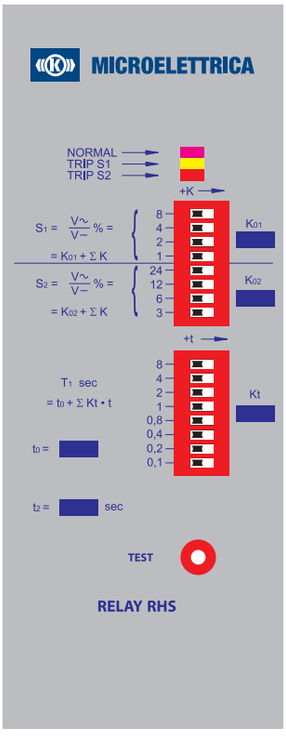
PROTECTION RELAYS

RHS

Rotating diode failure detection relay



General Characteristics

The electronic relays RHS have been designed and produced with characteristics and components which make them suitable to the most heavy duty and to the most sophisticated applications.

Application

The relay RHS is used to detect the failure of a shaft mounted diode in a brushless generator or motor by measuring the ratio between the peak value of the a.c. ripple superimposed on the exciter d.c. field current and the d.c. current itself; the frequency and the magnitude of the a.c. ripple sensibly change in case of failure of a shaft diode.

The input signal is detected as voltage drop on a resistor in series to the exciter.

The relay by means of two trip levels distinguishes open circuit diode from short circuit diode condition.

The open circuit diode condition causes a small increase of the exciter field current needed to maintain the generator voltage; this increase is normally within the capability of the voltage regulators. The machine can then continue to operate without severe troubles and the relay has only to monitor the failure so that it can be removed as soon as opportune.

On the contrary with a short circuit diode, the exciter field current needed to maintain the generator voltage increases largely with the risk of severe damage to the Automatic Voltage Regulator and to the exciter; the relay has then to trip and to shut the machine down.

The tripping of the relay two levels is timed with an adjustable long time delay for the first one (open circuit diode) and a fixed short time delay for the second one.

MICROELETTRICA

Commands
A test push button on relay's front face, when pressed, simulates a trip condition and allows the complete test of the unit (test does not trip the output relays).

Output Relay
Output relays with 1 or 2 c/o contacts are deenergized in operating conditions (i.e. with auxiliary supply on and input signal below the trip threshold) and are energized when relay trips. Available on request version with normally energized relays.

Reset of output relays after trip is automatic.

Settings
Setting is made by two 8-poles DIP-SWITCHES (one for the trip levels, one for the trip time delay) which allow a wide and sensitive setting range with high resolution.

Electrical Characteristics
Auxiliary Power Supply : 24 - 48 - 110 - 220 - 380 Vac
24 - 48 - 110 Vdc
Burden on Power Supply : 3W(dc); 6VA(ac)

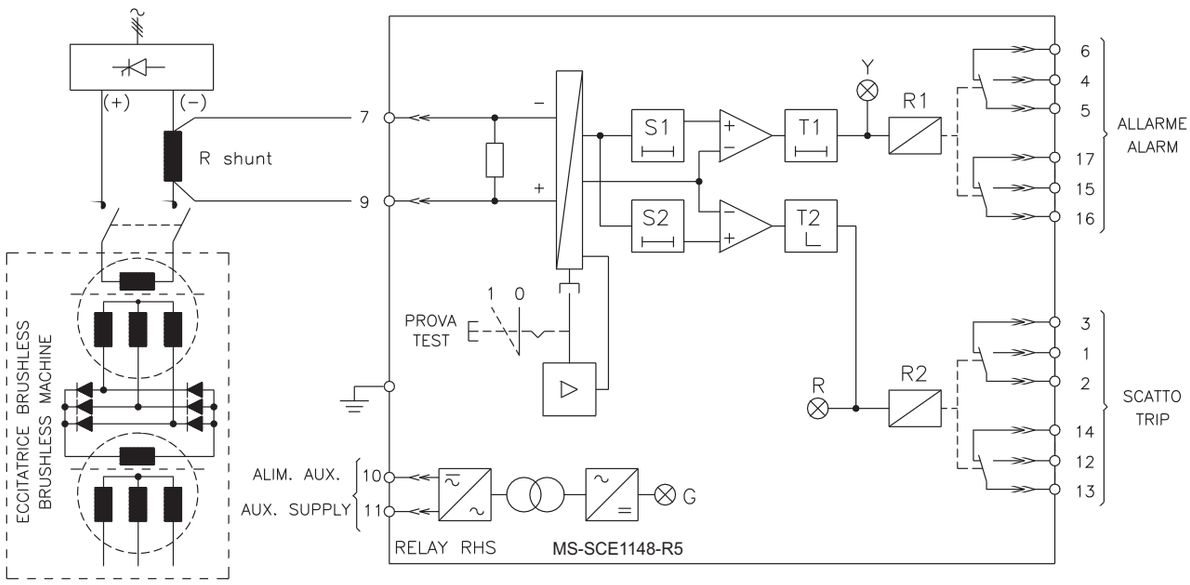
Standard Setting Ranges
- S1 (open circuit diode)
  Level Setting Range S1 = (15 ÷ 30)%, step 1%
  Trip Time delay T1 = (1 ÷ 34) sec.
- S2 (short circuit diode)
  Level Setting Range S2 = (40 ÷ 85)%, step 3%
  Trip Time delay T2 = 5 sec.

Input signal : voltage drop across series resistor (*)
Signal permissible range: 0 ÷ 3,6V = (0 ÷ 3) Ifn
Signal operation range: 0,12 ÷ 1,8V = (0,1 ÷ 1,5) Ifn
Exciter frequency: Fn = 20 ÷ 400 Hz
Operational frequency: Fn ± 30%

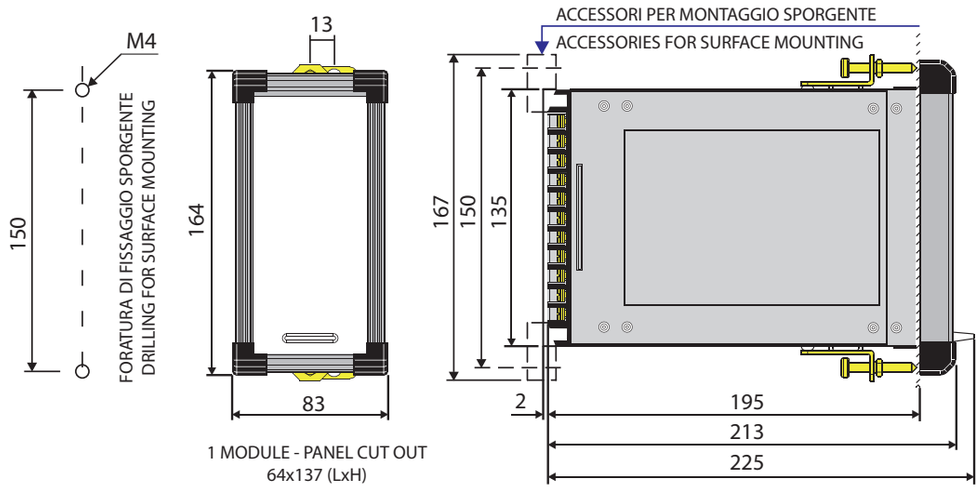
(*) Drop resistor : $R \leq 1,2/Ifn\ [\Omega]$;
(Ifn [A]= rated field current);$W \geq 3R \cdot Ifn^2$ [W]

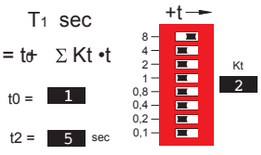
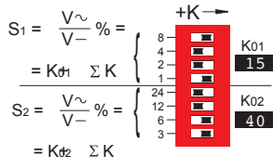
Signalizations
- 1 Green led for signalization of auxiliary supply presence and relay regular operation.
- 1 Yellow led for first level tripping.
- 1 Red led for second level tripping.

Wiring Diagram



Overall Dimensions (mm)



Example setting trip time delay T1 = 17s	Example setting level S1 = 24% - S2 = 49%
	
T1 = 1 + 8 · 2 = 17s T2 = 5s	S1 = 15 + 8 + 1 = 24% S2 = 40 + 6 + 3 = 49%

Order Code: Example (RHS - 60Hz - 48Vca - NE)	
Relay Type	**RHS**
Nominal Frequency	Indicate the Frequency value in the range (20 ÷ 400)Hz
Power Suppy	Select the value (24 - 48 - 110 - 220 - 380)Vac or (24 - 48 - 110) Vdc
Output relay	NE (Normally Energized) or ND (Normally Deenergized)
Mounting Type	Front Panel (Standard) or Surface (on Request)

The technical specifications reported are not binding and they should be agreed in the contract.

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