

PROAT®

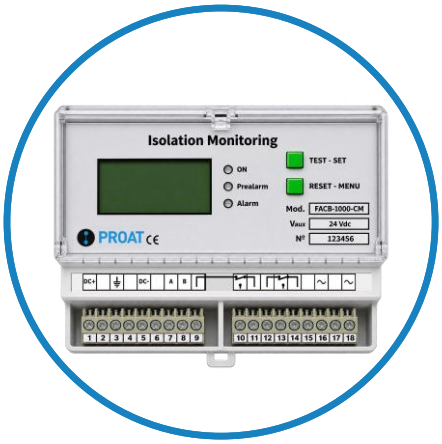
Catalog

FACB

DC Isolation Monitor

FACB

DC Insulation Monitoring Device with Automatic Reset and Real-Time Display



✓ **Detects symmetrical and asymmetrical insulation faults** on the (+) and (-) conductors with respect to earth

✓ **2 independent potential-free** changeover output contacts, with programmable actuation levels and time delays: pre-alarm and alarm

✓ **Pre-alarm**: actuation level from 1 MΩ to 8 MΩ and actuation delay of 0-30 seconds

✓ **Alarm**: actuation level from 100 kΩ to 1 MΩ and actuation delay of 0-30 seconds

✓ **Automatic reset** configurable from 1 to 60 minutes

✓ **Real-time display** of the installation insulation level. Measurement range from 1 kΩ to 10 MΩ

✓ For IT systems from **38 V_{DC} – 1500 V_{DC}** depending on model

✓ **Modbus communications**

Applications

Monitoring of possible earth faults in unearthed DC IT systems:

- Unearthed electrical installations
- Photovoltaic installations
- Electric vehicle charging systems
- Battery systems
- Power conversion systems with rectifiers and inverters



Functional Features

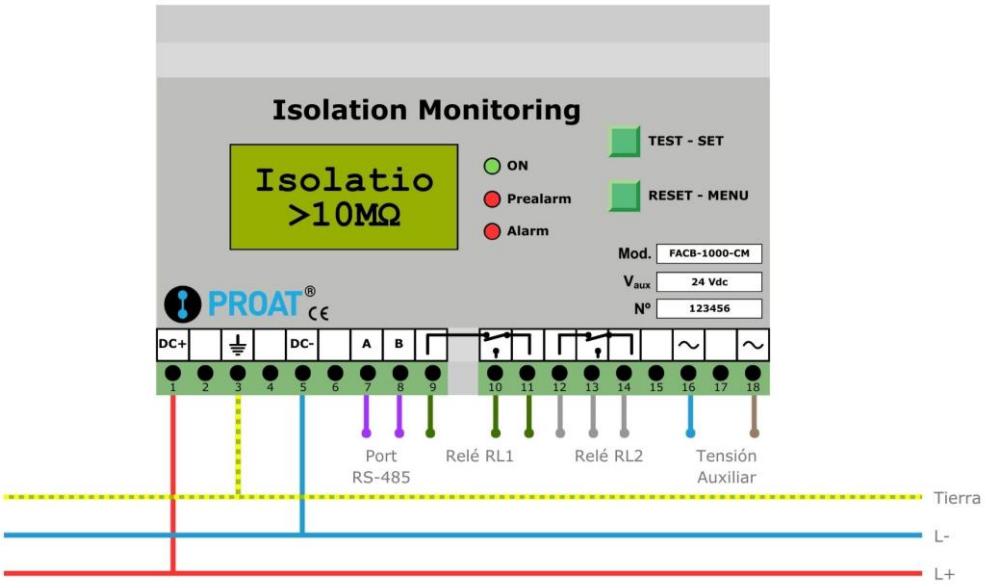
- 2 output relays with independent potential-free changeover contacts, with programmable actuation levels and time delays: pre-alarm and alarm
- Programming of setting values using the **SET-MENU** buttons on the front panel:
  - Pre-alarm actuation level
  - Alarm actuation level
  - Pre-alarm time delay
  - Alarm time delay
  - Automatic reset time
  - Alarm memory – Yes/No
  - Modbus ID
  - Language: Spanish/English
- Real-time display of insulation resistance
- 2 × 8-character front LCD display
- TEST button to simulate an earth fault on (+) and (-)
- RESET button to reset the device and clear the fault
- LEDs for pre-alarm and alarm fault indication
- Electrically isolated RS-485 interface with Modbus RTU protocol depending on model:
  - Instantaneous insulation measurement
  - Relay status
  - View Modbus map

Models

Model	Nominal Voltage U_N	Operating Range	Alarm Threshold	Auxiliary Supply	DIN Size	Communications
FACB-125-CM	125 V_{DC}	38-150 V_{DC}	100 kΩ - 1 MΩ	86-264 V_{AC} | 96-370 V_{DC}	6M – 106 mm	Modbus RTU
FACB-125-CM-24	125 V_{DC}	38-150 V_{DC}	100 kΩ - 1 MΩ	24 V_{DC}	6M – 106 mm	Modbus RTU
FACB-600-CM	600 V_{DC}	180-600 V_{DC}	100 kΩ - 1 MΩ	86-264 V_{AC} | 96-370 V_{DC}	6M – 106 mm	Modbus RTU
FACB-600-CM-24	600 V_{DC}	180-600 V_{DC}	100 kΩ - 1 MΩ	24 V_{DC}	6M – 106 mm	Modbus RTU
FACB-800-CM	800 V_{DC}	240-800 V_{DC}	100 kΩ - 1 MΩ	86-264 V_{AC} | 96-370 V_{DC}	6M – 106 mm	Modbus RTU
FACB-800-CM-24	800 V_{DC}	240-800 V_{DC}	100 kΩ - 1 MΩ	24 V_{DC}	6M – 106 mm	Modbus RTU
FACB-1000-CM	1000 V_{DC}	300-1000 V_{DC}	100 kΩ - 1 MΩ	86-264 V_{AC} | 96-370 V_{DC}	6M – 106 mm	Modbus RTU
FACB-1000-CM-24	1000 V_{DC}	300-1000 V_{DC}	100 kΩ - 1 MΩ	24 V_{DC}	6M – 106 mm	Modbus RTU
FACB-1500-CM	1500 V_{DC}	450-1500 V_{DC}	100 kΩ - 1 MΩ	86-264 V_{AC} | 96-370 V_{DC}	9M – 160 mm	Modbus RTU
FACB-1500-CM-24	1500 V_{DC}	450-1500 V_{DC}	100 kΩ - 1 MΩ	24 V_{DC}	9M – 160 mm	Modbus RTU

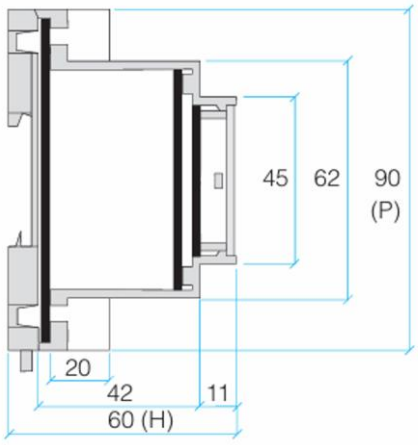
*Other models can be manufactured on request

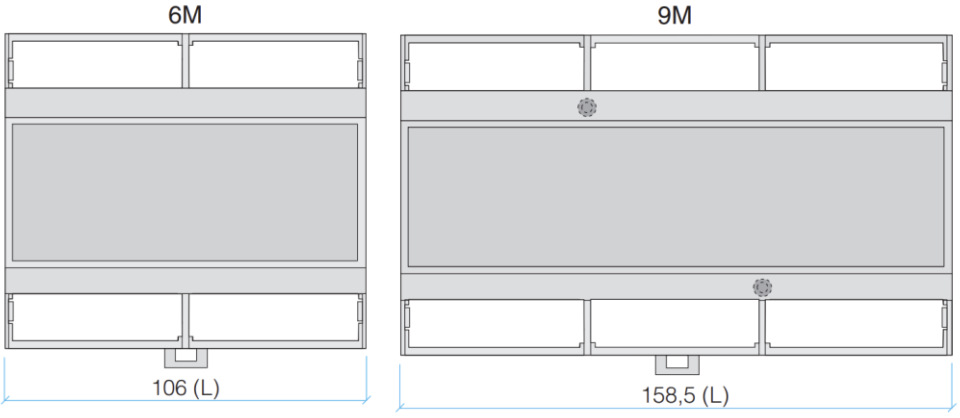
Wiring



Construction Features

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





Technical Data

MODEL	FACB
Voltage range	
Monitoring voltage U_N	**0.3*U_N - U_N**
Auxiliary supply V_{AUX}	86 – 264 V_{AC} 96 – 370 V_{DC} 24 V_{DC}
Standby power consumption	≤ 1 W
Maximum power consumption	≤ 12 W
Response values	
Pre-alarm level	**1 - 8 MΩ**
Alarm Threshold	**100 kΩ - 1 MΩ**
Measurement range	1 kΩ - 10 MΩ
Measurement error	±10 %
Pre-alarm time delay	0-30 s
Alarm time delay	0-30 s
Reset time	1-60 min
Factory settings	
Pre-alarm level	1 MΩ
Alarm Threshold	150 kΩ
Pre-alarm time delay	10 s
Alarm time delay	5 s
Reset time	1 min
Modbus ID	1
Alarm memory	Yes
Measuring circuit	
Maximum voltage U_N	U_N + 10%
Internal resistance R+	2.1 MΩ
Internal resistance R-	2.1 MΩ
Earth impedance	> 750 KΩ
Parasitic capacitance	< 5 µF
Type of faults detected	Symmetrical and asymmetrical
Front Panel	
ON	Green LED
Pre-alarm	Red LED
Alarm	Red LED
TEST button	Yes
RESET button	Yes
Display	LCD 2 × 8 characters
Displayed value	Insulation level
Dielectric test	
V_{DC} input – V_{AUX}	3 kV_{RMS} – 1 min
VDC input - Output contacts	3 kV_{RMS} – 1 min
VAUX – Output contacts	3 kV_{RMS} – 1 min

Switching elements	
Number of switching elements	2
Output type	Changeover contact
Outputs	Potential-free
Maximum AC load	250 V_{AC} 2 A
Maximum DC load	300 V_{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	350 g
Operating temperature	-5ºC to +60ºC
Storage temperature	-20ºC to +80ºC
Relative humidity (non-condensing)	< 95%
Setting method	Front selection
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
Communications	
Interface	RS-485
Protocol	Modbus RTU
Port parameters	9600, 8, N, 1
Modbus ID	1-248
Available functions	3, 4
Operation	Server
Cable length (m)	<1200
Connection	A/B terminals