

**8860 & 8861A/8862  
Quick Setup Guide**

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## 8860 & 8861A/8862 Quick Setup Guide

### 1.1 Introduction

This guide is provided as an aid for the user to quickly configure the 8860 Antenna Tracking Controller (ATC) and 8861A/8862 Antenna Position Controller (APC) for operation. Several typical operations will be covered in this guide; however only with the basic steps to complete the task are described. This document is not intended to be a stand-alone manual for these products therefore, it should be used in conjunction with the standard installation, operation and maintenance manuals. Refer to the standard manuals to get detailed discussions and explanations of the various features, settings, and operation for the 8860 ATC and 8861A/8862 APC products.

The 8860 ATC provides two methods for entering and viewing data on the display. Numerical values as well as selecting the home (H) and previous (P) display screen are performed with the keypad. Changing menus, settings, and entering alphanumeric characters is done by the appropriate soft keys below the display.

### NOTE

This guide assumes that the antenna system is fully installed and wired as described in the various installation drawings and manuals provided with the antenna kits. The following tasks should be completed before using this guide:

- Motors installed and tested for proper rotation and antenna moves in proper directions,
- LSR packages have been installed, angle indications verified with antenna movement, limit switches set and tested,
- All electrical wiring complete and verified,
- Calibration software installed on a laptop or desktop computer,
- Comm link between 8860 APC and 8861A/8862 ATC verified,
- Equipment is powered up and ready for use.

## 1.2 Configure and Calibrate 8861A/8862

The operations and tasks described in this section require the use of the ViaSat Calibration software. This software, once installed on a laptop or desktop computer, can be used with the computer directly connected to the 8860 ATC or 8861A/8862 APC. The interface cables that connect between the computer and the 8860 ATC or 8861A/8862 APC are described in the calibration manual 1002111. (These cables, one each, are supplied by ViaSat and in the calibration kit.) Note that there is a unique cable for connecting to either of the two units. For connection to the 8860 ATC, use the modem connector on the rear panel. For connection the 8861A/8862 APC, use the 9-pin D connector on the logic card located on the inside of the inner access door of the unit. See section 1.3, 8860 to 8861/8862 Communications Settings, of this guide for configuring the communications link.

Connect computer with the Calibration Software installed to the MODEM connector on the rear panel of the 8860 or 8861A/8862 logic card. Start the program, set the address to 3 (8861A/8862 use address 1), choose computer com port and enable polling. Several windows should open after communications is established. If connected to the 8860, the 8860 display will show PASSTHROUGH mode. This indicates that the communication activity is “passing through” the 8860 to the 8861A/8862. Perform the following steps using the calibration software on the computer.

### **Step 1: Load General Setup parameters from file**

The General Setup parameters file is used to configure the 8861A/8862 for various options such as Variable Speed Drives, Southern Hemisphere, or Emergency-Stop Relay. These settings can be uploaded from a file contained in the \886x\CAL sub-directory or can be set manually from the General Setup screen. Note that you may still have to adjust these parameters manually for your installation. There are typically only four different configurations that should cover most installations. These files are named:

<u>Filename</u>	<u>Configuration</u>
8861NLAT.DAT	8861 Northern Latitude
8861SLAT.DAT	8861 Southern Latitude
8862NLAT.DAT	8862 Northern Latitude
8862SLAT.DAT	8862 Southern Latitude

To upload the 8861A/8862 with one of these standard configurations perform the following steps:

- 1) Select the Antenna Control window. From the menu bar,  
**Select: *File* -> *Restore Setup***
- 2) Change to the \886x\CAL sub-directory to locate one of the above files.
- 3) Select the file to load and then the **OK** button.

### **Step 2: Initial Check List**

**Select: *Calibration* -> *Check List***

Follow the Check List procedure and answer all questions.

### **Step 3: Feed Setup**

**Select: *Calibration* -> *Feed Setup***

Check the appropriate boxes for any motorized feeds installed. Check the Data Pot box for any motorized feeds. Note that ViaSat only uses data pots for the feed angle sensor. Uncheck the *Installed* box for any motorized feeds that are not installed. See calibration manual to calibrate angles of any motorized feeds.

### **Step 4: Limit Switch Setup**

**Select: *Calibrations* -> *Advanced Settings***

Enter password **full\_access**.

**Select: *Calibrations* -> *Limit Setup***

Tag each valid axis and select Find Hard Limits to allow calibration software to find the axis limits. Repeat for each axis. Note that this could take some time depending on antenna speed. Soft limits are entered manually in this window.

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### **Step 5: Dynamic Calibration**

#### **Select: *Calibrations* -> *Dynamic Calibration***

Note: Select Tracking Defaults in the Dynamic Calibration window if the antenna will be configured to track inclined satellites using one of the 8860 track modes. Otherwise, select Calibrate All Stops in the Dynamic Calibration window.

### **Step 6: Calibrate Azimuth and Elevation Look Angle**

This configuration step is critical to the pointing of the antenna. Typically, this step is only done at the time of installation. It may also have to be performed if there has been a major failure of the logic card, user error or other error that resulted in the loss of stored configuration data.

The calibration software will compute an offset value for the AZ and EL Axis parameters which provides for accurate position indication. The offset can be found by viewing the Axis Setup parameters window.

At this time, the antenna must be correctly pointed and optimized on the satellite that is to be used for calibrating the look angle of the antenna system.

#### **Select: *Calibrations* -> *Advanced Settings***

Enter password **full\_access**.

#### **Select: *Utilities* -> *Pointing Calcs***

Enter values for: Site Altitude, North or South Latitude and East or West Longitude. Enter name of satellite and choose if it's East or West Longitude location.

#### **Select: *Calc***

The antenna look angle for this satellite is shown in the Pointing fields of the window.

#### **Select: *Transfer Pointing***

The calculated look angles for azimuth and elevation will appear in the Move fields of the Antenna Control window. Close the Pointing Calculations window.

**Select: *Calibrations* -> *Calibrate Look Angle***

Follow the steps as indicated by the calibration program.

The current AZ and EL angles viewed in the Antenna Control window will begin to increment or decrement until the final calibrated angles are reached.

**Step 7: Save 8861A/8862 calibration data****Select Antenna Control window then: *File* -> *Save Setup***

Enter a filename (which might include the current date and antenna name).

Save as type **.DAT**. After a few seconds, a file is created that contains the 8861A/8862 calibration data that is used for calibration restoration.

**Optional: Restore 8861A/8862 calibration data**

If for any reason the calibration is lost, it can be restored from the file created in the previous step.

**Select Antenna Control window then: *File* -> *Restore Setup***

Choose file and set file type to **.DAT** and then press open. The contents of the file is uploaded to the 8861A/8862.

### 1.3 8860 to 8861/8862 Communications Settings

The 8860 communicates with the 8861A/8862 by sending a unique address. The address of the 8861A/8862 is fixed at 1 and cannot be changed. The address for the 8860 usually 3 but can be set to whatever you prefer within the available address space. Baud rates are always 9600 for both units. To set the address and baud rate on the 8860 use the keypad and soft keys as follows:

**Press: *H* -> *SYSTEM* -> *SITE* -> *COMM* -> *ESC\_COMM***

Enter 03 for 60ADR and 9600 for ESCBAUD, leave default address of ANT\_COM (8861A/8862) set to 1.

## 1.4 8860 General Purpose Settings

### **Step 1: Set 8860 Date and UTC Time**

**Press: H -> SYSTEM -> SITE -> TIME**

Enter date, UTC time, and then press **UTC\_ENTER**

### **Step 2: Set Antenna Diameter and Frequency Band**

**Press: H -> SYSTEM -> SITE -> ANTENNA**

Enter antenna diameter and frequency band.

### **Step 3: Set Antenna Longitude, Latitude and Height**

**Press: H -> SYSTEM -> SITE -> ANTENNA -> COORD**

Enter longitude, latitude and height.

## 1.5 8860 Movement and Status

### **Stopping Antenna Motion and Tracking**

**Press: H -> \* STOP \***

All antenna movement as well as tracking will stop.

### **Jog Azimuth, Elevation or Feeds**

To move Azimuth:

**Press: H -> AZIM**

Select JOG UP or JOG DN.

To move Elevation:

**Press: H -> ELEV**

Select JOG UP or JOG DN.

To move Feed 1 or Feed 2

**Press: H -> FEEDS**

Select FEED1 or FEED2, then JOG UP or JOG DN.

### **Store Current Antenna Position To A Satellite Entry**

For storing current azimuth angle,

**Press: H -> SYSTEM -> SATELLITE**

Use NEXT or PREVIOUS to select desired satellite entry to modify.

**Press: EDIT -> AZIMUTH -> ENTER**

Repeat for elevation and feeds.

If this is a new satellite entry,

**Press: EDIT -> NAME**

Enter name using NEXT\_LTR, PREV\_LTR and keypad.

### **Store User Defined Angles To A Satellite Entry**

For storing current azimuth angle,

**Press: H -> SYSTEM -> SATELLITE**

Use NEXT or PREVIOUS to select desired satellite entry to modify.

**Press: EDIT -> AZIMUTH**

Enter angle using keypad and decimal point soft key.

If this is a new satellite entry,

**Press: P -> NAME**

Enter name using NEXT\_LTR, PREV\_LTR and keypad.

Repeat to enter angles for elevation and feeds.

### **Move To A Stored Satellite Entry**

**Press: H -> SYSTEM -> SATELLITE**

Use NEXT or PREVIOUS to select desired satellite.

**Press: ENTER -> CONFIRM**

Motion light will come on and antenna will begin moving.

### **View and Configure General Purpose I/O**

**Press: H -> SYSTEM -> OTHER -> AUX\_IO**

Auxiliary input status viewed on top row of display screen.

Select 60\_OUT to control the general purpose outputs

Select 60CFG to apply names to the auxiliary output controls.

Select ANT\_IO to view the 8861A/8862 auxiliary input status.

### **View 8860 and 8861A/8862 Firmware Version**

If you contact ViaSat Customer Service, you may be asked to provide your firmware version number. Use the following key sequence to determine firmware versions. Make note of the firmware versions for the indoor and out door unit.

**Press: H -> SYSTEM -> REPORT**

View firmware information on top line of display.

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**View Faults, Limit Switch Alarms, Limit Switch Settings and Logs**

**Press: H -> SYSTEM -> REPORT**

Select desired menu. Note that selecting the appropriate RESET or ERASE can clear the current FAULTS or LOGS that are stored.

## 1.6 Configure 8860 for Tracking, Beacon Method

### **Step 1: Select Track mode of an inclined satellite**

**Press: H -> SYSTEM -> SATELITE -> EDIT -> TRACKING -> TRACK\_MODE**

Select the desired tracking mode for the current satellite entry. Any tracking mode other than fixed will have a database and database number assigned which stores either learned or manually entered tracking parameters.

### **Step 2: Enter Beacon Frequency**

**Press: H -> SYSTEM -> SETUP -> SEARCH**

Enter Beacon Frequency in GHz.

### **Step 3: Select Beacon Receiver for tracking source**

**Press: H -> SYSTEM -> SETUP -> PEAK**

Press SIGNAL key and choose BEACON – STEP PEAKING.

### **Step 4: Select Beacon Receiver Source to be 1 ONLY, 2 ONLY, AVG 1,2 , GTR 1,2**

**Press: H -> SYSTEM -> SITE -> BEACON -> BEACON**

Press SOURCE key and choose Beacon Source

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**Step 5: Enter Beacon 1 and/or Beacon 2 Receiver operating parameters**

**Press: H -> SYSTEM -> SITE -> BEACON -> BEACON -> BEACON1**

Press RANGE and choose the operating beacon voltage range.

Press UNITS and set to dB.

Press GRAD\_dB and set the gradient of the beacon output voltage (volts/dB).

Press SET\_dB to set a relative beacon signal level indication on the home screen.

Repeat these settings for Beacon2, if a second beacon receiver is used.

**Step 6: Enable Beacon Alarm and enter alarm set point**

**Press: H -> SYSTEM -> SETUP -> TRACK**

Press LST\_LVL and enter a relative value (in db, referenced to the current beacon signal level) that will cause an alarm. This alarm indicates that the beacon signal has been lost.

Press ALARM to toggle alarm on or off.

MOV\_OPT should be OFF until tracking database is at or near 100% of charge.

**Step 7: Set tracking Trigger points**

**Press: H -> SYSTEM -> SETUP -> TRACK -> TRIGGER**

Press TRIGGER to allow tracking based on TIME ONLY, SIGNAL ONLY or combination of TIME/SIGNAL. Use the TIME or SIGNAL ONLY trigger for satellites that have either little or no inclination (< 3 degrees). Use the TIME /SIGNAL trigger for satellites that have inclination > 3 degrees.

Press TIME and enter the tracking interval time period that will activate tracking.

Press THRESHOLD and enter an absolute value that the beacon signal must drop to activate tracking.

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**Step 8: Set the degree of inclination for the inclined satellite to be tracked**

**Press: H -> SYSTEM -> SATELITE -> EDIT -> TRACKING -> INCLINE**

Press ANGLE and enter the degree of inclination for the desired satellite to be tracked.

**Step 9: Set Movement Optimization off**

**Press: H -> SYSTEM -> SETUP -> TRACK**

Press MOV\_OPT to toggle to the off state.

This parameter should be set to the off state until 24-hours of data have been taken or the database charge is at 100%.

**Step 10: Start tracking a satellite**

**Press: H -> SYSTEM -> SATELITE -> MOVE\_TO**

Press NO\_SEARCH. 8860A will begin peaking from current antenna position. Antenna should be pointed and manually peaked on satellite to be tracked.

**Step 11: View database charge for a satellite entry**

**Press: H -> SYSTEM -> SATELITE -> EDIT -> TRACKING -> DATABASE -> ADAPT**

CHG indicates the percentage of database charge for the selected satellite entry.

**Optional: Defining a satellite entry as stationary**

**Press: H -> SYSTEM -> SATELITE -> EDIT -> TRACKING -> TRACK\_MODE**

Press FIXED to configure the current satellite entry as a fixed or stationary Satellite. If changing the selected satellite entry from tracking to Fixed, choose ERASE when prompted which clears database. This will disable tracking for the selected satellite entry.