Netcon GW502-iM
Substation Gateway & Protocol Converter

One module - all the functionality

- Bespoke embedded hardware designed for harsh substation environment
- Options for full redundancy
- Support for over 50 energy utility protocols including IEC61850 client
- Multiple simultaneous master & slave protocol support
- Cyber secure with integrated VPN, Firewall, Encryption & Authentication
- IEC61131-3 PLC soft logic functionality based on ISaGRAF
- Netcon Blocks - customised applications for tapchanger etc;
- Time Synchronisation - (GPS & NTP Protocol)
- 2 x Ethernet, 4 x Serial Port, 4 port 10/100 Base-TX & 100Base-FX Ethernet Switch, 2 x Micro SD
- Remote management & Netcon 3000 Lite (Mini SCADA) option
- Integral Protocol Diagnostic & Debugging Tools
Ruggedised design for harsh environments

The Netcon GW502-iM has been specifically designed for use in high voltage electrical substations, avoiding the need to use commercial PC/Windows-based technology.

The hardware platform is an evolution of our Transmission grade gateway/RTU allowing us to offer unparalleled reliability, resilience and performance.

Redundancy

Designed to stand alone, utilising a pair of GW502-iM’s offers the energy network operator complete redundancy.

Interfaces

Netcon GW502-iM benefits from the following:

- 2 Ethernet Ports
- 4 Serial Ports (RS232 & RS485)
- 2 Flash Card for rapid configuration & local storage
- 4 port 10/100 Base-TX & 100Base-FX Ethernet Switch
- 2 Independent power supply inputs (24-48V)
- GPS receiver port

Installation Options

- 19” 1U Rack Option
- Horizontally or Vertical Cabinet Mounted options

Integral Cyber Security

‘Man-in-the-middle’ (MITM) attack prevention

Rather than relying on external bolt-on security devices, the Netcon GW502-iM avoids MITM attacks through the use of integrated cyber secure elements, including:

- Multiple VPN connections
- Firewalls
- 256-bit AES Encryption
- OPC-free. No Windows OS vulnerabilities
- Remote access toolkit (RAT) hardened

Embedded Platform

Netcon NFE Inside

Embedded Linux OS

Reliable, resilient, secure. Linux OS runs inside the Netcon GW502-iM. Netcon NFE executes as a priority application providing protocol and database functionality.

Large Dataset Capability

A single Netcon GW502-iM can easily integrate/support 60-100 IEDs, depending on protocol selection and typically up to 50,000 I/O points.

Multiple Master & Slave Protocols

Netcon NFE, our real time database application, contains a library of over 50 energy utility protocols (see list on back page). Furthermore, Netcon NFE supports connection to multiple masters using independent protocols upstream and downstream to multiple IEDs, running different protocols over a mixture of serial and IP communications media.

Disturbance Record Retrieval

Netcon NFE can provide a local and remote retrieval aggregation facility for IED disturbance record and sequence of event (SOE) archives.

Integral Protocol Diagnostic & Debugging Tools

The integrated Netcon Serial Analyser (NSA) provides the user the ability to interrogate protocol messaging.

Embedded Logic

IEC61131-3 PLC Soft Logic

Enhanced logic functionality is provided by the industry standard ISaGRAF run-time and developer applications

Netcon Blocks

Unique customised secure applications for energy automation routines, such as tapchanger, loop-schemes etc.

Local & Remote Management

Configuration

Through the use of Netcon NCU tool, configuration is made intuitive and straightforward.

Remote Management

Ability to remotely deploy, maintain and upgrade the GW502-iM securely and download aggregated data such as disturbance records.
Installation Options

IEC 61850 Support
Netcon 500 has full support for the emerging IEC 61850 standard. The implementation is open with proven multi-vendor interoperability. As Netcon 500 is capable to act as a communications gateway and a protocol converter, a 61850 substation can be connected to a control centre using any standard protocol, like IEC-104.

IEC 61850 key advantages are:
- Simpler substation structure: IEC 61850 offers a single, uniform method to integrate Intelligent Electronic Devices (IED), like protection relays
- Enhanced engineering, implementation, operation and service. Savings on time and costs on configuration, commissioning and maintenance.
- Reduction of wiring costs: IEC 61850 replaces wiring between feeders, control switches, and signalling devices.
- Increased reliability: A single, real time communication channel for all data – using standard Ethernet as the medium

Substation Ready

Typical Application

Multiple Masters

WAN

Micro SD

Netcon 500 OP

GPS Time Sync

Legacy Protective Relays, Modbus RTU, DNP3

Protective relays, IEC60870-5-103, JBUS, SPA

IEC61850 Relays/IED

19" 1U Rack Installation

Vertical Installation

Horizontal Installation
GW502-iM
Your only substation protocol converter gateway module

Technical Data

Environmental specifications
Usage temperature -25...+60 °C
Storage temperature −40...+80 °C
Relative humidity 5...95 %

Power supplies
Nominal voltage 24 or 48 VDC
Voltage range 20.5...60 VDC
Power consumption 6...10 W

CPU Ethernet ports ports 0-1 (RJ45)
Interface type 10/100BaseT
Connector RJ45

Ethernet switch ports 1–4 (RJ45)
Interface type 10/100BaseT
Connector RJ45

Ethernet switch port 5 (Fibre)
Interface type 100BaseFX
Connector type LC

Serial port 1
1x RS485/GPS Sync

Serial port 2
1x RS485

Serial ports 3-4
2x RS232

Applied standards
Emission IEC 61000-6-4 Emission standard for industrial environments
Immunity IEC 61000-6-2 Immunity standard for industrial environments
Immunity IEC/TS 61000-6-5 Immunity for power station and substation environments

Netcon NFE Protocols

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