Owner Manual

Operator/Installation/Service/Parts

Our energy working for you.™

Cummins® Power Generation

Accessory

PowerCommand® Universal Annunciator 300–5929

English – Original Instructions

1–2011

900–0301 (Issue 7)

Safety Precautions

⚠ DANGER ***High voltage is deadly. Installation and service of the network annunciator involves working with high voltage equipment. Installation and service must be performed by trained and experienced personnel working with such equipment. Disconnect the utility line from the transfer switch and disconnect power from the battery charger, day tank, and any other power equipment where connections are to be made.***

⚠WARNING ***Accidental starting of the generator set while working on it can cause severe injury or death. Disconnect the battery cables to prevent accidental starting. Always disconnect the negative (–) cable first and connect it last to prevent arcing if a tool accidentally touches the frame or other grounded metal parts of the set while connecting or disconnecting the positive (+) cable. Arcing can ignite explosive hydrogen gas given off by the battery and cause severe injury. Ventilate the battery compartment before removing cables.***

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Introduction

ABOUT THIS MANUAL

This manual provides information for operating, installing, selecting customer options, and troubleshooting the universal annunciator control. A parts list is also included for all available service parts. Study this manual carefully and observe all warnings and cautions. Installing the control properly will contribute to better performance and safer operation.

SOFTWARE VERSIONS

Since it's initial release, the universal annunciator's software has been upgraded. The upgrades have included changed features and the ability of the annunciator to be connected to additional devices. Before connecting to a device, always make sure your annunciator includes the appropriate software. Below are some things that need to be considered because of changes in software.

- Starting with version 1.06, the predefined configuration factory defaults are set to the parameters in the NFPA 110 table. The factory defaults for earlier versions of software are set to the parameters in the Legacy NFPA 110 table. For more information, see pages 19 and 20.
- Starting with version 2.00, universal annunciator communication is available using either a PCCNet network or a Modbus network. Only the PCCNet network was available in earlier versions.
- When connected to a PCC2100, then PCC2100 version 2.5 or greater is required to use the universal annunciator.

NOTE: Use InPower to view the software version of your annunciator.

HOW TO OBTAIN SERVICE

When the universal annunciator requires servicing, contact the nearest dealer or distributor. Factory-trained Parts and Service representatives are ready to handle all your service needs.

If you are unable to locate a dealer or distributor, consult the yellow Pages. Typically, our distributors are listed under:

Generators-Electric,
Engines-Gasoline or Engines-Diesel, or
Recreational Vehicles-Equipment,
Parts and Service.

For the name of your local Cummins Power Generation distributor in the United States or Canada, call 1–800–888–6626 (this automated service utilizes touch-tone phones only).

For outside North America, call Cummins Power Generation, 1-763-574-5000, 7:30 AM to 4:00 PM, Central Standard Time, Monday through Friday. Or, send a fax to Cummins Power Generation using the fax number 1–763–528–7229.

⚠WARNING

Incorrect service or parts replacement can result in severe personal injury, death, and/or equipment damage. Service personnel must be trained and experienced to perform electrical and/or mechanical service.

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Description

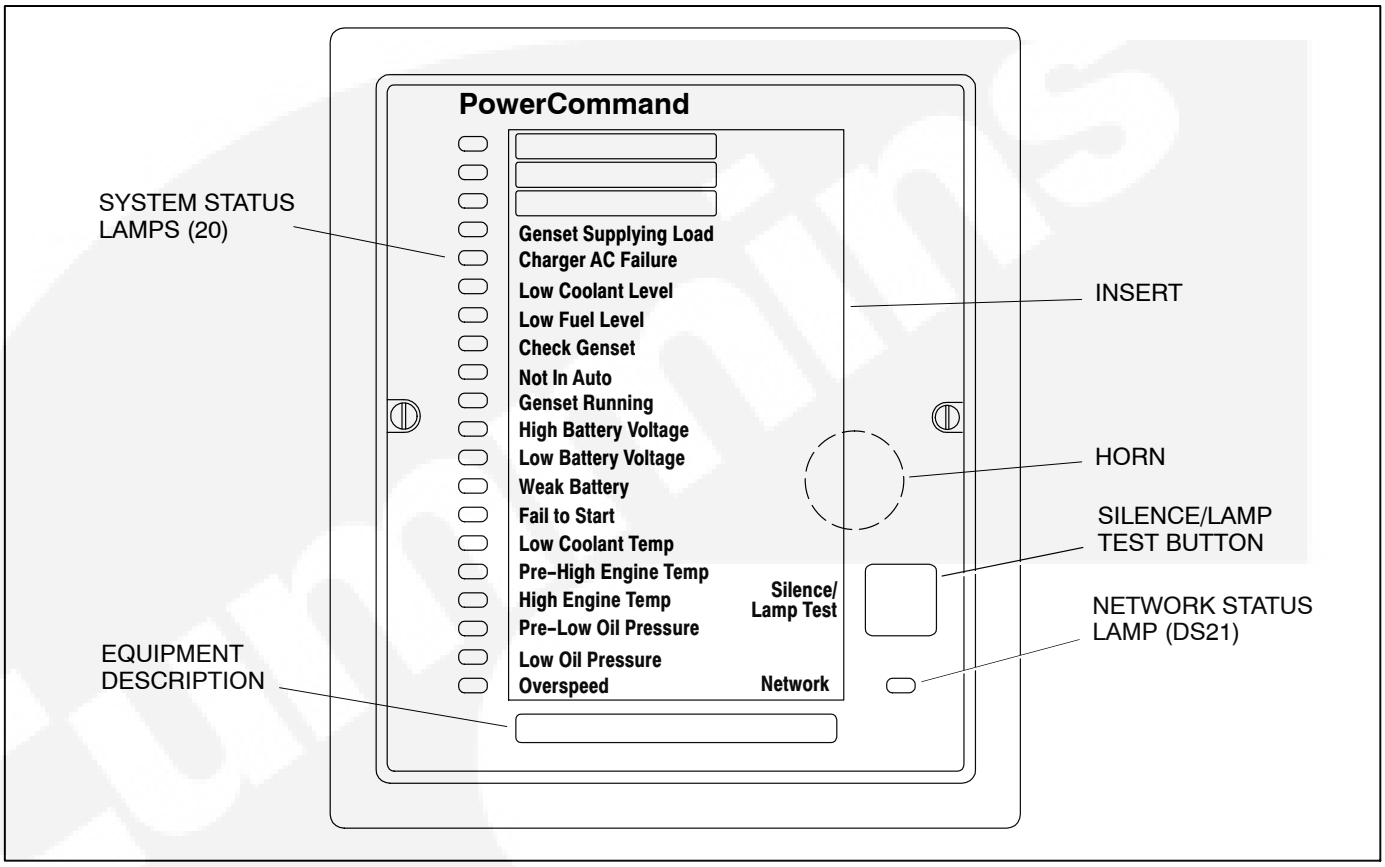


FIGURE 1. ANNUNCIATOR PANEL

GENERAL

The universal annunciator (see Figure 1) provides lamps and a horn to annunciate the operating status and fault conditions of an emergency power system. It is designed for connection to either a 12 VDC or a 24 VDC control system. It can be configured to be either a positive or negative signal device.

This annunciator can be used to replace legacy annunciators 300−4510 ANN (negative signal) and 300−4511 ANP (positive signal).

Two versions of the universal annunciator are available.

- 300−5929−01 = Panel Mounted
- 300−5929−02 = Panel with Enclosure

NETWORK TYPES

The universal annunciator can communicate using either a PCCNet or a Modbus network. The functionality differs, depending upon which network is being used.

The Network LED (DS21) is not configurable and does not activate the horn. With a Modbus network, the Network LED is used as a Modbus activity LED.

PCCNet Network

When connected to a PCCNet, multiple devices can broadcast their NFPA 110 status. The annunciator monitors broadcasts and ORs together all sources along with its discrete inputs and displays the OR's status on its 20 system status LEDs. When each device on the PCCNet network broadcasts its NFPA110 status logical, it will only activate a bit if the device is the source of that status. The annunciator does the same thing. It only broadcasts the status of its direct wired inputs. The annunciator will not OR together all sources and send the information to other devices.

When the annunciator powers up, the network LED is off. If a network device is not found (such as with Legacy applications), it remains off.

When the annunciator starts to receive status information from one or more devices, it turns green. The annunciator keeps track of the number of devices from which it has received status information. If six seconds elapses without receiving status information from each device, the network LED turns red. If the device count goes back to the previous high value, the network LED changes from red back to green.

Modbus Network

When connected to a Modbus network, the annunciator acts as a Modbus slave. The Modbus master must request updates from the annunciator. All communications with the annunciator are done via request/response. The annunciator does not initiate any communications.

A single Modbus master can send status data to up to four annunciators on a single Modbus network. Each annunciator ORs together the status data with its discrete inputs and displays the status on its 20 LEDs. When the Modbus master reads the annunciator status, it can read either the status of the direct wired inputs or the status of the LEDs.

When the annunciator powers up, it turns off the network LED on the front panel. When there is Modbus network activity, the network LED (DS21) on the front panel turns green (or stays green). After ten seconds of no network activity, the LED turns off.

If Modbus data has been received and the ten-second timer has expired or the annunciator has received bad data, then the network LED turns red and the active system status LEDs turn off. If this occurs, the system status LEDs with configured audible alarms will display a quick flash until communications are reestablished and the network LED becomes active again or the Silence button is pressed. If the network LED is red and data is received, then the network LED will again turn green and the ten-second timer starts. The updated status is then displayed by the system status LEDs.

Modbus Communications

Before Modbus can be used for communications, the universal annunciator must be set up for Modbus communications by selecting the Modbus NFPA 110 configuration table. For more information, see “Annunciator Configuration” on page 18.

With Modbus communications, there is a Remote Terminal Unit (RTU) two-wire RS-485 master/slave multi-drop network configuration, where the annunciator is defined as the slave.

Port communications, by default, occur at a baud rate of 19,200 baud and even parity. The baud rate and parity are configurable via Modbus registers.

A PLC can be the master device in the Modbus network. The Modbus node address is configurable and is set to node 1 by default.

A list of available annunciator registers is included at the back of this manual (see “Modbus Register Table” on page 33).

The controller is designed to respond within 100 ms of a request for information from the master.

OPERATION

- Table 1 lists the conditions monitored by the annunciator. The status lamps always annunciate the present state of each condition.
- In PCCNet mode, the annunciator broadcasts information a minimum of every five seconds and whenever a change occurs.
- Press the Silence/Lamp Test button to silence the horn, if activated. Several annunciators serving one emergency power system can be interconnected so that all the horns can be silenced from any location. Subsequent faults will cause the horn to sound again.
- All indicator lamps should light (turn green) when you press the Silence/Lamp Test button. When you press and hold the Silence/Lamp Test button, all indicator lamps will cycle through the colors (green, amber, red) and then display the current configuration. When the button is released, the current status of just the hard-wired inputs are displayed for one second.
- Pressing the Silence/Lamp Test button does not reset the switch or sensor that is providing the fault signal. The lamp for the associated fault will continue to remain in the active condition (solid or flashing) until the fault is corrected. After correcting the fault condition, the annunciator lamp goes out.

  NOTE: If a lamp is configured with the Invert Hardware Active Signals function, the color and flash characteristics are displayed during normal operation and the lamp goes out during the active condition.
- When the annunciator powers up, it turns the Network lamp off. If it never finds another network device (as with legacy applications), it remains off. When communications with another device are established or re-established, the Network lamp turns green. If communications with a device broadcasting annunciator data are lost for 30 seconds (PCCNet) or 10 seconds (Modbus), the Network lamp turns red; the horn will not sound.
- With legacy annunciator installations, normal status could be annunciated with Normal Utility Power and Normal Battery Voltage lamps. When replacing a legacy annunciator with this annunciator, this can be accomplished either by using the Check Genset and Weak Battery inputs or by using one of the Customer Fault inputs for Normal Utility Power.

EVENT PROCESSING

The 20 status lamps always annunciate the present state of each event. Unless a lamp is configured to invert its hard-wired inputs, the lamp displays its configured color and flash characteristics when the event occurs. Lamps that are configured to invert hard-wired inputs display their color and flash characteristics during normal operation.

Alarm Processing

An audible alarm sounds anytime an event that is configured as audible becomes active. An alarm can be deactivated by:

- Pressing the Silence/Lamp Test pushbutton
- Receiving a silence command via the digital input
- Receiving a silence command via the PCCNet network
- Receiving a silence command via the Modbus network

If another audible alarm event occurs while a silenced lamp is active, the alarm again sounds.

Because the alarm remains active until the condition is corrected (the event becomes inactive), the lamp normally continues to display its color and flash characteristics after the Silence/Lamp Test pushbutton is pressed. However, if a lamp is configured as audible, the event occurs, and then it becomes inactive before the Silence/Lamp Test pushbutton is pressed, the alarm will sound but the lamp will not continue to flash its configured color and flash characteristics. Instead, it will display a quick blip (0.2 seconds On and 1.8 seconds Off).

TABLE 1. ANNUNCIATOR CONDITIONS MONITORED

STANDARD LEGEND	CONDITION INDICATED	STATUS LAMP	
		NEW INSTALLATION	LEGACY REPLACEMENT*
Customer Fault 1	Customer selected fault condition	DS1	DS18
Customer Fault 2	Customer selected fault condition	DS2	DS19
Customer Fault 3	Customer selected fault condition	DS3	DS20
Genset Supplying Load	Genset is supplying the load	DS4	DS6
Charger AC Failure	Battery charger is signaling a failure	DS5	DS15
Low Coolant Level	Coolant level below preset minimum	DS6	DS17
Low Fuel Level	Fuel level below preset minimum	DS7	DS16
Check Genset	Use InPower or the genset keypad to check the genset for fault conditions	DS8	NA
Not in Auto	Switch on the control is in the Not in Auto position. The genset will not start automatically.	DS9	DS14
Genset Running	Generator has output voltage	DS10	DS4
High Battery Voltage**	Battery voltage too high (overcharging)	DS11	DS1
Low Battery Voltage**	Battery voltage too low (poor battery or charger failure)	DS12	DS2
Weak Battery	Genset battery is weak	DS13	NA
Fail to Start	Engine fails to start after full cranking cycle (overcrank)	DS14	DS13
Low Coolant Temp	Engine coolant heater has malfunctioned	DS15	DS11
Pre-High Engine Temp	Engine coolant approaching maximum temp.	DS16	DS9
High Engine Temp	Genset has shut down due to high coolant temp.	DS17	DS10
Pre-Low Oil Pressure	Oil pressure approaching minimum	DS18	DS7
Low Oil Pressure	Genset has shut down due to low oil pressure	DS19	DS8
Overspeed	Engine has shut down due to overspeed	DS20	DS12
Normal Battery Voltage	Battery Voltage OK	NA	DS3
Normal Utility Power	Utility power supplying the load	NA	DS5

***** "Legacy Replacement" refers to replacing 300−4510 ANN negative signal and 300−4511 ANP positive signal annunciators with Universal Annunciator 300−5929.

****** Battery Voltage Specification (The setting must be low or high for a minimum of five seconds):
Low Battery Voltage Setting: 12 ± 0.5 VDC for 12-volt system; 24 ± 1 VDC for 24-volt system
High Battery Voltage Setting: 16 ± 0.5 VDC for 12-volt system; 32 ± 1 VDC for 24-volt system

Switch Inputs:
Positive Sense Mode: Input impedance is 1.82 Kohms to ground; maximum input voltage = 31 VDC.
Negative Sense Mode: Input impedance is 1.82 Kohms to Bat+; inputs are at Bat+ level when open.
Sink/Source current threshold for detection: 150 uA minimum, 3 mA maximum.
Maximum allowable sink/source current: 20mA.
Power Supply should be between 6.5 VDC and 31 VDC.

Installation

GENERAL INFORMATION

A block diagram of a typical installation is shown in Figure 2. The installation shows a typical PCCNet network that includes a genset that is connected to four automatic transfer switches (ATSs) and a battery charger. In this example, the annunciator has inputs from both the PCCNet network and from hard-wired inputs.

Network Considerations

The total network length cannot exceed 4000 feet (1219 meters). Depending on the installation, either a cable with a single twisted pair or two twisted pairs can be used. The following are recommended, but are not mandatory: Belden 9729 or equivalent (two pair of stranded 24 AWG (or larger) twisted pair cable with shield). Unshielded cable may not provide the maximum distance in a noisy environment. Care must be taken when selecting the appropriate cable.

In order to meet NFPA 37 requirements, stranded copper cable must be used.

The network cable must be used only for transmitting network data and for installations with remote isolated power supplies to provide common logic reference. The second twisted pair is meant only to be used for a common logic reference. It cannot be used to provide power to the annunciator boards. Power to the annunciator must be provided via TB1-16 and one of the TB1 GND connections.

J2-1 can be interconnected to provide a common logic reference when applicable. J2-1 can be used to interconnect two controls where one of the controls uses a floating DC Power Supply not connected to Earth ground and the other is connected to Earth ground (see Figure 3). Otherwise, using J2-1 can induce a ground loop.

If a single power source (see Figure 4) is used, then care must be taken to make sure that at least minimal voltage is supplied to all boards by taking into consideration the wire gauge, current used, and distance traveled. A single power source should be considered for only a small number of controllers. Otherwise, a separate floating power supply must be used.

J2-3 and J2-4 is a twisted pair and must be interconnected between all controllers on the network to transmit network data.

J2-2 and J2-5 should not be connected to the network. J2-2 is for factory use only.

Each cable shield or interconnected cable shield must be connected to GND at only one point to prevent ground loops.

INPUT PIN	DESCRIPTION
TB1-15	GND
TB1-16	BATT In
TB1-17	GND
TB1-18	GND
J2-1	GND
J2-2	Factory Use Only
J2-3	RS-484 Data A
J2-4	RS-485 Data B
J2-5	No Connection

Although a typical network installation includes only one annunciator, additional annunciators can be installed. The Network Configuration Address function can be used to configure each annunciator with one of four different addresses. This feature allows annunciators to display different network information, depending on the address assigned. For more information, see page 22.

When two or more annunciators serve the same emergency power system, all of the terminals marked TB1-10 (new annunciator installations) or TB1-20 (legacy annunciator replacement installations) must be interconnected so that the horns can all be silenced from any location.

ROUTING OF CABLES

Communication over stranded unshielded twisted pair (UTP) could be distorted by external sources of electromagnetic interference (EMI), especially if the conductors are physically degraded in any way. To avoid or minimize this interference, observe the following guidelines.*

⚠ CAUTION ***Electromagnetic interference (EMI) can cause communication signal distortion, which can cause network failure and unintended equipment operation. Read and follow these wiring guidelines.***

Observe all local wiring codes. Refer to the NEC (NFPA70) section on *Wiring Methods and Materials* for general wiring methods and procedures.

Routing: Whenever possible, cabling should be installed over corridor areas or along lines that are parallel to the contours of buildings. All deviations from straight runs should be made at right angles. Keep wire away from sharp, abrasive, and hot surfaces.

Separation from sources of EMI: All cabling should be installed in such a way as to comply with the minimum separations from AC power sources.

In general, communications wiring should not be located in spaces that are shared with electrical panels, transformers, or other high voltage equipment.

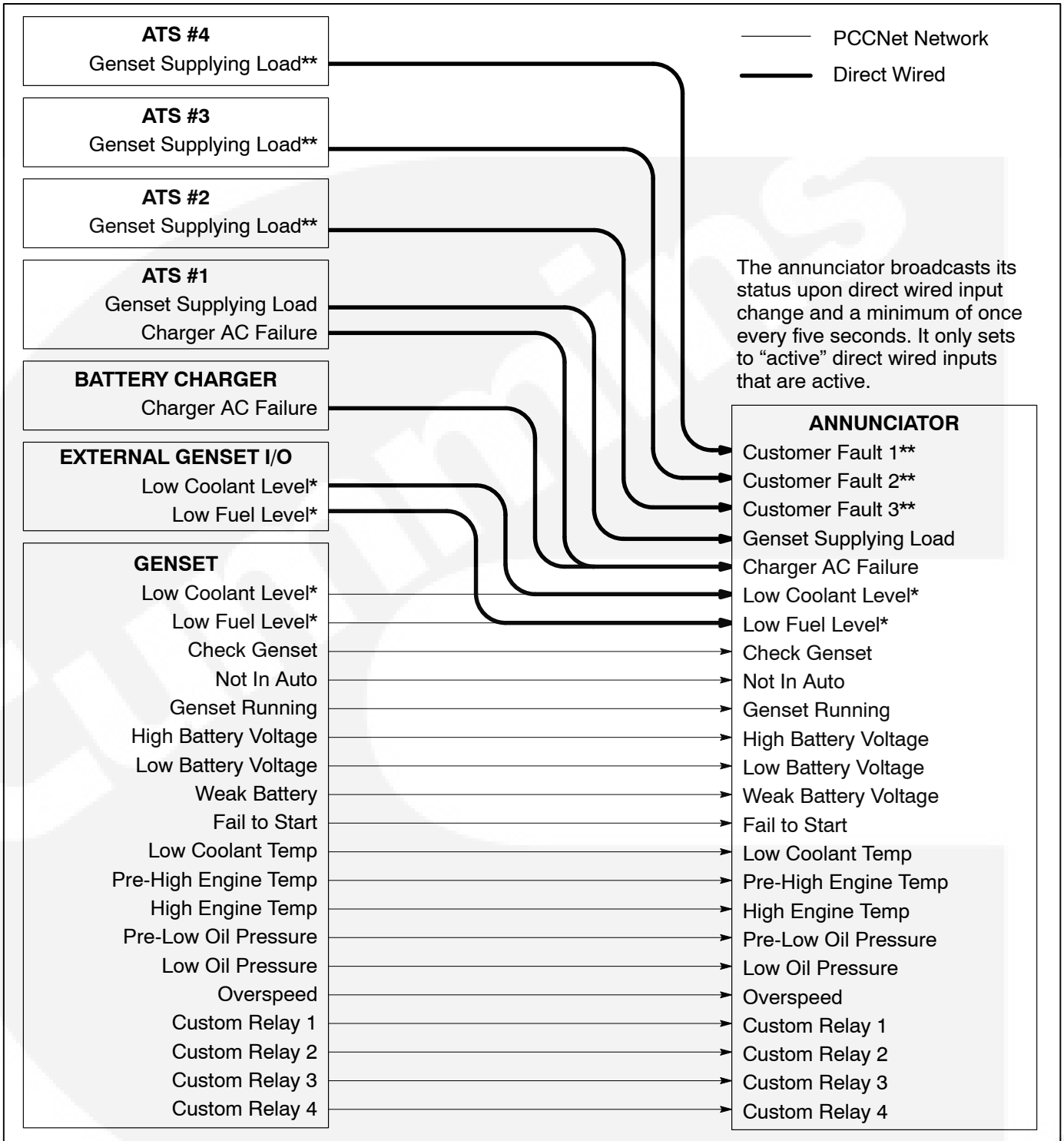
Tension: All cabling should be free from tension at both ends, as well as over the length of each run.

Stranded Twisted pairs: All terminations should be made in such a way as to **minimize the extent to which each stranded twisted pair is unraveled at the point of its physical termination**. Allow no more than 0.5 inch (13 mm) of exposed untwisted pairs.

Cable bends: Cable bends, or radii, should be no less than eight times the cable diameter.

Harsh, hazardous, or corrosive environments: Communications wiring should not be installed where vapors, fumes, corrosives, dusts, or other industrial byproducts are present without taking appropriate precautions to protect the cables. Installers and cabling manufacturers of the materials involved must be consulted in all such cases.

Grounding and bonding: When shielded cables are used, all applicable regulations for grounding and bonding as defined by local building codes for electrical materials must be strictly adhered to. In some cases, qualified installers or manufacturers will make related recommendations in the interest of human safety or mechanical protection of installed cables (e.g., shielding against rodents).



* Low Coolant Level and Low Fuel Level statuses can be either direct wired from External Genset I/O or be part of the PCCNet network status coming from the genset. If direct wired, then the annunciator sets the appropriate bit for the genset to reference. For PCC 2100 control, low fuel, low coolant level warnings and shutdown messages do not broadcast over PCCNet and can only be hard wired from the PCC 2100 control.

** These can be Genset Supplying Load 2 thru 4 or Customer Faults.

When enabled, High Battery Voltage, Low Battery Voltage, and Normal Battery Voltage takes precedence over the hard-wired input.

Normal Battery voltage can replace Weak Battery.

FIGURE 2. TYPICAL ANNUNCIATOR INSTALLATION (PCCNET NETWORK)

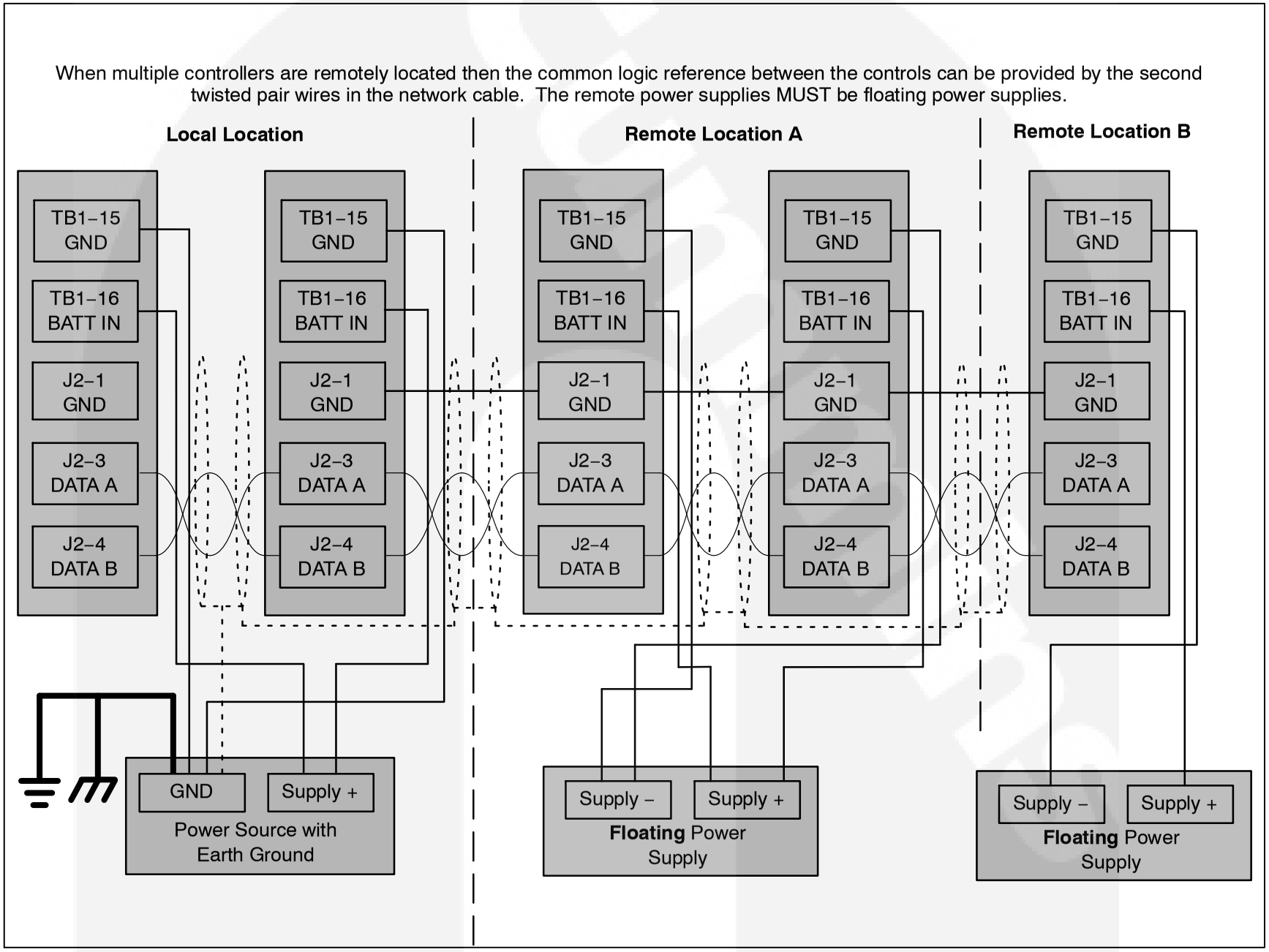


FIGURE 3. MULTIPLE REMOTE CONTROLLERS WIRING DIAGRAM

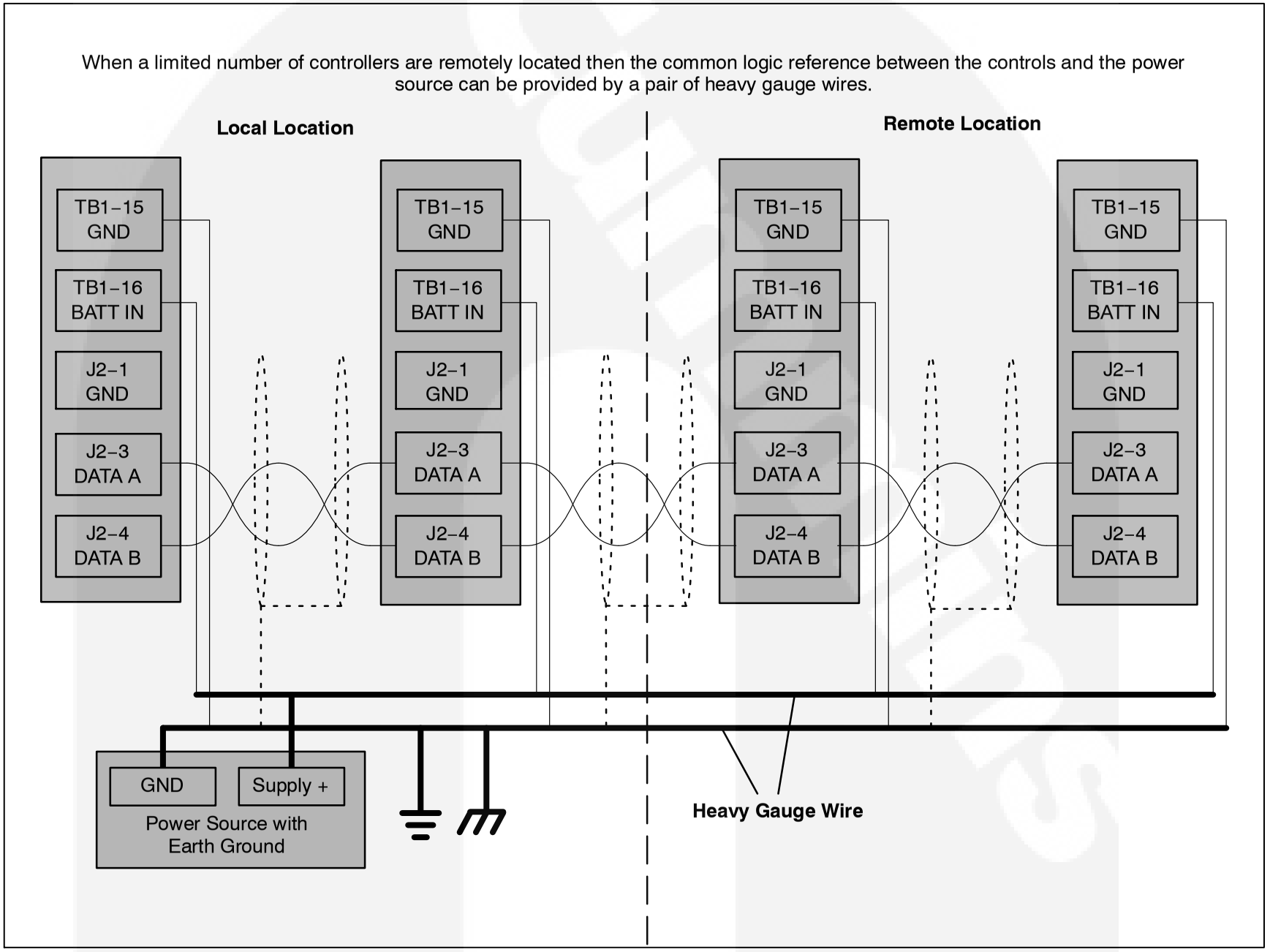


FIGURE 4. MULTIPLE REMOTE CONTROLLERS WITH ONE POWER SOURCE WIRING DIAGRAM

Custom Relays

The annunciator can control four custom (N.O.) relays that can be used as custom outputs that are controlled by external devices.

For example, when a specified event becomes active, a message can be sent by the external device (for example, a PCC1301 control) to the annunciator to turn the relay on or off. Only one event per relay is allowed. Refer to your genset Service Manual for information on how to set up the genset controller to control the relays.

The rating for the custom relays is 0.2 amps @ 125 VAC, 1A @ 30 VDC.

Wiring for these relays is done via the TB3 connector (see Figure 6) — TB3-1 to TB3-2 for relay 1, TB3-3 to TB3-4 for relay 2, etc.

CONNECTION	DESCRIPTION
TB3-1	Custom Relay 1, Contact A
TB3-2	Custom Relay 1, Contact B
TB3-3	Custom Relay 2, Contact A
TB3-4	Custom Relay 2, Contact B
TB3-5	Custom Relay 3, Contact A
TB3-6	Custom Relay 3, Contact B
TB3-7	Custom Relay 4, Contact A
TB3-8	Custom Relay 4, Contact B

ANNUNCIATOR INSTALLATION

Select a location for mounting the annunciator that is **accessible**. Make sure all components can be **easily removed for service**. The annunciator should be mounted in an environment that has a temperature range of –40° to 176°F (–40° to 80°C) and relative humidity between 10 and 95%. The power supply input voltage must be from 6 to 31 VDC (reverse protected).

1. Remove the annunciator panel from the control box.

2. Locate the desired location on the wall and use the box as a template to mark the required holes (see Figure 5). Be sure to check for wiring, plumbing, and gas lines behind the wall before cutting or drilling.

***WARNING** Drilling into utility lines can cause severe personal injury or death. Make sure no wires, plumbing, or gas lines run behind the mounting area before drilling the mounting holes.*

3. Drill the mounting holes and mount the box securely to the wall. For flush mounting, the front edges of the box should be flush with the surface of the wall.

4. Remove knock-outs, as needed for wiring, from the top and/or bottom of the control box.

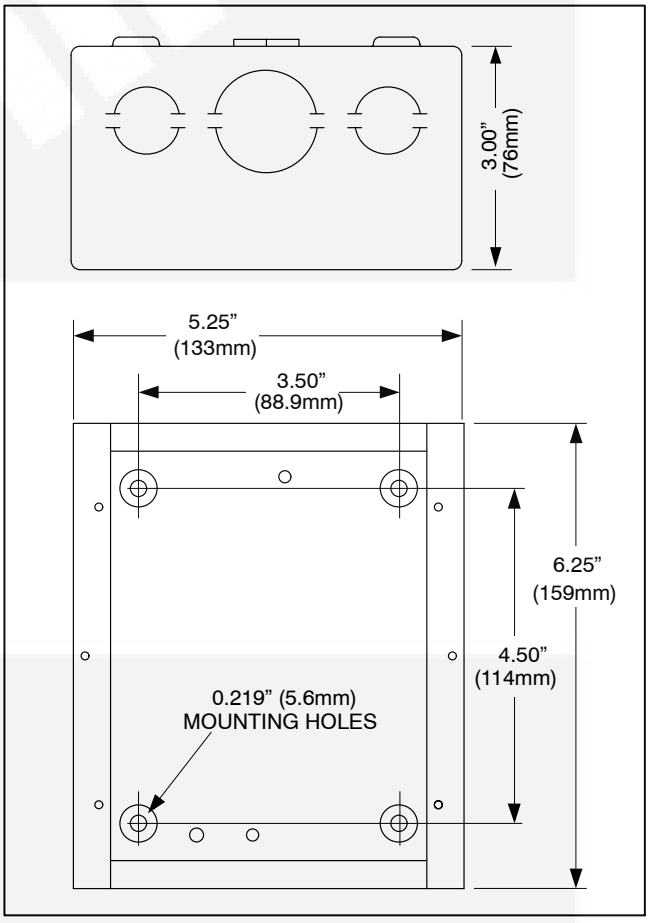


FIGURE 5. ANNUNCIATOR CONTROL BOX FOOTPRINT

***DANGER** High voltage is deadly. Installation and service of the network annunciator involves working with high voltage equipment. Installation and service must be performed by trained and experienced personnel working with such equipment. Disconnect the utility line from the transfer switch and disconnect power from the battery charger, day tank, and any other power equipment where connections are to be made.*

⚠WARNING ***Accidental starting of the generator set while working on it can cause severe injury or death. Disconnect the battery cables to prevent accidental starting. Always disconnect the negative (–) cable first and connect it last to prevent arcing if a tool accidentally touches the frame or other grounded metal parts of the set while connecting or disconnecting the positive (+) cable. Arcing can ignite explosive hydrogen gas given off by the battery and cause severe injury. Ventilate the battery compartment before removing cables.***

5. Before making any wiring connections, disconnect the utility line from the transfer switch. Make sure the genset cannot start by pressing the RUN/STOP switch to STOP and by disconnecting the starting battery (negative [–] battery cable first). Disconnect the power to the battery charger.

6. Route the wiring from the annunciator to the genset, transfer switch, and battery charger (see Table 2). Do not route wiring in the same conduit as AC wiring. Allow pigtails of at least 12 inches (304 mm) at each end for connections.

7. Connect the auxiliary switches to the transfer switch, the battery charger malfunction switch, and the customer faults to GROUND for negative signal annunciators and to B+ for positive signal annunciators (see Table 2).

8. When two or more annunciators serve the same emergency power system, interconnect all the terminals marked TB1-10 (new annunciator installations) or TB1-20 (legacy annunciator replacement installations) so that the horns can all be silenced from any location. The connections are made to TB1-10 on the new annunciators.

   NOTE: Pressing the Silence/Lamp Test button silences all horns of the connected annunciators but will only test the lamps of the annunciator whose button is pressed.

9. Apply power to the annunciator. When power is applied to the annunciator,

   a. Lamps DS1 thru DS21 cycle on and off, displaying the available colors (green, amber, red).

   b. LED N3 on the back of the control board (see Figure 6) starts flashing (green – one flash per second), indicating that the annunciator is in Running Mode.

   c. When the annunciator establishes communications with another device, the Network lamp (DS21) turns green.

10. Check the lamp characteristics on the annunciator control board and, if necessary, change the configuration to meet the needs of your installation (see “Annunciator Configuration” on page 18). Make sure that the annunciator is properly set up for the correct negative or positive input, reporting battery voltage, and predefined configuration table.

11. Press the Silence/Lamp Test button. All indicator lamps should light (turn green). Press and hold the Silence/Lamp Test button to cycle through the colors (green, amber, red) and then the current configuration is displayed.

12. Secure the annunciator to the control box with the screws provided with the annunciator.

13. Reconnect the utility line to the transfer switch, reconnect the battery to the generator set (negative [–] battery cable last), reconnect the battery charger, and return the generator set to automatic standby.

REPLACING LEGACY ANNUNCIATORS

The following describes how to replace a 300–4510 ANN negative signal or 300–4511 ANP positive signal annunciator with this annunciator.

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⚠ WARNING ***Accidental starting of the generator set while working on it can cause severe injury or death. Disconnect the battery cables to prevent accidental starting. Always disconnect the negative (–) cable first and connect it last to prevent arcing if a tool accidentally touches the frame or other grounded metal parts of the set while connecting or disconnecting the positive (+) cable. Arcing can ignite explosive hydrogen gas given off by the battery and cause severe injury. Ventilate the battery compartment before removing cables.***

1. Disconnect the utility line from the transfer switch. Make sure the genset cannot start by pressing the RUN/STOP switch to STOP and by disconnecting the starting battery (negative [–] battery cable first). Disconnect the power to the battery charger.

2. Remove the existing annunciator panel from the control box. Tag and remove the wire connections. Examine the wires for damage and replace, if necessary.

3. Remove the new annunciator panel from the control box.

4. If necessary, replace the existing control box with the control box included in this kit and remove knock-outs, as needed for wiring, from the top and/or bottom of the control box.

5. Connect the existing wires to the new annunciator. Refer to Table 2 on specifics on wiring the annunciator. The battery is connected to the TB1-16 terminal in both 12 volt and 24 volt systems. If battery check is not desired, the three lamps can be used for custom indications, using TB2-4, TB2-5, and TB2-6.

6. Modify the insert card to match the installation. Text can be added to the three blank boxes located at the top of the insert. If the predefined legend is not desired, text can be covered with white tape and the desired text written on the tape. In addition, the back of the insert has all blank spaces for writing text. In a legacy annunciator replacement, the modifications shown in Table 3 are typical.

7. Apply power to the annunciator. When power is applied to the annunciator,

   a. Lamps DS1 thru DS21 cycle on and off, displaying the available colors (green, amber, red).

   b. LED N3 on the back of the control board (see Figure 6) starts flashing (green – one flash per second), indicating that the annunciator is in Running Mode.

8. Press the Silence/Lamp Test button briefly. All indicator lamps should light (turn green).

9. Check the lamp characteristics on the annunciator control board and, if necessary, change the configuration to meet the needs of your installation (see “Annunciator Configuration” on page 18). Make sure that the annunciator is properly set up for the correct negative or positive input, reporting battery voltage, and predefined configuration table. Standard default configurations for the lamp and horn settings are set at the factory.

10. Secure the annunciator to the control box with the screws provided with the annunciator.

11. Reconnect the utility line to the transfer switch, reconnect the battery to the generator set (negative [–] battery cable last), reconnect the battery charger, and return the generator set to automatic standby.

TABLE 2. LEGACY INTERCONNECTIONS

LEGACY ANNUNCIATOR CONNECTIONS	DESCRIPTION	NEW ANNUNCIATOR CONNECTIONS
TB1-1 (12 VDC) TB1-2 (24 VDC)	BATT	TB1-16
TB1-3	GND	TB1-15
TB1-4	Genset Running	TB2-3
TB1-5	Normal Utility or Check Genset	TB1-8
TB1-6	Genset Supplying Load	TB1-4
TB1-7	Pre-Low Oil Pressure	TB2-11
TB1-8	Low Oil Pressure	TB2-12
TB1-9	Pre-High Engine Temp	TB2-9
TB1-10	High Engine Temp	TB2-10
TB1-11	Low Coolant Temp	TB2-8
TB1-12	Overspeed	TB2-13
TB1-13	Fail to Start	TB2-7
TB1-14	Not In Auto	TB2-2
TB1-15	Charger AC Failure	TB1-5
TB1-16	Low Fuel Level	TB1-7
TB1-17	Customer Fault 1	TB1-1
TB1-18	GND	TB2-1
TB1-19	GND	TB2-14
TB1-20	Silence Lamp Test (N.O.)	TB1-10
TB1-21	GND	TB1-9
TB1-22	Remote Alarm (N.O.)	TB1-13
TB1-23	GND	TB1-12
TB1-24	GND	TB1-17
TB2-1	High Battery Voltage or Customer Indication 1	TB2-4
TB2-2	Low Battery Voltage or Customer Indication 2	TB2-5
TB2-3	Normal Battery Voltage or Customer Indication 3 or Weak Battery	TB2-6
TB2-4	Low Coolant Level	TB1-6
TB2-5	Customer Fault 2	TB1-2
TB2-6	Customer Fault 3	TB1-3
TB2-7	Silence Lamp Test (N.C.)	TB1-11
TB2-8	Remote Alarm (N.C.)	TB1-14

TABLE 3. INSERT MODIFICATIONS

LAMP	INSERT CARD MODIFICATION
1	Customer Fault 1 text can be written in the blank space provided.
2	Customer Fault 2 text can be written in the blank space provided.
3	Customer Fault 3 text can be written in the blank space provided.
8	A “Normal Utility Power” sticky label can be placed over “Check Genset” or white tape can be used to cover “Check Genset” with “Normal Utility Power” written on the tape.
11	A blank sticky label or white tape can be used to cover “High Battery Voltage” and Custom Indication 1 text can be written on the label/tape.
12	A blank sticky label or white tape can be used to cover “Low Battery Voltage” and Custom Indication 2 text can be written on the label/tape.
13	A “Normal Battery Voltage” sticky label can be placed over “Weak Battery” or white tape can be used to cover “Weak Battery” with “Normal Battery Voltage” written on the tape.
Text for all other lamps should not need to be changed.	

Customer Options

OPTIONS

The annunciator with version 1.06 can only be configured via the three push buttons on the back of the annunciator.

The annunciator with version 2.00 or higher can be configured by:

1. Using the three push buttons on the back or the annunciator,
2. By PCCNet communications,

   or

   By Modbus communications.

When configuring via PCCNet or Modbus, the external device must have special code for performing this function.

Annunciator functions can be modified to meet the needs of your installation. individual status lamp colors (red, green, or amber), flash, and alarm characteristics can be changed. The S1 button on the control board (see Figure 6) can be used to enter the configuration mode and make adjustments.

Customer indications and customer faults can also be added.

The annunciator also has connections for Remote Silence/Lamp Test and Remote Alarm.

The following subsections describe how to modify and utilize optional features.

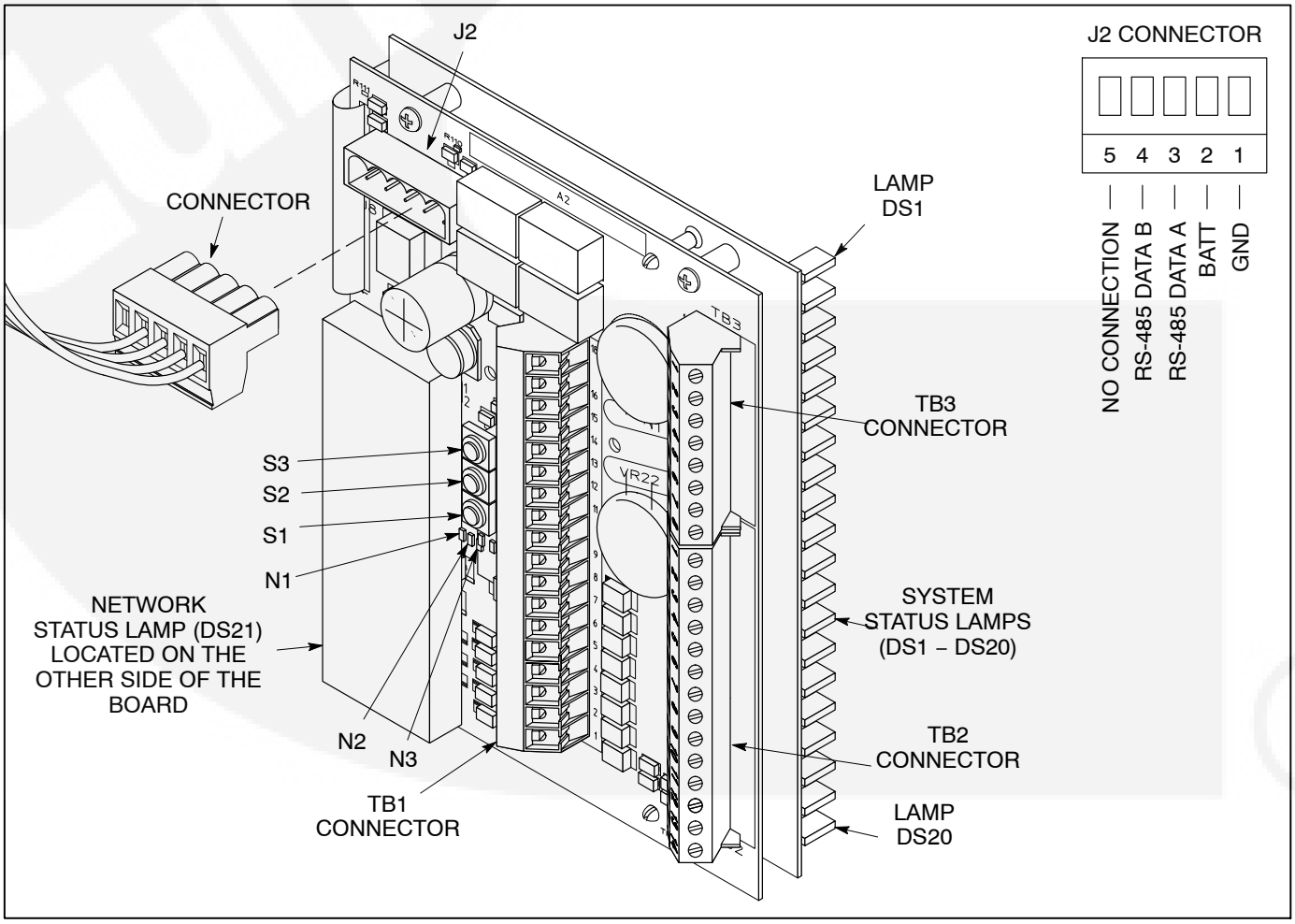

FIGURE 6. ANNUNCIATOR CONTROL BUTTONS, STATUS LAMPS, AND CONNECTORS

ANNUNCIATOR CONFIGURATION

During normal operation, the annunciator is in Running Mode. When in Running Mode, only the N3 LED is flashing (green). Configuration Mode must be entered to modify or check lamp characteristics and annunciator settings. When in Configuration Mode, the three LEDs on the back panel are used to display which configuration function is presently selected. One or more of the front panel system status lamps (DS1–DS20) are used to display the configurations available with each function.

Three momentary buttons on the back panel are used to set configurations:

- The S1 button is used to enter or leave Configuration Mode and to cycle through the configuration functions. While in Running Mode, the N1 LED will light if the S1 button is pressed.
- The S2 button is used in certain configuration functions to cycle through each of the 20 lamps. While in Running Mode, the N2 LED will light if the S2 button is pressed.
- The S3 button is used to select the available configurations. While in Running Mode, the N3 LED will light if the S3 button is pressed.

A summary of configuration settings is included in Table 7, located at the end of this section.

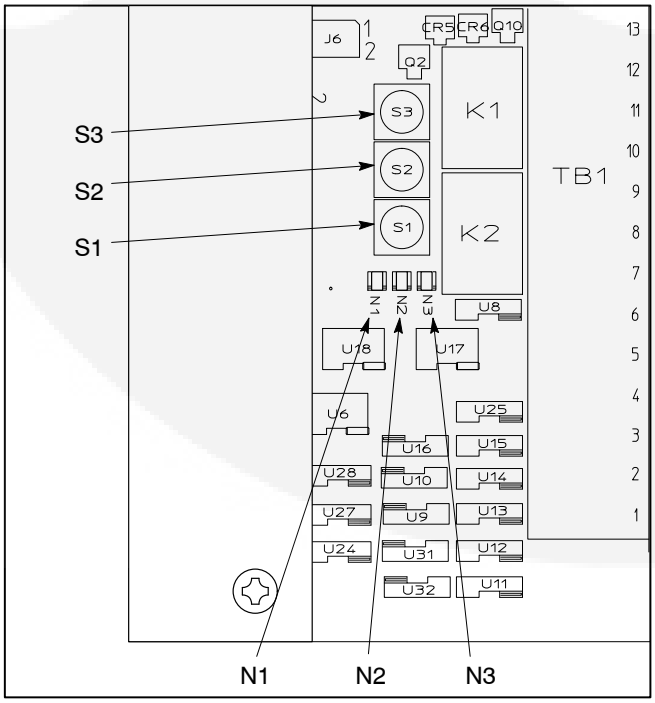

FIGURE 7. CONFIGURATION BUTTONS AND LEDs

Entering Configuration Mode

During normal operation (Running Mode), the green N3 LED flashes at one flash per second.

1. Press and hold S1 for 5 seconds to enter Configuration Mode.
2. During the five seconds that S1 is pressed, N1 lights and N3 continues to flash.
3. After S1 has been pressed for five seconds, N1, N2, and N3 go out. You have entered Configuration Mode when all three LEDs are off.

Configuration Functions

Upon entering Configuration Mode, eight configuration functions can be selected by pressing the S1 button. Table 4 shows the sequence of the functions that are available. The black-filled squares indicate which LEDs are lit for each function.

TABLE 4. CONFIGURATION FUNCTIONS

	FUNCTION	LED		
		N1	N2	N3
1	Select Predefined Configuration Table for all 20 lamps	□	□	□
2	Report Battery Voltage	■	□	□
3	Select Negative/Positive Input	□	■	□
4	Select Network Configuration Address	■	■	□
5	Configure individual Lamps with Color and Flash Characteristics	□	□	■
6	Configure individual Lamps with Audible Alert	■	□	■
7	Invert Active Signals	□	■	■
8	Enable Global Horn	■	■	■

Information on how to configure these functions is shown on the following pages. With each function, all configurations that are available are listed (including the default configuration). For most functions, a color is assigned to one or more lamps to indicate which configuration is currently selected.

NOTE: Active conditions are not displayed when in Configuration Mode. If a condition occurs while in Configuration Mode, it will not be displayed until after you have returned to Running Mode (see “Exiting Configuration Mode” on page 23).

Selecting Predefined Configuration Tables

LED		
N1	N2	N3
☐	☐	☐

Upon entering Configuration Mode, N1, N2, and N3 LEDs are all off, indicating that the Predefined Configuration Mode function has been selected. If a different configuration function is presently selected, repeatedly press the S1 button until all three LEDs are off.

Two sets of predefined lamp configurations are available ("Modbus and NFPA 110" for new annunciator installations and "Legacy NFPA 110" for replacement of legacy annunciators). The default settings for each of these configurations are shown in Table 5. If one of the two predefined configuration tables is selected, characteristics (color, flash, and audible alert) for all 20 discrete input lamps are automatically set. However, after selecting the table of attributes, characteristics of individual lamps can be modified (see page 22).

Selecting a predefined configuration table only needs to be done once. If you customize a predefined configuration table by changing default settings, always keep the configuration mode setting as "No Change." Otherwise, individual changes may be lost.

TABLE 5. DEFAULT LAMP CONFIGURATION TABLES

Lamp	Description	Modbus and NFPA 110 (DS1 = Red)			Legacy NFPA 110 (DS1 = Amber)		
		Color	Horn	Flash	Color	Horn	Flash
DS1	Customer Fault 1	Green	No	No	Red	Yes	No
DS2	Customer Fault 2	Amber	No	No	Red	Yes	No
DS3	Customer Fault 3	Red	No	No	Red	Yes	No
DS4	**Genset Supplying Load**	Amber	No	No	Green	No	No
DS5	**Charger AC Failure**	Amber	Yes	No	Red	No	No
DS6	**Low Coolant Level**	Amber	Yes	No	Red	Yes	No
DS7	**Low Fuel Level**	Red	Yes	No	Red	Yes	No
DS8	**Check Genset** (Modbus and NFPA 110) *or* Normal Utility (Legacy NFPA 110)	Amber	No	No	Green	No	No
DS9	**Not In Auto**	Red	Yes	Yes	Red	Yes	No
DS10	**Genset Running**	Amber	No	No	Green	No	No
DS11	**High Battery Voltage**	Amber	Yes	No	Red	No	No
DS12	**Low Battery Voltage**	Red	Yes	No	Red	No	No
DS13	**Weak Battery** (Modbus and NFPA 110) *or* Normal Battery Voltage (Legacy NFPA 110)	Red	Yes	No	Green	No	No
DS14	**Fail to Start**	Red	Yes	No	Red	Yes	No
DS15	**Low Coolant Temp**	Red	Yes	No	Red	Yes	No
DS16	**Pre-High Engine Temp**	Amber	Yes	No	Amber	Yes	No
DS17	**High Engine Temp**	Red	Yes	No	Red	Yes	No
DS18	**Pre-Low Oil Pressure**	Red	Yes	No	Amber	Yes	No
DS19	**Low Oil Pressure**	Red	Yes	No	Red	Yes	No
DS20	**Overspeed**	Red	Yes	No	Red	Yes	No

Bold type indicates the items that are printed on the annunciator overlay. The remaining slots are blank (see Figure 1).

For software versions **prior to version 2.00**, when you select the Predefined Configuration Mode function, lamp DS1 displays the color associated with the predefined configuration shown in the table below. To change the predefined configuration, press the S3 button to select the color assigned to one of the predefined configuration tables, as shown below.

DS1 COLOR	CONFIGURATION
Green	No Change (For customized configurations)
Amber	Legacy NFPA 110 (Default with software version 1.05 or earlier)*
Red	NFPA 110 (Default, starting with software version 1.06)*

* Starting with version 1.06, the factory defaults are set to the parameters in the NFPA 110 table. The factory defaults for earlier versions of software are set to the parameters in the Legacy NFPA 110 table.

If you have an unused, factory fresh annunciator, you can determine which table has been pre-selected by pressing the Silence/Lamp Test button when the annunciator is in Run mode (not Configuration mode). If the top three LEDs are Green, Amber, Red, then the NFPA 110 table has been preselected. If the top three LEDs are Red, Red, Red, then the Legacy NFPA 110 has been preselected. If a different pattern is displayed, the table doesn't match your needs, or if the annunciator has been used before, then select the predefined table that best matches your needs.

NOTE: When the predefined Legacy NFPA 110 table is selected, then "Report 12 Volt" battery voltage function is automatically selected. When the predefined NFPA 110 table is selected, then "Don't Report" battery reporting function is automatically selected. It may be necessary to change this setting for your installation. For more information on reporting battery voltage, see "Reporting Battery Voltage" below.

For software versions **starting with version 2.00**, when you select the Predefined Configuration Mode function, lamps DS1 and DS2 are used to display the color associated with the predefined configuration shown in the table below. To change the predefined configuration, press the S3 button to select the color assigned to one of the predefined configuration tables, as shown below.

If Modbus communications is desired, select the Modbus NFPA 110 table.

COLOR		CONFIGURATION
DS1	DS2	
Green	Off	No Change: PCCNet (For customized configurations)
Green	Green	No Change: Modbus (For customized configurations)
Amber	Off	PCCNet Legacy NFPA 110
Red	Off	PCCNet NFPA 110
Amber	Amber	Modbus NFPA 110

NOTE: When the predefined Legacy NFPA 110 table is selected, then "Report 12 Volt" battery voltage function is automatically selected. When the predefined NFPA 110 table is selected, then "Don't Report" battery reporting function is automatically selected. When the predefined Modbus table is selected, then "Don't Report" is automatically selected. It may be necessary to change this setting for your installation. For more information on reporting battery voltage, see "Reporting Battery Voltage" below.

Reporting Battery Voltage

LED		
N1	N2	N3
■	□	□

To check on or modify the status of the Reporting Battery Voltage function, enter the Configuration Mode and repeatedly press the S1 button until the N1 LED is lit. When the Reporting Battery Voltage function is selected, lamps DS11, DS12, and DS13 display the color indicating the status of this function.

NOTE: The Reporting Battery Voltage function is automatically selected when a Predefined Configuration Table is selected (see page 19).

A report high and low only configuration can be used when an input is available for Weak Battery, but no inputs are available for High Battery Voltage and Low Battery Voltage. A report high and low only configuration can also be used when it is desired to report a customer fault in place of Normal Battery.

To change the Reporting Battery Voltage function, press the S3 button until the color associated with the desired reporting configuration is displayed, as shown below.

COLOR			CONFIGURATION
DS11	DS12	DS13	
Green	Green	Green	Don't Report
Amber	Amber	Amber	Report – 12 Volt High/Low/Normal (Default)
Red	Red	Red	Report – 24 Volt High/Low/Normal
Amber	Amber	Off	Report – 12 Volt High/Low
Red	Red	Off	Report – 24 Volt High/Low

TABLE 6. BATTERY VOLTAGE SETTINGS

LOW	HIGH	CONFIGURATION
12 ± 0.5 VDC	16 ± 0.5 VDC	12 VDC
24 ± 1 VDC	32 ± 1 VDC	24 VDC

Selecting Negative/Positive Input

LED		
N1	N2	N3
□	■	□

The annunciator can be configured to be either a Positive or Negative signal device. The polarity of the annunciator must match that of the emergency power system.

To check on or modify the status of the Negative/Positive Input function, enter the Configuration Mode and repeatedly press the S1 button until only the N2 LED is lit. When the Negative/Positive Input function is selected, all 20 lamps are lit and are the same color (either red or green). Press the S3 button to modify the Negative/Positive Input function, as shown below.

DS1–20 COLOR	CONFIGURATION
Green	Positive Input
Red	Negative Input (Default)

Configuring the Network Configuration Address

LED		
N1	N2	N3
■	■	□

The annunciator can be configured to communicate using one of the four available network configuration addresses. This feature allows for up to four annunciators to be installed in a network, all displaying different network information.

To check on or modify the status of the Network Configuration Address function, enter the Configuration Mode and repeatedly press the S1 button until the N1 and N2 LEDs are lit. The first four lamps are used to indicate the address. Press the S3 button to modify the Network Configuration Address function, as shown below.

DS1	DS2	DS3	DS4	CONFIGURATION
Green	Off	Off	Off	Network Address 1 (Default)
Off	Green	Off	Off	Network Address 2
Off	Off	Green	Off	Network Address 3
Off	Off	Off	Green	Network Address 4

NOTE: Always use Network Configuration Address 1 (default) to set up NFPA 110 annunciators.

Configuring the Color and Flash Characteristics of individual Lamps

LED		
N1	N2	N3
□	□	■

Each of the 20 status lamps can be configured to be red, green, or amber. Each lamp can be configured to flash or not flash. Each lamp can also be disabled (turned off). Default lamp characteristics are determined by the predefined configuration table selected (see page 19).

To select the lamp configuration function after entering Configuration Mode, repeatedly press the S1 button until the N3 LED is lit.

When this function is selected, the characteristics of all 20 lamps are shown and the first lamp (DS1) flashes. To scroll through the other lamps, repeatedly press the S2 button until the desired lamp flashes a quick flash.

To modify the characteristics on an individual lamp, press the S3 button. The lamp characteristics are:

- Solid Green
- Solid Amber
- Solid Red
- One Second Flashing Green
- One Second Flashing Amber
- One Second Flashing Red
- Disabled (Off) – A lamp that is disabled cannot be configured with an audible alert.

NOTE: When a lamp is selected for flash configuration, a double flash can be observed. After selecting the next lamp, the lamp that was configured to flash will flash at a slower rate (once per second).

Configuring individual Lamps with An Audible Alert

LED		
N1	N2	N3
■	□	■

Each of the 20 status lamps can be configured with an Audible Alert that sounds when the associated LED becomes active.

NOTE: A lamp that is disabled cannot be configured with an audible alert.

To view and modify the status of the Audible Alert function of the lamps, enter the Configuration Mode and repeatedly press the S1 button until the N1 and N3 LEDs are lit.

When this function is selected, the alert status of all 20 lamps is shown and the first lamp (DS1) flashes. The default alert status is determined by the predefined configuration table selected (see page 19). To scroll through the lamps, repeatedly press the S2 button until the desired lamp flashes. Press the S3 button to modify the Audible Alert function, as shown below.

DS1–20 COLOR	CONFIGURATION
Green	Sound Disabled
Red	Sound Enabled

Inverting Active Hardware Signals

LED		
N1	N2	N3
□	■	■

The state of each of the 20 hardware input signals can optionally be individually inverted. If set to inverted, then an active hardware signal will be considered inactive and an inactive signal will be considered active.

After entering Configuration Mode, repeatedly press the S1 button until the N2 and N3 LEDs are lit.

When this function is selected, the characteristics of first lamp (DS1) are shown. To scroll through the other lamps, repeatedly press the S2 button until the desired lamp flashes. Press the S3 button to modify the Invert Active Signal function, as shown below.

DS1–20 COLOR	CONFIGURATION
Green	Don't Invert (Default)
Red	Invert

Enabling Global Horn

LED		
N1	N2	N3
■	■	■

Although individual lamps can be set up with an audible alert, the horn will not sound unless the Global Horn function is enabled. To check on or change the status of the Global Horn function, enter the Configuration Mode and repeatedly press the S1 button until the N1, N2, and N3 LEDs are lit.

When the Global Horn Enable function is selected, lamp DS1 displays the color indicating the status of this function. Press S3 to change the color associated with the global horn configuration, as shown below.

DS1 COLOR	CONFIGURATION
Green	Horn Disabled
Amber	Horn Enabled – Soft
Red	Horn Enabled – Loud (Default)

Exiting Configuration Mode

All changes are automatically saved upon exiting the configuration mode. To exit the configuration mode,

1. Press and hold S1 for 5 seconds.
2. After S1 has been pressed for five seconds, N3 begins to flash, indicating that you have returned to Running Mode.

NOTE: If you do not manually exit Configuration Mode, the annunciator automatically exits this mode after ten minutes of button inactivity. Any changes that were made are automatically saved.

CUSTOMER FAULTS

Three customer faults are available for annunciation of the customers specified conditions. Add the fault descriptions to the control panel insert. Refer to Table 5 for interconnect locations.

REMOTE SILENCE/LAMP TEST

Two remote Silence/Lamp Test connections are available (refer to Table 5). One Silence/Lamp Test has normally open contacts (connection TB1-10) and is used as both input and output for the Silence/Lamp Test function. The other Silence/Lamp Test has normally closed contacts (connection TB1-11) and can only be used as an output for the Silence/Lamp Test function. Both contacts are rated at two amps maximum.

REMOTE ALARM

Two remote alarm connections are available (refer to Table 5). One remote alarm has normally open contacts (connection TB1-13) and the other has normally closed contacts (connection TB1-14). Both contacts are rated at two amps maximum.

TABLE 7. CONFIGURATION SUMMARY TABLE

Function	Configuration LEDs (S1 Button) N1 N2 N3	Select individual Input (S2 Button)	Front Panel Lamp Selection (Lamps 1 Through 20) (S3 Button)	Value
Predefined Configuration Table (Software Versions Prior to Version 2.00)	– – –	NA	G – – – – – – – – – – – – – – – – – – –	No Change
			A – – – – – – – – – – – – – – – – – – –	Legacy
			R – – – – – – – – – – – – – – – – – – –	NFPA 110[1]
Predefined Configuration Table (Starting with Software Version 2.00)	– – –	NA	G – – – – – – – – – – – – – – – – – – –	No Change (PCCNet)
	– – –	NA	G G – – – – – – – – – – – – – – – – – –	No Change (Modbus)
	– – –	NA	A – – – – – – – – – – – – – – – – – – –	PCCNet Legacy
	– – –	NA	R – – – – – – – – – – – – – – – – – – –	PCCNet NFPA 110[1]
	– – –	NA	A A – – – – – – – – – – – – – – – – – –	Modbus NFPA 110
Report Battery Voltage (in Status Lamps 11, 12, and 13) – Used with PCCNet Network Only	G – –	NA	– – – – – – – – – – G G G – – – – – – –	Don't Report [134]
			– – – – – – – – – – A A A – – – – – – –	Report 12V[2]
			– – – – – – – – – – R R R – – – – – – –	Report 24V
			– – – – – – – – – – A A – – – – – – – –	Report 12V High/Low
			– – – – – – – – – – R R – – – – – – – –	Report 24V High/Low
Negative/ Positive Input Selection	– G –	NA	G G G G G G G G G G G G G G G G G G G G	Positive
			R R R R R R R R R R R R R R R R R R R R	Negative[1]
Network Configuration Address	G G –	NA	G – – – – – – – – – – – – – – – – – – –	1 (NFPA 110)[1234]
			– G – – – – – – – – – – – – – – – – – –	2
			– – G – – – – – – – – – – – – – – – – –	3
			– – – G – – – – – – – – – – – – – – – –	4
Color and Flash for individual Lamps	– – G	Press S2 to cycle through the 20 lamps	G	Solid Green
			A	Solid Amber
			R	Solid Red
			>G<	Flashing Green
			>A<	Flashing Amber
			>R<	Flashing Red
			–	Disabled
Audible Alert with individual Lamps	G – G	Press S2 to cycle through the 20 lamps	G	Disabled
			R	Enabled
Invert Active Signal for individual Inputs	– G G	Press S2 to cycle through the 20 lamps	G	Don't Invert[1]
			R	Invert
Global Horn Enable	G G G	NA	G – – – – – – – – – – – – – – – – – – –	Disabled
			A – – – – – – – – – – – – – – – – – – –	Enabled–Soft
			R – – – – – – – – – – – – – – – – – – –	Enabled–Loud[1]

Notes:

G = Green, A = Amber, R = Red, – = Off

[1] = Factory Default (Legacy was the default in early version of software. NFPA 110 is the default, starting with version 1.06.)

[2] = Default when Predefined Configuration Table = PCCNet Legacy

[3] = Default when Predefined Configuration Table = PCCNet NFPA 110.

[4] = Default when Predefined Configuration Table = Modbus NFPA 110.

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Troubleshooting

WARNING ***Faulty service of the equipment monitored by the annunciator can lead to severe injury or death from electrocution, and equipment or property damage due to fire. Service must be performed by trained and experienced personnel.***

PRE-CHECK

Verify the proper power supply wiring connection is made and that the power supply voltage range is correct for your installation.

- The power supply wiring connection for a **new annunciator installation** must be between TB1-16 (BATT) and TB1-15 (GND).
- The power supply wiring connection for a **legacy annunciator replacement** that was between TB1-2 and TB1-3 (GND) for a 12-volt system or between TB1-1 and TB1-3 (GND) for a 24-volt system must now be between TB1-16 (BATT) and TB1-15 (GND).
- The power supply voltage range must between 6.5 and 31 VDC.

Verify that the annunciator is correctly set up to be either a positive or negative signal device. To check the negative/positive input status, remove the annunciator panel from the control box and use the configuration buttons to enter Configuration Mode and check on the negative/positive input status (see pages 18 and 22).

TROUBLESHOOTING

Incorrect Battery Voltage Sensing

If incorrect or no battery voltage indication appears, perform the following checks.

1. For a **new annunciator installation**, verify that B+ is connected to TB1-16 and that the ground (GND) connection is made to TB1-15.
2. For a **legacy annunciator replacement**, verify that B+ is no longer connected to TB1-2 on a 12-volt system or connected to TB1-1 on a 24-volt system and that the ground (GND) connection is not made to TB1-3. B+ must be connected to TB1-16 and the ground (GND) connection must be made to TB1-15.
3. Verify that the annunciator is configured to report battery voltage.
4. Verify that the annunciator has power by pressing the Silence/Lamp Test pushbutton. All 21 lamps should light.
5. Use a voltmeter to check the voltage between the “BATT IN” and a GND terminal to verify that it is correct.
6. If the failure still exists, the PCB is defective and must be replaced.

Lamp Testing

All test lamps should light when the Silence/Lamp Test button is pressed. The following describes the sequence of events that should occur if you press and hold the Silence/Lamp Test button.

1. If there are no active audible alarms, all lamps (DS1 thru DS21) switch from green to amber to red.
2. Lamps DS1 thru DS20 display their configured color, flash, and audible alert characteristics.
3. After releasing the Silence/Lamp Test button, the status of the lamps that are hard-wired is displayed for one second.

All Indicators Fail to Light

If the indicators fail to light when the Silence/Lamp Test button is pressed, then perform the following checks.

1. Verify that the annunciator has power between TB1-16 (+) and TB1-15 (GND).
2. Verify that the J1 connector (membrane panel ribbon cable to PCB assembly – located on the back of the board) is secure (see Figure 8). Press the Silence/Lamp Test pad.
3. If the problem continues, momentarily jumper the J1 pins together. If all the indicators light when J1 pins are jumpered together, the membrane touch panel is defective and must be replaced.
4. If the failure still exists, the PCB is defective and must be replaced.

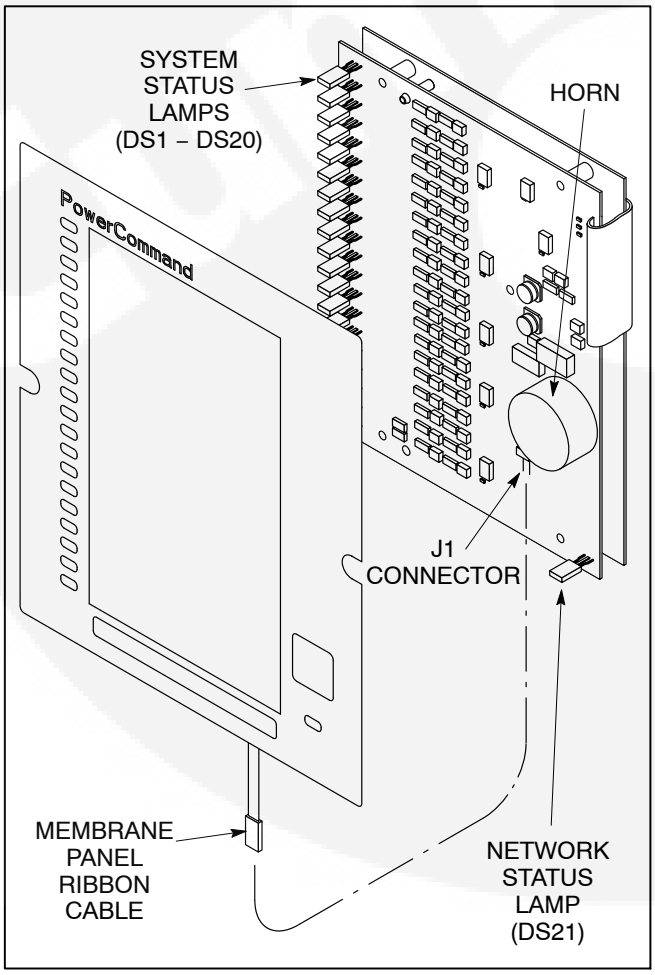

FIGURE 8. J1 CONNECTION

One or More Failed Lamps

If one or more lamps fail to light when the Silence/Lamp Test button is pressed, the lamp(s) and/or PCB is/are defective. If any defective lamp is used, replace the PCB.

Input Fails to Light Lamp

If a status lamp fails to light when the corresponding input condition is activated, but the lamp does light during a lamp test, then verify the input connections.

1. Enter Configuration Mode and verify that the lamp has been enabled (see “Annunciator Configuration” on page 18).
2. Apply B+ to the respective input and verify that the lamp fails to light.
3. Apply GND to the respective input and verify that the lamp fails to light.
4. If the lamp lights with the proper input, check for a poor connection or defective lead back to the signal source.
5. If the status lamp still does not light, the lamp and/or PCB is defective. Replace the PCB if the lamp is used.

Not All Lamps Display the Desired Characteristics

If one or more lamps do not display the desired characteristics when the Silence/Lamp Test button is pressed and held (see “Lamp Testing on the previous page), perform the following checks.

1. Enter Configuration Mode and verify that the desired individual lamp characteristics have been set (see page 23).
2. While in Configuration Mode, verify that the Invert Active Signals function is correctly set (see page 23).

Lamps Are Lit At the Wrong Time

If most or all lamps are lit during normal operation but you do not want them to be lit, perform the following checks.

1. Enter Configuration Mode and verify that the correct negative/positive input setting has been made (see page 23).

2. While in Configuration Mode, verify that the Invert Active Signals function is correctly set (see page 23).

Excessive Battery Voltage Indications

If there are numerous indications of High Battery Voltage or Low Battery Voltage, perform the following checks.

1. Enter Configuration Mode and verify that the correct Reporting Battery Voltage configuration has been made (see page 23). The configuration must be properly set for a 12 or 24 VDC control system.

2. Check the battery and/or battery charger for proper voltage/operation.

Alarm Failure

If a fault fails to signal an audible alarm, but does light the lamp, perform the following checks.

NOTE: If both the alarm and lamp fail to function, perform the checks under "Input Fails to Light Lamp."

1. Enter Configuration Mode and verify that the Global Horn function has been enabled (see "Enabling Global Horn" on page 23). If Global Horn is disabled, lamp DS1 will be green.

2. While in Configuration Mode, verify that the lamp has been configured with an audible alert. (see "Configuring individual Lamps with an Audible Alert" on page 23). If the alert for the lamp is disabled, it will be green.

3. Verify that during the fault input condition, the remote alarm (N.O.) output (TB1-13 for new annunciator installations or TB1-22 for legacy annunciator replacement installations) becomes grounded.

4. If steps one through three do not indicate any problems, tap on the side of the horn a few times. This action may free the piezo element and allow it to vibrate. Sometimes after extreme temperature changes, the piezo element becomes jammed and is unable to vibrate.

5. If the alarm still fails to sound, the PCB is defective and must be replaced.

The Alarm Sounds But No Lamps are Flashing

Check to see if a lamp is displaying a quick blip (0.2 seconds On and 1.8 seconds Off). If a lamp is configured as inaudible (horn off), the event occurs, and then it becomes inactive before the Silence/Lamp Test pushbutton is pressed, the alarm will sound but the lamp will not continue to flash its configured color and flash characteristics.

Remote/Silence Lamp Test Connection

If the local annunciator fails to silence the alarm horns of the remote interconnected annunciators, then verify that the Silence/Lamp Test (N.O.) terminals (TB1-10 for new annunciator installations or TB1-20 for legacy annunciator replacement installations) are interconnected. The connections are made to TB1-10 on the new annunciators.

Genset Fault Fails to Go Inactive

If an annunciator fault status remains active but you believe it should be inactive, it may be that the genset controller is actually keeping the fault active. Some genset controllers (PCC2100, PCC3200) keep some faults active (High Engine Temperature, Low Oil Pressure) until the genset shuts down, restarts, and then runs without the fault condition in the fault range for a predetermined amount of time. Refer to the controller's fault status list to see if the fault is still active. Some controllers display an asterisk (*), indicating that the fault is still active. Refer to your genset or controller manual for more information.

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Parts Information

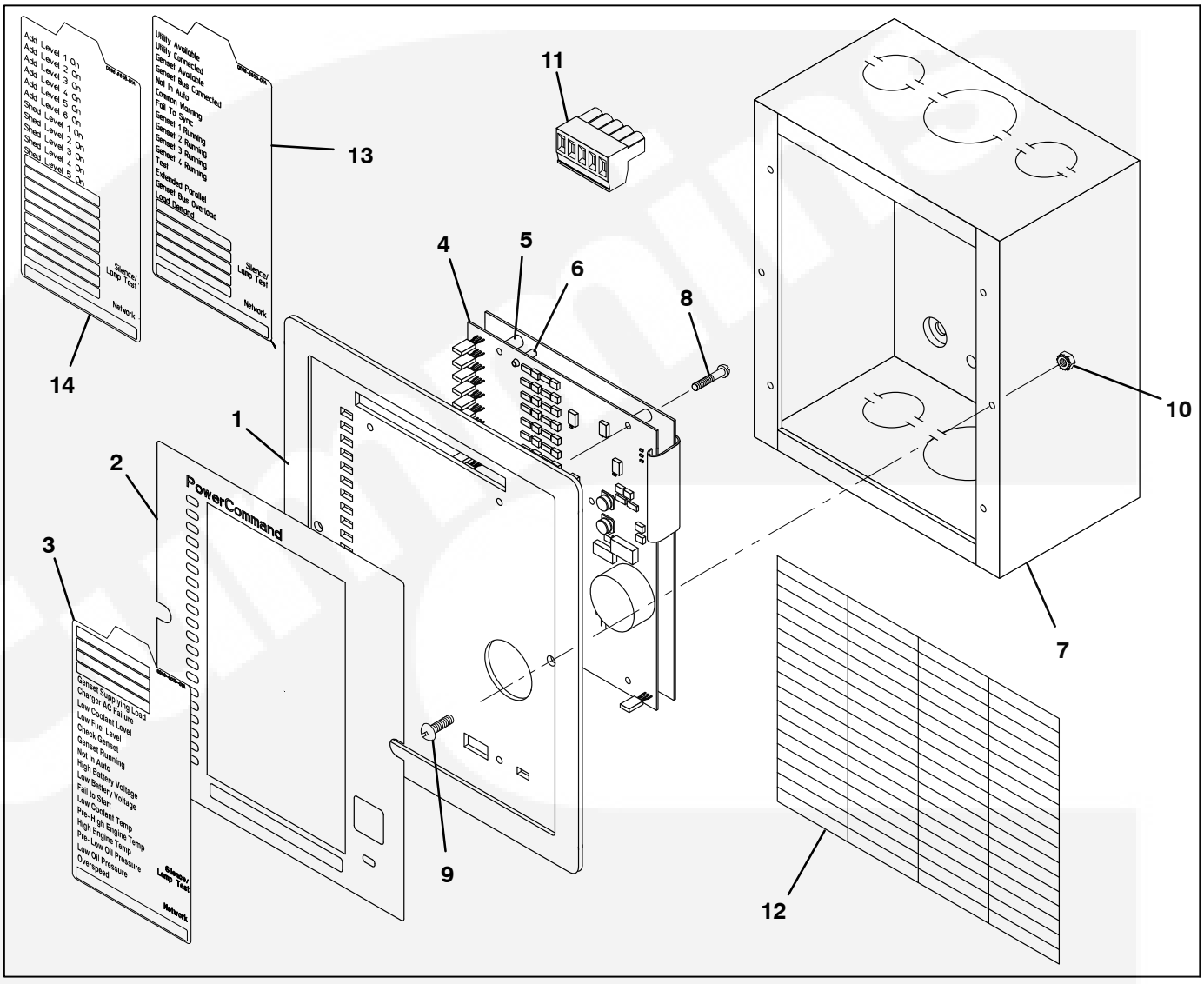

FIGURE 9. ANNUNCIATOR PARTS

REF NO.	PART NO.	QTY USED	PART DESCRIPTION
			Annunciator
	300–5929–01	1	Panel Mounted
	300–5929–02	1	Panel with Enclosure
1	319–4148–02	1	Panel, Annunciator
2	300–5338	1	Panel, Membrane
3			Card, Insert – Membrane
	098–8321–01	1	English
	098–8321–02	1	Spanish
	098–8321–03	1	French
	098–8321–04	1	Chinese
4	327–1521	1	Board, Printed Circuit (PCB) – Annunciator
5	332–4064	4	Spacer
6	332–3332–04	3	Post, Circuit Board
7	301–3090	1	Control Box (Used with 300–5929–02 Annunciator)
8	819–1160–01	3	Screw, Machine – Round Head (M3 x 10mm)
9	815–0385	2	Screw, Machine – Round Head (6–32 x 1/2”) (Black)
10	870–0183	2	Nut, Hex – Lock (6–32)
11	323–2192–04	1	Connector

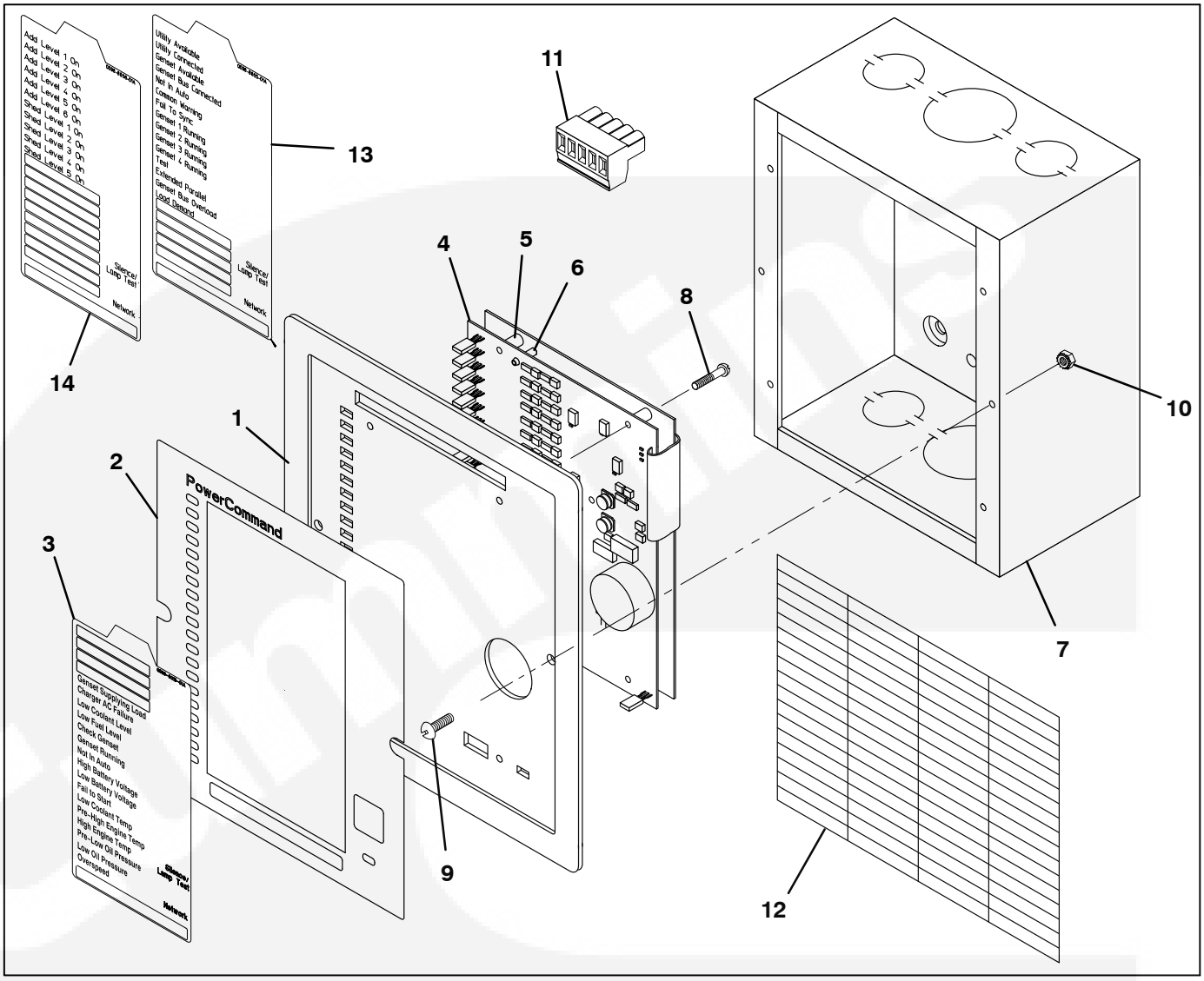

FIGURE 9. ANNUNCIATOR PARTS

REF NO.	PART NO.	QTY USED	PART DESCRIPTION
12			Label, Peel Off
	098–6902	1	English
	098–6902–01	1	Spanish
13			Card, Insert – Membrane
	098–8855–01	1	English
	098–8855–02	1	Spanish
	098–8855–03	1	French
	098–8855–04	1	Chinese
14			Card, Insert – Membrane
	098–8856–01	1	English
	098–8856–02	1	Spanish
	098–8856–03	1	French
	098–8856–04	1	Chinese

Modbus Register Table

Modbus Address	System Name	Access	Specifications		Description
43000	High 4 LEDs	Read/Write	bit 0: Input 1(LSB) bit 1: Input 2 bit 2: Input 3 bit 3: Input 4	Default: 0	Read this register for the statuses of LEDs 1..4. Write to this register to control the status of the LEDs.
43001	Low 16 LEDs	Read/Write	bit 0: Input 5(LSB) bit 1: Input 6 bit 2: Input 7 bit 3: Input 8 .. bit 14: Input 19 bit 15: Input 20(MSB)	Default: 0	Read this register for the statuses of LEDs 5..20. Write to this register to control the status of the LEDs.
43002	High 4 Discrete Inputs	Read Only	bit 0: Input 1(LSB) bit 1: Input 2 bit 2: Input 3 bit 3: Input 4	Default: n/a	Read this register for the statuses of discrete inputs 1..4.
43003	Low 16 Discrete Inputs	Read Only	bit 0: Input 5(LSB) bit 1: Input 6 bit 2: Input 7 bit 3: Input 8 .. bit 14: Input 19 bit 15: Input 20(MSB)	Default: n/a	Read this register for the statuses of discrete inputs 5..20.
43004	High Battery Status	Read Only	0: OK 1: Too High	Default: n/a	Annunciator generated high battery voltage status. To use this status the Report Battery Voltage register must not be set to Don't Report.
43005	Low Battery Status	Read Only	0: Ok 1: Too Low	Default: n/a	Annunciator generated low battery voltage status. To use this status the Report Battery Voltage register must not be set to Don't Report.
43006	Audible Alarm Status	Read Only	0: Inactive 1: Active	Default: n/a	Read current state of audible alarm.
43007	Silence Button	Read/Write	0: Not Pressed 1: Pressed	Default: Not Pressed	Silence Button has been pressed since the last time this register was read.
43008	Relay 1 State	Read/Write	0: Inactive 1: Active	Default: Inactive	Read current state of relay or write desired state.
43009	Relay 2 State	Read/Write	0: Inactive 1: Active	Default: Inactive	Read current state of relay or write desired state.
43010	Relay 3 State	Read/Write	0: Inactive 1: Active	Default: Inactive	Read current state of relay or write desired state.
43011	Relay 4 State	Read/Write	0: Inactive 1: Active	Default: Inactive	Read current state of relay or write desired state.
43021	Configure LED 1	Read/Write	See Modbus LED Configuration Structure	Default: See Modbus NFPA 110 Table	Set-up Individual LED.

Modbus Address	System Name	Access	Specifications		Description
43022	Configure LED 2	Read/Write	See Modbus LED Configuration Structure	Default: See Modbus NFPA 110 Table	Set-up Individual LED.
43023	Configure LED 3	Read/Write	See Modbus LED Configuration Structure	Default: See Modbus NFPA 110 Table	Set-up Individual LED.
43024	Configure LED 4	Read/Write	See Modbus LED Configuration Structure	Default: See Modbus NFPA 110 Table	Set-up Individual LED.
43025	Configure LED 5	Read/Write	See Modbus LED Configuration Structure	Default: See Modbus NFPA 110 Table	Set-up Individual LED.
43026	Configure LED 6	Read/Write	See Modbus LED Configuration Structure	Default: See Modbus NFPA 110 Table	Set-up Individual LED.
43027	Configure LED 7	Read/Write	See Modbus LED Configuration Structure	Default: See Modbus NFPA 110 Table	Set-up Individual LED.
43028	Configure LED 8	Read/Write	See Modbus LED Configuration Structure	Default: See Modbus NFPA 110 Table	Set-up Individual LED.
43029	Configure LED 9	Read/Write	See Modbus LED Configuration Structure	Default: See Modbus NFPA 110 Table	Set-up Individual LED.
43030	Configure LED 10	Read/Write	See Modbus LED Configuration Structure	Default: See Modbus NFPA 110 Table	Set-up Individual LED.
43031	Configure LED 11	Read/Write	See Modbus LED Configuration Structure	Default: See Modbus NFPA 110 Table	Set-up Individual LED.
43032	Configure LED 12	Read/Write	See Modbus LED Configuration Structure	Default: See Modbus NFPA 110 Table	Set-up Individual LED.
43033	Configure LED 13	Read/Write	See Modbus LED Configuration Structure	Default: See Modbus NFPA 110 Table	Set-up Individual LED.
43034	Configure LED 14	Read/Write	See Modbus LED Configuration Structure	Default: See Modbus NFPA 110 Table	Set-up Individual LED.
43035	Configure LED 15	Read/Write	See Modbus LED Configuration Structure	Default: See Modbus NFPA 110 Table	Set-up Individual LED.

Modbus Address	System Name	Access	Specifications		Description
43036	Configure LED 16	Read/Write	See Modbus LED Configuration Structure	Default: See Modbus NFPA 110 Table	Set-up Individual LED.
43037	Configure LED 17	Read/Write	See Modbus LED Configuration Structure	Default: See Modbus NFPA 110 Table	Set-up Individual LED.
43038	Configure LED 18	Read/Write	See Modbus LED Configuration Structure	Default: See Modbus NFPA 110 Table	Set-up Individual LED.
43039	Configure LED 19	Read/Write	See Modbus LED Configuration Structure	Default: See Modbus NFPA 110 Table	Set-up Individual LED.
43040	Configure LED 20	Read/Write	See Modbus LED Configuration Structure	Default: See Modbus NFPA 110 Table	Set-up Individual LED.
43041	Report Battery Voltage	Read/Write	0: Don't Report 1: 12 volt Hi/Low/Normal 2: 24 volt Hi/Low/Normal 3: 12 volt Hi/Low 4: 24 volt Hi/Low	Default: Don't Report	Specifies if annunciator generated voltage statuses should be displayed on the annunciator.
43042	Neg/Pos Input Select	Read/Write	0: Negative 1: positive	Default: Negative	Specifies whether the annunciator discrete inputs accepts negative signals or positive signals.
43043	Global Horn Enable	Read/Write	0: Disabled 1: Enabled – Soft 2: Enabled – Load	Default: Enabled – Load	Overall control of the audible alarm.
43044	Network Configuration Address	Read/Write	1: Modbus Address 1 2: Modbus Address 2 3: Modbus Address 3 4: Modbus Address 4	Default: Modbus Address 1	If you change the address then you will not be able to communicate with the annunciator until the Modbus Master also changes its sending address.
43045	Modbus Baud Rate	Read/Write	0: 2400 Baud 1 :4800 Baud 2 :9600 Baud 3 :19200 Baud	Default: 19200	If you change baud rates then you will not be able to communicate with the annunciator until the Modbus Master also changes its baud rate.
43046	Modbus Parity	Read/Write	0: Even 1 :Odd 2 :None	Default: Even	If you change parity then you will not be able to communicate with the annunciator until the Modbus Master also changes its parity.
43047	Save Trims	Read/Write	0: Do Nothing 1: Save Trims	Do Nothing	Use to save adjustments to non-volatile memory. Perform Save Trims after all configurations have been updated.

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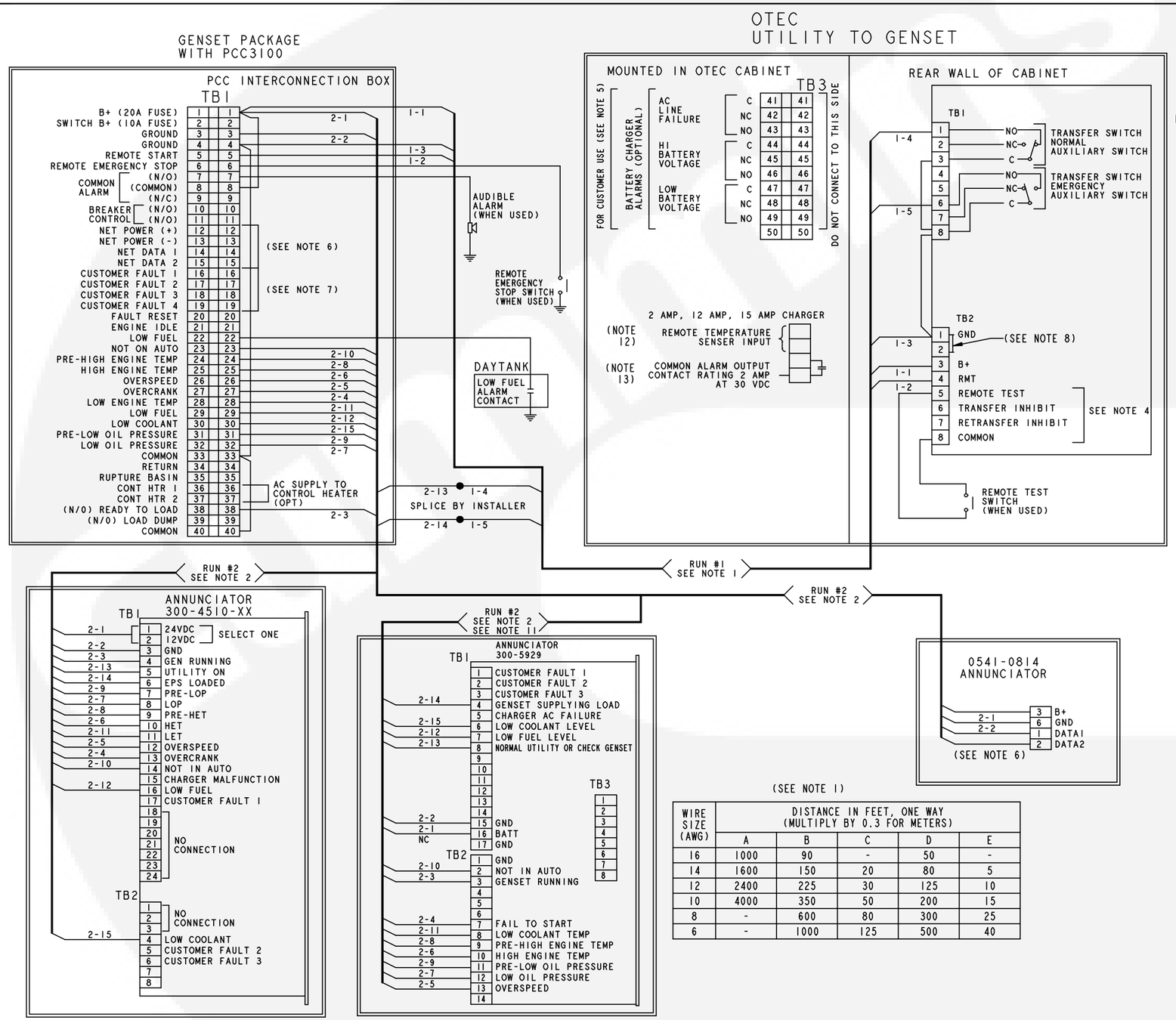


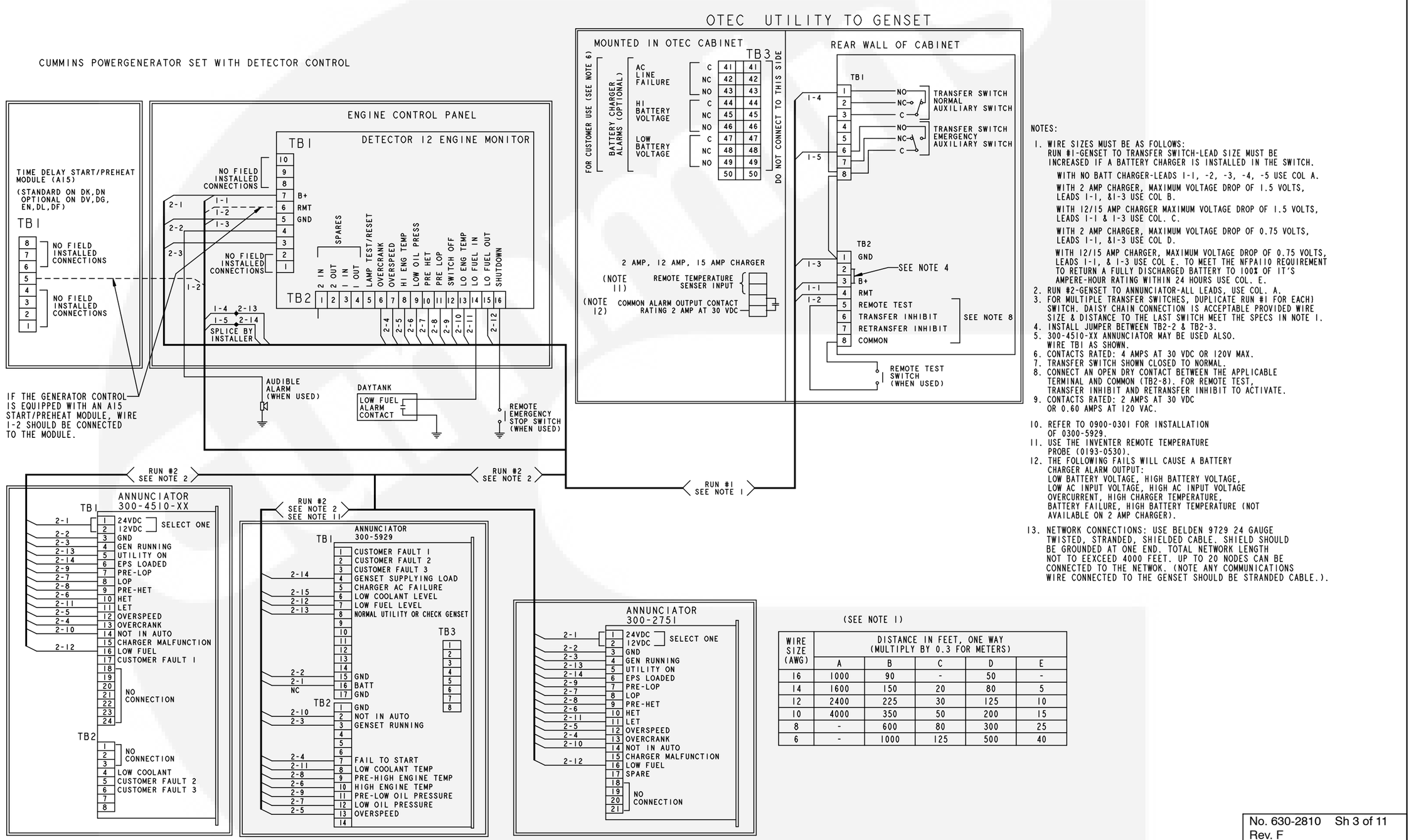
(SEE NOTE 1)

WIRE SIZE (AWG)	DISTANCE IN FEET, ONE WAY (MULTIPLY BY 0.3 FOR METERS)				
	A	B	C	D	E
16	1000	90	-	50	-
14	1600	150	20	80	5
12	2400	225	30	125	10
10	4000	350	50	200	15
8	-	600	80	300	25
6	-	1000	125	500	40

NOTES:

1. WIRE SIZES MUST BE AS FOLLOWS:
   RUN #1-GENSET TO TRANSFER SWITCH-LEAD SIZE MUST BE INCREASED IF A BATTERY CHARGER IS INSTALLED IN THE SWITCH.
   WITH NO BATT CHARGER-LEADS 1-1, -2, -3, -4, -5 USE COL A.
   WITH 2 AMP CHARGER, MAXIMUM VOLTAGE DROP OF 1.5 VOLTS, LEADS 1-1, &1-3 USE COL B.
   WITH 12/15 AMP CHARGER MAXIMUM VOLTAGE DROP OF 1.5 VOLTS, LEADS 1-1 & 1-3 USE COL. C.
   WITH 2 AMP CHARGER, MAXIMUM VOLTAGE DROP OF 0.75 VOLTS, LEADS 1-1, &1-3 USE COL D.
   WITH 12/15 AMP CHARGER, MAXIMUM VOLTAGE DROP OF 0.75 VOLTS, LEADS 1-1, & 1-3 USE COL E. TO MEET THE NFPA110 REQUIREMENT TO RETURN A FULLY DISCHARGED BATTERY TO 100% OF IT'S AMPERE-HOUR RATING WITHIN 24 HOURS USE COL. E.
2. FOR 300-4510 ANNUNCIATOR, RUN #2-GENSET TO ANNUNCIATOR-ALL LEADS, USE COL. A.
3. FOR MULTIPLE TRANSFER SWITCHES, DUPLICATE RUN #1 FOR EACH) SWITCH. DAISY CHAIN CONNECTION IS ACCEPTABLE PROVIDED WIRE SIZE & DISTANCE TO THE LAST SWITCH MEET THE SPECS IN NOTE 1.
4. CONNECT AN OPEN DRY CONTACT BETWEEN THE APPLICABLE TERMINAL AND COMMON (TB2-8). FOR REMOTE TEST, TRANSFER INHIBIT AND RETRANSFER INHIBIT TO ACTIVATE.
5. CONTACTS RATED: 4 AMPS AT 30 VDC OR 120V MAX.
6. NETWORK CONNECTIONS: USE BELDEN 9729 24 GAUGE TWISTED, STRANDED, SHIELDED CABLE. SHIELD SHOULD BE GROUNDED AT ONE END. TOTAL NETWORK LENGTH NOT TO EEXCEED 4000 FEET. UP TO 20 NODES CAN BE CONNECTED TO THE NETWOK. (NOTE ANY COMMUNICATIONS WIRE CONNECTED TO THE GENSET SHOULD BE STRANDED CABLE.).
7. INPUTS FOR CUSTOMER FAULTS. GROUNDED SIGNAL REQUIRED TO ACTIVATE INPUT (MAX 50 MA.)
8. INSTALL JUMPER BETWEEN TB2-1 & TB2-2. FOR SETS WITH PCC 3100 CONTROL.
9. TRANSFER SWITCH SHOWN CLOSED TO NORMAL.
10. CONTACTS RATED: 2 AMPS AT 30 VDC OR 0.60 AMPS AT 120 VAC.
11. REFER TO 0900-0301 FOR INSTALLATION OF 0300-5929.
12. USE THE INVENTER REMOTE TEMPERATURE PROBE (0193-0530).
13. THE FOLLOWING FAILS WILL CAUSE A BATTERY CHARGER ALARM OUTPUT:
    LOW BATTERY VOLTAGE, HIGH BATTERY VOLTAGE, LOW AC INPUT VOLTAGE, HIGH AC INPUT VOLTAGE OVERCURRENT, HIGH CHARGER TEMPERATURE, BATTERY FAILURE, HIGH BATTERY TEMPERATURE (NOT AVAILABLE ON 2 AMP CHARGER).
14. NETWORK CONNECTIONS: USE BELDEN 9729 24 GAUGE TWISTED, STRANDED, SHIELDED CABLE. SHIELD SHOULD BE GROUNDED AT ONE END. TOTAL NETWORK LENGTH NOT TO EXCEED 4000 FEET. UP TO 20 NODES CAN BE CONNECTED TO THE NETWOK. (NOTE ANY COMMUNICATIONS WIRE CONNECTED TO THE GENSET SHOULD BE STRANDED CABLE.).

FIGURE 10. TYPICAL INTERCONNECTION WIRING DIAGRAM (WITH PCC3100)



NOTES:

1. WIRE SIZES MUST BE AS FOLLOWS:
   RUN #1-GENSET TO TRANSFER SWITCH-LEAD SIZE MUST BE INCREASED IF A BATTERY CHARGER IS INSTALLED IN THE SWITCH.
   WITH NO BATT CHARGER-LEADS 1-1, -2, -3, -4, -5 USE COL A.
   WITH 2 AMP CHARGER, MAXIMUM VOLTAGE DROP OF 1.5 VOLTS, LEADS 1-1, &1-3 USE COL B.
   WITH 12/15 AMP CHARGER MAXIMUM VOLTAGE DROP OF 1.5 VOLTS, LEADS 1-1 & 1-3 USE COL. C.
   WITH 2 AMP CHARGER, MAXIMUM VOLTAGE DROP OF 0.75 VOLTS, LEADS 1-1, &1-3 USE COL D.
   WITH 12/15 AMP CHARGER, MAXIMUM VOLTAGE DROP OF 0.75 VOLTS, LEADS 1-1, & 1-3 USE COL E. TO MEET THE NFPA110 REQUIREMENT TO RETURN A FULLY DISCHARGED BATTERY TO 100% OF IT'S AMPERE-HOUR RATING WITHIN 24 HOURS USE COL. E.
2. RUN #2-GENSET TO ANNUNCIATOR-ALL LEADS, USE COL. A.
3. FOR MULTIPLE TRANSFER SWITCHES, DUPLICATE RUN #1 FOR EACH SWITCH. DAISY CHAIN CONNECTION IS ACCEPTABLE PROVIDED WIRE SIZE & DISTANCE TO THE LAST SWITCH MEET THE SPECS IN NOTE 1.
4. INSTALL JUMPER BETWEEN TB2-2 & TB2-3.
5. 300-4510-XX ANNUNCIATOR MAY BE USED ALSO. WIRE TB1 AS SHOWN.
6. CONTACTS RATED: 4 AMPS AT 30 VDC OR 120V MAX.
7. TRANSFER SWITCH SHOWN CLOSED TO NORMAL.
8. CONNECT AN OPEN DRY CONTACT BETWEEN THE APPLICABLE TERMINAL AND COMMON (TB2-8). FOR REMOTE TEST, TRANSFER INHIBIT AND RETRANSFER INHIBIT TO ACTIVATE.
9. CONTACTS RATED: 2 AMPS AT 30 VDC OR 0.60 AMPS AT 120 VAC.
10. REFER TO 0900-0301 FOR INSTALLATION OF 0300-5929.
11. USE THE INVENTER REMOTE TEMPERATURE PROBE (0193-0530).
12. THE FOLLOWING FAILS WILL CAUSE A BATTERY CHARGER ALARM OUTPUT: LOW BATTERY VOLTAGE, HIGH BATTERY VOLTAGE, LOW AC INPUT VOLTAGE, HIGH AC INPUT VOLTAGE OVERCURRENT, HIGH CHARGER TEMPERATURE, BATTERY FAILURE, HIGH BATTERY TEMPERATURE (NOT AVAILABLE ON 2 AMP CHARGER).
13. NETWORK CONNECTIONS: USE BELDEN 9729 24 GAUGE TWISTED, STRANDED, SHIELDED CABLE. SHIELD SHOULD BE GROUNDED AT ONE END. TOTAL NETWORK LENGTH NOT TO EEXCEED 4000 FEET. UP TO 20 NODES CAN BE CONNECTED TO THE NETWOK. (NOTE ANY COMMUNICATIONS WIRE CONNECTED TO THE GENSET SHOULD BE STRANDED CABLE.).

(SEE NOTE 1)

WIRE SIZE (AWG)	DISTANCE IN FEET, ONE WAY (MULTIPLY BY 0.3 FOR METERS)				
	A	B	C	D	E
16	1000	90	-	50	-
14	1600	150	20	80	5
12	2400	225	30	125	10
10	4000	350	50	200	15
8	-	600	80	300	25
6	-	1000	125	500	40

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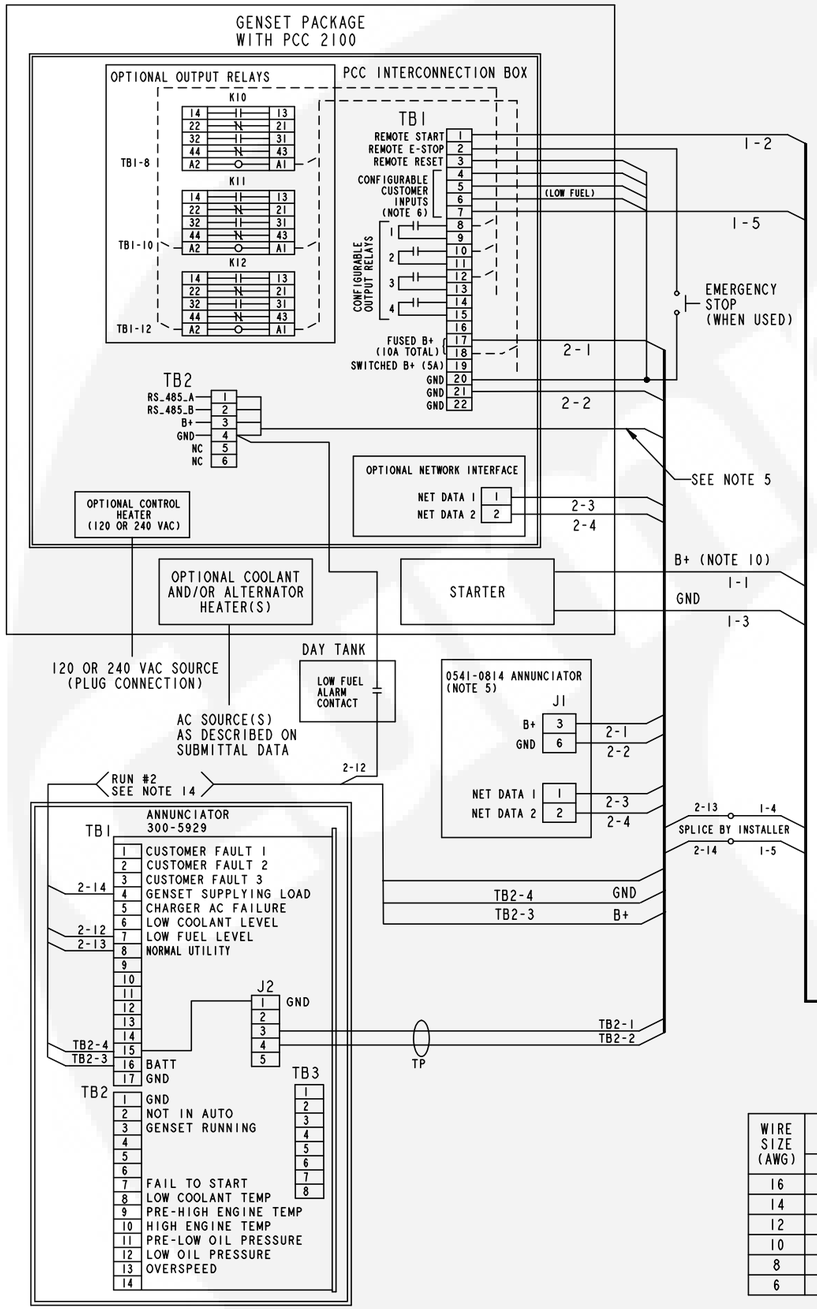
Date: 9/2010

FIGURE 11. TYPICAL INTERCONNECTION WIRING DIAGRAM (WITH DETECTOR CONTROL)



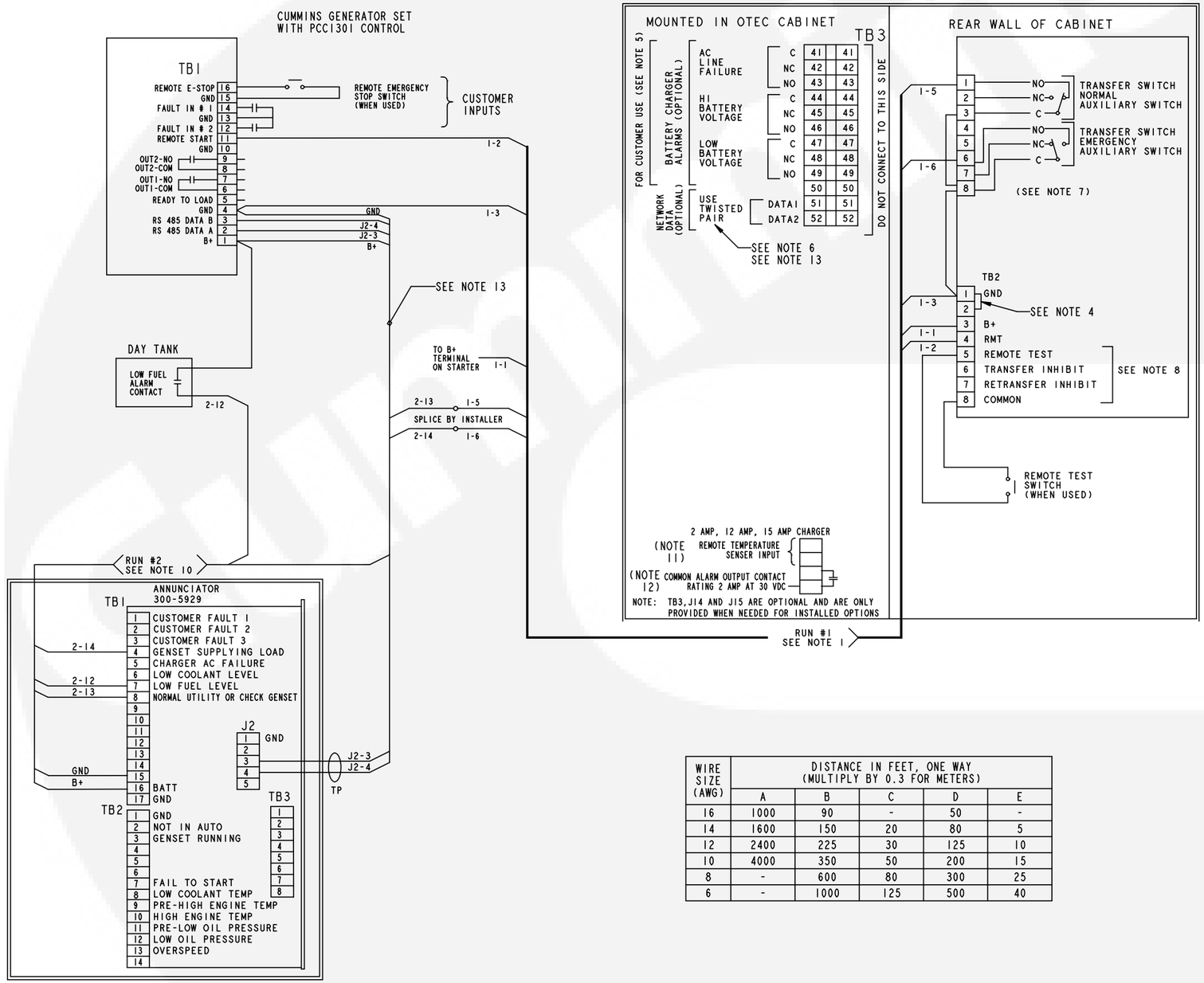
(NOTE 1)

WIRE SIZE (AWG)	DISTANCE IN FEET, ONE WAY (MULTIPLY BY 0.3 FOR METERS)				
	A	B	C	D	E
16	1000	90	-	50	-
14	1600	150	20	80	5
12	2400	225	30	125	10
10	4000	350	50	200	15
8	-	600	80	300	25
6	-	1000	125	500	40

NOTES:

1. WIRE SIZES MUST BE AS FOLLOWS:
   RUN #1-GENSET TO TRANSFER SWITCH-LEAD SIZE MUST BE INCREASED IF A BATTERY CHARGER IS INSTALLED IN THE SWITCH.
   WITH NO BATT CHARGER-LEADS 1-1, -2, -3, -4, -5 USE COL A.
   WITH 2 AMP CHARGER, MAXIMUM VOLTAGE DROP OF 1.5 VOLTS, LEADS 1-1, &1-3 USE COL B.
   WITH 12/15 AMP CHARGER MAXIMUM VOLTAGE DROP OF 1.5 VOLTS LEADS 1-1 & 1-3 USE COL. C.
   WITH 2 AMP CHARGER, MAXIMUM VOLTAGE DROP OF 0.75 VOLTS, LEADS 1-1, &1-3 USE COL D.
   WITH 12/15 AMP CHARGER, MAXIMUM VOLTAGE DROP OF 0.75 VOLTS, LEADS 1-1, & 1-3 USE COL E. TO MEET THE NFPA110 REQUIREMENT TO RETURN A FULLY DISCHARGED BATTERY TO 100% OF IT'S AMPERE-HOUR RATING WITHIN 24 HOURS USE COL. E.
2. FOR MULTIPLE TRANSFER SWITCHES, DUPLICATE RUN #1 FOR SWITCH. DAISY CHAIN CONNECTION IS ACCEPTABLE PROVIDED SIZE & DISTANCE TO THE LAST SWITCH MEET THE SPECS IN NOTE 1.
3. CONNECT AN OPEN DRY CONTACT BETWEEN THE APPLICABLE TERMINAL AND COMMON (TB2-8), FOR REMOTE TEST, TRANSFER INHIBIT AND RETRANSFER INHIBIT. CLOSE TO ACTIVATE.
4. CONTACTS RATED: 4 AMPS AT 30 VDC OR 120V MAX.
5. REFER TO ONAN 900-0529 POWERCOMMAND NETWORK INSTALLATION & OPERATION MANUAL FOR WIRING INSTRUCTIONS, WIRE SIZE, AND LENGTH. USE STRANDED TWISTED PAIR WIRES WHEN CONNECTING DATA1 AND DATA2 TO NETWORK. PART # 0334-1350 OR EQUAL.
6. CONNECTIONS TO TB1-4 THRU 7 ON GENSET ARE FOR CUSTOMER USE AND MAY BE CONFIGURED TO DISPLAY CUSTOM ALARM MESSAGES ON GENSET CONTROL. LOW FUEL IS REQUIRED FOR NFPA110 COMPLIANCE.
7. INSTALL JUMPER BETWEEN TB2-1 & TB2-2.
8.
9. TRANSFER SWITCH SHOWN CLOSED TO NORMAL.
10. CONFIGURATION SHOWN IS FOR ATS-MOUNTED BATTERY CHARGER. IF WALL-MOUNTED CHARGER IS USED, CONNECT B+ AND GND FROM CHARGER DIRECTLY TO BATTERY OR STARTER.
11. USE THE REMOTE TEMPERATURE PROBE (0193-0530).
12. THE FOLLOWING FAILURES WILL CAUSE A BATTERY CHARGER ALARM OUTPUT:
    LOW BATTERY VOLTAGE, HIGH BATTERY VOLTAGE, LOW AC INPUT VOLTAGE, HIGH AC INPUT VOLTAGE OVERCURRENT, HIGH CHARGER TEMPERATURE, BATTERY FAILURE, HIGH BATTERY TEMPERATURE (NOT AVAILABLE ON 2 AMP CHARGER).
13.
14. REFER TO 0900-0301 FOR INSTALLATION OF 0300-5929.
15. 0300-5929 COMMUNICATION ONLY AVAILABLE WITH PCC2100 SOFTWARE VERSION 2.400 OR HIGHER.

FIGURE 12. TYPICAL INTERCONNECTION WIRING DIAGRAM (WITH PCC2100)



WIRE SIZE (AWG)	DISTANCE IN FEET, ONE WAY (MULTIPLY BY 0.3 FOR METERS)				
	A	B	C	D	E
16	1000	90	-	50	-
14	1600	150	20	80	5
12	2400	225	30	125	10
10	4000	350	50	200	15
8	-	600	80	300	25
6	-	1000	125	500	40

NOTES:

1. WIRE SIZES MUST BE AS FOLLOWS:
   RUN #1-GENSET TO TRANSFER SWITCH-LEAD SIZE MUST BE INCREASED IF A BATTERY CHARGER IS INSTALLED IN THE SWITCH.
   WITH NO BATT CHARGER-LEADS 1-1, -2, -3, -5, -6 USE COL. A.
   WITH 2 AMP CHARGER, MAXIMUM VOLTAGE DROP OF 1.5 VOLTS, LEADS 1-1, &1-3 USE COL B.
   WITH 12/15 AMP CHARGER MAXIMUM VOLTAGE DROP OF 1.5 VOLTS, LEADS 1-1 & 1-3 USE COL. C.
   WITH 2 AMP CHARGER, MAXIMUM VOLTAGE DROP OF 0.75 VOLTS, LEADS 1-1, &1-3 USE COL D.
   WITH 12/15 AMP CHARGER, MAXIMUM VOLTAGE DROP OF 0.75 VOLTS, LEADS 1-1, & 1-3 USE COL E. TO MEET THE NFPA110 REQUIREMENT TO RETURN A FULLY DISCHARGED BATTERY TO 100% OF IT'S AMPERE-HOUR RATING WITHIN 24 HOURS USE COL. E.
2. RUN #2-GENSET TO ANNUNCIATOR-ALL LEADS, USE COL. A
3. FOR MULTIPLE TRANSFER SWITCHES, DUPLICATE RUN #1 FOR EACH SWITCH. DAISY CHAIN CONNECTION IS ACCEPTABLE PROVIDED WIRE SIZE & DISTANCE TO THE LAST SWITCH MEET THE SPECS IN NOTE 1.
4. INSTALL JUMPER BETWEEN TB2-1 & TB2-2.
5. CONTACTS RATED: 4 AMPS AT 30 VDC OR 120V MAX.
6. USE STRANDED TWISTED PAIR WIRES WHEN CONNECTING DATA1 AND DATA2 TO THE NETWORK.
7. TRANSFER SWITCH SHOWN CLOSED TO NORMAL
8. CONNECT AN OPEN DRY CONTACT BETWEEN THE APPLICABLE TERMINAL AND COMMON (TB2-8). FOR REMOTE TEST, TRANSFER INHIBIT AND RETRANSFER INHIBIT. CLOSE TO ACTIVATE.
9. CONTACTS RATED: 2 AMPS AT 30 VDC OR 0.60 AMPS AT 120 VAC.
10. REFER TO 0900-0301 FOR INSTALLATION OF 0300-5929.
11. USE THE INVENTER REMOTE TEMPERATURE PROBE (0193-0530).
12. THE FOLLOWING FAILS WILL CAUSE A BATTERY CHARGER ALARM OUTPUT:
    LOW BATTERY VOLTAGE, HIGH BATTERY VOLTAGE, LOW AC INPUT VOLTAGE, HIGH AC INPUT VOLTAGE OVERCURRENT, HIGH CHARGER TEMPERATURE, BATTERY FAILURE, HIGH BATTERY TEMPERATURE (NOT AVAILABLE ON 2 AMP CHARGER).
13. NETWORK CONNECTIONS: USE BELDEN 9729 24 GAUGE TWISTED, STRANDED, SHIELDED CABLE. SHIELD SHOULD BE GROUNDED AT ONE END. TOTAL NETWORK LENGTH NOT TO EEXCEED 4000 FEET. UP TO 20 NODES CAN BE CONNECTED TO THE NETWOK. (NOTE ANY COMMUNICATIONS WIRE CONNECTED TO THE GENSET SHOULD BE STRANDED CABLE.).

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FIGURE 13. TYPICAL INTERCONNECTION WIRING DIAGRAM (WITH PCC1301)

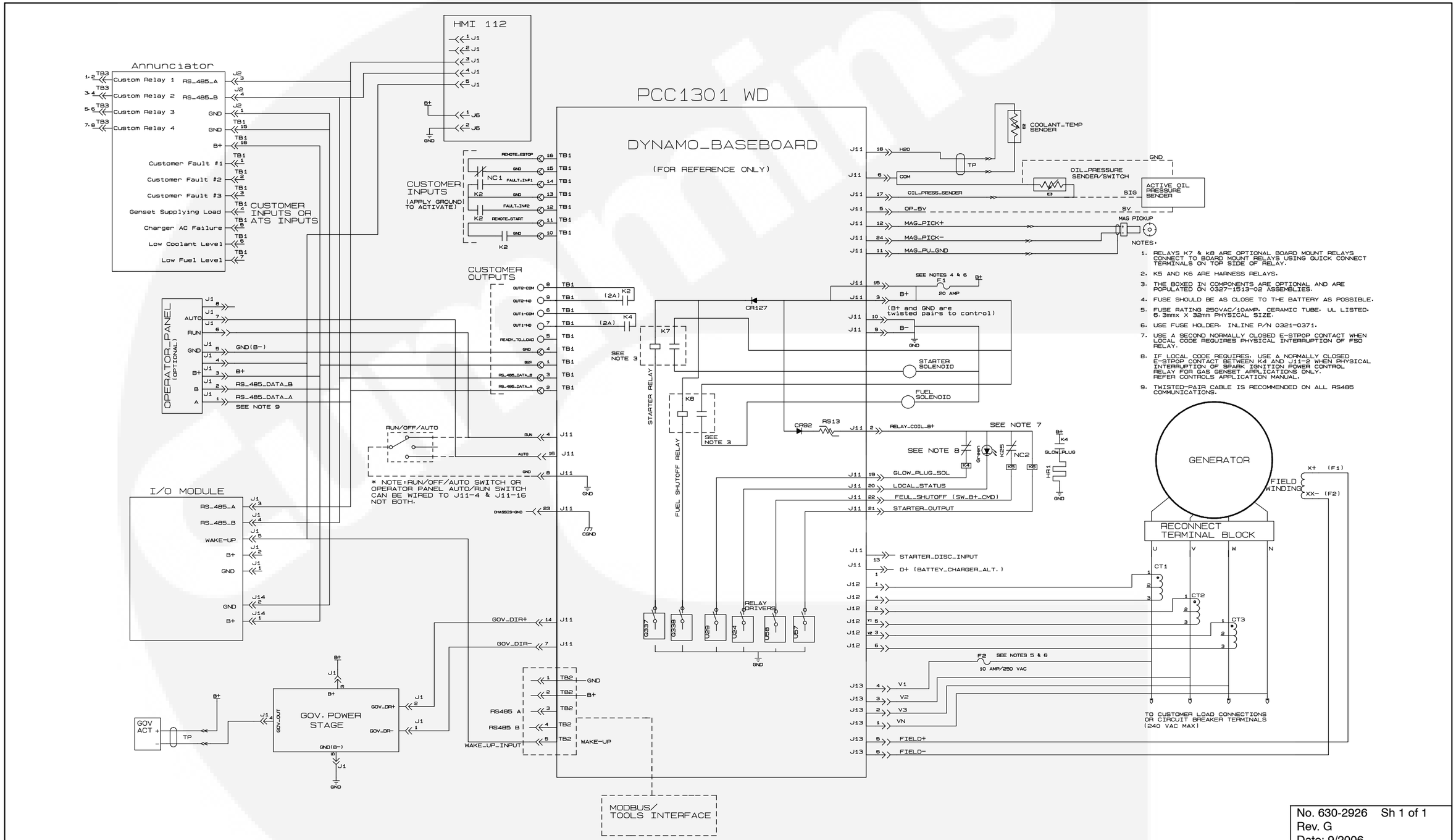


FIGURE 14. 1301 CONTROL WIRING DIAGRAM

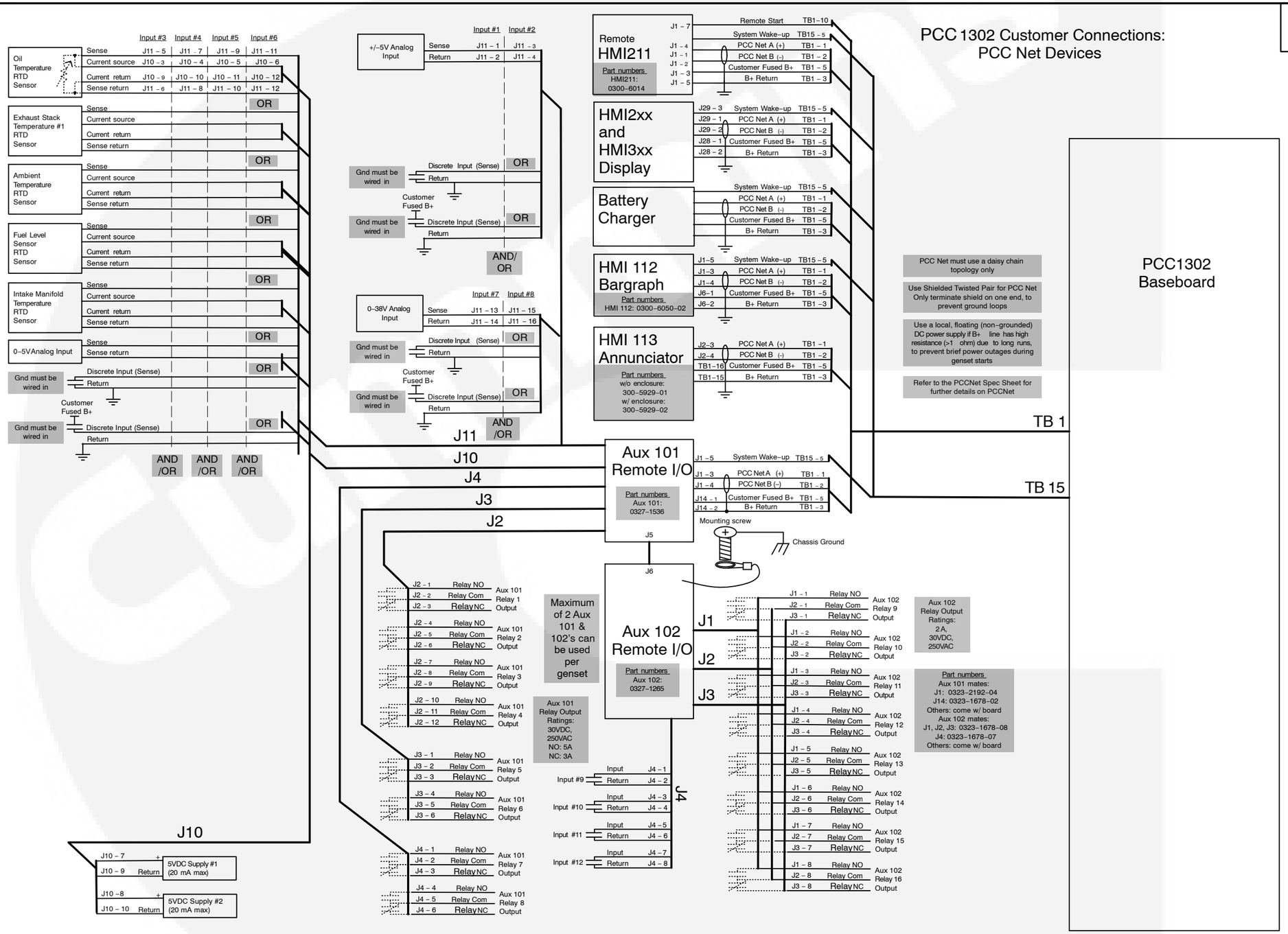
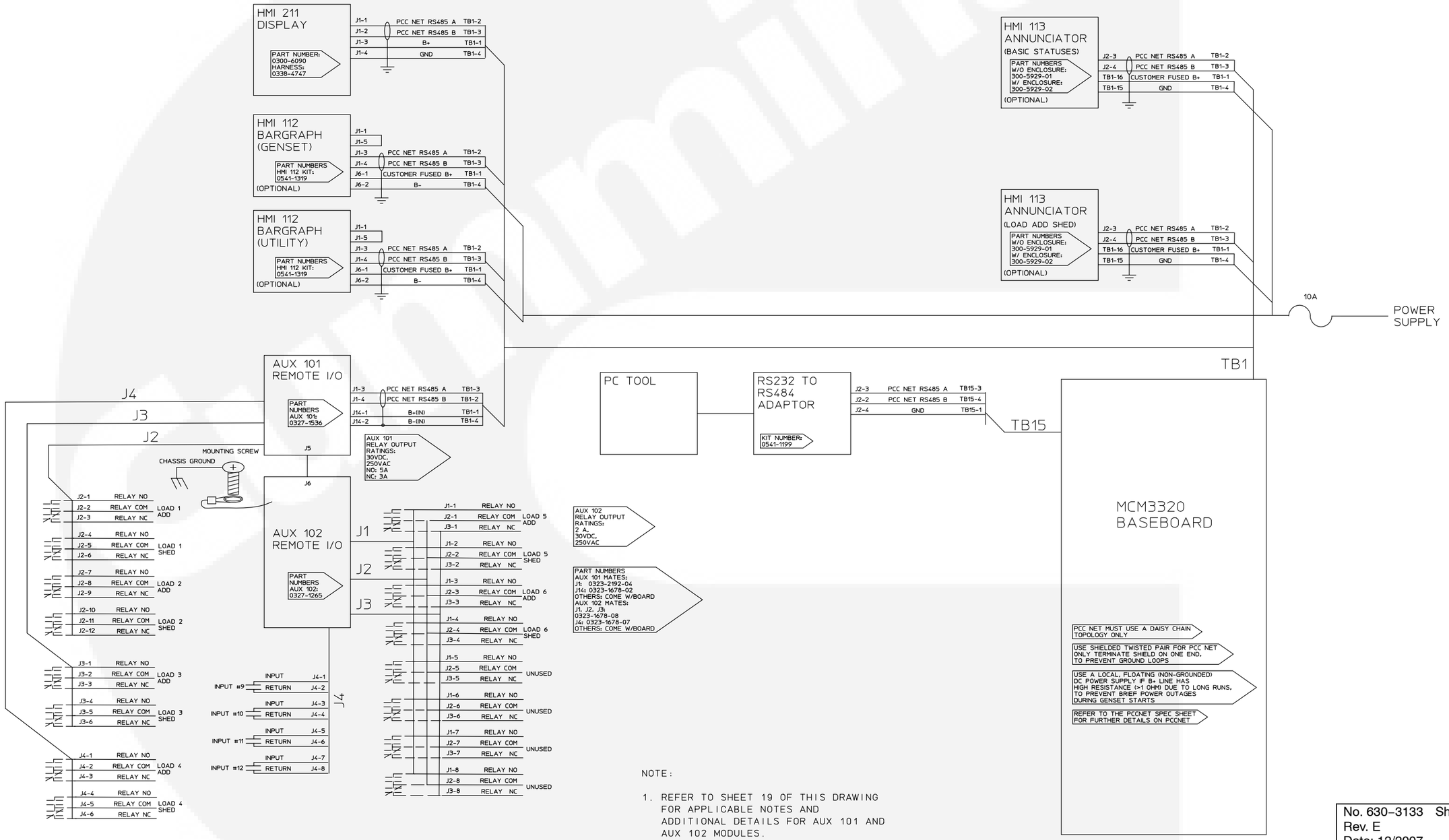


FIGURE 15. 1302 CONTROL WIRING DIAGRAM

MASTER CONTROL MODULE 3.3
CUSTOMER CONNECTIONS:
PCC NET DEVICES



NOTE:

1. REFER TO SHEET 19 OF THIS DRAWING FOR APPLICABLE NOTES AND ADDITIONAL DETAILS FOR AUX 101 AND AUX 102 MODULES.

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FIGURE 16. MCM3320 CONTROL WIRING DIAGRAM

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