

## IXR-G24044X & IXR-G48044X

◀ Layer 3 24x GbE RJ45 + 4x FE/GbE SFP + 4x 1G/2.5G/10G SFP+

▶ Layer 3 48x GbE RJ45 + 4x 1G/2.5G/10G SFP+

**NEW**



- L3 IPV4/IPV6 Static Routing, RIP v2 Dynamic Routing, OSPF v2/v3 Dynamic Routing
- Supports u-Ring, ERPS, EPS, MSTP, RSTP, STP for redundant cabling
- Supports maximum up to 14 u-rings in one device
- EN62368-1, CE, FCC certified
- 4KV surge protection for RJ45 and SFP ports
- Supports negative voltage power input



IXR-G24044X & IXR-G48044X are industrial grade, hardened design, Layer 3 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. The 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. The 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, G.8031 EPS, ITU-T G.8032 Ethernet Ring Protection Switching (ERPS) for network redundancy
- Provides 14 instances each can support μ-Ring, u-Chain or Sub-Ring for flexible networking applications
- μ-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 (IXR-G24044X)
- Supports SmartView™ for Centralized Management\*

\*Please see Chapter 1- **Software Management** for more details

### Specifications

<b>Standard</b>	IEEE 802.3	10Base-T 10Mbit/s Ethernet	<b>Network Cable</b>	UTP/STP Cat.5e cable or above	
	IEEE 802.3u	100Base-TX, 100Base-FX, Fast Ethernet		EIA/TIA-568 100-ohm (100meter)	
	IEEE 802.3ab	1000Base-T Gbit/s Ethernet over twisted pair		<b>Protocols</b>	CSMA/CD
	IEEE 802.3z	1000Base-X Gbit/s Ethernet over Fiber-Optic			<b>Reverse Polarity</b>
	IEEE 802.3ae	10 Gbit/s Ethernet over fiber		<b>Overload Current</b>	Protection Supported
	IEEE 802.1d	STP (Spanning Tree Protocol)		<b>CPU Watch Dog</b>	Supported
	IEEE 802.1w	RSTP (Rapid Spanning Tree Protocol)		<b>Power Supply</b>	Redundant 2x AC input power (-AA model)
	IEEE 802.1s	MSTP (Multiple Spanning Tree Protocol)			Redundant 1x AC and 1x DC input power (-AD model)
	ITU-T G.8032 / Y.1344	ERPS (Ethernet Ring Protection Switching)		Redundant 2x DC input power (-DD model)	AC input power (A) : Isolated 110/220VAC (85VAC~264VAC)
	ITU-T G.8031 / Y.1342	EPS (Ethernet Protection Switching)		AC input power (A) : Isolated 110/220VAC (85VAC~264VAC)	DC input power (D) : Isolated 24/48/-48VDC (18~60VDC),
	IEEE 802.1Q	Virtual LANs (VLAN)		DC input power (D) : Isolated 24/48/-48VDC (18~60VDC),	Removable Terminal Block
	IEEE 802.1X	Port based and MAC based Network Access Control, Authentication		DC input power (D) : Isolated 24/48/-48VDC (18~60VDC),	Supports negative voltage power input
	IEEE 802.3ac	Max frame size extended to 1522Bytes		DC input power (D) : Isolated 24/48/-48VDC (18~60VDC),	Consumption: <33W (IXR-G24044X )
	IEEE 802.3ad	Link aggregation for parallel links with LACP(Link Aggregation Control Protocol)		DC input power (D) : Isolated 24/48/-48VDC (18~60VDC),	TBD (IXR-G4804X )
	IEEE 802.3X	Flow control for full duplex		<b>Power Consumption</b>	
	IEEE 802.1ad	Stacked VLANs, Q-in-Q			<b>LED</b>
IEEE 802.1p	LAN Layer 2 QoS/CoS Protocol for Traffic Prioritization	P1~P24 (IXR-G24044X )	Per RJ-45 port: 10/100 Link/Active (Green)		
IEEE 802.1ab	Link Layer Discovery Protocol (LLDP)	P25~P32 (IXR-G24044X )	1000 Link/Active (Amber)		
IEEE 802.3az	EEE (Energy Efficient Ethernet)	Per SFP Fiber port: Link/Active (Amber)	TBD (IXR-G4804X)		
<b>VLAN ID</b>	4094	IEEE 802.1Q VLAN VID	<b>Jumbo Frame</b>	10K Byte	
	<b>Switch Architecture</b>	Back-plane (Switching Fabric):		<b>MAC Address Table</b>	32K
136Gbps (IXR-G24044X)		<b>Memory Buffer</b>	4M Bytes for packet buffer		
176Gbps (IXR-G48044X)	<b>Device Memory</b>		16M Bytes Flash ROM, 1G Bytes RAM		
(Full wire-speed)		<b>Warning Message</b>	System Syslog, SMTP/ e-mail event message, alarm relay		
<b>Data Processing</b>	Store and Forward		<b>Alarm Relay Contact</b>	Relay outputs with current carrying capacity of 1A @24VDC, 2-Pin removable terminal block	
	<b>Network Connector</b>	<b>10GbE SFP+ :</b>		<b>Operating Temperature</b>	-40 ~ 60°C
4x 1G/2.5G/10G SFP socket		<b>Operating Humidity</b>	5% to 95% (Non-condensing)		
Supports DDMI	<b>GbE SFP:</b>		<b>Storage Temperature</b>	-40 ~ 85°C	
Supports DDMI	4x 100/1000Base-X SFP socket (IXR-G24044X)	<b>Housing</b>		Rugged Metal, IP30 Protection, Fanless	
<b>RJ45:</b>	24x 10/100/1000Base-T RJ-45 (IXR-G24044X)				
	48x 10/100/1000Base-T RJ-45 (IXR-G4804X)				
	Support Auto negotiation speed, Auto MDI/MDI-X function				
<b>Console</b>	RS-232 (RJ-45)				

<b>Dimensions</b>	280x 440 x 44mm (D x W x H)
<b>Weight</b>	4,755kg (IXR-G24044X-AA) 4.51kg (IXR-G24044X-AD) 4.26kg (IXR-G24044X-DD) TBD (IXR-G4804X)
<b>Installation Mounting</b>	19" rack mount
<b>MTBF</b>	103,057 Hours (IXR-G24044X-AA) 103,451 Hours (IXR-G24044X-AD) 103,447 Hours (IXR-G24044X-DD) TBD (IXR-G4804X) (MIL-HDBK-217)
<b>Warranty</b>	5 years
<b>Certification</b>	
<b>EMC</b>	CE (EN55032, EN55035)
<b>EMI (Electromagnetic Interference)</b>	FCC Part 15 Subpart B Class A, CE

<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

## Software Specifications

<b>L3 Routing</b>	
<b>IPv4/v6 Static Routing</b>	Supported
<b>RIP v2 Dynamic Routing</b>	Supported
<b>OSPF v2 Dynamic Routing</b>	Supported
<b>Topology</b>	
<b>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 (Ethernet, 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) Voice VLAN
<b>Link Aggregation (Port Trunk)</b>	Static (IEEE 802.3ad LACP), Maximum trunk group: 16group (IXR-G24044X) 26group (IXR-G4804X) Dynamic (IEEE 802.3ad LACP), Maximum trunk group: 16group (IXR-G24044X) 26group (IXR-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
<b>ITU-T G.8031 / Y.1342 EPS (Ethernet Protection Switching)</b>	Single Ring, Sub-Ring, Multiple ring topology
<b>QoS Features</b>	Supported
<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>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>sFlow</b>	Supported
<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 (IXR-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

Industrial Layer 3 10G Core Switch IXR-G24044X & IXR-G4804X

IPv6 TFTP	Supported
IPv6 QoS	Supported
IPv6 ACL	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

Other Features	<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
Cable Diagnostic	LED Power Management : Adjustment LEDs intensity
	Measuring UTP cable normal or broken point distance

## Application

Figure 1 : 10G Backbone application

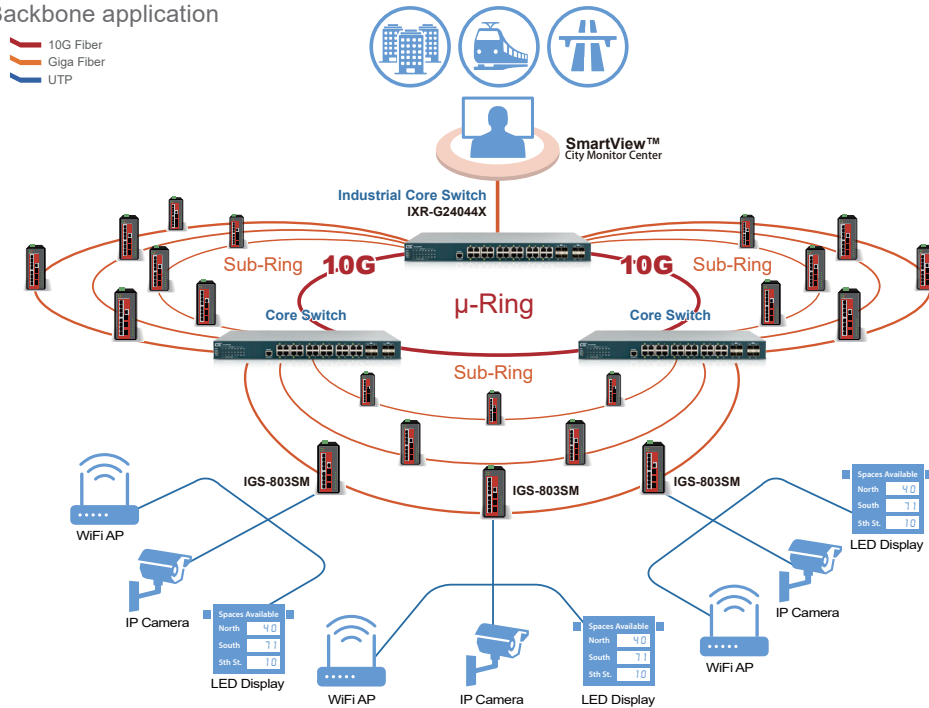
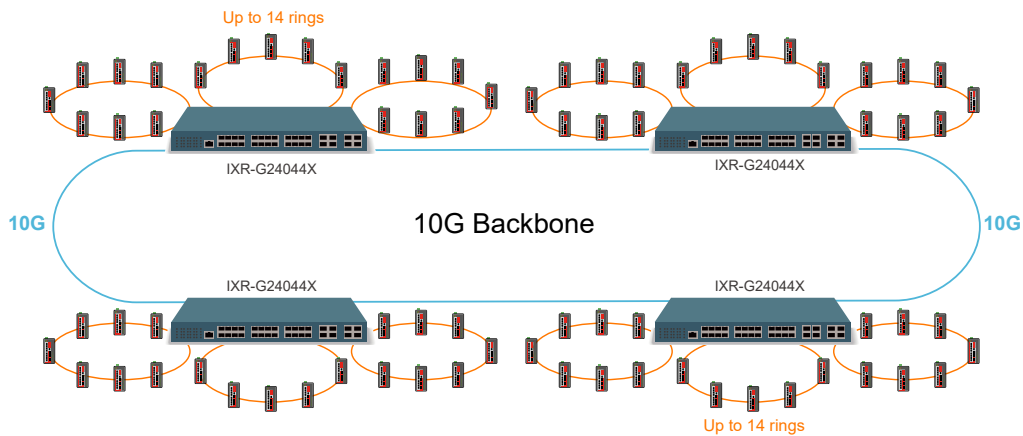
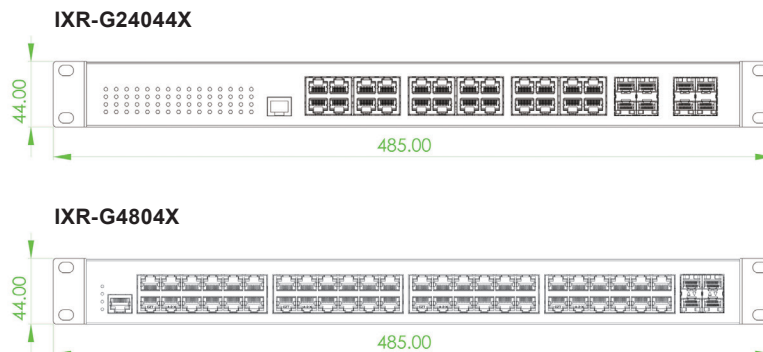


Figure 2 : 10G Backbone with μ-Ring topology



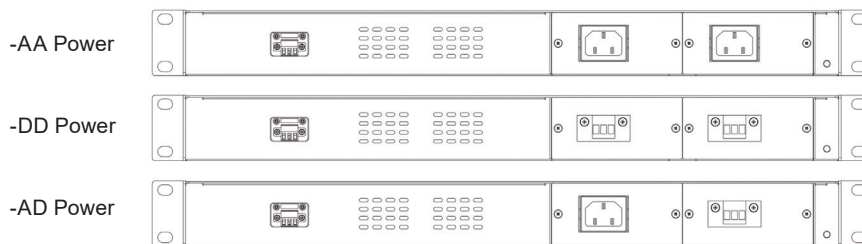
## Dimensions

Front View

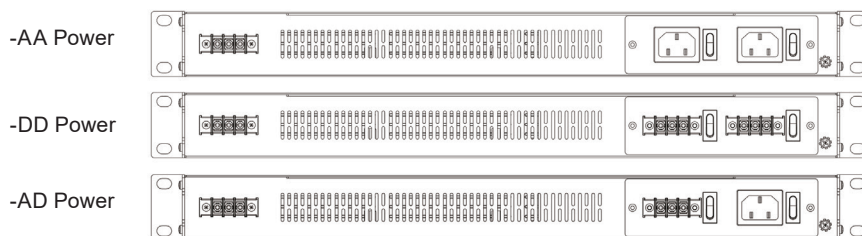


Rear View

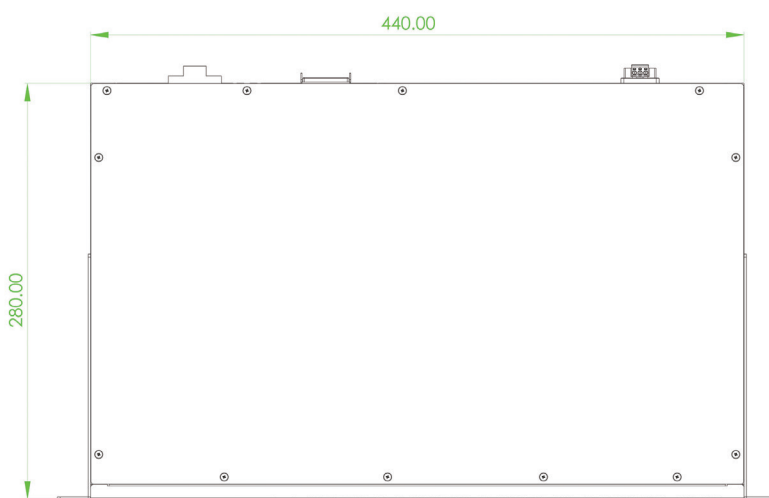
**IXR-G24044X**



**IXR-G4804X**



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	CE, FCC
IXR-G24044X-AA	V	32	24	4	4		2	V	V
IXR-G24044X-AD	V	32	24	4	4	1	1	V	V
IXR-G24044X-DD	V	32	24	4	4	2		V	V
IXR-G4804X-AA	V	52	48		4		2	V	V
IXR-G4804X-AD	V	52	48		4	1	1	V	V
IXR-G4804X-DD	V	52	48		4	2		V	V

■ Package List

- IXR-G4804X or IXR-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 all CTC Union industrial grade Ethernet switches for guaranteed compatibility and performance. Best performance can be guaranteed, even in mission-critical applications. (Please see CTC Union's Industrial SFP datasheets for more items and detailed information.)

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-T7T00-00-(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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