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Modbus RS485 + Memory module for 4 120 53

Cat. N°: 4 120 56



Contents **Pages**

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

1. DESCRIPTION - USE

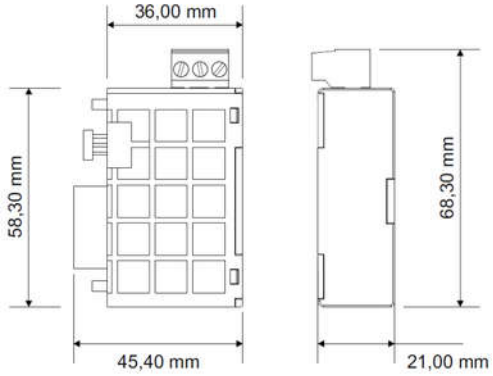
Modbus RS485 + Memory module.
Makes available, by RS485 communication, all measurements performed as well as the configuration parameters of the multifunction measurement devices 4 120 53.
Thanks to the internal memory, allows the storage of energy counts and of the main measured parameters.
By the RS485 communication it is possible to query the device and access to the stored data.

2. RANGE

. Cat. N° 4 120 56: Modbus RS485 + Memory module; associable only to multifunction measuring device 4 120 53.
. It is possible to connect only one module 4 120 56.

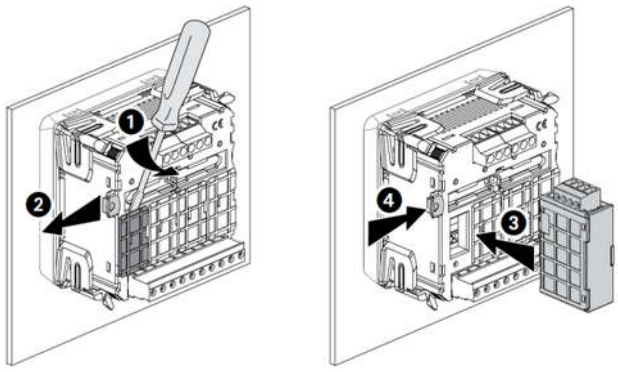
Auxiliary supply:
. Supplied by the multifunction measuring device 4 120 53

3. OVERALL DIMENSIONS



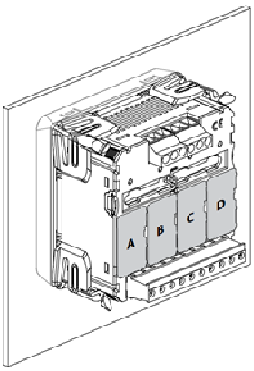
4. FIXING - CONNECTION

Fixing:



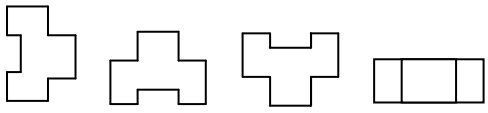
Note: modules must be connected with the device 4 120 53 not supplied.

Associability table:



	A	B	C	D	
4 120 55	✓	×	×	×	max. 1
4 120 56	✓	×	×	×	max. 1
4 120 57	×	×	✓	✓	max. 2
4 120 58	×	×	×	✓	max. 1
4 120 59	✓	✓	✓	✓	max. 2
4 120 60	×	×	✓	✓	max. 2
4 120 61	×	✓	×	×	max. 1

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.

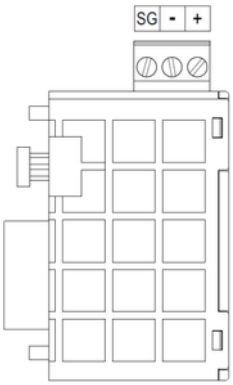
Recommended tightening torque:
. 0,6 Nm.

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

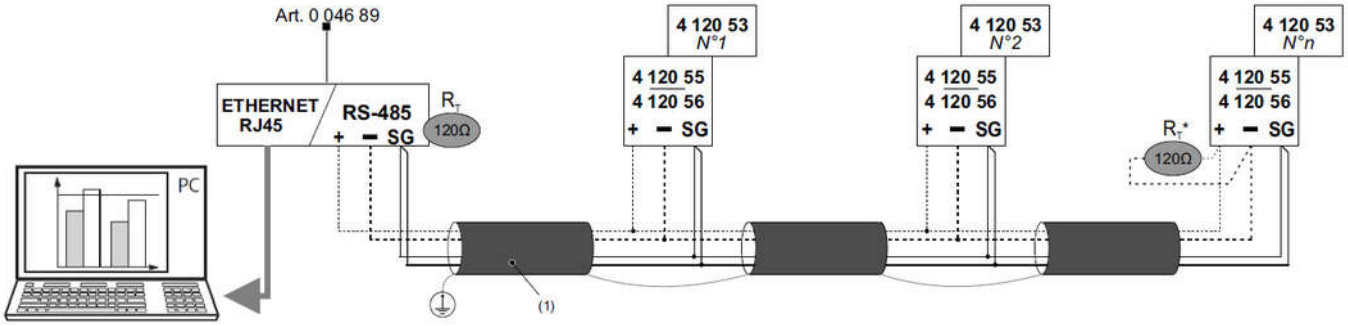
Connectable section:
. Copper cables.

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

Wiring diagrams:
. Terminals identifications



RS485 Wiring diagram:



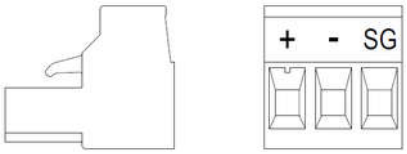
(1) RS485: Prescribed use of Cable Belden 9842, Belden 3106A (or equivalent) for a maximum length of 1000 m, or Category 6 cable (FTP or UTP) for a maximum length of 50 m;
(*)Resistance not furnished

Modbus communication tables
. Modbus communication tables are available at www.e-catalogue.legrandgroup.com, typing "4 120 53" 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

	Type				
Group 1	**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: ΣP, ΣQ, ΣS	✓	✓	✓	✓	
Three-phase power factor: CPF	✓	✓	✓	✓	
Phase power factor: PF_1, PF_2, PF_3	✓	✓			
Alarms status	✓	✓	✓	✓	
Frequency: f	✓	✓	✓	✓	

5. GENERAL CHARACTERISTICS *(continued)*

Table 1 - Saved data *(continued)*

Group 2	0	1	2	3	4
Active energy, positive and negative: Ea+, Ea-	✓	✓	✓	✓	✓
Reactive energy, positive and negative: Er+, Er-	✓	✓	✓	✓	✓
Active, Reactive and Apparent three-phase power - average value and max. average value: ΣP, ΣQ, ΣS, ΛP, ΛQ, ΛS	✓	✓	✓	✓	✓

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

	Sampling time							
Type	**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

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 dm^3

5. CARATTERISTICHE GENERALI *(continua)*

Consumption:

. Module 4 120 56: ≤ 1 VA

. Measuring device 4 120 53 + 1 Module 4 120 56: ≤ 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.