

## INSTALLATION INSTRUCTIONS

Original Issue Date: 11/14

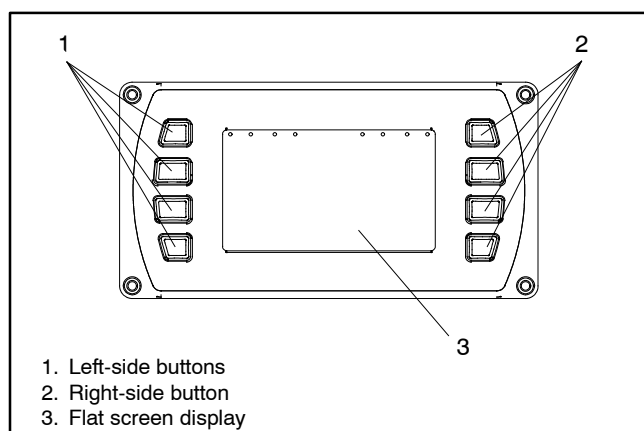
Model: **40-200EOZDJ/EOZCJ and 33-175EFOZDJ/EFOZCJ,  
13-24EKOZD and 11-20.5EFKOZD,  
350-500EOZCS and 300-450EFOZCS**

Market: **Marine**

Subject: **Remote Digital Display Kit GM88293-KP1**

### Introduction

The remote digital display allows starting, stopping, and monitoring of generator set functions. See Figure 1.



**Figure 1** Digital Display

The display communicates with the Decision-Maker® 3500 controller on the generator set model(s) listed above.

Read the entire installation procedure before beginning installation. Perform the steps in the order shown.

**Note:** Do not install more than 4 remote digital displays.

**Note:** This remote digital display does not include a “sleep” mode. If the digital display is connected and powered, it will draw battery power.

|                                  |                                       |
|----------------------------------|---------------------------------------|
| Operating voltage                | 6- 32 VDC                             |
| Operating temperature limits     | - 40°C to +85°C<br>(- 40°F to +185°F) |
| Communication protocol supported | J1939 & NMEA 2000                     |

**Figure 2** Digital Display Specifications

### Safety Precautions

Observe the following safety precautions while installing the kit.

**⚠ 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 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.

### Parts List

#### Remote Digital Display

| Kit: GM88293-KP1 |                         |             |
|------------------|-------------------------|-------------|
| Qty.             | Description             | Part Number |
| 1                | Display, remote digital | GM91770     |

## Installation Procedure

### 1. Remove the generator set from service.

- 1.1 Press the generator set OFF/RESET button to shut down the generator set.
- 1.2 Disconnect the power to the battery charger, if equipped.
- 1.3 Disconnect the generator set engine starting battery(ies), negative (-) lead first.

### 2. Install the remote digital display.

- 2.1 Consider the following when mounting the remote digital display:
  - A dry location in the wheelhouse or bridge.
  - The wiring harness length.
  - The mounting depth and overall size.
- 2.2 See Figure 5 and Figure 6 for the display mounting dimensions. See Section 4 for gimbaling mounting.
- 2.3 The diagrams shown in Figure 7 and Figure 8 provide details for connecting one or multiple digital displays.

In paralleling applications, use Belden communication cable #9841 (Kohler part number GM64595-KP1 for 50 ft. or GM64595-KP2 for 100 ft.) to connect all CAN terminals together as shown in Figure 7. Using the wiring scheme, shown in Figure 8, all generator sets will communicate to the remote digital display. Note that Generator Set #1 also powers the display so it must be ON for the remote digital display to be ON.

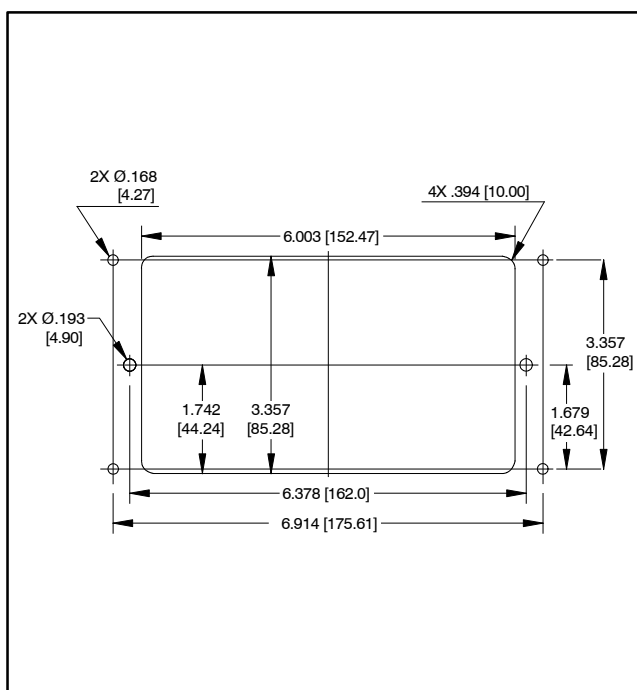
**Note:** Order harness kits, if required. See Figure 3 and Figure 4. **DO NOT exceed 91.4 m (300 ft.) CAN network length.**

| Harness Kit Numbers        | Length m (ft.) |
|----------------------------|----------------|
| GM91774-KP1 (see Figure 9) | 7.6 (25)       |
| GM91774-KP2 (see Figure 9) | 15.2 (50)      |
| GM91774-KP3 (see Figure 9) | 30.5 (100)     |

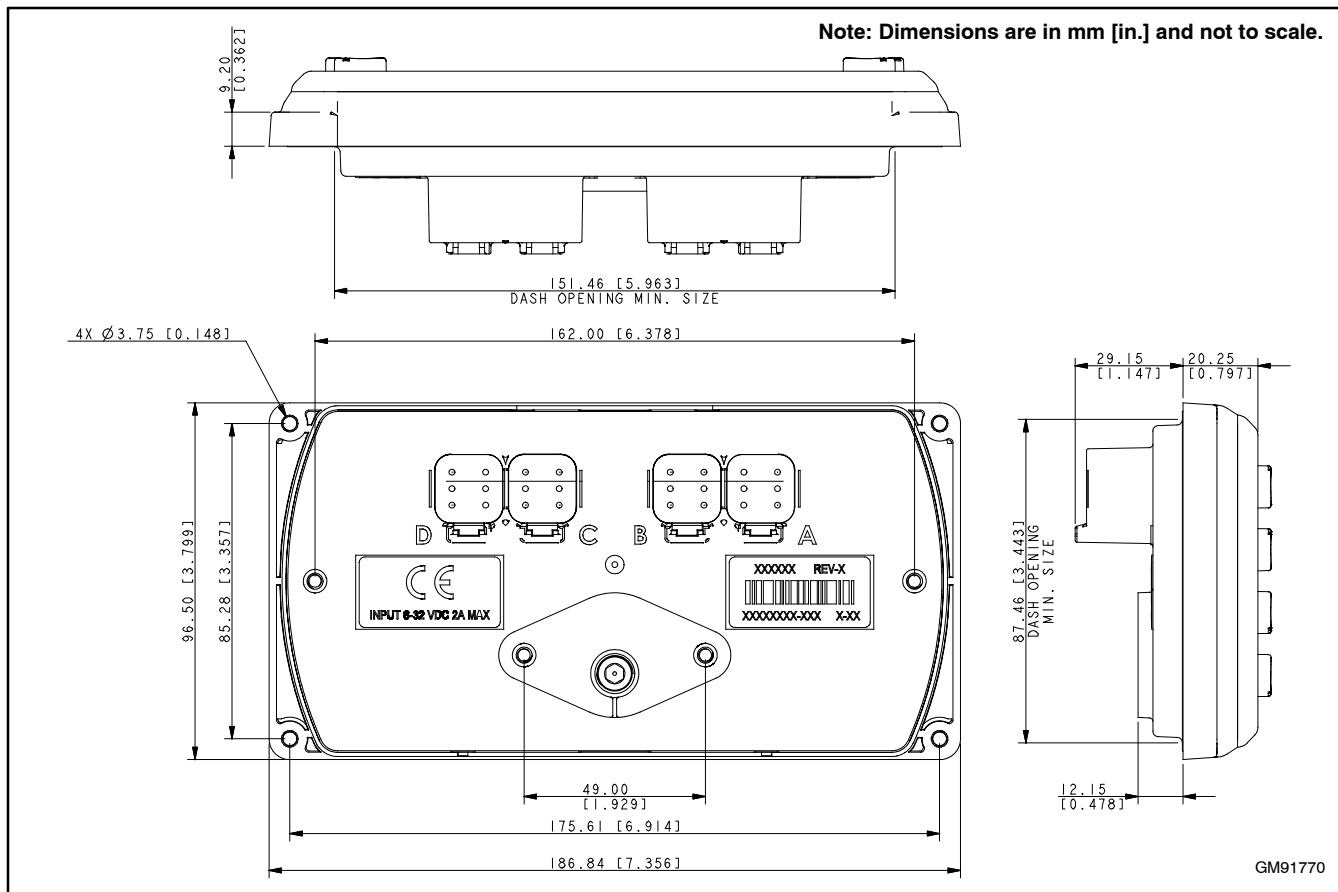
**Figure 3** Harness Kits that Connect to TB12 (In Junction Box)

| Extension Harness Kit Numbers | Length m (ft.) |
|-------------------------------|----------------|
| GM92053-KP1 (see Figure 10)   | 7.6 (25)       |
| GM92053-KP2 (see Figure 10)   | 15.2 (50)      |
| GM92053-KP3 (see Figure 10)   | 30.5 (100)     |
| <b>Y Harness Kit Number</b>   |                |
| GM92054-KP1 (see Figure 11)   |                |

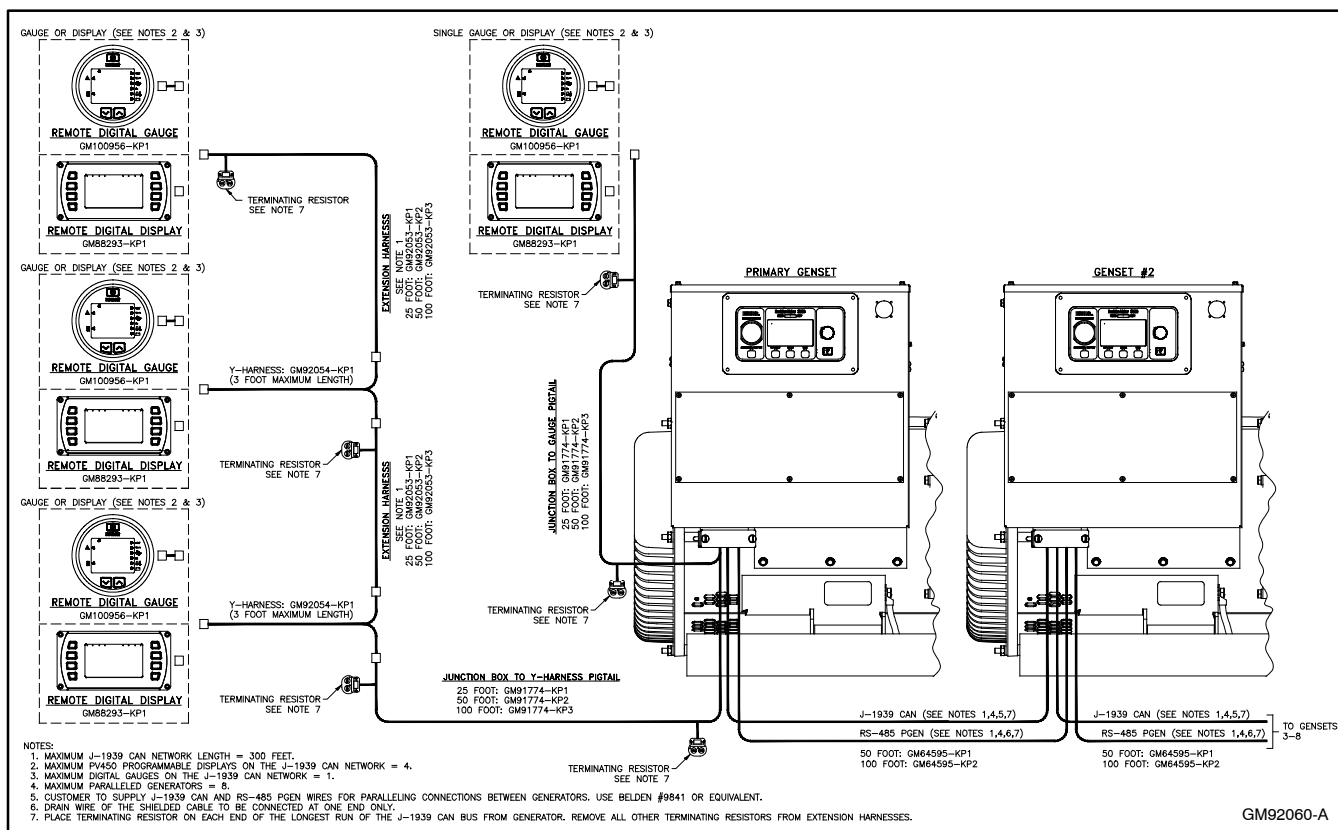
**Figure 4** Remote Extension and Y Harness Kits



**Figure 5** Cutout of Remote Digital Display

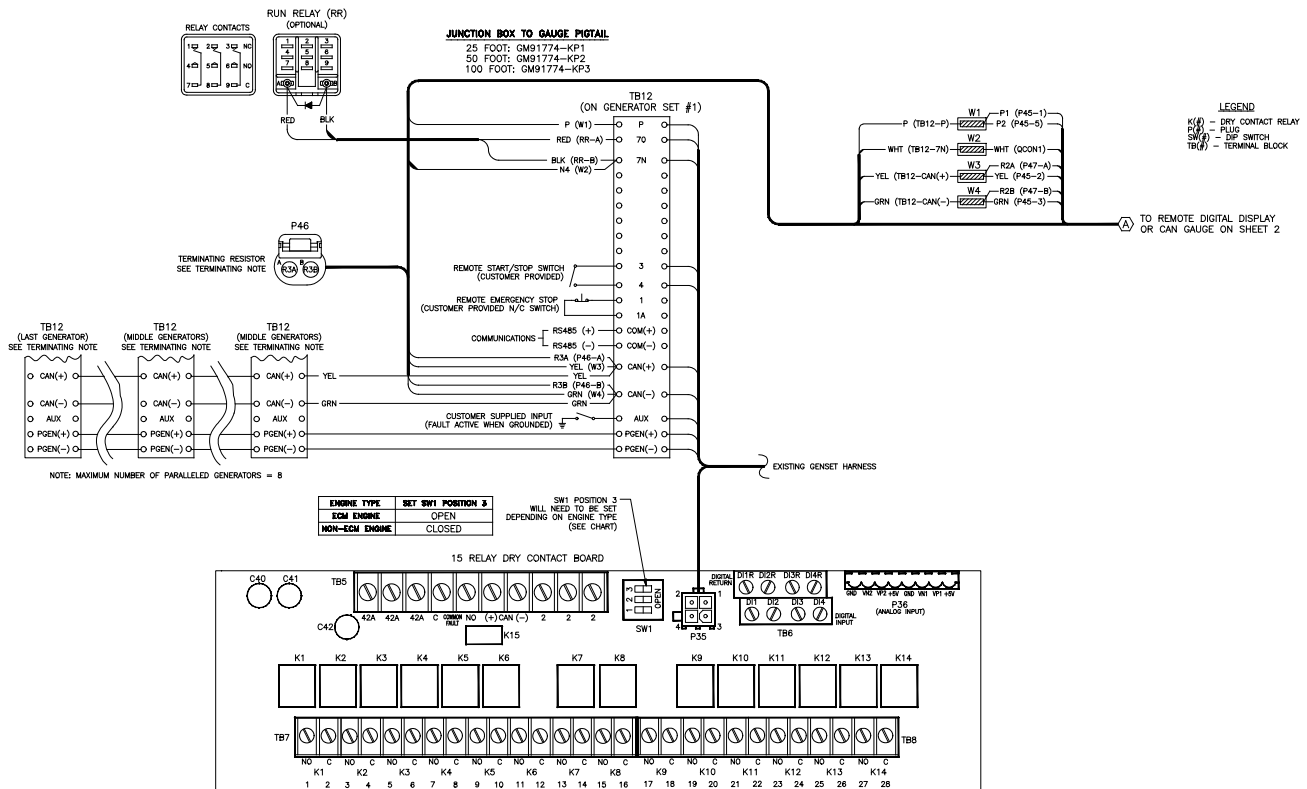


**Figure 6** Digital Display Mounting Dimensions



**Figure 7** Remote System Diagram

Sheet 1 of 2



Sheet 2 of 2

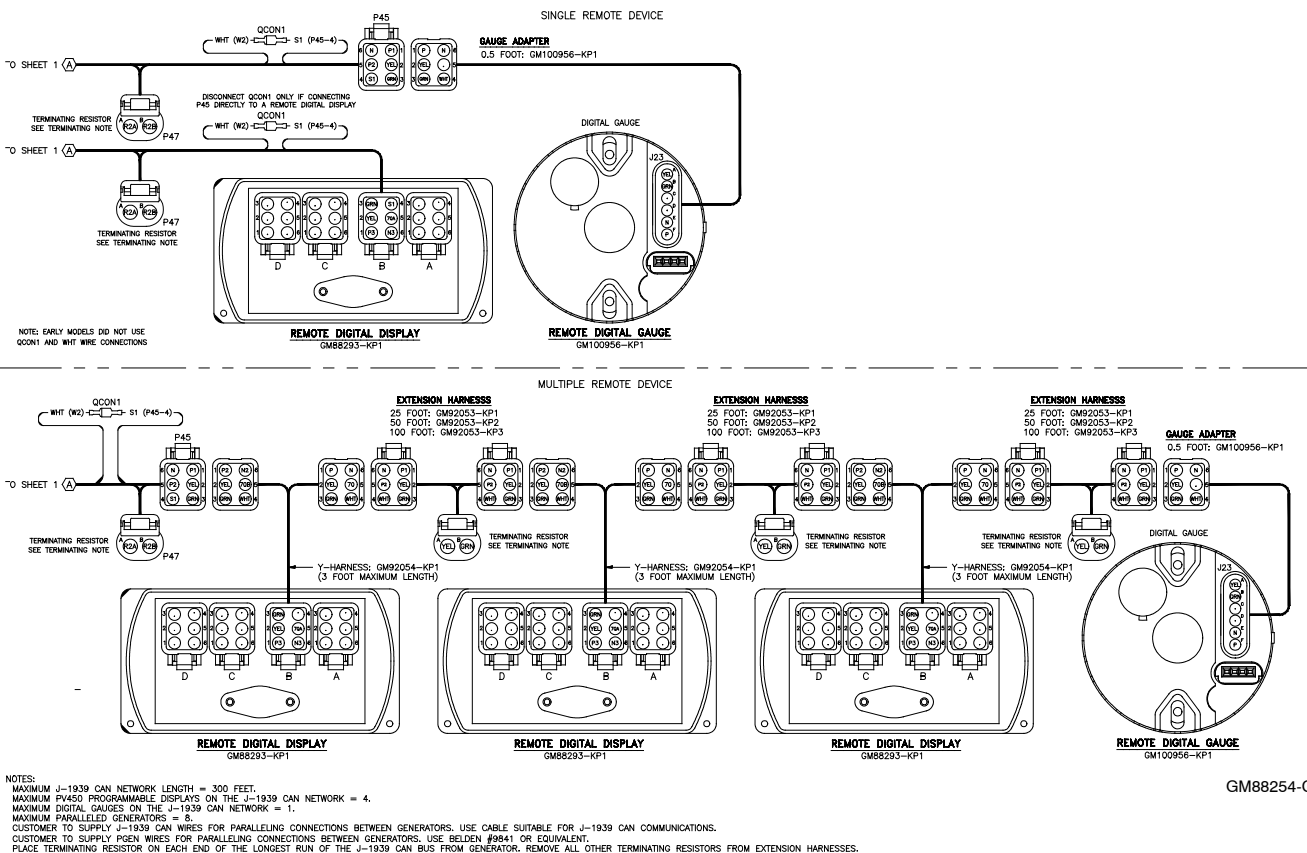


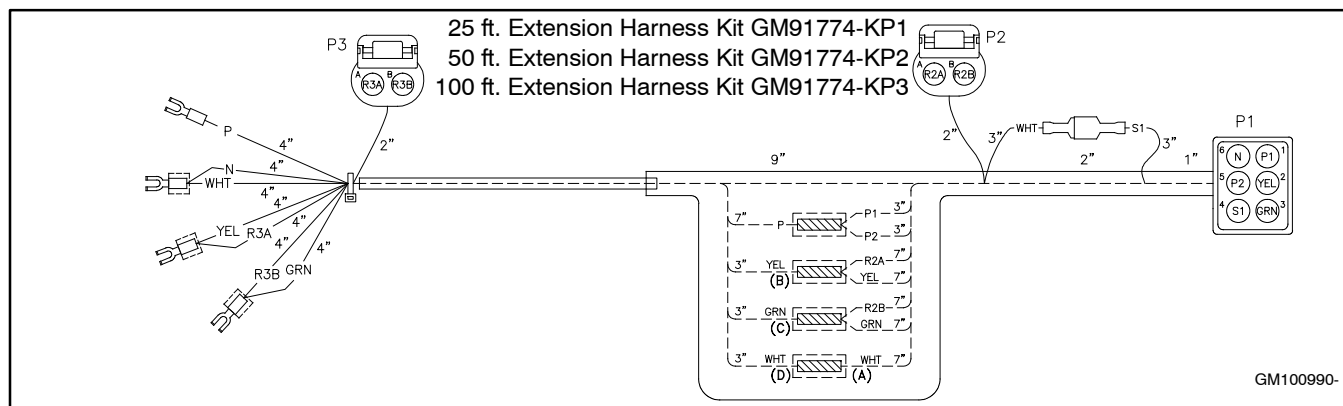
Figure 8 Interconnection Diagram

2.4 Connect the terminal ends of the harness shown in Figure 9 to terminal strip TB12 located inside the junction box. See Figure 8 for TB12 connections.

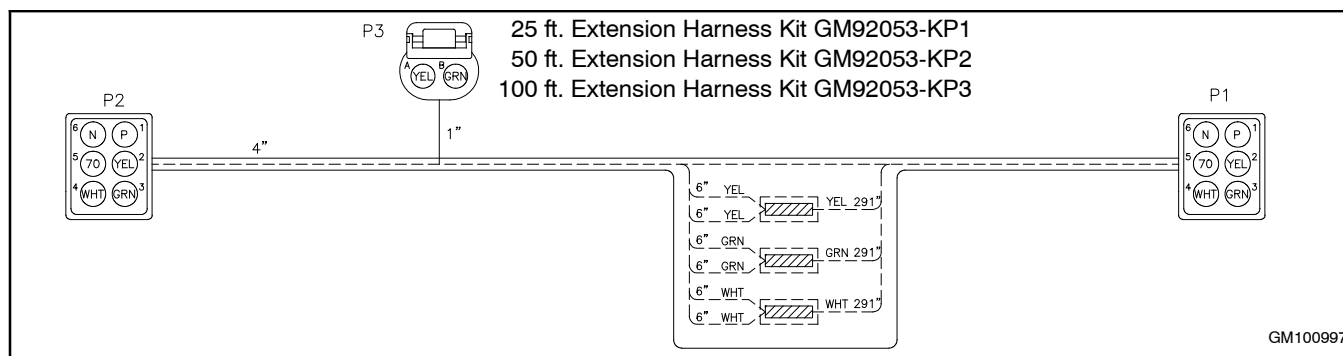
2.5 **Single Display Applications (See Figure 7 and Figure 8):**

Connect the 6-pin plug end of the harness to connector B on the display. See Figure 12 for connector B location.

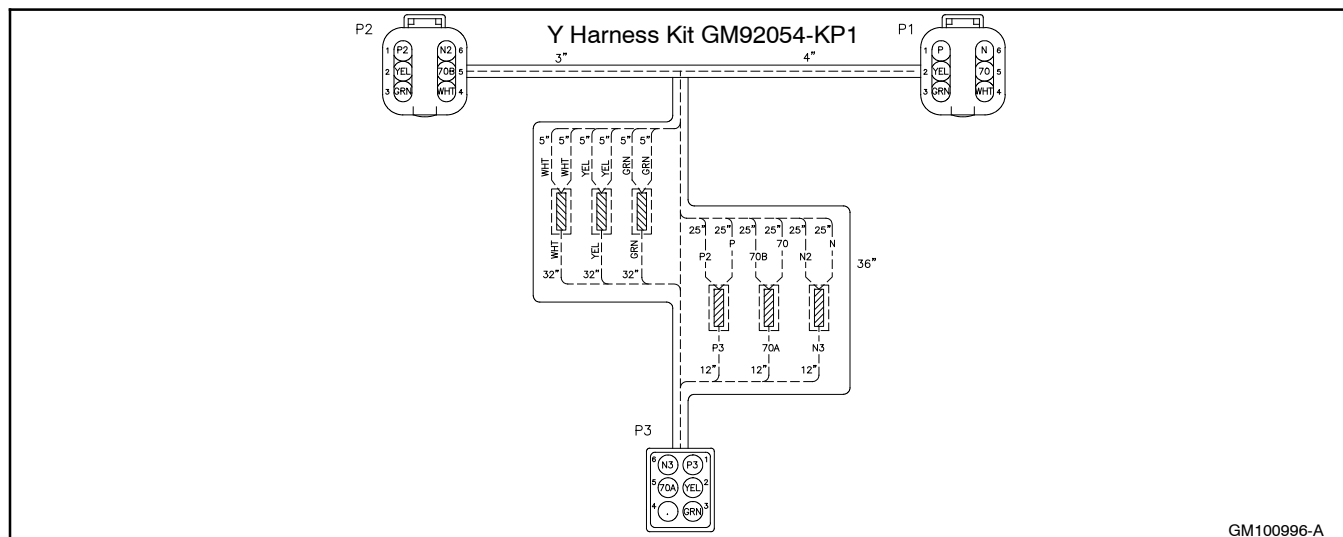
**Multiple Display Applications (See Figure 7 and Figure 8):** Connect the 6-pin plug end of the harness to an extension harness or Y-harness. Use extension harness(es) and/or Y-harness(es) (shown in Figure 10 and Figure 11) as needed. Connect the 6-pin plug end of the extension harness/Y-harness to connector B on the display. See Figure 12 for connector B location.



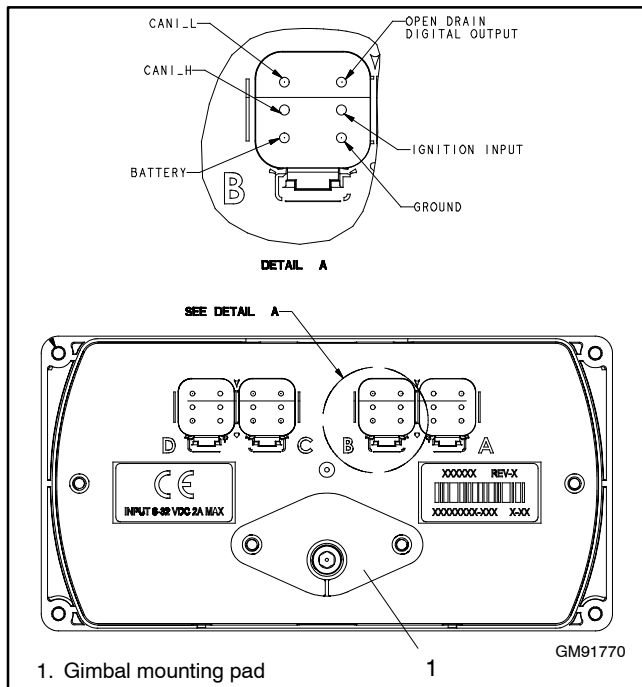
**Figure 9** Harness that Connects to Terminal Strip TB12 in the Junction Box



**Figure 10** Extension Harness



**Figure 11** Y-Harness



**Figure 12** Display Connector B and Gimbal Mounting Pad Locations

### 3. Install terminating resistor(s).

All installations require two 120 ohm terminating resistors (one on each end of the wiring).

- 3.1 Some earlier model Decision-Maker® 3500 controllers included a built-in 120 ohm terminating resistor. In all installations, **first check** the CAN+ and CAN- at the terminal strip in the junction box for 120 ohms on the controller (with the controller powered down). If measuring 120 ohms, a terminating resistor already exists in the controller and there is no need for a 2<sup>nd</sup> resistor at the controller.
- 3.2 Place one 120 ohm terminating resistor (labeled as P3 on the extension harness drawing in Figure 9 and Figure 10 or customer supplied if the harness does not contain a resistor) at the furthest end from the controller. See Figure 7 and Figure 8. If using multiple extension harnesses, remove all other terminating resistors from the extension harnesses by disconnecting the cap.
- 3.3 Place one 120 ohm terminating resistor (labeled as P2) at the controller end of the harness (customer supplied unless the controller has a built-in resistor—see step 3.1).

**Note:** Follow the notes shown in Figure 8.

- 3.4 After everything is connected, a properly terminated system with proper resistors in place will measure 60 ohms on CAN+ and CAN-.

**Final check:** Power down all of the devices and verify a proper connection by measuring 60 ohms on CAN+ and CAN-.

### 4. Gimbal Mounted Installation

- 4.1 If desired, the digital display can be gimbal mounted. See Figure 12. Source the gimbals from RAM® Mounting Systems, Inc. at [www.ram-mount.com](http://www.ram-mount.com)
- 4.2 The digital display has a matching bolt pattern for the RAM Diamond base with 9/16 in. ball (part number RAM-A-238).

\* RAM® is a registered trademark of National Products Inc. in the United States and/or other countries.

### 5. Restore the generator set to service.

- 5.1 Check that the generator set is OFF.
- 5.2 Reconnect the generator set engine starting battery, negative (-) lead last.
- 5.3 Reconnect power to the battery charger, if equipped.

### 6. Select the Public CAN protocol parameter.

- 6.1 Using SiteTech™, under the **Genset System Configuration** menu, select J1939 or NMEA 2000 for the Public CAN Protocol parameter. See Figure 13.

| 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 13** Genset System Configuration (in SiteTech™)

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

## Display Operation

The remote digital display supports monitoring up to 4 generator sets in 3 scenarios:

- Single
- Integrated paralleling
- Switchgear paralleling

CAN communications provides a simple wiring solution compared to individual gauges/meters. The CAN communication solution supports the use of multiple generators and/or gauges on the same communication bus.

In addition to monitoring, the remote digital display provides access and functionality to request generators to start and/or stop. The Decision-Maker® 3500 controller at each generator will be the primary controller for the respective generator. The controller will start and stop the generator, based on the relative condition of input signals, engine parameter status, electrical parameter status, system configuration, etc. The local mode switches (buttons) will be used for local starting and stopping (at the generator). When the AUTO mode

is selected, remote signals can be used to start and/or stop the generator or system.

**Note:** In applications where multiple displays are used: If the display doesn't connect and recognize other generator sets, load SiteTech™ and check the **GenSet Info** parameter of each generator. The **Controller ID** should be set to the following:

|                     | Controller ID |
|---------------------|---------------|
| Gen 1               | 0             |
| Gen 2 (if equipped) | 1             |
| Gen 3 (if equipped) | 2             |
| Gen 4 (if equipped) | 3             |

## Screens

Each screen displayed on the digital display includes the date and time. The date and time is set on the Decision-Maker® 3500 controller and passed to the remote digital display. Each screen also indicates alarm status if an alarm is present. Throughout this document, sample screens may include an identifier (G1, Gen 1, Starboard, etc.) for the particular generator set the information relates to. This identifier text is entered into the controller via SiteTech™. The default identifier is "Generator". The startup screen is shown in Figure 14.



**Figure 14** Startup Screen

When applying power to the gauge, do not press any buttons on the controller until after the startup screen that shows "Kohler Marine" is visible (see Figure 14). Pressing any button on the display, before or during the completion of the startup process, could result in the controller displaying an error screen, where it appears customer interface with the USB port is necessary. See Figure 15 for the error screen. If this occurs, cycle power to the controller and allow it to power up without pressing any buttons on the display to recover normal operation.



**Figure 15** Error Screen

The digital display includes 4 primary screens:

- **Electrical.** (See Section 7)
- **Start/Stop Control.** (See Section 8)
- **Generator Management Control** (only appears if PGEN is connected). (See Section 9)
- **Main** (only appears if PGEN is connected). (See Section 10).

Scroll through the primary screens by pressing the lower right button. See Figure 16.

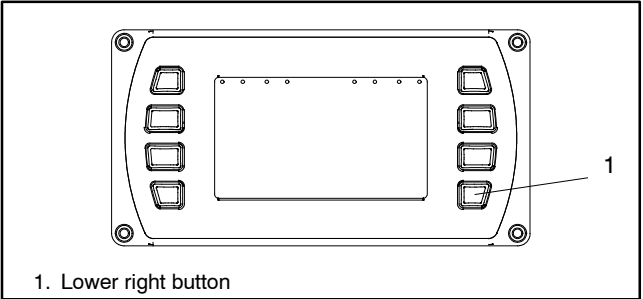


Figure 16 Lower Right Button

7. Electrical Screen

This screen displays key electrical information, in gauge view, for a single generator on a single screen. This allows for detailed monitoring of electrical status.



Figure 17 Electrical Screen

Total Power

This dial gauge shows total real power (kW) on the generator. The lower dial limit is zero (0) and the upper dial limit is 125% of rated kW to nearest 5 kW (based on system data values).

| Gauge Color Range | Description                                    |
|-------------------|------------------------------------------------|
| Green             | Less than over power warning level             |
| Yellow            | Between over power warning and shutdown levels |
| Red               | Above over power shutdown level                |

Figure 18 Total Power

Frequency

This dial gauge shows generator AC frequency in Hertz (Hz). Upper and lower dial limits depend on system frequency setting (50 Hz or 60 Hz):

| System Frequency | Upper/Lower Limits |
|------------------|--------------------|
| 50 Hz            | 45- 55             |
| 60 Hz            | 55- 65             |

| Gauge Color Range | Description                                                                                               |
|-------------------|-----------------------------------------------------------------------------------------------------------|
| Green             | Between under frequency and over frequency warning levels                                                 |
| Yellow            | Between under frequency shutdown and warning levels<br>Between over frequency warning and shutdown levels |
| Red               | Less than under frequency shutdown level<br>Above over frequency shutdown level                           |

Figure 19 Frequency

## Voltage

This dial gauge shows average line-to-line voltage. The lower dial limit is zero (0). The upper dial limit depends on the system voltage setting:

| System Voltage | Full Scale Value |
|----------------|------------------|
| 100- 139       | 150              |
| 190- 240       | 300              |
| 277- 480       | 600              |
| 600            | 800              |

| Gauge Color Range | Description                                           |
|-------------------|-------------------------------------------------------|
| Green             | Between under voltage and over voltage warning levels |
| Yellow            | Between under voltage shutdown and warning levels     |
|                   | Between over voltage warning and shutdown levels      |
| Red               | Less than under voltage shutdown level                |
|                   | Above over voltage shutdown level                     |

**Figure 20** Voltage

## Percent (%) Load

This dial gauge shows total real power (kW) as a calculated percentage of rated generator kW. The lower dial limit is 0% and the upper dial limit is 125%.

| Gauge Color Range | Description                                    |
|-------------------|------------------------------------------------|
| Green             | Less than over power warning level             |
| Yellow            | Between over power warning and shutdown levels |
| Red               | Above over power shutdown level                |

**Figure 21** Percent (%) Load

## Power Factor

This dial gauge shows total power factor for the generator load. The lower dial limit is zero (0) and the upper dial limit is 1.0.

| Gauge Color Range | Description          |
|-------------------|----------------------|
| Green             | Between 0.80 and 1.0 |
| Yellow            | Below 0.80           |

**Figure 22** Power Factor

“Lead” or “Lag” will be shown on the gauge as text. Lead is displayed in red while Lag is displayed in green.

“- Power” or “+Power” will be shown on the gauge as text. -Power is displayed in red while +Power is displayed in green.

## Average Current

This dial gauge shows the average of line currents. The lower dial limit is zero (0) and the upper dial limit is 125% of rated current.

| Gauge Color Range | Description                          |
|-------------------|--------------------------------------|
| Green             | Less than over current warning level |
| Yellow            | Above over current warning level     |

**Figure 23** Average Current

## Status

The Status indicates the generator state in the form of text. There are 4 Status possibilities:

- Off
- Standby (the Decision-Maker® 3500 controller is in AUTO)
- Shutdown
- Run

## Button Functions:

The top left button selects the Electric Multi Gen summary screen. See Section 11.

The second from the top, left button selects the Mechanical Multi Gen summary screen. See Section 12.

The two lowest buttons on the left (up and down) select the available generators (highlights selected generator set).

The two lowest buttons on the right (up and down) move to the next screen.

The top right button forces a move to the Alarms screen. See Section 13.

The second from the top, right button selects the Mechanical gauge screen for this generator. See Section 14.

## 8. Start/Stop Screen

From this screen, the operator can start and stop a single generator(s) or the system generator(s) in Decision-Maker® 3500 controlled, paralleling operation.



**Figure 24** Multi-Gen Start/Stop Screen

### Button Functions:

The top left button activates START for the selected generator set.

The second from the top, left button activates STOP for the selected generator set.

The two lowest buttons on the left (up and down) select available generators (highlights selected generator set).

The two lowest buttons on the right (up and down) move to the next screen.

The top right button forces a move to the Alarms screen. See Section 13.

The second from the top, right button is not used in this application.

### Start/Stop Functions:

When the Decision-Maker® 3500 controller is used for paralleling (PGEN connected), all generators will start when any one receives a START signal if the following conditions are true:

- All generators are in AUTO,
- None are already running, and
- No faults are active

After all generator sets are started, Generator Management may turn certain generators OFF, depending on the configuration of Generator Management.

If the Decision-Maker® 3500 controller is not controlling paralleling, individual START signals function independently if the following conditions are true:

- Generator is in AUTO,
- Generator is not running, and
- No faults are active

When the Decision-Maker® 3500 controller is used for paralleling (PGEN connected), all generators that are being commanded to run by Generator Management continue running until the START signal is removed from all generator sets.

If the Decision-Maker® 3500 controller is not controlling paralleling, individual STOP signals function independently if the following conditions are true:

- Generator is in AUTO and
- Remote start contacts to this generator set are not active.

The available selection (Start or Stop) is based on the generator set status. See Figure 25.

| Function       | Color                      | Multi-Gen<br>(PGEN)                                                                                                                                                                                                                                                                              | System<br>(Switchgear Controlled)                                                                                                                                                               |
|----------------|----------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                |                            | Generator Status                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                 |
| Start          | Green =<br>Selectable      | Standby<br>Cooldown (no start signal is active)                                                                                                                                                                                                                                                  | At least one generator has one of the following conditions:<br>Standby<br>Unloading (removal of remote start)                                                                                   |
| Stop           | Red =<br>Selectable        | Running (remote start contacts open)<br>Crank pause<br>Cranking<br>Idle<br>Preheat                                                                                                                                                                                                               | At least one generator has one of the following conditions:<br>Running (all remote start contacts are open)<br>Crank pause<br>Cranking<br>Idle<br>Preheat<br>Synching<br>Breaker trip<br>Online |
| Not In<br>Auto | Grey=<br>Not<br>Selectable | OFF<br>Not in Auto<br>Running<br>Fault/shutdown<br>Stopping<br>ECM powered<br>Fuel priming<br>Unloading (if PGEN is connected)<br>Stop by Generator Management (if PGEN is connected)<br>Synching (if PGEN is connected)<br>Breaker trip (if PGEN is connected)<br>Online (if PGEN is connected) | All in OFF<br>All are Not in Auto<br>Any remote start contacts are closed<br>All generators have one of the following conditions:<br>Fault/shutdown<br>Stopping<br>ECM powered (if in OFF)      |

**Figure 25** Start/Stop and Generator Status

## 9. Generator Management Screen (Paralleling Only- PGEN Connected)

This screen only appears if the Decision-Maker® 3500 is controlling paralleling and Generator Management.



**Figure 26** Generator Management Screen

This screen shows the capacity of the generator system (illustrated with a green bar) as a sum of the capacities of all generators online (connected to the bus). This screen shows the total bus load (illustrated with a blue bar) as the sum of the load on all generators on the bus. This screen also shows the start and stop levels for the generators that are included in Generator Management.

**Note:** Use the generator identifiers to identify the generators on these screens. The generator can fall into any order in Generator Management.

If the load is high enough for the system to consider a generator to start, the start accumulator will start filling. This is displayed as a progress bar on the screen. The bar is no longer displayed after the generator comes online (breaker closes).

If the load drops low enough that a generator is unneeded, the stop accumulator will start filling. This is displayed as a progress bar on the screen. The bar is no longer displayed after the generator disconnects from the bus (breaker opens).

The Start and Stop levels are broadcast and displayed in actual kW. These values will change dynamically as generators are added, faulted, overridden, or stopped.

To the right of the bar graph on the screen is the total kW (sum) for all generators in the system.

### Button Functions:

The top left button selects the Electrical gauge screen for the selected generator set. See Section 7.

The second from the top, left button selects the Mechanical gauge screen for the selected generator set. See Section 14.

The two lowest buttons on the left (up and down) select the available generators (highlights selected generator set).

The two lowest buttons on the right (up and down) move to the next screen.

The top right button forces a move to the Alarms screen. See Section 13.

The second from the top, right button selects the Electric Multi Gen summary screen. See Section 11.

## 10. Main Screen (Paralleling Only- PGEN Connected)

This screen only appears if the Decision-Maker® 3500 is controlling paralleling. If external gear is used, this screen shows accurate meter values but breaker status will be invalid.



**Figure 27** Main Screen

This screen shows the generators, the breakers, and basic information (status, meters, etc.). The generators and bus segments will be red (if ON or hot, and dangerous voltage is present) or green (if OFF or not hot, and no voltage is present).

The bus is shown as red when hot. Hot implies not dead or when bus voltage is above zero. The bus is shown as green when not hot.

The generator is shown as red when running. The generator is shown as green when not running.

The breaker is shown not connected (spaced from the bus) when the status is open. The breaker is shown connected (no spaces) when the status is closed.

The six circles indicate the status of Load Management, six for each. The button(s) appears blue if the load is added (ON) or orange if the load is shed (not ON). The determination comes from the value of the load shed parameter (next to shed). For those circles equal to or less than this parameter value, 1 at the bottom, will be blue to indicate that it is added. For those circles greater than the parameter value, the circle will be orange to indicate that it is shed.

If a box appears to the left of the text on the screen, it indicates that condition is present:

- Red box ShtDn (Shutdown)
- Yellow box Warn (Warning)
- Orange box NIA (Not in Auto)

### Button Functions:

The top left button selects the Electrical gauge screen for the selected generator set. See Section 7.

The second from the top, left button selects the Mechanical gauge screen for the selected generator set. See Section 14.

The two lowest buttons on the left (up and down) select the available generators (highlights selected generator set).

The two lowest buttons on the right (up and down) move to the next screen.

The top right button forces a move to the Alarms screen. See Section 13.

The second from the top, right button selects the Electric Multi Gen summary screen. See Section 11.

# 11. Electric Multi Gen Screen

This screen shows electrical information for all generators in a table format for easy visual comparison. The following information is displayed:

- Volts L1- L2
- Volts L2- L3
- Volts L3- L1
- Amps L1
- Amps L2
- Amps L3
- Frequency
- kW
- PF (Power Factor)
- Percent Load (calculated from total power and rated kW)

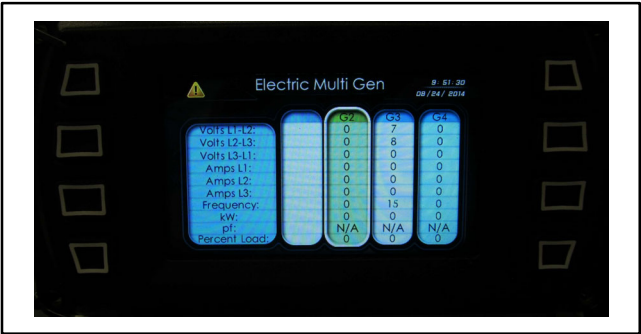


Figure 28 Electric Multi Screen

## Button Functions:

The top left button selects the Electrical gauge screen for the selected generator set. See Section 7.

The second from the top, left button selects the Mechanical gauge screen for the selected generator set. See Section 14.

The two lowest buttons on the left (up and down) select the available generators (highlights selected generator set).

The two lowest buttons on the right (up and down) move to the next screen.

The top right button forces a move to the Alarms screen. See Section 13.

The second from the top, right button selects the Mechanical Multi Gen summary screen. See Section 12.

## 12. Mechanical Multi Gen Screen

This screen shows mechanical information for all generators in a table format for easy visual comparison. The following information is displayed:

- Engine speed RPM
- Oil Pressure (kPa or psi)
- Coolant Temperature (degrees C or F)
- Battery Volts
- Run Hours
- Fuel Rate (liters/hr. or gal/hr.)
- Status:
  - Off
  - Crank On
  - Crank Pause
  - Idle
  - Running
  - Cool Down
  - Stopping
  - Shutdown
  - Fuel Priming
  - ECM Powered
  - Standby
  - Preheat
  - Unloading
  - Stopped by Generator Management
  - Synching
  - Breaker Trip
  - Online



**Figure 29** Mechanical Multi Gen Screen

### Button Functions:

The top left button selects the Electrical gauge screen for the selected generator set. See Section 7.

The second from the top, left button selects the Mechanical gauge screen for the selected generator set. See Section 14.

The two lowest buttons on the left (up and down) select the available generators (highlights selected generator set).

The two lowest buttons on the right (up and down) move to the next screen.

The top right button forces a move to the Alarms screen. See Section 13.

The second from the top, right button selects the Electric Multi Gen summary screen. See Section 11.

### 13. Alarms Screen

When a new alarm occurs, the alarm indicator flashes. The alarm indicator alerts the operator to access this screen. The Alarms screen displays a list of the most recent alarms. As alarms are cleared (at the generator) by user intervention or by normal sequence operation, the alarm disappears from the message list. When no active alarms exists, for any generator in the system, the alarm indicator changes from Red (for Shutdown) or Amber (for Warning) to Green. The Alarms screen contains the following information:

- Source (indicates which generator has the alarm. example: Gen2)
- SPN (Suspect Parameter Number as defined by J1939)
- FMI (Failure Mode Indicator as defined by J1939)
- Description



**Figure 30** Alarms Screen

### Button Functions:

The top left button activates ACK (Acknowledge) to the selected alarm.

The second from the top, left button activates ACK (Acknowledge) ALL for all alarms.

The two lowest buttons on the left (up and down) navigate to a particular alarm.

The two lowest buttons on the right (up and down) move to the next screen.

The second from the top, right button is not used in this application.

The top right button is unused.

## 14. Mechanical Screen

This screen displays key mechanical information, in gauge view, for a single generator set on a single screen. This allows the operator to monitor mechanical status.

Each generator set has unique information that is available to view by selecting the particular generator from the sequential list.



**Figure 31** Mechanical Screen

### Engine Speed

This dial gauge shows engine speed in RPM. The lower dial limit is zero (0). The upper dial limit is based on rated system speed:

| System Speed | Upper Limits |
|--------------|--------------|
| 1500         | 2000 RPM     |
| 1800         | 2250 RPM     |
| 3000         | 4000 RPM     |
| 3600         | 4500 RPM     |

| Gauge Color Range | Description                                                                         |
|-------------------|-------------------------------------------------------------------------------------|
| Green             | Between low and high engine speed shutdown levels                                   |
| Red               | Less than low engine speed shutdown level<br>Above high engine speed shutdown level |

**Figure 32** Engine Speed

## Battery Voltage

This dial gauge shows battery voltage as measured by the controller. The lower dial limit is 50% of system battery voltage:

| System Battery Voltage | Lower Limits |
|------------------------|--------------|
| 12 volt                | 6 volts      |
| 24 volt                | 12 volts     |

The upper dial limit is 150% of system battery voltage:

| System Battery Voltage | Upper Limits |
|------------------------|--------------|
| 12 volt                | 18 volts     |
| 24 volt                | 36 volts     |

| Gauge Color Range | Description                                                         |
|-------------------|---------------------------------------------------------------------|
| Green             | Between low and high battery warning levels                         |
| Yellow            | Below low battery warning level<br>Above high battery warning level |

**Figure 33** Battery Voltage

### Oil Pressure

This dial gauge displays oil pressure. The lower dial limit is zero (0). The upper dial limit is 690 kPa (100 psi).

| Gauge Color Range | Description                                          |
|-------------------|------------------------------------------------------|
| Green             | Above low oil pressure warning level                 |
| Yellow            | Between low oil pressure shutdown and warning levels |
| Red               | Less than low oil pressure shutdown level            |

**Figure 34** Oil Pressure

### Coolant Temperature

This dial gauge displays the engine coolant temperature. The lower dial limit is 0°C (32°F). The upper dial limit is 150°C (300°F).

| Gauge Color Range | Description                                                                                                 |
|-------------------|-------------------------------------------------------------------------------------------------------------|
| Green             | Between low and high coolant temperature warning levels                                                     |
| Yellow            | Below low coolant temperature warning level<br>Between high coolant temperature warning and shutdown levels |
| Red               | Above high coolant temperature shutdown level                                                               |

**Figure 35** Coolant Temperature

## Runtime

This screen displays engine run time hours.

## Fuel Flow

This screen displays fuel flow rate as either Liters-per-hour or Gallons-per-hour as reported by the ECM.

### Button Functions:

The top left button selects the Electric Multi Gen summary screen. See Section 11.

The second from the top, left button selects the Mechanical Multi Gen summary screen. See Section 12.

The two lowest buttons on the left (up and down) select the available generators (highlights selected generator set).

The two lowest buttons on the right (up and down) move to the next screen.

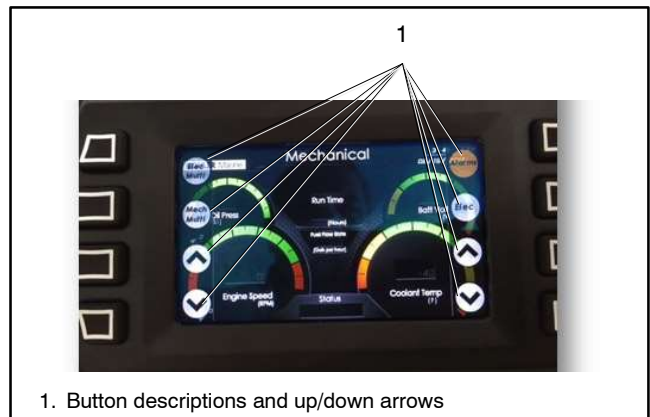
The top right button forces a move to the Alarms screen. See Section 13.

The second from the top, right button selects the Electrical gauge screen for the selected generator set. See Section 7.

## 15. User Menus

From any of the main screens, activate the Menu Selection Layer by pressing any key.

When the button descriptions and up/down arrows are displayed on the screen (see Figure 36), press and hold down the lower right button for approx. 7 seconds until the screen shown in Figure 37 appears.



**Figure 36** Menu Selection Layer

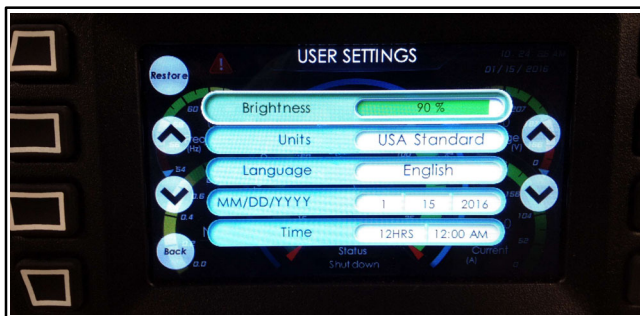


**Figure 37** User Menus

**Note:** Engine Diagnostics and System Settings are not supported at this time.

Press the button next to User Settings. From User Settings, the operator can adjust the following:

- **Brightness.** Use the up/down arrow buttons to adjust screen brightness from 100- 0%.
- **Units.** Use the up/down arrow buttons to select how units are displayed on the remote digital display. Selectable options include: USA Standard, Metric Bar, Metric kPa, or British Standard.
- **Language.** At this time, English is the only available language option.
- **Day.** Use the up/down arrow buttons to select how the day/month/year is displayed on the remote digital display.
- **Time.** Use the up/down arrow buttons to select how the time is displayed on the remote digital display.



**Figure 38** User Settings

To save adjustments, press the button next to Back and then press the button next to Gauge Display to return to the display screen.

To discard adjustments, press the button next to Restore and press the lower right button. Press the button next to Back and press the button next to Gauge Display to return to the display screen.

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