

Antenna Control Unit (ACU) Model Numbers: ACU-A11-N, ACU-A11W-N, ACU-A11S-N (AISG v1.1 Compliant)
ACU-A20-N (AISG v2.0 Compliant), ACU-A20-S (Slim ACU AISG v2.0 Compliant)

MODELS ELIGIBLE FOR UPGRADE

All RFS variable tilt antennas with an external ACU mount.

REQUIRED UPGRADE COMPONENTS

The following items must be purchased for accurate upgrades:

- (As needed) ACUs, RFS Model Numbers listed above
- (As needed) .3m AISG cable, RFS Model Number CA003-7
- (If needed) Additional cables or jumpers

MOUNTING INSTRUCTIONS

IMPORTANT: This section only applies when antennas are NOT pre-configured with ACUs at the RFS factory.

NOTE: RFS recommends recording the ACU and antenna serial numbers along with documenting the existing ELECTRICAL and MECHANICAL tilt angles for all antennas fitted with ACUs.

1. Install the ACU antenna interface plate if necessary. This is only required for certain antennas. Attach the plate to the antenna using the screws and washers provided.
2. Manually check that the VET hex socket mechanism (located at the bottom of the antenna) is not locked at the mechanical stop with a 5mm hex key. If it is locked, rotate key clockwise until unlocked.
3. Attach the ACU onto the antennas as shown in **figure 1**.
4. Engage the hex shaft of the ACU with the antenna. Rotate the ACU until the hex shaft engages. It is important to ensure that the hex shaft is engaged prior to tightening the screws.
5. Screw the ACU to the antenna using the two captive screws and washers attached to the ACU. Tighten the screws incrementally to ensure the ACU is not mis-aligned.

NOTE: Keep the cap on the daisy-chain connector if the daisy chain feature is not used.

6. The antenna must be calibrated with the appropriate antenna configuration file. For more details refer to either the **RFS NEM-ALD-A** or the **NEM-ALD-S** User Guides.

NOTE: Verify antenna configuration before installation. The antenna configuration file CANNOT be updated through OEM RRH/BTS controllers after installation.

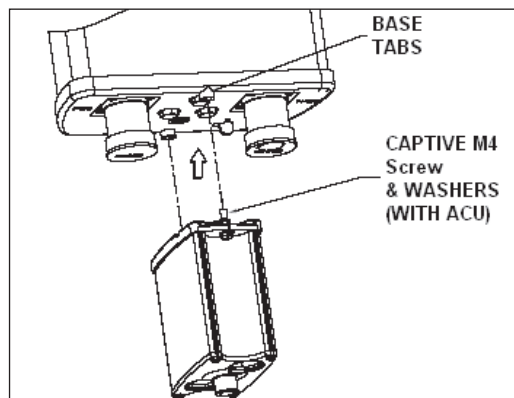


Figure 1 Typical single band installation

RECOMMENDED TOOLS

The following tools are needed for proper installation:

- Pozidrive PZ2 Screwdriver – for mounting ACU
- Allen Wrench / Hex Key, 5 mm – for adjusting downtilt

AISG CONNECTIONS (Internal & External)

IMPORTANT: This section applies to both internal and external ACU configurations (**page 1 & 2**).

1. On the antenna connector end plate select one RET on the left or right side of the antenna. The selected ACU is the one that will receive the AISG cable from either the BTS/RRH or the AISG TMA as shown in **figure 2**. This AISG cable is connected to the AISG port, male type, of the selected ACU (ACU #1).

NOTE: AISG ports are bi-directional. RFS AISG cables are 1 male / 1 female AISG connectors. If the AISG cable coming from the BTS or the TMA has a male connector, it can be connected to the female port of ACU # 1. Then male / female ports in the following steps have to be simply switched.

2. Use an AISG cable to connect ACU #1 female port to the adjacent ACU AISG male port. ACU #2 is now connected in daisy-chain.
3. Repeat step 2 for daisy-chaining ACU #2 with the ACU next to it (ACU #3) if the antenna has more than 2 ACUs attached.
4. Repeat step 3 in order to connect all ACUs in daisy-chain.
5. RFS recommends that a dielectric grease be applied between the AISG connectors per RFS instructions 412828.

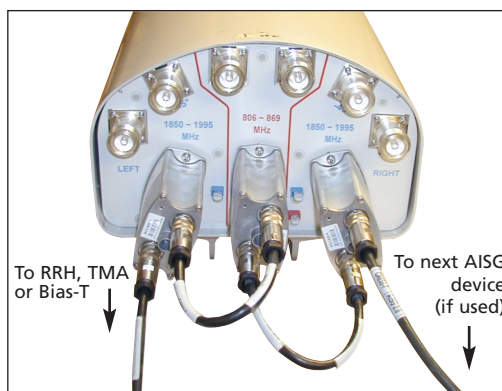


Figure 2 Typical daisy chain configuration



When electrical storm activity is present at ACU site, **DO NOT** install ACU (or antennas), or operate system from site. If adjustment is required, operate from a remote location only.

Antenna Control Unit (ACU) Model Number: ACU-A20-S (Slim ACU AISG v2.0 Compliant)

MODELS ELIGIBLE FOR UPGRADE

The following base station antennas can be upgraded to RET:

- APXVERR20X-C / APXVFRR12X-C / APXVFRR18X-C
- All RFS multi-band antennas with an internal slot for ACU-A20-S mounting

REQUIRED UPGRADE COMPONENTS

The following items must be purchased for accurate upgrades:

- (1-3) Remote tilt units, RFS Model Number ACU-A20-S
- (1-3) mounting adaptor kits for one ACU-A20-S, RFS Model Number ACU-MB1
- (If needed) 0.3m AISG jumper cables between ACUs, RFS Model Number CA003-7
- (If needed) Additional AISG cables towards the BTS or RRH, RFS Model Number for a 3 meter AISG cable CA030-7

RECOMMENDED TOOLS

The following tool is needed for proper installation:

- Torx screw driver T20 – for fixation of the ACU (1.7 Nm for all screws)

MOUNTING INSTRUCTIONS

IMPORTANT: This section only applies when antennas are NOT pre-configured with ACUs at the RFS factory.

NOTE: RFS recommends recording the ACU and antenna serial numbers along with documenting the existing ELECTRICAL and MECHANICAL tilt angles for all antennas fitted with ACUs.

1. Manually check that the downtilt adjustment is NOT locked at the mechanical stop. If it is locked, rotate the downtilt button clockwise until it is unlocked.
2. Remove the 4 mounting screws from the cover plate ACU slot as shown in **figures 3 and 4**. Remove the cover plate so that the slot for the ACU is open.

NOTE: Keep the slot clean and do NOT insert any tools into the hole.

3. Position the ACU Adapter Plate onto the ACU and attach it with 2 screws and washers as shown in **figure 5**.
4. Carefully slide the ACU into the slot and engage the hex shaft of the ACU with the hex-socket on the antenna.

NOTE: The hex shaft MUST be engaged prior to tightening the screws.

5. Position the ACU Adapter Plate onto the antenna bottom plate and attach it with 4 screws and washers as shown in **figures 3 and 4**. Tighten the screws incrementally to ensure that the ACU is not misaligned.

6. Repeat for the other ACU slots if required.

NOTE: Keep the cap on the daisy-chain connector if the daisy chain feature is not used.

7. The antenna must be calibrated with the appropriate antenna configuration file. For more details refer to either the **RFS NEM-ALD-A** or the **NEM-ALD-S** User Guides.

8. Follow the AISG Connection Instructions on **page 1** and **figure 6** if needed.

NOTE: Verify antenna configuration before installation. The antenna configuration file CANNOT be updated through OEM RRH/BTS controllers after installation.

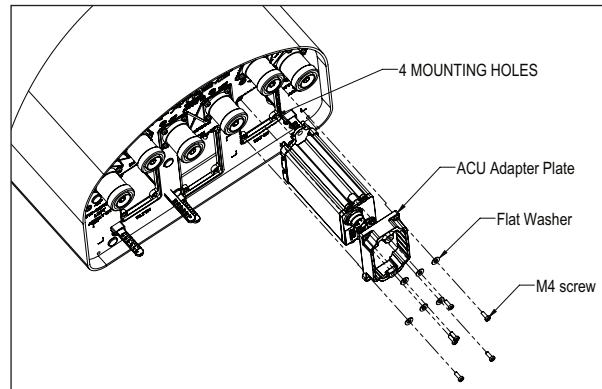


Figure 3 Typical multi-band installation

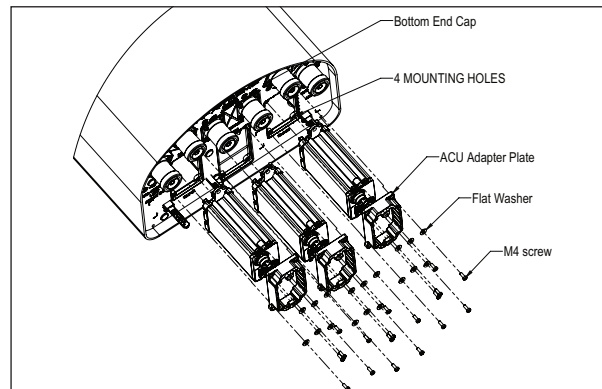


Figure 4 Typical multi-band installation

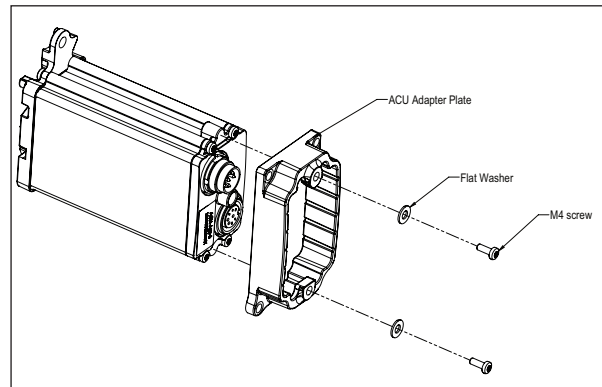


Figure 5 ACU Adapter Plate



Figure 6 Typical daisy chain configuration