

The Xiegu G106 and Fldigi

by HA3MGA Gabor

I bought my G106 from Xiegu.eu on 15.05.2023 and I was not satisfied with the available CAT control options in Fldigi.

The manufacturer claims, it works with the CAT control settings of the IC-7100, but it is only partially true. Only the frequency control works, but you must choose manually the required data mode on the radio (U-D or L-D).

Because of the inaccuracy of the available documentation about the CAT commands of the G106, I spent approx. a week on it and did some reverse engineering. After a short email exchange with the author of Fldigi (W1HKJ David), he made my RigCAT XML control file officially available. Please note that, there is a version 1.1 as I found some bugs in the initial 1.0 version.

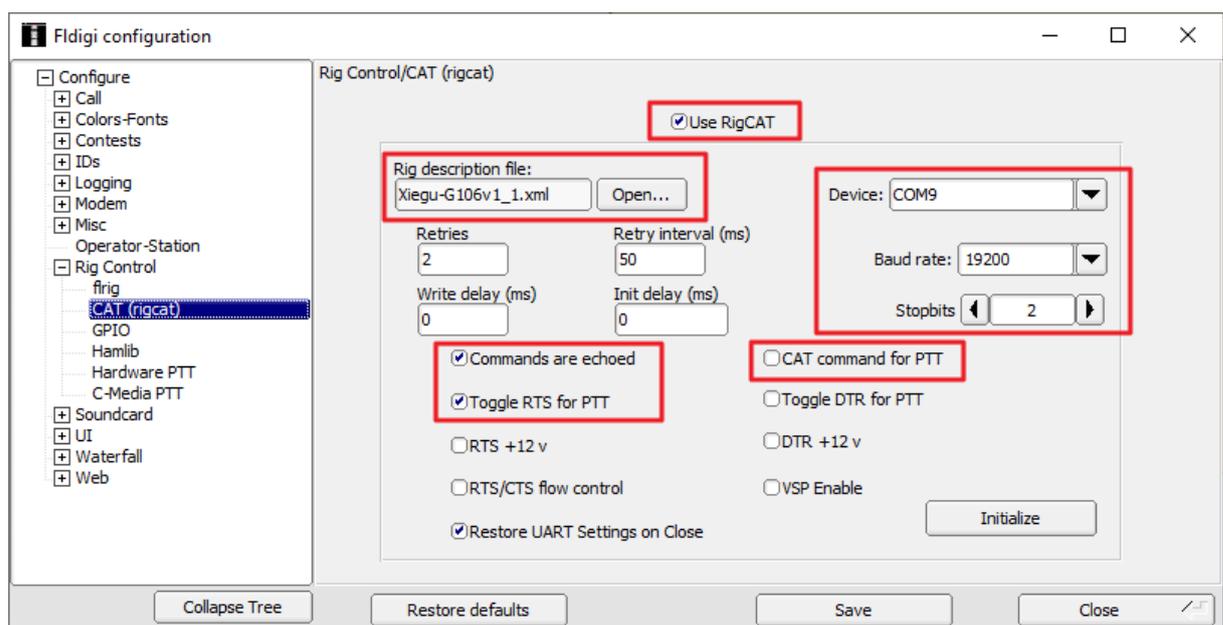
G106 setup in Fldigi

WARNING! The latest 1.3 version firmware must be installed on the G106!

Download the **Xiegu-G106v1_1.xml** file from here:

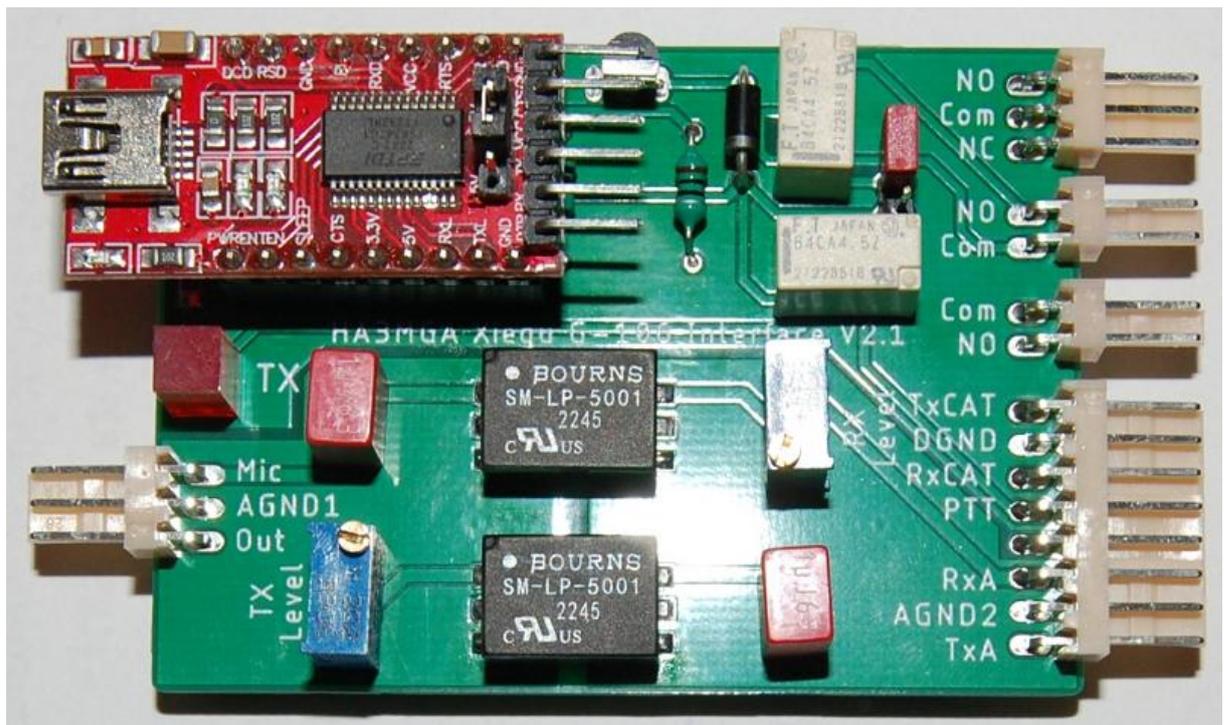
<https://sourceforge.net/projects/fldigi/files/xmles/xiegu/>

Then start **Fldigi** and go to the **Configure/Rig Control/CAT (rigcat)** menu. Apply exactly the same settings like on the below picture:



Of course, the name of the COM port will be different on your computer. Select the right COM port here. However the baud rate and number of the stop bits should be the same like on the picture. It is very important to know that the CAT command for PTT will not work with Fldigi! According to the CAT manual of the G106, if you send one PTT command to the radio, it will TX only for 2 seconds! It is not a problem with WSJT-X as it is polling the radio during TX, and sending the PTT CAT command continuously. Fldigi is not! This is the reason why only PTT via RTS or - depending on the interface hardware - via DTR will work.

It is also very important to note that, the G106 is extremely sensitive for coax sheath currents. It is using 3.3V TTL levels for CAT communication, which was not the best choice by designers. If you face with dropped CAT control in Fldigi and/or WSJT-X during TX, then the root cause is most probably the high sheath currents. It is a common problem with EFHW, LW and Vertical antennas. My radio produced it with my low hanging HF Kits EFHW and even with my Chelegance JPC-12 portable vertical on several bands despite of the low SWR figures. So, in similar cases try to reduce the sheath currents with common mode chokes or use a special interface. Ferrite rings on the USB cable (if you use USB serial ports) are totally useless. To overcome on this issue and to avoid from bulky common mode chokes, I designed a special interface with low distortion Bourns line transformers for the RX/TX audio with 4 kHz bandwidth. And most importantly, there are 3rd order low pass Chebyshev filters with 1 MHz cut off frequency on the RX/TX and RTS CAT lines.



I don't know whether the Xiegu DE-19 interface is affected or not as I never tried it.

How to utilize the CW filters for digi modes

With the **Xiegu-G106v1_1.xml** RigCAT control file you can control the frequency and also the modes from Fldigi. It makes possible to utilize a trick, which will make easier to work with weak stations in PSK31, RTTY or Olivia 8/250. To be able to TX, the radio should be in data mode (U-D or L-D). In any other modes, it will also switch to TX, but will not accept the audio signal from the external connector, so it will TX without modulation. During RX, you can utilize the CW filters of the radio. The 50 Hz filter is not very steep and quite good for PSK31. The 250 Hz filter is quite sharp and works wonderfully for RTTY and Olivia 8/250. With some smart macros, you can do the VFO adjustment and the mode change with a single click from Fldigi.

The trick is the following:

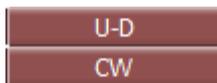
1. Go to the menu of the G106 and set CW tone exactly to 1000 Hz.
2. Choose the required CW filter on the radio, for example the 250 Hz if you would like to work in Olivia 8/250 or RTTY modes. Unfortunately, there is no CAT command to select the filter, so it must be selected always manually on the radio.
3. Create two macros in Fldigi with following contents:

Macro Button Label: **U-D**

Macro Text: **<RIGMODE:U-D><QSY+: -1.000>**

Macro Button Label: **CW**

Macro Text: **<RIGMODE:CW><QSY+: +1.000>**



When you hear a weak station in USB Data mode, then tune the radio to see (hear) the weak station at 1000 Hz on your waterfall in Fldigi. Then switch with the CW macro button to CW. The radio will automatically adjust the VFO and apply the previously selected narrow CW filter which will dramatically improve the S/N of the weak station. Very important! As I mentioned earlier, the G106 will not TX anything if it is not in Data mode! So, if you want to reply or call the weak station, first press the U-D macro button to switch back to USB Data, before you start your transmission!

It is not a 100% perfect solution to utilize the CW filters for digi modes, but much more usable than to change mode and tune the radio manually. Currently it is not possible to create a macro which receives in CW then switch mode to USB Data for TX and switch back to CW again for receive. The Fldigi macro processor has a somewhat strange behaviour, it is executing first all of the CAT commands in the macro text then executing others like <TX> and <RX> commands.

73! de HA3MGA Gabor