

# Managed Industrial Ethernet Switches 8, 10, 16, 18 port Ethernet Switches

Models SE408, SEC410-2SFP, SE416, SEC418-2SFP

B+B SMARTWORX

Powered by

ADVANTECH

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SE408

SEC410-2SFP

SE416

SEC418-2SFP

eWORX



## Features & Benefits

- 8-port or 16-port 10/100 Mbps
- 8-port or 16-port 10/100 Mbps + 2-port Gigabit Combo (RJ45 or SFP) Uplink
- Layer 2 Managed functionality and advanced diagnostic tools
- Support IGMP snooping to forward and filter multicast traffic intelligently
- Support RSTP standard redundancy protocol to integrate into standard system
- Energy Efficient Ethernet (EEE), IEEE 802.3az for low energy consumption
- IXM™ function enables the cross management for fast deployment
- X-Ring Elite™ function offers self-healing recovery time less than 20 ms
- Redundant Power Inputs (8.4 - 57.6 VDC)
- Operating temperature range -10 to +60°C
- UL508 certified for Industrial Control Panel
- UL C1D2, ATEX Zone 2 and IECEx certified for Hazardous Environments

## Introduction

The SE400 series is a managed Ethernet switch with industrial, ruggedized features designed to work in harsh environment applications. This switch offers all the features expected in a managed switch such as VLAN, IGMP Snooping, Network Redundancy, Link Aggregation, SNMP V1,V2c,V3 and Web Management. Comprehensive network security features such as 802.1x, DoS prevention, Multiple account setting, Storm control, SNMPv3 (Encryption) and Radius are also offered.

Embedded into each switch is the industry leading eWorX IXM™ cross management technology. IXM allows the installer to auto synchronize firmware updates and push configuration settings to either individual or groups of switches. IXM provides maintenance and provisioning functionality to both the SE400 and SE500 family switches without the need of extra software or trained personal. IXM™ speeds up switch deployment and ensures network stability.

The eWorX SE400 series switches feature a powerful suite of diagnostic, monitoring and network performance capabilities: Cable diagnostics, IPv4/IPv6 ping, fiber SFP monitoring (DDMI), port utilization, traffic statistics, QoS and rate limiting - all available from the Web GUI. These advanced features offer quick and easy troubleshooting.

## Essential L2 Managed Features in Automation

**IEEE802.3az** – Energy-Efficient Ethernet (EEE) is a set of enhancements to the twisted-pair and backplane Ethernet family of computer networking standards that allows for less power consumption during periods of low data activity.

**IXM™** – Offers auto synchronization function of both firmware and configuration settings to make middle/large-scale deployment of multiple switches fast and easy. A built-in Web GUI feature, no need for extra software to be installed on a computer.

**RSTP/STP** – IEEE standard self-healing/ring recovery technology. Reduce redundant network cabling and planning costs and ensure high reliability of your industrial network applications.

**Multiple Account Access** – This feature allows the network manager to create user accounts with differing permissions. User ID's can be created with a wide variety of access - from simple device monitoring to full maintenance accessibility, thus ensuring security and offering flexibility for field deployment.

**IGMP Snooping v1/v2/v3** – The Internet Group Management Protocol is a feature that allows the managed switch to forward and filter multicast traffic intelligently, designed for the video streaming and automation control network applications.

**VLAN** - Virtual Local Area Network allows you to segment the different network domains in a switch, also isolate the different network group as security consideration.

**QoS** - Quality of Service provides the network packet prioritization in order to provide better network service. The main goal of QoS is to improve the latency of prioritized Ethernet packets required for time-sensitive and real-time interactive applications in automation.

**Cable Diagnostics** – This feature will enable you to verify the length of a cable right from the switch to the other end. This is essential in diagnosing faults as a break in the cable can be easily identified on a single wire within the cable, as well as shorts and crossed-pairs.

**IPv6** – A future-proof feature, IPv6 (Internet Protocol version 6) is a set of specifications from the Internet Engineering Task Force (IETF) that is an upgrade of existing IP version 4 (IPv4). The basics of IPv6 are similar to those of IPv4 - devices can use IPv6 as source and destination addresses to pass packets over a network.

**Ease of Use** – 10/100BaseTX or 10/100/1000 Mbps ports are auto sensing and auto configuring. Each copper port is automatically negotiated for maximum speed and performance by default, but can also be configured individually via the user interface. A powerful inside processor allows wire speed capability on all.

All product specifications are subject to change without notice.  
SE400 ManagedSwitches-StandardTemp\_1017

## Specifications

| COMMUNICATIONS        |   |
|-----------------------|---|
| Standards             | IEEE 802.3, 802.3u, 802.3x, 802.3ab, 802.3z, 802.1p, 802.3az, 802.1w, 802.1Q, 802.1X, 802.1ad   |
| LAN                   | 10/100 Base-T(X), Optional 100Base-FX, 1000Base-SX/LX/LHX/XD/ZX/EZX   |
| Transmission Distance | Ethernet: 100m (4-wire Cat.5e, Cat.6 RJ-45 cable suggested for GB port) SFP: 110km (depends on SFP)   |
| Transmission Speed    | Ethernet: 10/100Mbps Auto-Negotiation<br>Gigabit Copper: 10/100/1000 Mbps, Auto-Negotiation<br>Gigabit Fiber: Up to 1000Mbps  |
| INTERFACE             |   |
| Connectors            | 8 x RJ45 / 16 x RJ45 - SE408 / SE416<br>8 x RJ45 / 16 x RJ45 + 2 x (RJ45/SFP) combo ports - SEC410-2SFP / SEC418-2SFP<br>1 x Reset button<br>6-pin removable screw terminal (power & relay) |
| Ethernet              | Auto Sensing, 10/100BaseTX, 10/100/1000BaseTX, Duplex and MDIX  |
| LED Indicators        | PWR1, PWR2, SYS, Alarm and R.M.<br>10/100 T(X): Link/Activity, Speed Gigabit Copper: Link/Activity, Speed SFP: Link/Activity  |

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# Managed Industrial Ethernet Switches

## 8, 10, 16, 18 port Ethernet Switches

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### Software Properties

| SWITCH PROPERTIES                 |  |
|-----------------------------------|--|
| MAC Table Size                    | 8k   |
| Packet Buffer Size                | 4.1 Mbits  |
| Switching Capacity                | 1.6 Gbps - SE408<br>5.6 Gbps - SEC410-2SFP<br>3.2 Gbps - SE416<br>7.2 Gbps - SEC418-2SFP   |
| Packet Buffer Size                | 9,216 bytes  |
| Priority Queues                   | 8  |
| Maximum Number of Available VLANs | 256  |
| VLAN ID Range                     | 1 to 4094  |
| IGMP Groups                       | 256  |
| SOFTWARE                          |  |
| Management                        | Web interface, WebAccess NMS™, Multiple user accounts, LLDP, SNMP v1/v2c/v3, Traps, SNMP, Standard MIB, Private MIB  |
| Configuration                     | HTTP/TFTP, IPv4/IPv6, DHCP client, DHCP 82, Flow control, Ingress/Egress Rate limit, Jumbo frame   |
| Security                          | 802.1x, DoS prevention, RADIUS, Multiple account setting, Storm control, SNMPv3 (Encryption)   |
| Redundancy                        | X-Ring Elite, STP/RSTP, LACP (Link Aggregation Control Protocol)   |
| Monitoring                        | Port statistics & utilization, LLDP/IGMP/MLD statics, Loop detection   |
| Filter                            | Multicast (IGMP Snooping/Querier), Unknown multicast filtering, 802.1Q, VLAN, Port-based VLAN, GVRP, QoS (IEEE 802.1p) with 8 classes and TOS/DiffServ, Flow control |
| Industrial Protocol               | Modbus/TCP   |
| Diagnostics                       | Cable Diagnostic, IPv4/IPv6 Ping Test, Syslog, Port Mirror, DDM (Digital-Diagnostic-Monitoring), Port Mirroring 1:1 and N:1  |
| Enhanced Provisioning             | IXM™ Cross management platform for fast deployment, Configuration backup manager, Import/ Export configuration files, firmware upgrades.                             |
| Miscellaneous                     | Remote reboot/reset device, Dual Image, Multiple account setting (Admin/User), Watchdog  |

### Hardware Properties

| POWER                         |  |
|-------------------------------|--|
| Power Consumption             | Max. 5.2W - SE408<br>Max. 5.8W - SEC410-2SFP<br>Max. 8W - SE416<br>Max. 8.2W - SEC418-2SFP   |
| Power Input                   | 12 ~ 48 VDC (8.4~57.6 VDC) redundant dual inputs   |
| Fault Output                  | 1 Relay Output   |
| Reverse Polarity Protection   | Present  |
| Overload Current              | Present  |
| PHYSICAL                      |  |
| Dimensions (WxHxD)            | 43 x 120 x 84 mm - SE408<br>74 x 120 x 84 mm - SEC410-2SFP, SE416, SEC418-2SFP   |
| Protection Class              | IP30 enclosure   |
| Weight                        | Net: 0.67 kg. Gross: 0.72 kg - SE408<br>Net: 1 kg. Gross: 1.2 kg - SEC410-2SFP, SE416, SEC418-2SFP   |
| Enclosure                     | Metal Shell  |
| Mounting                      | DIN-Rail, Wall Mount   |
| ENVIRONMENT                   |  |
| Operating Temperature         | -10 to +60°C (-14 to +140°F)   |
| Storage Temperature           | -40 to +85°C (-40 to +185°F)   |
| Operating Humidity            | 10 to 95% (non-condensing)   |
| Storage Humidity              | 10 to 95% (non-condensing)   |
| MTBF                          | 4,176,861 hours - SE408<br>3,183,604 hours - SEC410-2SFP<br>2,788,343 hours - SE416<br>2,825,281 hours - SEC418-2SFP                               |
| CERTIFICATIONS                |  |
| Hazardous Environments Safety | UL Class 1 Division 2 Groups A,B,C,D; ATEX Zone 2, IECEx UL508   |
| EMI                           | FCC Part 15 Subpart B Class A, EN 55011/55022, Class A   |
| EMS                           | EN 61000-4-2 (Level 3), EN 61000-4-3 (Level 3)<br>EN 61000-4-4 (Level 3), EN 61000-4-5 (Level 3)<br>EN 61000-4-6 (Level 3), EN 61000-4-8 (Level 3) |
| Shock                         | IEC 60068-2-27   |
| Freefall                      | IEC 60068-2-32   |
| Vibration                     | IEC 60068-2-6  |

### Product Ordering Information

| MODEL #     | DESCRIPTION   | OPERATING TEMPERATURE | RJ45        |                   | FIBER   |   | CONNECTOR |
|-------------|---|-----------------------|-------------|-------------------|---|---|-----------|
|             |   |                       | 10/100 MBPS | 100/1000 BASE-SFP | COMBO PORT<br>10/100/1000BASE-T(X)<br>OR 100/1000BASE-SFP |   |           |
| SE408       | 8-port 10/100Mbps Managed Ethernet Switch                                     | -10 ~ 60°C            | 8           | -                 | -   | - | -         |
| SEC410-2SFP | 8-port 10/100Mbps + 2-port GbE Combo (SFP or Copper) Managed Ethernet Switch  | -10 ~ 60°C            | 8           | -                 | 2   | - | LC (SFP)  |
| SE416       | 16-port 10/100Mbps Managed Ethernet Switch                                    | -10 ~ 60°C            | 16          | -                 | -   | - | -         |
| SEC418-2SFP | 16-port 10/100Mbps + 2-port GbE Combo (SFP or Copper) Managed Ethernet Switch | -10 ~ 60°C            | 16          | -                 | 2   | - | LC (SFP)  |

### Accessories - Optional (sold separately)

| MODEL #    | DESCRIPTION                             | OPERATING TEMPERATURE |
|------------|---|-----------------------|
| MDR-20-24  | DIN Rail Power Supply, 24VDC, 20W, 1.0A | -20~70 °C             |
| MDR-40-24  | DIN Rail Power Supply, 24VDC, 40W, 1.7A | -20~70 °C             |
| SDR-120-24 | DIN Rail Power Supply, 24VDC, 120W, 5A  | -20~70 °C             |
| SDR-240-24 | DIN Rail Power Supply, 24VDC, 240W, 10A | -20~70 °C             |

### Accessories - WebAccess/NMS, Networking Management Software (sold separately)

| MODEL #       | DESCRIPTION  |
|---------------|--|
| Trial Version | 6 Months Free Trial -- ask your local sales representative |
| NMS-U050-ULE  | Supports maximum 50 nodes                                  |
| NMS-U300-ULE  | Supports maximum 300 nodes                                 |
| NMS-U01K-ULE  | Supports maximum 1,000 nodes                               |
| NMS-U04K-ULE  | Supports maximum 4,000 nodes                               |

### Package Checklist

Ethernet Switch, Protective Caps for unused ports, Quick Start Guide, DIN-Rail mount bracket (installed), wall mount bracket.

### Warranty

Limited lifetime warranty for B+B SmartWorx designed and/or manufactured products.

# Small Form Pluggable (SFP) Modules

Copper SFP (10/100/1000 and 1000 Mbps)

Fiber SFP (155 Mbps, 1.25 Gbps)

- Future-proof network equipment
- Available in SM, MM fiber types
- Maximize network hardware
- Troubleshooting diagnostics
- Plug-and-play operation



Copper



Fiber LC

SFPs are compact transceivers that function as modular connectors. Available for copper (RJ-45) and all common fiber modes, wavelengths and data rates, these modules allow network operators to connect different interface types to the same network equipment via an SFP port. The cost of cable upgrades is greatly reduced, preserving the networking equipment investment – all for the price of a relatively inexpensive module.

More and more network equipment is being designed with SFP ports to take advantage of the inherent flexibility and to eliminate the guesswork and uncertainty of expensive equipment purchases. Remember to select an SFP to match the speed of your designated port. All modules from B+B SmartWorx carry a limited lifetime warranty.

## Standard Diagnostics

- SFP Type
- Fiber Link Length
- Wavelength
- Bit Rate
- Date Code

## DDMI/Extended Diagnostics

- Temperature
- Voltage
- Bias Current
- TX Power
- RX Power

## Fiber SFP Modules

### Robust Industrial Performance

- Extended operating temperature range
- Hot swappable

### Feature Friendly

- Available in a wide range of fiber types, wavelengths and transmission rates to meet almost any networking need

### Extended Diagnostics

- Powerful troubleshooting Digital Diagnostics Monitoring Interface (DDMI)

### Standard Compliances

- MSA compliant: available in dual- or single-strand, SC or LC connector
- Eye Safety meets Laser Class 1 Compliance with IEC 60825-1
- Complies with Telecordia GR-468-CORE
- RoHS compliant

### Voltage/Temperature

- Input Voltage: 3.3V
- Operating Temperature: -40° to +85° C
- Operating Temperature, CWDM: 0° to +70° C
- Storage Temperature: -40° to +85° C

### Data Rates

- 155 Mbps
  - ITU-T G.957, G.958 and IEEE 802.3u
  - Applications: Fast Ethernet, OC-3/STM-1 and other optical links
- 1.25 Gbps
  - Compliant with specifications for IEEE 802.3z
  - Applications: Gigabit Ethernet and other optical links

## Copper SFP Models

| MODEL NUMBER | PORT DESCRIPTION | CONNECTOR | DISTANCE |
|--------------|------------------|-----------|----------|
| 808-39001    | 10 - 1250, TX    | RJ45      | 100 m    |
| 808-39010    | 1250, TX         | RJ45      | 100 m    |

## IE-SFP Modules: 100 to 155 Mbps, DDMI (OC-3)

| MODEL NUMBER   | PORT DESCRIPTION | FIBER | DISTANCE | POWER BUDGET |
|----------------|------------------|-------|----------|--------------|
| <i>W/ DDMI</i> |                  |       |          | <i>(db)</i>  |
| 808-38101      | MM850            | LC    | 2 km     | 14.5         |
| 808-38102      | MM1300           | LC    | 2 km     | 11           |
| 808-38103      | SM1310           | LC    | 20 km    | 21           |
| 808-38104      | SM1310/PLUS      | LC    | 40 km    | 31           |
| 808-38105      | SM1550/LONG      | LC    | 80 km    | 31           |

## IE-SFP Modules: 1.25 Gbps GB Ethernet, DDMI (OC-24)

| MODEL NUMBER   | PORT DESCRIPTION | FIBER | DISTANCE  | POWER BUDGET |
|----------------|------------------|-------|-----------|--------------|
| <i>W/ DDMI</i> |                  |       |           | <i>(db)</i>  |
| 808-38201      | MM850            | LC    | 220/550 m | 7.5          |
| 808-38206      | MM1300           | LC    | 2 km      | 10           |
| 808-38200      | SM1310           | LC    | 20 km     | 14           |
| 808-38203      | SM1310/PLUS      | LC    | 30 km     | 17           |
| 808-38204      | SM1550/LONG      | LC    | 40 km     | 18           |
| 808-38205      | SM1550/XLONG     | LC    | 70 km     | 21           |
| 808-38208      | SM1550/XXLONG    | LC    | 120 km    | 30           |

## IE-SFP Modules: CWDM (155 Mbps/1.25 Gbps), DDMI

| MODEL NUMBER    | DESCRIPTION      | FIBER           | DISTANCE         | POWER BUDGET (db)         |
|-----------------|------------------|-----------------|------------------|---------------------------|
| <i>155 Mbps</i> | <i>1.25 Gbps</i> | <i>155 Mbps</i> | <i>1.25 Gbps</i> | <i>155 Mbps 1.25 Gbps</i> |
| 808-38141       | 808-38241        | CWDM-SM1270     | LC 80 km         | 40 km 29 22               |
| 808-38142       | 808-38242        | CWDM-SM1290     | LC 80 km         | 40 km 29 22               |
| 808-38143       | 808-38243        | CWDM-SM1310     | LC 80 km         | 40 km 29 22               |
| 808-38144       | 808-38244        | CWDM-SM1330     | LC 80 km         | 40 km 29 22               |
| 808-38145       | 808-38245        | CWDM-SM1350     | LC 80 km         | 40 km 29 22               |
| 808-38146       | 808-38246        | CWDM-SM1370     | LC 80 km         | 40 km 29 22               |
| 808-38147       | 808-38247        | CWDM-SM1390     | LC 80 km         | 40 km 29 22               |
| 808-38148       | 808-38248        | CWDM-SM1410     | LC 80 km         | 40 km 29 22               |
| 808-38149       | 808-38249        | CWDM-SM1430     | LC 80 km         | 70 km 29 22               |
| 808-38150       | 808-38250        | CWDM-SM1450     | LC 80 km         | 70 km 29 22               |
| 808-38151       | 808-38251        | CWDM-SM1470     | LC 80 km         | 70 km 29 22               |
| 808-38152       | 808-38252        | CWDM-SM1490     | LC 80 km         | 70 km 29 22               |
| 808-38153       | 808-38253        | CWDM-SM1510     | LC 80 km         | 70 km 29 22               |
| 808-38154       | 808-38254        | CWDM-SM1530     | LC 80 km         | 70 km 29 22               |
| 808-38155       | 808-38255        | CWDM-SM1550     | LC 80 km         | 70 km 29 22               |
| 808-38156       | 808-38256        | CWDM-SM1570     | LC 80 km         | 70 km 29 22               |
| 808-38157       | 808-38257        | CWDM-SM1590     | LC 80 km         | 70 km 29 22               |
| 808-38158       | 808-38258        | CWDM-SM1610     | LC 80 km         | 70 km 29 22               |

### NOTES: Fiber SFP Form Factors & Distances

Fiber SFP (OC-3, OC-24) form factors have virtually identical dimensions and are not typically interchangeable; this will depend on the device type.

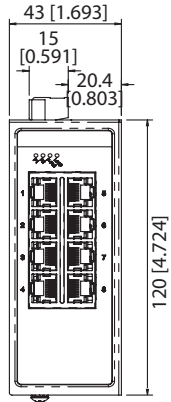
For each fiber product listed in the tables, DISTANCE represents an approximate fiber distance based on industry-standard fiber attenuation specifications. Actual distances will vary for each installation. For complete power budgets and additional information on calculating specific distances, contact B+B SmartWorx Technical Support specialists at (815) 433-5100 (USA).

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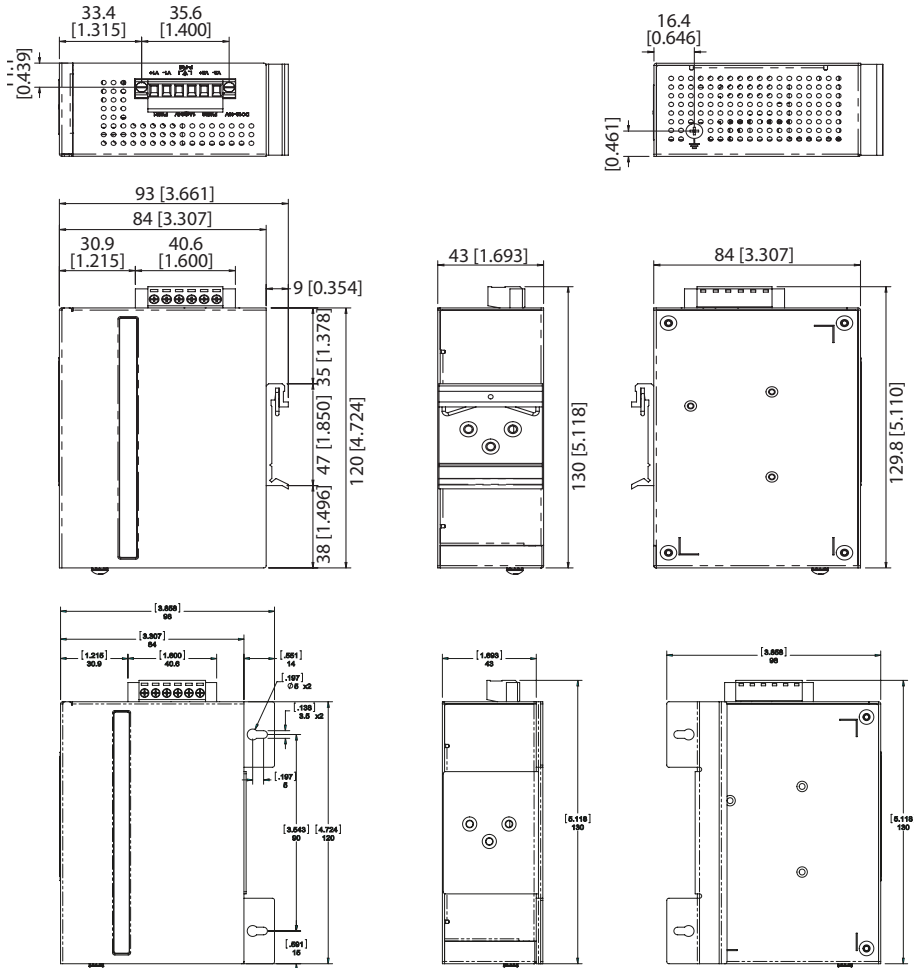
### Mechanical Diagram | Faceplate Detail



**Model SE408**  
faceplate detail

### Mechanical Diagram | Enclosure DIN Rail & Panel Mount Options

Units = [inches] mm



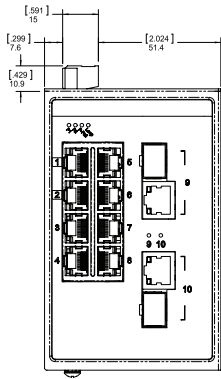
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## 8, 10, 16, 18 port Ethernet Switches

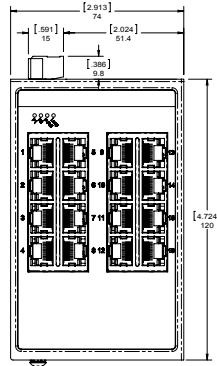
Models SE408, SEC410-2SFP, SE416, SEC418-2SFP

### Mechanical Diagram | Faceplate Detail by Model

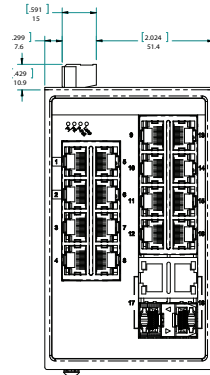
Units = [inches] mm



**Model SEC410-2SFP**  
faceplate detail



**Model SE416**  
faceplate detail



**Model SEC418-2SFP**  
faceplate detail

### Mechanical Diagram | Enclosure

#### DIN Rail & Panel Mount Options

Units = [inches] mm

