



### Features:

- Wireless CAN to Ethernet link (Ethernet UDP or TCP)
- CAN port (high speed, up to 1 Mbps) with configurable baud rate
- Operational 9...36 Vdc (12Vdc or 24Vdc)
- LED indicator
- Integrated Deutsch 8-pin connector
- Compact, fully sealed enclosure, IP67

### Description:

The converter is designed to work as a wireless CAN to Ethernet link on off-road machinery or in a harsh industrial environment with power transients, high humidity, and vibrations.

The device converts CAN frames into UDP or TCP IP datagrams and sends them over a wireless network using a WiFi protocol. It also receives UDP or TCP datagrams and converts them into CAN frames.

The converter has one CAN port. It supports a high-speed CAN with a configurable baud rate up to 1Mbit/s. All standard and extended CAN frames, including data and remote frames, are supported.

The WiFi port can work in a station or access point mode in 2.4GHz or 5GHz frequency range. The WiFi connection is provided by an internal antenna. The internal web server is used to set up configuration parameters, flash new firmware, and monitor the converter internal state with a web browser over the WiFi wireless connection.

The internal state of the converter is displayed by a LED indicator on the housing.

The converter is powered from an automotive 12V or 24V battery. Protection is provided.

### Applications:

- Wireless CAN bus monitoring in off-highway and industrial equipment.
- Remote bi-directional CAN bus access over a wireless link.
- Wireless CAN bus extension – wireless bridge.

### Ordering Part Numbers:

CAN/WiFi Module with auto-baud-rate detect - P/N: **AX141200**

#### Accessories:

Mating Plug KIT: **AX070112**

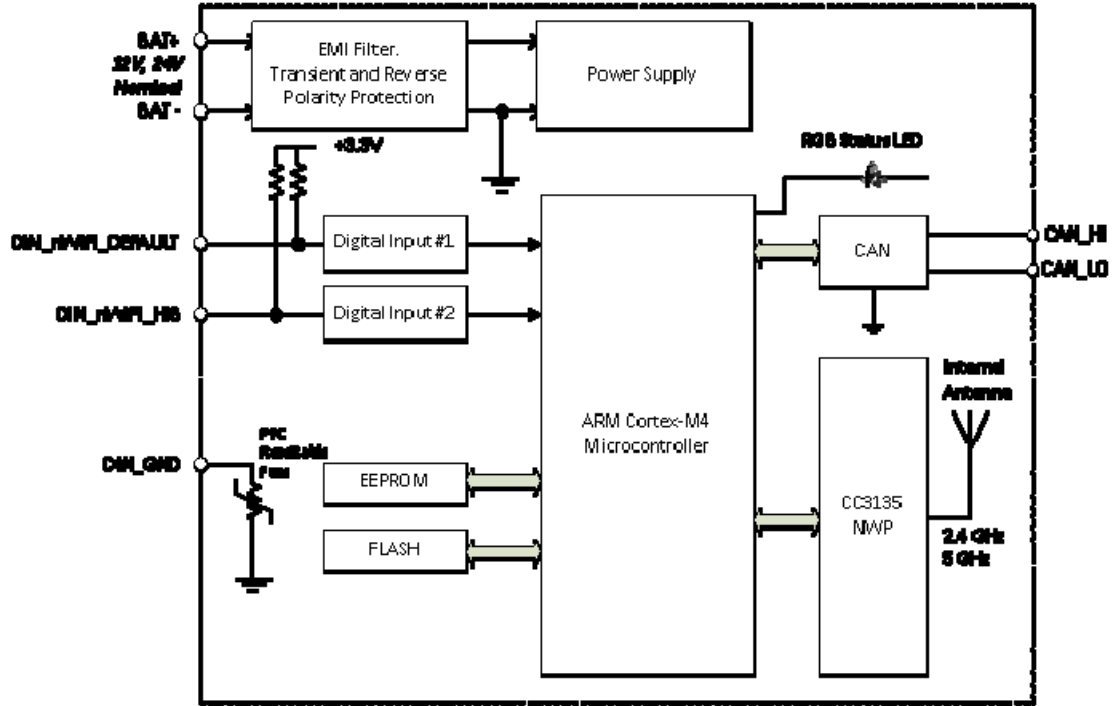


Figure 1.0 – Block Diagram

**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 Approvals/Limitations and Return Materials Process as described on [www.axiomatic.com/service.html](http://www.axiomatic.com/service.html).*

### Power Supply Input

The power supply input is located on the CAN connector. The power supply uses automotive battery power.

Parameter	Value	Remarks
Supply Voltage	9...36 VDC	12V, 24V – nominal
Supply Current <sup>1</sup>	65 mA 35 mA	Maximum at 12V Maximum at 24V
Protection	Reverse Polarity, Overvoltage, Transients	

<sup>1</sup>CAN bus is connected. WiFi is in station mode connected to an access point.

## WiFi Port

Parameter	Value	Remarks
Wireless Standards	802.11 a/b/g/n	802.11 a/b/g in Access Point mode
Frequency Ranges	2.4 GHz, 5 GHz	Available channels depend on the region of operation
Antenna	Internal	
Communication Range	40 m	Reliable communication between two converters in open space
Connectivity Modes	Station, Access Point	
Maximum Number of Stations	4	In Access Point mode
Security	Open, WEP, WPA/WPA2-PSK	
Firmware update	OTA	Using internal web server
Communication Protocols	IP, ICMP, ARP, UDP, TCP, HTTP, Proprietary	CAN messages are transmitted using a proprietary application protocol running on top of the user selectable UDP or TCP transport protocol. Internal web server uses HTTP protocol. The unit supports an Axiomatic proprietary discovery protocol
Server Mode	Up to 10 bi-directional simultaneous connections	Up to 9 connections, if the Client mode is enabled
Client Mode	1 remote connection	Auto-connect to a remote server, if connection is dropped or temporary unavailable. Client mode can be disabled
Web server	Provided	Always enabled for converter configuration, diagnostics, and OTA firmware update
Internal Diagnostics	Health Status	Internal health status of the converter is transmitted in heartbeat messages. It is also available from the web server
Hibernate State	Provided	Only in data-logging modification (p/n AX141220)

The proprietary communication protocol is described in [1], the Axiomatic discovery protocol – in [2]. The Health Status run-time parameter is described in [3]. Customized CAN protocols can be available on request.

## CAN Port

Parameter	Value	Remarks
Number of Ports	1	
Port Type	High Speed, ISO 11898-2 compatible	120Ohm terminated twisted pair, baud rate up to 1 Mbit/s. Shield connection is provided. External 120Ohm terminating resistor is required
Baud Rate	1000, 666.6(6), 500, 250, 125, 100, 83.3(3), 50, 20, 10	[kbit/s]. Programmable through the web interface
Protocol	CAN Bosch 2.0A and B	Data Frames and Remote Frames with Standard and Extended IDs are supported
Filtering	CAN ID Range/Mask	Disabled by default
CAN Frame Logging Memory	1 MByte	Non-volatile memory. Only in data-logging modification (p/n AX141220)

CAN port does not contain 120 Ohm termination resistor.

## Control Software

Software Platform	Pre-programmed with standard logic. Refer to the user manual.
-------------------	---

## General Specifications

Memory	ARM Cortex-M4																		
Operating Conditions	-40 to 85°C (-40 to 185°F)																		
LED Indicator	Displays Status, RBG																		
User Interface	Web Server Refer to the user manual																		
Weight	0.15 lb. (0.068 kg)																		
Protection Rating	IP67																		
Compliance	RoHS Directive, CE, FCC																		
Vibration	Pending MIL-STD-202G, Test 204D and 214A (Sine and Random) 10 g peak (Sine); 7.85 Grms peak (Random)																		
Shock	Pending MIL-STD-202G, Test 213B, 50 g																		
Enclosure and Dimensions	Molded Enclosure, integral connector Nylon 6/6, 30% glass Ultrasonically welded 3.47 x 2.75 x 1.31 inches (88.2 x 70.0 x 33.3 mm) L x W x H including integral connector Refer to Figure 1.0, dimensional drawing.																		
Electrical Connections for AX141200 and AX141220	Integral TE Deutsch 8 pin receptacle (P/N: DT04-08PA) 18 AWG wire is recommended for use with contacts 0462-201-16141.  <table border="1"> <thead> <tr> <th>Pin #</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>BATT -</td> </tr> <tr> <td>2</td> <td>BATT +</td> </tr> <tr> <td>3</td> <td>CAN_L</td> </tr> <tr> <td>4</td> <td>CAN_H</td> </tr> <tr> <td>5</td> <td>DIN_GND</td> </tr> <tr> <td>6</td> <td>DIN_nWIFI_DEFAULT (Active Low)</td> </tr> <tr> <td>7</td> <td>DIN_nCAN_LOG (Active Low)<sup>1</sup></td> </tr> <tr> <td>8</td> <td>DIN_nWIFI_HIB (Active Low)<sup>1</sup></td> </tr> </tbody> </table> <p><sup>1</sup> Used only in the data-logging modification (p/n AX141220), keep unconnected otherwise.</p>	Pin #	Description	1	BATT -	2	BATT +	3	CAN_L	4	CAN_H	5	DIN_GND	6	DIN_nWIFI_DEFAULT (Active Low)	7	DIN_nCAN_LOG (Active Low) <sup>1</sup>	8	DIN_nWIFI_HIB (Active Low) <sup>1</sup>
Pin #	Description																		
1	BATT -																		
2	BATT +																		
3	CAN_L																		
4	CAN_H																		
5	DIN_GND																		
6	DIN_nWIFI_DEFAULT (Active Low)																		
7	DIN_nCAN_LOG (Active Low) <sup>1</sup>																		
8	DIN_nWIFI_HIB (Active Low) <sup>1</sup>																		
Mating Plug Kit	A mating plug kit is available. Ordering P/N: <b>AX070112</b> is comprised of 1 DT06-08SA, 1 W8S, 8 0462-201-16141, and 3 114017.																		

## RF Regulatory Restrictions



Caution. This converter should be installed and operated with a minimum distance of 20 cm from a human body.

The user is responsible to properly select the country or region of operation to conform with local laws. Incorrect settings may cause RF interference.

The device is restricted to indoor use only when operating in the 5GHz frequency range, channels: 32...68 (5150 to 5350 MHz) in the following countries.

	AT	BE	BG	HR	CY	CZ	DK
	EE	FI	FR	DE	EL	HU	IE
	IT	LV	LT	LU	MT	NL	PL
	PT	RO	SK	SI	ES	SE	UK

## RF Module Compliance

The converter uses Texas Instrument CC3135MOD RF module. The CC3135MOD module meets the following regulations.

### CC3135MOD Regulatory Compliance

Regulatory Body	Regulation	Certificate ID (If Applicable)
FCC (USA)	Part 15C + MPE FCC RF Exposure	Z64-CC3135MOD
IC/ISED (Canada)	RSS-102 (MPE) and RSS-247 (Wi-Fi)	4511-CC3135MOD
ETSI/CE (Europe)	RED 2014/53/EU and RoHS2 2011/65/EU	—
MIC (Japan)	Article 49-20 of ORRE	201-190034

#### Module FCC Statement

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

- This device may not cause harmful interference.
- This device must accept any interference received, including interference that may cause undesired operation of the device.

#### CAUTION

FCC RF Radiation Exposure Statement:

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with a minimum distance of 20 cm between the radiator and your body.

#### Module CAN ICES-3(B) and NMB-3(B) Statement

This device complies with Industry Canada license-exempt RSS standards. Operation is subject to the following two conditions:

- This device may not cause interference.
- This device must accept any interference, including interference that may cause undesired operation of the device.

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes:

- L'appareil ne doit pas produire de brouillage.
- L'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

#### CAUTION

IC RF Radiation Exposure Statement:

This equipment complies with IC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with a minimum distance of 20 cm between the radiator and your body.

Déclaration d'exposition aux radiations:

Cet équipement est conforme aux limites d'exposition aux rayonnements IC établies pour un environnement non contrôlé. Cet équipement doit être installé et utilisé avec un minimum de 20 cm de distance entre la source de rayonnement et votre corps.

#### Module EC Declaration of Conformity

The module is in compliance with Radio Equipment Directive 2014/53/EU and RoHS2 Directive 2011/65.

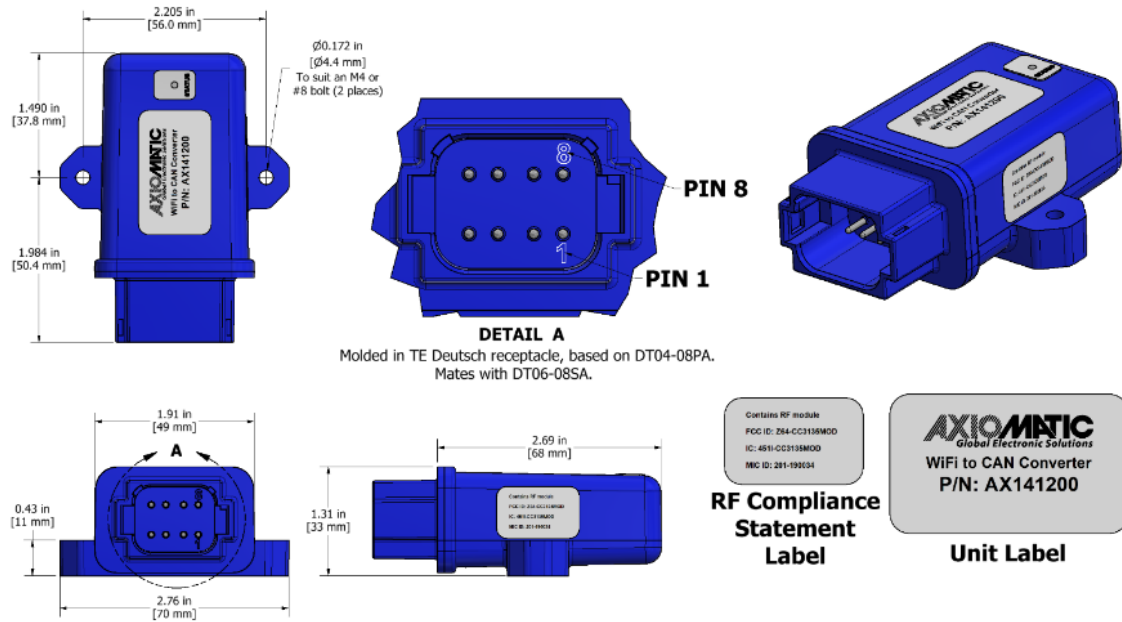


Figure 2.0 – Dimensional Drawing

**Connector**

TE Deutsch 8-pin receptacle (P/N: DT04-08PA).

Mating plug kit, AX070112, is available and includes 1 DT06-08SA, 1 W8S, 8 0462-201-16141, and 3 114017.

Pin #	Description
1	BAT -
2	BAT +
3	CAN_L
4	CAN_H
5	DIN_GND
6	DIN_nWIFI_DEFAULT (Active Low)
7	Not Used
8	DIN_nWIFI_HIB (Active Low)

**Notes:**

CANopen® is a registered community trademark of CAN in Automation e.V.

Form: TDAX141200-07/28/21