

# EX83000 Series

## IEC61850/IEEE1613 Managed Hardened 16-port 10/100BASE with 2-port Gigabit combo Ethernet Switch



### Value

- Provides flexibility of 16-port 10/100BASE-TX/FX/BX/SFP plus 2-port Gigabit-SX/LX/BX/SFP combo
- Complies with IEC61850-3 & IEEE1613 environmental requirements for power substation automation systems
- Supports GOOSE message
- Wide temp range for extreme environments



## Features

- Complies with IEC61850-3/IEEE1613 for power substations & EN50121-4 for railway applications
- Supports α-ring and RSTP/MSTP/STP for Ethernet redundancy and GOOSE Message
- Zero Packet Loss pass by GOOSE Message
- IP Multicast Filtering through IGMP Snooping V1, V2 & V3
- Port-based VLAN and IEEE802.1Q VLAN Tagging and GVRP
- IEEE802.1p QoS with four priority queues
- MAC-based trunking and LACP
- IEEE802.1x Security
- Bandwidth Rate Control
- Per-port programmable MAC address locking
- Up to 24 Static Secure MAC addresses per port
- Port mirroring
- NTP synchronization
- DHCP Client/Server
- RS-232 Console, Telnet, SNMP V1, V2c & V3, RMON, Web Browser, and TFTP Management
- 1000Mbps-Full-duplex, 10/100Mbps-Full/Half-duplex, Auto-Negotiation, Auto-MDI/MDIX
- Full wire-speed forwarding rate
- -40°C to 75°C (-40°F to 167°F) operating temperature range, tested for functional operation @ -40°C to 80°C (-40°F to 176°F)

## Ordering Information

|             |                                                                                             |
|-------------|---------------------------------------------------------------------------------------------|
| EX83400-00Z | 16-port 10/100BASE-TX Hardened Managed Ethernet Switch                                      |
| EX83401-0YZ | 16-port 10/100BASE-TX + 1-port Gigabit Hardened Managed Ethernet Switch                     |
| EX83402-0YZ | 16-port 10/100BASE-TX + 2-port Gigabit Hardened Managed Ethernet Switch                     |
| EX83310-X0Z | 12-port 10/100BASE-TX + 1-port 100BASE-FX Hardened Managed Ethernet Switch                  |
| EX83311-XYZ | 12-port 10/100BASE-TX + 1-port 100BASE-FX + 1-port Gigabit Hardened Managed Ethernet Switch |
| EX83312-XYZ | 12-port 10/100BASE-TX + 1-port 100BASE-FX + 2-port Gigabit Hardened Managed Ethernet Switch |
| EX83320-X0Z | 12-port 10/100BASE-TX + 2-port 100BASE-FX Hardened Managed Ethernet Switch                  |
| EX83321-XYZ | 12-port 10/100BASE-TX + 2-port 100BASE-FX + 1-port Gigabit Hardened Managed Ethernet Switch |
| EX83322-XYZ | 12-port 10/100BASE-TX + 2-port 100BASE-FX + 2-port Gigabit Hardened Managed Ethernet Switch |
| EX83200-00Z | 8-port 10/100BASE-TX Hardened Managed Ethernet Switch                                       |
| EX83201-0YZ | 8-port 10/100BASE-TX + 1-port Gigabit Hardened Managed Ethernet Switch                      |
| EX83202-0YZ | 8-port 10/100BASE-TX + 2-port Gigabit Hardened Managed Ethernet Switch                      |
| EX83210-X0Z | 8-port 10/100BASE-TX + 1-port 100BASE-FX Hardened Managed Ethernet Switch                   |
| EX83211-XYZ | 8-port 10/100BASE-TX + 1-port 100BASE-FX + 1-port Gigabit Hardened Managed Ethernet Switch  |
| EX83212-XYZ | 8-port 10/100BASE-TX + 1-port 100BASE-FX + 2-port Gigabit Hardened Managed Ethernet Switch  |
| EX83220-X0Z | 8-port 10/100BASE-TX + 2-port 100BASE-FX Hardened Managed Ethernet Switch                   |
| EX83221-XYZ | 8-port 10/100BASE-TX + 2-port 100BASE-FX + 1-port Gigabit Hardened Managed Ethernet Switch  |
| EX83222-XYZ | 8-port 10/100BASE-TX + 2-port 100BASE-FX + 2-port Gigabit Hardened Managed Ethernet Switch  |
| EX83240-X0Z | 8-port 10/100BASE-TX + 4-port 100BASE-FX Hardened Managed Ethernet Switch                   |
| EX83241-XYZ | 8-port 10/100BASE-TX + 4-port 100BASE-FX + 1-port Gigabit Hardened Managed Ethernet Switch  |
| EX83242-XYZ | 8-port 10/100BASE-TX + 4-port 100BASE-FX + 2-port Gigabit Hardened Managed Ethernet Switch  |

### 100FX Fiber Options :

- (X) = 1 : Multi Mode (SC) - 2Km  
 2 : Multi Mode (ST) - 2Km  
 6 : Multi Mode (SC) WDM-TX:1310nm/RX:1550nm - 2Km  
 7 : Multi Mode (SC) WDM-TX:1550nm/RX:1310nm - 2Km  
 8 : Multi Mode (SC) WDM-TX:1310nm/RX:1550nm - 5Km  
 9 : Multi Mode (SC) WDM-TX:1550nm/RX:1310nm - 5Km  
 A : Single Mode (SC) - 20Km

\*More 100FX Fiber options also available upon request.

- B : Single Mode (SC) - 40Km  
 H : Single Mode (ST) - 20Km  
 P : Single Mode (SC) WDM-TX:1310nm/RX:1550nm - 20Km  
 Q : Single Mode (SC) WDM-TX:1550nm/RX:1310nm - 20Km  
 R : Single Mode (SC) WDM-TX:1310nm/RX:1550nm - 40Km  
 S : Single Mode (SC) WDM-TX:1550nm/RX:1310nm - 40Km  
 V : SFP Mode

### Gigabit Port Options :

- (Y) = 1 : 10/100/1000BASE-TX (No Gigabit Fiber port supported)  
 3 : Combo port : 10/100/1000BASE-TX with 1000BASE-SX (SC) - 550m  
 4 : Combo port : 10/100/1000BASE-TX with 1000BASE-SX (SC) - 2Km  
 5 : Combo port : 10/100/1000BASE-TX with 1000BASE-SX (ST) - 550m  
 A : Combo port : 10/100/1000BASE-TX with 1000BASE-LX (SC) - 10Km  
 B : Combo port : 10/100/1000BASE-TX with 1000BASE-LX (SC) - 20Km

\*More Gigabit options also available upon request.

**Power Input Interface : (Z) = B : Terminal Block & DC Jack**

**Power Supply : (Optional)**

\*Option A - Terminal Block power supply(s), part numbers:

DR-30-24, DR-60-24, DR-75-24, DR-120-24 or 41-136046-X (X)=1: US, 2: EU, 3: UK, 4: AU, 5: JP

\*\*Option B - DC Jack power supplies kit(s), part numbers: 41-136044-X (X)=1: US, 2: EU, 3: UK, 4: AU, 5: JP

- R : Combo port : 10/100/1000BASE-TX with 1000BASE-LX (SC)  
 WDM-TX:1310nm/RX:1550nm - 20Km  
 S : Combo port : 10/100/1000BASE-TX with 1000BASE-LX (SC)  
 WDM-TX:1550nm/RX:1310nm - 20Km  
 V : 1000BASE-SFP Mode Combo 10/100/1000BASE-TX

**Installation Type :** DIN Rail (mounting kit is included), Optional Panel Mount kits (KP-AA96-480) are available for ordering.

## Specifications

| Technology                 |                                                                                                                                                                                                                     |
|----------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Standards                  | <ul style="list-style-type: none"> <li>IEEE802.3 10BASE-T, IEEE802.3u 100BASE-TX, IEEE802.3ab 1000BASE-T, IEEE802.3z 1000BASE-SX/1000BASE-LX, IEEE802.3x, IEEE802.1p, IEEE802.1Q, IEEE802.1w, IEEE802.1x</li> </ul> |
| Forward and Filtering Rate | <ul style="list-style-type: none"> <li>14,880pps for 10Mbps</li> <li>148,810pps for 100Mbps</li> <li>1,488,100pps for 1000Mbps</li> </ul>                                                                           |
| Packet Buffer Memory       | 2M bits                                                                                                                                                                                                             |
| Processing Type            | Store-and-Forward<br>Half-duplex back-pressure and IEEE802.3x full-duplex flow control                                                                                                                              |
| Address Table Size         | 8192 MAC addresses                                                                                                                                                                                                  |

| Power                       |                                                                                                                |
|-----------------------------|----------------------------------------------------------------------------------------------------------------|
| Input                       | <ul style="list-style-type: none"> <li>Input Voltage: 12 to 48VDC (Terminal Block); 12VDC (DC Jack)</li> </ul> |
| Power Consumption           | <ul style="list-style-type: none"> <li>15W Max. 1.25A @ 12VDC, 0.625A @ 24VDC</li> </ul>                       |
| Overload Current Protection | <ul style="list-style-type: none"> <li>Present</li> </ul>                                                      |
| Reverse Polarity Protection | <ul style="list-style-type: none"> <li>Present</li> </ul>                                                      |

| Mechanical   |                                                                                                                                |
|--------------|--------------------------------------------------------------------------------------------------------------------------------|
| Casing       | <ul style="list-style-type: none"> <li>Aluminum case</li> <li>IP30</li> </ul>                                                  |
| Dimensions   | <ul style="list-style-type: none"> <li>84mm (W) x 125mm (D) x 145mm (H)</li> <li>(3.3" (W) x 4.92" (D) x 5.71" (H))</li> </ul> |
| Weight       | 1.4Kg (3.08lbs.)                                                                                                               |
| Installation | DIN-Rail (Top hat type 35mm), Wall Mount                                                                                       |

| Interface      |                                                                                                                                                                                                                  |
|----------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Ethernet Port  | <ul style="list-style-type: none"> <li>10/100BASE-TX: 16, 12 or 8 ports</li> <li>100BASE-FX: 0, 1, 2 or 4 ports</li> <li>Gigabit: 0, 1 or 2 ports</li> </ul>                                                     |
| Console Port   | <ul style="list-style-type: none"> <li>Port: One DB9 RS-232 port</li> </ul>                                                                                                                                      |
| LED Indicators | <ul style="list-style-type: none"> <li>Per Unit: Power Status (Power 1, Power 2, Power 3)</li> <li>Per Port: 10/100BASE: Link/Activity</li> <li>1000BASE: Link/Activity (Green: Copper, Amber: Fiber)</li> </ul> |
| Alarm Contact  | <ul style="list-style-type: none"> <li>One relay output with current 1A @ 24VDC</li> </ul>                                                                                                                       |

| Environment               |                                                                                                                                   |
|---------------------------|-----------------------------------------------------------------------------------------------------------------------------------|
| Operating Temperature     | <ul style="list-style-type: none"> <li>-40°C to 75°C (-40°F to 167°F)</li> <li>Tested @ -40°C to 80°C (-40°F to 176°F)</li> </ul> |
| Storage Temperature       | <ul style="list-style-type: none"> <li>-45°C to 85°C (-49°F to 185°F)</li> </ul>                                                  |
| Ambient Relative Humidity | <ul style="list-style-type: none"> <li>5% to 95% (non-condensing)</li> </ul>                                                      |

| Regulatory Approvals          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|-------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ISO                           | <ul style="list-style-type: none"> <li>Manufactured in an ISO9001 facility</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| EMI                           | <ul style="list-style-type: none"> <li>FCC Part 15, Class A</li> <li>EN61000-6-4</li> <li>EN55022</li> <li>EN61000-3-2, EN61000-3-3</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| EMS                           | <ul style="list-style-type: none"> <li>EN61000-6-2               <ul style="list-style-type: none"> <li>EN61000-4-2 (ESD Standards)</li> <li>Contact: + / - 8KV</li> <li>Air: + / - 15KV</li> </ul> </li> <li>EN61000-4-3 (Radiated RFI Standards)</li> <li>10V/m, 80 to 1000MHz; 80% AM</li> <li>EN61000-4-4 (Burst Standards)</li> <li>Signal Ports: + / - 4KV</li> <li>D.C. Power Ports: + / - 4KV</li> <li>EN61000-4-5 (Surge Standards)</li> <li>Signal Ports: + / - 4KV; Line-to-Earth</li> <li>D.C. Power Ports: + / - 2KV; Line-to-Earth</li> <li>EN61000-4-6 (Induced RFI Standards)</li> <li>Signal Ports: 10Vrms @ 0.15 - 80MHz; 80% AM</li> <li>D.C. Power Ports: 10Vrms @ 0.15 - 80MHz; 80% AM</li> <li>EN61000-4-8 (Magnetic Field Standards)</li> <li>30A/m @ 50, 60Hz</li> <li>IEC61000-4-10 (Oscillatory wave magnetic field test)</li> <li>100kHz and 1MHz: 30A/m</li> <li>IEC61000-4-16 (Power frequency immunity test) 50Hz: 300V</li> <li>IEC61000-4-18 (oscillatory wave immunity test): 100kHz, 2.5kV CM and 2.5kV DM</li> <li>1MHz, 2.5kV CM and 2.5kV DM</li> <li>IEEE1613:               <ul style="list-style-type: none"> <li>power frequency withstand voltage: 2KV, Insulation resistance &gt;550 MOhm</li> <li>RJ45 Port 500V, Insulation resistance &gt;550 MOhm</li> <li>Impulse voltage: 5Kv, Insulation resistance &gt;550 MOhm</li> <li>IEC 60870-2-1: DC power supply voltage variations</li> </ul> </li> </ul> |
| Environmental Test Compliance | <ul style="list-style-type: none"> <li>IEC60068-2-6 Fc (Vibration Resistance)</li> <li>30A/m @ 50, 60Hz</li> <li>5g @ 10 - 150Hz, Amplitude 0.35mm (Operation/Storage/Transport)</li> <li>IEC60068-2-27 Ea (Shock)</li> <li>25g @ 11ms (Half-Sine Shock Pulse; Operation)</li> <li>50g @ 11ms (Half-Sine Shock Pulse; Storage/Transport)</li> <li>FED STD 101C Method 5007.1 (Free fall w/ package)</li> <li>-Tested with Cross Weight and Drop High standard table</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |

## Diagrams

Unit: mm

