

# ICS-G7826/G7828 Series

**24G+2 10GbE/24G+4 10GbE-port Layer 3 full Gigabit managed Ethernet switches**



- > Layer 3 routing interconnects multiple LAN segments
- > 24 Gigabit Ethernet ports plus up to 4 10G Ethernet ports
- > Up to 28 optical fiber connections (SFP slots)
- > Fanless, 0 to 60°C operating temperature range
- > Turbo Ring and Turbo Chain (recovery time < 50 ms @ 250 switches), RSTP/STP, and MSTP for network redundancy
- > Isolated redundant power inputs with universal 110/220 VAC power supply range



EN 50121



## Introduction

Process automation and transportation automation applications combine data, voice, and video, and consequently require high performance and high reliability. The ICS-G7826/G7828 series full Gigabit backbone switches are equipped with 24 Gigabit Ethernet ports plus up to 4 10 Gigabit Ethernet ports, and support Layer 3 routing functionality to facilitate the deployment of applications across networks, making them ideal for large scale industrial networks.

The ICS-G7826/G7828's full Gigabit capability increases bandwidth to provide high performance and the ability to quickly transfer large amounts of video, voice, and data across a network. The switches support the Turbo Ring, Turbo Chain, and RSTP/STP redundancy protocols, and are fanless and come with an isolated redundant power supply to increase system reliability and the availability of your network backbone.

## Features and Benefits

- Layer 3 switching functionality to move data and information across networks
- Command line interface (CLI) for quickly configuring major managed functions
- Supports advanced VLAN capability with Q-in-Q tagging
- Software based IEEE 1588 PTP V2 (Precision Time Protocol) for precise time synchronization of networks
- DHCP Option 82 for IP address assignment with different policies
- Support EtherNet/IP and Modbus/TCP protocols for device management and monitoring
- Compatible with EtherNet/IP and PROFINET protocols for transparent data transmission
- Redundant Gigabit Turbo Ring and Turbo Chain (recovery time < 50 ms @ 250 switches), RSTP/STP, and MSTP for network redundancy
- 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
- SNMPv1/v2c/v3 for different levels of network management
- RMON for efficient network monitoring and proactive capability
- Bandwidth management prevents unpredictable network status
- Lock port function for blocking unauthorized access based on MAC address
- Port mirroring for online debugging
- Automatic warning by exception through e-mail, relay output
- Digital inputs for integrating sensors and alarms with IP networks
- Redundant, dual AC power inputs

## Specifications

### Technology

#### Standards:

IEEE 802.3 for 10BaseT  
 IEEE 802.3u for 100BaseT(X) and 100BaseFX  
 IEEE 802.3ab for 1000BaseT(X)  
 IEEE 802.3z for 1000BaseSX/LX/LHX/ZX  
 IEEE 802.3ae for 10 Gigabit Ethernet  
 IEEE 802.3x for Flow Control  
 IEEE 802.1D-2004 for Spanning Tree Protocol  
 IEEE 802.1w for Rapid Spanning Tree Protocol  
 IEEE 802.1s for Multiple Spanning Tree Protocol

IEEE 802.1Q for VLAN Tagging  
 IEEE 802.1p for Class of Service  
 IEEE 802.1X for Authentication  
 IEEE 802.3ad for Port Trunk with LACP

**Protocols:** IGMPv1/v2, GMRP, GVRP, SNMPv1/v2c/v3, DHCP Server/Client, BootP, TFTP, SNTP, SMTP, RARP, RMON, HTTP, HTTPS, Telnet, Syslog, DHCP Option 66/67/82, SSH, LLDP, IEEE 1588 PTP V2, EtherNet/IP, Modbus/TCP, SNMP Inform, NTP Server/Client

**Layer 3 Switching:** Static routing, RIP V1/V2, OSPF, DVMRP, PIM-DM

**Layer 3 Switching Redundancy:** VRRP

**MIB:** MIB-II, Ethernet-like MIB, P-BRIDGE MIB, Q-BRIDGE MIB, Bridge

MIB, RSTP MIB, RMON MIB Groups 1, 2, 3, 9

**Flow Control:** IEEE 802.3x flow control, back pressure flow control

### Switch Properties

**Priority Queues:** 8

**Max. Number of Available VLANs:** 256

**VLAN ID Range:** VID 1 to 4094

**IGMP Groups and Multicast Route:** 1000

**MAC Table Size:** 16 K

**Packet Buffer Size:** 12 Mbit

**DRAM Size:** 128 MB

**Flash Size:** 16 MB

**Jumbo Frame Size:** 9.6 KB

**Switching Fabric Capacity:**

ICS-G7826: 88 Gbps

ICS-G7828: 128 Gbps

**Forwarding Rate:**

ICS-G7826: 65.5 Mpps (packets per second)

ICS-G7828: 95.2 Mpps

### Interface

**Gigabit Ethernet:** 10/100/1000BaseT(X) or 100/1000BaseSFP slot

**10 Gigabit Ethernet:** 10GbE SFP+ slot

**Console Port:** RS-232 (RJ45 connector)

**LED Indicators:** STAT, PWR1, PWR2, FAULT, MSTR/HEAD, CPLR/TAI

**Alarm Contact:** 1 relay output with current carrying capacity of 2 A @ 30 VDC

**Digital Inputs:** 1 input with the same ground, but electrically isolated from the electronics.

- +13 to +30V for state "1"

- -30 to +3V for state "0"

- Max. input current: 8 mA

### Power Requirements

**Input Voltage:** 110/220 VAC (85 to 264 VAC)

**Input Current:**

ICS-G7826: Max. 0.98/0.55 A @ 110/220 VAC

ICS-G7828: Max. 1.16/0.65 A @ 110/220 VAC

**Overload Current Protection:** Present

**Reverse Polarity Protection:** Present

### Physical Characteristics

**Housing:** IP30 protection

**Dimensions:** 440 x 44 x 386.9 mm (17.32 x 1.73 x 15.23 in)

**Weight:**

ICS-G7826: 5.3 kg

ICS-G7828: 5.5 kg

**Installation:** 19" rack mounting

### Environmental Limits

**Operating Temperature:** 0 to 60°C (32 to 140°F)

**Storage Temperature:** -40 to 85°C (-40 to 185°F)

**Ambient Relative Humidity:** 5 to 95% (non-condensing)

### Standards and Certifications

**Safety:** UL 60950-1, EN 60950-1

**EMI:** FCC Part 15 Subpart B Class A, EN 55022 Class A

**EMS:**

EN 61000-4-2 (ESD) Level 3, EN 61000-4-3 (RS) Level 3,

EN 61000-4-4 (EFT) Level 3, EN 61000-4-5 (Surge) Level 3,

EN 61000-4-6 (CS) Level 3, EN 61000-4-8, EN 61000-4-11

**Rail Traffic:** EN 50121-4

**Shock:** IEC 60068-2-27

**Freefall:** IEC 60068-2-32

**Vibration:** IEC 60068-2-6

*Note: Please check Moxa's website for the most up-to-date certification status.*

**MTBF** (mean time between failures)

**Time:** 233,244 hrs

**Database:** Telcordia (Bellcore), GB

### Warranty

**Warranty Period:** 5 years

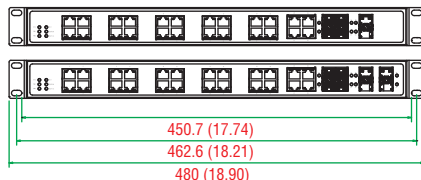
**Details:** See [www.moxa.com/warranty](http://www.moxa.com/warranty)

### Dimensions

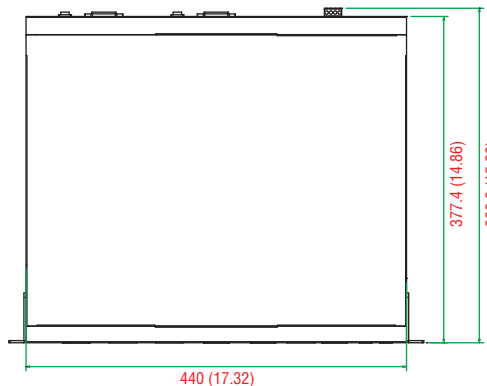
Unit: mm (inch)



Rear View



Front View



Top View



Side View

## : Ordering Information

Available Models	Port Interface				Power Supply	
Standard Temperature (0 to 60°C)	Gigabit Ethernet			10 Gigabit Ethernet	Isolated Power Supply 1	Isolated Power Supply 2
	10/100/1000BaseT(X)	100/1000BaseSFP*	Combo Port, 10/100/1000BaseT(X) or 100/1000BaseSFP*	10GbE SFP+*	HV: 85 to 264 VAC	HV: 85 to 264 VAC
ICS-G7826-4GTXSFP-2XG-HV-HV	20	–	4	2	1	1
ICS-G7826-8GSFP-4GTXSFP-2XG-HV-HV	12	8	4	2	1	1
ICS-G7826-20GSFP-4GTXSFP-2XG-HV-HV	–	20	4	2	1	1
ICS-G7828-4GTXSFP-4XG-HV-HV	20	–	4	4	1	1
ICS-G7828-8GSFP-4GTXSFP-4XG-HV-HV	12	8	4	4	1	1
ICS-G7828-20GSFP-4GTXSFP-4XG-HV-HV	–	20	4	4	1	1

Note: The ICS-G7826/G7828 series supports 10GbE SFP+ and 100/1000BaseSFP slots. See pages below for SFP-10G/1G/1FE series SFP module product information.

### Optional Accessories (can be purchased separately)

**MXview:** Moxa industrial network management software with 50, 100, 250, 500, or 1000 nodes

**EDS-SNMP OPC Server Pro:** OPC server software that works with all SNMP devices

**ABC-01:** Configuration backup and restoration tool for managed Ethernet switches, 0 to 60°C operating temperature

**Power Cords:** See website accessories pages for details

### Package Checklist

- ICS-G7826 or ICS-G7828 switch
- RJ45 to DB9 console port cable
- 2 power cords (EU and US)
- Protective caps for unused ports
- 2 rackmount ears
- Documentation and software CD
- Hardware installation guide (printed)
- Warranty card