



Catalog

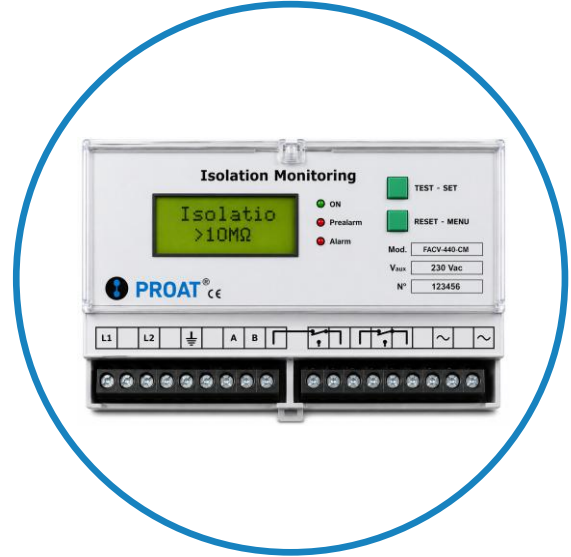
FACV

AC Isolation Monitor

FACV

AC Insolation Monitor with Automatic Reset and Real-Time Display

- ✓ Detects **symmetrical and asymmetrical** insulation faults in single-phase and three-phase AC systems in any of the phases, or between the neutral point and ground.
- ✓ **Continuous monitoring of the insulation level** for IT systems from **115 V_{AC}** to **7200 V_{AC}**, depending on the model and coupler.
- ✓ **2 independent potential-free output** changeover contacts, with programmable actuation levels and time delays: pre-alarm and alarm.
- ✓ **Pre-alarm:** actuation level of 50 - 150 kΩ and actuation delay of 10-30 seconds.
- ✓ **Alarm:** actuation level of 1 - 45 kΩ and actuation delay of 1-10 seconds
- ✓ Alarm with **automatic reset** configurable between 1-60 minutes
- ✓ **Real-time display** of the installation's isolation level. Measurement range: 1 kΩ - 1000 kΩ
- ✓ For IT systems from **115 V_{AC}** – **7200 V_{AC}** depending on model and coupler
- ✓ **Modbus** Communications



Applications

Monitoring of possible isolation failures in AC systems isolated from IT ground:

- Railway Infrastructure
- Photovoltaic Power Systems
- Industrial Electrical Equipment
- Marine Electrical Systems
- Electric Vehicle Charging Infrastructure
- Lighting Systems
- Elevators Systems



Functional 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 time delay
 - Alarm time delay
 - Automatic reset time
 - Alarm memory – Yes/No
 - Modbus ID
 - Language: Spanish/English
- 2x8-character front display with Real-time insulation resistance
- 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:
 - Instantaneous isolation measurement, Relay status, View ModBus map

Models

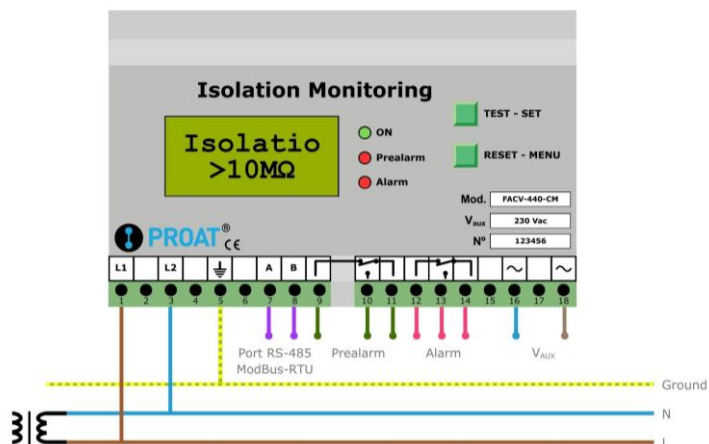
Model	Nominal Voltage U_N	Operating Range	Alarm Levels	Supply Voltage	DIN Size	Communications
FACV-115-M	115 V _{AC}	0-115 V _{AC}	50-150 kΩ and 1-45 kΩ	60-264V _{AC} 80-300V _{DC}	9M – 160 mm	Modbus-RTU
FACV-115-M-24	115 V _{AC}	0-115 V _{AC}	50-150 kΩ and 1-45 kΩ	24 V _{DC}	9M – 160 mm	Modbus-RTU
FACV-230-M	230 V _{AC}	0-230 V _{AC}	50-150 kΩ and 1-45 kΩ	60-264V _{AC} 80-300V _{DC}	9M – 160 mm	Modbus-RTU
FACV-230-M-24	230 V _{AC}	0-230 V _{AC}	50-150 kΩ and 1-45 kΩ	24 V _{DC}	9M – 160 mm	Modbus-RTU
FACV-440-M	440 V _{AC}	0-440 V _{AC}	50-150 kΩ and 1-45 kΩ	60-264V _{AC} 80-300V _{DC}	9M – 160 mm	Modbus-RTU
FACV-440-M-24	440 V _{AC}	0-440 V _{AC}	50-150 kΩ and 1-45 kΩ	24 V _{DC}	9M – 160 mm	Modbus-RTU
FACV-500-M	500 V _{AC}	0-500 V _{AC}	50-150 kΩ and 1-45 kΩ	60-264V _{AC} 80-300V _{DC}	9M – 160 mm	Modbus-RTU
FACV-500-M-24	500 V _{AC}	0-500 V _{AC}	50-150 kΩ and 1-45 kΩ	24 V _{DC}	9M – 160 mm	Modbus-RTU
FACV-750-M	750 V _{AC}	0-750 V _{AC}	50-150 kΩ and 1-45 kΩ	60-264V _{AC} 80-300V _{DC}	9M – 160 mm	Modbus-RTU
FACV-750-M-24	750 V _{AC}	0-750 V _{AC}	50-150 kΩ and 1-45 kΩ	24 V _{DC}	9M – 160 mm	Modbus-RTU
FACV-440E-M + AC-1000	1000 V _{AC}	0-1000 V _{AC}	50-150 kΩ and 1-45 kΩ	60-264V _{AC} 80-300V _{DC}	9M – 160 mm + Coupler	Modbus-RTU
FACV-440E-M-24 + AC-1000	1000 V _{AC}	0-1000 V _{AC}	50-150 kΩ and 1-45 kΩ	24 V _{DC}	9M – 160 mm + Coupler	Modbus-RTU
FACV-440S-M + ADP-4200	4200 V _{AC}	0-4200 V _{AC}	50-150 kΩ and 1-45 kΩ	60-264V _{AC} 80-300V _{DC}	9M – 160 mm + Coupler	Modbus-RTU
FACV-440S-M-24 + ADP-4200	4200 V _{AC}	0-4200 V _{AC}	50-150 kΩ and 1-45 kΩ	24 V _{DC}	9M – 160 mm + Coupler	Modbus-RTU
FACV-440S-M + ADP-7200	7200 V _{AC}	0-7200 V _{AC}	50-150 kΩ and 1-45 kΩ	60-264V _{AC} 80-300V _{DC}	9M – 160 mm + Coupler	Modbus-RTU
FACV-440S-M-24 + ADP-7200	7200 V _{AC}	0-7200 V _{AC}	50-150 kΩ and 1-45 kΩ	24 V _{DC}	9M – 160 mm + Coupler	Modbus-RTU

Optional **tropicalization** by adding the suffix **-T**

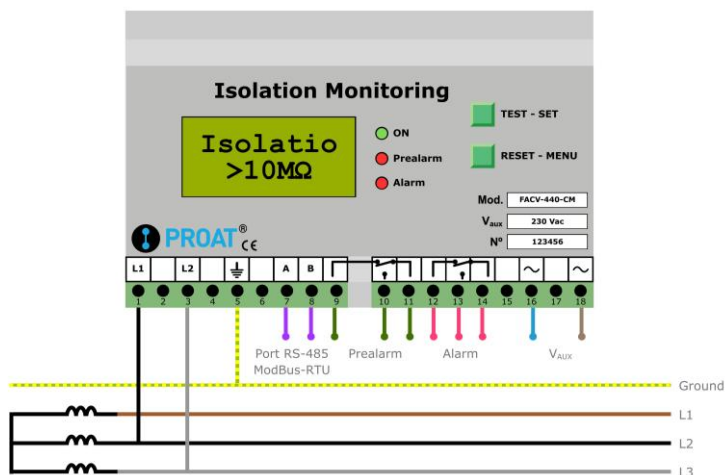
*Other models can be manufactured upon request

Wiring FACV

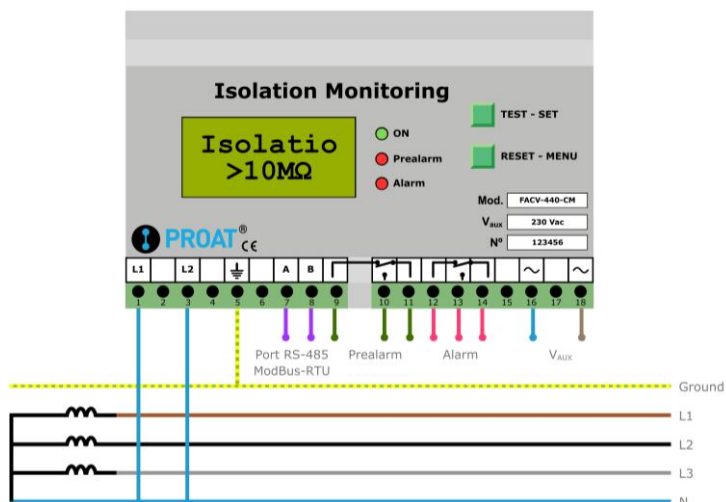
- Single-phase



- Three-phase without neutral

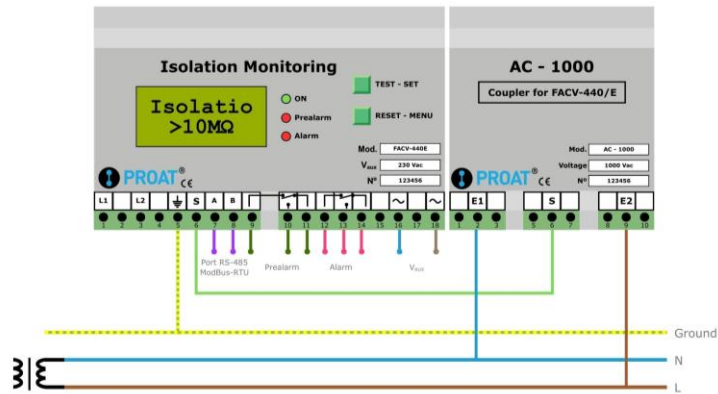


- Three-phase with neutral

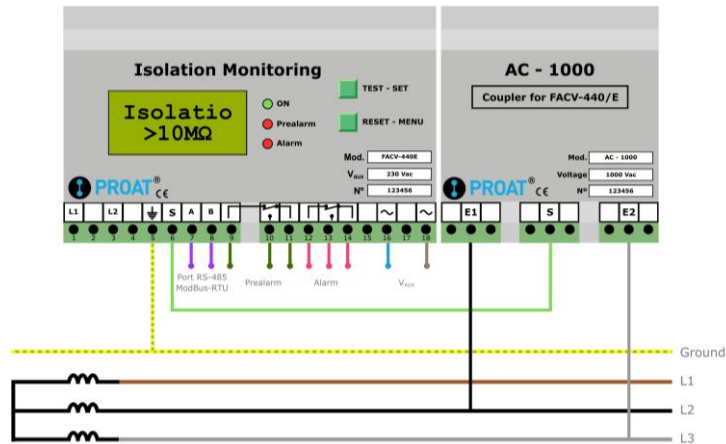


Wiring FACV + AC-1000

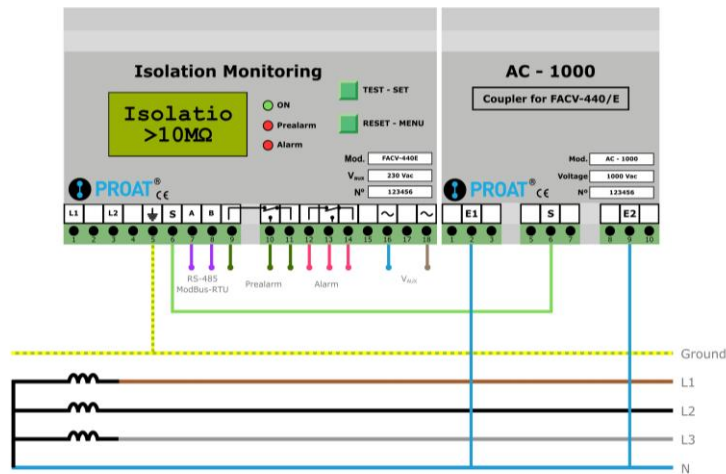
- Single-phase



- Three-phase without neutral



- Three-phase with neutral



Technical Data

MODEL	FACV
Voltage Range	
Monitoring Voltage U_N	0 - $U_N V_{AC}$
Nominal frequency F_N	40-300 Hz
	60 – 264 V_{AC}
Auxiliary voltage V_{AUX}	80 – 300 V_{DC}
	24 V_{DC}
Standby consumption	≤ 6 W
Maximum consumption	≤ 12 W
Response Values	
Pre-alarm level	50 k Ω - 150 k Ω
Alarm level	1 k Ω - 45 k Ω
Measurement range	1 k Ω - 1000 k 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	No
Language	ESP
Measuring Circuit	
Measurement voltage	+12 V_{DC}
Internal resistance	> 132 k Ω
Impedance at 50Hz	> 132 k Ω
Measurement current with $R_F=0$	≤ 300 μA
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
Screen	LCD 2x8 charac.
Dielectric Test	
V_{DC} Input – V_{AUX}	3 kV $_{RMS}$ – 1 min
V_{DC} Input - Output Contacts	3 kV $_{RMS}$ – 1 min
V_{AUX} – Output Contacts	3 kV $_{RMS}$ – 1 min

Switching Elements	
Number of switching elements	2
Type of outputs	Switched relay
Outputs	Potential-free contacts
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	
Operation mode	Continuous
Mounting	DIN rail
Connection	Screw M2.5
Screw torque	≤ 0.4 Nm
Protection grade	IP20
Flammability class	UL94V-0
Weight	350 g
Operating temperature	-5°C to +60°C
Storage temperature	-20°C to +80°C
Relative humidity (non-condensing)	< 95 %
Setting values method	Front opening

Standards	
Electrical safety requirements	UNE-EN 61010-1
Electrical safety requirements	UNE-EN 61010-2-081
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