CatKnobz

Thank you for purchasing CatKnobz. CatKnobz is an easy to connect controller for the latest Yaesu transceivers. Any knob can be programmed to a setting, in any order. Add another CatKnobz if you need more knobs.

The settings controlled are:

- **AGC** (Off, Fast, Mid, Slow, Auto)
- **AMC**
- **APF**
- **BAND**
- **CTR FRQ**
- **CTR LVL**
- **CTR WIDTH**
- **CW PCH**
- **CW SPD**
- **DNR**
- **IPO AMP1/2**
- **MCH**
- **METER** (TX CMP/ALC/PO/SWR/ID/VDD)
- **MIC LVL**
- **MODE**
- **MONI**
- **NB**
- **NOTCH**
- **PROC**
- **RF GAIN**
- **RF PWR** (+/- 2W increments)
- **SCP LVL**
- **SCP MODE**
- **SCP PEAK**
- **SCP SPAN**
- **SCP SPD**
- **SHFT**
- **SQLCH**
- **VFO**
- **VOLUME** (+/- 5 increments)
- **VOX Anti**
- **VOX DLY**
- **VOX LVL**
- **WDTH**

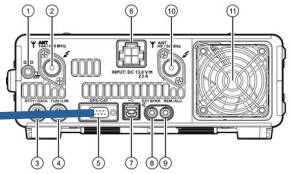
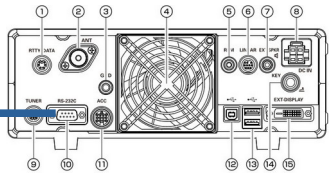
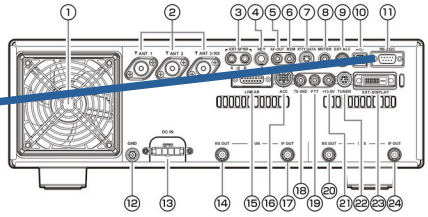
Compatibility

This version of CatKnobz that works with Yaesu FT-991/A, FT-DX10, FT-DX101D/MP. It may work with other models supporting the new Yaesu CAT commands however some functions that are only supported in newer transceivers will not work with older transceivers.

DC Power

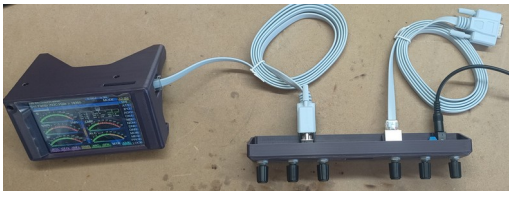
Requires 7V to 35V DC at around 150mA to operate.
It is designed to use the same power supply as your transceiver and features a voltmeter that goes RED when the voltage is too high, green when normal and orange when too low. The 2.1mm DC jack is wired center pin positive. It requires a power supply with a DC output that does not ramp the voltage up when turned on. If your power supply does ramp up, you may see a white screen until an internal timer kicks in and forces a reset (can take a minute). There is also screw terminals marked **+ -** for bare wire connection.

CAT Connection & Setup

Transceiver	*Setting*	*CAT location*
FT-991 FT-991A	Menu 028 → GPS/232C → **RS232C** Menu 029 → 232C RATE → **19200bps** **Connect to: 5 - RS232 CAT**	
FTdx10	OPERATION SETTING → GENERAL → 232C RATE→ **19200bps** **Connect to: 10 - RS232 CAT**	
FTdx101D FTdx101MP	OPERATION SETTING → GENERAL → TUNER SELECT → **INT** OPERATION SETTING → GENERAL → 232C RATE → **19200bps** **Connect to: 11 - RS232 CAT**	

CatKnobz with CatTouch

The image shows how CatKnobz & CatTouch are used together. Power is only supplied to CatKnobz. It is then routed via the serial cable to CatTouch. For more information on how this works please review this document: https://www.catknobz.com/assets/Power_Over_Serial.pdf



Mounting

CatKnobz is supplied with a a bracket designed for FT-991/ A or FTdx10. Remove the bottom front 2x case screws. Position the bracket holes over screw holes & reinstall screws. Do not over-tighten the screws. 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 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, “SET:” is displayed & stop on the setting you want

When display again shows “CatKnobz.com”, the setting is now associated with that knob & the next time the knob is turned, that setting will change. After a 2 minutes of no use, changes are saved to permanent memory & “*Saved..*” is displayed.

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. Changes are not permanent until the 2 minute timer is up & you see “Saved..” on the screen.
- 38400bps may cause interference with any device plugged into its pass through port. Reduce speed to correct.

Restoring Factory Defaults

Press the right most knob in twice then turn it. RESET is displayed and all knobs and baud rate will be restored to factory default. This procedure clears any corrupted EEPROM data that may be caused from close proximity to a high RF field.

Important !

- When power is applied, CatKnobz queries the transceiver for current knob settings. If “???” is displayed it means CatKnobz was turned on before the transceiver or it cannot communicate with the transceiver. Make sure baud rate matches the transceiver setting, the transceiver's CAT port is activated (if required) & CatKnobz has been turned on after or at the same time the transceiver.
- 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.
- 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.
- Over time, OLED displays can suffer from screen burn-in, especially if idle. To help eliminate this, CatKnobz screen slowly scrolls.
- 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