

# USER MANUAL

# NOVUS PRO ICT 071021

## PROGRAMMABLE DIGITAL AMPLIFIER

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## INTRODUCTION:

### Description:

EK presents its new range of NOVUS PRO programmable amplifiers, developed with the most advanced digital filtering technology. The NOVUS PRO models feature 32 ultra-selective digital filters that allow each digital multiplex to be selected, filtered, and amplified. This ensures an optimal output level for all types of installations, both individual and collective, guaranteeing exceptional output signal quality.

In addition, the amplifiers incorporate an automatic search system that allows for fast and efficient self-programming of the DTT multiplexes through the UHF inputs.

The EK NOVUS PRO series includes advanced features such as VISUAL MODE (patented by EK), which makes filter adjustments quick and easy. It is also the only product on the market that offers a graphical spectrum representation, allowing access to filters through SPECTRUM MODE.

Another key feature is the AUX PWR input, which allows a redundant power supply to be connected. This source is automatically detected and activates in the event of a failure of the main power supply.

The internal temperature of the amplifiers is continuously monitored and recorded, which allows for verification of proper ventilation and provides accurate diagnostics in the event of a malfunction.

This product family includes the NOVUS PRO and NOVUS PRO ICT models. Both models share the same general operation as described in this manual. The difference is that the ICT model incorporates satellite signal amplification.

Note for the Spanish market: Of course, the EK NOVUS PRO ICT range meets the requirements for amplifier equipment as set out by the regulations governing Common Telecommunications Infrastructures (ICT2) for access to telecommunications services within buildings, as approved by Royal Decree 346/2011 of March 11, since it includes single-channel filters with extremely high selectivity, guaranteeing a difference of less than 3dB between channels in the same band.

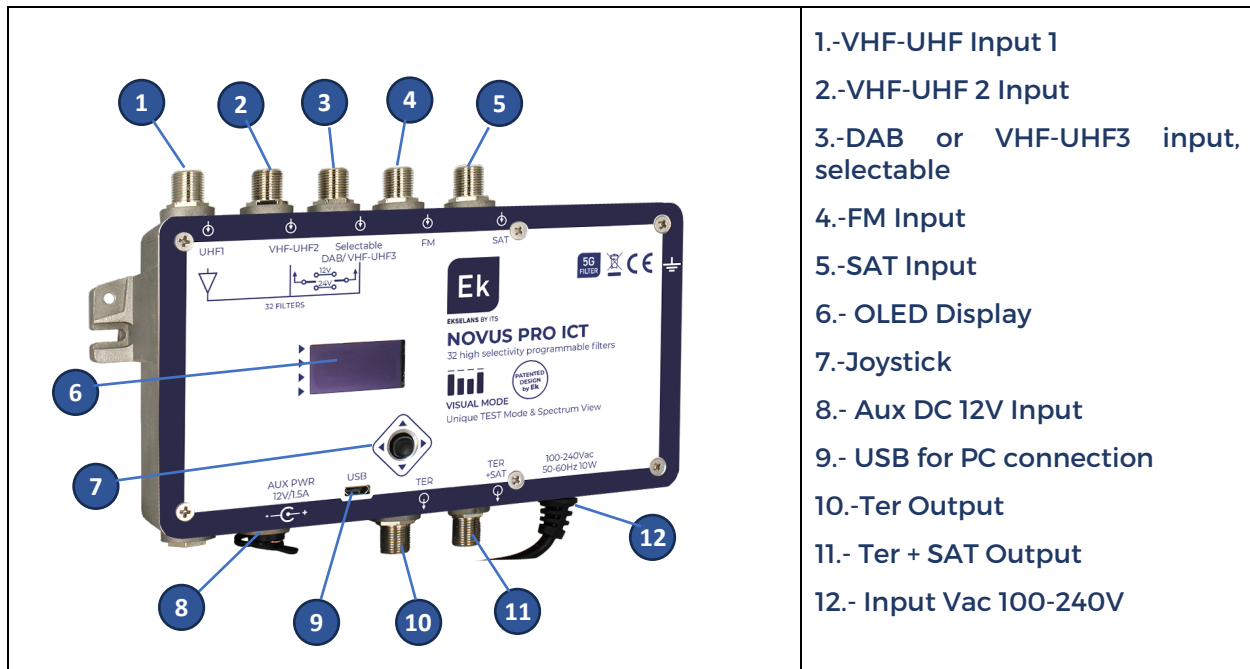
## Key features

- 5 inputs: 2 x UHF, 1 x FM, 1 x DAB/VHF-UHF (selectable), 1x SAT.
- 2 outputs: TER / TER+SAT.
- 32 ultra-selective digital filters.
- Automatic search for digital multiplexes.
- Gain > 70 dB (autoreg).
- DTT output level: 120 dB $\mu$ V (45004B); 112 dB $\mu$ V (10MUX).
- SAT output level: 119 dB $\mu$ V (IMD3 -35 dB).
- Individual output level adjustment.
- Joystick programming, with simple navigation through the menu.
- Processing functionality for channel conversion.
- Measurement of the input level of digital multiplexes.
- Automatic real-time gain control.
- Power supply for preamplifiers: 12V and 24V.
- Power supply for LNB.
- Input for redundant power supply (optional).
- TEST mode to identify defects in the installation.
- SPECTRUM mode for quick filter viewing and editing.
- VISUAL mode for adjusting and editing filters without a screen (patented by EK).
- Status monitor for diagnosis of internal operation.
- PIN protection.

## Packaging Contents:

1.- NOVUS PRO ICT, code 071021.

## CONNECTIONS AND INTERFACES:



- 1.-VHF-UHF Input 1
- 2.-VHF-UHF 2 Input
- 3.-DAB or VHF-UHF3 input, selectable
- 4.-FM Input
- 5.-SAT Input
- 6.- OLED Display
- 7.-Joystick
- 8.- Aux DC 12V Input
- 9.- USB for PC connection
- 10.-Ter Output
- 11.- Ter + SAT Output
- 12.- Input Vac 100-240V

## ASSEMBLY RECOMMENDATIONS:

- 1.- Mount the equipment vertically in a well-ventilated area, ensuring that the maximum recommended operating temperature is not exceeded. You can check the internal temperature of the equipment in the STATUS menu.
- 2.- Leave a clearance of 15 cm to 20 cm around the equipment to ensure proper ventilation, as indicated in the previous point.
- 3.-Connect a suitable grounding wire to the equipment's ground point.
- 4.-Connect the input and output cables to the equipment.
- 5.-Connect the power cable to the electrical mains. Optionally, connect a suitable redundant power supply (FA2600 P, not included).
- 6.-Configure the equipment according to the needs of the installation.

## CONFIGURACION DE LA NOVUS PRO ICT:

### General Equipment Use:

The user interface consists of an OLED screen that displays the menus in a clear and intuitive manner. Navigation is performed using a four-way joystick.

The selected element or parameter flashes on the screen. To confirm values or select an option, simply press the central button on the joystick.



Selection flashes



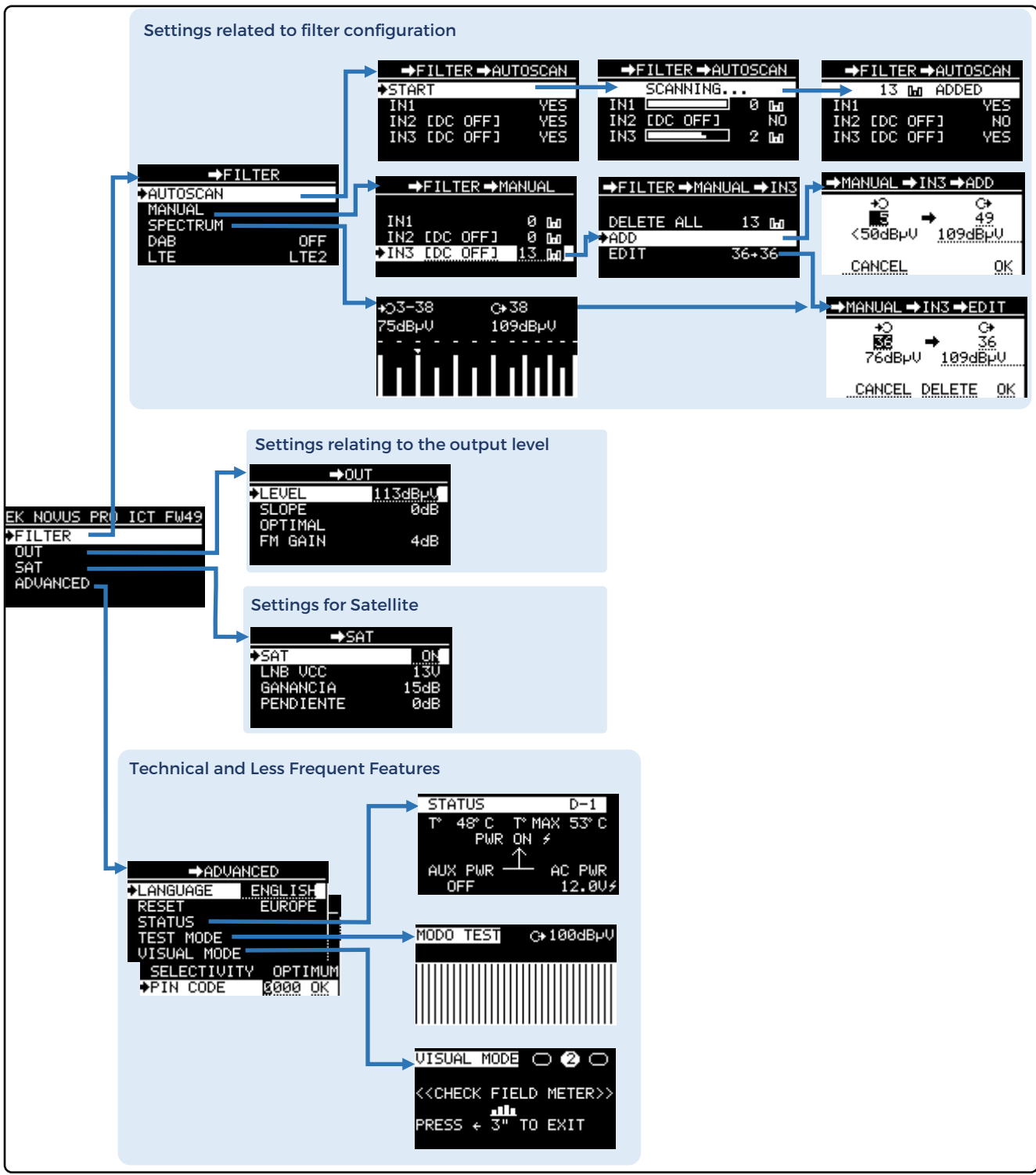
Navigation and changing values



Select and confirm

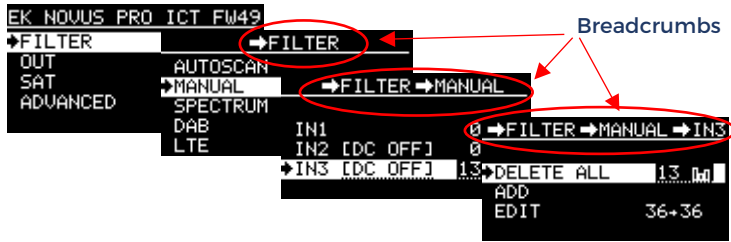
**Menu overview:**

The menu is organized into four main categories and follows a hierarchical structure that continuously guides the user, making it easy to navigate and explore the available options.





While navigating through the submenus, the top bar of the screen continuously shows the hierarchical location using a navigation trail or "breadcrumb". This allows the user to always know exactly which section of the menu they are in.



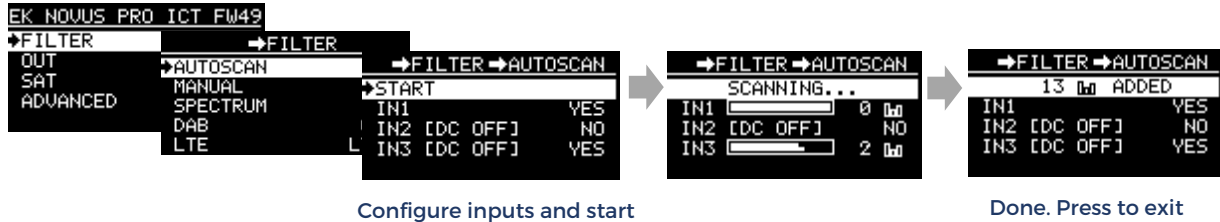
In the following chapters of the manual, each section of the menu will be explained in detail.

## 1.- FILTER Menu

This menu groups all the functions needed to configure programmable filters

### 1.1.-AUTOSCAN

The AUTOSCAN option allows you to configure the equipment quickly and easily with just three clicks, making it suitable for most situations. It is located within the FILTER menu and can be executed directly by selecting START.



By default, all inputs are scanned. For faster scanning, it is recommended to disable any unconnected inputs beforehand.

The power supply for preamps is turned off by default. Set it to 12V or 24V as needed before starting the scan.

At the end of the process, the number of channels found on each input will be displayed. Press any button on the joystick to exit.

In most cases, **the installation will be completed** without the need for additional adjustments.

The rest of the manual details the menus and functions available on the NOVUS PRO ICT for installations requiring specific configurations.

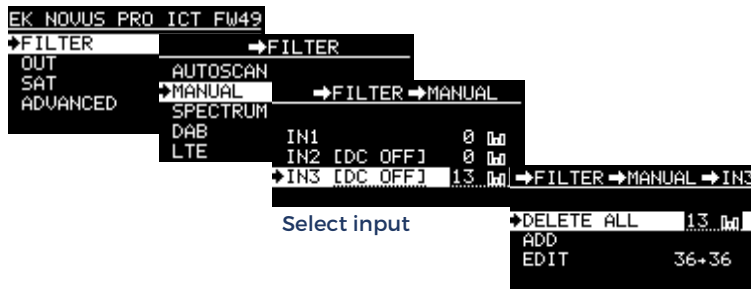
## 1.2.-MANUAL

This option allows you to manually configure all possible filter settings, such as creating, deleting, editing, etc.

The existing filters are displayed grouped by input, and from this option, you can also activate the preamp power (12V or 24V) as needed.

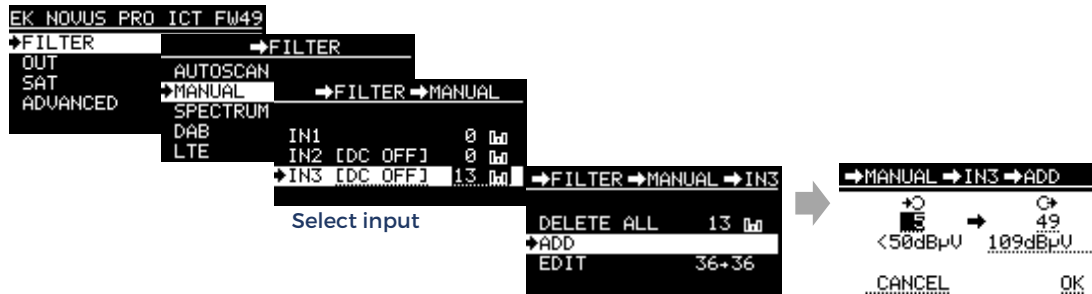
The following describes the process for each of the filter editing functions:

**Clear All:** Removes all filters from the selected input.

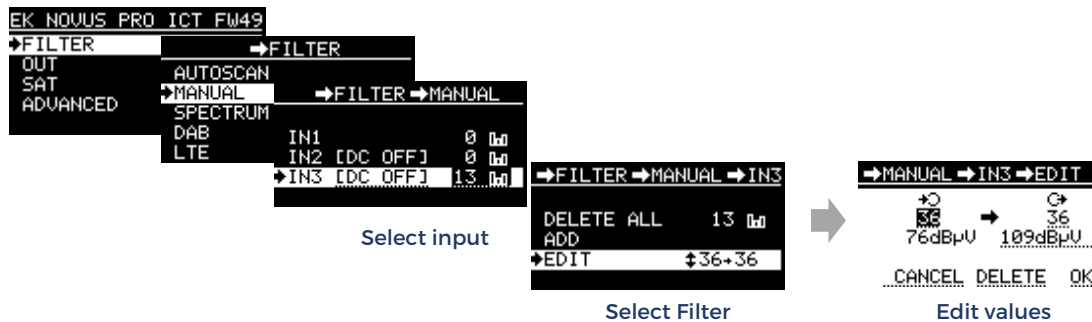


**Add New Filter:** Creates a filter for the selected input.

In the ADD option, when changing the input channel, the signal level for that channel is displayed in real-time, allowing you to quickly identify the presence or absence of a channel at that frequency.



**Edit an existing filter:** Using the up and down buttons on the joystick, select the filter you want to edit. This option allows you to modify the frequency, level, or delete the selected filter.

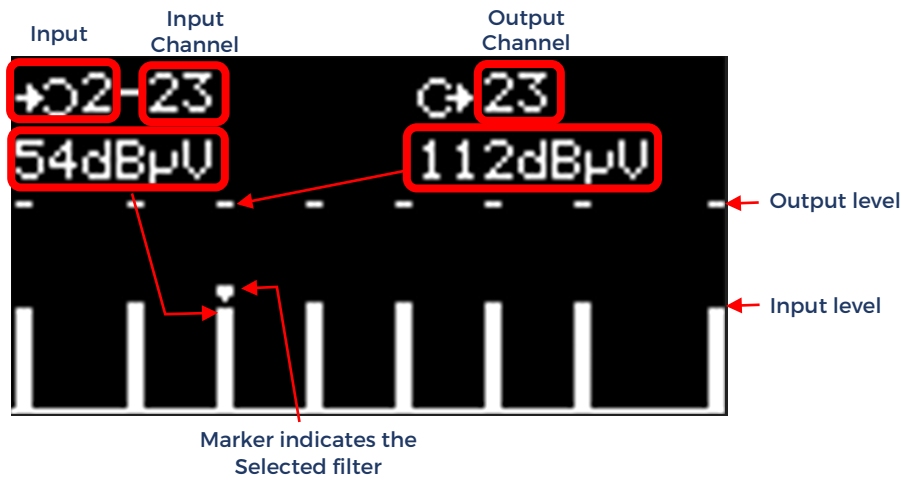


### 1.3.-SPECTRUM

This unique function of the NOVUS PRO series provides a graphical representation of the spectrum of programmed filters. The input signal for each filter is shown by a vertical bar, with the length representing the signal level.

The small upper bar represents the output level of each filter and allows you to quickly verify if it is properly equalized by aligning horizontally with the other filters.

Additionally, using the joystick, you can move a marker that displays the channel and the input and output levels of the filter signal.



By pressing the center button, you can directly access the EDIT menu of the selected filter using the marker.



The SPECTRUM option allows you to perform the same actions on the filters as the MANUAL option, with the additional advantage that, at a glance, you can see all the programmed filters and there's no need to select the input. It is simply a powerful alternative, offering the installer the flexibility to choose the option they prefer for managing the filters according to their needs.

### 1.3.-DAB

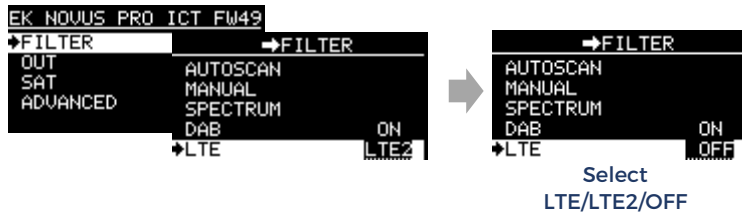
This option, which is disabled by default, allows input 3 to be configured as a filter for the DAB band, covering the range from 170 MHz to 240 MHz.



### 1.4.-LTE

By default, inputs 2 and 3 are configured with a filter to block LTE and LTE2 signals above 700 MHz. To receive DTT channels up to 790 MHz, select the LTE option. If you want to receive channels up to 860 MHz, disable the filter.

Note: This menu does not affect input 1, which has a permanent filter that blocks all LTE and LTE2 signals.



## 2.-OUTPUT menu (DTT and FM)

In this menu, you can directly access the configuration of the output level and slope for the DTT and FM channels.

### 2.1-DTT Output Level

Based on the number of programmed filters, the device sets the recommended maximum output level. This value can be adjusted here in 1 dB increments.



### 2.2.-Slope

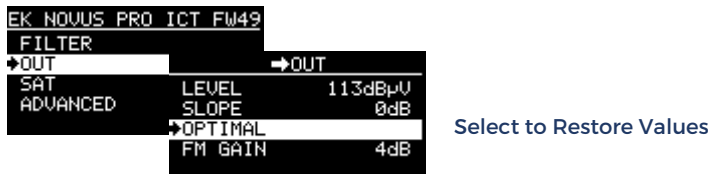
The default slope is 0 dB and can be adjusted up to 10 dB in 1 dB increments.



### 2.3.-OPTIMAL (Level)

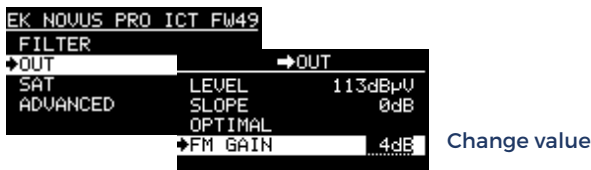
In some situations, the installer may need to perform tests by individually changing the output level of the filters or adjusting different slopes, which can result in an unequalized output and the need to revert the changes.

To avoid doing this manually or having to perform a new autoscan, the OPTIMAL option re-equalizes and restores the recommended output level based on the number of programmed filters.



### 2.4.-FM Gain

The output level of the FM band is adjusted by setting the desired gain.

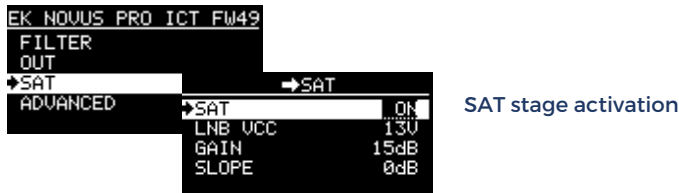


### 3.-SAT Menu

In this menu, all parameters related to satellite signal amplification are configured.

#### 3.1-Activate SAT Stage

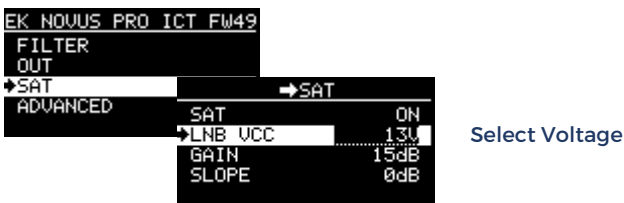
The NOVUS PRO ICT has the ability to disable satellite signal amplification, which is enabled by default. Although it is primarily designed for mixed DTT and satellite installations, in situations where a satellite signal is not available, it is possible to deactivate this section of the internal circuitry. This action results in lower energy consumption and a lower internal temperature.



#### 3.2-LNB Power

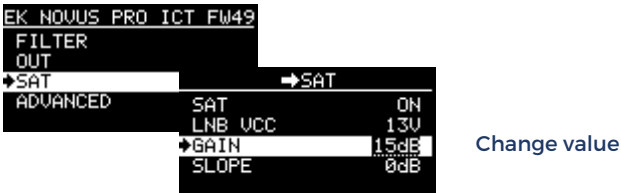
This option allows you to configure the LNB power supply for the different polarities:

13 V, 13 V + 22 kHz, 18 V and 18 V + 22 kHz.



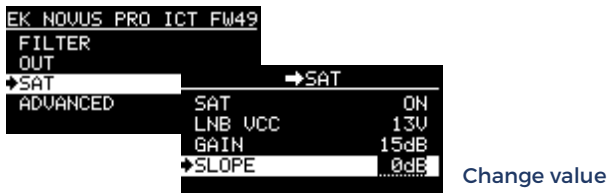
#### 3.3-SAT Gain

The output level of the SAT band is adjusted by setting the desired gain.



#### 3.4-SAT Slope

The default slope is 0 dB, and it is possible to activate a fixed slope of 7 dB



## 4.-ADVANCED Menu

This menu contains functions that, although less frequently used or more technical, are equally important and extremely useful.

### 4.1-Language

You can select between SPANISH, ENGLISH, FRENCH and ITALIAN



### 4.2-RESET

The RESET erases all data and restores the factory settings for the selected geographic region: EUROPE; AMER (COL/MEX); BRAZIL; THAILAND; NEW ZEALAND; AUSTRALIA; CABLE





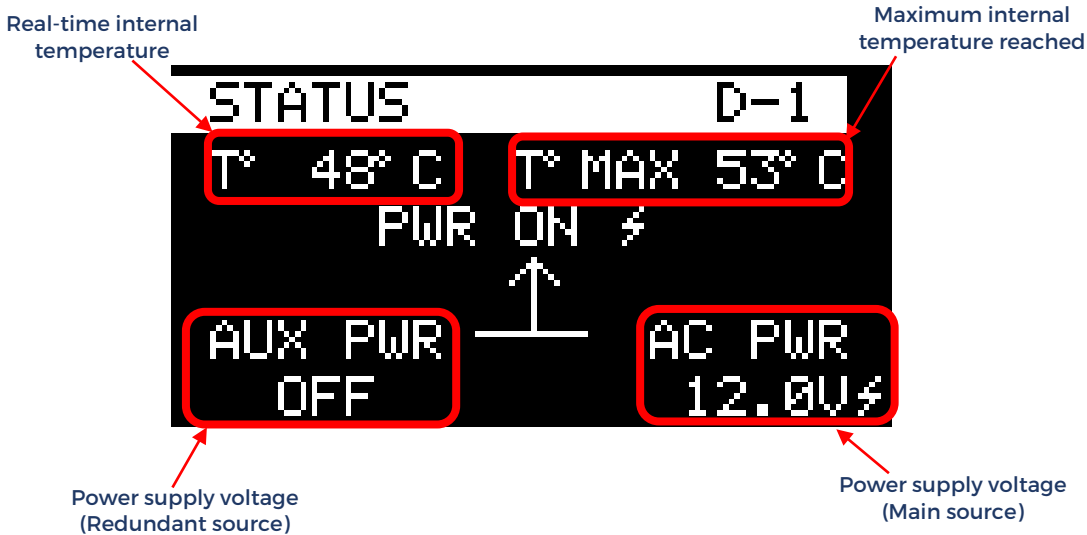
### 4.3-STATUS

This option provides information about the internal workings of the equipment, helping the installer verify that ventilation is proper and diagnose potential issues. The equipment displays the internal operating temperature in real-time, along with the highest internal temperature it has reached at any point. This data is not erased, even if the equipment is powered off, and under normal conditions, it should not differ much from the real-time operating temperature. Significant differences of more than 10 °C may indicate specific issues, such as exposure to sunlight, nearby heat sources, ventilation blockages, among others.

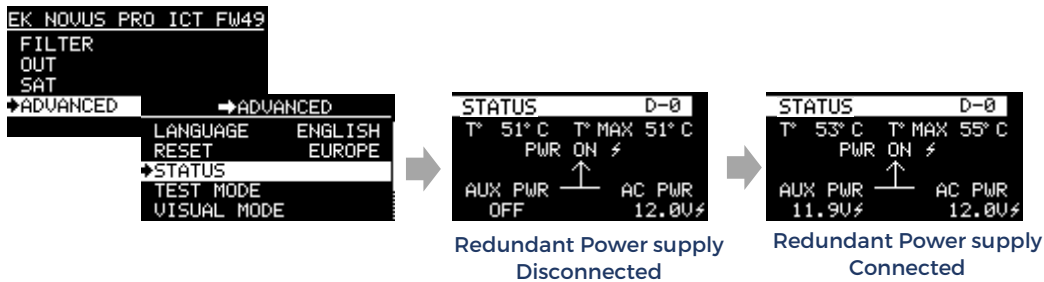
The temperature displayed refers to the internal electronics, not the equipment's enclosure. Although both temperatures are related, they are not equivalent, so this data should be used only as a relative reference.

The AC PWR value refers to the power supply connected to the mains (AC) and shows the internal operating voltage (12Vdc) in real-time.

If connected, the AUX PWR value shows the voltage of the redundant power supply.



If no redundant power supply is connected, OFF will be displayed



### 4.4-TEST MODE

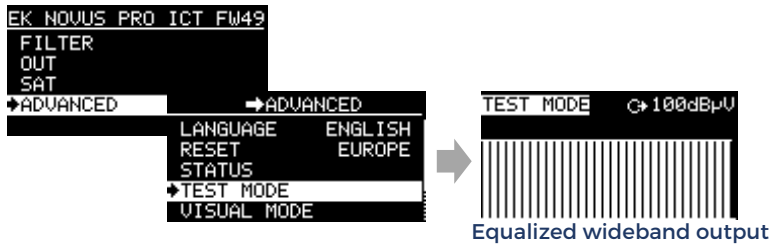
The TEST mode is another exclusive feature of the NOVUS PRO series that allows for the quick detection and localization of defects in the installation wiring. While in this mode, the unit temporarily modifies the output signal and generates an equalized channel comb that spans the entire UHF band. By sampling the signal with a field meter throughout the installation, defects causing abnormal losses at certain frequencies can be identified and diagnosed, which might otherwise go unnoticed.

In TEST mode, the output level is temporarily set to 100 dBuV, which makes it easier for the installer to quickly calculate the attenuation at each point in the installation.

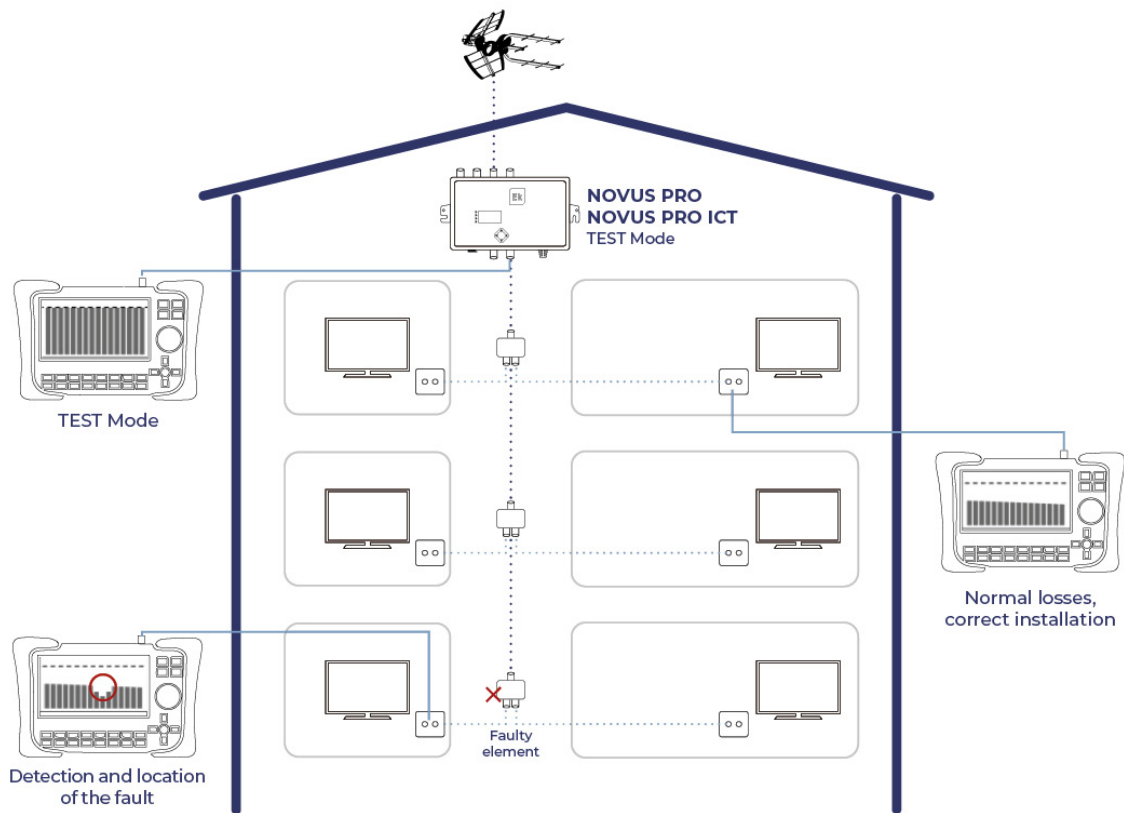
It is important to note that TEST mode uses one of the DTT input channels to generate the signal comb at the output. Therefore, it is recommended to have at least one valid channel signal at the input. If there is no valid signal at the input, TEST mode operates similarly, but in this case, the signal comb is generated with white noise.

To exit TEST MODE, press the joystick.

Additionally, if the installer forgets to exit TEST mode and there is no joystick activity for 15 minutes, the device will automatically exit TEST mode and restore the original output settings.



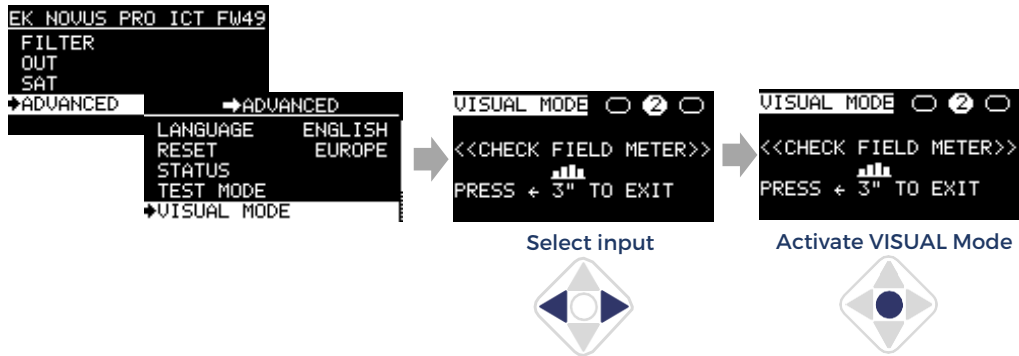
Example of TEST Mode usage:



### 4.5-VISUAL MODE (EK PATENTED)

Another exclusive and patented feature by EK is the VISUAL MODE, in which the programmable control panel screen is not used, but rather the field meter's screen.

This mode has been developed primarily for the NOVUS MAST range of programmable mast amplifiers, which are the only ones on the market of their kind that allow individual adjustment of filters. VISUAL MODE is available in the NOVUS PRO series as an additional advanced feature, offering the installer an alternative to the MANUAL and SPECTRUM options for filter configuration.

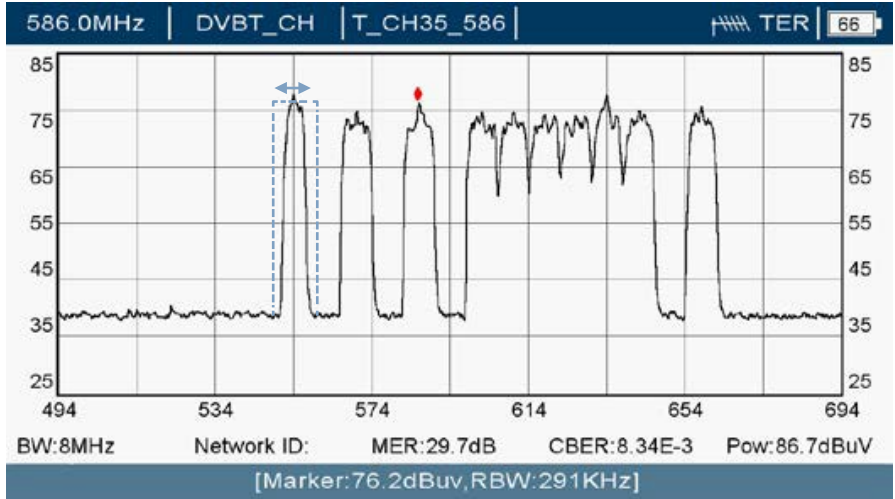


By activating VISUAL mode with a central click, the selected channel begins to flash on the field meter, making it easier to visually identify. Using the joystick's directional keys, you can change the frequency, adjust the output level, or remove the filter. With another central press, the next higher frequency channel is selected.

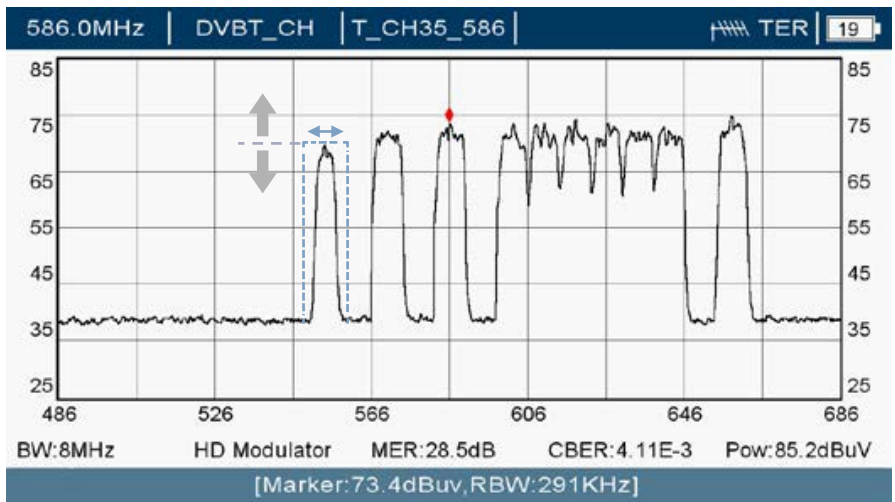
To exit this mode, simply press the joystick to the left for 3 seconds.

The operation of the control panel in VISUAL mode is described in more detail below:

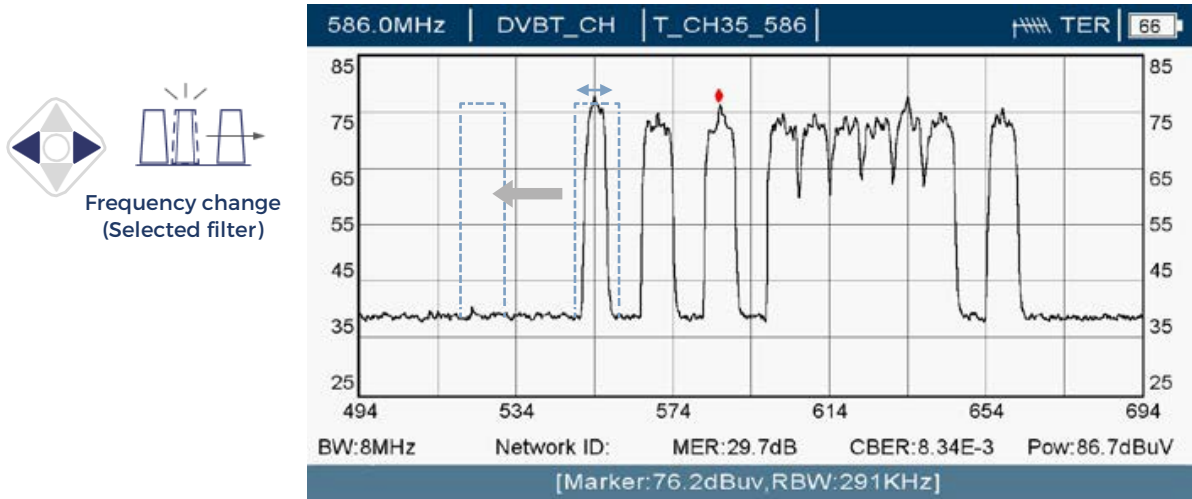
**Select filter:** When you press the central button on the joystick, the filter with the lowest frequency will start to change its width repeatedly, flashing, making it easier to identify among all the existing filters. While the filter is flashing, any adjustments made with the joystick will be applied to that filter.



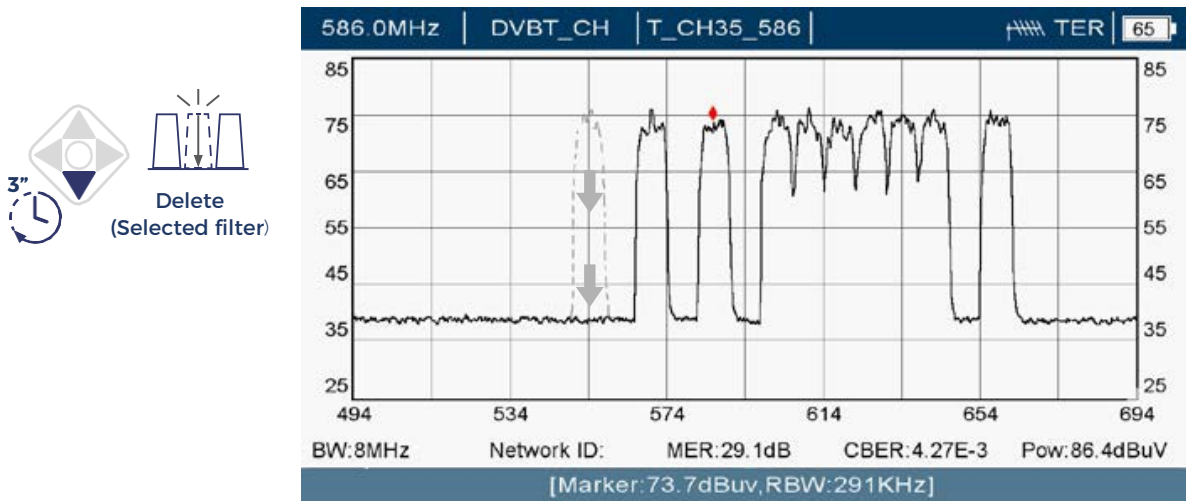
**Adjusting the output level (selected filter):** Using the up and down buttons on the joystick, you can adjust the output level of the selected filter. To confirm the changes, you need to press the central button on the joystick.



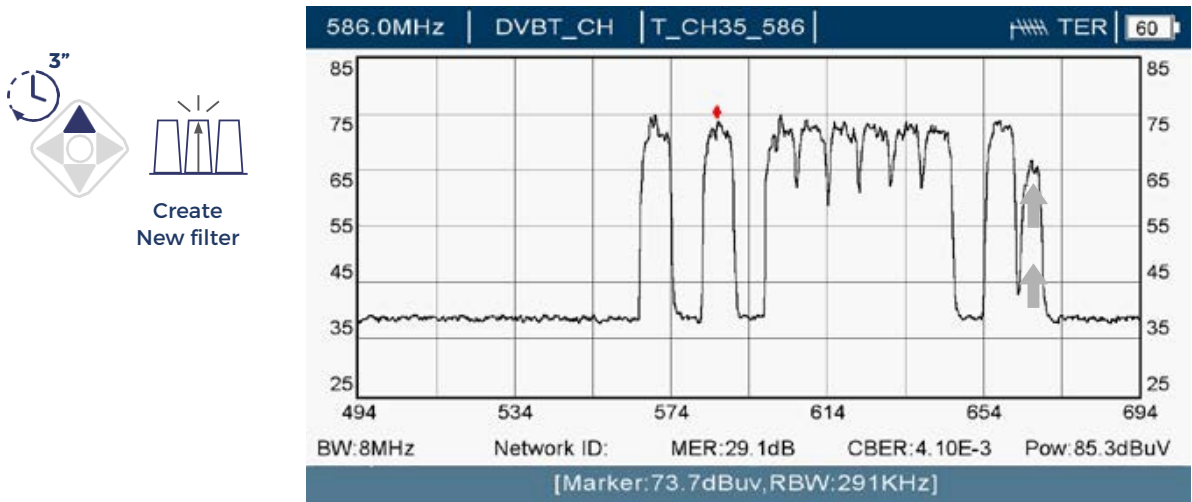
**Adjusting the output frequency (selected filter):** Using the side buttons on the joystick, the installer can change the output frequency of the selected filter. To confirm the changes, you need to press the central button on the joystick.



**Deleting a filter (selected filter):** Holding the down button on the joystick for 3 seconds will delete the selected filter.



**Creating a new filter:** Holding down the top button on the joystick for 3 seconds will bring up a new filter flashing. With the side keys you can adjust the input and output frequency. To confirm the creation of the filter, the middle button on the joystick must be pressed.

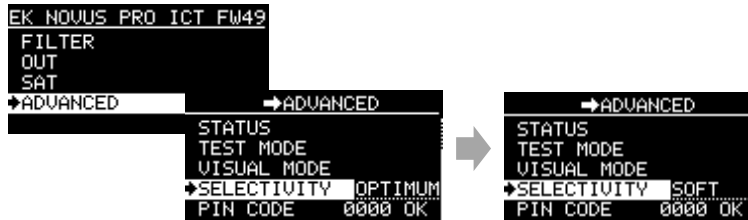


**EXIT:** To stop the flashing of a selected filter without saving the changes and exit VISUAL MODE, press the left button on the joystick for 3 seconds. Alternatively, if no action is taken with the joystick for one minute, the device will automatically exit VISUAL MODE without saving any changes.



### 4.5-SELECTIVITY

The NOVUS PRO offers two configurations for filter selectivity. The default option is OPTIMAL, which provides higher rejection and is suitable for most situations, especially when there are adjacent channels. Alternatively, there is the SOFT option, which offers slightly lower rejection but better preservation of the channel of interest. In complex scenarios, the installer can quickly test both configurations and select the one that best suits the installation needs.



### 4.6-PIN Code

The control panel can be locked with a 4-digit PIN code to prevent unauthorized access. To leave access unrestricted, use the default code 0000.



**Note:** If you forget your PIN to access the control panel's controls, you will need to force a RESET. To do this, disconnect the control panel from the mains power supply then reconnect it while holding down the central button for a few seconds. Note that this procedure will delete all previously saved settings.



## PC CONNECTION

The EK NOVUS Upgrade Tool is a simple software application that allows you to update the firmware and save configurations.

### Installing the EK NOVUS Upgrade Tool

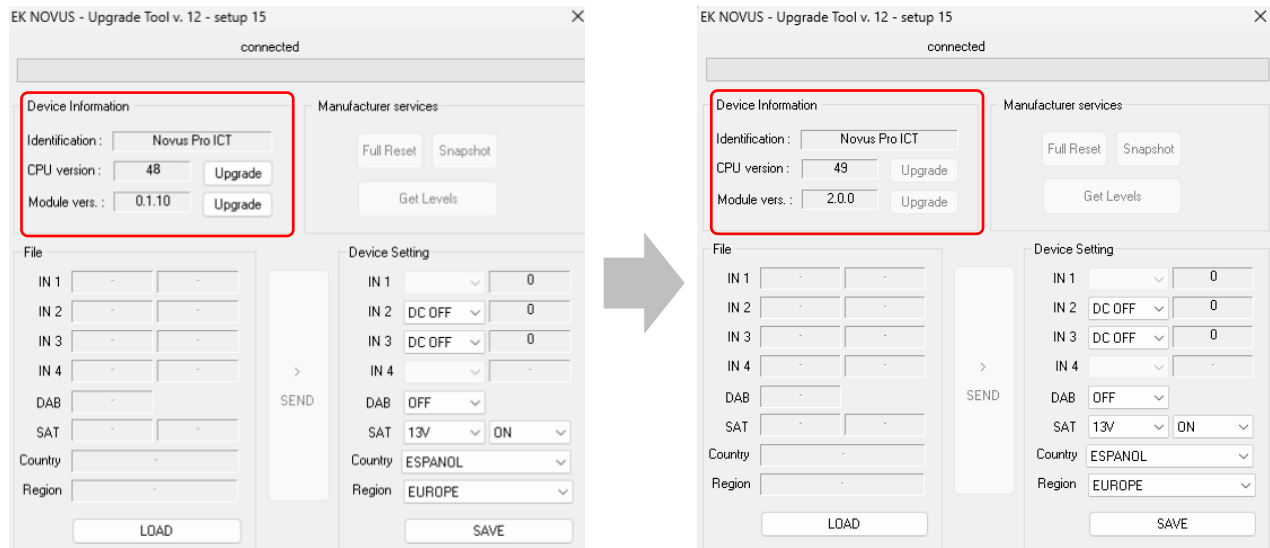
In the downloads section of [www.EK.plus](http://www.EK.plus), you can download the latest version of the software as a compressed file. Unzip it and run the .exe file (your operating system may not recognize the file source and may display a prompt requesting confirmation to continue).

Once the installation is complete, an icon will be created on the desktop. Open it to launch the program interface.

Connect your Novus PRO ICT to the PC via the USB port. The program will automatically detect it and display the model along with some internal device data.

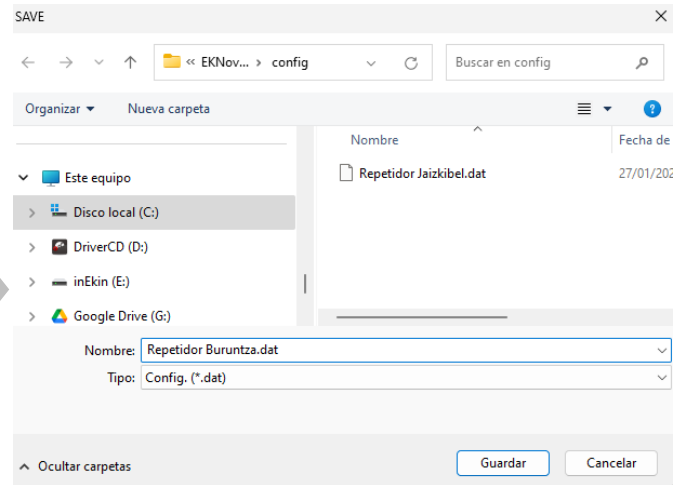
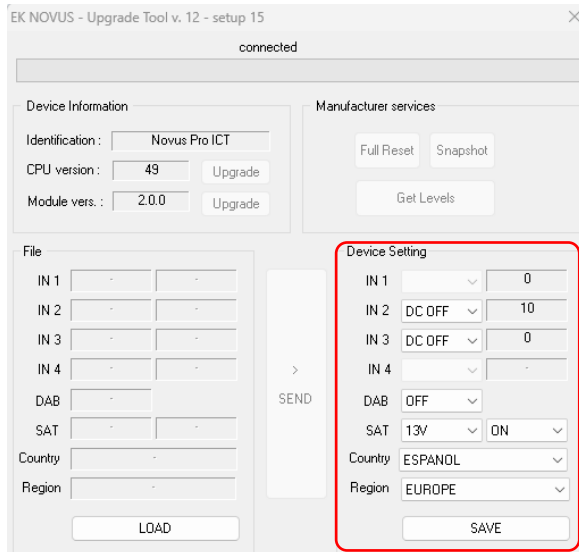
### Firmware Update

With the device connected and recognized, the "Upgrade" buttons will only be enabled if an update is available. If so, click the corresponding button to proceed with the update.

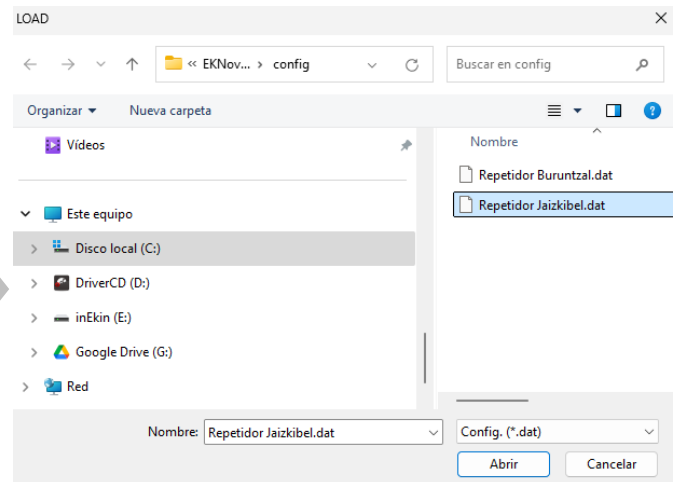
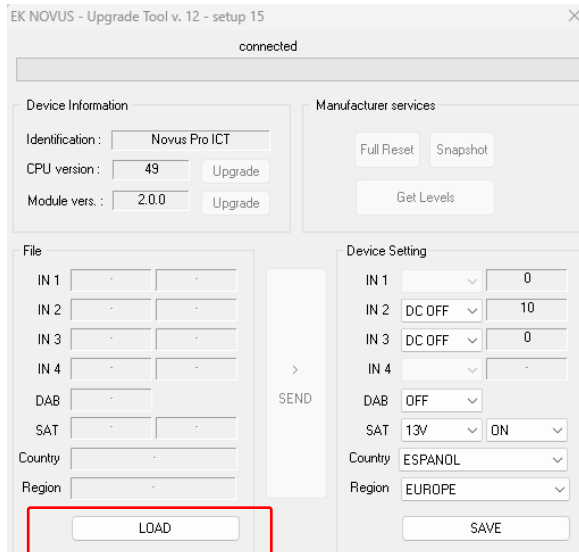


## Configuration cloning

If the programmable amplifier has existing settings, they will be displayed in the "Device Settings" section. By clicking the SAVE button, you can store them on your PC and later clone them to other programmable amplifiers:



To copy one of the saved settings to another programmable amplifier, select the desired file using the LOAD button:



Once the settings file is uploaded, press **SEND** to save it to the control panel..

