



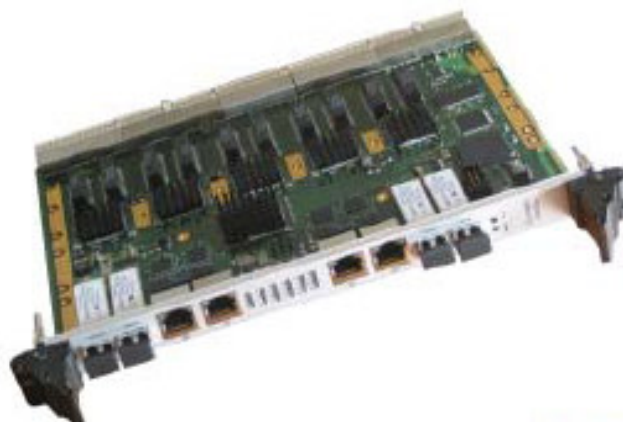
Model T4050a L2 & L3 Gigabit Ethernet Switch PICMG2.16 & Vita31.1

24 Gigabit Ethernet ports with full wire speed switching capability up to 37Mpps

Key features of the T4050a:

Layer 2 switching capabilities:

- 16k entry forwarding database
- Automatic or controlled learning and aging routing table
- Full line rate switching engine
- Port and MAC access control
- Flow control and back pressure
- 9KB jumbo frames
- IPV4 IGMP IPV6 MLD snooping
- MAC address transplant for rapid reconfiguration 802.1W
- Link aggregation – static or LACP
- Bandwidth management
 - Multicast rate limiting
 - Egress rate shaping with rate port ranging from 64K to 1Gbs
 - Minimal bandwidth guarantee per traffic class
- VLAN Services
 - 4K active VLAN
 - 4K bridge multicast groups
 - Flexible VLAN assignment 802.1Q - port based, protocol based 802.1V, service VLANs 802.1ad, policy based VLANs



- Quality of Service engine
 - Eight priority ques per port
 - Traffic class assignment per 802.1p tag, MAC address, port, DiffServ, CP or policy engine
- L3 IP V4 and V6 routing
 - 1K UC ARP entries
 - RIP V2, OSPF, V2 routing
 - Proxy ARP
 - DHCP relay
- Security features
 - 802.1x port authentication
 - Multicast / broadcast limiting
 - STP / RSTP protocol
 - Virtual cable tester on line
- Flexible management tools
 - Web or CLI management
 - Standard and private MIBS
 - Enhanced port mirroring
 - Easy software updating

T4050a is built on the latest generation of Gigabit switch engine and PHY transceiver. It combines a layer 2+ switch and a full layer 3 router with a optimized power consumption.

T4050a supports full-wire speed L2 bridging and L3 routing with L2-L4 advanced traffic classification, filtering and prioritization. It can provide strict priority traffic needed for delay-sensitive or critical applications.

T4050a ports are compatible both with PICMG 2.16 or VITA 31.1 systems. Twenty gigabit Ethernet ports are routed via rear I/O in compliance with PICMG 2.16. The remaining GigE ports are available on the front or on the rear panel through an RTM. The front copper ports use RJ45. The four optional fiber ports use LC connectors. The gigabit transceivers automatically select the media with activity.

Auto-crossover, auto-polarity, auto-negotiation and automatic MAC address management make the T4050a a true Plug & Play switch.

The Marvell Virtual Cable tester allows remote identification of potential cable malfunctions such as excessive pair skew, opens and impedance mismatch.

This switch is fully upward compatible with T4000, T4020 and T4030 range.

Management Capabilities

The T4050a can be monitored from a browser, a remote application via UDP or SNMP. The whole system lends itself to easy management. A comprehensive built-in test provided for easier the switch. Many additional functions are provided on this full-managed version:

- Configuration of all the PHY and switch parameters: ports monitoring, static MAC address, QoS policy, Multicast and VLAN control, STP/RSTP protocols, MAC security.
- Monitoring of all statistical counters and an extensive list of RMON counters.

The Switchware software provides 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. The IP routing and the L3 protocols are carried out by the processor and full wire speed forwarding by the L3 engine router.

The T4050a can be used as an open switching platform to implement specific functionalities.

Flexible Configurations

Its 6U form factor allows the T4050a to be integrated in VME Vita31, cPCI 2.16 or stand-alone applications and is available from in standard convection to conduction cooled grade.

Main features

Physical layer

24 auto-sensing 10/100/1000Mbs ports.

Optional front SX or LX Fiber (LC) interface 802.3U compliant.

Auto-Negotiation with Downshift.

Automatic MDI/MDIX crossover for all 3 speeds of operation.

Automatic polarity correction.

Online virtual cable tester.

Optional fast Ethernet out of band management port.

Layer 2 switching

802.1D/Q Compliant with a full-line rate Ethernet switching engine.

16000 MAC address database.

Automatic or controlled aging and learning mechanism.

Tag extraction and insertion (802.1p), Jumbo frames up to 9KBytes.

Back pressure for half-duplex, IEEE802.3x for full-duplex.

Discard broadcasts above critical threshold.

Link aggregation with static or dynamic LACP (7 trunks of 8 channels).

Enhanced port mirroring.

IGMP & MLD snooping.

VLAN

802.1Q compliant : supports Layer 2 domain partitioning of up to 4000 active VLANs.

VLAN programmable to any value from 1 to 4094 Protocol-based VLAN (802.1v) or Port-based VLAN (802.1x).

Security

Port and MAC access control compliant with 802.1X authentication.

L2/3 QoS

Eight queues per port.

Minimal and maximal bandwidth affectation per traffic class using weighted round robin and strict priority scheduling.

72 quality of services profiles for traffic class drop precedence.

L3 services

IGMP V2

RIP V2

OSPF V2

UDP relay

STP/RSTP provides redundant link support. Rapid STP capability for minimizing STP convergence.

Rear Transition module routes ports to the rear panel

Please refer to ordering information.

Front panel LEDs

Power supply and Switch status

Switched ports: activity & link

VME

3.3VDC Power Supply only

Power supply

P_{typ}=32W

Switch Management

Onboard firmware is implemented with comprehensive built-in test (loop back mode used during diagnostics), maintenance functions and network (BootP) updating functions. Management software provides a wide range of configuration L2/3 functions on any port: transmission speed/mode, VLAN, STP parameters, mirroring, QoS, etc.

MIB, RMON counters and private information retrievable via SNMP agent, web-browser and CLI for L3 functions.

Management via Switchware, a Linux open application package run on the resident PowerPC Processor.

Standard Conformance

Emissions
EN55022 Class A

Immunity

CEI 6000-4-2 (ESD), 6000-4-3 (Electric field), 6000-4-4 (Burst), 6000-4-5 (Surge).

Security

EN60950

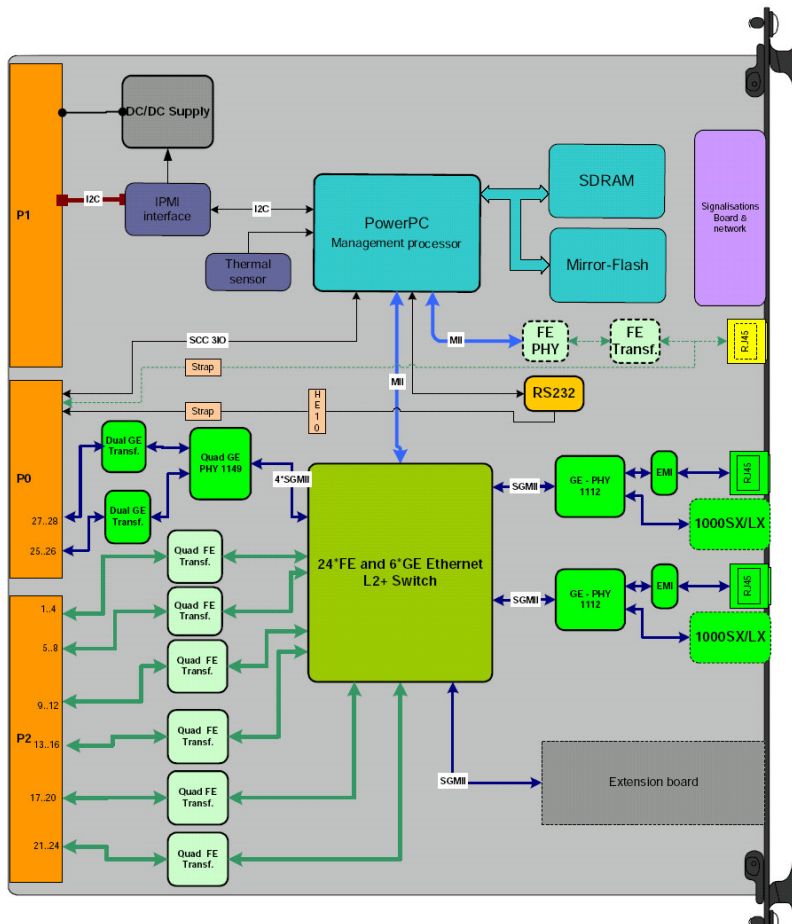
MTBF

TBD

Environment

See ordering grade Information.

Block Diagram



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	0.002g ² /Hz [10..2000]Hz	0.002g ² /Hz [10..2000]Hz	0.05g ² /Hz [10..2000]Hz	0.1g ² /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. Consult ACT/Technico for alternate configurations.

Model #	Description	Grade
T4051a-740	24 ports_FM : 4HP wide - 20*10/100/1000Mbs (R) to the backplane (PICMG/VITA) or through RTM - 4*1000BT (FP)	Standard
T4051a-760	24 ports_FM : 4HP wide - 20*10/100/1000Mbs (R) to the backplane (PICMG/VITA) or through RTM - 4*1000BT (FP)	Extended
T4052a-740	24 ports_FM : 4HP wide - 20*10/100/1000Mbs (R) to the backplane (PICMG/VITA) or through RTM - 4*1000BT (R)	Standard
T4052a-760	24 ports_FM : 4HP wide - 20*10/100/1000Mbs (R) to the backplane (PICMG/VITA) or through RTM - 4*1000BT (R)	Extended
T4052a-782	24 ports_FM : 4HP wide - 20*10/100/1000Mbs (R) to the backplane (PICMG/VITA) or through RTM - 4*1000BT (R)	Rugged

T4052a-795	24 ports_FM : 4HP wide - 20*10/100/1000Mbs (R) to the backplane (PICMG/VITA) or through RTM - 4*1000BT (R)	Conduction cooled -40 to +85°C
T4053a-740	24 ports_FM : 4HP wide - 20*10/100/1000Mbs (R) to the backplane (PICMG/VITA) or through RTM - 2*GE SX-LC (auto SX/TX) (FP) + 2*1000BT (FP)	Standard
T4053a-760	24 ports_FM : 4HP wide - 20*10/100/1000Mbs (R) to the backplane (PICMG/VITA) or through RTM - 2*GE SX-LC (auto SX/TX) (FP) + 2*1000BT (FP)	Extended
T4053a-795	22 ports_FM : 4HP wide - 20*10/100/1000Mbs (R) to the backplane (PICMG/VITA) or through RTM - 2*GE SX-LC (auto SX/TX) (FP)	Conduction cooled -40 to +85°C
T4054a-740	24 ports_FM : 4HP wide - 20*10/100/1000Mbs (R) to the backplane (PICMG/VITA) or through RTM - 4*GE SX-LC (auto SX/TX) (FP)	Standard
T4054a-760	24 ports_FM : 4HP wide - 20*10/100/1000Mbs (R) to the backplane (PICMG/VITA) or through RTM - 4*GE SX-LC (auto SX/TX) (FP)	Extended
T4056a-740	16 ports_FM : 4HP wide - 16*10/100/1000Mbs (R) to the backplane (PICMG/VITA) or through RTM	Standard
T4056a-760	16 ports_FM : 4HP wide - 16*10/100/1000Mbs (R) to the backplane (PICMG/VITA) or through RTM	Extended
T4056a-795	16 ports_FM : 4HP wide - 16*10/100/1000Mbs (R) to the backplane (PICMG/VITA) or through RTM	Conduction cooled -40 to +85°C
	The Rear Transition Modules below are suitable for T4050a standard cPCI & PICMG 2.16	
RTM05_100/1K_4 900-240-740	4 ports : 4*RJ45(10/100/1000BT) - 4HP - No EMI protection (J3,J4 & J5) For PICMG2.16	Standard
RTM05_100/1K_4 900-241-760	4 ports : 4*RJ45(10/100/1000BT) - 4HP - EMI protection (J3,J4 & J5) For PICMG2.16	Extended

RTM05_100/1K_5 900-244-740	5 ports : 4+Pf RJ45(10/100/1000BT) - 4HP - No EMI protection (J3,J4 & J5) For standard cPCI	Standard
RTM05_100/1K_24 900-242-740	24 ports : 24*RJ45(10/100/1000BT) - 8HP - No EMI protection (J3,J4 & J5) For standard cPCI	Standard
RTM05_100/1K_24 900-243-760	24 ports : 24*RJ45(10/100/1000BT) - 8HP - EMI protection (J3,J4 & J5) For standard cPCI	Extended
RTM6760G-4-X	24 ports : 24*RJ45(10/100/1000BT) - 8HP - EMI protection (J3,J4 & J5) For standard cPCI using SAME AS RTM05_100/1K_24 900-243-760 ABOVE - SPECIAL PART NUMBER FOR NG OHIO QUOTE 081108SG1	Extended
RTM05_100/1K_12 900-245-740	12 ports : 12*RJ45(10/100/1000BT) - 8HP - No EMI protection (J3,J4 & J5) For standard cPCI	Standard
RTM05_100/1K_16 900-246-740	16 ports : 16*RJ45(10/100/1000BT) - 8HP - No EMI protection (J3,J4 & J5) For standard cPCI	Standard
RTM05_100/1K_16 900-247-760	16 ports : 16*RJ45(10/100/1000BT) - 8HP - EMI protection (J3,J4 & J5) For standard cPCI	Extended

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Form #T4050a Rev. 0908