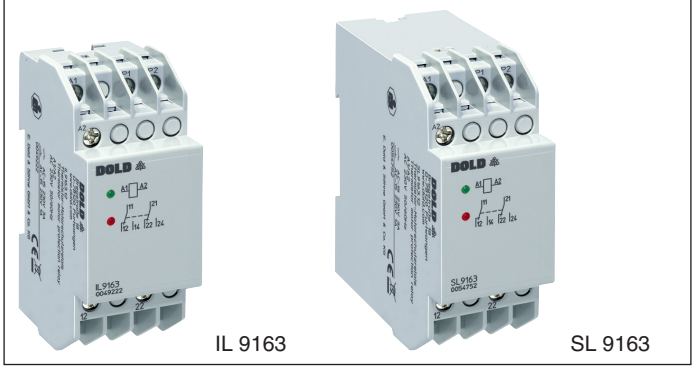
VARIMETER
Thermistor Motor Protection Relay
IL 9163, SL 9163

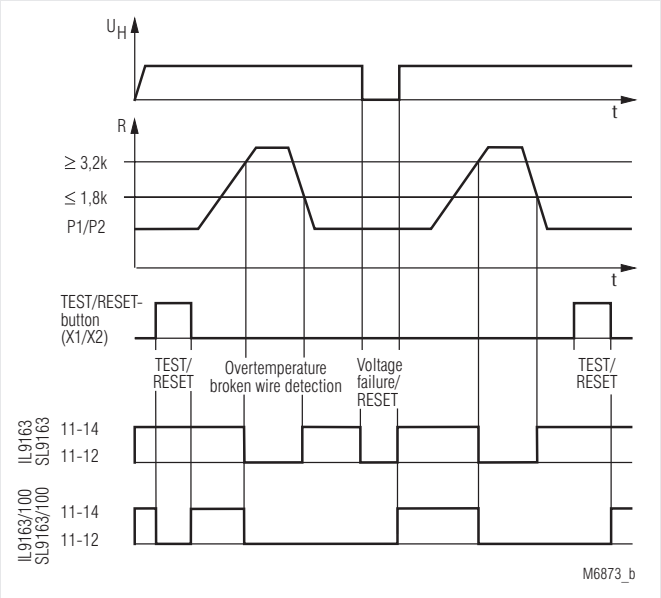
Translation of the original instructions

0225152

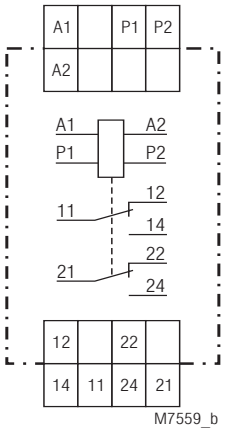


- According to IEC/EN 60255-1
- Monitoring of:
  - Overtemperature
  - Broken wire detection in sensor circuit
- 1 input for 1 to 6 PTC-resistors
- With manual reset variant /100
- Optionally with button for reset and test function
- Remote reset on A1/A2 (NC contact) or X1/X2 (NO contact)
- Closed circuit operation
- LED indicator for
  - Auxiliary supply
  - State of contact
- 2 changover contacts
- Devices available in 2 enclosure versions:
  IL 9163: Depth 58 mm, with terminals at the bottom for installation systems and industrial distribution systems according to DIN 43880
  SL 9163: Depth 98 mm, with terminals at the top for cabinets with mounting plate and cable duct
- Width 35 mm

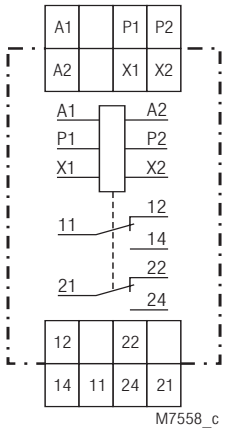
Function Diagram



Circuit Diagram



IL 9163.12,
SL 9163.12



IL 9163.12/100,
SL 9163.12/100

Approvals and Markings

CE

Applications

To protect against thermal overload of motors caused by high switching frequency, heavy duty starting, phase failure on one phase, bad cooling, high ambient temperature.

Function

If one of the sensors in the Measuring Circuit reaches the response temperature (or broken wire is detected), the device indicates failure. This failure is stored in the device /100 even if the temperature goes back to normal. The unit can be resetted by pressing the Test/Reset button, by bridging X1/X2 for a short moment or by disconnecting the auxiliary supply for a short time.
Test/Reset button:
Besides the reset function this button provides in normal operation a test facility. The unit indicates fault as long as the button is activated.

Indicators

Green LED:	On, when auxiliary supply connected
Red LED:	On, when overtemperature or broken wire is detected

Notes

The unit with AC/DC 24 V has no galvanic separation between auxiliary supply (A1/A2) and measuring input (P1, P2), and therefore it should only be used for battery powerd systems or with safety transformers according to IEC/EN 60742.

Technical Data

Measuring Circuit

Temperature sensors:	PTC-Resistor according to DIN 44081/082	
No. of sensors:	1 ... 6 in series	
Response value:	3.2 ... 3.8 kΩ	
Release value:	1.5 ... 1.8 kΩ	
Loading of measuring circuit:	< 5 mW (at R = 1.5 kΩ)	
Broken wire detection:	> 3.1 kΩ	
Measuring voltage:	≤ 2 V (at R = 1.5 kΩ)	
Measuring current:	≤ 1 mA (at R = 1.5 kΩ)	
Voltage at broken wire:	DC approx. 9 V	
Current when short circuit on input:	DC approx. 1.1 mA	

Auxiliary Circuit

Auxiliary voltage U_H:	AC/DC 24 V	
	AC 110, 230, 400 V	50 / 60 Hz
Voltage range:	AC 0.9 ... 1.1 U_H	
At 10 % residual ripple:	DC 0.9 ... 1.25 U_H	
At 48 % residual ripple:	DC 0.9 ... 1.1 U_H	
Nominal consumption:	AC: 1.5 VA	
	DC: 0.85 W	
Nominal frequency:	50 / 60 Hz	
Frequency range:	45 ... 65 Hz	
Max. bridging time on failure of aux. supply:	Approx. 70 ms	
Operate delay:	< 40 ms	
Release delay:	< 100 ms	

Control input (X1/X2)

Function:	Remote reset with NO contact (voltage free)
Remark:	This input is not galvanic separated from measuring input P1/P2

Output

Contacts		
IL/SL 9163.12:	2 changeover contacts	
Thermal current I_{th}:	5 A	
Switching capacity		
To AC 15		
NO contact:	3 A / AC 230 V	IEC/EN 60947-5-1
NC contact:	1 A / AC 230 V	IEC/EN 60947-5-1
Electrical life		IEC/EN 60947-5-1
To AC 15 at 1 A, AC 230 V:	≥ 5 x 10^5 switching cycles	
To AC 15 at 5 A, AC 230 V:	≥ 1.5 x 10^5 switching cycles	
Short-circuit strength		
max. fuse rating:	4 A gG / gL	IEC/EN 60947-5-1
Mechanical life:	≥ 1 x 10^8 switching cycles	

General Data

Operating mode:	Continuous operation	
Temperature range:	- 20 ... + 60°C	
Clearance and creepage distances		
Rated rated impulse voltage voltage / pollution degree:	4 kV / 2	IEC 60664-1
EMC		
Electrostatic discharge:	8 kV (air)	IEC/EN 61000-4-2
HF irradiation:	10 V / m	IEC/EN 61000-4-3
Fast transients:	4 kV	IEC/EN 61000-4-4
Surge voltages		
Between		
wires for power supply:	2 kV	IEC/EN 61000-4-5
Between wire and ground:	4 kV	IEC/EN 61000-4-5
HF-wire guided	10 V	IEC/EN 61000-4-6
Interference suppressions:	Limit value class B	EN 55011
Degree of protection		
Housing:	IP 40	IEC/EN 60529
Terminals:	IP 20	IEC/EN 60529

Technical Data

Housing:	Thermoplastic with V0 behaviour according to UL subject 94	
Vibration resistance:	Amplitude 0.35 mm, frequency 10 ... 55 Hz,	IEC/EN 60068-2-6
Climate resistance:	20 / 060 / 04	IEC/EN 60068-1
Terminal designation:	EN 50005	
Wire connection:	2 x 2.5 mm² solid or 2 x 1.5 mm² stranded ferruled DIN 46228-1/-2/-3/-4	
Wire fixing:	Flat terminals with self-lifting clamping piece	IEC/EN 60999-1
Fixing torque:	0.8 Nm	
Mounting:	DIN rail	IEC/EN 60715
Weight		
IL 9163:	150 g	
SL 9163:	200 g	

Dimensions

Width x height x depth	
IL 9163:	35 x 90 x 58 mm
SL 9163:	35 x 90 x 98 mm

Standard Type

IL 9163.12 AC 230 V 50 / 60 Hz

Article number:	0049222
• Auxiliary voltage U_H:	AC 230 V
• Automatic reset	
• Width:	35 mm

SL 9163.12 AC 230 V 50 / 60 Hz

Article number:	0054752
• Auxiliary voltage U_H:	AC 230 V
• Automatic reset	
• Width:	35 mm

Variant

IL 9163.12/100: 2 changeover contacts with manual reset

Ordering example for variant

IL 9163 .12 /_ _ _ AC 230 V 50 / 60 Hz

- 50 / 60 Hz — Nominal frequency
- AC 230 V — Auxiliary voltage
- /_ _ _ — Variant, if required
- .12 — Contacts
- IL 9163 — Type

Application Example