FEMTO 25A D RJ45 & NET D6

INSTALLATION GUIDE

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WARRANTY

This product is covered by a warranty against material and manufacturing defects for a 24 months period from the manufacturing date.
The warranty does not cover the defects that are due to:
• Negligent and improper use
• Failures caused by atmospheric hazards
• Acts of vandalism
• Wear out of materials
• Firmware upgrades
Akse reserves the right, at its discretion, to repair or substitute the faulty products
The warranty is not applicable to the products that will result defective in consequence of a negligent and improper use or an operating procedure not contemplated in this manual.

RETURN AND REPAIR FORMALITIES

Akse accepts the return of instruments for repair only when authorized in advance. The transport costs are at customer charge.

RE-SHIPPING OF REPAIRED PRODUCT

The terms for re-shipment of repaired products are ex-works, i.e. the transport costs are at customer charge.
Products returned as detective but found to be perfectly working by our laboratories, will be charged a flat fee to account for checking and testing time irrespective of the warranty terms.

SAFETY

This instrument was manufactured and tested in compliance with IEC 61010-1 CAT III - 300V class 2 standards for operating voltages up to 300 VAC rms phase to neutral.
In order to maintain this condition and to ensure safe operation, the user must comply with the indications and markings contained in the following instructions:

- When the instrument is received, before starting its installation, check that it is intact and no damage occurred during transport.
- Before mounting, ensure that the instrument operating voltages and the mains voltage are compatible then proceed with the installation.
- The instrument power supply needs no earth connection.
- The instrument is not equipped with a power supply fuse; a suitable external protection fuse must be foreseen by the contractor.
- Maintenance and/or repair must be carried out only by qualified, authorized personnel
- If there is ever the suspicion that safe operation is no longer possible, the instrument must be taken out of service and precautions taken against its accidental use.
- Operation is no longer safe when:

1) There is clearly visible damaged.
2) The instrument no longer functions.
3) After lengthy storage in unfavorable conditions.
4) After serious damage occurred during transport

The instruments must be installed in respect of all the local regulations.

OPERATOR SAFETY

Warning: Failure to observe the following instructions may lead to a serious danger of death.

- During normal operation dangerous voltages can occur on instrument terminals and on voltage and current transformers. Energized voltage and current transformers may generate lethal voltages. Follow carefully the standard safety precautions while carrying out any installation or service operation.
- The terminals of the instrument must not be accessible by the user after the installation. The user should only be allowed to access the instrument front panel where the display is located.
- Do not use the digital outputs for protection functions nor for power limitation functions. The instrument is suitable only for secondary protection functions.
- The instrument must be protected by a breaking device capable of interrupting both the power supply and the measurement terminals. It must be easily reachable by the operator and well identified as instrument cut-off device.
- The instrument and its connections must be carefully protected against short-circuit.

Precautions: Failure to respect the following instructions may irreversibly damage to the instrument.

- The outputs and the options operate at low voltage level; they cannot be powered by any unspecified external voltage.
- The application of currents not compatible with the current inputs levels will damage to the instrument.

Further documentation may be downloaded from our web site www.electrex.it.

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DECLARATION OF CONFORMITY

Akse hereby declares that its range of products complies with the following directives EMC 89/336/EEC 73/23CE 93/68 CE and complies with the following product's standard CEI EN 61326 – IEC 61326 CEI EN 61010 – IEC 61010.
The product has been tested in the typical wiring configuration and with peripherals conforming to the EMC directive and the LV directive.

READINGS

Keep pressed for 2 seconds to display:
- Type of instrument
- Firmware version
- Serial number
- RS485 address

MEASURE LIST TABLE
(The parameters available vary according to instrument configuration)

P/PF	Short keypress					
Long keypress	P	P Avg Imp	P Avg Exp	P MD Imp	P MD Exp	
	Q	Q Avg Imp	Q Avg Exp	Q MD Imp	Q MD Exp	
	S	S Avg Imp	S Avg Exp	S MD Imp	S MD Exp	
	PF					
U	Short keypress					
Long keypress	U L-N / f	U THD L-N	U L-N Min	U L-N Max		
	U L-L / f	U THD L-L	U L-L Min	U L-L Max		
I	Short keypress					
	In	I	I THD	I Max	I AVG	I MD
CNT	Short keypress					
Long keypress	Ea Imp ∑	Ea Imp P	Ea Exp ∑	Ea Exp P	Ea Imp ∑ Fase	
	Er Ind Imp ∑	Er Ind Imp P	Er Ind Exp ∑	Er Ind Exp P	Er Ind Imp ∑ Fase	
	Er Cap Imp ∑	Er Cap Imp P	Er Cap Exp ∑	Er Cap Exp P		
	Es Imp ∑	Es Imp P	Es Exp ∑	Es Exp P		
	C1 Pulse ∑	C1 Pulse P				

LEGEND OF PARAMETERS AND SYMBOLS

L-N	Phase Neutral	**U**	Voltage
L-L	Phase Phase	**I**	Current
THD	Total Harmonic Distortion	**In**	Neutral current
Avg	Average (rolling) value	**P**	Active Power
MD	Maximum Demand	**Q**	Reactive Power
Imp	Import value	**S**	Apparent Power
Exp	Export value	**PF**	Power Factor
Ind	Inductive	**Ea**	Active Energy
Cap	Capacitive	**Er**	Reactive Energy
Min	Minimum values (10 cycles time base)	**Es**	Apparent Energy
Max	Maximum values (10 cycles time base)	f	Frequency
CNT ∑	Pulse count (total)		
CNT P	Pulse count (partial)		

MECHANICAL CHARACTERISTICS	
Case	Self-extinguishing plastic material class UL94V0
Protection degree	IP40 on front panel, IP20 terminals side
Size	105 x 90 x 58 mm (6 DIN modules)
VOLTAGE INPUT	
Direct insertion	Up to 300 Vrms phase-neutral or 520 Vrms phase to phase
With external VT:	Primary: programmable (max. 400 kV) Secondary: programmable (max. 300 V)
	Overload: 900 Vrms phase to phase for 1 sec
Aux. power supply	85/265Vac +/- 10% 50/60Hz
Self consumption:	< 2 watt
MODELS	
PFN66-D1509-110, PFN66-D1519-110, PFN66-D1709-0M0, PFN66-D1719-0M0	

DESCRIPTION OF KEYS

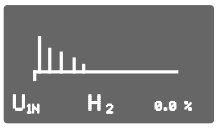
	Short keypress	Long keypress
MENU ENTER	Confirm parameter	Enter/Exit from the device's configuration menu
U ▲	Modify parameter	
I ▼	Modify parameter	
P/PF ◄	Go to previous value	Go to previous page
CNT ►	Go to next value	Go to next page
Esc	Exit without saving the configuration	

MEASURES

On "MEAS" page are displayed the main measures of the device (voltage, current, power, energy, etc.).

HARMONICS

On "HARM" page are displayed the harmonics (from 2nd to the 32nd) for voltage and current.



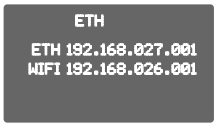
U ▲ / I ▼	Select measure (U1N, U2N, U3N, I1, I2, I3)
P/PF ◄ / CNT ►	Select harmonic (from H2 to H32 - value in %)
Esc	Exit without saving the configuration

PAGE

In development

STAT

The "STAT" page shows the assigned IP address of the LAN and WI-FI port (if present)



RESET

The "RESET" page allows to reset the total (TOT) and partial (PAR) energy counters, the minimum and maximum values (MAX) and the historical maximum values (MD).

RESET

PASSWORD REQUEST		0000 ... 9999	0000
COUNTERS			
	TOT	N, Y	
	PAR	N, Y	
	MAX	N, Y	
	MD	N, Y	

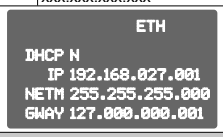
CHANGE PWD			
	PWD	0000...9999	0000

DEVICE SETUP

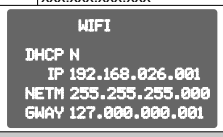
SETUP SEQUENCE

PAGE	PARAMETERS	VALUES AVAILABLE	DEFAULT
PASSWORD REQUEST		0000 ... 9999	0000
NET Note n.4			
	DEF	ETH, WIFI	ETH
	ETH	N, Y	Y
	WIFI	N, Y	Y

ETH Note n.5			
	DHCP	N, Y	N
	IP	xxx.xxx.xxx.xxx	192.168.027.001
	NETM	xxx.xxx.xxx.xxx	255.255.255.000
	GWAY	xxx.xxx.xxx.xxx	127.000.000.001

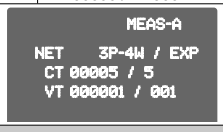


WIFI Note n.5			
	DHCP	N, Y	N
	IP	xxx.xxx.xxx.xxx	192.168.026.001
	NETM	xxx.xxx.xxx.xxx	255.255.255.000
	GWAY	xxx.xxx.xxx.xxx	127.000.000.001

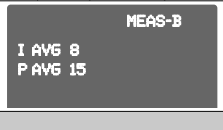


LCD Note n.3			
	DIM	DISABLE, ENABLE	DISABLE
	TIME	1...90 (sec)	3
	LIGHT	300...1000	500
	PULSE	DISABLE, ENABLE	ENABLE

CHANGE PWD			
	PWD	0000...9999	0000
MEAS-A Note n.1			
	NET	3PH-4W, 2PH-2W, 1PH-2W, 3PH-3W-2C	3P-4W
		IMP / EXP	EXP
	IMAX	25, 16	25
	VT	1...400000 / 1...300	1/1

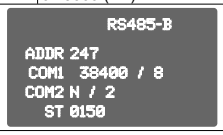


MEAS-B Note n.2			
	I AVG	1...60 (MINUTES)	8
	P AVG	1...60 (MINUTES)	15



RS485-A			
	MODE	SLAVE, MASTER	SLAVE
	TOUT	100...10000 (ms)	3000
	RETR	0...9	3

RS485-B			
	ADDR	1 ... 247	27
	Swap	None, B = byte, W = word, D = doubleword	NONE
	COM1	2400, 4800, 9600, 19200, 38400	38400
	Data Bit	5...8	8
	Parity	N = none, E = even, O = odd	N
	Stop Bit	1 or 2	2
	ST (Silent Time)	0...5000 (ms)	150

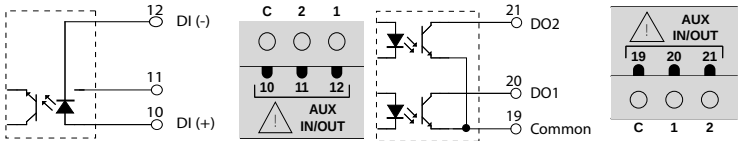


NOTE n.1		
NET	3PH-3W-2CT	2 phases 3 wires, triangle
	3PH-4W	3 phases 4 wires, Star
	2PH-2W	2 phases 2 wires, biphase
	1PH-2W	1 phase 2 wires, monophase
IMAX	Current full scale (16 or 25A).	
VT	Primary / Secondary of the voltage transformer (VT)	
NOTE n.2		
P AVG	Integration time of the average value (AVG) and peak value (MD) for power (from 1 to 60 minutes)	
I AVG	Integration time of the average value (AVG) and peak value (MD) for current (from 1 to 60 minutes)	
NOTE n.3		
DIM	Enable / Disable dimming of the display	
TIME	Time in seconds after which the display luminosity is reduced. (With DIM enabled)	
LIGHT	Luminosity level of the display	
PULSE	Enable / Disable the flashing of the sine wave symbol ⍾ light near the Electrex logo.	
NOTE n.4		
DEF	Selects the default network interface to be used for the communication	
ETH	Enable / Disable the Ethernet (LAN) port	
WIFI	Enable / Disable the WIFI port	
NOTE n.5		
DHCP	Enable / Disable the search for a DHCP server in the network	
IP	IP address of the network interface	
NETM	Subnet mask: defines the belonging range of a host within an IP subnetwork	
GWAY	IP address of the gateway	

MESSAGE “CFG ERROR”

During the set up operation a “CFG ERROR” message could appear. This means that some wrong parameters are inserted.

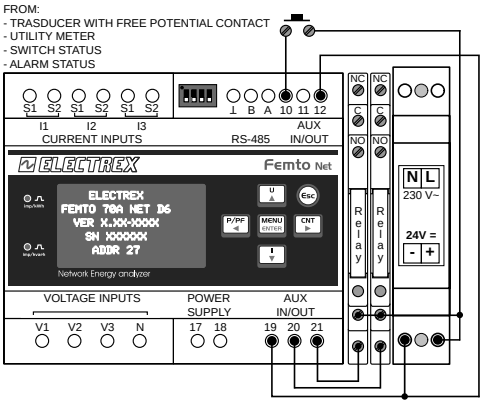
INPUT & OUTPUT CONNECTION



Digital Inputs	
Supply voltage (external):	from 10 to 30 Vdc
Current consumption:	from 2 to 10mA
Max. count frequency	10 or 100Hz
N.B. For gas meters a galvanic separation is needed per ATEX standards	

Digital outputs (optocoupled NPN transistor type for DIN 43864)	
Maximum applicable voltage:	27 Vdc
Maximum switchable current:	27 mA

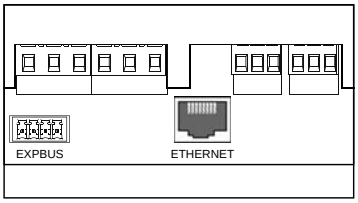
INPUT & OUTPUT CONNECTION EXAMPLE



DIP-SWITCH CONFIGURATION

DIP	FUNCTION	SLAVE	MASTER *
1	Line termination resistance (120 Ohm)	OFF	ON
2	Fail safe resistance B (-)	OFF	ON
3	Fail safe resistance A (+)	OFF	ON
4	Not used	OFF	OFF
* with RS-485 Master PUK activated			

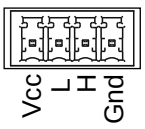
LAN 10/100 ETHERNET PORT



The instrument is equipped with a Ethernet Lan 10/100 Auto-MDI/MDIX port.
For the connection can be used a data cable straight or crossover.

Note: the port is not a PoE (Power over Ethernet = device power supply via the Lan port) type. The connection of the device to a PoE port is anyway accepted. The power supply anyway must be always provided by an external power supplier.

EXPBUS PORT



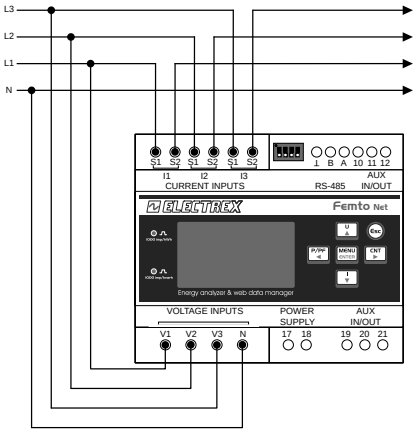
The ExpBus port, configurable via Ethernet port on web pages:
- uses a multicast communication rated at 250kb/sec with collision management
- max cable length : 10 meters
- manages up to 16 modules (but technically can manage up to 126)
- uses the UTP cable, 4 wires used:
  2 for the power supply at 9 Vdc
  2 for the bidirectional communication

The modules will also power supply the ExpBus port
The cable must be connected in in-out modality (multidrop) as per the RS485 Bus.

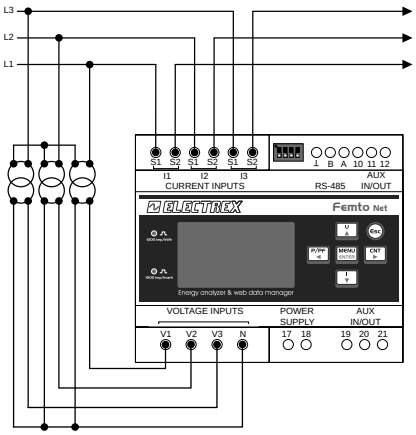
VOLTAGE AND CURRENT CONNECTION

Voltage connection: Use cables with max cross-section of 2,5 mm² if stranded 4 mm² if rigid and connect them to the clamps marked VOLTAGE INPUT on the instrument according to the applicable diagrams that follow.
Current connection: Connect the terminals marked I1, I2, I3 (CURRENT INPUT) of the instrument according to the applicable diagrams that follow.
N.B. Scrupulously respect the matching of phase between the voltage signals and current signals (RTD). Failure to comply with this correspondence and connection diagrams gives rise to measurement errors.

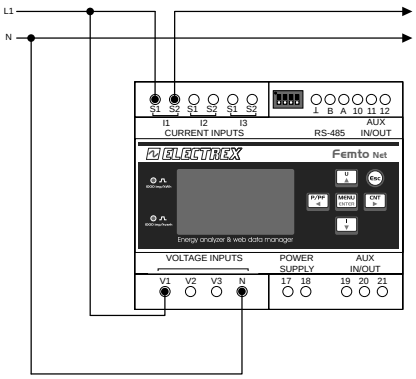
STAR 4W (4 WIRES) 3PH-4W LV



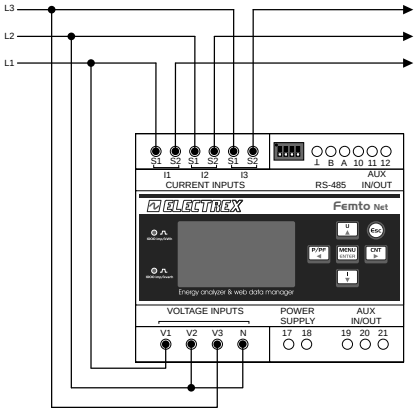
STAR 4W (4 WIRES) 3PH-4W MV



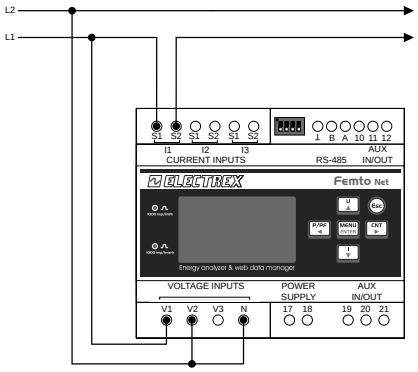
MONOFASE (2 WIRES) 1PH-2W



TRIANGLE 3W (3 WIRES) 3PH-3W

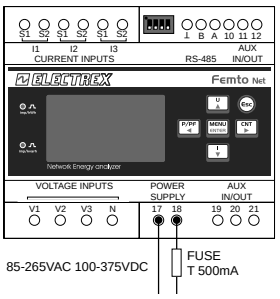


BI-PHASE (2 WIRES) 2PH-2W



POWER SUPPLY

The instrument is fitted with a separate power supply. The power supply terminals are numbered (17 e 18). Use cables with max cross-section of 2,5 mm² if stranded, 4 mm² if rigid.



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