

Product catalog

Reactors and filters

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

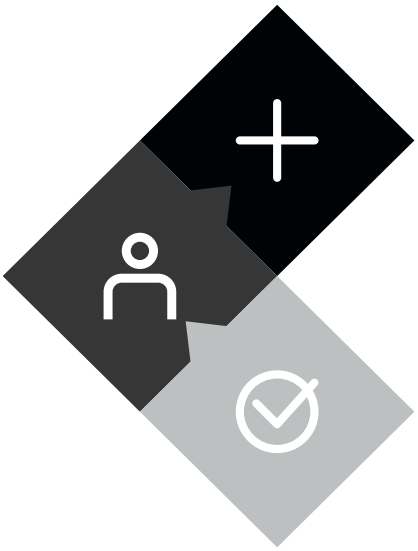
Transform actions into development, connecting society and organizations to the global future by utilizing the energy that keeps us moving.

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.





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.

certecnica
Más que certificaciones técnicas
PRODUCTO CERTIFICADO
UL LISTED
CE
CERTIFIED
ISO 9001
ISO 14001
ISO 45001

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

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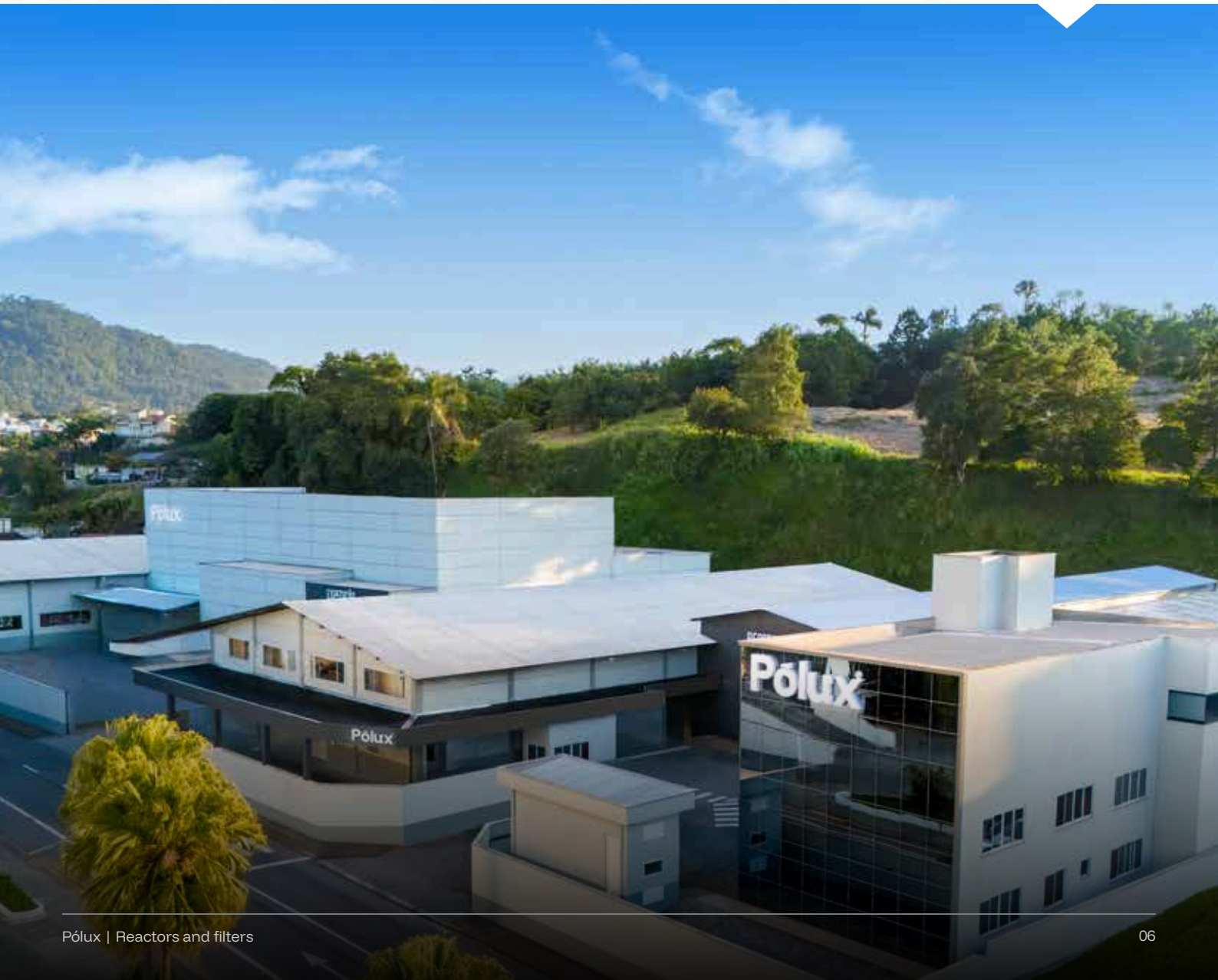
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Reactors and Filters

Pólux reactors and filters are designed for industrial applications requiring improved power quality, equipment protection, and operational reliability. Engineered for continuous operation, they help mitigate harmonic distortion, reduce surge currents, protect motors, and enhance the performance of electrical systems.

When used in conjunction with variable frequency drives (VFDs), capacitor banks, and industrial systems in general, they contribute to extending equipment service life and improving the stability of electrical installations.





Designed to reduce harmonic distortion and protect electrical equipment in industrial systems.

Three-Phase Reactor

Typical applications

- Variable frequency drives (VFDs)
- Soft starters
- Industrial networks
- Control panels
- Motor drive systems

These reactors contribute to improved power quality and extended equipment service life.

Pólux Three-Phase Reactors are recommended for cable lengths of up to 150 m (shielded cables) and 300 m (unshielded cables). For applications involving longer cable runs, we recommend using the Pólux Sine Wave Filter.



Detuned Reactor

Designed to protect capacitor banks against harmonics present in the electrical network, primarily caused by nonlinear loads such as variable frequency drives and rectifiers.

Typical applications

- Automatic capacitor banks
- Power factor correction
- Variable frequency drive systems
- Electrical networks with high harmonic distortion

These reactors help reduce the risk of resonance and improve the reliability of reactive power compensation systems.

The purpose of a detuned reactor is to shift the resonance frequency to a safe range, thereby reducing noise levels and temperature rise in installations with high THDi levels.



dV/dt Filter

Designed to mitigate dV/dt effects generated by variable frequency drives, protecting electric motors and cables.

Typical applications

- Motors driven by VFDs
- Long cable runs
- Systems with high switching frequencies
- Critical industrial applications

These filters help reduce overvoltages and extend the service life of motor insulation.

dV/dt filters are recommended for cable lengths of up to 150 m (shielded cables) and 300 m (unshielded cables). For longer cable runs, we recommend using the Pólux Sine Wave Filter.



Sine Wave Filter

Designed to smooth the output waveform of variable frequency drives, bringing it closer to a sinusoidal waveform.

Typical applications

- Induction motors
- Applications involving long cable runs
- Systems sensitive to electrical noise
- Applications requiring low electromagnetic interference

These filters help reduce motor heating, electrical noise, and insulation stress.

They also help reduce voltage and current harmonics experienced by the motor due to the PWM power supply, while minimizing voltage drop along cables supplying remote loads (over 300 m).

Sine wave filters are recommended for cable lengths of up to 500 m (shielded cables) and 1,000 m (unshielded cables).

For applications involving cable lengths exceeding 1,000 m, Pólux can develop custom-engineered solutions tailored to the specific characteristics and requirements of each application.



5% THDi Passive Harmonic Filter

Designed to reduce total current harmonic distortion (THDi) in industrial systems with nonlinear loads.

Typical applications

- Variable frequency drives
- Rectifiers
- Automated industrial systems
- Electrical networks with power quality requirements

These filters help ensure compliance with harmonic distortion limits and improve overall system electrical stability.

The primary purpose of Pólux harmonic filters rated for THDi ⩽ 5% is to attenuate the 3rd, 5th, 7th, or 11th harmonics, reducing total current harmonic distortion to levels below 5%.

High harmonic distortion levels can cause overheating in cables, switching devices, and measuring instruments due to high-frequency effects, resulting in higher installation costs and increased energy consumption.



10% THDi Passive Harmonic Filter

Designed to mitigate harmonics in industrial systems, improving power quality through an optimized solution.

Typical applications

- Systems with nonlinear loads
- Variable frequency drives and motor drives
- Industrial infrastructure
- Applications requiring moderate harmonic filtering

These filters help reduce harmonic distortion and provide greater protection for electrical equipment.

The primary purpose of Pólux harmonic filters rated for THDi ⩽ 10% is to attenuate the 3rd, 5th, 7th, or 11th harmonics, reducing total current harmonic distortion to levels below 10%.

High harmonic distortion levels can cause overheating in cables, switching devices, and measuring instruments due to high-frequency effects, resulting in higher installation costs and increased energy consumption.

Air-Core Reactor

The air-core reactors are designed to limit short-circuit currents, inrush currents, and switching transients. They provide a linear impedance response and prevent magnetic saturation during fault conditions.

These reactors also help reduce mechanical and thermal stress on insulators, busbars, and switching devices.

Typical applications

- Motor control center (MCC);
- Busbar systems in industrial facilities and industrial parks;
- Electrical systems in testing laboratories;
- Applications requiring controlled short-circuit current limitation.

TECHNICAL STANDARDS

- IEC 60076-6;
- IEEE P57.16;
- ABNT NBR 5356-6.

Technical Highlights

Type	Dry-type air-core reactor, vacuum-encapsulated in epoxy resin
Voltage Class	1.1 kV / 3.6 kV / 7.2 kV / 15 kV / 24.2 kV / 36.2 kV



Short-Circuit Limiting Reactor

Designed to limit short-circuit current during electrical faults, ensuring that fault current levels remain within the interruption ratings and specifications of upstream and downstream equipment.

They provide high mechanical strength and impedance stability under extreme fault current conditions.

Typical applications

- Motor control centers (MCCs) and distribution panels;
- Industrial power distribution busbars;
- Electrical testing laboratories;
- Infrastructure protection against electrodynamic forces.

TECHNICAL STANDARDS

- IEC 60076-6;
- IEEE P57.16;
- ABNT NBR 5356-6.

Technical Highlights

Short-Circuit Withstand Capability	2 s / 5 s / 10 s / 20 s
Voltage Class	1.1 kV / 3.6 kV / 7.2 kV / 15 kV / 24.2 kV / 36.2 kV



Inrush Current Limiting Reactor

These reactors are designed to limit inrush current peaks during the energization of electrical machines, keeping operation within the tripping characteristics of circuit breakers and fuses.

They help prevent nuisance tripping of protective devices and reduce costs associated with equipment sizing.

Typical applications

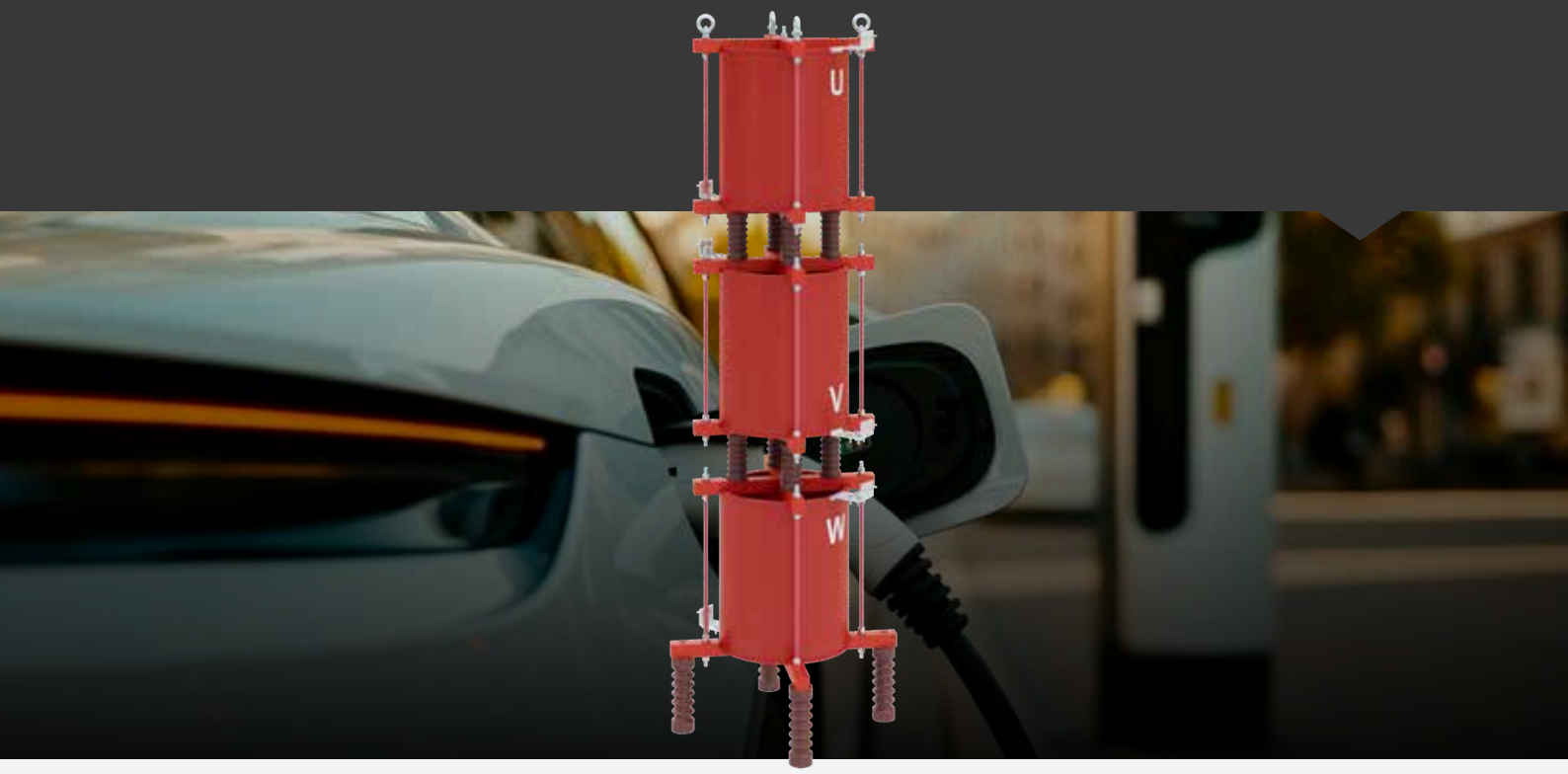
- Power transformer inputs;
- Electric motor inputs;
- Generator outputs;
- Reduction of energization transients in large loads.

TECHNICAL STANDARDS

- IEC 60076-6;
- IEEE P57.16;
- ABNT NBR 5356-6.

Technical Highlights

Type	Dry-type air-core reactor with highly linear impedance characteristics
Rated Current	0 to 2,000 A (other ratings available upon request)



Neutral Grounding Reactor

Designed to provide controlled limitation of phase-to-ground fault currents in power systems operating at voltages up to 34.5 kV (36.2 kV insulation class).

They provide high phase-to-ground fault withstand capability, with low acoustic noise and reduced losses.

Typical applications

- Neutral grounding of transformers and generators;
- Grounding of medium-voltage motors;
- Protection against phase-to-ground overcurrents in distribution networks.

TECHNICAL STANDARDS

- IEC 60076-6;
- IEEE P57.16;
- ABNT NBR 5356-6.

Technical Highlights

IP rating	IP00 (outdoor use)
Finish	Vacuum-encapsulated cycloaliphatic resin (RAL 7015 gray)
Short-Time Fault Current	0 to 1,500 A (2 s to 20 s)



Water-Cooled Reactor

Designed for high-power industrial installations or applications with high harmonic content, where space inside panels or enclosures is limited.

They offer high power density and efficient heat transfer through heat sinks integrated into the winding and/or core.

Typical applications

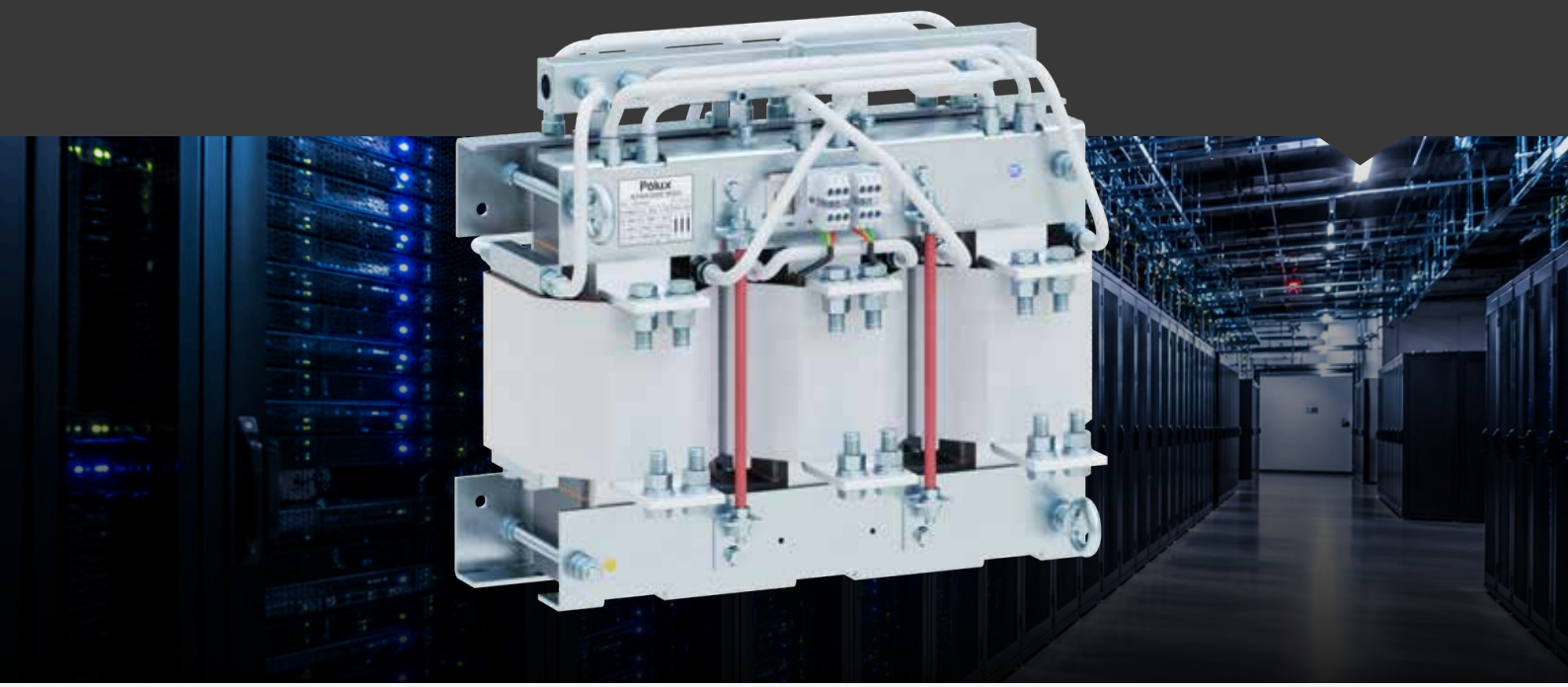
- Input and output stages of compact variable frequency drives;
- Panels and enclosures with severe space constraints;
- High-power applications with high switching frequencies.

TECHNICAL STANDARDS

- IEC 60076-6;
- ABNT NBR 5356-6.

Technical Highlights

Cooling Method	AW (water)
Maximum Switching Frequency	10 kHz
Voltage Class	1.1 kV / 3.6 kV / 7.2 kV



Medium-Voltage Three-Phase Reactor

These reactors are designed to attenuate current transients, mitigate starting currents, and reduce harmonic distortion in medium-voltage networks and drive systems.

They help improve grid stability, extend motor insulation service life, and require minimal maintenance.

Typical applications

- Input and output stages of medium-voltage variable frequency drives;
- Harmonic filtering and power quality improvement in medium-voltage networks;
- Reduction of voltage drop and protection of medium-voltage motors.

TECHNICAL STANDARDS

- IEC 60076-6;
- ABNT NBR 5356-6.

Technical Highlights

Voltage Class	1.1 kV / 3.6 kV / 7.2 kV / 15 kV / 24.2 kV / 36.2 kV
Finish	Epoxy resin, with optional protective enclosure





OVERVIEW

Reactor and Filter Product Line

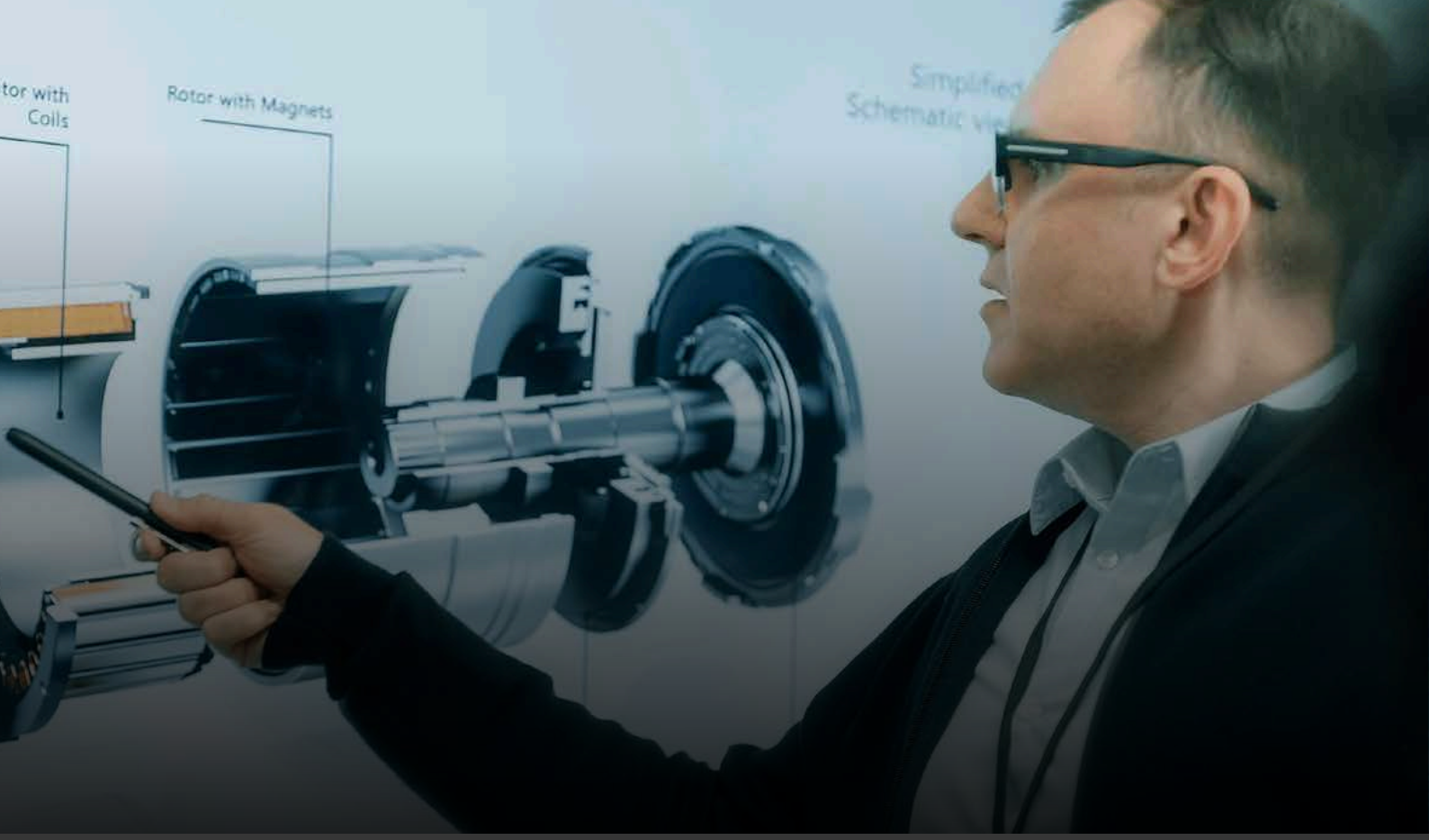
Products	Typical applications
Three-Phase Reactor	Current limiting, protection of inverters and drives (cable lengths up to 300 m)
Detuned Reactor	Protection of capacitor banks and mitigation of harmonic resonance
dV/dt Filter	Protection of motor insulation in inverter-fed applications (cable lengths up to 300 m)
Sine Wave Filter	PWM waveform smoothing, noise reduction and long-cable applications (cable lengths up to 1,000 m)
5% THDi Harmonic Filter	Advanced reduction of current harmonic distortion to levels below 5%
10% THDi Harmonic Filter	Moderate reduction of current harmonic distortion to levels below 10%



OVERVIEW

Reactor and Filter Product Line

Products	Typical applications
Air-Core Reactor	Short-circuit and inrush current limiting with linear, saturation-free response
Short-Circuit Limiting Reactor	Protection of busbars and MCCs against extreme fault currents
Inrush Current Limiting Reactor	Limitation of energization current peaks in motors, transformers and generators
Neutral Grounding Reactor	Ground-fault current limiting in medium-voltage systems up to 34.5 kV (outdoor use)
Water-Cooled Reactor	High-power-density solution for space-constrained enclosures
Medium-Voltage Three-Phase Reactor	Protection, filtering and transient attenuation in medium-voltage systems (up to 34.5 kV)



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 m^2 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.

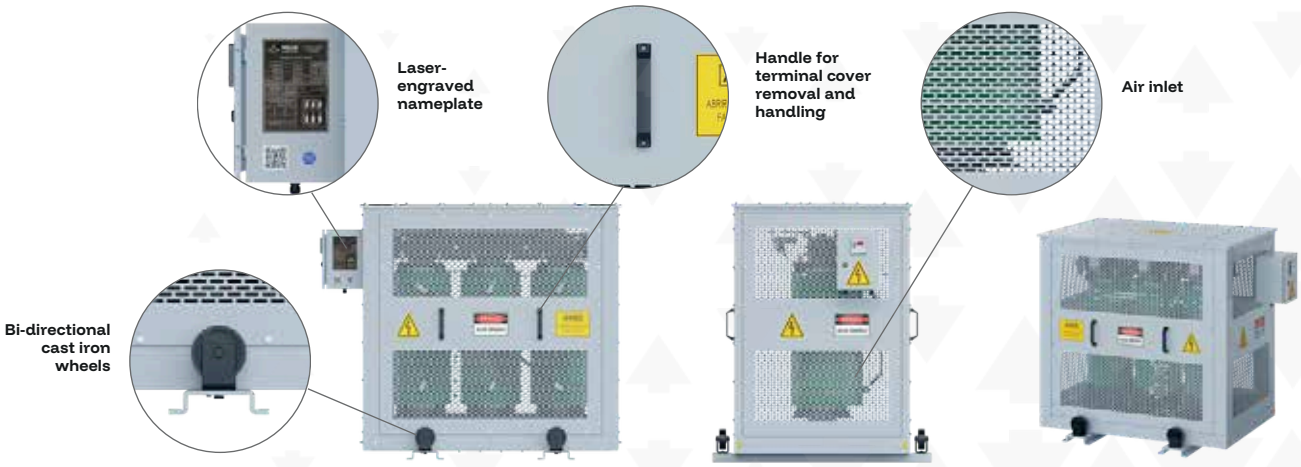
Contact us and let us contribute to the success of your next project!

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.





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