

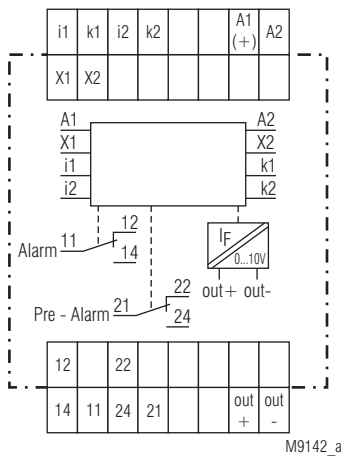
VARIMETER RCM

Residual Current Monitor, Type B for AC and DC Systems
IP 5883



- According to IEC/EN 62 020, VDE 0663
- For AC and DC systems Type B, according to IEC/TR 60755
- To detect earth faults in grounded voltage systems
- 4 Setting Ranges from 10 mA to 3 A
- Manual reset, with pre-warning
- As option pre warning without auto reset
- With adjustable pre-warning
- With adjustable switching delay
- Energized or de-energized on trip
- LED indicator for operation, prewarning and alarm
- LED-chain indicates fault current
- Analogue output
- With test function
- Broken wire detection
- Removable cover
- 70 mm width

Circuit Diagram



Approvals and Markings



Application

The differential current monitor type B is designed to monitor DC systems and AC systems up to 250 Hz.

Indication

- Green LED "ON": On, when auxiliary supply connected
- Red LED "pre alarm": flashes during time delay, on, when pre-alarm active
- Red LED "alarm": flashes during time delay, on, when alarm active
- Both red LEDs: flashing on broken wire or extremely high input signal
- Yellow LEDs: LED chain indicates fault current in % of adjusted alarm value

Function

The function is similar to an RCD tripping device. The voltage system is monitored to detect a fault current to ground. It does not disconnect the voltage, it only indicates the fault. The Measuring circuit includes an external residual current transformer. All conductors of a voltage system are fed through the transformer except the ground wire. In a healthy system the sum of all flowing currents is zero, so that no voltage is induced in the CT. If an earth fault occurs, sourcing a current flowing to ground, the current difference induces a current in the CT that is detected by the IP 5883.

On broken sensor wires and broken CT coils the unit goes into alarm state and the 2 red LEDs flash. The unit has 2 changeover output contacts. One for alarm (11, 12, 14) and one for pre-warning (21, 22, 24). The prewarning can be set to 20, 40, 60, 80 and 100 % of the alarm with or without 1 s time delay.

4 Setting Ranges can be selected from 10 mA to 3 A. An adjustable time delay up to 1 or 10 s is possible. The fine adjustment of the measuring value and the time delay is made via 2 potentiometers with setting ratio 1:10.

The different CT sizes require a correct adaption of the differential current monitor. 3 models are available:

Type	Frequency range	Suitable residual current transformer
IP 5883	DC + AC up to 250 Hz	ND 5018/030 ND 5018/035
IP 5883/070	DC + AC up to 180 Hz	ND 5018/070
IP 5883/140	DC + AC up to 60 Hz	ND 5018/105 ND 5018/140 ND 5018/210

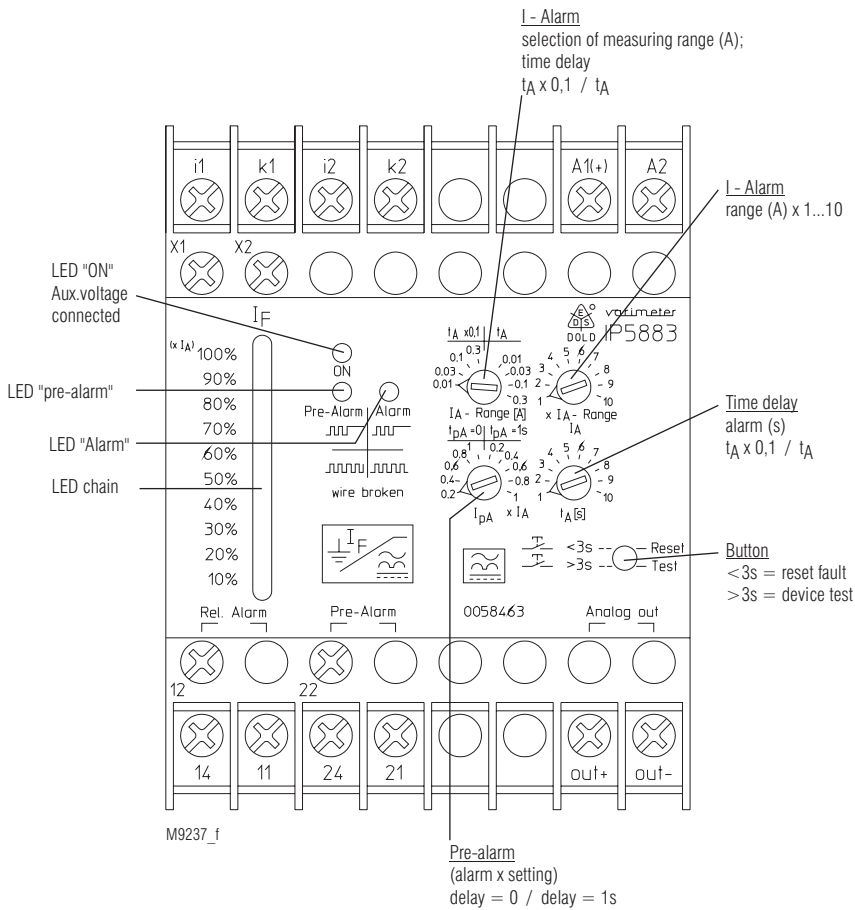
An external link on X1-X2 allows the change between energized and de-energized on trip. With inserted link the unit de-energises on trip. A change of the function will only be valid after interruption of the supply voltage.

If an adjusted value is reached on the measuring input (alarm or pre-warning) the signal is stored. Reset is made by pressing the button "Test/Reset" for < 3 s or by disconnecting the auxiliary supply (approx. 30 s).

If the "Test/Reset" button is pressed for > 3 s, a test of the unit is made. The time delays run, the pre-warning and alarm is activated.

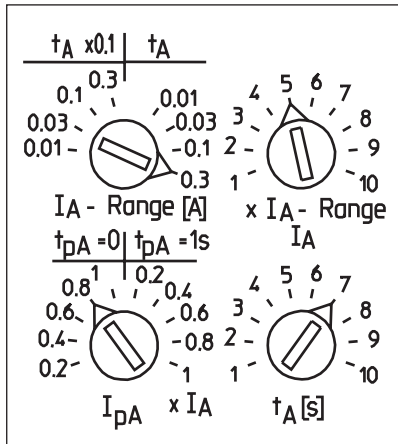
An LED chain shows the fault current between 10 and 100 % of the adjusted alarm value. An analogue output 0 - 10 V indicates also the fault current. 10 V corresponds to 100 % of the adjusted alarm value.

Set-up and Adjustment Facilities



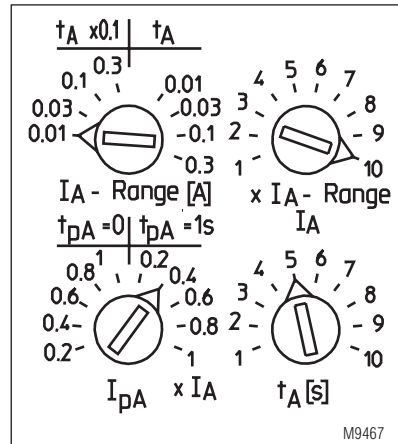
Settings

Front detail with potentiometers



Example 1

Alarm at 1.5 A (0.3 A \times 5)
 Time delay alarm t_A : 7 s (1 \times 7 s)
 Pre-warning at 80 % alarm
 Time delay pre-warning = 0



Example 2

Alarm at 100 mA (0.01 A \times 10)
 Time delay alarm t_A : 0.5 s (0.1 \times 5 s)
 Pre-warning at 40 % alarm
 Time delay pre-warning = 1 s

Notes

ATTENTION !



The devices measure AC and DC current (AC/DC sensitive). Due to the measuring principle they are also influenced by magnetic fields next to current transformer. When planning equipment with AC/DC sensitive residual current monitors, components that create magnetic fields as contactors, transformers etc., should not be placed near to the current transformer. If an influence cannot be avoided, turning the transformer 90° could reduce the influence.

Technical Data

Input

Auxiliary voltage U_H:	AC/DC 24 ... 80 V, AC/DC 80 ... 230 V
Voltage range:	DC 19 ... 110 V, AC 19 ... 90 V, DC 64 ... 300 V, AC 64 ... 265 V
Nominal frequency U_H:	AC 50 / 60 Hz
Nominal consumption	
at AC:	5 VA
at DC:	2.5 W
Measuring range:	10 ... 100 mA, 30 ... 300 mA, 100 ... 1000 mA, 300 ... 3000 mA
Measuring range fine adjustment:	1 ... 10
Max. overload:	with overload protection
Pre-warning:	20, 40, 60, 80, 100 %
Frequency range:	DC und AC to 250 Hz
Repeat accuracy:	$\leq \pm 3 \%$
Temperature drift:	$\leq \pm 0.1 \%$ / K
Reaction time:	< 50 ms
Switching delay pre-warning:	without delay or 1 s adjustable
Switching delay alarm:	x 0.1, x 1, fine adjustment 1 ... 10

Output

Contacts:	1 changeover contact for pre-warning, 1 changeover contact for alarm
Thermal current I_{th}:	5 A
Switching capacity	
at AC 15:	
NO contact:	3 A / AC 230 V IEC/EN 60 947-5-1
NC contact:	1 A / AC 230 V IEC/EN 60 947-5-1
Electrical life	
to AC 15 at 1 A, AC 230 V:	3 x 10 ⁶ switch. cycl. IEC/EN 60 947-5-1
Short circuit strength	
max. fuse rating:	4 A gL IEC/EN 60 947-5-1
Mechanical life:	$\geq 10^8$ switching cycles

Analogue Output

Terminal out+ / out-:	0 ... 10 V; 5 mA
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If using the analogue output "out+ / out -" you have to use a shielded cable. The shield has to be grounded on both sides.

General Data

Operating mode:	Continuous
Temperature range:	- 40 ... + 60°C
Clearance and creepage distances	
(with external current transformer)	
auxiliary voltage /	
Measuring circuit:	6 kV / 2 IEC 60 664-1
auxiliary voltage /	
analogue output:	6 kV / 2 IEC 60 664-1
auxiliary voltage / contacts:	4 kV / 2 IEC 60 664-1
analogue output / contacts:	4 kV / 2 IEC 60 664-1

Technical Data

EMC

Surge voltages:	Class 3 (5 kV / 0,5 J) DIN VDE 0435-303
Electrostatic discharge:	8 kV (air) IEC/EN 61 000-4-2
HF-irradiation	IEC/EN 61 000-4-3, DIN EN 50 121-3-2
80 MHz ... 1 GHz:	20 V / m
1 GHz ... 2.7 GHz:	10 V / m
HF-wire guided:	10 V (class 3) IEC/EN 61 000-4-6
Fast transients:	2 kV (class 3) IEC/EN 61 000-4-4
Surge voltages:	1 kV class 3 IEC/EN 61 000-4-5
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 UL subject 94

Vibration resistance:

Amplitude 0.35 mm frequency 10 ... 55 Hz IEC/EN 60 068-2-6
20 / 60 / 03 IEC/EN 60 068-1

Climate resistance:

Terminal designation:

Wire connection:

2 x 2.5 mm² solid or
2 x 1.5 mm² stranded wire with sleeve
DIN 46 228-1/-2/-3/-4

Wire fixing:

Flat terminals with self-lifting clamping piece

Mounting:

DIN rail IEC/EN 60 715

Weight:

220 g

Dimensions

Width x height x depth:	70 x 90 x 59 mm
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Standard Type

IP 5883 AC/DC 80 ... 230 V 50 / 60 Hz
Article number: 0058463
• for residual current transformer ND 5018/030 and ND 5018/035
• with pre warning and manual reset
• Energized or de-energized on trip
• Auxiliary voltage U_H : AC/DC 80 ... 230 V
• Width: 70 mm

Variants

For residual current transformer ND5018/030, ND5018/035:

IP 5883/001:	manual reset, pre warning with auto reset
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For residual current transformer ND5018/070:

IP 5883/070:	pre warning and manual reset
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IP 5883/071:	manual reset, pre warning with auto reset
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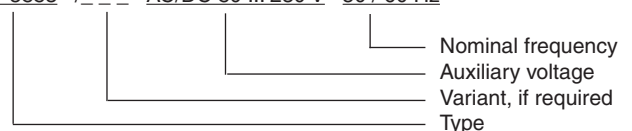
For residual current transformer ND5018/105, ND5018/140, ND5018/210:

IP 5883/140:	pre warning and manual reset
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IP 5883/141:	manual reset, pre warning with auto reset
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Ordering example for variants

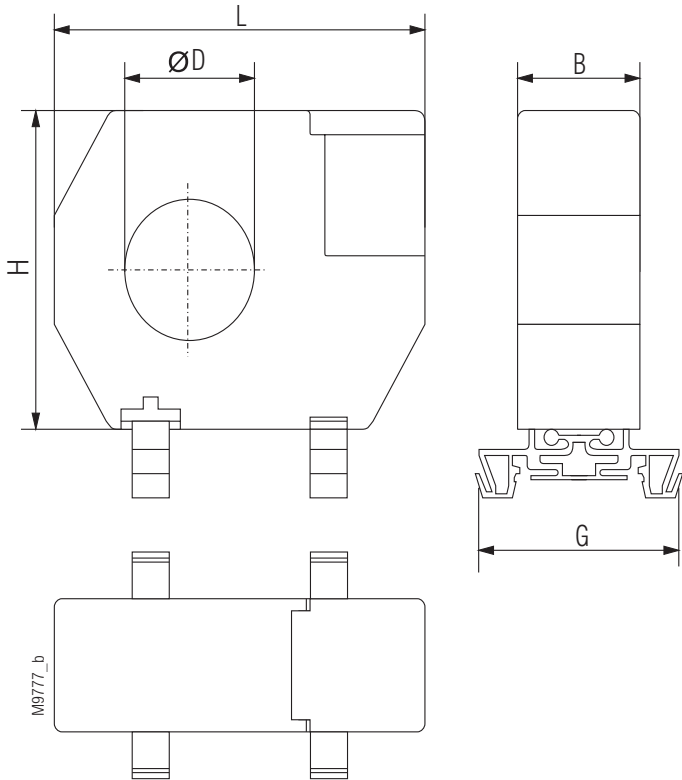
IP 5883 / _ _ _ AC/DC 80 ... 230 V 50 / 60 Hz



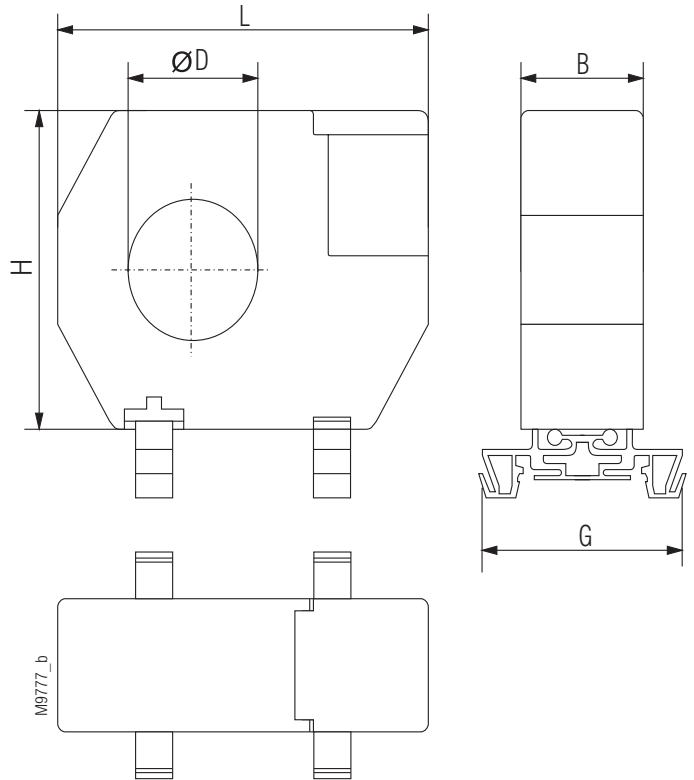
Accessories

Type	Frequency range	Suitable residual current transformer
IP 5883	DC + AC up to 250 Hz	ND 5018/030 ND 5018/035
IP 5883/070	DC + AC up to 180 Hz	ND 5018/070
IP 5883/140	DC + AC up to 60 Hz	ND 5018/105 ND 5018/140 ND 5018/210

ND 5018/035 Residual Current Transformer



ND 5018/030 Residual Current Transformer



for screw mounting

ND 5018/035	øD	L	B	H	C	D	E	F	k	m
Dimensions / mm	35	100	33	79	26	48.5	46	61	6.5	16
Weight / g	170									

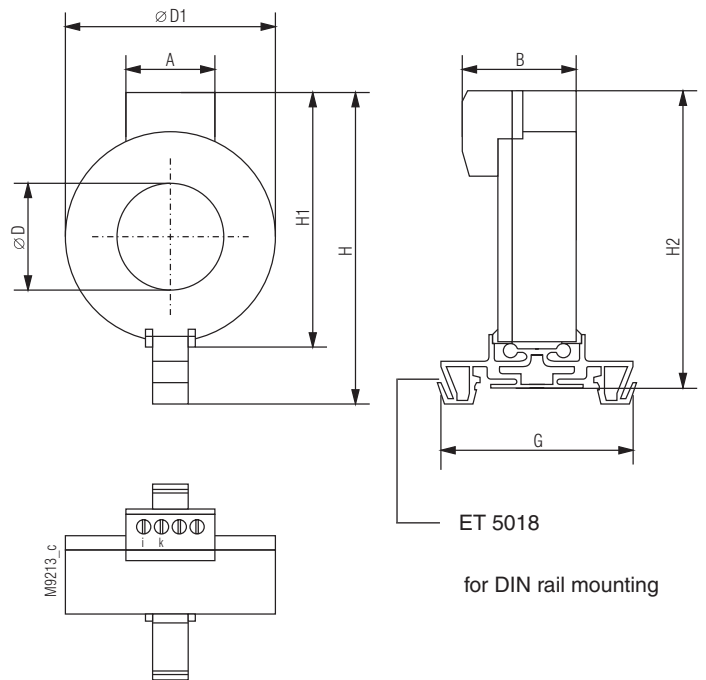
ND 5018/070	øD	L	B	H	C	D	E	F	k	m
Dimensions / mm	70	130	33	110	32	66	46	61	6.5	16
Weight / g	300									

ND 5018/105	øD	L	B	H	C	D	E	F	k	m
Dimensions/mm	105	170	33	146	38	94	46	61	6.5	16
Weight / g	530									

ND 5018/140	øD	L	B	H	C	D	E	F	k	m
Dimensions/mm	140	220	33	196	48,5	123	46	61	6.5	16
Weight / g	1250									

ND 5018/210	øD	L	B	H	C	D	E	F	k	m
Dimensions/mm	210	299	33	284	69	161	46	61	6.5	16
Weight / g	2100									

The residual current transformers ND 5018/035, ND 5018/070, ND 5018/105 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)



ET 5018

for DIN rail mounting

ND 5018/030	øD	øD1	L	B	A	H	H1
Dimensions/mm	30	59	55	32	25	87	70
Weight / g	90						

Technical Data - Residual Current Transformer-

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
 rated impulse voltage / pollution degree: 6 kV/3
 Voltage test according to DIN VDE 0435-303 / IEC/EN 60 255: AC 3 kV

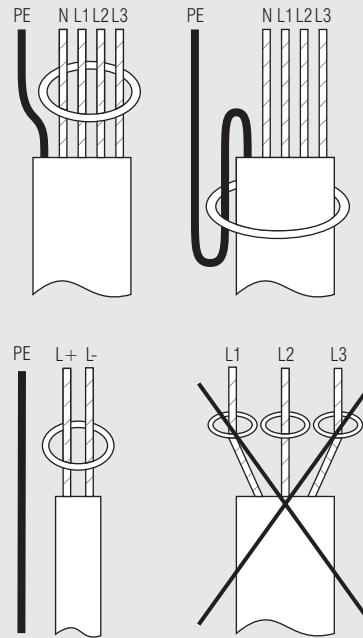
Length of connection wires
 Type of wire:
 Single wire 0.75 mm², e.g. up to 1 m
 Twisted pair 0.75 mm²: up to 10 m
 (pair 1: i1 - K1; pair 2: i2 - K2)
 Screened wire 0.75 mm² screen on terminal X2: up to 25 m

With a control wire LiYY 4 x 0.14 good measuring results were reached up to 20 m.

Screw connection: (only at ND 5018/035, ND 5018/070, ND 5018/105, ND 5018/140, ND 5018/210) M 5
 DIN rail mounting: using mounting adapter ET 5018

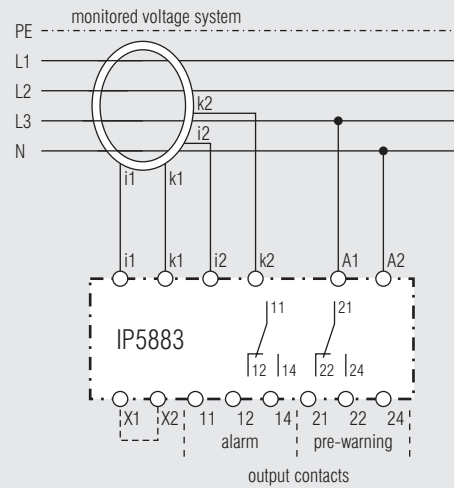
The delivery of ND 5018/030 includes the DIN rail mounting adapter ET 5018.

Installation of Wires



M8362_a

Connection Example



X1-X2 without bridge : energized on trip
 X1-X2 with bridge : de-energized on trip

M9238_a

