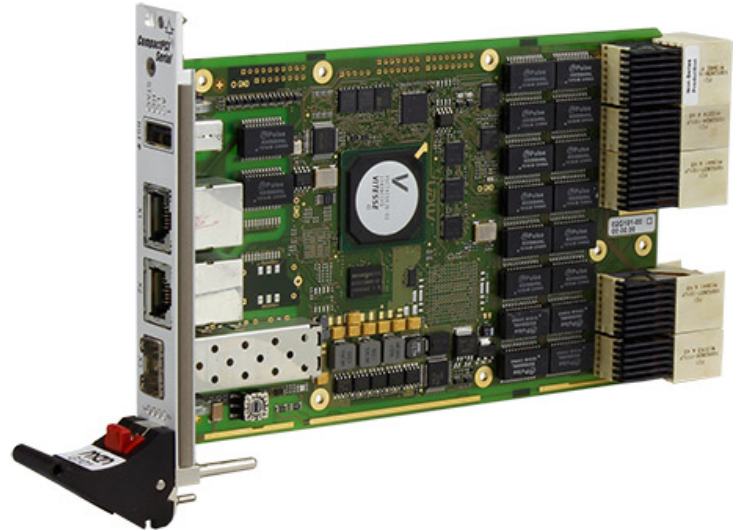


G101 – 3U CompactPCI® Serial Managed Industrial Ethernet Switch with Uplink

- **Managed rugged Ethernet switch**
- **Up to 25 Gigabit Ethernet ports on rear I/O**
- **Or 3 ports on front and up to 22 ports on rear**
- **29 Gbit/s carrier grade switch matrix**
- **Special switch protocols**
- **-40 to +85°C with qualified components**
- **EN 50155 class TX compliant (railways)**
- **PICMG CPCI-5.0 CompactPCI® Serial system slot and peripheral card**



The G101 is a managed 3U flexible multiport Gigabit Switch, with a 29 GBit/s Switch matrix, implemented as a CompactPCI® Serial board. It occupies one system slot or one peripheral slot using a 4 HP front panel with two Gigabit Ethernet ports on RJ45 connectors and one 2.5 Gb SFP cage. Alternatively, the G101 can be supplied with three M12 connectors on the front panel.

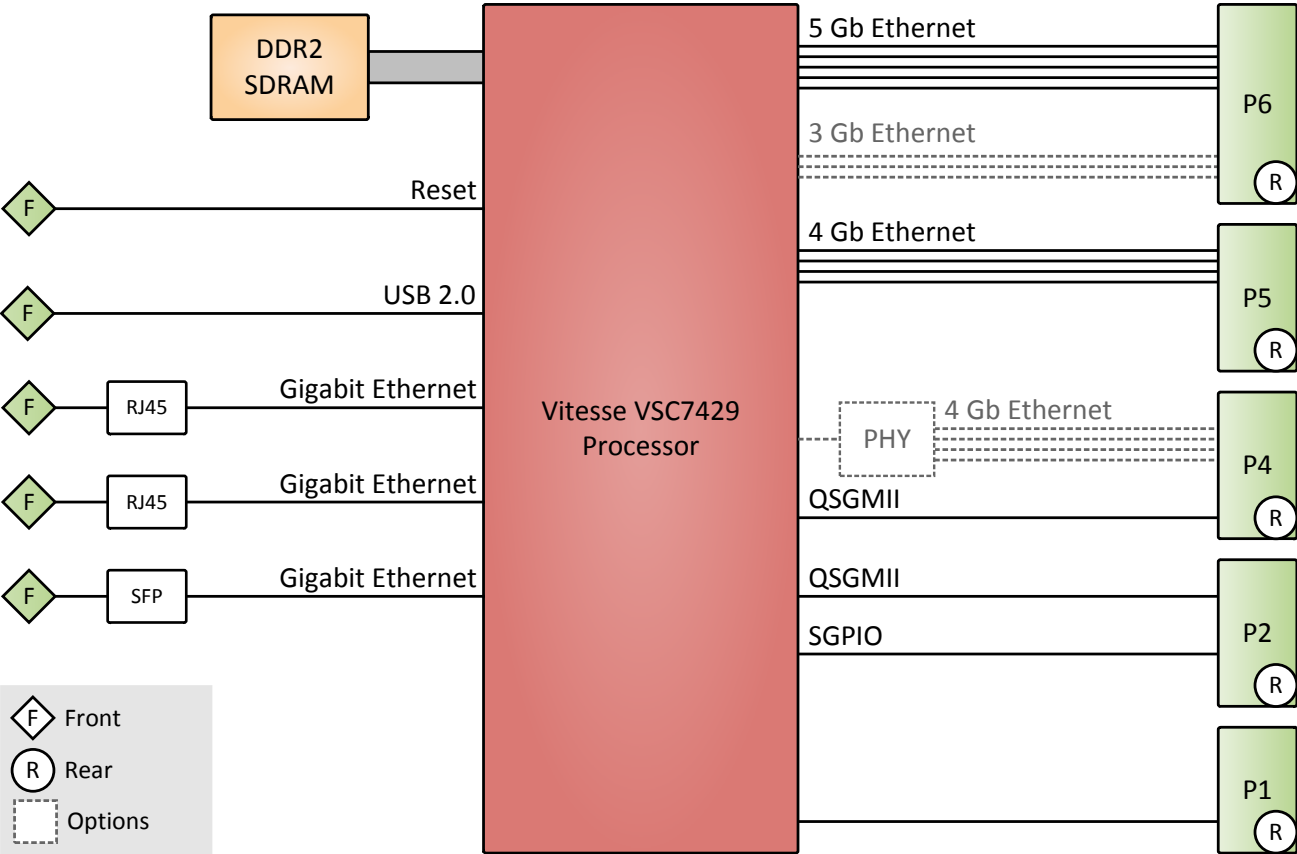
The G101 guarantees high speed, high efficiency and a large software pool for various protocols like security, time synchronicity, stability, as well as for temperature needs. The switch supports EEE (Energy Efficient Ethernet) as a standard on all ports, IEEE1588v2 on ports 1 to 12 and SyncE (synchronous Ethernet) as an option. Together with the new backplane concept for MEN switches and routers, it allows high flexibility in network applications and management.

The G101 either features three Ethernet ports on the front and up to 22 ports on the rear, or alternatively all 25 ports on the rear. These include 12 ports with integrated 10/100/1000 Mbit/s copper PHYs. In addition the G101 features a high performance port with up to 2.5 Gbit/s for a SFP pluggable module to support a high speed uplink.

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 G101 an even more reliable component in the communication system.

The railway Ethernet switch is specifically designed for rugged mobile communication systems and fully compliant with the EN 50155 railway standard, qualified for a -40 to +85°C operation temperature and ready for coating.

Diagram



Technical Data

Supported Port Types	<ul style="list-style-type: none"> ■ The following configurations are available: <ul style="list-style-type: none"> □ RJ45: 12x 1 Gbps + 1x 2.5 Gbps (2x 1 Gbps + 1x 2.5 Gbps on front) with "on-the-Fly" SFP detection support (Model: 02G101-00) □ M12: 12x 1 Gbps CU Ports (3x 1 Gbps M12 on front)(Model: 02G101-01) ■ Enhancements: <ul style="list-style-type: none"> □ Gigabit Copper Ethernet line card with 4x 1 Gbps ports, available via RJ45 or M12 connectors at the front panel □ Gigabit Copper Ethernet PHY line card with 4x 1 Gbps ports, available via RJ45 or M12 connectors at the front panel □ Gigabit Ethernet SFP PHY line card with 4x 1 Gbps ports, available via SFP cages at the front panel □ Supports up to 6 line cards, depending on configuration, with optional PoE
Tested SFP Types	<ul style="list-style-type: none"> ■ CISCO GLC-SX-MM, 1 Gbps BASE-SX, 220/500 m, 0 to +70°C ■ AVAGO ABR-571ALZ, 1 Gbps BASE-SX, 250/550 m, -40 to +85°C ■ Finisar FTLF8519P3BTL, 1 Gbps BASE-SX, 300/500 m, -40 to +85°C ■ Finisar FTLF1321P1BTL, 2.67 Gbps BASE-LH, 10 km, -40 to +85°C ■ Finisar FTLF1318P3BTL, 1 Gbps BASE-LH, 10 km, -40 to +85°C ■ COTS SFP-F2-SX-DPLX-R-A, 1 Gbps BASE-LH, 10 km, coated, -40 to +85°C ■ Finisar FTLF1518P1BTL, 1 Gbps BASE-ZX, 80 km, -40 to +85°C ■ Finisar FCLF8522P2BTL, 1000 Base-TX, 40 to +85°C
Switching Matrix	<ul style="list-style-type: none"> ■ Max. Throughput: 29 Gbps / 40 Mpps@64 Bytes per packet ■ Max. Mac Address Table Size: 8192 ■ Switching Algorithm. TCAM
General Network Support	<ul style="list-style-type: none"> ■ IPv4 and IPv6 Forwarding and Management ■ IPv6 Ready Logo Phase 2
Ports and Port Control	<ul style="list-style-type: none"> ■ Energy Efficient Ethernet (IEEE 802.3az) ■ ETH Signal Equalization and Power Control ■ Port state (admin), speed, duplex mode and flow control ■ Port frame size (Jumbo Frames: 9216 Bytes/Packet max) ■ Port status (link monitoring) and statistics (MIB counters) ■ Port VeriPHY (cable diagnostics), ActiPHY™ and PerfectReach™ ■ Inband management (VRAP)
User Configuration Interfaces	<ul style="list-style-type: none"> ■ http/HTTPS, Telnet, SSHv2, Console (USB)
Switch Management and Monitoring	<ul style="list-style-type: none"> ■ OAM <ul style="list-style-type: none"> □ Link OAM: IEEE 802.3ah □ Flow OAM (ingres, egres): IEEE802.1ag, ITU-T Y.1731 Down-MEP, ITU-T Y.1731 Up-MEP, ITU-T Y.1731 MIP, □ SMAC/DMAC Swap □ OAM Performance Monitoring MEF35 Phase 1 □ Redirect back to arrival port debugging feature ■ SNMP Management v1, v2c, v3 (RFC 1212, 1901-1908, 3411-3418) ■ SNMP v1 Traps (RFC 1157) with multiple destinations ■ LLDP (IEEE 802.10AB-2005/LLDP) ■ TIA 1057 LLDP-MED extensions ■ CDP (Cisco Discovery Protocol) ■ RMON Group 1, 2, 3 and 9(RFC 2819) ■ Syslog (RFC 5424) ■ sFlow (RFC 3176) ■ Port and Flow Mirroring (10 Ports max) ■ Fallback Firmware (Golden Firmware)
Configuration Management	<ul style="list-style-type: none"> ■ TFTP (RFC 1350) ■ Import/Export via Web-Interface ■ Fallback Configuration (Golden Configuration) ■ Configuration download and upload: XML and inidustry-standards format

Technical Data

Redundancy and Flow Control	<ul style="list-style-type: none"> ■ Static Link Aggregation ■ Link Aggregation Protocol (LACP: IEEE 802.3ad) ■ Back Pressure Flow Control (IEEE 802.3X) ■ Spanning Tree (STP: IEEE 802.1 D) ■ Rapid Spanning Tree (RSTP: IEEE 802.1w) ■ Multiple Spanning Tree (MSTP: IEEE 802.1s) ■ BPDU Restrict and Guard Role (IEEE 802.1w Root Guard) ■ Ring and Linear Protection Switching (ITU-T G.8031 and G.8032) <ul style="list-style-type: none"> □ 1+1 port protection □ 1:1 port protection □ 1:n port protection ■ Connectivity Fault Protection (IEEE 802.1ag/ITU-T Y.1731) ■ Loop Protection
Filtering	<ul style="list-style-type: none"> ■ Unicast, Multicast and Broadcast Traffic/broadcast storm control ■ Basic ingress limiter ■ Dynamic ARP Inspection (RFC 2132 / MAC address based filtering) ■ IP Source Guard (draft-baker-sava-cisco-ip-source-guard-00) ■ DHCP Snooping (RFC 2132) ■ IP MAC binding ■ IP MAC binding dynamic to static
Security	<ul style="list-style-type: none"> ■ Static L2 Port Isolation ■ Port based RADIUS and internal MAC Authentication (IEEE 802.1X) ■ RADIUS accounting (RFC 2866ff) ■ Single and Multiple IEEE 802.1X ■ VLAN and QOS assignment ■ TACACS+ (RFC 1492) ■ MAC address flood prevention (MAC address table limitation) ■ Web and CLI Authentication ■ Switch Access Authorization (15 levels) ■ ACLs for filtering, policing and port copy
VLAN	<ul style="list-style-type: none"> ■ Max. number of VLANs: 4096 ■ VLAN Tagging and Trunking (IEEE 802.1Q) ■ Supported VLAN Types: <ul style="list-style-type: none"> □ Private Static VLAN (RFC 5517) □ MAC, Protocol, IP-Subnet and Port based VLAN (IEEE 802.1Q) □ VOICE VLAN (IEEE 802.1Q, IEEE 802.1P) ■ VLAN Translation (IEEE 802.3ad) ■ GVRP VLAN registration (IEEE 802.1Q) ■ Multiple VLAN registration protocol (MVRP: IEEE 802.1ak) ■ Guest VLAN Isolation
Multicast	<ul style="list-style-type: none"> ■ Max. number of IGMP Groups: 8.000 for Layer 2 and 8.000 for IPv4/IPv6 ■ IPv4 Internet Group Management protocol (IGMP) v1, v2, v3 ■ IPv6 Multicast Listener Protocol (MLD) v1, v2 with flooding suppression and router port handling ■ Multicast VLAN registration protocol (MVR) ■ IGMP throttling, filtering, proxy and leave proxy ■ MRP/GMRP GARP Multicast Registration Protocol (IEEE 802.1ak)

Technical Data

QOS	<ul style="list-style-type: none"> ■ Active Priority Queues per Port: 8 ■ Class of Service (IEEE 802.1p) ■ Port and queue egress shaper ■ Port and User priority mode ■ Input priority mapping (PCP, DEI to QOS, DP level) ■ Scheduler Mode (weighted and fair scheduling) ■ QOS control list (QCL ID, QCL to QCE mapping) ■ QCE mapping based on ETH-Type, VLAN ID, UDP/TCP port range, DiffServ field and Tag priority ■ Random early discard (RED) ■ Policers: port, service, queue and global/VCAP (ACL) ■ DiffServ (RFC 2474) and Tag remarking
DHCP	<ul style="list-style-type: none"> ■ DHCP Server (RFC 2131 / 3132) ■ DHCP Client (RFC 2131 / 3132) ■ DHCP Option 82 (DHCP Relay Agent Information Option)
DNS	<ul style="list-style-type: none"> ■ DNS Client (RFC 2136) ■ DNS Proxy (RFC 5625)
Synchronization	<ul style="list-style-type: none"> ■ NTPv4 Client (RFC 5005) ■ IEEE 1588v2 PTP with one-step and two-step clock ■ IEEE 1588v2 PTP with redundant masters and timing domains ■ IEEE 1588v2 boundary, end-to-end and peer-to-peer clock ■ IEEE 1588v2 unicast and multicast support ■ Optional Synchronous Ethernet (ITU-T G.8261, G.8262 and G.8264) ■ Optional combined SyncE and IEEE 1588v2 solution
Layer 2 Bridging	<ul style="list-style-type: none"> ■ IEEE 802.1D Bridge with source source specific multicast filtering <ul style="list-style-type: none"> □ auto MAC address learning and aging □ static MAC addresses ■ IEEE 802.1Qd Provider Bridge (native or translated VLAN Q-in-Q bridging) ■ Service enabled Provider Bridge (E-LINE: EPL, EVPL; E-Lan: EP-LAN, EVP-LAN)
Layer 3 support	<ul style="list-style-type: none"> ■ Classification of Layer 3 flow (SIP, IP Prot, SProt, DProt) ■ DHCP Option 82 relay ■ Universal Plug and Play (UPnP) ■ IPv4 Unicast static routing
Front Interfaces	<ul style="list-style-type: none"> ■ Ethernet <ul style="list-style-type: none"> □ Two RJ45 connectors, 1000BASE-T (1 Gbit/s), IEEE802.3 compliant, and one SFP slot, 1000BASE-T (1 Gbit/s), or □ Three M12 connectors, 1000BASE-T (1 Gbit/s) ■ Reset button ■ Status LEDs <ul style="list-style-type: none"> □ One board status LED □ Two Ethernet status LEDs
Rear Interfaces	<ul style="list-style-type: none"> ■ USB <ul style="list-style-type: none"> □ One channel, USB2.0 as a console interface for configuration ■ Ethernet <ul style="list-style-type: none"> □ Twelve channels 1000BASE-T (1 Gbit/s) ■ Serial GPIO (SGPIO) <ul style="list-style-type: none"> □ Compliant with SFF 8485 specification
Supervision and Control	<ul style="list-style-type: none"> ■ Watchdog ■ Temperature monitoring
Backplane Standard	<ul style="list-style-type: none"> ■ CompactPCI® Specification PICMG CPCI-S.0 <ul style="list-style-type: none"> □ System or peripheral slot

Technical Data

Electrical Specifications	<ul style="list-style-type: none"> ■ Supply voltages <ul style="list-style-type: none"> □ +5V (-5%) to 16 VDC max. ■ Power consumption <ul style="list-style-type: none"> □ Max. 20 W
Mechanical Specifications	<ul style="list-style-type: none"> ■ Dimensions: 3U, 4 HP ■ Weight: 192 g (model 02G101-00)
Environmental Specifications	<ul style="list-style-type: none"> ■ Temperature range (operation): <ul style="list-style-type: none"> □ -40°C to +85°C □ Airflow 1.5m/s ■ Temperature range (storage): -40°C to +85°C ■ Relative humidity (operation): max. 95% non-condensing ■ Relative humidity (storage): max. 95% non-condensing ■ Altitude: -300 m to +2000 m ■ Shock: 50 m/s², 30 ms ■ Vibration (Function): 1 m/s², 5 Hz to 150 Hz (EN 61373) ■ Vibration (Lifetime): 7.9 m/s², 5 Hz to 150 Hz (EN 61373) ■ Conformal coating on request
Reliability	<ul style="list-style-type: none"> ■ MTBF: 692.753 h @ 40°C according to IEC/TR 62380 (RDF2000)
Safety	<ul style="list-style-type: none"> ■ Flammability <ul style="list-style-type: none"> □ UL 94V-0 ■ Electrical Safety <ul style="list-style-type: none"> □ EN 50155 (Insulation) □ EN 50155 (Voltage)
EMC	<ul style="list-style-type: none"> ■ EN 55022 (radio disturbance) ■ EN 61000-4-2 (ESD Immunity) ■ EN 61000-4-4 (burst)
Software Support	<ul style="list-style-type: none"> ■ Firmware for configuration and management

Ordering Information

Standard G101 Models	02G101-00	25 Port Gigabit Ethernet Managed Switch, 2x RJ45 + 1x SFP 2.5 Gbps on front, 10x GE + 3x QSGMII links on backplane, -40..+85°C with qualified components
	02G101-01	24 Port Gigabit Ethernet Managed Switch, 3x M12 on front, 9x GE + 3x QSGMII links on backplane, -40..+85°C with qualified components
Documentation	Compare Chart Industrial Ethernet switches for different platforms » Download	

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