Q-358R1

SVE BULLETIN

SPECIAL VEHICLE ENGINEERING – BODY BUILDERS ADVISORY SERVICE

Website: www.FordBBAS.com (click "Contact Us")
Toll-free: (877) 840-4338

FORD PRO - UPFITTER INTEGRATION SYSTEM (UIS)

REVISION	UPDATE	REVISION DATE
Q-358R1	UPDATED WITH INFORMATION REGARDING ADDITIONAL UIS CAPABILITIES & PARTS	30JUN2023
Q-358	INITIAL RELEASE	22FEB2023

MODEL(S) AFFECTED:
2023MY SUPER DUTY PICKUP & CHASSIS CAB - if equipped.

- Pickup UIS ***Optional*** - **Order Code 18A**
- Chassis Cab is ***Standard***, but UIS **Delete** is available - **Order Code 18Y** *(Due to supplier chip shortages, UIS availability maybe impacted)*

DESCRIPTION:
Vehicles Built with UIS **AFTER** June 12, 2023, have updated software and the following functionality:

- Upfitter Integration System (UIS) Module, Pigtail Harness/Blunt Cut-Jumper provided, J1939 Signals Access, and J1939 Reference documents.
- Programmability via the UIS Logic Tool (https://www.fordpro.com/en-us/upfit/uis) including customizable soft switches on the Sync screen.

Vehicles Built with UIS **BEFORE** June 12, 2023, contains the following components and functionality:

- Upfitter Integration System (UIS) Module, Pigtail Harness/Blunt Cut-Jumper provided, J1939 Signals Access, and J1939 Reference documents.

NOTE: Pre-June 12, 2023, built trucks with UIS Module can be updated to enable the programming capability with the UIS Logic Tool. The UIS module, APIM, and BCM modules will require a software reflash to allow communication/functionality with the UIS Tool. A software reflash can be performed with the use of FDRS tool.

UIS – INFORMATION & SUPPORT
This UIS website https://www.fordpro.com/en-us/upfit/uis will provide information and support for fleet and upfitter communities with information about the Ford Upfitter Interface System (UIS). Below is a sampling of information that is available:

- System & Network Requirements
- UIS Overview
- UIS Logic Tool Application
- UIS Tool Quick Start Guide
- UIS Features
- Introductory Training

In order to obtain access, you will need to have a valid **Upfitter Fleet Identification Number** (FIN) and username/password.

Support for UIS website user log-in, inquiries can be directed to Ford Pro Contact Center of Excellence (Ford Pro CCoE) at: (1-800-343-5338)

ELECTRICAL OVERVIEW *(FROM PRIOR BULLETIN)*:
IMPORTANT – 2023MY Super Duty has a new electrical architecture and includes CAN encryption. The new electrical architecture will no longer use the Gateway Module/OBDII connector, instead it will have a central gateway module connecting all the networks and provide channels via the standalone OBDII connector for diagnostic commands.

> **NOTE: *The new Super Duty electrical architecture will no longer provide a wired circuit for electronic park brake signal/status output.*** The electronic park brake signal/status output will be now available as a signal output for vehicles equipped with the UIS. (This signal would be equivalent to sending a diagnostic command to the ABS module for Park Brake status or gaining access to the vehicle CAN network and decode the message/signal.)

UPFITTER INTEGRATION SYSTEM OVERVIEW:
The 23MY Super Duty provides an improved upfitter experience through the Ford Pro Upfitter Integration System (UIS) that simplifies the upfitting process by providing vehicle CAN output access in the preferred J1939 format while enabling one-way communication between the second unit body (SUB) and the vehicle.

As noted above, the UIS programming capability will remain unfunctional until it is programmed using the UIS logic tool (J1939 Signals will remain present in UIS). After the UIS has been programmed, the UIS can command functions via SYNC screen utilizing input/output control circuits specific to vocational upfit.

NOTE: UIS can be installed to a vehicle if it was not ordered or equipped from factory (module installation referenced later in this document and/or referenced in the BBLB). Additionally, replacement of UIS is available through authorized Ford Dealers – *UIS availability is impacted as a result of chip shortages.*

- UIS Service Part Number: **PC3Z-14G372-B*** (Reference Engineering Part Number: PC3T-14G589-A*)
- UIS Pigtail Harness/Blunt Cut-Jumper Service Part Number: **PC3Z-14A303-A** (Reference Engineering Part Number: PC3T-14A303-D*)

UIS POWER ON/OFF STRATEGY
UIS is powered at all times during 'Key-On' and 'Accessory' modes – UIS module will be 'awakened' and/or 'asleep,' in a maximum of 5 seconds. In 'Key-Off' mode, the UIS will not transmit any constant signal(s).

- AWAKE FUNCTION: The 'awaking' conditions are of two types:
  - a soft interruption (network management call from CAN) and
  - a circuit stimulation (any change of state inputs).
- ASLEEP FUNCTION: The trigger to go to sleep is based on the network management call from CAN network, this is dependent on conditions required for the module to sleep and/or 'Key-Off' mode.

The UIS provides access to a subset (see below) of J1939 Signal access.

UIS OUTPUT CUSTOMER CAN-SIGNAL ACCESS

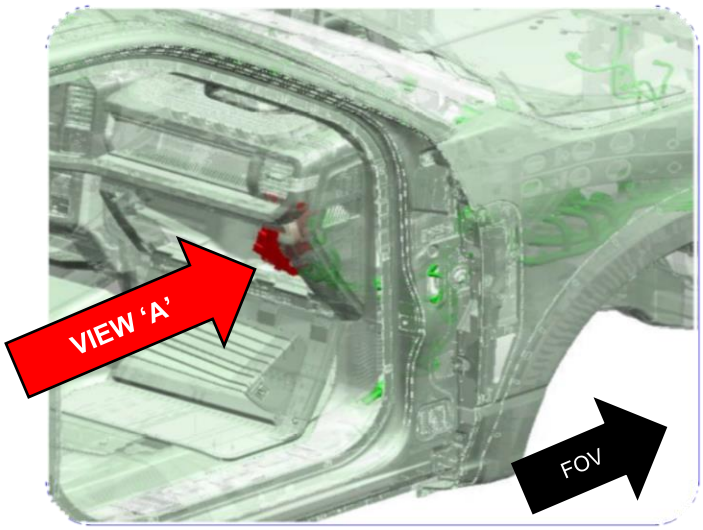
1. *Access to the UIS and connectors is achieved by Glove compartment removal*
2. *Reference body builder layout book for detailed UIS module connectors and necessary modifications*
3. *Identified circuits will be used to perform the cut and splice to obtain the signals*
4. *Ensure Ford Repair Guidelines are followed*
5. *Reinstall the UIS, and glove compartment following the reinstallation procedure outlined by Motorcraft Service, www.motorcraftservice.com.*
6. *UIS J1939 DBC files available by request fordbbas.com. DBC can be referenced to decode J1939 signals.*

Further details on CUSTOMER CAN-SIGNAL ACCESS can be found later in document or in the vehicle BBLB.

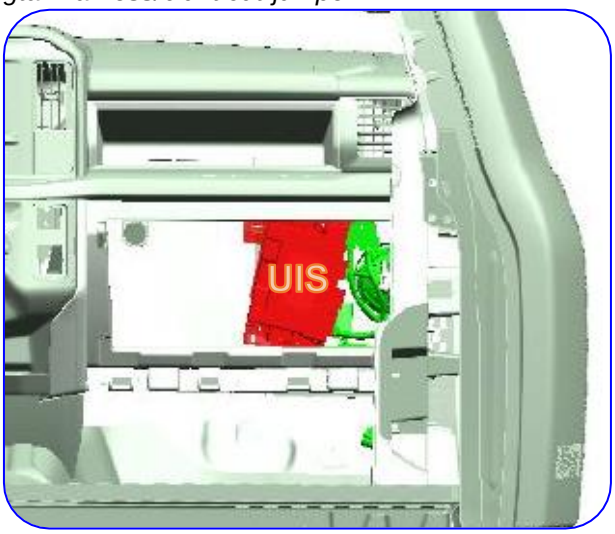
UIS LOCATION

2023MY SUPER DUTY **-** The UIS module is located in the interior of the vehicle on the passenger side, behind and below the lower glove compartment, along with Ford provided pigtail harness/blunt cut-jumper.

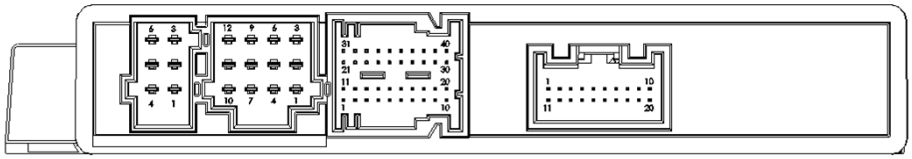
NOTE: Functionality will be provided via the Ford Provided pigtail harness/blunt cut-jumper.



PASSENGER SIDE OF VEHICLE SHOWN



VIEW IN 'A'



REFERENCE - UIS CONNECTOR SIDE

UIS J1939 OUTPUT SIGNALS:

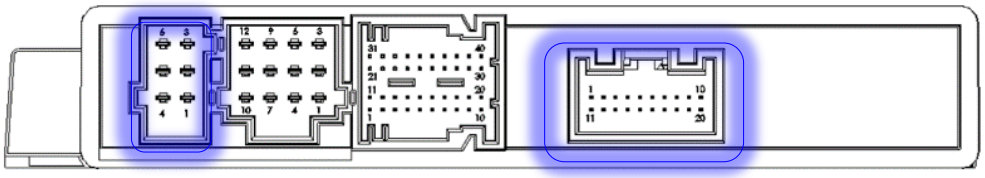
Below is a sample list of UIS J1939 signals available.

ABS Active	Day	Vehicle Inhibit Motion
Ambient Air Temperature	Hours	Auxiliary Digital Input 1 Status
Air Conditioner Compressor	Minutes	Auxiliary Digital Input 2 Status
Accelerator Pedal Position	Seconds	Auxiliary Digital Input 3 Status
HVAC Recirculation Switch	Year	Auxiliary Digital Input 4 Status
Battery Current	Headlamp Low Switch Status	Auxiliary Digital Input 5 Status
Battery Voltage	Headlamp High Switch Status	Auxiliary Digital Input 6 Status
Battery Temperature	Headlamp Light Switch Status	Auxiliary Digital Input 7 Status
Brake Switch	Front Blower Speed	Auxiliary Digital Input 8 Status
Battery State Of Charge	Ignition Status	Auxiliary Digital Input 9 Status
Cruise Control Mode	Man Rgen Soot	Auxiliary Digital Input 10 Status
Day Running Light	Max Defroster Switch Status	Auxiliary Digital Input 11 Status
Door 1 Status	Odometer Master Value	Auxiliary Digital Input 12 Status
Hood Status	Oil Pressure Warning	Auxiliary Digital Input 13 Status
Door 2 Status	Perimeter Alarm Status	Auxiliary Digital Input 14 Status
Door 3 Status	Park Brake Switch Status	Auxiliary Digital Input 15 Status
Door 4 Status	Park Brake Status	Auxiliary Digital Input 16 Status
Door 5 Status	Park Light Headlamp Status	Auxiliary Digital Output 1 Status
MIL Lamp	Regenerative Braking Status	Auxiliary Digital Output 2 Status
Emergency Light Siren	Second Row Passenger Buckle Status	Auxiliary Digital Output 3 Status
Engine Status	Second Row Driver Buckle Status	Auxiliary Digital Output 4 Status
Engine Speed	Second Row Driver Middle Buckle Status	Auxiliary Digital Output 5 Status
Engine Coolant Temperature	Second Row Middle Buckle Status	Auxiliary Digital Output 6 Status
Engine Oil Temperature	Second Tow Passenger Middle Buckle Status	Auxiliary Digital Output 7 Status
Powertrain Status	Steering Wheel Angle	Auxiliary Digital Output 8 Status
First Row Driver Buckle Status	Stop Lamp Brake Request	Automatic Engine Idle Shutdown Override
First Row Passenger Buckle Status	Third Row Driver Buckle Status	Wheel Based Vehicle Speed
Front Fog Light Status	Third Row Middle Buckle Status	Vehicle Identification Number
Rear Fog Light Status	Third Row Passenger Buckle Status	Acceleration Rate
Fuel Level Percentage	Tire Pressure	Long Rate
Oil Transmission Temperature	Park System	Roll Rate
Neutral Gear	Left Turn Light Status	Vertical Rate
Current Gear	Right Turn Light Status	Yaw Rate
Select Gear	Hazard Light Switch Status	Front Wiper Switch Status

J1939 UIS OUTPUT CUSTOMER CAN-SIGNAL ACCESS

1. Access to the UIS and connectors is achieved by glove compartment removal. For glove compartment, please reference the Motorcraft Service Procedure.

2. With the glove compartment removed, reference the UIS module and 2 connectors: Black 20-Way & Blue 6-Way (image highlighting below)



UIS 6-Way Connector View ***UIS 20-Way Connector View***

3. Disconnect both the Black 20-Way and Blue 6-Way from the module to ensure no power is being delivered to module. (Reference 23MY Super Duty Body Builder Layout Book for circuits/pin-outs details.)

4. The Black 20-Way circuits will be used to access the J1939 signals. Focusing on the Black 20-Way connector, carefully begin to unravel/unwrap the flocked tape around the harness such that enough workable length is available to expose the wire circuits. Stow away the unraveled/unwrapped flock tape so it can be reused for re-installation later.

5. Locate the J1939 wired circuits 3 & 4 (wire 3 CAN ' **+** ' GN/BU & wire 4 CAN ' **–** ' GY/BU). These 2 circuits will be used in order to perform the cut and splice to obtain the signals.

   NOTE: The circuits remaining in the harness will not be used and no longer need to be connected. Recommend taping the circuits back securely and stowed away from the splice.

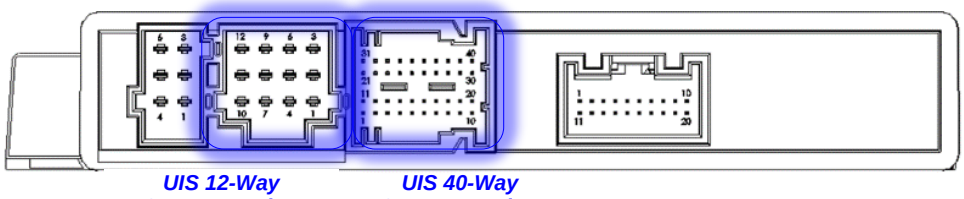
   NOTE: Follow the Ford approved procedure for soldering circuits to complete the splice. These are CAN network circuits that are a twisted pair, and for the added length ensure it meets the twists per foot requirement (4 twists per 50mm)

6. Complete the splice, following the Ford Repair Guidelines, rewrap the flock tape removed (Step 4) or use an acceptable substitute ensuring that circuits are wrapped within 50mm from the back of the connector

7. Reconnect the Black 20-way, and Blue 6-way to the UIS module

8. Reinstall the UIS, and glove compartment following the reinstallation procedure outlined by Motorcraft Service, www.motorcraftservice.com .

UIS OUTPUT CUSTOMER CAN-SIGNAL ACCESS



UIS 12-Way Connector view *UIS 40-Way Connector View*

The following UIS sample list of Channel/Signal Outputs for the 12-Way and 40-Way.

UIS 12-WAY CONNECTOR OUTPUTS

PIN #	SIGNAL NAME	DESCRIPTION
1	MFA_7	HS Switch Output 5A, Supply_2
2	MFA_5	HS Switch Output 5A, Supply_1
3	MFA_6	HS Switch Output 5A, Supply_1
4	MFA_8	HS Switch Output 5A, Supply_2
5	MFA_4	HS Switch Output 10A, Supply_2
6	MFA_1	HS Switch Output 5A, Supply_1
7	MFA_3	HS Switch Output 5A, Supply_2
8	MFA_20	HB_1 Output 5A, Supply_1
9	MFA_19	HB_1 Output 5A, Supply_1
10	MFA_22	HB_2 Output 5A, Supply_2
11	MFA_21	HB_2 Output 5A, Supply_2
12	MFA_2	HS Switch Output 10A, Supply_1

UIS 40-WAY CONNECTOR OUTPUTS

CIRCUIT NAME	PIN #	SIGNAL NAME	DESCRIPTION	CIRCUIT NAME	PIN #	SIGNAL NAME	DESCRIPTION
LSD 1	1	MFA_15	LS Switch Output 0.5A, PWM	HSD 10	21	MFA_11	HS Switch Output 0.5A, PWM, Supply_2
LSD 2	2	MFA_16	LS Switch Output 0.5A, PWM	HSD11	22	MFA_12	HS Switch Output 0.5A, PWM, Supply_2
LSD 3	3	MFA_13	LS Switch Output 1A, PWM	DAL 1	23	MFE_9	Digital Input, low active
N/A	4	REL1.NO	Relay_1 Output NO, 1A	DAL 2	24	MFE_11	Digital Input, low active
N/A	5	REL1.COM	Relay_1 Output COM	DAL 3	25	MFE_13	Digital Input, low active
N/A	6	REL1.NC	Relay_1 Output NC, 1A	DAL 4	26	MFE_15	Digital Input, low active
DAH 1	7	MFE_17	Digital Input, high active	ANL IN 1	27	MFE_1	Analog Input
DAH 2	8	MFE_19	Digital Input, high active	ANL IN 2	28	MFE_3	Analog Input
DAH 3	9	MFE_21	Digital Input, high active	ANL IN 3	29	MFE_5	Analog Input
DAH 4	10	MFE_23	Digital Input, high active	ANL IN 4	30	MFE_7	Analog Input
LSD 4	11	MFA_17	LS Switch Output 0.5A, PWM	HSD 12	31	MFA_9	HS Switch Output 0.5A, PWM, Supply_1
LSD 5	12	MFA_18	LS Switch Output 0.5A, PWM	HSD 13	32	MFA_10	HS Switch Output 0.5A, PWM, Supply_1
LSD 6	13	MFA_14	LS Switch Output 1A, PWM	DAL 5	33	MFE_10	Digital Input, low active
N/A	14	REL2.NO	Relay_2 Output NO, 1A	DAL 6	34	MFE_12	Digital Input, low active
N/A	15	REL2.COM	Relay_2 Output COM	DAL 7	35	MFE_14	Digital Input, low active
N/A	16	REL2.NC	Relay_2 Output NC, 1A	DAL 8	36	MFE_16	Digital Input, low active
DAH 5	17	MFE_18	Digital Input, high active	ANL IN 5	37	MFE_2	Analog Input
DAH 6	18	MFE_20	Digital Input, high active	ANL IN 6	38	MFE_4	Analog Input
DAH 7	19	MFE_22	Digital Input, high active	ANL IN 7	39	MFE_6	Analog Input
DAH 8	20	MFE_24	Digital Input, high active	ANL IN 8	40	MFE_8	Analog Input

For every input into UIS, the voltage range must be within the recommend minimum and maximum range, reference the Super Duty Body Builder Layout Book or refer to the Ford Pro™ | Commercial Fleet Vehicles, Services & Telematics website, https://www.fordpro.com/en-us/upfit/uis .

For every Pulse Width Modulation (PWM), the maximum and minimum frequencies should be within the recommended high and low amperage outputs, reference the Super Duty Body Builder Layout Book or refer to the Ford Pro website, https://www.fordpro.com/en-us/upfit/uis .

NOTE: UIS Grounding - recommendation is that the UIS must be grounded up to 40 Amps, and additional grounds to be routed/connected to chassis/frame. IT IS NOT RECOMMENDED TO UTILIZE EXISTING OEM GROUNDS, follow recommended grounding guidelines in General Body Builder Layout Book or www.motorcraftservice.com).

NOTE: During vehicle cranking and/or stop-start function, the voltage may drop below 9-Volts, UIS will momentarily become interrupted (pause in functionality), until the voltage is recovered and UIS will resume.

Refer to the Body Builder Layout Book for additional guidelines and recommendations. If you have any questions, please contact the Ford Body Builders Advisory Service as shown in the header of this bulletin.