

**Modbus RS485 + Memory module for
F4N400**Cat. N°:
F4N105

Contents	Pages
1. Description - Use	2
2. Range.....	2
3. Overall dimensions	2
4. Preparation - Connection	2
5. General characteristics	3
6. Compliance and approvals	5

Modbus RS485 + Memory module for F4N400

Cat. N°:
F4N105

1. DESCRIPTION - USE

Modbus RS485 + Memory module.
Makes available, by RS485 communication, all measurements performed as well as the configuration parameters of the multifunction measurement devices F4N400.
Thanks to the internal memory, allows the storage of energy counts and of the main measured parameters.
By the RS485 communication it is possible to query the device and access to the stored data.

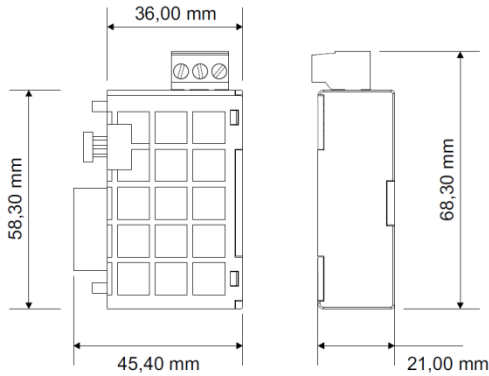
2. RANGE

. Cat. N° F4N105: Modbus RS485 + Memory module; associable only to multifunction measuring device F4N400.
. It is possible to connect only one module F4N105.

Auxiliary supply:

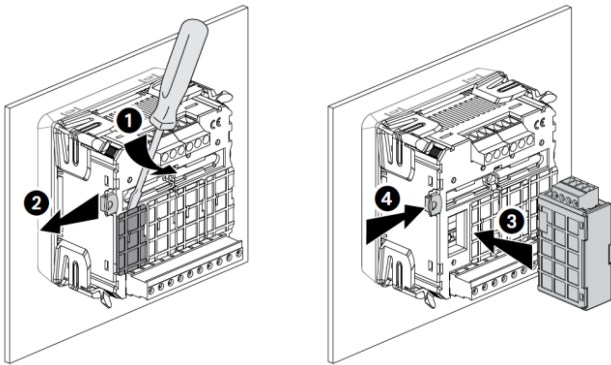
. Supplied by the multifunction measuring device F4N400

3. OVERALL DIMENSIONS



4. FIXING - CONNECTION

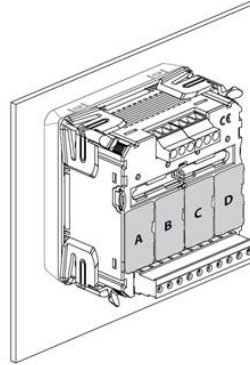
Fixing:



Note: modules must be connected with the device F4N400 not supplied.

4. FIXING - CONNECTION (continued)

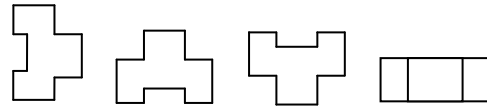
Associability table:



	A	B	C	D	
F4N101	x	x	✓	✓	max. 2
F4N102	x	x	✓	✓	max. 2
F4N103	✓	✓	✓	✓	max. 2
F4N104	✓	x	x	x	max. 1
F4N105	✓	x	x	x	max. 1
F4N106	x	x	x	✓	max. 1
F4N107	x	✓	x	x	max. 1

Operating position:

. Vertical Horizontal Upside down On the side



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 3,5 mm
. For fixing the modules to the measuring device: flat screwdriver max. 5 mm.

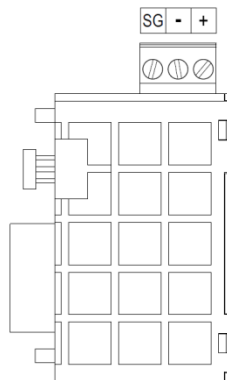
Connectable section:

. Copper cables.

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

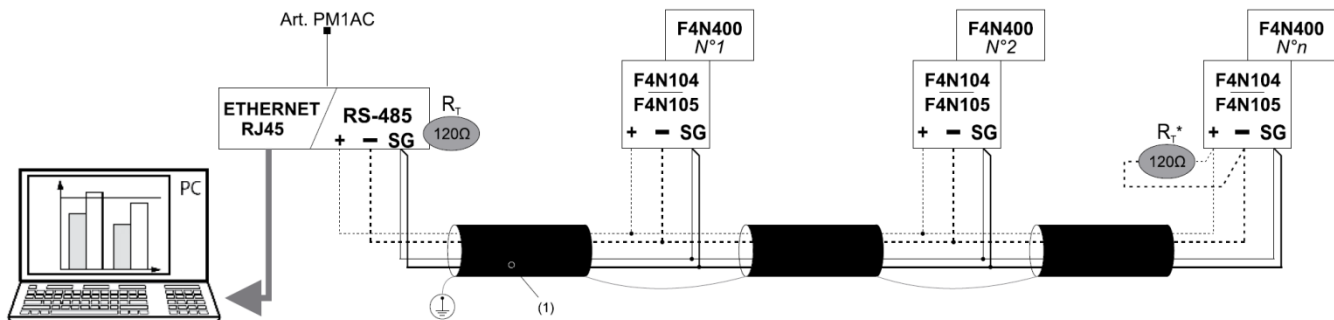
Wiring diagrams:

. Terminals identifications



4. FIXING - CONNECTION *(continued)*

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

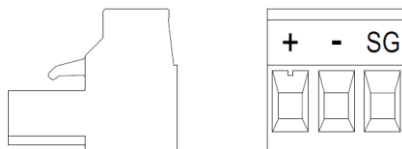
Modbus communication tables

. Modbus communication tables are available at www.download.bticino.it, typing "F4N400" in the search field

5. GENERAL CHARACTERISTICS

Terminals marking:

. By permanent ink pad printing.



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

Memory's characteristics:

- . Data are saved in a sliding-window memory (the oldest data are overwritten by the newest).
- . Memory capacity: 4MB

Programmable parameters - Memory

- . Clock: hours, minutes, seconds
- . Date: day, month, year
- . Daylight Saving Time:
 - starting date and hour
 - ending date and hour
- . Sampling time of "Group 1" data: 2, 5, 10, 30, 60 seconds - 2, 5, 10 minutes
- . Type of saved data: type 0 ÷ type 4 (see Table 1)
- . Reset to zero of saved data stored in the memory
- . Sampling time of "Group 2" data: 5, 10, 15 minutes

Table 1 - Saved data

Group 1	Type				
	0	1	2	3	4
Phase voltages: V_1, V_2, V_3	✓	✓		✓	
Chained voltages: V_{12}, V_{23}, V_{31}	✓		✓		
Active, Reactive and Apparent phase powers: $P_1, P_2, P_3 - Q_1, Q_2, Q_3 - S_1, S_2, S_3$	✓	✓			
Voltages and Currents THD: THDV - THDI	✓				
Phase and Neutral currents: I_1, I_2, I_3, I_N	✓	✓	✓	✓	
Active, Reactive and Apparent three-phase powers: $\Sigma P, \Sigma Q, \Sigma S$	✓	✓	✓	✓	
Three-phase power factor: CPF	✓	✓	✓	✓	
Phase power factor: PF_1, PF_2, PF_3	✓	✓			
Alarms status	✓	✓	✓	✓	
Frequency: f	✓	✓	✓	✓	

Group 2	0	1	2	3	4
Active energy, positive and negative: E_{a+}, E_{a-}	✓	✓	✓	✓	✓
Reactive energy, positive and negative: E_{r+}, E_{r-}	✓	✓	✓	✓	✓
Active, Reactive and Apparent three-phase power - average value and max. average value: $\Sigma P, \Sigma Q, \Sigma S, \Delta P, \Delta Q, \Delta S$	✓	✓	✓	✓	✓

Availability of saved data

. Group 1 data:

according to the type (type0 ÷ type4) and the sampling time set, data are available for different periods of time before being replaced. Data availability time is shown in Table 2

. Group 2 data:

energy measurements are saved every 5, 10 or 15 minutes. Data availability time is shown in Table 3

Table 2 - Availability "Group 1" data

. values expressed in hours

Type	Sampling time							
	2 s	5 s	10 s	30 s	60 s	2 min.	5 min.	10 min
0	15	40	80	240	480	960	2400	4800
1								
2	25	60	120	360	720	1440	2880	5760
3								

Table 3 - Availability "Group 2" data

. values expressed in hours / months

Sampling time	Memory capacity
5 min.	2880 / 4
10 min.	5760 / 8
15 min.	8760 / 12

5. CARATTERISTICHE GENERALI *(continua)*

Plastic material:

. Self-extinguishing polycarbonate.

Ambient operating temperature:

. Min. = - 5 °C Max. = + 55 °C.

Ambient storage temperature:

. Min. = - 25 °C Max. = + 70 °C.

Impulse withstand voltage:

. Supply / RS485 port:

alternate current 50 Hz / 1 min.: 2 kV

. Measuring inputs / RS485 port:

alternate current 50 Hz / 1 min.: 2 kV

Note: values referred to combination measuring device + add-on module.

Average weight per device:

. 0,030 kg.

Volume when packed:

. 0,30 dm³

Consumption:

. Module F4N105: ≤ 1 VA

. Measuring device F4N400 + 1 Module F4N105: ≤ 5 VA

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.