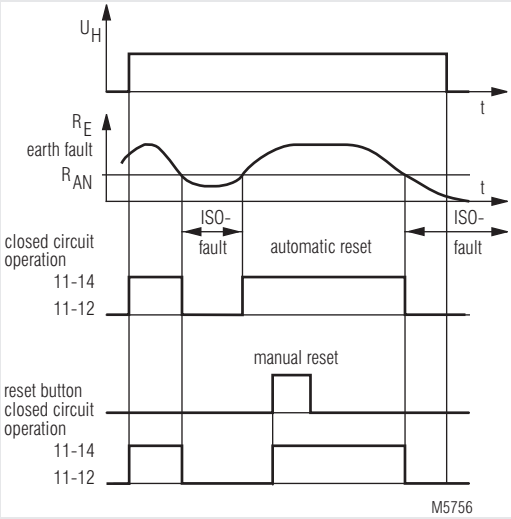
VARIMETER
Insulation Monitor
AI 897

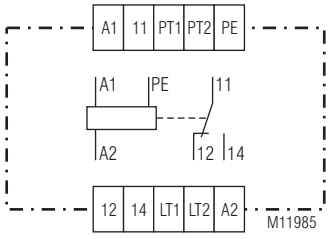
0225077

- According to IEC/EN 61 557-8
- For single- and 3-phase AC-voltage systems
- Adjustable response value R_{AN} from 10 ... 80 kΩ
- Without auxiliary supply
- Closed circuit operation
- Programmable for:
  - Manual reset (bridge LT1-LT2)
  - Automatic reset (without bridge)
- External reset button on LT1-LT2
- Test button to check the function of the device
- External test button can be connected to PT1-PT2
- 1 changeover contact
- Width 45 mm

Function Diagram



Circuit Diagram



Connection Terminals

Terminal designation	Signal description
A1, A2	AC auxiliary voltage and connection measuring circuit
PE	Connection for protective conductor
PT1, PT2	Connection for protective conductor
LT1, LT2	Connections for external reset or manual and auto reset: LT1/LT2 bridged: manual reset LT1/LT2 not bridged: hysteresis function
11, 12, 14	Alarm signal relay (1 changeover contact)

Approvals and Markings

CE AC

Applications

Monitoring of the resistance to earth in ungrounded single- and 3-phase-voltage systems.

Notes

When monitoring 3-phase IT systems it is sufficient to connect the insulation monitor only to one phase. The 3-phases have a low resistive connection (approx. 3 - 5 Ω) via the feeding transformer. So failures that occure in the non-connected phases will also be detected.
In one voltage system only one Insulation monitor must be connected. This has to be observed when coupling voltage system.

Technical Data

Measuring Circuit

Nominal voltage U_N:	AC 24, 42, 110, 127, 230, 400, 415, 500 V
Voltage range:	0.8 ... 1.1 U_N
Frequency range:	45 ... 400 Hz
Response value R_{AN}:	10 ... 80 kΩ
Setting R_{AN}:	infinite variable with screwdriver
Internal test resistor:	equivalent to earth resistance of < 10 kΩ
Internal AC resistance:	> 200 kΩ
Internal DC resistance:	> 200 kΩ
Measuring voltage:	DC 18 V
Max. measuring current (RE = 0):	< 0.1 mA
Max. permissible noise DC voltage:	DC 242 V
Operate delay	
at R_{AN} = 50 kΩ, CE = 1 µF	
R_E from ∞ to 0.9 R_{AN}:	< 4.2 s
R_E from ∞ to 0 kΩ:	approx. 2 s
Hysteresis	
at R_{AN} = 50 kΩ:	approx. 50 %
Response inaccuracy	
at R_{AN} = 50 kΩ:	± 15 % IEC 61557-8 ambient temperature - 5 ... 50 °C, within the permitted voltage range
Nominal consumption:	approx. 2.5 VA
Phase failure bridging:	> 25 ms

Technical Data

Output

Contacts:	1 changeover contact	
Max. switching voltage:	AC 400 V	
Thermal current I_{th}:	6 A	
Switching capacity		
to AC 15		
NO contact:	10 A / AC 230 V	IEC/EN 60 947-5-1
NC contact:	5 A / AC 230 V	IEC/EN 60 947-5-1
to DC 13:	1 A / DC 24 V	IEC/EN 60 947-5-1
Electrical life		
at 10 A, AC 250 V:	≥ 3 x 10^5 switch. cycl.	IEC/EN 60 947-5-1
Short circuit strength		
max. fuse rating:	5 A gG / gL	IEC/EN 60 947-5-1
Mechanical life:	≥ 30 x 10^6 switching cycles	

General Data

Operating mode:	Continuous operation	
Temperature range		
Operation:	- 20 ... + 60 °C	
Storage:	- 25 ... + 70 °C	
Altitude:	< 2,000 m	
Clearance and creepage distances		
rated impulse voltage / pollution degree:	4 kV / 2	IEC 60 664-1
Insulation test voltage		
Routine test:	AC 2.5 kV; 1 s	
EMC		
Electrostatic discharge:	8 kV (air)	IEC/EN 61 000-4-2
HF irradiation		
80 MHz ... 1 GHz:	10 V / m	IEC/EN 61 000-4-3
1 GHz ... 2.5 GHz:	10 V / m	IEC/EN 61 000-4-3
2.5 GHz ... 2.7 GHz:	10 V / m	IEC/EN 61 000-4-3
Fast transients:	2 kV	IEC/EN 61 000-4-4
Surge voltages between		
wires for power supply:	2 kV	IEC/EN 61 000-4-5
between wire and ground:	4 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...55Hz	IEC/EN 60 068-2-6
Climate resistance:	20 / 060 / 04	IEC/EN 60 068-1
Terminal designation:	EN 50 005	
Wire connection:	DIN 46 228-1/-2/-3/-4	
Cross section:	2 x 2.5 mm² solid or 2 x 1.5 mm² stranded wire	
Stripping length:	10 mm	
Wire fixing:	Flat terminals with self-lifting clamping piece	IEC/EN 60 999-1
Fixing torque:	0.8 Nm	
Mounting:	DIN rail	IEC/EN 60 715
Weight:	220 g	

Dimensions

Width x height x depth:	45 x 77 x 115 mm

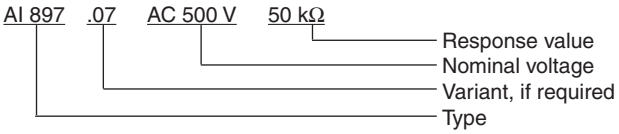
Standard Type

AI 897 AC 230 V	
Article number:	0001037
• Nominal voltage U_N :	AC 230 V
• Settable response value R_{AN}:	10 ... 80 kΩ
• Width:	45 mm

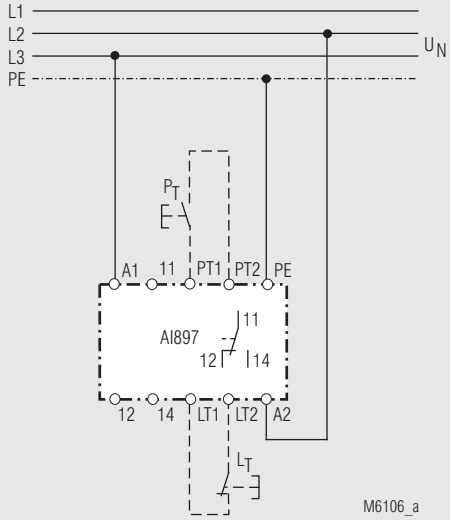
Variant

AI 897.07:	fixed response value between 10 and 80 kΩ, with internal test and reset button, LED indicator for earth fault

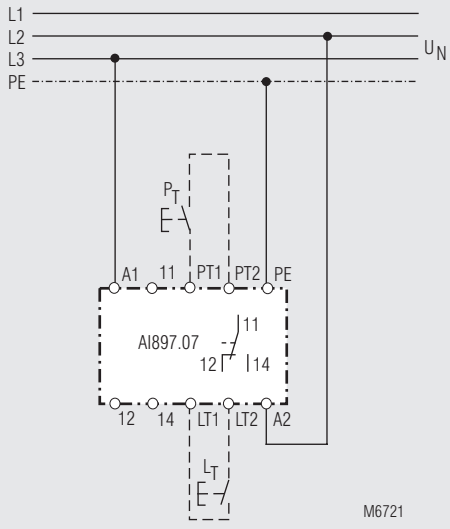
Ordering example for variant



Connection Examples



Connection Example AI 897
A1/A2: $U_N = U_H$
Bridge LT1/LT2: manual reset
Without Bridge LT1/LT2: automatic reset



Connection Example AI 897.07
A1/A2: $U_N = U_H$
Bridge LT1/LT2: automatic reset
Without Bridge LT1/LT2: manual reset