Preliminary
TECHNICAL DATASHEET #TDAX031300

10 LED Outputs Controller, SAE J1939

Maximum 600 mA, 28 V per Output
Configurable with the Axiomatic Electronic Assistant
P/N: AX031300

Features

- 10x outputs to power 10 LEDs
- Maximum 600 mA, 28 V per output
- Advanced dimming capabilities (DC and PWM)
- 1x SAE J1939 CAN port
- Operational from 9 to 36 V (12/24 VDC nominal)
- Protected against power surges, transients, under-voltage, over-voltage, and reverse polarity
- TE Deutsch 24-pin connector
- Fully sealed enclosure
- Rugged IP67 protection rating, suitable for humid and vibrating environments
- -40 to 85 °C operating temperature
- Configurable with Axiomatic Electronic Assistant

Applications

High-performance solution for managing LED lighting.

- Off-highway equipment
- Commercial trucks

Ordering Part Number

10 LED Outputs, CAN Controller, SAE J1939, Auto-Baud-Rate Detection - P/N: **AX031300**

CANopen® version - P/N: **AX031301**

Accessories:
Mating Plug Kit: **PL-DTM06-12SA-12SB**
Axiomatic Electronic Assistant: **AX070502** or **AX070506K**

Description

The AX031300 controller supports ten independent LED outputs, each capable of driving up to 600 mA, providing ample power for a variety of lighting configurations of up to 28 V. It provides advanced dimming capabilities, offering both DC and PWM dimming for each output. The PWM dimming is fully programmable, allowing adjustment of duty cycle to achieve precise control over lighting effects. For static applications, each dimming mode can be set to a constant value, eliminating the need for active control. Additionally, the controller includes ramp-up and ramp-down functionality for smooth transitions between brightness levels.

Built on the reliable CAN J1939 protocol, the controller ensures seamless integration into existing vehicle or machine communication networks. This versatile design ensures superior lighting management tailored to a wide range of applications, delivering comprehensive and adaptable LED control for diverse operational requirements.

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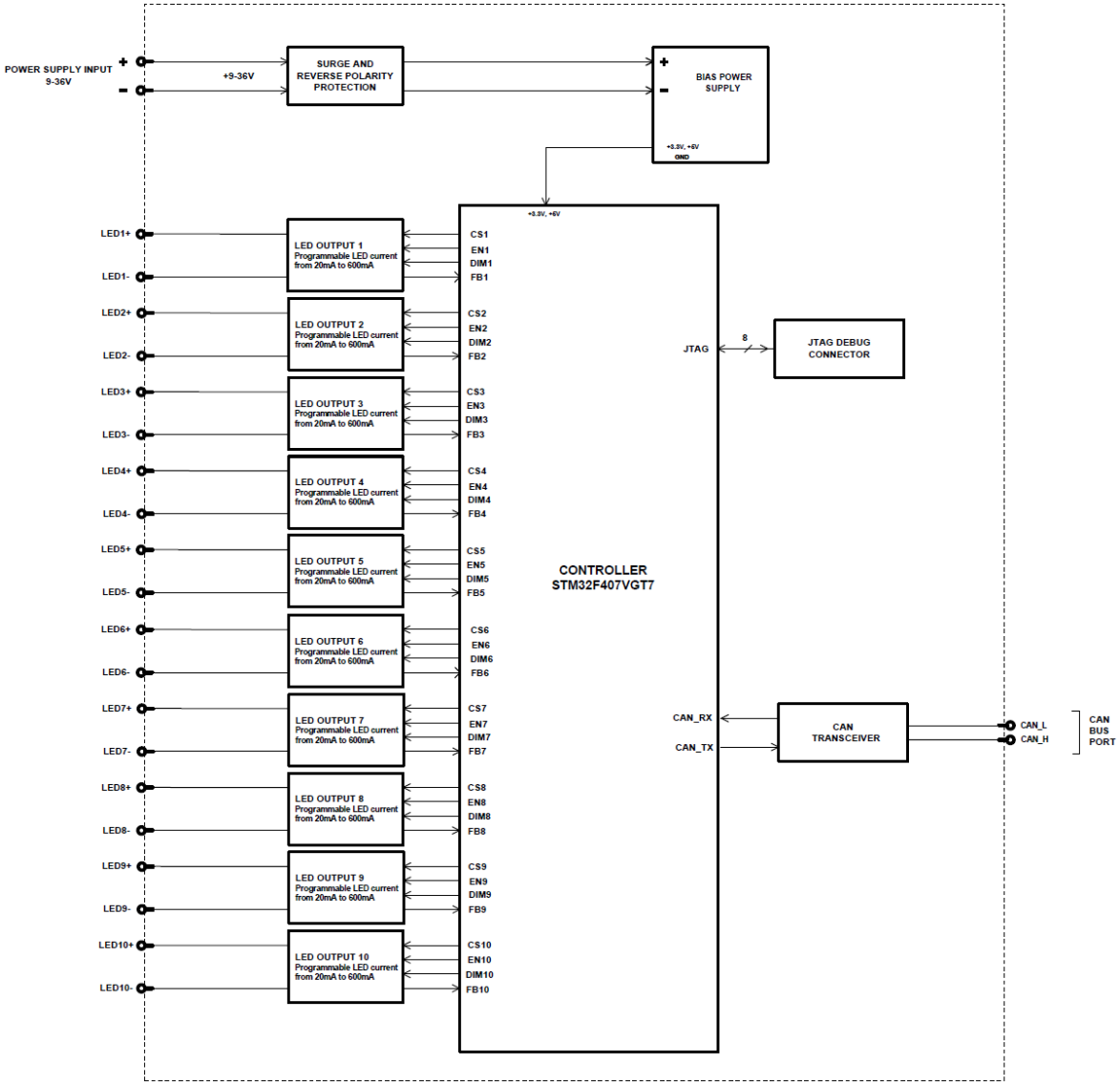
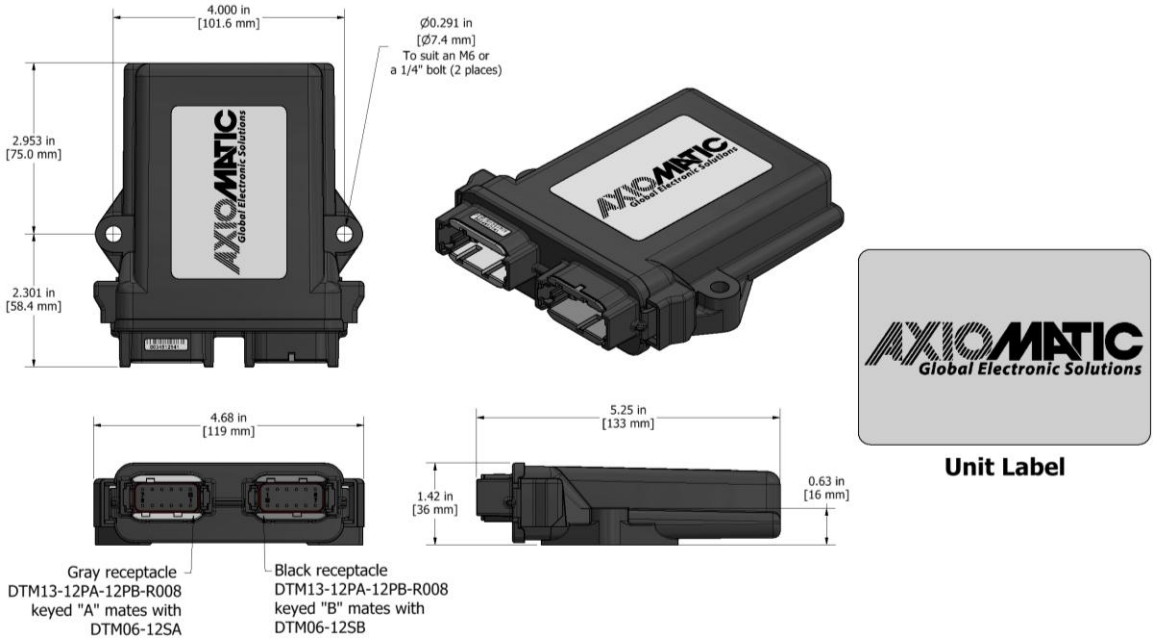
Block Diagram



Dimensional Drawing



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

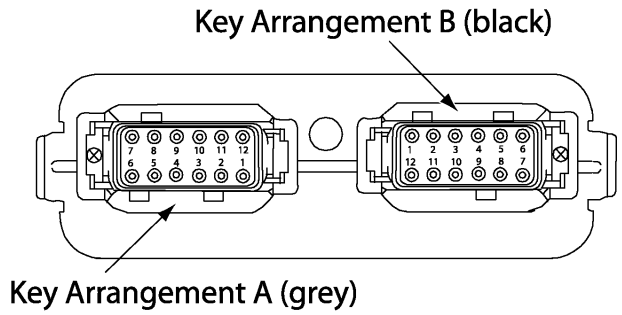
Power Supply	12 or 24 VDC nominal 9 to 36 VDC power supply range
Quiescent Current	TBD mA @ 12 VDC; TBD mA @ 24 VDC typical
Protection	Surge and transient protection Reverse polarity protection Undervoltage protection provided. Hardware shutdown at 6 VDC. Overvoltage protection provided. Hardware shutdown at 38 V.

Outputs

Outputs	10 outputs to power LEDs LED dimming option is provided via CAN. Voltage: 28 VDC max. Current: 80 to 600 mA per output PWM Dimming: Frequency range of 25 Hz to 100 kHz Duty cycle from 0 to 100 %
Protection	Overcurrent and overvoltage protection provided

General Specifications

Microcontroller	STM32F407VGT7 32-bit, 1 MB flash memory
Control Logic	Standard embedded software is provided. Refer to the user manual. *(Application-specific control logic or factory programmed set point file on request)*
Communication	1 CAN port (SAE J1939) Supported baud rate: 125 kbit/s, 250 kbit/s, 500 kbit/s, 667 kbit/s, and 1 Mbit/s with auto-baud-rate detection
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.
User Interface	Axiomatic Electronic Assistant P/Ns: **AX070502** or **AX070506K**
Compliance	RoHS
Operating Conditions	-40 to 85 °C (-40 to 185 °F)
Storage Temperature	-50 to 125 °C (-58 to 257 °F)
Protection	IP67; Unit is conformal coated within the housing.
Weight	0.65 lb. (0.295 kg)
Enclosure	High Temperature Nylon housing, TE Deutsch P/N: EEC-325X4B Flammability rating: UL 94 HB 4.677 in. x 5.254 in. x 1.416 in. (119 mm x 134 mm x 36 mm) Note: W x L x H excluding mating plug Refer to dimensional drawing.
Electrical Connections	24-pin TE Deutsch receptacle P/N: DTM13-12PA-12PB-R008
Mating Plugs	A mating plug kit is available under P/N: **PL-DTM06-12SA-12SB** (includes 1x plug DTM06-12S, 1x plug DTM06-12SB, 2x wedgelocks W12S, 18x sealing plugs 0413-204-2005, and 24x contacts 0462-201-20141)
Installation	Mounting holes are sized for four 5/16 in. or M8 bolts. The bolt length will be determined by the end-user's mounting plate thickness. The mounting flange of the controller is 0.47 in. (12 mm) thick. It should be mounted with connectors facing left or right to reduce likelihood of moisture entry. 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).



Grey Connector		Black Connector	
Pin	**Function**	**Pin**	**Function**
1	LED Output 5 +	1	LED Output 4 -
2	LED Output 6 +	2	LED Output 3 -
3	LED Output 7 +	3	LED Output 2 -
4	LED Output 8 +	4	LED Output 1 -
5	LED Output 9 +	5	CAN Low
6	LED Output 10 +	6	Battery -
7	LED Output 10 -	7	Battery +
8	LED Output 9 -	8	CAN High
9	LED Output 8 -	9	LED Output 1 +
10	LED Output 7 -	10	LED Output 2 +
11	LED Output 6 -	11	LED Output 3 +
12	LED Output 5 -	12	LED Output 4 +

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