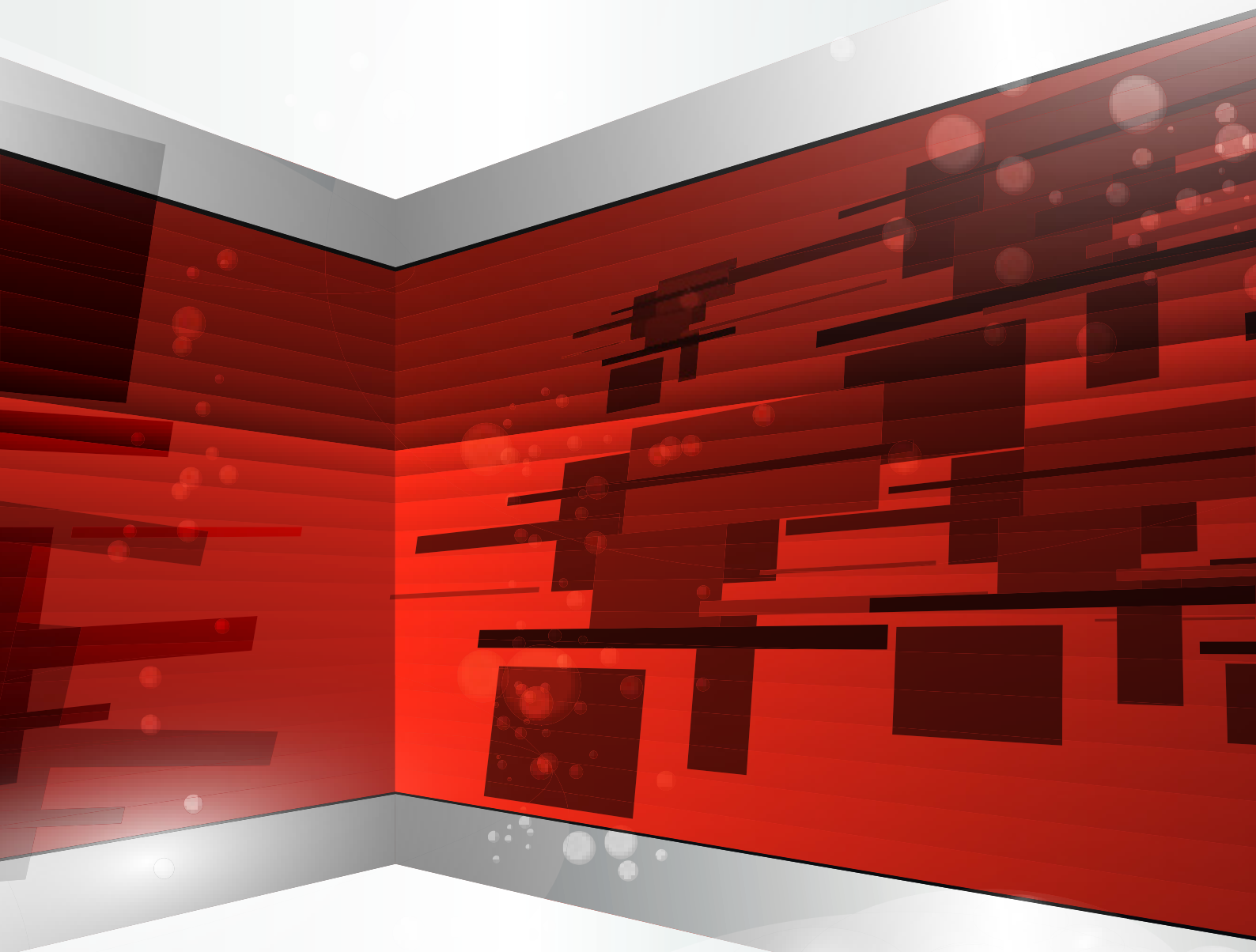
POLYLUX®

Quality and technology

MORE THAN 50 YEARS' EXPERIENCE

CATALOGUE 2025 v.1



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POLYLUX®

Your LEADING MANUFACTURER in transformers, autotransformers and reactors

50 +
years of market experience

We have a long and solid track record in the manufacture of products for voltage conversion, installation safety and electrical energy quality.

100 +
countries we export to

Our experience in each of the countries where we operate enables us to respond more effectively and efficiently to our customers' requirements, overcoming technical, logistical and business challenges.

20.000 +
m2 of surface area

We have a large production capacity, which allows us to operate efficiently, handle large-scale projects, and guarantee optimal delivery times.

POLYLUX®

About our products

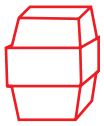
At POLYLUX, we help our customers improve their facilities by providing them with high-quality, reliable and safe products.

We offer a wide range of products, as well as tailor-made solutions that adapt to the needs of each project.

What makes our products different from others? Continuous improvement and quality.

Dip varnishing. + **Drying in a high compactation furnace**

These two processes prevent noise and vibrations in the operation of our products. This achieves increased isolation and additional protection against damp.



Flame retardant resin encapsulation.

This process gives our products high resistance to thermal contrasts and complies with the UL94 V0 plastics flammability standard.

Welded terminals

We use welding processes to achieve greater reliability and connection stability.

Magnetic cores.

We use magnetic cores with different properties and construction formats to achieve high efficiency.

Flexibility in the final product construction.

We adapt to all installation needs and design enclosures with different IP grades. Certified IP23 and IP65 enclosures.

Product testing.

Automatic checks and tests on ALL the products, in accordance with the standards.

Customer focus.

Technical support team that offers advice on product installation and maintenance.

Sectors

We adapt to the needs of each sector

The needs of these sectors are well known to POLYLUX. This experience allows us to offer tailor-made solutions to our customers, replying effectively to new market demands and the highest requirements of each sector.

Industrial

Marine & Offshore

Railway

Renewable Energies

Medical

Energy Quality

Lighting

Data Centre

Oil & Mining

Certified company

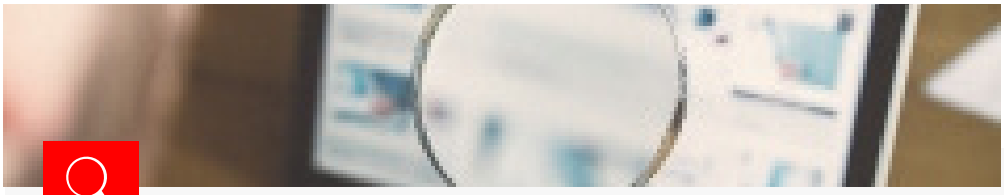
At POLYLUX, we have certifications that endorse our quality and commitment to meeting the highest international standards.

Our main certifications include **ISO 9001**, which validates our quality management system, as well as **UL** certification as individual components and **CE,** which guarantee the safety and conformity of our products in global markets. In addition, we are **Carbon Footprint certified**, which supports our commitment to sustainability and environmental friendliness.

To ensure that our products and processes meet the highest standards, we work with the industry's leading certification entities. We collaborate with **Applus,** as well as with renowned naval entities such as **DNV and Bureau Veritas**, who validate our processes and products under the strictest standards in the naval industry.

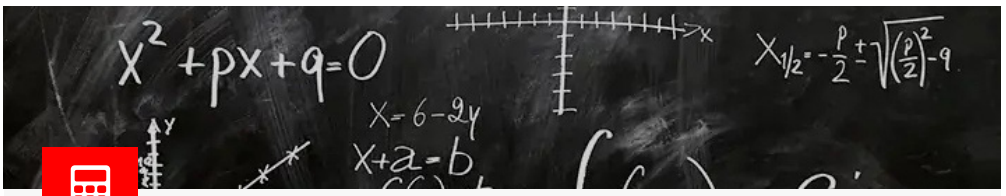
These certifications are a reflection of our dedication to offering quality, safe and sustainable solutions that meet our customers' expectations and the most rigorous market regulations.

Tools



Product finder

Quickly and easily find the product you need by filtering by up to 6 factors.



Calculators

Calculate the input and output protections for transformers, the minimum rating for a control transformer or the best three-phase transformers for feeding engines.

Tutorials and video tutorials

Check out our articles section and find tutorials and video tutorials, formulas, calculation examples and reference manuals.

24/7 Online resources

Users area

Enjoy exclusive webinars with specialised training and get personalised quotes quickly and easily. Register for free and get access to all these advantages.

Access!

FAQ's

Get your questions answered immediately with our Frequently Asked Questions area.
How to generate neutral in a three-phase network?
How to switch from a two-phase network (PH+PH) to a single-phase network with neutral (PH+N)?

Explore them!

Virtual assistant

Our chatbot is available to help you with any technical or commercial query. It is designed to respond quickly to the most frequently asked questions or to send it automatically to our specialised team.

Consult!

Access to all our resources

www.polylux.com/en

POLYLUX®

Buy online

Our solutions available 24/7: Find, choose and buy instantly.

Hoy to buy online?

1

To buy online, you have to be logged in and have an address located at one of the eligible countries.

Austria Croatia Czech Republic Finland France

Germany Greece Hungary Ireland Italy

Lithuania Luxembourg Poland Slovakia Sweden

2

Then, you'll see product prices (€) and the "add to cart" button

3

You can pay your order online with a credit card.

Login or create an account now

POLYLUX®

Request your quote

Would you like to receive a quote for our equipment?

You must not have an address in one of the eligible countries to request a quote.

1

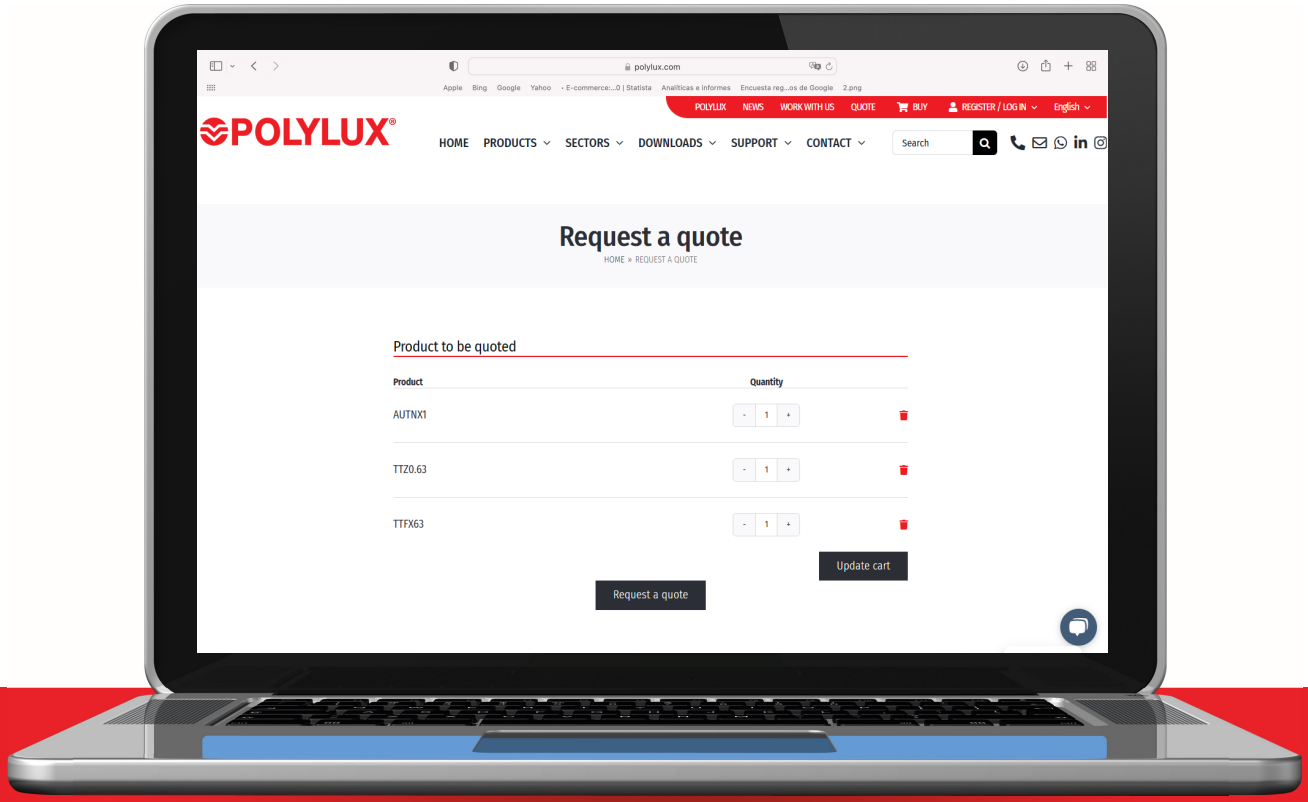
Browse the **PRODUCTS** catalogue or use the **AVANCED SEARCH** to locate the references you need.

2

Add the products to the **quotation** and send us your request following the instructions on the website.

3

We will send you a quotation for the equipment you need in the shortest possible time.



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P SERIES

Control manoeuvre and isolation

Definition and applications

Our P series equipment has a robust, modern design and is perfect for continuous operation in supplying industrial, tertiary or residential installations and machinery. Due to its design, it has an IP20 rating that prevents direct electrical contact and protects windings perfectly.
Its main applications are:

- Isolation of circuits, with the ability to increase or reduce the output voltage.
- Changing the neutral system of installations, with the ability to change from a two-phase network to a single one or vice versa (this case entails creating an artificial neutral).
- In installations with a determined level of electrical noise, the user of the transformer helps improve the quality of the electrical network in secondary.
- Installations that require a safety voltage (<50 V).
- The ability to isolation more sensitive systems in a control panel.
- Obtaining different control and manoeuvre voltages in an electrical panel.

Manufacturing characteristics

All the versions have the following features in common:

- Anti-flash dip varnishing. Ensures greater compactation, isolation and noise elimination.
- Bridges for the different connections included in the product packaging.
- Option of mounting on **DIN rail up to 250 VA**.
- Convertible from Class I to Class II (up to 2500 VA).
- LED indicator lamp.
- Full power in all sockets.
- All the transformers are checked automatically one by one and the compliance test report is created in accordance with the corresponding standard.

Up to 2500 VA.

- Technical polymer box.
- UL 94 V-0 flame retardant material.
- Protective terminal cover to prevent direct contact.
- Ventilation ducts at the top and along the perimeter.
- Feature label with all the connection and protection instructions.

From 3150 VA.

- Epoxy painted metal box resistant to all types of damp and corrosive atmospheres.
- Protective terminal cover to prevent direct contact.
- Ventilation ducts along the box perimeter.
- Feature label with all the connection and protection instructions.

NEW head design

- Increased wiring insulation.
- Clearer features.
- Easier connection.
- More uniform, compact and robust design.

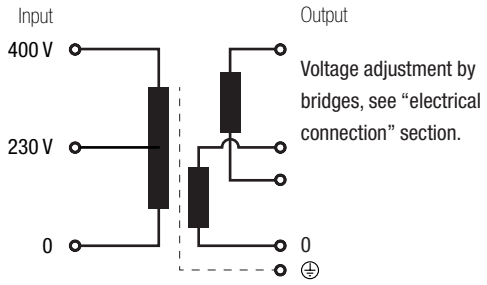
Technical features - standard model

Rating	**40 VA to 5000 VA**
Insulators	**Class H - 180 ºC**
Temperature rise	**Class B**
Winding	**Class HC - 200 ºC**
Room temperature	**45 ºC**
Frequency	**50-60 Hz**
Noise	**≤ 45 dB**
Protection rating	**IP20**
Cooling	**ANAN**
Includes	**LED indicator lamp**
Mounting	**With screws (for all powers)** **Mounting on DIN 46277/3 rail (up to 250 VA)**
Standards	**IEC/EN/UNE-EN 61558, CE**
Protection	**Convertible from Class I to Class II (up to 2500 VA).**
Voltage selection	**Metallic bridges, included**
Operation	**Continuous**
Test voltage	**4.6 kV (1 min., 50 Hz) between primary and secondary** **3.2 kV (1 min., 50 Hz) between primary and ground** **2.5 kV (1 min., 50 Hz) between secondary and ground**

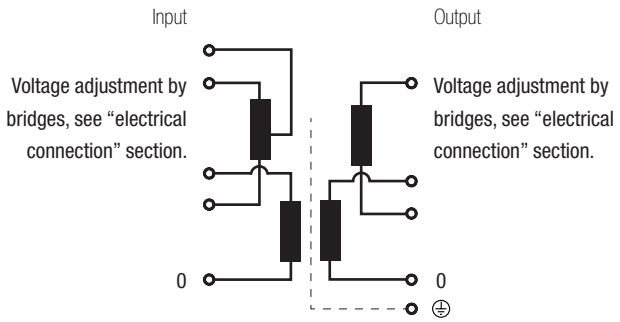
Protection calculation

Electrical diagrams

- **Up to 100 VA**



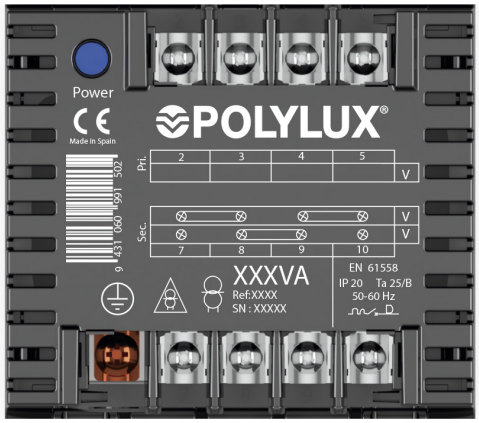
- **From 160 VA**



P SERIES

Control manoeuvre and isolation

Electrical connection



≤ 100 VA

Input:

- 230 V | Connection: 2-3
- 400 V | Connection: 2-4

Output:

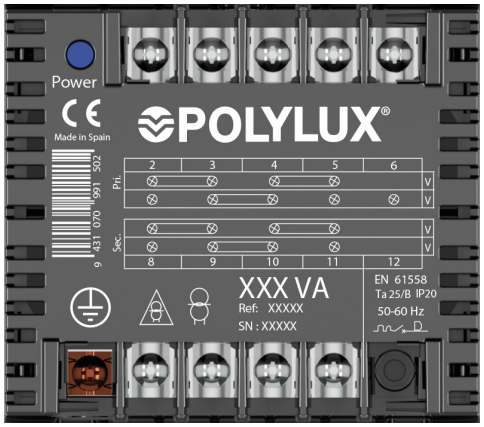
- Reference PB 12 V
- Reference PC 24 V
- Reference PD 115 V

Connection: 7-10
Bridges: 7-8 / 9-10

- Reference PB 24 V
- Reference PC 48 V
- Reference PD 230 V

Connection: 7-10
Bridges: 8-9

Connection video



From 160 VA to 1000 VA

Input:

- 230 V | Connection: 2-5
  Bridges: 2-3 / 4-5
- 400 V | Connection: 2-6
  Bridges: 3-4
- 460 V | Connection: 2-5
  Bridges: 3-4

Output:

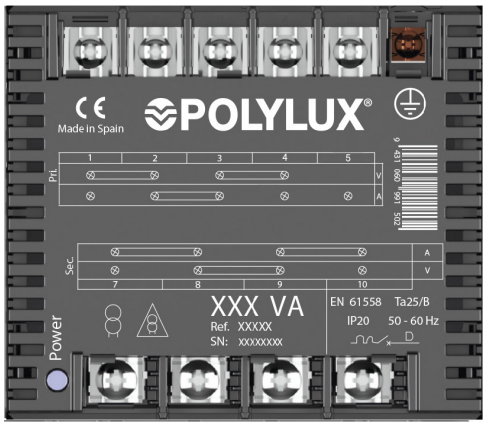
- Reference PB 12 V
- Reference PC 24 V
- Reference PD 115 V

Connection: 8-11
Bridges: 8-9 / 10-11

- Reference PB 24 V
- Reference PC 48 V
- Reference PD 230 V

Connection: 8-11
Bridges: 9-10

Connection video



≥ 1250 VA

Input:

- 230 V | Connection: 1-4
  Bridges: 1-2 / 3-4
- 400 V | Connection: 1-5
  Bridges: 2-3
- 460 V | Connection: 1-4
  Bridges: 2-3

Output:

- Reference PC 24 V
- Reference PD 115 V

Connection: 7-10
Bridges: 7-8 / 9-10

- Reference PC 48 V
- Reference PD 230 V

Connection: 7-10
Bridges: 8-9

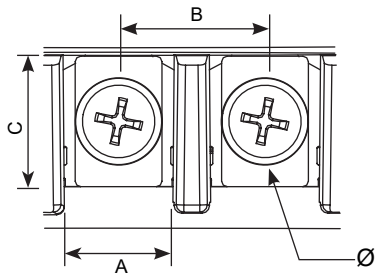
Connection video

P SERIES

Control manoeuvre and isolation

Terminal types

Terminal blocks	Dimensions mm				Maximum tightening torque N·m	Primary Power VA		Secondary Power VA	
	A	B	C	Ø		From	To	From	To
Terminal M3	8	11	9	M3	0.5	40	100	40	100
Terminal M4	10	13.5	12	M4	1.1	160	1000	160	250
Terminal M5	15	18.5	14	M5	2.5	1250	5000	315	1000
Terminal M6	15.5	20.4	13	M6	4	-	-	1250	5000



Theoretical data - standard model

Power VA	Reference	Input current A			Output current A		Input protections (A) (MCB -> D / Fuse -> aM)			Output protections (A) (MCB -> C / Fuse -> gG)	
		230 V	400 V	460 V	V1	V2	230 V	400 V	460 V	V1	V2
PB (output voltage 12 V [V1] or 24 V [V2])											
40	**PB40**	0.17	0.10	-	3.33	1.67	0.4 (--/T)	0.2 (--/T)	-	3.15	1.6
63	**PB63**	0.27	0.16	-	5.25	2.63	0.63 (--/T)	0.315 (--/T)	-	5	2.5
100	**PB100**	0.43	0.25	-	8.33	4.17	1 (--/T)	0.5 (--/T)	-	8	4
160	**PB160**	0.70	0.40	0.35	13.33	6.67	1.6	1	0.63	12.5	6
200	**PB200**	0.87	0.50	0.43	16.67	8.33	2	1	1	16	8
250	**PB250**	1.09	0.63	0.54	20.83	10.42	2.5	1.25	1.25	20	10
315	**PB315**	1.37	0.79	0.68	26.25	13.13	3.15	1.6	1.6	25	12.5
400	**PB400**	1.74	1.00	0.87	33.33	16.67	4	2	2	32	16
500	**PB500**	2.17	1.25	1.09	41.67	20.83	5	2.5	2.5	40	20
PC (output voltage 24 V [V1] or 48 V [V2])											
40	**PC40**	0.17	0.10	-	1.67	0.83	0.4 (--/T)	0.2 (--/T)	-	1.6	0.8 (--/T)
63	**PC63**	0.27	0.16	-	2.63	1.31	0.63 (--/T)	0.315 (--/T)	-	2.5	1.25
100	**PC100**	0.43	0.25	-	4.17	2.08	1 (--/T)	0.5 (--/T)	-	4	2
160	**PC160**	0.70	0.40	0.35	6.67	3.33	1.6	1	0.63	6	3.15
200	**PC200**	0.87	0.50	0.43	8.33	4.17	2	1	1	8	4
250	**PC250**	1.09	0.63	0.54	10.42	5.21	2.5	1.25	1.25	10	5
315	**PC315**	1.37	0.79	0.68	13.13	6.56	3.15	1.6	1.6	12.5	6
400	**PC400**	1.74	1.00	0.87	16.67	8.33	4	2	2	16	8
500	**PC500**	2.17	1.25	1.09	20.83	10.42	5	2.5	2.5	20	10
630	**PC630**	2.74	1.58	1.37	26.25	13.13	6	3.15	3.15	25	12.5
800	**PC800**	3.48	2.00	1.74	33.33	16.67	8	4	4	32	16
1000	**PC1000**	4.35	2.50	2.17	41.67	20.83	10	5	5	40	20
1250	**PC1250**	5.43	3.13	2.72	52.08	26.04	10	6.3	5	50	25
1600	**PC1600**	6.96	4.00	3.48	66.67	33.33	16	8	8	63	32
2000	**PC2000**	8.70	5.00	4.35	83.33	41.67	20	10	10	80	40
PD (output voltage 115 V [V1] or 230 V [V2])											
40	**PD40**	0.17	0.10	-	0.35	0.17	0.4 (--/T)	0.2 (--/T)	-	0.31 (--/T)	0.16 (--/T)
63	**PD63**	0.27	0.16	-	0.55	0.27	0.63 (--/T)	0.315 (--/T)	-	0.5 (--/T)	0.25 (--/T)
100	**PD100**	0.43	0.25	-	0.87	0.43	1 (--/T)	0.5 (--/T)	-	0.8 (--/T)	0.4 (--/T)
160	**PD160**	0.70	0.40	0.35	1.39	0.70	1.6	1	0.63	1.25	0.63 (--/T)
200	**PD200**	0.87	0.50	0.43	1.74	0.87	2	1	1	1.6	0.8 (--/T)
250	**PD250**	1.09	0.63	0.54	2.17	1.09	2.5	1.25	1.25	2	1
315	**PD315**	1.37	0.79	0.68	2.74	1.37	3.15	1.6	1.6	2.5	1.25
400	**PD400**	1.74	1.00	0.87	3.48	1.74	4	2	2	3.15	1.6
500	**PD500**	2.17	1.25	1.09	4.35	2.17	5	2.5	2.5	4	2
630	**PD630**	2.74	1.58	1.37	5.48	2.74	6	3.15	3.15	5	2.5
800	**PD800**	3.48	2.00	1.74	6.96	3.48	8	4	4	6	4
1000	**PD1000**	4.35	2.50	2.17	8.70	4.35	10	5	5	8	4
1250	**PD1250**	5.43	3.13	2.72	10.87	5.43	10	6.3	5	10	5
1600	**PD1600**	6.96	4.00	3.48	13.91	6.96	16	8	8	12.5	6
2000	**PD2000**	8.70	5.00	4.35	17.39	8.70	20	10	10	16	8
2500	**PD2500**	10.87	6.25	5.43	21.74	10.87	25	12.5	12.5	20	10
3150	**PD3150**	13.70	7.88	6.85	27.39	13.70	32	16	16	25	12.5
4000	**PD4000**	17.39	10.00	8.70	34.78	17.39	40	20	20	32	16
5000	**PD5000**	21.74	12.50	10.87	43.48	21.74	50	25	25	40	20

P SERIES

Control manoeuvre and isolation

Theoretical data - standard model

Power VA	Reference	Maximum cross-section input conductor (mm²)						Maximum cross-section output conductor (mm²)			
		230 V		400 V		460 V		V1		V2	
		Flexible	Rigid	Flexible	Rigid	Flexible	Rigid	Flexible	Rigid	Flexible	Rigid
PB (output voltage 12 V [V1] or 24 V [V2])											
40	**PB40**	0.5	0.5	0.5	0.5	-	-	1	1.5	1	1.5
63	**PB63**	0.5	0.5	0.5	0.5	-	-	1.5	2	1	1.5
100	**PB100**	0.5	1	0.5	0.5	-	-	2	2.5	1.5	2
160	**PB160**	0.5	1	0.5	0.5	0.5	0.5	2.5	4	1.5	2
200	**PB200**	0.5	1	0.5	1	0.5	1	4	-	2	2.5
250	**PB250**	0.5	1	0.5	1	0.5	1	4	-	2.5	4
315	**PB315**	0.5	1	0.5	1	0.5	1	6	-	2.5	4
400	**PB400**	1	1.5	0.5	1	0.5	1	8	-	4	-
500	**PB500**	1	1.5	0.5	1	0.5	1	10	-	4	-
PC (output voltage 24 V [V1] or 48 V [V2])											
40	**PC40**	0.5	0.5	0.5	0.5	-	-	1	1.5	0.5	1
63	**PC63**	0.5	0.5	0.5	0.5	-	-	1	1.5	0.5	1
100	**PC100**	0.5	1	0.5	0.5	-	-	1.5	2	1	1.5
160	**PC160**	0.5	1	0.5	0.5	0.5	0.5	1.5	2	1	1.5
200	**PC200**	0.5	1	0.5	1	0.5	1	2	2.5	1.5	2
250	**PC250**	0.5	1	0.5	1	0.5	1	2.5	4	1.5	2
315	**PC315**	0.5	1	0.5	1	0.5	1	2.5	4	1.5	2
400	**PC400**	1	1.5	0.5	1	0.5	1	4	-	2	2.5
500	**PC500**	1	1.5	0.5	1	0.5	1	4	-	2.5	4
630	**PC630**	1	1.5	1	1.5	0.5	1	6	-	2.5	4
800	**PC800**	1	1.5	1	1.5	1	1.5	8	-	4	-
1000	**PC1000**	1.5	2	1	1.5	1	1.5	10	-	4	-
1250	**PC1250**	1.5	2	1	1.5	1	1.5	16	-	6	-
1600	**PC1600**	1.5	2	1	1.5	1	1.5	16	-	8	-
2000	**PC2000**	2	2.5	1.5	2	1.5	2	20	-	10	-
PD (output voltage 115 V [V1] or 230 V [V2])											
40	**PD40**	0.5	0.5	0.5	0.5	-	-	0.5	0.5	0.5	0.5
63	**PD63**	0.5	0.5	0.5	0.5	-	-	0.5	1	0.5	0.5
100	**PD100**	0.5	1	0.5	0.5	-	-	0.5	1	0.5	1
160	**PD160**	0.5	1	0.5	0.5	0.5	0.5	0.5	1	0.5	1
200	**PD200**	0.5	1	0.5	1	0.5	1	1	1.5	0.5	1
250	**PD250**	0.5	1	0.5	1	0.5	1	1	1.5	0.5	1
315	**PD315**	0.5	1	0.5	1	0.5	1	1	1.5	0.5	1
400	**PD400**	1	1.5	0.5	1	0.5	1	1	1.5	1	1.5
500	**PD500**	1	1.5	0.5	1	0.5	1	1.5	2	1	1.5
630	**PD630**	1	1.5	1	1.5	0.5	1	1.5	2	1	1.5
800	**PD800**	1	1.5	1	1.5	1	1.5	1.5	2	1	1.5
1000	**PD1000**	1.5	2	1	1.5	1	1.5	2	2.5	1.5	2
1250	**PD1250**	1.5	2	1	1.5	1	1.5	2.5	4	1.5	2
1600	**PD1600**	1.5	2	1	1.5	1	1.5	2.5	4	1.5	2
2000	**PD2000**	2	2.5	1.5	2	1.5	2	4	-	2	2.5
2500	**PD2500**	2.5	4	1.5	2	1.5	2	4	-	2.5	4
3150	**PD3150**	2.5	4	2	2.5	1.5	2	6	-	2.5	4
4000	**PD4000**	4	-	2	2.5	2	2.5	8	-	4	-
5000	**PD5000**	4	-	2.5	4	2.5	4	10	-	4	-

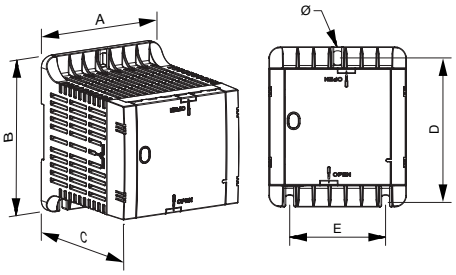
P SERIES

Control manoeuvre and isolation

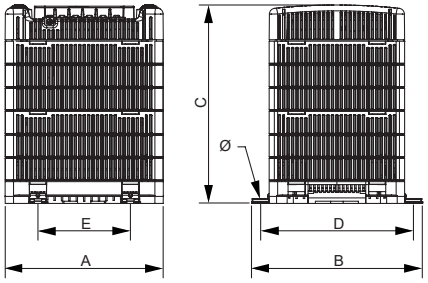
Measurements

Power VA	Input voltage V	Output voltage V References			External dimensions mm			Fastening elements mm			Weight kg
		12 / 24	24 / 48	115 / 230	A	B	C	D	E	Ø	
40	230 / 400	**PB40**	**PC40**	**PD40**	84	101	98	88	55	6	1,1
63	230 / 400	**PB63**	**PC63**	**PD63**	84	101	98	88	55	6	1,3
100	230 / 400	**PB100**	**PC100**	**PD100**	84	101	98	88	55	6	1,6
160	230 / 400 / 460	**PB160**	**PC160**	**PD160**	106	123	122	110	74	6	2,5
200	230 / 400 / 460	**PB200**	**PC200**	**PD200**	106	123	122	110	74	6	2,9
250	230 / 400 / 460	**PB250**	**PC250**	**PD250**	106	123	122	110	74	6	3,7
315	230 / 400 / 460	**PB315**	**PC315**	**PD315**	118	138	132	122	88	6	4,1
400	230 / 400 / 460	**PB400**	**PC400**	**PD400**	118	138	132	122	88	6	4,9
500	230 / 400 / 460	**PB500**	**PC500**	**PD500**	136	162	155	146	104	6	5,9
630	230 / 400 / 460		**PC630**	**PD630**	136	162	155	146	104	6	7,7
800	230 / 400 / 460		**PC800**	**PD800**	136	162	155	146	104	6	8,6
1000	230 / 400 / 460		**PC1000**	**PD1000**	136	162	180	146	104	6	9,6
1250	230 / 400 / 460		**PC1250**	**PD1250**	214	225	285	199	175	7	18
1600	230 / 400 / 460		**PC1600**	**PD1600**	214	225	285	199	175	7	22
2000	230 / 400 / 460		**PC2000**	**PD2000**	214	225	285	199	175	7	28
2500	230 / 400 / 460			**PD2500**	214	225	285	199	175	7	30
3150	230 / 400 / 460			**PD3150**	252	260	348	233	223	7	35
4000	230 / 400 / 460			**PD4000**	252	260	348	233	223	7	45
5000	230 / 400 / 460			**PD5000**	252	260	348	233	223	7	54

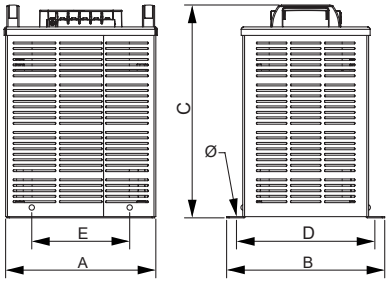
Up to PB500, PC1000 and PD1000



From PC1250 to PC2000
From PD1250 to PD2500



From PD3150

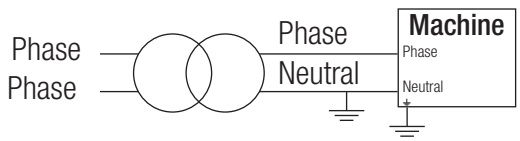


On-request manufacturing options (please see prices)

Power	**From 25 VA to 5000 VA**
Voltage	**From 6 V to 1100 V**
Shields	**Primary / secondary, primary / ground and secondary / ground**

Creating neutral

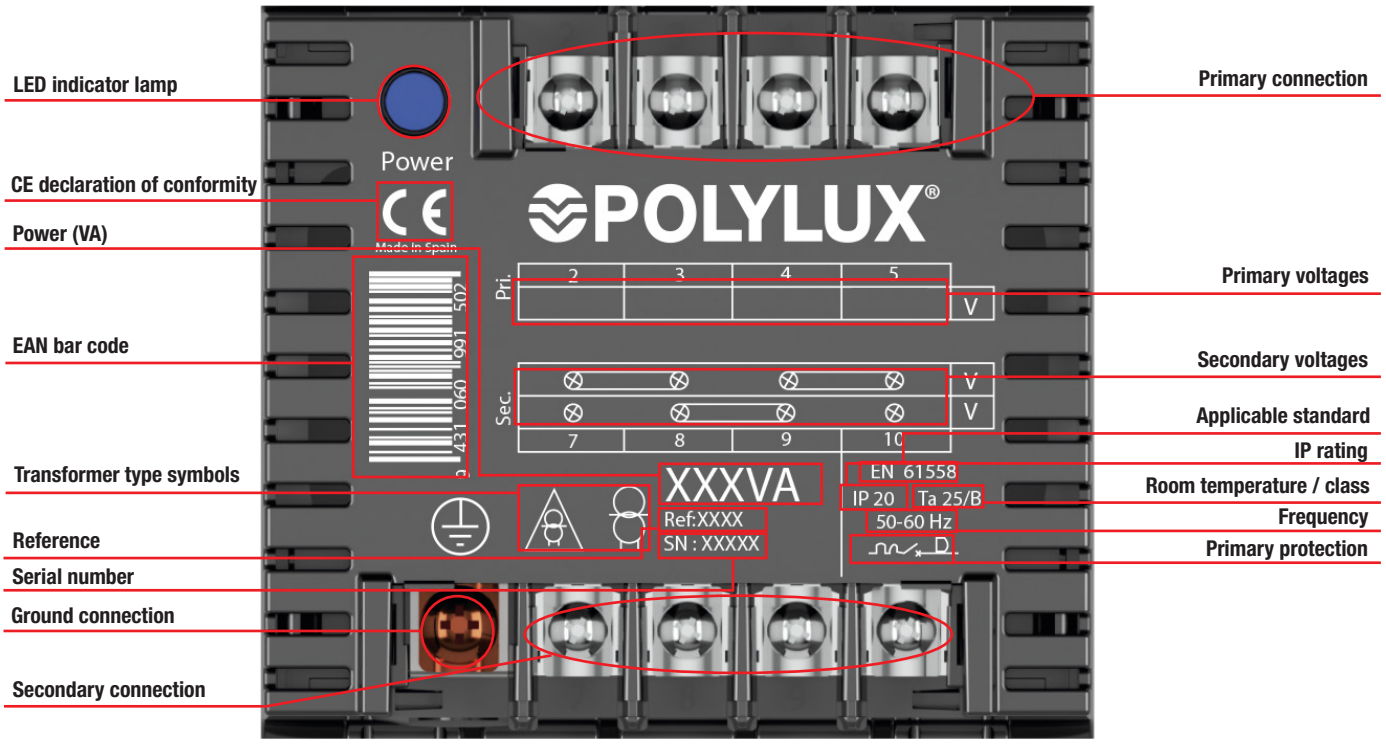
To perform this procedure: use a single-phase transformer with the appropriate power and connect it to primary with both phases and create a bridge at the output between one of the output phases and ground. This line will act as neutral from this moment.

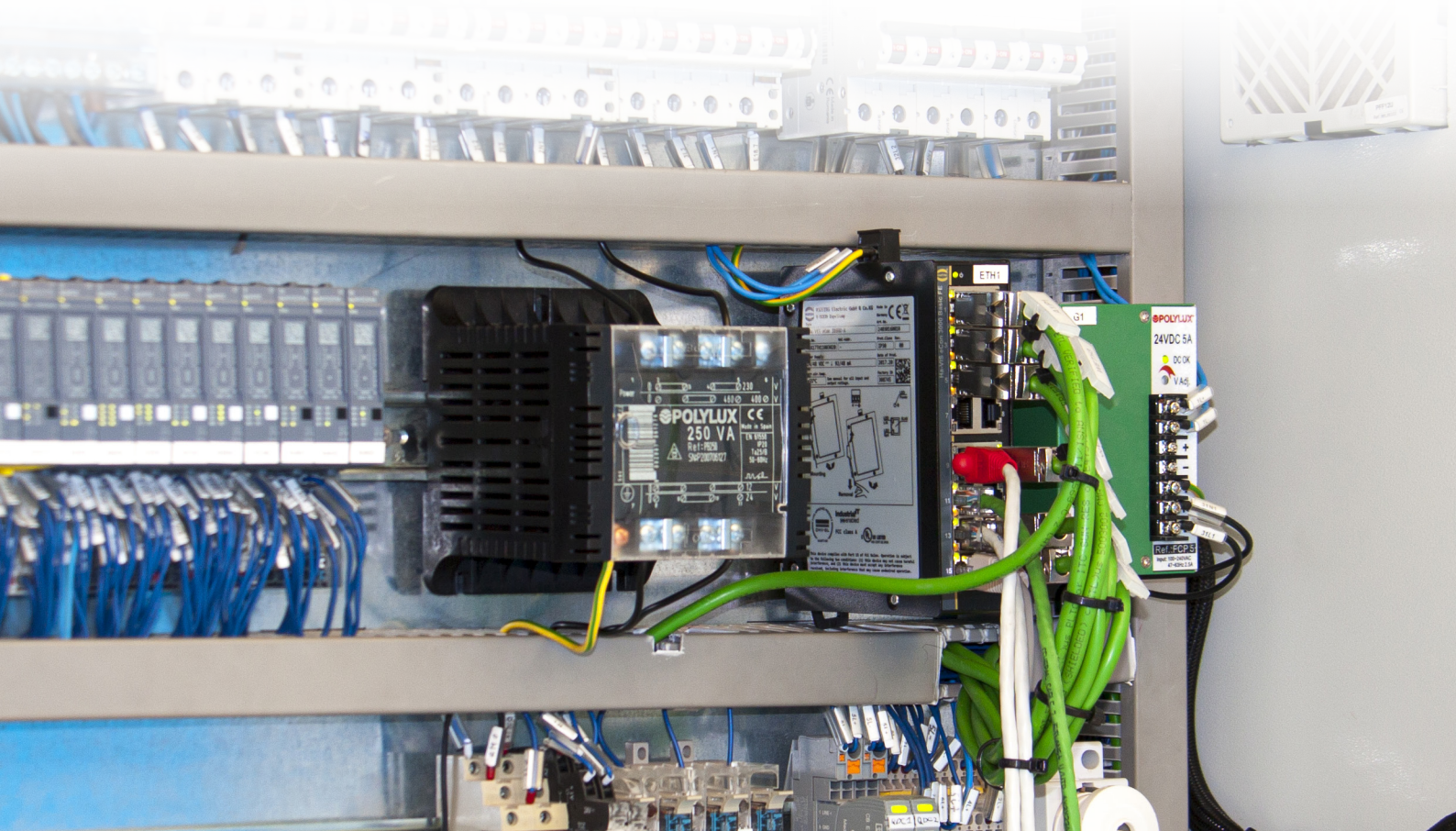


P SERIES

Control manoeuvre and isolation

Feature plate structure





Q SERIES

Encapsulated control, manoeuvre and isolation

Up to 1000 VA

- Technical polymer box.
- UL 94 V-0 flame retardant material.
- V-0 flame retardant resin encapsulation.
- Protective terminal cover to prevent direct contact.
- Feature label with all the connection and protection instructions.

From 1250 VA

- Completely encapsulated in flame retardant resin V-0.
- Protective terminal cover to prevent direct contact.
- Feature label with all the connection and protection instructions.

NEW head design

- Increased wiring insulation.
- Clearer features.
- Easier connection.
- More uniform, compact and robust design.

Definition and applications

The QB and QC control and manoeuvre transformers are specially designed for applications that require the adaptation of small voltages or where galvanic isolation is required for small loads or with safety voltages.
The QD transformers provide galvanic isolation between primary and secondary. **Its main applications include protection from single-phase electrical contacts** and isolation of the load / isolation of the network as well as the creation of neutrals referenced to ground.
Indicated for naval, wind farm, solar, pool, garden and railway installations and for oil rigs.

Manufacturing characteristics

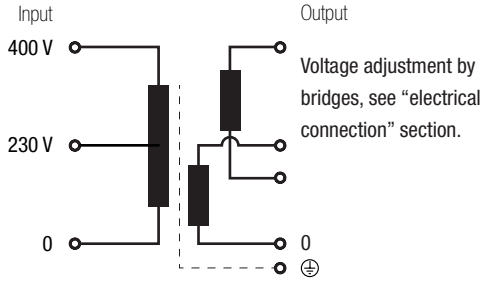
- Protection against indirect contacts.
- Convertible from Class I to Class II.
- LED indicator lamp included.
- Full power in all sockets.
- Voltage selection by metallic bridges (included).
- Mounted on **DIN rail (up to 100 VA)** or with screws.
- Option of special fabrications if the standard specification are inadequate.
- Protection against damp, saline and corrosive environments.
- Greater mechanical resistance to vibrations, power surges and transient harmonics.
- All the transformers are checked automatically one by one and the compliance test report is created in accordance with the corresponding standard.

Technical features - standard model

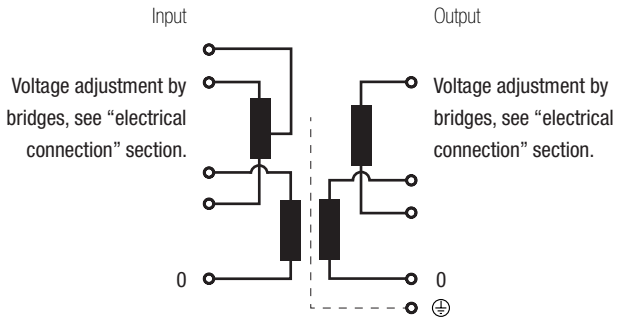
Rating	**40 VA to 2500 VA**
Insulators	**Class H - 180 ºC**
Temperature rise	**Class B**
Winding	**Class HC - 200 ºC**
Room temperature	**45 ºC**
Frequency	**50-60 Hz**
Noise	**≤ 40 dB**
Protection rating	**IP20**
Cooling	**AN**
Includes	**LED indicator lamp**
Mounting	**With screws (for all powers)** **Mounting on DIN 46277/3 rail (up to 100 VA)**
Standards	**IEC/EN/UNE-EN 61558, CE**
Protection	**Convertible from Class I to Class**
Voltage selection	**Metallic bridges, included**
Operation	**Continuous**
Test voltage	**4.6 kV (1 min., 50 Hz) between primary and secondary** **3.2 kV (1 min., 50 Hz) between primary and ground** **2.5 kV (1 min., 50 Hz) between secondary and ground**

Electrical diagrams

- **Up to 100 VA**



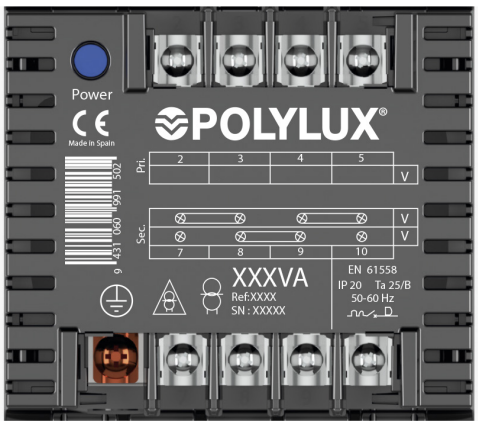
- **From 160 VA**



Q SERIES

Encapsulated control, manoeuvre and isolation

Electrical connection



≤ 100 VA

Input:

- 230 V | Connection: 2-3
- 400 V | Connection: 2-4

Output:

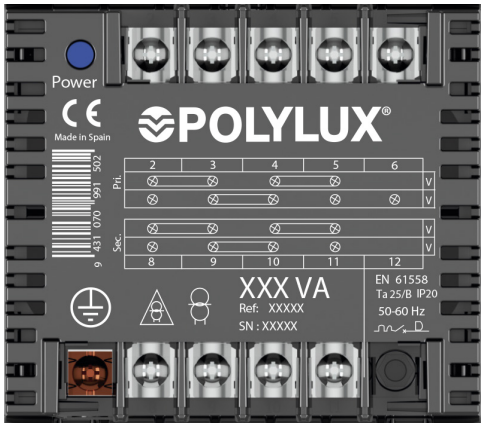
- References QB 12 V
- References QC 24 V
- References QD 115 V

Connection: 7-10
Bridges: 7-8 / 9-10

- References QB 24 V
- References QC 48 V
- References QD 230 V

Connection: 7-10
Bridges: 8-9

Connection video



From 160 VA to 1000 VA

Input:

- 230 V | Connection: 2-5
  Bridges: 2-3 / 4-5
- 400 V | Connection: 2-6
  Bridges: 3-4
- 460 V | Connection: 2-5
  Bridges: 3-4

Output:

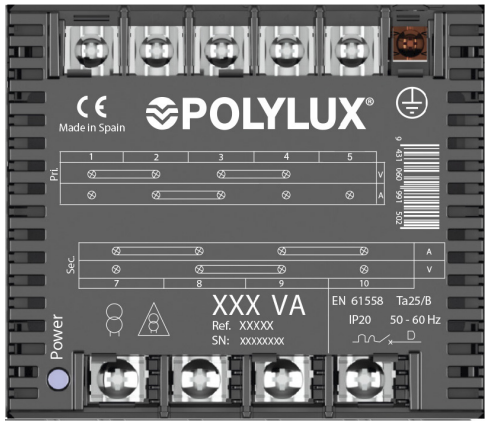
- References QB 12 V
- References QC 24 V
- References QD 115 V

Connection: 8-11
Bridges: 8-9 / 10-11

- References QB 24 V
- References QC 48 V
- References QD 230 V

Connection: 8-11
Bridges: 9-10

Connection video



≥ 1250 VA

Input:

- 230 V | Connection: 1-4
  Bridges: 1-2 / 3-4
- 400 V | Connection: 1-5
  Bridges: 2-3
- 460 V | Connection: 1-4
  Bridges: 2-3

Output:

- Reference QC 24 V
- References QD 115 V

Connection: 7-10
Bridges: 7-8 / 9-10

- Reference QC 48 V
- References QD 230 V

Connection: 7-10
Bridges: 8-9

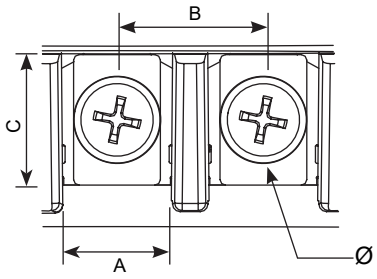
Connection video

Q SERIES

Encapsulated control, manoeuvre and isolation

Terminal types

Terminal blocks	Dimensions mm				Maximum tightening torque N·m	Primary Power VA		Secondary Power VA	
	A	B	C	Ø		From	To	From	To
Terminal M3	8	11	9	M3	0.5	40	100	40	100
Terminal M4	10	13.5	12	M4	1.1	160	1000	160	250
Terminal M5	15	18.5	14	M5	2.5	1250	2500	315	1000
Terminal M6	15.5	20.4	13	M6	4	-	-	1250	2500



Theoretical data - standard model

Power VA	Reference	Input current A			Output current A		Input protections (A) (MCB -> D / Fuse -> aM)			Output protections (A) (MCB -> C / Fuse -> gG)	
		230 V	400 V	460 V	V1	V2	230 V	400 V	460 V	V1	V2
QB (output voltage 12 V [V1] or 24 V [V2])											
40	**QB40**	0.17	0.10	-	3.33	1.67	0.4 (--/T)	0.2 (--/T)	-	3.15	1.6
63	**QB63**	0.27	0.16	-	5.25	2.63	0.63 (--/T)	0.315 (--/T)	-	5	2.5
100	**QB100**	0.43	0.25	-	8.33	4.17	1 (--/T)	0.5 (--/T)	-	8	4
160	**QB160**	0.70	0.40	0.35	13.33	6.67	1.6	1	0.63	12.5	6
200	**QB200**	0.87	0.50	0.43	16.67	8.33	2	1	1	16	8
250	**QB250**	1.09	0.63	0.54	20.83	10.42	2.5	1.25	1.25	20	10
315	**QB315**	1.37	0.79	0.68	26.25	13.13	3.15	1.6	1.6	25	12.5
400	**QB400**	1.74	1.00	0.87	33.33	16.67	4	2	2	32	16
500	**QB500**	2.17	1.25	1.09	41.67	20.83	5	2.5	2.5	40	20
QC (output voltage 24 V [V1] or 48 V [V2])											
40	**QC40**	0.17	0.10	-	1.67	0.83	0.4 (--/T)	0.2 (--/T)	-	1.6	0.8 (--/T)
63	**QC63**	0.27	0.16	-	2.63	1.31	0.63 (--/T)	0.315 (--/T)	-	2.5	1.25
100	**QC100**	0.43	0.25	-	4.17	2.08	1 (--/T)	0.5 (--/T)	-	4	2
160	**QC160**	0.70	0.40	0.35	6.67	3.33	1.6	1	0.63	6	3.15
200	**QC200**	0.87	0.50	0.43	8.33	4.17	2	1	1	8	4
250	**QC250**	1.09	0.63	0.54	10.42	5.21	2.5	1.25	1.25	10	5
315	**QC315**	1.37	0.79	0.68	13.13	6.56	3.15	1.6	1.6	12.5	6
400	**QC400**	1.74	1.00	0.87	16.67	8.33	4	2	2	16	8
500	**QC500**	2.17	1.25	1.09	20.83	10.42	5	2.5	2.5	20	10
630	**QC630**	2.74	1.58	1.37	26.25	13.13	6	3.15	3.15	25	12.5
800	**QC800**	3.48	2.00	1.74	33.33	16.67	8	4	4	32	16
1000	**QC1000**	4.35	2.50	2.17	41.67	20.83	10	5	5	40	20
1250	**QC1250**	5.43	3.13	2.72	52.08	26.04	10	6.3	5	50	25
1600	**QC1600**	6.96	4.00	3.48	66.67	33.33	16	8	8	63	32
2000	**QC2000**	8.70	5.00	4.35	83.33	41.67	20	10	10	80	40
QD (output voltage 115 V [V1] or 230 V [V2])											
40	**QD40**	0.17	0.10	-	0.35	0.17	0.4 (--/T)	0.2 (--/T)	-	0.31 (--/T)	0.16 (--/T)
63	**QD63**	0.27	0.16	-	0.55	0.27	0.63 (--/T)	0.315 (--/T)	-	0.5 (--/T)	0.25 (--/T)
100	**QD100**	0.43	0.25	-	0.87	0.43	1 (--/T)	0.5 (--/T)	-	0.8 (--/T)	0.4 (--/T)
160	**QD160**	0.70	0.40	0.35	1.39	0.70	1.6	1	0.63	1.25	0.63 (--/T)
200	**QD200**	0.87	0.50	0.43	1.74	0.87	2	1	1	1.6	0.8 (--/T)
250	**QD250**	1.09	0.63	0.54	2.17	1.09	2.5	1.25	1.25	2	1
315	**QD315**	1.37	0.79	0.68	2.74	1.37	3.15	1.6	1.6	2.5	1.25
400	**QD400**	1.74	1.00	0.87	3.48	1.74	4	2	2	3.15	1.6
500	**QD500**	2.17	1.25	1.09	4.35	2.17	5	2.5	2.5	4	2
630	**QD630**	2.74	1.58	1.37	5.48	2.74	6	3.15	3.15	5	2.5
800	**QD800**	3.48	2.00	1.74	6.96	3.48	8	4	4	6	4
1000	**QD1000**	4.35	2.50	2.17	8.70	4.35	10	5	5	8	4
1250	**QD1250**	5.43	3.13	2.72	10.87	5.43	10	6.3	5	10	5
1600	**QD1600**	6.96	4.00	3.48	13.91	6.96	16	8	8	12.5	6
2000	**QD2000**	8.70	5.00	4.35	17.39	8.70	20	10	10	16	8
2500	**QD2500**	10.87	6.25	5.43	21.74	10.87	25	12.5	12.5	20	10

Q SERIES

Encapsulated control, manoeuvre and isolation

Theoretical data - standard model

Power VA	Reference	Maximum cross-section input conductor (mm²)						Maximum cross-section output conductor (mm²)			
		230 V		400 V		460 V		V1		V2	
		Flexible	Rigid	Flexible	Rigid	Flexible	Rigid	Flexible	Rigid	Flexible	Rigid
QB (output voltage 12 V [V1] or 24 V [V2])											
40	**QB40**	0.5	0.5	0.5	0.5	-	-	1	1.5	1	1.5
63	**QB63**	0.5	0.5	0.5	0.5	-	-	1.5	2	1	1.5
100	**QB100**	0.5	1	0.5	0.5	-	-	2	2.5	1.5	2
160	**QB160**	0.5	1	0.5	0.5	0.5	0.5	2.5	4	1.5	2
200	**QB200**	0.5	1	0.5	1	0.5	1	4	-	2	2.5
250	**QB250**	0.5	1	0.5	1	0.5	1	4	-	2.5	4
315	**QB315**	0.5	1	0.5	1	0.5	1	6	-	2.5	4
400	**QB400**	1	1.5	0.5	1	0.5	1	8	-	4	-
500	**QB500**	1	1.5	0.5	1	0.5	1	10	-	4	-
QC (output voltage 24 V [V1] or 48 V [V2])											
40	**QC40**	0.5	0.5	0.5	0.5	-	-	1	1.5	0.5	1
63	**QC63**	0.5	0.5	0.5	0.5	-	-	1	1.5	0.5	1
100	**QC100**	0.5	1	0.5	0.5	-	-	1.5	2	1	1.5
160	**QC160**	0.5	1	0.5	0.5	0.5	0.5	1.5	2	1	1.5
200	**QC200**	0.5	1	0.5	1	0.5	1	2	2.5	1.5	2
250	**QC250**	0.5	1	0.5	1	0.5	1	2.5	4	1.5	2
315	**QC315**	0.5	1	0.5	1	0.5	1	2.5	4	1.5	2
400	**QC400**	1	1.5	0.5	1	0.5	1	4	-	2	2.5
500	**QC500**	1	1.5	0.5	1	0.5	1	4	-	2.5	4
630	**QC630**	1	1.5	1	1.5	0.5	1	6	-	2.5	4
800	**QC800**	1	1.5	1	1.5	1	1.5	8	-	4	-
1000	**QC1000**	1.5	2	1	1.5	1	1.5	10	-	4	-
1250	**QC1250**	1.5	2	1	1.5	1	1.5	16	-	6	-
1600	**QC1600**	1.5	2	1	1.5	1	1.5	16	-	8	-
2000	**QC2000**	2	2.5	1.5	2	1.5	2	20	-	10	-
QD (output voltage 115 V [V1] or 230 V [V2])											
40	**QD40**	0.5	0.5	0.5	0.5	-	-	0.5	0.5	0.5	0.5
63	**QD63**	0.5	0.5	0.5	0.5	-	-	0.5	1	0.5	0.5
100	**QD100**	0.5	1	0.5	0.5	-	-	0.5	1	0.5	1
160	**QD160**	0.5	1	0.5	0.5	0.5	0.5	0.5	1	0.5	1
200	**QD200**	0.5	1	0.5	1	0.5	1	1	1.5	0.5	1
250	**QD250**	0.5	1	0.5	1	0.5	1	1	1.5	0.5	1
315	**QD315**	0.5	1	0.5	1	0.5	1	1	1.5	0.5	1
400	**QD400**	1	1.5	0.5	1	0.5	1	1	1.5	1	1.5
500	**QD500**	1	1.5	0.5	1	0.5	1	1.5	2	1	1.5
630	**QD630**	1	1.5	1	1.5	0.5	1	1.5	2	1	1.5
800	**QD800**	1	1.5	1	1.5	1	1.5	1.5	2	1	1.5
1000	**QD1000**	1.5	2	1	1.5	1	1.5	2	2.5	1.5	2
1250	**QD1250**	1.5	2	1	1.5	1	1.5	2.5	4	1.5	2
1600	**QD1600**	1.5	2	1	1.5	1	1.5	2.5	4	1.5	2
2000	**QD2000**	2	2.5	1.5	2	1.5	2	4	-	2	2.5
2500	**QD2500**	2.5	4	1.5	2	1.5	2	4	-	2.5	4

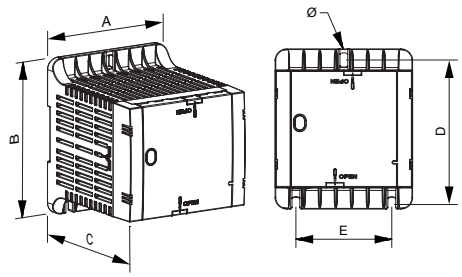
Q SERIES

Encapsulated control, manoeuvre and isolation

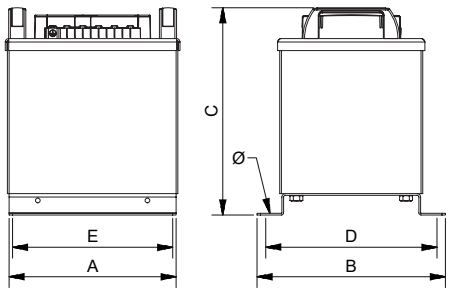
Measurements

Power VA	Input voltage V	Output voltage V References			External dimensions mm			Fastening elements mm			Weight kg
		12 / 24	24 / 48	115 / 230	A	B	C	D	E	Ø	
40	230 / 400	**QB40**	**QC40**	**QD40**	84	101	98	88	55	6	1,4
63	230 / 400	**QB63**	**QC63**	**QD63**	84	101	98	88	55	6	1,5
100	230 / 400	**QB100**	**QC100**	**QD100**	84	101	98	88	55	6	1,7
160	230 / 400 / 460	**QB160**	**QC160**	**QD160**	106	123	122	110	74	6	3
200	230 / 400 / 460	**QB200**	**QC200**	**QD200**	106	123	122	110	74	6	3,2
250	230 / 400 / 460	**QB250**	**QC250**	**QD250**	106	123	122	110	74	6	3,9
315	230 / 400 / 460	**QB315**	**QC315**	**QD315**	118	138	132	122	88	6	4,6
400	230 / 400 / 460	**QB400**	**QC400**	**QD400**	118	138	132	122	88	6	5,4
500	230 / 400 / 460	**QB500**	**QC500**	**QD500**	136	162	155	146	104	6	7
630	230 / 400 / 460		**QC630**	**QD630**	136	162	155	146	104	6	8,7
800	230 / 400 / 460		**QC800**	**QD800**	136	162	155	146	104	6	9,2
1000	230 / 400 / 460		**QC1000**	**QD1000**	136	162	180	146	104	6	10
1250	230 / 400 / 460		**QC1250**	**QD1250**	233	241	244	219	175	7	25
1600	230 / 400 / 460		**QC1600**	**QD1600**	233	241	274	219	175	7	29
2000	230 / 400 / 460		**QC2000**	**QD2000**	233	241	314	219	175	7	38
2500	230 / 400 / 460			**QD2500**	233	241	314	219	175	7	38

Up to QB500, QC1000 and QD1000



From QC1250 and QD1250

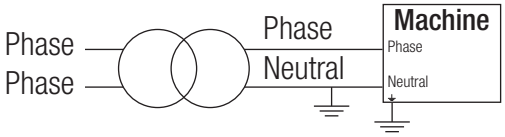


On-request manufacturing options (please see prices)

Power	**From 25 VA to 2500 VAA**
Voltage	**From 6 V to 1100 V**
Shields	**Primary / secondary, primary / ground and secondary / ground**

Creating neutral

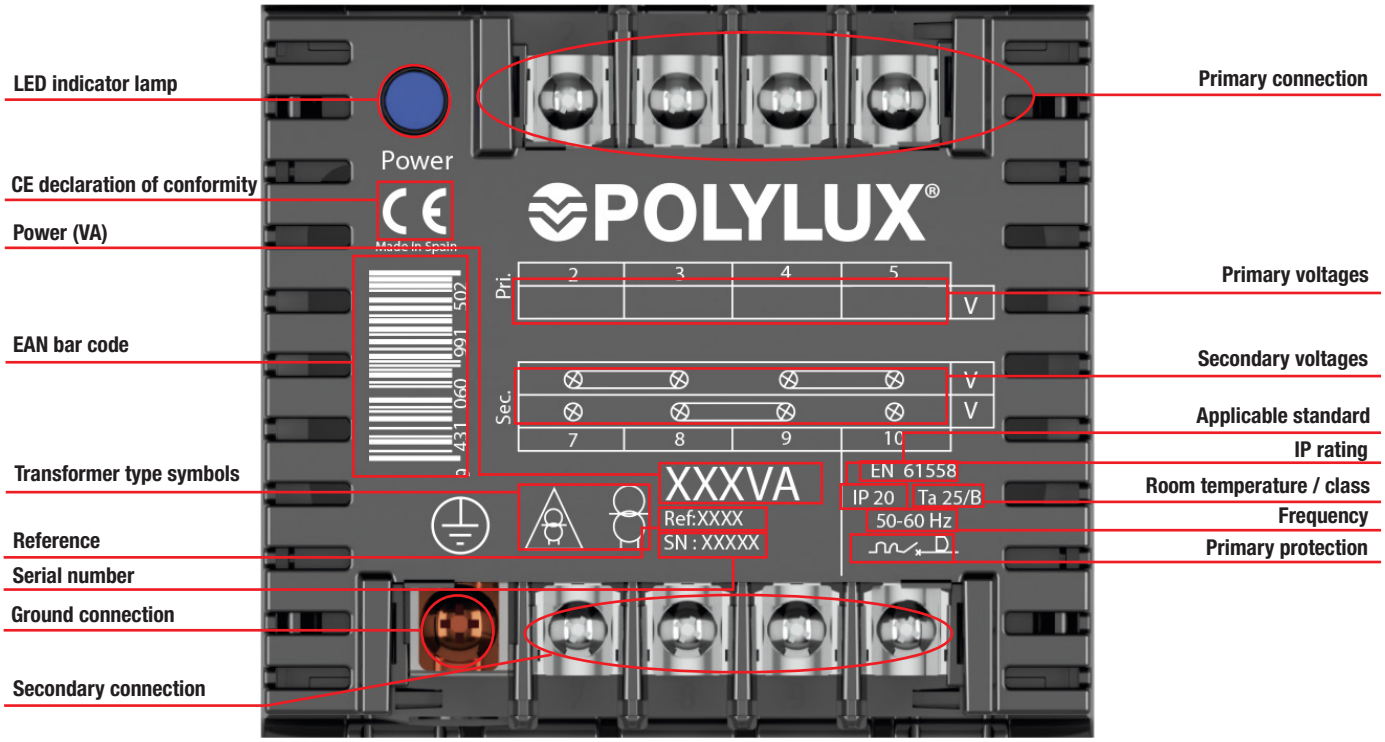
To perform this procedure: use a single-phase transformer with the appropriate power and connect it to primary with both phases and create a bridge at the output between one of the output phases and ground. This line will act as neutral from this moment.

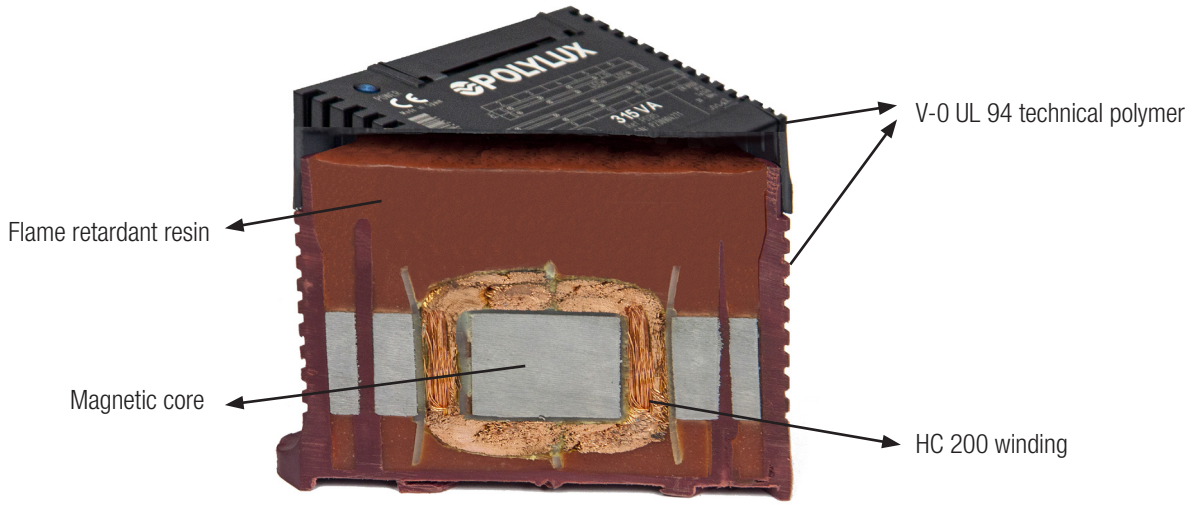


Q SERIES

Encapsulated control, manoeuvre and isolation

Feature plate structure





Sectioned transformer

N SERIES

Encapsulated control, manoeuvre and isolation

Technical features - standard model

Rating	**40 VA to 5000 VA**
Insulators	**Class H - 180 ºC**
Temperature rise	**Class B**
Winding	**Class HC - 200 ºC**
Room temperature	**45 ºC**
Frequency	**50-60 Hz**
Noise	**≤ 45 dB**
Protection rating	**IP20**
Cooling	**AN**
Mounting	**With screws (for all powers)** **Mounting on DIN 46277/3 rail (up to 100 VA)**
Standards	**IEC/EN/UNE-EN 61558, CE**
Voltage selection	**Metallic bridges, included**
Operation	**Continuous**
Test voltage	**4.6 kV (1 min., 50 Hz) between primary and secondary** **3.2 kV (1 min., 50 Hz) between primary and ground** **2.5 kV (1 min., 50 Hz) between secondary and ground**

Definition and applications

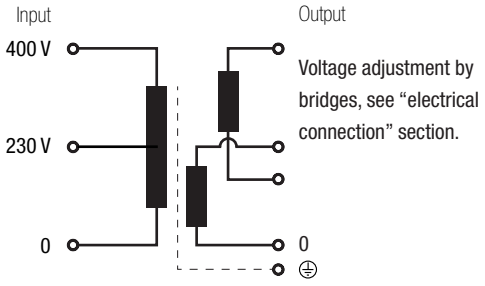
The NB and NC control and manoeuvre transformers are specially designed for applications that require the adaptation of small voltages or where galvanic isolation is required for small loads or with safety voltages.
The ND transformers do not provide galvanic isolation between primary and secondary.
Its main applications include protection from single-phase electrical contacts and isolation of the load / isolation of the network as well as the creation of neutrals referenced to ground.
Indicated for naval, wind farm, solar, pool, garden and railway installations and for oil rigs.

Manufacturing characteristics

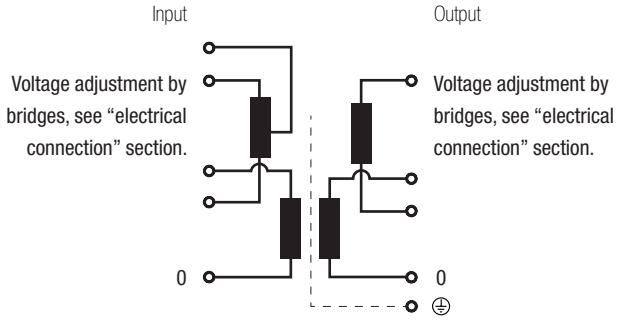
- Terminal protection cover.
- Mounting on **DIN rail (up to 100 VA)** or with screws.
- Electrical feature and connection label.
- Protection against damp, saline and corrosive environments.
- Greater mechanical resistance to vibrations, power surges and transient harmonics.
- All the transformers are checked automatically one by one and the compliance test report is created in accordance with the corresponding standard.

Electrical diagrams

- **Up to 160 VA**



- **From 200 VA**



N SERIES

Encapsulated control, manoeuvre and isolation

Electrical connection

≤ 160 VA

Input:

- 230 V | Connection: 1-2
- 400 V | Connection: 1-3

Output:

- Reference NB 12 V
- Reference NC 24 V
- Reference ND 115 V

Connection: 5-8
Bridges: 5-6 / 7-8

- Reference NB 24 V
- Reference NC 48 V
- Reference ND 230 V

Connection: 5-8
Bridges: 6-7

Connection video

≥ 200 VA

Input:

- 230 V | Connection: 1-4
  Bridges: 1-2 / 3-4
- 400 V | Connection: 1-5
  Bridges: 2-3
- 460 V | Connection: 1-4
  Bridges: 2-3

Output:

- Reference NB 12 V
- Reference NC 24 V
- Reference ND 115 V

Connection: 6-9
Bridges: 6-7 / 8-9

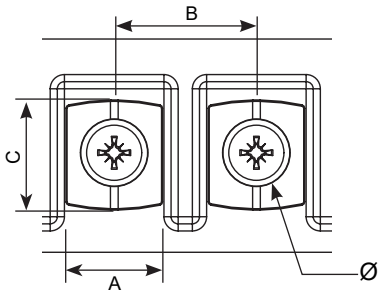
- Reference NB 24 V
- Reference NC 48 V
- Reference ND 230 V

Connection: 6-9
Bridges: 7-8

Connection video

Terminal types

Terminal blocks	Dimensions mm				Maximum tightening torque N·m	Primary Power VA		Secondary Power VA	
	A	B	C	Ø		From	To	From	To
Terminal M4	9.7	16	10.1	M4	1.1	40	400	40	400
Terminal M5	15.5	21.5	15.6	M5	2.5	500	3150	500	3150
Terminal M6	15.5	21.5	15.6	M6	4	4000	5000	4000	5000



N SERIES

Encapsulated control, manoeuvre and isolation

Theoretical data - standard model

Power VA	Reference	Input current A			Output current A		Input protections (A) (MCB -> D / Fuse -> aM)			Output protections (A) (MCB -> C / Fuse -> gG)	
		230 V	400 V	460 V	V1	V2	230 V	400 V	460 V	V1	V2
NB (output voltage 12 V [V1] or 24 V [V2])											
40	**NB40**	0.17	0.1	-	3.33	1.67	0.4 (--/T)	0.2 (--/T)	-	3.15	1.6
100	**NB100**	0.43	0.25	-	8.33	4.17	1 (--/T)	0.5 (--/T)	-	8	4
200	**NB200**	0.87	0.5	0.43	16.67	8.33	2	1	1	16	8
315	**NB315**	1.37	0.79	0.68	26.25	13.13	3.15	1.6	1.6	25	12.5
NC (output voltage 24 V [V1] or 48 V [V2])											
40	**NC40**	0.17	0.1	-	1.67	0.83	0.4 (--/T)	0.2 (--/T)	-	1.6	0.8 (--/T)
100	**NC100**	0.43	0.25	-	4.17	2.08	1 (--/T)	0.5 (--/T)	-	4	2
200	**NC200**	0.87	0.5	0.43	8.33	4.17	2	1	1	8	4
315	**NC315**	1.37	0.79	0.68	13.13	6.56	3.15	1.6	1.6	12.5	6
630	**NC630**	2.74	1.58	1.37	26.25	13.13	6	3.15	3.15	25	12.5
1000	**NC1000**	4.35	2.5	2.17	41.67	20.83	10	5	5	40	20
2000	**NC2000**	8.7	5	4.35	83.33	41.67	20	10	10	80	40
ND (output voltage 115 V [V1] or 230 V [V2])											
40	**ND40**	0.17	0.1	-	0.35	0.17	0.4 (--/T)	0.2 (--/T)	-	0.31 (--/T)	0.16 (--/T)
100	**ND100**	0.43	0.25	-	0.87	0.43	1 (--/T)	0.5 (--/T)	-	0.8 (--/T)	0.4 (--/T)
200	**ND200**	0.87	0.5	0.43	1.74	0.87	2	1	1	1.6	0.8 (--/T)
315	**ND315**	1.37	0.79	0.68	2.74	1.37	3.15	1.6	1.6	2.5	1.25
630	**ND630**	2.74	1.58	1.37	5.48	2.74	6	3.15	3.15	5	2.5
1000	**ND1000**	4.35	2.5	2.17	8.7	4.35	10	5	5	8	4
2000	**ND2000**	8.7	5	4.35	17.39	8.7	20	10	10	16	8
3150	**ND3150**	13.7	7.88	6.85	27.39	13.7	32	16	16	25	12.5
5000	**ND5000**	21.74	12.5	10.87	43.48	21.74	50	25	25	40	20

N SERIES

Encapsulated control, manoeuvre and isolation

Theoretical data - standard model

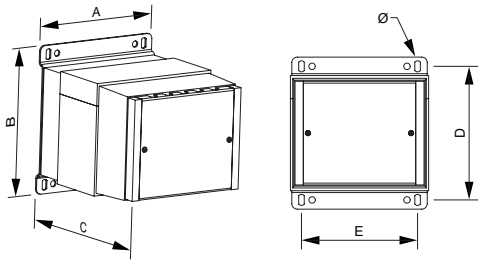
Power VA	Reference	Maximum cross-section input conductor (mm²)						Maximum cross-section output conductor (mm²)			
		230 V		400 V		460 V		V1		V2	
		Flexible	Rigid	Flexible	Rigid	Flexible	Rigid	Flexible	Rigid	Flexible	Rigid
NB (output voltage 12 V [V1] or 24 V [V2])											
40	**NB40**	0.5	0.5	0.5	0.5	-	-	1	1.5	1	1.5
100	**NB100**	0.5	1	0.5	0.5	-	-	2	2.5	1.5	2
200	**NB200**	0.5	1	0.5	1	0.5	1	4	-	2	2.5
315	**NB315**	0.5	1	0.5	1	0.5	1	6	-	2.5	4
NC (output voltage 24 V [V1] or 48 V [V2])											
40	**NC40**	0.5	0.5	0.5	0.5	-	-	1	1.5	0.5	1
100	**NC100**	0.5	1	0.5	0.5	-	-	1.5	2	1	1.5
200	**NC200**	0.5	1	0.5	1	0.5	1	2	2.5	1.5	2
315	**NC315**	0.5	1	0.5	1	0.5	1	2.5	4	1.5	2
630	**NC630**	1	1.5	1	1.5	0.5	1	6	-	2.5	4
1000	**NC1000**	1.5	2	1	1.5	1	1.5	10	-	4	-
2000	**NC2000**	2	2.5	1.5	2	1.5	2	20	-	10	-
ND (output voltage 115 V [V1] or 230 V [V2])											
40	**ND40**	0.5	0.5	0.5	0.5	-	-	0.5	0.5	0.5	0.5
100	**ND100**	0.5	1	0.5	0.5	-	-	0.5	1	0.5	1
200	**ND200**	0.5	1	0.5	1	0.5	1	1	1.5	0.5	1
315	**ND315**	0.5	1	0.5	1	0.5	1	1	1.5	0.5	1
630	**ND630**	1	1.5	1	1.5	0.5	1	1.5	2	1	1.5
1000	**ND1000**	1.5	2	1	1.5	1	1.5	2	2.5	1.5	2
2000	**ND2000**	2	2.5	1.5	2	1.5	2	4	-	2	2.5
3150	**ND3150**	2.5	4	2	2.5	1.5	2	6	-	2.5	4
5000	**ND5000**	4	-	2.5	4	2.5	4	10	-	4	-

N SERIES

Encapsulated control, manoeuvre and isolation

Measurements

Power VA	Input voltage V	Output voltage V References			External dimensions mm			Fastening elements mm			Weight kg
		12 / 24	24 / 48	115 / 230	A	B	C	D	E	Ø	
40	230 / 400	**NB40**	**NC40**	**ND40**	75	97	84	80	56	6	1,3
100	230 / 400	**NB100**	**NC100**	**ND100**	75	97	99	80	56	6	1,8
200	230 / 400 / 460	**NB200**	**NC200**	**ND200**	96	114	118	96	76	6	3,2
315	230 / 400 / 460	**NB315**	**NC315**	**ND315**	108	124	124	106	89	6	4,6
630	230 / 400 / 460		**NC630**	**ND630**	126	144	168	125	102	7	8,9
1000	230 / 400 / 460		**NC1000**	**ND1000**	150	165	182	145	125	7	13
2000	230 / 400 / 460		**NC2000**	**ND2000**	192	195	228	178	173	7	26
3150	230 / 400 / 460			**ND3150**	192	195	268	178	173	7	35
5000	230 / 400 / 460			**ND5000**	240	240	300	212	220	7	56

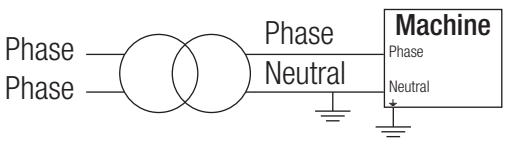


On-request manufacturing options (please see prices)

Power	**From 25 VA to 5000 VA**
Voltage	**From 6 V to 1100 V**
Shields	**Primary / secondary, primary / ground and secondary / ground**

Creating neutral

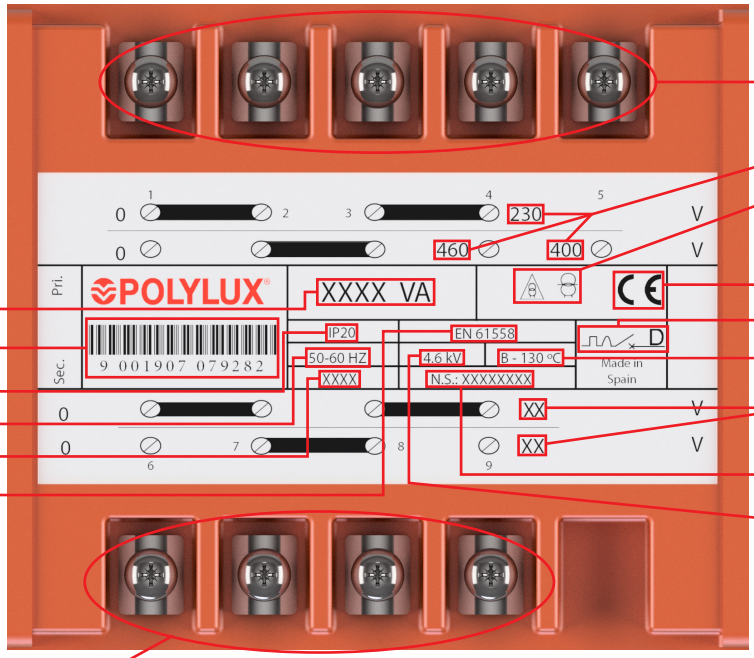
To perform this procedure: use a single-phase transformer with the appropriate power and connect it to primary with both phases and create a bridge at the output between one of the output phases and ground. This line will act as neutral from this moment.



N SERIES

Encapsulated control, manoeuvre and isolation

Feature plate structure



PTU SERIES

Ultra-isolation · Input **230 V** · Output **230 V**

Definition and applications

The PTA ultra-isolation transformers series is designed for high-noise environments where shielding is required to ensure good signal quality.
This series has two types:

- With 1 electrostatic shield (PTU1P) for minor perturbations between primary and secondary
- With 3 electrostatic shields (PTU3P) for high perturbations at the start of the winding between primary and secondary, and at the end of the winding.

Manufacturing characteristics

All the versions have the following features in common:

- Anti-flash dip varnishing. Ensures greater compactation, isolation and noise elimination.
- Noise and parasite attenuation depending on whether there are 1 or 3 electrostatic shields.
- All the transformers are checked automatically one by one and the compliance test report is created in accordance with the corresponding standard.

Up to 2500 VA

- Technical polymer box.
- UL 94 V-0 flame retardant material up to 2500 VA (PTU1P) or 2000 VA (PTU3P).
- Protective terminal cover to prevent direct contact.
- Ventilation ducts at the top and along the perimeter.
- Feature label with all the connection and protection instructions.

From 2500 VA

- Epoxy painted metal box resistant to all types of damp and corrosive environments from 3150 VA (PTU1P) or 2500 VA (PTU3P).
- Protective terminal cover to prevent direct contact.
- Ventilation ducts along the box perimeter.
- Feature label with all the connection and protection instructions.

NEW head design

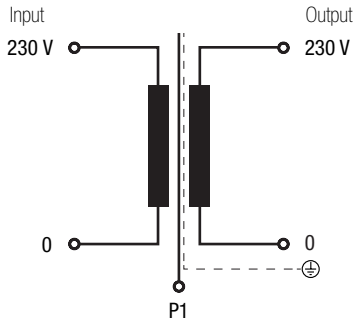
- Increased wiring insulation.
- Clearer features.
- Easier connection.
- More uniform, compact and robust design.

Technical features - standard model

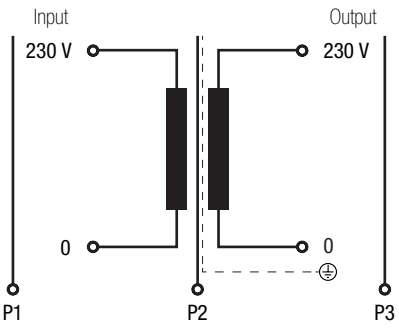
Rating	**40 VA a 5000 VA**
Insulators	**Class H - 180 ºC**
Temperature rise	**Class B**
Winding	**Class HC - 200 ºC**
Room temperature	**45 ºC**
Frequency	**50-60 Hz**
Noise	**≤ 65 dB (PTU1P), ≤ 80 dB (PTU3P)**
Protection rating	**IP20**
Cooling	**ANAN**
Includes	**LED indicator lamp** **1 (PTU1P) or 3 (PTU3P) electrostatic shields**
Mounting	**With screws (for all powers)** **Mounting on DIN 46277/3 rail up to 250 VA (PTU1P) or up to 200 VA (PTU3P)**
Standards	**IEC/EN/UNE-EN 61558, CE**
Protection	**Convertible from Class I to Class II up to 2500 VA (PTU1P) or 2000 VA (PTU3P)**
Operation	**Continuous**
Test voltage	**4 kV (1 min, 50 Hz)**

Electrical diagrams

- **With 1 electrostatic shield (PTU1P)**



- **With 3 electrostatic shield (PTU3P)**



PTU SERIES

Ultra-isolation · Input **230 V** · Output **230 V**

Electrical connection

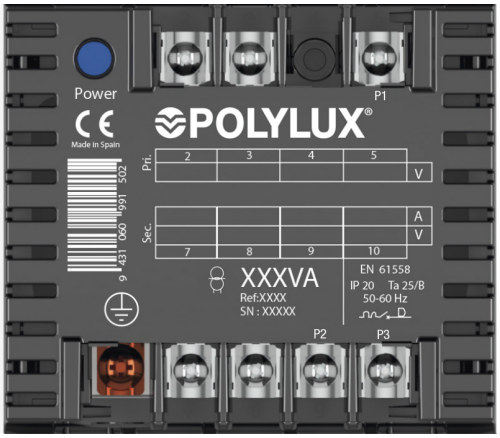


*Image for PTU3P (P1-P2-P3), in PTU1P (P1).

≤ 100 VA PTU1P
≤ 63 VA PTU3P

Input:

- 230 V | Connection: 2-3

Output:

- 230 V | Connection: 7-8

Electrostatic shield connection:

- PTU1P | Connection: 10
- PTU3P | Connection: 5 / 9 / 10

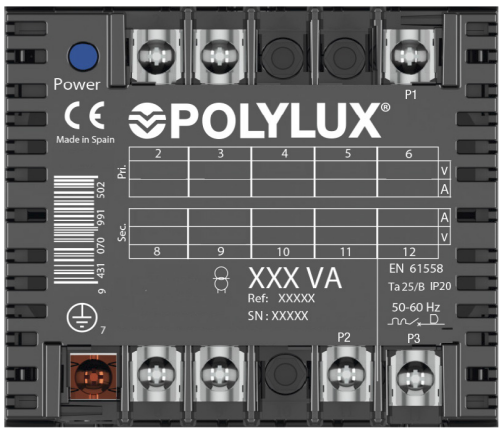


*Image for PTU3P (P1-P2-P3), in PTU1P (P1).

From 160 VA to 1000 VA PTU1P
From 100 VA to 800 VA PTU3P

Input:

- 230 V | Connection: 2-3

Output:

- 230 V | Connection: 8-9

Electrostatic shield connection:

- PTU1P | Connection: 11
- PTU3P | Connection: 6 / 11 / 12

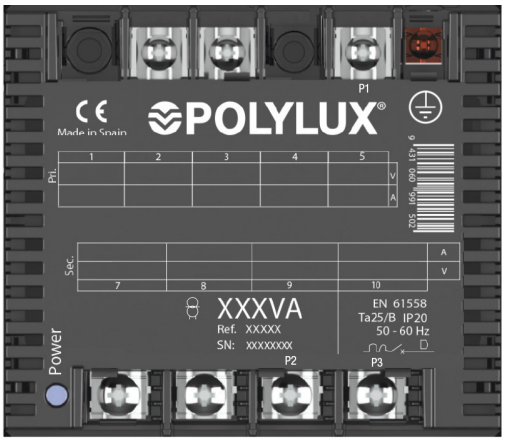


*Image for PTU3P (P1-P2-P3), in PTU1P (P1).

≥ 1250 VA PTU1P
≥ 1000 VA PTU3P

Input:

- 230 V | Connection: 2-3

Output:

- 230 V | Connection: 7-8

Electrostatic shield connection:

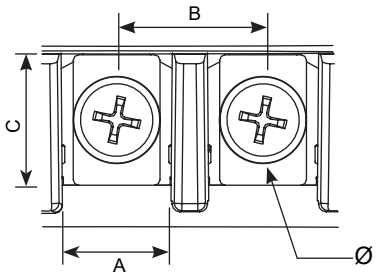
- PTU1P | Connection: 10
- PTU3P | Connection: 5 / 9 / 10

PTU SERIES

Ultra-isolation · Input **230 V** · Output **230 V**

Terminal types

PTU1P								
Terminal blocks	Dimensions mm				Maximum tightening torque N·m	Primary Power VA		Secondary Power VA	
	A	B	C	Ø		From	To	From	To
Terminal M3	8	11	9	M3	0.5	40	100	40	100
Terminal M4	10	13.5	12	M4	1.1	160	1000	160	250
Terminal M5	15	18.5	14	M5	2.5	1250	4000	315	1000
Terminal M6	15.5	20.4	13	M6	4	-	-	1250	4000



PTU3P								
Terminal blocks	Dimensions mm				Maximum tightening torque N·m	Primary Power VA		Secondary Power VA	
	A	B	C	Ø		From	To	From	To
Terminal M3	8	11	9	M3	0.5	40	63	40	63
Terminal M4	10	13.5	12	M4	1.1	100	800	100	200
Terminal M5	15	18.5	14	M5	2.5	1000	4000	315	1000
Terminal M6	15.5	20.4	13	M6	4	-	-	1000	4000

Theoretical data - standard model

Power VA	Reference	Input current A	Output current A	Maximum cross-section conductor (mm²)		Input protections (A) (MCB -> D / Fuse -> aM)	Output protections (A) (MCB -> C / Fuse -> gG)
				Flexible	Rigid		
PTU1P							
40	**PTU1P40**	0.17	0.17	0.5	0.5	0.4 (--/T)	0.16 (--/T)
63	**PTU1P63**	0.27	0.27	0.5	0.5	0.63 (--/T)	0.25 (--/T)
100	**PTU1P100**	0.43	0.43	0.5	0.5	1 (--/T)	0.4 (--/T)
160	**PTU1P160**	0.70	0.70	0.5	0.5	1.6	0.63 (--/T)
200	**PTU1P200**	0.87	0.87	0.5	0.5	2	0.8 (--/T)
250	**PTU1P250**	1.09	1.09	0.5	0.5	2.5	1
315	**PTU1P315**	1.37	1.37	0.5	0.5	3.15	1.25
400	**PTU1P400**	1.74	1.74	0.5	0.5	4	1.6
500	**PTU1P500**	2.17	2.17	0.5	1	5	2
630	**PTU1P630**	2.74	2.74	1	1	6	2.5
800	**PTU1P800**	3.48	3.48	1	1	8	4
1000	**PTU1P1000**	4.35	4.35	1	1.5	10	4
1250	**PTU1P1250**	5.43	5.43	1.5	1.5	10	5
1600	**PTU1P1600**	6.96	6.96	1.5	2.5	16	6
2000	**PTU1P2000**	8.70	8.70	2.5	2.5	20	8
2500	**PTU1P2500**	10.87	10.87	2.5	4	25	10
3150	**PTU1P3150**	13.70	13.70	4	4	32	12.5
4000	**PTU1P4000**	17.39	17.39	4	-	40	16
PTU3P							
40	**PTU3P40**	0.17	0.17	0.5	0.5	0.4 (--/T)	0.16 (--/T)
63	**PTU3P63**	0.27	0.27	0.5	0.5	0.63 (--/T)	0.25 (--/T)
100	**PTU3P100**	0.43	0.43	0.5	0.5	1 (--/T)	0.4 (--/T)
160	**PTU3P160**	0.70	0.70	0.5	0.5	1.6	0.63 (--/T)
200	**PTU3P200**	0.87	0.87	0.5	0.5	2	0.8 (--/T)
250	**PTU3P250**	1.09	1.09	0.5	0.5	2.5	1
315	**PTU3P315**	1.37	1.37	0.5	0.5	3.15	1.25
400	**PTU3P400**	1.74	1.74	0.5	0.5	4	1.6
500	**PTU3P500**	2.17	2.17	0.5	1	5	2
630	**PTU3P630**	2.74	2.74	1	1	6	2.5
800	**PTU3P800**	3.48	3.48	1	1	8	4
1000	**PTU3P1000**	4.35	4.35	1	1.5	10	4
1250	**PTU3P1250**	5.43	5.43	1.5	1.5	10	5
1600	**PTU3P1600**	6.96	6.96	1.5	2.5	16	6
2000	**PTU3P2000**	8.70	8.70	2.5	2.5	20	8
2500	**PTU3P2500**	10.87	10.87	2.5	4	25	10
3150	**PTU3P3150**	13.70	13.70	4	4	32	12.5
4000	**PTU3P4000**	17.39	17.39	4	-	40	16

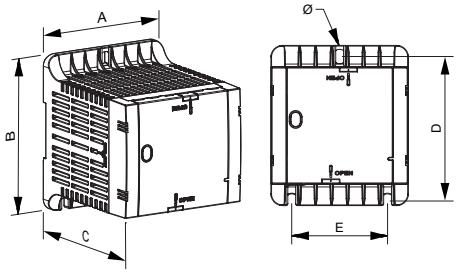
PTU SERIES

Ultra-isolation · Input **230 V** · Output **230 V**

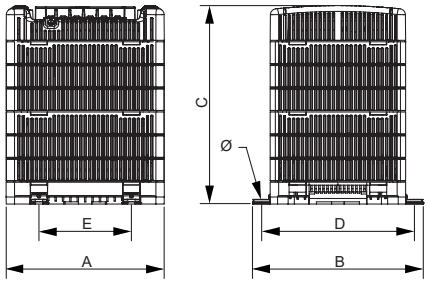
Measurements

Power VA	With 1 electrostatic shield PTU1P								With 3 electrostatic shield PTU3P							
	Ref.	External dimensions mm			Fastening elements mm			Weight kg	Ref.	External dimensions mm			Fastening elements mm			Weight kg
		A	B	C	D	E	Ø			A	B	C	D	E	Ø	
40	**PTU1P40**	84	101	98	88	55	6	1,1	**PTU3P40**	84	101	98	88	55	6	1,2
63	**PTU1P63**	84	101	98	88	55	6	1,2	**PTU3P63**	84	101	98	88	55	6	1,5
100	**PTU1P100**	84	101	98	88	55	6	1,6	**PTU3P100**	106	123	122	110	74	6	2,4
160	**PTU1P160**	106	123	122	110	74	6	2,6	**PTU3P160**	106	123	122	110	74	6	2,7
200	**PTU1P200**	106	123	122	110	74	6	2,7	**PTU3P200**	106	123	122	110	74	6	3,5
250	**PTU1P250**	106	123	122	110	74	6	3,6	**PTU3P250**	118	138	132	122	88	6	4,3
315	**PTU1P315**	118	138	132	122	88	6	4,1	**PTU3P315**	118	138	132	122	88	6	4,7
400	**PTU1P400**	118	138	132	122	88	6	4,9	**PTU3P400**	136	162	155	146	104	6	5,9
500	**PTU1P500**	136	162	155	146	104	6	6,1	**PTU3P500**	136	162	155	146	104	6	7,5
630	**PTU1P630**	136	162	155	146	104	6	7,6	**PTU3P630**	136	162	155	146	104	6	8,7
800	**PTU1P800**	136	162	155	146	104	6	8,6	**PTU3P800**	136	162	180	146	104	6	9,4
1000	**PTU1P1000**	136	162	180	146	104	6	9,5	**PTU3P1000**	214	225	285	199	175	7	17
1250	**PTU1P1250**	214	225	285	199	175	7	20	**PTU3P1250**	214	225	285	199	175	7	21
1600	**PTU1P1600**	214	225	285	199	175	7	24	**PTU3P1600**	214	225	285	199	175	7	27
2000	**PTU1P2000**	214	225	285	199	175	7	27	**PTU3P2000**	214	225	285	199	175	7	29
2500	**PTU1P2500**	214	225	285	199	175	7	29	**PTU3P2500**	252	260	348	233	223	7	39
3150	**PTU1P3150**	252	260	348	233	223	7	44	**PTU3P3150**	252	260	348	233	223	7	44
4000	**PTU1P4000**	252	260	348	233	223	7	53	**PTU3P4000**	252	260	348	233	223	7	53

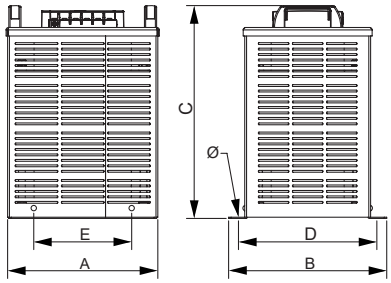
Up to PTU1P1000
Up to PTU3P800



From PTU1P1250 to PTU1P2500
From PTU3P1000 to PTU3P2000



From PTU1P3150
From PTU3P2500



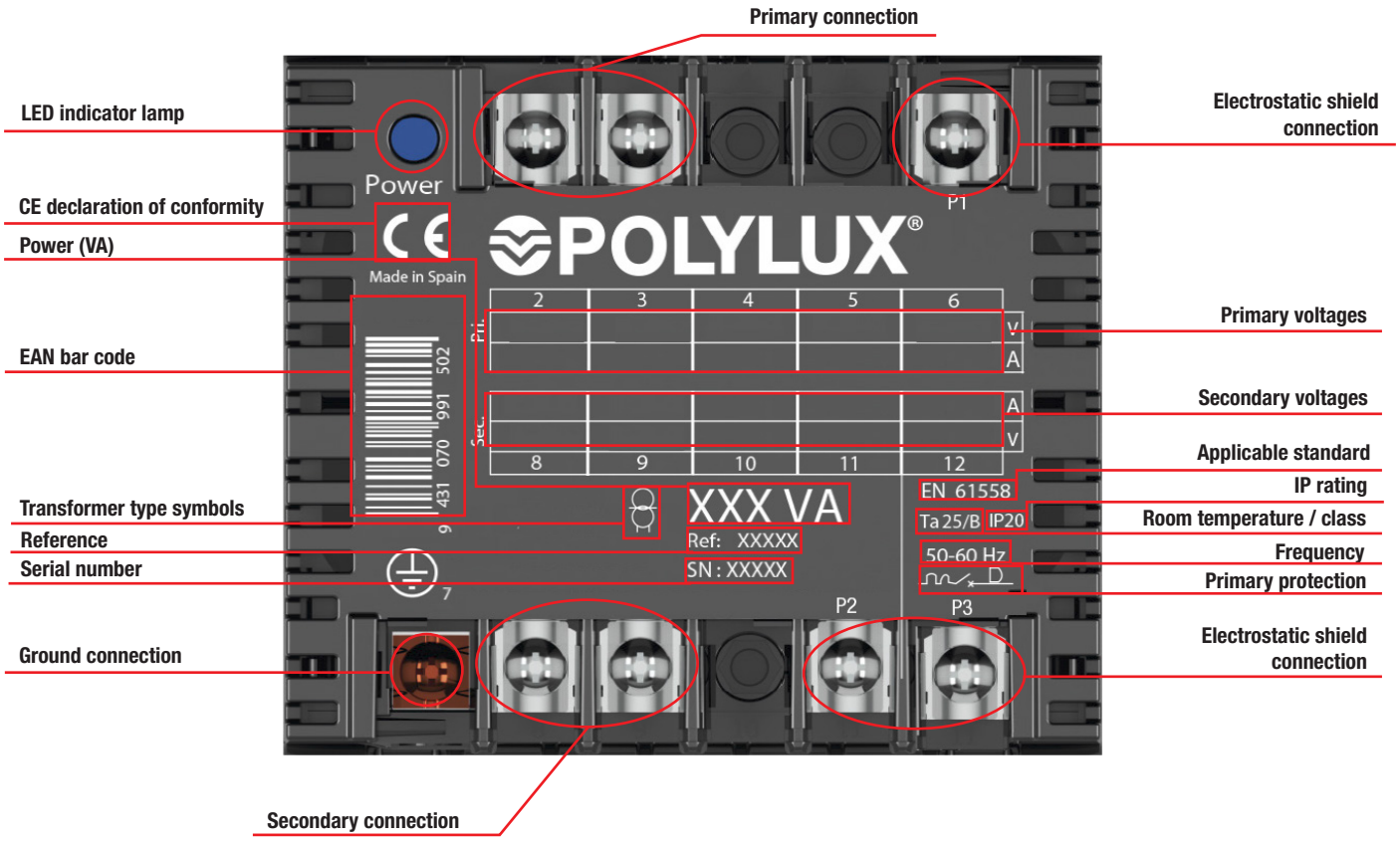
On-request manufacturing options (please see prices)

Power	**From 25 VA to 4000 VA**
Voltage	**From 6 V to 1100 V**

PTU SERIES

Ultra-isolation · Input **230 V** · Output **230 V**

Feature plate structure



QTU SERIES

Encapsulated ultra-isolation · Input **230 V** · Output **230 V**

Definition and applications

The QTU series is designed for high electrical noise environments where shielding is required to ensure good signal quality.
In addition, the resin encapsulation makes the QTU transformers the best option for areas that require great resistance to vibrations, damp or corrosion.
This series has two types:

- With 1 electrostatic shield (QTU1P) for minor perturbations between primary and secondary
- With 3 electrostatic shields (QTU3P) for high perturbations at the start of the winding between primary and secondary, and at the end of the winding.

Manufacturing characteristics

- Protected against indirect contacts.
- Convertible from Class I to Class II up to 1000 VA (QTU1P) or 800 VA (QTU3P).
- LED indicator lamp included.
- Mounted on **DIN rail (up to 100 VA in QTU1P or up to 63 VA in QTU3P**) or with screws.
- All the live parts of these transformers are encapsulated in resin, which is particularly indicated for working in damp, saline and corrosive environments.
- They have greater resistance to current surges and transient harmonics.
- Greater mechanical resistance to vibrations and undesirable movements.
- Noise and parasite attenuation depending on whether there are 1 or 3 electrostatic shields.
- Uniform heat dissipation.
- All the transformers are checked automatically one by one and the compliance test report is created in accordance with the corresponding standard.

Up to 1000 VA

- Technical polymer box.
- UL 94 V-0 flame retarden material up to 1000 VA (QTU1P) or 800 VA (QTU3P).
- Protective terminal cover to prevent direct contact.
- Feature label with all the connection and protection instructions.

From 1250 VA

- Completely encapsulated in flame retardant resin from 1250 VA (QTU1P) or 1000 VA (QTU3P).
- Protective terminal cover to prevent direct contact.
- Feature label with all the connection and protection instructions.

NEW head design

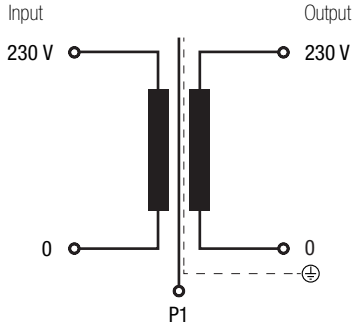
- Increased wiring insulation.
- Clearer features.
- Easier connection.
- More uniform, compact and robust design.

Technical features - standard model

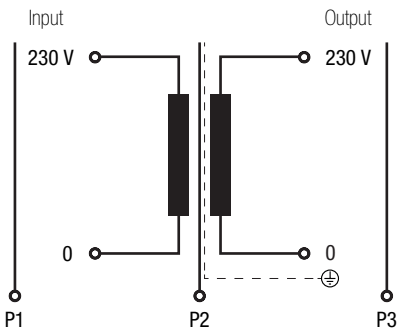
Rating	**40 VA to 2500 VA for QTU1P 40 VA to 2000 VA for QTU3P**
Insulators	**Class H - 180 ºC**
Temperature rise	**Class B**
Winding	**Class HC - 200 ºC**
Room temperature	**45 ºC**
Frequency	**50-60 Hz**
Noise	**≤ 65 dB (QTU1P), ≤ 80 dB (QTU3P)**
Protection rating	**IP20**
Cooling	**AN**
Includes	**LED indicator lamp 1 (QTU1P) or 3 (QTU3P) electrostatic shields**
Mounting	**With screws (for all powers) Mounted on DIN 46277/3 rail up to 100 VA (QT-U1P) or up to 63 VA (QTU3P)**
Standards	**IEC/EN/UNE-EN 61558, CE**
Protection	**Convertible from Class I to Class II up to 1000 VA (QTU1P) or 800 VA (QTU3P)**
Operation	**Continuous**
Test voltage	**4 kV (1 min, 50 Hz)**

Electrical diagrams

- **With 1 electrostatic shield (QTU1P)**



- **With 3 electrostatic shield (QTU3P)**



QTU SERIES

Encapsulated ultra-isolation · Input **230 V** · Output **230 V**

Electrical connection

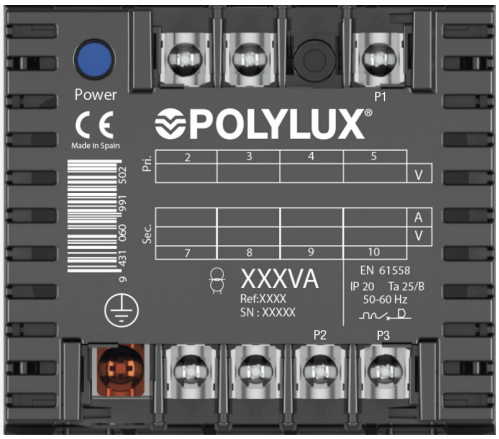


*Image for QTU3P (P1-P2-P3), in QTU1P (P1).

≤ 100 VA QTU1P
≤ 63 VA QTU3P

Input:

- 230 V | Connection: 2-3

Output:

- 230 V | Connection: 7-8

Electrostatic shield connection:

- QTU1P | Connection: 10
- QTU3P | Connection: 5 / 9 / 10

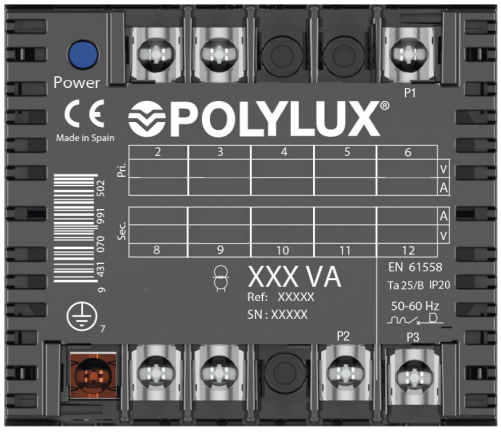


*Image for QTU3P (P1-P2-P3), in QTU1P (P1).

From 160 VA to 1000 VA QTU1P
From 100 VA to 800 VA QTU3P

Input:

- 230 V | Connection: 2-3

Output:

- 230 V | Connection: 8-9

Electrostatic shield connection:

- QTU1P | Connection: 11
- QTU3P | Connection: 6 / 11 / 12

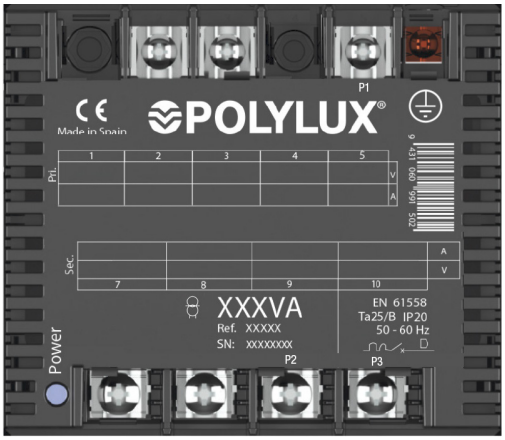


*Image for QTU3P (P1-P2-P3), in QTU1P (P1).

≥ 1250 VA QTU1P
≥ 1000 VA QTU3P

Input:

- 230 V | Connection: 2-3

Output:

- 230 V | Connection: 7-8

Electrostatic shield connection:

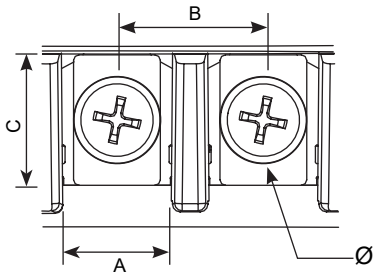
- QTU1P | Connection: 10
- QTU3P | Connection: 5 / 9 / 10

QTU SERIES

Encapsulated ultra-isolation · Input **230 V** · Output **230 V**

Terminal types

QTU1P								
Terminal blocks	Dimensions mm				Maximum tightening torque N·m	Primary Power VA		Secondary Power VA	
	A	B	C	Ø		From	To	From	To
Terminal M3	8	11	9	M3	0.5	40	100	40	100
Terminal M4	10	13.5	12	M4	1.1	160	1000	160	250
Terminal M5	15	18.5	14	M5	2.5	1250	2500	315	1000
Terminal M6	15.5	20.4	13	M6	4	-	-	1250	2500



QTU3P								
Terminal blocks	Dimensions mm				Maximum tightening torque N·m	Primary Power VA		Secondary Power VA	
	A	B	C	Ø		From	To	From	To
Terminal M3	8	11	9	M3	0.5	40	63	40	63
Terminal M4	10	13.5	12	M4	1.1	100	800	100	200
Terminal M5	15	18.5	14	M5	2.5	1000	2500	315	1000
Terminal M6	15.5	20.4	13	M6	4	-	-	1000	2500

Theoretical data - standard model

Power VA	Reference	Input current A	Output current A	Maximum cross-section conductor (mm²)		Input protections (A) (MCB -> D / Fuse -> aM)	Output protections (A) (MCB -> C / Fuse -> gG)
				Flexible	Rigid		
QTU1P							
40	**QTU1P40**	0.17	0.17	0.5	0.5	0.4 (--/T)	0.16 (--/T)
63	**QTU1P63**	0.27	0.27	0.5	0.5	0.63 (--/T)	0.25 (--/T)
100	**QTU1P100**	0.43	0.43	0.5	0.5	1 (--/T)	0.4 (--/T)
160	**QTU1P160**	0.70	0.70	0.5	0.5	1.6	0.63 (--/T)
200	**QTU1P200**	0.87	0.87	0.5	0.5	2	0.8 (--/T)
250	**QTU1P250**	1.09	1.09	0.5	0.5	2.5	1
315	**QTU1P315**	1.37	1.37	0.5	0.5	3.15	1.25
400	**QTU1P400**	1.74	1.74	0.5	0.5	4	1.6
500	**QTU1P500**	2.17	2.17	0.5	1	5	2
630	**QTU1P630**	2.74	2.74	1	1	6	2.5
800	**QTU1P800**	3.48	3.48	1	1	8	4
1000	**QTU1P1000**	4.35	4.35	1	1.5	10	4
1250	**QTU1P1250**	5.43	5.43	1.5	1.5	10	5
1600	**QTU1P1600**	6.96	6.96	1.5	2.5	16	6
2000	**QTU1P2000**	8.70	8.70	2.5	2.5	20	8
2500	**QTU1P2500**	10.87	10.87	2.5	4	25	10
QTU3P							
40	**QTU3P40**	0.17	0.17	0.5	0.5	0.4 (--/T)	0.16 (--/T)
63	**QTU3P63**	0.27	0.27	0.5	0.5	0.63 (--/T)	0.25 (--/T)
100	**QTU3P100**	0.43	0.43	0.5	0.5	1 (--/T)	0.4 (--/T)
160	**QTU3P160**	0.70	0.70	0.5	0.5	1.6	0.63 (--/T)
200	**QTU3P200**	0.87	0.87	0.5	0.5	2	0.8 (--/T)
250	**QTU3P250**	1.09	1.09	0.5	0.5	2.5	1
315	**QTU3P315**	1.37	1.37	0.5	0.5	3.15	1.25
400	**QTU3P400**	1.74	1.74	0.5	0.5	4	1.6
500	**QTU3P500**	2.17	2.17	0.5	1	5	2
630	**QTU3P630**	2.74	2.74	1	1	6	2.5
800	**QTU3P800**	3.48	3.48	1	1	8	4
1000	**QTU3P1000**	4.35	4.35	1	1.5	10	4
1250	**QTU3P1250**	5.43	5.43	1.5	1.5	10	5
1600	**QTU3P1600**	6.96	6.96	1.5	2.5	16	6
2000	**QTU3P2000**	8.70	8.70	2.5	2.5	20	8

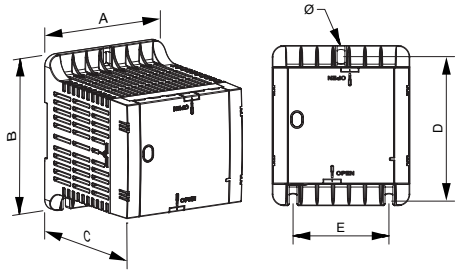
QTU SERIES

Encapsulated ultra-isolation · Input **230 V** · Output **230 V**

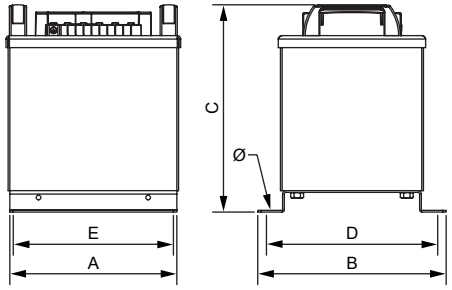
Measurements

Power VA	With 1 electrostatic shield QTU1P								With 3 electrostatic shields QTU3P							
	Ref.	External dimensions mm			Fastening elements mm			Weight kg	Ref.	External dimensions mm			Fastening elements mm			Weight kg
		A	B	C	D	E	Ø			A	B	C	D	E	Ø	
40	**QTU1P40**	84	101	98	88	55	6	1,4	**QTU3P40**	84	101	98	88	55	6	1,4
63	**QTU1P63**	84	101	98	88	55	6	1,5	**QTU3P63**	84	101	98	88	55	6	1,7
100	**QTU1P100**	84	101	98	88	55	6	1,7	**QTU3P100**	106	123	122	110	74	6	2,9
160	**QTU1P160**	106	123	122	110	74	6	3,1	**QTU3P160**	106	123	122	110	74	6	3,3
200	**QTU1P200**	106	123	122	110	74	6	3,3	**QTU3P200**	106	123	122	110	74	6	4
250	**QTU1P250**	106	123	122	110	74	6	4	**QTU3P250**	118	138	132	122	88	6	4,7
315	**QTU1P315**	118	138	132	122	88	6	4,7	**QTU3P315**	118	138	132	122	88	6	5,3
400	**QTU1P400**	118	138	132	122	88	6	5,4	**QTU3P400**	136	162	155	146	104	6	6,9
500	**QTU1P500**	136	162	155	146	104	6	7,3	**QTU3P500**	136	162	155	146	104	6	8,8
630	**QTU1P630**	136	162	155	146	104	6	8,9	**QTU3P630**	136	162	155	146	104	6	9,7
800	**QTU1P800**	136	162	155	146	104	6	9,8	**QTU3P800**	136	162	180	146	104	6	11
1000	**QTU1P1000**	136	162	180	146	104	6	11	**QTU3P1000**	233	241	244	219	175	7	25
1250	**QTU1P1250**	233	241	244	219	175	7	25	**QTU3P1250**	233	241	274	219	175	7	29
1600	**QTU1P1600**	233	241	274	219	175	7	29	**QTU3P1600**	233	241	314	219	175	7	38
2000	**QTU1P2000**	233	241	314	219	175	7	38	**QTU3P2000**	233	241	314	219	175	7	38
2500	**QTU1P2500**	233	241	314	219	175	7	38								

Up to QTU1P1000
Up to QTU3P800



From QTU1P1250
From QTU3P1000



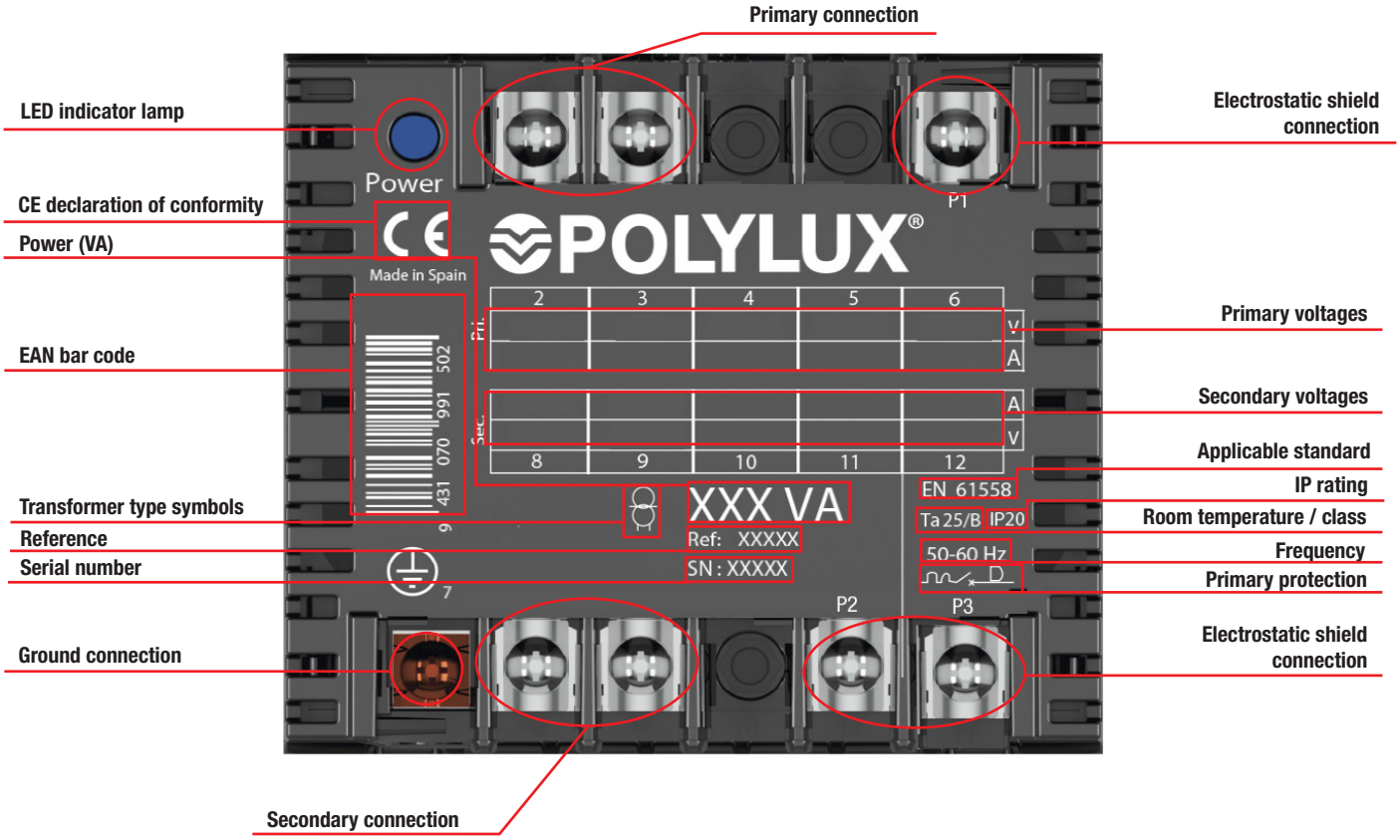
On-request manufacturing options (please see prices)

Power	**From 25 VA to 2500 VA**
Voltage	**From 6 V to 1100 V**

QTU SERIES

Encapsulated ultra-isolation · Input **230 V** · Output **230 V**

Feature plate structure



Sectioned transformer

PIL SERIES

For LED spotlights in pools and gardens · Input **230 V** · Output **12 V**

Definition and applications

An isolation and safety transformer with an output voltage of 12 V.

Their main applications are for pool and garden spotlights and they can be used as control and manoeuvre transformers in installations that pose a danger of contacts for persons.

Manufacturing characteristics

All the versions have the following features in common:

- Anti-flash dip varnishing. Ensures greater compactation, isolation and noise elimination.
- Option of mounting on **DIN rail for all powers**.
- IP20 enclosure, V-0 flame-retardant polymer box that complies with UL94.
- Safety Class I, convertible to Class II.
- LED indicator lamp included.
- All the transformers are checked automatically one by one and the compliance test report is created in accordance with the corresponding standard.

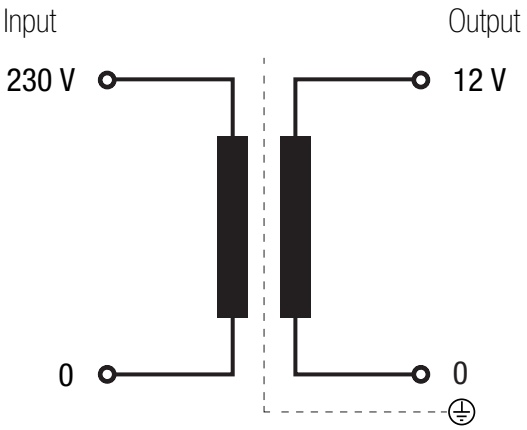
NEW head design

- Increased wiring insulation.
- Clearer features.
- Easier connection.
- More uniform, compact and robust design.

Technical features - standard model

Rating	**30 VA to 100 VA**
Insulators	**Class H - 180 ºC**
Temperature rise	**Class B**
Winding	**Class HC - 200 ºC**
Room temperature	**45 ºC**
Frequency	**50-60 Hz**
Noise	**≤ 45 dB**
Protection rating	**IP20**
Cooling	**ANAN**
Includes	**LED indicator lamp**
Mounting	**Mounted on DIN 46277/3 rail or with screws**
Standards	**IEC/EN/UNE-EN 61558, CE**
Protection	**Convertible from Class I to Class II**
Operation	**Continuous**
Test voltage	**4.6 kV (1 min., 50 Hz) between primary and secondary** **3.2 kV (1 min., 50 Hz) between primary and ground** **2.5 kV (1 min., 50 Hz) between secondary and ground**

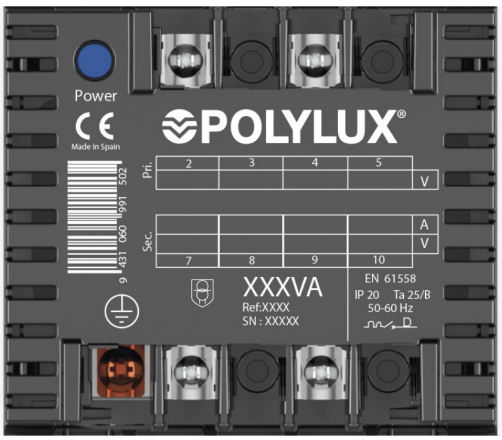
Electrical diagram



PIL SERIES

For LED spotlights in pools and gardens · Input **230 V** · Output **12 V**

Electrical connection



Compatible for all PIL series models

Input:

- 230 V | Connection: 2-4

Output:

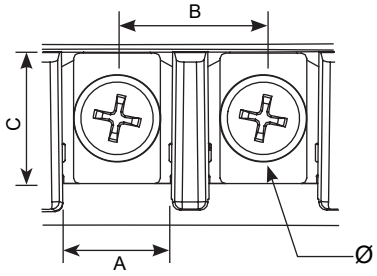
- 12 V | Connection: 7-9

Configuration of spotlights for the different models:

- PIL30: suitable for 24 VA spotlights
- PIL60: suitable for one 37 VA or two 24 VA spotlights
- PIL100: suitable for two 37 VA spotlights

Terminal type

Terminal blocks	Dimensions mm				Maximum tightening torque N·m	Primary Power VA		Secondary Power VA	
	A	B	C	Ø		From	To	From	To
Terminal M3	8	11	9	M3	0.5	30	100	30	100



Theoretical data - standard model

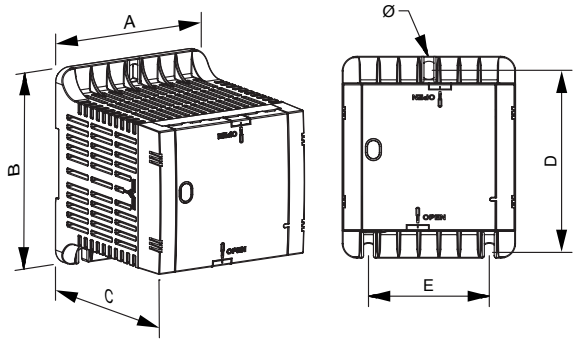
Power VA	Reference	Input current A	Output current A	Maximum cross-section input conductor (mm²)		Maximum cross-section output conductor (mm²)		Input protections (A) (MCB -> D / Fuse -> aM)	Output protections (A) (MCB -> C / Fuse -> gG)
				Flexible	Rigid	Flexible	Rigid		
30	**PIL30**	0.13	2.5	0.5	0.5	1	1.5	0.3	2.5
60	**PIL60**	0.26	5	0.5	0.5	1.5	2	0.6	5
100	**PIL100**	0.43	8.3	0.5	1	2	2.5	1	8

PIL SERIES

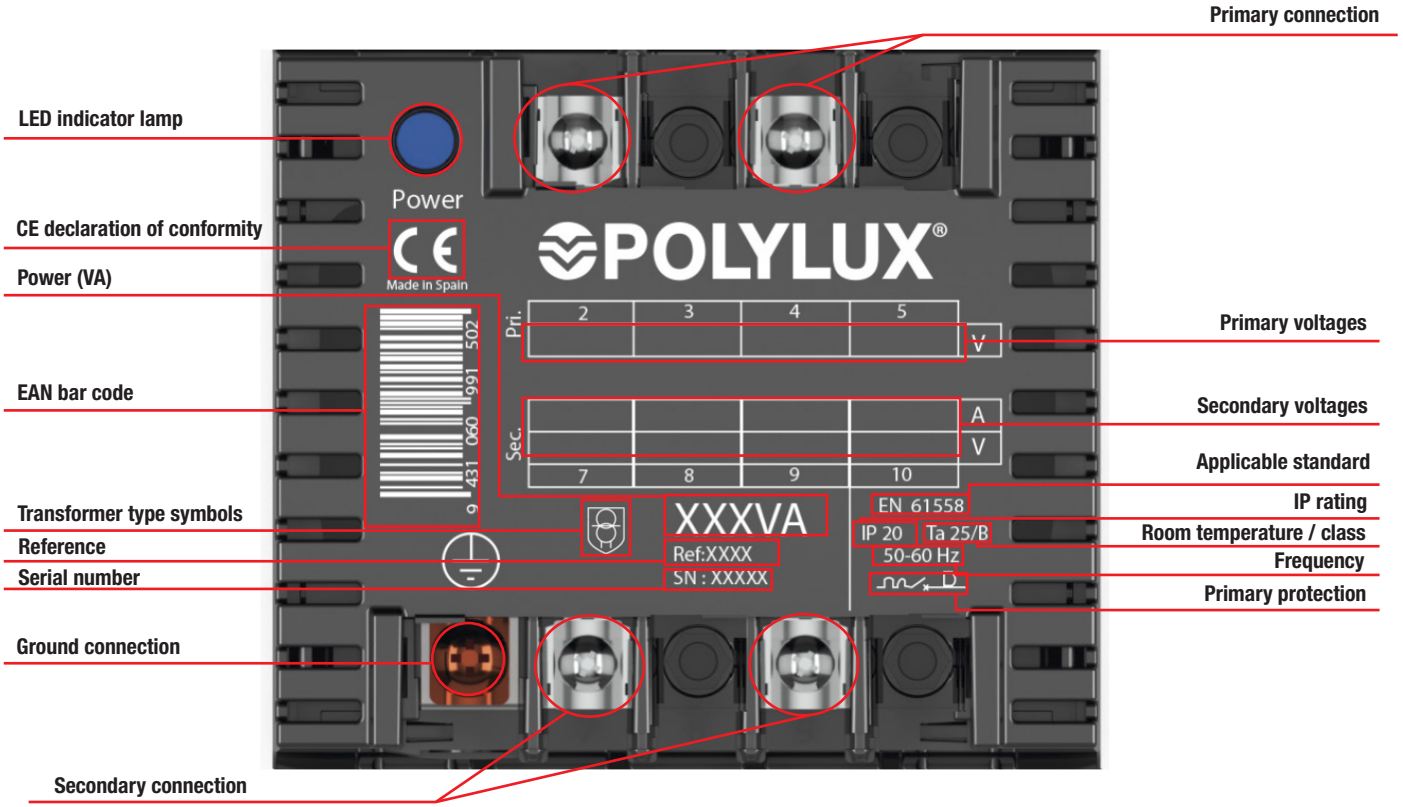
For LED spotlights in pools and gardens · Input **230 V** · Output **12 V**

Measurements

Power	Ref.	External dimensions mm			Fastening elements mm			Weight kg
		A	B	C	D	E	Ø	
30	**PIL30**	69	92	80	79	45	6	0,8
60	**PIL60**	84	101	98	88	55	6	1,1
100	**PIL100**	84	101	98	88	55	6	1,6



Feature plate structure



QIL SERIES

For LED spotlights in pools and gardens · Input **230 V** · Output **12 V**

Definition and applications

An isolation and safety transformer with an output voltage of 12 V.

Its main applications are spotlights in pools and gardens and it can be used as a control and manoeuvre transformer in installations that pose a risk of electrical contact for persons.

Manufacturing characteristics

All the versions have the following features in common:

- Encapsulated in flame retardant resin.
- Connection terminals made of copper, welded and inserted in blocks to prevent hazards caused by expansion that may lead to poor connection.
- Option of mounting on **DIN rail for all references**.
- IP20 enclosure, V-0 flame-retardant polymer box that complies with UL94.
- All the live parts of these transformers are encapsulated in resin, which is particularly indicated for working in damp, saline and corrosive environments.
- They have greater resistance to current surges and transient harmonics.
- Greater mechanical resistance to vibrations and undesirable movements.
- Safety Class I, convertible to Class II.
- LED indicator lamp included.
- All the transformers are checked automatically one by one and the compliance test report is created in accordance with the corresponding standard.

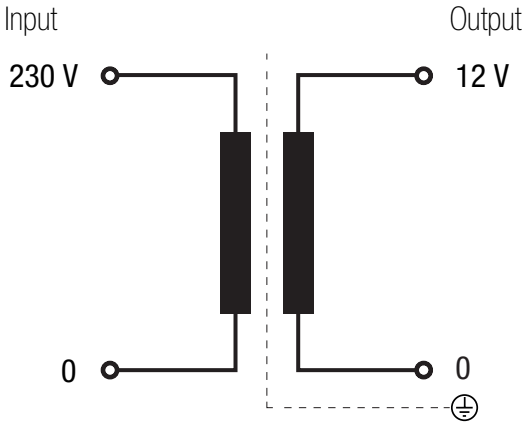
NEW head design

- Increased wiring insulation.
- Clearer features.
- Easier connection.
- More uniform, compact and robust design.

Technical features - standard model

Rating	**30 VA to 100 VA**
Insulators	**Class H - 180 ºC**
Temperature rise	**Class B**
Winding	**Class HC - 200 ºC**
Room temperature	**45 ºC**
Frequency	**50-60 Hz**
Noise	**≤ 40 dB**
Protection rating	**IP20**
Cooling	**AN**
Includes	**LED indicator lamp**
Mounting	**Mounted on DIN 46277/3 rail or with screws**
Standards	**IEC/EN/UNE-EN 61558, CE**
Protection	**Convertible from Class I to Class II**
Operation	**Continuous**
Test voltage	**4.6 kV (1 min., 50 Hz) between primary and secondary** **3.2 kV (1 min., 50 Hz) between primary and ground** **2.5 kV (1 min., 50 Hz) between secondary and ground**

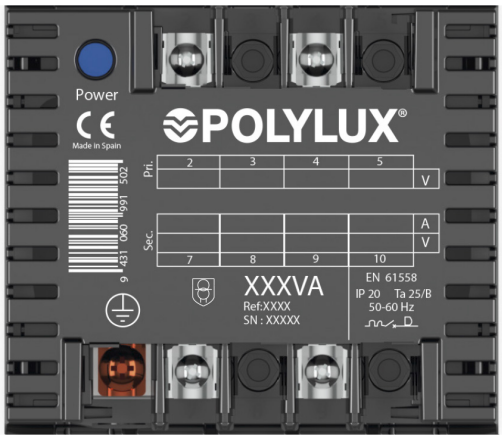
Electrical diagram



QIL SERIES

For LED spotlights in pools and gardens · Input **230 V** · Output **12 V**

Electrical connection



Compatible for al QIL series models

Input:

- 230 V | Connection: 2-4

Output:

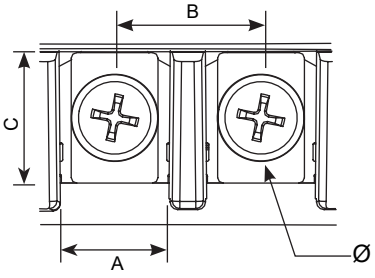
- 12 V | Connection: 7-9

Configuration of spotlights for the different models:

- QIL30: suitable for 24 VA spotlights
- QIL60: suitable for one 37 VA or two 24 VA spotlights
- QIL100: suitable for two 37 VA spotlights

Terminal type

Terminal blocks	Dimensions mm				Maximum tightening torque N·m	Primary Power VA		Secondary Power VA	
	A	B	C	Ø		From	To	From	To
Terminal M3	8	11	9	M3	0.5	30	100	30	100



Theoretical data - standard model

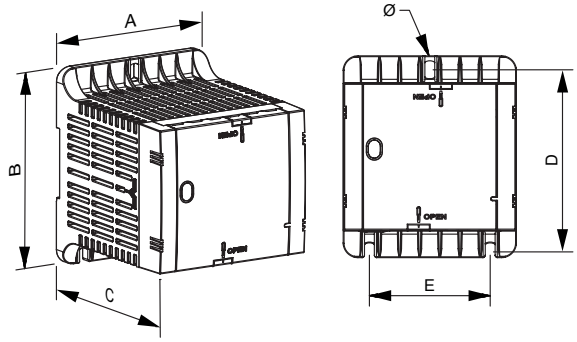
Power VA	Reference	Input current A	Output current A	Maximum cross-section input conductor (mm²)		Maximum cross-section output conductor (mm²)		Input protections (A) (MCB -> D / Fuse -> aM)	Output protections (A) (MCB -> C / Fuse -> gG)
				Flexible	Rigid	Flexible	Rigid		
30	**QIL30**	0.13	2.5	0.5	0.5	1	1.5	0.3	2.5
60	**QIL60**	0.26	5	0.5	0.5	1.5	2	0.6	5
100	**QIL100**	0.43	8.3	0.5	1	2	2.5	1	8

QIL SERIES

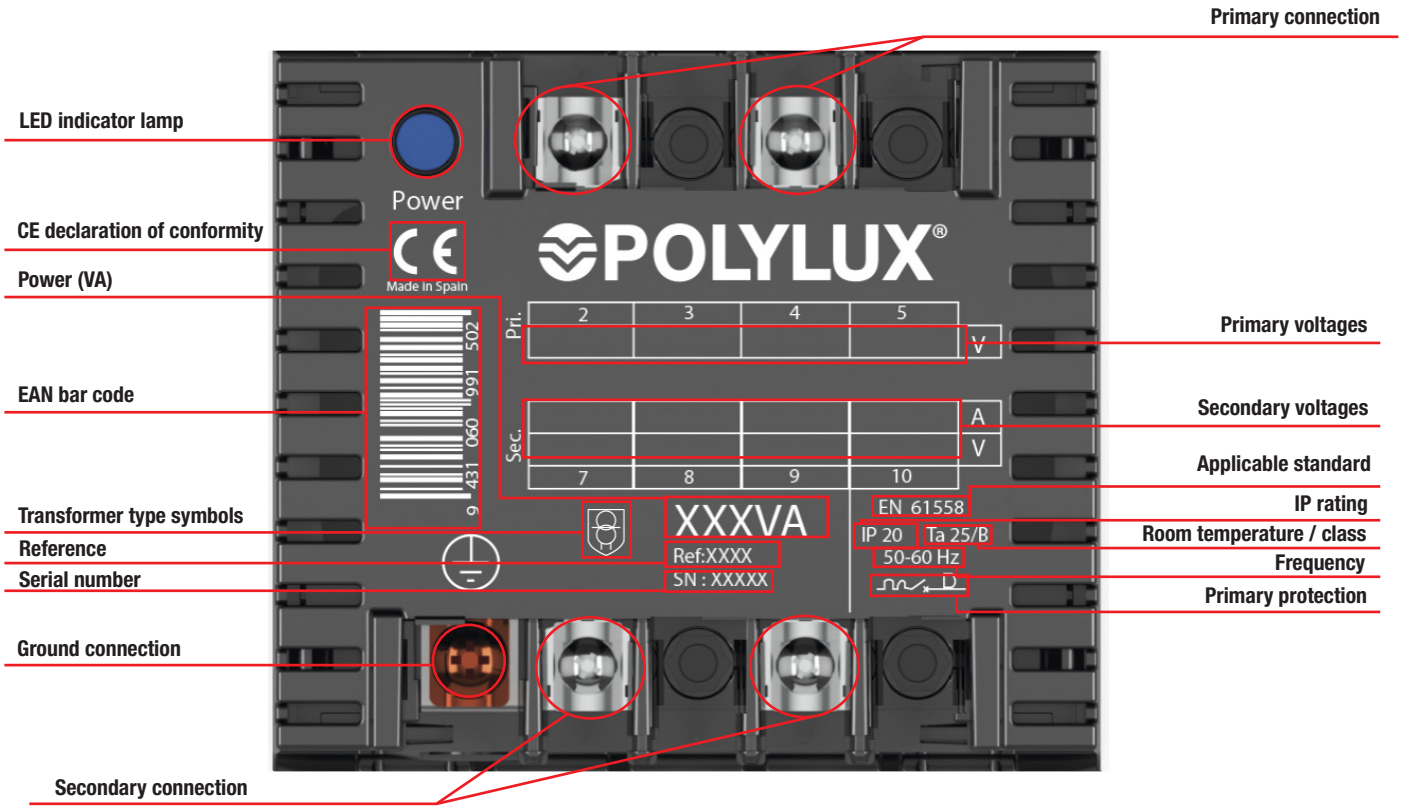
For LED spotlights in pools and gardens · Input **230 V** · Output **12 V**

Measurements

Power VA	Ref.	External dimensions mm			Fastening elements mm			Weight kg
		A	B	C	D	E	Ø	
30	**QIL30**	69	92	80	79	45	6	0,7
60	**QIL60**	84	101	98	88	55	6	1,4
100	**QIL100**	84	101	98	88	55	6	1,8



Feature plate structure



PIP SERIES

For spotlights in pools and gardens · Input **230 V** · Output **12 V depending on the distance** (see electrical connection)

NEW head design

- Increased wiring insulation.
- Clearer features.
- Easier connection.
- More uniform, compact and robust design.

Definition and applications

An isolation and safety voltage transformer with an output voltage of 12 V, fitted with a copper shield between primary and secondary, to provide complete safety for persons against electrical risks.
Its main applications are for pool and garden spotlights, and it can be used as a control and manoeuvre transformer in installations that pose a risk of electrical contact for persons.

Manufacturing characteristics

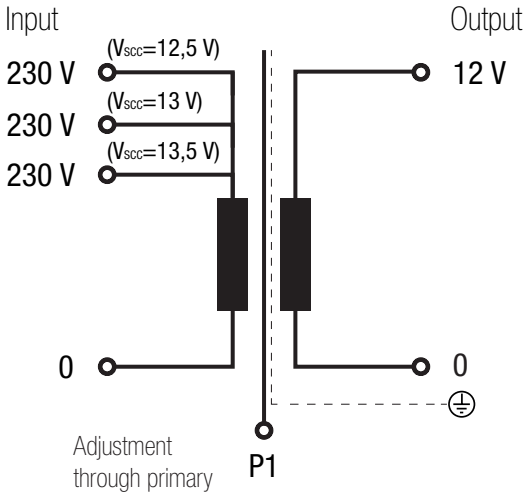
All the versions have the following features in common:

- **Important note**: copper shield between primary and secondary with connection to ground screw that prevents shunt voltage crossovers to the secondary circuit, thus posing no electrical risks for persons.
- Anti-flash dip varnishing. Ensures greater compactation, isolation and noise elimination.
- Bridges for the different connections included in the product packaging.
- Option of mounting on **DIN rail up to 300 VA**.
- IP20 enclosure, V-0 flame-retardant polymer box that complies with UL94.
- Safety Class I, convertible to Class II.
- Supplied with LED indicator lamp, electrostatic shield and adjustment through primary depending on the distance between the spotlight and the transformer (100 VA [10m, 20m, 30m] in 300 VA and 600 VA [10m, 25m, 40m]).
- All the transformers are checked automatically one by one and the compliance test report is created in accordance with the corresponding standard.

Technical features - standard model

Rating	**100 VA to 600 VA**
Insulators	**Class H - 180 ºC**
Temperature rise	**Class B**
Winding	**Class HC - 200 ºC**
Room temperature	**45 ºC**
Frequency	**50-60 Hz**
Noise	**≤ 45 dB**
Protection rating	**IP20**
Cooling	**ANAN**
Includes	**LED indicator lamp**
Mounting	**Mounted on DIN 46277/3 rail (up to 300 VA)**
Standards	**IEC/EN/UNE-EN 61558, CE**
Protection	**Convertible from Class I to Class II**
Voltage selection	**By means of metallic bridges, included (only for PIP600)**
Operation	**Continuous**
Test voltage	**3 kV (1 min, 50 Hz)**

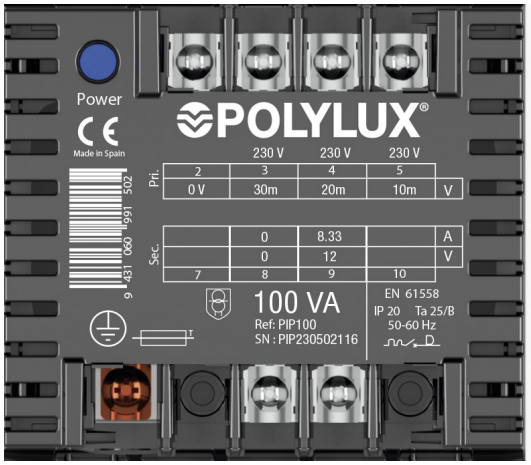
Electrical diagram



PIP SERIES

For spotlights in pools and gardens · Input **230 V** · Output **12 V depending on the distance** (see electrical connection)

Electrical connection



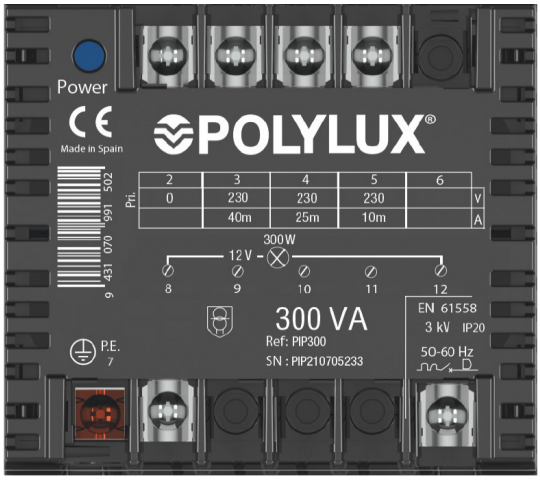
PIP100

Input:

- 230 V (distance between spotlight and transformer 30 metres) | Connection: 2-3
- 230 V (distance between spotlight and transformer 20 metres) | Connection: 2-4
- 230 V (distance between spotlight and transformer 10 metres) | Connection: 2-5

Output:

- 12 V | Connection: 8-9



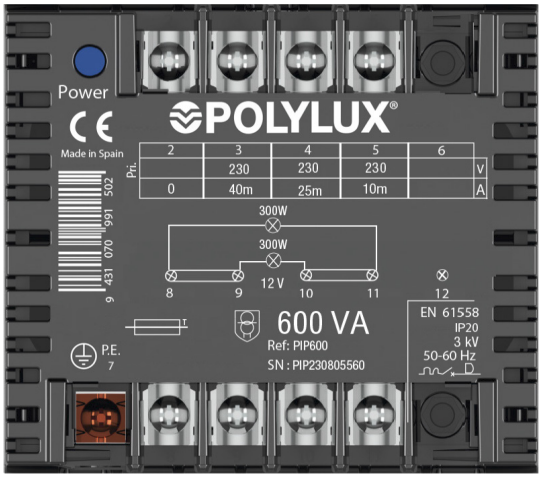
PIP300

Input:

- 230 V (distance between spotlight and transformer 40 metres) | Connection: 2-3
- 230 V (distance between spotlight and transformer 25 metres) | Connection: 2-4
- 230 V (distance between spotlight and transformer 10 metres) | Connection: 2-5

Output:

- 12 V | Connection: 8-12



PIP600

Input:

- 230 V (distance between spotlight and transformer 40 metres) | Connection: 2-3
- 230 V (distance between spotlight and transformer 25 metres) | Connection: 2-4
- 230 V (distance between spotlight and transformer 10 metres) | Connection: 2-5

Output:

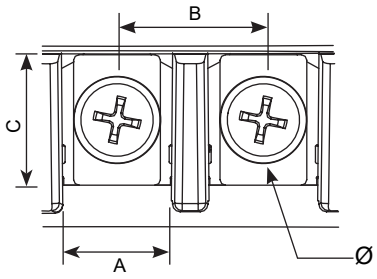
- For one spotlight:
  - 12 V | Connection: 9-10
- For two spotlights:
  - 12 V | Connection: 8-11/ 9-10
    Bridges: 8-9 / 10-11

PIP SERIES

For spotlights in pools and gardens · Input **230 V** · Output **12 V depending on the distance** (see electrical connection)

Terminal types

Terminal blocks	Dimensions mm				Maximum tightening torque N·m	Primary Power VA		Secondary Power VA	
	A	B	C	Ø		From	To	From	To
Terminal M3	8	11	9	M3	0.5	100	100	100	100
Terminal M4	10	13.5	12	M4	1.1	300	600	300	300
Terminal M5	15	18.5	14	M5	2.5	-	-	600	600

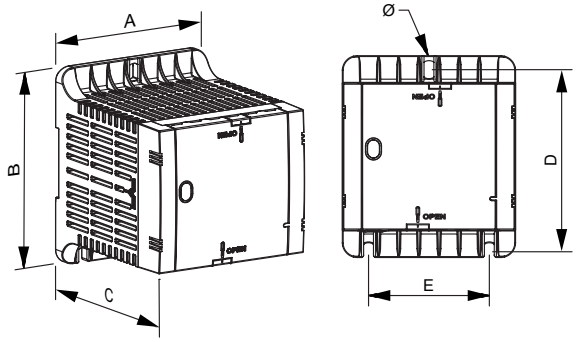


Theoretical data - standard model

Power VA	Reference	Input current A	Output current A			Maximum cross-section input conductor (mm²)		Maximum cross-section output conductor (mm²)		Input protections (A) (MCB -> D / Fuse -> aM)	Output protections (A) (MCB -> C / Fuse -> gG)
			13.5 V	13 V	12.5 V	Flexible	Rigid	Flexible	Rigid		
100	**PIP100**	0.43	8.3	8.3	8.3	0.5	1	2	2.5	1	8
300	**PIP300**	1.3	25	25	25	0.5	1	4	-	3	25
600	**PIP600**	2.6	50	50	50	1	1.5	10	-	10	50

Measurements

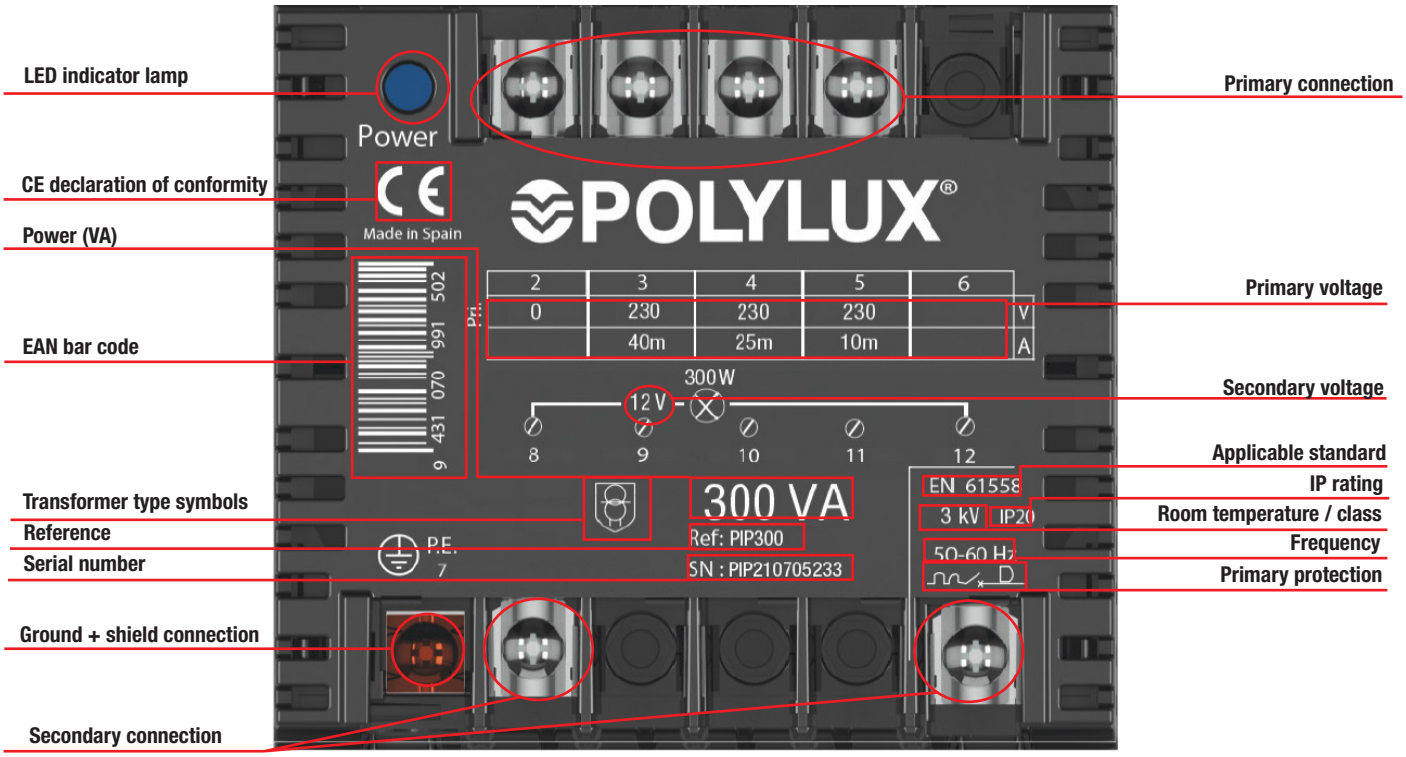
Power VA	Ref.	Output adjustment depending on distance V			External dimensions mm			Fastening elements mm			Weight kg
		13.5	13	12.5	A	B	C	D	E	Ø	
100	**PIP100**	30 m	20 m	10 m	84	101	98	88	55	6	1,7
300	**PIP300**	40 m	25 m	10 m	106	123	122	110	74	6	3,7
600	**PIP600**	40 m	25 m	10 m	136	162	155	146	104	6	7,6



PIP SERIES

For spotlights in pools and gardens · Input **230 V** · Output **12 V depending on the distance** (see electrical connection)

Feature plate structure



PIQ SERIES

For spotlights in pools and gardens · Input **230 V** · Output **12 V depending on the distance** (see electrical connection)

NEW head design

- Increased wiring insulation.
- Clearer features.
- Easier connection.
- More uniform, compact and robust design.

Definition and applications

An isolation and safety voltage transformer with an output voltage of 12 V, fitted with a copper shield between primary and secondary, to provide complete safety for persons against electrical risks.
Its main applications are spotlights in pools and gardens and it can be used as a control and manoeuvre transformer in installations that pose a risk of electrical contact for persons.

Manufacturing characteristics

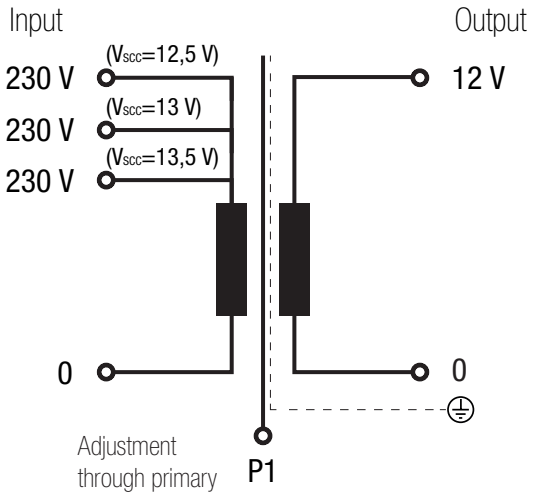
All the versions have the following features in common:

- **Important note**: copper shield between primary and secondary with connection to ground screw that prevents shunt voltage crossovers to the secondary circuit, thus posing no electrical risks for persons.
- Encapsulated in flame retardant resin.
- Bridges for the different connections included in the product packaging.
- Option of mounting on **DIN rail up to 100 VA**.
- IP20 enclosure, V-0 flame-retardant polymer box that complies with UL94.
- All the live parts of these transformers are encapsulated in resin, which is particularly indicated for working in damp, saline and corrosive environments.
- They have greater resistance to current surges and transient harmonics.
- Greater mechanical resistance to vibrations and undesirable movements.
- Safety Class I, convertible to Class II.
- Supplied with LED indicator lamp, electrostatic shield and adjustment through primary depending on the distance between the spotlight and the transformer (100 VA [10m, 20m, 30m] in 300 VA and 600 VA [10m, 25m, 40m]).
- All the transformers are checked automatically one by one and the compliance test report is created in accordance with the corresponding standard.

Technical features - standard model

Rating	**100 VA to 600 VA**
Insulators	**Class H - 180 ºC**
Temperature rise	**Class B**
Winding	**Class HC - 200 ºC**
Room temperature	**45 ºC**
Frequency	**50-60 Hz**
Noise	**≤ 40 dB**
Protection rating	**IP20**
Cooling	**AN**
Includes	**LED indicator lamp**
Mounting	**Mounted on DIN 46277/3 rail (up to 100 VA)**
Standards	**IEC/EN/UNE-EN 61558, CE**
Protection	**Convertible from Class I to Class II**
Voltage selection	**By means of metallic bridges, included (only for PIQ600)**
Operation	**Continuous**
Test voltage	**3 kV (1 min, 50 Hz)**

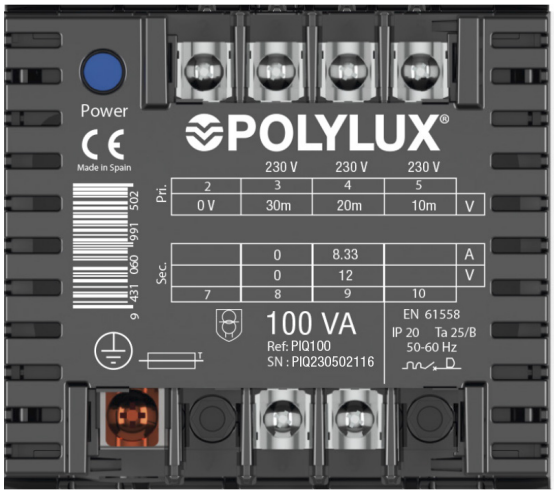
Electrical diagram



PIQ SERIES

For spotlights in pools and gardens · Input **230 V** · Output **12 V depending on the distance** (see electrical connection)

Electrical connection



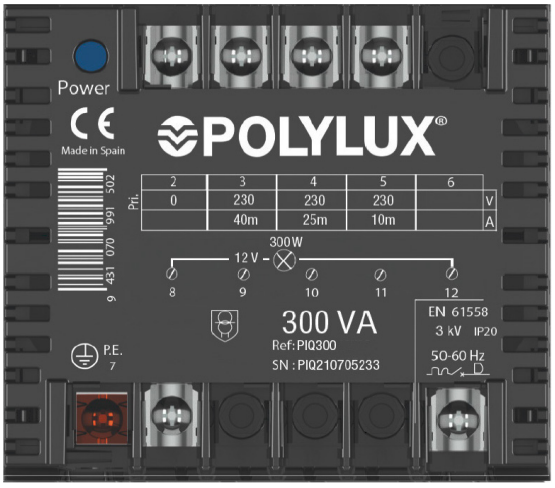
PIQ100

Input:

- 230 V (distance between spotlight and transformer 30 metres) | Connection: 2-3
- 230 V (distance between spotlight and transformer 20 metres) | Connection: 2-4
- 230 V (distance between spotlight and transformer 10 metres) | Connection: 2-5

Output:

- 12 V | Connection: 8-9



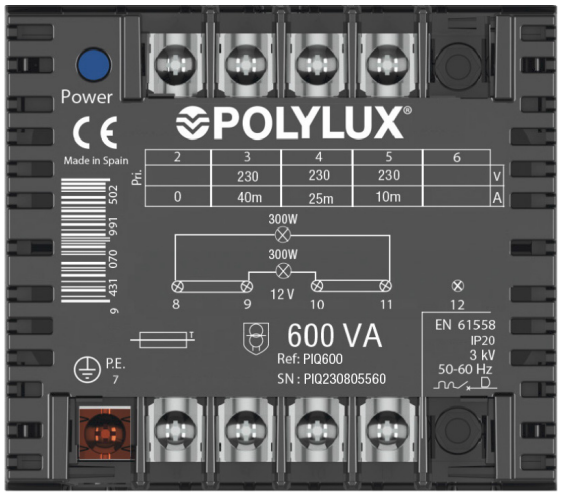
PIQ300

Input:

- 230 V (distance between spotlight and transformer 40 metres) | Connection: 2-3
- 230 V (distance between spotlight and transformer 25 metres) | Connection: 2-4
- 230 V (distance between spotlight and transformer 10 metres) | Connection: 2-5

Output:

- 12 V | Connection: 8-12



PIQ600

Input:

- 230 V (distance between spotlight and transformer 40 metres) | Connection: 2-3
- 230 V (distance between spotlight and transformer 25 metres) | Connection: 2-4
- 230 V (distance between spotlight and transformer 10 metres) | Connection: 2-5

Output:

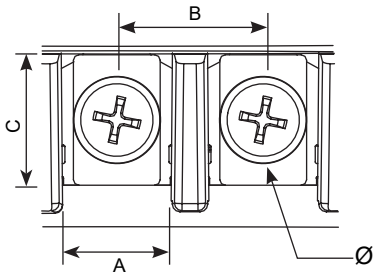
- For one spotlight:
  - 12 V | Connection: 9-10
- For two spotlights:
  - 12 V | Connection: 8-11 / 9-10
    Bridges: 8-9 / 10-11

PIQ SERIES

For spotlights in pools and gardens · Input **230 V** · Output **12 V depending on the distance** (see electrical connection)

Terminal types

Terminal blocks	Dimensions mm				Maximum tightening torque N·m	Primary Power VA		Secondary Power VA	
	A	B	C	Ø		From	To	From	To
Terminal M3	8	11	9	M3	0.5	100	100	100	100
Terminal M4	10	13.5	12	M4	1.1	300	600	300	300
Terminal M5	15	18.5	14	M5	2.5	-	-	600	600

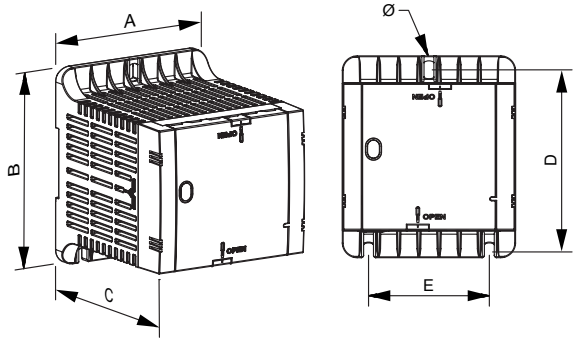


Theoretical data - standard model

Power VA	Reference	Input current A	Output current A			Maximum cross-section input conductor (mm²)		Maximum cross-section output conductor (mm²)		Input protections (A) (MCB -> D / Fuse -> aM)	Output protections (A) (MCB -> C / Fuse -> gG)
			13.5 V	13 V	12.5 V	Flexible	Rigid	Flexible	Rigid		
100	**PIQ100**	0.43	8.3	8.3	8.3	0.5	1	2	2.5	1	8
300	**PIQ300**	1.3	25	25	25	0.5	1	4	-	3	25
600	**PIQ600**	2.6	50	50	50	1	1.5	10	-	10	50

Measurements

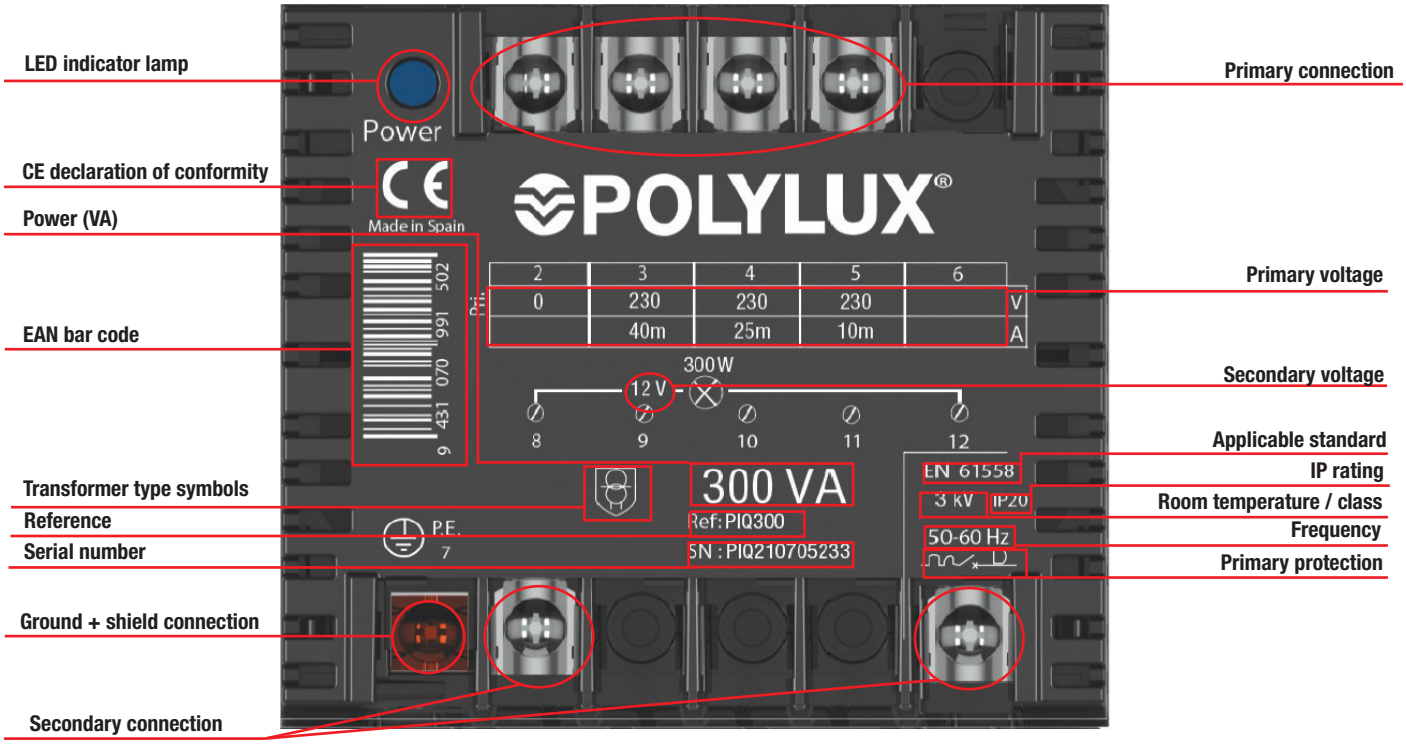
Power VA	Ref.	Output adjustment depending on distance V			External dimensions mm			Fastening elements mm			Weight kg
		13.5	13	12.5	A	B	C	D	E	Ø	
100	**PIQ100**	30 m	20 m	10 m	84	101	98	88	55	6	1,7
300	**PIQ300**	40 m	25 m	10 m	106	123	122	110	74	6	4,1
600	**PIQ600**	40 m	25 m	10 m	136	162	155	146	104	6	8,8



PIQ SERIES

For spotlights in pools and gardens · Input **230 V** · Output **12 V depending on the distance** (see electrical connection)

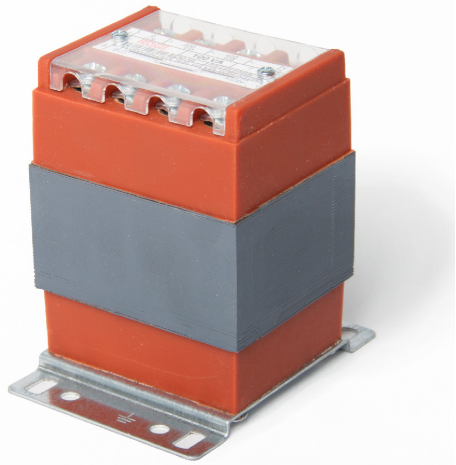
Feature plate structure



Sectioned transformer

PIN SERIES

For spotlights in pools and gardens · Input **230 V** · Output **12 V depending on the distance** (see electrical connection)



Definition and applications

An isolation and safety voltage transformer with an output voltage of 12 V, fitted with a copper shield between primary and secondary, to provide complete safety for persons against electrical risks.
Its main applications are spotlights in pools and gardens and it can be used as a control and manoeuvre transformer in installations that pose a risk of electrical contact for persons.

Manufacturing characteristics

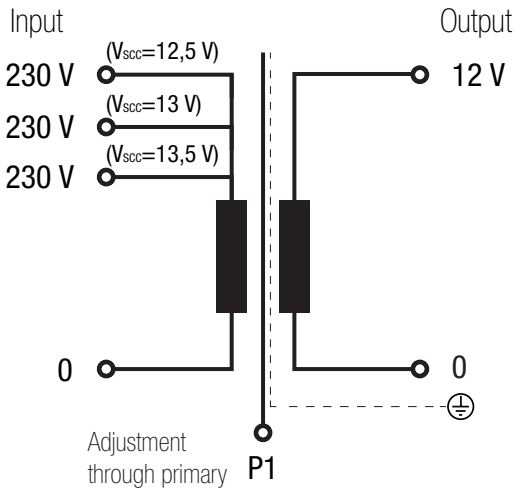
All the versions have the following features in common:

- **Important note**: copper shield between primary and secondary with connection to ground screw that prevents shunt voltage crossovers to the secondary circuit, thus posing no electrical risks for persons.
- Connection terminals made of copper, welded and inserted in blocks to prevent hazards caused by expansion that may lead to poor connection.
- Bridges for the different connections included in the product packaging.
- Option of mounting on **DIN rail up to 300 VA**.
- All the transformers are checked automatically one by one and the compliance test report is created in accordance with the corresponding standard.

Technical features - standard model

Rating	**100 VA to 600 VA**
Insulators	**Class H - 180 ºC**
Temperature rise	**Class B**
Winding	**Class HC - 200 ºC**
Room temperature	**45 ºC**
Frequency	**50-60 Hz**
Noise	**≤ 45 dB**
Protection rating	**IP20**
Cooling	**AN**
Mounting	**Mounting on DIN 46277/3 rail (up to 100 VA)**
Voltage selection	**By means of metallic bridges, included (only for PIN600)**
Standards	**IEC/EN/UNE-EN 61558, CE**
Operation	**Continuous**
Test voltage	**3 kV (1 min, 50 Hz)**

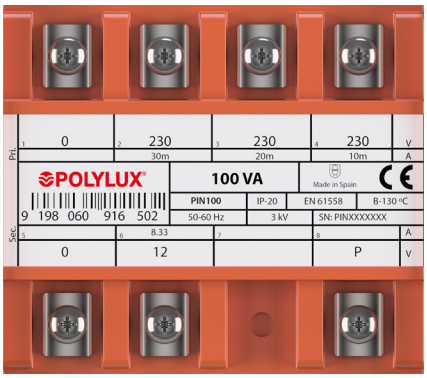
Electrical diagram



PIN SERIES

For spotlights in pools and gardens · Input **230 V** · Output **12 V depending on the distance** (see electrical connection)

Electrical connection



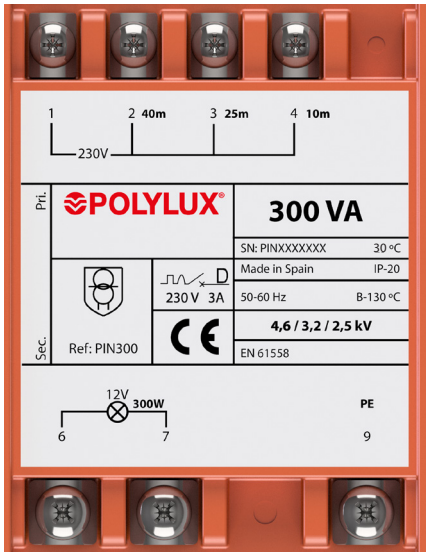
PIN100

Input:

- 230 V (distance between spotlight and transformer 30 metres) | Connection: 1-2
- 230 V (distance between spotlight and transformer 20 metres) | Connection: 1-3
- 230 V (distance between spotlight and transformer 10 metres) | Connection: 1-4

Output:

- 12 V | Connection: 5-6



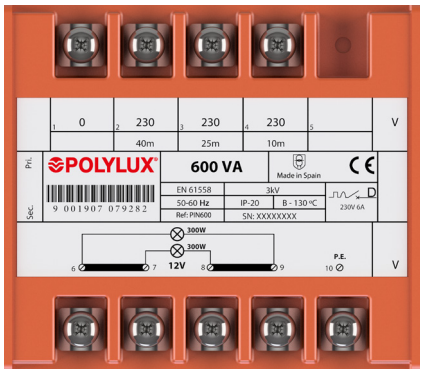
PIN300

Input:

- 230 V (distance between spotlight and transformer 40 metres) | Connection: 1-2
- 230 V (distance between spotlight and transformer 25 metres) | Connection: 1-3
- 230 V (distance between spotlight and transformer 10 metres) | Connection: 1-4

Output:

- 12 V | Connection: 6-7



PIN600

Input:

- 230 V (distance between spotlight and transformer 40 metres) | Connection: 1-2
- 230 V (distance between spotlight and transformer 25 metres) | Connection: 1-3
- 230 V (distance between spotlight and transformer 10 metres) | Connection: 1-4

Output:

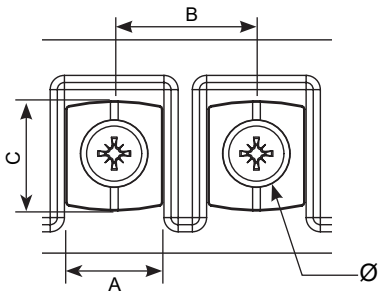
- For one spotlight:
  - 12 V | Connection: 7-8
- For two spotlights:
  - 12 V | Connection: 6-9 / 7-8
    Bridges: 6-7 / 8-9

PIN SERIES

For spotlights in pools and gardens · Input **230 V** · Output **12 V depending on the distance** (see electrical connection)

Terminal types

Terminal blocks	Dimensions mm				Maximum tightening torque N·m	Primary Power VA		Secondary Power VA	
	A	B	C	Ø		From	To	From	To
Terminal M4	9.7	16	10.1	M4	1.1	100	300	100	300
Terminal M5	15.5	21.5	15.6	M5	2.5	600	600	600	600

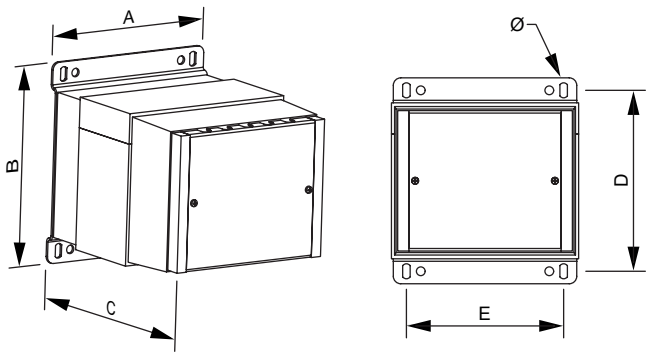


Theoretical data - standard model

Power VA	Reference	Input current A	Output current A			Maximum cross-section input conductor (mm²)		Maximum cross-section output conductor (mm²)		Input protections (A) (MCB -> D / Fuse -> aM)	Output protections (A) (MCB -> C / Fuse -> gG)
			13.5 V	13 V	12.5 V	Flexible	Rigid	Flexible	Rigid		
100	**PIN100**	0.43	8.3	8.3	8.3	0.5	1	2	2.5	1	8
300	**PIN300**	1.3	25	25	25	0.5	1	4	-	3	25
600	**PIN600**	2.6	50	50	50	1	1.5	10	-	10	50

Measurements

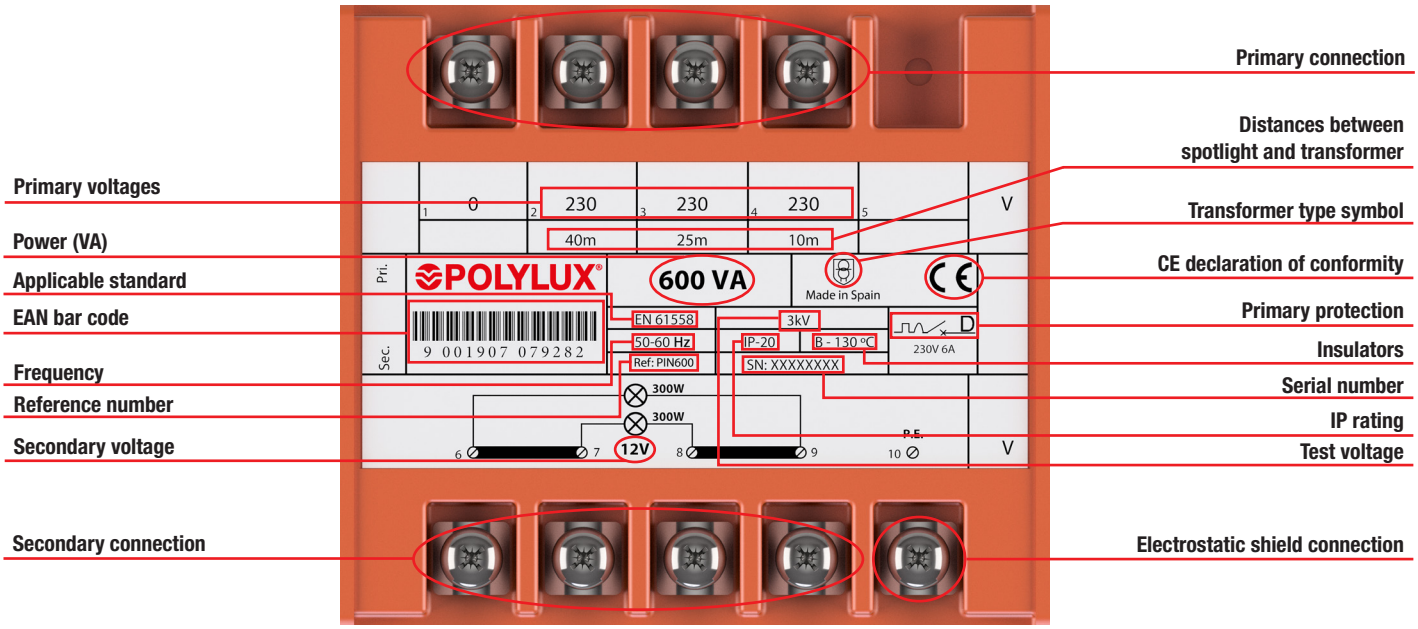
Power VA	Ref.	Output adjustment depending on distance V			External dimensions mm			Fastening elements mm			Weight kg
		13.5	13	12.5	A	B	C	D	E	Ø	
100	**PIN100**	30 m	20 m	10 m	75	97	99	80	56	6	1,9
300	**PIN300**	40 m	25 m	10 m	108	124	124	106	89	6	4,7
600	**PIN600**	40 m	25 m	10 m	126	144	168	125	102	7	8,8



PIN SERIES

For spotlights in pools and gardens · Input **230 V** · Output **12 V depending on the distance** (see electrical connection)

Feature plate structure



PIPZ SERIES

For spotlights in pools and gardens · Input **230 V** · Output **12 V depending on distance** (see electrical connection) · IP54 / IP56

Up to 100 VA

From 300 VA

Definition and applications

An isolation and safety voltage transformer with an output voltage of 12 V, fitted with a copper shield between primary and secondary in 300 VA and 600 VA, to provide complete safety for persons against electrical risks.
Its main applications are spotlights in pools and gardens and it can be used as a control and manoeuvre transformer in installations that pose a risk of electrical contact for persons.

Manufacturing characteristics

IP56 enclosure (PIPZ100), IP54 enclosure (PIPZ300 & PIPZ600), epoxy polyester painted metal box.

PIPZ300 & PIPZ600:

- Encapsulated in flame retardant resin, ensuring greater compactation, isolation and noise elimination.
- Connection terminals made of copper, welded and inserted in blocks to prevent hazards caused by expansion that may lead to poor connection.
- Bridges for the different connections included in the product packaging.
- Copper shield between primary and secondary with connection to ground screw that prevents shunt voltage crossovers to the secondary circuit, thus posing no electrical risks for persons.

All the versions have the following features in common:

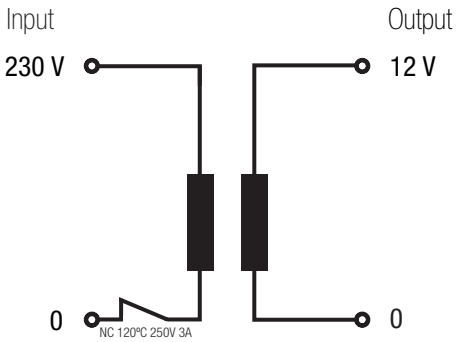
- Safety Class I.
- All the transformers are checked automatically one by one and the compliance test report is created in accordance with the corresponding standard.

Technical features - standard model

Rating	**100 VA a 600 VA**
Insulators	**Class H - 180 ºC**
Temperature rise	**Class B**
Winding	**Class HC - 200 ºC**
Room temperature	**45 ºC**
Frequency	**50-60 Hz**
Noise	**≤ 45 dB**
Enclosure colour	**RAL 7035**
Protection rating	**IP56 (PIPZ100), IP54 (PIPZ300 & PIPZ600)**
Cooling	**AN**
Mounting	**Hardware**
Standards	**IEC/EN/UNE-EN 61558, CE**
Operation	**Continuous**
Test voltage	**3 kV (1 min, 50 Hz)**

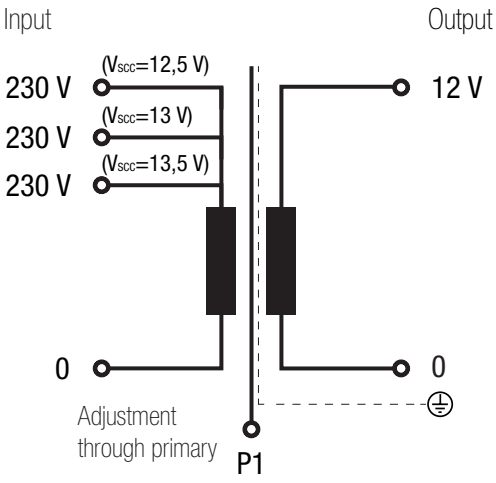
Electrical diagram

- **PIPZ100**



***Includes Klixon 120ºC 250V 3A for overtemperature protection.**

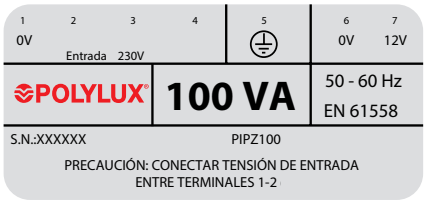
- **PIPZ300 & PIPZ600**



PIPZ SERIES

For spotlights in pools and gardens · Input **230 V** · Output **12 V depending on distance** (see electrical connection) · IP54 / IP56

Electrical connection



PIPZ100

Input:

- 230 V | Connection: 1-2

Output:

- 12 V | Connection: 6-7

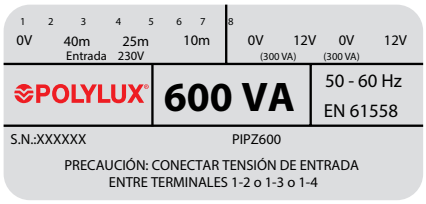
PIPZ300

Input:

- 230 V (distance between spotlight and transformer 40 metres) | Connection: 1-2
- 230 V (distance between spotlight and transformer 25 metres) | Connection: 1-3
- 230 V (distance between spotlight and transformer 10 metres) | Connection: 1-4

Output:

- 12 V | Connection: 6-7



PIPZ600

Input:

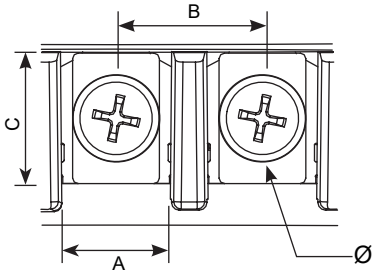
- 230 V (distance between spotlight and transformer 40 metres) | Connection: 1-2
- 230 V (distance between spotlight and transformer 25 metres) | Connection: 1-3
- 230 V (distance between spotlight and transformer 10 metres) | Connection: 1-4

Output:

- 12 V | Connection: 5-6 or 7-8 (for one spotlight)
- 12 V | Connection: 5-6 and 7-8 (for two spotlights)

Terminal types

Terminal blocks	Dimensions mm				Maximum tightening torque N·m	Primary Power VA		Secondary Power VA	
	A	B	C	Ø		From	To	From	To
TEKOK Connector	8	11	9	M3	0.5	100	100	100	100
Terminal M4	10	13.5	12	M4	1.1	300	600	300	300
Terminal M5	15	18.5	14	M5	2.5	-	-	600	600



Theoretical data - standard model

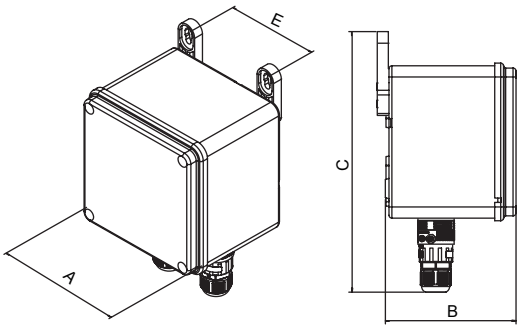
Power VA	Reference	Input current A	Output current A			Maximum cross-section input conductor (mm²)		Maximum cross-section output conductor (mm²)		Input protections (A) (MCB -> D / Fuse -> aM)	Output protections (A) (MCB -> C / Fuse -> gG)
			13.5 V	13 V	12.5 V	Flexible	Rigid	Flexible	Rigid		
100	**PIPZ100**	0.43	-	-	8,3	0.5	1	2	2.5	1	8
300	**PIPZ300**	1.3	25	25	25	0.5	1	4	-	3	25
600	**PIPZ600**	2.6	50	50	50	1	1.5	10	-	10	50

PIPZ SERIES

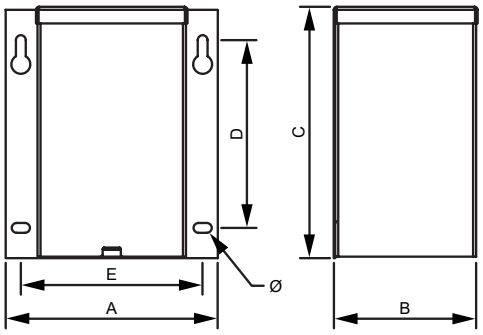
For spotlights in pools and gardens · Input **230 V** · Output **12 V depending on distance** (see electrical connection) · IP54 / IP56

Measurements

Power VA	Ref.	Output adjustment depending on distance V			External dimensions mm			Fastening elements mm			Weight kg
		13.5	13	12.5	A	B	C	D	E	Ø	
100	**PIPZ100**	-	-	-	108	94	179	-	75,8	6,5	2,3
300	**PIPZ300**	40 m	25 m	10 m	140	95	165	123	120	6	5,1
600	**PIPZ600**	40 m	25 m	10 m	190	120	215	174	160	6	11



PIPZ100



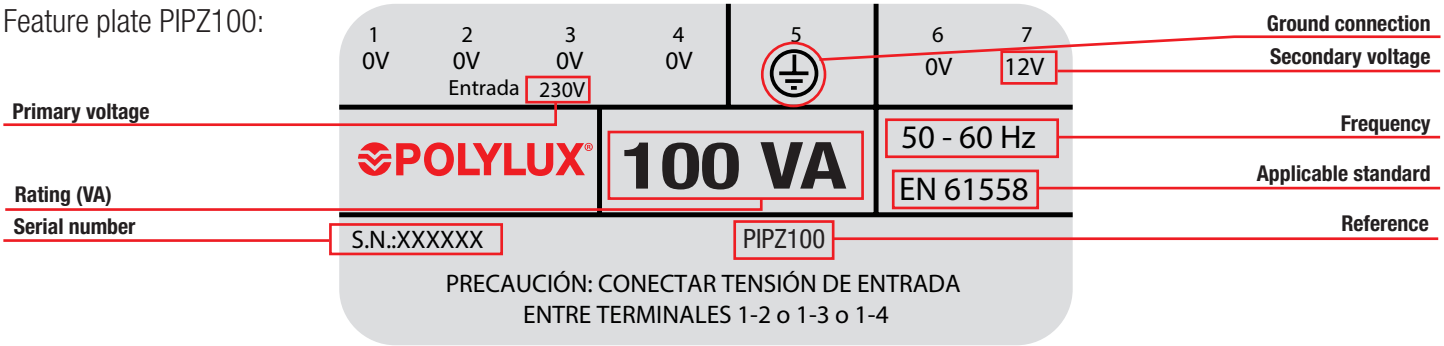
PIPZ300 & PIPZ600

On-request manufacturing options (please see prices)

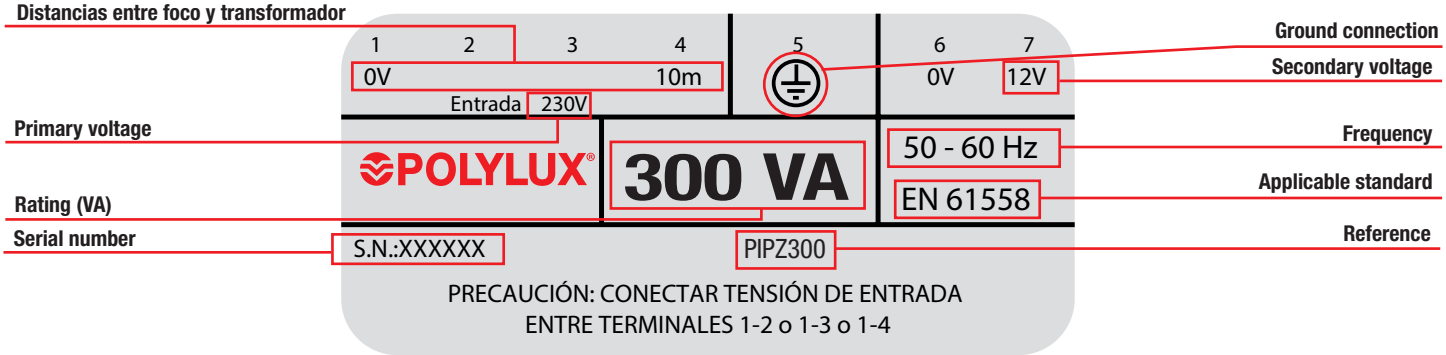
Power	**From 100 VA to 600 VA**
Protections	**Primary fuse**

Feature plate structure

Feature plate PIPZ100:

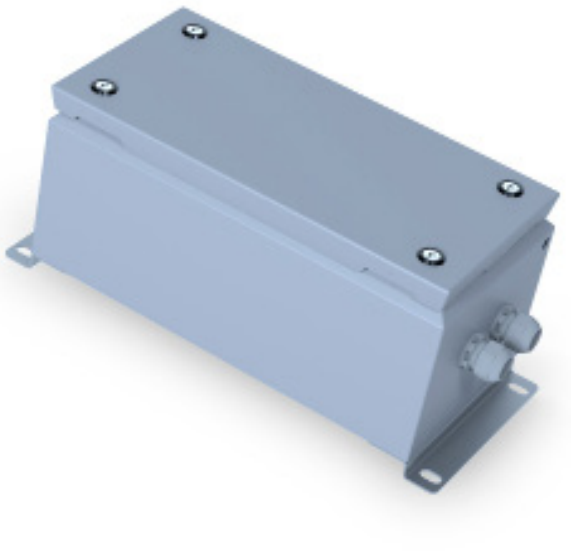


Feature plate PIPZ300 & PIPZ600:



IP SERIES

IP66 rated encapsulated isolation



Definition and applications

The IP transformers are used for the galvanic isolation of single-phase installations based on safety reasons and for the creation of neutrals referenced to ground.

Their IP66 enclosure make the IP transformers the ideal solution for outdoor installations.

Furthermore, the resin encapsulation makes the IP transformers the perfect solution in cases that require high resistance to vibrations, damp or a high level of winding insulation.

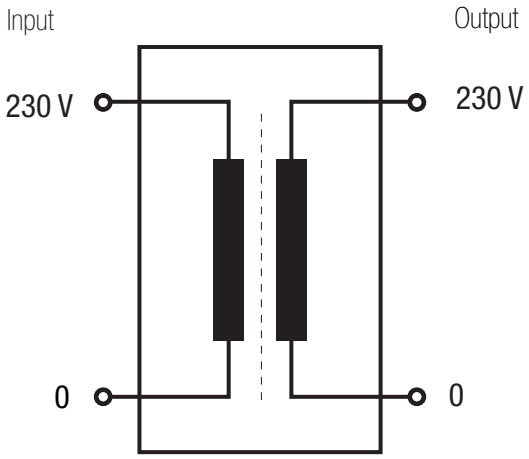
Manufacturing characteristics

- IP66 metal enclosure.
- Encapsulated in flame retardant resin.
- Protection against indirect contacts.
- All the transformers are checked automatically one by one and the compliance test report is created in accordance with the corresponding standard.
- Possibility of customised production with special tensions.

Technical features - standard model

Rating	**200 VA to 1600 VA**
Insulators	**Class H - 180 ºC**
Temperature rise	**Class B**
Winding	**Class HC - 200 ºC**
Room temperature	**45 ºC**
Frequency	**50-60 Hz**
Noise	**≤ 45 dB**
Protection rating	**IP66**
Cooling	**AN**
Mounting	**With screws (for all ratings)**
Standards	**IEC/EN/UNE-EN 61558, CE**
Safety	**Class I**
Operation	**Continuous**
Test voltage	**3 kV (1 min., 50 Hz) between primary and secondary**

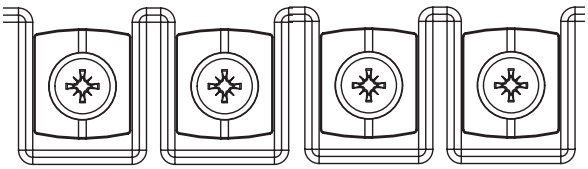
Electrical diagram



IP SERIES

IP66 rated encapsulated isolation

Electrical connection



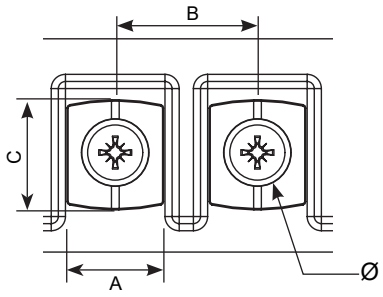
≥ 200 VA

Input:
- 230 V | Connection: 1-4 Bridges: 1-2 / 3-4

Output:
- 230 V | Bridges: 7-8

Terminal types

Terminal blocks	Dimensions mm				Maximum tightening torque N·m	Primary Rating VA		Secondary Rating VA	
	A	B	C	Ø		From	Up to	From	Up to
Terminal M6	86	36	29	M6	4	200	1600	200	1600



Theoretical data - standard model

Rating VA	Reference	Input current A	Output current A	Input protections (A) (MCB -> D / Fuse -> aM)	Output protections (A) (MCB -> C / Fuse -> gG)
		230 V	230 V	230 V	V2
IPD (output voltage 230 V / 230 V)					
200	**IPD200**	0,87	0,87	2	0,8 (--/T)
315	**IPD315**	1,37	1,37	3,15	1,25
500	**IPD500**	2,17	2,17	5	2
630	**IPD630**	2,74	2,74	10	2,5
1000	**IPD1000**	4,35	4,35	10	4
1250	**IPD1250**	5,43	5,43	10	5
1600	**IPD1600**	6,96	6,96	16	6

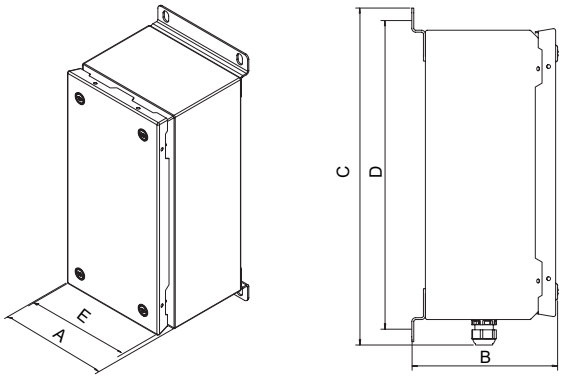
Rating VA	Reference	Maximum cross-section input conductor (mm²)		Maximum cross-section output conductor (mm²)		Stuffing boxes	
		230 V		V2			
		Flexible	Rigid	Flexible	Rigid	Input	Output
IPD (output voltage 230 V / 230 V)							
200	**IPD200**	0,5	1	0,5	1	PG11	PG16
315	**IPD315**	0,5	1	0,5	1	PG11	PG16
500	**IPD500**	1	1,5	1	1,5	PG16	PG21
630	**IPD630**	1	1,5	1	1,5	PG16	PG21
1000	**IPD1000**	1,5	2	1,5	2	PG21	PG21
1250	**IPD1250**	1,5	2	1,5	2	PG21	PG21
1600	**IPD1600**	1,5	2	1,5	2	PG21	PG21

IP SERIES

IP66 rated encapsulated isolation

Measurements

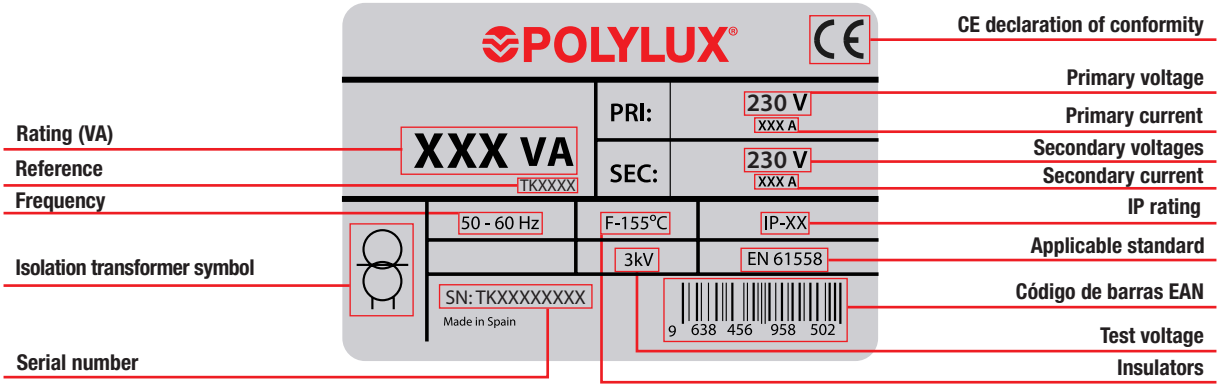
Output voltage 230 V IPD								
Rating VA	Ref.	External dimensions mm			Fastening elements mm			Weight kg
		A	B	C	D	E	Ø	
200	**IPD200**	150	151	350	325	120	9	7,3
315	**IPD315**	150	151	350	325	120	9	8,5
500	**IPD500**	150	151	350	325	120	9	11
630	**IPD630**	150	151	350	325	120	9	13
1000	**IPD1000**	150	151	350	325	120	9	15
1250	**IPD1250**	200	151	358	325	170	9	18
1600	**IPD1600**	200	151	358	325	170	9	21



On-request manufacturing options (please see prices)

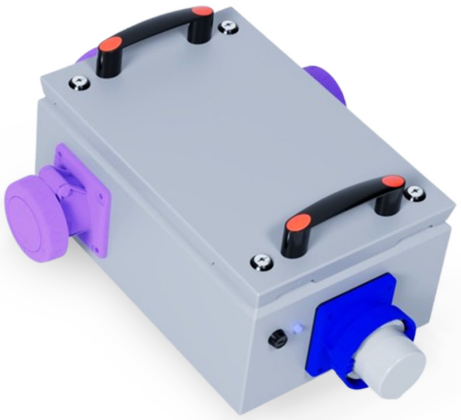
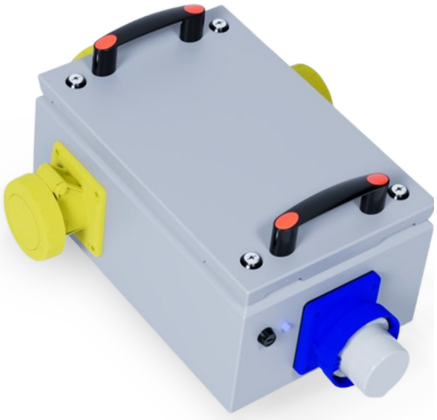
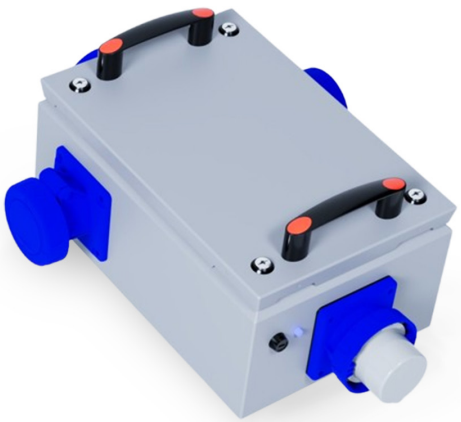
Rating	**From 200 VA up to 1600 VA**
Voltages	**12 V to 500 V**
Shields	**Primary / secondary, primary / ground and secondary / ground**

Feature plate structure



TP SERIES

Encapsulated safety PCs · Input **230 V** · Output **12 V (TPA) or 24 V (TPB)**

Definition and applications

The TP transformers are portable transformers designed for continuous service and for use in supplying low voltage single-phase loads in places that are difficult to reach, or where there is no power socket.

In addition, the flame retardant resin encapsulation make the TP transformers the ideal solution for areas that require high resistance to vibrations, damp or corrosion or a high level of winding insulation.

In outdoor installations where there are poor weather conditions, the high IP66 isolation protection rating also converts the TP transformers into the perfect solution for connecting low voltage appliances (spotlights, machinery, etc.) in damp places handled by personnel where there is a risk of electrocution.

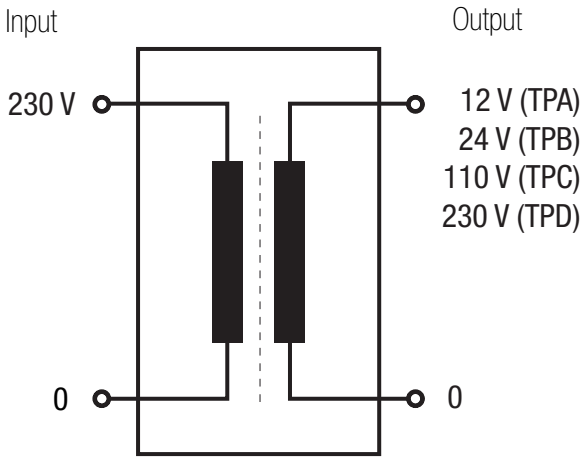
Manufacturing characteristics

- Dry transformer encapsulated in flame retardant resin.
- Safety Class II.
- Indicator lamp included.
- CETAC input pins connection and 3 CETAC output pins.
- Short circuit protection by means of a primary time-delay fuse.
- All the transformers are checked automatically one by one and the compliance test report is created in accordance with the corresponding standard.

Technical features - standard model

Rating	**200 VA to 1.600 VA**
Insulators	**Class H - 180ºC**
Temperature rise	**Class B**
Winding	**Class HC - 200 ºC**
Room temperature	**45 ºC**
Frequency	**50-60 Hz**
Noise	**≤ 45 dB**
Protection rating	**IP66**
Cooling	**AN**
Standards	**IEC/EN/UNE-EN 61558, CE**
Safety	**Class II**
Operation	**Continuous**
Test voltage	**3.5 kV (1 min., 50 Hz)**

Electrical diagram



TP SERIES

Encapsulated safety PCs · Input 230 V · Output 12 V (TPA) or 24 V (TPB)

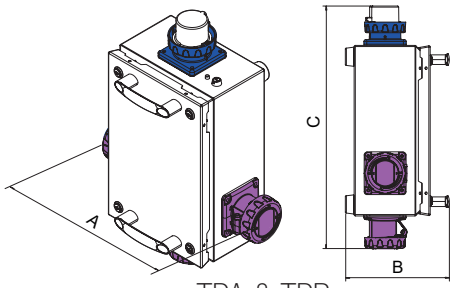
Theoretical data - standard model

Rating VA	Reference	Input current A	Output current A (Maximum current per pin of 32A)
TPA (output voltage 12 V)			
200	**TPA200**	0,87	16,67
400	**TPA400**	1,74	33,33
630	**TPA630**	2,74	52,5
1000	**TPA1000**	4,35	83,33
TPB (output voltage 24 V)			
200	**TPB200**	0,87	8,33
400	**TPB400**	1,74	16,67
630	**TPB630**	2,74	26,25
1000	**TPB1000**	4,35	41,67
1250	**TPB1250**	5,43	52,08
1600	**TPB1600**	6,96	66,67
TPC (output voltage 110 V)			
200	**TPC200**	0,87	1,82
400	**TPC400**	1,74	3,64
630	**TPC630**	2,74	5,73
1000	**TPC1000**	4,35	9,09
1250	**TPC1250**	5,43	11,36
1600	**TPC1600**	6,96	14,55
TPD (output voltage 230 V)			
200	**TPD200**	0,87	0,87
400	**TPD400**	1,74	1,74
630	**TPD630**	2,74	2,74
1000	**TPD1000**	4,35	4,35
1250	**TPD1250**	5,43	5,43
1600	**TPD1600**	6,96	6,96

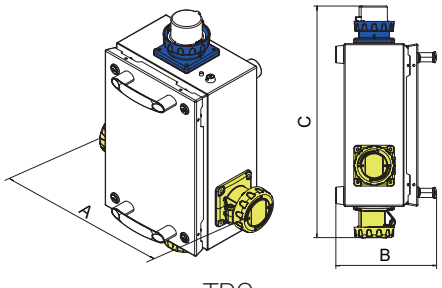
TP SERIES

Encapsulated safety PCs · Input **230 V** · Output **12 V (TPA) or 24 V (TPB)**

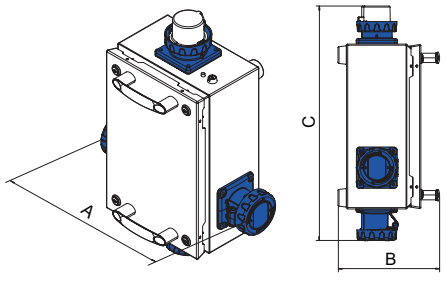
Measurements



TPA & TPB



TPC



TPD

Output voltage12 V (TPA), 24 V TPB), 110 V (TPC) y 230 V (TPD)					
Rating VA	Ref.	Dimensions mm			Weight kg
		A	B	C	
200	**TP(A/B/C/D)200**	266	168	430	8,2
400	**TP(A/B/C/D)400**	266	168	430	10
630	**TP(A/B/C/D)630**	266	168	430	13
1000	**TP(A/B/C/D)1000**	266	168	430	15
1250	**TP(B/C/D)1250**	317	184	428	18
1600	**TP(B/C/D)1600**	317	184	428	20

On-request manufacturing options (please see prices)

Cable	**Industrial type (Figure 1)**
Cable	**Residential type (Figure 2)**

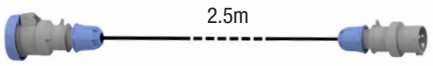


Figure 1

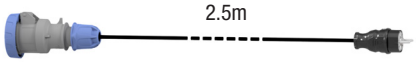
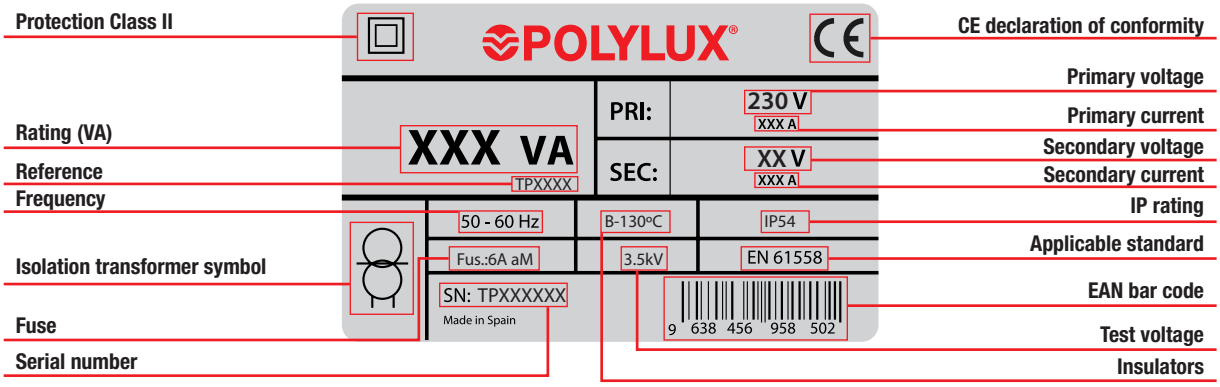


Figure 2

Feature plate structure



PTM SERIES

For measuring equipment

Definition and applications

The function of a measuring transformer is to provide a precise output voltage, isolating it from the input voltage. Firstly, it reduces the voltage to a lower value and secondly, it isolates the high voltage circuit from the measuring circuit.

Manufacturing characteristics

All the versions have the following features in common:

- Anti-flash dip varnishing. Ensures greater compactation, isolation and noise elimination.
- IP20 enclosure with next-generation V-0 flame retardant polymer box in accordance with UL94.
- Option of mounting on **DIN rail up to 7.5 VA**.
- Precision classes 0.2 / 0.5 / 1 based on power.
- Accepts a continuous surge current of 1.2 times the nominal voltage and a thermal power 6 times the nominal power.
- All the transformers are checked automatically one by one and the compliance test report is created in accordance with the corresponding standard.

NEW head design

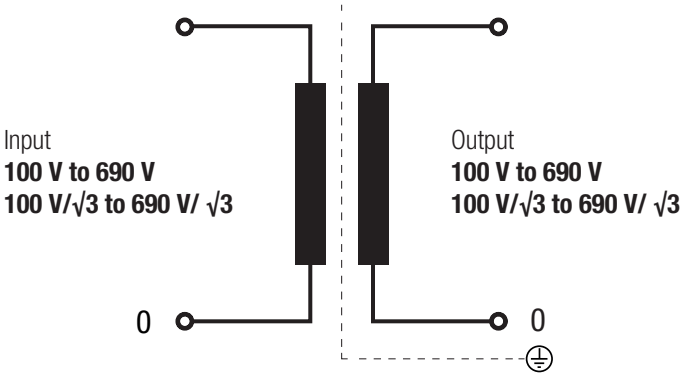
- Increased wiring insulation.
- Clearer features.
- Easier connection.
- More uniform, compact and robust design.

Technical features - standard model

Rating	**2 VA to 300 VA (class 0.2 / 0.5 / 1)**
Insulators	**Class H - 180ºC**
Temperature rise	**Class B**
Winding	**Class HC - 200 ºC**
Room temperature	**45 ºC**
Frequency	**50-60 Hz**
Noise	**≤ 45 dB**
Protection rating	**IP20**
Cooling	**ANAN**
Includes	**LED indicator lamp**
Mounting	**With screws (for all powers)** **Mounted on DIN 46277/3 rail (up to 7.5 VA)**
Standards	**IEC/EN/UNE-EN 61869-3, CE**
Protection	**Convertible from Class I to Class II**
Operation	**Continuous**
Test voltage	**3 kV (1 min, 50 Hz)**

*For three-phase measuring transformers see page 70.

Electrical diagram

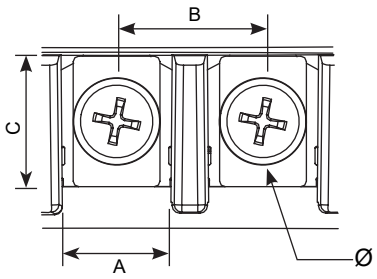


PTM SERIES

For measuring equipment

Terminal types

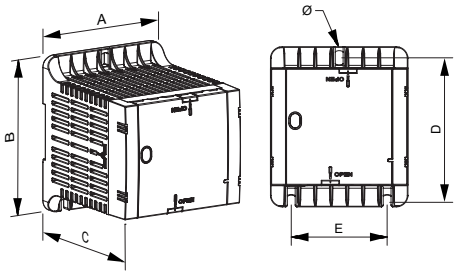
Terminal blocks	Dimensions mm				Maximum tightening torque N·m	Primary Power VA		Secondary Power VA	
	A	B	C	Ø		From	To	From	To
Terminal M4	10	13.5	12	M4	1.1	2	150 (Class 1)	2	7.5 (Class 1)
Terminal M5	15	18.5	14	M5	2.5	100 (Class 0.2)	300 (Class 1)	5 (Class 0.2)	150 (Class 1)
Terminal M6	15.5	20.4	13	M6	4	-	-	100 (Class 0.2)	300 (Class 1)



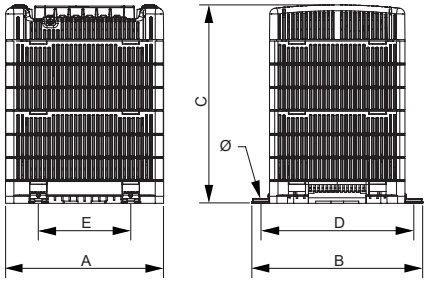
Measurements

Power VA			Ref.	External dimensions mm			Fastening elements mm			Weight kg
Class 0.2	Class 0.5 (3P)	Class 1 (6P)		A	B	C	D	E	Ø	
2	5	7.5	**PTM50**	106	123	122	110	74	6	3,2
5	10	15	**PTM51**	118	138	132	122	88	6	4,2
10	15	25	**PTM52**	118	138	132	122	88	6	4,9
15	30	50	**PTM53**	136	162	155	146	104	6	6,1
30	50	75	**PTM55**	136	162	155	146	104	6	7,9
50	75	100	**PTM57**	136	162	155	146	104	6	8,8
75	100	150	**PTM510**	136	162	180	146	104	6	9,8
100	150	200	**PTM515**	214	225	285	199	175	7	14
150	200	300	**PTM520**	214	225	285	199	175	7	17

Up to PTM510



From PTM515



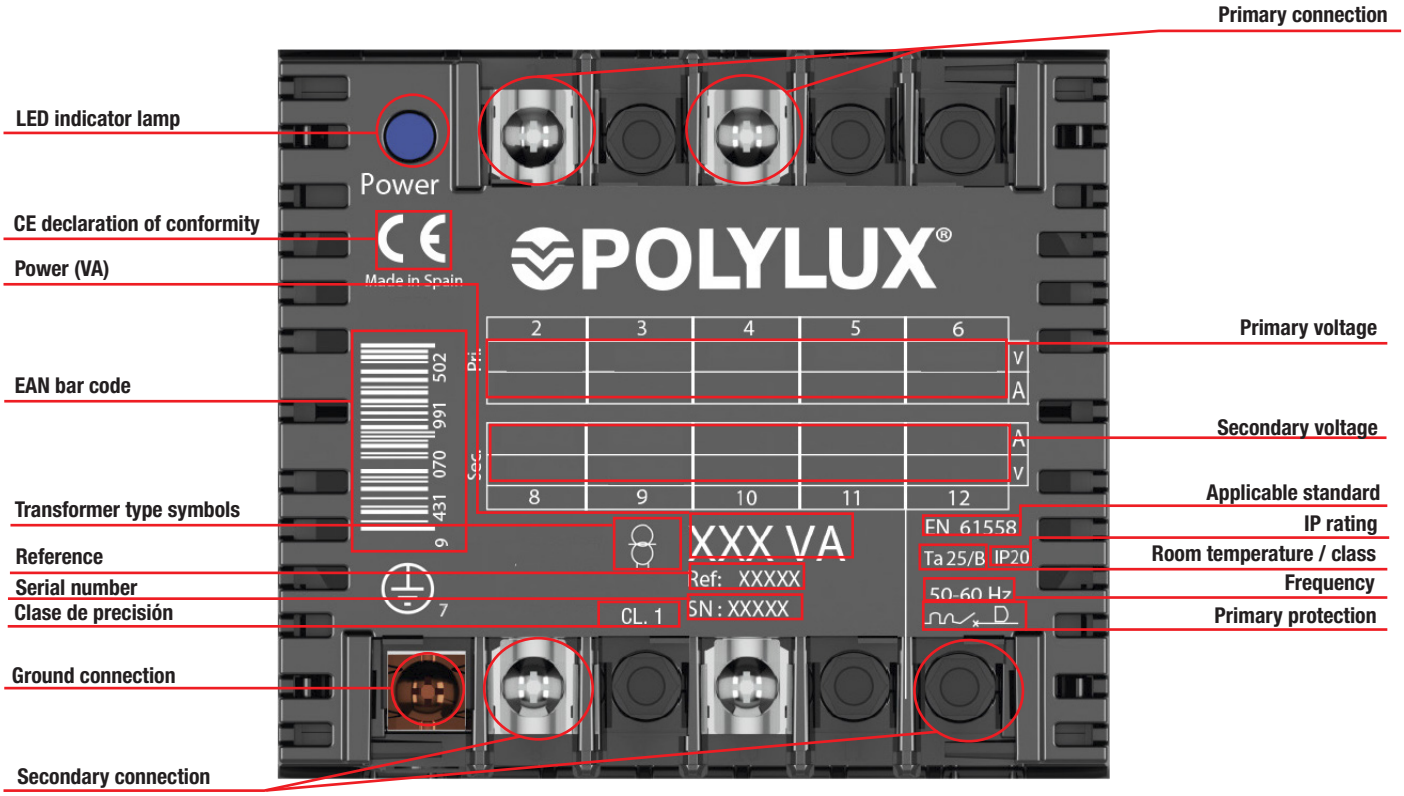
On-request manufacturing options (please see prices)

Power	**From 2 VA to 300 VA**
Output	**Option of 3 outputs**
Mounting	**Option of mounting 3 transformers for a three-phase system (or see page 73)**
Temperature	**Up to 60 °C**
Shields	**Primary / secundary**

PTM SERIES

For measuring equipment

Feature plate structure



QTM SERIES

Encapsulated for measuring equipment

Definition and applications

The function of a measuring transformer is to provide a precise output voltage, isolating it from the input voltage. Firstly, it reduces the voltage to a lower value and secondly, it isolates the high voltage circuit from the measuring circuit.

Manufacturing characteristics

All the versions have the following features in common:

- Encapsulated in flame retardant resin.
- Connection terminals made of copper, welded and inserted in blocks to prevent hazards caused by expansion that may lead to poor connection.
- IP20 enclosure, V-0 flame-retardant polymer box that complies with UL94.
- All the live parts of these transformers are encapsulated in resin, which is particularly indicated for working in damp, saline and corrosive environments.
- They have greater resistance to current surges and transient harmonics.
- Greater mechanical resistance to vibrations and undesirable movements.
- Safety Class I, convertible to Class II.
- LED indicator lamp included.
- Precision classes 0.2 / 0.5 / 1 based on power.
- Accepts a continuous surge current of 1.2 times the nominal voltage and a thermal power 6 times the nominal power.
- All the transformers are checked automatically one by one and the compliance test report is created in accordance with the corresponding standard.

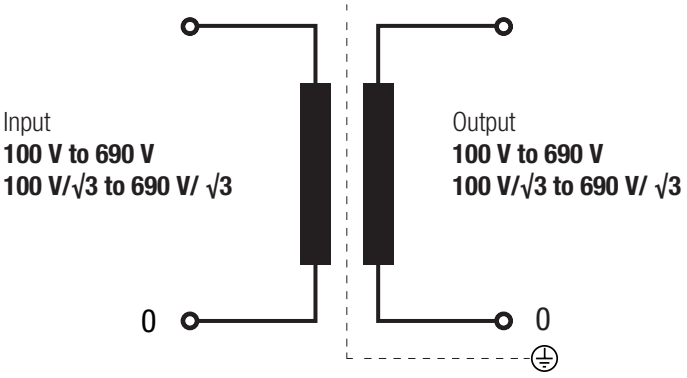
NEW head design

- Increased wiring insulation.
- Clearer features.
- Easier connection.
- More uniform, compact and robust design.

Technical features - standard model

Rating	**2 VA to 150 VA (class 0.2 / 0.5 / 1)**
Insulators	**Class H - 180ºC**
Temperature rise	**Class B**
Winding	**Class HC - 200 ºC**
Room temperature	**45 ºC**
Frequency	**50-60 Hz**
Noise	**≤ 40 dB**
Protection rating	**IP20**
Cooling	**ANA**
Includes	**LED indicator lamp**
Mounting	**With screws**
Standards	**IEC/EN/UNE-EN 61869-3, CE**
Protection	**Convertible from Class I to Class II**
Operation	**Continuous**
Test voltage	**3 kV (1 min, 50 Hz)**

Electrical diagram

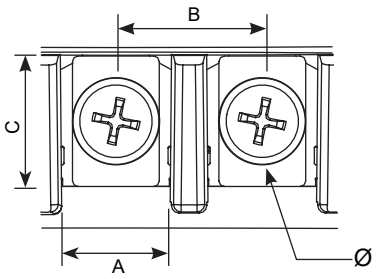


QTM SERIES

Encapsulated for measuring equipment

Terminal types

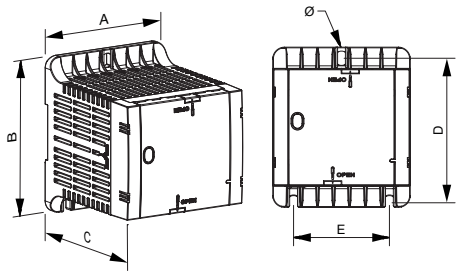
Terminal blocks	Dimensions mm				Maximum tightening torque N-m	Primary Power VA		Secondary Power VA	
	A	B	C	Ø		From	To	From	To
Terminal M4	10	13.5	12	M4	1.1	2	150 (Class 1)	2	7.5 (Class 1)
Terminal M5	15	18.5	14	M5	2.5	100 (Class 0.2)	300 (Class 1)	5 (Class 0.2)	150 (Class 1)
Terminal M6	15.5	20.4	13	M6	4	-	-	100 (Class 0.2)	300 (Class 1)



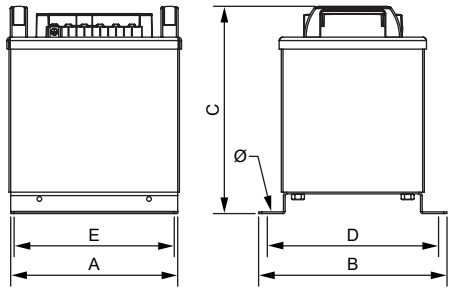
Measurements

Power VA			Ref.	External dimensions mm			Fastening elements mm			Weight kg
Class 0.2	Class 0.5 (3P)	Class 1 (6P)		A	B	C	D	E	Ø	
2	5	7.5	**QTM50**	106	123	122	110	74	5	2,6
5	10	15	**QTM51**	118	138	131	121	88	6	4,6
10	15	25	**QTM52**	118	138	131	121	88	6	4,6
15	30	50	**QTM53**	136	162	156	145	104	6	6,7
30	50	75	**QTM55**	136	162	156	145	104	6	7,8
50	75	100	**QTM57**	136	162	156	145	104	6	9,9
75	100	150	**QTM510**	136	162	180	145	104	6	11,5
100	150	200	**QTM515**	233	241	244	219	175	7	25,6
150	200	300	**QTM520**	233	241	274	219	175	7	30

Up to QTM510



From QTM515



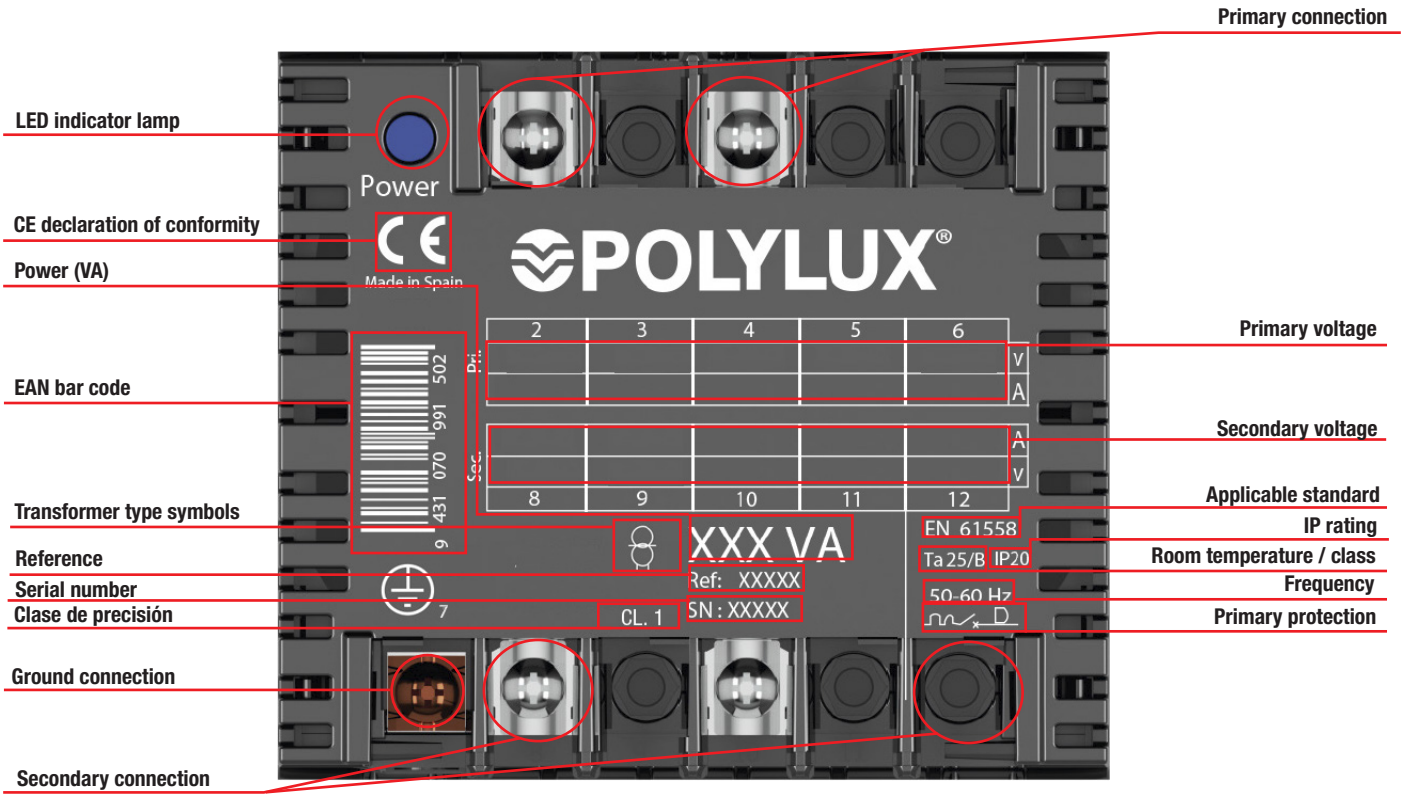
On-request manufacturing options (please see prices)

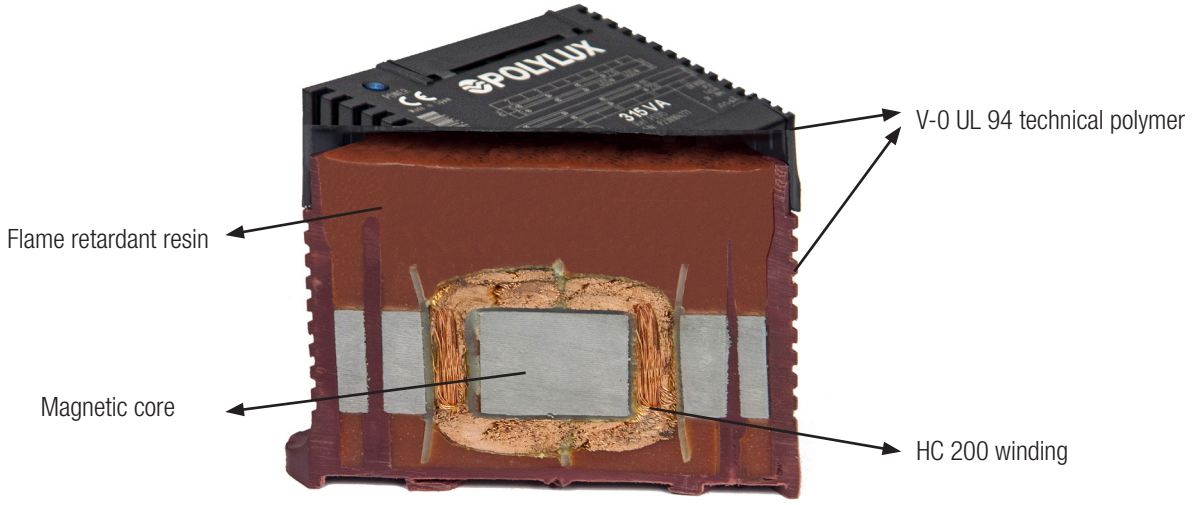
Power	**From 2 VA to 300 VA**
Output	**Option of 3 outputs**
Mounting	**Option of mounting 3 transformers for a three-phase system (or see page 73)**
Temperature	**Up to 60 ºC**
Shields	**Primary / secundary**

QTM SERIES

Encapsulated for measuring equipment

Feature plate structure

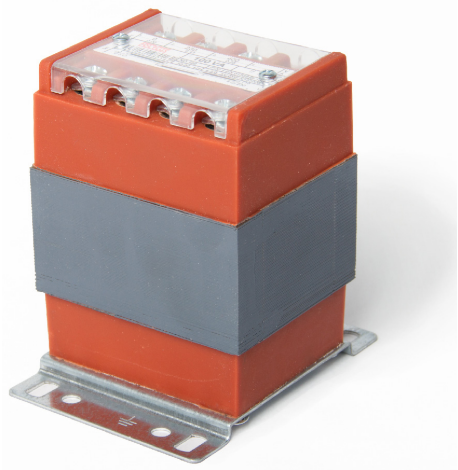




Sectioned transformer

TM SERIES

Encapsulated for measuring equipment



Definition and applications

The function of a measuring transformer is to provide a precise output voltage, isolating it from the input voltage. Firstly, it reduces the voltage to a lower value and secondly, it isolates the high voltage circuit from the measuring circuit.

Manufacturing characteristics

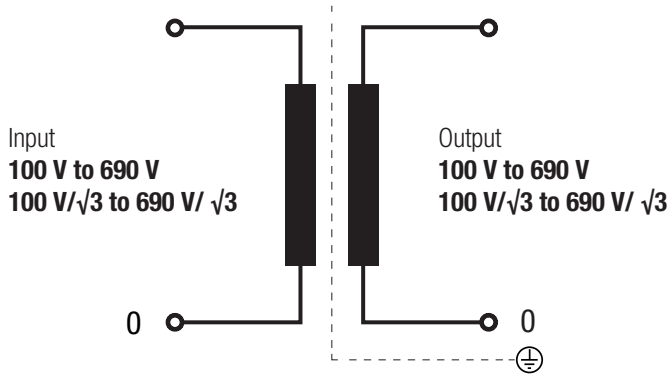
All the versions have the following features in common:

- Connection terminals made of copper, welded and inserted in blocks to prevent hazards caused by expansion that may lead to poor connection.
- Option of mounting on **DIN rail up to 7.5 VA**.
- Encapsulated in flame retardant resin.
- All the live parts of these transformers are encapsulated in resin, which is particularly indicated for working in damp, saline and corrosive environments.
- They have greater resistance to current surges and transient harmonics.
- Greater mechanical resistance to vibrations and undesirable movements.
- Precision classes 0.2 / 0.5 / 1 based on power.
- Accepts a continuous surge current of 1.2 times the nominal voltage and a thermal power 6 times the nominal power.
- All the transformers are checked automatically one by one and the compliance test report is created in accordance with the corresponding standard.

Technical features - standard model

Rating	**2 VA to 300 VA (class 0.2 / 0.5 / 1)**
Insulators	**Class H - 180 ºC**
Temperature rise	**Class B**
Winding	**Class HC - 200 ºC**
Room temperature	**45 ºC**
Frequency	**50-60 Hz**
Noise	**≤ 45 dB**
Protection rating	**IP20**
Cooling	**AN**
Mounting	**"With screws (for all powers) Mounted on DIN 46277/3 rail (up to 7.5 VA)"**
Standards	**IEC/EN/UNE-EN 61869-3, CE**
Operation	**Continuous**
Test voltage	**3 kV (1 min., 50 Hz)**

Electrical diagram

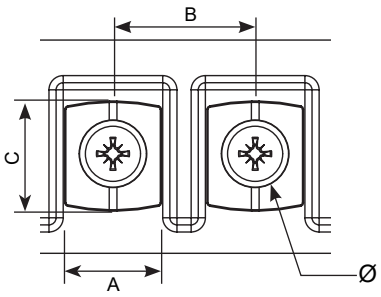


TM SERIES

Encapsulated for measuring equipment

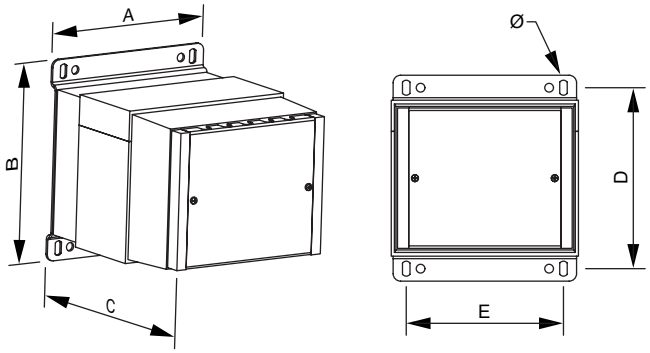
Terminal types

Terminal blocks	Dimensions mm				Maximum tightening torque N·m	Primary Power VA		Secondary Power VA	
	A	B	C	Ø		From	To	From	To
Terminal M4	9.7	16	10.1	M4	1.1	2	25 (Class 1)	2	25 (Class 1)
Terminal M5	15.5	21.5	15.6	M5	2.5	15 (Class 0.2)	300 (Class 1)	15 (Class 0.2)	150 (Class 1)



Measurements

Power VA			Ref.	External dimensions mm			Fastening elements mm			Weight kg
Class 0.2	Class 0.5 (3P)	Class 1 (6P)		A	B	C	D	E	Ø	
2	5	7.5	**TM50**	96	114	128	96	76	6	3,6
5	10	15	**TM51**	108	124	124	106	89	6	4,7
10	15	25	**TM52**	108	124	134	106	89	6	5,4
15	30	50	**TM53**	126	144	148	125	102	7	7,2
30	50	75	**TM55**	126	144	168	125	102	7	9
50	75	100	**TM57**	126	144	178	125	102	7	10
75	100	150	**TM510**	150	165	192	145	125	7	13
100	150	200	**TM515**	150	165	192	145	125	7	15
150	200	300	**TM520**	150	165	212	145	125	7	17



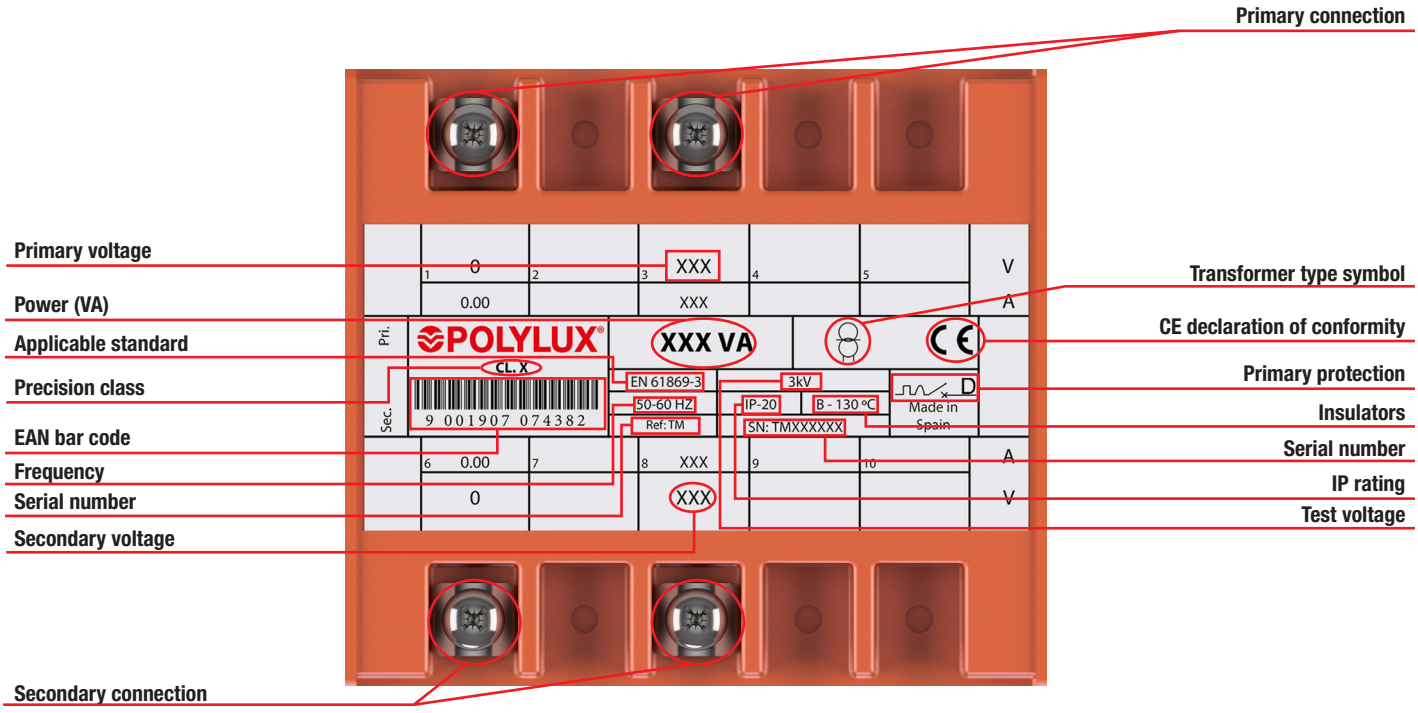
On-request manufacturing options (please see prices)

Power	**From 2 VA to 300 VA**
Output	**Option of 3 outputs**
Mounting	**Option of mounting 3 transformers for a three-phase system (or see page 73)**
Temperature	**Up to 60 ºC**
Shields	**Primary / secundary**

TM SERIES

Encapsulated for measuring equipment

Feature plate structure



TMT SERIES

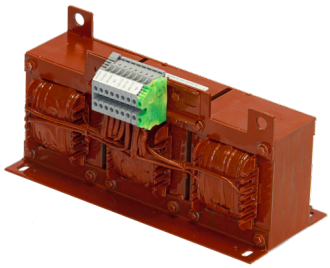
For adapting the voltage in measuring equipment

Definition and applications

The function of a measuring transformer is to provide a precise output voltage, isolating it from the input voltage. Firstly, it reduces the voltage to a lower high precision value and secondly, it isolates the high voltage circuit from the measuring circuit.

Manufacturing characteristics

- Built with independent circuits for the three phases to obtain a perfect balance betweem them and guarantee precision in measuring.
- Connection terminals made of copper, welded and inserted in blocks to prevent hazards caused by expansion that may lead to poor connection.
- LED indicator lamp (TMTW - TMTE).
- All the transformers are checked automatically one by one and the compliance test report is created in accordance with the corresponding standard.



TMTX

· IP00 protection rating.
· Total impregnated in anti-flash varnish.
· Hoisting elements included.

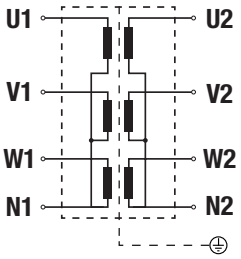
TMTW

· IP20 protection rating.
· Epoxy painted metal box resistant to all types of damp and corrosive environments.
· Protective cover for terminals to prevent direct contact.

TMTE

· **Encapsulated in flame retardant resin.**
· IP20 protection rating.
· Protection against damp, saline and corrosive environments.
· Protective cover for terminals to prevent direct contact.
· Greater resistance to surge currents.
· Greater resistance to transient harmonics.
· Greater mechanical resistance to undesirable vibrations.
· Uniform heat dissipation.

Electrical diagram

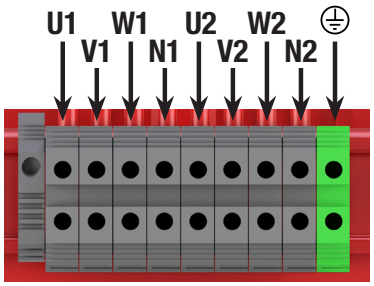


Technical features - standard model

Rating	**15 VA to 400 VA**
Standard frequency	**50-60 Hz**
Noise	**≤ 45 dB**
Connection unit	**YNyn0**
Insulators	**Class H - 180 ºC**
Temperature rise	**Class B** *More information in Technical Appendix (T.A.1)
Windings	**Class HC-200 ºC**
Class	**I**
IP rating	**IP00 (TMTX)** **IP20 (TMTW - TMTE)**
Room temperature	**45 ºC**
Standards	**IEC/EN/UNE-EN 61869-3, CE**
Test voltage	**3 kV (1 min., 50 Hz)**
Inrush	**≤ 5 In**
Servicio	**Continuo**
Refrigeración	**AN (TMTX - TMTE) - ANAN (TMTW)**
Accesorios de elevación	**Elementos de elevación**

Connection

· For TMTX



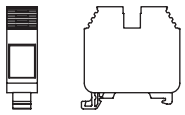
· For TMTW and TMTE

TMT SERIES

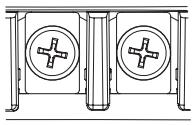
For adapting the voltage in measuring equipment

Terminal types

Terminals		Maximum cross-section conductor mm²	Maximum tightening torque		TMTX Power VA		TMTW-TMTE Power VA	
			N-m	Lb-In	From	To	From	To
Power strip 1	Terminal 4	6	0.5	4.4	15	400	-	-
Power strip 2	Terminal M5 (primary)	19	2.5	22.1	-	-	15	400
	Terminal M6 (secundary)	21	4	35.4	-	-	15	400



Power strip 1

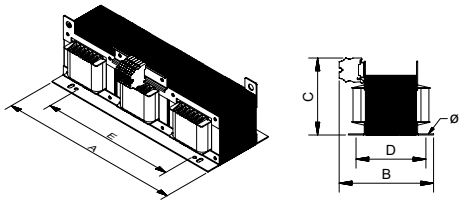


Power strip 2

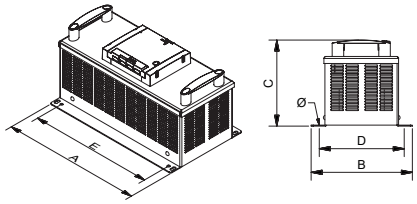
Measurements

TMTX								TMTW								TMTE							
Ref.	External dimensions mm			Fastening elements mm			Weight kg	Ref.	External dimensions mm			Fastening elements mm			Weight kg	Ref.	External dimensions mm			Fastening elements mm			Weight kg
	A	B	C	D	E	Ø			A	B	C	D	E	Ø			A	B	C	D	E	Ø	
TMTX51	280	140	145	100	255	6	13,3	**TMTW51**	350	200	170	170	325	6	15,3	**TMTE51**	350	200	170	170	325	6	20,7
TMTX52	280	140	145	100	255	6	13,9	**TMTW52**	350	200	170	170	325	6	15,9	**TMTE52**	350	200	170	170	325	6	20,9
TMTX53	325	160	170	130	295	6	18,4	**TMTW53**	350	200	170	170	325	6	20,4	**TMTE53**	350	200	170	170	325	6	25
TMTX55	325	160	170	130	295	6	21,4	**TMTW55**	350	200	170	170	325	6	23,4	**TMTE55**	350	200	170	170	325	6	27
TMTX57	325	160	170	130	295	6	26,8	**TMTW57**	350	200	170	170	325	6	28,8	**TMTE57**	350	200	170	170	325	6	31,9
TMTX510	325	160	170	130	295	6	31	**TMTW510**	350	200	220	170	325	6	33	**TMTE510**	350	200	170	170	325	6	35,6

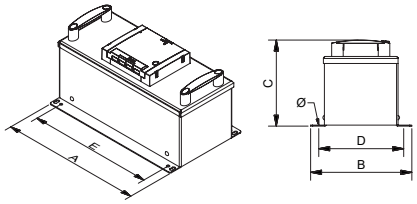
TMTX IP00



TMTW IP20



TMTE IP20



On-request manufacturing options (please see prices)

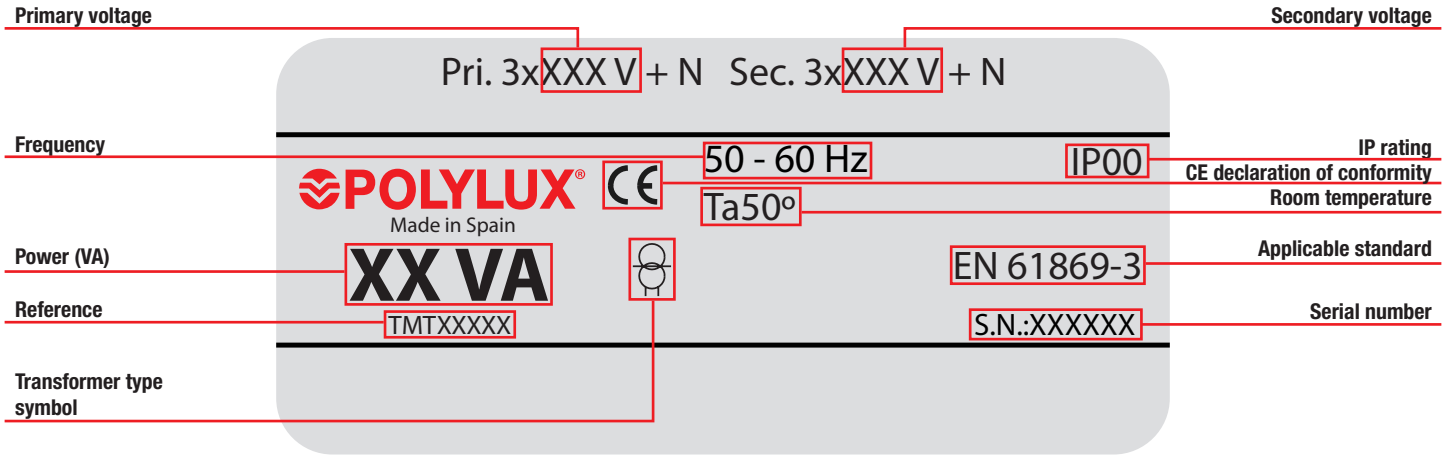
Power	**From 15 VA to 400 VA**
Frequency	**From 50 Hz to 400 Hz**
Operation	**Intermittent, continuous**
Electrostatic shield	**Up to three shields**
Class	**I, II**
Altitude	**Up to 4000 m**

TMT SERIES

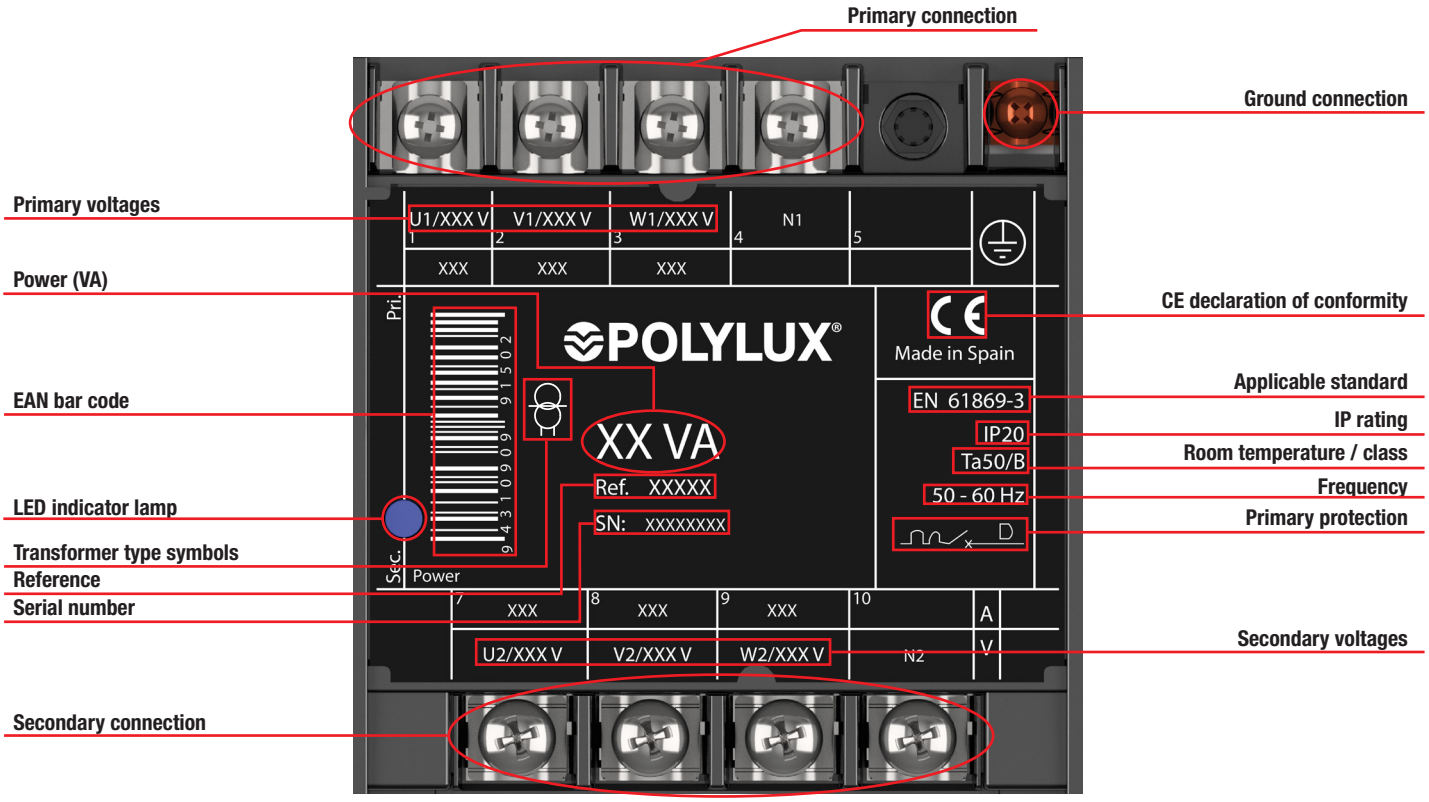
For adapting the voltage in measuring equipment

Feature plate structure

Label for TMTX:



Label for TMTW and TMTE:



TIB SERIES

Primary winding · Secondary current **5 A**

Definition and applications

The TIB transformer series are current transformers designed for use as energy monitoring products.
They may be used as measuring transformers or protection transformers:

- **Measuring transformer**:
  Short circuiting in terminals or connection to ground may be done using the fast-on or connecting two cables to the same terminal.

- **Protection transformer**:
  When a current transformer is is used to create a current for protection relays, its characteristics are different from those of measuring transformers.
  In fact the magnetic circuit of the measuring transformer will be saturated with Class 5P in primary currents, whereas in the protection transformers, the value of the secondary currents must follow the increment in the primary currents, which may reach 10-15-20 In, to guarantee the activation of the relay in the event of an unforeseen power cut.
  It is important not to load with a power (P) greater than that indicated to ensure that the current transformer saturation value is not modified.
  $P = R * I^2$
  P= Load connected to the current transformer.
  R= Relay resistance + cable resistance
  I = Nominal secondary current of the current transformer

Technical features - standard model

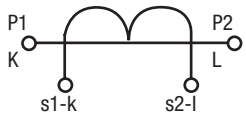
Standard power	**3 VA / 6 VA**
Standard current	**- Input: 10 A to 25 A** **- Output: 5 A**
Standard frequency	**50-60 Hz**
Thermal short circuit current	**40 IpN 1 sec.**
Dynamic short circuit current	**2.5 I th 1 sec.**
Permanent nominal thermal current	**120% Icth**
Class	**I / III**
Insulators	**In air, class E**
IP rating	**IP30**
Room temperature	**-20 °C to 40 °C**
Mounting	**Mounted on DIN 46277/3 rail or with screws**
Standards	**EN 61869-2**
Test voltage	**3 kV (1 min., 50 Hz)**
Operation	**Continuous**
Cooling	**AN**

Manufacturing characteristics

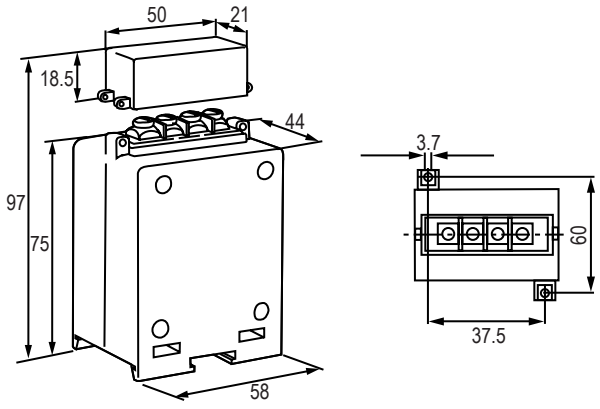
- Sealable terminal cover included.
- Fastening system with screws or **DIN rail**.
- All the transformers are checked automatically one by one and the compliance test report is created in accordance with the corresponding standard.

Connection

- Primary P1(K) P2(L)
- Secondary s1(k) s2(l)



Measurements



Theoretical data - standard model

I prim. / I sec. A	Reference	Weight kg
10 / 5	**TIB10A**	0.4
15 / 5	**TIB15A**	0.4
25 / 5	**TIB25A**	0.4

TIP SERIES

Primary pass-through · Secondary current **5 A**

Definition and applications

The TIP series transformers are current transformers designed for use as energy monitoring products.
They may be used as measuring transformers or protection transformers:

- **Measuring transformer**:
  Short circuiting in terminals or connection to ground may be done using the fast-on or connecting two cables to the same terminal.

- **Protection transformer**:
  When a current transformer is is used to create a current for protection relays, its characteristics are different from those of measuring transformers.
  In fact the magnetic circuit of the measuring transformer will be saturated with Class 5P in primary currents, whereas in the protection transformers, the value of the secondary currents must follow the increment in the primary currents, which may reach 10-15-20 In, to guarantee the activation of the relay in the event of an unforeseen power cut.
  It is important not to load with a power (P) greater than that indicated to ensure that the current transformer saturation value is not modified.
  $P = R * I^2$
  P= Load connected to the current transformer.
  R= Relay resistance + cable resistance
  I = Nominal secondary current of the current transformer

Technical features - standard model

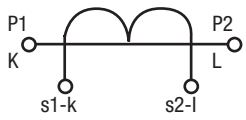
Standard power	**1 VA to 12 VA**
Standard current	**- Input: 40 A to 500 A** **- Output: 5 A**
Standard frequency	**50-60 Hz**
Thermal short circuit current	**40 IpN 1 sec.**
Dynamic short circuit current	**2.5 I th 1 sec.**
Permanent nominal thermal current	**120% Icth**
Class	**I / III**
Insulators	**In air, class E**
IP rating	**IP30**
Room temperature	**-20 °C to 40 °C**
Mounting	**Mounted on DIN 46277/3 rail or with screws**
Standards	**EN 61869-2**
Test voltage	**3 kV (1 min., 50 Hz)**
Operation	**Continuous**
Cooling	**AN**

Manufacturing characteristics

- Sealable terminal cover included.
- Fastening system with screws or **DIN rail**.
- All the transformers are checked automatically one by one and the compliance test report is created in accordance with the corresponding standard.

Connection

- Primary P1(K) P2(L)
- Secondary s1(k) s2(l)

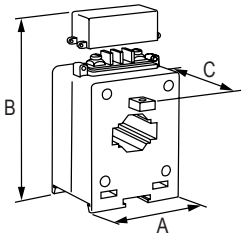


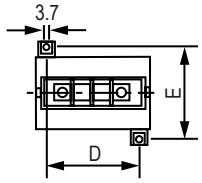
Theoretical data - standard model

I prim. / I sec. A	Reference	Plate diam.
40 / 5	**TIP40A**	21mm - 30x10
50 / 5	**TIP50A**	21mm - 30x10
100 / 5	**TIP100A**	21mm - 30x10
150 / 5	**TIP150A**	21mm - 30x10
200 / 5	**TIP200A**	32mm - 40x10
250 / 5	**TIP250A**	32mm - 40x10
300 / 5	**TIP300A**	32mm - 40x10
400 / 5	**TIP400A**	50mm - 60x10
500 / 5	**TIP500A**	50mm - 60x10

Measurements

Reference	External dimensions mm					Weight kg
	A	B	C	D	E	
TIP40A	58	70	97	37.5	60	0.3
TIP50A	58	70	97	37.5	60	0.3
TIP100A	58	70	97	37.5	60	0.3
TIP150A	58	70	97	37.5	60	0.3
TIP200A	75	70	109	45.5	60	0.5
TIP250A	75	70	109	45.5	60	0.7
TIP300A	75	70	109	45.5	60	0.7
TIP400A	105	85	131	82	76.7	1
TIP500A	105	85	131	82	76.7	1





TIN SERIES

Open core (SPLIT) · Secondary current **5 A**

Definition and applications

The TIN series are current transformers designed for use as energy monitoring products.
They may be used as measuring transformers or protection transformers:

- **Measuring transformer**:
  Short circuiting in terminals or connection to ground may be done using the fast-on or connecting two cables to the same terminal.

- **Protection transformer**:
  When a current transformer is is used to create a current for protection relays, its characteristics are different from those of measuring transformers.
  In fact the magnetic circuit of the measuring transformer will be saturated with Class 5P in primary currents, whereas in the protection transformers, the value of the secondary currents must follow the increment in the primary currents, which may reach 10-15-20 In, to guarantee the activation of the relay in the event of an unforeseen power cut.
  It is important not to load with a power (P) greater than that indicated to ensure that the current transformer saturation value is not modified.
  $P = R * I^2$
  P= Load connected to the current transformer.
  R= Relay resistance + cable resistance
  I = Nominal secondary current of the current transformer

Technical features - standard model

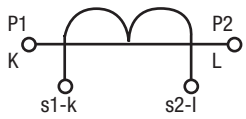
Standard power	**1.5 VA to 30 VA**
Standard current	**- Input: 400 A to 1500 A** **- Output: 5 A**
Standard frequency	**50-60 Hz**
Thermal short circuit current	**40 IpN 1 sec.**
Dynamic short circuit current	**2.5 I th 1 sec.**
Permanent nominal thermal current	**120% Icth**
Class	**I / III**
Insulators	**In air, class E**
IP rating	**IP30**
Room temperature	**-20 ºC to 40 ºC**
Mounting	**Fastened with screws**
Standards	**EN 61869-2**
Test voltage	**3 kV (1 min., 50 Hz)**
Operation	**Continuous**
Cooling	**AN**

Manufacturing characteristics

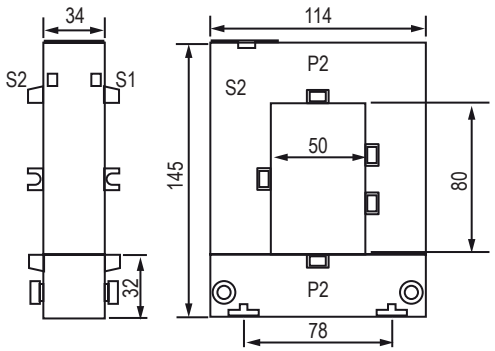
- Sealable terminal cover included.
- Fastening system with screws or **DIN rail**.
- All the transformers are checked automatically one by one and the compliance test report is created in accordance with the corresponding standard.

Connection

- Primary P1(K) P2(L)
- Secondary s1(k) s2(l)



Measurements



Theoretical data - standard model

I prim. / I sec. A	Reference	Plate	Weight kg
400 / 5	**TIN400A**	80x50	1.3
500 / 5	**TIN500A**	80x50	1.3
600 / 5	**TIN600A**	80x50	1.3
800 / 5	**TIN800A**	80x50	1.3
1000 / 5	**TIN1000A**	120x80	1.8
1200 / 5	**TIN1200A**	120x80	1.8
1500 / 5	**TIN1500A**	120x80	1.8

CTM4 SERIES

Temperature control unit

Technical features - standard model

Auxiliary power supply	
Operating voltage	**115-230-400 VAC // 24÷230 VAC/DC (optional)**
Nominal frequency	**50-60 Hz**
Self-consumption	**4 VA max.**
Inputs	
Sensors	**4 PT100 RTD (not included)**
Type	**3 wires (2 and 4 versions are also admitted)**
Measuring range	**-30 ... + 220 °C**
Compensation	**20 Ω max.**
Intervention delay / hysteresis	**5 s / 2 °C**
Relay outputs	
Number	**4**
Type	**NA-C-NC**
V max.	**12 VDC**
1 max.	**8 A (resistive load)**
Functions	**Alarm, intervention, ventilation and self-diagnosis**
RS485 serial interface (option)	
Serial node address	**01-247**
Programmable baud rate	**2400 - 19200 bps**
Data format	**8 bit, no parity - 8 bit, odd - 8 bit, even**
Stop bits	**1-2**
Protocol	**Modbus RTU**
Monitor	
Technology	**7-segment LED**
Connections	
Terminals	**Detachable screws**
Maximum cross-section	**2.5 mm²**
Insulation	
Voltage	**2.5 kV for 1 minute**
Environmental operating conditions	
Operating temperature	**-10 ... +55 °C**
Storage temperature	**-25 ... +80 °C**
Relative humidity	**90% max.**
Enclosure	
Dimensions	**96x96 mm**
Weight	**0.5 kg**
Protection rating	**IP52 front // IP20 rear**
Conformity	
Standards	**CEI EN 61000-6-2: 2006 CEI EN 61000-6-4: 2007 CEI EN 61010-1: 2013**

Definition and applications

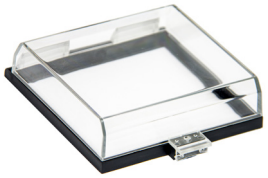
An excessive increase in the temperature of a power transformer is a sign of overload or malfunctions; the detection of critical values enables a preventive diagnosis of the system, anticipating faults and costly damages.
The CTM4 temperature measuring unit makes it possible to measure and control four temperature values usually related to the winding and for the international temperature of the panel, measured with PT100 sensors from -30 to +220 ° C.
Two alarm levels can be set for each measuring channel (alarm tripper) to activate the switching of the output relays, which can be used for remote signalling or for the controlled disabling of the equipment. There are five programming keys on the front part of the instrument and two 3-digit displays that show temperatures and the alarm status of the measuring channels. The presence of a RS485 serial port or an ethernet port permits the control and programming of the station and connection via a Modbus-RTU or Modbus-TCP protocol to acquisition systems (PC, PLC, SCADA, etc.)

Manufacturing characteristics

- Viewing of instant and maximum temperature.
- Double intervention level: alarm (ALARM) and release (TRIP).
- Self-diagnosis function for anomalies or incorrect installation (FAULT).
- Programmable outputs for all types of anomalies or failure conditions.
- Option of forced ventilation activation (FAN).
- FDC function for automatic control of temperature difference in a defined time.
- RS485 serial port modbus RTU for integration with supervision or remote control networks.

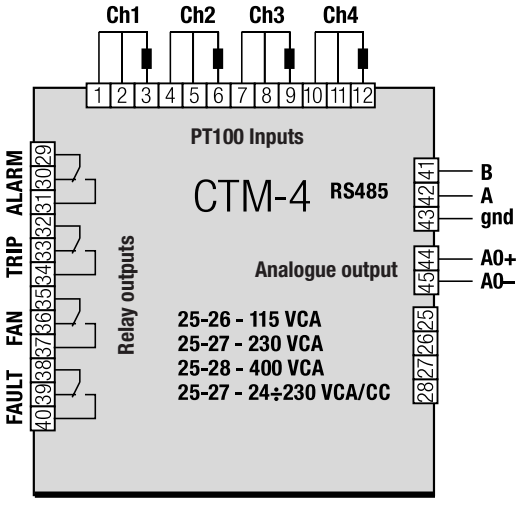
Accessories applicable on request

- IP65 front cover (CAL96x96)



MP96X96IP65

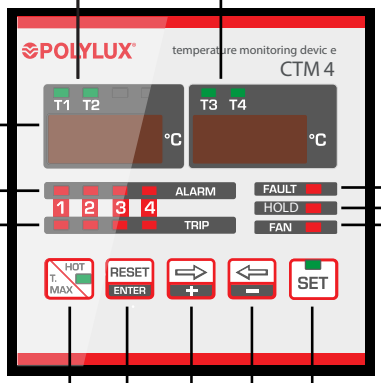
Electrical diagram



CTM4 SERIES

Temperature control unit

Panel structure



LEDs T1-T2-T3-T4
Show measurement channel indication

DISPLAYS
Show temperature values and settings

LED FAULT
Indication of failure of the control unit or of the thermometric probes

LEDs ALARM
Show the alarm status of the various measurement channels

LED HOLD
Indication of manual reset function activated

LEDs TRIP
Show the trigger status (second level alarm) of the various measurement channels

LED FAN
Fan function activated indication

Button HOT / T. MAX
Select the display of the measurement channels with the highest temperature (with LED indicating the activated function) and display of the maximum temperatures reached

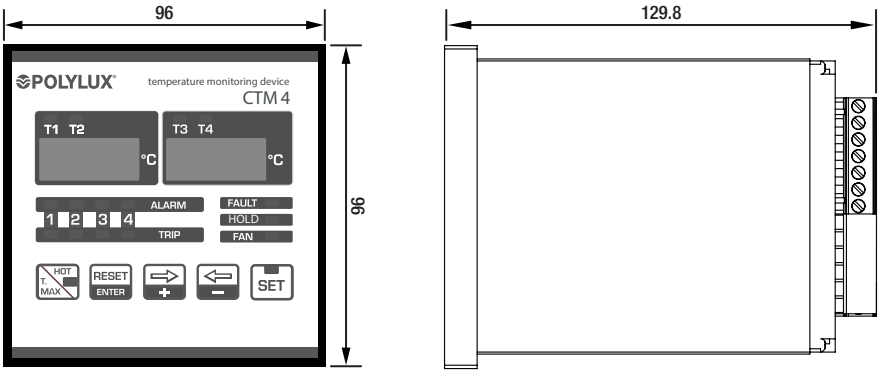
Setting button
With status LED to access programming of instrument settings

Button ENTER / RESET
Confirm programming settings and manual reset of alarm intervention

Button —> + / < —
Select the displayed measurement channels and to change the programming parameters

Measurements

In mm



MR12 SERIES

Remote monitor for up to 12 viewers VA40-485

Definition and applications

The MR12 remote monitoring system device provides a data gathering function and a supervisory interface.
The remote control is for the VA40 with an RS485 Modbus-RTU communication bus.
It can monitor up to 12 VA40-485 units.

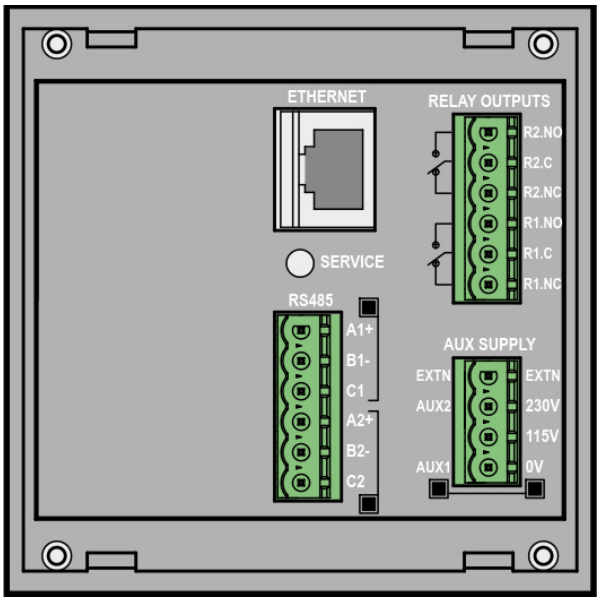
Manufacturing characteristics

- LCD graphic display,128x64 pixels
- Panel-mounted, standard 96x96 mm container
- 4 keys at front for viewing and settings
- Integrated buzzer
- Built-in double RS485 communication interface
- Fast, simple navigation
- Front programming

Technical features - standard model

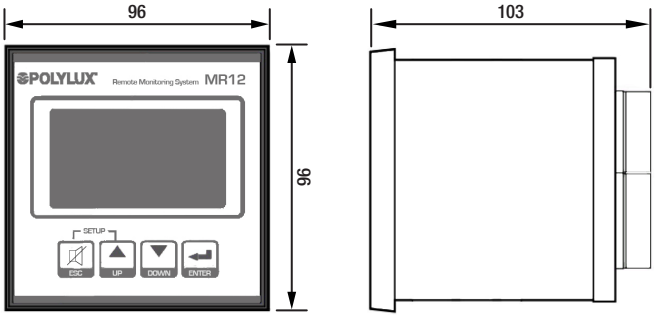
Auxiliary power supply	
Operating voltage	**90-250 VAC // 20-60 VCA/DC (optional)**
Nominal frequency	**45-65 Hz**
Self-consumption	**4 VA**
RS485 COM1 serial interface	
Programmable baud rate	**9600-38400 bps**
RS485 COM2 serial interface (optional)	
Programmable baud rate	**9600-38400 bps**
Protocol admitted	**Modbus RTU**
ETHERNET interface (optional)	
Network interface	**RJ45 Ethernet 10BASE-T or 100BASE-TX (automatic detection)**
Protocol admitted	**Modbus TCP**
Insulation	
Insulation voltage	**1kV for 1 minute**
Enclosure	
Mounting	**Flush mounted**
Dimensions	**96x96x81 mm**
Front panel cutout	**92x92 mm**
Protection rating	**IP52 front // IP20 rear**
Weight	**< 500 g**
Environmental operating conditions	
Operating temperature	**-10 ... +60 °C**
Storage temperature	**-25 ... +70 °C**
Relative humidity	**5...90%**
Conformity	
Standards	**EN 50081-1 EN 50082-2 EN 61010-1**

Terminal position



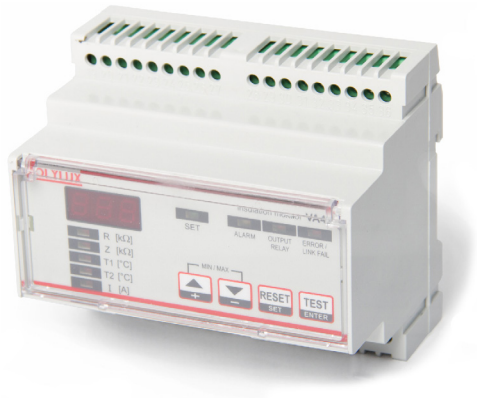
Measurements

In mm



VA40 SERIES

Insulation monitor and RS485 communication bus



Definition and applications

The insulation monitor applies a direct current measuring signal between the insulated line and ground, in order to detect whether a leakage current has been generated.
To ensure the measuring efficiency, even in the presence of perturbations and harmonic components, the monitor has a built-in digital filter and also uses an encoded signal.
The VA40 also permits the control of the electrical and thermal overload of the medical isolation transformer, controlling two different temperature thresholds in the PT100 and PTC sensors. The temperature control enables the monitoring of the transformer overload and bypasses the circuit breaker downstream of the secondary.
To detect **AC and DC leakages** we have the **VA40F-485**.

Technical features - standard model

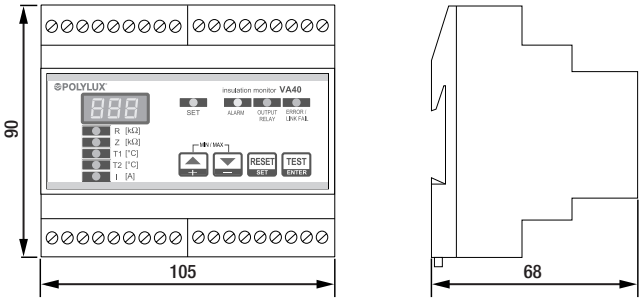
Supply voltage	**110 - 230 V**
Frequency	**50-60 Hz**
Network voltage to be checked	**24 ÷ 230 VCA**
Maximum voltage measurement	**24 V**
Maximum current measurement	**1 mA**
Insulation voltage	**2.5 kV / 60 seconds**
Type of control signal	**Continuous component with digital filter**
Measurements detected	**Insulation measuring range 0 ÷ 999 kΩ HIGH - resolution of 1 kΩ** **Measuring of temperature with Rd PT100 thermal sensor with 2 or 3 wires - 0 ÷ 250 °C, precision 2%** **Impedance measurement 0 ÷ 999 kΩ / HIGH - resolution 1 kΩ (test signal 2500 Hz)**
Intervention thresholds	**Low insulation 50 ÷ 500 kΩ, precision 5%, hysteresis, configurable delay** **Overtemperature 0 ÷ 200 °C, precision 2%** **Current overload 1 ÷ 999 A, precision 2%** **Low impedance (can be disabled)** **Device not connected to line (Link-Fail)**
Available outputs	**Up to a maximum of 4 CR5 panels for remote signalling** **Programmable auxiliary NA-C-NC relay output, 5A, 250 VCA** **RS485 serial output, standard Modbus RTU protocol**
Connections	**Maximum connectible cross-section 2.5 mm²**
Operating temperature	**-10...60 °C**
Storage temperature	**-25...70 °C, humidity <90%**
Dimensions	**6 DIN modules**
Weight	**0.5 kg**
Enclosure	**Self-extinguishing polymer for mounting on 35 mm DIN rail with transparent protective front cover**
Protection rating	**IP20**
Self-consumption	**5 VA**
Standards	**IEC EN 60364-7-710, IEC EN 61557-8, EN 60255-6, UNE 20615**

Manufacturing characteristics

All failure conditions are controlled remotely thanks to a connection with the CR5 remote signalling panels to guarantee the opportune adequate technical supervision.
In addition, it is fitted with an RS485 serial port through which it can be perfectly integrated with PLC / PC communication systems using the Modbus RTU protocol.
Lastly, it is worth noting that the VA40 has a self-diagnosis system called ERROR-LINK FAIL, which checks the presence and correction of cabling at the ends of the terminals, thus ruling out the possibility of having unit 2 in operation in the medical room without the supervision of the insulation monitor.

Measurements

In mm

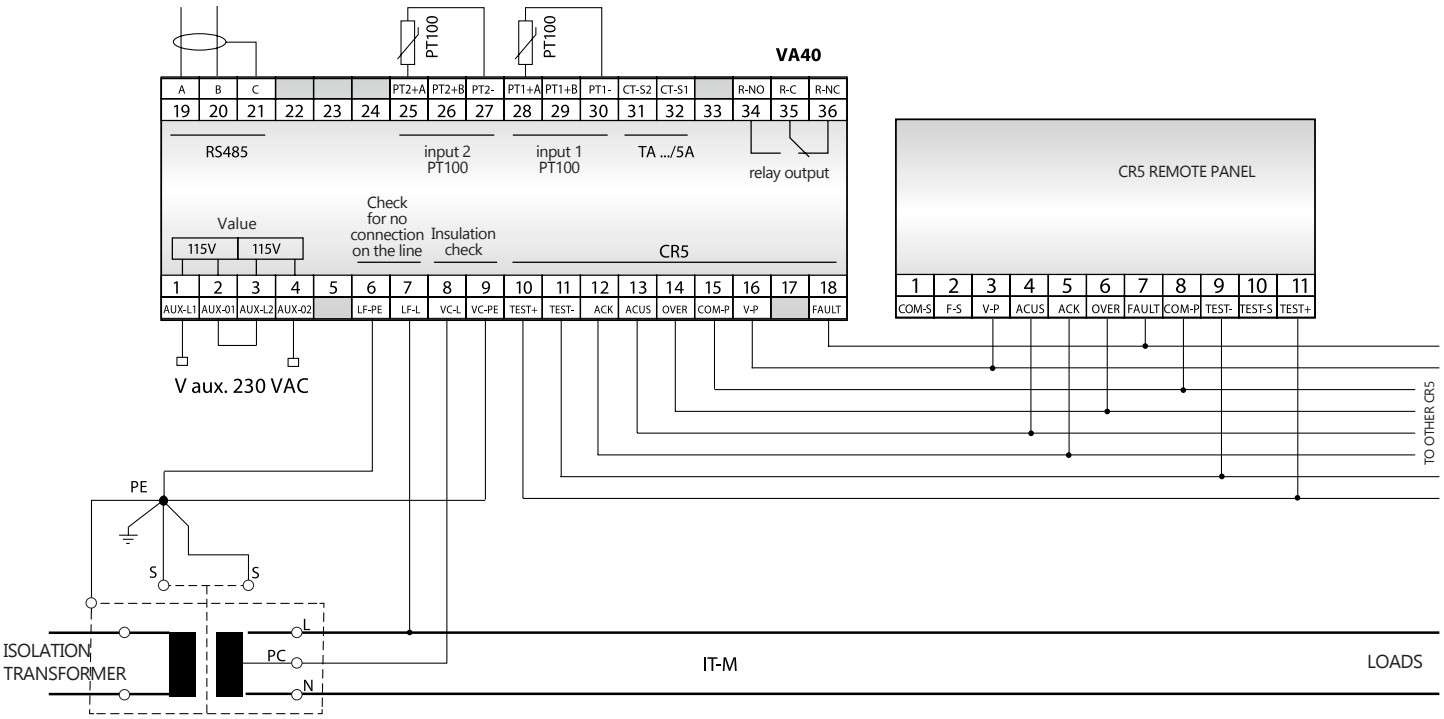


VA40 SERIES

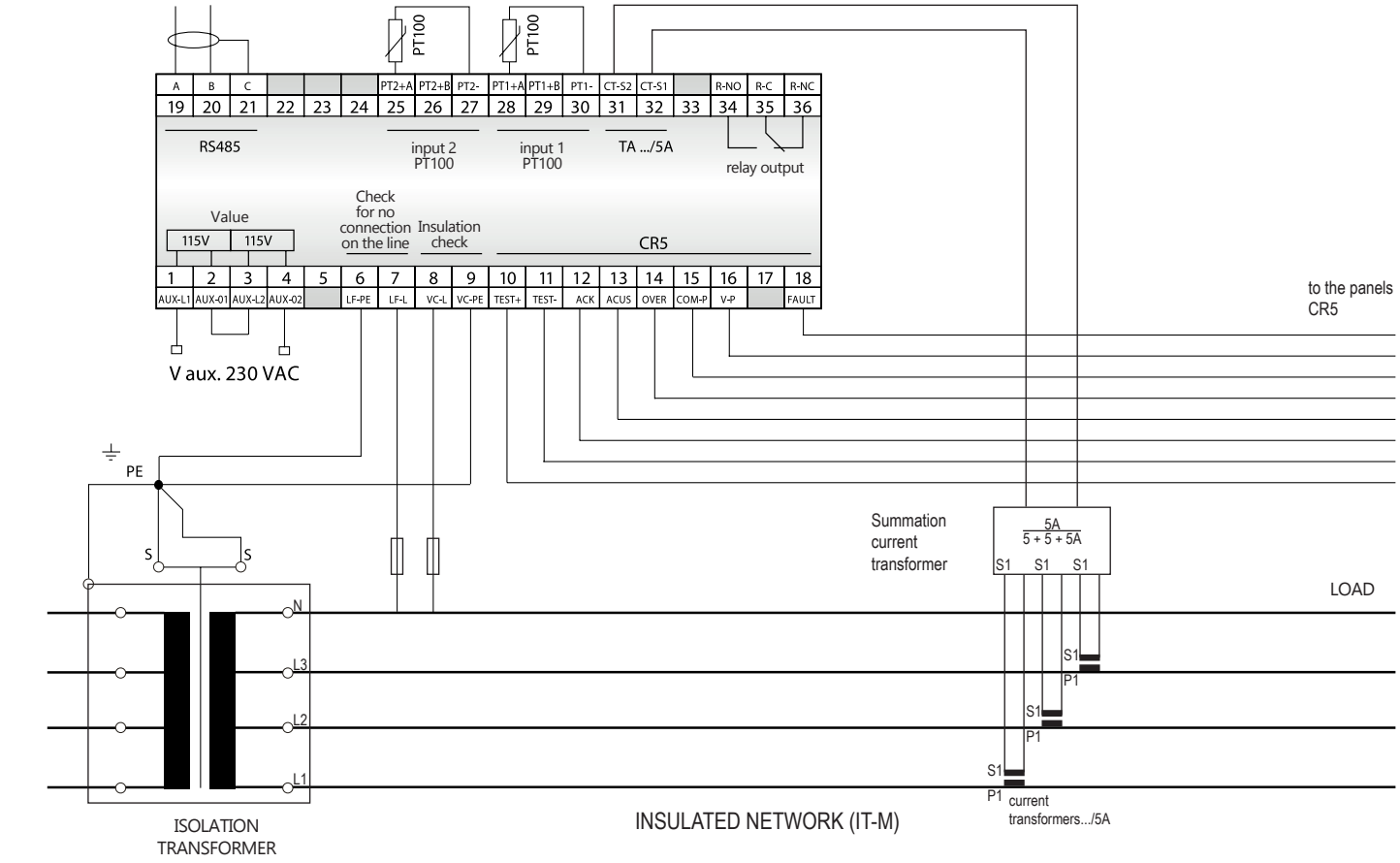
Insulation monitor and RS485 communication bus

Electrical diagram

- Single-phase



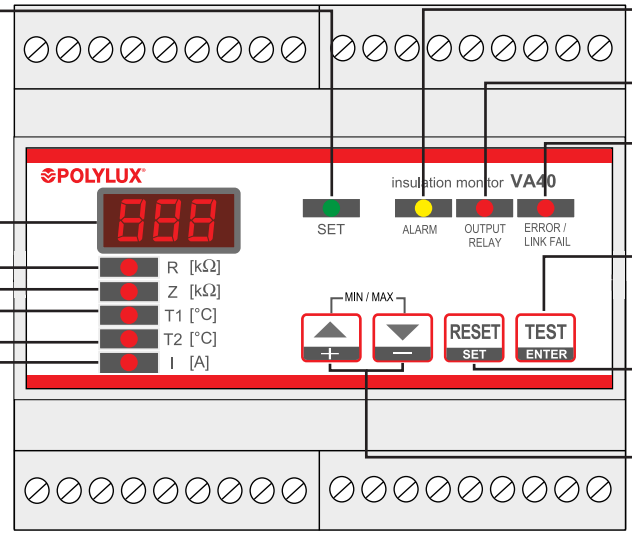
- Three-phase



VA40 SERIES

Insulation monitor and RS485 communication bus

Panel structure



SET
Instrument programming status

3-digit monitor

R [kΩ]
Insulation resistance

Z [kΩ]
Insulation impedance and line capacity

T1 [°C]
Transformer temperature

T2 [°C]
Second sensor temperature

I [A]
Line current

ALARM
Alarm for the value of the parameter outside the threshold

OUTPUT RELAY
Auxiliary relay status

ERROR / LINK FAIL
Alarm due to: internal failure, no connection to the line to be checked, PT100 temperature sensor open or in short circuit

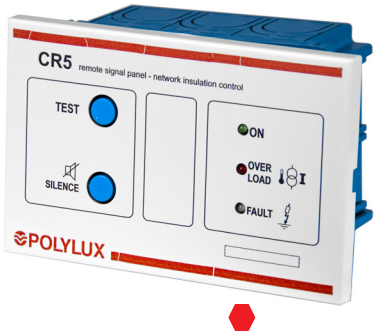
TEST I ENTER
Tests the instrument and remote signalling panels and confirms the setting adjustments

RESET I SET
Access to instrument programming, silencing of alarms and cancellation of stored values

+ I -
Selection of parameter to be shown, regulation of adjustments and viewing of maximum and minimum stored values

CR5 SERIES

Panel indicator light



Definition and applications

The CR5 remote signalling panel permits the reporting of the insulation monitor alarm signals in all the manned rooms, as required by the reference standards.
The CR5 panel produces an acoustic and a luminous signal in the case of an alarm due to low insulation or in the event of a thermal and electrical overload. It also has a TEST button to perform regular checks on the operating status and a button to silence the acoustic signal.

Technical features - standard model

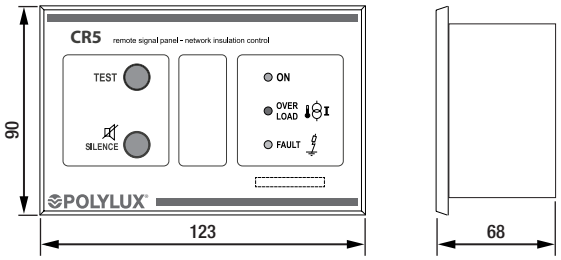
Acoustic signal.	**2400 Hz emission 2 Hz dB intermittence**
Terminal cross-section	**2 mm²**
Protection rating	**IP30**
Weight	**200 g**
Operating temperature	**-10 ÷ 60 °C, maximum humidity 95%**
Storage temperature	**-20 ÷ 80 °**
Insulation	**2500 v rms 50 Hz for 60 s**
Minimum cable cross-section	**0.35 mmq (300 m max.)**
Standards	**IEC-EN 61010-1, IEC EN 61557-8, IEC EN 60364-7-710, UNE 20615, IEC EN 61326-1**

Manufacturing characteristics

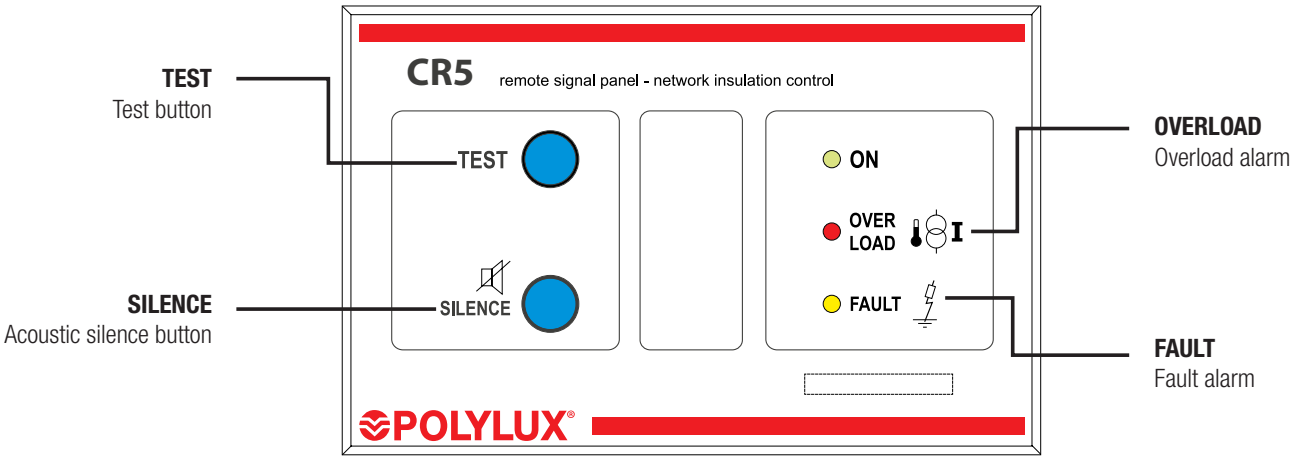
- Small size.
- Easy to install and mount in a universal E503 box.
- Reliability, immediate recognition of failure types.
- Comfort, simultaneous silencing of various signalling panels.
- Operating efficiency: acoustic and luminous signalling.

Measurements

In mm

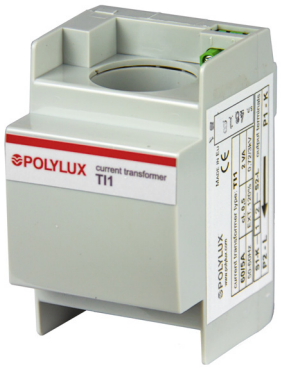


Panel structure



TI1 SERIES

Current transformer



Technical features - standard model

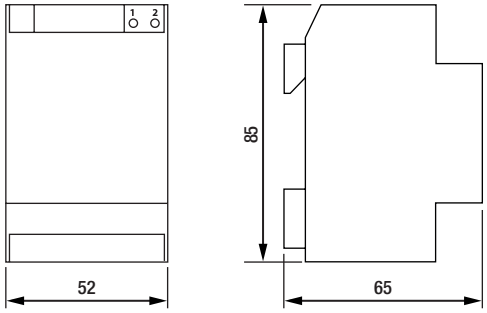
Reference voltage for isolation.	**0.72 kV**
Operating frequency	**50-60 Hz**
Dielectric strength test voltage	**3 kV (1 min., 50 Hz)**
Insulation	**Class B**
Protection rating	**IP20**
Permanent surge current	**1.2 In**
Occasional thermal current	**40 In**
Working temperature	**-25 to 50 °C**
Storage temperature	**-40 to 80 °C**
Standards	**IEC / EN 60044-1**

Definition and applications

The function of this equipment is the constant reading of the transformer's secondary current, which matches the isolated network so that the monitor can activate the alarm in the event of an overload.
The monitor must first have been configured with the admissible current of this network, depending on its loads.

Measurements

In mm



FCP SERIES

Switched single-phase

Definition and applications

The FCP series consists of power sources designed for all those application that require a continuous power supply. Thanks to their compact and functional design, they are easy to connect and provide an economical solution.

Manufacturing characteristics

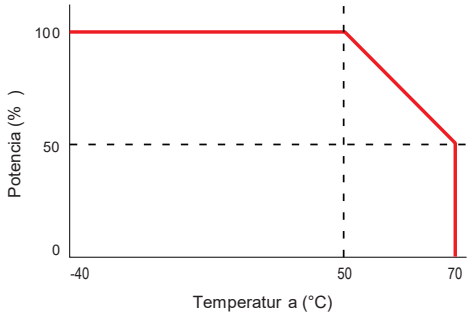
All the versions have the following features in common:

- High power density
- Universal input range
- Mounting on **DIN rail**.
- Protection against surge currents, overload and short circuit
- All the power sources are checked automatically one by one and a compliance report is created based on the respective standard.

Technical features - standard model

Rating	**2 Adc to 20 Adc (output 12 V)** **1 Adc to 15 Adc (output 24 V)**
Standard output voltage	**FCPB: 12 V (DC)** **FCP: 24 V (DC)**
Standard frequency	**47-63 Hz**
Room temperature	**45 ºC**
IP rating	**IP20**
Mounting	**Mounting on DIN 46277/3 rail**
Standards	**EN550011, EN55022, EN61000, EN 60950, UL 508**

Derating curve



Theoretical data - standard model

Output current A (DC)	Reference	Input voltage V (AC)	Output voltage V(DC)
FCPB			
2	**FCPB2**	100-240	12
4	**FCPB4**	100-240	12
6	**FCPB6**	100-240	12
10	**FCPB10**	100-240	12
20	**FCPB20**	100-240	12
FCP			
1	**FCP1**	100-240	24
2	**FCP2**	100-240	24
3	**FCP3**	100-240	24
5	**FCP5**	100-240	24
10	**FCP10**	100-240	24
15	**FCP15**	100-240	24

Measurements

Reference	External dimensions mm			Weight kg	Figure
	A	B	C		
FCPB					
FCPB2	45	75	97	0.16	1
FCPB4	45	75	97	0.23	1
FCPB6	56	121	110	0.52	2
FCPB10	75	121	110	0.59	2
FCPB20	100	121	110	1.12	3
FCP					
FCP1	45	74	97	0.15	1
FCP2	45	74	97	0.23	1
FCP3	56	121	110	0.51	2
FCP5	75	121	110	0.58	2
FCP10	100	121	110	1.1	3
FCP15	100	121	110	1.1	3

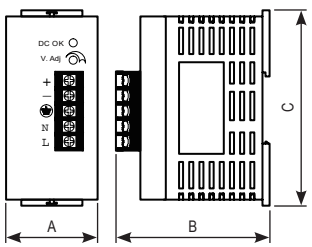


Figure 1

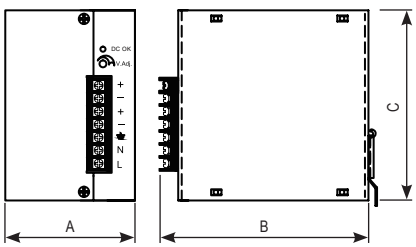


Figure 2

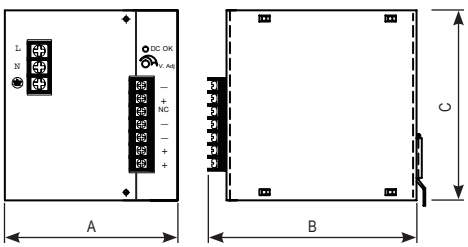


Figure 3

FCPT SERIES

Switched three-phase

Definition and applications

The FCPT series are three-phase power sources designed for all those applications that require a continuous power supply such as automatic control systems, instrumentation equipment, electromagnetic actuators and other CC motor loads.
Thanks to their compact and functional design, they are easy to connect and provide an economical solution.

Manufacturing characteristics

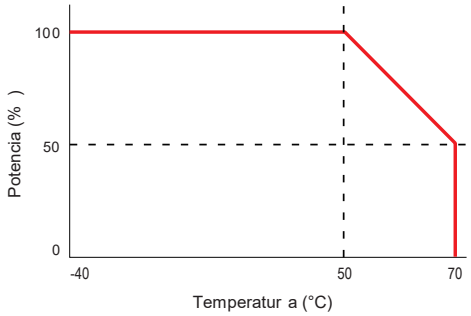
All the versions have the following features in common:

- High power density
- Universal input range
- Mounting on **DIN rail**.
- Protection against surge currents, overload and short circuit
- All the power sources are checked automatically one by one and a compliance report is created based on the respective standard.

Technical features - standard model

Rating	**20 Adc (FCPT20)** **40 Adc (FCPT40)**
Standard output voltage	**24 V (DC)**
Standard frequency	**47-63 Hz**
Room temperature	**45 ºC**
IP rating	**IP20**
Mounting	**Mounting on DIN 46277/3 rail**
Standards	**EN550011, EN55022, EN61000, EN 60950, UL 508**

Derating curve

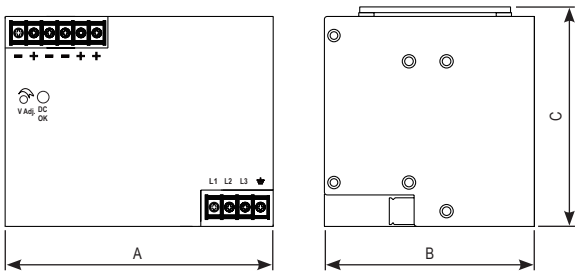


Theoretical data - standard model

Output current A (DC)	Reference	Input voltage V (AC)	Output voltage V(DC)
20	**FCPT20**	360-440	24
40	**FCPT40**	360-440	24

Measurements

Reference	External dimensions mm			Weight kg
	A	B	C	
FCPT20	142	110	110	1.10
FCPT40	156	110	110	1.3



TH SERIES

Isolation transformers for clinical electrical installations · Input 230 V · Output 230 V

Definition and applications

Our TH series is manufactured in accordance with the IEC/EN 61558-2-15 standard and is focused on safety in instalations for clinical use, guaranteeing patient safety.

Manufacturing characteristics

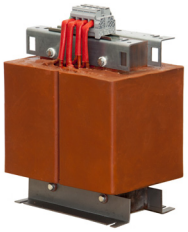
- Anti-flash varnish finish.
- Safety Class I.
- Hoisting bolts, bimetallic contact against overtemperature and electrostatic shield included.
- Leakage current <0,5 mA between secondary and ground.
- All the transformers are checked automatically one by one and the compliance test report is created in accordance with the corresponding standard.

THX

· IP00 protection rating.
· Total impregnated in anti-flash varnish.
· Hoisting elements included.
· **UL certification.** FILE: E532753 - Construction only.

THW

· IP23 rating (IK08).
· Metal box painted with polyester resin.
· High resistance to corrosion.
· Hoisting elements included.
· Detachable top and front cover.
· Cable outlet with cable gland.
· **UL certification.**



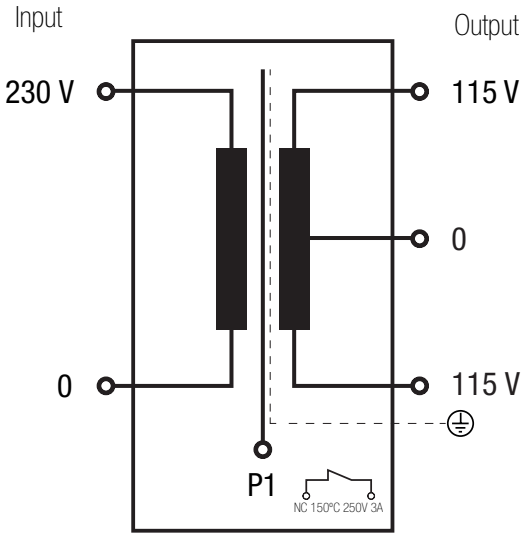
TH

· **Encapsulated in flame retardant resin.**
· IP20 protection rating.
· Protection against damp, saline and corrosive environments.
· Greater resistance to surge currents.
· Greater resistance to transient harmonics.
· Greater mechanical resistance to undesirable vibrations.
· Uniform heat dissipation.
· Hoisting elements included.

Technical features - standard model

Rating	**1 kVA to 10 kVA**
Standard voltage	**Input 230 V // Output 230 V**
Standard frequency	**50-60 Hz**
Noise	**≤ 35 dB**
Insulators	**Class H - 180 ºC**
Temperature rise	**Class F** *More information in Technical Appendix (T.A.1)
Windings	**Class HC-200 ºC**
Class	**I**
Altitude	**1000 m**
Enclosure colour	**RAL 7035**
IP rating	**IP00 (THX)** **IP20 (TH)** **IP23 (THW)**
IK protection rating	**IK08 (THW)**
Paint class (ISO 12944)	**C3 (THW)**
Room temperature	**45 ºC**
Standards	**600V: US Standard: UL 5085-1 / UL 5085-2** **Canada Standard: CSA C22.2 N0 66.1-06 / CSA C22.2 N0 66.2-06** **≤750V: IEC/EN/UNE-EN 61558-2-15, CE**
Test voltage	**3.5 kV (1 min., 50 Hz)**
Inrush	**< 8 In**
Ucc	**≤ 4.4 %**
K factor	**4**
Operation	**Continuous**
Cooling	**AN (THX / TH) - ANAN (THW)**
Hoisting accessories	**Hoisting elements**

Electrical diagram



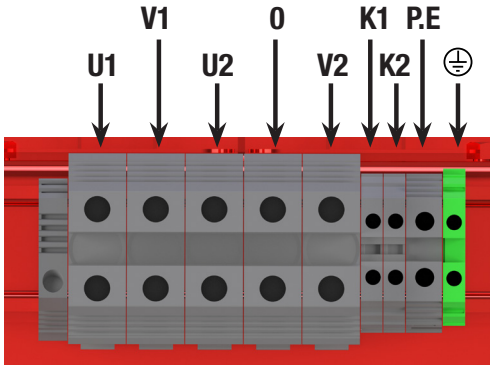
***Klixon 150ºC 250 V 3 A included**

TH SERIES

Isolation transformers for clinical electrical installations · Input **230 V** · Output **230 V**

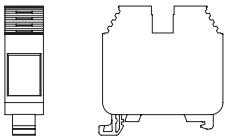
Connection

U1 = 0
V1 = 230 V
U2 = 115 V
V2 = 115 V
K1 = Klixon 150 ºC thermostat for first coil
K2 = Klixon 150 ºC thermostat for second coil
P.E = electrostatic shield

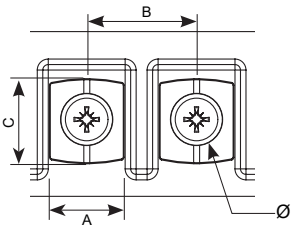


Terminal types

Terminals	Dimensions mm				Maximum cross-section conductor mm²	Maximum tightening torque		THX-THW Power VA		TH Power VA	
	A	B	C	Ø		N·m	Lb·In	From	To	From	To
Terminal M6	15	18.5	14	M6	-	1.1	9.7	-	-	1000	4000
Terminal 4	-	-	-	-	6	0.5	4.4	1000	1000	-	-
Terminal 16	-	-	-	-	25	1.2	10.6	2000	4000	-	-
Terminal 35	-	-	-	-	50	2.5	22.1	5000	10000	5000	10000



Terminal 4 / 16 / 35



Terminal M6

Theoretical data - standard model

Power kVA	Reference	Insulation class	Current A		Protections A		Cable gland	
			Input	Output	Input	Output	ø max. (mm)	Quantity
THX								
1	**THX1000**	F	4.5	4.5	6 (D/aM)	4 (C/gG)	-	-
2	**THX2000**	F	8.7	8.7	10 (D/aM)	8 (-/gG)	-	-
3.15	**THX3150**	F	13.7	13.7	16 (D/aM)	12 (-/gG)	-	-
4	**THX4000**	F	17.4	17.4	20 (D/aM)	16 (C) / 12 (gG)	-	-
5	**THX5000**	F	21.7	21.7	25 (D/aM)	20 (C/gG)	-	-
6.3	**THX6300**	F	27.4	27.4	32 (D/aM)	25 (C/gG)	-	-
8	**THX8000**	F	34.8	34.8	40 (D/aM)	32 (C) / 30 (gG)	-	-
10	**THX10000**	F	43.5	43.5	50 (D/aM)	40 (C/gG)	-	-
THW								
1	**THW1000**	F	4.5	4.5	6 (D/aM)	4 (C/gG)	14	2
2	**THW2000**	F	8.7	8.7	10 (D/aM)	8 (-/gG)	18	2
3.15	**THW3150**	F	13.7	13.7	16 (D/aM)	12 (-/gG)	18	2
4	**THW4000**	F	17.4	17.4	20 (D/aM)	16 (C) / 12 (gG)	18	2
5	**THW5000**	F	21.7	21.7	25 (D/aM)	20 (C/gG)	25	4
6.3	**THW6300**	F	27.4	27.4	32 (D/aM)	25 (C/gG)	25	4
8	**THW8000**	F	34.8	34.8	40 (D/aM)	32 (C) / 30 (gG)	32	4
10	**THW10000**	F	43.5	43.5	50 (D/aM)	40 (C/gG)	32	4
TH								
1	**TH1000**	F	4.5	4.5	6 (D/aM)	4 (C/gG)	-	-
2	**TH2000**	F	8.7	8.7	10 (D/aM)	8 (-/gG)	-	-
3.15	**TH3150**	F	13.7	13.7	16 (D/aM)	12 (-/gG)	-	-
4	**TH4000**	F	17.4	17.4	20 (D/aM)	16 (C) / 12 (gG)	-	-
5	**TH5000**	F	21.7	21.7	25 (D/aM)	20 (C/gG)	-	-
6.3	**TH6300**	F	27.4	27.4	32 (D/aM)	25 (C/gG)	-	-
8	**TH8000**	F	34.8	34.8	40 (D/aM)	32 (C) / 30 (gG)	-	-
10	**TH10000**	F	43.5	43.5	50 (D/aM)	40 (C/gG)	-	-

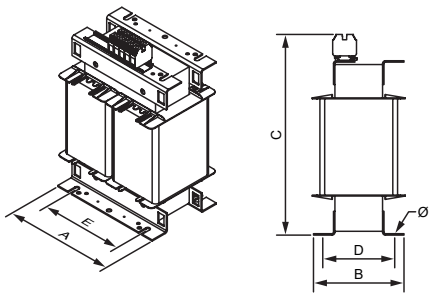
TH SERIES

Isolation transformers for clinical electrical installations · Input **230 V** · Output **230 V**

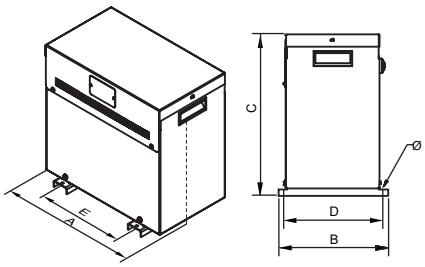
Measurements

Power kVA	Reference	External dimensions mm			Fastening elements mm			Weight kg
		A	B	C	D	E	Ø	
THX								
1	**THX1000**	160	128	253	100	140	9	13,9
2	**THX2000**	200	164	303	155	154	9	26
3.5	**THX3150**	240	140	355	112	180	9	27,3
4	**THX4000**	240	160	355	122	180	9	30,7
5	**THX5000**	240	170	355	142	180	9	38,5
6.3	**THX6300**	280	190	405	126	210	9	39,7
8	**THX8000**	280	210	405	146	210	9	52,6
10	**THX10000**	280	220	405	156	210	9	65,9
THW								
1	**THW1000**	320	230	315	205	200	6	18
2	**THW2000**	387	260	382	245	250	6	31
3.5	**THW3150**	460	340	501	300	300	12	38
4	**THW4000**	460	340	501	300	300	12	41
5	**THW5000**	460	340	501	300	300	12	49
6.3	**THW6300**	549	424	644	375	345	12	64
8	**THW8000**	549	424	644	375	345	12	76
10	**THW10000**	549	424	644	375	345	12	89
TH								
1	**TH1000**	190	180	205	115	160	9	21,7
2	**TH2000**	200	164	303	155	154	9	33
3.5	**TH3150**	240	140	355	112	180	9	34,3
4	**TH4000**	240	160	355	122	180	9	40,2
5	**TH5000**	240	170	355	142	180	9	48
6.3	**TH6300**	280	190	405	126	210	9	49,2
8	**TH8000**	280	210	405	146	210	9	69,6
10	**TH10000**	280	220	405	156	210	9	82,9

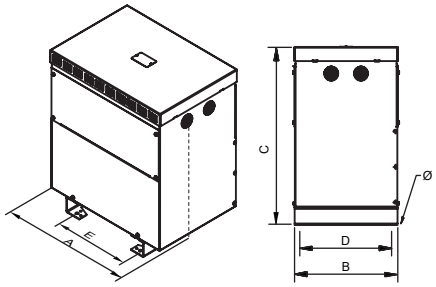
THX IP00



THW IP23

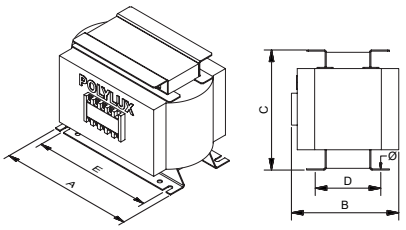


From 1000 kVA up to 5000 kVA

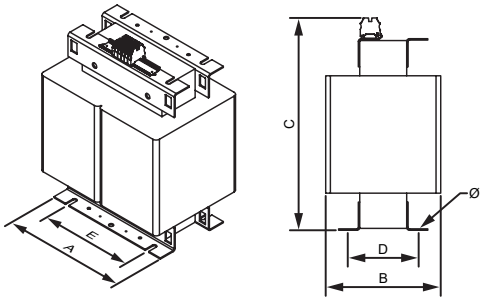


From 6300 kVA up to 10000 kVA

TH IP20



1 kVA

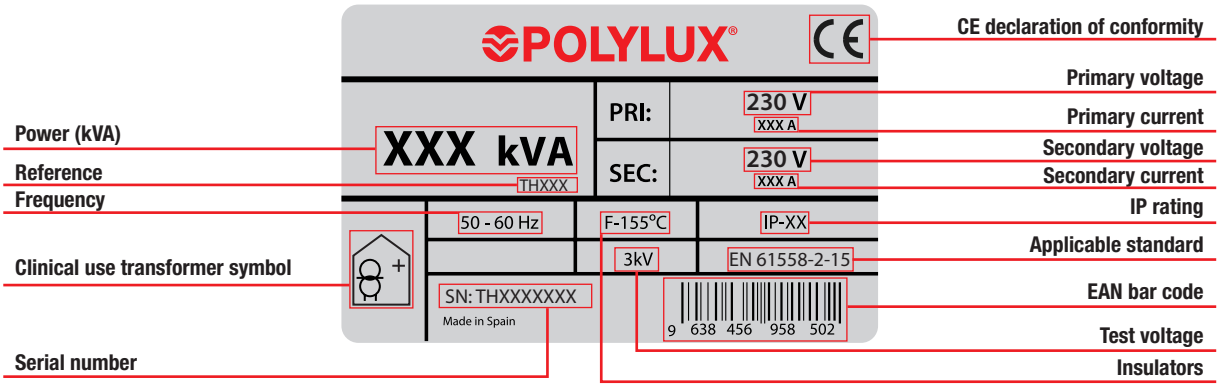


From 2 kVA

TH SERIES

Isolation transformers for clinical electrical installations · Input **230 V** · Output **230 V**

Feature plate structure



TLQ SERIES

For operating theatre spotlights · Input **230±5% V** · Output **0-24 / 25 / 26 / 27 V**

Definition and applications

Our TLQ series consists of single-phase isolation transformers specially designed for operating theatre spotlights.

Manufacturing characteristics

All the versions have the following features in common:

- Copper shield between primary and secondary with ground screw connection, which prevents crossovers with network voltage shunts to secondary, thus preventing electrical risks for persons.
- Anti-flash dip varnishing. Ensures greater compactation, insulation and noise elimination.
- Option of mounting on **DIN rail up to 160 VA**.
- IP20 enclosure, V-0 flame-retardant polymer box that complies with UL94.
- Safety Class I, convertible to Class II.
- All the transformers are checked automatically one by one and the compliance test report is created in accordance with the corresponding standard.

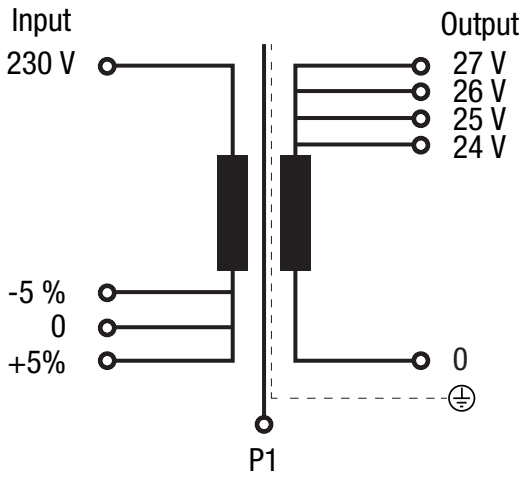
NEW head design

- Increased wiring insulation.
- Clearer features.
- Easier connection.
- More uniform, compact and robust design.

Technical features - standard model

Rating	**160 VA to 800 VA**
Insulators	**Class H - 180 ºC**
Temperature rise	**Class B**
Winding	**Class HC - 200 ºC**
Room temperature	**45 ºC**
Frequency	**50-60 Hz**
Noise	**≤ 45 dB**
Protection rating	**IP20**
Cooling	**ANAN**
Includes	**LED indicator lamp** **Electrostatic shield**
Mounting	**Mounting on DIN 46277/3 rail (up to 160 VA)**
Standards	**IEC/EN/UNE-EN 61558-1, CE**
Protection	**Convertible from Class I to Class II**
Operation	**Continuous**
Test voltage	**2.5 kV (1 min., 50 Hz)**

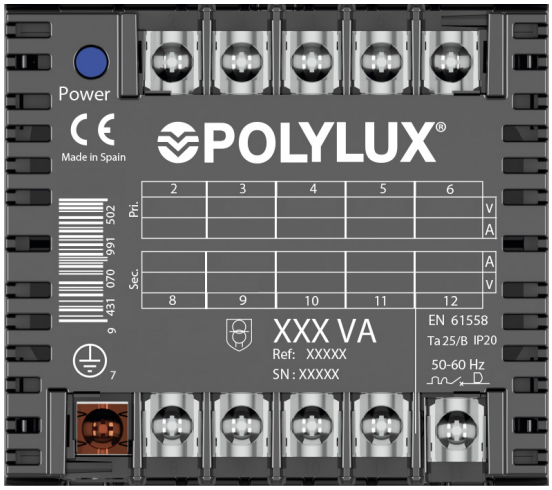
Electrical diagram



TLQ SERIES

For operating theatre spotlights · Input **230±5% V** · Output **0-24 / 25 / 26 / 27 V**

Electrical connection



Input:

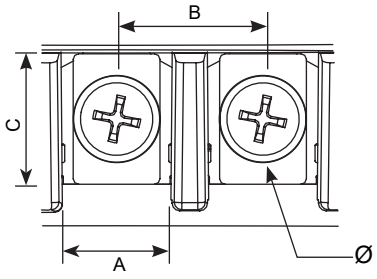
- 230-5% V | Connection: 2-3
- 230 V | Connection: 2-4
- 230+5% V | Connection: 2-5

Output:

- 24 V | Connection: 8-9
- 25 V | Connection: 8-10
- 26 V | Connection: 8-11
- 27 V | Connection: 8-12

Terminal types

Terminal blocks	External mm				Maximum tightening torque N·m	Primary Power VA		Secondary Power VA	
	A	B	C	Ø		From	To	From	To
Terminal M4	10	13.5	12	M4	1.1	160	800	160	160
Terminal M5	15	18.5	14	M5	2.5	-	-	315	800



Theoretical data - standard model

Power VA	Reference	Input current A		Output current A				Input protections (A) (MCB -> D / Fuse -> aM)		Output protections (A) (MCB -> C / Fuse -> gG)			
		230-5% V	230+5% V	24 V	25 V	26 V	27 V	230-5% V	230+5% V	24 V	25 V	26 V	27 V
160	**TLQ160**	0.73	0.66	6.67	6.40	6.15	5.93	2	2	6	6	6	5
315	**TLQ315**	1.44	1.30	13.13	12.60	12.12	11.67	3	3	12	12	12	10
630	**TLQ630**	2.88	2.61	26.25	25.20	24.23	23.33	10	10	25	25	20	20
800	**TLQ800**	3.66	3.31	33.33	32.00	30.77	29.63	10	10	30	30	30	25

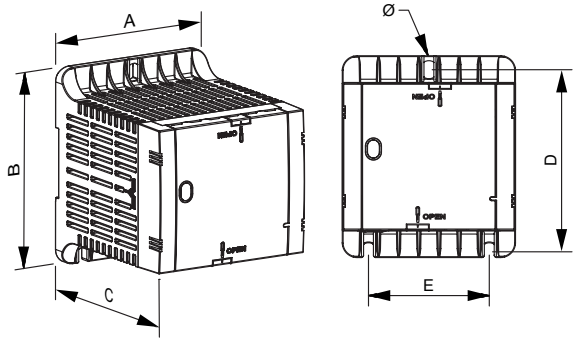
Power VA	Reference	Maximum cross-section input conductor(mm²)				Maximum cross-section output conductor (mm²)							
		230-5% V		230-5% V		24 V		25 V		26 V		27 V	
		Flexible	Rigid	Flexible	Rigid	Flexible	Rigid	Flexible	Rigid	Flexible	Rigid	Flexible	Rigid
160	**TLQ160**	0.5	1	0.5	1	1.5	2	1.5	2	1.5	2	1.5	2
315	**TLQ315**	0.5	1	0.5	1	2.5	4	2.5	4	2.5	4	2.5	4
630	**TLQ630**	1	1.5	1	1.5	6	-	6	-	6	-	6	-
800	**TLQ800**	1	1.5	1	1.5	8	-	8	-	8	-	6	-

TLQ SERIES

For operating theatre spotlights · Input 230±5% V · Output 0-24 / 25 / 26 / 27 V

Measurements

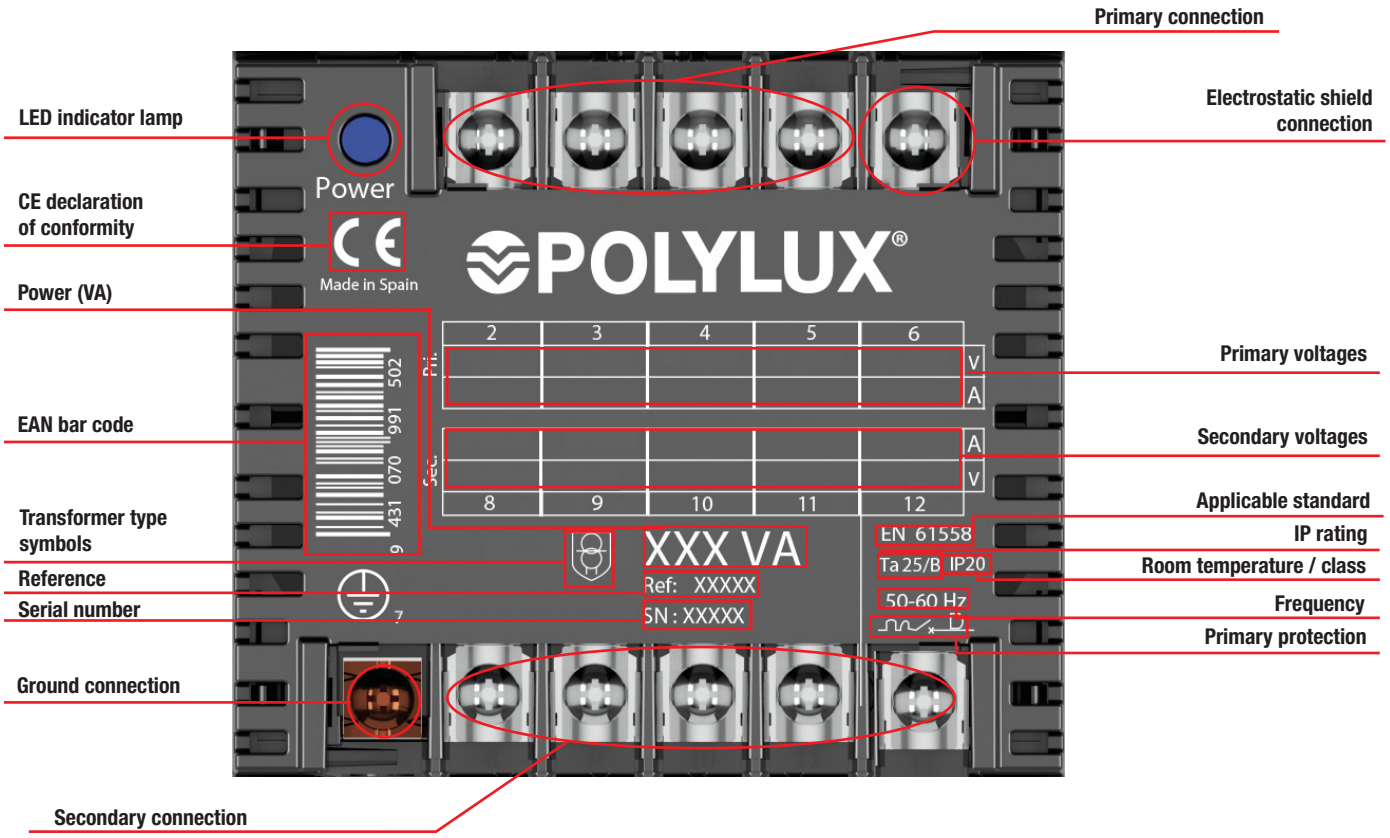
Power VA	Ref.	External dimensions mm			Fastening elements mm			Weight kg
		A	B	C	D	E	Ø	
160	**TLQ160**	106	123	122	110	74	6	2,6
315	**TLQ315**	118	138	132	122	88	6	4,4
630	**TLQ630**	136	162	155	146	104	6	8
800	**TLQ800**	136	162	180	146	104	6	9,9



On-request manufacturing options (please see prices)

Power	**From 160 VA to 800 VA**
Shields	**Primary / secondary, primary / ground and secondary / ground**

Feature plate structure



TTH SERIES

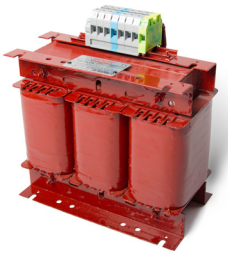
Insulation for clinical electrical installations · Input **400 V** · Output **230 V**

Definition and applications

Our TTH series is manufactured in accordance with the IEC/EN 61558-2-15 standard, focused on safety in clinical installations, and guaranteeing patient safety.

Manufacturing characteristics

- All the transformers are dipped in anti-flash varnish and then compacted in the furnace. This process increases the insulation grade, reduces noise and provides anti-moisture, waterproofed protection.
- All the transformers are checked automatically one by one and the compliance test report is created in accordance with the corresponding standard.



TTHX

· IP00 protection rating.
· Power from 1 kVA to 10 kVA.
· Total impregnated in anti-flash varnish.
· Hoisting elements included.
· **UL certification.** FILE: E532753 - Construction only.

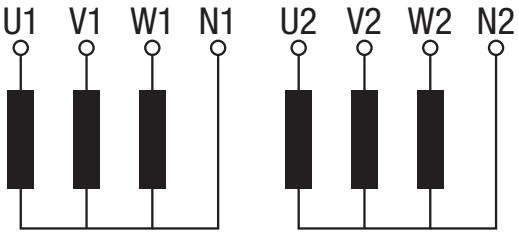
TTH

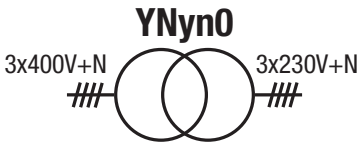
· **Encapsulated in resin**
· IP20 protection rating.
· Power from 0.40 kVA to 400 kVA.
· Protection against damp, saline and corrosive environments.
· Greater resistance to surge currents.
· Greater resistance to transient harmonics.
· Greater mechanical resistance to undesirable vibrations.
· Uniform heat dissipation.
· Hoisting elements included.

TTHW

· IP23 rating (IK08).
· Power from 1 kVA to 10 kVA.
· Metal box painted with RAL7035 polyester resin.
· High resistance to corrosion.
· Cable outlet with cable gland.
· Hoisting elements included.
· Detachable top and front cover.
· Cable outlet with cable gland.
· **UL certification.**

Electrical diagram

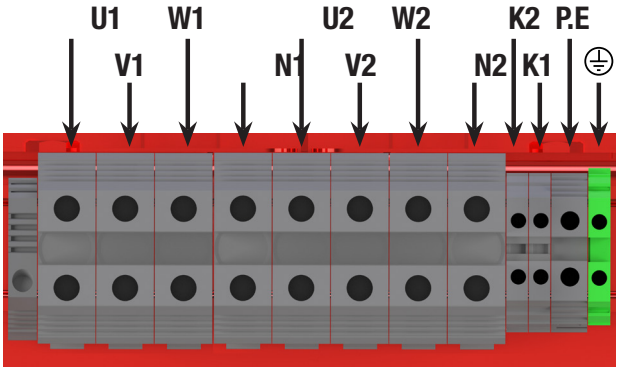




Technical features - standard model

Rating	**1 kVA to 10 kVA**
Standard voltage	**Input 400 V and N // Output 230 V and N.**
Standard frequency	**50-60 Hz**
Connection	**YNyn0**
Insulators	**Class H - 180 ºC**
Temperature rise	**Class F** *More information in Technical Appendix (T.A.1)
Windings	**Class HC-200 ºC**
Class	**I**
Altitude	**1000 m**
Enclosure colour	**RAL 7035**
IP rating	**IP00 (TTHX)** **IP20 (TTH)** **IP23 (TTHW)**
IK rating	**IK08 (TTHW)**
Paint class (ISO 12944)	**C3 (TTHW)**
Room temperature	**45 ºC**
Standards	**≤600V: US Standard: UL 5085-1 / UL 5085-2** **Canada Standard: CSA C22.2 N0 66.1-06 / CSA C22.2 N0 66.2-06** **≤750V: IEC/EN 61558-2-15, CE**
Test voltage	**4,5 kV (1 min, 50 Hz)**
Inrush	**< 12 In**
Ucc	**≤ 4 %**
K factor	**4**
Operation	**Continu**
Cooling	**AN (TTHX / TTH) - ANAN (TTHW)**

Connection



U1 = 400 V
V1 = 400 V
W1 = 400 V
N1 = Neutral 1
U2 = 230 V
V2 = 230 V
W2 = 230 V
N2 = Neutral 2

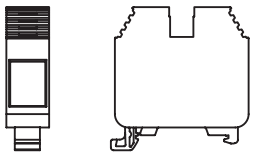
K1 = Klixon 150 ºC thermostat for first coil
K2 = Klixon 150 ºC thermostat for second coil
P.E = electrostatic shield

TTH SERIES

Insulation for clinical electrical installations · Input **400 V** · Output **230 V**

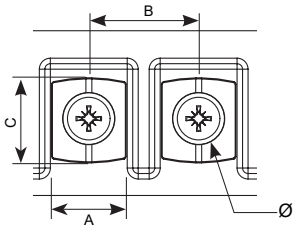
Terminal types

Terminals	Maximum cross-section conductor mm²	Maximum tightening torque		TTHX-TTHW Power kVA	
		N·m	Lb·In	From	To
Terminal 4	6	0.5	4.4	1	2
Terminal 10	16	1.2	10.6	3.15	4
Terminal 16	25	1.2	10.6	5	6
Terminal 35	50	2.5	22.1	8	10



Terminal 4 / 10 / 16 / 35

Terminals	External mm				Maximum cross-section conductor mm²	Maximum tightening torque		TTH Power kVA	
	A	B	C	Ø		N·m	Lb·In	From	To
Terminal M5	15	18.5	14	M5	-	1.1	9.7	1	6.3
Terminal 35	-	-	-	-	50	2.5	22.1	8	10



Terminal M5

Theoretical data - standard model

Power kVA	Reference	Insulation class	Current A		Protections A		Noise dB	Cable gland	
			Input	Output	Input	Output		ø max. (mm)	Quantity
TTHX									
1	**TTHX1**	F	1.4	2.5	2 (D/Am)	2.5 (C/gG)	≤45	-	-
2	**TTHX2**	F	2.9	5.0	3 (D/Am)	5 (C/gG)	≤45	-	-
3.15	**TTHX3.15**	F	4.5	7.9	6 (D/5Am)	7 (C/gG)	≤45	-	-
4	**TTHX4**	F	5.8	10.0	6 (D/Am)	10 (C/gG)	≤45	-	-
5	**TTHX5**	F	7.2	12.6	10 (D/8Am)	12 (C/gG)	≤45	-	-
6.3	**TTHX6.3**	F	9.1	15.8	10 (D/Am)	12 (C/gG)	≤45	-	-
8	**TTHX8**	F	11.5	20.1	16 (D/12Am)	20 (C/gG)	≤45	-	-
10	**TTHX10**	F	14.4	25.1	16 (D/Am)	25 (C/gG)	≤45	-	-
TTHW									
1	**TTHW1**	F	1.4	2.5	2 (D/Am)	2.5 (C/gG)	≤45	14	2
2	**TTHW2**	F	2.9	5.0	3 (D/Am)	5 (C/gG)	≤45	14	2
3.15	**TTHW3.15**	F	4.5	7.9	6 (D/5Am)	7 (C/gG)	≤45	18	2
4	**TTHW4**	F	5.8	10.0	6 (D/Am)	10 (C/gG)	≤45	18	2
5	**TTHW5**	F	7.2	12.6	10 (D/8Am)	12 (C/gG)	≤45	25	4
6.3	**TTHW6.3**	F	9.1	15.8	10 (D/Am)	12 (C/gG)	≤45	25	4
8	**TTHW8**	F	11.5	20.1	16 (D/12Am)	20 (C/gG)	≤45	25	4
10	**TTHW10**	F	14.4	25.1	16 (D/Am)	25 (C/gG)	≤45	25	4
TTH									
1	**TTH1**	F	1.4	2.5	2 (D/Am)	2.5 (C/gG)	≤45	-	-
2	**TTH2**	F	2.9	5.0	3 (D/Am)	5 (C/gG)	≤45	-	-
3.15	**TTH3.15**	F	4.5	7.9	6 (D/5Am)	7 (C/gG)	≤45	-	-
4	**TTH4**	F	5.8	10.0	6 (D/Am)	10 (C/gG)	≤45	-	-
5	**TTH5**	F	7.2	12.6	10 (D/8Am)	12 (C/gG)	≤45	-	-
6.3	**TTH6.3**	F	9.1	15.8	10 (D/Am)	12 (C/gG)	≤45	-	-
8	**TTH8**	F	11.5	20.1	16 (D/12Am)	20 (C/gG)	≤45	-	-
10	**TTH10**	F	14.4	25.1	16 (D/Am)	25 (C/gG)	≤45	-	-

TTH SERIES

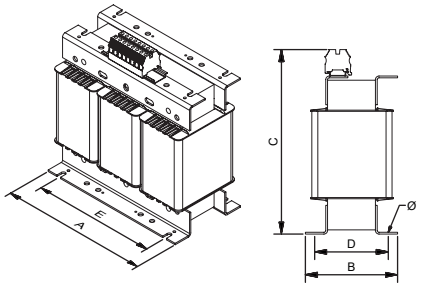
Insulation for clinical electrical installations · Input **400 V** · Output **230 V**

Measurements

Power kVA	Reference	External dimensions mm			Fastening elements mm			Weight kg
		A	B	C	D	E	Ø	
TTHX								
1	**TTHX1**	240	108	253	80	200	9	16
2	**TTHX2**	240	128	253	100	200	9	22
3.15	**TTHX3.15**	300	154	303	145	250	9	36
4	**TTHX4**	300	164	303	155	250	9	41
5	**TTHX5**	360	144	353	122	300	11	56
6.3	**TTHX6.3**	360	164	353	142	300	11	68
8	**TTHX8**	360	240	353	172	300	11	71
10	**TTHX10**	360	270	353	202	300	11	87

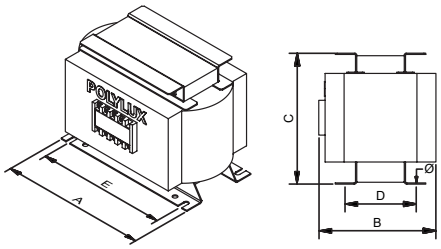
Power kVA	Reference	External dimensions mm			Fastening elements mm			Weight kg
		A	B	C	D	E	Ø	
TTHW								
1	**TTHW1**	320	230	315	205	200	6	20
2	**TTHW2**	320	230	315	205	200	6	26
3.15	**TTHW3.15**	387	260	382	245	250	6	41
4	**TTHW4**	387	260	382	245	250	6	46
5	**TTHW5**	460	340	501	300	300	12	56
6.3	**TTHW6.3**	460	340	501	300	300	12	66
8	**TTHW8**	460	340	501	300	300	12	79
10	**TTHW10**	460	340	501	300	300	12	94

TTHX IP00

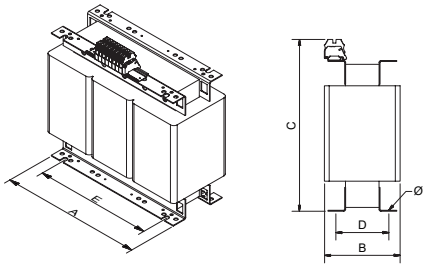


Power kVA	Reference	External dimensions mm			Fastening elements mm			Weight kg
		A	B	C	D	E	Ø	
TTH								
1	**TTH1**	300	124	303	115	250	9	34,5
2	**TTH2**	300	134	303	125	250	9	39,5
3.15	**TTH3.15**	300	154	303	145	250	9	47,5
4	**TTH4**	300	164	303	155	250	9	52,5
5	**TTH5**	360	144	353	122	300	11	70,4
6.3	**TTH6.3**	360	164	353	142	300	11	82,4
8	**TTH8**	360	240	353	172	300	11	85,4
10	**TTH10**	360	270	353	202	300	11	101,4

TTH IP20 & IP00

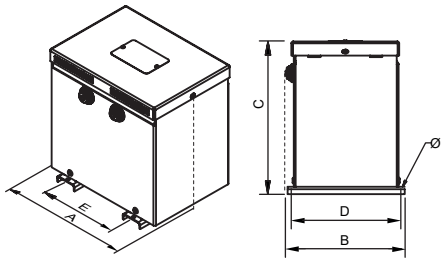


Up to 2 kVA

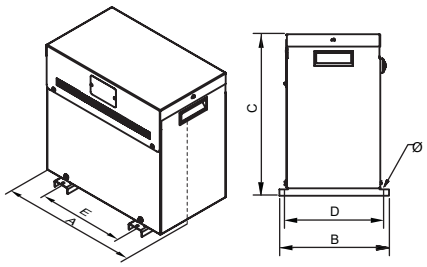


From 3,15 kVA

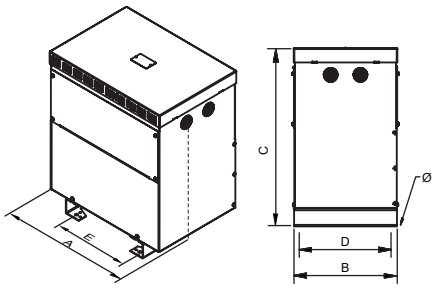
TTHW IP23



Up to 2 kVA



From 3,15 kVA up to 8 kVA



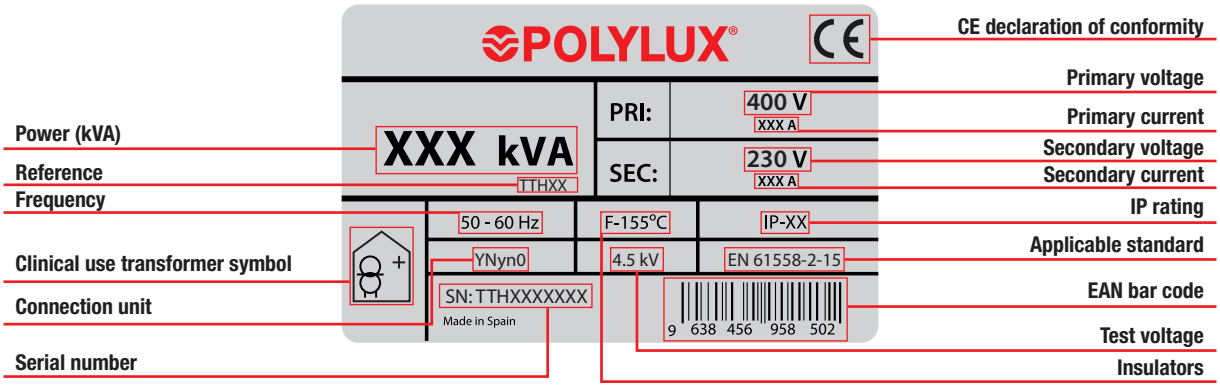
10 kVA

Sectioned

TTH SERIES

Insulation for clinical electrical installations · Input **400 V** · Output **230 V**

Feature plate structure



TTFK SERIES

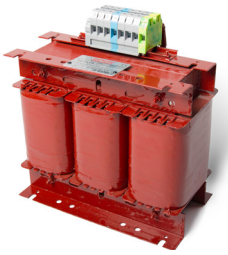
Insulation for three-phase harmonic networks · Input **400 V** · Output **400 V** + N

Definition and applications

The TTFK series is comprised of insulation transformers for three-phase networks with high levels of harmonics.
These "k" factor transformers are used to withstand overheating produced by non-linear load harmonics.
A k=13 factor transformer is used when the harmonic load represents 60% of the total load.
A k=20 factor transformer is used with the harmonic load represents 90% of the total load.

Manufacturing characteristics

- All the transformers are dipped in anti-flash varnish and then compacted in the furnace. This process increases the insulation grade, reduces noise and provides anti-moisture, waterproofed protection.
- Models with different "k" values can be manufactured on request.
- All the transformers are checked automatically one by one and the compliance test report is created in accordance with the corresponding standard.



TTFKX

· IP00 protection rating.
· Power from 10 kVA to 500 kVA.
· Total impregnated in anti-flash varnish.
· Hoisting elements included.
· **UL certification.** FILE: E532753 - Construction only.

TTFKW

· IP23 rating (IK08).
· Power from 10 kVA to 500 kVA.
· Metal box painted with RAL7035 polyester resin.
· High resistance to corrosion.
· Cable outlet with cable gland.
· Hoisting elements included.
· Detachable top and front cover.
· **UL certification.**

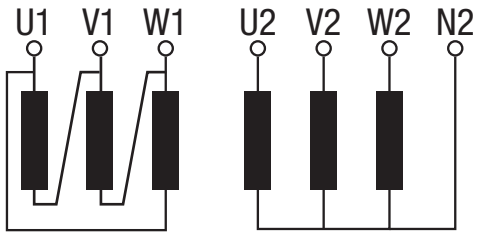
TTFKZ

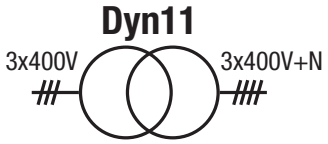
· IP65 rating up to 20 kVA / IP54 from 25 kVA (IK10).
· Power from 10 kVA to 500 kVA.
· Metal box painted with RAL7035 polyester resin.
· High resistance to corrosion.
· Stuffing box cover for cable input depending on installation needs.
· Hoisting elements included.
· Detachable top cover.
· With silentblock.
· **UL certification.**

Technical features - standard model

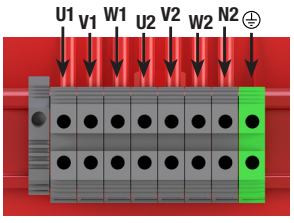
Rating	**10 kVA a 500 kVA**
Standard voltage	**Input 400 V // Output 400 V and N.**
Standard frequency	**50-60 Hz**
Connection unit	**Dyn11**
Insulators	**Class H - 180 ºC**
Temperature rise	**Class F ≤ 25 kVA (20 kVA TTFKZ)** **Class H ≥ 31,5 kVA (25 kVA TTFKZ)** *More information in Technical Appendix (T.A.1)
Windings	**Clase HC-200 ºC**
Class	**I**
Altitude	**1000 m**
Enclosure colour	**RAL 7035**
IP rating	**IP00 (TTFKX)** **IP23 (TTFKW)** **IP65 up to 20 kVA / IP54 from 25 kVA (TTFKZ)**
IK rating	**IK08 (TTFKW)** **IK10 (TTFKZ)**
Paint class (ISO 12944)	**C3 (TTFKW)** **C4 (TTFKZ)**
Room temperature	**45 ºC**
Standards	**≤600V: US Standard: UL 5085-1 / UL 5085-2** **Canada Standard: CSA C22.2 N0 66.1-06 / CSA C22.2 N0 66.2-06** **≤750V: IEC/EN 61558, CE up to 31.5 kVA** **IEC/EN 60076, CE from 40 kVA**
Test voltage	**3 kV (1 min, 50 Hz)**
Inrush	**< 12 In**
Ucc	**≤ 4 %**
K factor	**13**
Operation	**Continuous**
Cooling	**AN (TTFKX) - ANAN (TTFKW / TTFKZ IP65) - ANAF (≥400kVA TTFW / TTFKZ IP54)**

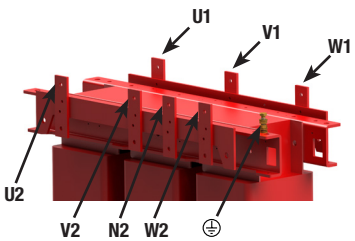
Electrical diagram





Connection



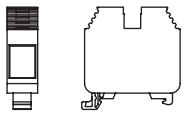


TTFK SERIES

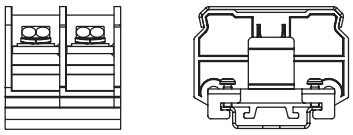
Insulation for harmonic three-phase networks · Input **400 V** · Output **400 V** + N

Terminal types

Terminals		Maximum cross-section conductor mm²	Maximum tightening torque		TTFKX-TTFKW-TTFKZ Power kVA	
			N-m	Lb-In	From	To
Power strip 1	Terminal 35	50	2.5	22.1	10	10
Power strip 2	Terminal 60	25	4.5	40	12.5	40
	Terminal 100	35	6.7	60	50	80
	Terminal 200	95	9	80	100	125
Connection plate	Plate 40 X 1	150	-	-	160	315
	Plate 60 X 2	150	-	-	400	400
	Plate 80 X 4	150	-	-	500	500



Power strip 1



Power strip 2

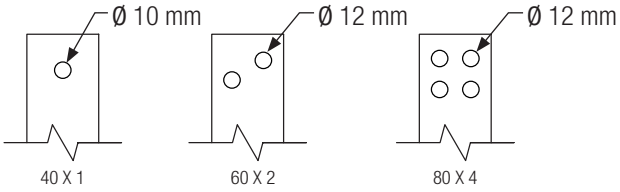


Plate connection

Theoretical data - standard model

Power kVA	Reference	Insulation class	Current A		Protections A		Noise dB
			Input	Output	Input	Output	
TTFKX							
10	**TTFKX10**	F	14.4	14.4	32 (D/Am)	12 (C/gG)	≤45
12.5	**TTFKX12.5**	F	18.0	18.0	40 (D/Am)	12 (C/gG)	≤45
16	**TTFKX16**	F	23.1	23.1	50 (D/Am)	20 (C/gG)	≤45
20	**TTFKX20**	F	28.9	28.9	63 (D/Am)	25 (C/gG)	≤45
25	**TTFKX25**	F	36.1	36.1	80 (D/Am)	30 (C/gG)	≤45
31.5	**TTFKX31.5**	H	45.5	45.5	100 (D/Am)	40 (C/gG)	≤45
40	**TTFKX40**	H	57.7	57.7	125 (D/Am)	50 (C/gG)	≤55
50	**TTFKX50**	H	72.2	72.2	160 (D/Am)	60 (C/gG)	≤55
63	**TTFKX63**	H	90.9	90.9	200 (D/Am)	80 (C/gG)	≤55
80	**TTFKX80**	H	115.5	115.5	300 (D/Am)	100 (C/gG)	≤55
100	**TTFKX100**	H	144.3	144.3	300 (D/Am)	100 (C/gG)	≤55
125	**TTFKX125**	H	180.4	180.4	400 (D/Am)	160 (C/gG)	≤55
160	**TTFKX160**	H	230.9	230.9	500 (D/Am)	200 (C/gG)	≤55
200	**TTFKX200**	H	288.7	288.7	600 (D/Am)	250 (C/gG)	≤55
250	**TTFKX250**	H	360.8	360.8	800 (D/Am)	300 (C/gG)	≤65
315	**TTFKX315**	H	454.7	454.7	1000 (D/Am)	400 (C/gG)	≤65
400	**TTFKX400**	H	577.4	577.4	1200 (D/Am)	500 (C/gG)	≤65
500	**TTFKX500**	H	721.7	721.7	1600 (D/Am)	800 (C/gG)	≤65

TTFK SERIES

Insulation for harmonic three-phase networks · Input **400 V** · Output **400 V** + N

Theoretical data - standard model

Power kVA	Reference	Insulation class	Current A		Protections A		Noise dB	Cable gland (TTFKW) / Stuffing boxes (TTFKZ)	
			Input	Output	Input	Output		ø max. (mm)	Quantity
TTFKW									
10	**TTFKW10**	F	14.4	14.4	32 (D/Am)	12 (C/gG)	≤45	32	4
12.5	**TTFKW12.5**	F	18.0	18.0	40 (D/Am)	12 (C/gG)	≤45	32	4
16	**TTFKW16**	F	23.1	23.1	50 (D/Am)	20 (C/gG)	≤45	32	4
20	**TTFKW20**	F	28.9	28.9	63 (D/Am)	25 (C/gG)	≤45	32	4
25	**TTFKW25**	F	36.1	36.1	80 (D/Am)	30 (C/gG)	≤45	32	4
31.5	**TTFKW31.5**	H	45.5	45.5	100 (D/Am)	40 (C/gG)	≤45	32	8
40	**TTFKW40**	H	57.7	57.7	125 (D/Am)	50 (C/gG)	≤55	32	8
50	**TTFKW50**	H	72.2	72.2	160 (D/Am)	60 (C/gG)	≤55	32	8
63	**TTFKW63**	H	90.9	90.9	200 (D/Am)	80 (C/gG)	≤55	44	8
80	**TTFKW80**	H	115.5	115.5	300 (D/Am)	100 (C/gG)	≤55	44	8
100	**TTFKW100**	H	144.3	144.3	300 (D/Am)	100 (C/gG)	≤55	44	8
125	**TTFKW125**	H	180.4	180.4	400 (D/Am)	160 (C/gG)	≤55	44	8
160	**TTFKW160**	H	230.9	230.9	500 (D/Am)	200 (C/gG)	≤55	44	8
200	**TTFKW200**	H	288.7	288.7	600 (D/Am)	250 (C/gG)	≤55	44	8
250	**TTFKW250**	H	360.8	360.8	800 (D/Am)	300 (C/gG)	≤65	44	8
315	**TTFKW315**	H	454.7	454.7	1000 (D/Am)	400 (C/gG)	≤65	44	8
400	**TTFKW400**	H	577.4	577.4	1200 (D/Am)	500 (C/gG)	≤65	44	8
500	**TTFKW500**	H	721.7	721.7	1600 (D/Am)	800 (C/gG)	≤65	44	8
TTFKZ									
10	**TTFKZ10**	F	14.4	14.4	32 (D/Am)	12 (C/gG)	≤45	22 - 32	2
12.5	**TTFKZ12.5**	F	18.0	18.0	40 (D/Am)	12 (C/gG)	≤45	22 - 32	2
16	**TTFKZ16**	F	23.1	23.1	50 (D/Am)	20 (C/gG)	≤45	22 - 32	2
20	**TTFKZ20**	F	28.9	28.9	63 (D/Am)	25 (C/gG)	≤45	22 - 32	2
25	**TTFKZ25**	H	36.1	36.1	80 (D/Am)	30 (C/gG)	≤45	22 - 32	2
31.5	**TTFKZ31.5**	H	45.5	45.5	100 (D/Am)	40 (C/gG)	≤45	22 - 32	2
40	**TTFKZ40**	H	57.7	57.7	125 (D/Am)	50 (C/gG)	≤55	22 - 32	2
50	**TTFKZ50**	H	72.2	72.2	160 (D/Am)	60 (C/gG)	≤55	34 - 44	2
63	**TTFKZ63**	H	90.9	90.9	200 (D/Am)	80 (C/gG)	≤55	34 - 44	2
80	**TTFKZ80**	H	115.5	115.5	300 (D/Am)	100 (C/gG)	≤55	34 - 44	2
100	**TTFKZ100**	H	144.3	144.3	300 (D/Am)	100 (C/gG)	≤55	34 - 44	2
125	**TTFKZ125**	H	180.4	180.4	400 (D/Am)	160 (C/gG)	≤55	34 - 44	2
160	**TTFKZ160**	H	230.9	230.9	500 (D/Am)	200 (C/gG)	≤55	34 - 44	2
200	**TTFKZ200**	H	288.7	288.7	600 (D/Am)	250 (C/gG)	≤55	34 - 44	2
250	**TTFKZ250**	H	360.8	360.8	800 (D/Am)	300 (C/gG)	≤65	34 - 44	2
315	**TTFKZ315**	H	454.7	454.7	1000 (D/Am)	400 (C/gG)	≤65	34 - 44	2
400	**TTFKZ400**	H	577.4	577.4	1200 (D/Am)	500 (C/gG)	≤65	34 - 44	2
500	**TTFKZ500**	H	721.7	721.7	1600 (D/Am)	800 (C/gG)	≤65	34 - 44	2

TTFK SERIES

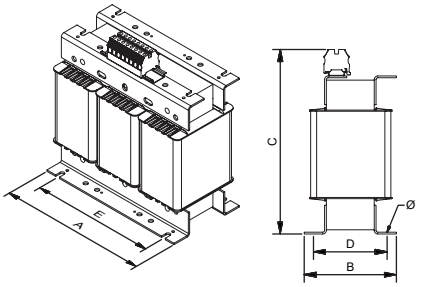
Insulation for harmonic three-phase networks · Input **400 V** · Output **400 V** + N

Measurements

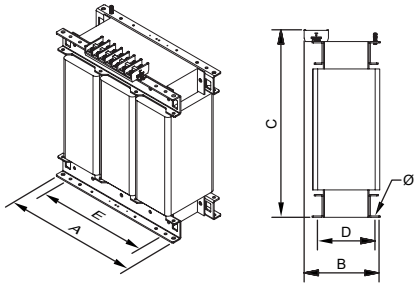
Power kVA	Reference	External dimensions mm			Fastening elements mm			Weight kg
		A	B	C	D	E	Ø	
TTFKX								
10	**TTFKX10**	420	190	419	162	350	11	88
12.5	**TTFKX12.5**	480	250	480	144	400	11	96
16	**TTFKX16**	480	260	480	154	400	11	109
20	**TTFKX20**	480	270	480	164	400	11	120
25	**TTFKX25**	480	310	480	204	400	11	159
31.5	**TTFKX31.5**	670	290	580	150	426	13	182
40	**TTFKX40**	670	310	580	170	426	13	221
50	**TTFKX50**	670	330	580	190	426	13	254
63	**TTFKX63**	785	550	880	460	472	17	347
80	**TTFKX80**	785	550	880	460	472	17	405
100	**TTFKX100**	785	550	880	460	472	17	441
125	**TTFKX125**	785	550	880	460	472	17	544
160	**TTFKX160**	785	550	880	460	472	17	660
200	**TTFKX200**	1016	550	1080	460	690	17	758
250	**TTFKX250**	1070	550	1220	460	690	17	966
315	**TTFKX315**	1070	550	1220	460	690	17	1176
400	**TTFKX400**	1300	550	1350	460	800	17	1801
500	**TTFKX500**	1300	550	1350	460	800	17	2198

Power kVA	Reference	External dimensions mm			Fastening elements mm			Weight kg
		A	B	C	D	E	Ø	
TTFKW								
10	**TTFKW10**	549	424	644	375	345	12	109
12.5	**TTFKW12.5**	616	424	710	375	345	12	126
16	**TTFKW16**	616	424	710	375	345	12	146
20	**TTFKW20**	616	424	710	375	345	12	169
25	**TTFKW25**	616	424	710	375	345	12	187
31.5	**TTFKW31.5**	815	555	975	500	415	12	230
40	**TTFKW40**	815	555	975	500	415	12	339
50	**TTFKW50**	815	555	975	500	415	12	377
63	**TTFKW63**	815	555	975	500	415	12	423
80	**TTFKW80**	815	555	975	500	415	12	471
100	**TTFKW100**	990	682	1250	582	470	18	501
125	**TTFKW125**	990	682	1250	582	470	18	554
160	**TTFKW160**	990	682	1250	582	470	18	678
200	**TTFKW200**	1215	772	1555	672	690	18	884
250	**TTFKW250**	1215	772	1555	672	690	18	1074
315	**TTFKW315**	1215	772	1555	672	690	18	1303
400	**TTFKW400**	1812	1000	1791	900	800	20	1947
500	**TTFKW500**	1812	1000	1791	900	800	20	2406

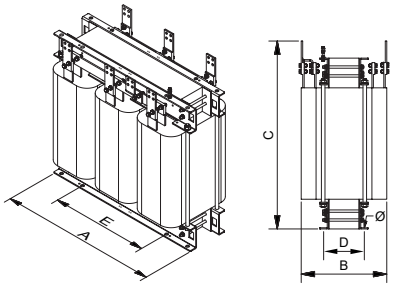
TTFKX IP00



Up to 25 kVA

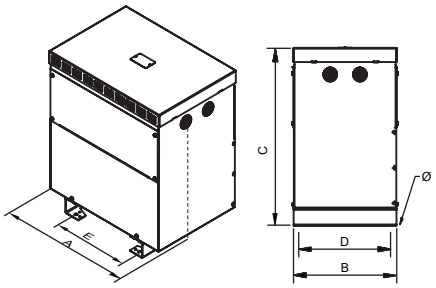


From 31.5 kVA to 315 kVA



From 400 kVA

TTFKW IP23



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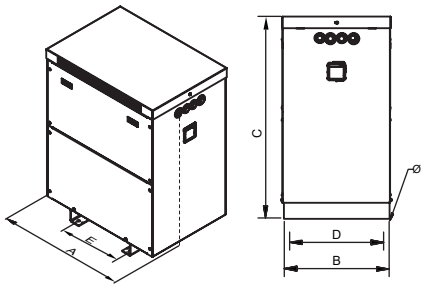
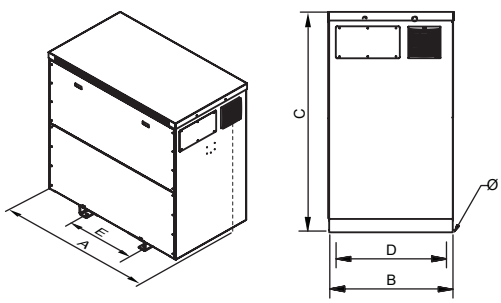


From 31.5 kVA to 315 kVA



From 400 kVA

Sectioned

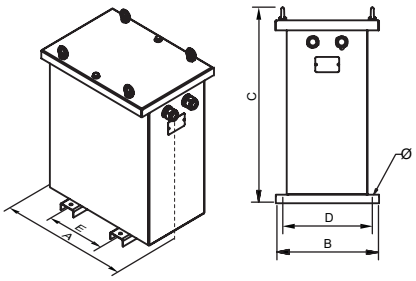
TTFK SERIES

Insulation for harmonic three-phase networks · Input **400 V** · Output **400 V** + N

Measurements

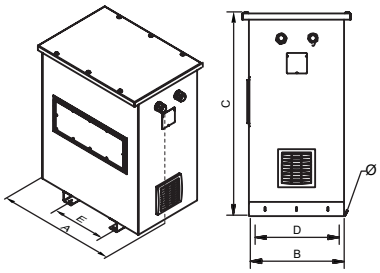
Power kVA	Reference	External dimensions mm			Fastening elements mm			Weight kg
		A	B	C	D	E	Ø	
TTFKZ								
10	**TTFKZ10**	745	413	735	370	350	11	140
12.5	**TTFKZ12.5**	745	413	735	370	350	11	159
16	**TTFKZ16**	745	413	735	370	350	11	183
20	**TTFKZ20**	745	413	735	370	350	11	200
25	**TTFKZ25**	745	413	735	370	350	11	211
31.5	**TTFKZ31.5**	968	621	1150	500	426	12	263
40	**TTFKZ40**	968	621	1150	500	426	12	366
50	**TTFKZ50**	968	621	1150	500	426	12	404
63	**TTFKZ63**	968	621	1150	500	426	12	450
80	**TTFKZ80**	968	621	1150	500	426	12	498
100	**TTFKZ100**	1040	892	1374	714	485	18	580
125	**TTFKZ125**	1040	892	1374	714	485	18	633
160	**TTFKZ160**	1040	892	1374	714	485	18	757
200	**TTFKZ200**	1532	1000	1755	806	684	18	1012
250	**TTFKZ250**	1532	1000	1755	806	684	18	1193
315	**TTFKZ315**	1532	1000	1755	806	684	18	1422
400	**TTFKZ400**	1950	1093	1797	900	790	20	2005
500	**TTFKZ500**	1950	1093	1797	900	790	20	2464

TTFKZ IP65

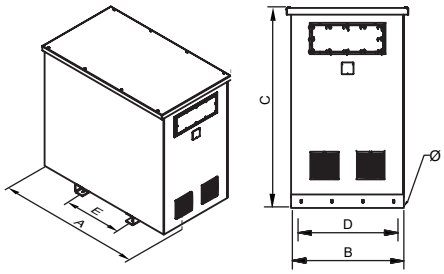


From 10 kVA up to 25 kVA

TTFKZ IP54



From 31,5 kVA up to 315 kVA



From 400 kVA

TTFK SERIES

Insulation for harmonic three-phase networks · Input **400 V** · Output **400 V** + N

On-request manufacturing options (please see prices)

Power	**From 10 kVA to 500 kVA**
Voltage	**From 1 V to 12 kV**
Windings	**Copper or aluminium**
Frequency	**From 50 Hz to 400 Hz**
Connection unit	**Yyn0, Dyn11, Dd0, Dy1, Dyn5, Yn1/5/11... (See Technical Appendix T.A.2)**
IP rating	**IP00, IP20, IP23, IP31, IP42, IP54, IP55 and IP65**
IK rating	**IK08 and IK10**
Room temperature	**Up to 60 ºC**
Locks	**Screw, key**
Test voltage	**Up to 28 kV**
Short circuit voltage	**From 2% to 9%**
Operation	**Intermittent, continuous**
Cooling	**Natural, forced ventilation**
Electrostatic shield	**Up to three shields**
Class	**I, II**
Altitude	**Up to 4000 m**
Protections	**In both primary and secondary (figure 1)**
Temperature sensors	**PT100 (figure 2), PTC (figure 3) or bimetallic**
Temperature control	**Temperature control station (4xPT100) (figure 4), PTC thermal relays (3xPTC / 6xPTC)**
Network analyser	**(Figure 5)**
Anti condensation system	**Hygrostat**
Heating system	**Heating elements**
External protection	**Anti-flash varnish, metallic or stainless steel enclosure**
Transportation and hoisting	**Wheels (figure 6), lifting points**
Paint	**C3, C4, C5, different RAL**
Feature plate	**High generation polymer or stainless steel (figure 7)**
Anti vibration system	**Silentblock**
Adjustment	**-10%; -7.5%; -5%; -2.5%; +2.5%; +5%; +7.5%; +10% With bridges (figure 8) or selector (figure 9)**
Certified	**CE, DNV-GL, BV, UL (insulation) and POLYLUX laboratory**
Climate class / environment / fire	**Up to C2-E2-F1**

Figure 1

Figure 2

Figure 3

Figure 4

Figure 5

Figure 6

Figure 7

Figure 8

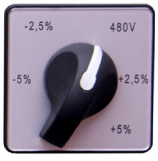


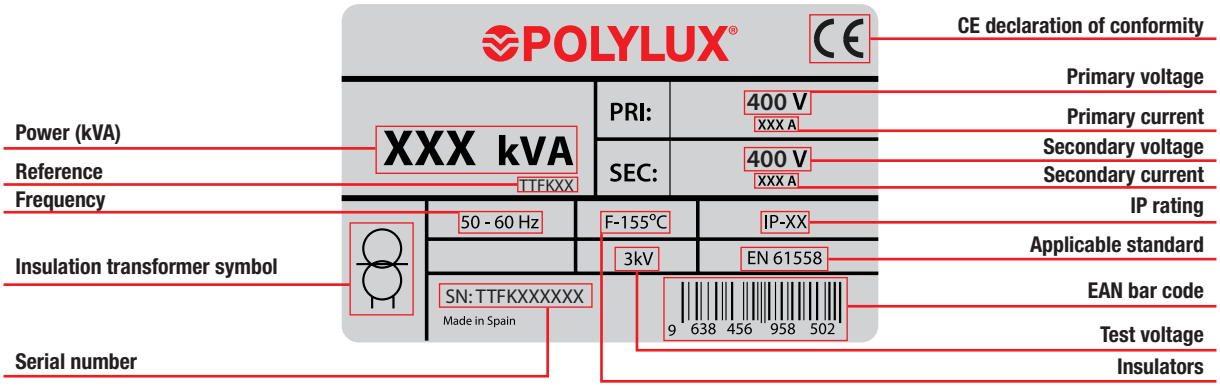
Figure 9

TTFK SERIES

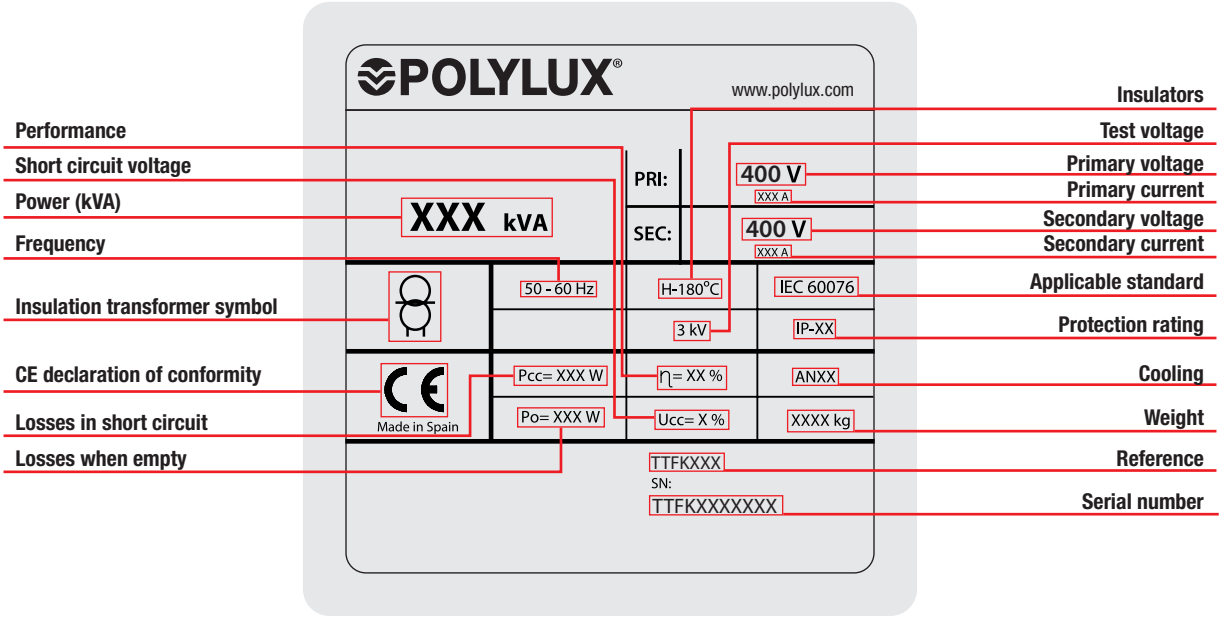
Insulation for harmonic three-phase networks · Input **400 V** · Output **400 V** + N

Feature plate structure

Label up to 31,5 kVA:



Label from 40 kVA:



CD SERIES

For office installations

Definition and applications

The CD series are harmonic compensators designed for installation in offices.
They provide considerable energy savings, reducing the power demand in the installation and transient current peaks, thus lengthening the service life of the connected appliances.

Manufacturing characteristics

- All the compensators are dipped in anti-flash varnish and then compacted in the furnace. This process increases the insulation grade, reduces noise and provides anti-moisture, waterproofed protection.
- Option of manufacturing C25D-180º for 180º dephasing of non-homopolar harmonics.
- Cable outlet with cable gland
- Hoisting elements included.
- All the compensators are checked automatically one by one and the compliance report is created in accordance with the respective standard.

Technical features - standard model

Standard voltage	**400 V**
Standard frequency	**50-60 Hz**
Insulators	**Class H - 180 ºC**
Temperature rise	**C10D - Class F** **C20D - Class F ≤ C20D160** **- Class H ≥C20D200** **C22D - Class F ≤ C22D20** **- Class H ≥C22D25** **C25D - Class F ≤ C25D20** **- Class H ≥C25D25** **C30D - Class F ≤ C30D20** **- Class H ≥C30D25** *More information in Technical Appendix (T.A.1)
Windings	**Class HC-200 ºC**
Class	**I**
Altitude	**1000 m**
Enclosure colour	**RAL 7035**
IP rating	**IP23**
IK rating	**IK08**
Paint class (ISO 12944)	**C3**
Room temperature	**45 ºC**
Standards	**IEC/EN/UNE-EN 60076 I 61000-3-2/4, CE y IEE 519, CE**
Test voltage	**3 kV (1 min, 50 Hz)**
Operation	**Continuous**
Cooling	**ANAN**

Connection

Configuration	**With just one C25D-0 or C25D-180**	**Combination of two C25D-0 and C25D-180**	**Single C30D**
Filtering from load	3rd, 9th and 15th	3rd, 5th, 7th, 9th, 15th, 17th and 19th	3rd, 5th, 7th, 9th, 15th, 17th and 19th
Phase current reduction	15%	45%	45%
THDI reduction	45%	85%	85%
THDV reduction	40%	65%	85%

CD SERIES

For office installations

Theoretical data - standard model

Phase current A	Reference	Insulation class	Current A		Protections A		Noise dB	Cable gland	
			Input	Output	Input	Output		ø max. (mm)	Quantity
C10D									
16	**C10D16**	F	16.0	16.0	16.0	16.0	≤65	14	2
20	**C10D20**	F	20.0	20.0	20.0	20.0	≤65	14	2
25	**C10D25**	F	25.0	25.0	25.0	25.0	≤65	14	2
31.5	**C10D31.5**	F	31.5	31.5	31.5	31.5	≤65	14	2
40	**C10D40**	F	40.0	40.0	40.0	40.0	≤65	14	2
50	**C10D50**	F	50.0	50.0	50.0	50.0	≤65	14	2
63	**C10D63**	F	63.3	63.0	63.0	63.0	≤65	14	2
80	**C10D80**	F	80.0	80.0	80.0	80.0	≤65	14	2
100	**C10D100**	F	100.0	100.0	100.0	100.0	≤65	14	2
125	**C10D125**	F	125.5	125.0	125.0	125.0	≤65	14	2
160	**C10D160**	F	160.0	160.0	160.0	160.0	≤65	14	2
200	**C10D200**	F	200.0	200.0	200.0	200.0	≤65	18	2
250	**C10D250**	F	250.0	250.0	250.0	250.0	≤65	18	2
315	**C10D315**	F	315.5	315.0	315.0	315.0	≤65	18	2
400	**C10D400**	F	400.0	400.0	400.0	400.0	≤65	25	4

Neutral current A	Reference	Insulation class	Current A		Protections A		Noise dB	Cable gland	
			Input	Output	Input	Output		ø max. (mm)	Quantity
C20D									
25	**C20D25**	F	25.5	-	25.5	-	≤65	25	4
31.5	**C20D31.5**	F	31.5	-	31.5	-	≤65	25	4
40	**C20D40**	F	40.0	-	40.0	-	≤65	32	4
50	**C20D50**	F	50.0	-	50.0	-	≤65	32	4
63	**C20D63**	F	63.3	-	63.3	-	≤65	32	4
80	**C20D80**	F	80.0	-	80.0	-	≤65	32	4
100	**C20D100**	F	100.0	-	100.0	-	≤65	32	4
125	**C20D125**	F	125.5	-	125.5	-	≤65	32	4
160	**C20D160**	F	160.0	-	160.0	-	≤65	32	4
200	**C20D200**	H	200.0	-	200.0	-	≤65	32	8
250	**C20D250**	H	250.0	-	250.0	-	≤65	32	8
315	**C20D315**	H	315.5	-	315.5	-	≤65	32	8
400	**C20D400**	H	400.0	-	400.0	-	≤65	44	8
500	**C20D500**	H	500.0	-	500.0	-	≤65	44	8
630	**C20D630**	H	630.0	-	630.0	-	≤65	44	8

CD SERIES

For office installations

Theoretical data - standard model

Power kVA	Reference	Insulation class	Current A		Protections A		Noise dB	Cable gland	
			Input	Output	Input	Output		ø max. (mm)	Quantity
C20D									
10	**C22D10**	F	14.5	14.5	32 (D/aM)	16 (C/gG)	≤45	25	4
12.5	**C22D12.5**	F	18.1	18.1	32 (D/aM)	16 (C/gG)	≤45	25	4
16	**C22D16**	F	23.1	23.1	40 (D/aM)	20 (C/gG)	≤45	32	4
20	**C22D20**	F	28.9	28.9	50 (D/aM)	25 (C/gG)	≤45	32	4
25	**C22D25**	F	36.1	36.1	63 (D/aM)	32 (C/gG)	≤45	32	4
31.5	**C22D31.5**	F	45.5	45.5	80 (D/aM)	40 (C/gG)	≤45	32	4
40	**C22D40**	F	57.8	57.8	100 (D/aM)	50 (C/gG)	≤55	32	4
50	**C22D50**	F	72.3	72.3	125 (D/aM)	63 (C/gG)	≤55	32	4
63	**C22D63**	F	91	91	160 (D/aM)	80 (C/gG)	≤55	32	4
80	**C22D80**	H	116	116	200 (D/aM)	100 (C/gG)	≤55	32	8
100	**C22D100**	H	145	145	250 (D/aM)	125 (C/gG)	≤55	32	8
125	**C22D125**	H	181	181	400 (D/aM)	160 (C/gG)	≤55	32	8
160	**C22D160**	H	231	231	500 (D/aM)	200 (C/gG)	≤55	44	8
C25D-0									
10	**C25D10-0**	F	14.5	14.5	32 (D/aM)	16 (C/gG)	≤45	32	4
12.5	**C25D12.5-0**	F	18.1	18.1	32 (D/aM)	16 (C/gG)	≤45	32	4
16	**C25D16-0**	F	23.1	23.1	40 (D/aM)	20 (C/gG)	≤45	32	4
20	**C25D20-0**	F	28.9	28.9	50 (D/aM)	25 (C/gG)	≤45	32	4
25	**C25D25-0**	H	36.1	36.1	63 (D/aM)	32 (C/gG)	≤45	32	8
31.5	**C25D31.5-0**	H	45.5	45.5	80 (D/aM)	40 (C/gG)	≤45	32	8
40	**C25D40-0**	H	57.8	57.8	100 (D/aM)	50 (C/gG)	≤55	32	8
50	**C25D50-0**	H	72.3	72.3	125 (D/aM)	63 (C/gG)	≤55	44	8
63	**C25D63-0**	H	91	91	160 (D/aM)	80 (C/gG)	≤55	44	8
80	**C25D80-0**	H	116	116	200 (D/aM)	100 (C/gG)	≤55	44	8
100	**C25D100-0**	H	145	145	250 (D/aM)	125 (C/gG)	≤55	44	8
125	**C25D125-0**	H	181	181	400 (D/aM)	160 (C/gG)	≤55	44	8
160	**C25D160-0**	H	231	231	500 (D/aM)	200 (C/gG)	≤55	44	8
C25D-180									
10	**C25D10-180**	F	14.5	14.5	32 (D/aM)	16 (C/gG)	≤45	32	4
12.5	**C25D12.5-180**	F	18.1	18.1	32 (D/aM)	16 (C/gG)	≤45	32	4
16	**C25D16-180**	F	23.1	23.1	40 (D/aM)	20 (C/gG)	≤45	32	4
20	**C25D20-180**	F	28.9	28.9	50 (D/aM)	25 (C/gG)	≤45	32	4
25	**C25D25-180**	H	36.1	36.1	63 (D/aM)	32 (C/gG)	≤45	32	8
31.5	**C25D31.5-180**	H	45.5	45.5	80 (D/aM)	40 (C/gG)	≤45	32	8
40	**C25D40-180**	H	57.8	57.8	100 (D/aM)	50 (C/gG)	≤55	32	8
50	**C25D50-180**	H	72.3	72.3	125 (D/aM)	63 (C/gG)	≤55	44	8
63	**C25D63-180**	H	91	91	160 (D/aM)	80 (C/gG)	≤55	44	8
80	**C25D80-180**	H	116	116	200 (D/aM)	100 (C/gG)	≤55	44	8
100	**C25D100-180**	H	145	145	250 (D/aM)	125 (C/gG)	≤55	44	8
125	**C25D125-180**	H	181	181	400 (D/aM)	160 (C/gG)	≤55	44	8
160	**C25D160-180**	H	231	231	500 (D/aM)	200 (C/gG)	≤55	44	8
C30D									
10	**C30D10**	F	14.5	14.5	32 (D/aM)	16 (C/gG)	≤45	32	4
12.5	**C30D12.5**	F	18.1	18.1	32 (D/aM)	16 (C/gG)	≤45	32	4
16	**C30D16**	F	23.1	23.1	40 (D/aM)	20 (C/gG)	≤45	32	4
20	**C30D20**	F	28.9	28.9	50 (D/aM)	25 (C/gG)	≤45	32	4
25	**C30D25**	H	36.1	36.1	63 (D/aM)	32 (C/gG)	≤45	32	8
31.5	**C30D31.5**	H	45.5	45.5	80 (D/aM)	40 (C/gG)	≤45	32	8
40	**C30D40**	H	57.8	57.8	100 (D/aM)	50 (C/gG)	≤55	44	8
50	**C30D50**	H	72.3	72.3	125 (D/aM)	63 (C/gG)	≤55	44	8
63	**C30D63**	H	91	91	160 (D/aM)	80 (C/gG)	≤55	44	8
80	**C30D80**	H	116	116	200 (D/aM)	100 (C/gG)	≤55	44	8
100	**C30D100**	H	145	145	250 (D/aM)	125 (C/gG)	≤55	44	8
125	**C30D125**	H	181	181	400 (D/aM)	160 (C/gG)	≤55	44	8
160	**C30D160**	H	231	231	500 (D/aM)	200 (C/gG)	≤55	44	8

CD SERIES

For office installations

Measurements

Phase current A	Reference	External dimensions mm			Fastening elements mm			Weight kg
		A	B	C	D	E	Ø	
C10D								
16	**C10D16**	196	175	220	165	100	6	5,9
20	**C10D20**	240	190	250	180	150	6	7,2
25	**C10D25**	240	190	250	180	150	6	8,3
31.5	**C10D31.5**	240	190	250	180	150	6	9,9
40	**C10D40**	240	190	250	180	150	6	10
50	**C10D50**	320	230	315	205	200	6	14
63	**C10D63**	320	230	315	205	200	6	15
80	**C10D80**	320	230	315	205	200	6	15
100	**C10D100**	320	230	315	205	200	6	18
125	**C10D125**	320	230	315	205	200	6	20
160	**C10D160**	320	230	315	205	200	6	23
200	**C10D200**	387	260	382	245	250	6	29
250	**C10D250**	387	260	382	245	250	6	33
315	**C10D315**	387	260	382	245	250	6	43
400	**C10D400**	460	340	501	300	300	12	53

Neutral current A	Reference	External dimensions mm			Fastening elements mm			Weight kg
		A	B	C	D	E	Ø	
C20D								
25	**C20D25**	460	340	501	300	300	12	55
31.5	**C20D31.5**	460	340	501	300	300	12	66
40	**C20D40**	549	424	644	375	345	12	92
50	**C20D50**	549	424	644	375	345	12	110
63	**C20D63**	616	424	710	375	345	12	116
80	**C20D80**	616	424	710	375	345	12	118
100	**C20D100**	616	424	710	375	345	12	126
125	**C20D125**	616	424	710	375	345	12	145
160	**C20D160**	616	424	710	375	345	12	167
200	**C20D200**	815	555	975	500	415	12	246
250	**C20D250**	815	555	975	500	415	12	281
315	**C20D315**	815	555	975	500	415	12	330
400	**C20D400**	815	555	975	500	415	12	364
500	**C20D500**	815	555	975	500	415	12	435
630	**C20D630**	990	682	1250	582	470	18	490

Power kVA	Reference	External dimensions mm			Fastening elements mm			Weight kg
		A	B	C	D	E	Ø	
C22D								
10	**C22D10**	549	424	644	375	345	12	109
12.5	**C22D12.5**	616	424	710	375	345	12	124
16	**C22D16**	616	424	710	375	345	12	145
20	**C22D20**	616	424	710	375	345	12	165
25	**C22D25**	616	424	710	375	345	12	196
31.5	**C22D31.5**	815	555	975	500	415	12	245
40	**C22D40**	815	555	975	500	415	12	280
50	**C22D50**	815	555	975	500	415	12	329
63	**C22D63**	815	555	975	500	415	12	373
80	**C22D80**	815	555	975	500	415	12	419
100	**C22D100**	990	682	1250	582	470	18	538
125	**C22D125**	990	682	1250	582	470	18	643
160	**C22D160**	1215	772	1555	672	690	18	782

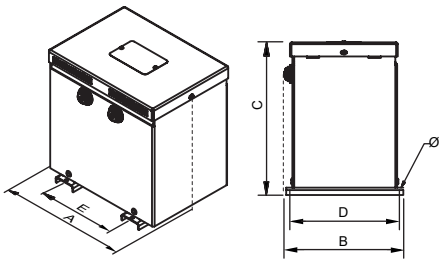
Power kVA	Reference		External dimensions mm			Fastening elements mm			Weight kg
			A	B	C	D	E	Ø	
C25D									
10	**C25D10-0**	**C25D10-180**	616	424	710	375	345	12	117
12.5	**C25D12.5-0**	**C25D12.5-180**	616	424	710	375	345	12	142
16	**C25D16-0**	**C25D16-180**	616	424	710	375	345	12	158
20	**C25D20-0**	**C25D20-180**	616	424	710	375	345	12	185
25	**C25D25-0**	**C25D25-180**	815	555	975	500	415	12	261
31.5	**C25D31.5-0**	**C25D31.5-180**	815	555	975	500	415	12	319
40	**C25D40-0**	**C25D40-180**	815	555	975	500	415	12	365
50	**C25D50-0**	**C25D50-180**	815	555	975	500	415	12	401
63	**C25D63-0**	**C25D63-180**	815	555	975	500	415	12	437
80	**C25D80-0**	**C25D80-180**	990	682	1250	582	470	18	596
100	**C25D100-0**	**C25D100-180**	990	682	1250	582	470	18	646
125	**C25D125-0**	**C25D125-180**	1215	772	1555	672	690	18	790
160	**C25D160-0**	**C25D160-180**	1215	772	1555	672	690	18	880

CD SERIES

For office installations

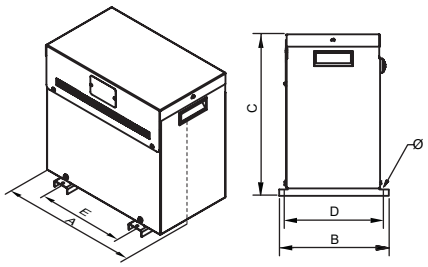
Power kVA	Reference	External dimensions mm			Fastening elements mm			Weight kg
		A	B	C	D	E	Ø	
C30D								
10	**C30D10**	616	424	710	375	345	12	134
12.5	**C30D12.5**	616	424	710	375	345	12	145
16	**C30D16**	616	424	710	375	345	12	166
20	**C30D20**	616	424	710	375	345	12	187
25	**C30D25**	815	555	975	500	415	12	270
31.5	**C30D31.5**	815	555	975	500	415	12	324
40	**C30D40**	815	555	975	500	415	12	360
50	**C30D50**	815	555	975	500	415	12	406
63	**C30D63**	815	555	975	500	415	12	457
80	**C30D80**	990	682	1250	582	470	18	551
100	**C30D100**	990	682	1250	582	470	18	613
125	**C30D125**	1215	772	1555	672	690	18	801
160	**C30D160**	1215	772	1555	672	690	18	900

C10D



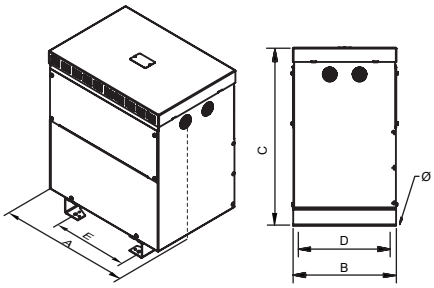
Up to C10D160

C10D / C20D

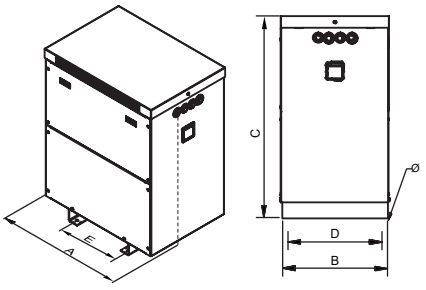


From C10D200 up to C10D400
Up to C20D31,5

C20D / C22D / C25D / C30D



From C20D40 up to C20D160
Up to C22D25 and 20 kVA for C25D / C30D



From C20D200 up to C20D630
From C22D31,5 and 25 kVA for C25D / C30D
up to 160 kVA

CE

CD SERIES

For office installations

On-request manufacturing options (please see prices)

Power	**From 10 kVA to 160 kVA**
Windings	**Copper or aluminium**
Frequency	**From 50 Hz to 400 Hz**
IP rating	**IP20, IP23, IP31, IP42, IP54, IP55 and IP65**
IK rating	**IK08 and IK10**
Room temperature	**Up to 60 ºC**
Locks	**Screw, key**
Operation	**Intermittent, continuous**
Cooling	**Natural, forced ventilation**
Electrostatic shield	**Up to three shields**
Class	**I, II**
Altitude	**Up to 4000 m**
Protections	**In both primary and secondary (figure 1)**
Temperature sensors	**PT100 (figure 2), PTC (figure 3) or bimetallic**
Temperature control	**Temperature control station (4xPT100) (figure 4), PTC thermal relays (3xPTC / 6xPTC)**
Network analyser	**(Figure 5)**
Anti condensation system	**Hygrostat**
Heating system	**Heating elements**
External protection	**Metallic or stainless steel enclosure**
Transportation and hoisting	**Wheels (figure 6), lifting points**
Paint	**C3, C4, C5, different RAL**
Feature plate	**High generation polymer or stainless steel (figure 7)**
Anti vibration system	**Silentblock**
Adjustment	**-10%; -7.5%; -5%; -2.5%; +2.5%; +5%; +7.5%; +10% With bridges (figure 8) or selector (figure 9)**
Certified	**CE, DNV-GL, BV, UL (insulation) and POLYLUX laboratory**
Climate class / environment / fire	**Up to C2-E2-F1**

Figure 1

Figure 2

Figure 3

Figure 4

Figure 5

Figure 6

Figure 7

Figure 8

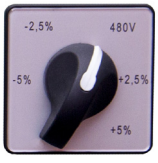


Figure 9

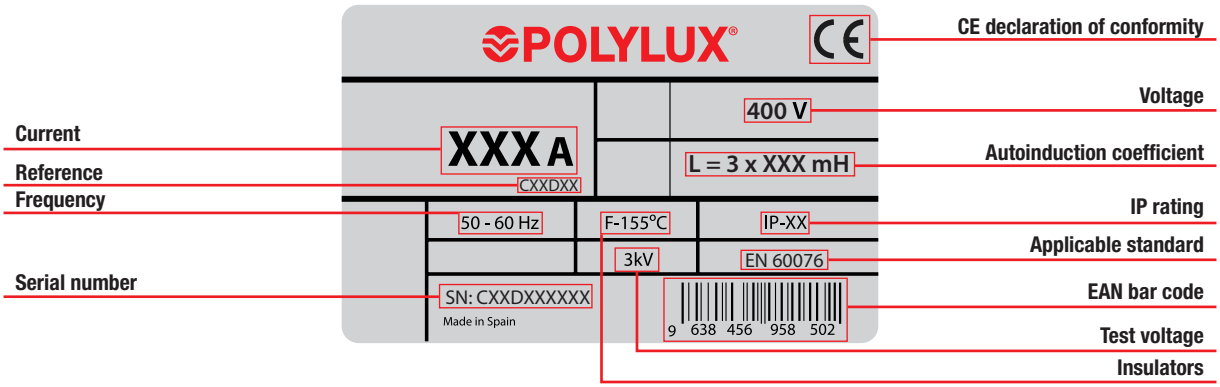
CD SERIES

For office installations

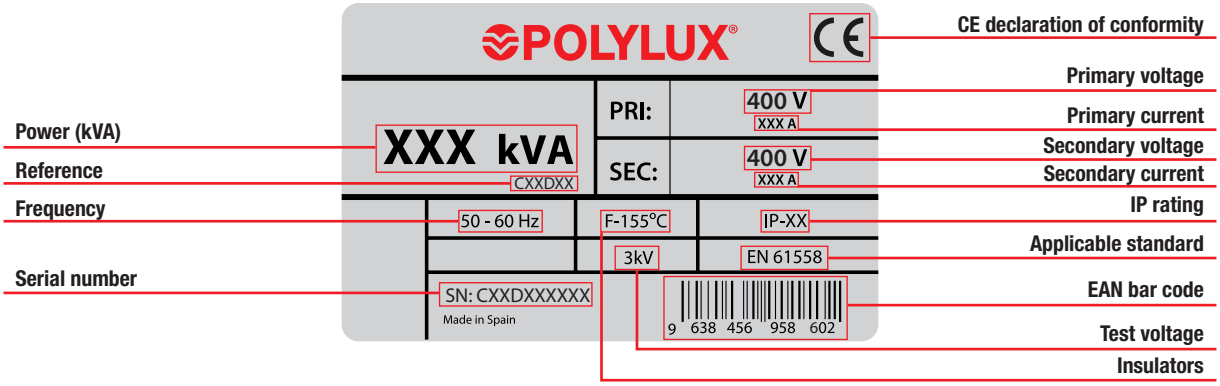
Feature plate structure

Label for C10D, up to C20D160

- For C10D, uo to C20D160:



- Up to 20 kVA for C22D / C25D / C30D:



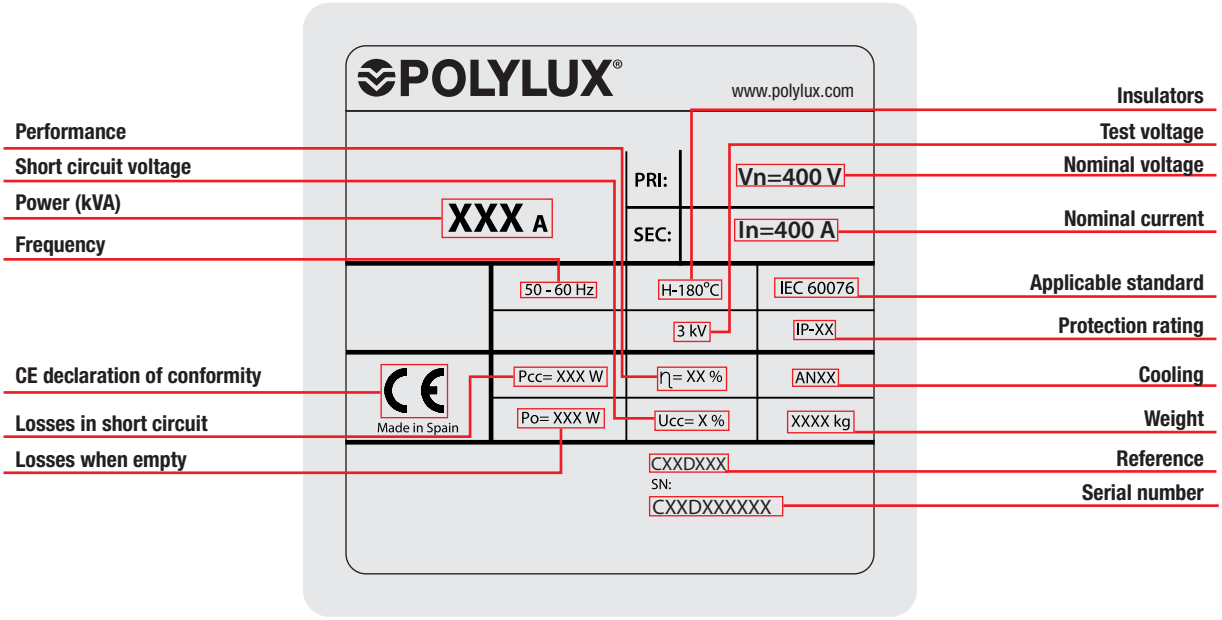
CD SERIES

For office installations

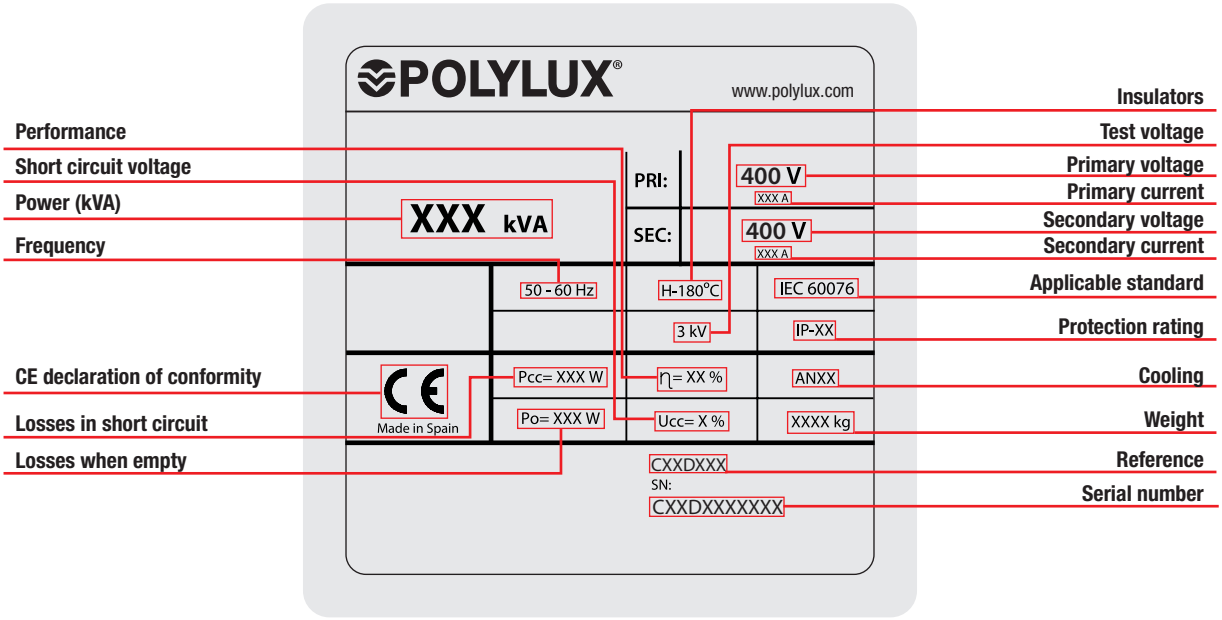
Feature plate structure

Label:

- From C20D200:



- From 25 kVA for C22D / C25D / C30D:



CF SERIES

For industrial installations · For non-homopolar harmonics

Definition and applications

The CF series are non-homopolar harmonic compensators designed for industrial installations.
The C10F compensators are specially designed for heavy industry where the presence of homopolar harmonics is usually negligible and problems arise due to harmonics of the 5th, 7th, 17th, 19th orders and others.
Along with line inductances, they are successful in reducing phase currents of up to 35% and a reduction in current distortion and voltage of up to 85%.

Manufacturing characteristics

- All the compensators are dipped in anti-flash varnish and then compacted in the furnace. This process increases the insulation grade, reduces noise and provides anti-moisture, waterproofed protection.
- Cable outlet with cable gland
- Hoisting elements included.
- All the compensators are checked automatically one by one and the compliance report is created in accordance with the respective standard.

Technical features - standard model

Standard voltage	**400 V**
Standard frequency	**50-60 Hz**
Insulators	**Class H - 180 ºC**
Temperature rise	**C10F - Class F ≤ C10F31.5** **- Class H ≥C10F40** **C20F - Class F ≤ C20F25** **- Class H ≥C20F31.5** *More information in Technical Appendix (T.A.1)
Windings	**Class HC-200 ºC**
Class	**I**
Altitude	**1000 m**
Enclosure colour	**RAL 7035**
IP rating	**IP23**
IK rating	**IK08**
Paint class (ISO 12944)	**C3**
Room temperature	**45 ºC**
Standards	**IEC/EN/UNE-EN 60076 I 61000-3-2/4, CE y IEE 519, CE**
Test voltage	**3 kV (1 min, 50 Hz)**
Operation	**Continuous**
Cooling	**ANAN**

CF SERIES

For industrial installations · For non-homopolar harmonics

Theoretical data - standard model

Power kVA	Reference	Insulation class	Current A		Protections A		Noise dB	Cable gland	
			Input	Output	Input	Output		ø max. (mm)	Quantity
C10F									
10	**C10F10**	F	14.5	14.5	32 (D/aM)	16 (C/gG)	≤45	32	4
12.5	**C10F12.5**	F	18.1	18.1	32 (D/aM)	16 (C/gG)	≤45	32	4
16	**C10F16**	F	23.1	23.1	40 (D/aM)	20 (C/gG)	≤45	32	4
20	**C10F20**	F	28.9	28.9	50 (D/aM)	25 (C/gG)	≤45	32	4
25	**C10F25**	F	36.1	36.1	63 (D/aM)	32 (C/gG)	≤45	32	4
31.5	**C10F31.5**	F	45.5	45.5	80 (D/aM)	40 (C/gG)	≤45	32	4
40	**C10F40**	H	57.8	57.8	100 (D/aM)	50 (C/gG)	≤55	32	8
50	**C10F50**	H	72.3	72.3	125 (D/aM)	63 (C/gG)	≤55	32	8
63	**C10F63**	H	91	91	160 (D/aM)	80 (C/gG)	≤55	32	8
80	**C10F80**	H	116	116	200 (D/aM)	100 (C/gG)	≤55	32	8
100	**C10F100**	H	145	145	250 (D/aM)	125 (C/gG)	≤55	44	8
125	**C10F125**	H	181	181	400 (D/aM)	160 (C/gG)	≤55	44	8
160	**C10F160**	H	231	231	500 (D/aM)	200 (C/gG)	≤55	44	8
200	**C10F200**	H	289	289	630 (D/aM)	250 (C/gG)	≤55	44	8
C20F									
10	**C20F10**	F	14.5	14.5	32 (D/aM)	16 (C/gG)	≤45	32	4
12.5	**C20F12.5**	F	18.1	18.1	32 (D/aM)	16 (C/gG)	≤45	32	4
16	**C20F16**	F	23.1	23.1	40 (D/aM)	20 (C/gG)	≤45	32	4
20	**C20F20**	F	28.9	28.9	50 (D/aM)	25 (C/gG)	≤45	32	4
25	**C20F25**	F	36.1	36.1	63 (D/aM)	32 (C/gG)	≤45	32	4
31.5	**C20F31.5**	H	45.5	45.5	80 (D/aM)	40 (C/gG)	≤45	32	4
40	**C20F40**	H	57.8	57.8	100 (D/aM)	50 (C/gG)	≤55	32	8
50	**C20F50**	H	72.3	72.3	125 (D/aM)	63 (C/gG)	≤55	32	8
63	**C20F63**	H	91	91	160 (D/aM)	80 (C/gG)	≤55	32	8
80	**C20F80**	H	116	116	200 (D/aM)	100 (C/gG)	≤55	32	8
100	**C20F100**	H	145	145	250 (D/aM)	125 (C/gG)	≤55	44	8
125	**C20F125**	H	181	181	400 (D/aM)	160 (C/gG)	≤55	44	8
160	**C20F160**	H	231	231	500 (D/aM)	200 (C/gG)	≤55	44	8
200	**C20F200**	H	289	289	630 (D/aM)	250 (C/gG)	≤55	44	8
250	**C20F250**	H	361	361	800 (D/aM)	300 (C/gG)	≤55	44	8

CE

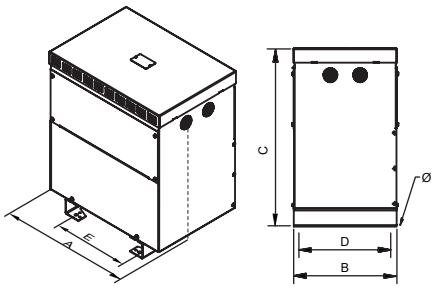
CF SERIES

For industrial installations · For non-homopolar harmonics

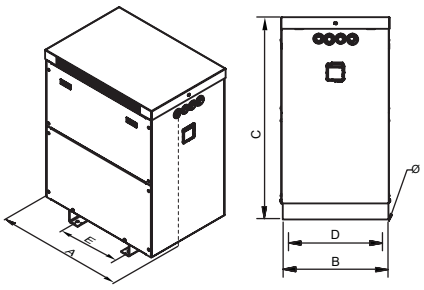
Measurements

Power kVA	Reference	External dimensions mm			Fastening elements mm			Weight kg
		A	B	C	D	E	Ø	
C10F								
10	**C10F10**	549	424	644	375	345	12	91
12.5	**C10F12.5**	549	424	644	375	345	12	106
16	**C10F16**	616	424	710	375	345	12	117
20	**C10F20**	616	424	710	375	345	12	124
25	**C10F25**	616	424	710	375	345	12	142
31.5	**C10F31.5**	616	424	710	375	345	12	166
40	**C10F40**	616	424	710	375	345	12	191
50	**C10F50**	815	555	975	500	415	12	238
63	**C10F63**	815	555	975	500	415	12	268
80	**C10F80**	815	555	975	500	415	12	319
100	**C10F100**	815	555	975	500	415	12	362
125	**C10F125**	815	555	975	500	415	12	402
160	**C10F160**	990	682	1250	582	470	18	533
200	**C10F200**	990	682	1250	582	470	18	641

Power kVA	Reference	External dimensions mm			Fastening elements mm			Weight kg
		A	B	C	D	E	Ø	
C20F								
10	**C20F10**	616	424	710	375	345	12	115
12.5	**C20F12.5**	616	424	710	375	345	12	120
16	**C20F16**	616	424	710	375	345	12	141
20	**C20F20**	616	424	710	375	345	12	160
25	**C20F25**	616	424	710	375	345	12	181
31.5	**C20F31.5**	815	555	975	500	415	12	253
40	**C20F40**	815	555	975	500	415	12	288
50	**C20F50**	815	555	975	500	415	12	333
63	**C20F63**	815	555	975	500	415	12	378
80	**C20F80**	815	555	975	500	415	12	462
100	**C20F100**	990	682	1250	582	470	18	508
125	**C20F125**	990	682	1250	582	470	18	615
160	**C20F160**	1215	772	1555	672	690	18	768
200	**C20F200**	1215	772	1555	672	690	18	872
250	**C20F250**	1215	772	1555	672	690	18	974



Up to C10F40 and up to C20F25



From C10F31,5 and from C20F31,5

CF SERIES

For industrial installations · For non-homopolar harmonics

On-request manufacturing options (please see prices)

Power	**From 10 kVA to 250 kVA**
Windings	**Copper or aluminium**
Frequency	**From 50 Hz to 400 Hz**
IP rating	**IP20, IP23, IP31, IP42, IP54, IP55 and IP65**
IK rating	**IK08 and IK10**
Room temperature	**Up to 60 ºC**
Locks	**Screw, key**
Operation	**Intermittent, continuous**
Cooling	**Natural, forced ventilation**
Electrostatic shield	**Up to three shields**
Class	**I, II**
Altitude	**Up to 4000 m**
Protections	**In both primary and secondary (figure 1)**
Temperature sensors	**PT100 (figure 2), PTC (figure 3) or bimetallic**
Temperature control	**Temperature control station (4xPT100) (figure 4), PTC thermal relays (3xPTC / 6xPTC)**
Network analyser	**(Figure 5)**
Anti condensation system	**Hygrostat**
Heating system	**Heating elements**
External protection	**Metallic or stainless steel enclosure**
Transportation and hoisting	**Wheels (figure 6), lifting points**
Paint	**C3, C4, C5, different RAL**
Feature plate	**High generation polymer or stainless steel (figure 7)**
Anti vibration system	**Silentblock**
Adjustment	**-10%; -7.5%; -5%; -2.5%; +2.5%; +5%; +7.5%; +10% With bridges (figure 8) or selector (figure 9)**
Certified	**CE, DNV-GL, BV, UL (insulation) and POLYLUX laboratory**
Climate class / environment / fire	**Up to C2-E2-F1**

Figure 1

Figure 2

Figure 3

Figure 4

Figure 5

Figure 6

Figure 7

Figure 8

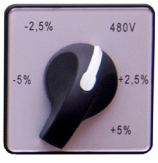


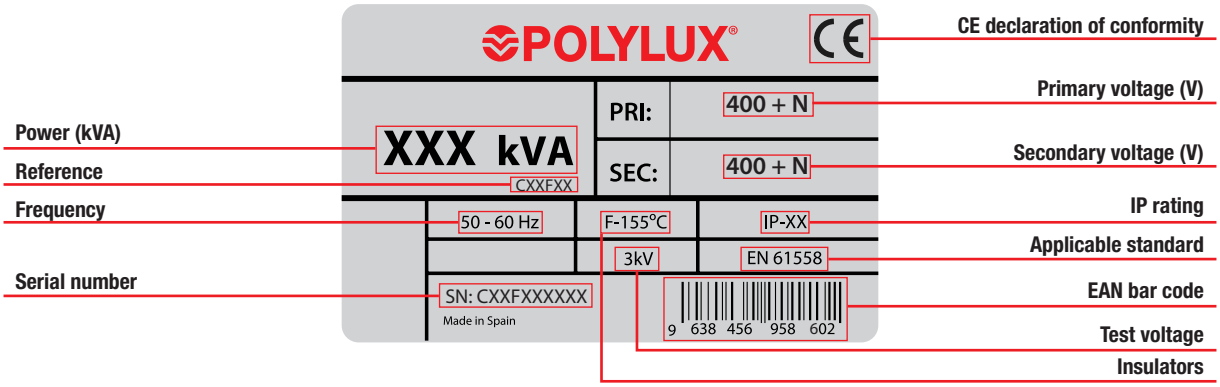
Figure 9

CF SERIES

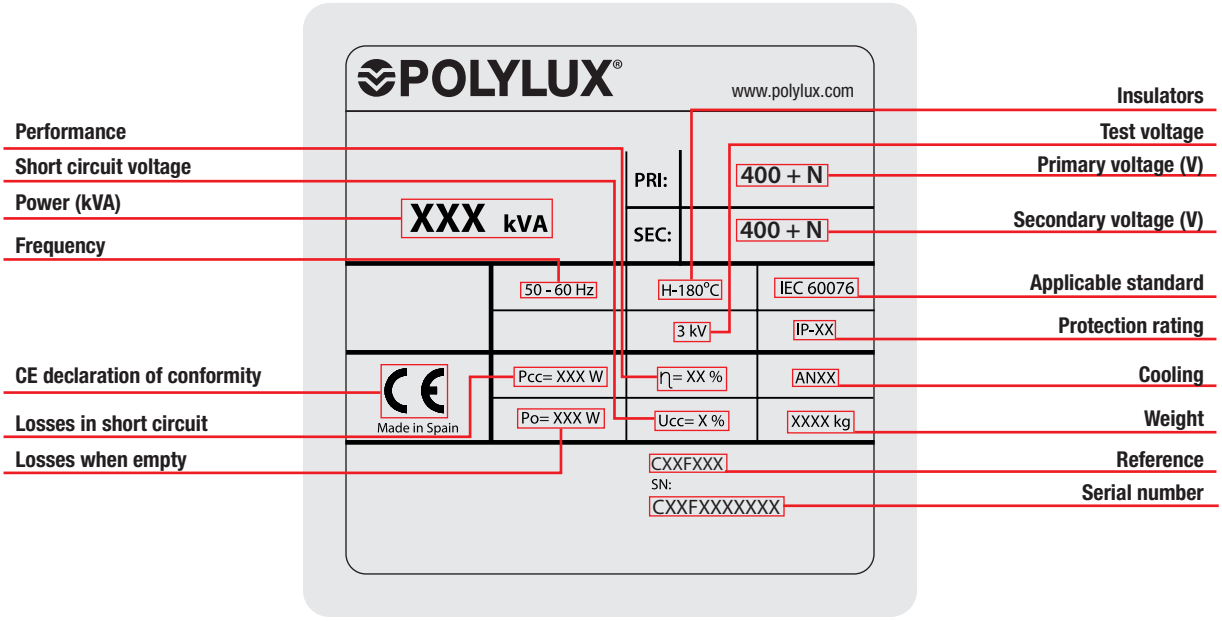
For industrial installations · For non-homopolar harmonics

Feature plate structure

Label up to C10F31.5 and up to C20F25



Label from C10F40 and from C20F31.5:

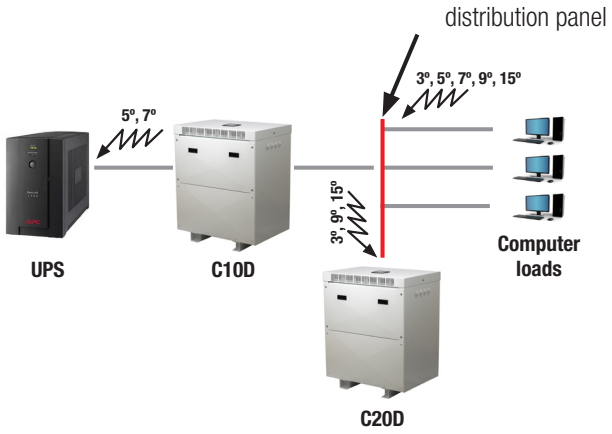


CE

Office installation solutions

Solution 1

Filtering of 3º, 9º and 15º harmonics.
C10D + C20D compensator

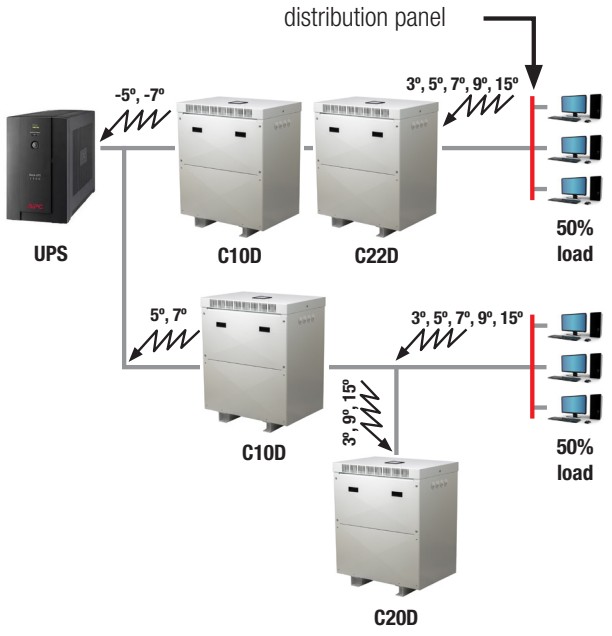


The 20D Compensator has a very good cost-filter ratio. It reduces homopolar harmonics (3rd, 9th, 15th) thus eliminating the main problem in office installations which is overload in the neutral conductor and a high neutral-ground voltage.
The C20D Compensators must be installed together with the C10D Impedance Adapter to obtain the best filtering.
Filtering obtained:

Reduction of neutral current and neutral-ground voltage up to	75%
Reduction of phase current up to	15%
Reduction of voltage distortion and current up to	45%
Power factor obtained up to	0.80

Solution 2

Filtering of harmonics of the 3º, 5º, 7º, 9º, 15º,17º and 19º orders
C10D + C20D and C10D + C22D Compensator

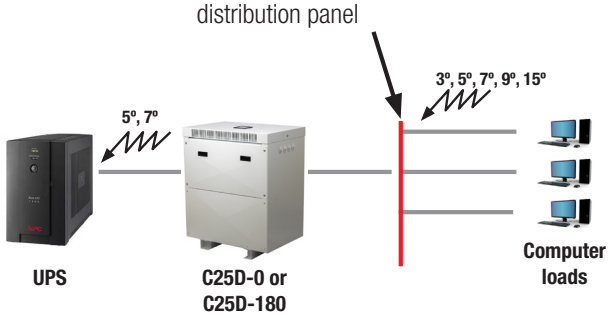


The C22D Compensator provides high filtering of 3rd, 5th, 7th, 9th, 15th, 17th and 19th harmonics. This solves all the harmonics problems in the installation. It is used in combination with the C20D + C10D model. Each one supplies 50% of the load to be filtered.
The C20D and C22D Compensators must be installed with the C10D Impedance Adapters for optimum filtering.
Filtering obtained:

Reduction of neutral current and neutral-ground voltage up to	80 %
Reduction of phase current up to	40 %
Reduction of voltage distortion and current up to	75 %
Power factor obtained up to	0.95

Solution 3

Filtering of harmonics with galvanic isolation of 3º, 9º and 15º
C25D Compensator



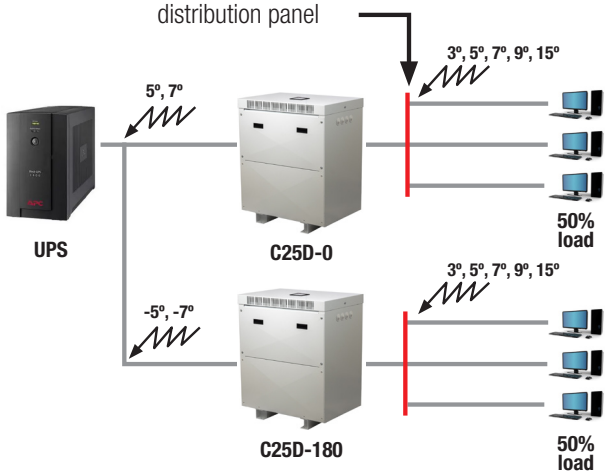
The C25D Compensator completely eliminates all homopolar harmonics (3rd, 9th, 15th), preventing surge current in neutral and high neutral-ground voltages produced by harmonics.
As it is a Compensator with galvanic isolation, it is the perfect solution in cases of high third harmonic voltages. It also has the following advantages: reduction of electromagnetic perturbations from the network, offers the possibility of changing the voltage between input and output and permits the use of independent ground circuits as the neutral is isolated from the network.
Filtering obtained:

Reduction of neutral current and neutral-ground voltage up to	90%
Reduction of phase current up to	15%
Reduction of current distortion up to	45%
Reduction of voltage distortion up to	40%
Power factor obtained up to	0.80

Office installation solutions

Solution 4

Filtering of harmonics with galvanic separation 3º, 5º, 7º, 9º, 15º, 17º and 19º
C25D Compensator

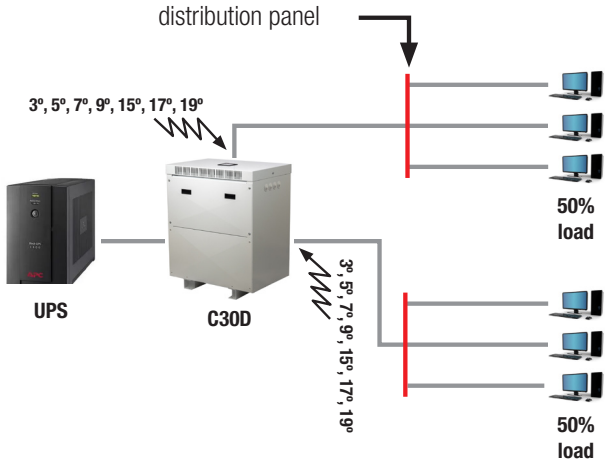


The C25D Compensator has two variants, depending on the dephase of the 5th and 7th harmonics. They are 0º and 180º. Combining their use, it is possible to eliminate 3rd, 5th, 7th, 9th, 15th, 17th and 19th harmonics.
Filtering obtained by combining the 0º and 180º variants:

Reduction of neutral current and neutral-ground voltage up to	90%
Reduction of phase current up to	45 %
Reduction of voltage distortion and current up to	85 %
Power factor obtained up to	0.96

Solution 5

Filtering of harmonics with galvanic separation 3º, 5º, 7º, 9º, 15º, 17º and 19º
C30D Compensator



The C30D Compensator obtains the highest filtering in office installations. It eliminates 3rd, 5th, 7th, 9th, 15th, 17th and19th harmonics and has additional advantages such as reducing electromagnetic perturbations coming from the network, permitting changes in voltage between input and output and making it possible to use independent ground circuits.
Filtering obtained:

Reduction of neutral current and neutral-ground voltage up to	90%
Reduction of phase current up to	45 %
Reduction of voltage distortion and current up to	85 %
Power factor obtained up to	0.96

Solutions for industrial installations

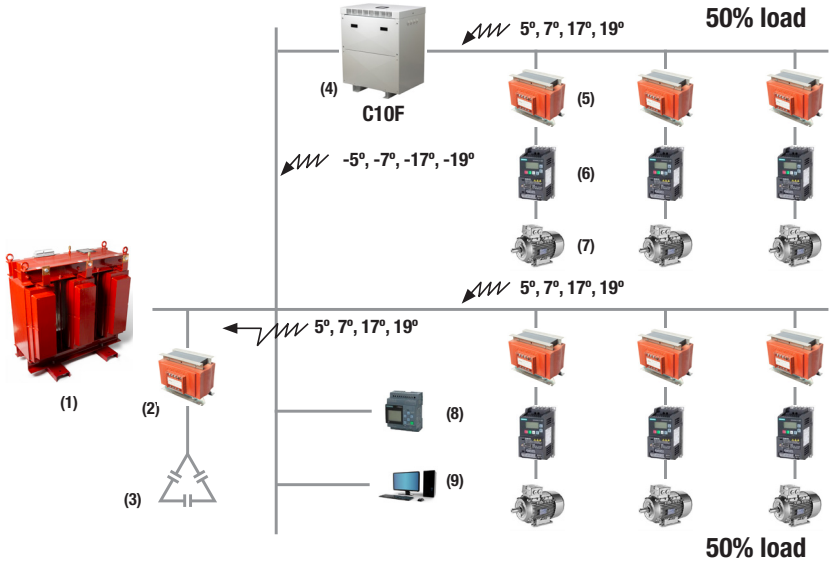
Solution 1

Optimum filtering of 3º, 5º, 7º, 9º, 15º, 17º and 19º harmonics.
C10F Compensator

The C10F Compensator is used in cases where very high filtering is required. Its operation is based on installing a C10F unit supplying 50% of the load and the other 50% is direct.
To ensure correct filtering, it is advisable to install it together with RTL or RTLX line inductances, particularly with converters with powers over 5 kVA.
Filtering obtained:

	C10F	C10F + RTL
Reduction of phase current up to	20%	35%
Reduction of voltage distortion and current up to	60%	85%
Power factor obtained up to	0.95	0.98

(1) Transformer
(2) Rejection inductance
(3) Capacitator battery
(4) Compensator
(5) RTL or RTLX line inductance
(6) Frequency variator
(7) Motor
(8) PLC
(9) Computer



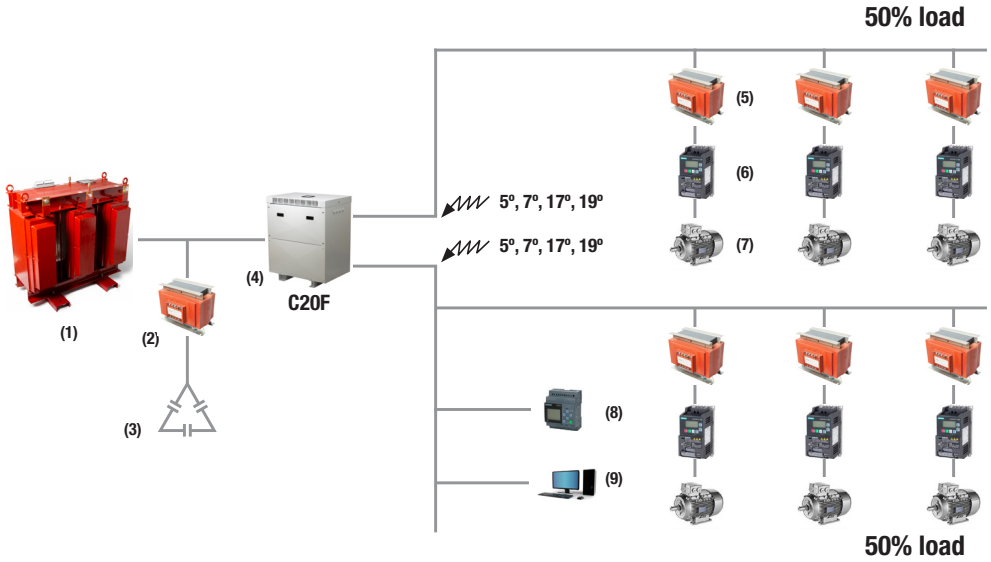
Solution 2

High filtering of 5º, 7º, 17º and 19º harmonics and galvanic isolation of load.
C20F Compensator

The C20F Compensator attains the highest level of protection in industrial installations. It obtains a high filtering of harmonics as well as the galvanic isolation of the load. It has two outputs, each one supplying 50% of the load.
To ensure correct filtering, it is advisable to install it together with RTL or RTLX line inductances, particularly with converters with powers over 5 kVA.
Filtering obtained:

	C20F	C20F + RTL
Reduction of phase current up to	20%	35%
Reduction of voltage distortion and current up to	60%	85%
Power factor obtained up to	0.95	0.98

(1) Transformer
(2) Rejection inductance
(3) Capacitator battery
(4) Compensator
(5) RTL or RTLX line inductance
(6) Frequency variator
(7) Motor
(8) PLC
(9) Computer



QR SERIES

Encapsulated for harmonic filtering in single-phase lines · Network 220 V - 260 V

NEW head design

- Increased wiring insulation.
- Clearer features.
- Easier connection.
- More uniform, compact and robust design.

Definition and applications

The QR series are inductances for harmonic filtering in low power single-phase installations.
Specific applications:

- Reduction of current harmonics generated by electronic equipment, reducing current consumption and improving the power factor.
- Reduction of the crest factor of the current waveform, lengthening the service life of the equipment.
- Attenuation of micro power cuts produced by the converter that cause the malfunction of computers, automatons and other susceptible equipment.

Manufacturing characteristics

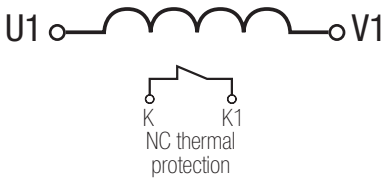
All the versions have the following features in common:

- Encapsulated in flame retardant resin.
- Option of mounting on **DIN rail up to 16 A**, rest with screws.
- IP20 enclosure, V-0 flame-retardant polymer box that complies with UL94.
- **All the parts of these inductances are live and encapulsulated in resin, and are thus specially indicated for operating in damp, saline or corrosive environments.**
- **They have greater resistance to current surges and transient harmonics.**
- **Greater mechanical resistance to vibrations and undesirable movements.**
- Safety Class I, convertible to Class II.
- All the inductances are checked automatically one by one and the compliance report is created based on the respective standard.

Technical features - standard model

Current	**2.5 A to 31.5 A**
Insulators	**Class H - 180 ºC**
Temperature rise	**Class B**
Winding	**Class HC - 200 ºC**
Room temperature	**45 ºC**
Frequency	**50-60 Hz**
Noise	**≤ 40 dB**
Protection rating	**IP20**
Cooling	**AN**
Mounting	**Mounting on DIN 46277/3 rail (up to 16 A) or with screws**
Standards	**UNE-EN 60076-6, CE**
Protection	**Convertible from Class I to Class II**
Operation	**Continuous**
Test voltage	**3 kV (1 min., 50 Hz) between coil and ground**

Electrical diagram



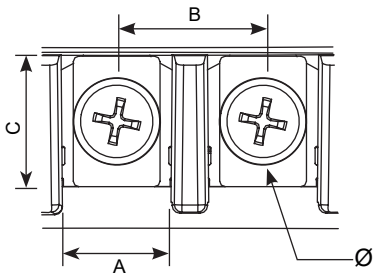
CE

QR SERIES

Encapsulated for harmonic filtering in single-phase lines · Network **220 V - 260 V**

Terminal types

Terminal blocks	External mm				Maximum tightening torque N·m	Primary Current A		Secondary Current A	
	A	B	C	Ø		From	To	From	To
Terminal M3	8	11	9	M3	0.5	2.5	5	2.5	5
Terminal M4	10	13.5	12	M4	1.1	6.3	31.5	6.3	16
Terminal M5	15	18.5	14	M5	2.5	-	-	20	31.5

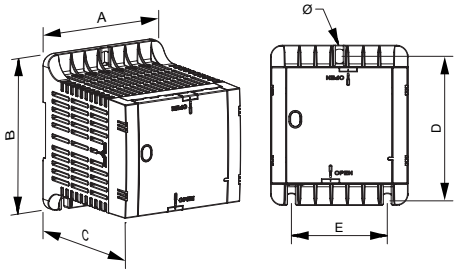


Theoretical data - standard model

Current A	Reference	L mH	Motor power	
			kVA	HP
2.5	**QR2.5**	8.785	0.23	0.31
4	**QR4**	5.491	0.37	0.5
5	**QR5**	4.393	0.46	0.6
6.3	**QR6.3**	3.486	0.55	0.75
8	**QR8**	2.745	0.75	1
10	**QR10**	2.196	1.1	1.5
12.5	**QR12.5**	1.757	1.5	2
16	**QR16**	1.373	1.85	2.5
20	**QR20**	1.098	2.2	3
25	**QR25**	0.879	3	4
31.5	**QR31.5**	0.697	4	5.5

Measurements

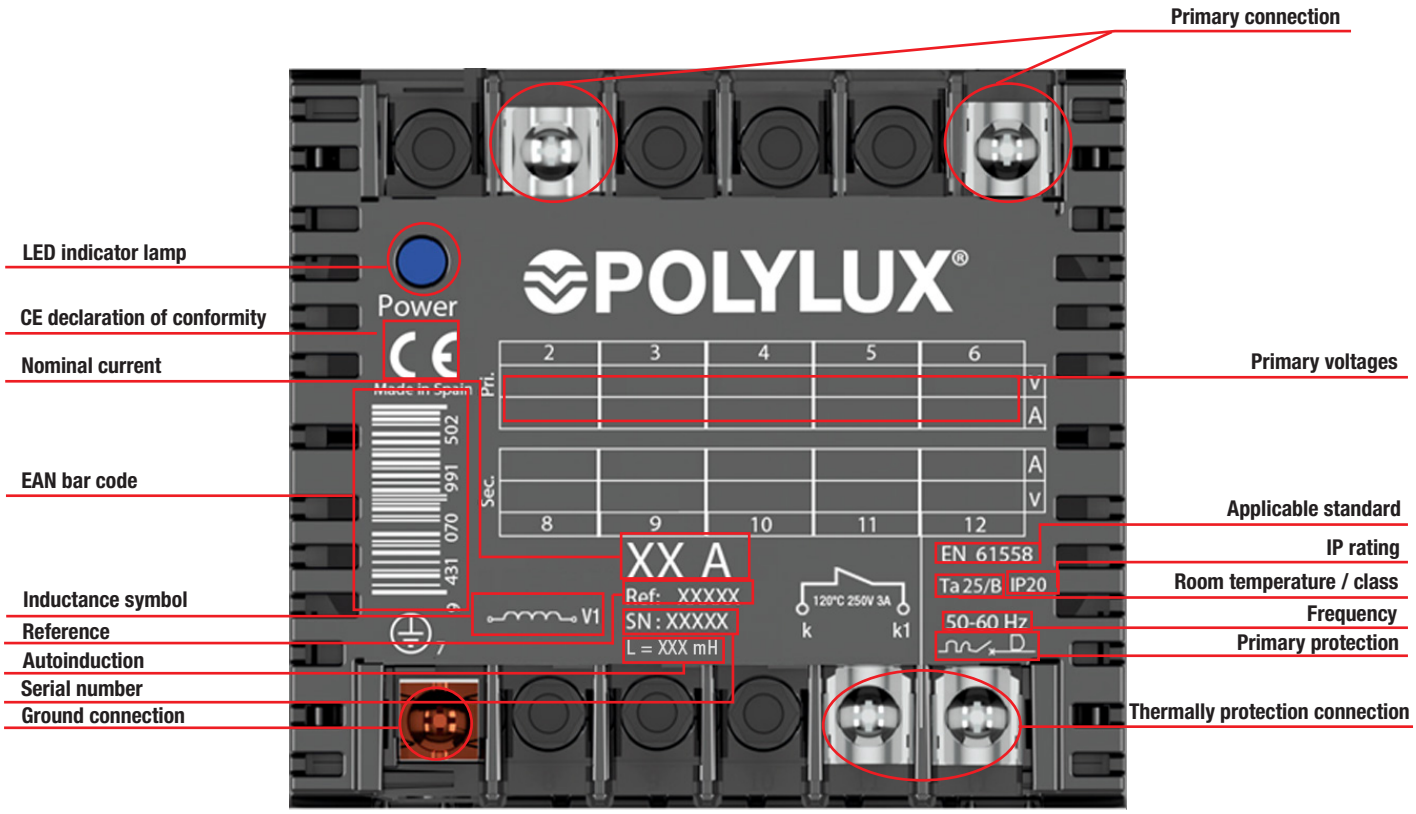
Current A	Ref.	External dimensions mm			Fastening elements mm			Weight kg
		A	B	C	D	E	Ø	
2.5	**QR2.5**	84	101	98	88	55	6	0,8
4	**QR4**	84	101	98	88	55	6	0,8
5	**QR5**	84	101	98	88	55	6	1
6.3	**QR6.3**	106	123	122	110	74	6	1,6
8	**QR8**	106	123	122	110	74	6	1,6
10	**QR10**	106	123	122	110	74	6	1,6
12.5	**QR12.5**	106	123	122	110	74	6	1,6
16	**QR16**	106	123	122	110	74	6	2
20	**QR20**	118	138	132	122	88	6	2,7
25	**QR25**	118	138	132	122	88	6	2,7
31.5	**QR31.5**	136	162	155	146	104	6	3,6



QR SERIES

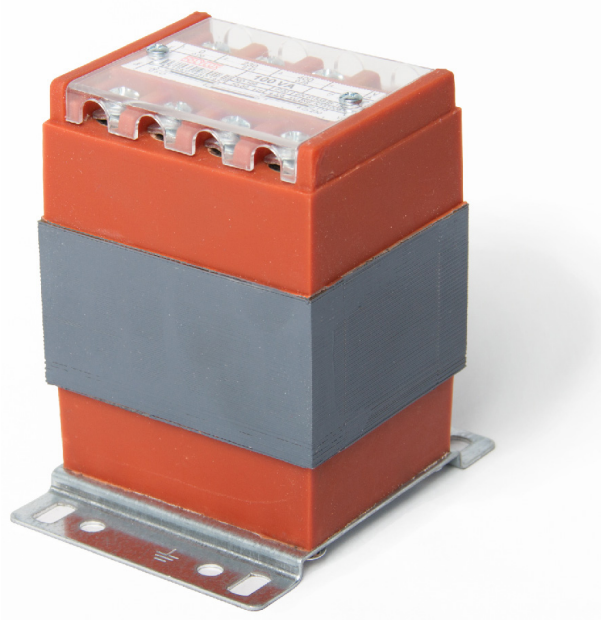
Encapsulated for harmonic filtering in single-phase lines · Network **220 V - 260 V**

Feature plate structure



R SERIES

Encapsulated for harmonic filtering in single-phase lines · Network 220 V - 260 V



Technical features - standard model

Current	**2.5 A to 100 A**
Insulators	**Class H - 180 ºC**
Temperature rise	**Class B**
Winding	**Class HC - 200 ºC**
Room temperature	**45 ºC**
Frequency	**50-60 Hz**
Noise	**≤ 45 dB**
Protection rating	**IP20**
Cooling	**AN**
Mounting	**Mounting on DIN 46277/3 rail (up to 16 A) or with screws**
Standards	**UNE-EN 60076-6, CE**
Protection	**Class I**
Operation	**Continuous**
Test voltage	**3 kV (1 min., 50 Hz) between coil and ground**

Definition and applications

The R series are inductances for harmonic filtering in low power single-phase installations.
Specific applications:

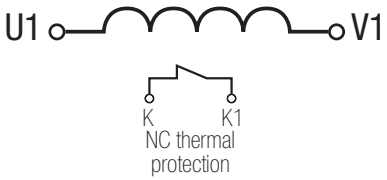
- Reduction of current harmonics generated by electronic equipment, reducing current consumption and improving the power factor.
- Reduction of the crest factor of the current waveform, lengthening the service life of the equipment.
- Attenuation of micro power cuts produced by the converter that cause the malfunction of computers, automatons and other susceptible equipment.

Manufacturing characteristics

All the versions have the following features in common:

- Encapsulated in flame retardant resin.
- Connection terminals made of copper, welded and inserted in blocks to prevent hazards caused by expansion that may lead to poor connection.
- Option of mounting on **DIN rail up to 16 A**, rest with screws.
- All the parts of these inductances are live and encapsulated in resin, which makes them especially suitable for use in damp, saline and corrosive environments.
- They have greater resistance to current surges and transient harmonics.
- Greater mechanical resistance to vibrations and undesirable movements.
- Safety Class I.
- All the inductances are checked automatically one by one and the compliance report is created based on the respective standard.

Electrical diagram

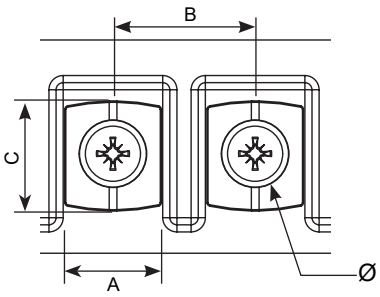


R SERIES

Encapsulated for harmonic filtering in single-phase lines · Network **220 V - 260 V**

Terminal types

Terminal blocks	External mm				Maximum tightening torque N·m	Primary Current A		Secondary Current A	
	A	B	C	Ø		From	To	From	To
Terminal M4	9.7	16	10.1	M4	1.1	2.5	16	2.5	12.5
Terminal M5	15.5	21.5	15.6	M5	2.5	40	100	16	31.5
Terminal M6	15.5	21.5	15.6	M6	4	-	-	40	50
Terminal M8	15.5	21.5	15.6	M8	4.5	-	-	63	100

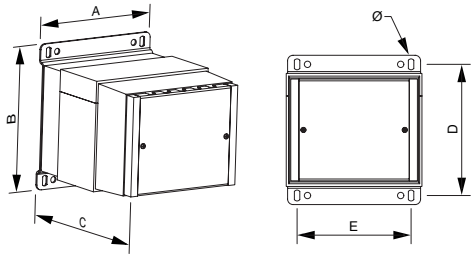


Theoretical data - standard model

Current A	Reference	L mH	Motor power	
			kVA	HP
2.5	**R2.5**	8.785	0.23	0.31
4	**R4**	5.491	0.37	0.5
5	**R5**	4.393	0.46	0.6
6.3	**R6.3**	3.486	0.55	0.75
8	**R8**	2.745	0.75	1
10	**R10**	2.196	1.1	1.5
12.5	**R12.5**	1.757	1.5	2
16	**R16**	1.373	1.85	2.5
20	**R20**	1.098	2.2	3
25	**R25**	0.879	3	4
31.5	**R31.5**	0.697	4	5.5
40	**R40**	0.549	5.5	7.5
50	**R50**	0.439	6.5	8.7
63	**R63**	0.349	7.5	10
80	**R80**	0.275	11	15
100	**R100**	0.220	14	18.7

Measurements

Current A	Ref.	External dimensions mm			Fastening elements mm			Weight kg
		A	B	C	D	E	Ø	
2.5	**R2.5**	50	97	84	80	34	6	0,8
4	**R4**	50	97	89	80	34	6	0,8
5	**R5**	50	97	94	80	34	6	1
6.3	**R6.3**	75	96	95	80	56	6	1,4
8	**R8**	75	96	95	80	56	6	1,4
10	**R10**	75	96	95	80	56	6	1,5
12.5	**R12.5**	75	96	95	80	56	6	1,5
16	**R16**	75	96	111	80	56	6	1,9
20	**R20**	84	102	120	86	65	6	2,7
25	**R25**	96	112	126	96	77	6	2,8
31.5	**R31.5**	96	112	126	96	77	6	3,2
40	**R40**	108	122	155	106	89	6	4,8
50	**R50**	126	145	167	125	102	6	5,5
63	**R63**	126	145	187	125	102	7	7
80	**R80**	126	145	187	125	102	7	7,3
100	**R100**	150	165	200	145	125	7	9,5



RTLX SERIES

For harmonic filtering in three-phase lines · Network **380 V - 460 V**

Definition and applications

The RTLX series are inductances for harmonic filtering in three-phase installations.
Specific applications:

- Reduction of current harmonics generated by electronic equipment, reducing current consumption and improving the power factor.
- Reduction of the crest factor of the current waveform, lengthening the service life of the equipment.
- Attenuation of micro power cuts produced by the converter that cause the malfunction of computers, automatons and other susceptible equipment.

Manufacturing characteristics

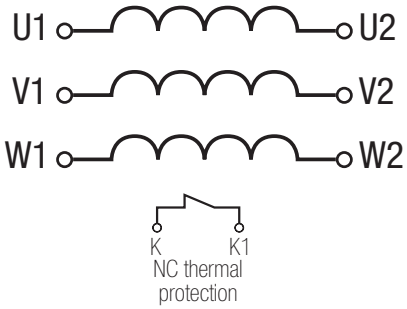
All the versions have the following features in common:

- Dual protection, resin + anti-flash varnish.
- Thermal protection against overtemperature included.
- Safety Class I.
- **UL certification.** FILE: E532753 - Construction only.
- All the inductances are checked automatically one by one and the compliance report is created based on the respective standard.

Technical features - standard model

Current	**2,5 A to 1000 A**
Insulators	**Class H - 180 ºC**
Temperature rise	**Class F**
Winding	**Class HC - 200 ºC**
Room temperature	**45 ºC**
Frequency	**50-60 Hz**
Noise	**≤ 60 dB**
Protection rating	**IP00**
Cooling	**AN**
Mounting	**With screws**
Standards	**≤600V: US Standard: UL 5085-1 / UL 5085-2 Canada Standard: CSA C22.2 N0 66.1-06 / CSA C22.2 N0 66.2-06 ≤750V: IEC/EN/UNE-EN 60076-6, CE**
Protection	**Class I**
Operation	**Continuous**
Test voltage	**3 kV (1 min., 50 Hz) between coil and ground**

Electrical diagram



RTLX SERIES

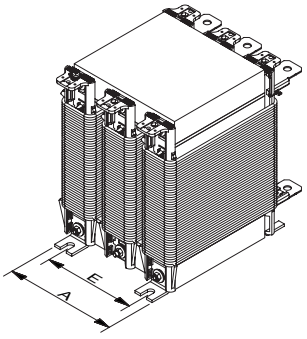
For harmonic filtering in three-phase lines · Network 380 V - 460 V

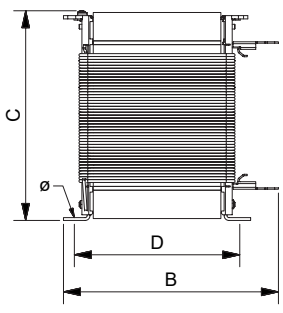
Theoretical data - standard model

Current A	Reference	L mH	Motor power	
			kVA	HP
2.5	**RTLX2.5**	11.762	0.75	1
4	**RTLX4**	7.351	1.1	1.5
5	**RTLX5**	5.881	1.5	2
6.3	**RTLX6.3**	4.667	2.2	3
8	**RTLX8**	3.676	3	4
10	**RTLX10**	2.941	4	5.5
12.5	**RTLX12.5**	2.352	5.5	7.5
16	**RTLX16**	1.838	6.5	8.8
20	**RTLX20**	1.47	7.5	10
25	**RTLX25**	1.176	11	15
31.5	**RTLX31.5**	0.933	15	20
40	**RTLX40**	0.735	18.5	25
50	**RTLX50**	0.588	22	30
63	**RTLX63**	0.467	30	40
80	**RTLX80**	0.368	37	50
100	**RTLX100**	0.294	45	60
125	**RTLX125**	0.235	55	75
160	**RTLX160**	0.184	75	100
200	**RTLX200**	0.147	90	125
250	**RTLX250**	0.118	110-132	150-180
315	**RTLX315**	0.093	150-160	205-220
400	**RTLX400**	0.074	185-200	250-270
500	**RTLX500**	0.059	220-250	300-340
630	**RTLX630**	0.047	280-315	405-425
800	**RTLX800**	0.037	370-400	500-540
1000	**RTLX1000**	0.029	440-500	600-680

Measurements

Current A	Ref.	External dimensions mm			Fastening elements mm			Weight kg
		A	B	C	D	E	Ø	
2.5	**RTLX2.5**	120	74	107	44	100	6	1,4
4	**RTLX4**	120	74	107	44	100	6	1,4
5	**RTLX5**	120	74	107	44	100	6	1,6
6.3	**RTLX6.3**	120	74	107	44	100	6	1,9
8	**RTLX8**	120	84	107	54	100	6	2,3
10	**RTLX10**	120	84	107	54	100	6	2,7
12.5	**RTLX12.5**	150	125	185	64	100	6	3,9
16	**RTLX16**	150	135	185	74	100	6	5,1
20	**RTLX20**	150	140	185	79	100	6	5,9
25	**RTLX25**	150	145	185	84	100	6	6,5
31.5	**RTLX31.5**	150	155	185	94	100	6	7,9
40	**RTLX40**	150	165	185	104	100	6	9,2
50	**RTLX50**	180	150	220	89	120	6	10,6
63	**RTLX63**	180	155	220	94	120	6	11,6
80	**RTLX80**	180	165	220	104	120	6	13,7
100	**RTLX100**	180	205	220	144	120	6	20,7
125	**RTLX125**	180	185	220	154	120	9	22,8
160	**RTLX160**	180	207	220	169	120	9	26,1
200	**RTLX200**	240	250	350	135	160	9	32,8
250	**RTLX250**	240	265	350	150	160	9	38,5
315	**RTLX315**	340	234	375	135	310	10	46,5
400	**RTLX400**	340	254	375	155	310	10	57,0
500	**RTLX500**	340	289	375	190	310	10	74,0
630	**RTLX630**	370	290	600	224	140	11	115,0
800	**RTLX800**	370	350	600	275	140	11	160,0
1000	**RTLX1000**	370	380	600	304	140	11	185,0

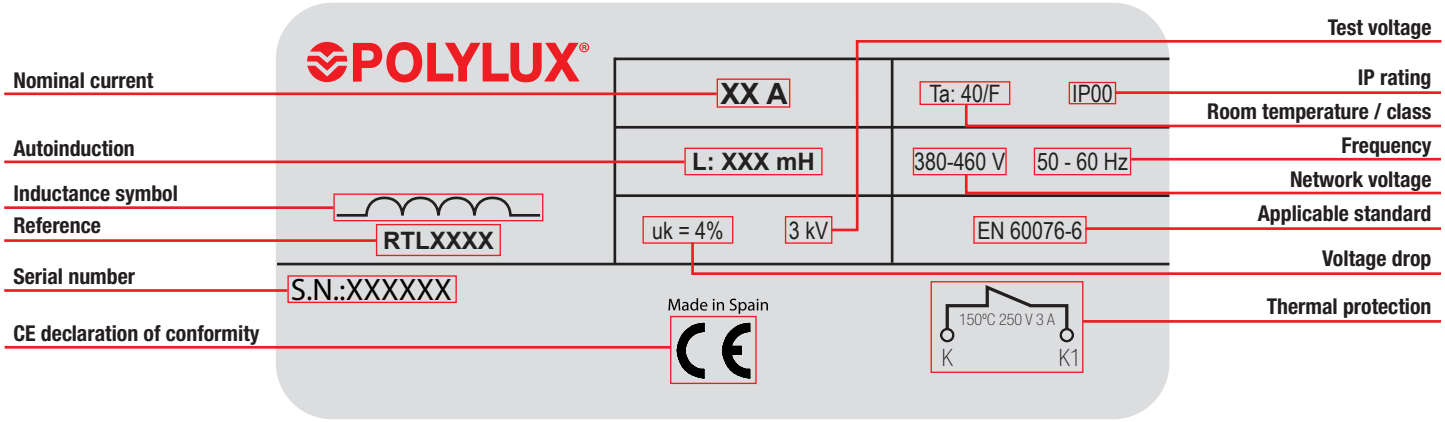




RTLX SERIES

For harmonic filtering in three-phase lines · Network 380 V - 460 V

Feature plate structure



RTL SERIES

Encapsulated for harmonic filtering in three-phase lines · Network **380 V - 460 V**

Technical features - standard model

Current	**2.5 A to 125 A**
Insulators	**Class H - 180 ºC**
Temperature rise	**Class F**
Winding	**Class HC - 200 ºC**
Room temperature	**45 ºC**
Frequency	**50-60 Hz**
Noise	**≤ 45 dB**
Protection rating	**IP20**
Cooling	**AN**
Mounting	**With screws**
Standards	**IEC/EN/UNE-EN 60076-6, CE**
Protection	**Class I**
Operation	**Continuous**
Test voltage	**3 kV (1 min., 50 Hz) between coil and ground**

Definition and applications

The RTL series are inductances for harmonic filtering in three-phase installations.
Specific applications:

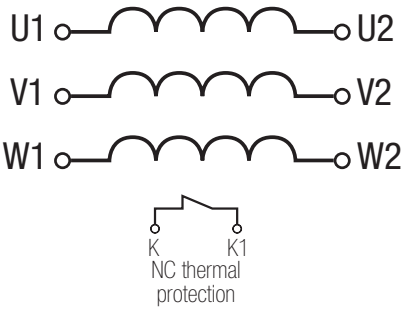
- Reduction of current harmonics generated by electronic equipment, reducing current consumption and improving the power factor.
- Reduction of the crest factor of the current waveform, lengthening the service life of the equipment.
- Attenuation of micro power cuts produced by the converter that cause the malfunction of computers, automatons and other susceptible equipment.

Manufacturing characteristics

All the versions have the following features in common:

- Encapsulated in flame retardant resin.
- Connection terminals made of copper, welded and inserted in blocks to prevent hazards caused by expansion that may lead to poor connection.
- All the live parts of these transformers are encapsulated in resin, which is particularly indicated for working in damp, saline and corrosive environments.
- They have greater resistance to current surges and transient harmonics.
- Greater mechanical resistance to vibrations and undesirable movements.
- Safety Class I.
- All the inductances are checked automatically one by one and the compliance report is created based on the respective standard.

Electrical diagram

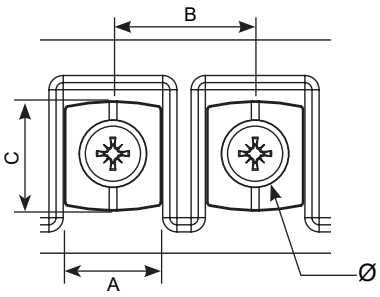


RTL SERIES

Encapsulated for harmonic filtering in three-phase lines · Network **380 V - 460 V**

Terminal types

Terminal blocks	External mm				Maximum tightening torque N·m	Primary Current A		Secondary Current A	
	A	B	C	Ø		From	To	From	To
Terminal M5	15.5	21.5	15.6	M5	2.5	2.5	40	2.5	40
Terminal M6	15.5	21.5	15.6	M6	4	50	63	50	53
Terminal M8	15.5	21.5	15.6	M8	4.5	80	125	80	125

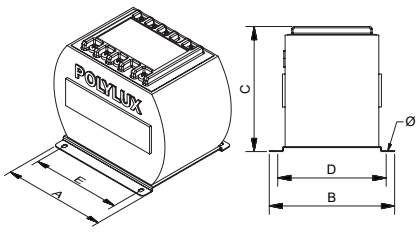


Theoretical data - standard model

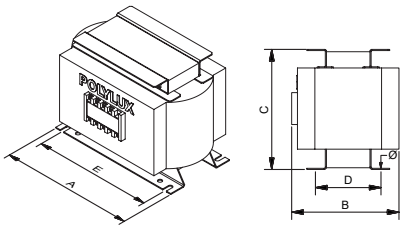
Current A	Reference	L mH	Motor power	
			kVA	HP
2.5	**RTL2.5**	11.762	0.75	1
4	**RTL4**	7.351	1.1	1.5
5	**RTL5**	5.881	1.5	2
6.3	**RTL6.3**	4.667	2.2	3
8	**RTL8**	3.676	3	4
10	**RTL10**	2.941	4	5.5
12.5	**RTL12.5**	2.352	5.5	7.5
16	**RTL16**	1.838	6.5	8.8
20	**RTL20**	1.47	7.5	10
25	**RTL25**	1.176	11	15
31.5	**RTL31.5**	0.933	15	20
40	**RTL40**	0.735	18.5	25
50	**RTL50**	0.588	22	30
63	**RTL63**	0.467	30	40
80	**RTL80**	0.368	37	50
100	**RTL100**	0.294	45	60
125	**RTL125**	0.235	55	75

Measurements

Current A	Ref.	External dimensions mm			Fastening elements mm			Weight kg
		A	B	C	D	E	Ø	
2.5	**RTL2.5**	135	145	108	125	102	7	1,5
4	**RTL4**	135	145	108	125	102	7	1,7
5	**RTL5**	135	145	108	125	102	7	2
6.3	**RTL6.3**	135	145	108	125	102	7	2,5
8	**RTL8**	135	145	108	125	102	7	2,7
10	**RTL10**	170	165	138	145	125	7	3,4
12.5	**RTL12.5**	170	165	138	145	125	7	3,9
16	**RTL16**	170	165	138	145	125	7	5,3
20	**RTL20**	210	198	185	178	173	7	6
25	**RTL25**	210	198	185	178	173	7	7,5
31.5	**RTL31.5**	210	198	185	178	173	7	9,7
40	**RTL40**	210	198	185	178	173	7	10,2
50	**RTL50**	280	190	205	80	250	9	13,9
63	**RTL63**	280	190	205	100	250	9	16,7
80	**RTL80**	280	190	205	115	250	9	20,1
100	**RTL100**	280	220	205	110	250	9	24,5
125	**RTL125**	340	220	255	106	310	9	30,3



From 2.5 A to 40 A

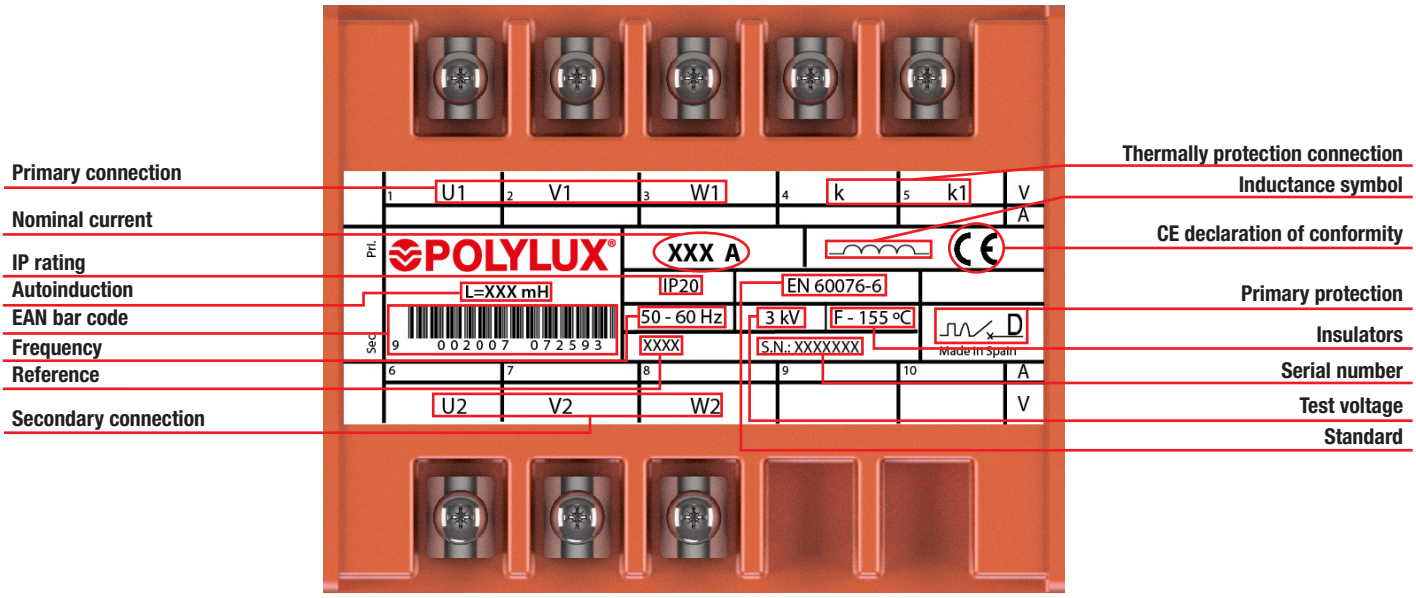


From 50 A

RTL SERIES

Encapsulated for harmonic filtering in three-phase lines · Network **380 V - 460 V**

Feature plate structure



RTOX SERIES

For harmonic filtering in three-phase lines at the converter output · Network **400 V**

Definition and applications

The RTOX series are inductances for harmonic filtering in three-phase lines at the converter output.
Specific applications:

- Attenuation of voltage peaks at the converter output, protecting the dielectric elements of the motor against premature damage caused by this.
- Reduction of the reflection effect due to the length of the cable between the converter and the motor. This reflection effect amplifies the voltage values in the motor terminals.

Manufacturing characteristics

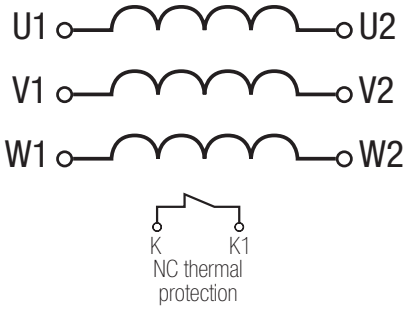
All the versions have the following features in common:

- Dual protection, resin + anti-flash varnish.
- Thermal protection against overtemperature included.
- Safety Class I.
- **UL certification.** FILE: E532753 - Construction only.
- All the inductances are checked automatically one by one and the compliance report is created based on the respective standard.

Technical features - standard model

Current	**2.5 A to 630 A**
Insulators	**Class H - 180 ºC**
Temperature rise	**Class F**
Winding	**Class HC - 200 ºC**
Room temperature	**45 ºC**
Frequency	**50-60 Hz**
Noise	**≤ 60 dB**
Protection rating	**IP00**
Cooling	**AN**
Mounting	**With screws**
Standards	**≤600V: US Standard: UL 5085-1 / UL 5085-2 Canada Standard: CSA C22.2 NO 66.1-06 / CSA C22.2 NO 66.2-06 ≤750V: IEC/EN/UNE-EN 60076-6, CE**
Protection	**Class I**
Operation	**Continuous**
Test voltage	**3 kV (1 min., 50 Hz) between coil and ground**

Electrical diagram



RTOX SERIES

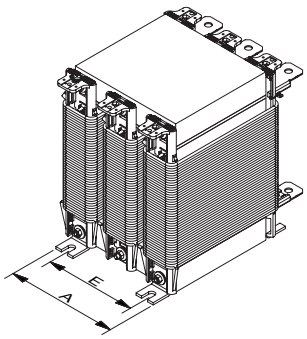
For harmonic filtering in three-phase lines at the converter output · Network **400 V**

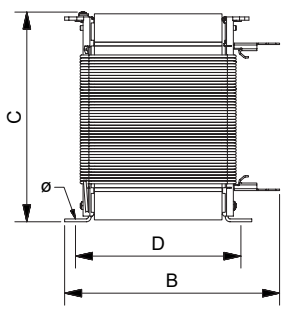
Theoretical data - standard model

Current A	Reference	L mH	cdt (%)
2.5	**RTOX2.5**	8.821	3
4	**RTOX4**	5.513	3
5	**RTOX5**	4.411	3
6.3	**RTOX6.3**	3.501	3
8	**RTOX8**	2.757	3
10	**RTOX10**	2.205	3
12.5	**RTOX12.5**	1.764	3
16	**RTOX16**	1.378	3
20	**RTOX20**	1.103	3
25	**RTOX25**	0.882	3
31.5	**RTOX31.5**	0.700	3
40	**RTOX40**	0.551	3
50	**RTOX50**	0.441	3
63	**RTOX63**	0.350	3
80	**RTOX80**	0.276	3
100	**RTOX100**	0.221	3
125	**RTOX125**	0.176	3
160	**RTOX160**	0.138	3
200	**RTOX200**	0.110	3
250	**RTOX250**	0.088	3
315	**RTOX315**	0.070	3
400	**RTOX400**	0.055	3
500	**RTOX500**	0.044	3
630	**RTOX630**	0.035	3

Measurements

Current A	Ref.	External dimensions mm			Fastening elements mm			Weight kg
		A	B	C	D	E	Ø	
2.5	**RTOX2.5**	150	110	185	49	100	6	2
4	**RTOX4**	150	120	185	59	100	6	3,2
5	**RTOX5**	150	120	185	59	100	6	3,3
6.3	**RTOX6.3**	150	120	185	59	100	6	3,4
8	**RTOX8**	150	125	185	64	100	6	4
10	**RTOX10**	150	130	185	69	100	6	4,7
12.5	**RTOX12.5**	150	135	185	74	100	6	5,4
16	**RTOX16**	150	140	185	79	100	6	6,3
20	**RTOX20**	150	150	185	89	100	6	7,8
25	**RTOX25**	150	155	185	94	100	6	8,5
31.5	**RTOX31.5**	180	150	220	89	120	6	11,1
40	**RTOX40**	180	165	220	104	120	6	13,9
50	**RTOX50**	180	180	220	119	120	6	16,7
63	**RTOX63**	180	205	220	155	120	6	21,3
80	**RTOX80**	240	205	320	114	160	6	27,3
100	**RTOX100**	240	220	320	129	160	6	32,4
125	**RTOX125**	240	230	320	154	160	9	40,7
160	**RTOX160**	340	219	375	120	310	10	38,7
200	**RTOX200**	340	239	375	140	310	10	49,1
250	**RTOX250**	340	259	375	160	310	10	59
315	**RTOX315**	340	294	375	195	310	10	77
400	**RTOX400**	340	319	375	220	310	10	93
500	**RTOX500**	370	330	600	254	140	11	135,0
630	**RTOX630**	370	350	600	274	140	11	160,0

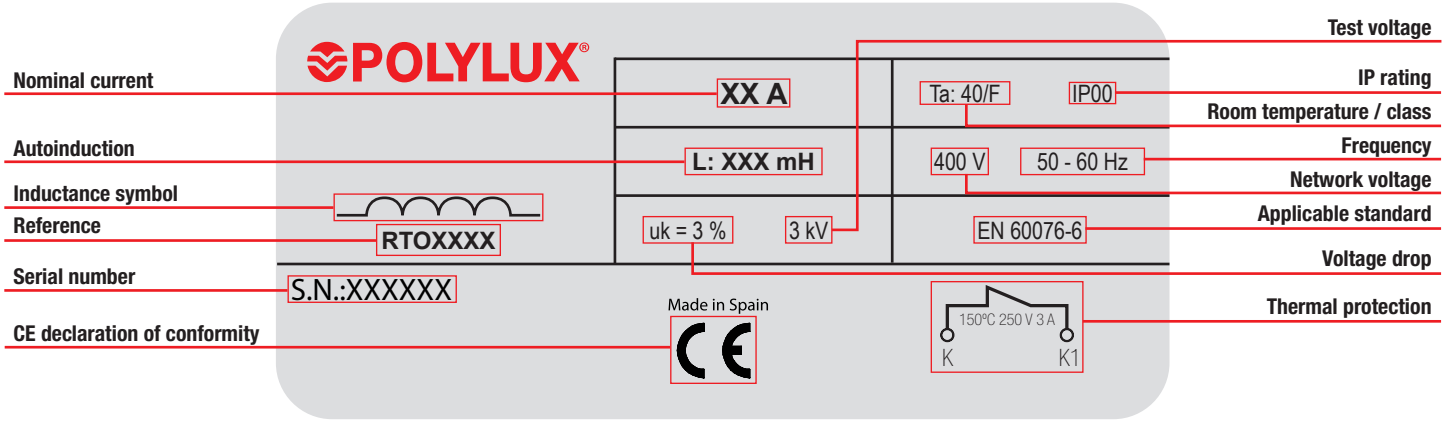




RTOX SERIES

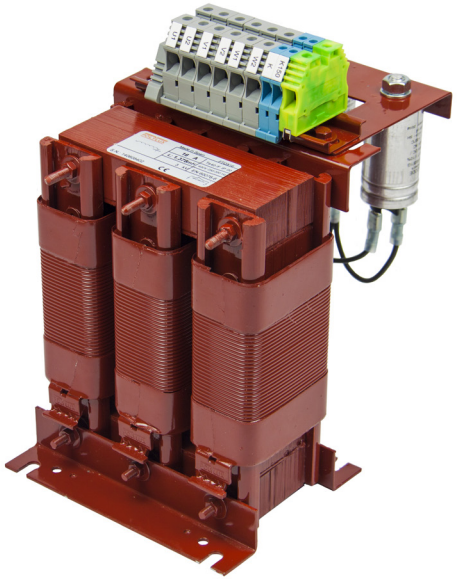
For harmonic filtering in three-phase lines at the converter output · Network **400 V**

Feature plate structure



FTOX SERIES

With a three-phase converter output filter · For **converter-motor distrances > 30 m** · **Network 400 V**



Definition and applications

The FTOX series are inductances with a capacitator filter for harmonic filtering in three-phase installations at the converter output.
Specific applications:

- Attenuation of voltage peaks at the converter output, protecting the dielectric elements of the motor against premature damage caused by this.
- Reduction of the reflection effect due to the length of the cable between the converter and the motor. This reflection effect amplifies the voltage values in the motor terminals.
- It is advisable to use these inductances for lengths of more than 30 m between the converter and motor.

Manufacturing characteristics

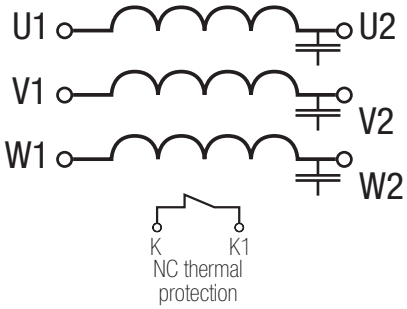
All the versions have the following features in common:

- Dual protection, resin + anti-flash varnish.
- Thermal protection against overtemperature included.
- Safety Class I.
- **UL certification.** FILE: E532753 - Construction only.
- All the inductances are checked automatically one by one and the compliance report is created based on the respective standard.

Technical features - standard model

Current	**2.5 A to 125 A**
Insulators	**Class H - 180 ºC**
Temperature rise	**Class F**
Winding	**Class HC - 200 ºC**
Room temperature	**45 ºC**
Frequency	**50-60 Hz**
Noise	**≤ 60 dB**
Protection rating	**IP00**
Cooling	**AN**
Mounting	**With screws**
Standards	**≤600V: US Standard: UL 5085-1 / UL 5085-2 Canada Standard: CSA C22.2 NO 66.1-06 / CSA C22.2 NO 66.2-06 ≤750V: IEC/EN/UNE-EN 60076-6, CE**
Protection	**Class I**
Operation	**Continuous**
Test voltage	**3 kV (1 min., 50 Hz) between coil and ground**

Electrical diagram



FTOX SERIES

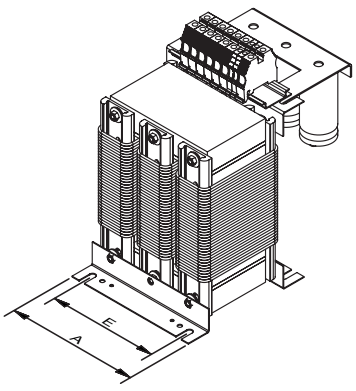
With a three-phase converter output filter · For converter-motor distrances > 30 m · Network 400 V

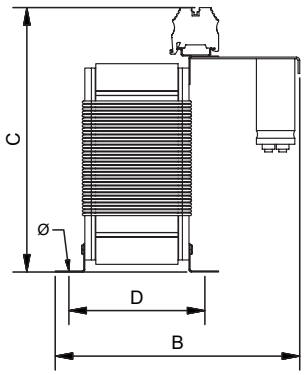
Theoretical data - standard model

Current A	Reference	L mH
2.5	**FTOX2.5**	8.821
4	**FTOX4**	5.513
5	**FTOX5**	4.411
6.3	**FTOX6.3**	3.501
8	**FTOX8**	2.757
10	**FTOX10**	2.205
12.5	**FTOX12.5**	1.764
16	**FTOX16**	1.378
20	**FTOX20**	1.103
25	**FTOX25**	0.882
31.5	**FTOX31.5**	0.700
40	**FTOX40**	0.551
50	**FTOX50**	0.441
63	**FTOX63**	0.350
80	**FTOX80**	0.276
100	**FTOX100**	0.221
125	**FTOX125**	0.176

Measurements

Current A	Ref.	External dimensions mm			Fastening elements mm			Weight kg
		A	B	C	D	E	Ø	
2.5	**FTOX2.5**	150	180	185	49	100	6	2,3
4	**FTOX4**	150	190	185	59	100	6	3,5
5	**FTOX5**	150	190	185	59	100	6	3,6
6.3	**FTOX6.3**	150	190	185	59	100	6	3,7
8	**FTOX8**	150	195	185	64	100	6	4,3
10	**FTOX10**	150	200	185	69	100	6	5
12.5	**FTOX12.5**	150	205	185	74	100	6	5,7
16	**FTOX16**	150	210	185	79	100	6	6,6
20	**FTOX20**	150	220	185	89	100	6	8,1
25	**FTOX25**	150	225	185	94	100	6	8,8
31.5	**FTOX31.5**	180	220	220	89	120	6	11,4
40	**FTOX40**	180	235	220	104	120	6	14,2
50	**FTOX50**	180	250	220	119	120	6	17
63	**FTOX63**	180	275	220	155	120	6	21,6
80	**FTOX80**	240	275	320	114	160	6	27,6
100	**FTOX100**	240	290	320	129	160	6	32,7
125	**FTOX125**	240	300	320	154	160	9	41

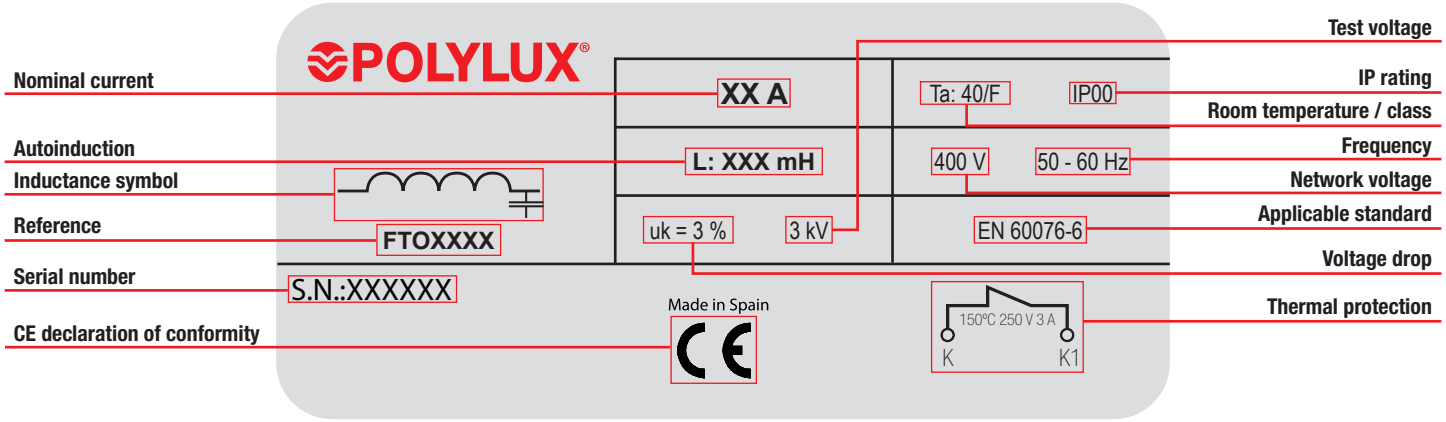




FTOX SERIES

With a three-phase converter output filter · For converter-motor distrances > 30 m · Network 400 V

Feature plate structure



RTFX SERIES

Three-phase rejection inductances for capacitator batteries, p = 7% · Network 400 V a 50 Hz

Definition and applications

The RTFX series are three-phase rejection inductances for capacitator batteries.
Specific applications:

- They prevent resonances between the power transformer inductance and the capacitance of the capacitator battery.
- They eliminate surge currents and overvoltage in the transformer and in the capacitator battery.
- They protect the condensers against harmonics, preventing their premature ageing.
- They limit the capacitator battery connection peaks, thus increasing their service life and reducing micro power cuts in the supply voltage.

Manufacturing characteristics

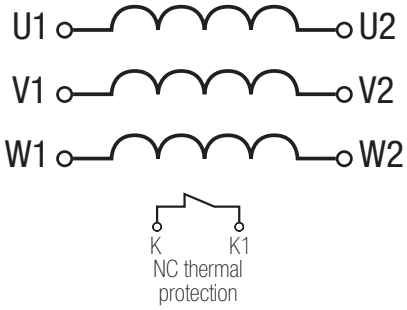
All the versions have the following features in common:

- Dual protection, resin + anti-flash varnish.
- Thermal protection against overtemperature included.
- Safety Class I.
- Option of manufacturing with different filter factors, p = 5.67% (RTF5X, capacitator voltage 440 V to 50 Hz and resonsance frequency 210 Hz) and p=14% (RTF14X, voltage 460 V to 50 Hz and resonance frequency 135 Hz); both factors cover the 5 kVar to 100 kVar power range.
- **UL certification.** FILE: E532753 - Construction only.
- All the inductances are checked automatically one by one and the compliance report is created based on the respective standard.

Technical features - standard model

Capacitator power	**5 kvar to 100 kvar**
Insulators	**Class H - 180 ºC**
Temperature rise	**Class F**
Winding	**Class HC - 200 ºC**
Room temperature	**45 ºC**
Frequency	**50-60 Hz**
Noise	**≤ 60 dB**
Protection rating	**IP00**
Cooling	**AN**
Mounting	**With screws**
Standards	**≤600V: US Standard: UL 5085-1 / UL 5085-2 Canada Standard: CSA C22.2 N0 66.1-06 / CSA C22.2 N0 66.2-06 ≤750V: UNE-EN 60076-6, CE**
Protection	**Class I**
Operation	**Continuous**
Test voltage	**3 kV (1 min., 50 Hz) between coil and ground**

Electrical diagram



RTFX SERIES

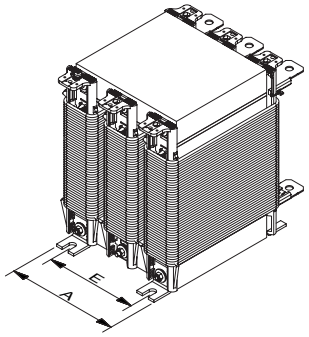
Three-phase rejection inductances for capacitator batteries, p = 7% · Network 400 V a 50 Hz

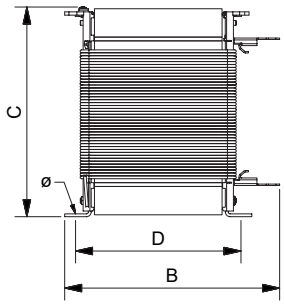
Theoretical data - standard model

Capacitator power kVar	Filter factor p= 7% Capacitator voltage 440 V at 50 Hz Resonance frequency 189 Hz		
	Reference	Delivered power kVar	Nominal current A
5	**RTFX5**	4.4	6.8
10	**RTFX10**	8.9	13.6
12.5	**RTFX12.5**	11.1	17
15	**RTFX15**	13.3	20.4
20	**RTFX20**	17.8	27.2
25	**RTFX25**	22.2	34
30	**RTFX30**	26.7	40.8
40	**RTFX40**	35.5	54.4
50	**RTFX50**	44.4	68
60	**RTFX60**	53.3	82
80	**RTFX80**	71.1	109
100	**RTFX100**	88.8	136

Measurements

Capacitator power kVar	Ref.	External dimensions mm			Fastening elements mm			Weight kg
		A	B	C	D	E	Ø	
5	**RTFX5**	150	111	185	85	100	9	5,6
10	**RTFX10**	150	126	185	100	100	9	7,6
12.5	**RTFX12.5**	150	141	185	115	100	9	9,5
15	**RTFX15**	180	126	220	100	120	9	11,1
20	**RTFX20**	180	131	220	105	120	9	12,1
25	**RTFX25**	180	141	220	115	120	9	14
30	**RTFX30**	180	156	220	130	120	9	16,8
40	**RTFX40**	180	176	220	150	120	9	20,9
50	**RTFX50**	180	186	220	160	120	9	22,9
60	**RTFX60**	180	201	220	175	120	9	25,8
80	**RTFX80**	240	200	320	135	160	9	33,2
100	**RTFX100**	240	220	320	160	160	9	40,8

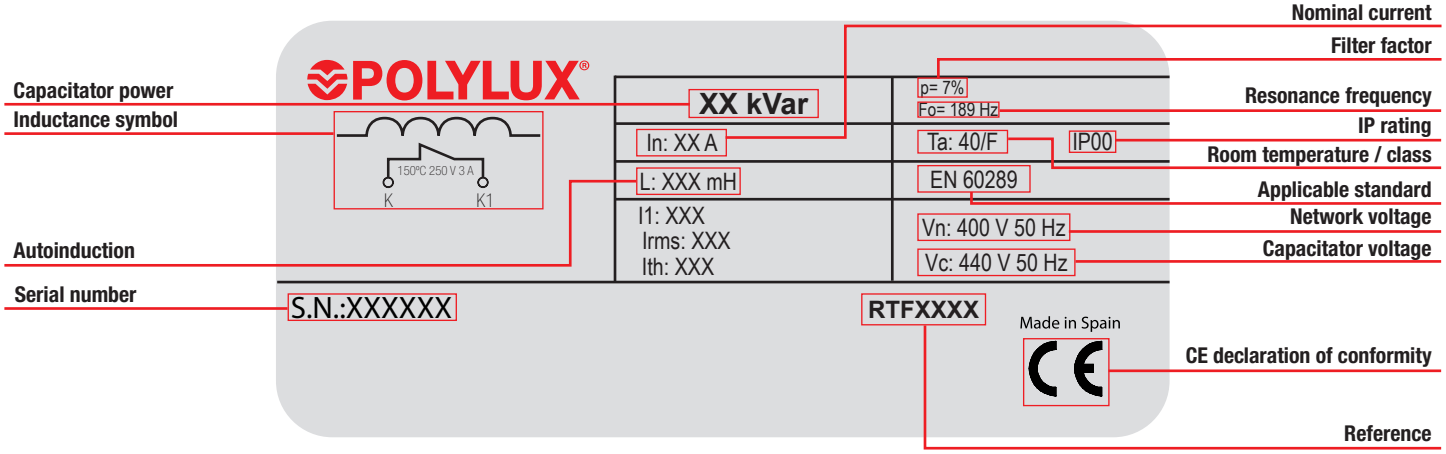




RTFX SERIES

Three-phase rejection inductances for capacitator batteries, p = 7% · Network 400 V a 50 Hz

Feature plate structure



PXD SERIES

Control, manoeuvre and insulation · IP00 with DIN rail

Definition and applications

The PXR transformers are specially designed to adapt voltages in manoeuvre and control, in both household and industrial environments.
They are mainly used to ensure the galvanic isolation of installations for safety reasons and to create neutrals referenced to ground.
They can also be used in installations that require safety voltages (<50V).

Manufacturing characteristics

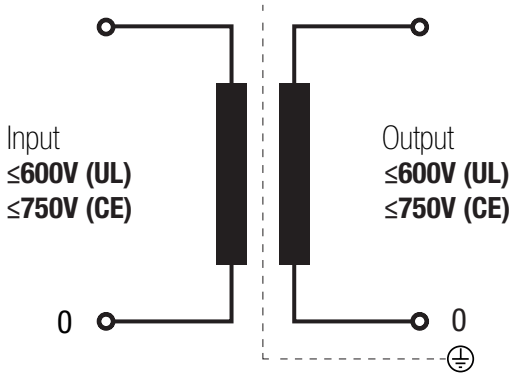
All the versions have the following features in common:

- Anti-flash dip varnishing. Ensures greater compactation, insulation and noise elimination.
- **UL certification.** FILE: E532753 - Construction only.
- Mounting on **DIN rail**.

Technical features - standard model

Rating	**40 VA to 250 VA**
Insulators	**Class H - 180 ºC**
Temperature rise	**Class B**
Winding	**Class HC - 200 ºC**
Room temperature	**45 ºC**
Frequency	**50-60 Hz**
Noise	**45 dB**
Protection rating	**IP00**
Cooling	**AN**
Mounting	**Mounting on DIN 46277/3 rail**
Standards	**≤600V: US Standard: UL 5085-1 / UL 5085-2 Canada Standard: CSA C22.2 N0 66.1-06 / CSA C22.2 N0 66.2-06 ≤750V: IEC/EN/UNE-EN 61558, CE**
Operation	**Continuous**

Electrical diagram

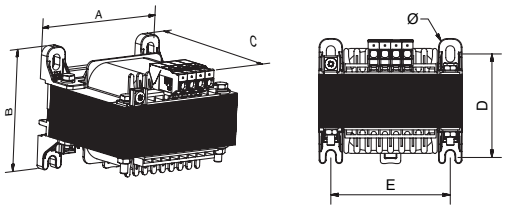


PXD SERIES

Control, manoeuvre and insulation · IP00 with DIN rail

Measurements

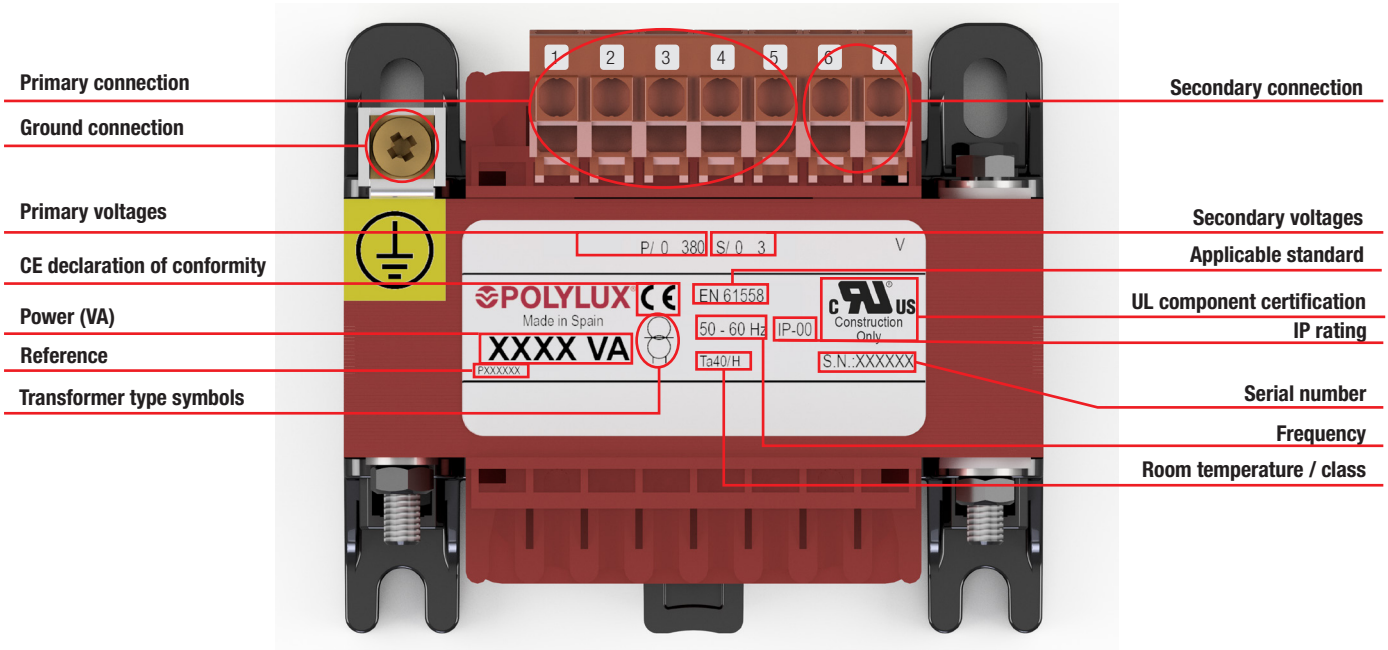
Power VA	Ref.	External dimensions mm			Fastening elements mm			Weight kg
		A	B	C	D	E	Ø	
40	**PXD40**	75	67	89,5	56	62,5	6	0,9
63	**PXD63**	75	72	89,5	61	62,5	6	1,1
100	**PXD100**	75	82	89,5	71	62,5	6	1,4
160	**PXD160**	84	93	102	81	70	6	2,2
200	**PXD200**	96	88	106	72	80	6	2,4
250	**PXD250**	96	98	106	82	80	6	3



On-request manufacturing options (please see prices)

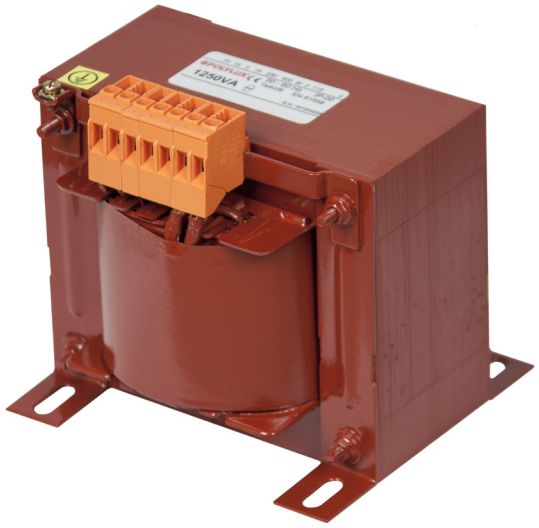
Protections	**Fuse holder terminal ≤500VA**

Feature plate structure



PX SERIES

Control, manoeuvre and insulation · IP00



Definition and applications

The PX transformers are specially designed to adapt voltages in manoeuvre and control, in both household and industrial environments.
They are mainly used to ensure the galvanic isolation of installations for safety reasons and to create neutrals referenced to ground.
They can also be used in installations that require safety voltages (<50V).

Manufacturing characteristics

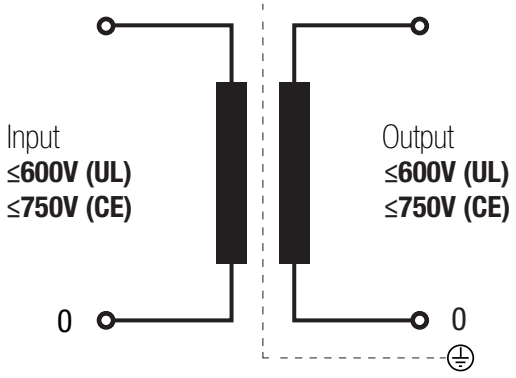
All the versions have the following features in common:

- Anti-flash dip varnishing. Ensures greater compactation, insulation and noise elimination.
- **UL certification.** FILE: E532753 - Construction only.

Technical features - standard model

Rating	**25 VA to 5000 VA**
Insulators	**Class H - 180 ºC**
Temperature rise	**Class B**
Winding	**Class HC - 200 ºC**
Room temperature	**45 ºC**
Frequency	**50-60 Hz**
Noise	**45 dB**
Protection rating	**IP00**
Cooling	**AN**
Mounting	**With screws**
Standards	**≤600V: US Standard: UL 5085-1 / UL 5085-2 Canada Standard: CSA C22.2 N0 66.1-06 / CSA C22.2 N0 66.2-06 ≤750V: IEC/EN/UNE-EN 61558, CE**
Operation	**Continuous**

Electrical diagram

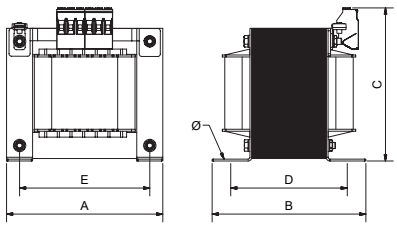


PX SERIES

Control, manoeuvre and insulation · IP00

Measurements

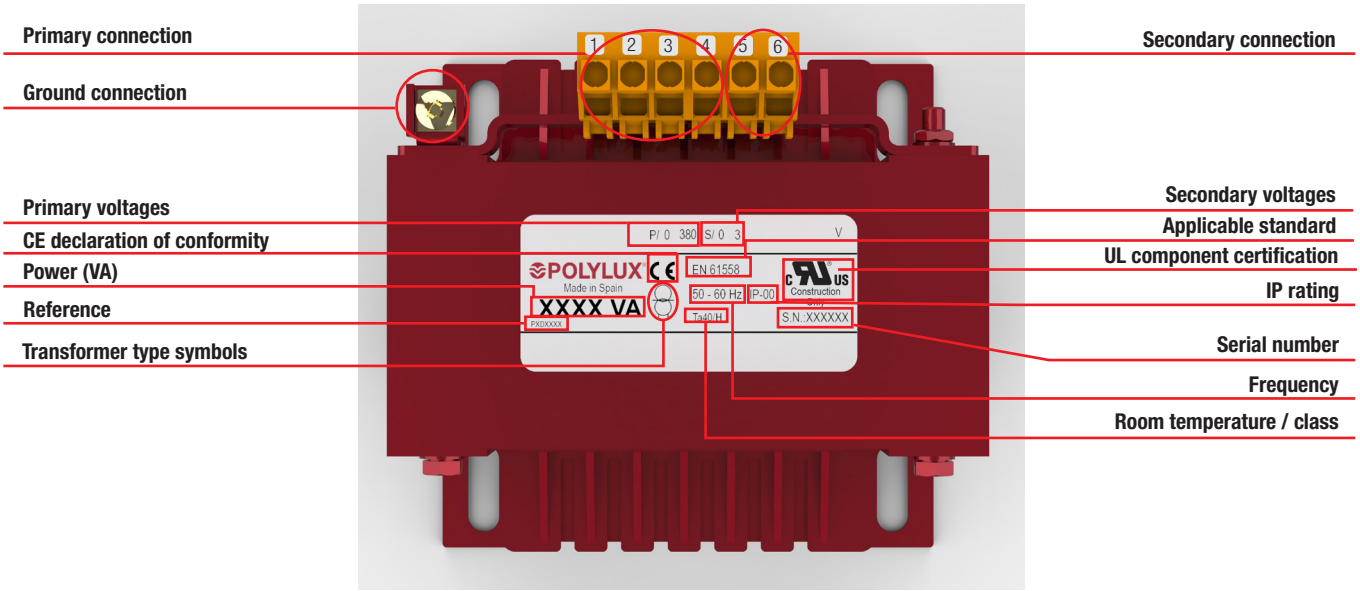
Power VA	Ref.	External dimensions mm			Fastening elements mm			Weight kg
		A	B	C	D	E	Ø	
40	**PX40**	75	67	89.5	56	62.5	6	0.9
63	**PX63**	75	72	89.5	61	62.5	6	1.1
100	**PX100**	75	82	89.5	71	62.5	6	1.4
160	**PX160**	84	93	102	81	70	6	2.2
200	**PX200**	96	88	106	72	80	6	2.4
250	**PX250**	96	98	106	82	80	6	3
315	**PX315**	108	98	109	83	90	6	3.8
400	**PX400**	108	108	109	93	90	6	4.5
500	**PX500**	126	110	115	75	106	8	5.3
630	**PX630**	126	120	115	95	106	8	7.3
800	**PX800**	126	130	115	105	106	8	8.3
1000	**PX1000**	150	135	135	102	125	8	10.8
1250	**PX1250**	150	155	135	122	125	8	13.1
1600	**PX1600**	150	175	135	142	125	8	16,9
2000	**PX2000**	192	160	170	120	166	9	22,8
2500	**PX2500**	192	180	170	140	166	9	27,5
3150	**PX3150**	192	200	170	160	166	9	32,2
4000	**PX4000**	240	180	205	135	202	11	42,9
5000	**PX5000**	240	200	205	155	202	11	49,5



On-request manufacturing options (please see prices)

Protections	**Fuse holder terminal ≤500VA**

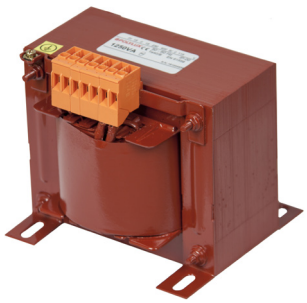
Feature plate structure



PXR SERIES

Control, manoeuvre and insulation · Input **15-0-15-230-400 V** · Output **230 V** · IP00

Up to 250 VA



From 315 VA

Definition and applications

The PXR transformers are specially designed to adapt voltages in manoeuvre and control, in both household and industrial environments.
They are mainly used to ensure the galvanic isolation of installations for safety reasons and to create neutrals referenced to ground.
They can also be used in installations that require safety voltages (<50V).
The ±15% adjustment facilitates the adaptation of the output depending on the voltage drop in the line.

Manufacturing characteristics

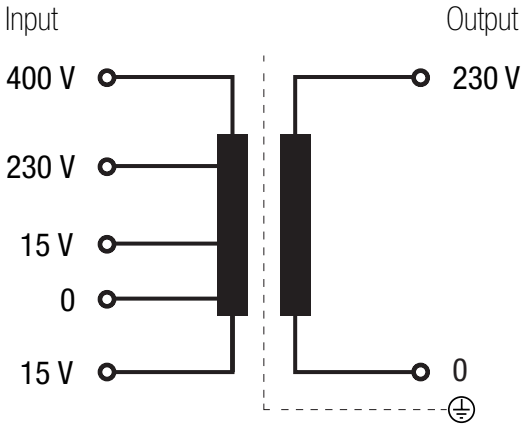
All the versions have the following features in common:

- Anti-flash dip varnishing. Ensures greater compactation, insulation and noise elimination.
- Adjustment to adapt the primary voltage, with the possibility of correcting the voltage drop in the line.
- Connection terminals made of copper, welded and inserted in blocks to prevent hazards caused by expansion that may lead to poor connection.
- Option of mounting on **DIN rail up to 250 VA**.
- **UL certification.** FILE: E532753 - Construction only.

Technical features - standard model

Rating	**40 VA to 1600 VA**
Insulators	**Class H - 180 ºC**
Temperature rise	**Class B**
Winding	**Class HC - 200 ºC**
Room temperature	**45 ºC**
Frequency	**50-60 Hz**
Noise	**≤45 dB**
Protection rating	**IP00**
Cooling	**AN**
Mounting	**With screws (for all powers)** **Mounting on DIN 46277/3 rail (up to 250 VA)**
Standards	**≤600V: US Standard: UL 5085-1 / UL 5085-2** **Canada Standard: CSA C22.2 N0 66.1-06 / CSA C22.2 N0 66.2-06** **≤750V: IEC/EN/UNE-EN 61558, CE**
Voltage selection	**Due to changing terminals**
Operation	**Continuous**
Test voltage	**.6 kV (1 min., 50 Hz) between primary and secondary** **3.2 kV (1 min., 50 Hz) between primary and ground** **2.5 kV (1 min., 50 Hz) between secondary and ground**

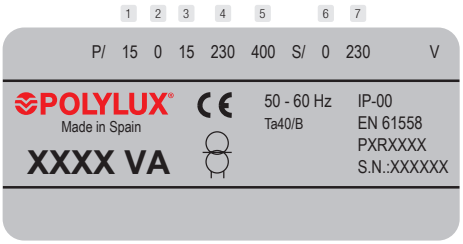
Electrical diagram



PXR SERIES

Control, manoeuvre and insulation · Input **15-0-15-230-400 V** · Output **230 V** · IP00

Electrical connection



Input:

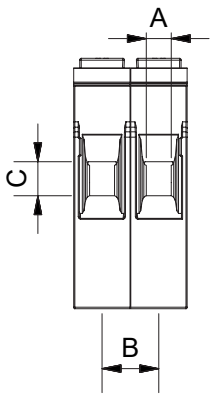
- 215 V | Connection: 3-4
- 230 V | Connection: 2-4
- 245 V | Connection: 1-4
- 400 V | Connection: 2-5
- 385 V | Connection: 3-5
- 415 V | Connection: 1-5

Output:

- 230 V | Connection: 6-7

Terminal type

Terminal block	External mm			Maximum tightening torque N·m
	A	B	C	
Terminal 4	3.3	7.5	4.5	0.5



Theoretical data - standard model

Power VA	Reference	Input current A		Output current A	Maximum cross-section input conductor (mm²)				Maximum cross-section output conductor (mm²)		Input protections (A) (MCB -> D / Fuse -> aM)		Output protections (A) (MCB -> C / Fuse -> gG)
					230 V		400 V						
		230 V	400 V	230 V	Flexible	Rigid	Flexible	Rigid	Flexible	Rigid	230 V	400 V	
40	**PXR40**	0.17	0.10	0.17	0.5	0.5	0.5	0.5	0.5	0.5	0.4 (--/T)	0.2 (--/T)	0.16 (--/T)
63	**PXR63**	0.27	0.16	0.27	0.5	0.5	0.5	0.5	0.5	0.5	0.63 (--/T)	0.315 (--/T)	0.25 (--/T)
100	**PXR100**	0.43	0.25	0.43	0.5	1	0.5	0.5	0.5	1	1 (--/T)	0.5 (--/T)	0.4 (--/T)
160	**PXR160**	0.70	0.40	0.70	0.5	1	0.5	0.5	0.5	1	1.6	1	0.63 (--/T)
200	**PXR200**	0.87	0.50	0.87	0.5	1	0.5	1	0.5	1	2	1	0.8 (--/T)
250	**PXR250**	1.09	0.63	1.09	0.5	1	0.5	1	0.5	1	2.5	1.25	1
315	**PXR315**	1.37	0.79	1.37	0.5	1	0.5	1	0.5	1	3.15	1.6	1.25
400	**PXR400**	1.74	1.00	1.74	1	1.5	0.5	1	1	1.5	4	2	1.6
500	**PXR500**	2.17	1.25	2.17	1	1.5	0.5	1	1	1.5	5	2.5	2
630	**PXR630**	2.74	1.58	2.74	1	1.5	1	1.5	1	1.5	6	3.15	2.5
800	**PXR800**	3.48	2.00	3.48	1	1.5	1	1.5	1	1.5	8	4	4
1000	**PXR1000**	4.35	2.50	4.35	1.5	2	1	1.5	1.5	2	10	5	4
1250	**PXR1250**	5.43	3.13	5.43	1.5	2	1	1.5	1.5	2	10	6.3	5
1600	**PXR1600**	6.96	4.00	6.96	1.5	2	1	1.5	1.5	2	16	8	6

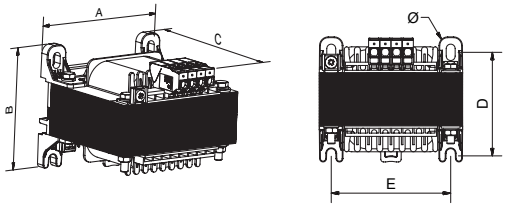
PXR SERIES

Control, manoeuvre and insulation · Input **15-0-15-230-400 V** · Output **230 V** · IP00

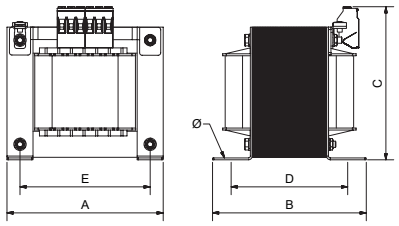
Measurements

Power VA	Ref.	External dimensions mm			Fastening elements mm			Weight kg
		A	B	C	D	E	Ø	
40	**PXR40**	75	67	89.5	56	62.5	6	0.9
63	**PXR63**	75	72	89.5	61	62.5	6	1.1
100	**PXR100**	75	82	89.5	71	62.5	6	1.4
160	**PXR160**	84	93	102	81	70	6	2.2
200	**PXR200**	96	88	106	72	80	6	2.4
250	**PXR250**	96	98	106	82	80	6	3
315	**PXR315**	108	98	109	83	90	6	3.8
400	**PXR400**	108	108	109	93	90	6	4.5
500	**PXR500**	126	110	115	75	106	8	5.3
630	**PXR630**	126	120	115	95	106	8	7.3
800	**PXR800**	126	130	115	105	106	8	8.3
1000	**PXR1000**	150	135	135	102	125	8	10.8
1250	**PXR1250**	150	155	135	122	125	8	13.1
1600	**PXR1600**	150	175	135	142	125	8	16.9

Up to PXR250



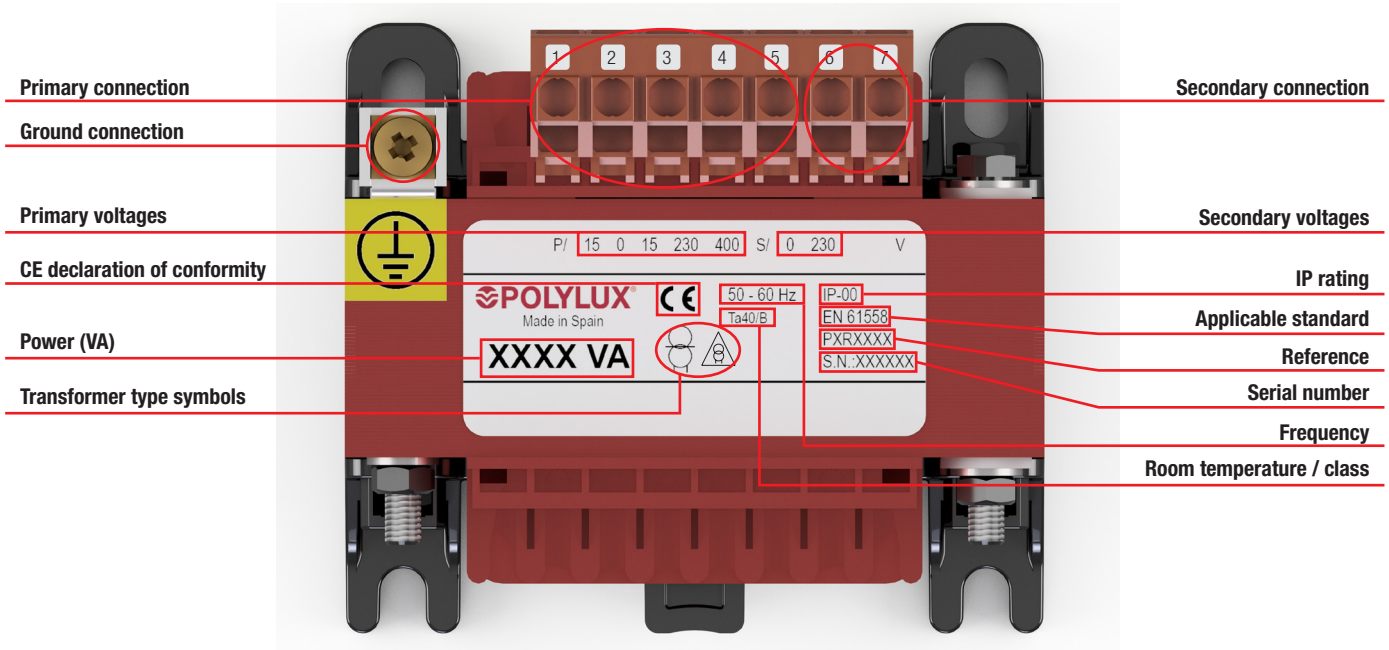
From PXR315



On-request manufacturing options (please see prices)

Power	**From 25 VA to 5000 VA**
Protections	**Fuse holder terminal**
Shields	**Primary / secondary, primary / ground and secondary / ground**

Feature plate structure



TK SERIES

Isolation · Input **230 V** · Output **230 V**

Definition and applications

The TK transformers are mainly used to isolate circuits and increase or reduce the output voltage if this is requested as a special assembly.
They are also used to change the installation neutral system for changing from a two-phase to a single-phase network or vice versa. (This case means creating an artificial neural).
In installations with a certain amount of electrical noise, the TK series helps improve the electrical network quality in secondary.
For example: Supplying equipment that requires the neutral reference and has only two phases. The ability to insulation more sensitive systems in a control panel. Increasing catenary voltage in the railway sector and reducing it to supply track control panels.

Manufacturing characteristics

The TK series are perfect for supplying continuous power to industrial, tertiary or residential installations or machinery. They are the POYLUX single-phase range with the highest power.
Equipment with four different finishes based on sealing.
All the versions have the following features in common:

- Anti-flash dip varnishing. Ensures greater compactation, insulation and noise elimination.
- Welded copper connection end sleeves inserted into the terminal block to prevent hazards caused by expansion that leads to poor connection.
- All the transformers are checked automatically one by one and the compliance test report is created in accordance with the corresponding standard.

TKX

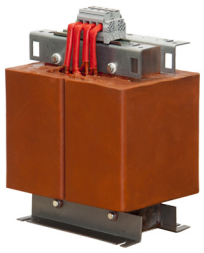
· IP00 protection rating.
· Power from 3.15 kVA to 50 kVA.
· Total impregnated in anti-flash varnish.
· Hoisting elements included.
· **UL certification.** FILE: E532753 - Construction only.

TKW

· IP23 rating (IK08).
· Power from 3.15 kVA to 50 kVA.
· Metal box painted with RAL7035 polyester resin.
· High resistance to corrosion.
· Hoisting elements included.
· Detachable top and front cover.
· Cable outlet with cable gland.
· **UL certification.**

TKZ

· IP54 rating up to 20 kVA / IP65 from 25 kVA (IK10).
· Power from 3.15 kVA to 50 kVA.
· Metal box painted with RAL7035 polyester resin.
· High resistance to corrosion.
· Hoisting elements included.
· Detachable top cover.
· Stuffing box cover for cable input depending on installation needs.
· With silentblock.
· **UL certification.**



TKE

· **Encapsulated in flame retardant resin.**
· IP20 protection rating up to 3,15 kVA / IP00 from 4 kVA.
· Power from 3.15 kVA to 50 kVA.
· Protection against damp, saline and corrosive environments.
· Greater resistance to surge currents.
· Greater resistance to transient harmonics.
· Greater mechanical resistance to undesirable vibrations.
· Uniform heat dissipation.
· Hoisting elements included.

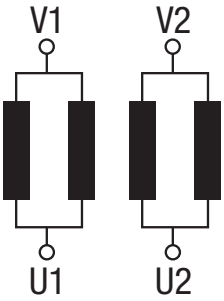
TK SERIES

Isolation · Input **230 V** · Output **230 V**

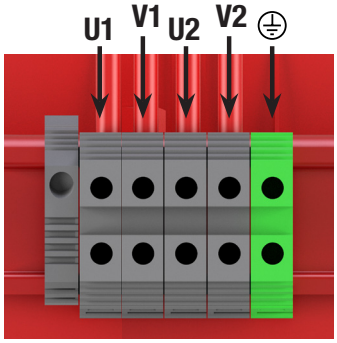
Technical features - standard model

Rating	**3.15 kVA to 50 kVA**
Standard voltage	**Input 230 V // Output 230 V**
Standard frequency	**50-60 Hz**
Noise	**≤ 45 dB**
Insulators	**Class H - 180 ºC**
Temperature rise	**Class F ≤ 25 kVA (31.5 kVA TKE)** **Class H - TKX, ≥ 31.5 kVA (40 kVA TKE)** *More information in Technical Appendix (T.A.1)
Windings	**Class HC-200 ºC**
Class	**I**
Altitude	**1000 m**
Enclosure colour	**RAL 7035**
IP rating	**IP00 TKX / TKE from 4 kVA** **IP20 up to 3,15 kVA (TKE)** **IP23 (TKW)** **IP65 up to 20 kVA / IP54 from 25 kVA (TKZ)**
IK rating	**IK08 (TKW)** **IK10 (TKZ)**
Paint class (ISO 12944)	**C3 (TKW)** **C4 (TKZ)**
Room temperature	**45 ºC**
Standards	**≤600V: US Standard: UL 5085-1 / UL 5085-2** **Canada Standard: CSA C22.2 N0 66.1-06 / CSA C22.2 N0 66.2-06** **≤750V: IEC/EN 61558, CE up to 31.5 kVA** **IEC/EN 60076, CE from 40 kVA**
Test voltage	**3 kV (1 min, 50 Hz)**
Inrush	**< 12 In**
Ucc	**≤ 4,7 %**
K factor	**4**
Klixon	**≤ 25 kVA (only TKE)**
Operation	**Continuous**
Cooling	**AN (TKX / TKE) - ANAN (TKW / TKZ IP65) - ANAF (TKZ IP54)**
Hoisting accessories	**Hoisting elements**

Electrical diagram

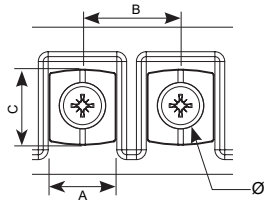


Connection

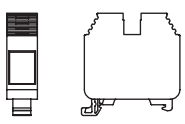


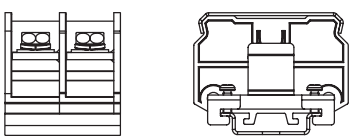
Terminal types

Terminals		External mm				Minimum conductor cross-section mm²	Maximum tightening torque		TKX-TKW Power kVA		TKE Power kVA		TKZ Power kVA	
		A	B	C	Ø		N·m	Lb·In	From	To	From	To	From	To
	Terminal M5	15	18.5	14	M5	16	1.1	9.7	-	-	3.15	3.15	-	-
Power strip 1	Terminal 16	-	-	-	-	25	1.2	10.6	3.15	6.3	4	6.3	3.15	4
Power strip 1	Terminal 35	-	-	-	-	50	2.5	22.1	8	8	8	8	5	6.3
Power strip 2	Terminal 60	-	-	-	-	25	4.5	40	10	12.5	10	12.5	8	10
Power strip 2	Terminal 100	-	-	-	-	35	6.7	60	16	20	16	20	12.5	16
Power strip 2	Terminal 200	-	-	-	-	95	9	80	25	40	25	40	20	31.5
Power strip 2	Terminal 300	-	-	-	-	150	9	80	50	50	50	50	40	50



Terminal M5


Power strip 1


Power strip 2

TK SERIES

Isolation · Input 230 V · Output 230 V

Theoretical data - standard model

Power kVA	Reference	Insulation class	Current A		Protections A		Cable gland (TKW) / Stuffing boxes (TKZ)	
			Input	Output	Input	Output	ø max. (mm)	Quantity
TKX								
3.15	**TKX3.15**	F	13.7	13.7	20 (D/aM)	12 (C/gG)	-	-
4	**TKX4**	F	17.4	17.4	25 (D/aM)	16 (C/gG)	-	-
5	**TKX5**	F	21.7	21.7	40 (D/aM)	20 (C/gG)	-	-
6.3	**TKX6.3**	F	27.4	27.4	50 (D/aM)	25 (C/gG)	-	-
8	**TKX8**	F	34.8	34.8	62 (D/aM)	32 (C/gG)	-	-
10	**TKX10**	F	43.5	43.5	80 (D/aM)	40 (C/gG)	-	-
12.5	**TKX12.5**	F	54.3	54.3	100 (D/aM)	50 (C/gG)	-	-
16	**TKX16**	F	69.6	69.6	125 (D/aM)	63 (C/gG)	-	-
20	**TKX20**	F	87.0	87.0	160 (D/aM)	80 (C/gG)	-	-
25	**TKX25**	F	108.7	108.7	200 (D/aM)	100 (C/gG)	-	-
31.5	**TKX31.5**	H	137.0	137.0	250 (D/aM)	125 (C/gG)	-	-
40	**TKX40**	H	173.9	173.9	400 (D/aM)	160 (C/gG)	-	-
50	**TKX50**	H	217.4	217.4	500 (D/aM)	200 (C/gG)	-	-
TKW								
3.15	**TKW3.15**	F	13.7	13.7	20 (D/aM)	12 (C/gG)	18	2
4	**TKW4**	F	17.4	17.4	25 (D/aM)	16 (C/gG)	25	4
5	**TKW5**	F	21.7	21.7	40 (D/aM)	20 (C/gG)	25	4
6.3	**TKW6.3**	F	27.4	27.4	50 (D/aM)	25 (C/gG)	32	4
8	**TKW8**	F	34.8	34.8	62 (D/aM)	32 (C/gG)	32	4
10	**TKW10**	F	43.5	43.5	80 (D/aM)	40 (C/gG)	32	4
12.5	**TKW12.5**	F	54.3	54.3	100 (D/aM)	50 (C/gG)	32	4
16	**TKW16**	F	69.6	69.6	125 (D/aM)	63 (C/gG)	32	4
20	**TKW20**	F	87.0	87.0	160 (D/aM)	80 (C/gG)	32	4
25	**TKW25**	F	108.7	108.7	200 (D/aM)	100 (C/gG)	32	4
31.5	**TKW31.5**	H	137.0	137.0	250 (D/aM)	125 (C/gG)	32	8
40	**TKW40**	H	173.9	173.9	400 (D/aM)	160 (C/gG)	32	8
50	**TKW50**	H	217.4	217.4	500 (D/aM)	200 (C/gG)	32	8
TKZ								
3.15	**TKZ3.15**	F	13.7	13.7	20 (D/aM)	12 (C/gG)	18 - 25	2
4	**TKZ4**	F	17.4	17.4	25 (D/aM)	16 (C/gG)	18 - 25	2
5	**TKZ5**	F	21.7	21.7	40 (D/aM)	20 (C/gG)	18 - 25	2
6.3	**TKZ6.3**	F	27.4	27.4	50 (D/aM)	25 (C/gG)	22 - 32	2
8	**TKZ8**	F	34.8	34.8	62 (D/aM)	32 (C/gG)	22 - 32	2
10	**TKZ10**	F	43.5	43.5	80 (D/aM)	40 (C/gG)	22 - 32	2
12.5	**TKZ12.5**	F	54.3	54.3	100 (D/aM)	50 (C/gG)	22 - 32	2
16	**TKZ16**	F	69.6	69.6	125 (D/aM)	63 (C/gG)	22 - 32	2
20	**TKZ20**	F	87.0	87.0	160 (D/aM)	80 (C/gG)	22 - 32	2
25	**TKZ25**	F	108.7	108.7	200 (D/aM)	100 (C/gG)	22 - 32	2
31.5	**TKZ31.5**	H	137.0	137.0	250 (D/aM)	125 (C/gG)	22 - 32	2
40	**TKZ40**	H	173.9	173.9	400 (D/aM)	160 (C/gG)	22 - 32	2
50	**TKZ50**	H	217.4	217.4	500 (D/aM)	200 (C/gG)	22 - 32	2
TKE								
3.15	**TKE3.15**	F	13.7	13.7	20 (D/aM)	12 (C/gG)	-	-
4	**TKE4**	F	17.4	17.4	25 (D/aM)	16 (C/gG)	-	-
5	**TKE5**	F	21.7	21.7	40 (D/aM)	20 (C/gG)	-	-
6.3	**TKE6.3**	F	27.4	27.4	50 (D/aM)	25 (C/gG)	-	-
8	**TKE8**	F	34.8	34.8	62 (D/aM)	32 (C/gG)	-	-
10	**TKE10**	F	43.5	43.5	80 (D/aM)	40 (C/gG)	-	-
12.5	**TKE12.5**	F	54.3	54.3	100 (D/aM)	50 (C/gG)	-	-
16	**TKE16**	F	69.6	69.6	125 (D/aM)	63 (C/gG)	-	-
20	**TKE20**	F	87.0	87.0	160 (D/aM)	80 (C/gG)	-	-
25	**TKE25**	F	108.7	108.7	200 (D/aM)	100 (C/gG)	-	-
31.5	**TKE31.5**	F	137.0	137.0	250 (D/aM)	125 (C/gG)	-	-
40	**TKE40**	H	173.9	173.9	400 (D/aM)	160 (C/gG)	-	-
50	**TKE50**	H	217.4	217.4	500 (D/aM)	200 (C/gG)	-	-

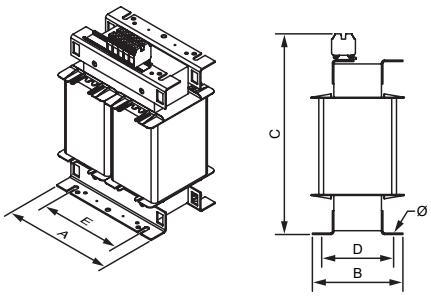
TK SERIES

Isolation · Input **230 V** · Output **230 V**

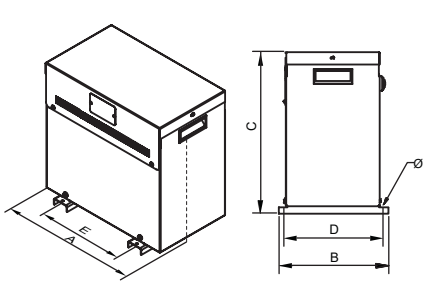
Measurements

Power kVA	Dimensions mm							
	Reference	A	B	C	D	E	Ø	Weight kg
TKX								
3.15	**TKX3.15**	200	164	320	128	154	9	25
4	**TKX4**	240	144	355	108	180	11	30
5	**TKX5**	240	164	372	128	180	11	38
6.3	**TKX6.3**	280	175	421	126	210	11	52
8	**TKX8**	280	195	421	146	210	11	63
10	**TKX10**	320	194	460	126	240	11	70
12.5	**TKX12.5**	320	194	460	126	240	11	75
16	**TKX16**	320	214	465	146	240	11	84
20	**TKX20**	320	234	465	166	240	11	104
25	**TKX25**	320	254	480	186	240	11	125
31.5	**TKX31.5**	440	281	620	156	250	11	144
40	**TKX40**	440	301	620	176	250	11	171
50	**TKX50**	440	321	625	196	250	11	228
TKW								
3.15	**TKW3.15**	387	260	382	245	250	6	31
4	**TKW4**	460	340	501	300	300	12	38
5	**TKW5**	460	340	501	300	300	12	46
6.3	**TKW6.3**	549	424	644	375	345	12	69
8	**TKW8**	549	424	644	375	345	12	80
10	**TKW10**	616	424	710	375	345	12	88
12.5	**TKW12.5**	616	424	710	375	345	12	91
16	**TKW16**	616	424	710	375	345	12	104
20	**TKW20**	616	424	710	375	345	12	118
25	**TKW25**	616	424	710	375	345	12	133
31.5	**TKW31.5**	815	555	975	500	415	12	232
40	**TKW40**	815	555	975	500	415	12	265
50	**TKW50**	815	555	975	500	415	12	298

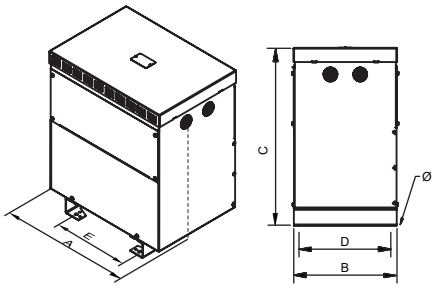
TKX IP00



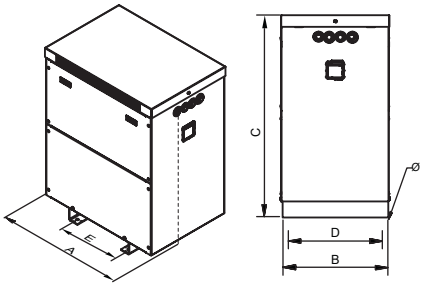
TKW IP23



Up to 5 kVA



From 6,3 kVA up to 25 kVA



From 31,5 kVA

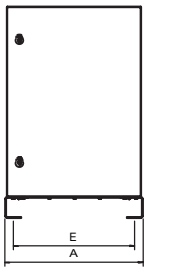
TK SERIES

Isolation · Input **230 V** · Output **230 V**

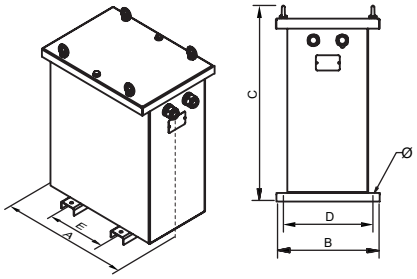
Measurements

Power kVA	Dimensions mm							
	Reference	A	B	C	D	E	Ø	Weight kg
TKZ								
3.15	**TKZ3.15**	613	316	878	220	550	13	56
4	**TKZ4**	613	316	878	220	550	13	64
5	**TKZ5**	745	413	735	370	350	11	86
6.3	**TKZ6.3**	745	413	735	370	350	11	96
8	**TKZ8**	745	413	735	370	350	11	102
10	**TKZ10**	745	413	735	370	350	11	104
12.5	**TKZ12.5**	745	413	735	370	350	11	117
16	**TKZ16**	745	413	735	370	350	11	131
20	**TKZ20**	745	413	735	370	350	11	146
25	**TKZ25**	968	621	1150	500	426	12	258
31.5	**TKZ31.5**	968	621	1150	500	426	12	292
40	**TKZ40**	968	621	1150	500	426	12	325
50	**TKZ50**	968	621	1150	500	426	12	411
TKE								
3.15	**TKE3.15**	245	245	255	138	210	11	34
4	**TKE4**	240	158	353	122	180	11	44
5	**TKE5**	240	178	353	142	180	11	53
6.3	**TKE6.3**	280	202	419	142	210	11	74
8	**TKE8**	280	222	419	162	210	11	89
10	**TKE10**	320	225	480	126	240	11	93
12.5	**TKE12.5**	320	225	480	126	240	11	101
16	**TKE16**	320	245	480	146	240	11	112
20	**TKE20**	320	265	480	166	240	11	134
25	**TKE25**	320	295	480	186	240	11	161
31.5	**TKE31.5**	440	320	609	166	250	11	185
40	**TKE40**	440	340	679	186	250	11	213
50	**TKE50**	440	360	679	206	250	11	260

TKZ IP65

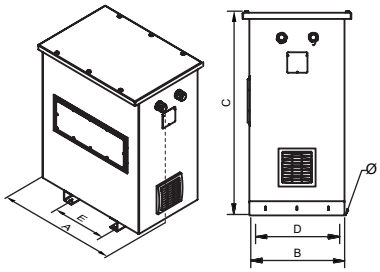


Up to 4 kVA



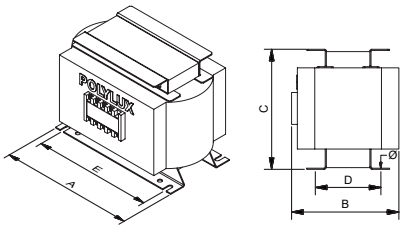
From 5 kVA up to 20 kVA

TKZ IP54

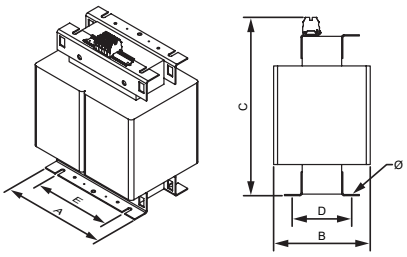


From 25 kVA

TKE IP20



Up to 3,15 kVA



From 4 kVA

TK SERIES

Isolation · Input 230 V · Output 230 V

On-request manufacturing options (please see prices)

Power	**From 3.15 kVA to 100 kVA**
Windings	**Copper or aluminium**
Frequency	**From 50 Hz to 400 Hz**
IP rating	**IP00, IP20, IP23, IP31,IP33, IP42, IP54, IP55 and IP65**
IK rating	**IK08 and IK10**
Room temperature	**Up to 60 ºC**
Locks	**Screw, key**
Test voltage	**Up to 28 kV**
Short circuit voltage	**From 2% to 9%**
Operation	**Intermittent, continuous**
Cooling	**Natural, forced ventilation**
Electrostatic shield	**Up to three shields**
Class	**I, II**
Altitude	**Up to 4000 m**
Protections	**In both primary and secondary (figure 1)**
Temperature sensors	**PT100 (figure 2), PTC (figure 3) or bimetallic**
Temperature control	**Temperature control station (4xPT100) (figure 4), PTC thermal relays (3xPTC / 6xPTC)**
Network analyser	**(Figure 5)**
Anti condensation system	**Hygrostat**
Heating system	**Heating elements**
External protection	**Anti-flash varnish, resin encapsulated, metal or stainless steel enclosure**
Transportation and hoisting	**Wheels (figure 6), lifting points**
Paint	**C3, C4, C5, different RAL**
Feature plate	**High generation polymer or stainless steel (figure 7)**
Anti vibration system	**Silentblock**
Adjustment	**-10%; -7.5%; -5%; -2.5%; +2.5%; +5%; +7.5%; +10% With bridges (figure 8) or selector (figure 9)**
Certified	**CE, DNV-GL, BV, UL (insulation) and POLYLUX laboratory**
Climate class / environment / fire	**Up to C2-E2-F1**

Figure 1

Figure 2

Figure 3

Figure 4

Figure 5

Figure 6

Figure 7

Figure 8

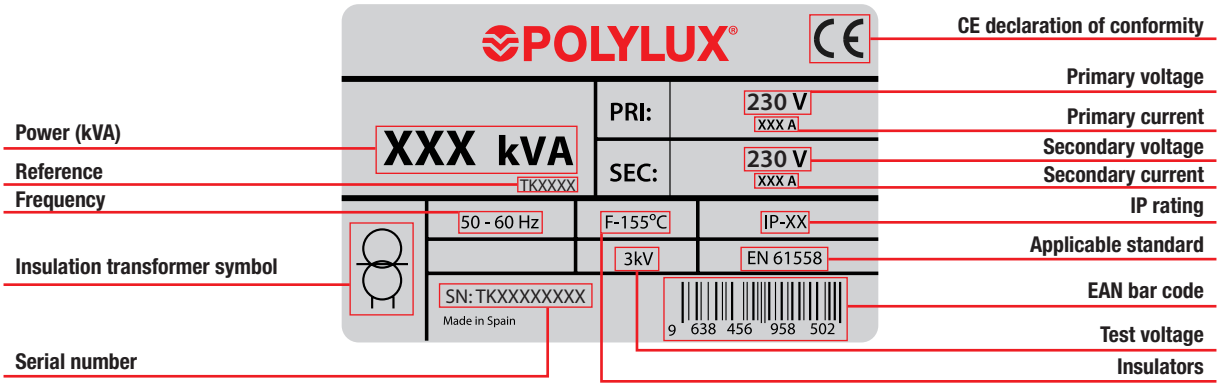
Figure 9

TK SERIES

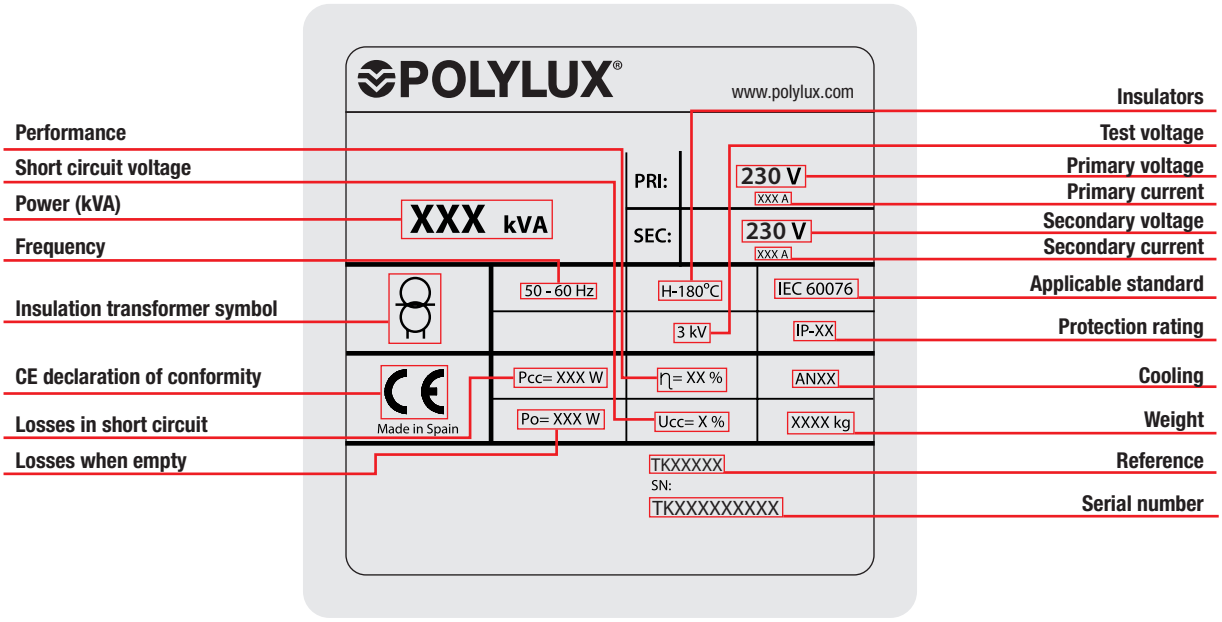
Isolation · Input **230 V** · Output **230 V**

Feature plate structure

Label upto 25 kVA:

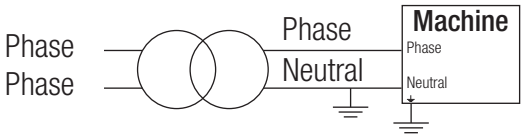


Lable from 31.5 kVA:



Creating neutral

To perform this procedure: use a single-phase transformer with the appropriate power and connect it to primary with both phases and create a bridge at the output between one of the output phases and ground. This line will act as neutral from this moment.



TK5IN SERIES

Isolation · Input **230 V** · Output **230 V**

Definition and applications

The TK5IN transformers are mainly used to isolate circuits and increase or reduce the output voltage if this is requested as a special assembly.
They are also used to change the installation neutral system for changing from a two-phase (PH + PH) to a single-phase network (PH + N) (this case means creating an artificial neural) or vice versa.
In installations with a certain amount of electrical noise, the TK5IN series helps improve the electrical network quality in secondary.
For example: Supplying the electronics of equipment such as EV chargers, boilers, aerothermal or biomass equipment, which require the generation of grounded neutral to supply the equipment with Phase + Neutral.

Manufacturing characteristics

The TK5IN series are perfect for supplying continuous power to machinery residential installations or machinery. The transformers of this series are characterised by their:

- Low inrush (3 or 5In)
- Low no-load losses
- High performance >95%
- Quiet operation (noise level <40dB)
- Input protections with B or C and rated current curves

Equipment with three different finishes based on sealing.
All the versions have the following features in common:

- Anti-flash dip varnishing. Ensures greater compactation, insulation and noise elimination <40dB.
- Welded copper connection end sleeves inserted into the terminal block to prevent hazards caused by expansion that leads to poor connection.
- All the transformers are checked automatically one by one and the compliance test report is created in accordance with the corresponding standard.

TK5INX

· IP00 protection rating.
· Power from 2 kVA to 40 kVA.
· Total impregnated in anti-flash varnish.
· Hoisting elements included.
· **UL certification.** FILE: E532753 - Construction only.

TK5INW

· IP23 rating (IK08).
· Power from 2 kVA to 40 kVA.
· Metal box painted with RAL7035 polyester resin.
· High resistance to corrosion.
· Hoisting elements included.
· Detachable top and front cover.
· Cable outlet with cable gland.
· **UL certification.**

TK5INZ

· IP65 rating up to 16 kVA / IP54 from 20 kVA (IK10).
· Power from 2 kVA to 40 kVA.
· Metal box painted with RAL7035 polyester resin.
· High resistance to corrosion.
· Hoisting elements included.
· Detachable top cover.
· Stuffing box cover for cable input depending on installation needs.
· With silentblock.
· **UL certification.**

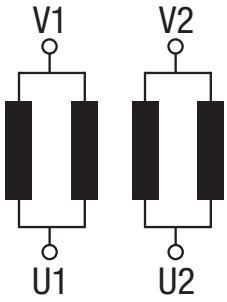
TK5IN SERIES

Isolation · Input **230 V** · Output **230 V**

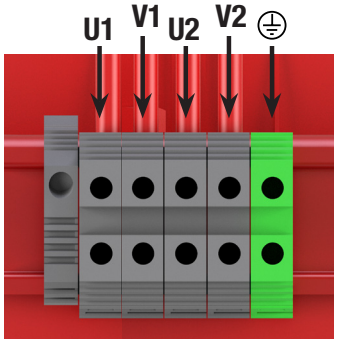
Technical features - standard model

Rating	**3.15 kVA to 50 kVA**
Standard voltage	**Input 230 V // Output 230 V**
Standard frequency	**50-60 Hz**
Noise	**≤ 45 dB**
Insulators	**Class H - 180 ºC**
Temperature rise	**Class F ≤ 16 kVA (TK5INX, TK5INW)** **Class F ≤ 12,5 kVA (TK5INZ)** **Class H ≥ 20 kVA (TK5INX, TK5INW)** **Class H ≥ 16 kVA (TK5INZ)** *More information in Technical Appendix (T.A.1)
Windings	**Class HC-200 ºC**
Class	**I**
Altitude	**1000 m**
Enclosure colour	**RAL 7035**
IP rating	**IP00 (TK5INX)** **IP23 (TK5INW)** **IP65 rating up to 16 kVA / IP54 from 20 kVA (TK5INZ)**
IK rating	**IK08 (TK5INW)** **IK10 (TK5INZ)**
Paint class (ISO 12944)	**C3 (TK5INW)** **C4 (TK5INZ)**
Room temperature	**45 ºC**
Standards	**≤600V: US Standard: UL 5085-1 / UL 5085-2** **Canada Standard: CSA C22.2 N0 66.1-06 / CSA C22.2 N0 66.2-06** **≤750V: IEC/EN 61558, CE up to 16 kVA** **IEC/EN 60076, CE from 20 kVA**
Test voltage	**3 kV (1 min, 50 Hz)**
Inrush	**< 5 In**
Ucc	**≤ 4,7 %**
K factor	**4**
Operation	**Continuous**
Cooling	**AN (TK5INX) - ANAN (TK5INW / TK5INZ IP65) - ANAF (TK5INZ IP54)**
Hoisting accessories	**Hoisting elements**

Electrical diagram

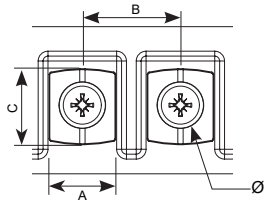


Connection

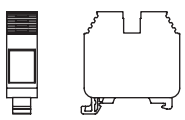


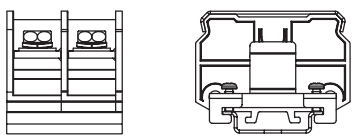
Terminal types

Terminals		External mm				Minimum conductor cross-section mm²	Maximum tightening torque		TK5INX-TK5INW Power kVA		TK5INZ Power kVA	
		A	B	C	Ø		N·m	Lb·In	From	To	From	To
Terminal M5		15	18.5	14	M5	16	1.1	9.7	-	-	-	-
Power strip 1	Terminal 16	-	-	-	-	25	1.2	10.6	3.15	6.3	3.15	4
	Terminal 35	-	-	-	-	50	2.5	22.1	8	8	5	6.3
Power strip 2	Terminal 60	-	-	-	-	25	4.5	40	10	12.5	8	10
	Terminal 100	-	-	-	-	35	6.7	60	16	20	12.5	16
	Terminal 200	-	-	-	-	95	9	80	25	40	20	31.5
	Terminal 300	-	-	-	-	150	9	80	50	50	40	50



Terminal M5


Power strip 1


Power strip 2

TK5IN SERIES

Isolation · Input **230 V** · Output **230 V**

Theoretical data - standard model

Power kVA	Reference	Insulation class	Current A		Protections A		Cable gland (TKW) / Stuffing boxes (TKZ)	
			Input	Output	Input	Output	ø max. (mm)	Quantity
TK5INX								
2	**TK5INX2**	F	13,7	13,7	12 (C/gG)	12 (C/gG)	-	-
2,5	**TK5INX2.5**	F	13,7	13,7	12 (C/gG)	12 (C/gG)	-	-
3,15	**TK5INX3.15**	F	13,7	13,7	12 (C/gG)	12 (C/gG)	-	-
4	**TK5INX4**	F	17,4	17,4	16 (C/gG)	16 (C/gG)	-	-
5	**TK5INX5**	F	21,7	21,7	20 (C/gG)	20 (C/gG)	-	-
6.3	**TK5INX6.3**	F	27,4	27,4	25 (C/gG)	25 (C/gG)	-	-
8	**TK5INX8**	F	34,8	34,8	32 (C/gG)	32 (C/gG)	-	-
10	**TK5INX10**	F	43,5	43,5	40 (C/gG)	40 (C/gG)	-	-
12.5	**TK5INX12.5**	F	54,3	54,3	50 (C/gG)	50 (C/gG)	-	-
16	**TK5INX16**	F	69,6	69,6	63 (C/gG)	63 (C/gG)	-	-
20	**TK5INX20**	H	87,0	87,0	80 (C/gG)	80 (C/gG)	-	-
25	**TK5INX25**	H	108,7	108,7	100 (C/gG)	100 (C/gG)	-	-
31,5	**TK5INX31.5**	H	137,0	137,0	125 (C/gG)	125 (C/gG)	-	-
40	**TK5INX40**	H	173,9	173,9	160 (C/gG)	160 (C/gG)	-	-
TK5INW								
2	**TK5INW2**	F	13,7	13,7	12 (C/gG)	12 (C/gG)	18	2
2,5	**TK5INW2.5**	F	13,7	13,7	12 (C/gG)	12 (C/gG)	25	4
3,15	**TK5INW3.15**	F	13,7	13,7	12 (C/gG)	12 (C/gG)	25	4
4	**TK5INW4**	F	17,4	17,4	16 (C/gG)	16 (C/gG)	32	4
5	**TK5INW5**	F	21,7	21,7	20 (C/gG)	20 (C/gG)	32	4
6,3	**TK5INW6.3**	F	27,4	27,4	25 (C/gG)	25 (C/gG)	32	4
8	**TK5INW8**	F	34,8	34,8	32 (C/gG)	32 (C/gG)	32	4
10	**TK5INW10**	F	43,5	43,5	40 (C/gG)	40 (C/gG)	32	4
12,5	**TK5INW12.5**	F	54,3	54,3	50 (C/gG)	50 (C/gG)	32	4
16	**TK5INW16**	F	69,6	69,6	63 (C/gG)	63 (C/gG)	32	4
20	**TK5INW20**	H	87,0	87,0	80 (C/gG)	80 (C/gG)	32	8
25	**TK5INW25**	H	108,7	108,7	100 (C/gG)	100 (C/gG)	32	8
31,5	**TK5INW31.5**	H	137,0	137,0	125 (C/gG)	125 (C/gG)	32	8
40	**TK5INW40**	H	173,9	173,9	160 (C/gG)	160 (C/gG)	32	8
TK5INZ								
2	**TK5INZ2**	F	13,7	13,7	12 (C/gG)	12 (C/gG)	18 - 25	2
2,5	**TK5INZ2.5**	F	13,7	13,7	12 (C/gG)	12 (C/gG)	18 - 25	2
3,15	**TK5INZ3.15**	F	13,7	13,7	12 (C/gG)	12 (C/gG)	18 - 25	2
4	**TK5INZ4**	F	17,4	17,4	16 (C/gG)	16 (C/gG)	22 - 32	2
5	**TK5INZ5**	F	21,7	21,7	20 (C/gG)	20 (C/gG)	22 - 32	2
6,3	**TK5INZ6.3**	F	27,4	27,4	25 (C/gG)	25 (C/gG)	22 - 32	2
8	**TK5INZ8**	F	34,8	34,8	32 (C/gG)	32 (C/gG)	22 - 32	2
10	**TK5INZ10**	F	43,5	43,5	40 (C/gG)	40 (C/gG)	22 - 32	2
12,5	**TK5INZ12.5**	F	54,3	54,3	50 (C/gG)	50 (C/gG)	22 - 32	2
16	**TK5INZ16**	H	69,6	69,6	63 (C/gG)	63 (C/gG)	22 - 32	2
20	**TK5INZ20**	H	87,0	87,0	80 (C/gG)	80 (C/gG)	22 - 32	2
25	**TK5INZ25**	H	108,7	108,7	100 (C/gG)	100 (C/gG)	22 - 32	2
31,5	**TK5INZ31.5**	H	137,0	137,0	125 (C/gG)	125 (C/gG)	22 - 32	2
40	**TK5INZ40**	H	173,9	173,9	160 (C/gG)	160 (C/gG)	22 - 32	2

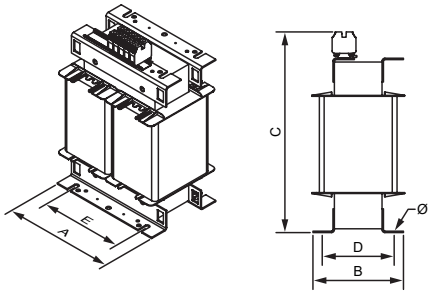
TK5IN SERIES

Isolation · Input **230 V** · Output **230 V**

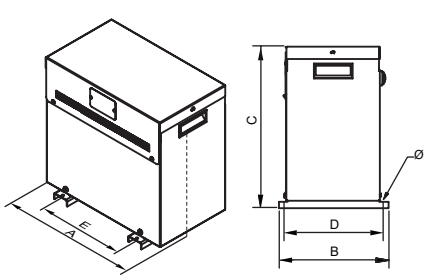
Measurements

Power kVA	Dimensions mm							
	Reference	A	B	C	D	E	Ø	Weight kg
TK5INX								
2	**TK5INX2**	240	144	355	122	180	11	30
2,5	**TK5INX2.5**	240	164	355	134	180	11	36
3,15	**TK5INX3.15**	240	174	355	144	180	11	39
4	**TK5INX4**	280	170	419	126	210	11	42
5	**TK5INX5**	280	190	419	146	210	11	52
6.3	**TK5INX6.3**	280	210	419	166	210	11	62
8	**TK5INX8**	280	220	419	176	210	11	66
10	**TK5INX10**	320	260	480	154	240	11	71
12.5	**TK5INX12.5**	320	280	480	174	240	11	81
16	**TK5INX16**	320	300	480	194	240	11	95
20	**TK5INX20**	440	240	615	170	250	11	120
25	**TK5INX25**	440	270	615	200	250	11	145
31,5	**TK5INX31.5**	440	290	615	220	250	11	170
40	**TK5INX40**	440	300	615	230	250	11	185
TK5INW								
2	**TK5INW2**	460	340	501	300	300	12	38
2,5	**TK5INW2.5**	460	340	501	300	300	12	46
3,15	**TK5INW3.15**	460	340	501	300	300	12	50
4	**TK5INW4**	549	424	644	375	345	12	69
5	**TK5INW5**	549	424	644	375	345	12	74
6,3	**TK5INW6.3**	549	424	644	375	345	12	81
8	**TK5INW8**	549	424	644	375	345	12	89
10	**TK5INW10**	616	424	710	375	345	12	97
12,5	**TK5INW12.5**	616	424	710	375	345	12	110
16	**TK5INW16**	616	424	710	375	345	12	127
20	**TK5INW20**	616	424	710	375	345	12	133
25	**TK5INW25**	815	555	975	500	415	12	232
31,5	**TK5INW31.5**	815	555	975	500	415	12	265
40	**TK5INW40**	815	555	975	500	415	12	298

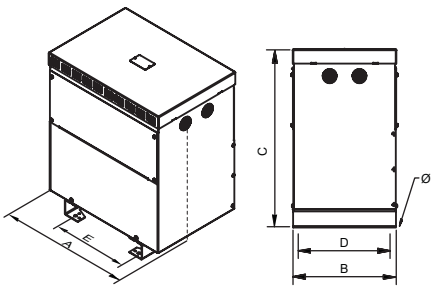
TK5INX IP00



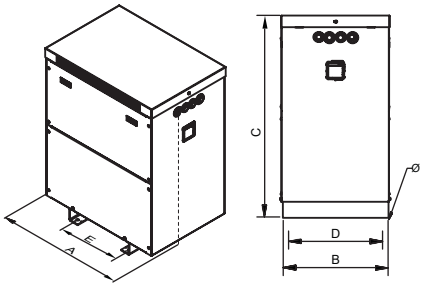
TK5INW IP23



Up to 5 kVA



From 6,3 kVA up to 25 kVA



From 31,5 kVA

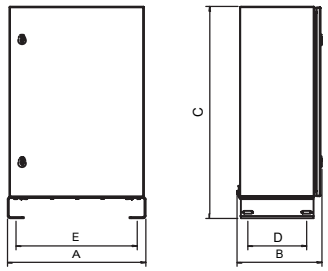
TK5IN SERIES

Isolation · Input **230 V** · Output **230 V**

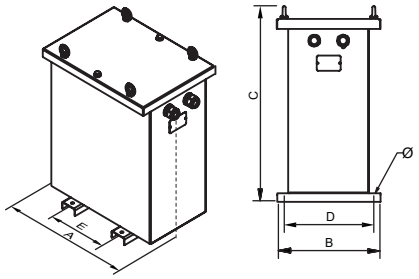
Measurements

Power kVA	Dimensions mm							
	Reference	A	B	C	D	E	Ø	Weight kg
TK5INZ								
2	**TK5INZ2**	613	316	878	220	550	13	64
2,5	**TK5INZ2.5**	613	316	878	220	550	13	67
3,15	**TK5INZ3.15**	613	316	878	220	550	13	71
4	**TK5INZ4**	745	413	735	370	350	11	82
5	**TK5INZ5**	745	413	735	370	350	11	104
6,3	**TK5INZ6.3**	745	413	735	370	350	11	108
8	**TK5INZ8**	745	413	735	370	350	11	111
10	**TK5INZ10**	745	413	735	370	350	11	122
12,5	**TK5INZ12.5**	745	413	735	370	350	11	128
16	**TK5INZ16**	968	621	1150	500	426	12	208
20	**TK5INZ20**	968	621	1150	500	426	12	235
25	**TK5INZ25**	968	621	1150	500	426	12	263
31,5	**TK5INZ31.5**	968	621	1150	500	426	12	275
40	**TK5INZ40**	968	621	1150	500	426	12	283

TK5INZ IP65

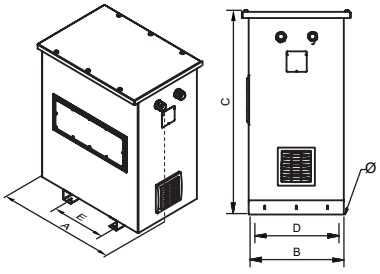


Up to 3,15 kVA

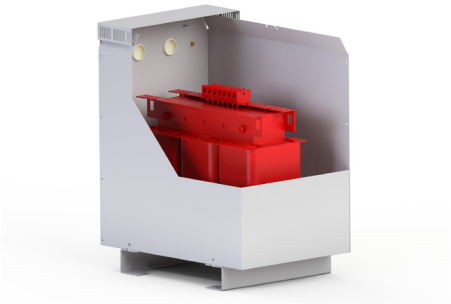


From 4 kVA up to 16 kVA

TK5INZ IP54



From 20 kVA



Sectioned

TK5IN SERIES

Isolation · Input **230 V** · Output **230 V**

On-request manufacturing options (please see prices)

Power	**From 2 kVA to 100 kVA**
Windings	**Copper or aluminium**
Frequency	**From 50 Hz to 400 Hz**
IP rating	**IP00, IP20, IP23, IP31,IP33, IP42, IP54, IP55 and IP65**
IK rating	**IK08 and IK10**
Room temperature	**Up to 60 ºC**
Locks	**Screw, key**
Test voltage	**Up to 28 kV**
Short circuit voltage	**From 2% to 9%**
Operation	**Intermittent, continuous**
Cooling	**Natural, forced ventilation**
Electrostatic shield	**Up to three shields**
Class	**I, II**
Altitude	**Up to 4000 m**
Protections	**In both primary and secondary (figure 1)**
Temperature sensors	**PT100 (figure 2), PTC (figure 3) or bimetallic**
Temperature control	**Temperature control station (4xPT100) (figure 4), PTC thermal relays (3xPTC / 6xPTC)**
Network analyser	**(Figure 5)**
Anti condensation system	**Hygrostat**
Heating system	**Heating elements**
External protection	**Anti-flash varnish, resin encapsulated, metal or stainless steel enclosure**
Transportation and hoisting	**Wheels (figure 6), lifting points**
Paint	**C3, C4, C5, different RAL**
Feature plate	**High generation polymer or stainless steel (figure 7)**
Anti vibration system	**Silentblock**
Adjustment	**-10%; -7.5%; -5%; -2.5%; +2.5%; +5%; +7.5%; +10% With bridges (figure 8) or selector (figure 9)**
Certified	**CE, DNV-GL, BV, UL (insulation) and POLYLUX laboratory**
Climate class / environment / fire	**Up to C2-E2-F1**


Figure 1


Figure 2


Figure 3

Figure 4


Figure 5


Figure 6

Figure 7


Figure 8

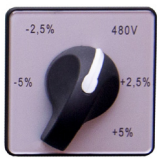


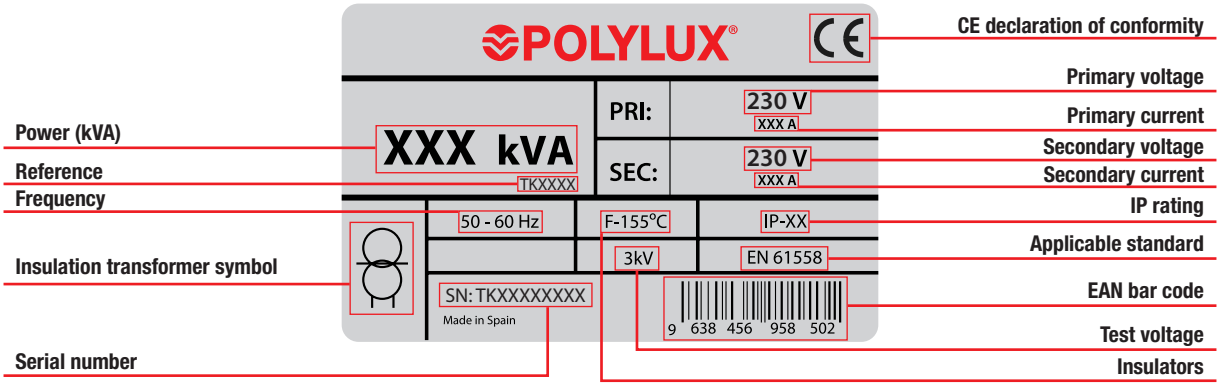
Figure 9

TK5IN SERIES

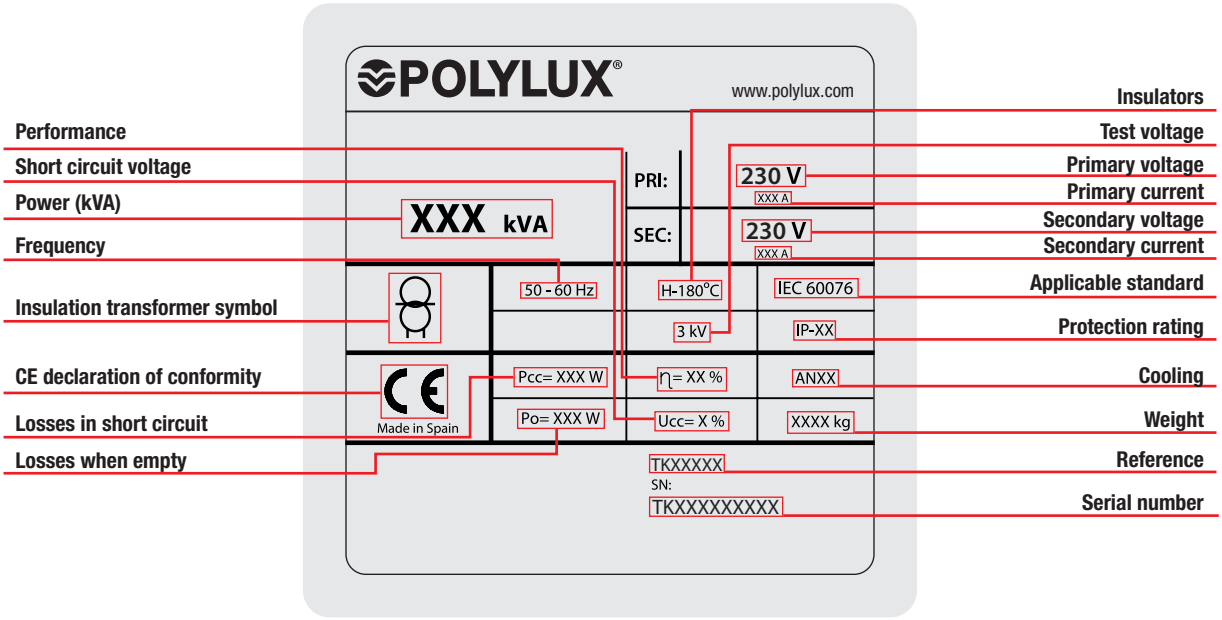
Isolation · Input **230 V** · Output **230 V**

Feature plate structure

Label upto 25 kVA:

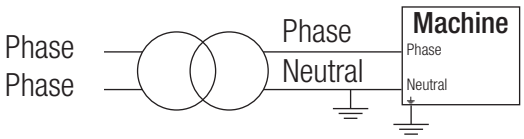


Lable from 31.5 kVA:



Creating neutral

To perform this procedure: use a single-phase transformer with the appropriate power and connect it to primary with both phases and create a bridge at the output between one of the output phases and ground. This line will act as neutral from this moment.



TT SERIES

Isolation · Input **400 V** · Output **400 V** +N

Definition and applications

Our TT series are three-phase isolation transformers designed for continuous operation at maximum output 365 days a year. This guarantees power is supplied to the installations or equipment they supply.

Applications:

- The main application of the TT transformers is the isolation of circuits, with the possibility of increasing or reducing the voltage.
- Reducing voltage drops in installations with long cable lengths. With the installation of a step-up transformer and a reducer transformer.
- In installations with a certain level of electrical noise, the TT series helps improve the electrical network quality in secondary.
- Changing the neutral system of an installation.

Manufacturing characteristics

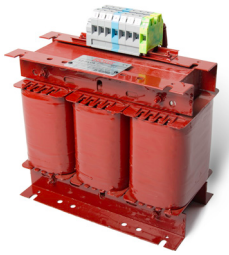
- All the transformers are dipped in anti-flash varnish and then compacted in the furnace. This process increases the insulation grade, reduces noise and provides anti-moisture, waterproofed protection.
- The high power transformers are manufactured with format cores and low loss properties, thus contributing to improving performance.
- All the transformers are checked automatically one by one and the compliance test report is created in accordance with the corresponding standard.

Recommendation for selecting the best transformer in terms of use and installation location

Main compliance properties based on model	 Encapsulated in resin	 IP00 Air	 Oil
Non-flammable	✓	✗	✗
Self-extinguishing.	✓	✗	✗
No safety measures against the risk of explosion	✓	✓	✗
No special installation conditions	✓	✓	✗
Protected against damp, saline and corrosive environments	✓	✗	✓
Greater resistance to overload and transient harmonics	✓	✗	✗
No maintenance	✓	✓	✗
No risk of contamination	✓	✓	✗

Considerations

- The IP00 (air) can be installed in control cabinets with all the necessary protections and in dry places, which is more economical.
- Both models (encapsulated and IP00) can be protected with metallic enclosures up to IP65.
- In addition, the **ECOLOGICAL** transformer can be manufactured in both models, with different properties such as lower consumption, thus achieving fast amortisation.
- The transformer with the best properties is the transformer encapsulated in fire retardant resin.



TTX

· IP00 protection rating.
· Power from 0.63 kVA to 1000 kVA.
· Total impregnated in anti-flash varnish.
· Hoisting elements included.
· **UL certification.** FILE: E532753 - Construction only.

TTW

· IP23 rating (IK08).
· Power from 0.63 kVA to 1000 kVA.
· Metal box painted with RAL7035 polyester resin.
· High resistance to corrosion.
· Hoisting elements included.
· Detachable top and front cover.
· Cable outlet with cable gland.
· **UL certification.**

TTZ

· IP65 rating up to 31,5 kVA / IP54 from 40 kVA (IK10).
· Power from 0.63 kVA to 1000 kVA.
· Metal box painted with RAL7035 polyester resin.
· High resistance to corrosion.
· Hoisting elements included.
· Detachable top cover.
· Stuffing box cover for cable input depending on installation needs.
· With silentblock.
· **UL certification.**

TTE

· **Encapsulated in flame retardant resin.**
· IP20 protection rating up to 2,5 kVA / IP00 from 3,15 kVA.
· Power from 0.40 kVA to 400 kVA.
· Protection against damp, saline and corrosive environments.
· Greater resistance to surge currents.
· Greater resistance to transient harmonics.
· Greater mechanical resistance to undesirable vibrations.
· Uniform heat dissipation.

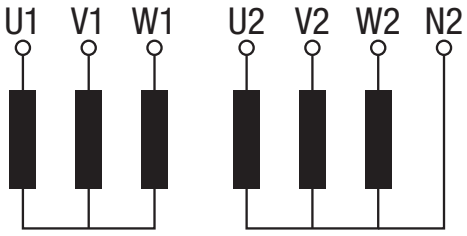
TT SERIES

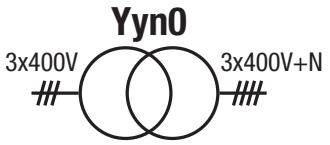
Isolation · Input **400 V** · Output **400 V** + N

Technical features - standard model

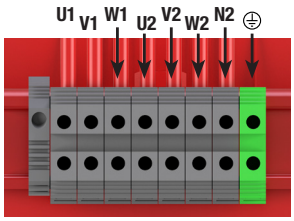
Rating	**0.63 kVA to 1000 kVA**
Standard voltage	**Input 400 V // Output 400 V and N.**
Standard frequency	**50-60 Hz**
Connection unit	**Yyn0**
Insulators	**Class H - 180 ºC**
Temperature rise	**Class F ≤ 31.5 kVA (25 kVA TTZ)** **Class H - TTX, ≥ 40 kVA (31.5 kVA TTZ)** *More information in Technical Appendix (T.A.1)
Windings	**Class HC-200 ºC**
Safety class	**I**
Altitude	**1000 m**
Enclosure colour	**RAL 7035**
IP rating	**IP00 (TTX) / TTE from 3,15 kVA** **IP20 up to 2,5 kVA (TTE)** **IP23 (TTW)** **IP65 rating up to 31,5 kVA / IP54 from 40 kVA (TTZ)**
IK rating	**IK08 (TTW)** **IK10 (TTZ)**
Paint class (ISO 12944)	**C3 (TTW)** **C4 (TTZ)**
Room temperature	**45 ºC**
Standards	**≤600V: US Standard: UL 5085-1 / UL 5085-2** **Canada Standard: CSA C22.2 N0 66.1-06 / CSA C22.2 N0 66.2-06** **≤750V: IEC/EN 61558, CE up to 31.5 kVA** **IEC/EN 60076, CE from 40 kVA**
Test voltage	**3 kV (1 min, 50 Hz)**
Inrush	**< 12 In**
Ucc	**≤ 4,7 %**
K factor	**4**
Operation	**Continuous**
Cooling	**AN (TTX / TTE) - ANAN (TTW / TTZ IP65) - ANAF (≥500kVA TTW/ TTZ IP54)**
Hoisting accessories	**Hoisting elements included**

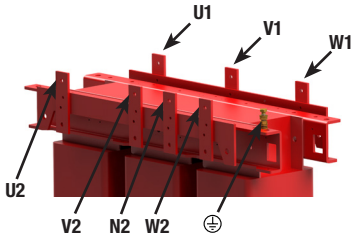
Electrical diagram





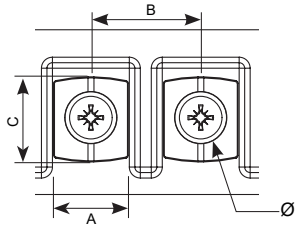
Connection



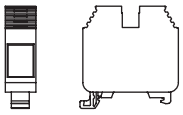


Terminal types

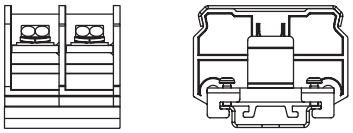
Terminals		External mm				Maximum cross-section conductor mm²	Maximum tightening torque		TTX-TTW Power kVA		TTE Power kVA		TTZ Power kVA	
		A	B	C	O		N-m	Lb-In	From	To	From	To	From	To
Terminal M5		15	18.5	14	M5	-	1.1	9.7	-	-	0.4	5	-	-
Power strip 1	Terminal 4	-	-	-	-	6	0.5	4.4	0.63	2	-	-	0.63	1
	Terminal 10	-	-	-	-	16	1.2	10.6	2.5	6.3	6.3	6.3	2	5
	Terminal 16	-	-	-	-	25	1.2	10.6	8	12.5	8	12.5	6.3	10
Power strip 2	Terminal 60	-	-	-	-	25	4.5	40	16	40	16	40	12.5	40
	Terminal 100	-	-	-	-	35	6.7	60	50	63	50	63	50	63
	Terminal 200	-	-	-	-	95	9	80	80	125	80	125	80	125
	Terminal 300	-	-	-	-	150	9	80	160	200	160	200	160	200
Connection plate	Plate 50 X 1	-	-	-	-	150	-	-	250	400	250	400	250	400
	Plate 100 X 4	-	-	-	-	150	-	-	500	1000	500	1000	500	1000



Terminal M5



Power strip 1



Power strip 2

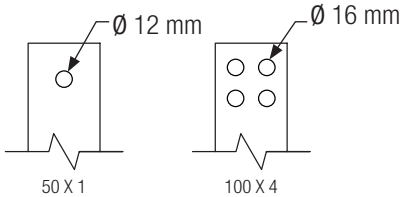


Plate connection

TT SERIES

Isolation · Input **400 V** · Output **400 V** + N

Theoretical data - standard model

Power kVA	Reference	Insulation class	Current A		Protections A		Noise dB	Cable gland	
			Input	Output	Input	Output		ø max. (mm)	Quantity
TTX									
0.63	**TTX0.63**	F	0.9	0.9	2 (D/aM)	1 (C/gG)	≤45	-	-
1	**TTX1**	F	1.4	1.4	3 (D/aM)	1.6 (C/gG)	≤45	-	-
2	**TTX2**	F	2.9	2.9	6 (D/aM)	3 (C/gG)	≤45	-	-
2.5	**TTX2.5**	F	3.6	3.6	6 (D/aM)	3 (C/gG)	≤45	-	-
3.15	**TTX3.15**	F	4.6	4.6	10 (D/aM)	4 (C/gG)	≤45	-	-
4	**TTX4**	F	5.8	5.8	10 (D/aM)	5 (C/gG)	≤45	-	-
5	**TTX5**	F	7.2	7.2	16 (D/aM)	6 (C/gG)	≤45	-	-
6.3	**TTX6.3**	F	9.1	9.1	20 (D/aM)	10 (C/gG)	≤45	-	-
8	**TTX8**	F	11.6	11.6	25 (D/aM)	12 (C/gG)	≤45	-	-
10	**TTX10**	F	14.5	14.5	32 (D/aM)	16 (C/gG)	≤45	-	-
12.5	**TTX12.5**	F	18.1	18.1	32 (D/aM)	16 (C/gG)	≤45	-	-
16	**TTX16**	F	23.1	23.1	40 (D/aM)	20 (C/gG)	≤45	-	-
20	**TTX20**	F	28.9	28.9	50 (D/aM)	25 (C/gG)	≤45	-	-
25	**TTX25**	F	36.1	36.1	63 (D/aM)	32 (C/gG)	≤45	-	-
31.5	**TTX31.5**	F	45.5	45.5	80 (D/aM)	40 (C/gG)	≤45	-	-
40	**TTX40**	H	57.8	57.8	100 (D/aM)	50 (C/gG)	≤55	-	-
50	**TTX50**	H	72.3	72.3	125 (D/aM)	63 (C/gG)	≤55	-	-
63	**TTX63**	H	91	91	160 (D/aM)	80 (C/gG)	≤55	-	-
80	**TTX80**	H	116	116	200 (D/aM)	100 (C/gG)	≤55	-	-
100	**TTX100**	H	145	145	250 (D/aM)	125 (C/gG)	≤55	-	-
125	**TTX125**	H	181	181	400 (D/aM)	160 (C/gG)	≤55	-	-
160	**TTX160**	H	231	231	500 (D/aM)	200 (C/gG)	≤55	-	-
200	**TTX200**	H	289	289	630 (D/aM)	250 (C/gG)	≤55	-	-
250	**TTX250**	H	361	361	800 (D/aM)	300 (C/gG)	≤65	-	-
315	**TTX315**	H	455	455	1000 (--/aM)	400 (C/gG)	≤65	-	-
400	**TTX400**	H	578	578	1250 (--/aM)	500 (C/gG)	≤65	-	-
500	**TTX500**	H	723	723	1500 (--/aM)	630 (C/gG)	≤65	-	-
630	**TTX630**	H	910	910	2000 (--/aM)	800 (C/gG)	≤65	-	-
800	**TTX800**	H	1156	1156	2500 (--/aM)	1000 (C/gG)	≤65	-	-
1000	**TTX1000**	H	1445	1445	3000 (--/aM)	1250 (C/gG)	≤65	-	-
TTW									
0.63	**TTW0.63**	F	0.9	0.9	2 (D/aM)	1 (C/gG)	≤45	14	2
1	**TTW1**	F	1.4	1.4	3 (D/aM)	1.6 (C/gG)	≤45	14	2
2	**TTW2**	F	2.9	2.9	6 (D/aM)	3 (C/gG)	≤45	14	2
2.5	**TTW2.5**	F	3.6	3.6	6 (D/aM)	3 (C/gG)	≤45	18	2
3.15	**TTW3.15**	F	4.6	4.6	10 (D/aM)	4 (C/gG)	≤45	18	2
4	**TTW4**	F	5.8	5.8	10 (D/aM)	5 (C/gG)	≤45	18	2
5	**TTW5**	F	7.2	7.2	16 (D/aM)	6 (C/gG)	≤45	18	2
6.3	**TTW6.3**	F	9.1	9.1	20 (D/aM)	10 (C/gG)	≤45	25	4
8	**TTW8**	F	11.6	11.6	25 (D/aM)	12 (C/gG)	≤45	25	4
10	**TTW10**	F	14.5	14.5	32 (D/aM)	16 (C/gG)	≤45	32	4
12.5	**TTW12.5**	F	18.1	18.1	32 (D/aM)	16 (C/gG)	≤45	32	4
16	**TTW16**	F	23.1	23.1	40 (D/aM)	20 (C/gG)	≤45	32	4
20	**TTW20**	F	28.9	28.9	50 (D/aM)	25 (C/gG)	≤45	32	4
25	**TTW25**	F	36.1	36.1	63 (D/aM)	32 (C/gG)	≤45	32	4
31.5	**TTW31.5**	F	45.5	45.5	80 (D/aM)	40 (C/gG)	≤45	32	4
40	**TTW40**	H	57.8	57.8	100 (D/aM)	50 (C/gG)	≤55	32	8
50	**TTW50**	H	72.3	72.3	125 (D/aM)	63 (C/gG)	≤55	32	8
63	**TTW63**	H	91	91	160 (D/aM)	80 (C/gG)	≤55	32	8
80	**TTW80**	H	116	116	200 (D/aM)	100 (C/gG)	≤55	32	8
100	**TTW100**	H	145	145	250 (D/aM)	125 (C/gG)	≤55	32	8
125	**TTW125**	H	181	181	400 (D/aM)	160 (C/gG)	≤55	44	8
160	**TTW160**	H	231	231	500 (D/aM)	200 (C/gG)	≤55	44	8
200	**TTW200**	H	289	289	630 (D/aM)	250 (C/gG)	≤55	44	8
250	**TTW250**	H	361	361	800 (D/aM)	300 (C/gG)	≤65	44	8
315	**TTW315**	H	455	455	1000 (--/aM)	400 (C/gG)	≤65	44	8
400	**TTW400**	H	578	578	1250 (--/aM)	500 (C/gG)	≤65	44	8
500	**TTW500**	H	723	723	1500 (--/aM)	630 (C/gG)	≤65	44	8
630	**TTW630**	H	910	910	2000 (--/aM)	800 (C/gG)	≤65	44	8
800	**TTW800**	H	1156	1156	2500 (--/aM)	1000 (C/gG)	≤65	44	8
1000	**TTW1000**	H	1445	1445	3000 (--/aM)	1250 (C/gG)	≤65	44	8

TT SERIES

Isolation · Input **400 V** · Output **400 V** + N

Theoretical data - standard model

Power kVA	Reference	Insulation class	Current A		Protections A		Noise dB	Stuffing boxes	
			Input	Output	Input	Output		ø (mm)	Quantity
TTZ									
0.63	**TTZ0.63**	F	0.9	0.9	2 (D/aM)	1 (C/gG)	≤45	10 - 14	2
1	**TTZ1**	F	1.4	1.4	3 (D/aM)	1.6 (C/gG)	≤45	10 - 14	2
2	**TTZ2**	F	2.9	2.9	6 (D/aM)	3 (C/gG)	≤45	10 - 14	2
2.5	**TTZ2.5**	F	3.6	3.6	6 (D/aM)	3 (C/gG)	≤45	18 - 25	2
3.15	**TTZ3.15**	F	4.6	4.6	10 (D/aM)	4 (C/gG)	≤45	18 - 25	2
4	**TTZ4**	F	5.8	5.8	10 (D/aM)	5 (C/gG)	≤45	18 - 25	2
5	**TTZ5**	F	7.2	7.2	16 (D/aM)	6 (C/gG)	≤45	18 - 25	2
6.3	**TTZ6.3**	F	9.1	9.1	20 (D/aM)	10 (C/gG)	≤45	18 - 25	2
8	**TTZ8**	F	11.6	11.6	25 (D/aM)	12 (C/gG)	≤45	18 - 25	2
10	**TTZ10**	F	14.5	14.5	32 (D/aM)	16 (C/gG)	≤45	22 - 32	2
12.5	**TTZ12.5**	F	18.1	18.1	32 (D/aM)	16 (C/gG)	≤45	22 - 32	2
16	**TTZ16**	F	23.1	23.1	40 (D/aM)	20 (C/gG)	≤45	22 - 32	2
20	**TTZ20**	F	28.9	28.9	50 (D/aM)	25 (C/gG)	≤45	22 - 32	2
25	**TTZ25**	F	36.1	36.1	63 (D/aM)	32 (C/gG)	≤45	22 - 32	2
31.5	**TTZ31.5**	F	45.5	45.5	80 (D/aM)	40 (C/gG)	≤45	22 - 32	2
40	**TTZ40**	H	57.8	57.8	100 (D/aM)	50 (C/gG)	≤55	22 - 32	2
50	**TTZ50**	H	72.3	72.3	125 (D/aM)	63 (C/gG)	≤55	22 - 32	2
63	**TTZ63**	H	91	91	160 (D/aM)	80 (C/gG)	≤55	22 - 32	2
80	**TTZ80**	H	116	116	200 (D/aM)	100 (C/gG)	≤55	22 - 32	2
100	**TTZ100**	H	145	145	250 (D/aM)	125 (C/gG)	≤55	22 - 32	2
125	**TTZ125**	H	181	181	400 (D/aM)	160 (C/gG)	≤55	34 - 44	2
160	**TTZ160**	H	231	231	500 (D/aM)	200 (C/gG)	≤55	34 - 44	2
200	**TTZ200**	H	289	289	630 (D/aM)	250 (C/gG)	≤55	34 - 44	2
250	**TTZ250**	H	361	361	800 (D/aM)	300 (C/gG)	≤65	34 - 44	2
315	**TTZ315**	H	455	455	1000 (--/aM)	400 (C/gG)	≤65	34 - 44	2
400	**TTZ400**	H	578	578	1250 (--/aM)	500 (C/gG)	≤65	34 - 44	2
500	**TTZ500**	H	723	723	1500 (--/aM)	630 (C/gG)	≤65	34 - 44	2
630	**TTZ630**	H	910	910	2000 (--/aM)	800 (C/gG)	≤65	34 - 44	2
800	**TTZ800**	H	1156	1156	2500 (--/aM)	1000 (C/gG)	≤65	34 - 44	2
1000	**TTZ1000**	H	1445	1445	3000 (--/aM)	1250 (C/gG)	≤65	34 - 44	2
TTE									
0.4	**TTE0.4**	F	0.6	0.6	2 (D/aM)	1 (C/gG)	≤45	-	-
0.63	**TTE0.63**	F	0.9	0.9	2 (D/aM)	1 (C/gG)	≤45	-	-
1	**TTE1**	F	1.4	1.4	3 (D/aM)	1.6 (C/gG)	≤45	-	-
1.6	**TTE1.6**	F	2.3	2.3	6 (D/aM)	2 (C/gG)	≤45	-	-
2	**TTE2**	F	2.9	2.9	6 (D/aM)	3 (C/gG)	≤45	-	-
2.5	**TTE2.5**	F	3.6	3.6	6 (D/aM)	3 (C/gG)	≤45	-	-
3.15	**TTE3.15**	F	4.6	4.6	10 (D/aM)	4 (C/gG)	≤45	-	-
4	**TTE4**	F	5.8	5.8	10 (D/aM)	5 (C/gG)	≤45	-	-
5	**TTE5**	F	7.2	7.2	16 (D/aM)	6 (C/gG)	≤45	-	-
6.3	**TTE6.3**	F	9.1	9.1	20 (D/aM)	10 (C/gG)	≤45	-	-
8	**TTE8**	F	11.6	11.6	25 (D/aM)	12 (C/gG)	≤45	-	-
10	**TTE10**	F	14.5	14.5	32 (D/aM)	16 (C/gG)	≤45	-	-
12.5	**TTE12.5**	F	18.1	18.1	32 (D/aM)	16 (C/gG)	≤45	-	-
16	**TTE16**	F	23.1	23.1	40 (D/aM)	20 (C/gG)	≤45	-	-
20	**TTE20**	F	28.9	28.9	50 (D/aM)	25 (C/gG)	≤45	-	-
25	**TTE25**	F	36.1	36.1	63 (D/aM)	32 (C/gG)	≤45	-	-
31.5	**TTE31.5**	F	45.5	45.5	80 (D/aM)	40 (C/gG)	≤45	-	-
40	**TTE40**	H	57.8	57.8	100 (D/aM)	50 (C/gG)	≤55	-	-
50	**TTE50**	H	72.3	72.3	125 (D/aM)	63 (C/gG)	≤55	-	-
63	**TTE63**	H	91	91	160 (D/aM)	80 (C/gG)	≤55	-	-
80	**TTE80**	H	116	116	200 (D/aM)	100 (C/gG)	≤55	-	-
100	**TTE100**	H	145	145	250 (D/aM)	125 (C/gG)	≤55	-	-
125	**TTE125**	H	181	181	400 (D/aM)	160 (C/gG)	≤55	-	-
160	**TTE160**	H	231	231	500 (D/aM)	200 (C/gG)	≤55	-	-
200	**TTE200**	H	289	289	630 (D/aM)	250 (C/gG)	≤55	-	-
250	**TTE250**	H	361	361	800 (D/aM)	300 (C/gG)	≤65	-	-
315	**TTE315**	H	455	455	1000 (--/aM)	400 (C/gG)	≤65	-	-
400	**TTE400**	H	578	578	1250 (--/aM)	500 (C/gG)	≤65	-	-

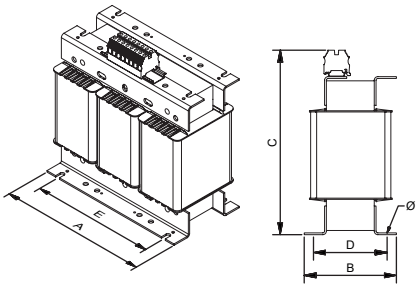
TT SERIES

Isolation · Input **400 V** · Output **400 V** + N

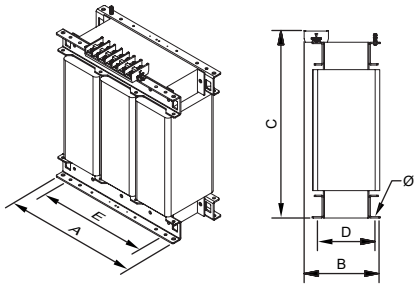
Measurements

Power kVA	Reference	External dimensions mm			Fastening elements mm			Weight kg
		A	B	C	D	E	Ø	
TTX								
0.63	**TTX0.63**	150	102	183	66	125	7	5,9
1	**TTX1**	180	94	208	76	150	7	9,5
2	**TTX2**	240	143	268	125	200	9	20
2.5	**TTX2.5**	300	124	308	102	250	9	23,9
3.15	**TTX3.15**	300	134	308	112	250	9	27,4
4	**TTX4**	300	154	308	132	250	9	36
5	**TTX5**	300	164	308	142	250	9	40,4
6.3	**TTX6.3**	360	144	360	122	300	11	55
8	**TTX8**	360	164	371	142	300	11	67
10	**TTX10**	420	170	421	142	350	11	78
12.5	**TTX12.5**	420	190	421	162	350	11	94
16	**TTX16**	480	194	465	115	400	11	105
20	**TTX20**	480	214	465	142	400	11	125
25	**TTX25**	480	234	465	166	400	11	145
31.5	**TTX31.5**	480	254	465	168	400	11	162
40	**TTX40**	640	325	500	159,5	426	11	191
50	**TTX50**	640	350	500	179,5	426	11	233
63	**TTX63**	640	370	500	199,5	426	11	277
80	**TTX80**	714	400	637	189	426	11	320
100	**TTX100**	714	420	637	209	426	11	368
125	**TTX125**	760	550	826	460	470	13	462
160	**TTX160**	760	550	826	460	470	13	560
200	**TTX200**	760	550	826	460	470	13	660
250	**TTX250**	1020	550	1060	460	690	13	808
315	**TTX315**	1083	700	1220	600	690	18	1000
400	**TTX400**	1083	700	1220	600	690	18	1092
500	**TTX500**	1300	700	1325	600	800	18	1658
630	**TTX630**	1300	700	1325	600	800	18	2000
800	**TTX800**	1300	700	1325	600	800	18	2413
1000	**TTX1000**	1490	700	1325	600	800	18	2993

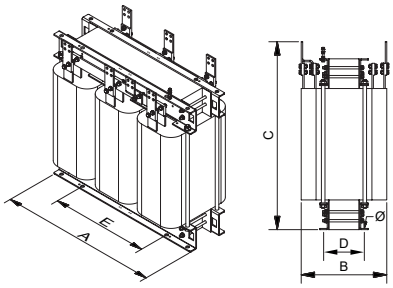
TTX IP00



From 0.63 kVA to 31.5 kVA



From 40 kVA to 400 kVA



From 500 kVA

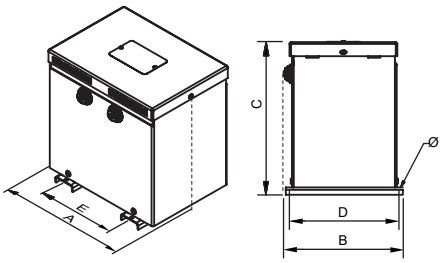
TT SERIES

Isolation · Input **400 V** · Output **400 V** + N

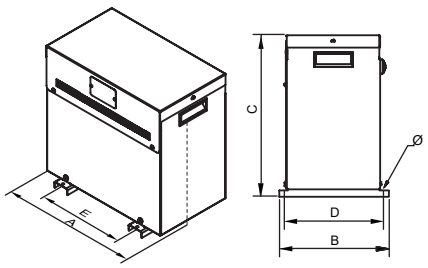
Measurements

Power kVA	Reference	External dimensions mm			Fastening elements mm			Weight kg
		A	B	C	D	E	Ø	
TTW								
0.63	**TTW0.63**	196	175	220	165	100	6	8,9
1	**TTW1**	240	190	250	180	150	6	12
2	**TTW2**	320	230	315	205	200	6	27
2.5	**TTW2.5**	387	260	382	245	250	6	29
3.15	**TTW3.15**	387	260	382	245	250	6	33
4	**TTW4**	387	260	382	245	250	6	41
5	**TTW5**	387	260	382	245	250	6	46
6.3	**TTW6.3**	460	340	501	300	300	12	55
8	**TTW8**	460	340	501	300	300	12	68
10	**TTW10**	549	424	644	375	345	12	93
12.5	**TTW12.5**	549	424	644	375	345	12	109
16	**TTW16**	616	424	710	375	345	12	126
20	**TTW20**	616	424	710	375	345	12	146
25	**TTW25**	616	424	710	375	345	12	169
31.5	**TTW31.5**	616	424	710	375	345	12	187
40	**TTW40**	815	555	975	500	415	12	239
50	**TTW50**	815	555	975	500	415	12	283
63	**TTW63**	815	555	975	500	415	12	310
80	**TTW80**	815	555	975	500	415	12	359
100	**TTW100**	815	555	975	500	415	12	405
125	**TTW125**	990	682	1250	582	470	18	501
160	**TTW160**	990	682	1250	582	470	18	554
200	**TTW200**	990	682	1250	582	470	18	714
250	**TTW250**	1215	772	1555	672	690	18	892
315	**TTW315**	1215	772	1555	672	690	18	1095
400	**TTW400**	1215	772	1555	672	690	18	1277
500	**TTW500**	1812	1000	1791	900	800	20	1882
630	**TTW630**	1812	1000	1791	900	800	20	2353
800	**TTW800**	1812	1000	1791	900	800	20	2836
1000	**TTW1000**	1812	1000	1791	900	800	20	3225

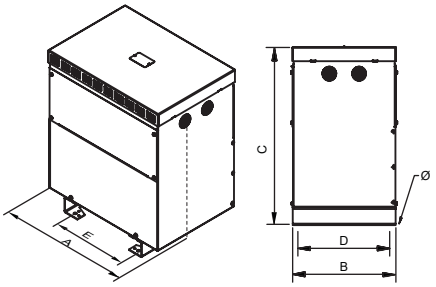
TTW IP23



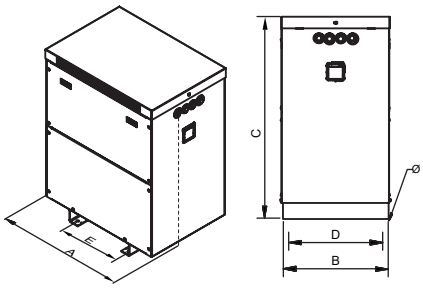
Up to 2 kVA



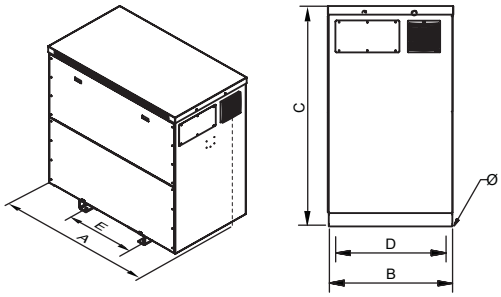
From 2,5 kVA up to 8 kVA



From 10 kVA up to 31,5 kVA



From 40 kVA up to 400 kVA



From 500 kVA

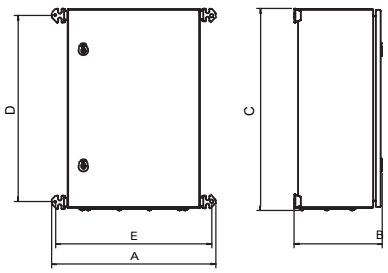
TT SERIES

Isolation · Input **400 V** · Output **400 V** + N

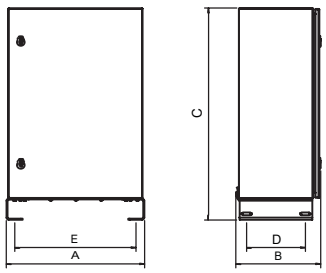
Measurements

Power kVA	Reference	External dimensions mm			Fastening elements mm			Weight kg
		A	B	C	D	E	Ø	
TTZ								
0.63	**TTZ0.63**	395	217	408	360	370	10.5	16
1	**TTZ1**	395	217	408	360	370	10.5	20
2	**TTZ2**	513	316	778	220	450	13	45
2.5	**TTZ2.5**	513	316	778	220	450	13	48
3.15	**TTZ3.15**	513	316	778	220	450	13	57
4	**TTZ4**	513	316	778	220	450	13	61
5	**TTZ5**	613	316	878	220	550	13	73
6.3	**TTZ6.3**	613	316	878	220	550	13	85
8	**TTZ8**	745	413	735	370	350	11	110
10	**TTZ10**	745	413	735	370	350	11	126
12.5	**TTZ12.5**	745	413	735	370	350	11	140
16	**TTZ16**	745	413	735	370	350	11	159
20	**TTZ20**	745	413	735	370	350	11	183
25	**TTZ25**	745	413	735	370	350	11	200
31.5	**TTZ31.5**	745	413	735	370	350	11	211
40	**TTZ40**	968	621	1150	500	426	12	266
50	**TTZ50**	968	621	1150	500	426	12	309
63	**TTZ63**	968	621	1150	500	426	12	337
80	**TTZ80**	968	621	1150	500	426	12	386
100	**TTZ100**	968	621	1150	500	426	12	432
125	**TTZ125**	968	621	1150	500	426	12	527
160	**TTZ160**	1040	892	1374	714	485	18	633
200	**TTZ200**	1040	892	1374	714	485	18	793
250	**TTZ250**	1532	1000	1755	806	684	18	1011
315	**TTZ315**	1532	1000	1755	806	684	18	1221
400	**TTZ400**	1532	1000	1755	806	684	18	1402
500	**TTZ500**	1950	1093	1797	900	790	20	1940
630	**TTZ630**	1950	1093	1797	900	790	20	2411
800	**TTZ800**	1950	1093	1797	900	790	20	2893
1000	**TTZ1000**	1950	1093	1797	900	790	20	3283

TTZ IP65

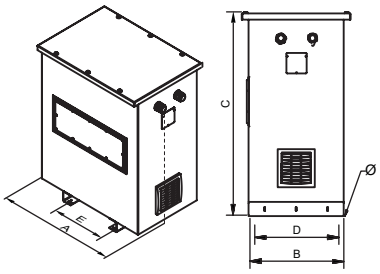


Up to 1 kVA

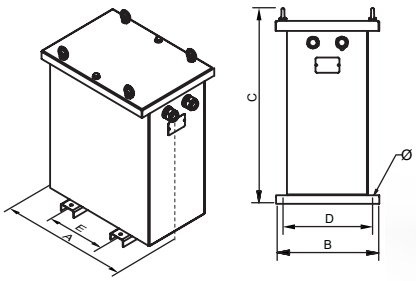


From 2 kVA up to 6,3 kVA

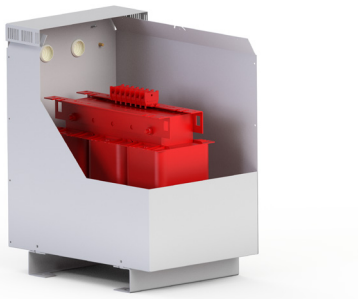
TTZ IP54



From 40 kVA up to 400 kVA



From 8 kVA up to 31,5 kVA



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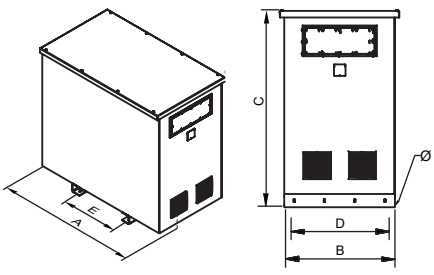


From 500 kVA

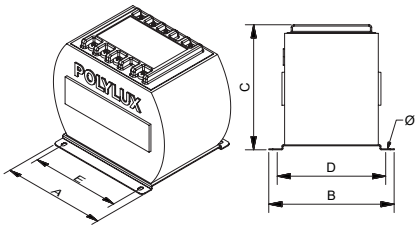
TT SERIES

Isolation · Input **400 V** · Output **400 V** + N

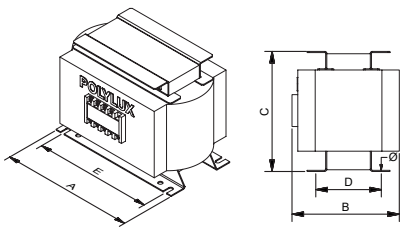
Measurements

Power kVA	Reference	External dimensions mm			Fastening elements mm			Weight kg
		A	B	C	D	E	Ø	
TTE								
0.4	**TTE0.4**	175	165	145	145	126	4	7,5
0.63	**TTE0.63**	175	165	160	145	126	4	9,2
1	**TTE1**	210	198	175	177	174	4	15,4
1.6	**TTE1.6**	280	158	205	100	250	9	24
2	**TTE2**	280	158	205	115	250	9	26,6
2.5	**TTE2.5**	300	124	303	115	250	9	35
3.15	**TTE3.15**	300	134	303	125	250	9	39
4	**TTE4**	300	154	303	145	250	9	49
5	**TTE5**	300	164	303	155	250	9	54
6.3	**TTE6.3**	378	158	353	122	300	11	69
8	**TTE8**	378	178	353	142	300	11	85
10	**TTE10**	448	202	419	142	350	11	111
12.5	**TTE12.5**	448	222	419	162	350	11	129
16	**TTE16**	510	225	480	126	400	11	146
20	**TTE20**	510	245	480	146	400	11	167
25	**TTE25**	510	265	480	166	400	11	189
31.5	**TTE31.5**	510	295	480	186	400	11	208
40	**TTE40**	670	320	608,5	166	426	11	254
50	**TTE50**	670	340	678,5	186	426	11	318
63	**TTE63**	670	360	678,5	206	426	11	420
80	**TTE80**	750	550	898	460	472	13	490
100	**TTE100**	750	550	898	460	472	13	546
125	**TTE125**	750	550	898	460	472	13	603
160	**TTE160**	750	550	898	460	472	13	720
200	**TTE200**	1016	550	1065	460	690	13	1093
250	**TTE250**	1016	550	1065	460	690	13	1225
315	**TTE315**	1083	550	1205	460	690	13	1429
400	**TTE400**	1083	550	1205	460	690	13	1619

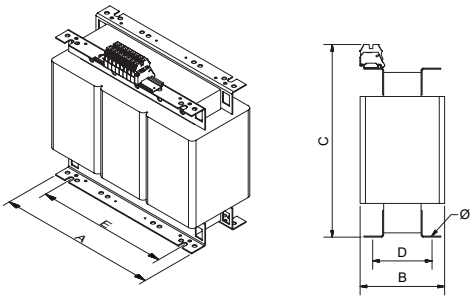
TTE IP20



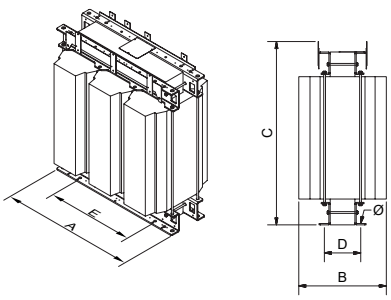
From 0.4 kVA to 1 kVA



From 1.6 kVA to 2.5 kVA



From 3.15 kVA to 31.5 kVA



From 40 kVA

TT SERIES

Isolation · Input **400 V** · Output **400 V** + N

On-request manufacturing options (please see prices)

Power	**From 0.15 kVA to 1000 kVA**
Voltage	**From 1 V to 12 kV**
Windings	**Copper or aluminium**
Frequency	**From 50 Hz to 400 Hz**
Connection unit	**Yyn0, Dyn11, Dd0, Dy1, Dyn5, YNd1/5/11... (See Technical Appendix T.A.2)**
IP rating	**IP00, IP20, IP23, IP31, IP42, IP54, IP55 and IP65**
IK rating	**IK08 and IK10**
Room temperature	**Up to 60 ºC**
Locks	**Screw, key**
Test voltage	**Up to 28 kV**
Short circuit voltage	**From 2% to 9%**
Losses	**Low losses, ecological**
Operation	**Intermittent, continuous**
Cooling	**Natural, forced ventilation**
Electrostatic shield	**Up to three shields**
Safety class	**I, II**
Altitude	**Up to 4000 m**
Protections	**In both primary and secondary (figure 1)**
Temperature sensors	**PT100 (figure 2), PTC (figure 3) or bimetallic**
Temperature control	**Temperature control station (4xPT100) (figure 4), PTC thermal relays (3xPTC / 6xPTC)**
Network analyser	**(Figure 5)**
Anti condensation system	**Hygrostat**
Heating system	**Heating elements**
External protection	**Anti-flash varnish, resin encapsulated, metal or stainless steel enclosure**
Transportation and hoisting	**Wheels (figure 6), lifting points**
Paint	**C3, C4, C5, different RAL**
Feature plate	**High generation polymer or stainless steel (figure 7)**
Anti vibration system	**Silentblock**
Adjustment	**-10%; -7.5%; -5%; -2.5%; +2.5%; +5%; +7.5%; +10% With bridges (figure 8) or selector (figure 9)**
Certified	**CE, DNV-GL, BV, UL (insulation) and POLYLUX laboratory**
Climate class / environment / fire	**Up to C2-E2-F1**


Figure 1


Figure 2


Figure 3

Figure 4

Figure 5


Figure 6

Figure 7


Figure 8

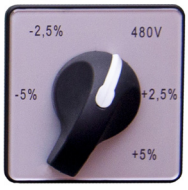


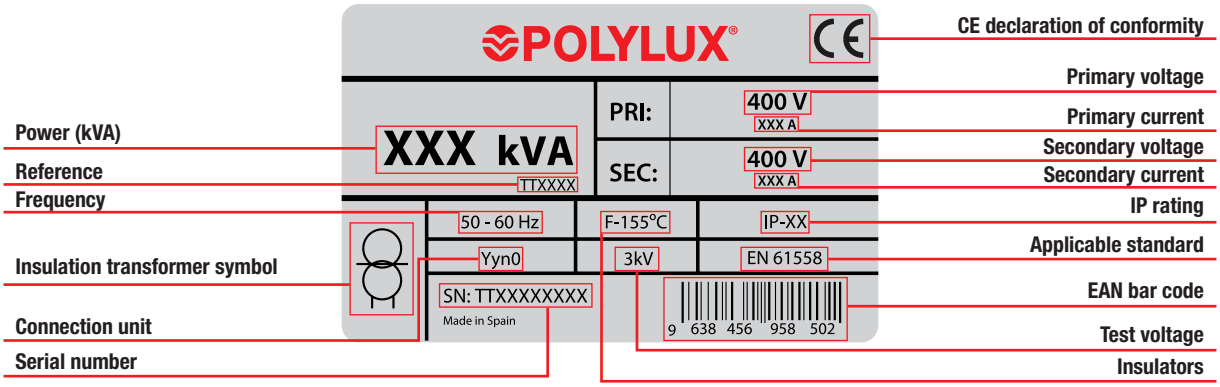
Figure 9

TT SERIES

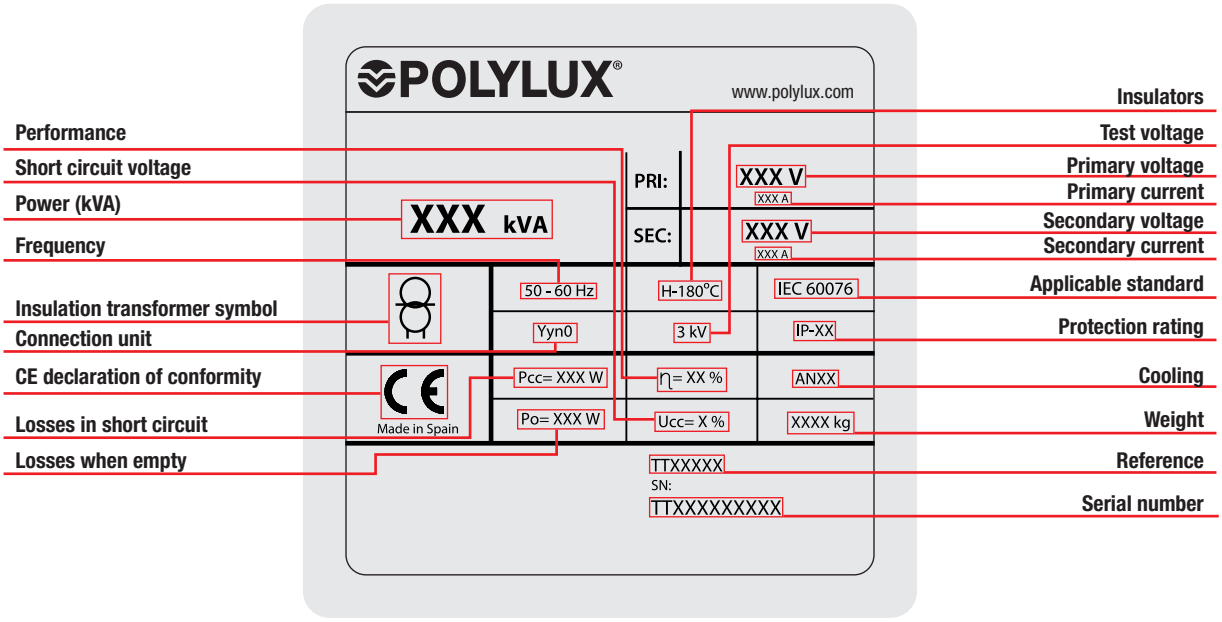
Isolation · Input **400 V** · Output **400 V** + N

Feature plate structure

Label up to 31,5 kVA:



Label from 40 kVA:



TTU SERIES

Isolation · Input **230 V** · Output **400 V** + N

Definition and applications

Our TTU series are three-phase isolation transformers designed for continuous operation at maximum output 365 days a year. This guarantees power is supplied to the installations or equipment they supply.

Applications:

- The main application of the TTU transformers is the isolation of circuits, by raising the voltage from 230V up to 400V.
- In installations with a certain level of electrical noise, the TTU series helps improve the electrical network quality in secondary.
- Changing the neutral system of an installation.

Manufacturing characteristics

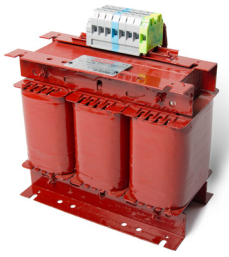
- All the transformers are dipped in anti-flash varnish and then compacted in the furnace. This process increases the insulation grade, reduces noise and provides anti-moisture, waterproofed protection
- The high power transformers are manufactured with format cores and low loss properties, thus contributing to improving performance.
- All the transformers are checked automatically one by one and the compliance test report is created in accordance with the corresponding standard.

Recommendation for selecting the best transformer in terms of use and installation location

Main compliance properties based on model	 Encapsulated in resin	 IP00 Air	 Oil
Non-flammable	✓	✗	✗
Self-extinguishing.	✓	✗	✗
No safety measures against the risk of explosion	✓	✓	✗
No special installation conditions	✓	✓	✗
Protected against damp, saline and corrosive environments	✓	✗	✓
Greater resistance to overload and transient harmonics	✓	✗	✗
No maintenance	✓	✓	✗
No risk of contamination	✓	✓	✗

Considerations

- The IP00 (air) can be installed in control cabinets with all the necessary protections and in dry places, which is more economical.
- Both models (encapsulated and IP00) can be protected with metallic enclosures up to IP65.
- In addition, the **ECOLOGICAL** transformer can be manufactured in both models, with different properties such as lower consumption, thus achieving fast amortisation.
- The transformer with the best properties is the transformer encapsulated in fire retardant resin.



TTUX

· IP00 protection rating.
· Power from 0.63 kVA to 1000 kVA.
· Total impregnated in anti-flash varnish.
· Hoisting elements included.
· **UL certification.** FILE: E532753 - Construction only.

TTUW

· IP23 rating (IK08).
· Power from 0.63 kVA to 1000 kVA.
· Metal box painted with RAL7035 polyester resin.
· High resistance to corrosion.
· Hoisting elements included.
· Detachable top and front cover.
· Cable outlet with cable gland.
· **UL certification.**

TTUZ

· IP65 rating up to 31,5 kVA / IP54 from 40 kVA (IK10).
· Power from 0.63 kVA to 1000 kVA.
· Metal box painted with RAL7035 polyester resin.
· High resistance to corrosion.
· Hoisting elements included.
· Detachable top cover.
· Stuffing box cover for cable input depending on installation needs.
· With silentblock.
· **UL certification.**

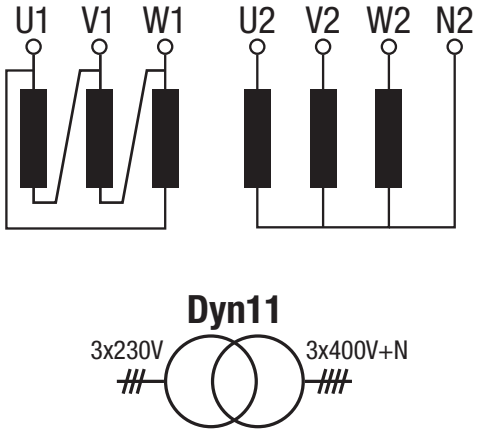
TTU SERIES

Isolation · Input **230 V** · Output **400 V** + N

Technical features - standard model

Rating	**0.63 kVA a 1000 kVA**
Standard voltage	**Input 230 V // Output 400 V and N.**
Standard frequency	**50-60 Hz**
Connection unit	**Dyn11**
Insulators	**Class H - 180 ºC**
Temperature rise	**Class F ≤ 31.5 kVA (25 kVA TTUZ)** **Class H ≥ 40 kVA (31.5 kVA TTUZ)** *More information in Technical Appendix (T.A.1)
Windings	**Class HC-200 ºC**
Safety class	**I**
Altitude	**1000 m**
Enclosure colour	**RAL 7035**
IP rating	**IP00 (TTUX) // IP23 (TTUW) // IP65 rating up to 31,5 kVA / IP54 from 40 kVA (TTUZ)**
IK rating	**IK08 (TTUW) // IK10 (TTUZ)**
Paint class (ISO 12944)	**C3 (TTUW) // C4 (TTUZ)**
Room temperature	**45 ºC**
Standards	**≤600V: US Standard: UL 5085-1 / UL 5085-2** **Canada Standard: CSA C22.2 N0 66.1-06 / CSA C22.2 N0 66.2-06** **≤750V: IEC/EN 61558, CE up to 31.5 kVA /IEC/EN 60076, CE from 40 kVA**
Test voltage	**3 kV (1 min, 50 Hz)**
Inrush	**< 12 In**
Ucc	**≤ 4 %**
K factor	**4**
Operation	**Continuous**
Cooling	**AN (TTUX) - ANAN (TTUW / TTUZ IP65) - ANAF (≥500kVA TTUW / TTUZ IP54)**
Hoisting accessories	**Hoisting elements included**

Electrical diagram



Theoretical data - standard model

Power kVA	Reference	Insulation class	Current A		Protections A		Noise dB	Cable gland	
			Input	Output	Input	Output		ø max. (mm)	Quantity
TTUX									
0.63	**TTUX0.63**	F	1.6	0.9	4 (D/aM)	1 (C/gG)	≤45	-	-
1	**TTUX1**	F	2.5	1.4	6 (D/aM)	1.6 (C/gG)	≤45	-	-
2	**TTUX2**	F	5	2.9	10 (D/aM)	3 (C/gG)	≤45	-	-
2.5	**TTUX2.5**	F	6.3	3.6	16 (D/aM)	3 (C/gG)	≤45	-	-
3.15	**TTUX3.15**	F	7.9	4.6	16 (D/aM)	4 (C/gG)	≤45	-	-
4	**TTUX4**	F	10	5.8	20 (D/aM)	5 (C/gG)	≤45	-	-
5	**TTUX5**	F	12.6	7.2	32 (D/aM)	6 (C/gG)	≤45	-	-
6.3	**TTUX6.3**	F	15.8	9.1	40 (D/aM)	10 (C/gG)	≤45	-	-
8	**TTUX8**	F	20.1	11.6	50 (D/aM)	12 (C/gG)	≤45	-	-
10	**TTUX10**	F	25.1	14.5	63 (D/aM)	16 (C/gG)	≤45	-	-
12.5	**TTUX12.5**	F	31.4	18.1	80 (D/aM)	16 (C/gG)	≤45	-	-
16	**TTUX16**	F	40.2	23.1	100 (D/aM)	20 (C/gG)	≤45	-	-
20	**TTUX20**	F	50.2	28.9	125 (D/aM)	25 (C/gG)	≤45	-	-
25	**TTUX25**	F	62.8	36.1	160 (D/aM)	32 (C/gG)	≤45	-	-
31.5	**TTUX31.5**	F	79.1	45.5	160 (D/aM)	40 (C/gG)	≤45	-	-
40	**TTUX40**	H	100	57.8	200 (D/aM)	50 (C/gG)	≤55	-	-
50	**TTUX50**	H	126	72.3	300 (D/aM)	63 (C/gG)	≤55	-	-
63	**TTUX63**	H	158	91	400 (D/aM)	80 (C/gG)	≤55	-	-
80	**TTUX80**	H	201	116	500 (D/aM)	100 (C/gG)	≤55	-	-
100	**TTUX100**	H	251	145	600 (D/aM)	125 (C/gG)	≤55	-	-
125	**TTUX125**	H	314	181	800 (D/aM)	160 (C/gG)	≤55	-	-
160	**TTUX160**	H	402	231	800 (D/aM)	200 (C/gG)	≤55	-	-
200	**TTUX200**	H	502	289	1000 (D/aM)	250 (C/gG)	≤55	-	-
250	**TTUX250**	H	628	361	1600 (D/aM)	300 (C/gG)	≤65	-	-
315	**TTUX315**	H	791	455	1600 (D/aM)	400 (C/gG)	≤65	-	-
400	**TTUX400**	H	1004	578	2000 (D/aM)	500 (C/gG)	≤65	-	-
500	**TTUX500**	H	1255	723	2600 (D/aM)	630 (C/gG)	≤65	-	-
630	**TTUX630**	H	1581	910	3000 (D/aM)	800 (C/gG)	≤65	-	-
800	**TTUX800**	H	2008	1156	4000 (D/aM)	1000 (C/gG)	≤65	-	-
1000	**TTUX1000**	H	2510	1445	5000 (D/aM)	1250 (C/gG)	≤65	-	-

TTU SERIES

Isolation · Input **230 V** · Output **400 V** + N

Theoretical data - standard model

Power kVA	Reference	Insulation class	Current A		Protections A		Noise dB	Cable gland (TTUW) Stuffing boxes (TTUZ)	
			Input	Output	Input	Output		ø max. (mm)	Quantity
TTUW									
0.63	**TTUW0.63**	F	1.6	0.9	4 (D/aM)	1 (C/gG)	≤45	14	2
1	**TTUW1**	F	2.5	1.4	6 (D/aM)	1.6 (C/gG)	≤45	14	2
2	**TTUW2**	F	5	2.9	10 (D/aM)	3 (C/gG)	≤45	14	2
2.5	**TTUW2.5**	F	6.3	3.6	16 (D/aM)	3 (C/gG)	≤45	18	2
3.15	**TTUW3.15**	F	7.9	4.6	16 (D/aM)	4 (C/gG)	≤45	18	2
4	**TTUW4**	F	10	5.8	20 (D/aM)	5 (C/gG)	≤45	18	2
5	**TTUW5**	F	12.6	7.2	32 (D/aM)	6 (C/gG)	≤45	18	2
6.3	**TTUW6.3**	F	15.8	9.1	40 (D/aM)	10 (C/gG)	≤45	25	4
8	**TTUW8**	F	20.1	11.6	50 (D/aM)	12 (C/gG)	≤45	25	4
10	**TTUW10**	F	25.1	14.5	63 (D/aM)	16 (C/gG)	≤45	32	4
12.5	**TTUW12.5**	F	31.4	18.1	80 (D/aM)	16 (C/gG)	≤45	32	4
16	**TTUW16**	F	40.2	23.1	100 (D/aM)	20 (C/gG)	≤45	32	4
20	**TTUW20**	F	50.2	28.9	125 (D/aM)	25 (C/gG)	≤45	32	4
25	**TTUW25**	F	62.8	36.1	160 (D/aM)	32 (C/gG)	≤45	32	4
31.5	**TTUW31.5**	F	79.1	45.5	160 (D/aM)	40 (C/gG)	≤45	32	4
40	**TTUW40**	H	100	57.8	200 (D/aM)	50 (C/gG)	≤55	32	8
50	**TTUW50**	H	126	72.3	300 (D/aM)	63 (C/gG)	≤55	32	8
63	**TTUW63**	H	158	91	400 (D/aM)	80 (C/gG)	≤55	32	8
80	**TTUW80**	H	201	116	500 (D/aM)	100 (C/gG)	≤55	32	8
100	**TTUW100**	H	251	145	600 (D/aM)	125 (C/gG)	≤55	32	8
125	**TTUW125**	H	314	181	800 (D/aM)	160 (C/gG)	≤55	44	8
160	**TTUW160**	H	402	231	800 (D/aM)	200 (C/gG)	≤55	44	8
200	**TTUW200**	H	502	289	1000 (D/aM)	250 (C/gG)	≤55	44	8
250	**TTUW250**	H	628	361	1600 (D/aM)	300 (C/gG)	≤65	44	8
315	**TTUW315**	H	791	455	1600 (D/aM)	400 (C/gG)	≤65	44	8
400	**TTUW400**	H	1004	578	2000 (D/aM)	500 (C/gG)	≤65	44	8
500	**TTUW500**	H	1255	723	2600 (D/aM)	630 (C/gG)	≤65	44	8
630	**TTUW630**	H	1581	910	3000 (D/aM)	800 (C/gG)	≤65	44	8
800	**TTUW800**	H	2008	1156	4000 (D/aM)	1000 (C/gG)	≤65	44	8
1000	**TTUW1000**	H	2510	1445	5000 (D/aM)	1250 (C/gG)	≤65	44	8
TTUZ									
0.63	**TTUZ0.63**	F	1.6	0.9	4 (D/aM)	1 (C/gG)	≤45	10 - 14	2
1	**TTUZ1**	F	2.5	1.4	6 (D/aM)	1.6 (C/gG)	≤45	10 - 14	2
2	**TTUZ2**	F	5	2.9	10 (D/aM)	3 (C/gG)	≤45	10 - 14	2
2.5	**TTUZ2.5**	F	6.3	3.6	16 (D/aM)	3 (C/gG)	≤45	18 - 25	2
3.15	**TTUZ3.15**	F	7.9	4.6	16 (D/aM)	4 (C/gG)	≤45	18 - 25	2
4	**TTUZ4**	F	10	5.8	20 (D/aM)	5 (C/gG)	≤45	18 - 25	2
5	**TTUZ5**	F	12.6	7.2	32 (D/aM)	6 (C/gG)	≤45	18 - 25	2
6.3	**TTUZ6.3**	F	15.8	9.1	40 (D/aM)	10 (C/gG)	≤45	18 - 25	2
8	**TTUZ8**	F	20.1	11.6	50 (D/aM)	12 (C/gG)	≤45	18 - 25	2
10	**TTUZ10**	F	25.1	14.5	63 (D/aM)	16 (C/gG)	≤45	22 - 32	2
12.5	**TTUZ12.5**	F	31.4	18.1	80 (D/aM)	16 (C/gG)	≤45	22 - 32	2
16	**TTUZ16**	F	40.2	23.1	100 (D/aM)	20 (C/gG)	≤45	22 - 32	2
20	**TTUZ20**	F	50.2	28.9	125 (D/aM)	25 (C/gG)	≤45	22 - 32	2
25	**TTUZ25**	F	62.8	36.1	160 (D/aM)	32 (C/gG)	≤45	22 - 32	2
31.5	**TTUZ31.5**	F	79.1	45.5	160 (D/aM)	40 (C/gG)	≤45	22 - 32	2
40	**TTUZ40**	H	100	57.8	200 (D/aM)	50 (C/gG)	≤55	22 - 32	2
50	**TTUZ50**	H	126	72.3	300 (D/aM)	63 (C/gG)	≤55	22 - 32	2
63	**TTUZ63**	H	158	91	400 (D/aM)	80 (C/gG)	≤55	22 - 32	2
80	**TTUZ80**	H	201	116	500 (D/aM)	100 (C/gG)	≤55	22 - 32	2
100	**TTUZ100**	H	251	145	600 (D/aM)	125 (C/gG)	≤55	22 - 32	2
125	**TTUZ125**	H	314	181	800 (D/aM)	160 (C/gG)	≤55	34 - 44	2
160	**TTUZ160**	H	402	231	800 (D/aM)	200 (C/gG)	≤55	34 - 44	2
200	**TTUZ200**	H	502	289	1000 (D/aM)	250 (C/gG)	≤55	34 - 44	2
250	**TTUZ250**	H	628	361	1600 (D/aM)	300 (C/gG)	≤65	34 - 44	2
315	**TTUZ315**	H	791	455	1600 (D/aM)	400 (C/gG)	≤65	34 - 44	2
400	**TTUZ400**	H	1004	578	2000 (D/aM)	500 (C/gG)	≤65	34 - 44	2
500	**TTUZ500**	H	1255	723	2600 (D/aM)	630 (C/gG)	≤65	34 - 44	2
630	**TTUZ630**	H	1581	910	3000 (D/aM)	800 (C/gG)	≤65	34 - 44	2
800	**TTUZ800**	H	2008	1156	4000 (D/aM)	1000 (C/gG)	≤65	34 - 44	2
1000	**TTUZ1000**	H	2510	1445	5000 (D/aM)	1250 (C/gG)	≤65	34 - 44	2

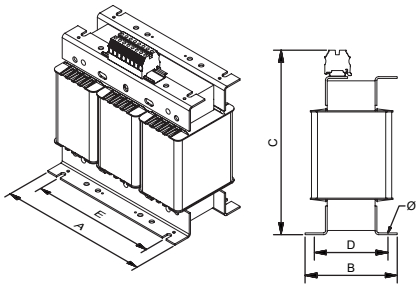
TTU SERIES

Isolation · Input **230 V** · Output **400 V** + N

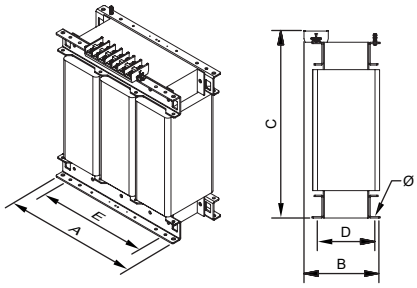
Measurements

Power kVA	Reference	External dimensions mm			Fastening elements mm			Weight kg
		A	B	C	D	E	Ø	
TTUX								
0.63	**TTUX0.63**	150	94	178	66	125	6	5,9
1	**TTUX1**	180	94	203	76	150	6	9,5
2	**TTUX2**	240	145	253	125	200	9	20
2.5	**TTUX2.5**	300	124	303	115	250	9	23,9
3.15	**TTUX3.15**	300	134	303	125	250	9	27,4
4	**TTUX4**	300	154	303	145	250	9	36
5	**TTUX5**	300	164	303	155	250	9	40,4
6.3	**TTUX6.3**	360	144	353	122	300	11	55
8	**TTUX8**	360	164	353	142	300	11	67
10	**TTUX10**	420	170	419	136	350	11	78
12.5	**TTUX12.5**	420	190	419	156	350	11	94
16	**TTUX16**	480	250	480	144	400	11	105
20	**TTUX20**	480	270	480	164	400	11	125
25	**TTUX25**	480	290	480	184	400	11	145
31.5	**TTUX31.5**	480	310	480	204	400	11	162
40	**TTUX40**	670	280	615	170	426	13	191
50	**TTUX50**	670	300	615	190	426	13	233
63	**TTUX63**	670	320	690	210	426	13	277
80	**TTUX80**	670	340	690	230	426	13	320
100	**TTUX100**	670	360	690	250	426	13	368
125	**TTUX125**	785	550	880	460	472	17	462
160	**TTUX160**	785	550	880	460	472	17	560
200	**TTUX200**	785	550	880	460	472	17	660
250	**TTUX250**	1016	550	1080	460	690	17	808
315	**TTUX315**	1070	550	1220	460	690	17	1000
400	**TTUX400**	1070	550	1220	460	690	17	1092
500	**TTUX500**	1300	550	1350	600	700	17	1658
630	**TTUX630**	1300	600	1350	600	700	17	2000
800	**TTUX800**	1300	700	1350	600	700	17	2413
1000	**TTUX1000**	1300	800	1350	600	700	17	2993

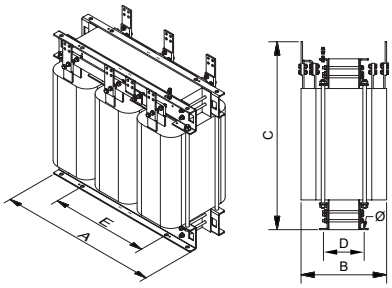
TTUX IP00



From 0.63 kVA to 12.5 kVA



From 16 kVA to 200 kVA



From 250 kVA

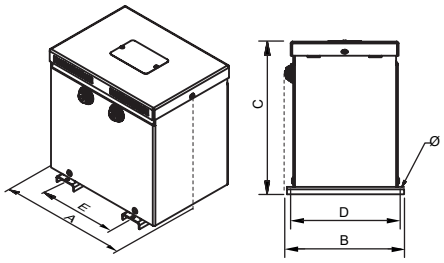
TTU SERIES

Isolation · Input **230 V** · Output **400 V** + N

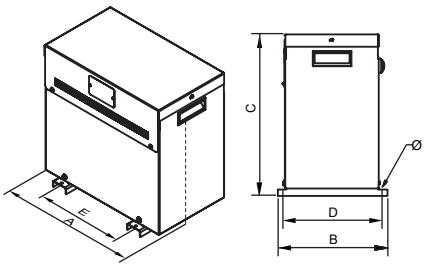
Measurements

Power kVA	Reference	External dimensions mm			Fastening elements mm			Weight kg
		A	B	C	D	E	Ø	
TTUW								
0.63	**TTUW0.63**	196	175	220	165	100	6	8,9
1	**TTUW1**	240	190	250	180	150	6	12
2	**TTUW2**	320	230	315	205	200	6	27
2.5	**TTUW2.5**	387	260	382	245	250	6	29
3.15	**TTUW3.15**	387	260	382	245	250	6	33
4	**TTUW4**	387	260	382	245	250	6	41
5	**TTUW5**	387	260	382	245	250	6	46
6.3	**TTUW6.3**	460	340	501	300	300	12	55
8	**TTUW8**	460	340	501	300	300	12	68
10	**TTUW10**	549	424	644	375	345	12	93
12.5	**TTUW12.5**	549	424	644	375	345	12	109
16	**TTUW16**	616	424	710	375	345	12	126
20	**TTUW20**	616	424	710	375	345	12	146
25	**TTUW25**	616	424	710	375	345	12	169
31.5	**TTUW31.5**	616	424	710	375	345	12	187
40	**TTUW40**	815	555	975	500	415	12	239
50	**TTUW50**	815	555	975	500	415	12	271
63	**TTUW63**	815	555	975	500	415	12	294
80	**TTUW80**	815	555	975	500	415	12	359
100	**TTUW100**	815	555	975	500	415	12	405
125	**TTUW125**	990	682	1250	582	470	18	501
160	**TTUW160**	990	682	1250	582	470	18	554
200	**TTUW200**	990	682	1250	582	470	18	714
250	**TTUW250**	1215	772	1555	672	690	18	892
315	**TTUW315**	1215	772	1555	672	690	18	1095
400	**TTUW400**	1215	772	1555	672	690	18	1277
500	**TTUW500**	1812	1000	1791	900	800	20	1882
630	**TTUW630**	1812	1000	1791	900	800	20	2353
800	**TTUW800**	1812	1000	1791	900	800	20	2836
1000	**TTUW1000**	1812	1000	1791	900	800	20	3225

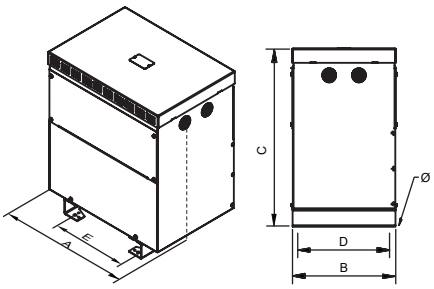
TTUW IP23



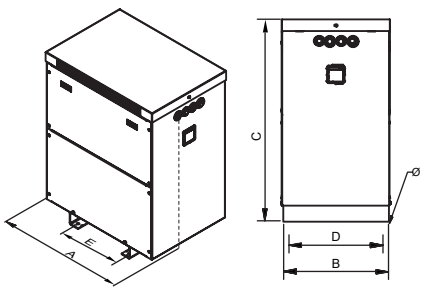
Up to 2 kVA



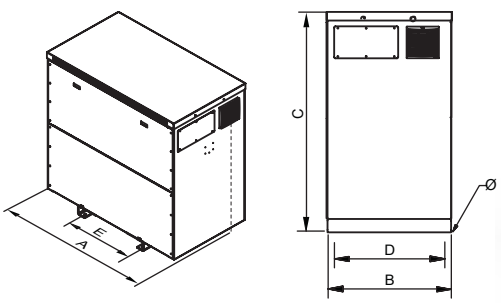
From 2,5 kVA up to 8 kVA



From 10 kVA up to 31,5 kVA



From 40 kVA up to 400 kVA



From 500 kVA

Sectioned

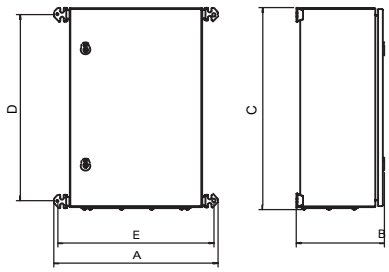
TTU SERIES

Isolation · Input **230 V** · Output **400 V** + N

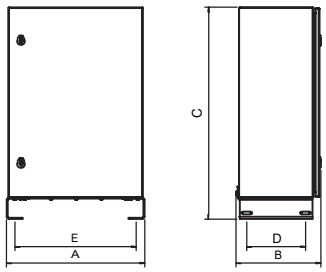
Measurements

Power kVA	Reference	External dimensions mm			Fastening elements mm			Weight kg
		A	B	C	D	E	Ø	
TTUZ								
0.63	**TTUZ0.63**	395	217	408	360	370	10.5	16
1	**TTUZ1**	395	217	408	360	370	10.5	20
2	**TTUZ2**	495	267	608	560	470	10.5	35
2.5	**TTUZ2.5**	513	316	778	220	450	13	45
3.15	**TTUZ3.15**	513	316	778	220	450	13	57
4	**TTUZ4**	513	316	778	220	450	13	61
5	**TTUZ5**	613	316	878	220	550	13	73
6.3	**TTUZ6.3**	613	316	878	220	550	13	85
8	**TTUZ8**	745	413	735	370	350	11	110
10	**TTUZ10**	745	413	735	370	350	11	126
12.5	**TTUZ12.5**	745	413	735	370	350	11	140
16	**TTUZ16**	745	413	735	370	350	11	159
20	**TTUZ20**	745	413	735	370	350	11	183
25	**TTUZ25**	745	413	735	370	350	11	200
31.5	**TTUZ31.5**	745	413	735	370	350	11	211
40	**TTUZ40**	968	621	1150	500	426	12	266
50	**TTUZ50**	968	621	1150	500	426	12	298
63	**TTUZ63**	968	621	1150	500	426	12	321
80	**TTUZ80**	968	621	1150	500	426	12	386
100	**TTUZ100**	968	621	1150	500	426	12	432
125	**TTUZ125**	968	621	1150	500	426	12	527
160	**TTUZ160**	1040	892	1374	714	485	18	633
200	**TTUZ200**	1040	892	1374	714	485	18	793
250	**TTUZ250**	1532	1000	1755	806	684	18	1011
315	**TTUZ315**	1532	1000	1755	806	684	18	1221
400	**TTUZ400**	1532	1000	1755	806	684	18	1402
500	**TTUZ500**	1950	1093	1797	900	790	20	1940
630	**TTUZ630**	1950	1093	1797	900	790	20	2411
800	**TTUZ800**	1950	1093	1797	900	790	20	2893
1000	**TTUZ1000**	1950	1093	1797	900	790	20	3283

TTUZ IP65

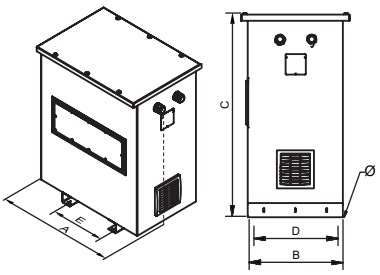


Up to 1 kVA

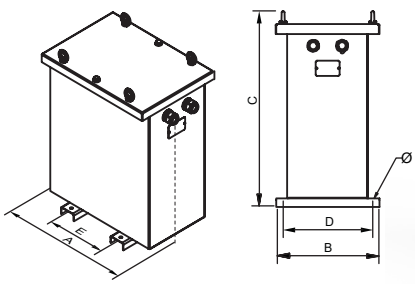


From 2 kVA up to 6,3 kVA

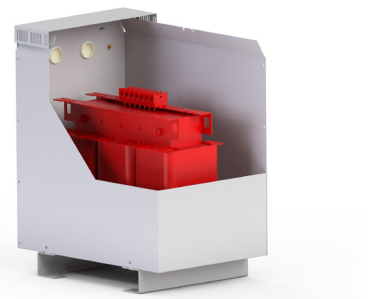
TTUZ IP54



From 40 kVA up to 400 kVA



From 8 kVA up to 31,5 kVA



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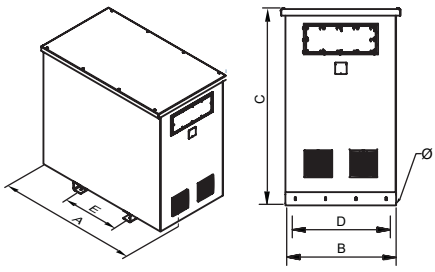


From 500 kVA

TTU SERIES

Isolation · Input **230 V** · Output **400 V** + N

On-request manufacturing options (please see prices)

Power	**From 0.15 kVA to 1000 kVA**
Voltage	**From 1 V to 12 kV**
Windings	**Copper or aluminium**
Frequency	**From 50 Hz to 400 Hz**
Connection unit	**Yyn0, Dyn11, Dd0, Dy1, Dyn5, YNd1/5/11... (See Technical Appendix T.A.2)**
IP rating	**IP00, IP20, IP23, IP31, IP42, IP54, IP55 and IP65**
IK rating	**IK08 and IK10**
Room temperature	**Up to 60 ºC**
Locks	**Screw, key**
Test voltage	**Up to 28 kV**
Short circuit voltage	**From 2% to 9%**
Losses	**Low losses, ecological**
Operation	**Intermittent, continuous**
Cooling	**Natural, forced ventilation**
Electrostatic shield	**Up to three shields**
Safety class	**I, II**
Altitude	**Up to 4000 m**
Protections	**In both primary and secondary (figure 1)**
Temperature sensors	**PT100 (figure 2), PTC (figure 3) or bimetallic**
Temperature control	**Temperature control station (4xPT100) (figure 4), PTC thermal relays (3xPTC / 6xPTC)**
Network analyser	**(Figure 5)**
Anti condensation system	**Hygrostat**
Heating system	**Heating elements**
External protection	**Anti-flash varnish, resin encapsulated, metal or stainless steel enclosure**
Transportation and hoisting	**Wheels (figure 6), lifting points**
Paint	**C3, C4, C5, different RAL**
Feature plate	**High generation polymer or stainless steel (figure 7)**
Anti vibration system	**Silentblock**
Adjustment	**-10%; -7.5%; -5%; -2.5%; +2.5%; +5%; +7.5%; +10% With bridges (figure 8) or selector (figure 9)**
Certified	**CE, DNV-GL, BV, UL (insulation) and POLYLUX laboratory**
Climate class / environment / fire	**Up to C2-E2-F1**


Figure 1


Figure 2


Figure 3


Figure 4


Figure 5


Figure 6

Figure 7


Figure 8

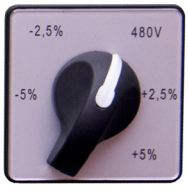


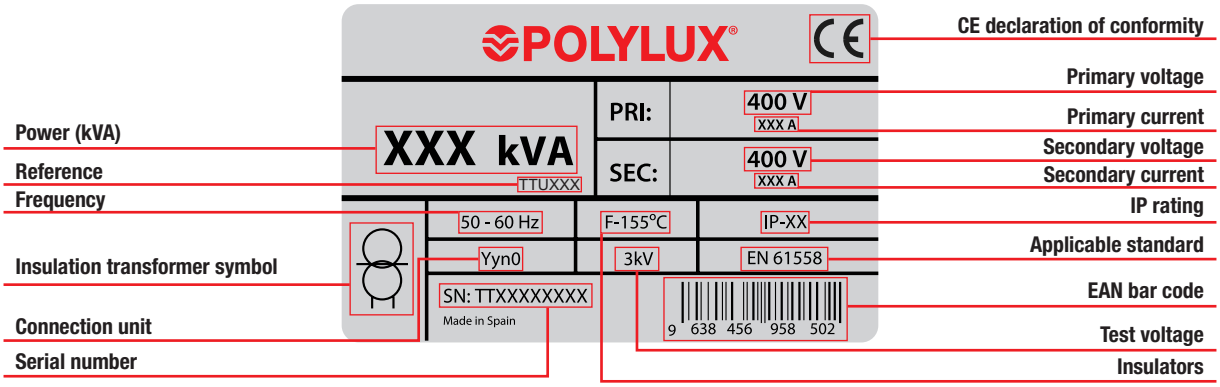
Figure 9

TTU SERIES

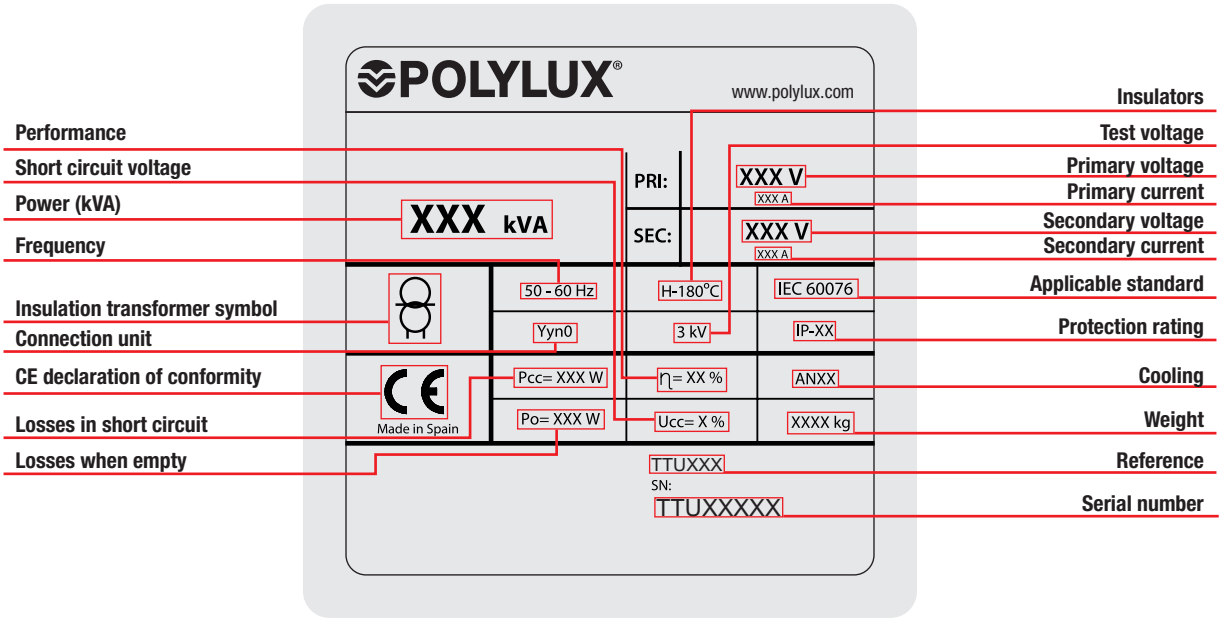
Isolation · Input **230 V** · Output **400 V** + N

Feature plate structure

Label up to 31,5 kVA:



Label from 40 kVA:



TTD SERIES

Isolation · Input **400 V** · Output **230 V** + N

Definition and applications

Our TTD series are three-phase isolation transformers designed for continuous operation at maximum output 365 days a year. This guarantees power is supplied to the installations or equipment they supply.

Applications:

- The main application of the TT transformers is the isolation of circuits, by reducing the voltage from 400V up to 230V.
- In installations with a certain level of electrical noise, the TTU series helps improve the electrical network quality in secondary.
- Changing the neutral system of an installation.

Manufacturing characteristics

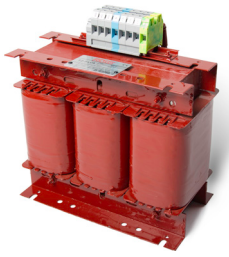
- All the transformers are dipped in anti-flash varnish and then compacted in the furnace. This process increases the insulation grade, reduces noise and provides anti-moisture, waterproofed protection
- The high power transformers are manufactured with format cores and low loss properties, thus contributing to improving performance.
- All the transformers are checked automatically one by one and the compliance test report is created in accordance with the corresponding standard.

Recommendation for selecting the best transformer in terms of use and installation location

Main compliance properties based on model	 Encapsulated in resin	 IP00 Air	 Oil
Non-flammable	✓	✗	✗
Self-extinguishing.	✓	✗	✗
No safety measures against the risk of explosion	✓	✓	✗
No special installation conditions	✓	✓	✗
Protected against damp, saline and corrosive environments	✓	✗	✓
Greater resistance to overload and transient harmonics	✓	✗	✗
No maintenance	✓	✓	✗
No risk of contamination	✓	✓	✗

Considerations

- The IP00 (air) can be installed in control cabinets with all the necessary protections and in dry places, which is more economical.
- Both models (encapsulated and IP00) can be protected with metallic enclosures up to IP65.
- In addition, the **ECOLOGICAL** transformer can be manufactured in both models, with different properties such as lower consumption, thus achieving fast amortisation.
- The transformer with the best properties is the transformer encapsulated in fire retardant resin.



TTDX

· IP00 protection rating.
· Power from 0.63 kVA to 1000 kVA.
· Total impregnated in anti-flash varnish.
· Hoisting elements included.
· **UL certification.** FILE: E532753 - Construction only.

TTDW

· IP23 rating (IK08).
· Power from 0.63 kVA to 1000 kVA.
· Metal box painted with RAL7035 polyester resin.
· High resistance to corrosion.
· Hoisting elements included.
· Detachable top and front cover.
· Cable outlet with cable gland.
· **UL certification.**

TTDZ

· IP65 rating up to 31,5 kVA / IP54 from 40 kVA (IK10).
· Power from 0.63 kVA to 1000 kVA.
· Metal box painted with RAL7035 polyester resin.
· High resistance to corrosion.
· Hoisting elements included.
· Detachable top cover.
· Stuffing box cover for cable input depending on installation needs.
· With silentblock.
· **UL certification.**

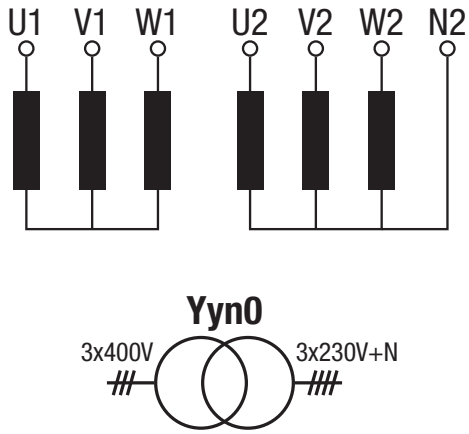
TTD SERIES

Isolation · Input **400 V** · Output **230 V** + N

Technical features - standard model

Rating	**0.63 kVA a 1000 kVA**
Standard voltage	**Input 400 V // Output 230 V and N.**
Standard frequency	**50-60 Hz**
Connection unit	**YynO**
Insulators	**Class H - 180 ºC**
Temperature rise	**Class F ≤ 31.5 kVA (25 kVA TTDZ)** **Class H ≥ 40 kVA (31.5 kVA TTDZ)** *More information in Technical Appendix (T.A.1)
Windings	**Class HC-200 ºC**
Safety class	**I**
Altitude	**1000 m**
Enclosure colour	**RAL 7035**
IP rating	**IP00 (TTDX) // IP23 (TTDW) // IP65 rating up to 31,5 kVA / IP54 from 40 kVA (TTDZ)**
IK rating	**IK08 (TTDW) // IK10 (TTDZ)**
Paint class (ISO 12944)	**C3 (TTDW) // C4 (TTDZ)**
Room temperature	**45 ºC**
Standards	**≤600V: US Standard: UL 5085-1 / UL 5085-2** **Canada Standard: CSA C22.2 N0 66.1-06 / CSA C22.2 N0 66.2-06** **≤750V: IEC/EN 61558, CE up to 31.5 kVA/IEC/EN 60076, CE from 40 kVA**
Test voltage	**3 kV (1 min, 50 Hz)**
Inrush	**< 12 In**
Ucc	**≤ 4 %**
K factor	**4**
Operation	**Continuous**
Cooling	**AN (TTDX) - ANAN (TTDW / TTDZ IP65) - ANAF (≥500kVA TTDW / TTDZ IP54)**
Hoisting accessories	**Hoisting elements included**

Electrical diagram



Theoretical data - standard model

Power kVA	Reference	Insulation class	Current A		Protections A		Noise dB	Cable gland	
			Input	Output	Input	Output		ø max. (mm)	Quantity
TTDX									
0.63	**TTDX0.63**	F	0.9	1.6	2 (D/aM)	1,6 (C/gG)	≤45	-	-
1	**TTDX1**	F	1.4	2.5	3 (D/aM)	2,5 (C/gG)	≤45	-	-
2	**TTDX2**	F	2.9	5	6 (D/aM)	5 (C/gG)	≤45	-	-
2.5	**TTDX2.5**	F	3.6	6.3	6 (D/aM)	6,3 (C/gG)	≤45	-	-
3.15	**TTDX3.15**	F	4.6	7.9	10 (D/aM)	8 (C/gG)	≤45	-	-
4	**TTDX4**	F	5.8	10	10 (D/aM)	10 (C/gG)	≤45	-	-
5	**TTDX5**	F	7.2	12.6	16 (D/aM)	12 (C/gG)	≤45	-	-
6.3	**TTDX6.3**	F	9.1	15.8	20 (D/aM)	16 (C/gG)	≤45	-	-
8	**TTDX8**	F	11.6	20.1	25 (D/aM)	20 (C/gG)	≤45	-	-
10	**TTDX10**	F	14.5	25.1	32 (D/aM)	25 (C/gG)	≤45	-	-
12.5	**TTDX12.5**	F	18.1	31.4	32 (D/aM)	30 (C/gG)	≤45	-	-
16	**TTDX16**	F	23.1	40.2	40 (D/aM)	40 (C/gG)	≤45	-	-
20	**TTDX20**	F	28.9	50.2	50 (D/aM)	50 (C/gG)	≤45	-	-
25	**TTDX25**	F	36.1	62.8	63 (D/aM)	60 (C/gG)	≤45	-	-
31.5	**TTDX31.5**	F	45.5	79.1	80 (D/aM)	80 (C/gG)	≤45	-	-
40	**TTDX40**	H	57.8	100	100 (D/aM)	100 (C/gG)	≤55	-	-
50	**TTDX50**	H	72.3	126	125 (D/aM)	100 (C/gG)	≤55	-	-
63	**TTDX63**	H	91	158	160 (D/aM)	160 (C/gG)	≤55	-	-
80	**TTDX80**	H	116	201	200 (D/aM)	200 (C/gG)	≤55	-	-
100	**TTDX100**	H	145	251	250 (D/aM)	250 (C/gG)	≤55	-	-
125	**TTDX125**	H	181	314	400 (D/aM)	300 (C/gG)	≤55	-	-
160	**TTDX160**	H	231	402	500 (D/aM)	400 (C/gG)	≤55	-	-
200	**TTDX200**	H	289	502	630 (D/aM)	500 (C/gG)	≤55	-	-
250	**TTDX250**	H	361	628	800 (D/aM)	600 (C/gG)	≤65	-	-
315	**TTDX315**	H	455	791	1000 (-/aM)	800 (C/gG)	≤65	-	-
400	**TTDX400**	H	578	1004	1250 (-/aM)	1000 (C/gG)	≤65	-	-
500	**TTDX500**	H	723	1255	1500 (-/aM)	1200 (C/gG)	≤65	-	-
630	**TTDX630**	H	910	1581	2000 (-/aM)	1500 (C/gG)	≤65	-	-
800	**TTDX800**	H	1156	2008	2500 (-/aM)	2000 (C/gG)	≤65	-	-
1000	**TTDX1000**	H	1445	2510	3000 (-/aM)	2500 (C/gG)	≤65	-	-

TTD SERIES

Isolation · Input **400 V** · Output **230 V** + N

Theoretical data - standard model

Power kVA	Reference	Insulation class	Current A		Protections A		Noise dB	Cable gland (TTDW) Stuffing boxes (TTDZ)	
			Input	Output	Input	Output		ø max. (mm)	Quantity
TTDW									
0.63	**TTDW0.63**	F	0.9	1.6	2 (D/aM)	1,6 (C/gG)	≤45	14	2
1	**TTDW1**	F	1.4	2.5	3 (D/aM)	2,5 (C/gG)	≤45	14	2
2	**TTDW2**	F	2.9	5	6 (D/aM)	5 (C/gG)	≤45	14	2
2.5	**TTDW2.5**	F	3.6	6.3	6 (D/aM)	6,3 (C/gG)	≤45	18	2
3.15	**TTDW3.15**	F	4.6	7.9	10 (D/aM)	8 (C/gG)	≤45	18	2
4	**TTDW4**	F	5.8	10	10 (D/aM)	10 (C/gG)	≤45	18	2
5	**TTDW5**	F	7.2	12.6	16 (D/aM)	12 (C/gG)	≤45	18	2
6.3	**TTDW6.3**	F	9.1	15.8	20 (D/aM)	16 (C/gG)	≤45	25	4
8	**TTDW8**	F	11.6	20.1	25 (D/aM)	20 (C/gG)	≤45	25	4
10	**TTDW10**	F	14.5	25.1	32 (D/aM)	25 (C/gG)	≤45	32	4
12.5	**TTDW12.5**	F	18.1	31.4	32 (D/aM)	30 (C/gG)	≤45	32	4
16	**TTDW16**	F	23.1	40.2	40 (D/aM)	40 (C/gG)	≤45	32	4
20	**TTDW20**	F	28.9	50.2	50 (D/aM)	50 (C/gG)	≤45	32	4
25	**TTDW25**	F	36.1	62.8	63 (D/aM)	60 (C/gG)	≤45	32	4
31.5	**TTDW31.5**	F	45.5	79.1	80 (D/aM)	80 (C/gG)	≤45	32	4
40	**TTDW40**	H	57.8	100	100 (D/aM)	100 (C/gG)	≤55	32	8
50	**TTDW50**	H	72.3	126	125 (D/aM)	100 (C/gG)	≤55	32	8
63	**TTDW63**	H	91	158	160 (D/aM)	160 (C/gG)	≤55	32	8
80	**TTDW80**	H	116	201	200 (D/aM)	200 (C/gG)	≤55	32	8
100	**TTDW100**	H	145	251	250 (D/aM)	250 (C/gG)	≤55	32	8
125	**TTDW125**	H	181	314	400 (D/aM)	300 (C/gG)	≤55	44	8
160	**TTDW160**	H	231	402	500 (D/aM)	400 (C/gG)	≤55	44	8
200	**TTDW200**	H	289	502	630 (D/aM)	500 (C/gG)	≤55	44	8
250	**TTDW250**	H	361	628	800 (D/aM)	600 (C/gG)	≤65	44	8
315	**TTDW315**	H	455	791	1000 (--/aM)	800 (C/gG)	≤65	44	8
400	**TTDW400**	H	578	1004	1250 (--/aM)	1000 (C/gG)	≤65	44	8
500	**TTDW500**	H	723	1255	1500 (--/aM)	1200 (C/gG)	≤65	44	8
630	**TTDW630**	H	910	1581	2000 (--/aM)	1500 (C/gG)	≤65	44	8
800	**TTDW800**	H	1156	2008	2500 (--/aM)	2000 (C/gG)	≤65	44	8
1000	**TTDW1000**	H	1445	2510	3000 (--/aM)	2500 (C/gG)	≤65	44	8
TTDZ									
0.63	**TTDZ0.63**	F	0.9	1.6	2 (D/aM)	1,6 (C/gG)	≤45	10 - 14	2
1	**TTDZ1**	F	1.4	2.5	3 (D/aM)	2,5 (C/gG)	≤45	10 - 14	2
2	**TTDZ2**	F	2.9	5	6 (D/aM)	5 (C/gG)	≤45	10 - 14	2
2.5	**TTDZ2.5**	F	3.6	6.3	6 (D/aM)	6,3 (C/gG)	≤45	18 - 25	2
3.15	**TTDZ3.15**	F	4.6	7.9	10 (D/aM)	8 (C/gG)	≤45	18 - 25	2
4	**TTDZ4**	F	5.8	10	10 (D/aM)	10 (C/gG)	≤45	18 - 25	2
5	**TTDZ5**	F	7.2	12.6	16 (D/aM)	12 (C/gG)	≤45	18 - 25	2
6.3	**TTDZ6.3**	F	9.1	15.8	20 (D/aM)	16 (C/gG)	≤45	18 - 25	2
8	**TTDZ8**	F	11.6	20.1	25 (D/aM)	20 (C/gG)	≤45	18 - 25	2
10	**TTDZ10**	F	14.5	25.1	32 (D/aM)	25 (C/gG)	≤45	22 - 32	2
12.5	**TTDZ12.5**	F	18.1	31.4	32 (D/aM)	30 (C/gG)	≤45	22 - 32	2
16	**TTDZ16**	F	23.1	40.2	40 (D/aM)	40 (C/gG)	≤45	22 - 32	2
20	**TTDZ20**	F	28.9	50.2	50 (D/aM)	50 (C/gG)	≤45	22 - 32	2
25	**TTDZ25**	F	36.1	62.8	63 (D/aM)	60 (C/gG)	≤45	22 - 32	2
31.5	**TTDZ31.5**	F	45.5	79.1	80 (D/aM)	80 (C/gG)	≤45	22 - 32	2
40	**TTDZ40**	H	57.8	100	100 (D/aM)	100 (C/gG)	≤55	22 - 32	2
50	**TTDZ50**	H	72.3	126	125 (D/aM)	100 (C/gG)	≤55	22 - 32	2
63	**TTDZ63**	H	91	158	160 (D/aM)	160 (C/gG)	≤55	22 - 32	2
80	**TTDZ80**	H	116	201	200 (D/aM)	200 (C/gG)	≤55	22 - 32	2
100	**TTDZ100**	H	145	251	250 (D/aM)	250 (C/gG)	≤55	22 - 32	2
125	**TTDZ125**	H	181	314	400 (D/aM)	300 (C/gG)	≤55	34 - 44	2
160	**TTDZ160**	H	231	402	500 (D/aM)	400 (C/gG)	≤55	34 - 44	2
200	**TTDZ200**	H	289	502	630 (D/aM)	500 (C/gG)	≤55	34 - 44	2
250	**TTDZ250**	H	361	628	800 (D/aM)	600 (C/gG)	≤65	34 - 44	2
315	**TTDZ315**	H	455	791	1000 (--/aM)	800 (C/gG)	≤65	34 - 44	2
400	**TTDZ400**	H	578	1004	1250 (--/aM)	1000 (C/gG)	≤65	34 - 44	2
500	**TTDZ500**	H	723	1255	1500 (--/aM)	1200 (C/gG)	≤65	34 - 44	2
630	**TTDZ630**	H	910	1581	2000 (--/aM)	1500 (C/gG)	≤65	34 - 44	2
800	**TTDZ800**	H	1156	2008	2500 (--/aM)	2000 (C/gG)	≤65	34 - 44	2
1000	**TTDZ1000**	H	1445	2510	3000 (--/aM)	2500 (C/gG)	≤65	34 - 44	2

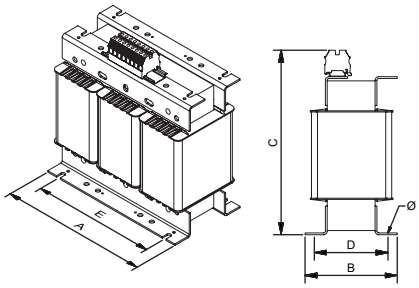
TTD SERIES

Isolation · Input **400 V** · Output **230 V** + N

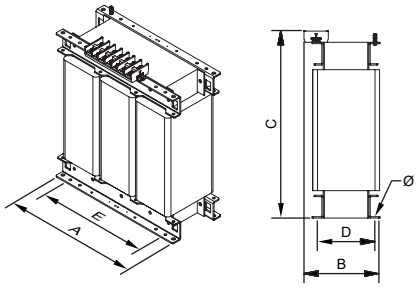
Measurements

Power kVA	Reference	External dimensions mm			Fastening elements mm			Weight kg
		A	B	C	D	E	Ø	
TTDX								
0.63	**TTDX0.63**	150	94	178	66	125	6	5,9
1	**TTDX1**	180	94	203	76	150	6	9,5
2	**TTDX2**	240	145	253	125	200	9	20
2.5	**TTDX2.5**	300	124	303	115	250	9	23,9
3.15	**TTDX3.15**	300	134	303	125	250	9	27,4
4	**TTDX4**	300	154	303	145	250	9	36
5	**TTDX5**	300	164	303	155	250	9	40,4
6.3	**TTDX6.3**	360	144	353	122	300	11	55
8	**TTDX8**	360	164	353	142	300	11	67
10	**TTDX10**	420	170	419	136	350	11	78
12.5	**TTDX12.5**	420	190	419	156	350	11	94
16	**TTDX16**	480	250	480	144	400	11	105
20	**TTDX20**	480	270	480	164	400	11	125
25	**TTDX25**	480	290	480	184	400	11	145
31.5	**TTDX31.5**	480	310	480	204	400	11	162
40	**TTDX40**	670	280	615	170	426	13	191
50	**TTDX50**	670	300	615	190	426	13	233
63	**TTDX63**	670	320	690	210	426	13	277
80	**TTDX80**	670	340	690	230	426	13	320
100	**TTDX100**	670	360	690	250	426	13	368
125	**TTDX125**	785	550	880	460	472	17	462
160	**TTDX160**	785	550	880	460	472	17	560
200	**TTDX200**	785	550	880	460	472	17	660
250	**TTDX250**	1016	550	1080	460	690	17	808
315	**TTDX315**	1070	550	1220	460	690	17	1000
400	**TTDX400**	1070	550	1220	460	690	17	1092
500	**TTDX500**	1300	550	1350	600	700	17	1658
630	**TTDX630**	1300	600	1350	600	700	17	2000
800	**TTDX800**	1300	700	1350	600	700	17	2413
1000	**TTDX1000**	1300	800	1350	600	700	17	2993

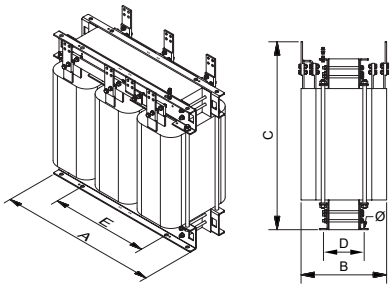
TTDX IP00



From 0.63 kVA to 12.5 kVA



From 16 kVA to 200 kVA



From 250 kVA

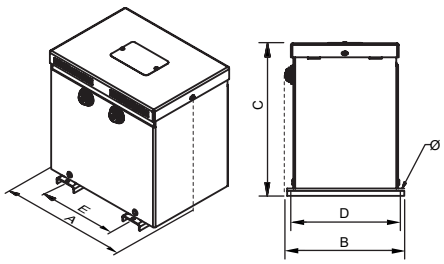
TTD SERIES

Isolation · Input **400 V** · Output **230 V** + N

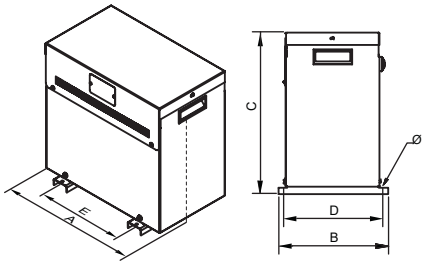
Measurements

Power kVA	Reference	External dimensions mm			Fastening elements mm			Weight kg
		A	B	C	D	E	Ø	
TTDW								
0.63	**TTDW0.63**	196	175	220	165	100	6	9,2
1	**TTDW1**	240	190	250	180	150	6	12
2	**TTDW2**	320	230	315	205	200	6	26
2.5	**TTDW2.5**	387	260	382	245	250	6	29
3.15	**TTDW3.15**	387	260	382	245	250	6	33
4	**TTDW4**	387	260	382	245	250	6	42
5	**TTDW5**	387	260	382	245	250	6	46
6.3	**TTDW6.3**	460	340	501	300	300	12	56
8	**TTDW8**	460	340	501	300	300	12	67
10	**TTDW10**	549	424	644	375	345	12	95
12.5	**TTDW12.5**	549	424	644	375	345	12	111
16	**TTDW16**	616	424	710	375	345	12	126
20	**TTDW20**	616	424	710	375	345	12	147
25	**TTDW25**	616	424	710	375	345	12	165
31.5	**TTDW31.5**	616	424	710	375	345	12	187
40	**TTDW40**	815	555	975	500	415	12	240
50	**TTDW50**	815	555	975	500	415	12	273
63	**TTDW63**	815	555	975	500	415	12	310
80	**TTDW80**	815	555	975	500	415	12	364
100	**TTDW100**	815	555	975	500	415	12	405
125	**TTDW125**	990	682	1250	582	470	18	501
160	**TTDW160**	990	682	1250	582	470	18	552
200	**TTDW200**	990	682	1250	582	470	18	708
250	**TTDW250**	1215	772	1555	672	690	18	900
315	**TTDW315**	1215	772	1555	672	690	18	1095
400	**TTDW400**	1215	772	1555	672	690	18	1262
500	**TTDW500**	1812	1000	1791	900	800	20	1878
630	**TTDW630**	1812	1000	1791	900	800	20	2205
800	**TTDW800**	1812	1000	1791	900	800	20	2836
1000	**TTDW1000**	1812	1000	1791	900	800	20	3225

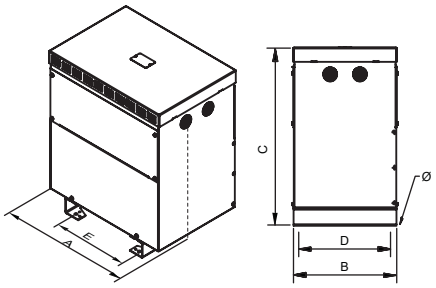
TTDW IP23



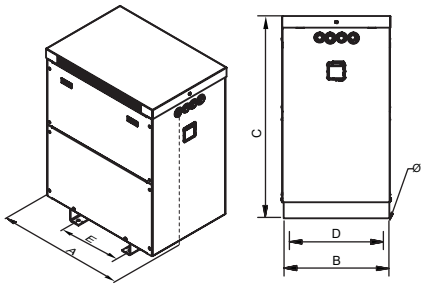
Up to 2 kVA



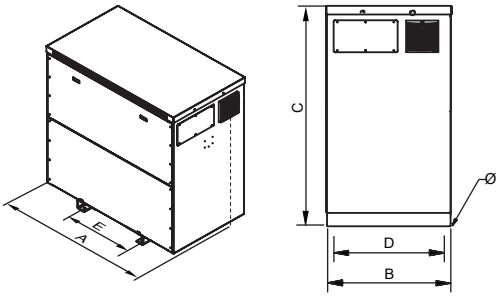
From 2,5 kVA up to 8 kVA



From 10 kVA up to 31,5 kVA



From 40 kVA up to 400 kVA



From 500 kVA

Sectioned

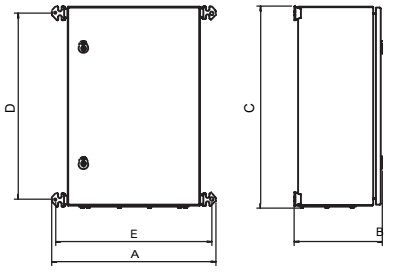
TTD SERIES

Isolation · Input **400 V** · Output **230 V** + N

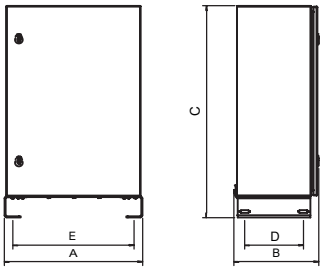
Measurements

Power kVA	Reference	External dimensions mm			Fastening elements mm			Weight kg
		A	B	C	D	E	Ø	
TTDZ								
0.63	**TTDZ0.63**	395	217	408	360	370	10.5	17
1	**TTDZ1**	395	217	408	360	370	10.5	30
2	**TTDZ2**	513	316	778	220	450	13	45
2.5	**TTDZ2.5**	513	316	778	220	450	13	48
3.15	**TTDZ3.15**	513	316	778	220	450	13	58
4	**TTDZ4**	513	316	778	220	450	13	62
5	**TTDZ5**	613	316	878	220	550	13	73
6.3	**TTDZ6.3**	613	316	878	220	550	13	85
8	**TTDZ8**	745	413	735	370	350	11	112
10	**TTDZ10**	745	413	735	370	350	11	127
12.5	**TTDZ12.5**	745	413	735	370	350	11	143
16	**TTDZ16**	745	413	735	370	350	11	160
20	**TTDZ20**	745	413	735	370	350	11	178
25	**TTDZ25**	745	413	735	370	350	11	200
31.5	**TTDZ31.5**	745	413	735	370	350	11	211
40	**TTDZ40**	968	621	1150	500	426	12	267
50	**TTDZ50**	968	621	1150	500	426	12	300
63	**TTDZ63**	968	621	1150	500	426	12	337
80	**TTDZ80**	968	621	1150	500	426	12	391
100	**TTDZ100**	968	621	1150	500	426	12	432
125	**TTDZ125**	1040	892	1374	714	485	18	580
160	**TTDZ160**	990	682	1250	582	470	18	552
200	**TTDZ200**	1040	892	1374	714	485	18	787
250	**TTDZ250**	1532	1000	1755	806	684	18	1019
315	**TTDZ315**	1532	1000	1755	806	684	18	1215
400	**TTDZ400**	1532	1000	1755	806	684	18	1381
500	**TTDZ500**	1950	1093	1797	900	790	20	1936
630	**TTDZ630**	1950	1093	1797	900	790	20	2263
800	**TTDZ800**	1950	1093	1797	900	790	20	2893
1000	**TTDZ1000**	1950	1093	1797	900	790	20	3283

TTDZ IP65

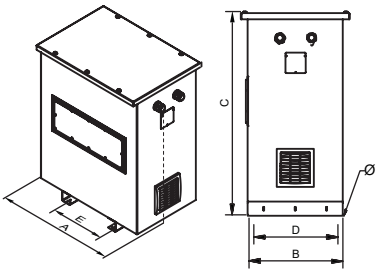


Up to 1 kVA

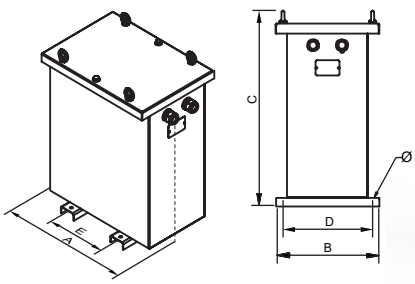


From 2 kVA up to 6,3 kVA

TTDZ IP54

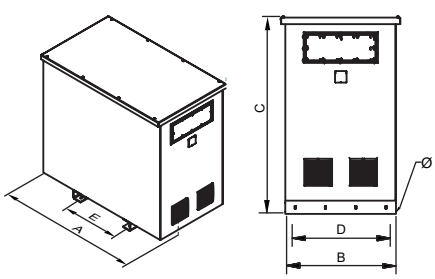


From 40 kVA up to 400 kVA



From 8 kVA up to 31,5 kVA

Sectioned



From 500 kVA

TTD SERIES

Isolation · Input **400 V** · Output **230 V** + N

On-request manufacturing options (please see prices)

Power	**From 0.15 kVA to 1000 kVA**
Voltage	**From 1 V to 12 kV**
Windings	**Copper or aluminium**
Frequency	**From 50 Hz to 400 Hz**
Connection unit	**Yyn0, Dyn11, Dd0, Dy1, Dyn5, YNd1/5/11... (See Technical Appendix T.A.2)**
IP rating	**IP00, IP20, IP23, IP31, IP42, IP54, IP55 and IP65**
IK rating	**IK08 and IK10**
Room temperature	**Up to 60 ºC**
Locks	**Screw, key**
Test voltage	**Up to 28 kV**
Short circuit voltage	**From 2% to 9%**
Losses	**Low losses, ecological**
Operation	**Intermittent, continuous**
Cooling	**Natural, forced ventilation**
Electrostatic shield	**Up to three shields**
Safety class	**I, II**
Altitude	**Up to 4000 m**
Protections	**In both primary and secondary (figure 1)**
Temperature sensors	**PT100 (figure 2), PTC (figure 3) or bimetallic**
Temperature control	**Temperature control station (4xPT100) (figure 4), PTC thermal relays (3xPTC / 6xPTC)**
Network analyser	**(Figure 5)**
Anti condensation system	**Hygrostat**
Heating system	**Heating elements**
External protection	**Anti-flash varnish, resin encapsulated, metal or stainless steel enclosure**
Transportation and hoisting	**Wheels (figure 6), lifting points**
Paint	**C3, C4, C5, different RAL**
Feature plate	**High generation polymer or stainless steel (figure 7)**
Anti vibration system	**Silentblock**
Adjustment	**-10%; -7.5%; -5%; -2.5%; +2.5%; +5%; +7.5%; +10% With bridges (figure 8) or selector (figure 9)**
Certified	**CE, DNV-GL, BV, UL (insulation) and POLYLUX laboratory**
Climate class / environment / fire	**Up to C2-E2-F1**


Figure 1


Figure 2


Figure 3


Figure 4


Figure 5


Figure 6


Figure 7


Figure 8

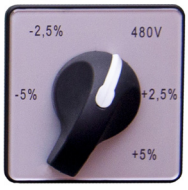


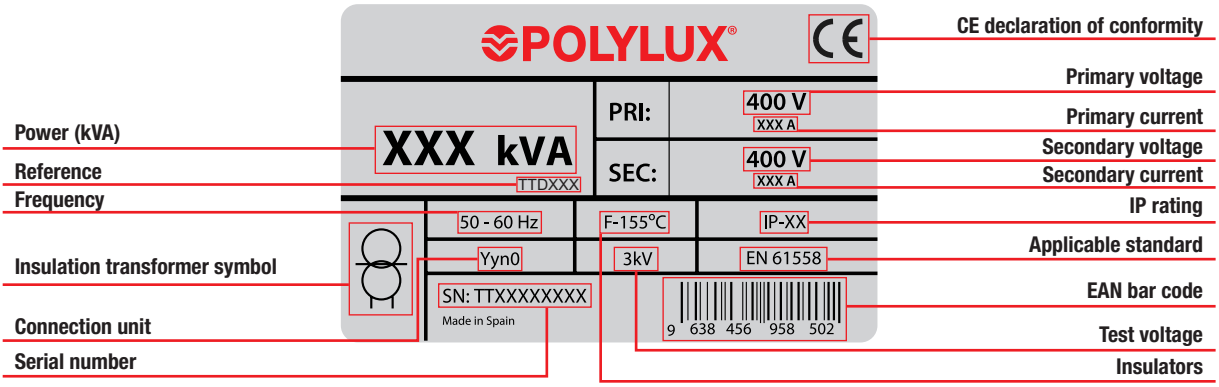
Figure 9

TTD SERIES

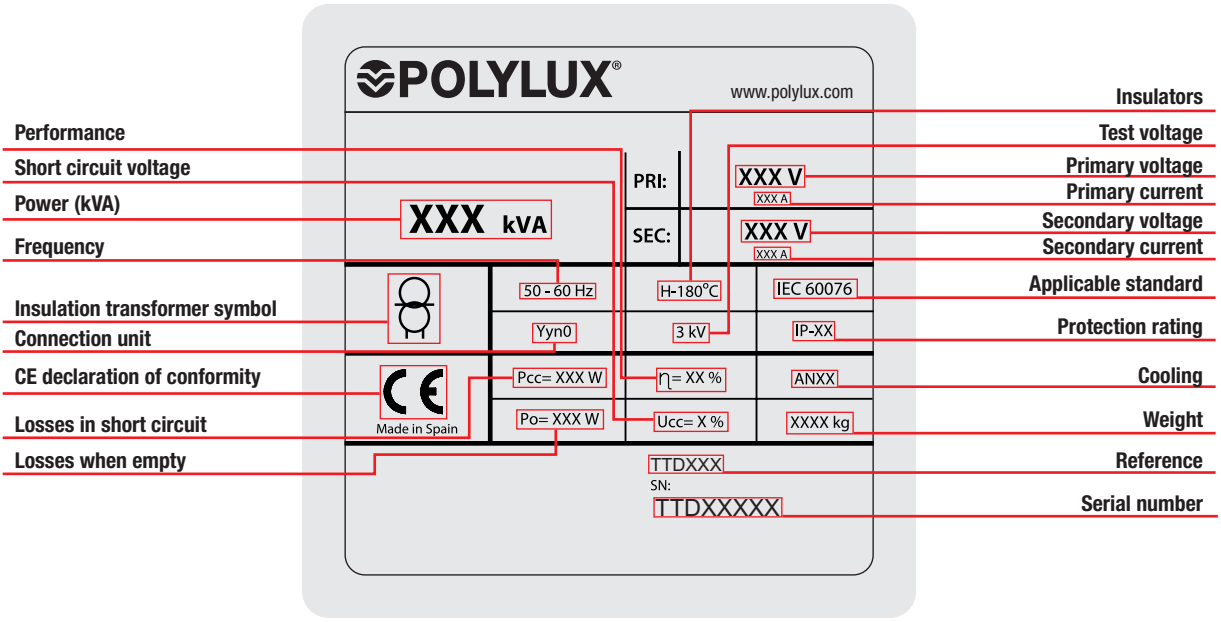
Isolation · Input **400 V** · Output **230 V** + N

Feature plate structure

Label up to 31,5 kVA:



Label from 40 kVA:



TTK SERIES

Isolation three-phase to single-phase · three-phase **input 400 V** · Single-phase **output 230 V**

Definition and applications

Transformers for applications in which there is very high single-phase consumption in an installation and the load is to be shared in a three-phase system to prevent important imbalances. It should be mentioned that due to the way in which they operate, this type of transformer does not achieve a totally balanced load in primary. The current in the central primary phase may be double the nominal current. It is advisable to use these transformers for powers higher than 5kVA as it is understood that in most industrial installations, for consumptions equal to or less than this power, it will not entail a considerable consumption load. For powers equal to or less than 5kVA, use the conventional single-phase "PD", "QD", "ND" or "TK" series transformers.

Manufacturing characteristics

- All the transformers are dipped in anti-flash varnish and then compacted in the furnace. This process increases the insulation grade, reduces noise and provides anti-moisture, waterproofed protection.
- The high power transformers are manufactured with format cores and low loss properties, thus contributing to improving performance.
- All the transformers are checked automatically one by one and the compliance test report is created in accordance with the corresponding standard.

TTKX

· IP00 protection rating.
· Power from 1 kVA to 100 kVA.
· Total impregnated in anti-flash varnish.
· Hoisting elements included.
· **UL certification.** FILE: E532753 - Construction only.

TTKZ

· IP65 rating up to 16 kVA / IP54 from 20 kVA (IK10).
· Power from 1 kVA to 100 kVA.
· Metal box painted with RAL7035 polyester resin.
· High resistance to corrosion.
· Stuffing box cover for cable input depending on installation needs.
· Hoisting elements included.
· Detachable top cover.
· With silentblock.
· **UL certification.**

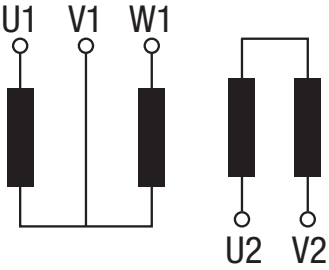
TTKW

· IP23 rating (IK08).
· Power from 1 kVA to 100 kVA.
· Metal box painted with RAL7035 polyester resin.
· High resistance to corrosion.
· Hoisting elements included.
· Detachable top and front cover.
· Cable outpet with cable gland.
· **UL certification.**

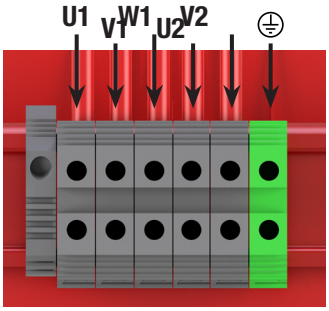
Technical features - standard model

Rating	**1 kVA to 100 kVA**
Standard voltage	**Three-phase 400 V input// Single-phase 230 V output**
Standard frequency	**50-60 Hz**
Insulators	**Class H - 180 ºC**
Temperature rise	**Class F ≤ 40 kVA (25 kVA TTKZ)** **Class H ≥ 50 kVA (31.5 kVA TTKZ)** *More information in Technical Appendix (T.A.1)
Windings	**Class HC-200 ºC**
Class	**I**
Altitude	**1000 m**
Enclosure colour	**RAL 7035**
IP rating	**IP00 (TTKX)** **IP23 (TTKW)** **IP65 rating up to 16 kVA / IP54 from 20 kVA (TTKZ)**
IK rating	**IK08 (TTKW)**
Paint class (ISO 12944)	**C3 (TTKW)** **C4 (TTKZ)**
Room temperature	**45 ºC**
Standards	**≤600V: US Standard: UL 5085-1 / UL 5085-2** **Canada Standard: CSA C22.2 N0 66.1-06 / CSA C22.2 N0 66.2-06** **≤750V: IEC/EN/UNE-EN 61558, CE**
Test voltage	**3 kV (1 min., 50 Hz)**
Inrush	**< 12 In**
Ucc	**≤ 4 %**
K factor	**4**
Operation	**Continuous**
Cooling	**AN (TTKX) - ANAN (TTKW-TTKZ IP65) - ANAF (TTKZ IP54)**

Electrical diagram



Connection

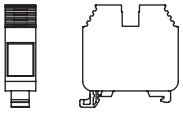


TTK SERIES

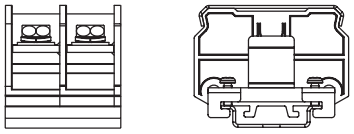
Isolation three-phase to single-phase · three-phase **input 400 V** · Single-phase **output 230 V**

Terminal types

Terminals		Maximum cross-section conductor mm²	Maximum tightening torque		TTKX-TTKW-TTKZ Power kVA			
					Input		Output	
			N-m	Lb-In	From	To	From	To
Power strip 1	Terminal 10	16	1.2	10.6	1	1.6	1	1.6
	Terminal 16	25	1.2	10.6	2	5	2	5
	Terminal 35	50	2.5	22.1	6.3	10	6.3	10
Power strip 2	Terminal 60	25	4.5	40	12.5	40	12.5	12.5
	Terminal 100	35	6.7	60	50	63	16	25
	Terminal 200	95	9	80	80	80	31.5	40
	Terminal 300	150	9	80	-	-	50	80
Connection plate	Plate 30 X 1	150	-	-	100	100	-	-
	Plate 50 X 1	150	-	-	-	-	100	100



Power strip 1



Power strip 2

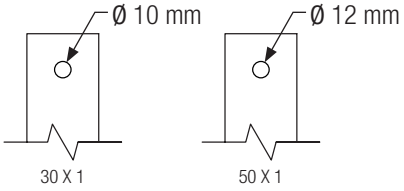


Plate connection

Theoretical data - standard model

Power kVA	Reference	Insulation class	Current A		Protections A		Noise dB
			Input	Output	Input	Output	
TTKX							
1	**TTKX1**	F	1.4	4.3	3 (D/Am)	4 (C/gG)	≤45
1.6	**TTKX1.6**	F	2.3	7.0	6 (D/Am)	7 (C/gG)	≤45
2	**TTKX2**	F	2.9	8.7	10 (D/Am)	8 (C/gG)	≤45
2.5	**TTKX2.5**	F	3.6	10.9	10 (D/Am)	10 (C/gG)	≤45
3.15	**TTKX3.15**	F	4.5	13.7	10 (D/Am)	12 (C/gG)	≤45
4	**TTKX4**	F	5.8	17.4	16 (D/Am)	12 (C/gG)	≤45
5	**TTKX5**	F	7.2	21.7	16 (D/Am)	20 (C/gG)	≤45
6.3	**TTKX6.3**	F	9.1	27.4	20 (D/Am)	25 (C/gG)	≤45
8	**TTKX8**	F	11.5	34.8	25 (D/Am)	30 (C/gG)	≤45
10	**TTKX10**	F	14.4	43.5	32 (D/Am)	40 (C/gG)	≤45
12.5	**TTKX12.5**	F	18.0	54.3	40 (D/Am)	50 (C/gG)	≤45
16	**TTKX16**	F	23.1	69.6	50 (D/Am)	60 (C/gG)	≤45
20	**TTKX20**	F	28.9	87.0	63 (D/Am)	80 (C/gG)	≤45
25	**TTKX25**	F	36.1	108.7	80 (D/Am)	100 (C/gG)	≤45
31.5	**TTKX31.5**	F	45.5	137.0	100 (D/Am)	100 (C/gG)	≤45
40	**TTKX40**	F	57.7	173.9	125 (D/Am)	160 (C/gG)	≤55
50	**TTKX50**	H	72.2	217.4	160 (D/Am)	200 (C/gG)	≤55
63	**TTKX63**	H	90.9	273.9	200 (D/Am)	200 (C/gG)	≤55
80	**TTKX80**	H	115.5	347.8	300 (D/Am)	300 (C/gG)	≤55
100	**TTKX100**	H	144.3	434.8	300 (D/Am)	400 (C/gG)	≤55

TTK SERIES

Isolation three-phase to single-phase · three-phase **input 400 V** · Single-phase **output 230 V**

Theoretical data - standard model

Power kVA	Reference	Insulation class	Current A		Protections A		Noise dB	Cable gland (TTKW) / Stuffing boxes (TTKZ)	
			Input	Output	Input	Output		ø max. (mm)	Quantity
TTKW									
1	**TTKW1**	F	1.4	4.3	3 (D/Am)	4 (C/gG)	≤45	14	2
1.6	**TTKW1.6**	F	2.3	7.0	6 (D/Am)	7 (C/gG)	≤45	14	2
2	**TTKW2**	F	2.9	8.7	10 (D/Am)	8 (C/gG)	≤45	18	2
2.5	**TTKW2.5**	F	3.6	10.9	10 (D/Am)	10 (C/gG)	≤45	18	2
3.15	**TTKW3.15**	F	4.5	13.7	10 (D/Am)	12 (C/gG)	≤45	18	2
4	**TTKW4**	F	5.8	17.4	16 (D/Am)	12 (C/gG)	≤45	18	2
5	**TTKW5**	F	7.2	21.7	16 (D/Am)	20 (C/gG)	≤45	25	4
6.3	**TTKW6.3**	F	9.1	27.4	20 (D/Am)	25 (C/gG)	≤45	25	4
8	**TTKW8**	F	11.5	34.8	25 (D/Am)	30 (C/gG)	≤45	32	4
10	**TTKW10**	F	14.4	43.5	32 (D/Am)	40 (C/gG)	≤45	32	4
12.5	**TTKW12.5**	F	18.0	54.3	40 (D/Am)	50 (C/gG)	≤45	32	4
16	**TTKW16**	F	23.1	69.6	50 (D/Am)	60 (C/gG)	≤45	32	4
20	**TTKW20**	F	28.9	87.0	63 (D/Am)	80 (C/gG)	≤45	32	4
25	**TTKW25**	F	36.1	108.7	80 (D/Am)	100 (C/gG)	≤45	32	8
31.5	**TTKW31.5**	F	45.5	137.0	100 (D/Am)	100 (C/gG)	≤45	32	8
40	**TTKW40**	F	57.7	173.9	125 (D/Am)	160 (C/gG)	≤55	32	8
50	**TTKW50**	H	72.2	217.4	160 (D/Am)	200 (C/gG)	≤55	44	8
63	**TTKW63**	H	90.9	273.9	200 (D/Am)	200 (C/gG)	≤55	44	8
80	**TTKW80**	H	115.5	347.8	300 (D/Am)	300 (C/gG)	≤55	44	8
100	**TTKW100**	H	144.3	434.8	300 (D/Am)	400 (C/gG)	≤55	44	8
TTKZ									
1	**TTKZ1**	F	1.4	4.3	3 (D/Am)	4 (C/gG)	≤45	10 - 14	2
1.6	**TTKZ1.6**	F	2.3	7.0	6 (D/Am)	7 (C/gG)	≤45	18 - 25	2
2	**TTKZ2**	F	2.9	8.7	10 (D/Am)	8 (C/gG)	≤45	18 - 25	2
2.5	**TTKZ2.5**	F	3.6	10.9	10 (D/Am)	10 (C/gG)	≤45	18 - 25	2
3.15	**TTKZ3.15**	F	4.5	13.7	10 (D/Am)	12 (C/gG)	≤45	18 - 25	2
4	**TTKZ4**	F	5.8	17.4	16 (D/Am)	12 (C/gG)	≤45	18 - 25	2
5	**TTKZ5**	F	7.2	21.7	16 (D/Am)	20 (C/gG)	≤45	18 - 25	2
6.3	**TTKZ6.3**	F	9.1	27.4	20 (D/Am)	25 (C/gG)	≤45	22 - 32	2
8	**TTKZ8**	F	11.5	34.8	25 (D/Am)	30 (C/gG)	≤45	22 - 32	2
10	**TTKZ10**	F	14.4	43.5	32 (D/Am)	40 (C/gG)	≤45	22 - 32	2
12.5	**TTKZ12.5**	F	18.0	54.3	40 (D/Am)	50 (C/gG)	≤45	22 - 32	2
16	**TTKZ16**	F	23.1	69.6	50 (D/Am)	60 (C/gG)	≤45	22 - 32	2
20	**TTKZ20**	F	28.9	87.0	63 (D/Am)	80 (C/gG)	≤45	22 - 32	2
25	**TTKZ25**	F	36.1	108.7	80 (D/Am)	100 (C/gG)	≤45	22 - 32	2
31.5	**TTKZ31.5**	H	45.5	137.0	100 (D/Am)	100 (C/gG)	≤45	22 - 32	2
40	**TTKZ40**	H	57.7	173.9	125 (D/Am)	160 (C/gG)	≤55	22 - 32	2
50	**TTKZ50**	H	72.2	217.4	160 (D/Am)	200 (C/gG)	≤55	34 - 44	2
63	**TTKZ63**	H	90.9	273.9	200 (D/Am)	200 (C/gG)	≤55	34 - 44	2
80	**TTKZ80**	H	115.5	347.8	300 (D/Am)	300 (C/gG)	≤55	34 - 44	2
100	**TTKZ100**	H	144.3	434.8	300 (D/Am)	400 (C/gG)	≤55	34 - 44	2

TTK SERIES

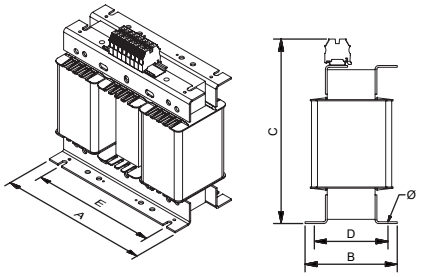
Isolation three-phase to single-phase · three-phase **input 400 V** · Single-phase **output 230 V**

Measurements

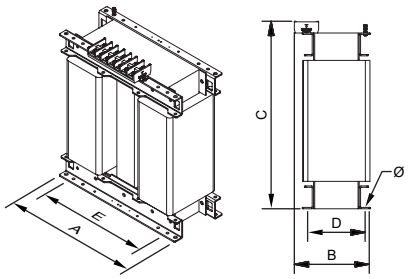
Power kVA	Reference	External dimensions mm			Fastening elements mm			Weight kg
		A	B	C	D	E	Ø	
TTKX								
1	**TTKX1**	240	118	268	100	200	9	14,1
1.6	**TTKX1.6**	240	143	268	125	200	9	20,4
2	**TTKX2**	300	124	320	102	250	9	23,3
2.5	**TTKX2.5**	300	134	320	112	250	9	27,8
3.15	**TTKX3.15**	300	154	320	132	250	9	35,2
4	**TTKX4**	300	164	320	132	250	9	40
5	**TTKX5**	360	144	375	122	300	11	48
6.3	**TTKX6.3**	360	164	375	142	300	11	58
8	**TTKX8**	420	170	425	142	350	11	72
10	**TTKX10**	420	190	425	162	350	11	88
12.5	**TTKX12.5**	480	204	470	136	400	11	112
16	**TTKX16**	480	234	470	166	400	11	139
20	**TTKX20**	480	254	470	186	400	11	164
25	**TTKX25**	640	330	550	159,5	426	13	191
31.5	**TTKX31.5**	640	365	550	179,5	426	13	234
40	**TTKX40**	714	400	640	189	426	13	277
50	**TTKX50**	714	425	640	209	426	17	340
63	**TTKX63**	760	550	826	460	470	17	394
80	**TTKX80**	760	550	826	460	470	17	436
100	**TTKX100**	760	550	843	460	470	17	507

Power kVA	Reference	External dimensions mm			Fastening elements mm			Weight kg
		A	B	C	D	E	Ø	
TTKW								
1	**TTKW1**	320	230	315	205	200	6	19
1.6	**TTKW1.6**	320	230	315	205	200	6	25
2	**TTKW2**	387	260	382	245	250	6	29
2.5	**TTKW2.5**	387	260	382	245	250	6	34
3.15	**TTKW3.15**	387	260	382	245	250	6	42
4	**TTKW4**	387	260	382	245	250	6	46
5	**TTKW5**	460	340	501	300	300	12	57
6.3	**TTKW6.3**	460	340	501	300	300	12	68
8	**TTKW8**	549	424	644	375	345	12	95
10	**TTKW10**	549	424	644	375	345	12	110
12.5	**TTKW12.5**	616	424	710	375	345	12	138
16	**TTKW16**	616	424	710	375	345	12	165
20	**TTKW20**	616	424	710	375	345	12	188
25	**TTKW25**	815	555	975	500	415	12	229
31.5	**TTKW31.5**	815	555	975	500	415	12	261
40	**TTKW40**	815	555	975	500	415	12	377
50	**TTKW50**	815	555	975	500	415	12	367
63	**TTKW63**	815	555	975	500	415	12	418
80	**TTKW80**	990	682	1250	582	470	18	487
100	**TTKW100**	990	682	1250	582	470	18	559

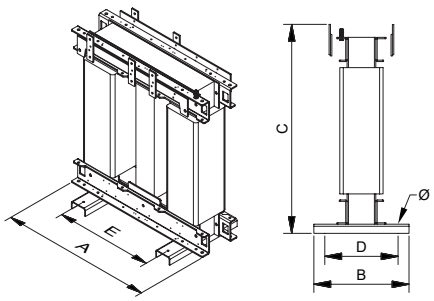
TTKX IP00



From 1 kVA to 12.5 kVA

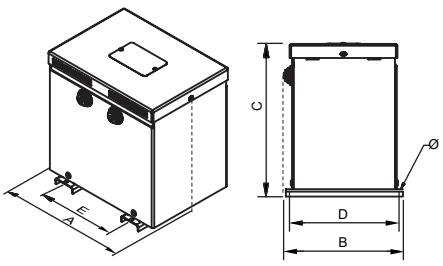


From 12.5 kVA to 63 kVA

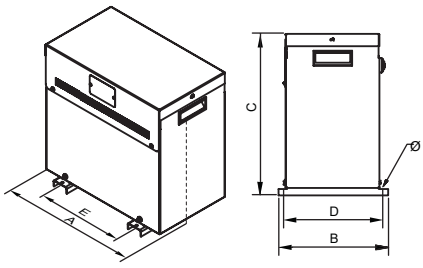


From 80 kVA

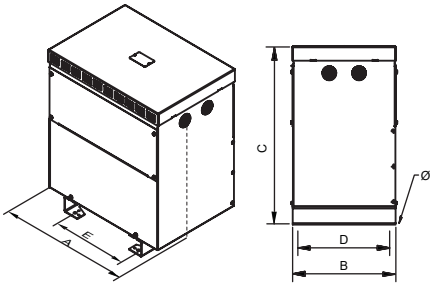
TTKW IP23



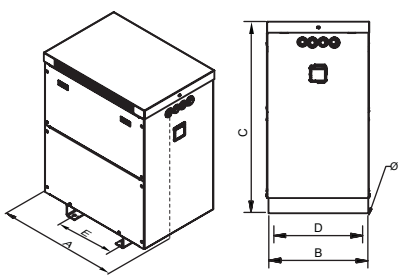
Up to 1,6 kVA



From 2 kVA up to 6,3 kVA



From 8 kVA up to 20 kVA



From 25 kVA

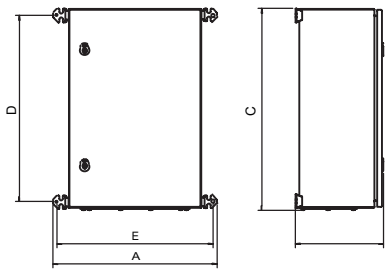
TTK SERIES

Isolation three-phase to single-phase · three-phase **input 400 V** · Single-phase **output 230 V**

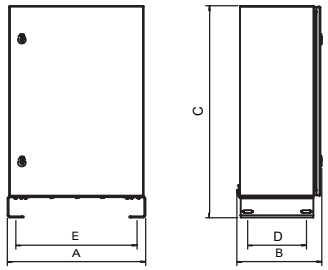
Measurements

Power kVA	Reference	External dimensions mm			Fastening elements mm			Weight kg
		A	B	C	D	E	Ø	
TTKZ								
1	**TTKZ1**	495	267	608	560	470	10.5	33
1.6	**TTKZ1.6**	513	316	778	220	450	13	45
2	**TTKZ2**	513	316	778	220	450	13	49
2.5	**TTKZ2.5**	513	316	778	220	450	13	58
3.15	**TTKZ3.15**	513	316	778	220	450	13	62
4	**TTKZ4**	613	316	878	220	550	13	75
5	**TTKZ5**	613	316	878	220	550	13	85
6.3	**TTKZ6.3**	745	413	735	370	350	11	111
8	**TTKZ8**	745	413	735	370	350	11	127
10	**TTKZ10**	745	413	735	370	350	11	152
12.5	**TTKZ12.5**	745	413	735	370	350	11	179
16	**TTKZ16**	745	413	735	370	350	11	201
20	**TTKZ20**	968	621	1150	500	426	12	255
25	**TTKZ25**	968	621	1150	500	426	12	288
31.5	**TTKZ31.5**	968	621	1150	500	426	12	404
40	**TTKZ40**	968	621	1150	500	426	12	395
50	**TTKZ50**	968	621	1150	500	426	12	444
63	**TTKZ63**	1040	892	1374	714	485	18	566
80	**TTKZ80**	1040	892	1374	714	485	18	638
100	**TTKZ100**	1040	892	1374	714	485	18	691

TTKZ IP65

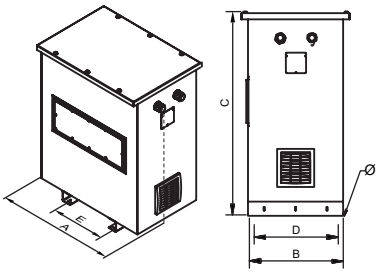


Up to 1 kVA

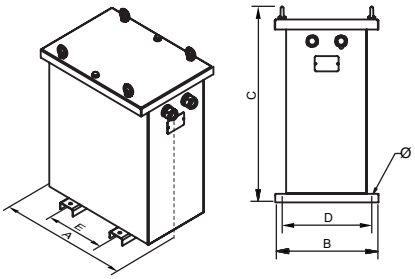


From 1,6 kVA up to 5 kVA

TTKZ IP54



From 20 kVA



From 6,3 kVA up to 16 kVA

TTK SERIES

Isolation three-phase to single-phase · three-phase **input 400 V** · Single-phase **output 230 V**

On-request manufacturing options (please see prices)

Power	**From 1 kVA to 100 kVA**
Windings	**Copper or aluminium**
Frequency	**From 50 Hz to 400 Hz**
IP rating	**IP00, IP20, IP23, IP31, IP42, IP54, IP55 and IP65**
IK rating	**IK08 and IK10**
Room temperature	**Up to 60 ºC**
Locks	**Screw, key**
Test voltage	**Up to 28 kV**
Short circuit voltage	**From 2% to 9%**
Operation	**Intermittent, continuous**
Cooling	**Natural, forced ventilation**
Electrostatic shield	**Up to three shields**
Class	**I, II**
Altitude	**Up to 4000 m**
Protections	**In both primary and secondary (figure 1)**
Temperature sensors	**PT100 (figure 2), PTC (figure 3) or bimetallic**
Temperature control	**Temperature control station (4xPT100) (figure 4), PTC thermal relays (3xPTC / 6xPTC)**
Network analyser	**(Figure 5)**
Anti condensation system	**Hygrostat**
Heating system	**Heating elements**
External protection	**Anti-flash varnish, metallic or stainless steel enclosure**
Transportation and hoisting	**Wheels (figure 6), lifting points**
Paint	**C3, C4, C5, different RAL**
Feature plate	**High generation polymer or stainless steel (figure 7)**
Anti vibration system	**Silentblock**
Adjustment	**-10%; -7.5%; -5%; -2.5%; +2.5%; +5%; +7.5%; +10% With bridges (figure 8) or selector (figure 9)**
Certified	**CE, DNV-GL, BV, UL (insulation) and POLYLUX laboratory**
Climate class / environment / fire	**Up to C2-E2-F1**

Figure 1

Figure 2

Figure 3

Figure 4

Figure 5

Figure 6

Figure 7

Figure 8

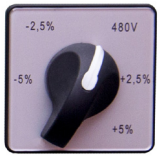


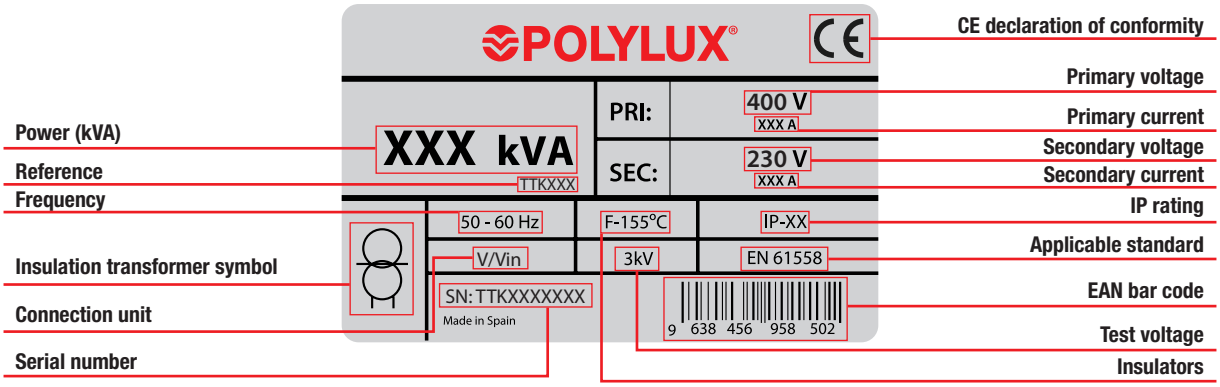
Figure 9

TTK SERIES

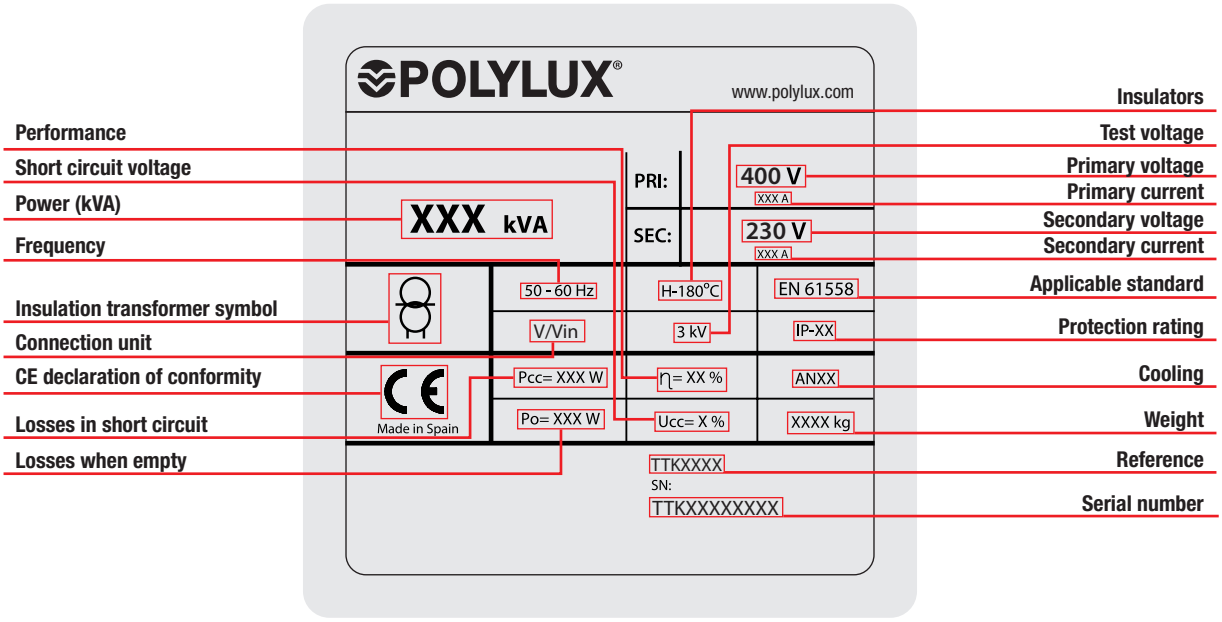
Isolation three-phase to single-phase · three-phase **input 400 V** · Single-phase **output 230 V**

Feature plate structure

Label up to 20 kVA:



Label from 25 kVA:



TTG SERIES

Ecological three-phase isolation · Input **400 V** · Output **400 V** + N

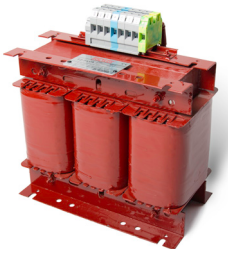
Definition and applications

Our TTG series are three-phase isolation transformers with low losses designed to operate continuously at maximum output.
Applications:

- Circuit isolation, with the possibility of increasing or reducing the voltage.
- Reducing voltage drops in installations with long cable lengths. With the installation of a step-up transformer and a reducer transformer.
- In installations with a certain level of electrical noise, the TTG series helps improve the electrical network quality in secondary.
- Changing the neutral system of an installation.
- In installations where energy savings is critical, or where a lower connection peak is required such as renewable energy plants or high energy efficiency installations.

Manufacturing characteristics

- All the transformers are dipped in anti-flash varnish and then compacted in the furnace. This process increases the insulation grade, reduces noise and provides anti-moisture, waterproofed protection.
- All the transformers are made to provide a high performance and lower losses than standard transformers. This high performance makes it possible to cut operating costs, providing great energy savings and thus helping to protect the environment.
- All the transformers are checked automatically one by one and the compliance test report is created in accordance with the corresponding standard.



TTGX

· IP00 protection rating.
· Power from 10 kVA to 400 kVA.
· Total impregnated in anti-flash varnish.
· Hoisting elements included.
· **UL certification.** FILE: E532753 - Construction only.

TTGW

· IP23 rating (IK08).
· Power from 10 kVA to 400 kVA.
· Metal box painted with RAL7035 polyester resin.
· High resistance to corrosion.
· Cable outpet with cable gland.
· Hoisting elements included.
· Detachable top and front cover.
· **UL certification.**

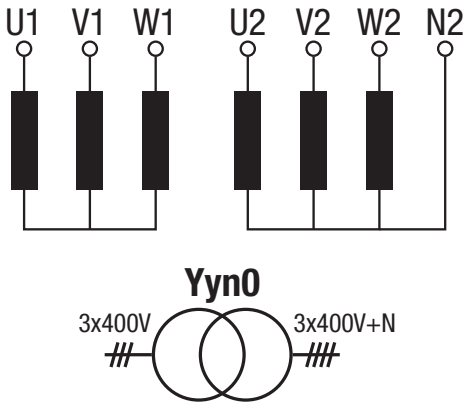
TTGZ

· IP65 rating up to 40 kVA / IP54 from 50 kVA (IK10).
· Power from 10 kVA to 400 kVA.
· Metal box painted with RAL7035 polyester resin.
· High resistance to corrosion.
· Stuffing box cover for cable input depending on installation needs.
· Hoisting elements included.
· Detachable top cover.
· With silentblock.
· **UL certification.**

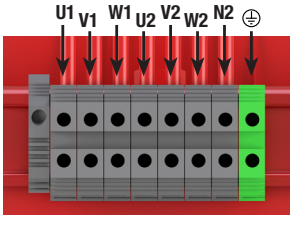
Technical features - standard model

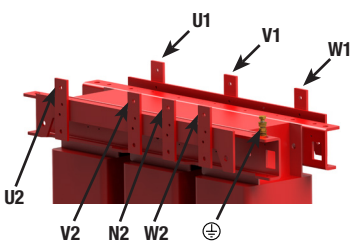
Rating	**10 kVA to 400 kVA**
Standard voltage	**Input 400 V // Output 400 V and N.**
Standard frequency	**50-60 Hz**
Connection unit	**Yyn0**
Insulators	**Class H - 180 ºC**
Temperature rise	**Class B** *More information in Technical Appendix (T.A.1)
Windings	**Class HC-200 ºC**
Class	**I**
Altitude	**1000 m**
Enclosure colour	**RAL 7035**
IP rating	**IP00 (TTGX)** **IP23 (TTGW)** **IP65 rating up to 40 kVA / IP54 from 50 kVA (TTGZ)**
IK rating	**IK08 (TTGW)** **IK10 (TTGZ)**
Paint class (ISO 12944)	**C3 (TTGW)** **C4 (TTGZ)**
Room temperature	**45 ºC**
Standards	**≤600V: US Standard: UL 5085-1 / UL 5085-2** **Canada Standard: CSA C22.2 N0 66.1-06 / CSA C22.2 N0 66.2-06** **≤750V: IEC/EN 61558, CE up to 31.5 kVA** **IEC/EN 60076, CE from 40 kVA**
Test voltage	**3 kV (1 min, 50 Hz)**
Inrush	**< 5 In**
Ucc	**≤ 2 %**
K factor	**4**
Operation	**Continuous**
Cooling	**AN (TTGX) - ANAN (TTGW / TTGZ IP65) - ANAF (TTGZ IP54)**

Electrical diagram



Connection



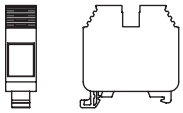


TTG SERIES

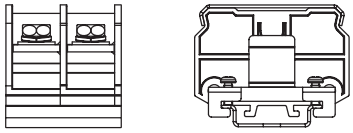
Ecological three-phase isolation · Input **400 V** · Output **400 V** + N

Terminal types

Terminals		Maximum cross-section conductor mm²	Maximum tightening torque		TTGX-TTGW Power kVA		TTGZ Power kVA	
			N-m	Lb-In	From	To	From	To
Power strip 1	Terminal 16	25	1.2	10.6	10	12.5	10	10
Power strip 2	Terminal 60	25	4.5	40	16	40	12.5	40
	Terminal 100	35	6.7	60	50	63	50	63
	Terminal 200	95	9	80	80	125	80	125
	Terminal 300	150	9	80	160	200	160	200
Connection plate	Plate 50 X 1	2x150	-	-	250	400	250	400



Power strip 1



Power strip 2

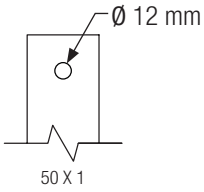


Plate connection

Theoretical data - standard model

Power kVA	Reference	Insulation class	Current A		Protections A		Noise dB
			Input	Output	Input	Output	
TTGX							
10	**TTGX10**	F	14.4	14.4	32 (D/Am)	12 (C/gG)	≤45
12.5	**TTGX12.5**	F	18.0	18.0	40 (D/Am)	12 (C/gG)	≤45
16	**TTGX16**	F	23.1	23.1	50 (D/Am)	20 (C/gG)	≤45
20	**TTGX20**	F	28.9	28.9	63 (D/Am)	25 (C/gG)	≤45
25	**TTGX25**	F	36.1	36.1	80 (D/Am)	30 (C/gG)	≤45
31.5	**TTGX31.5**	F	45.5	45.5	100 (D/Am)	40 (C/gG)	≤45
40	**TTGX40**	F	57.7	57.7	125 (D/Am)	50 (C/gG)	≤45
50	**TTGX50**	H	72.2	72.2	160 (D/Am)	60 (C/gG)	≤55
63	**TTGX63**	H	90.9	90.9	200 (D/Am)	80 (C/gG)	≤55
80	**TTGX80**	H	115.5	115.5	300 (D/Am)	100 (C/gG)	≤55
100	**TTGX100**	H	144.3	144.3	300 (D/Am)	100 (C/gG)	≤55
125	**TTGX125**	H	180.4	180.4	400 (D/Am)	160 (C/gG)	≤55
160	**TTGX160**	H	230.9	230.9	500 (D/Am)	200 (C/gG)	≤55
200	**TTGX200**	H	288.7	288.7	600 (D/Am)	250 (C/gG)	≤55
250	**TTGX250**	H	360.8	360.8	800 (D/Am)	300 (C/gG)	≤65
315	**TTGX315**	H	454.7	454.7	1000 (D/Am)	400 (C/gG)	≤65
400	**TTGX400**	H	577.4	577.4	1200 (D/Am)	500 (C/gG)	≤65

TTG SERIES

Ecological three-phase isolation · Input **400 V** · Output **400 V** + N

Theoretical data - standard model

Power kVA	Reference	Insulation class	Current A		Protections A		Noise dB	Cable gland (TTGW) / Stuffing boxes (TTGZ)	
			Input	Output	Input	Output		ø max. (mm)	Quantity
TTGW									
10	**TTGW10**	F	14.4	14.4	32 (D/Am)	12 (C/gG)	≤45	25	4
12.5	**TTGW12.5**	F	18.0	18.0	40 (D/Am)	12 (C/gG)	≤45	32	4
16	**TTGW16**	F	23.1	23.1	50 (D/Am)	20 (C/gG)	≤45	32	4
20	**TTGW20**	F	28.9	28.9	63 (D/Am)	25 (C/gG)	≤45	32	4
25	**TTGW25**	F	36.1	36.1	80 (D/Am)	30 (C/gG)	≤45	32	4
31.5	**TTGW31.5**	F	45.5	45.5	100 (D/Am)	40 (C/gG)	≤45	32	4
40	**TTGW40**	F	57.7	57.7	125 (D/Am)	50 (C/gG)	≤45	32	4
50	**TTGW50**	H	72.2	72.2	160 (D/Am)	60 (C/gG)	≤55	32	8
63	**TTGW63**	H	90.9	90.9	200 (D/Am)	80 (C/gG)	≤55	32	8
80	**TTGW80**	H	115.5	115.5	300 (D/Am)	100 (C/gG)	≤55	32	8
100	**TTGW100**	H	144.3	144.3	300 (D/Am)	100 (C/gG)	≤55	32	8
125	**TTGW125**	H	180.4	180.4	400 (D/Am)	160 (C/gG)	≤55	44	8
160	**TTGW160**	H	230.9	230.9	500 (D/Am)	200 (C/gG)	≤55	44	8
200	**TTGW200**	H	288.7	288.7	600 (D/Am)	250 (C/gG)	≤55	44	8
250	**TTGW250**	H	360.8	360.8	800 (D/Am)	300 (C/gG)	≤65	44	8
315	**TTGW315**	H	454.7	454.7	1000 (D/Am)	400 (C/gG)	≤65	44	8
400	**TTGW400**	H	577.4	577.4	1200 (D/Am)	500 (C/gG)	≤65	44	8
TTGZ									
10	**TTGZ10**	F	14.4	14.4	32 (D/Am)	12 (C/gG)	≤45	22 - 32	2
12.5	**TTGZ12.5**	F	18.0	18.0	40 (D/Am)	12 (C/gG)	≤45	22 - 32	2
16	**TTGZ16**	F	23.1	23.1	50 (D/Am)	20 (C/gG)	≤45	22 - 32	2
20	**TTGZ20**	F	28.9	28.9	63 (D/Am)	25 (C/gG)	≤45	22 - 32	2
25	**TTGZ25**	F	36.1	36.1	80 (D/Am)	30 (C/gG)	≤45	22 - 32	2
31.5	**TTGZ31.5**	F	45.5	45.5	100 (D/Am)	40 (C/gG)	≤45	22 - 32	2
40	**TTGZ40**	F	57.7	57.7	125 (D/Am)	50 (C/gG)	≤45	22 - 32	2
50	**TTGZ50**	H	72.2	72.2	160 (D/Am)	60 (C/gG)	≤55	22 - 32	2
63	**TTGZ63**	H	90.9	90.9	200 (D/Am)	80 (C/gG)	≤55	22 - 32	2
80	**TTGZ80**	H	115.5	115.5	300 (D/Am)	100 (C/gG)	≤55	22 - 32	2
100	**TTGZ100**	H	144.3	144.3	300 (D/Am)	100 (C/gG)	≤55	34 - 44	2
125	**TTGZ125**	H	180.4	180.4	400 (D/Am)	160 (C/gG)	≤55	34 - 44	2
160	**TTGZ160**	H	230.9	230.9	500 (D/Am)	200 (C/gG)	≤55	34 - 44	2
200	**TTGZ200**	H	288.7	288.7	600 (D/Am)	250 (C/gG)	≤55	34 - 44	2
250	**TTGZ250**	H	360.8	360.8	800 (D/Am)	300 (C/gG)	≤65	34 - 44	2
315	**TTGZ315**	H	454.7	454.7	1000 (D/Am)	400 (C/gG)	≤65	34 - 44	2
400	**TTGZ400**	H	577.4	577.4	1200 (D/Am)	500 (C/gG)	≤65	34 - 44	2

TTG SERIES

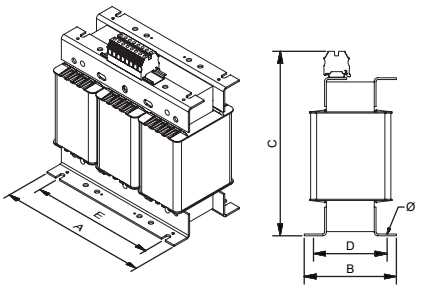
Ecological three-phase isolation · Input **400 V** · Output **400 V** + N

Measurements

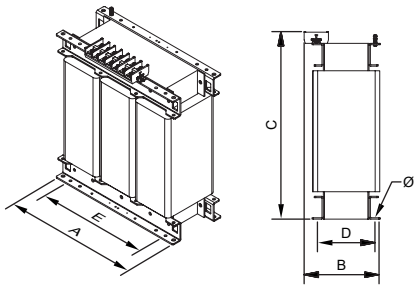
Power kVA	Reference	External dimensions mm			Fastening elements mm			Weight kg
		A	B	C	D	E	Ø	
TTGX								
10	**TTGX10**	360	164	353	142	300	11	73
12.5	**TTGX12.5**	420	170	419	136	350	11	90
16	**TTGX16**	420	190	419	156	350	11	113
20	**TTGX20**	480	250	480	144	400	11	152
25	**TTGX25**	480	270	480	164	400	11	166
31.5	**TTGX31.5**	480	290	480	184	400	11	198
40	**TTGX40**	480	310	480	204	400	11	212
50	**TTGX50**	670	300	615	190	426	13	233
63	**TTGX63**	670	320	690	210	426	13	277
80	**TTGX80**	670	340	690	230	426	13	320
100	**TTGX100**	670	360	690	230	426	13	368
125	**TTGX125**	785	550	880	460	472	17	498
160	**TTGX160**	785	550	880	460	472	17	534
200	**TTGX200**	1016	550	1080	460	690	17	745
250	**TTGX250**	1016	550	1080	460	690	17	859
315	**TTGX315**	1070	550	1220	460	690	17	1001
400	**TTGX400**	1070	550	1220	460	690	17	1096

Power kVA	Reference	External dimensions mm			Fastening elements mm			Weight kg
		A	B	C	D	E	Ø	
TTGW								
10	**TTGW10**	460	340	501	300	300	12	81
12.5	**TTGW12.5**	549	424	644	375	345	12	111
16	**TTGW16**	549	424	644	375	345	12	134
20	**TTGW20**	616	424	710	375	345	12	176
25	**TTGW25**	616	424	710	375	345	12	190
31.5	**TTGW31.5**	616	424	710	375	345	12	220
40	**TTGW40**	616	424	710	375	345	12	234
50	**TTGW50**	815	555	975	500	415	12	295
63	**TTGW63**	815	555	975	500	415	12	338
80	**TTGW80**	815	555	975	500	415	12	377
100	**TTGW100**	815	555	975	500	415	12	431
125	**TTGW125**	990	682	1250	582	470	18	494
160	**TTGW160**	990	682	1250	582	470	18	547
200	**TTGW200**	990	682	1250	582	470	18	728
250	**TTGW250**	1215	772	1555	672	690	18	973
315	**TTGW315**	1215	772	1555	672	690	18	1088
400	**TTGW400**	1215	772	1555	672	690	18	1282

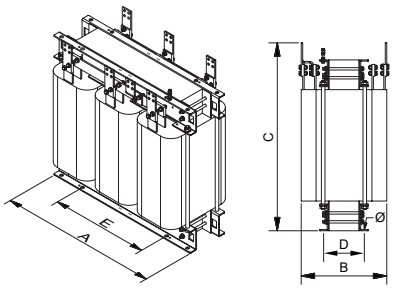
TTGX IP00



From 10 kVA to 12.5 kVA

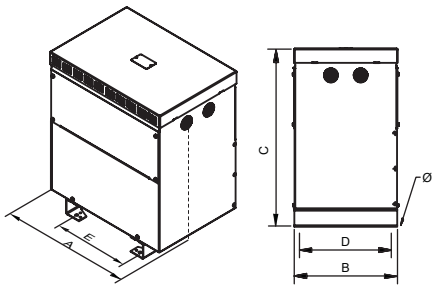


From 16 kVA to 200 kVA

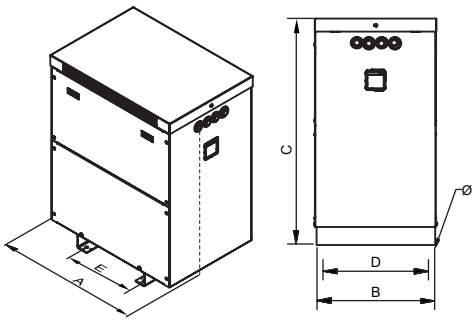


From 250 kVA

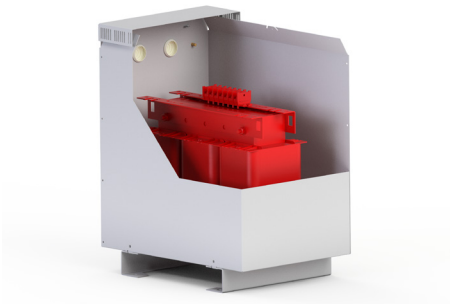
TTGW IP23



From 10 kVA up to 31,5 kVA



From 40 kVA



Sectioned

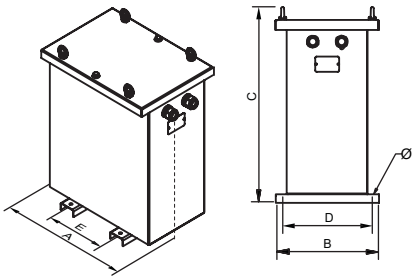
TTG SERIES

Ecological three-phase isolation · Input **400 V** · Output **400 V** + N

Measurements

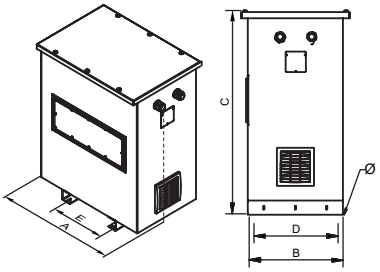
Power kVA	Reference	External dimensions mm			Fastening elements mm			Weight kg
		A	B	C	D	E	Ø	
TTGZ								
10	**TTGZ10**	745	413	735	370	350	11	128
12.5	**TTGZ12.5**	745	413	735	370	350	11	150
16	**TTGZ16**	745	413	735	370	350	11	189
20	**TTGZ20**	745	413	735	370	350	11	203
25	**TTGZ25**	745	413	735	370	350	11	234
31.5	**TTGZ31.5**	745	413	735	370	350	11	248
40	**TTGZ40**	745	413	735	370	350	11	256
50	**TTGZ50**	968	621	1150	500	426	12	322
63	**TTGZ63**	968	621	1150	500	426	12	365
80	**TTGZ80**	968	621	1150	500	426	12	404
100	**TTGZ100**	968	621	1150	500	426	12	458
125	**TTGZ125**	1040	892	1374	714	485	18	573
160	**TTGZ160**	1040	892	1374	714	485	18	626
200	**TTGZ200**	1040	892	1374	714	485	18	806
250	**TTGZ250**	1532	1000	1755	806	684	18	1092
315	**TTGZ315**	1532	1000	1755	806	684	18	1207
400	**TTGZ400**	1532	1000	1755	806	684	18	1402

TTGZ IP65



Up to 40 kVA

TTGZ IP54



From 50 kVA

TTG SERIES

Ecological three-phase isolation · Input **400 V** · Output **400 V** + N

On-request manufacturing options (please see prices)

Power	**From 10 kVA to 400 kVA**
Voltage	**From 1 V to 12 kV**
Windings	**Copper or aluminium**
Frequency	**From 50 Hz to 400 Hz**
Connection unit	**Yyn0, Dyn11, Dd0, Dy1, Dyn5, Yn1/5/11... (See Technical Appendix T.A.2)**
IP rating	**IP00, IP20, IP23, IP31, IP42, IP54, IP55 and IP65**
IK rating	**IK08 and IK10**
Room temperature	**Up to 60 ºC**
Locks	**Screw, key**
Test voltage	**Up to 28 kV**
Short circuit voltage	**From 2% to 9%**
Losses	**Low losses, ecological**
Operation	**Intermittent, continuous**
Cooling	**Natural, forced ventilation**
Electrostatic shield	**Up to three shields**
Class	**I, II**
Altitude	**Up to 4000 m**
Protections	**In both primary and secondary (figure 1)**
Temperature sensors	**PT100 (figure 2), PTC (figure 3) or bimetallic**
Temperature control	**Temperature control station (4xPT100) (figure 4), PTC thermal relays (3xPTC / 6xPTC)**
Network analyser	**(Figure 5)**
Anti condensation system	**Hygrostat**
Heating system	**Heating elements**
External protection	**Anti-flash varnish, metallic or stainless steel enclosure**
Transportation and hoisting	**Wheels (figure 6), lifting points**
Paint	**C3, C4, C5, different RAL**
Feature plate	**High generation polymer or stainless steel (figure 7)**
Anti vibration system	**Silentblock**
Adjustment	**-10%; -7.5%; -5%; -2.5%; +2.5%; +5%; +7.5%; +10% With bridges (figure 8) or selector (figure 9)**
Certified	**CE, DNV-GL, BV, UL (insulation) and POLYLUX laboratory**
Climate class / environment / fire	**Up to C2-E2-F1**

Figure 1

Figure 2

Figure 3

Figure 4

Figure 5

Figure 6

Figure 7

Figure 8

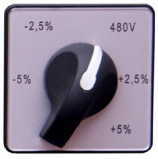


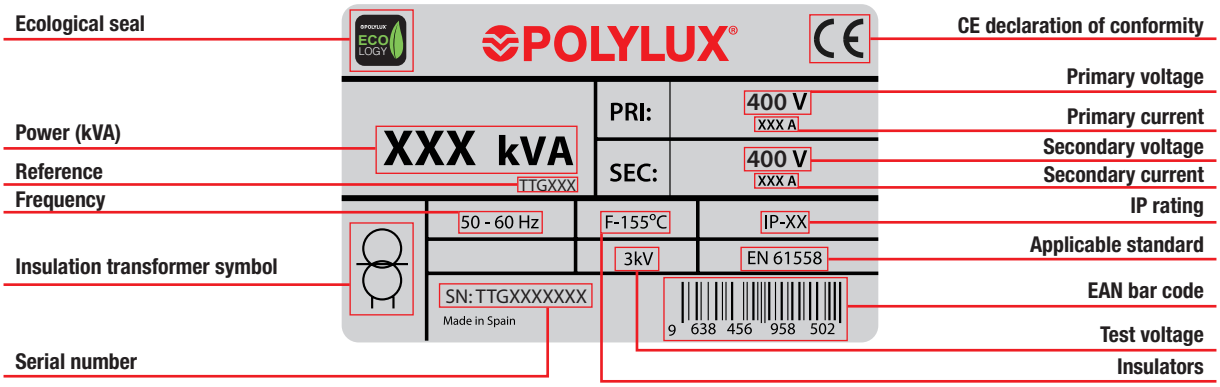
Figure 9

TTG SERIES

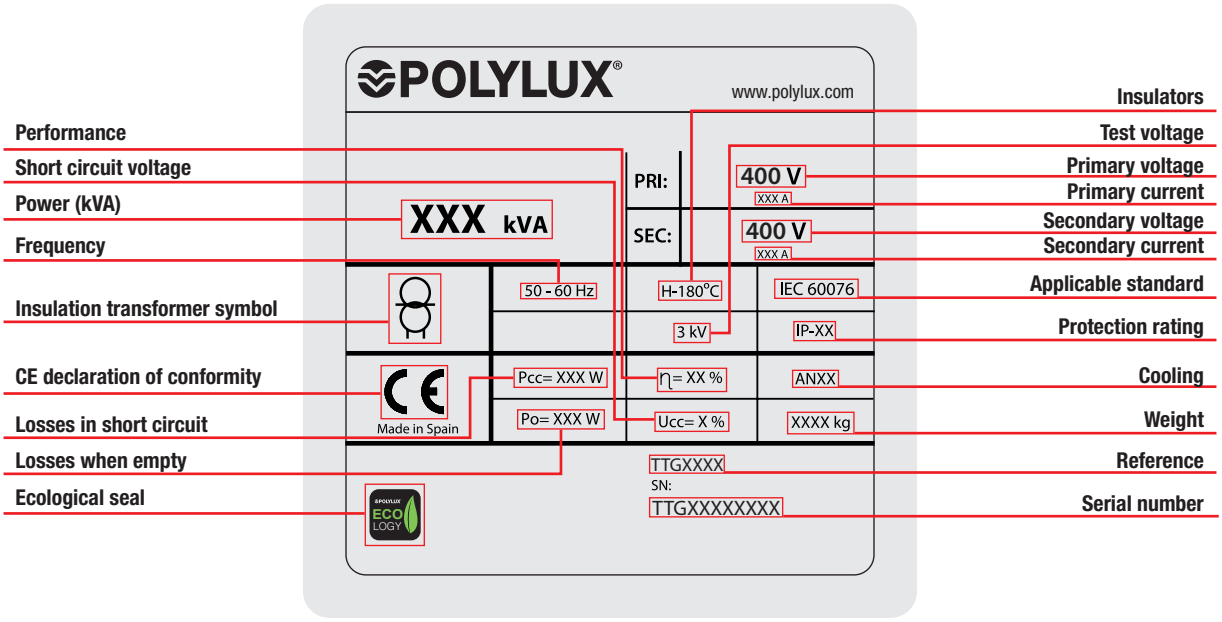
Ecological three-phase isolation · Input **400 V** · Output **400 V** + N

Feature plate structure

Label up to 31,5 kVA:



Label from 40 kVA:



TTF SERIES

Input **800 V** +N · Output **400 V** +N

Definition and applications

Definition and applications

Our TTF series are three-phase isolation transformers designed for continuous operation at maximum output 365 days a year. This guarantees power is supplied to the installations or equipment they supply.

Applications:

- The main use of TTF transformers is for the galvanic isolation of three-phase solar installations.
- In installations with a certain level of electrical noise, the TTF series helps improve the electrical network quality in secondary.
- Generation of ground-referenced neutrals.

Manufacturing characteristics

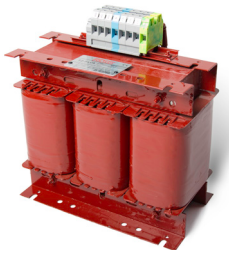
- All the transformers are dipped in anti-flash varnish and then compacted in the furnace. This process increases the insulation grade, reduces noise and provides anti-moisture, waterproofed protection
- The high power transformers are manufactured with format cores and low loss properties, thus contributing to improving performance.
- All the transformers are checked automatically one by one and the compliance test report is created in accordance with the corresponding standard.

Recommendation for selecting the best transformer in terms of use and installation location

Main compliance properties based on model	 Encapsulated in resin	 IP00 Air	 Oil
Non-flammable	✓	✗	✗
Self-extinguishing.	✓	✗	✗
No safety measures against the risk of explosion	✓	✓	✗
No special installation conditions	✓	✓	✗
Protected against damp, saline and corrosive environments	✓	✗	✓
Greater resistance to overload and transient harmonics	✓	✗	✗
No maintenance	✓	✓	✗
No risk of contamination	✓	✓	✗

Considerations

- The IP00 (air) can be installed in control cabinets with all the necessary protections and in dry places, which is more economical.
- Both models (encapsulated and IP00) can be protected with metallic enclosures up to IP65.
- In addition, the **ECOLOGICAL** transformer can be manufactured in both models, with different properties such as lower consumption, thus achieving fast amortisation.
- The transformer with the best properties is the transformer encapsulated in fire retardant resin.



TTFX

· IP00 protection rating.
· Power from 0.63 kVA to 1000 kVA.
· Total impregnated in anti-flash varnish.
· Hoisting elements included.

TTFW

· IP23 rating (IK08).
· Power from 0.63 kVA to 1000 kVA.
· Metal box painted with RAL7035 polyester resin.
· High resistance to corrosion.
· Hoisting elements included.
· Detachable top and front cover.
· Cable outlet with cable gland.

TTFZ

· IP65 hasta 31,5 kVA IP54 desde 40 kVA (IK10).
· Power from 0.63 kVA to 1000 kVA.
· Metal box painted with RAL7035 polyester resin.
· High resistance to corrosion.
· Hoisting elements included.
· Detachable top cover.
· Stuffing box cover for cable input depending on installation needs.
· With silentblock.

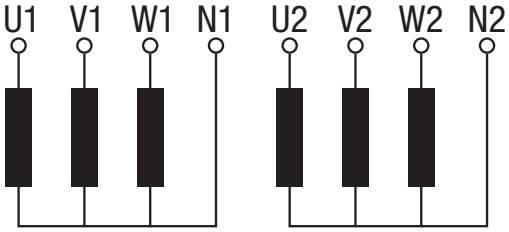
TTF SERIES

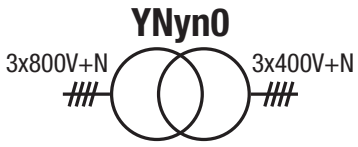
Input **800 V** +N · Output **400 V** +N

Technical features - standard model

Rating	**0.63 kVA a 1000 kVA**
Standard voltage	**Input 800 V and N // Output 400 V and N.**
Standard frequency	**50-60 Hz**
Connection unit	**YNyn0**
Insulators	**Class H - 180 ºC**
Temperature rise	**Class F ≤ 31.5 kVA (25 kVA TTFZ)** **Class H ≥ 40 kVA (31.5 kVA TTFZ)** *More information in Technical Appendix (T.A.1)
Windings	**Class HC-200 ºC**
Safety class	**I**
Altitude	**1000 m**
Enclosure colour	**RAL 7035**
IP rating	**IP00 (TTFX)** **IP23 (TTFW)** **IP65 up to 31,5 kVA IP54 from 40 kVA (TTFZ))**
IK rating	**IK08 (TTFW) // IK10 (TTFZ)**
Paint class (ISO 12944)	**C3 (TTFW) // C4 (TTFZ)**
Room temperature	**45 ºC**
Standards	**IEC/EN 61558, CE up to 31.5 kVA** **IEC/EN 60076, CE from 40 kVA**
Test voltage	**3 kV (1 min, 50 Hz)**
Inrush	**< 12 In**
Ucc	**≤ 4 %**
K factor	**4**
Operation	**Continuous**
Cooling	**AN (TTFX) - ANAN (TTFW / TTFZ IP65) - ANAF (≥500kVA TTFW / TTFZ IP54)**
Hoisting accessories	**Hoisting elements included**

Electrical diagram





Theoretical data - standard model

Power kVA	Reference	Insulation class	Current A		Protections A		Noise dB	Cable gland	
			Input	Output	Input	Output		ø max. (mm)	Quantity
TTFX									
0.63	**TTFX0.63**	F	0.5	0.9	2 (D/aM)	1 (C/gG)	≤45	-	-
1	**TTFX1**	F	0.7	1.4	2 (D/aM)	1.6 (C/gG)	≤45	-	-
2	**TTFX2**	F	1.4	2.9	3 (D/aM)	3 (C/gG)	≤45	-	-
2.5	**TTFX2.5**	F	1.8	3.6	4 (D/aM)	3 (C/gG)	≤45	-	-
3.15	**TTFX3.15**	F	2.3	4.5	6 (D/aM)	4 (C/gG)	≤45	-	-
4	**TTFX4**	F	2.9	5.8	10 (D/aM)	5 (C/gG)	≤45	-	-
5	**TTFX5**	F	3.6	7.2	10 (D/aM)	6 (C/gG)	≤45	-	-
6.3	**TTFX6.3**	F	4.5	9.1	10 (D/aM)	10 (C/gG)	≤45	-	-
8	**TTFX8**	F	5.8	11.5	16 (D/aM)	12 (C/gG)	≤45	-	-
10	**TTFX10**	F	7.2	14.4	16 (D/aM)	16 (C/gG)	≤45	-	-
12.5	**TTFX12.5**	F	9.0	18.0	20 (D/aM)	16 (C/gG)	≤45	-	-
16	**TTFX16**	F	11.5	23.1	25 (D/aM)	20 (C/gG)	≤45	-	-
20	**TTFX20**	F	14.4	28.9	32 (D/aM)	25 (C/gG)	≤45	-	-
25	**TTFX25**	F	18.0	36.1	40 (D/aM)	32 (C/gG)	≤45	-	-
31.5	**TTFX31.5**	F	22.7	45.5	50 (D/aM)	40 (C/gG)	≤45	-	-
40	**TTFX40**	H	28.9	57.7	63 (D/aM)	50 (C/gG)	≤55	-	-
50	**TTFX50**	H	36.1	72.2	80 (D/aM)	63 (C/gG)	≤55	-	-
63	**TTFX63**	H	45.5	90.9	100 (D/aM)	80 (C/gG)	≤55	-	-
80	**TTFX80**	H	57.7	115.5	125 (D/aM)	100 (C/gG)	≤55	-	-
100	**TTFX100**	H	72.2	144.3	160 (D/aM)	125 (C/gG)	≤55	-	-
125	**TTFX125**	H	90.2	180.4	200 (D/aM)	160 (C/gG)	≤55	-	-
160	**TTFX160**	H	115.5	230.9	300 (D/aM)	200 (C/gG)	≤55	-	-
200	**TTFX200**	H	144.3	288.7	300 (D/aM)	250 (C/gG)	≤55	-	-
250	**TTFX250**	H	180.4	360.8	400 (D/aM)	300 (C/gG)	≤65	-	-
315	**TTFX315**	H	227.3	454.7	500 (D/aM)	400 (C/gG)	≤65	-	-
400	**TTFX400**	H	288.7	577.4	600 (D/aM)	500 (C/gG)	≤65	-	-
500	**TTFX500**	H	360.8	721.7	800 (D/aM)	630 (C/gG)	≤65	-	-
630	**TTFX630**	H	454.7	909.3	1000 (D/aM)	800 (C/gG)	≤65	-	-
800	**TTFX800**	H	577.4	1154.7	1200 (D/aM)	1000 (C/gG)	≤65	-	-
1000	**TTFX1000**	H	721.7	1443.4	1600 (D/aM)	1250 (C/gG)	≤65	-	-

TTF SERIES

Input **800 V** +N · Output **400 V** +N

Theoretical data - standard model

Power kVA	Reference	Insulation class	Current A		Protections A		Noise dB	Cable gland (TTDW) Stuffing boxes (TTDZ)	
			Input	Output	Input	Output		ø max. (mm)	Quantity
TTFW									
0,63	**TTFW0.63**	F	0.5	0.9	2 (D/aM)	1 (C/gG)	≤45	14	2
1	**TTFW1**	F	0.7	1.4	2 (D/aM)	1.6 (C/gG)	≤45	14	2
2	**TTFW2**	F	1.4	2.9	3 (D/aM)	3 (C/gG)	≤45	14	2
2,5	**TTFW2.5**	F	1.8	3.6	4 (D/aM)	3 (C/gG)	≤45	18	2
3,15	**TTFW3.15**	F	2.3	4.5	6 (D/aM)	4 (C/gG)	≤45	18	2
4	**TTFW4**	F	2.9	5.8	10 (D/aM)	5 (C/gG)	≤45	18	2
5	**TTFW5**	F	3.6	7.2	10 (D/aM)	6 (C/gG)	≤45	18	2
6,3	**TTFW6.3**	F	4.5	9.1	10 (D/aM)	10 (C/gG)	≤45	25	4
8	**TTFW8**	F	5.8	11.5	16 (D/aM)	12 (C/gG)	≤45	25	4
10	**TTFW10**	F	7.2	14.4	16 (D/aM)	16 (C/gG)	≤45	32	4
12,5	**TTFW12.5**	F	9.0	18.0	20 (D/aM)	16 (C/gG)	≤45	32	4
16	**TTFW16**	F	11.5	23.1	25 (D/aM)	20 (C/gG)	≤45	32	4
20	**TTFW20**	F	14.4	28.9	32 (D/aM)	25 (C/gG)	≤45	32	4
25	**TTFW25**	F	18.0	36.1	40 (D/aM)	32 (C/gG)	≤45	32	4
31,5	**TTFW31.5**	F	22.7	45.5	50 (D/aM)	40 (C/gG)	≤45	32	4
40	**TTFW40**	H	28.9	57.7	63 (D/aM)	50 (C/gG)	≤55	32	8
50	**TTFW50**	H	36.1	72.2	80 (D/aM)	63 (C/gG)	≤55	32	8
63	**TTFW63**	H	45.5	90.9	100 (D/aM)	80 (C/gG)	≤55	32	8
80	**TTFW80**	H	57.7	115.5	125 (D/aM)	100 (C/gG)	≤55	32	8
100	**TTFW100**	H	72.2	144.3	160 (D/aM)	125 (C/gG)	≤55	32	8
125	**TTFW125**	H	90.2	180.4	200 (D/aM)	160 (C/gG)	≤55	44	8
160	**TTFW160**	H	115.5	230.9	300 (D/aM)	200 (C/gG)	≤55	44	8
200	**TTFW200**	H	144.3	288.7	300 (D/aM)	250 (C/gG)	≤55	44	8
250	**TTFW250**	H	180.4	360.8	400 (D/aM)	300 (C/gG)	≤65	44	8
315	**TTFW315**	H	227.3	454.7	500 (D/aM)	400 (C/gG)	≤65	44	8
400	**TTFW400**	H	288.7	577.4	600 (D/aM)	500 (C/gG)	≤65	44	8
500	**TTFW500**	H	360.8	721.7	800 (D/aM)	630 (C/gG)	≤65	44	8
630	**TTFW630**	H	454.7	909.3	1000 (D/aM)	800 (C/gG)	≤65	44	8
800	**TTFW800**	H	577.4	1154.7	1200 (D/aM)	1000 (C/gG)	≤65	44	8
1000	**TTFW1000**	H	721.7	1443.4	1600 (D/aM)	1250 (C/gG)	≤65	44	8
TTFZ									
0,63	**TTFZ0.63**	F	0.5	0.9	2 (D/aM)	1 (C/gG)	≤45	10 - 14	2
1	**TTFZ1**	F	0.7	1.4	2 (D/aM)	1.6 (C/gG)	≤45	10 - 14	2
2	**TTFZ2**	F	1.4	2.9	3 (D/aM)	3 (C/gG)	≤45	10 - 14	2
2,5	**TTFZ2.5**	F	1.8	3.6	4 (D/aM)	3 (C/gG)	≤45	18 - 25	2
3,15	**TTFZ3.15**	F	2.3	4.5	6 (D/aM)	4 (C/gG)	≤45	18 - 25	2
4	**TTFZ4**	F	2.9	5.8	10 (D/aM)	5 (C/gG)	≤45	18 - 25	2
5	**TTFZ5**	F	3.6	7.2	10 (D/aM)	6 (C/gG)	≤45	18 - 25	2
6,3	**TTFZ6.3**	F	4.5	9.1	10 (D/aM)	10 (C/gG)	≤45	18 - 25	2
8	**TTFZ8**	F	5.8	11.5	16 (D/aM)	12 (C/gG)	≤45	18 - 25	2
10	**TTFZ10**	F	7.2	14.4	16 (D/aM)	16 (C/gG)	≤45	22 - 32	2
12,5	**TTFZ12.5**	F	9.0	18.0	20 (D/aM)	16 (C/gG)	≤45	22 - 32	2
16	**TTFZ16**	F	11.5	23.1	25 (D/aM)	20 (C/gG)	≤45	22 - 32	2
20	**TTFZ20**	F	14.4	28.9	32 (D/aM)	25 (C/gG)	≤45	22 - 32	2
25	**TTFZ25**	F	18.0	36.1	40 (D/aM)	32 (C/gG)	≤45	22 - 32	2
31,5	**TTFZ31.5**	F	22.7	45.5	50 (D/aM)	40 (C/gG)	≤45	22 - 32	2
40	**TTFZ40**	H	28.9	57.7	63 (D/aM)	50 (C/gG)	≤55	22 - 32	2
50	**TTFZ50**	H	36.1	72.2	80 (D/aM)	63 (C/gG)	≤55	22 - 32	2
63	**TTFZ63**	H	45.5	90.9	100 (D/aM)	80 (C/gG)	≤55	22 - 32	2
80	**TTFZ80**	H	57.7	115.5	125 (D/aM)	100 (C/gG)	≤55	22 - 32	2
100	**TTFZ100**	H	72.2	144.3	160 (D/aM)	125 (C/gG)	≤55	22 - 32	2
125	**TTFZ125**	H	90.2	180.4	200 (D/aM)	160 (C/gG)	≤55	34 - 44	2
160	**TTFZ160**	H	115.5	230.9	300 (D/aM)	200 (C/gG)	≤55	34 - 44	2
200	**TTFZ200**	H	144.3	288.7	300 (D/aM)	250 (C/gG)	≤55	34 - 44	2
250	**TTFZ250**	H	180.4	360.8	400 (D/aM)	300 (C/gG)	≤65	34 - 44	2
315	**TTFZ315**	H	227.3	454.7	500 (D/aM)	400 (C/gG)	≤65	34 - 44	2
400	**TTFZ400**	H	288.7	577.4	600 (D/aM)	500 (C/gG)	≤65	34 - 44	2
500	**TTFZ500**	H	360.8	721.7	800 (D/aM)	630 (C/gG)	≤65	34 - 44	2
630	**TTFZ630**	H	454.7	909.3	1000 (D/aM)	800 (C/gG)	≤65	34 - 44	2
800	**TTFZ800**	H	577.4	1154.7	1200 (D/aM)	1000 (C/gG)	≤65	34 - 44	2
1000	**TTFZ1000**	H	721.7	1443.4	1600 (D/aM)	1250 (C/gG)	≤65	34 - 44	2

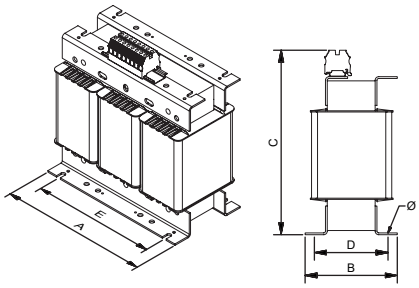
TTF SERIES

Input **800 V** +N · Output **400 V** +N

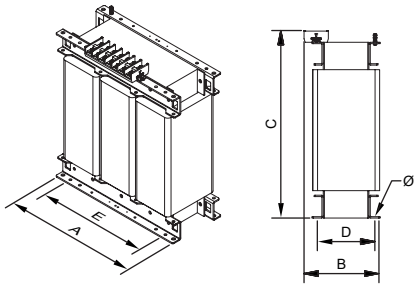
Measurements

Power kVA	Reference	External dimensions mm			Fastening elements mm			Weight kg
		A	B	C	D	E	Ø	
TTFX								
0,63	**TTFX0.63**	150	94	178	66	125	6	5,9
1	**TTFX1**	180	94	203	76	150	6	9,5
2	**TTFX2**	240	145	253	125	200	9	20
2,5	**TTFX2.5**	300	124	303	115	250	9	23,9
3,15	**TTFX3.15**	300	134	303	125	250	9	27,4
4	**TTFX4**	300	154	303	145	250	9	36
5	**TTFX5**	300	164	303	155	250	9	40,4
6,3	**TTFX6.3**	360	144	353	122	300	11	55
8	**TTFX8**	360	164	353	142	300	11	67
10	**TTFX10**	420	170	419	136	350	11	78
12,5	**TTFX12.5**	420	190	419	156	350	11	94
16	**TTFX16**	480	250	480	144	400	11	105
20	**TTFX20**	480	270	480	164	400	11	125
25	**TTFX25**	480	290	480	184	400	11	145
31,5	**TTFX31.5**	480	310	480	204	400	11	162
40	**TTFX40**	670	280	615	170	426	13	191
50	**TTFX50**	670	300	615	190	426	13	233
63	**TTFX63**	670	320	690	210	426	13	277
80	**TTFX80**	670	340	690	230	426	13	320
100	**TTFX100**	670	360	690	250	426	13	368
125	**TTFX125**	785	550	880	460	472	17	462
160	**TTFX160**	785	550	880	460	472	17	560
200	**TTFX200**	785	550	880	460	472	17	660
250	**TTFX250**	1016	550	1080	460	690	17	808
315	**TTFX315**	1070	550	1220	460	690	17	1000
400	**TTFX400**	1070	550	1220	460	690	17	1092
500	**TTFX500**	1300	550	1350	460	800	17	1658
630	**TTFX630**	1300	600	1350	460	800	17	2000
800	**TTFX800**	1300	700	1350	600	800	17	2413
1000	**TTFX1000**	1300	800	1350	600	800	17	2993

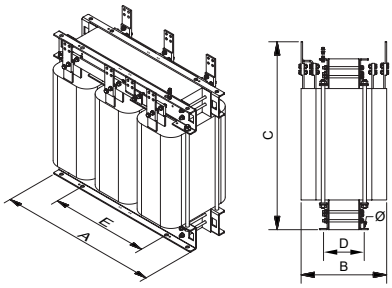
TTFX IP00



From 0,63 kVA to 12,5 kVA



From 16 kVA to 200 kVA



From 250 kVA

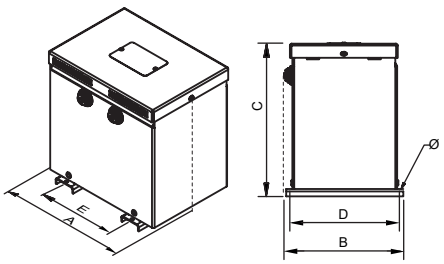
TTF SERIES

Input **800 V** +N · Output **400 V** +N

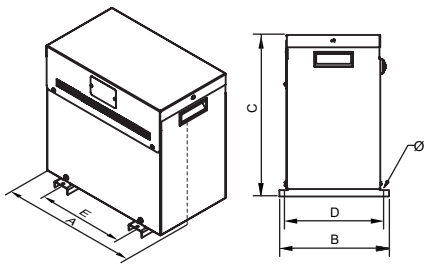
Measurements

Power kVA	Reference	External dimensions mm			Fastening elements mm			Weight kg
		A	B	C	D	E	Ø	
TTFW								
0,63	**TTFW0.63**	196	175	220	165	100	6	11
1	**TTFW1**	240	190	250	180	150	6	12
2	**TTFW2**	320	230	315	205	200	6	26
2,5	**TTFW2.5**	387	260	382	245	250	6	29
3,15	**TTFW3.15**	387	260	382	245	250	6	34
4	**TTFW4**	387	260	382	245	250	6	42
5	**TTFW5**	387	260	382	245	250	6	46
6,3	**TTFW6.3**	460	340	501	300	300	12	56
8	**TTFW8**	460	340	501	300	300	12	67
10	**TTFW10**	549	424	644	375	345	12	94
12,5	**TTFW12.5**	549	424	644	375	345	12	128
16	**TTFW16**	616	424	710	375	345	12	128
20	**TTFW20**	616	424	710	375	345	12	167
25	**TTFW25**	616	424	710	375	345	12	167
31,5	**TTFW31.5**	616	424	710	375	345	12	187
40	**TTFW40**	815	555	975	500	415	12	240
50	**TTFW50**	815	555	975	500	415	12	283
63	**TTFW63**	815	555	975	500	415	12	310
80	**TTFW80**	815	555	975	500	415	12	386
100	**TTFW100**	815	555	975	500	415	12	405
125	**TTFW125**	990	682	1250	582	470	18	530
160	**TTFW160**	990	682	1250	582	470	18	568
200	**TTFW200**	990	682	1250	582	470	18	714
250	**TTFW250**	1215	772	1555	672	690	18	923
315	**TTFW315**	1215	772	1555	672	690	18	1102
400	**TTFW400**	1215	772	1555	672	690	18	1283
500	**TTFW500**	1812	1000	1791	900	800	20	1882
630	**TTFW630**	1812	1000	1791	900	800	20	2353
800	**TTFW800**	1812	1000	1791	900	800	20	867
1000	**TTFW1000**	1812	1000	1791	900	800	20	3225

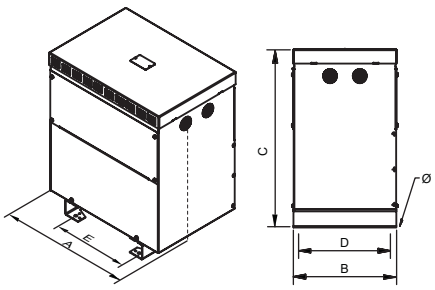
TTFW IP23



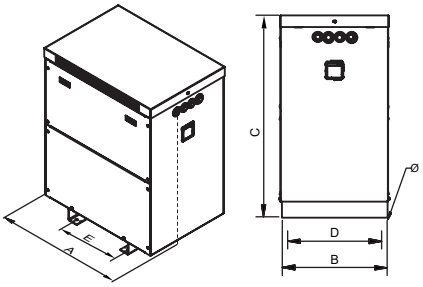
Up to 2 kVA



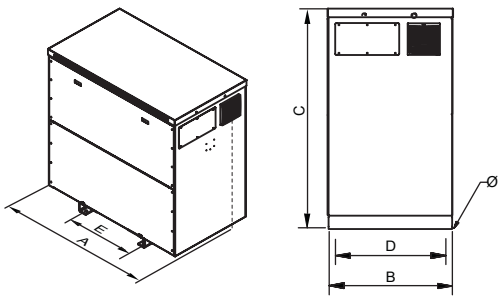
From 2,5 kVA up to 8 kVA



From 10 kVA up to 31,5 kVA



From 40 kVA up to 400 kVA



From 500 kVA

Sectioned

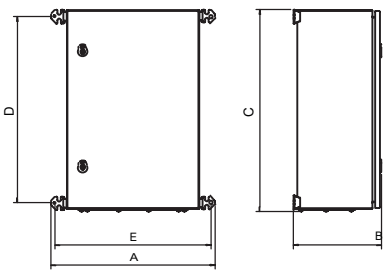
TTF SERIES

Input **800 V** +N · Output **400 V** +N

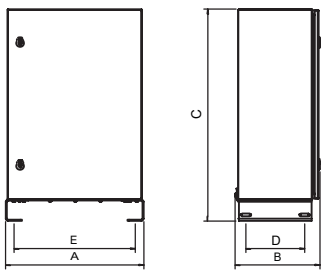
Measurements

Power kVA	Reference	External dimensions mm			Fastening elements mm			Weight kg
		A	B	C	D	E	Ø	
TTFZ								
0,63	**TTFZ0.63**	395	217	408	360	370	10.5	18
1	**TTFZ1**	395	217	408	360	370	10.5	30
2	**TTFZ2**	513	316	778	220	450	13	45
2,5	**TTFZ2.5**	513	316	778	220	450	13	49
3,15	**TTFZ3.15**	513	316	778	220	450	13	57
4	**TTFZ4**	513	316	778	220	450	13	62
5	**TTFZ5**	613	316	878	220	550	13	74
6,3	**TTFZ6.3**	613	316	878	220	550	13	85
8	**TTFZ8**	745	413	735	370	350	11	111
10	**TTFZ10**	745	413	735	370	350	11	126
12,5	**TTFZ12.5**	745	413	735	370	350	11	142
16	**TTFZ16**	745	413	735	370	350	11	161
20	**TTFZ20**	745	413	735	370	350	11	181
25	**TTFZ25**	745	413	735	370	350	11	200
31,5	**TTFZ31.5**	745	413	735	370	350	11	208
40	**TTFZ40**	968	621	1150	500	426	12	267
50	**TTFZ50**	968	621	1150	500	426	12	309
63	**TTFZ63**	968	621	1150	500	426	12	337
80	**TTFZ80**	968	621	1150	500	426	12	386
100	**TTFZ100**	968	621	1150	500	426	12	432
125	**TTFZ125**	968	621	1150	500	426	12	527
160	**TTFZ160**	1040	892	1374	714	485	18	647
200	**TTFZ200**	1040	892	1374	714	485	18	793
250	**TTFZ250**	1532	1000	1755	806	684	18	1042
315	**TTFZ315**	1532	1000	1755	806	684	18	1221
400	**TTFZ400**	1532	1000	1755	806	684	18	1402
500	**TTFZ500**	1950	1093	1797	900	790	20	1940
630	**TTFZ630**	1950	1093	1797	900	790	20	2411
800	**TTFZ800**	1950	1093	1797	900	790	20	924
1000	**TTFZ1000**	1950	1093	1797	900	790	20	3283

TTFZ IP65

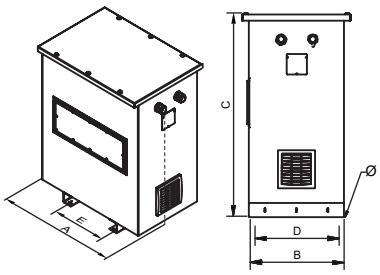


Up to 1 kVA

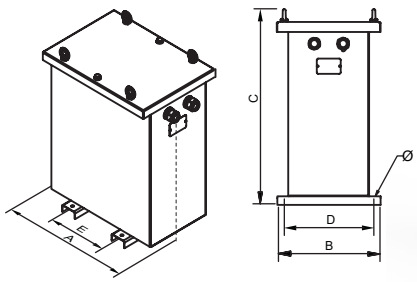


From 2 kVA up to 6,3 kVA

TTFZ IP54

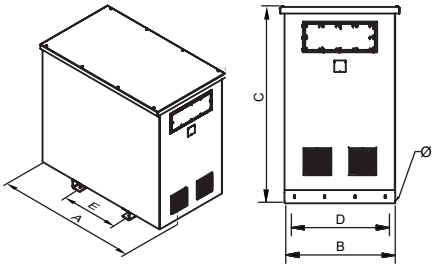


From 40 kVA up to 400 kVA



From 8 kVA up to 31,5 kVA

Sectioned



From 500 kVA

TTF SERIES

Input **800 V** +N · Output **400 V** +N

On-request manufacturing options (please see prices)

Power	**From 0.15 kVA to 1000 kVA**
Voltage	**From 1 V to 12 kV**
Windings	**Copper or aluminium**
Frequency	**From 50 Hz to 400 Hz**
Connection unit	**Yyn0, Dyn11, Dd0, Dy1, Dyn5, YNd1/5/11... (See Technical Appendix T.A.2)**
IP rating	**IP00, IP20, IP23, IP31, IP42, IP54, IP55 and IP65**
IK rating	**IK08 and IK10**
Room temperature	**Up to 60 ºC**
Locks	**Screw, key**
Test voltage	**Up to 28 kV**
Short circuit voltage	**From 2% to 9%**
Losses	**Low losses, ecological**
Operation	**Intermittent, continuous**
Cooling	**Natural, forced ventilation**
Electrostatic shield	**Up to three shields**
Safety class	**I, II**
Altitude	**Up to 4000 m**
Protections	**In both primary and secondary (figure 1)**
Temperature sensors	**PT100 (figure 2), PTC (figure 3) or bimetallic**
Temperature control	**Temperature control station (4xPT100) (figure 4), PTC thermal relays (3xPTC / 6xPTC)**
Network analyser	**(Figure 5)**
Anti condensation system	**Hygrostat**
Heating system	**Heating elements**
External protection	**Anti-flash varnish, resin encapsulated, metal or stainless steel enclosure**
Transportation and hoisting	**Wheels (figure 6), lifting points**
Paint	**C3, C4, C5, different RAL**
Feature plate	**High generation polymer or stainless steel (figure 7)**
Anti vibration system	**Silentblock**
Adjustment	**-10%; -7.5%; -5%; -2.5%; +2.5%; +5%; +7.5%; +10% With bridges (figure 8) or selector (figure 9)**
Certified	**CE, DNV-GL, BV, UL (insulation) and POLYLUX laboratory**
Climate class / environment / fire	**Up to C2-E2-F1**

Figure 1

Figure 2

Figure 3

Figure 4

Figure 5

Figure 6

Figure 7

Figure 8

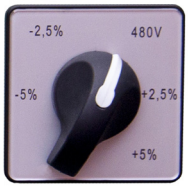


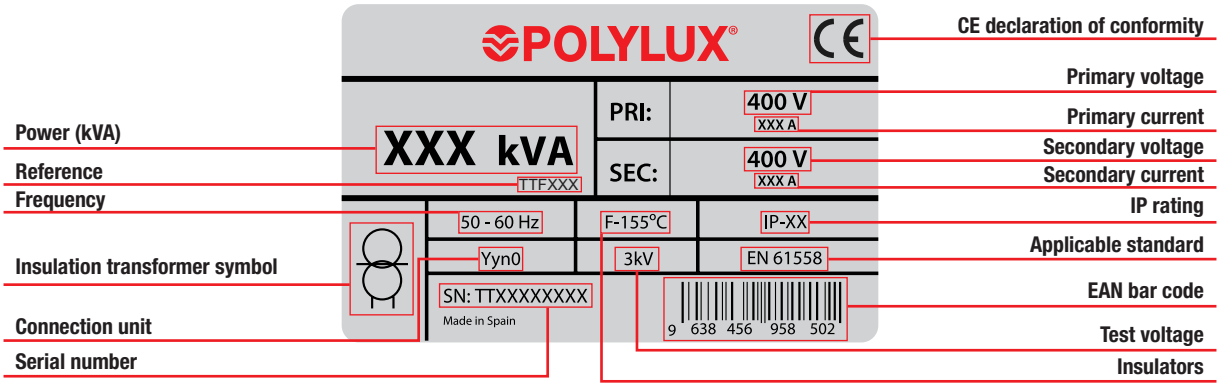
Figure 9

TTF SERIES

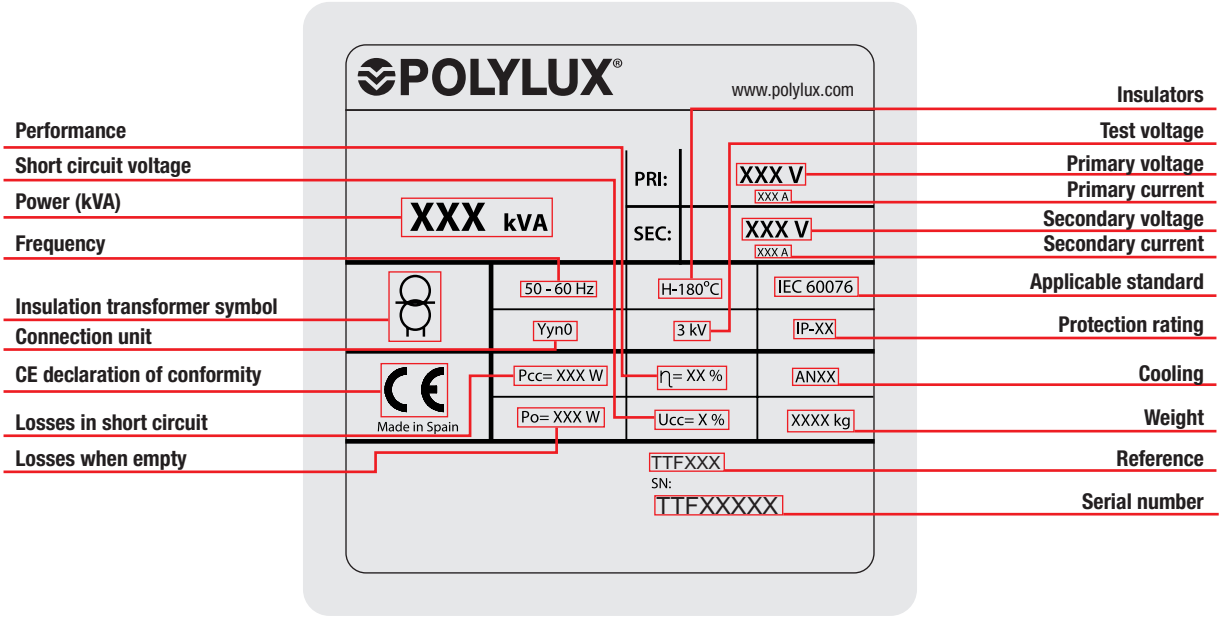
Input **800 V** +N · Output **400 V** +N

Feature plate structure

Label up to 31,5 kVA:



Label from 40 kVA:



PAU SERIES

Reversible · For voltage changes **400 / 230 V**

Definition and applications

The PAU SERIES single-phase autotransformers have a robust, modern design and are perfect for working with continuous power to supply industrial, tertiary and residential installations and machinery. Due to its design, it has an IP20 rating that prevents direct electrical contact and protects windings perfectly.
This autotransformer can make voltage changes from 400 V to 230 V and from 230 V to 400 V or other voltages on request in single-phase installations.

Manufacturing characteristics

All the versions have the following features in common:

- Anti-flash dip varnishing. Ensures greater compactation, insulation and noise elimination.
- Option of installing on **DIN rail up to 630 VA**.
- Convertible from Class I to Class II (up to 6300 VA)
- LED indicator lamp.
- All the transformers are checked automatically one by one and the compliance test report is created in accordance with the corresponding standard.

Up to 6300 VA

- Technical polymer box.
- UL 94 V-0 flame retardant material.
- Protective terminal cover to prevent direct contact.
- Ventilation ducts at the top and along the perimeter.
- Feature label with all the connection and protection instructions.

From 8000 VA

- Epoxy painted metal box resistant to all types of damp and corrosive atmospheres.
- Protective terminal cover to prevent direct contact.
- Ventilation ducts along the box perimeter.
- Feature label with all the connection and protection instructions.

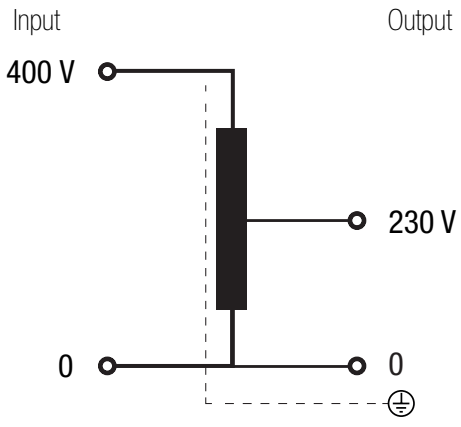
NEW head design

- Increased wiring insulation.
- Clearer features.
- Easier connection.
- More uniform, compact and robust design.

Technical features - standard model

Rating	**100 VA a 12500 VA**
Insulators	**Class H - 180 ºC**
Temperature rise	**Class B**
Winding	**Class HC - 200 ºC**
Room temperature	**45 ºC**
Frequency	**50-60 Hz**
Noise	**≤ 65 dB (PTU1P), ≤ 80 dB (PTU3P)**
Protection rating	**IP20**
Cooling	**ANAN**
Includes	**LED indicator lamp**
Mounting	**With screws (for all powers)** **Mounting on DIN 46277/3 rail (up to 630 VA)**
Standards	**IEC/EN/UNE-EN 61558, CE**
Protection	**Convertible from Class I to Class II (up to 6300 VA)**
Operation	**Continuous**
Test voltage	**3 kV (1 min, 50 Hz)**

Electrical diagram

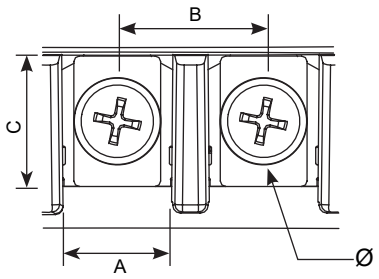


PAU SERIES

Reversible · For voltage changes **400 / 230 V**

Terminal types

Terminal blocks	External mm				Maximum tightening torque N·m	Primary Power VA		Secondary Power VA	
	A	B	C	Ø		From	To	From	To
Terminal M3	8	11	9	M3	0.5	100	200	100	200
Terminal M4	10	13.5	12	M4	1.1	315	2500	315	630
Terminal M5	15	18.5	14	M5	2.5	3150	12500	1000	2500
Terminal M6	15.5	20.4	13	M6	4	-	-	3150	12500



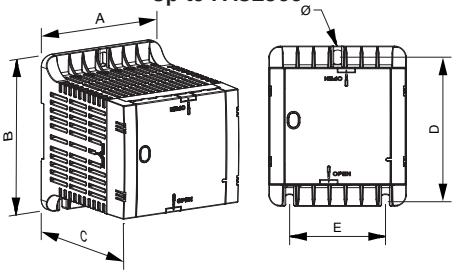
Theoretical data - standard model

Power VA	Reference	Input current	Output current	Maximum cross-section input conductor (mm²)		Maximum cross-section output conductor (mm²)		Input protections (A) (MCB -> D / Fuse -> aM)	Output protections (A) (MCB -> C / Fuse -> gG)
		400 V	230 V	Flexible	Rigid	Flexible	Rigid		
100	**PAU100**	0.25	0.43	0.5	0.5	0.5	1	0.5	0.4
200	**PAU200**	0.50	0.87	0.5	1	0.5	1	1	0.8
315	**PAU315**	0.79	1.37	0.5	1	0.5	1	2	1
400	**PAU400**	1.00	1.74	0.5	1	1	1.5	2	1.6
500	**PAU500**	1.25	2.17	0.5	1	1	1.5	3	2
630	**PAU630**	1.58	2.74	1	1.5	1	1.5	4	2.5
1000	**PAU1000**	2.50	4.35	1	1.5	1.5	2	6	4
2000	**PAU2000**	5.00	8.70	1.5	2	2	2.5	10	8
2500	**PAU2500**	6.25	10.87	1.5	2	2.5	4	16	10
3150	**PAU3150**	7.88	13.70	2	2.5	2.5	4	16	12
4000	**PAU4000**	10.00	17.39	2	2.5	4	-	20	12
5000	**PAU5000**	12.50	21.74	2.5	4	4	-	25	20
6300	**PAU6300**	15.75	27.39	4	-	6	-	40	25
8000	**PAU8000**	20.00	34.78	4	-	8	-	40	32
10000	**PAU10000**	25.00	43.48	4	-	10	-	50	40
12500	**PAU12500**	31.25	54.35	8	-	-	-	80	50

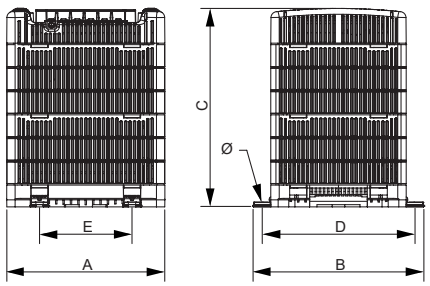
Measurements

Power kVA	Reference	External dimensions mm			Fastening elements mm			Weight kg
		A	B	C	D	E	Ø	
100	**PAU100**	84	101	98	88	55	6	1
200	**PAU200**	84	101	98	88	55	6	1,3
315	**PAU315**	106	123	122	110	74	6	2,4
400	**PAU400**	106	123	122	110	74	6	2,5
500	**PAU500**	106	123	122	110	74	6	2,7
630	**PAU630**	106	123	122	110	74	6	3,6
1000	**PAU1000**	118	138	132	122	88	6	4,9
2000	**PAU2000**	136	162	155	146	104	6	8,4
2500	**PAU2500**	136	162	180	146	104	6	9,8
3150	**PAU3150**	214	225	285	199	175	7	17
4000	**PAU4000**	214	225	285	199	175	7	21
5000	**PAU5000**	214	225	285	199	175	7	27
6300	**PAU6300**	214	225	285	199	175	7	29
8000	**PAU8000**	252	260	348	233	223	7	36
10000	**PAU10000**	252	260	348	233	223	7	45
12500	**PAU12500**	252	260	348	233	223	7	54

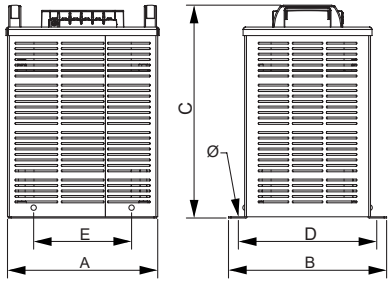
Up to PAU2500



From PAU3150 to PAU6300



From PAU8000



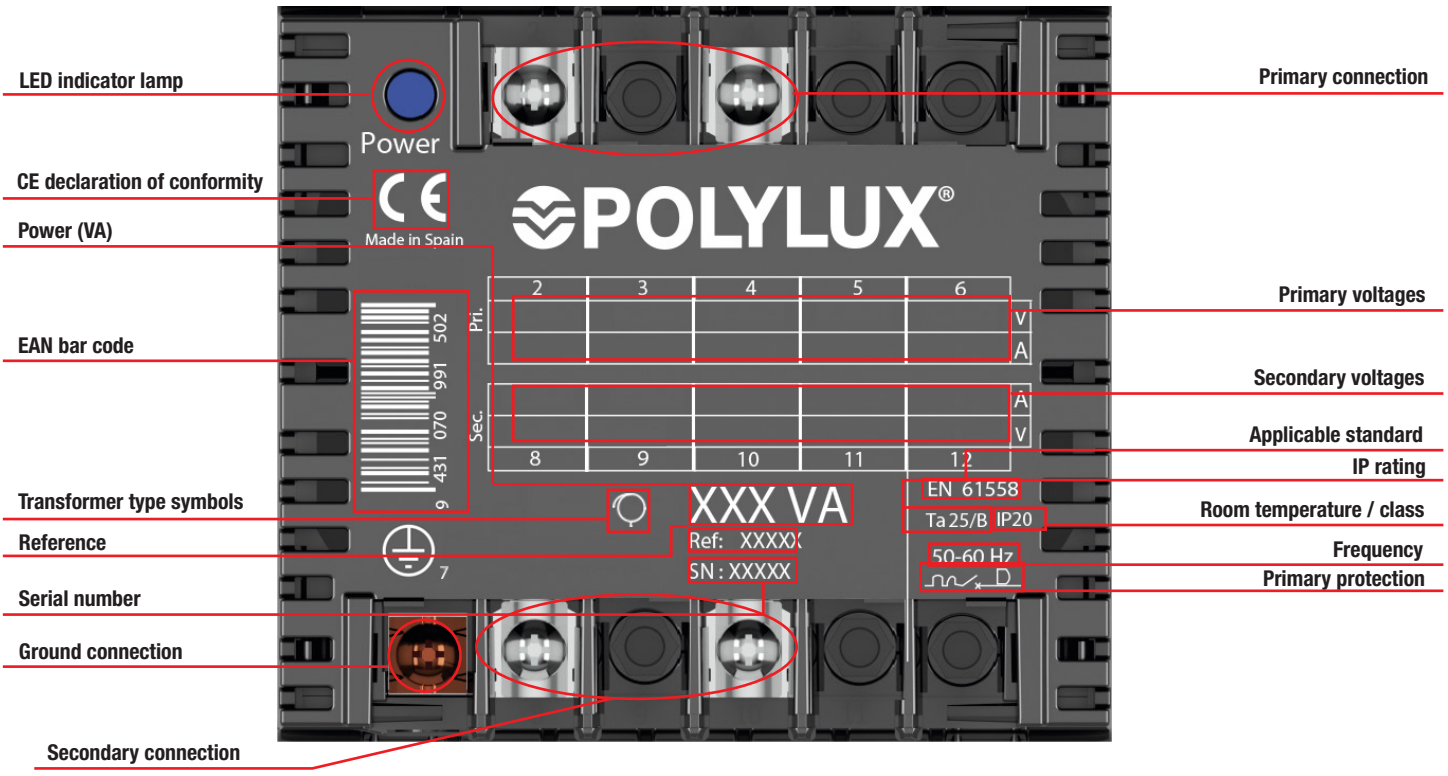
PAU SERIES

Reversible · For voltage changes **400 / 230 V**

On-request manufacturing options (please see prices)

Rating	**From 100 VA to 12500 VA**

Feature plate structure



QAU SERIES

Encapsulated reversible · For voltage changes **400 / 230 V**

Up to 2500 VA.

- Technical polymer box.
- UL 94 V-0 flame retardant material.
- Encapsulated in flame retardant resin.
- Protective terminal cover to prevent direct contact.
- Ventilation ducts at the top.
- Feature label with all the connection and protection instructions.

From 3150 VA.

- Completely encapsulated in flame retardant resin.
- Protective terminal cover to prevent direct contact.
- Feature label with all the connection and protection instructions.

NEW head design

- Increased wiring insulation.
- Clearer features.
- Easier connection.
- More uniform, compact and robust design.

Definition and applications

The QAU single-phase autotransformer series have a robust and modern design and are perfect for continuous operation in supplying industrial, tertiary or residential istallations and machinery. Due to its design, it has an IP20 rating that prevents direct electrical contact and protects windings perfectly.
This autotransformer can make voltage changes from 400 V to 230 V and from 230 V to 400 V or other voltages on request in single-phase installations.

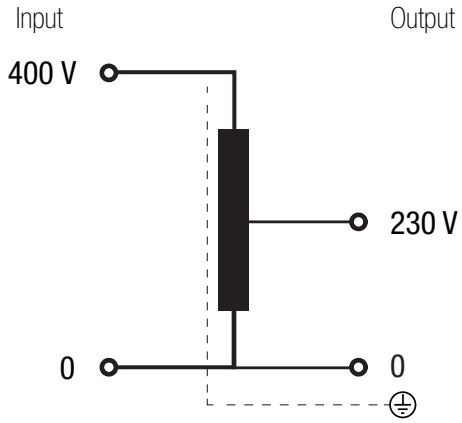
Manufacturing characteristics

- Protected against indirect contacts.
- Convertible from Class I to Class II.
- LED indicator lamp included.
- Optional protective fuse.
- Mounted on **DIN rail (up to 200 VA)** or with screws.
- Option of special fabrications if the standard specification are inadequate.
- Encapsulated in flame retardant resin.
- Protection against damp, saline and corrosive environments.
- Greater mechanical resistance to vibrations, power surges and transient harmonics.
- All the transformers are checked automatically one by one and the compliance test report is created in accordance with the corresponding standard.

Technical features - standard model

Rating	**100 VA to 6300 VA**
Insulators	**Class H - 180 ºC**
Temperature rise	**Class B**
Winding	**Class HC - 200 ºC**
Room temperature	**45 ºC**
Frequency	**50-60 Hz**
Noise	**≤ 65 dB (QTU1P), ≤ 80 dB (QTU3P)**
Protection rating	**IP20**
Cooling	**ANAN**
Includes	**LED indicator lamp**
Mounting	**With screws (for all powers)** **Mounting on DIN 46277/3 rail (up to 200 VA)**
Standards	**IEC/EN/UNE-EN 61558, CE**
Protection	**Convertible from Class I to Class II**
Operation	**Continuous**
Test voltage	**3 kV (1 min, 50 Hz)**

Electrical diagram

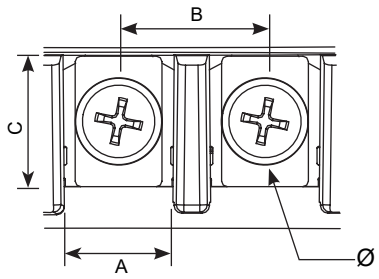


QAU SERIES

Encapsulated reversible · For voltage changes **400 / 230 V**

Terminal types

Terminal blocks	External mm				Maximum tightening torque N·m	Primary Power VA		Secondary Power VA	
	A	B	C	Ø		From	To	From	To
Terminal M3	8	11	9	M3	0.5	100	200	100	200
Terminal M4	10	13.5	12	M4	1.1	315	2500	315	630
Terminal M5	15	18.5	14	M5	2.5	3150	6300	1000	2500
Terminal M6	15.5	20.4	13	M6	4	-	-	3150	6300



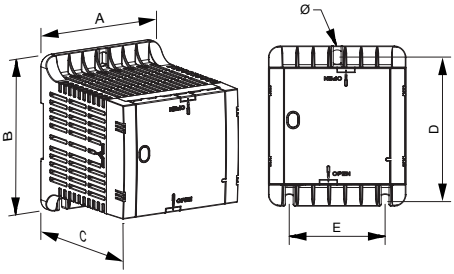
Theoretical data - standard model

Power VA	Reference	Input current	Output current	Maximum cross-section input conductor (mm²)		Maximum cross-section output conductor (mm²)		Input protections (A) (MCB -> D / Fuse -> aM)	Output protections (A) (MCB -> C / Fuse -> gG)
		400 V	230 V	Flexible	Rigid	Flexible	Rigid		
100	**QAU100**	0.25	0.43	0.5	0.5	0.5	1	0.5	0.4
200	**QAU200**	0.50	0.87	0.5	1	0.5	1	1	0.8
315	**QAU315**	0.79	1.37	0.5	1	0.5	1	2	1
400	**QAU400**	1.00	1.74	0.5	1	1	1.5	2	1.6
500	**QAU500**	1.25	2.17	0.5	1	1	1.5	3	2
630	**QAU630**	1.58	2.74	1	1.5	1	1.5	4	2.5
1000	**QAU1000**	2.50	4.35	1	1.5	1.5	2	6	4
2000	**QAU2000**	5.00	8.70	1.5	2	2	2.5	10	8
2500	**QAU2500**	6.25	10.87	1.5	2	2.5	4	16	10
3150	**QAU3150**	7.88	13.70	2	2.5	2.5	4	16	12
4000	**QAU4000**	10.00	17.39	2	2.5	4	-	20	12
5000	**QAU5000**	12.50	21.74	2.5	4	4	-	25	20
6300	**QAU6300**	15.75	27.39	4	-	6	-	40	25

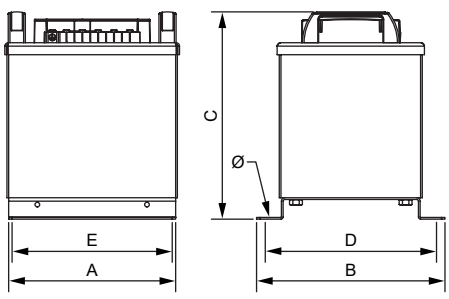
Measurements

Power kVA	Reference	External dimensions mm			Fastening elements mm			Weight kg
		A	B	C	D	E	Ø	
100	**QAU100**	84	101	98	88	55	6	1,4
200	**QAU200**	84	101	98	88	55	6	1,5
315	**QAU315**	106	123	122	110	74	6	3
400	**QAU400**	106	123	122	110	74	6	3,1
500	**QAU500**	106	123	122	110	74	6	3,2
630	**QAU630**	106	123	122	110	74	6	4
1000	**QAU1000**	118	138	132	122	88	6	5,3
2000	**QAU2000**	136	162	155	146	104	6	9,5
2500	**QAU2500**	136	162	180	146	104	6	11
3150	**QAU3150**	233	241	244	219	175	7	25
4000	**QAU4000**	233	241	274	219	175	7	29
5000	**QAU5000**	233	241	314	219	175	7	37
6300	**QAU6300**	233	241	314	219	175	7	38

Up to QAU2500



From QAU3150



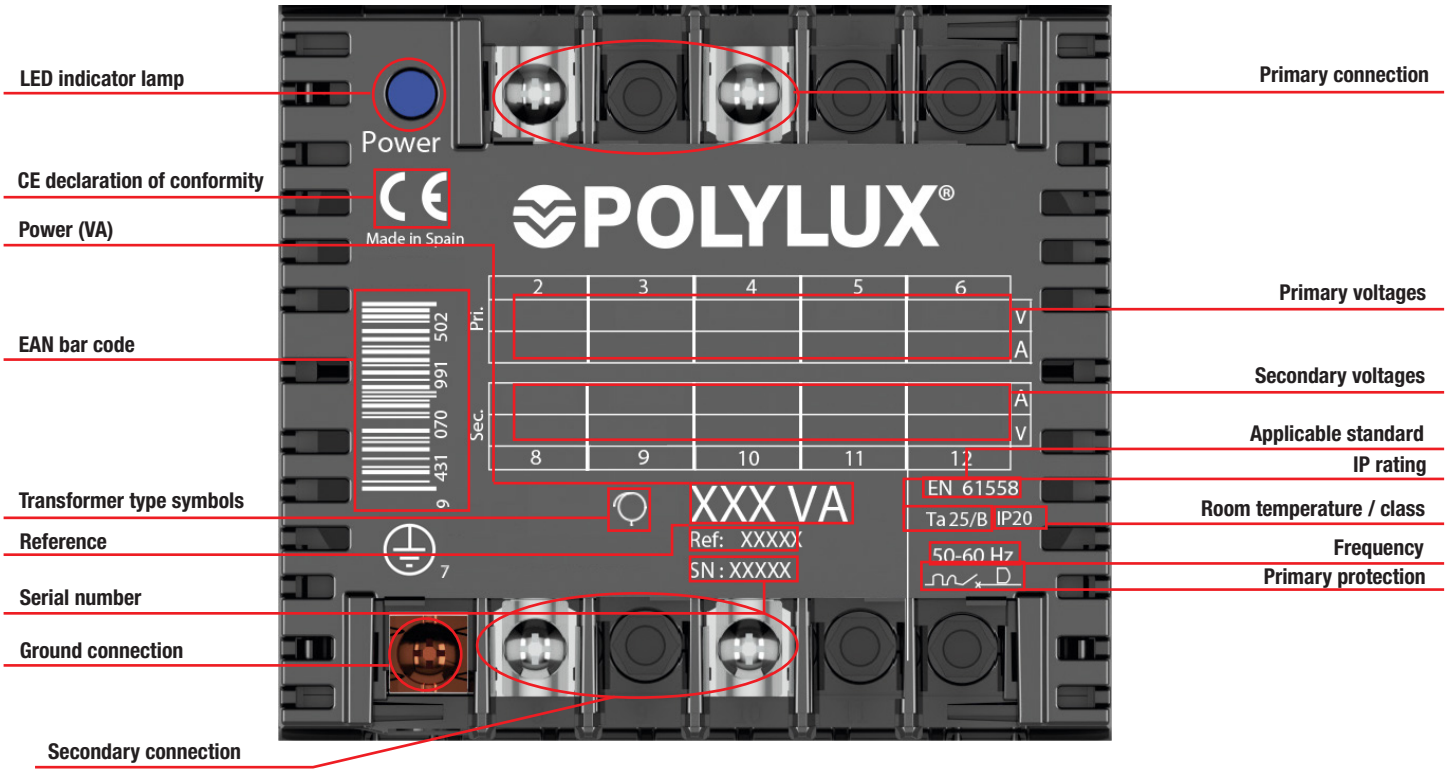
QAU SERIES

Encapsulated reversible · For voltage changes **400 / 230 V**

On-request manufacturing options (please see prices)

Rating	**From 100 VA to 6500 VA**

Feature plate structure



AUR SERIES

Reversible · For voltage changes **220 / 125 V**

Up to 1000 VA

- Made with epoxy resin-painted protective covers.
- Male to male cable included.
- Metal handle included.

From 1500 VA

- Made with epoxy resin-painted protective covers.
- Connection with screw connection strip

Definition and applications

The AUR series are dry, reversible single-phase autotransformers designed to solve problems that arise in connecting industrial and household appliances with different voltages.
Their IP20 rating prevents direct electrical contact and their winding is completely protected.

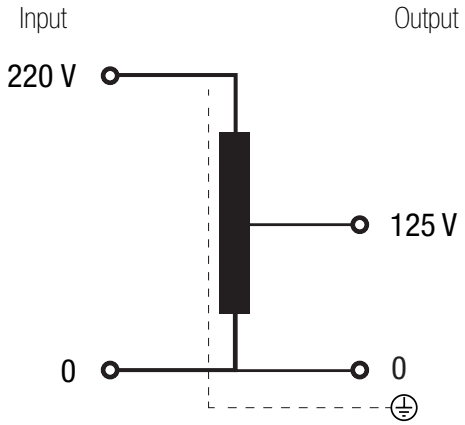
Manufacturing characteristics

- Protected against indirect contacts.
- Core protected against corrosion.

Technical features - standard model

Rating	**100 VA a 4000 VA**
Insulators	**Class H - 180 ºC**
Temperature rise	**Class B**
Winding	**Class HC - 200 ºC**
Room temperature	**45 ºC**
Frequency	**50-60 Hz**
Protection rating	**IP20**
Cooling	**ANAN**
Accessories	**Male to male cable up to 1000 VA** **Metal handle from 300 to 1000 VA**
Standards	**EN 61558-2-13**
Protection	**Class I**

Electrical diagram

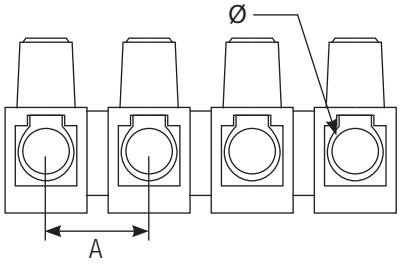


AUR SERIES

Reversible · For voltage changes **220 / 125 V**

Terminal types

Terminal blocks	External mm		Maximum tightening torque N·m	Primary Power VA		Secondary Power VA	
	A	Ø		From	To	From	To
Female	-	-	-	100	1000	100	1000
Power strip	14	6	0.5	1500	4000	1500	4000



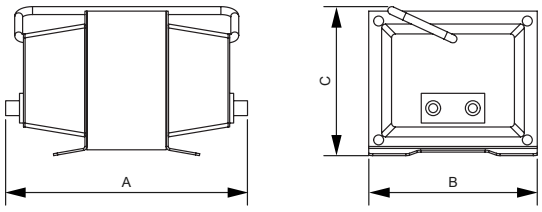
Theoretical data - standard model

Power VA	Reference	Current input / output A	Current input / output A	Maximum cross-section conductor input / output (mm²)		Maximum cross-section conductor input / output (mm²)		Input protections (A) (MCB -> D / Fuse -> aM)		Output protections (A) (MCB -> C / Fuse -> gG)	
		220 V	125 V	Flexible	Rigid	Flexible	Rigid	220 V	125 V	220 V	125 V
100	**AUR100**	0.45	0.80	-	-	-	-	1	2	0.4	0.8
300	**AUR300**	1.36	2.40	-	-	-	-	3	6	1	2
500	**AUR500**	2.27	4.00	-	-	-	-	6	10	2	4
1000	**AUR1000**	4.55	8.00	-	-	-	-	10	16	4	8
1500	**AUR1500**	6.82	12.00	1.5	2	2.4	4	16	25	6	12
2500	**AUR2500**	11.36	20.00	2.5	4	4	-	25	40	10	20
4000	**AUR4000**	18.18	32.00	4	-	8	-	40	80	16	32

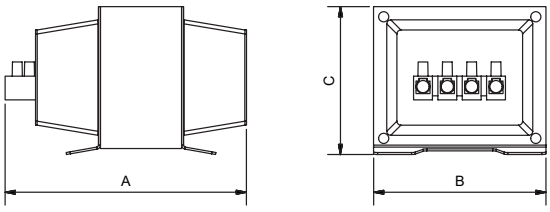
Measurements

Power VA	Reference	External dimensions mm			Weight kg
		A	B	C	
100	**AUR100**	75	102	65	1
300	**AUR300**	84	115	75	2.1
500	**AUR500**	96	122	83	2.7
1000	**AUR1000**	108	143	92	4.5
1500	**AUR1500**	126	150	108	6.7
2500	**AUR2500**	126	175	108	9
4000	**AUR4000**	150	190	128	14

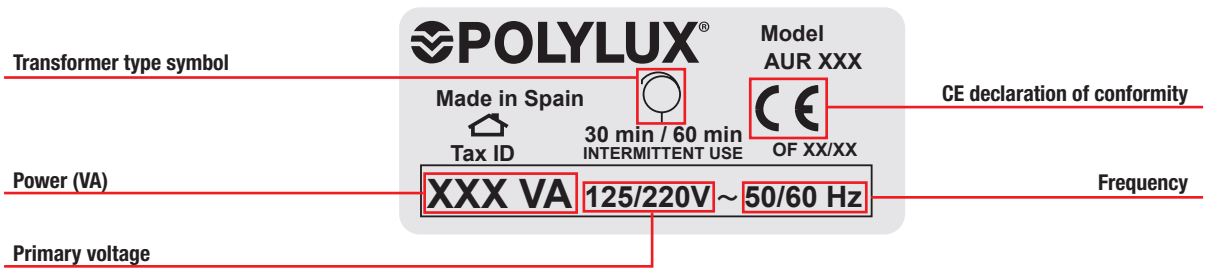
Up to AUR1000



From AUR1500



Feature plate structure



AUT SERIES

Reversible · For voltage changes **400 V / 230 V**

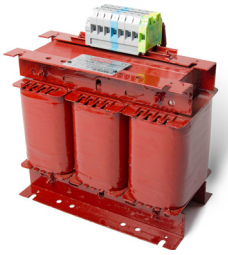
Definition and applications

The AUT series are reversible three-phase autotransformers designed to operate continuously at maximum output.

Their main application is for changing voltages from 400 V to 230 V and from 230 V to 400 V or other voltages on request in three-phase installations.

Manufacturing characteristics

- All the autotransformers are dipped in anti-flash varnish and then compacted in the furnace. This process increases the insulation grade, reduces noise and provides anti-moisture, waterproofed protection.
- The high power autotransformers are made with format cores and low loss properties, thus contributing to increasing their performance.
- All the autotransformers are checked automatically one by one and the compliance report is created based on the respective standard.



AUTX

· IP00 protection rating.
· Power from 1 kVA to 1000 kVA.
· Total impregnated in anti-flash varnish.
· Hoisting elements included.
· **UL certification.** FILE: E532753 - Construction only.

AUTW

· IP23 rating (IK08).
· Power from 1 kVA to 1000 kVA.
· Metal box painted with RAL7035 polyester resin.
· High resistance to corrosion.
· Cable outlet with cable gland.
· Hoisting elements included.
· Detachable top and front cover.
· **UL certification.**

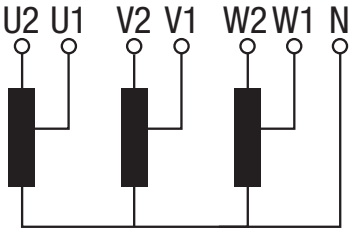
AUTZ

· IP65 rating up to 80 kVA / IP54 from 100 kVA (IK10).
· Power from 1 kVA to 1000 kVA.
· Metal box painted with RAL7035 polyester resin.
· High resistance to corrosion.
· Stuffing box cover for cable input depending on installation needs.
· Hoisting elements included.
· Detachable top cover.
· With silentblock.
· **UL certification.**

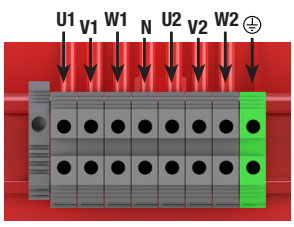
Technical features - standard model

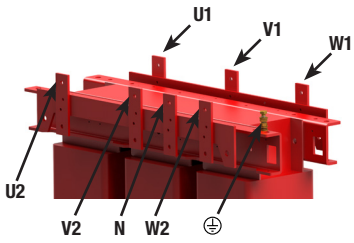
Rating	**1 kVA a 1000 kVA**
Standard voltage	**Reversible 400 V / 230 V**
Standard frequency	**50-60 Hz**
Connection unit	**YN0**
Insulators	**Class H - 180 ºC**
Temperature rise	**Class F ≤ 80 kVA** **Class H - AUTX, ≥ 100 kVA** *More information in Technical Appendix (T.A.1)
Windings	**Class HC-200 ºC**
Class	**I**
Altitude	**1000 m**
Enclosure colour	**RAL 7035**
IP rating	**IP00 (AUTX)** **IP23 (AUTW)** **IP65 rating up to 80 kVA / IP54 from 100 kVA (AUTZ)**
IK rating	**IK08 (AUTW)** **IK10 (AUTZ)**
Paint class (ISO 12944)	**C3 (AUTW)** **C4 (AUTZ)**
Room temperature	**45 ºC**
Standards	**≤600V: US Standard: UL 5085-1 / UL 5085-2** **Canada Standard: CSA C22.2 N0 66.1-06 / CSA C22.2 N0 66.2-06** **≤750V: IEC/EN 61558, CE up to 31.5 kVA** **IEC/EN 60076, CE from 40 kVA**
Test voltage	**3 kV (1 min, 50 Hz)**
Inrush	**< 12 In**
Ucc	**≤ 4 %**
K factor	**4**
Operation	**Continuous**
Cooling	**AN (AUTX) - ANAN (AUTW / AUTZ IP65) - ANAF (1000kVA AUTW / AUTZ IP54)**

Electrical diagram



Connection



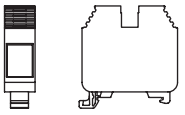


AUT SERIES

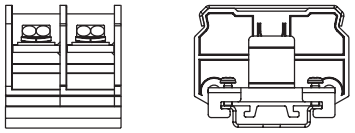
Reversible · For voltage changes **400 V / 230 V**

Terminal types

Terminals		Maximum cross-section conductor mm²	Maximum tightening torque		AUTX-AUTW-AUTZ Power kVA			
					Input		Output	
			N-m	Lb-In	From	To	From	To
Power strip 1	Terminal 4	6	0.5	4.4	1	2	1	2
	Terminal 10	16	1.2	10.6	3.15	5	3.15	5
	Terminal 16	25	1.2	10.6	8	12.5	8	12.5
	Terminal 35	50	2.5	22.1	16	31.5	16	31.5
	Terminal 50	70	6	53.1	40	50	40	50
Power strip 2	Terminal 100	35	6.7	60	63	63	-	-
	Terminal 200	95	9	80	80	80	63	80
	Terminal 300	150	9	80	100	125	100	125
Connection plate	Plate 30 X 1	150	-	-	160	160	-	-
	Plate 40 X 1	150	-	-	200	250	160	160
	Plate 50 X 1	150	-	-	315	500	200	250
	Plate 60 X 2	150	-	-	630	800	315	500
	Plate 80 X 4	150	-	-	1000	1000	630	800
	Plate 100 X 4	150	-	-	-	-	1000	1000



Power strip 1



Power strip 2

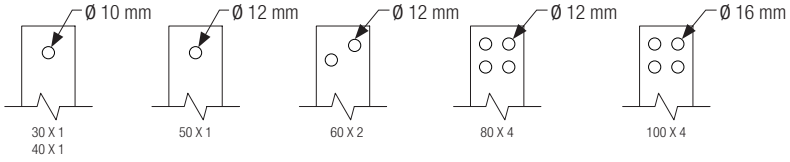


Plate connection

Theoretical data - standard model

Power kVA	Reference	Insulation class	Current A		Protections A		Protections A		Noise dB
			400 V	230 V	Input (400 V)	Output (230 V)	Input (230 V)	Output (400 V)	
AUTX									
1	**AUTX1**	F	1.4	2.5	3 (D/Am)	2.5 (C/Gg)	6 (D/Am)	1 (C/Gg)	≤45
2	**AUTX2**	F	2.9	5.0	10 (D/Am)	5 (C/Gg)	10 (D/Am)	2.5 (C/Gg)	≤45
3.15	**AUTX3.15**	F	4.5	7.9	10 (D/Am)	7 (C/Gg)	16 (D/Am)	4 (C/Gg)	≤45
5	**AUTX5**	F	7.2	12.6	16 (D/Am)	12 (C/Gg)	32 (D/Am)	7 (C/Gg)	≤45
8	**AUTX8**	F	11.5	20.1	25 (D/Am)	20 (C/Gg)	50 (D/Am)	10 (C/Gg)	≤45
10	**AUTX10**	F	14.4	25.1	32 (D/Am)	25 (C/Gg)	63 (D/Am)	12 (C/Gg)	≤45
12.5	**AUTX12.5**	F	18.0	31.4	40 (D/Am)	30 (C/Gg)	80 (D/Am)	12 (C/Gg)	≤45
16	**AUTX16**	F	23.1	40.2	50 (D/Am)	40 (C/Gg)	100 (D/Am)	20 (C/Gg)	≤45
20	**AUTX20**	F	28.9	50.2	63 (D/Am)	50 (C/Gg)	125 (D/Am)	25 (C/Gg)	≤45
25	**AUTX25**	F	36.1	62.8	40 (D/Am)	60 (C/Gg)	160 (D/Am)	30 (C/Gg)	≤45
31.5	**AUTX31.5**	F	45.5	79.1	100 (D/Am)	60 (C/Gg)	160 (D/Am)	40 (C/Gg)	≤45
40	**AUTX40**	F	57.7	100.4	125 (D/Am)	100 (C/Gg)	300 (D/Am)	50 (C/Gg)	≤55
50	**AUTX50**	F	72.2	125.5	160 (D/Am)	100 (C/Gg)	300 (D/Am)	60 (C/Gg)	≤55
63	**AUTX63**	F	90.9	158.1	200 (D/Am)	150 (C/Gg)	400 (D/Am)	80 (C/Gg)	≤55
80	**AUTX80**	F	115.5	200.8	300 (D/Am)	200 (C/Gg)	500 (D/Am)	100 (C/Gg)	≤55
100	**AUTX100**	H	144.3	251.0	300 (D/Am)	250 (C/Gg)	600 (D/Am)	100 (C/Gg)	≤55
125	**AUTX125**	H	180.4	313.8	400 (D/Am)	300 (C/Gg)	800 (D/Am)	160 (C/Gg)	≤55
160	**AUTX160**	H	230.9	401.6	500 (D/Am)	400 (C/Gg)	1000 (D/Am)	200 (C/Gg)	≤55
200	**AUTX200**	H	288.7	502.0	600 (D/Am)	500 (C/Gg)	1200 (D/Am)	250 (C/Gg)	≤55
250	**AUTX250**	H	360.8	627.6	800 (D/Am)	600 (C/Gg)	1600 (D/Am)	300 (C/Gg)	≤65
315	**AUTX315**	H	454.7	790.7	1000 (D/Am)	600 (C/Gg)	2000 (D/Am)	400 (C/Gg)	≤65
400	**AUTX400**	H	577.4	1004.1	1200 (D/Am)	1000 (C/Gg)	2500 (D/Am)	500 (C/Gg)	≤65
500	**AUTX500**	H	721.7	1255.1	1600 (D/Am)	1000 (C/Gg)	2500 (D/Am)	600 (C/Gg)	≤65
630	**AUTX630**	H	909.3	1581.4	2000 (D/Am)	1500 (C/Gg)	-	800 (C/Gg)	≤65
800	**AUTX800**	H	1154.7	2008.2	2500 (D/Am)	-	-	1000 (C/Gg)	≤65
1000	**AUTX1000**	H	1443.4	2510.2	2500 (D/Am)	-	-	1000 (C/Gg)	≤65

AUT SERIES

Reversible · For voltage changes **400 V / 230 V**

Theoretical data - standard model

Power kVA	Ref.	Insulation class	Current A		Protections A		Protections A		Noise dB	Cable gland (AUTW) Stuffing boxes (AUTZ)	
			400 V	230 V	Input (400 V)	Output (230 V)	Input (230 V)	Output (400 V)		ø max. (mm)	Quantity
AUTW											
1	**AUTW1**	F	1.4	2.5	3 (D/Am)	2.5 (C/Gg)	6 (D/Am)	1 (C/Gg)	≤45	14	2
2	**AUTW2**	F	2.9	5.0	10 (D/Am)	5 (C/Gg)	10 (D/Am)	2.5 (C/Gg)	≤45	14	2
3.15	**AUTW3.15**	F	4.5	7.9	10 (D/Am)	7 (C/Gg)	16 (D/Am)	4 (C/Gg)	≤45	14	2
5	**AUTW5**	F	7.2	12.6	16 (D/Am)	12 (C/Gg)	32 (D/Am)	7 (C/Gg)	≤45	14	2
8	**AUTW8**	F	11.5	20.1	25 (D/Am)	20 (C/Gg)	50 (D/Am)	10 (C/Gg)	≤45	18	2
10	**AUTW10**	F	14.4	25.1	32 (D/Am)	25 (C/Gg)	63 (D/Am)	12 (C/Gg)	≤45	18	2
12.5	**AUTW12.5**	F	18.0	31.4	40 (D/Am)	30 (C/Gg)	80 (D/Am)	12 (C/Gg)	≤45	18	2
16	**AUTW16**	F	23.1	40.2	50 (D/Am)	40 (C/Gg)	100 (D/Am)	20 (C/Gg)	≤45	18	2
20	**AUTW20**	F	28.9	50.2	63 (D/Am)	50 (C/Gg)	125 (D/Am)	25 (C/Gg)	≤45	25	4
25	**AUTW25**	F	36.1	62.8	40 (D/Am)	60 (C/Gg)	160 (D/Am)	30 (C/Gg)	≤45	25	4
31.5	**AUTW31.5**	F	45.5	79.1	100 (D/Am)	60 (C/Gg)	160 (D/Am)	40 (C/Gg)	≤45	25	4
40	**AUTW40**	F	57.7	100.4	125 (D/Am)	100 (C/Gg)	300 (D/Am)	50 (C/Gg)	≤55	32	4
50	**AUTW50**	F	72.2	125.5	160 (D/Am)	100 (C/Gg)	300 (D/Am)	60 (C/Gg)	≤55	32	4
63	**AUTW63**	F	90.9	158.1	200 (D/Am)	150 (C/Gg)	400 (D/Am)	80 (C/Gg)	≤55	32	4
80	**AUTW80**	F	115.5	200.8	300 (D/Am)	200 (C/Gg)	500 (D/Am)	100 (C/Gg)	≤55	32	4
100	**AUTW100**	H	144.3	251.0	300 (D/Am)	250 (C/Gg)	600 (D/Am)	100 (C/Gg)	≤55	32	8
125	**AUTW125**	H	180.4	313.8	400 (D/Am)	300 (C/Gg)	800 (D/Am)	160 (C/Gg)	≤55	32	8
160	**AUTW160**	H	230.9	401.6	500 (D/Am)	400 (C/Gg)	1000 (D/Am)	200 (C/Gg)	≤55	32	8
200	**AUTW200**	H	288.7	502.0	600 (D/Am)	500 (C/Gg)	1200 (D/Am)	250 (C/Gg)	≤55	32	8
250	**AUTW250**	H	360.8	627.6	800 (D/Am)	600 (C/Gg)	1600 (D/Am)	300 (C/Gg)	≤65	32	8
315	**AUTW315**	H	454.7	790.7	1000 (D/Am)	600 (C/Gg)	2000 (D/Am)	400 (C/Gg)	≤65	44	8
400	**AUTW400**	H	577.4	1004.1	1200 (D/Am)	1000 (C/Gg)	2500 (D/Am)	500 (C/Gg)	≤65	44	8
500	**AUTW500**	H	721.7	1255.1	1600 (D/Am)	1000 (C/Gg)	2500 (D/Am)	600 (C/Gg)	≤65	44	8
630	**AUTW630**	H	909.3	1581.4	2000 (D/Am)	1500 (C/Gg)	-	800 (C/Gg)	≤65	44	8
800	**AUTW800**	H	1154.7	2008.2	2500 (D/Am)	-	-	1000 (C/Gg)	≤65	44	8
1000	**AUTW1000**	H	1443.4	2510.2	2500 (D/Am)	-	-	1000 (C/Gg)	≤65	44	8
AUTZ											
1	**AUTZ1**	F	1.4	2.5	3 (D/Am)	2.5 (C/Gg)	6 (D/Am)	1 (C/Gg)	≤45	10 - 14	2
2	**AUTZ2**	F	2.9	5.0	10 (D/Am)	5 (C/Gg)	10 (D/Am)	2.5 (C/Gg)	≤45	10 - 14	2
3.15	**AUTZ3.15**	F	4.5	7.9	10 (D/Am)	7 (C/Gg)	16 (D/Am)	4 (C/Gg)	≤45	10 - 14	2
5	**AUTZ5**	F	7.2	12.6	16 (D/Am)	12 (C/Gg)	32 (D/Am)	7 (C/Gg)	≤45	18 - 25	2
8	**AUTZ8**	F	11.5	20.1	25 (D/Am)	20 (C/Gg)	50 (D/Am)	10 (C/Gg)	≤45	18 - 25	2
10	**AUTZ10**	F	14.4	25.1	32 (D/Am)	25 (C/Gg)	63 (D/Am)	12 (C/Gg)	≤45	18 - 25	2
12.5	**AUTZ12.5**	F	18.0	31.4	40 (D/Am)	30 (C/Gg)	80 (D/Am)	12 (C/Gg)	≤45	18 - 25	2
16	**AUTZ16**	F	23.1	40.2	50 (D/Am)	40 (C/Gg)	100 (D/Am)	20 (C/Gg)	≤45	18 - 25	2
20	**AUTZ20**	F	28.9	50.2	63 (D/Am)	50 (C/Gg)	125 (D/Am)	25 (C/Gg)	≤45	18 - 25	2
25	**AUTZ25**	F	36.1	62.8	40 (D/Am)	60 (C/Gg)	160 (D/Am)	30 (C/Gg)	≤45	18 - 25	2
31.5	**AUTZ31.5**	F	45.5	79.1	100 (D/Am)	60 (C/Gg)	160 (D/Am)	40 (C/Gg)	≤45	22 - 32	2
40	**AUTZ40**	F	57.7	100.4	125 (D/Am)	100 (C/Gg)	300 (D/Am)	50 (C/Gg)	≤50	22 - 32	2
50	**AUTZ50**	F	72.2	125.5	160 (D/Am)	100 (C/Gg)	300 (D/Am)	60 (C/Gg)	≤50	22 - 32	2
63	**AUTZ63**	F	90.9	158.1	200 (D/Am)	150 (C/Gg)	400 (D/Am)	80 (C/Gg)	≤50	22 - 32	2
80	**AUTZ80**	F	115.5	200.8	300 (D/Am)	200 (C/Gg)	500 (D/Am)	100 (C/Gg)	≤50	22 - 32	2
100	**AUTZ100**	H	144.3	251.0	300 (D/Am)	250 (C/Gg)	600 (D/Am)	100 (C/Gg)	≤50	22 - 32	2
125	**AUTZ125**	H	180.4	313.8	400 (D/Am)	300 (C/Gg)	800 (D/Am)	160 (C/Gg)	≤50	22 - 32	2
160	**AUTZ160**	H	230.9	401.6	500 (D/Am)	400 (C/Gg)	1000 (D/Am)	200 (C/Gg)	≤50	22 - 32	2
200	**AUTZ200**	H	288.7	502.0	600 (D/Am)	500 (C/Gg)	1200 (D/Am)	250 (C/Gg)	≤55	22 - 32	2
250	**AUTZ250**	H	360.8	627.6	800 (D/Am)	600 (C/Gg)	1600 (D/Am)	300 (C/Gg)	≤55	22 - 32	2
315	**AUTZ315**	H	454.7	790.7	1000 (D/Am)	600 (C/Gg)	2000 (D/Am)	400 (C/Gg)	≤60	34 - 44	2
400	**AUTZ400**	H	577.4	1004.1	1200 (D/Am)	1000 (C/Gg)	2500 (D/Am)	500 (C/Gg)	≤60	34 - 44	2
500	**AUTZ500**	H	721.7	1255.1	1600 (D/Am)	1000 (C/Gg)	2500 (D/Am)	600 (C/Gg)	≤65	34 - 44	2
630	**AUTZ630**	H	909.3	1581.4	2000 (D/Am)	1500 (C/Gg)	-	800 (C/Gg)	≤65	34 - 44	2
800	**AUTZ800**	H	1154.7	2008.2	2500 (D/Am)	-	-	1000 (C/Gg)	≤65	34 - 44	2
1000	**AUTZ1000**	H	1443.4	2510.2	2500 (D/Am)	-	-	1000 (C/Gg)	≤65	34 - 44	2

AUT SERIES

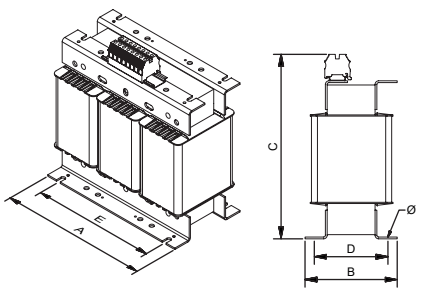
Reversible · For voltage changes **400 V / 230 V**

Measurements

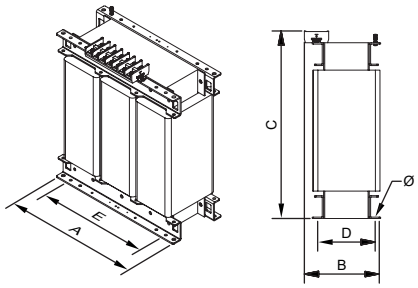
Power kVA	Reference	External dimensions mm			Fastening elements mm			Weight kg
		A	B	C	D	E	Ø	
AUTX								
1	**AUTX1**	150	83	184	51	125	7	3,4
2	**AUTX2**	180	92	209	66	150	7	6,6
3.15	**AUTX3.15**	180	129	209	111	150	7	12
5	**AUTX5**	240	128	269	110	200	9	17
8	**AUTX8**	300	124	320	102	250	9	23
10	**AUTX10**	300	144	320	122	250	9	31
12.5	**AUTX12.5**	300	154	320	132	250	9	36
16	**AUTX16**	300	174	320	152	250	9	45
20	**AUTX20**	360	144	372	122	300	11	47
25	**AUTX25**	360	164	372	142	300	11	60
31.5	**AUTX31.5**	360	184	372	162	300	11	72
40	**AUTX40**	420	190	443	162	350	11	90
50	**AUTX50**	420	210	443	182	350	11	105
63	**AUTX63**	480	210	484	166	400	11	140
80	**AUTX80**	480	230	484	186	400	11	162
100	**AUTX100**	640	325	550	159	426	11	199
125	**AUTX125**	640	325	550	179	426	11	225
160	**AUTX160**	640	400	590	199,5	426	11	288
200	**AUTX200**	714	430	692	189	426	11	339
250	**AUTX250**	714	450	692	209	426	11	385
315	**AUTX315**	1020	550	880	460	470	13	462
400	**AUTX400**	1020	550	880	460	470	13	600
500	**AUTX500**	1020	550	880	460	690	13	855
630	**AUTX630**	1083	700	1200	600	690	18	918
800	**AUTX800**	1083	700	1265	600	690	18	1250
1000	**AUTX1000**	1300	700	1365	600	800	18	1605

Power kVA	Reference	External dimensions mm			Fastening elements mm			Weight kg
		A	B	C	D	E	Ø	
AUTW								
1	**AUTW1**	196	175	220	165	100	6	5,9
2	**AUTW2**	240	190	250	180	150	6	9,8
3.15	**AUTW3.15**	240	190	250	180	150	6	15
5	**AUTW5**	320	230	315	205	200	6	21
8	**AUTW8**	387	260	382	245	250	6	28
10	**AUTW10**	387	260	382	245	250	6	36
12.5	**AUTW12.5**	387	260	382	245	250	6	40
16	**AUTW16**	387	260	382	245	250	6	49
20	**AUTW20**	460	340	501	300	300	12	56
25	**AUTW25**	460	340	501	300	300	12	67
31.5	**AUTW31.5**	460	340	501	300	300	12	78
40	**AUTW40**	549	424	644	375	345	12	110
50	**AUTW50**	549	424	644	375	345	12	125
63	**AUTW63**	616	424	710	375	345	12	167
80	**AUTW80**	616	424	710	375	345	12	189
100	**AUTW100**	815	555	975	500	415	12	234
125	**AUTW125**	815	555	975	500	415	12	277
160	**AUTW160**	815	555	975	500	415	12	303
200	**AUTW200**	815	555	975	500	415	12	391
250	**AUTW250**	815	555	975	500	415	12	445
315	**AUTW315**	990	682	1250	582	470	18	509
400	**AUTW400**	990	682	1250	582	470	18	673
500	**AUTW500**	1215	772	1555	672	690	18	920
630	**AUTW630**	1215	772	1555	672	690	18	1022
800	**AUTW800**	1215	772	1555	672	690	18	1323
1000	**AUTW1000**	1812	1000	1791	900	800	20	1887

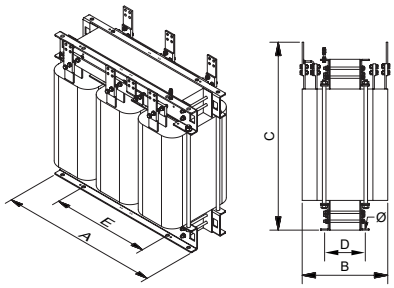
AUTX IP00



Up to 50 kVA

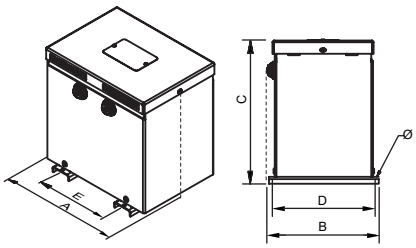


From 63 kVA to 125 kVA

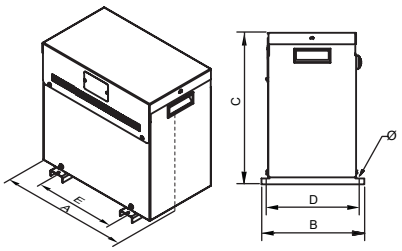


From 160 kVA

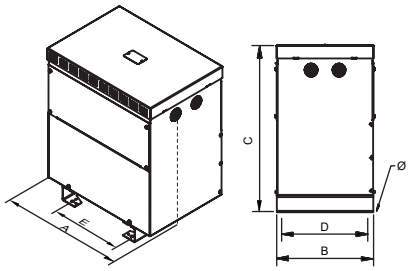
AUTW IP23



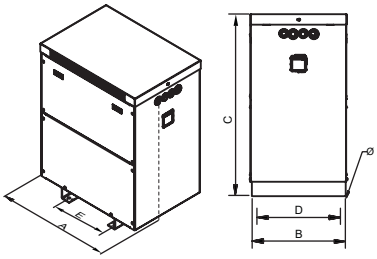
Up to 3,15 kVA



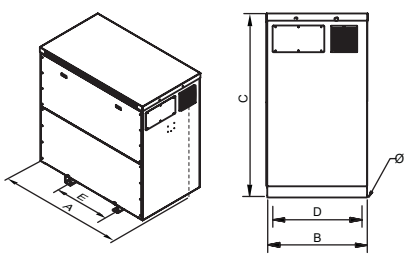
From 5 kVA up to 16 kVA



From 20 kVA up to 63 kVA



From 80 kVA up to 800 kVA



1000 kVA

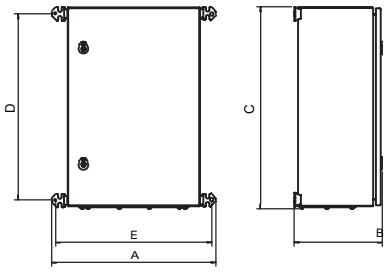
AUT SERIES

Reversible · For voltage changes **400 V / 230 V**

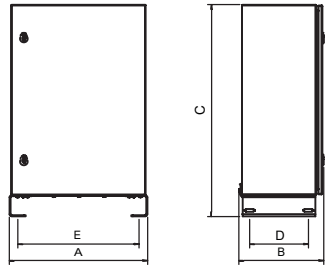
Measurements

Power kVA	Reference	External dimensions mm			Fastening elements mm			Weight kg
		A	B	C	D	E	Ø	
AUTZ								
1	**AUTZ1**	395	217	408	360	370	10.5	14
2	**AUTZ2**	395	217	408	360	370	10.5	20
3.15	**AUTZ3.15**	495	267	608	560	470	10.5	29
5	**AUTZ5**	513	316	778	220	450	13	44
8	**AUTZ8**	513	316	778	220	450	13	51
10	**AUTZ10**	513	316	778	220	450	13	56
12.5	**AUTZ12.5**	513	316	778	220	450	13	64
16	**AUTZ16**	613	316	878	220	550	13	73
20	**AUTZ20**	613	316	878	220	550	13	84
25	**AUTZ25**	613	316	878	220	550	13	96
31.5	**AUTZ31.5**	745	413	735	370	350	11	126
40	**AUTZ40**	745	413	735	370	350	11	141
50	**AUTZ50**	745	413	735	370	350	11	180
63	**AUTZ63**	745	413	735	370	350	11	202
80	**AUTZ80**	745	413	735	370	350	11	215
100	**AUTZ100**	968	621	1150	500	426	12	261
125	**AUTZ125**	968	621	1150	500	426	12	304
160	**AUTZ160**	968	621	1150	500	426	12	330
200	**AUTZ200**	968	621	1150	500	426	12	418
250	**AUTZ250**	968	621	1150	500	426	12	472
315	**AUTZ315**	1040	892	1374	714	485	18	589
400	**AUTZ400**	1040	892	1374	714	485	18	755
500	**AUTZ500**	1532	1000	1755	806	684	18	1046
630	**AUTZ630**	1532	1000	1755	806	684	18	1147
800	**AUTZ800**	1532	1000	1755	806	684	18	1472
1000	**AUTZ1000**	1950	1093	1797	900	790	20	1917

AUTZ IP65

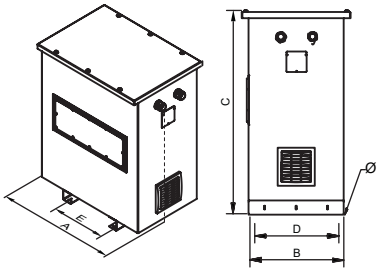


Up to 3,15 kVA

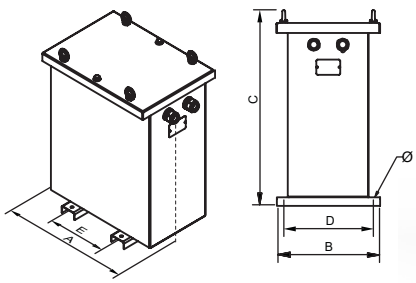


From 5 kVA up to 25 kVA

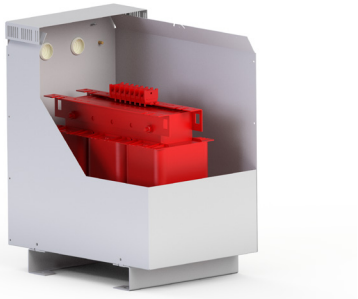
AUTZ IP54



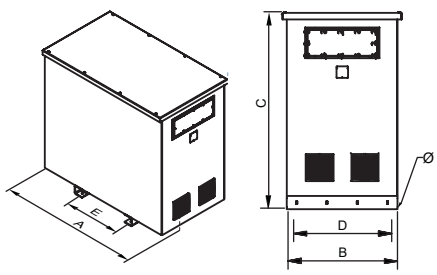
From 100 kVA up to 800 kVA



From 31,5 kVA up to 80 kVA



Sectioned



1000 kVA

AUT SERIES

Reversible · For voltage changes **400 V** / **230 V**

On-request manufacturing options (please see prices)

Power	**From 1 kVA to 1000 kVA**
Voltage	**From 1 V to 12 kV**
Windings	**Copper or aluminium**
Frequency	**From 50 Hz to 400 Hz**
IP rating	**IP00, IP20, IP23, IP31, IP42, IP54, IP55 and IP65**
IK rating	**IK08 and IK10**
Room temperature	**Up to 60 ºC**
Locks	**Screw, key**
Short circuit voltage	**From 2% to 9%**
Operation	**Intermittent, continuous**
Cooling	**Natural, forced ventilation**
Class	**I, II**
Altitude	**Up to 4000 m**
Protections	**In both primary and secondary (figure 1)**
Temperature sensors	**PT100 (figure 2), PTC (figure 3) or bimetallic**
Temperature control	**Temperature control station (4xPT100) (figure 4), PTC thermal relays (3xPTC / 6xPTC)**
Network analyser	**(Figure 5)**
Anti condensation system	**Hygrostat**
Heating system	**Heating elements**
External protection	**Anti-flash varnish, metallic or stainless steel enclosure**
Transportation and hoisting	**Wheels (figure 6), lifting points**
Paint	**C3, C4, C5, different RAL**
Feature plate	**High generation polymer or stainless steel (figure 7)**
Anti vibration system	**Silentblock**
Adjustment	**-10%; -7.5%; -5%; -2.5%; +2.5%; +5%; +7.5%; +10% With bridges (figure 8) or selector (figure 9)**
Certified	**CE, DNV-GL, BV, UL (insulation) and POLYLUX laboratory**
Climate class / environment / fire	**Up to C2-E2-F1**

Figure 1

Figure 2

Figure 3

Figure 4

Figure 5

Figure 6

Figure 7

Figure 8

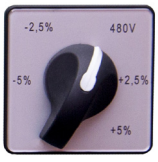


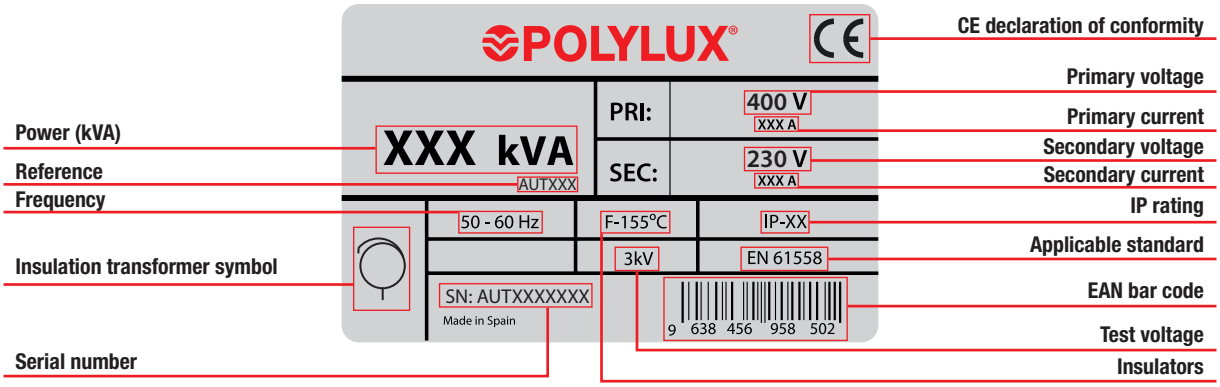
Figure 9

AUT SERIES

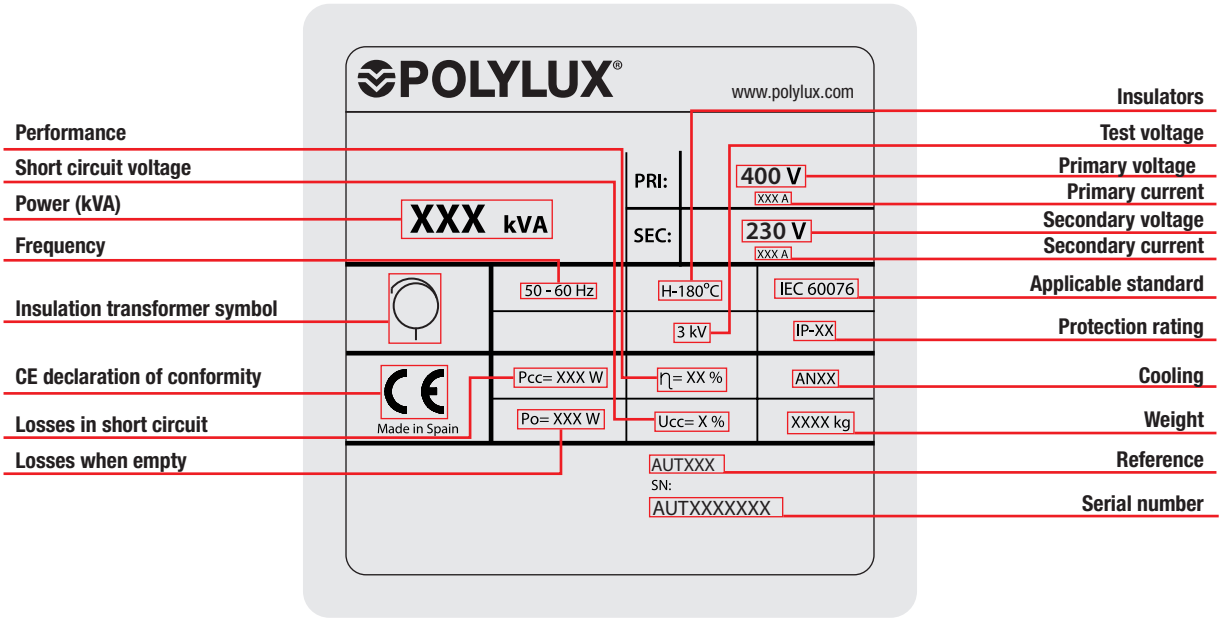
Reversible · For voltage changes **400 V / 230 V**

Feature plate structure

Label up to 80 kVA:



Label from 100 kVA:



AUTN SERIES

For creating artificial neutral in three-phase lines · Input **400 V** · Output **Neutral** · **Zig-zag connection**

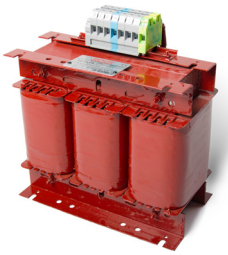
Definition and applications

The AUTN series are three-phase autotransformers designed to operate continuously and at maximum output.

Their main use, based on the zig-zag connection, is to withstand network voltage imbalances and provide a more stable neutral.

Manufacturing characteristics

- All the autotransformers are dipped in anti-flash varnish and then compacted in the furnace. This process increases the insulation grade, reduces noise and provides anti-moisture, waterproofed protection.
- The high power autotransformers are made with format cores and low loss properties, thus contributing to increasing their performance.
- All the transformers are checked automatically one by one and the compliance test report is created in accordance with the corresponding standard.



AUTNX

· IP00 protection rating.
· Power from 1 kVA to 400 kVA.
· Total impregnated in anti-flash varnish.
· Hoisting elements included.
· **UL certification.** FILE: E532753 - Construction only.

AUTNW

· IP23 rating (IK08).
· Power from 1 kVA to 400 kVA.
· Metal box painted with RAL7035 polyester resin.
· High resistance to corrosion.
· Cable outlet with cable gland.
· Hoisting elements included.
· Detachable top and front cover.
· **UL certification.**

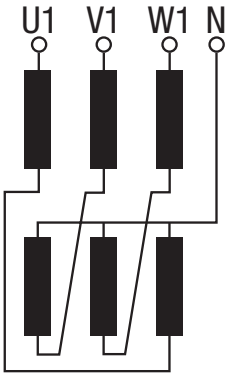
AUTNZ

· IP65 rating up to 63 kVA / IP54 from 80 kVA (IK10).
· Power from 1 kVA to 400 kVA.
· Metal box painted with RAL7035 polyester resin.
· High resistance to corrosion.
· Stuffing box cover for cable input depending on installation needs.
· Hoisting elements included.
· Detachable top cover.
· With silentblock.
· **UL certification.**

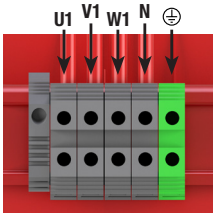
Technical features - standard model

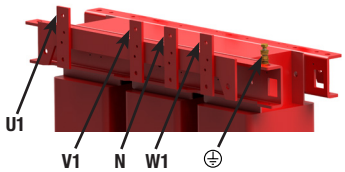
Rating	**1 kVA to 400 kVA**
Standard voltage	**Input 400 V // Output Neutral**
Standard frequency	**50-60 Hz**
Connection unit	**ZN0**
Insulators	**Class H - 180 ºC**
Temperature rise	**Class F ≤ 50 kVA 40 kVA AUTNZ)** **Class H ≥ 63 kVA (50 kVA AUTNZ)** *More information in Technical Appendix (T.A.1)
Windings	**Class HC-200 ºC**
Class	**I**
Altitude	**1000 m**
Enclosure colour	**RAL 7035**
IP rating	**IP00 (AUTNX)** **IP23 (AUTNW)** **IP65 rating up to 63 kVA / IP54 from 80 kVA (AUTNZ)**
IK rating	**IK08 (AUTNW)** **IK10 (AUTNZ)**
Paint class (ISO 12944)	**C3 (AUTNW)** **C4 (AUTNZ)**
Room temperature	**45 ºC**
Standards	**≤600V: US Standard: UL 5085-1 / UL 5085-2** **Canada Standard: CSA C22.2 N0 66.1-06 / CSA C22.2 N0 66.2-06** **≤750V: IEC/EN 61558, CE up to 31.5 kVA** **IEC/EN 60076, CE from 40 kVA**
Test voltage	**3 kV (1 min, 50 Hz)**
Inrush	**< 12 In**
K factor	**4**
Operation	**Continuous**
Cooling	**AN (AUTX) - ANAN (AUTW / AUTZ IP65) - ANAF (AUTZ IP54)**

Electrical diagram



Connection



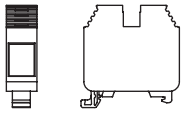


AUTN SERIES

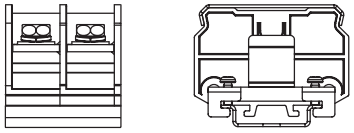
For creating artificial neutral in three-phase lines · Input **400 V** · Output **Neutral** · **Zig-zag connection**

Terminal types

Terminals		Maximum cross-section conductor mm²	Maximum tightening torque		AUTNX-AUTNW Power kVA		AUTNZ Power kVA	
			N·m	Lb-In	From	To	From	To
Power strip 1	Terminal 4	6	0.5	4.4	1	3.15	1	3.15
	Terminal 16	25	1.2	10.6	5	10	5	10
	Terminal 35	50	2.5	22.1	12.5	20	12.5	16
Power strip 2	Terminal 60	25	4.5	40	25	40	20	40
	Terminal 100	35	6.7	60	50	63	50	63
	Terminal 200	95	9	80	80	125	80	125
	Terminal 300	150	9	80	160	200	160	200
Connection plate	Plate 40 X 1	150	-	-	250	315	250	315
	Plate 50 X 1	150	-	-	400	400	400	400



Power strip 1



Power strip 2

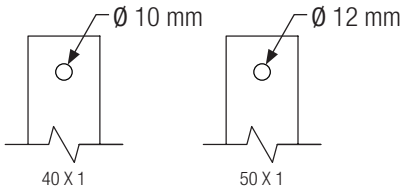


Plate connection

Theoretical data - standard model

Power kVA	Reference	Insulation class	Current A		Protections A		Noise dB
			Input	Output	Input	Output	
AUTNX							
1	**AUTNX1**	F	1.4	1.4	3 (D/Am)	1 (C/Gg)	≤45
2	**AUTNX2**	F	2.9	2.9	10 (D/Am)	2.5 (C/Gg)	≤45
3.15	**AUTNX3.15**	F	4.5	4.5	10 (D/Am)	4 (C/Gg)	≤45
5	**AUTNX5**	F	7.2	7.2	16 (D/Am)	7 (C/Gg)	≤45
8	**AUTNX8**	F	11.5	11.5	25 (D/Am)	10 (C/Gg)	≤45
10	**AUTNX10**	F	14.4	14.4	32 (D/Am)	12 (C/Gg)	≤45
12.5	**AUTNX12.5**	F	18.0	18.0	40 (D/Am)	12 (C/Gg)	≤45
16	**AUTNX16**	F	23.1	23.1	50 (D/Am)	20 (C/Gg)	≤45
20	**AUTNX20**	F	28.9	28.9	63 (D/Am)	25 (C/Gg)	≤45
25	**AUTNX25**	F	36.1	36.1	40 (D/Am)	30 (C/Gg)	≤45
31.5	**AUTNX31.5**	F	45.5	45.5	100 (D/Am)	40 (C/Gg)	≤45
40	**AUTNX40**	F	57.7	57.7	125 (D/Am)	50 (C/Gg)	≤55
50	**AUTNX50**	F	72.2	72.2	160 (D/Am)	60 (C/Gg)	≤55
63	**AUTNX63**	H	90.9	90.9	200 (D/Am)	80 (C/Gg)	≤55
80	**AUTNX80**	H	115.5	115.5	300 (D/Am)	100 (C/Gg)	≤55
100	**AUTNX100**	H	144.3	144.3	300 (D/Am)	100 (C/Gg)	≤55
125	**AUTNX125**	H	180.4	180.4	400 (D/Am)	160 (C/Gg)	≤55
160	**AUTNX160**	H	230.9	230.9	500 (D/Am)	200 (C/Gg)	≤55
200	**AUTNX200**	H	288.7	288.7	600 (D/Am)	250 (C/Gg)	≤55
250	**AUTNX250**	H	360.8	360.8	800 (D/Am)	300 (C/Gg)	≤65
315	**AUTNX315**	H	454.7	454.7	1000 (D/Am)	400 (C/Gg)	≤65
400	**AUTNX400**	H	577.4	577.4	1200 (D/Am)	500 (C/Gg)	≤65

AUTN SERIES

For creating artificial neutral in three-phase lines · Input **400 V** · Output **Neutral** · **Zig-zag connection**

Theoretical data - standard model

Power kVA	Reference	Insulation class	Current A		Protections A		Noise dB	Cable gland (AUTNW) Stuffing boxes (AUTNZ)	
			Input	Output	Input	Output		ø max. (mm)	Quantity
AUTNW									
1	**AUTNW1**	F	1.4	1.4	3 (D/Am)	1 (C/Gg)	≤45	14	2
2	**AUTNW2**	F	2.9	2.9	10 (D/Am)	2.5 (C/Gg)	≤45	14	2
3.15	**AUTNW3.15**	F	4.5	4.5	10 (D/Am)	4 (C/Gg)	≤45	14	2
5	**AUTNW5**	F	7.2	7.2	16 (D/Am)	7 (C/Gg)	≤45	18	2
8	**AUTNW8**	F	11.5	11.5	25 (D/Am)	10 (C/Gg)	≤45	18	2
10	**AUTNW10**	F	14.4	14.4	32 (D/Am)	12 (C/Gg)	≤45	25	4
12.5	**AUTNW12.5**	F	18.0	18.0	40 (D/Am)	12 (C/Gg)	≤45	25	4
16	**AUTNW16**	F	23.1	23.1	50 (D/Am)	20 (C/Gg)	≤45	32	4
20	**AUTNW20**	F	28.9	28.9	63 (D/Am)	25 (C/Gg)	≤45	32	4
25	**AUTNW25**	F	36.1	36.1	40 (D/Am)	30 (C/Gg)	≤45	32	4
31.5	**AUTNW31.5**	F	45.5	45.5	100 (D/Am)	40 (C/Gg)	≤45	32	4
40	**AUTNW40**	F	57.7	57.7	125 (D/Am)	50 (C/Gg)	≤55	32	4
50	**AUTNW50**	F	72.2	72.2	160 (D/Am)	60 (C/Gg)	≤55	32	4
63	**AUTNW63**	H	90.9	90.9	200 (D/Am)	80 (C/Gg)	≤55	32	4
80	**AUTNW80**	H	115.5	115.5	300 (D/Am)	100 (C/Gg)	≤55	32	8
100	**AUTNW100**	H	144.3	144.3	300 (D/Am)	100 (C/Gg)	≤55	32	8
125	**AUTNW125**	H	180.4	180.4	400 (D/Am)	160 (C/Gg)	≤55	32	8
160	**AUTNW160**	H	230.9	230.9	500 (D/Am)	200 (C/Gg)	≤55	32	8
200	**AUTNW200**	H	288.7	288.7	600 (D/Am)	250 (C/Gg)	≤55	32	8
250	**AUTNW250**	H	360.8	360.8	800 (D/Am)	300 (C/Gg)	≤65	44	8
315	**AUTNW315**	H	454.7	454.7	1000 (D/Am)	400 (C/Gg)	≤65	44	8
400	**AUTNW400**	H	577.4	577.4	1200 (D/Am)	500 (C/Gg)	≤65	44	8
AUTNZ									
1	**AUTZZ1**	F	1.4	1.4	3 (D/Am)	1 (C/Gg)	≤45	10 - 14	2
2	**AUTNZ2**	F	2.9	2.9	10 (D/Am)	2.5 (C/Gg)	≤45	10 - 14	2
3.15	**AUTNZ3.15**	F	4.5	4.5	10 (D/Am)	4 (C/Gg)	≤45	18 - 25	2
5	**AUTNZ5**	F	7.2	7.2	16 (D/Am)	7 (C/Gg)	≤45	18 - 25	2
8	**AUTNZ8**	F	11.5	11.5	25 (D/Am)	10 (C/Gg)	≤45	18 - 25	2
10	**AUTNZ10**	F	14.4	14.4	32 (D/Am)	12 (C/Gg)	≤45	18 - 25	2
12.5	**AUTNZ12.5**	F	18.0	18.0	40 (D/Am)	12 (C/Gg)	≤45	22 - 32	2
16	**AUTNZ16**	F	23.1	23.1	50 (D/Am)	20 (C/Gg)	≤45	22 - 32	2
20	**AUTNZ20**	F	28.9	28.9	63 (D/Am)	25 (C/Gg)	≤45	22 - 32	2
25	**AUTNZ25**	F	36.1	36.1	40 (D/Am)	30 (C/Gg)	≤45	22 - 32	2
31.5	**AUTNZ31.5**	F	45.5	45.5	100 (D/Am)	40 (C/Gg)	≤45	22 - 32	2
40	**AUTNZ40**	F	57.7	57.7	125 (D/Am)	50 (C/Gg)	≤55	22 - 32	2
50	**AUTNZ50**	H	72.2	72.2	160 (D/Am)	60 (C/Gg)	≤55	22 - 32	2
63	**AUTNZ63**	H	90.9	90.9	200 (D/Am)	80 (C/Gg)	≤55	22 - 32	2
80	**AUTNZ80**	H	115.5	115.5	300 (D/Am)	100 (C/Gg)	≤55	22 - 32	2
100	**AUTNZ100**	H	144.3	144.3	300 (D/Am)	100 (C/Gg)	≤55	22 - 32	2
125	**AUTNZ125**	H	180.4	180.4	400 (D/Am)	160 (C/Gg)	≤55	22 - 32	2
160	**AUTNZ160**	H	230.9	230.9	500 (D/Am)	200 (C/Gg)	≤55	22 - 32	2
200	**AUTNZ200**	H	288.7	288.7	600 (D/Am)	250 (C/Gg)	≤55	22 - 32	2
250	**AUTNZ250**	H	360.8	360.8	800 (D/Am)	300 (C/Gg)	≤65	34 - 44	2
315	**AUTNZ315**	H	454.7	454.7	1000 (D/Am)	400 (C/Gg)	≤65	34 - 44	2
400	**AUTNZ400**	H	577.4	577.4	1200 (D/Am)	500 (C/Gg)	≤65	34 - 44	2

AUTN SERIES

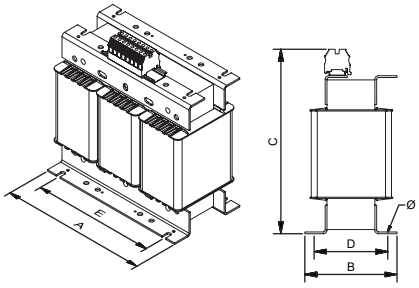
For creating artificial neutral in three-phase lines · Input **400 V** · Output **Neutral** · **Zig-zag connection**

Measurements

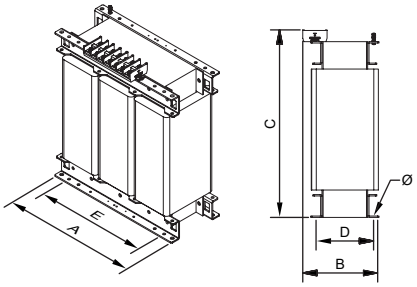
Power kVA	Reference	External dimensions mm			Fastening elements mm			Weight kg
		A	B	C	D	E	Ø	
AUTNX								
1	**AUTNX1**	180	84	203	66	150	6	5
2	**AUTNX2**	180	109	203	91	150	6	11
3.15	**AUTNX3.15**	240	118	253	100	200	9	17
5	**AUTNX5**	300	134	303	125	250	9	26
8	**AUTNX8**	300	164	303	155	250	9	39
10	**AUTNX10**	360	144	353	114	300	11	46
12.5	**AUTNX12.5**	360	164	353	134	300	11	56
16	**AUTNX16**	420	170	419	136	350	11	70
20	**AUTNX20**	420	190	419	156	350	11	84
25	**AUTNX25**	480	250	480	144	400	11	92
31.5	**AUTNX31.5**	480	260	480	154	400	11	104
40	**AUTNX40**	480	270	480	164	400	11	115
50	**AUTNX50**	480	290	480	184	400	11	137
63	**AUTNX63**	480	310	480	204	400	11	160
80	**AUTNX80**	670	280	615	170	426	13	199
100	**AUTNX100**	670	300	615	190	426	13	225
125	**AUTNX125**	670	320	690	210	599	13	288
160	**AUTNX160**	670	340	690	230	599	13	339
200	**AUTNX200**	670	380	690	270	599	13	406
250	**AUTNX250**	785	550	880	460	472	17	529
315	**AUTNX315**	1016	550	1080	460	690	17	596
400	**AUTNX400**	1016	550	1080	460	690	17	676

Power kVA	Reference	External dimensions mm			Fastening elements mm			Weight kg
		A	B	C	D	E	Ø	
AUTNW								
1	**AUTNW1**	240	190	250	180	150	6	7,9
2	**AUTNW2**	320	230	315	205	200	6	15
3.15	**AUTNW3.15**	320	230	315	205	200	6	21
5	**AUTNW5**	387	260	382	245	250	6	31
8	**AUTNW8**	387	260	382	245	250	6	45
10	**AUTNW10**	460	340	501	300	300	12	54
12.5	**AUTNW12.5**	460	340	501	300	300	12	63
16	**AUTNW16**	549	424	644	375	345	12	91
20	**AUTNW20**	549	424	644	375	345	12	105
25	**AUTNW25**	616	424	710	375	345	12	120
31.5	**AUTNW31.5**	616	424	710	375	345	12	130
40	**AUTNW40**	616	424	710	375	345	12	142
50	**AUTNW50**	616	424	710	375	345	12	163
63	**AUTNW63**	616	424	710	375	345	12	186
80	**AUTNW80**	815	555	975	500	415	12	238
100	**AUTNW100**	815	555	975	500	415	12	251
125	**AUTNW125**	815	555	975	500	415	12	282
160	**AUTNW160**	815	555	975	500	415	12	309
200	**AUTNW200**	815	555	975	500	415	12	416
250	**AUTNW250**	990	682	1250	582	470	18	541
315	**AUTNW315**	990	682	1250	582	470	18	639
400	**AUTNW400**	1215	772	1555	672	690	18	869

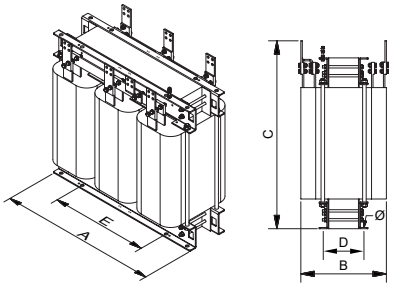
AUTNX IP00



Up to 63 kVA

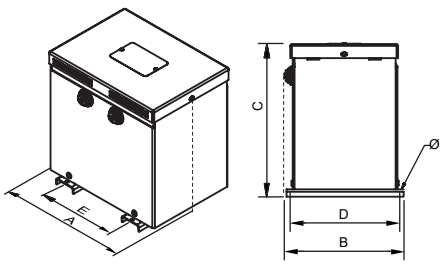


From 80 kVA to 160 kVA

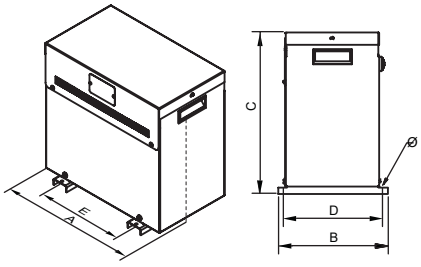


From 200 kVA

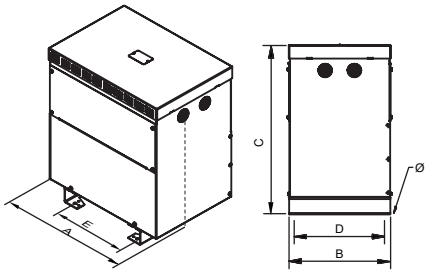
AUTNW IP23



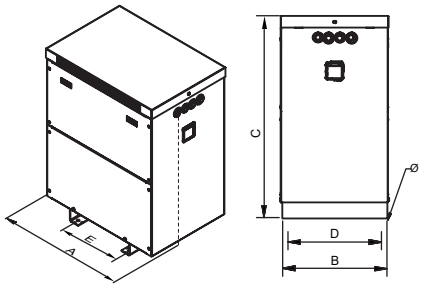
Up to 3,15 kVA



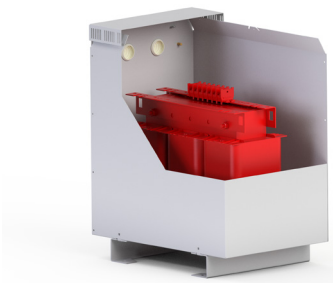
From 5 kVA up to 16 kVA



From 20 kVA up to 63 kVA



From 80 kVA



Sectioned

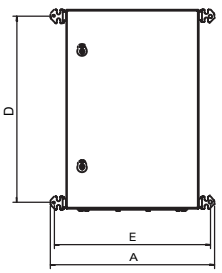
AUTN SERIES

For creating artificial neutral in three-phase lines · Input **400 V** · Output **Neutral** · **Zig-zag connection**

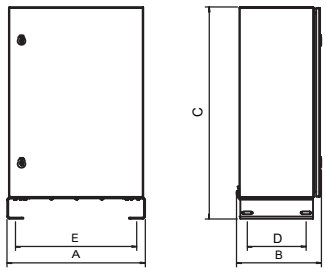
Measurements

Power kVA	Reference	External dimensions mm			Fastening elements mm			Weight kg
		A	B	C	D	E	Ø	
AUTNZ								
1	**AUTNZ1**	495	267	608	560	470	10.5	24
2	**AUTNZ2**	495	267	608	560	470	10.5	29
3.15	**AUTNZ3.15**	513	316	778	220	450	13	47
5	**AUTNZ5**	513	316	778	220	450	13	61
8	**AUTNZ8**	613	316	878	220	550	13	72
10	**AUTNZ10**	613	316	878	220	550	13	81
12.5	**AUTNZ12.5**	745	413	735	370	350	11	107
16	**AUTNZ16**	745	413	735	370	350	11	122
20	**AUTNZ20**	745	413	735	370	350	11	133
25	**AUTNZ25**	745	413	735	370	350	11	144
31.5	**AUTNZ31.5**	745	413	735	370	350	11	155
40	**AUTNZ40**	745	413	735	370	350	11	176
50	**AUTNZ50**	745	413	735	370	350	11	200
63	**AUTNZ63**	745	413	735	370	350	11	212
80	**AUTNZ80**	968	621	1150	500	426	12	265
100	**AUTNZ100**	968	621	1150	500	426	12	278
125	**AUTNZ125**	968	621	1150	500	426	12	309
160	**AUTNZ160**	968	621	1150	500	426	12	336
200	**AUTNZ200**	968	621	1150	500	426	12	443
250	**AUTNZ250**	1040	892	1374	714	485	18	620
315	**AUTNZ315**	1040	892	1374	714	485	18	717
400	**AUTNZ400**	1532	1000	1755	806	684	18	988

AUTNZ IP65

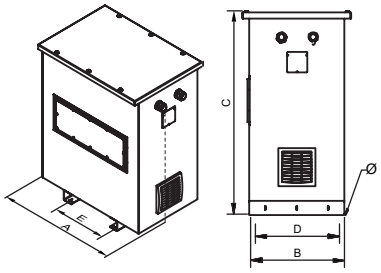


Up to 2 kVA

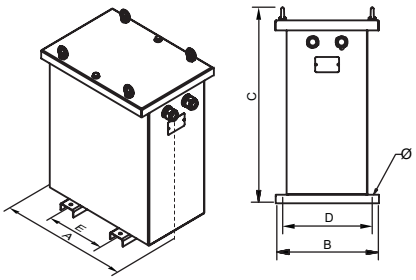


From 3,15 kVA up to 10 kVA

AUTNZ IP54



From 80 kVA



From 12,5 kVA up to 63 kVA

Sectioned

AUTN SERIES

For creating artificial neutral in three-phase lines · Input **400 V** · Output **Neutral** · **Zig-zag connection**

On-request manufacturing options (please see prices)

Power	**From 1 kVA to 400 kVA**
Windings	**Copper or aluminium**
Frequency	**From 50 Hz to 400 Hz**
IP rating	**IP00, IP20, IP23, IP31, IP42, IP54, IP55 and IP65**
IK rating	**IK08 and IK10**
Room temperature	**Up to 60 ºC**
Locks	**Screw, key**
Short circuit voltage	**From 2% to 9%**
Operation	**Intermittent, continuous**
Cooling	**Natural, forced ventilation**
Electrostatic shield	**Up to three shields**
Class	**I, II**
Altitude	**Up to 4000 m**
Protections	**In both primary and secondary (figure 1)**
Temperature sensors	**PT100 (figure 2), PTC (figure 3) or bimetallic**
Temperature control	**Temperature control station (4xPT100) (figure 4), PTC thermal relays (3xPTC / 6xPTC)**
Network analyser	**(Figure 5)**
Anti condensation system	**Hygrostat**
Heating system	**Heating elements**
External protection	**Anti-flash varnish, metallic or stainless steel enclosure**
Transportation and hoisting	**Wheels (figure 6), lifting points**
Paint	**C3, C4, C5, different RAL**
Feature plate	**High generation polymer or stainless steel (figure 7)**
Anti vibration system	**Silentblock**
Adjustment	**-10%; -7.5%; -5%; -2.5%; +2.5%; +5%; +7.5%; +10% With bridges (figure 8) or selector (figure 9)**
Certified	**CE, DNV-GL, BV, UL (insulation) and POLYLUX laboratory**
Climate class / environment / fire	**Up to C2-E2-F1**

Figure 1

Figure 2

Figure 3

Figure 4

Figure 5

Figure 6

Figure 7

Figure 8

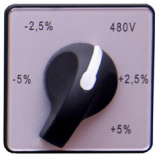


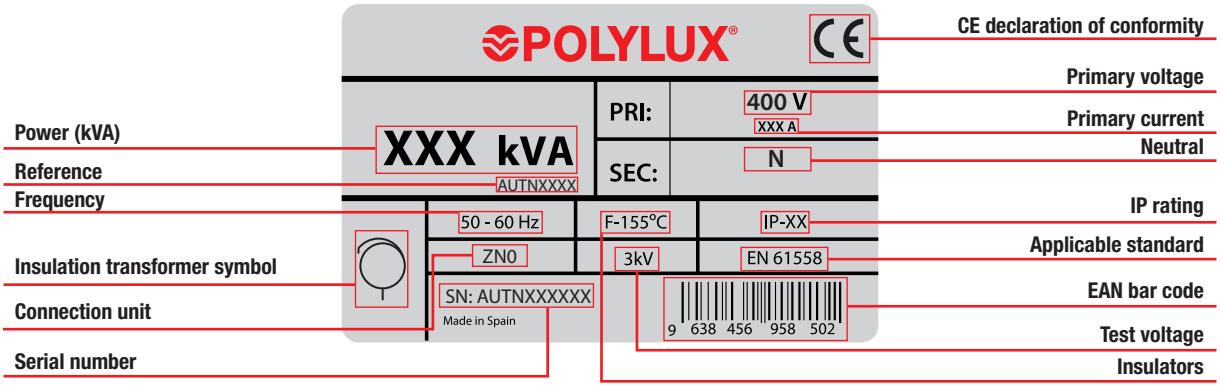
Figure 9

AUTN SERIES

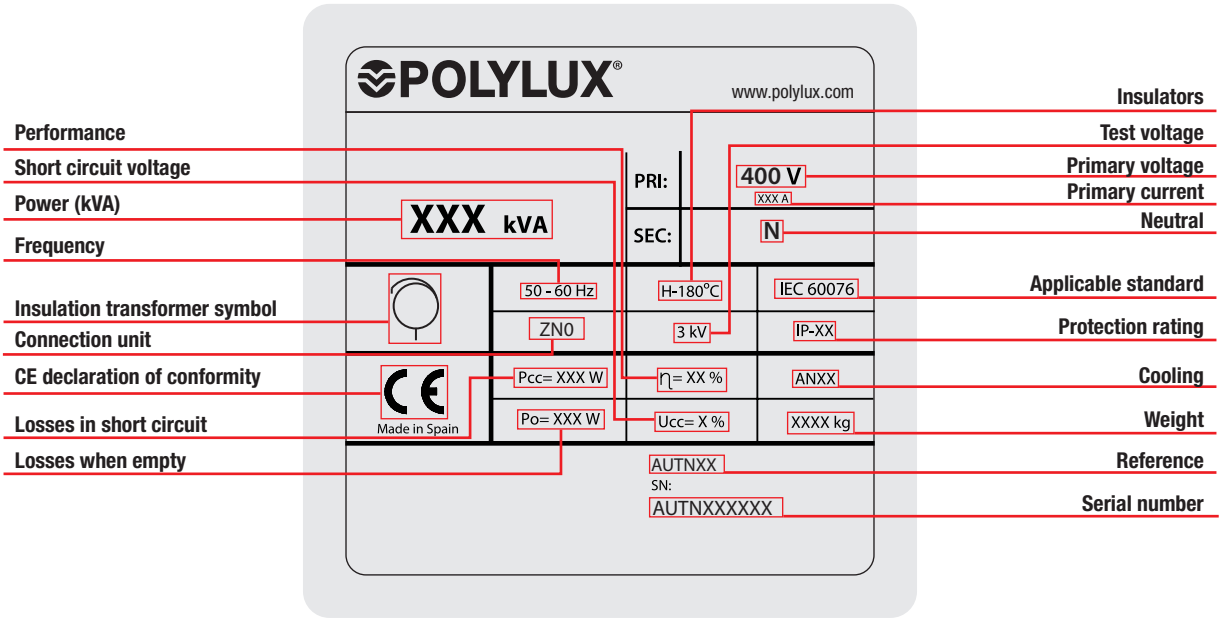
For creating artificial neutral in three-phase lines · Input **400 V** · Output **Neutral** · **Zig-zag connection**

Feature plate structure

Label up to 63 kVA:



Label from 100 kVA:



AUTF SERIES

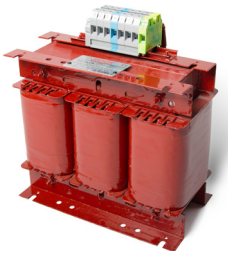
For voltage changes **800 V** / **400 V**

Definition and applications

The AUTF series are three-phase autotransformers that can be used to reduce the output voltage of inverters from 800V to 400V. Thus achieving the working voltage required by the customer.

Manufacturing characteristics

- All the transformers are dipped in anti-flash varnish and then compacted in the furnace. This process increases the insulation grade, reduces noise and provides anti-moisture, waterproofed protection
- The high power transformers are manufactured with format cores and low loss properties, thus contributing to improving performance.
- All the transformers are checked automatically one by one and the compliance test report is created in accordance with the corresponding standard.



AUTFX

· IP00 protection rating.
· Power from 1 kVA to 2000 kVA.
· Total impregnated in anti-flash varnish.
· Hoisting elements included.

AUTFW

· IP23 rating (IK08).
· Power from 1 kVA to 2000 kVA.
· Metal box painted with RAL7035 polyester resin.
· High resistance to corrosion.
· Cable outlet with cable gland.
· Hoisting elements included.
· Detachable top and front cover.

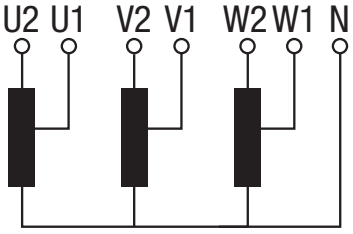
AUTFZ

· IP65 rating up to 63 kVA / IP54 from 80 kVA (IK10).
· Power from 1 kVA to 2000 kVA.
· Metal box painted with RAL7035 polyester resin.
· High resistance to corrosion.
· Stuffing box cover for cable input depending on installation needs.
· Hoisting elements included.
· Detachable top cover.
· With silentblock.

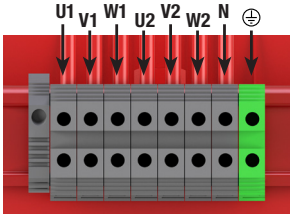
Technical features - standard model

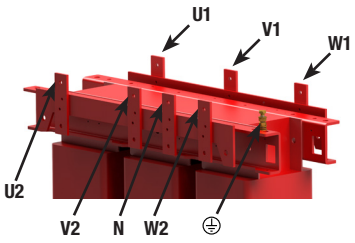
Rating	**1 kVA to 2000 kVA**
Standard voltage	**800 V / 400 V**
Standard frequency	**50-60 Hz**
Connection unit	**YN0**
Insulators	**Class H - 180 ºC**
Temperature rise	**Class F ≤ 80 kVA** **Class H ≥ 100 kVA** *More information in Technical Appendix (T.A.1)
Windings	**Class HC-200 ºC**
Class	**I**
Altitude	**1000 m**
Enclosure colour	**RAL 7035**
IP rating	**IP00 (AUTFX)** **IP23 (AUTFW)** **IP65 rating up to 63 kVA / IP54 from 80 kVA (AUTFZ)**
IK rating	**IK08 (AUTFW)** **IK10 (AUTFZ)**
Paint class (ISO 12944)	**C3 (AUTFW)** **C4 (AUTFZ)**
Room temperature	**45 ºC**
Standards	**IEC/EN 61558, CE up to 31.5 kVA** **IEC/EN 60076, CE from 40 kVA**
Test voltage	**3 kV (1 min, 50 Hz)**
Inrush	**< 12 In**
K factor	**4**
Operation	**Continuous**
Cooling	**AN (AUTFX) - ANAN (AUTFW / AUTFZ IP65) - ANAF (≥1000kVA AUTFW / AUTFZ IP54)**

Electrical diagram



Connection



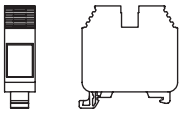


AUTF SERIES

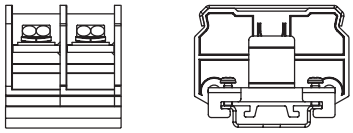
For voltage changes **800 V** / **400 V**

Terminal types

Terminals		Maximum cross-section conductor mm²	Maximum tightening torque		AUTFX-AUTFW-AUTFZ Power kVA			
					Entrada		Salida	
			N-m	Lb-In	From	To	From	To
Power strip 1	Terminal 4	6	0,5	4,4	1	2	1	2
	Terminal 10	16	1,2	10,6	3,15	5	3,15	5
	Terminal 16	25	1,2	10,6	8	12,5	8	12,5
	Terminal 35	50	2,5	22,1	16	31,5	16	31,5
	Terminal 50	70	6	53,1	40	50	40	50
Power strip 2	Terminal 100	35	6,7	60	63	63	-	-
	Terminal 200	95	9	80	80	80	63	80
	Terminal 300	150	9	80	100	125	100	125
Connection plate	Plate 30 X 1	150	-	-	160	160	-	-
	Plate 40 X 1	150	-	-	200	250	160	160
	Plate 50 X 1	150	-	-	315	500	200	250
	Plate 60 X 2	150	-	-	630	800	315	500
	Plate 80 X 4	150	-	-	1000	1000	630	800
	Plate 100 X 4	150	-	-	-	-	1000	1000



Power strip 1



Power strip 2

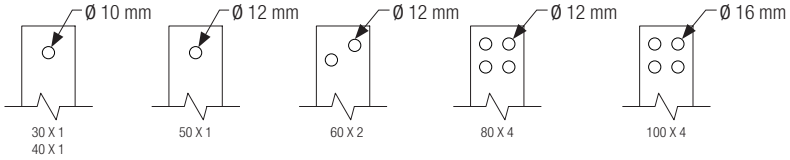


Plate connection

Theoretical data - standard model

Power kVA	Reference	Insulation class	Intensidad A		Protections A		Protections A		Noise dB
			800 V	400 V	Input (800 V)	Output (400 V)	Input (400 V)	Output (800 V)	
AUTFX									
1	**AUTFX1**	F	0.7	1.4	2 (D/aM)	1 (C/gG)	3 (D/aM)	0.7 (C/gG)	≤45
2	**AUTFX2**	F	1.4	2.9	3 (D/aM)	2.5 (C/gG)	10 (D/aM)	1 (C/gG)	≤45
3.15	**AUTFX3.15**	F	2.3	4.5	6 (D/aM)	4 (C/gG)	10 (D/aM)	2 (C/gG)	≤45
5	**AUTFX5**	F	3.6	7.2	10 (D/aM)	7 (C/gG)	16 (D/aM)	3 (C/gG)	≤45
8	**AUTFX8**	F	5.8	11.5	16 (D/aM)	10 (C/gG)	25 (D/aM)	5 (C/gG)	≤45
10	**AUTFX10**	F	7.2	14.4	16 (D/aM)	12 (C/gG)	32 (D/aM)	8 (C/gG)	≤45
12.5	**AUTFX12.5**	F	9	18	20 (D/aM)	12 (C/gG)	40 (D/aM)	8 (C/gG)	≤45
16	**AUTFX16**	F	11.5	23.1	25 (D/aM)	20 (C/gG)	50 (D/aM)	10 (C/gG)	≤45
20	**AUTFX20**	F	14.4	28.9	32 (D/aM)	25 (C/gG)	63 (D/aM)	12 (C/gG)	≤45
25	**AUTFX25**	F	18	36.1	40 (D/aM)	30 (C/gG)	40 (D/aM)	16 (C/gG)	≤45
31.5	**AUTFX31.5**	F	22.7	45.5	50 (D/aM)	40 (C/gG)	100 (D/aM)	20 (C/gG)	≤45
40	**AUTFX40**	F	28.9	57.7	63 (D/aM)	50 (C/gG)	125 (D/aM)	25 (C/gG)	≤55
50	**AUTFX50**	F	36.1	72.2	80 (D/aM)	60 (C/gG)	160 (D/aM)	32 (C/gG)	≤55
63	**AUTFX63**	F	45.5	90.9	100 (D/aM)	80 (C/gG)	200 (D/aM)	40 (C/gG)	≤55
80	**AUTFX80**	F	57.7	115.5	125 (D/aM)	100 (C/gG)	300 (D/aM)	50 (C/gG)	≤55
100	**AUTFX100**	H	72.2	144.3	160 (D/aM)	100 (C/gG)	300 (D/aM)	63 (C/gG)	≤55
125	**AUTFX125**	H	90.2	180.4	200 (D/aM)	160 (C/gG)	400 (D/aM)	80 (C/gG)	≤55
160	**AUTFX160**	H	115.5	230.9	300 (D/aM)	200 (C/gG)	500 (D/aM)	100 (C/gG)	≤55
200	**AUTFX200**	H	144.3	288.7	300 (D/aM)	250 (C/gG)	600 (D/aM)	100 (C/gG)	≤55
250	**AUTFX250**	H	180.4	360.8	400 (D/aM)	300 (C/gG)	800 (D/aM)	160 (C/gG)	≤65
315	**AUTFX315**	H	227.3	454.7	500 (D/aM)	400 (C/gG)	1000 (D/aM)	200 (C/gG)	≤65
400	**AUTFX400**	H	288.7	577.4	600 (D/aM)	500 (C/gG)	1200 (D/aM)	250 (C/gG)	≤65
500	**AUTFX500**	H	360.8	721.7	800 (D/aM)	600 (C/gG)	1600 (D/aM)	300 (C/gG)	≤65
630	**AUTFX630**	H	454.7	909.3	1000 (D/aM)	800 (C/gG)	2000 (D/aM)	400 (C/gG)	≤65
800	**AUTFX800**	H	577.4	1154.7	1200 (D/aM)	1000 (C/gG)	2500 (D/aM)	500 (C/gG)	≤65
1000	**AUTFX1000**	H	721.7	1443.4	1600 (D/aM)	1000 (C/gG)	2500 (D/aM)	600 (C/gG)	≤65
1250	**AUTFX1250**								
1600	**AUTFX1600**								
2000	**AUTFX2000**								

AUTF SERIES

For voltage changes **800 V** / **400 V**

Theoretical data - standard model

Pow. kVA	Ref.	Insulation class	Intensidad A		Protections A		Protections A		Noise dB	Cable gland (AUTFW) Stuffing boxes (AUTFZ)	
			800 V	400 V	Input (800 V)	Output (400 V)	Input (400 V)	Output (800 V)		ø max. (mm)	Quantity
AUTFW											
1	**AUTFW1**	F	0.7	1.4	2 (D/aM)	1 (C/gG)	3 (D/aM)	0.7 (C/gG)	≤45	14	2
2	**AUTFW2**	F	1.4	2.9	3 (D/aM)	2.5 (C/gG)	10 (D/aM)	1 (C/gG)	≤45	14	2
3.15	**AUTFW3.15**	F	2.3	4.5	6 (D/aM)	4 (C/gG)	10 (D/aM)	2 (C/gG)	≤45	14	2
5	**AUTFW5**	F	3.6	7.2	10 (D/aM)	7 (C/gG)	16 (D/aM)	3 (C/gG)	≤45	14	2
8	**AUTFW8**	F	5.8	11.5	16 (D/aM)	10 (C/gG)	25 (D/aM)	5 (C/gG)	≤45	18	2
10	**AUTFW10**	F	7.2	14.4	16 (D/aM)	12 (C/gG)	32 (D/aM)	8 (C/gG)	≤45	18	2
12.5	**AUTFW12.5**	F	9	18	20 (D/aM)	12 (C/gG)	40 (D/aM)	8 (C/gG)	≤45	18	2
16	**AUTFW16**	F	11.5	23.1	25 (D/aM)	20 (C/gG)	50 (D/aM)	10 (C/gG)	≤45	18	2
20	**AUTFW20**	F	14.4	28.9	32 (D/aM)	25 (C/gG)	63 (D/aM)	12 (C/gG)	≤45	25	4
25	**AUTFW25**	F	18	36.1	40 (D/aM)	30 (C/gG)	40 (D/aM)	16 (C/gG)	≤45	25	4
31.5	**AUTFW31.5**	F	22.7	45.5	50 (D/aM)	40 (C/gG)	100 (D/aM)	20 (C/gG)	≤45	25	4
40	**AUTFW40**	F	28.9	57.7	63 (D/aM)	50 (C/gG)	125 (D/aM)	25 (C/gG)	≤55	32	4
50	**AUTFW50**	F	36.1	72.2	80 (D/aM)	60 (C/gG)	160 (D/aM)	32 (C/gG)	≤55	32	4
63	**AUTFW63**	F	45.5	90.9	100 (D/aM)	80 (C/gG)	200 (D/aM)	40 (C/gG)	≤55	32	4
80	**AUTFW80**	F	57.7	115.5	125 (D/aM)	100 (C/gG)	300 (D/aM)	50 (C/gG)	≤55	32	4
100	**AUTFW100**	H	72.2	144.3	160 (D/aM)	100 (C/gG)	300 (D/aM)	63 (C/gG)	≤55	32	8
125	**AUTFW125**	H	90.2	180.4	200 (D/aM)	160 (C/gG)	400 (D/aM)	80 (C/gG)	≤55	32	8
160	**AUTFW160**	H	115.5	230.9	300 (D/aM)	200 (C/gG)	500 (D/aM)	100 (C/gG)	≤55	32	8
200	**AUTFW200**	H	144.3	288.7	300 (D/aM)	250 (C/gG)	600 (D/aM)	100 (C/gG)	≤55	32	8
250	**AUTFW250**	H	180.4	360.8	400 (D/aM)	300 (C/gG)	800 (D/aM)	160 (C/gG)	≤65	32	8
315	**AUTFW315**	H	227.3	454.7	500 (D/aM)	400 (C/gG)	1000 (D/aM)	200 (C/gG)	≤65	44	8
400	**AUTFW400**	H	288.7	577.4	600 (D/aM)	500 (C/gG)	1200 (D/aM)	250 (C/gG)	≤65	44	8
500	**AUTFW500**	H	360.8	721.7	800 (D/aM)	600 (C/gG)	1600 (D/aM)	300 (C/gG)	≤65	44	8
630	**AUTFW630**	H	454.7	909.3	1000 (D/aM)	800 (C/gG)	2000 (D/aM)	400 (C/gG)	≤65	44	8
800	**AUTFW800**	H	577.4	1154.7	1200 (D/aM)	1000 (C/gG)	2500 (D/aM)	500 (C/gG)	≤65	44	8
1000	**AUTFW1000**	H	721.7	1443.4	1600 (D/aM)	1000 (C/gG)	2500 (D/aM)	600 (C/gG)	≤65	44	8
1250	**AUTFW1250**										
1600	**AUTFW1600**										
2000	**AUTFW2000**										
AUTFZ											
1	**AUTFZ1**	F	0.7	1.4	2 (D/aM)	1 (C/gG)	3 (D/aM)	0.7 (C/gG)	≤45	10 - 14	2
2	**AUTFZ2**	F	1.4	2.9	3 (D/aM)	2.5 (C/gG)	10 (D/aM)	1 (C/gG)	≤45	10 - 14	2
3.15	**AUTFZ3.15**	F	2.3	4.5	6 (D/aM)	4 (C/gG)	10 (D/aM)	2 (C/gG)	≤45	10 - 14	2
5	**AUTFZ5**	F	3.6	7.2	10 (D/aM)	7 (C/gG)	16 (D/aM)	3 (C/gG)	≤45	18 - 25	2
8	**AUTFZ8**	F	5.8	11.5	16 (D/aM)	10 (C/gG)	25 (D/aM)	5 (C/gG)	≤45	18 - 25	2
10	**AUTFZ10**	F	7.2	14.4	16 (D/aM)	12 (C/gG)	32 (D/aM)	8 (C/gG)	≤45	18 - 25	2
12.5	**AUTFZ12.5**	F	9	18	20 (D/aM)	12 (C/gG)	40 (D/aM)	8 (C/gG)	≤45	18 - 25	2
16	**AUTFZ16**	F	11.5	23.1	25 (D/aM)	20 (C/gG)	50 (D/aM)	10 (C/gG)	≤45	18 - 25	2
20	**AUTFZ20**	F	14.4	28.9	32 (D/aM)	25 (C/gG)	63 (D/aM)	12 (C/gG)	≤45	18 - 25	2
25	**AUTFZ25**	F	18	36.1	40 (D/aM)	30 (C/gG)	40 (D/aM)	16 (C/gG)	≤45	18 - 25	2
31.5	**AUTFZ31.5**	F	22.7	45.5	50 (D/aM)	40 (C/gG)	100 (D/aM)	20 (C/gG)	≤45	22 - 32	2
40	**AUTFZ40**	F	28.9	57.7	63 (D/aM)	50 (C/gG)	125 (D/aM)	25 (C/gG)	≤50	22 - 32	2
50	**AUTFZ50**	F	36.1	72.2	80 (D/aM)	60 (C/gG)	160 (D/aM)	32 (C/gG)	≤50	22 - 32	2
63	**AUTFZ63**	F	45.5	90.9	100 (D/aM)	80 (C/gG)	200 (D/aM)	40 (C/gG)	≤50	22 - 32	2
80	**AUTFZ80**	F	57.7	115.5	125 (D/aM)	100 (C/gG)	300 (D/aM)	50 (C/gG)	≤50	22 - 32	2
100	**AUTFZ100**	H	72.2	144.3	160 (D/aM)	100 (C/gG)	300 (D/aM)	63 (C/gG)	≤50	22 - 32	2
125	**AUTFZ125**	H	90.2	180.4	200 (D/aM)	160 (C/gG)	400 (D/aM)	80 (C/gG)	≤50	22 - 32	2
160	**AUTFZ160**	H	115.5	230.9	300 (D/aM)	200 (C/gG)	500 (D/aM)	100 (C/gG)	≤50	22 - 32	2
200	**AUTFZ200**	H	144.3	288.7	300 (D/aM)	250 (C/gG)	600 (D/aM)	100 (C/gG)	≤55	22 - 32	2
250	**AUTFZ250**	H	180.4	360.8	400 (D/aM)	300 (C/gG)	800 (D/aM)	160 (C/gG)	≤55	22 - 32	2
315	**AUTFZ315**	H	227.3	454.7	500 (D/aM)	400 (C/gG)	1000 (D/aM)	200 (C/gG)	≤60	34 - 44	2
400	**AUTFZ400**	H	288.7	577.4	600 (D/aM)	500 (C/gG)	1200 (D/aM)	250 (C/gG)	≤60	34 - 44	2
500	**AUTFZ500**	H	360.8	721.7	800 (D/aM)	600 (C/gG)	1600 (D/aM)	300 (C/gG)	≤65	34 - 44	2
630	**AUTFZ630**	H	454.7	909.3	1000 (D/aM)	800 (C/gG)	2000 (D/aM)	400 (C/gG)	≤65	34 - 44	2
800	**AUTFZ800**	H	577.4	1154.7	1200 (D/aM)	1000 (C/gG)	2500 (D/aM)	500 (C/gG)	≤65	34 - 44	2
1000	**AUTFZ1000**	H	721.7	1443.4	1600 (D/aM)	1000 (C/gG)	2500 (D/aM)	600 (C/gG)	≤65	34 - 44	2
1250	**AUTFZ1250**										
1600	**AUTFZ1600**										
2000	**AUTFZ2000**										

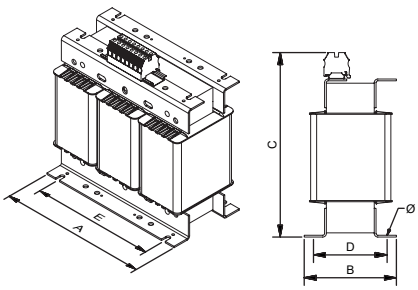
AUTF SERIES

For voltage changes **800 V** / **400 V**

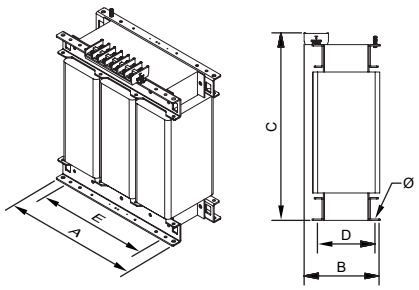
Measurements

Power kVA	Reference	External dimensions mm			Fastening elements mm			Weight kg
		A	B	C	D	E	Ø	
AUTFX								
1	**AUTFX1**	150	94	178	66	125	6	5,9
2	**AUTFX2**	180	94	203	76	150	6	9,5
3.15	**AUTFX3.15**	240	145	253	125	200	9	20
5	**AUTFX5**	300	124	303	115	250	9	23,9
8	**AUTFX8**	300	124	303	115	250	9	36
10	**AUTFX10**	300	164	303	155	250	9	40,4
12.5	**AUTFX12.5**	360	144	353	122	300	11	55
16	**AUTFX16**	360	164	353	142	300	11	67
20	**AUTFX20**	420	170	419	136	350	11	78
25	**AUTFX25**	420	190	419	156	350	11	94
31.5	**AUTFX31.5**	480	250	480	144	400	11	105
40	**AUTFX40**	480	270	480	164	400	11	125
50	**AUTFX50**	480	290	480	184	400	11	145
63	**AUTFX63**	480	310	480	204	400	11	162
80	**AUTFX80**	670	280	615	170	426	13	191
100	**AUTFX100**	670	300	615	190	426	13	233
125	**AUTFX125**	670	320	690	210	426	13	277
160	**AUTFX160**	670	340	690	230	426	13	320
200	**AUTFX200**	670	360	690	250	426	13	368
250	**AUTFX250**	785	550	880	460	472	17	462
315	**AUTFX315**	785	550	880	460	472	17	560
400	**AUTFX400**	785	550	880	460	472	17	660
500	**AUTFX500**	1016	550	1080	460	690	17	808
630	**AUTFX630**	1070	550	1220	460	690	17	1000
800	**AUTFX800**	1070	550	1220	460	690	17	1092
1000	**AUTFX1000**	1300	550	1350	460	800	17	1658
1250	**AUTFX1250**	1300	600	1350	600	700	17	1980
1600	**AUTFX1600**	1300	700	1350	600	700	17	2450
2000	**AUTFX2000**	1300	800	1350	600	700	17	3000

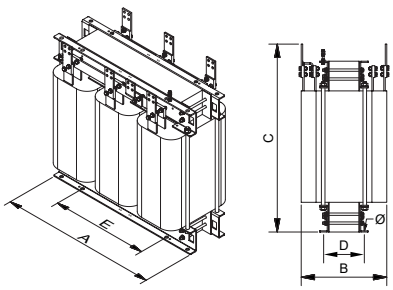
AUTFX IP00



Up to 50 kVA



From 63 kVA up to 125 kVA



From 160 kVA

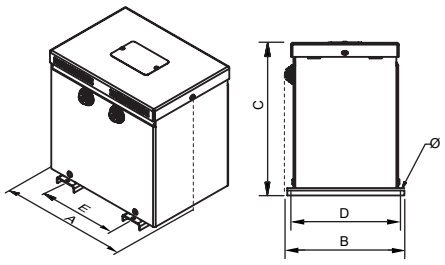
AUTF SERIES

For voltage changes **800 V** / **400 V**

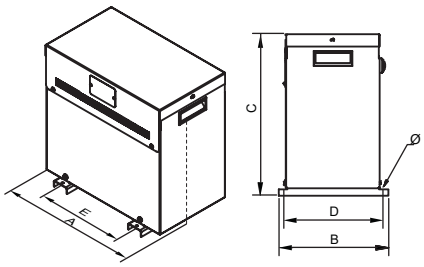
Measurements

Power kVA	Reference	External dimensions mm			Fastening elements mm			Weight kg
		A	B	C	D	E	Ø	
AUTFW								
1	**AUTFW1**	196	175	220	165	100	6	5,40
2	**AUTFW2**	240	190	250	180	150	6	12
3.15	**AUTFW3.15**	240	190	250	180	150	6	16
5	**AUTFW5**	320	230	315	205	200	6	25
8	**AUTFW8**	387	260	382	245	250	6	28
10	**AUTFW10**	387	260	382	245	250	6	38
12.5	**AUTFW12.5**	387	260	382	245	250	6	42
16	**AUTFW16**	387	260	382	245	250	6	50
20	**AUTFW20**	460	340	501	300	300	12	57
25	**AUTFW25**	460	340	501	300	300	12	68
31.5	**AUTFW31.5**	460	340	501	300	300	12	70
40	**AUTFW40**	549	424	644	375	345	12	112
50	**AUTFW50**	616	424	710	375	345	12	141
63	**AUTFW63**	616	424	710	375	345	12	167
80	**AUTFW80**	616	424	710	375	345	12	186
100	**AUTFW100**	815	555	975	500	415	12	244
125	**AUTFW125**	815	555	975	500	415	12	279
160	**AUTFW160**	815	555	975	500	415	12	310
200	**AUTFW200**	815	555	975	500	415	12	371
250	**AUTFW250**	990	682	1250	582	470	18	454
315	**AUTFW315**	815	555	975	500	415	12	506
400	**AUTFW400**	990	682	1250	582	470	18	707
500	**AUTFW500**	1215	772	1555	672	690	18	862
630	**AUTFW630**	1215	772	1555	672	690	18	1102
800	**AUTFW800**	1215	772	1555	672	690	18	1431
1000	**AUTFW1000**	1812	1000	1791	900	800	20	2091
1250	**AUTFW1250**	1812	1000	1791	900	800	20	801
1600	**AUTFW1600**	1812	1000	1791	900	800	20	907
2000	**AUTFW2000**	1812	1000	1791	900	800	20	3405

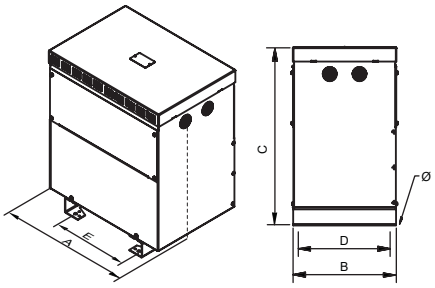
AUTFW IP23



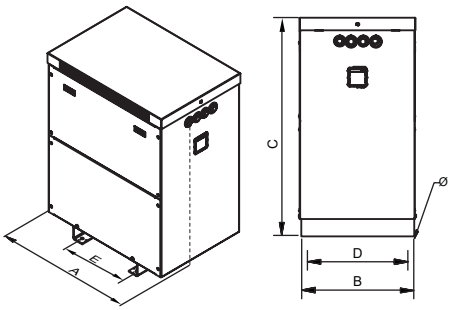
Up to 3,15 kVA



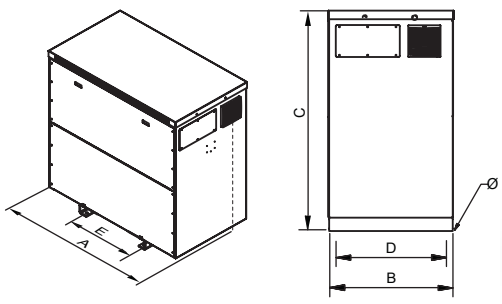
From 5 kVA up to 16 kVA



From 20 kVA up to 63 kVA



From 80 kVA up to 800 kVA



From 1000 kVA

Sectioned

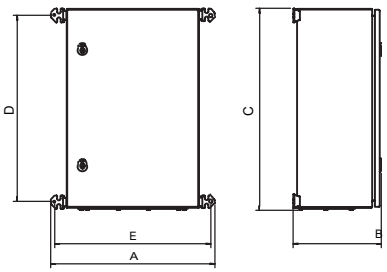
AUTF SERIES

For voltage changes **800 V** / **400 V**

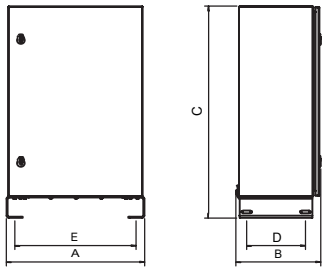
Measurements

Power kVA	Reference	External dimensions mm			Fastening elements mm			Weight kg
		A	B	C	D	E	Ø	
AUTFZ								
1	**AUTFZ1**	395	217	408	360	370	10.5	17
2	**AUTFZ2**	395	217	408	360	370	10.5	21
3.15	**AUTFZ3.15**	495	267	608	560	470	10.5	33
5	**AUTFZ5**	513	316	778	220	450	13	44
8	**AUTFZ8**	513	316	778	220	450	13	54
10	**AUTFZ10**	513	316	778	220	450	13	58
12.5	**AUTFZ12.5**	513	316	778	220	450	13	66
16	**AUTFZ16**	613	316	878	220	550	13	75
20	**AUTFZ20**	613	316	878	220	550	13	86
25	**AUTFZ25**	613	316	878	220	550	13	88
31.5	**AUTFZ31.5**	745	413	735	370	350	11	128
40	**AUTFZ40**	745	413	735	370	350	11	154
50	**AUTFZ50**	745	413	735	370	350	11	191
63	**AUTFZ63**	745	413	735	370	350	11	202
80	**AUTFZ80**	968	621	1150	500	426	12	397
100	**AUTFZ100**	968	621	1150	500	426	12	271
125	**AUTFZ125**	968	621	1150	500	426	12	305
160	**AUTFZ160**	968	621	1150	500	426	12	337
200	**AUTFZ200**	968	621	1150	500	426	12	397
250	**AUTFZ250**	968	621	1150	500	426	12	451
315	**AUTFZ315**	1040	892	1374	714	485	18	614
400	**AUTFZ400**	1040	892	1374	714	485	18	786
500	**AUTFZ500**	1532	1000	1755	806	684	18	982
630	**AUTFZ630**	1532	1000	1755	806	684	18	1221
800	**AUTFZ800**	1532	1000	1755	806	684	18	1551
1000	**AUTFZ1000**	1950	1093	1797	900	790	20	2109
1250	**AUTFZ1250**	1950	1093	1797	900	790	20	859
1600	**AUTFZ1600**	1950	1093	1797	900	790	20	2994
2000	**AUTFZ2000**	1812	1000	1791	900	800	20	3229

AUTFZ IP65

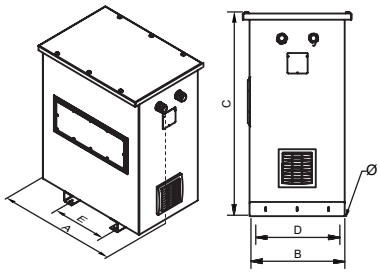


Up to 3,15 kVA

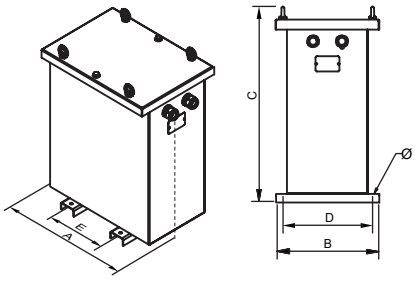


From 5 kVA up to 25 kVA

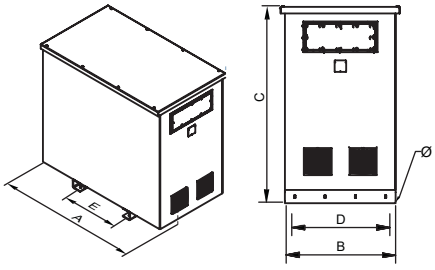
AUTFZ IP54



From 100 kVA up to 800 kVA



From 31,5 kVA up to 80 kVA



From 1000 kVA

AUTF SERIES

For voltage changes **800 V** / **400 V**

On-request manufacturing options (please see prices)

Power	**From 1 kVA to 2000 kVA**
Windings	**Copper or aluminium**
Voltage	**From 1 V to 12 kV**
Frequency	**From 50 Hz to 400 Hz**
IP rating	**IP00, IP20, IP23, IP31, IP42, IP54, IP55 and IP65**
IK rating	**IK08 and IK10**
Room temperature	**Up to 60 ºC**
Locks	**Screw, key**
Short circuit voltage	**From 2% to 9%**
Operation	**Intermittent, continuous**
Cooling	**Natural, forced ventilation**
Electrostatic shield	**Up to three shields**
Class	**I, II**
Altitude	**Up to 4000 m**
Protections	**In both primary and secondary (figure 1)**
Temperature sensors	**PT100 (figure 2), PTC (figure 3) or bimetallic**
Network analyser	**(Figure 5)**
Anti condensation system	**Hygrostat**
Heating system	**Heating elements**
External protection	**Anti-flash varnish, metallic or stainless steel enclosure**
Transportation and hoisting	**Wheels (figure 6), lifting points**
Paint	**C3, C4, C5, different RAL**
Feature plate	**High generation polymer or stainless steel (figure 7)**
Anti vibration system	**Silentblock**
Adjustment	**-10%; -7.5%; -5%; -2.5%; +2.5%; +5%; +7.5%; +10% With bridges (figure 8) or selector (figure 9)**
Certified	**CE, DNV-GL, BV, UL (insulation) and POLYLUX laboratory**
Climate class / environment / fire	**Up to C2-E2-F1**

Figure 1

Figure 2

Figure 3

Figure 4

Figure 5

Figure 6

Figure 7

Figure 8

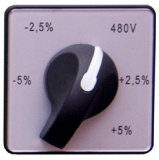


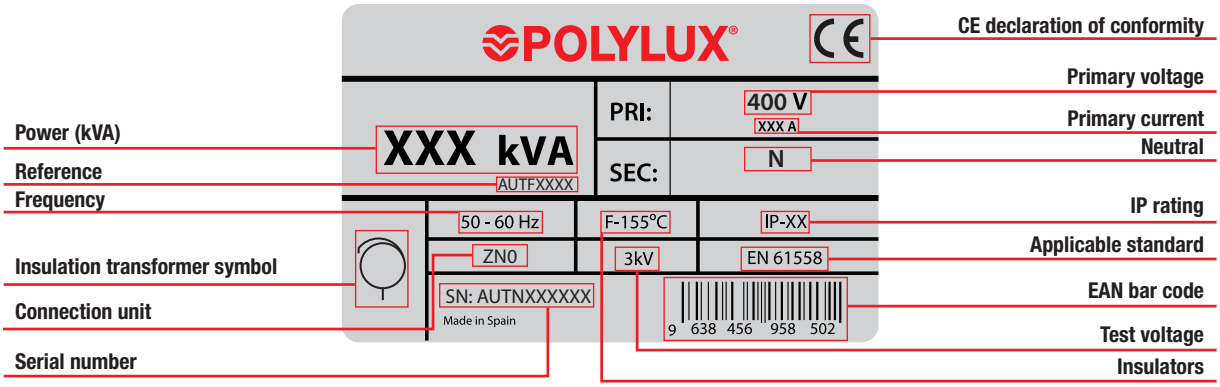
Figure 9

AUTF SERIES

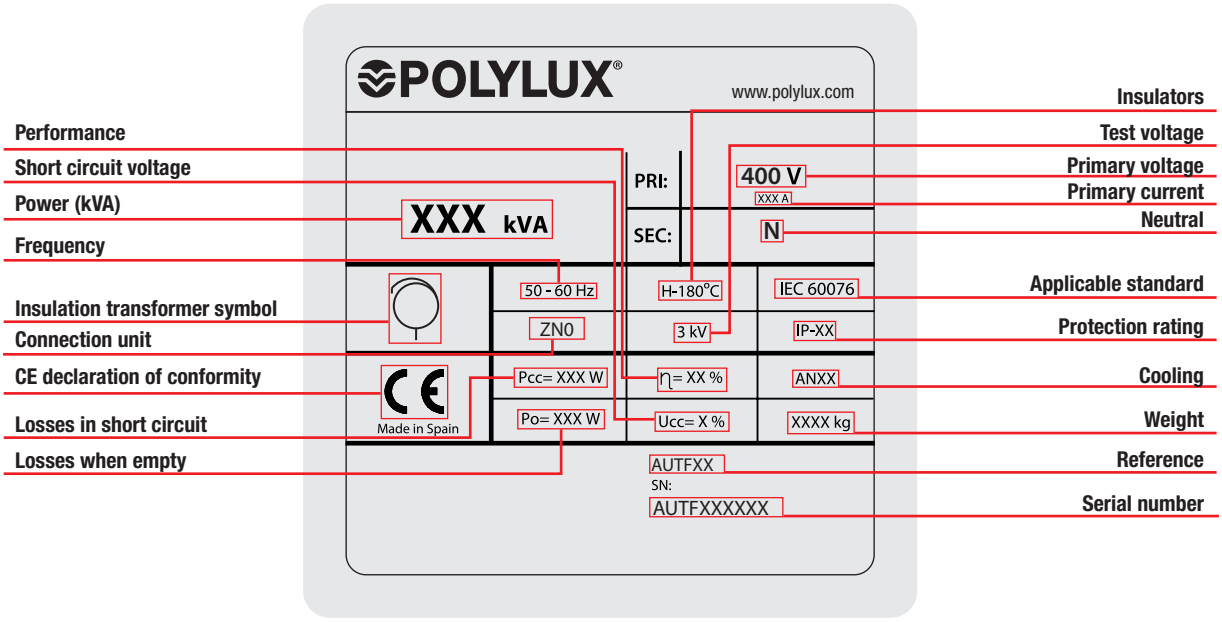
For voltage changes **800 V** / **400 V**

Feature plate structure

Plastic label up to 80 kVA:



Stainless steel label from 100 kVA:



REGM SERIES

Bidirectional single-phase · Input **230 V** · Output **230 V**

Definition and applications

The REGM bidirectional single-phase voltage regulator is an advanced solution designed by POLYLUX to eliminate inverter shutdowns in grid-connected photovoltaic installations. It acts bidirectionally, regulating grid fluctuations and also the overvoltages generated by the inverter on the grid.

It is ideal for self-consumption installations based on renewable energies that require an inverter to ensure that the inverters operate within their permitted working range, avoiding unexpected shutdowns and prolonging the useful life of the installation.

These problems are recurrent at the beginning and end of the line, also due to the impedances found in the installation, for example, rural houses, urbanizations of different types, etc.

Manufacturing characteristics

The REGM series is ideal for working with any inverter on the market, as it is fully compatible and designed to avoid noise pollution from this type of equipment. In addition, it is maintenance free, is manufactured with high technology and offers a series of exceptional performances in terms of safety.

Safety:
- Magneto-thermal protection.
- Protection against direct contact.

High-tech:
- Performance optimization of the photovoltaic plant.
- Grid voltage monitoring.
- High-quality display for visual evaluation of the grid status.
- Control electronics.
- Lightweight design adapted to small spaces.

Technical features - standard model

Rating	**5.000 VA to 10.000 VA**
Standard voltage	**Input 230 V / Output 230 V**
Lower limit voltage	**Input 180 V / Output 200 V**
Upper limit voltage	**Input 272 V / Output 248 V**
Adder mode	**Input ≤ 210 V**
Bypass mode	**Input 210 V - 248 V**
Subtractor mode	**Input ≥248 V**
Voltage jump	**±24V**
Total harmonic distortion (THDv)	**Null**
Standard frequency	**50-60 Hz**
Altitude	**2400 m.a.s.l**
IP rating	**IP65**
Noise	**≤ 25 dB**
Panel	**TFT screen**
Input protection	**Magnetothermic**
Cooling	**AN**
Standards	**IEC/EN/UNE-EN 61439-1, CE** **IEC/EN/UNE-EN 61558-1, CE** **IEC/EN/UNE-EN 61000, CE**

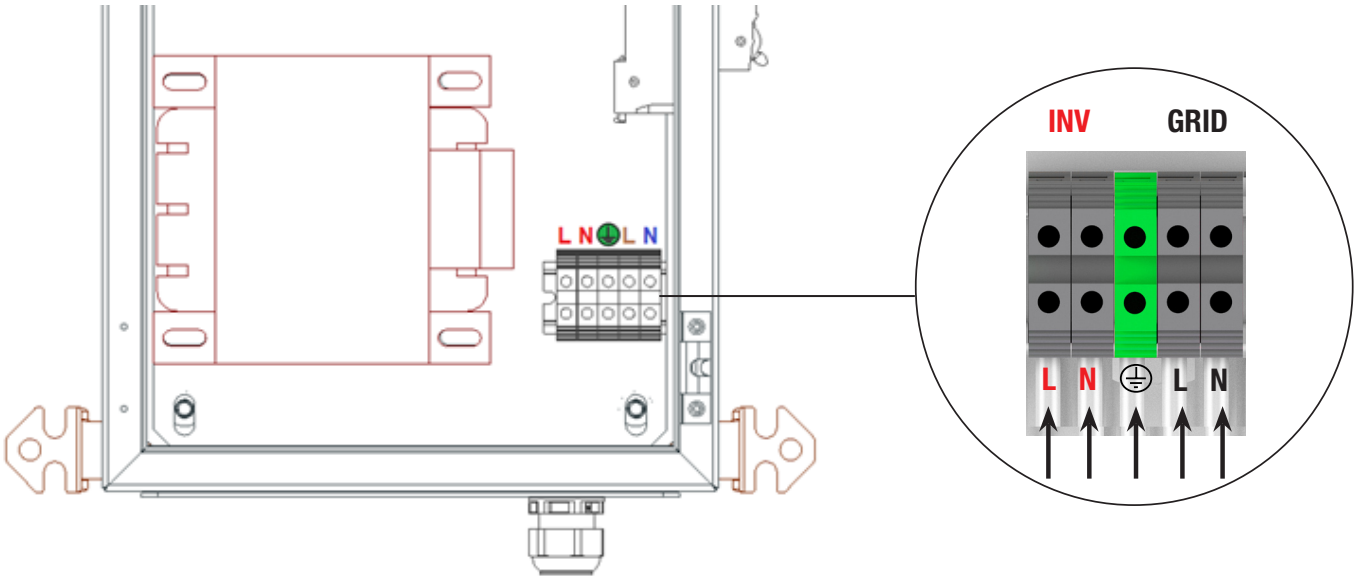
REGM

· Waterproof keypad.
· Internal terminal connection.
· Hanging accessory included.
· Wall cabinet (indoor installation).
· Cable gland for cable entry.

REGM SERIES

Bidirectional single-phase · Input **230 V** · Output **230 V**

Connection



Theoretical data - standard model

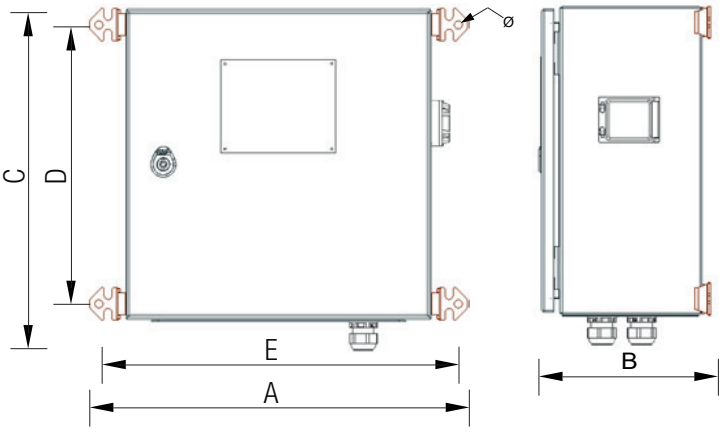
Voltage (V)		Operation mode	Regulation
Input	Output		
272	244	Subtractor	-24 V
265	238	Subtractor	-24 V
245	245	Bypass	Null
230	230	Bypass	Null
215	215	Bypass	Null
200	220	Adder	+24 V
180	200	Adder	+24 V

Stuffing boxes	
ø max. (mm)	Quantity
REGM	
18	2

Measurements

Rating VA	Dimensions mm							
	Reference	A	B	C	D	E	Ø	Weight kg
REGM								
5000	**REGM5**	495	215	442	360	471	10	25
6300	**REGM6.3**	495	215	442	360	471	10	26,2
8000	**REGM8**	495	215	442	360	471	10	27,8
10000	**REGM10**	495	215	442	360	471	10	29,5

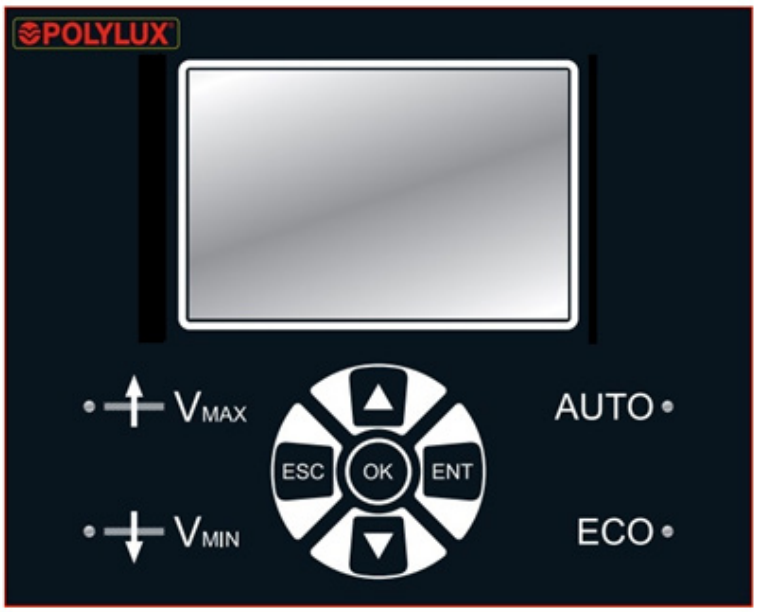
REGM IP65



REGM SERIES

Bidirectional single-phase · Input **230 V** · Output **230 V**

TFT screen structure



AUTO flashes red all the time and constantly.

ECO lights red when section 2 is activated.

Vmax lights red when section 3 is activated.

Vmin lights red when section 1 is activated.

VK SERIES

Single-phase · Input **230 V ± 20 %** - Output **230 V ± 1 %**

Definition and applications

With the single-phase automatic voltage stabilizer, a stable output voltage is achieved with a variable input voltage (power company supply or other generator.
The goal is to power industrial equipment that requires a stable voltage input.
Valid for installations where line tension experiences fluctuations throughout the day.
Not valid for sudden changes in tension such as company maneuvers.

Technical features - standard model

Rating	**5 kVA to 50 kVA**
Standard voltage	**Input: 230 V ± 20 % // Output: 230 V ± 1 %**
Standard frequency	**50-60 Hz**
Response speed	**10 V/s**
Enclosure colour	**RAL 7035**
IP rating	**IP20**
Paint class (ISO 12944)	**C3**
Operating temperature	**From -10 ºC to 60 ºC**
Relative humidity	**< 90 %**
Performance	**> 98 %**
Standards	**IEC/EN/UNE-EN 61439-1, CE IEC/EN/UNE-EN 61558-1, CE IEC/EN/UNE-EN 60076-11, CE IEC/EN/UNE-EN 61000, CE**
Operation	**Continuous**
Cooling	**ANAN**

Manufacturing characteristics

All the VK models have:
- Built-in BY-PASS
- Automatic control of the regulating motor
- Digital current and voltage indicators
- Maximum overload 200% 2 seconds.
- Visual and audible alarms
- Protections:
  - Against over temperatures.
  - Against short circuits.
  - Against over currents and overloads.
  - Phase failure and loss of protection per phase.
  - MCB input.
  - Outside stabilization margins.

- All the stabilisers are checked automatically one by one and the compliance report is created based on the respective standard.

In case of galvanic separation consult special isolating transformers TT and TK models:
- Independent installation in front of the stabilizer in IP23 grade.
- These transformers will be prepared to withstand an overvoltage of the +20% or the selected special margin.
- Possibility of incorporating electrostatic screen
- Possibility of incorporating overvoltage arresters.

VK SERIES

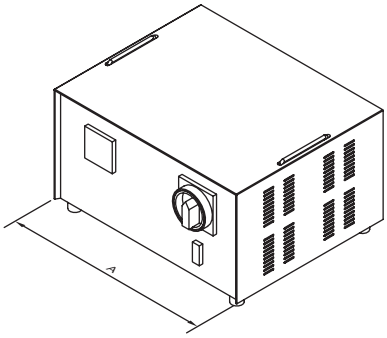
Single-phase · Input 230 V ± 20 % - Output 230 V ± 1 %

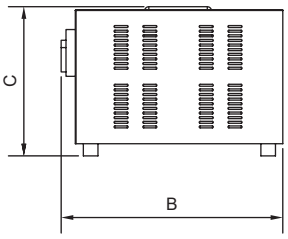
Theoretical data - standard model

Power kVA	Reference	Current A
VK		
5	VK5	21.7
6,3	VK6.3	27.4
8	VK8	34.8
10	VK10	43.5
16	VK16	69.6
20	VK20	87
25	VK25	108.7
30	VK30	130.4
40	VK40	173,9

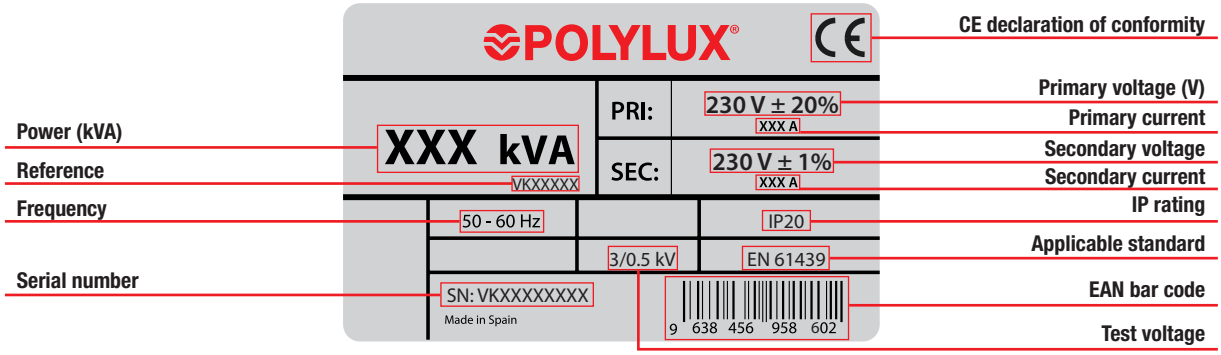
Measurements

Power kVA	Reference	External dimensions mm			Weight kg
		A	B	C	
VK					
5	VK5	500	350	300	40
6,3	VK6.3	550	350	300	46
8	VK8	550	350	300	46
10	VK10	550	350	300	72
16	VK16	550	350	300	72
20	VK20	500	550	850	130
25	VK25	500	550	850	130
30	VK30	600	600	900	200
40	VK40	600	600	900	200





Feature plate structure



On-request manufacturing options (please see prices)

Power	**From 5 kVA to 50 kVA**

VTF SERIES

Three-phase phase control · Input **400 V+N ± 20%** - Output **400 V+N ± 1%**

Definition and applications

With the three-phase automatic voltage stabilizer, a stable output voltage is achieved with a variable input voltage (power company supply or other generator.
The goal is to power industrial equipment that requires a stable voltage input.
Valid for installations where line tension experiences fluctuations throughout the day.
Not valid for sudden changes in tension such as company maneuvers.

Manufacturing characteristics

All the VTF models have:
- Built-in BY-PASS
- Automatic control of the regulating motor.
- Digital current and voltage indicators
- Maximum overload 200% 2 seconds.
- Visual and audible alarms
- Protections:
  - Against over temperatures.
  - Against short circuits.
  - Against over currents and overloads.
  - Phase failure and loss of protection per phase.
  - MCB input.
  - Outside stabilization margins.
- All the stabilisers are checked automatically one by one and the compliance report is created based on the respective standard.

In case of galvanic separation consult special isolating transformers TT and TK models:
- Independent installation in front of the stabilizer in IP23 grade.
- These transformers will be prepared to withstand an overvoltage of the +20% or the selected special margin.
- Possibility of incorporating electrostatic screen
- Possibility of incorporating overvoltage arresters.

Technical features - standard model

Rating	**5 kVA to 150 kVA**
Standard voltage	**Input: 400 V+N ± 20 % // Output: 400 V ± 1 %**
Standard frequency	**50-60 Hz**
Response speed	**10 V/s**
Enclosure colour	**RAL 7035**
IP rating	**IP20**
Paint class (ISO 12944)	**C3**
Operating temperature	**From -10 ºC to 60 ºC**
Relative humidity	**< 90 %**
Performance	**> 98 %**
Standards	**IEC/EN/UNE-EN 61439-1, CE IEC/EN/UNE-EN 61558-1, CE IEC/EN/UNE-EN 60076-11, CE IEC/EN/UNE-EN 61000, CE**
Operation	**Continuous**
Cooling	**ANAN**

VTF SERIES

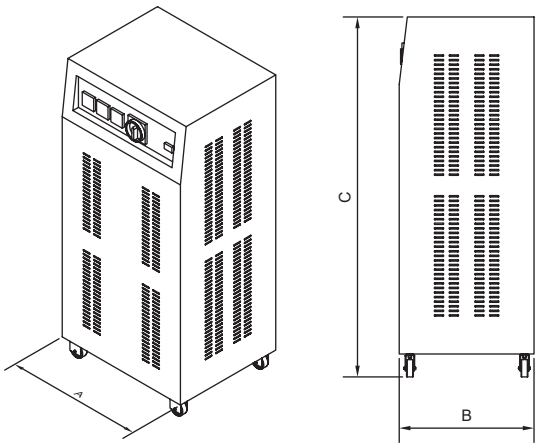
Three-phase phase control · Input 400 V+N ± 20% - Output 400 V+N ± 1%

Theoretical data - standard model

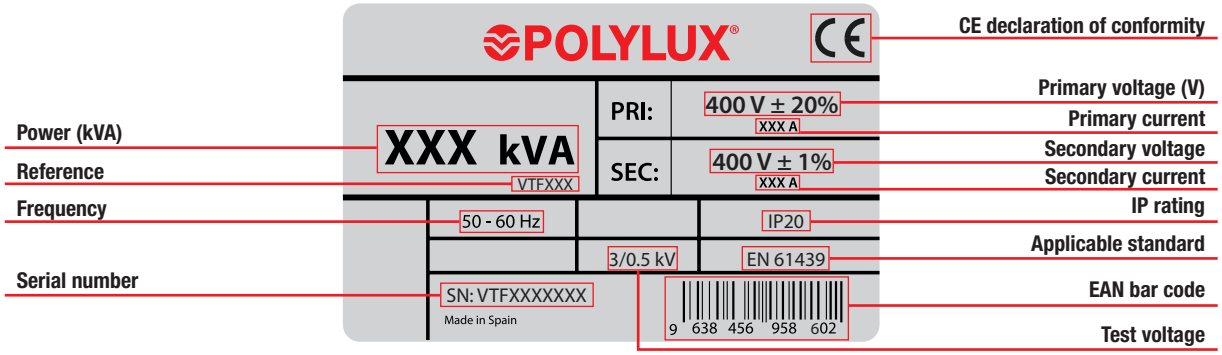
Power kVA	Reference	Current A
VTF		
5	VTF5	7.2
8	VTF8	11.5
10	VTF10	14.4
16	VTF16	23.1
20	VTF20	28.9
25	VTF25	36.1
31,5	VTF31.5	45.5
40	VTF40	57.7
50	VTF50	72.2
63	VTF63	90.9
80	VTF80	115.5
150	VTF150	144,3

Measurements

Power kVA	Reference	External dimensions mm			Weight kg
		A	B	C	
VTF					
5	VTF5	550	450	1100	90
8	VTF8	550	450	1100	90
10	VTF10	550	450	1100	90
16	VTF16	550	450	1100	130
20	VTF20	550	450	1100	130
25	VTF25	550	450	1100	180
31,5	VTF31.5	550	450	1100	180
40	VTF40	550	450	1100	180
50	VTF50	850	550	1300	340
63	VTF63	850	550	1300	340
80	VTF80	850	550	1300	450
100	VTF100	850	550	1300	450



Feature plate structure



On-request manufacturing options (please see prices)

Power	To 600 kVA

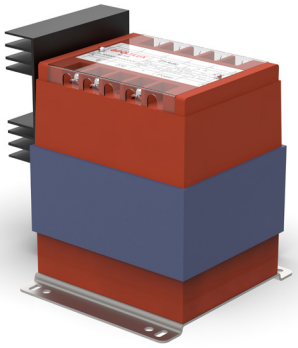
Transformer rectifiers

Configurable on request

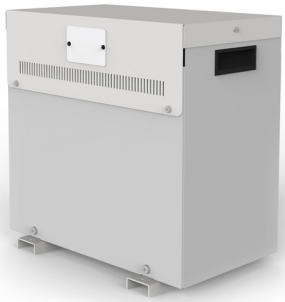
Definition and applications

Rectifier transformers are used in applications where loads require DC power supply, such as control systems, industrial automation, electromagnets, contactors or battery charging systems, among others.

Single-phase



Single-phase cast resin transformer rectifier **IP20**

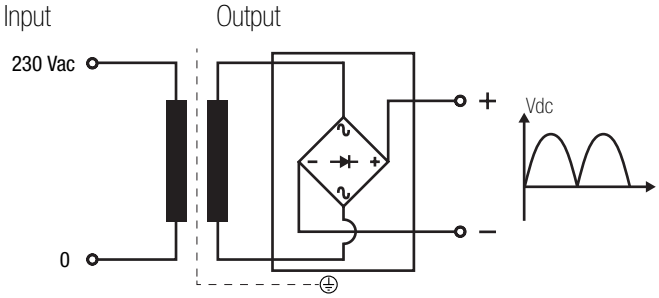


Single-phase transformer rectifier **IP23**

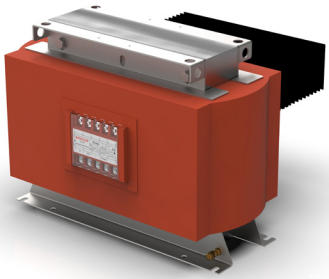
Available manufacturing options:

Output current	**1 up to 5000 Adc**
Input voltage	**230 V (Others to be agreed)**
Output voltage	**1 up to 1000 Vdc**
Room temperature	**45 ºC**
Frequency	**50-60 Hz**
Protection rating	**IP00 / IP20 / IP23 / IP54 / IP65**
Cooling	**AN / ANAN / ANAF**
Standards	**IEC/EN/UNE-EN 61204, CE**
Extras	**Capacitor filter option**

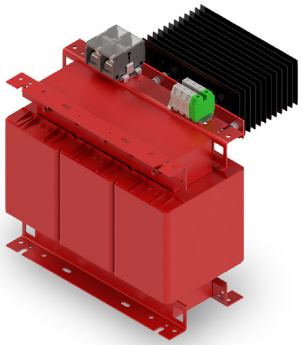
Electrical diagram



Three-phase



Three-phase cast resin transformer rectifier **IP20**

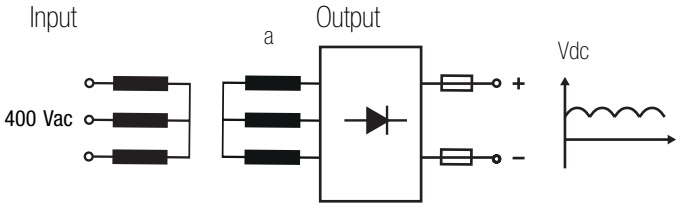


Three-phase transformer rectifier **IP00**

Available manufacturing options:

Output current	**1 up to 5000 Adc**
Input voltage	**400 V (Others to be agreed)**
Output voltage	**1 up to 1000 Vdc**
Room temperature	**45 ºC**
Frequency	**50-60 Hz**
Protection rating	**IP00 / IP20 / IP23 / IP54 / IP65**
Standards	**AN / ANAN / ANAF**
Extras	**IEC/EN/UNE-EN 61204, CE**

Electrical diagram



Controlled transformer rectifiers

Configurable on request

Definition and applications

Three-phase AC/DC controlled rectifier transformers with current and voltage control designed to power processes requiring high DC power, such as chemical electrolysis treatments in electroplating baths, hydrogen dissociation, surface treatment or purification processes.
They can also be used in other applications and applications where the following are required voltage and current control is required to adjust the parameters in these processes.

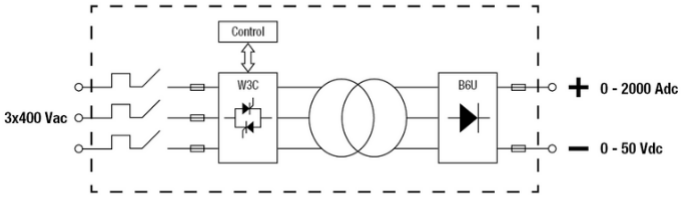
Manufacturing characteristics

- Control card for control of the regulation, which can be controlled via PLC.
- Inputs 0-5V/0-10V/0-20mA/4-20mA. RS232/MODBUS RS485 configurable (front panel control option).
- Galvanic isolation.
- 400Vac input protection.
- Vdc output protection
- Thermal protections with intrinsic ALARM and TRIP actuators.
- Mounted in refrigerated self-supporting modular cabinets.
- All transformers are automatically checked one by one, generating the conformity test report according to the corresponding standard.

Technical features - standard model

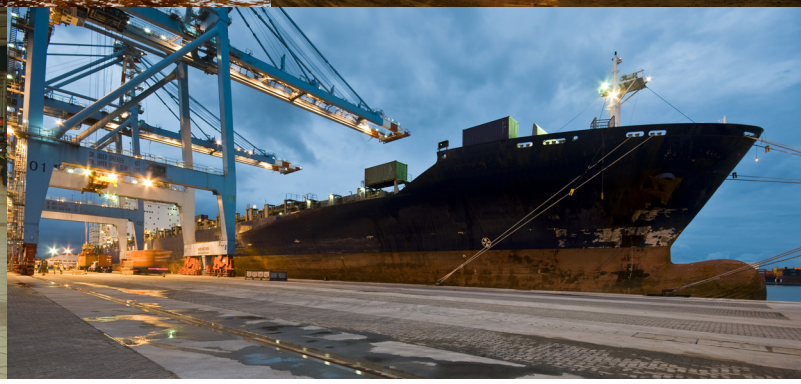
Rating	**0 up to 2000 Adc**
Voltages	**0 up to 50 Vdc**
Primary control	**SCR**
Rectifier	**B6U**
Frequency	**50-60 Hz**
Room temperature	**45 ºC**
Protection rating	**IP54**
Cooling	**ANAF**
Standards	**IEC/EN/UNE-EN 61204, CE**

Electrical diagram









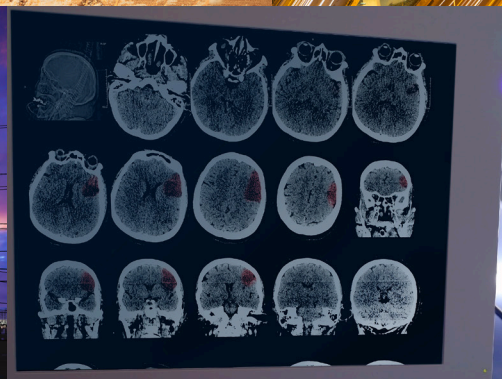
TAILOR-MADE FABRICATIONS

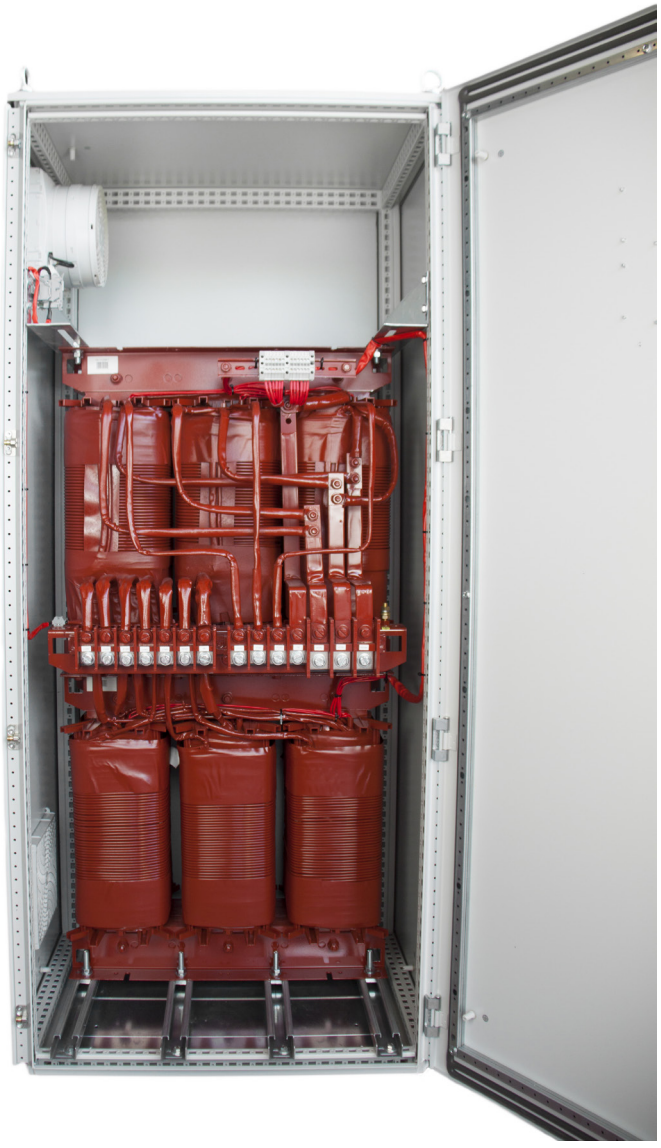
Most of the products requested by our customers are custom-engineered. This is due to the need for specific voltages, powers, losses, working temperatures, etc. in different parts of the world for different types of installations.

Today, Polylux is able to offer any product within the following specifications:

Single and three-phase encapsulated transformers with maximum voltages of 12 kV and three-phase products with powers up to 1000 kVA, as well as resin-encapsulated products up to 400 kVA. Polylux also has experience in manufacturing encapsulated single-phase high current transformers.




DANGER

Ratings

IP-00 Not protected from solids and water.

IP-20 Protected from solids over 12 mm in diameter, but not protected from water.

IP-23 Protected from solids over 12 mm in diameter and from water spray no more than 60º from the vertical.

IP-31 Protected from solids with a diameter greater than 2.5 mm and from vertically dripping water.

IP-42 Protected from solids with a diameter greater than 1.0 mm and from water srpay less than 15º from the vertical.

IP-54 Protected from contact with external elements and from dust ingress (deposits in quantities harmful to the appliance) and from water spray in any direction.

IP-65 Fully protected from dust ingress and from any contact. Protected from pressure water jets in any direction.

Advantages of resin encapsulation

High reliability in unfavourable vibratory conditions.

Protection from damp, corrosive environments.

Resistance to transient surge currents and harmonics.

Symbols

Isolation transformer.

Control and manoeuvre transformer.

Safety transformer.

Single-phase autotransformer.

Three-phase autotransformer.

Transformer for clinical use in accordance with IEC/EN 61558 standard.

Protection from dust.

Protection from water in any direction.

Ecological equipment: high performance and low losses.

Transformers for three-phase harmonic networks.

Equipment for clinical electrical installations.

Appendices

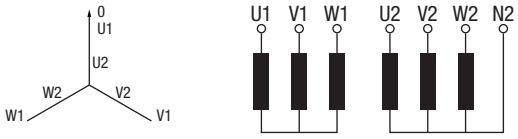
AT1-Insulators

Temperature increase (K) EN61558 / EN60076

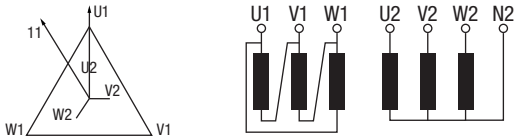
Class	ºC	ΔT ºC K	Ta40 ºC Tmax
B	130	80	120
F	155	100	140
H	180	120	160

AT2-Connection units

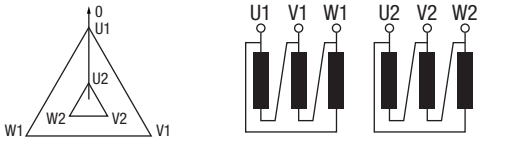
Yyn0



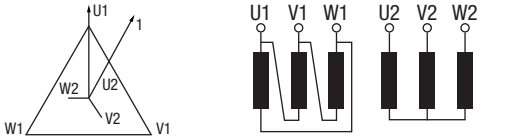
Dyn11



Dd0



Dy1



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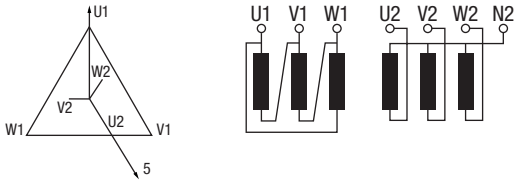

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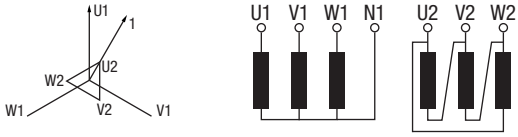

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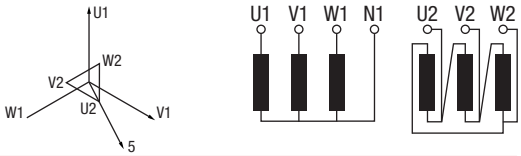

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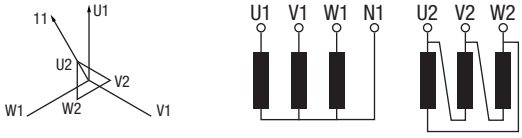

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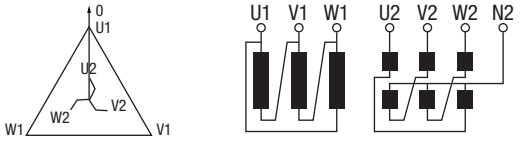

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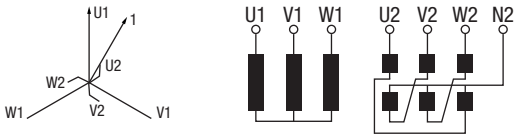

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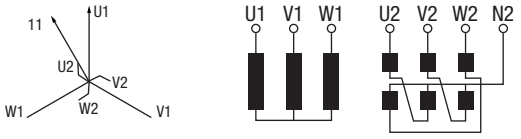

AT3- Table for the selection of conductors and protections for low power single-phase transformers

Calculation of maximum currents:

$$I_{max}\,(A) = \frac{\text{Power (VA)}}{\text{Voltage (V)}}$$

Based on the maximum current and voltage and depending on whether it is input or output for the protection, select the current equal to or higher than the one calculated in the table. For the output it is advisable to enter the standardised caliber lower than or equal to the calculated nominal current.

I_{max}	Max. cross-section (mm²)		Input protection (A)		Output protection (A)	
(A)	Flexible	Rigid	MCB -> D Curve	aM Fuse	MCB -> C Curve	gG Fuse
0.1	0.5	0.5	-	0.2	-	0.1
0.15	0.5	0.5	-	0.3	-	0.15
0.2	0.5	0.5	-	0.4	-	0.2
0.25	0.5	0.5	-	0.5	-	0.25
0.3	0.5	0.5	-	0.6	-	0.3
0.4	0.5	0.5	1	1	-	0.4
0.5	0.5	1	1	1	-	0.5
0.6	0.5	1	2	2	-	0.6
0.7	0.5	1	2	2	-	0.7
0.8	0.5	1	2	2	-	0.8
1	0.5	1	2	2	1	1
1.5	0.5	1	3	3	-	1.6
2	1	1.5	4	4	2	2
2.5	1	1.5	6	6	-	2.5
3.5	1	1.5	10	10	3	3
4	1	1.5	10	10	4	4
5	1.5	2	10	10	-	5
6	1.5	2	16	16	6	6.3
7	1.5	2	16	16	-	8
8	2	2.5	16	16	-	8
9	2	2.5	20	20	-	8
10	2	2.5	20	20	10	10
12	2.5	4	25	25	-	12
15	2.5	4	32	32	16	12
20	4	---	40	40	20	20
25	4	---	50	50	25	25
30	6	---	63	63	32	32
40	8	---	80	80	40	40
50	10	---	100	100	50	50

Example:

For a PD with a power of 500 VA, input of 400 V and output of 230 V, first calculate the input current:

$$I_{max}\ \text{input} = \frac{500\ VA}{400\ V} = 1,25\ A$$

According to the table the highest $I_{max\ would\ be}$ 1.5 A, so:

- Conductor: flexible, 0.5 mm² or rigid, 1 mm²
- Protection: MCB 3 A D Curve or 3 A aM Fuse

For the output, follow the same steps:

$$I_{max}\ \text{output} = \frac{500\ VA}{230\ V} = 2,17\ A$$

According to the table the highest $I_{max\ would\ be}$ 2.5 A, so:

- Conductor: flexible, 1 mm² or rigid, 1.5 mm²

According to the table the lowest I_{max} would be 2 A, so:

- Protection: 2 A gG Fuse

AT4- Table for the selection of protections for high power single-phase and three-phase transformers

Calculation of maximum currents:

- Single-phase: $$I_{max}\,(A) = \frac{\text{Power (VA)}}{\text{Voltage (V)}}$$

- Three-phase: $$I_{max}\,(A) = \frac{\text{Power (VA)}}{\sqrt{3}\cdot\text{Voltage (V)}}$$

Based on the maximum current and voltage and depending on whether it is input or output for the protection, select the current equal to or higher than the one calculated in the table. For the output it is advisable to enter the standardised caliber lower than or equal to the calculated nominal current.

I_{max}	Input protection (A)		Output protection (A)	
(A)	MCB -> D Curve	aM Fuse	MCB -> C Curve	gG Fuse
0.5	1	1	-	0.5
0.6	2	2	-	0.6
0.7	2	2	-	0.7
0.8	2	2	-	0.8
1	2	2	1	1
1.5	3	3	-	1.6
2	4	4	2	2
2.5	6	6	-	2.5
3.5	10	10	3	3
4	10	10	4	4
5	10	10	-	5
6	16	16	6	6.3
7	16	16	-	8
8	16	16	-	8
9	20	20	-	8
10	20	20	10	10
12	25	25	-	12
15	32	32	16	12
20	40	40	20	20
25	50	50	25	25
30	63	63	32	30
40	80	80	40	40
50	100	100	50	50
60	125	125	63	60
80	160	160	80	80
100	200	200	100	100
150	300	300	160	160
200	400	400	200	200
250	500	500	250	250
300	600	600	300	300
400	800	800	400	400
500	1000	1000	500	500
600	1200	1200	600	600
800	1600	1600	800	800
1000	2000	2000	1000	1000
1500	2500	2500	1600	1600

For high currents >100A modular MCBs are recommended with a thermal adjustment of 0.8-1In, to adapt to the nominal current of the transformer.

Example for single-phase transformer:

For a TKW with a power of 10 kVA, inputo f 230 V and output of 230 V:

$$I_{max} = \frac{10.000\ VA}{230\ V} = 43,47\ A$$

According to the table the highest I_{max} would be 50 A, so:

- Input protection: MCB 100 A D Curve or 100 A aM Fuse

According to the table the lowest I_{max} would be 40 A, so:

- Output protection: MCB 40 A D Curve or 40 A gG Fuse

Example for a three-phase transformer:

For a TTW with a power of 200 kVA, input of 400 V and output of 400 V:

$$I_{max} = \frac{200.000}{\sqrt{3}\cdot 400} = 288,67\ A$$

According to the table the highest I_{max} would be 300 A, so:

- Input protection: MCB 600 A D Curve or 600 A aM Fuse

According to the table the lowest I_{max} would be 250 A, so:

- Output protection: MCB 250 A D Curve or 250 A gG Fuse

NOTES

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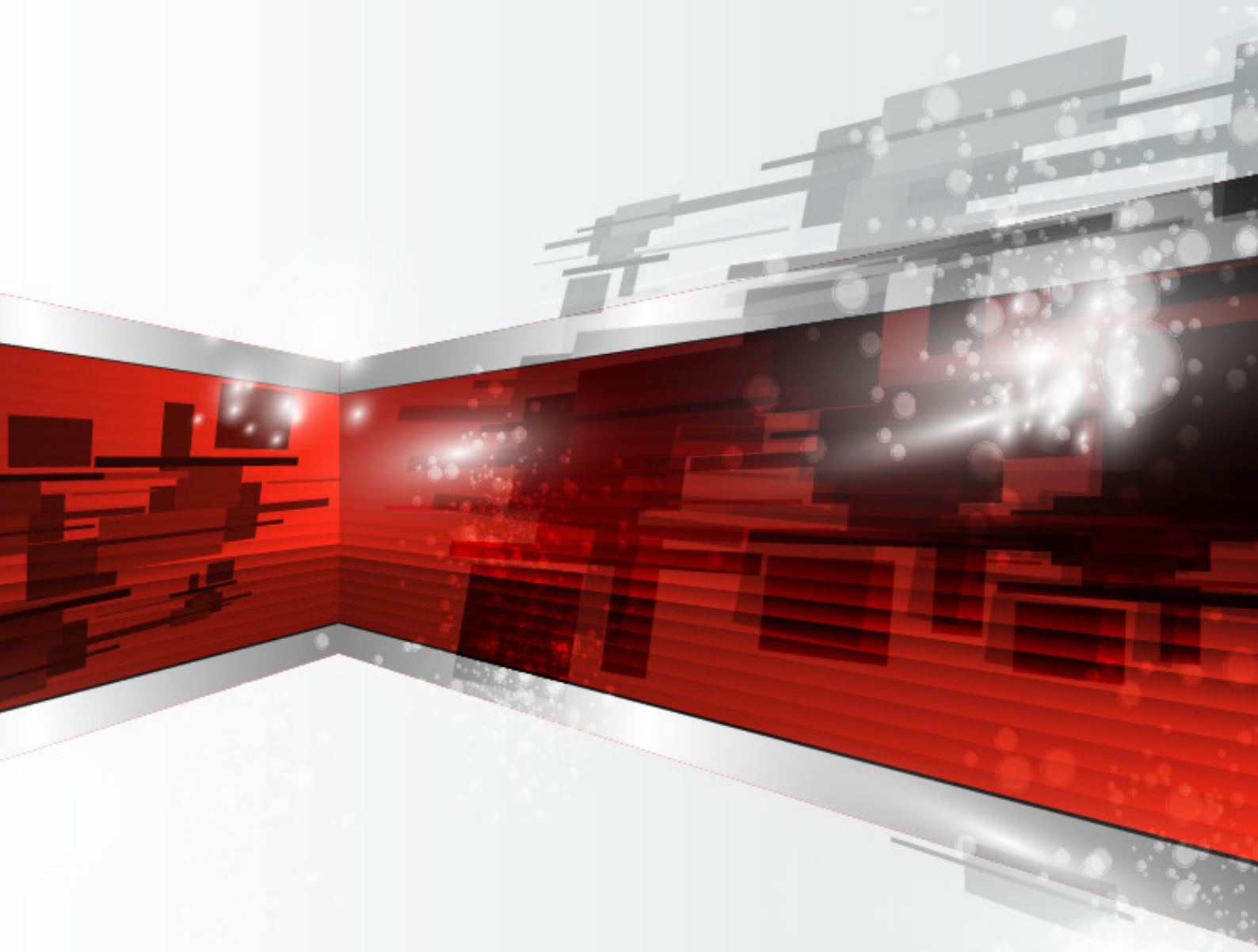
POLYLUX®



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