USAG - Unique System Automotive Gateway
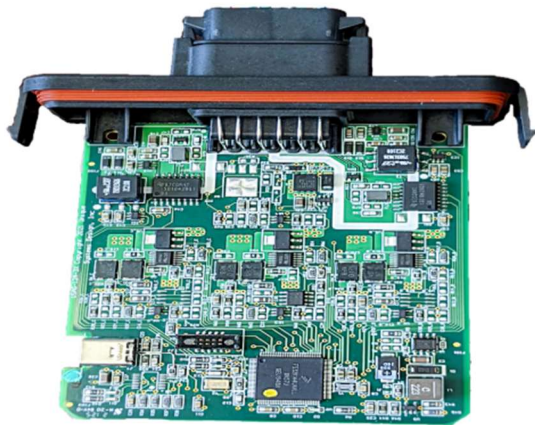
Model: USAG-12A-3X

Description: (3) I/O points. (2) are powered by VBatt, (1) is powered by 8V. The voltage can be configured by changing hardware components. Each of the I/O points can be powered by VBatt, 3.3V, or a custom voltage in the range of 1.2V to VBatt.

Manufacturer: Unique Systems Design, Inc. (USDI)

Product Overview

The Unique Systems Automotive Gateway (USAG) is a rugged ECU that enables advanced routing, monitoring, and diagnostic control between multiple CAN networks in electric or hybrid vehicles. With configurable I/O points, robust diagnostics, and seamless USB-based programming, the USAG simplifies the integration of complex vehicle systems.

Key Features

- USB interface for configuration and real-time monitoring
- Dual-CAN support (11-bit & 29-bit IDs, 250K/500K baud)
- Environmentally sealed module with sealed connectors
- CAN Isolated
- Reverse battery protection and ISO automotive compliance
- 3 software configurable I/O channels (High-Side Driver Output, Low-Side Driver Ouptut, Push-Pull Output, Analog Input, Digital Input)
- Diagnostic output and onboard status monitoring
- Software-selectable CAN routing, signal scaling, and translation
- Diagnostic & signal logging features with timestamped error tracking

Technical Specifications

Parameter	Value
Operating Voltage (VBATT)	8V to 36V
Max High-Side Output Current	Up to 7A
Max Low-Side Output Sink Current	Up to 4A
CAN Interfaces	2
Communication Interfaces	CAN, USB (UART)
Input Configuration	Enable/Sleep, 3 GPIO inputs
Diagnostic Output Logic	Active High (VBATT range)
Operating Temperature	-40°C to +85°C (Automotive Grade)
Enclosure Option	TE CAT-D485-EN17 or equivalent

UNIQUE SYSTEMS AUTOMOTIVE GATEWAY
DATA SHEET

Software for Configuration Available for Additional Purchase

UniqueCANedit (PC Software):
- Load DBC files for CAN signal mapping
- Configure routing, scaling, I/O pin roles
- USB-based field programming

Interfaces and I/O Pinout (12-pin version)

Pin	Name	Function
1	CAN0_L	CAN0 Low
2	CAN0_H	CAN0 High
3	CAN0_SHIELD	Ground Reference
4	GND	Ground
5	GPIO_1	Configurable Input or Output
6	VBATT	Power Supply (8–36V)
7	CAN1_L	CAN1 Low
8	CAN1_H	CAN1 High
9	CAN1_SHIELD	Ground Reference
10	GPIO_5	Configurable Input or Output
11	GPIO_2	Configurable Input or Output
12	GPIO_6	Configurable Input or Output

Mating Connectors and Pins

Duetch

Applications

- Multi-bus vehicle network integration
- EV battery system diagnostics
- Powertrain signal management
- Gateway for fleet telematics or BMS communication
- Smart conversion of legacy bus messages

Ordering Information

Part Number	Description	MOQ	Packaging
USAG-12A-3X	Dual-CAN Gateway ECU with 3 I/O	1	Box

Manufacturer Information

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