GNX Vehicle Support

APPLICATION NOTE

This document details high level features and functions of GNX vehicle support, including:

- Supported vehicles and data parameters
- Available documentation for GNX vehicle telemetry applications

The GNX product line supports the following vehicle bus electrical interfaces (see also GNX module support matrix on page 2):

- J1708/J1587—older heavy-duty vehicles and accessories.
  - 9600bps RS-485, 6 or 9 pin Deutsch connector (grey)
- J1939—Newer/current heavy-duty vehicles
  - 250Khz CAN, 9 pin Type1 connector (black)
  - 500khz CAN, 9 pin Type 2 connector (green)
  - 250Khz/500Khz CAN, 14 pin RP1226 connector
- J1979 ISO 15765-4 “OBDII”—passenger and light-duty trucks (2008+)
  - 11bit and 29bit 500Khz CAN, 16pin J1962 connector

GNX does not support older OBD-II interfaces, including J1850, ISO-9141, KWP-2000.

For long-term reliable reporting, installation that includes connection to vehicle ignition (or similar, such as an oil pressure switch, that indicates when the engine is running) is recommended.

GNX module support matrix

GNX Model	OBD-II	J-1708	J-1939
GNX-6	Yes	Yes	Yes
GNX-6 Companion	Yes	Yes	Yes
GNX-5P	Yes	Yes	No
GNX-3	No	No	No

Typical GNX-5P/6 Installation

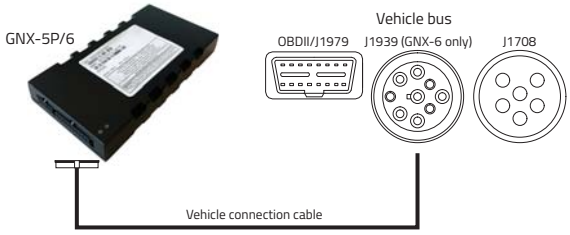

Figure 1: GNX-5B/6 Installation diagram

Typical GNX-6 Companion Installation

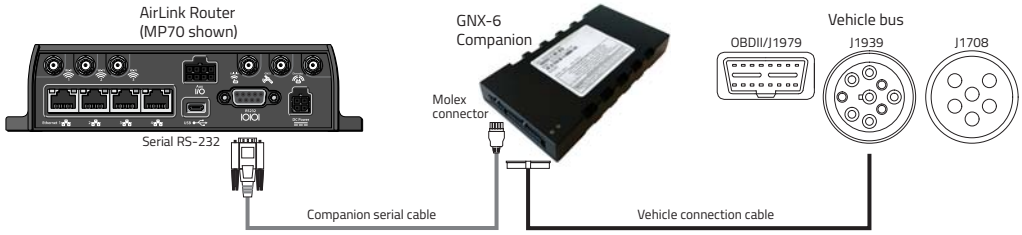

Figure 2: GNX-6 Companion Installation diagram

Supported OBD-II Parameter IDs

OBD-II Parameter ID (PIDs) come in two types:

1. Standard OBD parameters, on a request/response basis.

The minimum set of PIDs is defined by the OBD/ISO spec, and are mostly emission/fault related. GNX supports the following PIDs, which are the most useful items for customers:

- VIN
- Speed
- RPM
- MIL
- DTC codes

GNX also supports Distance Since Codes Cleared (DSCC), which allows a relative measure of the odometer. DSCC requires manual intervention to set the starting value at installation time.

2. Manufacturer proprietary PIDs. The PIDs vary by vehicle manufacturer, model, and year. GNX supports a limited number, of which you may find the following most useful:

- "Dash" odometer
- Seat belts
- Gear selector

Supported Heavy-Duty (J1708/J1939) Parameter Group Numbers

The standards provide definitions for all useful data, so reverse engineering is generally not required (with some exceptions).

However, vehicles are not required to support any particular data item, so what is reported is highly vehicle dependent. In some cases the vehicle manufacturer/dealer needs to enable the reporting of data.

Options for Vehicles without a Vehicle Bus

Some customer fleets are a mix of older vehicles do not have a vehicle bus.

Options for these deployments include providing the GNX device a proxy for ignition-on sense:

- By wiring the vehicle's ignition-on circuit to the GNX device's ignition sense input, GNX can report the engine's ON/OFF state. In the example, GNX cannot detect that the vehicle is moving because there is no connection to the vehicle bus.
- By wiring a proxy for an ignition-on circuit (such as a running light that is only on when the vehicle's ignition is turned on) to the GNX device's ignition sense input, GNX can report engine ON/OFF state. As in the previous case, GNX cannot detect that the vehicle is moving because there is no connection to the vehicle bus.

No other information, besides location, can be reported for vehicles without a connection to the vehicle bus.

Supported Light-Duty Vehicles and Vehicle Parameters

Table 1 lists vehicles that support the proprietary PIDs noted in the table.

Table key:

- Y—the GenX configuration server has the ability to supply the correct parameters needed to obtain the proprietary data to the GNX based on the reported VIN.
- N—you must apply the correct parameters by editing the config file or sending a command to the device.

Table 1: Supported vehicles and vehicle parameters

Manufacturer & Model	Model Year[a]	Dash Odometer	Seat Belt
Ford Cmax Hybrid	2008-2014	N	N
Ford Edge	2008-2014	Y	N
Ford Escape	2008-2014	Y	N
Ford Explorer	2008-	Y	Y[b]
Ford F-150	2008-	Y	Y
Ford F-250	2008-	Y	Y
Ford F-350	2015-	Y	Y
Ford F-450	2015-	Y	Y
Ford F-550	2015-	Y	Y
Ford Focus	2008-2014	Y	N
Ford Flex	2008-2014	Y	N
Ford Fusion	2008-	Y	N
Ford Taurus	2015-	Y	N
Ford Transit	2015	Y	N
Ford Transit Wagon	2016	Y	N
Ford Transit Connect	2014-	Y	N
GMC Sierra	2008-	Y	Y
GMC Equinox	2008-	Y	Y
GMC Impala	2008-	Y	Y
GMC Cruze	2008-	Y	Y
GMC Silverado	2008-	Y	Y
GMC Terrain	2008-	Y	Y
GMC Savana	2008-	Y	Y

Table 1: Supported vehicles and vehicle parameters

Manufacturer & Model	Model Year[a]	Dash Odometer	Seat Belt
GMC Canyon	2008-	Y	Y
Jeep Cherokee	2008-	N	N
Jeep Grand Cherokee	2008-	N	N
Jeep Patriot	2008-	N	N
Chrysler 200	2008-2018	Y	N
Chrysler Dart	2013-2018	Y	N
Chrysler Pacifica	2013-2018	Y	N
Dodge 4500	2008-2012	Y	N
Dodge 5500	2013-2018	Y	N
Dodge RAM	2008-2012	Y	N
Dodge RAM 1500	2013-2018	Y	Y
Dodge RAM 5500	2013-2018	Y	N
Dodge Promaster/Promaster City	2015	N	N
Dodge Journey	2012-2018	Y	N
Dodge Charger	2013-2018	N	N
Lincoln MKX	2008-	N	N
Honda Civic	2008-	N	TBD
Honda CRV	2008-	N	TBD
Honda Ridgeline	2008-	N	TBD
Nissan Sentra	2008-	N	TBD
Nissan Juke	2008-	N	TBD
Toyota Corolla	2008-	Y	TBD

a. Not all model years have been tested
b. 2015 and later (not all model years have been tested)

Supported Heavy-Duty Vehicle Parameters

- BusStatus
- BusOdometerD
- BusOdometer
- JFuelEcon
- JAmbientTemp
- JCargoTemp
- CoolantTemp
- VehicleSpeed
- EngineLoad
- EngineSpeed(rpm)
- EngineThrottle(%)
- FuelEconNG
- FuelConsumed
- DeltaFuelConsumed
- FuelConsumedNG
- DeltaFuelConsumedNG
- DerivedOdometer
- JPTOStatus
- JPTOEngageStatus
- J1708AUXIO
- JTripDistance
- FuelLevel1
- FuelLevel2
- J1939PTOStatus
- J1939AUXIO
- TripFuel
- OilTemp
- OilPressure(kPa)
- J1939AUXADC
- JBattery(V)
- TotalFuel
- TotalNGFuel
- TotalIdleFuel
- TotalIdleNGFuel
- EngTotalHours
- EngIdleHours
- SeatBeltStatus
- CCS
- WaterFuel
- ThrottlePos
- EngCoolLevel
- EngCoolPres
- FuelDelPres
- TransOilTemp
- ParkBrakeSW
- BrakeAppPres
- BrakePedalPos

Note: Contact Sierra Wireless support for an up-to-date list.

Additional Available Documentation

The following application notes are available on the Sierra Wireless Source:

- Using AirLink Vehicle Telemetry Configuration
- Installing GNX-6 Companion
- Configuring ALEOS Devices for GNX-6 Companion
- Configuring MG90 for GNX-6 Companion

Document History

Revision number	Release date	Changes
1	February 2021	First release
2	July 2021	Revised “Options for Vehicles without a Vehicle Bus”

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