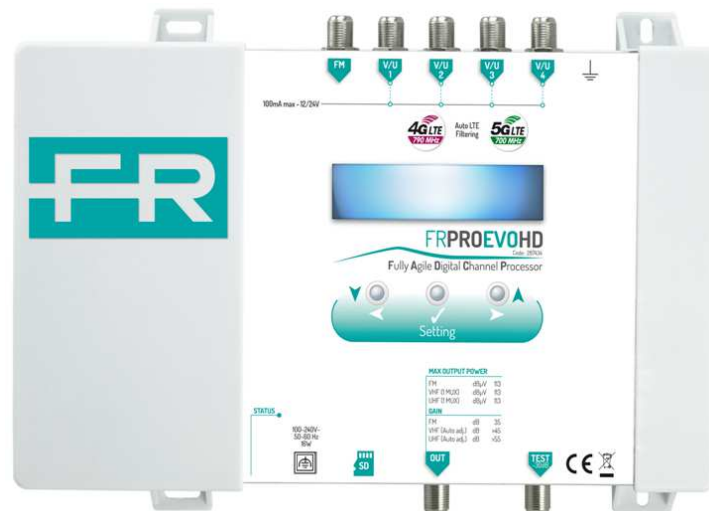# FRACARRO

PROGRAMMABLE CLUSTER HEADEND
FRPRO EVO HD

OPERATING INSTRUCTIONS

It is possible to download the **FRPRO EVO HD** manual on the relative product's page on www.fracarro.com web site

PRODUCT DESCRIPTION

The Fracarro **FRPRO EVO HD** is an high selective programmable compact headend for filter, convert and amplify the VHF/UHF Digital Terrestrial channels as well as mix the FM signal. The headend is a complete Digital Channel Processor that can be used on small, medium or high installation plants as well as in hospitality environments.

- Can process and convert more than 50 independent RF channels with very high selectivity on adjacent multiplexes.
- AGC automatic gain control circuit on all individual VHF and UHF input multiplexes.
- Isofrequency or converted channel filtering for every multiplex coming from VHF or UHF input.
- Security code available to avoid incidental settings.
- 5 independent inputs: 1 FM input and 4 VHF/UHF flexible inputs; with selectable 12-24V remote power on VHF and UHF inputs.
- SD slot to save or copy a configuration to another headend.

PRODUCT INSTALLATION

▶ Connect the device to the grounding electrode of the antenna system and fix the **FRPRO EVO HD** in vertical position to guarantee the correct ventilation and heat dissipation.
▶ Connect the power cord to the power supply socket and check the *STATUS* LED for DC power presence.
▶ Connect FM, VHF and UHF aerial's coaxial cables to the **FRPRO EVO HD** headend.
▶ Connect the RF output coaxial cable to the RF coaxial distribution network.
▶ If necessary, connect a field meter to the –30dB test port to check the signal quality.
▶ Configure the device using the three settings buttons available on the top of the **FRPRO EVO HD** headend; press the *confirm* button for two seconds to access to the main menu and use the *left/down* or *right/up* arrows to scroll the sub-menu; otherwise the configuration could be imported from another headend, using SD card.

If necessary, the power adapter can easily be replaced, without unmount the product, by open the top left plastic cover; please refer to the **Safety Warnings** chapter before proceed.

FACTORY SETUP: before starting the configuration, it is advised to set the correct VHF and UHF frequency plan.

▶ Power off the device,
▶ Push the *confirm* button and keep it pushing while you turn-on the **FRPRO EVOT HD**.
▶ Release the button when *RESET FINISHED* message is shown on display.
▶ To activate the correct frequency plan, select the *REGION* where the headend is situated and save with the *confirm* button; Europe (*EU*) is the default setting.

HEADEND CONFIGURATION

▶ Power up the **FRPRO EVO HD** by using the 220V power cord included in the package; the headend will need approximately 5 seconds to initialize itself; the configuration can be performed by using the three settings buttons and the display available on the top front.
▶ Press the *confirm* button for two seconds to access the different menus or for confirm the selection; scroll all the menu by using *left/down* or *right/up* arrows for move through the different settings.

INPUT CONFIGURATION

▶ Select *INPUT FM* to setup the desired FM input signal gain.
▶ Select *INPUT V/U 1 ... 4* to enter on VHF/UHF input settings; the first channel defines if the port will works on VHF or UHF band.
▶ If the input level is too low, it is possible to activate a pre amplification by turning *ON* the *PRE-AMPLI.*
▶ Set *12V* or *24V* on *DC* if it is necessary to insert the power supply to feed the external mast amplifiers; 100mA is the total available current for all VHF/UHF inputs; on advanced settings it is possible to set 12V or 24V.
▶ Select *ADD CHANNEL* to add the RF channel on the list of the managed filtered multiplexers by the relative input; to delete the unwanted RF channel, move on the position of the channel by using *left/down* or *right/up* arrows buttons and press the *confirm* button for 3 seconds until *CHANNEL DELETED* message is shown on the display. Up to 6 channels can be added and converted at once; first select the channels you want to add, then you can convert them. For example:
    o   To add CH5 and convert to CH6, select as follows: 5: 5 -> 6: 6
    o   To add CH21-22-23 and convert to CH31-32-33, select as follows: 21:23 -> 31:33

The value dBµV in the bottom right corner indicates the incoming level of the channel.
For EU, Italy and New Zealand region, Channel 13 (230-240MHz) can be used for DAB; CH13 cannot be converted.

OUTPUT CONFIGURATION

▶ By selecting *OUTPUT* and *LEVEL* menu it is possible to define the total RF output level from 98dBµV to 118dBµV depending on the total multiplexes amount managed by the headend; *108dBµV* is the default level.

▶ By selecting *SLOPE* it is possible to compensate cable losses by setting the slope from 0dB to -15dB, between the VHF and latest UHF channel, *0dB* is the default value.

▶ By selecting *VHF ATTN*. it is possible to further compensate cable losses by decreasing VHF and DAB output level from 0dB to 15dB (comparing to UHF level) *0dB* is the default value.

ADVANCED SETTINGS: select *ADVANCED* menu to:

▶ *LANG*: set the language (English, Italian, French or Spanish).

▶ *REGION*: read the channel plan configured on factory setup procedure.

▶ *DC VOLTAGE:* set 12V or 24V remote power available on VHF and UHF inputs.

▶ *BW:* the filter bandwidth can be changed from -2000 kHz to 0 KHz in steps of 250 KHz; this allows you to optimize the bandwidth of your filter; the default setting is *-1000 kHz*.

▶ *FW VERSION* and *SERIAL NUMBER*: to read firmware version and product serial number.

LOAD SD and *SAVE SD:* to import or export a configuration using an external SD card

Select *EXIT* menu to exit and protect the headend, if it is necessary, setting a lock code with *LOCK* menu.
SW version and product updates could modify this menu structure.

TECHNICAL SPECIFICATIONS

Fracarro code		287434
Inputs		
Input number		5 (FM, 4 flexible VHF/UHF)
N° filters / N° channels per filter		32 / 1÷6
Bandwidth	MHz	FM: 88÷108; VHF: 174÷240; UHF: 470÷862
AGC range	dBµV	FM: 37÷77; VHF: 40÷109; UHF: 40÷109
LTE filtering	MHz	Automatic selection: 694, 790 or disabled
Outputs		
Output number		1, Test (-30dB)
Maximum level	dBµV	FM: 113 (60dB/IM3); VHF/UHF 118 (per 30 transp.)
Level adjustment	dB	20
Gain (Adjustment)	dB	FM: 35 (20); VHF: >75 (auto AGC); UHF: >75 (auto AGC)
Slope adjustment/FM+DAB atten.	dB	15 / 15
Selectivity	dB@1MHz	50
Typical MER	dB	VHF: 35; UHF: 35
General characteristics		
Mains voltage	V, Hz	100÷240, 50/60
Consumption	W	15
Remote power	V, mA	12 or 24, 100 total (for 4 VHF/UHF inputs)
Dimensions (l x h x w)	mm	217 x 165 x 59
Operating temperature	°C	-5÷50

The technical data are nominal values and refer to an operating temperature of 25° C, they may vary without notice.

SAFETY WARNINGS

The product must only be installed by qualified persons, according to the local safety standards and regulations. Fracarro Radioindustrie is free from all civil and criminal responsibilities due to breaches of the current legislation derived from the improper use of the product by the installer, user or third parties. The product must be used in full compliance with the instructions given in this manual in order to protect the operator against all possible injuries and the product from being damaged. Don't open the product case: components under dangerous voltage may be accessible when the case is opened.

Installation warnings
- The product must not be exposed to any dripping or splashing and thus it should be installed indoors and in a dry location.
- Humidity and condensation could damage the product. In case of condensation, wait until the product is dry before using it.
- Handle the product carefully. Impacts can damage the product.
- Leave enough space around the product to ensure sufficient ventilation.
- Excessive temperatures and/or an overheating may affect the performance and the life of the product.
- Don't install the product above or near any heat sources, in dusty places or where it might come into contact with corrosive substances.
- In the event that the unit is fixed to the wall, use the proper screw anchors suitable to the characteristics of the fixing support. The wall and the anchoring system must be able to support at least 4 times the weight of the unit.

Warning: to avoid injury, this appliance must be secured to the wall depending on the installation instructions. For "PERMANENTLY INSTALLED APPLIANCES", an easily accessible cutting device must be added to the exterior of the appliance; for "APPLIANCES WITH A POWER PLUG", the socket must be installed close to the appliance and easily accessible. The product must be connected to the grounding electrode of the antenna system in compliance with standard EN 60728-11. The screw provided for this purpose is marked with the symbol:

It is recommended to comply with the provisions of the standard EN60728-11 and to connect this screw to the main earth node of the plant (do not connect to intermediate points).

Earth screw symbol

Class II symbol

General warnings: In the event of a malfunctioning, do not try to fix the product as the guarantee would be invalidated. Only use the power supply supplied with the product. Although the information given in this manual has been prepared carefully and thoughtfully, Fracarro Radioindustrie S.r.l. reserves the right to modify it without notice and to improve and/or modify the product described in this manual. See the website www.fracarro.com to have information relevant to the technical support and product guarantee.
The recycling of materials will help to conserve natural resources.

CONFORMITY TO EUROPEAN LAWS

Fracarro declares that the product complies with EU Directive 2014/53 and 2011/65/UE. The full text of the EU Declaration of Conformity is available on the following website ce.fracarro.com.

USER'S INFORMATION
Disposal of Old Electrical & Electronic Equipment
Applicable in the European Union and other European countries with separate collection system
This symbol on the product or on its packaging indicates that this product shall not be treated as household waste. Instead it shall be handed over to the applicable collection point for the recycling of electrical and electronic equipment. By ensuring this product is disposed of correctly, you will help prevent potential negative consequences for the environment and human health, which could otherwise be caused by inappropriate waste handling of this product. The recycling of materials will help to conserve natural resources. For more detailed information about recycling of this product, please contact your local city office, your household waste disposal service or the shop where you purchased the product.

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