CUSTOMER INFORMATION

HRO-600 Bulletin No. 1

In accordance with NRCI policy of continuing product improvement, changes have been incorporated into this HRO-600. These changes provide improved AGC operation, BFO stability, and additional provisions for use with optional accessories. The front panel meter now reads RF input signal strength in db relative to 1 uv across 50 ohm. The purpose of this bulletin is to provide the necessary corrections in the HRO-600 Technical Manual to make it agree with these changes.

Pg. 1-1 Last paragraph:

This receiver no longer requires a special installation kit for the Type 650 FSK Converter. All provisions for use with this accessory are now built in.

Pg. 1-3 Under the heading for rear panel facilities:

Add: AGC REF Terminal

TTY DIV Terminal

Pg. 2-3 Fig. 2-1 Add:

AGC REF and TTY DIV to TB2 terminals as on HRO-600 rear panel.

Pg. 2-4 Para. 2.5.3 Lines 3 & 4 Change to read:

...AGC out, in and ISB AGC terminals connected together by means of jumpers. These jumpers....

Pg. 2-10 Add paragraphs 2.5.19 and 2.5.20 as follows:

2.5.19 AGC REF terminal

AGC REF terminal is provided for use with external accessories.

2.5.20 TTY DIV terminal

TTY DIV terminal is provided for use with two HRO-600 receivers with Type 650 FSK Converters in diversity operation.

Pg. 3-6 Third line under "Function(s)" heading change to:

signal in db above 1 uv across 50 ohm

Pg. 3-12 Paragraph 3.3.9 c (2) First line change to:

to monitor the rf input level in db above 1 uv across 50 ohm,

pg. 4-11 Para. 4.4 Change to read:

The second IF/AGC module (A5) provides three AGC outputs (AGC REF, AGC, "S" Meter) to control the gain of the applicable signalpath circuits. AGC REF is applied to the A5, A4, and A2 modules, RF Gain Control and the "S" Meter when the front panel RF IN button is depressed. The "S" Meter output is applied to the front panel meter M1 via R22, R23, and S2 to indicate signal strength. The AGC output is connected to the rear panel AGC OUT terminal. When the HRO-600 is to supply its own IF AGC, the AGC IN and AGC OUT terminals of TB1 are connected together by means of a jumper. (The HRO-600 is shipped from the factory with this jumper connected.) When the HRO-600 is to supply its own RF front end AGC, the ISB AGC terminal of TB1 is connected to the AGC IN and AGC OUT terminals of TB1. (The HRO-600 is shipped from the factory with this jumper connected.) The AGC IN terminal of the rear panel is applied to the second IF/AGC module A5 and, via decoupling network L5 and C14, to the second mixer module A4. The rear panel ISB AGC terminal is applied to the front end module A2 via diodes CR3 and CR4.

The internally generated AGC output from the second IF/AGC module (A5) is derived in one of four ways. When more than one way is in use, the higher or highest level (which corresponds to the Lower or lowest RF gain) controls rf gain. The four levels involved are the automatic gain control (AGC) level, the manual gain control (MGC) level, and either the muting level or the listen-thru level. AGC level is enabled or disabled by the front panel AGC control (S4). MGC level is always determined by the setting of the front panel RF gain control (R16). Muting or listen-thru level is dependent upon external connections (if any) made at the rear panel of the HR0-600. These connections are described in paragraphs 2.5.2 and 2.5.8.

Pg. 5-6 Fig. 5-3 the adjustment location drawings for A2 and A5 must be changed. Delete R16 on A2. Delete R37 and R41 on A5.

Pg. 5-14 Para. 5.2.7 Change to read:

To align the front end module (A2), the second IF/AGC module (A5), and the AGC meter sensitivity control (R23), proceed as follows:

NOTE

To align A2 and A5 modules, an extender card is required.

a. Depress 50 ohm ANT selection pushbutton on front panel of HR0-600. Make sure that this pushbutton remains depressed, and that remaining two ANT selection push-buttons (-20 db and HI Z) are released (not depressed).

b. Depress SLOW AGC DECAY selection pushbutton on front panel of HR0-600. Make sure that this button remains depressed, and that

remaining two AGC DECAY selection pushbuttons (MED and FAST) are released (not depressed).

c. Depress AF LINE selection pushbutton on front panel of HR0-600. Make sure that this pushbutton remains depressed, and that remaining two METER selection pushbuttons (CAL and RF IN) are released (not depressed).

d. Set PRESELECTOR control on front panel of HR0-600 to ON position.

e. Set MODE switch on front panel of HR0-600 to USB (black) position.

f. Set AGC switch on front panel of HR0-600 to OFF position.

g. Rotate RF Gain Control on front panel of HR0-600 fully clockwise.

h. Connect output from 50 ohm rf signal generator to ANT connector (J8) on rear panel of HR0-600.

i. Set up signal generator and HR0-600 for 5.75 MHz by performing the following sub-steps (1) through (5):

   1. Tune HR0-600 for reception of 5.7500 MHz signal.
   2. Set signal generator output frequency at 5.75 MHz, as indicated by signal generator and heard in HR0-600.
   3. Adjust signal generator output level for mid-scale reading of LEVEL meter on front panel of HR0-600.
   4. Adjust signal generator output frequency for maximum reading on LEVEL meter. (Reduce signal generator output level as necessary to maintain meter reading on scale).
   5. Readjust signal generator output level as necessary for mid-scale reading on LEVEL meter.

j. Alternately adjust first if amplifier tuning control (A2L1) and three tuning slugs on first if filter (A2FL1) for maximum indication on front panel LEVEL meter.

NOTE

To adjust inductors A2L1 and A5L8 use Micrometals Tool A or its equivalent. To adjust three tuning slugs on first if filter (A2FL1) use Cambion Alignment Tool 1970-1 or its equivalent.

k. Adjust second if amplifier tuning control (A5L8) for maximum indication on front panel LEVEL meter.
Peak of bandpass characteristics adjusted by second if amplifier tuning control (A5L8) is relatively broad.

l. Set AGC Switch on front panel to ON position.

m. Depress RF IN pushbutton on front panel.

n. Increase signal generator output to 1V.

o. Adjust meter sensitivity control, R23, for a reading of 110 db. (This is a preliminary setting.)

p. Adjust front end attack threshold control, A4R20, fully clockwise.

q. Set signal generator output level to 6 uv EMF.

r. Adjust AGC attack threshold A5R30 for a reading of 10 on LEVEL meter.

s. Set signal generator to output level of 2000 uv EMF.

t. Adjust meter sensitivity control, R23, for a reading of 60.

u. Set signal generator to 18 uv EMF 30% 1000 Hz AM.

v. Set mode switch to WIDE (BFO OFF).

w. Adjust front end attack threshold A2R20 such that it just has no effect on LEVEL meter indication.

x. Vary the output level of the signal generator through its range. If "motorboating" is experienced, adjust AGC attack time constant A5R34 to just eliminate the motorboating effect.

Pg. 5-28 Fig. 5-7 Sheet 1

1. Remove CR3 and its connections to A5-15 and R23.
2. Reconnect CR3 in series with CR4 such that the annode of CR3 connects to the cathode of CR4 and the cathode of CR3 goes to A2 and C36.
3. Change designation of AGC OUT terminal of A5 from U to 14.
4. Change designation of AGC IN terminal of A5 from 15 to 5 and add connection to L5.
5. Delete old connections of terminals 5 and 14 of A5.
6. Add connection from A5-15 to R23 and label "S meter".
7. Add connection from A5-4 to rear panel TB2 and label "AGC REF".
8. From TTY + rear panel terminal, connection is to XA8-16.
9. From TTY - rear panel terminal, connection is to XA8-18.
10. Add connection to new terminal of TB2, TTY DIV from XA8-5.
11. Add coax connection from A5-9 to XA8-3.

Pg. 5-31 Fig. 5-7 Sheet 4

1. Change value of R5 from .47 ohm ½w to .75 ohm 2w.
2. Add to -5V distribution, connection to XA8-14.
3. Delete R17 and add connection from bottom of R16 to XA5-4.
4. Change value of R15 from 2.2K to 4.7K.
5. Change value of R19 from 4.7K to 2.2K.
6. Add R30, 6.8k ¼w 10% from arm of R18 to junction of R18 and R19.
7. In series with +18V connection to XA2-3 add L13 100 uh RFC and add from XA2-3 to ground C56 .001 uf capacitor.
8. Change connection XA2-3 to XA2-3 and XA2-15.
9. Delete old connection to XA2-15.
10. Add to +18V distribution, connection to XA8-1.

Pg. 6-1 Paragraph 6.2 Parts List

The following modules must be ordered as "AGC Modified" for replacement purposes:

A2 Front End PC Board

A4 2nd Mixer PC Board

A5 2nd IF/AGC PC Board

Pg. 6-3 Change R5 to Resistor .75 ohm 2w wirewound IRC BWH

Delete R17

Change R15 to R19 (ref des only)

Change R19 to R15 (ref des only)

Add R30 Resistor Mil Type RC07GF682K (Mounted on R18)