EST™
Life Safety & Communications

Ethernet® Network Switching Hub

NETSW-EIS6-MM, NETSW-EIS6-SM

Overview

The NETSW-EIS6-xM series switches are industrial grade six-port, 10/100 Mbps auto-negotiating switching hubs. Each switch provides four 10/100 Mbps shielded RJ-45 connectors for twisted pair (Ethernet) connections and two 100 Mbps fiber ports. The NETSW-EIS6-MM supports multi mode fiber and uses ST connectors while the NETSW-EIS6-SM supports single mode fiber and uses SC connectors.

Both switches operate on a nominal 24 VDC that can be supplied from a fire alarm control panel or booster power supply insuring power is always available. Connections are provided for redundant power supplies.

The units feature broadcast storm protection and loop detection of the network wiring. LED indicators are provided for data rate, activity/link integrity, power and loop detection. The units can be mounted with the NETCOM-BRKT mounting bracket in an MFC-A enclosure.

Standard Features

- 10BASE-T/100BASE-TX/100BASE-FX
- Loop detection algorithm
- Industrial Grade
- IEEE 802.3 compliant
- Auto-negotiated data rate and flow control on twisted-pair ports
- Broadcast storm control
- Full or half duplex
- Diagnostic LEDs
- 24VDC Operation w/Redundant connections
- UL-508 listed, CE mark

Application

NETSW-EIS6-xM series switches interconnect over a 100BASE-FX style fiber optic backbone. The use of a fiber backbone makes these switches ideal for proprietary network applications involving long networking distances. Up 9 miles (15 Km) is supported by the NETSW-EIS6-SM. The fiber backbone also provides immunity to EMI/RFI and moisture.

The use of network switch technology over a conventional hub results in improved communications speed and network reliability.

Fire Alarm Monitoring

Considerable thought and care must be used when combining life safety equipment and LAN technology. Systems that utilize LAN network technology for information and reporting purposes ONLY do not face the same network and agency listing restrictions as systems that use the LAN to transmit control information between the fire alarm panel and the FireWorks workstation(s). This technology is listed for monitoring applications only. All life safety applications using LAN technology should be fully reviewed with the Authority Having Jurisdiction.

Technical Details

NETSW-EIS-xM switches segment the Ethernet network into separate collision domains. The switch functions as a “bridge” between various data links creating a larger network than is achievable using repeating hubs. Each twisted-pair port automatically negotiates with its attached device the data rate for that port, either 10 or 100 Mbps. Flow control is also negotiated. Full duplex segments utilize the IEEE 802.3x PAUSE scheme. Half-duplex segments use the back pressure approach.

Switches learn the port locations of connected Ethernet devices by reading complete Ethernet frames and observing the source addresses. This information is then maintained as a table of source addresses and corresponding port assignments. After address and port information is stored, switch traffic is restricted only to those ports involved in a transmission. This process improves switch throughput as simultaneous transmissions can now be initiated on inactive ports. The address and port information is automatically “aged” facilitating changes in field wiring.

If broadcast, multicast, or unicast transmission to an unknown destination is received on a switch port, all other ports are flooded with the transmission. To reduce data latency, cut-through operation may be selected as opposed to store-and-forward operation. With cut-through operation, frames are forwarded after the first 512 bytes are received. Store-and-forward operation requires a complete frame be received before forwarding occurs.

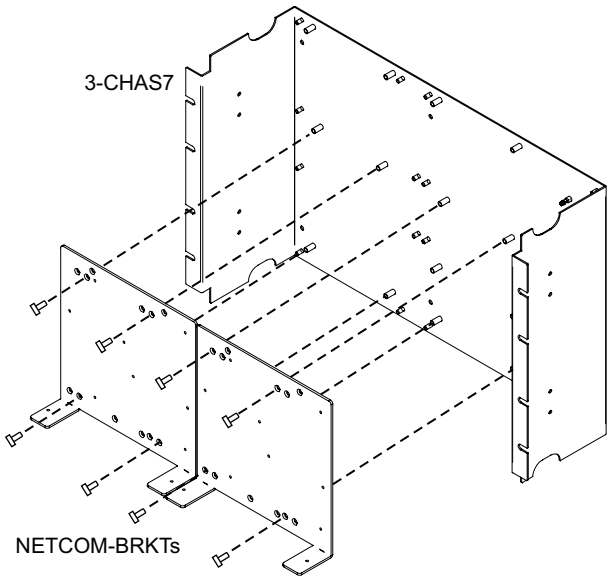
Engineering Specification

The TCP/IP network switches shall be industrial grade auto-negotating switching hubs. Switch shall be Each IEEE 802.3 compliant, shall provide four (4)10/100 Mbps shielded RJ-45 connectors for twisted pair (ethernet) connections and two 100 Mbps <single mode> <multi-mode> fiber ports. The switches shall operate on a nominal 24 VDC supplied from a battery backed up fire alarm control panel or booster power supply to insure power to the switch is always available. Switches shall provide LED indicators for data rate, activity/link integrity, power and loop detection.

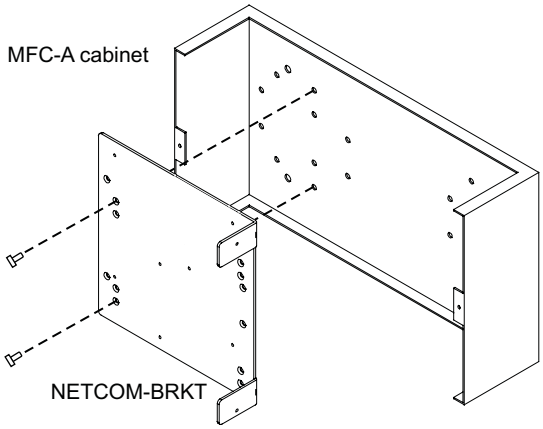
Installation and Mounting

The NETSW-EIS6-MM and NETSW-EIS6-SM are installed in a NETCOM-BRKT, which fits into the cabinet options shown below.

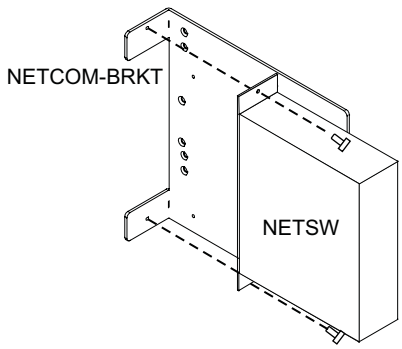
Installing the NETCOM-BRKT in a 3-CHAS7



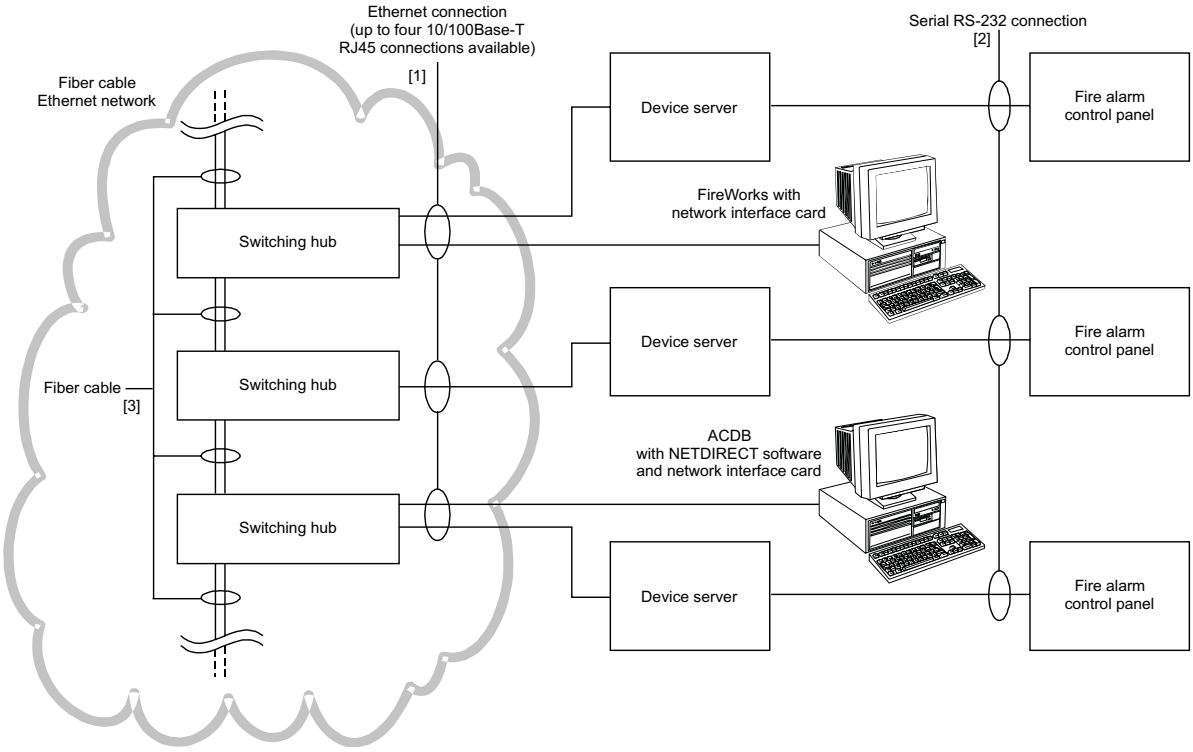
Installing the NETCOM-BRKT in an MFCA cabinet



Connecting a NETSW to the NETCOM-BRKT



Typical Configuration



Notes

[1] Ethernet connection: CAT 5/6 cable, maximum distance 300 feet (100 m); 62.5/125 multi mode fiber optic (NETCOM-1F)

[2] Serial RS-232 connection: Maximum distance 50 feet (15 m)

[3] Fiber connection: Maximum segment distance

NETSW-EIS6-MM Multimode:
Full duplex - 2 km (6562 feet)
Half duplex - 412 m (1352 feet)

NETSW-EIS6-SM Single mode:
Full duplex - 15 km (49213 feet)
Half duplex - 412 m (1352 feet)

MDI-X[1] 10BASE-T/100BASE-TX	
RJ-45	**Usage**
1	TD+
2	TD-
3	RD+
4	Not Used
5	Not Used
6	RD-
7	Not Used
8	Not Used

[1] The NETSW-EIS6-xM switch implements the internal crossover function allowing straight-through cables to connect to network interface modules.

EDWARDS
A UTC Fire & Security Company

Detection & alarm since 1872

U.S.
T 888-378-2329
F 866-503-3996

Canada
Chubb Edwards
T 519 376 2430
F 519 376 7258

Southeast Asia
T : +65 6391 9300
F : +65 6391 9306

India
T : +91 80 4344 2000
F : +91 80 4344 2050

Australia
T +61 3 9239 1200
F +61 3 9239 1299

Europe
T +32 2 725 11 20
F +32 2 721 86 13

Latin America
T 305 593 4301
F 305 593 4300

utcfireandsecurity.com

Specifications

	NETSW-EIS6-MM	NETSW-EIS6-SM
Ports/Connectors Copper Fiber Optic	Four (4) with shielded RJ-45 connectors Two (2) with ST connectors	Four (4) with shielded RJ-45 connectors Two (2) with SC connectors
Segment Length Copper Fiber Optic Fiber Optic Budget	3,28ft (100m) ~6,562 ft (2km) Multi Mode Fiber 10dB	3,28ft (100m) ~49,213ft (15km) Single Mode Fiber 7dB
Segment Media Copper Fiber Optic (1300 nm)	Category 5 UTP 50/125 or 62/5/125 Multi Mode Fiber	Category 5 UTP Single Mode Fiber
Agency Listings	CE; FCC Part 15, Class A; EN50081-2; EN50082-2	
	UL-864	UL-508
Compliance	ANSI/IEEE 802.3	
Signaling Twisted Pair Fiber Optics	10BASE-T/100BASE-T for a 10/100Mbps data rate1 100BASE-FX for a 100Mbps data rate	
Flow Control[1]	Half Duplex – back pressure Full Duplex – IEEE 802.3x	
Aging	172 to 322 Seconds	
LED Indicators	Data Rate (yellow), Link/Activity (green), Loop Detect (red)	
Dimensions (HWD)	7.54" x 1.75" x 6.0" (191mm x 44mm x 220mm) *Note: Allow 3.25" (82mm) minimum for fiber optic cable*	
Power Requirements	24VDC at 21 mA, nominal10 –36VDC, 5 watts 8-24VAC, 47 – 63 Hz, 5 VA	
Environmental Operating Temp Storage Temp	32°F to 140°F (0°C to 60°C) -40°F to 185°F (-40°C to 85°C)	

[1] *NOTE: Data rates and flow control are auto-negotiated on twisted-pair ports.*

Ordering Information

Catalog Number	Description	Ship Wt. lb (kg)
NETSW-EIS6-MM	10BASE-T/100BASE-TX/100BASE-FX 4 RJ-45 port, 2 multi-mode fiber optic port switch with ST connectors	2 (0.9)
NETSW-EIS6-SM	10BASE-T/100BASE-TX/100BASE-FX 4 port, 2 single mode fiber optic port switch with SC connectors	2 (0.9)

Related Equipment		
NETCOM-BRKT	Bracket for mounting two (2) NETCOM-1S, one (1) NETCOM-1F, or one (1) NETSW-EIS6-xM in an MFC-A Enclosure or 3-CHAS7 chassis	1 (0.45)
MFC-A	Multifunction Fire Cabinet	19 (7.26)