General

This instruction sheet contains all necessary information required to assist in the correct installation of RFS Single Band 125mm Profile Panel Antennas. These antennas can be supplied with either manually adjustable electrical downtilt or AISG-compatible remotely controlled electrical downtilt. Mechanical downtilt is also available if required, depending on the type of mounting kit selected.

The following symbols can be found next to text outlining important information.

⚠️ Please follow the procedure marked with this symbol precisely. Non-compliance may lead to damage of the product.

💡 Handy tips when installing product.

Unpacking

Make sure that the antenna and the accessory items listed below have been provided and have not been damaged during transport.

- Antenna
- Mounting kit (mounting kit components are given on mounting assembly drawing supplied).
- Hex Keys (4 and 6mm AF)

Installation Instructions

1. Ensure a torque spanner is used when tightening fasteners, see table below for the correct torque specification.

<table>
<thead>
<tr>
<th>Fastener size</th>
<th>M8</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stainless Steel Nut Torque</td>
<td>9-10 Nm</td>
</tr>
<tr>
<td>Stainless Steel Screw Torque</td>
<td>See Figs Below</td>
</tr>
</tbody>
</table>

2. Ensure mounting pipe diameter is within the range specified on the mounting kit assembly drawing. For high wind locations a pipe diameter between 75mm and 100mm is recommended.
Assemble mounting kit as per Figures 2 and 3 of this document

1. Attach the mounting kit assembly to the antenna, before trying to clamp the bracket to the pole.

**Figure 1:** Correctly Assembled Mounting Bracket for Fixed Downtilt Antenna

**Figure 2:** Fixed Downtilt Mounting Bracket Exploded Assembly

**Figure 3:** Fixed Downtilt Mounting Bracket Assembled onto Panel Antenna
Assemble upper mounting bracket as per Figures 5 and 6 of this document

1. Attach the upper mounting bracket assembly to the antenna, before trying to clamp the bracket to the pole.

2. A scale of the indicated downtilt is provided on the sliding bracket.
   - Use scale ‘A’ when the difference between the mounting brackets is 685mm.
   - Use scale ‘B’ when the difference between the mounting brackets is 1145mm.
   - Use scale ‘C’ when the difference between the mounting brackets is 610mm.
   - Use scale ‘D’ when the difference between the mounting brackets is 1010mm.

3. Accuracy of the indicated downtilt angle is dependent on vertical accuracy of the mounting pole. More accurate results can be achieved using an inclinometer on the rear of the antenna.

4. It is not recommended that this downtilt kit be used for very high wind areas if the antenna length exceeds 800mm.

**Figure 4:** Correctly Assembled Top Mounting Bracket for Mechanically Adjustable Downtilt Antenna

**Figure 5:** Upper Mounting Brackets Exploded Assembly

**Figure 6:** Upper Mounting Brackets Tilt Position Examples
Assemble lower mounting bracket as per Figures 7 and 8 of this document

1. Attach the lower mounting bracket assembly to the antenna, before trying to clamp the bracket to the pole.

2. Leave the M6 bolts secured firm, but do not tighten them until the desired downtilt of the antenna has been obtained by adjusting the upper mounting bracket. Then tighten the M6 bolts to specification.

**Figure 7:** Lower Mounting Brackets Exploded Assembly

**Figure 8:** Lower Mounting Brackets Assembly Detail

TORQUE: 5-6 Nm

NUT TORQUE: 9-10 Nm
Electrically Adjustable Downtilt Antennas

The beam downtilt below the horizon is adjusted in the range of 0° to 10° by rotating the hex socket located at the bottom of the antenna (see Figure 9). Turning the hex socket in a clockwise direction increases the beam downtilt below the horizon. Turning the hex socket in an anti-clockwise direction decreases the beam downtilt below the horizon.

AISG Compliant Adjustable Downtilt Antennas - Fitted with Remote Downtilt Adjustment

AISG Compliant antennas are compatible with AISG compliant control unit equipment, such as the RFS CNI-P2A20 AISG controller. For operation of antennas using AISG compliant controllers see controller documentation.

Figure 9. AISG Compliant Adjustable Downtilt Antenna showing Hex Socket for Manual Adjustment and Horizontal Angle Indicator Scale protruding past face of base.

Electrically Adjustable Downtilt Antennas – Indicator Scale

The downtilt angle in degrees below the horizon is read from the angle indicator scale at the point of protrusion from the antenna base plate. As the downtilt is increased, the indicator scale protrudes further past the face, revealing further graduations of degrees.

WARNING: During downtilt adjustment ensure the hex socket is not turned past the range of 0° to 10° as shown on the downtilt indicator scale. Forcing the hex adjustment beyond this point may lead to damage of the downtilt mechanism. Using power drills and electric screwdrivers to adjust downtilt may also lead to damage of the downtilt mechanism.

WARNING: Do not adjust the downtilt when the temperature is below -20° C. Adjustment below this temperature may lead to damage of the downtilt mechanism.
SAFETY WARNING!

Transmitters connected to this antenna should be turned off prior to servicing / repairing or entering the near field of this antenna. ANSI (IEEE) C95.1-1999 Standard for Safety Levels with respect to human exposure to Radio Frequency Electromagnetic Fields 3KHz to 300GHz provides guidelines for determining the minimum protection distance from a radiating antenna in a controlled environment. Chart A below illustrates recommendations for minimum distance from VHF-UHF antennas vs. Effective Radiated Power (ERP). ERP is the total transmitter power into the antenna times the antenna power gain. (See Chart B)

![Chart A](chart_a.png)

![Chart B](chart_b.png)

These are theoretical calculations in free space with equal radiation in all directions. The actual mounting configuration terrain and antenna pattern may affect radiation intensity. If you require a detailed analysis of these specifics, RFS can provide a reference list of professional consultants. A list of companies providing field strength meters and test equipment is also available.
This product was designed and manufactured as a component of a professional communication system. It is intended to be installed by a professional installer. If you are not a professional installer, please contact your dealer for professional assistance.

**WARNING!**
INSTALLATION OF THIS PRODUCT NEAR POWER LINES IS DANGEROUS FOR YOUR SAFETY; FOLLOW THE GENERAL SAFETY DIRECTIONS

Each year, hundreds of people are killed, mutilated, or receive severe permanent injuries when attempting to install or remove an antenna. In many of these cases, the victim was aware of the danger of electrocution, but did not take adequate steps to avoid the hazard.

For your safety, and a proper installation, please READ and FOLLOW the safety precautions that follow – THEY MAY SAVE YOUR LIFE.

Save these instructions for future reference. The same precautions will apply when dismantling an antenna.

### GENERAL SAFETY DIRECTIONS

1. Select your installation site with safety, as well as performance, in mind. Remember: ELECTRIC POWER LINES, PHONE LINES AND GUY WIRES LOOK ALIKE. FOR YOUR SAFETY, ASSUME THAT ANY OVERHEAD LINES CAN KILL YOU.

2. Call your electric power company. Tell them your plans and ask them to come look at your proposed installation. This is little inconvenience, considering YOUR LIFE IS AT STAKE.

3. Plan your installation procedure carefully and completely before you begin. Successful raising of a mast or tower is largely a matter of coordination. Each person should be assigned to a specific task, and should know what to do and when to do it. One person should be designated as the "boss" of the operation to call out instructions and watch for signs of trouble.

4. When installing your antenna, REMEMBER:
   - DO NOT use a metal ladder.
   - DO NOT work on a wet or windy day, especially during electrical storms or when there is thunder and lightning in the area.
   - DO dress properly – shoes with rubber soles and heels, rubber gloves, long sleeve shirt or jacket.

5. If the assembly starts to drop, get away from it and let it fall. REMEMBER: The antenna, mast, cable, and metal guy lines are excellent conductors of electrical current. Even the slightest touch of any of these parts to a power line completes an electrical path through the antenna and the installer – THAT’S YOU!

6. If any part of the antenna system should come in contact with a power line, DON’T TOUCH IT OR TRY TO REMOVE IT YOURSELF. CALL YOUR LOCAL POWER COMPANY. They will remove it safely.

7. If an accident should occur with the power lines: DON’T grab hold of the person in contact with the antenna and power line or you too will be electrocuted. Use a DRY board, stick or rope to push or pull the victim away from the antenna. If the victim has stopped breathing, administer artificial respiration – and stay with it. Have someone call for medical help.

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Radio Frequency Systems

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