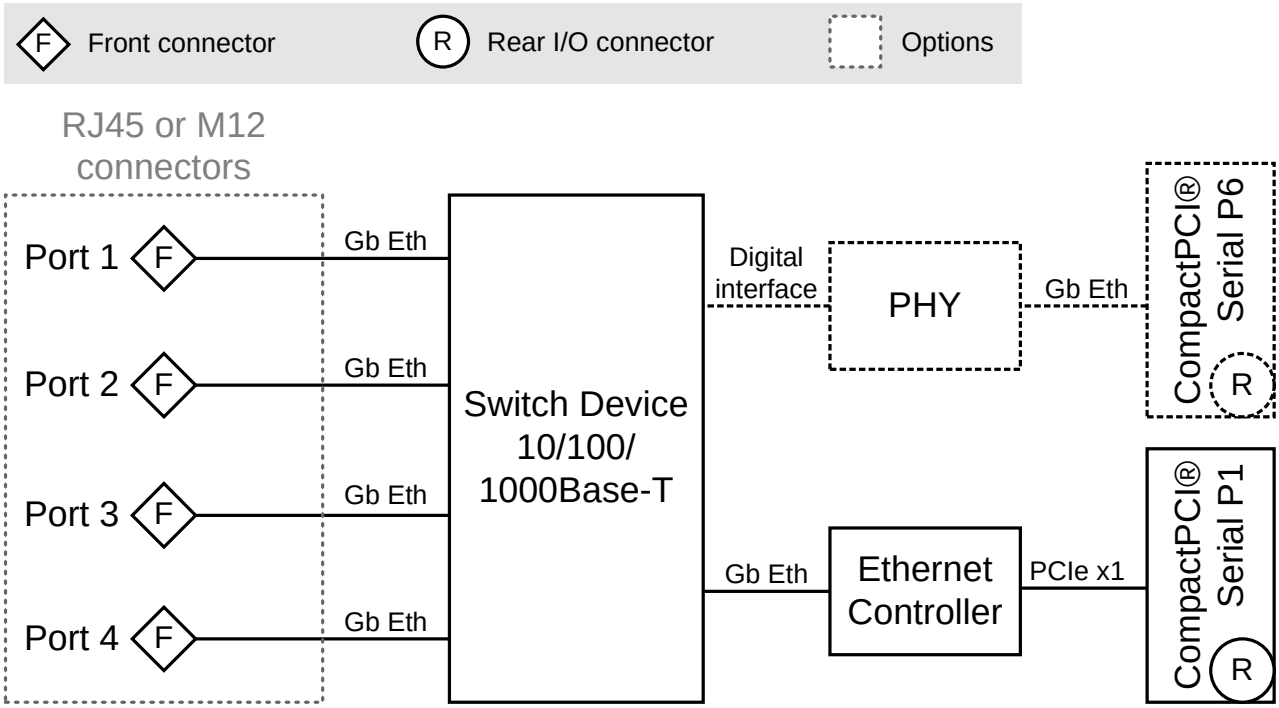
G301 – 3U CompactPCI® Serial Industrial Ethernet Switch

- **Unmanaged 4-port rugged Ethernet switch**
- **4 Gigabit Ethernet (front) on RJ45 (M12 optional)**
- **Power over Ethernet (PoE) PSE (all ports)**
- **LEDs for link and activity status**
- **1 Gigabit Ethernet on rear I/O (optional)**
- **-40 to +85°C (screened)**
- **EN 50155 class Tx (railways)**
- **PICMG CPCI-S.0 CompactPCI® Serial peripheral card**

The G301 is an unmanaged 3U Ethernet switch implemented as a CompactPCI® Serial board. It occupies one peripheral slot, using a 4 HP front panel sporting 4 Gigabit Ethernet ports on RJ45 connectors. Options include M12 front connectors and a P6 connector for the rear I/O Ethernet signals from the board's fifth Gigabit Ethernet port.
The G301 supports full-duplex and half-duplex operation with auto-negotiation, high-speed non-blocking store-and-forward switching, Quality of Service (QoS) support with four traffic classes IEEE 802.1p and three-level 802.1x security. The switch is fault tolerant and restores itself on its own: If a link is temporarily unavailable, frames can be sent via backup/ redundant links (spanning tree protocol / link aggregation) and no data loss occurs. Its built-in test mechanisms make the G301 an even more reliable component in the communication system.
In addition, the switch can act as Power over Ethernet (PoE) Power Sourcing Equipment (PSE), supplying other devices on all ports with power.
By using an application-specific configuration EEPROM, the G301 can act similarly to a managed switch with fixed settings. This enables features untypical for unmanaged models like 802.1p priority and port based priority, port based VLAN or IEEE 802.1q VLAN IDs.
The board is specifically designed for rugged mobile communication systems. It is thus for example fully compliant with the EN 50155 railway standard, screened for a -40 to +85°C operation temperature and ready for coating.

Diagram


F Front connector
R Rear I/O connector
Options
RJ45 or M12 connectors
Port 1
Port 2
Port 3
Port 4
F
Gb Eth
Switch Device 10/100/ 1000Base-T
Digital interface
PHY
Gb Eth
CompactPCI® Serial P6
R
Gb Eth
Ethernet Controller
PCIe x1
CompactPCI® Serial P1
R

Technical Data

Key Features	■ High-speed non-blocking, store-and-forward switching ■ Up to four 10/100/1000Base-T ports at front panel (Electrical isolation: 1500 Vrms) ■ One 10/100/1000Base-T port at rear connector (optional) ■ Port configuration: copper, 10/100 and 1000 Mbit/s ■ Auto-negotiation / Auto MDI/MDIX crossover on all ports ■ Layer2-based Policy Control List ■ 8K MAC address lookup table with automatic learning and aging
Supported Protocols and Standards	■ Ethernet flow control (IEEE 802.3x) ■ Link aggregation LACP / EtherChannel (IEEE 802.3ad, 2005) ■ Priority-based switching, Quality of Service/DiffServ, tagged frames, Layer2-based 801.1Q VLAN-ID packet routing (IEEE 802.1p) ■ Port-based authentication on registered MAC Address Lists ■ Power over Ethernet support (IEEE 802.3af / IEEE 802.3at, Type 1) ■ VLAN/port-based VLANs GVRP/MVRP (IEEE 802.1Q Rev D5.0, 2005)
Power Over Ethernet Features	■ Power over Ethernet functions on all ports □ PSE (Power Sourcing Equipment) function □ Supports supply classes 0 to 3 □ Supplies up to four PD devices (up to 28 W total)
Front I/O	■ Four Ethernet ports on RJ45 or M12 connectors ■ Four link and activity Ethernet status LEDs (two per channel)
Rear I/O	■ One Ethernet link via PCIe®
CompactPCI® Serial	■ Compliance with CompactPCI® Serial PICMG CPCI-S.0 Specification ■ Peripheral slot ■ Host interface: one PCI Express® x1 link □ PCIe® 1.x support □ Data rate up to 250 MB/s in each direction (2.5 Gbit/s per lane)
Electrical Specifications	■ Supply voltage/power consumption □ +12 V (-3%/+5%), 2.4 W approx. (without PoE), 28 W PoE max.
Mechanical Specifications	■ Dimensions: conforming to CompactPCI® Serial specification for 3U boards ■ Front panel: 4HP with ejector ■ Weight: 162 g (with RJ45 connectors)/188 g (with M12 connectors)
Environmental Specifications	■ Temperature range (operation): □ -40..+85°C (screened) □ Airflow: 1.0 m/s ■ Temperature range (storage): -40..+85°C ■ Relative humidity (operation): max. 95% non-condensing ■ Relative humidity (storage): max. 95% non-condensing ■ Altitude: -300 m to +3,000 m ■ Climatic tests according to EN 68068 ■ Shock and vibration tested according to EN 61373 ■ Conformal coating on request
MTBF	■ 211,019 h @ 40°C according to IEC/TR 62380 (RDF 2000)
Safety	■ Flammability □ PCB manufactured with a flammability rating of 94V-0 by UL recognized manufacturers
EMC Conformity	■ EN 55022 (radio disturbance) ■ EN61000-4-2 (ESD Immunity) ■ IEC 61000-4-4 (burst)

Configuration & Options

Standard Configurations

Article No.	Channels	Connectors	Rear I/O	Operating Temperature	Conformal Coating
02G301-00	4	RJ45	No	-40..+85°C	No
02G301-01	4	M12	No	-40..+85°C	Yes

Options

Ethernet Switch	■ Fixed managed version □ With fixed configuration according to customer requirements
Front Connectors	■ RJ45 connectors or M12 connectors
Rear I/O	■ CompactPCI® P6 connector □ For fifth Gigabit Ethernet 1000Base-T port (10/100 Mbit/s not supported)
Environmental specifications	■ Conformal coating
Cooling Concept	■ Also available with conduction cooling in MEN CCA frame

Please note that some of these options may only be available for large volumes. Please ask our sales staff for more information.

Ordering Information

Standard G301 Models	**02G301-00**	4-port unmanaged Gigabit Ethernet Switch with PoE, RJ45, -40..+70(+85)°C with qualified components
	02G301-01	4-port unmanaged Gigabit Ethernet Switch with PoE, M12, -40..+70(+85)°C with qualified components, conformal coating
Documentation	Compare Chart 3U CompactPCI® Serial CPU and I/O cards » Download	
	Compare Chart Industrial Ethernet switches for different platforms » Download	
	20G301-00	G301 User Manual

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