373-GFR Ground Fault Relay

The 373-GFR is designed to detect dangerous ground fault currents before damage is caused to expensive power assets. An undetected fault current may lead to cables overheating, which could start a fire. If high fault currents are involved, hazardous voltages may also appear on grounded equipment, putting lives at risk. The 373-GFR ground fault relay allows the fault current to be continuously monitored and compared with the user selectable trip level. Should the fault exceed this level, the relay will trip to indicate a fault condition. With a very fast response time of under 40ms, the supply can be disconnected before serious damage can occur. This product is intended to provide a high degree of ground fault protection and monitoring for any type of electrical equipment, specifically switchboards, generator sets and transformers.

Operation

The 373-GFR offers a single-pole change over relay contact incorporating a single set point, which will de-energise on trip. The relay senses the ground current by measuring the voltage developed across the N-G link impedance under a fault condition. We offer link selection of two standard N-G impedances, 0.2m ohms or 2m ohms. This is a very cost effective method, since a current transformer is not required.

The 373-GFR features two incremental rotary selector switches on the front panel and a series of LED annunciators. The 10 position trip current switch offers selectable ground fault current settings from 100 to 1200 amps and the 16 position time delay set point switch offers additional delay for fault discrimination, selectable from 0 to 10 seconds.

Once the trip current and time delay selections have been made, a green LED provides indication of mains healthy supply. The red LED will automatically illuminate if the pre-set fault level has been exceeded, (after any selected time delay). The unit also incorporates a bar graph of 5 yellow LEDs providing indication of the level of fault in 20% increments. When all 5 LEDs are illuminated the fault level has reached 100% of the set point setting.

The unit features a combined reset and test button. A short press of the button will reset the unit after a trip and one long press initiates an electronic confidence check. The relay latches on to a fault until the test/reset button is pressed or the auxiliary power is removed. However, automatic reset can be achieved by fitting a wire between two terminals. The relay will de-energise on trip (fail safe) as standard.

Analogue Outputs

The 373-GFR unit incorporates an 0/1mA analogue output which equals 0% to 100% of the selected tripping level. It can be used to drive an external test meter or panel meter, thus providing measurements for test commissioning and a useful indication of potential problems. The analogue output also enables fault level diagnosis to be communicated into building management or intelligent SCADA systems, whereby insulation deterioration can be monitored over a period of time and preventative maintenance arrangements made prior to expensive equipment failure.

Product Codes – Single-pole change over relay

Frequency	Auxiliary supply	Cat. no.
50Hz	12-48V dc	373-GFRW-SHC5-A1-SP
50Hz	24-48V ac/dc	373-GFRW-SHC5-A2-SP
50Hz	100-250V ac/dc	373-GFRW-SHC5-A3-SP
60Hz	12-48V dc	373-GFRW-SHC6-A1-SP
60Hz	24-48V ac/dc	373-GFRW-SHC6-A2-SP
60Hz	100-250V ac/dc	373-GFRW-SHC6-A3-SP

Features

Precision digital settings
LED bar graph display
10 selectable trip levels – 100 to 1200 amps
16 selectable time delay – 0ms to 10 seconds
Less than 40ms response time
0-1mA analogue output
User selectable input range of 0.2m ohms or 2m ohms
User selectable latching/self-resetting
Single-pole change over relay
8 amp 250V rated relay contacts

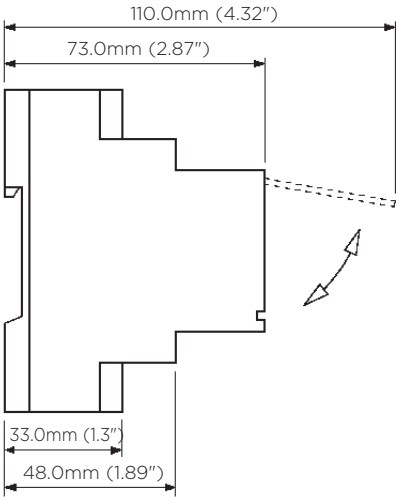
Benefits

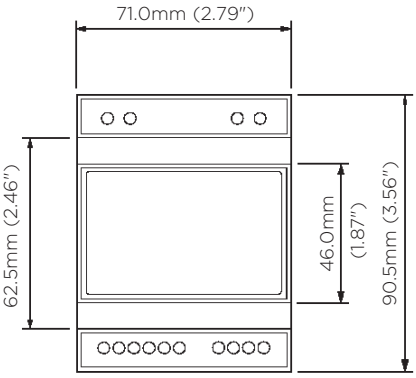
DIN-rail 43880 enclosure
Switched mode supply accepts a wide range of auxiliary voltages
Isolation of faulty circuits
Insulation monitoring
Advanced warning of faults
Protection of expensive power assets
Current transformer not required

Applications

Switchgear
Distribution systems
Generator sets
Control panels
Utility power monitoring
Transformer protection

Dimensions





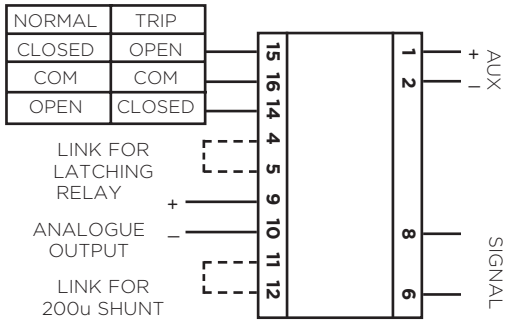
DIN 43880

Specifications

Measuring input	AC voltage developed across N-G link
Measuring range	0.2Ω or 2Ω shunt impedance link selectable
Overload	Maximum input voltage 600V
Frequency	50/60Hz
Auxiliary voltage	12 - 48V dc, 24 - 48V ac and dc or 100 - 250V ac and dc
Auxiliary burden	Less than 1.5 Watts
Trip current settings	Selectable 100A, 150A, 200A, 250A, 300A, 450A, 600A, 750A, 800A, 1200A
Trip accuracy	50% <trip point current ≤100% in accordance with IEC 1543
Trip response time	<40ms (at 5 x rated trip current, ignoring the selected time delay)
Time delay set points	Selectable 0ms, 50ms, 100ms, 150ms, 200ms, 300ms, 400ms, 500ms, 600ms, 700ms, 800ms, 900ms. 1 second, 2 seconds, 5 seconds, 10 seconds.
Indication	5 yellow LED bar graph for fault levels Red LED indicated trip function Green LED indicated auxiliary power presence
Relay contacts	1-pole change over (SPCO or NO+NC) contacts
Relay contact rating	8 amps at 250V ac 8 amps at 30V dc resistive
Relay mechanical life	>100,000 operations
Analogue output	0 to 1 mA = 0 to 100% of selected tripping level. Compliance 1V, accuracy 10%
Enclosure style	DIN 43880, rail width 70mm
Material	Flame retardant UL94V0
Terminals	1 to 4mm² solid or stranded conductors. IP20 protection
Operating temperature	–10°C to +60°C
Storage temperature	–20°C to +70°C
Relative humidity	<95% non condensing
Weight	<250g
Dimensions	71mm wide x 90.5mm high x 73mm deep 2.79" wide x 3.56" high x 2.87" deep

Connections

Install the neutral to ground shunt resistor in a suitable location. Connect the shunt sense wires directly to terminals N (neutral side) and G (ground side) on the relay. Cabling between the shunt resistor and the ground fault relay should be kept to a minimum.



Terminal No.

8	Neutral input
6	Ground input
2	Fused auxiliary supply (–)
1	Fused auxiliary supply (+)
4	Default operation is non-latching
5	Fit link to enable relay latch on trip
9/10	Analogue output 0/1mA
11	Default input range is for 2mff shunt
12	Link to select 200Qff shunt input
14	Relay (NO)
15	Relay (COM)
16	Relay (NC)