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Pulse concentrator, 12 inputs, 4 mod. DIN, with RS485 port

Cat. N°:
F4CON12

Contents **Pages**

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Cat. N°:
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1. DESCRIPTION - USE

Pulse concentrator.
It centralises and memorises pulses in output from electrical, gas, heating oil, water and compressed air counters or from multifunction measuring devices.

2. RANGE

. Cat. N° F4CON12N: Pulse concentrator, 4 DIN modules width (17,8 mm per pole).
The device is equipped with:
12 digital inputs.
1 Modbus RS485 output.

Width:

. 4 modules (4 x 17,8 mm = 71,2 mm).

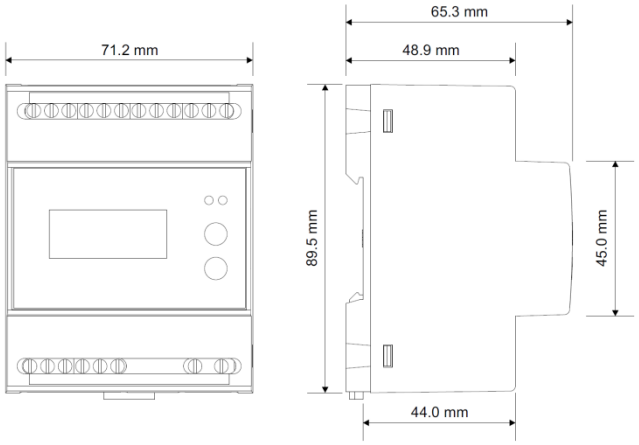
Auxiliary supply:

. 195 ÷ 250 V~, 50/60 Hz

Rated frequency:

. Fn: 50/60 Hz ± 5%

3. OVERALL DIMENSIONS



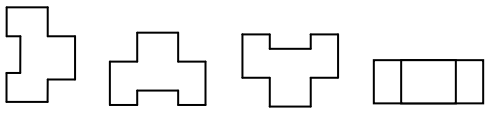
4. FIXING - CONNECTION

Fixing:

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

Operating position:

. Vertical Horizontal Upside down On the side



4. FIXING - CONNECTION *(continued)*

Screw terminals:

. Terminal depth: 8 mm.
. Stripping length: 8 mm

Screw head:

. Screw slotted.

Recommended tightening torque:

. 0,6 Nm.

Tools required:

. For terminals: flat screwdriver 2,5 mm
. For fixing the device on the DIN rail: flat screwdriver 5.5 mm (from 4 to 6 mm).

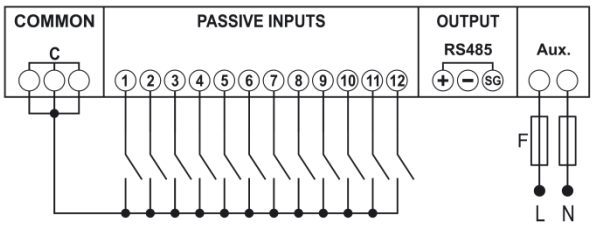
Connectable section:

. Copper cables.

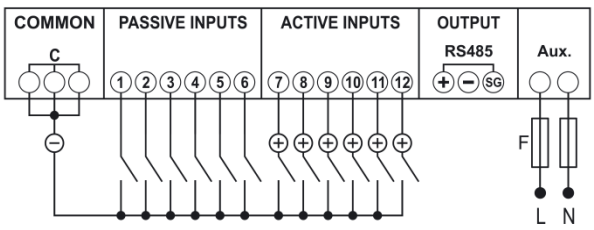
	Without ferrule	With ferrule
Rigid cable	**0,05 to 4 mm²**	**-**
Flexible cable	**0,05 to 2,5 mm²**	**0,05 to 2,5 mm²**

Inputs wiring diagrams:

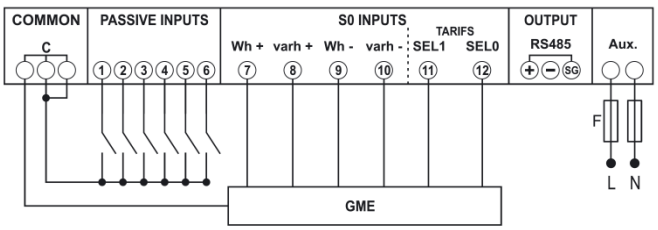
. Passive Configuration (Pot Free or Pot A Free):
cable length 1000 m max, 1.5 mm² min.



. Active Configuration (Pot Live):
cable length 1000 m max, 1.5 mm² min.

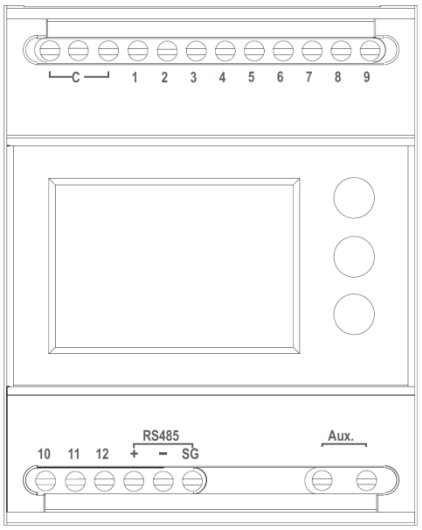


. Configuration GME S0:
cable length 1000 m max, 1.5 mm² min.



5. GENERAL CHARACTERISTICS

Case marking:
. By permanent ink pad printing.



Front face marking:
. Adhesive foil:

Display
. Type: LCD.
. Page scroll: manual or automatic (programmable)
. Display resolution and max. indication according to the programmed parameters:
engineering units
pulse weight
transformation ratio of the external current transformers kTA[1] and, if any, if the external voltage transformers kTV[2] (only for pulses from electrical energy counters).
[1] kTA= energy counters external CTs ratio (ex. 800A / 5A, kTA = 160).
[2] kTV = energy counters external VT ratio (ex. 600V / 100V, kTV = 6). For direct connection kTV =1.
In the example, kTA x kTV =160 x 6 = 960.

. Properly programming kTA and kTV ratios, you will get on the concentrator an energy count display with the same resolution of the energy meter from which the pulses are coming. (ex. energy meter with direct connection and current input from CT 800/5A → KTV = 1 e KTA = 160.
Setting these values you will get a display in kWh expressed on 8 integers without decimals, with resolution 1kWh.. Refresh time: 1,2 sec.

5. GENERAL CHARACTERISTICS *(continued)*

Value display and Programming:
. Through front keyboard, 2 keys (refer to user manual).

Digital inputs:
. 12 input terminals with 3 terminals for the common
. Digital inputs configurable in three ways:
- Passive (Pot Free, Pot A Free): 12 passive inputs
- Active (Pot Live): 6 passive inputs + 6 active inputs
- GME S0: 6 passive inputs + 6 inputs interfaced with the Electronic Measurement Group (GME) of the electrical supplier.

Inputs characteristics:
• Passive configuration (Pot. Free or Pot A Free):
. N° of inputs: 12 passive
. input type: potential free SPST-NO contact
. Connections: 12 inputs with common point
. Input pulse waveform:
ON state: ≥ 20ms
OFF state programmable, possible values: 5, 10, 20, 40, 50, 100, 200, 300 ms
Input frequency: max. 25 Hz
. Engineering units programmable, possible values: pulses, kWh, kvarh, kVAh, m^3, Nm^3.
. Pulse weight programmable, possible values: 0,001 - 0,01 - 0,1 - 1 - 10 – 100 - 1000.

• Active configuration (Pot. Live)
. N° of inputs: 6 passive + 6 active
. Input type:
6 passive inputs: potential free SPST-NO contact
6 active inputs: SPST-NO contact, V max. 27 Vd.c.
(input type2 IEC/EN 61131-2)
. Connections:
passive inputs: 6 inputs with common point
active inputs: 6 inputs with common point (negative terminal)
. Input pulse waveform:
ON state: ≥ 20ms
OFF state programmable, possible values: 5, 10, 20, 40, 50, 100, 200, 300 ms
Input frequency: max. 25 Hz
. Engineering units programmable, possible values: pulses, kWh, kvarh, kVAh, m^3, Nm^3.
. Pulse weight programmable, possible values: 0,001 - 0,01 - 0,1 - 1 - 10 – 100 - 1000.

5. GENERAL CHARACTERISTICS *(continued)*

Inputs characteristics *(continued):*

- GME S0 Configuration

. N° of inputs: 6 passive + 1 input (terminals 7÷12) from Electronic Measurement Group
. Input type:
6 passive inputs: potential free SPST-NO contact
S0 input: from terminal block of the Electronic Measurement Group (GME) according to IEC/EN62053-31 class B devices
. Connections:
passive inputs: 6 inputs with common point
S0 input: 1 input with common point
. Input pulse waveform (for passive inputs):
ON state: ≥ 20ms
OFF state programmable, possible values: 5, 10, 20, 40, 50, 100, 200, 300 ms
Input frequency: max. 25 Hz
. Engineering units programmable, possible values: pulses, kWh, kvarh, kVAh, m^3, Nm^3.
. Pulse weight programmable, possible values: 0,001 - 0,01 - 0,1 - 1 - 10 – 100 - 1000.

RS485 communication port's characteristics:

. Programmable addresses: from 1 to 247
. Baud rate: 4,8 - 9,6 - 19,2 - 38,4 kbps
. Parity bit: none, even, odd
. Stop bit: 1
. Galvanically isolated respect to measuring inputs and auxiliary supply
. Standard RS485 3 wires, half-duplex
. Protocol Modbus® RTU
. Response time (time out question/answer): ≤200 ms

Counting:

- Passive and Active configurations:

. 12 independent count registers resettable by RS485 communication.
. Max. indication: according to the programmed parameters[1]
. Resolution: according to the programmed parameters[1]
[1] measure unit, pulse weight, VT and CT ratio (only for pulses coming from energy meters).

- GME S0 configuration:

. 16 count registers for :
- active positive energy (subdivided into 4 tariffs)
- reactive positive energy (subdivided into 4 tariffs)
- active negative energy (subdivided into 4 tariffs)
- reactive negative energy (subdivided into 4 tariffs)

. 6 independent count registers resettable by RS485 communication.
. Max. indication: according to the programmed parameters[1]
. Resolution: according to the programmed parameters[1]
[1] measure unit, pulse weight, VT and CT ratio (only for pulses coming from energy meters).

Preservation of counts carried out:

Data saved in a non-volatile memory (without battery); in the event the auxiliary supply is lacking, the concentrator holds the counts carried out.

5. GENERAL CHARACTERISTICS *(continued)*

Plastic material:

. Self-extinguishing polycarbonate.

Ambient operating temperature:

. Min. = - 5 °C Max. = + 55 °C.

Ambient storage temperature:

. Min. = - 25 °C Max. = + 70 °C.

Device protection:

. Recommended fuse 0,5 A type gG

Protection Index:

. Protection index of terminals against solid and liquid bodies (wired device): IP 20 (IEC/EN 60529).
. Protection index of the front face against solid and liquid bodies: IP 54 (IEC/EN 60529).

Impulse withstand voltage:

. Inputs / RS485 port:
alternate current 50 Hz / 1 min.: 2,5 kV
Supply / RS485 port:
alternate current 50 Hz / 1 min.: 4 kV
. Supply / Inputs:
alternate current 50 Hz / 1 min.: 4 kV
. All circuits / earth:
alternate current 50 Hz / 1 min.: 4 kV

Pollution degree:

. 2

Installation category:

. III

Average weight per device:

.0, 280 kg.

Volume when packed:

. 0,58 dm^3.

Consumption

. ≤ 5 VA

Thermal power dissipated:

. ≤ 3 W.

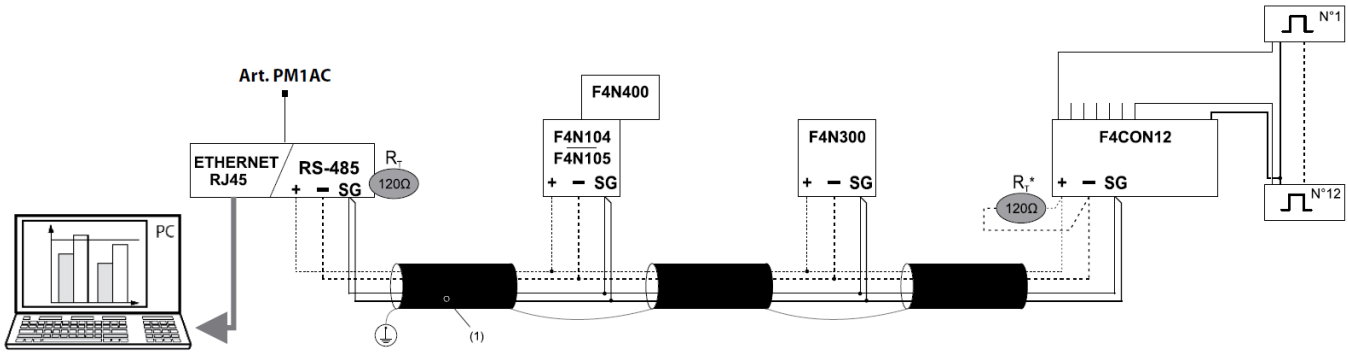
6. COMPLIANCE AND APPROVALS

Compliance to standards:

. Compliance with Directive on electromagnetic compatibility (EMC) n° 2004/108/EC
. Compliance with low voltage directive no. 73/23/CEE dated 19 February 1973, modified by directive no. 93/68/CEE dated 22 July 1993, modified by directive n° 2006/95/CE.
. Electromagnetic Compatibility:
emission according IEC/EN 61326-1
immunity according IEC/EN 61326-1.
. IEC/EN 62053-21, class B devices

7.COMMUNICATION

RS485 Wiring diagram:



(1) RS485: Prescribed use of Cable Belden 9842, Belden 3106A (or equivalent) for a maximum length of 1000 m, or Category 6 cable (FTP or UTP) for a maximum length of 50 m;
(*)Resistance not furnished

Modbus communication tables

. Modbus communication tables are available at www.download.bticino.it, typing “F4CON12” in the search field