Au Group Electronics J1708 Gateway Able to 24 Signals User Manual

May 17, 2022

Contents [hide]

Au Group Electronics J1708 Gateway Able to 24 Signals

Introduction

Au SAE J1708 to J1939 gateway (GW2) is able to 24 signals from SAE J1708/1587 network to J1939 network. It is designed for trucks with SAE J1708/J1587 network only. It will add a J1939 network to those trucks.

Features

- Power Supply: +12V – + 24V DC, 65mA typical, 250mA max
- Operating Temperature: -40˚F to 185˚F (-40˚C to 85˚C)
- TVS (Transient Voltage Suppressor) protection on J1939
- Size: 3-1/8”L X 1-11/16”W X 13/16” H (78mm X 42mm X 21mm)
- 1 LED (Bus Communication)
- 1 RS232 interface (DB9 female connector): can be connected to PC or any device with RS232 serial port for device running status monitoring and in-field programming (default RS232 baud rate: 115.2K).
- 1 BUS interface (DB9 male connector): can be connected to J1939/CAN, J1708/J1587 network, and a power supply (+14.2V DC nominal). The pin-out of the DB9 male “BUS” interface is illustrated in Figure 2.

Factory Reprogrammable Default Settings

	MID on J1708 / J1587 n etwork	**SA on J1939 network**
GW2 device (Off Board Diagn ostic Service Tool 1)	172	249
GW2 device shipped after June 9, 2017	164 (multiplexer)	37 (Off Vehicle Gateway)

MID for Relevant PID (to be received by GW2)

PID	**MID (with priority from high to low)**
84 (0X54) – Road Speed	136, 128, all other MID
245 (0XF5) – Total Vehicle Distance	128, all other MID
247 (0XF7) – Total Engine Hours	128, all other MID

Supported Parameters Cross Reference

Parameters		SAE J1708 / J1587	SAE J1939
1	Reference #	PID: **84**	PGN: **65265** SPN: **84**
	Description	Road Speed	Wheel-Based Vehicle Speed
	Transmission rate	100 ms	100 ms
	Data Range	0.0 to 205.2 km/h (0.0 to 127.5 mph)	0 to 250.996 km/h (0.0 to 155.96 mph)
	Bit Resolution	0.805 km/h (0.5 mph)	1/256 km/h per bit, 0 offset
2	Reference #	PID: **245**	PGN: **65248** SPN: **245**
	Description	Total Vehicle Distance	Total Vehicle Distance
	Transmission rate	10.0 s *	100 ms
	Data Range	0.0 to 691,207,984.6 km (0.0 to 429496729.5 mil)	0 to 526,385,151.9 km (327080569.41 mil)
	Bit Resolution	0.161 km (0.1 mi)	0.125 km/bit, 0 offset

3	Reference #	PID: **247**	PGN: **65253** SPN: **247**
	Description	Total Engine Hours	Engine Hour
	Transmission rate	On request *	On request
	Data Range	0.0 to 214,748,364.8 hr	0 to 210,554,060.75 hr

	Bit Resolution	0.05 h	0.05 hr/bit, 0 offset
4	Reference #	PID: 190	PGN: 61444 SPN: 190
	Description	Engine Speed	Engine Speed
	Transmission rate	100 ms	20ms
	Data Range	0.0 to 16383.75 rpm	0 to 8,031.875 rpm
	Bit Resolution	0.25 rpm	0.125 rpm
5	Reference #	PID: 110	PGN: 65262 SPN: 110
	Description	Engine Coolant Temperature	Engine Coolant Temperature
	Transmission rate	1.0 s	1s
	Data Range	0.0 to 255.0 °F	– 40 to 210 ° C
	Bit Resolution	1.0 °F	1.0 °C
6	Reference #	PID: 100	PGN: 65263 SPN: 100
	Description	Engine Oil Pressure	Engine Oil Pressure
	Transmission rate	1.0 s	0.5s
	Data Range	0.0 to 879.0 kPa (0.0 to 127.5 lbf /in2)	0 to 1000 kPa

	Bit Resolution	3.45 kPa (0.5 lbf/in2))	4 kPa
7	Reference #	PID: 102	PGN: 65270 SPN: 102
	Description	Boost Pressure	Engine Turbocharger Boost Pressure
	Transmission rate	1s	0.5s
	Data Range	0.0 to 219.8 kPa (0.0 to 31.875 lbf/in2)	0 to 500 kPa
	Bit Resolution	0.862 kPa (0.125 lbf/in2)	2 kPa
8	Reference #	PID: 86	PGN: 65265 SPN: 86
	Description	Cruise Control Set Speed	Cruise Control Set Speed
	Transmission rate	10s	100ms
	Data Range	0.0 to 205.2 km/h (0.0 to 127.5 mph)	0 to 250 km/h
	Bit Resolution	0.805 km/h (0.5 mph)	1 km/h
9	Reference #	PID: 91	PGN: 61443 SPN: 91
	Description	Percent Accelerator Pedal Position	Accelerator Pedal Position 1
	Transmission rate	0.1s	100ms

	Data Range	0.0 to 102.0%	0 to 100 %
	Bit Resolution	0.40%	0.40%
10	Reference #	PID: 92	PGN: 61443 SPN: 92
	Description	Percent Engine Load	Engine Percent Load At Current Speed
	Transmission rate	0.1s	50ms
	Data Range	0.0 to 127.5%	0 to 250 %
	Bit Resolution	0.50%	1%
11	Reference #	PID: 105	PGN: 65270 SPN: 105
	Description	Intake Manifold Temperature	Engine Intake Manifold 1 Temperature
	Transmission rate	1s	0.5s
	Data Range	0.0 to 255.0 °F	– 40 to 210° C
	Bit Resolution	1.0 °F	1 ° C

	Reference #	PID: 108	PGN: 65269 SPN: 108
	Description	Barometric Pressure	Barometric Pressure
	Transmission rate	1s	1s

12	Data Range	0.0 to 109.9 kPa (0.0 to 15.9375 lbf/in2)	0 to 125 kPa
	Bit Resolution	0.431 kPa (0.0625 lbf/in2)	0.5 kPa
13	Reference #	PID: 168	PGN: 65271 SPN: 168
	Description	Battery Potential(Voltage))	Battery Potential / Power Input 1
	Transmission rate	1s	1s
	Data Range	0.0 to 3276.75 V	0 to 3212.75 V
	Bit Resolution	0.05 V	0.05 V
14	Reference #	PID: 174	PGN: 65262 SPN: 174
	Description	Fuel Temperature	Engine Fuel Temperature
	Transmission rate	1s	1s
	Data Range	–8192.00 to +8191.75 °F	– 40 to 210 ° C
	Bit Resolution	0.25 °F	1 ° C
15	Reference #	PID: 175	PGN: 65262 SPN: 175
	Description	Engine Oil Temperature	Engine Oil Temperature 1
	Transmission rate	1s	1s
	Data Range	–8192.00 to +8191.75 °F	– 273 to 1735 deg C

	Bit Resolution	0.25 °F	0.03125 deg C
16	Reference #	PID: 183	PGN: 65266 SPN: 183
	Description	Fuel Rate (Instantaneous)	Engine Fuel Rate
	Transmission rate	0.2s	100ms
	Data Range	0.0 to 1.07665 L/s (0.0 to 0.28442190 gal/s or 0.0 to 1023.98 gal/h)	0 to 3,212.75 L/h
	Bit Resolution	16.428 x 10–6 L/s (4.34 x 10–6 gal/s or 1/64 gal/h)	0.05 L/h
17	Reference #	PID: 184	PGN: 65266 SPN: 184
	Description	Instantaneous Fuel Economy	Engine Instantaneous Fuel Economy
	Transmission rate	0.2s	100ms
	Data Range	0.0 to 108.835 km/L (0.0 to 255.996 mpg)	0 to 125.5 km/L
	Bit Resolution	1.66072 x 10–3 km/L (1/256 mpg)	1/512 km/L per bit, 0 offset
	Reference #	PID: 185	PGN: 65266 SPN: 185
	Description	Average Fuel Economy	Engine Average Fuel Economy

18	Transmission rate	10s	100ms
	Data Range	108.835 km/L (0.0 to 255.996 mpg)	0 to 125.498046875 km/L
	Bit Resolution	1.66072 x 10–3 km/L (1/256 mpg)	1/512 km/L
19	Reference #	PID: 187	PGN: 65264 SPN: 187
	Description	Power Takeoff Set Speed	Power Takeoff Set Speed
	Transmission rate	10s	100ms
	Data Range	0.0 to 16383.75 rpm	0 to 8,031.875 rpm
	Bit Resolution	0.25 rpm	0.125 rpm
20	Reference #	PID: 83	PGN: 61443 SPN: 1437
	Description	Road Speed Limit Status	Road Speed Limit Status
	Transmission rate	1s	50ms
	Data Range	1=active / 0=not active	00 – Active / 01 – Not Active
	Bit Resolution	Binary	4 states/2 bit, 0 offset

	Reference #	PID: 85	PGN: 65265 SPN: 595
	Description	Cruise Control Status	Cruise Control Status

21	Transmission rate	0.2s	100ms
	Data Range	1=active /0=not active	00 – Cruise control switched off /01 – on
	Bit Resolution	Binary	
22	Reference #	PID: 89	PGN: 65264 SPN: 981
	Description	Power Takeoff Status	Engine PTO Governor Accelerate Switch
	Transmission rate	1s	100 ms
	Data Range	1=active / 0=not active	00 – Off / 01 – On
	Bit Resolution	Binary	4 states/2 bit, 0 offset
23	Reference #	PID: 71	PGN: 65252 SPN: 590
	Description	Idle Shutdown Timer Status	Engine Idle Shutdown Timer State
	Transmission rate	1s	1s
	Data Range	1=active / 0=not active	00 – Inactive /01 – Active
	Bit Resolution	Binary	4 states/2 bit, 0 offset
	Reference #	PID: 121	PGN: 61440 SPN: 571

24	Description	Engine Retarder Status	Retarder Enable – Brake Assist Switch
	Transmission rate	0.2 s	100 ms
	Data Range	1=on / 0=off	00 Retarder – brake assist disabled /01 – enabled
	Bit Resolution	Binary	4 states/2 bit, 0 offset

Per SAE J1708 definition, Total Vehicle Distance (PID: 245) on J1708 network is broadcasted every 10 seconds, however, per SAE J1939 definition, transmission rate for Total Vehicle Distance on J1939 network is 100 milliseconds, so every time after GW2-1708-1939 device is powered up, there will be a period up to 10 seconds the “Total Vehicle Distance ” on J1939 network will displays as 0xFF FF FF FF (255 255 255 255) as there are no “Total Vehicle Distance” data available from J1708 network during at that time frame.

Timestamp (ms)	P	R	DP	Srr	exid	PF	PS	SA	PGN	DLC	data1	data2	data3	data4	data5	data6	data7	data8
70627	6	0	0	0	1	254	224	37	65248	8	255	255	255	255	255	255	255	255
…	6	0	0	0	1	254	224	37	65248	8	255	255	255	255	255	255	255	255

8047 8	6	0	0	0	1	254	224	37	65248	8	255	255	255	255	21	83	98	0

Hardware Connection

1. Following is an example of how GW2 (Au J1708 to J1939 gateway) was used in the lab environment, Au J1939 Data center captured the PGN 65265, 65248, 65253 on J1939 / CAN network, the result is displayed on Au J1939 Data Center PC optional PC was used for demonstration purpose (Figure 3). Two 120-ohm terminal resistor must present on each end of the J1939 network backbone.
2. On Figure 3, the J1708 ECU broadcasts “road speed” and “total vehicle distance” signals on J1708 network. Au GW2 receive these two parameters (road speed, odometer signals) on J1708 network . Then it will perform the following:
    1. convert J1587 “Road Speed” to J1939 “wheel based road speed” and transmit PGN 65265 on J1939 / CAN
    2. convert J1587 “Total Vehicle Distance” to J1939 “Total Vehicle Distance” and transmit PGN 65248 on J1939 / CAN network.
3. In the mean time, it also output ASCII string on RS232, which can be displayed on PC screen using Tera Term (open source serial communication software) for monitoring purpose, please see details at the next paragraph for AT command

    Au-Group-Electronic-J1708-Gateway-Able-to-24-Signals-fig-3
4. On Figure 3, A J1939 device (Au J1939 Interpreter) was used to send out Engine Hour request command to J1939 network (using PGN 59904), once GW2 receive the request, it will send the request to J1708 ECU, then J1708 ECU will reply with the current Total Engine Hours and send it over to J1708 network (PID 247). GW2 then convert Total Engine Hour to SAE J1939 Engine Hour and transmit SPN 247 (PGN 65243) on J1939 / CAN network. Engine Hour data flow is illustrated in Figure 4

    Au-Group-Electronic-J1708-Gateway-Able-to-24-Signals-fig-4

Optional Accessories

On the Bus side, use CBL-CAN-485-01 or CBL-CAN-485-03 to connect Au J1708 to J1939 Gateway to power supply, J1708 network, and J1939 network: connect black wire to GND, red wire to +12V/24V DC Power Supply , Yellow wire to CAN-L, Green

wire to CAN-H), Brown wire to J1708 B -, Violet wire to- J1708 A

	**CBL-CAN-485-01:** A 6-wire color coded cable which can be u sed for Au J1939 devices, Au J1708 devices. One end of the cable is DB9 female connector; it is designed to mate with Au devices on BUS side. The other side of the cable is a pig tail with 3 pairs of twisted color coded wires: Red wire: Power supply, e.g. +12V DC Bla ck wire: Ground Yellow wire: CAN High Green wire: CAN Lo w Violet: J1708A+ Brown: J1708B-
	**CBL-CAN-485-03** CBL-CAN-485-03 is a 0.33 meter CAN/J1939/J1708 cable wit h DB9 female connector and 9-way round threaded plug (HD1 6-9-1939S). This cable can be used to connect Au J1939 / J1708 products to trucks and school buses equipped with 9 pin diag nostic connectors.

AT Command	**Description**
AT J1708_BUS=ON	J1708 Network is ON
AT J1708_MID=164	Device MID is setting at 164
AT J1939_BUS=ON	J1939 Network is ON

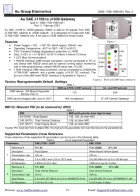
AT J1939_SADDRESS=CLAIMED	Device Source Address Clamed Status – Cla imed
AT J1939_SA=37	Device Source Address is setting at 37
AT ROAD_SPEED=126.5MPH	Road Speed is 126.5 mile per hour
AT HR=950049.0HR	Engine Hour is 950049.0 hours
AT TVD_ODO=950050.0MILE	Total vehicle distance is 950050.0 mile
AT DV=14.239V	Device voltage is 14.239 volts

AT Command

AT Command	**Description**	**Command to request info rmation or change default setting**
AT ID=GW2-1708-1939-001	Device ID is: GW2-1708-1939-001	display once at power up, c an be requested using: **AT ID=?\r\n**
AT FW=0.1B(32K-BUILD061 72017-01)	Device Firmware	display once at power up, c an be requested using: **AT FW=?\r\n**
AT SN=1612	Device Serial Number	display once at power up, c an be requested using: **AT SN=?\r\n**
AT DV=14.677V	Device Voltage	Broadcast every 1 second
AT J1708_BUS=OFF	J1708 Network Status i s off	Broadcast every 1 second

AT J1708_MID=164	Device Message ID – Default setting at 164 (Multiplex)	**AT MID=165\r\n** (change device default MID to 165)
AT J1939_BUS=OFF	J1939 Network Status is off	Broadcast every 1 second
AT J1939_SADDRESS=NOT CLAIMED	Device Source Address Clamed Status – not claimed	Broadcast every 1 second
AT J1939_SA=37	Device Source Address is set at 37	**AT SA=249\r\n** (change device's default SA to 249)

Documents / Resources

	Au Group Electronics J1708 Gateway Able to 24 Signals [pdf] User Manual J1708, J1939, Gateway Able to 24 Signals

References

- Au Group Electronics: Home for Innovation and DIY Fans

Related Posts

Gator Group GatorPro X1 LoRa Gateway User Manual

Gator Group GatorPro X1 LoRa Gateway Download the Helium App and create a Helium Wallet Please download "Helium…

[Beijer ELECTRONICS JetWave 4110L Outdoor Industrial Grade LoRa Gateway User Guide]

Version 1.0.0 People & Technology Connected JetWave 4110L Quick Start Guide 2 Reading the built-in Modbus Registers on…

[Wenzhou Morning Electronics MHUB Wireless Smart Gateway Instruction Manual]

Wenzhou Morning Electronics MHUB Wireless Smart Gateway Product Specifications Product name Wireless Smart Gateway Electrical Parameters 5V 1A…

[AU-XT ANC User Guide]

QUICK START GUIDE @Ausounds @Ausounds @Ausounds @Ausounds Ausounds Intelligence, LLC. 15300…

Au Group Electronics

Au Group Electronics, Gateway Able to 24 Signals, J1708, J1939

Next Post—
Au Group Electronics GW1 Au J1939 to J1708 Gateway User Manual

Leave a comment

Your email address will not be published. Required fields are marked *

Comment *

Name

Email

Website

Save my name, email, and website in this browser for the next time I comment.

Post Comment

Search

Search ...

Search

Manuals+,