

Extended Temperature, Layer 2 Managed Ethernet Switches

Introduction

GDC's FastSwitch 2000 Series switches are extended temperature Layer 2 managed Ethernet switches that offer support for copper and optical fast ethernet and gigabit ethernet. FastSwitch 2000 devices are available in DIN rail mount and rackmount configurations. The FS-2000 switches operate on 24 VDC natively, and can be powered using an external AC/DC power supply.

FastSwitch 2000 Series switches are designed with rugged packaging and protected circuitry for industrial environments that must endure climate and power conditions heat, cold, power brown outs/spikes, and other extreme conditions where other switches tend to fail. The FastSwitch Series offers a low-cost option for extended temperature Ethernet applications in industrial and service provider applications, as well as other applications that require extended temperature operation.

Enhanced Network Performance

FastSwitch 2000 Series managed switches can detect and report network irregularities before serious problems can occur. These switches support SNMP (Simple Network Management Protocol) that allows you to monitor Ethernet and RMON statistics, and SNMP Notifications (traps) to report possible problems as they occur. The detailed information from these reliability-enhancing switches can indicate the source of errors and eliminate hours of troubleshooting problems. Ultra-reliable FS-2000 switches will improve the overall performance of your network.

Rapid, Fault-Tolerant Redundancy

FastSwitch 2000 Series managed switches ensure that your system stays running even after a break in a communications pathway. This is possible due to the Rapid Spanning Tree Protocol (RSTP) which lets you wire fault-tolerant loops or redundant rings within your Ethernet network. When a communications path is lost, the switches will automatically and quickly re-route messages through backup or alternate pathways.

True Industrial Reliability

FastSwitch 2000 Series managed switches are designed to provide maintenance-free service for the life of your equipment. Reliability data reported from field installed units demonstrates on average over 1,000,000 hours of trouble free operation before service is required.

Real-time Performance

FastSwitch 2000 Series managed switches can intelligently route messages to eliminate collisions, and can use priority queuing (QoS & CoS) to ensure that higher priority messages are delivered first and in real-time. This automatic capability maximizes network performance by ensuring that priority traffic such as I/O control messages are delivered without delay, giving your deterministic software the open communication channels it needs.

FS-2000 switches also support IGMP for IP Multicast filtering for use with industrial protocols like Ethernet/IP, and VLANs for convenient network segregation. To protect from undesirable "broadcast storms" that can cripple your network, FS-2000 switches automatically limit the number of broadcast and multicast messages.

Advanced Security Features

FastSwitch 2000 Series managed switches are designed with the robust security needed to ensure that access to your network management is completely secure, with no holes or "back doors" to admit hackers. Security features include:

- Secure Shell (SSH) for secure and encrypted terminal access
- HTTPS protected web server (the same protocol used to manage many e-commerce sites)
- authenticated communications via user name and password
- SNMP v3 for authenticated and encrypted SNMP messaging.



8-port
Ethernet
Switch



Rackmount
Hi-Density
Switch



Gigabit
Managed
Switch

Figure 1: FastSwitch 2000 Series Managed Ethernet Switches

Real-Time Secure Performance

Rapid Spanning Tree (RSTP) for fast redundant ring or mesh networks
SNMPv1 and v2 network management
SNMPv3 authentication and encryption for security
SNMP notifications (traps) for report on event
Priority Queuing (QoS/CoS) for real-time operation
IGMP for Multicast filtering (snooping and querying)
VLAN for convenient traffic segregation
Broadcast and multicast storm protection
RMON and port mirroring for advanced diagnostics
Security with HTTPS, SSL, SSH, SNMPv3 and more
Easy configuration via Web, Telnet or CLI

Trouble-Free Operation

Wide temperature operation -40 to 75 deg. C
UL, CSA, CE, hazardous locations and maritime rated
Self-test/alarm output for reporting errors
Dual redundant power inputs with surge and spike protection
DIN-rail or direct-panel mounting (no extra kits required)
Rugged corrosion-resistant aluminum packaging
Ultra-reliable >2 million hours MTBF

Ethernet Performance

Type: Managed, store and forward
Operation: Wire-speed switching, non-blocking
Modes: Full or half duplex operation with flow control
MAC addresses: 2048
Memory bandwidth: 3.2 Gbps
Latency (typical): (plus frame time)
5 us for 100 Mbps
16 us for 10 Mbps
Ethernet isolation: 1500 Vrms 1 minute
Console Port(s): RS232 (RJ45) and USB (on newer models)

Interface Ports

RJ45 Copper Ports

Up to 8 RJ45 ports that are fully IEEE 802.3 compliant RJ45 configurable or 10/100 auto-detecting for speed and duplex (full or half)
RJ45 auto-mdi/mdix-crossover
RJ45 auto-polarity for auto-correction of crossed TXD and RXD pairs

Fiber Optic Ports

Up to two 100 Mbps fiber optic ports for distances up to 120km
Connector style: SC or ST or FC (special order)
Multimode: Links up to 4 km typical; use with 50-62.5/125 μm fiber
Singlemode: Links up to 120 km typical; use with 9-10/125 μm fiber
Eye safety: IEC60825-1, Class 1; FDA 21 CFR 1040.10 and 1040.11

Networking & Management

Devices supported: All IEEE 802.3 compliant devices are supported
Protocols: SNMPv1/v2/v3, RMON, DHCP, SNTP, TFTP, STP, RSTP, QoS/CoS/ToS/DS, IGMPv1/v2, VLAN (tag and port based), HTTP, HTTPS (SSL and TLS), telnet, SSH and more.

Industrial protocols supported: Modbus/TCP, EtherNet/IP, PROFINet, foundation fieldbus HSE and others.

Standards: IEEE 802.3, 802.3u, 802.3x, 802.1D/w, 802.1p, 802.1Q

Management interfaces: Text (Telnet and SSH), CLI (command line interface) and SNMP (see the user manual for supported MIBs)

Power Input & Alarm Output

Dual redundant power inputs for redundant power supplies

Input voltage range: 10 to 30 VDC

Power consumption: (typical with all ports linked and active)

3.6 W (5MS-1 with all copper ports)

4.3 W (8MS-1 with all copper ports)

5.6 W (5MS-4/5 with 2 fiber ports)

6.3 W (8MS-4/5 with 2 fiber ports)

9.0 W (8MS-8/9 with 4 fiber ports)

Transient protection: 15 kW peak

Spike protection: 5 kW (10 times for 10 us)

Self-test/alarm output: Same voltage as power input

0.5 Amps max.

Environmental

Operating temperature:-40 to 75 deg. C (cold startup at -40 deg. C)

Storage temperature: -40 to 85 deg C

Humidity: 5 to 95% RH (non-condensing) (conformal coating optional)

Vibration and shock: IEC60068-2-6, -27 and -32

Standards & Compliance

Electrical safety: UL508, CSA C22.2/14; EN61010-1, CE

EMC: FCC part 15, ICES-003; EN610006-2/4, CE

Hazardous locations: UL1604, CSA C22.2/213 (Class I, Div. 2, Groups)

EN60079-15 (Zone 2, Category 3), CE (ATEX)

Marine/maritime/offshore rated per ABS

RoHS and WEEE compliant

ISO9001:2008 certified company

MTBF: >2MM hours GB @ 40 deg. C per MIL-HNDBK-217F2

Mechanical

Case: Slim style, ideal for DIN rail mounting

Material: Corrosion-resistant aluminum

Ingress protection: IP30

Mounting: DIN-rail or direct-panel

No optional kits or accessories required)