

RI-R15 Series

DEVICE FOR PERMANENT INSULATION CONTROL
VERSION FOR NEUTRAL NETWORKS (IT) UP TO 1000VDC

GENERAL



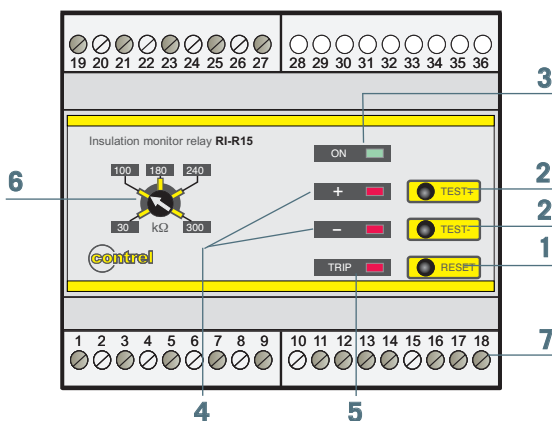
The RI-R15 device allows the permanent insulation monitoring to earth of electric networks in direct current isolated (IT systems). Insulation resistance monitoring is carried out measuring the potential variation of two polarity on ground reference. Auxiliary supply is taken from under-control network.

The threshold of trip is regulated by a frontal potentiometer. On the frontal panel there is the signalling of device ON, and three red LED to signal the tripping (TRIP) and to indicate the polarity of the line under control that has low insulation. It's available a changeover contact relay to use the low insulation signalling in a remote panel. The relay can be set as FAIL SAFE function. On front panel there are a TEST and a RESET push-buttons. The test can be activated locally while the reset can be set in automatic or manual, with local or external push-button.

MODELS

- RI-R15 300V** power supply and network to control 300 Vdc (network 280÷340 Vdc)
- RI-R15 500V** power supply and network to control 500 Vdc (network 400÷600 Vdc)
- RI-R15 1000V** power supply and network to control 1000 Vdc (network 600÷1000 Vdc) including ARI-R15 external adapter

FUNCTIONS AND OPERATORS - LEGEND



- 1** RESET push-button: this button is enabled to function only if is set the manual RESET. In this mode the instrument can come back in no alarm condition only when the RESET push-button is pressed or in absence of the power supply.
- 2** TEST push-buttons: the trip relay commute when these buttons is pressed. The TEST+ button will simulate a low insulation on the positive pole: the LED TRIP and + will turn on. The TEST- button will simulate a low insulation on the negative pole: the LED TRIP and - will turn on.
- 3** LED ON: device ON.
- 4** LED + and LED-: to signal the polarity that has the low insulation of the network under control. The lighting on of one of these LED is linked to the TRIP LED.
- 5** LED TRIP: to signal the trip insulation level under the set threshold value
- 6** Potentiometer to set the trip threshold
- 7** Terminal boards for the connections

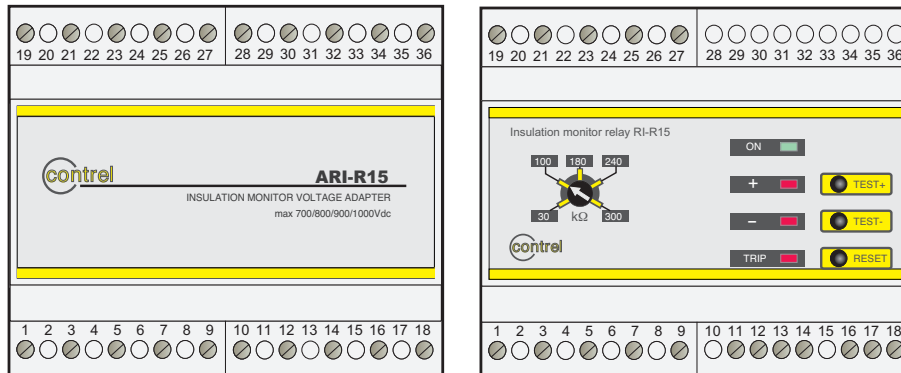
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ARI-R15 VOLTAGE ADAPTER FOR RI-R15 1000V

The RI-R15 1000V version for network from 600 to 1000V must be used only with the ARI-R15 external adapter. This adapter must be positioned between the network to control and the control device RI-R15 1000V. The

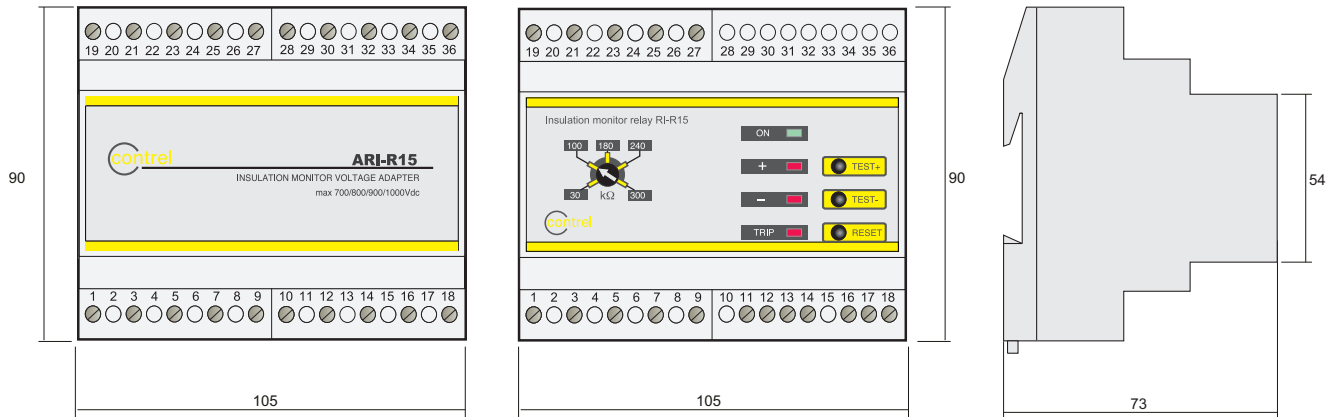
ARI-R15 adapter do not function with RI-R15 300 and 500V. The ARI-R15 adapter is in a box for connection snap on DIN rail, 6 modules:



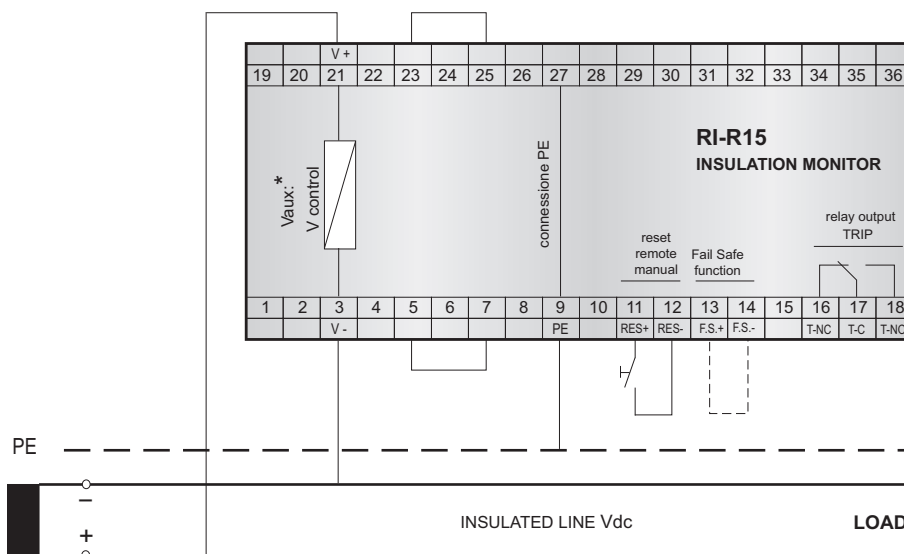
ELECTRIC CHARACTERISTICS

TIPO	RI-R15 300V	RI-R15 500V	RI-R15 1000V (with ARI-R15)
Auxiliary voltage supply and voltage network	300 Vdc network 280÷340 Vdc	500 Vdc network 400÷600 Vdc	Max 1000Vdc network 600÷1000Vdc
Maximum consumption	3W	5.5W	10W
Measure current	max 1 mA	max 1.5 mA	max 2.5 mA
Residual alternate	5 %		
Internal impedance	800 kΩ L+/L- 450 kΩ L/ground		
Tripping delay	1.5÷2.5 seconds		
Signalling	led ON, led TRIP, led +, led -		
Setting TRIP threshold	30 ÷ 300 kohm (using a potentiometer)		
Relay outputs	TRIP: changeover contacts NO-C-NC		
Relay contacts	5 A 250Vac – 0,3 A 130Vdc – 0,2 A 280Vdc resistive load 0,15 A 130Vdc – 0,05 A 280 Vdc inductive load L/R < 40 ms		
programmable functions	fail safe function, manual or automatic reset (external reset)		
Working temperature	-10 ÷ 60°C		
storing temperature	-20 ÷ 70°C		
Relative humidity	≤ 95 %		
Insulation test	2,5 kV 60 sec. / 6 kV imp. 1,2/50µs		
Mounting position	any		
Connection type	By screw terminals – wire section max 2.5 mm ²		
Protection degree	IP 40 frontal with cover - IP 20 case		
Mounting according DIN 50022	Connection snap on DIN rail 35mm / 6 modules of 17.5 mm		
Weight	about 0,4 kg for RI-R15 / about 0.2 kg for ARI-R15		
Standards	safety EN 61010-1 / CEI 64.8 / electromagnetic compatibility EN 61326-1-2-4		

DIMENSIONS



RI-R15 300V / RI-R15 500V WIRING CONNECTION - LEGEND



POWER SUPPLY AND NETWORK UNDER CONTROL CONNECTION / terminals 21-3 - At these terminals must be connected the negative and positive pole of the network to control. The same voltage must be used to supply the instrument. If the negative and positive pole are inverted, the instrument will not be damaged but the indication of LED+ and LED- will be inverted. It's necessary to verify the use of the instrument with correct supply voltage.

GROUND REFERENCE CONNECTION / terminals 27-9 - The terminals must be connected to the PE protection conductor (earth referring) to allow the insulation measuring.

REMOTE TEST CONNECTION / AUTOMATIC RESET / terminal 11-12 - For RESET function from external push-button it's necessary to connect an external N.O. contact push-button between these terminals. If these terminals are short-circuited the functioning of the reset will be automatic when the low insulation condition finish.

FAIL SAFE FUNCTION (NORMALLY EXCITED RELAY) / TERMINALS 13-14 - The fail safe function (normally excited relay) will be activated thanks to a short-circuit between these terminals. With fail safe function enabled the relay will be normally excited in not trip condition (with device supplied) and it will come back at rest with the device off or damaged and in case of tripping. With the fail safe the output relay switch for the low insulation, lack of auxiliary power supply or device failure.

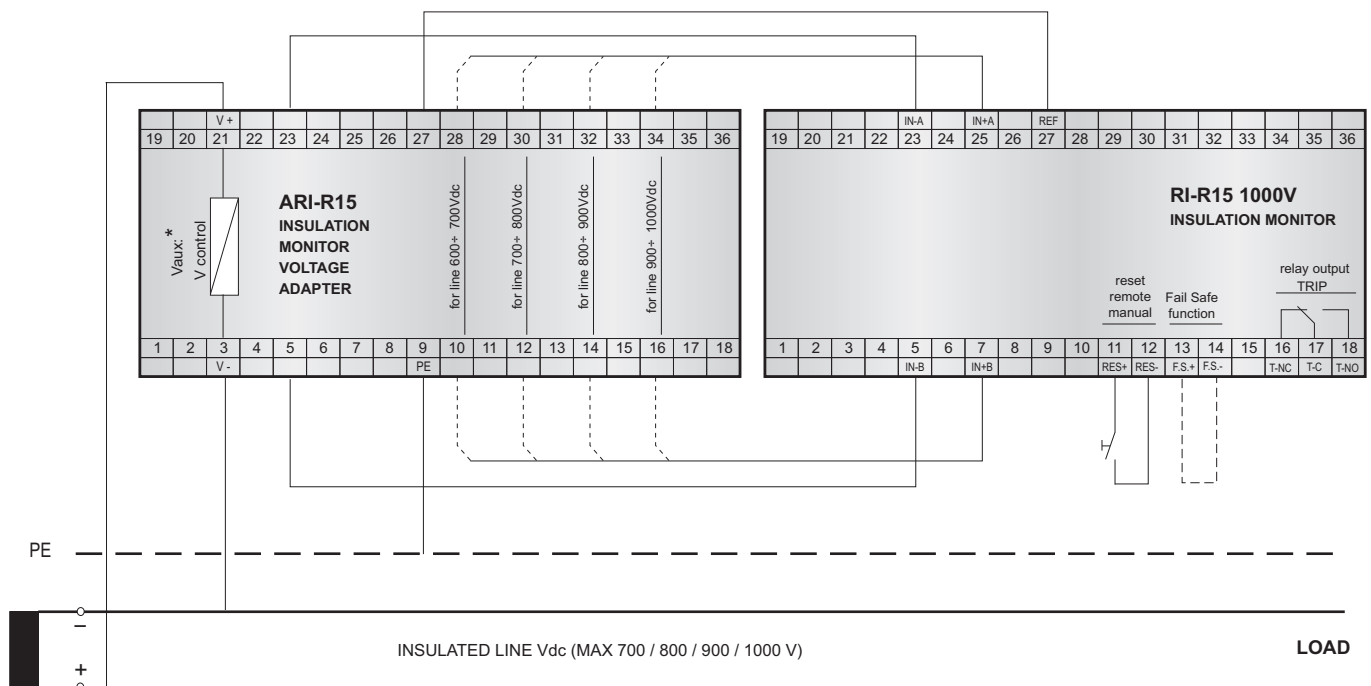
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TRIP RELAY OUTPUT / terminals 16-17-18 - To signal externally the TRIP threshold intervention it's available a voltage changeover contact relay. The wiring connection shows the contacts with the device off or on in rest condition with FAIL SAFE function disable (relay normally not excited). With FAIL SAFE function enabled the relay will be normally excited in not trip condition (with device supplied) and it will come back at rest with the device off or damage and in case of tripping.

CONNEXION TO THE EXTERNAL ADAPTERS - To activate the instrument it's necessary to make the short-circuit between the following terminals 23-25 and 5-7. This terminals are used to connect the external adapters when they are used (see specific manual).

RI-R15 1000V WIRING CONNECTION - LEGEND



In this version is present obligatory the ARI-R15 adapter.

The connections of the relay output, remote reset and fail safe function remain the same while the connections to the network under control and the earth reference has been changed.

POWER SUPPLY AND NETWORK UNDER CONTROL CONNECTION - terminals 21-3 of the ARI-R15 adapter

At these terminals must be connected the negative and positive pole of the network to control.

GROUND REFERENCE CONNECTION - terminal 9 of the ARI-R15 adapter

ARI-R15 AND RI-R15 1000V CONNECTIONS - Terminals 5-23-27 to connect between the control device and the adapter

Terminals to connect depending the network under control:

tensione di rete	ARI-R15	RI-R15 1000V
600÷700V dc	terminals 28- 10	terminals 25- 7
700÷800V dc	terminals 30- 12	terminals 25- 7
800÷900V dc	terminals 32- 14	terminals 25- 7
900÷1000V dc	terminals 34- 16	terminals 25- 7

If the network voltage is exactly an expected value for two outputs (700 / 800 / 900V) it's better to use the output with the upper nominal values.

For example for a network at 800V is better to use the output with the terminals 32-14.