

# Instruction Sheet

**A045H682 (Issue 2)**

9-2013

## Installation Instructions for HMI211 RS Home Standby Display Kit A046K103

### 1 Introduction

The information contained within is based on information available at the time of going to print. In line with Cummins Power Generation policy of continuous development and improvement, information may change at any time without notice. The users should therefore make sure that before commencing any work, they have the latest information available. The latest version of this manual is available on QuickServe Online (<https://qsol.cummins.com/info/index.html>).

### 2 Safety Precautions

#### 2.1 General Safety Precautions

**⚠ WARNING**

*Coolants under pressure can cause severe scalding. Do not open a radiator or heat exchanger pressure cap while the engine is running. Let the engine cool down before removing the coolant pressure cap. Turn the cap slowly and do not open it fully until the pressure has been relieved.*

**⚠ WARNING**

*Moving parts can cause severe personal injury or death and hot exhaust parts can cause severe burns. Make sure all protective guards are properly in place before starting the generator set.*

**⚠ WARNING**

*Used engine oils have been identified by some state and federal agencies to cause cancer or reproductive toxicity. Do not ingest, breathe the fumes, or contact used oil when checking or changing engine oil.*

**⚠ WARNING**

*Operation of equipment is unsafe when mentally or physically fatigued. Do not operate equipment in this condition, or after consuming any alcohol or drug.*

**⚠ WARNING**

*Substances in exhaust gases have been identified by some state and federal agencies to cause cancer or reproductive toxicity. Do not breath in or come into contact with exhaust gases.*

**⚠ WARNING**

*Flammable liquids can cause fire or explosion. Do not store fuel, cleaners, oil, etc. near the generator set.*

**⚠ WARNING**

*Wear hearing protection when going near an operating generator set .*

**⚠ WARNING**

*Hot metal parts can cause severe burns. Avoid contact with the radiator, turbo charger, and exhaust system.*

**⚠ WARNING**

*Maintaining or installing a generator set can cause severe personal injury. Wear personal protective equipment such as safety glasses, protective gloves, hard hats, steel-toed boots, and protective clothing when working on equipment.*

**⚠ WARNING**

*Ethylene glycol, used as engine coolant, is toxic to humans and animals. Clean up coolant spills and dispose of used antifreeze in accordance with local environmental regulations.*

**⚠ WARNING**

*Starting fluids, such as ether, can cause explosion and generator set engine damage. Do not use.*

**⚠ CAUTION**

*Stepping on the generator set can cause parts to bend or break, leading to electrical shorts, or to fuel, coolant, or exhaust leaks. Do not step on the generator set when entering or leaving the generator room.*

**⚠ CAUTION**

*To prevent accidental or remote starting while working on the generator set, disconnect the negative (-) battery cable at the battery using an insulated wrench.*

**⚠ CAUTION**

*Make sure that rags are not left on or near the engine.*

**⚠ CAUTION**

*Make sure the generator set is mounted in a manner to prevent combustible materials from accumulating under the unit.*

**⚠ CAUTION**

*Accumulated grease and oil can cause overheating and engine damage presenting a potential fire hazard. Keep the generator set clean and repair any oil leaks promptly.*

**⚠ CAUTION**

*Before performing maintenance and service procedures on enclosed generator sets, make sure the service access doors are secured open.*

**⚠ CAUTION**

*Keep the generator set and the surrounding area clean and free from obstructions. Remove any debris from the set and keep the floor clean and dry.*

**NOTICE**

Keep multi-class ABC fire extinguishers handy. Class A fires involve ordinary combustible materials such as wood and cloth. Class B fires involve combustible and flammable liquid fuels and gaseous fuels. Class C fires involve live electrical equipment. (Refer to NFPA No. 10 in applicable region.)

## 2.2 Generator Set Safety Code

Before operating the generator set, read the manuals and become familiar with them and the equipment. **Safe and efficient operation can be achieved only if the equipment is properly operated and maintained.** Many accidents are caused by failure to follow fundamental rules and precautions.

**⚠ WARNING**

*Improper operation and maintenance can lead to severe personal injury, or loss of life and property, by fire, electrocution, mechanical breakdown, or exhaust gas asphyxiation. Read and follow all Safety Precautions, Warnings, and Cautions throughout this manual and the documentation supplied with your generator set.*

**⚠ WARNING**

*Lifting and repositioning of the generator set must only be carried out using suitable lifting equipment, shackles, and spreader bars, in accordance with local guidelines and legislation, by suitably trained and experienced personnel. Incorrect lifting can result in severe personal injury, death, and/or equipment damage. For more information, contact your authorized distributor.*

## 2.3 Electrical Shocks and Arc Flashes Can Cause Severe Personal Injury or Death

**⚠ WARNING**

*Any work with exposed energized circuits with potentials of 50 Volts AC or 75 Volts DC or higher poses a significant risk of electrical shock and electrical arc flash. These silent hazards can cause severe injuries or death. Refer to standard NFPA 70E or equivalent safety standards in corresponding regions for details of the dangers involved and for the safety requirements.*

Guidelines to follow when working on de-energized electrical systems:

- Use proper PPE. Do not wear jewelry and make sure that any conductive items are removed from pockets as these items can fall into equipment and the resulting short circuit can cause shock or burning. Refer to standard NFPA 70E for PPE standards.

- De-energize and lockout/tagout electrical systems prior to working on them. Lockout/Tagout is intended to prevent injury due to unexpected start-up of equipment or the release of stored energy. Please refer to the lockout/tagout section for more information.
- De-energize and lockout/tagout all circuits and devices before removing any protective shields or making any measurements on electrical equipment.
- Follow all applicable regional electrical and safety codes.

Guidelines to follow when working on energized electrical systems:

#### **NOTICE**

**It is the policy of Cummins Inc. to perform all electrical work in a de-energized state. However, employees or suppliers may be permitted to occasionally perform work on energized electrical equipment only when qualified and authorized to do so and when troubleshooting, or if de-energizing the equipment would create a greater risk or make the task impossible and all other alternatives have been exhausted.**

#### **NOTICE**

**Exposed energized electrical work is only allowed as per the relevant procedures and must be undertaken by a Cummins authorized person with any appropriate energized work permit for the work to be performed while using proper PPE, tools and equipment.**

In summary:

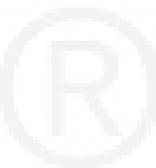
- Do not tamper with or bypass interlocks unless you are authorized to do so.
- Understand and assess the risks - use proper PPE. Do not wear jewelry and make sure that any conductive items are removed from pockets as these items can fall into equipment and the resulting short circuit can cause shock or burning. Refer to standard NFPA 70E for PPE standards.
- Make sure that an accompanying person who can undertake a rescue is nearby.

## **3 Instruction**

### **3.1 Installation of HMI211 RS Home Standby Display**

This instruction sheet describes the installation of the HMI211 RS Home Standby Display Kit for use with a PCC1302 controller. Refer to the figure below. Because the installation presents a severe shock hazard, this kit must be installed by trained and experienced personnel only.

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



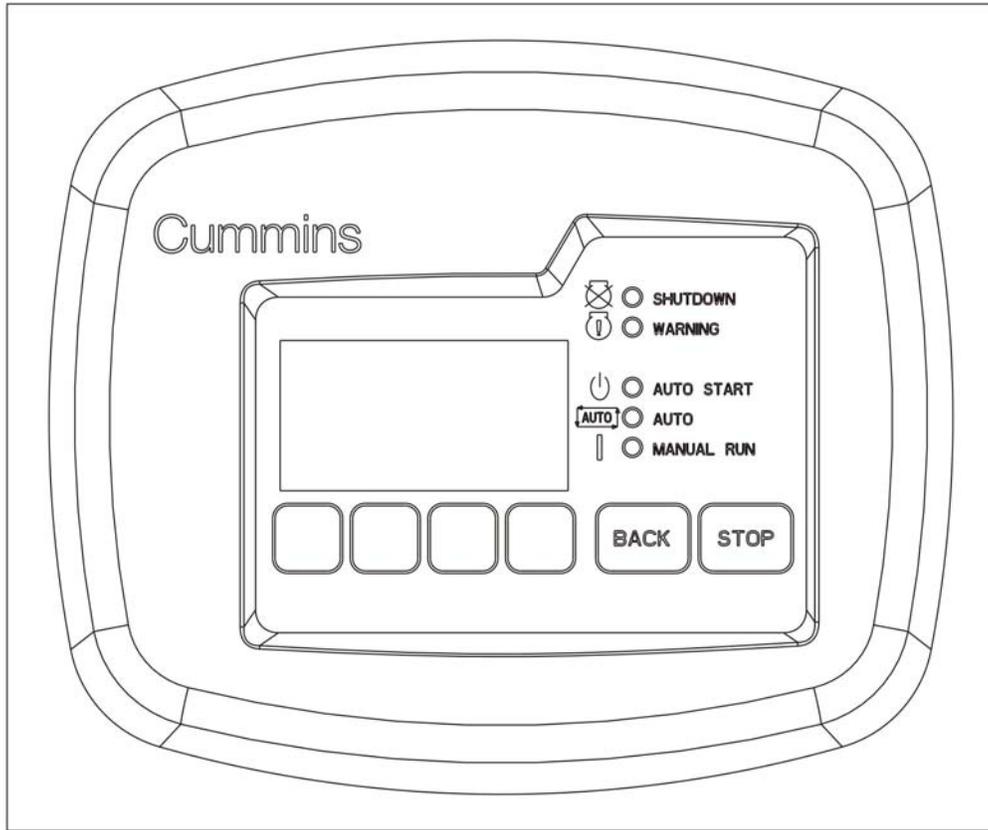


FIGURE 1. HMI211 RS

**⚠ WARNING**

*AC voltages and currents present an electrical shock and arc flash hazard. Only technically qualified and trained personnel are to perform service procedures. Voltages up to 600 VAC can be present inside the electrical enclosures. Incorrect installation, service, or replacement of parts can result in severe personal injury, death, or equipment damage.*

**⚠ CAUTION**

*Improper handling of components (even with power removed) can cause electrostatic discharge that damage circuit components.*

**⚠ WARNING**

*Make certain the battery area has been well-ventilated before servicing the battery. Wear protective clothing and safety goggles. Stop the genset and disconnect the charger before disconnecting battery cables. Arcing can ignite explosive hydrogen gas given off by batteries, causing severe personal injury. Arcing can occur when a battery cable are removed or re-attached, or when the negative [-] battery cable is connected and a tool used to connect or disconnect the positive [+] battery cable touches the frame or other grounded metal part of the generator set. Always remove the negative [-] cable first, and reconnect it last. Make certain hydrogen from the battery, engine fuel, and other explosive fumes are fully dissipated. This is especially important if the battery has been connected to a battery charger*

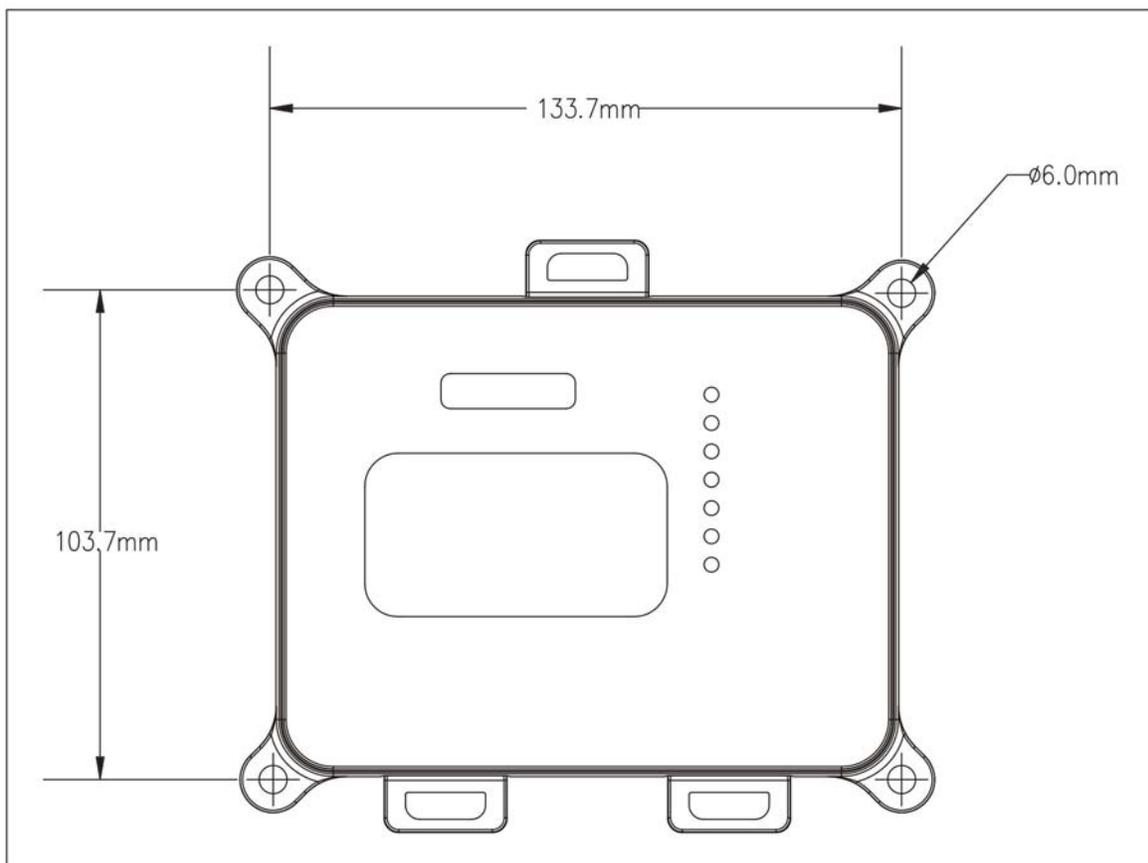
**⚠ WARNING**

*Ignition of explosive battery gases can cause severe personal injury or death. Arcing at battery terminals, operation of light switches, operation of other equipment, open flame, pilot lights, and sparks can ignite battery gas. Do not smoke, or switch trouble light ON or OFF near a battery. Discharge static electricity charge from your body before touching batteries by touching a grounded metal surface.*

**NOTICE**

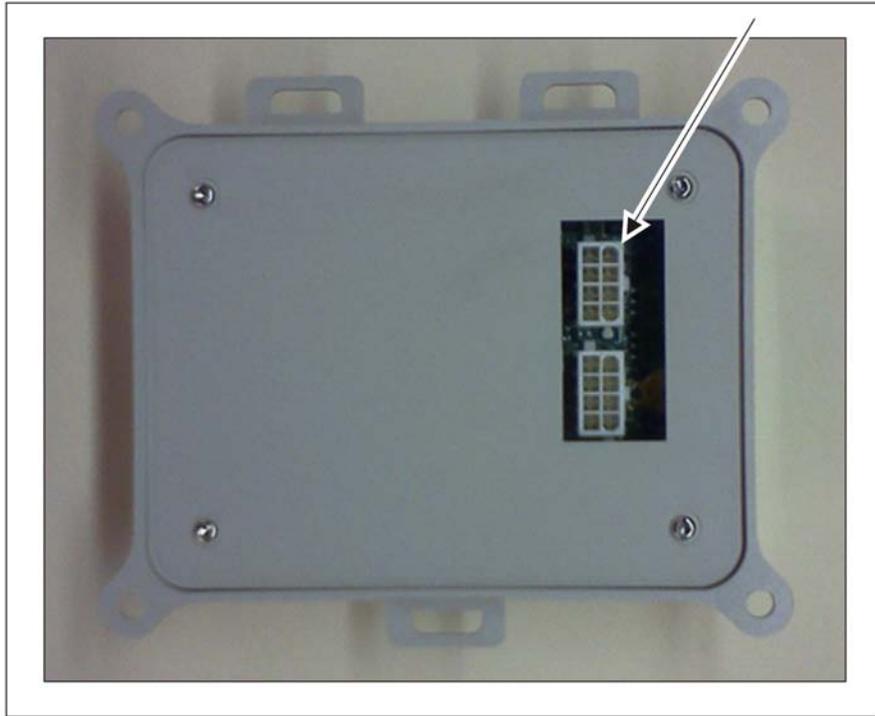
The HMI211 RS mounting distance from the 1302 controller is limited to a cable distance of 1219 meters (4000 feet).

1. Make sure the generator set is shut down and disabled.
  - a. Place the generator set O/Manual/Auto switch in the O (OFF) position.
  - b. Turn off and disconnect the battery charger (if equipped).
  - c. Disconnect the negative [-] cable from the battery and secure it from contacting the battery terminals to prevent accidental starting.
2. Use the mounting dimensions from the template shown in the figure below.

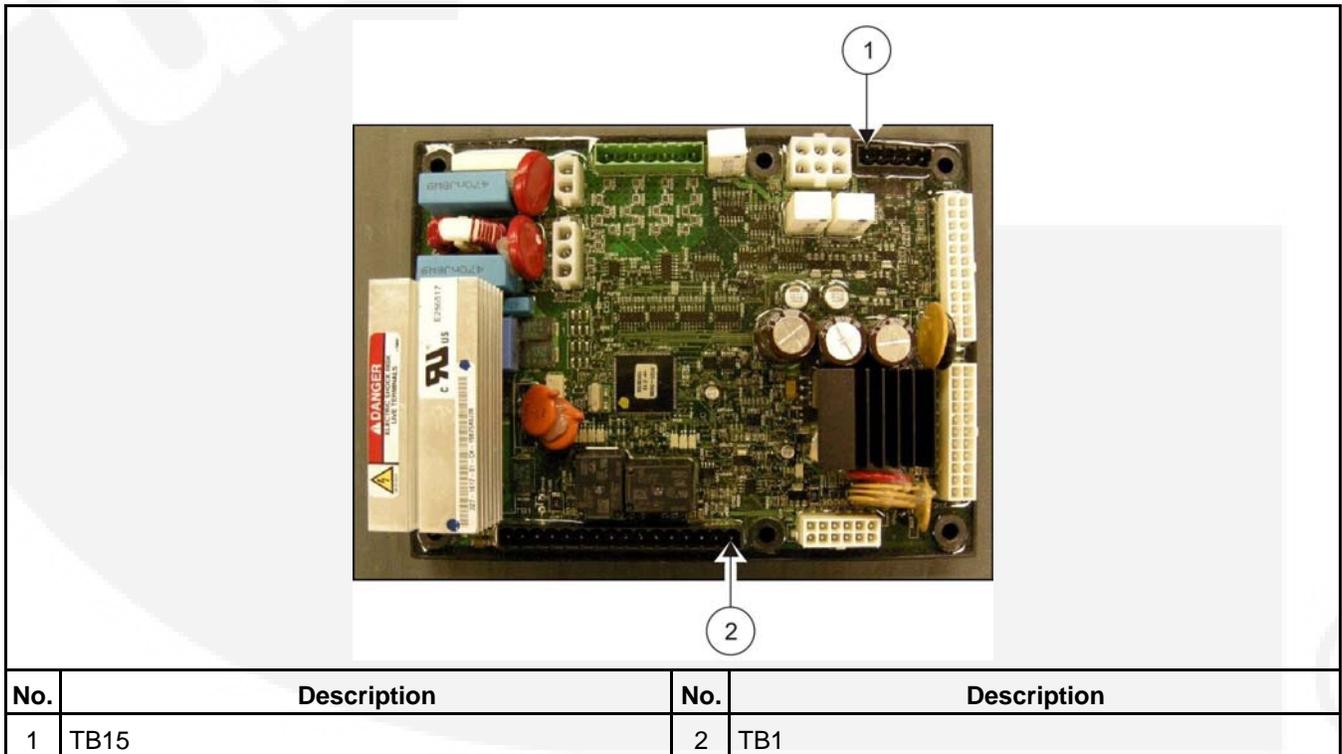


**FIGURE 2. MOUNTING DIMENSIONS**

3. Mount the HMI211 RS with four number 6 screws, nuts and washers.
4. Insert the harness plug P1 into the HMI211 RS J1 connector. Refer to the figures below.



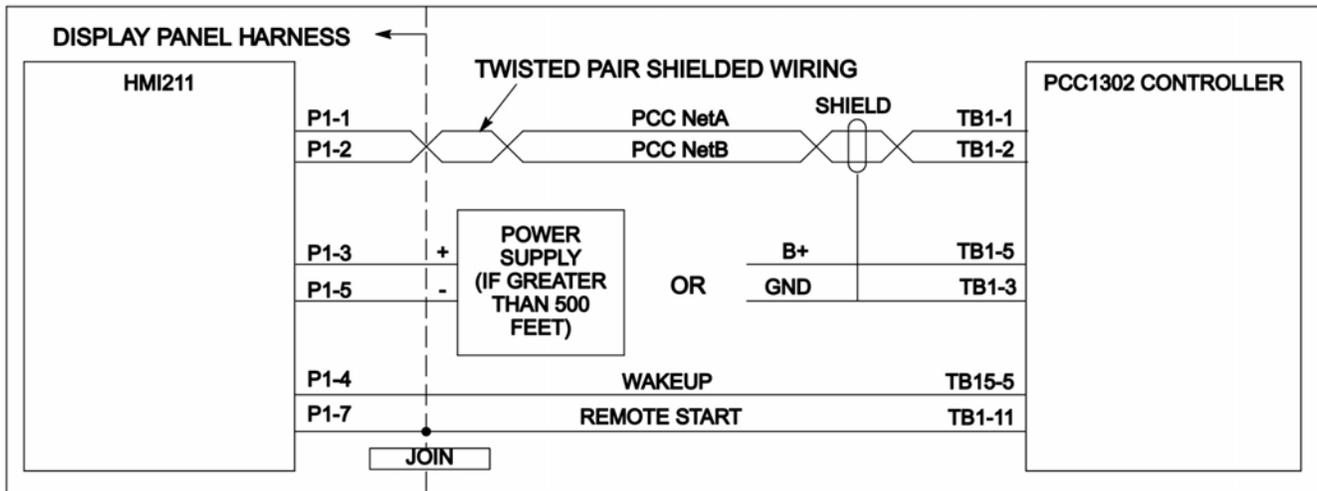
**FIGURE 3. HMI211 RS (REAR VIEW) SHOWING J1 CONNECTOR**



No.	Description	No.	Description
1	TB15	2	TB1

**FIGURE 4. PCC1302 TERMINAL BLOCKS TB1 AND TB15**

- The HMI211 RS can be powered from the PCC1302 if it is within 152 meters (500 feet); see the wiring schematic below. If the distance is greater than 500 feet, power must come from an isolated 12 or 24 VDC power supply with 3 Amp overcurrent protection. Select the appropriate wire size from [Table 1](#).



**FIGURE 5. WIRING SCHEMATIC**

**TABLE 1. WIRE SIZES**

B+ and GND Wiring	Maximum Mounting Distance from the Generator Set in Meters (Feet)
14 AWG	152.4 (500)
16 AWG	61 (200)
18 AWG	30.5 (100)

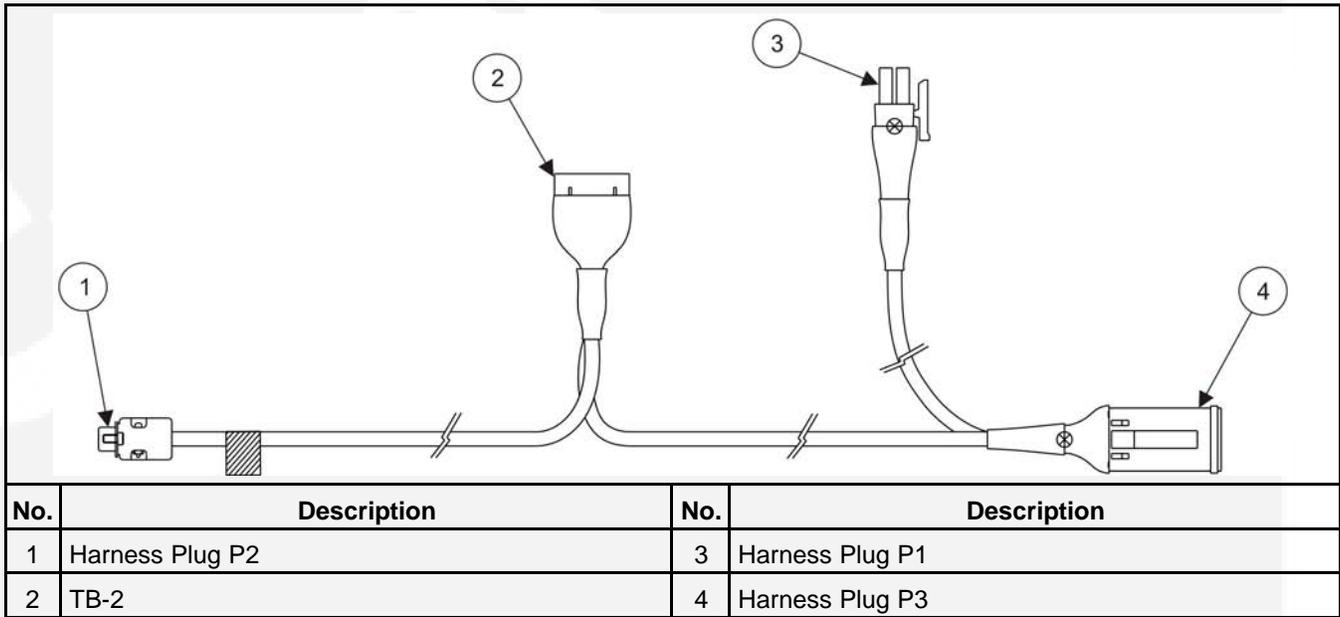
- Use Class 5, 22 AWG shielded stranded twisted pair wire for making the PCC NET connections between the PCC1302 and the HMI211 RS harness. Refer to [Figure 5](#). Torque to 0.5 Nm (0.37 ft-lb).
- Use 18 AWG stranded wire to make the Wakeup and Remote Start connections between the PCC1302 and the HMI211 RS harness. Refer to [Figure 5](#). Torque to 0.5 Nm (0.37 ft-lb).
- Reconnect the generator set as follows:
  - Connect the negative [-] cable to the battery.
  - Reconnect the battery charger (if applicable).
- Refer to the operator manual for the genset to verify functionality of display and generator set.
- Start the unit and verify functionality from the remote, using the instructions in the PCC1302 owner manual.

## 3.2 Instructions for Updating HMI211 Firmware

It may be necessary to update the HMI211 in the field using the Cummins InPower Service Tool. These instructions give the procedure for the update process.

The following hardware and firmware are required:

- Service Tool harness (not included in kit)
  - Latest version of the HMI211 firmware, which can be retrieved from the InCal website at <http://cumminspower.com/en/services/software/>
1. Disconnect generator set harness plug P1 (shown in [Figure 5](#)) from the back of the HMI211 RS.
  2. Disconnect TB1-1 or TB1-2 (shown in [Figure 4](#)) from the PCC1302. This will interrupt communication between the PCC1302 and HMI211 RS, while allowing the PCC1302 to continue to supply power to the HMI211 RS.
  3. Reconnect generator set harness plug P1 to the back of the HMI211 RS. The HMI211 RS will display an error screen.
  4. Connect Service Tool harness plug P1 to the open connector on the back of the HMI211 RS display.
  5. Connect harness plug P2 (shown below) to the laptop's USB port via converter.



**FIGURE 6. SERVICE TOOL HARNESS**

6. Connect to the HMI211 RS with the InPower Service Tool.
7. Download the latest version of HMI211 firmware.
8. When the download has been completed, disconnect the InPower Service Tool.
9. Disconnect harness plug P1 from the back of the HMI211 RS.
10. Reconnect TB1-1 or TB1-2 to the PCC1302. This will enable communication between the PCC1302 and HMI211 RS.
11. Reconnect harness plug P1 to the back of the HMI211 RS. The HMI211 RS will initialize and supply the proper information.