

# Installation Instructions for the FT-10 Network Genset LONWORKS® Card (GLC) with PCC 3200 Controls Kit 541-0809

## PURPOSE OF KIT

The GLC (Genset LONWORKS Card) is required for connection of a PowerCommand® (PCC 3200) Genset to a LONWORKS® FT-10 network. The GLC (Figure 1) provides an interface for data from the PCC 3200 control to other modules within the network. It communicates with the PCC 3200 control via the backplane of the card cage assembly.

## GENERAL INFORMATION

This kit contains one GLC and two power harnesses. There are two versions of the PCC 3200 control (Type I and Type II). The two power har-

nesses are provided to allow installation of the GLC on either control (Figures 3 and 4).

**NOTE:** In addition to the Type II control shown in Figure 2, which includes the operator panel assembly installed in the door, some Type II controls include operator panel piece parts installed in the door.

When this installation is complete, the genset is ready for connection to a network. Refer to the *FT-10 PowerCommand Network Installation and Operation Manual (900-0529)* for instructions on network wiring and network software installation.

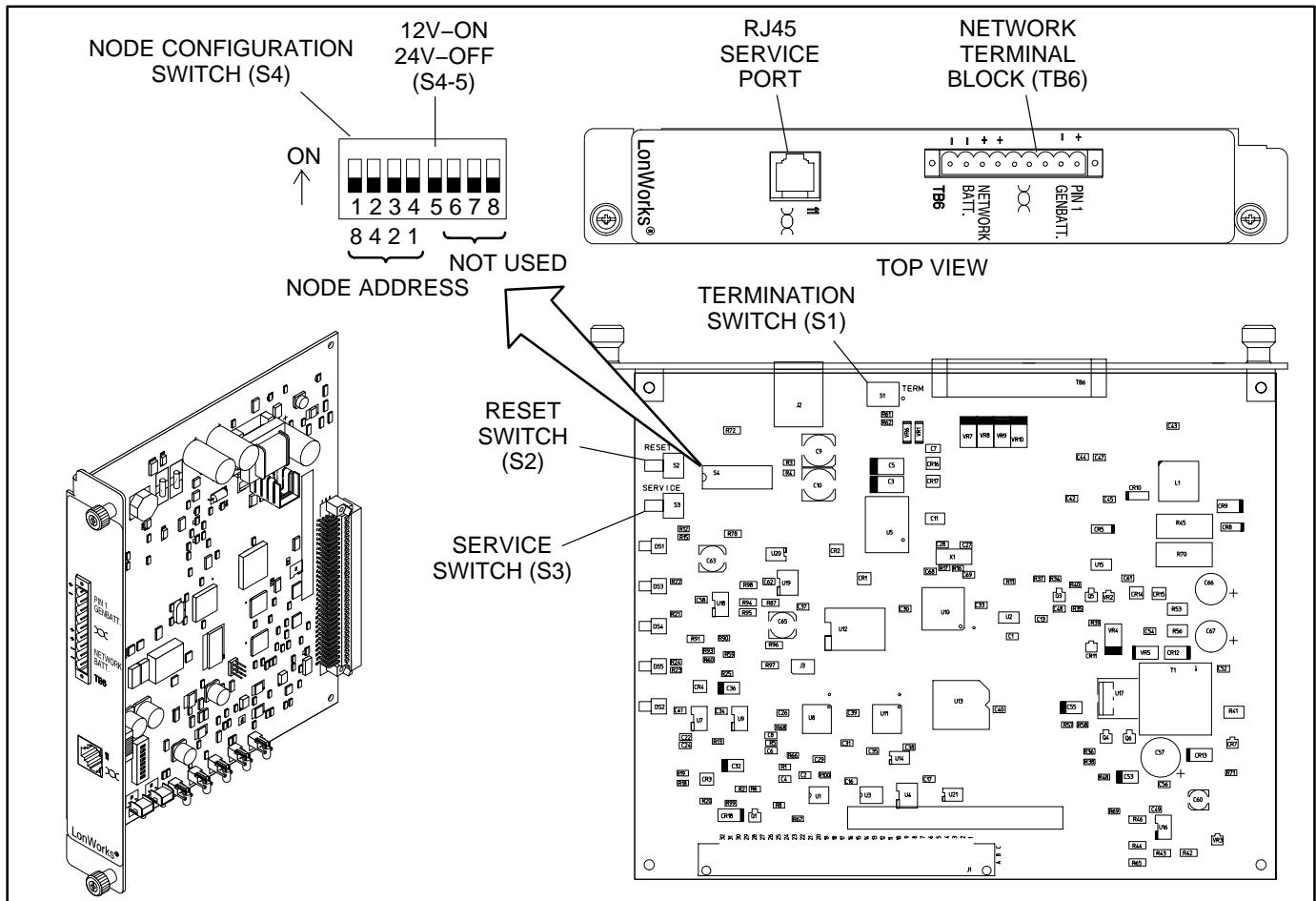


FIGURE 1. NETWORK COMMUNICATIONS MODULE

## SAFETY PRECAUTIONS

Read these instructions completely and become familiar with safety warnings, cautions, and procedures before starting the installation.

### Circuit Board Handling Precautions

**⚠ CAUTION** *Electrostatic discharge will damage circuit boards. Do not remove the circuit board from the antistatic shipping bag until you are grounded to the control box assembly with a wrist strap.*

To help prevent circuit board damage due to electrostatic discharge (ESD), a grounding wrist strap must be worn when handling the circuit board. (The wrist strap does not provide a direct short to ground, it is typically rated at approximately 1 megohm to ground.)

Attach the clip to a clean unpainted surface of the control box (see Figure 2) and place the strap around your wrist before handling a circuit board.

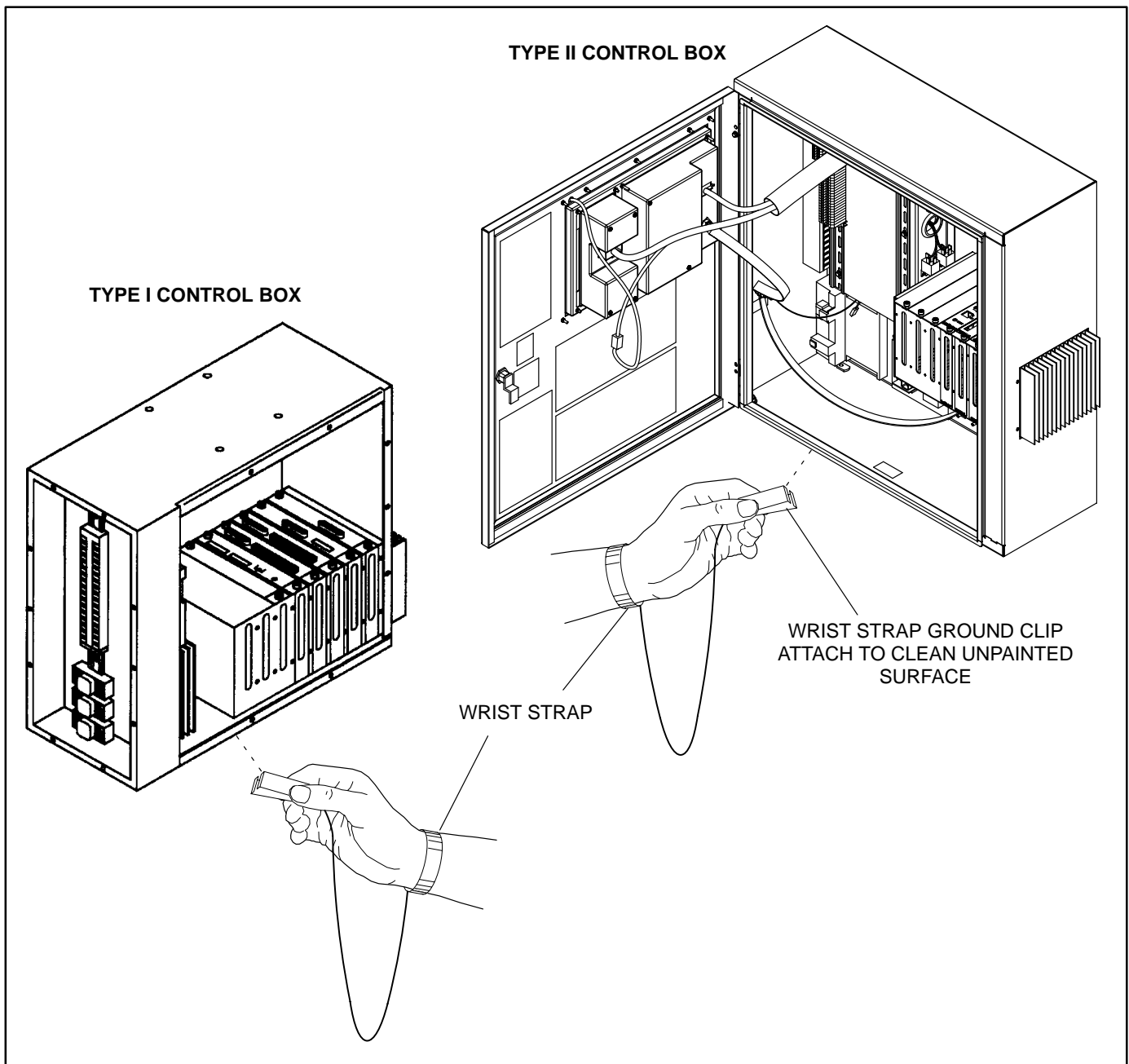


FIGURE 2. WRIST STRAP CONNECTION

## PHYSICAL INSTALLATION

Make sure the *Node Address* and battery voltage selections are made before proceeding with the physical installation (see *CONFIGURATION* on Page 6).

1. Place the genset O/Manual/Auto switch in the O (Off) position.

**⚠WARNING** *Arcing at battery terminals, light switch, or other equipment, flame, pilot lights, and sparks can ignite battery gas causing severe personal injury.*

*Ventilate battery area before working on or near battery—Wear safety glasses—Do not smoke—Switch trouble light ON or OFF away from battery—Stop genset and disconnect charger before disconnecting battery cables—Disconnect negative (–) cable first and reconnect last.*

**⚠CAUTION** *Disconnect battery charger from AC source before disconnecting battery cables. Otherwise, disconnecting cables can result in voltage spikes damaging to DC control circuits of the set.*

**⚠WARNING** *Accidental starting of the generator set can cause severe personal injury or death. Prevent accidental starting by disconnecting the negative (–) cable from the battery terminal.*

2. Disconnect the battery charger (if applicable). Remove all electrical supply sources.
3. Disconnect the negative (–) cable from the battery to prevent accidental starting.

For Type I PCC 3200 control, perform steps 4 through 12.

4. Locate the electronics box assembly (Figure 3). For a set-mounted control, it is attached to the drive end of the generator control housing. For a free-standing control, it is located inside the free-standing enclosure.
5. On the free-standing control, remove the 10 fasteners holding the lower front cover using a 13mm nut driver and remove cover. Loosen the two remaining fasteners in the slots and remove the cover.
6. Remove the 10 fasteners holding the front cover of the electronics box assembly using a 10mm nut driver and remove cover. Loosen the two remaining fasteners in the slots and remove the cover.
7. Connect the wrist strap ground clip as shown in Figure 2.
8. Locate slot 4 on the card cage assembly (Figure 3). Loosen the two fasteners holding the blank plate and remove plate.
- NOTE:** Not all installations include slots that are marked. Slot 4 can be located by counting from the Fuel Card which is installed in slot 0.
9. Insert the GLC into slot 4. Tighten the two fasteners about one-half turn.
10. Install the DC power harness between **TB6** of the GLC and **Inline K**, as shown in Figure 3 and Figure 5.
11. Install all panels that were removed during this procedure.
12. Reconnect the negative (–) cable to the battery. Also, reconnect battery charger (if used).

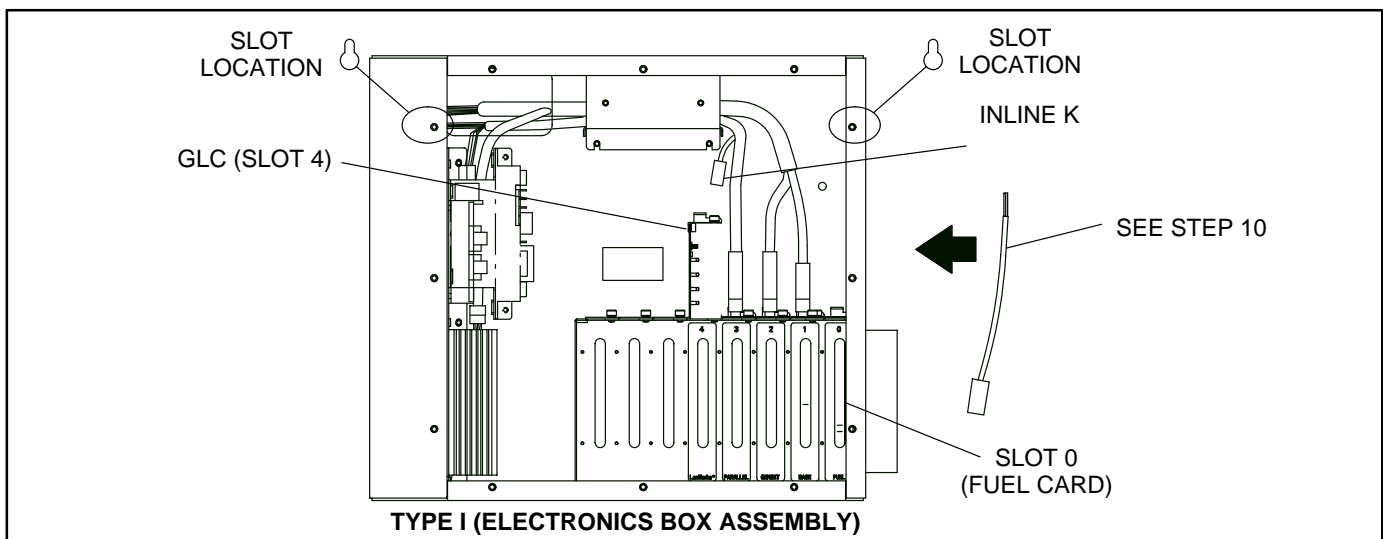


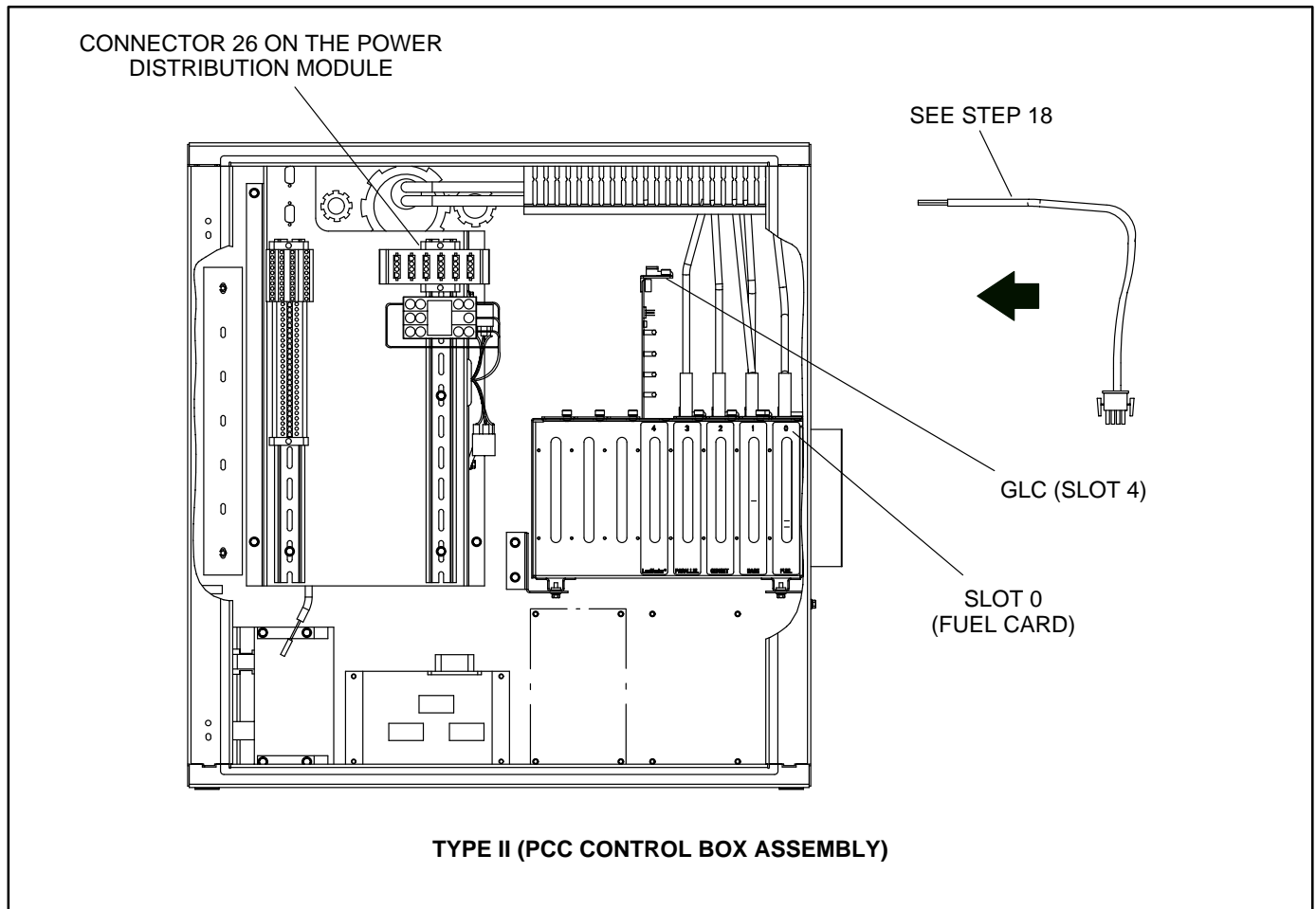
FIGURE 3. GLC INSTALLATION – TYPE I CONTROL

**For Type II PCC 3200 control, perform steps 13 through 20.**

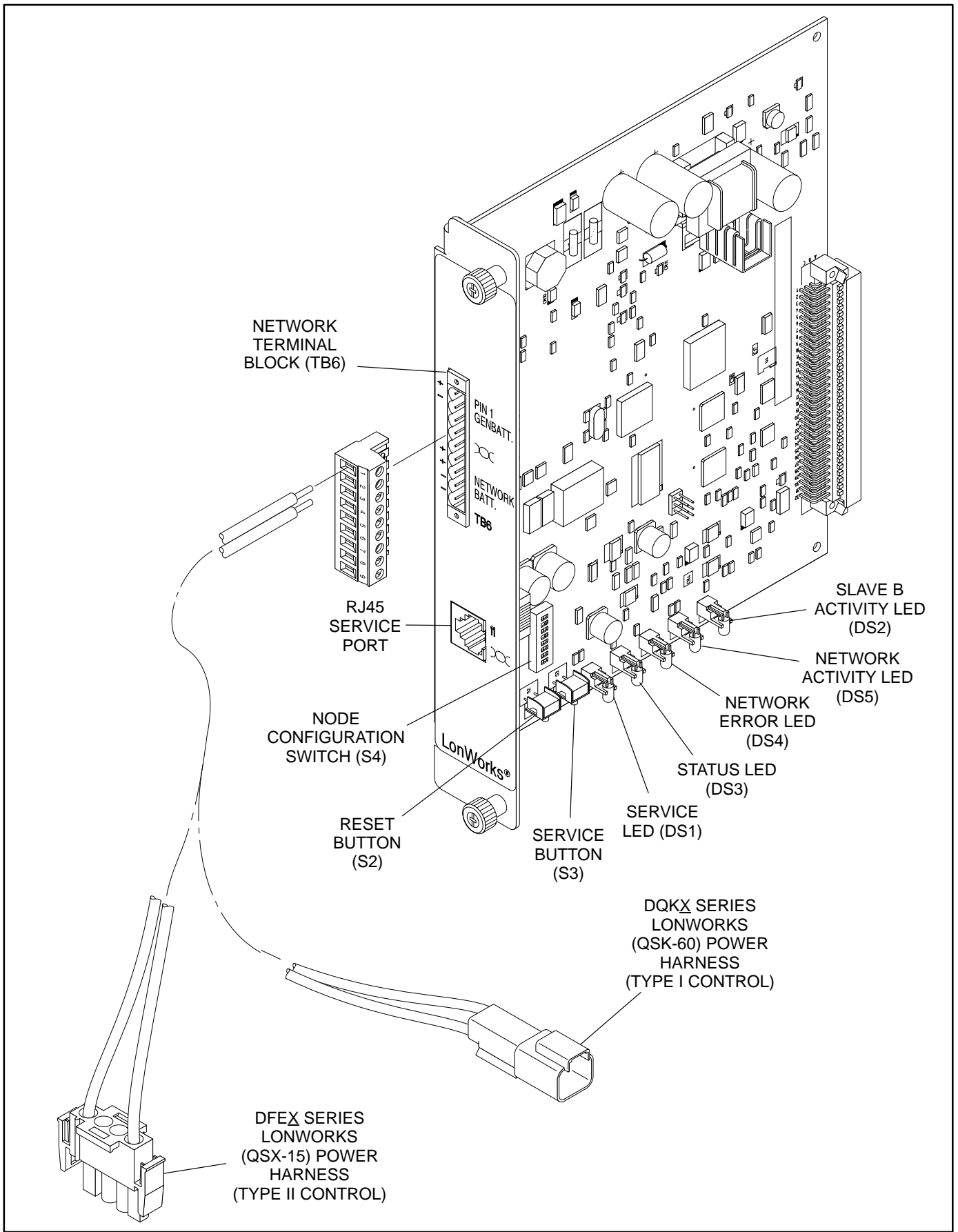
13. Locate the control box assembly. For a set mounted control, it is mounted on the non-drive end of the generator control housing. For the free-standing control, it is located at the top half of the control.
14. Open the control box door by turning the latch 1/4 turn using an 8mm hex wrench.
15. Connect the wrist strap ground clip as shown in Figure 2.
16. Locate slot 4 on the card cage assembly (Figure 4). Loosen the two fasteners holding the blank plate and remove plate.

**NOTE:** Not all installations include slots that are marked. Slot 4 can be located by counting from the Fuel Card which is installed in slot 0.

17. Insert the GLC into slot 4. Tighten the two fasteners about one-half turn.
18. Route the DC power harness through the overhead cable tray. Connect the DC power harness between **TB6** of the GLC and **Connector 26** of the power distribution module, as shown in Figure 4 and Figure 5.
19. Install all panels that were removed during this procedure.
20. Reconnect the negative (-) cable to the battery. Also, reconnect battery charger (if used).



**FIGURE 4. GLC INSTALLATION – TYPE II CONTROL**



**FIGURE 5. LED LOCATIONS**

## CONFIGURATION

### Termination

1. If the device is terminated, the termination switch (S1) must be set to the **ON** position. See Figure 1 for the location of the Termination switch.

**NOTE:** For free topology, only one device on each segment must be terminated. Multidrop bus topology requires termination at each end of the bus using multidrop bus terminators (Echelon P/N 44101) or the device terminator switch.

### Battery Voltage Setting

2. Set **S4-5** to the **ON** position for a 12V-battery system or to **OFF** for a 24V-battery system (Figure 1). (The GLC will automatically wake the genset controller if the battery is below the respective threshold.)

### Node Address (Self-Installation Only)

3. Each node on a self-installed network must have a unique address. Switches 1 through 4 of the Node Configuration Switch (S4) are used to set the *Node Address*. See Figure 1 for the location of the Node Configuration switch.

The switches are oriented so that switch S4-1 is the most significant bit (MSB) of the *Node Address*. Thus, S4-1 has a value of “8” when it is ON; S4-2 value of 4, S4-3 value of 2, and S4-4 value of 1. For example, to set the *Node Address* to 9, set switch S4 to 1001 (8+0+0+1=9). See Table 1.

4. **Be sure to assign each node in the network a unique address.** The *Node Address* can be verified by counting the number of pulses of the “STATUS” LED (see Figure 5). The default node address is 0001, which is a “STATUS” pulse rate of 1.

**TABLE 1. SETTING THE NODE ADDRESS (S4)**

S4-1 (8)	S4-2 (4)	S4-3 (2)	S4-4 (1)	ADDR (BIN)	ADDR (DEC)
OFF	OFF	OFF	OFF	0000	0*
OFF	OFF	OFF	ON	0001	1
OFF	OFF	ON	OFF	0010	2
				↓	↓
ON	ON	ON	ON	1111	15

\* “0” (zero) is not a valid address.

## SELF-INSTALLATION

### Requirements

This procedure can be used to logically install the GLC when the following requirements are met.

Self-installation is limited to one PowerCommand ATS or CCM-T, one PowerCommand Genset or CCM-G, and no more than four annunciators or five DIMs. The GLC can be autobound by an ATS and three annunciators and three DIMs, but by no more than a total of four annunciators and DIMs.

If these requirements are not met, the system must be installed with LonMaker™. Refer to LonMaker Installation, following this section.

### Node Address

Each node on a self-installed network must have a unique address. Refer to *CONFIGURATION*.

After the device has been logically installed, the *Node Address* can be verified by counting the number of pulses of the “STATUS” LED. See Figure 5.

### Logical Installation

After the GLC is *physically* connected to the network, it is ready to be *logically* installed.

1. Make sure the GLC node and other network devices are powered and connected to the twisted-pair data bus.
2. Make sure S4-1, S4-2, S4-3, and S4-4 on the GLC are configured for the desired node address. Each device on the network must have a unique address.
3. Make sure the network is terminated.
4. Press and hold the *Service* button (S3) (see Figure 5) for approximately two seconds until the *Network Status* LED (DS3) begins flashing.
5. Release the *Service* button.

### Binding Sequence

Logically connecting to another device is referred to as *binding*. *Binding* may be done when all the nodes are installed, connected, and powered.

*Binding* the node must occur in the proper sequence. Logically install the genset first, followed by

the transfer switch, and then the annunciator(s) and other network accessories.

**NOTE:** The genset (GLC) and ATS module must be Cummins Power Generation (CPG) devices which are able to self-install in the network. Each device on the network must have a unique address.

## Verify Binding

To verify the genset has installed itself properly and is bound to the ATS, disconnect the data cable at TB6. The “NETWORK ERROR” LED (DS4) (see Figure 5) should turn on (red) within 10 seconds. This indicates communications have failed and that the device was properly bound.

Reconnect the twisted pair cable and confirm that DS4 turns off within 10 seconds.

If no error is produced, use InPower to verify the *Test Interval* (located in the LONWORKS device folder from the Adjustments directory) is set for 10.0 seconds. Also check the wiring and Address of each node. Repeat the Self-Installation steps to re-initiate *binding*.

## Remove Bindings

If unresolved system errors occur, the bindings can be removed and then re-installed to reset the system. The bindings can also be removed if the network is being changed or the device is being moved to another network.

To remove all bindings from the device, change the *Node Address (S4)* to 0 (zero) and logically re-install the device.

The node will remove all bindings at this time, including the genset and annunciator bindings. The “STATUS” LED will not flash when the *Node Address* is 0, nor will it attempt to bind to a genset.

## Re-Binding

*Re-Binding* the node must occur in the proper sequence. Logically install the genset first, followed by the transfer switch; and then the annunciator(s), DIM(s), and other network accessories.

To re-bind an annunciator, DIM, or ATS to the genset node, press and hold the Service pin for two seconds.

## LONMAKER INSTALLATION

The GLC can be installed with LonMaker. The Device Stencil is required. To install using LonMaker:

1. Run LonMaker. Refer to the *PowerCommand Network Installation and Operation Manual* (900-0529).
2. Install Device Stencil.
3. Create a new site (or update an existing site).
4. Define, install and bind devices.
5. Verify system operation.

The GLC is defined and installed like any other device in LonMaker.