SG-gateway Multi-IO

Digitization of decentralized energy plants with direct sensor integration in control rooms and cloud systems

The SG-gateway supports the communication protocols used in the energy sector, including IEC60870-5-104 and IEC61850, and enables easy interconnection of numerous different energy devices. In addition, OPC-UA and MQTT functionality – that can be used simultaneously – enables direct integration into cloud-based enterprise applications.

The Multi-I/O interface allows connection of classic sensors (0-20 mA / 4-20 mA or 0-10 V) into energy automation applications as well as direct device monitoring in cloud systems. In addition, the Multi-I/O interface provides powerful digital inputs/outputs for integration and control of 24 V controlled devices within energy communication systems.

Besides IEC protocols, further devices in the field can be connected via Modbus TCP and RTU. As an option, the SG-gateway is available with a 4G/LTE modem providing an additional communication channel for all TCP-based protocols.

For more complex installations requiring multiple Ethernet networks or WLAN, we recommend the SG-gateway with 4-port switch and Multi-IO.

FEATURES & BENEFITS

- Easy way to transfer analog as well as digital I/O data from electrical devices in the field to SCADA or cloud systems, as well as control digital outputs from central control rooms
- Connects switchgear to SCADA systems
- Supports various communication protocols (IEC61850, IEC60870-5-104, Modbus, OPC-UA, MQTT)
- Connectivity via Ethernet or via optional 4G (LTE) modem
- Easy, web-based configuration with any standard browser
- Onboard WebPLC for easy data conversion and control functions
- Rugged metal enclosure for stand-alone DIN rail operation
- Worldwide technical support and consulting services
- Cyber security features including password protection, user management and OpenVPN
- Continuous software maintenance by HMS, devices can be updated on-site as well as remotely
- Easy export and import of configuration to simplify volume installations

MULTI-IO INTERFACE

- 8x digital input/output
  - All inputs can be used as output or input
  - No galvanic isolation of the inputs/outputs
  - Digital inputs: True from 15 V DC, False up to 5V DC max., 24 V DC, 5 mA (typ.)
  - Digital outputs: Short circuit and overload resistant, per output 24 V DC, 500 mA (typ.), in sum not more than 2 A
- 8x analog inputs
  - Voltage (0-10 V) or current measurement (0-20 mA), configurable via software
- Weidmüller B2L 3.50/20 connector
- Separate power supply of the Multi-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

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 protocols.
- 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)
- Variant 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)
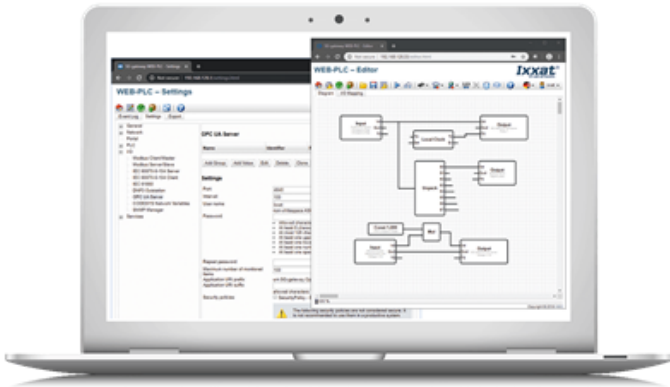
OPC-UA

- 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)	84 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 digital outputs) / with wireless modem: 140 mA at 24 V DC Additionally max. 500 mA at 24 V DC per digital output (to be supplied via the I/O connector)
Ethernet interface	1x 10/100 BaseT RJ45, link and traffic LED indicators
Multi-IO interface	8x digital inputs/outputs, 24 V DC; 500 mA per output (typ.) 8x analog inputs, 0-20 mA or 0-10 V switchable Weidmüller B2L 3.50/20 connector for I/O ports and power supply of the outputs
Serial interface	1 x RS232/RS485 (selectable), Weidmüller B2L 3.50/08 (included)
SD-card	microSD card SD/SDHC, push/push slot
Optional modem	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
Config method	Integrated webserver
Certifications	CE, cUL, FCC*

	* FCC for devices with wireless modem (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	**ASG1221 (Multi-IO + IEC60870-5-104 Client/Server + IEC61850 Client/Server + 4G/LTE for North America)**
	ASG1220 (Multi-IO + IEC60870-5-104 Client/Server + IEC61850 Client/Server + 4G/LTE for Europe)
Additional Order Codes	ASG1227-C (Multi-IO + IEC61850 Client/Server + 4G/LTE for Europe)
	ASG1206 (Multi-IO + IEC60870-5-104 Client/Server + IEC61850 Client/Server)
	ASG1200 (Multi-IO, no Energy Protocols)
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)
	I/O connector (Weidmüller B2L 3.50/20)
	(power supply and 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