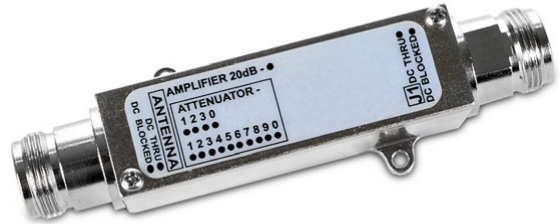


# GPS Inline Amplifier

Model 8227

## Installation Guide



# 1. Introduction

An inline amplifier is required whenever long antenna cable length attenuates the GPS signal below the receiver's recommended minimum input level. The maximum cable length permitted without an inline amplifier depends on the cable and receiver types used. Safran products use a GPS receiver that permits up to 12 dB cable loss. Using Safran CAL7xxx or Times Microwave LMR-400 coax, an amplifier is needed whenever antenna cable lengths exceed 200 feet.

The Model 8227 GPS Inline Amplifier, shown in Figure 1, extends the maximum cable length to 600 feet. The Model 8227 provides 20 dB of gain and is powered by the GPS receiver.

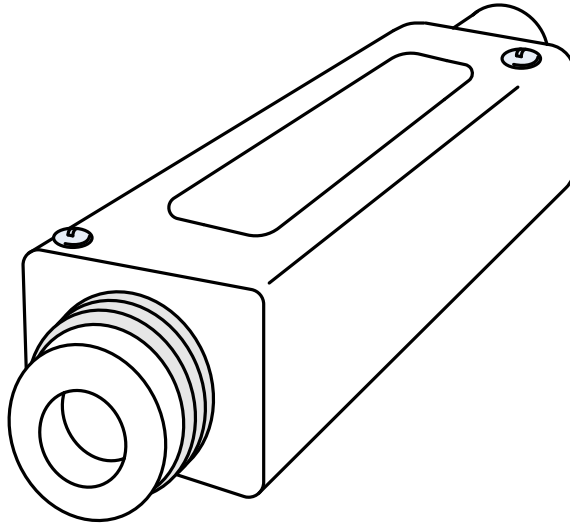


Figure 1: Model 8227 GPS Inline Amplifier

## 2. Specifications

**Connectors:** Type N Female  
**Gain:** 20  $\pm$ 3 dB  
**VSWR:**  $\leq$ 1.8:1  
**Power:** 3.6 - 15 VDC, 15 mA maximum

**Note:** The Safran Model 8226 Impulse Suppressor clamps voltage at 6 VDC.

## 3. Setup and Installation

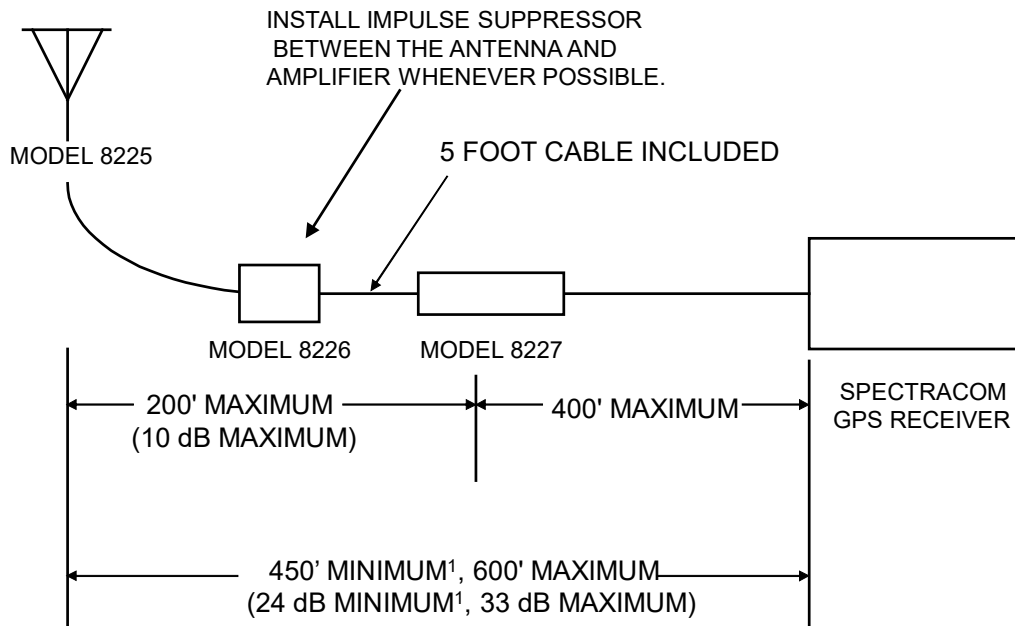
Each Model 8227 includes two clamp type male N connectors. These connectors can be used to splice the Model 8227 into the antenna coax. The connectors are compatible with Safran CAL7xxx cable assemblies or Times Microwave LMR-400 equivalent coax. Connector assembly instructions are found in Section 3.1.

A five-foot long coaxial cable is also provided with each Model 8227. This cable connects the amplifier to the surge suppressor. This cable is rated for indoor usage only.

Refer to Figure 2 for Model 8227 installation guidelines. The cable lengths shown in Figure 2 represent Safran CAL7xxx cable. The equivalent cable loss expressed in dB is provided for reference when using other cable sources.

Place the inline amplifier within 200 feet (~10 dB cable loss) of the antenna to optimize the signal to noise ratio. Whenever possible install the inline amplifier indoors after the impulse suppressor using the supplied 5-foot cable. The amplifier can be installed outdoors, providing care is taken to weatherproof the connections.

Due to unique system dynamics of the antenna, amplifier and receiver, a minimum of cable length of 450 feet (24 dB cable loss) is required to prevent overloading the GPS receiver used in the Models 8183, 8183ES and 8189. The GPS receiver used in all other Safran products do not require a minimum cable length.



1. Minimum cable required for Models 8183, 8183ES and 8189.

Figure 2: Cable Guidelines

### 3.1. Assembly Instructions (Part Number P051-0001-0100 Type N Connectors)

The table below lists the recommended tools needed to assemble the connectors. Verify all parts of the connector have been received as shown in the connector diagram below.

Tools Required
Sharp Knife or Razor Blade
Cable Cutter
Soldering Iron and Solder
Ruler
Wire Cutters/Scissors
5/8" Open End Wrench
11/16" Open End Wrench
Multimeter

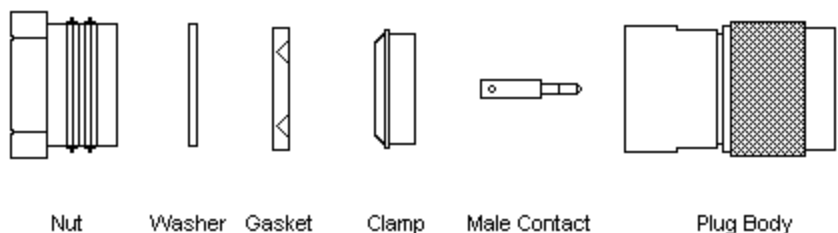
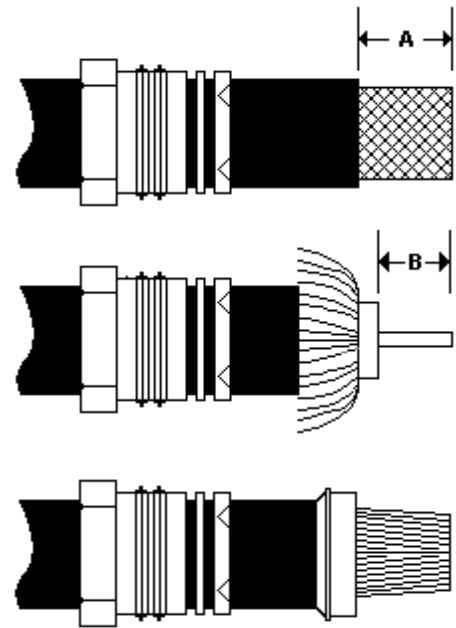


Figure 3

1. Cut the cable end squarely and place the nut, washer, and gasket onto the cable as shown. Make certain the gasket's "V" groove is oriented towards the end of the cable. Cut the cable jacket back to dimension A of 0.460 inches (11.7 mm). Do not cut or nick the braid.
2. Comb out the braid and fold back to expose the dielectric. Cut the dielectric back to dimension B of 0.234 inches (6.0 mm). Do not cut or nick the center conductor.
3. Comb the braid forward and slide the clamp onto the cable as shown. Make certain that the beveled edge of the clamp is oriented towards the gasket "V" groove to form a weatherproof seal.
4. Fold the braid back over the clamp. Comb the braid to evenly distribute it over the clamp and trim to the proper length as shown.
5. Verify there is no braid or dielectric foil that may short against the center conductor. Tin the center conductor and then solder on the male contact as shown.
6. Insert the cable assembly into the connector body. Verify the gasket "V" grooves fit into the clamp edges. Hold the body with the 11/16" wrench and tighten the nut using the 5/8" wrench. Using the multimeter, measure continuity of the center conductors on each end of the cable. It should be close to 0  $\Omega$ . Measure the continuity between the center conductor and connector body. It should be an open circuit.



## 4. Document Revision History

Rev	Description	Date
C	Document revised with new style and illustration. Power specifications updated.	
D	Corrected to 12dB loss figure.	
E	Minor maintenance & adjustments made to reflect hardware changes (cable jacket dimensions).	
6	Switched to Safran branding.	July 2024

## 5. Safran Technical Support

For technical support, product specifications, and additional documentation, you can visit <https://safran-navigation-timing.com/support-hub/> to submit a support request.

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