Giga PQ box net web
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.
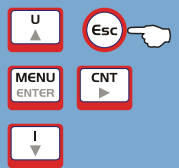
READINGS

Giga box net web

Mobile energy & quality analyzer
Wi-Fi web data manager

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

ELECTREX
GIGABOX
VER X.XX-XXXX
SN XXXXXX
ADDR 247

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	
Protection degree	IP40 on front panel, IP20 terminals side
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	
PKAR100-00	GIGA PQ BOX 85÷265V NET WEB CHARTS

DESCRIPTION OF KEYS

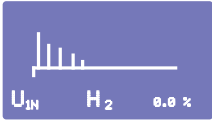|	Short keypress	Long keypress
MENU ENTER	Confirm parameter	Enter/exit the configuration menu of the device
U ▲	Modify parameter	
I ▼	Modify parameter	
P/PF ◄	Go to previous value	Go to previous page
CNT ►	Go to next value	Go to next page
Esc	Exit without saving the configuration	

MEASURES

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

```
ELECTREX        SET
GIGA BOX ADDR 247   RESET
VER  X.XX       MEAS
SN XXXXXX       HARM
MAC XXXXXXXXXXX  PAGE
```

HARMONICS

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

```
ELECTREX        RESET
GIGA BOX ADDR 247   MEAS
VER  X.XX       HARM
SN XXXXXX       PAGE
MAC XXXXXXXXXXX  STAT
```

```
U_1N    H_2     0.0 %
```

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

```
ELECTREX        MEAS
GIGA BOX ADDR 247   HARM
VER  X.XX       PAGE
SN XXXXXX       STAT
MAC XXXXXXXXXXX  SET
```

In development

STAT

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

```
ELECTREX        HARM
GIGA BOX ADDR 247   PAGE
VER  X.XX       STAT
SN XXXXXX       SET
MAC XXXXXXXXXXX  RESET
```

```
ETH
ETH 192.168.027.001
WIFI 192.168.026.001
```

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			

```
ELECTREX        STAT
GIGA BOX ADDR 247   SET
VER  X.XX       RESET
SN XXXXXX       MEAS
MAC XXXXXXXXXXX  HARM
```

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

```
COUNTERS
TOT N
PAR N
MAX N
MD N
```

CHANGE PWD			
PWD	0000...9999		0000

DEVICE SETUP

```
ELECTREX        PAGE
GIGA BOX ADDR 247   STAT
VER  X.XX       SET
SN XXXXX        RESET
MAC XXXXXXXXXXX  MEAS
```

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

```
NET

DEF  ETH
ETH Y
WIFI 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

```
ETH

DHCP N
   IP 192.168.027.001
NETM 255.255.255.000
GWAY 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

```
WIFI

DHCP N
   IP 192.168.026.001
NETM 255.255.255.000
GWAY 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

```
LCD

DIM DISABLE
TIME  3
LIGHT 0500
PULSE  ENABLE
```

CHANGE PWD			
	PWD	0000...9999	0000
MEAS1 Note n.1			
	NET	3PH-4W, 2PH-2W, 1PH-2W, 3PH-3W-2C	3P-4W
		IMP / EXP	EXP
	CT	1...10000 / 1...5	5/5
	VT	1...400000 / 1...300	1/1

```
MEAS-A

NET   3P-4W / EXP
   CT 00005 / 5
   VT 000001 / 001
```

MEAS2 Note n.2			
	I AVG	1...60 (MINUTES)	8
	P AVG	1...60 (MINUTES)	15

```
MEAS-B

I AVG 8
P AVG 15
```

RS485-1			
	MODE	SLAVE, MASTER	MASTER
	TOUT	100...10000 (ms)	3000
	RETR	0...9	3

```
RS485-A

MODE MASTER
TOUT 03000
RETR 3
```

RS485-2			
	ADDR	1 ... 247	247
	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

```
RS485-B

ADDR 247
COM1  38400 / 8
COM2 N / 2
   ST 0150
```

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
CT	Primary / Secondary of the current transformer (CT)	
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	

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.
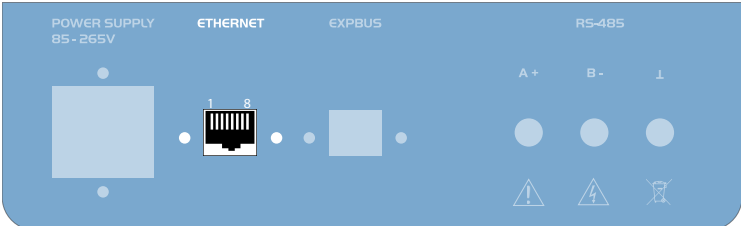

EXPBUS PORT
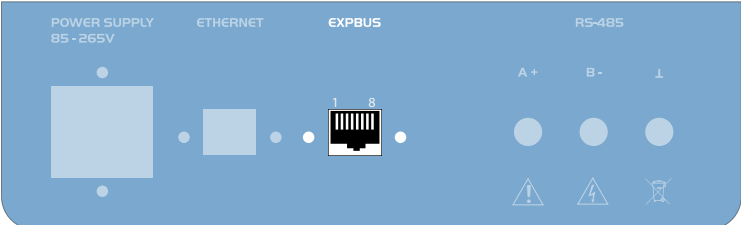
The ExpBus port, configurable via Ethernet port on web pages:
- uses a multicast communication rated at 250kb/sec with collision management
- max cable length : 10 meters
- manages up to 16 modules (but technically can manage up to 126)
- uses the UTP cable, 4 wires used:
  - 2 for the power supply at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

ExpBus	RJ45 Pin	Signal type
1 8	8	VCC
	7	L
	5	H
	4	GND

RS485 PORT
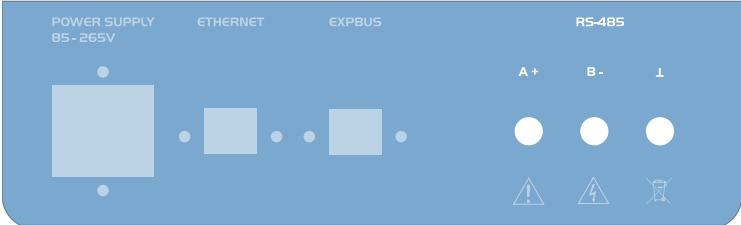
The RS-485 port allows a bidirectional communication in half duplex on a multipoint line and can be used to implement a local communication network.
The RS-485 interface is provided for connecting multiple devices in multi-drop (daisy chain), therefore are not allowed derivations or T type connections. In other words it is necessary to bring the two wires to the first instrument, then from this to go down to the second and so on until the last instrument of the line.

The connection of Modbus Slave devices to the RS485 port is possible, since, the relative PUK code "COM-1 Master (option MASTER-485)" is enabled on the device.
Refer to the "Firmware Options" menu page, on the web interface, to see which options are active.

MESSAGE "CFG ERROR"

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

VOLTAGE AND CURRENT CONNECTION

Voltage connection
Use the supplied cables and connect them to the terminals marked L1, L2, L3 (voltage input) following the diagrams here below.

Current connection
Use the supplied cables and connect them to the terminals marked I1, I2, I3 (current input) following the diagrams here below.

Note: Use current transformers (CT) with a proper primary and ../5A or ../1A secondary (output). The CT secondary must always be in short circuit when not connected to the instrument in order to avoid damages and risks for the operator.

Scrupulously respect the matching of phase between the voltage signals and current signals (RTD) and the direction of insertion of CT (P1-P2 and S1-S2). Failure to comply with this correspondence and connection diagrams will cause measurement errors. (*) The grounding of S2 must be close to the CT and not near the instrument.
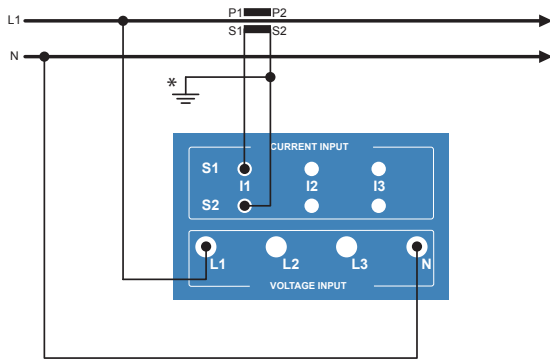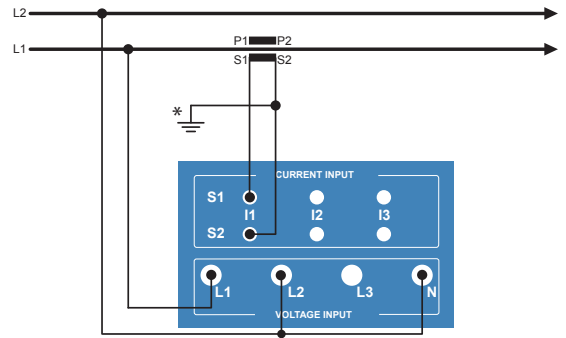
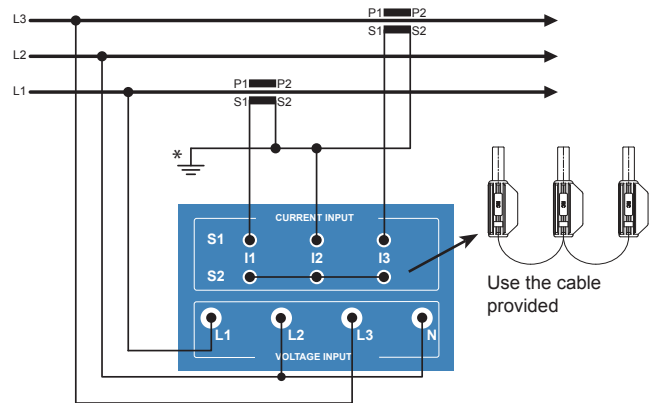## STAR 4W (4 WIRES) 3PH-4W LV

Default
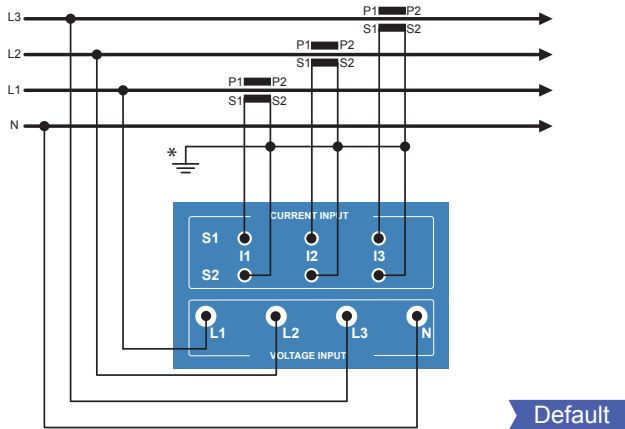
TRIANGLE 3W (3 WIRES) 3PH-3W
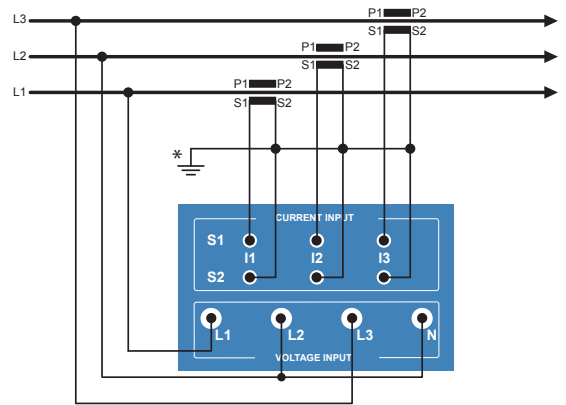
SINGLE PHASE (2 WIRES) 1PH-2W

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

TRIANGLE 2CT (3 WIRES) 3PH-3W

Use the cable provided

The Giga PQ Box net web allows the temporary monitoring of electricity (quantity and quality) with the possibility, adding other external Electrex devices, to monitor synchronously (same reference clock) other energy parameters (such as gas, water, steam, etc.), environmental parameters (temperature, humidity, light, CO_2, etc.) and process parameters.

For further info check our web site:
www.electrex.it/en >> Products >> Energy Analyzer & Web Data Manager >> Giga PQ Box net web

For downloading full installation instructions:
www.electrex.it /en >> Download >> Installation Instructions >> Giga Box

⚠️ USE ONLY CT WITH ../5A OR ../1A SECONDARY

POWER SUPPLY

The instrument is equipped with a separate power supply and protection fuse.

POWER SUPPLY 85 - 265V · ETHERNET · EXPBUS · RS-485 · A+ · B- · ⊥
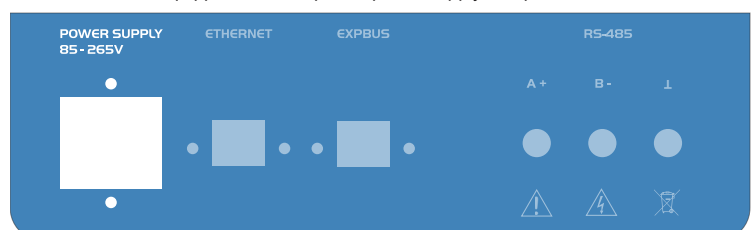
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Edition 2015 04 24 ENG0089