



### Main features

- Metal housing, right or bottom cable output
- Protection degrees IP67 and IP69K
- 4 types of integrated cable available
- Versions with M12 connector for safety applications ⊕
- Versions with AMP connector
- 14 contact blocks available
- 36 actuators available

### Markings and quality marks:



IMQ approval: CA02.04562  
 UL approval: E131787  
 CCC approval: 2013010305653520  
 EAC approval: RU C-IT DM94.B.01024

### ⚠ Installation for safety applications:

Use only switches marked with the symbol ⊕ aside the product code. Always connect the safety circuit to the **NC contacts** (normally closed contacts: see "internal connections" on page 122) as stated in **EN 60947-5-1, encl. K, par. 2**. Actuate the switch **at least up to the positive opening travel** shown in the travel diagrams on page 244. Operate the switch **at least with the positive opening force**, indicated between brackets below each article, aside the minimum force value. All applicable standards must be respected.

⚠ **If not expressly indicated in this chapter, for correct installation and utilization of all articles see chapter utilization requirements from page 235 to page 246.**

⚠ **Important: Switch off the circuit voltage before disconnecting the connector from the switch. The connector is not suitable for separation of electrical loads. According to EN 60204-1, 2NO+2NC versions with 8-pin M12 and AMP connector can be used only in PELV circuits.**

### Technical data

#### Housing

Metal housing, baked powder coating, UV resistant  
 Version with integrated cable, standard length 2 m. Other lengths and special cables on request.  
 Versions with integrated M12 connector, 5 or 8 poles  
 Protection degree:

IP67 according to EN 60529  
 IP69K according to ISO 20653  
 (Protect the cables from direct high-pressure and high-temperature jets)  
 ≥ 300 hours in NSS according to ISO 9227

Corrosion resistance in saline mist:

#### General data

Ambient temperature: See table on page 122  
 Max. actuation frequency: 3600 operating cycles<sup>1</sup>/hour  
 Mechanical endurance: 20 million operating cycles<sup>1</sup>  
 Mounting position: any  
 Safety parameters:  
 B<sub>10d</sub>: 40,000,00 for NC contacts  
 Mechanical interlock, not coded: type 1 according to EN ISO 14119  
 Vibration resistance (actuators 0BB, 2KB, 2KC, 2KD): 5 ... 150 Hz (7.9 m/s<sup>2</sup>) according to EN 61373 cl.9  
 Tightening torques for installation: see pages 235-246

(1) One operation cycle means two movements, one to close and one to open contacts, as defined in EN 60947-5-1.

#### Electrical data

Rated impulse withstand voltage (U<sub>imp</sub>): 4 kV  
 Conditional short circuit current: 1000 A according to EN 60947-5-1  
 Pollution degree: 3

#### In conformity with standards:

IEC 60947-5-1, EN 60947-5-1, IEC 60204-1, EN 60204-1, EN ISO 14119, EN ISO 12100, IEC 60529, EN 60529, ISO 20653, UL 508, CSA 22.2 No. 14.

#### In conformity with the requirements of:

Low Voltage Directive 2006/95/EC, Machinery Directive 2006/42/EC and EMC Directive 2004/108/EC.

#### Positive contact opening in conformity with standards:

IEC 60947-5-1, EN 60947-5-1.

### Characteristics approved by IMQ

Rated insulation voltage (Ui): 250 Vac  
 Conventional free air thermal current (Ith): 10 A (1-2 contacts) / 6 A (2-3 contacts)  
 4 A (4 contacts or 5-pin M12 connector)  
 Protection against short circuits (fuse): 10 A (1-2 contacts) / 6 A (2-3 contacts)  
 / 4 A (4 contacts or 5-pin M12 connector), gG type  
 Rated impulse withstand voltage (U<sub>imp</sub>): 4 kV  
 Protection degree of the housing: IP67  
 MA terminals (saddle clamps)  
 Pollution degree: 3  
 Utilization category: AC15 / DC13 (with connector)  
 Operating voltage (Ue): 250 Vac (50 Hz) / 24 Vdc (with connector)  
 Operating current (Ie): 3 A / 2 A (with connector)  
 Forms of the contact element: X, Y, X+Y, X+X, Y+Y, Y+Y+X, X+X+Y, X+X+Y+Y, Zb  
 Positive opening of contacts on contact blocks B01, B11, B02, B12, B21, B22, G01, G11, G02, G12, G21, G22, L01, L11, L02, L12, L21, L22, H01, H11, H02, H12, H21, H22  
 In conformity with standards: EN 60947-1, EN 60947-5-1 + A1:2009, fundamental requirements of the Low Voltage Directive 2006/95/EC.

Please contact our technical service for the list of approved products.

### Characteristics approved by UL

Utilization categories R300 pilot duty (28 VA, 125-250 Vdc)  
 B300 pilot duty (360 VA, 120-240 Vac) (1-2-3 cont.)  
 C300 pilot duty (180 VA, 120-240 Vac) (4 cont.)  
 Data of housing type 1, 4X "indoor use only"; 12.  
 Housing data for versions with 1-2 contacts and type N cable type 1, 4X "indoor use only"  
 In conformity with standard: UL 508, CSA 22.2 No. 14

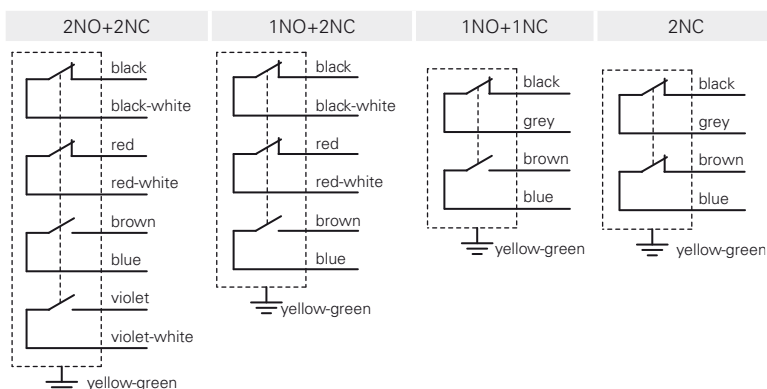
Please contact our technical service for the list of approved products.



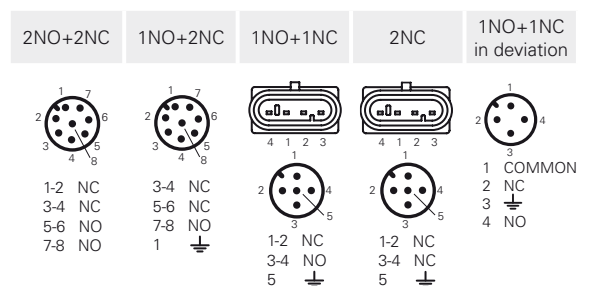
## Utilization temperatures and electrical data

Output with cable										Output with M12 connector		Output with AMP connector
Versions with 2 contacts				Versions with 3 contacts		Versions with 4 contacts				Versions with 2 contacts	Versions with 3/4 contacts	Versions with 2 contacts
Cable type N 5x0.75 mm <sup>2</sup> ,	Cable type G 5x0.75 mm <sup>2</sup> ,	Cable type H 5x0.75 mm <sup>2</sup> ,	Cable type R 5x0.5 mm <sup>2</sup>	Cable type N 7x0.5 mm <sup>2</sup>	Cable type H 7x0.5 mm <sup>2</sup> ,	Cable type N 9x0.34 mm <sup>2</sup>	Cable type R 9x0.5 mm <sup>2</sup>			M12 connector 5 poles	M12 connector 8 poles	AMP super-seal 1.5 connector
Sheath PVC 05VV-F, Self-extinguishing: IEC 60332-1-2 IEC 60332-1-3	Sheath PVC S05VV-F, Self-extinguishing: IEC 60332-1-2 IEC 60332-1-3 IEC 60332-3 CEI 20-22 II	Max. speed 100 m/min Max. acceleration 2 m/s <sup>2</sup> PUR sheath HALOGEN FREE Self-extinguishing: IEC 60332-1-2 IEC 60332-1-3	Cable for railway applications EN50306-4 1E-300V-5x0.5 mm <sup>2</sup> MM-90 Cable in conformity with standards: EN 50306-4 EN 45555 Self-extinguishing: IEC 60332-1 EN 50305 EN 50306-1	Sheath PVC 03VV-F, self-extinguishing: IEC 60332-1-2 IEC 60332-1-3	Max. speed 300 m/min Max. acceleration 25 m/s <sup>2</sup> PUR sheath HALOGEN FREE Self-extinguishing: IEC 60332-1-2 IEC 60332-1-3	Sheath PVC 03VV-F, self-extinguishing: IEC 60332-1-2 IEC 60332-1-3	Cable for railway applications EN50306-4 1P-300V-9x0.5 mm <sup>2</sup> MM-90 Cable in conformity with standards: EN 50306-4 EN 45555 Self-extinguishing: IEC 60332-1 EN 50305 EN 50306-1					
Minimum bending radius: 72 mm	Minimum bending radius: 72 mm	Minimum bending radius: 70 mm Without halogen Oil resistant IEC 60811-2-1	Minimum bending radius: 60 mm	Minimum bending radius: 108 mm	Minimum bending radius: 108 mm Without halogen Oil resistant IEC 60811-2-1	Minimum bending radius: 94 mm	Minimum bending radius: 60 mm					
External diameter: 8 mm	External diameter: 8 mm	External diameter: 8 mm	External diameter: 6 mm	External diameter: 7 mm	External diameter: 7 mm	External diameter: 7 mm	External diameter: 6,5 mm					
Stripped end: 80 mm	Stripped end: 80 mm	Stripped end: 80 mm	Stripped end: 80 mm	Stripped end: 80 mm	Stripped end: 80 mm	Stripped end: 80 mm	Stripped end: 80 mm					
Class 5 copper IEC 60228	Class 5 copper IEC 60228	IEC 60228 class 6 copper	Class 5 copper IEC 60228	Class 5 copper IEC 60228	Class 6 copper IEC 60228	Class 5 copper IEC 60228	Class 5 copper IEC 60228					
Ambient temperature standard extended (-T <sub>6</sub> )	Cable fixed installation	-25 °C ... +70 °C -25 °C ... +70 °C -25 °C ... +80 °C -25 °C +80 °C -25 °C ... +80 °C -25 °C ... +80 °C -25 °C ... +80 °C -25 °C +80 °C										
	Cable flexible installation	+5 °C ... +70 °C +5 °C ... +70 °C -25 °C ... +80 °C -25 °C +80 °C -5 °C ... +80 °C -25 °C ... +80 °C -5 °C ... +80 °C -25 °C +80 °C								-25 °C ... +80 °C		
	Cable mobile installation	/	/	-25 °C ... +80 °C	/	/	-25 °C ... +80 °C	/	/			
	Cable fixed installation	/	/	-40 °C ... +80 °C -40 °C ... +80 °C	/	/	-40 °C ... +80 °C	/	-40 °C +80 °C			
	Cable flexible installation	/	/	-40 °C ... +80 °C -40 °C ... +80 °C	/	/	-30 °C ... +80 °C	/	-40 °C +80 °C	-40 °C ... +80 °C		
	Cable mobile installation	/	/	-40 °C ... +80 °C	/	/	-30 °C ... +80 °C	/	/			
Electrical data	Thermal current I <sub>th</sub>	10 A	10 A	10 A	6 A	6 A	6 A	3 A	4 A	4 A	2 A	10 A
	Rated insulation voltage U <sub>i</sub>	250 Vac	250 Vac	250 Vac	250 Vac	250 Vac	250 Vac	250 Vac	250 Vac	250 Vac 300 Vdc	30 Vac 36 Vdc	250 Vac 300 Vdc
	Protection against short circuits (fuse)	10 A 500 V type gG	10 A 500 V type gG	10 A 500 V type gG	6 A 500 V type gG	6 A 500 V type gG	6 A 500 V type gG	3 A 500 V type gG	4 A 500 V type gG	4 A 500 V type gG	2 A 500 V type gG	10 A 500 V type gG
	Utilization category DC13	24 V	2 A	2 A	2 A	2 A	2 A	2 A	2 A	2 A	2 A	2 A
	125 V	0.4 A	0.4 A	0.4 A	0.4 A	0.4 A	0.4 A	0.4 A	0.4 A	0.4 A	/	0.4 A
	250 V	0.3 A	0.3 A	0.3 A	0.3 A	0.3 A	0.3 A	0.3 A	0.3 A	0.3 A	/	0.3 A
Utilization category AC15	24 V	4 A	4 A	4 A	4 A	4 A	4 A	3 A	4 A	4 A	2 A	4 A
	120 V	4 A	4 A	4 A	4 A	4 A	4 A	3 A	4 A	4 A	/	4 A
	250 V	4 A	4 A	4 A	4 A	4 A	4 A	3 A	4 A	4 A	/	4 A
Approvals		CE cULus IMQ EAC CCC	CE EAC CCC	CE cULus IMQ EAC CCC	CE IMQ EAC CCC	CE cULus IMQ EAC CCC	CE cULus IMQ EAC CCC	CE cULus IMQ EAC CCC	CE IMQ EAC CCC	CE cULus IMQ EAC CCC	CE cULus EAC CCC	CE cULus EAC CCC

### Internal connections of the cable



### Internal connections of the connector



Female connectors See page 226