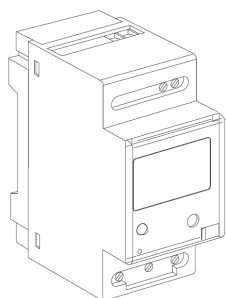
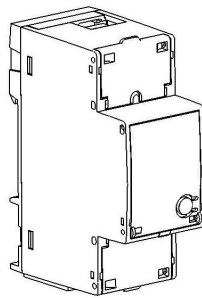


Single phase meter with direct connection and pulse or Modbus RS485 output

Cat. No(s): 0 046 72 / 77 / 81



0 046 81



0 046 72/77

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1. DESCRIPTION - USAGE

Active energy meter.
Measures the electricity consumed by a single phase circuit downstream of the power distribution metering. Displays electricity consumption in kWh.

2. RANGE

- . Cat. No. 0 046 72: 2-module single phase pulse output meter (17.8 mm) self-powered on the measurement terminal.
- . Cat. No. 0 046 77: 2-module single phase RS485 output meter (17.8 mm) self-powered on the measurement terminal.
- . Cat. No. 0 046 81: 2-module single phase pulse output meter (17.8 mm) self-powered on the measurement terminal.

Nominal ratings:

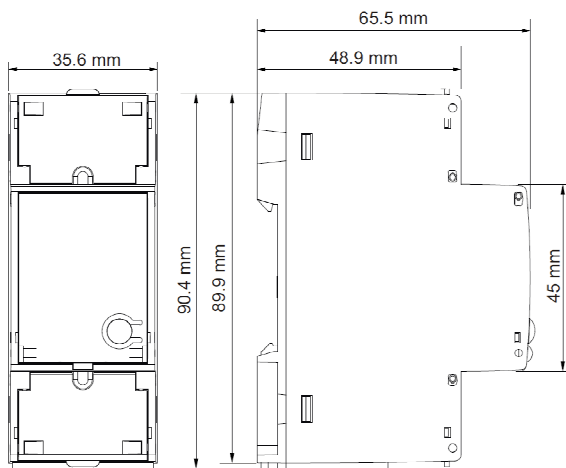
- . Basic current: Ib 10 A
- . I_{max} maximum current:
36 A (Cat. No. 046 81).
63 A (Cat. No(s). 046 72 / 77)

Nominal voltage and frequency:

- . Un: 230 V ± 20%
- . Fn: 50-60 Hz ± 5%

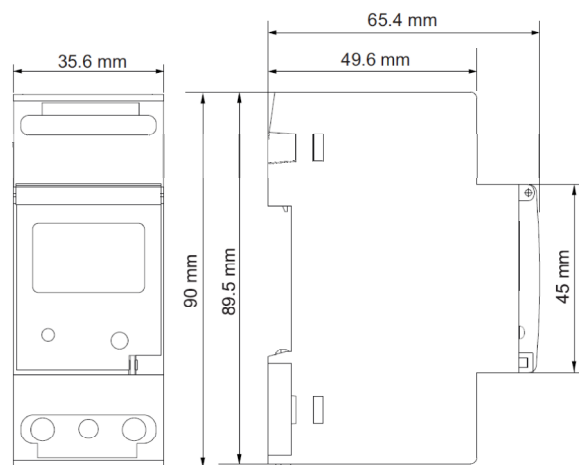
3. DIMENSIONS

. 046 72 / 77



3. DIMENSIONS (continued)

. 046 81



Single phase meter with direct connection and pulse or Modbus RS485 output

Cat. No(s): 0 046 72 / 77 / 81

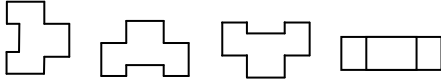
4. POSITIONING - CONNECTION

Mounting:

. On IEC/EN 60715 symmetrical rail

Operating positions:

. Vertical, horizontal, upside down, on the side



Power terminals:

. Terminal depth: 8 mm.
. Recommended stripping length: 8 mm

Screw head :

. Slotted head and Philips.

Recommended tightening torque:

. 0.8 Nm.

Maximum tightening torque:

. 1.2 Nm.

Tools required:

. For the terminals: Philips no. 2 screwdriver or 4 mm flat screwdriver.
. For attachment: 5.5 mm flat screwdriver (6 mm maximum).

Terminal capacity:

	Copper cable
Rigid cable	1 x 0.5 mm² to 16 mm²
Flexible cable	1 x 0.5 mm² to 16 mm²

Pulse output or RS485 terminals:

. Terminal depth: 8 mm.
. Recommended stripping length: 8 mm

Screw head :

. Slotted head.

Recommended tightening torque :

. 0.4 Nm.

Maximum tightening torque:

. 0.8 Nm.

Tools required:

. For the terminals: 3 mm flat screwdriver.
. For attachment: 5.5 mm flat screwdriver (6 mm maximum).

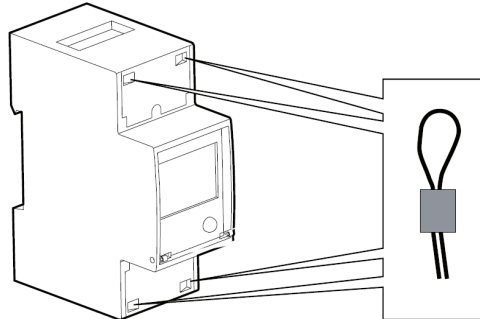
Terminal capacity:

	Copper cable
Rigid cable	1 x 0.5 mm² to 4 mm²
Flexible cable	1 x 0.5 mm² to 4 mm²

4. POSITIONING - CONNECTION (continued)

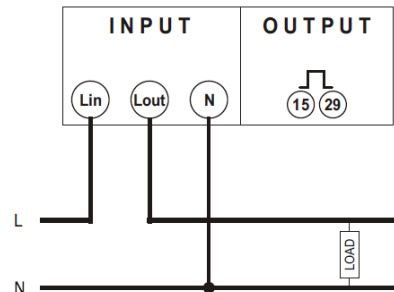
Terminal protection:

. The power and communication terminals are protected with sealable terminal shields integrated in the device box (Cat. No(s). 04672 / 77 only).

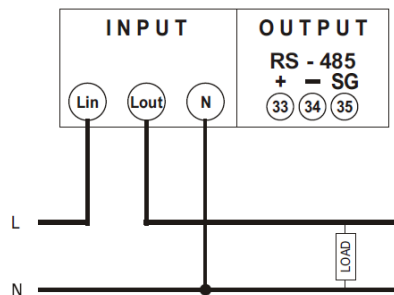


Electrical connection diagram:

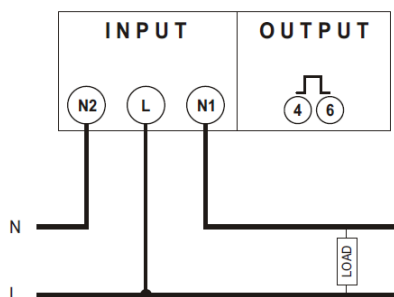
. Cat. No. 046 72 :



. Cat. No. 046 77:



. Cat. No. 046 81:



Single phase meter with direct connection and pulse or Modbus RS485 output

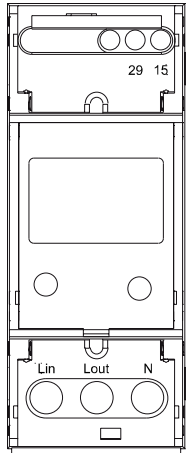
Cat. No(s): 0 046 72 / 77 / 81

5. GENERAL CHARACTERISTICS

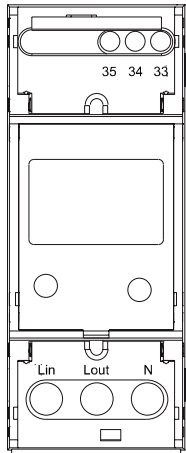
Marking on the device box:

. By indelible pad printing:

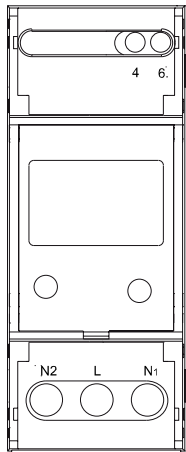
. 046 72



. 046 77



. 046 81

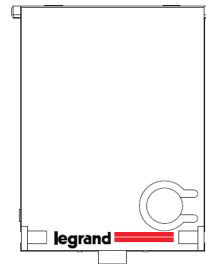


5. GENERAL CHARACTERISTICS *(continued)*

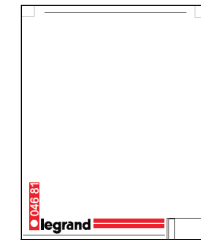
Front transparent marking:

. By indelible pad printing:

. Cat. No(s). 046 72 / 77



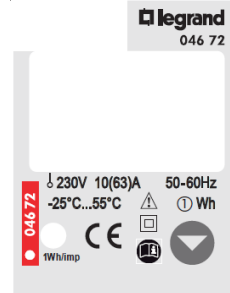
Cat. No. 046 81:



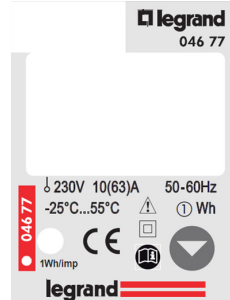
Marking on the front panel:

. By adhesive label:

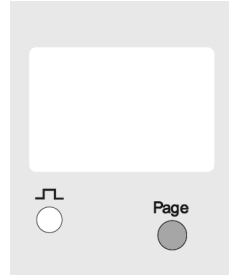
. Cat. No. 046 72:



. Cat. No. 046 77:



. Cat. No. 046 81:



Single phase meter with direct connection and pulse or Modbus RS485 output

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5. GENERAL CHARACTERISTICS *(continued)*

Display

Type: 6-digit LCD

Resolution: 0.1 kWh

Maximum indication: 99999.9 kWh

Value and programming indicator

. By pressing the front button (see the instructions).

Display:

- . Total active energy
- . Partial active energy (reset to zero possible)
- . Current
- . Voltage
- . Active power
- . Operation time (reset to zero possible)
- . Frequency (except for 04681)
- . Power factor (except for 04681)
- . Software version

Metrological LED:

. Pulse weight: 1 Wh/imp

RS485 output characteristics (Cat. No. 046 77):

- . Address: from 1 to 247
- . Communication speed: 2.4 - 4.8 - 9.6 - 19.2 Kbps
- . Parity bit: none, even, odd
- . Galvanically isolated output for the measurement inputs
- . RS 485 standard - 2 pairs of twisted wires
- . Modbus protocol
- . Query response time < 200 ms

Pulse output characteristics (Cat. No(s). 046 72 / 81):

- . SO according to EN62053-31, class A
- . Uimp voltage: max 110 V a.c./d.c.
- . Iimp current: max 50 mA
- . Pulse weight:
 - Cat. No. 046 72: programmable; possible values: 1 - 10 - 100 Wh/imp - 1 kWh/imp
 - Cat. No. 046 81: non-programmable; 10 Wh/imp.
- . Pulse duration:
 - Cat. No. 046 72: programmable; possible values: 50 - 100 - 150 - 200 - 300 - 400 - 500 ms.
 - Cat. No. 046 81 : non-programmable; 100 ms.

Ambient operating temperature:

. Min. = -25°C Max. = +55°C.

Ambient storage temperature:

. Min. = -40°C Max. = +70°C.

5. GENERAL CHARACTERISTICS *(continued)*

Device protection:

- . By 40 A circuit breaker (Cat No. 046 81)
- . By 63 A circuit breaker (Cat. No(s). 046 72 / 77)

Protection rating:

- . Protection index for the terminals against solid objects and liquids: IP 20 (in accordance with standards IEC 529, EN 60529 and NF C 20-010).
- . Protection index for the enclosure against solid objects and liquids: IP 30 (in accordance with standards IEC 529, EN 60529 and NF C 20-010).

Protection class:

. II

Degree of pollution:

. 2

Overvoltage category:

. III

Precision

. Active energy: class 1 in accordance with standard IEC 62053-21

Average weight per device:

. 0.235 kg.

Packaged volume:

. 0.46 dm³

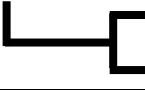
Power consumption:

. ≤ 4 VA.

Heat dissipation:

. ≤ 4 W.

Glossary:

CodE	Password	
ModE A / ModE b	Configuration	
Ct	CT ratio	
Vt	PT ratio	
tIME	Integration time	
Addr	Communication address	
bAUd	Communication speed	
Par	Parity bit	
	nonE	None
	EVE n	Even
	odd	Odd
PLSt Act	Active energy pulse output	
PLSt rEA	Reactive energy pulse output	
PLSU	Pulse weight	
PLSd	Pulse duration	
PASS	Password change	

Single phase meter with direct connection and pulse or Modbus RS485 output

Cat. No(s): 0 046 72 / 77 / 81

6. COMPLIANCE

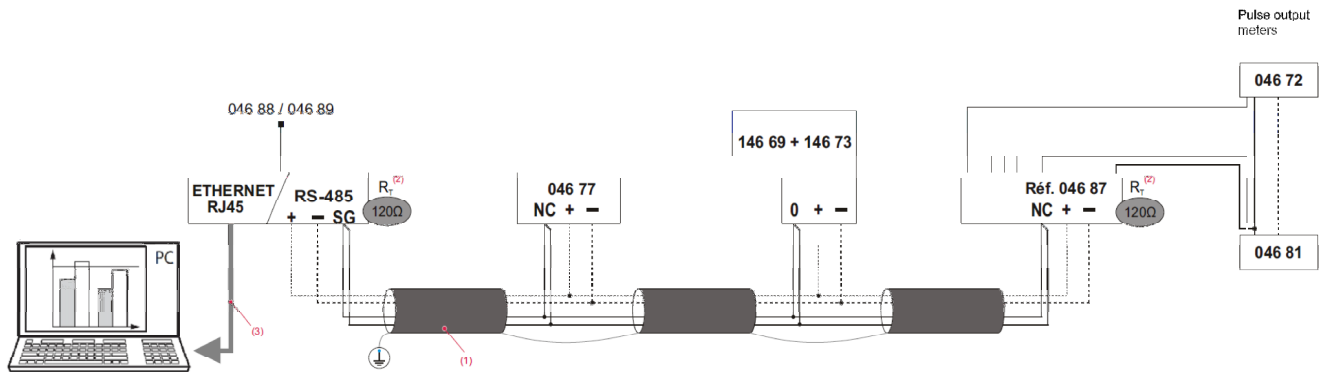
Compliance with standards:

- . Electromagnetic compatibility: IEC 62052-11
- . Measurement precision for the active energy: 1 (in accordance with IEC 62053-21).

7. COMMUNICATION

Modbus connection system diagram:

. The R_T (120 Ω) termination resistors must be inserted on the first and last device connected to the RS485 bus in the same terminals (+,-) where the bus cable is connected.



(1) RS485: Belden 9842 Cable (or equivalent) used for a maximum bus length of 1000 m or Category 6 Cable (FTP or UTP) for a maximum length of 50 m;

(2) Integrated R_T termination resistor;

(3) Ethernet: Category 6 Cable (FTP or UTP);

The pulse meters must be connected to the pulse concentrator (Cat. No. 0 046 87) for integration in a monitoring / energy metering system