

PB00149

GarrettCom Magnum DX940

Industrial Router with Cellular, T1/E1 or DDS WAN interface and configurable with six Ethernet ports and four serial ports.



The DX940 Provides a Secure and Reliable Way to Provide Connectivity Over a Cellular Network to Utility Substations, Roadside Traffic Controls, Energy Generation Facilities, Transportation Depots and Other Locations Where Cellular Signals are Readily Available.

Features

- Configurable network Interfaces of 4 types:
 - Cellular Wireless
 - Ethernet ports
 - T1/E1 or DDS WAN
 - Serial RS232/RS485
- Substation hardened, -40° to +85° C, no fans
- Modbus TCP ASCII/RTU internetworking
- Cyber security: IPsec, VPN, SSL and firewall
- Panel, DIN-Rail or rack mounting

Secure and Reliable

High speed data access over cellular communications is a new choice for reaching the local networks in remote industrial facilities. This cellular technology is used to transfer data in the Magnum DX940 Industrial Router.

The Cellular WAN interface in the DX940 provides a secure and reliable way to provide connectivity over a cellular network to utility substations, roadside traffic controls, energy generation locations, transportation depots, and other locations where cellular signals are readily available.

The Magnum DX940 uses the proven 3G EVDO REV A, EVDO, CDMA technology for cellular access. 3G cellular infrastructure sends data on a public network. Using the VPN capabilities in the DX940's software allows for secure, NERC-CIP-compliant data transfer on a public network.

Secure and Reliable

Besides a cellular WAN interface, the DX940 can be configured with six Ethernet ports, and four serial ports. Ethernet port options include Gb and 100Mb copper and fiber. In addition to the cellular port, a WAN port can be configured for T1/E1 or DDS circuits. The unit supports T1 to cellular fall back for WAN redundancy. The DX940 is purpose-built to be deployed and located in harsh environments.

**Be certain.
Belden.**

GarrettCom Magnum DX940 - Configurable Router with Cellular

Secure Management Software

The Magnum DX940 includes MNS-DX software for the necessary handshakes and authentications which are required for configuring cellular access. MNS-DX also includes IP routing, Ethernet switching, Serial-to-IP terminal services, and network security features. With the use of MNS-DX, the Magnum DX940 router can be easily installed and be up and running in a couple of hours compared to days or weeks for setting up leased line or dial-up connections.

Extra security features such as IPSec/VPN (including GRE tunnels for VPN), stateful firewall, RADIUS, syslog, Secure Seal SSL, SSH port forwarding and other security capabilities can be added via an MNS-DX-SECURE license key.

MNS-DX-SECURE also provides IP firewall features including address/port inspection/filtering, VPN connectivity over IPsec with strong 3DES, AES encryption, and both shared key (PSK) and X.509 certificates. Advanced routing capability for OSPF and BGP networks is enabled using the MNS-DX-ADVAVR software license key.

Optional serial ports enable Serial-IP terminal services via RS232, RS485, and RS422 serial interfaces as well as protocols such as DNP, telnet, and Modbus, including Modbus-ASCII/RTU to Modbus-TCP interworking. MNS-DX-SECURE also enables serial devices to transmit data securely using Serial-SSL connections.

Rugged Design

The DX940 operates at -40°C to +85°C without open vent holes or fans, and meets IP52 rating.

Hard metal packaging is standard and conformal coating for protection against moisture and corrosion is also available.

Product Specifications

Type	DX940
Product Description	DX940 base unit with configurable four 100Mb SFP Ethernet or 10/100 RJ45 ports. Other additions: 4 serial, 2 gig fiber/copper, choice of two WAN access ports (Cellular, T1/E1, DDS WAN). Includes IP routing, Ethernet switching and secure management. MNS-DX software license included. Panel mount. Other mounting options and conformal coating are also available.
Specifications	
Serial Protocols	Async to TCP/IP – including Modbus gateway for connectivity to serial Modbus devices and to other Modbus Ethernet devices; TCP/IP to serial/reverse terminal server, Serial Multipoint & Multimaster Topologies; PPP with authentication.
Performance	
Serial DB9 Ports	RS232/RS485 software selectable DB9 interface. Serial data rate from 300 bps to 230.4 kbps. Data length - 1-32 bits.
RJ-45 Ports	100 or 10 Mb speed, full- or half-duplex mode, per port, individually determined. 10/100 auto-negotiating & auto-cross
Fiber Ports <small>(multi-mode and single-mode)</small>	Configurable in modules. at 2/module, or SFF (Small Form Factor) for high fiber port density, 4 per module. Each FDX or HDX, default is FDX mode.
Gigabit Ports, 1000 Mb	Configurable, std. See configuration guide for selection of modules
Cellular WAN Ports	3G EVDO REV A, EVDO, CDMA,; Frequency – 1900MHz/800 MHz; supports antenna diversity. Cellular Antennas - optional high gain external antennas available. Used when the cellular signal is weak or not available due to enclosed areas.
WAN Ports	DDS: 56/64 kbps OR T1/E1: 1.544 Mbps / 2.048 Mbps G.703; Full rate and fractional (N*56/64kbps); Integral CSU/DSU
Network Standards	
Auto-Negotiation on TP	IEEE 802.3z, 802.3ab, 802.1p: 100BASE-TX, -FX, 1000BASE-SX, -LX
Flow Control & Prioritization	TP, IEEE 802.3u
VLANs	Compliant
Spanning Tree	Compliant
DiffServ	IEEE 802.1p: DiffServ, traffic prioritization for routed IP flows/ports



Product Specifications (continued)

Software	
MNS-DX and MNS-DX-SECURE licensed software	
Management & Diagnostics	
Ease-of-Use	Web-based Graphical User Interface (GUI) or CLI access remote SSH or TELNET connection. Powerful built-in protocol analyzer to assist with troubleshooting.
Other	Comprehensive statistics, SNMP MIB II and SNMP Traps, Routing Information, DHCP, ARP and other tables.
Operating Environment	
Operating Temperature	IEC 60068 Operating temp. per "Type Test" -40° to 185°F (-40° to 85°C)
Temperature Rating (components)	UL 60950 "Component Parts" temperature rating: 140°F (60°C)
Storage Temperature	-40° to 185°F (-40° to 85°C)
Ambient Relative Humidity	5% to 95% (non-condensing)
Altitude	-200 to 13000ft (-60 to 4000m)
Conformal Coating (humidity protection)	Request quote
Mechanical	
Enclosure	Rugged high-strength sheet metal
Mounting	19" ETSI and 23" Rack, Panel Mount and DIN-Rail
Cooling Method	Convection.
Dimensions	9.5" W x 9.0" D x 1.75" H (24.13 cm x 22.86cm x 4.45 cm); 1 RU
Weight	5 lbs (2.3 kg)
Power Supply Options	
High Voltage	90-250V AC or DC, 50-60Hz, 0.2A, 18 watts
Low Voltage	24-48V DC, 0.75A, 18 watts
Serial LED Indicators Per DB-9 or RJ45 Port	
One LED/port indicating active connection.	
Ethernet LED Indicators Per RJ45 or Fiber Port	
L/A	One LED/port indicating Link (solid green) and Activity (blinks to indicate activity).
Agency Standards Approval and Compliance	
ETL, UL 60950, EN55022, EN55024 FCC Part 15 CE, EMC & ENV	
Warranty	
Warranty	Three Years

DX940 Configuration Guide

DX940-4RJ-H - DXC-2GCU - DXC-DDS - DXC-4SERIAL - SA - XX

Product Family

DX940-4RJ-H = 90-250V DC/AC, 4x 10/100Mb RJ45 ports
 DX940-4RJ-L = 24-48V DC, 4x 10/100Mb RJ45 ports
 DX940-4FXSFP-H = 90-250V DC/AC, 4x 100Mb SFP ports
 DX940-4FXSFP-L = 24-48V DC, 4x 100Mb SFP ports

Slot A (Gigabit Port)

DXC-2GCU = 2x 10/100/1000Mb RJ45 ports
 DXC-2GSFP = 2x 1000Mb SFP ports
 XXXX = Blank Slot

Slot C (WAN Port)

DXC-CW = 1 EVDO 3G cellular
 DXC-CW-DDS = 1 EVDO 3G cellular + 1 DDS
 DXC-CW-T1E1 = 1 EVDO 3G cellular + 1 E1/T1
 DXC-DDS = 1 DDS WAN port
 DXC-T1E1 = 1 T1/E1 WAN port
 XXX = Blank Slot

Slot D (Serial Port)

DXC-4SERIAL = 4 DB9-DTE Serial ports
 XX = Blank Slot

Software

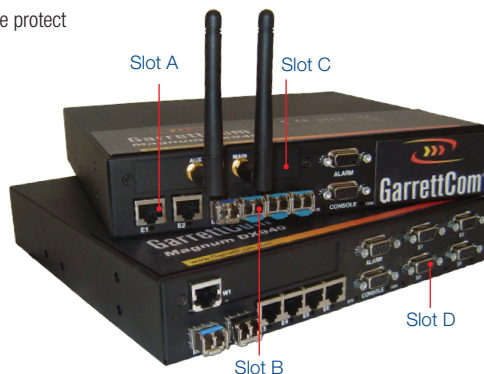
DX = Standard MNS-DX Software
 AD = MNS-DX ADVAR License
 SE = MNS-DX Secure License
 SA = Both Secure and ADVAR

Conformal Coating

CONFORM05-CRM = 5 mil, for moisture protect
 CONFORM08-CRM = 8 mil, for moisture protect
 XX = No Conformal Coating

DX940 Accessories

Module No.	Description
SFP-SX	Gb SX, 850nm wavelength, 550 meters
SFP-ESX	Gb SX, 1310nm wavelength, 2km
SFP-LX25	Gb LX, 1310nm wavelength, 25km
SFP-ZX40	Gb ZX, 1550nm wavelength, 40km
SFP-ZX70	Gb ZX, 1550nm wavelength, 70km
SFP-GT	Gb Copper
SFP-LX10	Gb LX, 1310nm wavelength, 10km
SFP100P-RJ45	100Mb Copper SFP transceiver, 10/100 auto-negotiating
SFP100P-FXMM2	100FX Fiber Optic SFP transceiver, multimode, 2Km
SFP100P-FXSM20	100FX Fiber Optic SFP transceiver, singlemode, 20Km.
SFP100P-FXSM40	100FX Fiber Optic SFP transceiver, singlemode, 40Km.
CONSOLE-CBLQD	Console attachment cable serial null Modem (aka X-modem) cable with DB9 connectors
CONSOLE-CBLQU	Console attachment cable serial null Modem (aka X-modem) cable with a USB connector



Module No.	Description
ACC-DX-00-PM	Panel Mount bracket spares
ACC-DX-00-DM	Set of two DIN-Rail holders for vertical mount
ACC-DX-00-RM	Rack-mount brackets for 19" rack mounting
ACC-DX-00-RRM	Rack-mount brackets for 19" Reverse rack mounting
RMB-ETSI	Brackets to extend width from 19" to ETSI width; Prerequisite: ACC-DX-00-RM or ACC-DX-00-RRM
RMB-23W	Brackets to extend width from 19" to 23" Telco width; Prerequisite: ACCDX-00-RM or ACC-DX-00-RRM
DXCW-ANT-DIPOLE:	Omni-directional external dipole Antenna. This pair of "rabbitears" antennas has 3 db gain, and attaches to both of the cellular port connectors.
DXCW-ANT-DOME:	Omni-directional low profile external dome antenna. Has 3 db gain. Suitable for mounting on side of a building.
DXCW-ANT-POLE:	Omni-directional 3db external antenna. Suitable for mounting on a tower or on a pole

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