FACB

DC Isolation Monitor with Automatic Reset and Real-Time Display

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

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

✓ **Pre-alarm:** actuation level of 1 - 8 MΩ and actuation delay of 10-30 seconds

✓ **Alarm**: actuation level of 100 kΩ - 8 MΩ and actuation delay of 10-30 seconds

✓ Alarm with **automatic reset** configurable between 1-60 minutes

✓ **Real-time display** of the installation's insulation level. Measurement range: 1 kΩ - 10 MΩ

✓ For IT systems of **$180V_{DC}$ - $1500V_{DC}$** depending on the model

✓ **Modbus** Communications

Applications

Monitoring for possible ground faults in IT DC systems isolated from ground:

- Electrical installations isolated from earth
- Photovoltaic installations
- Electric car chargers
- Battery systems
- Systems with power conversion for components with rectifiers and inverters

Pol. Ind. Can Tapioles c/Narcís Monturiol, 4 nave 10, 08110 Montcada-Reixac (Barcelona) SPAIN
Tel. +34 935790610 · comercial@proat.es · www.proat.es
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Function Features

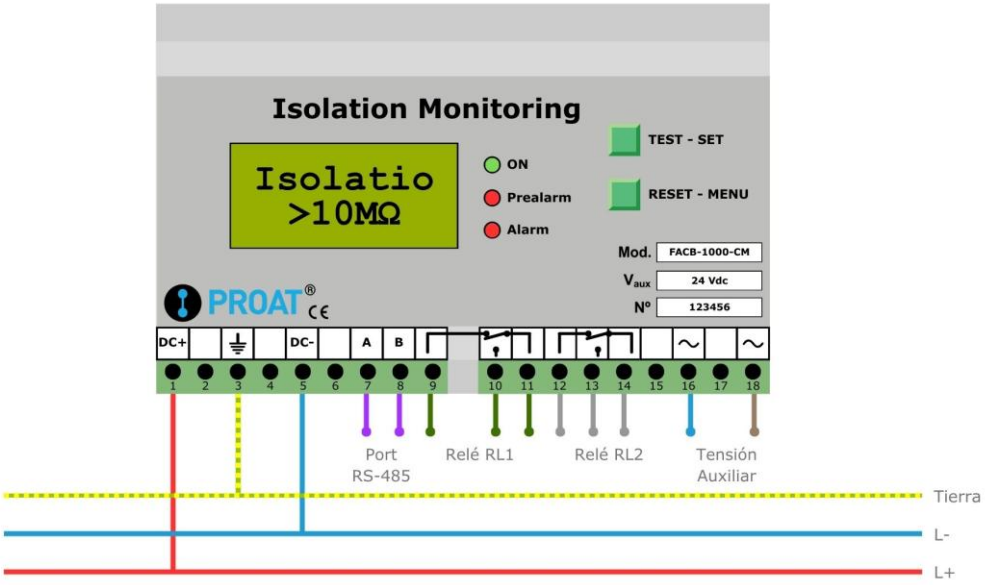
- 2 output relays with independent potential-free changeover contacts, with programmable actuation levels and timings: Pre-alarm and Alarm
- Programming adjustment values using the SET-MENU buttons on the front of the device:
  - Pre-alarm action level
  - Alarm action level
  - Pre-alarm timing
  - Alarm Timing
  - Automatic Reset Time
  - Alarm Memory – Yes/No
  - ID Modbus
  - Language: Spanish/English
- Real-time display of ground resistance measurement
- Front Display 2x8 characters
- **TEST** button to simulate ground fault (+) and (-)
- **RESET** button to restart the equipment and clear the fault
- LEDs to signal Pre-alarm and Alarm faults
- Electrically isolated RS-485 interface with Modbus-RTU protocol depending on the model:
  - Instant isolation measure
  - Relay Status
  - View ModBus map

Models

Model	Nominal Voltage U_N	Operating Range	Alarm level	Power Voltage	DIN size	Communications
FACB-600-CM	600 V_{DC}	180-600 V_{DC}	100 kΩ - 1 MΩ	86-264V_{AC} | 96-370V_{DC}	6M - 106mm	ModBus-RTU
FACB-600-CM-24	600 V_{DC}	180-600 V_{DC}	100 kΩ - 1 MΩ	24 V_{DC}	6M - 106mm	ModBus-RTU
FACB-800-CM	800 V_{DC}	240-800 V_{DC}	100 kΩ - 1 MΩ	86-264V_{AC} | 96-370V_{DC}	6M - 106mm	ModBus-RTU
FACB-800-CM-24	800 V_{DC}	240-800 V_{DC}	100 kΩ - 1 MΩ	24 V_{DC}	6M - 106mm	ModBus-RTU
FACB-1000-CM	1000 V_{DC}	300-1000 V_{DC}	100 kΩ - 1 MΩ	86-264V_{AC} | 96-370V_{DC}	6M - 106mm	ModBus-RTU
FACB-1000-CM-24	1000 V_{DC}	300-1000 V_{DC}	100 kΩ - 1 MΩ	24 V_{DC}	6M - 106mm	ModBus-RTU
FACB-1500-CM	1500 V_{DC}	450-1500 V_{DC}	100 kΩ - 1 MΩ	86-264V_{AC} | 96-370V_{DC}	9M - 160mm	ModBus-RTU
FACB-1500-CM-24	1500 V_{DC}	450-1500 V_{DC}	100 kΩ - 1 MΩ	24 V_{DC}	9M - 160mm	ModBus-RTU

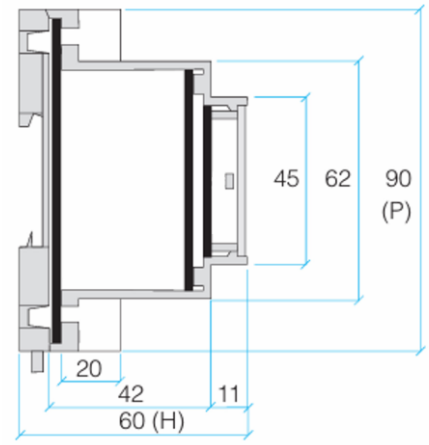
* Other models can be manufactured upon request.

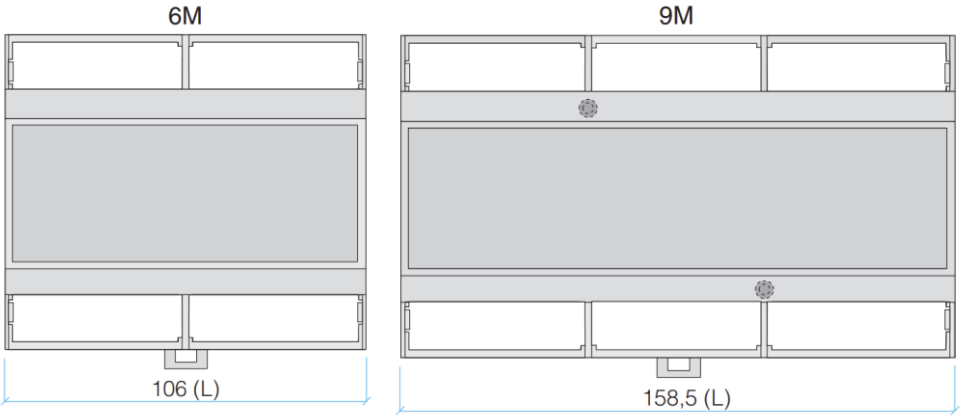
Wiring



Constructive Features

- DIN rail mounting
- Front plate terminals
- Class VO self-extinguishing plastic enclosure





Technical Data

MODELO	FACB
Voltage Range	
Voltage Range U_N	**0,3*U_N - U_N**
Auxiliary Voltage V_{AUX}	86 – 264 V_{AC} 96 – 307 V_{DC} 24 V_{DC}
Consumption at rest	≤1W
Maximum consumption	≤12W
Response Values	
Pre-Alarm Level	**1 - 8 MΩ**
Alarm Level	**100 kΩ - 1 MΩ**
Measurement Range	1 kΩ - 10 MΩ
Measurement error	±10 %
Pre-alarm timing	10-30 s
Alarm Timing	10-30 s
Auto-Reset time	1-60 min
Factory settings	
Pre-Alarm Level	1 MΩ
Alarm Level	150 kΩ
Pre-alarm timing	10 seg.
Alarm Timing	5 seg.
Auto-Reset time	1 min.
ID Modbus	1
Alarm Memory	Si
Measuring Circuit	
Max voltage U_N	U_N + 10%
Internal resistance R+	2,1 MΩ
Internal resistance R-	2,1 MΩ
Ground impedance	>750 KΩ
Max parasitic capacitance	<5uF
Type of faults detected	Symmetrical and Asymmetrical
Front View	
ON	Green led
Pre-Alarm	Red led
Alarm	Red led
Test button	Si
Reset button	Si
Screen	LCD 2x8 charac.
Display	Isolation level
Dielectric Test	
V_{DC} Input – V_{AUX}	3k V_{RMS} – 1min
V_{DC} Input - Output Contacts	3k V_{RMS} – 1min
V_{AUX} – Output Contacts	3k V_{RMS} – 1min

Switching Elements	
Number of switching elements	2
Type of outputs	Switched contact
Voltage outputs	Voltage free
Max AC Load	250V_{AC} 2A
Max DC Load	300V_{DC} 0,1A
Switching time RL	< 10 ms
Number of cycles	20,000,000
General Data	
Operation mode	Continually
Mounting	DIN rail
Connection	Screw M2,5
Screw torque	≤0,4 Nm
Protection grade	IP20
Flammability class	UL94V-0
Weight	350 gr
Operating temperature	-5ºC...+60ºC
Storage temperature	-20ºC...+80ºC
Relative humidity (without condensation)	<95%
Setting values method	Front opening
Standards	
Electrical safety requirements	UNE-EN 61010-1
Electrical safety requirements	UNE-EN 61010-2-0081
Electromagnetic compatibility (EMC)	UNE-EN 61000-6-1
Electromagnetic compatibility (EMC)	UNE-EN 61000-6-3/A1
European Directive	2006/95/CE
European Directive	2004/108/CE
Standard	IEC-61557-8
Communications	
Interface	RS-485
Protocol	ModBus-RTU
Port parameters	9600,8,0,1
ID ModBus	1-248
Available Features	3,4
Operation	Slave
Cable length (m)	<1200
Connection	Terminals A/B