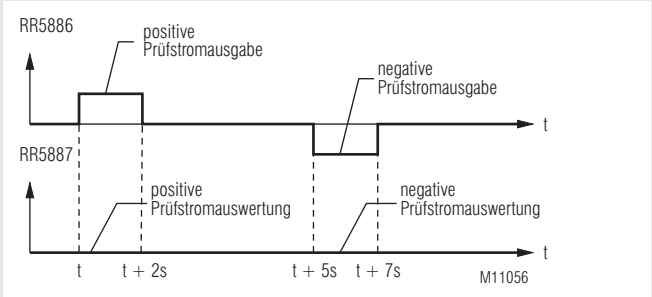
VARIMETER EDS
Locating current injector
RR 5886

0269247

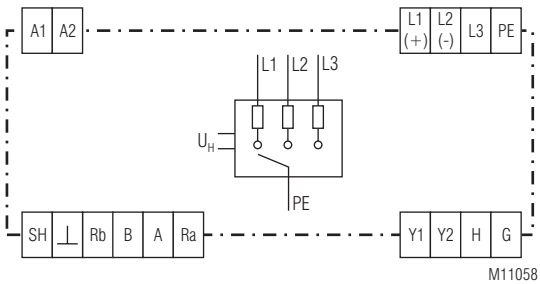
Product description

The locating current injector RR 5886 in connection with the insulation fault locator RR 5887 monitors and localises insulation faults in complex AC/DC networks (IT systems). The external current transformers work independently of each other, calibrate themselves and are simply connected to the measuring channels of the insulation fault locator RR 5887. The number of measuring channels is increased by combining several insulation fault locators via a RS-485 bus connection. The search for insulation faults in extensive networks can be refined in this manner. Two different alarm levels facilitate the timely detection of a dangerous insulation state. The devices are operated easily and intuitively thanks to automatic balancing and a clear layout of the setting elements. The early detection and localisation of insulations faults permits their quick and targeted correction. As user you will benefit from the operating reliability and high availability of your system.

Function Diagram



Circuit Diagram



Your Advantages
- Quick correction of insulation faults in complex power networks
- Universal auxiliary voltage range AC/DC 85 ... 265 V

Features
- Insulation troubleshooting in DC, AC and mixed IT systems in connection with the insulation fault locator RR 5887 according to DIN EN 61557-9 (VDE 0413-9):2009 and DIN EN 61557-1 (VDE 0413-1)
- Insulation coordination according to IEC 60664-1
- External control via insulation monitor possible
- Positive and negative test current to monitor DC networks and networks with simultaneous alternating current and direct current portions present
- RS-485 bus connection to synchronise the test current analysis and optionally for the connection to the EDS measuring bus
- Control via insulation monitor via RS-485 bus or external control input possible
- Pushbutton for manual test current output
- Terminal connection for automatic test current output
- Status output of insulation fault detection via external switching output
- Width: 105 mm

Approvals and Markings

CE

Application

- Insulation fault detection in complex AC/DC networks
- Industry, shipbuilding, plant engineering, PV systems
- Quick fault correction of insulation faults in medical facilities

Indication

green LED "ON":	on, when supply connected
yellow LED „ ⎍ “:	Indicates the output of the positive test current pulse
yellow LED „ ⎎ “:	Indicates the output of the negative test current pulse
yellow LED „RS485“:	Indicates RS-485 bus activity and test current output

Connection Terminals

Terminal designation	Signal designation
A1(+), A2	Auxiliary voltage AC or DC
L1(+), L2(-), L3, PE	IT network voltage connections DC/ AC/3AC
SH, GND, Rb, B, A, Ra	RS-485 Bus (galvanic separation)
Y1, Y2	Switching input Test current output to control
G, H	Status switching output Test current output

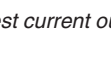
Notes

Switching input
The test current output can be externally controlled via the switching input (terminals Y1, Y2). If the terminal connection is left open, the test current output can be controlled manually via the start/stop button. The test current output is started and stopped in alternating fashion with each push of the button.

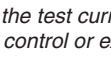
When bridging terminals Y1-Y2, the test current is output automatically after switching on the device. The start-stop button is inactive at this time.

The switching input can also be selected directly via an external device, e.g. insulation monitoring device. The switching input is supplied as well via the electrically separated supply voltage. The switching input can therefore be switched via a transistor or a relay output.

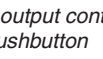
Configuration options for the test current output:



Automatic test current output



Release of the test current output through higher level control or external switch



Test current output controlled manually via device pushbutton

Switching output
The status of the test current output can be monitored via the switching output (terminals H, G). The switching output consists of a switching transistor, which is low-resistance at test current output and otherwise high-resistance. To generate digital output signals, the switching output must be connected to an external voltage source via a pull-up resistor.

RS-485 bus connection
The locating current injector can be operated both in master mode and slave mode. The bus mode is set via a rotary switch.

The RS485 telegrams the locating current injector sends to synchronise the insulation fault measurement are identical in both bus modes.
While in the master mode the output of the telegrams occurs automatically every 12 seconds, in slave mode it occurs as response to a bus master request. A pending test current output is announced here in the user data range of the response telegram.

The insulation fault locators RR 5887, generally working in slave mode, synchronise themselves by monitoring the RS485 telegram network with manual test current output.

The RS-485 LED is permanently on during the test current output and bus activity and flashes when bus failures occur.

Technical Data

Auxliary voltage

Nominal voltage range	
A1(+) / A2:	AC/DC 100 ... 230 V
Voltage range:	AC/DC 85 ... 265 V
Nominal consumption:	< 3 VA

Monitored network

Nominal voltage:	DC / AC / 3AC 24 … 360 V
Voltage range AC / 3AC	
L1/L2/L3:	21 ... 400 V, 40 ... 60 Hz
Voltage range DC	
L1(+)/L2(-):	21 ... 400 V
Rated current range for insulation test currents:	1 ... 5 mA
Maximum test current output:	6.5 mA
Test clock/test pause:	2 s / 3 s
Bus	
(galvanic separation):	RS-485

Technical Data

Switching input

Terminals:	Y1, Y2
Connection (passive)	
Low-signal:	Bridge set / input low resistance
High-signal:	Input open / input high resistance
Connection (active)	
Voltage range (low/high):	0V / 12 ... 24 V
Max. switching current (24 V):	10 mA

Switching output

Terminals:	H(+), G(-)
Switching output (passive):	transistor outputs
Test current output:	Output low resistance (minimal 220 Ω via PTC)
No test current output:	Output high resistance
Switching voltage max.:	24 V
Switching current max. (24 V):	10 mA

RS-485 Bus

Terminals:	SH, ⊥, Rb, B, A, Ra
Bus:	galvanic separation
Geräte Mode	
Bus-Master/Slave:	adjustable via rotational switch
Transmission medium:	twisted, shielded two-wire line (SH)
Data transmission rate:	115.2 kBit/s
Network termination:	Bus termination via bridges Rb, B and Ra, A

General Data

Nominal operating mode:	continuous operation	
Temperature range:	-20 ... + 60 °C	
Clearance and creepage distance		
rated impulse voltage/ pollution degree:	4 kV / 3	IEC 60 664-1
EMC		
Electro static discharge (ESD):	8 kV (air)	IEC/EN 61000-4-2
HF irradiation:	10 V / m	IEC/EN 61000-4-3
Fast transients:	2 kV	IEC/EN 61000-4-4
Surge voltage 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 VO behaviour acc. to UL subject 94	
Vibration resistance:	Amplitude 0.35 mm frequency 10...55 Hz, IEC/EN 60 068-2-6	
Climate resistance:	20 / 060 / 04	
Terminal designation:	EN 50 005	
Wire connection		
screw terminals:	fixed max. 4 mm² solid or 2.5 mm² stranded wire with sleeve min. 0.20 mm²	
clamping screw:	M2.5	
Mounting:	DIN-rail	IEC/EN 60 715
Weight:	approx. 200 g	

Dimensions

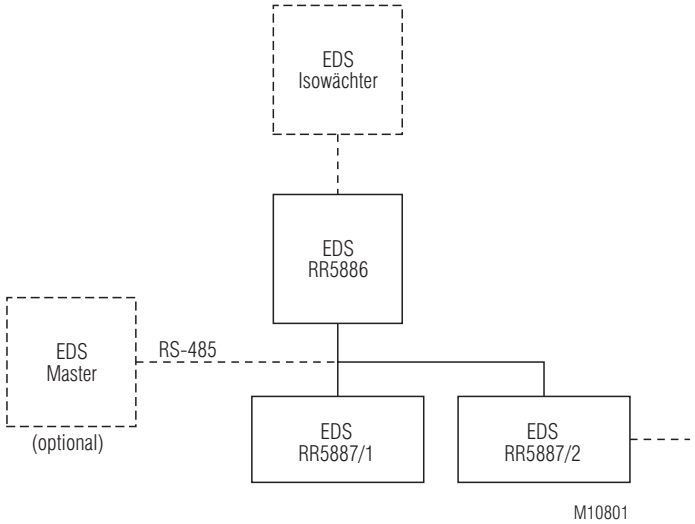
Width x height x depth:	105 x 90 x 71 mm

Standard Type

RR 5886 AC/DC 85 ... 265 V

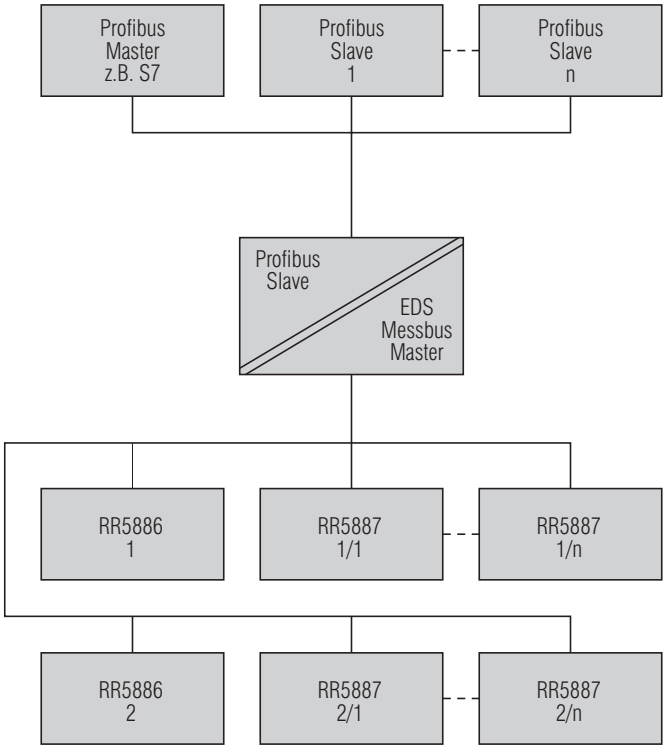
Article number:	0065011
• Rated current range for insulation test currents:	1 ... 5 mA
• Maximum test current output:	6.5 mA
• Width:	105 mm

System overview

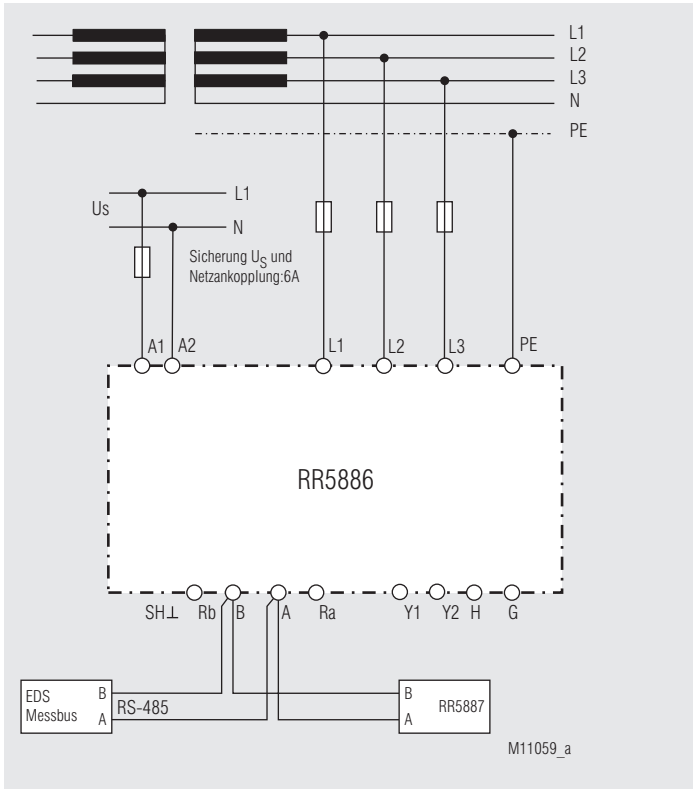


- Insulation fault detection in DC / AC / 3AC IT networks in connection with the insulation fault locator RR 5887
- External selection via an insulation monitoring device possible

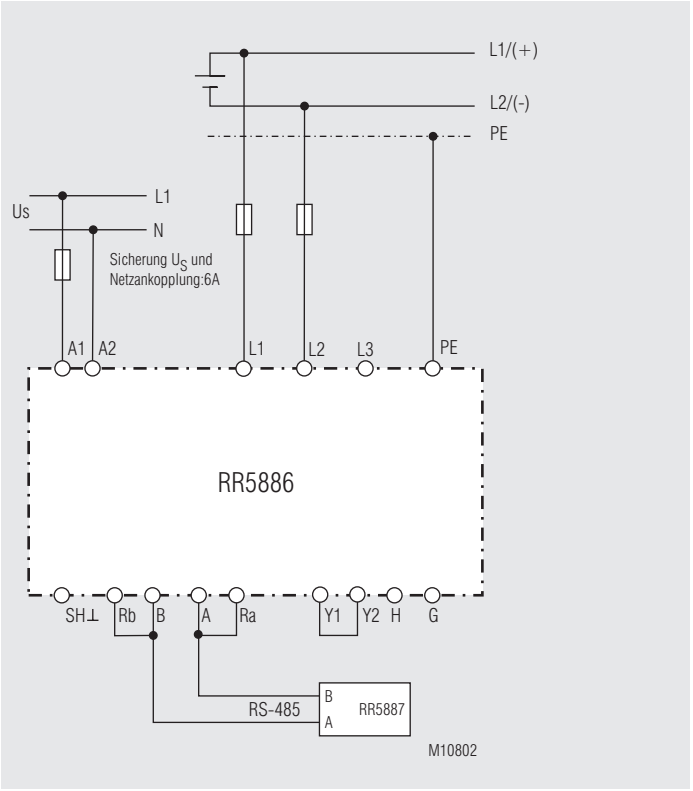
Connection to measuring bus /Profibus gateway



Connection Examples

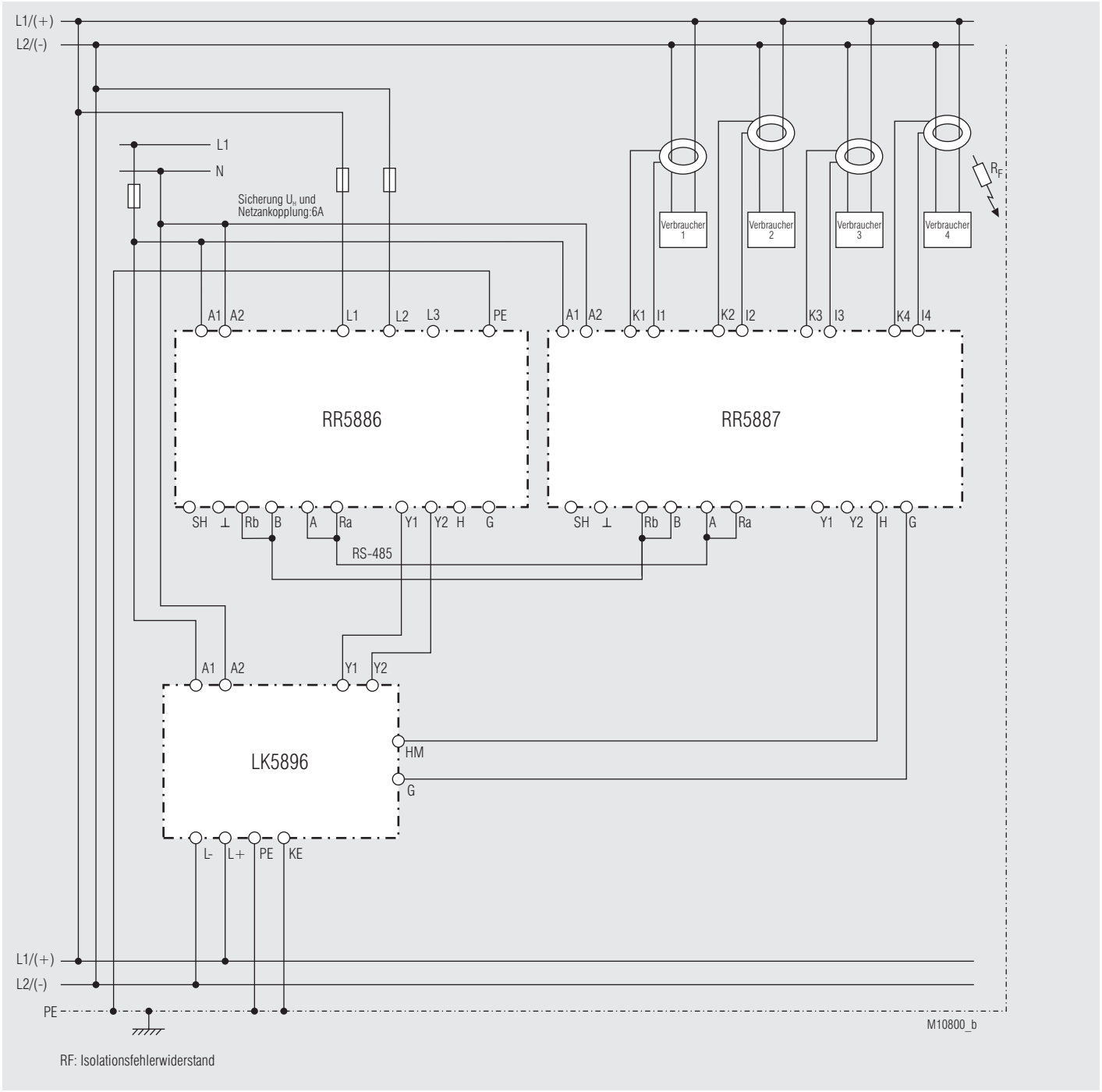


3AC network with manual test current output;
EDS measuring bus connection without bus termination



AC (DC) network with automatic test current output;
RR5886 is bus master; bus termination on the device

Connection Example



Insulation monitoring and insulation fault detection with 4 connected current transformers in a DC/AC network with subdistribution - insulation fault detection can be controlled by the insulation monitor /LK 5896); ALARM MEMORY active, i.e. alarm states are stored; bus termination of the first and last device on the RS-485 bus.