NOTE: Each time the calibrate screen is selected it is CRUCIAL to ensure wiring has been checked and the correct rotator type is highlighted green before continuing. Incorrect wiring or selecting the wrong rotator type could lead to rotator failure.

DTC-100 Automatic Calibration

A common topic of conversation when upgrading to a new Antenna Rotator Controller is Antenna Offset. Typically, when installing a rotator in the U.S region, the procedure is to connect the controller and rotator on the bench, rotate it fully Counter Clockwise (CCW), then move it 180 degrees clockwise (South Offset). The next step is to bolt the rotator on the tower and clamp the antenna down so it points North. This method allows both +/-180 degrees rotation either side of North. While all this seems simple enough, complications during installation can alter the desired outcome.

Even if the antenna was thought to be perfectly installed it's a good idea to recheck orientation when upgrading controller to verify previous installation.

Antenna mis-alignment can be easily corrected by setting the "Antenna Offset" parameter during the automatic calibration procedure. This document addresses the question, "what if the azimuth offset is unknown?"

How it Works

The DTC-100 electrical point of reference is based on a fully CCW rotator position. Antenna position away from the desired point is considered Azimuth Offset. The Azimuth Offset is the mechanical position related to the electrical position. Example **N**: if the desired antenna position is NORTH with rotator fully CCW, but the antenna position is actually at 10 degrees, the offset is 10. Or if the actual position is 350 degrees, the offset is -10 degrees, or 350. Example **S**: if the desired antenna position is SOUTH with rotator fully CCW, but the antenna position ends up being 187 degrees, the offset is 187 degrees.

Moving the rotator from the full CCW position to the full CW position determines the azimuth display resolution. Fully CCW to fully CW measurements allow a calculation to be made, but does not provide information relative to electrical position versus mechanical position. The selection of Antenna Offset provides that relationship.

Known Offset

The known offset angle (or antenna position relative to the CCW stop) is entered on the calibrate Screen. The calibrate screen is entered by pressing CAL after the unit power is applied. The direction buttons N/E/W/S set coarse heading and (+/-) buttons for fine adjustment.

The CAL touch button initiates the rotational calibration procedure providing user feedback to the sequence of events in the STATUS window. When completed the user must press "SAVE" to store results in permanent memory.

Offset Unknown

As described above, the DTC-100 antenna offset value is based on the difference between the electrical full CCW and physical position of the antenna. Therefore, if the desired antenna position is NORTH at full CCW, and the actual position is at 10 degrees, the offset is 10.

If the offset is unknown, the rotator can be moved to the full CCW position and the antenna azimuth estimated with a compass. This will be the value entered as offset during calibration.

The DTC-100 calibration process can be used to rotate to the full CCW position. After powering the unit on enter CAL calibration screen. Ensure correct rotator type has been selected and press the auto calibrate button CAL below the offset box. As soon as the CCW Complete message is seen in the STATUS window press EXIT.

The rotator should now be in the full CCW position. Turn off Power to the DTC-100. After the antenna azimuth has been estimated, turn the unit back on, press CAL on the sign-on screen, and recheck rotator type matches the rotator being used. The direction buttons N/E/W/S set coarse heading and (+/-) buttons for fine adjustment. Press the auto calibrate CAL button, and SAVE the results when the process has completed.

Auto Calibrate Sequence

As displayed in the "STATUS window"

- FULL CCW – xx where "xx" is the calibration step.
- CCW STOP
- FULL CW – xx
- CW STOP
- CW Complete
- CALIBRATING
- Cal Complete
- SAVE to Store

Post Calibration Offset Adjustments

It is possible to make future offset changes once the calibration process has been fully completed. Turn off the unit and back on to enter the sign-on screen. Select CAL calibrate and enter the adjusted offset and press SAVE. This will save the new offset without disturbing the sensor calibration.

The DTC-100 can be set for any desired offset between 0 and 359 degrees in 1 degree increments regardless of rotator physical stop position or initial antenna direction.