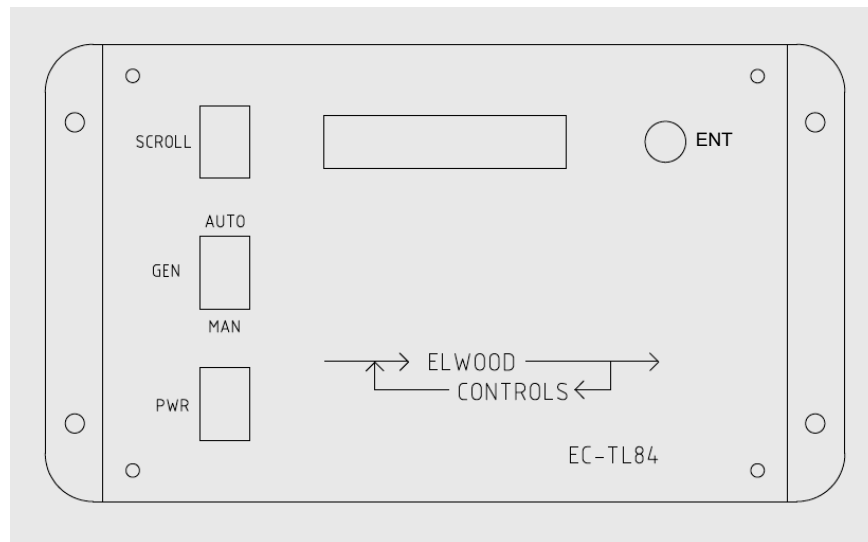




EC-TL84

Installation and Operation Manual



DISCLAIMER

Elwood Controls, LLC accepts no responsibility for damages arising from any circumstances involving system malfunction. The system should be tested thoroughly upon completion of installation and periodically to assure the user of proper function. Contact our technical support department when system operation is impaired.

The functionality of the EC-CLink is directly dependant on the cellular network to which it is connected. Coverage area should be carefully considered when selecting a cellular network for service . Elwood Controls, LLC accepts no responsibility for damages arising from malfunction of the EC-CLink.



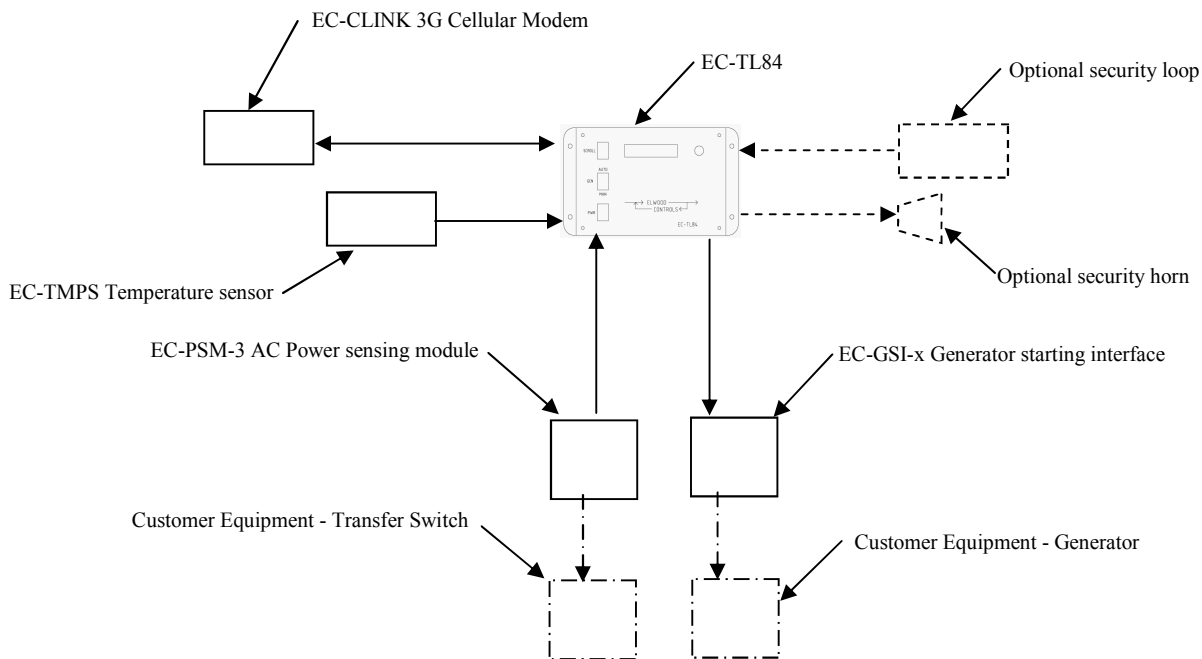
Warning! Read this manual completely prior to starting any installation.



WARNING! All power sources **MUST** be de-energized during all installation procedures. Failure to comply with this will void all warranties and could lead to serious injury or death.

NOTE: If there are any questions during Installation please contact us at 561-714-0883 or techsupport@elwoodcontrols. We are here to help assure your installation is successful.

PART 1: Functional Block Diagram



PART 2: System Overview

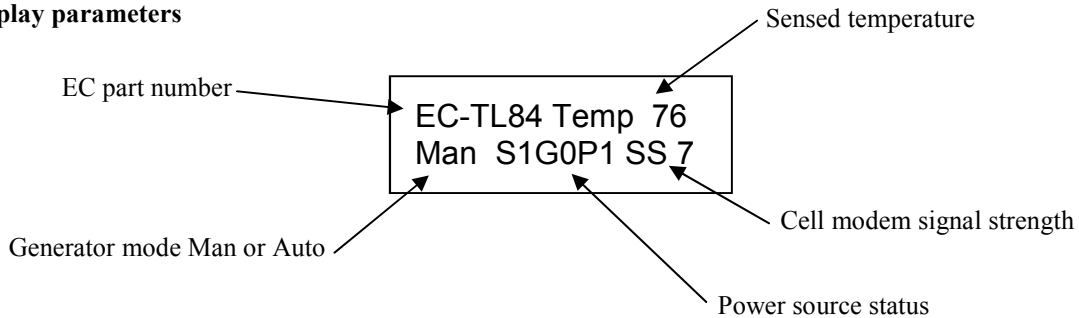
The EC-TL84 provides a cellular text messaging alarm notification system and automatic generator control and cellular text message power status reporting.

The system sends alarm text messages to a cell phone number that is entered into the system during the setup process. The alarm messages that can be sent are “Hi Temp Alarm”, “Lo Temp Alarm” and “Intrusion Alarm”. When the automatic generator starting mode is enabled the system will also send power status indication text messages. The power status text messages that are sent are “Shore Power Off”, “Gen Power On” and “Shore Power On”

Automatic generator starting is provided through one of four user selectable starting sequences using one of three generator starting interface modules.

The system is provided with a 3G HSPA cellular modem for sending the alarm and power status text messages.

Display parameters



Power source status

This field provides the power source status that is reported to the system from the EC-PSM-3 power sensing module. The S represents shore power, G generator power and P power at the distribution panel. The digits, 1 or 0, following each letter indicate if the power is ON (1) or OFF (0). The S1G0P1 shown indicates that the shore power is ON, generator power is OFF and there is power (ON) at the distribution side of the transfer switch.

Power up display

The power up display delays operation until the cellular modem has initialized and has connected to the network.

Modem Booting
Please Wait

Settings Mode display

The settings Mode will display momentarily after the ENT button has been pressed for 10 seconds to indicate that the system is about to display the settings menu

Settings Mode

Settings Menu displays

The settings Menu will display the setting parameters in a top to bottom list. The scroll switch allows moving up and down in the menu item list. Pressing the ENT button while the cursor is on the item goes to the setting entry display.

> Phone Number
> GEN Start Mode

> Send Times
> Resend Time

> Set Temp HIGH
> Set Temp Low

Parameter Value Setting Display

Setting a parameter value is done on the parameter setting screen. The cursor is moved from side to side using the scroll switch. Each press of the switch indexes the cursor one position in one direction or the other. The entered value is displayed on the second line as the digits are entered. Each entry display is tailored to the value being set.

To verify a previously entered value enter the parameter setting by pressing the ENT button when the item is selected in the menu to enter the setting display. The value will appear on the bottom line of the display. Once verified, scroll to the < symbol and press the ENT button to return to the menu.

0123456789 <
5617140883

0123456789 - <
-05

Display Backlighting

The display backlight turns off after 5 minutes of inactivity. To turn on the display backlight press the ENT button.



WARNING! GENERATOR SAFETY NOTICE

Labels are provided with this system that must be placed on the following:

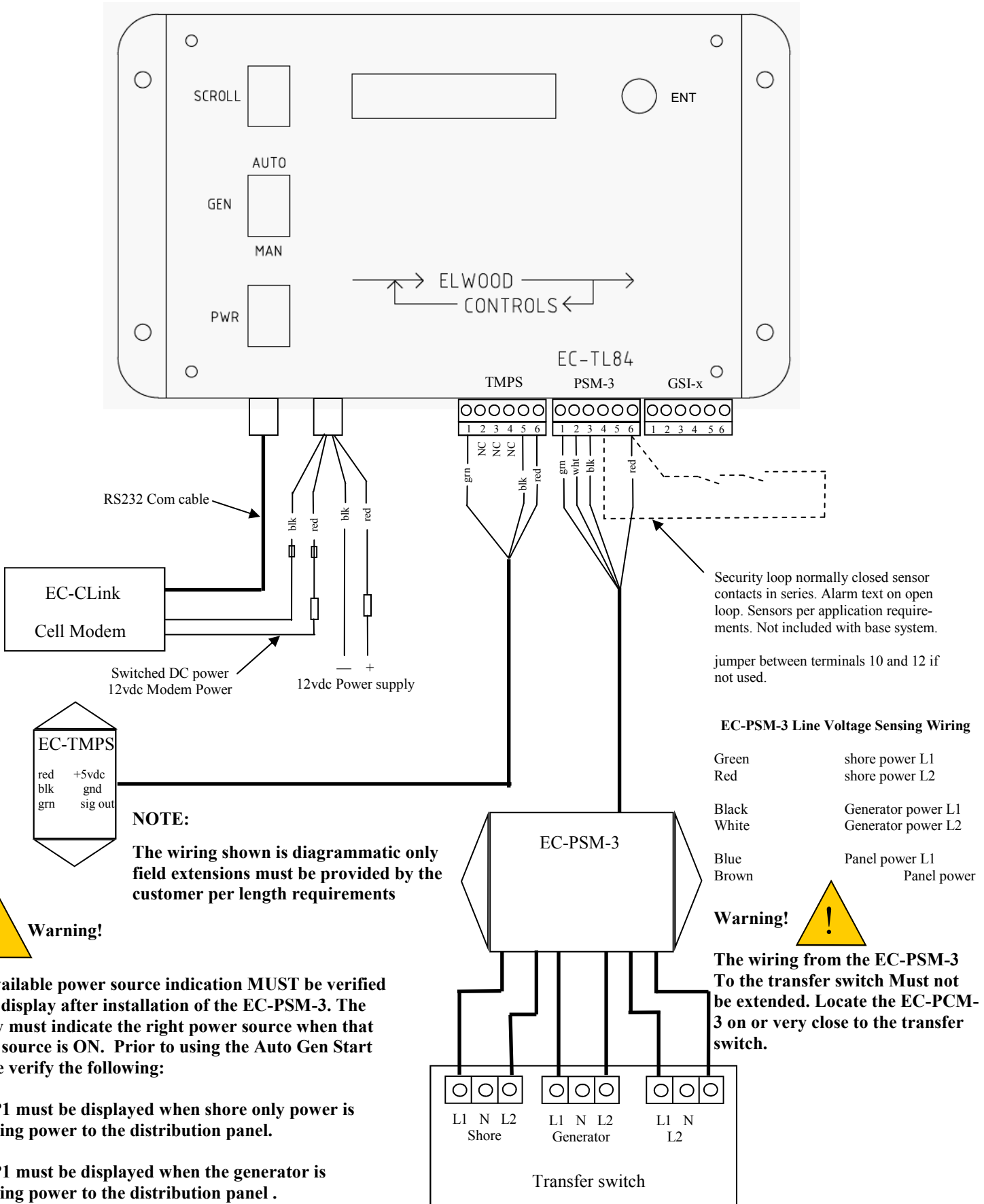
- 1) on the generator where it can be seen by service and operating personnel.**
- 2) on the distribution panel where it can be seen by service and operating personnel.**
- 3) on the transfer switch where it can be seen by service and operating personnel**

The labels state the following:

<p style="text-align: center;">!!!!!!!!!!Warning!!!!!!!!!! This Equipment Is Under Automatic Control Secure Automatic Controls Prior To Servicing</p>
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If these labels are not found with the parts supplied with this system or lost prior to installation please contact us immediately

PART 3a: Installation - Input Wiring



NOTE:
The wiring shown is diagrammatic only field extensions must be provided by the customer per length requirements



Warning!
The available power source indication **MUST** be verified on the display after installation of the EC-PSM-3. The display must indicate the right power source when that power source is ON. Prior to using the Auto Gen Start feature verify the following:

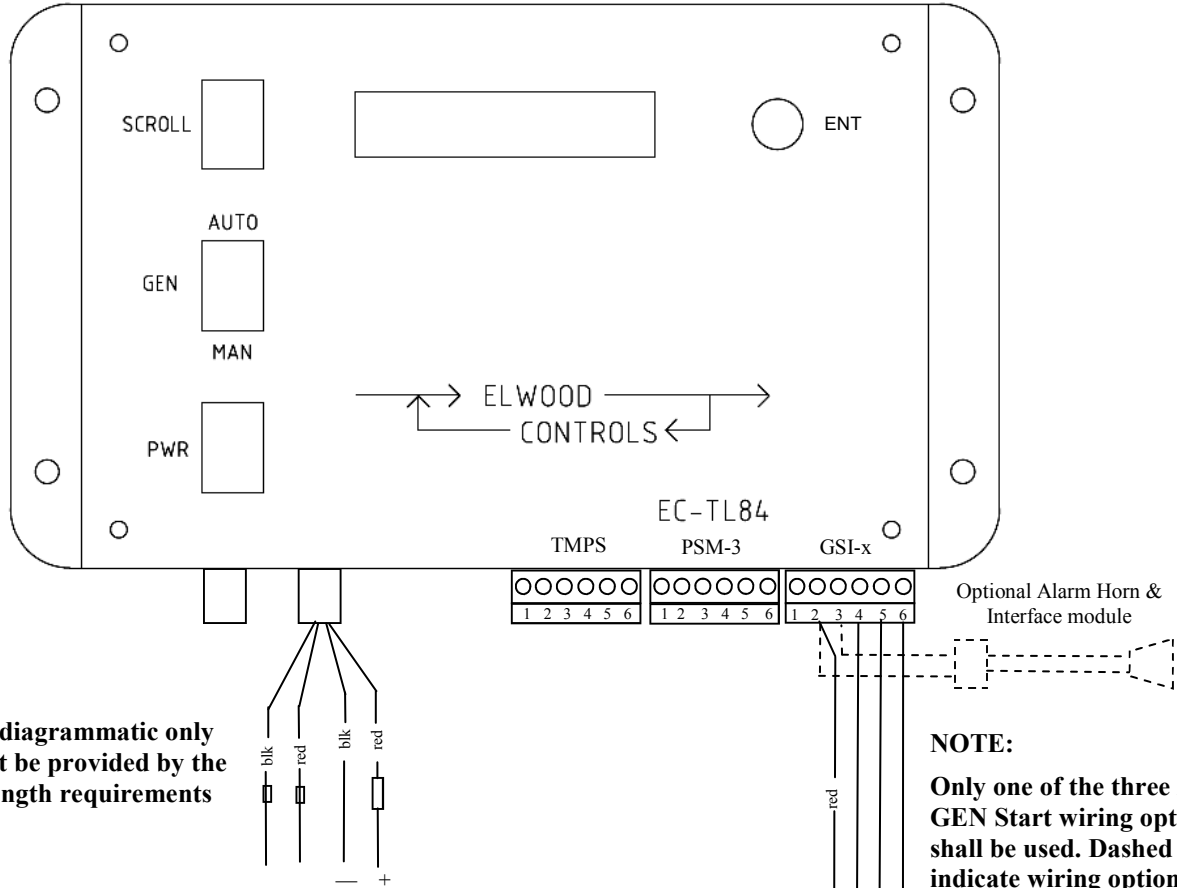
S1G0P1 must be displayed when shore only power is supplying power to the distribution panel.

S0G1P1 must be displayed when the generator is supplying power to the distribution panel.



Warning!
The wiring from the EC-PSM-3 To the transfer switch **Must not** be extended. Locate the EC-PCM-3 on or very close to the transfer switch.

PART 3b: Installation - output wiring

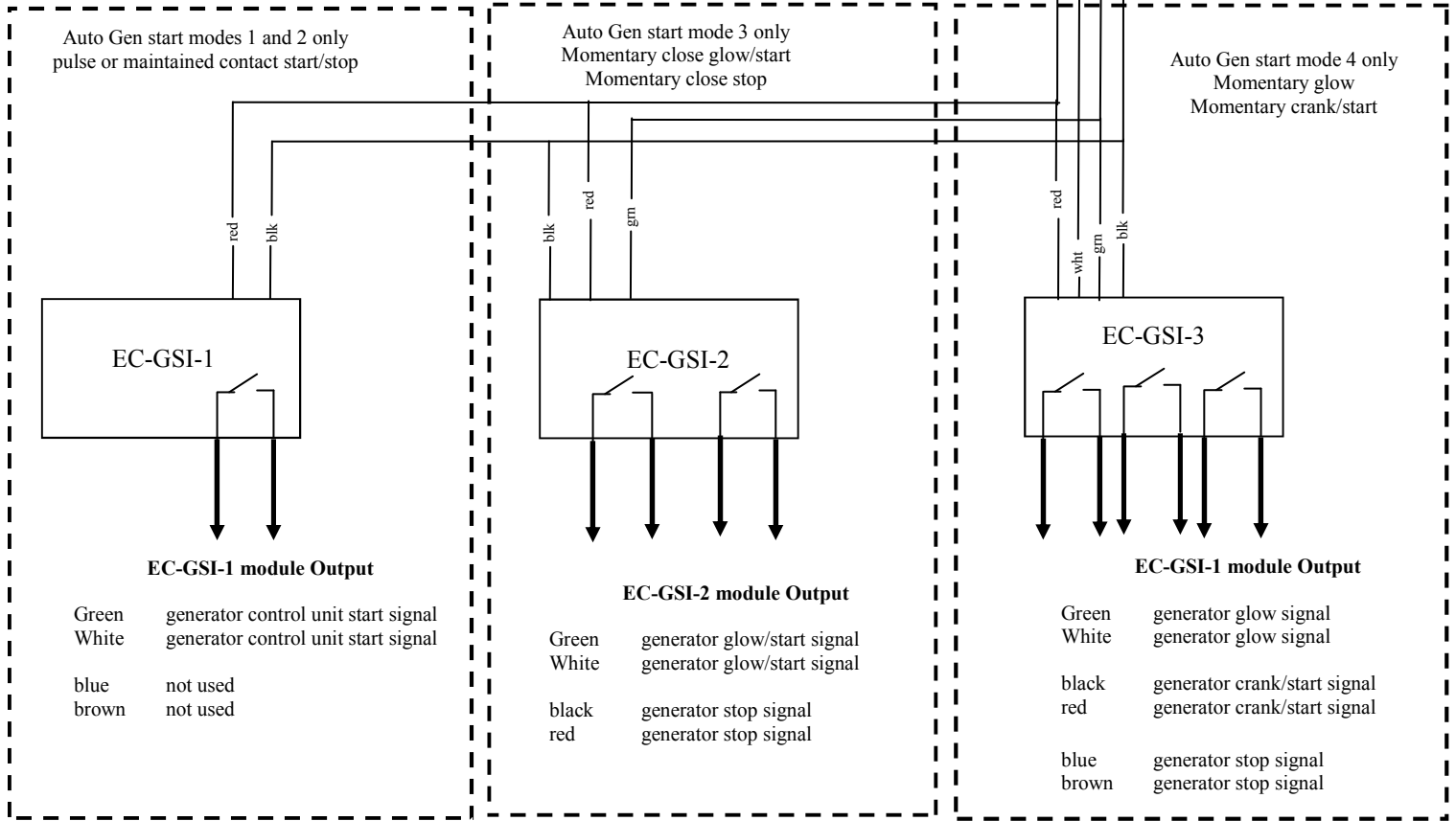


NOTE:

The wiring shown is diagrammatic only
Field extensions must be provided by the customer per their length requirements

NOTE:

Only one of the three Auto GEN Start wiring options shall be used. Dashed boxes indicate wiring options only



EC-GSI-1 module Output

Green	generator control unit start signal
White	generator control unit start signal
blue	not used
brown	not used

EC-GSI-2 module Output

Green	generator glow/start signal
White	generator glow/start signal
black	generator stop signal
red	generator stop signal

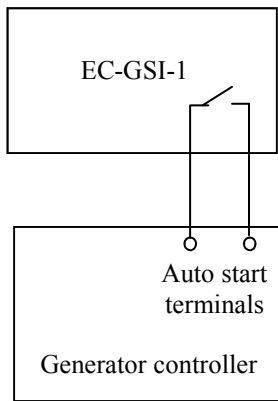
EC-GSI-3 module Output

Green	generator glow signal
White	generator glow signal
black	generator crank/start signal
red	generator crank/start signal
blue	generator stop signal
brown	generator stop signal

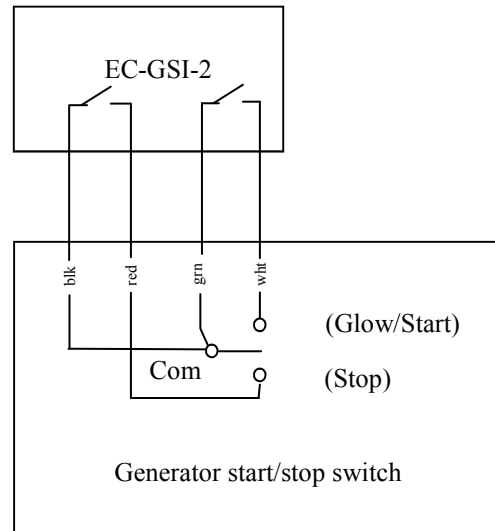
PART 3c: Installation - generator control wiring (examples)

Warning! These wiring diagrams are provided as examples only. Actual wiring will be generator specific and it is up to the customer to verify the actual interface control wiring required.

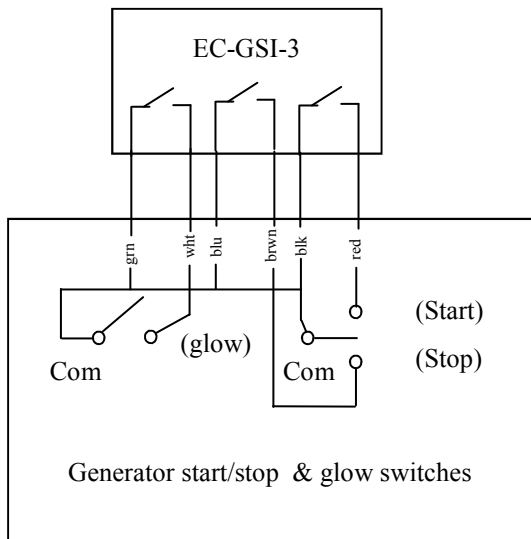
OPTION
Modes 1 and 2 only



OPTION
Mode 3 only



OPTION
Mode 4 only



NOTE:

The wiring shown is diagrammatic only
field extensions must be provided by the
customer per length requirements

PART 4: Setup

Enter the setup mode

Press and hold the ENT button for 10 seconds. “Settings Mode” will appear on the display. Release the ENT button.

Using the scroll switch scroll up and down the menu to reach the desired setting parameter. There is a 40 second timer that is reset on every press of the scroll button. When all entries have been made and there is no switch activity the 40 second timer will time out, the settings will be stored in nonvolatile memory and the display will return to the operation mode.

Menu items:

- > Phone Number
- > GEN Start Mode
- > Send Times
- > Resend Time
- > Set Temp HIGH
- > Set Temp LOW

Press the ENT button to select the parameter to edit or review.

Phone Number

Enter the ten digit phone number to receive the alarm text message by scrolling across the displayed digits and pressing the ENT button to enter the digit that the cursor is over. When the last digit is entered the display will automatically return to the main menu. If an error is made entering a digit continue entering unit returned to the main menu and go back into the phone number entry mode.



WARNING!

Entering the GEN Start Mode setting correctly is **CRITICAL** to proper operation and safety of both equipment and personnel. If you do not understand the options, how they function and the associated wiring diagrams then **DO NOT** attempt to perform this function or the installation or the wiring.

GEN Start Mode

Five automatic generator starting modes are provided, they are as follows:

Mode 0: Mode 0 is a factory default mode. It is provided for safety so that a mode that may be incompatible with the generator control system is not employed in advertently. This mode drives all outputs to OFF and keeps them OFF.

Mode 1: Mode 1 is used for generators with controls that require a maintained contact remote start input to start and stop the generator. When the EC-TL84 is in the automatic mode and a loss of shore power is detected the output signal is driven ON which closes a contact in the EC-GSI-1 to send a start signal to the generator control. This signal will remain ON as long as no shore power is available. When shore power is restored this signal will be forced to OFF sending the generator controls a shutdown signal.

Mode 2: Mode 2 is used for generators with controls that require a momentary 1 second pulsed signal to start and stop the generator. When the EC-TL84 senses a loss of shore power it turns ON the output for 1 second then turns it OFF to indicate a start condition, through the EC-GSI-1, to the generator.

When shore power is restored the EC-TL84 will turn the output ON for 1 second then turn it OFF to indicate a shutdown condition to the generator.

Mode 3: Mode 3 is used for generators that require a momentary ON signal to glow and start the generator and a separate momentary ON signal to stop the generator. When the EC-TL84 senses a shore power loss it will energize the glow/start output. When the generator controls receive the start signal through the EC-GSI-2 they initiate engine preheat then start cranking until the generator starts. The EC-TL84 senses the power output from the generator and drives the glow/start signal OFF. If the generator does not start after 30 seconds the EC-TL84 will drive the start output OFF, wait 2 minutes and then perform another start cycle. The EC-TL84 will attempt to start the generator 3 times before locking out the start sequence completely.

When shore power is restored the EC-TL84 will drive the stop signal ON until the generator is stopped and the EC-TL84 senses that it is no longer producing power. If the generator does not shut down after a 30 second time out, the EC-TL84 will force the stop signal OFF to prevent damage to the generator controls.

Mode 4: Mode 4 is used for generators that require a momentary ON preheat signal followed by a separate momentary ON start/crank signal and a third momentary ON stop signal for shutdown. When the EC-TL84 senses a loss of shore power in turns on the engine preheat/glow output through the EC-GSI-3 for 10 seconds, turn it OFF and turns ON the start/crank output. When generator output power is sensed the start/crank output is turned OFF. If the generator fails to start after 15 seconds of cranking the EC-TL84 will wait 2 minutes before initiating another start sequence. If the generator does not start after 3 attempts the EC-TL84 will lockout the start sequence completely.

When shore power is restored the EC-TL84 will turn ON the stop signal until the generator shuts down and no output power is sensed. If the generator does not shut down after a 30 second time out, the EC-TL84 will once the stop signal OFF to prevent damage to the generator controls.

Send Times

Send Times is used to set the number of times an alarm text message is send to the receiving cell phone. Power status messages are always sent 3 times but only when the generator is in automatic mode.

Scroll to the number desired and press the ENT button to enter the value. For single digit entries enter a 0 in the first position. To send the message 3 times enter 03. Once 2 digits are entered the display will automatically return to the main menu.

Resend Time

The Resend Time value sets the time to resend a message in minutes. If the Resend Time is set to 20 and the Send Times is set to 3 the alarm text message will be sent 3 times as soon as an alarm condition is sensed and then another 3 times after 20 minutes has passed. This feature is provided to prevent missed messages.

Scroll to the number desired and press the ENT button to enter the value. For single digit entries enter a 0 in the first position. To send the message 3 times enter 03. Once 2 digits are entered the display will automatically return to the main menu.

Set Temp HI

The Set Temp HI is for setting the high temperature alarm set point. This value is a 3 digit setting from -99 to 200.

Scroll to the number desired and press the ENT button to enter the value. If a single or double digit value is required enter 0 in the leading spaces.

If a setting of 5 degrees is required enter 005. If a below zero temperature set point is required put the negative sign in the set point i.e. -02 or -10.

Set Temp LOW

The Set Temp LOW is for setting the low temperature alarm set point. This value is a 3 digit setting from -99 to 200.

Scroll to the number desired and press the ENT button to enter the value. If a single or double digit value is required enter 0 in the leading spaces.

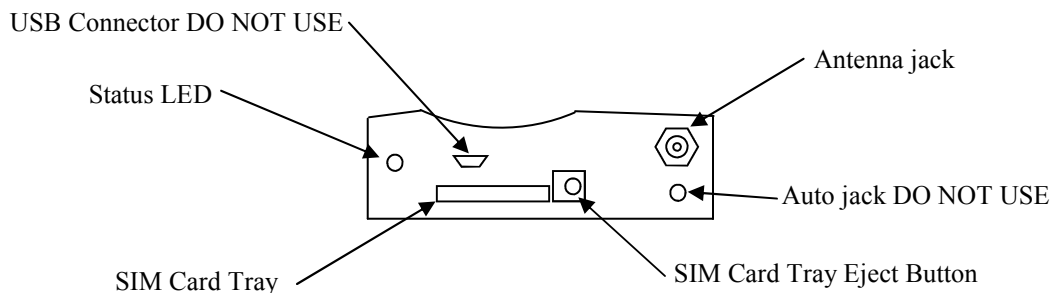
If a setting of 5 degrees is required enter 005. If a below zero temperature set point is required put the negative sign in the set point i.e. -02 or -10.

PART 5: Modem Setup



WARNING!

The power to EC-CLink must be de-energized prior to installing the SIM Card. Remove all system power prior to installing the SIM Card.



Getting SIM Card and account

EC-TL84 and EC-CLink system has been tested extensively using the T Mobile cellular network. We recommend that our customers use T Mobile as a network provider. Please contact us for our T Mobile account representative's contact information if you require assistance.

Installing the SIM Card

Remove the SIM card tray by pressing on the SIM card tray eject button. Place the SIM card in the tray with the contact (gold) side up. Carefully slide the SIM card tray back into the EC-CLink.

Make sure the antenna is connected. When power is applied the LED will light then go OFF. The modem is booting and obtaining network connection while the LED is OFF. When a cell signal is locked the LED will blink slowly.

PART 6: Operation

Power

Once the system is installed and a SIM card with an activated account has been installed in the EC-CLINK the system is ready to be turned on. Verify that the GEN switch is in the MAN (manual) position and turn the PWR switch on (up).

Once the modem has completed its initialization the operational mode display will appear. The first time the system is used it will need operational parameters set before it will be functional. Please refer to the **Setup** section of the manual and set the parameters to your needs. Once the parameters are set they are stored in nonvolatile memory and will be retained if the power is turned off.

Operation

When the system power is ON the temperature alarm is always active and cannot be deactivated. As long as the sensed temperature is between the upper and lower alarm set points no alarm text messages will be sent. When the temperature is above or below the high and low alarm set points respectively the system will send alarm texts according to the send times and resend time parameters set by the user to the phone number set by the user.

Testing the modem

The modem will send a test text message to the phone number stored by pushing the SCROLL switch to the up position and pressing the ENT button.

Activating The Intrusion Alarm

The intrusion alarm can be activated by pressing the ENT button 3 times. The display will indicate that the intrusion alarm is activated. There is a 20 second delay before the intrusion alarm is operational to allow personnel to exit the monitored space. During the 20 second delay the alarm can be deactivated by pressing the ENT button 3 times.

Alrm ON Temp 76
Man S1G0P1 SS 7

If an intrusion is detected there will be a 20 second delay before an alarm text message is sent to the stored phone number and the local horn output will be activated.

Deactivating The Intrusion Alarm

Once the intrusion detection zone has been entered there is a 20 second delay before the system goes into alarm. The intrusion alarm may be deactivated by pressing the ENT button 3 times within the 20 second delay. The display will return to the normal operation mode display.

EC-TL84 Temp 76
Man S1G0P1 SS 7

Generator Auto Start

The generator can be placed into automatic start mode by turning the GEN switch to AUTO. The generator will be started automatically using the sequence selected in the Gen Start Mode upon loss of shore power. A 60 second delay to start is provided so that the generator is not started during short outages.

The generator will be shutdown once the shore power has returned continuously for 60 seconds.

Three power status texts will be sent to the stored phone number at each of the following; loss of shore power, generator running and supplying power and when shore power is restored.