

# USER MANUAL

## CC-32

PROGRAMMABLE DVB-T2 DIGITAL CHANNEL  
CONVERTER/AMPLIFIER in 19" 1RU



## INTRODUCTION:

### Description:

DIGITAL CHANNEL CONVERTER / AMPLIFIER: RF presents the new programmable channel converter & amplifier developed with state-of-the-art digital filtering technology. CC-32 model incorporates 32 ultra-selective digital filters which enable the selection, filtering and amplification of each digital multiplex, guaranteeing the optimal output level for each type of installation - whether individual or collective - and a very high quality output. The amplifiers likewise incorporate an automatic search system for fast and efficient auto-programming of the terrestrial multiplexes of the UHF inputs.

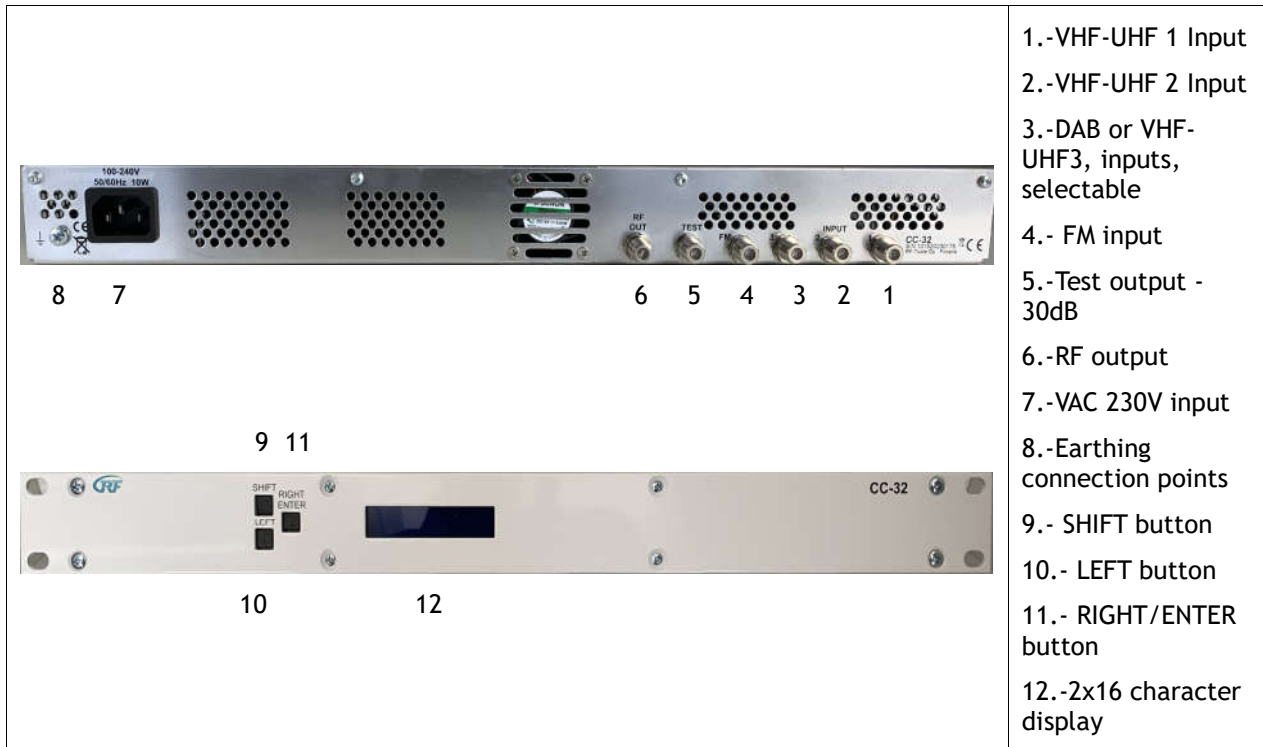
### Main Features:

- 0 4 inputs (1 x FM, 1 x VHF + DAB + VHF/UHF selectable)
- 1 2 x VHF/UHF selectable
- 2 2 outputs (RF OUT / TEST -30dB)
- 3 32 ultra-selective digital channel filters
- 4 Gain >55dB
- 5 Output level 120dBuV (45004B)
- 6 Automatic digital multiplex search
- 7 Buttons and display programming. User-friendly menu navigation
- 8 Processing functionality for channel conversion
- 9 Digital multiplex input level measurement
- 10 Automatic real-time gain control
- 11 Selectable LTE1 (790)/LTE2 (694) filters
- 12 Pre-amplifier power option
- 13 Power supply via output connector option
- 14 PIN protected
- 15 Filters Sharpness adjust

### Packaging Contents:

- 1.- CC-32 + AC power cord

## CONNECTIONS AND INTERFACES:



## INSTALLATION RECOMMENDATIONS:

- 1.- Install the equipment vertically in a well-ventilated located 19" rack , ensuring not to exceed the maximum recommended operating temperature range 0 to +50C.
- 2.- Connect a suitable earth cable to the equipment ground screw.
- 3.- Connect the equipment's input and output cables.
- 4.- Connect the power cable to the equipment.
- 5.- Configure.

## CC-32 CONFIGURATION:

### Keyboard operation explanation:

CC-32 19" 1RU unit uses the same SW version as our compact amplifier Smarthandy 4.

**NOTE:** RF-Tuote Oy is recommending to use manual FILTER ADDing method with manual IN and OUT channel setting when CC-32 is used as DVB-T2 channel converter only. Please see page 7.

The keyboard of this equipment consists of three buttons: SHIFT, LEFT and RIGHT/ENTER.

#### SHIFT:

Enables the menu.

As this is the start menu, pressing the button will display the FW version. The different menu selections will be validated.

In certain menus it is necessary to hold the button down in order to vary values.

#### LEFT:

Allows navigating to the left in the menus.

Decreasing values where required.

#### RIGHT/ENTER:

Allows navigating to the right in the menus.

Increasing values where required.

### Menu Overview:

Pressing any key will access the main menu unless you have set a PIN. In such case proceed as 3.-Miscellaneous Menu:

**RF-TUOTE**

**SMARTHANDY 4>**

Note: The arrows to the right or left indicate that there are menu options in that direction. The main menu options are:

**SMARTHANDY 4 > <FILTER MENU> <POWER MENU> <MISCELLANEOUS MENU**

Using ◀▶ to scroll through the first menu line, pressing SHIFT for accessing that submenu.

## Equipment Configuration:

<p><b>SMARTHANDY 4&gt;</b></p> <p><b>&lt;FILTERS MENU&gt;</b></p> <p><b>&lt;POWER MENU&gt;</b></p>	<p>SW version of the system. Press SHIFT. <b>[V3.7]</b></p> <p>Filter configuration. Press SHIFT to enter, ◀▶ to move between options and SHIFT to enter the option. <b>LTE FILTER&gt; &lt;FILTER AUTO ADD&gt; &lt;FILTER ADD &gt; &lt; FILTER EDIT&gt;&lt; FILTER DELETE &gt; &lt;DELETE ALL&gt; &lt;D.A.B.&gt; &lt;EXIT</b></p> <p>Configuration of input voltages and output power. Press SHIFT to enter, ◀▶ to move between options and ENTER to enter the option. <b>IN 1 POWER&gt; &lt;IN 2 POWER&gt;IN 3 POWER&gt; &lt;FM GAIN&gt; &lt;OUT LEVEL&gt; &lt;OUT SLOPE&gt; &lt;EXIT</b></p>
<p><b>&lt;MISCELLANEOUS MENU</b></p>	<p>Miscellaneous configuration. Press SHIFt to enter, ◀▶ to move between options and ENTER to enter the option. <b>LANGUAGE&gt; &lt;DEFAULT VALUE. &gt;&lt;SET PIN&gt; &lt;BANDWITH COEF&gt; &lt;EXIT&gt;</b></p>

## 1.-Filter Menu:

<FILTER MENU>	
LTE FILTERS>	<p>Allows you to modify the LTE, LTE2 filter or not have either asset.</p> <p>Press SHIFT, and hold down; select [OFF]&gt; &lt;[LTE]&gt; &lt;[LTE2]&gt; with ◀▶. Releasing SHIFT will automatically select the selected option.</p>
FILTER AUTO ADD>	<p>Automatic MUX search and automatic filter configuration.</p> <p>Press SHIFT, and press and hold down; select [NO]&gt; &lt;[YES] using ◀▶. When SHIFT is released, the selected option is automatically selected. [YES] accesses the menu, [NO] remains in &lt;FILTER MENU&gt;</p>
FILTER AUTO ADD IN PORT>	<p>Input selection.</p> <p>Press SHIFT, and press and hold down; select [1]&gt; &lt;[2]&gt; &lt;[3]&gt; &lt;[1&amp;2]&gt; &lt;[1&amp;3]&gt; &lt;[2&amp;3]&gt; &lt;[1&amp;2&amp;3] using ◀▶. When ENTER is released, the selected option is automatically selected.</p>
FILTER AUTO ADD <START CHANNEL>  FILTER AUTO ADD <STOP CHANNEL>  FILTER AUTO ADD <SEARCH>	<p><b>Autosearch start channel selection</b></p> <p>Press SHIFT, and press and hold down; select the Autosearch channel start [5] [6] [7]...[12] [21] [22]... using ◀▶. When SHIFT is released, the selected option is automatically selected.</p> <p><b>Autosearch end channel selection</b></p> <p>Press SHIFT, and press and hold down; select the Autosearch end channel [69] [68] [67]... using ◀▶. When SHIFT is released, the selected option is automatically selected.</p> <p><b>Automatic channel search run</b></p> <p>Press SHIFT, and press and hold down; select option: [ ]&gt; &lt;[ERASE &amp; SEARCH]&gt; &lt;[SEARCH ONLY]&gt; &lt;[EXIT] Using ◀▶. When SHIFT is released, the selected option will be automatically selected.</p> <p>[ ]&gt; nothing occurs</p> <p>[ERASE &amp; SEARCH]&gt; deletes any prior search and runs a search.</p> <p>&lt;[SEARCH ONLY]&gt; runs a search.</p> <p>&lt;[EXIT] Goes back without running a search.</p> <p>It is a sequential search for the various selected entries. The channel level found and their number is displayed.</p> <p style="text-align: center;">1: 45&gt;45 51dB 3 additions</p> <p>Once the search is complete, the total number of channels found will be displayed:</p> <p style="text-align: center;">PRESS KEY 10 additions</p>

<FILTER MENU>	
<p data-bbox="231 414 375 443">&lt;FILTER ADD&gt;</p> <p data-bbox="231 600 359 629">FILTER ADD</p> <p data-bbox="231 645 331 674">IN PORT&gt;</p> <p data-bbox="231 734 359 763">FILTER ADD</p> <p data-bbox="231 779 384 808">&lt;IN CHANNEL&gt;</p>	<p data-bbox="619 414 1433 472">Allows the manual addition of filters and/or output channel change (Channel Conversion).</p> <p data-bbox="619 488 1433 573">Press SHIFT, and press and hold down; select [YES]&gt; &lt;NO] using ◀▶. When SHIFT is released, the selected option is automatically selected. [SI] accesses the menu, [NO] remains in &lt;ADD FILTERS&gt;</p> <p data-bbox="619 600 802 629"><b>INPUT selection.</b></p> <p data-bbox="619 645 1433 703">Press SHIFT, and press and hold down; select [1]&gt; &lt;[2]&gt; &lt;[3]&gt; using ◀▶. When SHIFT is released, the selected option is automatically selected.</p> <p data-bbox="619 734 979 763"><b>Manual channel search selection</b></p> <p data-bbox="619 779 1433 864">Press SHIFT, and press and hold down; select the searched channel [5] [6] [7]... [12] [21] [22]... using ◀▶. When SHIFT is released, the selected option is automatically selected.</p> <p data-bbox="619 880 1433 938">Every time the channel number is changed, if it is valid, power supply will be displayed, and if not, the 0dB will be displayed.</p> <p data-bbox="930 947 1117 976">[INPUT CHANNEL]</p> <p data-bbox="970 987 1075 1016">[23 61dB]</p>
<p data-bbox="231 1048 359 1077">FILTER ADD</p> <p data-bbox="231 1093 408 1122">&lt;OUT CHANNEL&gt;</p> <p data-bbox="231 1323 359 1352">FILTER ADD</p> <p data-bbox="231 1368 300 1397">&lt;SAVE</p>	<p data-bbox="619 1048 979 1077"><b>Manual output channel selection</b></p> <p data-bbox="619 1093 1433 1178">Press SHIFT, and press and hold down; select the desired output channel [5] [6]... [21]... using ◀▶ When SHIFT is released, the selected option is automatically selected.</p> <p data-bbox="619 1193 1433 1252">In the event of not requiring a channel conversion, the output channel must match the input channel. (*)</p> <p data-bbox="619 1267 1203 1296">An already existing output channel cannot be selected.</p> <p data-bbox="619 1323 900 1352"><b>Saving an added channel.</b></p> <p data-bbox="619 1368 1433 1453">Press SHIFT, and press and hold down; select the desired option [NO]&gt; &lt;[YES]&gt; &lt;[EXIT]... using ◀▶. When SHIFT is released, the selected option is automatically selected.</p>

<FILTER MENU>	
<FILTER EDIT>  FILTER EDIT IN PORT>  FILTER EDIT <IN CHANNEL>	<p><b>Allows for a manual filter edit</b></p> <p>Press SHIFT, and press and hold down; select [BACK]&gt; &lt;[1:5&gt;5]&gt;... using ◀▶. When SHIFT is released, the selected option is automatically selected. [BACK]&gt; remains in &lt;EDIT FILTER&gt; if not, select the filter to be changed.</p> <p><b>Modify Input.</b></p> <p>Press SHIFT, and press and hold down, select [1]&gt; &lt;[2]&gt; &lt;[3]&gt; using ◀▶. When SHIFT is released, the selected option is automatically selected.</p> <p><b>Manual input channel selection</b></p> <p>Press SHIFT, and press and hold down; select the searched channel [5] [6] [7]... [12] [21] [22]... using ◀▶. When SHIFT is released, the selected option is automatically selected.</p> <p>Every time the channel number is changed, if it is valid, the voltage will be displayed, and if not, the 0dB will be displayed.</p> <p style="text-align: center;">[INPUT CHANNEL] [23 61dB]</p>
FILTER EDIT <OUT CHANNEL>	<p><b>Manual output channel selection</b></p> <p>Press SHIFT, and press and hold down; select the desired output channel [5] [6]... [21]... con ◀▶. When SHIFT is released, the selected option is automatically selected.</p> <p>In the event of not requiring a channel conversion, the output channel must match the input channel. (*) (**)</p> <p>An already existing output channel cannot be selected.</p>
EDIT FILTER <SAVE	<p><b>Saving an added channel.</b></p> <p>Press SHIFT, and press and hold down; select the desired option [NO]&gt; &lt;[YES]&gt; &lt;[BACK]&gt;... using ◀▶. When SHIFT is released, the selected option is automatically selected.</p>



<FILTER MENU>	
<.FILTER DELETE>	<p><b>Allows deleting a specific filter</b></p> <p>Press SHIFT, and press and hold down; select [BACK]&gt; &lt;[1:5&gt;5]&gt;... using ◀▶. When SHIFT is released, the selected option is automatically selected. [BACK]&gt; remains in &lt;CANCEL FILTER&gt; if not, select the filter to be deleted.</p>

<FILTER MENU>	
<DELETE ALL>	<p><b>Allows to delete all filters</b></p> <p>Press SHIFT, and press and hold down; select [NO]&gt; &lt;YES] using◀▶. When SHIFT is released, the selected option is automatically selected.</p>

<FILTER MENU>	
<D.A.B.>	<p><b>Activate/deactivate D.A.B.</b></p> <p>Press SHIFT, and press and hold down; select [OFF]&gt; &lt;[ON] using ◀▶ When SHIFT is released, the selected option will be automatically selected.</p>

<FILTER MENU>	
<EXIT.>	<p><b>Go back to the main menu</b></p> <p>Press SHIFT, and hold tight; select [YES] with ◀▶. Releasing SHIFT will automatically select the selected option.</p>

## 2.-Power Supply Menu:

<p>&lt;POWER SUPPLY MENU&gt;</p> <p>&lt;IN 1 POWER&gt;</p> <p>&lt; IN 2 POWER &gt;</p> <p>&lt; IN 3 POWER &gt;</p>	<p><b>Enable/disable input 1 power supply</b></p> <p>Press SHIFT, and press and hold down; select [OFF] &lt;[ON] using ◀▶ When SHIFT is released, the selected option is automatically selected.</p> <p><b>Enable/disable input 2 power supply</b></p> <p>Press SHIFT, and press and hold down; select [OFF] &lt;[ON] using ◀▶ When SHIFT is released, the selected option is automatically selected.</p> <p><b>Enable/disable input 3 power supply</b></p> <p>Press SHIFT, and press and hold down; select [OFF] &lt;[ON] using ◀▶ When SHIFT is released, the selected option is automatically selected.</p>
<p>&lt;FM GAIN&gt;</p>	<p><b>Allows FM gain between 8dB and 28dB</b></p> <p>Press SHIFT, and press and hold down; using ◀▶ the gain can be increased or decreased.</p>
<p>&lt;OUT LEVEL&gt;</p>	<p><b>Allows to adjust output level Vo (**)</b></p> <p>Press SHIFT, and press and hold down; using ◀▶ the gain can be increased or decreased.</p>
<p>&lt;OUT SLOPE&gt;</p>	<p><b>Allows adjusting equalisation level in pass band</b></p> <p>Press SHIFT, and press and hold down; using ◀▶ to increase or decrease the slope in a range of 0dB to 10dB.</p>
<p>&lt;EXIT.&gt;</p>	<p><b>Go back to the main menu</b></p> <p>Press SHIFT, and hold tight; select [YES] with ◀▶. Releasing SHIFT will automatically select the selected option.</p>

### 3.-Miscellaneous Menu:

<p>&lt;MISCELLANEOUS MENU&gt;</p> <p>&lt;LANGUAGE&gt;</p>	<p><b>Change language</b></p> <p>Press SHIFT, and press and hold down; select [ENGLISH] &lt;[FRENCH]&gt; &lt;[SPANISH]&gt; &lt;[ITALIAN]&gt; using ◀▶. When SHIFT is released, the selected option will be automatically selected.</p>
<p>&lt;DEFAULT VALUE.&gt;</p>	<p><b>Default values reset</b></p> <p>Press SHIFT, and press and hold down; select [CANCEL] &lt;[EUROPE]&gt; &lt;[BRAZIL]&gt; &lt;[THAILAND]&gt; &lt;[NEW ZEALAND]&gt; &lt;[AUSTRALIA]&gt; &lt;[MEXICO]&gt; using ◀▶. When SHIFT is released, the selected option is automatically selected.</p>
<p>&lt;SET PIN&gt;</p> <p>&lt;SET PIN&gt;</p> <p>&lt; [*--]&gt;</p>	<p><b>Allows you to enter a 4-digit access code</b></p> <p>Press SHIFT and hold down; select [YES] &lt;[NO]&gt; with ◀▶. Releasing SHIFT will automatically select the selected option. [IF] enters the menu, [NO] remains in &lt;MENU SEVERAL&gt;.</p> <p><b>We introduce the first digit</b></p> <p>Press SHIFT and hold down; select [0 to 9] with ◀▶, release SHIFT to select number.</p>
<p>&lt;SET PIN&gt;</p> <p>&lt; [-*-]&gt;</p> <p>&lt;SET PIN&gt;</p> <p>&lt; [--*]&gt;</p>	<p><b>We introduce the second digit</b></p> <p>Press SHIFT and hold; select [0 to 9] with ◀▶, release SHIFT to select number.</p> <p><b>We introduced the third digit</b></p> <p>Press SHIFT and tight; select [0 to 9] with ◀▶, release SHIFT to select number.</p>
<p>&lt;SET PIN&gt;</p> <p>&lt; [---*]&gt;</p> <p>&lt;SET PIN&gt;</p> <p>&lt;Confirm&gt;</p> <p>&lt;BANDWIDTH COEF&gt;</p>	<p><b>We introduced the fourth digit</b></p> <p>Press SHIFT, and hold; select [0 to 9] with ◀▶, release SHIFT to select number.</p> <p><b>We confirm</b></p> <p>Press SHIFT and hold; select [YES] or [NO] with ◀▶, release SHIFT to select.</p> <p><b>Select the input sensitivity level</b></p> <p>Press SHIFT and hold down; select [50-200%] with ◀▶. Releasing SHIFT will automatically select the selected option. Default [120%].</p>
<p>&lt;EXIT.&gt;</p>	<p><b>Go back to the main menu</b></p> <p>Press SHIFT, and hold down; select [YES] with ◀▶. Releasing SHIFT will automatically select the selected option.</p>

(\*) An already existing output channel cannot be selected.

(\*\*\*) The same input channel can be selected ONLY if it is from a different input.

(\*\*) The equipment calculates the maximum output level available according to the number of channels. The introduced level can only be decreased.

## FACTORY RESET

In case the control unit has a PIN and the user does not know the PIN , it is possible to reconfigure the control unit if we perform a factory reset. This is done by plugging in SMARTHANDY4 EC while holding down the right and left keys.

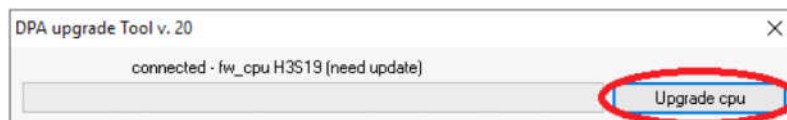
## STEPS TO UPGRADE FW:

- 1.- Install DPA Upgrade SW on a PC and run it.
- 2.- Connect SmartHandy EC to PC via USB/micro-USB cable.
- 3.- DPA Upgrade will indicate whether an FW upgrade is required.



4.- SmartHandy 4 must be put into "upgrade mode" if an upgrade is required. To do this, plug in SmartHandy4 EC by holding down the ENTER key.

5.- SmartHandy 4 EC will display "upgrade mode" on the display and the "upgrade CPU" button on the SW DPA Upgrade will be activated.



6.- Click the button and wait until the update is complete.

7.- SmartHandy4 EC will restart and the DPA Upgrade will show OK.



8.- Note: In the event that the FW version to be installed is V\_37 or higher and is done from a version less than V\_29 the equipment will need to be factory reset.