ICS-G24S4X

24x 100/1000Base-X SFP with 4x GbE Combo plus 4x 10GbE SFP+ Core Switch

ICS-G24S2X

24x 100/1000Base-X SFP with 4x GbE Combo plus 2x 10GbE SFP+ Core Switch

ICS-G24S4X & ICS-G24S2X are industrial grade Ethernet Core Switches that are equipped with 20 gigabit SFP ports plus 4 combo gigabit ports and 2 or 4 10G SFP+ ports. ICS series models are all fan-less designs with redundant, isolated power supplies (2 AC, 2 DC, AC + DC) and can be mounted in 19 inch EIA standard rack. This series offers various layer 2 Ethernet functions (IGMP, VLAN, QoS , Security, IPv6, bandwidth control, and port mirroring) and also support µ-Ring redundancy protocol that can establish 14 independent rings for flexible applications, especially when employed in backbone infrastructure. ICS switches can also be managed centrally and conveniently by CTC Union's SmartView™ Element Management System and mass configured by SmartConfig™.
Housed in rugged rack mountable enclosures, ICS Series complies with many industrial-grade standards and are ideal for deployments in harsh environments to deliver mission-critical network services. Additionally, with high port density and Gigabit or 10 Gigabit high-speed uplink, ICS-G24S4X & ICS-G24S2X are a reliable and scalable solution for core layer or backbone applications.

Feature

- 24x 100/1000Base-X SFP with 4x Combo (SFP+RJ-45) and 4x 10G Base-X SFP+ (ICS-G24S4X)
- 24x 100/1000Base-X SFP with 4x Combo (SFP+RJ-45) and 2x 10G Base-X SFP+ (ICS-G24S2X)
- UL60950-1, CE, FCC, Rail Traffic EN50121-4 certified
- Redundancy isolated low voltage 24/48VDC, or/and isolated High voltage AC/DC (110/220 VAC/VDC) power inputs
- Supports negative power input with isolated RS-232 console port (for example in telecom system)
- Industrial Grade EMS, EMI, EN61000-6-2, EN61000-6-4 certified
- STP, RSTP, MSTP, ITU-T G.8032 Ethernet Ring Protection Switching (ERPS) for redundant cabling
- Provides 14 instances that each can support µ-Ring, u-Chain or Sub-Ring type for flexible uses (see Figure 4). Supports up to 14 rings in one device (see Figure 2).
- µ-Ring for Redundant Cabling, recovery time<10ms in 250 devices
- DHCP Server/Client/Relay/Snooping/Snooping option 82/Relay option 82
- QoS, Traffic classification QoS, CoS, bandwidth control for Ingress and Egress, Storm Control, DiffServ
- IEEE802.1q VLAN, MAC based VLAN, IP subnet based VLAN, Protocol based VLAN, VLAN translation, GVRP, MVR
- Dynamic IEEE 802.3ad LACP Link Aggregation, Static Link Aggregation
- IGMP snooping V1/V2/V3, IGMP Filtering/ Throttling, IGMP query, IGMP proxy reporting, MLD snooping V1/V2
- Security: Port based and MAC based IEEE802.1X, RADIUS, ACL, TACACS+, HTTP/HTTPS, SSL/SSH v2
- Software upgrade via TFTP and HTTP, redundant firmware to avoid in case of upgrade failure
- Supports IEEE1588 PTP V2 for precise time synchronization to operate in Ordinary-Boundary, Peer to Peer Transparent Clock, End to End Transparent Clock, Master, Slave mode by each port
- RMON, MIB II, Port mirroring, Event syslog, DNS, NTP, SNTP, IEEE802.1ab LLDP
- Supports IPv6 Telnet server /ICMP v6
- CLI, Web based management, SNMP v1/v2c/v3, Telnet server for management
- Provides SmartConfig for quick and easy mass configuration (Figure 6)
- Supports SmartView for Centralized Management (Figure 7)
- Supporting Central EMS for management of up to 50 SmartView Server, and maximum up to 25,000 device (Figure 8)

Specifications

Standard	IEEE 802.3	10Base-T 10Mbit/s Ethernet
	IEEE 802.3u	100Base-TX, 100Base-FX, Fast Ethernet
	IEEE 802.3ab	1000Base-T Gbit/s Ethernet over twisted pair
	IEEE 802.3z	1000Base-X Gbit/s Ethernet over Fiber-Optic
	IEEE802.3ae	10 Gbit/s Ethernet over fiber
	IEEE 802.1d	STP (Spanning Tree Protocol)
	IEEE 802.1w	RSTP (Rapid Spanning Tree Protocol)
	IEEE 802.1s	MSTP (Multiple Spanning Tree Protocol)
	ITU-T G.8032 / Y.1344	ERPS (Ethernet Ring Protection Switching)
	IEEE 802.1Q	Virtual LANs (VLAN)
	IEEE 802.1X	Port based and MAC based Network Access Control, Authentication
	IEEE 802.3ad	Link aggregation for parallel links with LACP(Link Aggregation Control Protocol)
	IEEE 802.1ad	Stacked VLANs, Q-in-Q
	IEEE 802.1p	LAN Layer 2 QoS/CoS Protocol for Traffic Prioritization
	IEEE 802.1ab	Link Layer Discovery Protocol (LLDP)
VLAN ID	4094 IEEE802.1Q VLAN VID	
Switch Architecture	Back-plane (Switching Fabric): 128Gbps (ICS-G24S4X) 88Gbps (ICS-G24S2X) (Full wire-speed)	

Data Processing	Store and Forward
Network Connector	24x 100/1000Base-X SFP with 4x GbE Combo (UTP/SFP)+ 4x 10GBase-X SFP+ (ICS-G24S4X) 24x 100/1000Base-X SFP with 4x GbE Combo (UTP/SFP)+ 2x 10GBase-X SFP+ (ICS-G24S2X)
Network Connector	RJ-45 UTP port support 10/100/1000Base-T(X) , Auto negotiation speed,Auto MDI/MDI-X function GbE port SFP support dual speed (100M/1000M) with DDMI 10GbE port SFP+ support dual speed (1000M/10G) with DDMI
Console	RS-232 (RJ-45) Isolated RS-232 port grounding for negative power system, or telecom network application
Network Cable	UTP/STP above Cat. 5e cable EIA/TIA-568 100-ohm (100m)
Protocols	CSMA/CD
IEEE1588 PTP V2	Ordinary-Boundary, Peer to Peer Transparent Clock, End to End Transparent Clock, Master, Slave mode to operate in each port of these switch
Reverse Polarity Protection	Present
Overload Current Protection	Present
CPU Watch Dog	Present

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Specifications & design are subject to change without prior notice. Please visit CTC Union website for more details.

Power Supply	Redundant 2x isolated High Voltage AC/DC input power (-AA model) Redundant 2x Isolated Low Voltage DC Input power (-DD model) Redundant 1x isolated Low Voltage DC and 1x High Voltage AC/DC input power (-AD model) Low Voltage DC (D): Isolated 24/48V (18~60VDC), Removable Terminal Block High voltage AC/DC (A): Isolated 110/220VAC (88VAC~264VAC) ,isolated 110/220DC (88~300VDC) Support negative voltage input power for telecom network
Power Consumption	

Input Voltage	ICS-G24S4X	ICS-G24S2X
24VDC	33.1W	29.8W
48VDC	33.4	30.1W
110VAC/VDC	34.4W	31.1W
220VAC/VDC	34.4W	31.1W

LED	Per unit: Power 1 (Green), Power 2 (Green), Act /Alarm (Green/Red), Ring Master (Green) Per RJ-45 port: 10/100 Link/Active (Green) 1000 Link/Active (Yellow) SFP (P1~24) Fiber Per port: 100Base-X Link/Active (Green) 1000Base-X Link/Active (Yellow) SFP+ (P25~P28) Fiber Per port: 1000Base-X Link/Active (Amber) 10GBase-X Link/Active (Blue)
Jumbo Frame	10K
MAC Address Table	32K
Memory Buffer	4M Bytes for packet buffer
Warning Message	System Syslog, SMTP/ e-mail event message, alarm relay
Alarm Relay Contact	Relay outputs with current carrying capacity of 1 A @24VDC, 2-Pin removable terminal block
Operating Temperature	-10 ~ 60°C
Operating Humidity	5% to 95% (Non-condensing)
Storage Temperature	-40 ~ 85°C
Housing	Rugged Metal, IP30 Protection, Fanless
Dimensions	315 x 440 x 44 mm (D x W x H)
Weight	4.755kg (ICS-G24S4X-AA) 4.26kg (ICS-G24S4X-DD) 4.51kg (ICS-G24S4X-AD) 4.695kg (ICS-G24S2X-AA) 4.2kg (ICS-G24S2X-DD) 4.45kg (ICS-G24S2X-AD)
Installation Mounting	19" rack mount
MTBF	98,870 Hours (ICS-G24S4X-AA) 108,647 Hours (ICS-G24S4X-DD) 102,230 Hours (ICS-G24S4X-AD) 98,989 Hours (ICS-G24S2X-AA) 108,791 Hours (ICS-G24S2X-DD) 102,357 Hours (ICS-G24S2X-AD)
Warranty	5 years
Certification	
EMC	CE
EMI (Electromagnetic Interference)	FCC Part 15 Subpart B Class A,CE EN55022 Class A
Railway Traffic	EN50121-4
Immunity for Heavy Industrial Environment	EN61000-6-2
Emission for Heavy Industrial Environment	EN61000-6-4
EMS (Electromagnetic Susceptibility) Protection Level	EN61000-4-2 (ESD) Level 3, Criteria B EN61000-4-3 (RS) Level 3, Criteria A EN61000-4-4 (Burst) Level 3, Criteria A EN61000-4-5 (Surge) Level 3, Criteria B EN61000-4-6 (CS) Level 3, Criteria A EN61000-4-8 (PFMF, Magnetic Field) Field Strength: 300A/m, Criteria A
Safety	UL60950-1
Shock	IEC 60068-2-27
Freefall	IEC 60068-2-32
Vibration	IEC 60068-2-6

Software Specifications

Topology	
VLAN	IEEE 802.1q VLAN,up to 4094 802.1Q VLAN VID IEEE 802.1q VLAN,up to 4094 Groups IEEE 802.1ad Q-in-Q MAC-based VLAN,up to 256 entries IP Subnet-based VLAN, up to 128 entries Protocol-based VLAN(Ethernt, SNAP, LLC), up to 128 entries VLAN Translation, up to 256 entries GVRP (GARP VLAN Registration Protocal) MVR (Multicast VLAN Registration)
Link Aggregation (Port Trunk)	Static (Hash with SA, DA, IP, TCP/UDP port), up to 14 trunk group Dynamic (IEEE 802.3ad LACP), up to 14 trunk group Per group up-to 8 port
Spanning Tree	IEEE802.1d STP IEEE802.1w RSTP IEEE802.1s MSTP
Multiple µ-Ring	up to 14 instances that each supports µ-Ring, u-Chain or Sub-Ring type for flexible uses, and maximum up to 14 Rings. Recovery time <50ms The maximum number of devices allowed in a Ring supported ring is 250.
Loop Protection	Present
ITU-T G.8032 / Y.1344 ERPS (Ethernet Ring Protection)	Recovery time <50ms Single Ring, Sub-Ring, Multiple ring topology network
QoS Features	
Class of Service	IEEE802.1p 8 active priorities queues for per port
Traffic Classification QoS	IEEE802.1p based CoS IP Precedence based CoS IP DSCP based CoS QCL(QoS Control List): Frame Type, Source/ Destination MAC, VLAN ID, PCP, DEI QCE(QoS Control Entry): Protocol, Source IP, IP Fragment, DSCP, TCP/UDP port number
Bandwidth Control for Ingress	Per port based
Bandwidth Control for Egress	Per port based Per queue / Per port shaper
DiffServ (RF 2474) Remarking	
Storm Control	for Unicast, Broadcast, Multicast
IP Multicasting Features	
IGMP / MLD Snooping	IGMP Snooping v1, v2, v3 / MLD Snooping v1, v2 Port Filtering Profile Throttling, Fast Leave Maximum Multicast Group : up to 1022 entries Query / Static Router Port
Security Features	
IEEE 802.1X	Port-Based MAC-Based
ACL	Number of rules : up to 256 entries for L2 / L3 / L4
RADIUS authentication & accounting	
TACACS+ authentication & accounting, TACACS+ 3.0	
HTTPS, HTTP	
SSL / SSH v2	
User Name Password Authentication	Local Authentication Remote Authentication (via RADIUS / TACACS+)
Management Interface Access Filtering	Web, Telnet / SSH , CLI RS-232 console
Management Features	
CLI	Cisco® like CLI
Web Based Management	
Telnet	Server
SNMP	V1, V2c, V3
SW & Configuration Upgrade	TFTP, HTTP Redundant firmware in case of upgrade failure
RMON	RMON I (1, 2, 3, 9 group), RMON II
MIB	RFC1213 MIB II, Private MIB
UPnP	

DHCP	Server, Client, Relay, Snooping
	Snooping option 82
	Relay option 82
IP Source Guard	
Port Mirroring	
Event Syslog	Syslog server (RFC3164) (Support 1 server)
Warning Message	System syslog, e-mail, alarm relay
DNS	Client, Proxy
IEEE1588 PTP V2	Master, Boundary, Slave Operating mode Operating in each port of these switch
NTP, SNTP	Client

LLDP (IEEE 802.1ab)	Link Layer Discovery Protocol
	LLDP-MED
IPv6 Features	
IPv6 Management	Telnet Server/ICMP v6
SNMP over IPv6	
HTTP over IPv6	
SSH over IPv6	
IPv6 Telnet Support	
IPv6 NTP, SNTP	Client
IPv6 TFTP Support	
IPv6 QoS	
IPv6 ACL	Number of rules: up to 256 entries
	L2 / L3 / L4

Application

Figure 1 : 10G(Backbone) topology

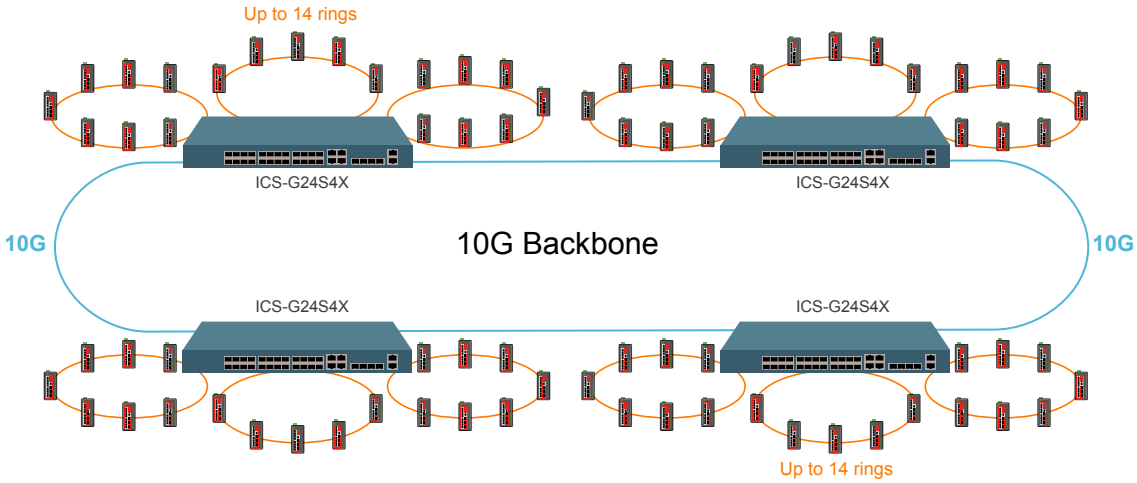

Figure 2 : Multiple Rings

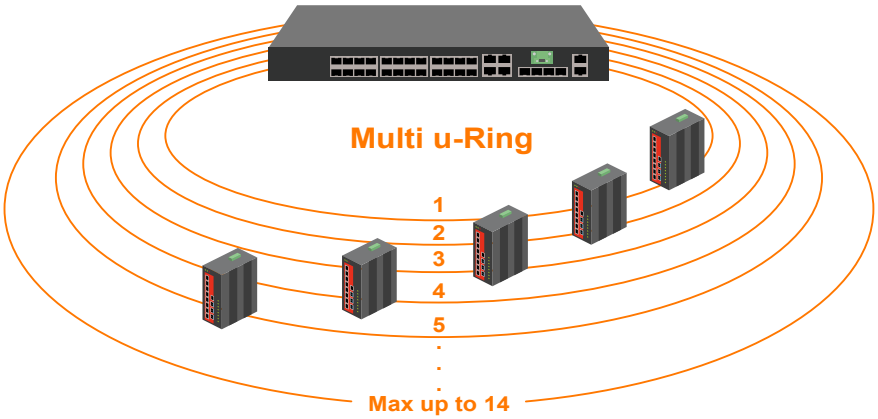

Figure 3 : User-Friendly Configuration In Web Interface

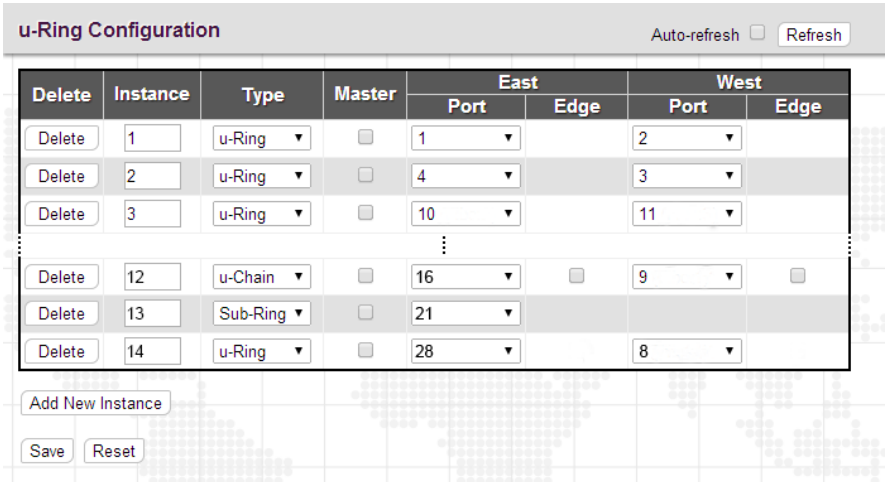

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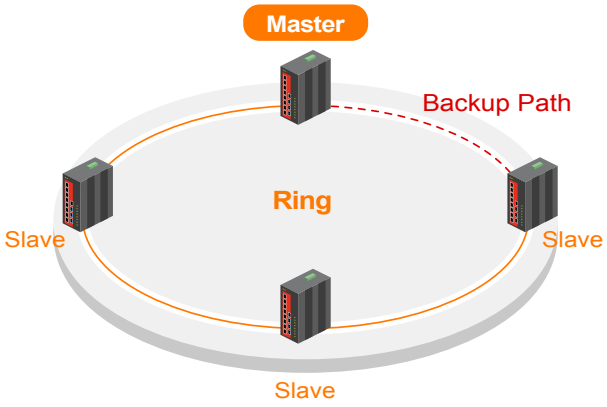
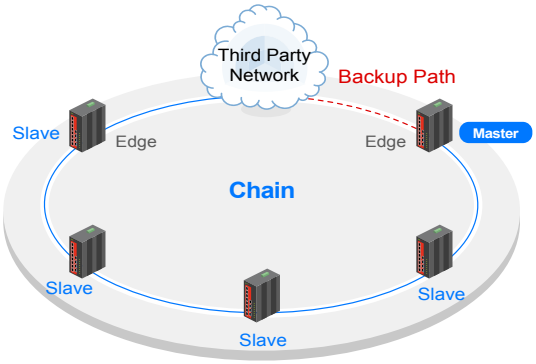
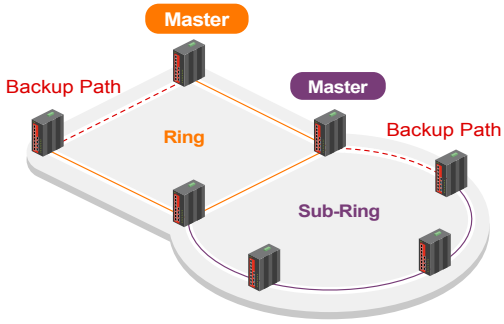
Figure 4 : µ-Ring Type



µ-Ring Type

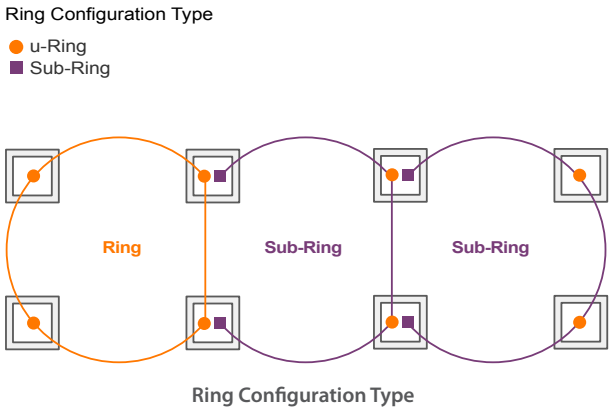


Determining the backup path (u-Chain type)

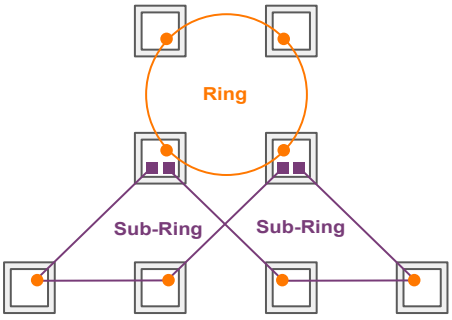


A major ring and a Sub-Ring topology

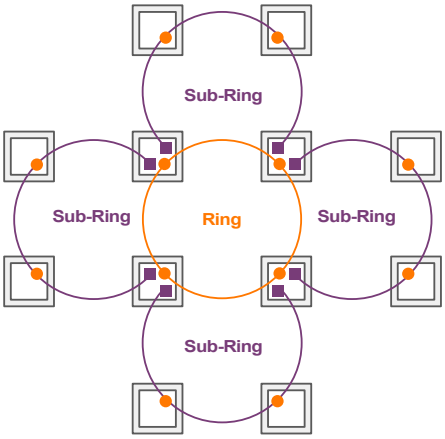
Figure 5 : Ring Configuration Example



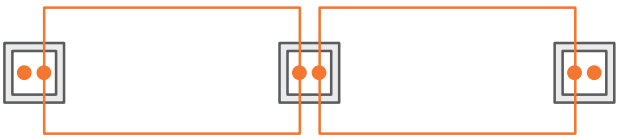
Ring Configuration Type



Combination of a ring and two Sub-Ring

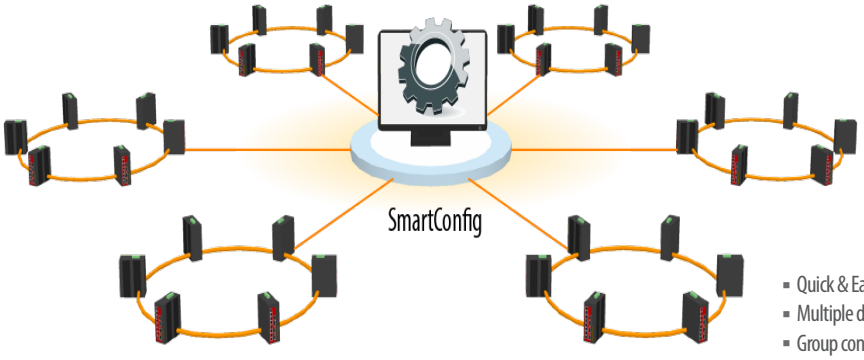


Combination of a ring and four Sub-Ring



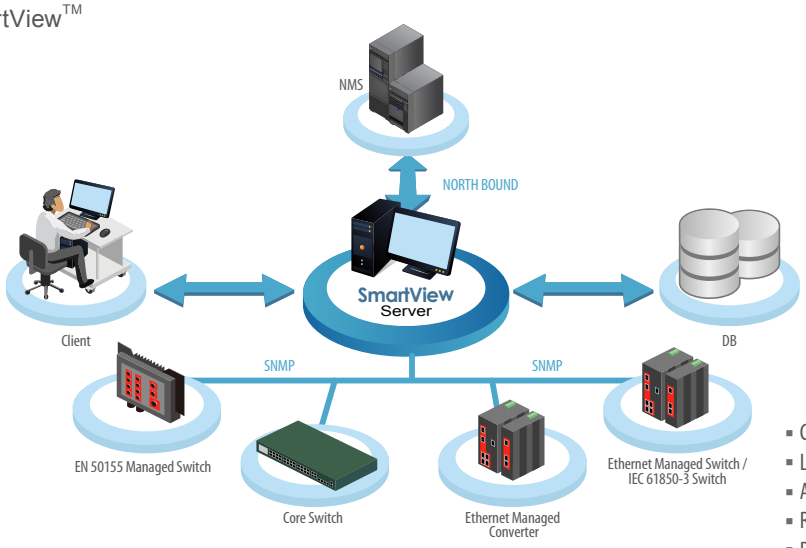
Cable Redundancy

Figure 6 : SmartConfig™ is a convenient configuration tool for mass deployment of switch products



- Quick & Easy for mass configuration tool
- Multiple device auto discovery
- Group configuration, access
- Group firmware upgrade
- Export/Import Configuration

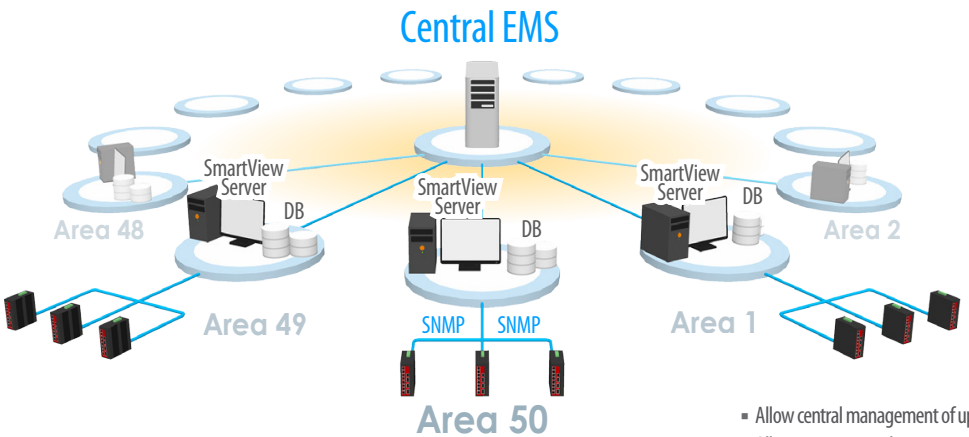
Figure 7 : SmartView™



SmartView™ management architecture

- Centralized Network Management Platform
- Long term events storage (up to 1 year)
- Alarm trap and event log management
- Real-time visual representations
- Remote access control
- Traffic/performance monitoring and management

Figure 8 : Central EMS allows central management of up to 50 SmartView™ servers



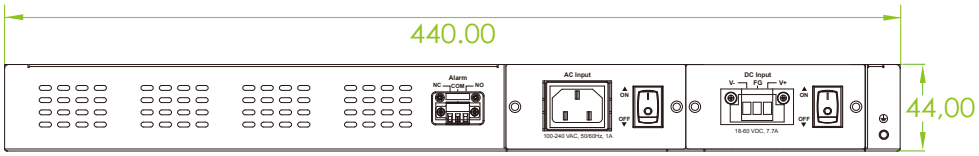
- Allow central management of up to 50 SmartView™ servers
- Allow up to 25,000 devices management
- Hierarchical Network Management Architecture
- Easy and rapid expansion of SmartView™ EMS

Specifications & design are subject to change without prior notice. Please visit CTC Union website for more details.

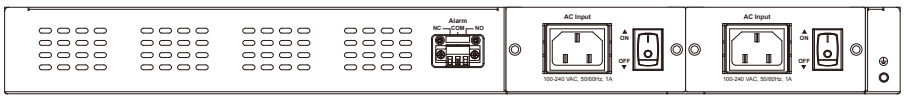
Dimensions

Rear View

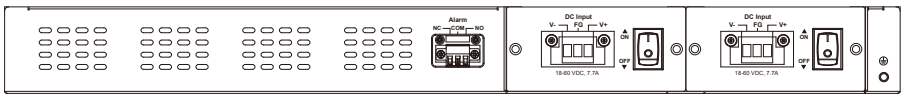
-AD Power



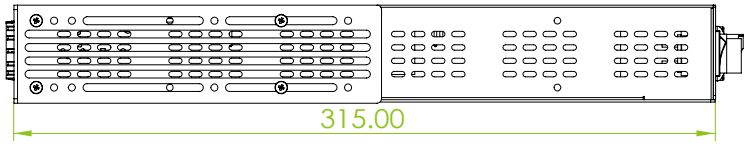
-AA Power



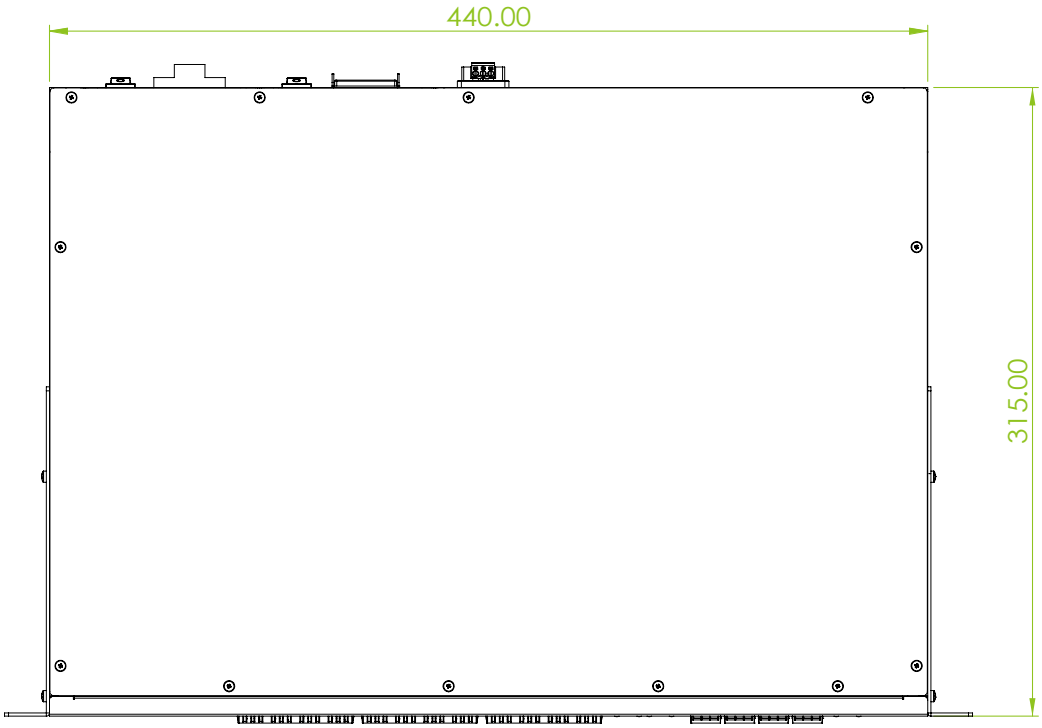
-DD Power



Side View

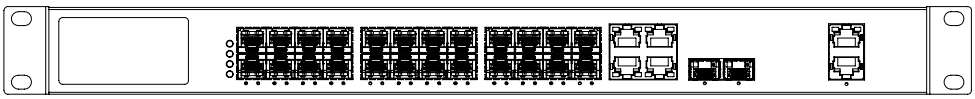


Top View

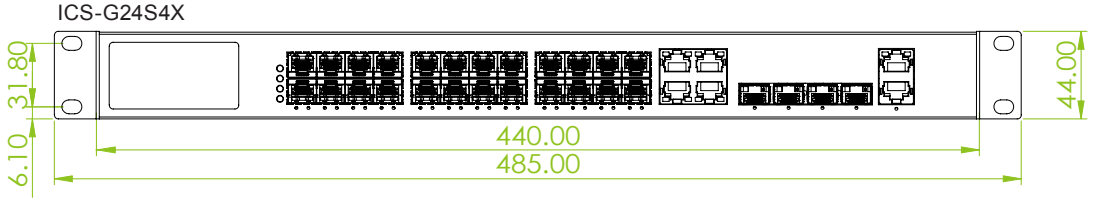


Front View

ICS-G24S2X



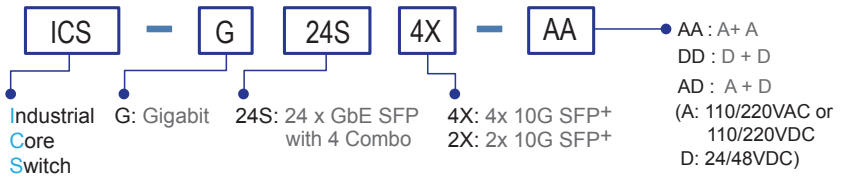
ICS-G24S4X



Ordering Information

Model Name	Managed	Total Port	GbE Port		10GbE	Input Power		Certification			
			100/1000 Base-X SFP	10/100/1000 Base-T UTP or 100/1000Base-X SFP	IEEE 802.3ae SFP+	DC (Low Volt) isolated 24/48VDC	(High Volt) 110/220V AC/DC	Safety UL60950-1	EN50121-4	EN61000-6-2 EN61000-6-4	CE FCC
ICS-G24S4X-AA	V	28	20	4 Combo	4		2	V	V	V	V
ICS-G24S4X-DD	V	28	20	4 Combo	4	2		V	V	V	V
ICS-G24S4X-AD	V	28	20	4 Combo	4	1	1	V	V	V	V
ICS-G24S2X-AA	V	26	20	4 Combo	2		2	V	V	V	V
ICS-G24S2X-DD	V	26	20	4 Combo	2	2		V	V	V	V
ICS-G24S2X-AD	V	26	20	4 Combo	2	1	1	V	V	V	V

Model Naming Rule



Optional Accessories

Industrial Power Supply

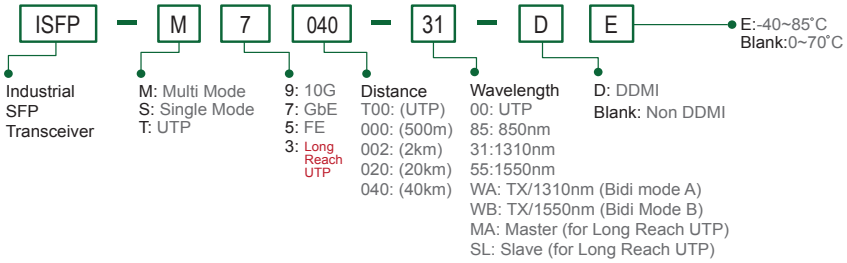
DR-120-24	Industrial Power, Input 88 ~ 132VAC / 176 ~ 264VAC, Output 24VDC , 120W, -10 ~ +60℃

Industrial SFP Transceiver

(The ISFP series of industrial grade SFP modules have been fully tested with the series product for guaranteed compatibility and performance. The best performance can be guaranteed even in mission-critical applications.)
(Please see CTC Union's Industrial SFP datasheet for more details and more items.)

ISFP-M9000-85-D(E)	Industrial SFP 10GbE 10GBase-SR, M/M, 300 meter (OM3 fiber) ,wave length 850nm, DDMI , -10~70℃ (-40~85℃)
ISFP-S9010-31-D(E)	Industrial SFP 10GbE 10GBase-LR, S/M, 10km, wave length 1310nm, DDMI, -10~70℃ (-40~85℃)
ISFP-M7000-85-D(E)	Industrial SFPGbE 1000Base-SX, M/M, 500 meter,wave length 850nm, DDMI, -10~70℃ (-40~85℃)
ISFP-S7020-31-D(E)	Industrial SFP 1000Base-SX, S/M, 20km, wave length 1310nm, DDMI, -10~70℃ (-40~85℃)
ISFP-T7T00-00-(E)	Industrial SFP 1000Base-SX, UTP 100meter, -10~70℃ (-40~85℃)
ISFP-M5002-31-D(E)	Industrial SFP 155M 100Base-FX, MM, 2km, wave length 1310nm, 12dB, LC, DDMI, -10~70℃ (-40~85℃)
ISFP-S5030-31-D(E)	Industrial SFP 155M 100Base-FX, SM, 30km, 1310nm, 19dB, LC, DDMI, -10~70℃ (-40~85℃)
ISFP-T3T00-MA-(E)	Industrial SFP 100Mbps , long reach UTP (2 wire) (500meter) , Master, -10~70℃ (-40~85℃)
ISFP-T3T00-SL-(E)	Industrial SFP 100Mbps , long reach UTP (2 wire) (500meter) , Slave, -10~70℃ (-40~85℃)

SFP Naming Rule



Package List

- ICS-G24S4X or ICS-G24S2X device
- Console cable (RJ-45 to DB9)
- CD (SmartConfig, MIB file, Manual)
- Quickly installation guide
- Rack mount ear with screws
- Power cord (for-A model)

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Specifications & design are subject to change without prior notice. Please visit CTC Union website for more details.