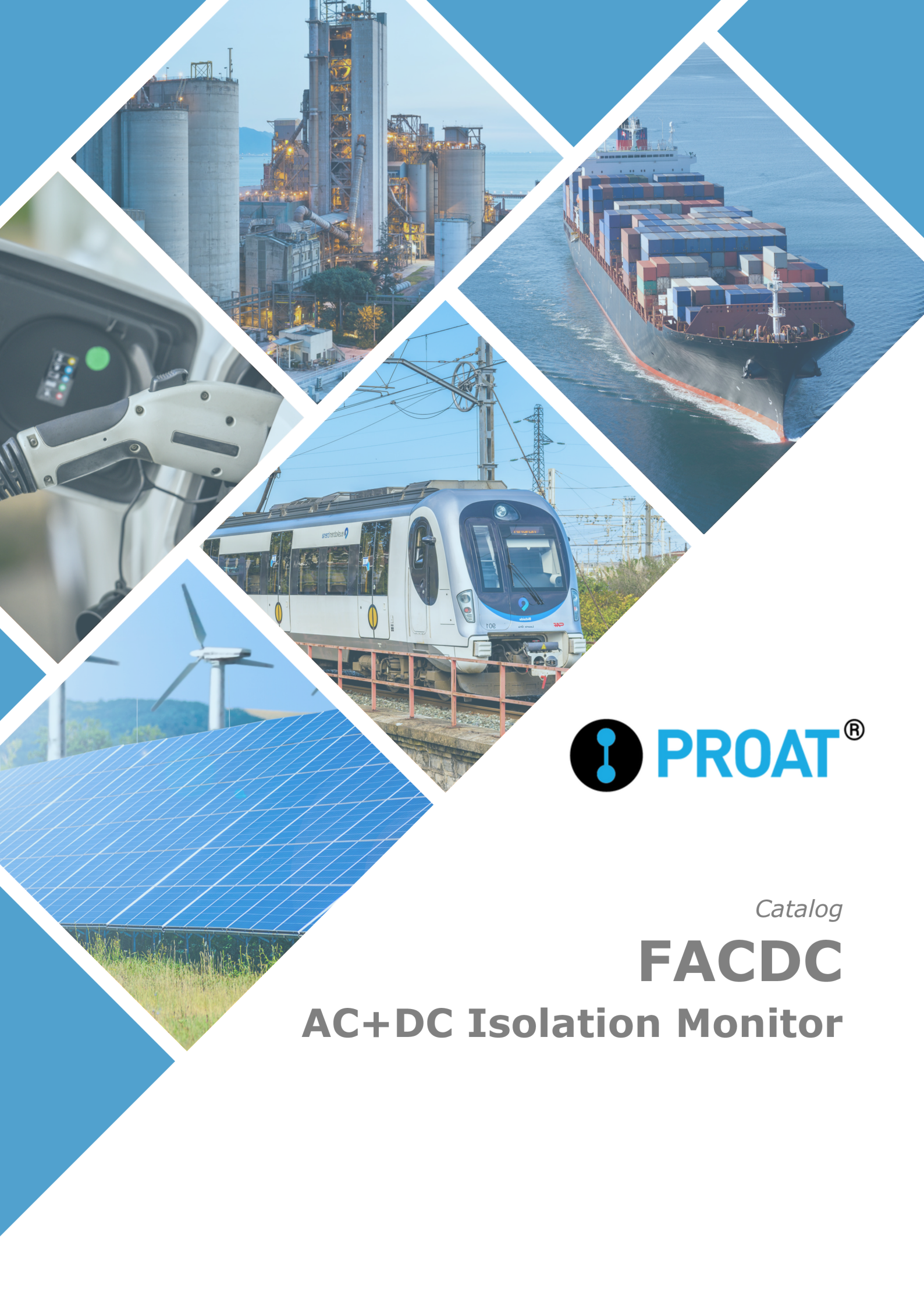




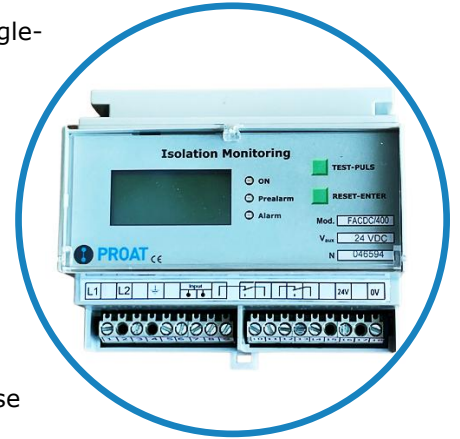
Catalog

FACDC

AC+DC Isolation Monitor

 FACDC
AC+DC Insolation Monitor
with Automatic Reset and Real-Time Display

- ✓ Detects **symmetrical and asymmetrical** isolation faults in single-phase and three-phase AC+DC systems in any of the phases or between the neutral and ground points
- ✓ **Two** independent potential-free output **commuted contacts**, with programmable actuation levels and time delays: pre-alarm and alarm
- ✓ **NA or NC contacts**. Selectable forward/reverse logic
- ✓ **Pre-alarm**: threshold adjustable from 50 to 150 k Ω and response time delay from 10 to 30 seconds
- ✓ **Alarm**: threshold adjustable from 5 to 45 k Ω and response time delay from 1 to 10 seconds
- ✓ **Automatic reset** when measurements are within normal parameters and there is no insulation fault
- ✓ **Real-time display** of the installation's isolation level. Measurement range between 1 k Ω - 3000 k Ω depending on the model
- ✓ **Programmable maximum parasitic capacitance**, up to 20 μ F and up to 500 μ F in GN versions
- ✓ **External input** to activate/deactivate the device in GN versions
- ✓ For IT systems up to **1000 V_{AC} – 1500 V_{DC}** depending on the model
- ✓ **Modbus** communications



Applications

Monitoring of possible isolation faults in AC+DC systems isolated from IT ground:

- Photovoltaic Installations (Inverters)
- Power Plants
- Rectifier Systems
- Lighting Installations
- AC+DC Auxiliary Power Systems



Function Features

- 2 output relays with independent potential-free commuted 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 time delay
 - Alarm time delay
 - Automatic reset time
 - Parasitic capacity
 - Alarm memory – Yes/No
 - Modbus ID
 - Language: Spanish/English
- Real-time display of ground resistance measurements
- 2x8-character front display
- **TEST** button to simulate ground faults (+) and (-)
- **RESET** button to reset the device 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:
 - Instantaneous isolation measurement
 - Relay status
 - View ModBus map



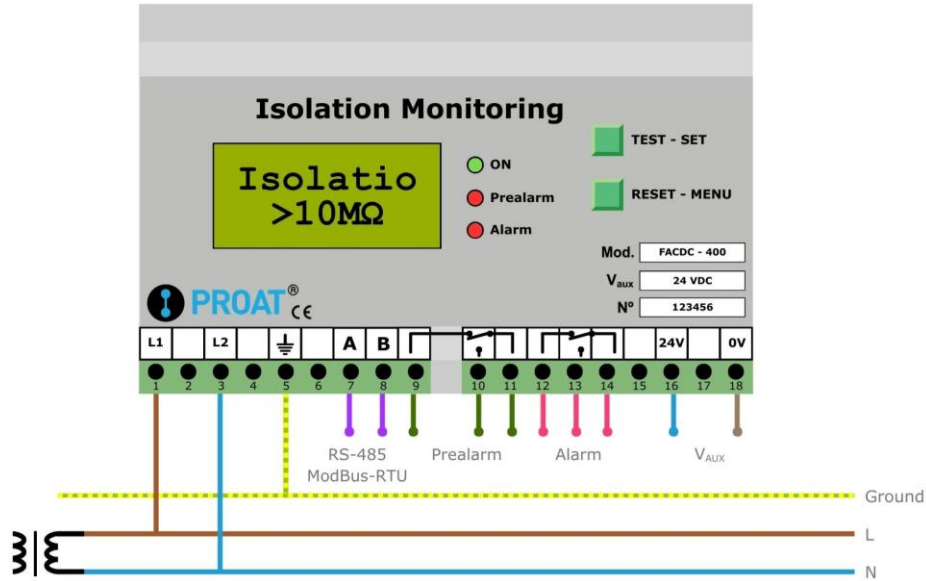
Models

Model	Nominal Voltage U_N	Operating Range	Alarm Level	Power Voltage	DIN Size	Communications
FACDC-250	250 V _{AC} 400V _{DC}	0-250 V _{AC} 0-400 V _{DC}	50-150kΩ y 5-45kΩ	86-264 V _{AC} 90-370 V _{DC}	6M - 106mm	-
FACDC-250-M	250 V _{AC} 400V _{DC}	0-250 V _{AC} 0-400 V _{DC}	50-150kΩ y 5-45kΩ	86-264 V _{AC} 90-370 V _{DC}	6M - 106mm	ModBus-RTU
FACDC-250-24	250 V _{AC} 400V _{DC}	0-250 V _{AC} 0-400 V _{DC}	50-150kΩ y 5-45kΩ	24 V _{DC}	6M - 106mm	-
FACDC-250-M-24	250 V _{AC} 400V _{DC}	0-250 V _{AC} 0-400 V _{DC}	50-150kΩ y 5-45kΩ	24 V _{DC}	6M - 106mm	ModBus-RTU
FACDC-400	400 V _{AC} 600V _{DC}	0-400 V _{AC} 0-600 V _{DC}	50-150kΩ y 5-45kΩ	86-264 V _{AC} 90-370 V _{DC}	6M - 106mm	-
FACDC-400-M	400 V _{AC} 600V _{DC}	0-400 V _{AC} 0-600 V _{DC}	50-150kΩ y 5-45kΩ	86-264 V _{AC} 90-370 V _{DC}	6M - 106mm	ModBus-RTU
FACDC-400-24	400 V _{AC} 600V _{DC}	0-400 V _{AC} 0-600 V _{DC}	50-150kΩ y 5-45kΩ	24 V _{DC}	6M - 106mm	-
FACDC-400-M-24	400 V _{AC} 600V _{DC}	0-400 V _{AC} 0-600 V _{DC}	50-150kΩ y 5-45kΩ	24 V _{DC}	6M - 106mm	ModBus-RTU
FACDC-700-GN	700 V _{AC} 1000V _{DC}	0-700 V _{AC} 0-1000 V _{DC}	50-150kΩ y 5-45kΩ	86-264 V _{AC} 90-370 V _{DC}	9M - 160mm	ModBus-RTU
FACDC-700-GN-24	700 V _{AC} 1000V _{DC}	0-700 V _{AC} 0-1000 V _{DC}	50-150kΩ y 5-45kΩ	24 V _{DC}	9M - 160mm	ModBus-RTU
FACDC-800-GN	800 V _{AC} 1500V _{DC}	0-800 V _{AC} 0-1500 V _{DC}	50-150kΩ y 5-45kΩ	86-264 V _{AC} 90-370 V _{DC}	9M - 160mm	ModBus-RTU
FACDC-800-GN-24	800 V _{AC} 1500V _{DC}	0-800 V _{AC} 0-1500 V _{DC}	50-150kΩ y 5-45kΩ	24 V _{DC}	9M - 160mm	ModBus-RTU
FACDC-1000-GN	1000 V _{AC} 1500V _{DC}	0-1000 V _{AC} 0-1500 V _{DC}	50-150kΩ y 5-45kΩ	86-264 V _{AC} 90-370 V _{DC}	9M - 160mm	ModBus-RTU
FACDC-1000-GN-24	1000 V _{AC} 1500V _{DC}	0-1000 V _{AC} 0-1500 V _{DC}	50-150kΩ y 5-45kΩ	24 V _{DC}	9M - 160mm	ModBus-RTU

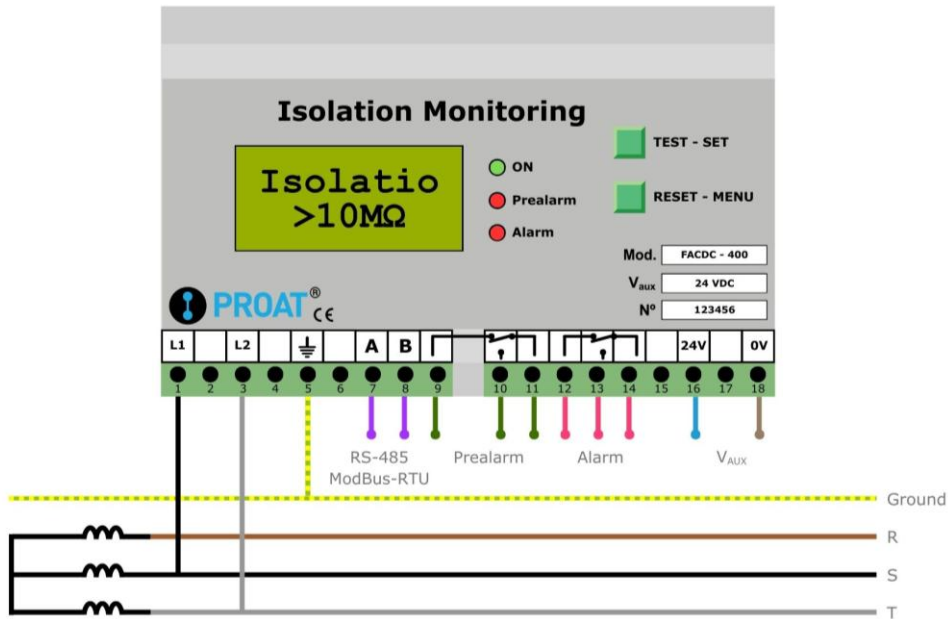
*Other models can be manufactured upon request

Wiring

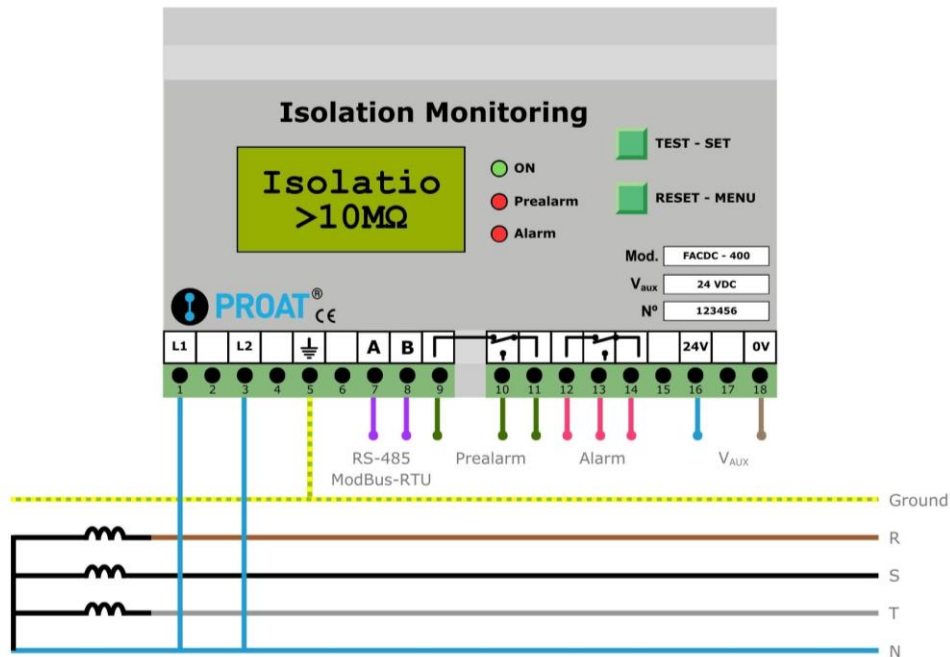
- Single-phase



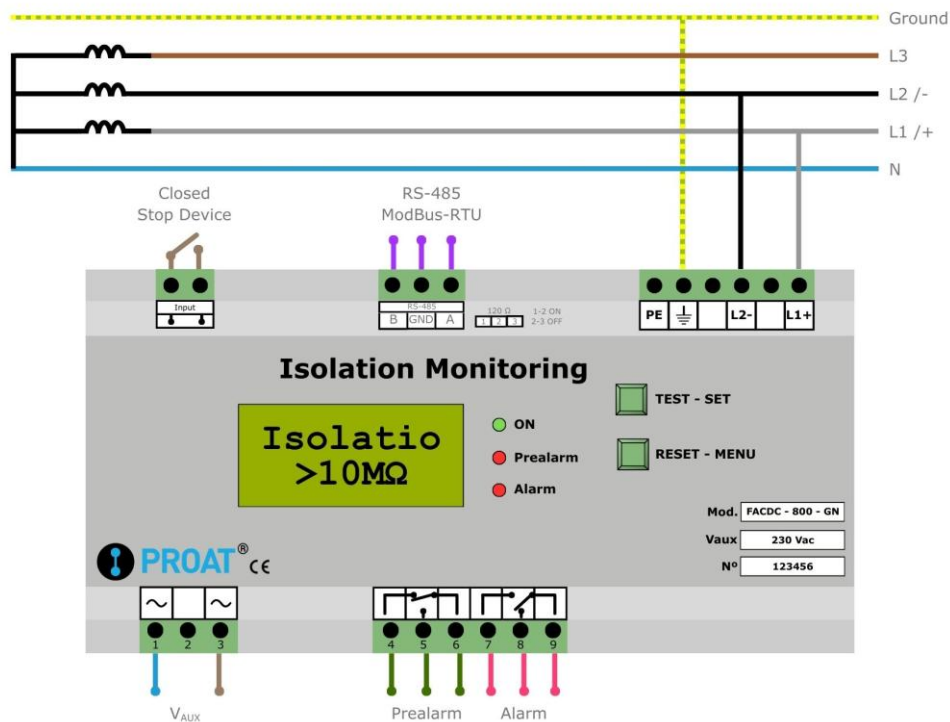
- Three-phase without neutral



- Three-phase with neutral

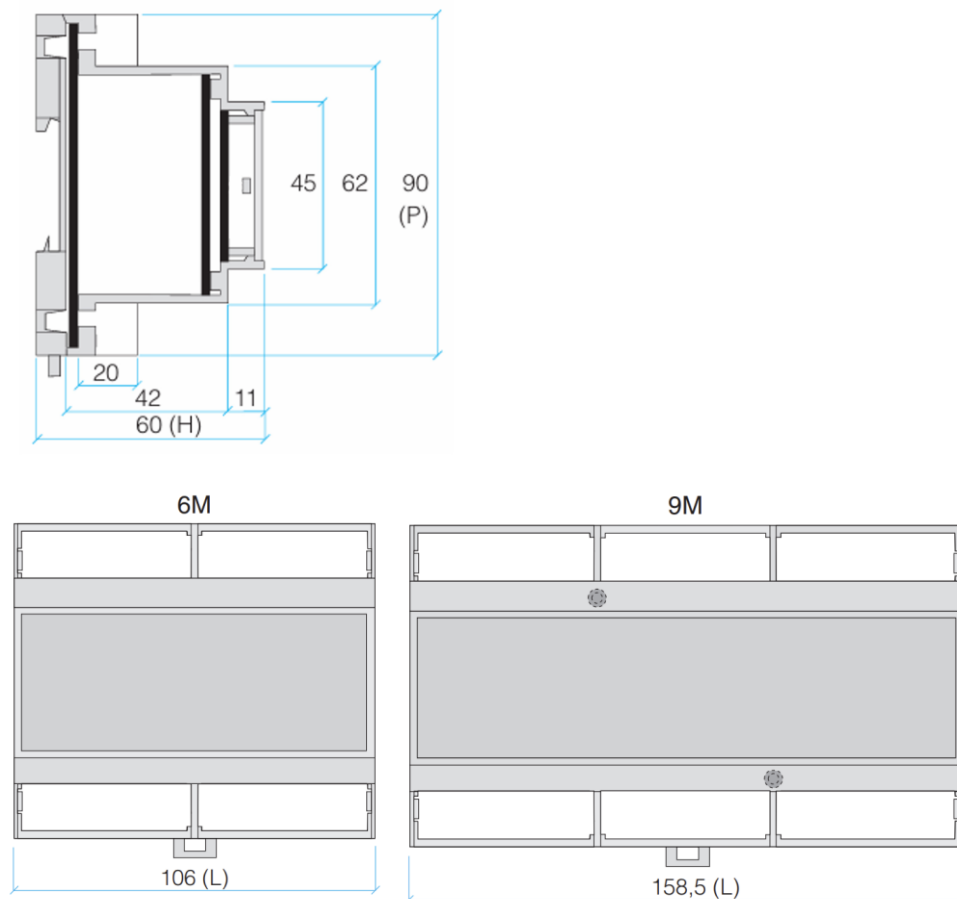


- GN Version



Constructive Features

- DIN rail mounting
- Front plate terminals
- Class V0 self-extinguishing plastic enclosure



Technical Data

MODEL	FACDC	GN Version
Voltage Range		
Voltage range U_N	0 - $U_N V_{AC}$	
Nominal frequency F_N	0-300Hz	
Auxiliary voltage V_{AUX}	86 – 264 V_{AC}	
	90 – 370 V_{DC} 24 V_{DC}	
Consumption at rest	≤6W	
Maximum consumption	≤12W	
Response Values		
Pre-alarm level	50 k Ω - 150 k Ω	
Alarm level	5 k Ω - 45 k Ω	
Measurement range	1 k Ω - 1 M Ω	1 k Ω - 3 M Ω
Measurement error 1-10 k Ω /10-200 k Ω	±1 k Ω / ±10%	
Hysteresis	25%	
Response time with $R_F=0,5 \cdot R_{AL}$	≤5 s	
Pre-alarm time delay	10-30 s	
Alarm time delay	1-10 s	
Reset time	1-60 min	
Factory settings		
Pre-alarm level	100 k Ω	
Alarm level	10 k Ω	
Pre-alarm time delay	10 s	
Alarm time delay	5 s	
Reset time	1 min	
Modbus ID	1	
Alarm memory	YES	
Language	ESP	
Parasitic capacity	1 μF	
Measuring Circuit		
Measurement voltage	±15 V_{DC}	±24 V_{DC}
Internal resistance	>196 k Ω	>294 k Ω
Impedance at 50Hz	>196 k Ω	>294 k Ω
Measurement current with $R_F=0$	≤2600 μA	
Parasitic capacitance	<20 μF	<500 μF
Type of faults detected	Symmetrical and Asymmetrical	
Front View		
ON	Green Led	
Fault (+)	Red Led	
Fault (-)	Red Led	
Test button	Yes	
Reset button	Yes	
Screen	LCD 2x8 charac.	
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 relay
Voltage outputs	Voltage free
Max AC load	250 V_{AC} 2A
Max DC load	300 V_{DC} 0,1A
Switching time R_L	< 10 ms
Number of cycles	20,000,000

General Data	
Continually	Continually
Mounting	DIN rail
Connection	Screw M2,5
Screw torque	$\leq 0,4$ Nm
Protection grade	IP20
Flammability class	UL94V-0
Weight	350 gr
Operating temperature	-5°C...+60°C
Storage temperature	-20°C...+80°C
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,N,1
ID ModBus	1-248
Available features	3,4
Operation	Slave
Cable length (m)	< 1200
Connection	Terminals A/B

External Input Blocking	
Activation	Closed contact
Deactivation	Open contact