PROAT®

Catalog

FACV

AC Isolation Monitor

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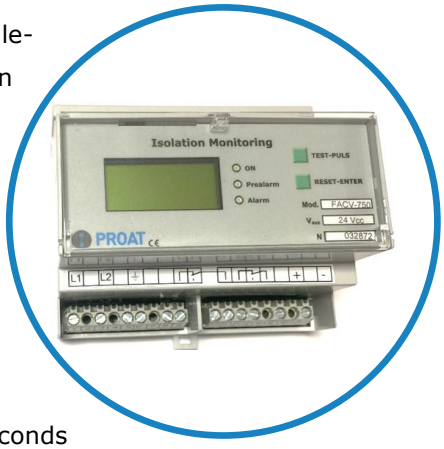
AC Insolation Monitor

with Automatic Reset and Real-Time Display



✓ Detects **symmetrical and asymmetrical** insolation faults in single-phase and three-phase AC systems in any of the phases, or between the neutral point and ground.

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

✓ **Pre-alarm:** actuation level of 50 - 100 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 **115VAC - 7200VAC** depending on model and coupler

✓ **Modbus** Communications

Applications

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

- Railway Facilities
- Power Plants
- Mobile Power Generators
- Lighting Installations
- Elevators

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
  - 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

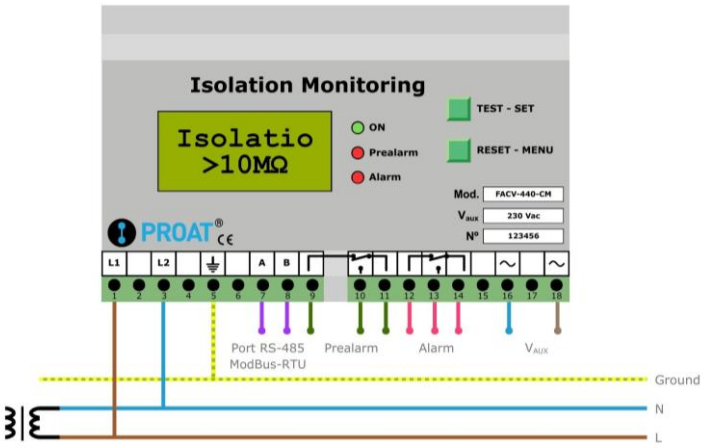
Models

Model	Nominal Voltage U_N	Operating Range	Alarm Level	Power Voltage	DIN Size	Communications
FACV-115-M	115 V_{AC}	0-115 V_{AC}	50-150kΩ y 5-45kΩ	60-264V_{AC} | 80-300V_{DC}	9M - 160mm	ModBus-RTU
FACV-115-M-24	115 V_{AC}	0-115 V_{AC}	50-150kΩ y 5-45kΩ	24 V_{DC}	9M - 160mm	ModBus-RTU
FACV-230-M	230 V_{AC}	0-230 V_{AC}	50-150kΩ y 5-45kΩ	60-264V_{AC} | 80-300V_{DC}	9M - 160mm	ModBus-RTU
FACV-230-M-24	230 V_{AC}	0-230 V_{AC}	50-150kΩ y 5-45kΩ	24 V_{DC}	9M - 160mm	ModBus-RTU
FACV-440-M	440 V_{AC}	0-440 V_{AC}	50-150kΩ y 5-45kΩ	60-264V_{AC} | 80-300V_{DC}	9M - 160mm	ModBus-RTU
FACV-440-M-24	440 V_{AC}	0-440 V_{AC}	50-150kΩ y 5-45kΩ	24 V_{DC}	9M - 160mm	ModBus-RTU
FACV-500-M	500 V_{AC}	0-500 V_{AC}	50-150kΩ y 5-45kΩ	60-264V_{AC} | 80-300V_{DC}	9M - 160mm	ModBus-RTU
FACV-500-M-24	500 V_{AC}	0-500 V_{AC}	50-150kΩ y 5-45kΩ	24 V_{DC}	9M - 160mm	ModBus-RTU
FACV-750-M	750 V_{AC}	0-750 V_{AC}	50-150kΩ y 5-45kΩ	60-264V_{AC} | 80-300V_{DC}	9M - 160mm	ModBus-RTU
FACV-750-M-24	750 V_{AC}	0-750 V_{AC}	50-150kΩ y 5-45kΩ	24 V_{DC}	9M - 160mm	ModBus-RTU
FACV-440E-M + AC-1000	1000 V_{AC}	0-1000 V_{AC}	50-150kΩ y 5-45kΩ	60-264V_{AC} | 80-300V_{DC}	9M - 160mm + Coupler	ModBus-RTU
FACV-440E-M-24 + AC-1000	1000 V_{AC}	0-1000 V_{AC}	50-150kΩ y 5-45kΩ	24 V_{DC}	9M - 160mm + Coupler	ModBus-RTU
FACV-440S-M + ADP-4200	7200 V_{AC}	0-7200 V_{AC}	50-150kΩ y 5-45kΩ	60-264V_{AC} | 80-300V_{DC}	9M - 160mm + Coupler	ModBus-RTU
FACV-440S-M-24 + ADP-4200	7200 V_{AC}	0-7200 V_{AC}	50-150kΩ y 5-45kΩ	24 V_{DC}	9M - 160mm + Coupler	ModBus-RTU
FACV-440S-M + ADP-7200	1000 V_{AC}	0-1000 V_{AC}	50-150kΩ y 5-45kΩ	60-264V_{AC} | 80-300V_{DC}	9M - 160mm + Coupler	ModBus-RTU
FACV-440S-M-24 + ADP-7200	1000 V_{AC}	0-1000 V_{AC}	50-150kΩ y 5-45kΩ	24 V_{DC}	9M - 160mm + Coupler	ModBus-RTU

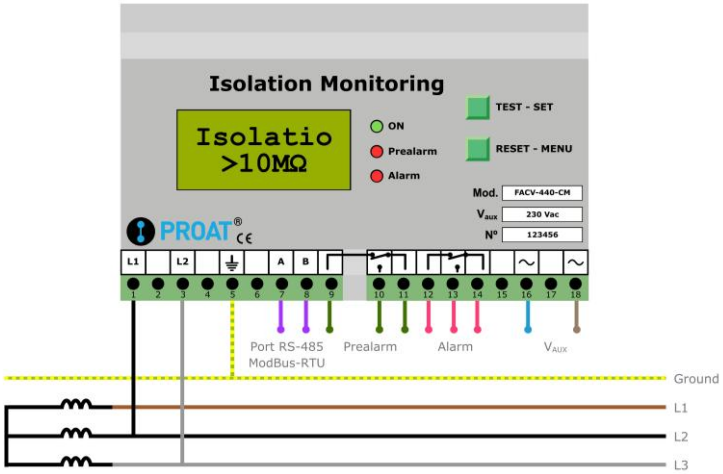
Optional **tropicalization** by adding the suffix **-T**
*Other models can be manufactured upon request

Wiring FACV

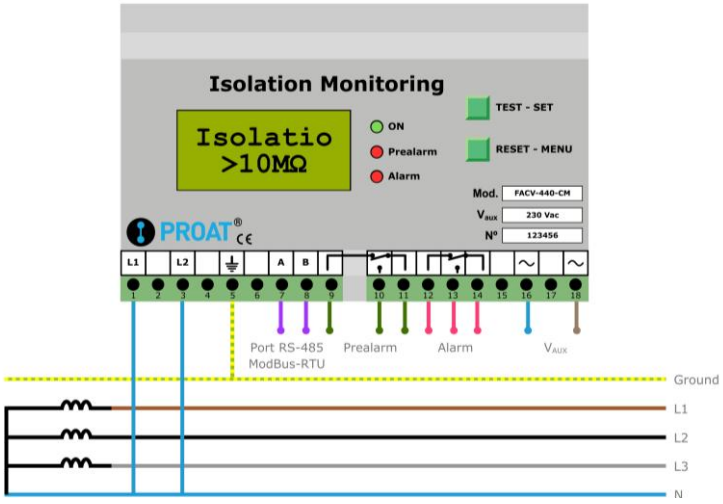
- Single-phase



- Three-phase without neutral

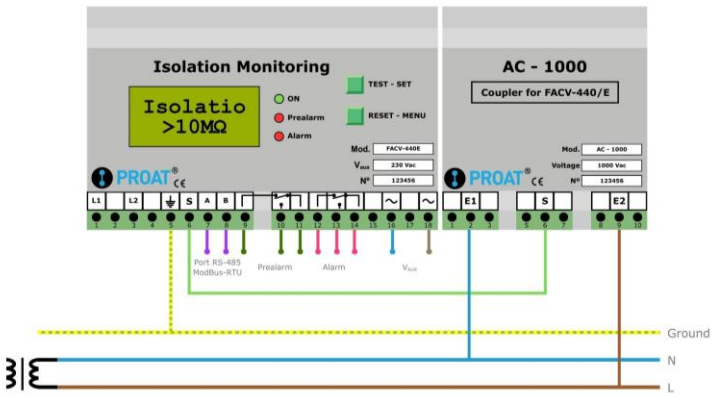


- Three-phase with neutral

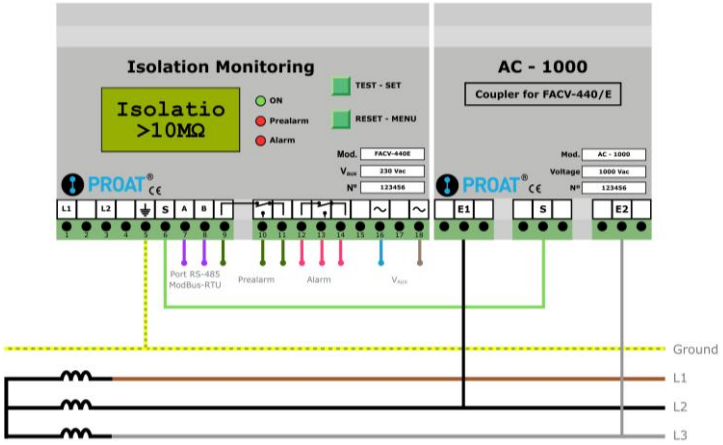


Wiring FACV + AC-1000

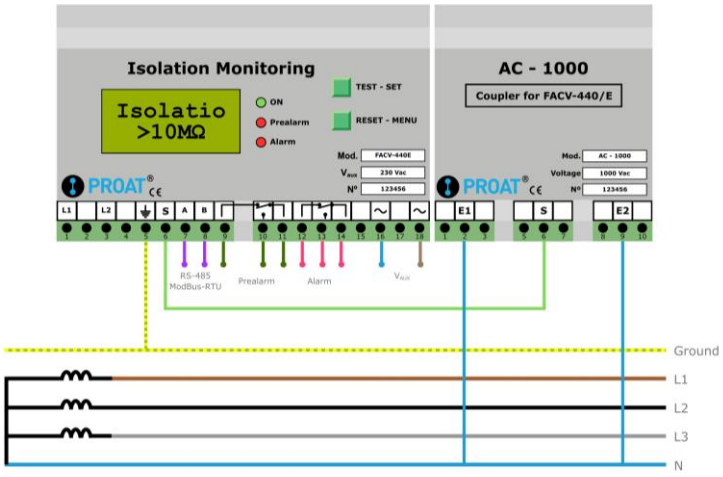
- Single-phase



- Three-phase without neutral

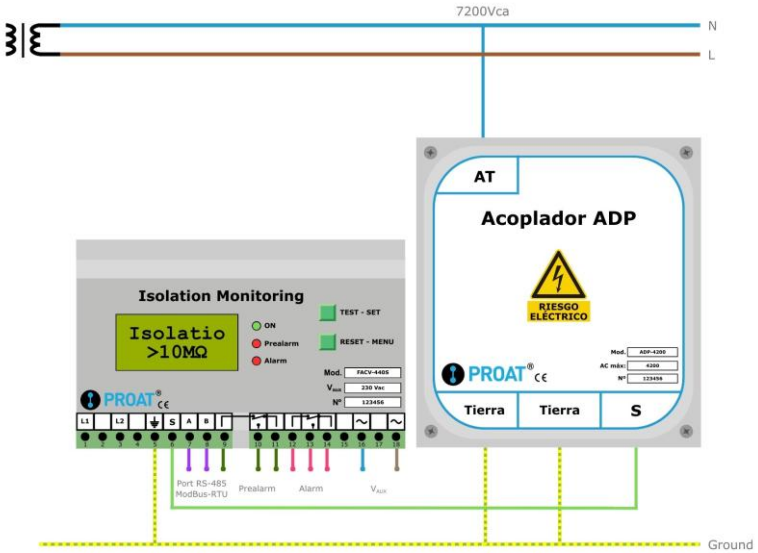


- Three-phase with neutral



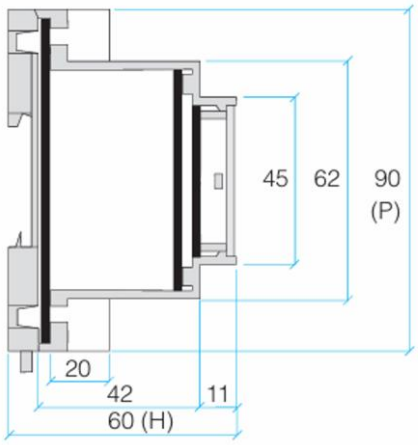
Wiring FACV + AC-4200/7200

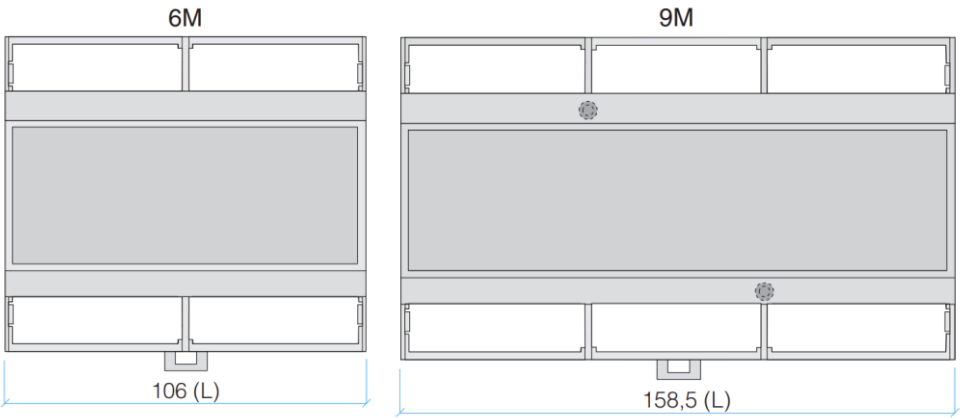
- Single-phase



Constructive Features

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





Technical Data

MODEL	FACV
Voltage Range	
Voltage range U_N	**0 - U_N** V_{AC}
Nominal frequency F_N	40-300Hz
Auxiliary voltage V_{AUX}	60 – 264 V_{AC} 80 – 300 V_{DC} 24 V_{DC}
Consumption at rest	≤6W
Maximum consumption	≤12W
Response Values	
Pre-alarm level	**50 kΩ - 150 kΩ**
Alarm level	**1 kΩ - 45 kΩ**
Measurement range	1 kΩ - 1000 kΩ
Measurement error 1-10 kΩ/10-200 kΩ	±1 kΩ / ±10%
Hysteresis	25%
Response time with R_F=0,5*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 kΩ
Alarm level	10 kΩ
Pre-alarm time delay	10 seg.
Alarm time delay	5 seg.
Reset time	1 min
Modbus ID	1
Alarm memory	No
Language	ESP
Measuring Circuit	
Measurement voltage	+12 V_{DC}
Internal resistance	>132 kΩ
Impedance at 50Hz	>132 kΩ
Measurement current with R_F=0	≤300µA
Parasitic capacity	<5uF
Type of faults detected	Symmetrical and Asymmetrical
Vista Frontal	
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	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