ELECTREX
the energy saving technology

Engineered and manufactured in Italy
Made in Italy
Pensato, progettato e prodotto in Italia

LOW ENERGY CONSUMPTION

Deca Sensor E-Wi and RS485

Multifunction Sensors

The Deca Sensor E-Wi and RS485 multifunction sensors, in their elegant and functional container, are the ideal solution for measuring and monitoring environmental and process parameters. Suitable for indoor and outdoor usage and for all the sectors, residential, tertiary and industrial. Depending on the model, it is possible to measure one or more parameters like temperature, temperature on contact (e.g. PV panels), relative humidity, luminosity, atmospheric pressure and count the impulses from electrical energy, gas, water, etc. meters.
The Deca Sensor can be used in an Electrex energy monitoring network, and combined with the Electrex instruments of the Yocto family, for various applications of Energy Automation, like: remote control, alarm management and building automation.
The **Deca Sensor E-Wi** ***transcieves all the data, without limits,*** *through radio waves* (Wireless) using the **E-Wi** protocol based on the IEEE802.15 .4 standard.

Indoor and outdoor models

The multifunction sensors **Deca Sensor E-Wi and RS485** are suitable for indoor and outdoor (if appropriately protected).

'4DI TE Bus' models

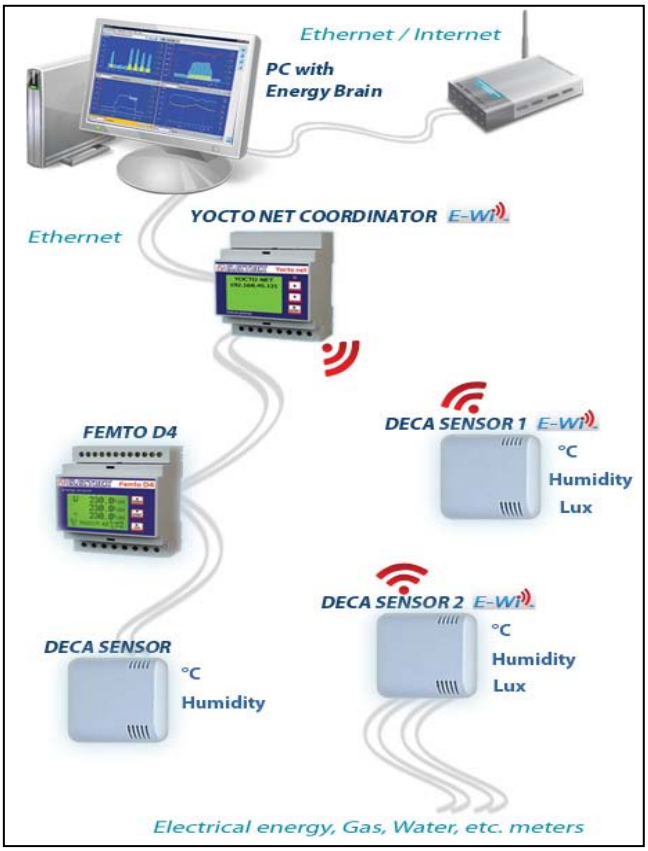
The **Deca Sensor E-Wi 4DI TE BUS** multifunctional sensors versions are equipped with:
- 4 Digital Inputs (4DI) suitable for counting impulses coming from electrical energy, gas and water meters / counters
- 1 Input for an external temperature probe (TE) measuring for example the temperature on contact of a PV panel
- 1 BUS where can be connected up to 4 sensors. In the standard configuration: temperature, humidity, luminosity, atmospheric pressure, CO2 carbon dioxide (in this case can be connected only 1 sensor).

Other configurations on request (e.g. 4 sensors all for temperature).

Adding the option module RS485 5V and a power supplier of 5Vdc the **Deca Sensors E-Wi 4DI TE BUS** became **Deca Sensor RS485 4DI TE BUS**.

Examples of external temperature on contact probes, Bus connected probes, and RS485 option.

Monitoring network including Deca Sensors



In the example above the Yocto net coordinator E-Wi is connected to the RS485 wired network branch including the Femto for the electrical measures and a Deca Sensor measuring temperature and humidity. While from the wireless Deca Sensor 1 E-Wi, it retrieves the data regarding temperature, humidity and luminosity of another environment. The Deca Sensor 2 E-Wi instead provides the same external data and the consumption of electrical energy, gas and water.

Electrical energy and Gas meter's sensor kit

Measures Deca Sensor E-Wi and RS485 *

Parameters	*Type*	*Range*
Temperature	**T ist**	**-20 … +80°C**
	T average	
	T min	
	T max	
Relative Humidity	**RH ist**	**0 … 100%**
	RH average	
	RH min	
	RH max	
Luminosity	**Lx ist**	**0 … 4.000 lux**
	Lx media	
	Lx min	
	Lx max	
Optional temperature	**T ist**	**-20 … +80°C**
	T average	
	T min	
	T max	
Atmospheric pressure		**800 … 1.100 mbar**
Counters (for 4 Digital Inputs)	**C**	**100 Hz**
Temperature, Humidity, luminosity and Pressure (as extensions on the 4 Bus inputs)	**ist**	
	average	
	min	
	max	

* depending on the version.

Deca Sensor Alarms

The **Deca Sensor E-Wi and RS485** include a Modbus register regarding the state of the 4 programmable alarms. Each alarm is independent and bindable to one of the available parameters (e.g. instantaneous or average temp., instantaneous or average relative humidity, luminosity, external optional temp., etc.). The alarms can refer to the same parameter in order to have more thresholds. Each alarm can be set on the max or min value. It is also possible to set the hysteresis (in % on the threshold) and the delay of activation on each alarm (from 1 sec. to 8 hours).

The battery alarm instead is automatic and it is activated when the remaining power is less than 30%.

Deca Sensor E-Wi and RS485 calibration

In the **Deca Sensor E-Wi and RS485**, it is also possible to define the offset, that is a value which can be added or subtracted from the measurement made, and the gain, that is a multiplicative constant. This will permit to apply compensations in order to, for example, correct the positioning of the sensor if installed in a different position from the original one.

Deca Sensor E-Wi and RS485 measurement setup

For each sensor it is possible to define if the measure should be disabled, if it should be instantaneous, an average or the median.

Deca Sensor E-Wi advanced settings

The **Deca Sensor E-Wi Battery**, in order to make the battery last longer, uses a communication method which alternates periods of "sleep" and periods "wake up" lasting the needed time to make the measures and transmit the data. The time between the two "wake up" periods is called '*rendez-vous*' interval.

The 'rendez-vous' interval can be set between 30 seconds and 24 hours, e.g. 15 minutes and it is also possible to configure the samples number (how many times the Deca Sensor should wake up and measure without transmitting, between two rendez-vous). It is also possible to choose the communication channel among 16 available channels.

Technical specification

- E-Wi or RS485 versions. If the E-Wi version includes also the '4DI TE BUS' it is possible, adding the option module RS485 5V and the 5Vdc power supply, to transform it in the RS485 version.
- 4DI (4 digital inputs): for pulse counting.
- Max. length for the External TE cable is 5 mt.
- Bus for up to 4 predefined sensors: temperature, humidity, luminosity, atmospheric pressure. Different sensor combinations on request (e.g. 4 temperature sensors). Can be wired in a in-out mode (as the one used for the RS485) or in a radial mode. Max. length for the Bus is 20 mt.
- E-Wi protocol based on the standard IEEE 802.15.4. Speed 250kbps and frequency 2.4GHz.
- Transceiver 'HI' transmitting up to 13,7dBm (further, up to 20 dBm only where permitted) [-102dBm in reception]. Range: Up to 800m in an open space.
- Auto-reset in case of temporary barrier that will prevent the communication.
- Alarms on 4 parameters and automatic alarm when battery is below 30%.
- Configuration and data retrieve through Energy Brain software. Needs an Modbus RS485 address.
- High accuracy and stability over time
- Accuracy: ±0,5 °C between +10 …+50°C
±1,5 °C on extremes
±2% relative humidity
± 0,1 lux
- Power supply: 5Vdc
battery 3,6V *(for E-Wi Battery)*
- Terminals: Spring clamp max. 1,5 mm^2
- Easy to install
- Wall mounting
- Black or White polycarbonate case
- Size (l x a x p): 80 x 80 x 25 mm

How to order

Type	Code
DECA SENSOR E-Wi HI T BATTERY	*PFATUTH-0B*
DECA SENSOR E-Wi HI T H BATTERY	*PFATUHH-0B*
DECA SENSOR E-Wi HI T H L BATTERY	*PFATULH-0B*
DECA SENSOR E-Wi HI T 4DI TE BUS BATTERY 5V..	*PFATUTH-NB*
DECA SENS. E-Wi HI T H 4DI TE BUS BATTERY 5V...	*PFATUHH-NB*
DECA SENS. E-Wi HI T H L 4DI TE BUS BATTERY 5V.	*PFATULH-NB*

NOTE: other customized versions on request.
NOTE: all the Deca Sensor E-Wi may be equipped with a RS485 port adding the option Cod. PFATV01-00 Deca Sensor Option Module RS485 5Vdc.

DECA SENSOR RS485 T 5V	*PFATUT1-0C*
DECA SENSOR RS485 T H 5V	*PFATUH1-0C*
DECA SENSOR RS485 T H L 5V	*PFATUL1-0C*
DECA SENSOR RS485 T 4DI TE BUS 5V..	*PFATUT1-NC*
DECA SENSOR RS485 T H 4DI TE BUS 5V..	*PFATUH1-NC*
DECA SENSOR RS485 T H L 4DI TE BUS 5V..	*PFATUL1-NC*

NOTE: other customized versions on request.

DECA SENSOR EXTERNAL TE1	*PFAT0TS-01*
DECA SENSOR EXTERNAL TE2	*PFAT0TS-02*
DECA SENSOR EXTERNAL TE3	*PFAT0TS-03*

NOTE: to each multifunction Deca Sensor 4DI TE BUS can be connected 1 Deca Sensor External TE.
NOTE: other customized versions on request.

DECA SENSOR BUS UNIT BOX T	*PFATVTQ-00*
DECA SENSOR BUS UNIT BOX T H	*PFATVHQ-00*
DECA SENSOR BUS UNIT BOX T L	*PFATVOQ-00*
DECA SENSOR BUS UNIT BOX T H L	*PFATVLQ-00*
DECA SENSOR BUS UNIT BOX T H L B	*PFATVRQ-00*
DECA SENSOR BUS UNIT BOX L	*PFATVMQ-00*
DECA SENSOR BUS UNIT BOX B	*PFATVNQ-00*
DECA SENSOR BUS UNIT BOX CO2	*PFATVCQ-00*
DECA SENSOR BUS UNIT T 1	*PFAT0TQ-00*
DECA SENSOR BUS UNIT T 2	*PFAT0TQ-01*
DECA SENSOR BUS UNIT L	*PFAT0MQ-00*

NOTE: in the standard configuration it is possible to manage on the BUS of the Deca Sensors up to 4 Deca Sensor Bus Unit and up to 4 different parameters (temperature, humidity, luminosity, pressure) with the exception of the sensor CO2 that cannot be connected together with other sensors. Other customized versions on request (e.g. 4 Deca Sensor Bus Unit measuring 4 temperatures).

DECA SENSOR LED PULSE COUNTER	*PFAT0IS-01*
DECA SENSOR LED PULSE C. MOUNTING BRACKET	*PFAT000-01*
DECA SENSOR OPTION MODULE RS485 5V	*PFATV01-00*
DECA SENSOR LITHIUM BATTERY	*PFAT000-0B*
SWITCHING POWER SUPPLY 5VDC 600mA	*PFTP000-R2*
DECA SENSOR EXTERNAL ENCLOSURE	*PFAT0T0-01*

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