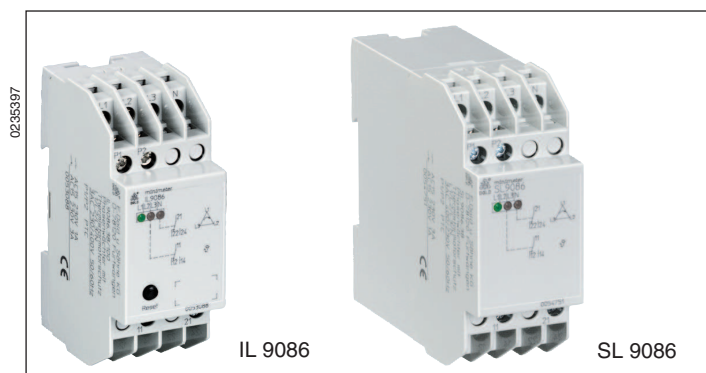


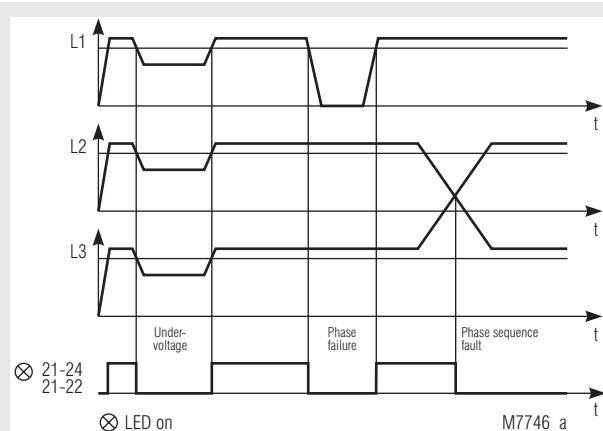
VARIMETER PRO

Phase Monitor with thermistor motor protection
IL 9086, SL 9086

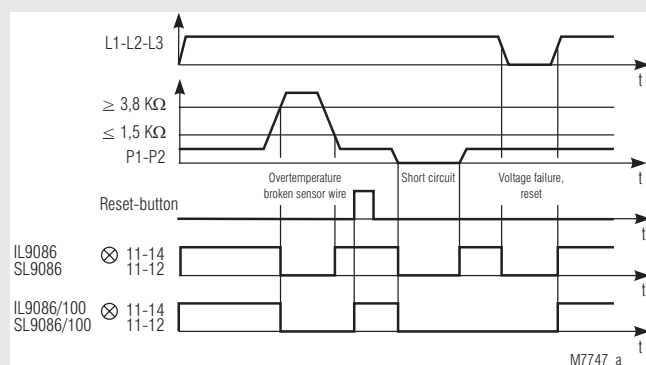


- According to IEC/EN 60 255-1, IEC/EN 60 947-8 (pr EN 60 947-8) and part 303
- Monitoring of
 - Undervoltage 3 phase
 - Phase failure
 - Phase sequence
 - Loss of neutral
 - Phase asymmetry
 - Overtemperature
 - Broken wire in thermistor circuit
 - Short circuit in thermistor circuit
- Without auxiliary supply
- 1 sensing input for 1 ... 6 thermistors
- LED indication
 - Supply voltage
 - Measuring voltage
 - Temperature
- As option with manual reset on temperature fault
- 2 x 1 changeover contact
- **Devices available in 2 enclosure versions:**
 - IL 9086:** depth 59 mm, with terminals at the bottom for installation systems and industrial distribution systems according to DIN 43 880
 - SL 9086:** depth 98 mm, with terminals at the top for cabinets with mounting plate and cable duct
- Width 35 mm

Function Diagrams



Voltage



Temperature

Approvals and Markings



Applications

Monitoring of 3-phase Motor systems with temperature sensing of the Motor thermistors, e.g. for elevators.

Function

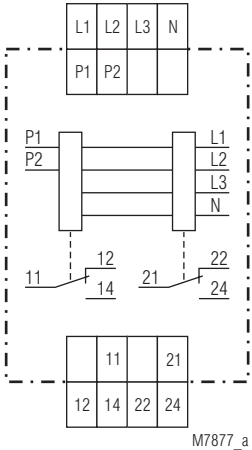
When the voltage of the system and the temperature of the load is correct all three LED are on. The device has 2 separate relay outputs. If a temperature fault is detected relay 1 trips (deenergises on fault). If a voltage fault occurs relay 2 trips. The unit can be used for 3p 3w and 3p 4w systems. If connected to a 3 wire system the N-terminal remains unconnected.

Indicators

Left green LED:	on when supply connected
Right green LED:	on when measured voltage is correct
Middle green LED \varnothing :	on when temperature correct

Notes

A short circuit between P1 - P2, i.e. between the sensor lines, will be detected. This is independent of the number of sensors. If more than one thermistors are connected in series, a short circuit across one sensor cannot be detected. The PTC input is galvanically separated from the supply and measuring voltage as well as from the output contacts.

Circuit Diagram		Technical Data	
		General Data Operating mode: Continuous operation Temperature range Operation: - 20 ... + 60 °C Storage: - 25 ... + 60 °C Altitude: < 2.000 m Input current L1: approx. 7 mA L2: approx. 7 mA L3: approx. 1.5 mA Nominal consumption: approx. 3.5 VA Clearance and creepage distances Rated impulse voltage / pollution degree Input/Output: 4 kV / 2 IEC 60 664-1 EMC Electrostatic discharge: 8 kV (air) IEC/EN 61 000-4-2 HF-irradiation 80 MHz ... 2.7 GHz: 10 V/m IEC/EN 61 000-4-3 Fast transients: 4 kV IEC/EN 61 000-4-4 Surge voltages between wires for power supply: 1 kV IEC/EN 61 000-4-5 between wire and ground: 2 kV IEC/EN 61 000-4-5 HF wire guided: 10 V IEC/EN 61 000-4-6 Interference suppression: Limit value class B EN 55 011 Degree of protection Housing: IP 40 IEC/EN 60 529 Terminals: IP 20 IEC/EN 60 529 Housing: Thermoplastic with V0 behaviour according to UL subject 94 Vibration resistance: Amplitude 0.35 mm frequency 10 ... 55 Hz IEC/EN 60 068-2-6 20 / 060 / 04 IEC/EN 60 068-1 Climate resistance: Wire connection max. cross section: 2 x 2.5 mm ² solid or 2 x 1.5 mm ² stranded wire with sleeve DIN 46 228-1/-2/-3/-4 Stripping length: 10 mm Fixing torque: 0,8 Nm Mounting: DIN rail IEC/EN 60 715 Weight IL 9086: 185 g SL 9086: 230 g Dimensions Width x height x depth IL 9086: 35 x 90 x 59 mm SL 9086: 35 x 90 x 98 mm	
Connection Terminals			
Terminal designation	Signal designation		
L1, L2, L3, N	Measuring- or supply input		
P1, P2	Thermistor input		
11, 12, 14; 21, 22, 24	Changeover contacts		
Technical Data			
Measuring Input Voltage			
Measuring voltage L1 / L2 / L3 / N:	3 / N AC 400 / 230 V (other voltages on request)		
Voltage range:	0.8 ... 1.1 U _N		
Nominal frequency:	50 / 60 Hz		
Frequency range:	45 ... 65 Hz		
Undervoltage detection:	approx. 0.7 ± 0.15 x U _N		
Asymmetry detection:	approx. 20° angle asymmetrie		
Hysteresis:	≤ 6 % x U _N		
Response delay:	100 ... 300 ms		
Operate delay:	15 ... 30 ms (0V ⇒ U _N)		
Measuring Input Thermistor (P1,P2)			
Temperature sensor:	PTC-sensor acc. to DIN 44 081/082		
Number of sensors:	1 ... 6 piece in series		
Response value:	3.2 ... 3.8 kΩ		
Reset value:	1.5 ... 1.8 kΩ		
Short circuit in sensor line:	10 ... 30 Ω		
Load on sensor circuit:	< 5 mW (at R = 1.5 kΩ)		
Broken sensor circuit:	> 3.8 kΩ		
Measuring voltage:	≤ 2 V (at R = 1.5 kΩ)		
Measuring current:	≤ 1 mA (at R = 1.5 kΩ)		
Voltage on P1,P2 on open sensor circuit:	approx. DC 12 V		
Short circuit current on sensor circuit:	approx. DC 1.5 mA		
Relay Output			
Contacts IL/SL 9086.38:		1 changeover contact (phase failure, contact 21-22-24) 1 changeover contact (temperature fault, contact 11-12-14)	
Contact material: Thermal current I_{th}: Switching capacity to AC 15		AgNi 0.15 + 0.3 µm AU 2 x 4 A	
NO contact:		3 A / AC 230 V	IEC/EN 60 947-5-1
NC contact:		1 A / AC 230 V	IEC/EN 60 947-5-1
Electrical life: to AC 15 at 1 A, AC 230 V:		6 x 10 ⁵ switching cycles	IEC/EN 60 947-5-1
Switching voltage:		min. 10 V ; max. DC 120 V / AC 250 V	
Switching current:		min. 0.1 A ; max. 5 A	
Switching load:		min. 1 W, 1 VA; max. 120 W, 1250 VA	
Short circuit strength max. fuse rating:		4 A gG / gL	IEC/EN 60947-5-1
Mechanical life:		> 10 ⁸ switching cycles	

Standard Type	
IL 9086.38 3 AC 400 V and 3 / N AC 400 / 230 V	
Article number:	0053087
• Output:	1 changeover contact (phase failure) 1 changeover contact (temperature fault)
• Nominal voltage U_N :	3 AC 400 V and 3 / N AC 400 / 230 V
• Width:	35 mm
SL 9086.38 3 AC 400 V and 3 / N AC 400 / 230 V	
Article number:	0054751
• Output:	1 changeover contact (phase failure) 1 changeover contact (temperature fault)
• Nominal voltage U_N :	3 AC 400 V and 3 / N AC 400 / 230 V
• Width:	35 mm

Variant	
IL 9086.38/100	with manual reset after detection of overtemperature or short circuit in the sensor circuit. The output can be reset by pressing the reset button or by disconnecting the voltage for a short period after the temperature returned to good value.

Ordering example vor variant

IL 9086	.38	/	00	3/N AC 400/230 V	50/60 Hz	
						Nominal frequency
						Measuring voltage
						1 with manual reset
						Contacts
						1 changeover contacts
						phase failure
						1 changeover contact
						temperature fault
						Type

