



FAC4

Insulation monitor for systems ungrounded up to 1000 VDC



Description

The FAC4 detects the insulation faults in isolated direct current circuits (IT systems), closing two auxiliary contacts and turning on the red LEDs of pre-alarm and alarm. It has models that allow monitoring the remote guard. Version A, which has a 0-10V output proportional to the insulation level, and the M version with ModBus output, which indicates the level of isolation and alarms activated.

Detects insulation faults at any of the poles against ground.

Wide auxiliary power supply range: 86 ... 264 VAC and 120 ... 370VDC.



Applications

It has its main applications in DC circuits (photovoltaic systems, battery power, boat power systems, etc.)



Characteristics functionalism

- The earth fault insulation resistance is displayed on the screen. In this way, any incident can be easily detected.
- It permanently connects two output contacts, pre-alarm and alarm, once the time delay has elapsed.
- When the pre-alarm threshold is exceeded, the 'Pre-alarm' LED is lit and contact RL1 is closed.
- When the alarm level is activated contact RL2 is switched on, the 'Alarm' LED lights up.
- Test push button that simulates the fault and activates the LEDs and alarm relays.
- Reset push button: turns off the led's and disconnects the output relays after a fault.
- Programming of the adjustment values (alarm levels) can easily be done by means of the keys located on the equipment cover.



Constructive Characteristics

- Polycarbonate box
- Quick fixing on DIN rail.
- Screw terminals with front cover.
- Potential-free output contacts.



Electrical Characteristics

- Input voltage range: U_n to U_n -60%
- Digital measurement of failure resistance.
- Range of 1 to 1000 k Ω
- Two action thresholds.
- Pre-alarm threshold of 20 to 80 k Ω
- Threshold Alarm from 2 to 20k Ω
- Response time: <4sec.
- Timer adjustment Prealarm: 10 to 30 s.
- Timer setting Alarm: 1 to 10 s.
- Wide Auxiliary Voltage range:
 - 86 ... 264VAC (50 / 60Hz), 120 ... 370VDC
- Consumption with defect: <20 VA W
- Measurement system: Modified Wheatstone bridge
- Rules that comply:
 - Regulation Low tension
 - EMC Regulation, Immunity
 - Class II insulation (Vca and Vcc)
- Properties of the relay contact:
 - Permanent current: 5 A.
 - Max. comm.: 230 Vac.
 - Pot. Max. Switch : 1000 VA.
- Weight: 350 gr. Approx.
- Protection degree: IP20
- Temperature range:
 - Operation: -5°C to + 55°C,
 - Store: -25°C to + 70°C



Models

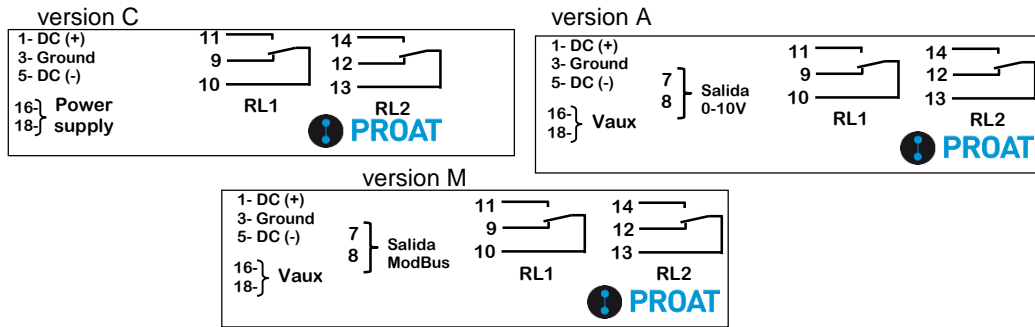
FAC4/xxx/ yy /zz

xxx = Voltage maximum:
200, 400, 600, 800, 1000 Vdc

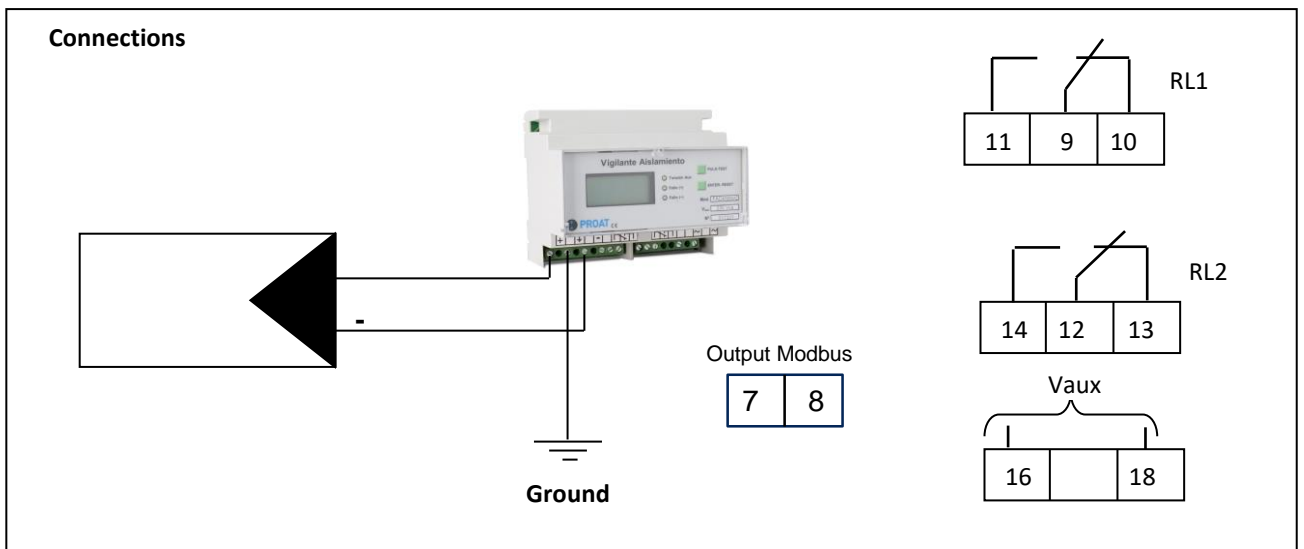
zz = 'blanc' 86...264 VAC / 120.. 370 VDC
'24' 24 VDC

yy='C' - 2 contacts
'A' - 2 contacts and output 0-10V
'M' - 2 contacts and ModBus output

External connections

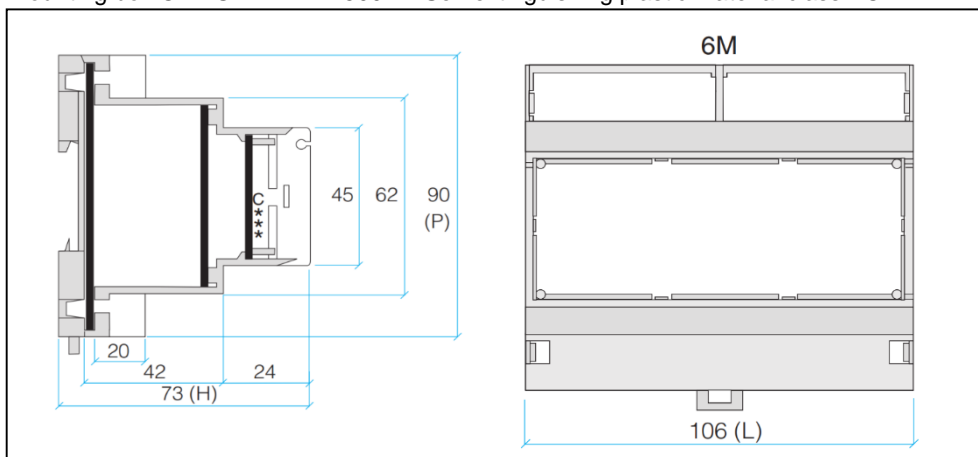


Connection Scheme /M



Box dimensions (millimeters)

Mounting box OMEGA DIN EN 50022. Self-extinguishing plastic material class VO



Technical data

Dielectric test	
VDC input against auxiliary voltage	3k VDC
VDC input against switching elements	3k VDC
Auxiliary voltage against switching elements	3k VDC

Voltage Ranges	
Monitoring voltage UN	0,3*UN...UN
Auxiliary voltage Vaux	AC 86...264
Power consumption	≤12VA

Response Values	
Prealarm Isolation level (L-PR)	20K...80KΩ
Alarm Isolation level (L-AL)	2K...20KΩ
Prealarm Timing (T-PR)	10..30 sec
Alarm Timing (T-AL)	1..10 sec
Re-connection time	1...60 min.
Measure error	>10kΩ ±10% ≤10kΩ ±1kΩ

Manufacture PreAlarm Level	34kΩ
Manufacture Alarm Level	5kΩ
Manufacture PreAlarm Timing	10 sec
Manufacture Alarm Timing	5 sec
Manufacture Reclosing time	1 min

Measuring Circuit	
Internal resistance R+	1 MΩ
Internal resistance R-	1 MΩ
Impedance to ground IT	750 kΩ
max. Monitoring voltage UN	UN+10%
Permissible system leakage capacitance	40μF

Frontal View	
Signal type	3 leds
VAUX	green led
Fault to (+)	red led
Fault to (-)	red led
Test Bottom	yes
Reset button	yes
Display	LCD 2x8 chr.
Information displayed	continuously

Switching Elements	
Number of switching elements	1 elements
Type of outputs	commuted
Voltage outputs	voltage free
Rated contact voltage	250VAC/300VDC
making capacity	5A/0,1A
Electrical service life, number of cycles	20,000,000
Breaking capacity	2A-AC239V
	0,4-0,2 - DC220V

General Data	
Operating mode	continuously
Mounting	DIN rail
Connection	screw M2,5
Maximum torque	0,4 Nm
Protection grade	IP20
Flammability	UL94V-0
Weight	310g.aprox.
Operation temperature	-5°C...+55°C
Storage temperature	-20°C...+80°C
Relative humidity (without condensation)	<95%
Setting values method	frontal selection

Standards	
Safety requirements	UNE-EN 61010-1 UNE-EN 61010-2-0081
Safety requirements	UNE-EN 61010-2-0081
Electromagnetic Compatibility (CEM)	UNE-EN 61000-6-1 UNE-EN 61000-6-3/A1
Electromagnetic Compatibility (CEM)	UNE-EN 61000-6-3/A1
European Directive	2006/95/CE
European Directive	2004/108/CE

Analogic Output 0-10V	
Output 0-10V equivalent to	0-999 kΩ
Load impedance	>100 kΩ

ModBus	
Protocol	ModBus-RTU
Interface	RS-485
Configuration	9600,8,N,1