NETCON GW502-iM

Cyber secure substation gateway & protocol converter

One module, all the functionality needed in a substation
without conventional wired I/O

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FEATURES

- Hardware designed for harsh substation environments
- Options for full redundancy
- Supports over 50 energy utility protocols, including IEC 61850 client & server
- Multiple simultaneous master & slave protocols
- Cyber secure with integrated VPN, firewall, encryption & authentication
- IEC 61131-3 PLC soft logic based on ISaGRAF
- Time synchronisation by GPS or NTP
- 2 Ethernet and 4 serial ports, 4-port 10/100 Base-TX & 100Base-FX Ethernet switch, 2 Micro SD slots
- Remote management
- Integrated tools for protocol diagnostics & debugging

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BUILT FOR HARSH ENVIRONMENTS

Specifically designed for use in electrical substations, the Netcon GW502-iM is superior to commercial PC/Windows-based technology. It belongs to our Gateway family of substation automation products. Like other members of the family, it offers unparalleled reliability, resilience and performance.

Redundancy

The GW502-iM has been designed to be stand alone, without a rack. However, two units can easily be connected together to form a redundant pair.

Interfaces

- 2 Ethernet ports
- 4 serial ports (RS-232, RS-485)
- 2 Micro SD memory card slots for rapid configuration & local storage
- 4-port 10/100 Base-TX & 100Base-FX Ethernet switch
- 2 independent power supply inputs (24...48 V)
- GPS receiver port

INTEGRATED CYBER SECURITY

Man-in-the-middle attack prevention

The Netcon GW502-iM avoids MITM attacks because it does not rely on external security devices. It has integrated cyber security:

- Secure boot and signed patches: signature checked before boot/update
- Built-in firewall
- Tools against DDoS (distributed denial of service)
- Security event logging by syslog by default
- Multiple VPN tunnes using OpenVPN or IPSec
- Authentication
- Support for IEC 60870-5-104/s with security according to IEC 62351-3
- 256-bit AES encryption
- No OPC – no Windows vulnerabilities
- protected against Remote access toolkit attacks.

NETCON NFE INSIDE

Embedded Linux OS

The Netcon GW502-iM is powered by the reliable, resilient and secure Linux OS. The primary application is Netcon NFE, which handles protocol conversions and I/O database functionality.

Large dataset capability

Depending on the protocol, a single Netcon GW502-iM can support dozens of protection relays and up to 5,000 I/O points.

Multiple master & slave protocols

Netcon NFE, our real-time-database and communication application, contains a library of over 50 energy utility protocols (see list on the back page). It supports connection to multiple masters, the simultaneous use of different protocols upstream and downstream towards different kinds of IEDs, with both serial and IP communications.

Disturbance record retrieval

Netcon NFE can collect, store and send forward IED disturbance records as well as sequence-of-event (SOE) archives.

Integral protocol diagnostic & debugging tools

The integrated Netcon Serial Analyser (NSA) enables the user to analyse protocol messaging for troubleshooting purposes.

SUBSTATION-READY

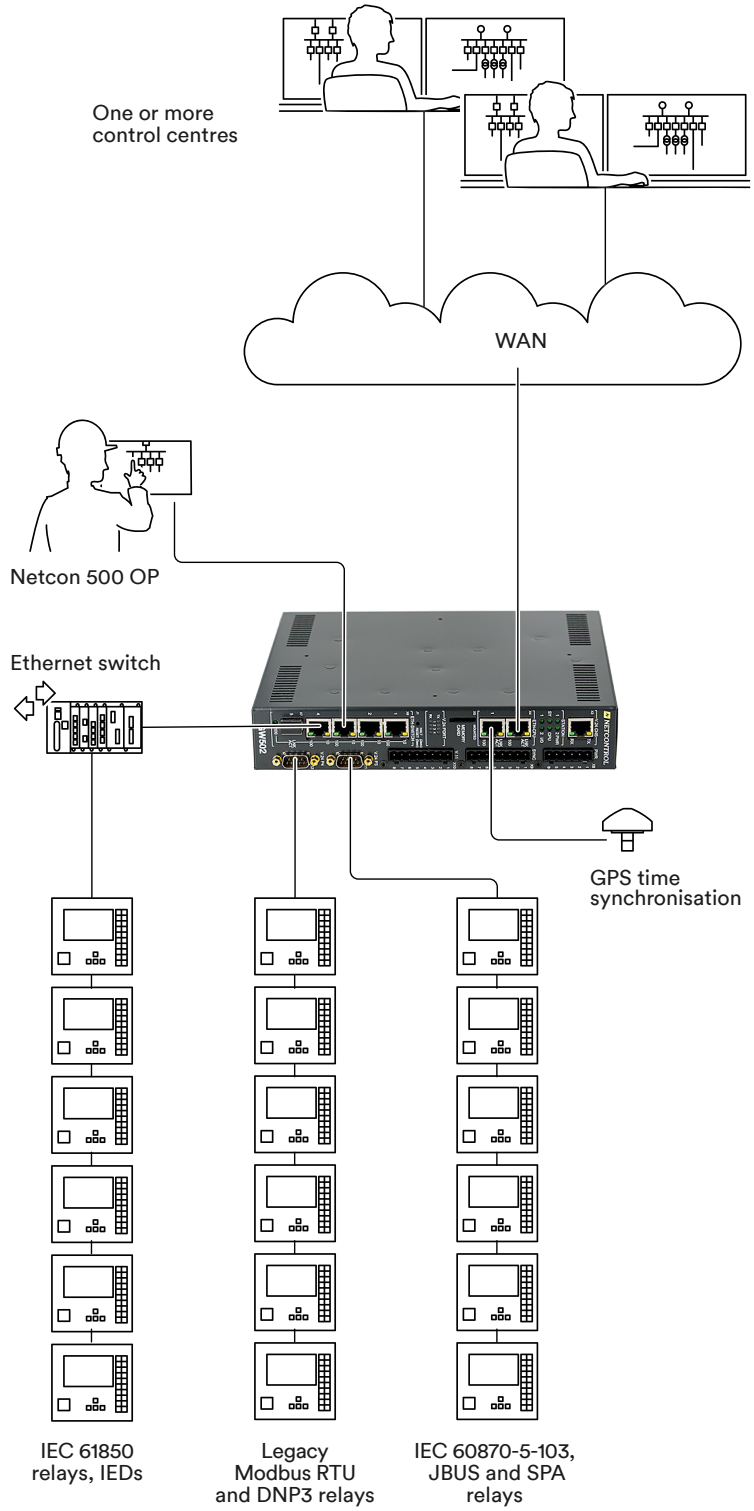
IEC 61850-8-1 Support

The Netcon GW502-iM has full support for the emerging IEC 61850-8-1 standard. The open implementation has proven multi-vendor interoperability. Since the GW502-iM is capable of acting as a communications gateway and a protocol converter, an IEC 61850 substation equipped with it can be connected to the control centre with any standard protocol, such as IEC 60870-5-104 or DNP3.0.

Reap the benefits of IEC 61850-8-1

- Simpler substation structure: IEC 61850 offers a single, uniform method of integrating IEDs
- Enhanced engineering, implementation, operation and service: savings of time and cost on configuration, commissioning and maintenance
- Reduction of wiring costs: IEC 61850 replaces wires between feeders, control switches and signalling devices
- Increased reliability: standard Ethernet serves as a uniform real time communication channel for all data

APPLICATION EXAMPLE



EMBEDDED LOGIC

IEC 61131-3 PLC Soft Logic

Enhanced logic functionality is provided by the industry standard ISaGRAF environment, with the run-time and developer applications included.

LOCAL/REMOTE MANAGEMENT

Configuration

The Netcon NCU application with its graphical user interface and the included SDC Import/Export Tool make configuration intuitive and easy to manage. The settings are stored on memory card and therefore easily copied between devices.

Remote management

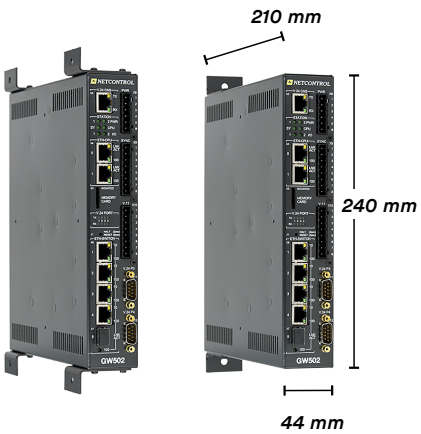
Remote management gives the user the ability to deploy, maintain and upgrade the GW502-iM securely as well as to download aggregated data such as disturbance records.

MOUNTING OPTIONS

Installation is flexible thanks to the compact enclosure and the location of all the connectors in the front panel.

Wall or console mounting

Using the included wall brackets you can fasten the GW502-iM from one of the three edges (front panel excluded) onto a cabinet wall or to the back of a console:

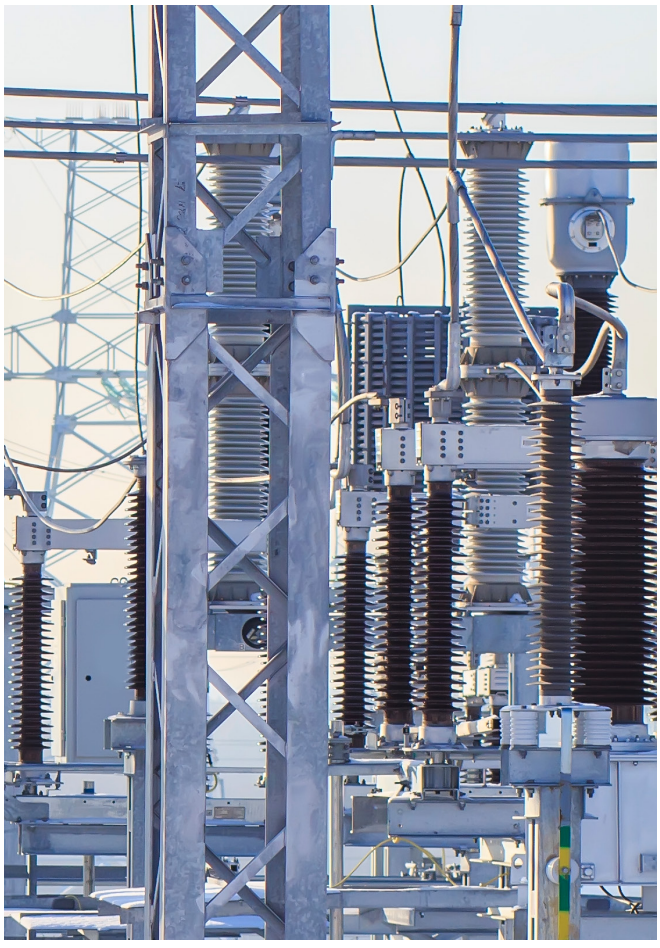


DIN rail mounting

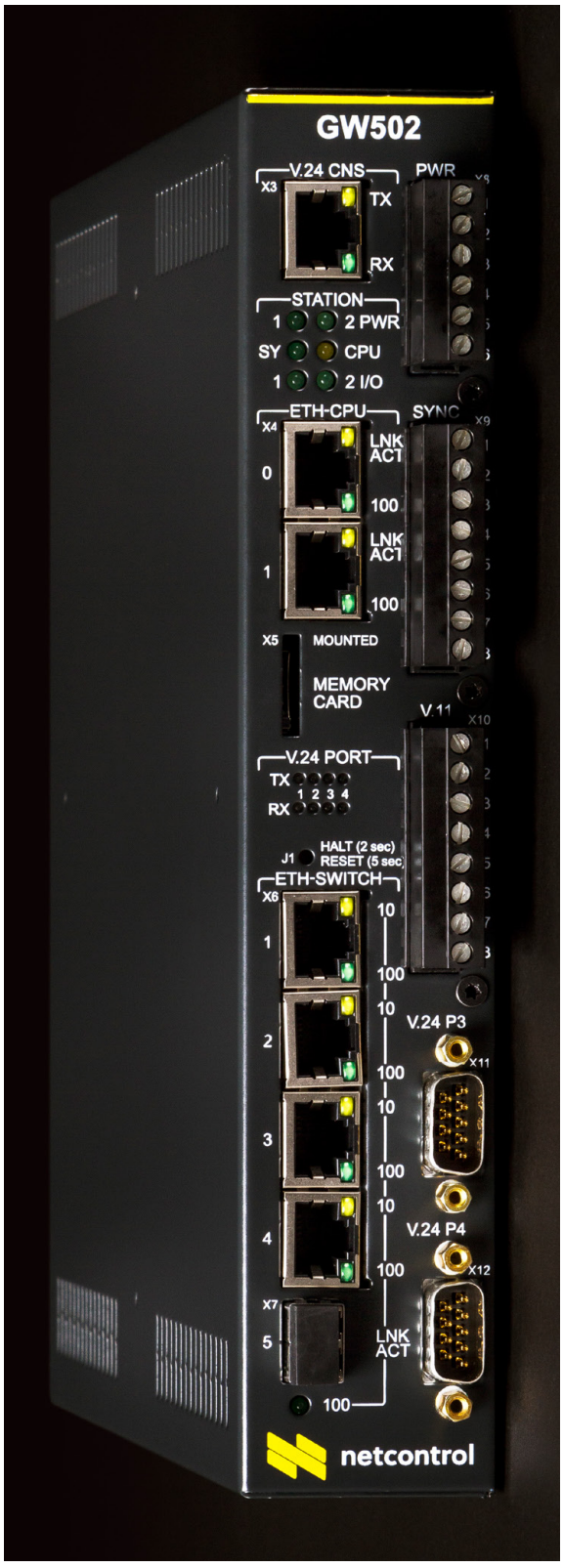
On any of the three edges or the two sides you can use clips that attach the device to a DIN rail:

L mounts for 19-inch rack

The included L mounts extend the front panel to 19 inches, so that you can fasten the device into a standard 19-inch rack (occupies a height of 1 U):



Technical Specifications



Environmental

Operating temperature: –25...+70°C*
Storage temperature: –40...+70°C
Relative humidity: 5...95%

Power supply

Nominal voltage: 24/48 VDC
Voltage range: 20.5...60 VDC
Power consumption: 6...10 W

Ethernet ports

CPU Ethernet ports, 0 & 1
Interface: 10/100BaseT
Connector: RJ45

Ethernet switch ports 1–4
Interface: 10/100BaseT
Connector: RJ45

Ethernet switch port 5 (fibre)
Interface: 100BaseFX
Connector: LC

Serial ports

1: RS-485 / GPS sync
2: RS-485
3 & 4: RS-232

Dimensions

240 × 210 × 44 mm
(W × D × H when horizontal)

Applied standards

IEC 61000-6-4
IEC 61000-6-2
IEC/TS 61000-6-5

*Operation beyond +55°C may lead to degradation in MTBF.

Netcon NFE protocols for GW 502-iM

PROTOCOL	SERIAL	IP	MASTER	SLAVE
IEC 61850-8-1 client, editions 1 & 2		✓	✓	
IEC 61850 server		✓		✓
IEC 60870-5-104		✓	✓	✓
IEC 60870-5-104 with NUC extensions		✓		✓
NFE-link		✓	✓	✓
Modbus serial/TCP	✓	✓	✓	✓
DNP3.0	✓	✓	✓	✓
IEC 60870-5-101	✓		✓	✓
IEC 60870-5-103	✓		✓	
ADLP80	✓		✓	✓
RP570 & ADLP180	✓		✓	✓
RP570 & ADLP180 modem pool	✓		✓	
ANSI X3.28 (Allen Bradley)	✓		✓	✓
COMLI	✓		✓	✓
Alstom Courier	✓		✓	
Ferranti MKIII	✓			✓
IEC 62056-21	✓	✓	✓	✓
Mobitex	✓		✓	✓
Mobitex radio simulation	✓		✓	
Netcon 8830/8080	✓		✓	
NettLink	✓		✓	✓
System NM	✓		✓	✓
Nortroll	✓		✓	
P&B	✓		✓	
Procol	✓		✓	✓
Sinaut ST1	✓		✓	
Spacom	✓		✓	
Telegyr 065, 102	✓		✓	
Telegyr 800	✓		✓	✓

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