iGrid T&D

THYTRONIC GROUP

iGWLite

Front mounting model (A)

Supports IEC 61850

MMS & GOOSE Protocols

Compact all-in-one protocol conversion capabilities with a small, smart and simple-to-use gateway

- **Secured, adaptable and modular** communication gateways specifically designed for electrical facilities
- **From meter data concentration to protocol conversion – full range of protocols** (DNP3.0**, IEC 61850 (MMS & GOOSE),** DLMS, Modbus, IEC 60870-5-101/102/103/104 etc.) to communicate with all devices and control centers involved in any kind of substation or generation plant
- **1 Ethernet & 1 RS485/RS422 port** and an **optional** RS232 port (copper or fiber) or 2G/3G/4G modem.

Providing the same protocol conversion and automation capabilities (incl. IEC 61850), only with fewer communication ports, the iGWlite is the compact version of the iGW. Therfore, it is particularly useful to set up, automize and retrofit generation plants, substations and other control networks requiring data concentration or conversion between several protocols, e.g. Modbus to Ethernet or IEC 61850 to DNP3.

The data collection from meters, protection relays, and other IEDs can be performed using any protocol, inlcuding IEC 60870-5, IEC 61850 (MMS/GOOSE), DNP3, DLMS, Modbus or Procome, whilst managing a microseconds timestamp resolution via NTP or PTP. Further, the iGWlite can also process and transfer the data to one or multiple control centers and SCADA master stations using upstream protocols such as IEC 104, IEC 101, TASE2.0/ ICCP (IEC 60870-6), IEC 61850-90-2, DNP3, and Modbus RTU/TCP.

A network architecture supported by an iGWlite is open, simple and scalable, allowing to integrate coming generations of devices (IEDs, sensors, routers etc.) and adapt to any kind of changes made to your power distribution network, saving you time, money and space on your DIN-Rail.

STANDARDS AND COMPLIANCE

The diverse backgrounds of our partners and clients from all over the world have helped us gather state-of-the-art know-how and firsthand experience in a great variety of energy applications. This joined knowledge is the foundation of our optimized iRTU/GW family, which has a proven track record of being particularly effective and resistant for a diverse range of applications and harsh environments belonging to the energy industry.

As a result, the iGWlite meets the requirements of extensive standards, e.g. IEC61850-3, IEC60870-2-1 & IEC60255-26.

COMMUNICATION PROTOCOLS

The iGWlite was designed to use a high number of protocols and communicate with several control centers at once.

The stack includes newer protocols such as IEC 61850 MMS or GOOSE (A-level certified by DNV-KEMA), but also older standard and proprietary protocols e.g. ModbusRTU/TCP, Profibus, SpaBus, Mlink or Procome. Other supported downstream protocols for meters and protection relays are IEC 60870-5-102/-103, IEC 62056-21 and DLMS, while upstream **protocols for control centers also include IEC 60870-5-101/-104 or DNP3.0 serial/TCP.**

IEC 61850 MMS

The iGWlite can be used as a simple link between serially connected physical devices and logical IEC 61850 devices, as it can map any signal from many kinds of data models and structures onto IEC 61850 logical nodes, whilst also providing IEEE1588 / PTP time synchronization.

Thanks to its full iGrid protocol stack, it can convert any standard or legacy protocol such as IEC 60870-5-103, SPAbus, Modbus, DLMS to IEC61850, allowing it to communicate with hundreds of vendors.

NETWORKING

The iGW is equipped with transparent TCP bridging and configurable IP routing to tunnel any serial protocol (such as Modbus) over a TCP/IP connection and facilitate the data transfer through complex IP networks.

Its VLAN and VPN support allow to improve the network's performance, simplifying its traffic management, design and deployment and also helping to secure communications through particularly hazardous networks.

IEC61131-3 PLC AUTOMATION

Thanks to its internal PLC based on *IEC 61131-3,* the iGWlite can provide powerful automation and control functionalities. For example, you can easily reuse programs on different projects, run multiple PLC instances simultaneously or use triggered variables for control commands and set points. It also allows to run hot program updates, stop PLC executions depending on the quality of selected PLC inputs and debug PLCs online, either cycle-by-cycle or step-by-step.

The iGwlite has a high execution speed – a 2000 ST line program takes less than 3ms.

CYBER SECURITY – IEC 62351

iGrid enforces several layers of security measures to protects its devices from all kinds of threats, guided by the propositions of the IEC 62531 standard.

The iGW is a hardened device featuring Role Based Access Control (RBAC) to avoid intrinsic risks such as security holes and unauthorized actions by authenticated users. In addition to encryptions via TSL/SSL, HTTPS, SSH and standard procedures for VPNs (e.g. OpenVPN), its communication can also be secured with network control methods such as firewalls, IP filters, ACL or TCP port blocks.

The iRTU – A Scalable Protocol Converter with Internal I/Os

iRTUs (B/M/S) carry 4 serial ports, up to 4 Ethernet ports with HSR/PRP redundancy and a configurable I/O board with relay outputs, AIs and DIs at several voltages. They also offer high precision (<1ms) timestamping via NTP/PTP.

The iGrid protocol stack allows them to act as bay controllers, collecting and processing data from old and new (61850) IEDs, whilst reporting directly to the control center (e.g. via IEC 60970-5-104) and also as substation gateways, mapping old serial IEDs to IEC 61850 logical nodes.

More specifications on the back

IGWLITE B SERIES

B#01 – (1) 10/100BaseTX (RJ45 connector) and (1) configurable serial port RS-232/RS-485/RS-422
B#11 – (1) 10/100BaseTX (RJ45) and (2) configurable serial ports RS-232/RS-485/RS-422

IGWLITE M SERIES

The M series combines the **B#01** ethernet and serial ports with one of the following modems: **M01** (GPRS), **M11** (3G + GPRS) and **M21** (4G/LTE + GPRS)

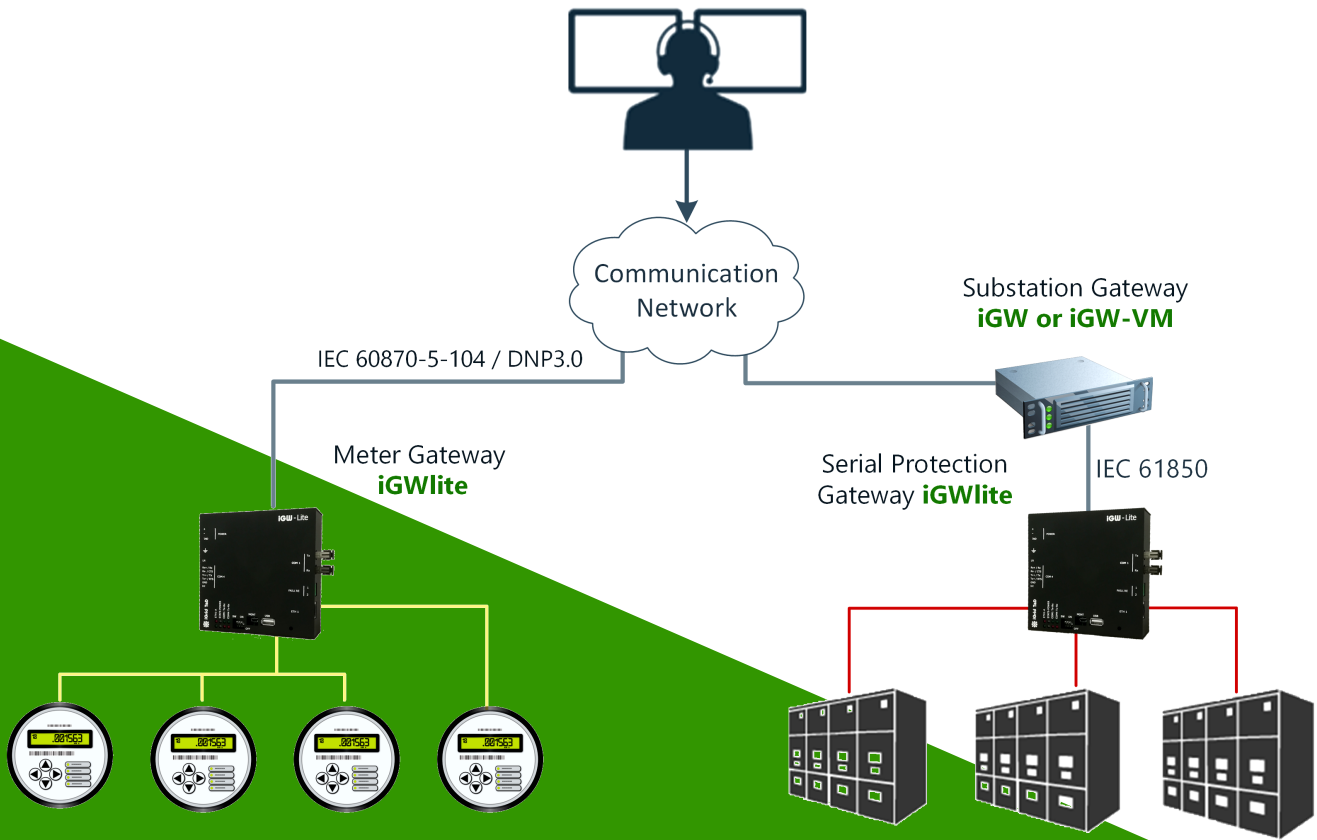
IGW SERIES – THE BIGGER BROTHER

The iGW B, M & S series have the same protocol stack and come with (4) configurable serial ports + (2) Ethernet ports to connect multiple IEDs or iRTUe. The iGW S Series provides up to (4) Ethernet ports (optional fiber optics)

IRTUE – REMOTE I/O EXPANSIONS

The iGWlite can be freely extended with I/Os by connecting several iRTUe.

They are IEC **61850 (GOOSE)** compliant and come in many configurations such as 48 DI, 16 relays, 16 AI, 24 DI + 8 relays, 24 DI + 8 AI or 8 relays + 8 AI.



SMART SOLUTIONS FOR SMART GRIDS

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PROTOCOL STACK

Master/Slave IEC 60870-5-101	Master/Slave IEC 60870-5-104
Master/Slave Modbus TCP/UDP and JBUS (master)	Master/Slave ModbusRTU
Master/Slave DNP3.0 (serial, UDP, TCP)	Master IEC 60870-5-103
Master IEC 60870-5-102	Master DLMS
Master Profibus DP	Master Spabus, Mlink, Procome
Master IEC 62056-21	SNMP Agent/Manager
IEC 61850 MMS Client/Server	**IEC 61850 GOOSE Publisher/Subscriber**

iGCOMMS SOFTWARE APPLICATION

Redundancy deployable on a hot-standby configuration, optional redundant power supply

Security IEC 62351-3 and IEC 62351-5 support, including TLS/SSL, SSH and VPN connections

IEC61131-3 automation logic and PLC programming, with LD, FBD, ST and SFC editor

LUA language can be used to create simple and complex logic and mathematical expressions

COMMUNICATION PORTS & CPU

Serial up to 2 software configurable ports with RS-232/RS-485/RS-422 or multimode fiber optic with ST connector

Ethernet (1) 10/100BaseTX ports with RJ45

Wireless full internal 4G(LTE), 3G and GPRS modem (optional)

Ethernet switch (S series) up to (4) 10/100BaseTX ports with RJ45 connection and (2) FX100 with ST, SC connectors or SFP interface, and supporting RSTP, HSR and PRP configurations

CPU ARM Cortex-A7 @ 528MHz, with 4GBytes Flash and 256MBytes RAM.

EMC STANDARDS

IEC 60950-1, IEC 60255-5:2000, IEC 60255-22:2000, EN 55022, IEC 61000-6-4, IEC 61000-6-5, IEC 61000-4-2, IEC 61000-4-3, IEC 61000-4-4, IEC 61000-4-5, IEC 61000-4-6, IEC 61000-4-8, IEC 61000-4-9, IEC 61000-4-10, IEC 61000-4-12, IEC 61000-4-16, IEC 61000-4-17, IEC 61000-4-18, IEC 61000-4-29

GENERAL CHARACTERISTICS

Power supply ***W*** : wide range, 32 - 250Vdc / 80 - 250Vac (2.5kVrms isolation) **24** : 19.5-60Vdc (2.5kVrms isolation)

Environmental Operating temperature: -25°C to +70°C
IEC 60068-2-1, IEC 60068-2-2, IEC 60068-2-3, IEC 60068-2-14, IEC 60068-2-30, IEC 60068-2-38

Vibration & shock test IEC 60068-2-6, IEC 60068-2-7

Physical IP30 enclosure with DIN Rail mounting

RTC & TIME SYNCHRONIZATION

Real-time Clock (RTC) with 1.5 ppm drift and microsecond resolution timestamp

Server NTP, IEC 60870-5-101, IEC 60870-5-104, DNP3.0, PTP

Client IEEE1588(PTP), SNTP, IEC 60870-5-101, IEC 60870-5-102, IEC 60870-5-103, IEC 60870-5-104 DNP3.0, DLMS, Spabus, Mlink, Pro-

CONFIGURATION & MAINTENANCE

Easy configuration with iConf tool

Internal web server, allowing real time monitoring of the system and all its internal parameters

Command console with full information on packet exchanges, with all available protocols

Local or remote maintenance via USB or Ethernet port

ORDERING INFORMATION

iGWlite-b#bbRvvms

MAIN BOARD & COMMUNICATIONS

B#01	(1) 10/100BaseTX RJ45 Ethernet + (1) serial RS232/RS485/RS422
B#11	2 Ethernet ports + 3 serial RS232/RS485/RS422 portsRSTP re
M#01	GPRS internal modem
M#11	3G internal modem
M#21	4G (LTE) internal modem

DEVICE ALARM RELAY

0	Not mounted

*relay only available upon request and MOQ

POWER SUPPLY

24	19.2-60 Vdc
WV	32-250 Vdc

INTERNAL SD MEMORY

0	No SD memory
S	16 GB internal memory

MOUNTING STYLE

B	Lateral mounting
A	Front mounting

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