

## ICS-G4804X & ICS-G24044X

- ◀ 48x GbE RJ45 + 4x 1G/2.5G/10G SFP
- ▶ 24x GbE RJ45 + 4x 100/1000Base SFP + 4x 1G/2.5G/10G SFP



- Support u-Ring, ERPS, MSTP, RSTP, STP for redundant cabling
- Supports maximum up to 14 u-rings in one device
- EN62368-1, CE, FCC, EN50121-4, EN61000-6-2, EN61000-6-4 certified
- 4KV surge protection for RJ45 and SFP ports
- Supports negative voltage power input



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ICS-G4804X & ICS-G24044X are industrial grade, hardened design, managed L2+ switches, built for the rigorous demands of centralized and critical applications. The switch supports 4-ports 10GbE SFP+ and 24 / 48 GbE (10/100/1000BaseTX) RJ-45 ports, plus 4 dual speed (100/1000Base-X) SFP fiber optical slots. 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. ICS Series are certified with many industrial-grade standards and are ideal for deployments in harsh environments to deliver mission-critical network services. This product is ideal for Smart City, surveillance, Intelligent traffic control systems and production automation applications.

### Features

- Redundant isolated 24/48/-48VDC (18~60VDC), or/and isolated 110/220VAC power inputs
  - Supports negative voltage power input
  - 2.25KVDC Hi-pot isolation protection for Ethernet ports and power
  - STP, RSTP, MSTP, ITU-T G.8032 Ethernet Ring Protection Switching (ERPS) for network redundancy
  - Provides 14 instances each can support  $\mu$ -Ring, u-Chain or Sub-Ring for flexible networking applications
  - $\mu$ -Ring redundancy, recovery time <20ms in 250 devices
  - Supports IEEE 1588 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 (ICS-G24044X)
  - Provides SmartConfig for quick and easy mass Configuration\*
  - Supports SmartView™ for Centralized Management\*
- \*Please see Chapter 1- **Software Management** for more details

### Specifications

<b>Standard</b>	IEEE 802.3 IEEE 802.3u IEEE 802.3ab IEEE 802.3z IEEE 802.3ae IEEE 802.1d IEEE 802.1w IEEE 802.1s ITU-T G.8032 / Y.1344 IEEE 802.1Q IEEE 802.1X IEEE 802.3ac IEEE 802.3ad IEEE 802.3X IEEE 802.1ad IEEE 802.1p IEEE 802.1ab IEEE 802.3az	10Base-T 10Mbit/s Ethernet 100Base-TX, 100Base-FX, Fast Ethernet 1000Base-T Gbit/s Ethernet over twisted pair 1000Base-X Gbit/s Ethernet over Fiber-Optic 10 Gbit/s Ethernet over fiber STP (Spanning Tree Protocol) RSTP (Rapid Spanning Tree Protocol) MSTP (Multiple Spanning Tree Protocol) ERPS (Ethernet Ring Protection Switching) Virtual LANs (VLAN) Port based and MAC based Network Access Control, Authentication Max frame size extended to 1522Bytes Link aggregation for parallel links with LACP(Link Aggregation Control Protocol) Flow control for full duplex Stacked VLANs, Q-in-Q LAN Layer 2 QoS/CoS Protocol for Traffic Prioritization Link Layer Discovery Protocol (LLDP) EEE (Energy Efficient Ethernet)	<b>Network Cable</b>	UTP/STP Cat.5e cable or above EIA/TIA-568 100-ohm (100meter)
<b>VLAN ID</b>	4094 IEEE 802.1Q VLAN VID		<b>Protocols</b>	CSMA/CD
<b>Switch Architecture</b>	Back-plane (Switching Fabric): 136Gbps (ICS-G24044X) 156Gbps (ICS-G4804X) (Full wire-speed)		<b>Reverse Polarity</b>	Protection for input power
<b>Data Processing</b>	Store and Forward		<b>Overload Current</b>	Protection Supported
<b>Network Connector</b>	<b>10GbE SFP+ :</b> 4x 1G/2.5G/10G SFP socket Supports DDMI <b>GbE SFP:</b> 4x 100/1000Base-X SFP socket (ICS-G24044X) Support DDMI <b>RJ45:</b> 24x 10/100/1000Base-T RJ-45 (ICS-G24044X) 48x 10/100/1000Base-T RJ-45 (ICS-G4804X) Support Auto negotiation speed, Auto MDI/MDI-X function		<b>CPU Watch Dog</b>	Supported
<b>Console</b>	RS-232 (RJ-45)		<b>Power Supply</b>	Redundant 2x AC input power (-AA model) Redundant 1x AC and 1x DC input power (-AD model) Redundant 2x DC input power (-DD model) AC input power (A) : Isolated 110/220VAC (85VAC~264VAC) DC input power (D) : Isolated 24/48/-48VDC (18~60VDC), Removable Terminal Block Supports negative voltage power input
			<b>Power Consumption</b>	Consumption: <33W (ICS-G24044X) TBD (ICS-G4804X)
			<b>LED</b>	Per unit: Power 1 (Green), Power 2 (Green), Act/Alarm (Green/Amber), Ring Master (Green) P1~P24 (ICS-G24044X) Per RJ-45 port: 10/100 Link/Active (Green) 1000 Link/Active (Amber) P25~P32 (ICS-G24044X) Per SFP Fiber port: Link/Active (Amber) TBD (ICS-G4804X)
			<b>Jumbo Frame</b>	10K Byte
			<b>MAC Address Table</b>	32K
			<b>Memory Buffer</b>	4M Bytes for packet buffer
			<b>Device Memory</b>	16M Bytes Flash ROM, 1G Bytes RAM
			<b>Warning Message</b>	System Syslog, SMTP/ e-mail event message, alarm relay
			<b>Alarm Relay Contact</b>	Relay outputs with current carrying capacity of 1A @24VDC, 2-Pin removable terminal block
			<b>Operating Temperature</b>	-40 ~ 60°C
			<b>Operating Humidity</b>	5% to 95% (Non-condensing)
			<b>Storage Temperature</b>	-40 ~ 85°C
			<b>Housing</b>	Rugged Metal, IP30 Protection, Fanless

<b>Dimensions</b>	280x 440 x 44mm (D x W x H)
<b>Weight</b>	4,755kg (ICS-G24044X-AA) 4,51kg (ICS-G24044X-AD) 4,26kg (ICS-G24044X-DD) TBD (ICS-G4804X)
<b>Installation Mounting</b>	19" rack mount
<b>MTBF</b>	103,057 Hours (ICS-G24044X-AA) 103,451 Hours (ICS-G24044X-AD) 103,447 Hours (ICS-G24044X-DD) TBD (ICS-G4804X) (MIL-HDBK-217)
<b>Warranty</b>	5 years
<b>Certification</b>	
<b>EMC</b>	CE (EN55024, EN55032)
<b>EMI (Electromagnetic Interference)</b>	FCC Part 15 Subpart B Class A, CE
<b>Railway Traffic</b>	EN50121-4
<b>Immunity for Heavy Industrial Environment</b>	EN61000-6-2

## Software Specifications

<b>Topology VLAN</b>	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 Private VLAN for port isolation GVRP (GARP VLAN Registration Protocol) MVR (Multicast VLAN Registration)
<b>Link Aggregation (Port Trunk)</b>	Static (IEEE 802.3ad LACP), Maximum trunk group : 16group (ICS-G24044X) 26group (ICS-G4804X) Dynamic (IEEE 802.3ad LACP), Maximum trunk group : 16group (ICS-G24044X) 26group (ICS-G4804X) Per group up-to 8 port
<b>Spanning Tree</b>	IEEE 802.1d STP, IEEE 802.1w RSTP, IEEE 802.1s MSTP
<b>Multiple μ-Ring</b>	Up to 14 instances each support μ-Ring, μ-Chain or Sub-Ring for flexible networking applications. Recovery time <20ms The maximum number of device is allowed 250 in a Ring.
<b>Loop Protection</b>	Supported
<b>ITU-T G.8032 / Y.1344 ERPS (Ethernet Ring Protection)</b>	Recovery time <50ms Single Ring, Sub-Ring, Multiple ring topology
<b>QoS Features</b>	
<b>Class of Service</b>	IEEE 802.1p 8 active priorities queues per port
<b>Traffic Classification QoS</b>	IEEE 802.1p based CoS IP Precedence based CoS IP DSCP based CoS
<b>Traffic Classification QoS</b>	QCL(QoS Control List): Frame Type, Source/Destination MAC, VLAN ID, PCP, DEI Protocol, Source IP, IP Fragment, DSCP, TCP/UDP port number
<b>Bandwidth Control for Ingress</b>	Per port based
<b>Bandwidth Control for Egress</b>	Per port based Per queue / Per port shaper
<b>DiffServ (RF 2474) Remarking</b>	
<b>Storm Control</b>	for Unicast, Broadcast, Multicast
<b>IP Multicasting Features</b>	
<b>IGMP / MLD Snooping</b>	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
<b>Security Features</b>	
<b>IEEE 802.1X</b>	Port-Based MAC-Based
<b>ACL</b>	Number of rules : up to 256 entries for L2 / L3 / L4 L2 : Mac address SA/DA/VLAN L3 : IP address SA/DA, Subnet L4 : TCP/UDP

<b>Emission for Heavy Industrial Environment</b>	EN61000-6-4
<b>EMS (Electromagnetic Susceptibility) Protection Level</b>	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
<b>Safety</b>	EN62368-1
<b>Hi pot protection</b>	DC 2.25KV for power to chassis ground, Ethernet port to chassis ground
<b>4KV surge protection</b>	Supported for RJ45 and SFP ports
<b>Shock</b>	IEC 60068-2-27
<b>Freefall</b>	IEC 60068-2-32
<b>Vibration</b>	IEC 60068-2-6

<b>RADIUS authentication &amp; accounting</b>	
<b>TACACS+ authentication &amp; accounting, TACACS+ 3.0</b>	
<b>HTTPS, HTTP</b>	Supported
<b>SSL / SSH v2</b>	Supported
<b>User Name Password Authentication</b>	Local Authentication Remote Authentication (via RADIUS / TACACS+)
<b>Management Interface Access Filtering</b>	Web, Telnet / SSH, CLI RS-232 console
<b>Management Features</b>	
<b>CLI</b>	Cisco® like CLI
<b>Web Based Management</b>	
<b>Telnet</b>	Server
<b>SNMP</b>	V1, V2c, V3
<b>Modbus/TCP</b>	Support for management and monitoring
<b>SW &amp; Configuration Upgrade</b>	TFTP, HTTP Redundant firmware in case of upgrade failure
<b>RMON</b>	RMON I (1, 2, 3, 9 group), RMON II
<b>MIB</b>	RFC1213 MIB II, Private MIB
<b>UPnP</b>	Supported
<b>DHCP</b>	Server, Client, Relay, Relay option 82, Snooping
<b>IP Source Guard</b>	Supported
<b>Mirroring</b>	Local and Remote
<b>Event Syslog</b>	Syslog server (RFC3164)
<b>Warning Message</b>	System syslog, e-mail, alarm relay
<b>DNS</b>	Client, Proxy
<b>IEEE 1588 PTP V2 (ICS-G24044X)</b>	Supports 5 operating mode in each port : Ordinary-Boundary, Peer to Peer Transparent Clock, End to End Transparent Clock, Master, Slave
<b>NTP V4.0, SNTP</b>	Client
<b>LLDP (IEEE 802.1ab)</b>	Link Layer Discovery Protocol LLDP-MED
<b>IPv6 Features</b>	
<b>IPv6 Management</b>	Telnet Server/ICMP v6
<b>SNMP over IPv6</b>	Supported
<b>HTTP over IPv6</b>	Supported
<b>SSH over IPv6</b>	Supported
<b>IPv6 Telnet</b>	Supported
<b>IPv6 NTP, SNTP</b>	Client
<b>IPv6 TFTP</b>	Supported
<b>IPv6 QoS</b>	Supported
<b>IPv6 ACL</b>	Number of rules: up to 256 entries for L2 / L3 / L4 L2 : Mac address SA/DA/VLAN L3 : IP address SIP, Subnet (32bit) L4 : TCP/UDP
<b>Other Features</b>	<b>Green Ethernet</b> Supports IEEE 802.3az EEE (Energy Efficient Ethernet) Management to optimize the power consumption Determine the cable length and lowering the power for ports with short cables Lower the power for a port when there is no link LED Power Management : Adjustment LEDs intensity <b>Cable Diagnostic</b> Measuring UTP cable normal or broken point distance

## Application

Figure 1 : 10G Backbone application

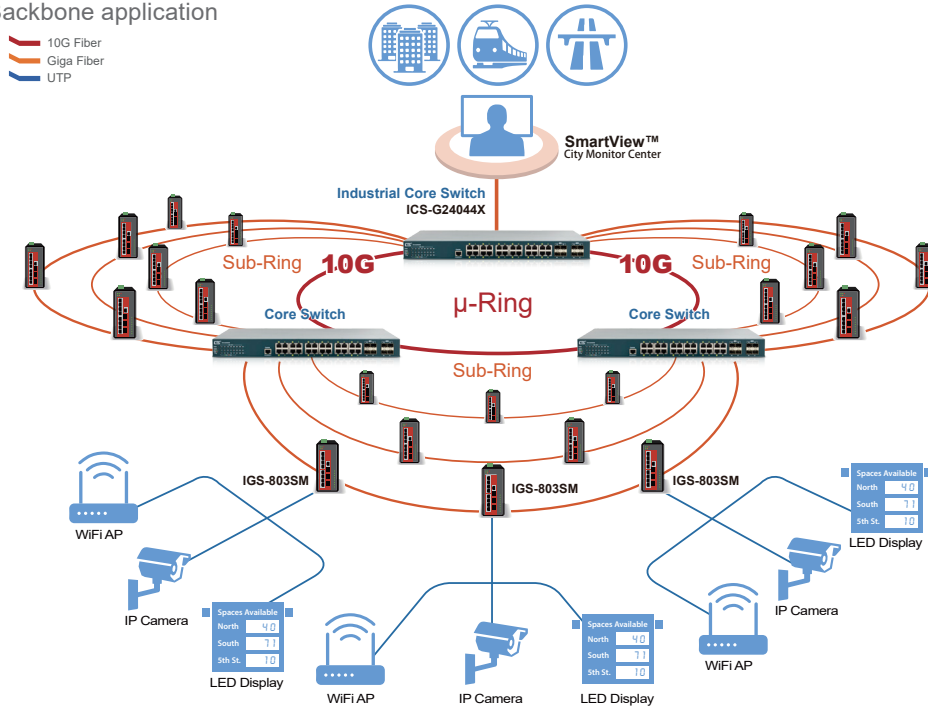
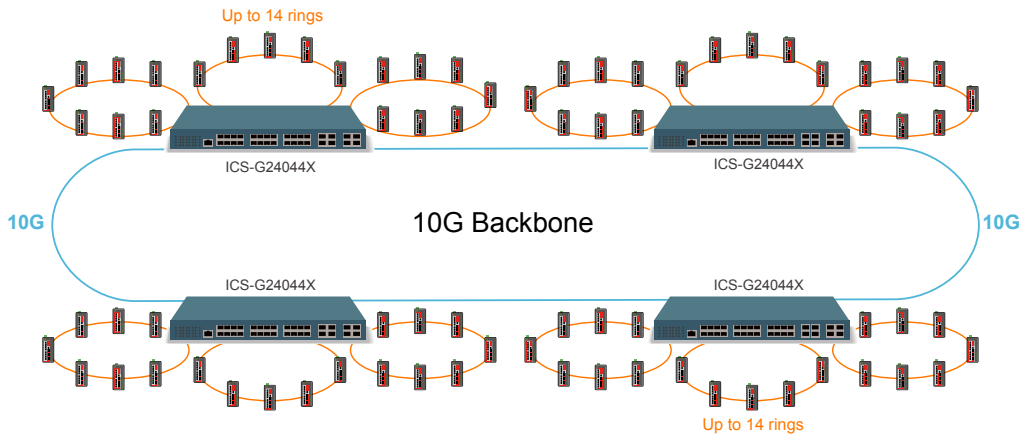


Figure 2 : 10G Backbone with μ-Ring topology



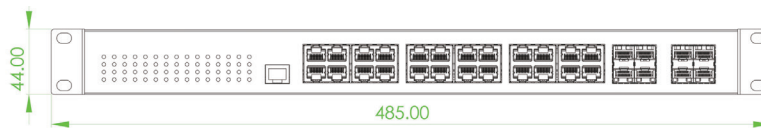
## Dimensions

ICS-G24044X

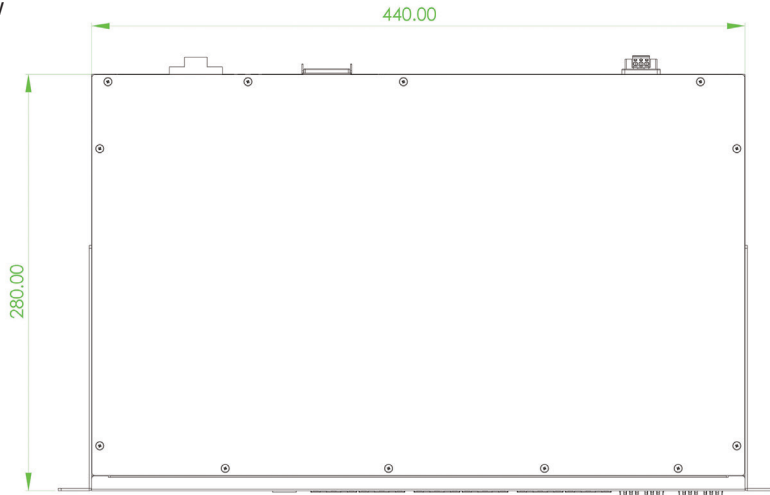
Rear View



Front View



Top View



Side View



## Ordering Information

Model Name	Managed	Total Ports (Maximum)	GbE		10GbE	Input Power		Certification			
			10/100/1000 Base-T(X) RJ45	100/1000 Base-X SFP	1G/2.5G/10GBase-X SFP+	24/48/-48VDC	110/220VAC	Safety EN62368-1	EN50121-4	EN61000-6-2 EN61000-6-4	CE, FCC
ICS-G24044X-AA	V	32	24	4	4		2	V	V	V	V
ICS-G24044X-AD	V	32	24	4	4	1	1	V	V	V	V
ICS-G24044X-DD	V	32	24	4	4	2		V	V	V	V
ICS-G4804X-AA	V	52	48		4		2	V	V	V	V
ICS-G4804X-AD	V	52	48		4	1	1	V	V	V	V
ICS-G4804X-DD	V	52	48		4	2		V	V	V	V

### Package List

- ICS-G4804X or ICS-G24044X device
- Console cable (RJ-45 to DB-9)
- 19" rack-mount kit (brackets and screws)
- Protective caps for SFP ports
- AC Power cord (for AC power -A model)

## Optional Accessories

### 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.

ISFP-M9000-85-D(E)	Industrial SFP 10GbE 10GBase-SR, M/M, 300 meter (OM3 fiber), wave length 850nm, DDMI, -10~70°C (-40~85°C)
ISFP-S9010-31-D(E)	Industrial SFP 10GbE 10GBase-LR, S/M, 10km, wave length 1310nm, DDMI, -10~70°C (-40~85°C)
ISFP-M7000-85-D(E)	Industrial SFP GbE 1000Base-SX, M/M, 500 meter, wave length 850nm, 7.5dB, LC, DDMI, -10~70°C (-40~85°C)
ISFP-S7020-31-D(E)	Industrial SFP 1000Base-LX, S/M, 20km, wave length 1310nm, 15dB, LC, DDMI, -10~70°C (-40~85°C)
ISFP-T7700-00-(E)	Industrial SFP 10/100/1000Base-T UTP 100meter, -10~70°C (-40~85°C)
ISFP-M5002-31-D(E)	Industrial SFP 155M 100Base-FX, MM, 2km, wave length 1310nm, 12dB, LC, DDMI, -10~70°C (-40~85°C)
ISFP-S5030-31-D(E)	Industrial SFP 155M 100Base-FX, SM, 30km, 1310nm, 19dB, LC, DDMI, -10~70°C (-40~85°C)

### Industrial Power Supply

NDR-120-48	Industrial Power, Input 90 ~ 264VAC/127 ~ 370VDC, Output 48VDC, 120W, -20 ~ +70°C (For DC type)
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### Industrial Optical Fiber Bypass Switch

IBP-202	Optical Fiber Bypass Switch
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