



Yocto I-O

Multifunctional Input-Output device

The **Yocto I-O** is a multifunctional Input-Output device with built-in memory and clock for connection to a RS485 networks. It is designed to memorize electrical and not electrical parameters detected by counters and sensors, to manage the related alarms and to be remotely controlled via serial line and Modbus commands.

Digital inputs

Yocto I-O is equipped with optically insulated digital inputs suitable for connection to external contact (0÷24V) or PNP. The digital inputs can operate for external pulse count of, for example, energy meters, water meters, gas meters (insulation to meet the ATEX requirements), quantity count, etc. The pulses are logged over an integration time of 2-60 min. (programmable) for a period of 60 days.

The digital inputs can be also configured as ON/OFF state inputs (example for reading the ON/OFF state of machines and switches).

Analogue inputs

Yocto I-O is complete with 2 analogue inputs 0÷10V (0÷5V, -5÷5V, -10÷10V, 4-20mA compatible). They may be used for the acquisition and logging of signals from external sensors such as temperature, humidity, distance, etc.. As well as for remote acquisition of these values over an RS485 Modbus-RTU network. The logging frequency must be the same as digital inputs (integration time of 2-60 min. programmable). The logging period is 60 days. The value logged is the average of the instantaneous values sampled.

Relay and Digital outputs

Yocto I-O, depending on type, could be equipped with 2 relay outputs (change-over contacts rated max 5A - 250Vac), and 2 digital outputs (open collector type, optically insulated). All outputs are suitable as alarm "contact" (see alarms) as well as output devices for remote control via serial line and Modbus commands.

Technical specification

Hardware Characteristics

16 bit Microprocessor, 128 Kbytes Flash ROM, 8 Kbytes RAM, clock with battery buffer.

Photomos digital outputs available on request.

1 RS485 serial communication port (screw connector, plug-in type).

Power supply: 8÷32Vac/12÷45Vdc.

Consumption: Standby around 1,5W.

Environmental conditions

Working temperature range: -20/+70 °C

Relative Humidity RH < 95% non-condensing

Alarms

Alarms set up by configuration software includes the setting of the input threshold value (min or max), the delay time (sec/min/hh), the hysteresis cycle (in % of threshold value) and the polarity of the output contacts (NO, NC).

It is also possible to match the state of one or more alarms with a change in one output (programmable). The sampling frequency of the inputs state is each second.

Serial communication

Yocto I-O is equipped with an opto-insulated and over-voltage protected RS485 serial communication port. The protocol is a *full compliant* Modbus-RTU suitable for communication with PLCs and with SCADA programs. A transmission speed from 4.800 bps to 38.400 bps with no waiting time between queries, ensure an unrivalled communication speed and dialogue efficiency.

Configuration and firmware update

The **Yocto I-O** is set up by Energy Brain software (with Modbus slave protocol) like all the other Electrex devices. The firmware is updatable locally via RS232 port.

Type of Yocto I-O

Yocto I-O is available in 3 Types:

- 2 analogue inputs, 2 digital inputs, 2 digital outputs, 2 relay outputs;
- 2 analogue inputs, 4 digital inputs, 2 relay outputs;
- 2 analogue inputs, 6 digital inputs.

Mechanical characteristics

Enclosure Self-extinguishing plastic material class V0

Protection degree Front panel IP40, Terminals side IP20

Size: 4 modules 70 x 90 x 58 mm

Mount DIN rail

Terminals screw connector

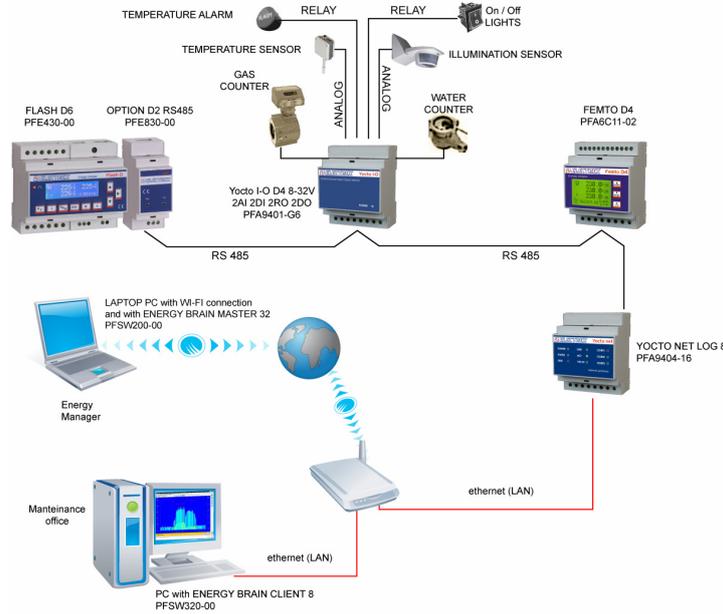
Max cable size: 2,5 mm² (stranded cable) / 4 mm² (solid cable)

How to Order

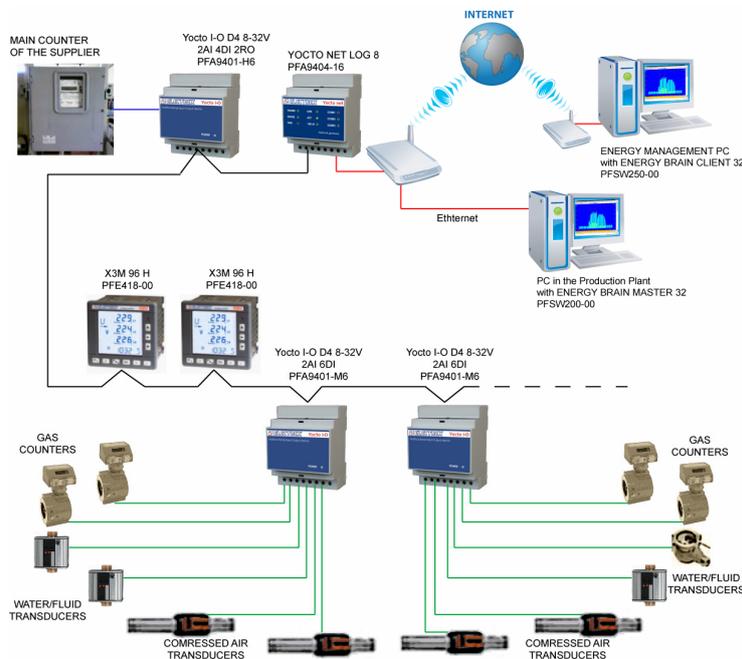
Type	Code
Yocto I-O 2AI 2DI 2DO 2RO	PFA9401-G6
Yocto I-O 2AI 4DI 2RO	PFA9401-H6
Yocto I-O 2AI 6DI	PFA9401-M6
Switching Power Supply D1 24VDC 400mA...PCAFL00-00	

Network examples with various models of Yocto I-O

The first network example is a simplification of the one installed in a chain of supermarkets where the optimization of consumption was taken into serious consideration. In this case, the Yocto I-O (PFA9401-G6) is used to monitor gas, water, temperature and luminosity with the possibility for the last two measures to trigger the output if you exceed the preset thresholds generating an alarm for temperature and turning off some lights for illumination.



The second example refers to a network installed in a factory where there are important cost centers for gas, other fluids and compressed air detected by 2 Yocto I-O 2AI 6DI (PFA9401-H6), while general electricity consumption is obtained counting the pulses of Active and Reactive Energy from the main counter by the Yocto I-O 2AI 4DI 2RO (PFA9401-H6).



Subject to modification without prior notice

Data-sheet Yocto I-O 2010 02 15-ENG

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