ICS-G7850A Series

48G+2 10GbE Layer 3 full Gigabit modular managed Ethernet switches

Features and Benefits

- Up to 48 Gigabit Ethernet ports plus 2 10G Ethernet ports
- Up to 50 optical fiber connections (SFP slots)
- Up to 48 PoE+ ports with external power supply (with IM-G7000A-4PoE module)
- Fanless, -10 to 60°C operating temperature range
- Modular design for maximum flexibility and hassle-free future expansion
- Hot-swappable interface and power modules for continuous operation
- Turbo Ring and Turbo Chain (recovery time < 20 ms @ 250 switches)[1], and STP/RSTP/MSTP for network redundancy
- Isolated redundant power inputs with universal 110/220 VAC power supply range
- Supports MXstudio for easy, visualized industrial network management
- V-ON™ ensures millisecond-level multicast data and video network recovery

Certifications

EN 50121-4

Introduction

Process automation and transportation automation applications combine data, voice, and video, and consequently require high performance and high reliability. The ICS-G7850A Series full Gigabit backbone switches' modular design makes network planning easy, and allows greater flexibility by letting you install up to 48 Gigabit Ethernet ports plus 2 10 Gigabit Ethernet ports.

The fanless switches support the Turbo Ring, Turbo Chain, and RSTP/STP redundancy technologies, and come with an isolated redundant power supply to increase system reliability and the availability of your network backbone.

Additional Features and Benefits

- Layer 3 switching functionality to move data and information across networks (ICS-G7800A Series)
- Advanced PoE management functions: PoE output setting, PD failure check, PoE scheduling, and PoE diagnostics (with IM-G7000A-4PoE module)
- Command line interface (CLI) for quickly configuring major managed functions
- Supports advanced VLAN capability with Q-in-Q tagging
- DHCP Option 82 for IP address assignment with different policies
- Supports EtherNet/IP and Modbus TCP protocols for device management and monitoring
- Compatible with PROFINET protocol for transparent data transmission
- Digital inputs for integrating sensors and alarms with IP networks
- Redundant, dual AC power inputs
- IGMP snooping and GMRP for filtering multicast traffic
- IEEE 802.1Q VLAN and GVRP protocol to ease network planning
- QoS (IEEE 802.1p/1Q and TOS/DiffServ) to increase determinism
- Port Trunking for optimum bandwidth utilization
- TACACS+, SNMPv3, IEEE 802.1X, HTTPS, and SSH to enhance network security
- Access control lists (ACL) increase the flexibility and security of network management
- SNMPv1/v2c/v3 for different levels of network management
- RMON for proactive and efficient network monitoring
- Bandwidth management to prevent unpredictable network status
- Lock port function for blocking unauthorized access based on MAC address
- Port mirroring for online debugging
- Automatic warning by exception through email and relay output

1. If the port link speed is 1 Gigabit or higher, the recovery time is < 50 ms.

Specifications

Input/Output Interface

Alarm Contact Channels	Relay output with current carrying capacity of 2 A @ 30 VDC
Digital Inputs	+13 to +30 V for state 1 -30 to +1 V for state 0 Max. input current: 8 mA

Ethernet Interface

10GbE SFP+ Slots	2
Slot Combination	12 slots for 4-port interface modules (10/100/1000BaseT(X), or PoE+ 10/100/1000BaseT(X), or 100/1000BaseSFP slots)[2]
Standards	IEEE 802.1D-2004 for Spanning Tree Protocol IEEE 802.1p for Class of Service IEEE 802.1Q for VLAN Tagging IEEE 802.1s for Multiple Spanning Tree Protocol IEEE 802.1w for Rapid Spanning Tree Protocol IEEE 802.1X for authentication IEEE 802.3 for 10BaseT IEEE 802.3ab for 1000BaseT(X) IEEE 802.3ad for Port Trunk with LACP IEEE 802.3u for 100BaseT(X) and 100BaseFX IEEE 802.3x for flow control IEEE 802.3z for 1000BaseSX/LX/LHX/ZX IEEE 802.3af/at for PoE/PoE+ output IEEE 802.3ae for 10 Gigabit Ethernet

Ethernet Software Features

Management	ARP Back Pressure Flow Control BOOTP DDM DHCP Option 66/67/82 DHCP Server/Client Flow control IPv4 LLDP Port Mirror RARP RMON SCP SMTP SNMP Inform SNMPv1/v2c/v3 Syslog Telnet TFTP
Filter	802.1Q BPDU Filter BPDU Guard GMRP GVRP IGMP v1/v2/v3 QinQ VLAN
Multicast Routing	DVMRP PIM-DM PIM-SM PIM-SSM
Redundancy Protocols	Link Aggregation MRP MSTP RSTP Turbo Chain

2. See the IM-G7000A datasheet for Gigabit Ethernet module product information.

	Turbo Ring v1/v2 V-ON
Routing Redundancy	VRRP
Security	Access control list Broadcast storm protection HTTPS/SSL MAB authentication Sticky MAC NTP authentication Port Lock RADIUS SSH TACACS+
Time Management	NTP Server/Client SNTP
Unicast Routing	OSPF RIPV1/V2 Static Route
Industrial Protocols	EtherNet/IP Modbus TCP
MIB	Bridge MIB Ethernet-like MIB MIB-II P-BRIDGE MIB Q-BRIDGE MIB RMON MIB Groups 1, 2, 3, 9 RSTP MIB

Switch Properties

DRAM	128 MB
Flash	16 MB
IGMP Groups	4096
Jumbo Frame Size	9.6 KB
MAC Table Size	16 K
Max. No. of VLANs	256
Packet Buffer Size	12 Mbits
VLAN ID Range	VID 1 to 4094
Priority Queues	8

USB Interface

Storage Port	USB Type A

Serial Interface

Console Port	USB-serial console (Type B connector)

Power Parameters

Input Voltage	110 to 220 VAC Redundant dual inputs
Operating Voltage	85 to 264 VAC
Input Current	1.1/0.72 A @ 110/220 VAC

	Note: These are the input current ratings for the device with the maximum number of modules installed.
Power Consumption (Max.)	109.68/117.8 W @ 110/220 VAC Note: These are the power consumption ratings for the device with the maximum number of modules installed.
Total PoE Power Budget	Installed with IM-G7000A-4PoE Module: Maximum 1,440 W @ 48 VDC
Overload Current Protection	Supported
Reverse Polarity Protection	Supported

Physical Characteristics

IP Rating	IP30
Dimensions	440 x 176 x 523.8 mm (17.32 x 6.93 x 20.62 in)
Weight	12900 g (28.5 lb)
Installation	Rack mounting

Environmental Limits

Operating Temperature	-10 to 60°C (14 to 140°F)
Storage Temperature (package included)	-40 to 85°C (-40 to 185°F)
Ambient Relative Humidity	5 to 95% (non-condensing)

Standards and Certifications

Safety	EN 61010-2-201 UL 61010-2-201
EMC	EN 55032/35
EMI	CISPR 32, FCC Part 15B Class A
EMS	IEC 61000-4-2 ESD: Contact: 6 kV; Air: 8 kV IEC 61000-4-3 RS: 80 MHz to 1 GHz: 20 V/m IEC 61000-4-4 EFT: Power: 4 kV; Signal: 4 kV IEC 61000-4-5 Surge: Power: 2 kV; Signal: 2 kV IEC 61000-4-6 CS: 10 V IEC 61000-4-8 PFMF
Railway	EN 50121-4
Freefall	IEC 60068-2-32
Shock	IEC 60068-2-27
Vibration	IEC 60068-2-6

MTBF

Time	282,329 hrs
Standards	Telcordia (Bellcore), GB

Warranty

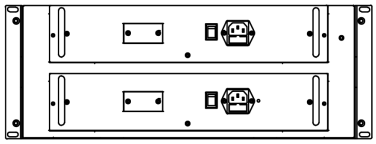
Warranty Period	5 years
Details	See www.moxa.com/warranty

Package Contents

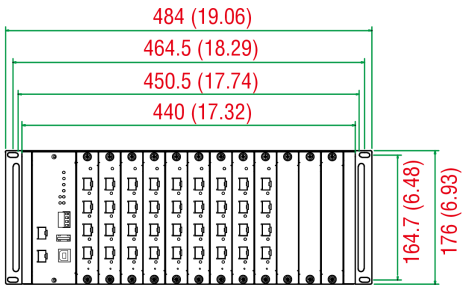
Device	1 x ICS-G7850A Series switch
Cable	1 x USB type A male to USB type B male
Installation Kit	2 x rack-mounting ear 6 x cap, plastic, for SFP slot
Power Supply	1 x power cord, EU type 1 x power cord, US type
Documentation	1 x quick installation guide 1 x warranty card
Note	48 V external power supply, SFP modules and/or modules from the IM-G7000A Module Series need to be purchased separately for use with this product.

Dimensions

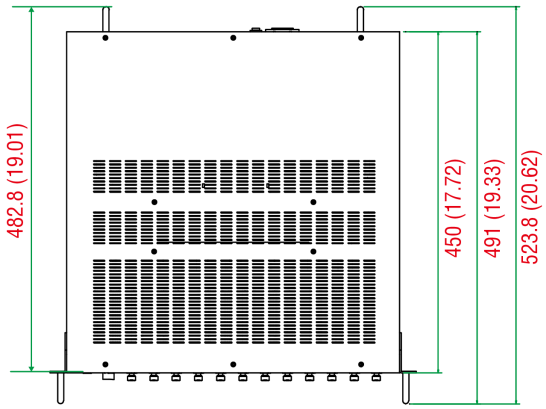
Unit: mm (inch)



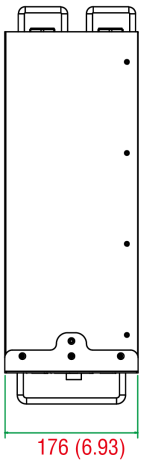
Rear View



Front View



Top View



Side View

Ordering Information

Model Name	Layer	10GbE SFP+ Slots	100/1000Base SFP Slots	10/100/1000BaseT(X) Ports RJ45 Connector	Operating Temp.
ICS-G7850A-2XG-HV-HV	3	2	Up to 48	Up to 48	-10 to 60°C

Accessories (sold separately)

IM-G7000A Module Series

IM-G7000A-4GSFP	Gigabit Ethernet interface module with 4 100/1000BaseSFP slots, -10 to 60°C operating temperature
IM-G7000A-4GTX	Gigabit Ethernet interface module with 4 10/100/1000BaseT(X) ports, -10 to 60°C operating temperature
IM-G7000A-4PoE	Gigabit Ethernet PoE+ interface module with 4 10/100/1000BaseT(X) ports, -10 to 60°C operating temperature

Power Supplies

PWR-G7000A-AC	Power supply module (85 to 264 VAC) for ICS-G7748A/G7750A/G7752A/G7848A/G7850A/G7852A Series, -10 to 60°C operating temperature

SFP Modules

SFP-1FELLC-T	SFP module with 1 100Base single-mode with LC connector for 80 km transmission, -40 to 85°C operating temperature
SFP-1FEMLC-T	SFP module with 1 100Base multi-mode, LC connector for 2/4 km transmission, -40 to 85°C operating temperature
SFP-1FESLC-T	SFP module with 1 100Base single-mode with LC connector for 40 km transmission, -40 to 85°C operating temperature
SFP-1G10ALC	WDM-type (BiDi) SFP module with 1 1000BaseSFP port with LC connector for 10 km transmission; TX 1310 nm, RX 1550 nm, 0 to 60°C operating temperature
SFP-1G10ALC-T	WDM-type (BiDi) SFP module with 1 1000BaseSFP port with LC connector for 10 km transmission; TX 1310 nm, RX 1550 nm, -40 to 85°C operating temperature
SFP-1G10BLC	WDM-type (BiDi) SFP module with 1 1000BaseSFP port with LC connector for 10 km transmission; TX 1550 nm, RX 1310 nm, 0 to 60°C operating temperature
SFP-1G10BLC-T	WDM-type (BiDi) SFP module with 1 1000BaseSFP port with LC connector for 10 km transmission; TX 1550 nm, RX 1310 nm, -40 to 85°C operating temperature
SFP-1G20ALC	WDM-type (BiDi) SFP module with 1 1000BaseSFP port with LC connector for 20 km transmission; TX 1310 nm, RX 1550 nm, 0 to 60°C operating temperature
SFP-1G20ALC-T	WDM-type (BiDi) SFP module with 1 1000BaseSFP port with LC connector for 20 km transmission; TX 1310 nm, RX 1550 nm, -40 to 85°C operating temperature
SFP-1G20BLC	WDM-type (BiDi) SFP module with 1 1000BaseSFP port with LC connector for 20 km transmission; TX 1550 nm, RX 1310 nm, 0 to 60°C operating temperature
SFP-1G20BLC-T	WDM-type (BiDi) SFP module with 1 1000BaseSFP port with LC connector for 20 km transmission; TX 1550 nm, RX 1310 nm, -40 to 85°C operating temperature
SFP-1G40ALC	WDM-type (BiDi) SFP module with 1 1000BaseSFP port with LC connector for 40 km transmission; TX 1310 nm, RX 1550 nm, 0 to 60°C operating temperature
SFP-1G40ALC-T	WDM-type (BiDi) SFP module with 1 1000BaseSFP port with LC connector for 40 km transmission; TX 1310 nm, RX 1550 nm, -40 to 85°C operating temperature
SFP-1G40BLC	WDM-type (BiDi) SFP module with 1 1000BaseSFP port with LC connector for 40 km transmission; TX 1550 nm, RX 1310 nm, 0 to 60°C operating temperature
SFP-1G40BLC-T	WDM-type (BiDi) SFP module with 1 1000BaseSFP port with LC connector for 40 km transmission; TX 1550 nm, RX 1310 nm, -40 to 85°C operating temperature
SFP-1GEZXLC	SFP module with 1 1000BaseEZX port with LC connector for 110 km transmission, 0 to 60°C operating temperature
SFP-1GEZXLC-120	SFP module with 1 1000BaseEZX port with LC connector for 120 km transmission, 0 to 60°C operating temperature
SFP-1GLHLC	SFP module with 1 1000BaseLH port with LC connector for 30 km transmission, 0 to 60°C operating temperature
SFP-1GLHLC-T	SFP module with 1 1000BaseLH port with LC connector for 30 km transmission, -40 to 85°C operating temperature
SFP-1GLHXLC	SFP module with 1 1000BaseLHX port with LC connector for 40 km transmission, 0 to 60°C operating temperature
SFP-1GLHXLC-T	SFP module with 1 1000BaseLHX port with LC connector for 40 km transmission, -40 to 85°C operating temperature
SFP-1GLSXLC	SFP module with 1 1000BaseLSX port with LC connector for 1km/2km transmission, 0 to 60°C operating temperature
SFP-1GLSXLC-T	SFP module with 1 1000BaseLSX port with LC connector for 1km/2km transmission, -40 to 85°C operating temperature
SFP-1GLXLC	SFP module with 1 1000BaseLX port with LC connector for 10 km transmission, 0 to 60°C operating temperature
SFP-1GLXLC-T	SFP module with 1 1000BaseLX port with LC connector for 10 km transmission, -40 to 85°C operating temperature
SFP-1GSXLC	SFP module with 1 1000BaseSX port with LC connector for 300m/550m transmission, 0 to 60°C operating temperature
SFP-1GSXLC-T	SFP module with 1 1000BaseSX port with LC connector for 300m/550m transmission, -40 to 85°C operating temperature

SFP-1GZXLC	SFP module with 1 1000BaseZX port with LC connector for 80 km transmission, 0 to 60°C operating temperature
SFP-1GZXLC-T	SFP module with 1 1000BaseZX port with LC connector for 80 km transmission, -40 to 85°C operating temperature
SFP-1GTXRJ45-T	SFP module with 1 1000BaseT port with RJ45 connector for 100 m transmission, -40 to 75°C operating temperature
SFP-10GERLC-T	SFP+ module with 1 10GBase-ER port, LC connector for 40 km transmission, -40 to 85°C operating temperature
SFP-10GLRLC-T	SFP+ module with 1 10GBase-LR port, LC connector for 10 km transmission, -40 to 85°C operating temperature
SFP-10GSRLC-T	SFP+ module with 1 10GBase-SR port, LC connector for 33m/82m/300m/400m transmission, -40 to 85°C operating temperature
SFP-10GZRLC-T	SFP+ module with 1 10GBase-ZR port, LC connector for 80 km transmission, -40 to 85°C operating temperature

Power Cords

PWC-C7UK-2B-183	Power cord with United Kingdom (UK) plug, 2.5A/250V, 1.83 m
PWC-C7EU-2B-183	Power cord with Continental Europe (EU) plug, 2.5A/250V, 1.83 m
PWC-C7US-2B-183	Power cord with United States (US) plug, 10A/125V, 1.83 m
PWC-C13US-3B-183	Power cord with United States (US) plug, 1.83 m
PWC-C7AU-2B-183	Power cord with Australian (AU) plug, 2.5A/250V, 1.83 m
PWC-C13UK-3B-183	Power cord with United Kingdom (UK) plug, 1.83 m
PWC-C13CN-3B-183	Power cord with three-prong China (CN) plug, 1.83 m
PWC-C13AU-3B-183	Power cord with Australian (AU) plug, 1.83 m
PWC-C13EU-3B-183	Power cord with Continental Europe (EU) plug, 1.83 m

Software

MXview-50	Industrial network management software with a license for 50 nodes (by IP address)
MXview-100	Industrial network management software with a license for 100 nodes (by IP address)
MXview-250	Industrial network management software with a license for 250 nodes (by IP address)
MXview-500	Industrial network management software with a license for 500 nodes (by IP address)
MXview-1000	Industrial network management software with a license for 1000 nodes (by IP address)
MXview-2000	Industrial network management software with a license for 2000 nodes (by IP address)
MXview Upgrade-50	License expansion of MXview industrial network management software by 50 nodes (by IP address)

Storage Kits

ABC-02-USB	Configuration backup and restoration tool, firmware upgrade, and log file storage tool for managed Ethernet switches and routers, 0 to 60°C operating temperature
ABC-02-USB-T	Configuration backup and restoration tool, firmware upgrade, and log file storage tool for managed Ethernet switches and routers, -40 to 75°C operating temperature