PROFINET Managed Industrial Ethernet Switches
8, 10, 16, 18 port Ethernet Switches
Models SE408-PN-T, SE408-PNMA-T, SEC410-2SFP-PN-T, SE416-PN-T, SEC418-2SFP-PN-T

B+B SmartWorx
Powered by ADVANTECH
www.advantech-bb.com

SE408-PN-T SE408-PNMA-T SEC410-2SFP-PN-T SE416-PN-T SEC418-2SFP-PN-T

eworx

IXM™ Network Deployment | X-RING™ <20ms Failure Recovery | PROFINET® | -40°C +75°C Wide Operating Temperature | ECO Friendly | RoHS READY | CE FC c UL us LISTED

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
- PROFINET Conformance Class B Certification
- Meet PROFINET RT (Real-Time) Standard with Media Redundancy Protocol, IEC 62493-2
- Less than 200 ms switch-over times achievable with Media Redundancy Protocol (MRP)
- Seamless integration for configuration and remote diagnostics by use of GSDML file in the Siemens STEP 7 & TIA (Totally Integrated Automation Portal) operation system.
- LLDP & SNMP key benefits for the network management system in PROFINET network
- Layer 2 Managed functionality and advanced diagnostic tools
- Energy Efficient Ethernet (EEE), IEEE 802.3az for low energy consumption
- IXM™ function enables the cross management for fast deployment
- Redundant Power Inputs (8.4 - 57.6 VDC)
- UL508 certified for Industrial Control Panel
- UL C1D2, ATEX Zone 2 and IECEx certified for Hazardous Environments

Introduction

PROFINET™ is better known as the real-time Ethernet communication protocol for wide deployment in industrial automation.The SE400-PN series is ideal for use in PROFINET conformance Class B networks that contain the most configuration and diagnostic functions to seamlessly communicate with SIEMENS by use of GSDML files in STEP 7 or TIA portal operation systems. By use the procotol of LLDP and SNMP is easy to identify neighboring devices and remote managment by the network management software in PROFINET network

SE400-PN series has the essential L2 managed switching features, such as network security, management, redundancy and diagnostic functions. Default enabled PROFINET function which allows SE400-PN switch to forward and filter control data traffic in PLC/HMI/IO Real-time Ethernet environment. With QoS, Rate limiting, VLAN setting, the user can easily prioritize the networking traffic and segment the separated local group domains to tailor the actual networking requirement in industrial automation.

Also embedded into each switch is the industry leading 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 SE400 and SE300 family switches without the need of extra software or trained personal. IXM™ speeds up switch deployment and ensures network stability.

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 Gigabit Copper: 10/100/1000 Mbps, Auto-Negotiation Gigabit Fiber: Up to 1000Mbps
INTERFACE	
Connectors	8 x RJ45 / 16 x RJ45 - SE408-PN-T / SE408-PNMA-T/ SE416-PN-T 8 x RJ45 / 16 x RJ45 + 2 x (RJ45/SFP) combo ports - SEC410-2SFP-PN-T / SEC418-2SFP-PN-T 1 x RS-232 Console port (RJ45 connector) 1 x Reset bottom 6-pin removable screw terminal (power & relay)
Ethernet	Auto Sensing, 10/100BaseTX, 10/100/1000BaseTX, Duplex and MDIX
LEDs	PWR1, PWR2, SYS, Alarm and R.M. 10/100 T(X): Link/Activity, Speed GB Copper: Link/Activity, Speed SFP: Link/Activity

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. 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.

Media Redundancy Protocol – IEC 62439-2, sub-200ms self-healing/ring recovery technology. Reduce redundant network cabling and planning costs and ensure high reliability of your industrial network applications.

LLDP - Link Layer Discovery Protocol, the best practice to standardize network topology across all devices if you have multiple devices in a network and allow devices to advertise information to directly connected peers/neighbors

SNMP – With Simple Network Management Protocol, the network administrator can collect and organize information about managed devices on IP networks and modify that information to change device behavior remotely.

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.

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 enables you to verify the length of a cable 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.

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Software Properties

SWITCH PROPERTIES	
MAC Table Size	8k
Packet Buffer Size	4.1 Mbits
Switching Capacity	1.6 Gbps - SE408-PN-T / SE408-PNMA-T 3.2 Gbps - SEC416-PN-T 5.6 Gbps - SEC410-2SFP-PN-T 7.2 Gbps - SEC418-2SFP-PN-T
Packet Buffer Size	9,216 bytes
Priority Queues	8
Maximum Number 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, SNTP, 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), MRP(Media Redundancy 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	PROFINET RT (Real-Time) Standard & Conformance Class B Certification
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-PN-T / SE408-PNMA-T Max. 5.8W - SEC410-2SFP-PN-T Max. 8W - SE416-PN-T Max. 8.2W - SEC418-2SFP-PN-T
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-PN-T / SE408-PNMA-T 74 x 120 x 84 mm - SEC410-2SFP-PN-T/SE416-PN-T/ SEC418-2SFP-PN-T
Protection Class	IP30 enclosure
Weight	Net: 0.67 kg. Gross: 0.72 kg - SE408-PN-T / SE408-PNMA-T Net: 1 kg. Gross: 1.2 kg - SEC410-2SFP-PN-T/SE416-PN-T/ SEC418-2SFP-PN-T
Enclosure	Metal Shell
Mounting	DIN-Rail, Wall Mount
ENVIRONMENT	
Operating Temperature	-40 to +75°C (-40 to +167°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-PN-T / SE408-PNMA-T 3,183,604 hours - SEC410-2SFP-PN-T 2,788,343 hours - SE416-PN-T 2,825,281 hours - SEC418-2SFP-PN-T
CERTIFICATIONS	
Hazardous Environments	UL Class 1 Division 2 Groups A,B,C,D; ATEX Zone 2, IECEx
Safety	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) EN 61000-4-4 (Level 3), EN 61000-4-5 (Level 3) 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

				RJ45	FIBER		
MODEL #	DESCRIPTION	OPERATING TEMPERATURE	MRP MODES	10/100 MBPS	100/1000 BASE-SFP	COMBO PORT 10/100/1000BASE-T(X) OR 100/1000BASE-SFP	CONNECTOR
SE408-PN-T	8-port 10/100Mbps PROFINET Managed Ethernet Switch	-40~ 75 °C	Client	8	-	-	LC (SFP)
SE408-PNMA-T	8-port 10/100Mbps PROFINET Manager Managed Ethernet Switch	-40~ 75 °C	Manager / Client	8	-	-	LC (SFP)
SEC-410-2SFP-PN-T	8-port 10/100Mbps + 2-port GbE Combo (SFP or Copper) PROFINET Managed Ethernet Switch	-40~ 75 °C	Client	8	-	2	LC (SFP)
SE416-PN-T	16-port 10/100Mbps PROFINET Managed Ethernet Switch	-40~ 75 °C	Client	16	-	-	LC (SFP)
SEC418-2SFP-PN-T	16-port 10/100Mbps + 2-port GbE Combo (SFP or Copper) PROFINET Managed Ethernet Switch	-40~ 75 °C	Client	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.

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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
W/ DDMI				*(db)*
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
W/ DDMI				*(db)*
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)	
155 Mbps	*1.25 Gbps*			*155 Mbps*	*1.25 Gbps*	*155 Mbps*	*1.25 Gbps*
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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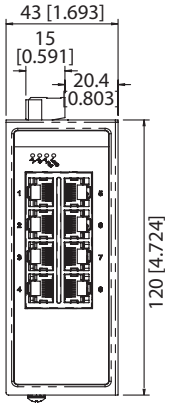
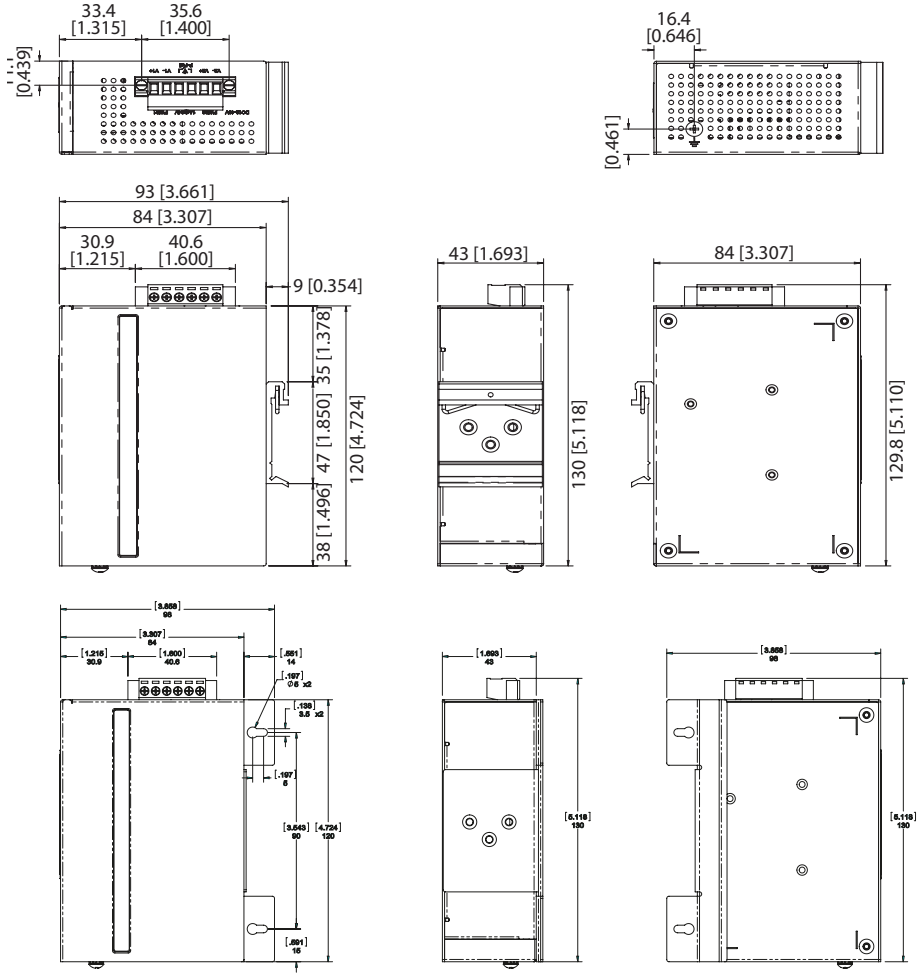
Mechanical Diagram | Faceplate Detail



Models SE408-PN-T & SE408-PNMA-T
faceplate detail

Mechanical Diagram | Enclosure
DIN Rail & Panel Mount Options
Units = [inches] mm



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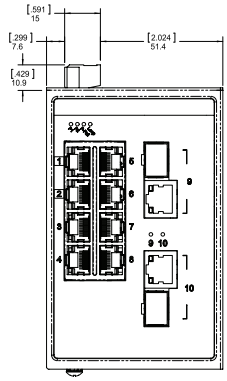
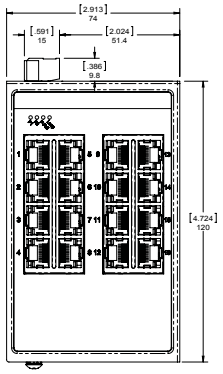
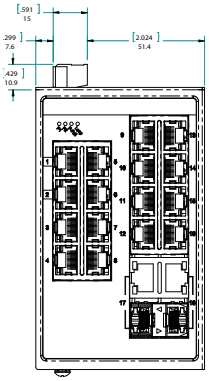
Mechanical Diagram | Faceplate Detail by Model
Units = [inches] mm



Model SEC410-2SFP-PN-T
faceplate detail



Model SE416-PN-T
faceplate detail



Model SEC418-2SFP-PN-T
faceplate detail

Mechanical Diagram | Enclosure
DIN Rail & Panel Mount Options
Units = [inches] mm