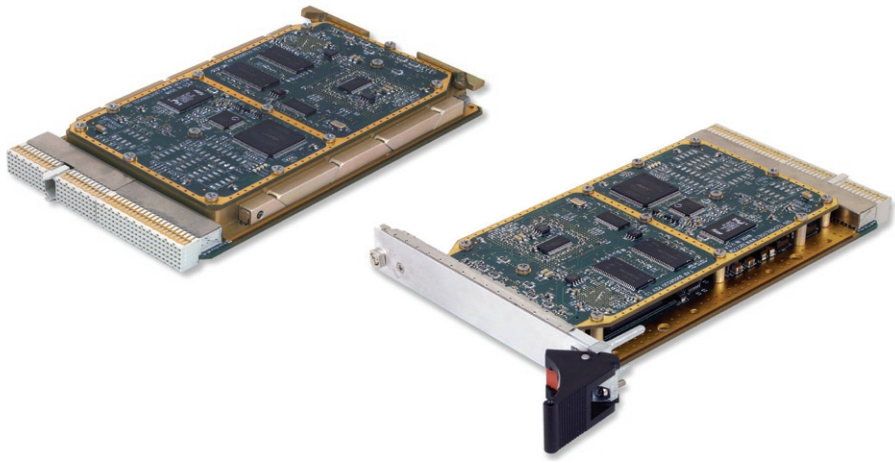
GE Fanuc
Embedded Systems



NETernity™ CP3-GESW12M3

3U CompactPCI 10-Port Layer-2 & Layer-3 Managed Gigabit Ethernet Switch

Features

- 10-port Gigabit Ethernet line speed switching
- Complete Layer-2 and Layer-3 (routing) management
- Management interface is through serial RS-232 interface or in-band Ethernet (CLI, Telnet, HTTP, SNMP)
- Extensive Built-In Test (BIT)
- Standard air cooled design, rugged air cooled option or conduction cooled option
- Standalone board, no host CPU intervention is required

NETernity™ CP3-GESW12M3 is a 10-port managed Layer-2 and Layer-3 Gigabit Ethernet switch offering cost-effective high-speed network connectivity for both military and commercial applications. This is a standalone board, no host CPU intervention is required.

The switch's embedded processor performs all Layer-2 and Layer-3 management functions. Switch management can be performed through a serial RS-232 interface using CLI or an in-band Ethernet interface using Telnet, HTTP or SNMP.

This switch has an extensive Built-In Test (BIT) feature that provides three distinct types of BIT. A power on BIT is run immediately following a power on reset. While the switch operates, a background BIT that does not interfere with normal switch operation is active. A commanded BIT can be activated through one of the available management interfaces. Commanded BIT is more extensive than background BIT but will disrupt normal switch operation.

CP3-GESW12M3 in the standard configuration is air cooled and supports a commercial operating temperature range. A rugged air cooled version and a conduction cooled version are also available.

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NETernity™ CP3-GESW12M3 3U CPCI 10-Port Managed Gigabit Ethernet Switch

Protocols

Layer-2 Protocols

- IEEE 802.3ac – VLAN Tagging
- IEEE 802.3ad – Link Aggregation & LACP support
- IEEE 802.1D – Spanning Tree
- IEEE 802.1w – Rapid Spanning Tree
- IEEE 802.1s – Multiple Spanning Tree
- GARP
- GMRP
- IEEE 802.1Q – Virtual VLANs
- GVRP
- IEEE 802.1v Port & Protocol based VLANs
- IEEE 802.1p – Priority
- IEEE 802.1X – Port Authentication
- IEEE 802.3x – Flow Control
- IGMP Snooping
- Port Mirroring
- Broadcast Storm Recovery
- Static MAC filtering
- RFC 768 – UDP
- RFC 783 – TFTP
- RFC 791 – IP
- RFC 792 – ICMP
- RFC 793 – TCP
- RFC 826 – ARP
- RFC 951 – BOOTP
- RFC 1312 – Message Digest Algorithm (MD5)
- RFC 1534 – Interoperation between BOOTP & DHCP
- RFC 2131 – DHCP Client
- RFC 2131 – DHCP Server
- RFC 2132 – DHCP Options & BOOTP Vendor Extensions
- RFC 2865 - RADIUS Client
- RFC 2866 – RADIUS Accounting
- RFC 2868 – RADIUS Attributes for Tunnel Protocol Support
- RFC 2869 – RADIUS Extensions
- RFC869bis – RADIUS support for EAP

Layer-3 Protocols

- RFC 826 – Ethernet ARP
- RFC 894 – Transmission of IP Datagrams over Ethernet Networks
- RFC 896 – Congestion Control in IP/TCP Networks
- RFC 1058 – RIP v1
- RFC 1256 – ICMP Router Discovery Messages
- RFC 1321 – Message Digest Algorithm (MD5)
- RFC 1519 – CIDR
- RFC 1583 – OSPF v2
- RFC 1723 – RIP v2
- RFC 1765 – OSPF Database Overflow
- RFC 1812 – Requirements for IP Version 4 Routers
- RFC 2328 – OSFP v2 w/Equal Cost Multipath support
- RFC 2338 – VRRP – Virtual Router Redundancy Protocol
- RFC 2453 – RIP v2

- RFC 3046 – DHCP/BootP Relay
- RFC 3101 – OSPF with NSSA support
- Route Redistribution across RIP, OSPF & BGP
- VLAN Routing

IP Multicasting

- RFC 1112 – Host Extensions for IP Multicasting (IGMPv1)
- RFC 2236 – IGMPv1
- RFC 2362 – PIM-SM
- IP Multicast Traceroute
- RFC 2365 – Administratively Scoped Multicast
- Draft-ietf-pim-v2-dm-03 – PIM-DM
- Draft-ietf-idmr-dvmrp-v3-10 -- DVMRP

QoS

- Bandwidth Policing (Min & Max, per port, per VLAN)
- Committed Information Rate (CIR)
- Maximum Burst Rate (MBR)
- Filtering (L3/L4 Access Lists)
- IP Classification – 6 Tuple Classification
- RFC 2474 – DiffServ Definition
- RFC 2475 – DiffServ Architecture
- RFC 2597 – Assured Forwarding PHB
- RFC 3246 – An Expedited Forwarding PHB
- RFC 3260 – New Terminology and Clarifications for DiffServ

BGP-4

- RFC 1771 – BGP-4
- RFC 1965 –Autonomous System Confederations for BGP
- RFC 1966 – BGP Route Reflection
- RFC 1997 – BGP Community Attributes
- RFC 2439 – BGP Route Flap Damping
- RFC 3107 –Carrying Label Information in BGP
- Draft-ietf-idr-bgp4-09 – BGP-4
- Draft-ietf-idr-bgp4-cap-neg-03 – Capabilities
- Draft-ietf-idr-bgp4-multiprotocol-v2-02 – Multi-protocol extensions for BGP-4

Switch Management
- RFC 854 – Telnet
- RFC 855 – Telnet option
- SNMP v1, v2, v3
- SMI
- HTML
- Management interfaces: RS-232, off-band Ethernet, in-band Ethernet
- Management interface security: SSL, TLS, SSH
- Exhaustive MIB support

Specifications

Form Factor
- 3U CPCI
- 3U CPCI rugged air cooled
- 3U CPCI conduction cooled

Number of Ports
- 10 Ethernet ports

Management Layers
- Layer-2 & Layer-3 (routing)

Built-In Test (BIT)
- Power on BIT
- Background BIT
- Commanded BIT

Front Panel I/O
- None

Rear Panel I/O
- 10

Dimensions
- 3.9 x 6.3 inches; 100 x 160 mm

Weight
- Standard Air Cooled: 0.65lb, 0.3kg
- Rugged Air Cooled: 0.78lb, 0.36kg
- Conduction Cooled: 0.87lb, 0.4kg

Power Requirements
- +5V (+5%/-3%) @ 4.1A
- +3.3V (+5%/-3%) @ 1.2A

Vibration
- Standard Air Cooled:
  5Hz to 100Hz Power Spectral Density (PSD) = 0.04 g^2/Hz
- Rugged Air Cooled:
  5Hz to 100Hz PSD increasing at 3dB/octave; 100Hz to 1000Hz PSD = 0.04 g^2/Hz; 1000Hz to 2000Hz PSD decreasing at 6dB/octave
- Conduction Cooled:
  5Hz to 100Hz PSD increasing at 3dB/octave; 100Hz to 1000Hz PSD = 0.1 g^2/Hz; 1000Hz to 2000Hz PSD decreasing at 6dB/octave

Shock
- Standard Air Cooled:
  Operating Shock: 20g, 11msec, half-sine
- Rugged Air Cooled:
  Operating Shock: 20g, 11msec, half-sine
- Conduction Cooled:
  Operating Shock: 40g, 11msec, half-sine

Environmental
- CP3-GESW12M3 (air cooled) operating temperature: 0° to +55° C @ 4 cfm
- CP3-GESW12M3R (rugged air cooled) operating temperature: -40° to +70° C @ 4 cfm
- CP3-GESW12M3N (conduction cooled) operating temperature: -40° to +85° C
- Humidity: 5% to 95% non-condensing
- Storage Temp: -40° to +125° C

VITA 47 Environmental Class
- CP3-GESW12M3 (air cooled): AC1
- CP3-GESW12M3R (rugged air cooled): AC1, AC2, AC3
- CP3-GESW12M3N (conduction cooled): CC1, CC2, CC3

Note

To assure error-free operation using full-length cable as specified in IEEE 802.3, physical link traces for Ethernet and Gigabit Ethernet signals on all interconnects between the PMC and cable must be routed differentially with 100-ohm differential impedance.

Due to possible signal integrity issues that might be introduced on various models of backplanes, maximum cable lengths which can be supported cannot be guaranteed. This issue should be considered carefully in any design using differential signaling across the backplane.

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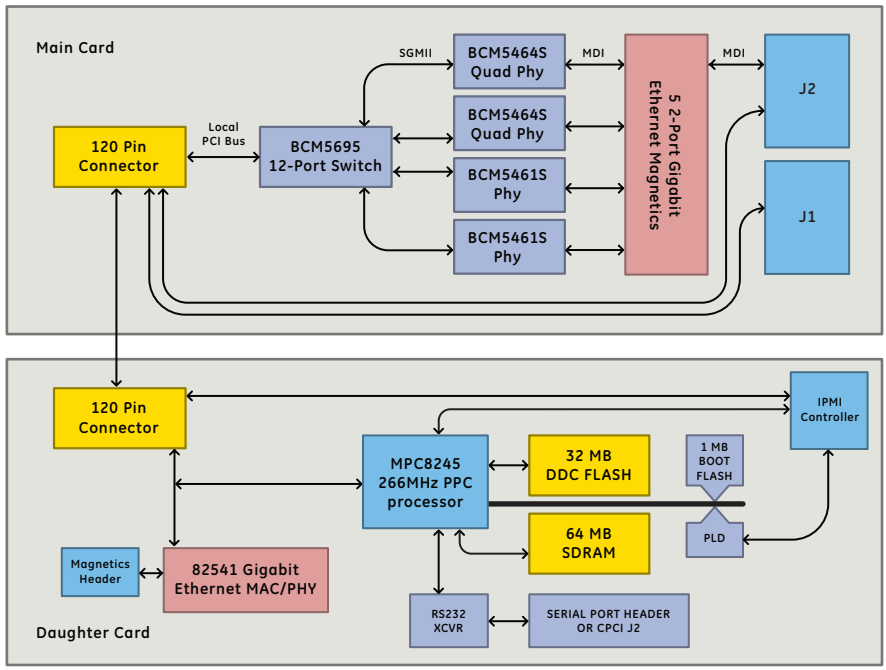
Block Diagram



Ordering Information

CP3-GESW12M3
3U CompactPCI 10-port Layer-2 & Layer-3 managed Gigabit Ethernet switch

CP3-GESW12M3R
3U CompactPCI 10-port Layer-2 & Layer-3 managed Gigabit Ethernet switch; rugged air cooled, conformal coated

CP3-GESW12M3N
3U CompactPCI 10-port Layer-2 & Layer-3 managed Gigabit Ethernet switch; conduction cooled, conformal coated

CP3-GESW-TM10
3U CompactPCI rear-panel transition module with 10 RJ-45 ports for CP3-GESW12M3x

About GE Fanuc Embedded Systems

GE Fanuc Embedded Systems is a leading global provider of embedded computing solutions for a wide range of industries and applications. Our comprehensive product offering includes many types of I/O, single board computers, high performance signal processors, fully integrated, rugged systems including flat panel displays, plus high speed networking and communications products. The company is headquartered in the U.S. and has design, manufacturing and support offices throughout the world. Whether you're looking for one of our standard products or a fully custom solution, GE Fanuc Embedded Systems has the breadth, experience and 24/7 support to deliver what you need. For more information, visit www.gefanucembedded.com.

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Additional Resources

For more information, please visit the GE Fanuc Embedded Systems web site at:

www.gefanucembedded.com