

CTS8116BP

16-Port Layer 3 100M Bypass Managed Modular Embedded M12 Industrial Ethernet Switch



- Support 16 x 100M copper ports
- Support two sets of bypass functions, which can be directly connected after the device loses power
- MW-Ring (recovery time < 20 ms @ 200 switches), EAPS, ERPS, MSTP (compatible with RSTP/STP), MRP for network redundancy
- Support static routing, RIPv1/v2, OSPF dynamic routing protocols for routing selection and packet forwarding
- Support DC24V power input
- -40 to +70°C operating temperature range

Product Description

The CTS8116BP is a 16-port M12 Layer 3 100M bypass managed modular embedded industrial Ethernet switch. It supports 16 x 100M copper ports, of which the interface board provides 12 x 100M ports with M12 connectors, meeting rail transit industry standards to ensure secure and robust connections, ideal for applications subject to strong vibration. An additional 4 x 100M Ethernet ports are extended via Harting connectors on the backplane. The M12 ports support two sets of bypass functions, which automatically create a direct connection in the event of power failure, bypassing faulty nodes to prevent network interruptions and ensure continuous operation. Utilizing a store-and-forward mechanism, it delivers strong bandwidth processing capability, automatically detects packet errors, reduces transmission faults, and easily supports 100Mbps networking, ensuring stable, reliable, and efficient data transmission. Built with industrial-grade components and high-standard system design and production control, the board-mounted device operates in temperatures from -40°C to +70°C with high-level industrial protection, making it suitable for harsh environments with stable communication performance.

The CTS8116BP Layer 3 switch complies with major communication standards in the industrial sector, addressing real-time communication and network security requirements. It offers multiple management options, including CLI access via CONSOLE port or TELNET/SSH protocols, WEB interface access via HTTP/HTTPS, and device MIB access via SNMP. It supports a comprehensive range of network protocols and industry standards such as RIP, OSPF, VRRP, MW-Ring, EAPS, ERPS, STP/RSTP/MSTP, MRP, VLAN, GVRP, QoS, LACP, PIM, IGMP, IGMP Snooping, GMRP, LLDP, RMON, 802.1X, ACL, DHCP Server/Relay/Security/Snooping, NTP client/server, port mirroring, Ping, and Tracert, enhancing network

performance, reliability, and security to meet complex networking demands. The product undergoes rigorous functional, high/low temperature, safety, and EMC testing, ensuring suitability for diverse network scenarios and demanding industrial environments. It is widely applicable in industrial automation, integrated energy, smart cities, rail transit, intelligent transportation, smart mining, and smart manufacturing.

Product Features

- Support storm suppression for broadcast, multicast, and unknown unicast packets, supports broadcast and multicast packet storm detection, and prevents network storms
- Support static and dynamic link aggregation LACP, which can increase transmission bandwidth, improve link reliability, and achieve network load balancing
- Support 802.1Q VLAN, providing Access, Trunk, and Hybrid interfaces for easy division into multiple broadcast domains, enhancing network security
- Support VLAN segmentation based on port, MAC, protocol, IP subnet, and other methods, suitable for networks in different environments
- Support the GVRP protocol, enabling dynamic distribution, registration, and propagation of VLAN attributes to maintain dynamic VLANs
- Support MAC address aging and learning limits, static MAC address forwarding and filtering, and MAC address binding to ensure legitimate user access
- Support multicast protocols such as PIM, IGMP, IGMP Snooping, and GMRP to reduce multicast data broadcasting in the network and conserve network resources
- Support the LLDP (Link Layer Discovery Protocol) to obtain LLDP neighbor device information, monitor link status, and facilitate topology management and fault localization
- Support the MSTP (Multi-Spanning Tree Protocol) to eliminate network loops and improve network reliability
- Support ERPS Ethernet Multi-Ring Protection Technology, enabling multi-ring networking, link backup, rapid convergence, and improved network stability
- Support EAPS Loop Protection Protocol and MW-Ring proprietary ring network protocol, enhancing system communication reliability
- Support MRP Medium Redundancy Protocol, improving network reliability with reconfiguration time $\leq 500\text{ms}$
- Support loopback detection to prevent network loops from causing network storms
- Support static routing configuration, RIPv1/v2, and OSPF dynamic routing protocols to enable routing selection and packet forwarding
- Support SNMPv1/v2c/v3, enabling information queries, modifications, and fault diagnosis through an MIB network management system for centralized management
- Support RMON remote network monitoring, providing statistics and alerts for various types of data frames,

enabling remote monitoring and management via a network management system

- Support QoS (Quality of Service) to prioritize the transmission of voice, video, and critical data through network devices, addressing network congestion
- Support ACL access control lists, filtering TCP/UDP/ICMP/IGMP packets based on source/destination IP and MAC addresses
- Support 802.1X port authentication, verifying user identities and controlling access permissions
- Support DHCP servers, enabling centralized dynamic management and configuration of user IP addresses

Technical Specifications

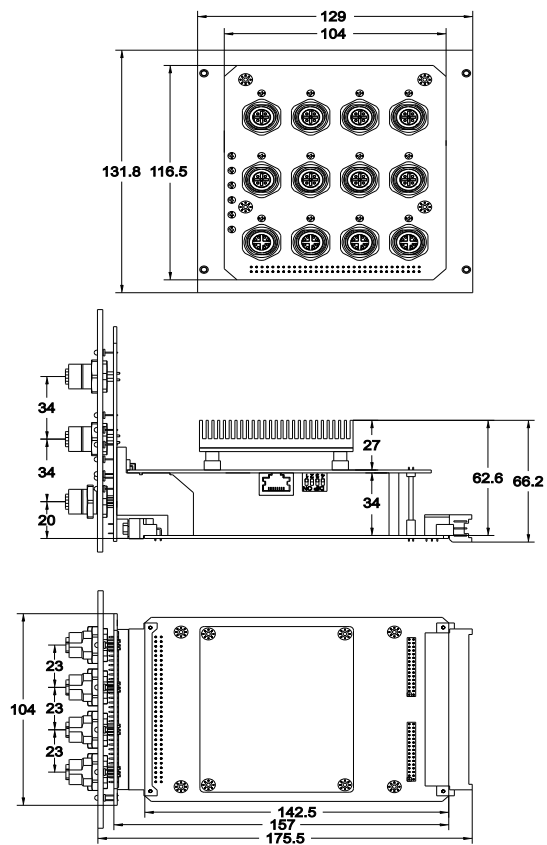
Software	
Switching	Support port configuration, port rate limiting, storm suppression, storm detection, port aggregation, LACP, and port statistics Support 802.1Q VLAN, VLAN based on port/MAC/protocol/subnet, GVRP, and port isolation Support MAC address aging and learning restrictions, static MAC address forwarding and filtering, and MAC address binding
Redundancy	Support MW-Ring proprietary ring network technology Support EAPS and ERPS Support MSTP, compatible with RSTP/STP Support MRP
Multicast	Support IGMP Snooping Support static multicasting and GMRP Support IGMPv1/v2/v3 Support PIM-DM and PIM-SM
Routing	Support static routing Support RIPv1/v2 and OSPF dynamic routing Support VRRP
Security Management	Support HTTP, HTTPS, TELNET, and SSH access methods and login control

	Support ACL access control lists for filtering L2-L4 layer data Support 802.1X port authentication and MAC address authentication Support loopback detection
Management and Maintenance	Support DHCP Server/Relay/Security/Snooping Support QoS, SNMPv1/v2c/v3, SNMPv1/v2c TRAP, LLDP, and RMON Support port mirroring, Ping, and Tracert Support user management with different permissions, system logs, local time synchronization, and NTP client/server Support online reboot, factory reset, system upgrade, and configuration file upload/download Support MW-NMPv2 private network management interface protocol and MixView, MaxView upper-level computer management
Switch Capability	
Processing Type	Store-and-Forward
Backplane Bandwidth	128Gbps
Buffer Size	12Mbit
MAC Table Size	16K
LPM Routing Entries	512
Interface	
100M Copper Port	16×10/100Base-T(X) auto-sensing 100M copper ports, 12 x M12 (D-Code 4-pin female) ports and 4 ports connected via backplane connectors, supporting full/half-duplex and auto MDI/MDI-X ; Supports two sets of Bypass functions, with Port1 and Port2 forming one Bypass group, and Port3 and Port4 forming another Bypass group
CONSOLE	1× CONSOLE port, RS232 signal RJ45 port, used for device debugging and command-line configuration
DIP Switch	Restart
Status LED	Power indicator, Operation indicator, Port indicator
Power Supply	

Input Voltage	DC24V
Power Consumption	<10W@DC24V(full load)
Connection	3×16-pin Harting connector socket
Physical Characteristics	
Dimensions	157×104×116.5 mm (excluding connector)
Installations	Slide in
Weight	0.65kg
Working Environment	
Operating Temp	-40℃~+70℃
Storage Temp	-40℃~+85℃
Relative Humidity	5%~95% (non-condensing)

Dimensions

Unit: mm



Ordering Information

Standard Model	100M Copper Port	Input Voltage
CTS8116BP	16	DC24V



Contact Us

COME-STAR COMMUNICATION(WUHAN) CO., LTD.

Address: Puneng Industrial Park, Fenghuang Garden 1st Road, East Lake High-Tech Development Zone, Wuhan, China.

Tel: +86-027-59257958

Mail: sales@come-star.com

Official site: www.come-star.com

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