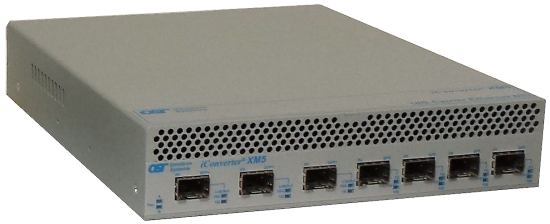
Omnitron Systems

iConverter® XM5
Network Interface Device



Quick Start Guide

38 Tesla, Irvine, CA 92618 USA
Phone: (949) 250-6510; Fax: (949) 250-6514

Warranty

This network product and the included AC/DC power adapter are warranted to the original purchaser (Buyer) against defects in material and workmanship for a period of two (2) years from the date of shipment. The warranty for the network product can be extended to three (3) years by registering the product at www.omnitron-systems.com/support within ninety (90) days from the date of shipment. During the warranty period, Omnitron will, at its option, repair or replace a product which is proven to be defective with the same product or with a product with at least the same functionality.

For warranty service, the product must be sent to an Omnitron designated facility, at Buyer's expense. Omnitron will pay the shipping charge to return the product to Buyer's designated US address using Omnitron's standard shipping method.

Limitation of Warranty

The foregoing warranty shall not apply to product malfunctions resulting from improper or inadequate use and/or maintenance of the equipment by Buyer, Buyer-supplied equipment, Buyer-supplied interfacing, unauthorized modifications or tampering with equipment (including removal of equipment cover by personnel not specifically authorized and certified by Omnitron), or misuse, or operating outside the environmental specification of the product (including but not limited to voltage, ambient temperature, radiation, unusual dust, etc.), or improper site preparation or maintenance.

No other warranty is expressed or implied. Omnitron specifically disclaims the implied warranties of merchantability and fitness for any particular purpose.

The remedies provided herein are the Buyer's sole and exclusive remedies. Omnitron shall not be liable for any direct, indirect, special, incidental, or consequential damages, whether based on contract, tort, or any legal theory.

Environmental Notices

The equipment covered by this manual must be disposed of or recycled in accordance with the Waste Electrical and Electronic Equipment Directive (WEEE Directive) of the European Community directive 2012/19/EU on waste electrical and electronic equipment (WEEE) which, together with the RoHS Directive 2015/863/EU, for electrical and electronic equipment sold in the EU after July 2019. Such disposal must follow national legislation for IT and Telecommunication equipment in accordance with the WEEE directive: (a) Do not dispose waste equipment with unsorted municipal and household waste. (b) Collect equipment waste separately. (c) Return equipment using collection method agreed with Omnitron.

The equipment is marked with the WEEE symbol shown to indicate that it must be collected separately from other types of waste. In case of small items the symbol may be printed only on the packaging or in the user manual. If you have questions regarding the correct disposal of equipment go to www.omniton-systems.com/support or e-mail to Omnitron at intlinfo@omnitron-systems.com.

Safety Warnings and Cautions

ATTENTION: Observe precautions for handling electrostatic discharge sensitive devices.

WARNING: Potential damage to equipment and personal injury.

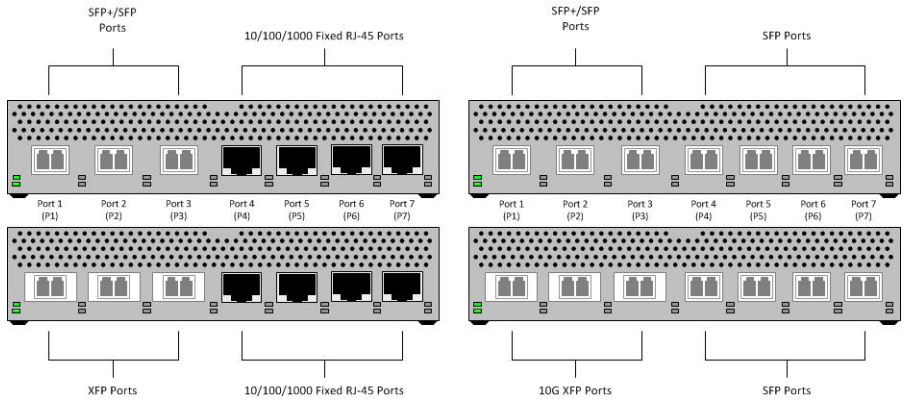
WARNING: Risk of electrical shock.

Product Overview

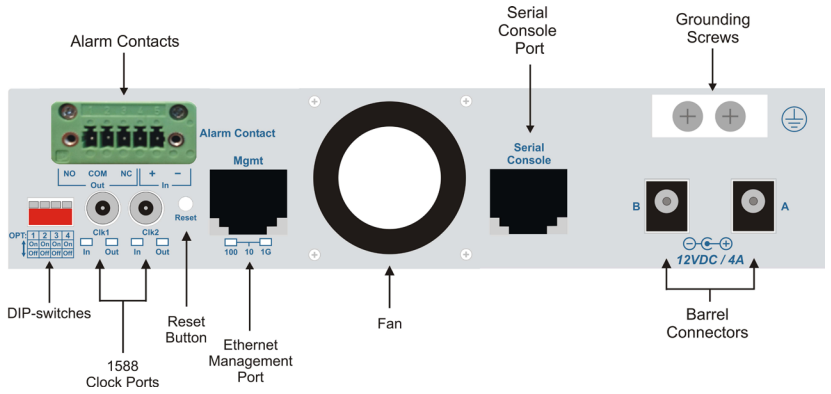
The iConverter® XM5 is a 10G Network Interface Device (NID) that provides service demarcation and aggregation for Carrier Ethernet 2.0 services. The XM5 provides comprehensive support of the latest carrier-class Ethernet Service OAM, testing and protection standards.

A full version of the user manual is available by registering on the Omnitron web site at: https://www.omnitron-systems.com/create-an-account.

The front panel of the XM5 provides access to the RJ-45 (fixed copper) and SFP/SFP+/XFP ports. The back panel of the XM5 provides access to the management (serial console and Ethernet) port, alarm contact connector, clock I/O connectors, reset button and power connectors. All available hardware options are shown.



Front Panel Layout



Rear Panel Layout with Dual AC Barrel Connectors

Serial Console Port

The XM5 features a RS-232 Serial Console Port (aka Craft Interface) which can be connected to a computer for initial setup and configuration. The Serial Console Port is accessed through the a RJ-45 port on the back of the module.

Ethernet Management Port

The XM5 supports a 10/100/1000Mbps Ethernet management port. The port supports auto-negotiation and auto MDI/MDI-X crossover. The physical port is referred to as Port 8 in the CLI menus. The default IP address is 192.168.1.220. Username: admin password: public

RJ-45 Ports

The RJ-45 Ethernet ports support 10BASE-T, 100BASE-TX and 1000BASE-T protocols, auto-negotiation, auto MDI/MDI-X crossover and can be manually forced to a specific speed and duplex mode using the *port* command.

SFP/SFP+/XFP Ports

The SFP interfaces (P4 - P7) support SERDES 100BASE-X or 1000BASE-X fiber transceivers and SGMII 10/100/1000BASE-T copper transceivers. The SFP interfaces operate in manual mode or auto-negotiation and support full duplex operation.

NOTE: When using 100BASE-X and SGMII SFPs, the port must be manually configured using the Command Line Interface (CLI). Interface settings can be changed using the *port* command.

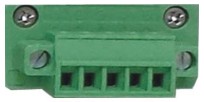
The SFP+ interfaces (P1 - P3) support 10G Ethernet fiber transceivers up to power level 2 devices, 1000BASE-X fiber transceivers and 1000BASE-T copper transceivers.

The XFP interfaces support 10G Ethernet fiber transceivers up to power level 4 devices.

Alarm Contact Connector

The alarm contact connector is located on the rear of the unit and is used to alert of an internal alarm conditions and detect the state of external alarm conditions. Not all models support this hardware feature.

The pinout for the alarm contact is shown below.



1 2 3 4 5

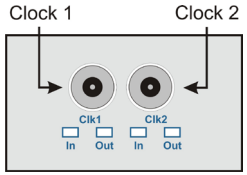
Alarm Contact Connector Pinout

Pin	Function
1	Normally Open - Output
2	Common - Output
3	Normally Closed - Output
4	Detection - Input
5	Ground

Alarm Contact Description

Clock I/O Connectors

The clock I/O connectors are located on the rear of the unit and can be configured as inputs or outputs to support IEEE 1588 clock requirements. Not all models support this hardware feature.



Clock I/O

SMB clock I/O connectors can be configured as inputs or outputs.

Reset Button

The reset button when pushed will reboot or factory default the module depending on the length of time the button is pushed.

Time	Function
Less than 10 seconds	Module Reboot
10 to 20 seconds	Restores Factory Defaults
Greater than 20 seconds	No action

Reset Button Functions

Installation Procedure

1) Configure DIP-switches
2) Installing the Module
3) Apply Power
4) Connect Cables
5) Configure Module via Command Line Interface
6) Verify Operation

1) Configure DIP-switches

The function of DIP-switch is outlined in the table below.

Switch Position	Description	Down (Off)	Up (On)
1	Reserved	Off	-
2	Reserved	Off	-
3	Zero Touch 1	Normal	On
4	Zero Touch 2	Normal	On

DIP-switch Description

SW1 and SW2 - Reserved

These DIP-switches are reserved and must be in the DOWN (default) position.

SW3 and SW4 - Zero Touch Provisioning

Zero Touch Provisioning (ZTP) utilizes DHCP and TFTP to automatically configure the module during the initial setup.

SW3	SW4	Function
OFF (DOWN)	OFF (DOWN)	ZTP process is disabled
ON (UP)	OFF (DOWN)	Listen Mode
OFF (DOWN)	ON (UP)	Activate Mode
ON (UP)	ON (UP)	Standard Mode

ZTP Options

Zero Touch is disabled by default. The ZTP process is configured by setting these DIP-switches to the desired mode of operation.. The ZTP process is initiated at start-up.

Refer to the full user manual for more details on the ZTP process (041-09600-001x).

2) Installing the Module

Wall Mounting

The wall mounting height of the module should be less than or equal to 2 meters (6.6 feet) from the floor. Use the four mounting holes on the module to secure the module to the wall. The module can accommodate #6 screws (not included).

Installation of the module should be such that the air flow in the front, back, side and top vents of the switch are not compromised or restricted.

The accessory cables should have their own strain relief and do not pull down on the module.

Rack Mounting

The module can be rack mounted using the optional Rack Mount Shelf (8261-0). Refer to the Rack Mount Shelf user manual (040-08261-001x) for the proper installation guidelines. Follow the same guidelines above when rack mounting the module.

3) Apply Power

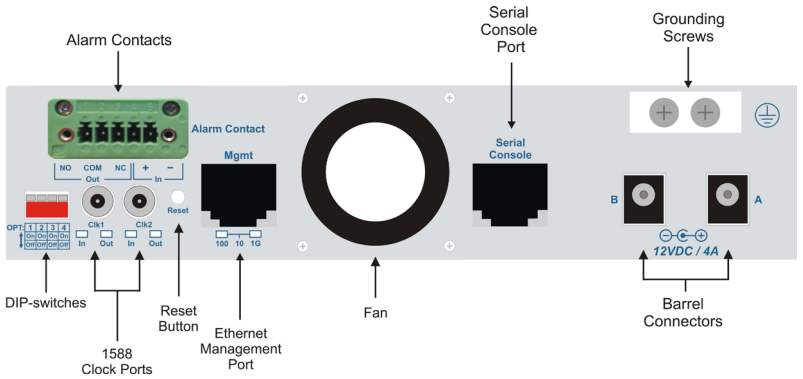
AC Power

To power the XM5 using the AC/DC adapter, connect the barrel plug at the end of the wire on the AC/DC adapter to the 2.5mm DC barrel connector (center-positive) on the back of the XM5. Then connect the AC/DC adapter to an AC outlet. Confirm the XM5 has powered up properly by checking the status of the Power LED located on the front of the XM5.

Depending on the model number of the module, a second power source is available. Use the same power supply installation procedure above for the second power supply.

Installation of the equipment should be such that the air flow in the front, back, side and top vents of the XM5 are not compromised or restricted.

Secure the grounding wire to the ground screws. See the figure for the location of the grounding screws.



Rear View with Dual AC Barrel Connector

WARNING!!!

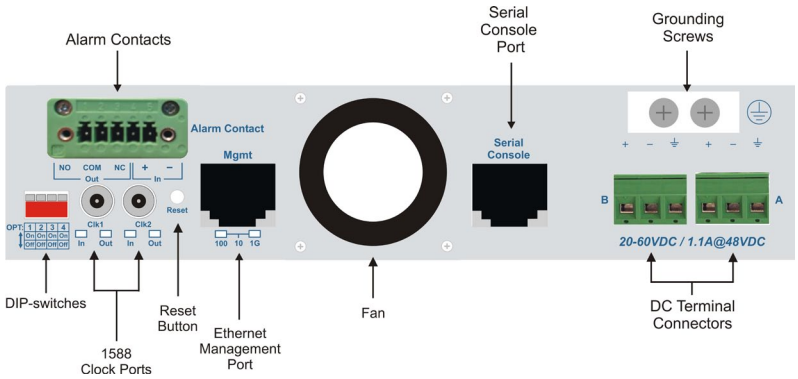
NEVER ATTEMPT TO OPEN THE CHASSIS OR SERVICE THE POWER SUPPLY OR FAN MODULE. OPENING THE CHASSIS MAY CAUSE SERIOUS INJURY OR DEATH.
THERE ARE NO USER REPLACEABLE OR SERVICEABLE PARTS IN THIS UNIT.

DC Power

This module is intended for installation in restricted access areas. ("Les matériels sont destinés à être installés dans des EMPLACEMENTS À ACCÈS RESTREINT"). A restricted access area can be accessed only through the use of a special key, or other means of security.

The over current protection for connection with centralized DC shall be provided in the building installation, and shall be a UL listed circuit breaker rated 20 Amps, and installed per the National Electrical Code, ANSI/NFPA-70.

The XM5 requires +/-20 to +/-60VDC inclusive or tolerance (48VDC @ 1.1 Amp max rated power). Appropriate overloading protection should be provided on the DC power source outlets utilized.



Rear View with Dual DC Terminal Connector

WARNING: Only a DC power source that complies with safety extra low voltage (SELV) requirements can be connected to the DC-input power supply.

WARNING REGARDING EARTHING GROUND:

- This equipment shall be connected to the DC supply system earthing electrode conductor or to a bonding jumper from an earthing terminal bar or bus to which the DC supply system earthing electrode is connected.
- This equipment shall be located in the same immediate area (such as adjacent cabinets) as any other equipment that has a connection between the earthed conductor of the same DC supply circuit and the earthing conductor, and also the point of earthing of the DC system. The DC system shall not be earthed elsewhere.
- The DC supply source is to be located within the same premises as this equipment.
- There shall be no switching or disconnecting devices in the earthed circuit conductor between the DC source and the earthing electrode conductor.

Locate the DC circuit breaker of the external power source, and switch the circuit breaker to the OFF position.

Prepare a power cable using a three conductor insulated wire (not supplied) with 12AWG to 14AWG thickness. Cut the power cable to the length required.

Strip approximately 3/8 of an inch of insulation from the power cable wires.

Connect the ground wire to the grounding screws on the back of the module.

Connect the power cables to the terminal by fastening the stripped ends to the DC power connector.

WARNING: Note the wire colors used in making the positive, negative and ground connections. Use the same color assignment for the connection at the circuit breaker.

Connect the power wires to the circuit breaker and switch the circuit breaker ON. The Power LED will indicate the presence of power.

During the installation, ensure that the ground potentials are maintained throughout the system connections. This includes but not limited to the power source ground and any shielded cabling grounds.

Installation of the equipment should be such that the air flow in the front, back and side vents of the XM5 are not compromised or restricted.

WARNING!!!

NEVER ATTEMPT TO OPEN THE CHASSIS OR SERVICE THE POWER SUPPLY OR FAN MODULE. OPENING THE CHASSIS MAY CAUSE SERIOUS INJURY OR DEATH.
THERE ARE NO USER REPLACEABLE OR SERVICEABLE PARTS IN THIS UNIT.

4) Connect Cables

a. Insert the fiber or copper transceivers into the 10G/1G receptacles on the module.

NOTE: The release latch of the transceiver must be in the closed (up) position before insertion.

The XM5 has the ability to detect the speed and automatically configure the port to match the speed of approved transceivers. Some fiber transceivers will need to be configured using the *port* CLI commands to configure the speed of the port to match the speed of the installed SFP transceiver.

b. Connect the appropriate multimode or single-mode fiber cable to the fiber port of the installed module. When using dual fiber, it is important to ensure that the transmit (TX) is attached to the receive side of the device at the other end and the receive (RX) is attached to the transmit side. Single-fiber (SF) transceivers operate in pairs. The TX wavelength must match the RX wavelength at the other end and the RX wavelength must match the TX wavelength at the other end.

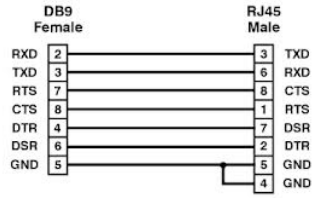
c. For models with fixed RJ-45 ports or copper SFP transceivers, connect the RJ-45 port via a Category 5 or better cable to a 10BASE-T, 100BASE-TX or 1000BASE-T Ethernet device (depending on the configuration of the port).

5) Configure Module via Command Line Interface

To configure the XM5 using the serial port, attach a DB-9 serial (RS-232) equipped computer with terminal emulation software such as Procomm or Putty to the serial console port on the XM5. The Serial Console Port (DCE) is a RJ-45 connector (per EIA/TIA-561) which can be changed to a DB-9 connector.

The serial console port is located on the back of the device. Attach the ends of a serial adapter cable to the serial port of the PC and the RJ-45 connector of the XM5. The port is a standard RS-232 asynchronous serial interface.

The serial adapter cable pin-outs are illustrated below.



Serial Adapter Cable Pin Outs

Serial Console Port Settings

Start the terminal emulation program and select the correct COM Port. Set the serial port to the following:

Bits Per Second	57,600	Stop Bits	1
Data Bits	8	Parity	NONE
Hardware Flow Control	NONE		

Once the module has booted, an Entry screen will be displayed on the attached PC. Enter the username and password and press <ENTER>.

Username: admin
password: public

A system prompt, '>', will be displayed. At the module prompt (>), enter *?*, *help* or *h* to view the command options.

6) Verify Operations

Verify the module is operational by viewing the status of the LED indicators. The table below provides a description for each LED indicator.

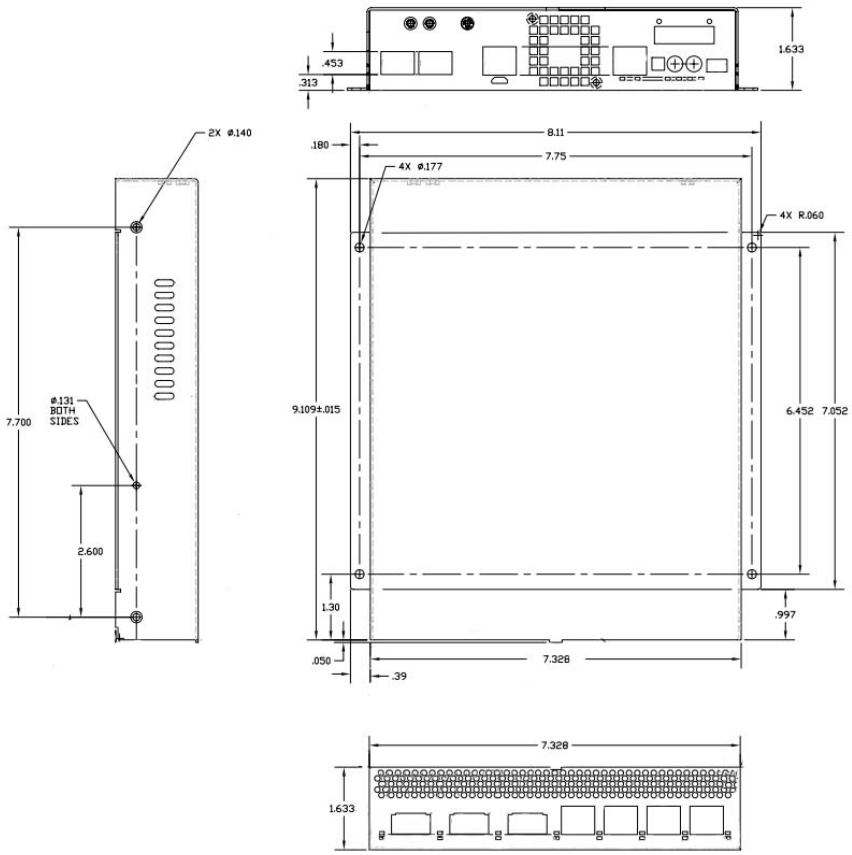
The Power LED(s) indicate the module is receiving power from the external power source.

The port LEDs indicate the state of connection between link partners. A blinking port activity LED indicates the presence of data.

LED Function "Legend"	Color	OFF State	ON/Blinking State
Power "Pwr A"	Green/ Yellow	No power	Solid Green: Module has power Blinking Yellow (10Hz): Fan Alarm
Power "Pwr B" (Dual power models only)	Green/ Yellow	No Power	Solid Green: Module has power Blinking Yellow (10Hz): Fan Alarm
P1, P2, P3 Link/Act "10G"	Green	Port not linked	Solid Green: Port linked at 10G Blinking Green (10Hz): Data activity Blinking Green (1Hz): Energy detected but no link
P1, P2, P3 Link/Act "1G" (SFP+ models only)	Green	Port not linked	Solid Green: Port linked at 1G Blinking Green (10Hz): Data activity Blinking Green (1Hz): Energy detected but no link
P4, P5, P6, P7 Link/Act "100"	Green	Port not linked at 100M	Solid Green: Port linked at 100M Blinking Green (10Hz): Data activity Blinking Green (1Hz): Far-end fault detected but no link
P4, P5, P6, P7 Link/Act "1G"	Green	Port not linked at 1G	Solid Green: Port linked at 1G Blinking Green (10Hz): Data activity Blinking Green (1Hz): Auto-negotiation detected but no link
P4, P5, P6, P7 Link/Act "100 and 1G"	Green	Port not linked at 10M	Solid Green: Port linked at 10M Blinking Green (10Hz): Data activity
Mgmt "100" (Located on the back)	Green	Port not linked at 100M	Solid Green: Port linked at 100M Blinking Green (10Hz): Data activity Blinking Green (1Hz): Far-end fault detected but no link
Mgmt "1G" (Located on the back)	Green	Port not linked at 1G	Solid Green: Port linked at 1G Blinking Green (10Hz): Data activity Blinking Green (1Hz): Auto-negotiation detected but no link
Mgmt "100" and "1G" (Located on the back)	Green	Port not linked at 10M	Solid Green: Port linked at 10M Blinking Green (10Hz): Data activity

LED Indicators

Mechanical



Specifications

Standard Compliances	IEEE 802.1Q, 802.1ad, 802.1p, 802.3, 802.3ah*, 802.1ag,1588v2 RFC 2819 (RMON), 2863 (IF-MIB), 2131 (DHCP), 2544 ITU-T G.8031, G.8032, G.8262, Y.1731, Y.1564 MEF Carrier Ethernet 2.0 Certified MEF 6.2, 9, 10.2, 14, 21, 26.1, 30, 31, 33	
Management	Telnet, SNMPv1, SNMPv2c, SNMPv3, SSH, Serial Console	
Regulatory Compliances	Safety: EMI: ACT:	UL, CE, NEBS, UKCA FCC Class A TAA, BAA, NDAA
Environmental	RoHS, WEEE, REACH	
Frame Size	Up to 10,056 bytes	
Port Types	Copper:	10/100/1000BASE-T (Fixed RJ-45)
	Fiber:	1G SFP: 1000BASE-X,10/100/1000BASE-T, 100BASE-X 10G SFP+: 10GBASE-R, 1000BASE-X, 10/100/1000BASE-T 10G XFP: 10GBASE-R
	Serial: (Management)	RS-232 (RJ-45)
	Copper: (Management)	10/100/1000BASE-T (RJ-45)
Cable Types	Copper:	EIA/TIA 568 A/B, Category 5 and higher
	Fiber:	Multimode: 50/125um, 62.5/125um Single-mode: 9/125um
	Serial: (Management)	EIA/TIA 568 A/B, Category 3 and higher
	Copper: (Management)	EIA/TIA 568 A/B, Category 5 and higher
AC Power Requirements	AC Power Adapter:	100-240VAC~ 50-60Hz 0.6A @ 110VAC
DC Power Requirements	2.5mm Barrel Connector:	12VDC Maximum power consumption 48W
	3-Pin Terminal:	+/- 20 to 60VDC inclusive of tolerance Maximum power consumption 48W
Temperature	Commercial: Wide: Extended: Storage:	0 to 50° C -40 to 60° C -40 to 75° C -40 to 80° C
Dimensions (W x D x H)	7.29” x 9.15” x 1.63” (185.17 mm x 232.41 mm x 41.4 mm)	
Weight	3.24 lbs (1.47 kg)	
Humidity	5% to 95% (non-condensing)	
Altitude	-100m to 4,000m (operational)	
Warranty	3 year warranty	

*IEEE 802.3ah Link OAM with Dying Gasp
Supported on all standalone models.

Customer Service Information

If you encounter problems while installing this product, contact Omnitron Technical Support:

Phone: (949) 250-6510
Fax: (949) 250-6514
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