The power of networks

BELLCOMMS

Network Ethernet Switch Catalogue

ASIA PACIFIC CATALOGUE

CONTENT

10/100Mbps Fast Ethernet Switch

10/100Mbps POE Ethernet Switch

10/100/1000Mbps Ethernet Gigabit Switch

SFP module 1.25Gb/s Mini GBIC

SMD-2402
24 Port 10/100Mbps +2G TP/SFP Combo Ethernet Switch

Features

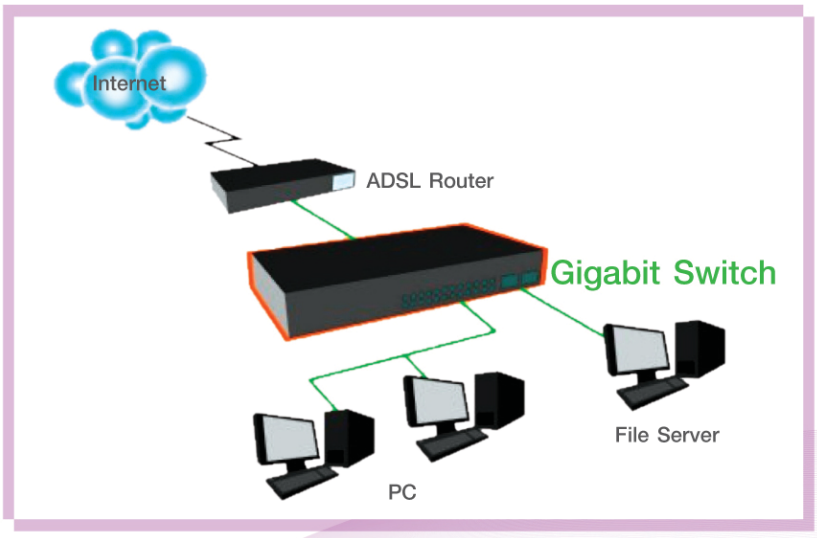
- 19" Industrial Size
- No Fan No Noise

- Auto-MDI/MDI-X :Every port can automatically sense your type of cable, so there is no need for crossover cables whether you are connecting this switch to another switch or to a computer

- Auto-Negotiation : Every port can automatically sense if the connected network devices are running at 10Mbps or 100Mbps and Half/Full-Duplex mode, and adjust accordingly

- Non-Blocking : This switch receives and forwards traffic seamlessly with its non-blocking wire-speed. Every port simultaneously supports up to 200Mbps of bandwidth in full-duplex mode. This feature provides full wire speed to the connected devices and allows you to run a smooth network

- Internal Power Supply



Standards
- IEEE 802.3 10BaseT
- IEEE 802.3u 100BaseTX
- IEEE 802.3ab 1000BaseT
- IEEE 802.3z 1000BaseSX/LX
- IEEE 802.3x Flow Control

Buffer Memory
- 2.75Mbit

MAC Address
- 4K

Transmission Media
- 10BaseT Cat. 3, 4, 5 UTP/STP
- 100BaseTX Cat. 5 UTP/STP
- 1000BaseT Cat. 5E UTP/STP

Led Indicators
- Per Port: Link/Act
- Per Unit: Power

Power Requirement
- 100~240V/AC, 50~60Hz

Power Consumption
- 20 Watts (Max)

Dimensions
- 440 x 220 x 44 mm (L x W x H)

Weight
- 3.1 kg

Operating Temperature
- 0 to 40℃

Storage Temperature
- 20 to 90℃

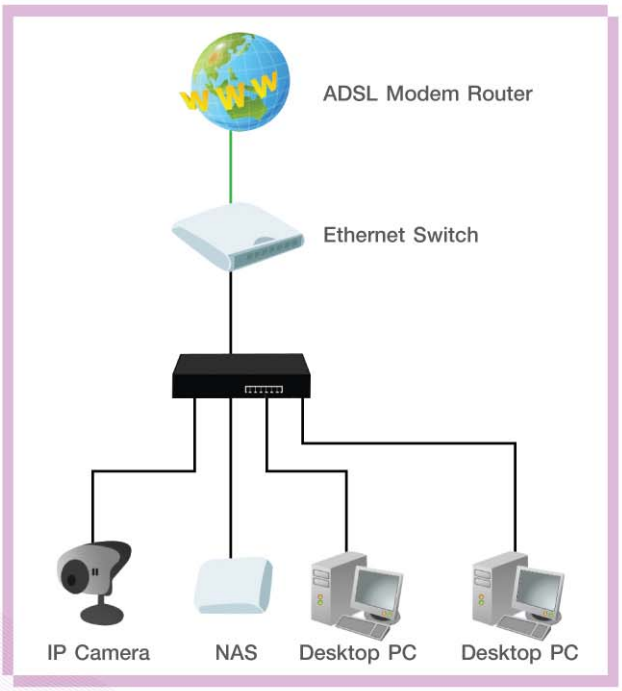
Humidity
- 10 to 90% RH (non-condensing)

Regulatory Compliance
- FCC Class B, CE

BC-9324 / SH-9324ED
24 Port 10/100Mbps Ethernet Switch

Feature

- 24 ports with 10/100TX auto-negotiation
- Each port supports Auto-MDI/MDIX
- Plug-and-play Auto-negotiation for speed and half and full duplex operation.
- True non-blocking architecture for full wire speed forwarding
- Store-and-forward switching mechanism
- Back pressure and IEEE 802.3x compliant full-duplex flow control
- Support up to 1536 bytes packet size
- Supports 8,192 MAC address table
- Automatic source address learning and aging
- LED indicators for simple diagnosis
- Provide long rack ear for 19" chassis



Standards

- IEEE802.3 10Base-T
- IEEE 802.3u 100Base-TX
- IEEE 802.3x flow control both on half and full duplex

Protocol

- CSMA/CD

Network Media

- 100Base-TX : Category 5 EIA/TIA-568 twisted pair Cable
- 0Base-T : Category 3,4,5 EIA/TIA-568 twisted pair Cable

Connector

- Shielded RJ-45 for all ports

Network Data Transfer Rate

- Ethernet : 10/20Mbps (half/full duplex)
- Fast Ethernet : 100/200Mbps (half/full duplex)

LED indicators

- System : Power LED
- ndividual port : Link/active, 10/100 LED

Dimension

- 265 x 140 x 44 mm (L*W*H)

Temperature

- Operating : 0℃ to 50℃
- Storage : -20℃ to 70℃

Humidity

- Operating : 10% to 90% RH
- Storage : 5% to 90% RH

Power

- 100~240VAC, 50-60Hz internal switching power supply

Compliance

- CE, FCC

POE-808
8 Port 10/100Mbps PoE Switch, w/8 PSE Port

Feature

The PoE-808 is 8-port 10/100M PoE Switch that is designed for small or medium network environment to strengthen its network connection. This product is compact in size, making it ideal for Desktop users with limited space. It also gives you the option of installing it in a 19" cabinet by rack-mount kits or underneath a desk.

IEEE 802.3af Power over Ethernet (PoE) ports
PoE-808 features 8 IEEE 802.3af Power over Ethernet (PoE) ports supplying up to 15.4 watts per port. This product can convert standard 100~240V/AC power into low-voltage DC that runs over existing LAN cable to power up IEEE 802.3af compliant network accessories. It also features PoE awareness to verify whether the network device receive power is IEEE 802.3af compliant, or only the data will be sent through LAN cable. By adding PoE-808 to existing networking, installing networking products such as Access Points and IP cameras can be easily managed and set up. Wireless device deployments are easily located with available power outlets and network administrators don't need to use heavy AC power adapters anymore.

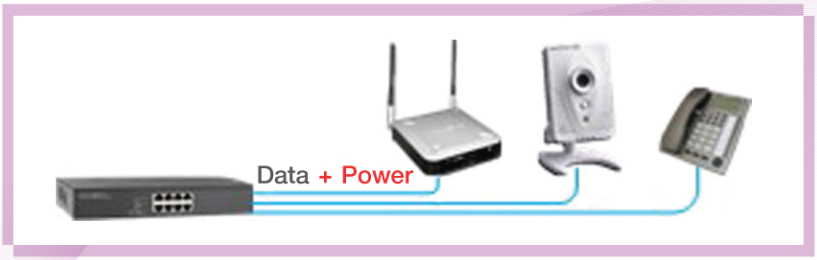
No Special Networking Cable Required
By adding PoE devices, you can use an existing standard Cat-5 Ethernet cable without a new electrical outlet for both power and data. It helps you reduce installation time and cost.

Auto-MDI/MDI-X
Every port can automatically sense your type of cable, so there is no need for crossover cables whether you are connecting this switch to another switch or to a computer.

Non-Blocking
This switch receives and forwards traffic seamlessly with its non-blocking wire-speed. Every port simultaneously supports up to 200Mbps of bandwidth in full-duplex mode. This feature provides full wire speed to the connected devices and allows you to run a smooth network.

Store and Forward
By this function, this switch can maximize network performance while minimizing the propagation of bad network packets.

- Number of Ports: 8 PSE/Power over Ethernet Ports
- MAC Address: 1K
- Buffer Memory: 512K bits



Standards
- IEEE-802.3af
- IEEE 802.3 10BaseT
- IEEE 802.3u 100BaseTX
- IEEE 802.3x Flow Control

Features
- Number of Ports: 8 PSE/Power over Ethernet Ports
- MAC Address: 1K
- Buffer Memory: 512K bits
- Transmission Method: Store and Forward

Filtering/Forwarding Rates
- 100Mbps port - 148,800pps
- 10Mbps port - 14,880pps

Transmission Media
- 10BaseT Cat. 3, 4, 5 UTP/STP
- 100BaseTX Cat. 5 UTP/STP

Led Indicators
- Per Port: Link/Act, PoE Act/Status
- HPer Unit: Power

Power Input
- 100~240V/AC, 50~60Hz

Power Output
- 48V/DC Per Port Output – 15.4 W Max Per Port
- 8 Ports at Full 15.4 W Output Supported

Power Consumption 130 Watts (Max)

- Dimensions 266 × 160 × 44 mm (L x W x H)
  Weight 1.6 kg
- Operating Temperature -0 to 40℃
- Storage Temperature -20 to 90℃
- Humidity -10 to 90% RH (non-condensing)
- Certifications FCC Class A, CE

POE-8242
24 Port 10/100Mbps + 2 Port Gigabit Combo TP/SFP PoE Ethernet Switch

Feature

POE-8242 is 24-port 10/100M + 2 Combo Gigabit Copper / 2 SFP Rack-mount Gigabit Ethernet Switch that is designed for medium or large network environment to strengthen its network connection. Including rack-mount brackets, the 19" size fits into your rack environment. It is a superb choice to boost your network with better performance and efficiency.

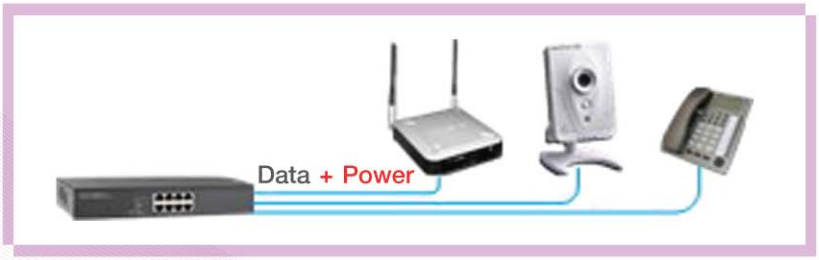
IEEE 802.3af Power over Ethernet (PoE) ports

POE-8242 features 24 IEEE 802.3af Power over Ethernet (PoE) ports supplying Maximum 390Watt. This product can convert standard 90~260V/AC power into low-voltage DC that runs over existing LAN cableto power up IEEE 802.3af compliant network accessories. It also features PoE awareness to verify whether the network device receive power is IEEE 802.3af compliant, or only the data will be sent through LAN cable. By adding POE-8242 to existing networking, installing networking products such as Access Points and IP cameras can be easily managed and set up. Wireless device deployments are easily located with available power outlets and network administrators don't need to use heavy AC power adapters anymore.

2 Combo Gigabit Copper / 2 SFP Open Slots

POE-8242S supports 2 Combo Gigabit Copper or 2 SFP open slots to uplink to servers, storage, or other switching devices for long loop reach applications.

- Number of Ports: 24 port with 24 PoE port (full power)
- 10/100Base TX with RJ-45 Connectors: 2
- Combo SFP Open Slots: 2
- MAC Address : 4K
- Buffer Memory: 2.75Mb



Standards
- IEEE 802.3 10BaseT
- IEEE 802.3u 100BaseTX
- IEEE 802.ab 1000BaseT
- IEEE 802.3z 1000BaseSX/LX
- IEEE 802.3x Full-duplex and Flow Control

Features
- Number of Ports:
  10/100BaseTX with RJ-45 Connectors: 24
  10/100/1000BaseT with RJ-45 Connectors: 2
  Combo SFP Open Slots: 2
- MAC Address: 4K
- Buffer Memory: 2.75Mb
- Transmission Method: Store and Forward

Filtering/Forwarding Rates
- 1000Mbps port – 1,488,000pps
- 100Mbps port - 148,800pps
- 10Mbps port - 14,880pps

Transmission Media
- 10BaseT Cat. 3, 4, 5 UTP/STP
- 100BaseTX Cat. 5 UTP/STP
- 1000BaseT Cat. 5E UTP/STP

Led Indicators
- Per Port: Link/Act, PoE Act/Status
- Per Unit: Power

Power Requirement
- 100-240V/AC, 50~60Hz

Power Consumption 390 Watts (Max)
- Dimensions 440 x 310 x 44 mm (L x W x H)
  Weight 4 kg
- Operating Temperature 0 to 40℃
- Storage Temperature -20 to 90℃
- Humidity 10 to 90% RH (non-condensing)
- Certifications FCC Class A, CE

BCG-2400
24 port 10/100/1000Mbps Ethernet Switch Unmanage Ethernet Switch

Standards
- IEEE 802.3 10BaseT
- IEEE 802.3u 100BaseTX
- IEEE 802.3ab 1000BaseT
- IEEE 802.3x Flow Control

Features
- 24 port 10/100/1000Mbps TX Auto-Negotiation Ethernet Switch
- Supports TP interface Auto MDIX function for auto TX/RX swap
- Automatic Source MAC Address Learning and Aging
- Supports up to 8K MAC addresses
- Up to 2M bits buffer
- Support Jumbo frame up to 10K bytes
- Supports Store & Forward architecture and performs forwarding and filtering
- Broadcast Storming Filter function
- IEEE802.3x flow control for Full-duplex
- Back Pressure function for Half-duplex operation
- Supports to handle up to 1522 bytes packet
- LED indicators for simple diagnostics and management
- Plug and Play

MAC Address Table 8K
Built-in Buffer 2M bits
Auto MDI/MDIX

Green Ethernet Technology
1.Link-On and Cable Length Power Saving:
The Switch provides link-on and dynamic detection of cable length and dynamic adjustment of power required for the detected cable length. This feature provides high performance with minimum power consumption.

2.Link-Down Power Saving
The Switch implements link-down power saving on a per-port basis, greatly cutting power consumption when the network cable is disconnected. After it detects an incoming signal, it wakes up from link-down power saving and operates in normal mode.

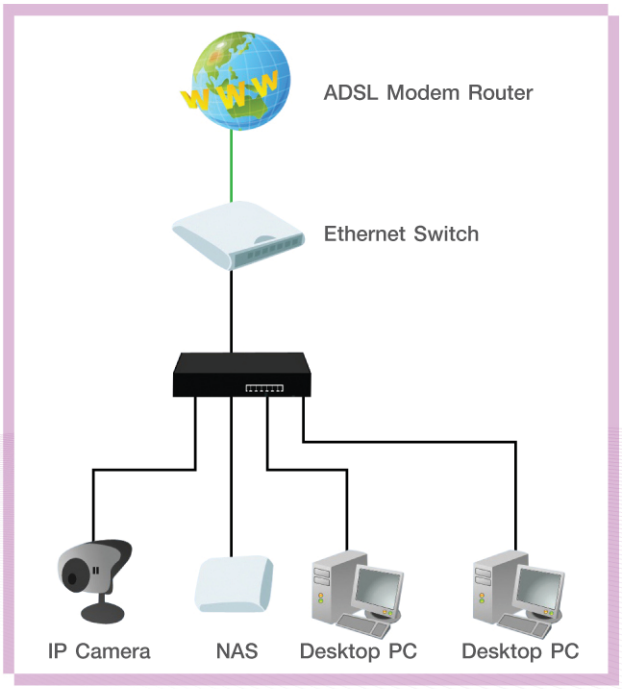
Green Ethernet Benefit
- Reducing Your Power Consumption
- Creating Less Heat
- Extending Your Product Life
- Decreasing Your Operating Costs

Transmission Media
- 10BaseT Cat. 3, 4, 5 UTP/STP
- 100BaseTX Cat. 5 UTP/STP
- 1000BaseT Cat. 5E UTP/STP

Led Indicators
- Per Port: Link/Act, 1000M
- Per Unit: Power
- Power Supply 100-240VAC 50-60Hz
- Power 45w (max)
- 438mm(L) x 200mm(W) x 44mm(H)
- Weight 4000g
- Storage Temperature -20℃ to 70℃
- Operating Temperature 0℃ to 50℃

Humidity
- 5% to 90 % non-condensing (operating)
- 5% to 90% non-condensing (storage)

Certifications
FCC Class B, CE



BCG-0802 | 8 RJ45 ports, with 10/100/1000Mbps, Full/Half duplex auto-negotiation and Auto-MDIX and Fource MDI/MDIX function 2 SFP ports with Port9 and Port10

Feature

- Web-based Configuration and Management
- IEEE 802.1Q VLAN Tagging
- 802.1p Priority Queues
- Jumbo Frames
- Link Aggregation and Spanning Tree
- Quality of Service
- IGMP Snooping
- LACP, RSTP
- MAC Filtering
- Rate Limiting (Ingress rate and Egress rate)
- 802.1x Port-based Security
- Management: Port Mirroring, Password-protected Access, Port Settings

MAC Address 8K

Buffer Memory 500K Bytes
Jumbo Frames 9.6K

Smart Features

VLAN : 24
Trunk Groups : 8

Filtering/Forwarding Rates

- 1000Mbps port - 1,488,000pps
- 100Mbps port - 148,800pps
- 10Mbps port - 14,880pps

Green Ethernet Technology

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2.Link-Down Power Saving

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Green Ethernet Benefit

- Reducing Your Power Consumption
- Creating Less Heat
- Extending Your Product Life
- Decreasing Your Operating Costs

Transmission Media

- 10BaseT Cat. 3, 4, 5 UTP/STP
- 100BaseTX Cat. 5 UTP/STP
- 1000BaseT Cat. 5E UTP/STP

Led Indicators

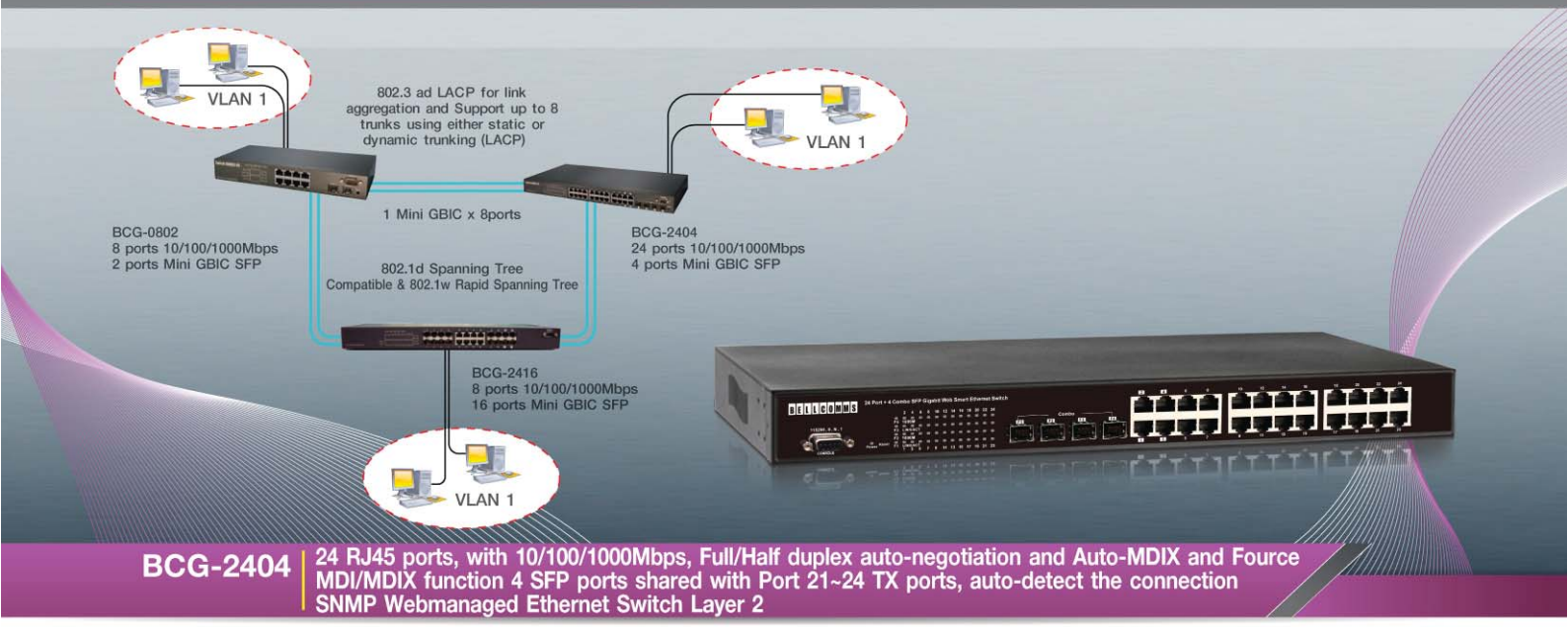
- Per Port: Link/Act, 1000M
- Per Unit: Power

Power Supply 100-240VAC 50-60Hz Power 25w (max)

- Dimensions 440 × 220 × 44 mm (L x W x H)
- Weight 3.0Kg
- Storage Temperature -20 to 90℃
- Operating Temperature 0 to 55℃
- Humidity10 to 90% RH (non-condensing)

Certification

- FCC Class A, CE



BCG-2404

24 RJ45 ports, with 10/100/1000Mbps, Full/Half duplex auto-negotiation and Auto-MDIX and Fource MDI/MDIX function 4 SFP ports shared with Port 21~24 TX ports, auto-detect the connection SNMP Webmanaged Ethernet Switch Layer 2

Features

- Web-based Configuration and Management
- IEEE 802.1Q VLAN Tagging
- 802.1p Priority Queues
- Jumbo Frames
- Link Aggregation and Spanning Tree
- Quality of Service
- IGMP Snooping
- LACP, RSTP
- MAC Filtering
- Rate Limiting (Ingress rate and Egress rate)
- 802.1x Port-based Security
- Management: Port Mirroring, Password-protected Access, Port Settings

MAC Address 8K

Buffer Memory 500K Bytes
Jumbo Frames 9.6K

Smart Features

VLAN：24
Trunk Groups：8

Filtering/Forwarding Rates

- 1000Mbps port - 1,488,000pps
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Green Ethernet Technology

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The Switch provides link-on and dynamic detection of cable length and dynamic adjustment of power required for the detected cable length. This feature provides high
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2.Link-Down Power Saving

The Switch implements link-down power saving on a per-port basis, greatly cutting power consumption when the network cable is disconnected. After it detects an incoming signal, it wakes up from link-down power saving and operates in normal mode.

Green Ethernet Benefit

- Reducing Your Power Consumption
- Creating Less Heat
- Extending Your Product Life
- Decreasing Your Operating Costs

Transmission Media

- 10BaseT Cat. 3, 4, 5 UTP/STP
- 100BaseTX Cat. 5 UTP/STP
- 1000BaseT Cat. 5E UTP/STP

Led Indicators

- Per Port: Link/Act, 1000M
- Per Unit: Power

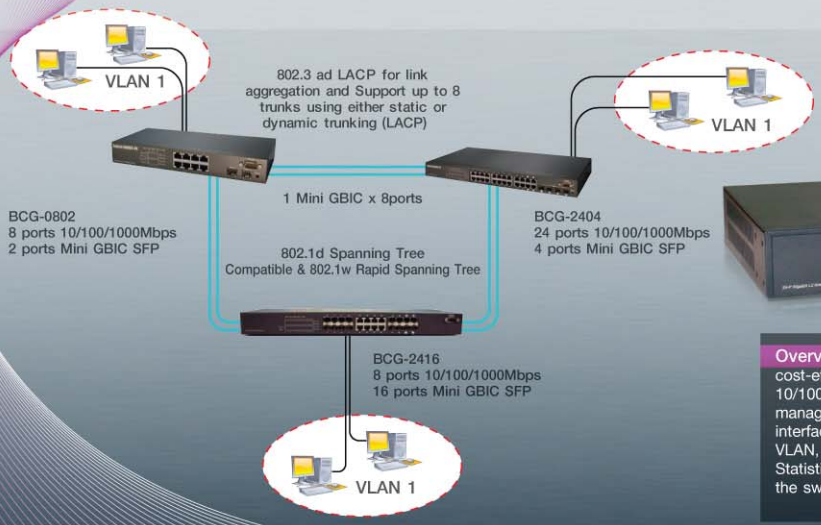
Power Supply100-240VAC 50-60Hz Power 25W (max)

- Dimensions 440 x 220 x 44 mm (L x W x H)
- Weight 3.0Kg
- Storage Temperature - 20 to 90℃
- Operating Temperature 0 to 55℃
- Humidity10 to 90% RH (non-condensing)

Certification

- FCC Class A, CE

Ethernet Switch Network



Overview

cost-effect high performance 24G L2 Ethernet management switch. It provides 8* 10/100/1000Mbps TX ports and 16* 1000M SFP ports. This switch supports remote management by SNMP, Http and Telnet interfaces, and local management by console interface. SGI-2416 supports lots of L2 switch management functions, e.g. 802.1Q VLAN, 802.1x Port Security, Rate Control, Port Configuration, Port Mirroring, Port Statistics, QoS functions, etc. Auto-MDIX function is supported for every TX port of the switch for easy cable connection.

BCG-2416/ SGI-2416

8 RJ45 ports, with 10/100/1000Mbps, Full/Half duplex auto-negotiation and Auto-MDIX and Fource MDI/MDIX function16 GigaBIT SFP sockets(Port1~Port8 and Port17~Port24) SNMP Webmanaged Ethernet Switch Layer 2

Feature

- 8* RJ45 ports, with 10/100/1000Mbps, Full/Half duplex auto-negotiation and Auto-MDIX functions
- 16* GigaBIT SFP sockets(Port1~Port8 and Port17~Port24)
- Jumbo Frame
- Out-band console and in-band SNMP/Http/Https/Telnet management interface
- CISCO-like Command Line Interface
- 802.1Q VLAN, 1024 active VLAN maximum with VID 1~4094
- Port-based VLAN
- Private VLAN
- DHCP Relay Option 82
- IP-Port Binding
- Storm control
- VLAN Stacking(Q in Q)
- 802.3ad LACP for link aggregation
- 802.1x for user authentication, Dynamic VLAN and Guest VLAN are supported
- GMP snooping and query and MVR(Multicast VLAN Registration)
- 4 priority queues for Port-based, 802.1P QoS operation, with Strict Priority/WRR scheduling
- 802.1d Spanning Tree Compatible & 802.1w Rapid Spanning Tree
- Port rate limit for ingress/egress traffic
- Static MAC address binding / Dynamic Mac address number limit
- Event log and Syslog are supported
- Administrator IP/Subnet limit for security
- Support SFP Transceiver DDMI function
- Radius Authentication for Management Access

Standards

- IEEE 802.3 (10BaseT Ethernet)
- IEEE 802.3u(100Base Fast Ethernet)
- IEEE 802.3ab (1000BaseT),
- IEEE 802.3z (1000Base)
- IEEE 802.1D, IEEE 802.1W, IEEE 802.1P, IEEE 801.1Q, IEEE 802.1x

Ports

- 8* RJ45 ports, with 10/100/1000Mbps, Full/Half duplex auto-negotiation and Auto-MDIX and Force MDI/MDIX function
- 16* GigaBIT SFP sockets(Port1~Port8 and Port17~Port24)

Console Port :DB9 console port
Dimensions: 440W * 172D * 44H mm
Filter & Forwarding Rate :Full line speed
Transmission method :Store-and-forward
Packet Buffer :500K Bytes
MAC Table Size :8K
Max Packet Size :1518 bytes (without tag), 9600 bytes for Jumbo frame
Switching Capacity: 48Gbps
Packet Forwarding Rate:35.7Mpps
Flow Control :Back pressure for half duplex, IEEE802.3x for full duplex

Management

- Out-band : Console (Cisco-like Command LineInterface)
- In-band : SNMP/Telnet/Http/Https
- Administrator IP/Subnet limit is supported
- Radius Authentication for Management Access (Telnet/Http)

DHCP :Support DHCP Client / Relay / Option 82 functions
SNMP Agent

- Version 1, 2c, 3
- Support MIB II (RFC1213), Bridge MIB (RFC 1493)
- VLAN MIB (802.1Q, RFC2674), Private MIB

VLAN

- 802.1Q VLAN with 1024 co-current groups maximum from 4094 VLANs

-Port-based VLAN, Private VLAN

Q in Q : Yes
Trunking :Support up to 8 trunks using either static or dynamic trunking (LACP)

QoS

- Four priority queues per port for Port-based & 802.1p tagged-based QoS
- Strict Priority/WRR scheduling

Spanning Tree :802.1d Spanning Tree Compatible & 802.1w Rapid Spanning Tree
Port Mirror :Yes
Static Mac ID Access Limit :Yes, limit on port
Dynamic Mac ID Number Limit :Yes
IP-Port Binding :Yes

IEEE 802.1x

- Yes, support Transparent and Authentication modes
- Dynamic VLAN & Guest VLAN are supported

Rate Control :Yes, 1~31 levels, with level is configured between 128Kbps ~ 30Mbps
Storm Control :Yes, for broadcast/flooding/multicast traffic control
IP Multicast :Yes, IGMP Snooping (256 Groups Max.) / query and MVR function
Software upgrade :Out-band : Xmodem, In-band : TFTP/Http/Https
Configuration Down/Upload :Yes
Text Configuration :Yes, for easy edit
Event Log :Yes, and Syslog is supported

LED Display

- Per port : Link/Act (Green : Gigabit, Yellow:10/100M), Full Duplex
- Per Device : Power, System

Input Power :100-240V, 50/60Hz
Power Consumption :Max. 17.5Watt
Environmental Temperature :Operation:0. ~ 50.
Humidity :Humidity:10% ~ 90% non-condensing

CTM-LC02KM-MM
1.25Gbp/s Mini GBIC SFP module 1310nm(MM) LC 2Km.

Compatible Brand : BELLCOMMS, Cisco, 3COM, Linksys Allied Telesyn, Xyxel, LINK

PRODUCT FEATURES

- Up to 1.25Gb/s data links
- FP laser transmitter and PIN photo-detector
- Up to 2Km. on 50/125μm MMF
- Hot-pluggable SFP footprint
- Duplex LC/UPC type pluggable optical interface
- Low power dissipation
- Metal enclosure, for lower EMI
- RoHS compliant and lead-free
- Single +3.3V power supply
- Compliant with SFF-8472
- Case operating temperature
  - Commercial: 0°C to +70°C
  - Extended: -10°C to +80°C
  - Industrial: -40°C to +85°C

APPLICATIONS

- 1x Fiber Channel
- Switch to Switch Interface
- Gigabit Ethernet
- Switched Backplane Applications
- Router/Server Interface
- Other Optical Links

PRODUCT DESCRIPTION

CTM-LC02KM-MM Small Form Factor Pluggable (SFP) transceivers are compatible with the Small Form Factor Pluggable Multi-Sourcing Agreement (MSA). The transceiver consists of four sections: the LD driver, the limiting amplifier, the FP laser and the PIN photo-detector .The module data link up to 2Km. in 50/125um multi mode fiber.

The optical output can be disabled by a TTL logic high-level input of Tx Disable, and the system also can disable the module via I2C. Tx Fault is provided to indicate that degradation of the laser. Loss of signal (LOS) output is provided to indicate the loss of an input optical signal of receiver or the link status with partner. The system can also get the LOS (or Link)/Disable/Fault information via I2C register access.

I. PIN DESCRIPTIONS

Pin	Symbol	Name/Description	Ref.
1	VEET	Transmitter Ground (Common with Receiver Ground)	1
2	TFAULT	Transmitter Fault.	
3	TDIS	Transmitter Disable. Laser output disabled on high or open.	2
4	MOD_DEF(2)	Module Definition 2. Data line for Serial ID.	3
5	MOD_DEF(1)	Module Definition 1. Clock line for Serial ID.	3
6	MOD_DEF(0)	Module Definition 0. Grounded within the module.	3
7	Rate Select	No connection required	4
8	LOS	Loss of Signal indication. Logic 0 indicates normal operation.	5
9	VEER	nd (Common with Transmitter Ground)	1
10	VEER	nd (Common with Transmitter Ground)	1
11	VEER	nd (Common with Transmitter Ground)	1
12	RD-	Receiver Inverted DATA out. AC Coupled	
13	RD+	Receiver Non-inverted DATA out. AC Coupled	
14	VEER	Receiver Ground (Common with Transmitter Ground)	1
15	VCCR	Receiver Power Supply	
16	VCCT	Transmitter Power Supply	
17	VEET	Transmitter Ground (Common with Receiver Ground)	1
18	TD+	Transmitter Non-Inverted DATA in. AC Coupled.	
19	TD-	Transmitter Inverted DATA in. AC Coupled.	
20	VEET	Transmitter Ground (Common with Receiver Ground)	1

Notes:
1. Circuit ground is internally isolated from chassis ground.
2. Laser output disabled on TDIS >2.0V or open, enabled on TDIS <0.8V.
3. Should be pulled up with 4.7k - 10kohms on host board to a voltage between 2.0V and 3.6V.MOD_DEF (0) pulls line low to indicate module is plugged in.
4. This is an optional input used to control the receiver bandwidth for compatibility with multiple data rates (most likely Fiber Channel 1x and 2x Rates).If implemented, the input will be internally pulled down with > 30kΩ resistor. The input states are:
   - Low (0 – 0.8V) : Reduced Bandwidth
   - (>0.8, < 2.0V) : Undefined
   - High (2.0 – 3.465V) : Full Bandwidth
   - Open : Reduced Bandwidth
5. LOS is open collector output should be pulled up with 4.7k - 10kohms on host board to a voltage between 2.0V and 3.6V. Logic 0 indicates normal operation; logic 1 indicates loss of signal.

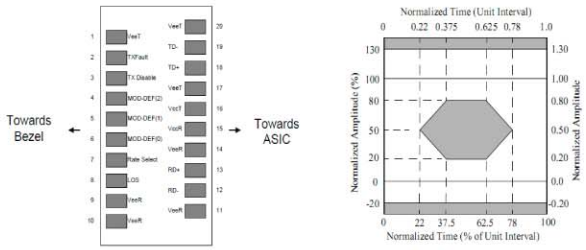
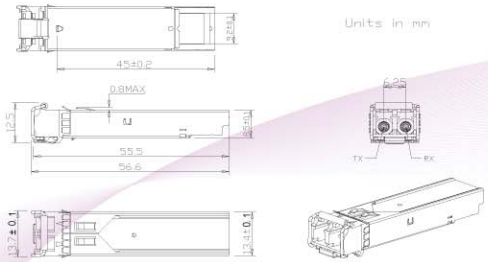


Figure2. Pin out of Connector Block on Host Board



II. ABSOLUTE MAXIMUM RATINGS

Parameter	Symbol	Min.	Typ.	Max.	Unit	Note
Storage Temperature	Ts	-40		85	°C	
Storage Ambient Humidity	HA	5		95	%	
Power Supply Voltage	VCC	-0.5		4	V	
Signal Input Voltage		-0.3		VCC+0.3	V	
Receiver Damage Threshold		+5			dBm	

III. RECOMMENDED OPERATING CONDITIONS

Parameter	Symbol	Min.	Typ.	Max.	Unit	Note
Case Operating Temperature	Tcase	0		70	°C	CTM-LC02KM-MM
		-10		80		XGSF-8512-02E-F
		-40		85		XGSF-8512-02A-F
Ambient Humidity	HA	5		70	%	Non-condensing
Power Supply Voltage	VCC	3.13	3.3	3.47	V	
Power Supply Current	ICC			280	mA	
Power Supply Noise Rejection				100	mVp-p	100Hz to 1MHz
Data Rate			1250/1250		Mbps	TX Rate/RX Rate
Transmission Distan				550	M	
Coupled Fiber	Multi mode fiber					50/125um MMF

IV. SPECIFICATION OF TRANSMITTER

Parameter	Symbol	Min.	Typ.	Max.	Unit	Note
Average Output Power	POUT	-9		-2	dBm	
Extinction Ratio	ER	9			dB	
Center Wavelength	λC	830	850	860	nm	FP Laser
Spectrum Bandwidth (RMS)	σ			1	nm	
Transmitter OFF Output Power	POff			-45	dBm	
Differential Line Input Impedance	RIN	90	100	110	Ohm	
Output Eye Mask	Compliant with IEEE802.3 z (class 1 laser safety)					Note (1)

Note (1): Transmitter eye mask definition.

V. SPECIFICATION OF RECEIVER

Parameter	Symbol	Min.	Typ.	Max.	Unit	Note
Input Optical Wavelength	λIN	770	850	860	nm	PIN-TIA
Receiver Sensitivity	PIN			-18	nm	Note (1)
Input Saturation Power (Overload)	PSAT	0			dBm	
Los Of Signal Assert	PA			-19	dBm	
Los Of Signal De-assert	PD	-33			dBm	Note (2)
LOS Hysteresis	PA-PD	0.5	2	6	dB	

Note (1): Measured with Light source 1310nm, ER=9dB; BER =<10^12 @PRBS=2^71 NRZ

Note (2): When LOS de-asserted, the RX data+/-output is signal output.

VI. ELECTRICAL INTERFACE CHARACTERISTICS

Parameter	Symbol	Min.	Typ.	Max.	Unit	Note
Transmitte						
Total Supply Current	ICC			A	mA	Note (1)
Transmitter Disable Input-High	VDISH	2		VCC+0.3	V	
Transmitter Disable Input-Low	VDISL	0		0.8	V	
Transmitter Fault Input-High	VDISL	2		VCC+0.3	V	
Transmitter Fault Input-Low	VTXFH	0		0.8	V	
Receiver						
Total Supply Current	ICC			B	mA	Note (1)
LOSS Output Voltage-High	VLOSH	2		VCC+0.3	V	LVTTL
LOSS Output Voltage-Low	VLOSL	0		0.8	V	

Note (1): A (TX) + B (RX) = 280mA (Not include termination circuit)

IX. REGULATORY COMPLIANCE

Feature	Reference	Performance
Electrostatic discharge (ESD)	IEC/EN 61000-4-2	Compatible with standards
Electromagnetic Interference (EMI)	FCC Part 15 Class B EN 55022 Class B (CISPR22A)	Compatible with standards
Laser Eye Safety	FDA 21CFR 1040.10, 1040.11 IEC/EN 60825-1, 2	Class 1 laser product
Component Recognition	IEC/EN 60950, UL	Compatible with standards
ROHS	2002/95/EC	Compatible with standards
EMC	EN61000-3	Compatible with standards

CTM-LC0500-MM
1.25Gbp/s Mini GBIC SFP module 850nm(MM) LC 550meters

Compatible Brand : BELLCOMMS, Cisco, 3COM, Linksys Allied Telesyn, Xyxel,LINK

PRODUCT FEATURES

- Up to 1.25Gb/s data links
- VCSEL laser transmitter and PIN photo-detector
- Hot-pluggable SFP footprint
- Duplex LC/UPC type pluggable optical interface
- Low power dissipation
- Metal enclosure, for lower EMI
- RoHS compliant and lead-free
- Single +3.3V power supply
- Compliant with SFF-8472
- Case operating temperature
  Commercial: 0°C to +70°C
  Extended: -10°C to +80°C
  Industrial: -40°C to +85°C

APPLICATIONS

- 1x Fiber Channel
- Switch to Switch Interface
- Gigabit Ethernet
- Switched Backplane Applications
- Router/Server Interface
- Other Optical Links

PRODUCT DESCRIPTION

CTM-LC0500-MM Small Form Factor Pluggable (SFP) transceivers are compatible with the Small Form Factor Pluggable MultiSourcing Agreement (MSA). The transceiver consists of four sections: the LD driver, the limiting amplifier, the VCSEL laser and the PIN photo-detector .The module data link up to 550m in 50/125um multi mode fiber.

The optical output can be disabled by a TTL logic high-level input of Tx Disable, and the system also can disable the module via I2C. Tx Fault is provided to indicate that degradation of the laser. Loss of signal (LOS) output is provided to indicate the loss of an input optical signal of receiver or the link status with partner. The system can also get the LOS (or Link)/Disable/Fault information via I2C register access.

I. PIN DESCRIPTIONS

Pin	Symbol	Name/Description	Ref.
1	VEET	Transmitter Ground (Common with Receiver Ground)	1
2	TFAULT	Transmitter Fault.	
3	TDIS	Transmitter Disable. Laser output disabled on high or open.	2
4	MOD_DEF(2)	Module Definition 2. Data line for Serial ID.	3
5	MOD_DEF(1)	Module Definition 1. Clock line for Serial ID.	3
6	MOD_DEF(0)	Module Definition 0. Grounded within the module.	3
7	Rate Select	No connection required	4
8	LOS	Loss of Signal indication. Logic 0 indicates normal operation.	5
9	VEER	nd (Common with Transmitter Ground)	1
10	VEER	nd (Common with Transmitter Ground)	1
11	VEER	nd (Common with Transmitter Ground)	1
12	RD-	Receiver Inverted DATA out. AC Coupled	
13	RD+	Receiver Non-inverted DATA out. AC Coupled	
14	VEER	Receiver Ground (Common with Transmitter Ground)	1
15	VCCR	Receiver Power Supply	
16	VCCT	Transmitter Power Supply	
17	VEET	Transmitter Ground (Common with Receiver Ground)	1
18	TD+	Transmitter Non-Inverted DATA in. AC Coupled.	
19	TD-	Transmitter Inverted DATA in. AC Coupled.	
20	VEET	Transmitter Ground (Common with Receiver Ground)	1

Notes:
1. Circuit ground is internally isolated from chassis ground.
2. Laser output disabled on TDIS >2.0V or open, enabled on TDIS <0.8V.
3. Should be pulled up with 4.7k - 10kohms on host board to a voltage between 2.0V and 3.6V.MOD_DEF (0) pulls line low to indicate module is plugged in.
4. This is an optional input used to control the receiver bandwidth for compatibility with multiple data rates (most likely Fiber Channel 1x and 2x Rates).If implemented, the input will be internally pulled down with > 30kΩ resistor. The input states are:
   - Low (0 – 0.8V) : Reduced Bandwidth
   - (>0.8, < 2.0V) : Undefined
   - High (2.0 – 3.465V) : Full Bandwidth
   - Open : Reduced Bandwidth
5. LOS is open collector output should be pulled up with 4.7k - 10kohms on host board to a voltage between 2.0V and 3.6V. Logic 0 indicates normal operation; logic 1 indicates loss of signal.

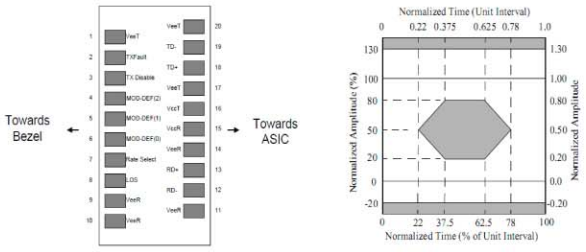
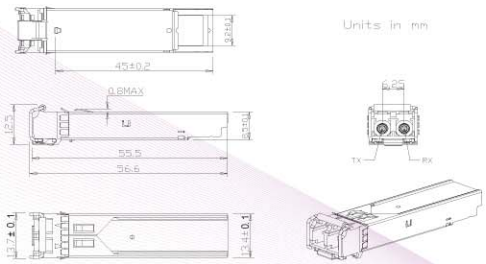


Figure2. Pin out of Connector Block on Host Board



II. ABSOLUTE MAXIMUM RATINGS

Parameter	Symbol	Min.	Typ.	Max.	Unit	Note
Storage Temperature	Ts	-40		85	°C	
Storage Ambient Humidity	HA	5		95	%	
Power Supply Voltage	VCC	-0.5		4	V	
Signal Input Voltage		-0.3		VCC+0.3	V	
Receiver Damage Threshold		+5			dBm	

III. RECOMMENDED OPERATING CONDITIONS

Parameter	Symbol	Min.	Typ.	Max.	Unit	Note
Case Operating Temperature	Tcase	0		70	°C	CTM-LC0500-MM
		-10		80		XGSF-8512-02E-F
		-40		85		XGSF-8512-02A-F
Ambient Humidity	HA	5		70	%	Non-condensing
Power Supply Voltage	VCC	3.13	3.3	3.47	V	
Power Supply Current	ICC			280	mA	
Power Supply Noise Rejection				100	mVp-p	100Hz to 1MHz
Data Rate			1250/1250		Mbps	TX Rate/RX Rate
Transmission Distan				550	M	
Coupled Fiber	Multi mode fiber					50/125um MMF

IV. SPECIFICATION OF TRANSMITTER

Parameter	Symbol	Min.	Typ.	Max.	Unit	Note
Average Output Power	POUT	-9		-2	dBm	
Extinction Ratio	ER	9			dB	
Center Wavelength	λC	830	850	860	nm	VCSEL Laser
Spectrum Bandwidth (RMS)	σ			1	nm	
Transmitter OFF Output Power	POff			-45	dBm	
Differential Line Input Impedance	RIN	90	100	110	Ohm	
Jitter P-P	tj			120	ps	Note (1)
Output Eye Mask	Compliant with IEEE802.3 z (class 1 laser safety)					Note (2)

Note (1): Measure at 2^7-1 NRZ PRBS pattern Note (2): Transmitter eye mask definition

V. SPECIFICATION OF RECEIVER

Parameter	Symbol	Min.	Typ.	Max.	Unit	Note
Input Optical Wavelength	λIN	770	850	860	nm	PIN-TIA
Receiver Sensitivity	PIN			-18	nm	Note (1)
Input Saturation Power (Overload)	PSAT	0			dBm	
Los Of Signal Assert	PA			-19	dBm	
Los Of Signal De-assert	PD	-33			dBm	Note (2)
LOS Hysteresis	PA-PD	0.5	2	6	dB	

Note (1): Measured with Light source 850nm, ER=9dB; BER =<10^12 @PRBS=2^71 NRZ
Note (2): When LOS de-asserted, the RX data+/-output is High level (fixed)

VI. ELECTRICAL INTERFACE CHARACTERISTICS

Parameter	Symbol	Min.	Typ.	Max.	Unit	Note
Transmitte						
Total Supply Current	ICC			A	mA	Note (1)
Transmitter Disable Input-High	VDISH	2		VCC+0.3	V	
Transmitter Disable Input-Low	VDISL	0		0.8	V	
Transmitter Fault Input-High	VDISL	2		VCC+0.3	V	
Transmitter Fault Input-Low	VTXFH	0		0.8	V	
Receiver						
Total Supply Current	ICC			B	mA	Note (1)
LOSS Output Voltage-High	VLOSH	2		VCC+0.3	V	LVTTL
LOSS Output Voltage-Low	VLOSL	0		0.8	V	

Note (1): A (TX) + B (RX) = 280mA (Not include termination circuit)

IX. REGULATORY COMPLIANCE

Feature	Reference	Performance
Electrostatic discharge (ESD)	IEC/EN 61000-4-2	Compatible with standards
Electromagnetic Interference (EMI)	FCC Part 15 Class B EN 55022 Class B (CISPR22A)	Compatible with standards
Laser Eye Safety	FDA 21CFR 1040.10, 1040.11 IEC/EN 60825-1, 2	Class 1 laser product
Component Recognition	IEC/EN 60950, UL	Compatible with standards
ROHS	2002/95/EC	Compatible with standards
EMC	EN61000-3	Compatible with standards

The power of networks
BELLCOMMS

CTS-LC0010-SM
1.25Gbp/s Mini GBIC SFP module 1310nm(SM) LC 10 Km.

Compatible Brand : BELLCOMMS, Cisco, 3COM, Linksys Allied Telesyn, Xyxel, LINK

PRODUCT FEATURES

- Up to 1.25Gb/s data links
- FP laser transmitter and PIN photo-detector
- Up to 10km on 9/125μm SMF
- Hot-pluggable SFP footprint
- Duplex LC/UPC type pluggable optical interface
- Low power dissipation
- Metal enclosure, for lower EMI
- RoHS compliant and lead-free
- Single +3.3V power supply
- Compliant with SFF-8472
- Case operating temperature
  - Commercial: 0°C to +70°C
  - Extended: -10°C to +80°C
  - Industrial: -40°C to +85°C

APPLICATIONS

- 1x Fiber Channel
- Switch to Switch Interface
- Gigabit Ethernet
- Switched Backplane Applications
- Router/Server Interface
- Other Optical Links

PRODUCT DESCRIPTION

CTS-LC0010-SM Small Form Factor Pluggable (SFP) transceivers are compatible with the Small Form Factor Pluggable Multi-Sourcing Agreement (MSA). The transceiver consists of four sections: the LD driver, the limiting amplifier, the FP laser and the PIN photo-detector .The module data link up to 10KM in 9/125um single mode fiber.

The optical output can be disabled by a TTL logic high-level input of Tx Disable, and the system also can disable the module via I2C. Tx Fault is provided to indicate that degradation of the laser. Loss of signal (LOS) output is provided to indicate the loss of an input optical signal of receiver or the link status with partner. The system can also get the LOS (or Link)/Disable/Fault information via I2C register access.

II. ABSOLUTE MAXIMUM RATINGS

Parameter	Symbol	Min.	Typ.	Max.	Unit	Note
Storage Temperature	Ts	-40		85	°C	
Storage Ambient Humidity	HA	5		95	%	
Power Supply Voltage	Vcc	-0.5		4	V	
Signal Input Voltage		-0.3		Vcc+0.3	V	
Receiver Damage Threshold		+5			dBm	

III. RECOMMENDED OPERATING CONDITIONS

Parameter	Symbol	Min.	Typ.	Max.	Unit	Note
Case Operating Temperature	Tcase	0		70	°C	CTS-LC0010-SM
		-10		80		XGSF-1312-10E-F
		-40		85		XGSF-1312-10A-F
Ambient Humidity	HA	5		70	%	Non-condensing
Power Supply Voltage	Vcc	3.13	3.3	3.47	V	
Power Supply Current	Icc			280	mA	
Power Supply Noise Rejection				100	mVp-p	100Hz to 1MHz
Data Rate			1250/1250		Mbps	TX Rate/RX Rate
Transmission Distan				10	KM	
Coupled Fiber	Multi mode fiber					9/125um MMF

IV. SPECIFICATION OF TRANSMITTER

Parameter	Symbol	Min.	Typ.	Max.	Unit	Note
Average Output Power	POUT	-9		-3	dBm	
Extinction Ratio	ER	9			dB	
Center Wavelength	λC	1270	1310	1360	nm	FP Laser
Spectrum Bandwidth (RMS)	σ			3.5	nm	
Transmitter OFF Output Power	Poff			-45	dBm	
Differential Line Input Impedance	RIN	90	100	110	Ohm	
Jitter P-P	tj			128	ps	Note (1)
Output Eye Mask	Compliant with IEEE802.3 z (class 1 laser safety)					Note (2)

Note (1): Measure at 2^7-1 NRZ PRBS pattern Note (2): Transmitter eye mask definition

V. SPECIFICATION OF RECEIVER

Parameter	Symbol	Min.	Typ.	Max.	Unit	Note
Input Optical Wavelength	λIN	1270		1610	nm	PIN-TIA
Receiver Sensitivity	PIN			-20	dBm	Note (1)
Input Saturation Power (Overload)	PSAT	-3			dBm	
Los Of Signal Assert	PA			-19	dBm	
Los Of Signal De-assert	PD	-38			dBm	Note (2)
LOS Hysteresis	PA-PD	0.5	2	6	dB	

Note (1): Measured with Light source 1310nm, ER=9dB; BER =<10^12 @PRBS=2^71 NRZ

Note (2): When LOS de-asserted, the RX data+/-output is High level (fixed)

VI. ELECTRICAL INTERFACE CHARACTERISTICS

Parameter	Symbol	Min.	Typ.	Max.	Unit	Note
Transmitte						
Total Supply Current	Icc			A	mA	Note (1)
Transmitter Disable Input-High	VDISH	2		Vcc+0.3	V	
Transmitter Disable Input-Low	VDISL	0		0.8	V	
Transmitter Fault Input-High	VDISL	2		Vcc+0.3	V	
Transmitter Fault Input-Low	VTxFH	0		0.8	V	
Receiver						
Total Supply Current	Icc			B	mA	Note (1)
LOSS Output Voltage-High	VLOSH	2		Vcc+0.3	V	LVTTL
LOSS Output Voltage-Low	VLOSL	0		0.8	V	

Note (1): A (TX) + B (RX) = 280mA (Not include termination circuit)

IX. REGULATORY COMPLIANCE

Feature	Reference	Performance
Electrostatic discharge (ESD)	IEC/EN 61000-4-2	Compatible with standards
Electromagnetic Interference (EMI)	FCC Part 15 Class B EN 55022 Class B (CISPR22A)	Compatible with standards
Laser Eye Safety	FDA 21CFR 1040.10, 1040.11 IEC/EN 60825-1, 2	Class 1 laser product
Component Recognition	IEC/EN 60950, UL	Compatible with standards
ROHS	2002/95/EC	Compatible with standards
EMC	EN61000-3	Compatible with standards

I. PIN DESCRIPTIONS

Pin	Symbol	Name/Description	Ref.
1	VEET	Transmitter Ground (Common with Receiver Ground)	1
2	TFAULT	Transmitter Fault.	
3	TDIS	Transmitter Disable. Laser output disabled on high or open.	2
4	MOD_DEF(2)	Module Definition 2. Data line for Serial ID.	3
5	MOD_DEF(1)	Module Definition 1. Clock line for Serial ID.	3
6	MOD_DEF(0)	Module Definition 0. Grounded within the module.	3
7	Rate Select	No connection required	4
8	LOS	Loss of Signal indication. Logic 0 indicates normal operation.	5
9	VEER	nd (Common with Transmitter Ground)	1
10	VEER	nd (Common with Transmitter Ground)	1
11	VEER	nd (Common with Transmitter Ground)	1
12	RD-	Receiver Inverted DATA out. AC Coupled	
13	RD+	Receiver Non-inverted DATA out. AC Coupled	
14	VEER	Receiver Ground (Common with Transmitter Ground)	1
15	VCCR	Receiver Power Supply	
16	VCCT	Transmitter Power Supply	
17	VEET	Transmitter Ground (Common with Receiver Ground)	1
18	TD+	Transmitter Non-Inverted DATA in. AC Coupled.	
19	TD-	Transmitter Inverted DATA in. AC Coupled.	
20	VEET	Transmitter Ground (Common with Receiver Ground)	1

Notes:

1. Circuit ground is internally isolated from chassis ground.
2. Laser output disabled on TDIS >2.0V or open, enabled on TDIS <0.8V.
3. Should be pulled up with 4.7k - 10kohms on host board to a voltage between 2.0V and 3.6V.MOD_DEF (0) pulls line low to indicate module is plugged in.
4. This is an optional input used to control the receiver bandwidth for compatibility with multiple data rates (most likely Fiber Channel 1x and 2x Rates).If implemented, the input will be internally pulled down with > 30kΩ resistor. The input states are:
   - Low (0 – 0.8V) : Reduced Bandwidth
   - (>0.8, < 2.0V) : Undefined
   - High (2.0 – 3.465V) : Full Bandwidth
   - Open : Reduced Bandwidth
5. LOS is open collector output should be pulled up with 4.7k - 10kohms on host board to a voltage between 2.0V and 3.6V. Logic 0 indicates normal operation; logic 1 indicates loss of signal.

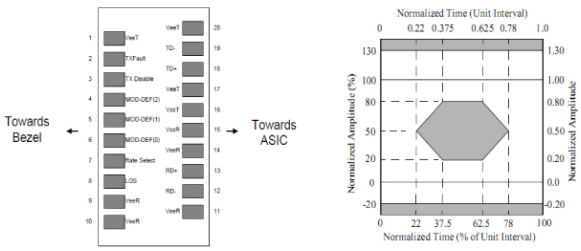
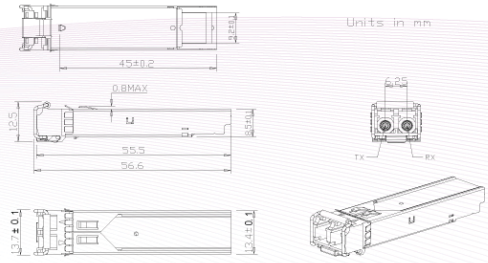


Figure2. Pin out of Connector Block on Host Board



CTS-LC0040-SM [BC-GLC-LHX-SM]
1.25Gbp/s Mini GBIC SFP module 1310nm(MM) LC 40 Km.

Compatible Brand : BELLCOMMS, Cisco, 3COM, Linksys Allied Telesyn, Xyxel,LINK

PRODUCT FEATURES

- Up to 1.25Gb/s data links
- DFB laser transmitter and PIN photo-detector
- Up to 40km on 9/125μm SMF
- Hot-pluggable SFP footprint
- Duplex LC/UPC type pluggable optical interface
- Low power dissipation
- Metal enclosure, for lower EMI
- RoHS compliant and lead-free
- Single +3.3V power supply
- Compliant with SFF-8472
- Case operating temperature
  Commercial: 0°C to +70°C
  Extended: -10°C to +80°C
  Industrial: -40°C to +85°C

APPLICATIONS

- 1x Fiber Channel
- Switch to Switch Interface
- Gigabit Ethernet
- Switched Backplane Applications
- Router/Server Interface
- Other Optical Links

PRODUCT DESCRIPTION

CTS-LC0040-SM Small Form Factor Pluggable (SFP) transceivers are compatible with the Small Form Factor Pluggable Multi-Sourcing Agreement (MSA). The transceiver consists of four sections: the LD driver, the limiting amplifier, the DFB laser and the PIN photo-detector .The module data link up to 40KM in 9/125um single mode fiber.

The optical output can be disabled by a TTL logic high-level input of Tx Disable, and the system also can disable the module via I2C. Tx Fault is provided to indicate that degradation of the laser. Loss of signal (LOS) output is provided to indicate the loss of an input optical signal of receiver or the link status with partner. The system can also get the LOS (or Link)/Disable/Fault information via I2C register access.

I. PIN DESCRIPTIONS

Pin	Symbol	Name/Description	Ref.
1	VEET	Transmitter Ground (Common with Receiver Ground)	1
2	TFAULT	Transmitter Fault.	
3	TDIS	Transmitter Disable. Laser output disabled on high or open.	2
4	MOD_DEF(2)	Module Definition 2. Data line for Serial ID.	3
5	MOD_DEF(1)	Module Definition 1. Clock line for Serial ID.	3
6	MOD_DEF(0)	Module Definition 0. Grounded within the module.	3
7	Rate Select	No connection required	4
8	LOS	Loss of Signal indication. Logic 0 indicates normal operation.	5
9	VEER	nd (Common with Transmitter Ground)	1
10	VEER	nd (Common with Transmitter Ground)	1
11	VEER	nd (Common with Transmitter Ground)	1
12	RD-	Receiver Inverted DATA out. AC Coupled	
13	RD+	Receiver Non-inverted DATA out. AC Coupled	
14	VEER	Receiver Ground (Common with Transmitter Ground)	1
15	VCCR	Receiver Power Supply	
16	VCCT	Transmitter Power Supply	
17	VEET	Transmitter Ground (Common with Receiver Ground)	1
18	TD+	Transmitter Non-Inverted DATA in. AC Coupled.	
19	TD-	Transmitter Inverted DATA in. AC Coupled.	
20	VEET	Transmitter Ground (Common with Receiver Ground)	1

Notes:
1. Circuit ground is internally isolated from chassis ground.
2. Laser output disabled on TDIS >2.0V or open, enabled on TDIS <0.8V.
3. Should be pulled up with 4.7k - 10kohms on host board to a voltage between 2.0V and 3.6V.MOD_DEF (0) pulls line low to indicate module is plugged in.
4. This is an optional input used to control the receiver bandwidth for compatibility with multiple data rates (most likely Fiber Channel 1x and 2x Rates).If implemented, the input will be internally pulled down with > 30kΩ resistor. The input states are:
   - Low (0 – 0.8V) : Reduced Bandwidth
   - (>0.8, < 2.0V) : Undefined
   - High (2.0 – 3.465V) : Full Bandwidth
   - Open : Reduced Bandwidth
5. LOS is open collector output should be pulled up with 4.7k - 10kohms on host board to a voltage between 2.0V and 3.6V. Logic 0 indicates normal operation; logic 1 indicates loss of signal.

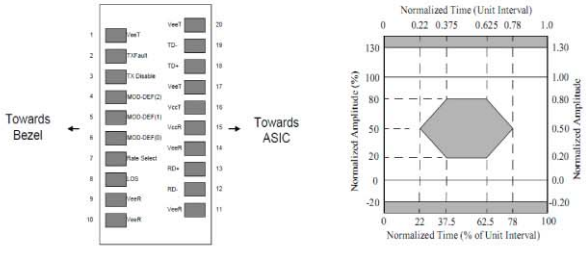
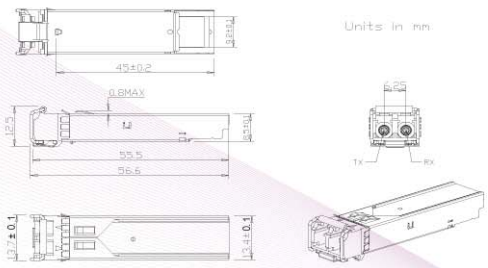


Figure2. Pin out of Connector Block on Host Board



II. ABSOLUTE MAXIMUM RATINGS

Parameter	Symbol	Min.	Typ.	Max.	Unit	Note
Storage Temperature	Ts	-40		85	°C	
Storage Ambient Humidity	HA	5		95	%	
Power Supply Voltage	Vcc	-0.5		4	V	
Signal Input Voltage		-0.3		Vcc+0.3	V	
Receiver Damage Threshold		+5			dBm	

III. RECOMMENDED OPERATING CONDITIONS

Parameter	Symbol	Min.	Typ.	Max.	Unit	Note
Case Operating Temperature	Tcase	0		70	°C	CTS-LC0040-SM
		-10		80		XGSF-1312-40E-F
		-40		85		XGSF-1312-40A-F
Ambient Humidity	HA	5		70	%	Non-condensing
Power Supply Voltage	Vcc	3.13	3.3	3.47	V	
Power Supply Current	Icc			280	mA	
Power Supply Noise Rejection				100	mVp-p	100Hz to 1MHz
Data Rate			1250/1250		Mbps	TX Rate/RX Rate
Transmission Distan				40	KM	
Coupled Fiber	Single mode fiber					9/125um MMF

IV. SPECIFICATION OF TRANSMITTER

Parameter	Symbol	Min.	Typ.	Max.	Unit	Note
Average Output Power	POUT	-5		0	dBm	
Extinction Ratio	ER	9			dB	
Center Wavelength	λC	1270	1310	1360	nm	DFB Laser
Side Mode Suppression Ratio	SMSR	30			dB	
Spectrum Bandwidth (-20dB)	σ			1	nm	
Transmitter OFF Output Power	Poff			-45	dBm	
Differential Line Input Impedance	RIN	90	100	110	Ohm	
Jitter P-P	tj			0.1	UI	Note (1)
Output Eye Mask	Compliant with IEEE802.3 z (class 1 laser safety)					Note (2)

Note (1): Measure at 2^7-1 NRZ PRBS pattern Note (2): Transmitter eye mask definition

V. SPECIFICATION OF RECEIVER

Parameter	Symbol	Min.	Typ.	Max.	Unit	Note
Input Optical Wavelength	λIN	1270		1610	nm	PIN-TIA
Receiver Sensitivity	PIN			-24	dBm	Note (1)
Input Saturation Power (Overload)	PSAT	-1			dBm	
Los Of Signal Assert	PA	-38			dBm	
Los Of Signal De-assert	PD			-25	dBm	Note (2)
LOS Hysteresis	PA-PD	0.5	2	6	dB	

Note (1): Measured with Light source 1310nm, ER=9dB; BER =<10^12 @PRBS=2^71 NRZ
Note (2): When LOS de-asserted, the RX data+/-output is High level (fixed)

VI. ELECTRICAL INTERFACE CHARACTERISTICS

Parameter	Symbol	Min.	Typ.	Max.	Unit	Note
Transmitte						
Total Supply Current	Icc			A	mA	Note (1)
Transmitter Disable Input-High	VDISH	2		Vcc+0.3	V	
Transmitter Disable Input-Low	VDISL	0		0.8	V	
Transmitter Fault Input-High	VDISL	2		Vcc+0.3	V	
Transmitter Fault Input-Low	VTxFH	0		0.8	V	
Receiver						
Total Supply Current	Icc			B	mA	Note (1)
LOSS Output Voltage-High	VLOSH	2		Vcc+0.3	V	LVTTL
LOSS Output Voltage-Low	VLOSL	0		0.8	V	

Note (1): A (TX) + B (RX) = 280mA (Not include termination circuit)

IX. REGULATORY COMPLIANCE

Feature	Reference	Performance
Electrostatic discharge (ESD)	IEC/EN 61000-4-2	Compatible with standards
Electromagnetic Interference (EMI)	FCC Part 15 Class B EN 55022 Class B (CISPR22A)	Compatible with standards
Laser Eye Safety	FDA 21CFR 1040.10, 1040.11 IEC/EN 60825-1, 2	Class 1 laser product
Component Recognition	IEC/EN 60950, UL	Compatible with standards
ROHS	2002/95/EC	Compatible with standards
EMC	EN61000-3	Compatible with standards

Spanning Tree Protocol (STP) คืออะไร? ในอุปกรณ์สวิตช์

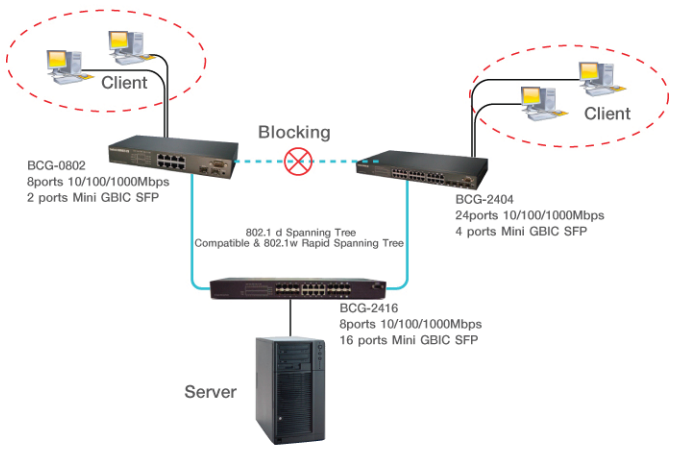
Spanning Tree เป็นอุปกรณ์ที่เหมาะกับการใช้งานกับลูกค้าที่ต้องการทำ Loop Bac คือต้องการให้เครือข่ายมีเส้นทางสำรองเมื่อเครือขายหยุดทำงาน

Spanning Tree Protocol (STP)

เป็นโปรโตคอลที่มีไว้เพื่อป้องกันการเกิดลูปบนสวิตช์ (การเกิด loop ซึ่งทำให้ไม่สามารถค้นหาเส้นทางการส่งข้อมูลระหว่างแหล่งกำเนิดกับเป้าหมายได้และจะทำให้ระบบเครือข่ายหยุดการทำงานทันที) ซึ่งการเกิดลูปบนสวิตช์จะทำให้เกิดปัญหาทำซ้ำของแพ็กเก็ต (Duplicate Packet) ซึ่งเป็นการทำให้แพ็กเก็ตหรือเฟรมข้อมูลถูกคัดลอกซ้ำแล้วซ้ำเล่า และถูกส่งเข้าออกไปมาระหว่างสวิตช์หลายตัวที่เชื่อมต่อกันเป็นลูป การเชื่อมต่อที่เป็นลูปเป็นเรื่องที่ควรหลีกเลี่ยง แต่บ่อยครั้งการเชื่อมต่อแบบ เป็นลูปเป็นเรื่องที่จำเป็น เนื่องจากต้องการสร้างเส้นทางสำรองในกรณีที่เกิด เส้นทางเชื่อมต่อหลักเกิดชำรุดบกพร่อง ระบบSTPที่ติดตั้งอยู่บนสวิตช์สามารถตรวจพบความบกพร่องในลักษณ์นี้จากนั้นมันจะเกิดเส้นทางสำรองทำให้การเชื่อมต่อระหว่างสวิตช์ไม่เกิดการ หยุดชะงัก ดังนั้นการเชื่อมต่อกันระหว่างสวิตช์ในลักษณะลูปก็จะไม่เกิดผล เสียหายหากมีการติดตั้ง STP บนสวิตช์

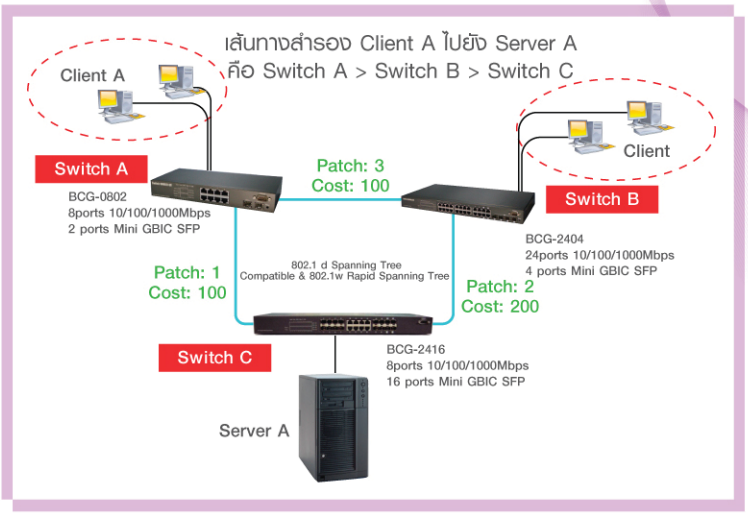
Spanning Tree Protocol

Spanning Tree Protocol ใช้มาตรฐาน IEEE802.1d เป็นรูปแบบการทำงานที่มีมาตั้งแต่อุปกรณ์ Bridge สามารถเชื่อมต่ออุปกรณ์สวิตช์เป็นแบบลูปปิดได้โดยไม่เกิดปัญหา เนื่องจากว่าภายใต้ระบบ Spanning Tree Algorithm ตัวสวิตช์จะทำงานการคำนวณเส้นทางเพื่อหาค่า Path Cost และกำหนดการเชื่อมต่อระหว่างสวิตช์ด้วยกันว่าจะกำหนดให้เส้นทางใดเป็น Primary Link หรือ Main Link และเส้นทางใดเป็น Backup Link ซึ่งหากเส้น Link หลักเส้นใดเส้นหนึ่งเกิดปัญหาจะมีการคำนวณเส้นทางใหม่อย่างรวดเร็ว แล้วกำหนดให้ Backup Link เป็น Link หลักในทันที วิธีการเช่นนี้เป็นหลักประกันว่าเมื่อใดก็ตามที่เกิดปัญหาเกี่ยวกับการเชื่อมต่อจะมีเส้นทางสำรองเกิดขึ้นจึงทำให้การเชื่อมต่อไม่สะดุด ซึ่งเท่ากับเป็นการเพิ่ม Availability ของเครือข่าย



รูปที่ 1 แสดงการเชื่อมต่อแบบลูปภายใต้ Spanning Tree Protocol

โดยวิธีการนี้ Spanning Tree Protocol จะช่วยป้องกันปัญหา Link หลุดจนนำไปสู่ความเสียหายได้ อย่างไรก็ดีวิธีเช่นนี้มีจุดด้อยได้แก่ Spanning Tree ทำให้มีการสูญเสียแบนด์วิดธ์ เนื่องจากการที่สวิตช์ที่ใช้โปรโตคอลนี้จะต้องคำนวณเส้นทางที่เหมาะสมใน ขณะที่ทำงานในระยะแรก



รูปที่ 2 แสดงการทำงานของ Spanning Tree

ด้วยเหตุนี้สวิตช์ปกติที่ไม่มีฟังชั่น Spanning Tree จึงไม่สามารถเชื่อมต่อได้ ทำให้สวิตช์แบบ Spanning Tree นี้กำลังได้รับความนิยมจากผู้ใช้งานอยู่ขณะนี้ เช่นนำไปใช้กับการติดตั้งกล้อง IP camera เพื่อป้องกันสายขาดและสัญญานภาพขาดหายได้ อีกทั้งปัจจุบันราคาไม่ค่อยสูงมากนัก

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- Web-based Configuration and Management
- IEEE 802.1Q VLAN Tagging
- 802.1p Priority Queues
- Jumbo Frames
- Link Aggregation and Spanning Tree
- Quality of Service
- IGMP Snooping
- LACP, RSTP
- MAC Filtering
- Rate Limiting (Ingress rate and Egress rate)
- 802.1x Port-based Security
- Management: Port Mirroring, Password-protected Access, Port Settings

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