



CN-FRC + Omni-Rig

CN-FRC versión 1.4.8b



Ms.C: Hugo Batista Vázquez, CO6HZ

Actualizado: 20-08-2025, 08.40pm.

“A LONE-AWAITED MARRIAGE”

That's right. It's nothing new; it's an expansion of CN-FRC's capabilities into today's world. Don't hesitate to look forward to new options in the future of CN-FRC.

.....The Omni-Rig is now deployed at the CN-FRC.....

Obviously, it's not a question. **It's a proven and functional statement.**

Very close friends and colleague have asked me to review and implement the Omni-Rig or the Grlig in the CN-FRC competition program ("National Competitions of the Cuban Radio Amateur Federation"), even though a representative number of colleagues has not been able to participate in the national competitions, which requires personal effort to consolidate this goal.

Well, by listening to the requests and analyzing the real and available option, this request has been addressed, allowing for greater flexibility in using this software with the variety of radio stations available in the country.

You're wondering: where did Flrig fit in? Well... after this work is completed, we'll be analyzing the possibility of integrating Flrig into CN-FRC. For now, I think the inclusion is good option and I hope it will be useful to my colleagues.

¿What is Omni-Rig, what does it do and what is it used for?

Omni-Rig is free software created and supported by VE3NEA (Alex Shovkoplyas) that allows you to connect a variety of radio using CAT to your computer. Once installed, it can be manually configured by the operator and allows you to use two radio at your discretion.

Browsing the internet, you can find several version of the Omni-Rig for other amateur radio programs capable of using up to four radios connected to it. Some of these versions have been tested, but the results have not been positive. This leads us to suggest installing the original version available on its author's website. We have performed the appropriate testing for implementing the Omni-Rig on the CN-FRC.

Omni-Rig supports radio brands such as Icom, Kenwood, Yaesu, Ten-Tec, and many others.

You can visit <http://www.dxatlas.com/Omnirig/> to download it. You can also download others programs created by Alex.



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¿What is the expansive magnitude of Omni-Rig in programs developed for the service of radio amateurs?

Omni-Rig is currently implemented in just over 60 software applications developed worldwide for amateur radio users. These include N1MM, WSJT-X, MixW, Log4u, Win-Test, Log4Win and Log4OM, among many others. The VE3NAE website (<https://www.dxatlas.com/>) lists the software packages under which Omni-Rig is integrated by its developers.

How does CN-FRC integrate the Omni-Rig?

Exactly the same as the rest of the applications mentioned. CN-FRC sends messages to Omni-Rig, which then translates them and interacts with the radio so that it responds to the commands sent by CN-FRC. In other words, Omni-Rig acts as an intermediate communication server between the radio and CN-FRC.

Omni-Rig, is it integrated into the CN-FRC?

No, no. Omni-Rig must be downloaded from the site referenced above (<http://www.dxatlas.com/OmniRig/>), and installed on the PC as a Windows application. It must then be configured according to the radio's you wish to use for the CN-FRC to communicate with them. OmniRig can be installed on Win7, 10 y 11. Its successful functionality has been verified on Windows 7 x86 and Windows 10 x64.

Tests carried out with the CN-FRC and Omni-Rig combination on radio's such as the Yaesu FT-747GX and the Icom IC-7300, demonstrate full functionality under the purpose and objectives for which the CN-FRC was created.

Many of the functions supported by Omni-Rig are not fully implemented for the CN-FRC, as there is no substantial demand for their use due to the activity of national competitions. In future versions of the CN-FRC, many of the Omni-Rig connection capabilities with user-configured radios are expected to be implemented.

How to setup Omni-Rig?

In the test conducted during the implementation of the Omni-Rig, the following configurations were used, but the parameters for each radio can be manually modified, and you can witness the functionality of these changes. However, we suggest maintaining their values, which were the result of our tests, and we do not assume they are optimal.

Internet searches show that there are a variety of configuration options for their parameters. If you want to configure them correctly, simply refer to the manual for each radio selected and configure it according to the manufacturer's



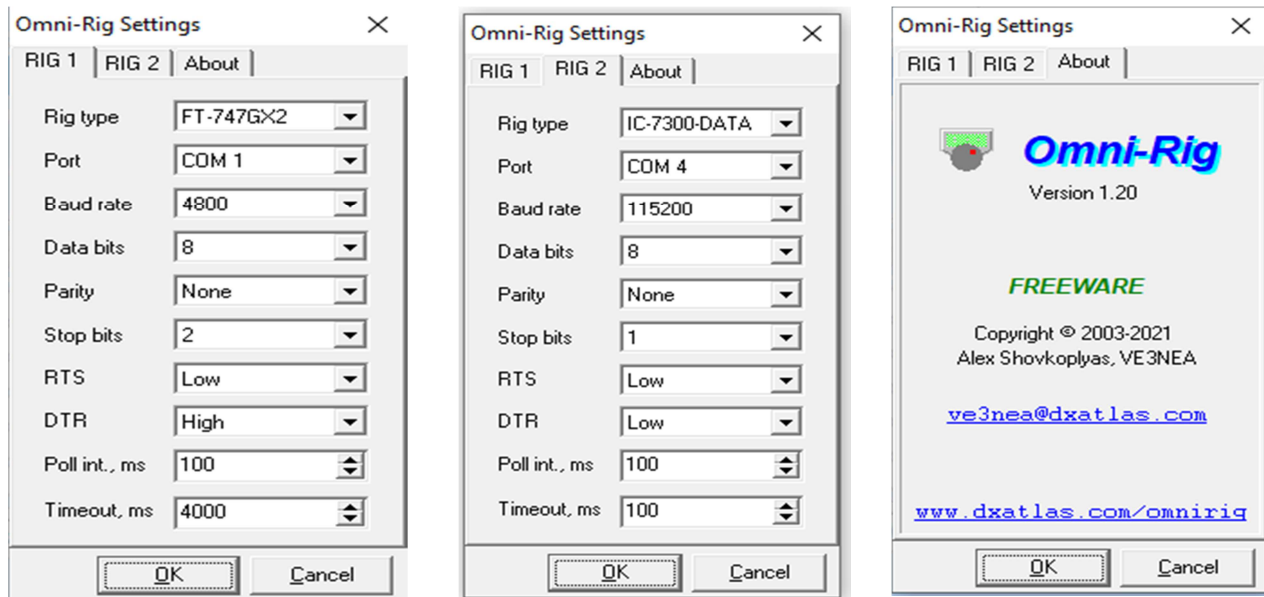
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requirements or simply follow the experiences of the other colleagues with the configurations they are using.



It's worth nothing that the version of Omni-Rig installed is the one published on Alex's website (VE3NEA). This can be seen in the images above.

How the CN-FRC learns of the existence of this spouse to work with CAT-Radio?

This new version uses a class called Registry.vcx, file available on the FRCuba download site in the CN-FRC section. This file is responsible for verifying whether Omni-Rig has been install on the Pc.

The two files with the same name but different extensions must be downloaded and copied into the root folder of the CN-FRC.

When launched, the CN-FRC displays the following window, verifying that the Omni-Rig is installed on the Pc. It also displays the selected radio in red, and indicates that it is not activate. To do this, click on it ichenage the color to green.



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When it detects that the Omni-Rig is installed, it activates it and checks if any radio has been previously configured with the "CAT Radio" option. If so, it checks the box for the radio configured in that window, reading the radio's VFO frequencies and typing only the VFO-A frequency in the text box provided.

How do I activate the radio whose name is displayed in red?

- Click on the radio name.
- The radio name appears underlined and turns green.

Simply activate the CAP-PTT window. To select the other radio, otherwise, select the "Vox Control" or "Serial COM" options.

To do this:

MENU ➡ **Configuration** ➡ **CAT System.**

Frequency entry and radio control are performed while the radio is in the "Online" status, as shown in the CAT-PTT window. Similarly, the Checkmark is activated on the CN-FRC, where the frequency is entered and the frequency shift buttons are immediately activated.

At this point, the CN-FRC is ready for operation and connected to the Omni-Rig.

As a footnote, it's worth remembering that by clicking on the CN-FRC icon on the main screen, you can replace it with a photo of yourself or your Shack, customizing the CN-FRC interface. You must have previously copied the photo to the root of the CN-FRC for it to be selected.



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The remaining functions of the CN-FRC are not explained in this material because it is assumed that the operator has accumulated experience using the software since previous versions, and there is no reason to comment or explain details.

If you wish to delve deeper into the functions and operation of the CN-FRC, visit [https://download.frcuba.cu/CN-FRC/CN-FRC INSIDE/](https://download.frcuba.cu/CN-FRC/CN-FRC%20INSIDE/), where you will find .docx files detailing aspects that may be of interest.

However, the changes in this version only apply to the implementation of the Omni-Rig. All other processes and procedures prior to this version remain unchanged for version 1.4.8a.



As a result of the implementation of Omni-Rig, the visual presentation of the "CAT-PTT" window has changed, as shown above. The Omni-Rig icon is included, which is visible only when the CN-FRC detects that it is installed; otherwise, the icon is not visible.

Clicking on the Omni-Rig icon activates the interface, allowing you to make configuration changes to the radio you prefer or select another radio connected to the PC.

Since Omni-Rig can operate two radios, two options have been included in the CAT-PTT window so the operator can select which radio to use in "CAT Radio" mode. The checkmarks for Rig1 and Rig2 (located on the left), when selected, determine which of the two radios the CN-FRC will send operating commands to.

When you select one of the two spokes, the spoke image appears if it's in the "ImgRig" folder. The image name must be identical to the name Omni-Rig displays in its window.

The radio status must be "Online" for CN-FRC commands to be accepted by the Omni-Rig. Otherwise, communication between the CN-FRC and Omni-Rig pair will not occur.



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Why did we use the Icom IC-7300 for testing?

The Icom IC-7300 has been a request from some of my Cuban colleagues who have asked me to include this radio in the CN-FRC's CAT connection options. In Cuba, some models already exist, and we are sure that the permit holders will appreciate this CN-FRC+Omni-Rig combination.

Nor has this been the only radio requested to be operated by CAT from the CN-FRC using the Omni-Rig; there are many, and it is not necessary to mention all the requested models.

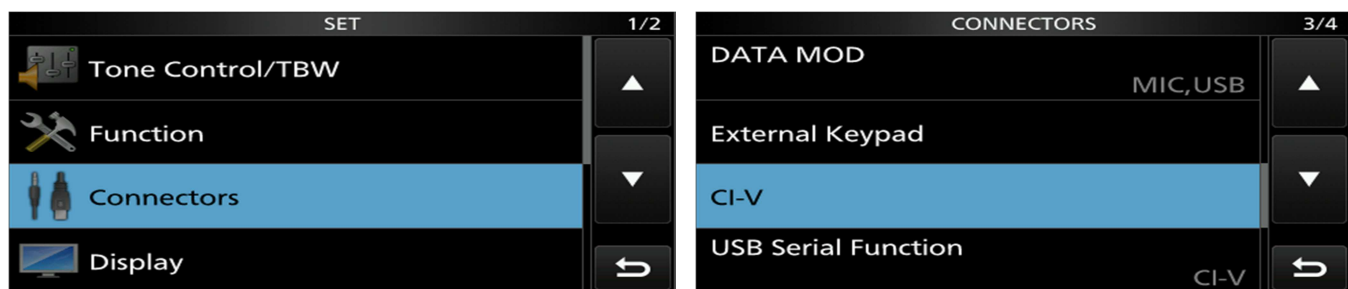
We share a brief historical overview of the Icom IC-7300. This radio was announced to the public at the 2015 Japan Trade Fair. It is a small, low-end radio with a good price-performance ratio, and the transmitted audio is wonderfully tunable.

Although it wasn't the first software-defined radio on the market, the IC-7300 was the first mass-produced conventional radio to utilize new technology (FPGA, for Field Programmable Gate Arrays) instead of the older superheterodyne transceiver design. It also utilizes a real-time RF direct sampling method, making it highly versatile and user-friendly.

Designed to replace the older IC-746PRO, the IC-7300 is smaller and significantly lighter than its predecessor.

It has become the most popular and best-selling radio of recent times, which is why Icom is continuing its production due to the high demand that remains in the international market throughout 2023.

Configuring the IC-7300 to connect to the Omni-Rig.





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CI-V		1/2
CI-V Baud Rate	Auto	▲
CI-V Address	94h	▼
CI-V Transceive	OFF	↺
CI-V USB→REMOTE Transceive Address	00h	↺

CI-V		2/2
CI-V Output (for ANT)	OFF	▲
CI-V USB Port	Unlink from [REMOTE]	▼
CI-V USB Baud Rate	Auto	↺
CI-V USB Echo Back	ON	↺

CONNECTORS		3/4
DATA MOD	MIC,USB	▲
External Keypad		▼
CI-V		↺
USB Serial Function	CI-V	↺

USB Serial Function		1/1
CI-V		▲
RTTY Decode		▼
		↺

The images above represent the parameters that have been used for the configuration of the IC-7300.



The CI-V Baud Rate appears as "Auto," but we tested it with 19200, the recommended value for connecting to the radio, and it works correctly. Just remember that this radio communicates with the PC using a cable with USB type A and B ports, i.e., a USB cable for connecting printers to the PC, as shown in the photo.

As shown in the CAT-PTT window, the other radio used for testing was the Yaesu FT-747GX. This and its commercial version (FT-80C) are widely available in colleagues' Shacks across the country. It's not unreasonable to consider them the most popular radios in Cuba today.

Setting up the FT-747GX to connect with the OmniRig.

The previous images shown in this material show the configuration used for this radio with the Omni-Rig server.

We updated the .ini files located on the PC (C:\Program Files (x86)\Afrete\OmniRig\Rigs), and during this process, five files appeared in the Rigs folder (FT-747; FT-747GX; FT-747GX1; FT-747GX2; FT-747GXII).

Of all the files described above, we were only able to establish communication with the radio using the files named FT-747GX1 and FT-747GX2. Keeping the Poll int,ms and Timeout,ms values unchanged, the results with the remaining files were negative.



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We tested different values for Poll int,ms and can confirm that the ideal values are between 100 and 150. Since increasing this value, the connection with the radio became very unstable. Selecting values below 100 is not allowed by Omni-Rig.

The other value, which was the reason for testing in the Omni-Rig window for this radio, was Timeout,ms. In this case, we varied the values, and the stable connection between the Omni-Rig and the radio was 1000-2000. We have seen other suggested values for both Poll int,ms and Timeout,ms on the internet.

All of these tests explained above for the FT-747GX radio can be applied to other radio models where you are unable to establish communication with the radio through Omni-Rig.

Things to consider when changing one of the two radios selected on the Omni-Rig.

Selecting one or another connected radio and configuring it yourself in the CAT-PTT window while using the CN-FRC requires taking certain aspects into account.

1. When selecting the IC-7300, keep in mind that all radio communication with the PC is handled through the Silicon Labs Universal CP210x Virtual COM Port (VCP) Driver, created for this and other Icom radio models.

This means that if you decide to change radios in the CN-FRC's CAT-PTT window, you must change the current audio driver (VCP) in the windows operating system to the Windows audio driver. This is because if you try to listen to a digital transmission with another radio that doesn't use the VCP connected to your PC, you won't hear anything due to the VCP driver's incompatibility with the Windows operating system's internal audio card.

2.- The radio response speeds using the Omni-Rig are within acceptable ranges, with the IC-7300 being somewhat faster than the FT-747GX, obviously. This behavior displayed by the FT-747GX can be observed in other radios before or after its generation when you use the CAT through the connection to Omni-Rig.

3.- The communication test port used for the FT-747GX was a physical port, as the PC where the work was carried out had this port. It's worth remembering that when using a USB-serial cable, a new virtual port is created on the PC according to the cable's drivers. You'll need to visit the Windows Device Manager to identify the COM port number associated with the cable used and define the port through which it will connect to the selected radio in the Omni-Rig window.



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Configuration of Special Stations.

Steps:

1.-Uncheck the checkmark

2. The list opens and "Special Station 2025" is selected. In the text, the number will change depending on the current year.

3. A new window will open.

- Click the "New" button.

- If you're registering contacts for GDXC Anniversaries, please note that the words "Anniversary" and "GDXC" must always be missing. Otherwise, simply write the name of the activity.

- Enter the details (Start and End Date, as well as the Start Time)

4.- Save the entered data.

When the system is configured for a special station, the previous window appears upon opening it, allowing you to select the desired activity.

If there are no contacts registered for that event, a window appears notifying you that no data exists.



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Conclusions.

We have worked on a project that has been frequently requested by some colleagues and also considered by the author when developing the 6HZLOG project.

The objective was to implement the Omni-Rig at the CN-FRC, and this has been achieved. Improvements remain to be made, as in any software development process, but work will be done on them.

I hope this short report is useful to those who prefer to interact with radio and computer.

We appreciate any problems encountered in the implementation of this material and are happy to help in any way we can.

We are happy to address your concerns and/or suggestions. You can write to co6hz@frcuba.cu.

This work is far from being academic material intended for individuals with a PhD, Expert, Master's, or any other scientific degree.

It is a material in which we have tried to eliminate depth and comments in technical language and make it more didactic, using popular language for the general understanding.

Thanks to those who inspired me on more than one occasion and believed I could achieve it.

Thank you for forcing me to step out of my comfort zone and include something new in the CN-FRC for the enjoyment of others.

CO6HZ, Hugo.



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ANNEXES

This first image shows the CN-FRC without the selected radio activated (red). The text box where the frequency appears is also not activated (it has no active CheckMark in front of it). The software logo has been replaced by a photo of the system operator, which can be accessed by clicking on it.

This second image shows the radio activated when you click on the radio name.

When you type the station's callsign, the station image will appear as long as it is saved in the "Image" folder. If you want to upload photos, they must always be copied to the folder mentioned with the station's callsign.

If you upload multiple photos with the station's three categories, the system will display the photo with the highest category, "CO."

It's recommended that you update the station photo based on the latest category obtained or simply change the category to the photo name. The choice for the photo is yours.



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LOG DE CONCURSOS ...

Opciones Datos Personales Impresión Configuración Herramientas Ayuda

CO6HZ **RX**

FT-747GX1

100 Hz 1 KHz
10 KHz 100 KHz

7.110050

QSO: 0 Ptos: 0 Mult: 0

CUCALAMBE 2023

No: Estación: Pref.Mpio. Bandas:

TR CO2BK HE 40m

Pref: HE R.Dado R.Rec. Modos:

59 59 SSB

EL83ud 30/11/2023 22:57:51

LUIS ENRIQUE ESTRADA HERNANDEZ

HABANA DEL ESTE ; LA HABANA

Aceptar

© CO6HZ, 2010-2023 Ver: 1.4.8a =>30-11-2023 Usuario: HUGO DAVID BATISTA VAZQUEZ

Once the contact is accepted (Accept button), the photo of the station being worked on is replaced by the operator's photo, provided you have copied your photo to the "Image" folder; otherwise, the CN-FRC logo will appear.

In future versions or updates to this version, photos of other colleagues may appear if each person sends their photo to my email address shown in that material. The ones included in this version were obtained from those published on qrz.com by some colleagues; others were taken from those published in WhatsApp groups.

You can enter the frequency you want to send to the radio by clicking in the text box where the frequency appears.

The frequency format is x.xxxxxx, and it always has 8 characters, including the period.

The system does not allow entering frequencies outside the 160m, 80m, and 40m bands, as these are the only operating bands for National Competitions.