

S-A6640 | Space Ethernet Switch

Unmanaged GbE Switch for LEO/NEO Space



-
- 12x 10/100/1000Base-T Ports
 - Full Wire-speed Non-blocking Forwarding
 - Jumbo Frame Support (10 kB)
 - Immediate Boot
 - System Resources
 - ▶ Power Monitor
 - ▶ Watchdog
 - Vibration and Shock Resistant
 - Lightning Protection
 - D38999 I/O and Power Connectors
 - EMI/RFI Filtering
 - Environmentally Sealed (IP54)
-



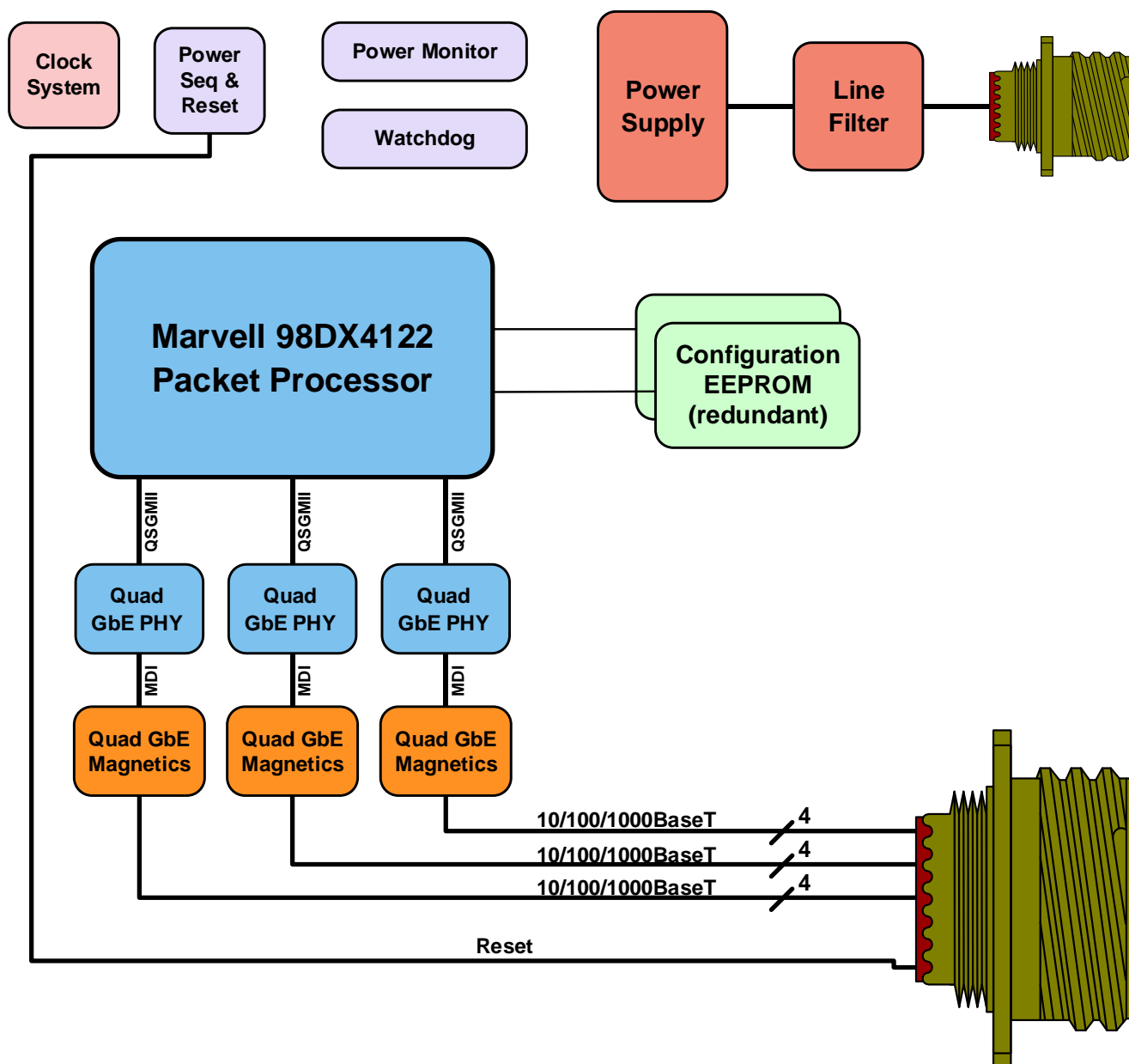
www.aitechsystems.com

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Aitech's S-A6640 is a first of its kind, standalone space radiation-tolerant Gigabit Ethernet switch, designed specifically for LEO/NEO space applications such as Small Satellites and satellite constellations. The S-A6640 is designed to serve as central component of any space electronics system/backbone, assuring fast and reliable connectivity between all other components, and serving as the heart of Aitech's LEO/NEO Space Digital Backbone Architecture. Housed in a rugged enclosure, the S-A6640 is based on a Gigabit Ethernet Switch packet processor, which performs Layer 2 switching for its 12x 10/100/1000BaseT Gigabit Ethernet copper ports. This unmanaged switch supports one-time configuration of various static L2 switching functions, as specified in the table below under "Ethernet Switch Features".



S-A6640 Functional Block Diagram

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Switch Architecture

Ethernet Switch Controller	L2/L3 Switch packet processor
Additional System Resources	<ul style="list-style-type: none">• Power Monitor• Watchdog

I/O

Copper Ports	<ul style="list-style-type: none">• Twelve Copper Ports• Supports 10/100/1000 Mbps rates through 10Base-T/100Base-TX/1000Base-T connections with auto negotiation
Discrettes (GND/Open)	<ul style="list-style-type: none">• Reset - input

Ethernet Switch Features

Port Features	<ul style="list-style-type: none">• Auto Negotiation Support• Auto MDI/MDI-X Support• Flow Control (IEEE 802.3X) Support	<ul style="list-style-type: none">• Jumbo Frames Support (10 kB)• Full and Half-Duplex Operation
Mirroring	<ul style="list-style-type: none">• Port Mirroring Support	
MAC Address Support	<ul style="list-style-type: none">• VLAN-Aware MAC-based Forwarding• HW-based MAC Address Learning & Aging	<ul style="list-style-type: none">• Up to 16k MAC Entries• Static MAC Entries
802.1Q-based VLAN Support	<ul style="list-style-type: none">• Predefined VLANs• Port-based VLANs	
Boot-Up time	<ul style="list-style-type: none">• Ethernet traffic forwarding is functional immediately after boot (within 1 second)	

Note: these features are supported only via custom configuration of the Packet Processor through the on-board Configuration EEPROM and are not configurable in-flight. These features are disabled on the standard product. Auto-negotiation and Auto MDI/MDI-X support are enabled on all ports on the standard product. Please contact your Aitech sales representative for more information on how custom switch configurations may be obtained.

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Mechanical

Dimensions	40.0 x 230.5 x 180.5 mm [1.57 x 9.07 x 7.11"]
Weight	<2 kg [4.4 lb]

Power

Input Power	<ul style="list-style-type: none">• 85% Typical Efficiency Internal Power Supply• Wide input voltage range operation 12 – 32Vdc• EMI/RFI Input Filter	<ul style="list-style-type: none">• Input Transient Protection• Input Reverse Polarity Protection• MIL-STD-704D/E, MIL-STD-1275 Compliance
Power Consumption	20W Max Power consumption is dependent on Ethernet Ports utilization	

Environmental

Operating Temp.	-40 to +60 °C ambient
Non-Operating Temp.	-40 to +85 °C
Vibration	GSFC-STD-7000B (14.1g)
Operating Shock	GSFC-STD-7000B (500g)
Vacuum	GSFC-STD-7000B (10 ⁻⁵ Torr)
Relative Humidity	0-100%
Conformal Coating	Parylene-C
Bench Handling	MIL-STD-810F, Method 516.5, Procedure VI
Total Ionizing Dose	At least 10 kRad (Si) ⁽¹⁾
Single Event Effects	Watchdog Mitigated with no more than one Type-2 SEFI per 360 days in the ISS orbit
EMI/RFI	MIL-STD-461G (CS101, RE102)

Notes:

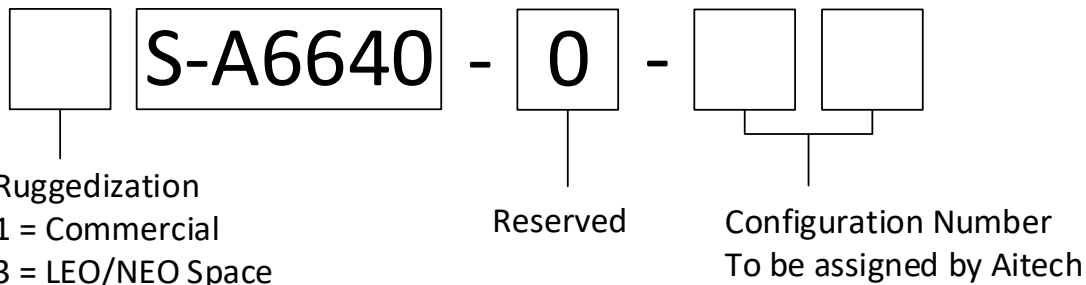
(1) Aitech has characterized the S-A6640 in proton irradiation.

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Ordering Information



Supported Configurations:

- 1S-A6640-0-00
- 3S-A6640-0-00

Optional Accessories

MCS6640-1-00	Set of Front Panel Mating Connectors
TCA6640-J1-00	J1 Power Cable
TCA6640-J2-00	J2 I/O Breakout Cable (12x 1000Base-T, Reset)
PS24-150-00	24 Vdc/150W External Power Supply (100 - 240 Vac input)

Contact Aitech

Contact your Aitech sales representative for additional product information, and for inquiries regarding customized configurations of the S-A6640.



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