

4 On/Off Valve Machine Controller

7 Digital Inputs for Switches and Proximity Sensors

4 Outputs for On/Off Hydraulic Valves (up to 4A)

3 Sourcing LED Outputs

1 Sinking 50 mA Output

1 CAN (SAE J1939)


12VDC or 24VDC nominal

Rugged Packaging

Programmable with Electronic Assistant® 

P/N: AX022900

Features:

- 12VDC or 24VDC nominal power input
- 7 Digital Inputs for Switches and Proximity Sensors
- 4 Outputs up to 4A for On/Off Hydraulic Valves
- 3 Sourcing LED Outputs (up to 50 mA)
- 1 Sinking 50 mA Output
- 1 CAN (SAE J1939)
- Rugged IP67 packaging and connectors
- Designed for SIL 2 applications with full fault detection on the outputs
- Rugged design for EMC
- Suitable for the environmental and vibration requirements of off-highway equipment applications
- **Electronic Assistant®**  together with an Axiomatic USB-CAN converter links the PC to the CAN bus for user configuration.
- Flexible user programming for application-specific control logic via the CAN based Electronic Assistant.



Applications:

The controller is designed to meet the rugged demands of mobile off-highway equipment applications.

Ordering Part Numbers:

SAE J1939 version Controller: **AX022900**

Accessories: PL-DTM06-12SA-12SB Mating Plug Kit (no DB-9)
(The KIT is comprised of: DTM06-12S, DTM06-12SB, 2 W12S and 24 contacts.
The Axiomatic stock # is FG-IOCTRL-19.)

AX070502 Configuration KIT includes the following.
USB-CAN Converter P/N: AX070501
1 ft. (0.3 m) USB Cable P/N: CBL-USB-AB-MM-1.5
12 in. (30 cm) CAN Cable with female DB-9 P/N: CAB-AX070501
AX070502IN CD P/N: CD-AX070502, includes: **Electronic Assistant®** AX070500 software; EA & USB-CAN User Manual UMAX07050X; USB-CAN drivers & documentation; CAN Assistant (Scope and Visual) software & documentation; and the SDK Software Development Kit.

NOTE: To order this kit, you need only to specify P/N: AX070502.

Technical Specifications:

Inputs

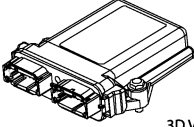
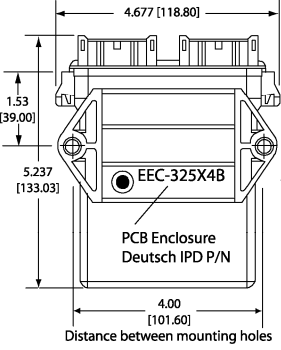
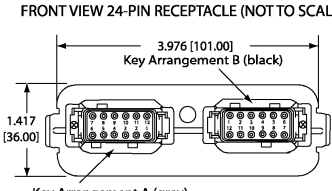
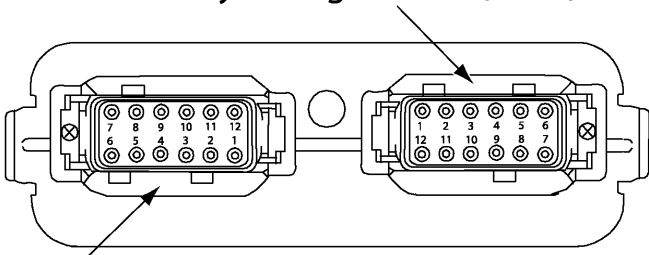
Power Supply Input - Nominal	12VDC or 24VDC nominal (8...32 VDC power supply range)
Protection	Reverse polarity protection is provided. Overvoltage protection up to 60V is provided.
CAN	SAE J1939 Commands CANopen® is available on request.
Digital Signal Inputs	7 ACTIVE HIGH Digital inputs 5V CMOS, +Vps (12VDC or 24VDC) Inputs 4 and 5 can interface with a NO relay. Inputs 6 and 7 can interface with a NC relay. All inputs except Inputs 6 and 7 have a 10kΩ pull-down resistor. Input functionality is user selectable. Inputs are sampled multiple times per millisecond. Protected against shorts to GND or +Vcc
GND Reference	One provided

Outputs

CAN	SAE J1939 Messages
Valve Outputs	4 independent software controlled outputs: On/Off Digital types Current sensing, grounded load High side sourcing up to 4A
Return Outputs	Two independent software controlled outputs: On/Off Digital types Low side sinking up to 4A
Signal Outputs	3 Sourcing Outputs (50 mA) for LED's 1 Sinking Output (50 mA)
Protection	FULL FAULT DETECTION to achieve SIL 2 compliance in a system. Fully protected against short circuit to ground or +Vcc Grounded short circuit protection will engage at 4.5A +/- 0.5A. Unit will fail safe in the case of a short-circuit condition, and is self-recovering when the short is removed.

General Specifications

Quiescent Current	Contact Axiomatic
Microprocessor	32-bit, 512 KByte or larger program memory
Diagnostics	Each input and output channel can be configured to send diagnostic messages to the J1939 CAN network if the I/O goes out of range. Diagnostic data is stored in a non-volatile log. Refer to the User Manual for details.
Additional Fault Feedback	There are several types of faults that the controller will detect and provide a response: unit power supply undervoltage and overvoltage, microprocessor over temperature and lost communication. They can be sent to the J1939 CAN bus.
Compliance	Designed for EMC compliance Designed for the environmental and vibration requirements of off-highway equipment applications
Control Logic	User programmable functionality using Electronic Assistant® service tool The controller consists of a set of internal functional blocks, which can be individually programmed and arbitrarily connected together to achieve the required system functionality. Each functional block is absolutely independent and has its own set of parameters, or setpoints, used to control its functionality. The setpoints are accessible through CAN using Axiomatic Electronic Assistant® (EA) software.
Communications	1 CAN port (SAE J1939) CANopen® is available on request.

User Interface	<p>Electronic Assistant® for <i>Windows</i> operating systems It comes with a royalty-free license for use. To use the Electronic Assistant, P/n: AX070502, an USB-CAN converter links the device's CAN port to a <i>Windows</i>-based PC. An Axiomatic USB-CAN Converter AX070501 is included as part of the Axiomatic Configuration KIT.</p>
Packaging	<p>High Temperature Nylon housing - Deutsch IPD PCB Enclosure (EEC-325X4B) Other packaging is available on request, including a metal enclosure.</p> <p>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)</p> <div style="text-align: center;">  <p>HOUSING DIMENSIONS Housing Material: High Temperature Nylon (Black)</p> <p>3D VIEW Housing with 24 Pin Receptacle</p> </div> <div style="display: flex; justify-content: space-around;"> <div style="text-align: center;">  <p>Height 1.368 [34.75] with 24 pin receptacle</p> <p>Mounting Holes: \varnothing 0.29 [7.40] through 2 pl for 0.25 [6.00] fastener</p> <p>Mounting flange: 16 mm [0.63 in] thick</p> <p>PCB Enclosure Deutsch IPD P/N</p> <p>EEC-325X4B</p> <p>Distance between mounting holes 4.00 [101.60]</p> <p>BOTTOM VIEW</p> </div> <div style="text-align: center;">  <p>FRONT VIEW 24-PIN RECEPTACLE (NOT TO SCALE)</p> <p>3.976 [101.00] Key Arrangement B (black)</p> <p>1.417 [36.00] Key Arrangement A (grey)</p> <p>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.)</p> <p>Dimensions: inches [mm] excluding mating plug(s)</p> </div> </div>
Protection	<p>IP67 rating for the product assembly NOTE : Deutsch IPD connectors are rated at IP67 for submersion (3 ft., 0.9 m) and IP69K for high pressure, high temperature wash down applications.</p>
Weight	<p>0.55 lbs. (0.250 kg)</p>
Temperature Rating	<p>Operating: -40 to 85°C (-40 to 185°F) Storage: -50 to 105°C (-58 to 221°F)</p>
Electrical Connections	<p>Deutsch DTM series 24 pin receptacle (DTM13-12PA-12PB-R008) Mating plug: Deutsch 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. Use dielectric grease on the pins when installing the controller.</p> <div style="text-align: center;"> <p>Key Arrangement B (black)</p>  <p>Key Arrangement A (grey)</p> <p>FRONT VIEW 24 PIN RECEPTACLE</p> </div>

Grey Connector		Black Connector	
Pin #	Function	Pin #	Function
1	50 mA Sourcing Output 1 (LED)	1	50 mA Sinking Output
2	GND Reference	2	CAN_L
3	Solenoid 1 +	3	CAN_H
4	Solenoid 1/2 Return	4	Digital Input 1
5	Solenoid 3 +	5	Digital Input 4 (NO)
6	Battery -	6	Digital Input 5 (NO)
7	Battery +	7	Digital Input 6 (NC)
8	Solenoid 4 +	8	Digital Input 7 (NC)
9	Solenoid 3/4 Return	9	Digital Input 2
10	Solenoid 2 +	10	Digital Input 3
11	50 mA Sourcing Output 2 (LED)	11	CAN_Shield
12	50 mA Sourcing Output 3 (LED)	12	GND Reference

Installation	<p>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.</p> <p>If the module is mounted without an enclosure, it should be mounted to reduce the likelihood of moisture entry.</p> <p>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).</p> <p>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.</p> <p>All field wiring should be suitable for the operating temperature range of the module.</p> <p>All chassis grounding should go to a single ground point designated for the machine and all related equipment.</p>
Network Termination	<p>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.</p>

Notes:

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

Electronic Assistant® is a registered US trade mark of Axiomatic Technologies Corporation.

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.

Form: TDAX022900-05/17/12