



Ixxat SG-gateways



OPC UA

dnp

IEC 60870-5

IEC 61850



Ixxat Energy – communication solutions for networking of energy systems

The core of the Ixxat Energy offering from HMS Networks are the SG-gateways which enable safe and reliable communication between energy systems, control rooms and industrial automation systems.

Combined with the documented expertise of HMS staff, the SG-gateways are all that you need to solve challenges related to Energy and Smart Grid communication.

About HMS Networks

With millions of installed products worldwide, HMS Networks is the leading supplier of solutions for industrial communication and the Industrial Internet of Things.

HMS is “Connecting Devices” for a more productive and sustainable world. Our solutions enable our customers to expand their businesses globally.

- Employees: > 600
- Locations: in 16 countries
- Distributors: > 50 countries
- Brands: Anybus, Ixxat, Ewon
- Development: > 30 % of our employees are active in research and development
- Year founded: 1988

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The application possibilities of our SG-gateways are very versatile, meeting the industrial and energy supply fields. During development, we didn't only focus on a broad protocol coverage, but also on simplifying configuration and installation.

An intuitive user interface was developed which allows the user to easily master the diverse application possibilities of the SG-gateways.

In my opinion, we offer the fastest path on the market to solve complex communication requirements in the Smart Grid.



Martin Matt
Product Manager
Energy Communication

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Industries and applications

Energy Distribution

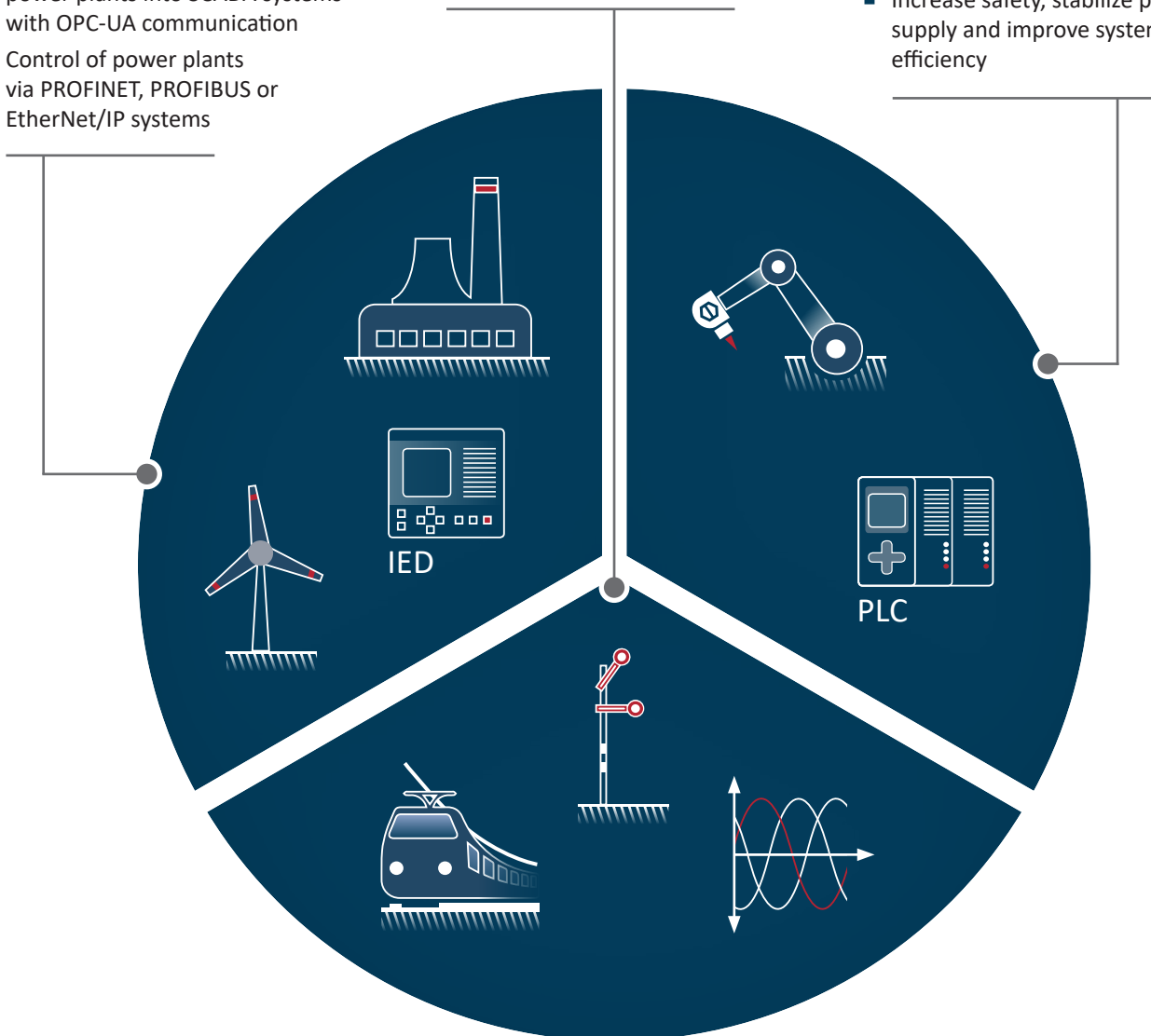
- Communication between components and Intelligent Electronic Devices (IEDs) from different manufacturers
- Integration of switchgear and power plants into SCADA systems with OPC-UA communication
- Control of power plants via PROFINET, PROFIBUS or EtherNet/IP systems

Railway power distribution

- Digitization and remote control of manual and analog substations
- Retrofitting of switchgear to IEC 60870-5 or IEC 61850

Industry

- Reduction of electricity costs through intelligent load management
- Connection of energy equipment to industrial control systems
- Increase safety, stabilize power supply and improve system efficiency



IEC
61850

IEC
60870-5-104

IEC
60870-5-101

dnp

GOOSE

M-Bus

Modbus

PROFI[®]
BUS

PROFI[®]
NET

EtherNet/IP™

OPC UA

MQTT

GP-IO

S0
Interface



Control of energy plants

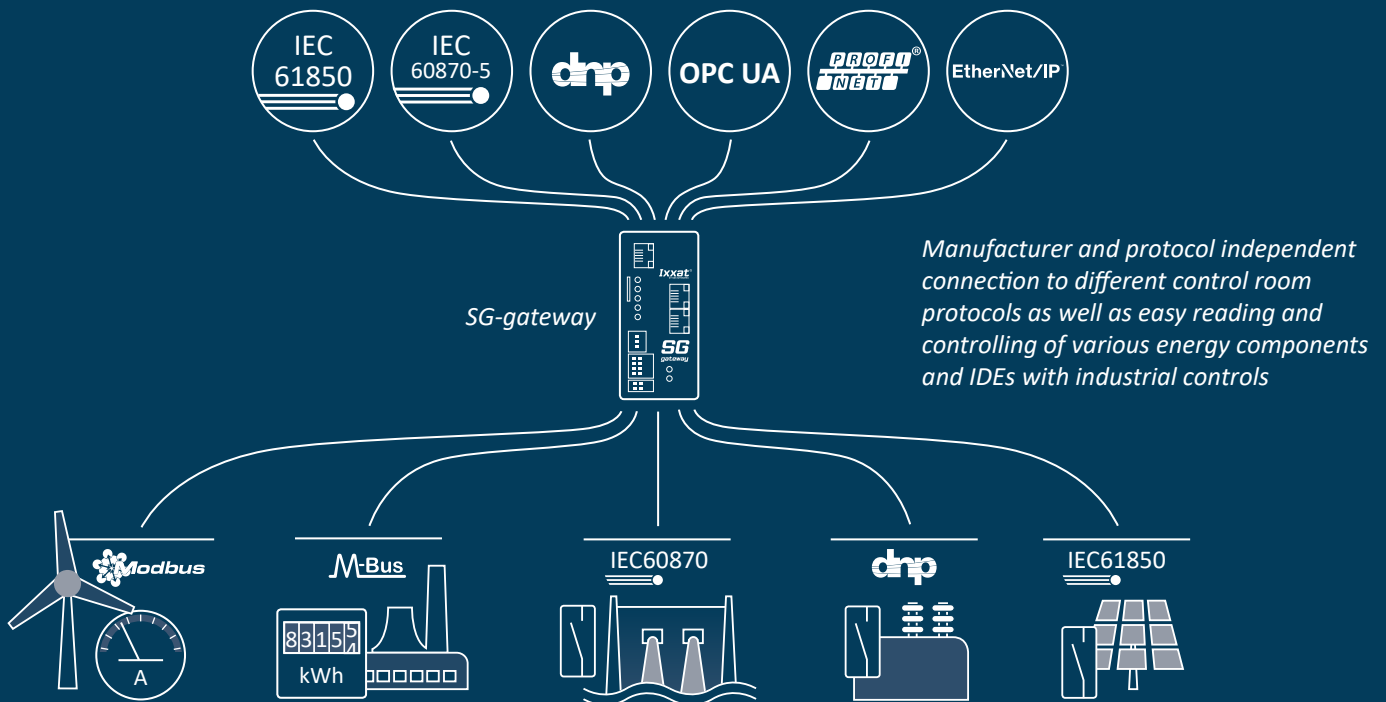
With Ixxat SG-gateways, existing systems, new equipment and control systems can be connected to each other in a smooth and fast way – regardless of communication technology or manufacturer brand.

Retrofitting of existing assets

- The SG-gateways enable easy retrofitting of existing switchgear and other components to your protocol of choice
- Fast plug & play installation after configuration

Compatibility

- The SG-gateways have successfully passed interoperability tests with key products from different vendors
- Easy configuration of all communication with a common web based user interface covering all protocols
- Simultaneous usage of different protocols and network functions (master/slave)





Data processing

- Adaptation and processing of data using a graphical programming interface
- 1:1 data mapping via tabular assignment

Configuration

- Configuration by using wizards and a graphical programming interface
- Fast installation and adjustment of parameters in the field via the integrated web interface – no additional tools are required
- Optional remote access for configuration updates

Applications

- Substations
- Power plant components
- Energy storage
- Photovoltaic systems
- Measuring instruments
- and many more

Integration of components with IEC 61850, IEC 60870-5, DNP3, Modbus, M-Bus and GPIO interfaces into modern control rooms or industrial controllers from Siemens or Rockwell Automation.

Convincing technical service!



Due to the use of different manufacturers and different technologies, we already had to master great technical challenges at the beginning of the project. HMS provided excellent technical support from the initial enquiry to project completion, which enabled us to successfully complete the project on time. Since then we have been using the Ixxat SG-gateways as a standard solution whenever conversion between energy protocols is needed!



Amir Bulic
*Technical Leader,
Energy Automation
at Schneider Electric*



Networking of industrial parks

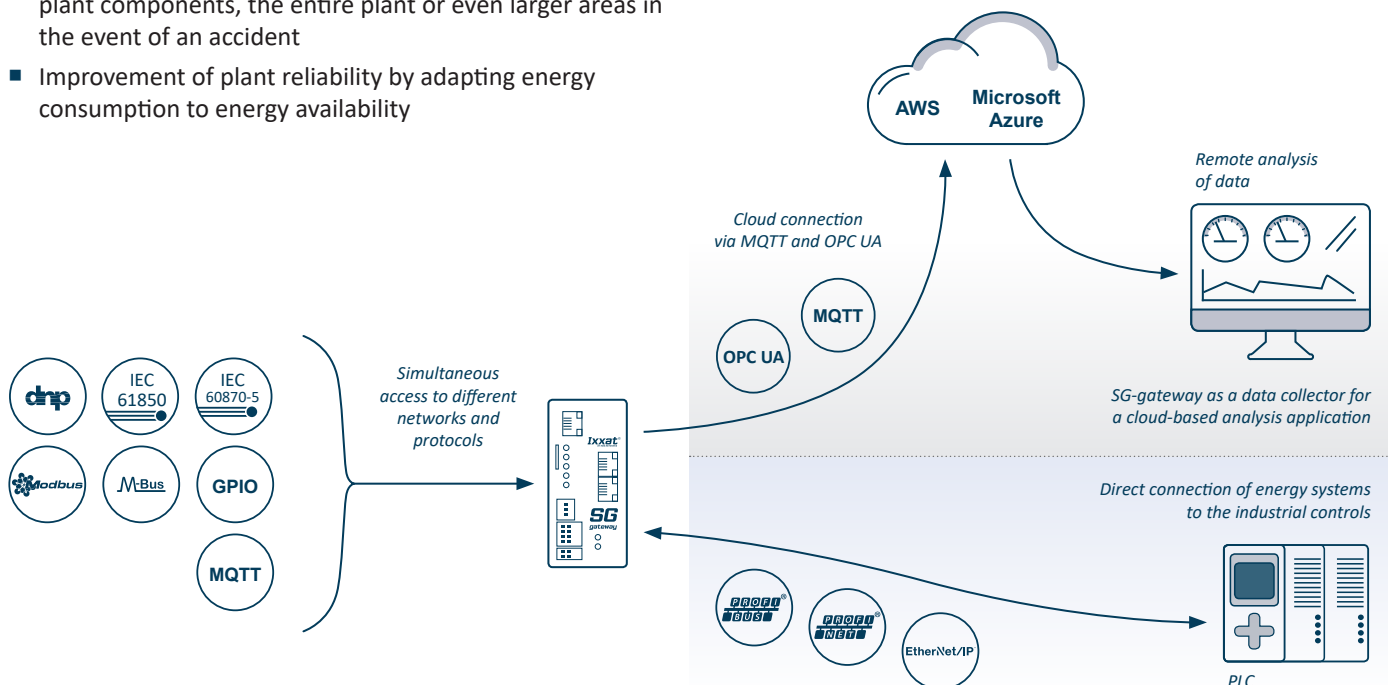
Industrial sites with a high energy demand often handle their energy supply on their own premises. The communication network of the energy supply is typically not connected to the control system of the industrial plant. Establishing such a connection with Ixxat SG-gateways can enable massive savings.

Reduced electricity costs and improved operational safety via load shedding

- Reduction of consumption peaks through direct use of current energy data from IEDs in your industrial controller
- Improved energy efficiency in process plants in the chemical, oil and steel industries
- Emergency shutdown of energy components via the industrial control system – in order to disconnect specific plant components, the entire plant or even larger areas in the event of an accident
- Improvement of plant reliability by adapting energy consumption to energy availability

Making machine and consumption data accessible

- Ixxat SG-gateways provide data from the industrial site and from energy equipment at the same time via OPC-UA or MQTT
- The opposite way is also possible – commands are forwarded via OPC-UA to the connected components

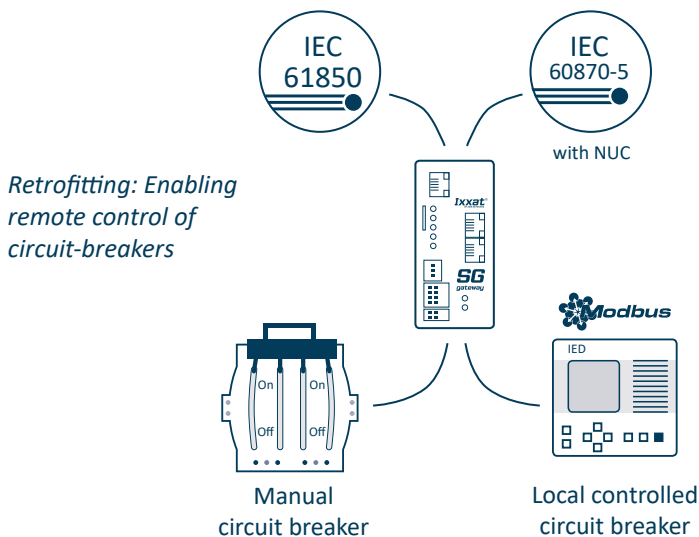




Railway power distribution

The high capacity utilization of railway network segments up to the highest load limit makes maximum availability of energy supply critical. In order to best prevent breakdowns and minimize downtimes, systems must be monitored and controlled centrally. This is easily done with SG-gateways.

- Simple conversion of manually operated switchgear to become digitally controlled with remote management capabilities
- Support of the Norwegian User Convention (NUC)



Safety and security



OpenVPN

Integrated firewall

User and access rights control

Industry protocols



GP-IO

EtherNet/IP



MQTT



OPC UA

Energy protocols



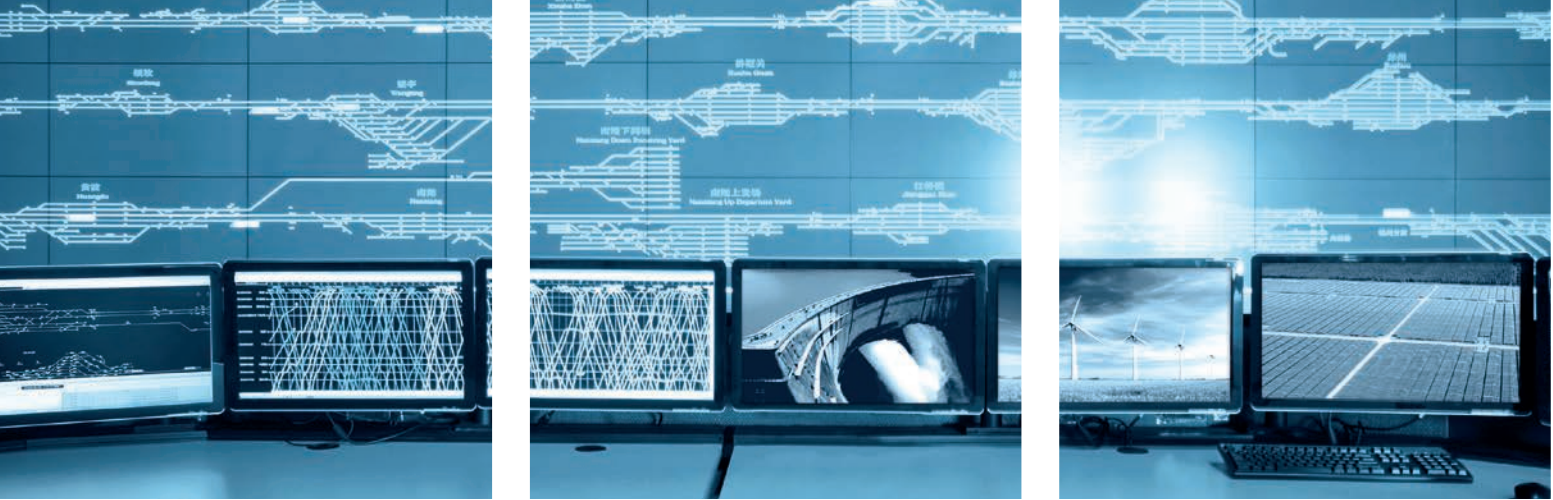
GOOSE



M-Bus

S0 Interface

OPC UA



Security gateway for distribution networks

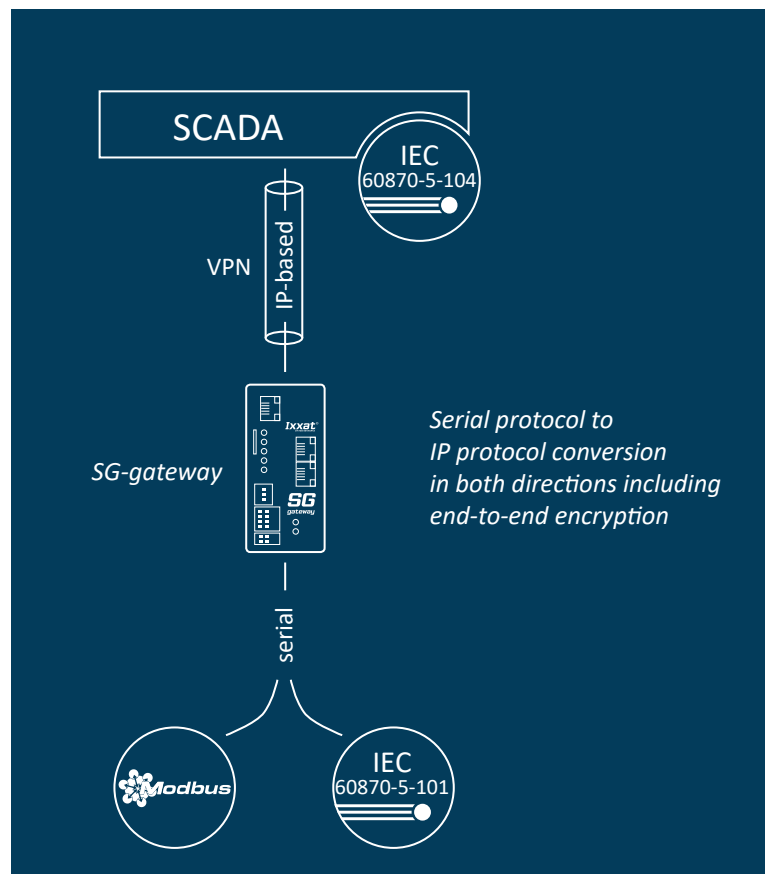
According to the guidelines of many Transmission System Operators (TSOs), a system must have a media break between a serial and an Ethernet-based protocol. The SG-gateways meet these requirements in line with current standards and norms.

Increased security by changing the transmission medium

- Malware is not passed through
- No direct access to the substation control bus via Ethernet
- Invalid and potentially dangerous commands are rejected

Compliance with the TSO requirements

- Media Break feature – between IP-based and serial links
- VPN end-to-end encryption



Configuration

With the intuitive user interface, configuration is made simple, without any need for training in complex programming skills.

The entire configuration is done using a standard web browser connected to the SG-gateway itself. No other external tools are required.

Protocol wizards

- No deep protocol knowledge is required
- Intuitive and fast configuration

Programming editor

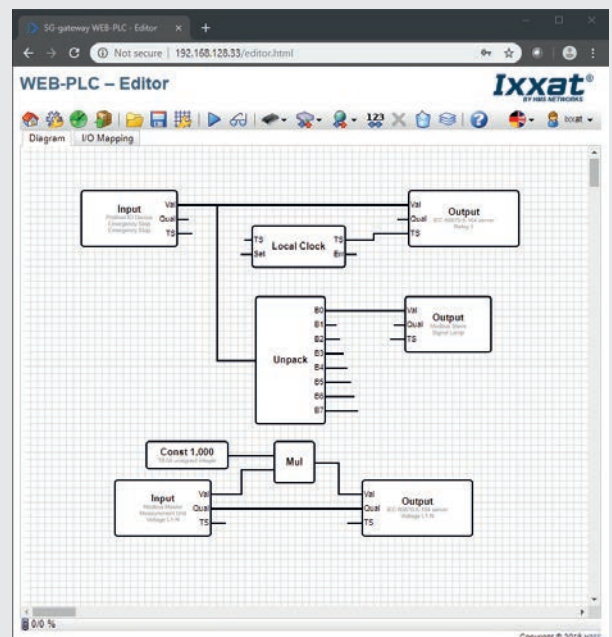
- Simple drag & drop programming
- No programming knowledge required
- Control tasks directly in the SG-gateway



The SG-gateways offer an integrated WEB-PLC for easy configuration via a standard web browser.

Engineering services

Based on our many years of experience in the field of energy and industrial communication, we are proud to offer a comprehensive service portfolio to our customers. Services range from SG-gateway configuration according to customer requirements to troubleshooting and analysis of the network communication by our experts.



Intuitive configuration interface including wizards and graphical programming possibilities.

Technical information

Thanks to the many hardware and software options, the SG-gateway offering is optimal for numerous applications in the energy sector, as well as for connecting the energy and industry segments together.



	SG-gateway Media Converter	SG-gateway Switch	SG-gateway IO	SG-gateway M-Bus Master	SG-gateway EtherNet/IP
Hardware interfaces	1 x ETH 10/100BaseT 1 x RS232/485 (switchable)	1 x ETH 10/100BaseT 1 x RS232/485 (switchable) 1 x 4-port ETH switch 10/100BaseT	1 x ETH 10/100BaseT 1 x RS232/485 (switchable) 4 x Digital input 24 V 4 x Digital output 24 V, 0.5 A	1 x ETH 10/100BaseT 1 x RS232/485 (switchable) 1 x M-Bus Master 2 x S0 interface 10 mA, max. 50 Hz 2 x Digital output 24 V, 0.5 A	1 x ETH 10/100BaseT 1 x RS232/485 (switchable) 1 x EtherNet/IP with 2-port cut-through switch
Protocols and interfaces	<ul style="list-style-type: none"> ■ Modbus-RTU master/slave via RS232/485 ■ Modbus-TCP master/slave ■ DHCP server, SNTP, Network trace (pcap), SNMPv2c ■ OPC-UA server, MQTT ■ Codesys network variables 			Optional: <ul style="list-style-type: none"> ■ IEC 60870-5-104 client/server with redundancy (Norwegian User Convention) ■ IEC 60871-5-101 master/slave ■ IEC 61850 client/server ■ GOOSE publisher/subscriber ■ Outstation DNP3 ■ Hardware versions with 3G or 4G modem 	
Local functions	Battery-buffered real-time clock, remanence variables, 8 user-definable cron jobs, IEC 60870-5 Media Breaker autoconfigurator				
Security features	OpenVPN, integrated firewall, password protection, user management, NAT routing, event logging				
Storage medium	Micro SD card with 4 GByte included. Device supports Micro SD cards with up to 32 GByte				
Power supply	24 V DC (-15 % / +15 %)				
Temperature range	-20 °C to +60 °C				
Housing	Robust, powder-coated sheet steel housing for top hat rail mounting (EN 50022), IP20, NEMA rating 1, 46 x 105 x 78 mm (WxHxD, + 5.1 mm depth for version with 3G/4G modem)				
Certifications	CE, FCC, UL				



SG-gateway PROFIBUS	SG-gateway PROFINET
1 x ETH 10/100BaseT	1 x ETH 10/100BaseT
1 x RS232/485 (switchable)	1 x RS232/485 (switchable)
1 x PROFIBUS DP-V0/DP-V1	1 x PROFINET RT class 1 and 3 V2.3 with 2-port IRT switch



Discover more
www.ixxat.com/energy



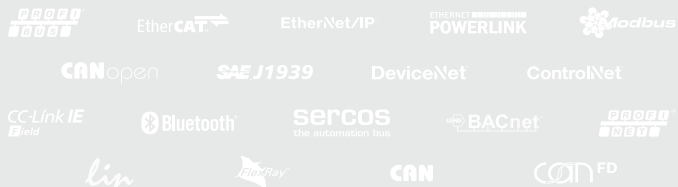
Work with HMS.
The number one choice for
industrial communication
and IIoT.



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Embedded Networking Solutions



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