



## Digital Multiband Amplifier

# WWK-ALPHA+

## User Manual

## 1. Intended use and characteristics of the amplifier

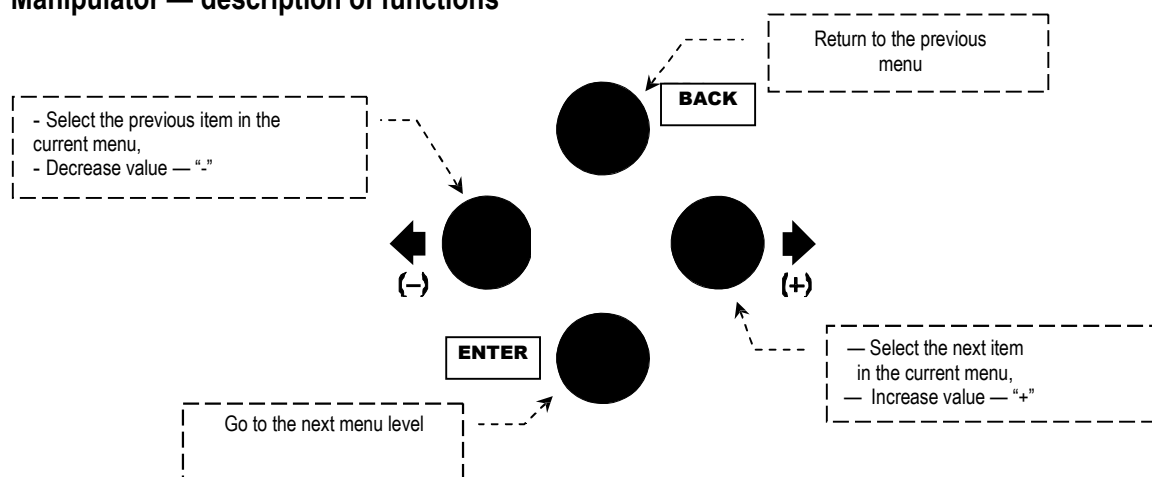
**WWK-ALPHA+** is a digital multiband amplifier. It is designed for use in antenna installations for the reception of digital terrestrial television channels (DVB-T/T2), in single-family houses, residences, guest houses, hotels, resorts, schools, hospitals, etc. It is an excellent solution for areas with difficult reception conditions, where the received signals (VHF, UHF) are coming from different directions and at varying strengths. In such situations, the amplifier, selecting the desired channels, equalizes the signal strength, amplifies it, and sends the combined signals further in the installation.

The **WWK-ALPHA+** is TELKOM-TELMOR's latest achievement in the field of multiband amplifiers. It features built-in LTE 800 / 5G filters as well as surge and short-circuit protectors. The amplifier has been designed for operation in FM, DAB, DVB-T (VHF and UHF) bands.

With the new technology we have also added new functionalities:

- AGC — automatic gain control
- Strength measurement of the received signals
- Channel conversion for each programmed mux

## 2. Manipulator — description of functions



## 3. Connection and startup of the amplifier

Connection and startup of the amplifier should begin after installation and proper alignment of the receiving antennas. The antennas should be aligned optimally with regard to signal reception quality from a given broadcast direction. It is recommended to use a signal level meter to align the antennas.

1. The amplifier does not have any channels pre-programmed by default, so it does not distribute signals received by VHF and UHF antennas.
2. Connect the antennas to the appropriate inputs of the amplifier:
  - FM antenna (87.5 - 108 MHz) to the FM input,
  - an antenna for DAB signals (174 - 230MHz) to any VHF/UHF DAB input,
  - an antenna for band III signals (174 - 230MHz) to any VHF/UHF input,
  - antenna for IV/V band signals (470 - 790MHz) to any VHF/UHF input,
  - signals from cable television headends or DVB-T modulators to AUX input

**NOTE !!! Unused inputs should be terminated with a 75  $\Omega$  termination resistor.**

3. Antennas equipped with TV preamplifiers can be connected to VHF/UHF inputs.

The preamplifier can be powered by 12 V DC at max. 80 mA. The amplifier is capable of delivering a maximum of 200 mA to all VHF/UHF inputs. You can adjust the setting in the **"DC PASS: 12V"**. There, power can be activated for each

input individually.

The + symbol means that power has been activated for a given input, while the - symbol that the input is disabled.

#### 4. DVB-T VHF/UHF channel configuration.

To select the channels to amplify:

1. Enter by pressing the right or left arrow until the display reads V-UHF 1..4. Values 1 – 4 correspond to the RF inputs marked VHF/UHF 1 – 4. Select the appropriate menu for the input from which the channels are to be programmed and click ENTER.
2. The “ADDING CHANNEL” message will appear. Press ENTER.
3. Now use the right/left arrow keys to select the channel number on which the DVB-T signal is to be received. Once selected, press ENTER
4. Next, select the channel number on which the signal is to be distributed in our network. The amplifier can freely convert channel frequencies from VHF and UHF bands. A channel from UHF can be distributed in the UHF band only, similarly a VHF channel in the VHF band only. After selecting the output channel, press ENTER.
5. Now you observe the value of the input level measured in dB $\mu$ V and select the output level needed for signal distribution. Output level range — 96..116 dB $\mu$ V. Confirm by pressing ENTER.
6. The unit has an automatic limiter that will lower the maximum output level as the number of programmed channels increases. For example, for 6 mux the maximum value is 112 dB $\mu$ V.
7. To add another channel from the same antenna, press the right arrow and program using the same method.
8. After completing the adjustment process, press BACK.
9. To delete a programmed channel, select it by entering the menu of the corresponding VHF/UHF input. Then hold down the ENTER button until the “Channel deleted” message appears on the screen. Then press the BACK button to return to the previous menu.

#### 5. FM and AUX adjustment.

The FM and AUX signal paths are not digitally processed. These are band amplified. To avoid overdriving the amplified signal:

1. Enable or disable the preamplifier option in the FM or AUX menu.
2. Take advantage of the built-in attenuator, which will properly attenuate excessively high signal levels.

The value of gain and maximum output level is available in the technical parameters table.

#### 6. Adjusts the output level and equalization.

In addition to individual output level settings for each amplified channel, a global output level can be set. With this option, all signals will be transmitted with equal strength. In addition, the device has been equipped with a signal equalization function, allowing to determine the appropriate difference between the signals from the beginning and the end of the band. Such sloped signals can be distributed over sections with higher attenuation.

Output signal adjustment:

1. Press the right/left arrow to select EXIT. Press ENTER.
2. The option “Level: xxx dB $\mu$ V” will be displayed. Press ENTER and use the right/left arrows to select the desired value. Press ENTER to confirm.
3. Press the right/left arrow to enter “Slope: xdB”.
4. Press ENTER and use the arrows to select a value in the range -9 – 0dB.
  - a. 0 dB means equal gain for all channels

- b. -9 dB means the maximum slope of the channels in the band, where the channel at the lowest frequency will be 9 dB weaker than the channel at the highest frequency. The signal strength of the intermediate channels will be calculated automatically.
5. After completing the adjustment process, press ENTER, then BACK to return to the main MENU.

## 7. Filtering of LTE and 5G signals

The amplifier automatically eliminates signals that have not been programmed. However, an LTE Filter option has been added to allow to manually block programming channels from the UHF band that may contain LTE signals.

1. To do this, use the arrows to select the "LTE FILTER" (trans. LTE filter) menu
2. The available settings are:
  - a. LTE 700 — for the 470–694 MHz band — channels 21–48
  - b. LTE 800 — for the 470–790 MHz band — channels 21–60
  - c. OFF — for the 470–862 MHz band — channels 21–69
3. Selecting the LTE filter does not block the ability to convert the channel at the amplifier output outside the selected band.

## 8. DAB mode.

We have added a special functionality for DAB antennas. It allows the entire DAB band to be carried to the output, without the need to program a specific channel. This way, newly appearing channels in the DAB/VHF band will be automatically amplified and there will be no need to reprogram the amplifier.

In the "V-UHF 4 MODE" menu, select:

- a. VHF-UHF — then input 4 will have the same functionality as inputs 1 – 3.
- b. DAB — then the entire DAB/VHF band is amplified.

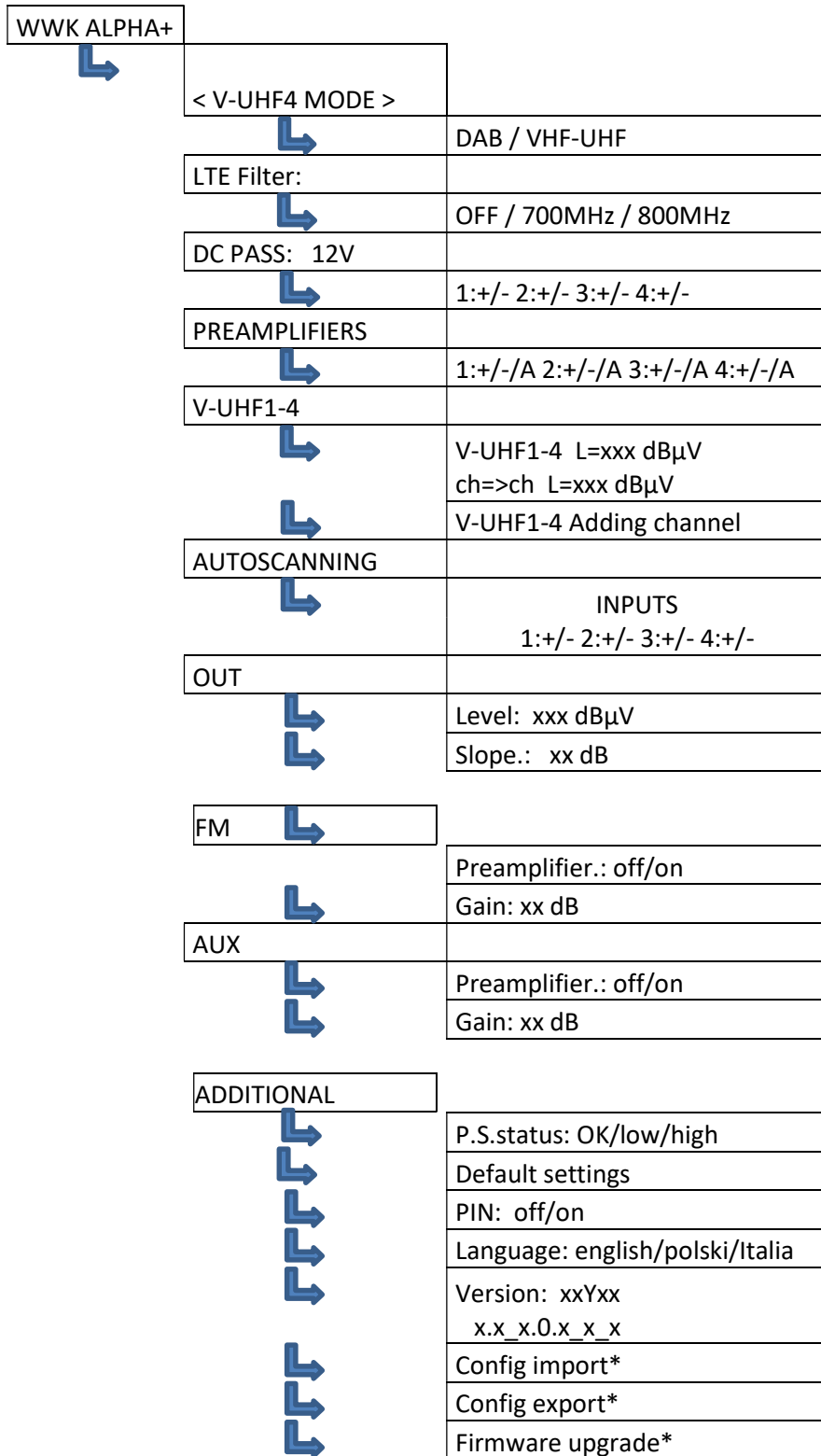
## 10. Configuration menu

In the "ADDITIONAL" menu, we have the following items to choose from:

1. P. S. status: XX — the OK value indicates the correct voltage of the power supply.
2. PIN — allows you to set a PIN for the device, to protect against unauthorized use
3. LANGUAGE — language settings menu.
4. VERSION — displays the software and hardware versions.
5. Config Import— read settings from USB\*
6. Config Export— save settings to USB\*
7. Firmware upgrade\*

\* Menu visible after connecting a flashdrive to the USB port. The flashdrive should be formatted to FAT32.

## 11. Amplifier menu tree



\* available when pendrive inserted

## 12. Technical parameters:

		VHF/UHF	FM	AUX
Inputs	/	4	1	1
Band	MHz	174..230 + 470...694/790/862	87,5-108	47-862
Max. Input level	dB $\mu$ V	40-100	40-90	60-90
Gain	dB	20-80 (AGC)	25/35	10/22
Equalisation	dB	0..9	/	/
Nosie figure	dB	/	<7	/
Gain adjustment	dB	20 +/-1		
Max output level VHF/UHF (IM3-60dB)	dB $\mu$ V	116		
Max output level – 6 MUXes	dB $\mu$ V	112	/	/
Filter combination	/	32	/	/
Channel bands	MHz	8(UHF), 7(VHF)	/	/
Selectivity $\pm$ 1 MHz	dB	>35		
Return loss – inputs	dB	>10		
Return loss – outputs	dB	>10		
Powering	V/AC	100-240		
Power consumption 230VAC	W	17		
Remote powering on VHF-UHF inputs	V/mA	12/50		
Inputs with remote powering	V/mA	VHF/UHF 1..4		
Working temperature	°C	0..50		
Connectors type	/	F		
Dimensions	mm	200 x 190 x 48		
Weight	kg	0,5		
Package	/	box		

Specifications are subject to change without prior notice.

### Disposal of unwanted electrical and electronic equipment.



This symbol on the product or its packaging indicates that the product cannot be treated as household waste, but must be delivered to an applicable collection point for the recycling of electrical and electronic equipment.



In the European Union and other European countries, there are separate waste segregation systems for the disposal of electrical and electronic equipment. By behaving in an environmentally responsible manner, you help prevent potential negative effects on the environment and human health which could result from incorrect storage of such product. Save the environment by proper waste management.



For more detailed information on the processing and recovery of electronic materials from this product, please contact your local government office or local recycling plant.