

## 63A single-phase energy meter, direct connection

Codes: **CE2DF30PCL1 – CE2DF3DTCL1**  
 Model: **CONTO D2**



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### 1. USE

Bidirectional active and reactive energy meter (4 quadrants) with direct connection.  
 The device, in 2 DIN modules, is self-powered and is equipped with ModBus communication or pulse output and double tariff input.

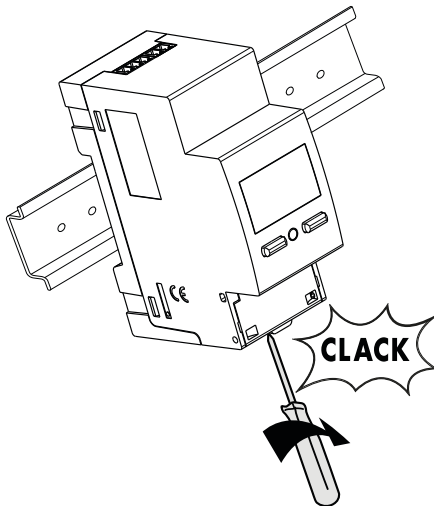
### 2. RANGE

Code Art.	I <sub>max</sub>	Output	Input	Range Voltage
CE2DF30PCL1	63A	Pulse	Pulse	230V ± 15%
CE2DF3DTCL1	63A	ModBus	2 Tariff / Pulse	230V ± 15%

### 3. INSTALLATION

#### Fixing:

On EN/IEC 60715 symmetric rail or DIN 35 rail.

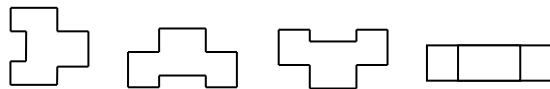


#### Necessary tools:

For fastening the device on the DIN rail: 5.5 mm flat screwdriver (from 4 to 6 mm).

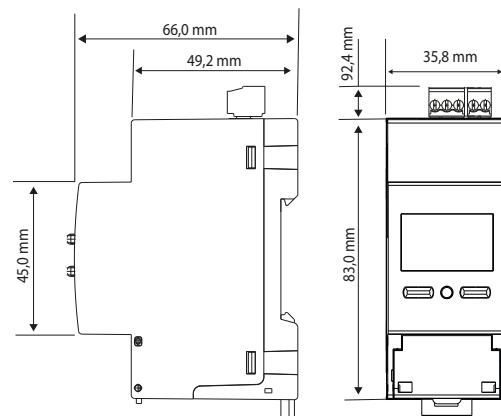
### Operating position:

Vertical, Horizontal, Upside down, On the side



### 4. DIMENSIONS

Housing: 2 DIN43880 modules



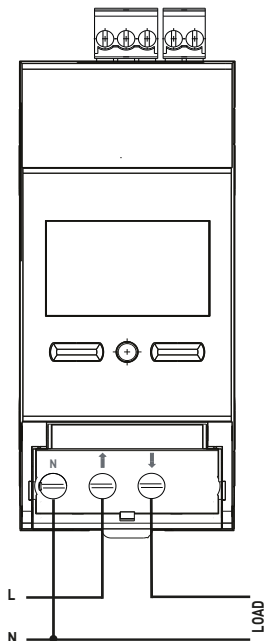
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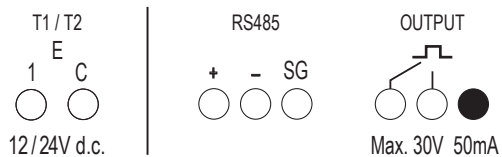
Model: CONTO D2

## 5. CONNECTIONS

Wiring diagrams:



Terminal board marking and diagram combination:



## 6. OPERATING DATA

### 6.1 ELECTRIC DATA

#### Currents:

- Reference current,  $I_{ref}$ : 5A
- Minimum current,  $I_{min}$ : 0,25A
- Maximum current,  $I_{max}$ : 63A
- Starting current,  $I_{st}$ : 0,04A

#### Rated voltages:

- Single-phase rated voltage  $U_n$ : 230V  $\pm$ 15%

#### Rated frequency:

- $F_n$ : 50Hz; 60Hz
- Permitted variation: 49...51Hz; 59...61Hz

#### Connectable section:

- Copper wires
- Voltage connection terminals, neutral:

	Without bush	With bush
Rigid wire	<b>1 x 0,75 + 16 mm<sup>2</sup></b>	-
Flexible wire	<b>1 x 0,75 + 16 mm<sup>2</sup> (<math>\varnothing</math> 5mm)</b>	<b>1 x 4 + 10 mm<sup>2</sup></b>

- Terminal boards in the upper part of the meter (input, impulse output):

	Without bush	With bush
Rigid wire	<b>1 x 0,2 + 1,5 mm<sup>2</sup></b>	-
Flexible wire	<b>1 x 0,2 + 1 mm<sup>2</sup></b>	<b>1 x 0,2 + 1 mm<sup>2</sup></b>

#### Necessary tools:

- For the voltage connection terminals, neutral: screwdriver with 6mm blade or Pozidriv No. 2
- For the terminal boards in the upper part of the meter (input, impulse output): screws with 2.5mm blade

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## 6.2 MECHANICAL DATA

### Screw terminals:

- Depth of the terminals: 12mm
- Lengths of the wire stripping: 11mm

### Screw head:

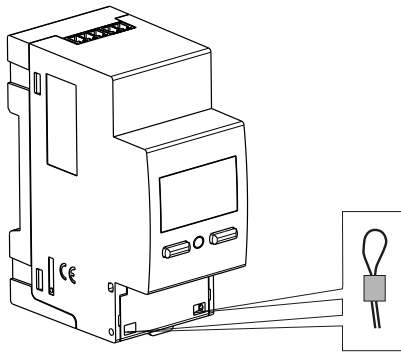
- Voltage connection terminals, neutral : screws with countersunk head with hexagon socket and Pozidriv No. 2
- Terminal boards in the upper part of the meter (input, impulse output ) : screws with countersunk head with hexagon socket

### Recommended torque:

- Voltage connection terminals, neutral: from 1,6 to 2 Nm
- Terminal boards in the upper part of the meter (input, impulse output): 0.2 N/m

### Terminal protection:

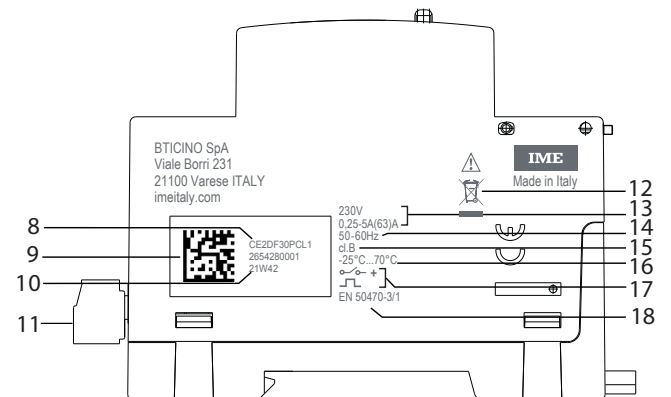
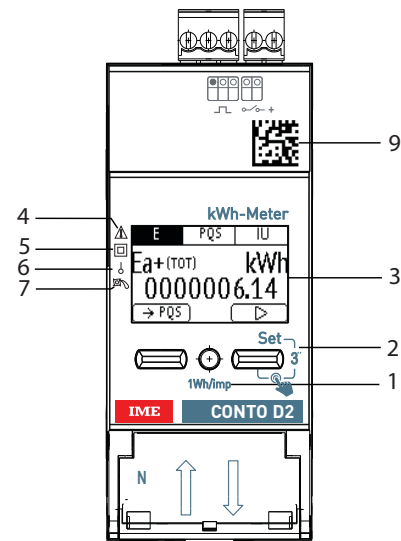
- The power terminals are protected with sliding and sealable terminal front covers which are integrated in the device



## 7. GENERAL FEATURES (continues)

### Marking data:

Indelible marking



1. Metrological LED
2. Keypad made up of 2 double-function pushbuttons (display/configurations)
3. Graphic display
4. Consult the user manual before installation
5. Double insulation
6. Connection on single-phase line
7. Anti-rotation device (anti-decreasing)
8. Product code
9. Datamatrix for product traceability
10. Week and year of manufacture
11. Output connection terminals
12. RAEE Symbol
13. Voltage / Current
14. Frequency
15. Precision class
16. Temperature of use
17. Outputs
18. Standard

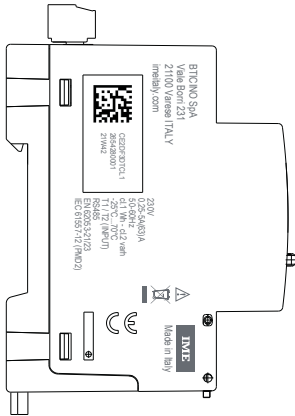
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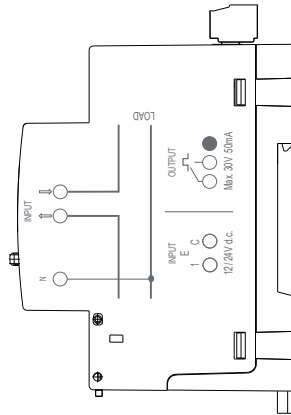
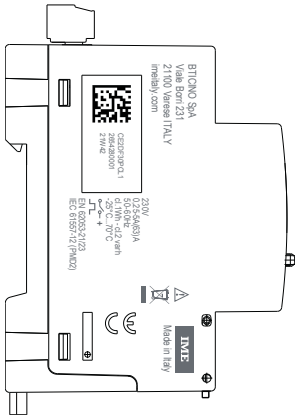
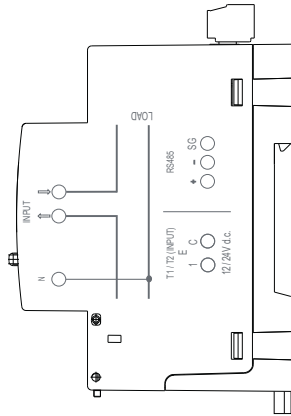
## 7. GENERAL FEATURES

### Laser marking

**Left side**  
Traceability information



**Right side**  
Wiring diagram



## 7. GENERAL FEATURES (continues)

### Display:

- Graphic, backlit, 1.2 inches (128x64).

### Resolution:

- Total meters: 0,01kWh/kvarh
- Partial meters: 0,01kWh/kvarh
- Tariff meters: 0,01kWh/kvarh

### Maximum indication

- Total meters: 9 999 999,99
- Partial meters: 9 999 999,99
- Tariff meters: 9 999 999,99

**Metrological LED:** 1Wh/imp.

### Display of the value and programming:

- By means of the front keypad, 2 pushbuttons.
- Change protected by identification code (**predefined code 1000**); the code can be changed during the programming procedure.

### Measurements and precision in conformity with EN/IEC 61557-12

- Current: cl.0,5
- Voltage: cl.0,5
- Frequency:  $\pm 0,01$  Hz
- Instantaneous total active power, phase, average value and max. average value cl.1
- Instantaneous total active power, phase, average value and max. average value: cl.1
- Instantaneous total reactive power, phase: cl.2
- Instantaneous total apparent power, phase: cl.1
- Power Factor: cl.1

### Average power:

- Measurement: active power
- Calculation: moving average, on the selected period
- Average time: 5/8/10/15/20/30/60 min.

### Hour meter:

- Counting of operating hours and minutes (**resettable meter**)
- Resolution: 7 figures (5 for the hours + 2 for the minutes)
- Maximum display: 99 999.59 (tariff total)
- Programmable value: 0...50% Pn (positive)

## 63A single-phase energy meter, direct connection

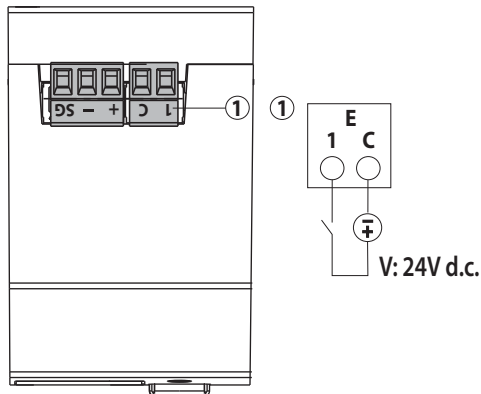
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### 7. GENERAL FEATURES

#### Digital input

- The digital input allows switching the energy counting on 2 tariffs
- 2 input terminals with common point (1 - C)
- Rated voltage: 12 – 24V d.c. max. 10mA



#### Features of the ModBus communication port:

- Programmable addresses: from 1 to 255 (5\*)
- Communication speed: 4.8 – 9.6 – 19.2\* – 38.4 kbps
- No. of bit: 8
- Parity bit: none, even\*, odd
- Stop bit: 1
- Galvanically isolated with respect to the measurement inputs
- Standard RS485 3 wires, half-duplex
- Modbus® RTU protocol
- Response time (question/response time-out):  $\leq 200$ ms
- 120 $\Omega$  terminating resistor inside the instrument (it can be set in the SETUP menu, default value: none\*)

#### Features of the Impulse output:

- Optorelay with potential-free SPST-NO contact
- Type S0 (IEC/EN62053-31)
- Voltage  $U_{imp}$ : Max. 24V a.c./d.c.
- Current  $I_{imp}$ : Max. 50 mA
- Programmable impulse weight, possible values:  
1 – 10\* – 100 – 1k – 10k Wh/imp or varh/imp
- Programmable impulse duration, possible values:  
50 -100\* – 200 – 300 – 400 – 500ms

#### \* Factory setting

### 7. GENERAL FEATURES

#### Auxiliary power supply:

- Shunted from the power socket (Self-supplied)

#### Operating room temperatures:

- Min. = - 25 °C Max. = + 70 °C

#### Room storage temperatures:

- Min. = - 25 °C Max. = + 70 °C
- Max.humidity. 85% non-condensing

#### Short-duration overcurrent:

- 30  $I_{max}$  per 10ms

#### Short circuit current:

- $I_{max}$  (kA): 17,5 ( $\Delta t$ : 7,4msec)
- Energy 0.635 MA<sup>2</sup>s

#### Voltage circuit self-consumption:

- Max.1,5VA

#### Current circuit self-consumption:

- Max.1,8W

#### Maximum dissipated thermal power for the thermal dimensioning of the panels: $\leq 4$ W

#### Protection class:

- Terminal protection index against solid bodies and liquids: IP 20 (IEC/EN 60529).
- Housing protection index against solid bodies and liquids: IP 54 (IEC/EN 60529).

#### Protection of the device:

- By means of thermal-magnetic circuit breaker

Room: mechanical M1 – electric E2

Housing material: Polycarbonate

Packaged volume: 0,192 dm<sup>3</sup>.

## 8. CONFORMITY AND CERTIFICATIONS

### Insulation

- Measurement categories: III
- Level of pollution: 2
- Insulation voltage,  $U_i$ : 300V, Phase-Neutral

### Dielectric rigidity:

- Power supplies/ Outputs: 4kV / 50Hz / 1min
- Housing / Terminals: 4kV / 50Hz / 1min

### Pulse:

- Power supplies: 6.3kV / 1.2 – 50 $\mu$ sec / 0.5J
- Power supplies/ Outputs: 6.3kV / 1.2- 50 $\mu$ s / 0.5J

### In compliance with the standards:

- Active energy: accuracy class B (class 1 EN / IEC 62053-21) in accordance with EN 50470-1, -3
- Reactive energy: accuracy class 2 in accordance with EN / IEC 62053-23
- Electromagnetic compatibility: in accordance with EN 50470-1, -3

### Respecting the environment – Conformity with the CEE directives:

- Conformity with directive 2011/65/EU modified by directive 2015/863 (RoHS 2) which restricts hazardous substances such as lead, mercury, cadmium, hexavalent chromium, brominated flame retardants, polybrominated biphenyls (PBB) and polybrominated diphenyl ethers (PBDE)
- Conformity with directive 91/338/CEE of 18/06/91 and decree 94-647 of 27/07/04
- Conformity with the REACH regulation

### Plastic materials:

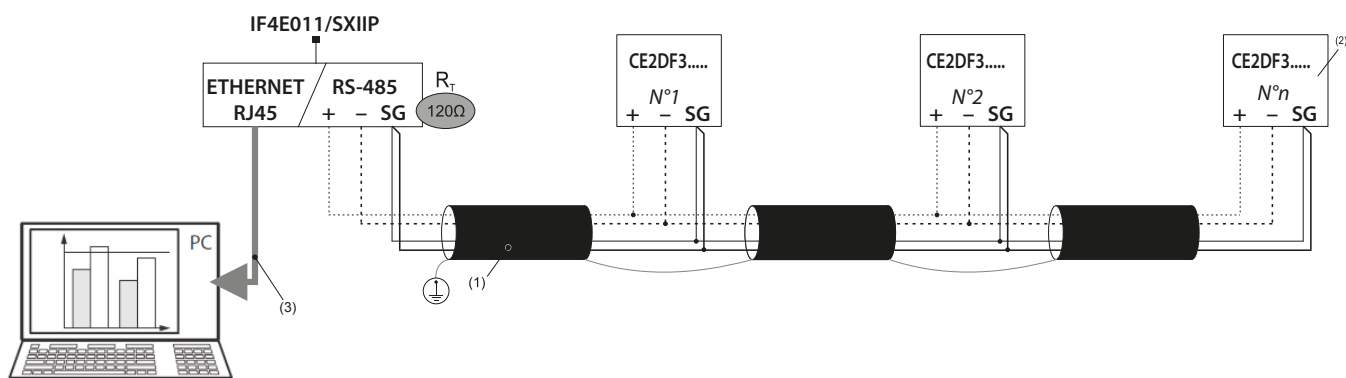
- Plastic materials without Halogens.
- Part marking according to standards ISO 11469 and ISO 1043.

### Packaging:

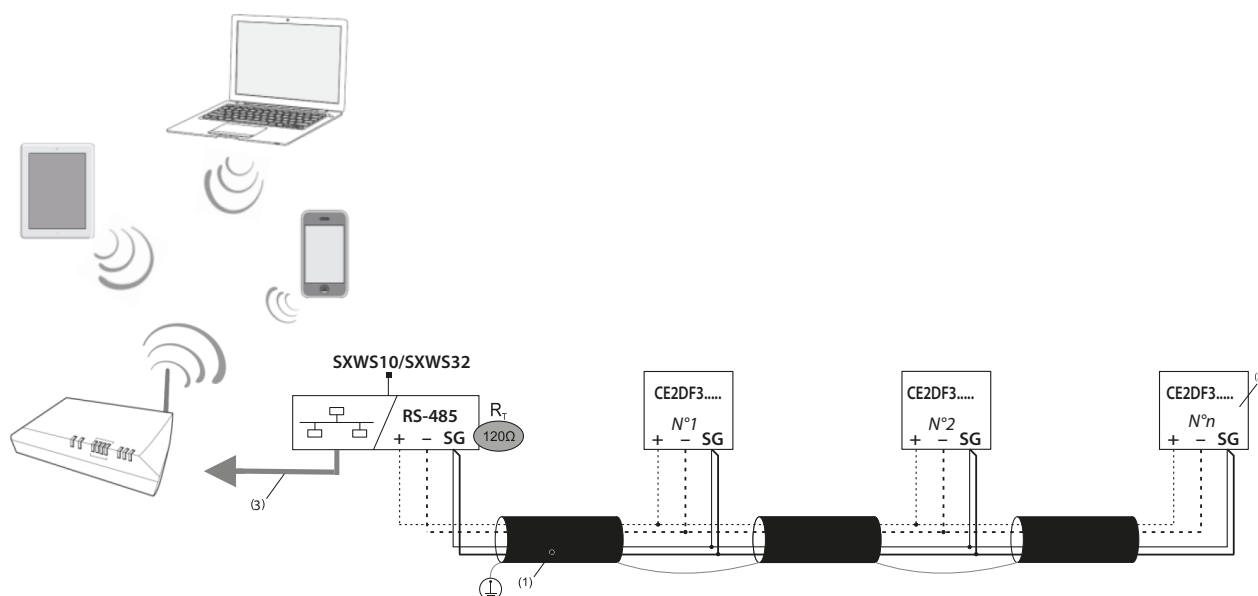
- Packaging designed and produced in accordance with Decree 98-638 of 07.20.98 and directive 94/62/CE

## 9. COMMUNICATION

### RS485 Modbus wiring diagram:



### RS485 Modbus wiring diagram with Mini Web Server:



(1) RS485: Required use of Belden 9842 or Belden 3106A wire (or equivalent) for a maximum bus length of 1000 m, or Category 6 wire (FTP or UTP) for a maximum length of 50 m

(2) 120Ω terminating resistor inside the instrument (it can be set in the SETUP menu)

(3) Ethernet: Cat. 6 (FTP/UTP)

### Communication tables

- The MODBUS communication protocols are available on the <http://www.imeitaly.com> site.