



Product catalog

Medium-Voltage Dry-Type Transformers and Autotransformers

Pólux[®]

Founded in 1986, Pólux is a Brazilian company headquartered in Jaraguá do Sul, Santa Catarina, specialized in the development and manufacture of magnetic solutions. Throughout our history, we have transformed knowledge into solutions that keep pace with the evolution of the industry and the needs of our customers, combining quality, safety, reliability, and sustainability.

Our energy drives transformation across various sectors of industry and infrastructure. Our solutions are used in electrical machinery, hospital equipment, elevators, electrical panels, power systems, home appliances, data centers, and industrial facilities. They are also used in applications across the naval and mining sectors, as well as in airports, oil rigs, residential buildings, shopping centers, and various other projects.

Our commitment to innovation and sustainable development guides our actions at every stage of our processes. We continuously invest in training our team, improving our technologies, and strengthening partnerships with customers and suppliers. As a result, we develop solutions aligned with market demands and adopt practice that reduce environmental impacts and restricts the use of substances harmful to human health and the environment.



Powering transformation

Purpose

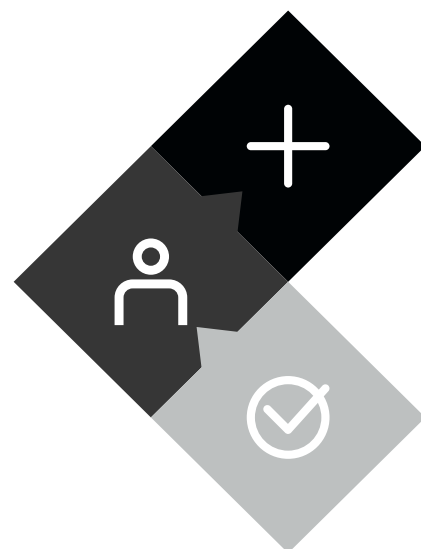
Transform actions into development, connecting society and organizations to the global future by utilizing the energy that keeps us moving.

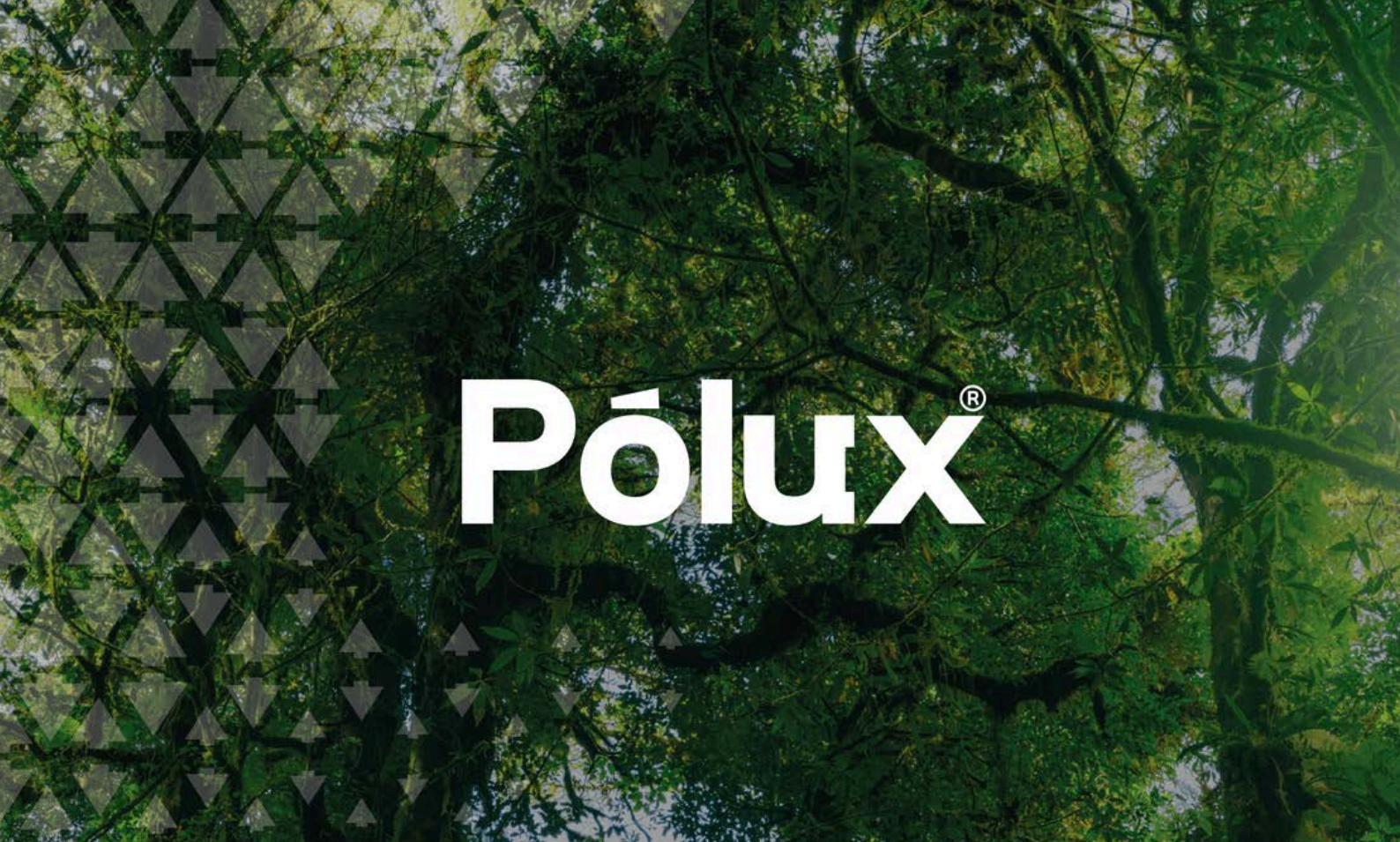
Culture

Our culture is rooted in a commitment to excellence and in relationships built on trust with our employees, customers, and suppliers.

Values

- Respect: value and inclusion of people, coupled with a commitment to sustainable development and social-environmental responsibility.
- Ethics and transparency: ethical conduct, compliance with applicable laws and regulations, and corporate governance.
- Innovation: continuously evolve in the pursuit of creative and efficient solutions.
- Excellence: a constant effort to achieve the highest technical and operational standards.
- Reliability: recognized quality in every solution delivered.





Pólux[®]

ESG Environmental, Social, and Governance

Pólux is an integral part of people's daily lives and is constantly striving for improvement in order to ensure the best possible balance between the economy, society, and the environment.

Sustainability is our strategic pillar, through which we aim to build economic, social, and environmental legacies, as well as reduce the impacts of our operations. Therefore, in addition to building strong and lasting ties with the local community, we also adhere to high ethical standards and practice highly transparent management, actively contributing to progress in the areas of the environment, biodiversity, and sustainable development.

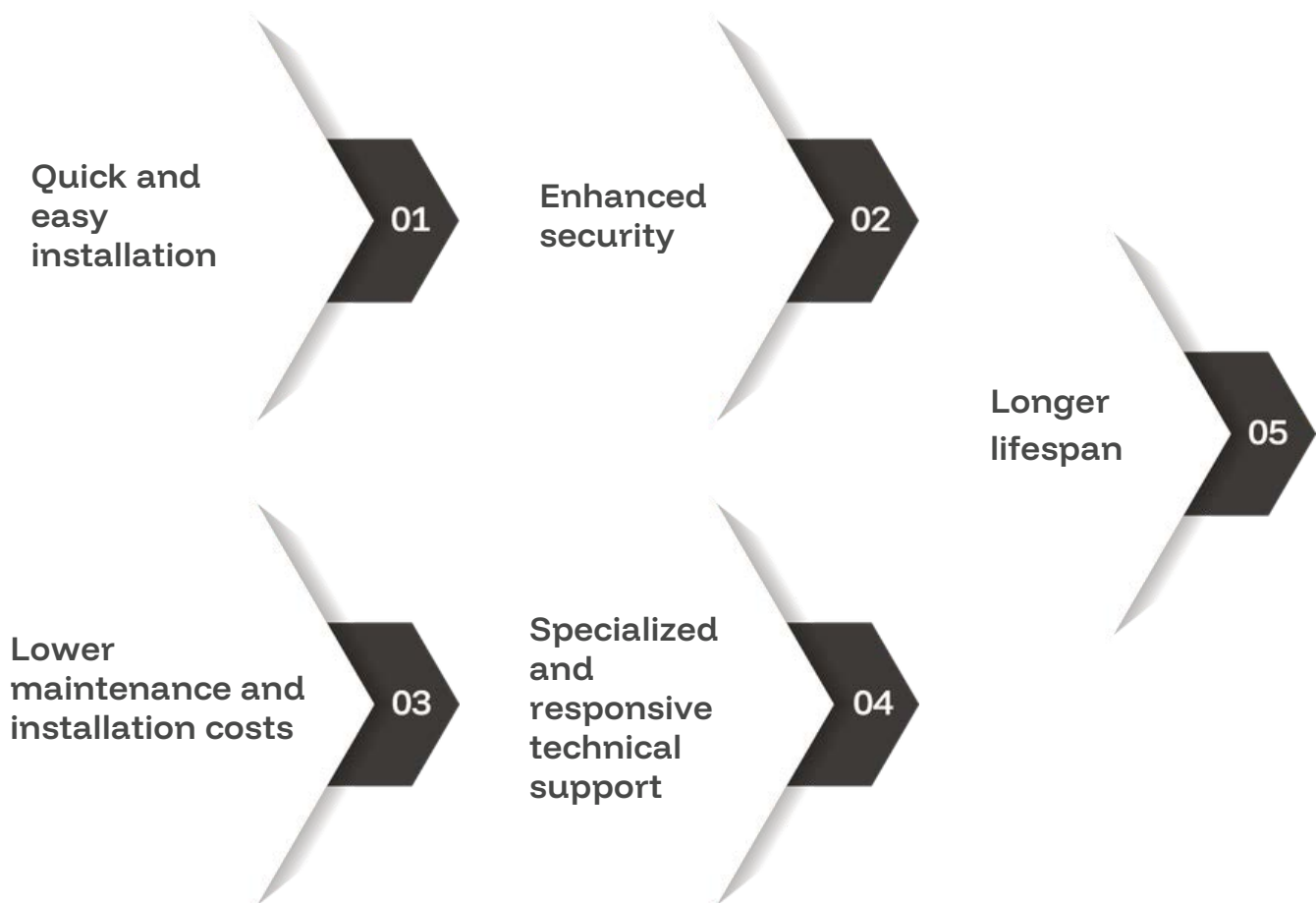
Our dedication to sustainability has earned us ISO 14001 international certification. Its implementation demonstrates our commitment to protecting the environment through the management of environmental risks and the reduction of our environmental impact.





Advantages of Pólux Dry-Type Transformers

- Ensure high levels of energy efficiency;
- Are free from partial discharges;
- Have low noise levels;
- Do not release toxic gases;
- Have an estimated service life of 25 years;
- Are designed exclusively for each type of application;
- Have dimensions designed specifically to accommodate locations with space constraints;
- Offer greater safety for locations with high foot traffic;
- Have no risk of contamination from oil leaks, as they are cooled by ambient air;
- Are designed to withstand a 15° tilt from the horizontal plane.



Main Applications

- ENERGY
- SUGAR AND ETHANOL
- AGRIBUSINESS
- FOOD AND BEVERAGE
- CONSTRUCTION
- DATA CENTERS
- ELEVATORS
- SOLAR ENERGY
- HOSPITALS
- INDUSTRIES
- MINING
- ELECTRIC MOBILITY
- MARINE
- OIL & GAS
- PULP AND PAPER
- WATER AND WASTEWATER
- STEEL INDUSTRY
- CHEMICAL AND PETROCHEMICAL
- POWER GENERATION, TRANSMISSION AND DISTRIBUTION

Summary

- 07** Three-Phase Transformers (7.2 kV Class)
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- 09** Three-Phase Transformers (24.2 kV Class)
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Three-Phase Transformers

7.2 kV Class

Pólux three-phase transformers are electrical devices that isolate the power grid from the load, used to convert voltages and protect circuits.

Main Applications

- Electrical circuit insulation;
- Industrial distribution and lighting systems;
- Power supply for panels, motors, and linear loads.



General Characteristics

Rated power:	up to 25,000 kVA;
Voltage class:	7.2 kV;
Cooling:	AN (natural air);
Frequency:	50 or 60 Hz;
Installation altitude:	up to 1,000 m;
Ambient temperature:	40 °C;
Temperature class:	F (155 °C) or H (180 °C);
Finish:	vacuum-cast epoxy resin;
IP rating:	IP00 to IP65;
Other specifications:	upon request.

TECHNICAL STANDARDS

IEC 60076-11;
IEEE C57.12.01;
ABNT NBR 5356-11.



Included Accessories

- Off-circuit tap changer (OCTC);
- Thermal protection relay with PT-100 temperature sensors installed in the windings;
- Bi-directional wheels;
- Grounding terminal;
- Lifting lugs.

Optional accessories

- Forced-air cooling;
- Plug-in bushings;
- Infrared inspection window;
- Surge arresters;
- Snubber circuit;
- Electrostatic shielding.

Three-Phase Transformers

15 kV Class

Pólux three-phase transformers are electrical devices that isolate the power grid from the load, used to convert voltages and protect circuits.

Main Applications

- Electrical circuit insulation;
- Industrial distribution and lighting systems;
- Power supply for panels, motors, and linear loads.



General Characteristics

Rated power:	up to 25,000 kVA;
Voltage class:	15 kV;
Cooling:	AN (natural air);
Frequency:	50 or 60 Hz;
Installation altitude:	up to 1,000 m;
Ambient temperature:	40 °C;
Temperature class:	F (155 °C) or H (180 °C);
Finish:	vacuum-cast epoxy resin;
IP rating:	IP00 to IP65;
Other specifications:	upon request.

TECHNICAL STANDARDS

IEC 60076-11;
IEEE C57.12.01;
ABNT NBR 5356-11.



Included Accessories

- Off-circuit tap changer (OCTC);
- Thermal protection relay with PT-100 temperature sensors installed in the windings;
- Bi-directional wheels;
- Grounding terminal;
- Lifting lugs.

Optional accessories

- Forced-air cooling;
- Plug-in bushings;
- Infrared inspection window;
- Surge arresters;
- Snubber circuit;
- Electrostatic shielding.

Three-Phase Transformers

24.2 kV Class

Pólux three-phase transformers are electrical devices that isolate the power grid from the load, used to convert voltages and protect circuits.

Main Applications

- Electrical circuit insulation;
- Industrial distribution and lighting systems;
- Power supply for panels, motors, and linear loads.



General Characteristics

Rated power:	up to 25,000 kVA;
Voltage class:	24.2 kV;
Cooling:	AN (natural air);
Frequency:	50 or 60 Hz;
Installation altitude:	up to 1,000 m;
Ambient temperature:	40 °C;
Temperature class:	F (155 °C) or H (180 °C);
Finish:	vacuum-cast epoxy resin;
IP rating:	IP00 to IP65;
Other specifications:	upon request.

TECHNICAL STANDARDS

IEC 60076-11;
IEEE C57.12.01;
ABNT NBR 5356-11.



Included Accessories

- Off-circuit tap changer (OCTC);
- Thermal protection relay with PT-100 temperature sensors installed in the windings;
- Bi-directional wheels;
- Grounding terminal;
- Lifting lugs.

Optional accessories

- Forced-air cooling;
- Plug-in bushings;
- Infrared inspection window;
- Surge arresters;
- Snubber circuit;
- Electrostatic shielding.

Three-Phase Transformers

36.2 kV Class

Pólux three-phase transformers are electrical devices that isolate the power grid from the load, used to convert voltages and protect circuits.

Main Applications

- Electrical circuit insulation;
- Industrial distribution and lighting systems;
- Power supply for panels, motors, and linear loads.



General Characteristics

Rated power:	up to 25,000 kVA;
Voltage class:	36.2 kV;
Cooling:	AN (natural air);
Frequency:	50 or 60 Hz;
Installation altitude:	up to 1,000 m;
Ambient temperature:	40 °C;
Temperature class:	F (155 °C) or H (180 °C);
Finish:	vacuum-cast epoxy resin;
IP rating:	IP00 to IP65;
Other specifications:	upon request.

TECHNICAL STANDARDS

IEC 60076-11;
IEEE C57.12.01;
ABNT NBR 5356-11.



Included Accessories

- Off-circuit tap changer (OCTC);
- Thermal protection relay with PT-100 temperature sensors installed in the windings;
- Bi-directional wheels;
- Grounding terminal;
- Lifting lugs.

Optional accessories

- Forced-air cooling;
- Plug-in bushings;
- Infrared inspection window;
- Surge arresters;
- Snubber circuit;
- Electrostatic shielding.

Grounding Transformers

Pólux grounding transformer allows for the creation of a neutral grounding point in a three-phase, three-wire system. They are designed to limit the zero-sequence current during phase-to-ground faults in the system, restricting the current to a desired level for a specified duration until the protection device operates.

Main Applications

- Creation of a neutral grounding point;
- Limit phase-to-ground fault currents to known and controllable levels.



General Characteristics

Rated power:	up to 25,000 kVA;
Voltage class:	7.2 to 36.2 kV;
Cooling:	AN (natural air);
Frequency:	50 or 60 Hz;
Short-circuit duration:	2 s, 5 s, 10 s, or 20 s (other durations upon request);
Vector group:	Zn (zigzag) or Ynd1;
Continuous current:	upon request;
Short-time current:	upon request;
Installation altitude:	up to 1,000 m;
Ambient temperature:	40 °C;
Temperature class:	F (155 °C) or H (180 °C);
Finish:	vacuum-cast epoxy resin;
IP rating:	IP00 to IP65;
Other specifications:	upon request.

TECHNICAL STANDARDS

IEC 60076-11;
IEEE C57.12.01;
ABNT NBR 5356-11.



Included Accessories

- Bi-directional wheels;
- Grounding terminal;
- Lifting lugs.

Optional accessories

- Forced-air cooling;
- Plug-in bushings;
- Infrared inspection window;
- Surge arresters;
- Snubber circuit;
- Electrostatic shielding;
- Thermal protection relay with PT-100 temperature sensors installed in the windings.

Pólux Renewable Energy Line

Pólux has developed a dedicated product line for renewable energy applications. Designed to deliver maximum efficiency, low noise levels, and reduced temperature rise, these transformers provide extended service life while ensuring seamless integration with the electrical system. For this application type, isolation transformers or autotransformers are available upon request. Contact us to learn more!

Main Applications

- Photovoltaic systems;
- Electric vehicle charging stations.



General Characteristics

Rated power:	up to 25,000 kVA;
Voltage class:	7.2 to 36.2 kV;
Cooling:	AN (natural air);
K factor:	4;
Frequency:	50 or 60 Hz;
Installation altitude:	up to 1,000 m;
Ambient temperature:	40 °C;
Temperature class:	F (155 °C) or H (180 °C);
Finish:	vacuum-cast epoxy resin;
IP rating:	IP00 to IP65;
Other specifications:	upon request.

TECHNICAL STANDARDS

IEC 60076-11;
IEEE C57.12.01;
ABNT NBR 5356-11.



Included Accessories

- Off-circuit tap changer (OCTC);
- Thermal protection relay with PT-100 temperature sensors installed in the windings;
- Bi-directional wheels;
- Grounding terminal;
- Lifting lugs.

Optional accessories

- Forced-air cooling;
- Plug-in bushings;
- Infrared inspection window;
- Surge arresters;
- Snubber circuit;
- Electrostatic shielding.

Starting Autotransformer

Pólux three-phase starting autotransformers are specially designed for motors utilizing reduced-voltage autotransformer starters. They assist the system in achieving a stepped start, reducing the risk of system disturbances caused by direct-on-line starting.

Main Application

- Stepped starting for electric motors.



General Characteristics

Rated power:	up to 25,000 kVA;
Voltage class:	7.2 to 36.2 kV;
Cooling:	AN (natural air);
Frequency:	50 or 60 Hz;
Installation altitude:	up to 1,000 m;
Ambient temperature:	40 °C;
Temperature class:	F (155 °C) or H (180 °C);
Finish:	vacuum-cast epoxy resin;
IP rating:	IP00 to IP65;
Starting time:	according to the application;
Motor starting current:	according to the application;
Number of starts per hour and intervals between starts:	according to the application;
Autotransformer bypass after starting:	according to the application;
Other specifications:	upon request.

TECHNICAL STANDARDS

IEC 60076-11;
ABNT NBR 5356-11.

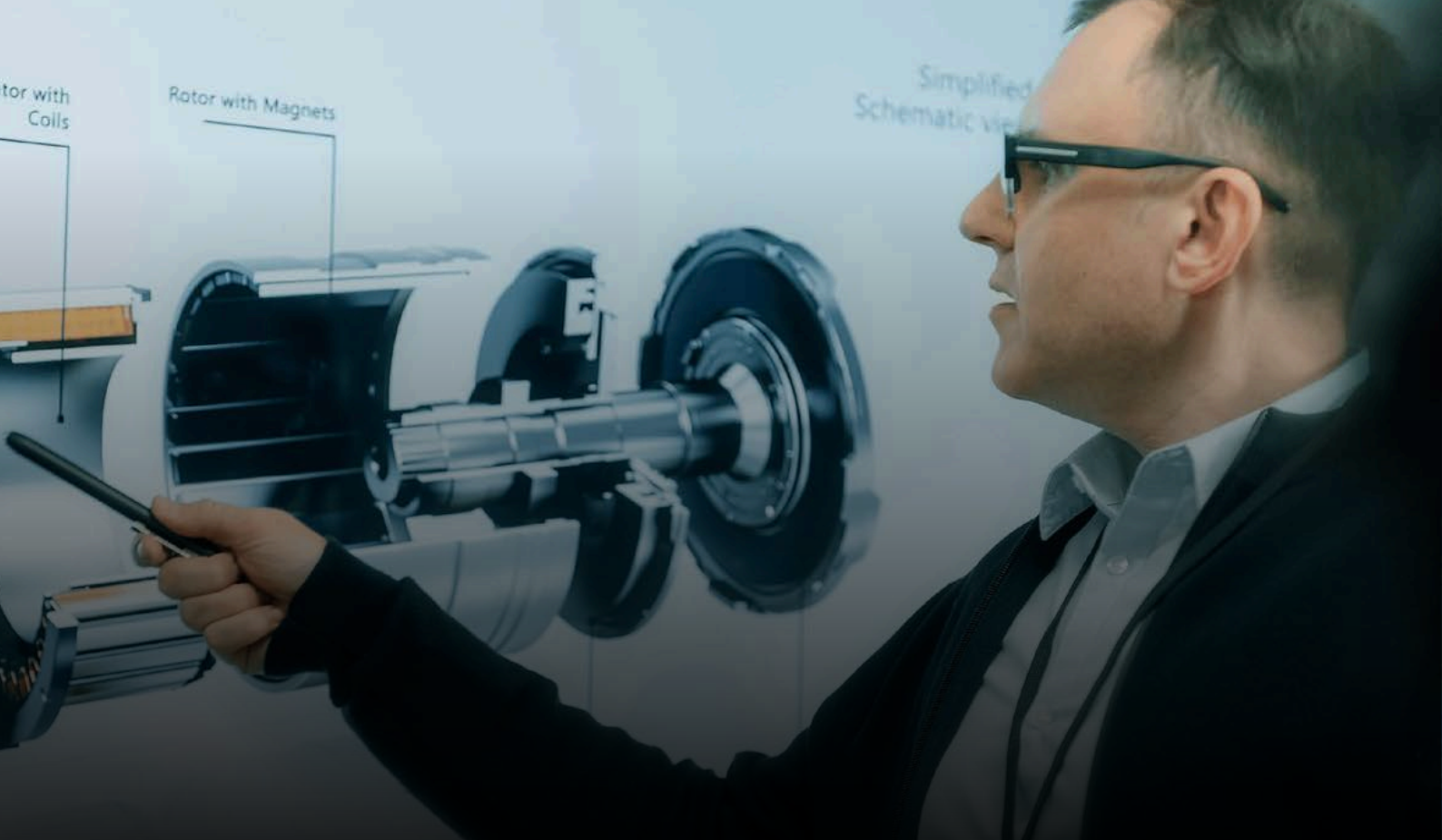
Included Accessories

- Bi-directional wheels;
- Grounding terminal;
- Lifting lugs.

Optional accessories

- Thermal protection relay with PT-100 temperature sensors installed in the windings;
- Surge arresters;
- Electrostatic shielding.





DEVELOPMENT OF CUSTOM PROJECTS

Pólux features a highly specialized engineering team dedicated to developing customized solutions for a wide range of applications. Our strength lies in the flexibility to design dedicated projects, with every solution developed to meet each customer's specific requirements with the highest level of expertise and attention to detail.

At Pólux, we understand that every customer and every application is unique. That is why our engineering team carefully evaluates each project, exploring every possibility to deliver the most efficient and reliable solution.

Our manufacturing facility covers more than 10,000 m² and includes an in-house silicon steel processing center and metal fabrication shop, enabling us to develop products with customized dimensions and configurations. We also operate state-of-the-art testing laboratories that ensure full compliance with applicable international standards.

By choosing Pólux, you're not only ensuring a high-quality product, but also a solid partnership committed to your success! Our customer-focused approach and dedication to excellence ensure that every project is handled with the care, attention, and expertise it deserves.

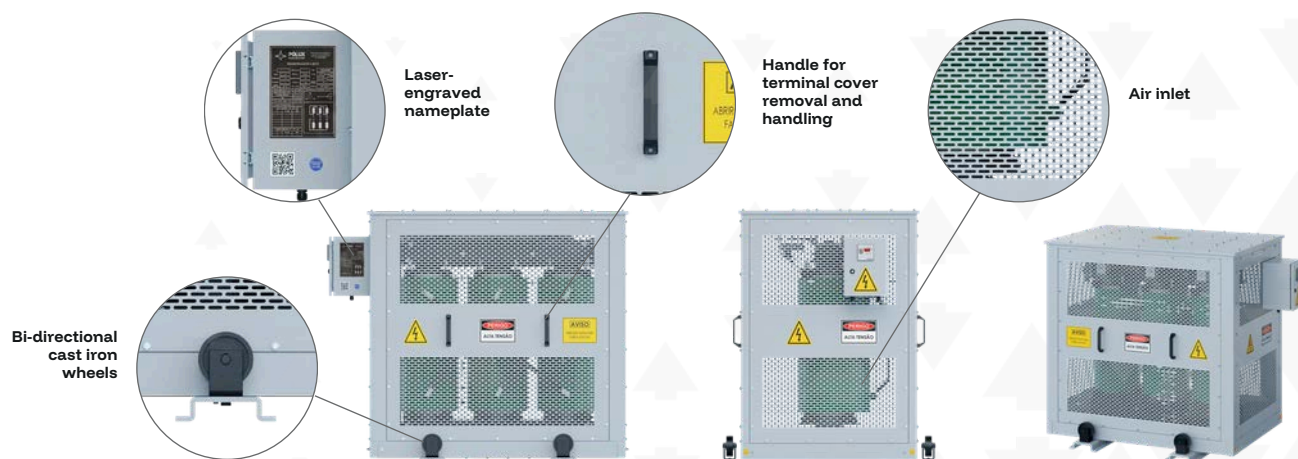
Contact us and let us contribute to the success of your next project!

DEGREE OF PROTECTION IN ACCORDANCE WITH IEC 60529

Pólux offers products with protection ratings ranging from IP00 to IP65. The most common ratings are:

IP00: designed without an enclosure. This protection rating is typically suitable for equipment installed inside electrical panels or in protected indoor locations where there is no public access and minimal dust exposure.

IP21: recommended for indoor installations where people may be present, with low dust levels and occasional exposure to water splashes.



IP54: suitable for outdoor installation in unsheltered environments with personnel and wildlife traffic, and full exposure to weather conditions.



Refer to the table below to determine the best IP rating for your application:

IP

X

1st CHARACTERISTIC NUMERAL:
protection against the ingress of solid foreign
objects and access to hazardous parts

	Indications regarding equipment protection	Indications regarding personal protection
0	Not protected	Not protected
1	Protected against solid foreign objects over 50 mm	Protected against access with the back of the hand
2	Protected against solid foreign objects over 12.5 mm	Protected against access with a finger
3	Protected against solid foreign objects over 2.5 mm	Protected against access with a tool
4	Protected against solid foreign objects over 1 mm	
5	Dust-protect- ed (limited ingress permitted without harmful deposits)	Protected against access with a wire
6	Dust-tight	

X

2nd CHARACTERISTIC NUMERAL:
protection against the ingress of
water to hazardous parts

0	Not protected
1	Protected against vertically falling water drops
2	Protected against water drops falling at an angle up to 15° from the vertical
3	Protected against rain at an angle up to 60° from the vertical
4	Protected against water splashing from any direction
5	Protected against water jets (low pressure) from any direction
6	Protected against powerful water jets from any direction
7	Protected against the effects of temporary immersion (between 15 cm and 1 m)
8	Protected against the effects of continuous immersion under pressure

C

W

ADDITIONAL LETTER (OPTIONAL):
Protection provided against
access to hazardous parts

A	Protected against access with the back of the hand (used for IP0X enclosures)
B	Protected against access with a finger (used for IP0X and IP1X enclosures)
C	Protected against access with a tool (used for IP0X, IP1X and IP2X enclosures)
D	Protected against access with a wire (used for IP0X, IP1X, IP2X and IP3X enclosures)
To be used when: - The actual protection against access to hazardous parts is higher than that indicated by the first characteristic numeral; - Only protection against access to hazardous parts is indicated (the first characteristic numeral is replaced by "X").	

SUPPLEMENTARY LETTER
(OPTIONAL):
Supplementary information

H	High-voltage equipment
M	Tested for protection against the harmful effects of water ingress while operating
S	Tested for protection against the harmful effects of water ingress while stationary
W	Intended for use under specified atmospheric conditions



TESTS AND STANDARDS

Experience Pólux's commitment to quality. Our fully equipped testing laboratory features state-of-the-art equipment, enabling us to meet the highest quality standards and comply with all applicable regulations and industry standards.

At Pólux, quality is more than a promise — it is a commitment. Every stage of our manufacturing process is carefully designed to ensure that each product delivers maximum performance and reliability.

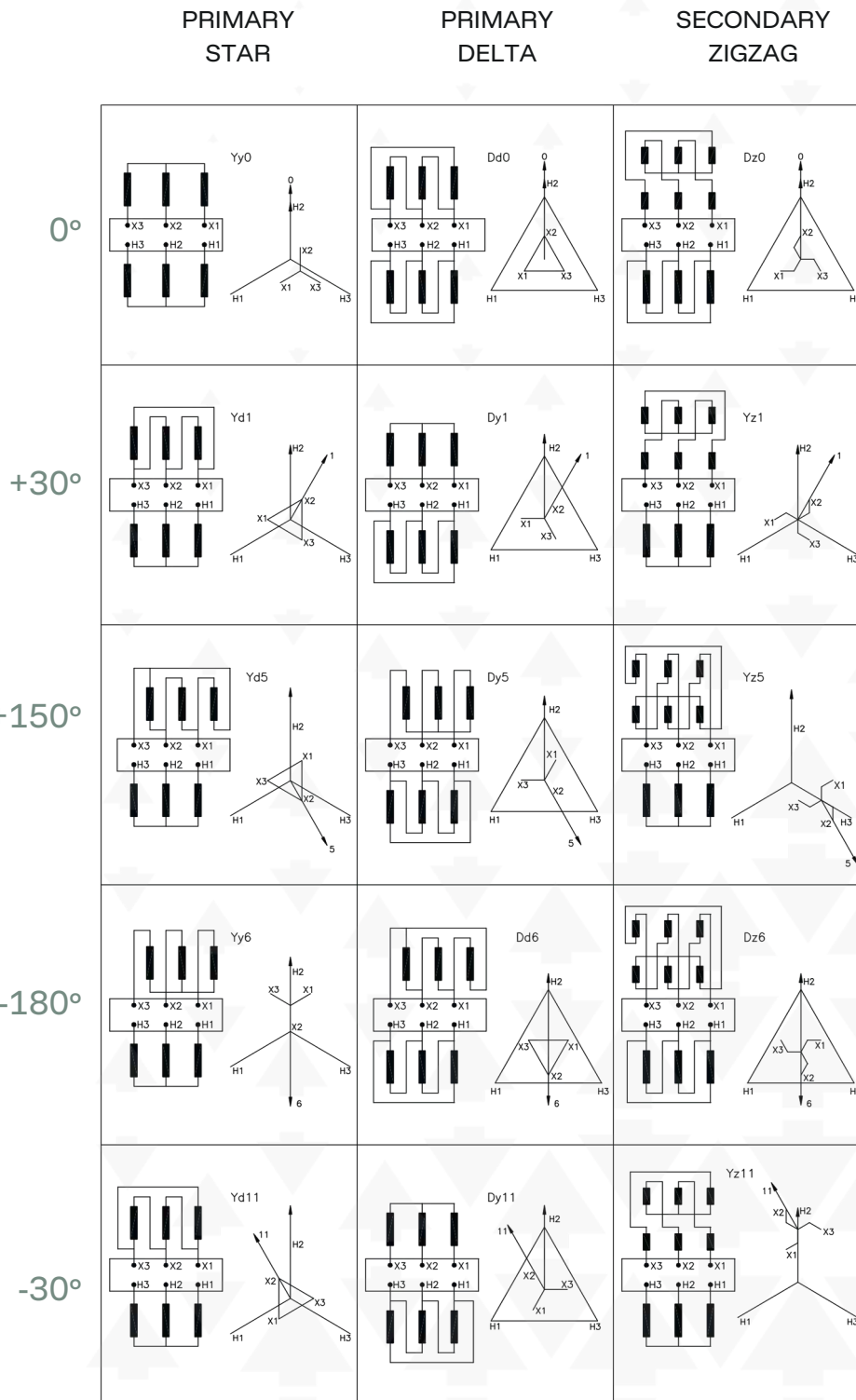
We perform all routine tests required by the applicable standards, ensuring that every product is thoroughly inspected and verified before delivery.

In addition to routine tests, we are fully equipped to perform type and special tests according to customer requirements. We understand that every project is unique, and testing requirements may vary. Our team is prepared to tailor the testing process to ensure full compliance with each project's specifications.

Our commitment to quality is reflected in every stage of production, from design and manufacturing to final testing and delivery. Choose Pólux to ensure excellence in every product you deliver to your customers!

THREE-PHASE TRANSFORMER CONNECTION GROUP

IN ACCORDANCE WITH IEC 60076-1



Typical Connections —
Examples of vector group
symbols, terminal markings,
and phasor diagrams for
three-phase transformers



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