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Systems By Design

ACT TECHNICO

Model T5100b Fast and Gigabit Ethernet Switch PICMG2.16 and VITA31.1

The T5100b is a range of highly integrated Layer 2+ Ethernet switches that provides twenty four 10/100TX Ethernet ports and six Gigabits ports. All capabilities are implemented on a single slot 6U board.

Key features of the T5100b:

- 24 Fast Ethernet and 6 Gigabit Ethernet Channels
- Compliant with PICMG2.16 and VITA31.1 Systems
- Conduction and Convection Cooled versions
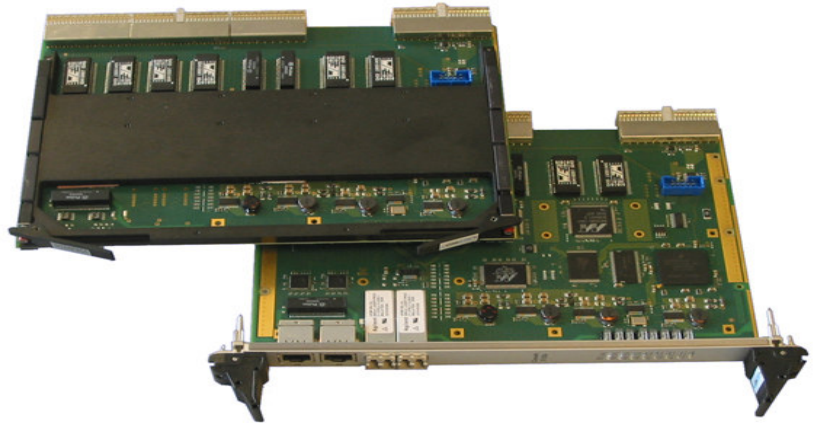
High speed non-blocking layer 2 switch with:

- Store and forward
- 8000 MAC addresses
- Static or automatic MAC address management
- Broadcast filtering
- Trunking
- Auto negotiation and auto crossover for true plug and play
- Prevents packet loss with back pressure and IEEE 802.3x flow control
- QoS layer 2/3 using four priority ques with advanced congestion management
- Supports VLANs based on ports and or MAC addresses to simplify network management
- Multicast flow management with IGMP snooping, IGMP v2
- RSTP/STP protocol for a more reliable network

Management Flexibility:

- Windows PC, browser or console interface
- Ful MIB and RMON counters
- Optional SNMP agent
- Thermal monitoring
- Comprehensive built in test
- Front panel LEDs
- Optional PICMG2.9 (IPMI)
- On line virtual cable tester
- Layer 3 software routing functions

T5100b ports are compatible both with PICMG 2.16 or VITA 31.1 system. A rear I/O transition interface is available to provide a set of RJ45 rear connectors.

Twenty Fast Ethernet ports are routed out the rear I/O in compliance with PICMG 2.16 (J3/J5). The remaining four Fast Ethernet plus four Gigabit Ethernet ports are available on J4 and can be used through a rear transition module. Two additional front Gigabit Ethernet channels are available with an auto-media selection between a 10/100/1000BT (RJ45) or a 1000SX/LX (LC). An optional mezzanine board can provide some additional front port.

Its **ultra low-power** design together with the thermal monitoring makes it ideal for integration in high-demanding application. The switch is available in standard, rugged or conduction-cooled grade.

Managed capabilities
5T100b products are as end-user switches with **Switchware** embedded software. T5100b acts as a full Layer 2/3 managed switch. It can be operated from a browser, Windows PC application or SNMP. All switch functions can be easily managed and monitored. The switch is powered by a PowerPC. Software updates can be downloaded and stored in flash memory.

The Enhanced **Switchware** package provides software layer 3 functions, allowing local IP forwarding (IPv4/IPv6), static and dynamic protocols (RIP, OSPF) routing, proxy-ARP and DHCP-relay. These L3 functions are managed through a CLI interface. **T5100b** combines layer 2+ switch and a layer 3 router functions in this 6U form factor product.

Main features
Base unit
Twenty four auto-crossover 10/100BT and four 10/100/1000BT ports available on the rear panel (J3/4/5).

Two Gigabit ports 1000BT or Fiber. The 1000BT ports are available out the front panel. In the dual configuration the selection between fiber or copper is automatic.

The 1000SX or LX characteristics are :
VCSEL (850nm) or FP laser (1300nm) model :
850nm > 220m with MMF 62.5/125µm or 500m with MMF 50/125µm

1300nm > 550m with MMF 62,5 or 50/125µm and 10 Km with SMF 9/125µm
1550nm (consult ACT/Technico)

Front Panel LEDs
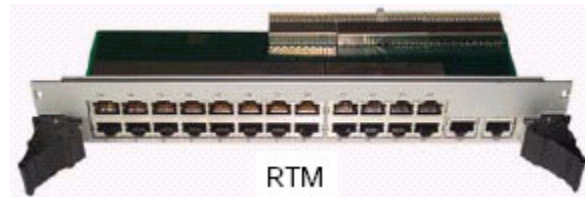Power supply and CPU Status
Switched ports : activity/link

3.3VDC Power supply
Up to 18 Watts depending on the configuration

Rear Transition module routes ports to the rear panel
Please refer to ordering information.

RTM

Switch Management
Onboard firmware is implemented with comprehensive Built-In Test maintenance functions and network updating functions. **Switchware** provides a wide range of L2/L3 configuration functions on any port: Transmission speed/mode, VLAN, STP parameters, mirroring, QoS, etc. MIB and RMON counters and private information are available via SNMP agent, HTTP web-browser via Ethernet. **Switchware** resides on a PowerPC processor running LINUX.

Standard Conformance
Emissions EN55022
Immunity CEI 6000-4-2 (ESD), 61000-4-3
(Electric field), 61000-4-4 (fast transient), 61000-4-5 (Surge), 61000-4-6 (Electric conduction)
MTBF TBD

Switching
Store-and-Forward with low last-bit-in to first-bit-out delay.
Full wire-speed on each port with 64-byte frames.
Link aggregation (802.3ad) with static or LACP management.

MAC level
8000 MAC unicast address with automatic aging, and self-learning mechanism or static configuration.

Tag extraction and insertion (802.1p), security with locked port mode, etc.

Queue Buffer
Four levels of priority queuing per port with fixed or weighted priority.

Flow Control
Back pressure and pause frame-based flow control schemes are included to support zero packet loss under temporary traffic congestion

Filtering/Forwarding Rate
Ingress storm limiting - broadcast discard above a defined
Egress rate shaping

Spanning Tree Algorithm
STP (802.1D) or RSTP (802.1w) provide redundant link support and Fast port capabilities.

VLANs
Port based VLANs or VLANs fully compliant with 802.1Q standard and per VLAN forwarding databases

QoS
Layer2 : Tagged frames according to 802.1p (Tagged or untagged frames supported on each port)
Layer3 : IPv4 TOS/DS, IP V6 TC, priority override

Port Mirroring
Allows traffic mirroring from a port to an external network analyzer for in-depth traffic analysis

Virtual cable tester
Diagnosis of opens, shorts, cable and termination impedance mismatches, bad connectors, etc.
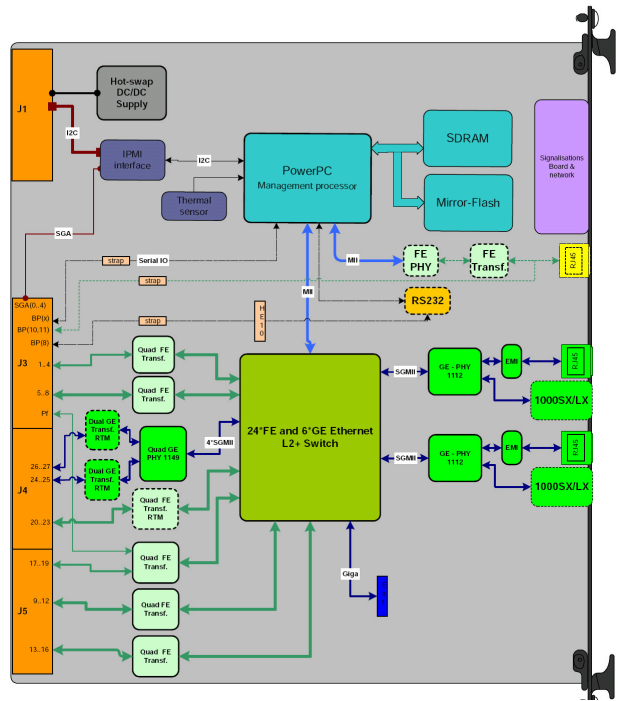
Environment Specifications:
Please refer to ordering information below.

Criterion	Standard Grade	Extended Grade	Rugged Grade	CC Grade
Coating	Optional	Standard	Standard	Standard
Operating Temp.	0 to 55°C	-20 to 65°C	-40 to 75°C	-40 to 75°C
Humidity - non cond.	5 to 90%	5 to 95%	5 to 95%	5 to 95%
Storage Temp.	-45 to 85°C	-45 to 85°C	-45 to 100°C	-45 to 100°C
Sinusoidal Vibration	2G [20..2000]Hz	2G [20..2000]Hz	5G [20..2000]Hz	5G [20..2000]Hz
Random Vibration	0.002g²/Hz [10..2000]Hz	0.002g²/Hz [10..2000]Hz	0.05g²/Hz [10..2000]Hz	0.1g²/Hz [10..2000]Hz
Shock 1/2Sin. 11ms	20G	20G	40G	40G

Ordering Information:

All Extended Grade, Rugged Grade and Conduction Cooled boards below are conformal coated

Model #	Description	Grade
T5150b 571-050-710	18 ports_FM : 4HP wide - 16*10/100TX (R) to the backplane (PICMG/VITA) or through RTM - 2*GE 1000BT (R) to the backplane (PICMG/VITA) or through RTM	Standard
T5150b 571-050-720	18 ports_FM : 4HP wide - 16*10/100TX (R) to the backplane (PICMG/VITA) or through RTM - 2*GE 1000BT (R) to the backplane (PICMG/VITA) or through RTM	Extended
T5151b 571-051-710	28 ports_FM : 4HP wide - 24*10/100TX (R) to the backplane (PICMG/VITA) and/or through RTM - 4*GE 1000BT (R) to the backplane (PICMG/VITA) and/or through RTM	Standard
T5151b 571-051-720	28 ports_FM : 4HP wide - 24*10/100TX (R) to the backplane (PICMG/VITA) and/or through RTM - 4*GE 1000BT (R) to the backplane (PICMG/VITA) and/or through RTM	Extended
T5151b 571-051-725	28 ports_FM : 4HP wide - 24*10/100TX (R) to the backplane (PICMG/VITA) and/or through RTM - 4*GE 1000BT (R) to the backplane (PICMG/VITA) and/or through RTM	Conduction Cooled
T5152b 571-052-710	30 ports_FM : 4HP wide - 24*10/100TX (R) to the backplane (PICMG/VITA) and/or through RTM - 4*GE 1000BT (R) to the backplane (PICMG/VITA) and/or through RTM - 2*GE SX (auto SX/TX) (FP)	Standard
T5152b 571-052-720	30 ports_FM : 4HP wide - 24*10/100TX (R) to the backplane (PICMG/VITA) and/or through RTM - 4*GE 1000BT (R) to the backplane (PICMG/VITA) and/or through RTM - 2*GE SX (auto SX/TX) (FP)	Extended
T5153b 571-053-710	26 ports_FM : 4HP wide - 24*10/100TX (R) to the backplane (PICMG/VITA) and/or through RTM - 2*GE SX_LC (auto SX/TX) (FP)	Standard