

# SS 581428 - eB2 Replacement Danfoss Powertrain Inverter Programming

## **Applicable Vehicles**

FCCC eB2 (Jouley) Gen 1 with Danfoss Powertrain Inverter

## **Symptoms**

Chassis communication issues arise upon replacement of Danfoss Powertrain Inverter.

## **Issue**

During prescribed service procedures to replace the Danfoss Powertrain Inverter, the inverter will not come configured and will need to be configured upon installation.

## **Solution**

Configure the replacement Danfoss Powertrain Inverter using UQM Motor x3 and the supplied configuration file.

Labels :

**Busses**

Add tags

## **Attachments**





Comment



# DAIMLER TRUCK

## Danfoss Powertrain Inverter Programming (EB2 Jouley)

Connection Interface Creation, Software Installation and Usage Instruction



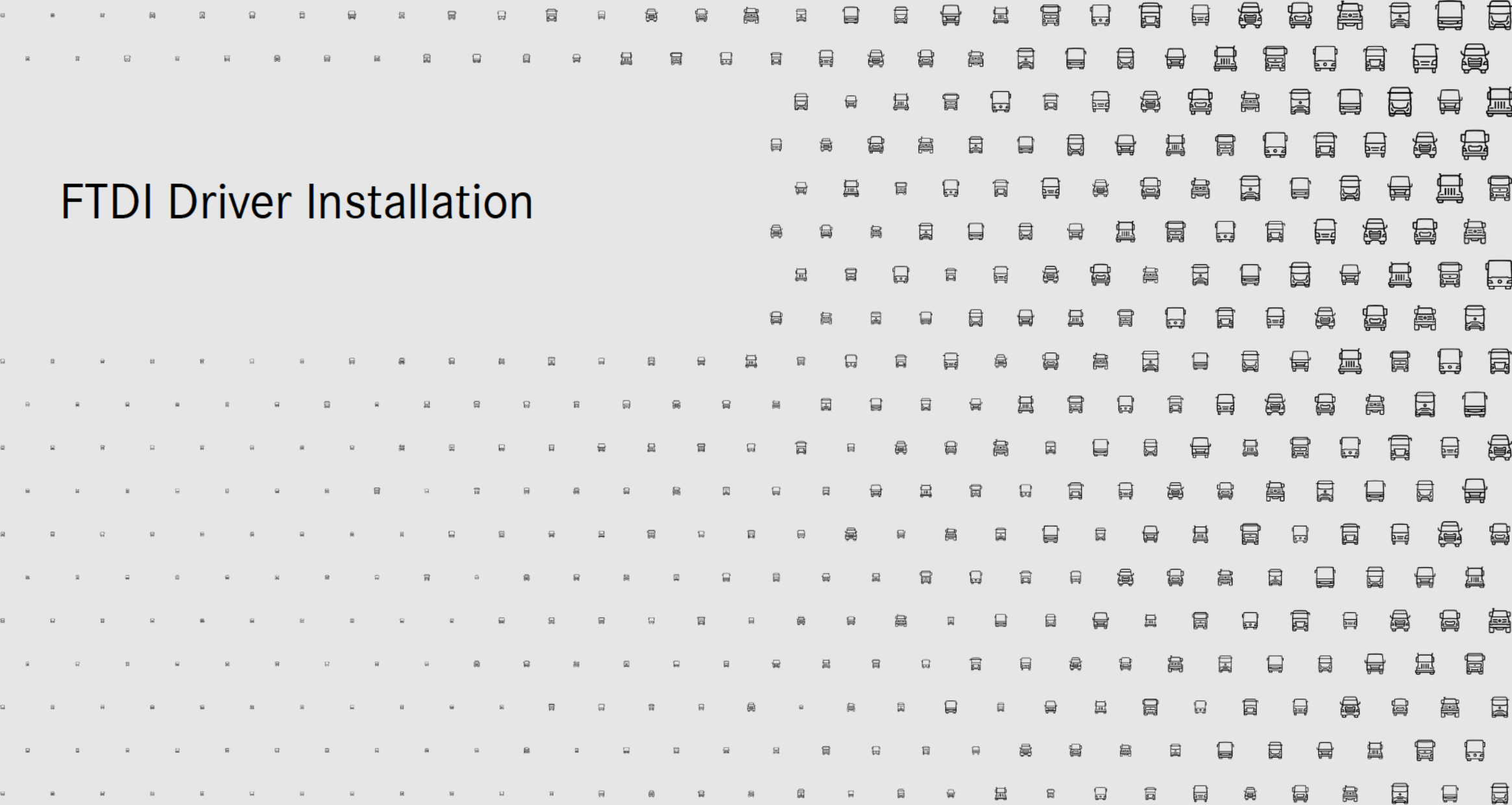
# Purpose

- This will allow dealers to obtain event logs from suspect components
- This will allow dealers to apply configurations to new (blank) components

# Required Items

- FTDI VCP Drivers ([Page 4](#))
- UQM Motor x3 Inverter Software ([Page 6](#))
- RS232 to USB Adapter (Recommend Oikwan) ([Page 8](#))
- Configuration .qsc File (PP220\_400V\_RRCAN\_500kbps\_Modified.qsc) (Included in download package)
- Inverter Harness ([Page 8](#))

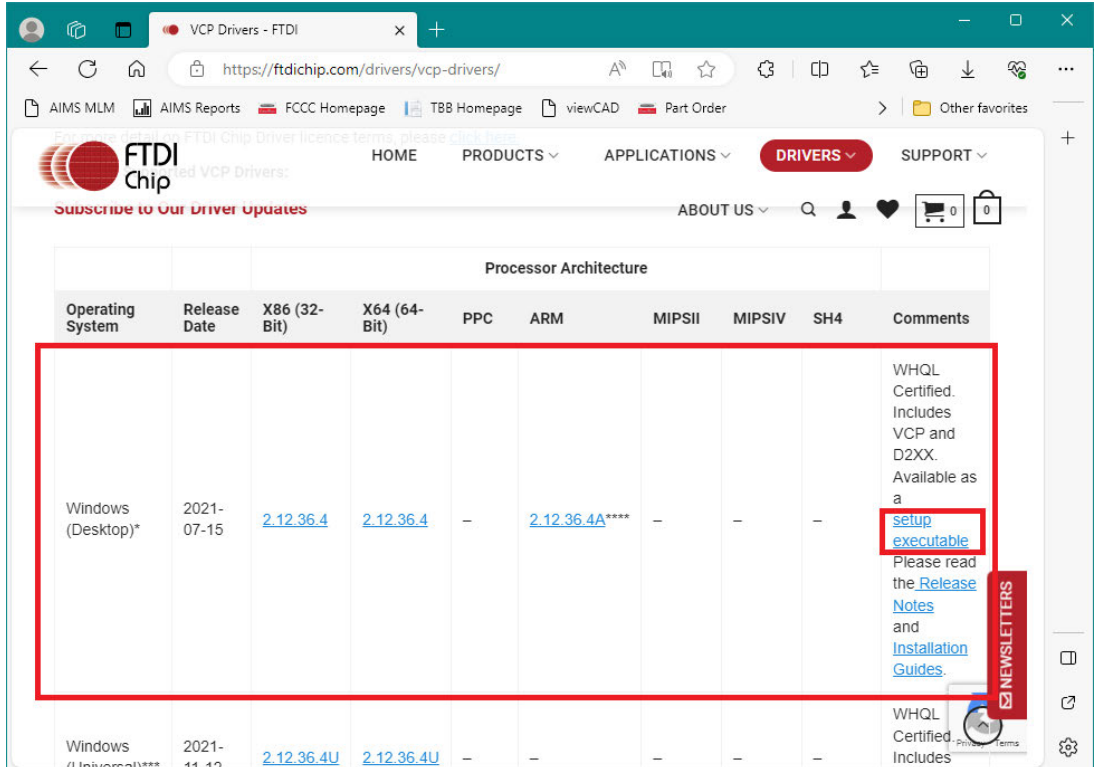
# FTDI Driver Installation



# FTDI Driver Installation

- Download the latest driver package from ftdichip.com (Or supplied in download package)
- The appropriate drivers for a Windows PC can be obtained from <https://ftdichip.com/drivers/vcp-drivers/> -> Windows (Desktop) -> setup executable as pictured below
- Run the downloaded executable to install the VCP driver package

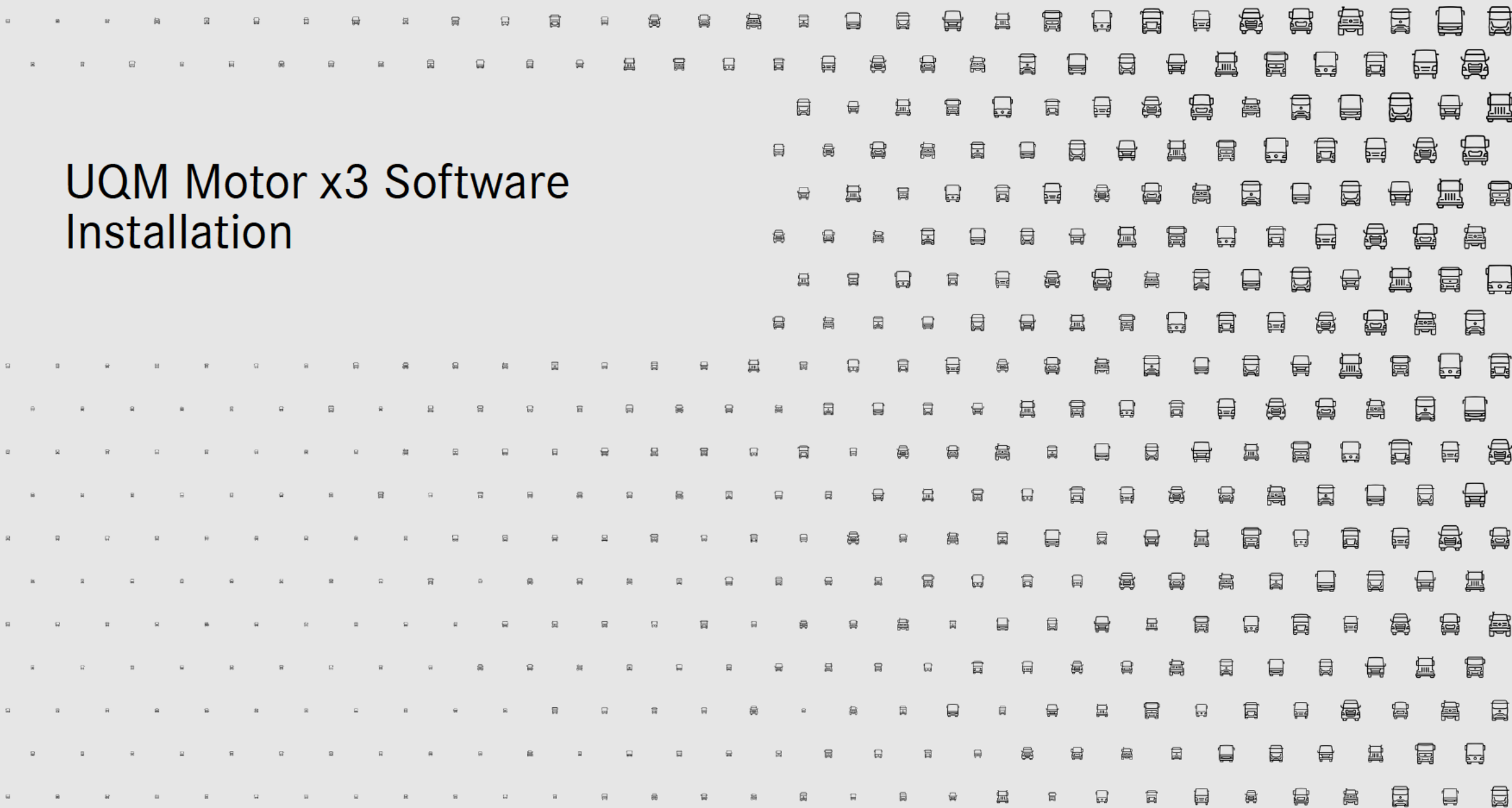
NOTE: If you already have FTDI Chip drivers installed as a result of SS 292 (Body AC Controller Update), you may skip this step.



The screenshot shows the FTDI website's 'VCP Drivers' page. A table lists various driver packages categorized by processor architecture. The table has columns for Operating System, Release Date, X86 (32-Bit), X64 (64-Bit), PPC, ARM, MIPSII, MIPSIV, SH4, and Comments. A red box highlights the row for 'Windows (Desktop)\*' with a release date of '2021-07-15'. The 'Comments' column for this row contains the text 'WHQL Certified. Includes VCP and D2XX. Available as a setup executable' with a red box around the 'setup executable' link. Below this, there are links for 'Release Notes' and 'Installation Guides'. A 'NEWSLETTERS' sign-up button is visible on the right side of the page.

Operating System	Release Date	X86 (32-Bit)	X64 (64-Bit)	PPC	ARM	MIPSII	MIPSIV	SH4	Comments
Windows (Desktop)*	2021-07-15	<a href="#">2.12.36.4</a>	<a href="#">2.12.36.4</a>	-	<a href="#">2.12.36.4A****</a>	-	-	-	WHQL Certified. Includes VCP and D2XX. Available as a <a href="#">setup executable</a> . Please read the <a href="#">Release Notes</a> and <a href="#">Installation Guides</a> .
Windows (Universal)***	2021-11-12	<a href="#">2.12.36.4U</a>	<a href="#">2.12.36.4U</a>	-	-	-	-	-	WHQL Certified. Includes

# UQM Motor x3 Software Installation



# UQM Motor x3 Inverter Software Installation

- Navigate to the Download Center on DTNA Portal
- Locate the “Danfoss Powertrain Inverter Configuration.zip” package and download the folder
- Install the UQM Motor x3 Inverter Software

# Connection Interface Creation

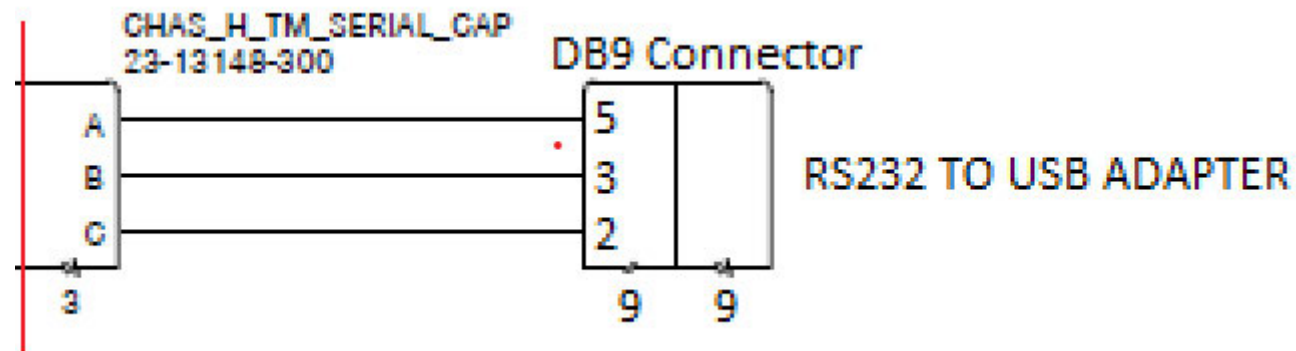


# Connection Interface Creation

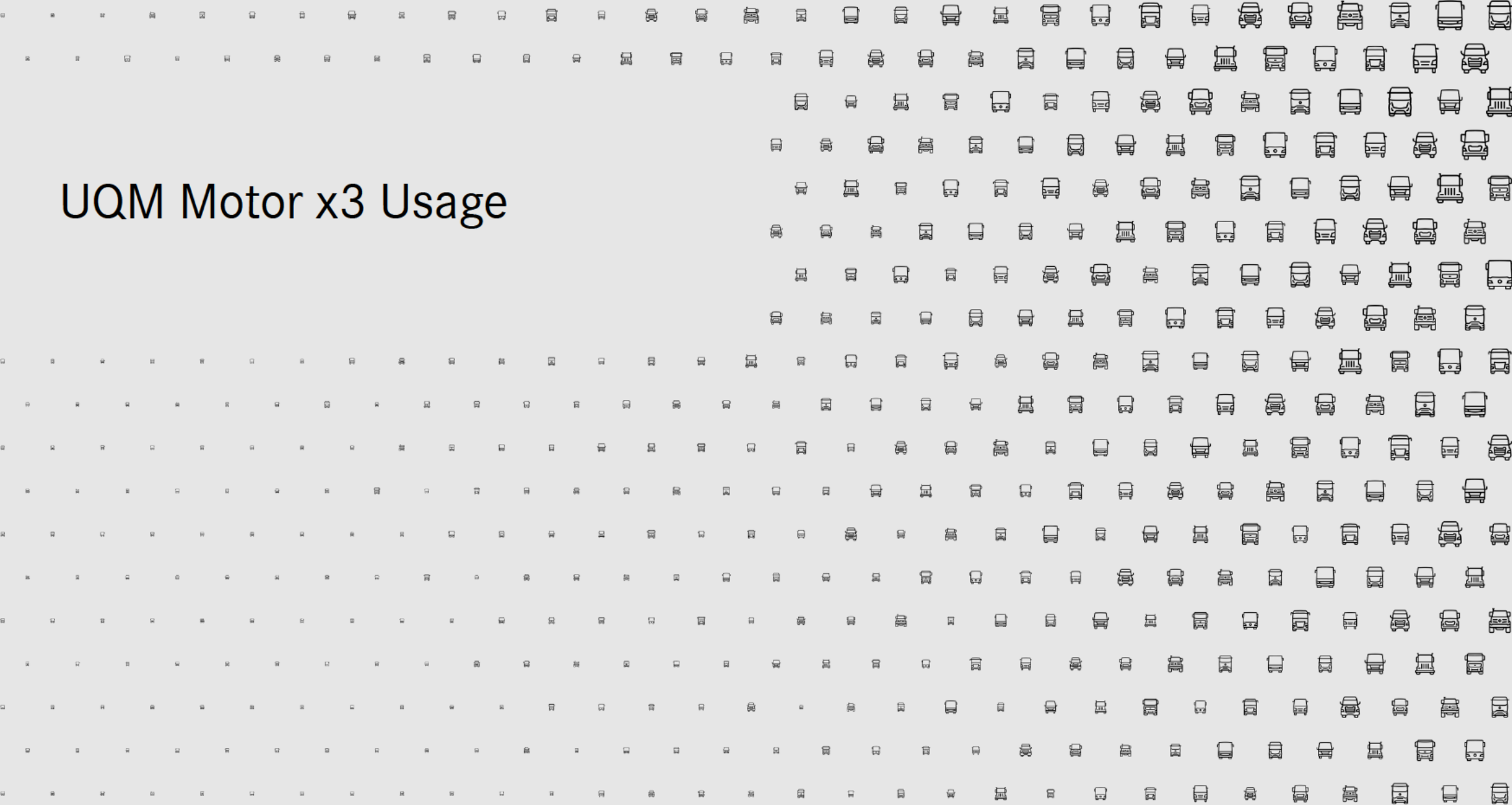
- Parts Required
  - 1x Paragon Part # DUF DT04 3
  - 1x Paragon Part # DUF W3P
  - 3x Paragon Part # 23-13210-118
  - 1x RS232 to USB Adapter (Recommend “OIKWAN AQ-17”)
  - 1x DB9 Connector of choice (Recommend “Oiyagai 765470517877”)
  - 18 or 20 awg automotive wire

# Connection Interface Creation

- This harness will allow your computer to connect to a 3-pin serial connector located near the traction motor inverter on the vehicle
- Construct the harness according to the schematic below



# UQM Motor x3 Usage



# UQM Motor x3 Usage

- Connect the harness created in the previous steps to the 3-pin serial connector located near the traction motor inverter on the vehicle (Figure 1)
  - NOTE: Ensure the new component is installed and connected to the chassis harness connector
- Connect the USB-A end of the RS232 to USB adapter to a Windows PC with UQM Motor x3 and FTDI VCP drivers installed
- Run the UQM Motor x3 software

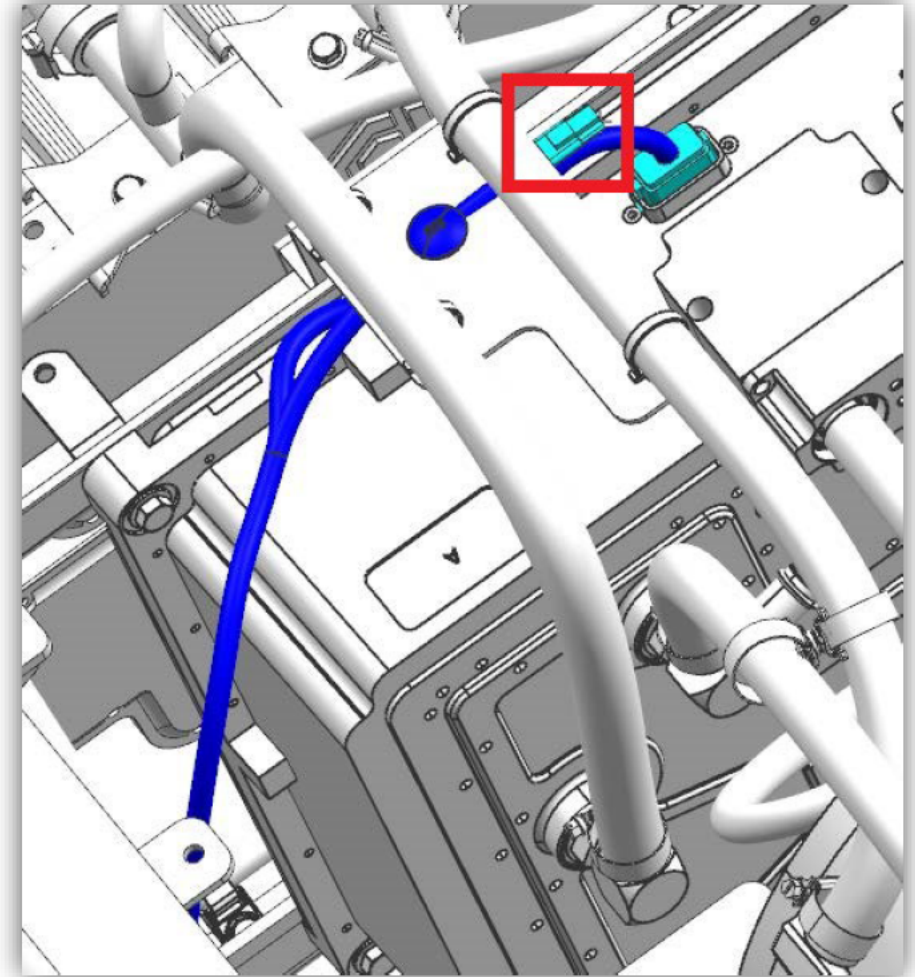
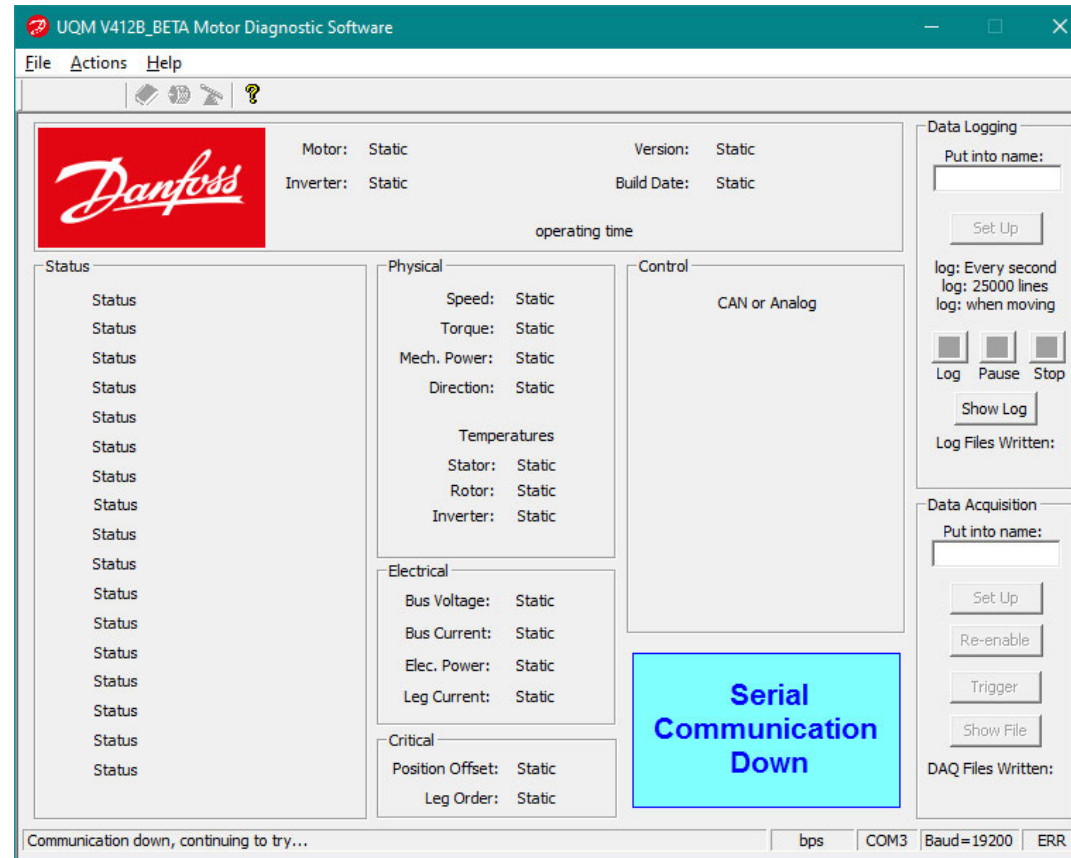


Figure 1

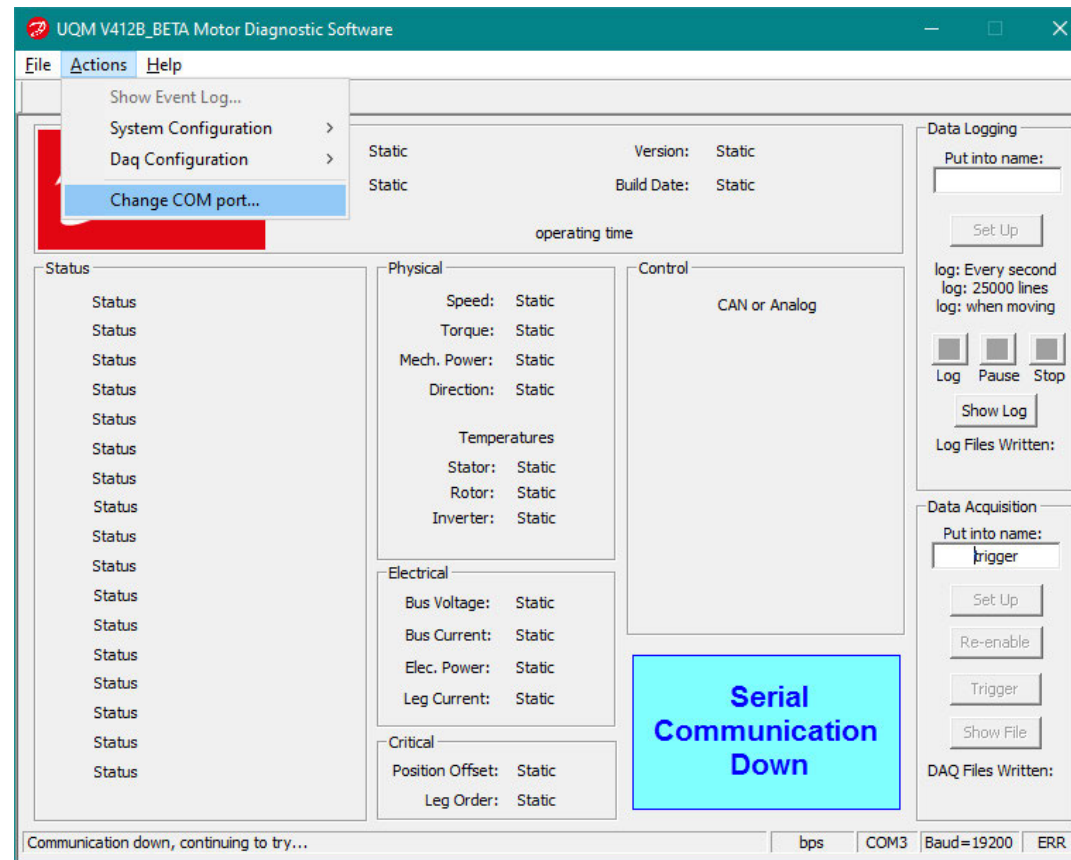
# UQM Motor x3 Usage Continued...

- On initial startup the software should resemble the figure below



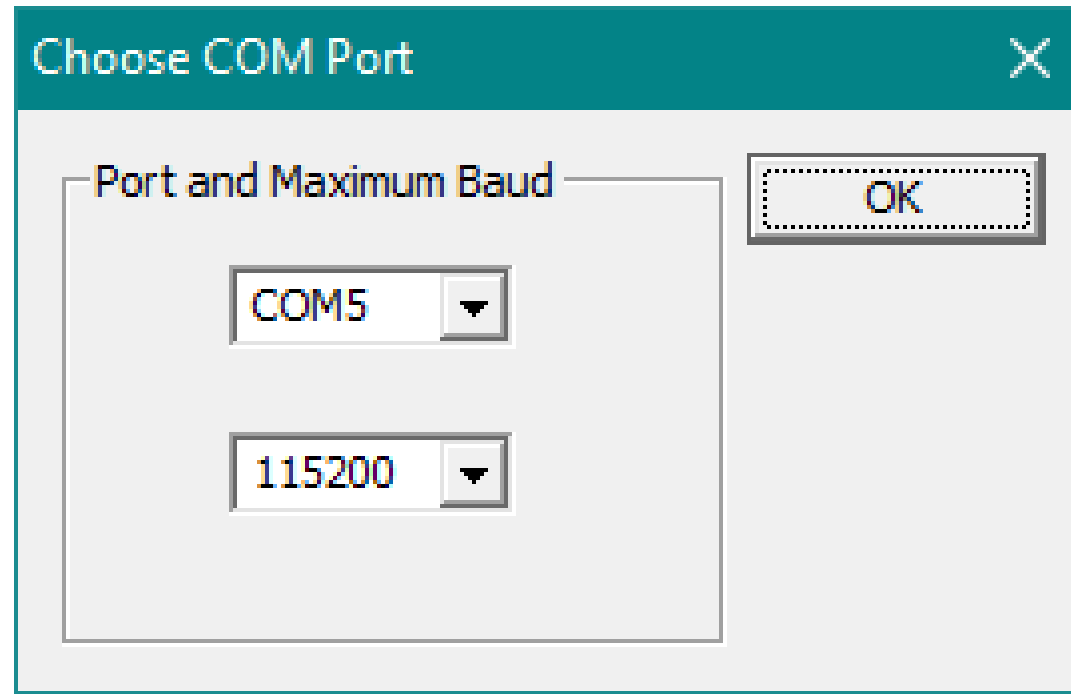
# UQM Motor x3 Usage Continued...

- Select Actions -> Change COM port... from the menu bar



# UQM Motor x3 Usage Continued...

- Select the appropriate COM port on the dropdown and select OK to close the popup window
- NOTE: The appropriate COM port may be different for each user depending on Windows PC Configuration
- NOTE: Typically, the correct COM port will only appear in the dropdown box while the RS232 adapter is connected to the PC



# UQM Motor x3 Usage Continued...

- Once connected, the interface will show a graphic of a Danfoss Powertrain Inverter, and status information

UQM V412\_SS1004 Motor Diagnostic Software

File Actions Help

**Danfoss**

Motor: SPM250-130-2 Version: 4.12.7  
Inverter: ER-46-106-55 Build Date: 05/13/2016 15:07:27  
1000T-060,D00\*317308  
Inverter has been operating for 00:00:00.0 (h:m:s)

**Status**

- Disabled
- Power switches off
- Motoring limited to 0%
- Regen limited to 0%
- Under Voltage
- Bus Current good
- Leg Current good
- Temperatures good
- Unknown speed
- Position good
- No CANbus communication

**Physical**

Speed: 0 RPM  
Torque: 0.0 Nm  
Mech. Power: 0.0 kW  
Direction: Reverse

**Temperatures**

Stator: 0.0 °C  
Rotor: 0.0 °C  
Inverter: 0.0 °C

**Electrical**

Bus Voltage: 0 V  
Bus Current: 0.0 A  
Elec. Power: 0.0 kW  
Leg Current: 0 A

**Critical**

Position Offset: 0  
Leg Order: ----

**Control**

CANbus Mode (29L)

**Torque Control**

Requested torque = 0 Nm  
Desired torque = 0 Nm  
Torque error = 0 Nm

Desired direction: Reverse

Forward speed Limit = 0 RPM  
Reverse speed Limit = 0 RPM

**Data Logging**

Put into name: test

Set Up

log: Every second  
log: 25000 lines  
log: when moving

Log Pause Stop

Show Log

Log files written: 0

**Data Acquisition**

Put into name: trigger

Set Up

Re-enable

Trigger

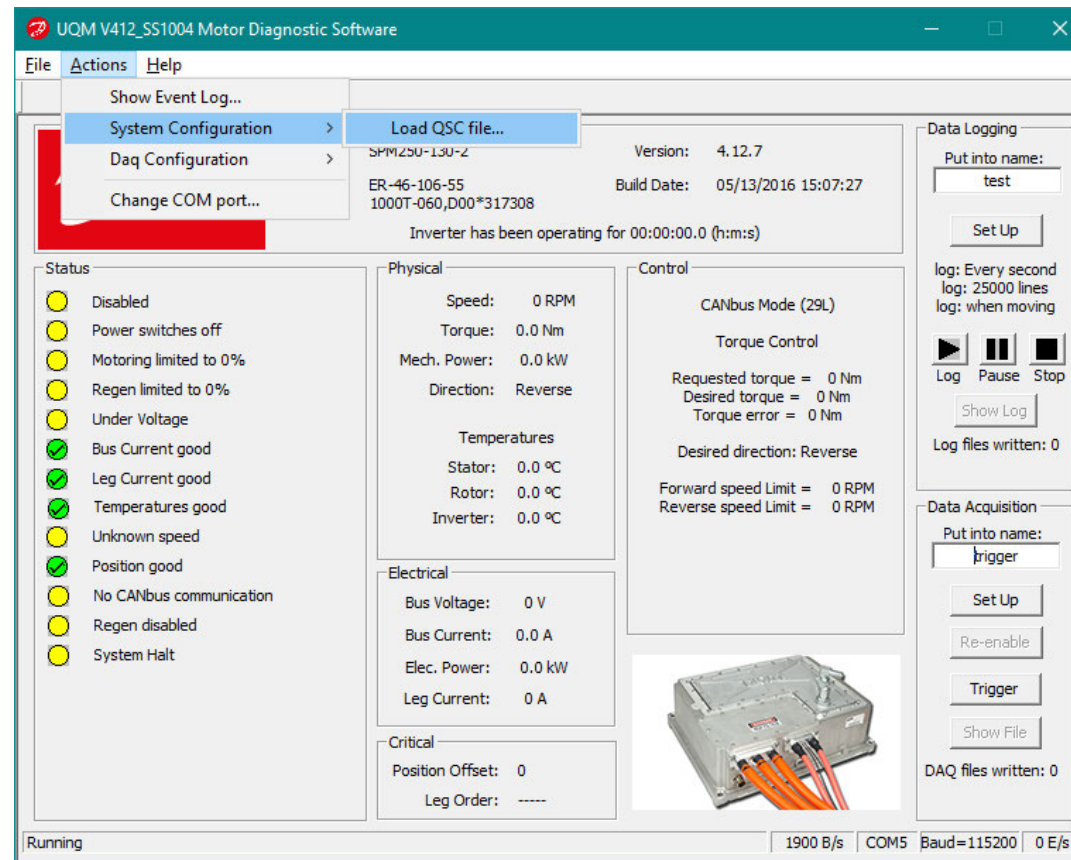
Show File

DAQ files written: 0

Running | 64752 B/s | COM5 | Baud=115200 | ERR

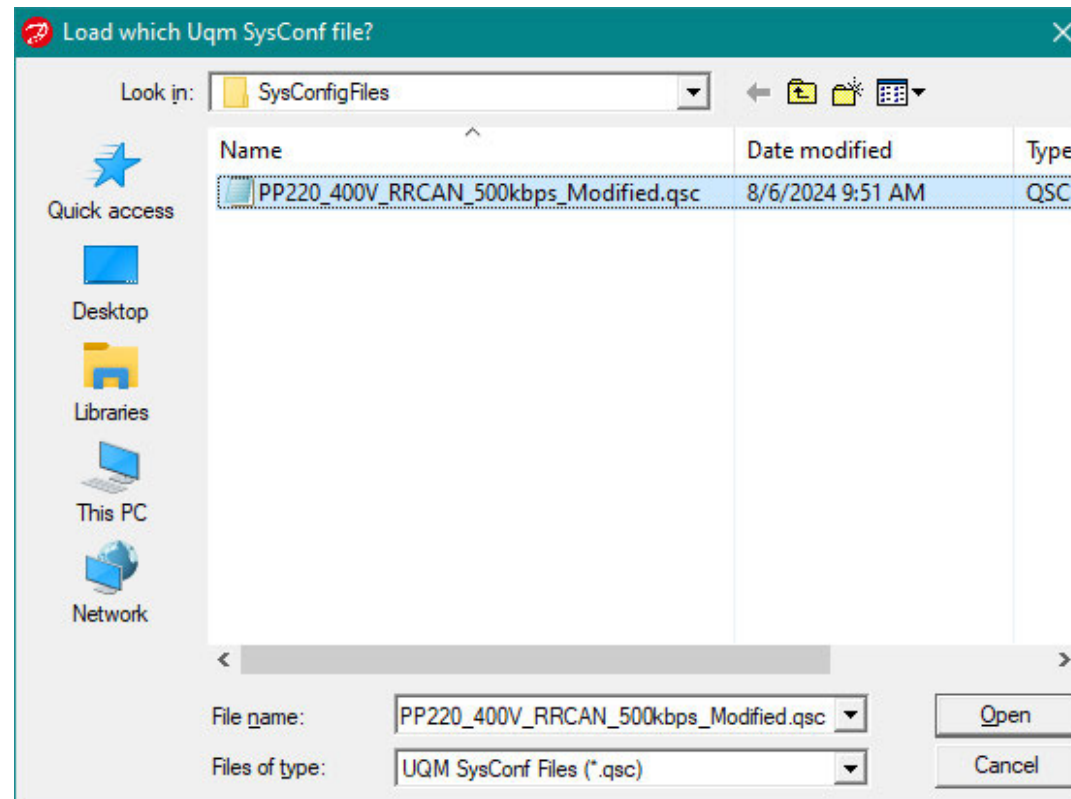
# UQM Motor x3 Usage Continued...

- Select Actions -> System Configuration -> Load QSC file... from the menu bar



# UQM Motor x3 Usage Continued...

- Select the supplied PP220\_400V\_RRCAN\_500kbps\_Modified.qsc configuration file from the downloaded software package; the update will begin as soon as the configuration .qsc is selected



# UQM Motor x3 Usage Continued...

- Monitor the status bar indicated in **RED** below, the update is complete when the status message is “Running”, and the graphic of the powertrain inverter is displayed

The screenshot displays the UQM V412\_SS1004 Motor Diagnostic Software interface. The window title is "UQM V412\_SS1004 Motor Diagnostic Software". The interface includes a menu bar (File, Actions, Help) and a toolbar. The main content area is divided into several sections:

- Motor Information:** Motor: SPM250-130-2, Version: 4.12.7, Inverter: ER-46-106-55, Build Date: 05/13/2016 15:07:27, Inverter has been operating for 00:00:00.0 (h:m:s).
- Status:** A list of status indicators with colored circles: Disabled (yellow), Power switches off (yellow), Motoring limited to 0% (yellow), Regen limited to 0% (yellow), Under Voltage (yellow), Bus Current good (green), Leg Current good (green), Temperatures good (green), Unknown speed (yellow), Position good (green), No CANbus communication (yellow), Regen disabled (yellow), System Halt (yellow).
- Physical:** Speed: 0 RPM, Torque: 0.0 Nm, Mech. Power: 0.0 kW, Direction: Reverse, Temperatures: Stator: 0.0 °C, Rotor: 0.0 °C, Inverter: 0.0 °C.
- Electrical:** Bus Voltage: 0 V, Bus Current: 0.0 A, Elec. Power: 0.0 kW, Leg Current: 0 A.
- Critical:** Position Offset: 0, Leg Order: -----.
- Control:** CANbus Mode (29.), Torque Control: Requested torque = 0 Nm, Desired torque = 0 Nm, Torque error = 0 Nm, Desired direction: Reverse, Forward speed Limit = 0 RPM, Reverse speed Limit = 0 RPM.
- Data Logging:** Put into name: test, Set Up, log: Every second, log: 25000 lines, log: when moving, Log, Pause, Stop, Show Log, Log files written: 0.
- Data Acquisition:** Put into name: trigger, Set Up, Re-enable, Trigger, Show File, DAQ files written: 0.

A red status bar at the bottom of the window displays the message "Resetting Processor...". A blue box in the center-right of the interface displays the message "Serial Communication Down". The bottom right corner of the window shows the connection status: "0 B/s COM5 Baud=38400 0 E/s".