

1939CM517-AP J1939 Translator 2022 - 2023 Ford E-Transit (G-1939CM517-AP)



Introduction

The 1939CM517-AP translator plugs into a vehicle's Gateway connector and acquires proprietary vehicle data which it translates and transmits over a separate J1939 protocol network. This allows 3rd party J1939 devices to be installed on light duty vehicles which do not support J1939 protocol. By moving 3rd party devices off of the OEM network and onto a separate J1939 network, OEM network bandwidth traffic problems are eliminated as well as conflicts between multiple 3rd party devices.

Installation Instructions

Disconnect vehicle battery before proceeding with installation.



WARNING
Disconnect the battery to
prevent setting a check engine
light.

IMPORTANT—READ BEFORE INSTALLATION

It is the installer's responsibility to route and secure all wiring harnesses where they cannot be damaged by sharp objects, mechanical moving parts and high heat sources. Failure to do so could result in damage to the system or vehicle and create possible safety concerns for the operator and passengers. Avoid placing the module where it could encounter strong magnetic fields from high current cabling connected to motors, solenoids, etc. Avoid radio frequency energy from antennas or inverters next to the module. Avoid high voltage spikes in vehicle wiring by always using diode clamped relays when installing upfitter circuits.

CAUTION

All electronic products are susceptible to damage from Electrostatic Discharge or ESD. Ground yourself before handling or working with the module and harnessing by first touching chassis ground, such as the barrel of the cigarette lighter.



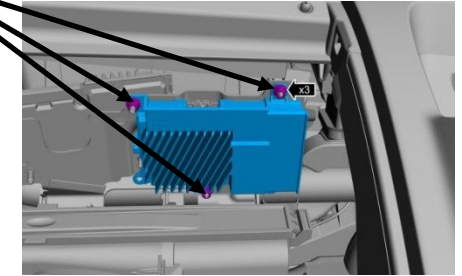
J1939CM517 Module

Locate the module in an area away from any external heat sources (engine heat, heater ducts, etc.). Do not actually mount the module until all wire harnesses are routed and secure (last step of the installation is to mount the module).

Installation Instructions (Continued)

Ford 26-pin Data Link Harness

1. Locate the vehicle's Gateway Module. It will be mounted behind the passenger-side glovebox.
2. Press the tabs on the sides of the glove compartment and fully lower it.
3. Remove the 3 nuts securing the Gateway module to the vehicle.
4. Remove the 26-pin connector from the side of the Gateway module and plug into the mating connector on the 1939CM517-AP harness.
5. Plug the male 26-pin connector from the 1939CM517-AP harness into the Gateway module.
6. Reinstall the Gateway module and the glove compartment.
7. Plug the free end of the Data Link harness into the mating 6-pin connector on the 1939CM517-AP module.



To 3rd Party Device



To OEM Gateway Module

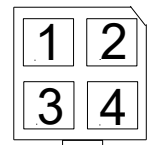
1939CM517 Translator Connection Output

The 1939CM517-AP Data Link Harness has a 4-Pin White connector that provides J1939 CAN 1 High and CAN 1 Low signals for connecting to a 3rd party device.

Pin 1 Green Wire - J1939 CAN 1 High Pin 2 Red Wire - Battery Voltage

Pin 3 Blue Wire - J1939 CAN 1 Low Pin 4 Gray Wire - Ground

Mating connectors: Molex 39012040 Termination: 39000038 18-24 awg 39000077 16 awg



Initial Installation:

1. Start with vehicle in PARK, Park Brake APPLIED, Ignition ON, Engine OFF, and 1939CM517-AP module **unplugged** from the 6-pin connector.
2. Plug in the 6-pin 1939CM517-AP connector.
3. On this initial power up sequence, the module requests the vehicle VIN as well as checks to see what Optional PGNs are available on the vehicle. The module stores this information internally and uses it on subsequent boot-up sequences.
4. To verify a successful initial power-up sequence, observe the module LEDs; there should be no LEDs ON. If "scrolling" LEDs (1-4) are seen, another LED will also be ON solid – this indicates a problem occurred while powering up (see Error Mode below). In this case, try repeating the initial power up sequence again. If errors persist, contact Intermotive Technical Support.

Operation

Normal Operation: Once power is applied to the module or it wakes up on CAN traffic, there is a period of 2 seconds before the module starts transmitting data on the J1939 port. If there is no connection on the J1939 port, the module will sense this and stop transmitting until proper equipment (terminated with 120 ohms) is attached.

Inactive Operation: When the key is turned off, and the vehicle CAN traffic stops, the module ceases operation after 20 sec. and goes into a low-power state. It will remain in this state until it detects CAN traffic again at which point it will wake up and begin transmitting data.

Diagnostic Mode: The 1939CM517-AP module has 2 diagnostic modes that enable its LEDs. This can be helpful in troubleshooting or determining what vehicle data is available. Pressing the Test button on the module will cause it to enter the "TestDiag" mode. A second press enables "BaudDiag" mode. After approximately 3 seconds, the module will exit these diagnostic modes and shut off the LEDs. The module continues to operate normally in all modes. The LEDs are defined as follows:

TestDiag Mode (first Test button press)

LED1 – toggles at a 1 sec. rate to indicate TestDiag Mode
LED2 – toggles when vehicle HSCAN data is being received
LED3 – toggles when data is being *received* on the J1939 port (rare)
LED4 – toggles when data is being received over laptop connection
LED8 – toggles when data is being transmitted out the J1939 port (normal)

BaudDiag Mode – This mode can be used to view or change the J1939 baud rate if necessary. To change the baud rate, vehicle transmission must be out of park and the service brake must be applied. If conditions are not met, the module will display the current baud rate by blinking LED(s) as defined below 3 times. If conditions are met, the module will display the new baud rate with the LED(s) staying solid for 3 seconds. The LEDs are defined as follows:

LED1 only – 250kbps
LEDs 1 & 2 – 500kbps

Error Mode – certain events can lead to a condition which halts translator operation. This can be observed by LEDs 1 – 4 scrolling and one of three (6, 7, or 8) LEDs being constantly ON. While there can be several causes for the three errors listed below, the most common fault is poor or no connection to the Gateway connector. Error Modes are defined as follows:

LED6 – Module failed to receive all information about which optional PGNs are available.
LED7 – Invalid VIN received. Module may be installed in currently unsupported vehicle.
LED8 – Module timed out (about 8 sec) waiting for a VIN to be received during installation.

Module mounting

Ensure all harness are properly connected and routed, and are not hanging below the dash are. Mount the module as described on page one and secure using supplied screws or double sided tape.

Function	SPN	PGN
VSS - Vehicle Speed	SPN84	PGN65265
SoC - State of Charge	SPN7895	PGN64706
PB - Park Brake	SPN619	PGN65274
TR - Transmission Range	SPN163	PGN61445
ODO - Odometer	SPN917	PGN65217
AAT - Ambient Air Temperature	SPN171	PGN65269
Tire Location	SPN929	PGN65268
Tire Pressure	SPN241	PGN65268
High Voltage Battery Voltage	SPN5919	PGN61584
AC Charger Status	SPN8207	PGN61590
DC Charger Status	SPN13171	PGN64184
12V Battery SoC	SPN5981	PGN64694
MIL - Malfunction Indicator Lamp		PGN61452
HVAC - HVAC Status		PGN61452
Key Position / Ignition Status		PGN61452
DRLKS - Door Locks		PGN61452
12V Battery Voltage		PGN61452
Ignition Cycles		PGN61450
Charging Stage		PGN61450
Charger Type		PGN61450
Ford Pro Power Status		PGN61450
J1939 Output Protocol Version		PGN61450
1939CM517 Firmware Version		PGN61450

All PGNs having an SPN designation will be formatted and transmitted as stated in the SAE J1939-71 (Rev. AUG2002) standards document. Some of the PGNs on the previous chart do not have SPN's specified. These are custom-defined and have chassis data in the locations described below. NOTE: For 2-bit definitions below, a value of "01" indicates a TRUE condition (as defined), a "00" indicates a FALSE condition, and if both bits are HIGH, data is to be considered invalid **unless otherwise specified**.

PGN 61452 Format:

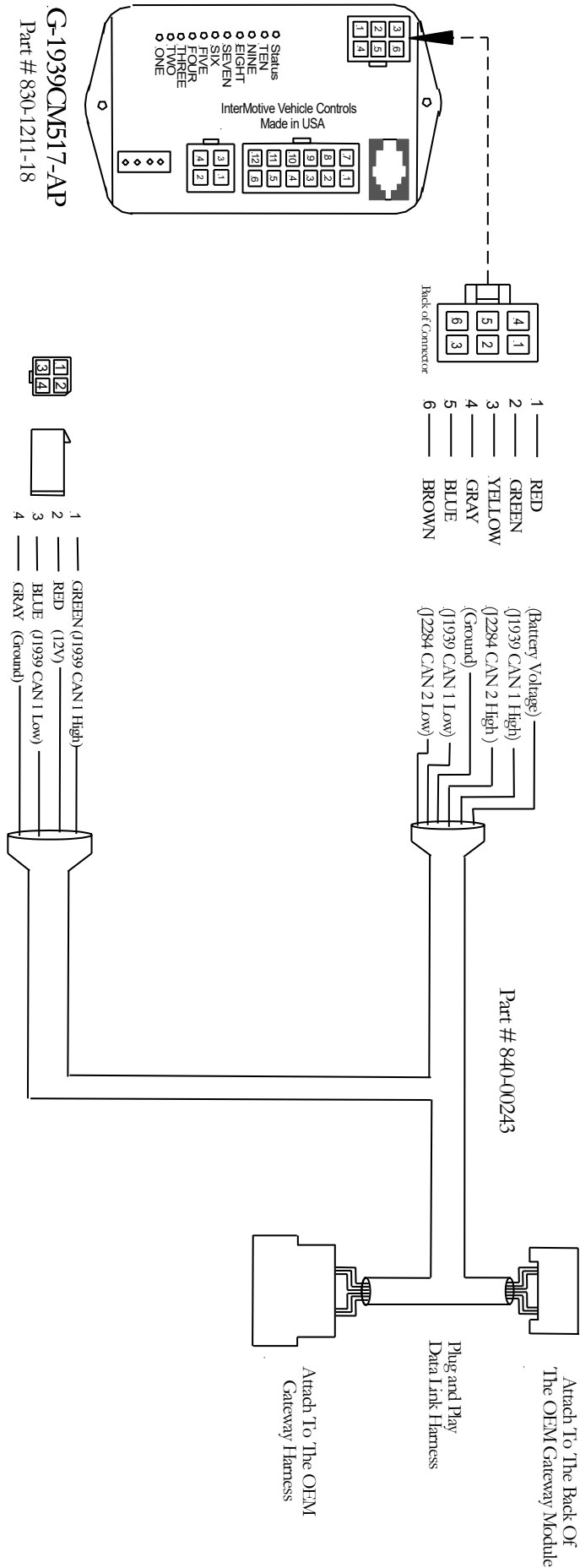
Key Position (4 bits)	Byte 0 bits 0-3
	1 = OFF (0001)
	4 = Run (0100)
	8 = Crank (1000)
	F = Data invalid (1111)
MIL (2 bits)	Byte 2, bits 2 & 3
AC clutch (2 bits)	Byte 2, bits 6 & 7
Door Locks (3 bits)	Byte 4, bits 0-2
	001 – All doors locked
	010 – All doors unlocked
	011 – Driver door unlocked
	111 – Data invalid
12V Battery Voltage (2 Bytes)	Bytes 6 & 7

PGN 61450 Format:

Ignition Cycles (2 bytes)	Bytes 0 & 1
Charging Stage (2 bits)	Byte 2, bits 0 & 1
	00 – Not Charging
	01 – Bulk
	10 – Absorption
	11 – Float
Charger Type (2 bits)	Byte 2, bits 2 & 3
	00 – Not Charging
	01 – Level 1
	10 – Level 2
	11 – Level 3
Ford Pro Power Status (3 bits)	Byte 3, bits 4 & 5
	00 – Off
	01 – Front On
	10 – Front & Rear On
J1939 Output Protocol Version (1 byte)	Byte 5
1939CM517 Firmware Version (2 bytes)	Bytes 6 & 7

NOTES on certain PGN data:

ODO is read in meters (as defined) and the resolution is 10m for Ford vehicles.
 VIN must be requested - J1939 REQ PGN 59904 using destination address 65260. VIN will then be transmitted in a multi-frame packet to this address (65260).



Submit product registration at www.intermotive.net

If the 1939CM517-AP-A fails any step in the Post Installation Test, review the installation instructions and check all connections. If necessary, call InterMotive Technical Support at (530) 823-1048.