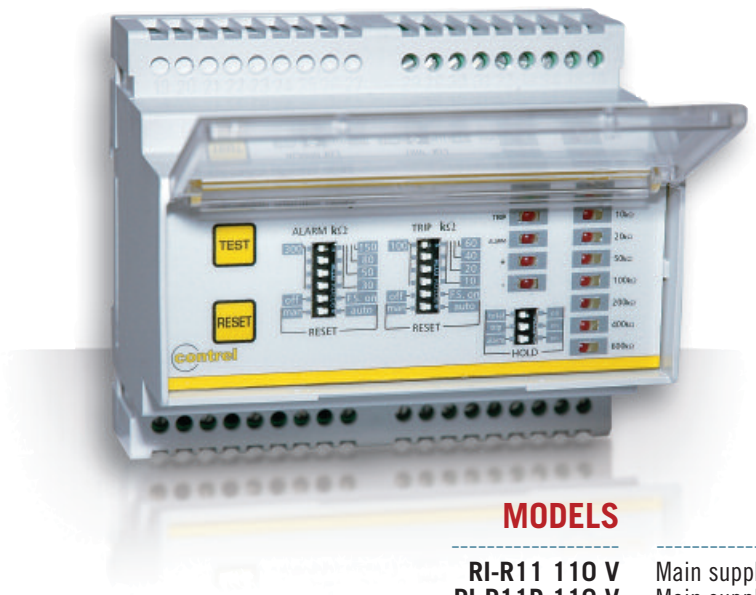
RI-R11 series
RI-R11D series

INSULATION MONITORING

VERSIONS FOR NETWORKS dc MAX 250 V

GENERAL



The devices allow permanent monitoring of insulation of electrical networks in direct-current current isolated on earth (IT networks). Monitoring is carried out measuring potential's variation of two polarities of network on earth. Auxiliary supply is taken from under-control network.

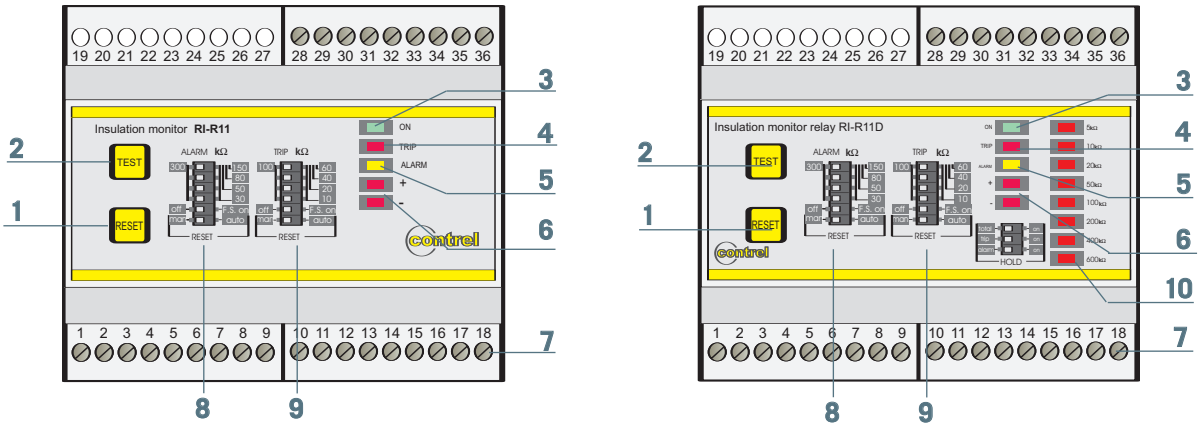
These devices have two trip thresholds, which are adjustable by frontal micro switches, called ALARM and TRIP. This works in order to signal that insulation's level decreased under the threshold. Trip is signalled by frontal LED with indication of polarity (+ or -) that show low insulation. Remote trip threshold is carried out by double switch two relays with contacts voltage-free. Relays could be programmed in positive safe too (FAIL-SAFE function, normally excited). On the front, there are TEST and RESET buttons; test could be activated locally or by an external button; push button could be set manually or automatically, either with local button or with external push button.

Model RI-R11D has a monitor of insulation's level of the device by a bar.

MODELS

RI-R11 110 V	Main supply and auxiliary voltage 110 Vdc / -15% +25% (80 ÷ 180 Vdc)
RI-R11D 110 V	Main supply and auxiliary voltage 110 Vdc / -15% +25% (80 ÷ 180 Vdc)
RI-R11 220 V	Main supply and auxiliary voltage 220 Vdc /-15% +25% (185 ÷ 275 Vdc)
RI-R11D 220 V	Main supply and auxiliary voltage 220 Vdc / -15% +25% (185 ÷ 275 Vdc)

FUNCTIONS AND OPERATORS - LEGENDA

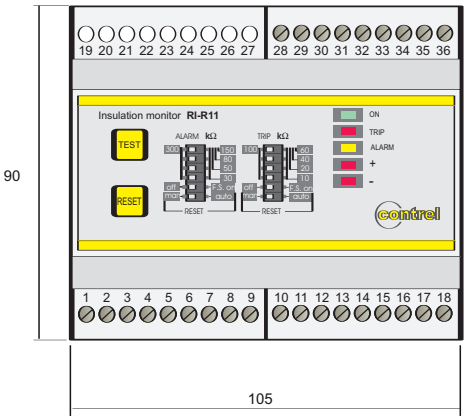


1	RESET button. This works only if RESET functioning is set manually.
2	TEST button. Pushing TEST button cause either alarm activation or trip activation with output relays' switching.
3	LED ON for active device signalling
4	LED TRIP for trip threshold TRIP signalling
5	LED ALARM for alarm threshold ALARM signalling
6	LED+ and LED- signalling which under-control network's polarity has low insulation. Ignition of one of these LED will be connected with ALARM LED and TRIP ignition.
7	Screw terminals for connections
8	Micro switches for alarm threshold setting
9	Micro switches for trip threshold setting
10	Led bar for insulation level visualising (only for RI-R11D)

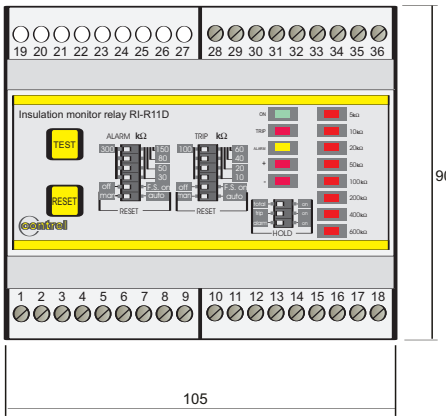
ELECTRIC CHARACTERISTICS

Network voltage and auxiliary supply	RI-R11 110 V 110 Vdc $^{-15}/_{+25}$ % (80 ÷ 180 Vdc) RI-R11D 110 V 110 Vdc $^{-15}/_{+25}$ % (80 ÷ 180 Vdc) RI-R11 220 V 220 Vdc $^{-15}/_{+25}$ % (185 ÷ 275 Vdc) RI-R11D 220 V 220 Vdc $^{-15}/_{+25}$ % (185 ÷ 275 Vdc)
Self-consumption	5 W MAX
Alternating residual load	5 %
ALARM threshold setting	300 ÷ 30 kohm (5 levels adjustable by micro switches)
TRIP threshold setting	100 ÷ 10 kohm (5 levels adjustable by micro switches)
Signalling	led ON, led ALARM, led TRIP, led +, led - signalling insulation led bar (only for RI-R11D)
Tripping delay	about 1 second
Measure's current	MAX 1.8 mA
Internal impedance	RI-R11 / RI-R11D 110 V 200 kohm L+/L- 100 kohm L/earth RI-R11 / RI-R11D 220 V 400 kohm L+/L- 200 kohm L/earth
Output relay free from voltage contacts	ALARM : 2 contacts switched NO-C-NC TRIP : 2 contacts switched NO-C-NC
Capacity relay contacts	5 A 250 Vac – 0.3 A 130 Vdc – 0.2 A 280 Vdc resistive load 0.15 A 130 Vdc – 0.05 A 280 Vdc inductive load L/R < 40 ms with 2 serial contacts: 0.7 A 130 Vdc – 0.5 A 280 Vdc resistive load
Adjustable functions	output alarm function - fail safe function for both outputs manual or automatic reset (external reset)
Working temperature	- 10 …+ 60 °C
Storing temperature	- 20 …+ 70 °C
Relative humidity	< 90 %
Insulation test	2.5 kV 60 sec / 4 kV set 1.2 / 50 μs
Assembling position	indifferent
Connection type	by screw terminals - wire section MAX 2.5 mm^2
Protection's degree	IP 40 frontal with cap - IP 20 case
Mounting according with DIN 50022	easy connection snap on DIN rail 35 mm / 6 modules of 17.5 mm
Weight	approximately 400 g
Standard reference	CEI-EN 61010-1 / CEI-EN 61557-8 / VDE 0413 part.8 / CEI-EN 61326-1

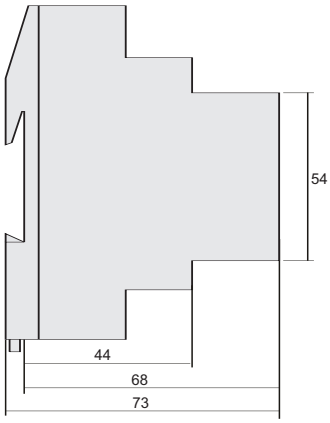
DIMENSIONS



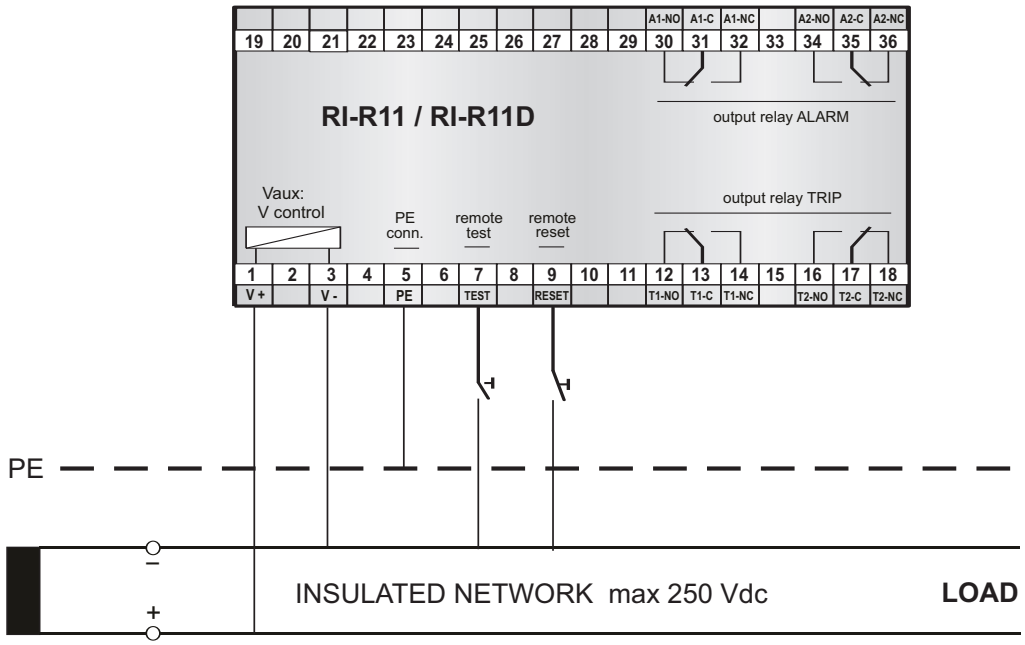
RI-R11



RI-R11D



WIRING DIAGRAMS - LEGENDA



AUXILIARY SUPPLY AND UNDER-CONTROL NETWORK CONNECTION - TERMINALS 1-3.
Positive and negative polarities of under-control network have to be connected to these terminals. Network's voltage is used for device's supply. If positive and negative has been inverted, the device would not be damaged but **(+)** and **(–)** indications of frontal LED would be inverted too. The advice is that of making sure about the model with right functioning voltage.

CONNECTION TO EARTH - TERMINAL 5.
Terminal has to be connected with protection conductor PE (earth) in order to allow insulation's measure.

CONNECTION FOR REMOTE TEST - TERMINAL 7.
In case of willing to foresee **TEST** function also from an external push button, it's possible to connect a pushbutton with normally open contact NO between this terminal and under-control network. If it's connected to **(+)** polarity, test will cause ALARM LED, TRIP LED and **(+)** lighting; but if it's connected to **(–)** polarity, LED - will light.

CONNECTION FOR REMOTE RESET - TERMINAL 9.
In case of willing to foresee RESET function also from an external push button, it's possible to connect a pushbutton with normally open contact NO between this terminal and **(–)** polarity of under-control network.

OUTPUT TERMINAL FOR TRIP RELAY - TERMINALS 12-13-14 16-17-18.
In order to signal to exterior threshold TRIP activation, it's available a relay with double change over contact voltage-free. The diagram shows contacts' condition either with not supplied device or supplied at rest with FAIL SAFE function not active (relay normally not excited). If FAIL SAFE function is set, relay will be normally excited when there is not tripping (supplied device) and it will be back at rest in case of tripping, not supplied device or failure.

OUTPUT TERMINAL FOR ALARM RELAY - TERMINALS 30-31-32 34-35-36
In order to signal trip threshold ALARM activation, it's available a relay with double switch voltage-free. The diagram shows contacts' condition either with not supplied device or supplied at rest with FAIL SAFE function not active (relay normally not excited). If FAIL SAFE function is set, relay will be normally excited when there is not tripping (supplied device) and it will be back at rest in case of tripping, not supplied device or failure.

RI-F22 series
RI-R22 series
RI-R38 series

INSULATION MONITORING

VERSIONS FOR NETWORKS ac MAX 400 V

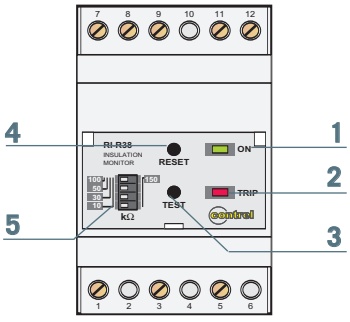
GENERALITA'

These devices allow insulation monitoring on earth of electric networks in alternating 230 V and isolated 400 V (IT systems).
Insulation resistance monitoring is carried out applying a measure's signalling in direct-current between isolated network and earth.
Surveying electric leakage set up on earth it's possible to measure insulation level.
Versions with fixed trip threshold are available and they are very cheap.
There are also versions with possibility of adjustable calibration of trip threshold.
On frontal panel, devices have signal for activity ON, for TRIP (low insulation), a test button, a reset button (only for versions with adjustable threshold) and a potentiometer for setting the threshold of tripping (model RI-R22) or micro switches (model RI-R38).

MODELS

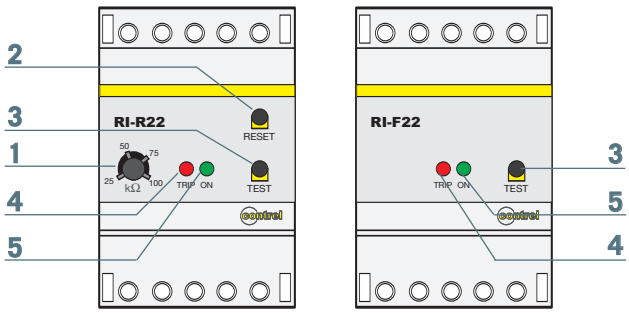
RI-F22 fixed threshold	Vaux: 230 V 50-60 Hz (standard version)
RI-F22 fixed threshold	Vaux: 110 V 50-60 Hz (optional version)
RI-R22 adjustable threshold	Vaux: 230 V 50-60 Hz (standard version)
RI-R22 adjustable threshold	Vaux: 110 V 50-60 Hz (optional version)
RI-R38 adjustable threshold	Vaux: 230 V 50-60 Hz (standard version)
RI-R38 adjustable threshold	Vaux: 110 V 50-60 Hz (optional version)

FUNCTIONS AND OPERATORS - LEGENDA



RI-R38

1. LED ON green active device's indication
2. LED TRIP red signal of trip for low insulation
3. TEST button device functioning testing
4. RESET button trip signalling reset (manual reset functions)
5. micro switches for trip threshold adjusting



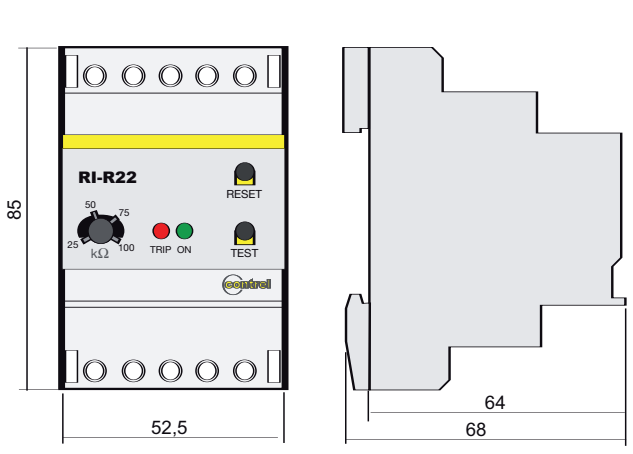
RI-F22 / RI-R22

1. Potentiometer for adjusting insulation's resistance (only for model RI-R22)
2. Manual resetting button (only for model RI-R22)
3. Test button
4. Signalling lamp of auxiliary supply (green LED)
5. Signalling lamp for relay tripped (red LED)

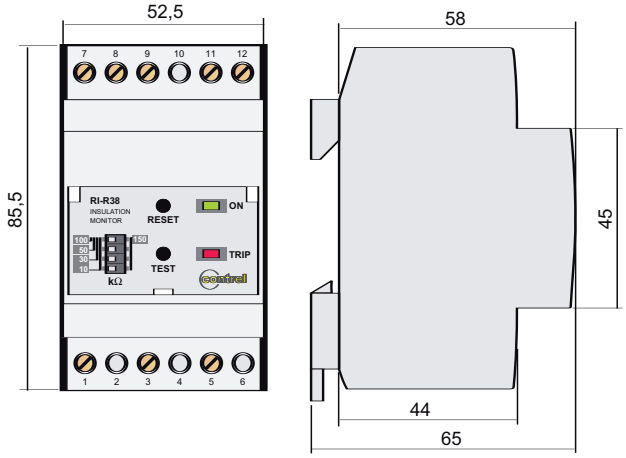
ELECTRIC CHARACTERISTICS

Auxiliary supply voltage	230 V 50-60 Hz ± 20 % standard 110 V 50-60 Hz ± 20 % optional
Self-consumption	3 VA MAX
Network voltage	RI-F22 / RI-R22 24 ÷ 230 Vac +10 % (400 V on 3 phase network with neutral) RI-R38 24 ÷ 440 Vac +10 % (760 V on 3 phase network with neutral)
Measure's voltage	RI-F22 / RI-R22 12 V MAX RI-R38 24 V MAX
Measure's current	RI-F22 / RI-R22 0.1 mA MAX RI-R38 0.5 mA MAX
Internal impedance	RI-F22 / RI-R22 100 kohm RI-R38 250 kohm
Tripping threshold setting	RI-F22 fixed 100 kohm RI-R22 adjustable 25 ÷ 100 kohm (by potentiometer) RI-R38 adjustable 10 ÷ 150 kohm (4 levels by micro switches)
Tripping late	about 1 second
Signals and operators	led ON - led TRIP buttons TEST and RESET (RESET is not available for RI-F22)
Output	relay switch contact NO-C-NC MAX 5 A 250 Vac
Working temperature	- 10 …+ 60 °C
Storing temperature	- 20 …+ 70 °C
Relative humidity	< 90 %
Insulation test	3 kV 60 sec / 4 kV set 1.2 / 50 μs
Assembling position	indifferent
Connection type	by screw terminals - wire section MAX 4 mm²
Protection's degree	IP 40 frontal with cap - IP 20 case
Mounting according with DIN 50022	easy connection snap on DIN rail 35 mm / 3 modules of 17.5 mm
Weight	approximately 300 g
Standard reference	CEI-EN 61010-1 / CEI-EN 61557-8 / VDE 0413 part.8 / CEI-EN 61326-1

DIMENSIONS

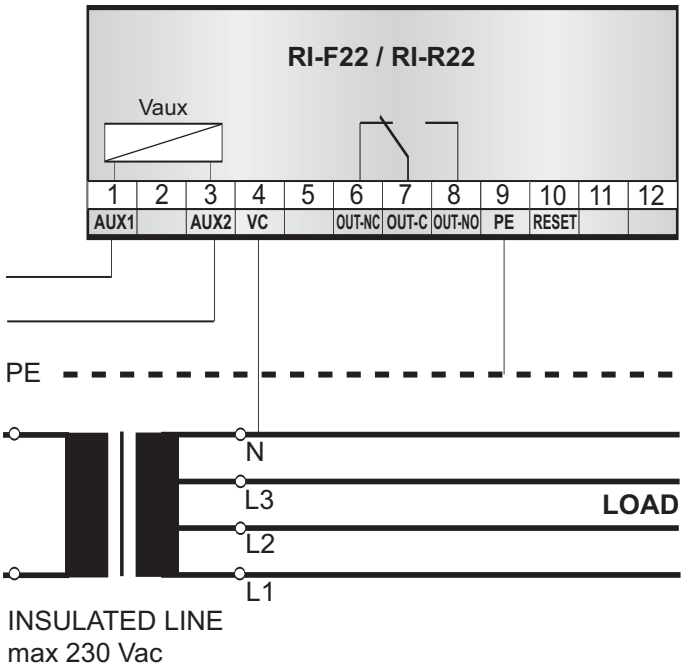


RI-F22 I RI-R22



RI-R38

WIRING DIAGRAMS - LEGENDA



RI-F22 / RI-R22

AUXILIARY SUPPLY - terminals 1-3
auxiliary supply available from under-control network

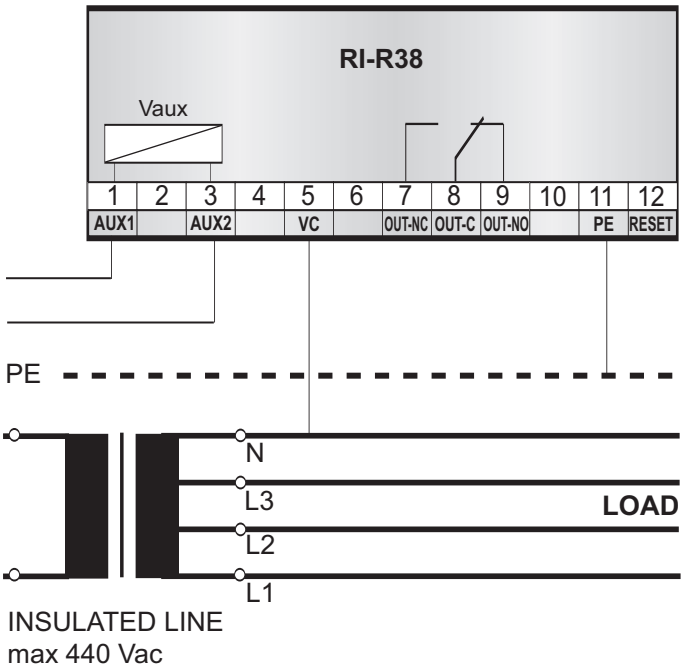
INSULATION MONITORING - terminals 4-9
the two terminals have to be connected between under-control network and measure's referring earth (max. applicable voltage between these terminals is 230 V, so it's possible apply insulation monitoring on single phase networks till 230 V, three phase networks three-wires without neutral till 230 V and three phase networks with neutral till 400 V)

RELAYS' OUTPUT CONNECTIONS - terminals 6-7-8

CONNECTIONS FOR REMOTE SIGNALLING
by relays in switch voltage-free max 5 A 250 V on resistive load

EVENTUAL CONNECTION FOR AUTOMATIC OR REMOTE RESET
(only for RI-R22) it is required to connect a NC button between terminal 10 and earth's conductor PE and to link with a bond terminals 9 and 10 themselves

EVENTUAL CONNECTION FOR REMOTE TEST
(only for version RI-R22) it is required to connect a NO button between terminal 5 and earth's conductor PE



RI-R38

AUXILIARY SUPPLY - terminals 1-3
auxiliary supply available from under-control network

INSULATION MONITORING - terminals 5-11
the two terminals have to be connected between under-control network and measure's referring earth. Terminal 5 has to be connected between under-control network single phase or three phase and neutral conductor. If three phase network is three-wire, the terminal has to be connected to a phase. max. applicable voltage between these terminals is 230 V, so it's possible apply insulation monitoring on single phase networks up to 440 V, three phase networks three-wire without neutral up to 440 V and three phase networks with neutral up to 760 V

RELAYS' OUTPUT CONNECTIONS - terminals 7-8-9

CONNECTIONS FOR REMOTE SIGNALLING
by relays in switch voltage-free max 5 A 250 V on resistive load

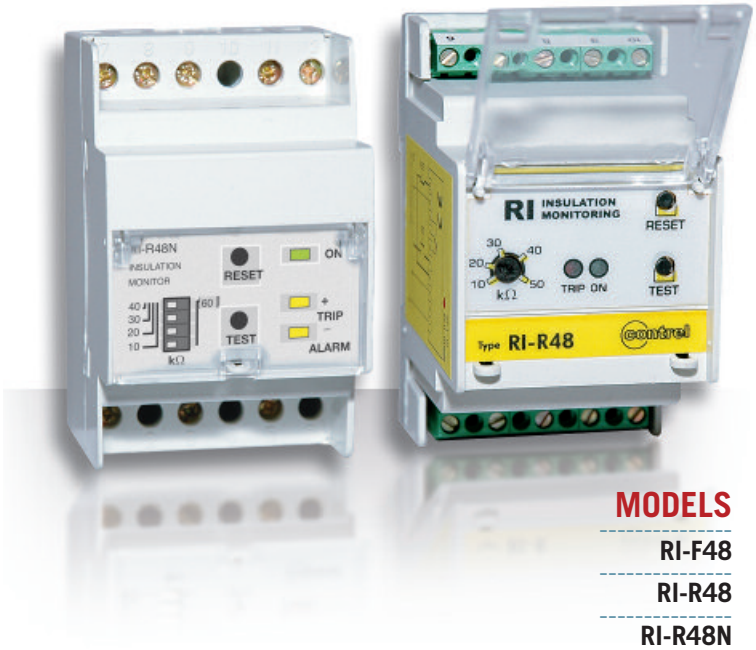
CONNECTION FOR AUTOMATIC OR REMOTE RESET - terminal 12

RI-F48 series
RI-R48 series
RI-R48N series

INSULATION MONITORING

VERSIONS FOR NETWORKS ac/dc MAX 48 V

GENERAL

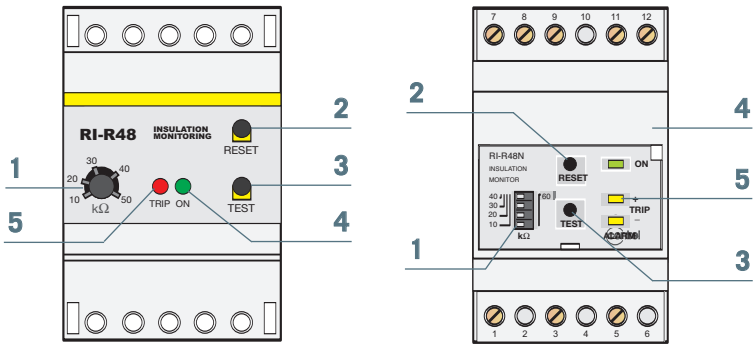


The devices allow the insulation monitoring to earth of electric networks in alternate and direct-current till 48 V isolated (IT systems).
They measure potential's variation of two polarities on earth so that provide for a signal of insulation decreasing under a fixed level.
Monitoring is carried out measuring potential's variation of two polarities on earth.
Auxiliary supply is taken from under-control network.
There are different versions available: some, very cheap, with a fixed tripping threshold, others with possibility of adjustable calibration of tripping threshold and versions with indication of polarity (positive or negative, phase or neutral) on which the failure took place.
Devices have on frontal panel signal for activity ON, for tripping TRIP (low insulation), a test bottom, a reset bottom and a potentiometer (or micro switches) for setting the threshold of tripping (only for versions with adjustable threshold).

MODELS

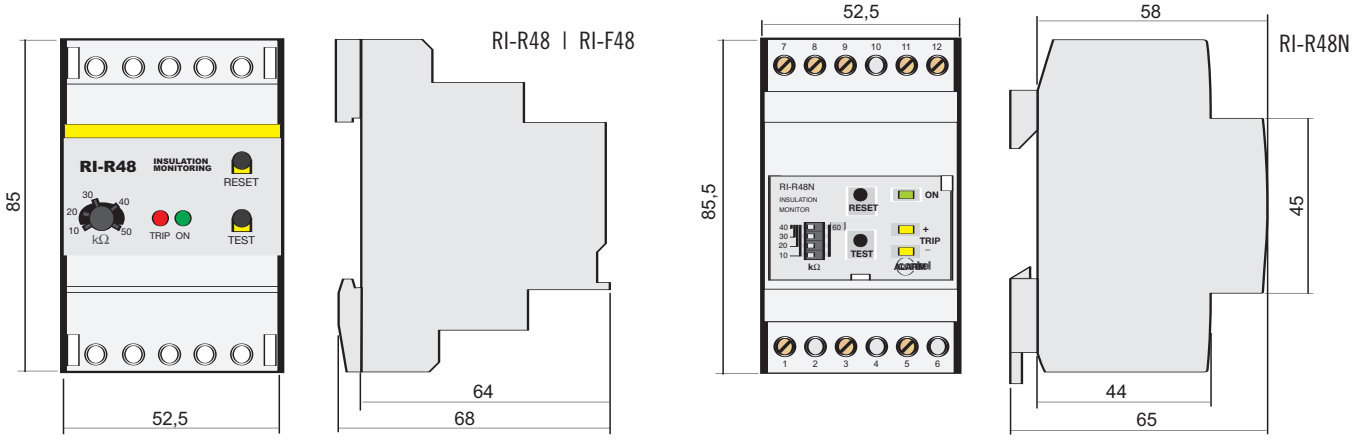
RI-F48	fixed threshold
RI-R48	adjustable threshold
RI-R48N	adjustable threshold, indication of broken down polarity

FUNCTIONS AND OPERATORS - LEGENDA



1. Potentiometer/micro switches for insulation tripping setting (only for models RI-R48 and RI-R48N)
2. Manual reset button (only for models RI-R48 and RI-R48N)
3. Test button
4. Signal of supplied relay ON (green LED)
5. Signal for insulation's threshold set reached (indication of broken down polarity for RI-R48N)

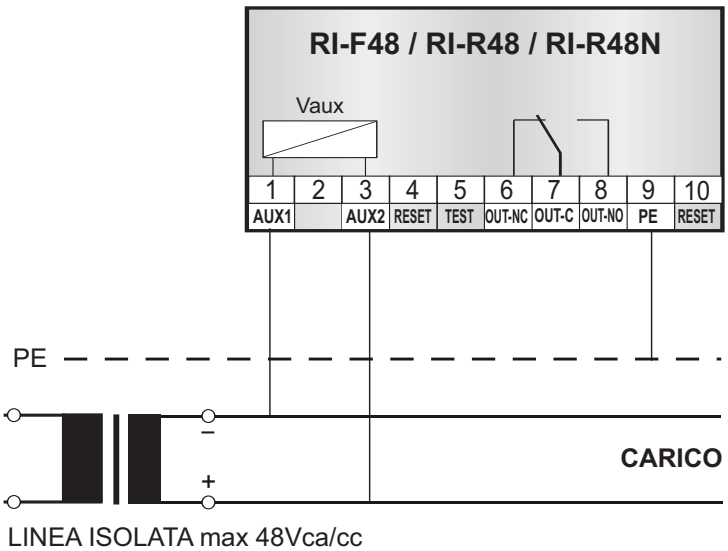
DIMENSIONS



ELECTRIC CHARACTERISTICS

Auxiliary supply voltage	**24 V or 48 V 50-60 Hz ± 20 % or dc ± 20 %**
Self-consumption	**3 VA MAX**
Network voltage	**24 ÷ 48 Vac/dc +10 %**
Measuring voltage	**24 V MAX**
Measuring current	**0.5 mA MAX**
Internal impedance	**100 kohm**
Tripping threshold	**RI-R48 adjustable 10 ÷ 50 kohm by potentiometer** **RI-R48N adjustable 10 ÷ 60 kohm by micro switches** **RI-F48 fixed 10 kohm**
Tripping late	**about 1 second**
Signalling and operators	**led ON - led TRIP** **buttons TEST and RESET (only model RI-R48 / RI-R48N)**
Output	**relay switch contact NO-C-NC MAX 5 A 250 Vac**
Working temperature	**- 10 ...+ 60 °C**
Storing temperature	**- 20 ...+ 70 °C**
Relative humidity	**< 90 %**
Insulation test	**3 kV 60 sec / 4 kv imp. 1,2 / 50 µs**
Assembling position	**indifferent**
Connection type	**by screw terminals - wire section MAX 4 mm²**
Protection's degree	**IP 40 frontal with cap - IP 20 case**
Mounting according with DIN 50022	**easy connection snap on DIN rail 35 mm / 3 modules of 17.5 mm**
Weight	**approximately 300 g**
Standard reference	**CEI-EN 61010-1 / CEI-EN 61557-8 / VDE0413 part.8 / CEI-EN 61326-1**

WIRING DIAGRAMS - LEGENDA



AUXILIARY SUPPLY - TERMINALS 1-3
Auxiliary supply could be taken from under-control network.

INSULATION MONITORING - TERMINALS 1-9
Terminals have to be connected between under-control network and measure's referring earth.
Maximum voltage applicable between these terminals is 48 V

CONNECTION OUTPUT RELAY - TERMINALS 6-7-8
Connection for remote signal by relays with switch free from voltage, max 5 A 250 V on resistive load.

Eventual connection for automatic or remote **RESET** (only for models RI-R48 and RI-R48N), connect a button NC between terminals 4 and 10.

Eventual connection for remote **TEST** (only for models RI-R48 and RI-R48N), connect a button NO between terminal 5 and earth's conductor PE