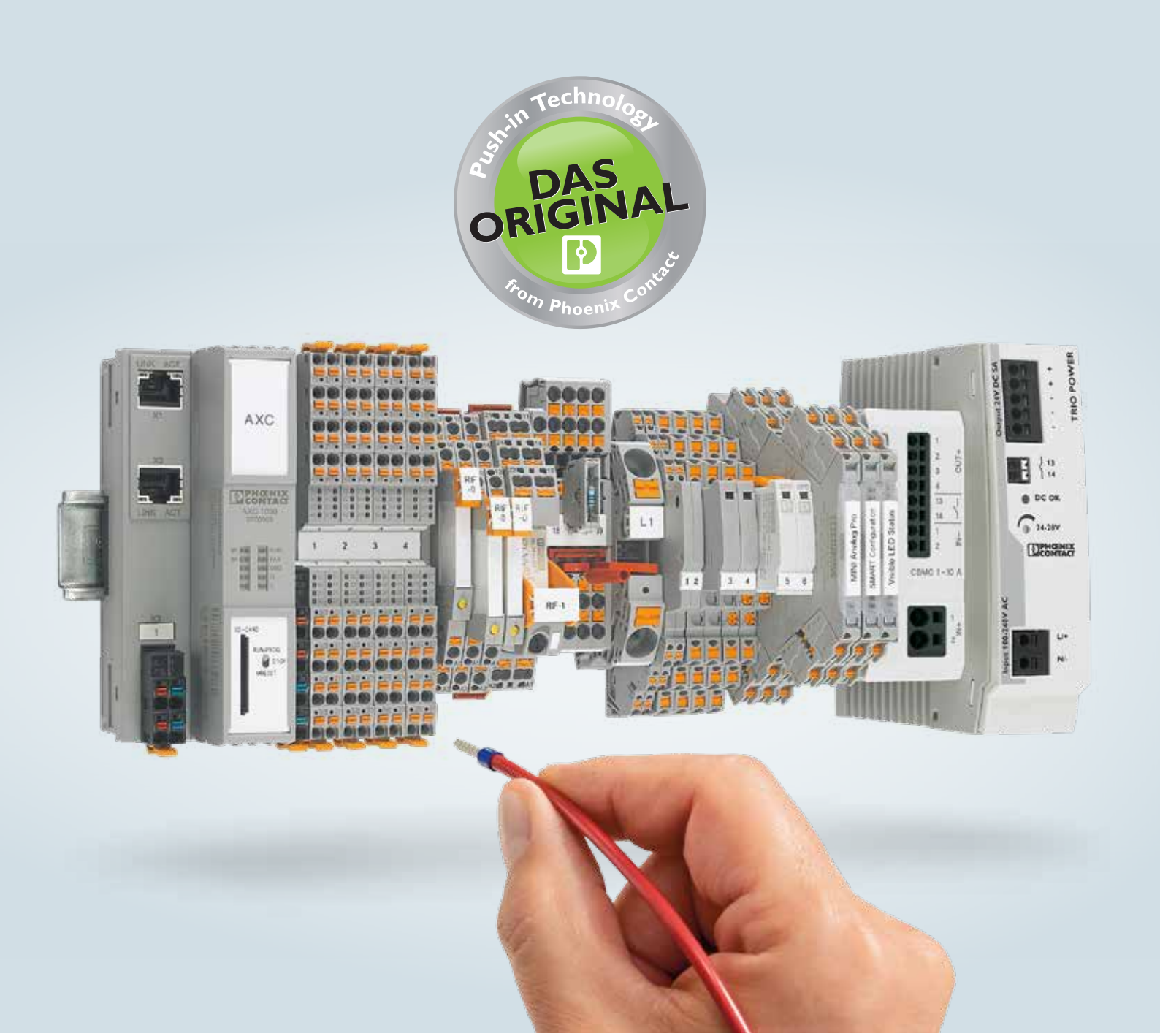


Push-in Technology

Consistent from the field to the controller

PHOENIX CONTACT
INSPIRING INNOVATIONS

Push-in Technology

Consistent from the field to the controller

Wire your application from the field to the controller consistently using simple Push-in connection technology. We offer a complete product range, from the controller to relay modules, modular terminal blocks and surge protection, all the way through to sensor/actuator cabling in the field.

More than 2600

PCB terminal blocks and connectors with Push-in Technology.

More than 1800

terminal blocks and distribution blocks with Push-in Technology.

More than 400

industrial connectors and sensor/actuator cabling with Push-in Technology.

Push-in Technology

Designed by PHOENIX CONTACT

More than 150

controllers and I/O modules with Push-in Technology.

More than 150

power supplies and device circuit breakers with Push-in Technology.

More than 500

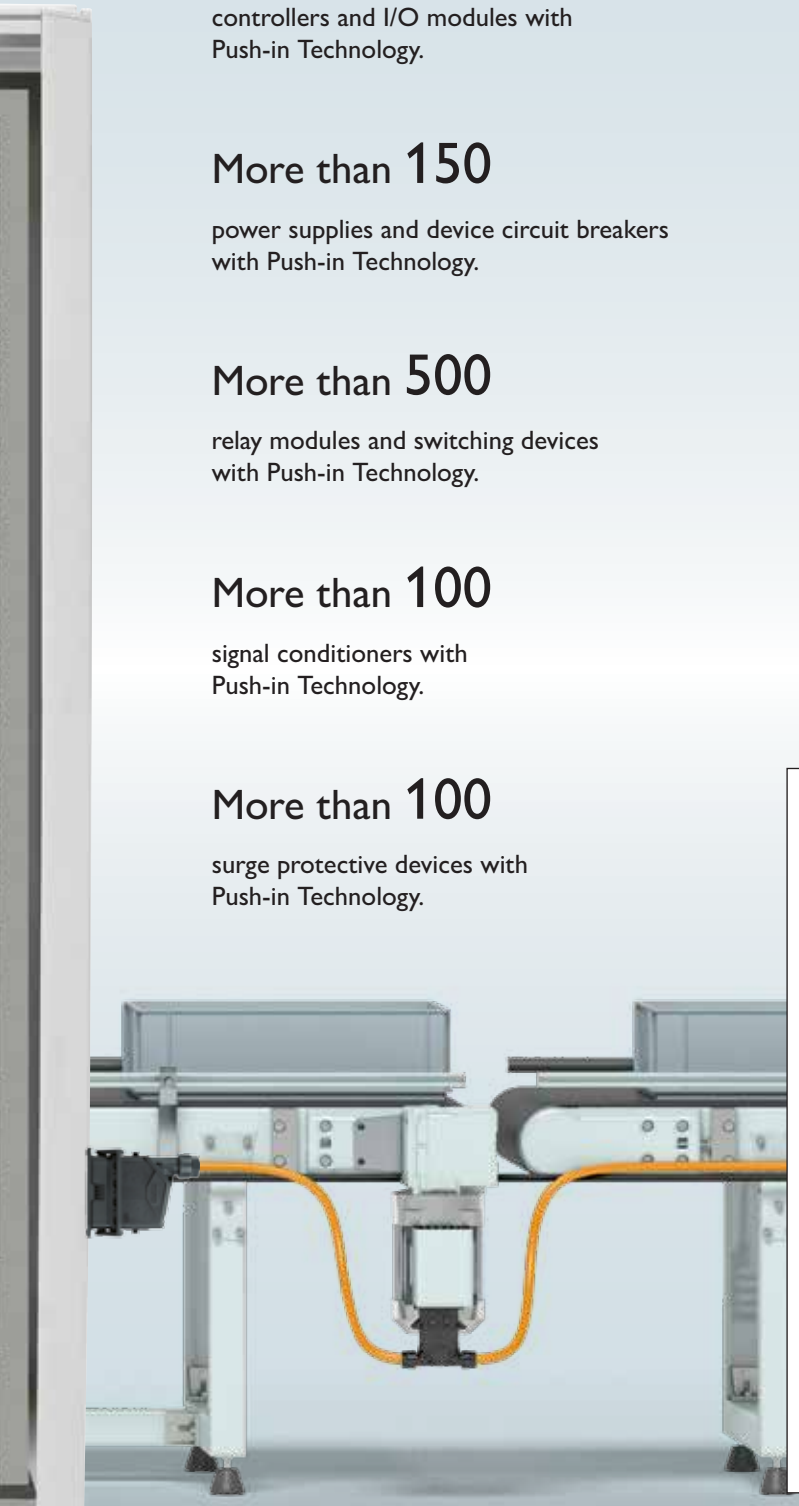
relay modules and switching devices with Push-in Technology.

More than 100

signal conditioners with Push-in Technology.

More than 100

surge protective devices with Push-in Technology.



Contents

Find out more with the web code

You can find web codes in this brochure: a pound sign followed by a four-digit number combination.

Web code: #1234 (example)

This allows you to access information on our website quickly.

It could not be easier:

1. Go to the Phoenix Contact website.
2. Enter # and the number combination in the search field.
3. Get more information and product versions.

#1234 **Search**

Or use the direct link:
phoenixcontact.net/webcode/#1234

Phoenix Contact invented the modular terminal block nine decades ago

Mr. Hugo Knumann, who founded Phoenix Contact in 1923, developed the first terminal block in 1928, in conjunction with Rhine Westphalian Electricty Works. Phoenix Contact applied for its first U.S. patent in 1931, with it being awarded in 1935. This was the world's first modular, rail-mounted terminal block.

Dear reader,

In today's market, we see a growing need to produce smaller and more efficient control cabinets. Being on the forefront of this trend is vital to success in any market. Several years ago Phoenix Contact introduced Push-in Technology as a connection solution high in efficiency and compact in size. Since its debut, push-in has been incorporated on almost all of our products and can be found in every industry. We have implemented it on almost every major product line we sell, seeking to bring the highest levels of efficiency to every element of the control cabinet. Today, you can find Push-in Technology on relays, surge protection, power supplies, hybrid motor starters, power terminal blocks, I/O modules and controllers.

This brochure is our opportunity to make a strong and convincing case for Push-in Technology. We invite you to see for yourself. I wish you an interesting read.

~ **Bill Schalon**
Director of Product Marketing - Industrial Components
Phoenix Contact USA

A small thing makes a big difference

Why consideration for your connections is important

In a recent survey of all German industries, researchers found that 62 percent of industrial facilities use push-in connections. An astounding 70 percent of companies surveyed prefer spring-force connections, followed by screw (54 percent) and plug-in connectors (47 percent).

While this research is specific to one European country, the findings imply a coming change to the American market. In many ways the United States follows European design trends. It's our belief that push-in will become a larger part of the U.S. market in the coming years.

Why is the world market moving to this new technology? Should you consider it yourself?

Without a doubt, push-in is the fastest way to increase quality and reduce cost. The findings of our study revealed that the most important quality of push-in connections is the time savings. On average, making this change can save up to 30 percent on wiring time. In some instances, we recorded a wiring time reduction by 50 percent!

Additionally, Push-in Technology offers a substantial improvement on long-term quality. Each connection point in your cabinet is a potential failure point. With push-in, wires connect with constant tension for the life of the application. Push-in also offers a pullout force of up to five times the IEC-required level. This combination gives our products stability in the long term. This reduces the cost of ownership and improves reliability.

The detailed results of our study are summarized in a white paper, which informs readers about the distribution of different connection technologies in the surveyed establishments. In addition, it displays the application areas of Push-in Technology. It also provides the perspectives of surveyed participants.

To request our white paper, please visit:
www.phoenixcontact.com/pushin

History of Push-in Technology by Phoenix Contact

As a universal solution provider, Phoenix Contact has been successfully developing and producing spring connection technology products for decades. In 1978, we created the first terminal blocks with a directly pluggable spring connection and an orange pushbutton.

The FK 1.5 was designed to offer installation engineers a simple and safe conductor connection method. This was the birth of the terminal block with Push-in Technology.

2010

First PLC relay system with push-in

2011

First signal conditioner with push-in

2012

First circuit breaker with push-in

2013

First industrial relay system with push-in

2014

First safety relay with push-in

2015

First power supply with push-in

1923

Company foundation

1928

First modular terminal blocks

1978

First push-in terminal block

1979

First circuit board connector with push-in

2009

First I/O system with push-in

First terminal system with push-in

2016

First safety bridge with push-in

2017

First power outlets with push-in

Wiring made easy

Quickly and safely connect with Push-in Technology

Push-in Technology enables you to insert wires quickly and easily. Even small conductors from 0.25 mm^2 can be connected reliably and without using tools. For disconnection purposes and to connect stranded conductors without ferrules, just use the push button.

Removing wires from PT blocks

PT connections are tested to hold up to five times the IEC-required pullout force, far surpassing many of the market's existing spring technologies. This guarantees a rugged wire connection, no matter what the environment.

Even with the rugged spring force connection, the wire can be removed with the simple push of our orange pusher, using a screwdriver or even a ballpoint pen!

Time savings

Labor is one of today's most sizable cabinet expenses. Wiring connections can often take hours to complete. With Push-in Technology, Phoenix Contact offers up to 50 percent reduced wiring time over screw connections! There is an incredible amount of time saved when installers can simply push to connect and move on to the next wire.

Reliable spring force connection

Trust is one of the largest concerns customers have before switching to PT connections. The wire may be easy to insert, but is it easy to remove?

We posed this question to our customers, asking them to showcase their best attempts at removing wires from PT blocks. The winner of our competition used an airplane to pull out the wire, measuring just short of 200 lbs. of force before removal.




How does it work?

Push-in Technology allows users to directly insert ferruled or solid conductors without the use of tools. Simply push the wire into the hole for a reliable, vibration-free connection every time. This technology also works with stranded wires. Simply depress the orange button first, and insert the wire (as shown).

To disconnect any wires, pushing on the orange tab with a screwdriver will compress the spring and release the conductor. This makes maintenance fast and efficient. Once your conductors are prepared, all of your wiring can be done with one hand!

Kiss torque goodbye

A key qualification for any screw connection is using the proper torque. This must be carefully observed using calibrated tools. If the screws holding your cabinet's wires are under-torqued, you risk loose connections – and hours of troubleshooting. Over-torque them and you strip the screw, requiring a replacement block. Matching the torque specification requires a properly calibrated torque screwdriver to be used every time.

Push-in Technology provides a solution for these problems by completely eliminating torque. With PT, every wire is installed under the same condition, no matter who is using it or what tool they are using: no tools are required. Keep in mind, no special training is needed beyond the basics of installing a wire. Each operator can install as efficiently as the next, with minimal training.

No risk of a shakeout

Push-in connection terminals are ideal in high-vibration environments because they never shake free! The contact spring maintains a continuous, gas-tight connection under any circumstance, in every connection. If you're using a traditional screw-cage block, there's always a risk that, over time, the screw may back out and loosen, especially as the wires undergo hot/cold cycles. Thankfully, PT connections will maintain a maintenance-free connection at every point.

Ergonomic and safe design

The simplified nature of the push-in connection makes for light work on the wrist and hands while wiring. Our technology removes the repetitive use of insertion tools. There is no constant prying of screwdrivers into each terminal. The wires are connected quickly and shortly without issue.

In comparison tests with other direct connection blocks, Phoenix Contact's PT requires 50 percent less force to insert wires. Additionally, operators are protected from risk of electric shock in the event of live wiring. Thanks to the orange button, tools are isolated from electric circuits, removing the risk of a shock. This combination of safety and ergonomic design makes for a reliable and easy wiring experience.

An interview with Klaus Firschke on push-in connection technology

For several years, Phoenix Contact has offered push-in connection technology as a feature on many of its products. Klaus Firschke, Head of Product Marketing for Industrial Cabinet Connectivity at Phoenix Contact, interviewed with us about the technology and why his department has recently launched a major marketing campaign promoting Push-in Technology.

How does the future look for Push-in Technology?

Good! In the future, the amount of wires used will continue to climb. Consider the field of energy generation. There are still many wires and connections required, because energy today cannot be wirelessly transmitted. At least, not over large distances.

Are there any current developments that have a particular influence on connection technology?

Particularly in the European area, we are thinking about how switch cabinet wiring can be further automated in the future. This, of course, has a direct influence on the connection technology.

Push-in Technology is nothing new; Phoenix Contact has been offering it for several years now. Why does Phoenix Contact promote it now so heavily?

Currently, we observe that the number of prefabricated cables and preassembled wiring harnesses continues to rise. This is an essential condition for Push-in Technology, which is increasingly gaining acceptance. Efficiency in wiring is now a very big issue.

What are the strengths of this technology?

The strength of the Push-in Technology lies in the intuitive operation and the speed of wiring.

Compared to other push-in manufacturers: What are the advantages offered by the solution from Phoenix Contact?

The biggest advantage of our system is that on one side our plug in force is very low, which significantly simplifies the wiring. On the other hand, the pull-out forces, however, are high, so you have large wiring safety. Another plus point of our push-in system is the operating trigger. The trigger has two essential parts: With its orange coloring it is clear where the conductor insertion is located – which prevents false insertions when wiring. And it serves as an insulator, so when wiring with a screwdriver or another tool, one cannot touch any electrical parts.

Klaus Firschke, Head of Product Marketing for Industrial Cabinet Connectivity at Phoenix Contact, spoke with us about the technology in general and why his department has recently launched a major marketing campaign promoting Push-in Technology.

One often hears the argument against Push-in technology that the price is too high. What is your response to that?

Basically, the terminal blocks equipped with push-in are the most cost-efficient in our portfolio! This becomes clear when looking at the entire wiring process chain – from engineering, about how to prepare the cable, through to the actual connection – another cost advantage. With prefabricated cables you can simply be wired quickly.

Most users use Push-in Technology in the control cabinet. Not so much in the field/outside of the cabinet. Is that justified?

Technically not. Historically, however, crimp connections were more common in the field/outside the cabinet. In addition, the selection for field-capable push-in solutions is still fairly limited.

Push-in Technology has its biggest advantages with solid conductor wiring and when used with ferrules. Is that a correct statement? If you also count in ultra-sonic/resistance welded flexible conductor wiring, then yes.

Are there advantages to customers using stranded conductors without wire end ferrules?

If I used the push-in technique here, I would consider that the short operating distance of the pusher reduces the total time of wiring. There is still an advantage over the conventional spring connection technology. Each wire takes only a short push from the screwdriver, instead of the prying motion used with most springs.

Do you see a future for push-in technology with automatic wiring using robots?

A very clear yes! But, a very important prerequisite must be met: the data flow must be from the E-CAD system to all the machines used during the wiring process. You need a database that covers everything and a consistent flow through all systems

Where do you see development potential for Push-in Technology?

Push-in technology is already used in many areas of our components and solutions. However, we will continue to expand this range in the future. This means that Push-in Technology will increasingly be used in all areas of the control cabinet. On the one hand, of course, at Phoenix Contact, but also at the manufacturers of components which are not supplied by us. These companies also increasingly use push-in technology to design their products.

Solution for high-contact density

The big benefits of going small

The degree of automation in industry continues to increase. More and more sensors, actuators, and controls are required to produce efficiency in plants and manufacturing facilities. Despite the triumph of bus systems and the increasingly decentralized automation of cabling efforts, wiring costs remain high. In larger machines and plants, as well as in the control room, hardware is still connected with hundreds of cables.

slim

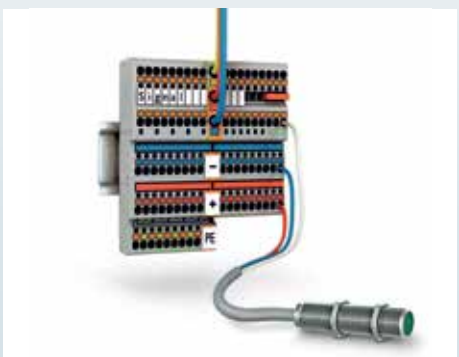
An important trend in our industry over the last decade has been the drive for smaller cabinets. Miniaturization is becoming more necessary due to the value of available space. As more and more sensors, actuators and controls are added to normal processes, it's important that operators preserve space in their control cabinets. The benefits of shrinking needed space are often very clear: less space = less cost. As we see this trend impact the design of control cabinets, Push-in Technology has a unique advantage over traditional connection styles.

MP 1,5

Designed to mount on both rail and panel, Micro blocks with PT fit into the most confined spaces. Each block can fit up to 14 AWG wire and is rated to 15A and 300V per UL.

PT 1,5

Phoenix Contact offers push-in terminals with a pitch of only 3.5 millimeters. This enables much higher density when wiring small conductors. For example, with 50 terminals on rail, the user can save over 3 inches of space compared to utilizing a 5.2 mm pitch block.



PTIO

These blocks offer the market's highest density of power distribution for all of your field sensors/actuators. Fit 85 sensors on under 12 inches of rail!

PTRV

Connect up to 32 wires on eight potentials by using PTRV. Slim at only 8.3 mm wide, this solution allows an incredibly dense selection of wire to be connected through one block. Available in four and eight level.

Fast wire preparation

All in one hand

Ferrules for stranded wire have been in use since the 1960s, but they're only now beginning to gain popularity in North America. Many manufacturers are now using ferrules across each connection they make.

Why the switch? Ferrules have many benefits, at minimal cost. They increase wire durability, increase long-term electrical performance and eliminate many risks associated with using stranded wire. Perhaps the most convincing benefit of ferruled wire is its ability to be rapidly connected to push-in blocks, reducing labor time.

As push-in terminals become more dominant, ferrules also increase in popularity. Because of this trend, there is a growing need for tools that increase productivity in wiring.

Three tools making a big impact:

CRIMPFOX Centrus

The CRIMPFOX Centrus are self-adjusting crimping pliers. Thanks to their ergonomic and improved mechanical design, these make for light work when crimping ferrules. Available in four versions, the crimping pliers process a wide range of ferrules quickly and reliably, from 24 to 8 AWG.

CRIMPFOX 4in1

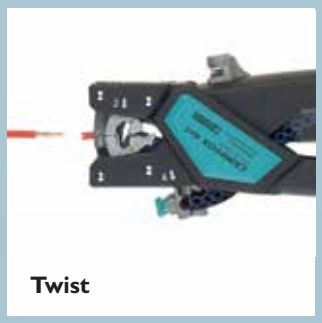
With the CRIMPFOX 4in1, four functions are combined in a single tool: cutting, stripping, twisting and crimping 20- to 14-gauge wires. An effective handling process enables all steps to be performed without putting the tool down, saving you significant amounts of time when wiring.

CF 3000

The CF 3000 is ideal for processing large quantities of ferruled wire. Automatically strip and crimp ferrules onto wires from 22 to 14 AWG. Up to 1200 terminations can be processed in an hour. Designed to be lightweight, the CF 3000 can easily be moved from work station to work station, making wire preparation a breeze.

Cut

Strip



Twist

Crimp

How does it work?

With the Crimpfox 4in1 multifunction tool, four functions are combined in a single tool: cutting, stripping, twisting, and crimping. An effective handling process enables all steps to be performed without putting the tool down.

Ferrules

Around 1960, ferrules began to gain popularity in North America. Manufactures were making the switch to experience increased wire durability and long-term electrical performance and to eliminate the risks associated with using stranded wire alone. The most convincing attribute of the ferrule is its ability to be rapidly connected to Push-in Technology.

Push-in Technology

Consistent from the field to the controller

Push-in, the connection technology of the future: This is the result of many years of experience in development and Phoenix Contact know-how. Benefit from the advantages of easy, consistent wiring realized through our wide range of push-in products, from the terminal block to the controller. Push-in – the original from Phoenix Contact.

Push-in Technology

Designed by PHOENIX CONTACT

Controller and I/O system

Controllers, bus couplers and I/O modules offer you a consistent solution for your automation tasks.

Relay modules

The extensive product portfolio offers the suitable relay module for every application or industry for reliably switching, isolating and amplifying signals.

Surge protection

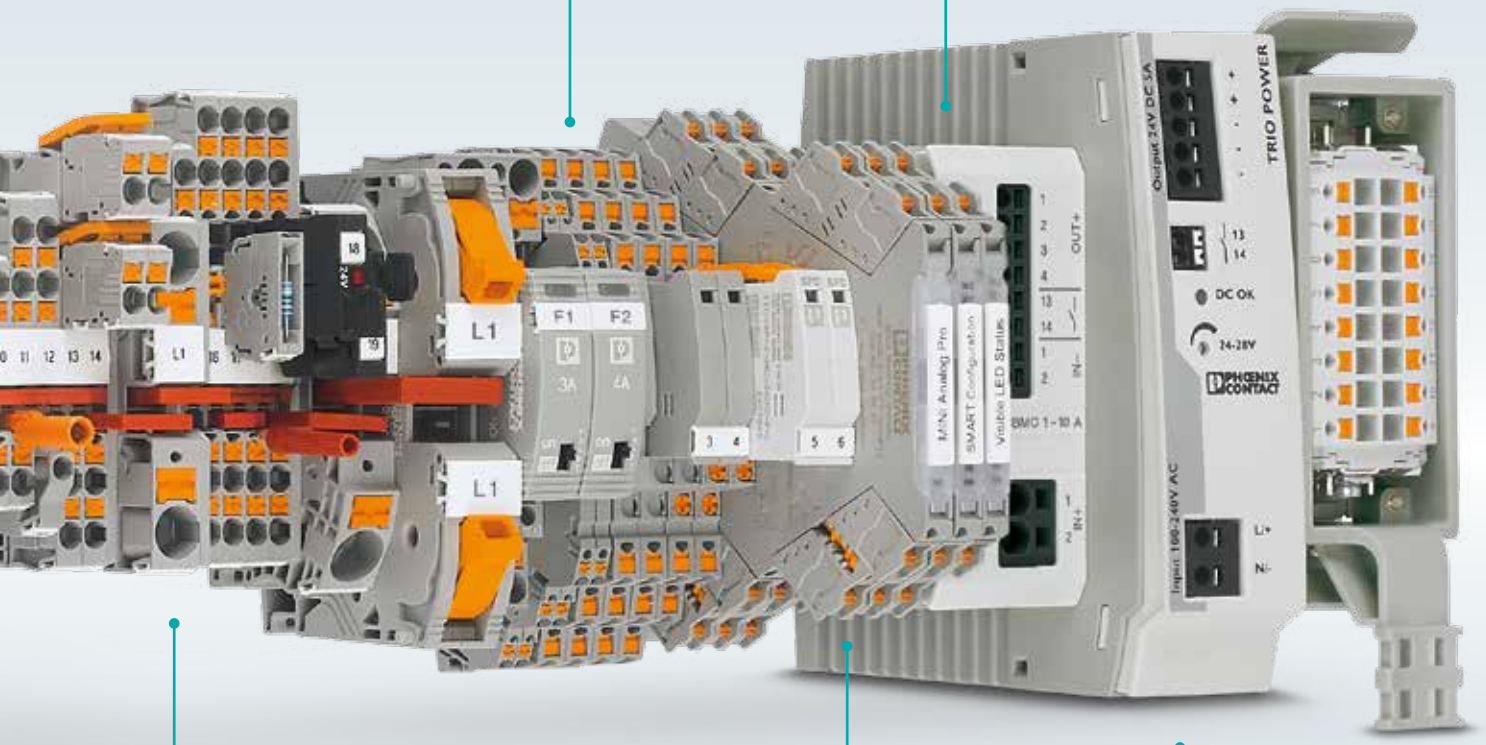
Effectively protect your machines and systems against surge voltages.

Device circuit breakers

Secure your equipment individually and selectively shut down the faulty circuit in the event of an overload and short circuit.

Field cabling

Safely from the field into the control cabinet: connectors and distributors provide for fast and simple power and signal wiring.



Terminal blocks

Simply consistent: for the PT terminal blocks with push-in connection technology, you can choose from the ideal terminal block from 1.5 mm² to 150 mm² for every task.

Signal conditioners

Isolate, convert, filter, and amplify: our signal conditioners ensure interference-free transmission of your signals.

Power supply

Our high-quality power supplies provide your application with leading technology.

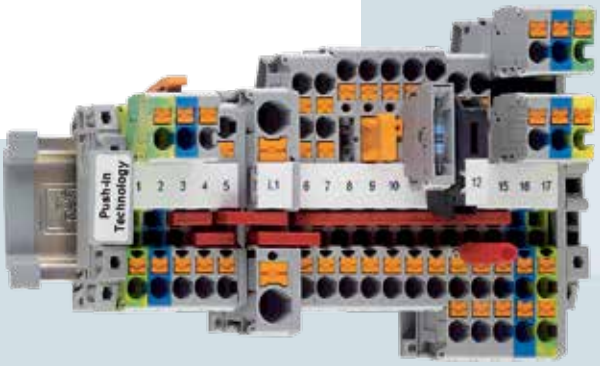
Push-in Technology

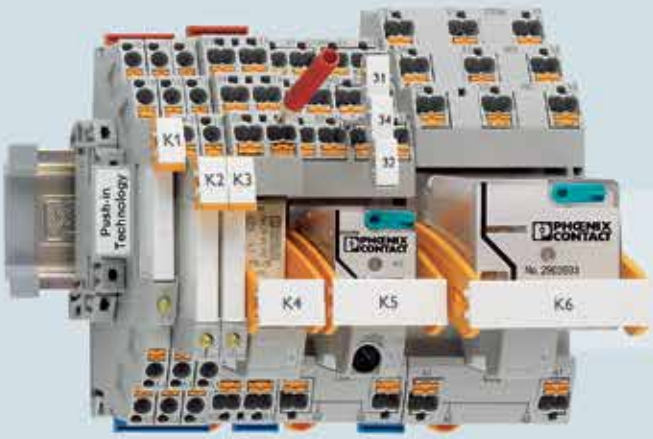
From the field to the controller

Push-in Technology from Phoenix Contact enables you to easily and quickly wire your entire application.

A complete product range is available for consistent wiring, from field wiring to power and control wiring. Without tools, you can easily contact sensors and actuators, modular terminal blocks, interface and automation components.

Push-in – the ideal connection.





Interface components with push-in connection

Field cabling with push-in connection

For more information, please visit: **www.phoenixcontact.com/ptproducts**

I/O system and controller with push-in connection

Modular terminal blocks with push-in connection

Compact, quick, and easy

SAC sensor/actuator cabling

M12 cordsets, connectors and sensor boxes have established themselves as the robust solution for sensor/actuator connectivity.

Take advantage of the benefits of push-in connection technology when wiring your sensors in the field. Machine mountable sensor boxes and both non-shielded and shielded field-wired connectors complete the range. Coupled with our SPEEDCON rapid interlock system, your installation is simplified.

Our fast connections will significantly reduce labor costs related to connecting field I/O to the PLC.

Web code: #0564

Fast connections

The M12 design offers extreme compactness in a standardized interface. The combination of push-in connection technology and our SPEEDCON fast locking system, which saves 90 percent of the connection time, results in a cost-effective and time-saving solution for field cabling.

SPEEDCON LOCKING

Simple operation

Quickly open any terminal point using the color-coded levers: Ideal for landing stranded wires or removing a wire.

M12 connectors for assembly

Connect solid or ferruled wires directly. The terminal point does not have to be opened.

Push-in Technology

Designed by PHOENIX CONTACT

M12 connectors for data and signals

M12 connectors for assembly are available with A, B, and D coding for networks, fieldbuses, and signals.

Data field-wired connectors

The shield variants for data connectivity are available in four-position D-coding for ETHERNET, as well as 5-position B- and A-coding design for profibus, interbus and DeviceNet™ fieldbus networks. The integrated tension spring provides a 360° shield connection. This fulfills the requirements of the railway industry.

M12 distributor boxes

Easily group together signals in individually laid master cables with M12 distributor boxes with push-in connection.

Compatible connection, flexible combination

HEAVYCON complete heavy-duty connectors

Designed for harsh environments, Heavycon heavy-duty rectangular connectors from Phoenix Contact are the right choice where robust plug-and-play connections are required.

Our Heavycon EVO is now available in metal and plastic, helping you to reduce inventory costs by up to 70 percent. When used with our new, time-saving push-in contact inserts that provide a simple and reliable connection, Phoenix Contact can help you reduce costs even more.

Web code: #0002

HEAVYCON complete

HEAVYCON complete provides the right connector with matching connection technology for every application.

Customized wiring

Choose from versions with single and double push-in connection. Traditional inserts only allow one wire per contact. With the new PT TWIN, you can jumper or daisy chain by landing two wires to any contact. Inserts fit all common housing series and sizes.

Everything in one housing

Combine modules for data, signal, and power transmission in one connector – simply click into the snap-in frame and you're done!

Easy installation

Contact inserts with Push-in Technology allow you to make connections quickly and easily, even for components already installed in a control cabinet.

Push-in Technology

Designed by PHOENIX CONTACT

Proven versatility

STANDARD housings are distinguished by a wide range of robust metal housings with different cable outlet directions and locks. They are corrosion-resistant as well as mounting- and plug-in-compatible.

Reduced inventory

The flexible and swiveling bayonet locking of the EVO series enables you to freely select the cable outlet direction on-site. Housing variations are therefore greatly reduced, cutting inventory costs by up to 70 percent. Just four cable glands are required for all hood sizes.

Robust without compromise

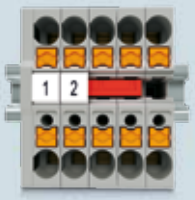
ADVANCE housings are particularly durable, robust, and cost-saving, thanks to the direct screw locking without panel mounting base. They fit on standard panel cutouts and, thanks to the high degree of protection, are suitable for particularly aggressive conditions.

Simply consistent: PT terminal blocks

The consistent function shaft in all push-in terminal blocks gives you a high degree of flexibility and simplifies project planning and configuration of the control cabinet. All terminal blocks can be freely combined with one another.

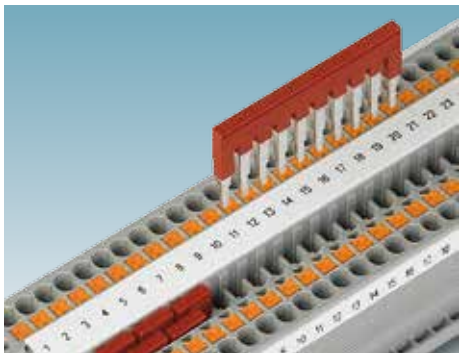
The CLIPLINE complete system accessories, such as jumpering, marking, and testing accessories, are standardized and greatly reduce your logistics costs.

Web code: #1126



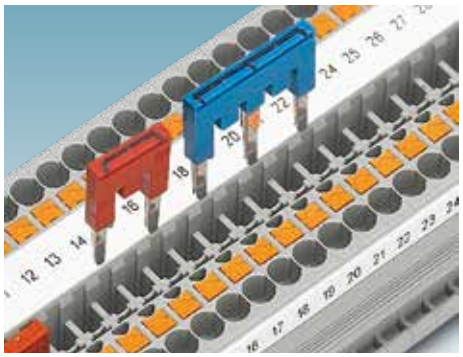
MPT miniature terminal blocks

Extremely small, but they can be labeled and bridged just like their larger counterparts.



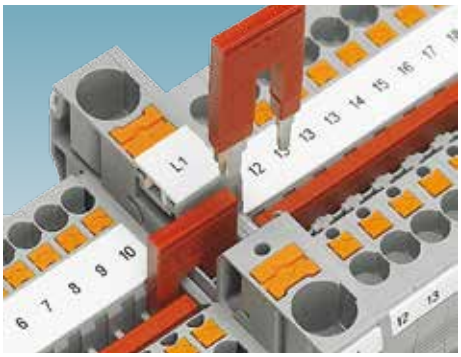
Flexible plug-in bridge system

To allow fast and individual potential distribution, the terminal blocks in the CLIPLINE complete system have two function shafts. These are arranged in one line over all the terminal blocks, allowing for a combination of connection technologies. This makes it possible to implement all the tasks of potential bridging within a very short time.



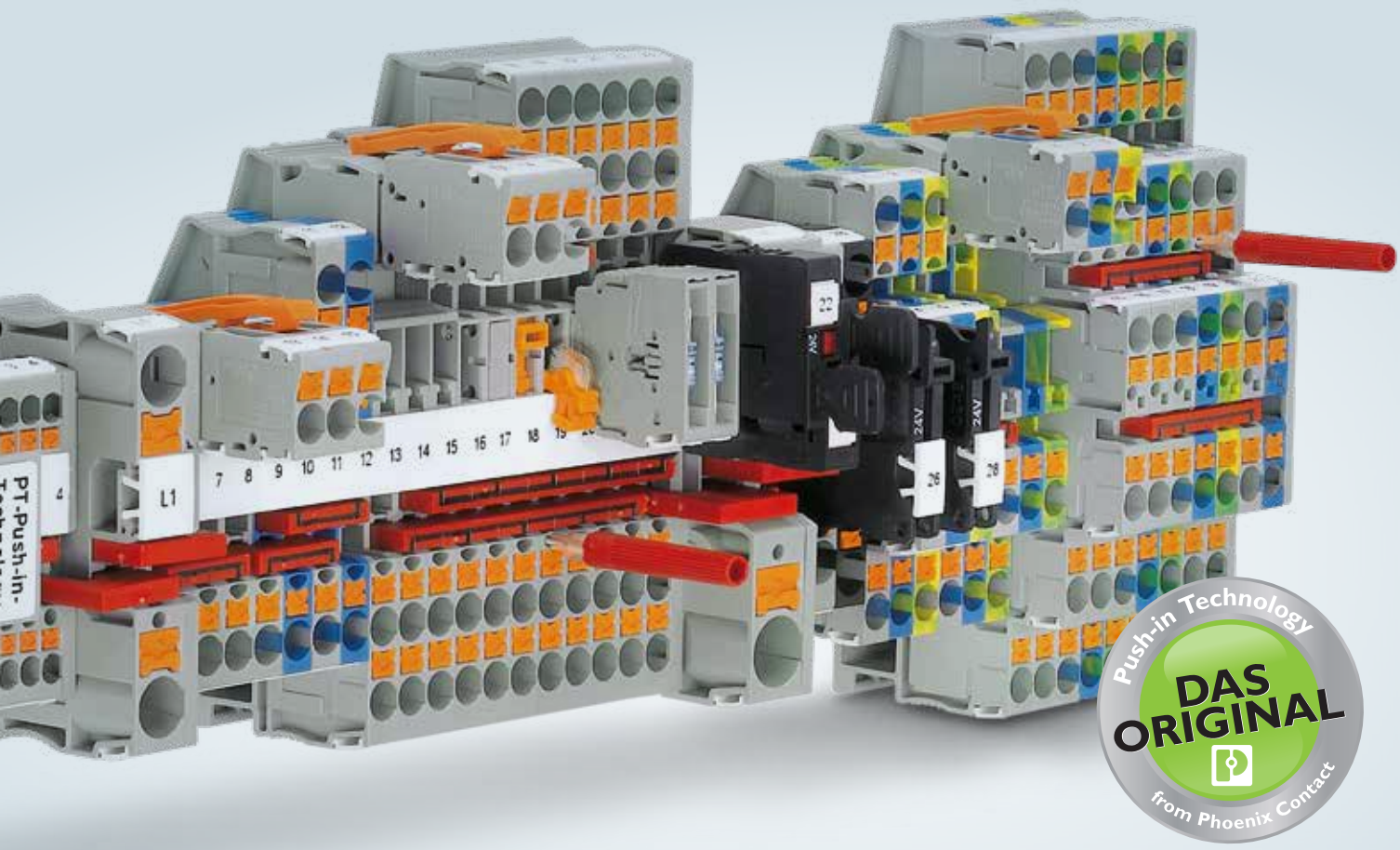
Bridging between nonadjacent terminal blocks

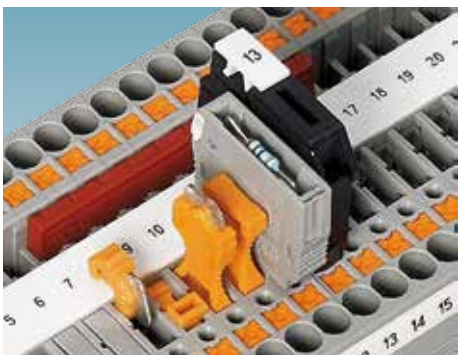
A jumping bridge is created by removing individual contact guides from the standard bridge. Two potentials can then be routed in parallel through a terminal strip.



Easy potential distribution

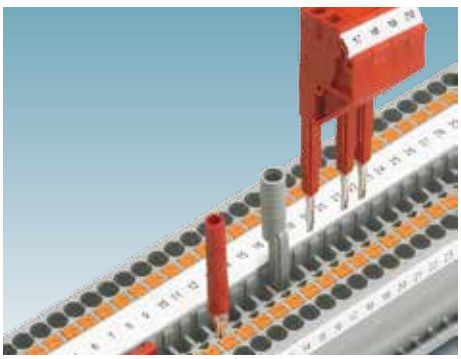
The reducing bridge allows terminal blocks with different nominal cross sections to be connected with ease. It can be used to quickly create power blocks (e.g., a 10 mm² terminal block with a 2.5 mm² or 4 mm² terminal block), regardless of the connection technology.





Multifunctional disconnect zone

All disconnect terminal blocks in the CLIPLINE complete system have a standardized disconnect zone. The disconnect zone accommodates various plugs, such as fuse plugs, component connectors, and isolating plugs.



Standardized test system

All test plugs in the system make contact in the freely accessible function shaft. For individual test leads, a 2.3 mm diameter test plug is available. More complex testing tasks can be implemented using alignable test plugs. Test adapters can be assembled individually and are perfectly suited for use in test laboratories.

Large-surface marking

Each terminal point supports clear, large-surface marking to ensure the best possible overview of the control cabinet.

Quick, easy, and reliable: PTPOWER high-current terminal blocks

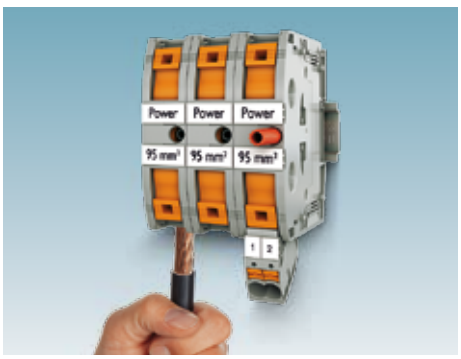
With PTPOWER, the spring high-current terminal blocks can be used to quickly, safely, and easily wire conductors up to 150 mm² and 309 ampere, thanks to the unique Power-Turn connection technology.

Compact versions of the DIN rail and direct mounting are available.

Web code: #0158

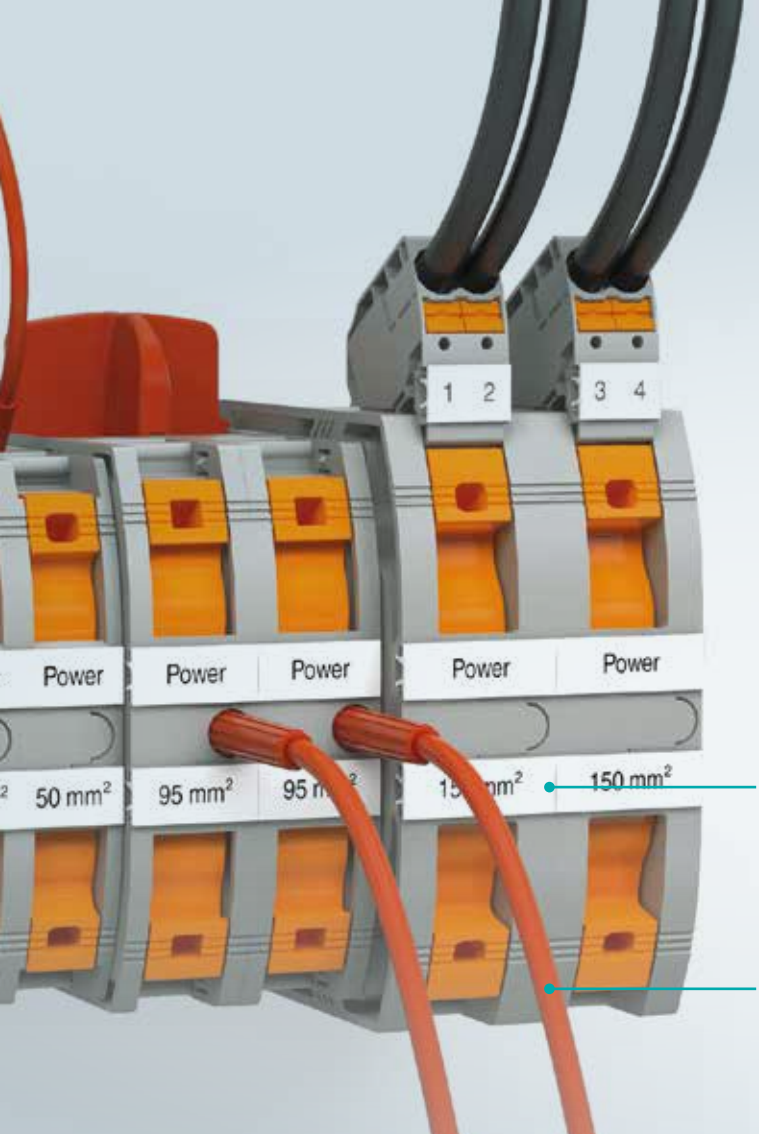
Power-Turn Technology

Designed by PHOENIX CONTACT



Easy, tool-free wiring

Quick and easy connection is now also possible for large conductors. Alternatively, conductors can also be quickly and easily inserted directly when the lever is closed by means of the push-in method.



Power-Turn Technology

The patented Power-Turn spring connection technology enables large conductors to be connected quickly and easily using a standard screwdriver and a single lever movement. Up to three high-quality, steel pressure springs work with the prismatic terminal body base to create a vibration-resistant conductor connection that is stable in the long term.

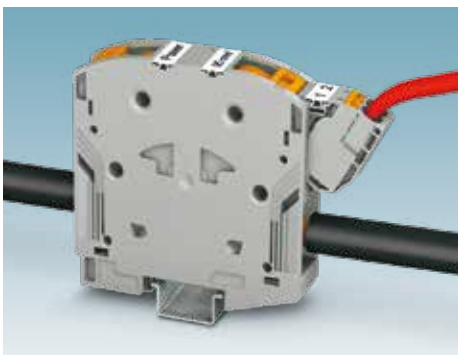
Designed by PHOENIX CONTACT

Large-surface marking

For maximum overview in the control cabinet.

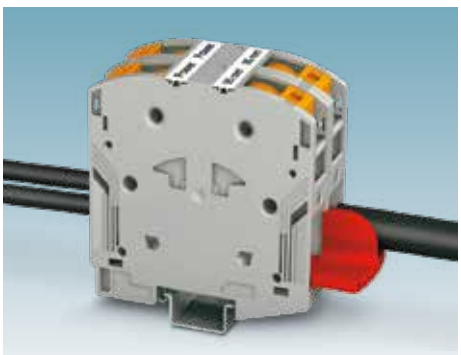
Easy testing

Test connections for standard test plugs.



Safe tap-off

With the fully isolated and optional snap-on, tap-off terminal block, you can easily achieve your voltage tap-off for two conductors up to 16 mm². Large-surface marking and integrated 2.3 mm test connections.



Easy potential distribution

Distribute your potentials with the isolated insertion bridges. They can be installed easily without any tools and latch securely in the clamping space.

Functional blocks

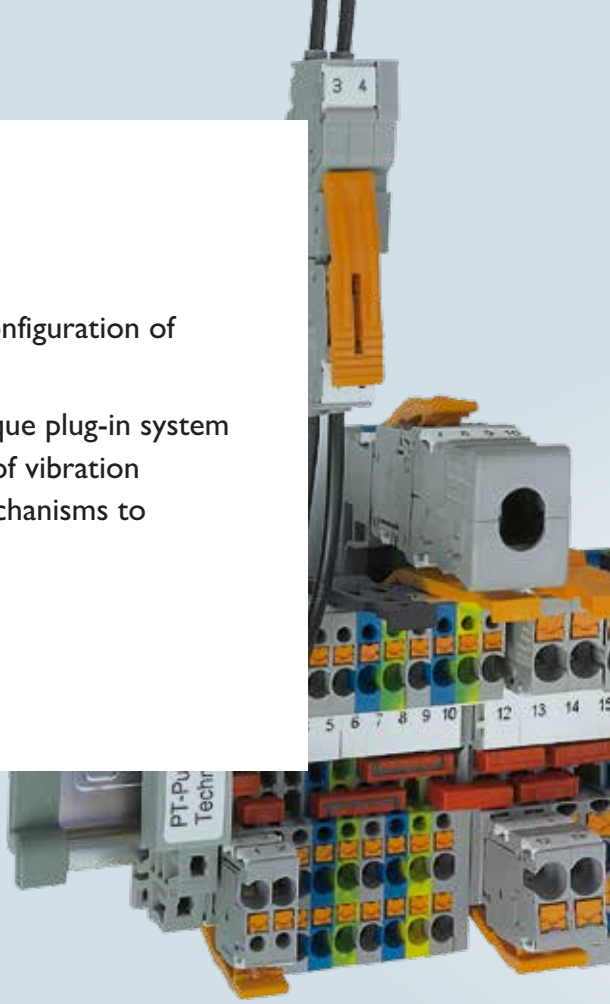
Preassembled terminal block bases reduce mounting and storage costs. The right terminal block base for DIN rail or direct mounting is available for every function.

Modular connection solutions

PT plug-in terminal solutions

The COMBI plug-in system enables the time-saving and modular configuration of your application.

The nominal ratings up to 40 A and 600 V provide a basis for a unique plug-in system for signal and power wiring. The system meets the most stringent of vibration requirements. Extensive accessories are available, from latching mechanisms to shield connections.



Web code: #1276

Control cabinet feed-through

The CES cable-entry system allows you to insert a variety of preassembled conductors, cables, and protective hoses into areas with limited space in control cabinets, distributor boxes or devices, in a way that protects them against water and dust.

Web code: #0570

Uniform plug-in zone

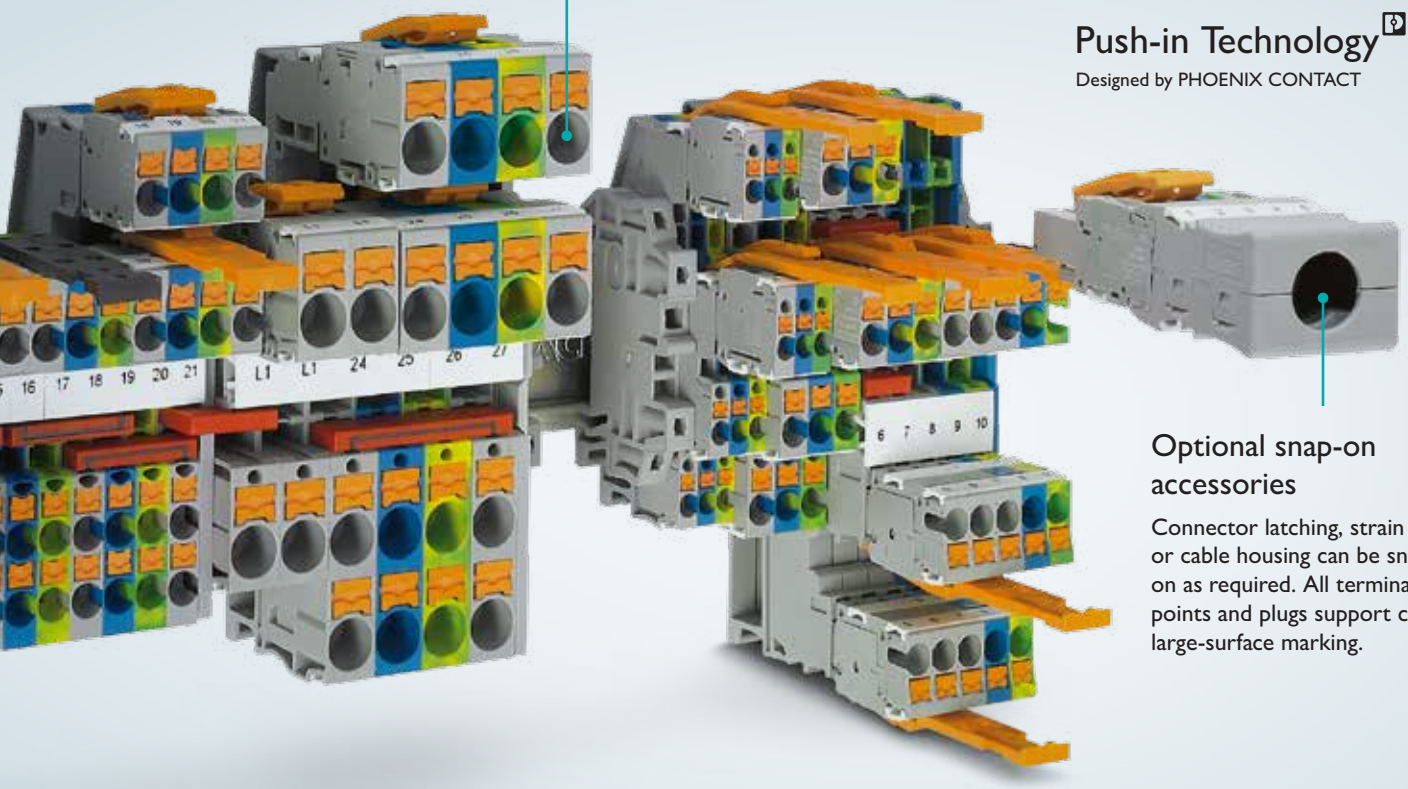
The COMBI connection system enables the time-saving and modular configuration of your application. Its distinguishing feature is its standardized plug-in zone. This plug-in zone allows terminal blocks and plugs to be combined to suit the application, regardless of the connection technology.

Flexible design

Connector and coupling can be assembled to meet application requirements, thanks to their modular design.

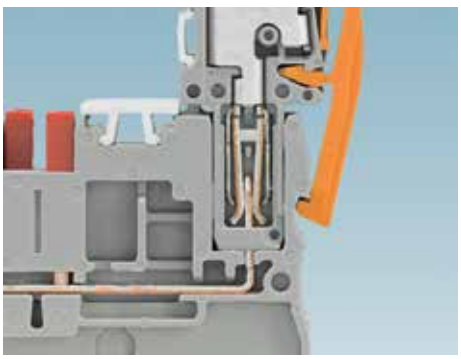
Push-in Technology

Designed by PHOENIX CONTACT



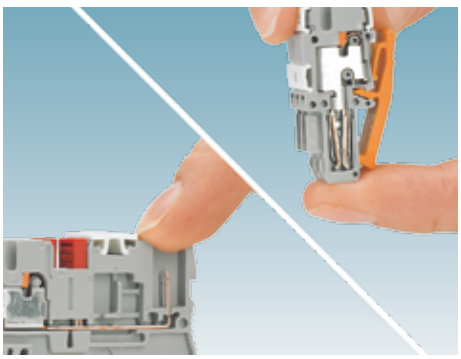
Optional snap-on accessories

Connector latching, strain relief or cable housing can be snapped on as required. All terminal points and plugs support clear, large-surface marking.



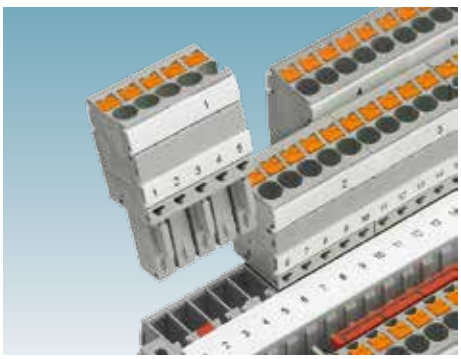
Powerful contact

The COMBI plug-in system enables a plug-in wiring solution up to a nominal current of 40 A and a nominal voltage of 600 V to be implemented. The contact system meets the most stringent of vibration requirements due to the integrated spring.



Touch-proof

The COMBI system offers the highest levels of protection for users, as both the basic terminal blocks and the plugs are touch-proof. Alongside the safety aspect, this offers great flexibility for configuration work: the supply may be routed via the terminal blocks or the plugs.



Individual coding

The easy and individual coding option increases wiring reliability and serves to protect against incorrect connection. For this purpose, the individual coding elements are inserted at the coding position in the basic terminal block, and the coding tab is removed at the corresponding point on the plug.

Compact and functional: PT knife disconnect and fuse terminal blocks

With a width of just 3.5 mm, the new terminal blocks now combine push-in connection and knife disconnection for conductors up to 1.5 mm². The product range of compact terminal blocks includes feed-through, multiple conductor, and double-level terminal blocks.

Holding fuses of different designs and with different nominal currents – with fuse terminal blocks from Phoenix Contact, this isn't a problem.

Web code: #1393

Fuse terminal blocks

The easily accessible fuse-links are easy to use or replace – we offer the right fuse holder for every application:

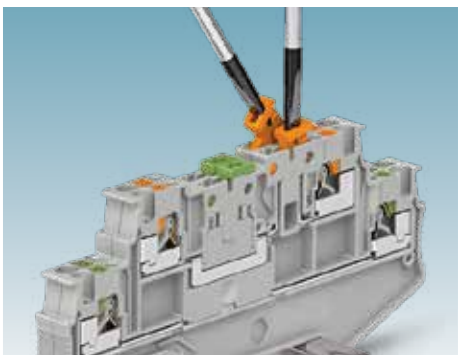
- Lever-type fuse terminal block to hold fuse-links: type G 5 x 20 mm and 6.3 x 32 mm
- Fuse terminal block to hold flat-type fuses: type C and F
- Versions with an LED display are available to indicate faults

Web code: #0070

3.5 mm

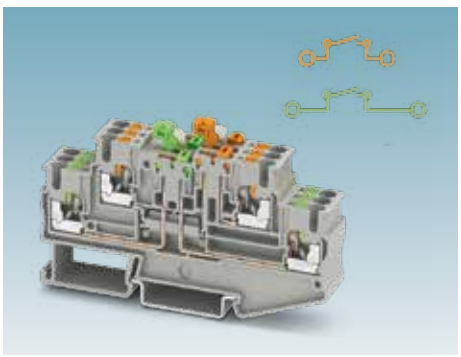
Push-in Technology

Designed by PHOENIX CONTACT



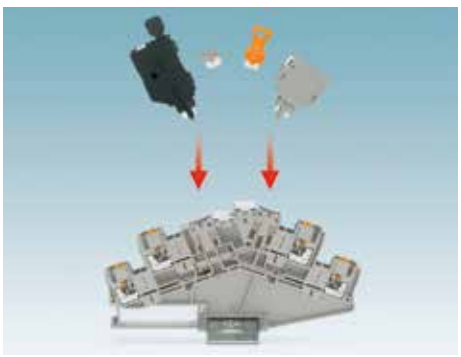
Easy operation and testing

The actuation cross on the disconnect knife enables the use of different sized screwdrivers. All terminal blocks have an additional test contact on both sides of the disconnect points for test plugs with a 2.3 mm diameter.



Unique color coding

Disconnect knives and push buttons of the same color provide clear assignment of connection levels when dealing with two disconnect levels. Each terminal point can be provided with large-surface marking for ease of recognition, a prerequisite for safe and time-saving installation.



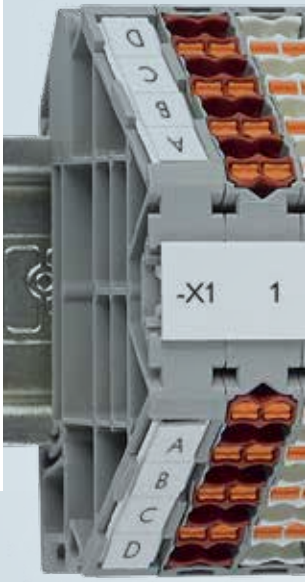
Multifunctional disconnect zone

In the range of 2.5 mm² terminal blocks, two-tier disconnect terminal blocks with one or two universal disconnect zones are available. The disconnect zone accommodates various plugs such as fuse plugs, component connectors, and isolating plugs.

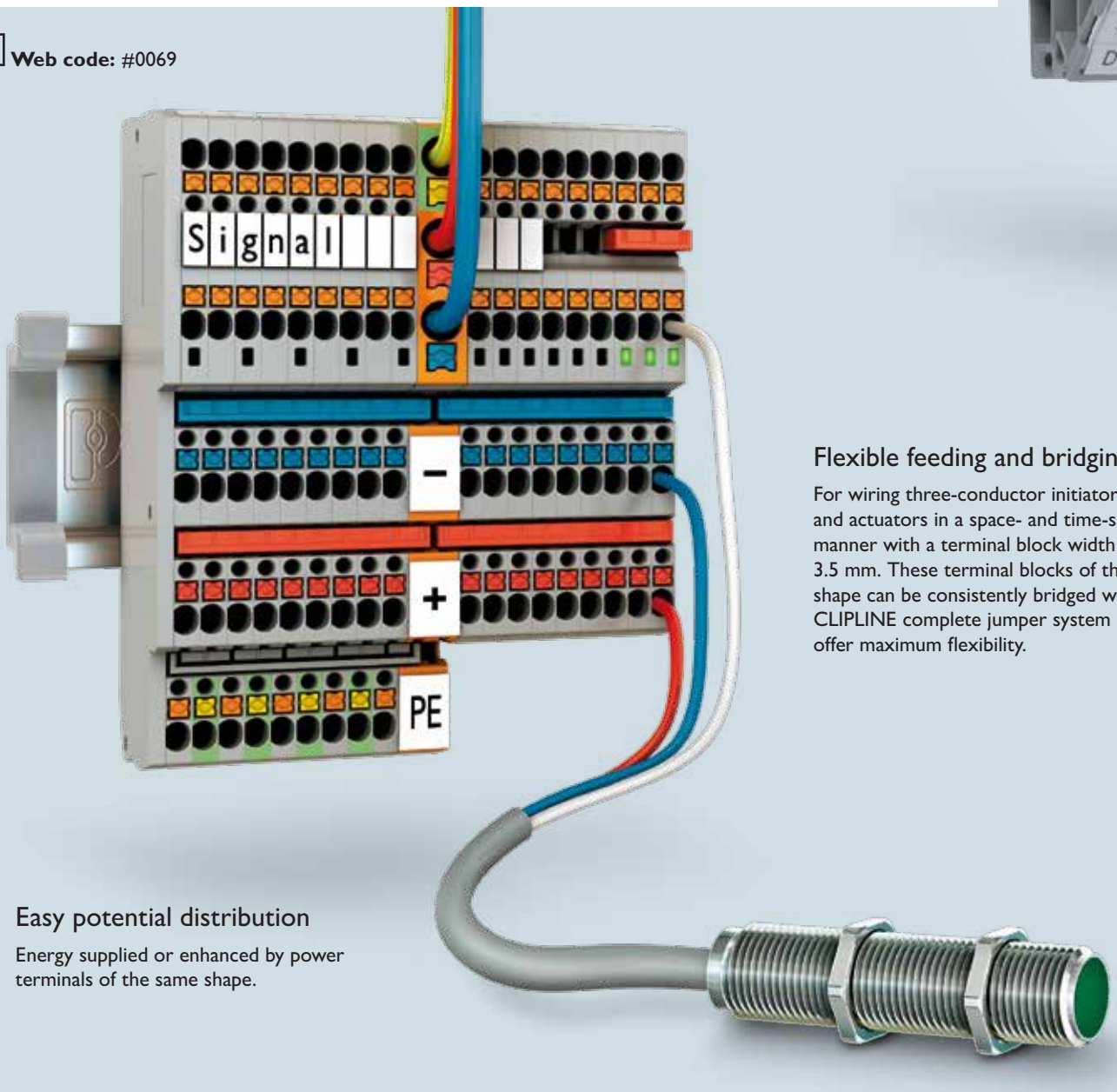
Space saving and compact

PT sensor/actuator and four-level terminal blocks

Wire sensors and actuators easily and clearly in modern machine and system controllers using compact sensor/actuator terminal blocks only 3.5 mm wide. All PTIO terminal blocks feature the same shape and can be consistently bridged with the CLIPLINE complete jumper system to offer maximum flexibility.



Web code: #0069

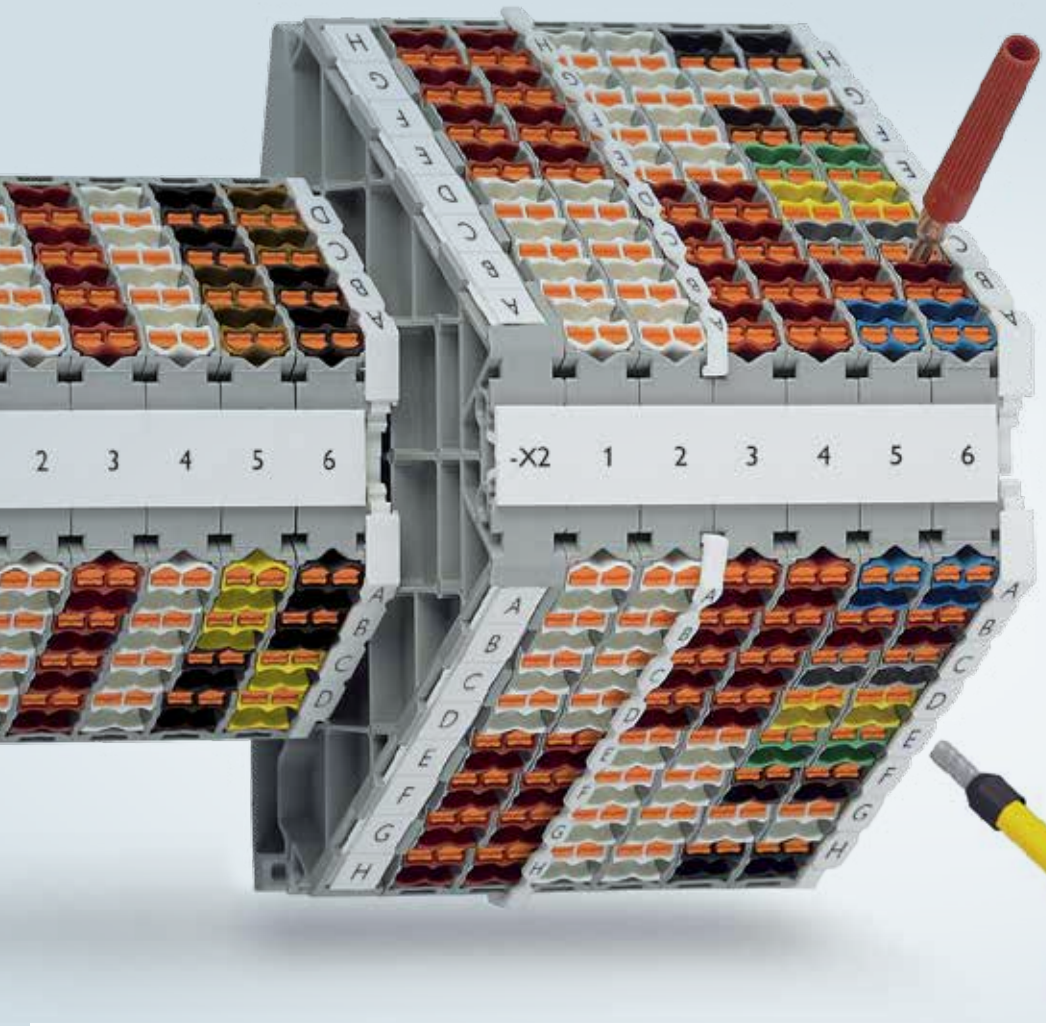


Flexible feeding and bridging

For wiring three-conductor initiators and actuators in a space- and time-saving manner with a terminal block width of just 3.5 mm. These terminal blocks of the same shape can be consistently bridged with the CLIPLINE complete jumper system and offer maximum flexibility.

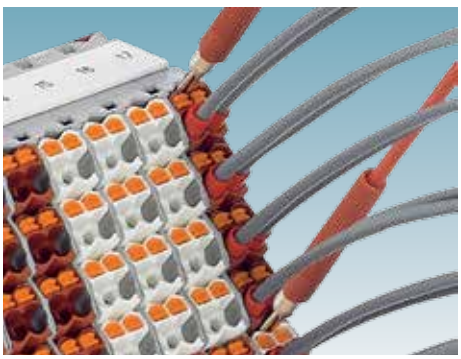
Easy potential distribution

Energy supplied or enhanced by power terminals of the same shape.



Push-in Technology

Designed by PHOENIX CONTACT



Easy testing

The easily accessible 2.3 mm test connections are centered between connection points. This lets you conveniently check the marshalling terminals at any level.

Flexible marking

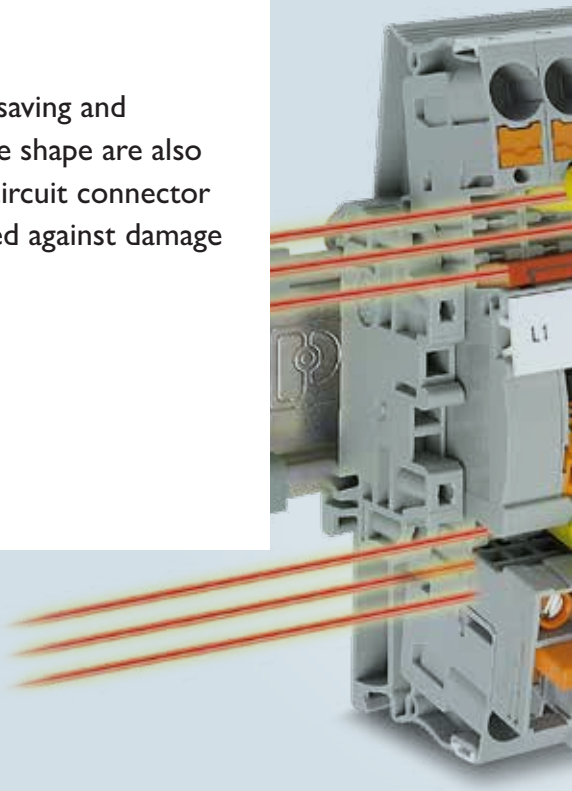
Large individually insertable pitch-free marker carriers enable matrix identification and provide the best possible overview when carrying out wiring and testing (e.g., during servicing).

Space-saving potential distribution

Potential distributions with up to 32 connections can be implemented with the PTRVB ...-PV terminal block and can be extended to potential distributor blocks via plug-in bridges than can be assembled. Supplies up to 6 mm² and 37 A can be implemented with PTRVB …-FI potential distributors. Versions are available in blue and red, for example, for clear potential assignment.

Flexible for all transformer circuits: PTME test disconnect terminal blocks

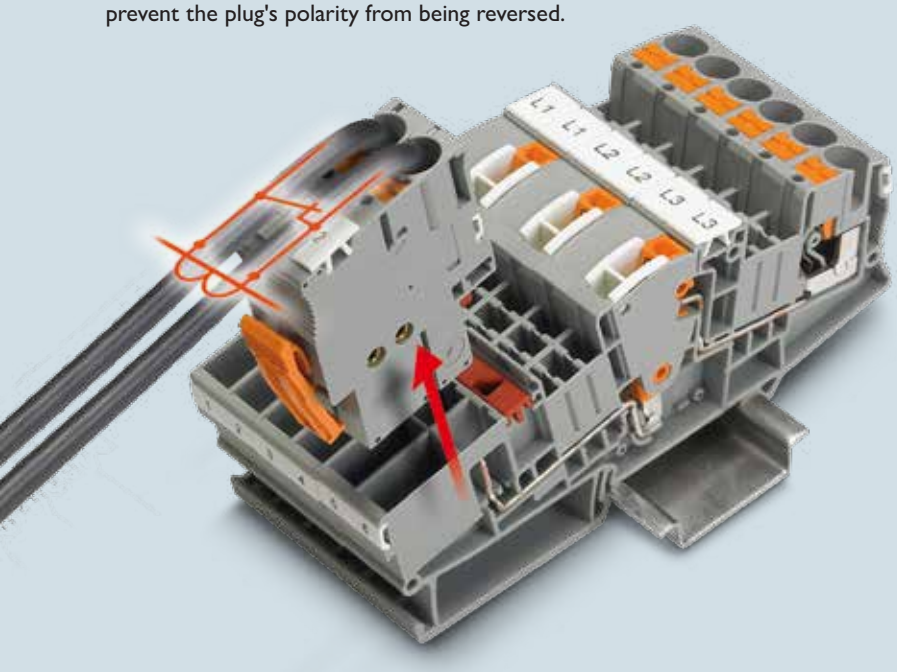
The new test disconnect terminal blocks can be used to design space-saving and modular switchgears. Feed-through and PE terminal blocks of the same shape are also available for the test/disconnect terminal blocks. The patented short-circuit connector is particularly convenient and safe: measuring transducers are protected against damage by means of automatic short circuiting.

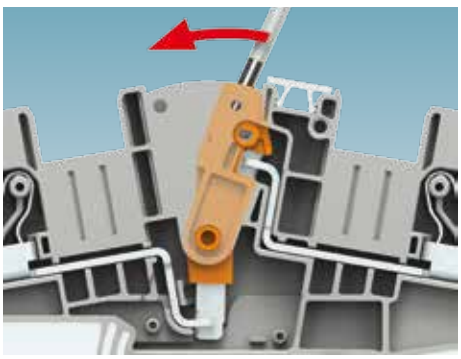


Web code: #1095

Automatic short circuiting

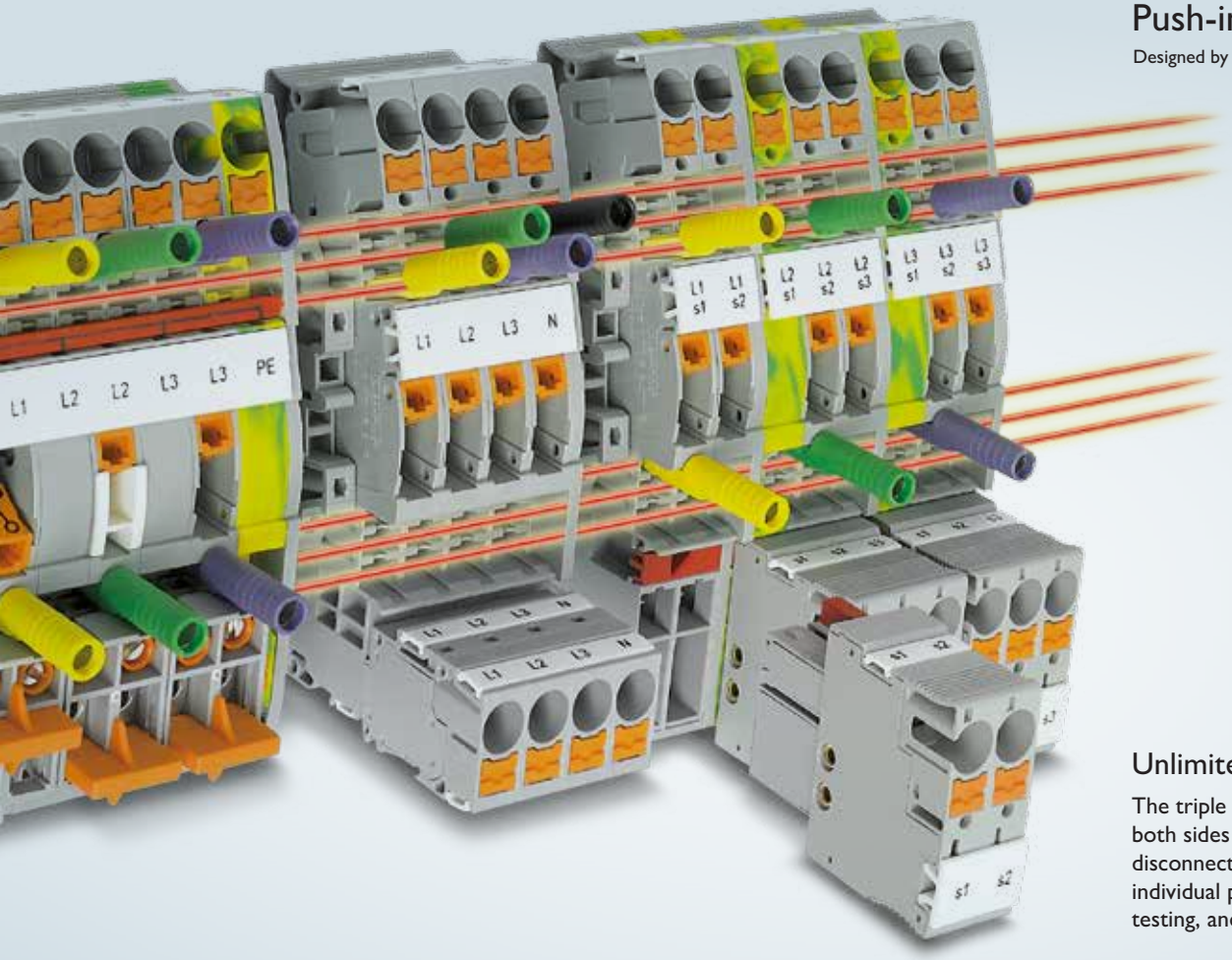
The plug-in current transformer disconnect terminal blocks and connectors also enable the safe plug-in wiring of current transformers. When the transformer plug is removed, a leading current transformer short circuit is automatically ensured. Additional coding accessories prevent the plug's polarity from being reversed.





Easy and safe isolation

The section disconnector reliably makes contact and latches with a swiveling movement in the respective switching state. Switching symbols and optional switching locks also ensure a clear overview inside the measuring transducer terminal strip.

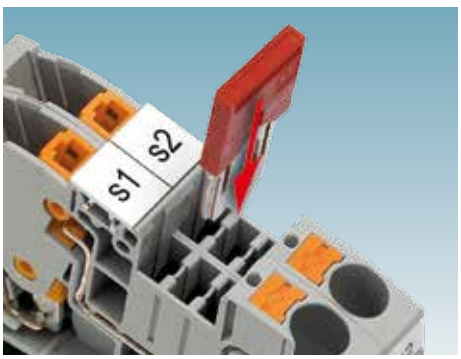


Unlimited flexibility

The triple function shaft on both sides of the longitudinal disconnect point enables the individual placement of bridging, testing, and switching accessories.

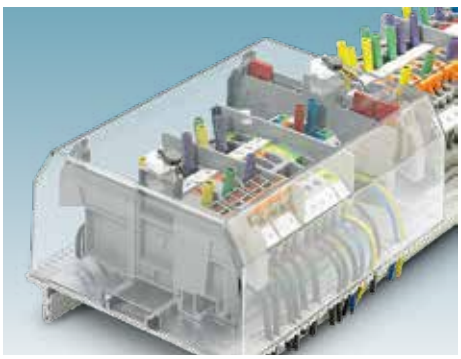
Safe short circuiting with bridge bars

The plug-in current transformer short-circuit bridges can be used individually, based on the switching task, in the terminal block function shafts. The switching jumper disconnect element is operated with a screwdriver, which means that the switching operation is only activated intentionally.



Safe short circuiting with plug-in bridges

The current transformer short circuit can be implemented easily with the standard FBS plug-in bridges. FBSRH versions with molded extraction tool are available as two-, three-, and four-position.



Safe covering

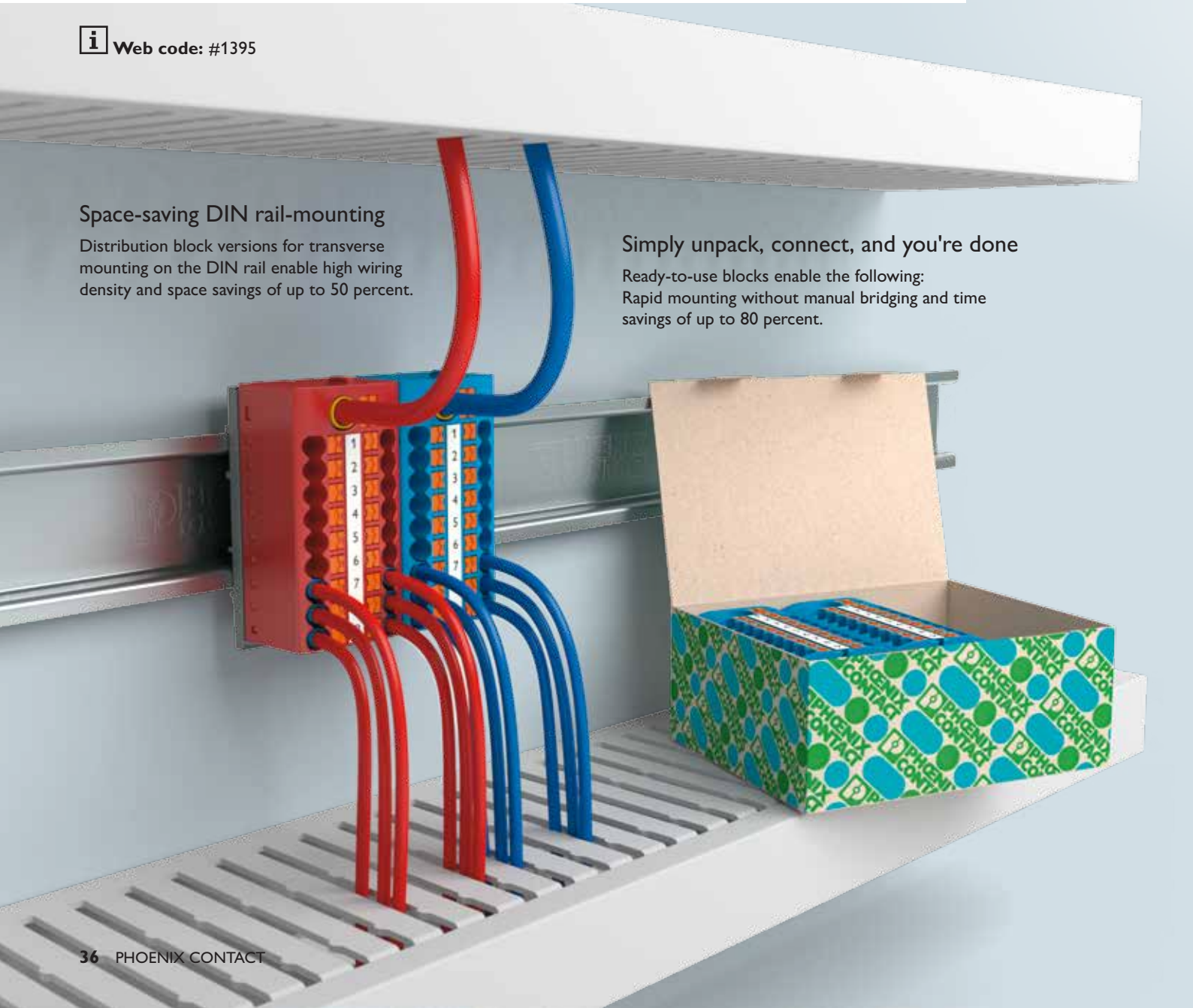
Cover profiles and covering hoods are available as accessories. These can be mounted and sealed on the measuring transducer strip in a way that protects them against external influences and manipulation.

Simply unpack, connect, and you're done: PTFIX distribution blocks

PTFIX distribution blocks come ready to be connected in different numbers of positions and mounting options. They can be used straightaway and expanded as needed.

PTFIX therefore helps to ensure flexible and cost-effective load and control current distribution.

Web code: #1395



Space-saving DIN rail-mounting

Distribution block versions for transverse mounting on the DIN rail enable high wiring density and space savings of up to 50 percent.

Simply unpack, connect, and you're done

Ready-to-use blocks enable the following:
Rapid mounting without manual bridging and time savings of up to 80 percent.

Intuitive and secure installation

Distribution and power blocks with 6, 12 and 18 terminal points are available for intuitive and secure installation in 11 colors.

Individual extension

The distribution blocks can be arranged and extended, checked and marked individually with two-position plug-in bridges from the CLIPLINE complete system.

Push-in Technology

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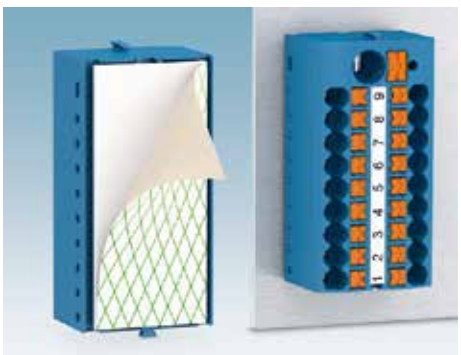
DIN rail-mounting

The distribution blocks for mounting on 35 mm standard DIN rails enable clear and convenient conductor routing. Distribution blocks for mounting on 15 mm standard DIN rails are available for use in small junction boxes.

Mounting type: self-assembly

The basic blocks can be individually self-assembled with different adapters or flanges according to the desired mounting type.



Tool-free mounting

The self-adhesive distribution blocks can be quickly and easily mounted on flat surfaces with no preparation or tools.

Varied and flexible: EO electrical outlets

The new EO outlets with push-in connection offer different plug shapes for international use in control cabinets and systems manufacturing. We guarantee to offer you the right outlet with our broad product range.

Web code: #1092

Push-in Technology

Designed by PHOENIX CONTACT

Numerous functions

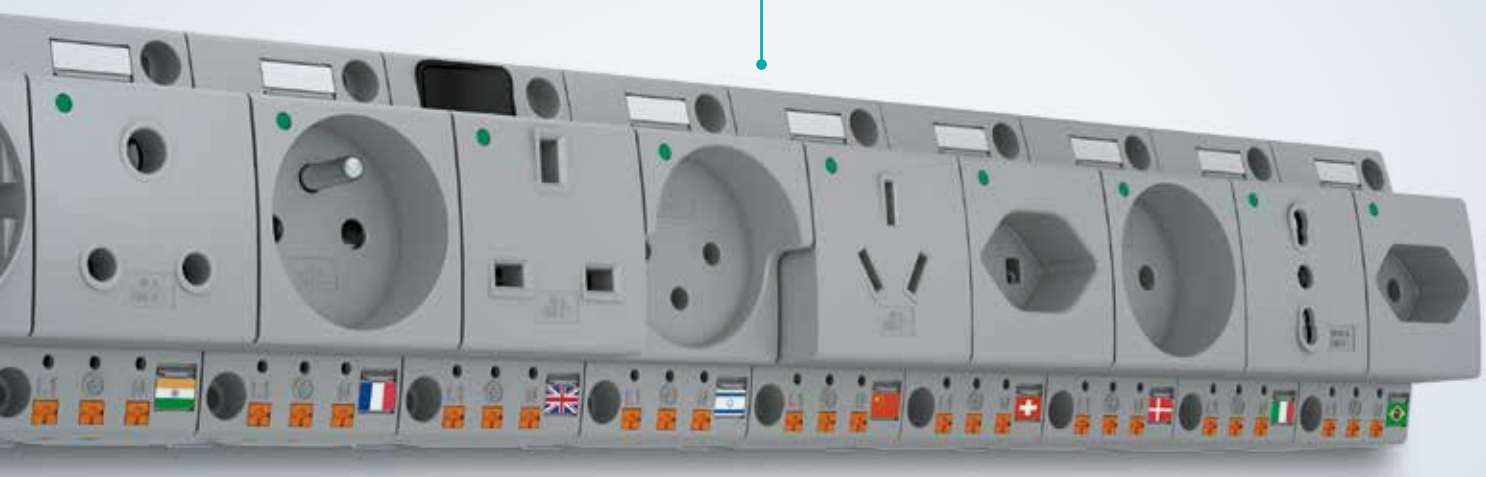
Additional functions like LED displays, switches, fuses or circuit breakers expand the application possibilities and fulfill the specific requirements of the respective country standards.

Flexible mounting

Whether it is screw or DIN rail-mounting, electrical outlets from Phoenix Contact offer you full flexibility for the installation of the products.

Worldwide use

The large product portfolio with over 150 versions fulfills the requirements of a broad range of applications. With 11 different receptacle configurations, the electrical outlets can be used worldwide.



Generous marking surfaces

Mark the outlets clearly and permanently on two marking areas and maintain a better overview of your control cabinet. Phoenix Contact offers you a wide selection of products with suitable marking labels.

Space-saving double electrical outlets

Versions with two outlets are available with almost all receptacle configurations for international use. The outlets only need very little space in the control cabinet, thanks to their compact design.

Interfaces

The matching adapter plate fixes the outlets in place in the service interfaces from Phoenix Contact. They allow for fast and easy maintenance and offer you protection even in harsh industrial environments with IP65 protection.

Easy handling:
RIFLINE complete industrial relay system

You can implement all of your standard relay applications using the RIFLINE complete industrial relay system. Whether you want to isolate, multiply or amplify signals, it makes no difference.

The relay system up to 16 A, with a consistent plug-in design, ensures high machine and system availability. The field of application ranges from coupling and time relays to a replacement for small power contactors.

Web code: #0695

Coupling relay module with force-guided contacts

In addition to standard relay for universal requirements, the RIFLINE complete product series offers a broad product range of various relay solutions. For example, force-guided coupling relay modules, relays with integrated blowout magnet for switching high DC loads and many special voltage versions are available.

Multifunctional timer module

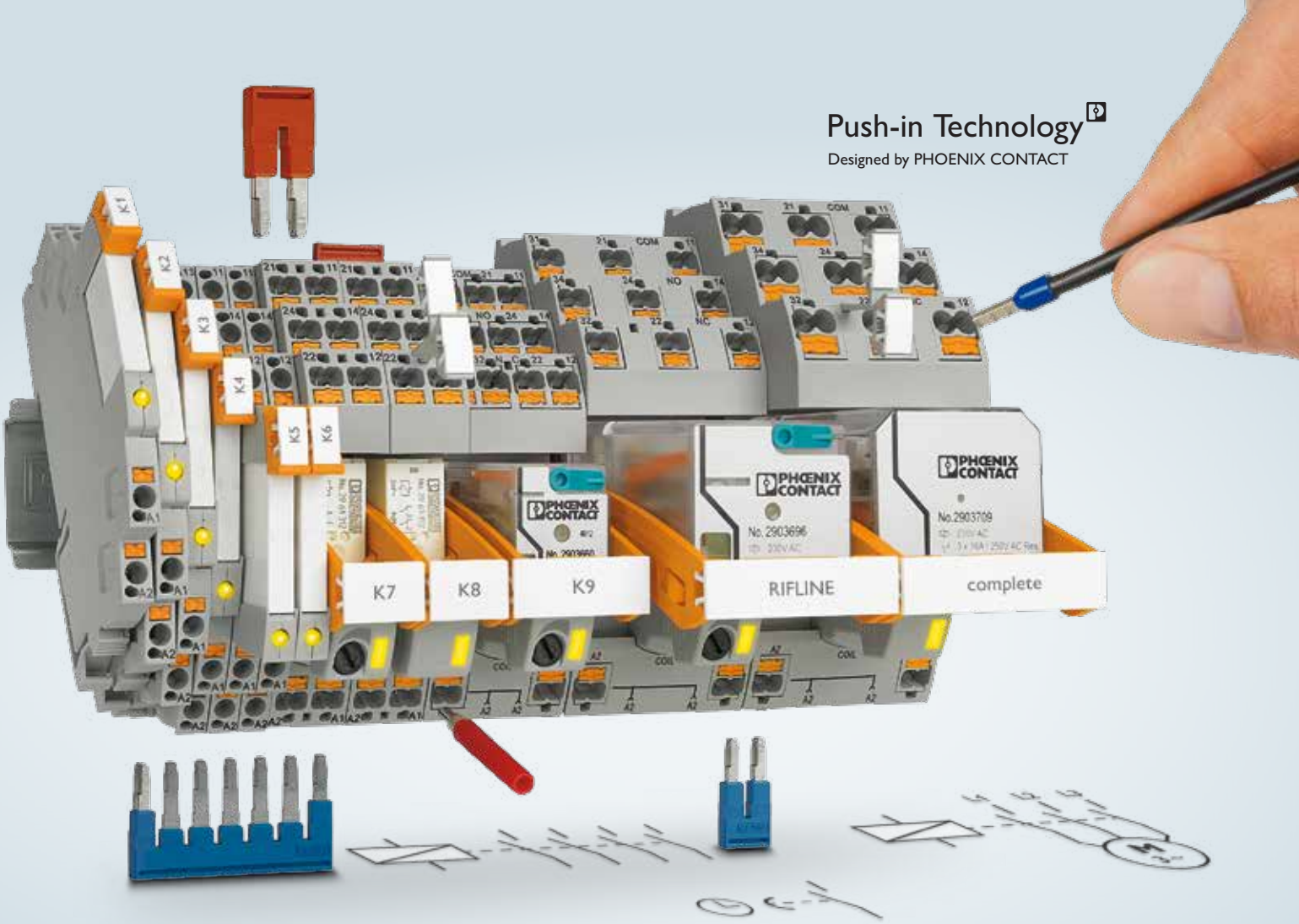
The multifunctional plug-in timer module for 24 V transforms the relay module into a time relay. The RIF-1 to RIF-4 bases can be fitted with this module.

System cabling adapter

The system cabling adapter enables fast and error-free connection of RIFLINE complete relay modules to the control level.

Push-in Technology

Designed by PHOENIX CONTACT



Easy wiring

Easy wiring, thanks to Push-in Technology. This enables quick, tool-free wiring.

Easy potential distribution

Easy potential distribution with plug-in bridges from the CLIPLINE complete system accessories.

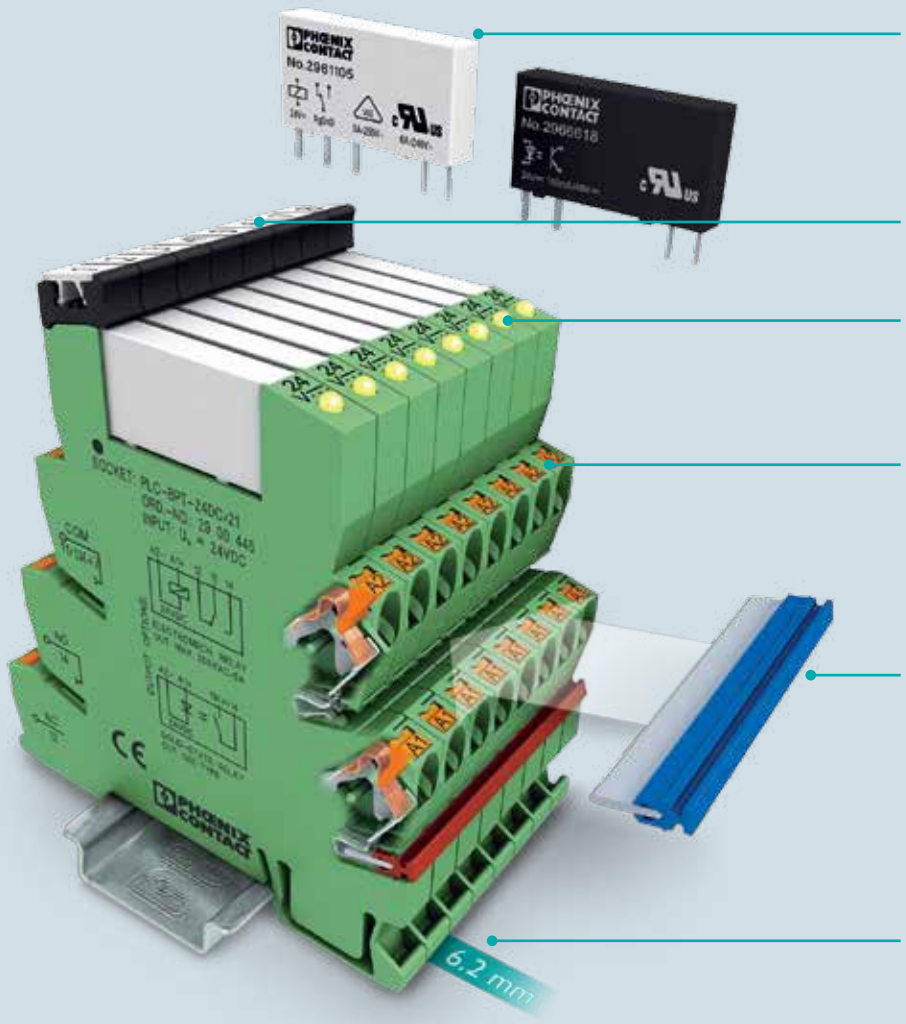
Easy expansion

Easy extension with the plug-in, multifunctional timer module. Three time functions can be selected in a time range from 0.5 seconds to 100 minutes.

Powerful interface: PLC relay system

The PLC-INTERFACE relay system from Phoenix Contact is the high-performance interface between the controller and system I/O devices. PLC-INTERFACE provides you with a comprehensive range of extremely narrow, plug-in relays and solid-state relays, plus a complete range of accessories. In addition, PLC sensor/actuator versions, switch modules, and filter series always provide the right solution for special applications. PLC-INTERFACE plus system cabling – fast plug-in connection of the controller and peripherals.

Web code: #0688



Relay/solid-state relay

Can be easily replaced

Clear identification

With standard marking material

LED status indicator

Monitoring at a glance

Integrated input and protective circuits

No external wiring required

Jumpers instead of wiring

Time-saving potential distribution. Continuous bridge suitable for mixed 6.2 mm/14 mm relays

Compact space-saving housing

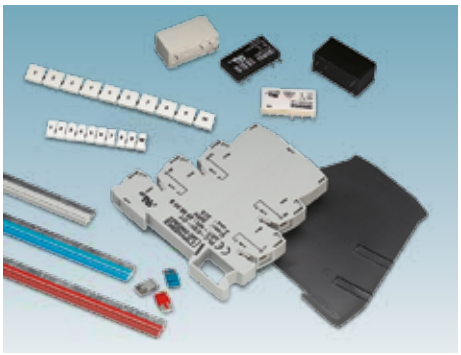
6.2 mm for SPDT and 14 mm for DPDT

Push-in Technology

Designed by PHOENIX CONTACT

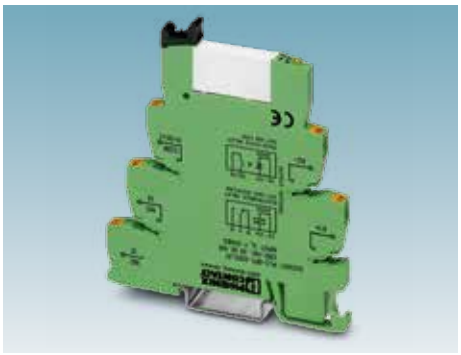
PLC relay system plus system cabling

Together with front adapters, system cables, and PLC V8 adapters, you have a system concept for easy wiring. This saves time and money compared to laborious single wiring.



Universal relay system

The plug-in bridges with a length of 500 mm, a separate feed-in terminal, separator plates, various standard marketing materials, pluggable relays and solid-state relays offer you high flexibility.



Compact space-saving housing

For space-saving installation, we offer plug-in relays or solid-state relays in a narrow housing that is just 6.2 mm or 14 mm wide. For example, these can easily be replaced in the event of maintenance work.

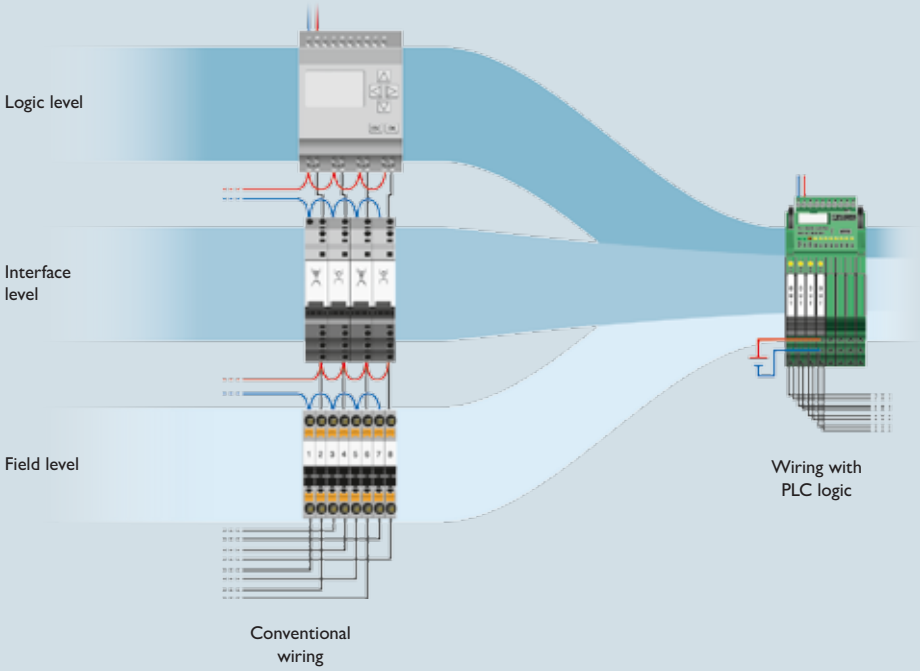
Extremely compact control and switching

PLC logic relay system

On the logic module market, the PLC logic relay system is the first to combine logic, interface, and field connection levels in a single solution. This means that you can switch and control I/O signals using a single compact system. You can combine the new PLC logic module with the corresponding PLC relays as required. The modular structure opens up a wealth of applications.

Web code: #1104

You can flexibly extend the system thanks to the wide choice of different modules. In addition to the basic module, extension modules are also available for more complex tasks. Eight relay modules can be freely selected for each logic module. Up to 48 I/O signals can be acquired and switched with one basic module and two extension modules.

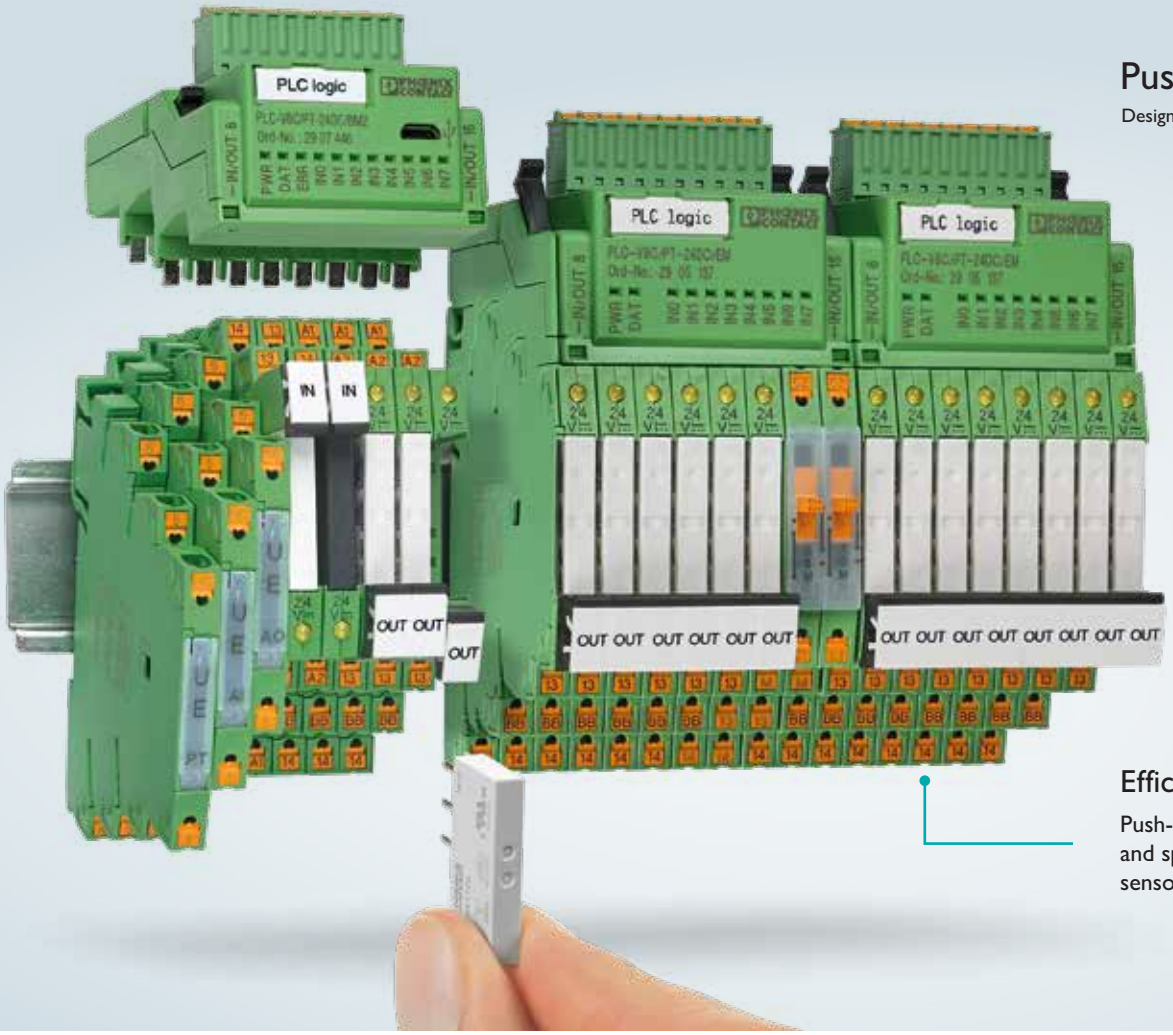


Reduce wiring costs

With conventional logic modules, wiring is complex and time consuming. To avoid the disadvantages of permanently soldered relays, additional relay modules are often used in front of the inputs and outputs. PLC logic replaces conventional switching and control devices and reduces the wiring required.

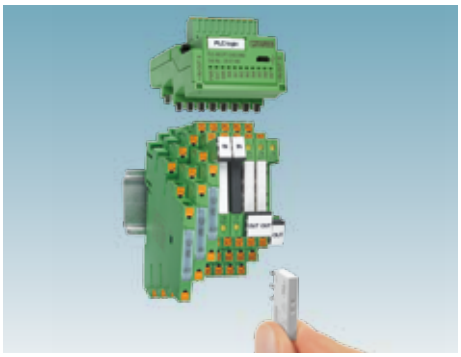
Push-in Technology

Designed by PHOENIX CONTACT



Efficient wiring

Push-in connection technology and special versions for the sensor or actuator wiring.



Flexible combinations and tailor-made configurations

Depending on the application requirement, you can use electromechanical or solid-state relays. Furthermore, analog input and output modules as well as special sensor and actuator series are also available.

PLC logic app

Easy and quick parameter adjustments and monitoring using an app. Thanks to the corresponding Bluetooth adapter, you can access the process data quickly and wirelessly.

Intuitive programming using LOGIC+

LOGIC+ is the intuitive software that allows you to implement your projects quickly.

Efficient wiring: VARIOFACE system cabling

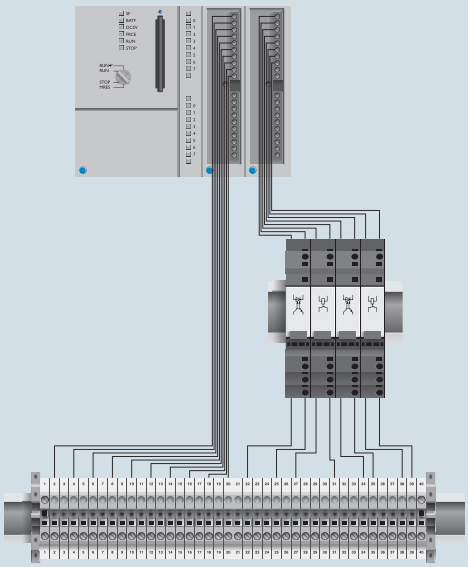
Wiring I/O modules with single wires is an extremely time-consuming process. VARIOFACE system components reduce assembly costs by using plug-in components to carry out wiring quickly, clearly, and without errors.

The controller-specific system cabling is a wiring concept that was developed especially for connecting I/O modules. This means that all components such as front adapters, system cables, and modules are matched to each other.

Web code: #1526

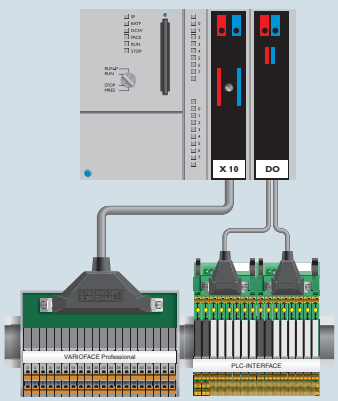
Wiring with single wires

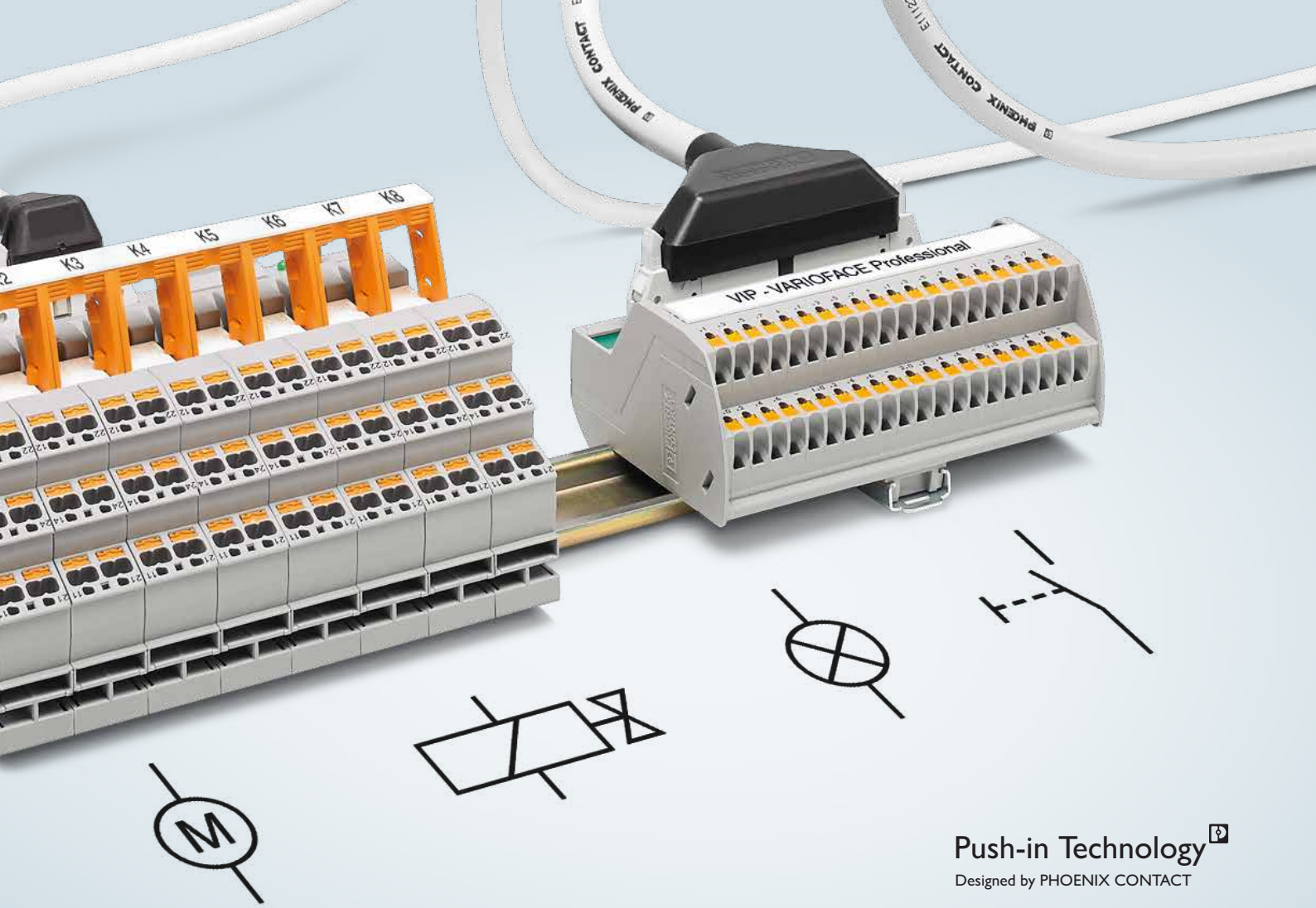
- Time-consuming connection of 80 and more individual terminal points for each I/O module
- Messy bundles of cables and error-prone wiring



Wiring with system cables is 90 percent faster

Wiring with VARIOFACE system cabling is at least 90 percent faster than with single wires.





Push-in Technology

Designed by PHOENIX CONTACT

Controller-specific system cabling

Use the front adapters to couple all signal types of your modules. Different module functions offer you numerous options for field wiring. Preassembled system cables connect the field and automation level via plug and play.

Multichannel variety

Benefit from different functions in 8-channel and 32-channel modular design. Whether it is 1:1 wiring, electrical isolation or power matching, different modules are available for field wiring.

Flexibility via V8 adapters

Implement channel-specific functions with plug-in relays. One-channel relay components allow you a flexible, modular design. Eight channels are grouped via a V8 adapter.

High system availability, perfect timing: EMD monitoring and ETD time relays

The EMD monitoring relays can be used to detect deviations in important system parameters at an early stage. These can be indicated to a controller, or system parts can be shut down selectively. ETD time relays provide for tailor-made time sequences and are a cost-effective alternative to a PLC.

Web code: #1105 (monitoring relays)

Web code: #1106 (time relays)

Perfect for building installation

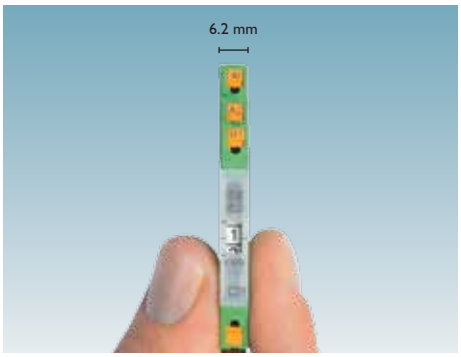
Thanks to the compact installation housing, EMD monitoring relays and ETD time relays are ideally suited for building installation. As reasonably priced solutions with numerous functions, the products are just as ideally suited for series production.

Easy handling

For all monitoring and time relays, the parameters can be adjusted conveniently using the rotary switch or thumbwheel on the front of the housing. The time relays offer an exact configuration of milliseconds to several days.

Clear diagnostics

Color LEDs on the front of the housing indicate the device states. The EMD monitoring relays shut down system parts selectively or report an error to a controller by way of the relay outputs as soon as the set limit value is exceeded or not reached.

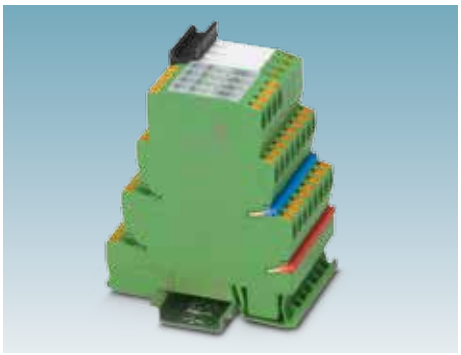


Particularly space-saving

With an overall width of just 6.2 mm, the extra narrow ETD time relays save up to 70 percent of space compared to conventional time relays.

Precise and convenient time setting

Easy to read and well illuminated: the desired time is set on the thumbwheel precisely and conveniently.



Fast installation

The extra narrow time relays can be connected to the relays in the PLC series in the same housing. Plug-in bridges and system cabling save you time during wiring.

Simplicity in safety: PSR safety relay modules

From the simple PSRclassic safety relay to the multifunctional PSRmultifunction safety relay, our PSR safety relay modules offer you the ideal solution for every application.

A comprehensive product range is available for the reliable monitoring of safety functions such as emergency stop, safety doors, light grids, and two-hand control.

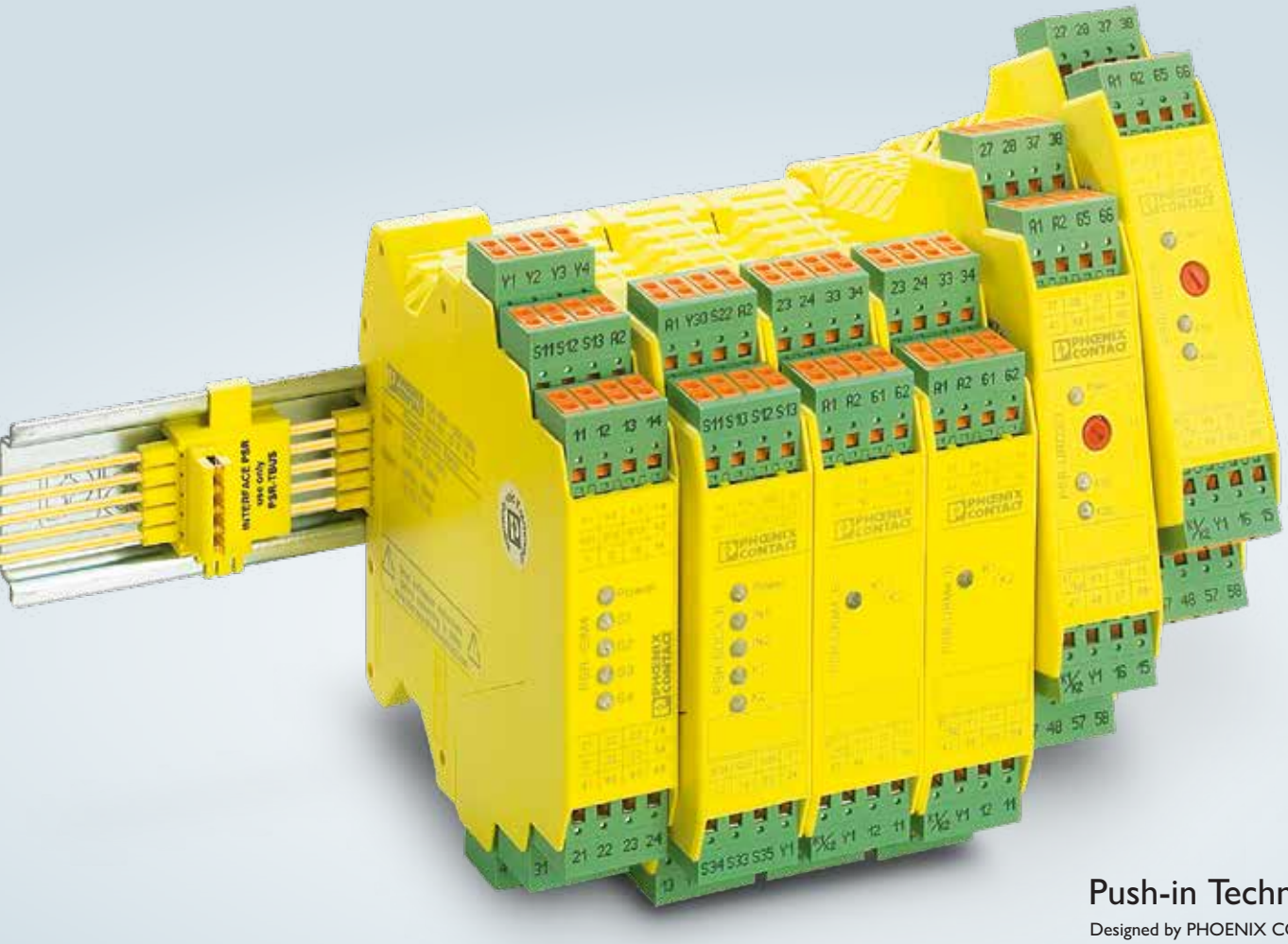
Web code: #1538

Force-guided contacts for maximum safety

All of our safety relay modules are equipped with force-guided contacts in accordance with EN 50205 to ensure maximum safety for both person and machine. The N/O and N/C contacts of an elementary relay are connected to one another mechanically through forced guidance. This prevents N/O and N/C contacts from closing at the same time. A failure to open can therefore be reliably detected.

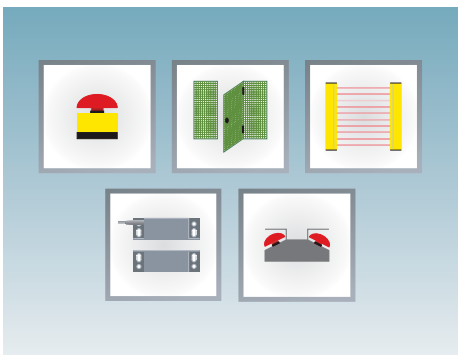
Safety for every function

Benefit from our experience in safety technology. As a pioneer in the field of functional safety, Phoenix Contact was the first to offer electronic components for the safe monitoring of sensors and actuators. Proven technology – that is subject to ongoing development – makes our safety products extremely reliable. With the tool-free, push-in connection, you significantly save wiring time.



Push-in Technology

Designed by PHOENIX CONTACT

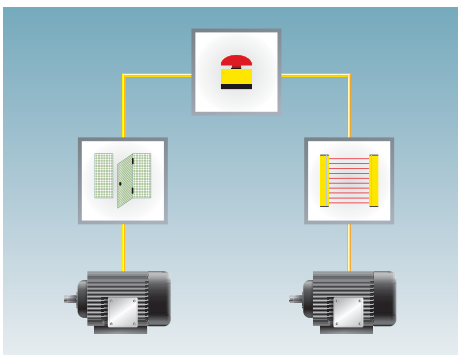


Conventional safety relays

Conventional safety relays from Phoenix Contact are ideal for use in applications where your machine or system only requires a few safety functions and logic operations – one device per function.

Modular safety relay system

With PSRmodular, you put together your customized safety system. To do so, select the required functions, such as emergency stop or two-hand control, and simply add the classic safety relays to the master safety relay. Cross-wiring of the master module with up to 10 extension modules is made possible using the system connector at the back – without any wiring and configuration effort.



Multifunctional safety relays

The multifunctional PSRmultifunction safety relays implement three safety functions, such as emergency stop, safety door or light grid monitoring, in one device. Thanks to two local and one higher-level sensor circuit, they provide a slim solution for many standard applications on only 22.5 mm.

Clever motor switching: CONTACTRON hybrid motor starters

The CONTACTRON hybrid motor starters combine up to four functions in one device: motor starter, reversing function, motor protection against overload, and emergency stop.

In addition to standard devices for parallel wiring, network-capable versions are also available that can be integrated into fieldbus environments.

Web code: #0568

Continuous networking with I/O-Link

The new linkable variants enable continuous communication between the field and controller levels so that process data can be transferred easily.

Forward running

Easy control directly via 24 V PLC output cards or 230 V AC signal.

Reverse running

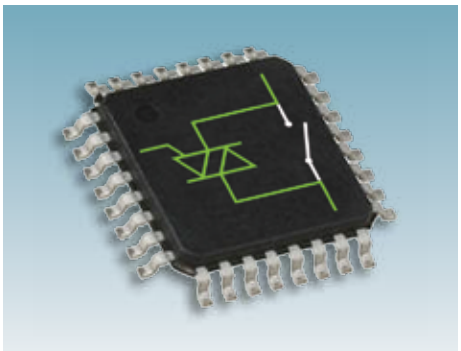
Optional: reversing function including locking circuit and load wiring.

Motor protection

User-friendly protection by means of the electronic motor protection relay with automatic and remote reset function.

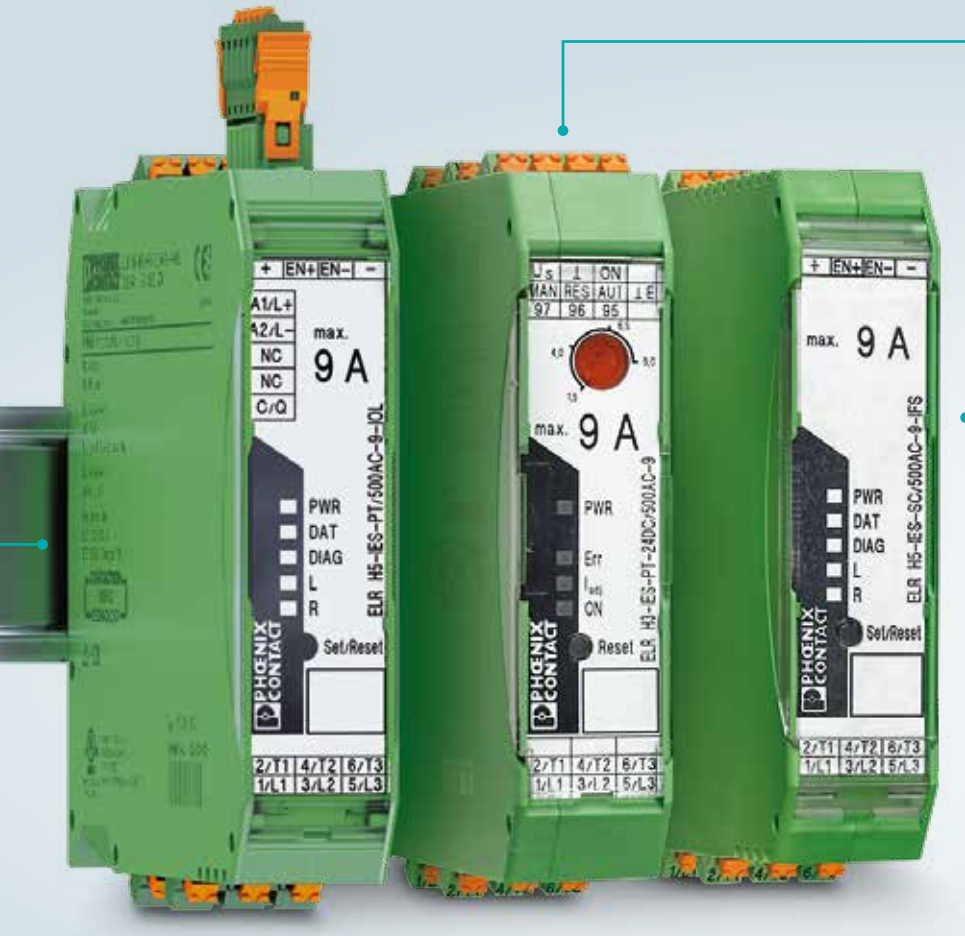
Emergency stop

The integrated safety function enables use in safety-related applications.



CONTACTRON hybrid motor starter technology

CONTACTRON hybrid motor starter technology is a microprocessor-controlled combination of wear-free solid-state technology and robust relay technology. This enables soft switching, thereby considerably reducing the load on the relay contacts. This means the service life of hybrid motor starters is up to 10 times longer than that of purely mechanical switchgear.



Clever switching

CONTACTRON combines all the functions of a conventional reversing contactor in a single device.

Networking with bus connection

Integration into fieldbus systems is implemented using the INTERFACE system connection or the SmartWire-DT™ wiring system. Corresponding gateways are available for all common fieldbus systems.

CONTACTRON
HYBRID
TECHNOLOGY

Easy handling and time savings

Internal load and locking circuits enable quick and tool-free clear wiring, thanks to Push-in Technology.

High system availability

Service life is up to 10 times longer, thanks to gentle switching with CONTACTRON hybrid motor starter technology.

Space saving

Less space required in the control cabinet, thanks to the narrow design: 22.5 mm overall width.

Easier than ever but as slim as before: MINI Analog Pro signal conditioners

MINI Analog Pro offers the easiest installation and startup with minimum space requirements. Plug-in connection technology, easily accessible terminal points and current measurement during operation make your work easier than ever.

With the plug-in gateways, you can transmit up to eight field signals, saving space and without any interference in industrial networks, while eliminating the need for signal-specific input cards.

Web code: #0492

Easy installation and startup

Easily accessible terminal points and plug-in connection terminal blocks simplify installation and startup. During servicing, the signal and power supply circuits are disconnected easily with the built-in disconnection function. The wiring remains the same.

Push-in Technology

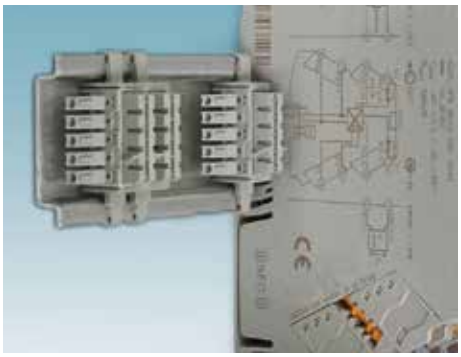
Designed by PHOENIX CONTACT

Safely isolated from the field to the network

The plug-in gateways combine the advantages of safe electrical isolation and digital communication. With an overall width of less than 50 mm, they can transmit, free of interference, up to eight field signals to industrial networks.

Measure current signals during operation

Current measuring during operation is particularly easy on maintenance: The signal circuit does not have to be interrupted to integrate the ammeter. With just a single measurement, the entire current loop is acquired from the sensor to the controller.



Rapid power bridging and group error messaging

In addition to fast power bridging, the DIN rail connector also simplifies wiring, system extension or module replacement during operation. In addition, the group error messaging simplifies diagnostics.

Numerous parameterization options

The basic configuration of the signal conditioners can be performed simply via the easily accessible DIP switches. The free software or MINI Analog Pro app offers additional extended device and monitoring functions for multifunctional versions.

Reliable and safe: MACX signal conditioners

In all phases of the product lifecycle, MACX signal conditioners have been developed and produced in accordance with IEC 61508 standards for functional safety. This ensures the highest level of safety for your machines and systems. Save planning and operating costs by combining high signal flexibility with consistent SIL evaluation.

Web code: #1137

SIL IEC 61508 Ex n

A solution for every type of signal

From the price-optimized standard signal conditioner to multifunctional universal devices, MACX Analog provides comprehensive solutions for signal processing.

SIL IEC 61508 IECEx Ex n Ex i

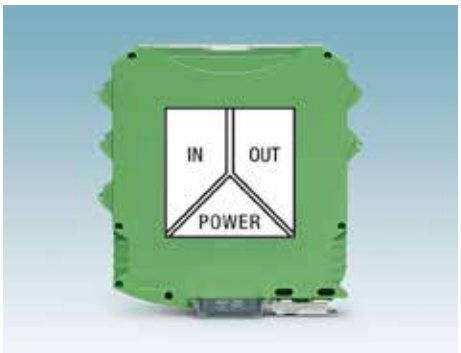
Maximum explosion protection

With an overall width of just 12.5 mm, MACX Analog Ex offers single- and two-channel signal isolators for intrinsically safe circuits up to zone 0, zone 20 and Division I according to UL.

PL EN ISO 13849 IECEx Ex n Ex i

Analog signals with performance level

With MACX Safety and MACX Safety Ex, you can integrate analog signals easily into your safety application in accordance with the Machinery Directive.

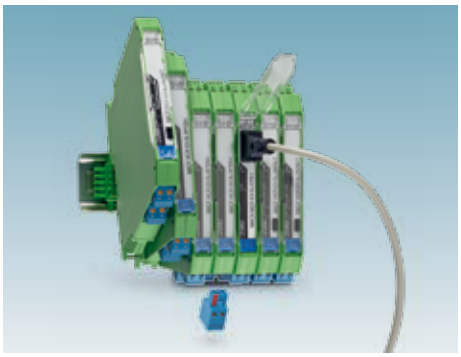


High signal quality and long service life

Safe electrical isolation and a patented transmitter concept guarantee precise signal transmission. The low power consumption provides for low self-heating and results in a long service life.

Push-in Technology

Designed by PHOENIX CONTACT



Fast power bridging, easy-to-maintain connection terminal blocks

The DIN rail connector simplifies wiring, system extension or module replacement during operation. In addition, the group error messaging simplifies diagnostics. The plug-in, coded connection terminal blocks with integrated test sockets are particularly easy to maintain.

Convenient configuration and monitoring

The basic configuration of the signal conditioners can be performed simply via the DIP switches mounted in the front. In addition, the free software offers extended device settings and monitoring functions for multifunctional versions.

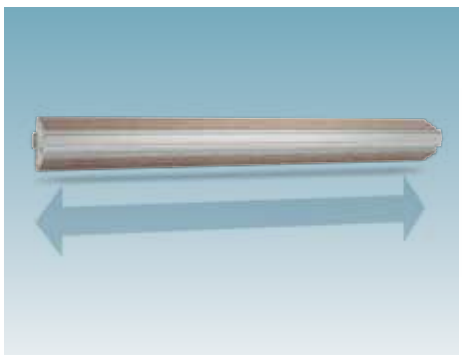
Fast and error-free signal connection

Termination carriers are plug-and-play solutions for fast and error-free connection of a large number of signals from the field to the automation system. A wide range of system connectors and front adapters for I/O cards of various automation systems are available for optimum adaptation to your system.

Surge protection in thin layers: TERMITRAB complete

TERMITRAB complete is the world's narrowest surge protection solution for measurement and control technology. The new product range provides you with a complete system, offering advantages such as a status indicator and optional remote signaling. TERMITRAB complete provides surge protection on an overall width from 3.5 mm. This is made possible, among other things, by using the innovative Push-in Technology and the use of particularly flat components.

Web code: #1521



Extremely narrow overall width

A wide range of signals is transmitted in MCR technology. This requires an increasingly large packing density. TERMITRAB complete provides surge protection on an overall width of just 3.5 m and thus protects 572 signals on one meter.

Status indicator and optional remote signaling

TERMITRAB complete provides mechanical signaling right at the protective device. By request, you can utilize optional remote signaling modules to monitor the remote tunnel in each protective module via a photoelectric barrier.

Tailored portfolio

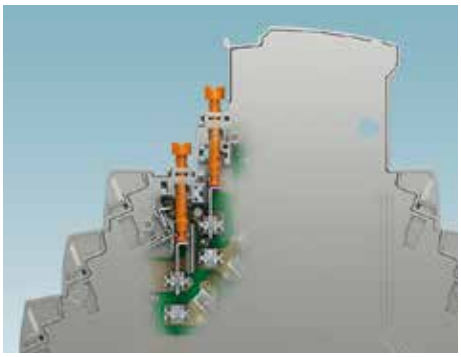
The TERMITRAB complete product range is a tailored product range for all applications in measurement and control technology. You will find the ideal TERMITRAB complete version for your requirements in the portfolio.

Push-in Technology

Designed by PHOENIX CONTACT

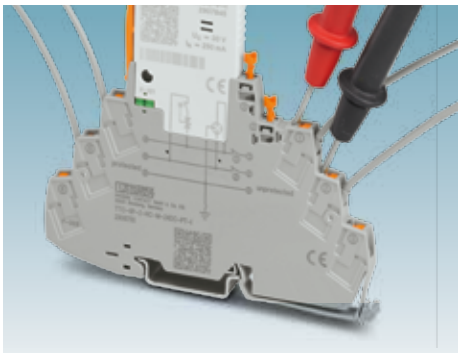
Toolless replacement

When a protection component is overloaded, the device can be switched without accessing the installation, and the full protection can be restored.



Quickly isolate signal circuits

Knife disconnection enables fast and easy troubleshooting and system maintenance (e.g. when measuring loop resistance levels). The switching state is clearly signaled.



Testing right at the protective device

You can carry out the required measurements or tests right at the protective device without interfering with installation.

Intelligent and systematic: PT-IQ surge protection

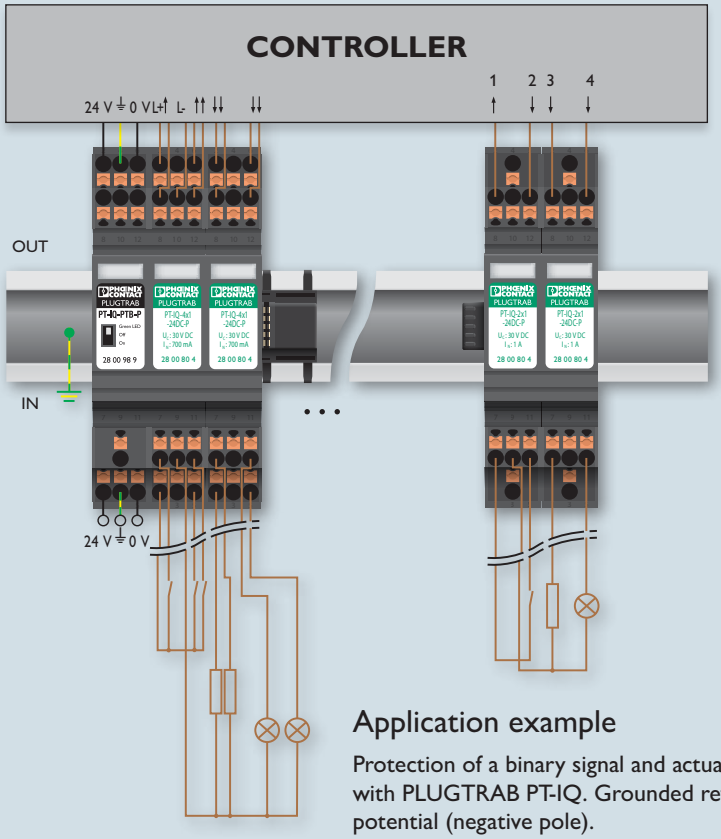
PLUGTRAB PT-IQ offers you a new, forward-looking surge protection system with a variety of new features. Each voltage-limiting component of the protective circuit is intelligently monitored. This enables immediate detection of prior damage, resulting from powerful surge voltages. The function status is indicated and signaled remotely in multiple stages.

A controller manages the installed protective devices. At the same time, it supplies the system with voltage and also functions as the central evaluation unit for all status signals.

Web code: #1522

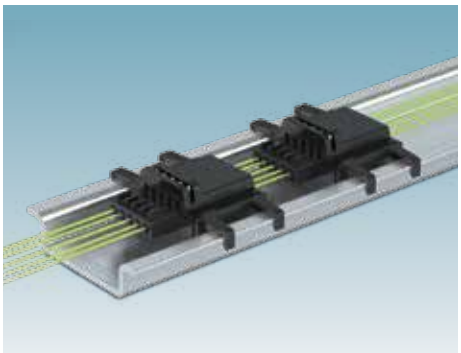
Limitless extendibility

A controller supplies up to 28 protection modules with voltage. Only then does the installation of a second controller become necessary for controlling additional protection modules.



Application example

Protection of a binary signal and actuator circuit with PLUGTRAB PT-IQ. Grounded reference potential (negative pole).

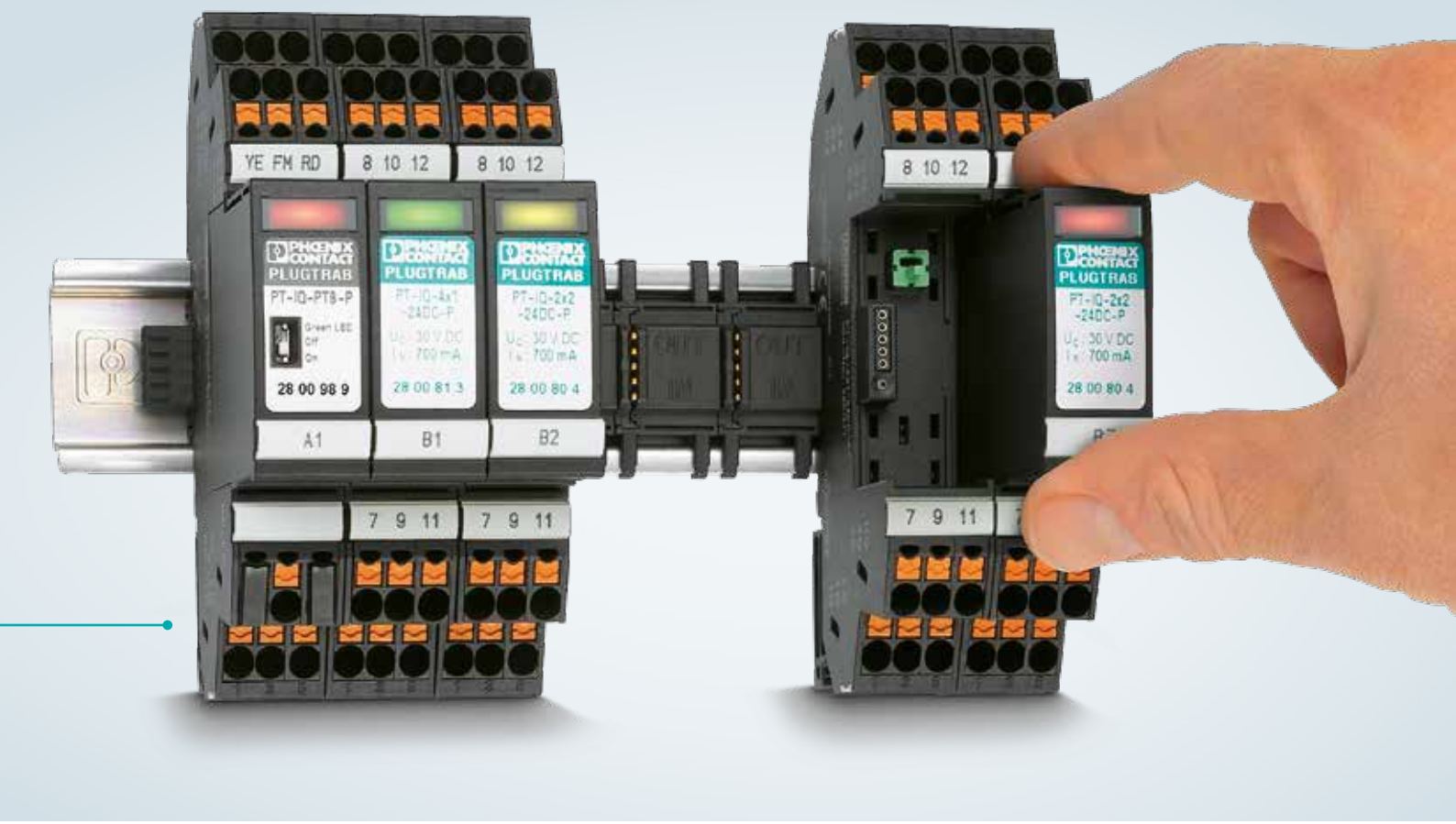


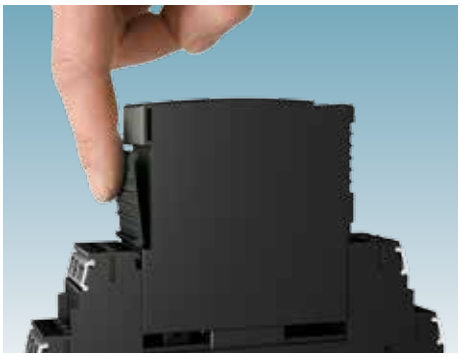
Fast installation

Individual DIN rail connectors can be converted into a bus. This transmits the power supply and status information to the controller. Conventional wiring is not used.

Push-in Technology

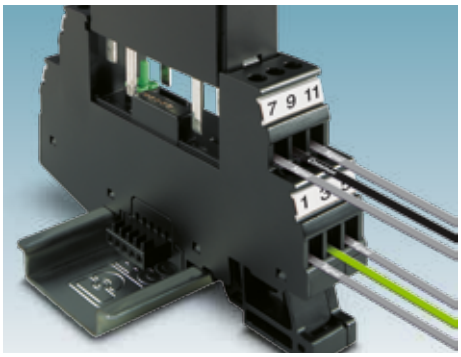
Designed by PHOENIX CONTACT





Latching

The latching guarantees a secure fit for installations in harsh environments. It holds the plug in place in the base element, even during extremely strong vibrations and shocks.



Wiring

Up to five signal lines can be protected with one device. This requires an overall width of just 17.5 mm on the DIN rail, meaning only 3.5 mm per signal line.

Multistage status indicator

PLUGTRAB PT-IQ provides multistage monitoring of the protective devices and issues group messages via the controller.

Green:	O.K.
Yellow:	Performance limit reached, replacement recommended
Red:	Overloaded, replacement required

Systematic device protection: CB device circuit breakers

Device circuit breakers offer reliable protection in the event of overload and short-circuit currents.

The circuit breakers ensure high system availability by selectively switching off the faulty circuit. The installation of the device circuit breakers can be expanded easily in a modular way, adapted on a case-by-case basis and branched widely.

Web code: #1523

Modular extension

Your system can be expanded quickly and easily depending on demand. In the event of a change to the system, the device circuit breakers can be adapted without problems by using their fine rated current increments.

Customizable

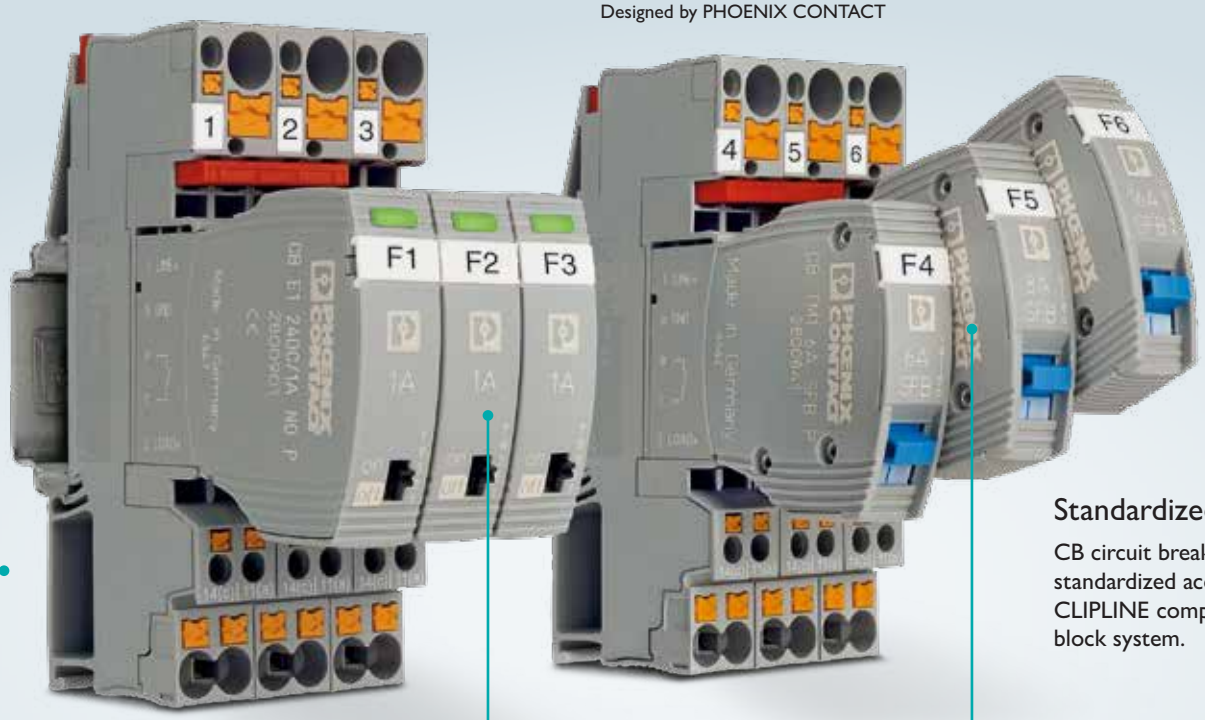
Systems and control cabinets can be pre-wired with base elements and individually fitted with corresponding protective plugs on site. Should the demands on a load change in the meantime, you can simply replace the protective plug in question. Various tripping methods, tripping characteristics, and nominal currents are available depending on the application.

Latching

The latching ensures a secure fit in harsh environments and where there are vibrations in the installation environment. It firmly latches the plug in the base element, thereby ensuring a firm seat during the production process.

Push-in Technology

Designed by PHOENIX CONTACT

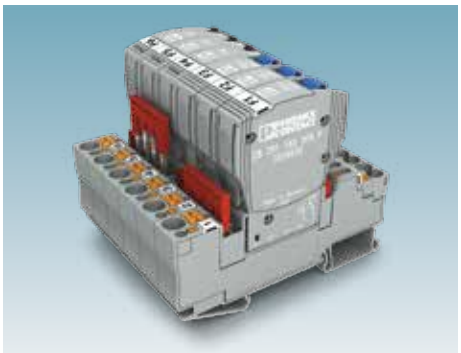


Standardized accessories

CB circuit breakers use the standardized accessories of the CLIPLINE complete terminal block system.

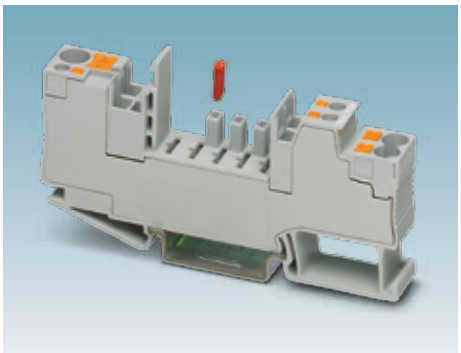
CB E1 Electronic plugs with active current limiting and remote reset or control for 24 V DC devices.
UL 2367 - State Overcurrent Protectors

CB TM1 Thermal-magnetic plugs, F1, M1 or, for optimizing system uptime, use the unique SFB plug.
UL 1077 - Supplementary Protectors for Use in Electrical Equipment



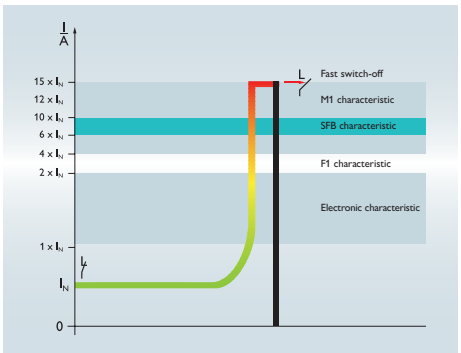
Bridging

Potential distribution in the case of series installation of device circuit breakers does not pose any problems. With the bridge system from the CLIPLINE complete standard program, the device circuit breakers can also be combined easily and individually.



Coding

The coding ensures that components can be mounted safely on the base element. It prevents adjacent plugs from being mixed up during maintenance or repair.



SFB tripping characteristic

Thermomagnetic device circuit breakers with the SFB tripping characteristic provide maximum overcurrent protection – even in large systems with long cable paths. They prevent the device from being shut down unnecessarily early in the event of brief current increases and, at the same time, prevent long overload currents.

Maximum functionality, minimal overall width: CBM multichannel device circuit breakers

Securely protect your system against overload and short-circuit current. The multi-channel, electronic device circuit breakers are optimally suited for use in machine building, process engineering, and control and systems manufacturing.

The individual adjustability of the four- and eight-channel devices provides a convenient and space-saving solution for every application.

Web code: #1524

CBMC – extremely compact device circuit breaker

The CBMC combines a compact design and options for individual adjustment. The four channels can be adjusted via the LED button easily and with no need for tools.

Can be ordered preconfigured

Order the CBMC device circuit breaker that is already configured for your system. This means the device can be used immediately, without further configuration effort. The preconfigured devices are also available with fixed, preprogrammed nominal current values.

Status indicator in traffic light colors

Identify the operating status of your system intuitively and correctly using the status LEDs in traffic light colors.

CBM – device circuit breaker with nominal current wizard

Thanks to the integrated nominal current wizard, setting the right nominal current for your loads is very easy. The selected settings are locked electronically.

Push-in Technology

Designed by PHOENIX CONTACT

Easily adjustable

As easy as can be to set the individual circuits. No additional tools are necessary, thanks to its one-button operation.

Detection of overvoltages and undervoltages

The operating range of the device circuit breaker is between 18 V DC and 30 V DC. If the voltage drops below or is exceeded, the DC-OK LED signals the status with yellow or red. An electrical signal is also output.

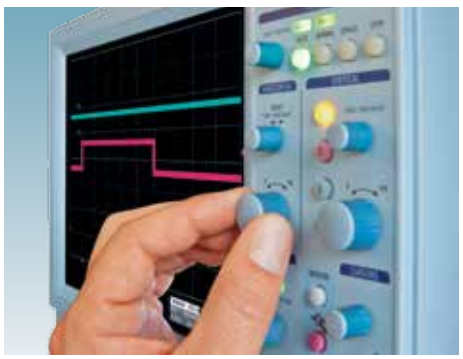
Analysis and signaling

The flowing current is measured permanently and analyzed. If the set nominal current is exceeded by 80 percent or there is an overload or a short circuit, this is displayed directly on the channel LED via different lighting and blinking modes. The device is shut down according to the detected residual current.

Robust standard functionality: TRIO POWER supplies

The new generation of the TRIO POWER range of power supplies is perfect for use in machine building. All functions and the space-saving design are tailored to the high requirements in this field. The power supply units, which feature an extremely robust electrical and mechanical design, ensure the reliable supply of all loads even under harsh ambient conditions.

Web code: #1539



Superior system availability

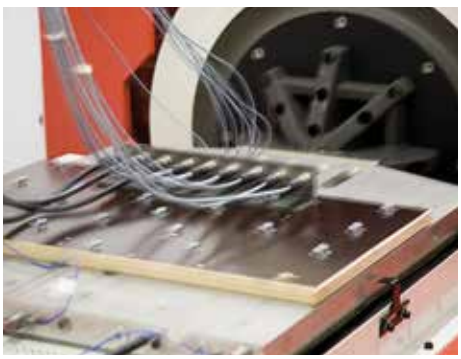
The TRIO POWER supply units offer dynamic boost, which even starts heavy loads for five seconds with 150 percent of the nominal current. The robust design with high shock and active function monitoring with floating signal contact ensure the safe supply of DC systems.

Very cost-effective

A total of 14 one- and three-phase supply units with output currents from 3 to 40 A save time during the installation, thanks to the tool-free, push-in connection. With the slim design, you also save space in your control cabinet. The three-phase 20 A device, for example, uses an overall width of just 65 mm.

Push-in Technology

Designed by PHOENIX CONTACT



Robust design

High dielectric strength of single-phase devices of up to 300 V AC make TRIO POWER electrically robust. Even when a phase fails permanently, the three-phase modules work without errors. TRIO POWER is mechanically robust, thanks to the vibration resistance of up to 4g and shock resistance up to 30g. High MTBF (Mean Time Between Failure) times of more than 1 million hours at +40°C ensure maximum availability.

Maximum flexibility

Maximum flexibility for use in all areas is guaranteed by the wide temperature range from -25°C to +70°C as well as reliable device startup at -40°C (from 10 A). The wide input voltage range for all common AC and DC networks, as well as the comprehensive approval package, enables use worldwide.

Maritime use

Thanks to the particularly robust design and optimized EMC properties (electromagnetic compatibility), the TRIO POWER supplies are ideal for use in a maritime environment. Two one-phase power supply units with output currents of 5 and 10 A can also be used on the bridges of ships and specifically for the supply of sensitive loads in accordance with EN 60945.

Fast, robust, easy: Axioline F for the control cabinet

Axioline F is the modular I/O system for the control cabinet. Open to all Ethernet-based communication protocols, Axioline F offers maximum flexibility. In addition, Axioline F is fast regarding response times and installation, robust in terms of its design and mechanics, and at the same time very easy to operate.

Based on PROFINET and PROFIBUS, these PROFIsafe modules can be used to acquire and output safety-related signals.

Web code: #1147

Push-in Technology

Designed by PHOENIX CONTACT

Increased machine output, thanks to particularly fast and synchronous signal acquisition.

SafetyBridge Technology

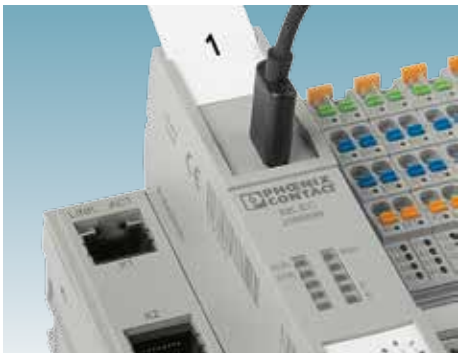
Designed by PHOENIX CONTACT

Distributed safety solution

The safe I/O modules with SafetyBridge Technology can be distributed in a modular fashion throughout your standard network – entirely without a safety controller and independently of the network.

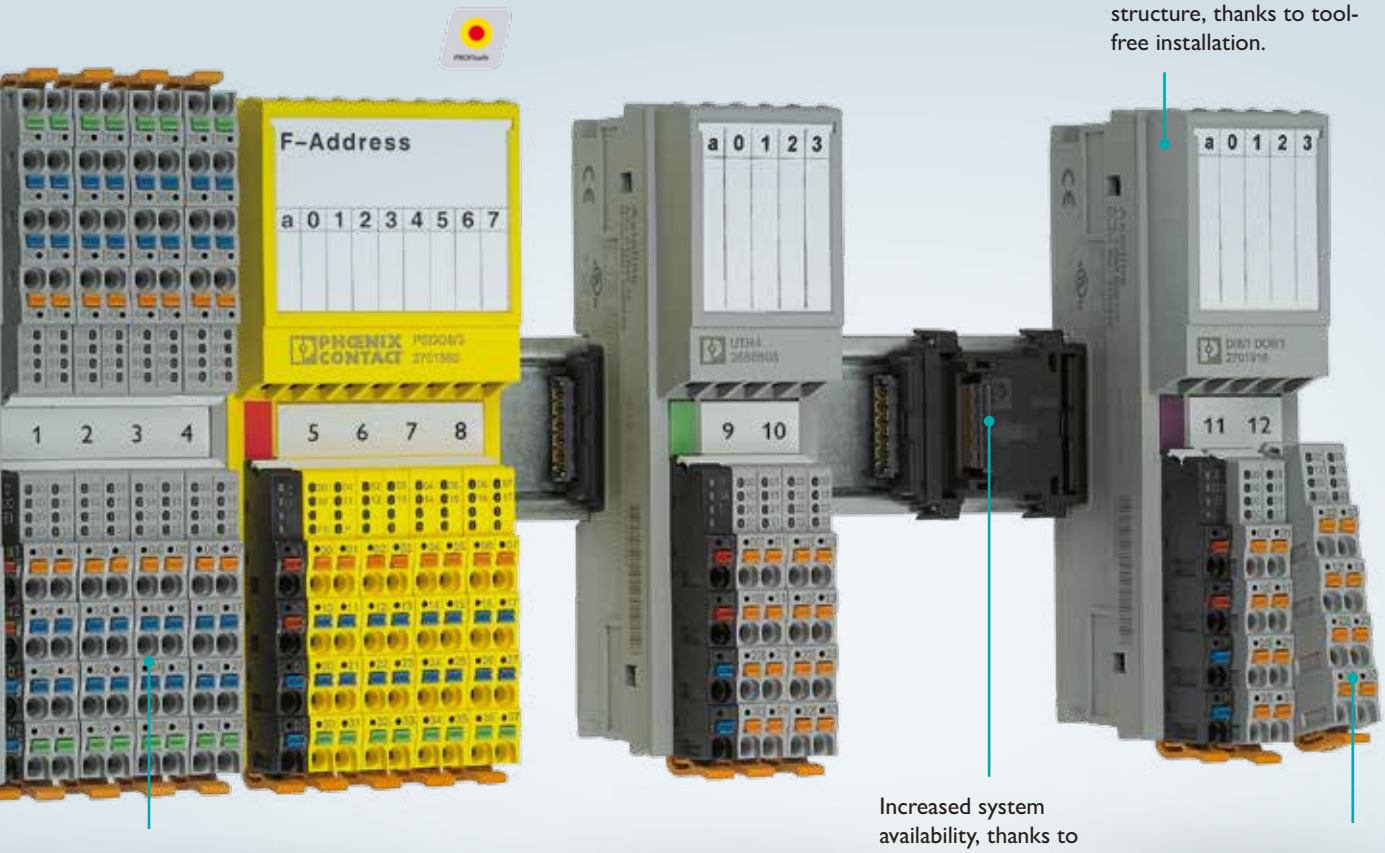
Optimum system connection

Axioline F is the Ethernet specialist for control cabinet installation. Alongside PROFIBUS DP, bus couplers are also available for today's leading Ethernet systems



Easy startup and maintenance

The rotary coding switches and the USB port in the bus coupler housing simplify startup and maintenance of an Axioline F station.



Simple and fast station structure, thanks to tool-free installation.

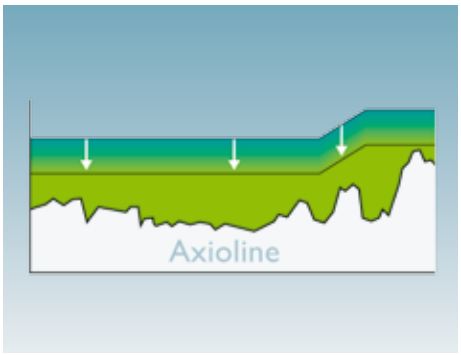
Fast and intuitive wiring, thanks to color coding of the contact points – even in the case of multiconductor connection.

Increased system availability, thanks to particularly robust mechanics and shock and vibration resistance.

Fast module replacement with existing wiring.

Test connection

Direct verification of the installation is possible thanks to the test connection – even during operation.



EMC radiation/emission

Given the low emissions of Axioline F, the I/O system can also be used in residential areas and offers a high degree of future safeguarding.

Startup+

The Startup+ software enables easy hardware testing and convenient diagnostics of the Axioline F station. This means that startup can be performed independently, without connecting to the control system.

Fast, robust, easy: Axiocontrol controllers

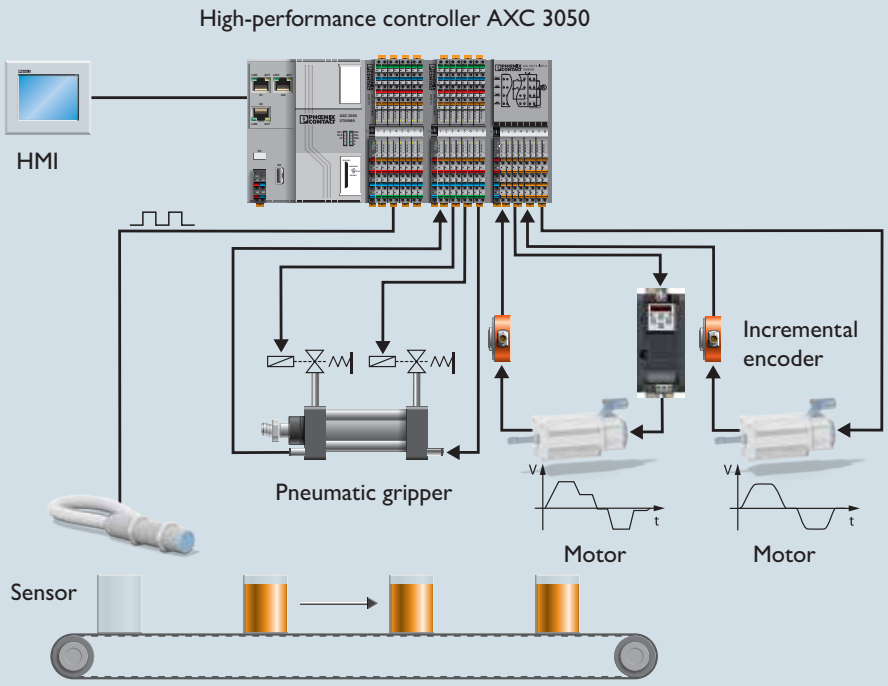
Axiocontrol controllers are designed for maximum performance, easy handling, and use in harsh industrial environments. Together with the Axioline F I/O system, Axiocontrol offers maximum speed thanks to direct bus connection. The controllers are therefore at the heart of a high-performance automation system, regardless of whether they are used as small-scale controllers or as high-performance PLCs.

Web code: #1275

Ethernet

Modbus

PROFINET



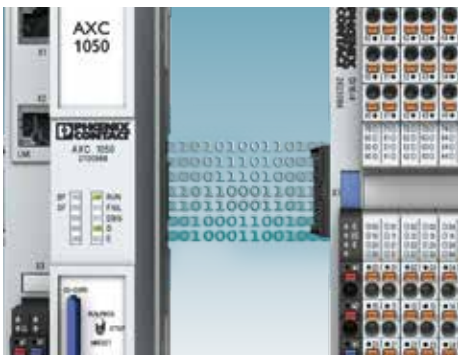
Thanks to functions such as fast counters, high-performance processors, and direct I/O connection to the Axioline F I/O system, the controller Axiocontrol AXC 3050 performs demanding tasks, such as rotation speed and machine cycle monitoring.

For sophisticated tasks

Axiocontrol is the ideal solution when it comes to high demands on performance and robustness. This makes small and high-performance controllers ideal for automation tasks, such as in machine building or for wind turbines. The controller can be extended flexibly with software packages, including the communication to IEC 61850 for applications in the power industry.

Push-in Technology

Designed by PHOENIX CONTACT



Fast

Thanks to the direct connection via the integrated Axiobus, communication between the PLC and I/O system is lightning fast, which means that they also provide control resources for complex tasks. The Ethernet interfaces of the controllers enable integration into existing networks and connection of additional distributed I/Os.

Robust

In the solid housing, Axioline is vibration resistant and EMC protected. Thanks to the integrated uninterruptible power supply, the PLC is particularly resistant to voltage failures. The XC version can be used in particularly demanding environments with an extended temperature range from -40°C to +70°C.

Easy

Automation with Axiocontrol is easy. From tool-free wiring of the PLC and I/O systems with Push-in Technology to fast error diagnostics, thanks to the integrated USB port.

Planning and marking software CLIP PROJECT

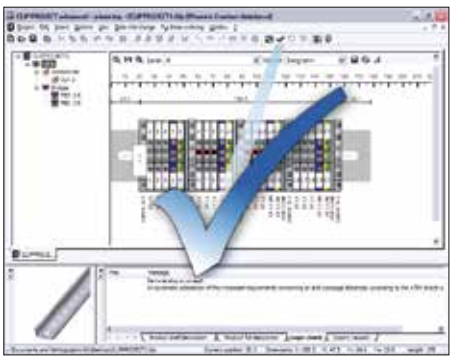
CLIP PROJECT combines our proven planning software for terminal strip configuration with a high-performance marking tool. Direct data exchange with all conventional CAE programs, combined with the creation of all project documentation, are what make this configuration software unique.

And there's more: with CLIP PROJECT you can also create marking for all of your applications.

Web code: #1093

A consistent system from configuration through to the finished application

By integrating CLIP PROJECT in EPLAN P8, terminal strips are automatically produced from the circuit diagram in CLIP PROJECT. The product data is written back to the EPLAN parts lists using the two-way interface. Use CLIP PROJECT to develop your DIN rail modules – complete with bridging, marking, and further accessories.

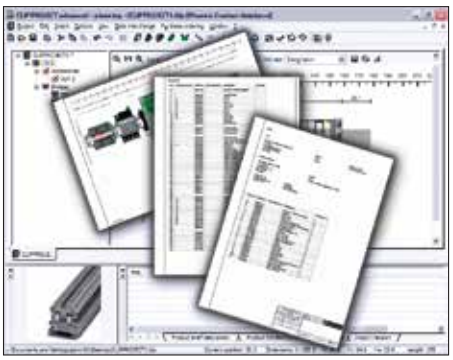


Auto correction with one click

The automatic correction function checks the configured terminal strip and automatically adds any missing accessories. 2D and 3D design data are just one click away.

Distributing DIN rails with one click

The configured terminal strips can be distributed across several DIN rails in order to determine the exact space requirements for installation.



Complete documents in one click

Complete documentation and an effective 3D preview are available for the quick and error-free mechanical layout of the terminal strips.

Simply place your order with one click

Phoenix Contact provides a terminal strip service. The terminal strips configured to your specifications can be ordered using the e-mail function. Phoenix Contact will supply the terminal strips promptly.

Surprisingly easy: Marking, labeling, and tools

MARKING system – this consists of compatible software and hardware for quick, easy marking of your control cabinets and switchgears.

For whichever printing system you choose, a wide range of marking materials for terminals, conductors, devices and systems is available for labeling your entire application. These materials are controlled by software.

Web code: #0006

A consistent system from configuration through to the finished application

By integrating CLIP PROJECT in EPLAN P8, terminal strips are automatically produced from the circuit diagram in CLIP PROJECT. The product data is written back to the EPLAN parts lists using the two-way interface. Use CLIP PROJECT to develop your DIN rail modules – complete with bridging, marking, and further accessories.

Terminal marking

Terminal markers are offered in marked and unmarked form in the UniCard and UniSheet formats or in a roll or sheet format.

The right printer for every application: With innovative print and laser technology you can create permanent, durable markings with ease.

Wire and cable marking

There are numerous variants of wire and cable marking. The markers can either be threaded on, pushed on, clipped on, adhered in place, or attached with cable binders. They are available in non-printed or printed form.

Equipment marking

Various device markers are available to you for optimum, individual marking of control cabinets, switchgears and their components.

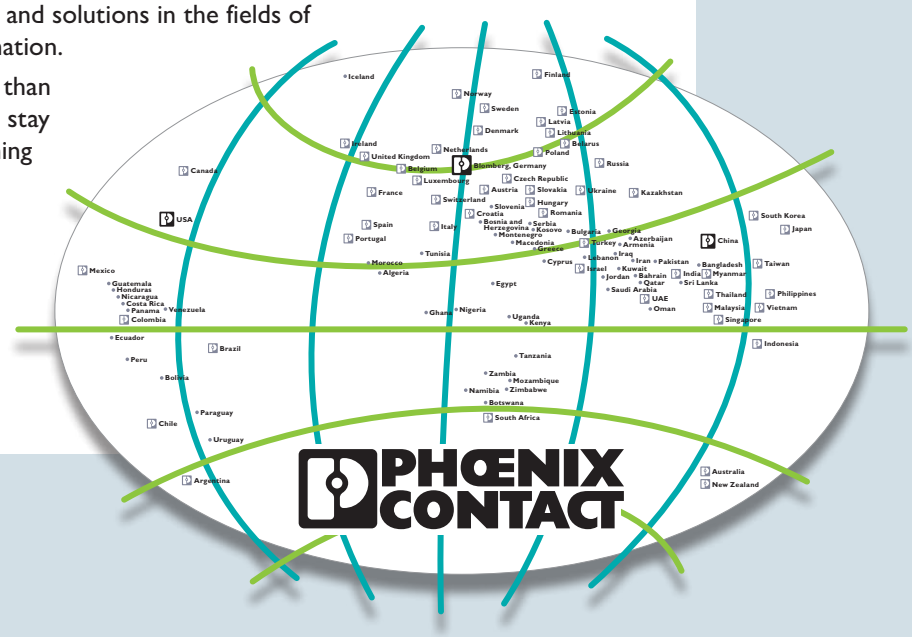
Plant marking

Numerous safety markings are available for the clear and comprehensive marking of systems. These signs can be delivered in non-printed form or are printed by our marking service individually according to customer specifications.

Ongoing communication with customers and partners worldwide

Phoenix Contact is a global, market leader based in Germany. Our group is known for its future-oriented components, systems, and solutions in the fields of electrical engineering, electronics, and automation.

With a global network reaching across more than 100 countries and 14,500 employees, we can stay in close contact with our customers, something we believe is essential to success. The wide variety of our innovative products makes it easy for our customers to find future-oriented solutions for multiple applications and industries. We especially focus on the fields of energy, infrastructure, process, and factory automation.



You will find our complete product range at:

www.phoenixcontact.com

USA
PHOENIX CONTACT
P.O. Box 4100
Harrisburg, PA 17111-0100
Phone: 800-888-7388
717-944-1300
Technical Service: 800-322-3225
Fax: 717-944-1625
E-mail: info@phoenixcon.com
Website: www.phoenixcontact.com

Canada
PHOENIX CONTACT Ltd.
8240 Parkhill Drive
Milton, Ontario L9T 5V7
Toll Free: 800-890-2820
Phone: 905-864-8700
Fax: 905-864-7900
E-mail: cdinfo@phoenixcontact.ca

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