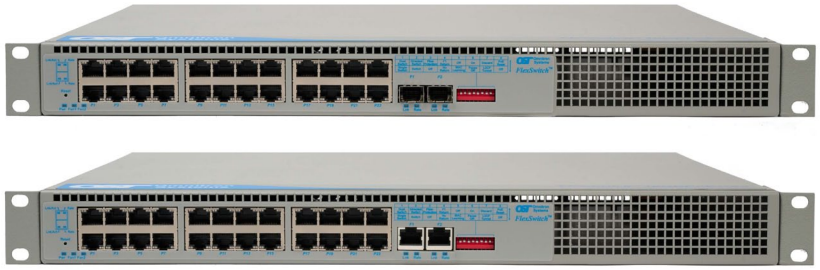
Omnitron Systems

FlexSwitch® 10GR/Sx

Unmanaged 24 Port Ethernet Switch



User Manual Guide

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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 (excluding the AC/DC power adapter) can be extended to five (5) 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.omnitron-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.

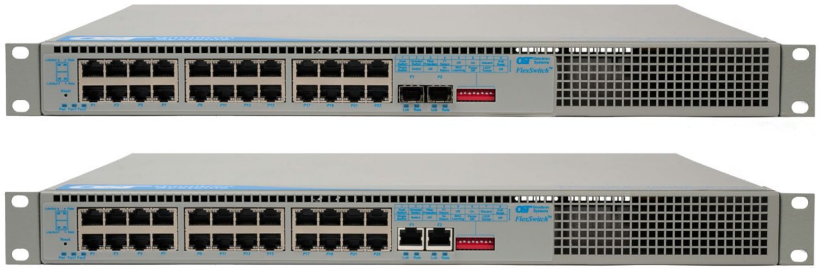
WARNING: Risk of electrical shock.

FlexSwitch® 10GR/Sx User Manual

Product Overview

The FlexSwitch 10GR/Sx is an unmanaged Ethernet switch that features two 1/10G SFP/SFP+ or multi-gigabit/multi-rate RJ-45 uplink ports and twenty-four 10/100/1000 RJ-45 copper ports. This layer 2 switch is ideal for connecting computers and servers in a high density office environment,

The RJ-45 uplink ports support multi-gigabit/multi-rate speeds of 100Mbps, 1Gbps, 2.5Gbps, 5Gbps and 10Gbps.



FlexSwitch 10GR/Sx 24 Port Models

Front Panel

The front of the switch provides access to the RJ-45 user ports, uplink ports and DIP-switches.

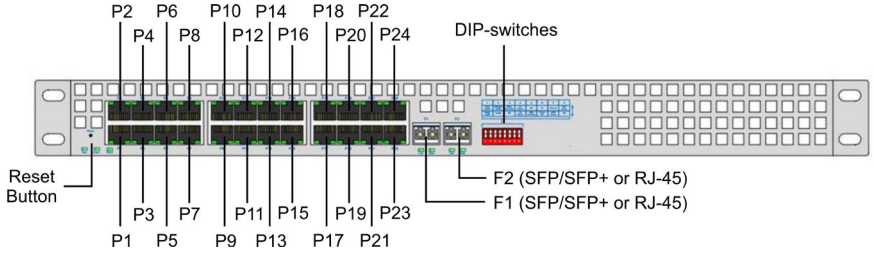
RJ-45 and Uplinks Ports

The RJ-45 Ethernet user port supports speeds of 10/100/1000, auto-negotiation, and auto MDI/MDI-X crossover.

Models are available with an RJ-45 or SFP/SFP+ uplink port.

The SFP/SFP+ transceiver receptacle port supports a variety of copper and fiber transceivers. It supports 10/100/1000BASE-T, 1000BASE-T, copper transceivers and 1G and 10G multimode or single-mode fiber, dual or single-fiber transceivers in standard, CWDM and DWDM wavelengths.

The RJ-45 uplink port is a multi-gigabit/multi-rate supporting speeds of 100Mbps, 1Gbps, 2.5Gbps, 5Gbps and 10Gbps.



Front Panel Layout

Installation Procedure

1) Configure DIP-switches

2) Installing the Switch

3) Apply Power

4) Connect Cables

5) Verify Operation

1) Configure DIP-switches

DIP-switches are located on the front of the switch.

The table below provides a description of each DIP-switch position and function.

Switch	Position	Legend	Function
SW1	DOWN	Single Switch	Device Mode
	UP	Dual Switch	
SW2	DOWN	Switch	Switch Mode
	UP	Directed Switch	
SW3	DOWN	Off	Uplink Redundancy
	UP	Link Protection	
SW4	DOWN	No Return	
	UP	F1 Return	
SW5	DOWN	MAC Learning	MAC Learning Enabled (factory default)
	UP	Off	MAC Learning Disabled
SW6*	DOWN	Reserved	
	UP		
SW7	DOWN	L2CP Tunnel	L2CP Tunnel (factory default)
	UP	Discard	L2CP Tunnel Discard
SW8	DOWN	Reserved	
	UP		

***On the front of the switch, SW6 is labeled as PAUSE. The Pause feature is not implemented.**

SW1 and SW2: Device and Switch Mode

The switch supports Switch, Directed Switch and Dual Device mode. The modes are described with MAC learning enabled. When MAC learning is disabled, unicast packets are forwarded to all ports.

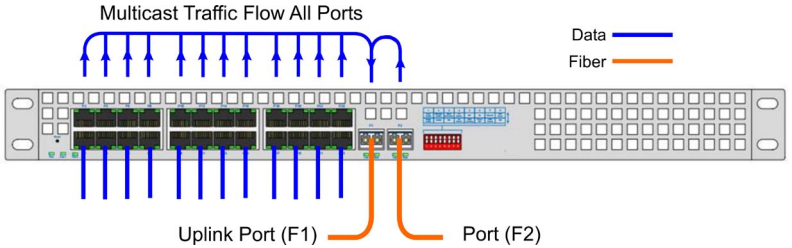
SW1	SW2	Function
DOWN	DOWN	Switch Mode (factory default)
DOWN	UP	Directed Switch Mode (AKA Camera Mode)
UP	DOWN	Dual Device Mode - Switch Mode
UP	UP	Dual Device Mode - Directed Switch Mode

Switch Mode

When configured for Switch Mode (factory default), the switch operates as a standard layer 2 switch. Data flow will follow MAC address mapping.

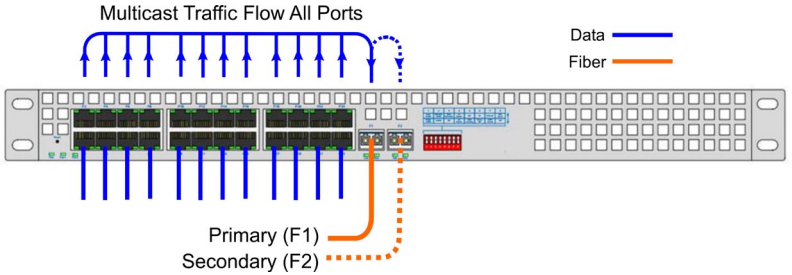
Directed Switch Mode (AKA Camera Mode)

When configured for Directed Switch Mode, traffic from all the RJ-45 user ports is only forwarded to the uplink port F1, preventing the broadcast traffic from flooding other network ports. The data traffic on the additional uplink port (F2) is also forwarded to port F1. Incoming traffic from F1 follows MAC address mapping.



Directed Switch Mode Dual Uplink Port

When configured for Directed Switch Mode and Uplink Redundancy (per DIP-switches 3 and 4), traffic is forwarded to both the primary and secondary uplink ports. The secondary port will block all traffic while the primary port is active. When the primary port goes down, the secondary port will be active and all traffic will be forwarded out the secondary port (F2).



Directed Switch Mode with Uplink Redundancy

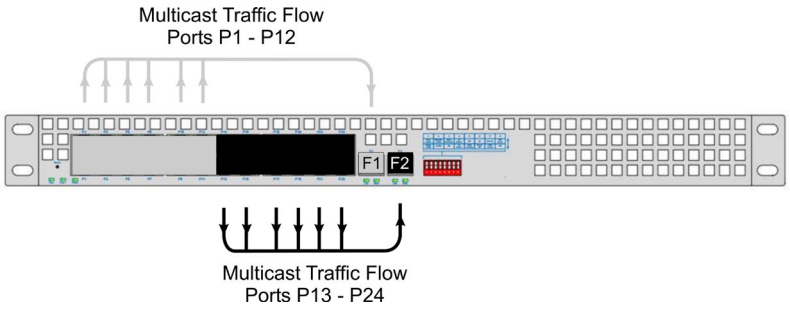
Dual Device Mode

When configured for Dual Device Mode, the switch is configured as two logically independent Layer 2 switches. Port F1 is associated with ports P1 - P12 and Port F2 is associated with ports P13 - P24. Data flow will follow MAC address mapping.

Dual Device Mode

When configured for Dual Device Mode and Directed Switch Mode, the traffic from ports P1- P12 are only forwarded to uplink port F1 and ports P13 - P24 are only

forwarded to uplink port F2. This prevents broadcast traffic from flooding other network ports. Incoming traffic from F1 and F2 follows MAC address mapping.



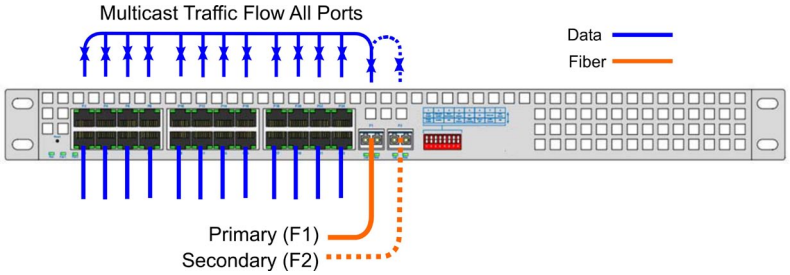
Dual Device with Directed Switch Mode

SW3 and SW4: Uplink Redundancy

The modes are described with MAC learning enabled. When MAC learning is disabled, the switch will send data to all ports.

SW3	SW4	Function
DOWN	DOWN	Switch Mode (factory default)
DOWN	UP	Switch Mode (factory default)
UP	DOWN	Redundant Mode - no return to primary (F1)
UP	UP	Redundant Mode - return to primary (F1)

When configured for Uplink Redundant Mode “no return to primary”, the uplink ports operate as redundant links. A fault on the primary Port F1, will cause a fail over to the secondary Port F2 within 50msec. Port F1 will become the secondary port once the failure condition has been restored because “no return to primary” has been selected.



Redundant Uplink

When configured for Uplink Redundant Mode “return to primary’, a fault on the primary Port F1, will cause a fail over to the secondary Port F2 within 50msec. The switch will return to the primary Port F1 after the failure condition has been restored for 6 seconds.

SW5: MAC Learning - “MAC Learning/Off”

When this DIP-switch is in the DOWN “MAC Learning” position (factory default), all ports on the switch will learn the source MAC address of each received packet and store the address so packets destined for the stored addresses can be forwarded to the appropriate port on the switch. When the DIP-switch is in the UP “Off” position, learning is turned off and all received unicast packets are forwarded to all ports.

SW6: Reserved

Leave the DIP-switch in the default DOWN position.

On the front of the switch, SW6 is labeled as PAUSE. The Pause feature is not implemented.

SW7: L2CP - “L2CP Tunnel/Discard”

When this DIP-switch is in the DOWN “L2CP Tunnel” position (factory default), all L2CP frames will be tunneled through the switch. When this DIP-switch is in the UP “Discard” position, all L2CP frames will be discarded with the exception of the frames listed below.

Multicast Destination Address	Name	SW7 L2CP DOWN / UP
01-80-C2-00-00-00	Bridge Group Address	Based on RSTP / MSTP
01-80-C2-00-00-01	IEEE Std 802.3 Full Duplex PAUSE	Based on PAUSE
01-80-C2-00-00-03	IEEE Std 802.1X PAE Address	Based on AAA 802.1X
01-80-C2-00-00-0B	Reserved for future standardization	Tunnel
01-80-C2-00-00-0C	Reserved for future standardization	Tunnel
01-80-C2-00-00-0D	Provider Bridge GVRP Address	Tunnel
01-80-C2-00-00-0E	IEEE Std 802.1AB LLDP	Based on LLDP
01-80-C2-00-00-0F	Reserved for future standardization	Tunnel
01-80-C2-00-00-10	All Bridges	Tunnel
01-80-C2-00-00-2X	GARP	Tunnel
01-80-C2-00-00-3X	802.1ag CFM	Tunnel

SW8: Reserved

Leave the DIP-switch in the default DOWN position.

2) Installing the Switch

Rack Mounting

Verify the rack is properly grounded to Earth ground. When rack mounting the switch to a 19” standard rack, first attach the two enclosed “L” shaped rack mounting brackets to the chassis using the enclosed screws.

Mount and attach the switch (after the mounting brackets are installed) to the rack using the appropriate rack mounting screws (not provided).

The operating temperature of this equipment is 0 to 50 degrees C, -40 to 60 degrees C or -40 to 75 degrees C depending on the model number. If installed in a closed or multi-unit rack assembly, the operating ambient temperature of the rack must not exceed the maximum rated temperature for the chassis used.

Installation of the equipment should be such that the air flow in the front and back of the unit is not compromised or restricted

3) Apply Power

AC Power

Connect the AC power cord to the AC outlet. Confirm that the switch has powered up properly by checking the Power LED located on the front of the switch.

AC Models Rear View

Make sure to disconnect the power and ground cables before removing the switch.

WARNING!!!

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

DC Power

This switch 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 10GR/Sx requires +12 to +57VDC; 0.67A @ 56VDC max rated power). See specification table for specific model requirements.

Appropriate overloading protection should be provided on the DC power source outlets utilized.

DC Models Rear View

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.

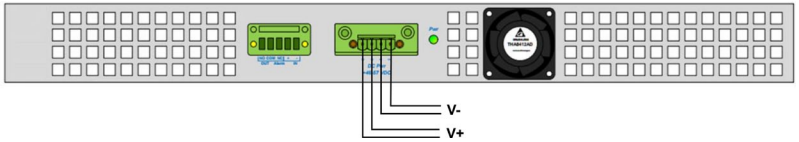
Locate the DC circuit breaker of the external power source, and switch the circuit breaker to the OFF position.

Prepare a power cable using a three conductor insulated wire (not supplied) with 14AWG to 16AWG 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 switch.

Connect the power cables to the switch by fastening the stripped ends to the DC power connector. Only one V+ and one V- connection is necessary to power the switch.



DC Models Rear View: Power Connections

WARNING: The positive lead of the power source must be connected to the "+" terminal on the switch and the negative lead of the power source to the "-" terminal on the switch as shown above.

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. If any switch are installed, 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.

WARNING!!!

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

Make sure to disconnect the power and ground cables before removing the equipment.

4) Connect Cables

a. Insert the SFP/SFP+ transceiver into the SFP receptacle on the front of the module (see the SFP Data Sheet 091-17000-001 for supported Gigabit transceivers or 091-17400-001 for supported 10G transceivers).

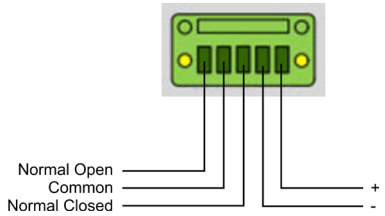
NOTE: The release latch of the SFP fiber transceiver must be in the closed (up) position before insertion.

b. Connect an appropriate multimode or single-mode fiber cable to the fiber port on the front of the module. It is important to ensure that the transmit (TX) is attached to the receive side of the transceiver at the other end and the receive (RX) is attached to the transmit side. When using single-fiber (SF) models, 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. When using RJ-45 uplink port models, connect the multi-gigabit/multi-rate RJ-45 Ethernet port using a cable type as specified in the Speciation Table (Cable Type).

d. Connect the RJ-45 Ethernet 10/00/1000 ports using a Category 5 or better cable to an external Ethernet device.

e. An alarm relay is available to detect a user configured event. The three contacts closure pins can be configured for normally open (pin 1 and 2) or normally closed (pin 3 and 2) operation. The relay contacts support 110VDC/125VAC Maximum Voltage at a maximum current or 2 amps. Use the supplied connector to attach the wire to the external alarm. Use 16 - 24 AWG wire.



Alarm Contact (Output)	2 form C Relay for Normally Open and Normally Closed Operation 110VDC/125VAC Maximum Voltage, 2A Maximum Current

f. An alarm input is available for detecting external events such as door open or closed (pin 4 and 5). The alarm input provides 3.3VDC to detect an external open or shorted condition. Use the supplied connector to attach the wire to the external alarm. Use 16 - 24 AWG wire.

Alarm Sensor (Input)	2.0ma @ 3.3VDC Closure Detection

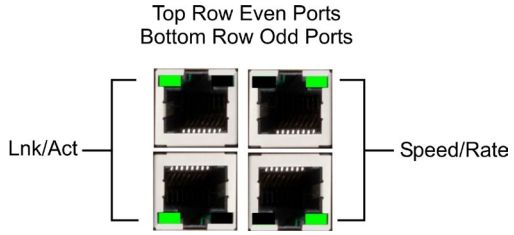
4) Verify Operation

Verify the switch is operational by viewing the LED indicators.

Power and Fan LED Indicators		
Legend	**Indicator**	**Description**
Pwr	OFF	Unit not powered
	Green - ON	Unit powered
Fan 1	OFF	Fan OFF
	Green - ON	Fan ON
	Amber - ON	Fan not operating within specification
Fan 2	OFF	Fan OFF
	Green - ON	Fan ON
	Amber - ON	Fan not operating within specification

Uplink LED Indicators (SFP/SFP+ or RJ-45)		
Legend	**Indicator**	**Description**
Link	OFF	Port not linked
	Green - ON	Port linked at the speed indicated by the Rate LED
	Green - Blinking at 10Hz	Port is linked and transmitting or receiving data
	Green Blinking at 1Hz	Port is in redundant standby mode
	Amber Blinking at 1Hz	Port receiving FEFI
Speed/Rate	OFF	Port not linked
	Green - single blink	Port linked at 10M, 100M or 1G
	Green - two blinks	Port linked at 2.5G
	Green - three blinks	Port linked at 5G
	Green - four blinks	Port linked at 10G
	Green Blinking at 1Hz	Port is in redundant standby mode

Multi-Gigabit/Multi-Rate RJ-45 Port LED Indicators		
Legend	**Indicator**	**Description**
Link	OFF	Port not linked
	Green - ON	Port linked at the speed indicated by the Rate LED
	Green - Blinking at 10Hz	Port is linked and transmitting or receiving data
	Green - Blinking at 1Hz	Port is in redundant standby mode
Spped/Rate	OFF	Port not linked
	Green - single blink	Port linked at 10M, 100M or 1G
	Green - two blinks	Port linked at 2.5G
	Green - three blinks	Port linked at 5G
	Green - four blinks	Port linked at 10G
	Green - Blinking at 1Hz	Port is in redundant standby mode



RJ-45 User Ports LED Indicators			
Legend		**Indicator**	**Description**
Lnk/Act		OFF	No link
		Green - ON	Port linked
		Green - Blinking at 10Hz	Port data activity
Rate/Speed		OFF	No link
		Green - single blink	Port linked at 10M
		Green - two blinks	Port linked at 100M
		Green - three blinks	Port linked at 1G

Specifications

Frame Size		Up to 10,240 bytes
Port Types	Copper:	RJ-45 Uplink Ports 100/1000BASE-T, 2.5GBASE-T/5GBASE-T/10GBASE-T RJ-45 User Ports 10/100/1000BASE-T
	SFP/ SFP+:	10GBASE-X Fiber Transceivers, 10GBASE-T Copper Transceivers 1000BASE-X Fiber Transceivers, 1000BASE-T Copper Transceivers 10/100/1000BASE-T SGMII Copper Transceivers
Cable Types	Copper:	RJ-45 User Ports EIA/TIA 568A/B, Cat 5 UTP and higher RJ-45 Uplink Ports 10BASE-T: Cat 3, 4, 5, 5e, 6, 6A 100BASE-TX: Cat 5, 5e, 6, 6A 1G/2.5G: 4-pair Cat 5e, 6, 6A, 7 5G: 4-pair Cat 6, 6A, 7 10G: 4-pair Cat 6A, 7
	Fiber:	Multimode: 50/125, 62.5/125µm Single-mode: 9/125µm
AC Power Requirements		100 - 240VAC/50 - 60Hz 1.5A max at 115VAC, 1.0A max at 230VAC IEC 320 Socket
DC Power Requirements		+12 to +57VDC; 0.67A @ 56VDC 4 Pin Terminal (isolated)
Alarm Contact (Output)		2 form C Relay for Normally Open and Normally Closed Operation 110VDC/125VAC Maximum Voltage, 2A Maximum Current
Alarm Sensor (Input)		2.0ma @ 3.3VDC Closure Detection
Dimensions (W x D x H)		17.375” x 14” x 1.75” (441.3 mm x 355.6 mm x 44.45 mm)
Weight		8.9 lbs (4037 grams)
Operating Temperature		Commercial: 0 to 50°C Wide: -40 to 60°C (-20°C AC cold start) Extended: -40 to 75°C Storage: -40 to 80°C
Humidity		5 to 95% (non-condensing)
Altitude		-100m to 4,000m (operational)
MTBF (hours)		AC Model: 49,800 DC Model: 81,000
Warranty		5 year product warranty with 24/7/365 free Technical Support

Regulatory Compliances (*Pending)	Safety*:	UL 62368-1, UL 60950-1, IEC 62368-1, IEC 60950-1, EN 62368-1, EN 60950-1, CAN/CSA C22.2 No. 62368-1-14, CAN/CSA C22.2 No. 60950-1, CE Mark, UKCA
	EMC:	EN 55032/24 CE Emissions/Immunity, IEC 61000-6-4 Industrial Emissions, IEC 61000-6-2 Industrial Immunity
	EMI:	CISPR 32, FCC 47 Part 15 Subpart B Class A
	EMS:	IEC 61000-4-2 ESD: Contact: 6 kV; Air: 8 kV, IEC 61000-4-3 RS: 80 MHz to 1 GHz: 10 V/m, IEC 61000-4-4 EFT: Power: 2 kV; Signal: 1 kV (DC models), IEC 61000-4-4 EFT: Power: 1 kV; Signal: 1 kV (AC models), IEC 61000-4-5 Surge: Power: 2 kV; Signal: 2 kV (DC models), IEC 61000-4-5 Surge: Power: 1 kV Line/Line; 2 kV Line/Gnd; Signal: 2 kV (AC models), IEC 61000-4-6 CS: Signal: 10 V, IEC 61000-4-8 (Magnetic Field) 30A/m, IEC 61000-4-11 (Voltage Dips, interrupts)
	IP Rating:	IP20 Protection
	ACT:	TAA, BAA, NDAA

Customer Support Information

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

Phone: (949) 250-6510

Fax: (949) 250-6514

Address: Omnitron Systems Technology, Inc.
38 Tesla
Irvine, CA 92618, USA

Email: support@omnitron-systems.com

URL: www.omnitron-systems.com

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