

639526-WEB Revision T, May 2016

**CommScope Actuators**

ATM200-002, ATM200-A20, E-ATM300

This bulletin covers installation procedures for our CommScope line of actuators. Please refer to system configuration diagrams for each RET control application (Figures 11, 13, and 14).

**WARRANTY NOTICE**

Proper installation procedures must be followed when installing and operating RET equipment. Failure to assure installations are done properly by trained installation personnel and to follow procedures discussed in this bulletin may cause warranty for such products to be void.

**CommScope requires pretesting actuators on the ground prior to installation, using the portable controller and the latest version of the controller software** (available online at [www.commscope.com/resources/software](http://www.commscope.com/resources/software)). This will verify proper actuator functionality and also ensure that the latest available actuator firmware release is installed on the actuator. Failure to conduct pre-test and pre-installation procedures defined by CommScope will void warranty.

**Unauthorized removal of a protective shroud to replace actuators voids the CommScope warranty.**

**SAFETY NOTICE**

The installation, maintenance, or removal of an antenna requires qualified, experienced personnel. CommScope installation instructions are written for such installation personnel. Antenna systems should be inspected once a year by qualified personnel to verify proper installation, maintenance, and condition of equipment.

CommScope disclaims any liability or responsibility for the results of improper or unsafe installation practices.

It is recommended that transmit power be turned off when the field installation is performed. Follow all applicable safety precautions as shown on this page.



Do not install near power lines. Power lines, telephone lines, and guy wires look the same. Assume any wire or line can electrocute you.



Do not install on a wet or windy day or when lightning or thunder is in the area. Do not use metal ladder.



Wear shoes with rubber soles and heels. Wear protective clothing including a long-sleeved shirt and rubber gloves.

**PRE-INSTALLATION INSTRUCTIONS**

- Do not use the actuator as a lifting device for an antenna. Doing so is likely to damage the actuator and the coupling attachment on the antenna.
  - **It is required to connect the actuator to the controller and to test it ON THE GROUND before attaching it to the antenna. The actuator MUST be set to its original factory downtilt position, maximum downtilt, before installation on the antenna.**
  - Both data and power are provided through the RET connections on the actuator. The ATM200-002 and ATM200-A20 actuators have both an input and an output connector for ease in daisy chaining (Figure 10). The E-ATM300 type actuator also has two connectors, but it is intended to be used with controllers which support only one actuator per bus (Figure 12).
  - Each variable electrical downtilt adjuster requires its own actuator. For example, a single band antenna requires one actuator and a multi-band antenna requires an actuator for each frequency band (i.e. a dual-band antenna requires two actuators and a tri-band antenna requires three actuators).
  - The downtilt adjusters on the antenna should be checked before installing actuators to ensure they move freely. See Figure 4.
  - Carefully check to make sure that installation of the actuators will not require realignment of the antennas. It is assumed that the RF feeder or jumper cables are attached to the connectors of pre-installed antennas and appropriately weatherproofed.
- There is no need to disconnect the antenna RF feeder cabling, but it is recommended to turn off the transmit power when working around the antenna.
- RET connections are weather resistant and must not be weatherproofed.
  - Visit us online at [www.commscope.com/Resources/Software](http://www.commscope.com/Resources/Software) to download software updates. Updates include new antenna models compatible with the CommScope controller systems.

**LIGHTNING PROTECTION**

- CommScope actuators have built-in lightning protection.
- In order to provide additional protection either one of the following three components could be added to the top of a site: (a) AISG TMA, (b) lightning protection unit, or (c) junction box. These units need to be grounded.
- If none of these three units are used on the top, then the AISG cable needs to be grounded by a grounding kit.

## OPERATION NOTES FOR COMMSCOPE ACTUATORS

- The bottom of a site can be protected from surges and induced currents by using a lightning protection unit.
- The CommScope actuators are designed with an internal feature that safeguards against overheating, which may occur when the actuator is continuously moved over full-range for several minutes. This feature will generate a hardware alarm when activated.  
To clear the hardware alarm, use the **Clear Alarm** command from your controller. After the alarm has been cleared, wait 60 seconds before sending new actuator commands.
- The CommScope actuator is equipped with an LED located at the bottom of the actuator (Figure 12). This feature has been implemented to aid users at the tower base to visually identify actuator movement.
- The CommScope actuator has an absolute position sensor and does not require calibration.

## OPERATION NOTES FOR E-ATM300 ACTUATORS

- E-ATM300 actuators must be configured prior to installation on sites. Configurations must be made using CommScope EFCT software installed on a local computer. The E-ATM300 actuator will need to be connected to the CommScope ATC200-LITE-USB portable controller using a short CommScope AISG control cable (Figure 13). The controller is connected to the laptop with a serial cable (not a USB cable).
- Refer to Bulletin 639556 for operating the EFCT software.
- Final site installation has two setup options. Connect RET cables from the Ericsson ASC or RIU to actuators (Figure 14).  
For more information on the setup of the Ericsson RBS RET controller and other Ericsson components, refer to Ericsson customer product information.
- Download EFCT software from [www.commscope.com/Resources/Software](http://www.commscope.com/Resources/Software).

Note: The EFCT software is also required for uploading future firmware updates to the actuator.

## COMMSCOPE ACTUATORS INSTALLATION INSTRUCTIONS: Attaching The Actuator To An Antenna

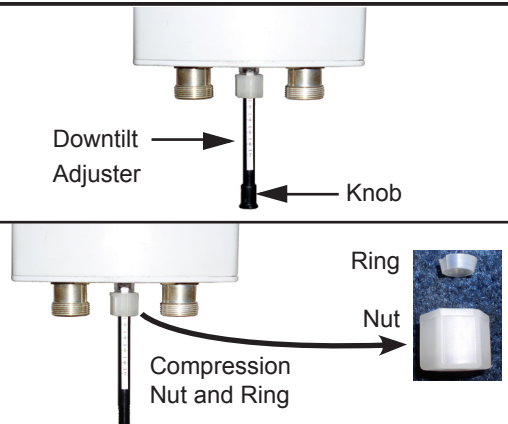
<p>STEP 1. Remove the knob located on the end of the antenna downtilt adjuster to expose the threads.</p> <p>STEP 2. Remove BOTH the compression nut and the compression ring to expose the threads.</p> <p>BOTH the compression nut and the ring must be removed so that the actuator can freely perform remote controlled adjustments to the antenna's electrical downtilt setting.</p>	
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Figure 1. Removing Knob, Compression Nut, and Ring.

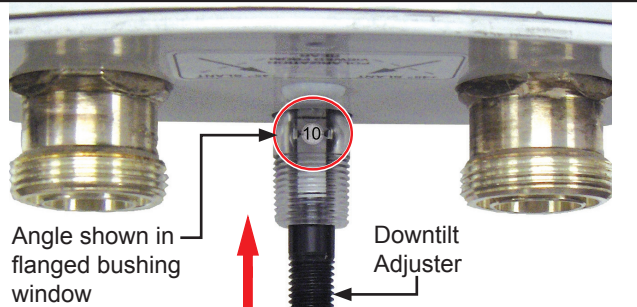
<p>STEP 3. Push the downtilt adjuster all the way in, and note the angle shown in the flanged bushing window. (This angle will be used in Step 16.)</p> <p>Note: The maximum tilt range may vary from antenna to antenna.</p>	
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Figure 2. Noting the Tilt Angle on Retracted Adjuster.

<p>STEP 4. Remove the adhesive backing from the silicone washer, and attach the washer to the jam nut. For washers that have three circular imprints on one surface, attach the adhesive silicone washer to the circular imprinted surface.</p> <p>STEP 5. Slide the rubber boot onto the clear bushing until it seats against the antenna.</p> <p>STEP 6. Thread the jam nut/silicone washer as far as it will go onto the clear bushing. Pull the rubber boot down onto the jam nut to make the tilt window visible.</p>	<p>Remove adhesive backing from washer.</p> <p>Attach washer to jam nut.</p> <p>Circular imprints</p> <p>Rubber boot</p> <p>Clear bushing</p> <p>Jam nut</p> <p>Silicone washer</p> <p>Downtilt adjuster</p>
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Figure 3. Attaching Rubber Boot, Jam Nut, and Silicone Washer.

<p>STEP 7. Slide the downtilt adjuster all the way out and in a few times to ensure that the downtilt adjuster moves freely.</p> <p>STEP 8. Leave the downtilt adjuster pulled out when attaching the actuator.</p>	<p>Move downtilt adjuster in and out.</p>
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Figure 4. Positioning Antenna Downtilt Adjuster.

<p>STEP 9. Hold the downtilt adjuster with one hand, align the actuator with downtilt adjuster with the other hand, and engage the actuator onto the downtilt adjuster.</p>	
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Figure 5. Engaging Actuator to Downtilt Adjuster.

<p>STEP 10. Slightly turn actuator clockwise until actuator is engaged to the downtilt adjuster.</p> <p>STEP 11. Verify connection by carefully moving the actuator in and out. The rod should stay connected to the actuator.</p>	<p><math>\approx 3/4</math> (270°)</p>
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Figure 6. Testing the Actuator.

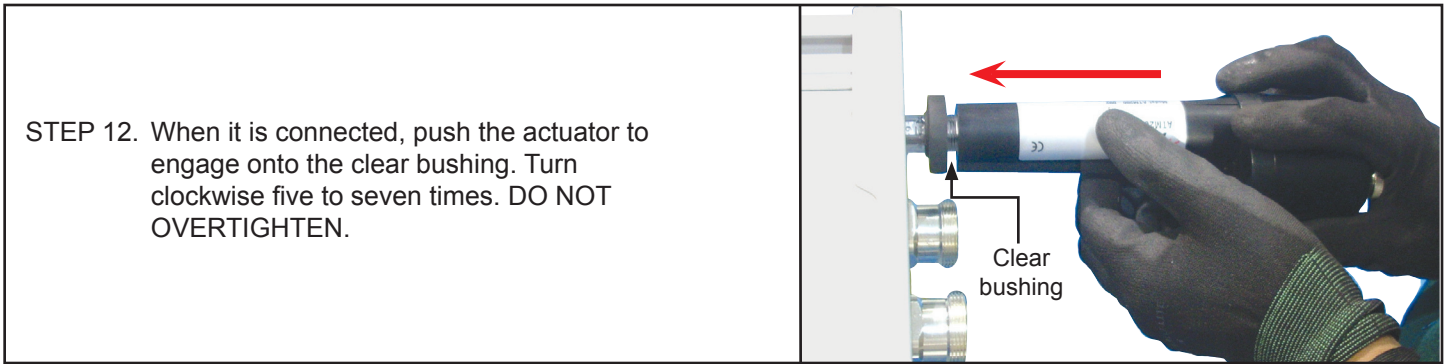


Figure 7. Engaging Actuator to Clear Bushing.

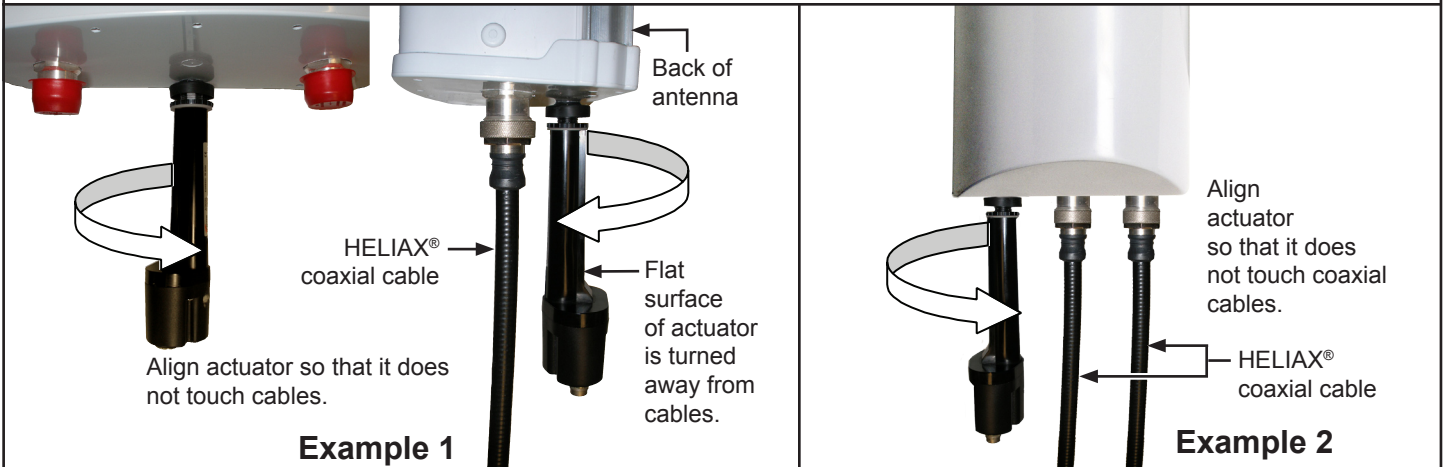
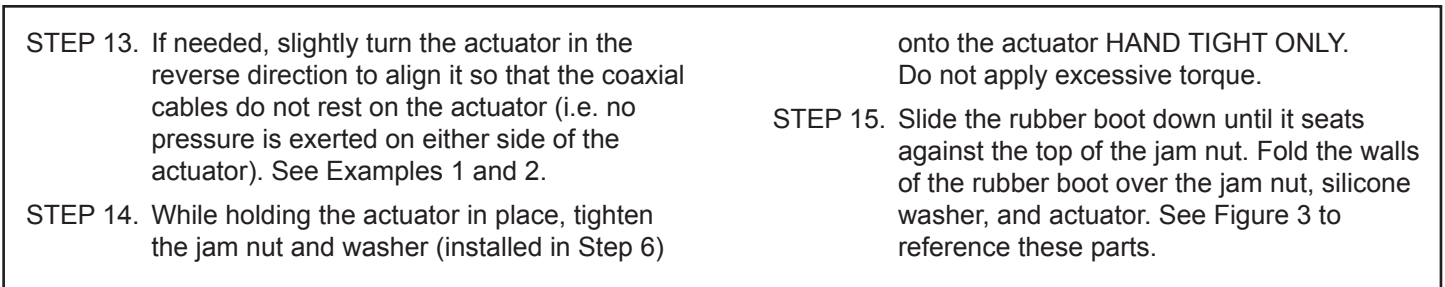


Figure 8. Aligning Replacement Actuator.



Figure 9. Verifying Downtilt Accuracy.



## Attaching Control Cables to ATM200-002 and ATM200-A20 Actuators

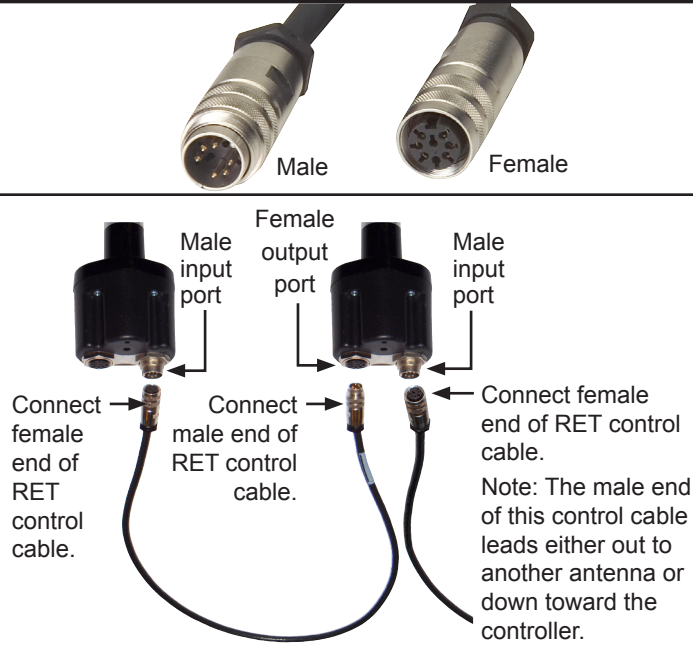
<p>STEP 18. Connectors on RET control cables and actuators are keyed to provide a matching fit. Mate connectors with caution to avoid damaging pins.</p> <p>STEP 19. Attach the control cable to the actuator, hand tight only. Do not use hand tools. The actuator and control cables are weather resistant and do not require weather proofing.</p> <p>STEP 20. Leave protective cover on unused actuator connector.</p> <p>Note: Control cables must be dressed so that no lateral tension is placed on the actuators.</p>	
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Figure 10. Attaching Control Cables to ATM200 Series Actuators.

### POST INSTALLATION INSTRUCTIONS FOR SYSTEMS USING AISG CONTROL CABLES

- With the RET controller connected to the actuators, check to ensure that each actuator moves on command; various set-tilt commands should be carried out at this stage. Ensure that the motion of the actuator is unrestricted between its minimum and maximum downtilt positions. Compare the visual reading of downtilts through the viewing window in the clear bushing on each antenna with the readings shown on the computer. See Figure 9.

### ACTUATOR REMOVAL AND REATTACHMENT TO ANOTHER ANTENNA

1. Set the current antenna to the maximum tilt position.
2. Loosen the lock nut and unscrew the actuator.
3. Remove the washer, nut, and rubber boot.
4. Follow installation instructions described in Steps 1–20 for attaching an actuator to a new antenna. (Note: The washer, nut, and rubber boot from the old antenna can be re-used on the new antenna, if these materials look fully functional. Otherwise, new material can be ordered — part number 602369.)

- Control cables should be secured to the tower structure using cable ties, hangers, or similar fasteners such as CommScope 40417 cable ties or 68MCLICK hangers. The main cables should be secured at 2 m intervals and at 1 m from either end. The cables feeding to the actuators should be secured every 0.5 m, to avoid excessive wind vibration.
- RET controllers must be located indoors or in a weather-proof enclosure when placed outdoors.

5. Use the ATC200-LITE-USB controller to detect the new antenna.
6. Configure the actuator for the new antenna type.
7. Test the actuator movement, by changing the antenna to its minimum and maximum tilt positions.
8. Set the antenna to the desired tilt position.

## ATM200-002 and ATM200-A20 CommScope Actuators

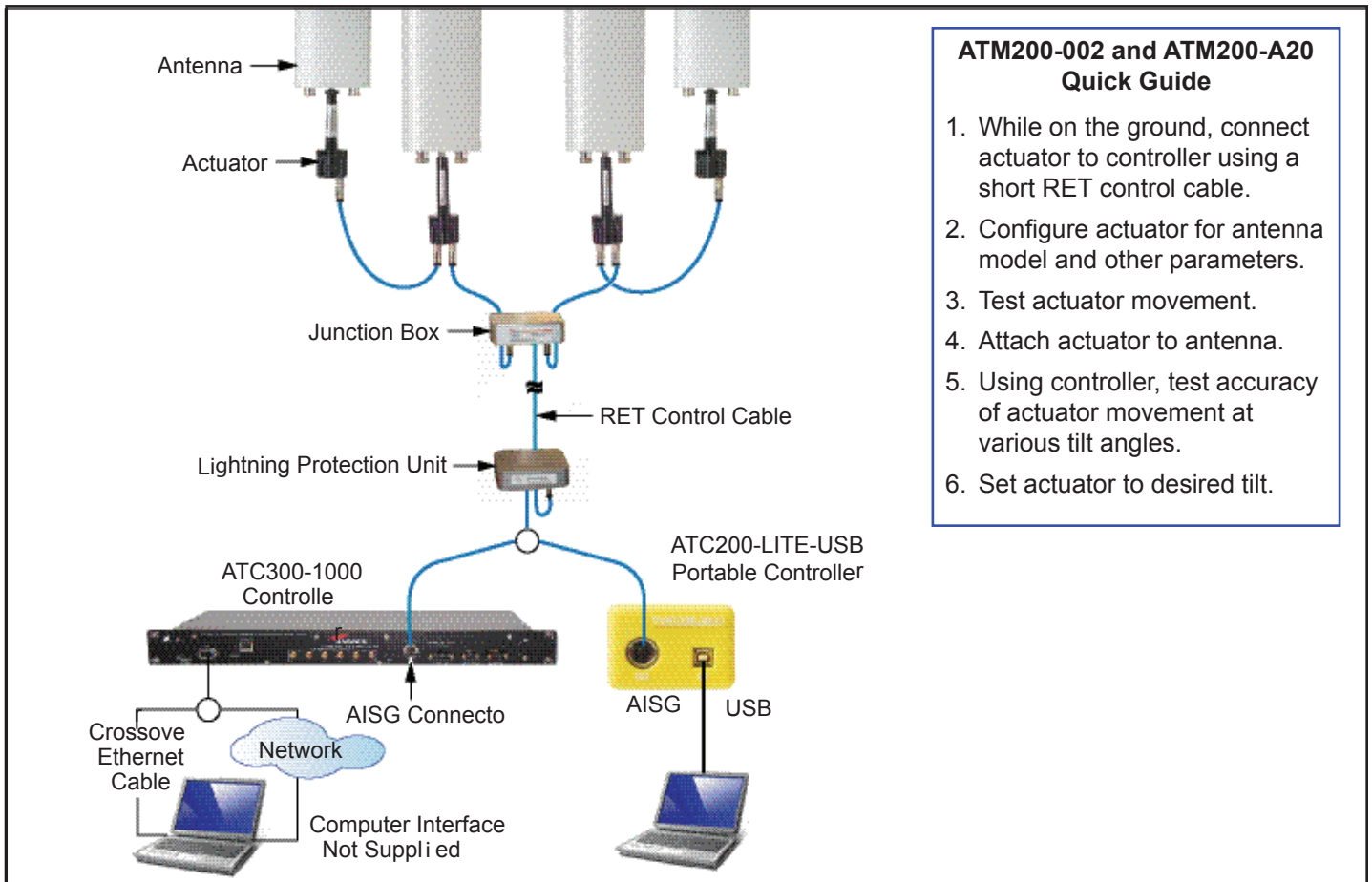


Figure 11. Typical CommScope RET System.

## INSTALLATION INSTRUCTIONS FOR SYSTEMS USING E-ATM300 ACTUATORS

### Attaching Control Cable to the E-ATM300 Actuator

STEP 18. Use caution when attaching cable to actuator to avoid damage to pins. Cover unused actuator port with protective cover, supplied.

Note: Control cables must be dressed so that no lateral tension is placed on the actuators.

The E-ATM300 actuator does not support a daisy chain setup.

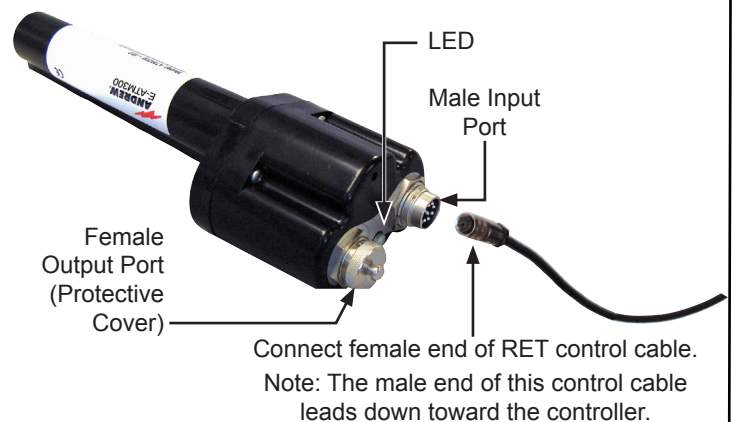


Figure 12. Attaching Control Cable to the E-ATM300 Actuator.

## E-ATM300 Actuator

**Initial Setup**

- When setting up to configure actuator, use the CommScope AISG control cable (ATCB-B01-001).
- For final installation, use the Ericsson RET cable from the RIU or the ASC to the E-ATM300 actuator.

**IMPORTANT**

- ONLY USE the CommScope EFCT software with the E-ATM300 actuator. DO NOT use the standard ATC200-LITE-USB controller software.
- ALWAYS USE the serial cable with the E-ATM300 actuator. DO NOT use the USB cable.

Note: EFCT Software can be downloaded from [www.commscope.com/Resources/Software](http://www.commscope.com/Resources/Software).

Figure 13. Configuring E-ATM300 Actuator with EFCT Software Prior to Installation.

**E-ATM300 Quick Guide**

1. While on the ground, connect actuator to ATC200-LITE-USB controller using a short AISG RET cable.
2. Connect ATC200-LITE-USB to laptop using the serial cable (not the USB cable).
3. Use the EFCT Software to configure actuator and test movement. (Do not use ATC Lite Software to control E-ATM300 actuator.)
4. Configure actuator for antenna model and note the factory set tilt position.
5. Test actuator movement.
6. Reset tilt position to original factory setting.
7. Disconnect actuator from ATC200-LITE-USB controller.
8. Attach actuator to antenna.
9. Connect RET cables from Ericsson ASC or RIU to actuator.

Figure 14. Final Site Installation of the Ericsson Control System Using the E-ATM300.

## ATM200 SERIES TROUBLESHOOTING RESOURCE GUIDE

Problem	Possible Cause	Solution
Actuator does not move the downtilt adjuster.	Compression ring was not removed.	See Step 2.
Actuator does not adjust the downtilt to the correct tilt position.	Actuator tilt position was not set to the correct angle before it was attached to the antenna. See Steps 7 through 11.	Remove the actuator from the downtilt adjuster. Using the controller and PC/laptop, reset the actuator to the angle indicated when the tilt rod is fully retracted (see Step 3).

## E-ATM300 TROUBLESHOOTING RESOURCE GUIDE

Problem	Possible Cause	Solution
Actuator does not move the downtilt adjuster.	Compression ring was not removed.	See Step 2.
Actuator does not adjust the downtilt to the correct tilt position.	Actuator tilt position was not set to the correct angle before it was attached to the antenna. See Steps 7 through 11.	Remove the actuator from the downtilt adjuster. Using the ATC200-LITE-USB controller, EFCT Software, and PC/laptop, reset the actuator to the angle indicated when the tilt rod is fully retracted (see Step 3).
Actuator cannot be found during a device scan using the ATC200-LITE-USB controller.	USB cable has been used instead of a serial cable.	Use the serial port on the controller with either a serial cable or a serial cable and a USB adapter. In case the laptop does not have a serial port, connect the controller to the laptop USB port.