Preliminary
TECHNICAL DATASHEET #TDAX141840

4 Digital Inputs Modbus Router with CAN

CAN and Modbus TCP/IP Protocol Conversion

CAN (SAE J1939)
Ethernet (Modbus TCP/IP)
Configurable using a Web Browser
P/N: AX141840

Features

- Fast bi-directional data exchange between a CAN network (SAE J1939) and Ethernet (Modbus TCP/IP)
- 1 CAN port (SAE J1939)
- 1 Ethernet port (Modbus TCP/IP, 10/100 Mbit/s)
- Operational from 9 to 30 VDC (12 or 24 VDC nominal)
- Integrated TE Deutsch 12-pin connector
- Reverse polarity, overvoltage, and undervoltage protection
- Fully sealed enclosure with a rugged IP67 protection rating
- Compact size
- User configurable using a web browser

Applications

- Control panels
- Machine automation
- Communication interface between machine and master control systems

Ordering Part Number

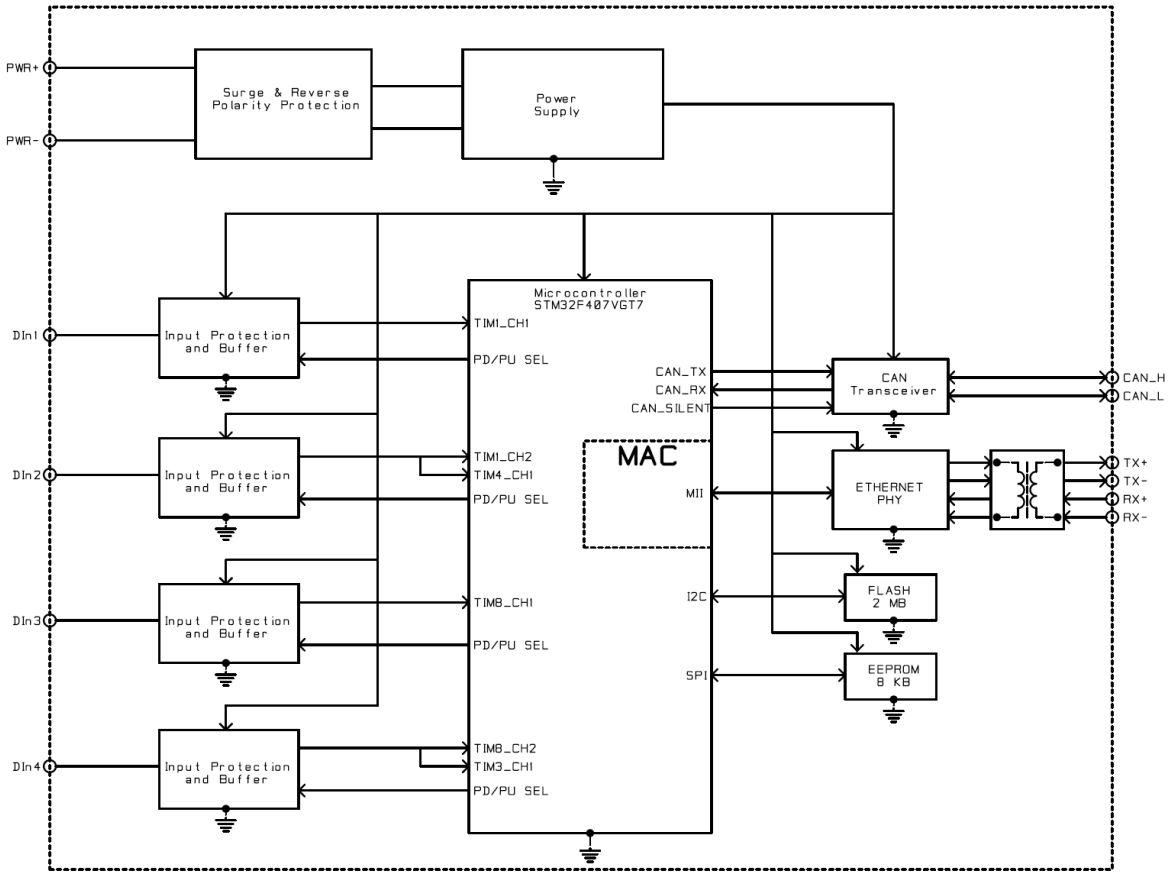
4 Digital Inputs Modbus Router with CAN, SAE J1939 with Auto-Baud-Rate Detection - P/N: **AX141840**

Accessories:
Mating Plug KIT P/N: **PL-DTM06-12SA** (includes 1x DTM06-12SA, 1x WM-12S, 12x 0462-201-20141, 6x 0413-204-2005)

Axiomatic Technologies Oy
Höytämöntie 6
33880 LEMPÄÄLÄ, Finland
Tel. +358 103 375 750
salesfinland@axiomatic.com
www.axiomatic.fi

Axiomatic Technologies Corporation
1445 Courtneypark Dr. E.
Mississauga, ON Canada L5T 2E3
Tel. 1 905 602 9270
sales@axiomatic.com
www.axiomatic.com

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/.

Note: All specifications are typical at nominal input voltage and 25°C unless otherwise specified.

Power

Power Supply Input	12 or 24 VDC nominal (9 to 30 VDC)
Quiescent Current	TBD mA @ 12 V; TBD mA @ 24 V typical
Under-Voltage Protection	Hardware shutdown at 4 VDC
Over-Voltage Protection	Hardware shutdown at 41 VDC
Reverse Polarity Protection	Provided up to -30 V

Inputs

Inputs	4 digital inputs selectable as digital on/off, frequency/RPM, PWM, or encoder inputs
Table – User Programmable Inputs	
Digital On / Off	Active high or active low with user selectable pull-up resistor of 11 kΩ or pull-down through a 10 kΩ resistor
Frequency / RPM	Range: 0.5 Hz to 10 kHz Resolution: 1 Hz
PWM	Duty Cycle: 0 to 100 % Resolution: 0.1 %
Encoder Input	Input pairs 1 & 2 and/or 3 & 4 can be configured to read quadrature / incremental / standard A & B phase encoder signals. Frequency range: 0-20 kHz Amplitude: 0-32 V
Input Ground	The input return should be connected to the “Battery -" pin.

Functionality

Routing & Conversion	The router supports conversion logic for bi-directional data exchange between an Ethernet (Modbus TCP/IP) and an SAE J1939 CAN network. The actual conversion logic setup is highly application specific.
Ethernet	1 Ethernet port (Modbus TCP/IP) 10BASE-T 100BASE-Tx (auto-negotiation and full-duplex supported) Auto-MDIX 10/100 Mbit/s
CAN	1 CAN port (SAE J1939) Supported baud rates: 250 kbit/s (default), 500 kbit/s, 667 kbit/s, and 1 Mbit/s with auto-baud-rate detection

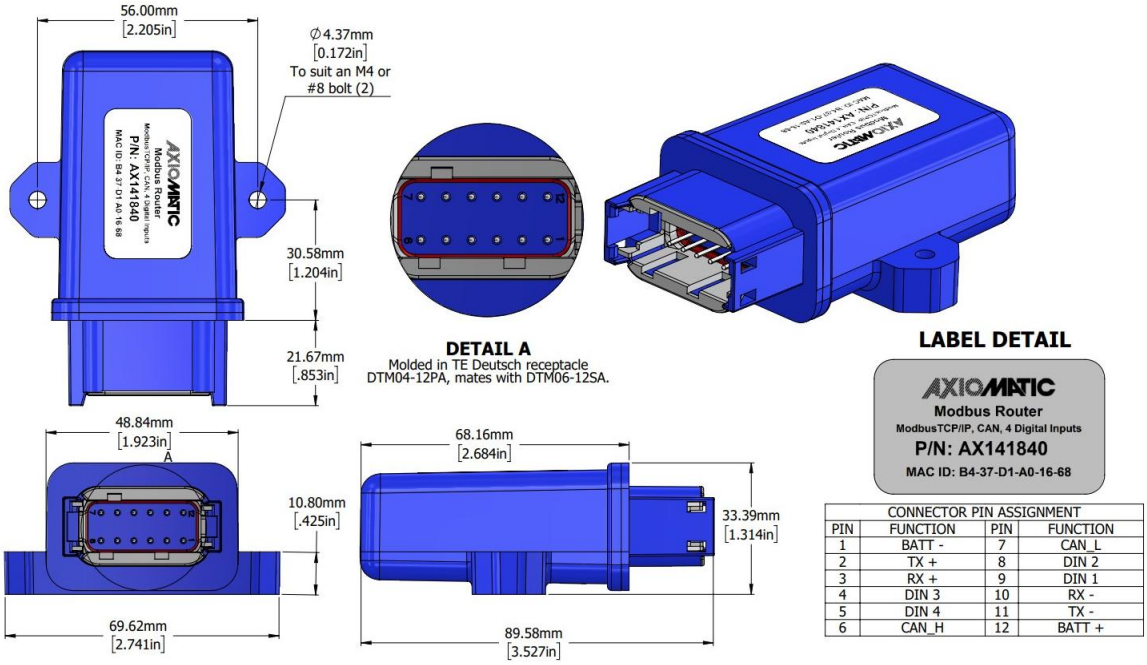
General Specifications

Microcontroller	STM32F407VGT7, 32-bit, 1 MByte flash memory
User Interface	Parameters are configurable using a web browser. Firmware can also be updated using a web browser. Axiomatic Electronic Assistant (P/N: **AX070502** or **AX070506K**) can be used for configuring some parameters like device IP address, Modbus port, ECU address, etc. Please see the user manual for details.
Compliance	RoHS
Operating Conditions	-40 to 85 °C (-40 to 185 °F)
Storage Temperature	-40 to 85 °C (-40 to 185 °F)
Weight	0.70 lbs. (0.32 kg)
Protection	IP67
Enclosure	Molded Enclosure, integral connector Nylon 6/6, 30% glass, ultrasonically welded 3.53 in. x 2.74 in. x 1.31 in. (89.58 mm x 69.62 mm x 33.39 mm) L x W x H including integral connector Refer to the dimensional drawing.
Electrical Connections	Integral 12-pin receptacle (TE Deutsch P/N: DTM04-12PA)

Pin	Function
1	Battery -
2	Ethernet TX +
3	Ethernet RX +
4	Digital Input 3
5	Digital Input 4
6	CAN High
7	CAN Low
8	Digital Input 2
9	Digital Input 1
10	Ethernet RX -
11	Ethernet TX -
12	Battery +

Mating Plug Kit	A mating plug kit is available from Axiomatic under P/N: **PL-DTM06-12SA** (includes 1x DTM06-12SA, 1x WM-12S, 12x 0462-201-20141, 6x 0413-204-2005 sealing plugs)
Network Termination	It is necessary to terminate the network with external termination resistors. The resistors are 120 Ω, 0.25 W minimum, metal film or similar type. They should be placed between CAN High and CAN Low terminals at both ends of the network.
Mounting	Mounting holes are sized for #8 or M4 bolts. The bolt length will be determined by the end-user's mounting plate thickness. The mounting flange of the controller is 0.425 in. (10.8 mm) thick. If the module is mounted without an enclosure, it should be mounted vertically with connectors facing left or right to reduce the likelihood of moisture entry. The CAN wiring is considered intrinsically safe. Power wires are not considered intrinsically safe and so in hazardous locations, they need to be located in conduit or conduit trays at all times. The module must be mounted in an enclosure in hazardous locations for this purpose. No wire or cable harness should exceed 30 m in length. The power input wiring should be limited to 10 m. All field wiring should be suitable for the operating temperature range. Install the unit with appropriate space available for servicing and for adequate wire harness access (6 in. or 15 cm) and strain relief (12 in. or 30 cm).

Dimensional Drawing



CONNECTOR PIN ASSIGNMENT			
PIN	FUNCTION	PIN	FUNCTION
1	BATT -	7	CAN_L
2	TX +	8	DIN 2
3	RX +	9	DIN 1
4	DIN 3	10	RX -
5	DIN 4	11	TX -
6	CAN_H	12	BATT +

Form: TDAX141840-07/02/2025