87045 LIMOGES Cedex
Telephone: +33 (0)5 55 06 87 87 – Fax: +33 (0)5 55 06 88 88

3-phase meter with direct connection and pulse or Modbus RS485 output

Cat. No(s).: 0 046 73 / 80

CONTENTS PAGES

1. DESCRIPTION - USAGE

Active and reactive energy meter.
Measures the electricity consumed by a single phase or 3-phase circuit downstream of the power distribution metering. Displays electricity consumption in kWh and kvarh.

2. RANGE

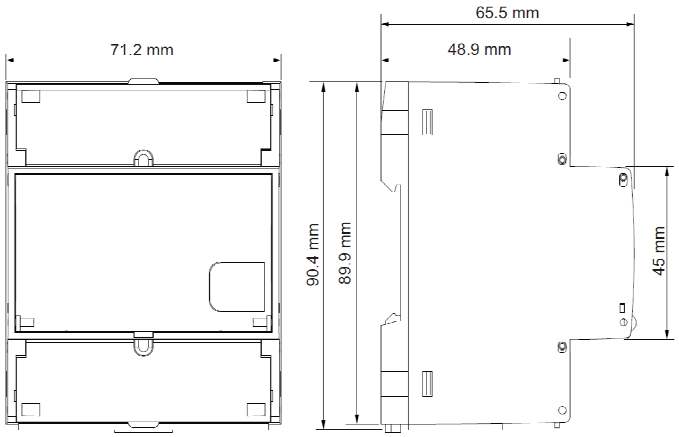
. Cat. No. 0 046 73: 4-module 3-phase pulse output meter (17.8 mm) self-powered on the measurement terminal.
. Cat. No. 0 046 80: 4-module 3-phase RS485 output meter (17.8 mm) self-powered on the measurement terminal.

Nominal ratings:

. Basic current: Ib 10 A
. Imax maximum current: 63 A

Nominal voltage and frequency:
. Un: 3 x 230 / 400 V~ ± 20%
. Fn: 50-60 Hz ± 5%

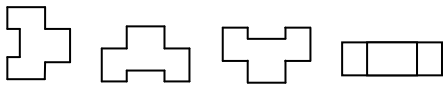
3. DIMENSIONS



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**

4. POSITIONING – CONNECTION *(continued)*

Neutral, pulse output or RS485 terminals:
. Terminal depth: 8 mm.
. Recommended stripping length: 8 mm

Screw head :
. Slotted head.

Recommended tightening torque :
. 0.4 Nm.

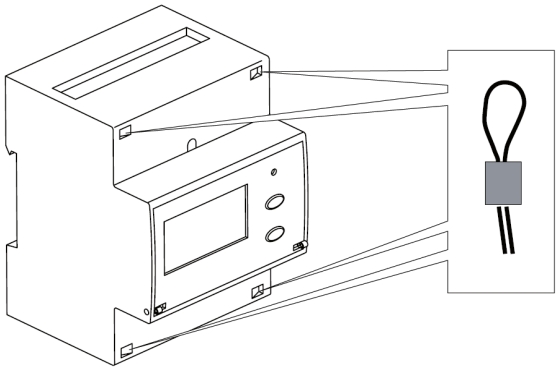
Maximum tightening torque:
. 0.8 Nm.

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

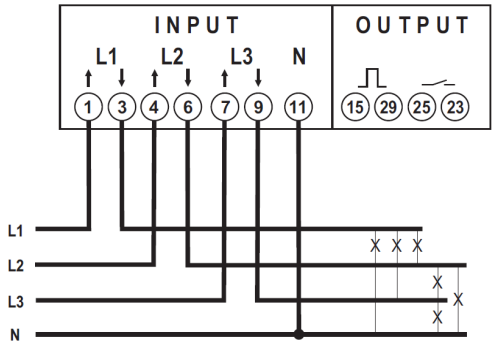
Terminal capacity:

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

Terminal protection:
. The power and communication terminals are protected with sealable terminal shields integrated in the product.



Electrical connection diagram:
. Cat. No. 046 73:

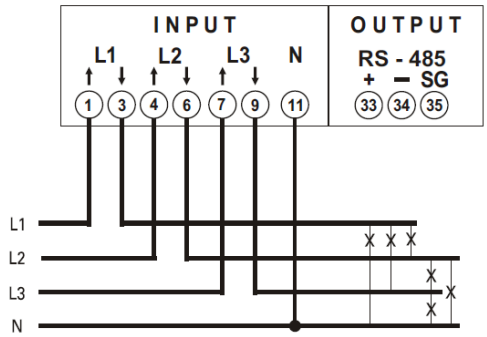


15 29: Pulse output
25 23: Dual tariff

4. POSITIONING – CONNECTION *(continued)*

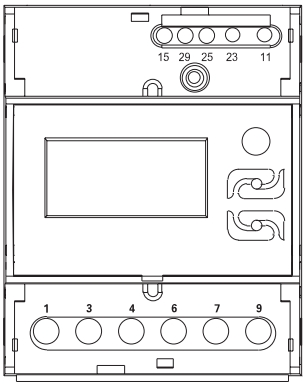
Electrical connection diagram *(continued)*:

. Cat. No. 046 80:

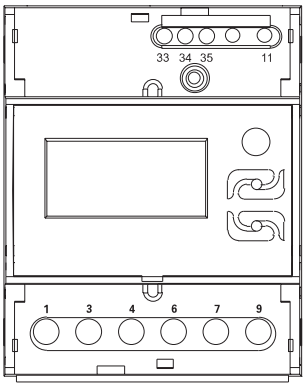


5. GENERAL CHARACTERISTICS

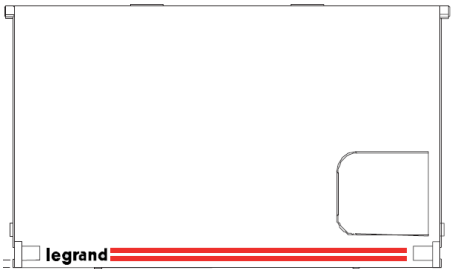
Marking on the device box:
. By indelible pad printing:
. 046 73



. 046 80

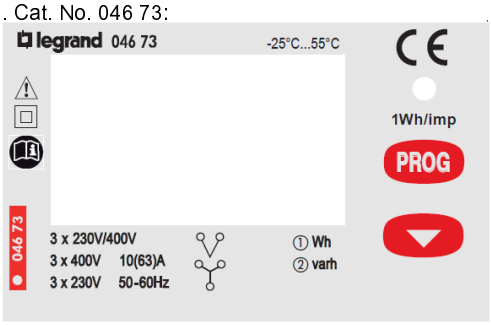


Front transparent marking:
. By indelible pad printing:

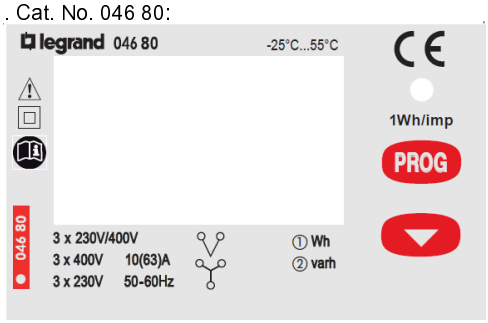


5. GENERAL CHARACTERISTICS *(continued)*

Marking on the front panel:
. By adhesive label:
. Cat. No. 046 73:



. Cat. No. 046 80:



Display
Type: 8-digit LCD
Resolution: 0.01 kWh
Maximum indication: 999999.99 kWh or kvarh

Value and programming indicator
.By pressing the front buttons (see the instructions).

Display:
. Total active energy
. Total reactive energy
. Partial active energy (reset to zero possible)
. Partial reactive energy (reset to zero possible)
. Maximum average active power (reset to zero possible)
. Average active power
. Menu: Current, Voltage, Power
. Current L1, L2, L3
. Phase-to-phase voltage L1-L2, L2-L3, L3-L1
. Instantaneous active power
. Instantaneous reactive power
. Instantaneous apparent power
. Frequency
. Power factor

Dual tariff mode display (Cat. No. 046 73 only, if programmed):
. Active energy tariff 1
. Reactive energy tariff 1
. Active energy tariff 2
. Reactive energy tariff 2
. Maximum average active power tariff 1 (reset to zero possible)
. Maximum average active power tariff 2 (reset to zero possible)

5. GENERAL CHARACTERISTICS *(continued)*

Metrological LED:
. Pulse weight: 1 Wh/imp

Programming menu
. 046 73:
Password (1000 by default)
Configuration:
- ASY mode: partial energy metering always active
- SYN mode: partial energy metering set by closure of the external contact (terminals 23/25)
- TRF mode: dual tariff metering. Switching of the tariff by closure of the external contact (terminals 23/25)
Average power integration time (min): 5, 8, 10, 15, 20, 30, 60
Pulse output type (wh or varh)
Pulse weight
Pulse duration
Password change

. 046 80:
Password (1000 by default)
Average power integration time (min): 5, 8, 10, 15, 20, 30, 60
Communication speed
Modbus address
Parity bit
Password change

RS485 output characteristics (Cat. No. 046 80):
. 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. 046 73):
. SO according to EN62053-31, class A
. Uimp voltage: max 115 Va.c./d.c.
. Iimp current: max 50 mA
. Pulse weight: programmable; possible values: 1 - 10 – 100 - 1000 Wh/imp or varh/imp
. Pulse duration: programmable; possible values: 50 - 100 - 150 - 200 - 300 - 400 - 500 ms.

Ambient operating temperature:
. Min. = -25°C Max. = +55°C.

Ambient storage temperature:
. Min. = -40°C Max. = +70°C.

5. GENERAL CHARACTERISTICS

Device protection:
. By 63 A circuit breaker

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

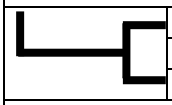
Average weight per device:
. 0.380 kg.

Packaged volume:
. 0.58 dm^3

Power consumption:
. ≤ 4.5 VA.

Heat dissipation:
. ≤ 6 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
	EVEn	Even
	odd	Odd
PLSt ACt		Active energy pulse output
PLSt rEA		Reactive energy pulse output
PLSU		Pulse weight
PLSd		Pulse duration
PASS		Password change

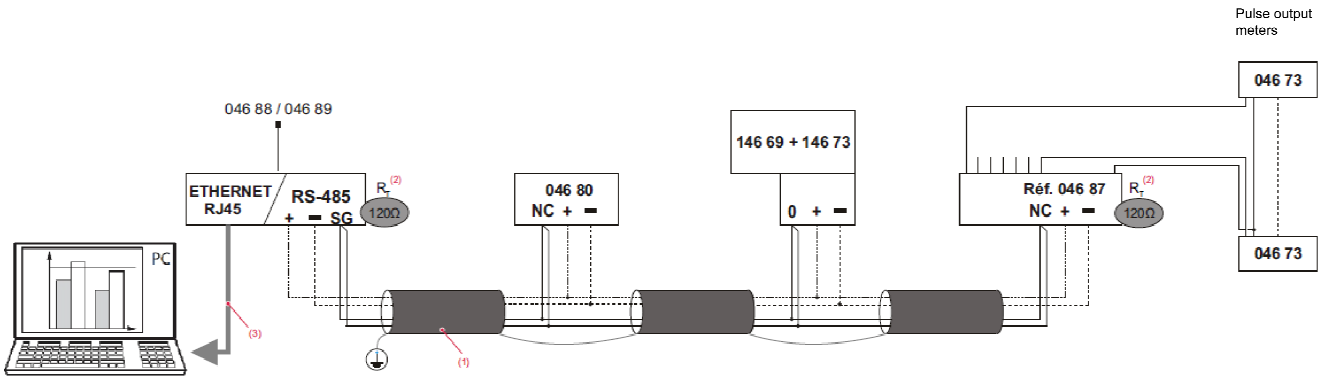
6. COMPLIANCE

Compliance with standards:
. Electromagnetic compatibility: IEC 62052-11
. Measurement precision for the active energy: 1 (in accordance with IEC 62053-21).
. Measurement precision for the active energy: 2 (in accordance with IEC 62053-23).

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