



Relays for use in hazardous locations

Class I, Division 2, ATEX, and IECEx

Hazardous location relays

The industry has imposed stringent requirements on the reliability and safety of the switching components in potentially explosive areas. In order to protect against explosion, all equipment that could be exposed to the flammable or combustible atmospheres in hazardous (classified) locations must be of a type suitable for installation in these areas. The classes and groups for which equipment has been certified are shown in the individual certifications under the respective categories and are marked on the equipment itself.

Phoenix Contact offers triple-rated hazardous location relays in our slim PLC Relay series that have the required approvals for industrial control equipment. The triple rating includes approvals for:

- Class I, Division 2 (CID2) UL/cUL Listed (for use in the Americas)
- ATEX is certified through UL/DEMKO (for use in Europe)
- IECEx is a certification scheme championed by the IEC (for countries outside Europe)

The IECEx scheme is a very positive step toward a world certification system. When combined with ATEX and Class I, Division 2 as a triple rating, it will help you make a more informed decision during the process of designing, building, or purchasing products for hazardous area applications. Having a hazardous-location-approved triple rating will be beneficial in simplifying the export process.



Class I, Division 2 (CID2) relays

PLC-INTERFACE for hazardous areas

Relay modules with ATEX, IECEx, and Class I, Division 2 approval for potentially explosive applications as well as solid-state relays with Class I, Division 2 approval.

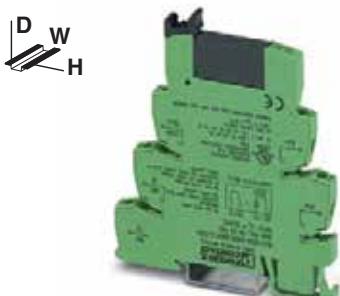
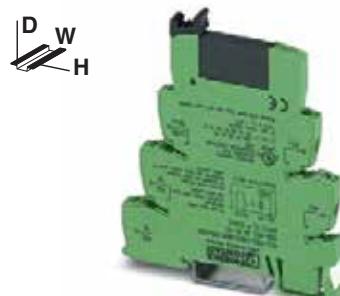
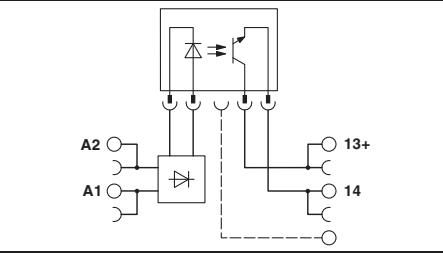
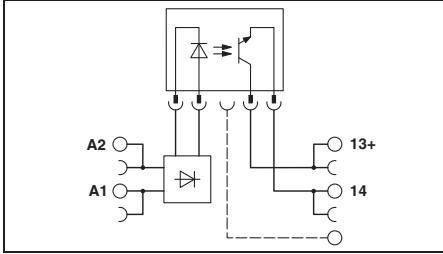
The advantages:

- Slim design
- Functional jumpers
- Integrated input and interference suppression circuit
- RTI-sealed relays
- Safe isolation according to DIN EN 50178 between coil and contact

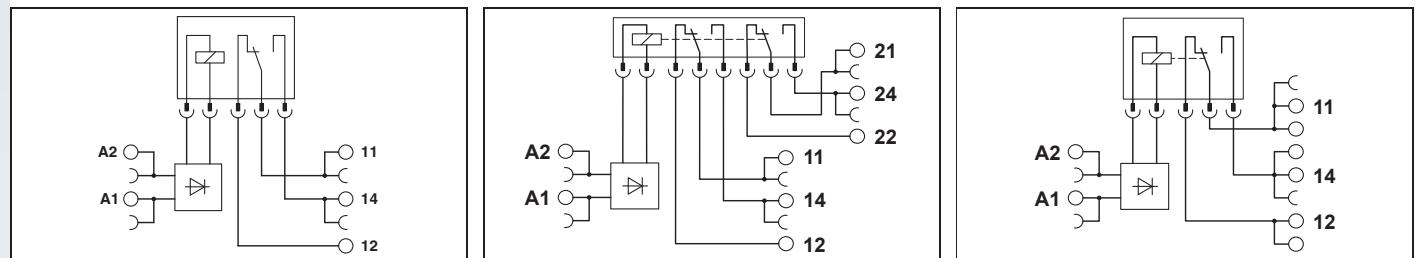
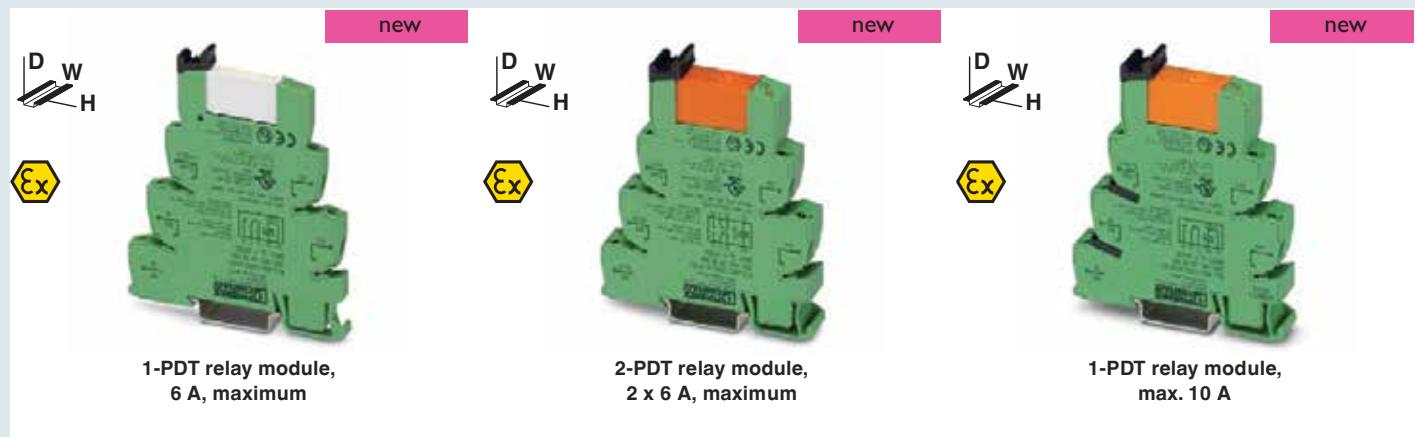
Notes:
Type of insulating housing: Polyamide PBT, non-reinforced, color: green.
Marking systems and mounting material
Separating plate PLC-ATP must be installed for voltages larger than 250 V (L1, L2, L3) between identical terminal blocks in adjacent modules. Potential bridging is then carried out with FBST 8-PLC... or FBST 500....
1) Ambient temperature (operation): -40°C ... 55°C (ATEX / IECEx)

Input data
Permissible range (with reference to U_N)
Switching level (with reference to U_N)
Typical input current at U_N
Typical response time/switch-on time at U_N
Typical release time/switch-off time at U_N
Transmission frequency f_{limit}
Input circuit DC
Input circuit AC/DC
Output data
Contact material
Max. switching voltage
Minimum switching voltage
Limiting continuous current
Maximum switch-on current
Minimum switching current
Output protection
Voltage drop at maximum limiting continuous current
General data
Test voltage input/output
Ambient temperature (operation)
Mechanical service life
Standards/regulations
Degree of pollution/surge voltage category
Connection data solid/stranded/AWG
Dimensions
EMC note
Conformance/approvals
Conformance
ATEX
IECEx
UL, USA
UL, USA/Canada
UL, Canada

Description	Input voltage U_N
PLC INTERFACE, with screw connection	
①	12 V DC
②	24 V DC
③	120 V AC / 110 V DC
④	230 V AC / 220 V DC
PLC-INTERFACE, with push-in connection	
①	12 V DC
③	24 V DC
④	120 V AC / 110 V DC
⑤	230 V AC / 220 V DC

																																	
Solid-state relay module, DC output max. 3 A	Solid-state relay module, DC output max. 100 mA																																
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<p>-</p> <p>33 V DC</p> <p>3 V DC</p> <p>3 A</p> <p>15 A (10 ms)</p> <p>-</p> <p>Reverse polarity protection, Surge protection $\leq 200 \text{ mV}$</p> <p>2.5 kV (50 Hz, 1 min.) $-20^\circ \text{C} \dots 60^\circ \text{C}$</p> <p>-</p> <p>IEC 60664 , EN 50178 2 / III 0.14 - 2.5 mm² / 0.14 - 2.5 mm² / 26 - 14 6.2 mm / 80 mm / 94 mm Class A product, see page 605</p> <p>CE-compliant -</p> <p>Class I, Zone 2, AEx nA nC IIC T6 Class I, Div. 2, Groups A, B, C, D Class I, Zone 2, Ex nA nC IIC Gc T6 X</p>	<p>-</p> <p>48 V DC</p> <p>3 V DC</p> <p>100 mA</p> <p>-</p> <p>-</p> <p>Reverse polarity protection, Surge protection $\leq 1 \text{ V}$</p> <p>2.5 kV (50 Hz, 1 min.) $-20^\circ \text{C} \dots 60^\circ \text{C}$</p> <p>-</p> <p>IEC 60664 , EN 50178 2 / III 0.14 - 2.5 mm² / 0.14 - 2.5 mm² / 26 - 14 6.2 mm / 80 mm / 94 mm Class A product, see page 605</p> <p>CE-compliant -</p> <p>Class I, Zone 2, AEx nA nC IIC T6 Class I, Div. 2, Groups A, B, C, D Class I, Zone 2, Ex nA nC IIC Gc T6 X</p>																																
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Triple-rated relays: Class I, Division 2 (CID2), ATEX, and IECEx



Technical data				Technical data				Technical data			
①	②	③	④	①	②	③	④	①	②	③	④
Upon request	Upon request	Upon request	Upon request	Upon request	Upon request	Upon request	Upon request	Upon request	Upon request	Upon request	Upon request

15.3 5 8	9 5 8	3.5 6 15	3.2 7 15	33 8 10	18 8 10	4.5 7 10	4.5 7 10	33 8 10	18 8 10	4.5 7 10	4.5 7 10
Yellow LED, Reverse polarity protection, Free-wheeling diode Yellow LED, Bridge rectifier											
AgSnO 250 V AC/DC 5 V (at 100 mA) 6 A 10 A (4 s) 10 mA (at 12 V) -											
AgNi 250 V AC/DC 5 V AC/DC (at 10 mA) 6 A 15 A (300 ms) 10 mA (At 5 V) -											
4 kV AC (50 Hz, 1 min.) -20 °C ... 60 °C (UL), -40 °C ... 60 °C (ATEX / IECEx) 2 x 10 ⁷ cycles IEC 60664 , EN 50178 , EN 60079-0, -7, -15 3 / III 0.14 - 2.5 mm ² / 0.14 - 2.5 mm ² / 26 - 14 6.2 mm / 80 mm / 94 mm											
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CE-compliant Ex II 3G Ex ec nC IIC T4 Gc (IBEExU16ATEXB015 X) Ex ec nC IIC T4 Gc (IECEx IBE 16.0029X) Class I, Zone 2, AEx nA nC IIC T6 Class I, Div. 2, Groups A, B, C, D Class I, Zone 2, Ex nA nC IIC Gc T6 X	CE-compliant Ex II 3G Ex ec nC IIC T4 Gc (IBEExU16ATEXB015 X) Ex ec nC IIC T4 Gc (IECEx IBE 16.0029X) Class I, Zone 2, AEx nA nC IIC T6 Class I, Div. 2, Groups A, B, C, D Class I, Zone 2, Ex nA nC IIC Gc T6 X	CE-compliant Ex II 3G Ex ec nC IIC T4 Gc (IBEExU16ATEXB015 X) Ex ec nC IIC T4 Gc (IECEx IBE 16.0029X) Class I, Zone 2, AEx nA nC IIC T6 Class I, Div. 2, Groups A, B, C, D Class I, Zone 2, Ex nA nC IIC Gc T6 X
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Ordering data			Ordering data			Ordering data		
Type	Order No.	Replacement relay order no.	Type	Order No.	Replacement relay order no.	Type	Order no.	Replacement relay order no.
PLC-RSC-12DC/21/EX PLC-RSC-24DC/21/EX PLC-RSC-120UC/21/EX PLC-RSC-230UC/21/EX ¹	2909522 2909524 2909525 2909526	2961150 2961105 2961118 2961118	PLC-RSC-12DC/21-21/EX PLC-RSC-24DC/21-21/EX PLC-RSC-120UC/21-21/EX PLC-RSC-230UC/21-EX ¹	2909517 2909509 2909511 2909512	2906988 2906213 2908824 2908824	PLC-RSC-12DC/21HC/EX PLC-RSC-24DC/21HC/EX PLC-RSC-120UC/21HC/EX PLC-RSC-230UC/21HC/EX ¹	2909518 2909519 2909520 2909521	2908821 2908822 2908823 2908823
PLC-RPT-12DC/21/EX PLC-RPT-24DC/21/EX PLC-RPT-120UC/21/EX PLC-RPT-230UC/21/EX ¹	2909527 2909528 2909529 2909530	2961150 2961105 2961118 2961118	PLC-RPT-12DC/21-21/EX PLC-RPT-24DC/21-21/EX PLC-RPT-120UC/21-21/EX PLC-RPT-230UC/21-EX ¹	2909513 2909514 2909515 2909516	2906988 2906213 2908824 2908824	PLC-RPT-12DC/21HC/EX PLC-RPT-24DC/21HC/EX PLC-RPT-120UC/21HC/EX PLC-RPT-230UC/21HC/EX ¹	2909531 2909532 2909533 2909534	2908821 2908822 2908823 2908823

Areas of explosion protection



North America

Hazardous (classified) locations, as defined in the National Electric Code (NEC), are locations where fire or explosion hazards may exist due to the presence of flammable gases, vapors, flammable liquids, combustible dusts, ignitable fibers or flying matter. Article 500 of the NEC divides all hazardous (classified) locations into Classes, Divisions and Groups.

Phoenix Contact's hazardous-location relays have been tested and approved for Class I, Division 2; Groups A, B, C, D; and Class I, Zone 2.

UL, USA: Class I, Zone 2, AEx nA nC IIC T6

UL, USA/Canada: Class I, Div. 2, Groups A, B, C, D

UL, Canada: Class I, Zone 2, Ex nA nC IIC Gc T6 X

- **Class I:** Areas in which flammable gases or vapors are or may be present in the air in quantities sufficient to produce explosive or ignitable mixtures
- **Division 2:** Hazard under abnormal conditions
- **Groups A, B, C, D:** gas mixtures have been grouped on the basis of their characteristics:
 - **Group A** – Atmospheres containing acetylene
 - **Group B** – Atmospheres containing acrolein, butadiene, ethylene oxide, propylene oxide, and hydrogen, as well as fuel and combustible process gases containing more than 30 percent hydrogen by volume
 - **Group C** – Atmospheres containing ethyl ether and ethylene
 - **Group D** – Atmospheres containing acetone, ammonia, benzene, butane, cyclopropane, ethanol, gasoline, hexane, methane, methanol, naphtha, and propane
- **Class I, Zone 2, AEx nA nC IIC T6 (U.S.)**
- **Class I, Zone 2, Ex nA nC IIC T6 (Canada)**
- **Class I:** Areas in which flammable gases or vapors are or may be present in the air in quantities sufficient to produce explosive or ignitable mixtures
- **Zone 2 – Hazard under abnormal conditions**
- **AEx – Conformity to U.S. requirements**
- **Ex – Conformity to Canadian requirements**
- **nA – Nonsparking –** Equipment has no normally arcing parts or thermal effects capable of ignition
- **nC – Sparking with protected contacts –** Arcing contacts are in nonincendive circuits or are inside a hermetically sealed container or sealed device
- **IIC – Gas group**
- **T6 – Temperature class 85°C**

Europe

The countries that make up the European Economic Area adopt directives as their national laws. The ATEX Directive is the law in every country in the European Community. Part of the law states that all products for use in explosive atmospheres must meet the Directive.

This means that all manufacturers of mechanical and electrical equipment intended for use in potentially explosive atmospheres and that wish to place these products on the market within the European Union must comply with the ATEX Directive.

The hazardous-location relays are also ATEX approved and classified into device groups and categories. Our triple-rated HAZLOC relays are approved for Device Group II and Category 3G, for use in Zone 2 (gases).

Approval: II 3G Ex ec nC IIC T4 Gc (IB ExU16ATEXB015 X)

- **II (Equipment group) –** Areas with explosive atmosphere like chemical industries or mills (combustible gases and dusts)
- **3G (Equipment category) –** Equipment suitable for Zone 2, intended for use in areas where an explosive atmosphere is unlikely to occur in normal operation
- **Ex (Explosion protection)**
- **ec (Protection type) –** Increased safety, no arcs, sparks, or hot surfaces
- **nC (Protection type) –** Sealed device
- **II (Device group) –** Surface (non-mining) equipment
- **C (Gas group) –** Atmospheres containing hydrogen, acetylene
- **T4 (Temperature class) –** Maximum surface temperature 135°C (275°F)
- **Gc (Equipment protection level) –** Protection level: assured level of protection against becoming an ignition source in normal operation

International

The International Electrotechnical Commission (IEC) is the leading global organization that prepares and publishes international standards for all electrical, electronic, and related technologies. IECEx is a single global certification framework based on the IEC's international standards. It caters to countries whose national standards are either identical to those of the IEC or very close to IEC standards. The IECEx approval is truly global in concept and practice, reduces trade barriers caused by different conformity assessment criteria in various countries, and helps industry open up new markets.

Approval: Ex ec nC IIC T4 Gc (IEx Ex IBE 16.0029X)

- **Ex –** Explosion-proof electrical equipment
- **ec (Protection type) –** Increased safety, no arcs, sparks, or hot surfaces
- **nC (Protection type) –** Sealed device
- **II (Device group) –** Surface (non-mining) equipment
- **C (Gas group) –** Atmospheres containing hydrogen, acetylene
- **T4 (Temperature class) –** Maximum surface temperature 135°C (275°F)
- **Gc (Equipment protection level) –** Protection level: assured level of protection against becoming an ignition source in normal operation

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



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