

## INSTALLATION INSTRUCTIONS

Original Issue Date: **5/04**  
 Model: **4-32 kW**  
 Market: **Marine**  
 Subject: **Three-Inch (J1939) Remote Digital Gauge Kits**  
**GM32337-KP1 and GM100956-KP1**

### Introduction

The digital gauge allows remote starting/stopping and monitoring of certain generator set functions. The three-inch remote digital gauge can be used with the marine generator set models/controllers shown in Figure 1. See Figure 2 for the remote digital gauge.

Model	Controller	Kit Number
EGD, EFGD, and EGZD EOD and EFOD EOZD and EFOZD	ADC 2100	GM32337-KP1
EKD and EFKD	ADC II	
EKOD and EFKOD EKOZD and EFKOZD	ADC II d	
EKOZD and EFKOZD	Decision-Maker® 3500	GM100956-KP1

**Figure 1** Kit Number for Model with Controller Type



**Figure 2** Remote Digital Gauge

**Note: For generator sets with an ADC 2100 controller and with serial numbers below 2051416:** These units used an earlier version of the ADC 2100 controller that was equipped with a removeable power mode jumper at P7. Operation of the remote digital gauge's start/stop function requires that the jumper is enabled on the Advanced Digital Control (ADC) (generator sets shipped from the factory already have the jumper enabled). Refer to the wiring diagram in the generator set operation manual if the jumper was disconnected from terminals 1 and 2 on the P7 connector (continuous power mode).

**Note: For generator sets with an ADC 2100 controller:** ADC application program version 3.32 or higher is required for complete digital gauge operation. If your application program version is lower than 3.32, use your SecurID to access Kohler Power Resource Center, click on the TechTools button, and follow the instructions to download the files.

**Note: For generator sets with a Decision-Maker® 3500 controller:** Firmware version 1.14.3 or higher is required for complete digital gauge operation. If your firmware version is lower than 1.14.3, visit the Kohler Power Resource Center website using the TechTools button.

### Parts List

#### Remote Digital Gauge Kits

Kit: GM32337-KP1		
Qty.	Description	Part Number
1	Gauge	GM100649
1	Harness, gauge	GM32325
1	Decal, warning	249494
Kit: GM100956-KP1		
Qty.	Description	Part Number
1	Gauge	GM100649
1	Harness, gauge	GM100955
1	Decal, warning	249494

## Safety Precautions

### WARNING

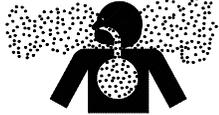


#### **Accidental starting. Can cause severe injury or death.**

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.

**Disabling the generator set. Accidental starting can cause severe injury or death.** Before working on the generator set or equipment connected to the set, disable the generator set as follows: (1) Press the generator set off/reset button to shut down the generator set. (2) Disconnect the power to the battery charger, if equipped. (3) Remove the battery cables, negative (-) lead first. Reconnect the negative (-) lead last when reconnecting the battery. Follow these precautions to prevent the starting of the generator set by the remote start/stop switch.

 <b>WARNING</b>

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

**Carbon monoxide symptoms. Carbon monoxide can cause severe nausea, fainting, or death.** Carbon monoxide is a poisonous gas present in exhaust gases. Carbon monoxide is an odorless, colorless, tasteless, nonirritating gas that can cause death if inhaled for even a short time. 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.

**Operating the generator set. Carbon monoxide can cause severe nausea, fainting, or death.** Be especially careful if operating the generator set when moored or anchored under calm conditions because gases may accumulate. If operating the generator set dockside, moor the craft so that the exhaust discharges on the lee side (the side sheltered from the wind). Always be aware of others, making sure your exhaust is directed away from other boats and buildings.

 <b>WARNING</b>

<b>Explosion. Gasoline vapors can cause explosion and severe injury or death.</b>
Before starting the generator set, operate the blower 4 minutes and check the engine compartment for gasoline vapors.

**Ignition-protected equipment. Explosive fuel vapors can cause severe injury or death.** Gasoline vapors can cause an explosion. USCG Regulation 33CFR183 requires that all electrical devices (ship-to-shore transfer switch, remote start panel, etc.) must be ignition protected when used in a gasoline and gaseous-fueled environment.

# Installation Procedure

## 1. Remove the generator set from service.

1.1 **For generator sets with an ADC 2100 controller:** Place the generator set master switch in the OFF position.

**For generator sets with an ADC II or ADC IId controller:** Press the start/stop button to stop the generator set. Then, press the power button to turn off the controller.

**For generator sets with a Decision-Maker® 3500 controller:** Press the OFF/RESET button to shut down the generator set.

1.2 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 5 for the mounting dimensions.

2.2 For units with an **ADC controller**, order a remote extension harness kit. See Figure 3 for kit selection. Do not use more than 3 remote harness kits and do not exceed 23 m (75 ft.) in harness length.

Remote Extension Harness Kit Number	Length m (ft.)	As Shown In
GM32333-KP1	4.6 (15)	Figure 8
GM32333-KP2	7.6 (25)	

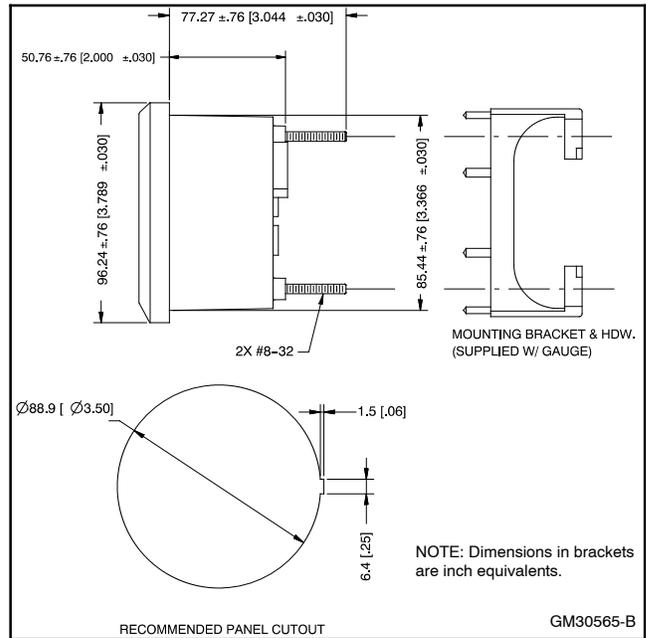
**Figure 3** Remote Extension Harness Kits (For Units with an ADC Controller)

For units with a **Decision-Maker® 3500 controller**, order a remote extension harness kit. See Figure 4 for kit selection. **DO NOT exceed 91.4 m (300 ft.) CAN network length.**

Remote Extension Harness Kit Number*	Length m (ft.)	As Shown In
GM91774-KP1	7.6 (25)	Figure 11
GM91774-KP2	15.2 (50)	
GM91774-KP3	30.5 (100)	
GM92053-KP1	7.6 (25)	Figure 12
GM92053-KP2	15.2 (50)	
GM92053-KP3	30.5 (100)	

\* Y Harness shown in Figure 13

**Figure 4** Remote Extension Harness Kits (For Units with a Decision-Maker® 3500 Controller)



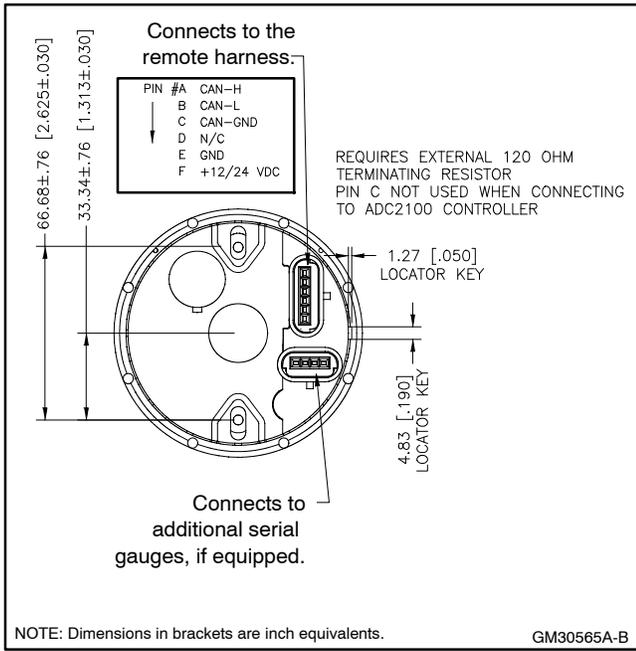
**Figure 5** Mounting Dimensions

2.3 Connect the 6-pin in-line connector of the gauge harness (GM32325 or GM100955) to the 6-pin in-line connector on the digital gauge. See Figure 6 and Figure 7 or Figure 10.

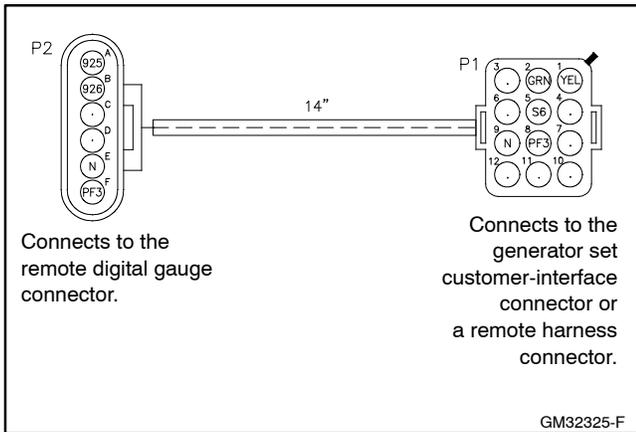
2.4 **For Kit GM32337-KP1:** Connect the 12-pin connector end of the gauge harness or a remote extension harness to the generator set's customer-interface 12-pin connector. See Figure 7, Figure 8, and Figure 9.

2.5 **For Kit GM100956-KP1:** Connect the 6-pin connector end of the gauge harness to a remote extension harness. See Figure 10, Figure 11, Figure 12, Figure 13, Figure 14, and Figure 15.

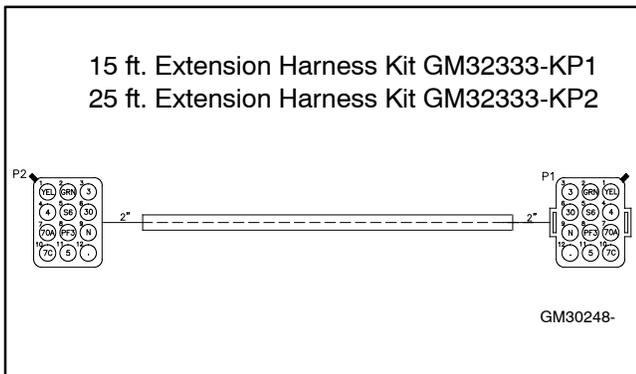
Connect the lead ends of the extension harness to the TB12 terminal strip. The TB12 terminal strip is located inside the junction box. See Figure 15 for TB12 connections.



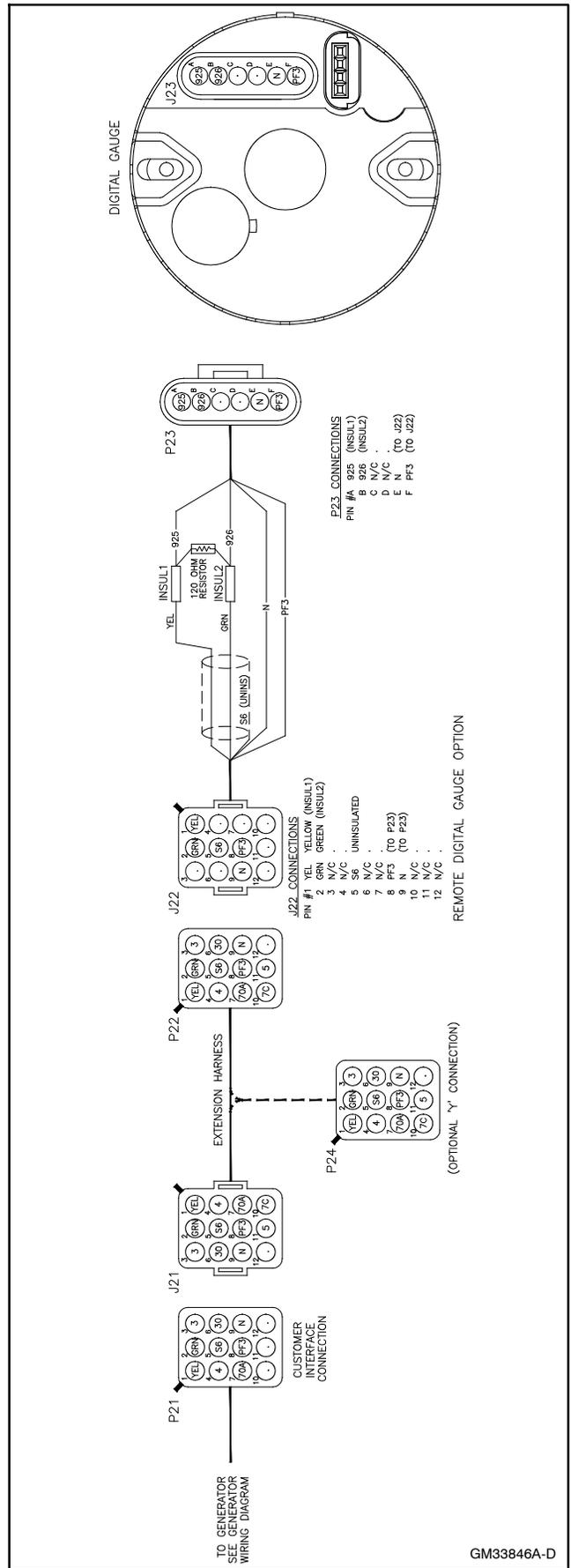
**Figure 6** Remote Digital Gauge Connections (Back View)



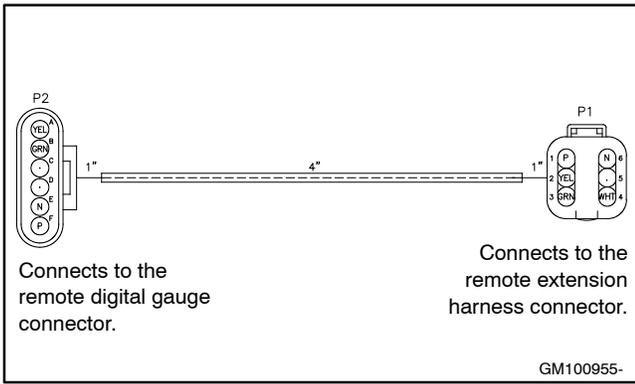
**Figure 7** Remote Gauge Harness GM32325 (Included with Kit GM32337-KP1)



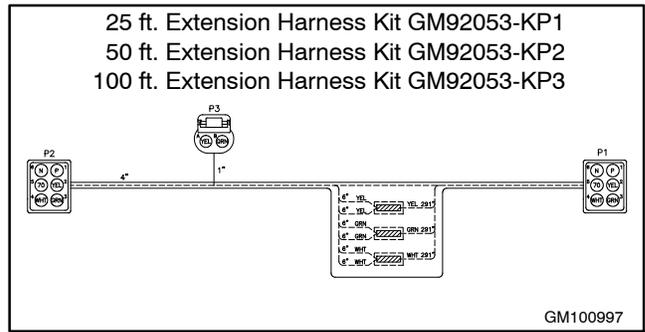
**Figure 8** Remote Extension Harness Kits (For Use With Kit GM32337-KP1)



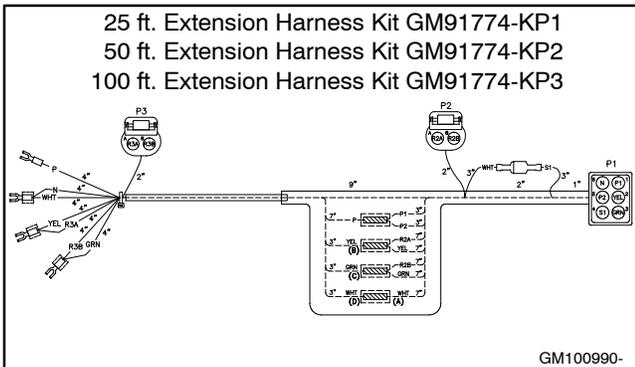
**Figure 9** Harness Connection Diagram For Kit GM32337-KP1



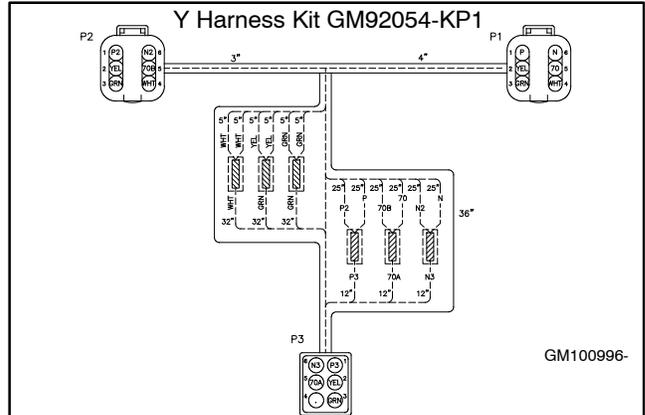
**Figure 10** Remote Gauge Harness GM100955  
(Included with Kit GM100956-KP1)



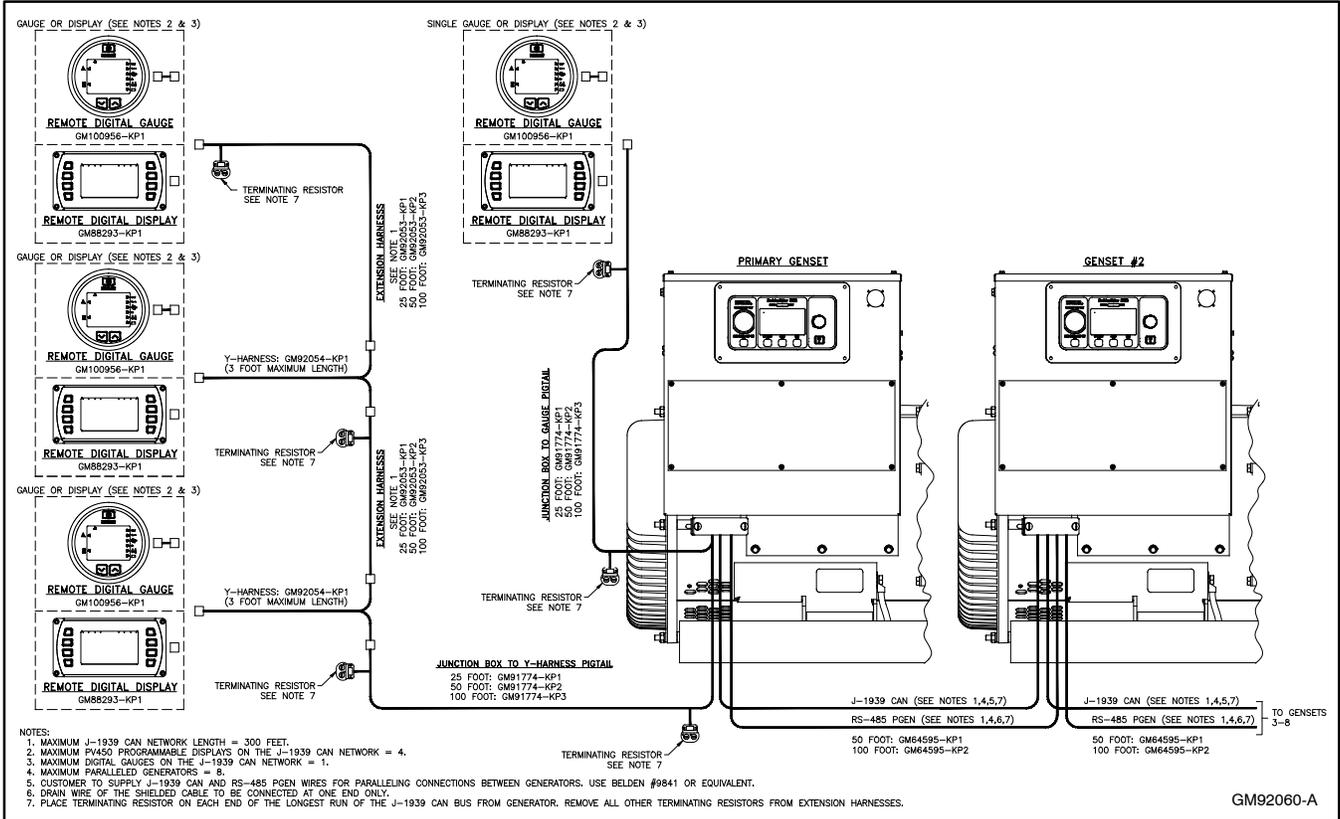
**Figure 12** Remote Extension Harness Kits  
(For Use With Kit GM100956-KP1)



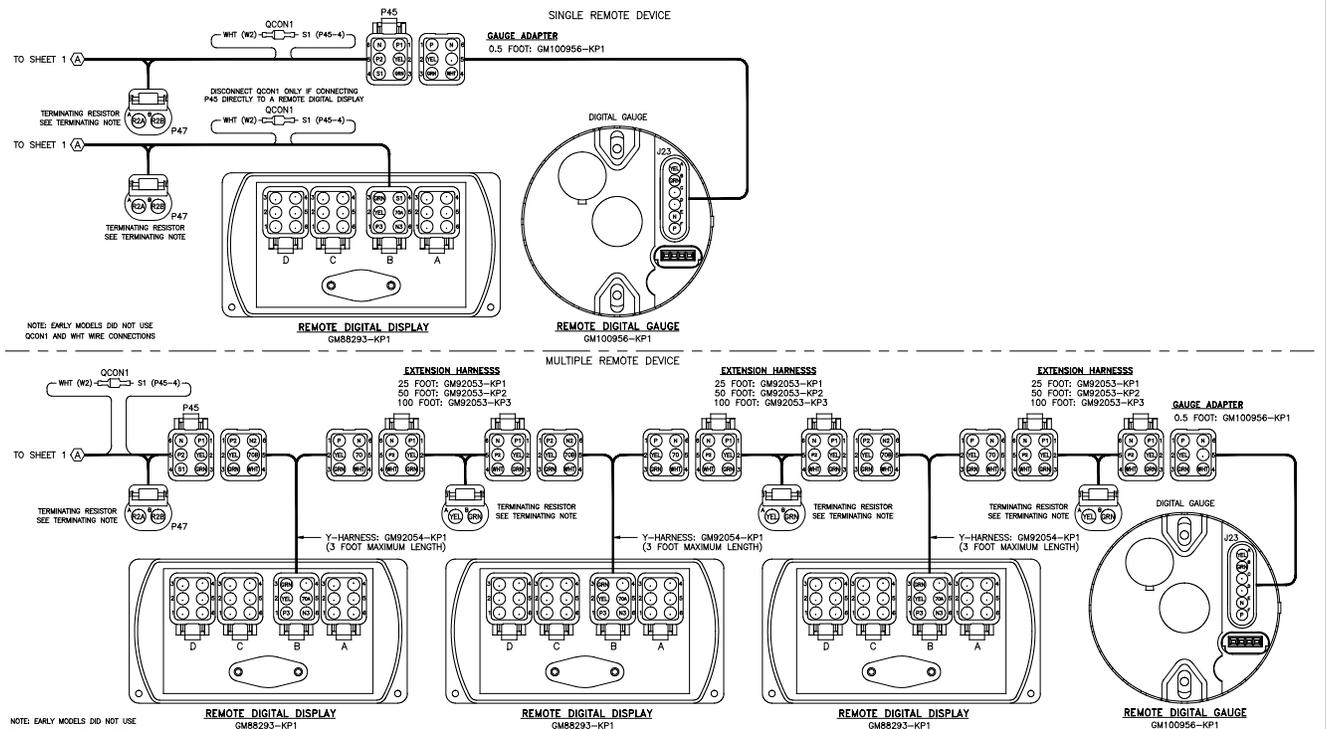
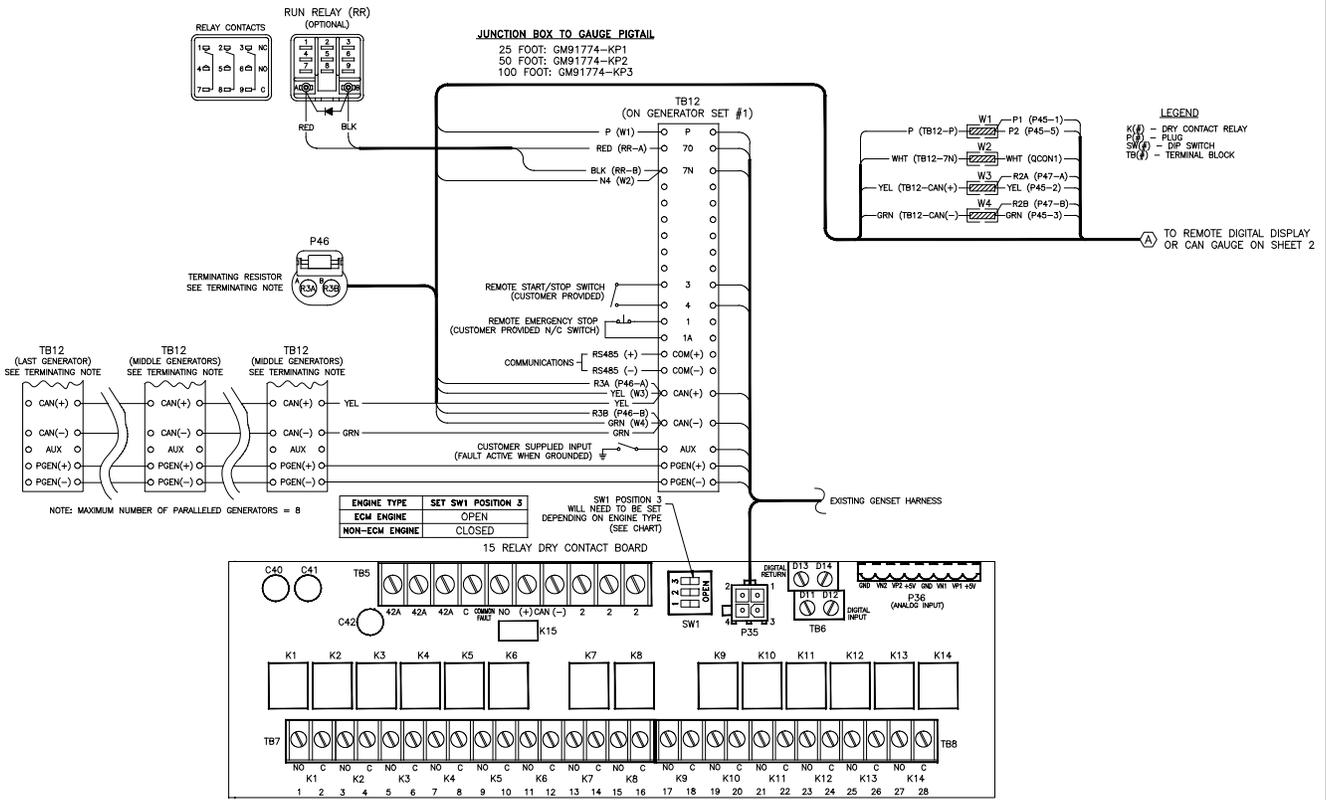
**Figure 11** Remote Extension Harness Kits  
(For Use With Kit GM100956-KP1)



**Figure 13** Y Harness Kit  
(For Use With Kit GM100956-KP1)



**Figure 14** Remote System Diagram For Kit GM100956-KP1



GM88254-B

Figure 15 Interconnection Diagram For Kit GM100956-KP1

- 2.6 Use rubber grommets and cable ties as necessary to protect and secure the wiring from sharp objects, exhaust system, water, and any moving parts.
- 2.7 For gasoline-powered marine generator sets, select a location as near as practical to the generator remote digital gauge for mounting the warning decal. The decal should be visible when starting the generator set from the remote digital gauge. Before applying the decal, ensure that the surface is clean and dry.

**3. Restore the generator set to service.**

- 3.1 Check that the generator set is off and stopped.
- 3.2 Reconnect the generator set engine starting battery, negative (-) lead last.

**4. Set the controller parameter for J1939 communications.**

- 4.1 For generator sets with an **ADC 2100 controller**: Set the ADC 2100 controller's communication parameter to Cn01 or Cn06. Consult TT-1364 for instructions to change the controller's parameter settings.

**Note: ADC 2100 controllers:** When the master switch is in the AUTO position, the controller may automatically power down and go into Sleep Mode to conserve battery power. This will occur, after one hour of inactivity, only when the CAN parameter is set to Cn06. If the CAN parameter is set to Cn01, the controller will remain powered and will draw battery power. See TT-1364 for more information.

ADC 2100 Controller		
CAN Setting	Power Down Time	Application Notes
Cn01	Never/None	J1939 gauge with no sleep mode
Cn06	1 Hour	J1939 gauge with one hour sleep mode

For generator sets with an **ADC II controller**: Set the CAN A parameter to J1939. Consult the generator set installation manual for full instructions to set the CAN A parameter.

For generator sets with an **ADC IId controller**: Set the CAN A parameter, under the Gen Set System menu, to J1939. Consult the generator set operation manual for full instructions to set the CAN A parameter.

For generator sets with a **Decision-Maker® 3500 controller**: Using SiteTech™, under the **GenSet System Configuration** menu, select J1939 for the Public CAN Protocol parameter. See Figure 16.

**Note:** For more information on SiteTech™, see TP-6701™ SiteTech Software Operation Manual.

^ GenSet System Configuration	
GenSet System Voltage	240.0 V
GenSet System Frequency	60.0 Hz
GenSet Voltage Phase Connection	Three Phase Wye
GenSet Power Rating	55.0 kW
GenSet Apparent Power Rating	68.7 kVA
GenSet Rated Current	165.4 A
GenSet System Battery Voltage	24 V
Prime Power Application	Prime
Current Transformer Ratio	400
Local Start Mode	Off
Measurement System	English
Alarm Silence Always Allowed	Always
NFPA 110 Enabled	Off
Cool Down Temperature Override	Off
Oil Sensor Type	Switch
Public CAN Protocol	J1939
Display Contrast	50
Using Voltage Selector Switch	False
GenSet System Language	English
GenSet Maximum Percent Capacity	70.0 %
Generator Overloaded Percent	85.0 %
Under Frequency Shed Level	0.50 %
Base Load Add Time	60.0 s
Base Over Load Shed Time	30.0 s
Base Under Frequency Shed Time	5.0 s
GenSet Fuel Type	Diesel
Battle Mode	Off
ECM Powered Mode	Off
GenSet Application	Marine

**Figure 16** GenSet System Configuration (in SiteTech™)

# Gauge Operation

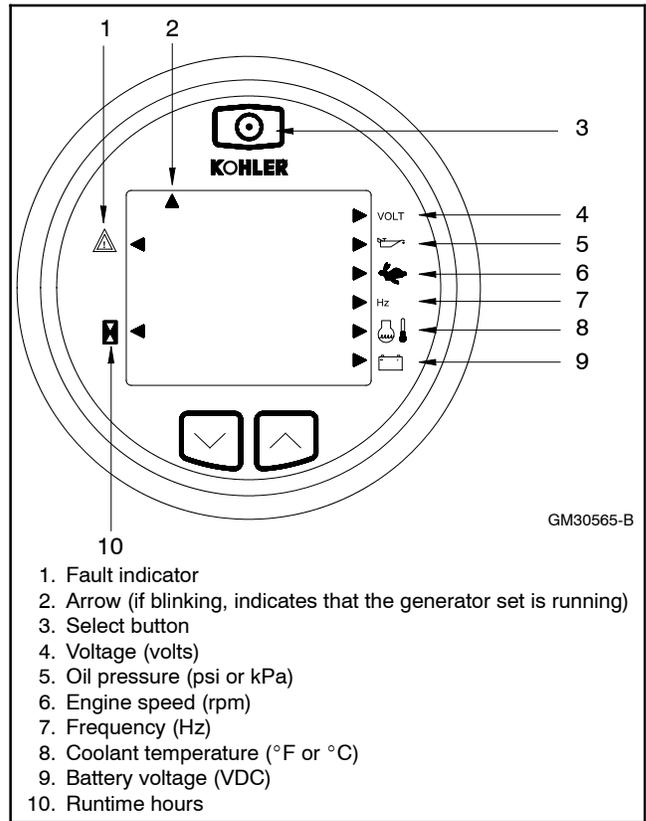
## To Select the Units of Measure:

**Note:** 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 17.
2. Apply power to the gauge.
3. The gauge displays: **Adc 2100**

**Note:** The gauge will display Adc 2100 even if the generator set is equipped with an ADC II or ADC IId controller.

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 17** Remote Digital Gauge

## Digital Gauge Modes:

**Note:** 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 17. 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). May require the installation of an optional oil pressure sender on the engine. See Figure 18.
- 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.

Model	Oil Pressure Sender
EKD and EFKD	Optional
EOD and EFOD	
EOZD and EFOZD	
EGD, EFGD, and EGZD	Standard
EKOD and EFKOD	
EKOZD and EFKOZD	

**Figure 18** Models with Optional or Standard Oil Pressure Sender

## 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 17, item 2).

**Note:** The ADC II and ADC IId must be powered (display active) for remote start/stop.

**Note:** The Decision-Maker 3500 must be powered (display active) and in the AUTO position for remote start/stop. If 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 17, 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 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 or solid 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.

**Note:** For a fault warning, the background lamp is solid. For a fault shutdown, the background lamp will flash. Consult your operation manual for more details on warnings and shutdowns.

**Note:** Always identify and correct the cause of a fault shutdown before resetting the controller. Consult the operation manual for guidance and items to check.

## Digital Gauge Fault Codes

Fault codes are displayed on the gauge when a fault condition is detected.

See Figure 19 for faults displayed on the gauge for units equipped with an ADC 2100 controller.

See Figure 20 for faults displayed on the gauge for units equipped with an ADC II or ADC IId controller.

See Figure 21 for faults displayed on the gauge for units equipped with a Decision-Maker® 3500 controller.

Units with ADC 2100 Controller	
Digital Gauge Display	Description
LOP	Low Oil Pressure
OC	Over Crank
OS	Over Speed
LCL	Low Coolant Level
LOC	Loss of Coolant
AF	Auxiliary Input Fault
HE	High Engine Temperature
OU	Over Voltage
UU	Under Voltage
OF	Over Frequency
UF	Under Frequency
LB	Low Battery Voltage
HB	High Battery Voltage

**Figure 19** Fault Codes Displayed on the Gauge (for Units Equipped with an ADC 2100 Controller)

Units with ADC II or ADC IId Controller	
Digital Gauge Display	Description
LOP	Low Oil Pressure
OC	Over Crank
OS	Over Speed
AF	Auxiliary Input Fault
HE	High Engine Temperature
OU	Over Voltage
UU	Under Voltage
OF	Over Frequency
UF	Under Frequency
LB	Low Battery Voltage
HB	High Battery Voltage

**Figure 20** Fault Codes Displayed on the Gauge (for Units Equipped with an ADC II or ADC IId Controller)

Units with Decision-Maker® 3500 Controller	
Digital Gauge Display	Description
LOP	Low Oil Pressure
OS	Over Speed
AF	Auxiliary Input Fault
HE	High Engine Temperature
OU	Over Voltage
UU	Under Voltage
OF	Over Frequency
UF	Under Frequency

For other possible fault codes, the gauge displays:

**SHdn** (for a Shutdown) or

**Alrt** (for an Alert/Warning).

Check the interface on the Decision-Maker® 3500 Controller for more details.

**Figure 21** Fault Codes Displayed on the Gauge (for Units Equipped with an Decision-Maker® 3500 Controller)

# Notes

KOHLER CO., Kohler, Wisconsin 53044 USA  
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Kohler Power Systems  
Asia Pacific Headquarters  
7 Jurong Pier Road  
Singapore 619159  
Phone (65) 6264-6422, Fax (65) 6264-6455

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