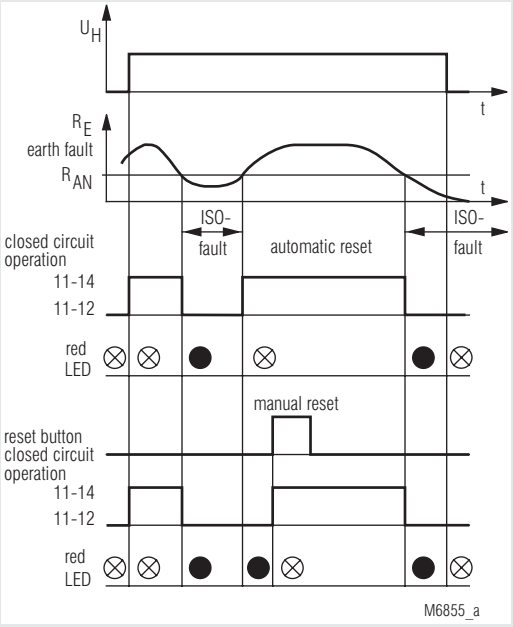
VARIMETER
Insulation Monitor
EH 5878

Translation of the original instructions

0225255

- According to IEC/EN 61557-8
- For single- and 3-phase AC-voltage systems
- Fixed response value R_{AN}
- Closed circuit operation
- Programmable for:
  - Manual reset (bridge X5 - LT1)
  - Automatic reset (without bridge)
- Reset button LT1
- Test button to check the function of the device
- External test and reset buttons can be connected
- LED indicators
- 1 changeover contact
- External connection of indicating instrument possible
- Frontside 96 x 96 mm

Function Diagram



Connection Terminals

Terminal designation	Signal description
A1, A2, A3, A4, A5, A6	Auxiliary voltage U_H
L	Connection for monitored IT-systems
PE	Connection for protective conductor
PT1, PT2	Connection for external test button
LT1, LT2	Connection for external reset
X5, (LT1)	Connections for manual and auto reset: X5/LT1 bridged: Manual reset X5/LT1 not bridged: Hysteresis function
X3, X4	Connection for external indicating instrument
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.

Indicators

LED chain:	Displays actual resistance to ground
Green LED:	On, when resistance above response value
Red LED:	On, when ground fault

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 transormer. So failures that occure in the non-connected phases will also be detectet.

In one voltage system only one Insulation monitor must be connected. This has to be observed when coupling voltage system.

The insulation monitor EH 5878 is designed to monitor single- and 3-phase-voltage systems. Overlayed DC voltage does not damage the instrument but may change the conditions in the measuring circuit.

Line capacitance C_E to ground does not influence the insulation measurement, as the measurement is made with DC-voltage. It is possible that the reaction time in the case of insulation fault gets longer corresponding to the time constant $R_E * C_E$.

The auxiliary supply can be connected to a separate auxiliary supply or to the monitored voltage system. The range of the auxiliary supply input has to be observed.

Technical Data

Auxiliary Crcuit

Auxiliary voltage U_H:	AC 24, 42, 110, 230, 400 V or AC 24, 42, 230, 400, 500 V
Voltage range:	0.8 ... 1.2 U_N
Frequency range:	40 ... 400 Hz
Nominal consumption:	Approx. 4 VA

Measuring Circuit

Nominal voltage U_N:	AC 0 ... 500 V
Voltage range:	0 ... 1.15 U_N
Frequency range:	40 ... 60 Hz
Response value R_{AN}:	50 kΩ, others on request
Setting R_{AN}:	Fixed
Internal test resistor:	10 kΩ
Internal AC resistance:	> 400 kΩ
Internal DC resistance:	> 30 kΩ
Measuring voltage:	DC 15 V
Max. measuring current (RE = 0):	< 0.5 mA
Max. permissible noise DC voltage:	DC 250 V
Operate delay	
At R_{AN} = 50 kΩ, CE = 1 µF	
R_E from ∞ to 0.9 R_{AN}:	< 0.6 s
R_E from ∞ to 0 kΩ:	< 0.25 s
Hysteresis	
At R_{AN} = 50 kΩ:	Approx. 8 %
Response inaccuracy	
At R_{AN} = 50 kΩ:	± 15 % + 1.5 kΩ IEC 61557-8 ambient temperature -5 ... 50 °C, within the permitted voltage range
Phase failure bridging:	> 60 ms

Output

Contacts:	1 changeover contact	
Max. switching voltage:	AC 250 V	
Thermal current I_{th}:	3 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		
At AC 250 V, 8 A, cos φ = 1:	> 3 x 10^5 switch. cycl.	IEC/EN 60947-5-1
Short circuit strength		
max. fuse rating:	3 A gG / gL	IEC/EN 60947-5-1
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:	< 2000 m	
Clearance and creepage distances		
Rated impulse voltage / pollution degree:	4 kV / 2	IEC 60664-1
Insulation test voltage		
Routine test:	AC 2.5 kV; 1 s	
EMC		
Electrostatic discharge (ESD):	8 kV (air)	IEC/EN 61000-4-2
HF irradiation		
80 MHz ... 1 GHz:	10 V / m	IEC/EN 61000-4-3
1 GHz ... 2.5 GHz:	3 V / m	IEC/EN 61000-4-3
2.5 GHz ... 2.7 GHz:	1 V / m	IEC/EN 61000-4-3
Fast transients:	2 kV	IEC/EN 61000-4-4
Surge voltages		
Between		
wires for power supply:	1 kV	IEC/EN 61000-4-5
Between wire and ground:	2 kV	IEC/EN 61000-4-5
HF-wire guided:	10 V	IEC/EN 61000-4-6
Interference suppression:	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 behaveior 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	
Cross section:	1 x 2.5 mm² starr/flexibel DIN 46228-1/-2/-3/-4
Stripping length:	7 mm
Wire fixing:	Srew terminals with removable terminal strips
Fixing torque:	0.6 Nm
Mounting:	Flush mounting
Weight:	790 g

Dimensions

Width x height x depth:	96 x 96 x 111.5 mm
Panel cut-out:	$92^{+0.8}$ x $92^{+0.8}$ mm

Standard Type

EH 5878.05 AC 24, 42, 110, 230, 400 V 50 kΩ

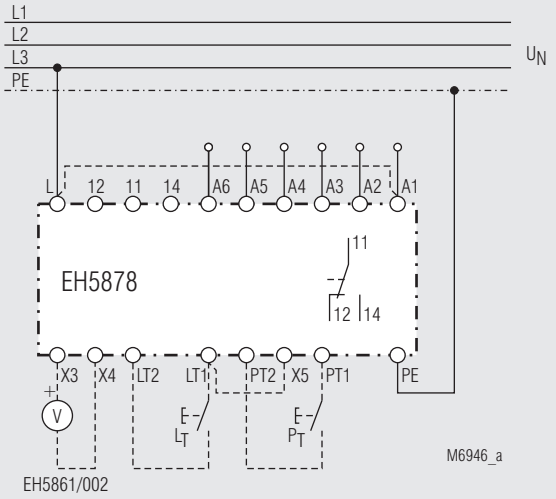
Article number:	0033168
• Output:	1 Wechsler
• Auxiliary voltage U_H:	AC 24, 42, 110, 230, 400 V
• Response value R_{AN}:	50 kΩ
• Frontside	96 x 96 mm

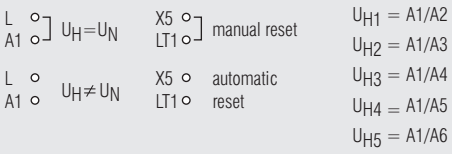
Accessories

EH 5861/002: Indicating instrument
degree of protection: IP 52
Article number: 0030616

The indicating device EH 5861 is externally connected to the insulation monitor and shows the actual insulation resistance of the voltage systems to ground.
Dimensions:
Width x height x depth
96 x 96 x 52

Connection Examples





U_{H1} = A1/A2
U_{H2} = A1/A3
U_{H3} = A1/A4
U_{H4} = A1/A5
U_{H5} = A1/A6

A1/A2: AC 24 or 24 V
A1/A3: AC 42 or 42 V
A1/A4: AC 110 or 230 V
A1/A5: AC 230 or 400 V
A1/A6: AC 400 or 500 V