

Exa Net

- ▶ Flexibility (open platform)
- ▶ Reliability (high quality of components)
- ▶ Connectivity (RS485, E-Wi, ExpBus, Ethernet, Wi-Fi, NFC)



Energy Analyzer & (Wi-Fi) Web Data Manager

Exa Net D6 is an Energy & Web Data Manager, an open platform connected to Ethernet / Internet through the RJ45 port. Designed for the range of power between 20kW and 200kW, where it represents the starting point for the continuous monitoring of the energy efficiency through the measurement and management of the energy parameters (electricity, gas, water, etc.), environmental parameters (temperature, luminosity, CO2, etc.) and process parameters.

It includes the **Exa D6** device for the measurement of the electrical parameters and of the quality of;

It is a Web and FTP Server which communicates and manages the other Electrex devices both through the RS485 master port in the sub-network and the ExpBus port. The Wi-Fi option permits to manage / display the data from any device having a browser (PC, Smartphone, tablet, etc.) allowing also a rapid connection through NFC enabled devices.

Simplicity

Exa Net D6 is equipped with a FSTN dot matrix display with high contrast, back-lighted, white LEDs allowing the simultaneous displaying of 4 measurements and of their identification symbol with high visibility characters.



The 6 keys keypad Joystick positioned and menu list type on the display for configuration provide a simple and rational use of the instrument, while the default page displayed when powering on is user definable.

On the front panel 2 calibration and control LEDs pulse with a frequency proportional to the imported Active and Reactive Energy for the on-field calibration with optical devices. The red LED pulsing under the symbol by the Electrex logo indicates the functioning state. 2 additional LEDs positioned under the white band report instead the activity on the RS485 port. While for the Rj45 port the 2 built-in LEDs will indicate the Ethernet activity.

In order to reduce the energy consumption it is possible to configure the display's back-lighting, the state LED and the ones related to the RS485 port..

Versatility

The measuring device internal to the **Exa Net D6** is suitable for virtually all type of electrical grid systems, single phase, bi-phase, three phase 3- and 4-wire, symmetrical and asymmetrical, balanced or unbalanced, Low Tension, with 1, 2 or 3 CTs as well as for 2 and 4 quadrant (import/export) measurement. A simple configuration from the keyboard (or via our Energy Brain software) allows to configure all the operating parameters like network type, CT and VT (if present) ratio, integration time (1-60m) and alarms (threshold,

delay, hysteresis), digital outputs and configuration parameters related to optional modules connected.

Measures

Parameters	Type	L1	L2	L3	n	Σ	P	Range
Voltage	U _{L-N}	•	•	•	•	•	•	20,0V...400 kV
	U _{L-L}	•	•	•	•	•	•	
	U _{L-N} MAX (1)	•	•	•	•	•	•	
	U _{L-L} MAX (1)	•	•	•	•	•	•	
	U _{L-N} MIN (1)	•	•	•	•	•	•	
Current	I	•	•	•	•	•	•	10 mA...10,0 kA Flexible Electrex CT(3): 1A ... (5A - 500A) 4A ... (20A - 2000A) 16A ... (80A - 8000A)
	I _{MAX} (1)	•	•	•	•	•	•	
	I _{AVG THERM} (2)	•	•	•	•	•	•	
	I _{MD THERM} (2)	•	•	•	•	•	•	
Power Factor	PF	•	•	•	•	•	•	0,00ind..1,00..0,00cap
Frequency	F	•	•	•	•	•	•	45 ... 65 Hz
Harmonic Distortion	THD-U _{L-N}	•	•	•	•	•	•	0...199,9%
	THD-U _{L-L}	•	•	•	•	•	•	
	THD-I	•	•	•	•	•	•	
Active Power	P	•	•	•	•	•	•	± 0,00...1999 MW
	P _{AVG} (4)	•	•	•	•	•	•	
	P _{MD} (4)	•	•	•	•	•	•	
	P _{MAX} (1)	•	•	•	•	•	•	
Reactive Power	Q IND	•	•	•	•	•	•	± 0,00...1999 Mvar
	Q CAP	•	•	•	•	•	•	
	Q _{AVG IND} (4)	•	•	•	•	•	•	
	Q _{AVG CAP} (4)	•	•	•	•	•	•	
	Q _{MD IND} (4)	•	•	•	•	•	•	
	Q _{MD CAP} (4)	•	•	•	•	•	•	
Apparent Power	S	•	•	•	•	•	•	± 0,00...1999 MVA
	S _{AVG} (4)	•	•	•	•	•	•	
Life Time	S _{MD} (4)	•	•	•	•	•	•	0,01...99.999,99 hours
	h, h/100	•	•	•	•	•	•	
Active Energy	E _a IMP (5)	•	•	•	•	•	•	0,1 kWh...99.999,9 MWh
	E _a EXP (5)	•	•	•	•	•	•	
Reactive Energy	E _r IND IMP (5)	•	•	•	•	•	•	0,1 kvarh...99.999,9 Mvarh
	E _r CAP IMP (5)	•	•	•	•	•	•	
	E _r IND EXP (5)	•	•	•	•	•	•	
	E _r CAP EXP (5)	•	•	•	•	•	•	
Apparent Energy	E _s IMP (5)	•	•	•	•	•	•	0,1kVAh...99.999,9 MVAh
	E _s EXP (5)	•	•	•	•	•	•	
Pulse Counter	CNT	•	•	•	•	•	•	
Analog Measure	(7)	•	•	•	•	•	•	

- (1) Absolute value (For all the "instantaneous measures" mean over 10 cycles - example: 200ms at 50Hz).
- (2) Mean value (rolling average) over the integration time (1.. 60 min. programmable) and peak (MD).
- (3) With Flexible Electrex CT, accuracy Class 1 for both the devices, within the current ranges denoted above with brackets.
- (4) Average value (moving average) in both import and export over the integration time (1..60 min programmable) and peak (MD) that is the maximum average value.
- (5) Import/Export energies displayed as 9 digits in floating-point readings; internal energy counters are logged with a 64 bit resolution which assures a minimum definition of 0,1 Wh and a max count of 99.999.999.999 kWh
- (6) Only for versions with digital inputs.
- (7) Only for versions with analog inputs

Phase sequence

The **Exa Net D6** allows the identification of the correct phase sequence.

Ethernet communication and sub network via RS485

Exa Net D6 is equipped with a 10/100 Base-TX (RJ45) Auto-MDIX **Ethernet port** for the "http" communications (real-time measurements and memory logs) and "Modbus over IP" (real-time measurements), while the serial RS485 master port, protected against overvoltage, is available for connecting other Electrex instruments/devices in a sub-network and the transmitting speed is configurable up to 38.400bps.

Exa Net D6 versions

The **Exa Net D6** is available in various versions:

- *Basic*.....without inputs or outputs
- *1DI 2DO*.....with 1 digital input and 2 digital outputs
- *1DI 2DO Self-Powered*..... with 1 self powered digital input and outputs rated at 250V 100mA
- *2AO4-20mA*.....with 2 analog 4-20mA outputs (external power supply for resistances > 250 ohm needed)
- *2DI 1RO*..... with 2 digital inputs and 1 relay output
- *2RO*.....with 2 relay outputs
- *4DI*..... with 4 digital inputs
- *4DO*..... with 4 digital outputs
- *2DI 2DO*..... with 2 digital inputs and 2 digital outputs
- *4AI*..... with 4 analog inputs 0÷10V (4-20mA)
- *I2C*.....for environmental param. sensors (T, H, L, P, etc)
- *E-Wi*.....for wireless comm. using E-Wi protocol

Digital Inputs

The **Exa Net D6 .. 1DI or 2DI or 4DI** is equipped with an optically insulated digital input complete with programmable filter for input glitches. The digital input is set to operate for external pulse count of, example, water meters, gas meters (insulation to meet the ATEX requirements), water meters, quantity count, etc. Other user selectable operative modes are ON/OFF state input (example for reading the ON/OFF state of machines and switches) and tariff change input (example for day-night tariff changeover). The digital input requires an external 10-30Vdc power supply.

The **Exa Net D6 1DI 2DO Self-Powered** and **Exa Net D6 2DI 1RO Self-Powered** instead are provided with a self powered digital input.

Analog Inputs

The **Exa Net D6 4AI** are equipped with 4 analog inputs rated at -10÷10V (compatible with 0÷10V, 0÷5V, -5÷5V, 4÷20mA at 200 ohm).

Digital Outputs

The **Exa Net D6 .. 2DO or 4DO** are equipped with two optically insulated transistor outputs rated 27 Vdc 27 mA per DIN 43864 standards. The two outputs may be set for the transmission of pulses or alternatively configured as outputs of the internal alarms (see Alarms) or as remote output devices controlled via serial line and Modbus commands.

The **Exa Net D6 1DI 2DO Self-Powered** instead are provided with two opto-mos outputs rated at max. 250V or 100mA AC/DC.

Relay Output

The **Exa Net D6 2DI 1RO Self-Powered** and **Exa Net D6 2RO** are equipped with one or two relay outputs with changeover contact rated at max 30V max 2A (resistive load).

Alarms

The **Exa Net D6 .. 2DO or 4DO or 1RO or 2RO** are equipped with outputs programmable as alarms. Each alarm is associated to any of the parameters available, for example, either as a minimum alarm and / or as a maximum. All alarm outputs can also refer to the same parameter For having more alarm thresholds. You can set the delay of activation of each alarm

(1-99 sec.), the hysteresis (in% of the threshold value) and the polarity of the output contacts (NO, NC). The alarm status is always available on the serial line (via Modbus "coils"). Because of the many combinations available only part of the alarm is programmable from the keyboard while they are completely Web Page or through the Energy Brain software or by "holding registers" of the Modbus protocol.

Analog Outputs 4-20mA

The **Exa Net 2AO4-20mA** is equipped with 2 galvanic insulated analogue outputs 4-20 mA or 0-20 mA providing an extremely high accuracy and signal stability. The outputs are active for resistor loads up to 250 ohm, for higher loads an external power supply (12Vdc) will be needed (up to 750 ohm). The outputs ensure a response time of max. 200 ms. Each output is associated to any of the parameters.

I2C Bus

The **Exa Net I2C** is equipped with an I2C Bus for connecting up to 4 sensors (up to 4 for the temperature or up to 1 for the temperature, 1 for the humidity, 1 for the luminosity and 1 for the air pressure). The max total distance of the I2C bus is 20 m.

Exa Net Coordinator E-Wi

The **Exa Net Coordinator E-Wi** acts as the coordinator of the wireless network using E-Wi protocol and deals with the data-logging (recording of trends over time) of the wireless E-Wi devices connected to it. The E-Wi versions use the E-Wi protocol based on IEEE 802.15.4 **and receive and transmit all data, without limitation**, to 250kbps on the frequency of 2.4 GHz at a distance, without signal boosting, can reach up to 800 m in open field.

Exa Net Wi-Fi and NFC (Near Field Communication)

The **Exa Net Wi-Fi D6** is a version of Exa net D6 that communicates directly with the Wi-Fi network / Wi-Fi devices without the need to be connected to an Ethernet cable and if equipped with a mobile device with NFC (Near Field Communication), such as some NFC smart phones, it is enough to position it closer to the Exa Net Wi-Fi D6 to enable the Wi-Fi communication without the need to enter the ID and password. This feature opens the possibility of creating specific APPs for mobile devices related to energy management.

The Exa F Net version for Electrex Flexible CTs

All the hardware and (PUK) upgrade implementations combinations are available also for the **Exa F Net** which is equipped with exclusive current inputs for the Electrex Flexible CTs (mV output and appropriate internal linearization in order to enhance accuracy).

ATTENTION: do not connect in these current inputs, CT with current output (e.g. ..1A o ../5A) otherwise both, the Exa F Net and the CT, will be damaged.

The full scale can be set among 500A, 2000A and 8000A. Class 1 of accuracy for both (device + flexible CTs) between the full scale current and 1/100 of the same value. Minimum current measurable: 1/500 of the selected full scale value.

FCTS 040-500 Flessibile split CT,internal diameter: 4 cm

FCTS 100-1000 Flessibile split CT,internal diameter: 10 cm

 FCTS 200-2000 Flessibile split CT,internal diameter: 20 cm

 FCTS 280-1000 Flessibile split CT,internal diameter: 28 cm

Firmware and Special versions on request

The **Exa Net D6** firmware is upgradeable, remotely, at any time, in order to add and/or replace the existing characteristics with new and different functionalities. The **Exa Net D6** can be also requested in other configurations.

Astronomical Clock Calendar

The **Exa Net D6** is equipped with a clock / calendar with astronomical real time management of the Coordinated Universal Time (UTC). It manages also the rules for the automatic switching from Standard Time at summer time (Daylight Saving Time) and vice versa. Automatic synchronization via NTP.

Load curves and data of consumption / production

Exa Net D6 continuously stores the data of consumption / production and power by organizing them into separate files (daily, weekly, monthly and yearly), each of which contains all the information necessary for the reconstruction of the load chart and study the trend of withdrawals / inputs (downloadable via RJ45 port / Ethernet). The memory is readable by RJ45 port / **Ethernet or Wi-Fi** via Web pages and / or the Energy Brain software and HTTP protocol.

Functional memory

The memory of the **Exa Net D6** is also used for other operational functions such as:

Functional event log with the registration of all operations affecting the functioning of the instrument since it has been produced.

Special files for programming and/or functions that can be implemented in the future by up-load.

Exa Net D6 and the Net upgrade (PUK)

The **Exa net D6** in addition to having all the features of the Energy Analyzer Exa is also a Modbus-TCP Server acting as bridge between the Ethernet network (Modbus-TCP protocol) and RS485 (Modbus-RTU protocol) and acting as an arbiter between the Ethernet port (optional Wi-Fi) and any eventual E-Wi wireless port (optional) and the expansion Bus ExpBus. It is also a: WEB server for the configuration of the Exa Net D6 and the instruments in subnetwork via WEB Browser. Static or dynamic (DHCP) IP address. FTP server for file transmission. Clock synchronization via NTP server.

It is also possible to implement the following net Upgrade purchasing the following PUK codes to be activated via Web page:

Net upgrade Log 8 (PUK)-PFSU940-01 (1 activated)

With the activation of the PUK Log 8 you can record the trend over time of the energy / environmental parameters acquired by Electrex devices (also called channels) connected under the RS485 port of the Exa net D6. A Net upgrade Log 8 enables storage service for 8 instruments, power / energy just in import, therefore a Exa net D6 Net becomes a Exa net D6 Net log 8, or a Exa net D6 Net log 24 becomes a Exa net D6 Net log 32. The "storage service" is characterized by an univocal time base (sampling frequency). It is possible to use more Log 8 for further services (e.g. daily, weekly, monthly, yearly or else) or to expand a single service. Example: Exa net D6 log 16: 2 storage services (2 x 8 channels) or 1 service of 16 channels. Exa net D6 log 24: 3 storage services (3 x 8 channels) or 2 where one service of 8 channels and the other of 16 channels or just a single service of 24 channels.

It is possible to activate up to a maximum of 8 Upgrade Log 8 services.

Net upgrade WEB (PUK) - PFSU940-05

Enables the display of the measures on web pages of each instrument connected to the RS485 port of the Exa Net.

Net upgrade WEB Open (PUK) - PFSU940-10

Adds to the Exa Net the ability to upload and display **custom Web pages**. The software implementation Net upgrade Web (PUK) code PFSU940-05 **must** be installed previously.

Net upgrade Mail Alarm (PUK) - PFSU940-15

Adds to the Exa Net the ability to send alarm emails and / or ModBus commands (e.g. to close a contact or edit a ModBus registry).

Net upgrade Calendar (PUK) - PFSU940-20

Adds to the Exa Net the ability to manage Energy Automation functions such as on / off switches, alarms / alerts and

automatismos conditioned to events and / or an annual calendar configurable in minutes / hours / days / months.

Net upgrade Charts (PUK) - PFSU940-30

Allows you to display on a web page daily charts of electricity, temperature, humidity, luminosity, etc. obtained from the files stored in the Exa Net log with the possibility to export to CSV files.

Net upgrade New Features – PFSU940-40

Upgrade to new versions of the firmware of the Exa Net that add new features to the instrument.

Monitoring network example for the Tertiary sector

The image above shows a part of the monitoring network of a shopping mall (but it is suitable also for an automobile repair shop, a dairy, a private offices building, a governmental building and in general buildings served by Low Voltage power supply). In this specific example the monitoring network has two



branches. In the first branch the Exa Net D6, which can communicate in various ways (Ethernet, Wi-Fi, RS485, E-Wi, NFC, etc.), will serve both as a gateway and as a measuring device monitoring the energy consumption of the main load, just after the utility/billing meter. The other devices connected to the Exa Net D6 are: the X3M H for monitoring the fridge-freezer energy use and its quality; the Exa TR for monitoring the air conditioning system; the Yocto I-O for alarms and notifications several Femto (not showed in the diagram above) retrieve the energy consumption of power and lighting system

In the second branch the Yocto net coordinator uses a wireless connection for communicating with the various Deca Sensor E-Wi which monitor the ambient temperature and luminosity in the different areas of the building.

The shopping mall manager uses the Energy Brain software, installed on its PC, in order to control the energy consumption profiles and the environmental parameters. The Web pages displaying alarms and notifications, which are activated from anomalies or the exceeding of thresholds related to instantaneous measurements, are particularly useful for the maintenance team that can target and manage quickly the interventions.

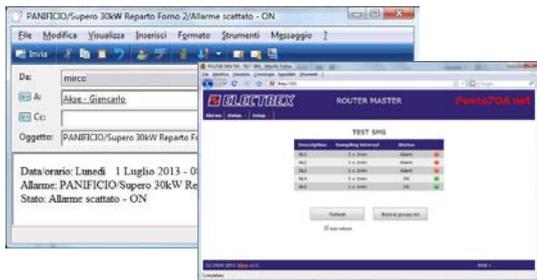


Examples of standard web pages – PFSU940-05

Enabling the 'Net upgrade WEB' functionality it is possible to view the standard web pages displaying real-time measurements, the average values and the energy counters both of the internal instrument and of every instrument connected in the RS485 subnetwork to the Femto 70A Net. In the example on the side are shown the web page with the instantaneous measurements and below the one with the average values of power and the energy counters of a Exa Net D6 which measures the general supply of a R&D lab with offices.

Examples of custom web pages – PFSU940-10

Enabling the 'Net upgrade WEB' and the 'Net upgrade WEB open' functionalities it is possible to activate a memory part in the memory of the Exa Net where can be uploaded custom web pages. Alongside are reported an example of managing energy / environment parameters of an office (could be shops, bank branches, villas or other) and an example of efficiency gains between production and energy consumption of a building which uses the surplus of energy production for heating the boiler's water through the insertion of different resistances (a similar logic has been adopted for industrial, commercial and public entities). Both pages include real-time measurements of various devices represented graphically in a static and / or dynamic way. The pages residing on the web server of the Exa Net are easily accessible from any the browser of a PC, Smartphone, etc., typing just the IP address and password..



E-mail alarms examples – PFSU940-15

Enabling the 'Net upgrade email alarm' you can configure the Exa Net to send emails and / or commands (On / Off, change ModBus registers, etc.) in the case where one or more instruments in the sub-network have exceeded the thresholds set. The example shows the alarm e-mail of a department in a bakery and a graphical display in the specific web page of Exa Net.

Calendar event example – PFSU940-20

Enabling the 'Net upgrade Calendar' functionality in the Exa Net it is possible to manage Energy Automation functions such as on / off switches, alarms / alerts and automatisms conditioned to events and / or an annual calendar configurable in minutes / hours / days / months which may be conditioned to the occurrence of various events detected by Electrex instruments in the subnetwork. The astronomical clock is synchronized via NTP (references from the Internet or from a PC on the internal network) and the configuration of the time-zone enables you to identify the sunrise, the sunset and the Christian Easter Monday. You can manage up to 32 Events / Calendars different that you can match a Modbus command for ON-OFF.



Web charts examples – PFSU940-30

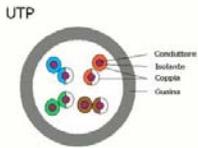
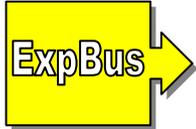


Enabling the 'Net upgrade Charts' functionality in the Exa Net log it is possible to display on a web page, daily charts of electricity, temperature, humidity, luminosity, etc. obtained from the files stored in the same Exa Net log with the possibility to export to CSV files. In the examples, the first chart shows the load profile for each 15 min. of active and reactive energy used for the lighting of a shopping mall, while the in the other chart it is shown the weekly profile.

Expansions via ExpBus

The **Exa Net D6** is an evolutionary instrument capable to be adapted to the needs of the customer, even after it has been installed.

The system architecture is designed to allow the implementation on the field of hardware expansions thanks to the ExpBus, providing therefore to the customers the ability to modulate the investment and / or to respond to new needs.



UTP cable for the ExpBus (max 10m)	
VDC	Blue
Exp L	White & Blue
Exp H	Brown
GND	White & Brown

ExpBus

The **ExpBus**, configurable via the Ethernet port from Web pages:

- allows a multicast communication to 250kb/sec with collision management
- has a maximum length of 10 meters
- manages up to 8 nodes (modules) but technically it can manage up to 126

The connecting cable is a UTP where 4 wires are used:
2 for the power supply at 9 Vdc
2 for the bidirectional communication

The modules power the ExpBus

The cable must be connected in the in-out modality (multidrop) as for the RS485 Bus.

The **Exa net D6** manages up to 8 ExpBus Modules.



ExpBus Module suitable for the Exa net D6 family

ExpBus Module D2

The *ExpBus Module D2* must be used with an external power supply of 24Vdc (e.g. Switching Power Supply D1 24VDC 400mA code PFTP100-Q2) and can contain up to 2 modules similar to the one shown here at the (of which, however, only one of the two types can be self powered, therefore only one for 1DI 2DO Self-Powered or 2AO4-20mA or 2DI 1RO Self Powered). Max. weight 45 gr.



When the ExpBus Module D2 is connected, the Exa Net D6 recognizes it and allows you to configure it via Web page.

Types of internal modules for ExpBus Module D2 and D4

- **1DI 2DO**: 1 digital input and 2 digital outputs;
- **1DI 2DO Self-Powered**: 1 self powered digital input and 2 digital outputs;
- **2AO 4-20mA**: 2 analog self-powered 4-20mA outputs for loads up to 250 ohm, power supply needed for higher loads;
- **2DI 1RO Self-Powered**: 2 self-powered digital inputs and 1 relay output rated at 30V 2A (resistive load);
- **2 RO**: 2 relay output rated at 30V 2A (resistive load);
- **4DI**: 4 digital inputs;
- **4DO**: 4 digital outputs;
- **2DI 2DO**: 2 digital inputs and 2 digital outputs;
- **4AI**: 4 analog inputs -10÷10V (compatible with 0÷10V, 0÷5V, -5÷5V, 4÷20mA);
- **I2C**: for connecting environmental sensors Deca Sensor Bus Unit Box (T, TH, TL, THL, THLB, L, B, up to 4 T)
- **E-Wi**: for communicating in the wireless E-Wi network

ExpBus Module D4

The ExpBus Module D4 have a built-in 230Vac power supply (24Vdc power supply version on request) and can contain up to 2 modules, also self-powered Max. weight 100 gr.



When the ExpBus Module D4 is connected, the Exa Net D6 recognizes it and allows you to configure it via Web page.

UTP cable for the I2C Bus (max 20m)	
VCC	Orange
SCL	White Orange
SDA	Green
GND	White Green

The Energy Brain software installed on a PC (separate option)

Energy Brain software developed for the establishment of networks of instruments, including very complex ones, both locally or remotely.



It is suitable for applications with all the Electrex instruments equipped with a communication port, and provides all the necessary functions for monitoring and accurate management of energy efficiency (consumption / production of electricity, gas, water, etc.), environmental parameters (temperature, humidity, luminosity, CO2, etc.) and process parameters.

Main functions

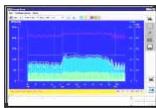
Configuration

- The available options allow for maximum flexibility in adapting the software to the network instruments (even to different types of networks connected simultaneously) and the operator needs.
 - Remote set-up of the devices (CT, alarms, etc.)
 - Network configuration (per each device, per each client, per groups, per locations) with individual setting of the local connection (direct RS485, E-Wi, Ethernet) or remote (Internet, Wi-Fi) and of the communication parameters (speed, etc.).
 - Configuration of scheduled downloading specific for each location and customer, on a daily, weekly or monthly basis through a programmable agenda.



Load chart and curves of consumption/production

- Charts of the daily, weekly, monthly, yearly power curves.
- Charts of the daily, weekly, monthly, yearly consumption curves.
- Charts of powers, power peaks and energy per each tariff.
- Up to 4 simultaneous charts.
- Zoom and selection of measures functions.
- Numerical and graphical data print.



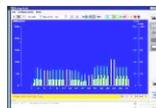
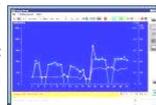
Parameters displaying

- Displays on-line all the measures provided by each of the instruments on the field



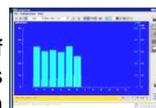
Data archive

- Automatic or manual download of the data of power, energy and other variables from the devices connected and automatic archiving in the internal database (Access®, PostgreSQL® or MySQL®).
- Export data to other DB via ODBC module or .txt or .xls format files.



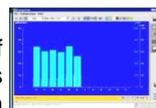
Tariffs

- Management of the data per each tariff
- Configuration Editor for tariffs and calendars



Virtual and Multiple Channels

- Creating virtual channels, so of "groups" of instruments (e.g. "summation" of various departments) and display those, on graphical form, in the same way of a physical channel
- Creation of multiple channels in order to view curves of more instruments in the same chart for a quick comparison.
- Inclusion of variables and mathematical formulas, even highly complex ones, particularly useful, for example, to perform simulations.

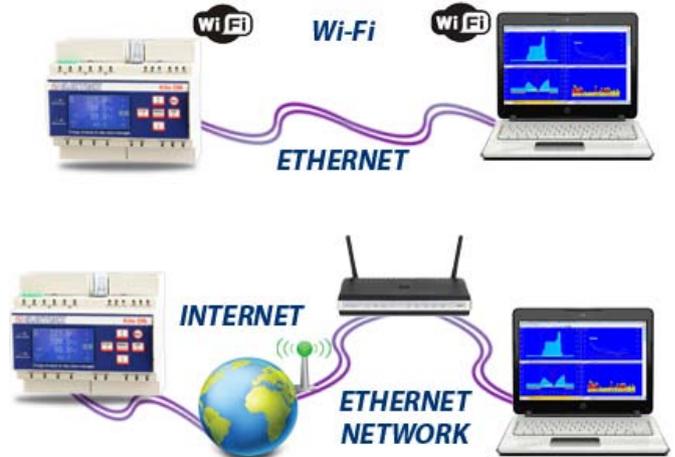


Other types of Energies / Measurements

- Creating charts of data obtained from Electrex Deca Sensors and / or third party transducers with pulse output (e.g. luminosity, temperature, gas, calories, etc.).

Connections between PC and Exa Net

direct Ethernet Rj45 port, Wi-Fi, Ethernet network, Internet



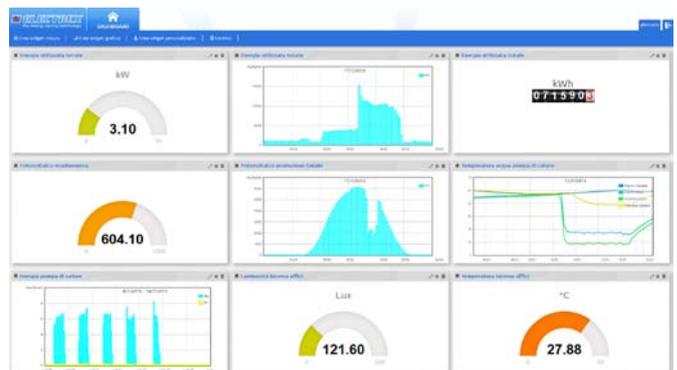
Energy Brain software is expandable and it is available in different versions according to the functions and the number of channels required. For more details about the software: www.electrex.it/en

Energy Brain Cloud

Energy Brain Cloud is the software that allows you to display and manage via a web browser, on a variety of devices such as PCs, tablets, Smartphones, data, measures and real-time and historical charts acquired by Electrex instruments. Taking advantage of the technology of cloud computing, users can manage the data collected through a standard Internet browser without installing any software on their computer or mobile device.

Energy Brain Cloud can be used in three modalities:

1. Energy Brain Cloud is installed and managed directly by the end user of the Electrex monitoring networks
2. A third party (Energy Consultants, Energy Saving Company, associations, etc.). Installs and manages Energy Brain Cloud and makes available to its customers/members the access to their data as a service
3. Electrex provides to end users of the Electrex monitoring networks access to their data through Energy Brain Cloud as a service



How to order and versions of Exa Net and Exa F Net

Type	Code
Exa Net D6 or Exa Net Wi-Fi D6 versions:	
Exa Net D6 Web 85÷265V	PFAK6Q5-091
Exa Net Wi-Fi D6 Web 85÷265V	PFAK6QW-091
<i>For the coding of the different possible versions of the eXA Net (can be equipped with 1 module * and / or Web functionalities ** and / or Log 8 ***) refer to the tables following.</i>	
<i>The Exa Net can implement additional features activating the following Net upgrade (PUK):</i>	
Net Upgrade Log 8 (PUK).....	PFSU940-01
Net Upgrade Web (PUK)	PFSU940-05
Net Upgrade Web Open (PUK).....	PFSU940-10
Net Upgrade Mail Alarm (PUK).....	PFSU940-15
Net Upgrade Calendar (PUK)	PFSU940-20
Net Upgrade Bundle Mail Alarm, Calendar (PUK).....	PFSU940-21
Net Upgrade Charts (PUK)	PFSU940-30
Net Upgr. Bundle Web, Log 8, Mail, Calendar, Charts (PUK).....	PFSU940-31
<i>ExpBus Module D2 versions (2 DIN Rail modules):</i>	
ExpBus Module D2 24VDC 4DI 4DO	PFAB20E-N5P
ExpBus Module D2 24VDC 2AO4-20mA 2DI 2DO	PFAB20E-65Q
<i>Possible hardware combinations with 1 or 2 modules (of which, however, only one of the two types can be self powered, therefore only one for 1DI 2DO Self-Powered or 2AO4-20mA or 2DI 1RO Self Powered). For the coding of the different possible versions refer to the tables* following.</i>	
<i>Needs external 24Vdc power supply:</i>	
Switching Power Supply D1 24VDC 400mA.....	PFTP100-Q2
<i>ExpBus Module D4 versions (4 DIN Rail modules):</i>	
ExpBus Module D4 230V 4DI 4DO	PFAB40E-N2P
ExpBus Module D4 230V 2AO4-20mA 2DI 2DO	PFAB40E-62Q
<i>Possible hardware combinations with 1 or 2 modules also self-powered versions. For the coding of the different possible versions refer to the tables* following.</i>	
<i>Internal 230Vac power supply, other power supply versions on request.</i>	
<i>All the hardware and upgrade (PUK) combinations mentioned above are available also for the Exa F Net (version suitable for the Electrex flexible CT) which's initial part of the code will become PFAF</i>	
<i>Electrex flexible CT:</i>	
FCTS 040-500 Split flexible CT	PFCF005
FCTS 100-1000 Split flexible CT	PFCF002
FCTS 200-2000 Split flexible CT	PFCF003
FCTS 280-4000 Split flexible CT	PFCF004

Table for the coding of Exa Net and Exa F Net

Type	Code
<ul style="list-style-type: none"> * Table for the Exa Net and ExpBus Module versions (in order to define the type of internal module) For the construction of the product code insert the number / letter of the internal module needed as the 9th character for the Exa Net and Exa F Net (while for the ExpBus Module also as the 11th character for the eventual second module): 	
Example for Exa Net Web 1DI 2DO :	PFAK6Q5-191
Example for ExpBus Module D2 2DI 2DO 2AO4-20mA:	PFAB20E-65Q
Versions differing on the internal module/Character per code:	
No module	0
Module 1DI 2DO	1
Module 2DI 1 RO Self Powered	2
Module 2RO	5
Module 2AO4-20mA	6
Module 1DI 2DO Self Powered.....	E
Module E-Wi	L
Module 4DI	N
Module 4DO	P
Module 2DI 2DO	Q
Module 4AI	R
Module I2C	T
<ul style="list-style-type: none"> ** Table for versions of Exa Net (in order to define the type of the Web functionality) For the construction of the product code insert the number / letter of Web functionality needed as the 11th character: E.g. for the Exa Net Web 1DI 2DO : PFAK6Q5-191 	
Versions differing on Web functionality /Character per code:	
No Web functionality.....	0
Functionality Web	1
Functionality Web open	2
Functionality Mail alarm	3
Functionality Calendar	4
Functionality Mail alarm Calendar.....	5
Functionality Charts	6
Functionality Web Mail alarm.....	7
Functionality Web Calendar.....	8
Functionality Web Mail alarm Calendar Charts	A
Functionality Web open Mail alarm Calendar	B
Functionality Web open Charts.....	C
Functionality Web open Mail alarm Calendar Charts.....	D
<ul style="list-style-type: none"> *** Table for versions of Femto 70A Net (in order to define how many Log 8). For the construction of the product code insert the number / letter of the amount of Log 8 needed as the 8th character (instead of the dash): E.g. for the Exa net Web Log 8 1DI 2DO: PFAK6Q51191 	
Versions differing on Log 8 number:..... Character per code:	
From Log 8 to Log 64 (multiples of 8)	from 1 - to 8