CES7110-3GF Series

10-port Layer 2 Gigabit Managed Embedded Industrial Ethernet Switch with 4/6 x RS485/CAN Ports

- 3 x 1G SFP ports, 2/4/6/7 x 100M fiber ports, and 7/5/3/1 x 100M copper ports
- 2/4 x RS485 and 2 x CAN ports, or 4 x RS485 ports
- MW-Ring (recovery time < 20 ms @ 200 switches), ERPS, STP/RSTP for network redundancy
- Support networking of serial terminal devices, converting protocols including UDP, TCP, Modbus, HTTPD, and WebSocket, with virtual serial port support
- Support CAN terminal device networking, enabling bidirectional transparent transmission between CAN bus and Ethernet (UDP/TCP)
- Support DC 9~24V power input with reverse polarity protection; dual inputs enable power redundancy
- -40°C~+85°C operating temperature range

Product Description

The CES7110-3GF series is a 10-port Layer 2 Gigabit managed Embedded mining-grade intrinsically safe industrial Ethernet switch specifically designed for industrial communication network applications. It meets intrinsic safety design requirements and integrates serial device networking with CAN device networking. This series offers configurable ports: 3 x Gigabit fiber ports, 2/4/6/7 x 100M fiber ports, 7/5/3/1 x 100M copper ports, 2/4 x RS485 and 2 x CAN ports, or 4 x RS485 ports. Supports 1/2 x DC 9~24V power inputs with reverse polarity protection. Embedded installation design meets diverse industrial bus and field network requirements.

The CES7110-3GF series supports WEB management and multiple network protocols including MW-Ring, ERPS, STP/RSTP, VLAN, QoS, LACP, LLDP, IGMP snooping, 802.1X authentication, SNMPv1/v2c/v3, port mirroring, static multicast, bus configuration, storm detection, port statistics, and online firmware upgrades. Supports multiple network operating modes including UDP, UDP Multicast, TCP Client/Server, Modbus RTU Master/Slave, Modbus ASCII Master/Slave, RealCOM_MCP/CCP/MW, Pair Connection Master/Slave, HTTPD Client, and WebSocket Client to implement serial-to-Ethernet or Modbus TCP protocol conversion; Supports network operation modes including UDP, TCP Client/Server, and UDP Multicast to enable CAN terminal device networking; The system provides multi-level user management with support for online reboot, firmware upgrade, and factory reset. The hardware features a fanless, intrinsically safe design with wide temperature range capabilities. It utilizes industrial-grade components, supports operation from -40°C to +85°C, and incorporates power supplies compliant with intrinsically safe circuit design standards. The device has passed rigorous safety and EMC testing to meet demanding industrial environment requirements. It is widely applicable in industrial automation, integrated energy systems, intelligent transportation, smart cities, and smart mining.

Features and Benefits

- Support rate limiting for broadcast, unknown multicast, and unknown unicast packets; detects broadcast and multicast packet storms to prevent network storms
- Enable networking of serial and CAN terminal devices, extending transmission distance for centralized network management
- Support conversion between Modbus RTU/ASCII and Modbus TCP protocols, with transparent transmission for Modbus RTU/ASCII over TCP
- Support multiple packet segmentation mechanisms, converting serial/CAN data into Ethernet packets to meet diverse network real-time requirements
- Support Modbus ID mapping, translating actual Modbus slave IDs to virtual IDs for data communication, preventing slave ID conflicts
- Support QoS (Quality of Service) to prioritize voice, video, and critical data transmission across network devices, resolving congestion
- Support 802.1Q VLAN with Access, Trunk, and Hybrid interfaces for easy broadcast domain segmentation and enhanced network security
- Support IGMP snooping and static multicast tables to establish Layer 2 multicast forwarding tables, reducing multicast broadcasts and conserving network resources
- Support LLDP (Link Layer Discovery Protocol) to obtain LLDP neighbor device information, perform link status monitoring, and facilitate topology management and fault isolation
- Support ERPS (Ethernet Ring Protection System) for multi-ring networking, providing link backup, achieving fast convergence, and improving network stability
- Fast ring redundancy (MW-Ring) with less than 20ms recovery time enhances system communication reliability
- Support RSTP (Rapid Spanning Tree Protocol), compatible with STP, eliminating network loops and improving reliability
- Support static and dynamic link aggregation, increasing transmission bandwidth and enhancing link reliability
- Support observer and administrator roles with hierarchical user permission management
- Support web control with HTTP/HTTPS protocol access control and login IP address restrictions
- Support TELNET and SSH access control; SSH provides secure remote login to ensure data integrity and reliability
- Support 802.1X port authentication for user identity verification, offering local authentication databases and remote RADIUS login authentication
- Support static unicast/multicast MAC address binding to interfaces, ensuring authorized user access
- Support SNMPv1/v2c/v3 and SNMPv1/v2c/v3 TRAPs, enabling centralized management via MIB network management systems
- Support port statistics, counting different types of transmitted and received data frames for port traffic monitoring
- Support port mirroring to capture ingress, egress, or all port traffic for network diagnostics and fault management
- Support loopback detection to prevent network storms caused by closed loops
- Support system logging for WEB, LINK, CONFIG, AUTH, IGMP, STORM, RING, RSTP, SNMP, and other log information
- Support remote log host monitoring and email logging

Specifications

Software	
Switching	Support port configuration, including speed mode, duplex mode, flow control, etc. Support port VLAN and 802.1Q VLAN Support port ingress/egress rate limiting, storm detection, port aggregation, LACP Support MAC address table, received frame/transmitted frame/total traffic statistics
Serial Port	Support UDP, UDP Multicast, TCP Client, TCP Server, Modbus RTU Master,Modbus RTU Slave, Modbus ASCII Master, Modbus ASCII Slave,RealCOM_MCP, RealCOM_CCP, RealCOM_MW, Pair Connection Master, Pair Connection Slave, Httpd Client, WebSocket Client, and other network operating modes Support packet length, packet interval, and network connection information Support Modbus slave address mapping, Modbus pre-read, Modbus over TCP Support heartbeat packets, registration packets, frame header/trailer mode, RFC2217 functionality
CAN (Optional)	Support UDP, TCP Client, TCP Server, UDP Multicast and other network operating modes. Support packet frame count, packet interval, CAN ID filtering, and network connection information.
Redundancy	Support ERPS Support MW-Ring proprietary ring network technology Support RSTP, compatible with STP
Multicast	Support IGMP snooping Support static multicast MAC address binding
Security Management	Support WEB, TELNET, SSH control Support 802.1X port authentication with local authentication database and remote RADIUS server Support static MAC port locking Support email logging Support loopback detection
Management and Maintenance	Support QoS (Quality of Service), 802.1P/DSCP/port priority mapping, absolute and relative priority control Support SNMP v1/v2c/v3, SNMP v1/v2c/v3 TRAP, LLDP Support port mirroring, Ping Support multi-level user management, local time management, SNTP client, log information Support online reboot, factory reset, system upgrade, configuration file upload/download Support unified host software management

Switch Capability	
Processing Type	Store-and-Forward
Backplane Bandwidth	7.6Gbps
Buffer Size	1Mbit
MAC Table Size	8K
Interface	
1G Fiber Port	3 × 1000Base-X SFP ports
100M Fiber Port	2/4/6/7 × 100Base-FX fiber ports, SC/FC/ST interfaces, transmission distance supports 1310nm multimode dual-fiber 2km or 1310nm single-mode dual-fiber 20km (40/60/80/100km)
100M Copper Port	7/5/3/1× 10/100Base-T(X) auto-negotiating RJ45 ports, supporting full/half-duplex, MDI/MDI-X
CAN	Interface Type: 2-port CAN interface optional Interface Signals: CANH, CANL, GND Baud Rate: 5kbps-1000kbps Connection Method: 6-pin 3.81mm pitch locking terminal block Terminating Resistor: Built-in 120Ω terminating resistor, configurable via jumper cap Isolation Voltage: 1.5kV
Serial Port	Interface Type: 2/4-port RS485 interface optional Interface Signals: A, B, GND Baud Rate: 300bps–460800bps Data Bits: 7-bit, 8-bit Stop Bits: 1-bit, 2-bit

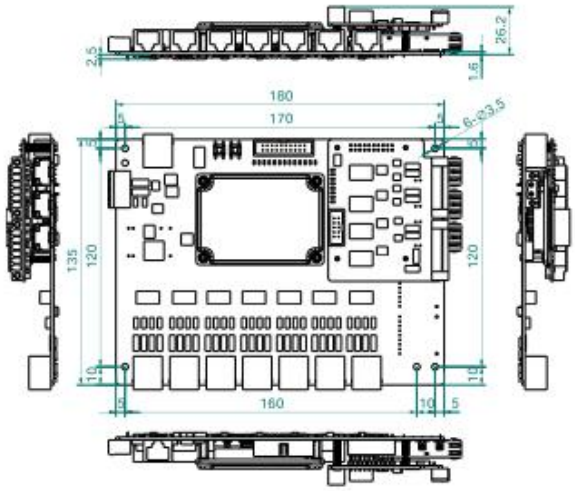
	Parity Bit: None, Odd Parity, Even Parity Connection Method: 1/2 x 6-pin 3.81mm pitch locking terminal blocks Terminating Resistor: Built-in 120Ω terminating resistor, configurable via jumper cap Isolation Voltage: 1.5kV
CONSOLE	1 x CONSOLE interface, RS232 signal RJ45 port for device debugging
Status LED	Power indicator, Operation indicator, Optical port indicator, Electrical port indicator, Serial port indicator, CAN indicator, Host software operation indicator; supports external indicator wiring
Power Supply	
Power Input	Single DC9~24V (2F and below) Dual DC9~24V, supports dual power redundancy (4F) Single DC5~32V (6F, 7F)
Power Consumption	＜9W@DC24V (Full Load)
Connection	2-pin 5.08mm pitch locking terminal block (2F and below) 5-pin 5.08mm pitch locking terminal block (4F) 2-pin 5.08mm pitch terminal block (6F, 7F)
Protection	Reverse polarity protection
Physical Characteristics	
Dimensions	180×135×26.2(mm) (excluding connectors) (2F and below) 185×140×26.2(mm) (excluding connectors) (4F, 6F, 7F)
Installations	Embedded
Weight	About 0.33kg
Working Environment	
Operating Temp	-40°C~+85°C

Storage Temp	-40°C~+85°C
Relative Humidity	5%~95% (non-condensing)

Dimensions

Unit: mm

CES7110-3GF-2D485-2CAN
CES7110-3GF-4D485



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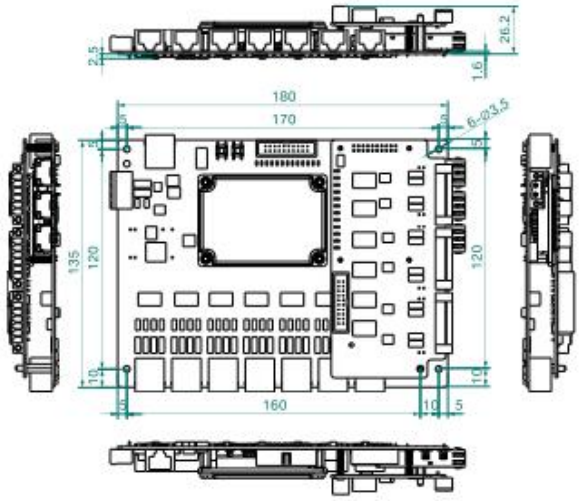

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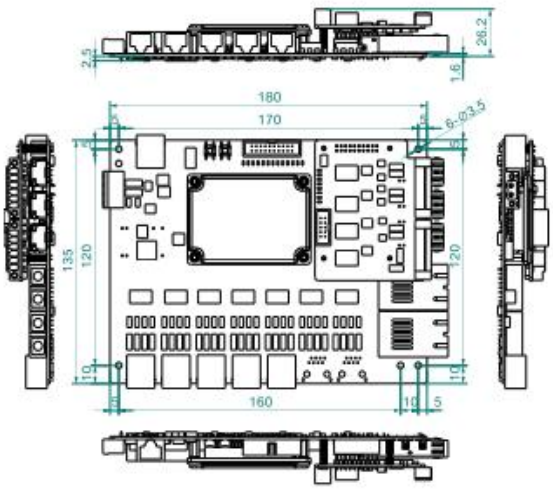

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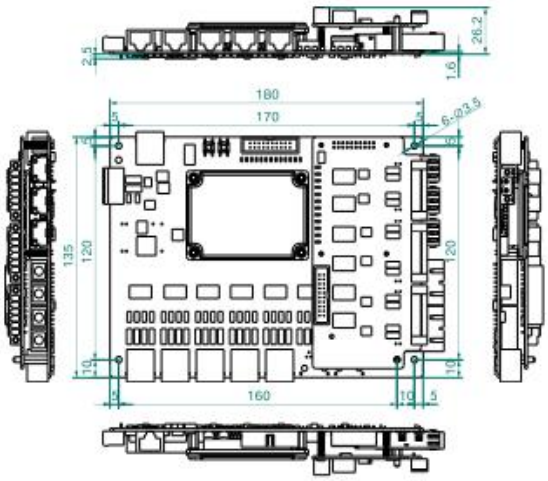

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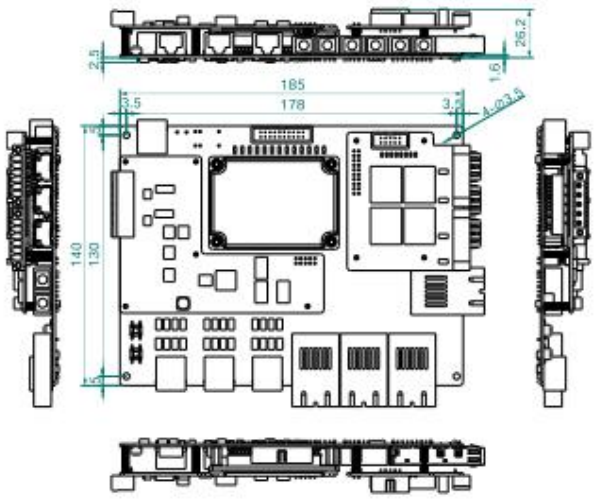

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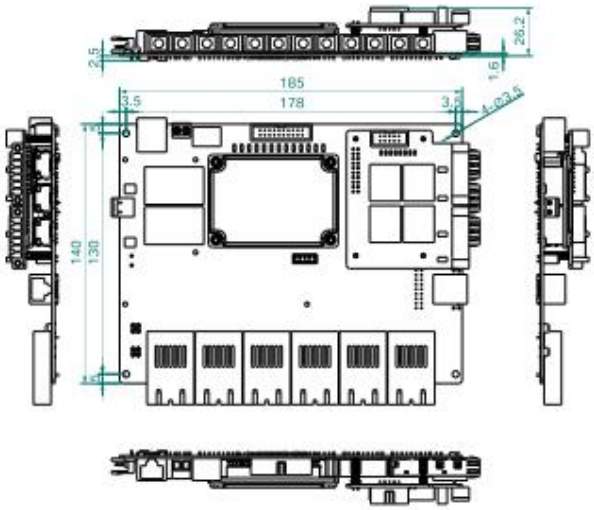

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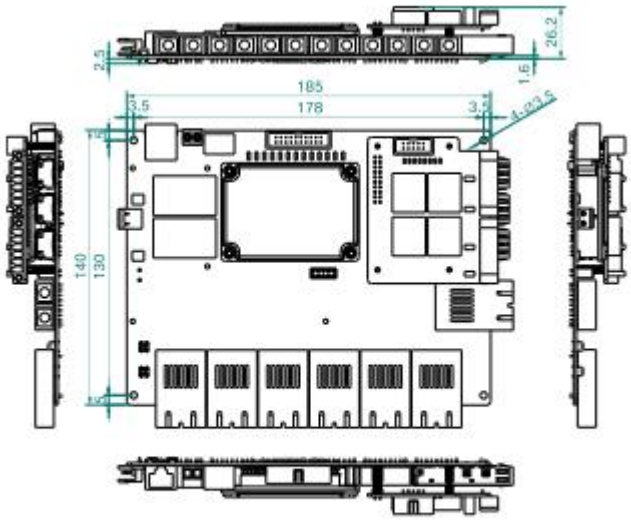

Ordering Information

Standard Model	1G Fiber Port	100M Fiber Port	100M Copper Port	RS485	CAN	Input Voltage
CES7110-3GF-2D485-2CAN	3	/	7	2	2	Single DC9~24V
CES 7110-3GF-4D485	3	/	7	4	/	
CES7110-3GF-4D485-2CAN	3	/	7	4	2	
CES7110-3GF-2F(M/S)-2D485-2CAN	3	2	5	2	2	
CES7110-3GF-2F(M/S)-4D485	3	2	5	4	/	
CES7110-3GF-2F(M/S)-4D485-2CAN	3	2	5	4	2	
CES7110-3GF-4F(M/S)-2D485-2CAN	3	4	3	2	2	Dual DC9~24V
CES7110-3GF-6F(M/S)-2D485-2CAN	3	6	1	2	2	Single DC5~32V
CES7110-3GF-7F(M/S)-2D485-2CAN	3	7	/	2	2	

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