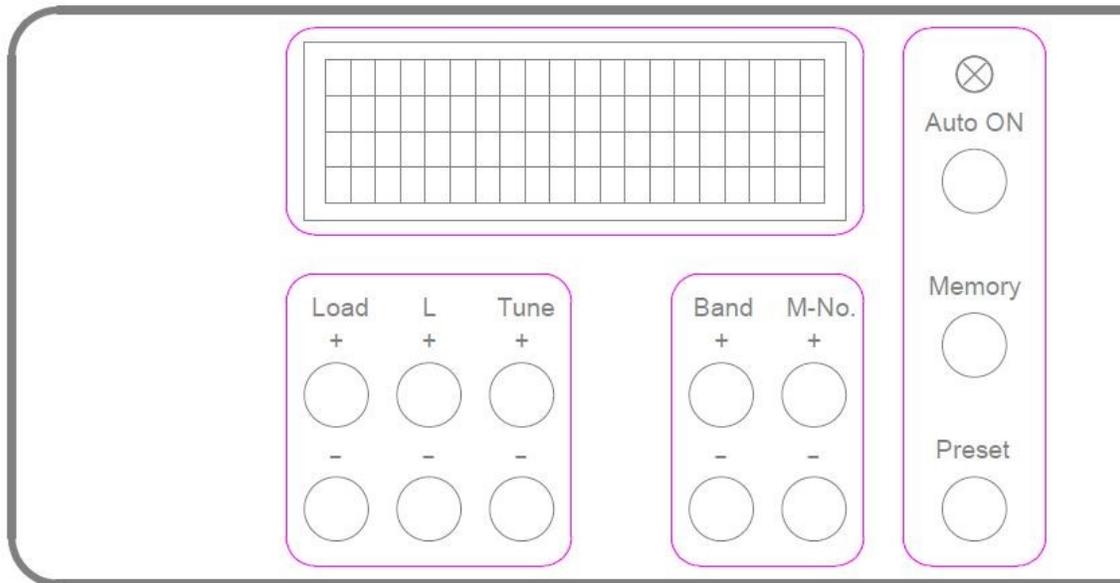


### Manual Tune Operation Guide:



With the keys "Load", "L" and "Tune" the motors can be moved between the positions 0% and 100%. The amateur band can be selected with the "Band" buttons. Which band is currently selected is shown on the display on the third line on the left. The buttons "M-No." and the other indications on line 3, as well as the buttons "Preset, Memory and Auto ON" have no meaning here. Since only the input filter of the PA is switched with the band buttons, it is recommended to enter a frequency per band in the favorites memory (described below) (for example, the respective band center). Thus, by pressing the memory button, the Pi filter can be easily preset to the band.

### **Manual operation with favorite memory:**

You can create 10 favorite memories per band. The desired favorite memory can be selected with the "M-No." buttons; it is shown on the display in line 3 from "M1" to "M10". To the right of this the corresponding frequency is displayed.

On delivery of the PA, the frequency "0,000MHz" is stored in all favorite memory locations. The frequency display for these memory locations is actually just a sticky note to indicate which frequency has been assigned to a memory location, it has nothing to do with saving "tuning settings".

### **Save frequencies to favorite memory locations:**

1. Use the "Band" buttons to select the desired amateur band.
2. Press both "M-No." - keys (+ -) simultaneously for more than 2 seconds until the LED briefly lights up red. The bottom line shows "Favorite program".

3. Select a memory location (M1 - M10) with the "Band" buttons.
4. With the "M-No." - buttons can now set the desired frequency according to the amateur band to be selected.
5. By repeating procedures 3. and 4. you can use all 10 memory slots for this amateur band a frequency indication be provided.
6. Press the "Preset" button for more than 2 seconds until the LED briefly flashes red twice. It is going to be switched back to normal operation.
7. By simultaneously pressing (> 2sec) the "M-No." - buttons (+ -) you can cancel the process without saving.

**Hints:**

- 1) It makes sense to store the frequencies in ascending order in the memory locations "M1" to "M10".
- 2) Memory locations that you do not want to use, set it back to "0.000MHz", this is for clarity.

**Save tuning settings to favorite memory:**

1. Use the "Band" and "M-No." buttons to select the desired memory location.
2. Set the transceiver to the appropriate frequency.
3. Manually tune the PA.
4. Press the "Preset" button for more than 2 seconds until the LED flashes red twice. The settings are saved in the selected favorites memory.

These saved tuning settings apply only to operation with the same antenna and the same performance as at the time of storage.

**Retrieve tuning settings from favorites storage:**

1. Use the "Band" and "M-No." buttons to select the desired memory location.
2. Press the "Memory" key. The motors drive to the positions stored in favorite memory. As long as the motors are running, the LED lights red and the PA is locked (appears in the bottom line of the display). The process is aborted by pressing any key.

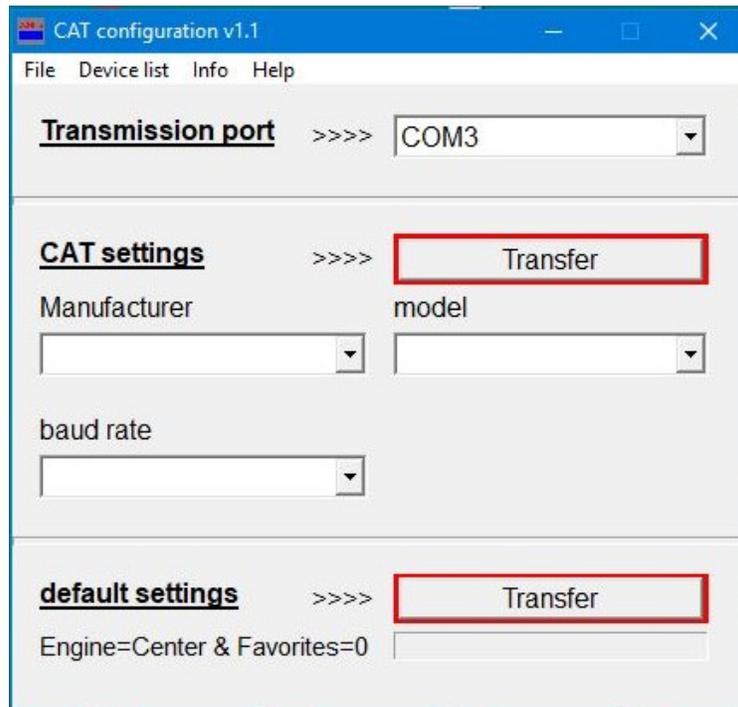
**Auto Tune Operation:**

**Requirements:**

The transceiver must be connected to the RS232 CAT port of the PA and the appropriate transceiver protocol must be set on the PA.

### Set CAT protocol in PA:

Before the data transfer with the PC, the PA must be set to CAT programming. To do this, press the "Auto ON" button for more than 2 seconds until the LED quickly flashes red. The bottom line of the display shows "CAT programming!" When the CAT data is transferred, the programming mode of the PA is automatically switched off again. If no CAT data has been transmitted, pressing the "Auto" key again can switch off the programming mode of the PA.



To be able to set the "CAT protocol" on the PA you need the PC program "CatProg.exe". Connect the PA connector "CAT" to the PC using a crossed (0-modem) RS232 cable. Start "CatProg.exe" and first set the COM port for data transfer with the PA (in the example COM3). Now the manufacturer, model and baud rate (transceiver - PA) can be set and sent to the PA using the "Transfer" button. With the button in factory settings all engine targets are set to middle position and all favorite frequencies to 0.

### Functionality:

The amateur bands are divided into areas that are completed by so-called "corner frequencies".

### Corner frequencies of the autotune segments:

10m	28000, 28350, 28550, 28850, 29150, 29500, 29700
12m	24890, 24990
15m	21000, 21100, 21200, 21300, 21400, 21450
17m	18068, 18168
20m	14000, 14100, 14200, 14300, 14350
30m	10100, 10150
40m	7000, 7100, 7200
80m	3500, 3600, 3700, 3800
160m	1810, 1910, 2000,

At all these corner frequencies, the target settings for the engines must be determined before Autotune can be used. If, in operation, the request for e.g. 14.25 MHz comes, then the motor target between 14.2 and 14.3 MHz is interpolated (applies to special version according to the frequencies used there). These settings are only valid if the same antenna is used during operation and the same output power is used.

#### **Save tuning settings of "corner frequencies":**

1. Use the "Band" buttons to select the desired amateur band.
2. Press both "Band" buttons (+ -) simultaneously for more than 2 seconds until the LED briefly lights up red. In the bottom line will show "Autotune-Prog."
3. Select a cutoff frequency using the "Band" buttons.
4. Set the transceiver to the appropriate frequency.
5. Manually tune the PA.
6. Press the "PRESET" button for more than 2 seconds until the LED briefly flashes red twice. The settings are stored in the selected corner frequency memory.
7. Execute points 3 to 6 until the tuning settings for all cutoff frequencies for the selected band are stored.
8. Press the "Band" buttons (+ -) to return to normal mode by simultaneously pressing (> 2sec). The display "Autotune-Prog." goes off.
9. Execute points 1 to 8 until the tuning settings for all cutoff frequencies for all bands are stored.

These saved tuning settings apply only to operation with the same antenna and the same output power as at the time of storage.

#### **Working with Auto Tune:**

1. Switch to Auto Tune mode by pressing the "Auto ON" button. The LED lights green and the bottom line of the display shows the band and frequency of the transceiver. If the PA cannot connect to the transceiver, the LED stays off and in the bottom line of the display shows "No transceiver!". Auto Tune is not possible then.
2. By pressing the "MEMORY" key or "PTT", the transceiver polls the current frequency and the motors are driven to the setting stored for this purpose. As long as the engines are running the lights Red LED and the PA is locked (also shown in the bottom line of the display). The process is aborted by pressing any key.

#### **Difference between "Memory" key and "PTT":**

If the engine positions have been changed manually after "Auto Tune" you can restore them by pressing the "Memory" button, even if the frequency has not changed.

Pressing the "PTT" will only work if a new frequency has been set on the transceiver. Thereby it is possible to correct the tuning position and pressing the "PTT" again causes the engines will not run back again.