

INSTALLATION INSTRUCTIONS

Original Issue Date: 5/06

Model: 8.5–40 kW Generator Sets Equipped with the ADC 2100 Controller

Market: Mobile and Residential/Commercial

Subject: Remote Digital Gauge Kit GM32337-KP2

Introduction

The remote digital gauge allows remote starting/stopping and monitoring of certain generator set functions. These generator sets have the ADC 2100 controller and a 12-pin customer-interface connector for connection to the remote digital gauge.

See Figure 1 for the remote digital gauge controls.

Kit GM32337-KP2 includes gauge connection harness GM48148, which allows two different types of power connections:

- Gauge powered continuously. In this configuration, the gauge can be used for remote start and stop as well as generator set monitoring.
- Gauge powered during generator set crank and run only. In this configuration, the drain on the battery is reduced but the remote gauge cannot be used for remote start/stop. Install a separate start/stop switch if remote start/stop capability is required.

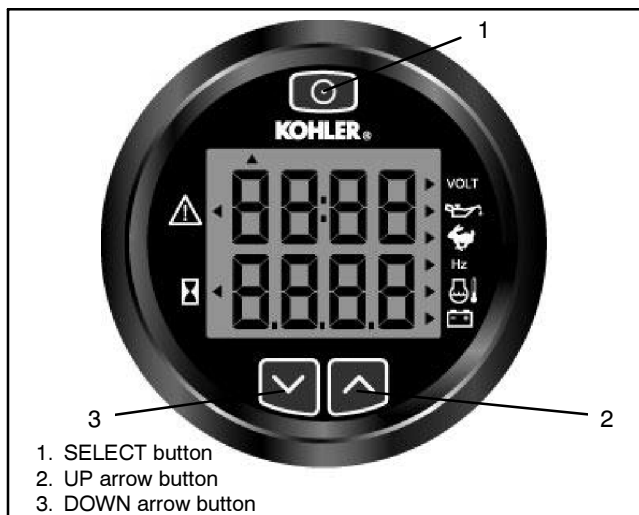


Figure 1 Remote Digital Gauge

The ADC 2100 controller’s communication parameter can also be set for two different power modes:

- Continuous power mode. The ADC 2100 is powered continuously to allow communication with the remote gauge at all times. A battery charger is recommended to maintain the battery.
- One-hour power down. The ADC 2100 powers down after 1 hour of inactivity. In this mode, a remote start/stop switch or the generator set master switch must be used to activate the controller after it has powered down.

ADC 2100 application code version 1.21 or higher is required for Remote Digital Gauge kit GM32337-KP2. Refer to TT-1285, Program Loader Instructions, for instructions to load the latest version of the controller application code, if necessary.

Extension Harnesses

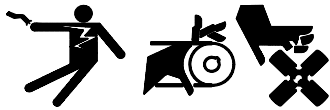
The connection harness included with the kit is approximately 305 mm (12 in.) long. Order extension harness kits if required. See Figure 2 for kit selection. Do not use more than 3 extension harness kits and do not exceed 23 m (75 ft.) in harness length.

Extension Harness Kit Number	Length m (ft.)
GM32333-KP1	4.6 (15)
GM32333-KP2	7.6 (25)

Figure 2 Extension Harness Kits

Safety Precautions

WARNING


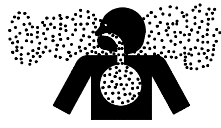


Accidental starting. Can cause severe injury or death.

Disconnect the battery cables before working on the generator set. Remove the negative (-) lead first when disconnecting the battery. Reconnect the negative (-) lead last when reconnecting the battery.

Disabling the generator set. Accidental starting can cause severe injury or death. Before working on the generator set or connected equipment, disable the generator set as follows: (1) Move the generator set master switch to the OFF position. (2) Disconnect the power to the battery charger. (3) Remove the battery cables, negative (-) lead first. Reconnect the negative (-) lead last when reconnecting the battery. Follow these precautions to prevent starting of the generator set by an automatic transfer switch, remote start/stop switch, or engine start command from a remote computer.

The fuel system. Explosive fuel vapors can cause severe injury or death. Vaporized fuels are highly explosive. Use extreme care when handling and storing fuels. Store fuels in a well-ventilated area away from spark-producing equipment and out of the reach of children. Never add fuel to the tank while the engine is running because spilled fuel may ignite on contact with hot parts or from sparks. Do not smoke or permit flames or sparks to occur near sources of spilled fuel or fuel vapors. Keep the fuel lines and connections tight and in good condition. Do not replace flexible fuel lines with rigid lines. Use flexible sections to avoid fuel line breakage caused by vibration. Do not operate the generator set in the presence of fuel leaks, fuel accumulation, or sparks. Repair fuel systems before resuming generator set operation.

 WARNING

Carbon monoxide. Can cause severe nausea, fainting, or death.
The exhaust system must be leakproof and routinely inspected.

Generator set operation. Carbon monoxide can cause severe nausea, fainting, or death. Carbon monoxide is an odorless, colorless, tasteless, nonirritating gas that can cause death if inhaled for even a short time. Avoid breathing exhaust fumes when working on or near the generator set. Never operate the generator set inside a building unless the exhaust gas is piped safely outside. Never operate the generator set where exhaust gas could accumulate and seep back inside a potentially occupied building or vehicle. Do not obstruct the exhaust outlet when parking your vehicle. The exhaust gases must discharge freely to prevent carbon monoxide from deflecting into the vehicle.

Carbon monoxide symptoms. Carbon monoxide can cause severe nausea, fainting, or death. Carbon monoxide is a poisonous gas present in exhaust gases. Carbon monoxide poisoning symptoms include but are not limited to the following:

- Light-headedness, dizziness
- Physical fatigue, weakness in joints and muscles
- Sleepiness, mental fatigue, inability to concentrate or speak clearly, blurred vision
- Stomachache, vomiting, nausea

If experiencing any of these symptoms and carbon monoxide poisoning is possible, seek fresh air immediately and remain active. Do not sit, lie down, or fall asleep. Alert others to the possibility of carbon monoxide poisoning. Seek medical attention if the condition of affected persons does not improve within minutes of breathing fresh air.

Installation Procedure

1. Remove the generator set from service.

- 1.1 Place the generator set master switch in the OFF position.
- 1.2 Disconnect power to the battery charger, if equipped.
- 1.3 Disconnect the generator set engine starting battery, negative (-) lead first.

2. Install the remote digital gauge.

- 2.1 Select a dry location to mount the remote digital gauge. Consider the length of the wiring harness and the gauge's mounting depth and size when selecting a location. See Figure 3 for the mounting dimensions.
- 2.2 Connect gauge connection harness GM48148 to the 6-pin connector on the back of the digital gauge. See Figure 4.

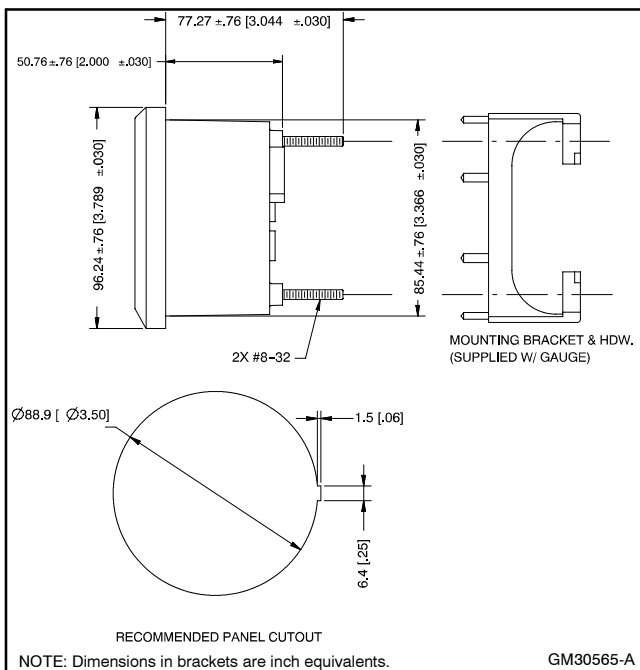


Figure 3 Mounting Dimensions

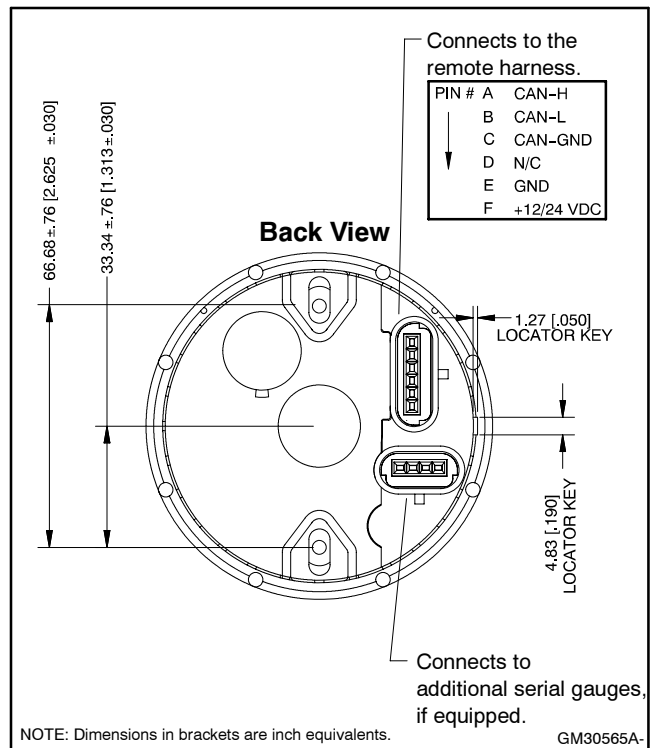


Figure 4 Remote Digital Gauge Connections

2.3 On harness GM48148, connect either lead PF3 or lead 70A to power the gauge as follows. See Figure 5.

2.3.1 For continuous power to the gauge, connect lead PF3 from connector J22 to lead PF3 from connector P23.

2.3.2 For gauge power during generator set crank and run only, connect lead 70A from connector J22 to lead PF3 from connector P23.

2.4 If a separate remote start/stop switch is used, connect it to leads 3 and 4 of harness GM48148. See Figure 5.

2.5 Connect the 12-pin connector of harness GM48148 to the 12-pin customer connection on the generator set. Use extension harnesses for additional length up to 23 m (75 ft.), if necessary.

2.6 Use rubber grommets and cable ties as necessary to secure and protect the wiring from sharp objects, exhaust system, water, and any moving parts.

3. Restore the generator set to service.

3.1 Check that the generator set master switch is in the OFF position.

3.2 Reconnect the generator set engine starting battery, negative (-) lead last.

3.3 Connect power to the battery charger, if equipped.

4. Set the ADC 2100 for J1939 communications.

4.1 Check the code version on the ADC 2100 controller. Version 1.21 or later is required. Refer to TT-1285, Program Loader Instructions, for instructions to load the latest version of the controller application code, if necessary.

4.2 Set the ADC 2100 controller's communication parameter to Cn01 or Cn06. See Figure 6. Consult TT-1364 for instructions to change the controller's parameter settings.

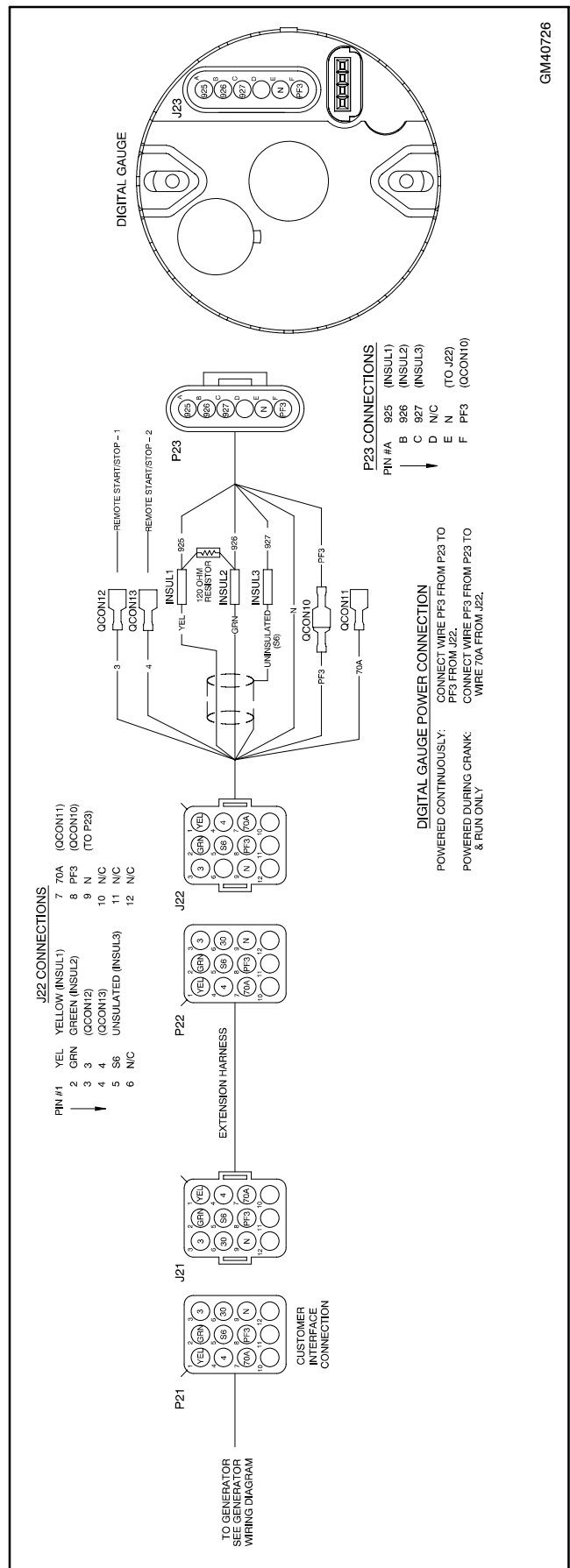


Figure 5 Harness GM48148 Connections

Cn Setting	Operation	
	ADC Controllers with Removeable P7 Jumper*	Upgraded ADC 2100
Cn01	Jumper installed: J1939 communication and ADC 2100 continuously powered. Jumper removed: J1939 communication and ADC 2100 power down after 48-hours.	J1939 communication and ADC 2100 continuously powered.
Cn06	Jumper installed: J1939 communication and ADC 2100 continuously powered. Jumper removed: J1939 communication and ADC 2100 power down after 1 hour.	J1939 communication and ADC 2100 power down after 1 hour.

* Generator sets with serial numbers below 2051416 use an earlier version of the ADC 2100 controller that is equipped with a removeable power mode jumper at P7.

Figure 6 ADC Communication Parameters, Upgraded ADC

Gauge Operation

Selecting the Units of Measure

Data can be displayed in either US or international units.

- (1) With no power to the gauge, press and hold the SELECT button. See Figure 7.
- (2) Apply power to the gauge.
- (3) The gauge displays: **Adc 2100**
- (4) The gauge displays: **Unit SEt**
- (5) Press and hold *both* the UP and DOWN buttons until the gauge beeps and the display changes.
- (6) Use the UP or DOWN buttons to select either **Int** or **USA** units.
- (7) Press and hold *both* the UP and DOWN buttons until the gauge beeps and the display changes.
- (8) Press the DOWN button.
- (9) The gauge displays: **ESC 08 ?**
- (10) Press and hold *both* the UP and DOWN buttons until the gauge switches to the monitor mode.

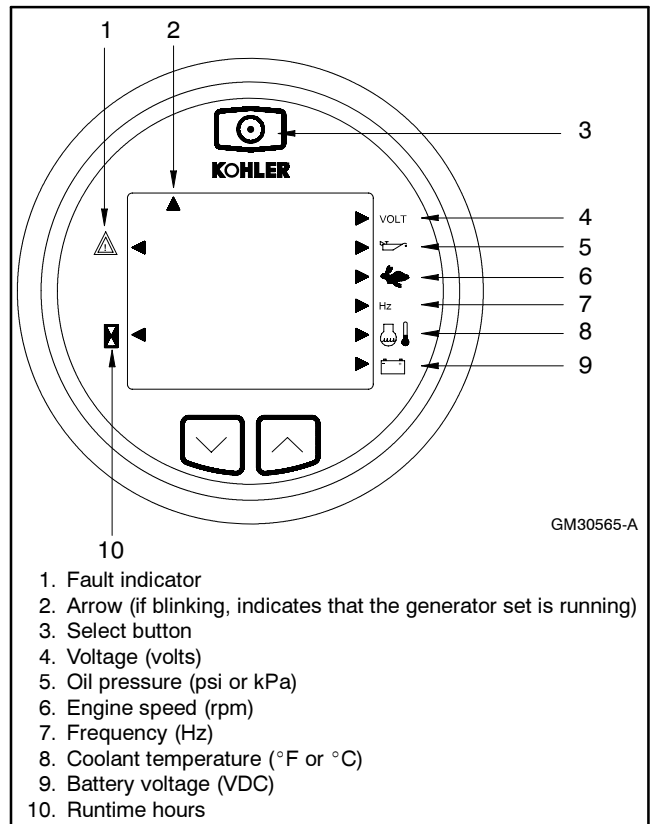


Figure 7 Remote Digital Gauge

Digital Gauge Modes

The digital gauge has three normal operating modes: monitor, start/stop, and backlight adjust. Use the SELECT button at the top of the gauge to step through the modes.

Monitor Mode

Press the SELECT button until the display shows generator set data and indicator arrows. Use the UP or DOWN arrow to scroll through the data. The corresponding illuminated arrow indicates which data is being displayed. See Figure 7. Any faults are displayed in blinking text. The following generator set operation data is displayed in this mode:

- Voltage (AC volts)
- Oil pressure (psi or kPa). Requires installation of an optional oil pressure sender on the engine, which is available for some models.
- Engine speed (rpm)
- Frequency (Hz)
- Coolant temperature (°F or °C)
- Runtime hours
- Battery voltage (VDC)

Note: The maximum battery voltage that the ADC will display on the remote digital gauge is 31.5 volts. If the voltage is higher than 31.5, it will display 31.5 volts.

Start/Stop Command Mode

Press the SELECT button until the display shows SEND RUN or SEND STOP. Use the UP or DOWN arrow to send a remote start/stop command.

Note: The ADC 2100 must be powered (display active) and the master switch must be in the AUTO position for remote start/stop. If the ADC 2100 master switch is in the RUN position, a remote stop command will not stop the generator set. The arrow at the top left side of the display blinks to indicate that the generator set is running (see Figure 7, item 2).

Refer to the generator set operation manual and follow the safety precautions when operating the generator set.

Backlighting Mode

Press the SELECT button until the display shows LEVL. Use the UP or DOWN arrow to select a lighting level:

- 0 = no backlight
- 3 = brightest backlight.

Note: While in this mode, faults appear on the display, however no audible alarm is heard.

Once set, the backlight level defaults to the last selection.

The maximum power draw of the remote gauge when used with the ADC 2100 is 50 mA at 12 VDC (or 25 mA at 24 VDC) with the brightest backlight.

To Silence an Audible Alarm:

Faults are indicated by blinking text and an audible alarm. To silence an audible alarm, press and hold the UP and DOWN arrow buttons simultaneously until the gauge emits a long beep and then release.

Parts List

Remote Digital Gauge

Kit: GM32337-KP2		
Qty.	Description	Part Number
1	Gauge, Digital CAN J1939	GM30565
1	Harness, Remote CAN Gauge	GM48148