INSULATION MONITORING DEVICES

contrel elettronica

ITALIAN DESIGN


HOSPITAL

Insulation monitoring devices

An IT earthing system allows your electrical distribution system to continually operate, even in the presence of an insulation fault, without endangering people or property. Required as part of an IT earthing system, an insulation monitoring device (IMD) detects the initial fault so you can make repairs before a second fault occurs, which could trigger protective devices and halt operations.

The main interest of IT systems is that in case of one insulation fault.

- Enhanced continuity of service of the network (no trip if there is one insulation fault on the network).
- Reduced risk of electric shock.
- Reduced risk of fire or explosion (low faulty current in case of insulation fault).
- Reduced stress on the network and increased equipment life (low faulty current in case of insulation fault).

For this reason, Insulation Monitoring Devices are used on IT networks in order to detect a first insulation fault so that the fault can be repaired; hence avoiding situations with several insulation faults and maintaining the continuity of service on the network.

- Using an Insulation Fault Locator (IFL) allows the operator to locate the fault in multiple feeders installations.

The RI/HRI catalog offers a range of products suitable for these various applications, from the simplest insulation monitoring systems to the most advanced ones, including individual insulation monitoring per feeder and communication with supervision.

IT earthing systems are used for applications requiring continuity of service, such as:

- Healthcare: critical rooms in medical premises such as operating theaters, intensive care units, recovery rooms.
- Industry: critical processes in cement, steel, aluminium, oil and gas, chemical factories, food processing, car manufacturing, (painting area, other...) water, and waste water.
- Infrastructure: control tower and take-off path in airports, railways, seaports, tunnels, and signaling networks in rail.
- Utilities: power plants and control command systems.
- Photovoltaic: solar farms.
- Marine: electrical distribution of any type of ship.
- DC applications such as electrical vehicle charging stations.
- Medium Voltage: cable monitoring, distribution in industrial sites, MV loads-transformers and motors.

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INSULATION MONITORING DEVICES
DC NETWORKS

Certification obtained: **EAC** | Compliant with standards: **EN 61010-1, EN 61557-8, EN 61326-1**

See dimensions and wiring diagrams at the end of chapter

RI-R11

RI-R11D

TYPE		RATED AUXILIARY SUPPLY VOLTAGE	NETWORK TO MONITOR	ORDER CODE	PCS	WT
RI-R11	• 2 operation thresholds • Modular 6 DIN • Configurable fail safe operation • Damaged pole LED	80-180 VDC	115 VDC	**3RI44F**	1	0,400
		185-275 VDC	230 VDC	**3RI44H**		
RI-R11D	• 2 operation thresholds • Modular 6 DIN • Configurable fail safe operation • Damaged pole LED • Insulation level visual indication	80-180 VDC	115 VDC	**3RI45F**	1	0,400

GENERAL CHARACTERISTICS

- Insulation monitor for DC networks
- Green power LED indicator (ON)
- Yellow indicator light for preventive insulation alarm
- Red indicator light for insulation trip
- Tripping delay < 5 sec
- LED indicator for damaged pole
- Front TEST and RESET buttons
- Configurable automatic or manual resetting
- Configurable fail safe pre-alarm and operation
- LED bar for insulation level (RI-R11D only)
- Modular DIN module, with transparent cover
- Degree of protection: IP20 terminals, IP40 on front with cover

ADJUSTMENTS
RI-R11 e RI-R11D

- ALARM threshold setting: 30-50-80-150-300 kΩ
- TRIP threshold setting: 10-20-40-60-100 kΩ

INSULATION MONITORING DEVICES
DC NETWORKS

Certification obtained: **EAC** | Compliant with standards: **EN 61010-1, EN 61557-8, EN 61326-1**

See dimensions and wiring diagrams at the end of chapter

RI-R15

TYPE		RATED AUXILIARY SUPPLY VOLTAGE	NETWORK TO MONITOR	ORDER CODE	PCS	WT
RI-R15	• 1 operation threshold • Modular 6 DIN • Configurable fail safe operation • Damaged pole LED	300 VDC	280÷340 VDC	**3RI47M**	1	0,400
		600 VDC	400÷600 VDC	**3RI47Z**		
		1000 VDC (with adapter ARI-R15)	600÷1000 VDC	**3RI470**		

GENERAL CHARACTERISTICS

- Insulation monitor for DC networks
- Green power LED indicator (ON)
- Red indicator light for insulation trip
- Tripping delay < 5 sec
- Indication of which polarity of the network under control has the low insulation
- Front TEST and RESET buttons
- Configurable automatic or manual resetting
- Configurable fail safe pre-alarm and operation
- Modular DIN module, with transparent cover
- Degree of protection: IP20 terminals, IP40 on front with cover

ADJUSTMENTS RI-R15

- TRIP threshold setting: 30...300 kΩ

INSULATION MONITORING DEVICES
AC NETWORKS

Certification obtained: **EAC** | Compliant with standards: **EN 61010-1, EN 61557-8, EN 61326-1**

See dimensions and wiring diagrams at the end of chapter

RI-F22

RI-R22

TYPE		RATED AUXILIARY SUPPLY VOLTAGE	NETWORK TO MONITOR	ORDER CODE	PCS	WT
RI-F22	• Modular 3 DIN • Fixed TRIP threshold	115 VAC	220÷240 VAC	**3RI02E**	1	0,200
		230 VAC	220÷240 VAC	**3RI02G**		
RI-R22	• Modular 3 DIN • TRIP threshold adjustment	115 VAC	220÷240 VAC	**3RI01E**	1	0,200
		230 VAC	220÷240 VAC	**3RI01G**		

GENERAL CHARACTERISTICS

- Insulation monitor for AC networks
- Green power LED indicator (ON)
- Red indicator light for insulation trip
- Tripping delay 1 sec
- Front TEST and RESET buttons (RI-R22 only)
- Manual resetting
- Modular DIN module, with transparent cover
- Degree of protection: IP20 terminals, IP40 on front with cover

ADJUSTMENTS RI-F22

- Fixed TRIP threshold: 100 kΩ

ADJUSTMENTS RI-R22

- TRIP threshold setting: 25…100 kΩ

INSULATION MONITORING DEVICES
AC NETWORKS

Certification obtained: **EAC** | Compliant with standards: **EN 61010-1, EN 61557-8, EN 61326-1**

See dimensions and wiring diagrams at the end of chapter

RI-R38

TYPE		RATED AUXILIARY SUPPLY VOLTAGE	NETWORK TO MONITOR	ORDER CODE	PCS	WT
RI-R38	• Modular 3 DIN • TRIP threshold adjustment	115 VAC	440 VAC	**3RI24E**	1	0,200
		230 VAC	440 VAC	**3RI24G**		

GENERAL CHARACTERISTICS

- Insulation monitor for AC networks
- Green power LED indicator (ON)
- Red indicator light for insulation trip
- Tripping delay 1 sec
- Front TEST and RESET buttons
- Manual resetting
- Modular DIN module, with transparent cover
- Degree of protection: IP20 terminals, IP40 on front with cover.

ADJUSTMENTS RI-R38

- TRIP threshold setting: 10-30-50-100-150 kΩ

INSULATION MONITORING DEVICES
AC NETWORKS

Certification obtained: **EAC** | Compliant with standards: **EN 61010-1, EN 61557-8, EN 61326-1**

See dimensions and wiring diagrams at the end of chapter

RI-R45

RI-R46

TYPE		RATED AUXILIARY SUPPLY VOLTAGE	NETWORK TO MONITOR	ORDER CODE	PCS	WT
RI-R45	• Modular 2 DIN • 1 operation threshold	115 VAC	440 VAC	**3RI38E**	1	0,200
		230 VAC	440 VAC	**3RI38G**		
RI-R46	• Modular 2 DIN • 2 operation thresholds	115 VAC	440 VAC	**3RI37E**	1	0,200
		230 VAC	440 VAC	**3RI37G**		

GENERAL CHARACTERISTICS

- Insulation monitor for AC networks
- Green power LED indicator (ON)
- Yellow indicator light for preventive insulation alarm (RI-R46 only)
- Red indicator light for insulation trip
- Tripping delay 1 sec
- Front TEST and RESET buttons
- Configurable automatic or manual resetting
- Configurable fail safe operation
- Modular DIN module, with transparent cover
- Degree of protection: IP20 terminals, IP40 on front with cover

ADJUSTMENTS RI-R45

- TRIP threshold setting: 10...200 kΩ

ADJUSTMENTS RI-R46

- ALARM threshold setting: 22...300 kΩ
- TRIP threshold setting: 10...200 kΩ

INSULATION MONITORING DEVICES
AC NETWORKS

Certification obtained: **EAC** | Compliant with standards: **EN 61010-1, EN 61557-8, EN 61326-1**

See dimensions and wiring diagrams at the end of chapter

RI-R44
RI-R44-485

RI-R44-V
RI-R44-V-485

ACCESSORY

ARI-R60:
auxiliary voltage adapter
for isolation control 1000V
AC networks

TYPE		RATED AUXILIARY SUPPLY VOLTAGE	NETWORK TO MONITOR	ORDER CODE	PCS	WT
RI-R44	• Modular 2 DIN • 2 operation thresholds • Configurable fail safe operation	115 VAC	440 VAC	**3RI27E**	1	0,400
		230 VAC	440 VAC	**3RI27G**		
RI-R44-V	• Modular 2 DIN • 2 operation thresholds • Measure and display of the network insulation resistance • Configurable fail safe operation	115 VAC	440 VAC	**3RI30E**	1	0,400
		230 VAC	440 VAC	**3RI30G**		
RI-R44-485	• Modular 2 DIN • 2 operation thresholds • Configurable fail safe operation • Isolated RS485 interface	115 VAC	440 VAC	**3RI28E**	1	0,400
		230 VAC	440 VAC	**3RI28G**		
RI-R44-V-485	• Modular 2 DIN • 2 operation thresholds • Measure and display of the network insulation resistance • Configurable fail safe operation • Isolated RS485 interface	115 VAC	440 VAC	**3RI29E**	1	0,400
		230 VAC	440 VAC	**3RI29G**		

GENERAL CHARACTERISTICS

- Insulation monitor for AC networks
- Green power LED indicator (ON)
- Yellow indicator light for preventive insulation alarm
- Red indicator light for insulation trip
- Yellow indicator LCD for preventive insulation alarm (RI-R44-V only)
- Red indicator LCD for insulation trip (RI-R44-V only)
- Configurable tripping delay
- Front TEST and RESET buttons
- Configurable automatic or manual resetting
- Configurable fail safe operation
- Modbus-RTU communication protocol
- Modular DIN module, with transparent cover (RI-R44 only)
- Degree of protection: IP20 terminals, IP40 on front with cover

ADJUSTMENTS RI-R44

- ALARM threshold setting: 200% della
- TRIP threshold setting: 1-5-10-30-50-100-150-300 kΩ

ADJUSTMENTS RI-R44-V

- ALARM threshold setting: 1...999 kΩ
- TRIP threshold setting: 1...999 kΩ

INSULATION MONITORING DEVICES
AC NETWORKS

Certification obtained: **EAC** | Compliant with standards: **EN 61010-1, EN 61557-8, EN 61326-1**

See dimensions and wiring diagrams at the end of chapter

NETWORK AC

RI-R60

TYPE		RATED AUXILIARY SUPPLY VOLTAGE	NETWORK TO MONITOR	ORDER CODE	PCS	WT
RI-R60	• Modular 2 DIN • 2 operation thresholds • Configurable fail safe operation • Insulation level visual indication	115-230 VAC	760 VAC	**3RI34V**	1	0,500
ARI-R60	Voltage adapter for RI-60 insulation monitor device	-	1000 VAC	**3RI35V**	1	0,500

GENERAL CHARACTERISTICS

- Insulation monitor for AC networks
- Green power LED indicator (ON)
- Yellow indicator light for preventive insulation alarm
- Red indicator light for insulation trip
- Tripping delay < 5 sec
- Front TEST and RESET buttons
- Configurable automatic or manual resetting
- Configurable fail safe operation
- LED bar for insulation level
- Modular DIN module, with transparent cover
- Degree of protection: IP20 terminals, IP40 on front with cover

ADJUSTMENTS RI-R60

- ALARM threshold setting: 30-50-80-150-300 kΩ
- TRIP threshold setting: 10-20-40-60-100 kΩ

INSULATION MONITORING DEVICES
AC / DC NETWORKS

Certification obtained: **EAC** | Compliant with standards: **EN 61010-1, EN 61557-8, EN 61326-1**

See dimensions and wiring diagrams at the end of chapter

NETWORK AC

NETWORK DC

RI-F48

RI-R48

RI-R48N

TYPE		RATED AUXILIARY SUPPLY VOLTAGE	NETWORK TO MONITOR	ORDER CODE	PCS	WT
RI-F48	• Modular 3 DIN • Fixed threshold setting	24÷48 VAC/DC	24÷48 VAC/DC	**3RI03N**	1	0,200
RI-R48	• Modular 3 DIN • TRIP threshold adjustment	24÷48 VAC/DC	24÷48 VAC/DC	**3RI04N**	1	0,200
RI-R48N	• Modular 3 DIN • TRIP threshold adjustment • Damaged pole LED	24÷48 VAC/DC	24÷48 VAC/DC	**3RI42N**	1	0,200

GENERAL CHARACTERISTICS

- Insulation monitor for AC and DC networks
- Green power LED indicator (ON)
- Red indicator light for insulation trip
- Tripping delay 0,2 sec
- Indication of which polarity of the network under control has low insulation (only for RI-R48N)
- Front TEST and RESET buttons
- Manual resetting
- Modular DIN module, with transparent cover
- Degree of protection: IP20 terminals, IP40 on front with cover

ADJUSTMENTS RI-F48

- TRIP threshold setting: 10-30-50-100-150 kΩ

ADJUSTMENTS RI-R48

- TRIP threshold setting: 10-30-50-100-150 kΩ

ADJUSTMENTS RI-R48N

- TRIP threshold setting: 10-30-50-100-150 kΩ

INSULATION MONITORING DEVICES
FOR VOLTAGELESS NETWORKS

Certification obtained: **EAC** | Compliant with standards: **EN 61010-1, EN 61557-8, EN 61326-1**

See dimensions and wiring diagrams at the end of chapter

RI-SM

RI-SM-V-485

TYPE		RATED AUXILIARY SUPPLY VOLTAGE	NETWORK TO MONITOR	ORDER CODE	PCS	WT
RI-SM	• Modular 2 DIN • 1 operation threshold	115 VAC	20÷500 VAC/DC (fuori tensione)	**3RI52E**	1	0,200
		230 VAC		**3RI52G**		
RI-SM-V-485	• Modular 2 DIN • 1 operation threshold • Measure and display of the network insulation resistance • Isolated RS485 interface	115 VAC	20÷500 VAC/DC (fuori tensione)	**3RI54E**	1	0,200
		230 VAC		**3RI54G**		

GENERAL CHARACTERISTICS

- Green power LED indicator (ON)
- Yellow indicator light for preventive insulation alarm
- Red indicator light for insulation trip
- Yellow indicator LCD for preventive insulation alarm (RI-SM-V-485 only)
- Red indicator LCD for insulation trip (RI-SM-V-485 only)
- Tripping delay 0,2 sec
- Front TEST and RESET buttons
- Configurable automatic or manual resetting
- Modular DIN module, with transparent cover (RI-SM only)
- Degree of protection: IP20 terminals, IP40 on front with cover

ADJUSTMENTS RI-SM (2 DIN)

- ALARM threshold setting: 120% of trip threshold
- TRIP threshold setting: 0,1-0,25-0,50-1-2,5-5-10-15 MΩ

ADJUSTMENTS RI-SM-V-485

- ALARM threshold setting: 0,1...30 MΩ
- TRIP threshold setting: 0,1...30 MΩ

INSULATION MONITORING DEVICES
FOR HEALTHCARE FACILITIES

Certification obtained: **EAC**
Compliant with standards: **CEI EN 61010-1; CEI EN 64-8/7-710; CEI EN 61326-1**

See dimensions and wiring diagrams at the end of chapter

HRI-R24

TYPE		RATED AUXILIARY SUPPLY VOLTAGE	NETWORK TO MONITOR	ORDER CODE	PCS	WT
HRI-R24	• Pannello di segnalazione a distanza. • Scatola universale tipo E503.	24 VAC/DC	24 VAC/DC	**3RI04J**	1	0,200

GENERAL CHARACTERISTICS

- Medical insulation monitoring device for scialitic lamps
- Green power LED indicator (ON)
- Red indicator light for insulation trip
- Tripping delay 1 sec
- Front TEST and RESET buttons
- Manual resetting
- Modular DIN module, with transparent cover
- Degree of protection: IP20 terminals, IP40 on front with cover

ADJUSTMENTS PER HRI-R24

- TRIP threshold setting: 25...100 kΩ

INSULATION MONITORING DEVICES
FOR HEALTHCARE FACILITIES

See dimensions and wiring diagrams at the end of chapter

Certification obtained: **EAC**
Compliant with standards: **CEI-EN 64-8/7-710, CEI EN 61557-8, EN 60255-6, UNE 20615**

HRI-R40

TYPE		RATED AUXILIARY SUPPLY VOLTAGE	NETWORK TO MONITOR	ORDER CODE	PCS	WT
HRI-R40	• Modular 6 DIN • Alarm threshold: low insulation, low impedence, over temperature, over current, Link-Fail	115 VAC / 230 VAC	24÷230 VAC	**3RI83V**	1	0,500
HRI-R40-485	• Modular 6 DIN • Alarm threshold: low insulation, low impedence, over temperature, over current, Link-Fail • Isolated RS485 interface using Modbus RTU	115 VAC / 230 VAC	24÷230 VAC	**3RI85V**	1	0,500
HRI-R40W	• Modular 6 DIN • Thanks to a codified signal, it grants absolute reliability of measurement in any operational condition, even if high network interferences occur. • Isolated RS485 interface using Modbus RTU	115 VAC / 230 VAC	24÷230 VAC	**3RI86V**	1	0,500

GENERAL CHARACTERISTICS

- Medical insulation monitoring devices
- Insulation resistance is measured by applying a direct current signal between insulated line and earth
- Displays the resistance and impedance of the network insulation
- Monitoring of the isolation transformer
- Monitoring of the current consumed by the loads
- Red LED for signaling insulation threshold intervention
- Red LED for signaling intervention of the overtemperature threshold
- Red LED for signaling intervention of the current overload threshold
- Red LED indicating device not connected to the line (LINK-FAIL)
- Tripping delay 3 sec
- Front TEST and RESET buttons
- Ripristino automatico o manuale impostabile
- Configurable fail safe operation
- Modular DIN module, with transparent cover
- Degree of protection: IP20 terminals, IP40 on front with cover

ADJUSTMENTS HRI-R40

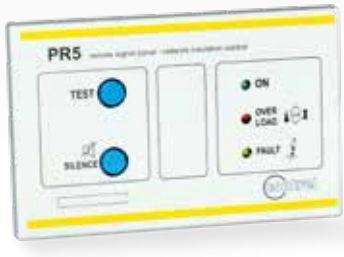
- Low resistence threshold: 50÷500 kΩ
- Low impedance threshold: 50÷500 kΩ
- Overtemperature of the transformer: 0 ÷ 200 °C
- Overload of the transformer: 1 ÷ 999 A
- Device not connected to the line (LINK-FAIL)

INSULATION MONITORING DEVICES
REMOTE SIGNALLING PANEL

See dimensions and wiring diagrams at the end of chapter

Certification obtained: **EAC** | Compliant with standards: **CEI EN 61010-1; CEI EN 61557-8; CEI EN 64-8/7-710; UNE 20615; CEI EN 61326-1**

PR-5



TYPE		RATED AUXILIARY SUPPLY VOLTAGE	NETWORK TO MONITOR	ORDER CODE	PCS	WT
PR-5	• Panel provides an acoustic and luminous signal in case of low insulation or thermal and electrical overload • Operational efficiency: both visual and acoustic signalling	24 VAC/DC (from HRI-R40 device)	-	**3RIA08**	1	0,200

GENERAL CHARACTERISTICS

- Remote signalling panel enables to send alarm signals from the insulation monitoring devices
- Green LED (device is working properly)
- Red LED for overload alarm
- Yellow LED for fault alarm
- TEST and MUTE pushbutton
- Compact size: installation in a universal 3-module flush-mounted box type E503, in horizontal or vertical position
- Degree of protection: IP30

INSULATION MONITORING DEVICES
OPERATING THEATER DISPLAY

Certification obtained: **EAC**
Compliant with standards: **IEC/EN 61010-1, EN 61000-6-2, EN 61000-6-4**

See dimensions and wiring diagrams at the end of chapter

RMS-24

TYPE		RATED AUXILIARY SUPPLY VOLTAGE	NETWORK TO MONITOR	ORDER CODE	PCS	WT
RMS-24	• Compact data concentrator of several insulation monitoring devices for hospitals. It is possible to immediately understand if the system works correctly or if, on the other hand, it has anomalies or damage. • Alarms page: summarizes the measurements in a single screen real time, maximum and minimum (resistance, impedance, transformer overtemperature and overcurrent) and alarms (Error - Link Fail; low insulation; programmed alarm threshold exceeded) • Configuration page: it is possible to configure the system to be monitored and monitored. Password access protection • Isolated RS485 interface for Modbus RTU	90-250 VAC/DC	-	**3ML30V**	1	0,400
		24-48 VAC/DC	-	**3ML30N**	1	0,400
RMS-24-Eth	• Compact data concentrator of several insulation monitoring devices for hospitals. It is possible to immediately understand if the system works correctly or if, on the other hand, it has anomalies or damage. • Alarms page: summarizes the measurements in a single screen real time, maximum and minimum (resistance, impedance, transformer overtemperature and overcurrent) and alarms (Error - Link Fail; low insulation; programmed alarm threshold exceeded) • Configuration page: it is possible to configure the system to be monitored and monitored. Password access protection • Ethernet interface for Modbus TCP / IP	90-250 VAC/DC	-	**3ML302V**	1	0,400
		24-48 VAC/DC	-	**3ML302N**	1	0,400

SYSTEM CONFIGURATION PAGES

DEFINITION ALPHA-NUMERIC OF THE MEDICAL PREMISES

MANAGEMENT OF ALARMS ON THRESHOLD EXCEEDING

CONTROL THE STATUS OF A GROUP OF OPERATING THEATRES

ALARM LOGGER ENABLING

ENABLING INTERNAL BUZZER

GENERAL CHARACTERISTICS

- RMS-24 is an interface to be installed in a medical critical room such as an operating theater.
- Simple and intuitive human machine interface, informing the medical staff about the status of the medical room
- Works in conjunction with insulation monitors such as HRI-R40 and fault locator such as HRI-IFL-4
- 320x240 pixel color TFT display
- Alarm signaling LED
- Event storage and management
- Advanced I / O functions
- Relay outputs each with 1 changeover contact, both settable for intervention or 1 for intervention and 1 for pre-alarm
- Positive safety operation settable with pre-alarm
- Include a buzzer to provide a sound signal in case of alarm.
- Acoustic silence button on the front
- Front insulation monitor functional test buttons
- Modbus-RTU communication protocol
- Modbus-TCP communication protocol (optional)
- Housing for recessed mounting 96x96x50mm
- Degree of protection: IP20 terminals, IP40 on front

INSULATION FAULT LOCATOR
FOR HEALTHCARE FACILITIES

Certification obtained: **EAC |** Compliant with standards: **CEI EN 61010-1; CEI EN 64-8/7-710; CEI EN 61326-1**

See dimensions and wiring diagrams at the end of chapter

HRI-IFL-4

TYPE		RATED AUXILIARY SUPPLY VOLTAGE	NETWORK TO MONITOR	ORDER CODE	PCS	WT
HRI-IFL-4	• Insulation fault locator, simultaneously for 4 lines • Monitoring of the ground insulation of each individual line • The insulation fault is displayed by 4 LEDs, one for each line • Communication via Modbus RS485 protocol to allow measurement and event reporting to the supervisory system	115 VAC / 230 VAC	-	**3RI90V**	1	0,600

Application

- For Medical premises such as operating theaters, intensive care units, Recovery rooms, designed as per IEC60364-7-710, where ungrounded networks are used and where automatic insulation fault location is required.
- Strongly recommended in networks where a medical IT system is used to supply multiple rooms or locations

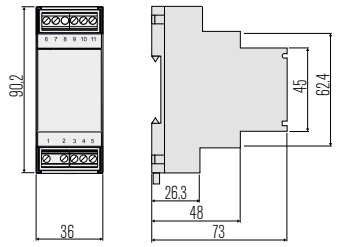
Insulation Fault Locator

If an insulation fault occurs on the IT network, the latter must be localized and corrected, with a minimum interruption of site operations.
The search for the fault can be performed by sequentially opening the circuit breakers; however this method causes the temporary interruption of the power supply on the various departures.

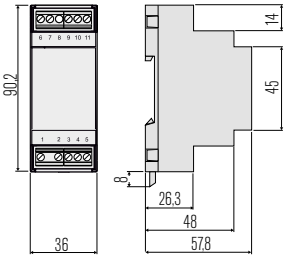
To avoid this situation, it is useful to use insulation fault locators as they allow you to automatically locate the fault while maintaining continuity of service on the site. In networks that contain numerous lines, the use of fault locators also saves time and operating costs in network maintenance.

The insulation fault locators are associated with a permanent insulation controller. Their measurement principle is based on the low frequency component injected by the insulation monitor.

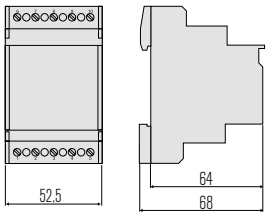
RI-SM | RI-R44-V | RI-R45 | RI-R46



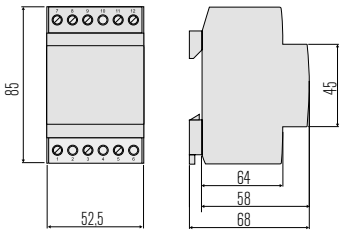
RI-R44-V | RI-SM-V



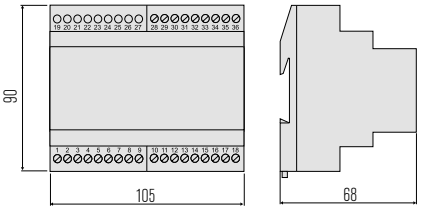
RI-F48 | RI-R48 | RI-F22 | RI-R22 | HRI-R24



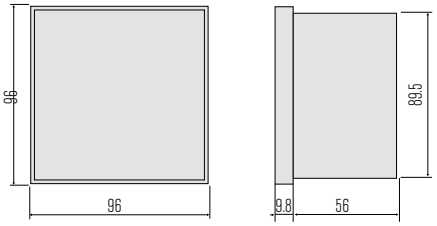
RI-R38 | RI-R48N



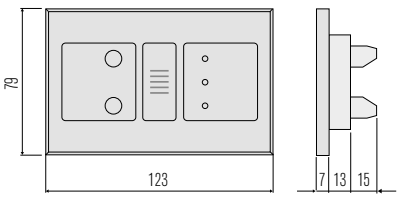
RI-R11 | RI-R11D | RI-R60 | HRI-R40 | ARI-R60



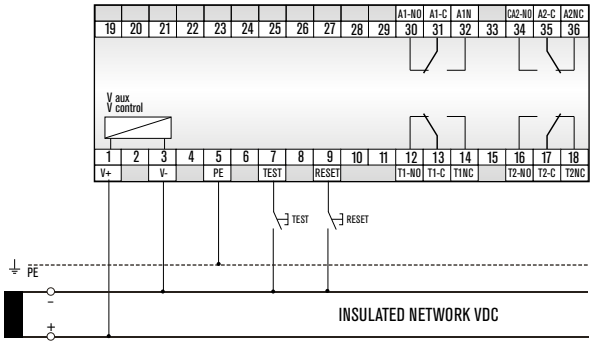
RMS-24



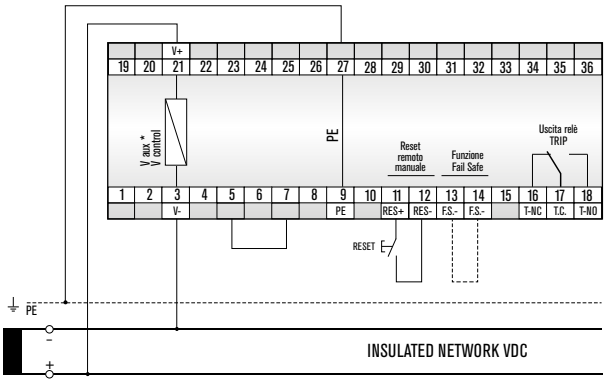
PR-5



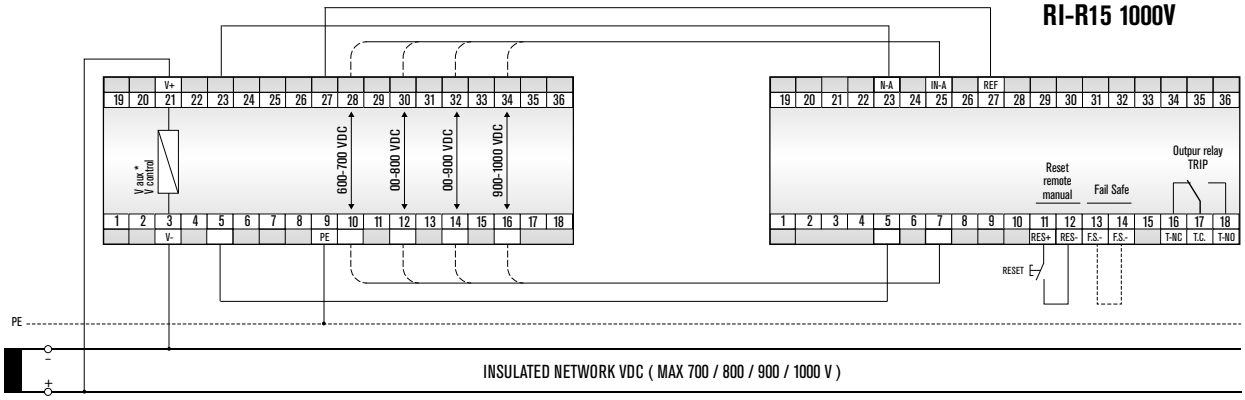
RI-R11 | RI-R11D



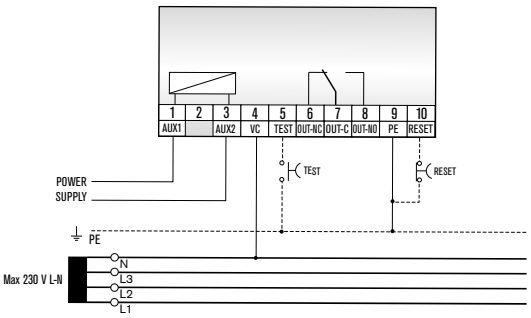
RI-R15



RI-R15 1000V



RI-F22 | RI-R22



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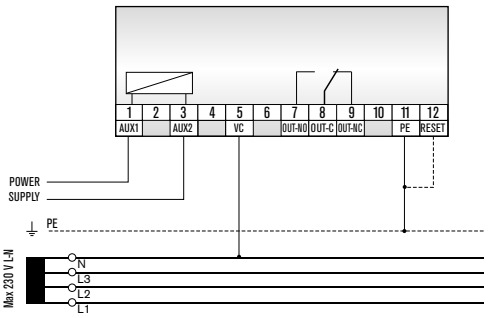

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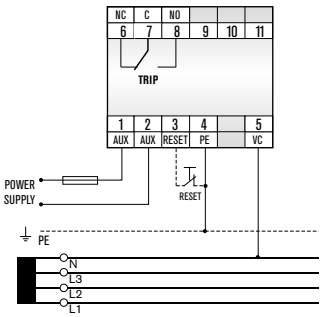

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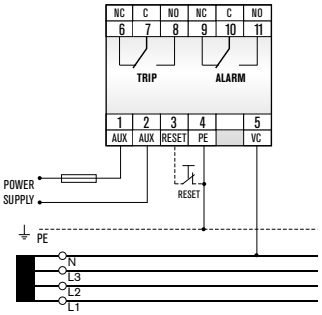
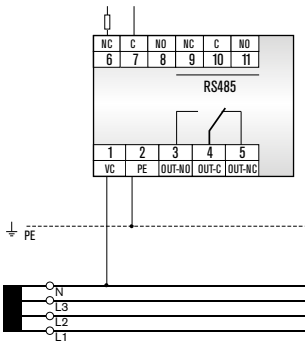


RI-R44 | RI-R44-V



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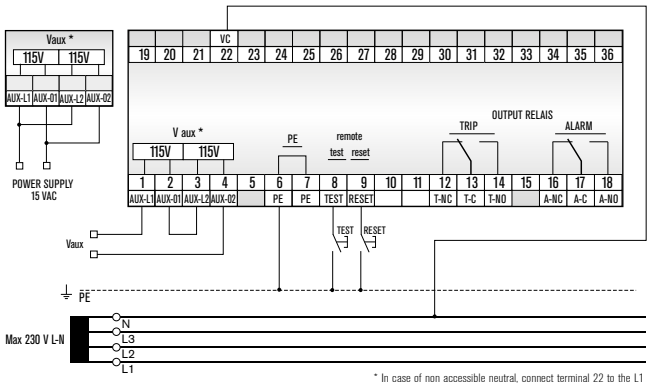

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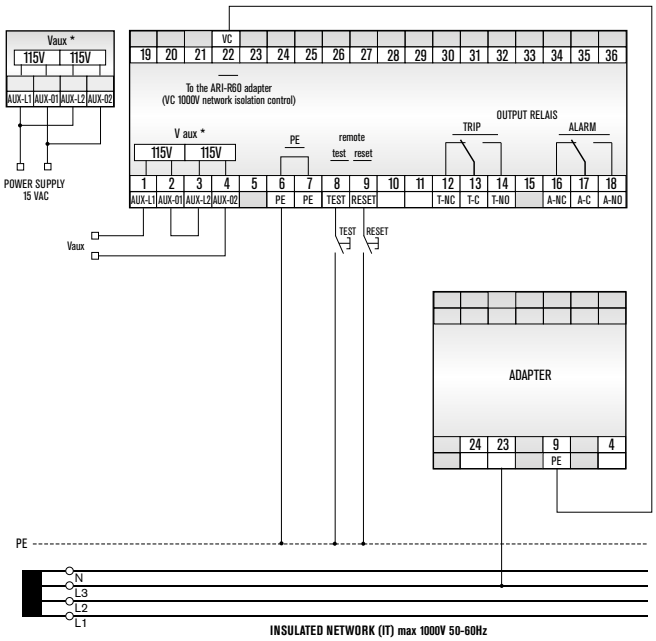
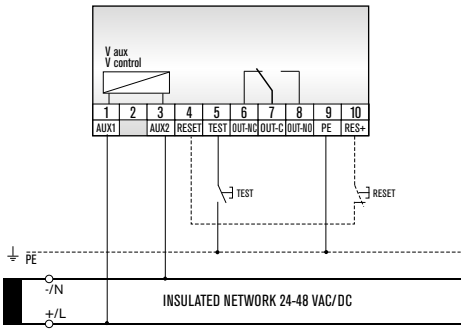
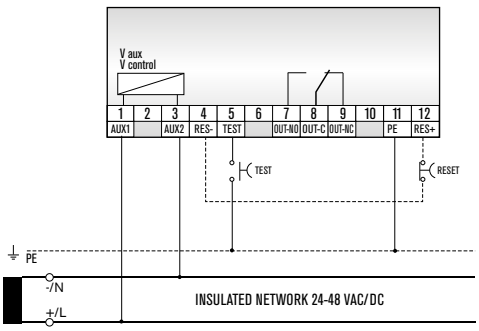


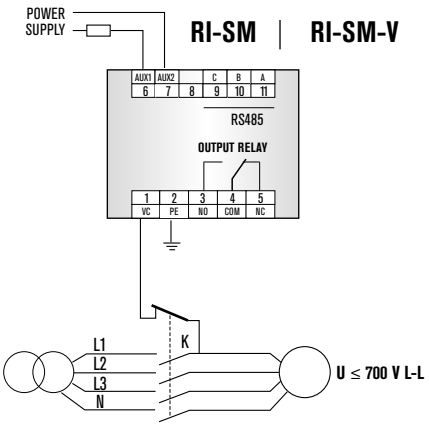
RI-F48 | RI-R48



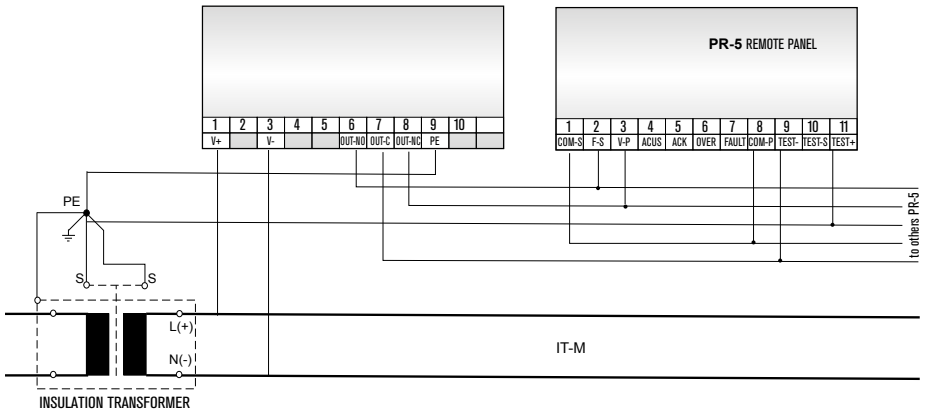
RI-R48N



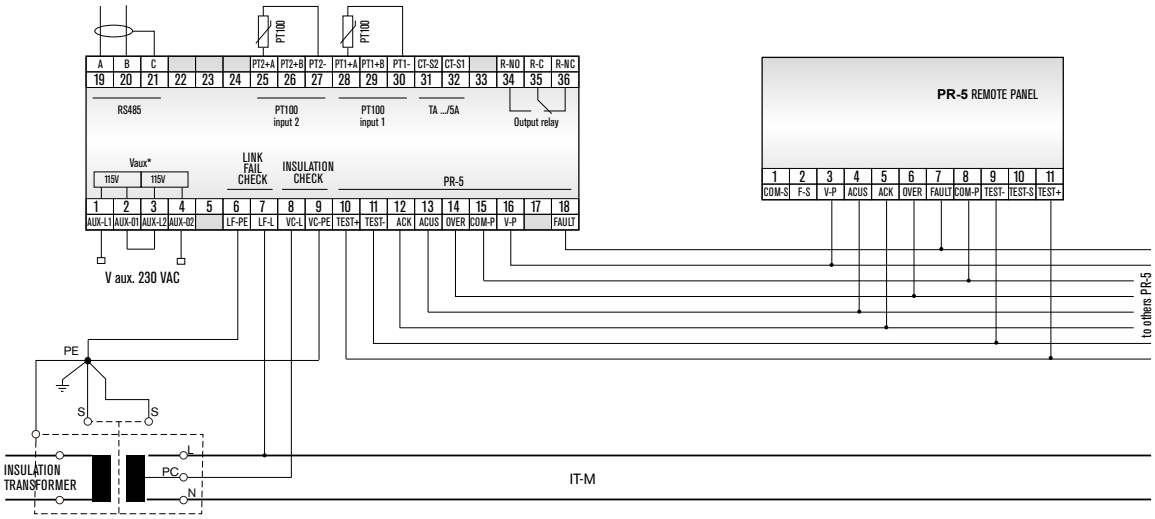
RI-SM | RI-SM-V



HRI-R24

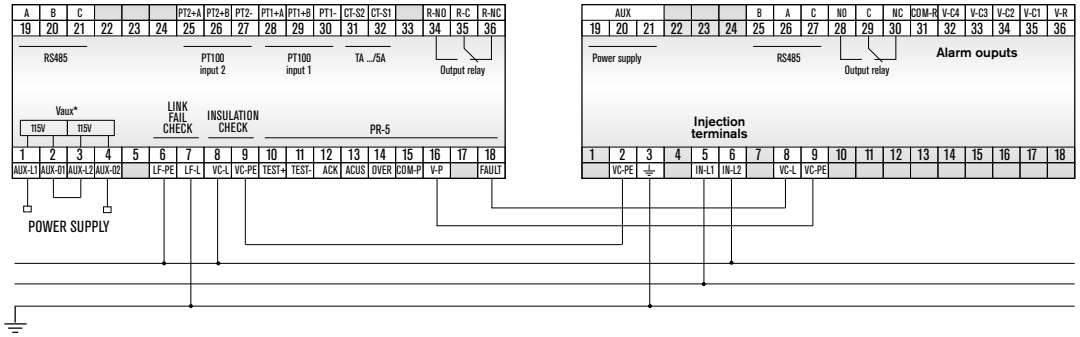


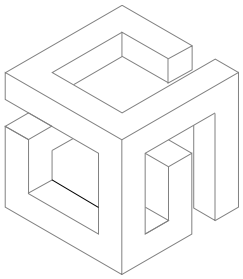
HRI-R40



HRI-R40

HRI-IFL-4





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