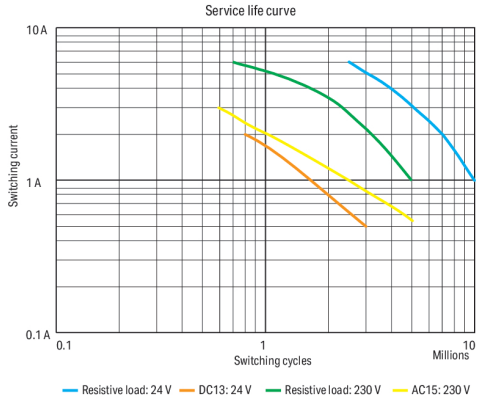

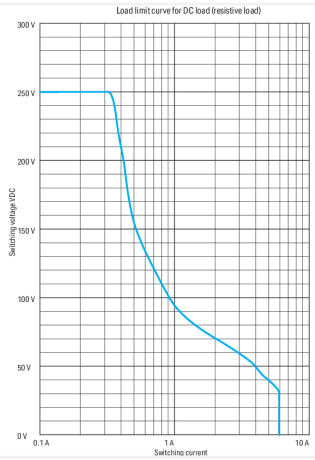

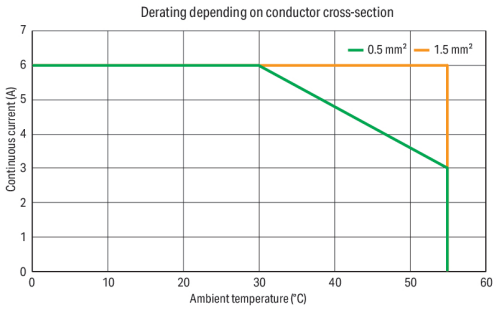

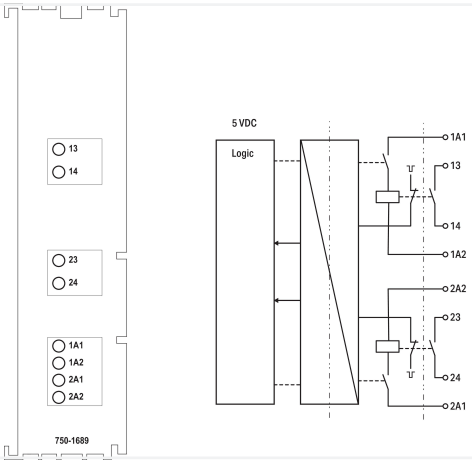

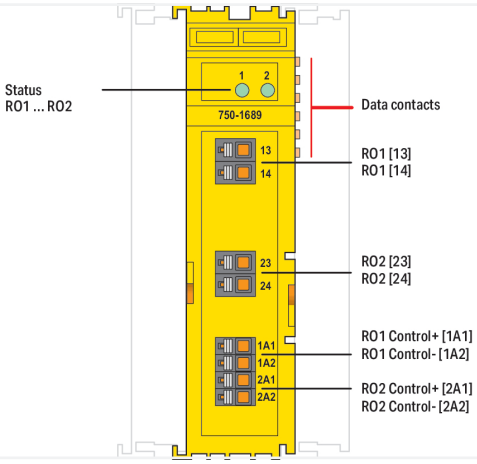

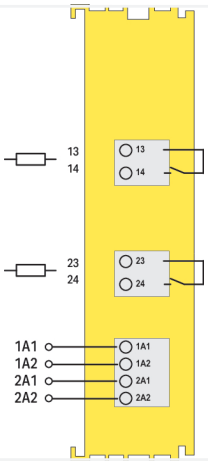

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This module (Item No. 750-1689) features two independently switchable relay outputs (RO1 … RO2) and is particularly suitable for applications that require individually electrically isolated outputs, need to switch high loads, or must be controlled using different voltage types (e.g., DC and AC). The module supports operating voltages up to 250 VAC and 250 VDC.
The electrically isolated outputs can be freely combined with each other, so that Cat.2 or Cat.4 architectures up to SIL3 or PLe are possible. Details on possible wiring options can be found in the product manual.
The relay outputs must be controlled via safe digital outputs (e.g., the outputs of modules 75x-667/000-004, 750-1665/000-004, ...). In addition, a non-safe enable signal for the relay outputs must be provided via the process image.
The status of the safe relay outputs and the temperature of each relay are recorded and transmitted to the controller via the non-safe process image, where they must be evaluated as diagnostics.
The field level and system level are electrically isolated from one another.
Individual safety modules can be arranged in any combination when configuring the fieldbus node.
This module (Item No. 750-1689) was evaluated by UL to UL/CSA 61010-1, UL/CSA 61010-2-201, UL 121201, and CSA-C22.2 No. 213. The functional safety evaluation was performed by TÜV Rheinland in compliance with the specified standards.

Technical data

Indicators	LED (A/B), green: Status RO1 … RO2
Number of F I/O modules per node (fieldbus coupler/controller)	See information in the manual about the respective fieldbus coupler/controller
Supply voltage (system)	5 VDC; via data contacts
Current consumption (5 V system supply)	15 mA

Relay control signals

Signal type	Digital
Cable length (max.)	3 m
Reverse voltage protection	Yes
Input voltage (max.)	24 VDC (-5 … +30 %)
Input current (max.)	15 mA (maximum control current per channel)
Test pulse duration (max.)	1 ms

Relay outputs

Number of digital outputs	2
Output circuit design	2 make contacts; relay
Signal type	Digital
Actuator connection	2 x (2-wire)
Output characteristic	potential-free
Switching voltage (max.)	250 VAC; 250 VDC
Switching power	AC: 0.1 VA … 1500 VA; DC: 200 W; see load limit curve
Output current (per channel)	6 A at 250 VAC (resistive load); 6 A at 31.2 VDC (resistive load); 3 A at 60 VDC (resistive load); 0.8 A at 110 VDC (resistive load); 0.3 A at 250 VDC (resistive load); 2 A at 31.2 VDC (pilot duty); UL: R300 pilot duty per UL508; UL: B300 pilot duty per UL508
Switching capacity	AC-15: 3 A / 250 VAC; DC-13: 2 A / 31.2 VDC
Output current (module)	12 A
Limitation of the inductive switch-off voltage	nein
Drop-out time (typ.)	50 ms
Pull-in time (max.)	10 ms
Short-circuit withstand capacity	1 kA / 250 VAC IEC/EN 60947-5-1
Fuse	A separate external fuse is required for each channel; Current (max.): 10 A, slow-blow; Current (min.): approved for the switching voltage used.
Switching frequency (max.)	1 Hz; Resistive load
Switching frequency (max.) (2)	0.1 Hz; Inductive load
Contact load	2 mA (min.); 10 mA after a single overflow of 300 mA load current or a switching power of 12 W or 12 VA
Diagnostics	Relay status in the process image via force-guided contact
Electrical switching operations (min.) (at max. resistive load)	1 x 10^6 switching operations

 Continued on next page

Relay outputs

Mechanical switching operations (min.) (at max. resistive load)	40 x 10^6 switching operations
Contact material	AgNi + 5 µm Au
B10d values (resistive load)	Resistive load (at 230 VAC); 6 A: 600,000; 3 A: 6,000,000; 2 A: 10,000,000; 1 A: 12,000,000 switching cycles Resistive load (at 24 VDC); 6 A: 4,000,000; 3 A: 10,000,000; 2 A: 14,000,000; 1 A: 20,000,000 switching cycles
B10d (15 AAC)	AC-15 (at 230 VAC); 3 A: 6,000,000; 2 A: 10,000,000; 1 A: 12,000,000; 0.5 A: 20,000,000 switching cycles
B10d (DC 13)	DC-13 (at 24 VDC); 2 A: 4,000,000; 1 A: 8,000,000; 0.5 A: 15,000,000 switching cycles

Safety and protection

System voltage	≤ 250 V
Note on system voltage	The system voltage corresponds to the line-to-neutral voltage derived from conventional mains power supply systems.

Insulation coordination

Overvoltage category	per EN 60664-1: III; per EN/UL 61010-2-201: II
Insulation type	Relay: Reinforced insulation; Channel/Channel: Reinforced insulation; Control/System: Functional insulation

Test voltage

Test voltage	Test voltage (relay): 3.51 kVAC, 50/60 Hz, 1 min; test voltage (control/system): 500 VDC, 1 min.
Rated impulse withstand voltage	6 kV (relay)

Functional Safety

Achievable safety classes	Dual-channel Cat. 4/PL e to EN ISO 13849-1; SIL 3 to IEC 61508 / EN 62061; single-channel Cat. 2/PL d to EN ISO 13849-1; SIL 2 to IEC 61508 / EN 62061
Safety standards	IEC 61508-1 ... -7; EN ISO 13849-1; EN 62061; DIN EN 61810-1, DIN EN 61810-3
Service life	20 years

Connection Data

Connection technology: I/O	8 x Push-in CAGE CLAMP® (outputs)
Connectable conductor materials	Copper
Connection type	Output
Solid conductor	0.14 … 1.5 mm² / 28 … 16 AWG
Fine-stranded conductor; with insulated ferrule	0.25 … 0.75 mm²
Fine-stranded conductor; with uninsulated ferrule	0.25 … 1.5 mm²
Strip length	8 … 9 mm / 0.31 … 0.35 inches

Physical data

Width	24 mm / 0.944 inches
Height	100 mm / 3.937 inches
Depth	69.8 mm / 2.748 inches
Depth from upper-edge of DIN-rail	62.6 mm / 2.465 inches

Continued on next page

Mechanical data

Mounting type	DIN-35 rail
Pluggable connector	fixed

Material data

Housing material	Polycarbonate; polyamide 6.6
Fire load	1.372 MJ
Weight	93.5 g

Environmental requirements

Ambient temperature (operation)	0 … +55 °C
Ambient temperature (storage)	-40 … +85 °C
Protection type	IP20
Pollution degree	2
Protection class	II
Operating altitude	0 … 2000 m / 0 … 6562 ft
Mounting position	Horizontal left, horizontal right, horizontal top, vertical top and vertical bottom
Relative humidity (without condensation)	95 %
Vibration resistance	4g per IEC 60068-2-6
Shock resistance	15g per IEC 60068-2-27
EMC immunity to interference	Per EN 61000-6-2; marine applications; EN 61000-6-7 (FS); EN 61326-3-1:2017
EMC emission of interference	per EN 61000-6-4, marine applications, EN 61000-6-3
Exposure to pollutants	per IEC 60068-2-42 and IEC 60068-2-43
Permissible H_2S contaminant concentration at a relative humidity 75 %	10 ppm
Permissible SO_2 contaminant concentration at a relative humidity 75 %	25 ppm

Conformity marking	CE; UKCA
EU directive	EU Machinery Directive: 2006/42/EC; EU Low Voltage Directive: 2014/35/EU; EU EMC Directive: 2014/30/EU

Commercial data

PU (SPU)	1 pcs
Packaging type	Box
Country of origin	DE
GTIN	4066966764451
Customs tariff number	85371098990

Product Classification

ETIM 9.0	EC001599
ETIM 10.0	EC001599
ECCN	NO US CLASSIFICATION

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Environmental Product Compliance

RoHS Compliance Status	Compliant,No Exemption

Approvals / Certificates

General approvals

Approval	Standard	Certificate Name
UL Underwriters Laboratories Inc. (ORDINARY LOCATIONS)	-	E175199

Declarations of conformity and manufacturer's declarations

Approval	Standard	Certificate Name
EU-Declaration of Conformity WAGO GmbH & Co. KG	-	-

Downloads

Environmental Product Compliance

Compliance Search

Environmental Product Compliance 750-1689

Documentation

Manual

Product manual Fail-safe 2 channel relay output;	2781645579 | 2 | en-US | 2025-09-16 12:27 23.09.2025	pdf 1515.09 KB

CAD/CAE-Data

CAD data

2D/3D Models 750-1689

1 Compatible Products

1.1 Optional Accessories

1.1.1 DIN-rail

1.1.1.1 Mounting accessories

Item No.: 210-196
Aluminum carrier rail; 35 x 8.2 mm; 1.6 mm thick; 2 m long; unslotted; similar to EN 60715; silver-colored

Item No.: 210-198
Copper carrier rail; 35 x 15 mm; 2.3 mm thick; 2 m long; unslotted; according to EN 60715; copper-colored

Item No.: 210-197
Steel carrier rail; 35 x 15 mm; 1.5 mm thick; 2 m long; slotted; similar to EN 60715; silver-colored

Item No.: 210-114
Steel carrier rail; 35 x 15 mm; 1.5 mm thick; 2 m long; unslotted; similar to EN 60715; silver-colored

Item No.: 210-118
Steel carrier rail; 35 x 15 mm; 2.3 mm thick; 2 m long; unslotted; according to EN 60715; silver-colored

Item No.: 210-115
Steel carrier rail; 35 x 7.5 mm; 1 mm thick; 2 m long; slotted; according to EN 60715; "Hole width 18 mm; silver-colored

Item No.: 210-112
Steel carrier rail; 35 x 7.5 mm; 1 mm thick; 2 m long; slotted; according to EN 60715; "Hole width 25 mm; silver-colored

Item No.: 210-113
Steel carrier rail; 35 x 7.5 mm; 1 mm thick; 2 m long; unslotted; according to EN 60715; silver-colored

Continued on next page

1.1.2 Marking

1.1.2.1 Group marker carrier

Item No.: 750-107
Group marker carrier

1.1.2.2 Marker

Item No.: 2009-145/000-006
Mini-WSB Inline; for Smart Printer; 1700 pieces on roll; stretchable 5 - 5.2 mm; plain; snap-on type; blue

Item No.: 2009-145/000-007
Mini-WSB Inline; for Smart Printer; 1700 pieces on roll; stretchable 5 - 5.2 mm; plain; snap-on type; gray

Item No.: 2009-145/000-023
Mini-WSB Inline; for Smart Printer; 1700 pieces on roll; stretchable 5 - 5.2 mm; plain; snap-on type; green

Item No.: 2009-145/000-012
Mini-WSB Inline; for Smart Printer; 1700 pieces on roll; stretchable 5 - 5.2 mm; plain; snap-on type; orange

Item No.: 2009-145/000-005
Mini-WSB Inline; for Smart Printer; 1700 pieces on roll; stretchable 5 - 5.2 mm; plain; snap-on type; red

Item No.: 2009-145/000-024
Mini-WSB Inline; for Smart Printer; 1700 pieces on roll; stretchable 5 - 5.2 mm; plain; snap-on type; violet

Item No.: 2009-145
Mini-WSB Inline; for Smart Printer; 1700 pieces on roll; stretchable 5 - 5.2 mm; plain; snap-on type; white

Item No.: 2009-145/000-002
Mini-WSB Inline; for Smart Printer; 1700 pieces on roll; stretchable 5 - 5.2 mm; plain; snap-on type; yellow

Item No.: 248-501/000-006
Mini-WSB marking card; as card; not stretchable; plain; snap-on type; blue

Item No.: 248-501/000-007
Mini-WSB marking card; as card; not stretchable; plain; snap-on type; gray

Item No.: 248-501/000-023
Mini-WSB marking card; as card; not stretchable; plain; snap-on type; green

Item No.: 248-501/000-017
Mini-WSB marking card; as card; not stretchable; plain; snap-on type; light green

Item No.: 248-501/000-012
Mini-WSB marking card; as card; not stretchable; plain; snap-on type; orange

Item No.: 248-501/000-005
Mini-WSB marking card; as card; not stretchable; plain; snap-on type; red

Item No.: 248-501/000-024
Mini-WSB marking card; as card; not stretchable; plain; snap-on type; violet

Item No.: 248-501
Mini-WSB marking card; as card; not stretchable; plain; snap-on type; white

Item No.: 248-501/000-002
Mini-WSB marking card; as card; not stretchable; plain; snap-on type; yellow

1.1.2.3 Marker carrier

Item No.: 750-103
Group marker carrier

1.1.3 Shield termination

1.1.3.1 Shield clamping saddles

Item No.: 790-108
Shield clamping saddle; 11 mm wide; diameter of compatible conductor; 3 … 8 mm

Item No.: 790-208
Shield clamping saddle; 12.4 mm wide; 3 … 8 mm

Item No.: 790-116
Shield clamping saddle; 19 mm wide; diameter of compatible conductor; 7 … 16 mm

Item No.: 790-216
Shield clamping saddle; 21.8 mm wide; 6 … 16 mm

Item No.: 790-124
Shield clamping saddle; 27 mm wide; diameter of compatible conductor; 6 … 24 mm

Item No.: 790-220
Shield clamping saddle; 30 mm wide; 6 … 20 mm

Item No.: 790-140
Shield clamping saddle; diameter of compatible conductor

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1.1.4 Supply module

1.1.4.1 Supply module

Item No.: 750-612
Power Supply; 0 … 230 V AC/DC

Item No.: 750-602
Power Supply; 24 VDC

Item No.: 750-601
Power Supply; 24 VDC; fuse holder

Item No.: 750-610
Power Supply; 24 VDC; fuse holder; Diagnostics

1.1.5 System enclosure

1.1.5.1 System enclosure

Item No.: 850-825
IP65 enclosure; Aluminium (RAL 7032); WxHxD (160x100x160 mm); 9 x M12, 4 x M20

Item No.: 850-826
IP65 enclosure; Aluminium (RAL 7032); WxHxD (240x100x160 mm); 4 x M20, 4 x M16, 14 x M12 cable grip

Item No.: 850-827
IP65 enclosure; Aluminium (RAL 7032); WxHxD (320x100x160 mm); 4 x M20, 8 x M16, 17 x M12 cable grip

Item No.: 850-828
IP65 enclosure; Aluminium (RAL 7032); WxHxD (480x100x160 mm); 4 x M20, 10 x M16, 35 x M12 cable grip

Item No.: 850-826/002-000
IP65 enclosure; Aluminium (RAL 7035); WxHxD (240x100x160 mm); 4 x M20, 4 x M16, 14 x M12 cable grip

Item No.: 850-827/002-000
IP65 enclosure; Aluminium (RAL 7035); WxHxD (320x100x160 mm); 4 x M20, 8 x M16, 17 x M12 cable grip

Item No.: 850-828/002-000
IP65 enclosure; Aluminium (RAL 7035); WxHxD (480x100x160 mm); 4 x M20, 10 x M16, 35 x M12 cable grip

Item No.: 850-834
IP65 enclosure; Polyester (RAL 7032); WxHxD (164x100x164 mm); 9 x M12, 4 x M20

Item No.: 850-835
IP65 enclosure; Polyester (RAL 7032); WxHxD (244x100x164 mm); 4 x M20, 4 x M16, 14 x M12 cable grip

Item No.: 850-836
IP65 enclosure; Polyester (RAL 7032); WxHxD (324x100x164 mm); 4 x M20, 8 x M16, 17 x M12 cable grip

Item No.: 850-814/002-000
IP65 enclosure; Sheet steel (RAL 7035); WxHxD (200x120x200 mm); without flange plate

Item No.: 850-815/002-000
IP65 enclosure; Sheet steel (RAL 7035); WxHxD (300x120x200 mm); without flange plate

Item No.: 850-816/002-000
IP65 enclosure; Sheet steel (RAL 7035); WxHxD (400x120x200 mm); without flange plate

Item No.: 850-817/002-000
IP65 enclosure; Sheet steel (RAL 7035); WxHxD (600x120x200 mm); without flange plate