

CatKnobz

Thank you for purchasing CatKnobz.

CatKnobz is an easy to connect controller for the latest Yaesu transceivers. Six easy use knobs control over 30 settings. Any knob can be any setting, in any order. Add another CatKnobz if you need more knobs. Add a CatDisplay232 or CatMeters for more information about your Transceiver. The settings controlled are:

- | | | |
|---------------|---------------|--------------|
| • APF | • IPO AMP1/2 | • RF Gain |
| • AGC | • Keyer Speed | • SCP Span |
| • Band Up/Dn | • Keyer Pitch | • Squelch |
| • Contour | • MEM Up/Dn | • TX Power W |
| • Contour LVL | • Mic. Gain | • TX TOT |
| • Contour WDT | • Mic. Proc | • VFO Up/Dn |
| • DVS RX | • Meter | • VOX Delay |
| • DVS TX | • Mode | • VOX Gain |
| • DNR | • Monitor | • Volume |
| • IF Shift | • Notch | |
| • IF Width | • NB LVL | |



Compatibility

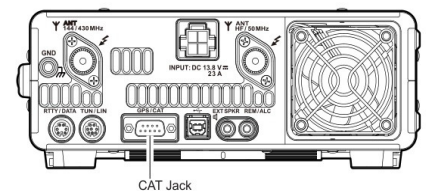
CatKnobz was developed for the Yaesu FT-991A which supports the latest Yaesu CAT command set. It also works with other Yaesu models that support the same commands. These mostly include all versions of FT-450, FT-950, FT-2000, FT-DX10, FT-DX101, FT-DX1200, FT-DX3000, FT-DX5000, FT-DX9000. Be aware that some of these models do not support all the new CAT commands.

This version of CatKnobz does not work with FT-847, FT-900, FT-920, FT-990, FT-1000, FT100, FT817, FT818, FT857, FT897.

Installation

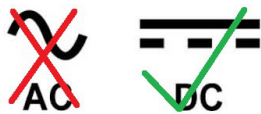
These instructions are correct for FT-991A firmware version Main:02-04. Menu numbers may be different for other revisions of firmware. Set Menu item:

- **028** **GPS/232C SELECT** . **RS232C**
- **029** **232C RATE** . . **19200bps***
..when CatKnobz is powered up, "CAT baud" is displayed & must match menu 029.
- **030** **232C TOT** . . **10msec**



Plug the supplied CAT cable into the transceiver's RS232 CAT jack. Plug the other end into the CatKnobz CAT jack.

CatKnobz requires 7VDC to 30VDC at around 160mA to operate. It has a standard 2.1mm DC jack and is wired centre pin positive (tip positive), an industry standard for many plug-packs (wall warts).



You must use a power supply with a DC output.
 Do not use a power supply with AC output.



CatKnobz can also provide power to CatDisplay232 or CatMeters via the CAT passthrough port. Short the jumper on the back of CatKnobz labelled "CatDisplay232 Power Link". DC is then passed through to the connected device via the CAT cable. If you purchased CatKnobz with CatDisplay232 or CatMeters, the link will be jumpered.

- Note:**
- The FT991 GPS/CAT Jack cannot be used for GPS while CatKnobz is connected.
 - If you want to use a GPS for updating transceiver location, you will have to remove the CatKnobz and set up the GPS/CAT port for GPS use. Refer page 117 of the FT-991A Operating Manual. You can manually enter a location into the transceiver as outlined on page 118 of the FT-991A Operating Manual
 - **For transceiver installation other than FT-991A, please refer to your user manual.**

Mounting

CatKnobz is supplied with a bracket designed for FT-991 or FT-991A front mounting. Remove the bottom front 2x case screws. Position the bracket holes over screw holes & reinstall screws. Do not over-tighten the screws. Extend the bottom transceiver bail foot.

For other mounting ideas, you could remix this STL design file: <https://www.thingiverse.com/thing:4838885>

Operation

To control a setting, simply turn a knob left or right. The display indicates what setting you are changing & its value. The change is sent to the transceiver when the knob is turned. The display continues to show the setting for a few seconds.

If a setting does not appear to change on the transceiver, like Contour (& others), check to make sure it has been turned on in the transceivers' menu. Also, the setting must be valid for the current transceiver band or mode.

Customising a knob

To customise a knob:

1. Momentarily press in the knob
2. Turn the knob, left or right, and stop on the setting you want

When the display again shows "www.CatKnobz.com", the setting is now associated with that knob. The next time you turn that knob, it will change the setting you have selected.

After a 2 minutes of no use, CatKnobz will commit changes to permanent memory. When completed, the display shows "Saved.." for a short time.

Changing CAT Baud Rate

CatKnobz is set to 19200bps by default. To change it, press the left knob in twice then turn it & stop on the baud rate you want. After a few seconds delay the selected baud rate will be set.

- You will need to match the speed on your transceiver. The change effects both CAT port and pass through port. They cannot be set differently.
- Any change is not permanent until the 2 minute timer is up & you see "Saved.."
- At 38400bps CatKnobz may cause interference with any device plugged into its pass through port. This is due to EMI filters clipping the high data rate. Dropping down to the default of 19200bps (or lower) will improve serial data integrity.

Important !

- When a knob is turned, the display shows what is being changed for a few seconds. During this time, turning another knob has no effect.
- CatKnobz does not check the settings you make. It does not know things like C4FM does not support AGC. So unlike the transceiver, it will let you change AGC while in C4FM mode but the change won't have an effect.
- For transceivers with a sub receiver, like FT-DX101, CatKnobz controls the main receiver only.
- On the CatKnobz CAT pass through port, both TXD & RXD are at RS232 levels and not suitable for connecting to devices requiring TTL voltage levels.
- EEPROM memory typically has 100,000 save cycles. A 2 minute save delay is used to dramatically reduce save cycles & corresponding EEPROM wear and tear. If power is removed from CatKnobz before a customisation has been saved, any changes will be lost.
- When another serial device is plugged into the pass through DB9 RS232 connector (EG. CatDisplay232), serial data is cut off while a CatKnobz knob is turned. Communication will resume when CatKnobz is idle again.
- CatKnobz contains biodegradable PLA which is not suitable for extreme temperature or direct sunlight environments.
- A noisy power supply or high RF field may cause interference or lock up. If the display or buttons become corrupted or unresponsive, one of these will be the cause which you need to remedy.
- CatKnobz is a digital device that has an internal oscillator. Even though TDK EMI filters are used in its design, you may experience interference when in close proximity to some transceiver installations. It can be particularly noticeable if the transceiver has a poor earth, open line antenna feeders or is using a simple rubber-duck type antenna. In this instance, it may be necessary to add further RFI suppression techniques. A good article on this is "A Ham's Guide to RFI, Ferrites, Baluns, and Audio Interfacing" by Jim Brown K9YC.

CatKnobz is proudly designed, programmed and marketed for Amateur Radio use by ZL1CVD Chris Day, New Zealand. It was not designed for commercial or life saving purposes.

Thank you for your custom...
...73s de Chris ZL1CVD