SG-gateway with I/O

Remote control for Smart Grid applications

The SG-gateway supports the communication protocols used in the energy sector, including IEC60870-5-104, DNP3 and IEC61850 and enables connectivity for numerous different energy devices. On top of that the simultaneously usable OPC-UA and MQTT functionality empower direct integration into the companies' cloud-based applications.

The I/O interface enables integration of any 24 V controlled device into energy communication systems.

In addition to the I/O interface and the IEC and DNP3 protocols, other electric equipment in the field can also be connected via Modbus TCP and RTU. Optionally, the SG-gateway is also available with a 3G (UMTS) or even a 4G/LTE modem as an additional communication channel for all TCP-based protocols.

Note: For new projects, we recommend the new SG-gateway with multi-I/O, which is even more flexible and powerful due to an extended I/O interface. The SG-gateway with I/O will be set to the Product Life Cycle Phase "Limited" on March 1, 2021 and is therefore only available for a limited time. Further information about the HMS Product Life Cycle can be found $\rightarrow$ here.

FEATURES AND BENEFITS

- Easy way to transport I/O data from electrical equipment in the field to SCADA systems as well as controlling digital outputs from central control rooms
- Connects switchgear to SCADA systems
- Supports several communication protocols (IEC61850, IEC60870-5-104, DNP3, Modbus, OPC-UA, MQTT)
- Connectivity via Ethernet or via optional wireless modem: 3G (UMTS) or 4G (LTE)
- Easy web-based configuration using any standard browser
- Onboard WebPLC for easy data conversion and control functions
- Robust metal housing for stand-alone operation with DIN rail mounting
- Global technical support and consulting services
- Range of cybersecurity features including password protection, user management, and OpenVPN
- Continuous software maintenance by HMS, devices can be upgraded in the field
- Easy export and import of configuration to ease volume installations

I/O INTERFACE

- Digital inputs: 4 x sink, TRUE: 15 V DC min, FALSE: 5 V DC max, no galvanic isolation, 24 V DC, 5 mA (typ.)
- Digital outputs: 4 x transistor (high-side), short circuit and overload resistant, no galvanic isolation, 24 V DC, 500 mA per output (typ.)
- Weidmüller BL 3.50/10 connector for I/Os
- Own power supply of the IO interface (+24 V DC, min. 2 A)

ADDITIONAL INTERFACES
ETHERNET INTERFACE

- 10/100 Mbit/s
- DHCP server

- SNTP
- NAT routing
- SNMP manager

SERIAL INTERFACE

- Selectable RS-232/485
- Serial baud rate 300 bps - 187,5 kbps

SECURITY FEATURES

- OpenVPN client
- TLS version 1.3 data encryption
- Integrated Firewall
- Password protection with password policy
- Support for user roles
- Root access authentication
- Usage of standard ports for easy integration into firewalled environments
- Encrypted and signed files for firmware-updates
- Password protection for configuration export & import

MODBUS/TCP

- Supports Modbus TCP Client/Server
- Connects up to 128 server devices and supports 4096 values

MODBUS RTU

- Supports Modbus RTU Master/Slave
- Connects up to 128 serial Modbus RTU slave devices and supports up to 4096 values

DNP3 (OPTIONAL)

- Outstation: 1 TCP link, up to 4 local/master links
- Up to 4096 data objects (each data object with value, quality and timestamp)

IEC61850 (OPTIONAL)

- Client/Server
- Goose Publisher/Subscriber
- Up to 4096 data objects (each data object with value, quality and timestamp)
- 32 server devices supported in Client configuration

IEC60870-5-104 (OPTIONAL)

- Client/Server functionality
- Up to 4096 data objects (each data object with value, quality and timestamp)
- 32 server devices supported in Client configuration
- Support for IEC60870-5-104 redundancy according to Norwegian User Convention

4G/LTE MODEM (OPTIONAL)

- Send and receive SMS
- In addition, all Ethernet-based protocols of the SG-gateway can be used via 4G/LTE: E.g. for remote access to the control room via IEC60870-5-104 or IEC61850
- Uplink up to 5 Mbps
- Downlink up to 10 Mbps
- Mini SIM (2FF)
- Variant for Europe:
  - 2G bands: B3/B8 (1800/900 MHz)
  - 3G bands: B1/B3/B8 (2100/1800/900 MHz)
  - 4G bands: B1/B3/B7/B8/B20/B28A (2100/1800/2600/900/800/700 MHz)
- Vairante for North America:
  - 3G bands: B2/B4/B5 (1900/1700/850 MHz)

- 4G bands: B12/B14/B4/B2/B5/B13/B66/B71 (700/700/1700/1900/850/700/1700/600 MHz)

3G/UMTS MODEM (OPTIONAL)

- Send and receive SMS
- In addition, all Ethernet-based protocols of the SG-gateway can be used via 3G/UMTS: E.g. for remote access to the control room via IEC60870-5-104 or IEC61850
- GSM/GPRS, four frequency bands: 850/900/1800/1900 MHz
- UMTS, seven frequency bands: 800/850/900/AWS 1700/1900/2100 MHz
- Mini SIM (2FF)

OPC-UA

- Micro Embedded Device Server Profile
- UA-TCP, UA-SC, UA-Binary protocol and encoding
- Up to 128 groups, 4096 values
- Up to 4 concurrent client sessions

MQTT

- Client version 3.1 and 3.11
- Flexible for own definition of payloads
- Last will, QoS, Keep alive interval
- TLS encryption

CONFIGURATION INTERFACE

The application logic can be realized on the device either using the integrated graphical web editor or by using a predefined configuration loaded to the device. The graphical web editor is a very intuitive and easy to use interface to program software applications and configure the gateway. No engineering tools are required, and it can easily be accomplished by service technicians.
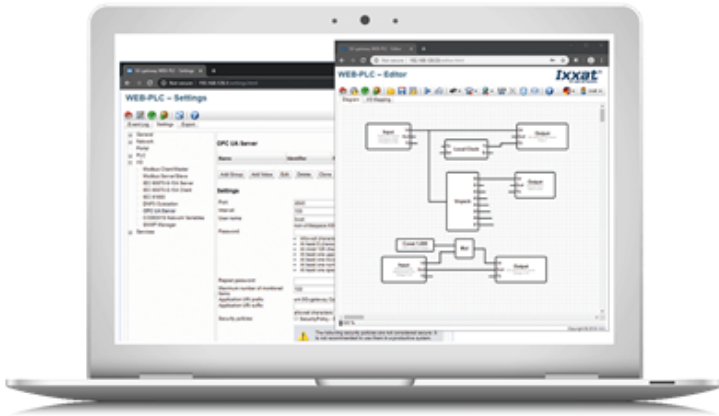
TECHNICAL SPECIFICATIONS

Dimensions (L•W•H)	79 x 46 x 107 mm with included connectors plugged
Weight	350 g or 0.8 lbs
Operating temperature	0 to +55 °C or +32 to +131 °F
Enclose material	Powder-coated, aluminum-zinc hot-dipped steel, RAL 7021
Power supply	24 VDC (+/- 15%); Weidmüller BL 3.50/03 (connector included)
Current consumption	100 mA at 24 V DC (without I/Os) / with modem: 140 mA at 24 V DC Additionally, 500 mA at 24 V DC per digital output max. to be supplied via I/O connector

Ethernet interface	1x 10/100 BaseT RJ45, link and traffic LED indicators
Serial interface	1 x RS232/RS485 (selectable), Weidmüller B2L 3.50/08 (included)
I/O interface	4x digital inputs, 4x digital outputs, 24 V DC, 500 mA per output (typ.) Weidmüller BL 3.50/10 connector for I/O ports and power supply of outputs
SD-card	microSD card SD/SDHC, push/push slot
Optional cellular modem	Variants with 3G three-band UTM modem or 4G/LTE modems for Europe or North America Antenna for SMA socket not included. In the accessories section you will find the matching antenna.
Mechanical rating	IP20, NEMA rating 1
Mounting	DIN-rail (EN 50022 standard)
Always included protocols	Modbus TCP Client/Server, Modbus RTU Master/Slave, OPC-UA Server, MQTT Publisher/Subscriber, Kolibri (for HMS Hub connectivity)
Optional protocols	IEC61850 Client/Server, IEC60870-5-104 Client/Server, DNP3 Outstation
Config method	Integrated webserver / WebPLC
Certifications	CE, cUL, , KC*, FCC** * KC only for variants without wireless modem (3G/4G) ** FCC for devices with wireless modem (3G/4G)

TECHNICAL SERVICES

The Ixxat Energy Technical Services Team is always on your side. We offer different service levels to fit your needs and fill the knowledge gaps you have for your next project!

→ Learn more...

Ordering information

Order Code	Note: The SG-gateway I/O is only available for a limited time; HMS recommends the SG-gateway Multi-I/O (article ASG12xx-C) or the SG-gateway Multi-I/O with Switch (article ASG25xx-C) for new projects. **ASG1025 (IEC60870-5-104 client/server + IEC61850 client/server + DNP3 Outstation + 4G/LTE for North America)** **ASG1024 (IEC60870-5-104 client/server + IEC61850 client/server + DNP3 Outstation + 4G/LTE for Europe)** **ASG1015 (IEC60870-5-104 client/server + IEC61850 client/server + DNP3 Outstation + 3G)**
Additional Order Codes	ASG1014 (IEC60870-5-104 client/server + IEC61850 client/server + DNP3 Outstation) ASG1006 (IEC60870-5-104 client/server + IEC61850 client/server) ASG1004 (IEC61850 client/server) ASG1002 (IEC60870-5-104 client/server) ASG1000 (Entry-level device without any options)
Included components	4 GByte microSD memory card Power connector (Weidmüller BL 3.50/3) Serial connector (Weidmüller BL 3.50/8) CAN connector (Weidmüller B2L 3.50/04) I/O connector (Weidmüller B2L 3.50/10) (power supply and 3G or 4G antenna NOT included)
Accessories	ISG9500-C (3G/4G antenna with SMA connector)

Required software	Ixxat IP configurator (for IP configuration - Freeware)
	Downloadable under Support | Files and Documents
Technical services	From getting started up to full support during the entire project. Our different service levels cover all your needs.