Resi9 Energy Meter Wired, Universal, 80A/ 160A/250A, 6 Channels

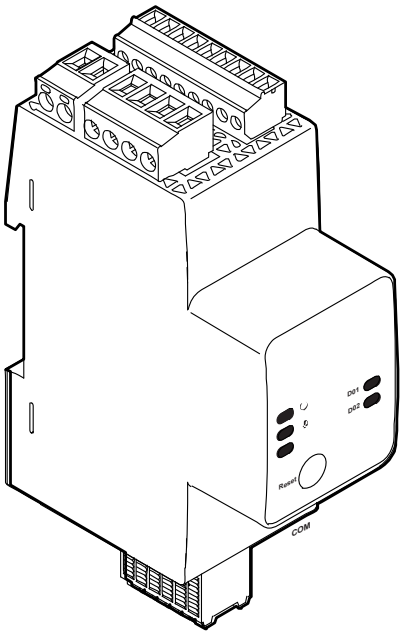
Instruction Sheet

9 Series

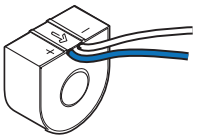
Resi9 Current Transformer 80 A, 160 A and 250 A

03/2025

R9MUX6M



R9MCT80



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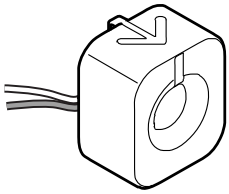

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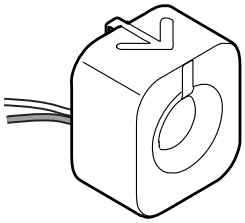

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Table of Contents

Safety information

Important information

Read these instructions carefully and look at the equipment to become familiar with the device before trying to install, operate, service, or maintain it. The following special messages may appear throughout this manual or on the equipment to warn of potential hazards or to call attention to information that clarifies or simplifies a procedure.

The addition of either symbol to a “Danger” or “Warning” safety label indicates that an electrical hazard exists which will result in personal injury if the instructions are not followed.

This is the safety alert symbol. It is used to alert you to potential personal injury hazards. Obey all safety messages that accompany this symbol to avoid possible injury or death.

⚠⚠DANGER

DANGER indicates a hazardous situation which, if not avoided, **will result in** death or serious injury.

Failure to follow these instructions will result in death or serious injury.

⚠WARNING

WARNING indicates a hazardous situation which, if not avoided, **could result in** death or serious injury.

⚠CAUTION

CAUTION indicates a hazardous situation which, if not avoided, **could result in** minor or moderate injury.

NOTICE

NOTICE is used to address practices not related to physical injury.

Symbols

ETS settings

Additional information

The information provided must be complied with, otherwise program or data errors may occur.

Safety Precautions

Installation, wiring, testing, and maintenance must be performed in accordance with all local and national electrical codes.

Read carefully and follow the safety precautions below.

⚠⚠DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

Safe electrical installation must be carried out only by skilled professionals.

Skilled professionals must prove profound knowledge in the following areas:

- Connecting to installation networks.
- Connecting to several electrical devices.
- Laying electrical cables.
- Safety standards, local wiring rules and regulations.

Failure to follow these instructions will result in death or serious injury.

⚠⚠WARNING

HAZARD OF ELECTRIC SHOCK

- Observe the regulations for working on live parts.
- Only actuate the device buttons using insulated auxiliary equipment that meets the requirements of EN 60900.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

⚠⚠WARNING

UNINTENTIONAL OPERATION

- Do not use energy meters for critical control or protection purposes when the operation of the control circuit affects the safety of personnel or equipment.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

⚠⚠WARNING

INACCURATE DATA RESULTS

- Do not rely solely on the data displayed on the front panel or in the software to determine whether the device operates correctly or observes all applicable standards.
- Never substitute the data displayed on the front panel or in the software for appropriate workplace norms or equipment maintenance.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

NOTICE

RISK OF EQUIPMENT DAMAGE

Use only the compatible CTs to ensure safety and proper function of the equipment.

Failure to follow these instructions can result in equipment damage.

About the products

Resi9 Energy Meter Wired, Universal, 80A/160A/250A, 6 Channels

The Resi9 Energy Meter Wired, Universal, 80A/160A/250A, 6 Channels (hereinafter referred to as module) measures current, voltage, energy consumption, etc., for monitoring single-phase or three-phase electrical installations.

This energy meter provides bidirectional active energy. The active energy are saved in the non-volatile memory of the energy meter.

The energy meter provides highly accurate measurement and average value. To be completed with Resi9 Current Transformer 80 A or 160 A or 250 A.

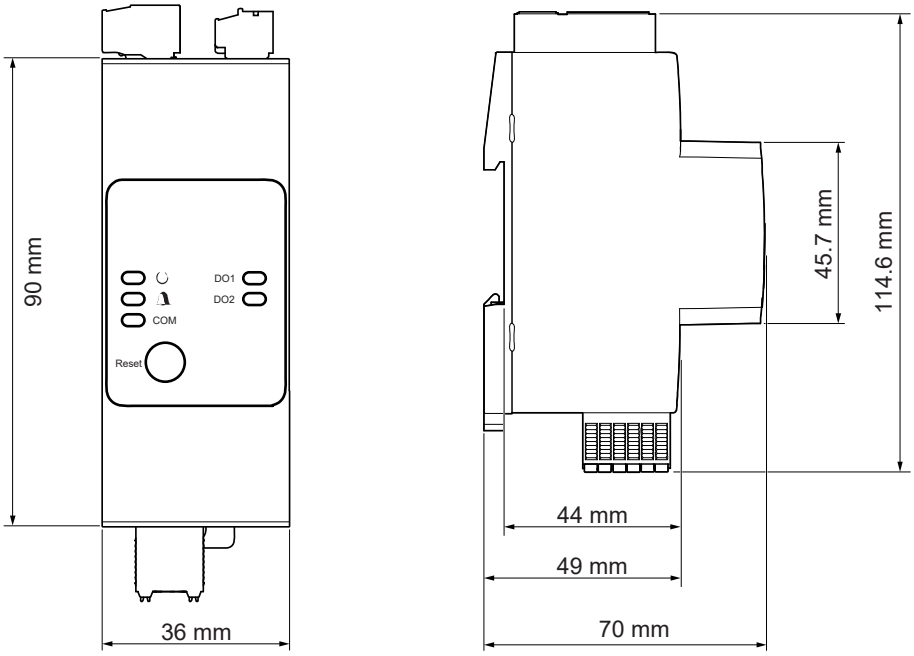
Resi9 Current Transformer 80 A, 160 A, 250 A

The Resi9 Current Transformer 80 A (CT) is the sensing device for single-phase and three-phase electrical installations, with one set containing 6 units. Similarly, the Resi9 Current Transformers 160 A and 250 A (CT) are the sensing devices for three-phase electrical installations, with one set containing 3 units.

NOTE: All CT set needs to be procured separately.

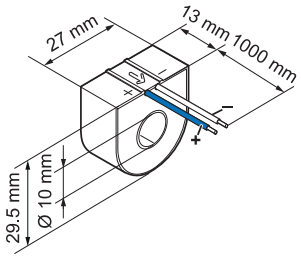
Components

Module

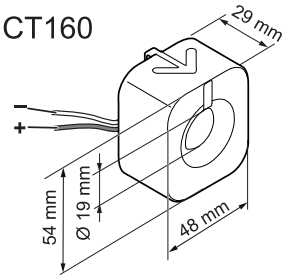


CT

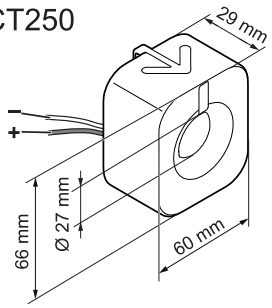
R9MCT80



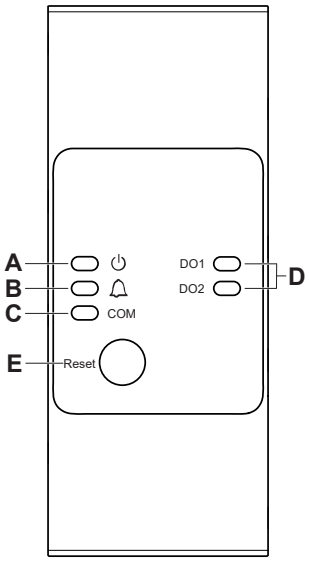
R9MCT160



R9MCT250



User Interface



A. LED in Green. Power: LED is ON when it is powered and is OFF when the power supply is off.

B. LED in Red. Alarm: Flashes at 1 Hz frequency when alarm happens and is off when there is no alarm. The LED flashes at 10 Hz frequency during reset. Alarm could be configured by the user, e.g. set input voltage normal range with threshold value, when input voltage is over the threshold, alarm is on for this over voltage situation happening.

C. LED in Green. Modbus Communication: flashes at 2 Hz when Modbus communication occurs and is constantly ON when no communication occurs. In Modbus address change mode: See details in section E “Button”.

D. LED in Green. Digital output: LED is ON when DO switch is closed, LED is OFF when DO switch is opened.

E. Button

- **Reset to factory settings**: Press and hold the button for 10 seconds to reset the device.
- **Check Modbus address**: Short press the button (< 2 s), COM LED C will indicate the current address by the number of flashes. By default, the factory settings define the Modbus address as 1.

  For example: After changing the address (1 <= address <= 10), the flash times equals to the address, if address (address > 10), the flash times represents only the last digit of the address, flash 5 times for address 15
- **Change Modbus address**: Long press the button (> 2 s, but < 10 s), COM LED C turns off, indicating that the setting mode is activated.

  NOTE: Factory settings define the Modbus address as 1.

  TIP: Address can be set/changed up to 15 by reset button.

Enter the address pressing the button.
1x = address 1
2x = address 2 etc.

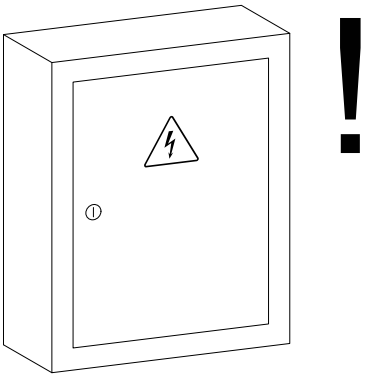
To exit the mode, either long press the button again (COM LED turns back to green) or wait for 10 s (COM LED turns back to green).

NOTE:

- When typing more than 15 time in Modbus address setting mode, the address will be always set as 15.
- Reset to factory settings resets the following parameters:
  - Communication settings: Device modbus address, RS485 port baud rate and parity
  - Digital output: Digital alarm output settings, Digital alarm bit mask.

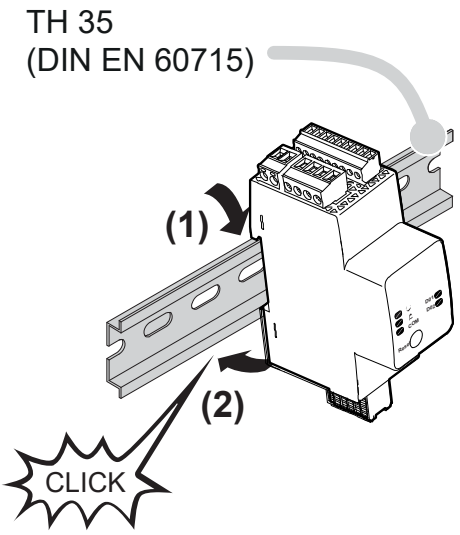
Mounting

General



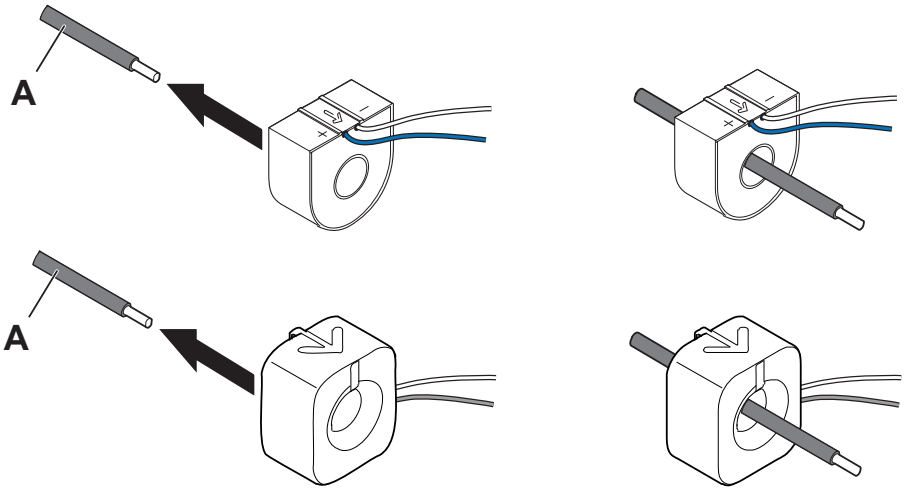
Module and CTs must be installed in a locked cabinet.

Module



1. Hook the module to the DIN rail from above.
2. Press the locking system of the module at the bottom against the DIN rail.

CT



A: Phase

TIP: First feed the phase power wire through the CT and only then fit the wire ends with ferrules. With the ferrules, the wire may no longer fit through the opening.

Connections

Module

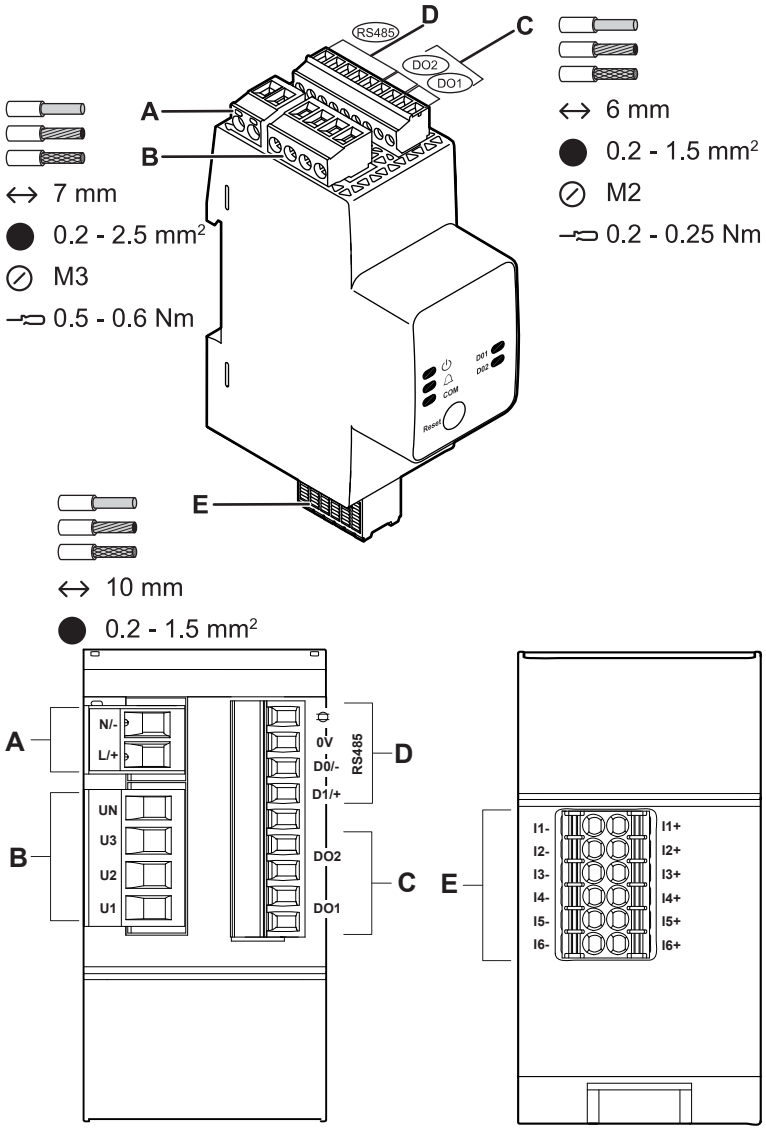
⚠⚠WARNING

HAZARD OF ELECTRIC SHOCK

The terminal blocks are removable.

- Observe the regulations for working on live parts.
- Only actuate the device buttons using insulated auxiliary equipment that meets the requirements of EN 60900.

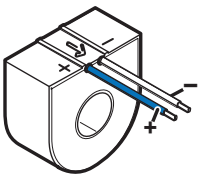
Failure to follow these instructions can result in death, serious injury, or equipment damage.



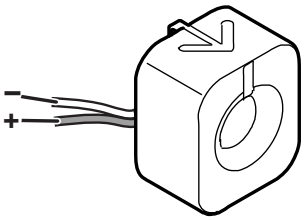
A. Auxiliary power supply terminal L/+, N/–
B. Voltage input terminal UL, UN
C. Pulse/DO output
D. RS485 Communication D1/+, D0/–, 0V,
E. Current input I1, I2, I3, I4, I5, I6

CT

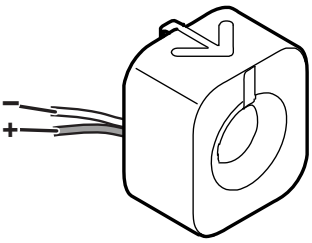
80 A



160 A



250 A



+ Blue/Gray
– White

Wiring

General

When wiring, pay particular attention to the Modbus installation instructions, especially regarding line shielding, earthing and line termination.

Note the polarity (+/–) for the Modbus connections.

Module

NOTICE

RISK OF EQUIPMENT DAMAGE

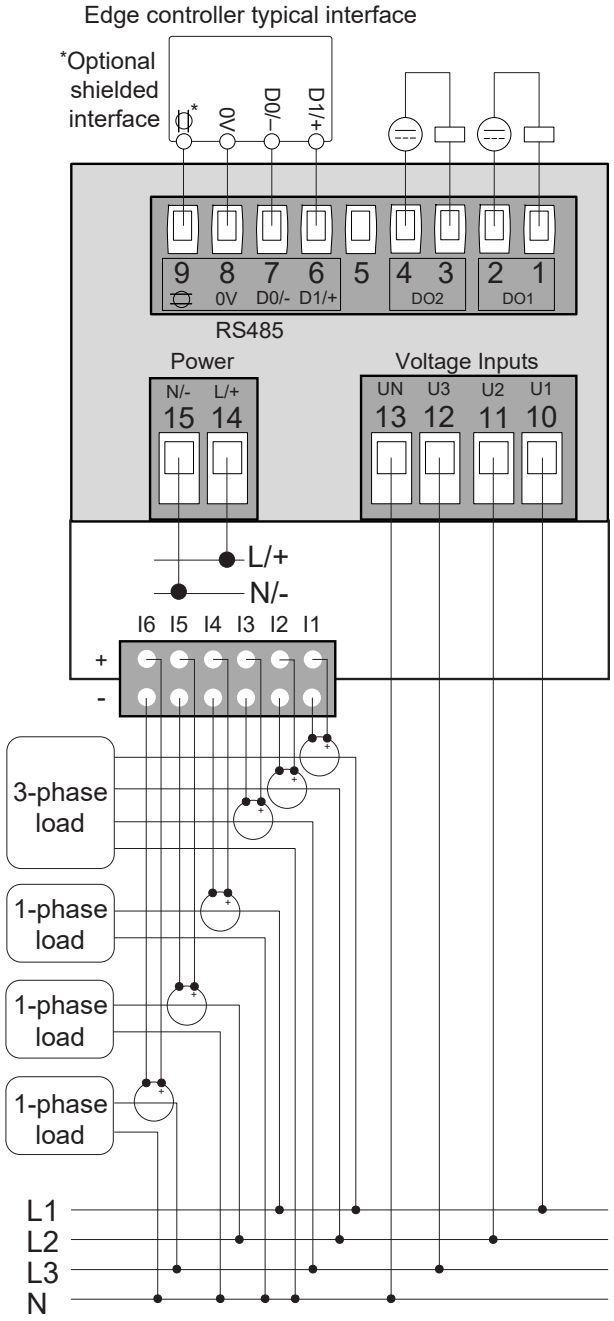
- Respect certain length of the stripped copper wires.
- Do not use 2-line voltage (L-L) to provide auxiliary power supply for the module.

Failure to follow these instructions can result in equipment damage.

You can connect a maximum of 2 CTs to the same current transformer channel. The module then measures the sum of the currents from both loads without impact on accuracy.

The digital output DO can be configured for digital applications, e.g. for generating ON/OFF control signals for capacitor banks, generators and external devices and systems.

	Length stripped	Width	Screw	Torque	Note
Digital / pulse output	6 mm	0.2 - 1.5 mm	M2	0.2 — 0.25 Nm	
RS485	6 mm	0.2 - 1.5 mm	M2	0.2 — 0.25 Nm	Optional spaceLynk
Auxiliary power supply	7 mm	0.2 - 2.5 mm	M3	0.5 — 0.6 Nm	
Voltage input	7 mm	0.2 - 2.5 mm	M3	0.5 — 0.6 Nm	
Current input	10 mm	0.2 - 1.5 mm	NA	NA	Max. 2 CT's per input



Click here to refer different wiring cases.

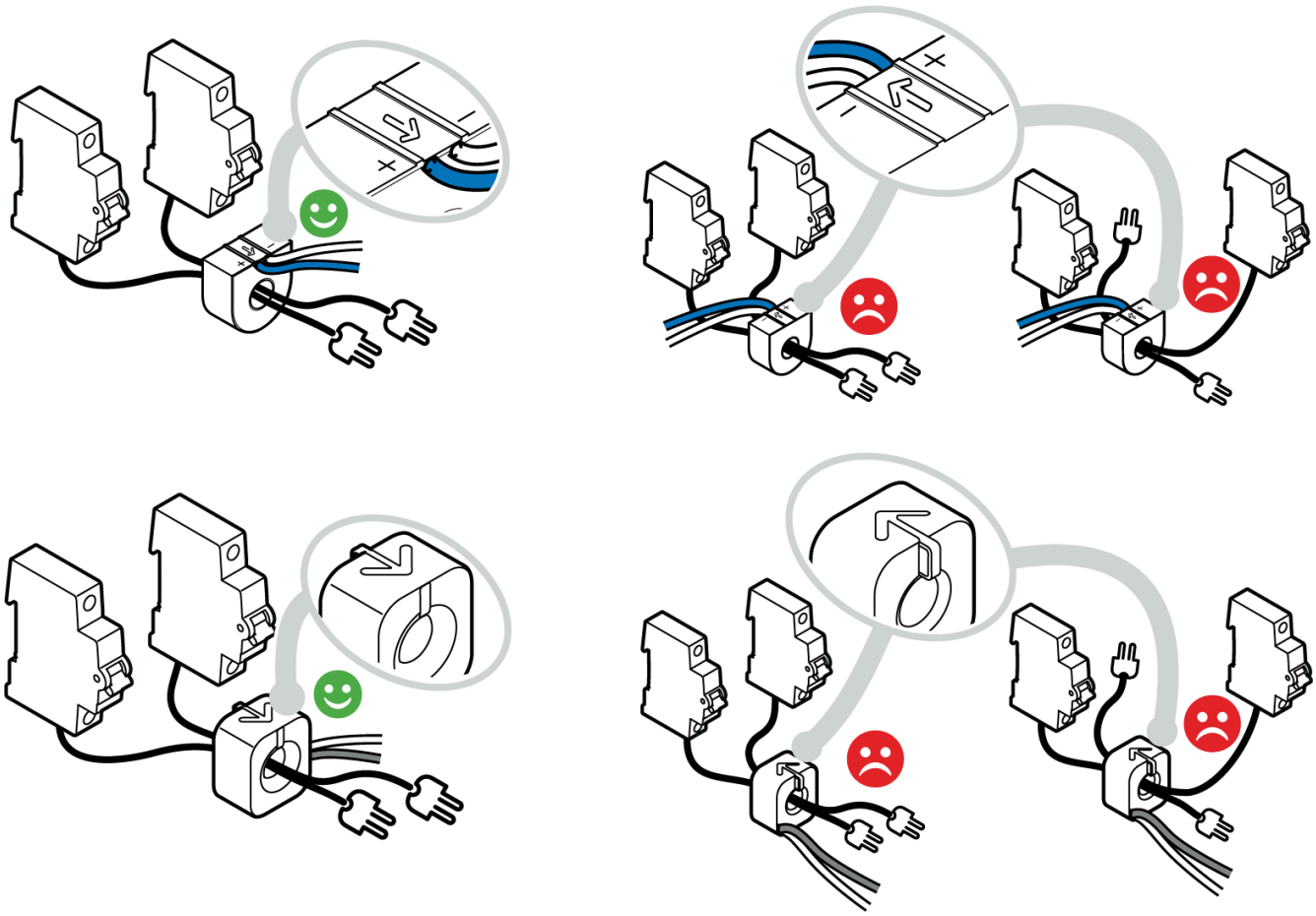
NOTE: The voltage input and the loads must be connected to the same phase. Do not connect single-phase circuits from different phases, as this will lead to incorrect measurement results.

CT

The following notes are applicable to the CTs 80 A, 160 A and 250 A.

NOTE:

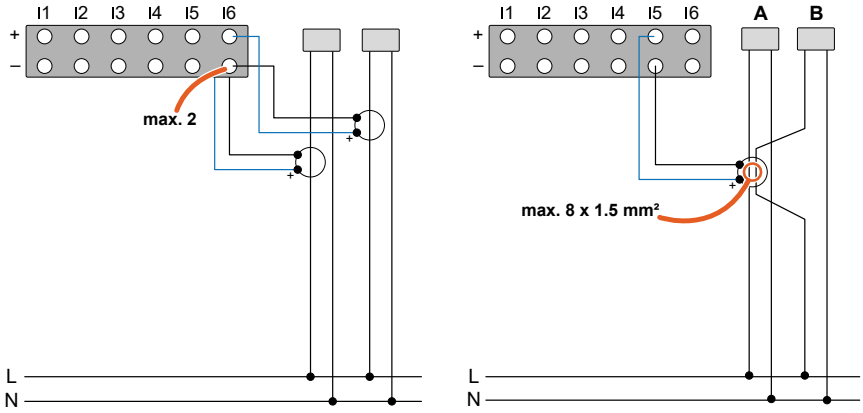
- When installing the CT on the cable, pay attention to the correct direction of the phase in relation to the source. Wrong direction generates negative outputs (negative energy).
- While using more than one cable with 1 CT, pay attention to the same direction.



NOTE: Only use the R9MCT80, R9MCT160, and R9MCT250 as the current transformer. Note that the measurement accuracy cannot be guaranteed if a different current transformer is used.

- Cutting CT cable length will not impact accuracy. When it's in the case to extend the CT cable, you should not get the cable longer than 1.5 m.
- Max. 2 CTs per input without impact on accuracy
- Up to 8 cables (phase) per 80 A CT

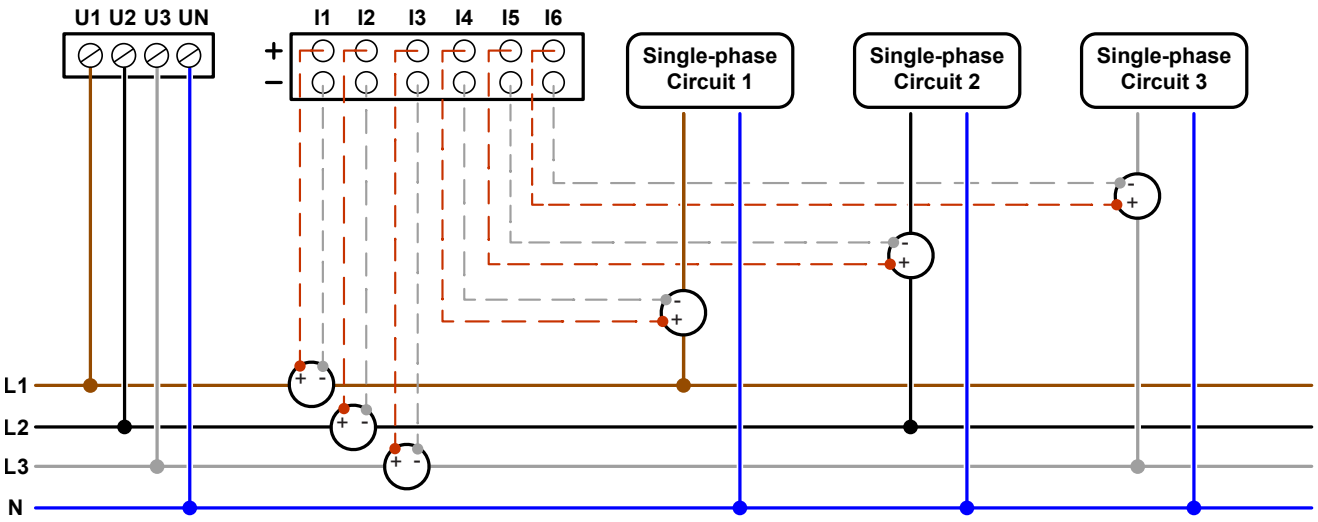
For 80 A CT	For 160 A CT	For 250 A CT
◦ 8 x 1.5 mm^2 ◦ 6 x 2.5 mm^2 ◦ 4 x 4 mm^2 ◦ 2 x 6 mm^2 ◦ 1 x 10 mm^2 ◦ 1 x 16 mm^2	◦ 3 x 16 mm^2 ◦ 2 x 25 mm^2 ◦ 1 x 35 mm^2 ◦ 1 x 50 mm^2 ◦ 1 x 70 mm^2	◦ 3 x 35 mm^2 ◦ 1 x 50 mm^2 ◦ 1 x 70 mm^2 ◦ 1 x 95 mm^2 ◦ 1 x 125 mm^2 ◦ 1 x 150 mm^2 ◦ 1 x 185 mm^2



Note: This image represent 80 A CT

Wiring Cases

Three-phase circuit and 3x Single-phase circuits monitoring



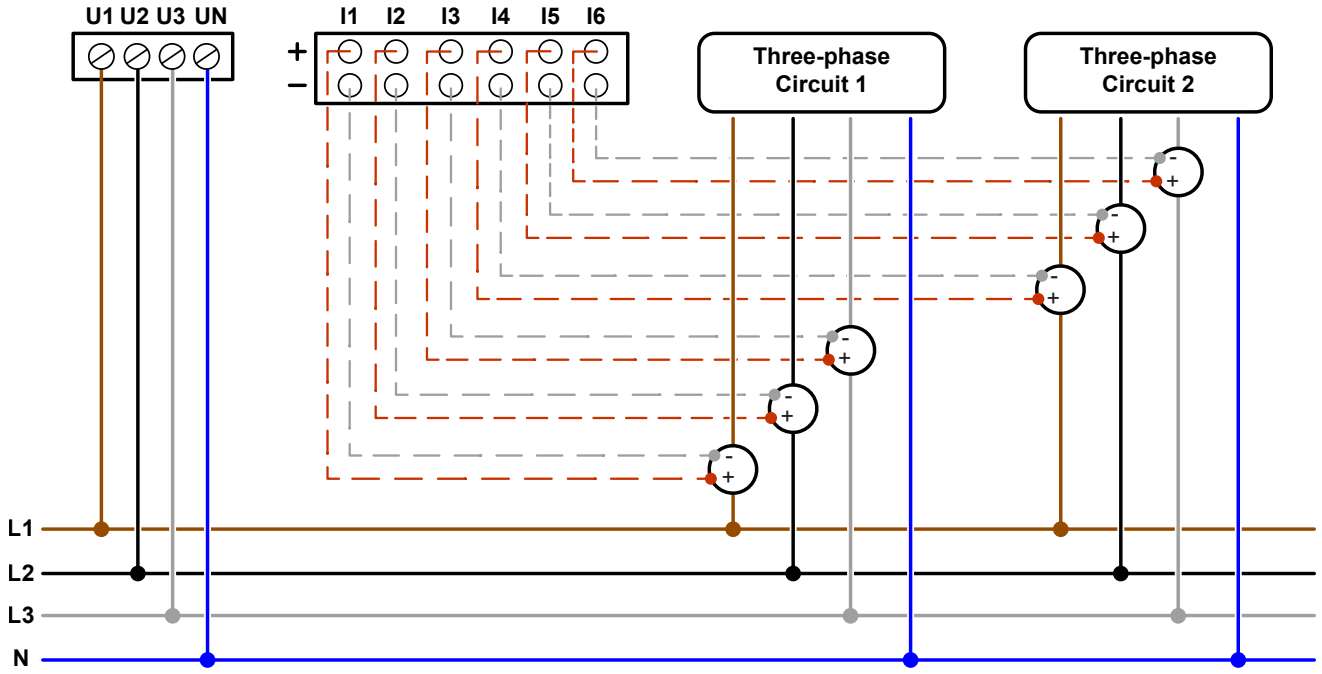
Three phase source

Circuit	Active Power	Active Energy Delivered	Active Energy Received
Grid	Active Power Total L1, L2, L3	L1, L2, L3 Active Energy Delivered	L1, L2, L3 Active Energy Received

Single phase load

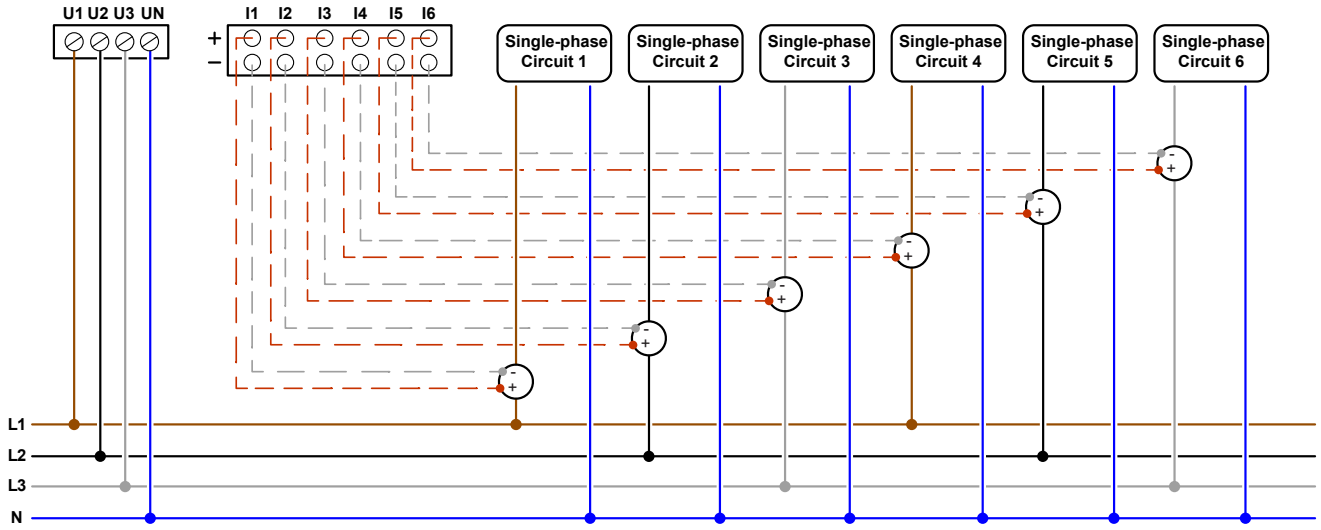
Single-phase circuit 1	Active Power L4	L4 Active Energy Delivered	L4 Active Energy Received
Single-phase circuit 2	Active Power L5	L5 Active Energy Delivered	L5 Active Energy Received
Single-phase circuit 3	Active Power L6	L6 Active Energy Delivered	L6 Active Energy Received

2 x Three-phase circuits monitoring



Circuit	Active Power	Active Energy Delivered	Active Energy Received
Three-phase circuit 1	Active Power Total L1, L2, L3	L1, L2, L3 Active Energy Delivered	L1, L2, L3 Active Energy Received
Three-phase circuit 2	Active Power Total L4, L5, L6	L4, L5, L6 Active Energy Delivered	L4, L5, L6 Active Energy Received

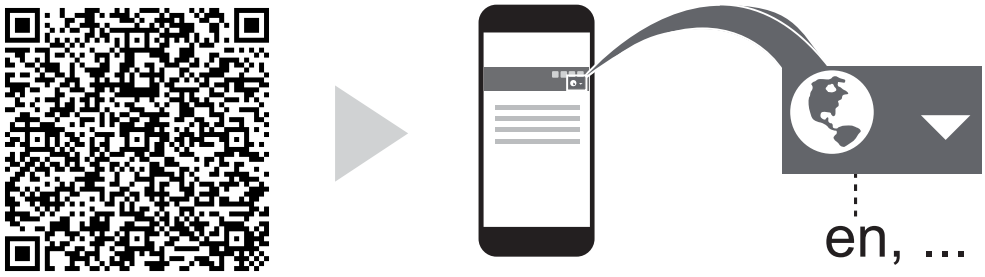
6 x Single-phase circuits monitoring



Circuit	Active Power	Active Energy Delivered	Active Energy Received
Single-phase circuit 1	Active Power L1	L1 Active Energy Delivered	L1 Active Energy Received
Single-phase circuit 2	Active Power L2	L2 Active Energy Delivered	L2 Active Energy Received
Single-phase circuit 3	Active Power L3	L3 Active Energy Delivered	L3 Active Energy Received
Single-phase circuit 4	Active Power L4	L4 Active Energy Delivered	L4 Active Energy Received
Single-phase circuit 5	Active Power L5	L5 Active Energy Delivered	L5 Active Energy Received
Single-phase circuit 6	Active Power L6	L6 Active Energy Delivered	L6 Active Energy Received

Configuration and User Manual

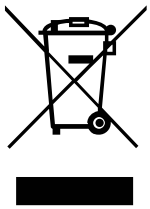
Click here or scan below code for complete information about the device, including operation, configuration and using the product.



Technical data

Auxiliary power supply	
Nominal voltage	AC 100-240 V, 50/60 Hz, or DC 80-265 V
Power loss	< 5 VA @ AC; < 3 W @ DC
Voltage Inputs	
Measured voltage	3 of AC 230/400, +/- 20%
Nominal frequency	50 Hz, ± 5 Hz
Current inputs	
Measured current	20 mA to 80 A, 40 mA to 160 A, 40 mA to 250 A
Nominal frequency	50 Hz, ± 5 Hz
Connecting terminals	Pluggable screw and plug-in terminals see wiring, page 13.
DO output:	DC 24 V, 50 mA
Pulse output:	400 imp/kWh
Environment	
Operating temperature	-25 °C to +60 °C
Storage temperature	-40 °C to +85 °C
Humidity rating	5% to 95% relative at 50 °C (non-condensing)
Pollution degree:	2
Altitude:	≤ 2000 m (6562 ft)
Protection type:	IP40 front display, IP20 housing
Dimensions (W x L x H)	
Module (R9MUX6M)	36 x 70 x 114.6 mm
CT (R9MCT80)	27 x 13 x 29.5 mm, Inner diameter 10 mm
CT (R9MCT160)	48 x 29 x 54 mm, Inner diameter 19 mm
CT (R9MCT250)	60 x 29 x 66 mm, Inner diameter 27 mm

Disposal



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