

## Differential current relay IL 5882, SL 5882 varimeter

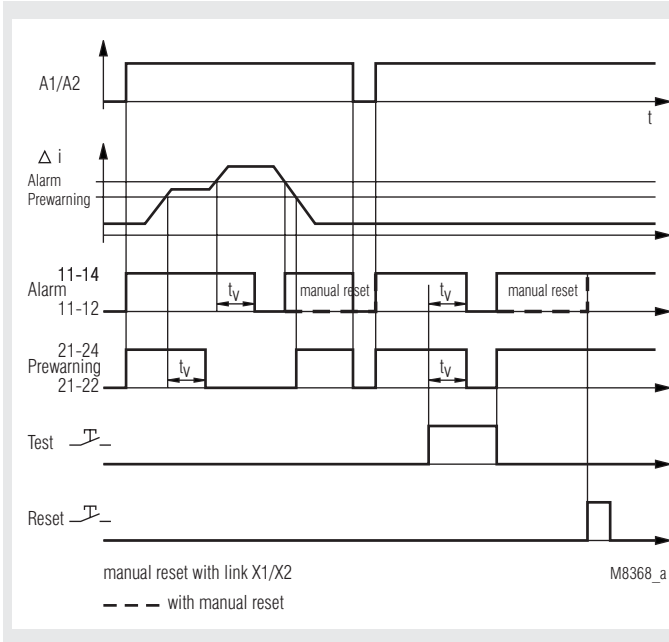


- According to IEC/EN 62 020
- for AC and pulsating DC currents (Type A to IEC 60755 A2))
- 9 tripping values from 10 mA to 10 A
- Connected to core balance transformer, e. g. DOLD ND 5019
- Selection of manual or automatic reset
- With prewarning
- With test and reset button
- Broken wire detection
- Short reaction time
- With adjustable delay  $t_v$
- De-energised on trip
- LED indication for auxiliary supply and state of contact
- 2 x 1 changeover contact
- With sealable cover
- **Devices available in 2 enclosure versions:**
  - IL 5882:** 63 mm deep with terminals near to the bottom to be mounted in consumer units or industrial distribution systems according to DIN 43 880
  - SL 5882:** 100 mm deep with terminals near to the top to be mounted in cabinets with mounting plate and cable ducts
- 35 mm width

### Approvals and marking



### Function diagram



### Application

Detection of insulation faults in grounded voltage systems. The differential current relay is used to maintain electrical plants before faults occur. Decrease in insulation can be detected and indicated early without interruption of operation.

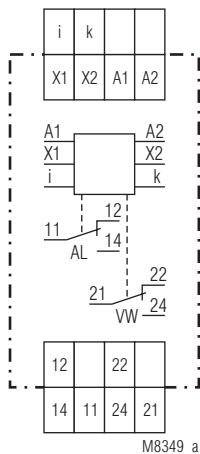
### Function

The function of the IL/SL 5882 can be compared to a fault current circuit breaker unit. It detects and indicates residual currents, but does not disconnect. The measurement is done by an external differential current transformer e. g. ND 5019 which is connected via terminals i and k to the IL/SL 5882. All conductors of the voltage system to be monitored are run through the CT except the ground wire. In a fault free voltage system the sum of all current is 0 and the CT induces no secondary voltage. If due to an insulation fault a fault current flows to ground, the current difference in the CT creates a measuring current, which is detected and measured by the IL/SL 5882. A broken wire in the sensing circuit would disable the measurement, therefore a special circuit detects broken wire and forces the unit to trip.

The unit has 2 x 1 changeover contacts. Contact 11-12-14 for alarm (AL) and 21-22-24 for prewarning (VW). Prewarning is detected at 70 % of the selected alarm value. With external bridge X1-X2 the alarm is stored and has to be reset by pressing the reset button or by disconnecting the auxiliary supply. Without bridge X1-X2 the unit works with auto-reset and the fault is not stored. With the button "Test" a fault can be simulated (Alarm). Each contact is delayed with an adjustable time delay  $t_v$  (same delay time for alarm and pre-warning).

To avoid unauthorised adjustment of the potentiometers the unit has a transparent cover that could be sealed with laquer. Two holes above the push buttons allow activation of test and reset.

### Circuit diagram



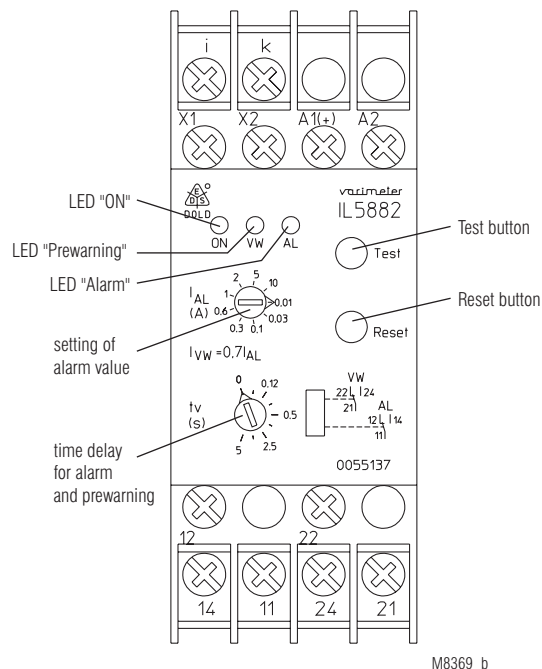
## Indication

green LED:	on, when supply connected
2 red LEDs:	on, when insulation failure (prewarning and alarm)

## Note

If time is set to 0 and a pulsating fault current is flowing (e.g. 1-way rectified) the output relay may flicker because of the short reaction time. By increasing the time delay this effect can be avoided.

## Setting and adjustment



## Technical data

### Input

<b>Auxiliary voltage <math>U_H</math>:</b>	AC/DC 12 V, AC/DC 24 ... 230 V
<b>Voltage range:</b>	
AC:	0,8 ... 1,1 $U_N$
DC:	0,9 ... 1,25 $U_N$
<b>Nominal frequency <math>U_H</math>:</b>	50 ... 400 Hz
<b>Nominal consumption</b>	
AC 230 V:	4 VA
AC 24 V:	1,6 VA
DC 24 V:	1 W
<b>Measuring value adjustable via rotational switch:</b>	AC 0,01; 0,03 A; 0,1 A; 0,3 A; 0,6 A 1 A; 2 A; 5 A; 10 A
<b>Frequency range:</b>	20 Hz ... 2 kHz at failure current < 50 Hz and the function "auto reset", a time delay must be adjusted, so that the relay does not buzz before switching
<b>Hysteresis:</b>	approx. 4% of trip value, fixed
<b>Accuracy:</b>	$\leq \pm 15\%$
<b>Repeat accuracy:</b>	$\leq \pm 1\%$
<b>Temperature drift:</b>	$\leq \pm 0,05\% / K$
<b>Reaction time:</b>	10 ... 30 ms
<b>Response delay <math>t_v</math>:</b>	0 ... 10 s adjustable (logarithmic scale in order to allow also short time delay to be adjusted without problems)

### Output

<b>Contacts:</b>	
IL / SL 5882.38:	1 changeover contact for Prewarning, 1 changeover contact for Alarm
<b>Thermal current <math>I_{th}</math>:</b>	5 A
<b>Switching capacity</b>	
to AC 15:	
NO contact:	3 A / AC 230 V EN 60 947-5-1
NC contact:	1 A / AC 230 V EN 60 947-5-1
<b>Electrical life</b>	
to AC 15 at 1 A, AC 230 V:	3 x 10 <sup>5</sup> switching cycles EN 60 947-5-1

## Technical data

<b>Short circuit strength</b>	
<b>max. fuse rating:</b>	4 A gL EN 60 947-5-1
<b>Mechanical life:</b>	$\geq 10^8$ switching cycles

## General data

<b>Operating mode:</b>	Continuous
<b>Temperature range:</b>	- 20 ... + 60°C
<b>Clearance and creepage distances</b>	
overvoltage category / contamination level	
supply / contacts:	4 kV / 2 IEC 60 664-1
supply / measuring circuit:	corresponding to CT
<b>EMC</b>	
Surge voltages:	class 3 (5 kV / 0,5 J) DIN VDE 0435-303
HF-interference:	class 3 (2,5 kV) DIN VDE 0435-303
Electrostatic discharge:	8 kV (air) IEC/EN 61 000-4-2
HF-irradiation:	10 V / m (class 3) IEC/EN 61 000-4-3
Fast transients:	4 kV (class 4) IEC/EN 61 000-4-4
Surge voltages:	2 kV (class 4) IEC/EN 61 000-4-5
Interference suppression:	Limit value class B EN 55 011
<b>Degree of protection:</b>	
Housing:	IP 40 IEC/EN 60 529
Terminals:	IP 20 IEC/EN 60 529
<b>Housing:</b>	Thermoplastic with V0-behaviour according UL subject 94
<b>Vibration resistance:</b>	Amplitude 0,35 mm frequency 10 ... 55 Hz IEC/EN 60 068-2-6
<b>Climate resistance:</b>	20 / 060 / 03 IEC/EN 60 068-1
<b>Terminal designation:</b>	EN 50 005
<b>Wire connection:</b>	2 x 2,5 mm <sup>2</sup> solid or 2 x 1,5 mm <sup>2</sup> stranded wire with sleeve DIN 46 228-1/-2/-3/-4
<b>Wire fixing:</b>	Flat terminals with self-lifting clamping piece IEC/EN 60 999-1 DIN rail IEC/EN 60 715
<b>Mounting:</b>	
<b>Weight</b>	
IL 5882:	approx. 125 g
SL 5882:	approx. 150 g

## Dimensions

<b>Width x height x depth:</b>	
IL 5882:	35 x 90 x 63 mm
SL 5882:	35 x 90 x 100 mm

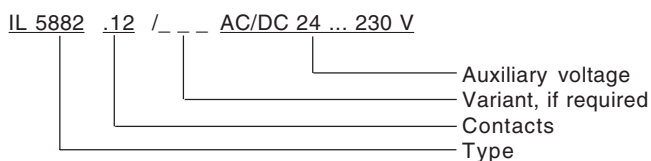
## Standard types

IL 5882.38 AC/DC 24 ... 230 V 50 / 60 Hz	
Article number:	0055138
• De-energised on trip	
• Auxiliary voltage $U_H$ :	AC/DC 24 ... 230 V
• Width:	35 mm
SL 5882.38 AC/DC 24 ... 230 V 50 / 60 Hz	
Article number:	0055515
• De-energised on trip	
• Auxiliary voltage $U_H$ :	AC/DC 24 ... 230 V
• Width:	35 mm

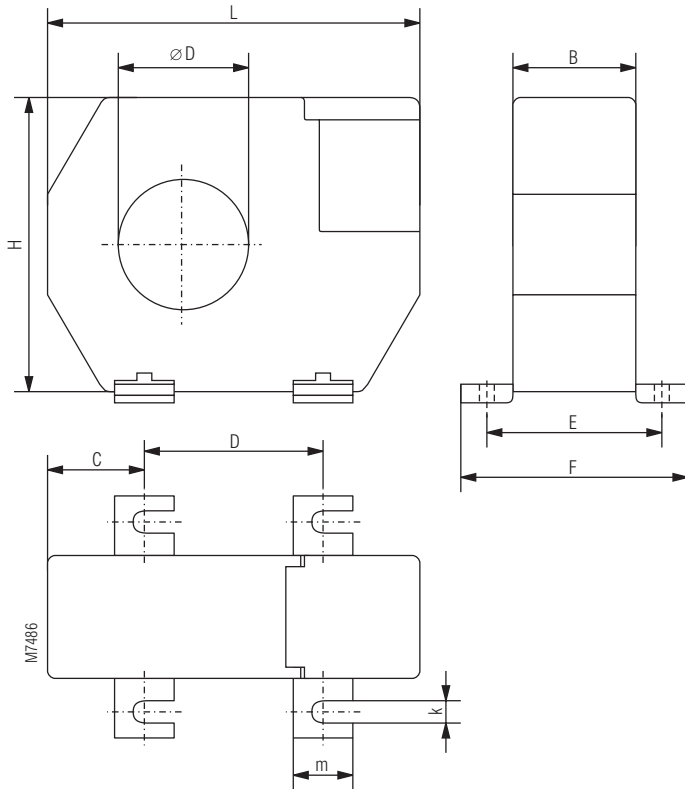
## Varianten

IL 5882.12/002:	with 2 changeover contacts for alarm and no pre-warning
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## Ordering example for Variants



ND 5019 Differential current transformer

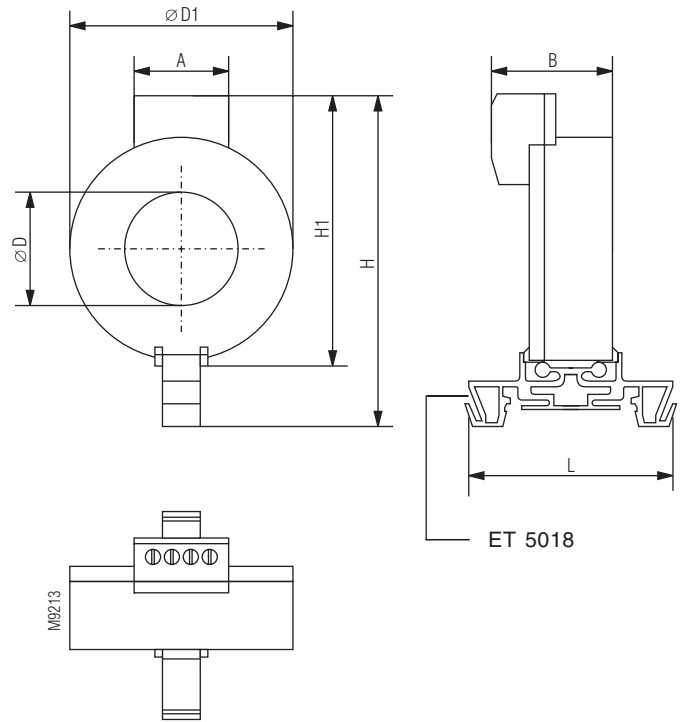
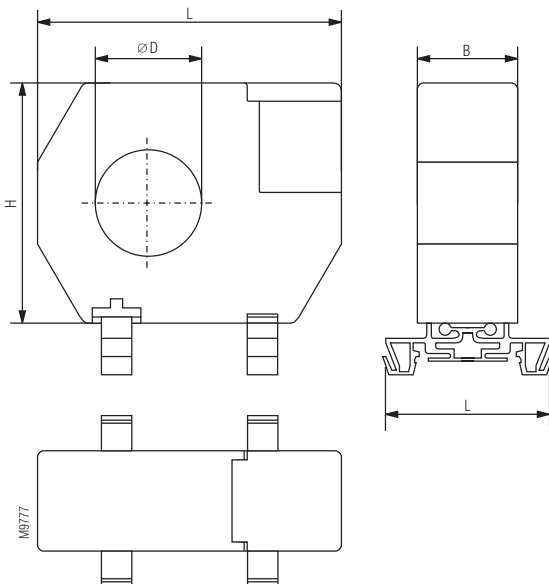


for Screw connection

Dimensions in mm			
	ND 5019/035	ND5019/070	ND5019/105
$\varnothing D$	35	70	105
L	100	130	170
B	33	33	33
H	79	110	146
C	26	32	38
D	48,5	66	94
E	46	46	46
F	61	61	61
k	6,5	6,5	6,5
m	16	16	16

Weight			
kg	ND 5019/035	ND5019/070	ND5019/105
	0.15	0.24	0.5

The current transformers ND 5019/035, ND 5019/070, ND 5019/105 can also be mounted on DIN-rail. To do this the metal screw fixings have to be removed and have to be replaced by 2 mounting clips (ET5018: art.no. 0058754; set with 2 pcs)



for DIN rail mounting

Dimensions in mm		
	ND 5019/020	ND 5019/030
$\varnothing D$	20	30
$\varnothing D1$	46	59
L	55	55
B	32	32
A	25	25
H	77	87
H1	60	70

Weight		
kg	ND 5019/020	ND 5019/030
	0.07	0.085

Technical Data

Ambient temperature: - 10°C ... + 50°C / 263 K ... 323 K  
 Inflammability class: V0 according to UL94

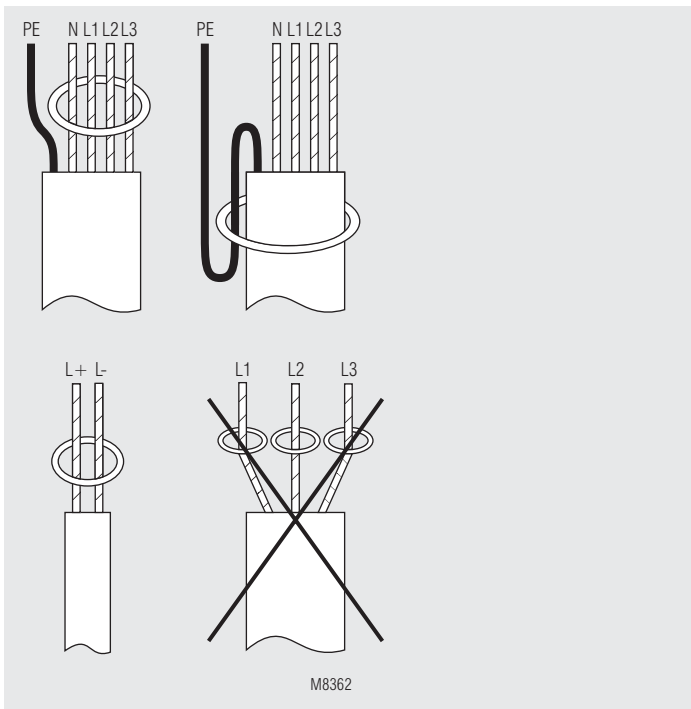
Nominal insulation voltage according to IEC 60 664-1: AC 630 V  
 Overvoltage category / contamination level: 6 kV/3  
 Voltage test according to DIN VDE 0435-303 / IEC/EN 60 255: AC 3 kV

Transformation ratio: 500 /1

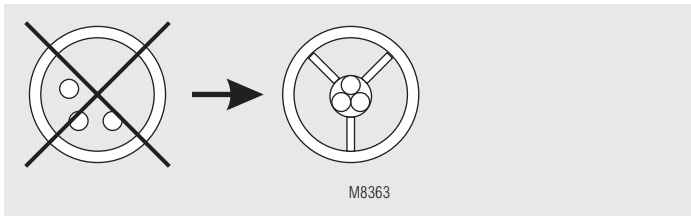
Length of connection wires  
 Type of wire:  
 Single wire 0.75 mm<sup>2</sup>: up to 1 m  
 Twisted pair 0.75 mm<sup>2</sup>: up to 10 m  
 Screened wire 0.75 mm<sup>2</sup> screen on terminal k: up to 25 m  
 Screw connection: (only at ND 5019/035, ND 5019/070, ND 5019/105) M 5  
 DIN rail mounting: using mounting adapter ET 5018

The delivery of ND 5019/020 and ND 5019/030 includes the DIN rail mounting adapter ET 5018.

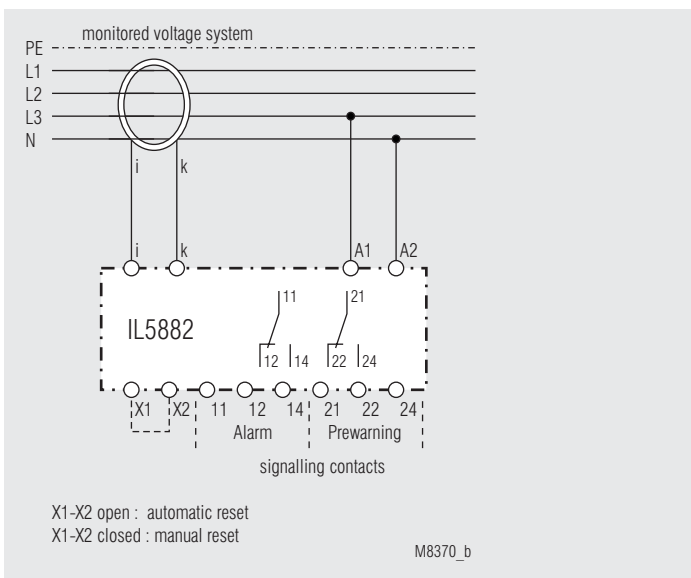
## Installation of wires



## To avoid interference with high starting currents



## Connection example



### Attention:

As the auxiliary supply has no galvanic separation, the secondary circuit of the CT must not be connected to ground. A ground connection will lead to a damage of the unit!