TECHNICAL DATASHEET #TDAX030311

18 Digital Inputs CAN Controller

CANopen®

P/N: AX030311

Features:

- 10 digital inputs are user selectable from the following.
  - Active High/Active Low
  - PWM signal from sensors or diesel engine ECM's
  - Frequency (Hz or RPM)
  - Counter
- 8 digital inputs are user selectable as Active High/Active Low
- 12V, 24VDC input power (nominal) with rugged surge protection
- 1 CAN (SAE J1939)
- SAE J1939 model available (P/N: AX030310)
- Rugged IP67 enclosure and connectors
- CE/UKCA marking
- Standard control logic
- .EDS provided to interface to standard CANopen® tools

Applications:

- Engine controls for power generation, co-generation, stationary power
- Engine controls for commercial vehicles, off-highway equipment, etc.

Ordering Part Numbers:

CANopen® Controller: **AX030311**
EDS File: **EDS-AX030311** Accessories: **PL-DTM06-12SA-12SB** Mating Plug Kit

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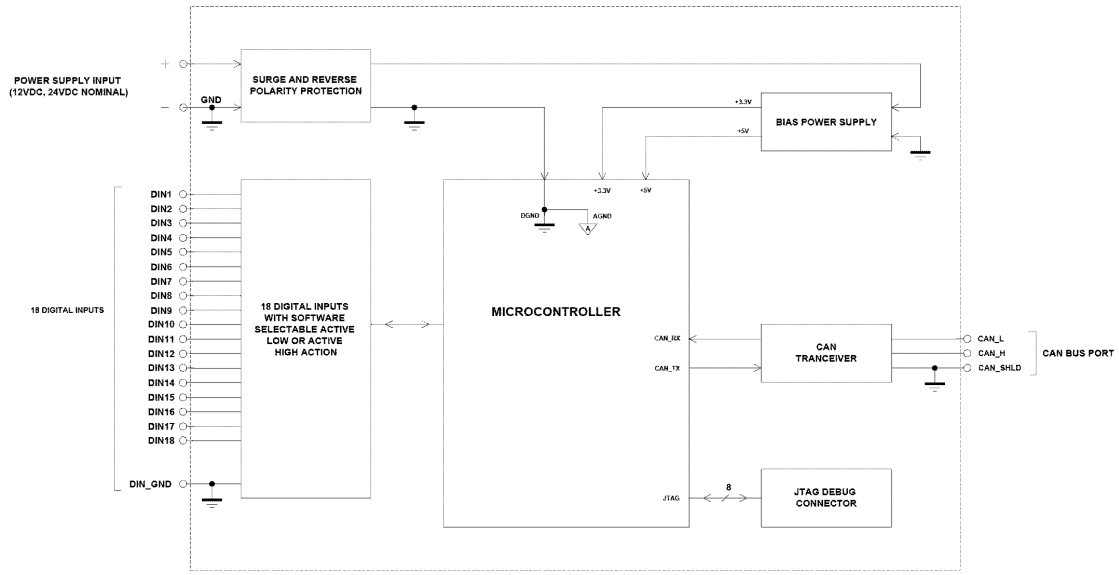
BLOCK DIAGRAM



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 https://www.axiomatic.com/service/.

Input Specifications

Power Supply Input - Nominal	12V, 24VDC nominal (8…36VDC power supply range)
Protection	Surge and reverse polarity protection are provided.
All Inputs	Up to 18 digital inputs are selectable by the user. Refer to Table 1.0.
Input Protection	Full protection to all other physical pins (any other input or power terminal).
CAN Commands	CANopen®
Ground Connection	1 Digital GND connection is provided.

Table 1.0 - Inputs

Digital Inputs	Up to 18 digital inputs are available. The first 10 digital inputs can be configured for any one of the following options. • Disable Input • Digital Input • PWM signal input (1-10,000 Hz, 0-100% D.C.) • Pulse Input (Hz or RPM) (50 to 10,000 Hz, 50 mV-3V RMS)* • 16-bit Counter Input The last 8 digital inputs can be configured for any one of the following options. • Disable Input • Digital Input Threshold 3.5V Hysteresis 0.4V Pull up/Pull down 10 KOhm Input voltage maximum is 30Vdc.
Input Accuracy	PWM, single channel: +/- 0.05% to +/- 1.25% (over the 500 Hz to 10 kHz range) Frequency/RPM, single channel: +/- 1% 16-bit counter, single channel: +/- 3 mSec (@50 Hz)
Input Resolution	PWM, single channel: +/- 0.05% to +/- 1.25%, 0 decimal place resolution Frequency/RPM (single channel) 0.5 Hz to 50 Hz: +/- 0.01Hz, 0 decimal place resolution 50 Hz to 10kHz: +/- 1Hz, 0 decimal place resolution 16-bit counter, single channel: 1 pulse resolution

Input Accuracy	**Table 2.0. Input Accuracy**

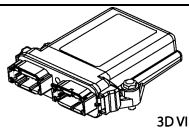
Input Type	Accuracy	Resolution
Voltage	+/- 1%	1 [mV]
Current	+/- 1%	1 [uA]
PWM	+/- 1% (<5kHz) +/- 2% (>5kHz)	0.1 [%]
Frequency/RPM	+/- 1%	0.01 [Hz]

Output Specifications

CAN Messages	CANopen®

General Specifications

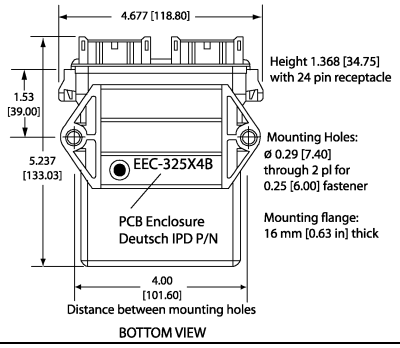
Microcontroller	STM32F205RET6
Control Logic	Standard embedded software (Application-specific logic is available on request.)
User Interface (PC-based)	EDS File is provided. The controller architecture consists of a set of internal functional blocks, which can be individually programmed and arbitrarily connected together to achieve the required system functionality for a specific application. All objects are user configurable using standard commercially available tools that can interact with a CANopen® Object Dictionary via an .EDS file.
CAN Communications	1 CAN 2.0B port, protocol CiA CANopen ® The controller's object dictionary is compatible with the CiA DS-404 device profile (Device profile for measurement devices and closed-loop controllers). Refer to the user manual for details. The controller is compliant with the following CAN in Automation (CiA) standards. [DS-301] CiA DS-301 V4.02 – CANopen® Application Layer and Communication Profile. CAN in Automation 2002 [DS-404] CiA DS-404 V1.2 – Device Profile for Measurement Devices and Closed-Loop Controllers. CAN in Automation 2002 [DS-305] CiA DS-305 V2.0 – Layer Setting Service (LSS) and Protocols. CAN in Automation 2006
CAN Response Time	The maximum recommended transmit rate for any TPDO is 10ms. Response time of feedback on the CAN to changes at the I/O will be a combination of the I/O type's response time and the configurable software filtering, delays, etc.
Node-ID and Baud Rate	Configurable using Layer Setting Services. Default Node-ID = 127 and Baud Rate = 125 kbps.
Quiescent Current Draw	13.71 mA @ 24V 24.15 mA @ 12V 31.68 mA @ 9V
Diagnostics	The module can detect the following. • Module Over-Temperature • Power Supply Over Voltage • Power Supply Under Voltage
Compliance	CE/UKCA marking: EMC Directive RoHS Directive Exempt from Low Voltage Directive
Network Termination	It is necessary to terminate the network with external termination resistors. The resistors are 120 Ohm, 0.25W minimum, metal film or similar type. They should be placed between CAN_H and CAN_L terminals at both ends of the network.
Operating Temperature	-40 to 85 °C (-40 to 185 °F)
Storage Temperature	-50 to 125 °C (-50 to 257 °F)
Protection	IP67, PCB is conformal coated and protected by the enclosure.
Weight	0.50 lbs. (0.23 kg)
Enclosure and Dimensions	High Temperature Nylon Enclosure – (equivalent TE Deutsch P/N: EEC-325X4B) Flammability Rating: UL 94V-0 4.62 x 5.24 x 1.43 inches 117.42 x 133.09 x 36.36 mm (W x L x H excluding mating plugs)



3D VIEW
Housing with 24 Pin Receptacle

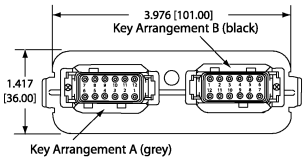
HOUSING DIMENSIONS

Housing Material: High Temperature Nylon (Black)



BOTTOM VIEW

FRONT VIEW 24-PIN RECEPTACLE (NOT TO SCALE)

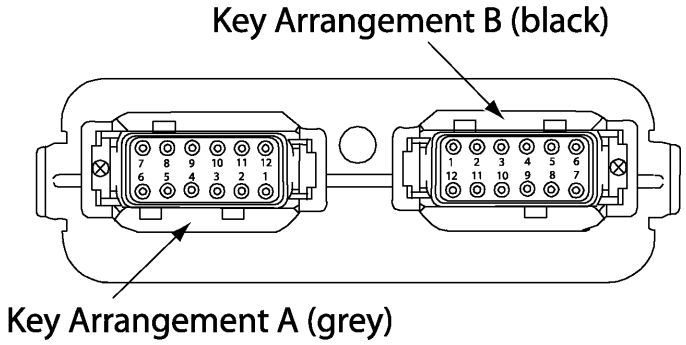


Mating Plug Assemblies for 24-pin receptacle:
Deutsch IPD P/N: DTM06-12SA and DTM06-12SB
with wedgelocks WM12S and contacts
(Contact factory for contact specification.)

Dimensions: inches [mm]
excluding mating plug(s)

Electrical Connections

24-pin receptacle (equivalent TE Deutsch P/N: DTM13-12PA-12PB-R008)
Mating plug: equivalent to the TE Deutsch P/Ns: DTM06-12SA and DTM06-12SB, with 2 wedgelocks (WM12S) and 24 contacts (0462-201-20141).
20 AWG wire is recommended for use with contacts 0462-201-20141.



FRONT VIEW 24 PIN RECEPTACLE

Grey Connector		Black Connector	
1	CAN_H	1	Digital Input 7
2	CAN_L	2	Digital Input 8
3	CAN_Shield	3	Digital Input 9
4	GND	4	Digital Input 10
5	Power -	5	Digital Input 11
6	Power+	6	Digital Input 12
7	Digital Input 6	7	Digital Input 18
8	Digital Input 5	8	Digital Input 17
9	Digital Input 4	9	Digital Input 16
10	Digital Input 3	10	Digital Input 15
11	Digital Input 2	11	Digital Input 14
12	Digital Input 1	12	Digital Input 13

Mounting

Mounting holes sized for ¼ inch or M6 bolts. The bolt length will be determined by the end-user's mounting plate thickness. The mounting flange of the controller is 0.63 inches (16 mm) thick. If the module is mounted without an enclosure, it should be mounted to reduce the likelihood of moisture entry. The CAN wiring is considered intrinsically safe. The 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. All field wiring should be suitable for the operating temperature range of the module. Install the unit with appropriate space available for servicing and for adequate wire harness access (6 inches or 15 cm) and strain relief (12 inches or 30 cm).

Form: TDAX030311-05/31/23