G-SHIELD-FIRE

gastech

Upgrade Kit

Instructions

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1. Introduction

Congratulations on your purchase of a Velox to G-Shield Fire Upgrade kit. Gastech has built on the foundations of the Velox system to bring you an enhanced vehicle mounted gas detection system. The G-Shield Fire will detect carbon monoxide (CO) and hydrogen cyanide (HCN).

2. What's in the box

The upgrade kit includes:

- One replacement Printed Circuit Board Assembly (PCBA) for the touchscreen
- Two G-Shield Sensor Platforms fitted with dummy plugs
- One CO G-Pod
- One HCN G-Pod
- USB cable
- This instruction guide
- Software (Download directly from https://gastech.com/g-shieldfire)
- 1.3 mm hex wrench for Bushing Nut grubscrew

3. Safety Precautions

WARNING: The G-Shield Fire must be installed by an approved person. Incorrect installation can cause injury or death to personnel.

4. The Upgrade Process

The upgrade of the Velox system to the G-Shield Fire involves multiple steps. The suggested workflow is shown below.

1. Removal of the Velox hardware
2. Upgrade of the touchscreen (new PCBA and software updates)
3. Installation of the G-Shield Fire hardware
4. Response test of the G-Pods

CAUTION: The Velox used a single power connection. The G-Shield Fire requires two power connections to be made to the G-Shield Fire PCBA plus a ground connection. Please refer to the wiring diagram in section 14.

5. Removal of the Velox system

CAUTION: You must de-energise the existing Velox gas detection system before it is removed to avoid damage to the touchscreen.

Note: The removal of the Velox system is not covered by these instructions.

WARNING: The Velox system must be removed by an approved person. Incorrect removal can cause injury or death to personnel.

Please return these obsolete parts to Gastech for responsible disposal.

Figure 1. Velox Sensor Head image.

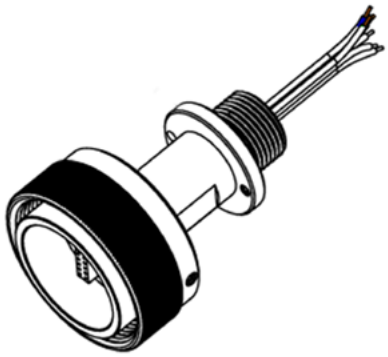

Figure 2. Velox Sensor Bushing image.

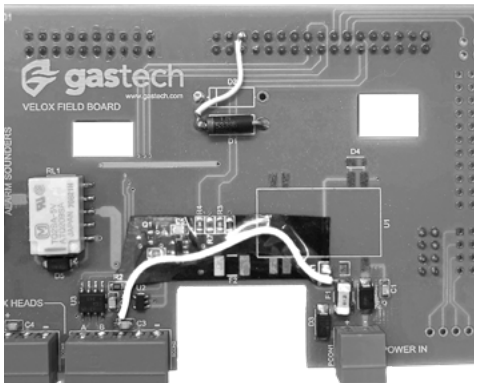

Figure 3. Velox Touchscreen PCBA image.

Note: The existing Velox wiring may be retained and re-terminated if desired.

6. Touchscreen display hardware upgrade procedure.

The touchscreen display must be configured to operate as a G-Shield Fire device. The Velox PCBA must be carefully removed and the information stored in the touchscreen display must be updated.

The touchscreen is reused for the G-Shield Fire and must be retained.

Step 1. Lay the touchscreen display face down on a soft cloth with the Velox PCBA facing upwards.

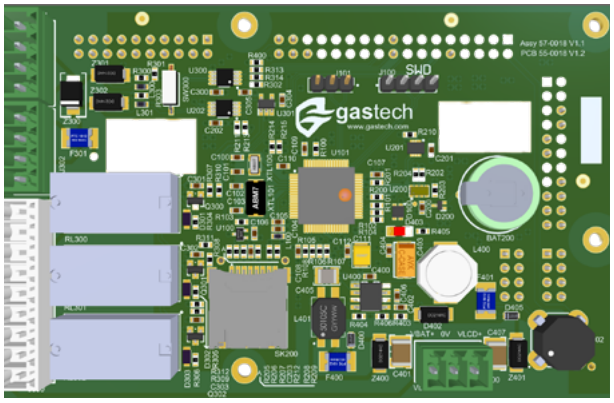

Figure 4. G-Shield Fire Touchscreen PCBA image.

Step 2. Carefully insert a suitable spudger between the touchscreen display and the PCBA. Work the spudger around the gap and gently lever the two items apart.

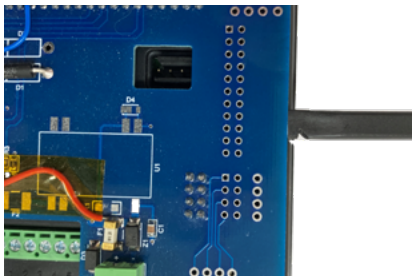

Figure 5. Spudger inserted - top view.

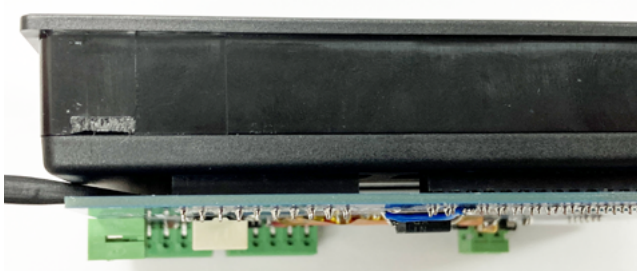

Figure 6. Spudger inserted - edge view.

CAUTION: Do not lift one side more than the other. Small movements are best. The PCBA must be removed without excessive force to avoid damage to the touchscreen connector pins.

Step 3. Make sure the pins are undamaged.

Figure 7. Touchscreen with undamaged connector pins.

7. Touchscreen display software upgrade procedure

Step 1. Download the Velox to G-Shield Fire Upgrade Kit software from https://gastech.com/g-shieldfire Select the downloads tab and choose the file 84-1011-01 Software Package.zip

Step 2. Unzip the files to a convenient location.

Step 3. Connect the USB cable from the upgrade kit to the USB port on the touchscreen..

Figure 8. USB connected to touchscreen.

Note: The USB cable supplied in the upgrade kit is sufficient to provide power and communications to the touchscreen display. No external power is required.

Step 4. Connect the USB cable to a windows PC and run the application DisplayDeviceUtility.exe. The touchscreen will turn on automatically and the application will show this screen.

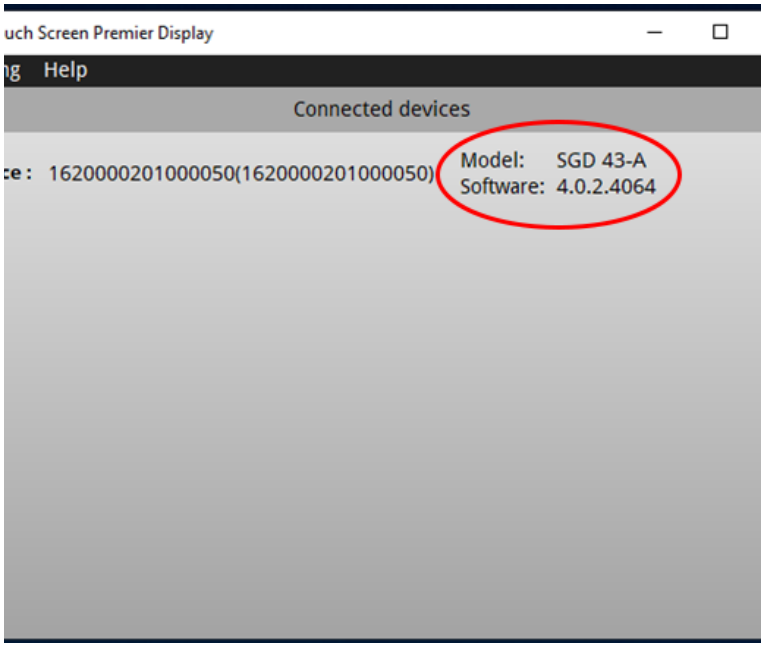

Figure 9. Touchscreen DisplayDeviceUtility connected devices screen.

Step 5. Check the software version currently installed in the touchscreen. The Software version must be 4.0.2.4064. If it is already 4.0.2.4064 skip to Section 9.

Note: The touchscreen display uses an embedded operating system and application software to connect to the G-Shield Fire gas detection hardware.

8. Update the touchscreen device software

Step 1. Select the Upgrade Device Software menu.

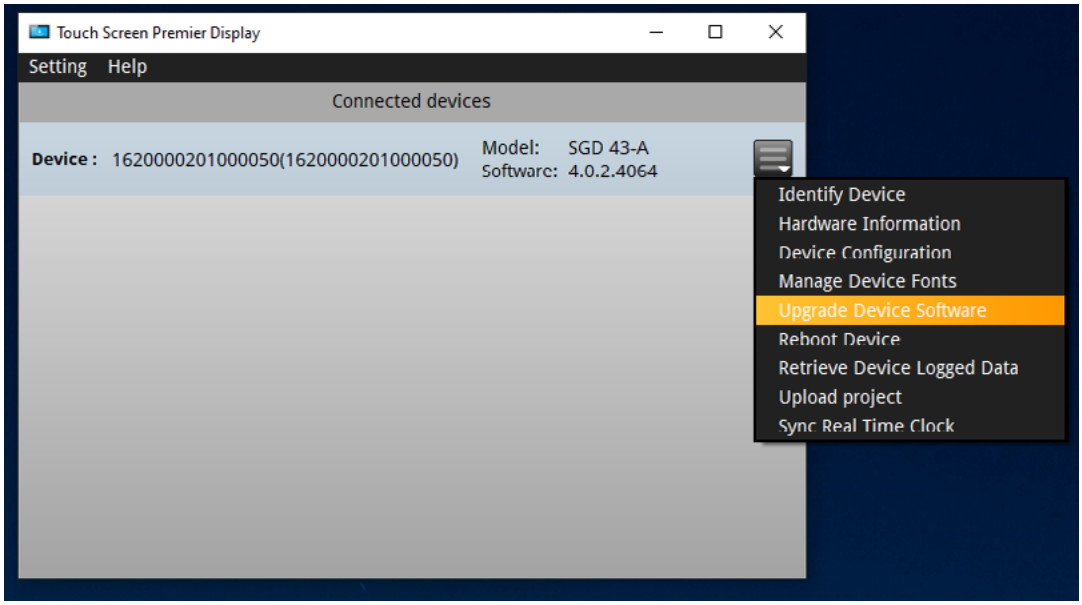

Figure 10. Touchscreen upgrade device software screen.

Step 2. Select the *SGD 43-A4.0.2.4064.PPSW* file. The file is located in the 84-1011-01 Software Package.

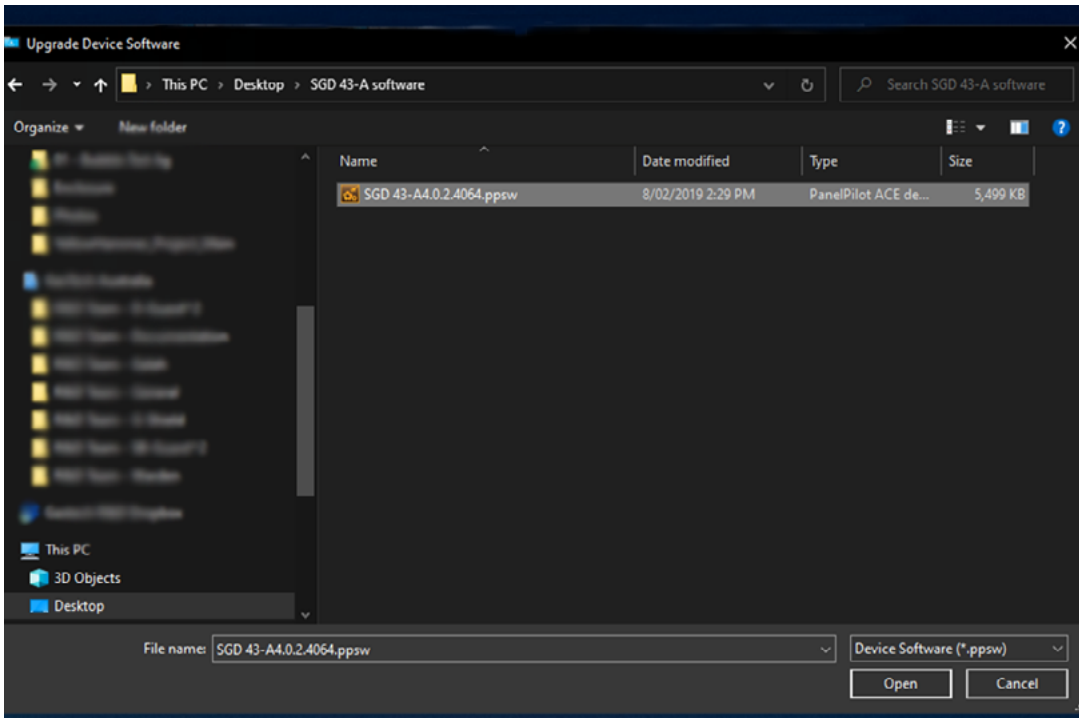

Figure 11. Select software for touchscreen device upgrade screen.

Update the touchscreen device software continued

Step 3. Double-click on the device software file. A pop-up window will appear.

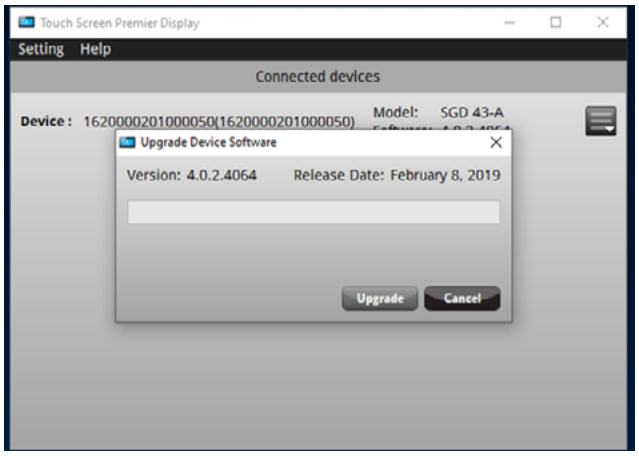

Figure 12. Touchscreen software update start screen.

Step 4. Click on the Upgrade button.

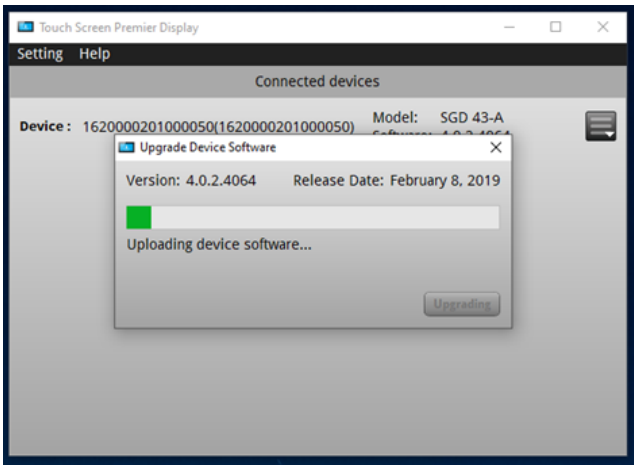

Figure 13. Touchscreen software update under way.

Step 5. Allow the software update to complete. Do not disconnect the USB cable during this time.

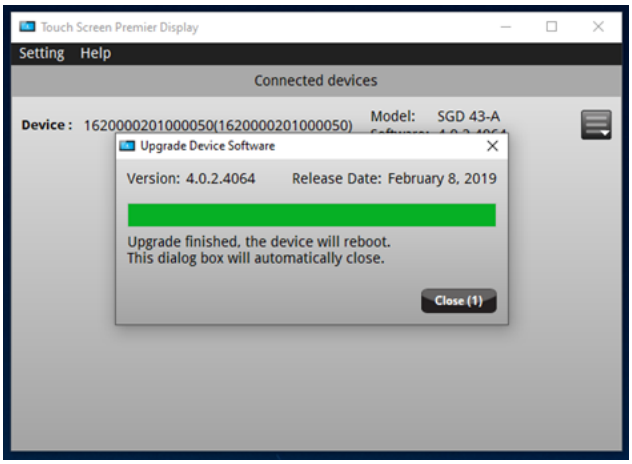

Figure 14. Touchscreen device software update completed. Reboot required.

Note: This dialog box will close automatically when the file has uploaded. The touchscreen will automatically reboot to complete installation.

9. Install the G-Shield Fire application software.

Step 1. Select the Upload project menu.

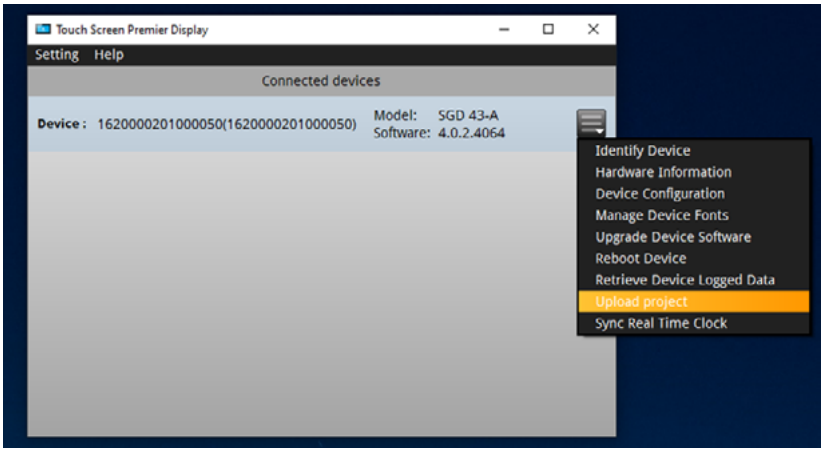

Figure 15. G-Shield Fire application upload screen.

Step 2. Double click on the *GShield_Display_V2.0.ppdevproj*.

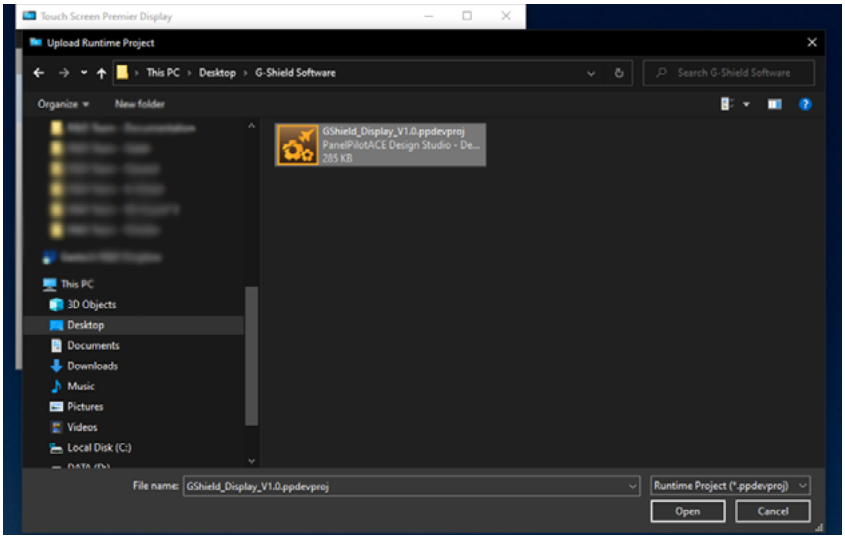

Figure 16. G-Shield Fire application file selection.

Step 3. Click Yes to upload the G-Shield Fire application.

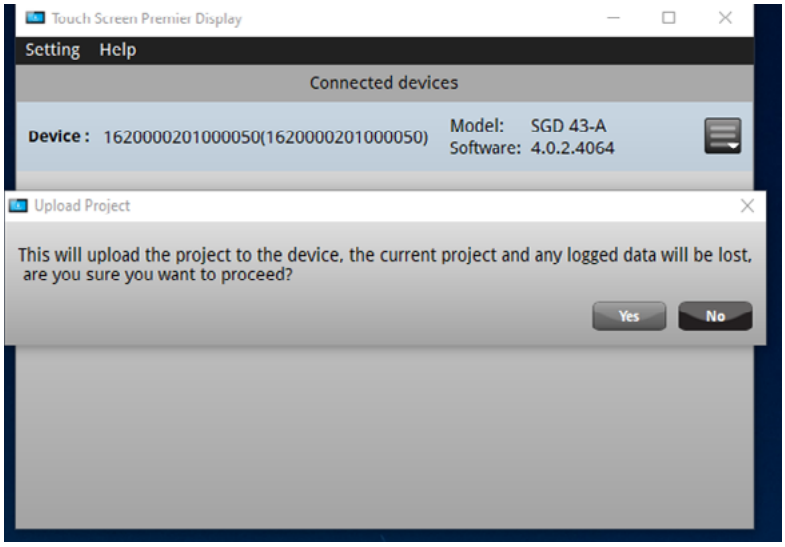

Figure 17. G-Shield Fire application upload start screen.

Install the G-Shield Fire application software continued.

Step 4. Allow the software update to complete. Do not disconnect the USB cable during this time.

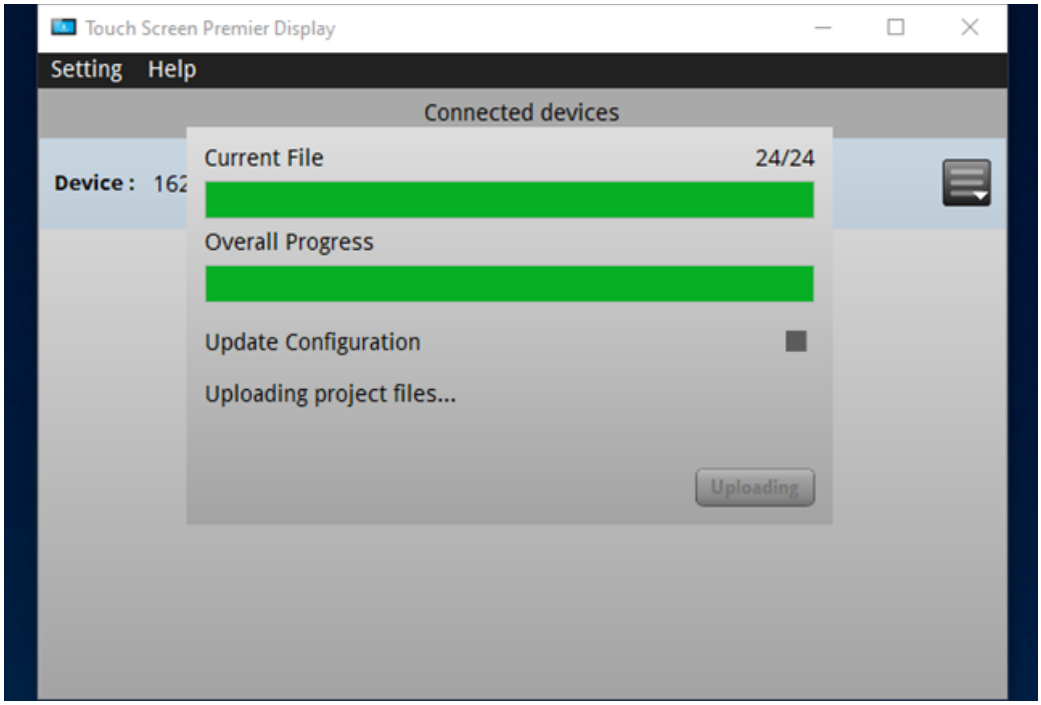

Figure 18. G-Shield Fire application upload started.

Step 5. Allow the system to reboot.

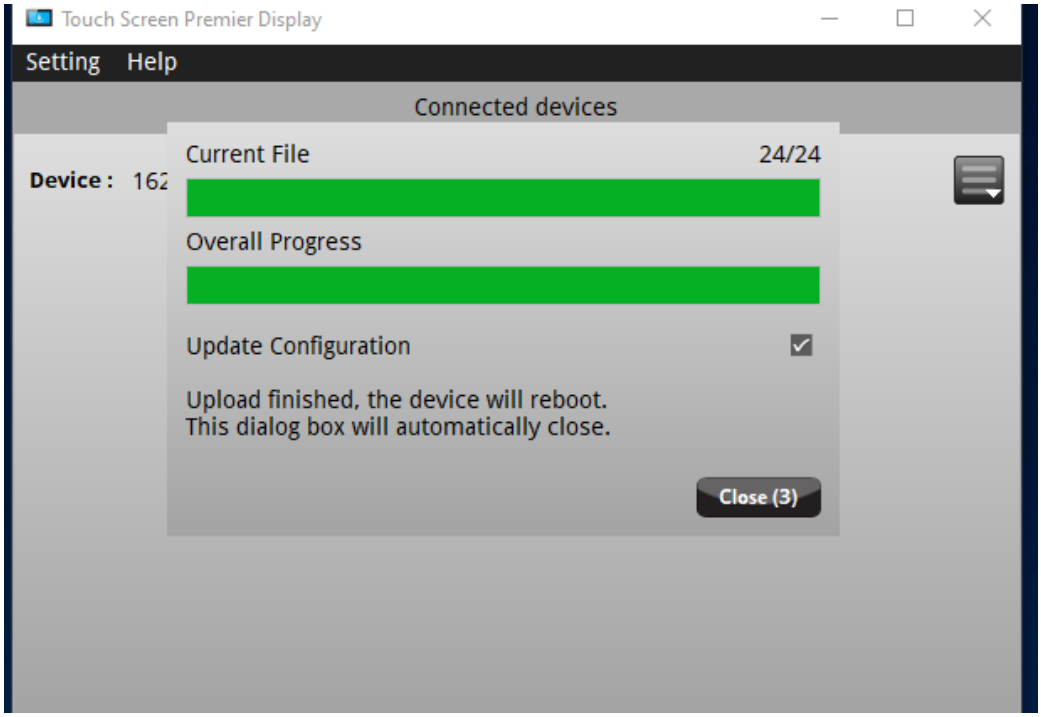

Figure 19. G-Shield Fire application upload completed. Reboot required.

Note: This dialog box will close automatically after the file has uploaded. The touchscreen will automatically reboot to complete installation.

10. Attach the G-Shield Fire PCBA to the Touchscreen.

Step 1. Fit the PCBA to the touchscreen. Do not bend any pins on the touchscreen.

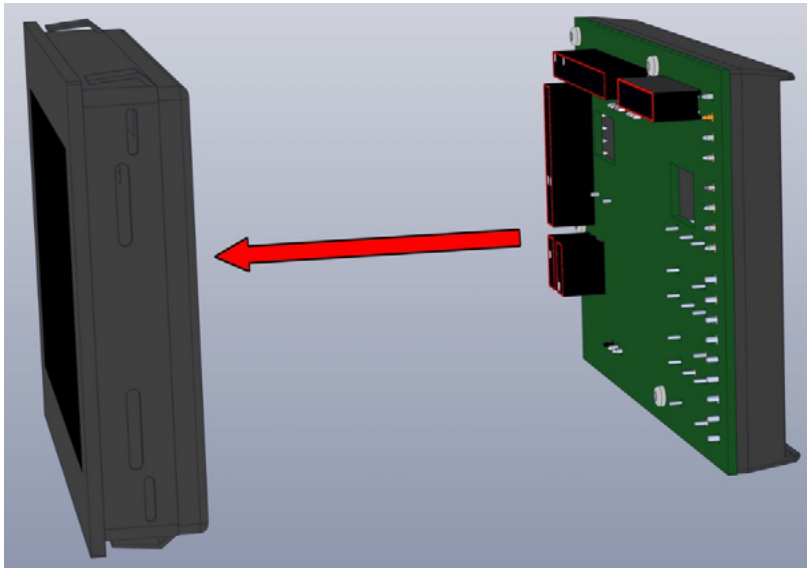

Figure 20. Attach the PCBA to the touchscreen.

11. Sensor Platform Installation

Step 1. Install the Sensor Platforms vertically at the rear of the vehicle. Make sure the G-Pod sinter faces downwards.

CAUTION: The G-Pod sinter must face towards the ground. Sudden pressure changes can cause a loss of accuracy.

Step 2. Use the M25 x 1.5P thread to attach the Sensor Platform to the vehicle.

Step 3. Torque the Mounting Nut to between 12 Nm and 20 Nm. Gastech recommends finger tight and 3/4 of one turn.

CAUTION: Do not exceed 20 Nm when the Mounting Nut is tightened. Damage can be caused to the gasket.

Note: You can use Loctite® 243™ Threadlocker to make sure the nut does not loosen because of vibration.

CAUTION: The Splash Guard protects the G-Pod from wind and water to the ingress protection level IPX6 and must always be fitted.

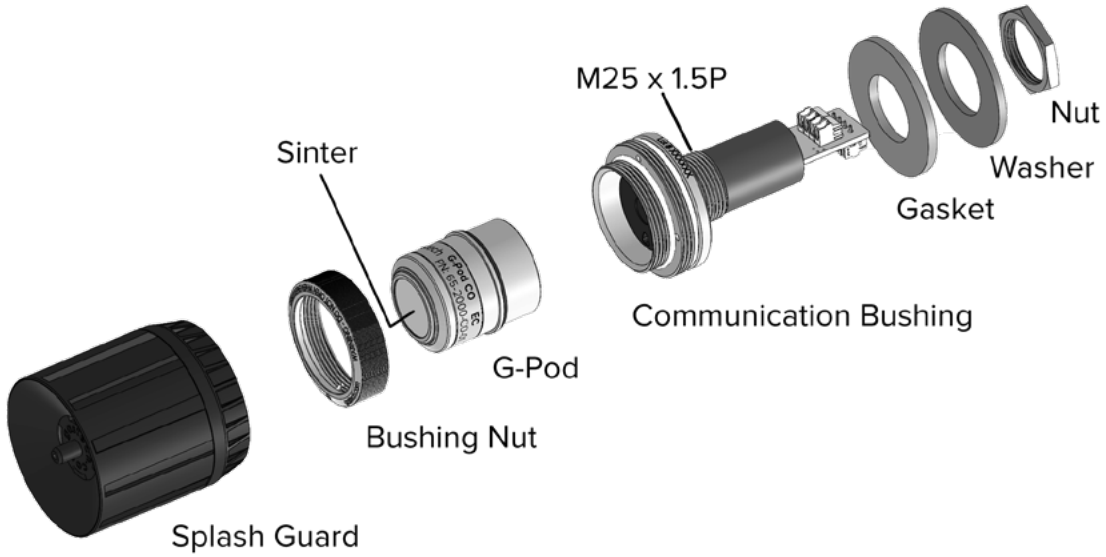

Figure 21. Sensor Platform exploded diagram.

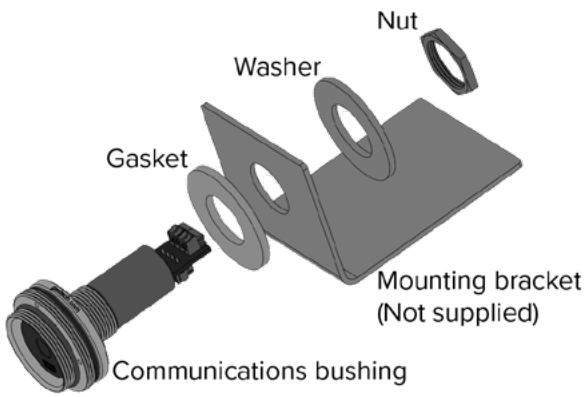

Figure 22. Typical installation to bracket

CAUTION: The gasket must be fitted between the mounting bracket and the communication bushing as shown

12. Sensor Platform Maintenance

Step 1. Make sure you replace the G-Pod with a Dummy Plug (P/N 65-2000-00) during maintenance.

CAUTION: Do not try to attach the Splash Guard when a Dummy Plug is installed as it will not fit.

13. G-Pod Installation

Step 1. Align the key on the G-Pod with the keyway on the Sensor Platform. Push the G-Pod into the Sensor Platform.

Note: You will notice some resistance as air is expelled from between the G-Pod and the Sensor Platform. This is normal.

Step 2. Fit the bushing nut. The Bushing Nut attaches the G-Pod to the Sensor Platform.

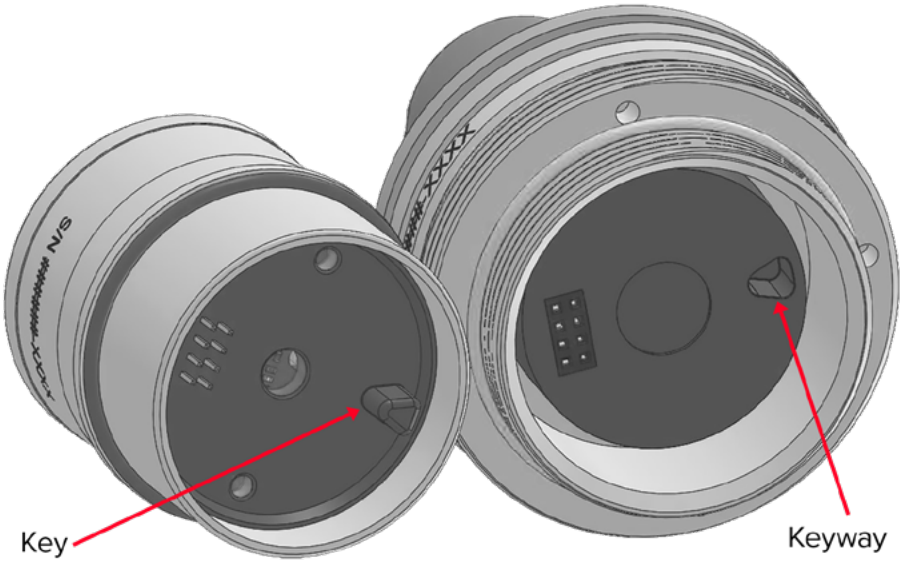

Figure 23. G-Pod key.

Figure 24. Sensor Platform keyway.

Step 3. Tighten the grubscrew using the 1.3mm hex wrench supplied in the upgrade kit.

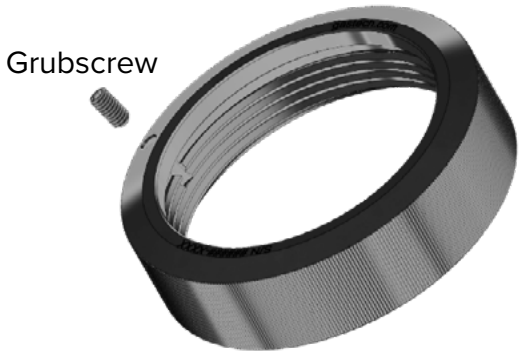

Figure 25. Sensor Platform Bushing Nut.

CAUTION: Do not over tighten the grubscrew. The grubscrew can damage the threads on the Sensor Platform.

CAUTION: Sensor Platforms are supplied without a G-Pod installed. Make sure you install a G-Pod.

14. Wiring Diagram

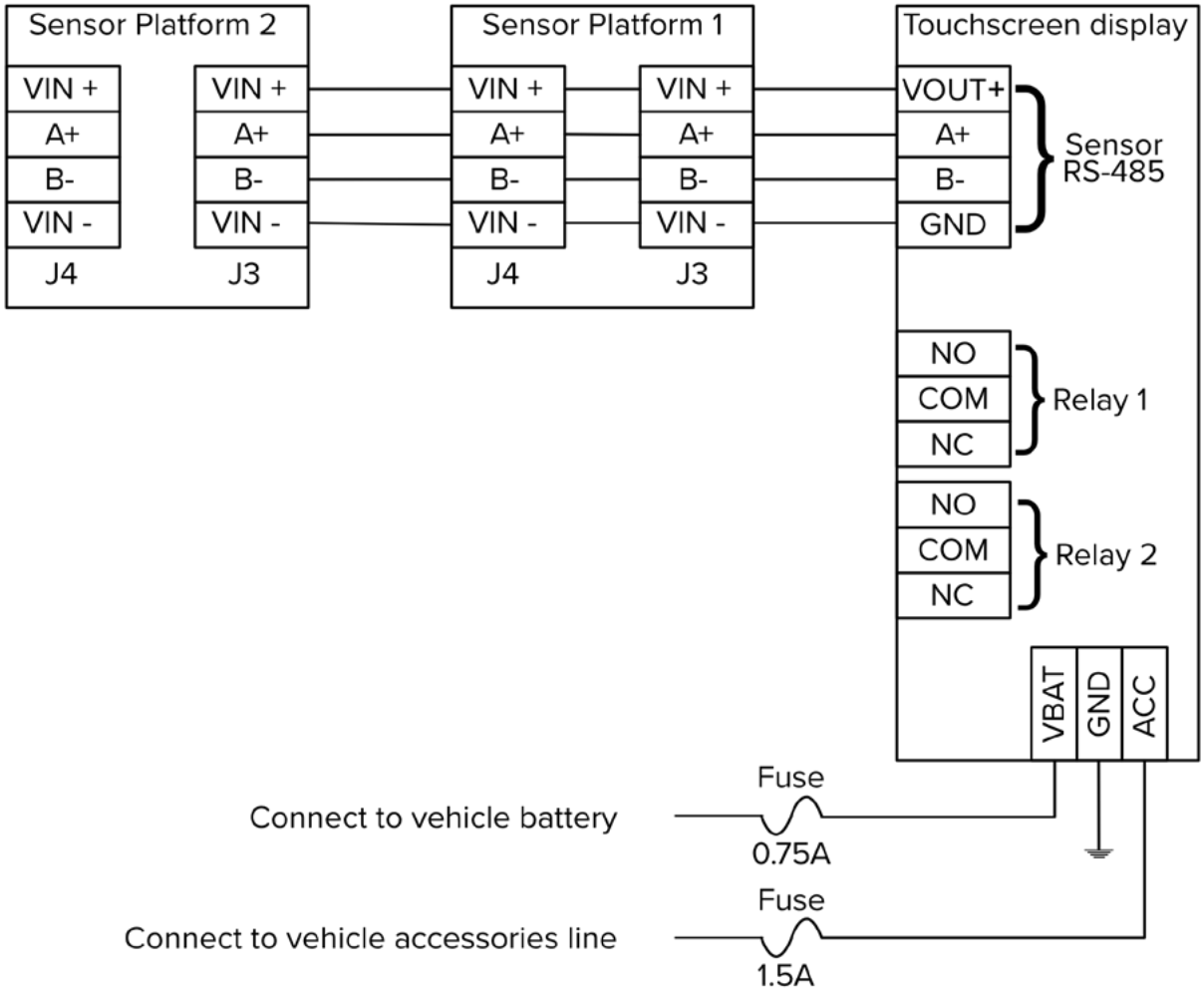

Figure 26. G-Shield Fire system wiring diagram.

Note: J3 and J4 are interchangeable.

Note: Gastech recommends inline fuses for both power feeds. Refer to figure 26 for the fuse values.

15. Cable Information

Use four core sheathed cable between the touchscreen and the Sensor Platforms. The maximum cable length permitted is 20 m.

Use stranded tinned copper conductors in a PVC jacket. Cable size of 16 AWG to 22 AWG is suitable. The maximum allowable outside diameter (OD) is 6.5 mm. Use insulated bootlace ferrules to avoid damage to the copper conductors.

Note: You can use equivalent alternatives for this item.

16. Touchscreen Electrical Connections

The touchscreen has 2 inputs for power. VBAT supplies constant power to the Sensor Platforms. VBAT connects internally to VOUT+ on the sensor RS-485 connection. Constant power is necessary for the G-Pods. ACC supplies power to the touchscreen.

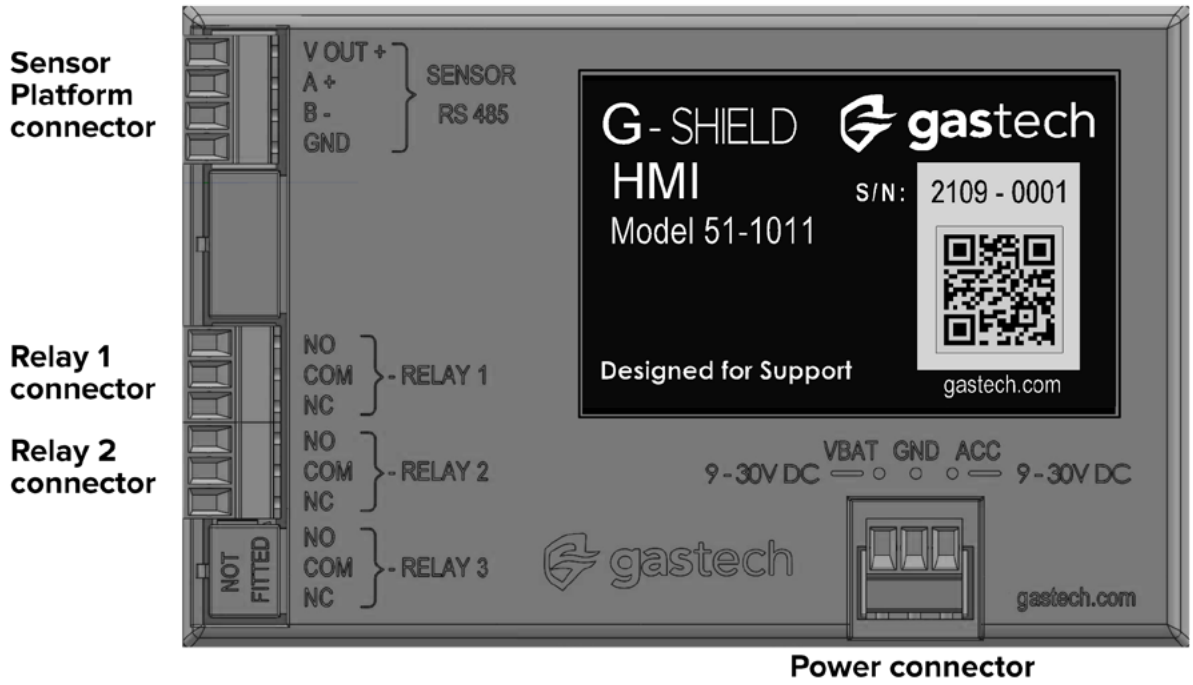

Figure 27. G-Shield Fire touchscreen PCBA electrical connections..

Label	Connection Description	Rating
VBAT	Positive supply from vehicle battery	9 - 30 VDC
GND	GND connection	
ACC	Positive supply from vehicle accessories circuit	9 - 30 VDC

Figure 28. Touchscreen PCBA electrical power connections.

Step 1. Connect the vehicle battery input to VBAT.

Step 2. Connect the vehicle accessories circuit to ACC. The touchscreen will turn on and off with the vehicle ignition.

Note: The G-Shield Fire can be installed into vehicles with a 12V DC or 24V DC electrical system.

17. Sensor Platform Electrical Connections

Label	Connection Description
VOUT+	Positive supply voltage to Sensor Platform
A+	Signal A
B-	Signal B
GND	GND supply voltage to Sensor Platform

Figure 29. Touchscreen PCBA Sensor Platform electrical connections.

Step 1. Connect the Sensor Platforms in series to the touchscreen.

Step 2. Use the same specification cable to connect to the second Sensor Platform.

Note: RS-485 is a balanced transmission standard. The end of the electrical transmission line must have a termination resistor.

Step 3. Set the switch SW1 to the ON position to use the built-in termination resistor for Sensor Platform 2.

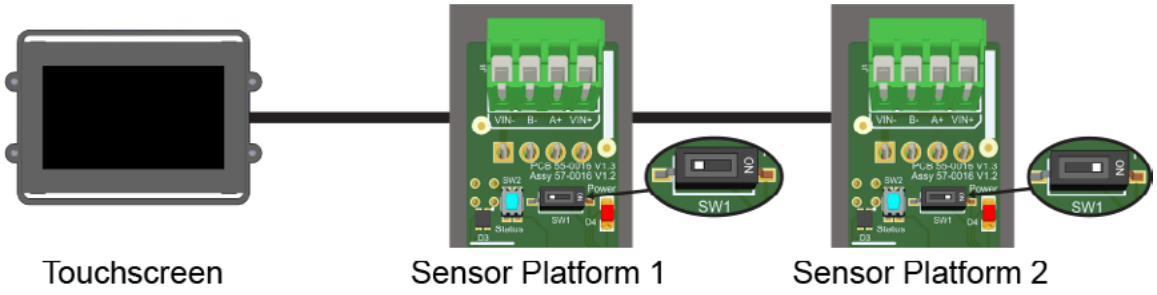

Figure 30. Sensor Platforms termination resistor settings.

18. Audible and Visual Alarm Electrical Connections

The touchscreen has two alarm relay outputs. Relay 1 can be muted. Relay 2 cannot be muted.

Label	Connection description
NO	Normally open relay contact
COM	Common relay contact
NC	Normally closed relay contact

Figure 31. Touchscreen PCBA alarm relay electrical connections.

Step 1. Connect the Relay 1 output to an external audible alarm indicator

Step 2. Connect the Relay 2 output to an external visual alarm indicator

Note: The relays are activated when the gas detected reaches the danger alarm level.

Note: Other relay connections may be used.

19. Response Test

CAUTION: The G-Shield Fire must be response tested before use.

Make sure you read the response test section of the full user instruction manual. Download a copy from our website at gastech.com/g-shieldfire.

20. Gastech Policy Statements

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Revisions to manual

All information contained in this manual is believed to be true and correct at the time of publication. However, as part of its continuing efforts to improve its products and their documentation, GasTech Australia reserves the right to make changes at any time without notice. Any revised copies of this manual can be obtained by contacting GasTech Australia Pty Ltd.