ENGINE GOVERNING

*Datasheet*

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# JDR050 Series - J1939 Diagnostic Reader


- **Cost Effective J1939 Diagnostic Code Reader**
- **Displays Active and Stored Codes from Up to 10 ECUs**
- **Low Power Consumption**
- **Wide Temperature Range (-40˚ to +185˚F, -40˚ to +85˚C)**
- **Two Buttons Operation**
- **Built in CANbus Termination Resistor**
- **Self Contained, No Configuration Software Required**
- **Sealed Case, Non-Fogging Display**
- **Front is Rated to IP67 - Sealed from Direct Exposure to Water Spray**
- **With Deutsch Connector, Rear is Rated to IP69K**
- **Fits in 2" (51mm) Round Standard Panel Opening**
- **Simple Slide Latch Mounting Ring**

## INTRODUCTION

The **JDR050, GAC's** J1939 diagnostic reader, is a simple, low-cost device that allows users to read standard **J1939 Diagnostic Trouble Codes (DTCs)** from engines equipped with J1939 compatible **Engine Control Units (ECU)**. The **JDR050** supports J1939 stop, warning, malfunction, and protection status messages with independent indicators that are controlled by the **ECU**. The device is also equipped with mode, busy, and communication indicators.

**J1939 DTCs** are divided into two categories, active and stored (also referred to as previously active). Active codes are present when a condition is present. Stored codes are a record that the condition occurred. Within each **DTC**, active or stored, there are several distinct data components, the **Suspect Parameter Number (SPN)**, the **Failure Mode Indicator (FMI)**, the **Occurrence Count (OC)**, and the **Source Address (SRC)**. The **SPN** is the engine parameter that is out of range (e.g., **Oil Pressure, Coolant Temperature).** The **FMI** provides information about the failure (e.g., **OUT OF CALIBRATION)**. The **OC** indicates the number of times the failure has occurred, and the **SRC** tells the user the **CAN** address of the offending device. Note, the **JDR050** can record up to 240 **DTCs** from up to 10 different CAN devices.

## DESCRIPTION

The **JDR050** reads and displays the **DTCs** transmitted by the engine via J1939 **DM1** and **DM2** messages. The **DTCs** within the **DM1** messages are active codes. The **DTCs** within the **DM2** messages contain the stored messages. In **Auto Mode**, the **JDR050** continually scrolls through the active **DTCs**. If a stored **DTC** is present, the **JDR050** turns on the **MEM** indicator.

To access the information within the **DTC**, the user enters **Manual Mode** by either pressing the **i** button, or by pressing the **II/II▶** button. When in manual mode, the **JDR050** will reveal the **J1939 Failure Mode Indicator (FMI)**, the **Occurrence Count (OC)**, and the **Source (SRC)** address of the **DTC** with each time the **i** button is pressed. If the **J1939 Text Translation** is enabled, the **JDR050** will scroll the standard English text for the **SPN** and **FMI**. To return to **Auto Mode** the user can press and hold the button for 3 seconds; the unit will also return to **Auto Mode** if no button is pressed within 30 seconds.

While in **Manual Mode,** the user can loop through the list of SPNs by pressing ▮▮/▮▮▶ button.

To adjust the behavior of the device, the **JDR050** is equipped with a **User Configuration Mode.** To enter **User Configuration Mode,** the **JDR050** must be in **Manual Mode** and then by simultaneously holding the ℹ and ▮▮/▮▮▶ buttons for 3 seconds. Once in this **Configuration Mode**, the user can set the **CAN** address of the **ECU**, **CAN** address of the **JDR050**, max number of **DTCs** to be logged, the number of seconds before the unit waits before it returns to **Auto Mode**, the number of seconds the unit will display a given **SPN** (when in **Auto Mode**), and the rate at which to scroll the text of a J1939 message. To exit, the user can press and hold the ▮▮/▮▮▶ button for 3 seconds; the unit will also return to **Auto Mode** if no button is pressed within the number of seconds specified by the return to auto parameter.

If enabled, the **JDR050** can also be used send a **DM3** message (clear stored codes) to the **ECU.**

**DIAGRAM 1. JDR050 Dimensions**

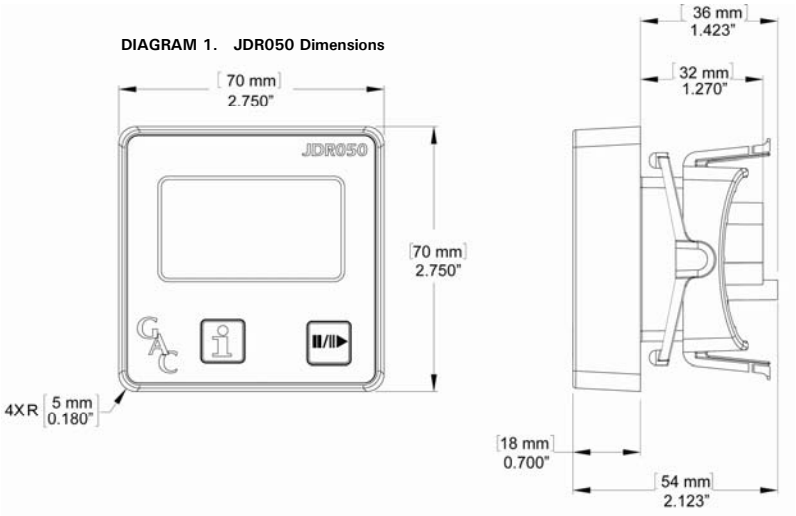
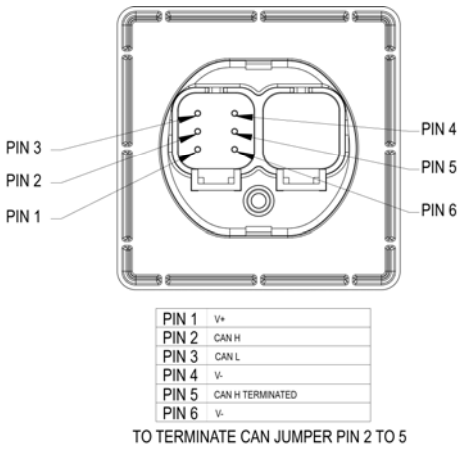


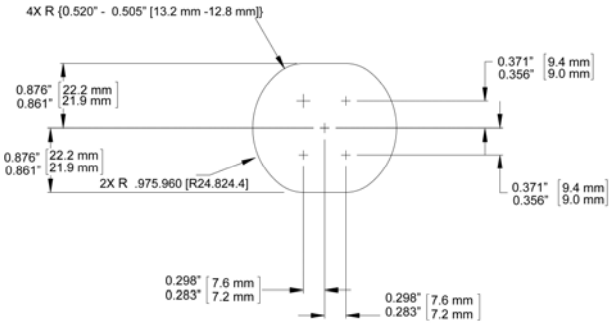

**DIAGRAM 2. JDR050 Connections**




| | |
|---|---|
| PIN 1 | V+ |
| PIN 2 | CAN H |
| PIN 3 | CAN L |
| PIN 4 | V- |
| PIN 5 | CAN H TERMINATED |
| PIN 6 | V- |

TO TERMINATE CAN JUMPER PIN 2 TO 5

**DIAGRAM 3. JDR050 Mounting Hole Dimensions**




## SPECIFICATIONS

**Power Input**

Operating Voltage ..... 8-32 VDC (0V 50ms transient condition)
Current Draw ..... 0.25 Amp @ 12V Reverse polarity protected

**Physical**

Overall ..... 2.75″ x 2.75″ x 2.127″ (70mm x 70mm x 54mm)
Front to Back ..... 2.75″ x 2.75″ x 0.7″ (70mm x 70mm x 18mm)
Panel opening ..... 2″ Round (51mm)

**CANbus**

J1939 SAE Compliant ..... (V1 when CM = 1, V4 when CM = 0) 120 CANbus termination resistor included

**Environmental**

Ambient Temperature Range ..... -40 to +85°C (-40 to +185°F)
Relative Humidity ..... Up to 100%
IP67 Front ..... Resist Direct Spray
IP69K Rear (w. Deutsch connector) ..... Sealed (no fogging)
Shock/Vibe ..... TBD