Preliminary
TECHNICAL DATASHEET #TDAX140740

4x Gigabit, 1x 10 Gigabit Ethernet Switch

4x Gigabit Ethernet Ports (10/100 Mbps, 1 Gbps)
1x 10 Gigabit Ethernet Ports (10/100 Mbps, 1/2.5/5/10 Gbps)
Password Protected Web-Based User Interface
P/N: AX140740

Features

- 4x Gigabit Ethernet port (1 Gbps, 100/10 Mbps)
- 1x 10 Gigabit Ethernet ports (10/5/2.5/1 Gbps, 100/10 Mbps)
- 12 or 24 VDC input power (nominal) for connection to a battery
- Surge, transient, overvoltage, and reverse polarity protection
- 6x LED indicators (one each for the 5x Ethernet ports and one for Power)
- 1x 4-pin male T-coded and 5x 8-pin X-coded female M12 Phoenix Contact connectors
- Rugged IP67-rated enclosure
- Suitable for high vibration and shock environments (pending)
- Password protected web-based user interface

Applications

Connect multiple Ethernet devices (cameras, displays, etc.) in off-highway and mining equipment

Ordering Part Numbers

4x Gigabit, 1x 10 Gigabit Ethernet Switch – P/N: **AX140740**

Description

The 4x Gigabit, 1x 10 Gigabit Ethernet Switch is designed for industrial and automotive applications requiring high performance 1 Gbit/s Ethernet connectivity with ability to aggregate Ethernet traffic to one 10 Gbit/s Ethernet port to prevent bandwidth loss.

The switch has four 1 Gbit/s Ethernet ports and one 10 Gbit/s Ethernet port. All Ethernet ports use industrial M12 X-coded connectors. The 10 Gbit/s Ethernet port is intended for connection to the uplink Ethernet infrastructure or a high-bandwidth server but can be used as a regular downlink port. Each port can be individually configured for the desired connection speed, duplex, and flow control. The internal logic is not configurable, resulting in unmanaged switch functionality.

An embedded web server allows users to configure ports, monitor the device performance, download and upload configuration parameters, and update application firmware. An auxiliary RS-232 port can be used as a local alternative to the remote web server interface, similar to a console port on a generic Ethernet switch.

The internal state of the switch is displayed by LEDs on the front panel of the housing.

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Block Diagram

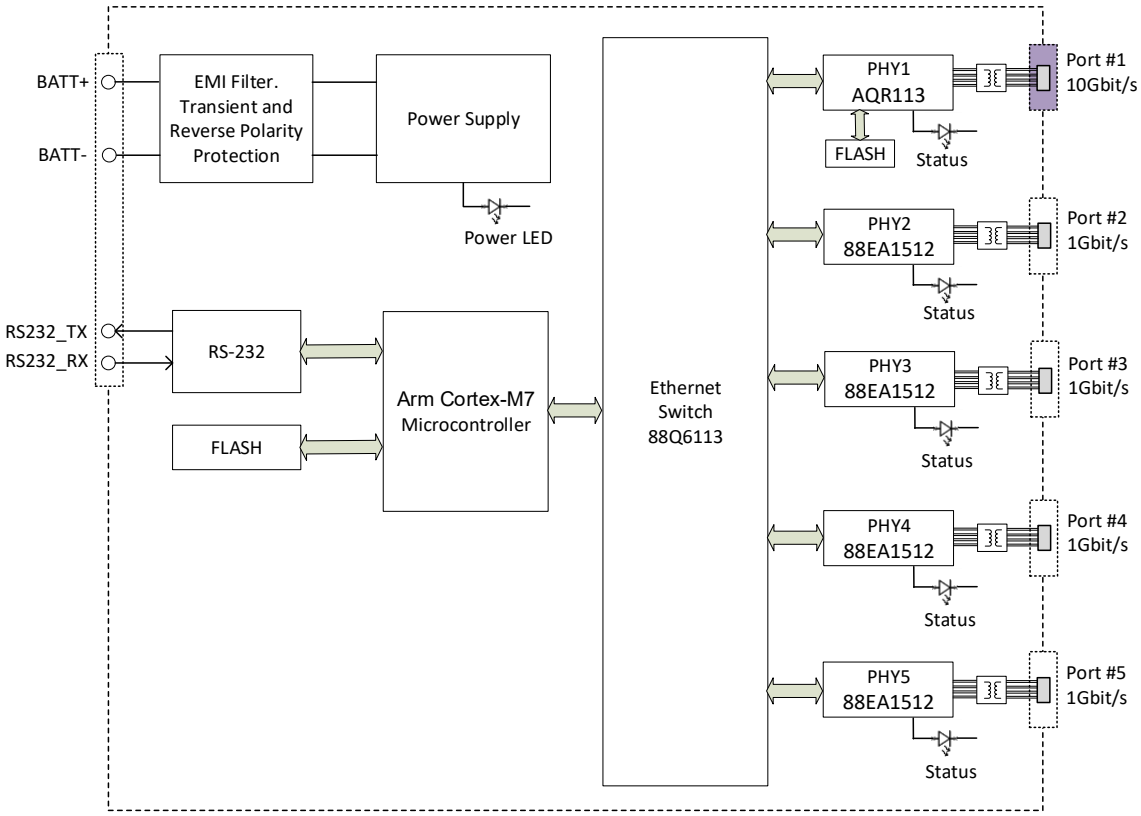


Figure 1 – Block Diagram

Technical Specifications

Specifications are indicative and subject to change. Actual performance will vary depending on the application and operating conditions. Users should satisfy themselves that the product is suitable for use in the intended application. All our products carry a limited warranty against defects in material and workmanship. Please refer to our Warranty, Application Limitations & Return Materials Process as described on https://www.axiomatic.com/service/.

Power Supply

Parameter	Value	Remarks
Supply Voltage	9 to 36 VDC	12 or 24 V – nominal
Standby Supply Current[1]	230 mA	12 V – typical[3]
	120 mA	24 V – typical[3]
Maximum Supply Current[2]	510 mA	12 V – typical[3]
	260 mA	24 V – typical[3]
Standby Supply Current Decrease per Disabled Ethernet Port	17 mA	12 V, 10 Gbps port – typical[3]
	8 mA	12 V, 1 Gbps port – typical[3]
	10 mA	24 V, 10 Gbps port – typical[3]
	4 mA	24 V, 1 Gbps port – typical[3]
LED Indicator	Power ON	Green LED
Protection	Overvoltage, Reverse Polarity, Transients/Surge	

[1]All Ethernet ports are set at maximum speed, enabled, and disconnected.
[2]All Ethernet ports are set at maximum speed, enabled, and connected.
[3]At room temperature (25 °C)

Ethernet Switch

Parameter	Value	Remarks
Number of Ports	5	1 port – 10 Gbps, 10 GbE port 4 ports – 1 Gbps, ENET 1 to 4 ports All ports are Individually configurable
Switch Type	Unmanaged	Based on Marvell 88Q6113, with individually configurable PHYs, based on Marvell AQR113 (10 Gbps) and Marvell 88EA1512 (1 Gbps)
Switching Capacity	28 Gbps	
Forwarding Rate	20.83 Mpps	
MAC Address Table	16 K Entries	16384 address database entries
Packet Buffer Memory	2 Mbit	
Jumbo Frame	10236/10240 bit	Tagged/Untagged frames
QoS	8 Priority Queues	
	802.1p/DSCP QoS	
Communication Protocols	Ethernet IEEE 802.3, IP, ICMP, ARP, UDP, TCP, DHCP, HTTP, Proprietary[1]	For internal web server and proprietary discovery protocol on Port #1 or Port #2. Communication with the switch over Ethernet can be disabled for security reasons.
Web server	On Port #1 or Port #2 only	Used for configuration, diagnostics, and flashing application firmware. Supports configuration files. Password protected. Can be disabled.
Internal Diagnostics	Health Status	Available from the web server or RS-232 port user interface
RS-232 Port	3-wire	Local alternative to the web server. Menu based text user interface[2]. YMODEM for upload/ download configuration files.

[1] Proprietary discovery protocol is supported by Axiomatic AxioDisc.exe Windows console application and *CAN-ENET Software Support Package* (SSP), P/N AX140910, v3.0.0+.
[2] Use any terminal emulation software, TeraTerm is preferred (free download from: *https://teratermproject.github.io/index-en.html*).

1 Gbps Ports

Parameter	Value	Remarks
Port Type	1000BASE-T, 100BASE-TX, 10BASE-T	IEEE 802.3ab/u/i IEEE 802.3 compliant auto-negotiation Port can be disabled to save power and for security reasons.
MDIX	Auto-MDIX	Automatic A/B and C/D pair swaps, and polarity inversions
Port Speed	1 Gbps, 100 Mbps, 10 Mbps	Configurable or auto-negotiation
Port Duplex	Full-Duplex, Half-Duplex	Configurable or auto-negotiation
Flow Control	Available	IEEE 802.3x symmetric and asymmetric PAUSE for full-duplex, backpressure for half-duplex
Port LED Indicator	Link/Speed/Activity	Red-green bicolor LED

10 Gbps Port

Parameter	Value	Remarks
Port Type	10GBASE-T, 5GBASE-T, 2.5GBASE-T, 1000BASE-T, 100BASE-TX, 10BASE-Te	IEEE 802.3an/bz/ab NBASE-T IEEE 802.3-2012 compliant auto-negotiation Port can be disabled to save power and for security reasons.
MDIX	Auto-MDIX	Automatic A/B and C/D pair swaps, polarity inversions, and semi-cross (A/B or C/D only)
Port Speed	10 Gbps, 5 Gbps, 2.5 Gbps, 1 Gbps, 100 Mbps, 10 Mbps	Configurable or auto-negotiation
Port Duplex	Full Duplex	Resolved to full-duplex, if auto-negotiation
Flow Control	Available	IEEE 802.3x symmetric and asymmetric PAUSE
Port LED Indicator	Link/Speed/Activity	Red-green bicolor LED

LED Indicators

1 Gbps Port LEDs

LED Color[1]	Port Speed
Off	No Link
Green	10 Mbps
Yellow	100 Mbps
Red	1 Gbps

[1]Transmit or receive activity on the Link if blinking

10 Gbps Port LED

LED Color[1]	Port Speed
Off	No Link
Green	10 Mbps
Yellow	100 Mbps
Red	10 Gbps, 5 Gbps, 2.5 Gbps, 1 Gbps

[1]Transmit or receive activity on the Link if blinking

RS-232 Port

Parameter	Value	Remarks
Bit Rate	115200 bps	
Data	8-bit	
Parity	None	
Stop	1 bit	
Flow Control	Xon/Xoff	For flashing new application firmware only

Ethernet Connector

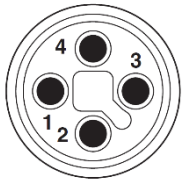
M12 socket, 8-pin, X-coded, shielded female connector, Phoenix Contact, P/N: 1411964.
Use X-coded mating connectors compliant with IEC 61076-2-109.

Pin	Description
1	DA+
2	DA-
3	DB+
4	DB-
5	DD+
6	DD-
7	DC-
8	DC+

Power Connector

M12 socket, 4-pin, T-coded, male connector, Phoenix Contact, P/N: 1412017.
Use T-coded mating connectors compliant with IEC 61076-2-111.

Pin	Description
1	RS-232 TX
2	RS-232 RX
3	Battery+
4	Battery- (RS-232 Ground[1])



[1] RS-232 Ground is connected to Battery-.

Ethernet Cable Requirements

1 Gbps Port Cable Requirements

Port Speed	Cable Category	Maximum Distance[1]	Cable Standard
1 Gbps	CAT 5e (or better)[2]	100 m	ANSI/TIA-568.2-D
100 Mbps	CAT 5e (or better)[2]	100 m	
10 Mbps	CAT 3 (or better)	100 m	

[1]Based on the appropriate Ethernet standard
[2]Legacy CAT 5 can be used, but not recommended

10 Gbps Port Cable Requirements

Port Speed	Cable Category	Maximum Distance[1]	Cable Standard
10 Gbps	CAT 7 STP (or better)	100 m	ISO/IEC 11801-1:2017 Class F
	CAT 6a UTP	100 m	ANSI/TIA-568.2-D
	CAT 6	55 m	
5 Gbps, 2.5 Gbps	CAT 5e (or better)	100 m	
1 Gbps, 100 Mbps, 10 Mbps	CAT 5e (or better)	130 m	

[1]Based on the PHY rating

General Specifications

Parameter	Value	Remarks
Operating Temperature	-40 to 65 °C (-40 to 149 °F)	
Storage Temperature	-40 to 85 °C (-40 to 185 °F)	
Compliance	RoHS Directive	
Environmental Protection	IP67	IEC 60529 with mated connectors
Enclosure	Cast aluminum, anodized enclosure, Lexan overlay	
Size	6.1 in. x 6.4 in. x 1.5 in. (155 mm x 162 mm x 37 mm)	L x W x H excluding connectors. See dimensional drawing
Weight	1.572 lb. (0.713 kg)	

Dimensional Drawing

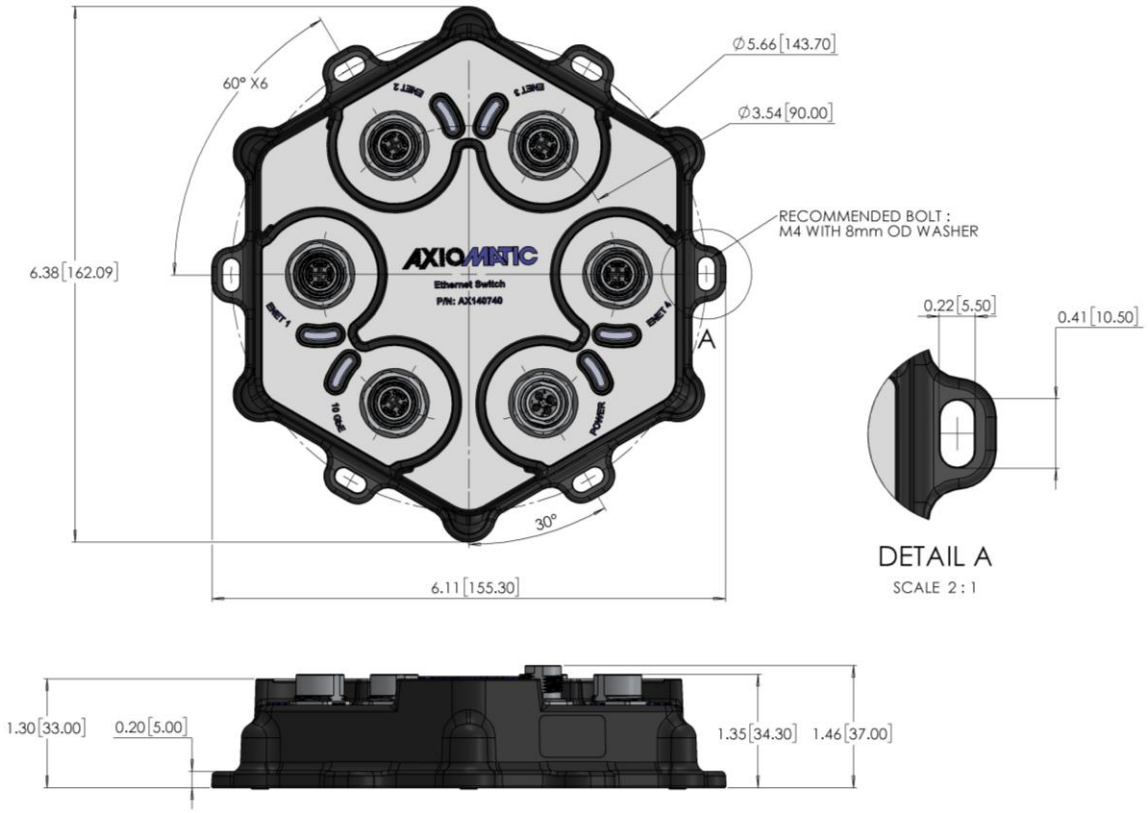


Figure 2 – Dimensional Diagram

Form: TDAX140740-01/30/2026