Sam™ KO6YD Designs

Screwdriver Antenna Memory

General Description

The SAM is an add on product for the class of mobile antennas known as a "screwdriver". The SAM will add a tuning preset feature to the antenna by replacing the current manual control switch. The picture to the right depicts the SAM control unit. The new panel contains a 2 digit LED display, a mode button and a VFO style tuning knob with integrated push button.

Screwdriver Antenna Memory

Features:

- 16 Memories for saving Antenna Location.
- 2 Digit Display (For Memory and Mode information)
- Jog mode for fine tuning
- VFO style knob for selection and fine tuning.
- Built in ICOM 706 Tune Controller

Circuit Description:

The heart of the SAM system unit is a small microprocessor which controls the up and down movement of the antenna and tracks the antenna coil position. This position can be saved to one of 16 non-volatile memories for later recall.

The sensing operation at the antenna is done by attaching a small magnet onto the internal shaft. The sensor is attached to the outer tube of the antenna or internally if space permits. This sensor is connected to the SAM control unit.

The user will operate the SAM system by using a VFO style knob with integrated push button and a separate MODE push button. The knob is used to select a preset channel and to "jog" the antenna position for fine tuning. The MODE button is used to select the various operating modes.

There is also an optional output from the SAM that can be used to key the radio while the antenna is moving in Jog mode to make tuning up a "one handed" operation. On the ICOM 706, this feature will cause the 706 to switch to CW mode and transmit 10 Watts regardless of the current mode and power setting.

Connection to the Antenna

Prior to using the SAM you must be able to gain access to the internal shaft of your antenna. This is to install a small magnet which must be attached to any turning part of the shaft. A sensor is then attached to the outside (or inside if space permits) of the antenna so that when the tuning motor is running, the magnet will activate the sensor once for each turn of the screw shaft. Check with your antenna manufacture to see how to gain access to the inside of your antenna to install the SAM magnet and sensor.

The SAM requires a 4 wire connection (Not Counting RF) to the antenna. The first 2 are the standard motor power lines as are currently used with a manual switch. A second pair is required that connect to the small position sensor. The SAM will require a 12VDC and Ground connection. This 12V connection will be used to operate the SAM electronics as well as drive the antenna motor. If pulling wire, a 4 conductor 18ga cable is a good choice.

PO Box 1090 Elverta, CA 95626 (916) 728-4359
(888)83-KO6YD www.ko6yd.com email: info@ko6yd.com

Operating Modes:

The following is an overview of the SAM operating modes. The operating modes are changed by pressing the "MODE" push button (See Figure 1). The LED display indicates the current mode.

Mode	Description
Jog Mode	The JOG mode is used to fine tune the antenna. The JOG mode is indicated by the ⊔- on the display and is used to raise or lower the antenna in very small increments. As you turn the knob clockwise (CW), the antenna coil will be extended. Turn the knob counter clockwise (CCW) and the coil will be retracted. The JOG mode is used for the initial setup of the SAM memories as well as fine tuning the antenna after returning to a memorized location.
Fast Jog	The jog mode can also be set to a FAST or coarse mode. This operates the same as the JOG mode but now as the knob is turned, the antenna will advance the coil position farther per tuning step of the knob. The user can define this value.
Memory	The MEMORY mode is indicated by a number from 1 to 16 in the display. In this mode, turn the tuning dial to the desired preset location as indicated on the display. Then press the tuning knob to "activate" the preset. The antenna will move up or down as required until it reaches the memorized location.
Program	The program mode is used to program the initial settings into the SAM unit. The program mode is used to set parameters such as the lower and upper limits of the antenna. Once set, the SAM will not move the antenna beyond these limits. It also allows you to re-calibrate the antenna position without loosing the memory presets.

Tune Control (Jog Mode Option)
This can be enabled to be done automatically in the JOG mode. As you turn the TUNE knob, your 706 will transmit a 10W signal and allows a one handed fine tuning of your antenna. Once you stop turning the TUNE knob, the 706 will return to it's prior power and mode setting.

Pricing:

Item	Description	Price
SAM Fully Assembled:	Assembled and tested unit installed in custom case. External cable assembly.	**$149.95**
Shipping & Handling:	Units ship by Ground.	**$6.00**
Tax:	California Only: Add Ca. Sales Tax.	**Ca. Tax**

You can order online at **www.ko6yd.com**.

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