

Predictive Stop Arm™ (PSA) Quick Installation Guide

Service

If a PSA component is to be returned for service, please contact the Safe Fleet technical support team, provide the model and/or serial# of your SAM controller, and ask for a **Return Merchandise Authorization (RMA)** number. An **RMA#** allows the support team to better track your product when it comes in for service. Please show the RMA# on the **outside** of the package.

ANY PRODUCT SENT WITHOUT AN RMA# MAY BE REFUSED!

Technical Support

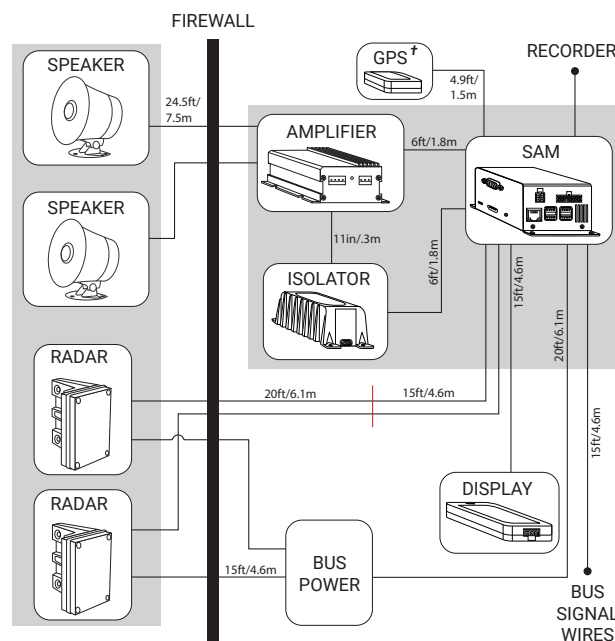
- Email: Ptsupport@safefleet.net
- Phone: 1.844.899.7366

Documentation

Additional copies of this guide, along with other supporting documentation can be found on the Safe Fleet Community (<https://community.safefleet.net>)

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System Diagram



† GPS may be provided by an external source: installations that include both PSA and the Safe Fleet Right-hand Danger Zone (RHDZ) system share location data from a single GPS receiver. For instructions, see the *Sharing GPS Data between Right-hand Danger Zone (RHDZ) addendum* to this guide (part #700-1195).

System Components

1x SAM Controller 	1x SAM Power Harness Kit - 20ft/6.1m 	1x SAM I/O harness 15 ft/4.6m 
1x FORWARD Radar 1x REAR Radar 	2x Radar I/O harness 20 ft/6.1m & 15ft/4.6m legs 	1x SAM Display 
2x Exterior Speakers 	1x Audio Amplifier 1 x Speaker Harness plus 24.5ft/7.5m extension 	1x Ground Loop Isolator 
1x Audio Connector 6ft/1.8m 	1x Amplifier Power Splitter 6ft/1.8m, & Harness) 	1x GPS Receiver magnet mount 

Introduction

Installation of the PSA system is for certified personnel only. For more information, please contact Technical Support.

Vehicle-specific Planning

Important aspects of a PSA installation depend on implementation details, including:

- School bus body and cab interior configuration
- Vehicle mechanical/electrical design
- Pre-existing equipment

Before proceeding, carefully consider the guidelines and recommendations in this document, and discuss component mounting locations with the customer.

System Installation

Functional requirements:

- Allow physical space around components; account for bulky I/O harnesses, wiring, fuse holders, and connectors
- Consider harness runs, including access to power relays or interface panels
- Do not block operator sight lines (windows/mirrors)

For component requirements, see the mounting procedures below.

Initial Configuration

After installing components, you must set up the system to operate correctly. For instructions, see the *PSA User Guide* (700-1176).

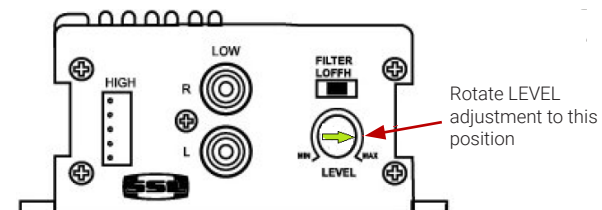
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Mounting the SAM Controller and GPS Receiver†

- In addition to the system mounting requirements:
 - Allow sufficient clearance for harness and cable connections to SAM ports. For details, consult the Wiring Diagram in this guide.
 - Vertical, horizontal, and hang-mounting are all acceptable. Do not orient the unit with the SD card facing downward.
 - Do not expose the SAM to moisture.
 - Ensure airflow around the SAM is unrestricted.
- Secure the SAM Controller to the mounting surface with the 4 supplied self-drilling screws.
- Attach the GPS unit to a ferrous metal surface. The cable (4.9ft./1.5m) must reach a SAM USB port. For best results, place the unit close to the windshield edge and ensure the top side faces up.

Mounting the Audio Amplifier and Ground Loop Isolator

- In addition to the system mounting requirements:
 - Do not expose these components to moisture, and keep away from any sort of heat outlet, heater, or AC blower.
 - Avoid locations near electrical circuits.
 - The amplifier must be mounted within 10 inches of the isolator unless a cable extension is used.
- Set the amplifier input **LEVEL** adjustment to the position indicated:



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- Mount the amplifier:
 - Remove the 4 soft washers from the supplied strip, and apply the sticky side of each washer to the underside of the amplifier at the 4 mount points.
 - Secure the amplifier to the mounting surface with the 4 supplied screws/lockwashers. Secure the isolator to the mounting surface with the 4 x #8 x 3/4" screws.

Mounting the SAM Display

- In addition to the system mounting requirements:
 - DO NOT BLOCK OPERATOR SIGHT LINES.**
 - Mount on a flat surface. Choose a prominent location within the operator's peripheral vision, preferably at eye-level: we recommend the A-pillar (lined-up with the bottom half of the side mirror) or just above the driver's console.
- Remove the backing from the 2-sided tape on the rear of the display.
- With the car image facing you, and the Safe Fleet logo toward the ground, press the display against the mounting surface until it sticks.

Mounting Speaker Horns

- In addition to the system mounting requirements, place speakers so sound projects out/toward students exiting the bus. For example:
 - in the engine compartment - on the radiator frame, or just inside the grille (mount as close as possible to openings)
 - in a cavity under the bus floor (e.g. behind the entrance door)
 - on the firewall, or frame-mounted (downward-facing)
 - Avoid mounting speakers on exterior bus panels**
- Remove the mounting plate from a speaker horn, and use the plate to mark the screw holes on the mounting surface.
- Drill the screw holes, then mount the bracket to the surface.
- Place the speaker in the bracket so the holes line up, and secure the speaker.

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Mounting Locations

- Choose where to mount the SAM controller before planning for other components.
- Locate SAM controller, Amplifier, and Ground Loop Isolator in proximity.
- Radar modules mount on the driver's side exterior, min. 10ft. (3.05m) from the front bumper (typically under the stop arm).

Harnesses

Determine routing and cable lengths:

- Two I/O harnesses run from the radar modules to the SAM inside the bus (generally through the firewall). The serial leg is 20ft./6.1m with two DB9 connectors. The SAM I/O (5 wires) and power (2 wires) legs are 15ft./4.6m.
- The radar I/O serial leg (DB9) connections are only used temporarily for configuration and logging, and are not required for normal system operation.

Label harnesses:

- Find a suitable area outside the bus to lay out wiring
- On each radar I/O harness, attach 3 supplied "Forward" labels to the legs:
 - Aviation connector (radar end)
 - DB9 connector (serial leg)
 - 5-wire I/O

The 2-wire power connection does not require labeling.
- Use 3 supplied "Rear" labels to repeat the process for the other harness. Reference the labels to make proper connections during system installation and configuration procedures.

Create Looms

- Use appropriate conduit and/or bind with tape or zip ties.

Mounting Radar Modules

- Radar modules are labeled **FORWARD** and **REAR**:
 - Mount on the driver's side bus panel, minimum 10ft. (3.05m) from the front bumper** (typically beneath the Stop Arm).
 - Select a flat location to minimize potential moisture leakage into the vehicle.
 - Attach a supplied "Forward"/"Rear" label near the connector on each radar pigtail.
- Use the supplied drilling template:
 - Drill the 2 module cable holes (1 5/16")
 - Drill 3 pilot holes (5/32") for each module's mounting screws.

Important: Before proceeding, ensure you know how I/O harnesses will route from inside the bus and out to the radar modules. For more information see the *PSA Installation Guide*.

- Run the 8-pin aviation connectors from radar module pigtails through the panel cable holes, and thread into the forward and rear radar I/O harnesses.
- Use the 3 supplied #10 x 1 1/4" Phillips screws to secure each radar module to the panel.
 - Ensure the rubber backing of the radar module is flat against the panel surface, with the round rubber grommet inside the cable hole.
 - We recommend caulking around the edges of the radar module base.

Wiring the System

Follow the Wiring Diagram at the end of this guide. For detailed procedures, see the *PSA Installation Guide* (700-1144).

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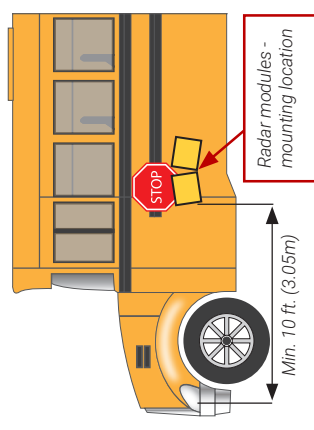
Wiring Diagram

Cable Legend

- 1** Radar I/O harness (060-1168) 20ft/6.1m (DB9 and SAM I/O legs), 15ft/4.6m (power leg)
- 2** SAM I/O harness (060-1117) 15ft/4.6m
- 3** Power splitter harness (060-1166) 6ft./1.8m
- 4** SAM power harness (PH2X2MFJR) 20ft/6.1m
- 5** SAM audio connector (085-1096) 6ft./1.83m
- 6** Speaker cable extension (060-1155) 24.5 ft/7.5m

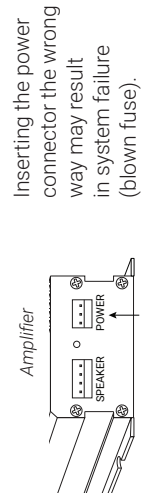
IMPORTANT: Radar module placement

Mount radar modules a minimum of 10ft. (3.05m) from the front bumper.



CAUTION: Amplifier Power Harness

With the amplifier oriented as shown below, the 1x3 connector on the power harness must be inserted into the connector housing with the orange wire on the left and the red wire on the right.



1x3 Power Harness Connector

