

# Charger Battery Management System GSE CAN Installation Guide



Revised 09/19/24

© Ampure 2024. All rights reserved.

PosiCharge™ systems is a product line of Ampure. Ampure and the Ampure logo are trademarks of Ampure. Corporate names, trademarks, registered trademarks, service marks, symbols, and logos stated herein are property of their respective companies. Specifications are subject to change without notice. Images of the power cycling and test systems are representative; production models may vary. No portion of these materials may be duplicated, used, or disclosed without prior written permission from Ampure.

Disclaimer: this manual includes the latest information available at the time of printing. Ampure reserves the right to make changes to this manual and/or product without further notice. Changes or modifications to this product not completed by an authorized service provider could void the product warranty.

These commodities, technology or software were exported from the United States in accordance with the Export Administration Regulations. Diversion contrary to US law prohibited.

<https://www.posicharge.com/>

**PosiCharge customer support:**      **service@posicharge.com**  
   **+1 (866) 767-4242**

**Parts:**    **orders@posicharge.com**

## CONTENTS

<b>1 – SAFETY PRECAUTIONS – READ BEFORE USING.....</b>	<b>5</b>
1.1 – Symbol Usage .....	5
<b>2 – GENERAL INFORMATION.....</b>	<b>5</b>
2.1 – Document Purpose .....	5
2.2 – GCAN Board.....	5
Figure 1 – GCAN Board 29974 and Ribbon Cable.....	6
2.3 – GSE Charger Decal .....	7
Figure 2 – GCAN Sticker Placement .....	7
<b>3 – GCAN BOARD INSTALLATION PROCESS.....</b>	<b>8</b>
3.1 – Updating the Charger Software Version .....	8
3.2 – Powering OFF the GSE Charger .....	8
3.3 – Installing the GCAN Board .....	9
Figure 3 – P6 and P7 Cables Connected to BMID A and BMID B Ports .....	9
Figure 5 – BMID A and BMID B Ports.....	10
Figure 4 – GCAN Board Connectors .....	10
Figure 6 – Gently press the board into place.....	11
Figure 7 – GCAN Board Connected to the GSE Control Board .....	11
Figure 8 – GCAN Board Connected to the 5VDC Supply at Port 25.....	12
Figure 9 P6 and P7 Cables on the GSE Control Board.....	13
3.4 – The baud rate and other functions can be controlled using the DIP switches. ....	14
3.5 – Powering the GSE charger ON again.....	14
Figure 10 – Location of DIP Switches on the GCAN Board .....	14

This page left intentionally blank.

## 1 – SAFETY PRECAUTIONS – READ BEFORE USING

The following safety precautions must be read and observed.

- The ground support equipment (GSE) controller area network (CAN) (GCAN) board is designed with the safety of the user as the highest priority.
- The GCAN board design is such that the installer can safely install it.
- Installation must comply with all local codes.
- The GCAN board supports safe operation of basic charging functions by a user.

### 1.1 – Symbol Usage

Take special note of the information in this manual marked with the following symbol.



#### **DANGER**

Indicates information about safety practices which, if not followed, may result in death or serious injury.

## 2 – GENERAL INFORMATION

### 2.1 – Document Purpose

The GCAN Installation Guide is intended to provide a production technician with the information and guidance necessary to install the GCAN board safely onto the GSE control board.

### 2.2 – GCAN Board

#### 2.2.1 – Description

The ground support equipment (GSE) controller area network (CAN) (GCAN) board is an add-on circuit board that can be added to the 08067 GSE control board. (All boards are in the power station of the chargers.) The GCAN board is conformal-coated<sup>1</sup> similarly to the 08067 GSE control board.

#### 2.2.2 – Purpose

The GCAN board enables the charger communication (comm) lines to get charger information from the battery information management system (BMS)<sup>2</sup> via the IPC charger CAN communication protocol. If the GCAN board detects CAN communication, the charger switches into CAN control mode. If the GCAN board does not detect CAN communication, the charger uses BMID control mode. This allows the charger to be fully backwards compatible with existing batteries at the customer site.

<sup>1</sup> Conformal coating material is a thin polymeric film that conforms to the contours of a printed circuit board to protect the board components (Wikipedia).

<sup>2</sup> BMS controls the charging process and the charger.

<sup>3</sup> The GCAN board supports both the IPC charger CAN communication protocol and the Chinese recommended national standard (GB/T) communication protocol.

### 2.2.3 – Scope

The GCAN board can be used in all GSE chargers, which include DVS300, DVS330, DVS400, MVS, and the power station.

### 2.2.4 – Use Case

If a customer plugs a charger into a truck, then the charger automatically detects whether the truck is using CAN communication and begins charging using the IPC Charger CAN communication protocol.

### 2.2.5 – Equipment

Equipment Description	Quantity	Part Number	Notes
GCAN package	1	29974	

The GCAN package contains the GCAN board 29974 and a ribbon cable (Figure 1).



**Figure 1 – GCAN Board 29974 and Ribbon Cable**

### 2.3 – GSE Charger Decal

A GCAN decal (sticker) indicating that the GSE charger is CAN compatible is adhered to the front-panel door of the charger, on the bottom-right corner near the screws (Figure 2).



Figure 2 – GCAN Sticker Placement

### 3 – GCAN BOARD INSTALLATION PROCESS

A technician should install the GCAN board. Installation must comply with the provisions of all local electrical codes in the country of installation. The following sections walk technicians through a five-step installation process.

Step 1 – Updating the Charger Software Version  
Step 2 – Powering OFF the GSE Charger  
Step 3 – Installing the GCAN Board  
Step 4 – Configuring the DIP Switches  
Step 5 – Powering the GSE Charger Back ON

#### Step 1

##### 3.1 – Updating the Charger Software Version

3.1.1 – Update the charger software to version 1.015 or later, using the charger tools software. Contact your local PosiCharge service representative for a copy of the latest software version.

#### Step 2

##### 3.2 – Powering OFF the GSE Charger

3.2.1 – Power OFF the GSE Charger before installation.



#### **DANGER – RISK OF SHOCK**

The GSE charger needs to be powered OFF during installation. Do not restore power to the charger until the installation is complete. Failure to follow these instructions could result in shock or electrocution.



#### **DANGER – ELECTRIC SHOCK CAN KILL**

- Touching live electrical parts can cause fatal shocks or severe burns.
- The battery terminals are always electrically live, and the output circuit is live whenever the battery is connected or being charged.
- The input power circuitry and internal circuits are live whenever input power is ON.
- An incorrectly installed or improperly grounded charger is a hazard.



**Step 3****3.3 – Installing the GCAN Board**

3.3.1 – Remove the P6 and P7 connectors from the BMID A and BMID B ports on the GSE control board 08067 (Figure 3).

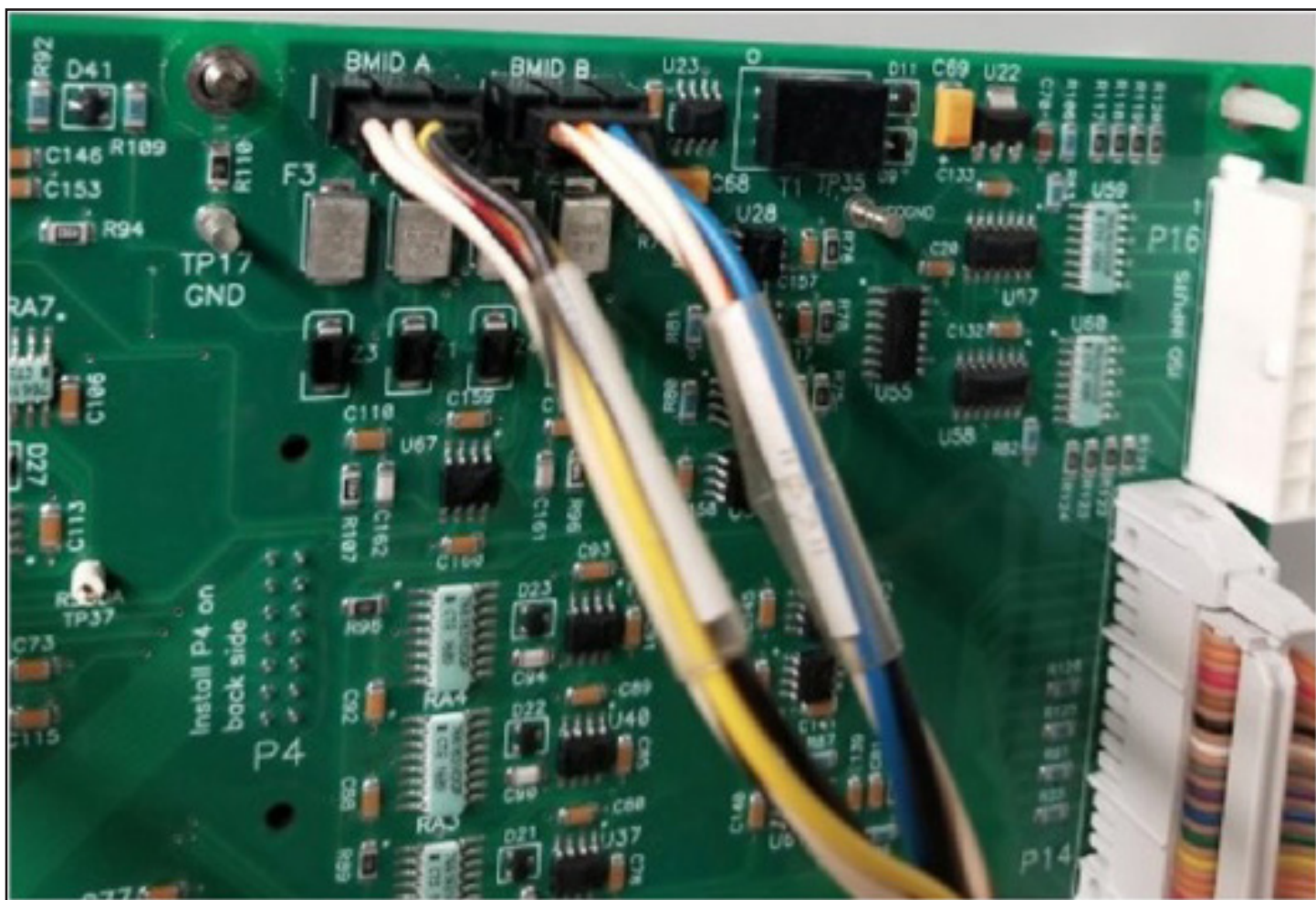
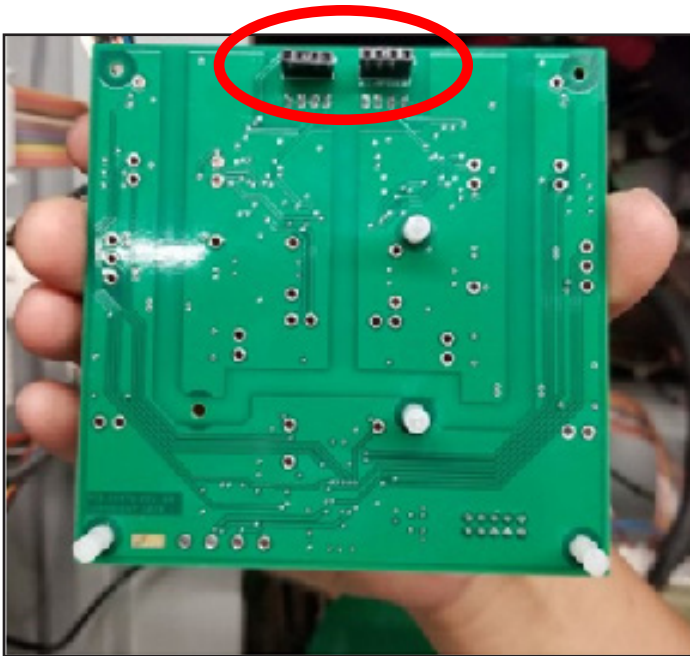
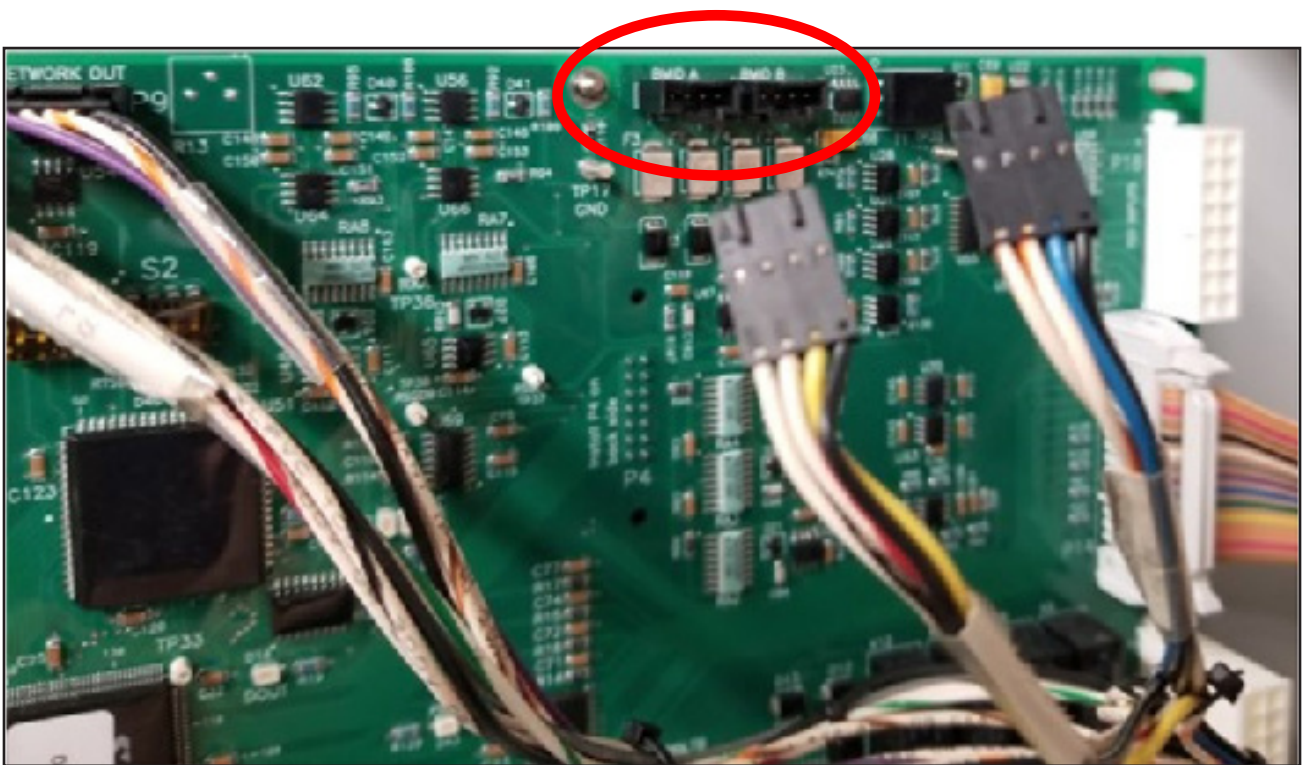


Figure 3 – P6 and P7 Cables Connected to BMID A and BMID B Ports on GSE Control Board 08067

3.3.2 – Connect the GCAN board connectors on the board back (Figure 4) to the BMID A and BMID B ports on the GSE control board as shown below and on the next page (Figures 4 – 7).

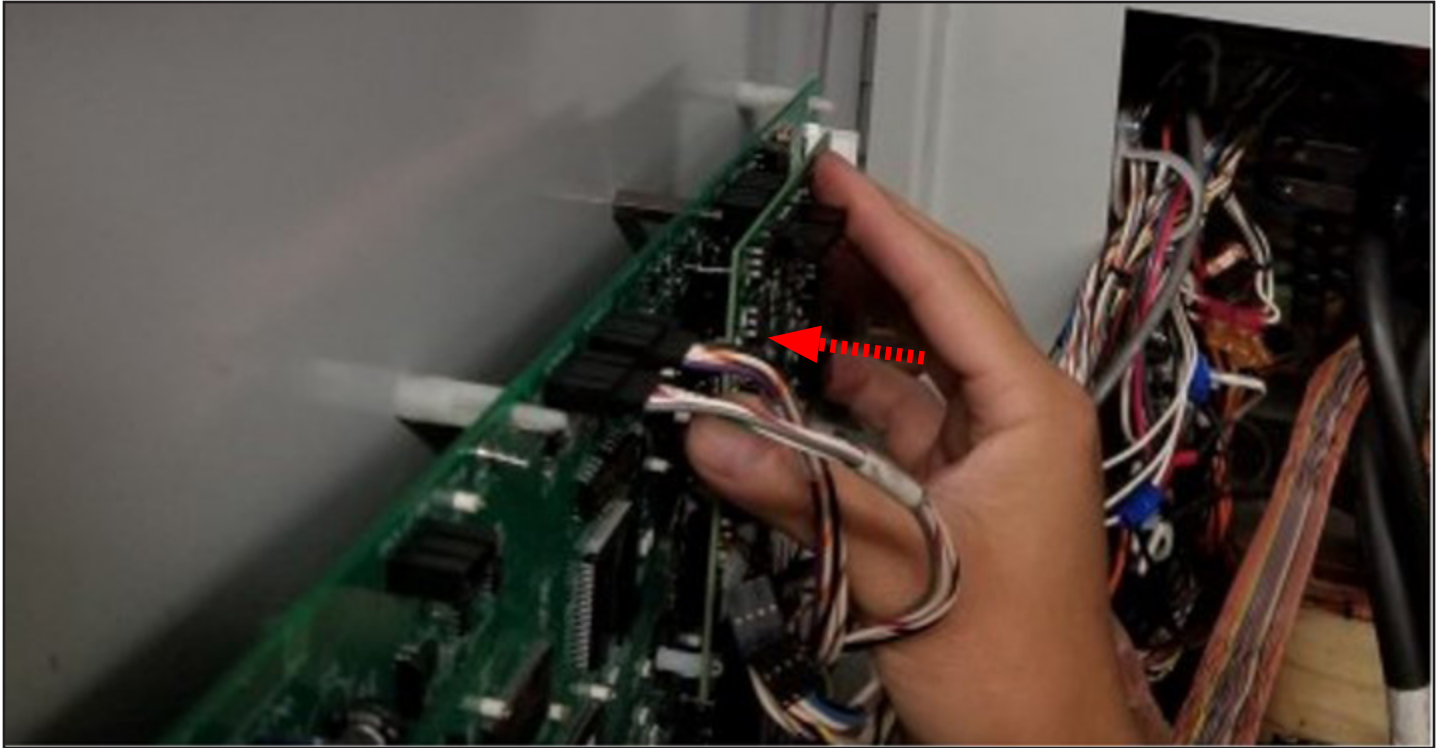


**Figure 4 – GCAN Board Connectors**

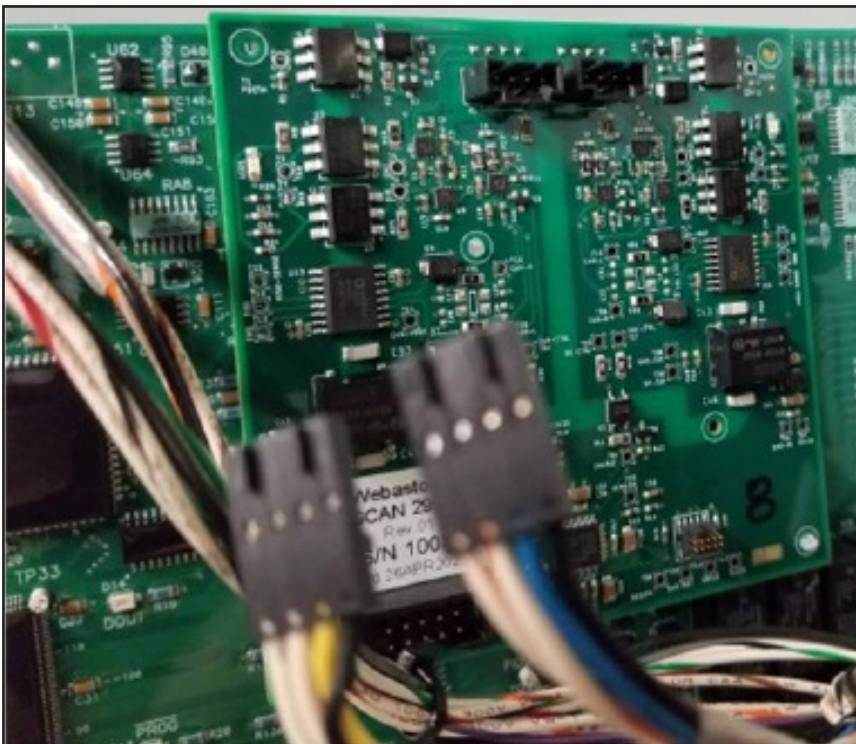


**Figure 5 – BMID A and BMID B Ports**



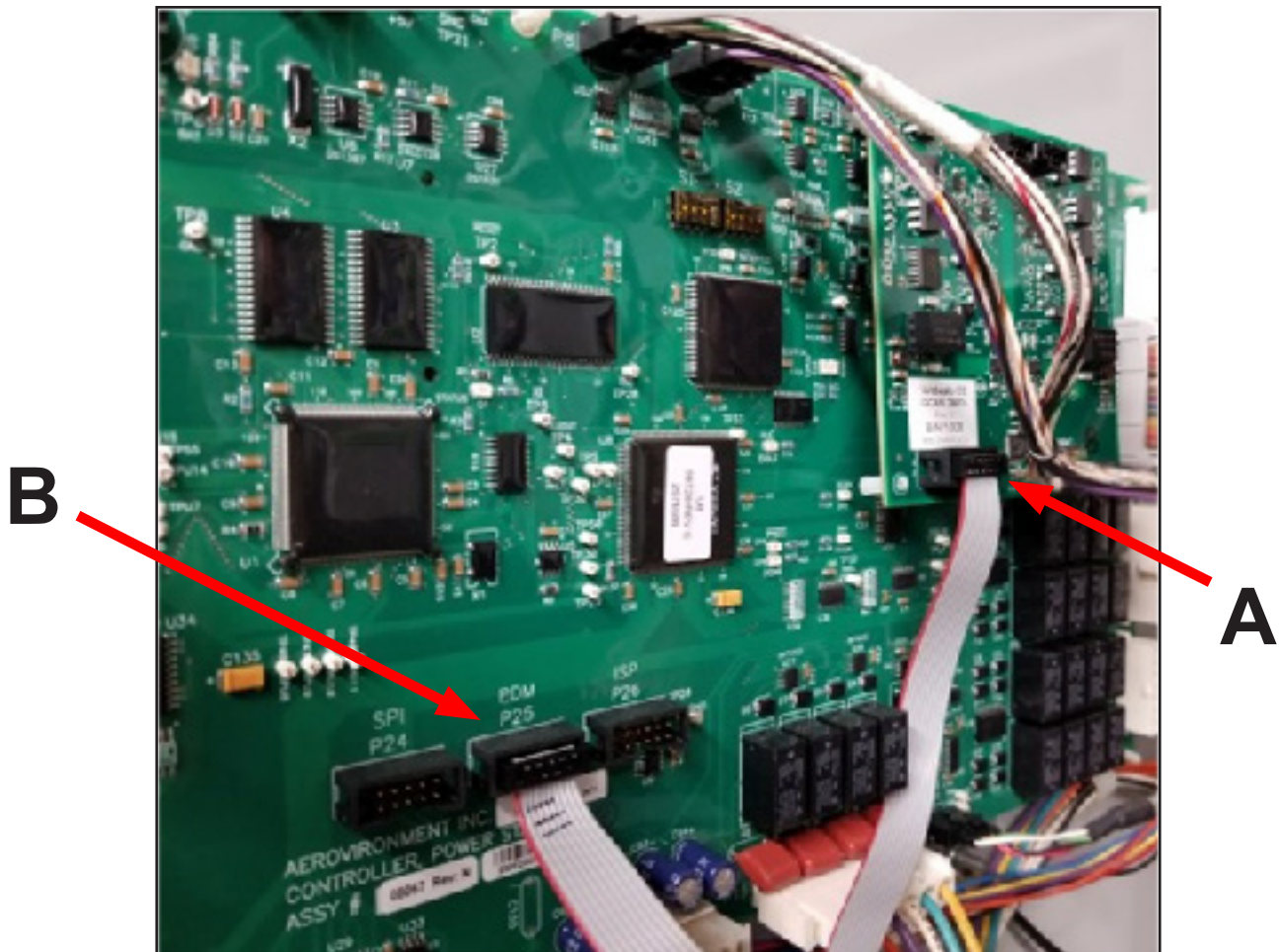


**Figure 6 – Gently press the GCAN board into place so the standoff snaps into place on the GSE control board as shown above.**



**Figure 7 – GCAN Board Connected to the GSE Control Board**

**3.3.3 – Connect the GCAN board ribbon cable connector to the GCAN board ribbon cable port (Figure 8, A) and the P25 ribbon cable connector to the P25 ribbon cable port (to the 5VDC<sup>6</sup> supply) (Figure 8, B) on the GSE control board.**

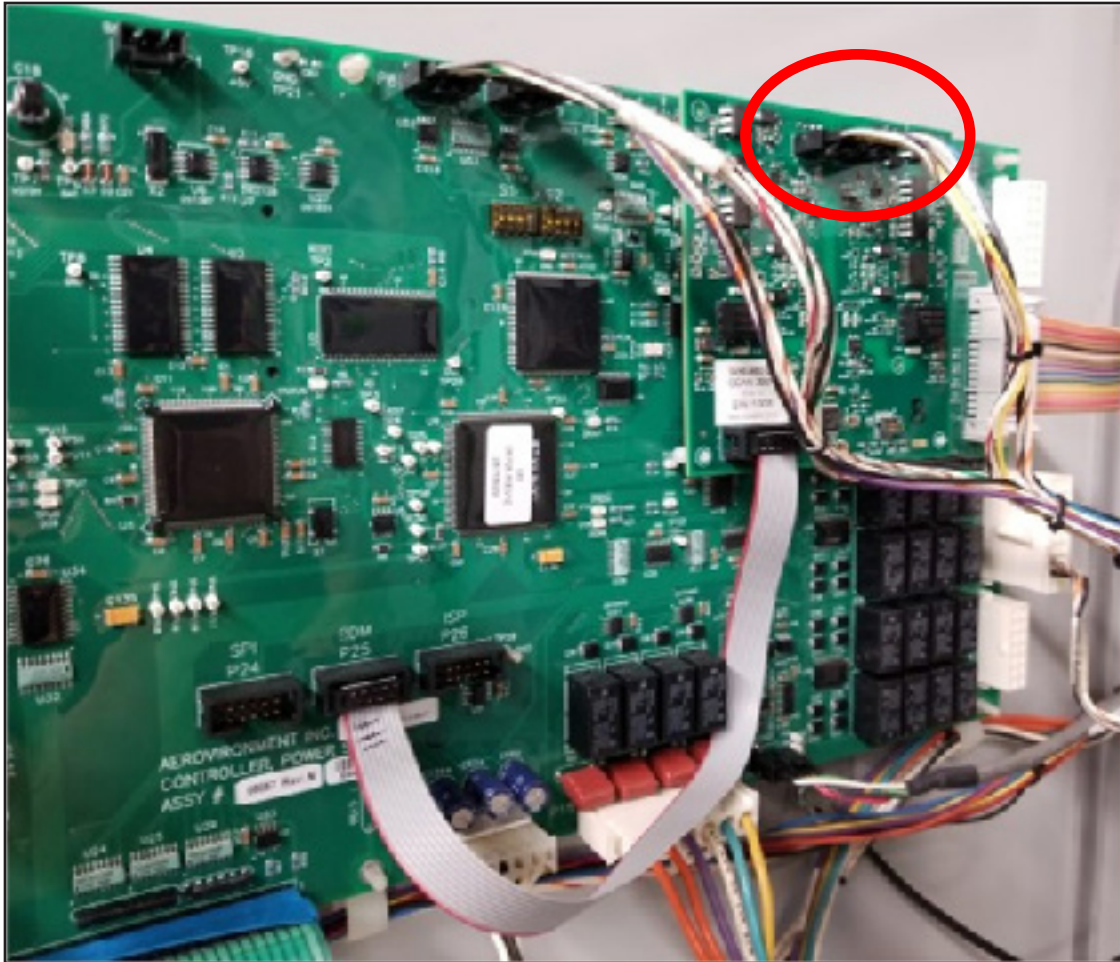


**Figure 8 – GCAN Board Connected to the 5VDC Supply at Port 25 on the GSE Control Board with the Ribbon Cable**

6 Volts Direct Current



### 3.3.4 – Connect the P6 and P7 cables on the GSE control board to the corresponding ports on the GCAN board (Figure 9).



**Figure 9 P6 and P7 Cables on the GSE Control Board Connected to the Corresponding Ports on the GCAN Board**

The GCAN board is placed between the comm cables and the GSE control board. If the charger is powered ON, the GCAN board detects when a BMS charger using CAN communication is connected to the comm lines.

The GCAN board uses CAN protocols to get charging information from the BMS. The GCAN board then uses SG commands to pass that information to the GSE control board.

Step 4

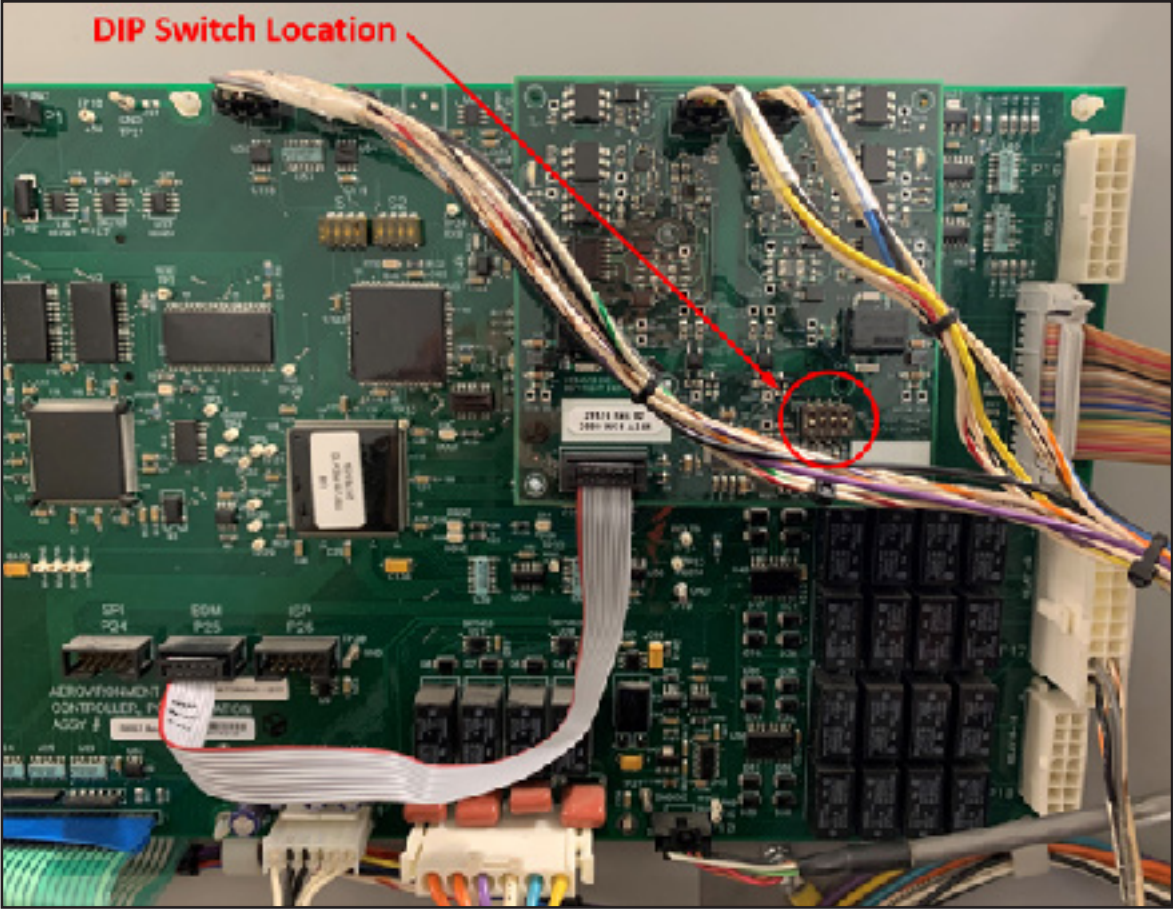


Figure 10 – Location of DIP Switches on the GCAN Board when Installed

3.4 – The baud rate and other functions can be controlled using the DIP switches on the GCAN board – see the table below for the baud rate and other configuration options.

DIP Switch #	ON	OFF
1	125 kbps	250 kbps
2	Not Used	
3	Port A – CAN Mode Only	Pot A – CAN and BMID Modes
4	Port B – CAN Mode Only	Port B – CAN and BMID Modes

Step 5

3.5 – Powering the GSE charger ON again

3.5.1 – Power the GSE charger back ON again after installation.

This page left intentionally blank.

PosiCharge  
Ampure  
1333 S. Mayflower Ave., Ste 100  
Monrovia, CA 91016  
USA