

SG-gateway Core

Serial to Ethernet-based communication

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

In addition to 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 4G/LTE modem as an additional communication channel for all TCP-based protocols.

The optional WLAN interface can be used for configuration but also for connection to control rooms. As the WLAN port supports all Ethernet-based protocols this also enables the connection of wireless sensor technology (e.g. Modbus TCP via WLAN) as well as the wireless connection of remote IEDs via IEC 61850 to the SG-gateway.



FEATURES & BENEFITS

- Easy way to convert between Ethernet-based and serial communication
- Supports several communication protocols (IEC61850, IEC60870-5-104, DNP3, Modbus, OPC-UA, MQTT)
- Connectivity via Ethernet or via optional wireless modems: WLAN, 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

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
- 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

WIRELESS LAN (OPTIONAL)

- All Ethernet-based protocols of the SG-gateway can be used via WLAN
- WLAN module according to IEEE 802.11 a/b/g/n
- Dual-band capable (2.4 GHz, 5 GHz)
- WLAN client
- Prepared for WLAN access point functionality – will be available via firmware-update
- Supports WPA/WPA2-PSK encryption
- SMA antenna socket with foldable WLAN antenna

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) – PRODUCT LIFE CYCLE: LIMITED

- The 3G/UMTS modem is only available for a limited time. We recommend the 4G/LTE modem for all new installations in Europe and North America.
- 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

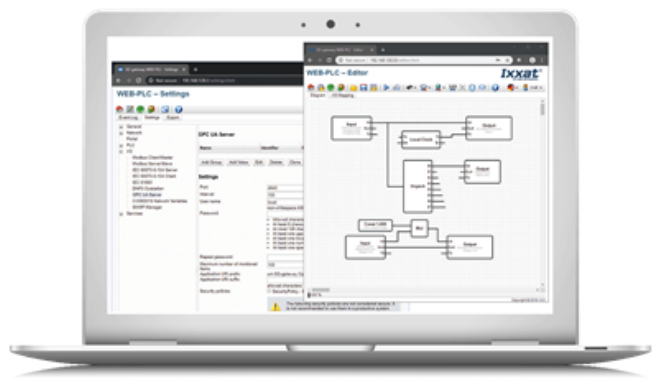
- Up to 4 concurrent client sessions

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 / with modem: 140 mA at 24 V DC
Ethernet interface	1x 10/100 BaseT RJ45, link and traffic LED indicators
Serial interface	1 x RS232/RS485 (selectable), Weidmüller BL 3.50/08 (included)
SD-card	microSD card SD/SDHC, push/push slot
Optional WLAN	Variants with dual-band WLAN interface. A suitable WLAN antenna is included in the scope of delivery.
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. Note: The 3G/UMTS modem is only available for a limited time. We recommend the 4G/LTE modem for all new installations in Europe and North America.
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

Certifications	CE, cUL, , KC*, FCC** * KC only for variants without wireless modem (3G/4G/WLAN) ** FCC for devices with wireless modem (3G/4G/WLAN)
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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!

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Ordering information

Order Code	ASG3036-C ((IEC60870-5-104 client/server + IEC61850 client/server + WLAN) ASG3021 ((IEC60870-5-104 client/server + IEC61850 client/server + 4G/LTE for North America) ASG3020 ((IEC60870-5-104 client/server + IEC61850 client/server + 4G/LTE for Europe) ASG3015 (IEC60870-5-104 client/server + IEC61850 client/server + DNP3 Outstation + 3G) Only available for a limited time.
Additional Order Codes	ASG3014 (IEC60870-5-104 client/server + IEC61850 client/server + DNP3 Outstation) ASG3006 (IEC60870-5-104 client/server + IEC61850 client/server) ASG3004 (IEC61850 client/server) ASG3002 (IEC60870-5-104 client/server) ASG3070 (4G/LTE for Europe) ASG3000 (Entry-level device without any options)
Included components	4 GByte microSD memory card Power connector (Weidmüller BL 3.50/3) Serial connector (Weidmüller B2L 3.50/8) CAN connector (Weidmüller B2L 3.50/04) For models with WLAN: Dual-band bend antenna included (power supply and 3G/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.