



Surge protection reinvented

Safe Energy Control Technology

PHOENIX CONTACT –
in dialog with customers
and partners worldwide

Phoenix Contact is a global market leader in the fields of electrical engineering, electronics and automation. Founded in 1923, the family-owned company now employs around 14,000 people worldwide. A sales network with over 50 sales subsidiaries anywhere in the world and 30 additional sales partners guarantees customer proximity directly on site.

Our range of services consists of products surrounding various different electro-technical applications. This includes numerous connection technologies for device manufacturers and machine building, components for modern control cabinets, and tailor-made solutions for many applications and industries, such as the automotive industry, wind energy, solar energy, the process industry or applications in the field of water supply, power transmission/distribution, and traffic infrastructure.



Global player with personal customer contact

Company independence is an integral part of our corporate policy. Phoenix Contact therefore relies on in-house competence and expertise in a range of contexts: the design and development departments constantly come up with innovative product ideas, developing special solutions to meet customer requirements. Numerous patents emphasize the fact that many of Phoenix Contact's products have been developed in-house.



Safe lightning current and surge protection for power supplies systems

Lightning currents and surge voltages cause damage to devices and components. In the worst case scenario, the system could even fail. Downtimes and repairs then lead to high costs. The solution: surge protection from Phoenix Contact.



Safe Energy Control Technology

Designed by PHOENIX CONTACT

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Leading in technology: Surge protection from PHOENIX CONTACT

Phoenix Contact places the highest value on new and ongoing development of technologies for meeting the demands of the market. This happens in close coordination with technical universities and colleges.

One excellent example of this is the new spark gap with safe energy control technology. Professionally developed, designed and tested in our pulse and high-current laboratory, lightning current arresters and surge arresters from Phoenix Contact are the perfect protection for any power supply.

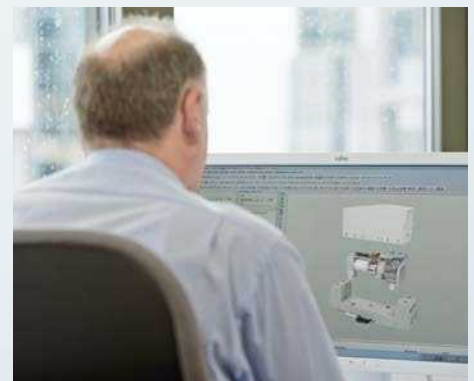
Tested to the smallest detail

All products have been tested in the Phoenix Contact test lab from their earliest stages.

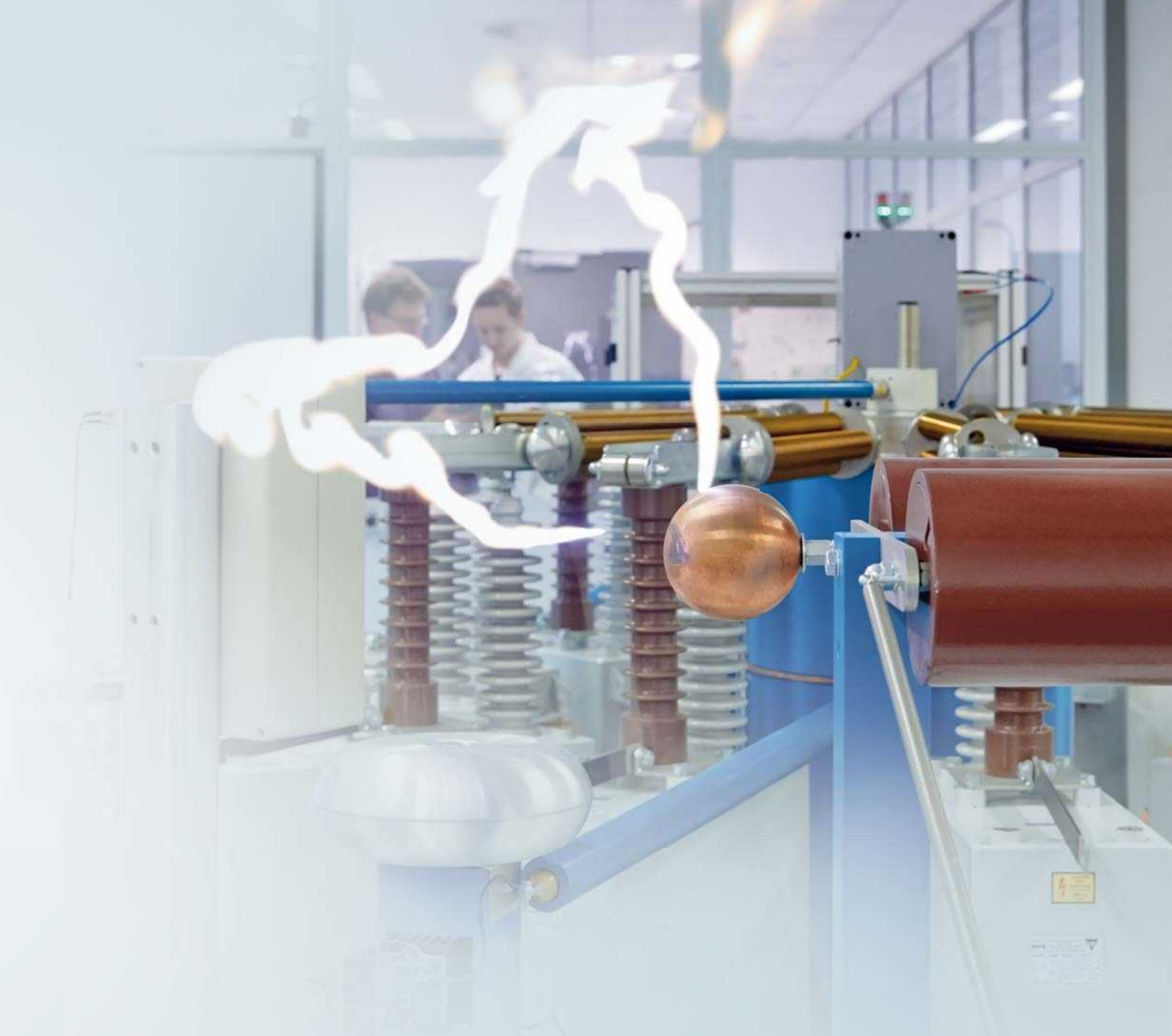
The lab is accredited based on DIN EN ISO/IEC 17025, showcasing its expertise in specialized and technical fields as well as independence and nonpartisan approach toward third parties.



Develop with innovation



CAD-supported design



High-performance testing



Normative testing



Accredited testing

Safe Energy Control Technology: Surge protection without line follow current or backup fuses

Safe Energy Control, abbreviated SEC, is synonymous with outstanding durability and maximum performance in the area of lightning current and surge protection.

Revolutionary spark gap technology safely prevents any line follow current. This reduces the stress on the entire installation to a minimum. This means outstanding durability for the surge protective devices at the same time.

The protective devices work quietly in the background and help protect the entire system. Solutions without the need for backup fuses are available for all applications.

Use without backup fuses

The SEC range lightning current arresters and surge arresters can be used without a separate arrester backup fuse up to a main fuse nominal current of 315 A.

If the main fuse has a higher nominal current, the SEC product range provides a combination of encapsulated spark gap with an integrated surge-current-proof backup fuse, the FLT-SEC-HYBRID.



Line follow current definition

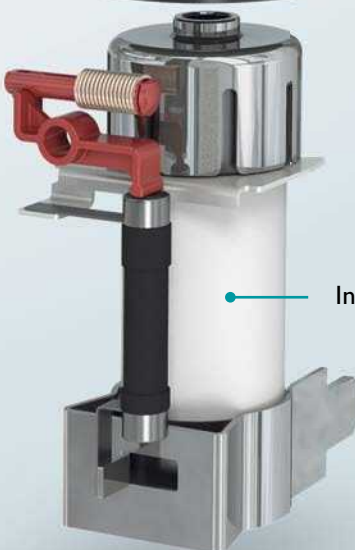
The line follow current is the part of a current flow, which, after discharging a power surge from the power supply network, flows through a spark gap. This type of line follow current can last up to a few milliseconds and has the intensity of a short-circuit current.

This means line follow currents put a strain on the entire installation. As a result, this can cause voltage dips and subsequent malfunctions. Additionally, an upstream overload protection device can be triggered in some circumstances.

The type 1 arresters of the SEC range are the first of their kind to feature spark gaps without line follow current. They embody the ideas of high system availability, protected equipment and secure installation.



Spark gap without line follow current



Integrated backup fuse



Safe Energy Control Technology

Designed by PHOENIX CONTACT

A feeling of safety: The SEC range

The SEC range of arresters forms the perfect protection against lightning currents and surge voltages.

The newly developed spark gaps, combined with type 2 and type 3 arresters, provide an absolutely indispensable protection concept for the power supply. The uniform, compact design and comprehensive plug-in feature make the SEC range an installation-friendly overall package.

Approved worldwide

The lightning current and surge protective devices with safe energy control technology are tested by various institutes including: KEMA, UL, and GL.

For more information about the approvals of individual items, refer to page 27.



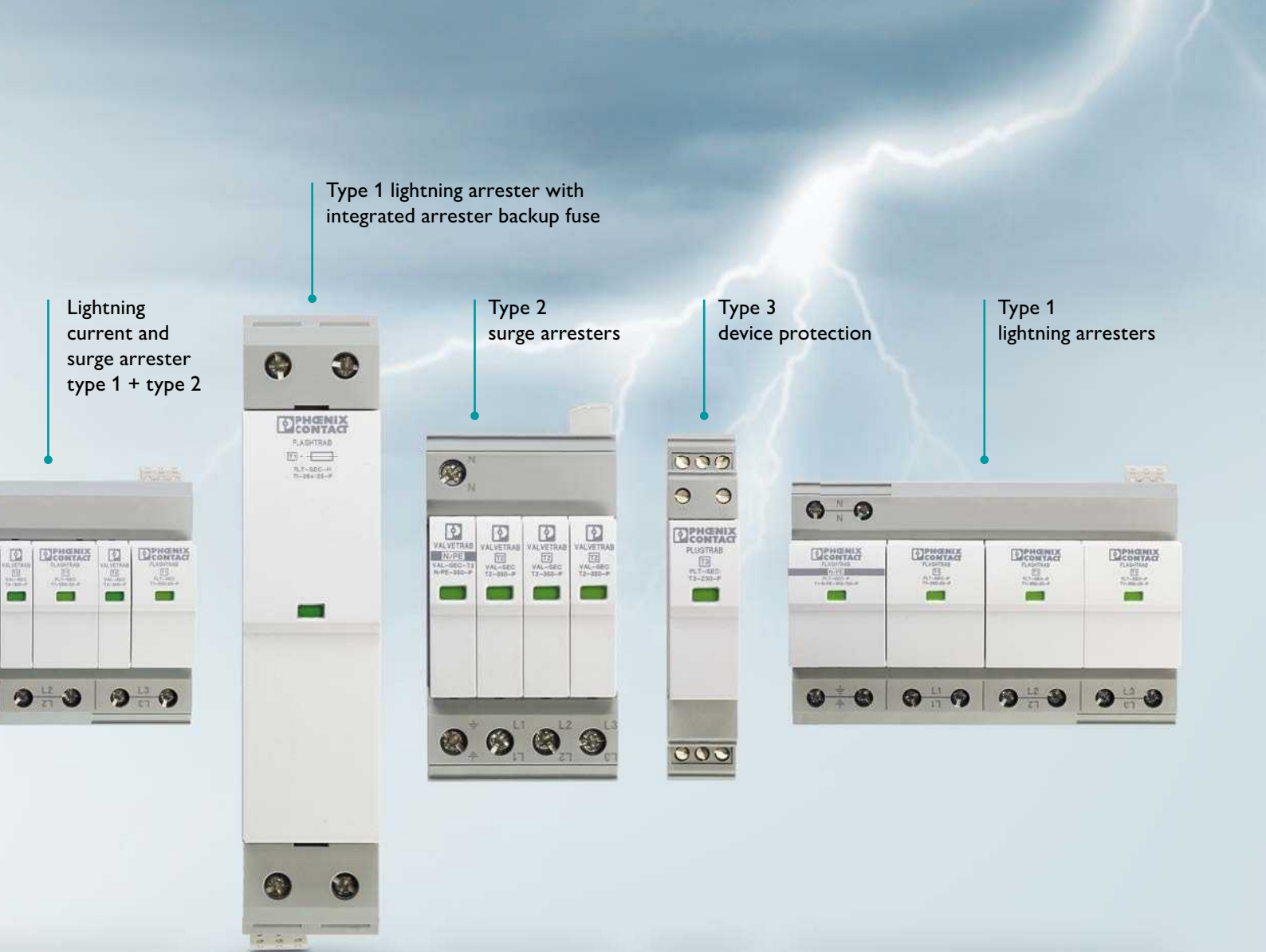
Large-surface labeling areas



Easy to handle



Common floating remote indication contact



180 degree rotation in the application



Clear visibility of colored, mechanical status indication



Unmistakable coding of all protective plugs

The SEC range in use:

Protection for any power supply system

Power supply

Durable and reliable surge protection for uninterrupted supply in industry, businesses, and private households.

Building installation

Universal solutions for surge voltage-resistant housing technology and convenient installation in commercial and residential buildings.

Telecommunications

Impact-free and approved protective devices for high availability of all communication networks.

Businesses in every industry require a high degree of availability. With individualized solutions for requirements in a wide variety of applications, state-of-the-art surge protection makes a significant contribution.

Infrastructure

High-performance surge protection for interruption-free supply, transportation, and traffic

Wind energy

Robust protective devices for the harsh ambient conditions in wind power plants.

Machine building

Compact protective devices save space in control cabinets for uninterrupted system operation.

FLASHTRAB-SEC-HYBRID:

One-of-a-kind plug-in combination

FLASHTRAB-SEC-HYBRID is the first plug-in type 1 arrester with an integrated backup fuse combined with a high-performance spark gap without line follow current.

Thanks to the integrated backup fuse, the design for the installation can be simple and flexible. This allows you to stay adaptable to installation locations while saving space and reducing wiring effort.

The FLASHTRAB-SEC-HYBRID is suitable for use in 230/400 V power supply systems. Thanks to the plug-in feature of the protective device, no interaction inside the installation is required when service is necessary.

Your advantages:

- Low voltage protection level
- No external arrester backup fuse required
- Saves space in the control cabinet
- Long service life of the electric installation
- Maximum system availability
- Easy replacement during servicing
- Testable with CHECKMASTER 2

Easily visible mechanical **status indicator** for backup fuse and spark gaps

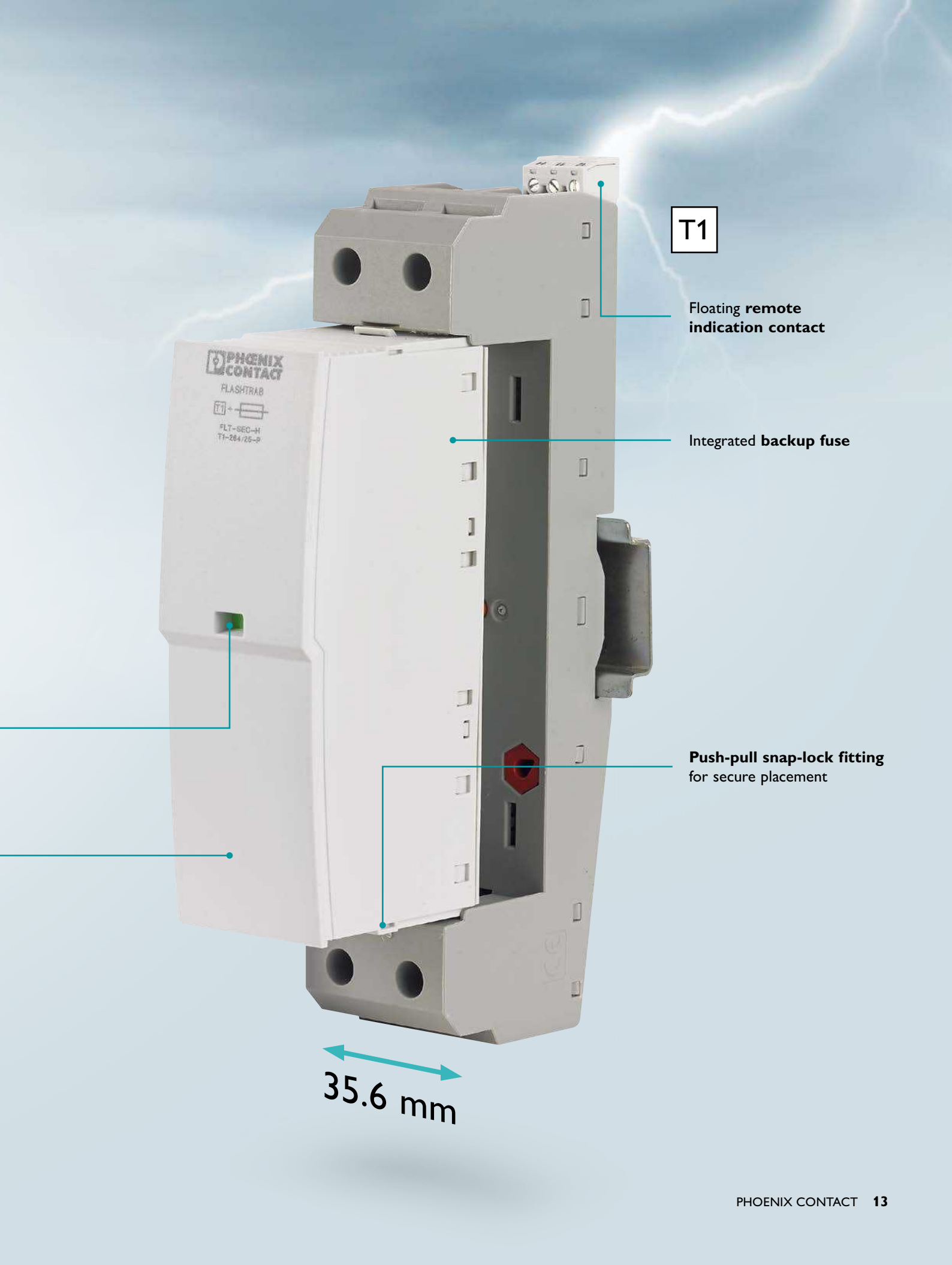


FLASHTRAB-SEC-HYBRID in use



Low-voltage supply

Spark gap **without line follow current**



T1

Floating **remote**
indication contact

Integrated **backup** fuse

Push-pull snap-lock fitting
for secure placement

35.6 mm

PHOENIX
CONTACT
FLASHTRAB
T1
FLT-SEC-H
T1-284/25-P

FLASHTRAB-SEC-PLUS-440:

The compact power package for 400/690 volts

The FLASHTRAB-SEC-PLUS-440 is specifically designed for higher nominal voltages. Its compact design and the comprehensive plug-in feature of the protective devices make installation space-saving and flexible.

The technical performance of the FLASHTRAB-SEC-PLUS-440 is one-of-a-kind for its format. The compact type 1 arrester is used in 400/690 V TN and 400 V IT power supply systems.

The FLASHTRAB-SEC-PLUS-440 is suited perfectly for use in industrial and wind power plants due to its high, continuous voltage of 440 V and strong shock and vibration resistance.

Your advantages:

- Low voltage protection level
- No external arrester backup fuse required up to 400 A
- Long service life of the electric installation
- Satisfies TOV requirements for use in IT systems
- Shock and vibration tested
- Maximum availability of the system
- Saves space in the control cabinet
- Easy replacement during servicing
- Testable with CHECKMASTER 2

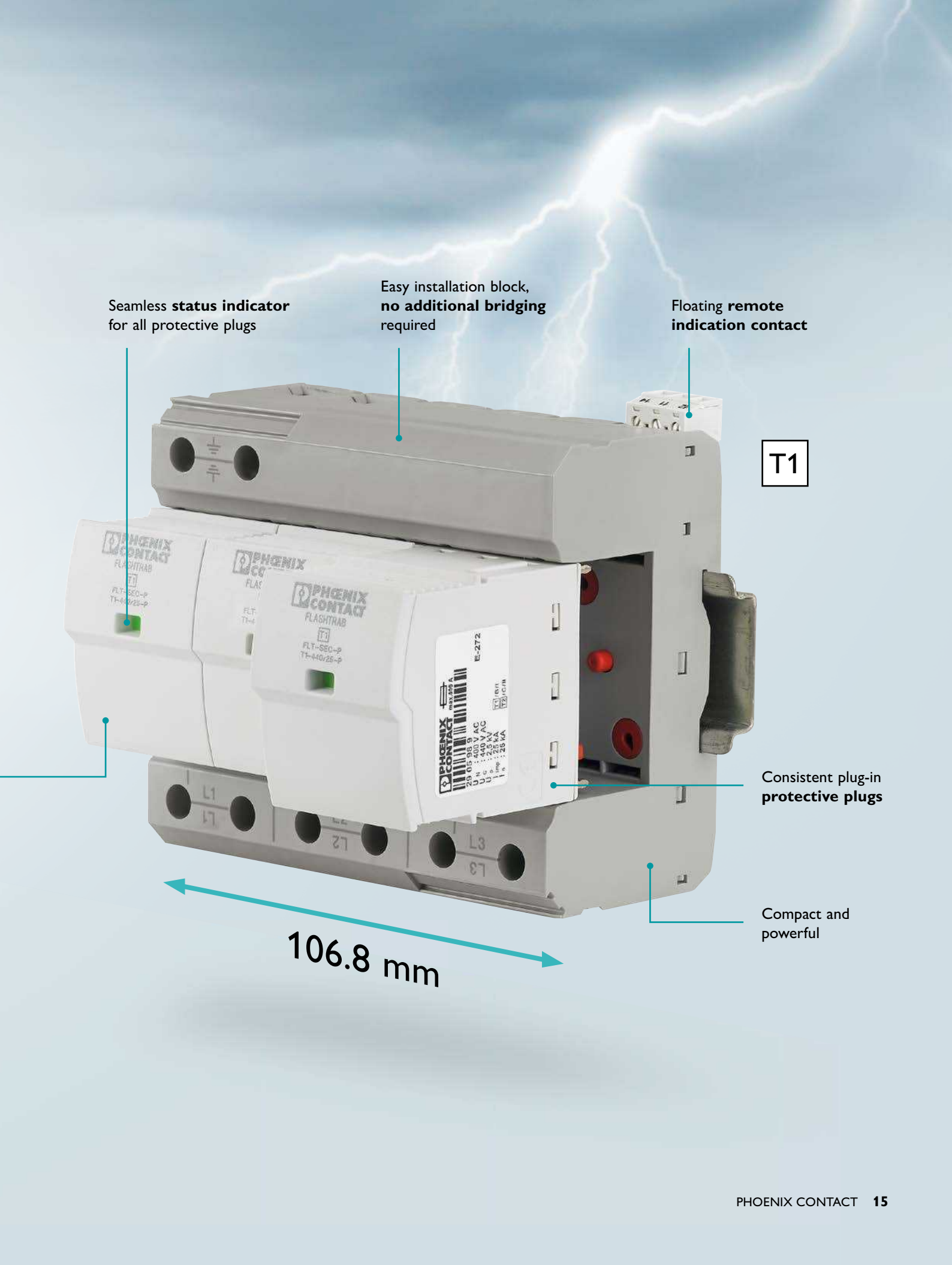
Spark gap **without line**
follow current



FLASHTRAB-SEC-PLUS-440 in use



Low-voltage supply



Seamless **status indicator**
for all protective plugs

Easy installation block,
no additional bridging
required

Floating **remote**
indication contact

T1

Consistent plug-in
protective plugs

Compact and
powerful

106.8 mm

FLASHTRAB-SEC-PLUS-350:

Compact and powerful for 230/400 volts

The FLASHTRAB-SEC-PLUS-350 is ideal for use in the pre-meter area of the main power supply and for industrial applications.

The powerful FLASHTRAB-SEC-PLUS-350 spark gaps without line follow current protect your systems every step of the way and substantially increase the service life of the electric installation.

High voltage fluctuations and extreme lightning current loads are no problem for the FLASHTRAB-SEC-PLUS-350.

Like all other SEC range type 1 arresters, the FLASHTRAB-SEC-PLUS-350 is also tested and certified as a type 2 arrester.

Your advantages:

- Suitable for almost all network configurations
- Low voltage protection level
- No external arrester backup fuse required up to 315 A
- Spark gap without line follow current
- Long service life of the electric installation
- Maximum availability of the system
- Easy replacement during servicing
- Testable with CHECKMASTER 2

Spark gap **without line follow current**



FLASHTRAB-SEC-PLUS in use



Low-voltage supply



FLASHTRAB-SEC-T1+T2:

One-of-a-kind, real combination of type 1 and type 2 arresters

The FLASHTRAB-SEC-T1+T2 is the combination of a lightning current arrester and a surge arrester. This type of arrester is the ideal protection for environments with frequent switch actions. Lightning currents are safely controlled by the powerful spark gap. This guarantees a low residual voltage, while dynamic surge voltages are limited reliably by the type 2 arresters based on voltage dependant resistors. The setup provides optimal coordination between a spark gap and the voltage-dependant resistor.

The combined protective device, which has been the only one of its kind for ten years, provides noticeable reduction in installation and maintenance expenses. It is now also available with spark gap without line follow current and newly designed type 2 arrester.

Your advantages:

- Installation effort reduced to a minimum
- Low voltage protection level
- No external arrester backup fuse required up to 315 A
- Optimum protection even at the lowest surge voltages
- Long service life of the electric installation
- Maximum availability of the system
- Saves space in the control cabinet
- Easy replacement during servicing
- Testable with CHECKMASTER 2

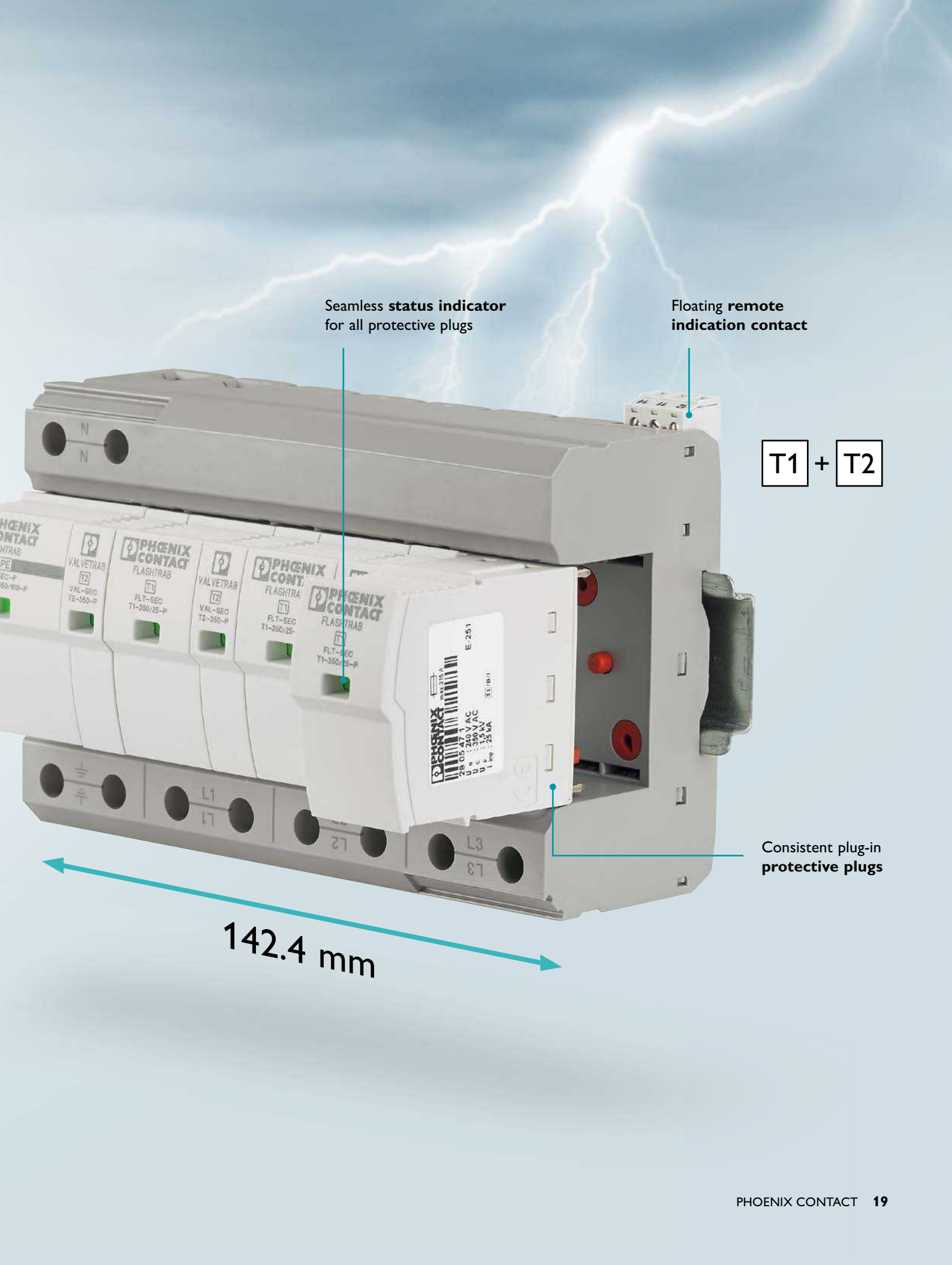
Spark gap **without line follow current**



FLASHTRAB-SEC-T1+T2 in use



Low-voltage supply



Seamless **status indicator**
for all protective plugs

Floating **remote**
indication contact

T1 + **T2**

Consistent plug-in
protective plugs

142.4 mm

VALVETRAB-SEC:

Narrowest plug-in surge arrester design in the world

The type 2 compact surge protective device provides maximum performance and high short-circuit resistance on 12 mm for each channel.

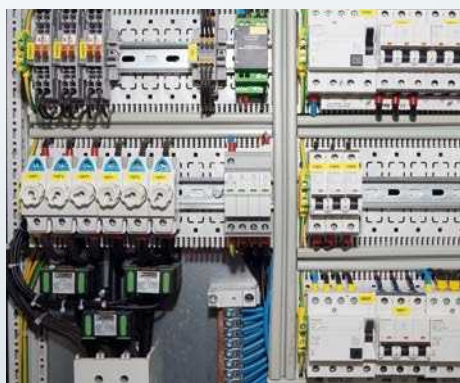
Thus, the VALVETRAB-SEC can be housed without any problems in any miniature distribution system and without a separate arrester backup fuse up to a main fuse nominal current of 315 A. The high discharge capacity and low overall width make the VALVETRAB-SEC a reliable surge protection for any power supply.

Your advantages:

- Low voltage protection level
- Powerful disconnect device
- No external arrester backup fuse required up to 315 A
- High short circuit stability: up to 50 kA
- Saves space in the control cabinet
- Easy replacement during servicing
- Testable with CHECKMASTER 2
- Also available as 175 V version

Seamless **status indicator** for all protective plugs

Consistent plug-in **protective plugs**



VALVETRAB-SEC in use



Sub-distribution



Floating remote
indication contact

T2

High short-circuit current rating

49.2 mm

PLUGTRAB-SEC:

High performance device protection for AC and DC

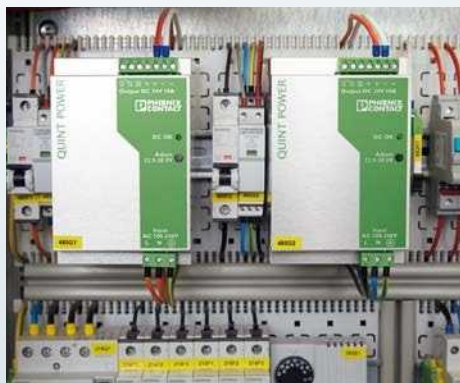
The PLUGTRAB-SEC is the powerful surge protection type 3 for end devices up to 230 V nominal voltage.

The newly developed, internal disconnect device provides increased safety in the case of electric and thermal overloads, regardless of the installed backup fuse.

This means the PLUGTRAB-SEC also provides reliable surge protection for AC and DC end devices.

Your advantages:

- Improved overload response
- Easy replacement during servicing
- Can be used in AC and DC applications
- High load current up to 26 A
- No external arrester backup fuse required in the branch
- Reliable remote status signalling
- Testable with CHECKMASTER 2



Power supply protection



Sub-distribution

Floating remote
indication contact

Powerful, internal
disconnecting technology

T3

Plug-in and encoded
device protection

17.7 mm



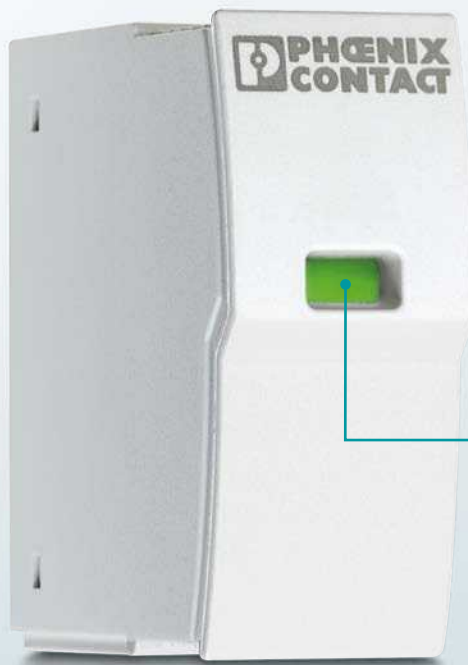
Plugtrab SEC-3S

Device protection for three-phase
230/400 V systems

The all-round complete package: Surge protection from PHOENIX CONTACT

The all-round complete package in terms of surge protection for the power supply: The protective devices with Safe Energy Control Technology are extremely powerful and durable – for greater availability and a lower total load on the system. Because of our confidence in their abilities, we will provide free replacement plugs for the first five years after purchase, if you return a plug with a red status indicator.



The CHECKMASTER 2 provides a convenient way to check all SEC range protective plugs on-site to ensure compliance with standards.



Getting the green light – We bet that you won't see red for five years

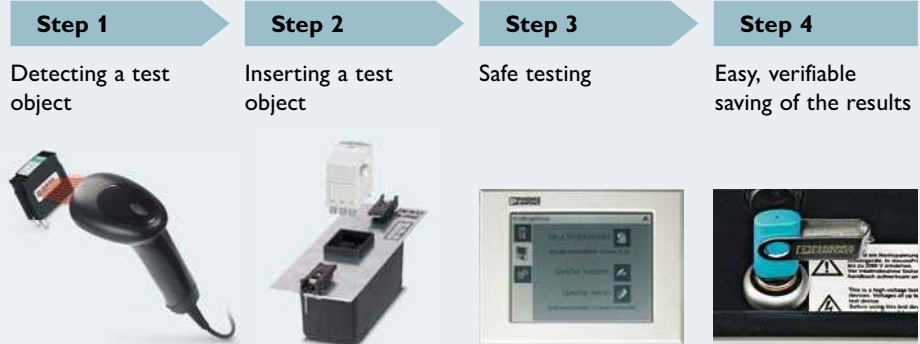
With low-wear protective devices, you won't have to worry about replacing wear parts for at least five years. Because of the SEC technology, the high-quality components are particularly durable. However, should the status indicator signal the need for replacement within the first five years following your purchase, you will receive free replacement plugs. All you have to do is simply return the affected plug.*

Status indicator on each module

-  Protective device O.K.
-  Replacement required

The CHECKMASTER 2 – everything you need for testing

The second generation CHECKMASTER can be used to test all SEC range surge protective devices conveniently, safely, and quickly according to IEC 62305-3 requirements and all government agency guidelines. Recurring tests are documented and saved reliably using the CHECKMASTER 2. Additionally, the CHECKMASTER 2 is also backward compatible. As a result, almost all existing surge protective products from the Phoenix Contact portfolio can be tested.



The **CHECKMASTER 2** tests and documents devices in accordance with IEC 62305.

The **sturdy case** ensures safe transport and provides space for your documents and other items.

It couldn't be any easier – the integrated **hand-held scanner** detects the test object via the barcode without error.

The storage area below the scanner provides **space for another test adapter**.

Display of test results in the LC color display

- Protective plug functional
- Protective plug damaged – replacement recommended
- Protective plug defective – must be replaced

The **USB port** allows you to save data to a USB stick. Software updates can be carried out in the same manner.

The intuitive, menu-driven user interface of the **touch panel** enables easy and user-friendly handling during testing.


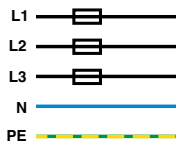
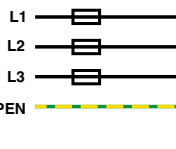
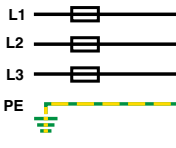
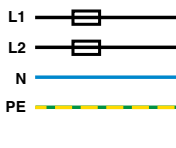
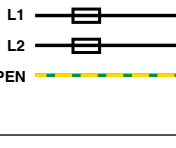
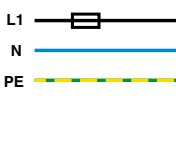


Test adapters for various protective plugs are available for the CHECKMASTER 2.



Selection guide

The new SEC range products can be found in the accompanying selection guide. It is divided into common network forms and arrester types. This makes searching for the correct surge protective device for your application much easier.

Standard applications

| Network type | | | | I/T1 | I/T1+  | Type I+II/T1+T2 |
|--------------|---------|---------|--|------|---|--------------------|
| 230/400 V | 3-phase | TN-S/TT |  | X | | |
| | | | | | X | X |
| | | TN-C |  | X | | |
| | | | | | X | X |
| | | IT |  | X | | |
| | | | | | | |
| | 2-phase | TN-S/TT |  | X | | |
| | | | | | X | X |
| | | TN-C |  | X | | |
| | | | | | X | X |
| 400/690 V | 1-phase | TN-S/TT |  | X | | |
| | | | | | X | X |
| | 1-phase | TN-C |  | X | | |
| | | | | | X | X |
| 24 V | DC | |  | | | |

* Submissions for approval

| II/T2 | III/T3 | Product name | Order No. | Approvals | | |
|-------|--------|---|------------------------|-----------|----|----|
| | | | | KEMA | UL | GL |
| | | FLT-SEC-P-T1-3S-350/25-FM | 2905421 | X | X | X |
| | | FLT-SEC-H-T1-3C-264/25-FM + FLT-SEC-P-T1-N/PE-350/100-FM | 2905871 + 2905472 | X | * | * |
| | | FLT-SEC-T1+T2-3S-350/25-FM | 2905470 | X | X | X |
| X | | VAL-SEC-T2-3S-350-FM | 2905340 | X | X | X |
| | X | PLT-SEC-T3-3S-230-FM | 2905230 | | | |
| | | FLT-SEC-P-T1-3C-350/25-FM | 2905419 | X | X | X |
| | | FLT-SEC-H-T1-3C-264/25-FM | 2905871 | X | * | * |
| | | FLT-SEC-T1+T2-3C-350/25-FM | 2905469 | X | X | X |
| X | | VAL-SEC-T2-3C-350-FM | 2905339 | X | X | X |
| | | FLT-SEC-P-T1-3C-440/25-FM | 2905988 | X | * | * |
| | | FLT-SEC-P-T1-2S-350/25-FM | 2905418 | X | X | X |
| | | FLT-SEC-H-T1-1C-264/25-FM (2x) + FLT-SEC-P-T1-N/PE-350/100-FM | 2801615 (2x) + 2905472 | X | * | * |
| | | FLT-SEC-T1+T2-2S-350/25-FM | 2905468 | X | X | X |
| X | | VAL-SEC-T2-2S-350-FM | 2905338 | X | X | X |
| | | FLT-SEC-P-T1-2C-350/25-FM | 2905416 | X | X | X |
| | | FLT-SEC-H-T1-1C-264/25-FM (2x) | 2801615 (2x) | X | * | * |
| | | FLT-SEC-T1+T2-2C-350/25-FM | 2905467 | X | X | X |
| X | | VAL-SEC-T2-2C-350-FM | 2905337 | X | X | X |
| | | FLT-SEC-P-T1-1S-350/25-FM | 2905415 | X | X | X |
| | | FLT-SEC-H-T1-1C-264/25-FM + FLT-SEC-P-T1-N/PE-350/100-FM | 2801615 + 2905472 | X | * | * |
| | | FLT-SEC-T1+T2-1S-350/25-FM | 2905466 | X | X | X |
| X | | VAL-SEC-T2-1S-350-FM | 2905333 | X | X | X |
| | X | PLT-SEC-T3-230-FM | 2905229 | X | * | * |
| | | FLT-SEC-P-T1-1C-350/25-FM | 2905414 | X | X | X |
| | | FLT-SEC-H-T1-1C-264/25-FM | 2801615 | X | * | * |
| | | FLT-SEC-T1+T2-1C-350/25-FM | 2905465 | X | X | X |
| | | FLT-SEC-P-T1-3C-440/25-FM | 2905988 | X | * | * |
| | X | PLT-SEC-T3-24-FM | 2905223 | X | * | * |

The current state of approvals can be found on the Internet at: phoenixcontact.com



Always up-to-date, always available to you.
Here you'll find everything on our products,
solutions and service:

phoenixcontact.com

Product range

- Cables and wires
- Connectors
- Controllers
- Electronics housing
- Electronic switchgear and motor control
- Fieldbus components and systems
- Functional safety
- HMIs and industrial PCs
- I/O systems
- Industrial communication technology
- Industrial Ethernet
- Installation and mounting material
- Lighting and signaling
- Marking and labeling
- Measurement and control technology
- Modular terminal blocks
- Monitoring
- PCB terminal blocks and PCB connectors
- Power supply units and UPS
- Protective devices
- Relay modules
- Sensor/actuator cabling
- Software
- Surge protection and interference filters
- System cabling for controllers
- Tools
- Wireless data communication

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INSPIRING INNOVATIONS