

# ADD KEYPAD TO COLLINS/TURNER MICROPHONE

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## **KWM-380 TRANSCEIVER (622-5093-001, -101) HF-380 TRANSCEIVER (622-3580-001, -101)**

This service information letter describes a method of adding a frequency control keypad to a Collins SM-280 or similar microphone with flat base. This modification provides an alternative to the AC-3805 and AC-3805A keypads, which are no longer available from Rockwell-Collins.

The frequency control keypad permits the user to enter a frequency directly into the transceiver, to store and recall 10 or 11 frequencies (depending upon the ROM installed in the transceiver) and to step through the stored frequencies. If the Kiron memory board is installed, the keypad allows storage and access to 100 frequencies.

This modification consists of mounting a 16-key keypad from Pipo Communications to a Rockwell-Collins SM-280 or SM-281 or Turner 750 series or similar microphone and adding a nine conductor shielded cable from the microphone to the transceiver's rear panel connector. This modification requires that a Rockwell-Collins AC-3803 Control Interface or Kiron KPI-380 keypad interface kit has been installed in the transceiver. No permanent changes are made to the transceiver. However, several holes must be drilled into the top and rear of the microphone base.

Estimated time required is two man-hours.

The modification parts are itemized in the material information paragraph.

A drill press or hand held power drill with 3/32", 1/8" and 11/64" bits are required.

### **MODIFICATION PROCEDURES**

- A. Remove the cover and PTT switch assembly from the bottom of the microphone.
- B. Examine the bottom of the microphone for any clearance issues that the keypad mounting screws and the 9-pin header connection may pose.
- C. Using the template in Figure 1 and a center punch, accurately lay out the mounting holes and cable slot on the top of the microphone base. (Use the ruler above the template to verify that the dimensions of the template haven't changed from subsequent distribution of this SIL. If the keypad was received with a mounting frame, the frame can be used as a drilling template).
- D. Using a 3/32" drill bit, drill the four keypad mounting holes.
- E. Using a 1/8" drill bit, drill a series of closely spaced holes 1" long for the cable slot.
- F. Using a flat needle file, elongate the holes created in step E. to create a 1/8" x 1" slot for the cable connector. See Figure 2.

- G. Using an 11/64" drill bit, create a hole for the keypad cable on the back left side of the microphone base. See Figure 3.
- H. Mount the keypad to the microphone base using the screws supplied with the keypad. (If the keypad was received with a mounting frame, discard the frame, as it is not needed).
- I. Thread the nine conductor shielded cable through the hole drilled in step G. above.
- J. Strip and solder the cable to the DB25M connector and the 9 pin header using the following table:

DB25M		9 Pin Header
1	Row 1	1
2	Row 2	2
3	Row 3	3
4	Row 4	4
5	Col 1	5
6	Col 2	6
7	Col 3	7
8	Col 4	8
9	+ 5 V	9
10-25	Not Used	

- K. Connect the 9-pin header to the 9-pin connector on the underside of the keypad. The #1 pin is located on the top right of the keypad.
- L. Solder the cable shield lead to both the DB25M connector shell and the microphone housing.
- M. Secure the cable to the microphone base using an appropriate cable clamp.
- N. Replace the microphone PTT switch assembly and base cover.
- O. Connect the DB25M connector to the AC-3803 Control Interface DB25 rear panel connector.

## **DETERMINING THE NUMBER OF MEMORY LOCATIONS**

The Kiron memory adapter provides for 100 memory locations (00-99). Otherwise, the ROM version installed in the transceiver will determine whether the keypad will provide ten or eleven memory locations. The difference is significant since the procedure for storing a frequency is slightly different between the two versions. To determine which version is installed in the transceiver, perform the following operation:

1. Turn the transceiver off then on again. This clears the memories and the frequency displayed will be 15.000.00.
2. Press the "B" ("RCL" or recall) key, then press the "0" key once, then a second time. If the display changed to .000.00 after the first "0", the transceiver has ten memories and only one digit (0-9) is required to program and recall memories. If the display changed to .000.00 only after the "0" was pressed for the second time, the transceiver has eleven memories but will require two digits (00-10) to program and recall memories.

## **USING THE KEYPAD**

To enter a frequency from the keypad, simply key in the frequency in mHz, using the \* key as the decimal point, then press the # (Enter) key. For instance, to enter 7.150 mHz, press 7 \* 1 5 #. Note that it was not necessary to enter the 0.

To change to a different frequency within the same mHz band, press the decimal then only the kHz portion of

the new frequency—there is no need to reenter the mHz portion of the frequency. For instance, to change from 7.150 mHz to 7.250 mHz, press \* 2 5 #.

To store the displayed frequency into memory, press the "A" ("STO" or store) key then the memory location to hold the frequency (either 0-9 or 00-10 depending upon the ROM version as discussed in the preceding section). This works regardless of whether the frequency was selected by the keyboard or the front panel tuning knob.

To store a frequency without changing the operating frequency, key in the frequency using the keypad but do not press the enter ("#") key prior to storing the frequency. This is handy to make a note of a frequency while in the middle of a QSO.

To recall a stored frequency, press the "B" ("RCL" or recall) key then the memory location where the desired frequency was stored. To step through all programmed memories, press the "C" ("STP" or step) key.

If an incorrect key or keys are pressed while entering a frequency, press the "D" ("CLR" or clear) key and rekey the frequency. The clear key is also used in the event that an invalid frequency entry has caused the display to present all zeros and the keyboard to become nonresponsive (a situation that occurs only on certain ROM versions).

All memory locations are cleared when the transceiver is turned off.

## **USE WITH THE KIRON MEMORY ADAPTER**

The above instructions apply equally to transceivers equipped with the Kiron board, except that 100 memory locations are available (00-99) and turning off the transceiver does not clear the memories. To clear the memories from a Kiron board, hold down the "5" and "D" ("CLR" or clear) key while turning on the transceiver.

## **MATERIAL INFORMATION**

The parts listed below are required to modify one KWM-380 or one HF-380.

<u>QTY</u>	<u>DESCRIPTION</u>
1	PK-8V Keypad, 16 button, available from: Pipo Communications 1516 Cassil Place Hollywood, California 90028-7106 <a href="http://www.pipo.cc">www.pipo.cc</a> (Note that Pipo also offers a keypad specifically labeled for the KWM-380 but it is generally too large to mount to the base of a microphone)
1	Microphone, Collins SM-280, SM-281, Turner 750 series, or other microphone with a similar flat base
1	Connector, DB-25M
1	Hood, DB-25
1	9 pin header connector, 0.1" spacing
6 feet	Cable, 26 ga 9 conductor plus shield (a good source for an appropriate cable is a DB9 computer serial cable, with the installed connectors discarded)
1	Clamp, cable

**NOTE:** I would like to keep track of the number keypads that have been installed on microphones per the above. So, if you perform the above, please let me know by sending an email to me at [leecraner@aol.com](mailto:leecraner@aol.com).



Completed installation on the author's Turner 752 microphone. The original labeling of the right column of keys on the Pipo keypad, "A" through "D," was scraped off with an Exacto knife and the appropriate function labeling STO (Store), RCL (Recall), STP (Step) and CLR (Clear), has been applied to the base with dry transfer labeling



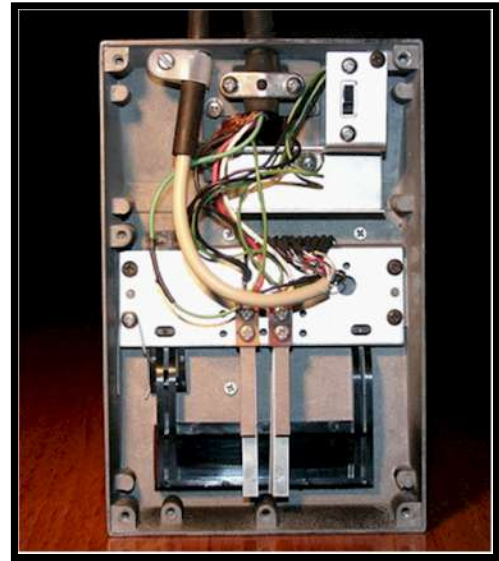
Figure 1. Drilling template



Figure 2. Keypad Mounting Holes



**Figure 3. New Cable Exit Hole**



**Figure 4. Completed installation showing the cable clamp**