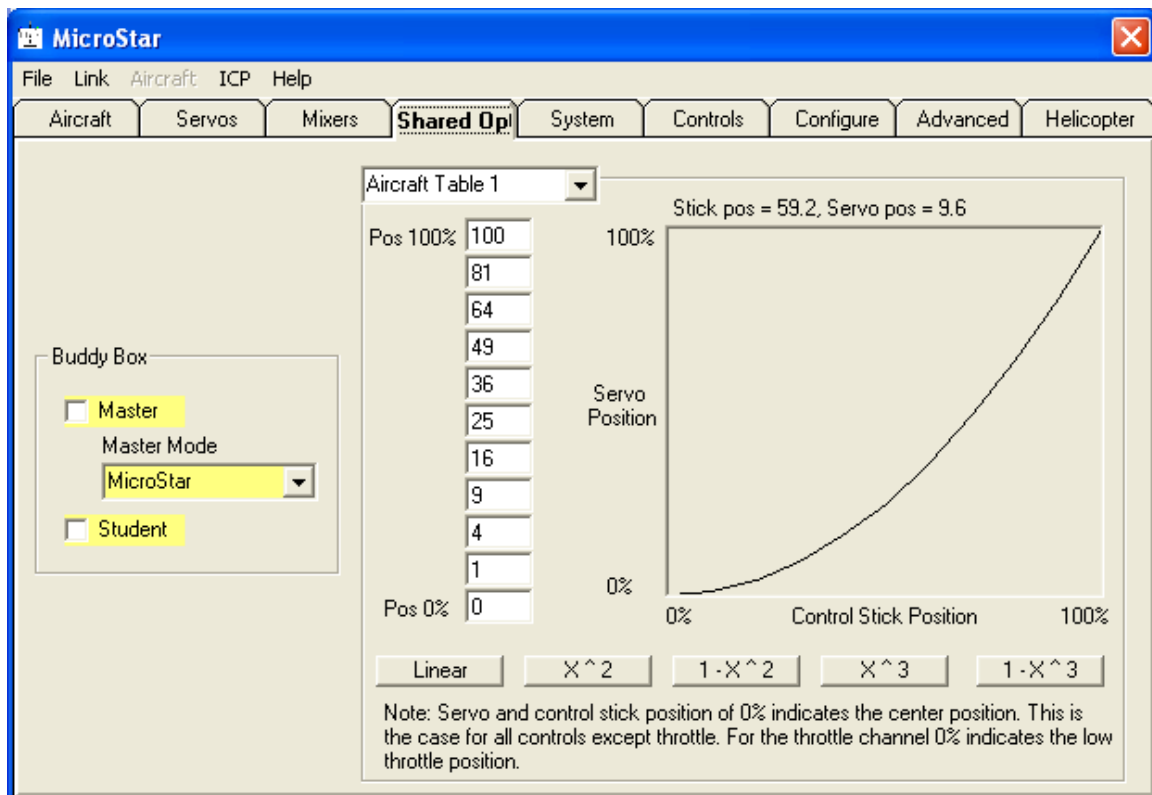


MicroStar 2000 Translation Tables

February 20, 2010

The MicroStar provides a number of Translation Tables intended to support any kind of control stick to servo motion relationship you need. This narrative is intended to describe in detail how these tables work and how they can be programmed for your application.

Tables translate the transmitter control stick movement into servo movement using a number of data points to define the motion. Each table has 11 points that can be defined. The PC application provides a visual representation of the tables and makes it a lot easier to see how these tables work. Below is the PC application showing a nonlinear mapping from control stick to servo position.



The graph illustrates the table's translation of the control stick position to servo output position. In this case a nonlinear curve is used that will make the control stick less sensitive near its zero position. The column of user definable values allows you to define a mapping from the control stick position, shown as Pos 0% to Pos 100%, into servo output position also in percentages. As you enter values you

will see the plot reflect the inputs you have made. This will allow you to visualize the translation table as you adjust the values.

The selection box in the upper left corner of the table section allows you to select the table you want to define. There are 8 global tables and two aircraft tables. Global tables are available to all aircraft settings and are seen by each and every aircraft selected in the MicroStar. If you need tables defined that are specific to an aircraft that is selected use the aircraft tables. There are two aircraft tables available to each aircraft selected in the MicroStar.

Control stick position is shown on the plot from 0% to 100%. The 0% position is the center of the stick motion in all cases except the throttle stick. In the case of the throttle stick 0% is low throttle. All controls with the exception of throttle vary from -100% at the left or down position, 0% in the center, and 100% at the right or up position. Throttle is 0% at low throttle and 100% at full throttle. This means that the curve shown above defines half the servo motion in all controls except the throttle. For the case shown if this table is applied to the aileron channel the same translation is performed for the positive stick motion as the negative stick motion. Table values can also be defined with negative values and this will allow the throttle stick to be translated into a centered control and mixed with a flight channel. Tables provide a lot of capability and flexibility but can also be a bit confusing. The best way to learn is to experiment with the tables and use the PC application to make setup a lot faster.

The PC application also provides a set of predefined curves that you can apply to the selected table. These predefined can also provide a starting point that you can use when setting up a table. To use a predefined curve first select the table you want to define from the selection box then press one of the buttons shown below the plot. This will result in the tables values being defined automatically.

Tables need to be defined and then applied before they have any effect on the MicroStar. This section shows how to define the tables but this will not assign a table to a function. Tables are assigned through two different sections of the MicroStar setup; mixers and helicopters.

Mixers:

A translation table can be defined when you are defining a general mixer function. The general mixer requires you to select a "From" channel and then provides the option of selecting a translation table. If the table is identified then the "From" channel is applied to the table prior to using its value. For example if you wanted to apply a translation table to the throttle channel to provide a custom throttle curve you would perform the following steps:

- 1.) Define the throttle curve using a table that you select. This could be a global table or an aircraft specific table. A single table can be used by multiple mixer functions if needed.
- 2.) Select a general mixer you want to use for the throttle function.

3.) Setup the mixer as follows:

- a. From channel: Throttle
- b. Table: Select the table you want to use, note you must define the table curve using the table setup options.
- c. To channel: Throttle
- d. Replace: Yes, this will cause the translated throttle channel to replace the To channel, or in this case to replace the throttle channel.
- e. Zero point: 0%
- f. Positive gain: 100%
- g. Negative gain: 100%

The general mixer will also need to be enabled for their defined functions to become active. The mixers are assigned a switch on the transmitter to enable and disable them, you can define this switch and you can even force it to always be on if desired.

Helicopter:

The helicopter mode uses tables extensively. The throttle stick in the helicopter mode performs two functions; it controls the throttle channel that drives the engine's throttle setting and it also controls the pitch of the main rotor. These two functions are performed using tables. The single throttle input from the control stick is sent to a throttle curve table and also to a pitch curve table. The helicopter mode contains multiple flight conditions allowing a total of up to 7 tables that can be defined for one helicopter setup.