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FTTX Solutions Product Catalogue



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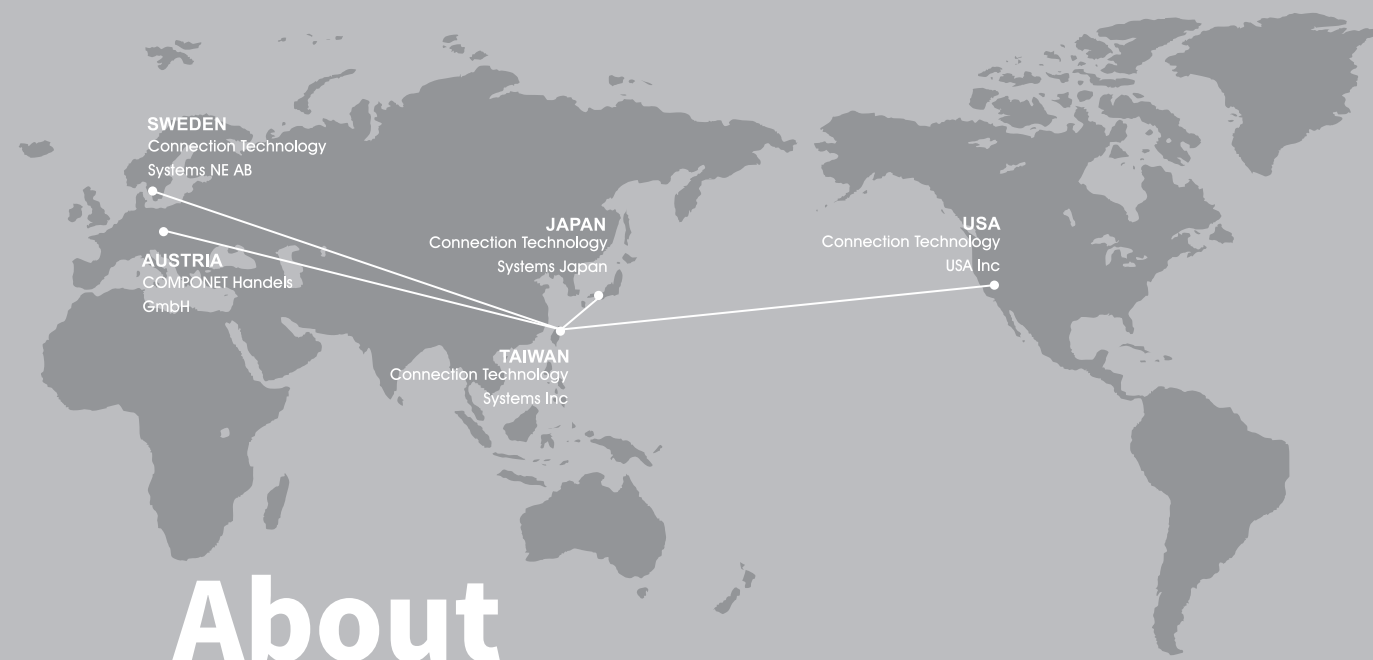
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1x9 Fixed Fiber Transceiver
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About CTS

Founded In 1998,

Connection Technology System Inc. (CTS) is consist of a group of design, technical, and marketing professionals with diverse backgrounds from the communication field and is focused on the market segments of FTTX, Triple-Play, and surveillance networking. For the past 20 years, CTS has insisted on keeping “Differentiation and Glocalization”, and that motto, along with the spirit of “Pursuing Excellence”, have led us to become one of the leading solution providers for telecoms, network operators, and broadband service providers all over the world.

To achieve the goal of providing the best support for customers worldwide and to meet regional FTTX market demands, CTS established our first two branches in Sweden and the USA in 2010. Followed by the successful stories and positive reputation from Europe and the USA, CTS founded the Japanese branch in 2015 to expand our “Glocalization” strategy to Asian markets. Today, CTS has become a global company with a proven track record in the optical communication industry, and we are still willing to move the extra mile to meet local market demands and understand customers’ different challenges and needs.

Based on the advantages and experiences accumulated from FTTX markets, CTS has also focused on the research and development of “Internet of Things” (IoT) for years, and launched a new corporate brand called SiMPNiC at the end of 2017. The new brand is dedicated to providing the most cutting-edge IoT solutions to meet growing demands for smart living. Different from other manufacturers who prefer mass production for lower costs, CTS insists on customizing specific solutions based on customers’ demands and chooses particular markets in order to establish deeper relations with local operators and further enhanced cooperation.

It is going to be the 20th anniversary of CTS in 2018. Throughout the two decades, CTS has always prioritize our commitment in providing the best solutions, services and support to fulfill our customers’ demands. This vision will never change, and CTS will continue to hold onto our commitment and develop more flexible, high-quality and cost-effective solutions to the demands coming from our customers around the world.

Why CTS



Customer Comes First

For CTS, the key foundation to our success is established by our customers. As a company that delivers FTTX networking solutions to customers all over the world, CTS is always making the effort to understand users’ demands, foresee future applications together with our customers, and provide correspondent solutions. Different from “box moving suppliers”, CTS positions ourself as a “Solution Provider” creating premium service programs that include network application consulting services, remote and on-site engineering service, and after-sales service. These programs ensure CTS’ customers to receive Value-Added Knowledge Solutions and assist them to become a highly reliable network provider.



Glocalization

CTS aims to be outstanding in the market . In order to achieve this ambitious goal, CTS concentrates on differentiation and glocalization as our major values. Being a vendor of Ethernet-Powered solutions, CTS always follows global standards to ensure the functionality and interoperability and CTS also combines this with strong focus on customized services and localizes the solutions based on customer’s requirements and expectations. CTS’ flexible organization and willingness to learn and listen to customers enable us to provide the best solution based on global standards as well as local demands.



Stability and Reliability

The foundation of CTS is a range of innovative and flexible products under constant development and own managed manufacturing. CTS needs to be sure that all products delivered to customers perform with the best possible quality and comply with international standards. To guarantee this, CTS conducts a wide range of tests on both hardware and software before shipment. Our professional in-house Research andDevelopment team, Systems Quality Assurance team, and Production Management team ensure the stability and reliability of all CTS’ products. Owing to this continuous effort, CTS has earned a good reputation in the market and has become a widely respected company in the optical communication industry.



Commitment

For the past 20 years, CTS has dedicated ourself to listening and understanding customers’ demands. CTS never walks away from challenges encountered, and the never-ending commitment to partners has made CTS one of the most preferred suppliers to both small and large networks globally. Another outcome of the same commitment is a broad product range consisting of flexible, cost-efficient solutions for all Telecom, FTTX network operators, Broadband and CATV service providers and Surveillance companies using optical fiber communication to build their network infrastructure and deliver services to their end-users.

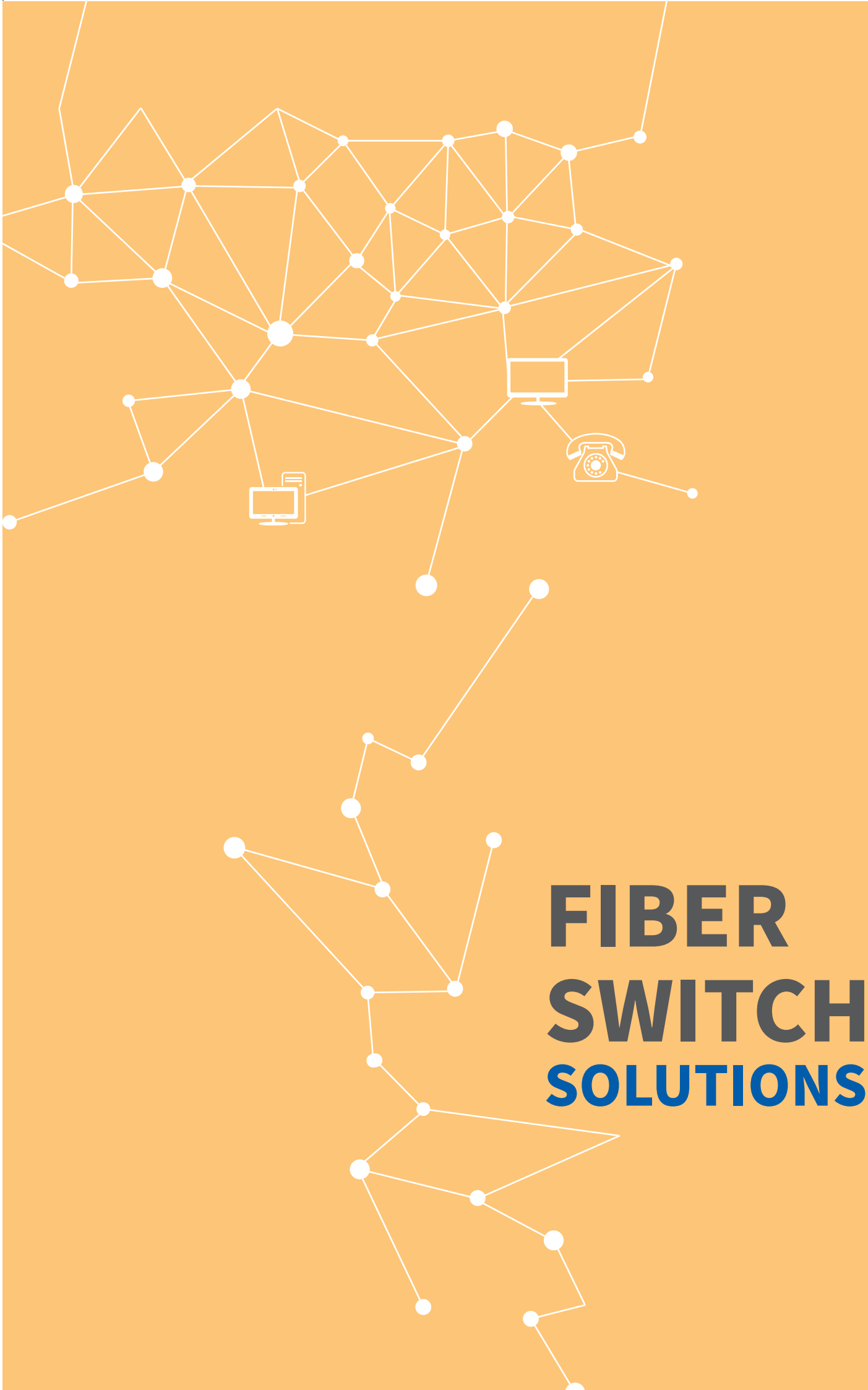


Promise to Corporate Social Responsibilities

As a member of the global society, CTS has been concerned and taken responsibility for environmental sustainability and has been committed to developing Green Products for years. CTS is also participating in a number of dedicated projects with local communities and non-profit organizations voluntarily contributing to social groups who may need extra help and care. Finally, CTS considers all our employees as our most significant asset and puts a considerable amount of effort in employees’ welfare, health, and safety of the working place, including facilitating a best possible workplace, also from a sustainability point of view.

Icon Descriptions

 IPv4 IPv6	Dual Stack Supports both IPv4 and IPv6	 WiFi AC	802.11ac Wi-Fi Supports the latest 802.11ac Wi-Fi technology
 Power down trap	Power Down Trap A notification will be sent to the NOC when experiencing unexpected power failures	 Green	Green Ethernet Power saving technology
 Power redundancy	Power Redundancy Keeps the device working when facing unexpected power module failures	 Lightning Protection	Lightning Protection All ports are protected from power surges due to lightning or improper electrical wiring
 DHCP auto Provision	DHCP Auto Provisioning Automatically upgrades the firmware and configuration from DHCP server	 Dual Image	Dual Image Prevents your device from turning into a brick due to firmware upgrade failures
 Dual rate fiber	Dual Rate Fiber Automatically senses and adjusts the fiber speed between 100Mbps and 1000Mbps	 VoIP	VoIP Supports FXS ports for VoIP services
 Combo Port	Combo Port Supports both RJ-45 and SFP ports for flexible uplink options	 Loop Detection	Loop Detection Automatically prevents looping events from causing congestion in the network
 High Density fiber	High Density Fiber Up to 48 Gigabit Dual-rate fiber ports	 Cable tray	Cable Tray Manages and secures the fiber cable and fiber connector with a fiber cable tray
 NAT/Bridge hybrid mode	NAT/Bridge Hybrid Mode Supports NAT/Bridge Hybrid Mode	 Link alarm	Link Alarm Supports Link Fault Management
 IPTV	IPTV Designed with rich functions in facilitating multimedia streaming	 Backup	Battery Backup Enables your service to run smoothly under power failure situations
 IPTV Probe	IPTV Probe Supports IPTV traffic monitoring function	 SNMP	SNMP Simple Network Management Protocol
 USB	USB 2.0 Supports external USB ports	 TR-069	TR-069 Complies with TR-069 CPE WAN Management Protocol
 Triple Play	Triple Play Supports Internet, IPTV, and VoIP triple-play services	 OAM	OAM Complies with Ethernet OAM standards
 10G Ethernet	10G Supports 10G	 PoE+ 30	PoE+ Supports 802.3at 30W PoE+
 PoE	PoE Scheduling Operators can define when to turn on or off the PoE power for each port		



**FIBER
SWITCH
SOLUTIONS**

FIBER SWITCH SOLUTIONS

FEATURES

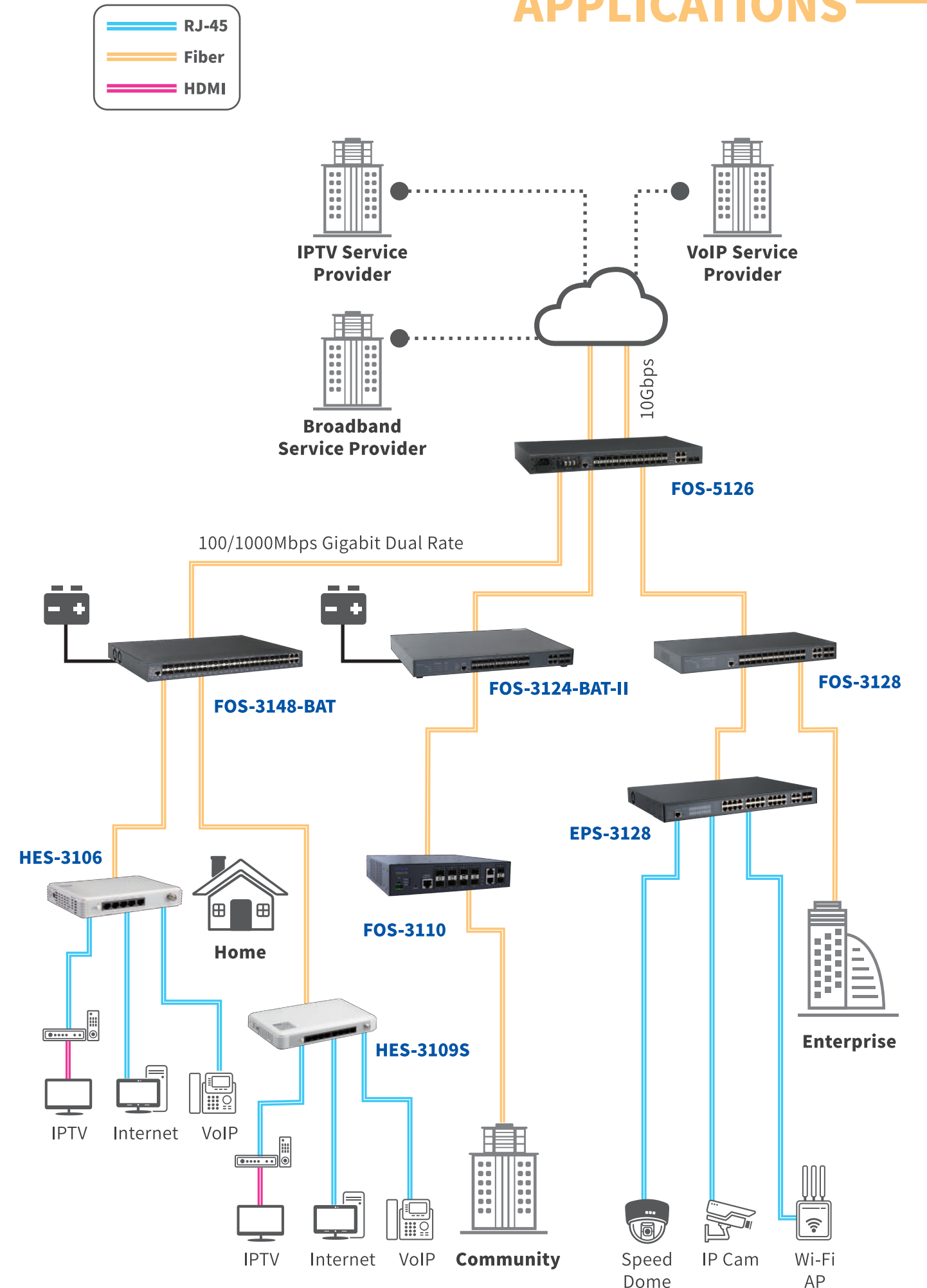


- MSO Features for Multiple Service Setups
- Dual Image Feature for Smooth Upgrades
- Powerful Security Features
- Reduced Maintenance Cost through Smart Monitoring and Auto Provisioning
- Cost-Effective Power Backup Solutions
- Fast and Secured Fiber Installation Concept
- Management, DHCP and MLD Snooping Ready for Future IPv6 Environments



CTS' Fiber Switch Solution is the perfect choice for service providers and enterprises who plan to implement FTTX or Metro Ethernet networks. It is provided with 10G and Gigabit Dual-rate speed, Full Layer2+ Management, and from 6 ports all the way up to 48 ports. Advanced features including MVR, IGMP, various QoS classifications, and rate limit control facilitate service providers to deploy a management level network environment and deliver a successful triple-play (Data Internet, VoIP, and IPTV) service.

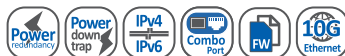
APPLICATIONS



Access Switch Solution



Model Name	FOS-5126	FOS-3148 FOS-3148-BAT FOS-3148-BAT-P
	Managed	Managed
Hardware		
Uplink Port (Type)	2 x 1Gbps/10Gbps (SFP+)	4 x 100/1000Mbps (COMBO)
LAN Port (Type)	4 x 100/1000Mbps (COMBO) + 20 x 100/1000Mbps (SFP)	44 x 100/1000Mbps (SFP)
Console Port (Type)	1 x RS-232 (RJ-45)	1 x RS-232 (RJ-45)
Dimension WxDxH	440 x 205 x 44mm	440 x 290 x 44mm, FOS-3148 440 x 350 x 44mm, FOS-3148-BAT
Temperature °C (Humidity)	Operating °C: 0~50, Storage °C: -20~60, (5%~90%)	Operating °C: 0~50, Storage °C: -20~60, (5%~90%)
Power Source	AC/DC AC: 100V~240V	AC/DC AC: 100V~240V (FOS-3148, FOS-3148-BAT) AC: 190V~270V, Protected up to 400V (FOS-3148-BAT-P)
Power Redundancy	V	V
External Battery Type		VRLA (BAT model only)
IEEE 802.3af/at PoE		
Performance		
MAC Address Table	16K	16K
Non-Blocking Switching Fabric	88Gbps	96Gbps
Memory Buffer	1536K Bytes	1536K Bytes
Jumbo Frame	9K Bytes	9K Bytes
Traffic Management		
IPv6	IPv4/IPv6 Dual Stack	IPv4/IPv6 Dual Stack
QoS	802.1p, ToS/DSCP	802.1p, ToS/DSCP
QoS Priority Queue	8	8
Bandwidth Control	V	V
Broadcast Storm Suppression	V	V
IPTV Multicast	IGMP v1/v2/v3, MLD v1/v2	IGMP v1/v2/v3, MLD v1/v2
Network Redundancy	STP/RSTP	STP/RSTP
LACP	V	V
Security & Authentication		
VLAN	802.1q, Q-in-Q, Port Based	802.1q, Q-in-Q, Port Based
VLAN ID	4094	4094
VLAN Group	2K	2K
SSHv2	V	V
DHCP Option 82	V	V
Authentication	RADIUS, 802.1X MAB*	RADIUS, 802.1X MAB*
ACL (Access Control List)	V	V
Network Management & Maintenance		
Management	Telnet, CLI, WEB, SNMP	Telnet, CLI, WEB, SNMP
Port Mirroring	V	V
SNMP Power Down Trap	V	V
DHCP	Client, Auto Provisioning, Snooping	Client, Auto Provisioning, Snooping
SNTP	V	V
Firmware / Configuration upgrade	FTP/TFTP/HTTP	FTP/TFTP/HTTP



*Coming soon



Model Name	FOS-3128	ESW-3128
	Managed	Managed
Hardware		
Uplink Port (Type)	4 x 100/1000Mbps (COMBO)	4 x 100/1000Mbps (COMBO)
LAN Port (Type)	24 x 100/1000Mbps (SFP)	24 x 10/100/1000Mbps (RJ-45)
Console Port (Type)	1 x RS-232 (RJ-45)	1 x RS-232 (RJ-45)
Dimension WxDxH	440 x 205 x 44mm	440 x 205 x 44mm
Temperature °C (Humidity)	Operating °C: 0~50, Storage °C: -20~60, (5%~90%)	Operating °C: 0~50, Storage °C: -20~60, (5%~90%)
Power Source	AC/DC AC:100V-240V	AC/DC AC:100V-240V
Power Redundancy	V	V
External Battery Type		
IEEE 802.3af/at PoE		
Performance		
MAC Address Table	16K	16K
Non-Blocking Switching Fabric	56Gbps	56Gbps
Memory Buffer	1536K Bytes	1536K Bytes
Jumbo Frame	9K Bytes	9K Bytes
Traffic Management		
IPv6	IPv4/IPv6 Dual Stack	IPv4/IPv6 Dual Stack
QoS	802.1p, ToS/DSCP	802.1p, ToS/DSCP
QoS Priority Queue	8	8
Bandwidth Control	V	V
Broadcast Storm Suppression	V	V
IPTV Multicast	IGMP v1/v2/v3, MLD v1/v2	IGMP v1/v2/v3, MLD v1/v2
Network Redundancy	STP/RSTP	STP/RSTP
LACP	V	V
Security & Authentication		
VLAN	802.1q, Q-in-Q, Port Based	802.1q, Q-in-Q, Port Based
VLAN ID	4094	4094
VLAN Group	2K	2K
SSHv2	V	V
DHCP Option 82	V	V
Authentication	RADIUS, 802.1X MAB*	RADIUS, 802.1X MAB*
ACL (Access Control List)	V	V
Network Management & Maintenance		
Management	Telnet, CLI, WEB, SNMP	Telnet, CLI, WEB, SNMP
Port Mirroring	V	V
SNMP Power Down Trap	V	V
DHCP	Client, Auto Provisioning, Snooping	Client, Auto Provisioning, Snooping
SNTP	V	V
Firmware / Configuration upgrade	FTP/TFTP/HTTP	FTP/TFTP/HTTP



*Coming soon



Model Name	FOS-3124-BAT-II
	FOS-3124-BAT-II-P
Managed	
Hardware	
Uplink Port (Type)	4 x 100/1000Mbps (COMBO)
LAN Port (Type)	20 x 100/1000Mbps (SFP)
Console Port (Type)	1 x RS-232 (RJ-45)
Dimension WxDxH	440 x 310 x 44mm
Temperature °C (Humidity)	Operating °C: 0~50, Storage °C: -20~60, (5%~90%)
Power Source	AC: 100V~240V (FOS-3124-BAT-II) AC: 190V~255V, Protected up to 400V (FOS-3124-BAT-II-P)
Power Redundancy	V
External Battery Type	VRLA
IEEE 802.3af/at PoE	
Performance	
MAC Address Table	16K
Non-Blocking Switching Fabric	48Gbps
Memory Buffer	1536K Bytes
Jumbo Frame	9K Bytes
Traffic Management	
IPv6	IPv4/IPv6 Dual Stack
QoS	802.1p, ToS/DSCP
QoS Priority Queue	8
Bandwidth Control	V
Broadcast Storm Suppression	V
IPTV Multicast	IGMP v1/v2/v3, MLD v1/v2
Network Redundancy	STP/RSTP
LACP	V
Security & Authentication	
VLAN	802.1q, Q-in-Q, Port Based
VLAN ID	4094
VLAN Group	2K
SSHv2	V
DHCP Option 82	V
Authentication	RADIUS, 802.1X MAB*
ACL (Access Control List)	V
Network Management & Maintenance	
Management	Telnet, CLI, WEB, SNMP
Port Mirroring	V
SNMP Power Down Trap	V
DHCP	Client, Auto Provisioning, Snooping
SNTP	V
Firmware / Configuration upgrade	FTP/TFTP/HTTP



*Coming soon



Model Name	FOS-3114	FOS-3110
Managed		Managed
Hardware		
Uplink Port (Type)	2 x 100/1000Mbps (SFP)	2 x 100/1000Mbps (COMBO)
LAN Port (Type)	12 x 100/1000Mbps (SFP)	8 x 100/1000Mbps (SFP)
Console Port (Type)	1 x RS-232 (RJ-45)	1 x RS-232 (RJ-45)
Dimension WxDxH	210 x 235 x 44mm	210 x 235 x 44mm
Temperature °C (Humidity)	Operating °C: 0~50, Storage °C: -20~60, (5%~90%)	Operating °C: 0~50, Storage °C: -20~60, (5%~90%)
Power Source	AC AC:100V-240V	AC AC:100V-240V
Power Redundancy		
External Battery Type		
IEEE 802.3af/at PoE		
Performance		
MAC Address Table	16K	16K
Non-Blocking Switching Fabric	28Gbps	20Gbps
Memory Buffer	512K Bytes	512K Bytes
Jumbo Frame	10K Bytes	10K Bytes
Traffic Management		
IPv6	IPv4/IPv6 Dual Stack	IPv4/IPv6 Dual Stack
QoS	802.1p, ToS/DSCP	802.1p, ToS/DSCP
QoS Priority Queue	8	8
Bandwidth Control	V	V
Broadcast Storm Suppression	V	V
IPTV Multicast	IGMP v1/v2/v3, MLD v1/v2	IGMP v1/v2/v3, MLD v1/v2
Network Redundancy	STP/RSTP	STP/RSTP
LACP	V	V
Security & Authentication		
VLAN	802.1q, Q-in-Q, Port-Based	802.1q, Q-in-Q, Port-Based
VLAN ID	4094	4094
VLAN Group	2K	2K
SSHv2	V	V
DHCP Option 82	V	V
Authentication	RADIUS, 802.1X MAB*	RADIUS, 802.1X MAB*
ACL (Access Control List)	V	V
Network Management & Maintenance		
Management	Telnet, CLI, WEB, SNMP	Telnet, CLI, WEB, SNMP
Port Mirroring	V	V
SNMP Power Down Trap	V	V
DHCP	Client, Auto Provisioning, Snooping	Client, Auto Provisioning, Snooping
SNTP	V	V
Firmware / Configuration upgrade	FTP/TFTP/HTTP	FTP/TFTP/HTTP



*Coming soon



Model Name	SWH-3112	SWH-3109 SWH-3109-DR SWH-3109-BAT
	Managed	Managed
Hardware		
Uplink Port (Type)	4 x 100/1000Mbps (COMBO)	1 x 100/1000Mbps Fiber (FX/W2X/SFP)
LAN Port (Type)	8 x 10/100/1000Mbps (RJ-45)	8 x 10/100/1000Mbps (RJ-45)
Console Port (Type)	1 x RS-232 (RJ-45)	
Dimension WxDxH	265 x 183 x 44mm	228 x 148 x 25mm
Temperature °C (Humidity)	Operating °C: 0~50, Storage °C: -40~70, (5%~90%)	Operating °C: 0~50, Storage °C: -20~60, (5%~90%)
Power Source	AC AC:100V-240V	AC to DC Power Adaptor
Power Redundancy		
External Battery Type		VRLA (BAT model only)
IEEE 802.3af/at PoE		
Performance		
MAC Address Table	8K	8K
Non-Blocking Switching Fabric	24Gbps	18Gbps
Memory Buffer	512K Bytes	128K Bytes
Jumbo Frame	9K Bytes	9K Bytes
Traffic Management		
IPv6	IPv4/IPv6 Dual Stack	IPv4/IPv6 Dual Stack
QoS	802.1p, ToS/DSCP	Port Based , 802.1p, ToS/DSCP, 802.1q
QoS Priority Queue	8	4
Bandwidth Control	V	V
Broadcast Storm Suppression	V	V
IPTV Multicast	IGMP v1/v2/v3, MLD v1/v2	IGMP v1/v2
Network Redundancy	STP/RSTP	
LACP	V	
Security & Authentication		
VLAN	802.1q, Q-in-Q, Port Based	802.1q, Q-in-Q
VLAN ID	4094	4094
VLAN Group	2K	128
SSHv2	V	V
DHCP Option 82	V	V
Authentication	RADIUS, 802.1X MAB*	RADIUS
ACL (Access Control List)	V	
Network Management & Maintenance		
Management	Telnet, CLI, WEB, SNMP	Telnet, CLI , WEB , SNMP
Port Mirroring	V	V
SNMP Power Down Trap	V	V
DHCP	Client, Auto Provisioning, Snooping	Client, Auto Provisioning
SNTP	V	V
Firmware / Configuration upgrade	FTP/TFTP/HTTP	FTP/TFTP



*Coming soon



PoE Switch Solution



Model Name	EPS-3128 EPS-3128-LP	EPS-3112
	Managed	Managed
Hardware		
Uplink Port (Type)	4 x 100/1000Mbps (COMBO)	4 x 100/1000Mbps (COMBO)
LAN Port (Type)	24 x 10/100/1000Mbps (RJ-45 /w PoE)	8 x 10/100/1000Mbps (RJ-45 /w PoE)
Console Port (Type)	1 x RS-232 (RJ-45)	1 x RS-232 (RJ-45)
Dimension WxDxH	440 x 330 x 44mm	330 x 230 x 44 mm
Temperature °C (Humidity)	Operating °C: 0~50, Storage °C: -20~60, (5%~90%)	Operating °C: 0~50, Storage °C: -40~70, (5%~90%)
Power Source	AC AC:100V-240V	AC AC:100V-240V
Power Redundancy	Internal Redundancy**	
External Battery Type		
IEEE 802.3af/at PoE	V	
Performance		
MAC Address Table	16K	8K
Non-Blocking Switching Fabric	56Gbps	24Gbps
Memory Buffer	1536K Bytes	512K Bytes
Jumbo Frame	9K Bytes	9K Bytes
Traffic Management		
IPv6	IPv4/IPv6 Dual Stack	IPv4/IPv6 Dual Stack
QoS	802.1p, ToS/DSCP	802.1p, ToS/DSCP
QoS Priority Queue	8	8
Bandwidth Control	V	V
Broadcast Storm Suppression	V	V
IPTV Multicast	IGMP v1/v2/v3, MLD v1/v2	IGMP v1/v2/v3, MLD v1/v2
Network Redundancy	STP/RSTP	STP/RSTP
LACP	V	V
Security & Authentication		
VLAN	802.1q, Q-in-Q, Port Based	802.1q, Q-in-Q, Port Based
VLAN ID	4094	4094
VLAN Group	2K	2K
SSHv2	V	V
DHCP Option 82	V	V
Authentication	RADIUS, TACACS+, 802.1X MAB*	RADIUS, 802.1X MAB*
ACL (Access Control List)	V	V
Network Management & Maintenance		
Management	Telnet, CLI , WEB , SNMP	Telnet, CLI, WEB, SNMP
Port Mirroring	V	V
SNMP Power Down Trap	V	V
DHCP	Client, Auto Provisioning, Snooping	Client, Auto Provisioning, Snooping
SNTP	V	V
Firmware / Configuration upgrade	FTP/TFTP/HTTP	FTP/TFTP/HTTP



*Coming soon

**Function available only when the total power consumption is under 240W for EPS-3128-480W model.



CPE Switch Solution



Model Name	HES-3109	HES-3109SSFP-DR
	HES-3109-DR	
	Managed	Managed
Hardware		
Uplink Port (Type)	1 x 100/1000Mbps Fiber (FX/W2X/SFP/TP)	1 x 100/1000Mbps Fiber (SFP)
LAN Port (Type)	8 x 10/100/1000Mbps (RJ-45)	8 x 10/100/1000Mbps (RJ-45)
Console Port (Type)	228 x 148 x 33mm	180 x 130 x 30mm
Dimension WxDxH	Operating °C: 0~50, Storage °C: -20~60, (5%~90%)	Operating °C: 0~50, Storage °C: -20~60, (5%~90%)
Temperature °C (Humidity)	Optional (HES-FCT)	Optional (HES-FCT-S)
Power Source	AC to DC Power Adaptor	AC to DC Power Adaptor
Power Redundancy	V (RF model only)	
External Battery Type		
IEEE 802.3af/at PoE		
Performance		
MAC Address Table	8K	8K
Non-Blocking Switching Fabric	18Gbps	18Gbps
Memory Buffer	128K Bytes	128K Bytes
Jumbo Frame	9K Bytes	9K Bytes
Traffic Management		
IPv6	IPv4/IPv6 Dual Stack	IPv4/IPv6 Dual Stack
QoS	Port Based , 802.1p, ToS/DSCP, 802.1q	Port Based , 802.1p, ToS/DSCP, 802.1q
QoS Priority Queue	4	4
Bandwidth Control	V	V
Broadcast Storm Suppression	V	V
IPTV Multicast	IGMP v1/v2	IGMP v1/v2
Network Redundancy		
LACP		
Security & Authentication		
VLAN	802.1q, Q-in-Q	802.1q, Q-in-Q
VLAN ID	4094	4094
VLAN Group	128	128
SSHv2	V	V
DHCP Option 82	V	V
Authentication	RADIUS	RADIUS
ACL (Access Control List)		
Network Management & Maintenance		
Management	Telnet, CLI , WEB , SNMP	Telnet, CLI , WEB , SNMP
Port Mirroring	V	V
SNMP Power Down Trap	V	V
DHCP	Client, Auto Provisioning	Client, Auto Provisioning
SNTP	V	V
Firmware / Configuration upgrade	FTP/TFTP	FTP/TFTP



*Coming soon



Model Name	HES-3106	HES-3106-PLUS
	HES-3106-DR	HES-3106-PLUS-DR
	Managed	Managed
Hardware		
Uplink Port (Type)	1 x 100/1000Mbps Fiber (FX/W2X/SFP/TP)	1 x 100/1000Mbps Fiber (FX/W2X/SFP + RJ-45)
LAN Port (Type)	5 x 10/100/1000Mbps (RJ-45)	4 x 10/100/1000Mbps + 1 x LAN5/WAN (RJ-45)
Console Port (Type)	180 x 130 x 30mm	180 x 130 x 30mm
Dimension WxDxH	Operating °C: 0~50, Storage °C: -20~60, (5%~90%)	Operating °C: 0~50, Storage °C: -20~60, (5%~90%)
Temperature °C (Humidity)	Optional (HES-FCT-S)	Optional (HES-FCT-S)
Power Source	AC to DC Power Adaptor	AC to DC Power Adaptor
Power Redundancy	V (RF model only)	V (RF model only)
External Battery Type		
IEEE 802.3af/at PoE		
Performance		
MAC Address Table	2K	2K
Non-Blocking Switching Fabric	12Gbps	12Gbps
Memory Buffer	128K Bytes	128K Bytes
Jumbo Frame	9K Bytes	9K Bytes
Traffic Management		
IPv6	IPv4/IPv6 Dual Stack	IPv4/IPv6 Dual Stack
QoS	802.1p, Tos/DSCP	802.1p, Tos/DSCP
QoS Priority Queue	4	4
Bandwidth Control	V	V
Broadcast Storm Suppression	V	V
IPTV Multicast	IGMP v1/v2	IGMP v1/v2
Network Redundancy		
LACP		
Security & Authentication		
VLAN	802.1q, Q-in-Q, Port Based	802.1q, Q-in-Q, Port Based
VLAN ID	4094	4094
VLAN Group	128	128
SSHv2	V	V
DHCP Option 82	V	V
Authentication		
ACL (Access Control List)		
Network Management & Maintenance		
Management	Telnet, CLI , WEB , SNMP	Telnet, CLI , WEB , SNMP
Port Mirroring	V	V
SNMP Power Down Trap	V	V
DHCP	Client, Auto Provisioning	Client, Auto Provisioning
SNTP	V	V
Firmware / Configuration upgrade	FTP/TFTP	FTP/TFTP



*Coming soon



Order Information

FOS-5126											
MODEL	FIBER PORT					TP PORT		POWER SOURCE			
	Speed (bps)	Type	Connector	Distance	Port	Speed (Mbps)	Port	AC /w Protector 190~255V	AC 100~240V	DC 48V	External VRLA Battery 12V
FOS-5126-1A	1G/10G 100/1000M	SFP+ SFP	-	-	2 24	10/100/1000	4	-	1	-	-
FOS-5126-2A	10G 100/1000M	SFP+ SFP	-	-	2 24	10/100/1000	4	-	2	-	-
FOS-5126-1D	10G 100/1000M	SFP+ SFP	-	-	2 24	10/100/1000	4	-	-	1	-
FOS-5126-2D	10G 100/1000M	SFP+ SFP	-	-	2 24	10/100/1000	4	-	-	2	-
FOS-5126-1AD	10G 100/1000M	SFP+ SFP	-	-	2 24	10/100/1000	4	-	1	1	-

FOS-3148 / FOS-3148-BAT											
MODEL	FIBER PORT					TP PORT		POWER SOURCE			
	Speed (Mbps)	Type	Connector	Distance	Port	Speed (Mbps)	Port	AC /w Protector 190~255V	AC 100~240V	DC 48V	External VRLA Battery 12V
FOS-3148-1A	100/1000	SFP	-	-	48	10/100/1000	4	-	1	-	-
FOS-3148-2A	100/1000	SFP	-	-	48	10/100/1000	4	-	2	-	-
FOS-3148-1D	100/1000	SFP	-	-	48	10/100/1000	4	-	-	1	-
FOS-3148-2D	100/1000	SFP	-	-	48	10/100/1000	4	-	-	2	-
FOS-3148-1AD	100/1000	SFP	-	-	48	10/100/1000	4	-	1	1	-
FOS-3148-BAT-1A	100/1000	SFP	-	-	48	10/100/1000	4	-	1	-	1
FOS-3148-BAT-P-1A	100/1000	SFP	-	-	48	10/100/1000	4	1	-	-	1

FOS-3128											
MODEL	FIBER PORT					TP PORT		POWER SOURCE			
	Speed (Mbps)	Type	Connector	Distance	Port	Speed (Mbps)	Port	AC /w Protector 190~255V	AC 100~240V	DC 48V	External VRLA Battery 12V
FOS-3128-1A	100/1000	SFP	-	-	28	10/100/1000	4	-	1	-	-
FOS-3128-2A	100/1000	SFP	-	-	28	10/100/1000	4	-	2	-	-
FOS-3128-1D	100/1000	SFP	-	-	28	10/100/1000	4	-	-	1	-
FOS-3128-2D	100/1000	SFP	-	-	28	10/100/1000	4	-	-	2	-
FOS-3128-1AD	100/1000	SFP	-	-	28	10/100/1000	4	-	1	1	-

ESW-3128											
MODEL	FIBER PORT					TP PORT		POWER SOURCE			
	Speed (Mbps)	Type	Connector	Distance	Port	Speed (Mbps)	Port	AC /w Protector 190~255V	AC 100~240V	DC 48V	External VRLA Battery 12V
ESW-3128SFP-1A	100/1000	SFP	-	-	4	10/100/1000	28	-	1	-	-
ESW-3128SFP-2A	100/1000	SFP	-	-	4	10/100/1000	28	-	2	-	-
ESW-3128SFP-1D	100/1000	SFP	-	-	4	10/100/1000	28	-	-	1	-
ESW-3128SFP-2D	100/1000	SFP	-	-	4	10/100/1000	28	-	-	2	-
ESW-3128SFP-1AD	100/1000	SFP	-	-	4	10/100/1000	28	-	1	1	-

FOS-3124-BAT-II											
MODEL	FIBER PORT					TP PORT		POWER SOURCE			
	Speed (Mbps)	Type	Connector	Distance	Port	Speed (Mbps)	Port	AC /w Protector 190~255V	AC 100~240V	DC 48V	External VRLA Battery 12V
FOS-3124-BAT-II-1A	100/1000	SFP	-	-	24	10/100/1000	4	-	1	-	1
FOS-3124-BAT-II-P-1A	100/1000	SFP	-	-	24	10/100/1000	4	1	-	-	1

FOS-3114											
MODEL	FIBER PORT					TP PORT		POWER SOURCE			
	Speed (Mbps)	Type	Connector	Distance	Port	Speed (Mbps)	Port	AC /w Protector 190~255V	AC 100~240V	DC 48V	External VRLA Battery 12V
FOS-3114-1A	100/1000	SFP	-	-	14	-	-	-	1	-	-

FOS-3110											
MODEL	FIBER PORT					TP PORT		POWER SOURCE			
	Speed (Mbps)	Type	Connector	Distance	Port	Speed (Mbps)	Port	AC /w Protector 190~255V	AC 100~240V	DC 48V	External VRLA Battery 12V
FOS-3110-1A	100/1000	SFP	-	-	10	10/100/1000	2	-	1	-	-

SWH-3112											
MODEL	FIBER PORT					TP PORT		CATV RF		POWER SOURCE	
	Speed (Mbps)	Type	Connector	Distance	Port	Speed (Mbps)	Port	Fiber (SC/APC)	Coaxial (F-Type/Female)	Power Adaptor 100-240VAC, 12VDC	Optional VRLA Battery Backup Charger

SWH-3112	100/1000	SFP	-	-	4	10/100/1000	12	-	-	1	-
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SWH-3109 / SWH-3109-DR / SWH-3109-BAT											
MODEL	FIBER PORT					TP PORT		CATV RF		POWER SOURCE	
	Speed (Mbps)	Type	Connector	Distance	Port	Speed (Mbps)	Port	Fiber (SC/APC)	Coaxial (F-Type/Female)	Power Adaptor 100-240VAC, 12VDC	Optional VRLA Battery Backup Charger

SWH-3109FC	1000	MM	SC	550M	1	10/100/1000	8	-	-	1	V
SWH-3109FC (SM-10/20/30)	1000	SM	SC	10/20/30KM	1	10/100/1000	8	-	-	1	V
SWH-3109W2A (SM-10/20/40)	1000	WDM	SC	10/20/40KM	1	10/100/1000	8	-	-	1	V
SWH-3109W2B (SM-10/20/40)	1000	WDM	SC	10/20/40KM	1	10/100/1000	8	-	-	1	V
SWH-3109W2A (SM-10)-DR	100/1000	WDM	SC	10KM	1	10/100/1000	8	-	-	1	V
SWH-3109W2B (SM-10)-DR	100/1000	WDM	SC	10KM	1	10/100/1000	8	-	-	1	V
SWH-3109SFP-DR	100/1000	SFP	-	-	1	10/100/1000	8	-	-	1	V

EPS-3128													
MODEL	FIBER PORT					TP PORT				POWER SOURCE			
	Speed (Mbps)	Type	Connector	Distance	Port	Speed (Mbps)	Port			AC 100~240V	DC 48V	PoE Budget	Support Lightning Protection
							Non-PoE	PoE	PoE /w Protector				

EPS-3128-240W	100/1000	SFP	-	-	4	10/100/1000	4	24	-	1	-	240W	-
EPS-3128-480W	100/1000	SFP	-	-	4	10/100/1000	4	24	-	1	-	480W	-
EPS-3128-240W-LP	100/1000	SFP	-	-	4	10/100/1000	4	-	24	1	-	240W	-
EPS-3128-480W-LP	100/1000	SFP	-	-	4	10/100/1000	4	-	24	1	-	480W	-

EPS-3112													
MODEL	FIBER PORT					TP PORT				POWER SOURCE			
	Speed (Mbps)	Type	Connector	Distance	Port	Speed (Mbps)	Port			AC 100~240V	DC 48V	PoE Budget	Support Lightning Protection
							Non-PoE	PoE	PoE /w Protector				

EPS-3112	100/1000	SFP	-	-	4	10/100/1000	4	8	-	1	-	130W	-
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HES-3109 / HES-3109-DR											
MODEL	FIBER PORT					TP PORT		CATV RF			POWER SOURCE
	Speed (Mbps)	Type	Connector	Distance	Port	Speed (Mbps)	Port	Optional / CATV RF Receiver	Fiber (SC/APC)	Coaxial (F-Type/Female)	Power Adaptor 100-240VAC, 12VDC

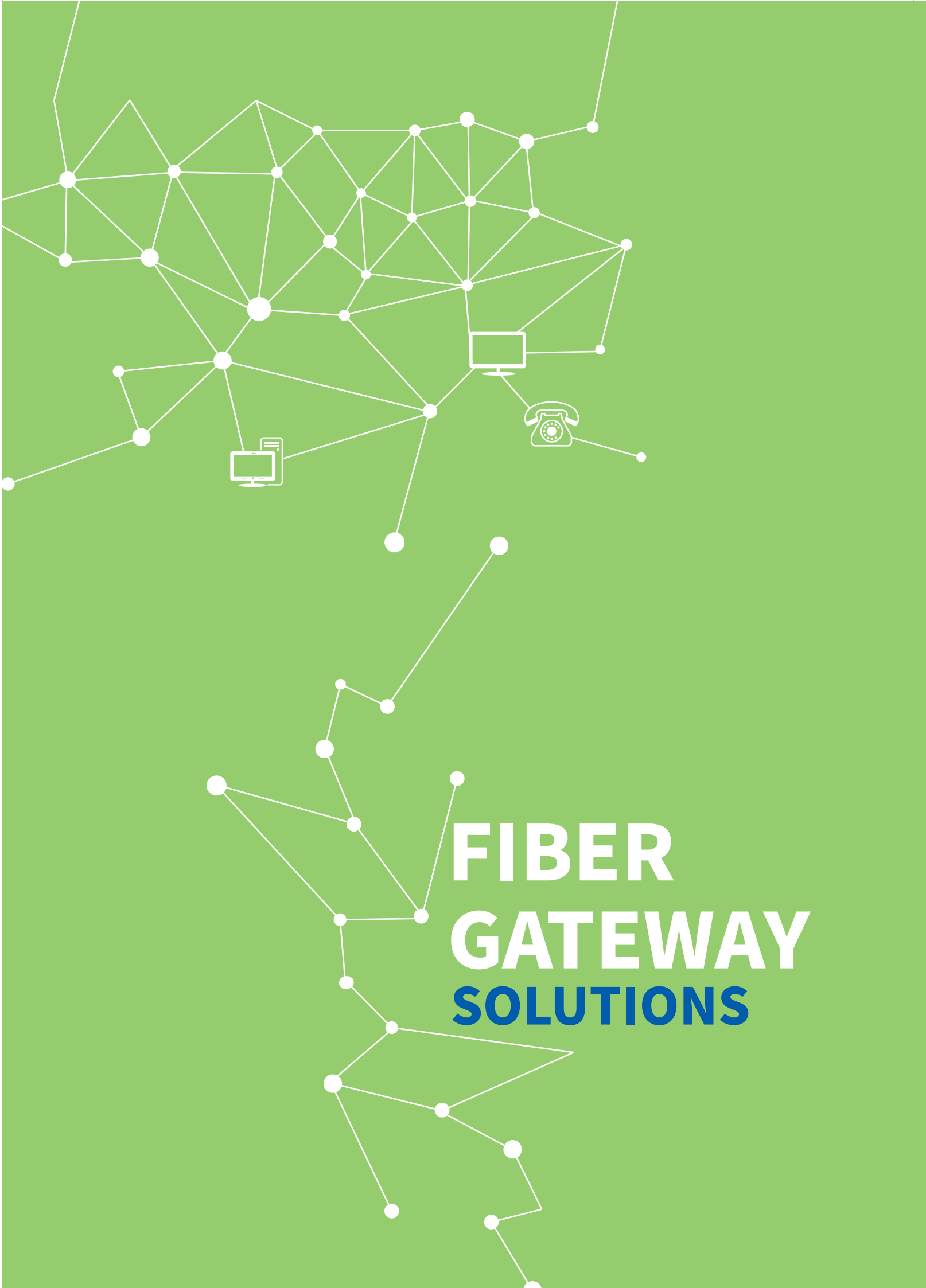
HES-3109FC	1000	MM	SC	550M	1	10/100/1000	8	-	-	-	1
HES-3109FC (SM-10/20/30)	1000	SM	SC	10/20/30KM	1	10/100/1000	8	-	-	-	1
HES-3109W2A (SM-10/20/40)	1000	WDM	SC	10/20/40KM	1	10/100/1000	8	V	1	1	1
HES-3109W2B (SM-10/20/40)	1000	WDM	SC	10/20/40KM	1	10/100/1000	8	V	1	1	1
HES-3109W2A (SM-10)-DR	100/1000	WDM	SC	10KM	1	10/100/1000	8	V	1	1	1
HES-3109W2B (SM-10)-DR	100/1000	WDM	SC	10KM	1	10/100/1000	8	V	1	1	1
HES-3109SFP-DR	100/1000	SFP	-	-	1	10/100/1000	8	V	1	1	1
HES-3109TP	-	-	-	-	-	10/100/1000	9	-	-	-	1

HES-3109SSFP-DR											
MODEL	FIBER PORT					TP PORT		CATV RF			POWER SOURCE
	Speed (Mbps)	Type	Connector	Distance	Port	Speed (Mbps)	Port	Optional / CATV RF Receiver	Fiber (SC/APC)	Coaxial (F-Type/Female)	Power Adaptor 100-240VAC, 12VDC

HES-3109SSFP-DR	100/1000	SFP	-	-	1	10/100/1000	8	-	-	-	1
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HES-3106 / HES-3106-DR											
MODEL	FIBER PORT					TP PORT		CATV RF			POWER SOURCE
	Speed (Mbps)	Type	Connector	Distance	Port	Speed (Mbps)	Port	Optional / CATV RF Receiver	Fiber (SC/APC)	Coaxial (F-Type/ Female)	Power Adaptor 100-240VAC, 12VDC
HES-3106FC	1000	MM	SC	550M	1	10/100/1000	5	-	-	-	1
HES-3106FC (SM-10/20/30)	1000	SM	SC	10/20/30KM	1	10/100/1000	5	-	-	-	1
HES-3106W2A (SM-10/20/40)	1000	WDM	SC	10/20/40KM	1	10/100/1000	5	V	1	1	1
HES-3106W2B (SM-10/20/40)	1000	WDM	SC	10/20/40KM	1	10/100/1000	5	V	1	1	1
HES-3106W2A (SM-10)-DR	100/1000	WDM	SC	10KM	1	10/100/1000	5	V	1	1	1
HES-3106W2B (SM-10)-DR	100/1000	WDM	SC	10KM	1	10/100/1000	5	V	1	1	1
HES-3106SFP-DR	100/1000	SFP	-	-	1	10/100/1000	5	V	1	1	1
HES-3106TP	-	-	-	-	-	10/100/1000	6	-	-	-	1

HES-3106-PLUS / HES-3106-PLUS-DR											
MODEL	FIBER PORT					TP PORT		CATV RF			POWER SOURCE
	Speed (Mbps)	Type	Connector	Distance	Port	Speed (Mbps)	Port	Optional / CATV RF Receiver	Fiber (SC/APC)	Coaxial (F-Type/ Female)	Power Adaptor 100-240VAC, 12VDC
HES-3106FC-PLUS	1000	MM	SC	550M	1	10/100/1000	5	-	-	-	1
HES-3106FC (SM-10/20/30)-PLUS	1000	SM	SC	10/20/30KM	1	10/100/1000	5	-	-	-	1
HES-3106W2A (SM-10/20/40)-PLUS	1000	WDM	SC	10/20/40KM	1	10/100/1000	5	V	1	1	1
HES-3106W2B (SM-10/20/40)-PLUS	1000	WDM	SC	10/20/40KM	1	10/100/1000	5	V	1	1	1
HES-3106W2A (SM-10)-PLUS-DR	100/1000	WDM	SC	10KM	1	10/100/1000	5	V	1	1	1
HES-3106W2B (SM-10)-PLUS-DR	100/1000	WDM	SC	10KM	1	10/100/1000	5	V	1	1	1
HES-3106SFP-PLUS-DR	100/1000	SFP	-	-	1	10/100/1000	5	V	1	1	1



FIBER GATEWAY SOLUTIONS

FEATURES

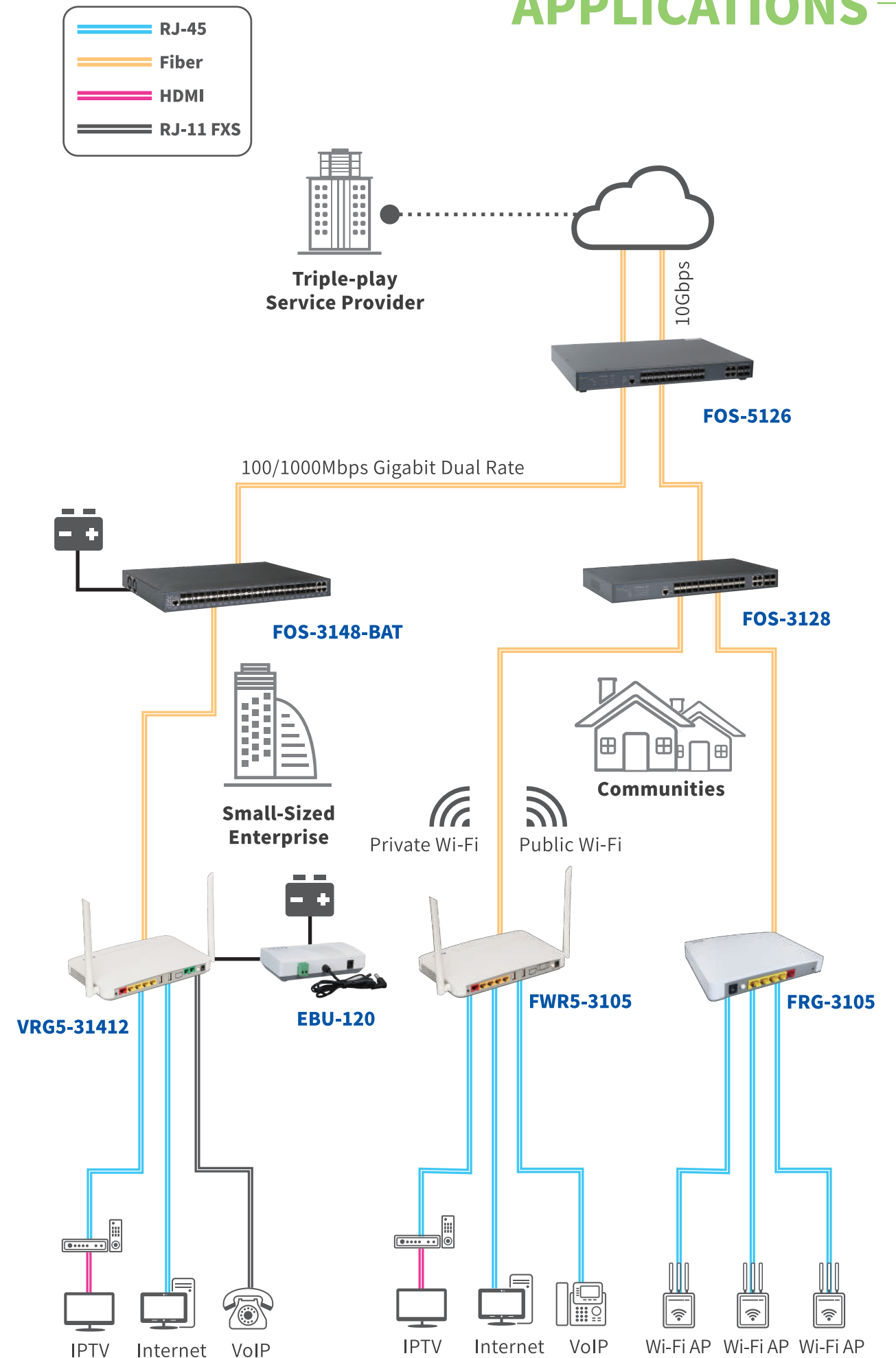
- AC1200 Dual-band Wireless for Best Wi-Fi Performance
- MSO Features for Multiple-Service Setups
- Dual Image Feature for Smooth Upgrades
- Reduced Maintenance Cost through Smart Monitoring and Auto Provisioning
- Fast and Secured Fiber Installation Concept
- Management, DHCP and MLD Snooping Ready for Future IPv6 Environments



CTS' Fiber Residential Gateway Solution is tailor made for ISPs, Telecom, and Regional Operators. It is designed with so many powerful features that it optimizes the services that service providers or operators provide. From simple Internet broadband service all the way to triple-play (Internet, IPTV, and VoIP) service, this is an all-in-one solution that can meet your requirements.



APPLICATIONS



VoIP/Residential Gateway Solution



Model Name	VRG5-31412SFP-CW-AC-DR	FWR5-3105SFP-CW-AC-DR
	Managed	Managed
Hardware		
WAN Port (Type)	100/1000Mbps (COMBO)	100/1000Mbps (COMBO)
LAN Port (Type)	4 x 10/100/1000Mbps (RJ-45)	4 x 10/100/1000Mbps (RJ-45)
VoIP FXS Port	2	
WiFi Standard	802.11 b/g/n/ac	802.11 b/g/n/ac
WiFi Frequency	2.4GHz / 5GHz	2.4GHz / 5GHz
Antenna	2 x Fixed External, 2T2R MIMO	2 x Fixed External, 2T2R MIMO
Dimension WxDxH	229 x 149 x 30.8mm	229 x 149 x 30.8mm
Temperature °C (Humidity)	Operating °C: 0~50, Storage °C: -20~60, (5%~90%)	Operating °C: 0~50, Storage °C: -20~60, (5%~90%)
Cable Tray	Optional (HES-FCT) or (HES-FCT-S)	Optional (HES-FCT) or (HES-FCT-S)
MAC Address Table	1K	1K
Jumbo Frame	9K Bytes	9K Bytes
WiFi & Security		
WiFi WPS	V	V
Data Encryption	64/128bit WEP, WPA, WPA2	64/128bit WEP, WPA, WPA2
MAC ACL	V	V
Firewall	V	V
SSID	8	8
Features		
IPv6	IPv4/IPv6 Dual Stack	IPv4/IPv6 Dual Stack
VoIP	SIP. Codec (G.711a/u, G.723, G.726, G.729a/b)	
VLAN	802.1q	802.1q
VLAN Group	64	64
QoS	Port Based, 802.1p, ToS/DSCP	Port Based, 802.1p, ToS/DSCP
QoS Priority Queue	4	4
Bandwidth Control	V	V
NAT/Bridge Hybrid Mode	V	V
DHCP	Server, Client, Auto-Provisioning	Server, Client, Auto-Provisioning
IPTV Multicast	IGMP Snooping v1/v2, Proxy, Fast Leave	IGMP Snooping v1/v2, Proxy, Fast Leave
DMZ Host	V	V
Network Management		
Management	Web , SNMP, CLI, Telnet	Web , SNMP, CLI, Telnet
RADIUS	V	V
Packet & URL Filtering	V	V
SNTP	V	V
UPnP & DDNS	V	V
CWMP	TR-069**	TR-069**
Firmware Upgrade	FTP/TFTP/HTTP	FTP/TFTP/HTTP
Power Down Trap	V	V



**Customizations may be required for the interoperability between the ACS server and the device.



Model Name	FRG-3105SFP-CW-DR
	Managed
Hardware	
WAN Port (Type)	100/1000Mbps (COMBO)
LAN Port (Type)	4 x 10/100/1000Mbps (RJ-45)
VoIP FXS Port	
WiFi Standard	
WiFi Frequency	
Antenna	
Dimension WxDxH	229 x 149 x 30.8mm
Temperature °C (Humidity)	Operating °C: 0~50, Storage °C: -20~60, (5%~90%)
Cable Tray	Optional (HES-FCT) or (HES-FCT-S)
MAC Address Table	1K
Jumbo Frame	9K Bytes
WiFi & Security	
WiFi WPS	
Data Encryption	
MAC ACL	
Firewall	
SSID	8
Features	
IPv6	IPv4/IPv6 Dual Stack
VoIP	
VLAN	802.1q
VLAN Group	64
QoS	Port Based, 802.1p, ToS/DSCP
QoS Priority Queue	4
Bandwidth Control	V
NAT/Bridge Hybrid Mode	V
DHCP	Server, Client, Auto-Provisioning
IPTV Multicast	IGMP Snooping v1/v2, Proxy, Fast Leave
DMZ Host	V
Network Management	
Management	Web , SNMP, CLI, Telnet
RADIUS	V
Packet & URL Filtering	V
SNTP	V
UPnP & DDNS	V
CWMP	TR-069**
Firmware Upgrade	FTP/TFTP/HTTP
Power Down Trap	V



**Customizations may be required for the interoperability between the ACS server and the device.

Order Information

VRG5-31412SFP-CW-AC-DR											
MODEL	FIBER PORT					TP PORT		WLAN	VoIP	CATV RF	
	Speed (Mbps)	Type	Connector	Distance	Port	Speed (Mbps)	Port	Type	FXS Port	Fiber (SC/APC)	Coaxial (F-Type/Female)
VRG5-31412SFP-CW-AC-DR	100/1000	SFP	-	-	1	10/100/1000	5	802.11 b/g/n/ac	2	-	-
VRG5-31412TP-AC	-	-	-	-	-	10/100/1000	5	802.11 b/g/n/ac	2	-	-

FWR5-3105SFP-CW-AC-DR											
MODEL	FIBER PORT					TP PORT		WLAN	VoIP	CATV RF	
	Speed (Mbps)	Type	Connector	Distance	Port	Speed (Mbps)	Port	Type	FXS Port	Fiber (SC/APC)	Coaxial (F-Type/Female)
FWR5-3105SFP-CW-AC-DR	100/1000	SFP	-	-	1	10/100/1000	5	802.11 b/g/n/ac	-	-	-
FWR5-3105TP-AC	-	-	-	-	-	10/100/1000	5	802.11 b/g/n/ac	-	-	-

FRG-3105SFP-CW-DR											
MODEL	FIBER PORT					TP PORT		WLAN	VoIP	CATV RF	
	Speed (Mbps)	Type	Connector	Distance	Port	Speed (Mbps)	Port	Type	FXS Port	Fiber (SC/APC)	Coaxial (F-Type/Female)
FRG-3105SFP-CW-DR	100/1000	SFP	-	-	1	10/100/1000	5	-	-	-	-



MEDIA CONVERTER SOLUTIONS

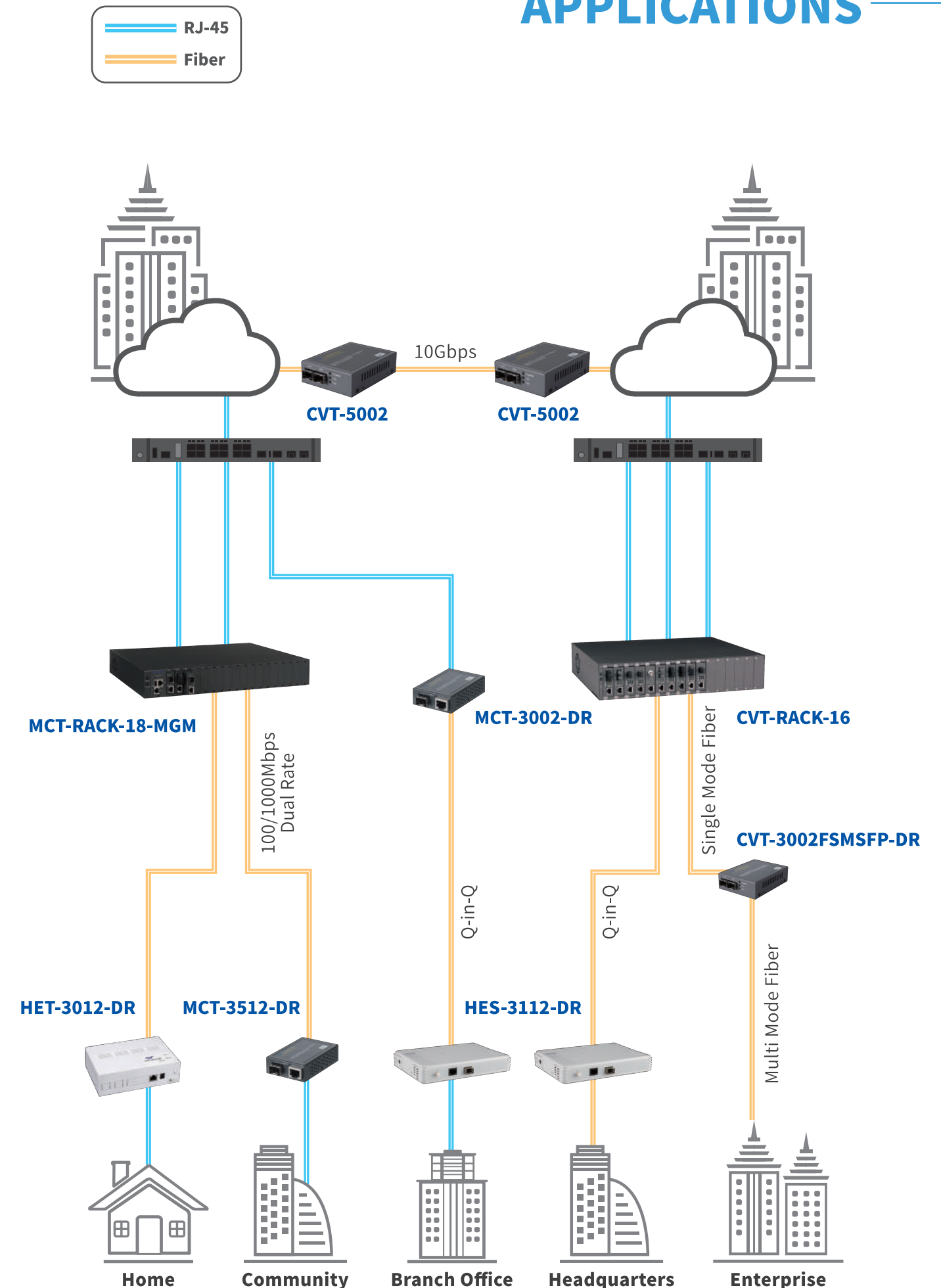
FEATURES

- Flexible and Complete Choice of Media Converters
- Stable Network Operation with Power Redundancy
- Reduced Maintenance Cost through Smart Monitoring
- Fast Trouble Shooting through Link Alarm
- Easy Management with Centralized Rack/Chassis
- Space-Saving Media Converter Design



CTS' Fiber Media Converter Solution provides a complete range of products to meet different customers' demands. From 100Mbps to 10Gbps, from non-managed device to managed device with OAM features, and from stand alone media converters to cost-effective rack solutions, you will definitely find the most suitable solution for your environment.

APPLICATIONS



Compact Media Converter Solution



Model Name	MCT-RACK-18-MGM	MCT-RACK-18	MCT-RACK-12-MGM
	Managed	Non-Managed	Managed
Hardware			
Slots for Media Converter	18	18	12
Dimension WxDxH	440 x 340 x 66 mm	440 x 340 x 66 mm	440 x 340 x 44 mm
Temperature °C (Humidity)	Operating °C: 0~50, Storage °C: -20~60, (5%~90%)	Operating °C: 0~50, Storage °C: -20~60, (5%~90%)	Operating °C: 0~50, Storage °C: -20~60, (5%~90%)
Power Rated	100W	100W	100W
Power Module	Hot Swappable	Fixed	Hot Swappable
Slots for Power Module	2	0	2
Redundant Power	V	V	V
Power Consumption (Empty)	7W	5W	7W
Management & Features			
Network Port (Type)	1 x Ethernet (RJ-45)		1 x Ethernet (RJ-45)
Console Port (Type)	1 x RS-232 (RJ-45)		1 x RS-232 (RJ-45)
USB Port (Type)	1 x USB 2.0 (Type A)		1 x USB 2.0 (Type A)
Digital Input	1		1
Digital Output (Alarm Relay)	1		1
Management	Telnet, CLI , WEB, SNMP v1/v2c/v3		Telnet, CLI , WEB, SNMP v1/v2c/v3
Power Down Trap	V		V
SNTP	V		V
Firmware/Configuration Upgrade	FTP/TFTP/HTTP		FTP/TFTP/HTTP
			



Model Name	MCT-5002SFP+	MCT-3512	MCT-3612
		MCT-3512-DR	MCT-3612-DR
	Non-Managed	Managed	Managed
Interface			
F/O (Type)	10Gbps (SFP+)	100/1000Mbps (BTFX/W2X/SFP)	100/1000Mbps (BTFX/W2X/SFP)
RJ-45	10Gbps (RJ-45)	10/100/1000Mbps (RJ-45)	10/100/1000Mbps (RJ-45)
H/W Specification			
Store and Forward Switching Mechanism	V	V	V
Auto-Crossover for MDI/MDI-X in TP Port	V	V	V
Auto-Negotiation in TP Port	V	V	V
Flow Control			
Full/Half Duplex Mode Operation	V	V	V
Mac Address Table	2K	2K	2K
Memory Buffer (Bytes)	128K	128K	128K
Jumbo Frame (9K Bytes)	V	V	V
Slide-in Converter Center	V	V	V
Dimension WxDxH	51 x 74 x 20mm	51 x 74 x 20mm	51 x 74 x 20mm
Temperature °C (Humidity)	Operating °C: 0~50, Storage °C: -20~60, (5%~90%)	Operating °C: 0~50, Storage °C: -20~60, (5%~90%)	Operating °C: 0~50, Storage °C: -20~60, (5%~90%)
Voltage Requirement	5VDC	3.3VDC	3.3VDC
Power Consumption	5W	2.5W	2.1W
Management & Features			
IEEE 802.3ah OAM		V	
TS-1000 Loopback Test			
ISP Ethernet Tag Type		V	V
QoS			
QoS Priority Queue			
Bandwidth Control		V	V
VLAN		802 1q, Q-in-Q	802 1q, Q-in-Q
VLAN ID		4094	4094
VLAN Groups		8	8
Management		In Rack Management Remote Management*	In Rack Management
Power Down Trap			
DHCP			
Link Alarm/Link Pass Through	Link Alarm	Link Pass Through	Link Alarm
Firmware Upgrade		In-Rack	In-Rack
			

*Must be used with another MCT-3512 in a managed MCT-RACK



Model Name	MCT-3002	MCT-100
	MCT-3002-DR	
	Non-Managed	Non-Managed
Interface		
F/O (Type)	100/1000Mbps (BTFX/W2X/SFP)	100Mbps (BTFX/W2X/SFP)
RJ-45	10/100/1000Mbps (RJ-45)	10/100Mbps (RJ-45)
H/W Specification		
Store and Forward Switching Mechanism	V	V
Auto-Crossover for MDI/MDI-X in TP Port	V	V
Auto-Negotiation in TP Port	V	V
Flow Control		
Full/Half Duplex Mode Operation	V	V
Mac Address Table	2K	1K
Memory Buffer (Bytes)	128K	48K
Jumbo Frame (9K Bytes)	V	V
Slide-in Converter Center	V	V
Dimension WxDxH	51 x 74 x 20mm	51 x 74 x 20mm
Temperature °C (Humidity)	Operating °C: 0~50, Storage °C: -20~60, (5%~90%)	Operating °C: 0~50, Storage °C: -20~60, (5%~90%)
Voltage Requirement	3.3VDC	3.3VDC
Power Consumption	2.3W	1.9W
Management & Features		
IEEE 802.3ah OAM		
TS-1000 Loopback Test		
ISP Ethernet Tag Type		
QoS		
QoS Priority Queue		
Bandwidth Control		
VLAN		
VLAN ID		
VLAN Groups		
Management		
Power Down Trap		
DHCP		
Link Alarm/Link Pass Through	Link Alarm	Link Alarm
Firmware Upgrade		



Standalone Media Converter Solution



Model Name	CVT-RACK-16	CVT-RACK-16S
	Non-Managed	Non-Managed
Interface		
Slot for Media Converter	16	16
Slot for Power Module	2	(Fixed AC Power)
Hot Swappable FAN Number	3	-
Advanced Features		
Hot Swappable Power Module	V	-
Power Load Sharing		
Redundant Power	V	-
Others		
Dimension WxDxH	440 x 385 x 88mm	440 x 280 x 88mm
Temperature °C (Humidity)	Operating °C: 0~50, Storage °C: -20~60, (5%~90%)	Operating °C: 0~50, Storage °C: -20~60, (5%~90%)
Power Rated	150W	100W
Power Consumption (Empty)	9.5W	9.5W



			
Model Name	CVT-5002SFP+	CVT-3512	CVT-3112
	Non-Managed	Managed	Managed
Interface			
F/O (Type)	2 x 10Gbps (SFP+)	1000Mbps (BTFX/W2X/SFP)	1000Mbps (BTFX/W2X/SFP)
RJ-45		10/100/1000Mbps (RJ-45)	10/100/1000Mbps (RJ-45)
H/W Specification			
Store and Forward Switching Mechanism		V	V
Auto-Crossover for MDI/MDI-X in TP Port		V	V
Auto-Negotiation in TP Port		V	V
Flow Control		V	V
Full/Half Duplex Mode Operation		V	V
Mac Address Table		1K	1K
Memory Buffer (Bytes)		32K	32K
Jumbo Frame (9K Bytes)	V	V	V
Slide-in Converter Center	V	V	V
Dimension WxDxH	71 x 94 x 26mm	71 x 94 x 26mm	71 x 94 x 26mm
Temperature °C (Humidity)	Operating °C: 0~50, Storage °C: -20~60, (5%~90%)	Operating °C: 0~50, Storage °C: -20~60, (5%~90%)	Operating °C: 0~50, Storage °C: -20~60, (5%~90%)
Voltage Requirement	5VDC	5VDC	5VDC
Power Consumption	4.3W	3.4W	3.4W
Management & Features			
IEEE 802.3ah OAM		V	
TS-1000 Loopback Test		V	V
ISP Ethernet Tag Type		V	V
QoS			
QoS Priority Queue			
Bandwidth Control		V	V
VLAN		802.1q, Q-in-Q	802.1q, Q-in-Q
VLAN ID		4094	4094
VLAN Groups		16	16
Management		WEB, SNMP(v1,v2c)	WEB, SNMP(v1,v2c)
Power Down Trap		V	V
DHCP		Client	Client
Link Alarm		V	V
Firmware Upgrade		HTTP	HTTP



			
Model Name	CVT-2512	CVT-2112	CVT-3002-PLUS CVT-3002-PLUS-DR
	Managed	Managed	Managed
Interface			
F/O (Type)	100Mbps (BTFX/W2X/SFP)	100Mbps (BTFX/W2X/SFP)	100/1000Mbps (BTFX/W2X/SFP)
RJ-45	10/100Mbps (RJ-45)	10/100Mbps (RJ-45)	10/100/1000Mbps (RJ-45)
H/W Specification			
Store and Forward Switching Mechanism	V	V	V
Auto-Crossover for MDI/MDI-X in TP Port	V	V	V
Auto-Negotiation in TP Port	V	V	V
Flow Control	V	V	V
Full/Half Duplex Mode Operation	V	V	V
Mac Address Table	1K	1K	2K
Memory Buffer (Bytes)	12K	12K	128K
Jumbo Frame (9K Bytes)	V	V	V
Slide-in Converter Center	V	V	V
Dimension WxDxH	71 x 94 x 26mm	71 x 94 x 26mm	71 x 94 x 26mm
Temperature °C (Humidity)	Operating °C: 0~50, Storage °C: -20~60, (5%~90%)	Operating °C: 0~50, Storage °C: -20~60, (5%~90%)	Operating °C: 0~50, Storage °C: -20~60, (5%~90%)
Voltage Requirement	5VDC	5VDC	5VDC
Power Consumption	2.9W	2.9W	2.2W
Management & Features			
IEEE 802.3ah OAM	V		
TS-1000 Loopback Test	V	V	
ISP Ethernet Tag Type	V	V	
QoS			
QoS Priority Queue			
Bandwidth Control	V	V	
VLAN	802.1q, Q-in-Q	802.1q, Q-in-Q	
VLAN ID	4094	4094	
VLAN Groups	16	16	
Management	WEB, SNMP(v1,v2c)	WEB, SNMP(v1,v2c)	
Power Down Trap	V	V	
DHCP	Client	Client	
Link Alarm	V	V	V
Firmware Upgrade	HTTP	HTTP	





Model Name	CVT-3002FSMSFP-DR	CVT-3012	CVT-100
	Non-Managed	Non-Managed	Non-Managed
Interface			
F/O (Type)	2 x 100/1000Mbps (SM & MM) Fiber (SFP)	1000Mbps (SFP)	100Mbps (BTFX/W2X)
RJ-45		10/100/1000Mbps (RJ-45) + Console (RJ-45)	10/100Mbps (RJ-45)
H/W Specification			
Store and Forward Switching Mechanism		V	V
Auto-Crossover for MDI/MDI-X in TP Port		V	V
Auto-Negotiation in TP Port		V	V
Flow Control		V	V
Full/Half Duplex Mode Operation		V	V
Mac Address Table		2K	1K
Memory Buffer (Bytes)		128K	48K
Jumbo Frame (9K Bytes)	V	V	V
Slide-in Converter Center	V	V	V
Dimension WxDxH	71 x 94 x 26mm	71 x 94 x 26mm	71 x 94 x 26mm
Temperature °C (Humidity)	Operating °C: 0~50, Storage °C: -20~60, (5%~90%)	Operating °C: 0~50, Storage °C: -20~60, (5%~90%)	Operating °C: 0~50, Storage °C: -20~60, (5%~90%)
Voltage Requirement	5VDC	5VDC	5VDC
Power Consumption	1.8W	4W	2.5W
Management & Features			
IEEE 802.3ah OAM			
TS-1000 Loopback Test			
ISP Ethernet Tag Type	V (via Console port)		
QoS			
QoS Priority Queue			
Bandwidth Control			
VLAN	802.1q, Q-in-Q (via Console port)		
VLAN ID			
VLAN Groups			
SSHv2			
Management	Console		
Power Down Trap			
DHCP			
Link Alarm	V	V	V
Firmware Upgrade			
Console			



Home Size Media Converter Solution



Model Name	HES-3112-CL-DR	HET-3012	HET-100
	HET-3012-DR		
	Managed	Non-Managed	Non-Managed
Interface			
F/O (Type)	2 x 100/1000Mbps (W2X/SFP)	100Mbps (BTFX/W2X/SFP)	100/1000Mbps (BTFX/W2X/SFP)
RJ-45	10/100/1000Mbps (RJ-45)	10/100Mbps (RJ-45)	10/100/1000Mbps (RJ-45)
H/W Specification			
Store and Forward Switching Mechanism	V	V	V
Auto-Crossover for MDI/MDI-X in TP Port	V	V	V
Auto-Negotiation in TP Port	V	V	V
Flow Control	V	V	V
Full/Half Duplex Mode Operation	V	V	V
Mac Address Table	2K	2K	1K
Memory Buffer (Bytes)	128K	128K	48K
Jumbo Frame (9K Bytes)	V	V	V
Dimension WxDxH	180 x 130 x 30mm	160 x 110 x 45mm	160 x 110 x 36mm
Temperature °C (Humidity)	Operating °C: 0~50, Storage °C: -20~60, (5%~90%)	Operating °C: 0~50, Storage °C: -20~60, (5%~90%)	Operating °C: 0~50, Storage °C: -20~60, (5%~90%)
Cable Tray	Optional (HES-FCT-S)	Built-in	Built-in
Fiber Redundancy			
Voltage Requirement	12VDC	12VDC	12VDC
Power Consumption	4.8W	3W	2.5W
Management & Features			
IEEE 802.3ah OAM			
IPv6	IPv4/IPv6 Dual Stack		
ISP Ethernet Tag Type	V		
QoS	P-bit, CoS, DSCP		
QoS Priority Queue	4		
Bandwidth Control	V		
VLAN	802.1q, Q-in-Q, Port Based		
VLAN ID	4094		
VLAN Groups	128		
SSHv2	V		
Management	Telnet, CLI, WEB , SNMP(v1,v2c)		
Power Down Trap	V		
DHCP	Client, Auto-Provisioning		
Link Alarm			
Firmware Upgrade	FTP/TFTP		



Order Information

MCT-RACK-18-MGM / MCT-RACK-18								
MODEL	SLOTS		POWER SOURCE		REMARK			
	Converter Module	Power Module	AC 100~240VAC	DC 48V				
MCT-RACK-18-MGM	18	2	-	-	Managed Model			
MCT-RACK-18-MGM-1A	18	2	1	-	Managed Model			
MCT-RACK-18-MGM-2A	18	2	2	-	Managed Model			
MCT-RACK-18-MGM-1D	18	2	-	1	Managed Model			
MCT-RACK-18-MGM-2D	18	2	-	2	Managed Model			
MCT-RACK-18-MGM-1AD	18	2	1	1	Managed Model			
MCT-RACK-18-MGM-AC POWER	-	-	-	-	AC Power Module			
MCT-RACK-18-MGM-DC POWER	-	-	-	-	DC Power Module			
MCT-RACK-18-2A	18	-	2	-	Non-Managed Model			
MCT-RACK-18-2D	18	-	-	2	Non-Managed Model			
MCT-RACK-18-1AD	18	-	1	1	Non-Managed Model			
MCT-RACK-12-MGM								
MODEL	SLOTS		POWER SOURCE		REMARK			
	Converter Module	Power Module	AC 100~240VAC	DC 48V				
MCT-RACK-12-MGM	12	2	-	-	Managed Model			
MCT-RACK-12-MGM-1A	12	2	1	-	Managed Model			
MCT-RACK-12-MGM-2A	12	2	2	-	Managed Model			
MCT-RACK-12-MGM-1D	12	2	-	1	Managed Model			
MCT-RACK-12-MGM-2D	12	2	-	2	Managed Model			
MCT-RACK-12-MGM-1AD	12	2	1	1	Managed Model			
MCT-RACK-12-MGM-AC POWER	-	-	-	-	AC Power Module			
MCT-RACK-12-MGM-DC POWER	-	-	-	-	DC Power Module			
MCT-3512 / MCT-3512-DR								
MODEL	FIBER PORT						TP PORT	
	Speed (Mbps)	Type	Wavelength (nm)	Connector	Distance	Port	Speed (Mbps)	Port
MCT-3512BTFC	1000	MM	850	SC	550M	1	10/100/1000	1
MCT-3512BTFC (SM-10/20/30/50/80)	1000	SM	1310/1310/1310/1550/1550	SC	10/20/30/50/80KM	1	10/100/1000	1
MCT-3512W2A (SM-10/20/40)	1000	WDM	TX: 1310/1310/1310 RX: 1550/1550/1550	SC	10/20/40KM	1	10/100/1000	1
MCT-3512W2B (SM-10/20/40)	1000	WDM	TX: 1550/1550/1550 RX: 1310/1310/1310	SC	10/20/40KM	1	10/100/1000	1
MCT-3512BTFC (SM-10)-DR	100/1000	SM	1310	SC	10KM	1	10/100/1000	1
MCT-3512W2A (SM-10)-DR	100/1000	WDM	TX: 1310 RX: 1550	SC	10KM	1	10/100/1000	1
MCT-3512W2B (SM-10)-DR	100/1000	WDM	TX: 1550 RX: 1310	SC	10KM	1	10/100/1000	1
MCT-3512SFP-DR	100/1000	SFP	-	-	-	1	10/100/1000	1

MCT-3612 / MCT-3612-DR							
MODEL	FIBER PORT						TP PORT
	Speed (Mbps)	Type	Wavelength (nm)	Connector	Distance	Port	Speed (Mbps) Port
MCT-3612BTFC	1000	MM	850	SC	550M	1	10/100/1000 1
MCT-3612BTFC (SM-10/20/30/50/80)	1000	SM	1310/1310/1310/1550/1550	SC	10/20/30/50/80KM	1	10/100/1000 1
MCT-3612W2A (SM-10/20/40)	1000	WDM	TX: 1310/1310/1310 RX: 1550/1550/1550	SC	10/20/40KM	1	10/100/1000 1
MCT-3612W2B (SM-10/20/40)	1000	WDM	TX: 1550/1550/1550 RX: 1310/1310/1310	SC	10/20/40KM	1	10/100/1000 1
MCT-3612BTFC (SM-10)-DR	100/1000	SM	1310	SC	10KM	1	10/100/1000 1
MCT-3612W2A (SM-10)-DR	100/1000	WDM	TX: 1310 RX: 1550	SC	10KM	1	10/100/1000 1
MCT-3612W2B (SM-10)-DR	100/1000	WDM	TX: 1550 RX: 1310	SC	10KM	1	10/100/1000 1
MCT-3612SFP-DR	100/1000	SFP	-	-	-	1	10/100/1000 1
MCT-3002 / MCT-3002-DR							
MODEL	FIBER PORT						TP PORT
	Speed (Mbps)	Type	Wavelength (nm)	Connector	Distance	Port	Speed (Mbps) Port
MCT-3002BTFC	1000	MM	850	SC	550M	1	10/100/1000 1
MCT-3002BTFC (SM-10/20/30/50/80)	1000	SM	1310/1310/1310/1550/1550	SC	10/20/30/50/80KM	1	10/100/1000 1
MCT-3002W2A (SM-10/20/40)	1000	WDM	TX: 1310/1310/1310 RX: 1550/1550/1550	SC	10/20/40KM	1	10/100/1000 1
MCT-3002W2B (SM-10/20/40)	1000	WDM	TX: 1550/1550/1550 RX: 1310/1310/1310	SC	10/20/40KM	1	10/100/1000 1
MCT-3002BTFC (SM-10)-DR	100/1000	SM	1310	SC	10KM	1	10/100/1000 1
MCT-3002W2A (SM-10)-DR	100/1000	WDM	TX: 1310 RX: 1550	SC	10KM	1	10/100/1000 1
MCT-3002W2B (SM-10)-DR	100/1000	WDM	TX: 1550 RX: 1310	SC	10KM	1	10/100/1000 1
MCT-3002SFP-DR	100/1000	SFP	-	-	-	1	10/100/1000 1
MCT-100							
MODEL	FIBER PORT						TP PORT
	Speed (Mbps)	Type	Wavelength (nm)	Connector	Distance	Port	Speed (Mbps) Port
MCT-100BTFC	100	MM	1310	SC	2KM	1	10/100 1
MCT-100BTFT	100	MM	1310	ST	2KM	1	10/100 1
MCT-100BTFC (SM-30/50/80/100)	100	SM	1310/1310/1310/1550	SC	30/50/80/100KM	1	10/100 1
MCT-100W2A (SM-20/40)	1000	WDM	TX: 1310/1310 RX: 1550/1550	SC	20/40KM	1	10/100 1
MCT-100W2B (SM-20/40)	100	WDM	TX: 1550/1550 RX: 1310/1310	SC	20/40KM	1	10/100 1
MCT-100SFP	100	SFP	-	-	-	1	10/100 1

CVT-RACK-16					
MODEL	SLOTS		POWER SOURCE		REMARK
	Converter Module	Power Module	AC 100~240VAC	DC 48V	
CVT-RACK-16	16	2	-	-	Non-Managed Model
CVT-RACK-16-P1 AC	16	2	1	-	Non-Managed Model
CVT-RACK-16-P1 DC	16	2	-	1	Non-Managed Model
CVT-RACK-16-P2 AC	16	2	2	-	Non-Managed Model
CVT-RACK-16-P2 DC	16	2	-	2	Non-Managed Model
CVT-RACK-16-AC POWER	-	-	-	-	AC Power Module
CVT-RACK-16-DC POWER	-	-	-	-	DC Power Module
CVT-RACK-16S					
MODEL	SLOTS		POWER SOURCE		REMARK
	Converter Module	Power Module	AC 100~240VAC	DC 48V	
CVT-RACK-16S	16	-	1 (Fixed)	-	Non-Managed Model

CVT-5002SFP+								
MODEL	FIBER PORT						TP PORT	
	Speed (Mbps)	Type	Wavelength (nm)	Connector	Distance	Port	Speed (Mbps)	Port
CVT-5002SFP+	10G	SFP+	-	-	-	2	-	-
CVT-3512								
MODEL	FIBER PORT						TP PORT	
	Speed (Mbps)	Type	Wavelength (nm)	Connector	Distance	Port	Speed (Mbps)	Port
CVT-3512BTFC	1000	MM	850	SC	550M	1	10/100/1000	1
CVT-3512BTFC (SM-10/20/30/50/80)	1000	SM	1310/1310/1310/1550/1550	SC	10/20/30/50/80KM	1	10/100/1000	1
CVT-3512W2A (SM-10/20/40)	1000	WDM	TX: 1310/1310/1310 RX: 1550/1550/1550	SC	10/20/40KM	1	10/100/1000	1
CVT-3512W2B (SM-10/20/40)	1000	WDM	TX: 1550/1550/1550 RX: 1310/1310/1310	SC	10/20/40KM	1	10/100/1000	1
CVT-3512SFP	1000	SFP	-	-	-	1	10/100/1000	1
CVT-3112								
MODEL	FIBER PORT						TP PORT	
	Speed (Mbps)	Type	Wavelength (nm)	Connector	Distance	Port	Speed (Mbps)	Port
CVT-3112BTFC	1000	MM	850	SC	550M	1	10/100/1000	1
CVT-3112BTFC (SM-10/20/30/50/80)	1000	SM	1310/1310/1310/1550/1550	SC	10/20/30/50/80KM	1	10/100/1000	1
CVT-3112W2A (SM-10/20/40)	1000	WDM	TX: 1310/1310/1310 RX: 1550/1550/1550	SC	10/20/40KM	1	10/100/1000	1
CVT-3112W2B (SM-10/20/40)	1000	WDM	TX: 1550/1550/1550 RX: 1310/1310/1310	SC	10/20/40KM	1	10/100/1000	1
CVT-3112SFP	1000	SFP	-	-	-	1	10/100/1000	1
CVT-2512								
MODEL	FIBER PORT						TP PORT	
	Speed (Mbps)	Type	Wavelength (nm)	Connector	Distance	Port	Speed (Mbps)	Port
CVT-2512BTFC	1000	MM	1310	SC	2KM	1	10/100	1
CVT-2512BTFT	1000	MM	1310	ST	2KM	1	10/100	1
CVT-2512BTFC (SM-30/50/80/100)	1000	SM	1310/1310/1310/1550	SC	30/50/80/100KM	1	10/100	1
CVT-2512W2A (SM-20/40)	1000	WDM	TX: 1310/1310 RX: 1550/1550	SC	20/40KM	1	10/100	1
CVT-2512W2B (SM-20/40)	1000	WDM	TX: 1550/1550 RX: 1310/1310	SC	20/40KM	1	10/100	1
CVT-2512SFP	1000	SFP	-	-	-	1	10/100	1

CVT-2112								
MODEL	FIBER PORT						TP PORT	
	Speed (Mbps)	Type	Wavelength (nm)	Connector	Distance	Port	Speed (Mbps)	Port
CVT-2112BTFC	100	MM	1310	SC	2KM	1	10/100	1
CVT-2112BTFT	100	MM	1310	ST	2KM	1	10/100	1
CVT-2112BTFC (SM-30/50/80/100)	100	SM	1310/1310/1310/1550	SC	30/50/80/100KM	1	10/100	1
CVT-2112W2A (SM-20/40)	100	WDM	TX: 1310/1310 RX: 1550/1550	SC	20/40KM	1	10/100	1
CVT-2112W2B (SM-20/40)	100	WDM	TX: 1550/1550 RX: 1310/1310	SC	20/40KM	1	10/100	1
CVT-2112SFP	100	SFP	-	-	-	1	10/100	1
CVT-3002-PLUS / CVT-3002-PLUS-DR								
MODEL	FIBER PORT						TP PORT	
	Speed (Mbps)	Type	Wavelength (nm)	Connector	Distance	Port	Speed (Mbps)	Port
CVT-3002BTFC-PLUS	1000	MM	850	SC	550M	1	10/100/1000	1
CVT-3002BTFC (SM-10/20/30/50/80)-PLUS	1000	SM	1310/1310/1310/1550/1550	SC	10/20/30/50/80KM	1	10/100/1000	1
CVT-3002W2A (SM-10/20/40)-PLUS	1000	WDM	TX: 1310/1310/1310 RX: 1550/1550/1550	SC	10/20/40KM	1	10/100/1000	1
CVT-3002W2B (SM-10/20/40)-PLUS	1000	WDM	TX: 1550/1550/1550 RX: 1310/1310/1310	SC	10/20/40KM	1	10/100/1000	1
CVT-3002BTFC (SM-10)-PLUS-DR	100/1000	SM	1310	SC	10KM	1	10/100/1000	1
CVT-3002W2A (SM-10)-PLUS-DR	100/1000	WDM	TX: 1310 RX: 1550	SC	10KM	1	10/100/1000	1
CVT-3002W2B (SM-10)-PLUS-DR	100/1000	WDM	TX: 1550 RX: 1310	SC	10KM	1	10/100/1000	1
CVT-3002SFP-PLUS-DR	100/1000	SFP	-	-	-	1	10/100/1000	1
CVT-3002FSMSFP-DR								
MODEL	FIBER PORT						TP PORT	
	Speed (Mbps)	Type	Wavelength (nm)	Connector	Distance	Port	Speed (Mbps)	Port
CVT-3002FSMSFP-DR	100/1000	SFP	-	-	-	2	-	-
CVT-3012								
MODEL	FIBER PORT						TP PORT	
	Speed (Mbps)	Type	Wavelength (nm)	Connector	Distance	Port	Speed (Mbps)	Port
CVT-3012SFP	1000	SFP	-	-	-	1	10/100/1000	1
CVT-100								
MODEL	FIBER PORT						TP PORT	
	Speed (Mbps)	Type	Wavelength (nm)	Connector	Distance	Port	Speed (Mbps)	Port
CVT-100BTFC	100	MM	1310	SC	2KM	1	10/100	1
CVT-100BTFT	100	MM	1310	ST	2KM	1	10/100	1
CVT-100BTFC (SM-30/50/80/100)	100	SM	1310/1310/1310/1550	SC	30/50/80/100KM	1	10/100	1
CVT-100W2A (SM-20/40)	100	WDM	TX: 1310/1310 RX: 1550/1550	SC	20/40KM	1	10/100	1
CVT-100W2B (SM-20/40)	100	WDM	TX: 1550/1550 RX: 1310/1310	SC	20/40KM	1	10/100	1

HES-3112-CL-DR								
MODEL	FIBER PORT						TP PORT	
	Speed (Mbps)	Type	Wavelength (nm)	Connector	Distance	Port	Speed (Mbps)	Port
HES-3112W2A (SM-10)-CL-DR	100/1000	WDM	TX: 1310 RX: 1550	SC	10KM	2	10/100/1000	1
HES-3112W2B (SM-10)-CL-DR	100/1000	WDM	TX: 1550 RX: 1310	SC	10KM	2	10/100/1000	1
HES-3112SFP-CL-DR	100/1000	SFP	-	-	-	2	10/100/1000	1
HET-3012 / HET-3012-DR								
MODEL	FIBER PORT						TP PORT	
	Speed (Mbps)	Type	Wavelength (nm)	Connector	Distance	Port	Speed (Mbps)	Port
HET-3012BTFC	1000	MM	850	SC	550M	1	10/100/1000	1
HET-3012BTFC (SM-10/20/30/50/80)	1000	SM	1310/1310/1310/1550/1550	SC	10/20/30/50/80KM	1	10/100/1000	1
HET-3012W2A (SM-10/20/40)	1000	WDM	TX: 1310/1310/1310 RX: 1550/1550/1550	SC	10/20/40KM	1	10/100/1000	1
HET-3012W2B (SM-10/20/40)	1000	WDM	TX: 1550/1550/1550 RX: 1310/1310/1310	SC	10/20/40KM	1	10/100/1000	1
HET-3012W2A (SM-10)-DR	100/1000	WDM	TX: 1310 RX: 1550	SC	10KM	1	10/100/1000	1
HET-3012W2B (SM-10)-DR	100/1000	WDM	TX: 1550 RX: 1310	SC	10KM	1	10/100/1000	1
HET-3012SFP-DR	100/1000	SFP	-	-	-	1	10/100/1000	1
HET-100								
MODEL	FIBER PORT						TP PORT	
	Speed (Mbps)	Type	Wavelength (nm)	Connector	Distance	Port	Speed (Mbps)	Port
HET-100BTFC	100	MM	1310	SC	2KM	1	10/100	1
HET-100BTFT	100	MM	1310	ST	2KM	1	10/100	1
HET-100BTFC (SM-30/50/80/100)	100	SM	1310/1310/1310/1550	SC	30/50/80/100KM	1	10/100	1
HET-100W2A (SM-20/40)	100	WDM	TX: 1310/1310 RX: 1550/1550	SC	20/40KM	1	10/100	1
HET-100W2B (SM-20/40)	100	WDM	TX: 1550/1550 RX: 1310/1310	SC	20/40KM	1	10/100	1
HET-100SFP	100	SFP	-	-	-	1	-	1



SFP Transceiver

			
Model Name	SFP-51	SFP-30	SFP-20
	10G Ethernet	Gigabit Ethernet	Fast Ethernet
Interface			
Speed	10 Gbps	1000Mbps	100Mbps
Transceiver Type	FC/W2X	RJ-45	RJ-45
Features			
Duplex link	V	V	V
Single Power Supply	3.3V	3.3V	3.3V
SFP MSA Compatible	SFF-8431	SFF-8074i	SFF-8074i
Digital Diagnostic SFF-8472 Compatible	V		
LC Duplex Receptacle	V		
Telcordia GR-468 Compliant	V		
RoHS Compliance	V	V	V
Lower power Dissipation	V	V	V
Class I Laser product	V		
Low EMI and Excellent ESD protection	V	V	V
Temperature (°C)	Operating °C: 0~60	Operating °C: 0~70	Operating °C: 0~70

				
Model Name	SFP-31-DR	SFP-31-D	SFP-31	SFP-21
	Dual Rate	Gigabit Ethernet	Gigabit Ethernet	Fast Ethernet
Interface				
Speed	100/1000Mbps	1000Mbps	1000Mbps	100Mbps
Transceiver Type	FC/W2X	FC/W2X	FC/W2X	FC/W2X
Features				
Duplex link	V	V	V	V
Single Power Supply	3.3V	3.3V	3.3V	3.3V
SFP MSA Compatible	SFF-8074i	SFF-8074i	SFF-8074i	SFF-8074i
Digital Diagnostic SFF-8472 Compatible	V	V	V	V
LC Duplex Receptacle	V	V	V	V
Telcordia GR-468 Compliant	V	V	V	V
RoHS Compliance	V	V	V	V
Lower power Dissipation	V	V	V	V
Class I Laser product	V	V	V	V
Low EMI and Excellent ESD protection	V	V	V	V
Temperature (°C)	Operating °C: 0~70	Operating °C: -40~85	Operating °C: 0~70	Operating °C: 0~70

Lightning Protector



Model Name	LPB-101G-P	LPB-101G	LPB-101
	Gigabit Ethernet	Gigabit Ethernet	Fast Ethernet
Interface			
TP Input (Type)	10/100/1000Mbps (RJ-45 /with PoE)	10/100/1000Mbps (RJ-45)	10/100Mbps (RJ-45)
TP Output (Type)	10/100/1000Mbps (RJ-45 /with PoE)	10/100/1000Mbps (RJ-45)	10/100Mbps (RJ-45)
Grounding Contact	1	1	1
Dimension WxDxH	70 x 25 x 25mm	70 x 25 x 25mm	70 x 25 x 25mm
Temperature °C (Humidity)	Operating °C: 0~50, Storage °C: -20~60, (5%~90%)	Operating °C: 0~50, Storage °C: -20~60, (5%~90%)	Operating °C: 0~50, Storage °C: -20~60, (5%~90%)

External Battery Unit



Model Name	EBU-120
Features	
Power Jack (DC Input)	1
Power Cord (DC Output)	1
Terminal Block (Battery Input)	1
Dimension WxDxH	124 x 70 x 30mm
Temperature °C (Humidity)	Operating °C: 0~50, Storage °C: -20~60, (5%~90%)
LED Indicator	Charging, Discharging
DC Input	12V
DC Output (supplied by external Power Adaptor)	11.5V
DC Output (supplied by external Battery)	10.8~13.5V
External Battery Type	VRLA
External Battery Capacity (recommended)	12V / 2.3Ah
Battery Backup / Recharge Feature	
Charging Current	400mA (Max)
Charging Time	7 Hours
Reverse Polarity Protection	V
Short Circuit Protection	V

Order Information

SFP-51						
MODEL	FIBER PORT					
	Speed (Gbps)	Type	Connector	Distance	Wavelength (nm)	Temperature
SFP-51FC	10	MM	LC	300M	850	0°C to 60°C
SFP-51FC (SM-10/40/80)	10	SM	LC	10/40/80KM	1310/1550/1550	0°C to 60°C
SFP-51W2A (SM-10/20/40)	10	WDM	LC	10/20/40KM	TX:1270/1270/1270 RX:1330/1330/1330	0°C to 60°C
SFP-51W2B (SM-10/20/40)	10	WDM	LC	10/20/40KM	TX:1330/1330/1330 RX:1270/1270/1270	0°C to 60°C
SFP-30						
MODEL	COPPER PORT					
	Speed (Mbps)	Type	Connector	Distance	Wavelength (nm)	Temperature
SFP-30TP	1000	-	RJ-45	100M		0°C to 70°C
SFP-20						
MODEL	COPPER PORT					
	Speed (Mbps)	Type	Connector	Distance	Wavelength (nm)	Temperature
SFP-20TP	100	-	RJ-45	100M		0°C to 70°C
SFP-31-DR						
MODEL	FIBER PORT					
	Speed (Mbps)	Type	Connector	Distance	Wavelength (nm)	Temperature
SFP-31FC-DR	100/1000	MM	LC	2KM/550M	1310	0°C to 70°C
SFP-31FC (SM-10)-DR	100/1000	SM	LC	10KM	1310	0°C to 70°C
SFP-31W2A (SM-10)-DR	100/1000	WDM	LC	10KM	TX:1310 RX:1550	0°C to 70°C
SFP-31W2B (SM-10)-DR	100/1000	WDM	LC	10KM	TX:1550 RX:1310	0°C to 70°C
SFP-31-D						
MODEL	FIBER PORT					
	Speed (Mbps)	Type	Connector	Distance	Wavelength (nm)	Temperature
SFP-31FC-D	1000	MM	LC	550M	850	-40°C to 85°C
SFP-31FC-(MM-02)-D	1000	MM	LC	2KM	1310	-40°C to 85°C
SFP-31FC (SM-10/20/40/80)-D	1000	SM	LC	10/20/40/80KM	1310/1310/1310/1550	-40°C to 85°C
SFP-31W2A (SM-10/20)-D	1000	WDM	LC	10/20KM	TX:1310/1310 RX:1550/1550	-40°C to 85°C
SFP-31W2B (SM-10/20)-D	1000	WDM	LC	10/20KM	TX:1550/1550 RX:1310/1310	-40°C to 85°C

SFP-31						
MODEL	FIBER PORT					
	Speed (Mbps)	Type	Connector	Distance	Wavelength (nm)	Temperature
SFP-31FC	1000	MM	LC	550M	850	0°C to 70°C
SFP-31FC (SM-10/20/40/50/80/120)	1000	SM	LC	10/20/40/50/80/120KM	1310/1310/1310/1550/1550/1550	0°C to 70°C
SFP-31W2A (SM-10/20/40/80)	1000	WDM	LC	10/20/40/80KM	TX:1310/1310/1310/1510 RX:1550/1550/1550/1570	0°C to 70°C
SFP-31W2B (SM-10/20/40/80)	1000	WDM	LC	10/20/40/80KM	TX:1550/1550/1550/1570 RX:1310/1310/1310/1510	0°C to 70°C
SFP-31FC-C11	1000	CWDM	LC	80KM	1470	0°C to 70°C
SFP-31FC-C12	1000	CWDM	LC	80KM	1490	0°C to 70°C
SFP-31FC-C13	1000	CWDM	LC	80KM	1510	0°C to 70°C
SFP-31FC-C14	1000	CWDM	LC	80KM	1530	0°C to 70°C
SFP-31FC-C15	1000	CWDM	LC	80KM	1550	0°C to 70°C
SFP-31FC-C16	1000	CWDM	LC	80KM	1570	0°C to 70°C
SFP-31FC-C17	1000	CWDM	LC	80KM	1590	0°C to 70°C
SFP-31FC-C18	1000	CWDM	LC	80KM	1610	0°C to 70°C
SFP-21						
MODEL	FIBER PORT					
	Speed (Mbps)	Type	Connector	Distance	Wavelength (nm)	Temperature
SFP-21FC	100	MM	LC	2KM	1310	0°C to 70°C
SFP-21FC (SM-20/30/50/80)	100	SM	LC	20/30/50/80KM	1310/1310/1310/1550	0°C to 70°C
SFP-21W2A (SM-20/40/80)	100	WDM	LC	20/40/80KM	TX:1310/1310/1310 RX:1550/1550/1550	0°C to 70°C
SFP-21W2B (SM-20/40/80)	100	WDM	LC	20/40/80KM	TX:1550/1550/1550 RX:1310/1310/1310	0°C to 70°C
SFP-21FC-C11	100	CWDM	LC	80KM	1470	0°C to 70°C
SFP-21FC-C12	100	CWDM	LC	80KM	1490	0°C to 70°C
SFP-21FC-C13	100	CWDM	LC	80KM	1510	0°C to 70°C
SFP-21FC-C14	100	CWDM	LC	80KM	1530	0°C to 70°C
SFP-21FC-C15	100	CWDM	LC	80KM	1550	0°C to 70°C
SFP-21FC-C16	100	CWDM	LC	80KM	1570	0°C to 70°C
SFP-21FC-C17	100	CWDM	LC	80KM	1590	0°C to 70°C
SFP-21FC-C18	100	CWDM	LC	80KM	1610	0°C to 70°C

LPB-101					
MODEL	COPPER PORT				
	Speed Mbps	Type	Input Port	Output Port	Note
LPB-101G-P	10/100/1000	RJ-45 with PoE	1	1	It is necessary to be grounding properly when implementing.
LPB-101G	10/100/1000	RJ-45	1	1	
LPB-101	10/100	RJ-45	1	1	
EBU-120					
MODEL	DC INPUT	EXTERNAL BATTERY (Recommended Spec.)		CHARGING/ BACKUP (for reference)	
	Voltage	Type	Capacity	Charging Time	Backup Time
EBU-120	12V	VRLA	12V / 2.3h	7hrs	2.2hrs (for HES-3109SSFP)



APPENDIX

Product Naming System Switch

Abbreviation		Function/Ports		Media/Interface		Distance		Notice			
		□□□□									
		Speed	■□□□								
Abbreviation	Contents	Symbol	Contents	Symbol	Contents	Symbol	Contents	Symbol	Contents		
SWH	Switching Hub	2	100Mbps	FC	Fiber Port +SC Connector	None	Multi Mode	RF	With CATV RF Module		
		3	1000Mbps (Gigabit)			(SM-XX)	Single Mode XX KM				
FOS	Fiber Optic Switch	5	10Gbps	FT	Fiber Port +ST Connector					PLUS	New Generation Product
ESW	Enterprise Ethernet Switch	Management	□■□□	W2A	WDM in 2 Wavelengths TX:1310nm/ RX:1550nm			DR	Support 100/1000Mbps Dual Rate Fiber Port		
		Symbol	Contents								
HET	Home Size Switch with Cable Tray	0	Non Management	W2B	WDM in 2 Wavelengths TX:1550nm/ RX:1310nm			BAT-II	With 2nd Generation Battery Charging Module		
		1	SNMP Management								
HES	Home Size Switch in Stylish ID	5	802.3ah					BAT-II-P	With 2nd Generation of Battery Charging Module and Power Protection Circuit.		
		6	802.1ag or Y.1731								
EPS	Enterprise PoE Switch	Port	□□■□	SFP	SFP Type Uplink			LP	With Lightning Protector		
		Symbol	Contents								
				1~n	F/O Port + TP Port	TP	TP Type Uplink			240W	Equipped with 240W AC Power Supply
								480W	Equipped with 480W AC Power Supply		

Residential Gateway

Abbreviation		Function/Ports		Media/Interface		Distance		Notice			
		□□□□									
		Speed	■□□□								
Abbreviation	Contents	Symbol	Contents	Symbol	Contents	Symbol	Contents	Symbol	Contents		
FWR5	The Fifth Generation Fiber Wireless Residential Gateway	2	100Mbps	SFP	SFP Type Uplink	None	Multi Mode	RF	With CATV RF Module		
		3	1000Mbps (Gigabit)			(SM-XX)	Single Mode XX KM				
		5	10Gbps	TP	TP Type Uplink			N	With 802.11n WiFi Module		
FRG	Fiber Residential Gateway	Management	□■□□							AC	With 802.11ac WiFi Module
		Symbol	Contents								
		0	Non Management					DR	Support 100/1000Mbps Dual Rate Uplink		
		1	SNMP Management								
				Port	□□■□					CW	Copper/Fiber Combo WAN
		Symbol	Contents								
		1~n	F/O Port + TP Port								

VoIP Residential Gateway

Abbreviation		Function/Ports		Media/Interface		Distance		Notice				
		□□□□										
		Speed	■□□□									
Abbreviation	Contents	Symbol	Contents	Symbol	Contents	Symbol	Contents	Symbol	Contents			
VRG5	The Fifth Generation VoIP Residential Gateway	2	100Mbps	SFP	SFP Type Uplink	None	Multi Mode	RF	With CATV RF Module			
		3	1000Mbps (Gigabit)			(SM-XX)	Single Mode XX KM					
		5	10Gbps	TP	TP Type Uplink			N	With 802.11n WiFi Module			
		Management □■□□						AC	With 802.11ac WiFi Module			
		Symbol Contents						DR	Support 100/1000Mbps Dual Rate Uplink			
		0	Non Management					CW	Copper/Fiber Combo WAN			
		1	SNMP Management									
		Port □□■□□										
		Symbol Contents										
		0~n	TP Port									
		Port (F/O) □□□■□										
		Symbol Contents										
		0~n	F/O Port									
		FXS Port (RJ-11) □□□□■										
		Symbol Contents										
		0~n	FXS Port									

Media Converter

Abbreviation		Function/Ports		Media/Interface		Distance		Notice	
		□□□□							
		Speed ■□□□							
Abbreviation	Contents	Symbol	Contents	Symbol	Contents	Symbol	Contents	Symbol	Contents
CVT	Stand-Alone Media Converter	2	100Mbps	BTFC	Base+TP Port+Fiber Port +SC Connector	None	Multi Mode	PLUS	New Generation Product
		3	1000Mbps (Gigabit)			(SM-XX)	Single Mode XX KM		
		5	10Gbps	BTFT	Base+TP Port+Fiber Port +ST Connector			DR	Support 100/1000Mbps Dual Rate Uplink
HET	Home Size Converter with Cable Tray	Management □■□□		W2A	WDM in 2 Wavelengths TX:1310nm/ RX:1550nm			CL	Copper/Fiber Combo LAN
		Symbol	Contents						
HES	Home Size Converter in Stylish ID	0	Non Management	W2B	WDM in 2 Wavelengths TX:1550nm/ RX:1310nm				
		1	SNMP Management						
		2	TS-1000 Management						
MCT	Compact Media Converter	3	Proxy IN-Band	FSM	Multi Mode to Single Mode				
		5	802.3ah						
		6	In-Rack Local Management	SFP	SFP Type Uplink				
		Switching □□■□							
		Symbol	Contents						
		0	Non Switch						
		1	Auto Switch						
		Port □□□■							
		Symbol	Contents						
		1~n	F/O Port + TP Port						

SFP Transceiver

Abbreviation		Function/Ports		Media/Interface		Distance		Notice	
		□□□□							
		Speed ■□□□							
Abbreviation	Contents	Symbol	Contents	Symbol	Contents	Symbol	Contents	Symbol	Contents
SFP	Small Form Factor Pluggable Transceiver	2	100Mbps	FC	Fiber Port + LC Connector	None	Multi Mode	DR	Support 100/1000Mbps Dual Rate
		3	1000Mbps (Gigabit)			(SM-XX)	Single Mode XX KM		
		5	10Gbps	W2A	WDM in 2 Wavelengths TX:1310nm/ RX:1550nm		CXX	CWDM Channel XX Channel 11~18 (1470nm ~1610nm)	D
Management □■□□		W2B	WDM in 2 Wavelengths TX:1550nm/ RX:1310nm						
				Symbol	Contents				
		0	No DMI	TP	Copper Port (RJ-45)	(MM-XX)	Multi Mode XX KM		
		1	Support DMI						

Specification

1 X 9 Fixed Fiber Transceiver

Fiber Transceiver Information - Dual Rate	
SINGLE-MODE	
TYPE	BTFC(SM-10)-DR
Connector Type	SC
Wavelength	1310nm
Typical Distance	10 Km
Min TX PWR	-9.5dBm
Max TX PWR	-3.0dBm
Sensitivity	-20.0 dBm
Link Budget	10.5dB

2 WAVE-LENGTH WDM		
TYPE	W2A(SM-10)-DR	W2B(SM-10)-DR
Connector Type	SC	SC
Wavelength (Tx/Rx)	1310/1550nm	1550/1310nm
Typical Distance	10 Km	10 Km
Min TX PWR	-10.0dBm	-10.0dBm
Max TX PWR	-3.0dBm	-3.0dBm
Sensitivity	-20.0dBm	-20.0dBm
Link Budget	10.0dB	10.0dB

Fiber Transceiver Information - 1000M		
MULTI-MODE		
TYPE	BTFC	BTFT
Connector Type	SC	ST
Wavelength	850nm	850nm
Typical Distance	550m	550m
Min TX PWR	-9.5dBm	-9.5dBm
Max TX PWR	-4.0dBm	-4.0dBm
Sensitivity	-18.0dBm	-18.0dBm
Link Budget	8.5dB	8.5dB

SINGLE-MODE						
TYPE	BTFC(SM-10)	BTFC(SM-20)	BTFC(SM-30)	BTFC(SM-50)	BTFC(SM-80)	BTFC(SM-120)
Connector Type	SC	SC	SC	SC	SC	SC
Wavelength	1310nm	1310nm	1310nm	1550nm	1550nm	1550nm
Typical Distance	10 Km	20 Km	30 Km	50 Km	80 Km	120 Km
Min TX PWR	-9.5dBm	-5.0dBm	-5.0dBm	-5.0dBm	0dBm	0dBm
Max TX PWR	-3.0dBm	3.0dBm	3.0dBm	3.0dBm	5.0dBm	5.0dBm
Sensitivity	-20.0 dBm	-24.0dBm	-24.0dBm	-24.0dBm	-24.0dBm	-32.0dBm
Link Budget	10.5dB	19.0dB	19.0dB	19.0dB	24.0dB	32.0dB

2 WAVE-LENGTH WDM										
TYPE	W2A (SM-10)	W2B (SM-10)	W2A (SM-20)	W2B (SM-20)	W2A (SM-40)	W2B (SM-40)	W2A (SM-60)	W2B (SM-60)	W2A (SM-80)	W2B (SM-80)
Connector Type	SC	SC	SC	SC	SC	SC	SC	SC	SC	SC
Wavelength (Tx/Rx)	1310nm /1550nm	1550nm /1310nm	1310nm /1550nm	1550nm /1310nm	1310nm /1550nm	1550nm /1310nm	1310nm /1550nm	1550nm /1310nm	1510nm /1590nm	1590nm /1510nm
Typical Distance	10 Km	10 Km	20 Km	20 Km	40 Km	40 Km	60 Km	60 Km	80 Km	80 Km
Min TX PWR	-10.0dBm	-9.0dBm	-7.0dBm	-7.0dBm	-3.0dBm	-3.0dBm	0dBm	-1.0dBm	-2.0dBm	-2.0dBm
Max TX PWR	-3.0dBm	-3.0dBm	0 dBm	0 dBm	2.0dBm	2.0dBm	5.0dBm	5.0dBm	3.0dBm	3.0dBm
Sensitivity	-22.0dBm	-22.0dBm	-23.0dBm	-23.0dBm	-22.0dBm	-22.0dBm	-25.0dBm	-24.0dBm	-26.0dBm	-26.0dBm
Link Budget	12.0dB	13.0dB	16.0dB	16.0dB	19.0dB	19.0dB	25.0dB	23.0dB	24.0dB	24.0dB

[illegible]

1 X 9 Fixed Fiber Transceiver

Fiber Transceiver Information - 100M			
MULTI-MODE			
TYPE	BTFC-850	BTFC	BTFT
Connector Type	SC	SC	ST
Wavelength	850nm	1310nm	1310nm
Typical Distance	2 Km	2 Km	2 Km
Min TX PWR	-10.0dBm	-20.0dBm	-20.0dBm
Max TX PWR	-4.0dBm	-14.0dBm	-14.0dBm
Sensitivity	-24.0dBm	-31.0dBm	-31.0dBm
Link Budget	14.0dB	11.0dB	11.0dB

SINGLE-MODE								
TYPE	BTFC(SM-10)	BTFC(SM-20)	BTFC(SM-30)	BTFC(SM-50)	BTFC(SM-60)	BTFC(SM-80)	BTFC(SM-100)	BTFC(SM-120)
Connector Type	SC	SC	SC	SC	SC	SC	SC	SC
Wavelength	1310nm	1310nm	1310nm	1310nm	1310nm	1310nm	1550nm	1550nm
Typical Distance	10 Km	20 Km	30 Km	50 Km	60 Km	80 Km	100 Km	120 Km
Min TX PWR	-15.0dBm	-15.0dBm	-15.0dBm	-5.0dBm	-5.0dBm	0dBm	-5.0dBm	0dBm
Max TX PWR	-8.0dBm	-8.0dBm	-8.0dBm	0dBm	0dBm	5.0dBm	0dBm	5.0dBm
Sensitivity	-34.0dBm	-34.0dBm	-34.0dBm	-35.0dBm	-35.0dBm	-36.0dBm	-35.0dBm	-35.0dBm
Link Budget	19.0dB	19.0dB	19.0dB	30.0dB	30.0dB	36.0dB	30.0dB	35.0dB

2 WAVE-LENGTH WDM										
TYPE	W2A(SM-20)	W2B(SM-20)	W2A(SM-40)	W2B(SM-40)	W2A(SM-60)	W2B(SM-60)	W2A(SM-80)	W2B(SM-80)	W2A(SM-120)	W2B(SM-120)
Connector Type	SC	SC	SC	SC	SC	SC	SC	SC	SC	SC
Wavelength (Tx/Rx)	1310nm /1550nm	1550nm /1310nm	1310nm /1550nm	1550nm /1310nm	1310nm /1550nm	1550nm /1310nm	1310nm /1550nm	1550nm /1310nm	1510nm /1570nm	1570nm /1510nm
Typical Distance	20 Km	20 Km	40 Km	40 Km	60 Km	60 Km	80 Km	80 Km	120 Km	120 Km
Min TX PWR	-14.0dBm	-14.0dBm	-8.0dBm	-8.0dBm	-5.0dBm	-5.0dBm	0dBm	-2.0dBm	-3.0dBm	-3.0dBm
Max TX PWR	-8.0dBm	-8.0dBm	0 dBm	0 dBm	0dBm	0dBm	5.0dBm	4.0dBm	3.0dBm	3.0dBm
Sensitivity	-31.0dBm	-31.0dBm	-34.0dBm	-34.0dBm	-33.0dBm	-33.0dBm	-34.0dBm	-35.0dBm	-35.0dBm	-35.0dBm
Link Budget	17.0dB	17.0dB	26.0dB	26.0dB	28.0dB	28.0dB	34.0dB	33.0dB	32.0dB	32.0dB

[illegible]

SFP Fiber Transceiver

Fiber Transceiver Information 10G						
MULTI-MODE						
TYPE	SFP-51FC					
Connector Type	LC					
Wavelength	850nm					
Typical Distance	300m					
Min TX PWR	-7.3dBm					
Max TX PWR	-1.2dBm					
Sensitivity	-9.9 dBm					
Link Budget	2.6dB					
SINGLE-MODE						
TYPE	SFP-51FC (SM-10)		SFP-51FC (SM-40)		SFP-51FC (SM-80)	
Connector Type	LC		LC		LC	
Wavelength	1310nm		1550nm		1550nm	
Typical Distance	10 Km		40 Km		80 Km	
Min TX PWR	-8.2dBm		-4.7dBm		0dBm	
Max TX PWR	0.5dBm		4.0dBm		4.0dBm	
Sensitivity	-14.4dBm		-15.8dBm		-23dBm	
Link Budget	6.2dB		11.1dB		23.0dB	
2 WAVE-LENGTH WDM						
TYPE	SFP-51W2A(SM-10)	SFP-51W2B(SM-10)	SFP-51W2A(SM-20)	SFP-51W2B(SM-20)	SFP-51W2A(SM-40)	SFP-51W2B(SM-40)
Connector Type	LC	LC	LC	LC	LC	LC
Wavelength (Tx/Rx)	1270nm/1330nm	1330nm/1270nm	1270nm/1330nm	1330nm/1270nm	1270nm/1330nm	1330nm/1270nm
Typical Distance	10 Km	10 Km	20 Km	20 Km	40 Km	40 Km
Min TX PWR	-8.2dBm	-8.2dBm	-2dBm	-2dBm	1dBm	1dBm
Max TX PWR	0.5 dBm	0.5 dBm	2.0dBm	2.0dBm	5.0dBm	5.0dBm
Sensitivity	-14.4dBm	-14.4dBm	-14.0dBm	-14.0dBm	-15.0dBm	-15.0dBm
Link Budget	6.2dB	5.8dB	12.0dB	12.0dB	16.0dB	16.0dB
Fiber Transceiver Information - Dual Rate						
MULTI-MODE						
TYPE	SFP-31FC-DR					
Connector Type	LC					
Wavelength	1310nm					
Typical Distance (100Mbps/1000Mbps)	2 Km/550m					
Min TX PWR	-11.5dBm					
Max TX PWR	-5.0dBm					
Sensitivity (100Mbps/1000Mbps)	-26.0dBm/-22.0dBm					
Link Budget (100Mbps/1000Mbps)	14.5dB/10.5dB					
SINGLE-MODE						
TYPE	SFP-31FC(SM-10)-DR					
Connector Type	LC					
Wavelength	1310nm					
Typical Distance	10 Km					
Min TX PWR	-9.5dBm					
Max TX PWR	-3.0dBm					
Sensitivity	-20.0dBm					
Link Budget	10.5dB					
2 WAVE-LENGTH WDM						
TYPE	SFP-31W2A(SM-10)-DR			SFP-31W2B(SM-10)-DR		
Connector Type	LC			LC		
Wavelength (Tx/Rx)	1310/1550nm			1550/1310nm		
Typical Distance	10 Km			10 Km		
Min TX PWR	-9.0dBm			-9.0dBm		
Max TX PWR	-3.0dBm			-3.0dBm		
Sensitivity	-20.0dBm			-20.0dBm		
Link Budget	11.0dB			11.0dB		

SFP Fiber Transceiver

Fiber Transceiver Information - 1000M										
MULTI-MODE										
TYPE	SFP-31FC									
Connector Type	LC									
Wavelength	850nm									
Typical Distance	550m									
Min TX PWR	-10.0dBm									
Max TX PWR	-3.0dBm									
Sensitivity	-18.0dBm									
Link Budget	8.0dB									
SINGLE-MODE										
TYPE	SFP-31FC(SM-10)	SFP-31FC(SM-20)	SFP-31FC(SM-30)	SFP-31FC(SM-40)	SFP-31FC(SM-50)	SFP-31FC(SM-80)				
Connector Type	LC	LC	LC	LC	LC	LC				
Wavelength	1310nm	1310nm	1310nm	1310nm	1550nm	1550nm				
Typical Distance	10 Km	20 Km	30 Km	40 Km	50 Km	80 Km				
Min TX PWR	-9.0dBm	-7 dBm	-4.0dBm	-5.0dBm	-5.0dBm	0dBm				
Max TX PWR	-3.0dBm	0 dBm	1.0dBm	0dBm	0dBm	5.0dBm				
Sensitivity	-22.0dBm	-24.0dBm	-24.0dBm	-24.0dBm	-24.0dBm	-24.0dBm				
Link Budget	13.0dB	17.0dB	20.0dB	19.0dB	19.0dB	24.0dB				
2 WAVE-LENGTH WDM										
TYPE	SFP-31W2A (SM-10)	SFP-31W2B (SM-10)	SFP-31W2A (SM-20)	SFP-31W2B (SM-20)	SFP-31W2A (SM-40)	SFP-31W2B (SM-40)	SFP-31W2A (SM-60)	SFP-31W2B (SM-60)	SFP-31W2A (SM-80)	SFP-31W2B (SM-80)
Connector Type	LC	LC	LC	LC	LC	LC	LC	LC	LC	LC
Wavelength (Tx/Rx)	1310nm /1550nm	1550nm /1310nm	1310nm /1550nm	1550nm /1310nm	1310nm /1550nm	1550nm /1310nm	1310nm /1550nm	1550nm /1310nm	1510nm /1570nm	1570nm /1510nm
Typical Distance	10 Km	10 Km	20 Km	20 Km	40 Km	40 Km	60 Km	60 Km	80 Km	80 Km
Min TX PWR	-9.0dBm	-9.0dBm	-8.0dBm	-8.0dBm	-5.0dBm	-5.0dBm	0dBm	0dBm	-2.0dBm	-2.0dBm
Max TX PWR	-3.0dBm	-3.0dBm	0 dBm	0 dBm	2.0dBm	2.0dBm	5.0dBm	5.0dBm	3.0dBm	3.0dBm
Sensitivity	-20.0dBm	-20.0dBm	-20.0dBm	-20.0dBm	-24.0dBm	-24.0dBm	-24.0dBm	-24.0dBm	-26.0dBm	-26.0dBm
Link Budget	11.0dB	11.0dB	12.0dB	12.0dB	19.0dB	19.0dB	24.0dB	24.0dB	24.0dB	24.0dB
CWDM										
TYPE	SFP-31FC-C11	SFP-31FC-C12	SFP-31FC-C13	SFP-31FC-C14	SFP-31FC-C15	SFP-31FC-C16	SFP-31FC-C17	SFP-31FC-C18		
Connector Type	LC	LC	LC	LC	LC	LC	LC	LC		
Wavelength	1470nm	1490nm	1510nm	1530nm	1550nm	1570nm	1590nm	1610nm		
Typical Distance	80 Km	80 Km	80 Km	80 Km	80 Km	80 Km	80 Km	80 Km		
Min TX PWR	0dBm	0dBm	0dBm	0dBm	0dBm	0dBm	0dBm	0dBm		
Max TX PWR	5.0dBm	5.0dBm	5.0dBm	5.0dBm	5.0dBm	5.0dBm	5.0dBm	5.0dBm		
Sensitivity	-24.0dBm	-24.0dBm	-24.0dBm	-24.0dBm	-24.0dBm	-24.0dBm	-24.0dBm	-24.0dBm		
Link Budget	24.0dB	24.0dB	24.0dB	24.0dB	24.0dB	24.0dB	24.0dB	24.0dB		

SFP Fiber Transceiver

Fiber Transceiver Information - 100M								
MULTI-MODE								
TYPE	SFP-21FC							
Connector Type	LC							
Wavelength	1310nm							
Typical Distance	2Km							
Min TX PWR	-20.0dBm							
Max TX PWR	-14.0dBm							
Sensitivity	-30.0dBm							
Link Budget	10.0dB							
SINGLE-MODE								
TYPE	SFP-21FC(SM-20)	SFP-21FC(SM-30)	SFP-21FC(SM-50)	SFP-21FC(SM-80)				
Connector Type	LC	LC	LC	LC				
Wavelength	1310nm	1310nm	1310nm	1550nm				
Typical Distance	20 Km	30 Km	50 Km	80 Km				
Min TX PWR	-15.0dBm	-15.0dBm	-5.0dBm	-5.0dBm				
Max TX PWR	-8.0dBm	-8dBm	0dBm	0dBm				
Sensitivity	-28.0dBm	-34.0dBm	-35.0dBm	-34.0dBm				
Link Budget	13.0dB	19.0dB	30.0dB	29.0dB				
2 WAVE-LENGTH WDM								
TYPE	SFP-21W2A (SM-20)	SFP-21W2B (SM-20)	SFP-21W2A (SM-40)	SFP-21W2B (SM-40)	SFP-21W2A (SM-60)	SFP-21W2B (SM-60)	SFP-21W2A (SM-80)	SFP-21W2B (SM-80)
Connector Type	LC	LC	SC	LC	LC	LC	LC	LC
Wavelength	1310nm/1550nm1550nm/1310nm1310nm/1550nm1550nm/1310nm1310nm/1550nm1550nm/1310nm							
Typical Distance	20 Km	20 Km	40 Km	40 Km	60 Km	60 Km	80 Km	80 Km
Min TX PWR	-14.0dBm	-14.0dBm	-5.0dBm	-5.0dBm	-5.0dBm	-5.0dBm	0dBm	-5.0dBm
Max TX PWR	-8.0dBm	-8.0dBm	0 dBm	0 dBm	0 dBm	0 dBm	5.0dBm	0 dBm
Sensitivity	-32.0dBm	-32.0dBm	-28.2dBm	-28.2dBm	-34.0dBm	-34.0dBm	-34dBm	-35dBm
Link Budget	18.0dB	18.0dB	23.2dB	23.2dB	29.0dB	29.0dB	34.0dB	30.0dB
CWDM								
TYPE	SFP-21FC-C11	SFP-21FC-C12	SFP-21FC-C13	SFP-21FC-C14	SFP-21FC-C15	SFP-21FC-C16	SFP-21FC-C17	SFP-21FC-C18
Connector Type	LC	LC	LC	LC	LC	LC	LC	LC
Wavelength	1470nm	1490nm	1510nm	1530nm	1550nm	1570nm	1590nm	1610nm
Typical Distance	80 Km	80 Km	80 Km	80 Km	80 Km	80 Km	80 Km	80 Km
Min TX PWR	-5.0dBm	-5.0dBm	-5.0dBm	-5.0dBm	-5.0dBm	-5.0dBm	-5.0dBm	-5.0dBm
Max TX PWR	0dBm	0dBm	0dBm	0dBm	0dBm	0dBm	0dBm	0dBm
Sensitivity	-34.0dBm	-34.0dBm	-34.0dBm	-34.0dBm	-34.0dBm	-34.0dBm	-34.0dBm	-34.0dBm
Link Budget	29.0dB	29.0dB	29.0dB	29.0dB	29.0dB	29.0dB	29.0dB	29.0dB

Optical RF Receiver

Parameter	Unit	Min	Typ	Max	Note
Optical Specifications					
Wavelength	nm	1260	-	1610	
Optical Return Loss	dB	-	45	-	
Optical Input Power	dBm	-6	-	0	AGC (optical Level Auto Gain Control)
Fiber Optic Connector	-	SC/APC			
RF Specifications					
RF Bandwidth	MHz	45	-	1000	
Output Level	dBuV	-	88	-	
Flatness	dB	-	+/- 1	-	
Slope	dB	-	3	5	
Return Loss	dB	14	16	-	
CNR	dB	46	-	-	@-6dBm; OMI=3.5%
CSO	dBc	55	-	-	@0dBm; OMI=3.5%
CTB	dBc	55	-	-	@0dBm; OMI=3.5%
RF Output Impedance	Ω	-	75	-	
RF Connector	-	SC/APC			Fit for Cable Size

WiFi Module

Parameter	Unit	Min	Type	Max	Note
General Specification					
WLAN Standard	-	IEEE 802.11b/g/n/ac, 2T2R			
Modulation	-	BPSK, QPSK, 16QAM, 64QAM, DBPSK, DQPSK and CCK			
Frequency Range	MHz	2400	-	2483.5	
Radio Output Power					
802.11b Mode	dBm	14.5	16	17	11MHz
802.11g Mode	dBm	12.5	14	15	54MHz
802.11n Mode	dBm	12.5	14	15	HT20-MCS7
802.11n Mode	dBm	12.5	14	15	HT40-MCS7
802.11ac Mode	dBm		12		HT20-MCS9
802.11ac Mode	dBm		12		HT40-MCS9
802.11ac Mode	dBm		12		HT80-MCS9
Receiver Sensitivity					
802.11b Mode	dBm	-	-83	-	11MHz
802.11g Mode	dBm	-	-65	-	54MHz
802.11n Mode (2.4G)	dBm	-	-64	-	HT20-MCS7
802.11n Mode (2.4G)	dBm	-	-61	-	HT40-MCS7
802.11n Mode (5G)	dBm	-	-64	-	HT20-MCS7
802.11n Mode (5G)	dBm	-	-61	-	HT40-MCS7
802.11ac Mode	dBm	-	-57	-	VHT20-MCS9
802.11ac Mode	dBm	-	-54	-	VHT40-MCS9
802.11ac Mode	dBm	-	-51	-	VHT80-MCS9
Data Rate					
802.11b CCK Mode	Mbps	11, 5.5, 2, 1			
802.11g OFDM Mode	Mbps	54, 48, 36, 24, 18, 12, 9, 6			
802.11n HT20 Mode	Mbps	130, 117, 104, 78, 65, 58.5, 52, 39, 26, 19.5, 13, 6.5			
802.11n HT20 Mode	Mbps	144.4, 130, 115.6, 88.7, 72.2, 65, 57.8, 43.3, 28.9, 21.7, 14.4, 7.2			
802.11n HT40 Mode	Mbps	270, 243, 216, 162, 135, 121.5, 108, 81, 54, 40.5, 27, 13.5			
802.11n HT40 Mode	Mbps	300, 270, 240, 180, 150, 135, 120, 90, 60, 45, 30, 15			
802.11ac HT80 Mode	Mbps	390, 351, 292.5, 263.2, 234, 175.5, 117, 87.7, 58.5, 29.2			
802.11ac HT80 Mode	Mbps	433.3, 390, 325, 292.5, 260, 195, 130, 97.5, 65, 32.5			

External Battery (Recommended)

Model	Battery Type	Battery Voltage (V)	Battery Capacity (AH)	Charging Time* (Hours)	Backup Time** (Hours)
FOS-5126-BAT	VRLA	12	26	16	8
FOS-5126-BAT-P	VRLA	12	26	16	8
FOS-3148-BAT	VRLA	12	52	16	8
FOS-3148-BAT-P	VRLA	12	52	16	8
FOS-3124-BAT-II	VRLA	12	26	16	8
FOS-3124-BAT-II-P	VRLA	12	26	16	8
SWH-3109-DR-BAT	VRLA	12	7	16	8
HES-3109SSFP + EBU-120	VRLA	12	2.3	7	2.2

* Charging time depends on the battery capacity of your choice. The values in the table are for reference only.

** The backup time is based on full loading of device. The actual time might be longer depending on the application environment.

Shipping & Packing Information

MODEL	PACKING UNIT	PER CARTON			N.W (Kg)	G.W (Kg)	PRODUCT SINGLE PACKAGE			SINGLE PACKAGE WEIGHT
		D(cm)	W(cm)	H(cm)			D(cm)	W(cm)	H(cm)	
FOS-5126-1AD	5	57	34	67	20.5	22	550	315	115	4.1
FOS-3148-2A	2	56.5	47.0	28.0	13.3	14.7	535	460	115	6.63
FOS-3148-BAT-1A	2	56.5	47.0	28.0	15.3	16.7	535	460	115	7.67
FOS-3128-1A	5	57	34	67	20.5	22	550	315	115	4.1
FOS-3128-2A	5	57	34	67	22	23.5	550	315	115	4.4
ESW-3128SFP-1A	5	57	34	67	19.6	21.1	550	315	115	3.92
FOS-3124-BAT-IIP-1A	2	56.5	47.0	28.0	14.4	15.8	535	460	115	7.2
SWH-3109	10	45.0	41.0	41.0	12.8	13.9	380	220	80	1.28
HES-3109	10	45.0	37.0	39.0	9.1	10.2	347	215	68	0.91
HES-3109-RF	10	45.0	37.0	39.0	9.3	10.4	347	215	68	0.93
HES-3109SSFP-DR	10	35	47	27	6.6	7.6	250	170	90	0.66
HES-3106	10	35	47	27	6.2	7.2	250	170	90	0.62
HES-3106-RF	10	35	47	27	6.8	7.8	250	170	90	0.68
FWR5-3105SFP-CW-AC-DR	10	42.0	59.4	39.0	11	12.5	408	284	70	1.1
VRG5-31412SFP-CW-AC-DR	10	42.0	59.4	39.0	11	12.5	408	284	70	1.1
CCT-CHASSIS-II	2	57	54	56.5	17.5	19.5	530	510	255	8.75
CCT-3512	20	35	47	27	4	4.8	166	120	88.5	0.2
PCT-3512	10	62	35	31	5.8	6.6	298	137	62	0.58
CVT-RACK-16(without Power)	2	57.0	54.0	56.5	15.3	17.3	530	510	255	7.65
CVT-RACK-16-P1-AC	2	57.0	54.0	56.5	18.2	20.2	530	510	255	9.1
CVT-RACK-16-P2-AC	2	57.0	54.0	56.5	21.2	23.2	530	510	255	10.6
CVT-RACK-16-AC POWER	4	51	34	34	6.5	7.5	310	240	135	1.625
CVT-RACK-16-DC POWER	4	51	34	34	5.2	6.2	310	240	135	1.3
CVT-RACK-16S	2	56	42	56	13.8	15.4	540	400	255	6.9
CVT-5002SFP+	20	35	47	27	9.7	10.7	166	120	88.5	0.485
CVT-3512	20	35	47	27	10.2	11.2	166	120	88.5	0.51
CVT-3112	20	35	47	27	9.6	10.6	166	120	88.5	0.48
CVT-2512	20	35	47	27	9.6	10.6	166	120	88.5	0.48
CVT-2112	20	35	47	27	11.6	12.6	166	120	88.5	0.58
CVT-3002-PLUS	20	35	47	27	10	11	166	120	88.5	0.54
CVT-3002FSMSFP-DR	20	35	47	27	9	10	166	120	88.5	0.45
CVT-100	20	35	47	27	9.8	10.8	166	120	88.5	0.49
MCT-RACK-18-MGM-2A	2	56.5	47	36	15.6	17.6	545	450	150	7.8
MCT-RACK-18-MGM-AC POWER	4	51	34	34	3.6	4.6	310	240	135	0.9
MCT-RACK-18-2A	2	56.5	47.0	36.0	15.2	17.2	530	510	255	7.6
MCT-3512	20	35	47	27	7.4	8.4	166	120	88.5	0.37
MCT-3612	20	35	47	27	7.4	8.4	166	120	88.5	0.37
MCT-3002	20	35	47	27	7.4	8.4	166	120	88.5	0.37
MCT-100	20	35	47	27	7.2	8.2	166	120	88.5	0.36

MODEL	PACKING UNIT	PER CARTON			N.W (Kg)	G.W (Kg)	PRODUCT SINGLE PACKAGE			SINGLE PACKAGE WEIGHT
		D(cm)	W(cm)	H(cm)			D(cm)	W(cm)	H(cm)	
HET-3012	20	62	35	31	11.4	12.6	298	137	62	0.57
HET-100	20	62	35	31	11.4	12.6	298	137	62	0.57
SFP	30p/Box	32	31	15	0.72	0.82	240	155	60	0.024 (Unit)
SFP	600p/Carton	51	34	34	16.4	17.4	240	155	60	0.82 (Box)
LPB-101	5	19	11	3.2	0.15	0.22				
LPB-101G	5	19	11	3.2	0.15	0.22				
LPB-101G-P	5	19	11	3.2	0.15	0.22				
EBU-120	50p/Carton	60	32	38	10	12.2	166	120	44	0.2
HES-FCS-S	40	50	38	43	9.4	11.2	242	205	50	0.3