

# CATconv

## CAT Protocol Converter

**A Java multiplatform application used to convert CAT commands between a transceiver and a CAT application**

**Version 0.2**

**Included configuration is used to control Yaesu FT-991 transceiver using the latest free version of HamRadio Deluxe (v5.x), with some limitations.**

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## Introduction

This is a very simple to use multi-platform Java application which can be used to convert CAT commands. It can be used to allow controlling newer transceivers using old application (no more updated). The application is user configurable for different transceivers, no matter the CAT protocol used.

As an example you can work in DigiModes using the latest free version of HamRadio Deluxe Suite (5.24.0.38) with the new Yaesu FT-991 (which is not supported in that version of the application) using the Yaesu FT-950 model in HRD. Without this application, you will not be able to set or read the frequency from the radio as the number of digits used to represent the frequency is higher for FT-991 (as it covers VHF and UHF bands too) making this application almost useless for the new transceiver.

**NOTE:** As an alternative, you can buy the latest HRD version which includes 1 year of support from:

<http://www.hrdsoftwarellc.com/>

which natively supports the Yaesu FT-991 transceiver. If you are like me and you like the old free version, then go further with the reading.

## Features

Current version of the application has the following features:

- Use two virtual COM ports to be the man-in-the-middle between the transceiver and CAT application.
- Listen for specific patterns and replace/modify the data as defined in the configuration file
- Work in both directions, with separate pattern rules (CAT application -> radio and radio -> CAT application)
- Can be run on Windows, Linux or Mac (with Java Runtime installed)
- The application is fully portable, nothing is modified in the Registry and contains only the executable (JAR) and a simple text configuration file
- Configurable Baudrate (from 4800 to 38400)
- Settings are saved in a configuration file, so no need to enter values again at next start
- Auto start at application startup (unattended)
- Users can define new conversion rules based on patterns by just editing a text configuration file.

## Limitations

Current version of the application has the following limitations:

- Not all features can be converted. For example using FT-991 transceiver in FT-950 mode of HRD does not allow to set frequencies  $\geq 100\text{MHz}$

## WARNING!!!

**Use this application on your own risk. If you write wrong conversion rules in the configuration file, you can send commands that can brick some transceivers.**

## Preparing the system

In order to use the application, you need two virtual COM ports. For this purpose, I recommend you to use the well-known open source solution named com0com.

To be able to install com0com on Windows 7 or higher, use the latest available version of the signed package available here:

<http://pete.akeo.ie/2011/07/com0com-signed-drivers.html>

or this direct link:

<http://files.akeo.ie/blog/com0com.7z>

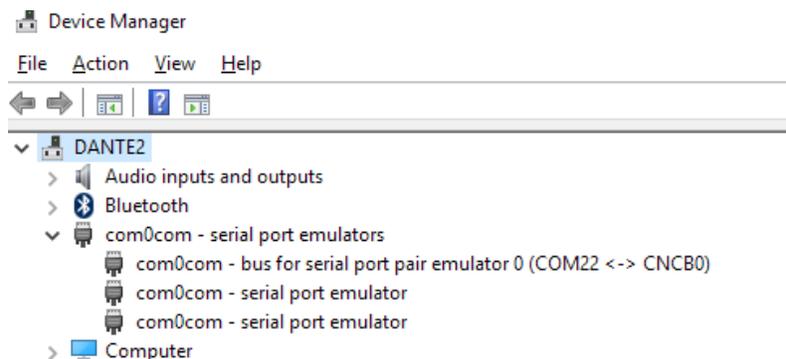
This is a package available only without GUI, so to install it do the following (as described in the article from the link above):

- Download and extract the files (using 7zip if needed)
- Open an elevated command prompt in the i386\ (32 bit) or x64\ (64 bit) directory
- Run the command:  
**setupc**
- Enter the install command (when you get the 'command>' prompt):  
**install - -**
- Accept the prompts.

Once the driver is installed, two connected COM ports will be created: CNCA0 and CNCB0. As HamRadio Deluxe (for example) does not support such names for COM ports, rename CNCA0 to COM22 (or any other not used COM port in your system). For this, do the following:

- Open an elevated command prompt in the i386\ (32 bit) or x64\ (64 bit) directory
- Run the command:  
**setupc**
- Enter the following command (when you get the 'command>' prompt):  
**change CNCA0 PortName=COM22**

You have now two new COM ports (COM22 and CNCB0) virtually connected. You can see the two devices in the Device Manager under "com0com – serial port emulators" as in the picture below.



## Download the application

You can always download the latest version of the application from the link available on my web page:

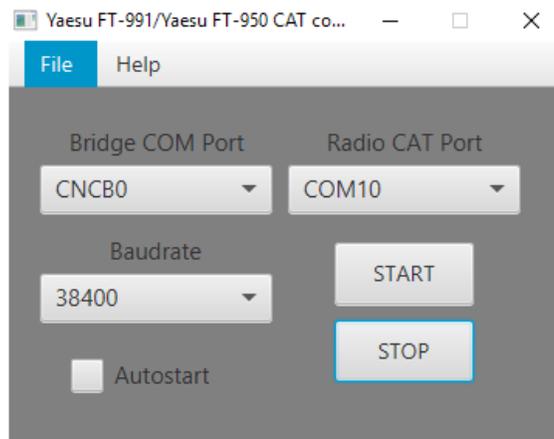
<https://www.yo3ggx.ro>

The package is a zip archive containing two files: catconv.jar and catconv.cfg.

Unzip the two file in a new folder of your choice.

## Starting the application

To start the application in Windows, if you have previously installed Java Runtime (from Oracle), just click on the file (catconv.jar). You will get the following window:



**Note:** This application was tested with Java SE Runtime Environment 8u92 downloaded from here:

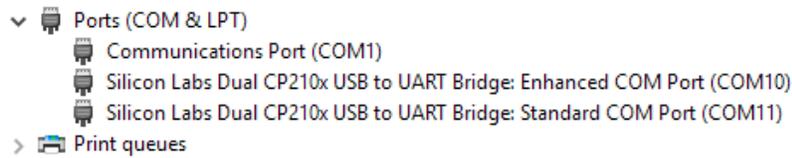
<http://www.oracle.com/technetwork/java/javase/downloads/jre8-downloads-2133155.html>

## Configuring converter parameters from the GUI

Select the virtual COM port previously created (named CNCB0) as the "Bridge COM Port". This will be used to connect to HamRadio Deluxe.

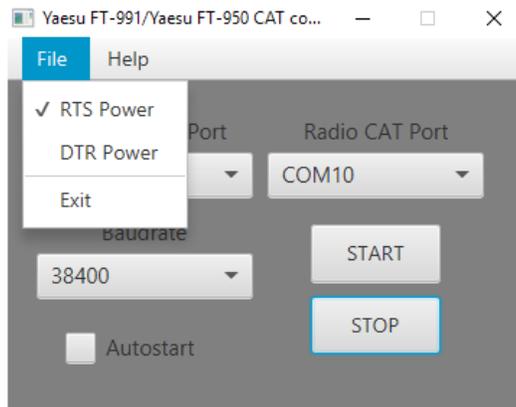
Select the COM port used by your transceiver CAT interface as the “Radio CAT Port”. This will be used for the communication with the radio.

In my case this is COM10. In fact is the port named “Silicon Labs Dual CP210x USB to UART Bridge: Enhanced COM Port (COM10)” in Device Manager.



Select the Baudrate. Use the value configured in the radio CAT setup menu. I recommend you to use the higher available speed.

Yaesu FT-991 require to set RTS in order to control it over CAT using the USB connection. For this purpose, in the File menu verify that “RTS Power” to be checked.



All settings are saved in the configuration file and automatically used at next application start.

You are now ready to use it. Do not check “Autostart” before you are sure that everything work as expected. Click on “START” button. The window background will go green and the converter will become active.



## Configuring Yaesu FT-991

Use the following document to configure the settings in FT-991.

[http://www.hamoperator.com/Fusion/FusionFiles/K9EQ-FUSION-PDF-0020\\_HRD-FT-991.pdf](http://www.hamoperator.com/Fusion/FusionFiles/K9EQ-FUSION-PDF-0020_HRD-FT-991.pdf)

Discard the section related to the HRD version 6 configuration.

## Configuring HamRadio Deluxe free version (5.28)

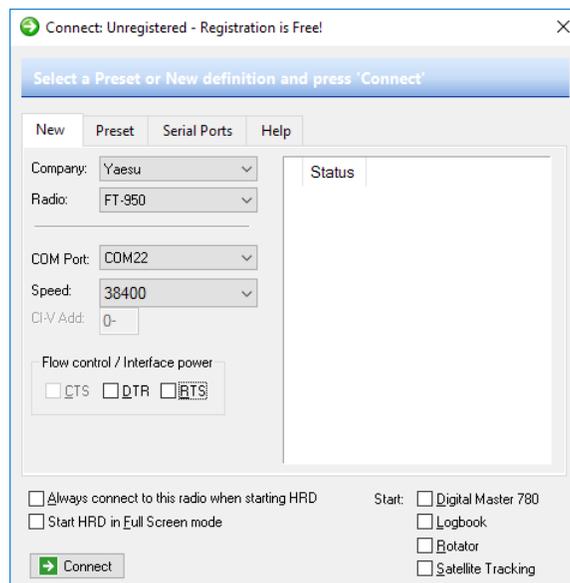
You can download the latest free version of HamRadio Deluxe (5.24.0.38) from this web page:

<http://www.iw5edi.com/software/ham-radio-deluxe-5-download-links>

or if the page is not available using this direct link:

<http://www.mannini.it/software/Ham-Radio-Deluxe-Download/setuphrd52438.exe>

Start HamRadio Deluxe. You will be prompted to define a new transceiver connection. Define the preset as in the following picture. Use the virtual COM port defined previously and FT-950 as the radio model. You don't need to check "RTS" as this line will be controlled by the java application.



Click on "Connect" button to connect to the radio through the CATconv application.

You will be able to use most of the functions in HRD 5.x with your new transceiver.



- px – where x can be any positive decimal number representing the byte position of the original input data which will be used on the current position of the replacing data.

More tags will be added in the future if this will help extend the support for other transceivers, based on users feedback.

## Application history

### *Version 0.1 (Jun 29,, 2016).*

- First public release of the application

### *Version 0.2 (Jul 1, 2016).*

#### **What's new/changed from 0.1:**

#### **Solved bugs:**

- prevent app crash when running with autostart enabled and invalid config
- different background color (normal vs light gray) when stopping the service

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