

Metro Ethernet Ethernet Switch

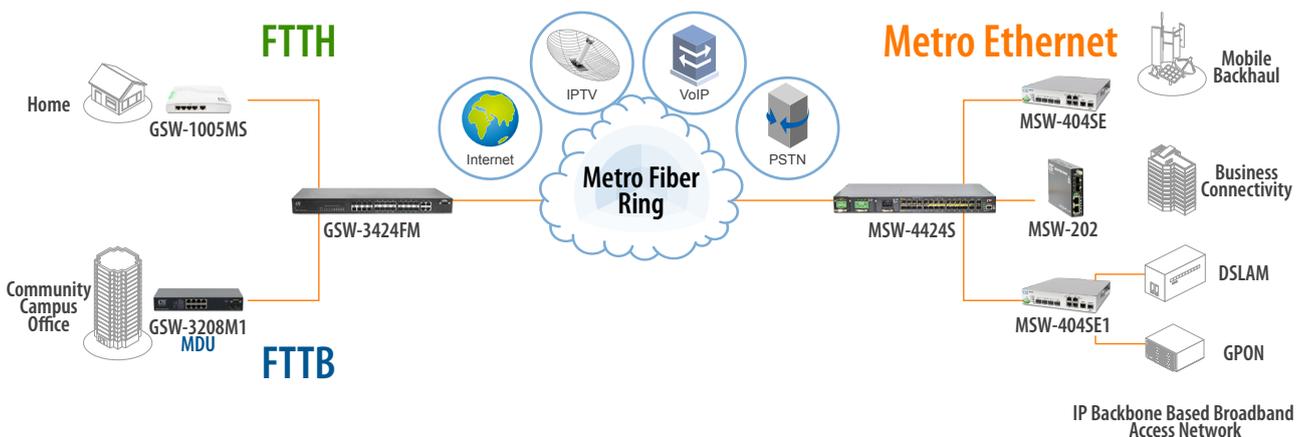
FTTH for Premises & Node
Enterprise Ethernet
Residential CPE



The standalone fiber switch series of CTC Union contains Fast / Gigabit Ethernet, non-managed to managed switch family, which is suitable for market segments included SOHO, SMB and Enterprise as well as Telecom customers. No matter if the company scale is very budget limited for the minimum office network maintenance or even plug-and-play requirement, the CTC Union's standalone fiber switch family fulfill the simple installation requirements of Ethernet LAN based network in cost effective manner.

Carrier operators can deploy the Ethernet services beyond metropolitan area then extend to the wide area. Metro Ethernet is then used to enable service providers to migrate their network infrastructure to offer the Carrier Ethernet services for enterprise, business, SOHO and residential end customers and eventually bring substantial business benefits to those subscribers.

Application





MSW-4424S

L2+ Gigabit Carrier Ethernet Switch with Sync. Ethernet

MSW-4424S layer 2+ managed Gigabit Ethernet switches are positioned as a Carrier Ethernet access switch solution. They are equipped with 24 SFP based 100Base-FX/1000Base-X dual speed optical ports and 4 10GBase-X SFP+ or 1000Base-X SFP uplink ports. The MSW-4424S offers the best flexibility and scalability for operators and service providers to deploy their Metro Ethernet networks. Aimed specifically at Metro Ethernet deployment, the specifications of MSW-4424S fully meet the attributes of Carrier Ethernet proposed by the Metro Ethernet Forum. The switches comply with MEF 9 standard to support E-Line/E-LAN services and MEF 14 standard to enable the bandwidth profile configuration for delivering SLA (Service Level Agreement) with predictable end-to-end performance characteristics. MSW-4424S supports advanced service OAM management. MSW-4424S model supports timing synchronization features (Sync. E and IEEE1588v2) to enhance and migrate to a carrier grade network for mobile backhaul application.

Features and Benefits

Front access and hot swappable design

All of the system modules are front accessible, the hot swappable power and FAN module are designed to keep high network availability without service interruption when components fail

Fully dual rate architecture of fiber link port

Dual speed fiber ports offer scalable physical connections for Metro Ethernet network operators

Fully Ethernet OAM enable

Ethernet OAM features (IEEE 802.3ah/802.1ag/ITU-T.Y.1731) help to rapidly detect and recover network faults and save OPEX for operators as well as increase customer satisfaction

Supports Sync. Ethernet

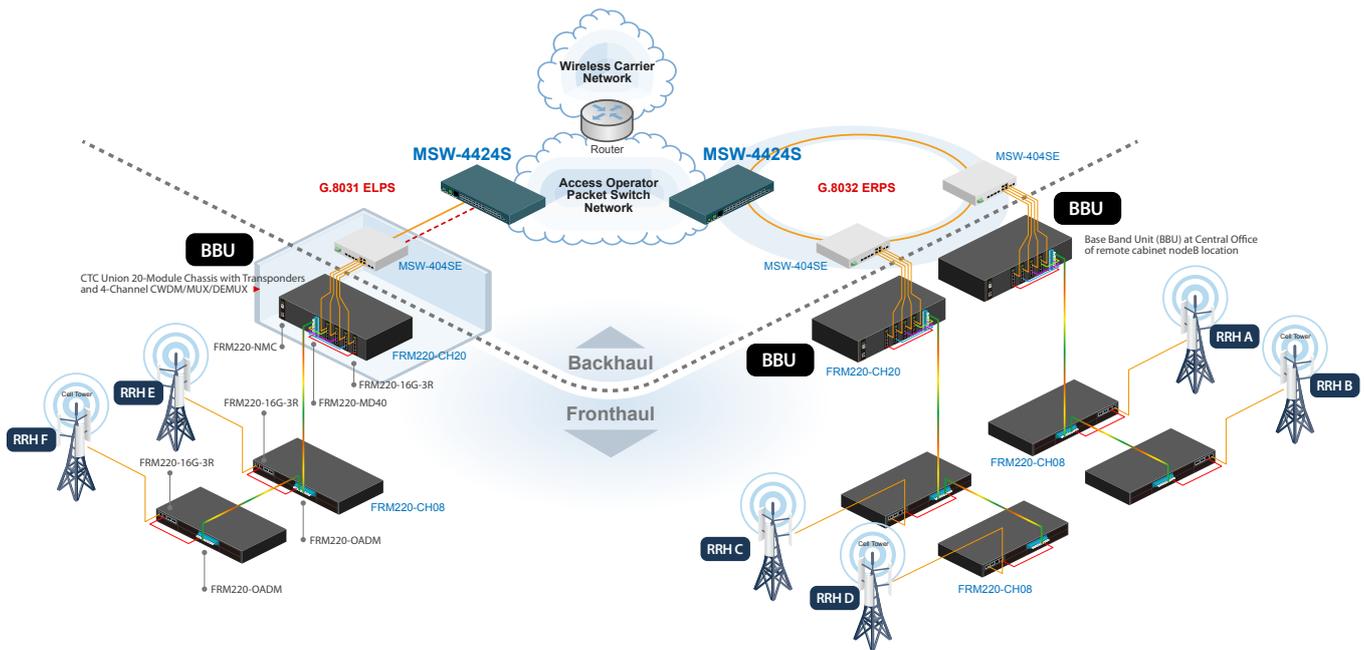
Advanced synchronization features for carrier Ethernet networks allow operators to deliver services with optimal stability and continuity in the end-to-end connectivity

Specifications

Interface	100/1000Mbps SFP slots *24 + 10Gbps SFP+ slots *4
Console Port	RJ-45 console port x 1
Filter & Forward Rate	10M (14880/14880pps); 100M (148800/148800pps) 1000M (1488000/1488000pps)
Transmission Method	Store and Forward Switching
Standard	IEEE 802.3u, IEEE 802.3z, IEEE 802.3ae, IEEE 802.3x IEEE 802.1p, IEEE 802.1Q, IEEE 802.1ad, IEEE 802.1D IEEE 802.1w, IEEE 802.1s, IEEE 802.1x, IEEE 802.3ad IEEE 802.3ah, IEEE 802.1ag, ITU-T Y.1731
Packet Buffer	32M bits
Mac Table Size	32K
Max. Packet Size	10K Bytes
VLAN Feature	IEEE 802.1Q tagged VLAN, port based VLAN, MAC based VLAN, protocol based VLAN, private VLAN, IEEE 802.1ad Q-in-Q
QoS Feature	IEEE 802.1p 8 priority queues per port, CoS based on switch port; VLAN ID; DSCP; TCP/UDP port, IEEE 802.1p priority tag remarking, DSCP remarking, Port based ingress/egress rate limit
L2 switching Protection	STP, RSTP, MSTP, ITU-T G.8031/G.8032
Trunking	IEEE 802.3ad LACP

Security	IEEE 802.1x port based access control MAC based access control authentication RADIUS authentication, limited MAC address learning IP/MAC binding, ACL rule based filtering, TACACS+ IP source guard, DHCP snooping/relay option 82 ARP inspection, IP source guard
IP Multicasting	IGMP throttling, IGMP filtering, IGMP fast leave IGMP snooping v1/v2/v3, MVR, MLD snooping v1/v2
Storm Control Management	Unicast/Broadcast/Multicast storm suppression Web/Telnet CLI/SNMP/console interface, Web/CLI authentication, SSH v2, HTTPs, port mirroring system syslog, IPv6 management, NTP, SNTP
SNMP agent	SNMP v1/v2c/v3
Software upgrade	TFTP / HTTP / HTTPs
Ethernet OAM	IEEE 802.3ah / IEEE 802.1ag / ITU-T Y.1731
Timing Synchronization	Sync. Ethernet, IEEE 1588 V2
LED display	Power, System, Console, Link/Act, Speed
Power input	100V ~ 240VAC -30~-60VDC (-48VDC Power) -9 ~ -32VDC (-24VDC Power)
Power Consumption	< 60W
Operating Temperature	0 ~ 50°C
Humidity	5% ~ 90% (non-condensing)
Dimensions	270.3 x 437.5 x 43.5 mm (D x W x H)
Certification	FCC, CE, RoHS compliant

Application



- Carrier Ethernet with multiple class of service
- Traffic Synchronization
- Precisely delivery of time-sensitive service

Ordering Information

Model Name	Description
MSW-4424S	24x100/1000Base-X (SFP) + 4 x 10GBase-X SFP+ L2+ Gigabit Carrier Ethernet Switch with Sync. E

Remark: SFP Transceiver not included

Optional Power

4424-AC	100V ~ 240V AC power module (60W)
4424-DC24	9V ~ 32V DC power module (60W)
4424-DC48	30V ~ 120V DC power module (60W)

Optional Cable Tray

4424-CTY	Front Cable Tray
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Optional FAN

4424-FAN	FAN module (3in1 FAN module, 10000RPM, software real-time status detection)
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Example: MSW - 4424S



MSW-4424A

L2+ Gigabit Carrier Ethernet Switch

MSW-4424A layer 2+ managed Gigabit Ethernet switches are positioned as a Carrier Ethernet access switch solution. They are equipped with 24 SFP based 100Base-FX/1000Base-X dual speed optical ports and 4 10GBase-X SFP+ or 1000Base-X SFP uplink ports. The MSW-4424 Series offers the best flexibility and scalability for operators and service providers to deploy their Metro Ethernet networks. Aimed specifically at Metro Ethernet deployment, the specifications of MSW-4424A fully meet the attributes of Carrier Ethernet proposed by the Metro Ethernet Forum. The switches comply with MEF 9 standard to support E-Line/E-LAN services and MEF 14 standard to enable the bandwidth profile configuration for delivering SLA (Service Level Agreement) with predictable end-to-end performance characteristics. MSW-4424A supports advanced service OAM management to rapidly detect and recover from the network incidents in real time

Features and Benefits

Front access and hot swappable design

All of the system modules are front accessible, the hot swappable power and FAN module are designed to keep high network availability without service interruption when components fail

Fully dual rate architecture of fiber link port

Dual speed fiber ports offer scalable physical connections for Metro Ethernet network operators

Fully Ethernet OAM enable

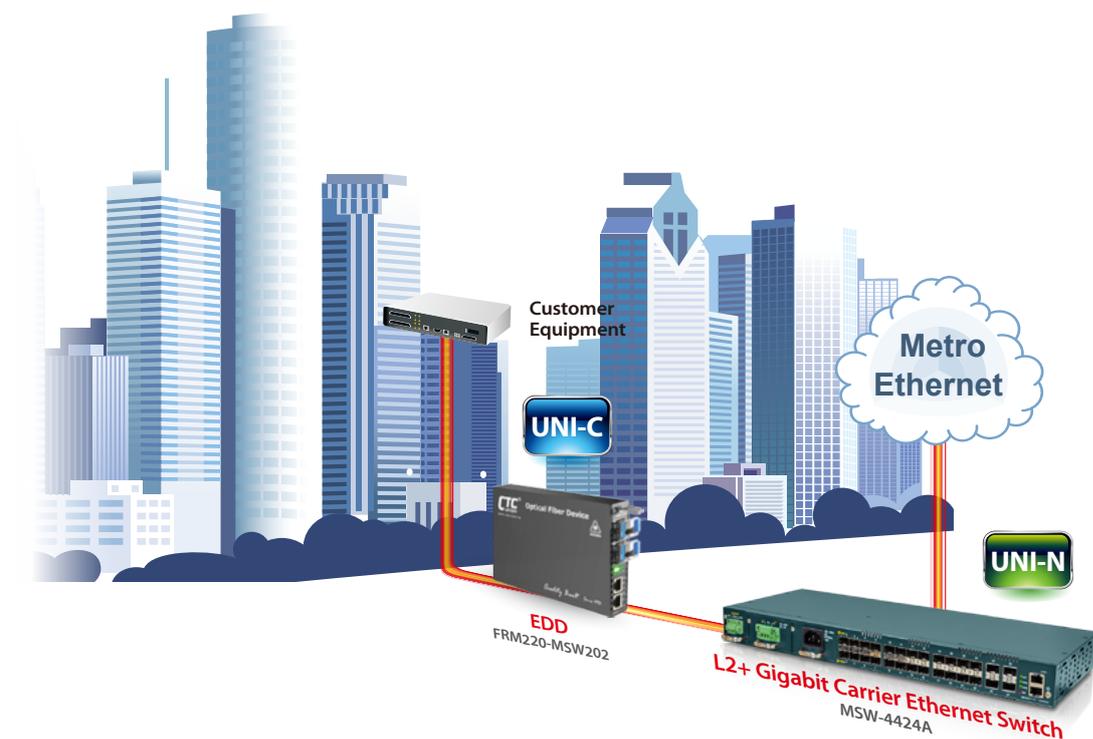
Ethernet OAM features (IEEE 802.3ah/802.1ag/ITU-T Y.1731) help to rapidly detect and recover network faults and save OPEX for operators as well as increase customer satisfaction

Specifications

Interface	100/1000Mbps SFP slots *24 + 10Gbps SFP+ slots *4
Console Port	RJ-45 console port x 1
Filter & Forward Rate	10M (14880/14880pps); 100M (148800/148800pps) 1000M (1488000/1488000pps)
Transmission Method Standard	Store and Forward Switching
Packet Buffer	32M bits
Mac Table Size	32K
Max. Packet Size	10K Bytes
VLAN Feature	IEEE 802.1Q tagged VLAN, port based VLAN, MAC based VLAN, protocol based VLAN, private VLAN, IEEE 802.1ad Q-in-Q
QoS Feature	IEEE 802.1p 8 priority queues per port, CoS based on switch port; VLAN ID; DSCP; TCP/UDP port, IEEE 802.1p priority tag remarking, DSCP remarking, Port based ingress/egress rate limit
L2 switching Protection	STP, RSTP, MSTP, ITU-T G.8031/G.8032
Trunking	IEEE 802.3ad LACP

Security	IEEE 802.1x port based access control MAC based access control authentication RADIUS authentication, limited MAC address learning IP/MAC binding, ACL rule based filtering, TACACS+ IP source guard, DHCP snooping/relay option 82 ARP inspection, IP source guard
IP Multicasting	IGMP throttling, IGMP filtering, IGMP fast leave IGMP snooping v1/v2/v3, MVR, MLD snooping v1/v2
Storm Control Management	Unicast/Broadcast/Multicast storm suppression Web/Telnet CLI/SNMP/console interface, Web/CLI authentication, SSH v2, HTTPs, port mirroring system syslog, IPv6 management, NTP, SNTP
SNMP agent	SNMP v1/v2c/v3
Software upgrade	TFTP / HTTP / HTTPs
Ethernet OAM	IEEE 802.3ah / IEEE 802.1ag / ITU-T Y.1731
LED display	Power, System, Console, Link/Act, Speed
Power input	100V ~ 240VAC -30~-60VDC (-48VDC Power) -9 ~ -32VDC (-24VDC Power)
Power Consumption	< 60W
Operating Temperature	0 ~ 50°C
Humidity	5% ~ 90% (non-condensing)
Dimensions	270.3 x 437.5 x 43.5 mm (D x W x H)
Certification	FCC, CE, RoHS compliant

Application



Ordering Information

Model Name	Description
MSW-4424A	24x100/1000Base-X (SFP) + 4 x 10GBase-X SFP+ L2+ Gigabit Carrier Ethernet Switch

Remark: SFP Transceiver not included

Optional Power

4424-AC	100V ~ 240V AC power module (60W)
4424-DC24	9V ~ 32V DC power module (60W)
4424-DC48	30V ~ 120V DC power module (60W)

Optional Cable Tray

4424-CTY	Front Cable Tray
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Optional FAN

4424-FAN	FAN module (3in1 FAN module, 10000RPM, software real-time status detection)
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Example: MSW – 4424A

Preliminary



MSW-4424CS

L2+ Gigabit Carrier Ethernet Switch with Sync. Ethernet

The MSW-4424CS is positioned as a layer 2+ Gigabit access switch solution. It equips 20 100Base-FX/1000Base-X dual speed SFP slots, 4 ports GbE combo (10/100/1000Base-T or 100/1000Base-X SFP) ports and 4 1000Base-X/10GBase-X dual speed SFP+ uplink slots. The MSW-4424CS offers the best flexibility and scalability for the operators or service providers to deploy their Metro Ethernet network. With the deployment of MSW-4424CS, the operators or service providers can flexibly provision the bandwidth either 100Mbps or 1000Mbps as well as uplink connection of Gigabit or 10G speed upon their service applications. The MSW-4424CS builds in dual power modules to enable power redundancy function and enhance the high network availability.

To aim at the Metro Ethernet application, the specifications of MSW-4424CS fully meet the attributes of Carrier Ethernet proposed by MEF (Metro Ethernet Forum). It comply MEF 9 standard to support E-Line/E-LAN service, MEF 14 standard to enable the bandwidth profile configuration delivering SLA (Service Level Agreement) for end-to-end performance characteristics as well as Ethernet OAM functionality to support carrier grade service OAM management rapidly detecting and recovering from the network incidents in real time. MSW-4424CS supports timing synchronization features (Sync.E & IEEE 1588v2) to enhance and migrate a carrier grade network for mobile backhaul application.

Features and Benefits

Fully dual rate architecture of fiber link port

Completely dual speed ports of fiber link to offer the scalable physical connection of Metro Ethernet network for operators

Fully Ethernet OAM enabled

Enabling Ethernet OAM features (IEEE 802.3ah/802.1ag/ITU-T Y.1731) to rapidly detect and recover network fault and save the OPEX for operators as well as increase customer satisfaction

Timing synchronization

Advanced synchronization features such as Sync. Ethernet or IEEE 1588v2 to allow operators delivering service with optimal stability and continuity in the end-to-end connectivity.

MEF standards compliant solution

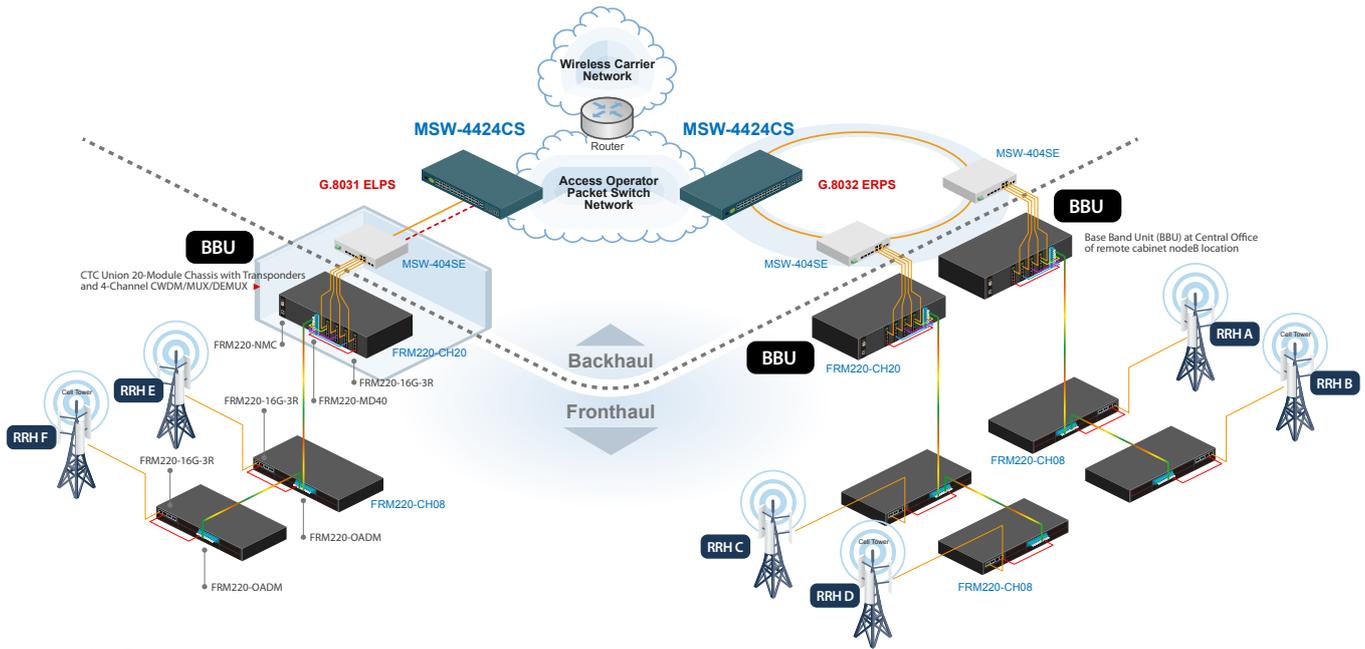
MEF 9/14 compliant product to guarantee the compatibility with other MEF certified equipment and reduce the risk and cost for Metro Ethernet network deployment of operators

Specifications

Interface	100/1000Mbps SFP slots* 20 + GbE combo port (10/100/1000Base-T or 100/1000Mbps SFP slot)* 4 + 1/10Gbps SFP+ slots* 4
Console Port	RJ-45 console port * 1
Management Port	10/100/1000Base-T RJ45 * 1
Filter & Forward Rate	10M (14880/14880pps); 100M (148800/148800pps) 1000M (1488000/1488000pps)
Transmission Method	Store and Forward Switching
Standard	IEEE 802.3u, IEEE 802.3z, IEEE 802.3ae, IEEE 802.3x IEEE 802.1p, IEEE 802.1Q, IEEE 802.1ad, IEEE 802.1d IEEE 802.1w, IEEE 802.1s, IEEE 802.1x, IEEE 802.3ad IEEE 802.3ah, IEEE 802.1ag, ITU-T Y.1731, ITU-T G.8262, IEEE 1588 v2
Packet Buffer	32M bits
Mac Table Size	32K
Max. Packet Size	10K Bytes
VLAN Feature	IEEE 802.1Q tagged VLAN, port based VLAN MAC based VLAN, protocol based VLAN private VLAN, IEEE 802.1ad Q-in-Q
QoS Feature	IEEE 802.1p 8 priority queues per port, CoS based on switch port; VLAN ID; DSCP; TCP/UDP port IEEE 802.1p priority tag remarking, DSCP remarking, Port based ingress/egress rate limit
L2 switching Protection	STP, RSTP, MSTP, ITU-T G.8031/G.8032
Trunking	IEEE 802.3ad LACP

Security	IEEE 802.1x port based access control MAC based access control authentication RADIUS authentication, limited MAC address learning IP/MAC binding, ACL rule based filtering, TACACS+ IP source guard, DHCP snooping/relay option 82 ARP inspection, IP source guard
IP Multicasting	IGMP throttling, IGMP filtering, IGMP fast leave IGMP snooping v1/v2/v3, MVR, MLD snooping v1/v2
Storm Control Management	Unicast/Broadcast/Multicast storm suppression Web/Telnet CLI/SNMP/console interface, Web/CLI authentication, SSH v2, HTTPs, port mirroring system syslog, IPv6 management, NTP, SNTP
SNMP agent	SNMP v1/v2c/v3
Software upgrade	TFTP/HTTP
Ethernet OAM	IEEE 802.3ah/IEEE 802.1ag/ITU-T Y.1731
Timing synchronization	ITU-T G.8262 Sync. Ethernet, IEEE 1588 v2
LED display	Power, System, Console, Link/Act, Speed
Power input	100V ~ 240V AC, -36 ~ -60V DC
Build in power module combination	AC, DC, AD (AC+DC), AA (AC+AC) or DD (DC+DC)
Power Consumption	< 60W
Operating Temperature	0 ~ 50°C
Humidity	5% ~ 90% (non-condensing)
Dimensions	250x 440x 43.5mm (DxWxH)
Certification	FCC, CE, RoHS

Application



- Carrier Ethernet with multiple class of service
- Traffic Synchronization
- Precisely delivery of time-sensitive service

Ordering Information

Model Name	Description
MSW-4424CS-AC	L2 10G Fiber Access Switch with Sync. E and build-in single AC power module
MSW-4424CS-DC	L2 10G Fiber Access Switch with Sync. E and build-in single DC power module
MSW-4424CS-AA	L2 10G Fiber Access Switch with Sync. E and build-in dual AC power module
MSW-4424CS-DD	L2 10G Fiber Access Switch with Sync. E and build-in dual DC power module
MSW-4424CS-AD	L2 10G Fiber Access Switch with Sync. E and build-in AC + DC power module

Remark: SFP Transceiver not included

Preliminary



MSW-4424C

L2+ Gigabit Carrier Ethernet Switch

The MSW-4424C is positioned as a layer 2+ Gigabit access switch solution. It equips 20 100Base-FX/1000Base-X dual speed SFP slots, 4 ports GbE combo (10/100/1000Base-T or 100/1000Base-X SFP) ports and 4 1000Base-X/10GBase-X dual speed SFP+ uplink slots. The MSW-4424C offers the best flexibility and scalability for the operators or service providers to deploy their Metro Ethernet network. With the deployment of MSW-4424C, the operators or service providers can flexibly provision the bandwidth either 100Mbps or 1000Mbps as well as uplink connection of Gigabit or 10G speed upon their service applications. The MSW-4424C builds in dual power modules to enable power redundancy function and enhance the high network availability.

To aim at the Metro Ethernet application, the specifications of MSW-4424C fully meet the attributes of Carrier Ethernet proposed by MEF (Metro Ethernet Forum). It comply MEF 9 standard to support E-Line/E-LAN service, MEF 14 standard to enable the bandwidth profile configuration delivering SLA (Service Level Agreement) for end-to-end performance characteristics as well as Ethernet OAM functionality to support carrier grade service OAM management rapidly detecting and recovering from the network incidents in real time.

Features and Benefits

Fully dual rate architecture of fiber link port

Completely dual speed ports of fiber link to offer the scalable physical connection of Metro Ethernet network for operators

Fully Ethernet OAM enabled

Enabling Ethernet OAM features (IEEE 802.3ah/802.1ag/ITU-T Y.1731) to rapidly detect and recover network fault and save the OPEX for operators as well as increase customer satisfaction

MEF standards compliant solution

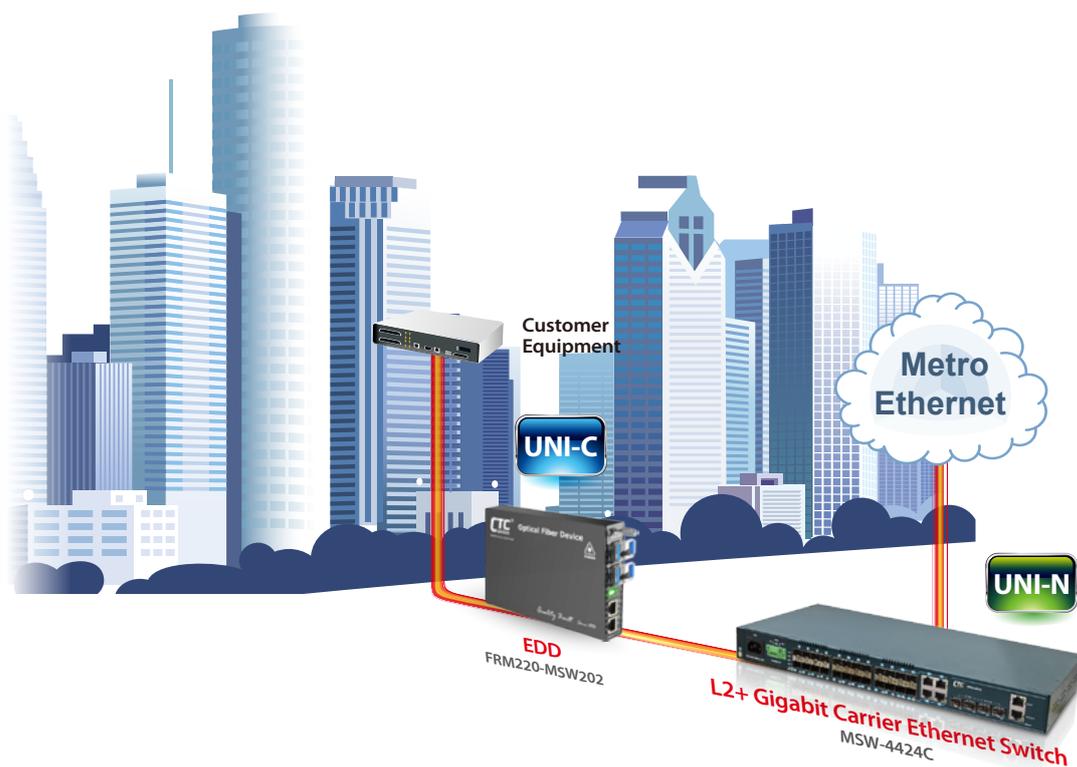
MEF 9/14 compliant product to guarantee the compatibility with other MEF certified equipment and reduce the risk and cost for Metro Ethernet network deployment of operators

Specifications

Interface	100/1000Mbps SFP slots* 20 + GbE combo port (10/100/1000Base-T or 100/1000Mbps SFP slot)* 4 + 1/10Gbps SFP+ slots* 4
Console Port	RJ-45 console port * 1
Management Port	10/100/1000Base-T RJ45 * 1
Filter & Forward Rate	10M (14880/14880pps); 100M (148800/148800pps) 1000M (1488000/1488000pps)
Transmission Method	Store and Forward Switching
Standard	IEEE 802.3u, IEEE 802.3z, IEEE 802.3ae, IEEE 802.3x IEEE 802.1p, IEEE 802.1Q, IEEE 802.1ad, IEEE 802.1d IEEE 802.1w, IEEE 802.1s, IEEE 802.1x, IEEE 802.3ad IEEE 802.3ah, IEEE 802.1ag, ITU-T Y.1731, ITU-T G.8262, IEEE 1588 v2
Packet Buffer	32M bits
Mac Table Size	32K
Max. Packet Size	10K Bytes
VLAN Feature	IEEE 802.1Q tagged VLAN, port based VLAN MAC based VLAN, protocol based VLAN private VLAN, IEEE 802.1ad Q-in-Q
QoS Feature	IEEE 802.1p 8 priority queues per port, CoS based on switch port; VLAN ID; DSCP; TCP/UDP port IEEE 802.1p priority tag remarking, DSCP remarking, Port based ingress/egress rate limit
L2 switching Protection	STP, RSTP, MSTP, ITU-T G.8031/G.8032
Trunking	IEEE 802.3ad LACP

Security	IEEE 802.1x port based access control MAC based access control authentication RADIUS authentication, limited MAC address learning IP/MAC binding, ACL rule based filtering, TACACS+ IP source guard, DHCP snooping/relay option 82 ARP inspection, IP source guard
IP Multicasting	IGMP throttling, IGMP filtering, IGMP fast leave IGMP snooping v1/v2/v3, MVR, MLD snooping v1/v2
Storm Control	Unicast/Broadcast/Multicast storm suppression
Management	Web/Telnet CLI/SNMP/console interface, Web/CLI authentication, SSH v2, HTTPs, port mirroring system syslog, IPv6 management, NTP, SNTP
SNMP agent	SNMP v1/v2c/v3
Software upgrade	TFTP/HTTP
Ethernet OAM	IEEE 802.3ah/IEEE 802.1ag/ITU-T Y.1731
LED display	Power, System, Console, Link/Act, Speed
Power input	100V ~ 240V AC, -36 ~ -60V DC
Build in power module combination	AC, DC, AD (AC+DC), AA (AC+AC) or DD (DC+DC)
Power Consumption	< 60W
Operating Temperature	0 ~ 50°C
Humidity	5% ~ 90% (non-condensing)
Dimensions	250x 440x 43.5mm (DxWxH)
Certification	FCC, CE, RoHS

Application



Ordering Information

Model Name	Description
MSW-4424C-AC	L2 10G Fiber Access Switch with build-in single AC power module
MSW-4424C-DC	L2 10G Fiber Access Switch with build-in single DC power module
MSW-4424C-AA	L2 10G Fiber Access Switch with build-in dual AC power module
MSW-4424C-DD	L2 10G Fiber Access Switch with build-in dual DC power module
MSW-4424C-AD	L2 10G Fiber Access Switch with build-in AC + DC power module

Remark: SFP Transceiver not included

Preliminary



GSW-3424FM

24x 100/1000Base-X SFP slots + 4x GbE combo ports (10/100/1000Base-T or 1000Base-X) L2 Managed Ethernet Switch

GSW-3424FM is an SNMP manageable Gigabit Ethernet switch for FTTx deployment or Gigabit Ethernet fiber aggregation that equipped 24 dual rate 100/1000Base-X SFP ports and 4 Gigabit Ethernet combo (10/100/1000Base-T or 1000Base-X) ports. With advanced layer 2 and QoS features, this switch is targeted at multi-service operators (MSO) with a desire to deploy provisioned triple play services via active Ethernet FTTx network infrastructures. Fiber based network infrastructures offer the data rates required by triple play services such as high speed internet access, VoIP and HD IPTV. The GSW-3424FM Ethernet access switch provides VLAN, QoS and IGMP L2 feature sets as well as robust security management to facilitate service provider's build up of a manageable and secure FTTx access network.

Features

- 24x SFP ports, support 100Base-FX or 1000Base-X
- 4x RJ45/SFP(100/1G) ports, auto-detect RJ45/SFP connection
- IPv6 management
- 8 priority queues are supported on each port for QoS application
- Port-based VLAN, 802.1Q VLAN, Voice VLAN and Q-in-Q(double tagging) function
- Protected Port and LoopBack Detection function
- IEEE 802.1x security function, and VLAN assignment, Guest VLAN functions
- Static Mac address access limit and Dynamic Mac address number on port
- IEEE802.1d & 802.1w & 802.1s
- DHCP Client / DHCP Option 82 Relay / DHCP Snooping function
- DHCP Snooping Database agent to upload DHCP Snooping table to external TFTP Server.
- ACL function for L2 ~ L4 packet control, Ingress/Egress rate control on port
- IP Multicast with IGMP snooping / query / fast leave / filtering / group limited /MVR
- Broadcast/Multicast/Unicast storm control
- ARP inspection / IP source guard
- RMON 1,2,3,9
- SFP Transceiver DDMI function
- Remote port configuration setting and statistics monitoring
- Text configuration download and upload
- IEEE 802.3az power management / Green Ethernet

Specifications

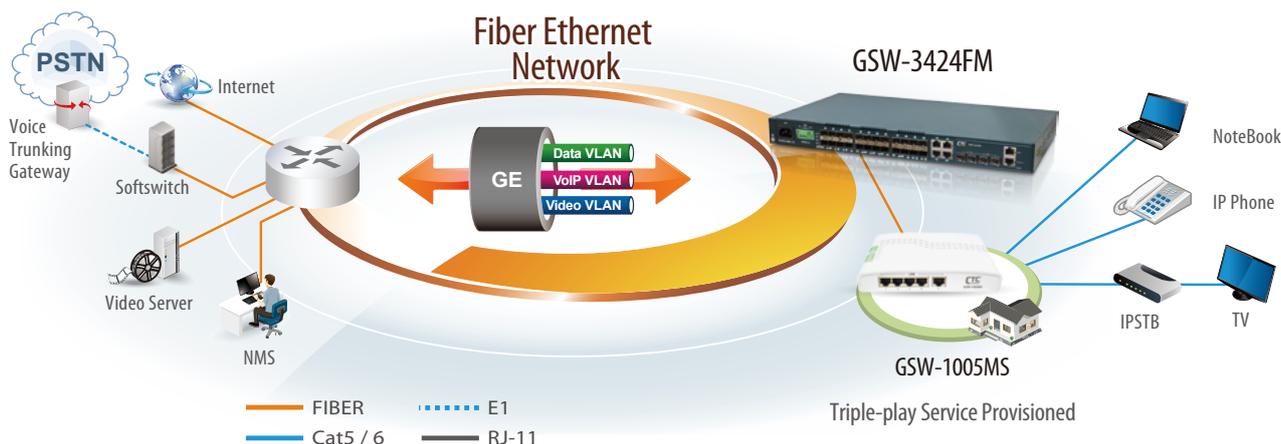
System	
100/1G SFP Port	24
UTP/SFP Combo Uplink Port	4
Memory	Flash : SPI 16MB / RAM:DDRII 128MB
Packet buffer	16M bits
MAC Table size	16K
Max Packet Size	10K
Switching capability	14880pps at 10Mbps, 148810pps at 100Mbps, 1488095pps at 1Gbps with 64bytes packets
Switch capacity	48Gbps
Forwarding Rate	35.7Mpps
FAN Design	Yes
Console port	RJ-45
19" Rack-Mount	Yes, with kits
SFP DDMI	Yes
Dimension	250x 440x 43.5mm (DxWxH)
Environmental Temperature	Operating : 0 ~ 50°C Storage : -25 ~ 70°C
Humidity	10% ~ 90% (non-condensing)
LED Display	Per Port : Link/Act (Green: Gigabit, Yellow:10/100M) Per Device : Power and System
Power Consumption	<60W Max.
Power Input	AC Power input (100V~240V); -36~60VDC
LED	
Power	Lights(Green) System is receiving power
System	Lights(Green) System is ready
Link / Act	Lights Link is ready 1000Mbps : Green 100Mbps : Amber Flashing Data packets being received or sent

Software	
Port Control	Port speed, duplex mode, and flow control Port Auto MDI/MDI-X Port frame size (jumbo frames), Maximum ingress frame size (10056 bytes) Port state (administrative status) Port status (link monitoring) Port statistics (MIB counters) Port VeriPHY (cable diagnostics)
L2 Switching	Auto MAC address learning/aging and MAC addresses (static) IEEE 802.1Q static VLAN(4096 entries Max.), Voice VLAN Port isolation, Private VLAN, static, MAC based VLAN protocol based VLAN IP subnet based VLAN IEEE 802.1D STP/802.1w RSTP/802.1s MSTP IEEE 802.3ad Link Aggregation, static and LACP BPDU guard and restricted role, Error Disable Recovery DHCP client, DHCP snooping, DHCP option 82 relay ARP inspection(256 entries Max.) Port mirroring
Layer 2 Multicast	IGMP snooping v1,v2, v3 snooping, (1024 groups) IGMP snooping Fast and Immediate leave IGMP throttling, filtering, and leave proxy MVR and MVR profile IPv6 MLD v1 snooping
QoS	8 Priority Queues per Port Port Based priority Scheduler priority QoS Control List(256 entries Max.) Storm control for UC, MC, and BC Policing and shaping per port and per queue Ingress Policing Egress Shaping DiffServ (RFC 2474) remarking Tag remarking

Security	Port-based 802.1X, Single 802.1X, Multiple 802.1X MAC-based authentication, VLAN assignment, QoS assignment, Guest VLAN RADIUS accounting MAC address limit TACACS+ Web and CLI authentication and authorization Authorization ACLs for filtering, policing, and port copy IP source guard
Synchronization	NTPv4 Client
SFP DDMI	Yes

Management	HTTP server CLI console port Telnet Management access filtering SSHv2 and HTTPS IPv6 Management System Syslog Software upload through Web and TFTP SNMPv1/v2c/v3 Agent RMON Group 1, 2, 3, and 9 IEEE 802.1AB-2005 Link Layer Discovery, LLDP Text Configuration download or upload sFlow Daylight Saving
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Application



Ordering Information

Model Name	Description
GSW-3424FM-AC	24x 100/1000Base-X SFP slots + 4x GbE combo (1000Base-X or 10/100/1000Base-T) uplink with single AC power supply
GSW-3424FM-DC	24x 100/1000Base-X SFP slots + 4x GbE combo (1000Base-X or 10/100/1000Base-T) uplink with single DC power supply (-48V)
GSW-3424FM-AA	24x 100/1000Base-X SFP slots + 4x GbE combo (1000Base-X or 10/100/1000Base-T) uplink Dual AC power supply
GSW-3424FM-DD	24x 100/1000Base-X SFP slots + 4x GbE combo (1000Base-X or 10/100/1000Base-T) uplink Dual DC power supply (-48V)
GSW-3424FM-AD	24x 100/1000Base-X SFP slots + 4x GbE combo (1000Base-X or 10/100/1000Base-T) uplink AC & DC (-48V) power supply

Remark: SFP Transceiver not included

Power Type
MSW - 3424FM -
 Example: **MSW - 3424FM - AD**



GSW-3424M1

24x 10/100/1000Base-T + 4x GbE (SFP) L2 Managed Switch

4

L2 Managed
Ethernet Switch

GSW-3424M1 is a cost-effect, high performance, managed L2 Ethernet with 20 x 10/100/1000Base-T ports and 4 x Gigabit Ethernet combo (10/100/1000Base-T or 1000Base-X) ports. This switch supports remote management by SNMP, HTTP and Telnet interfaces along with local management by console interface. GSW-3424M1 supports many L2 switch management functions, including 802.1Q VLAN, 802.1x Port Security, Rate Control, Port Configuration, Port Mirroring, Port Statistics, QoS functions, Spanning tree and more.

Features

- 24x RJ45 ports, with 10/100/1000Mbps, Full/Half duplex auto-negotiation and Auto-MDIX functions
- 4x Dual Speed SFP sockets, shared with TX ports of Port 21~24 ;
- auto-detect TX/SFP connection
- CISCO-like command line interface, IPv6 management
- 8 priority queues are supported on each port for QoS application
- Port-based VLAN, 802.1Q VLAN, Voice VLAN and Q-in-Q (double tagging) function
- Protected Port and LoopBack Detection function
- IEEE 802.1x security function, and VLAN assignment, Guest VLAN functions
- Static Mac address access limit and Dynamic Mac address number on port
- IEEE802.1d & 802.1w & 802.1s (spanning tree)
- IP Multicast with IGMP snooping / query / fast leave / filtering / group limited /MVR
- DHCP Client / DHCP Option 82 Relay / DHCP Snooping function
- ACL function for L2 ~ L4 packet control, Ingress/Egress rate control on port
- Broadcast/Multicast/Unicast storm control
- ARP inspection / IP source guard, RMON 1,2,3,9
- SFP Transceiver DDMI function / Dual Speed SFP Ports (100/1000Mbps)
- Remote port configuration setting and statistics monitoring
- Text configuration download and upload
- IEEE 802.3az power management / FANless / Green Ethernet

Specifications

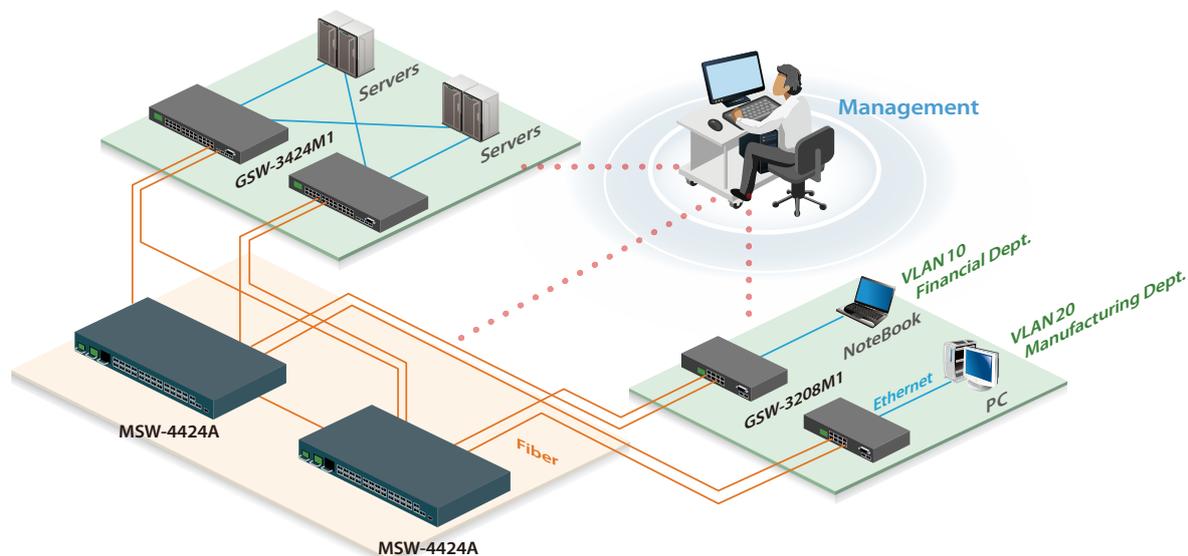
System	
10/100/1000 Base-T	24
100/1G SFP Slot	4 UTP/SFP Combo (Port 21~24)
Packet buffer	512KB
MAC Table size	8K
Max Packet size	9600 Bytes
Switching capability	14880pps at 10Mbps, 148810pps at 100Mbps, 1488095pps at 1Gbps with 64bytes packets.
Switch capacity	48Gbps
Forwarding Rate	35.7Mpps
FAN Design	FAN less
Console port	D-Sub 9
19" Rack-Mount	Yes, with kits
SFP DDMI	Yes
Dimensions	330 x 204 x 44 mm (W x D x H)
Environmental Temperature	Operating : 0 ~ 50°C Storage : -40 ~ 70°C
Humidity	10% ~ 90% (non-condensing)
LED Display	Per Port : Link/Act (Green: Gigabit, Yellow:10/100M) Per Device : Power and System
Power Consumption	18 Watt Max.
Power Input	AC Power input (100V~240V)

Software	
Port Control	Port speed, duplex mode, and flow control Port frame size (jumbo frames), Maximum ingress frame size (9600 bytes) Port state (administrative status) Port status (link monitoring) Port statistics (MIB counters) Port VeriPHY (cable diagnostics), Power Control
L2 Switching	Auto MAC address learning/aging and MAC addresses (static) IEEE 802.1Q static VLAN, Voice VLAN, Port isolation, Port Based VLAN, IEEE 802.1ad Provider Bridge IEEE 802.1D STP/802.1w RSTP/802.1s MSTP IEEE 802.3ad Link Aggregation, static and LACP BPDU guard and restricted role, BPDU transparency DHCP client, DHCP snooping, DHCP option 82 relay ARP inspection, Port mirroring, IP MAC binding
Layer 2 Multicast	IGMP snooping v1,v2, v3 snooping, (1024 groups) IGMP snooping Fast and Immediate leave IGMP throttling, filtering, and leave proxy IGMP proxy mode and snooping mode selection MVR, IPv6 MLD snooping
QoS	8 Priority Queues per Port Port Based priority, Scheduler priority, QoS Control List Storm control for UC, MC, and BC Policing and shaping per port and per queue Ingress Policing : (100-1000000 when the "Unit" is "kbps" or "fps" and 1-3300 when the "Unit" is "Mbps" or "kfps") Egress Shaping : (100-1000000 when the "Unit" is "kbps", and 1-3300 when the "Unit" is "Mbps") DiffServ (RF 2474) remarking, Tag remarking

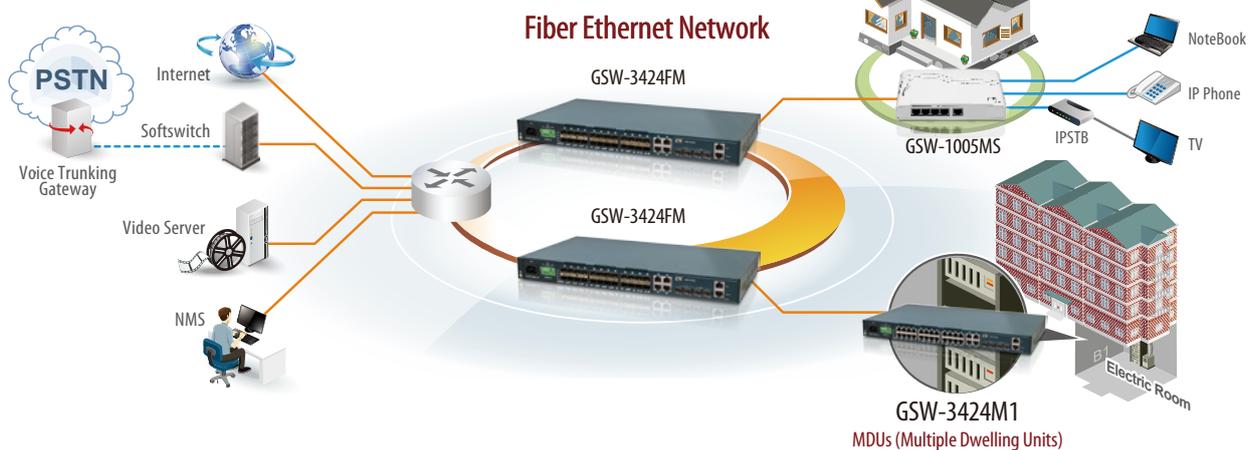
Security	Port-based 802.1X, Single 802.1X, Multiple 802.1X MAC-based authentication, VLAN assignment, QoS assignment, Guest VLAN, RADIUS accounting, MAC address limit TACACS+, Web and CLI authentication and authorization Authorization (3 levels) ACLs for filtering(256 entries), policing, and port copy IP source guard
Synchronization	NTPv4 Client

Power Saving	ActiPHY, PerfectReach, Ethernet Energy Efficient power management(EEE)
SFP DDMI Management	Yes
Management	HTTP server, CLI console port, Telnet, Management access filtering, SSHv2 and HTTPS IPv6 Management, System Syslog Software download through Web, SNMPv1/v2c/v3 Agent RMON Group 1, 2, 3, and 9 IEEE 802.1AB-2005 Link Layer Discovery, LLDP Text Configuration download or upload, sFlow, Daylight Saving

Application



- FIBER
- Cat5 / 6
- - - E1
- RJ-11



Ordering Information

Model Name	Description
GSW-3424M1	24x 10/100/1000Base-T + 4x GbE Combo with AC power supply
GSW-3424M1-DC48	24x 10/100/1000Base-T + 4x GbE Combo with DC 48V power supply

Remark: SFP Transceiver not included

MSW – 3424M1 – □□□□
Example: MSW – 3424M1 – DC48



GSW-3208M1

8-Port 10/100/1000Base-T + 2-Port GbE (SFP) L2 Managed Switch

GSW-3208M1 is a cost-effect, high performance, managed L2 Ethernet with 8 x 10/100/1000Base-T ports and 2 x Gigabit Ethernet 1000Base-X ports. This switch supports remote management by SNMP, HTTP and Telnet interfaces along with local management by console interface. GSW-3208M1 supports many L2 switch management functions, including 802.1Q VLAN, 802.1x Port Security, Rate Control, Port Configuration, Port Mirroring, Port Statistics, QoS functions, Spanning tree and more.

Features

- 8x RJ45 ports, with 10/100/1000Mbps, Full/Half duplex auto-negotiation and Auto-MDIX functions
- 2x Dual Speed SFP sockets, Port9 and Port10
- CISCO-like command line interface
- IPv6 management
- 8 priority queues are supported on each port for QoS application
- Port-based VLAN, 802.1Q VLAN, Voice VLAN and Q-in-Q (double tagging) function
- Protected port and LoopBack Detection function
- Q-in-Q(double tagging) function
- IEEE 802.1x security function, and VLAN assignment, Guest VLAN functions
- Static Mac address access limit and Dynamic Mac address number on port
- IEEE802.1d & 802.1w & 802.1s (spanning tree)
- IP Multicast with IGMP snooping / query / fast leave / filtering / group limited /MVR
- DHCP Client / DHCP Option 82 Relay / DHCP Snooping function
- ACL function for L2 ~ L4 packet control
- Ingress/Egress rate control on port
- Broadcast/Multicast/Unicast storm control
- ARP inspection / IP source guard RMON 1,2,3,9
- SFP Transceiver DDMI function / Dual Speed SFP Ports (100/1000Mbps)
- Remote port configuration setting and statistics monitoring
- Text configuration download and upload
- IEEE 802.3az power management / FANless / Green Ethernet

Specifications

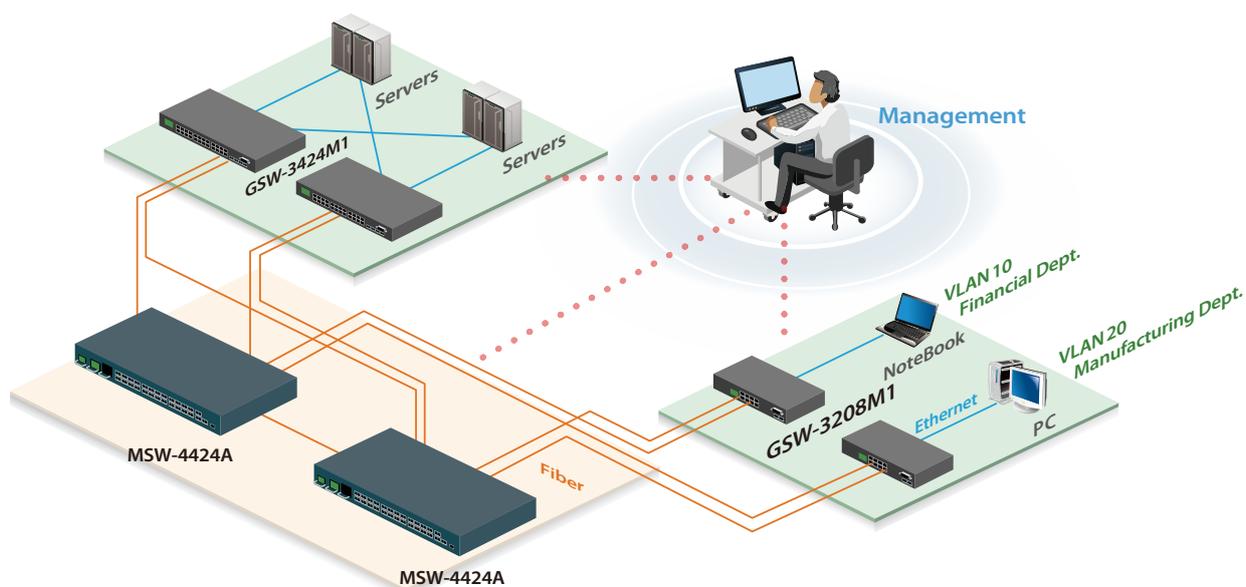
System	
10/100/1000 Base-T	8
100/1G SFP Slot	2
Packet buffer	4M bits
MAC Table size	8K
Max Packet size	9600 Bytes
Switching capability	9600 Bytes 14880pps at 10Mbps, 148810pps at 100Mbps, 1488095pps at 1Gbps with 64bytes packets
Switch capacity	20Gbps
Forwarding Rate	14.8Mpps
FAN Design	FAN less
Console port	D-Sub 9
19" Rack-Mount	Yes, with kits (Optional)
SFP DDMI	Yes
Dimensions	117 x 250 x 37 mm(D x W x H)
Environmental Temperature	Operating : 0 ~ 50°C Storage : -40 ~ 70°C
Humidity	10% ~ 90% (non-condensing)
LED Display	Per Port : Link/Act (Green: Gigabit, Yellow:10/100M) Per Device : Power and System
Power Consumption	8.5 Watt Max
Power Input	AC Power input (100V~240V)
LED	
Power	Lights(Green) System is receiving power
System	Lights(Green) System is ready
Link / Act	Lights Link is ready 1000Mbps : Green 10/100Mbps : Amber
	Flashing 10/100Mbps : Amber Data packets being received or sent

Software	
Port Control	Port speed, duplex mode, and flow control Port frame size (jumbo frames), Maximum ingress frame size (9600 bytes), Port state (administrative status) Port status (link monitoring) Port statistics (MIB counters) Port VeriPHY (cable diagnostics), Power Control
L2 Switching	Auto MAC address learning/aging and MAC addresses (static) IEEE 802.1Q static VLAN, Voice VLAN, Port isolation, Port Based VLAN, IEEE 802.1ad Provider Bridge IEEE 802.1D STP/802.1w RSTP/802.1s MSTP IEEE 802.3ad Link Aggregation, static and LACP BPDU guard and restricted role, BPDU transparency DHCP client, DHCP snooping, DHCP option 82 relay ARP inspection, Port mirroring, IP MAC binding
Layer 2 Multicast	IGMP snooping v1,v2, v3 snooping, (1024 groups) IGMP snooping Fast and Immediate leave IGMP throttling, filtering, and leave proxy IGMP proxy mode and snooping mode selection MVR, IPv6 MLD snooping
QoS	8 Priority Queues per Port Port Based priority, Scheduler priority, QoS Control List Storm control for UC, MC, and BC Policing and shaping per port and per queue Ingress Policing : (100-1000000 when the "Unit" is "kbps" or "fps" and 1-3300 when the "Unit" is "Mbps" or "kfps") Egress Shaping : (100-1000000 when the "Unit" is "kbps", and 1-3300 when the "Unit" is "Mbps") DiffServ (RF 2474) remarking, Tag remarking

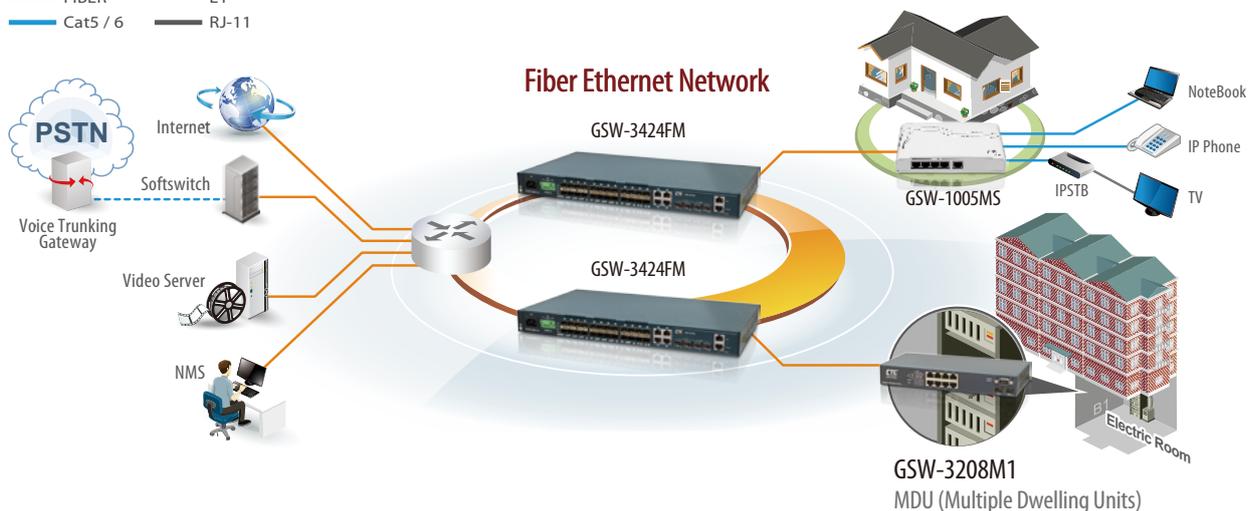
Security	Port-based 802.1X, Single 802.1X, Multiple 802.1X MAC-based authentication, VLAN assignment, QoS assignment, Guest VLAN, RADIUS accounting, MAC address limit TACACS+, Web and CLI authentication and authorization Authorization (3 levels) ACLs for filtering(256 entries), policing, and port copy IP source guard
Synchronization	NTPv4 Client

Power Saving	ActiPHY, PerfectReach, Ethernet Energy Efficient power management(EEE)
SFP DDMI	Yes
Management	HTTP server, CLI console port, Telnet, Management access filtering, SSHv2 and HTTPS IPv6 Management, System Syslog Software download through Web, SNMPv1/v2c/v3 Agent RMON Group 1, 2, 3, and 9 IEEE 802.1AB-2005 Link Layer Discovery, LLDP Text Configuration download or upload, sFlow, Daylight Saving

Application



- FIBER
- Cat5 / 6
- - - E1
- RJ-11



Ordering Information

Model Name	Description
GSW-3208M1	8x 10/100/1000Base-T + 2x GbE SFP slot with AC power supply
GSW-3208M1-DC48	8x 10/100/1000Base-T + 2x GbE SFP slot with DC 48V power supply

Remark: SFP Transceiver not included

GSW – 3208M1 – □□□□
Example: GSW – 3208M1 – DC48

Preliminary



MSW-404SE

**4x 100/1000Base-x SFP slots + 4x
10/100/1000Base-T RJ45 Carrier Ethernet
Switch (NID) with Sync. Ethernet**

The CTC Union's MSW-404SE is the new generation of carrier grade Ethernet demarcation device for business connection and mobile backhaul transportation service delivered by carriers. The MSW-404SE is equipped 4 SFP slots in dual rate 100/1000Base-X and 4 ports 10/100/1000Base-T RJ45 network interfaces. It is designed to enable E-Line, E-LAN, E-Tree services which are CE (Carrier Ethernet) 2.0 compliant for Metro Ethernet network deployments.

The MSW-404SE device enables carriers and service providers to delivered SLA-based network service with extensive fault detection and diagnostic capabilities which are compliant with the latest Ethernet OAM standards such as IEEE 802.3ah, IEEE 802.1ag and ITU-T Y.1731. With built-in RFC2544 feature sets, The MSW-404SE also enables the service providers to perform the SLA verification anytime to ensure the quantitative latency, jitter and throughput delivery performance indexes. The CE2.0 compliant functions support EVCs and hierarchical QoS traffic management to enable service providers managing bandwidth and enforce SLA guaranteed.

MEF 22.1 defines the standard how Metro Ethernet service is adopted into the traffic transportation in the mobile backhaul application. The mobile service is time sensitive and required accurately packet delivery over a clocking synchronized network to transmit packetized data from a mobile device among base stations without loss. The MSW-404SE supports Synchronized Ethernet to fulfill the IP converged services (data, voice, video) over synchronous Ethernet aware carrier Ethernet network.

Features

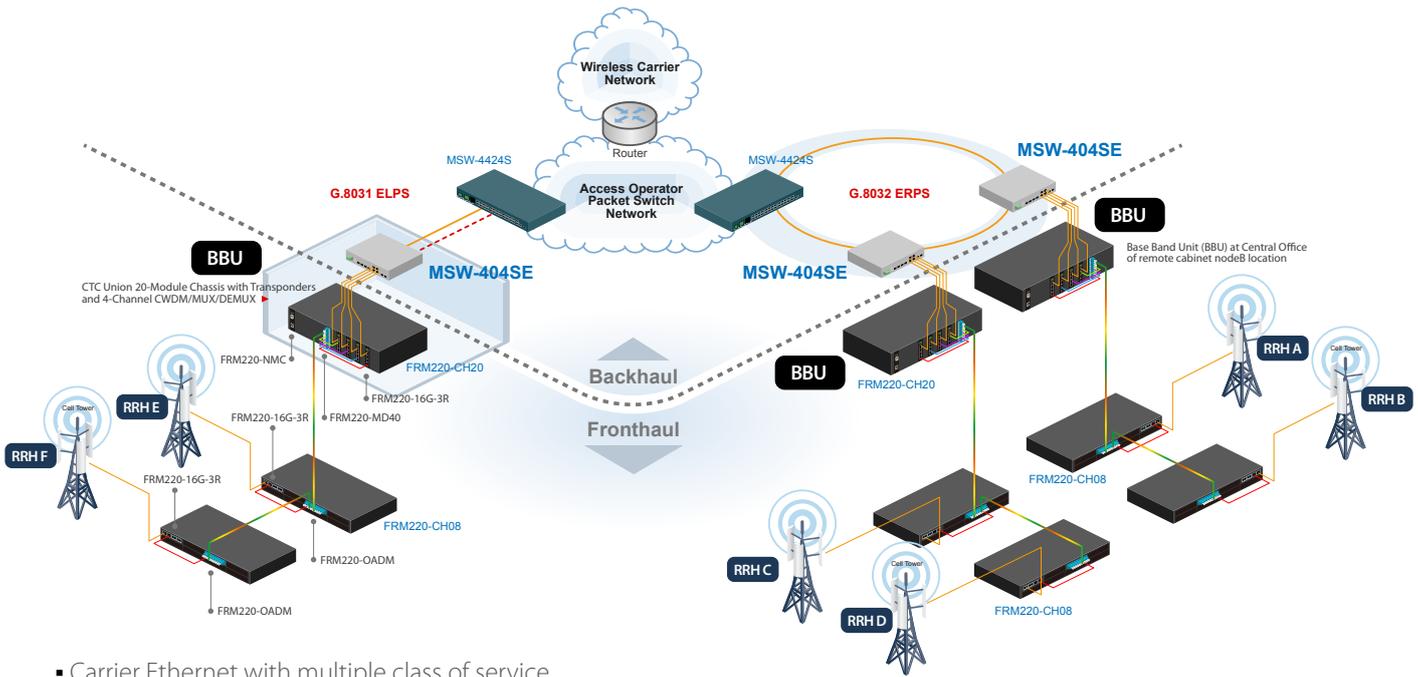
- The next generation of Ethernet demarcation device, at customer premise, fulfilling the large-scale carrier Ethernet deployment for intelligent business connection and mobile backhaul services complied to CE 2.0 standard.
- MEF 9/14 standards compliant product guarantees the fully interoperability with other MEF certified equipment and reduces the risks and cost of Carrier Ethernet network deployment for operators and service providers.
- Advanced clock synchronized features for carrier Ethernet network allows operators to deliver time sensitive services with optimal stability and continuity in the end-to-end connectivity.

Specifications

Interface	100/1000Mbps SFP slots X 4 + 10/100/1000Base-T RJ45 X 4
Console Port	DB-9 RS-232 console port X 1
Filter & Forward Rate	10M (14880/14880pps); 100M (148800/148800pps); 1000M (1488000/1488000pps)
Transmission Method	Store and Forward Switching
Standard	IEEE 802.3u, IEEE 802.3z, IEEE 802.3ae, IEEE 802.3x, IEEE 802.1p, IEEE 802.1Q, IEEE 802.1ad, IEEE 802.1D, IEEE 802.1w, IEEE 802.1s, IEEE 802.1x, IEEE 802.3ad
Packet Buffer	8M bits
MAC Table Size	8K
Max. Packet Size	10K Bytes
VLAN Feature	IEEE 802.1Q tagged VLAN, port based VLAN, MAC based VLAN, protocol based VLAN, private VLAN, IEEE 802.1ad Q-in-Q
QoS Feature	IEEE 802.1p 8 priority queues per port, CoS based on switch port; VLAN ID; DSCP; TCP/UDP port, IEEE 802.1p priority tag remarking, DSCP remarking, Port based ingress/egress rate limit
L2 switching protection	STP, RSTP, MSTP, ITU-T G.8031/G.8032 Ethernet ring protection

Trunking	IEEE 802.3ad LACP
Security	IEEE 802.1x port based access control, MAC based access control authentication, RADIUS authentication, limited MAC address learning, IP/MAC binding, ACL rule based filtering, TACACS+, IP source guard, DHCP snooping/relay option 82, ARP inspection, IP source guard
IP Multicasting	IGMP throttling, IGMP filtering, IGMP fast leave, IGMP snooping v1/v2/v3, MVR, MLD snooping v1/v2
Storm Control	Unicast/Broadcast/Multicast storm suppression
Management	Web/Telnet CLI/SNMP/console interface, Web/CLI authentication, SSH v2, HTTPs, port mirroring, system syslog, IPv6 management, NTP, SNTP
SNMP Agent	SNMP v1/v2c/v3
Software Upgrade	TFTP/HTTP/HTTPS
Ethernet OAM	IEEE 802.3ah, IEEE 802.1ag, ITU-T Y.1731, RFC2544
Timing Synchronization	ITU-T G.8262 Synchronous Ethernet, IEEE 1588v2
LED Display	Power, System, Console, Link, Speed/Act
Power Input	100V ~ 240VAC, -36 ~ -60VDC
Power Consumption	< 20W
Operating Temperature	0 ~ 50°C
Humidity	5% ~ 90% (non-condensing)
Dimensions	250 x 218 x 44 mm (D x W x H)
Regulatory	FCC, CE, RoHS compliant

Application



4 L2+ Carrier Ethernet Switch (NID)

- Carrier Ethernet with multiple class of service
- Traffic Synchronization
- Precisely delivery of time-sensitive service

Ordering Information

Model Name	Description
MSW-404SE	4x 100/1000Base-x SFP slots + 4x 10/100/1000Base-T RJ45 Carrier Ethernet Switch with Sync. E

MSW – 404SE
 Example: MSW – 404SE

Preliminary



MSW-404SE1

4x 100/1000Base-x SFP slots + 4x
10/100/1000Base-T RJ45 Carrier Ethernet
Switch (NID)

The CTC Union's MSW-404SE1 is the new generation of carrier grade Ethernet demarcation device for business connection service delivered by carriers. The MSW-404SE1 is equipped 4 SFP slots in dual rate 100/1000Base-X and 4 ports 10/100/1000Base-T RJ45 network interfaces. It is designed to enable E-Line, E-LAN, E-Tree services which are CE (Carrier Ethernet) 2.0 compliant for Metro Ethernet network deployments.

The MSW-404SE1 device enables carriers and service providers to delivered SLA-based network service with extensive fault detection and diagnostic capabilities which are compliant with the latest Ethernet OAM standards such as IEEE 802.3ah, IEEE 802.1ag and ITU-T Y.1731. With built-in RFC2544 feature sets, MSW-404SE1 series also enables the service providers to perform the SLA verification anytime to ensure the quantitative latency, jitter and throughput delivery performance indexes. The CE2.0 compliant functions support EVCs and hierarchical QoS traffic management to enable service providers managing bandwidth and enforce SLA guaranteed.

Features

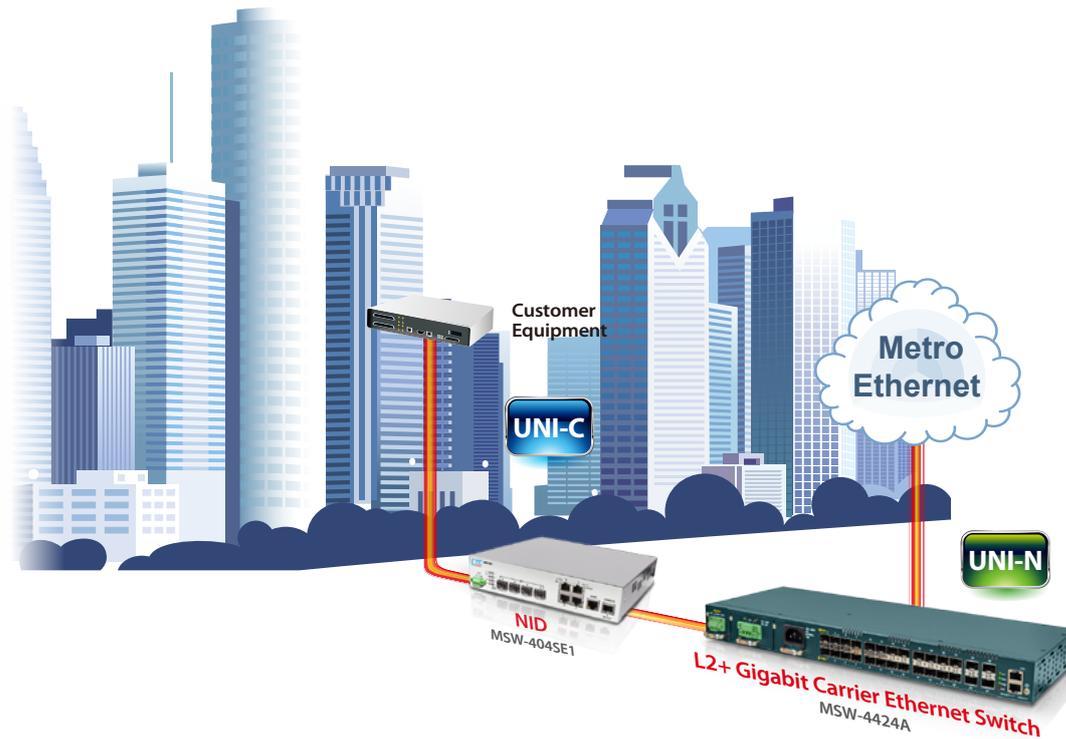
- The next generation of Ethernet demarcation device, at customer premise, fulfilling the large-scale carrier Ethernet deployment for intelligent business connection and mobile backhaul services complied to CE 2.0 standard.
- MEF 9/14 standards compliant product guarantees the fully interoperability with other MEF certified equipment and reduces the risks and cost of Carrier Ethernet network deployment for operators and service providers.

Specifications

Interface	100/1000Mbps SFP slots X 4 + 10/100/1000Base-T RJ45 X 4
Console Port	DB-9 RS-232 console port X 1
Filter & Forward Rate	10M (14880/14880pps); 100M (148800/148800pps); 1000M (1488000/1488000pps)
Transmission Method	Store and Forward Switching
Standard	IEEE 802.3u, IEEE 802.3z, IEEE 802.3ae, IEEE 802.3x, IEEE 802.1p, IEEE 802.1Q, IEEE 802.1ad, IEEE 802.1D, IEEE 802.1w, IEEE 802.1s, IEEE 802.1x, IEEE 802.3ad
Packet Buffer	8M bits
MAC Table Size	8K
Max. Packet Size	10K Bytes
VLAN Feature	IEEE 802.1Q tagged VLAN, port based VLAN, MAC based VLAN, protocol based VLAN, private VLAN, IEEE 802.1ad Q-in-Q
QoS Feature	IEEE 802.1p 8 priority queues per port, CoS based on switch port; VLAN ID; DSCP; TCP/UDP port, IEEE 802.1p priority tag remarking, DSCP remarking, Port based ingress/egress rate limit

L2 switching protection	STP, RSTP, MSTP, ITU-T G.8031/G.8032 Ethernet ring protection
Trunking	IEEE 802.3ad LACP
Security	IEEE 802.1x port based access control, MAC based access control authentication, RADIUS authentication, limited MAC address learning, IP/MAC binding, ACL rule based filtering, TACACS+, IP source guard, DHCP snooping/relay option 82, ARP inspection, IP source guard
IP Multicasting	IGMP throttling, IGMP filtering, IGMP fast leave, IGMP snooping v1/v2/v3, MVR, MLD snooping v1/v2
Storm Control	Unicast/Broadcast/Multicast storm suppression
Management	Web/Telnet CLI/SNMP/console interface, Web/CLI authentication, SSH v2, HTTPs, port mirroring, system syslog, IPv6 management, NTP, Sntp
SNMP Agent	SNMP v1/v2c/v3
Software Upgrade	TFTP/HTTP/HTTPS
Ethernet OAM	IEEE 802.3ah, IEEE 802.1ag, ITU-T Y.1731, RFC2544
LED Display	Power, System, Console, Link, Speed/Act
Power Input	100V ~ 240VAC, -36 ~ -60VDC
Power Consumption	< 20W
Operating Temperature	0 ~ 50°C
Humidity	5% ~ 90% (non-condensing)
Dimensions	250 x 218 x 44 mm (D x W x H)
Regulatory	FCC, CE, RoHS compliant

Application



Ordering Information

Model Name	Description
MSW-404SE1	4x 100/1000Base-x SFP slots + 4x 10/100/1000Base-T RJ45 Carrier Ethernet Switch

MSW – 404SE1
Example: MSW – 404SE1



GSW-2008MS

**8-Port 10/100/1000Base-T to
2 Port 100/1000Base-X Managed GbE
Switch with Cable Tray (Optional)**

The CTC Union GSW-2008MS is a managed Gigabit Ethernet CPE switch positioned as a layer 2 managed switch solution for high speed connectivity with popular traffic priority and management capabilities for small and medium businesses. It features 8-port 10/100/1000Base-T RJ45 and 2-100/1000Base-X SFP based fiber optics. The GSW-2008MS is designed with a high-performance switching architecture and offers wire-speed transportation capability for bandwidth-intensive applications of enterprises. More and more corporations are adapting new IT technologies over the network such as voice over IP, video conference to improve productivity and save operation expenditure. The GSW-2008MS also supports features such as VLAN, QoS, IGMP for multicast applications and network management to fulfill SMB requirements. The GSW2008 delivers a cost effective Gigabit Ethernet solution to meet the converged applications for enterprise customer's networks.

Features

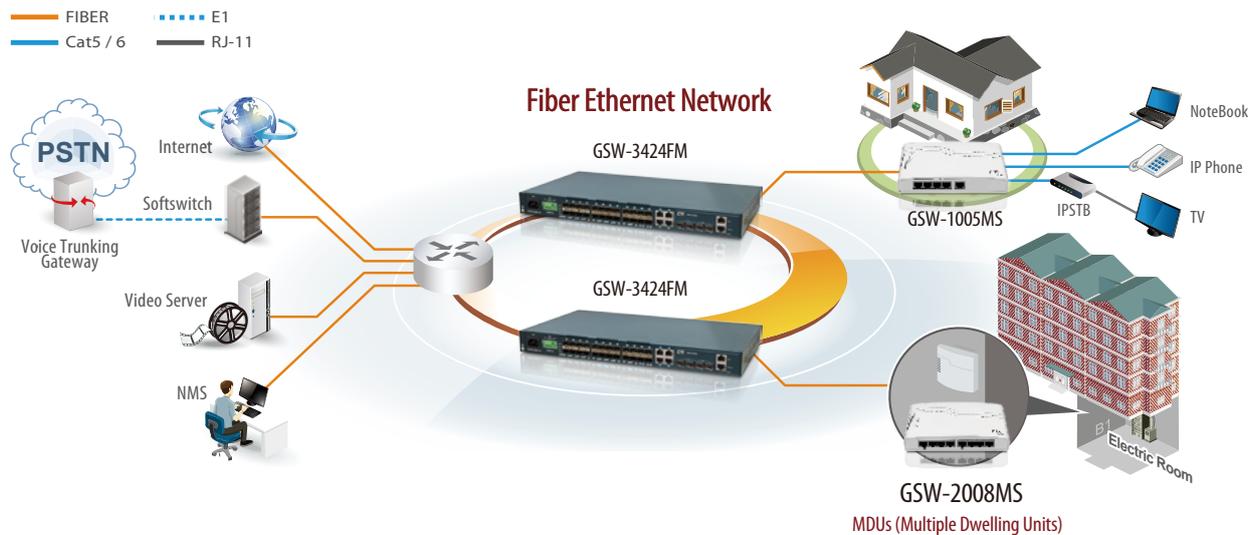
- 8-port 10/100/1000Base-T RJ45 + 2 uplink 100/1000Base-X SFP slot
- Supports 9K Bytes jumbo frame
- Supports IEEE 802.1Q tagged VLAN & Q-in-Q VLAN stacking
- Supports IEEE 802.1p priority queue
- Supports IGMP snooping v1/v2/v3
- Supports dying gasp
- Fiber Cable Tray (optional)

Specifications

Interface	8x 10/100/1000Base-T(X) RJ-45 with 2x 100/1000Base-X SFP
Filter & forward rate	10M (14880/14880pps) 100M (148800/148800pps) 1000M (1488000/1488000pps)
Transmission method	Store and Forward Switching
Standard	IEEE 802.3u, IEEE 802.3z, IEEE 802.3ae, IEEE 802.3x, IEEE 802.1p, IEEE 802.1Q, IEEE 802.1ad, IEEE 802.1x, IEEE 802.1D, IEEE 802.1w, IEEE 802.1s, IEEE 802.3ad, IEEE 802.1ab
Packet buffer	4M bits
MAC table size	8K
Jumbo frame size	9600 Bytes
VLAN feature	IEEE 802.1Q tagged VLAN MAC based VLAN Protocol based VLAN Private VLAN for port isolation IP subnet based VLAN, Voice VLAN VLAN translation, IEEE 802.1ad Q-in-Q
L2 switching protection	STP, RSTP, MSTP
Trunking	IEEE 802.3ad LACP
QoS feature	IEEE 802.1p 8 priority queues per port, Port Default Priority, User Priority, Input priority mapping, QoS Control List (QCL Mode), Storm Control for UC, BC and Unknown, Port policers, Global/VCAP (ACL) policers, Port egress shaper, Queue egress shapers, DiffServ (RFC2474) remarking, Tag remarking, Scheduler mode

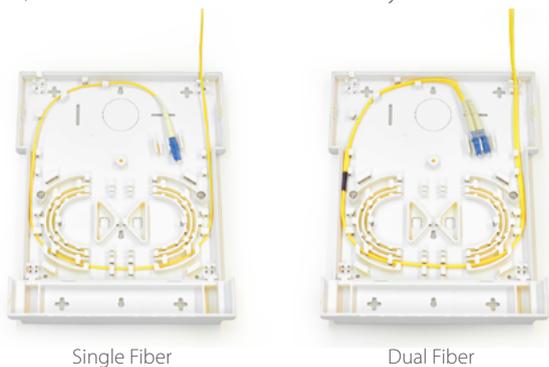
Security	Port based/single/multiple IEEE 802.1x access control MAC based access control authentication RADIUS authentication, limited MAC address learning IP/MAC binding, ACL rule based filtering TACACS+, IP source guard DHCP snooping/relay option 82 ARP inspection, IP source guard
IP multicasting	IGMP throttling, IGMP filtering, IGMP fast leave, IGMP snooping v1/v2/v3, MVR, MLD snooping v1
Storm Control Management	Unicast/Broadcast/Multicast storm suppression Web/Telnet CLI interface, Web/CLI authentication, SSH v2, HTTPs, port mirroring, system syslog, IPv6 management, NTP, text based configuration upload or download, IEEE 802.1ab LLDP, Cisco discovery filtering (CDP), sFlow, DHCP auto provisioning
SNMP agent	SNMP v1/v2c/v3
Software upgrade	TFTP/HTTP
Operating Temperature	0 ~ 50°C
Humidity	5% ~ 90% (non-condensing)
Dimensions	170 × 120 × 35mm (D × W × H)
Certification	FCC, CE, RoHS compliant

Application



Step 1

First, install fiber cable on the cable tray base.



Step 2

Use two wall-mounting holes on GSW-2008MS to install GSW-2008MS on the cable tray base. Connect the fiber cable connector to the SFP transceiver and connect the power cable.



Step 3

Finally, install the upper cover.



Ordering Information

Model Name	Description
GSW-2008MS	8-port 10/100/1000 Base-T to 2-port 100/1000 Base-X Managed GbE Switch (cable tray optional)
CT001	Cable Tray for GSW-1005MS/GSW-2008MS
CT002	Cable Tray & LAN cable protection cover for GSW-1005MS/2008MS
CH01-WMK02	Single unit Magnetic Mounting Kit



GSW-1005MS

**5-Port 10/100/1000Base-T to
1 Port 100/1000Base-X Managed GbE
Switch with Cable Tray (Optional)**

GSW-1005MS is a managed Gigabit Ethernet CPE switch designed 5-Ports 10/100/1000Base-T RJ45 and 1 port 100/1000Base-X SFP based fiber optics. The traditional transmission distance of Gigabit Ethernet over RJ45 copper can be extended up to 100km over a fiber optics interface. GSW-1005MS has a optional cable tray that allows the installer to enclose the excessive fiber within the unit, thus providing protection for the sensitive fiber at subscriber side. LEDs provide visual monitoring of Ethernet connected devices such as Ethernet home gateways, wireless access points or PC/laptop via 10/100/1000Base-T twisted pair RJ45 ports on GSW-1005MS. When GSW-1005MS is deployed as a stand-alone solution, it incorporates an easy to use Web user interface for operation, administration and maintenance both locally and remotely. All of the enabled Layer 2 features and functions of GSW-1005MS can be configured and monitored via web, CLI and SNMP management interfaces. GSW- 1005MS is particularly suitable for deploying and provisioning active Ethernet FTTX service of multi-service operators (MSO).

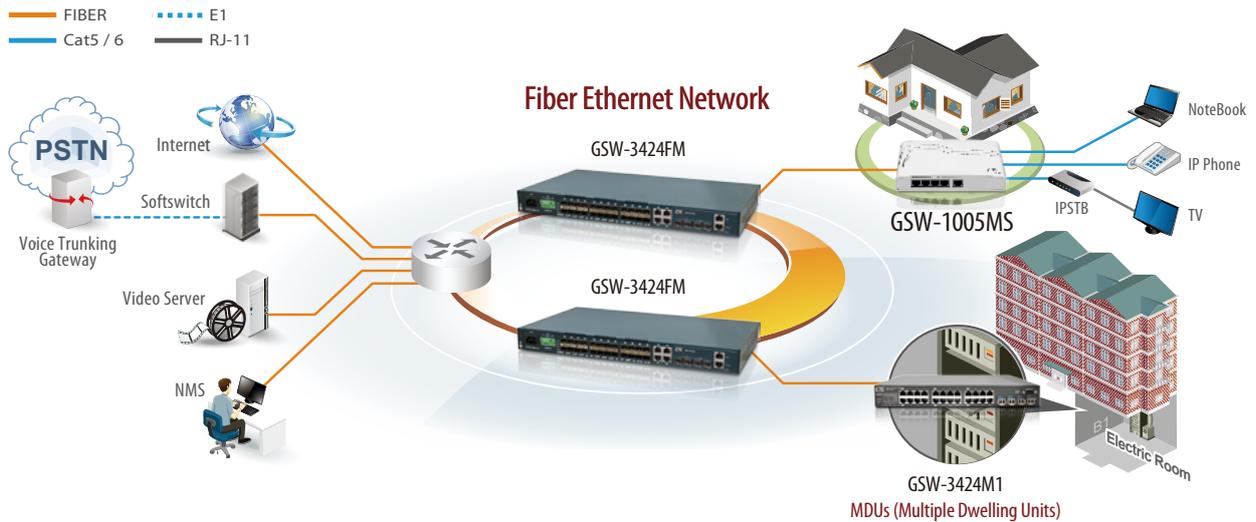
Features

- 5-Port 10/100/1000Base-T + 100/1000Base-X SFP uplink
- Supports 9.6K Bytes jumbo frame
- Supports IEEE 802.1Q tagged VLAN & Q-in-Q VLAN stacking
- Supports IEEE 802.1p priority queue
- Supports IGMP snooping v1/v2/v3
- Supports DHCP auto provisioning
- Supports dying gasp
- Fiber cable tray(optional)

Specifications

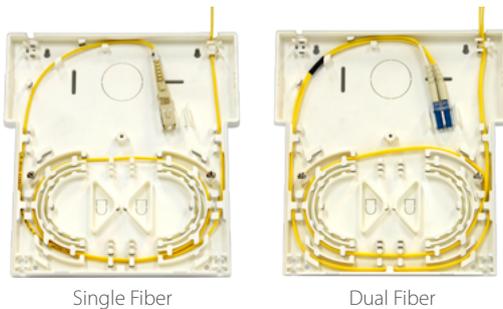
Interface	5x 10/100/1000Base-T(X) RJ-45 with 1x 100/1000Base-X SFP	Security	Port based/single/multiple IEEE 802.1x access control MAC based access control authentication RADIUS authentication, limited MAC address learning IP/MAC binding, ACL rule based filtering TACACS+, IP source guard DHCP snooping/relay option 82 ARP inspection, IP source guard
Filter & forward rate	10M (14880/14880pps) 100M (148800/148800pps) 1000M (1488000/1488000pps)	IP multicasting	IGMP throttling, IGMP filtering, IGMP fast leave, IGMP snooping v1/v2/v3, MVR, MLD snooping v1
Transmission method	Store and Forward Switching	Storm Control	Unicast/Broadcast/Multicast storm suppression
Standard	IEEE 802.3u, IEEE 802.3z, IEEE 802.3ae, IEEE 802.3x, IEEE 802.1p, IEEE 802.1Q, IEEE 802.1ad, IEEE 802.1x, IEEE 802.1ab	Management	Web/Telnet CLI interface, Web/CLI authentication, SSH v2, HTTPs, port mirroring, system syslog, IPv6 management, NTP, text based configuration upload or download, IEEE 802.1ab LLDP, Cisco discovery filtering (CDP), sFlow, DHCP auto provisioning
Packet buffer	4M bits	SNMP agent	SNMP v1/v2c/v3
MAC table size	8K	Software upgrade	TFTP/HTTP
Jumbo frame size	9600 Bytes	Operating Temperature	0 ~ 50°C
VLAN feature	IEEE 802.1Q tagged VLAN MAC based VLAN Protocol based VLAN Private VLAN for port isolation IP subnet based VLAN, Voice VLAN VLAN translation, IEEE 802.1ad Q-in-Q	Humidity	5% ~ 90% (non-condensing)
QoS feature	IEEE 802.1p 8 priority queues per port, Port Default Priority, User Priority, Input priority mapping, QoS Control List (QCL Mode), Storm Control for UC, BC and Unknown, Port policers, Global/VCAP (ACL) policers, Port egress shaper, Queue egress shapers, DiffServ (RFC2474) remarking, Tag remarking, Scheduler mode	Dimensions	170 × 120 × 35mm (D x W x H)
		Certification	FCC, CE, RoHS compliant

Application



Step 1

First, install fiber cable on the cable tray base.



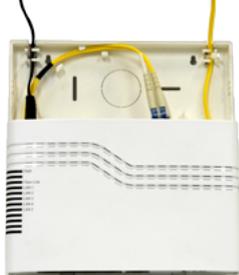
Step 2

Then, put the dust cover on the cable tray base and fasten two items with a screw securely.



Step 3

Use two wall-mounting holes on GSW-1005MS to install GSW-1005MS on the cable tray base. Connect the fiber cable connector to the SFP transceiver and connect the power cable.



Step 4

Finally, install the upper cover.



Ordering Information

Model Name	Description
GSW-1005MS	5-Port 10/100/1000Base-T to 100/1000Base-X managed Gigabit Ethernet Switch (cable tray optional)
CT001	Cable Tray for GSW-1005MS/GSW-2008MS
CT002	Cable Tray & LAN cable protection cover for GSW-1005MS/2008MS
CH01-WMK02	Single unit Magnetic Mounting Kit



FSW-2104

4x 10/100Base-TX and 100Base-FX Switch

FSW-2204

4x 10/100Base-TX and 2x 100Base-FX Switch

The FSW-2104 & FSW-2204 provide a low cost solution for non-managed Ethernet fiber switches. The FSW-2104 is a 4-port 10/100Base-TX plus 1-port 100Base-FX Fast Ethernet switch, and FSW-2204 is a 4-port 10/100Base-TX plus 2-port 100Base-FX Fast Ethernet switch. Both models are designed for small workgroup applications that require a long distance connection to the backbone, such as between buildings, offices, or within a campus location. FSW2104 & FSW-2204 provide full-duplex capability on each auto-negotiating port, for enhanced performance. A wide range of transceiver selection provides fiber connection with SC type connectors in multimode or single mode and at distance from 2 to 120km as well as BiDi (single fiber) at distances of 20, 40, 60, or 80km.

Features

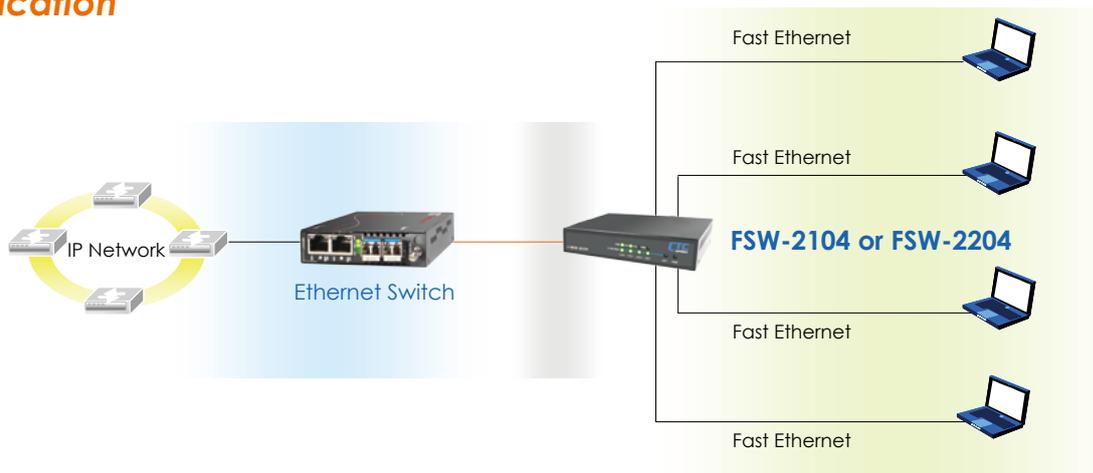
- 4x 10/100Base-TX and 100Base-FX Switch (FSW-2104)
- 4x 10/100Base-TX and 2x 100Base-FX Switch (FSW-2204)
- Auto-Negotiation
- Auto MDI/MDIX
- Forward 1552 bytes (Max.) packets
- Supports 1K MAC address
- 512k bits packets buffer memory
- Supports broadcast storm protection

Specifications

Optical Interface	Connector	1x9 (SC)
	Data rate	100Mbps
	Duplex mode	Full duplex
	Fiber	MM 50/125µm, 62.5/125µm SM 9/125µm
	Distance	MM 2km, SM 15/30/50/80/120km WDM 20/40/60/80km
Wavelength	MM	1310nm, SM 1310,1550nm
	WDM	1310Tx/1550Rx (type A) 1550Tx/1310Rx (type B)
Standards	IEEE802.3, IEEE802.3u	
Indications	LED (FX-Link, TX SPD, TX-Link/Act)	
Power Consumption	< 4W	

Dimensions	138 x 77 x 28mm (D x W x H)	
Weight	450g	
Electrical Interface	Connector	RJ-45
	Data rate	10Mbps, 100Mbps
	Duplex mode	Half / Full duplex
	Cable	10Base-T Cat.3, 4, 5, UTP, 100Base-TX Cat.5, 5e or higher
Power Input	Card	5VDC
	Standalone	AC, DC options
Temperature	0 ~ 50°C (Operating), 0 ~ 70°C (Storage)	
Humidity	10 ~ 90% non-condensing	
Certification	CE, FCC, RoHS compliant	
MTBF	65,000 hrs	

Application



Ordering Information

Model Name	Description
FSW-2104	4x 10/100Base-TX and 100Base-FX Switch
FSW-2204	4x 10/100Base-TX and 2x 100Base-FX Switch
Connector Type	Connectivity Distance
SC	002: 2km 015: 15km 030: 30km 050: 50km 080: 80km 120: 120km 20A: WDM 20km A type 20B: WDM 20km B type 40A: WDM 40km A type 40B: WDM 40km B type 60A: WDM 60km A type 60B: WDM 60km B type 80A: WDM 80km A type 80B: WDM 80km B type

Connector Type Connectivity Distance
FSW - 2104 -
 Example: FSW - 2104 - SC002



FTH4-1000MS

Web Smart GbE OAM/IP Managed Converter with Cable Tray

The FTH4-1000MS is an IEEE802.3ah OAM compliant copper to fiber Gigabit Ethernet solution designed to make conversion between 10/100/1000Base-T and 100/1000Base-X with SFP based fiber optics. The FTH4-1000MS has a built-in cable tray that allows the installer to enclose the excessive fiber within the converter. When deployed as a stand-alone solution, this media converter incorporates an easy to use Web user interface for operation, administration and maintenance, both locally and remotely. By offering IEEE802.3ah OAM compliance, this converter can be linked to any IEEE802.3ah compliant fiber switch and support loop back and dying gasp functions. All functions of this converter and the remotely connected converter can be configured and monitored via Web management, including bandwidth control, duplex, speed and VLAN configuration.

Features

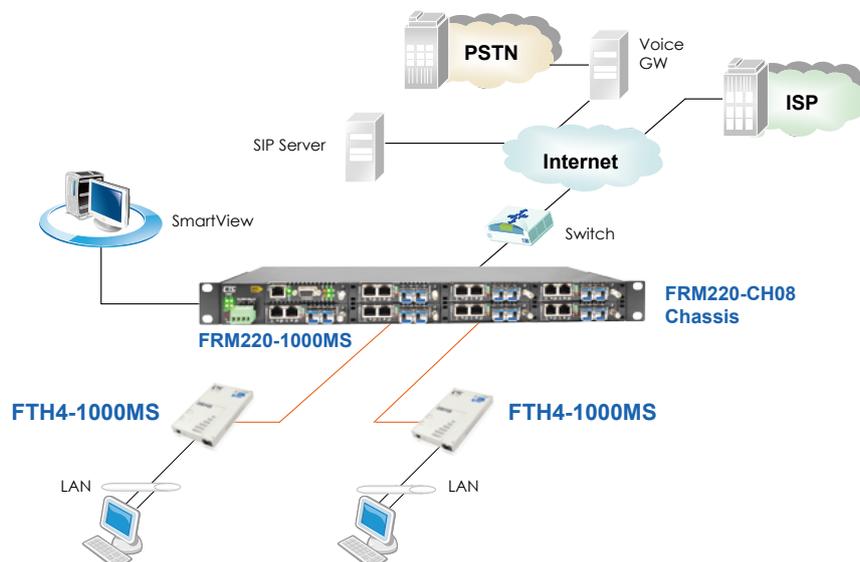
- 10/100/1000Base-T to 100/1000Base-X
- Forwarding 9k bytes Jumbo Packet
- Built-in fiber cable tray
- Ingress/Egress Bandwidth control
- Supports 802.3ah OAM/IP In-band management
- Firmware upgrade via Web
- Dying gasp (remote power failure detection)
- Supports Link Fault Pass-Through (LFPT) Function
- Supports Auto Laser Shutdown (ALS) Function
- Allow IP settings via Web management
- Supports On-Line F/W upgrade (local) by the Web manager
- Supports 16 Tag VLAN Group
- RMON counters
- Auto-Cross over for MDI/MDIX in TP port
- Auto-Negotiation or Manual mode in TP port
- Supports flow control Enable or Disable

Specifications

Optical Interface	Connector	SFP LC
	Data rate	100/1000Mbps
	Duplex mode	Full duplex
	Fiber	MM 50/125 μ m, 62.5/125 μ m SM 9/125 μ m
	Distance	MM 2km, SM 15/30/50/80/120km WDM 20/40/60/80km
Wavelength	MM	1310nm, SM 1310,1550nm
	WDM	1310Tx/1550Rx (type A) 1550Tx/1310Rx (type B)
Standards	IEEE802.3, IEEE802.3u IEEE802.3ab, IEEE802.3z, IEEE802.3x	
Indications	LED (Power, FX-Link, LAN Speed, LAN Link)	
Power Consumption	< 4W	

Dimensions	220 x 140 x 27mm (D x W x H)	
Weight	0.72kg	
Electrical Interface	Connector	RJ-45
	Data rate	10Mbps, 100Mbps, 1000Mbps
	Duplex mode	Half / Full duplex
Cable	10Base-T Cat.3, 4, 5, UTP, 100Base-TX Cat.5, 5e or higher	
	Power	Adapter
Temperature	0 ~ 60°C (Operating), -10 ~ 70°C (Storage)	
Humidity	10 ~ 90% non-condensing	
Certification	CE, FCC, RoHS compliant	
MTBF	65,000 hrs	

Application



QoS with Four Priority Queues

The QoS (Quality Of Service) function provides four priority queues to support different classifications of traffic. High priority packet streams experience less delay inside the FTH4-1000MS, which supports lower latency for certain delay-sensitive traffic. The FTH4-1000MS can classify the packet as one of the four priorities according to VIP port.

Dying Gasp

The Dying Gasp features enables FTH4-1000MS media converter to send out a SNMP trap to alert the SNMP manager in the event of remote power failure.

Remote Firmware Upgrade

The remote firmware upgrade feature enables the media converter to be updated remotely via firmware upgrade including the products that were already installed in the field. This feature eliminates the need for the users to ship the product back to the supplier.

Bandwidth Control

The Bandwidth Control function allows users to set the bandwidth of FTH4-1000MS media converter for both ingress and egress rate and can be allocated a variety of rates up to full bandwidth capability of the devices (64Kbps ~ 1000Mbps).

Broadband Services

The FTH4-1000MS product philosophy allows the end user to follow and benefit fully from the fast developments in Fiber to the home-networking solutions. The CPE is the interface between the digital broadband network and the user peripheral equipment, such as routers, wireless access points, servers, and printers. With generations of computers and home networking equipment coming and going the FTH4-1000MS will be a constant and reliable factor for the delivery of broadband data services.

These services are not limited to today's broadband internet applications. In the next few years, end-users will also benefit from next generation health-care, security, communication and infotainment services. The FTH4-1000MS CPE platform fully supports today's services and is ready for the next wave of new broadband services. Flexibility is key, since the CPE functionality must be matched to the requirements of those new services.

Quick Installation

The installation of the wall-mount unit of FTH4-1000MS CPE is swift and straightforward. Because of its size and ideal dimensions, the FTH4-1000MS CPE can be positioned easily at the user residence or home. The FTH4-1000MS design allows easy access for mounting and does not need the small elements, making the installation process predictable and hassle-free. The wall-mount unit, including integrated fiber tray, not only makes fiber handling and termination easy and robust, but also eliminates the need for optical patch cords.



Ordering Information

Model Name	Description
FTH4-1000MS	10/100/1000Base-T to 100/1000Base-X Web Smart OAM/IP managed media converter w/ cable tray



FTH4-100M

Web Smart FE OAM/IP Managed Converter with Cable Tray

The FTH4-100M is an IEEE802.3ah OAM compliant copper to fiber Fast Ethernet solution designed to make conversion between 10/100Base-TX and 100Base-FX fiber optics. The FTH4-100M has a built-in cable tray that allows the installer to enclose the excessive fiber within the converter. When deployed as a stand-alone solution, this media converter incorporates an easy to use Web user interface for operation, administration and maintenance, both locally and remotely. By offering IEEE802.3ah OAM compliance, this converter can be linked to any IEEE802.3ah compliant fiber switch and support loop back and dying gasp functions. All functions of this converter and the remotely connected converter can be configured and monitored via Web management, including bandwidth control, duplex, speed and VLAN configuration.

Features

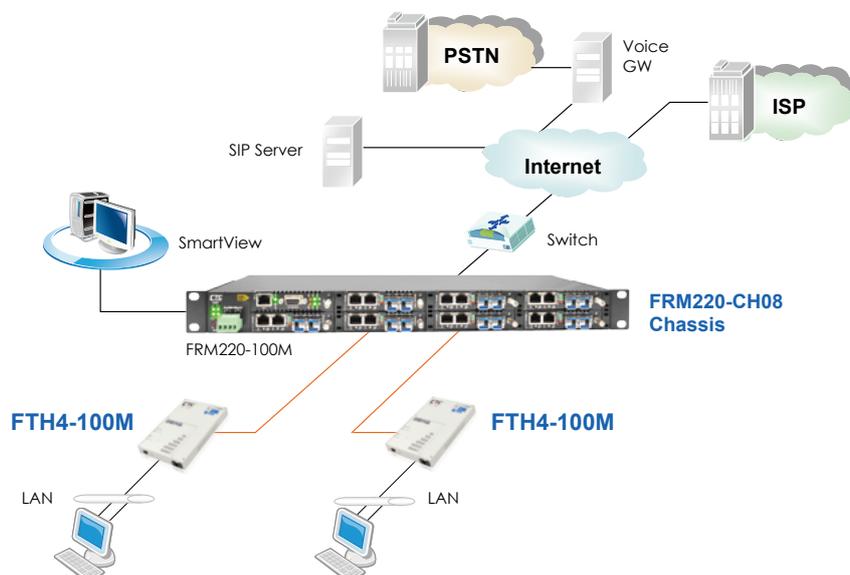
- 10/100Base-TX to 100Base-FX Converter
- Forwarding 9k bytes Jumbo Packet
- Built-in fiber cable tray
- Ingress / Egress Bandwidth control
- Support IEEE802.3ah-OAM/IP in-band management
- Firmware upgrade via Web
- Dying gasp (remote power failure detection)
- Supports Link Fault Pass-Through (LFPT) Function
- Supports Auto Laser Shutdown (ALS) Function
- Allow IP settings via Web management
- Supports On-Line F/W upgrade (local) by the Web manager
- Supports 16 Tag VLAN Group
- RMON counters
- Auto-Cross over for MDI/MDIX in TP port
- Auto-Negotiation or Manual mode in TP port
- Supports flow control Enable or Disable

Specifications

Optical Interface	Connector	1x9 (SC, ST, FC) (Option)
	Data rate	100Mbps
	Duplex mode	Full duplex
	Fiber	MM 50/125 μ m, 62.5/125 μ m SM 9/125 μ m
	Distance	MM 2km, SM 15/30/50/80/120km WDM 20/40/60/80km
	Wavelength	MM 1310nm, SM 1310,1550nm WDM 1310Tx/1550Rx (type A) 1550Tx/1310Rx (type B)
Standards	IEEE802.3, IEEE802.3u, IEEE802.3ah, IEEE802.3x	
Indications	LED (Power, FX-Link, LAN Speed, LAN Link)	
Power Consumption	< 4W	

Dimensions	220 x 140 x 27mm (D x W x H)	
Weight	0.72kg	
Electrical Interface	Connector	RJ-45
	Data rate	10Mbps, 100Mbps
	Duplex mode	Half / Full duplex
	Cable	10Base-T Cat.3, 4, 5, UTP, 100Base-TX Cat.5, 5e or higher
Power	Adapter	Output Voltage: 12VDC
Temperature	0 ~ 60°C (Operating), -10 ~ 70°C (Storage)	
Humidity	10 ~ 90% non-condensing	
Certification	CE, FCC, RoHS compliant	
MTBF	65,000 hrs	

Application



QoS with Four Priority Queues

The QoS (Quality Of Service) function provides four priority queues to support different classifications of traffic. High priority packet streams experience less delay inside the FTH4-100M, which supports lower latency for certain delay-sensitive traffic. The FTH4-100M can classify the packet as one of the four priorities according to VIP port.

Dying Gasp

The Dying Gasp features enables FTH4-100M media converter to send out a SNMP trap to alert the SNMP manager in the event of remote power failure.

Remote Firmware Upgrade

The remote firmware upgrade feature enables the media converter to be updated remotely via firmware upgrade including the products that were already installed in the field. This feature eliminates the need for the users to ship the product back to the supplier.

Bandwidth Control

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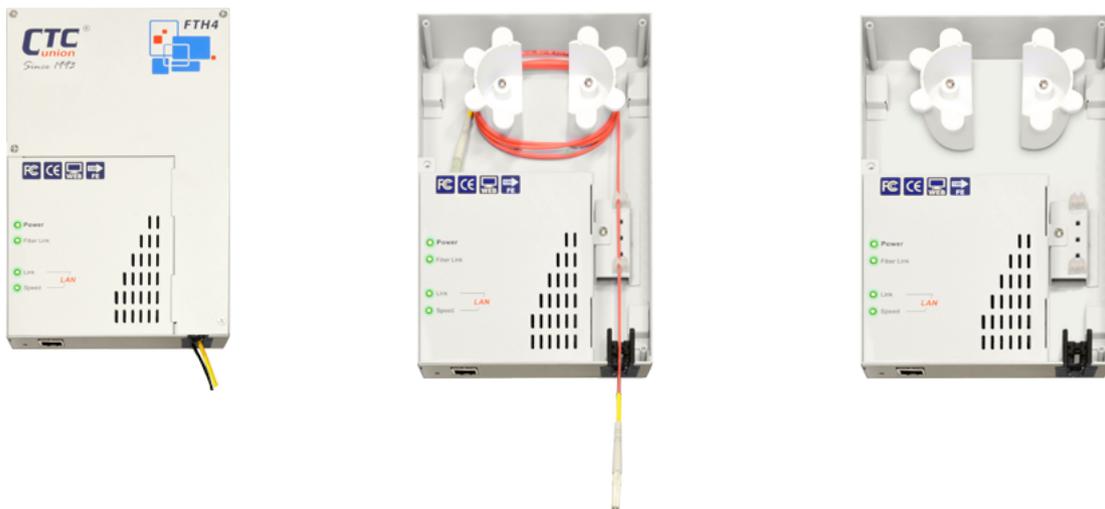
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These services are not limited to today's broadband internet applications. In the next few years, end-users will also benefit from next generation health-care, security, communication and infotainment services. The FTH4-100M CPE platform fully supports today's services and is ready for the next wave of new broadband services. Flexibility is key, since the CPE functionality must be matched to the requirements of those new services.

Quick Installation

The installation of the wall-mount unit of FTH4-100M CPE is swift and straightforward. Because of its size and ideal dimensions, the FTH4-100M CPE can be positioned easily at the user residence or home. The FTH4-100M design allows easy access for mounting and does not need the small elements, making the installation process predictable and hassle-free. The wall-mount unit, including integrated fiber tray not only makes fiber handling and termination easy and robust, but also eliminates the need for optical patch cords.



Ordering Information

Model Name	Description
FTH4-100M	10/100Base-TX to 100Base-FX Web Smart OAM/IP managed media converter w/ cable tray

Preliminary



GW-732FW

Gigabit Ethernet Fiber IAD Gateway with IEEE 802.11ac WiFi

The GW-732FW is the new generation single mode Fiber and VoIP-based IAD (Internet Access Device), which is designed to interoperate with end-to-end fiber from major vendors to meet the worldwide market requirements of triple-play services. It is Class 1 Laser product complying with EN 60825-1. The integrated Ethernet switch features automatic crossover-correction and auto-negotiation for easy connection to user's PCs or LAN environment. The GW-732FW model also features a built-in IEEE 802.11ac WLAN which brings relief to those troublesome wirings. Two lines of telephony service are provided using VoIP technology with SIP signaling protocol.

Features

Voice Features

- G.711 a/μ-law, G.729A/B, G.726, G.723.1
- DTMF Detection and Generation
- Silence Suppression & Detection
- Comfort Noise Generation (CNG)
- Voice Activity Detection (VAD)
- Echo Cancellation (G.165/G.168)
- Dynamic Jitter Buffer
- Call progress tone generation (FXS)
- Programmable Gain Control
- Inbuilt Local Mixer

SIP Method Support

- ACK, BYE, CANCEL, INFO, INVITE, MESSAGE, NOTIFY, OPTIONS, PING,
- PRACK, PUBLISH, REFER, REGISTER, SUBSCRIBE, UPDATE

SIP Call Features

- Peer to Peer Call
- Call Hold / Retrieve
- Call Waiting
- Call Pick Up
- Call Park / Retrieve (SIP Server Required)
- Call Forward - unconditional, busy, no answer
- Call Transfer - attended, unattended
- Do Not Disturb
- Speed Dialing
- Repeat Dialing
- Three-way Calling
- MWI (RFC-3842)
- Hot Line and Warm Line

IPTV Application

- IGMP Snooping
- Virtual LAN (VLAN)
- Quality of Service (QoS)

SIP Call Management

- Support Outbound Proxy
- SIP Registration Failover Mechanism
- Group Hunting
- Privacy Mechanism / Private Extensions to SIP
- Session Timers (Update / Re-invite)
- DNS SRV Support
- Call Types: Voice / Modem / FAX
- User Programmable Dial Plan Support
- Automatic Calling Number Manipulation
- CDR Client
- Manual Peer Table (for P2P calls)
- E.164 Numbering, ENUM support

SIP Account Management

- By port registration
- By device registration (share account)
- Mixed mode (Hunt number for inbound, by port number for outbound)
- Invite with Challenge
- Register by SIP Server IP Address or Domain Name
- Support RFC3986 SIP URI format

Telephony Specifications

- In-Band DTMF, Out-of-Band DTMF Relay (RFC2833 or SIP INFO)
- DTMF / PULSE Dial Support
- Caller ID Generation / Detection:
 - DTMF
 - FSK-Bellcore Type 1 & 2
 - FSK-ETSI Type 1 & 2
 - FSK-NTT
 - FSK: Calling Name, Number, Date and Time, vMWI
- FXS metering pulse:
 - Polarity Reversal
 - 12kHz calling tone
 - 16kHz calling tone
- Polarity Reversal Generation (FXS)
- T.30 FAX Bypass to G.711, T.38 Real Time FAX Relay
- ROH Tone (Receiver Off-Hook Tone @ 480 Hz)
- Loop Current Suppression

Wireless

- Compliant with IEEE802.11b/g/n/ac, 2.4G/5G concurrent operation
- Operating frequency 2.4 G/5 GHz
- Auto rate adaptive
- Multi-SSID
- Broadcast SSID control
- 64 / 128 bits WEP supported for encryption
- Wireless Security with WPA-PSK / WPA2-PSK
- WDS repeater function
- Wi-Fi Multi-Media (WMM) for AP mode
- WPS (Wi-Fi Protected Setup) for easy setup

Physical interface

- Combo WAN : GbE Ethernet copper or fiber SFP
- LAN : 4-Port RJ-45 10/100/1000 Ethernet
- Antenna : 2 x 2dBi detachable antenna
- Telephone:2-port FXS
- Factory default reset button, WPS push button, Power jack, Power switch
- USB 2.0 Host interface x2

LED Indicators

- Power, Provision/Alarm, Register, WAN, WLAN, LAN1~LAN4, USB, Phone off-hook 1~2, WPS

Network Security Specifications

- DIGEST Authentication
- MD5 Encryption
- DoS Protection (configurable)
- Firewall: MAC filter, IP/Port filter, URL filter

Device Management

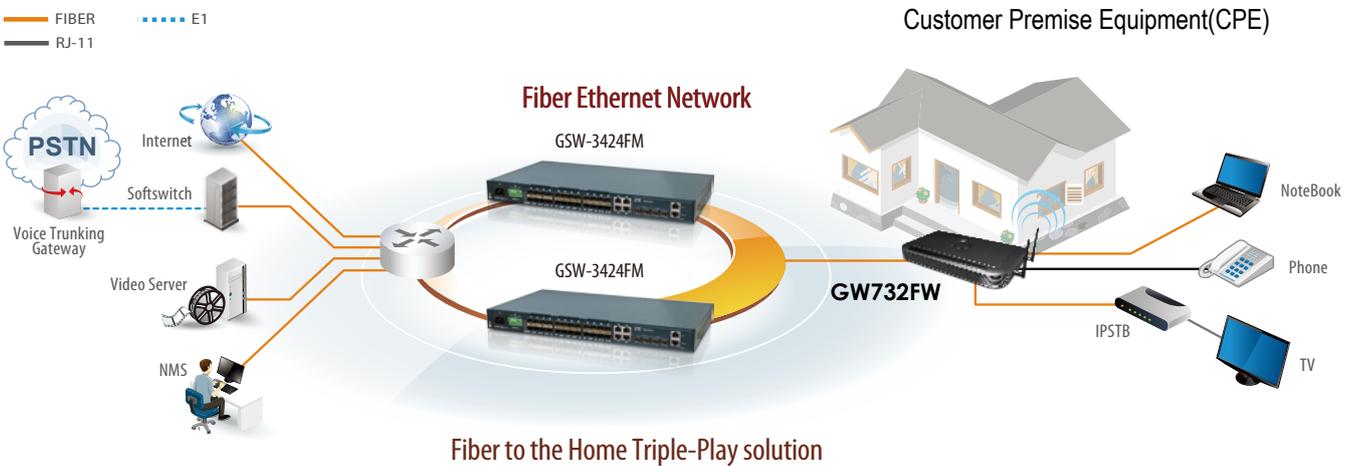
- WEB, TELNET
- TR-069, TR-098, TR-104, TR-111
- ACS info via DHCP options
- Two levels WEB login account
- WEB languages: English, TC
- System Information
- Per call RTP packet summary
- PING inquiry
- Syslog

Specifications

Protocol	SIP (RFC3261)
Model	2FXS
Combo WAN	GbE Ethernet copper or fiber (SFP)
LAN	4-port RJ-45 10/100/1000M Ethernet
Wi-Fi	IEEE 802.11b/g/n/ac, 2.4G/5G concurrent operation
Telephony Interface	RJ-11 connector
Power	AC 100~240V 50/60Hz input, DC 12V/2A output

Power Consumption	< 15W
Dimensions	155 x 226 x 80mm(D x W x H)
Weight	480g
Temperature	0 ~ 45°C (Operating), -25 ~ 75°C (Storage)
Humidity	Up to 90% RH, non-condensing
Certification	CE, FCC, RoHS
MTBF	57,000 hours

Application



Ordering Information

Model Name	Description
GW732FW	Fiber IAD Gateway with IEEE 802.11ac Wi-Fi



GW-532FW

**Gigabit Ethernet Fiber IAD Gateway
with IEEE 802.11n WiFi**

The GW532FW is a single mode Fiber and VoIP-based IAD (Internet Access Device), which is designed to interoperate with end-to-end fiber from major vendors to meet the worldwide market requirements of triple-play services. It is Class 1 Laser product complying with EN 60825-1. The integrated Ethernet switch features automatic crossover-correction and auto-negotiation for easy connection to user's PCs or LAN environment. The GW532FW model also features a built-in 802.11n WLAN which brings relief to those troublesome wirings. Two lines of telephony service are provided using VoIP technology with SIP and MGCP signaling protocol.

Features

Voice Features

- G.722, G.711 a/ μ -law, G.729A/B, G.726, G.723.1 GSM 6.10 Full Rate, iLBC 13.3 kbps
- DTMF Detection and Generation
- Silence Suppression & Detection
- Comfort Noise Generation (CNG)
- Voice Activity Detection (VAD)
- Echo Cancellation (G.165/G.168)
- Dynamic Jitter Buffer
- Call progress tone generation (FXS)
- Programmable Gain Control
- Inbuilt Local Mixer
- ITU-T V.152 Voice-band Data over IP Networks

SIP Method Support

- ACK, BYE, CANCEL, INFO, INVITE, MESSAGE, NOTIFY, OPTIONS, PING, PRACK, PUBLISH, REFER, REGISTER, SUBSCRIBE, UPDATE

SIP Call Features

- Peer to Peer Call
- Call Hold / Retrieve
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- Call Pick Up
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- Call Forward - unconditional, busy, no answer
- Call Transfer - attended, unattended
- Do Not Disturb
- Speed Dialing
- Repeat Dialing
- Three-way Calling
- MWI (RFC-3842)
- Hot Line and Warm Line

IPTV Application

- IGMP Snooping
- Virtual LAN (VLAN)
- Quality of Service (QoS)

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- Support Outbound Proxy
- SIP Registration Failover Mechanism
- Group Hunting
- Privacy Mechanism / Private Extensions to SIP
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- Call Types: Voice / Modem / FAX
- User Programmable Dial Plan Support
- Automatic Calling Number Manipulation
- CDR Client
- Manual Peer Table (for P2P calls)
- E.164 Numbering, ENUM support

SIP Account Management

- By port registration
- By device registration (share account)
- Mixed mode (Hunt number for inbound, by port number for outbound)
- Invite with Challenge
- Register by SIP Server IP Address or Domain Name
- Support RFC3986 SIP URI format

Telephony Specifications

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 - FSK-Bellcore Type 1 & 2
 - FSK-ETSI Type 1 & 2
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- FXS metering pulse:
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- Polarity Reversal Generation (FXS)
- T.30 FAX Bypass to G.711, T.38 Real Time FAX Relay
- ROH Tone (Receiver Off-Hook Tone @ 480 Hz)
- Loop Current Suppression

Wireless

- Compliant with IEEE802.11b/g/n, 2T2R
- Operating frequency 2.4GHz
- Auto rate adaptive
- Multi-SSID
- Broadcast SSID control
- 64 / 128 bits WEP supported for encryption
- Wireless Security with WPA-PSK / WPA2-PSK
- WDS repeater function
- Wi-Fi Multi-Media (WMM) for AP mode
- WPS (Wi-Fi Protected Setup) for easy setup

Physical interface

- Combo WAN : Gigabit Ethernet copper or fiber SFP
- LAN : 4-Port RJ-45 10/100/1000 Ethernet
- Antenna : 2 x 2dBi detachable antenna
- Telephone:2-port FXS
- Factory default reset button, WPS push button, Power jack, Power switch
- USB 2.0 Host interface x 2

LED Indicators

- Power, Provision/Alarm, Register, WAN, WLAN, LAN1~LAN4, USB, Phone off-hook 1~2, WPS

Network Security Specifications

- DIGEST Authentication
- MD5 Encryption
- DoS Protection (configurable)
- Firewall: MAC filter, IP/Port filter, URL filter

Device Management

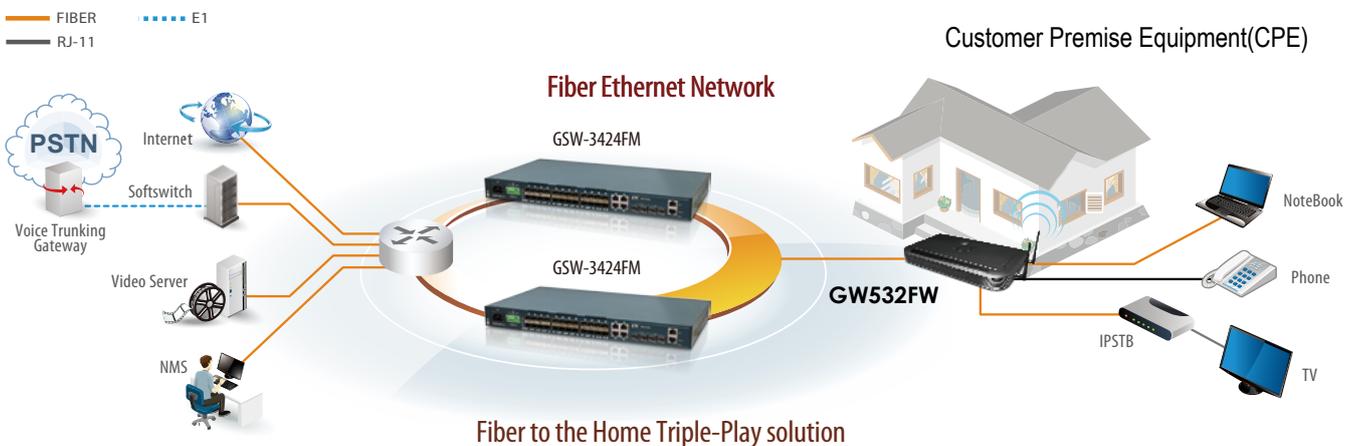
- WEB, TELNET
- TR-069, TR-098, TR-104, TR-111
- ACS info via DHCP options
- Two levels WEB login account
- WEB languages: English, TC
- System Information
- Per call RTP packet summary
- PING inquiry
- Syslog

Specifications

Protocol	SIP (RFC3261)
Model	2FXS
Combo WAN	Gigabit Ethernet copper or fiber (SFP)
LAN	4-port RJ-45 10/100/1000 Ethernet
Wi-Fi	IEEE 802.11b/g/n, 2T2R
Telephony Interface	RJ-11 connector
Power	AC 100~240V 50/60Hz input, DC 12V/2A output

Power Consumption	< 15W
Dimensions	155 x 226 x 80mm(D x W x H)
Weight	480g
Temperature	0 ~ 45°C (Operating), -25 ~ 75°C (Storage)
Humidity	Up to 90% RH, non-condensing
Certification	CE, FCC, RoHS
MTBF	57,000 hours

Application



Ordering Information

Model Name	Description
GW532FW	Fiber IAD Gateway with IEEE 802.11 n Wi-Fi



Fiber Transceiver

Hot-Pluggable
Fiber Transceiver Modules

SFP Transceivers are high performance, cost effective modules for serial optical data communications applications specified for a single mode at 1.25/2.5Gbps. They operate with +3.3V/5V power supplies and are intended for single mode or multi-mode fiber, operating at a nominal wavelength of 1310(850) nm. Each SFP Transceiver consists of a transmitter optical subassembly, a receiver optical subassembly and an electrical subassembly. SFP Transceivers are duplex SC/ LC transceiver designed for use in Gigabit Ethernet and to provide an IEEE-802.3z compliant link for 1.25/2.5Gbps short or long reach applications.

Features

- SFP & SFP+ Multi-Source Agreement compliant
- Single 3.3V power supply
- Duplex or Simplex LC receptacle connector
- Up to 10Gb/s bi-directional data links
- Class 1 laser safety standard IEC825 compliant
- Hot Pluggable
- Lower power dissipation

155Mbps 100Base-X Dual fiber SFP

Model Name	Wavelength(nm)	Media	Optical Power(dBm)	Sensitivity(dBm)	Power Budget(dB)	Distance	DDMI
SFM-5000-L31	1310	MMF	-20~-14	-32	12	2km	
SFM-5000-L31-DD	1310	MMF	-20~-14	-32	12	2km	✓
SFS-5030-L31	1310	SMF	-15~-8	-34	19	30km	
SFS-5030-L31-DD	1310	SMF	-15~-8	-34	19	30km	✓
SFS-5050-L31	1310	SMF	-5~0	-35	30	50km	
SFS-5050-L31-DD	1310	SMF	-5~0	-35	30	50km	✓

155Mbps 100Base-BX, Single fiber Bi-Directional SFP

Model Name	Wavelength(nm)	Media	Optical Power(dBm)	Sensitivity(dBm)	Power Budget(dB)	Distance	DDMI
SFS-5020-WA	T1310 / R1550	SMF	-14~-8	-32	18	20km	
SFS-5020-WA-DD	T1310 / R1550	SMF	-14~-8	-32	18	20km	✓
SFS-5020-WB	T1550 / R1310	SMF	-14~-8	-32	18	20km	
SFS-5020-WB-DD	T1550 / R1310	SMF	-14~-8	-32	18	20km	✓

1.25Gbps (1000Base-X, Fiber Channel) SFP

Model Name	Wavelength(nm)	Media	Optical Power(dBm)	Sensitivity(dBm)	Power Budget(dB)	Distance	DDMI
SFM-7000-S85	850	MMF	-9.5~-4	-17	7.5	550m	
SFM-7000-S85-DD	850	MMF	-9.5~-4	-17	7.5	550m	✓
SFM-7000-L31	1310	MMF	-9~-1	-19	10	2km	
SFM-7000-L31-DD	1310	MMF	-9~-1	-19	10	2km	✓
SFS-7010-L31	1310	SMF	-9.5~-3	-20	10.5	10km	
SFS-7010-L31-DD	1310	SMF	-9.5~-3	-20	10.5	10km	✓
SFS-7020-L31	1310	SMF	-8~-2	-23	15	20km	
SFS-7020-L31-DD	1310	SMF	-8~-2	-23	15	20km	✓
SFS-7030-L31	1310	SMF	-7~-1	-24	17	30km	
SFS-7030-L31-DD	1310	SMF	-7~-1	-24	17	30km	✓
SFS-7040-L31	1310	SMF	-2~3	-23	21	40km	
SFS-7040-L31-DD	1310	SMF	-2~3	-23	21	40km	✓

1.25Gbps (1000Base-X, Single Fiber Bi-Directional) SFP

Model Name	Wavelength(nm)	Media	Optical Power(dBm)	Sensitivity(dBm)	Power Budget(dB)	Distance	DDMI
SFS-7020-WA	T1310 / R1550	SMF	-7~-2	-22	15	20km	
SFS-7020-WA-DD	T1310 / R1550	SMF	-7~-2	-22	15	20km	✓
SFS-7020-WB	T1550 / R1310	SMF	-7~-2	-22	15	20km	
SFS-7020-WB-DD	T1550 / R1310	SMF	-7~-2	-22	15	20km	✓
SFS-7040-WA	T1310 / R1550	SMF	-3~-2	-23	20	40km	
SFS-7040-WA-DD	T1310 / R1550	SMF	-3~-2	-23	20	40km	✓
SFS-7040-WB	T1550 / R1310	SMF	-3~-2	-23	20	40km	
SFS-7040-WB-DD	T1550 / R1310	SMF	-3~-2	-23	20	40km	✓

10Gbps SFP+

Model Name	Wavelength(nm)	Media	Optical Power(dBm)	Sensitivity(dBm)	Power Budget(dB)	Distance	DDMI
SFM-1000-SR85	850	MMF	-6.5~-1	-11.1	4.6	300m	✓
SFS-1010-LR31	1310	SMF	-8.2~-0.5	-14.4	6.2	10km	✓
SFS-1040-LR31	1550	SMF	-3~-3	-15.8	12.8	40km	✓

10Gbps XFP

Model Name	Wavelength(nm)	Media	Optical Power(dBm)	Sensitivity(dBm)	Power Budget(dB)	Distance	DDMI
XFM-1000-SR85	850	MMF	-6.5~-1	-11.1	4.6	300m	✓
XFS-1010-LR31	1310	SMF	-8~0	-14.4	4.6	10km	✓
XFS-1040-ER55	1550	SMF	-3~-3	-15.8	11.1	40km	✓

SFP Naming Rule

