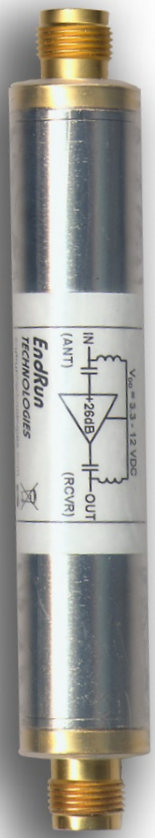
EndRun TECHNOLOGIES
"Smarter Timing Solutions"

INSTALLATION GUIDE

# Rooftop GPS Antenna with LNA

**EndRun produces a GPS Low-Noise Amplifier (LNA) which is a very high-performance, low-noise, low-power-drain, inline amplifier for difficult GPS signal environments and long cable runs (greater than 250 feet of Belden 9104 or 1505A). This installation guide contains instructions for adding one or more LNAs. See the Rooftop-Mount GPS Antenna Installation Guide that was included with your GPS Antenna Kit for general information on the best place to mount a GPS antenna and for safety guidelines.**

IN from GPS antenna




Connect end marked IN to cable that goes to antenna.
Connect end marked OUT to cable that goes to receiver.

OUT to GPS receiver

## Step 1
Locate end of antenna cable with TNC connector. Run this end through the antenna mounting pipe and connect to the LNA (to the end marked "OUT").

## Step 2
Connect the short cable (12 inches long) between the LNA (the end marked "IN") to the base of the antenna as shown on the reverse.

## Step 3
Thread the antenna mounting pipe into the base of the antenna. Excessive force is not necessary and may damage threads. Do not use thread locking compound.

## Step 4
Secure the antenna mounting pipe to roof structure or roof pipe using hose clamps as shown on the reverse.

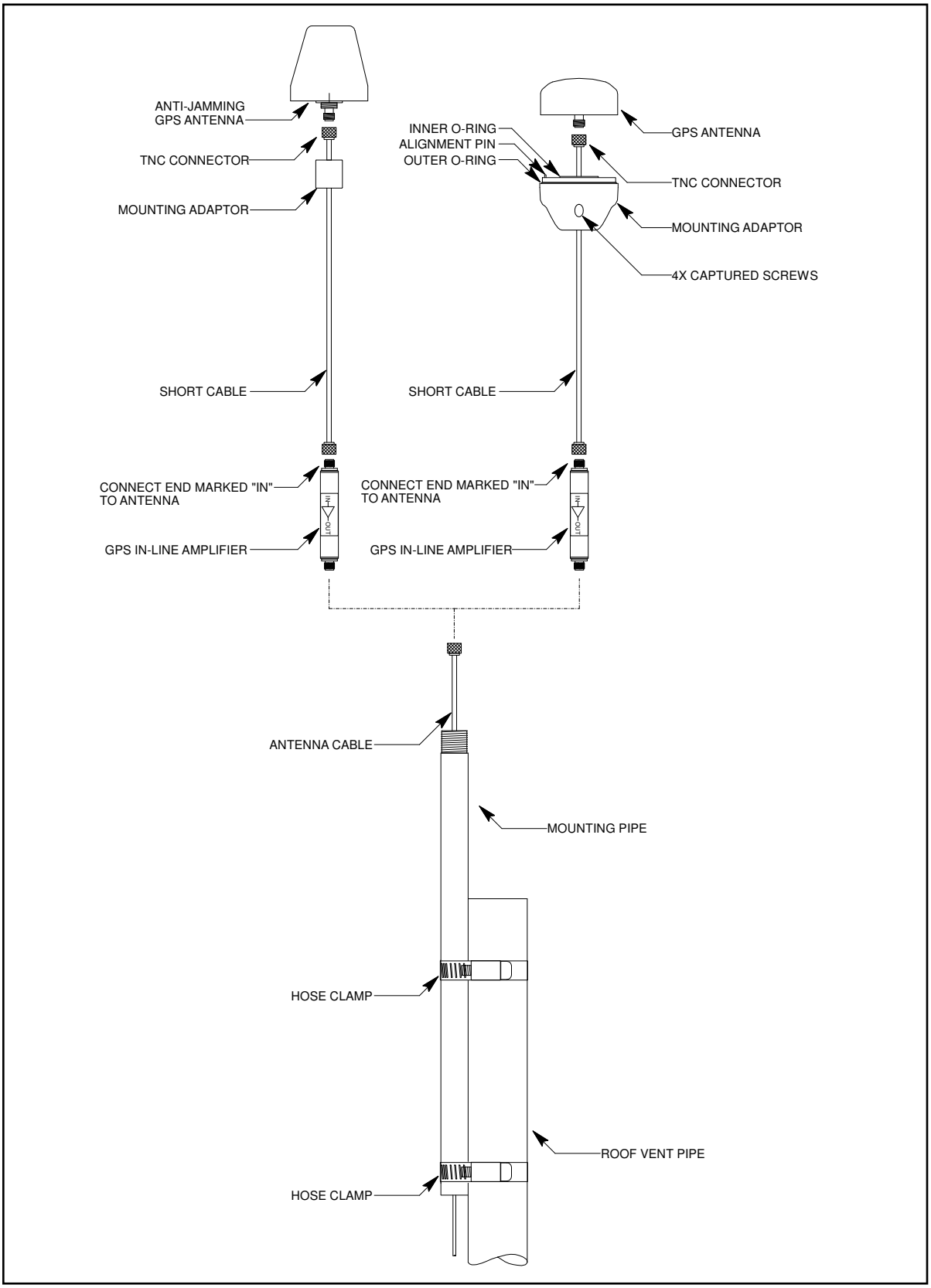
## Step 5
Run the antenna cable into your building and connect to GPS antenna connector on your unit. Do not bend the cable too tightly as this may result in permanent cable damage.
NOTE: If possible, do not bend or coil the cable anywhere near the antenna or preamp.

## Using Two or Three LNAs
Installation for one LNA is simple. But the physical layout of two or three LNAs is critical. An improper installation can cause feedback to the antenna. This may create problems for both your GPS receiver and any antennas nearby. If you cannot comply with the directions below contact EndRun Technologies for help with your specific situation.

LNAs should be in a straight line down from the bottom of the antenna. No bends or loops. Double-shielded cable such as Belden 9104 or 1505A is required. It is best to locate the third LNA (if any) as far as possible from the antenna. Here is the suggested configuration for an antenna installation with two or three LNAs:

| Two LNAs | Three LNAs |
|---|---|
| GPS Antenna | GPS Antenna |
| One-foot cable | One-foot cable |
| LNA | LNA |
| One-foot cable | One-foot cable |
| LNA | LNA |
| Up to 750 feet (228 meters) of cable. | Up to 1,000 feet (305 meters) of cable. |
| EndRun product | LNA |
| | One-foot cable |
| | EndRun product |

# GPS Antenna Rooftop-Mounting Guidelines with LNA





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