

PLC-...RW

PLC-INTERFACE for railway applications in acc. with EN 50155

Application note
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1 Description

The PLC- ...RW relay series is specially designed for railway applications. The relay modules meet the special requirements of standard EN 50155 in regard to input voltage and temperature range. This puts the modules right in line with the trend toward energy-efficient, lightweight, and space-saving design.

The bases can be equipped with plug-in electromechanical relays or electronic solid-state relays. If service should become necessary, these are easily replaced, without any adjustments to the wiring.

Features

- Plug-in electromechanical relays and solid-state relays
- Integrated input circuit
- Flammability class V0 in acc. with UL94
- Safe isolation in acc. with DIN EN 50178 for electromechanical relays
- Electromechanical relays available alternatively with gold-plated contacts for optimal switching of small loads
- Wear-free switching thanks to solid-state relays
- Spring-cage and push-in connection technology



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This document is valid for the products listed in section “Ordering data” on page 3.

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2 Ordering data

Description	Type	Order no.	Pcs. / Pkt.
PLC-INTERFACE for railway applications, consisting of basic terminal block with push-in connection and plug-in miniature relay with power contact, range: 0.7 x UN to 1.25 x UN, temperature class TX: -40 °C to + 70 °C, 1 changeover contact, 110 V DC input voltage	PLC-RPT-110UC/21/RW	2900320	10
PLC-INTERFACE for railway applications, consisting of basic terminal block with push-in connection and plug-in miniature relay with power contact, range: 0.7 x UN to 1.25 x UN, temperature class TX: -40 °C to + 70 °C, 1 changeover contact, 72 V DC input voltage	PLC-RPT- 72UC/21/RW	2900319	10
PLC-INTERFACE for railway applications and high continuous currents, consisting of basic terminal block with push-in connection and plug-in miniature relay, range: 0.7 x UN to 1.25 x UN, temperature class TX: -40 °C to + 70 °C, 1 changeover contact, 24 V DC input voltage	PLC-RPT- 24UC/21HC/RW	2900324	10
PLC-INTERFACE for railway applications, consisting of basic terminal block with push-in connection and plug-in miniature relay with multilayer gold contact, range: 0.7 x UN to 1.25 x UN, temperature class TX: -40 °C to + 70 °C, 1 changeover contact, 24 V DC input voltage	PLC-RPT- 24UC/21AU/RW	2900321	10
PLC-INTERFACE for railway applications, consisting of basic terminal block with push-in connection and integrated miniature solid-state relay, range: 0.7 x UN to 1.25 x UN, temperature range: -25 °C to + 70 °C, 1 N/O contact, input: 110 V DC, output: 3-33 V DC/3 A	PLC-OPT-110DC/ 24DC/3RW	2900380	10
PLC-INTERFACE for railway applications and high continuous currents, consisting of basic terminal block with push-in connection and plug-in miniature relay, range: 0.7 x UN to 1.25 x UN, temperature class TX: -40 °C to + 70 °C, 1 changeover contact, 110 V DC input voltage	PLC-RPT- -110UC/21HC/RW	2900326	10
PLC-INTERFACE for railway applications, consisting of basic terminal block with push-in connection and plug-in miniature relay with multilayer gold contact, range: 0.7 x UN to 1.25 x UN, temperature class TX: -40 °C to + 70 °C, 2 changeover contacts, 24 V DC input voltage	PLC-RPT- 24UC/21-21AU/RW	2900349	10
PLC-INTERFACE for railway applications, consisting of basic terminal block with push-in connection and plug-in miniature relay with multilayer gold contact, range: 0.7 x UN to 1.25 x UN, temperature class TX: -40 °C to + 70 °C, 2 changeover contacts, 110 V DC input voltage	PLC-RPT-110UC/21-21AU/RW	2900351	10
PLC-INTERFACE for railway applications, consisting of basic terminal block with push-in connection and integrated miniature solid-state relay, range: 0.7 x UN to 1.25 x UN, temperature range: -25 °C to + 70 °C, 1 N/O contact, input: 24 V DC, output: 12-140 V DC/3 A	PLC-OPT- 24DC/110DC/3RW	2900391	10
PLC-INTERFACE for railway applications, consisting of basic terminal block with push-in connection and plug-in miniature relay with multilayer gold contact, range: 0.7 x UN to 1.25 x UN, temperature class TX: -40 °C to + 70 °C, 2 changeover contacts, 72 V DC input voltage	PLC-RPT- 72UC/21-21AU/RW	2900350	10
PLC-INTERFACE for railway applications, consisting of basic terminal block with push-in connection and integrated miniature solid-state relay, range: 0.7 x UN to 1.25 x UN, temperature range: -25 °C to + 70 °C, 1 N/O contact, input: 36 V DC, output: 12-140 V DC/3 A	PLC-OPT- 36DC/110DC/3RW	2900392	10
PLC-INTERFACE for railway applications, consisting of basic terminal block with push-in connection and integrated miniature solid-state relay, range: 0.7 x UN to 1.25 x UN, temperature range: -25 °C to + 70 °C, 1 N/O contact, input: 72 V DC, output: 12-140 V DC/3 A	PLC-OPT- 72DC/110DC/3RW	2900394	10
PLC-INTERFACE for railway applications, consisting of basic terminal block with push-in connection and integrated miniature solid-state relay, range: 0.7 x UN to 1.25 x UN, temperature range: -25 °C to + 70 °C, 1 N/O contact, input: 96 V DC, output: 12-140 V DC/3 A	PLC-OPT- 96DC/110DC/3RW	2900395	10
PLC-INTERFACE for railway applications, consisting of basic terminal block with push-in connection and integrated miniature solid-state relay, range: 0.7 x UN to 1.25 x UN, temperature range: -25 °C to + 70 °C, 1 N/O contact, input: 24 V DC, output: 3-33 V DC/3 A	PLC-OPT- 24DC/ 24DC/3RW	2900379	10
PLC-INTERFACE for railway applications, consisting of basic terminal block with push-in connection and plug-in miniature relay with multilayer gold contact, range: 0.7 x UN to 1.25 x UN, temperature class TX: -40 °C to + 70 °C, 1 changeover contact, 72 V DC input voltage	PLC-RPT- 72UC/21AU/RW	2900322	10

Description	Type	Order no.	Pcs. / Pkt.
PLC-INTERFACE for railway applications, consisting of basic terminal block with push-in connection and plug-in miniature relay with multilayer gold contact, range: 0.7 x UN to 1.25 x UN, temperature class TX: -40 °C to + 70 °C, 1 changeover contact, 110 V DC input voltage	PLC-RPT-110UC/21AU/RW	2900323	10
PLC-INTERFACE for railway applications, consisting of basic terminal block with push-in connection and plug-in miniature relay with power contact, range: 0.7 x UN to 1.25 x UN, temperature class TX: -40 °C to + 70 °C, 2 changeover contacts, 72 V DC input voltage	PLC-RPT- 72UC/21-21/RW	2900347	10
6.2 mm PLC basic terminal block for railway applications with spring-cage connection, without relay or solid-state relay, range: 0.7 x UN to 1.25 x UN, temperature range: -25 °C to + 70 °C, 1 changeover contact, 24 V DC input voltage	PLC-BSP- 24DC/21RW	2961396	10
PLC-INTERFACE for railway applications, consisting of basic terminal block with screw connection and integrated miniature solid-state relay, range: 0.7 x UN to 1.25 x UN, temperature range: -25 °C to + 70 °C, 1 N/O contact, input: 110 V DC, output: 3-33 V DC/3 A	PLC-OSC-110DC/ 24DC/ 3RW	2980623	10
PLC-INTERFACE for railway applications, consisting of basic terminal block with screw connection and integrated miniature solid-state relay, range: 0.7 x UN to 1.25 x UN, temperature range: -25 °C to + 70 °C, 1 N/O contact, input: 24 V DC, output: 3-33 V DC/3 A	PLC-OSC- 24DC/ 24DC/ 3RW	2980610	10
PLC-INTERFACE for railway applications, consisting of basic terminal block with push-in connection and integrated miniature solid-state relay, range: 0.7 x UN to 1.25 x UN, temperature range: -25 °C to + 70 °C, 1 N/O contact, input: 48 V DC, output: 12-140 V DC/3 A	PLC-OPT- 48DC/110DC/3RW	2900393	10
PLC-INTERFACE for railway applications, consisting of basic terminal block with push-in connection and plug-in miniature relay with power contact, range: 0.7 x UN to 1.25 x UN, temperature class TX: -40 °C to + 70 °C, 2 changeover contacts, 110 V DC input voltage	PLC-RPT-110UC/21-21/RW	2900348	10
PLC-INTERFACE for railway applications, consisting of basic terminal block with push-in connection and plug-in miniature relay with power contact, range: 0.7 x UN to 1.25 x UN, temperature class TX: -40 °C to + 70 °C, 1 changeover contact, 24 V DC input voltage	PLC-RPT- 24UC/21/RW	2900318	10
6.2 mm PLC basic terminal block for railway applications with push-in connection, without relay or solid-state relay, range: 0.7 x UN to 1.25 x UN, temperature range: -25 °C to + 70 °C, 1 changeover contact, 24 V DC input voltage	PLC-BPT- 24DC/21RW	2900261	10
PLC-INTERFACE for railway applications, consisting of basic terminal block with push-in connection and plug-in miniature relay with power contact, range: 0.7 x UN to 1.25 x UN, temperature class TX: -40 °C to + 70 °C, 2 changeover contacts, 24 V DC input voltage	PLC-RPT- 24UC/21-21/RW	2900346	10
PLC-INTERFACE for railway applications and high continuous currents, consisting of basic terminal block with push-in connection and plug-in miniature relay, range: 0.7 x UN to 1.25 x UN, temperature class TX: -40 °C to + 70 °C, 1 changeover contact, 72 V DC input voltage	PLC-RPT- 72UC/21HC/RW	2900325	10
PLC-INTERFACE for railway applications, consisting of basic terminal block with push-in connection and integrated miniature solid-state relay, range: 0.7 x UN to 1.25 x UN, temperature range: -25 °C to + 70 °C, 1 N/O contact, input: 110 V DC, output: 12-140 V DC/3 A	PLC-OPT-110DC/110DC/3RW	2900396	10
PLC-INTERFACE for railway applications, consisting of basic terminal block with spring-cage connection and plug-in miniature relay with multilayer gold contact, range: 0.75 x UN to 1.15 x UN, nominal input frequency 16.7 Hz, 2 changeover contacts, 230 V AC input voltage	PLC-RSP-230UC/21-21AU/RWF	2968001	10
PLC-INTERFACE for railway applications, consisting of basic terminal block with push-in connection and plug-in miniature relay with multilayer gold contact, range: 0.75 x UN to 1.15 x UN, nominal input frequency 16.7 Hz, 2 changeover contacts, 230 V AC input voltage	PLC-RPT-230UC/21-21AU/RWF	2900345	10
PLC-INTERFACE for railway applications, consisting of basic terminal block with spring-cage connection and plug-in miniature relay with power contact, range: 0.7 x UN to 1.25 x UN, temperature class TX: -40 °C to + 70 °C, 1 changeover contact, 24 V DC input voltage	PLC-RSP- 24UC/21/RW	2987011	10
PLC-INTERFACE for railway applications, consisting of basic terminal block with spring-cage connection and plug-in miniature relay with power contact, range: 0.7 x UN to 1.25 x UN, temperature class TX: -40 °C to + 70 °C, 1 changeover contact, 72 V DC input voltage	PLC-RSP- 72UC/21/RW	2987037	10

Description	Type	Order no.	Pcs. / Pkt.
PLC-INTERFACE for railway applications, consisting of basic terminal block with spring-cage connection and plug-in miniature relay with power contact, range: 0.7 x UN to 1.25 x UN, temperature class TX: -40 °C to + 70 °C, 1 changeover contact, 110 V DC input voltage	PLC-RSP-110UC/21/RW	2987053	10
PLC-INTERFACE for railway applications, consisting of basic terminal block with spring-cage connection and plug-in miniature relay with multilayer gold contact, range: 0.7 x UN to 1.25 x UN, temperature class TX: -40 °C to + 70 °C, 1 changeover contact, 24 V DC input voltage	PLC-RSP- 24UC/21AU/RW	2987024	10
PLC-INTERFACE for railway applications, consisting of basic terminal block with spring-cage connection and plug-in miniature relay with multilayer gold contact, range: 0.7 x UN to 1.25 x UN, temperature class TX: -40 °C to + 70 °C, 1 changeover contact, 72 V DC input voltage	PLC-RSP- 72UC/21AU/RW	2987040	10
PLC-INTERFACE for railway applications, consisting of basic terminal block with spring-cage connection and plug-in miniature relay with multilayer gold contact, range: 0.7 x UN to 1.25 x UN, temperature class TX: -40 °C to + 70 °C, 1 changeover contact, 110 V DC input voltage	PLC-RSP-110UC/21AU/RW	2987066	10
PLC-INTERFACE for railway applications, consisting of basic terminal block with spring-cage connection and plug-in miniature relay with power contact, range: 0.7 x UN to 1.25 x UN, temperature class TX: -40 °C to + 70 °C, 2 changeover contacts, 24 V DC input voltage	PLC-RSP- 24UC/21-21/RW	2987105	10
PLC-INTERFACE for railway applications, consisting of basic terminal block with spring-cage connection and plug-in miniature relay with power contact, range: 0.7 x UN to 1.25 x UN, temperature class TX: -40 °C to + 70 °C, 2 changeover contacts, 72 V DC input voltage	PLC-RSP- 72UC/21-21/RW	2987121	10
PLC-INTERFACE for railway applications, consisting of basic terminal block with spring-cage connection and plug-in miniature relay with power contact, range: 0.7 x UN to 1.25 x UN, temperature class TX: -40 °C to + 70 °C, 2 changeover contacts, 110 V DC input voltage	PLC-RSP-110UC/21-21/RW	2987147	10
PLC-INTERFACE for railway applications, consisting of basic terminal block with spring-cage connection and plug-in miniature relay with multilayer gold contact, range: 0.7 x UN to 1.25 x UN, temperature class TX: -40 °C to + 70 °C, 2 changeover contacts, 24 V DC input voltage	PLC-RSP- 24UC/21-21AU/RW	2987118	10
PLC-INTERFACE for railway applications, consisting of basic terminal block with spring-cage connection and plug-in miniature relay with multilayer gold contact, range: 0.7 x UN to 1.25 x UN, temperature class TX: -40 °C to + 70 °C, 2 changeover contacts, 72 V DC input voltage	PLC-RSP- 72UC/21-21AU/RW	2987134	10
PLC-INTERFACE for railway applications, consisting of basic terminal block with spring-cage connection and plug-in miniature relay with multilayer gold contact, range: 0.7 x UN to 1.25 x UN, temperature class TX: -40 °C to + 70 °C, 2 changeover contacts, 110 V DC input voltage	PLC-RSP-110UC/21-21AU/RW	2987150	10
PLC-INTERFACE for railway applications and high continuous currents, consisting of basic terminal block with spring-cage connection and plug-in miniature relay, range: 0.7 x UN to 1.25 x UN, temperature class TX: -40 °C to + 70 °C, 1 changeover contact, 24 V DC input voltage	PLC-RSP- 24UC/21HC/RW	2987079	10
PLC-INTERFACE for railway applications and high continuous currents, consisting of basic terminal block with spring-cage connection and plug-in miniature relay, range: 0.7 x UN to 1.25 x UN, temperature class TX: -40 °C to + 70 °C, 1 changeover contact, 72 V DC input voltage	PLC-RSP- 72UC/21HC/RW	2987082	10
PLC-INTERFACE for railway applications and high continuous currents, consisting of basic terminal block with spring-cage connection and plug-in miniature relay, range: 0.7 x UN to 1.25 x UN, temperature class TX: -40 °C to + 70 °C, 1 changeover contact, 110 V DC input voltage	PLC-RSP-110UC/21HC/RW	2987095	10
PLC-INTERFACE for railway applications, consisting of basic terminal block with spring-cage connection and integrated miniature solid-state relay, range: 0.7 x UN to 1.25 x UN, temperature range: -25 °C to + 70 °C, 1 N/O contact, input: 24 V DC, output: 12-140 V DC/3 A	PLC-OSP- 24DC/110DC/ 3RW	2982511	10
PLC-INTERFACE for railway applications, consisting of basic terminal block with spring-cage connection and integrated miniature solid-state relay, range: 0.7 x UN to 1.25 x UN, temperature range: -25 °C to + 70 °C, 1 N/O contact, input: 36 V DC, output: 12-140 V DC/3 A	PLC-OSP- 36DC/110DC/ 3RW	2982524	10
PLC-INTERFACE for railway applications, consisting of basic terminal block with spring-cage connection and integrated miniature solid-state relay, range: 0.7 x UN to 1.25 x UN, temperature range: -25 °C to + 70 °C, 1 N/O contact, input: 48 V DC, output: 12-140 V DC/3 A	PLC-OSP- 48DC/110DC/ 3RW	2982537	10

Description	Type	Order no.	Pcs. / Pkt.
PLC-INTERFACE for railway applications, consisting of basic terminal block with spring-cage connection and integrated miniature solid-state relay, range: 0.7 x UN to 1.25 x UN, temperature range: -25 °C to + 70 °C, 1 N/O contact, input: 72 V DC, output: 12-140 V DC/3 A	PLC-OSP- 72DC/110DC/ 3RW	2982540	10
PLC-INTERFACE for railway applications, consisting of basic terminal block with spring-cage connection and integrated miniature solid-state relay, range: 0.7 x UN to 1.25 x UN, temperature range: -25 °C to + 70 °C, 1 N/O contact, input: 96 V DC, output: 12-140 V DC/3 A	PLC-OSP- 96DC/110DC/ 3RW	2982553	10
PLC-INTERFACE for railway applications, consisting of basic terminal block with spring-cage connection and integrated miniature solid-state relay, range: 0.7 x UN to 1.25 x UN, temperature range: -25 °C to + 70 °C, 1 N/O contact, input: 110 V DC, output: 12-140 V DC/3 A	PLC-OSP-110DC/110DC/ 3RW	2982566	10
PLC-INTERFACE for railway applications, consisting of basic terminal block with spring-cage connection and integrated miniature solid-state relay, range: 0.7 x UN to 1.25 x UN, temperature range: -25 °C to + 70 °C, 1 N/O contact, input: 24 V DC, output: 3-33 V DC/3 A	PLC-OSP- 24DC/ 24DC/ 3RW	2980513	10
PLC-INTERFACE for railway applications, consisting of basic terminal block with spring-cage connection and integrated miniature solid-state relay, range: 0.7 x UN to 1.25 x UN, temperature range: -25 °C to + 70 °C, 1 N/O contact, input: 110 V DC, output: 3-33 V DC/3 A	PLC-OSP-110DC/ 24DC/ 3RW	2980526	10

Accessories

Description	Type	Order no.	Pcs. / Pkt.
Insulating plate, 2 mm thick, required at the start and end of a PLC terminal strip. It is also used for: visual separation of groups, protective isolation of different voltages on adjacent PLC-INTERFACES in acc. with DIN VDE 0106-101, Isolation	PLC-ATP BK	2966841	25

3 Wide-range electronics

The relay modules are equipped with a special wide-range input, which offers the following advantages:

- Control voltage range of 70 % ... 125% of the nominal voltage throughout the entire temperature and load range
- Low self-heating even with increased control voltage
- Broad ambient temperature range of -40 °C ... +70 °C throughout the entire control voltage and load range for electromechanical relays

Moreover, the modules are equipped with an RCZ filter and surge protection circuitry on the input side to ensure a high level of operational safety and interference immunity.

The relay bases are specially designed for applications on rail vehicles which are operated with AC voltage and supplied with operating voltage via contact lines by means of a transformer with a charger and a battery. This series is also distinguished by a high level of resistance to shock and vibration.

4 Switch high loads reliably

The relay modules can switch currents of up to 6 A per contact. And the modules are equipped with either one or two changeover contacts.

The PLC-...HC/RW version is particularly suitable for applications that require a higher limiting continuous current. This version is equipped with a changeover contact and can switch currents of up to 10 A. The relay is dimensioned to even handle short overloads.

5 Efficient connection with system cabling

Another way to significantly reduce the effort involved in wiring is to connect the relay and the controller by means of the system cabling and the corresponding PLC...V8 adapter. Connect the adapter directly in the bridge shafts on the relay module. It can be connected to the controller with a 14-position flat-ribbon cable or a 15-position D-SUB connection. This way, there is no longer any need for time-consuming, error-prone individual wiring.

6 Optimum use of jumpers

Achieve maximum effectiveness with FBST jumpers. They can be used to bridge the connections A1 and A2 on the control side as well as the changeover contact 11 and the N/O contact 14 on the contact side.

The 500 mm jumpers with color-coded insulation can be cut to the required length and inserted into the bridge shafts. Complex wire loop jumpers are no longer needed.