

# Instruction Sheet

**A045Z609 (Issue 3)**

6-14

## Installation Instructions for J1939 to NMEA 2000<sup>®</sup> Network Conversion Kit (A045Y826)

### 1 Introduction

This instruction sheet covers installation instructions for the J1939 to NMEA 2000 conversion kit.

The information contained within is based on information available at the time of going to print. In line with Cummins Power Generation policy of continuous development and improvement, information may change at any time without notice. The users should therefore make sure that before commencing any work, they have the latest information available. The latest version of this manual is available on QuickServe Online (<https://qsol.cummins.com/info/index.html>).

### 2 Safety Precautions

#### 2.1 General Safety Precautions

##### **WARNING**

*Operation of equipment.  
Is unsafe when mentally or physically fatigued.  
Do not operate equipment in this condition, or after consuming any alcohol or drug.*

##### **WARNING**

*Generator sets in operation mode emit noise.  
Exposure to noise can cause hearing damage  
Wear appropriate ear protection at all times.*

##### **WARNING**

*Hot metal parts.  
Can cause severe burns.  
Avoid contact with the radiator, turbo charger, and exhaust system.*

##### **WARNING**

*Maintaining or installing a generator set.  
Can cause severe personal injury.  
Wear personal protective equipment such as safety glasses, protective gloves, hard hats, steel-toed boots, and protective clothing when working on equipment.*

### NOTICE

Stepping on the generator set can cause parts to bend or break, leading to electrical shorts, or to fuel, coolant, or exhaust leaks. Do not step on the generator set when entering or leaving the generator room.

### DANGER

**Accidental or remote starting.**

**Accidental starting of the generator set while working on it can cause severe personal injury or death**

**To prevent accidental or remote starting while working on the generator set, disconnect the negative (-) battery cable at the battery using an insulated wrench.**

### CAUTION

**Cleaning materials.**

**Loose cleaning materials can become entangled in moving parts or cause a fire hazard.**

**Make sure that all cleaning materials are removed from the generator set before operating the generator.**

### CAUTION

**Combustible materials.**

**A build up of combustible materials under the generator set can present a fire hazard.**

**Make sure the generator set is mounted in a manner to prevent combustible materials from accumulating under the unit.**

### CAUTION

**Maintenance and service procedures.**

**Service access doors on generator sets can be heavy.**

**Before performing maintenance and service procedures on enclosed generator sets, make sure the service access doors are secured open**

### CAUTION

**Obstructions.**

**Articles left against the generator set or close by may restrict the air flow and cause over heating or a fire hazard.**

**Keep the generator set and the surrounding area clean and free from obstructions. Remove any debris from the set and keep the floor clean and dry.**

### NOTICE

Keep multi-class ABC fire extinguishers handy. Class A fires involve ordinary combustible materials such as wood and cloth. Class B fires involve combustible and flammable liquid fuels and gaseous fuels. Class C fires involve live electrical equipment. (Refer to NFPA No. 10 in applicable region.)

## 2.2 Generator Set Safety Code

Before operating the generator set, read the manuals and become familiar with them and the equipment. **Safe and efficient operation can be achieved only if the equipment is properly operated and maintained.** Many accidents are caused by failure to follow fundamental rules and precautions.

### WARNING

***Improper operation and maintenance.***

***Can lead to severe personal injury, or loss of life and property, by fire, electrocution, mechanical breakdown, or exhaust gas asphyxiation.***

***Read and follow all Safety Precautions, Warnings, and Cautions throughout this manual and the documentation supplied with your generator set***

### WARNING

***Lifting and repositioning of the generator set.***

***Incorrect lifting can result in severe personal injury, death, and/or equipment damage.***

***Lifting must only be carried out using suitable lifting equipment, shackles, and spreader bars, in accordance with local guidelines and legislation, by suitably trained and experienced personnel. For more information, contact your authorized distributor.***

## 2.3 Electrical Shocks and Arc Flashes Can Cause Severe Personal Injury or Death

### WARNING

***Energized circuits.***

***Any work with exposed energized circuits with potentials of 50 Volts AC or 75 Volts DC or higher poses a significant risk of electrical shock and electrical arc flash. These silent hazards can cause severe injuries or death.***

***Refer to standard NFPA 70E or equivalent safety standards in corresponding regions for details of the dangers involved and for the safety requirements.***

Guidelines to follow when working on de-energized electrical systems:

- Use proper PPE. Do not wear jewelry and make sure that any conductive items are removed from pockets as these items can fall into equipment and the resulting short circuit can cause shock or burning. Refer to standard NFPA 70E for PPE standards.
- De-energize and lockout/tagout electrical systems prior to working on them. Lockout/Tagout is intended to prevent injury due to unexpected start-up of equipment or the release of stored energy.
- De-energize and lockout/tagout all circuits and devices before removing any protective shields or making any measurements on electrical equipment.
- Follow all applicable regional electrical and safety codes.

In summary:

- Do not tamper with or bypass interlocks unless you are authorized to do so.
- Understand and assess the risks - use proper PPE.

- Make sure that an accompanying person who can undertake a rescue is nearby.

## **3 Instruction**

### **3.1 Conversion Kit Contents**

- Remote Control Interface Module
- Mounting Bracket
- Flat Head Washers (4)
- Hex Nuts (4)
- Screws (2)
- Connector Cable
- Instruction Sheet

### **3.2 Additional Equipment Required**

In order to install this conversion kit, the customer will need to provide the following.

- Network Interface Module: The existing generator set needs to have a J1939 compatible network interface module (NIM) board. For generator sets that do not have a J1939 NIM, the following kits can be ordered to add this feature to the generator sets:
  - 0541-1195-01 for MDKBH/J/W model families
  - 0541-1193-03 for MDKBL/M/N/P/R/V/T/U model families
- Cable: Additional cable is required to establish connection between NMEA 2000 port on remote interface and NMEA 2000 network backbone on the vessel
- Terminating resistors: For network backbone connections. Contact your boat manufacturer or NMEA for assistance if needed.
- DC power: To the interface module as part of the connections on the NMEA 2000 port. The interface module requires a 9-16 VDC 150mA source as part of the port connections to provide appropriate power.

### 3.3 Conversion Kit Installation

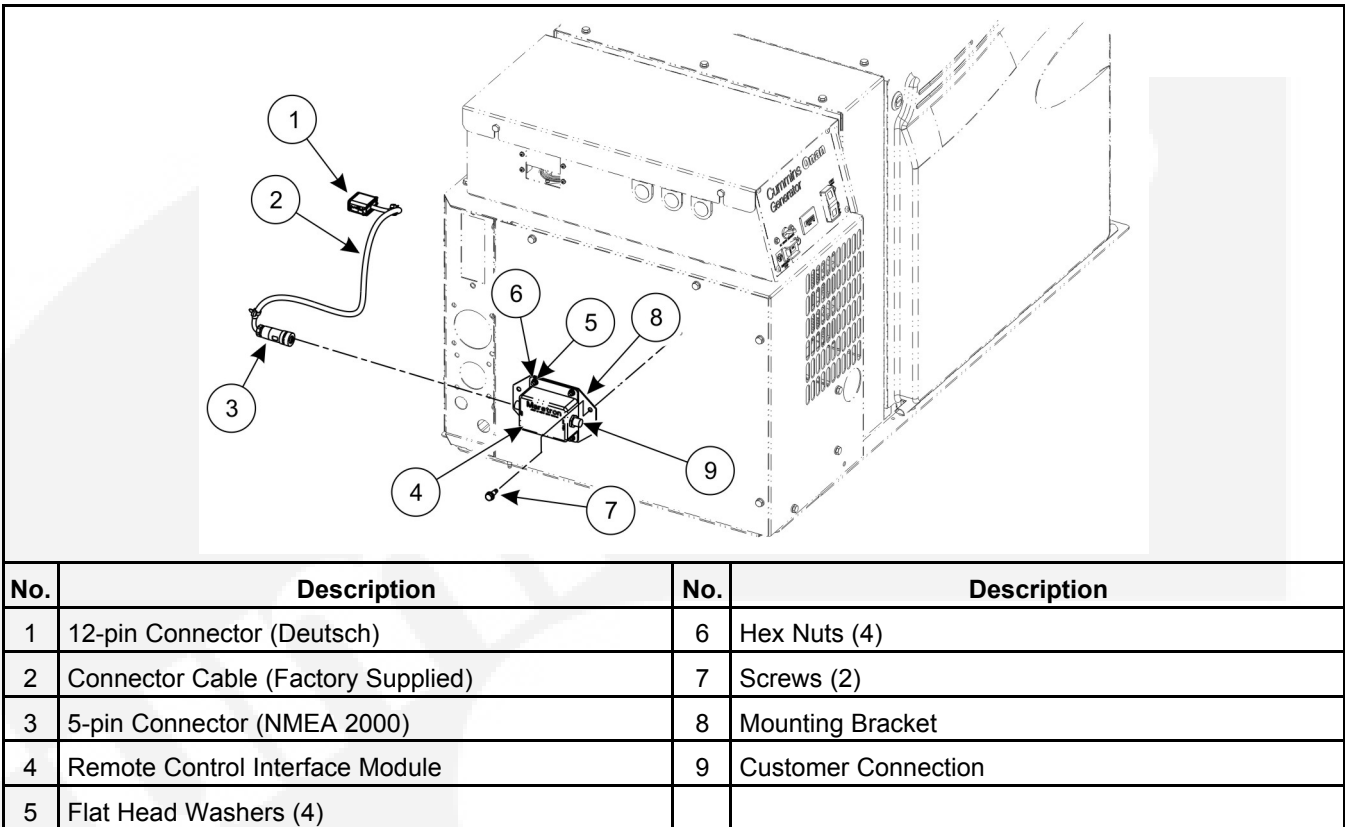


FIGURE 1. CONVERSION KIT INSTALLATION

### 3.4 Interface Module Mounting

- Mount the interface module to the mounting bracket with the washers and nuts provided as shown above.
- Torque the (4) nuts to 2.8-3.5 Nm.
- Once mounted on the bracket, mount entire assembly onto the generator or onto some location near the generator on a bulkhead.

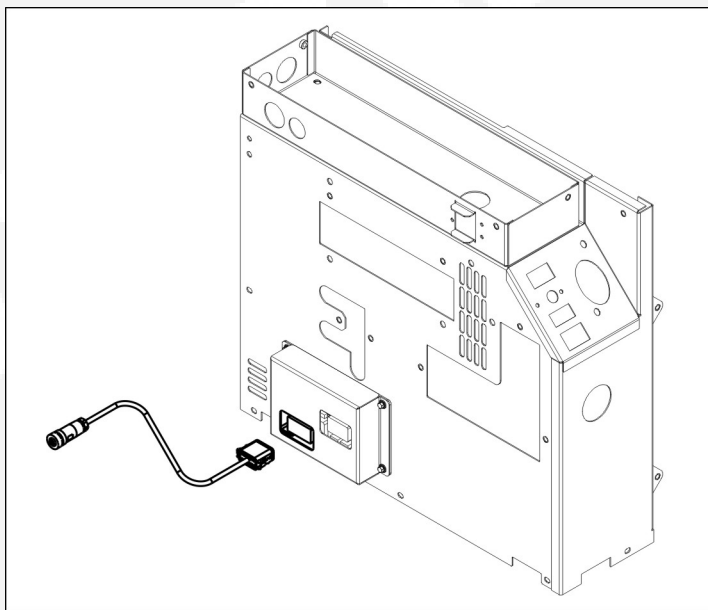
#### NOTICE

**Avoid mounting the communication cables in close proximity to the AC power leads of generator to prevent electromagnetic interference between both sets of cables.**

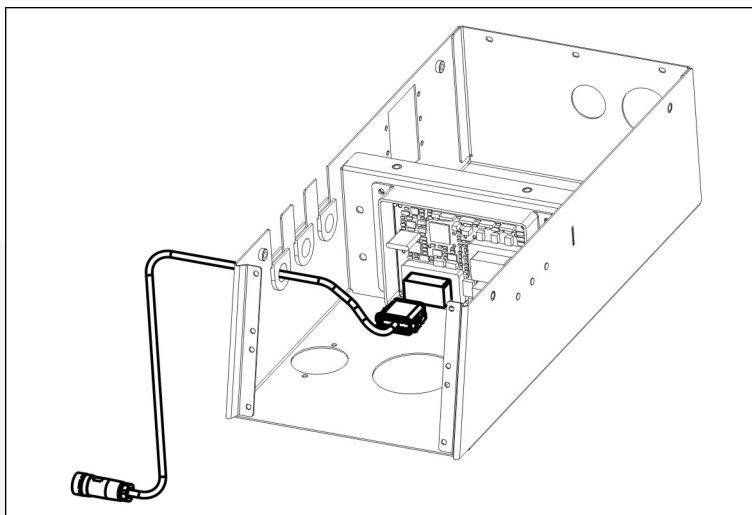
### 3.5 Interface Connection

The J1939 5-pin port is located on the left side of the interface module, while the NMEA 2000 5-pin port is located on the right side.

- Fasten the female 12-pin connector on the factory-supplied cable to the J1939 port on the side of the interface module. Ensure that the collar on the cable connector is tightened firmly for a proper connection.
- Connect the 12-pin connector end of the factory-supplied cable to the 12-pin receptacle located on the board of the Network Interface Module (NIM) located either on the outside of the sound shield (MDKBH/J/W models) or on the back wall of the control box (MDKBJ/L/M/N/P/R/V/T/U models) (See figures below).
- Connect the 5-pin connector of the customer-supplied cable to the NMEA 2000 port, connect the 12-pin connector to the network backbone located on the vessel.



**FIGURE 2. NIM MOUNTING LOCATION ON MDKBH, MDKBJ, MDKBW**



**FIGURE 3. NIM MOUNTING LOCATION ON MDKBK, MDKBL, MDKBM, MDKBN, MDKBP, MDKBR, MDKBV, MDKBT, MDKBU**

### 3.6 Verify Connections

Connect the customer-supplied NMEA 2000 cable between the 5-pin NMEA 2000 port and the network backbone located on the vessel.

#### NOTICE

The generator data on the NMEA 2000 network has been set with an instance value of 10, as shipped from the factory. In order to view the generator data over the NMEA 2000 network, applicable displays and gauges will need to be set to read the generator data on instance 10.

#### NOTICE

The generator needs to be up and running in order to “wake up” the NIM and enable data transmission via the interface module. When the NIM is active, the green LED lights on the NIM board will either flash or remain solidly lit.

### 3.7 Troubleshooting

If there is no data detection by the connected NMEA 2000 device, perform the following steps.

- Verify connections are correct and secure on the interface module and NIM board.
- Check to be sure the NIM module is “woken up” as mentioned in the 'Verify Connections' Section above.
- If genset is equipped with a mounted display, verify real time data on display.