ELECTREX
the energy saving technology

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

Yocto gate and gate master

Multifunctional GSM gateway

The **Yocto gate** is a multifunctional GSM gateway with built-in memory, clock and inputs/outputs, designed to support several simultaneous applications such as:

- Logging of energy consumption data and detection of alarms in an RS485 network of Electrex meters
- Home and Building Automation
- Remote control
- Alarm management

Main function

The **Yocto gate** operates as an independent supervisor of an RS485 network of Electrex instruments; it autonomously scans and detects the alarm states - example: MD threshold, anomalies on given parameters, etc. - and/or it collects the load profile data from the field meters and logs them into the built in memory. In case of alarms may generate SMS messages (or e-mail messages and fax messages where supported by the provider) that are automatically circulated to a programmable list of users. Each SMS contains the information about the meter generating the alarm, parameter, value, etc. An alarm event may be as well linked to anyone of the local output contacts for external alerting purposes, example bell or flashing light control, etc. The user, via SMS message, can deactivate the notification of alarm, can modify the threshold of alarm and can check the input output status.
The **Yocto gate master** is a special version of GSM gateway to be used with Yocto net master in complex networks. It allows to send SMS alarms detected from Electrex devices connected to the Ethernet network by means of two or more Yocto Net and Yocto Net Log.

Memory and clock

Yocto gate is complete with memory and clock for the storage of time-stamped data such as demand profiles and energy consumption data. Yocto gate besides storing 4 inputs (see inputs), stores up to 4 measures (active and reactive energy of 2 instruments) with integration time selectable between 2-60 min for 60 days.

Digital inputs

Yocto gate is equipped with 2 optically insulated digital inputs suitable for connection to external contacts or PNP (PLC) signal. The digital inputs can operate for external pulse count of, 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 gate 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 via GSM. The logging frequency must be the same as digital inputs (integration time of 2-60 min. programmable for 60 days) and the memorized value is the average of the sampled values.

Relay and Digital outputs

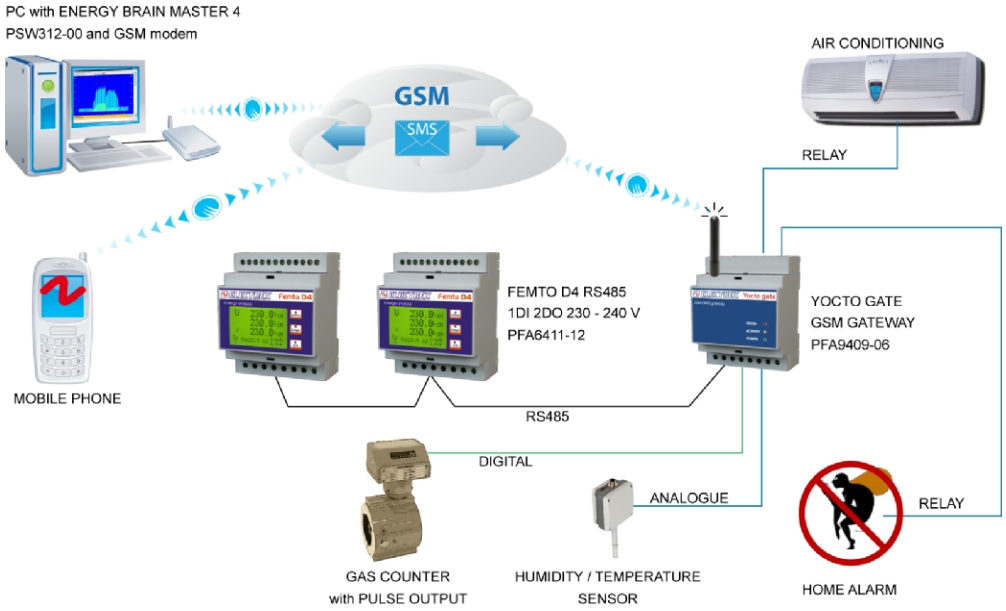
Yocto gate is equipped with 2 relay outputs (change-over contacts rated max 250Vac and 5A) and 2 digital outputs (open collector type, optically insulated). All outputs are suitable as alarm “contact” as well as output devices for remote control via Modbus commands, even by SMS messages.

Alarms

The alarms may be associated to all readings collected from the sub meters connected in RS485 network.
Alarms configuration includes the option of precise setting of a threshold value (min or max), a delay time (sec/min/hh), an hysteresis cycle (in % of threshold value) and the polarity of the output contacts (NO, NC). The alarm notification and acknowledgement as well as the alarm thresholds of the sub meters may be user programmed by means of SMS messages by the operator. It is possible to define up to 50 alarms to the readings collected from the Electrex sub meters (Modbus RTU) plus 4 alarms to the 4 inputs. To each of these 54 alarms it is possible to match one of the 32 messages defined by the administrator. The address book of Yocto gate allows to manage up to 15 telephone number shared between a multi level access composed of administrators (up to 4) and users (up to 15). The administrator can be also a user. The ‘administrator’ can configure the parameters of Yocto gate, the alarms and the outputs, while the ‘user’ (up to 4 each alarm) can only read the register value of the alarm and receive the SMS message of alarm. It is also possible to mach the state of one or more alarms with a change in one output (programmable).

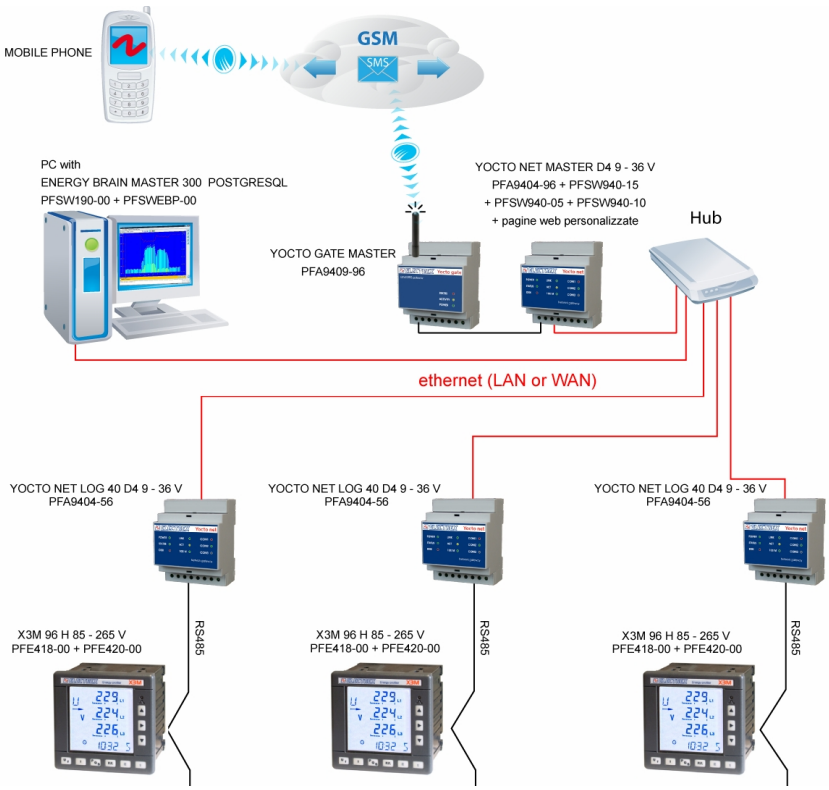
Serial communication

Yocto gate is equipped with an opto-insulated and over-voltage protected RS485 or RS232 serial communication port. The protocol is a *full compliant* Modbus-RTU suitable for communication with PLCs and with SCADA programs. A transmission speed from 4.800bps to 38.400bps with no waiting time between queries, ensure an unrivalled communication speed and dialogue efficiency.



Network example with Yocto gate

The network example above refers to a laboratory where the Yocto gate is the core of an home automation system. The Yocto gate PFA9409-06 stores the electrical energy consumption measured by Femto D4 1DI 2DO PFA6411-12, the gas consumption detected by one digital input, temperature and humidity detected through the analogue inputs. The solution adopted allows to activate an alarm management and show from remote the counter values of electrical energy and gas through a mobile phone and/or a PC with GSM modem. Setting the threshold for temperature and humidity it is possible to automatically activate the air conditioning system. It is possible connect to the 2 digital inputs other types of counter such as water counter and / or switch to verify if it is ON or OFF. Through mobile phone and / or PC it is possible send SMS command to manage the outputs of Yocto gate for example to activate the home alarm and / or deactivate the conditioning air system. Similar applications are available for tertiary and industrial sectors other then in the energy production system based on renewable sources.



Network example with Yocto gate master

The example above refers to a monitoring network in a factory where Yocto gate master PFA9409-96 is managed by Yocto net master to send SMS alarms to mainteners' mobile phone when an alarm situation is active.

Configuration, state control and firmware update

The configuration system is password protected against undesired modification. The set up of **Yocto gate** is allowed by means of the **Energy Brain** software (or by SMS messages) with Modbus slave protocol such as each other Electrex device. Once configured, Yocto gate can function as a gateway between the Energy Brain software and the RS485 network of Electrex meters allowing the total configuration of the network by remotely (even the control of input and output status via SMS). The update of the firmware can be done remotely via GSM modem or locally via RS232 port.

Technical specification

Functional characteristics

Modbus Master/Slave RTU Protocol on RS485.

Auto wake-up preventing the disabling of dormant SIM card.

SMS acknowledgement upon execution of commands or error detection.

User configurable SMS alarm messages (max 62 characters).

Hardware characteristics

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

The clock is battery powered for about 2 months when Yocto gate is not powered. The battery is completely rechargeable in 6 - 8 hours.

Built-in SIM card reader.

1 FME/F connector for external antenna connection.

2 opto-insulated digital inputs for connection to external contact or PNP (PLC) signal. External 24Vdc power supply required.

2 analogue 0÷10V inputs (0÷5V, -5÷5V, -10÷10V, 4-20mA compatible).

2 relay outputs (change-over contacts rated max 5A – 250Vac). Double insulation.

2 digital outputs (opto-insulated, open collector type). Double insulation. Photomos digital outputs available on request.

2 opto-insulated serial communication ports (*)
RS232 port (D-Sub 9 female connector)
RS485 port (screw connector, plug-in type
(*) only one at the time, user selectable..

3 Led indicators (status, activity, power)

Switching power supply: .....8÷32Vac/12÷45Vdc.

Consumption: ....1,25VA in standby, below 3VA in TALK state and with energised inputs outputs.

GSM / GPRS Modem characteristics

Type: .....Siemens MC55
Tri-Band GSM/GPRS 900/1800/1900 MHz
According to GSM phase 2/2+ standard
AT commands (GSM 07.07 e 07/05)
Output power ..... 2 W for GSM 900
.....1 W for GSM 1800
.....1 W for GSM 1900
Approvals: R&TTE, FCC, IC, GCF, PCCRB, GFC

Antenna (supplied separately)

For example: GSM/gprs antenna with magnetic base fixing complete with 2.5 m cable and FME/F connector.

Environmental conditions

Working temperature range: .....-20/+70 °C
Relative Humidity ..... RH< 95% non-condensing

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 mm^2 (stranded cable) / 4 mm^2 (solid cable)

How to order

Type	*Code*
Yocto gate D4	*PFA9409-06*
Yocto gate Master D4	*PFA9409-96*
Antenna Dual Band Stilo	*PFC3530*
Others on request	
Switching Power Supply D1 24VDC 400mA	*PCAFL00-00*

Your Distributor

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