VARIMETER RCM
Residual Current Monitor
IL 5882, SL 5882

Translation of the original instructions

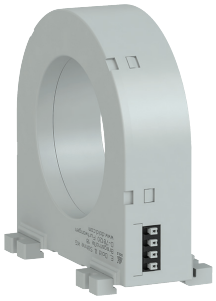
DOLD

0239971

IL 5882

ND 5016/024

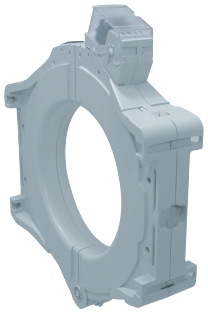
ND 5016/035



ND 5016/070

Split current transf.
ND 5014/050

Split current transf.
ND 5014/080



Split current transf.
ND 5014/120

Product Description

The residual current monitors IL/SL 5882 of the VARIMETER RCM series are suitable for detecting insulation faults in earthed systems as well as for monitoring and preventive maintenance of electrical systems. Insulation deterioration can be detected at an early stage and indicated to the operator of the installation without immediately causing an interruption of operation.

Application

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

Your advantages

- Preventive fire and system protection
- Increasing the availability of plants by early fault detection
- With external residual current transformer
- Protection against manipulation by sealable transparent cover over setting switches

Features

- According to IEC/EN 62020
- For AC and pulsating DC currants Type A to IEC/TR 60755
- 9 tripping values from 10 mA to 10 A or from 10 mA ... 30 A
- Frequency range 20 ... 2000 Hz
- 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-energized on trip
- LED indication for auxiliary supply and state of contact
- 2 x 1 changeover contact
- Devices available in 3 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 43880
  - Width 35 mm
  - For connection of external residual current transformer, e. g. ND 5016, ND 5019 or split current transformer ND 5014

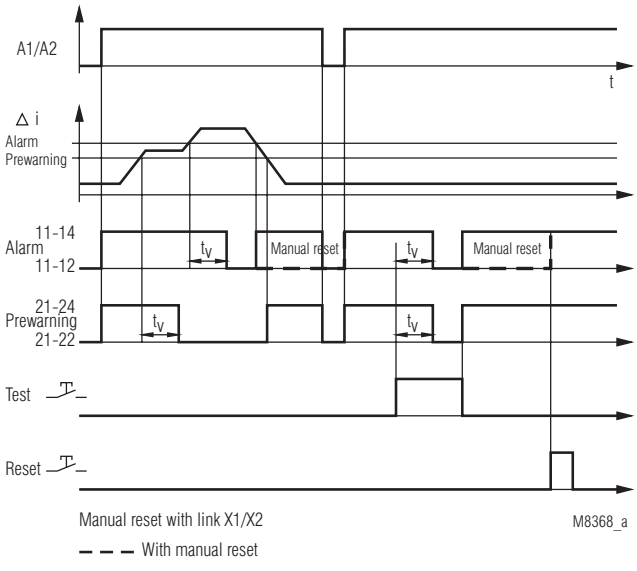
  SL 5882: 100 mm deep with terminals near to the top to be mounted in cabinets with mounting plate and cable ducts
  - Width 35 mm
  - For connection of external residual current transformer, e. g. ND 5016, ND 5019 or split current transformer ND 5014

Approvals and Markings

CE cULus UKCA*)

*) For IL 5882, SL 5882

Function Diagram



Function

The function of the IL/SL 5882 can be compared to a fault current circuit braker unit. It detects and indicates residual currents, but does not disconnect. The measurement is done by an external residual current transformer e. g. ND 5016 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 seald with laquer. Two holes above the push buttons allow activation of test and reset.

Connection terminals

Terminal designation	Signal description
A1, A2	Auxiliary voltage
i, k (only at IL/SL 5882)	Conn. f. external current transformer ND 5016, ND 5019; terminals i, k
X1, X2	Control input X1/X2 bridged: With manual reset of alarm X1/X2 not bridged: Without manual reset of alarm (Hysteresis function)
11, 12, 14	1. C/O contact (Alarm)
21, 22, 24	1. C/O contact (Pre-warning)

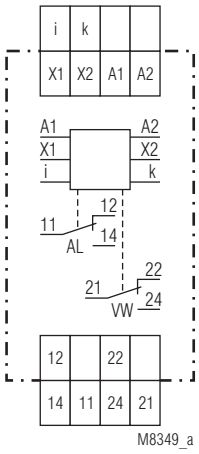
Indication

Green LED "ON": On, when supply connected
Red LEDs "VW", "AL": On, when insulation failure (prewarning and alarm)

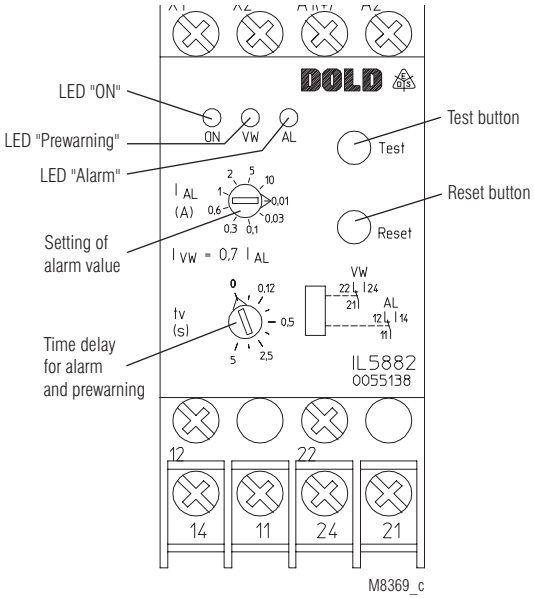
Note

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.

Circuit Diagram



Setting



Technical Data

Input

Auxiliary voltage U_H:	AC/DC 12 V, AC/DC 24 ... 230 V	
Voltage range:		
AC:	0.8 ... 1.1 U_N	
DC:	0.9 ... 1.25 U_N	
Nominal frequency U_H:	50 ... 400 Hz	
Nominal consumption		
AC 230 V:	4.1 VA	
DC 230 V:	1.6 W	
AC 24 V:	1.7 VA	
DC 24 V:	1.3 W	
Measuring value adjustable via rotational switch:	AC 0.01; 0.03 A; 0.1 A; 0.3 A; 0.6 A 1 A; 2 A; 5 A; 10 A or AC 0.01 A, 0.03 A; 0.1 A; 0.3 A; 0.6 A 1 A; 2 A; 7 A; 30 A	
Frequency range:	20 Hz ... 2 kHz (At failure current < 50 Hz and the function "auto reset", a switching delay t_v must be adjusted, so that the relay does not buzz before switching)	
Hysteresis:	Approx. 4 % of trip value, fixed	
Accuracy:	≤ 0 ... - 30 %	
Repeat accuracy:	≤ ± 1 %	
Temperature drift:	≤ ± 0.05 % / K	
Reaction time:	10 ... 40 ms	
Response delay t_v:	0 ... 5 s adjustable (logarithmic scale in order to allow also short time delay to be adjusted without problems)	

Output

Contacts		
IL / SL 5882:	1 changeover contact for Prewarning, 1 changeover contact for Alarm	
Thermal current I_{th}:	5 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
To DC 13:		
NO contact:	2 A / DC 24 V	IEC/EN 60947-5-1
NC contact:	1 A / DC 24 V	IEC/EN 60947-5-1
Electrical life		
to AC 15 at 1 A, AC 230 V:	3 x 10^5 switching cycles	EN 60947-5-1
Short circuit strength		
max. fuse rating:	4 A gG / gL	EN 60947-5-1
Mechanical life:	≥ 10^8 switching cycles	

General Data

Operating mode:	Continuous	
Temperature range		
Operation:	- 20 ... + 60 °C	
Storage:	- 30 ... + 70 °C	
Altitude:	≤ 2000 m	
Clearance and creepage distances		
Rated impulse voltage / pollution degree		
Auxiliary voltage / contacts:	4 kV / 2	IEC 60664-1
Auxiliary voltage / meas. circuit:	Corresponding to CT	
EMC		
Surge voltages:	Class 3 (5 kV / 0.5 J)	DIN VDE0435-303
HF-interference:	Class 3 (2.5 kV)	DIN VDE0435-303
Electrostatic discharge:	8 kV (air)	IEC/EN 61000-4-2
HF irradiation	IEC/EN 61000-4-3, EN 50121-3-2	
80 MHz ... 1 GHz:	20 V / m	
1 GHz ... 2.7 GHz:	10 V / m	
Fast transients:	4 kV (class 4)	IEC/EN 61000-4-4
Surge voltages:	1 kV (class 3)	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
Housing:	Thermoplastic with V0-behaviour according UL subject 94	

Technical Data

Vibration resistance:	Amplitude 0.35 mm frequency 10 ... 55 Hz	IEC/EN 60068-2-6
Climate resistance:	20 / 060 / 03	IEC/EN 60068-1
Terminal designation:	EN 50005	
Wire connection:	2 x 2.5 mm² solid or 2 x 1.5 mm² stranded wire with sleeve DIN 46228-1/-2/-3/-4	
Wire fixing:	Flat terminals with self-lifting clamping piece	IEC/EN 60999-1
Fixing torque:	0.8 Nm	
Mounting:	DIN rail	IEC/EN 60715
Weight		
IL 5882:	Approx. 125 g	
SL 5882:	Approx. 150 g	

Dimensions

Width x height x depth:	
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 10 A 5 s

Article number:	0055138
• De-energized on trip	
• Auxiliary voltage U_H:	AC/DC 24 ... 230 V
• Measuring range:	10 A
• Response delay t_v:	5 s
• Width:	35 mm

SL 5882.38 AC/DC 24 ... 230 V 50 / 60 Hz 10 A 5 s

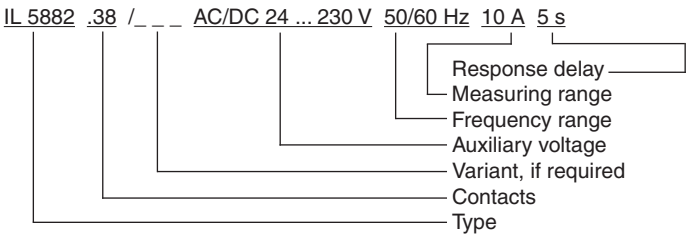
Article number:	0055515
• De-energized on trip	
• Auxiliary voltage U_H:	AC/DC 24 ... 230 V
• Measuring range:	10 A
• Response delay t_v:	5 s
• Width:	35 mm

ND 5016/035

Article number:	0067064
• Residual current transformer for IL/SL 5882	
• Diameter:	Ø 35 mm
• DIN-rail mounting:	Horizontal or perpendicular
• Screw mounting:	M4

Variant

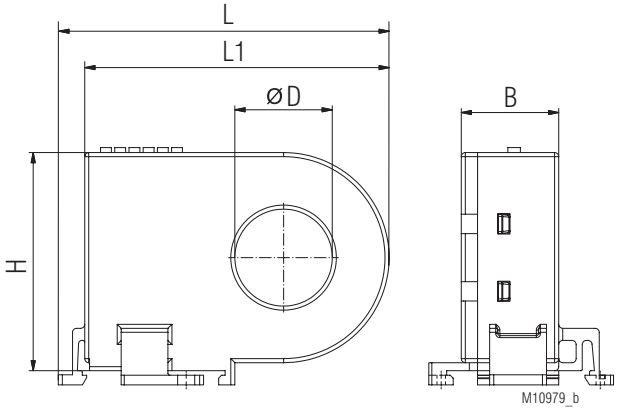
Ordering example for variant



IL 5882.12/002: With 2 changeover contacts for alarm and no pre-warning

Accessories

Residual Current Transformer ND 5016/024, ND 5016/035



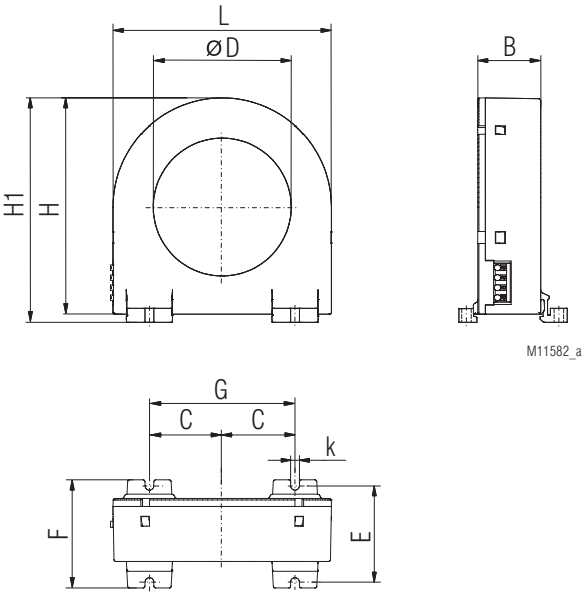
For DIN rail mounting or screw mounting

ND 5016/024	øD	L	L1	B	H	C	E	F	k
Dimension / mm	24	82	75	24	54	25	42*	46	4.2
Weight / g	Approx. 80								
Article number	0066009								

ND 5016/035	øD	L	L1	B	H	C	E	F	k
Dimension / mm	35	88	81	24	67	25	42*	46	4.2
Weight / g	Approx. 90								
Article number	0067064								

*) Drill tolerance for screw mounting: ± 0.5 mm

Residual Current Transformer ND 5016/070



For DIN rail mounting or screw mounting

ND 5016/070	øD	L	H	H1	B	C	F	k	E	G
Dimension/mm	70	111	110	115	32	37	55	4.2	50*	74*
Weight / g	Approx. 220									
Article number	0067065									

*) Drill tolerance for screw mounting: ± 0.5 mm

Technical Data Residual Current Transformer ND 5016, ND 5019

Ambient temperature
ND 5016:
Operation: - 20 ... + 60 °C / 258 K ... 333 K
Storage: - 30 ... + 70 °C / 243 K ... 343 K
ND 5019: - 10 ... + 50 °C / 263 K ... 323 K
Inflammability class: V0 according to UL94

Nominal insulation voltage acc. to IEC 60664-1: AC 630 V
Rated impulse voltage / pollution degree: 6 kV/3
Voltage test acc. to IEC/EN 60255: AC 3 kV

Transformation ratio: 500 /1

Length of connection wires
Type of wire:
Single wire: Up to 1 m
Single wire twisted pair: Up to 10 m
Screened wire;
screen on terminal k: Up to 25 m
Wire cross section
ND 5016: 0.2 ... 1.5 mm²
ND 5019: 0.75 mm²
Stripping length: 8 mm
Wire fixing
ND 5016: Terminals with spring connection and direct (Push in) technology
ND 5019: Box terminals
Screw connection:
ND 5016: M3 or M4
ND 5019: M5
Fixing torque: Max. 0.8 Nm
DIN rail mounting:
ND 5016/024, /035: Integrated clips for vertical and horizontal mounting
ND 5016/070: Integrated clips for horizontal mounting
ND 5019: Using mounting adapter ET 5018

Mounting instructions for screw mounting

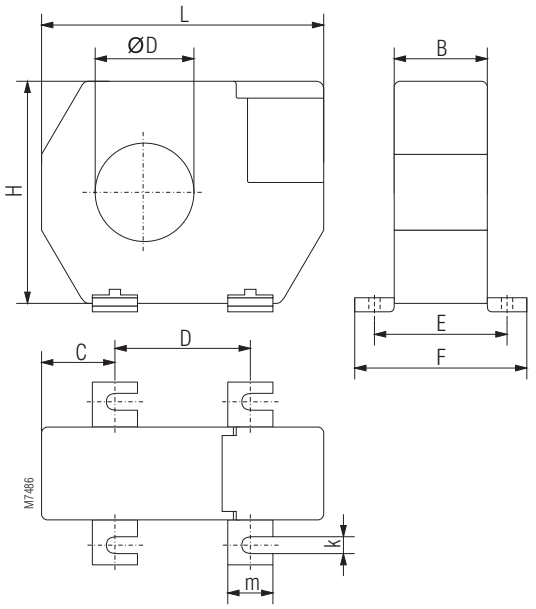
High forces when mounting may damage the current transformer fixtures. The fixing clips are designed to support the current transformer. Forces that are applied by the cable running through the current transformer can only be tolerated within limitations.
During installation and afterwards please make sure that the wires are led through the current transformer without applying pressure and remain stable in that position.

Note for accessoires

The listed current transformers are only approved for operation with this unit.

Accessories

Residual Current Transformer ND 5019

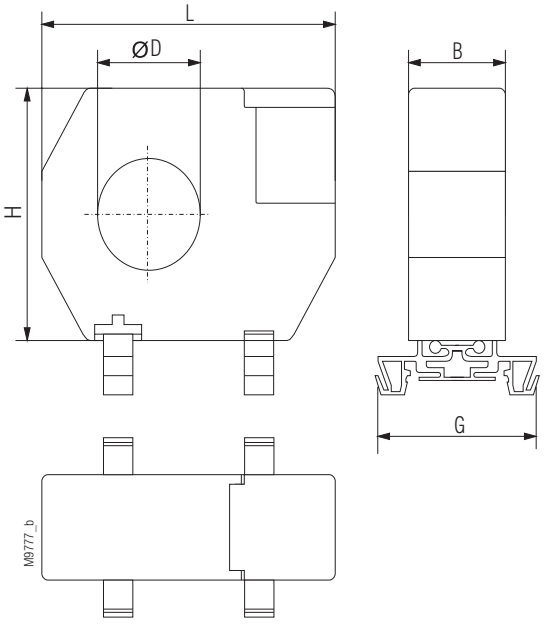


For Screw connection

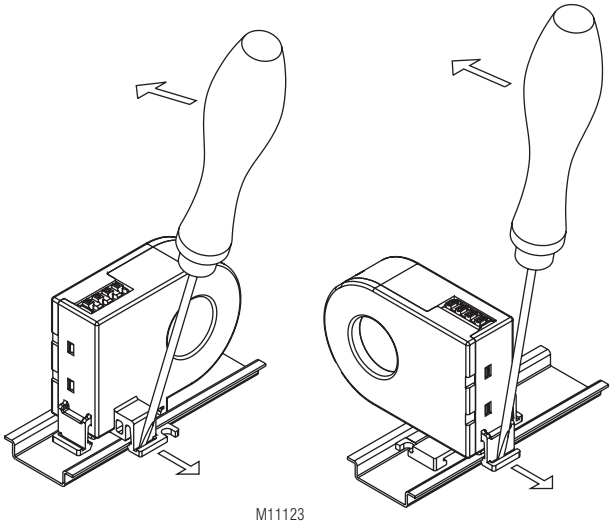
Dimensions in mm	
	ND 5019/105
øD	105
L	170
B	33
H	146
C	38
D	94
E	46
F	61
k	6,5
m	16

Weight	
	ND 5019/105
kg	0.5
Art-Nr.	0055118

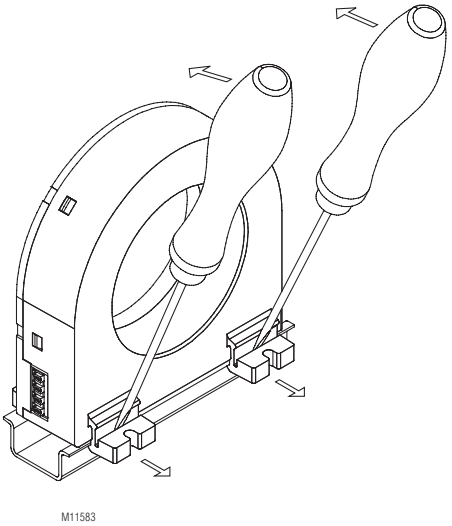
The residual current transformer ND 5019/105 can also be mounted on DIN-rail. To do this the metal screw fixings have to be removed and have to be replaced by 2 mounting clips (ET5018: Art.no. 0058754; set with 2 pcs)



Disassembling ND 5016/024 and ND 5016/035

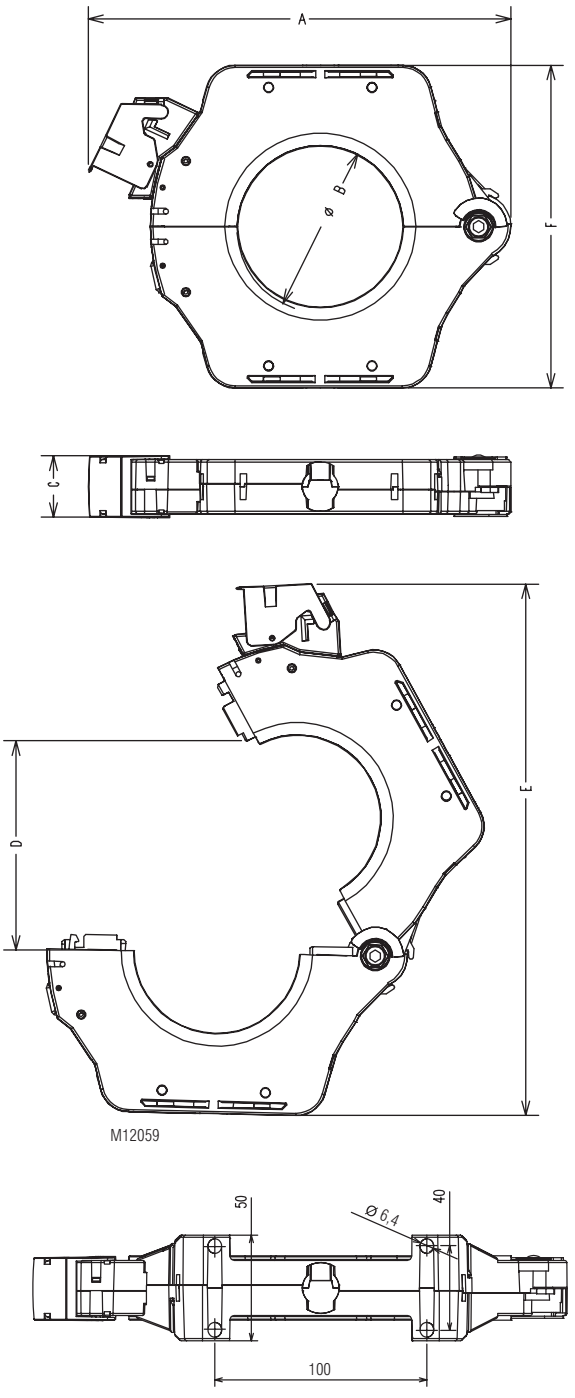


Disassembling ND 5016/070



Dimensions

Residual current monitor ND 5014/050, ND 5014/080, ND 5014/120



ND 5014/050	A	B	C	D	E	F
Dimension / mm	160	49	30	77	200	116
Weight / g	Approx. 380					
Article number	0068614					

ND 5014/080	A	B	C	D	E	F
Dimension / mm	204	79	30	108	260	156
Weight / g	Approx. 850					
Article number	0068613					

ND 5014/120	A	B	C	D	E	F
Dimension / mm	252	119	30	149	328	204
Weight / g	Approx. 1500					
Article number	0068565					

*) Drill tolerance for screw mounting: ± 0.5 mm

Technical Data Residual Current Monitor ND 5014

Ambient temperature:	- 40 ... + 80 °C / 233 K ... 353 K
Inflammability class:	V0 according to UL94

Insulation coordination according to IEC 61869-1

Highest rated operating voltage U_m:	AC 720 V
Rated impulse voltage:	3 kV
Rated impuls voltage / pollution degree:	8 kV / 3

Rated transformation ratio:	500 / 1
Rated primary current:	10 A
Nominal load:	50 mVA
Accuracy:	Class 3

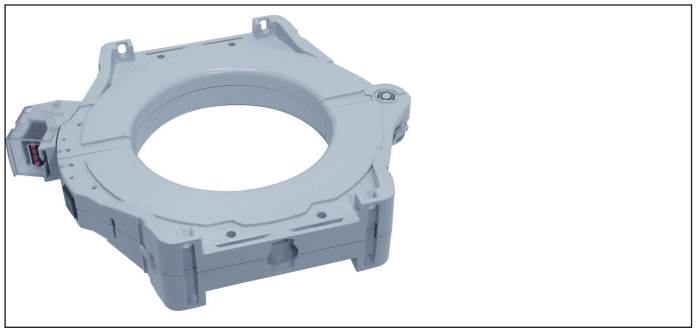
Wire connection

Wire cross section:	0.2 ... 2.5 mm² rigid / 0.2 ... 2.5 mm² flexible / AWG 24 ... 12
Stripping length:	6 mm
Wire fixing:	Terminals with spring connection and direct (Push in) technology
Actuating force:	40 N max.

Mounting

DIN rail mounting:	Vertical and horizontal mounting on enclosed socket
ND 5014/120:	Screw fastening also possible

Mounting - Srew fixing at ND 5014/120

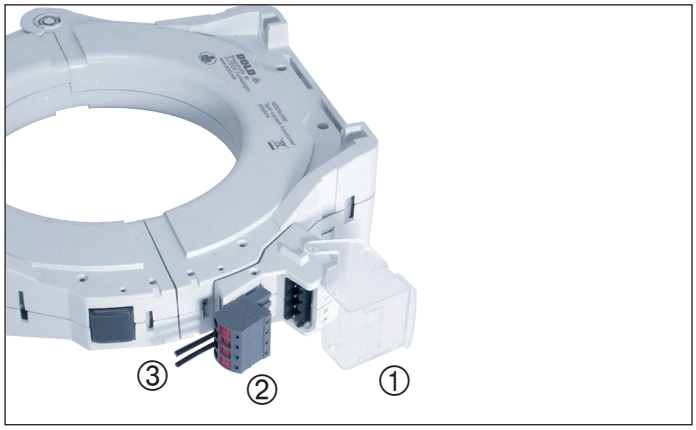


Screws are not included in the delivery !

Mounting instructions for srew fixing

To high forces applied during installation can damage the transformer on the mounting foots.
The mounting foots are only designed to fix the transformer. Forces that are applied to the CT by the conductors can only be supported within limitations. When installing the CT, the conductors should be lead free through the transformer and should later stay in that position.

Wiring Information Residual Current Monitor



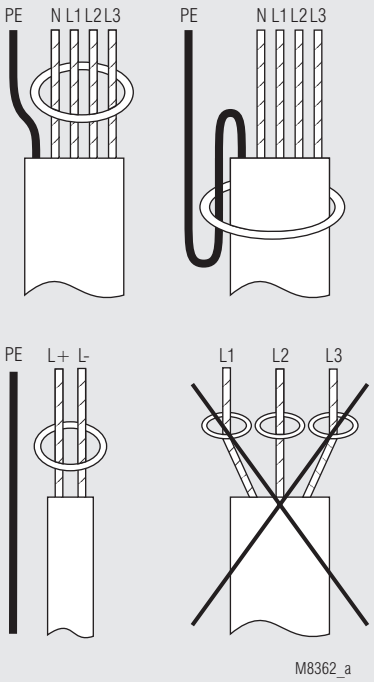
① The hinged cover protects the push-in terminal block and avoids unintended disconnection of the wiring

② The push-in terminal block provides easy mounting

③ Stripping length: 10 mm
Connecting capacity: 0.2 .... 2.5 mm²

For further details see separate data sheet ND 5014.

Installation of Wires



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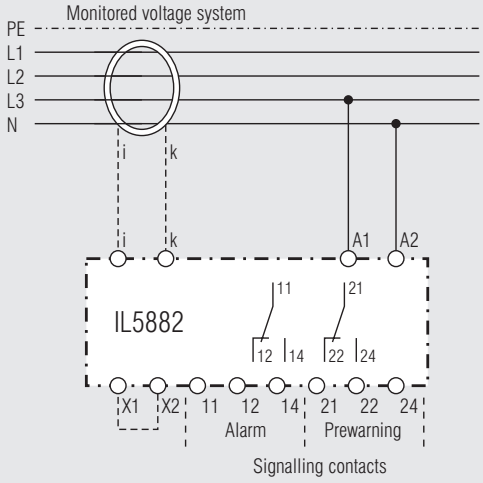
Connection Example



X1-X2 open : Automatic reset
X1-X2 closed : Manual reset

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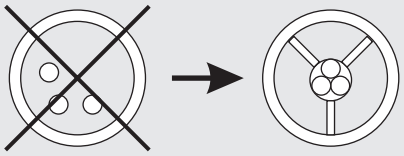
Attention:
As the auxiliary supply has no galvanic separation, the secondary circuit of the CT must not be connected to ground. A ground connection will lead to a damage of the unit!

To Avoid Interference with High Starting Currents



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