



HAMBUILDER HBR4HF
4 Band HF Transceiver
50 watt power out

HBR4HF V2.0

4 Band HF Transceiver

Si5351 on board

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Specification

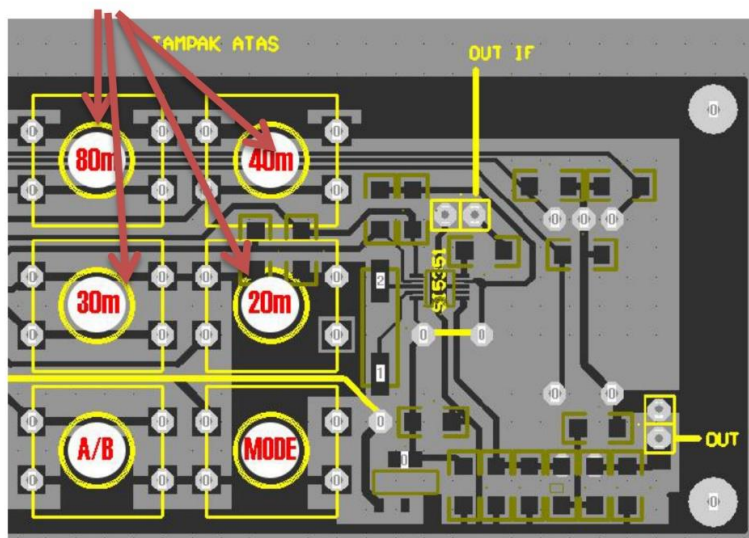
- New 2.2 Inch TFT display,
- 4 amateur band (80m, 40m, 30m sharing filter with 20m)
- TX covering: 80m/40m/30m/20m,
- RX covering: 3.5-14.5 MHz,
- Step 1Hz, 10Hz, 100Hz, 1KHz, 100KHz,
- Output 13.8V 45-50W,
- CW SSB modulation with 700Hz tone,
- Display VFO A/B, mode, Smeter, Band, RX/TX.
- IF Freq 11.059.200.

PSU requirement

- Voltage 13.8V
- Current 15A

Operation

1. **BAND** button

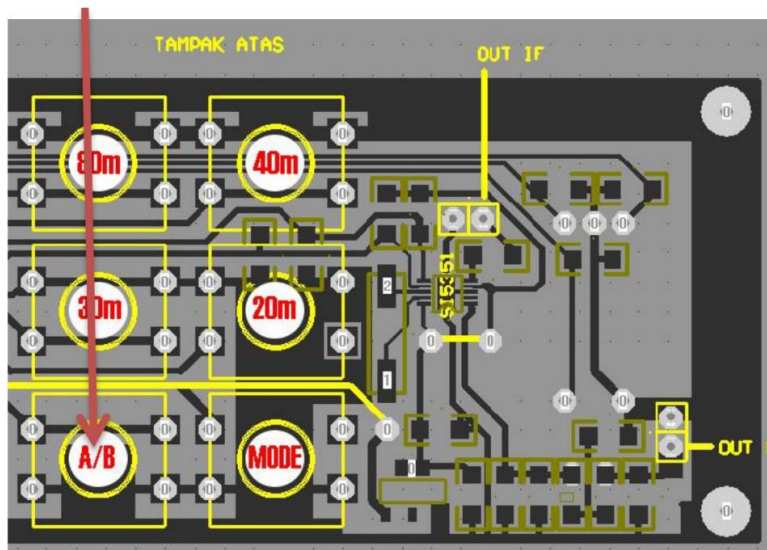


Band selection

• 80m	=	3.500 MHz	-	3.999 MHz
• 40m	=	6.900 MHz	-	7.249 MHz
• 30m	=	10.100 MHz	-	10.149 MHz
• 20m	=	14.000 MHz	-	14.349 MHz

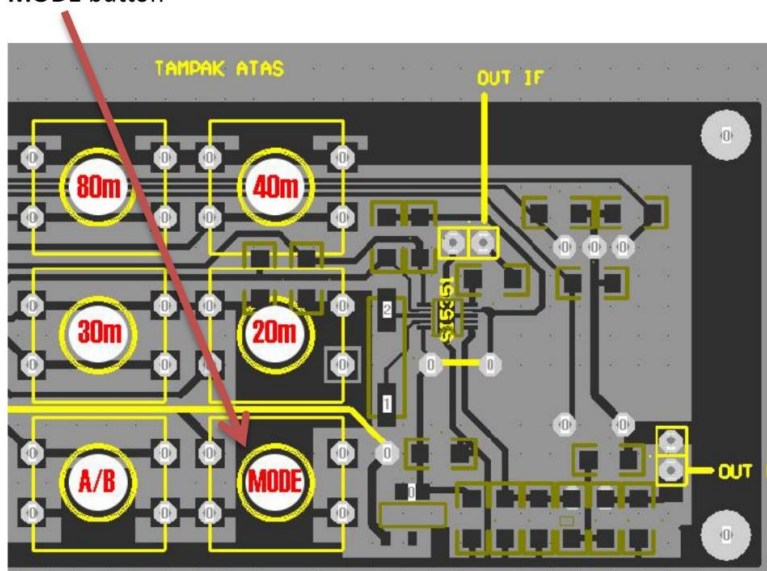
Each band have their own output control pin with active logic high 5V to pre-drive BPF dan LPF. Special for 26m the control band follow 30m band and CB will follow 10m band. Selected active band will store into microcontroller EEPROM after a few second.

2. VFO A/B button



VFO A/B button used to choose active VFO A or B, each band have A/B to selected VFO and will be store in microcontroller EEPROM after a few second.

3. MODE button



MODE Button used to choose modulation (LSB, USB, and CW). This button will drive output pin for selected modulation out pin and or drive BFO frequency out. This modulation pin out will have 5V high logic pin to drive external BFO for example.

Active mode will be store in microcontroller pin after a few second



Warning

Setting this may change the transceiver performance
Push A/B + Mode button (together) for setting value

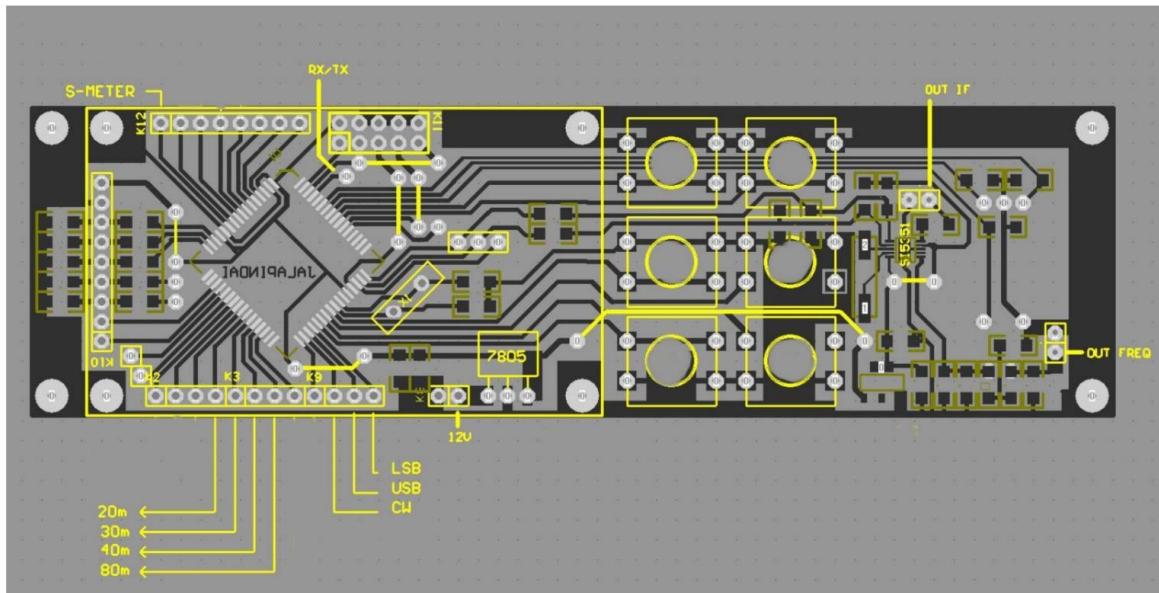
EEPROM Value setting

For the first time we need to set up the system such as correction value (calibration), IF and etc.

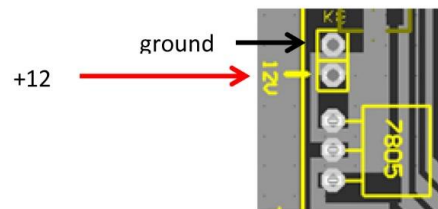
1. Correction menu will show up as default initialization.
Default correction value is zero except already calibrate. If we don't want to set the new calibration value, just push DWN button to skip then go to other setup.

Read the vfo value on VFO out pin. If counter read value did not show exact 10MHz please do rotate dial button left or right until counter read exact. Then push DWN button for next step.
2. IF SSB
IF SSB use to set up IF offset value, we need to rotate dial rotary button left or right. We could push rotary dial button also to change step.
Then push DWN button for next step.
3. IF CW
Same as above but for CW mode
Then push DWN button for next step.
4. BFO USB
BFO offset for USB. Default value is 1500Hz (1.5KHz), we could rotate rotary dial button to change the value.
Then push DWN button for next step.
5. BFO LSB
BFO offset for LSB. Default value is -1500Hz (-1.5KHz), we could rotate rotary dial button to change the value.
Then push DWN button for next step.
6. BFO CW
BFO offset for CW. Default value is 600Hz, we could rotate rotary dial button to change the value.

RTC for HBR4HF Connection and pinout



- 12V supply pin (beware connecting this pin)



- Output pin
 - This pin pin have logic high (5V) when active and logic low (0V) when not active
 - Alarm pin (K2.0)
 - Band control pin (K2.1 – K2.3)(10m, 15m, 20m)
 - Band control pin (K3.0-K3.3)(30, 40m, 80m, 160m)
 - Mode control pin (K9.0-K9.3)(AM, CW, USB, LSB)
- Frequency out pin
 - OUT FREQ (VFO out)
VFO out = IF + Display Frequency +/- SSB BFO offset
 - OUT IF (BFO out)
BFO out = IF +/- SSB BFO Offset

- RX/TX input pin

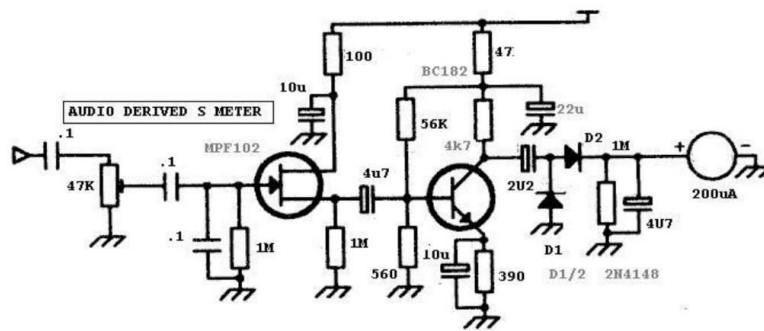
This digital input pin will accept 5V as RX state and 0V as TX state.

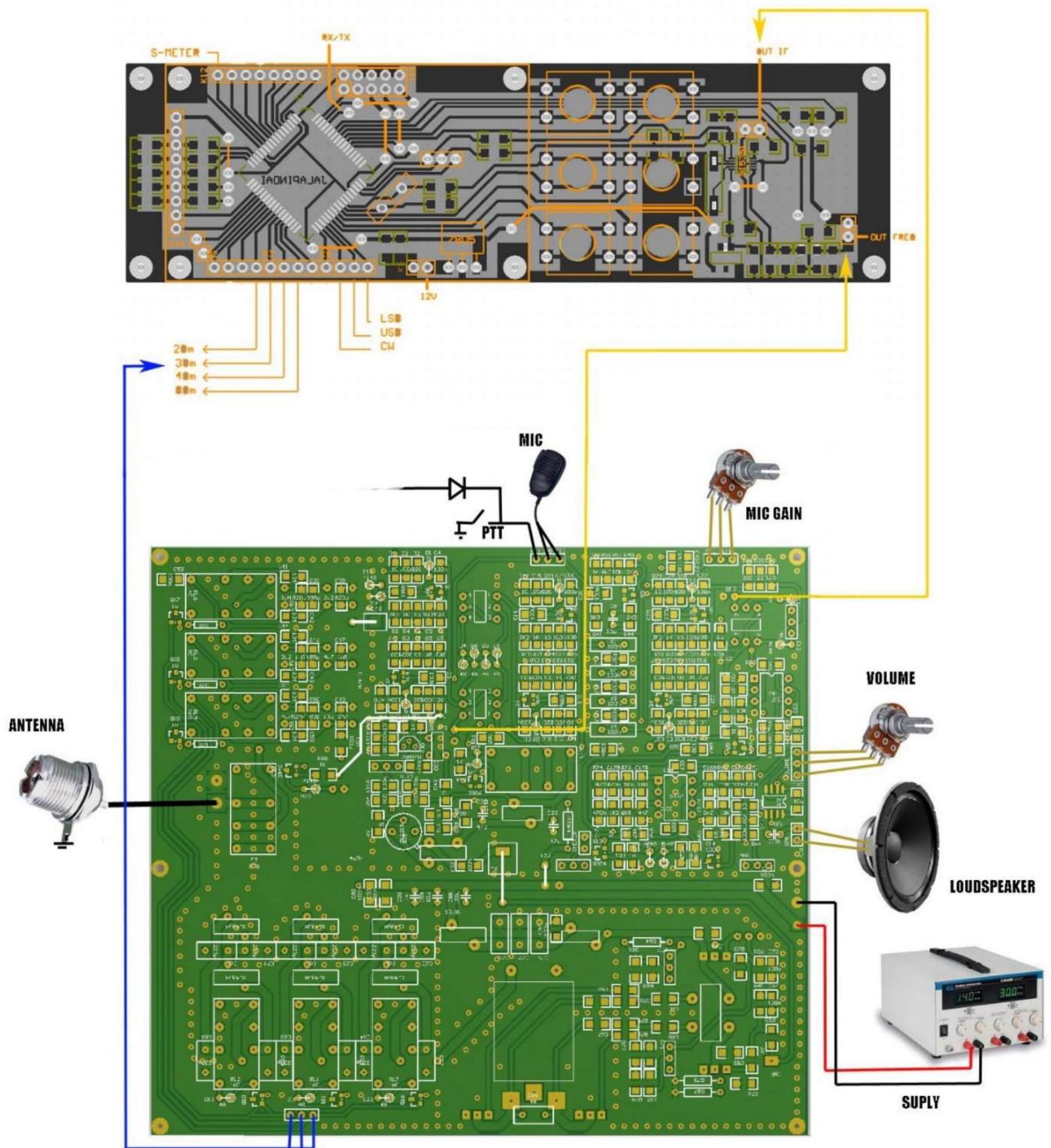
RX state will drive LCD display to show RX state and set up VFO value according to rx state, special for AM mode, will offset RX vfo to AM IF. This will also drive microcontroller to read s-meter value (see ADC input s-meter).

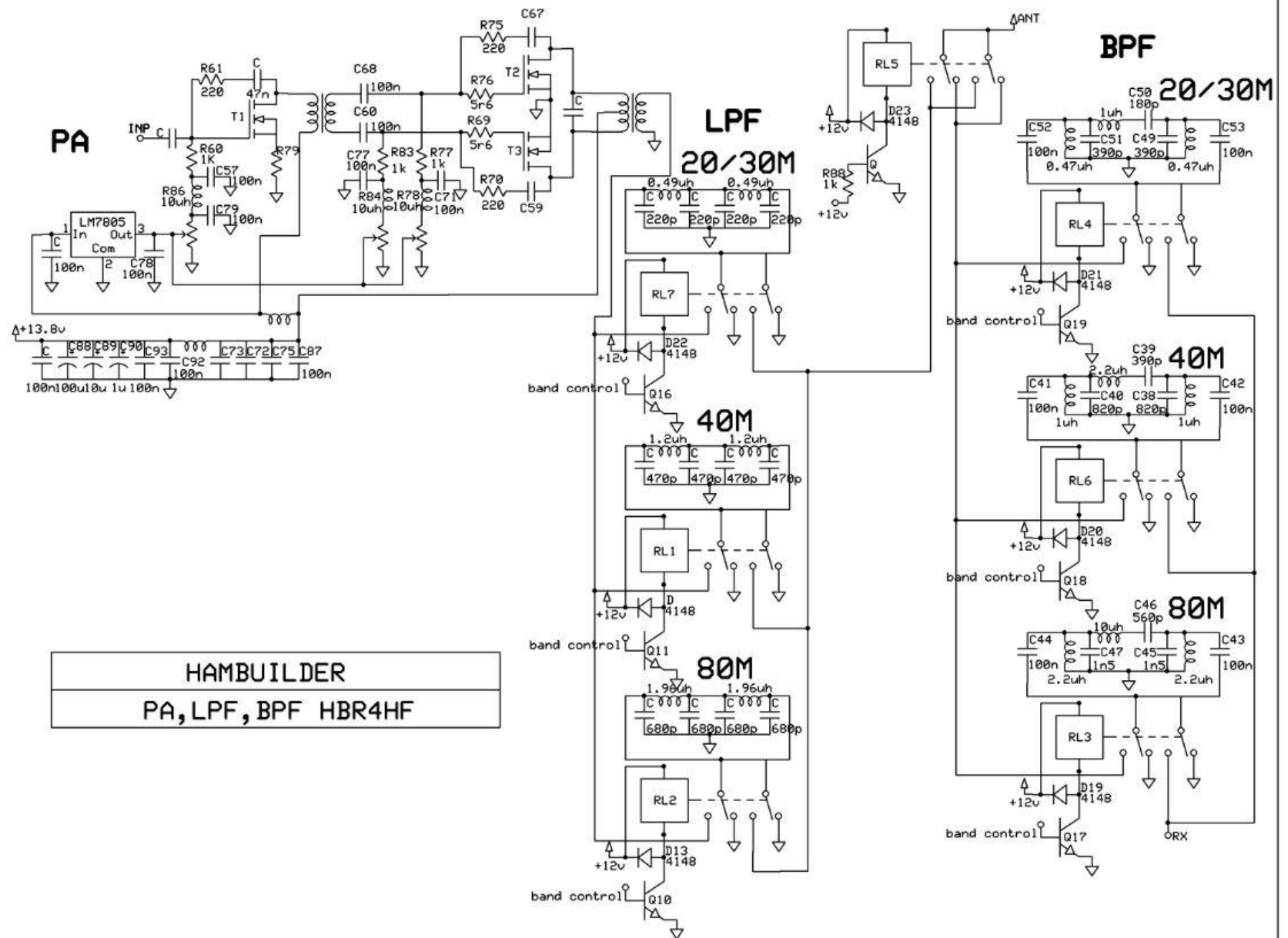
TX state will drive LCD display to show TX state and set up VFO value according to tx state, special for AM mode will not offset TX vfo to AM IF. This will also drive microcontroller to read forward (FWD) and reflected (REF) value (see ADC input pin REF/FWD)

- S-Meter (0-2.56V)

Connect this pin so s-meter buffer then do calibration. (replace analog meter then connect it to microcontroller s-meter input)







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