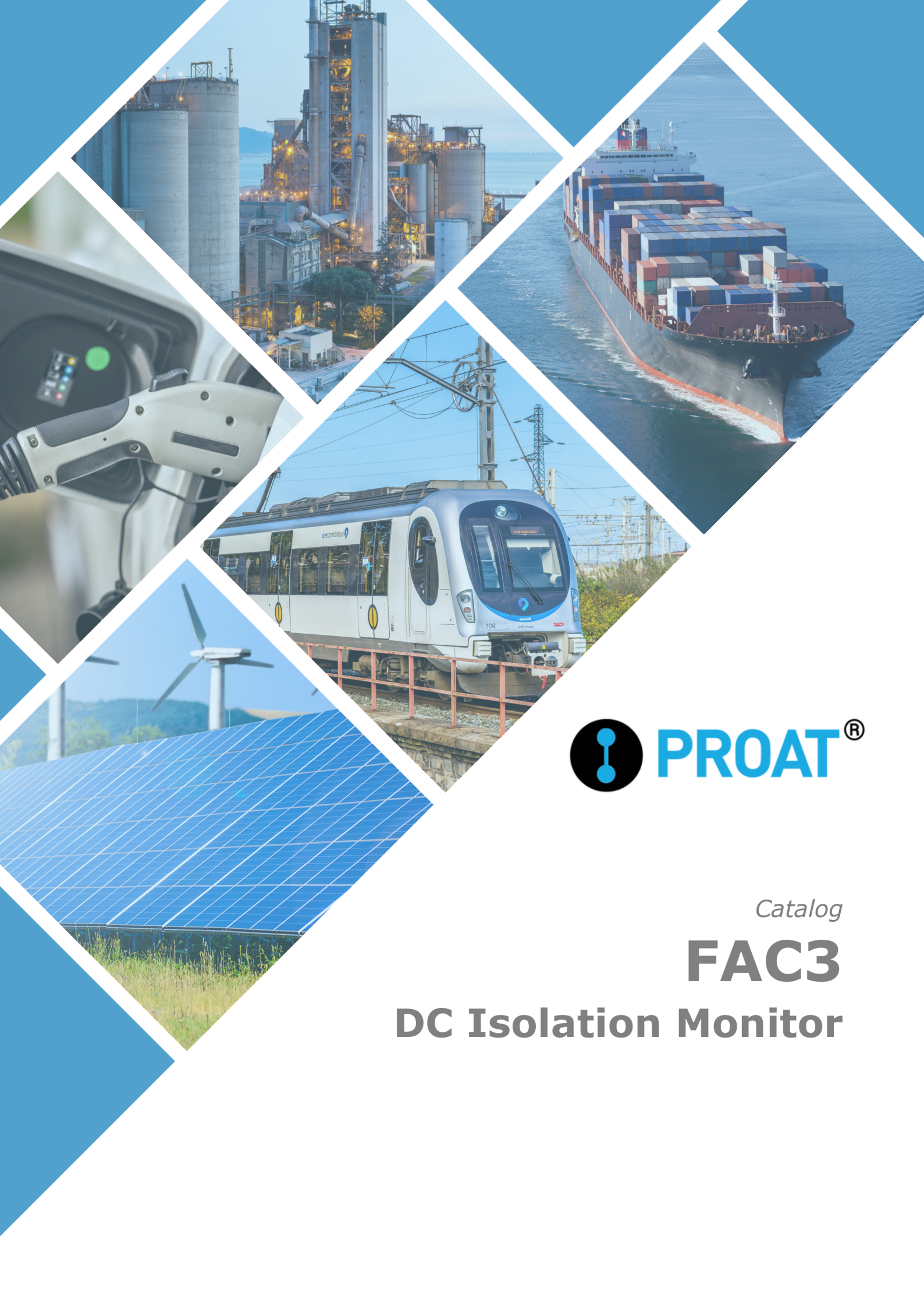




Catalog

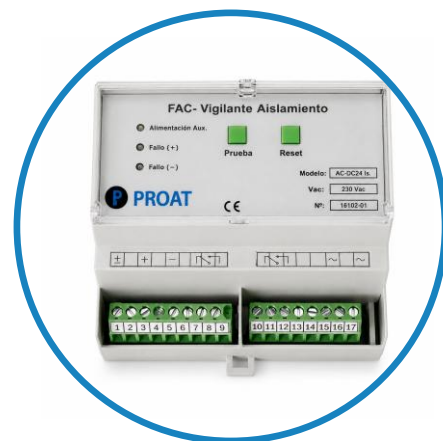
FAC3

DC Isolation Monitor

FAC3

DC Insulation Monitoring Device with Automatic Reset

- ✓ Detects insulation faults of the (+) and (-) conductors with respect to earth
- ✓ **2 output relays** with potential-free changeover contacts
- ✓ Available Outputs:
 - **Type C** – Timed changeover contact from 1 to 4 seconds depending on model
 - **Type I** – 250 ms pulse output
- ✓ Configurable **alarm threshold** from 10 to 80 kΩ
- ✓ **Automatic reset** configurable from 1 to 60 minutes depending on model
- ✓ For IT systems from **200 V_{DC}** – **1500 V_{DC}** depending on model
- ✓ Modbus **communications** depending on model



Applications

Monitoring of possible earth faults in **isolated DC IT systems**:

- Electrical installations isolated from earth
- Photovoltaic installations
- Battery systems
- Power conversion systems with rectifiers and inverters



Available Outputs

Type Output	Relay	No Insulation Fault	With Insulation Fault	After Reset
C	Relay 1	Energized	Instantaneous de-energization	Delayed energization
C	Relay 2	De-energized	Delayed energization	Instantaneous de-energization
I	Relay 1	De-energized	250 ms pulse	De-energized
I	Relay 2	De-energized	De-energized	250 ms pulse

Functional Features

- 2 output relays with potential-free changeover contacts
- Automatic reset time configurable from 1 to 60 minutes
- Configurable alarm threshold:
 - **Models without Modbus:** adjustment from 10 to 80 k Ω using a potentiometer
 - **Models with Modbus:** selector setting at 10 or 80 k Ω or configuration via Modbus from 10 to 80 k Ω
- Button **TEST** to simulate connection of (+) and (-) to earth
- Button **RESET** to **reset** the device and clear the fault
- LEDs for fault indication
- Electrically isolated RS-485 interface with Modbus RTU protocol depending on model:
 - Instantaneous insulation measurement
 - Relay status
 - Parameter reading

Models

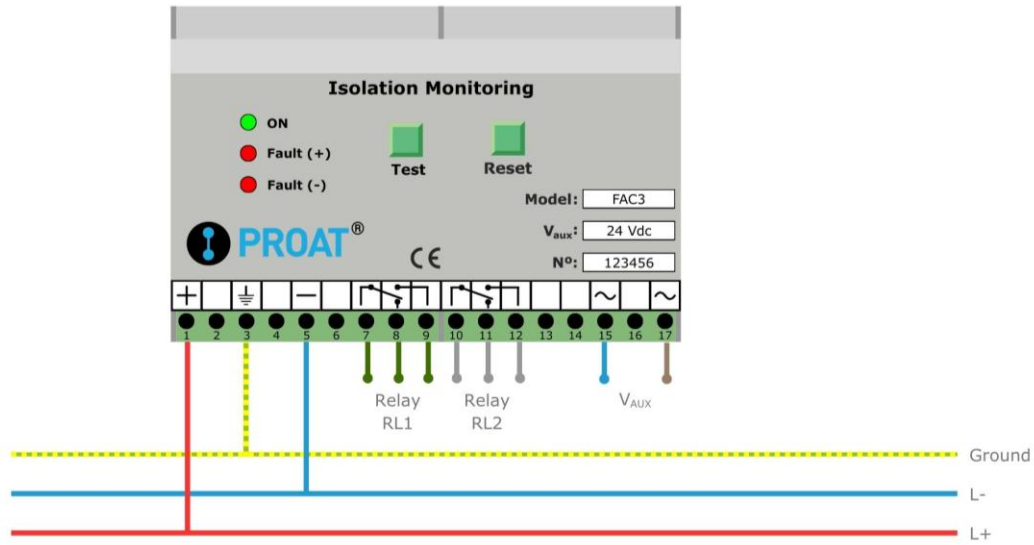
Model	Voltage	Operating Range	Alarm Threshold	Auxiliary Supply	DIN Size	Communications
FAC3-400-C	400 V _{DC}	200-400 V _{DC}	10-80 k Ω	230 V _{AC}	6M – 106 mm	-
FAC3-400-C-24	400 V _{DC}	200-400 V _{DC}	10-80 k Ω	24 V _{DC}	6M – 106 mm	-
FAC3-600-C	600 V _{DC}	300-600 V _{DC}	10-80 k Ω	230 V _{AC}	6M – 106 mm	-
FAC3-600-C-24	600 V _{DC}	300-600 V _{DC}	10-80 k Ω	24 V _{DC}	6M – 106 mm	-
FAC3-800-C	800 V _{DC}	400-800 V _{DC}	10-80 k Ω	230 V _{AC}	6M – 106 mm	-
FAC3-800-C-24	800 V _{DC}	400-800 V _{DC}	10-80 k Ω	24 V _{DC}	6M – 106 mm	-
FAC3-900-C	900 V _{DC}	450-900 V _{DC}	10-80 k Ω	230 V _{AC}	6M – 106 mm	-
FAC3-900-C-24	900 V _{DC}	450-900 V _{DC}	10-80 k Ω	24 V _{DC}	6M – 106 mm	-
FAC3-1000-C	1000 V _{DC}	500-1000 V _{DC}	10-80 k Ω	230 V _{AC}	6M – 106 mm	-
FAC3-1000-C-24	1000 V _{DC}	500-1000 V _{DC}	10-80 k Ω	24 V _{DC}	6M – 106 mm	-
FAC3-1500-CM	1500 V _{DC}	450-1500 V _{DC}	10-80 k Ω	230 V _{AC}	9M – 160 mm	Modbus RTU
FAC3-1500-CM-24	1500 V _{DC}	450-1500 V _{DC}	10-80 k Ω	24 V _{DC}	9M – 160 mm	Modbus RTU

Tropicalized version available by adding suffix -T

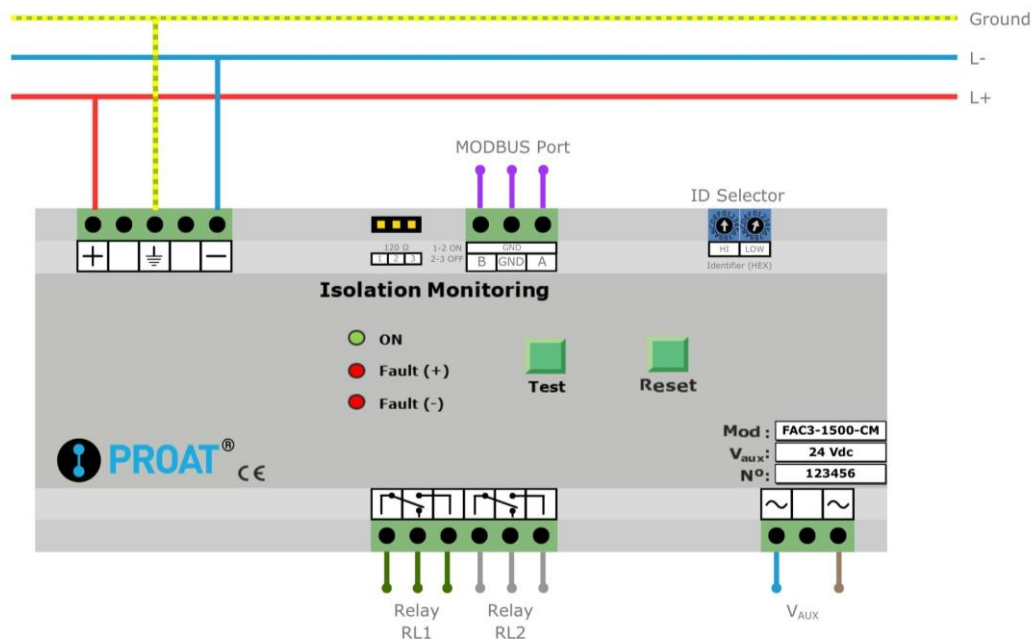
Type I output available for all models

*Other models can be manufactured on request

Wiring FAC3-400/600/800/900/1000

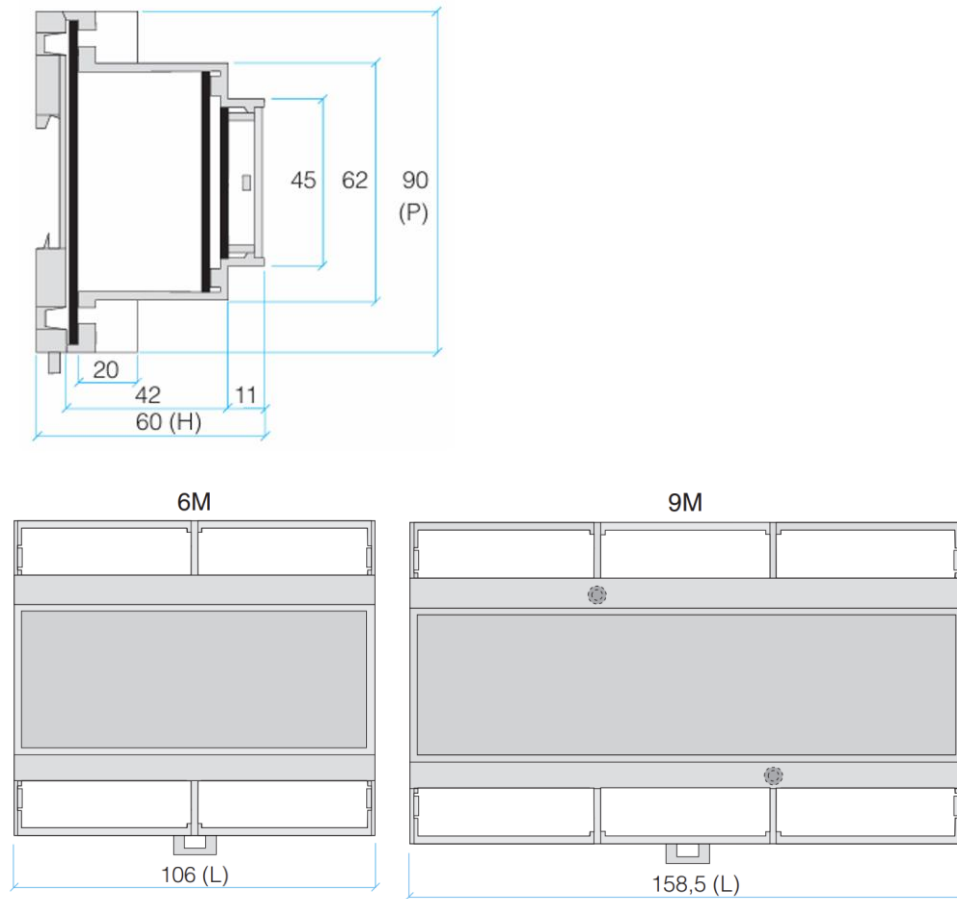


Wiring FAC3-1500-CM



Construction Features

- DIN rail mounting
- Connection terminals accessible from the front
- Self-extinguishing plastic enclosure, UL 94 V-0 classification



Technical Data

MODEL	FAC3-400/1000	FAC3-1500
Voltage range		
Monitoring voltage UN	$0.5 \cdot U_N - U_N$	$0.3 \cdot U_N - U_N$
Auxiliary supply VAUX	24 V _{DC} 230 V _{AC}	24 V _{DC} 230 V _{AC}
Standby power consumption	≤0.5 W	≤0.5 W
Maximum power consumption	≤6 W	≤12 W
Response values		
Alarm Threshold	10 - 80 kΩ	10 - 80 kΩ
Measurement error	±10%	±10%
Response time TR	< 1 s	< 1 s
RL1-RL2 delay	1-4 s	1-2 s
Reset time	1-60 minutes	1-2 minutes
Factory settings		
Alarm Threshold	80 kΩ	80 kΩ
Reset time	1 minute	1 minute
RL1-RL2 delay	1 s	1 s
ID Modbus	-	1
Measuring circuit		
Maximum voltage UN	U _N +10%	U _N +10%
Internal resistance R+	1 MΩ	1 MΩ
Internal resistance R-	1 MΩ	1 MΩ
Earth impedance	> 500 kΩ	> 750 kΩ
Parasitic capacitance	< 500 μF	< 500 μF
Front Panel		
ON	Green LED	Green LED
Fault (+)	Red LED	Red LED
Fault (-)	Red LED	Red LED
TEST button	Yes	Yes
RESET button	Yes	Yes
Dielectric test		
VDC input – VAUX	3 kV _{RMS} – 1 min	3 kV _{RMS} – 1 min
VDC input - Output contacts	3 kV _{RMS} – 1 min	3 kV _{RMS} – 1 min
VAUX – Output contacts	3 kV _{RMS} – 1 min	3 kV _{RMS} – 1 min
Communications		
Interface	-	RS-485
Protocol	-	Modbus RTU
Port settings	-	19200, 8, N, 1
Modbus ID	-	1-240
Available functions	-	3, 4
Operation	-	Server
Cable length (m)	-	< 1200
Connection	-	A/B terminals

Switching elements	
Number of switching elements	2
Output type	Changeover contact
Outputs	Potential-free
Maximum AC load	250V _{AC} 2 A
Maximum DC load	300V _{DC} 0,1 A
Relay switching time	< 10 ms
Service life, number of cycles	20 000 000

General	
Operating mode	Continuous
Mounting	DIN rail
Connection	M2.5 screw
Tightening torque	≤ 0.4 Nm
Degree of protection	IP20
Flammability	UL94V-0
Weight	310 g
Operating temperature	-20°C to +55°C
Storage temperature	-25°C to +80°C
Relative humidity (non-condensing)	< 95%
Setting method	Front access

Standards	
Electrical safety requirements	UNE-EN 61010-1 UNE-EN 61010-2-081
Electromagnetic compatibility (EMC)	UNE-EN 61000-6-1 UNE-EN 61000-6-3/A1
European Directives	2014/35/UE 2014/30/UE
Standard	IEC-61557-8