

## eNode IP/Ethernet 10/100 Plug-n-Play Switching Hub Family for Building Automation
















### Features



**EIBA Series**

**EISM Series**

**EISK Series**

-  Din and Panel mounting compact packaging
-  10BASE-T/ 100BASE-TX compliant
-  Shielded RJ-45 connectors
-  Loop detection algorithm
-  IEEE802.3 compliant
-  Compatible with LonWorks™ over IP networks, CNS eNode™ Lon/IP Router products and BACnet/IP and BACnet/Ethernet
-  Broadcast storm control
-  Auto-negotiated data rate and flow control on twisted-pair ports
-  Full or Half-Duplex operation
-  Auto-MID/X ports on EIBA and EISK Series
-  Low-voltage AC or DC operation 10 – 36V unregulated DC or 8 – 24V AC, redundant power supply option on EISM Series
-  Quick disconnect power strip
-  LED's for activity, link, data rate and power
-  Industrial environment EMC compatible
-  CE Approved, UL 508 Listed



## Description

### EIBA Series

EIBA switches were specifically designed to provide plug-n-play Ethernet connectivity for Building Automation Systems (BAS) which have unique needs of convenient mounting, simple and dependable operation, low voltage AC/DC operation and low cost. The EIBA-100T for panel mounting and the EIBA5-1—T/R for DIN-rail mounting meet these needs.

Their low cost and compact size should not be confused with low performance more likely experienced with equivalent office grade equipment sometimes found installed in BAS Ethernet networks.

The EIBA series is a very capable product using the latest switching technologies to offer five 10/100 auto-negotiating shielded RJ-45 ports. Each port supports auto-negotiation protocol to automatically select the correct data rate, duplex and flow control. Both half- and full-duplex operations are supported as well as flow control. For half-duplex links the Backpressure scheme is used and for full duplex the PAUSE scheme is supported. All five ports are auto-MID/X compliant so each one can be used as an uplink to another switch removing the need for crossover cables.

All these features are fully automated so requiring no previous experience in their use and providing full Plug-n-Play operation, saving time and cost.

All LED's are easily visible from the front of the device making it easy for a technician to confirm operation and trouble shoot where necessary. These units are supplied in two packaging styles one Panel mount and the other DIN mountable both with AC/DC low voltage input power requirements found in BAS panels.

These devices will link to any compatible 10BASE-T or 100BASE-TX device and will operate with any application operating with Ethernet including EIA852 (LonTalk® over Ethernet/IP) and BACnet/IP and BACnet/Ethernet.

### EISM Series

The EISM miniature switching hub is designed for use where space is at a premium because of shrinking panels and the space restrictions of small machines.

The EISM5-100T is designated as a 5-port miniature-switching hub. One port has an extra socket allowing it to be used as an uplink port to connect two switches together; thereby, eliminating the need for a crossover cable. This unit is similar in function and capabilities to its EIS8-100T counterpart. It divides the Ethernet network into as many as five separate collision domains. It terminates the collision domain at each port. It functions as a "bridge" between these various data links creating a larger network diameter than can be achieved with repeating hubs. Each port automatically negotiates with its attached device the data rate; 10 or 100 Mbps and duplex full or half-duplex for that port. The flow control mechanism is also negotiated. For full-duplex segments, the PAUSE scheme is used. For half-duplex segments, the Backpressure method is automatically invoked.

The switch learns the port locations of Ethernet devices by reading complete Ethernet frames and

observing source addresses. A table of source addresses and corresponding port assignments is created and maintained. From that time on, traffic is restricted to only those ports involved in a transmission. This allows enhanced throughput since simultaneous transmissions can now be initiated on those ports without activity. In addition, table values are aged to automatically accommodate changes to the field wiring. If a unicast transmission to an unknown destination is received on a port, all other ports are flooded with the transmission. This is also true of broadcast or multicast transmissions.

Link integrity is monitored, verifying that a working adapter or hub is on the distant end of a segment. To aid troubleshooting, each port LED glows solid if a link exists, flashes to show activity and shows data rate by colour: green for 100 Mbps and yellow for 10 Mbps. One green power LED is provided.

Other features include wide-range, low-voltage AC or DC power requirements. Provisions exist for redundant power connections. The unit mounts on TS-32 or TS-35 DIN-rail, making it simple to install into control panels.

### **EISK Series**

EISK switches were specifically designed to provide Plug-n-Play Ethernet connectivity for Building Automation Systems which have unique needs— convenient mounting, simple and dependable operation, low-voltage input power and especially low-cost. These needs are met by the compact and rugged EISK5-100T.

Although small and low-cost, the EISK Series are very capable devices. Utilising switching technology, they provide five 10/100 Mbps shielded RJ-45 ports. Each port supports the auto-negotiation protocol in order to select data rate, duplex and flow control. For half-duplex links, the Backpressure scheme is used. For full-duplex links, the PAUSE scheme is supported. All five ports are auto-MDI/X compliant and therefore any port can operate as an uplink port to another switch, eliminating the need for crossover cables in the field. All these features require no operator intervention, making this Switch truly Plug-n- Play.

The EISK Series of Switches addresses one of the biggest issues in Building Automation Systems and that is convenient mounting in control panels where DIN-rail space is at a premium. Office-grade equipment is intended for desktop operation and requires a separate power supply that needs to be powered from a 120/230 Volt AC mains circuit. This usually requires a shelf to be constructed to mount the unit and a duplex receptacle to be installed inside the control panel. Industrial Automation System switches are intended for sub-panel mounting and can be powered from the same control transformer that is used to power the other Building Automation System equipment, making the installation neat and rugged. These Switches can be powered from a low voltage, wide-range AC or DC power source as well. The activity LED's on these units face the technician, thus easing trouble-shooting.










Unlike office-grade equipment, EISK units are intended for commercial and industrial applications. They have a wider operating temperature range and comply with global industrial electromagnetic compatibility standards so there is no concern about installing these switches in the harshest of sites. They are UL 508, c-UL Listed for Industrial Control Equipment.

The auto-negotiation protocol allows these Switches to link with any compatible 10BASE-T or 100BASE-TX device. These devices will link to any compatible 10BASE-T or 100BASE-TX device and will operate with any application operating with Ethernet including EIA852 (LonTalk® over Ethernet/IP) and BACnet/IP and BACnet/Ethernet.

These units have built-in broadcast storm control to prevent excess broadcasts from degrading network performance.

To aid in troubleshooting, each port LED is lit solid if a valid link exists to an attached device, flashes to show activity and indicates data rate by color: green for 100 Mbps and yellow for 10 Mbps. A separate green LED indicates the device is powered.

### **Typical Applications**

-  Building Management and Supervision
-  LonWorks™ over IP networks
-  Ethernet I/O
-  Machine Monitoring
-  Environmental Control
-  Test and Measurement
-  Process Control
-  Remote Data Acquisition
-  Communications Gateway



## Specification

| <b>Electrical</b>      | <b>DC</b>                               | <b>AC</b>  |
|------------------------|---|------------|
| Input voltage:         | 10-36 Volts                             | 8-24 Volts |
| Input power:           | 5 Watts (max)                           | 5VA (max)  |
| Input frequency:       | N/A                                     | 47-63 Hz   |
| <b>Environmental</b>   |   |            |
| Operating temperature: | 0°C to 60°C                             |            |
| Storage temperature:   | -40°C to 85°C                           |            |
| Relative humidity:     | 10% to 95% non-condensing               |            |
| Protection:            | IP30 (EIBA, EISK Series)                |            |
| <b>Functional</b>      |   |            |
| Compliance:            | ANSI/IEEE 802.3                         |            |
| *LED indicators:       | DATA RATE – Yellow                      |            |
|                        | LINK/ACTIVITY – Green                   |            |
|                        | LOOP DETECT – Red (EISM Series)         |            |
| Flow control           | Half Duplex – Backpressure              |            |
|                        | Full Duplex – IEEE802.3x (PAUSE)        |            |
| Aging                  | 172 to 322 seconds (EISM Series)        |            |
|                        | 200 to 300 seconds (EIBA & EISK Series) |            |
| <b>Transceiver</b>     | <b>Twisted Pair</b>                     |            |
| <b>Signaling</b>       | 100BASE-T/100BASE-TX                    |            |
| Data rate:             | 10/100 Mbps                             |            |
| Number of ports        | 4 or 5                                  |            |
| Segment length (max):  | 100m (max)                              |            |
| Port Connectors        | Shielded RJ-45                          |            |

\* ACTIVITY and LINK/DATA RATE LED's exist for each port.

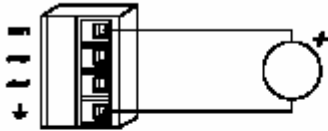
| MDI-X* 10BASE-T/100BASE-TX Port Assignments |  |          |
|---|--|----------|
| RJ-45                                       |  | Usage    |
| 1   |  | TD+      |
| 2   |  | TD-      |
| 3   |  | RD+      |
| 4   |  | Not Used |
| 5   |  | Not used |
| 6   |  | RD-      |
| 7   |  | Not Used |
| 8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

\*The EISwitch implements the internal crossover function allowing straight-through cables to connect to network interface modules

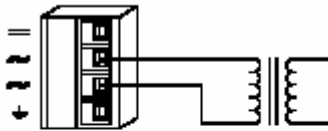
**Power Supply Options-**

**EISM Series**

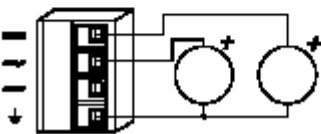
**DC POWERED**



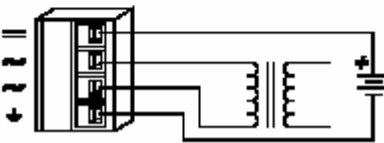
**AC POWERED**



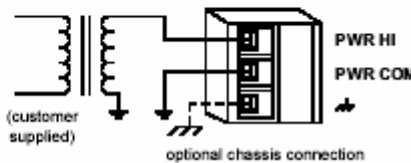
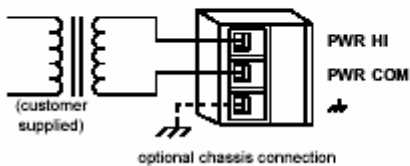
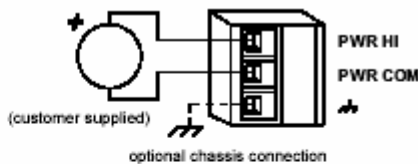
**REDUNDANT DC POWERED**



**AC POWERED WITH BATTERY BACKUP**

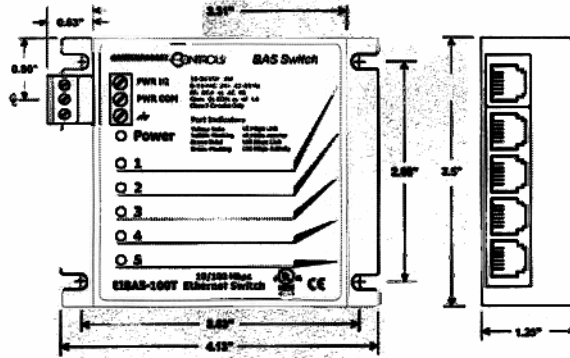


**EIBA and EISK Series**

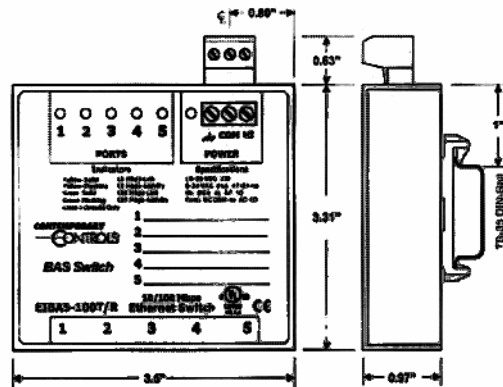




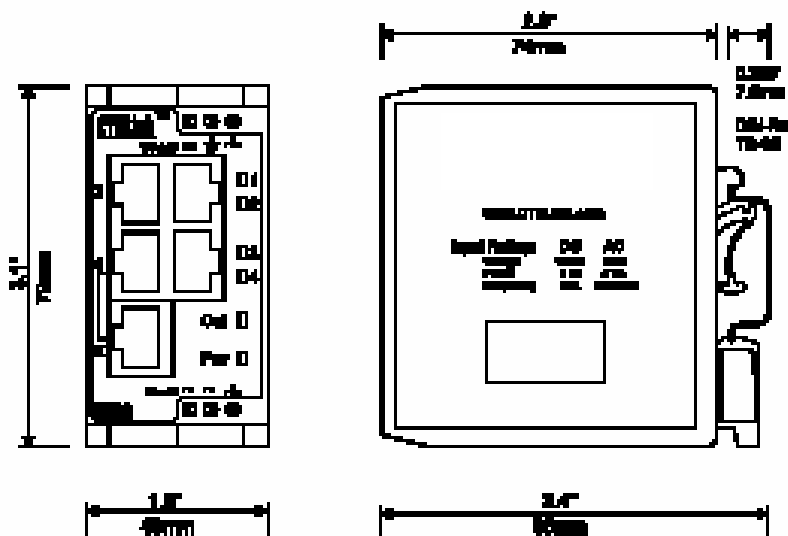
**EIBAS-100T Panel Mount**



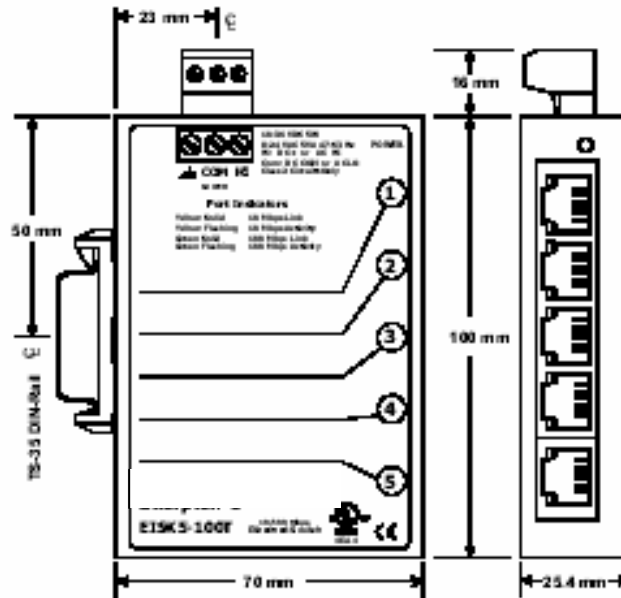
**EIBAS-100T/R DIN-rail Mount**



**EISM Packaging**



## EISK Packaging



## Ordering Information

| Model           | Description   |
|-----------------|---|
| CNSEIBA5-100T   | Five-port 10BASE-T/100BASE-TX switching hub, panel mount                  |
| CNSEIBA5-100T/R | Five-port 10BASE-T/100BASE-TX switching hub, DIN Rail mount               |
| CNSEISM5-100T   | Five-port Ethernet Miniature Switch, 10/100BASE-TX, DIN Rail mount        |
| CNSEISK5-100T   | Five-port 10BASE-T/100BASE-TX sub miniature switching hub, DIN Rail mount |



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