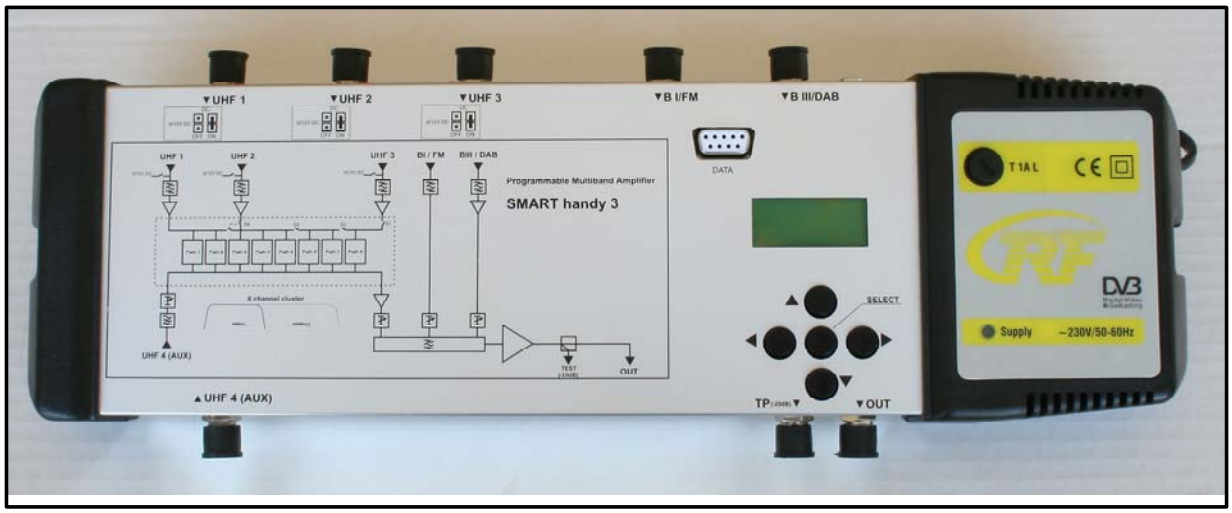
# SMART handy3®

## Programmable multiband amplifier

# USER MANUAL

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## I. Introduction

SMART handy 3 is series of multi-band TV amplifiers assigned for use in antenna systems receiving terrestrial TV programs in detached houses, residences, terrace houses, hotels, boarding houses, holiday centres, schools, hospitals, etc. - even situated in places with difficult reception conditions, where the received signals have different levels and are coming from different directions. SMART handy 3 amplifiers can be used as an independent unit, as a part of a multiswitch system as well as a part of a simple head-end station.

The automatic level adjustment function of the amplifier enables easy and fast installation. SMART handy® can also be used for transmission of adjacent TV channels. The amplifier is especially suitable for receiving terrestrial digital TV signals (DVB-T).

## II. Product features

- Selective, independent amplification for 8 channel paths in UHF range
- Possibility of expanding channel path up to 6 TV channels (8…48MHz)
- Supplies antenna's preamplifiers for UHF1-UHF3 inputs
- On-board preamplifiers status indicator – two-color LED diode
- Prepared for analog and digital Terrestrial TV signal – DVB- T
- Low-power consumption
- Easy installation and activation

SMART Handy 3 is equipped with 8 channel paths P1…P8 for UHF1-UHF3 inputs. Every channel has an adjustable filter, which can be tuned in range of 21…69 . Furthermore frequency band of every channel may be expanded from 8 up to 48 MHZ ( 1 up to 6 TV channels ). UHF1- UHF3 inputs enable to supply preamplifiers with +12 V or +24 V voltage. If preamplifier power supply is not needed you can disable it by removing the jumpers located near each UHF input. In case of short-circuit (closed shield with concentric cable core or low impedance), state will be immediate indicated by red color of LED diode located near proper UHF input.
UHF 4 input (AUX – 470…862 MHZ) enables connection of additional devices such as: video camera, satellite receiver, DVD player etc.

## III. Installation

The amplifier should be activated only after mounting is completed and correctly directed antennas have been connected. Minimum and maximum TV signal levels are shown in the table Technical specification at last page.

1. Connect the antennas as follows:

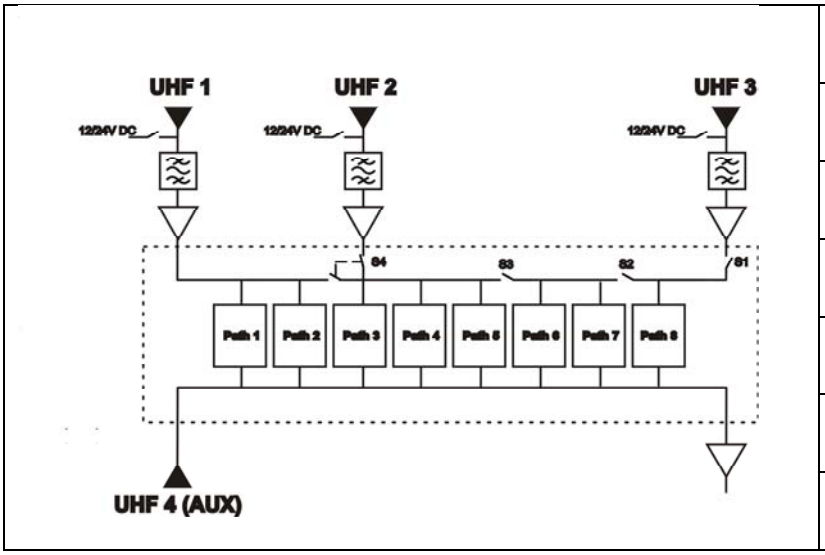
   - VHFIII-band antenna to **VHF** input,
   - UHF-band antennas to **UHF1**, **UHF2** and **UHF3** inputs,
   - FM antenna to **BI/FM** input.

   Note: **UHF1** input is recommended for the antenna receiving the biggest number of UHF channels. ?????

It is possible to connect to **UHF1**, **UHF2**, and **UHF3** inputs antennas with preamplifiers. To turn on the preamplifier power, jumper should be placed near proper UHF input. In case the power supply is not needed jumper should be displaced.

According to amplifier's location (place of installation), the correct number of channel paths P1…P8 (filters) should be assigned to proper UHF1-UHF3 inputs.

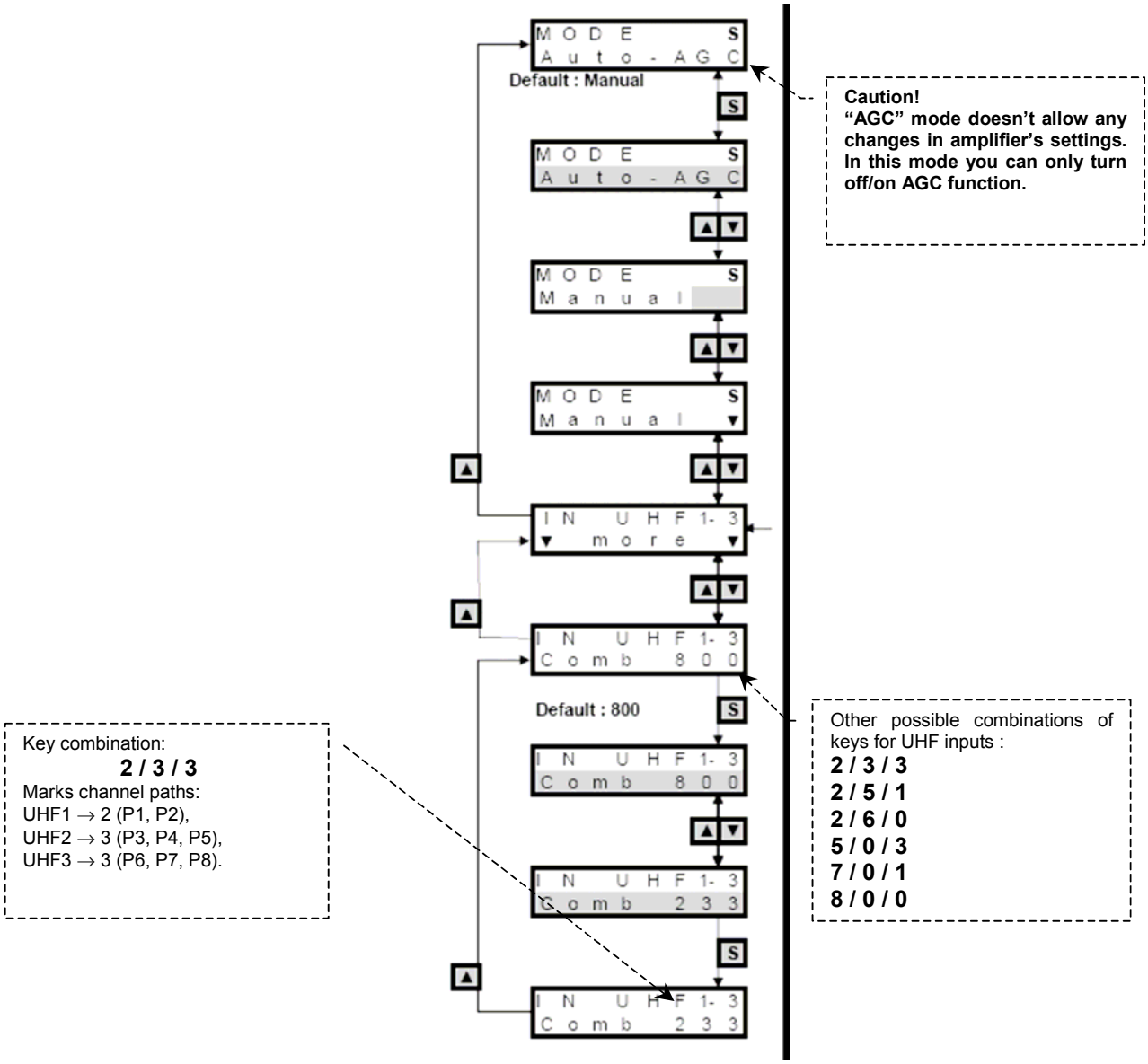
Table 1 specifies possible combinations of channel paths for UHF1-UHF3 inputs. For example, if every TV signal is coming from one direction, you should choose 8/0/0 key setting and connect receiving antenna to UHF1 input. Remaining and unused inputs should be closed with 75 Ω resistors.



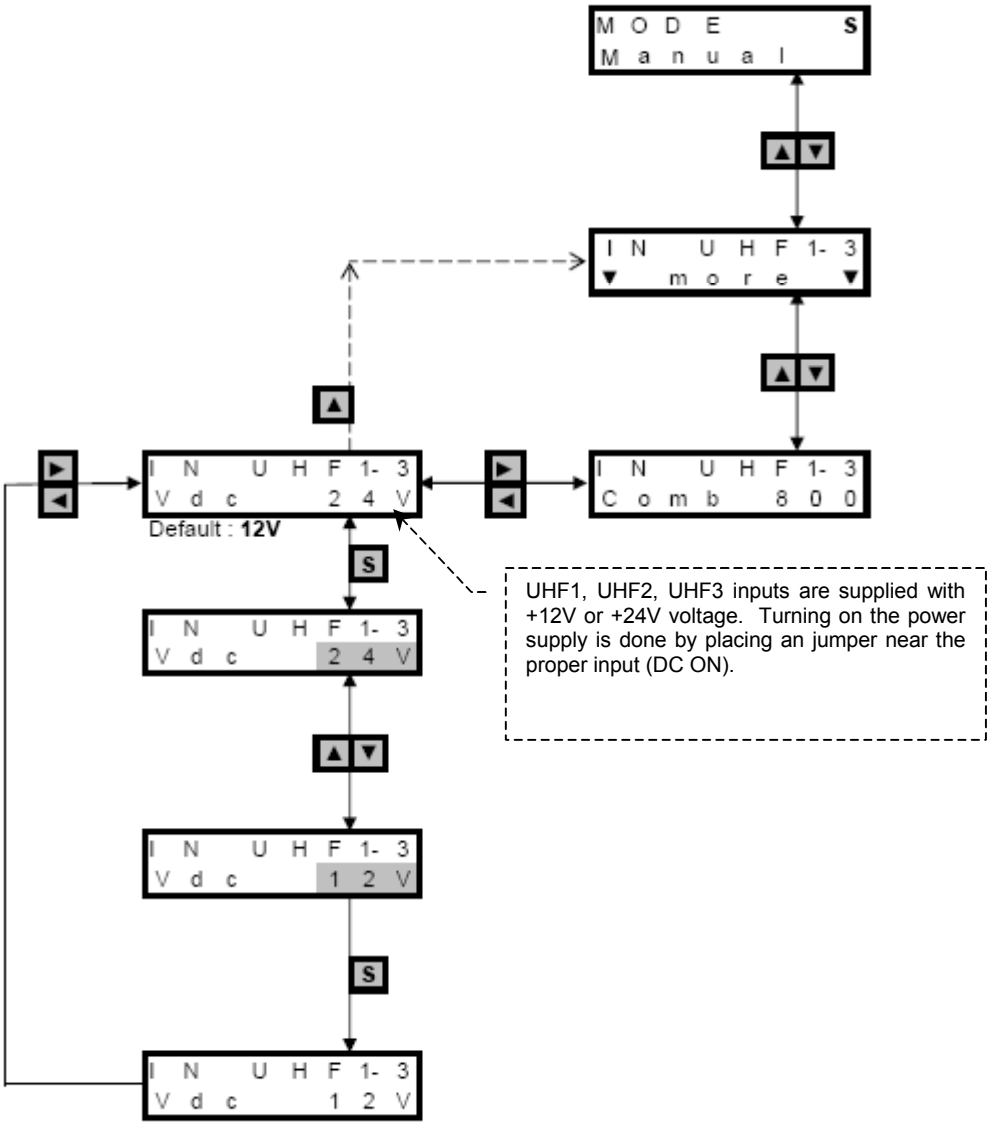

| UHF1 | UHF2 | UHF3 |
|---|---|---|
| 2 | 3 | 3 |
| 2 | 5 | 1 |
| 2 | 6 | 0 |
| 5 | 0 | 3 |
| 7 | 0 | 1 |
| 8 | 0 | 0 |

Table 1.

2. Main settings of UHF 1 – UHF 3 inputs

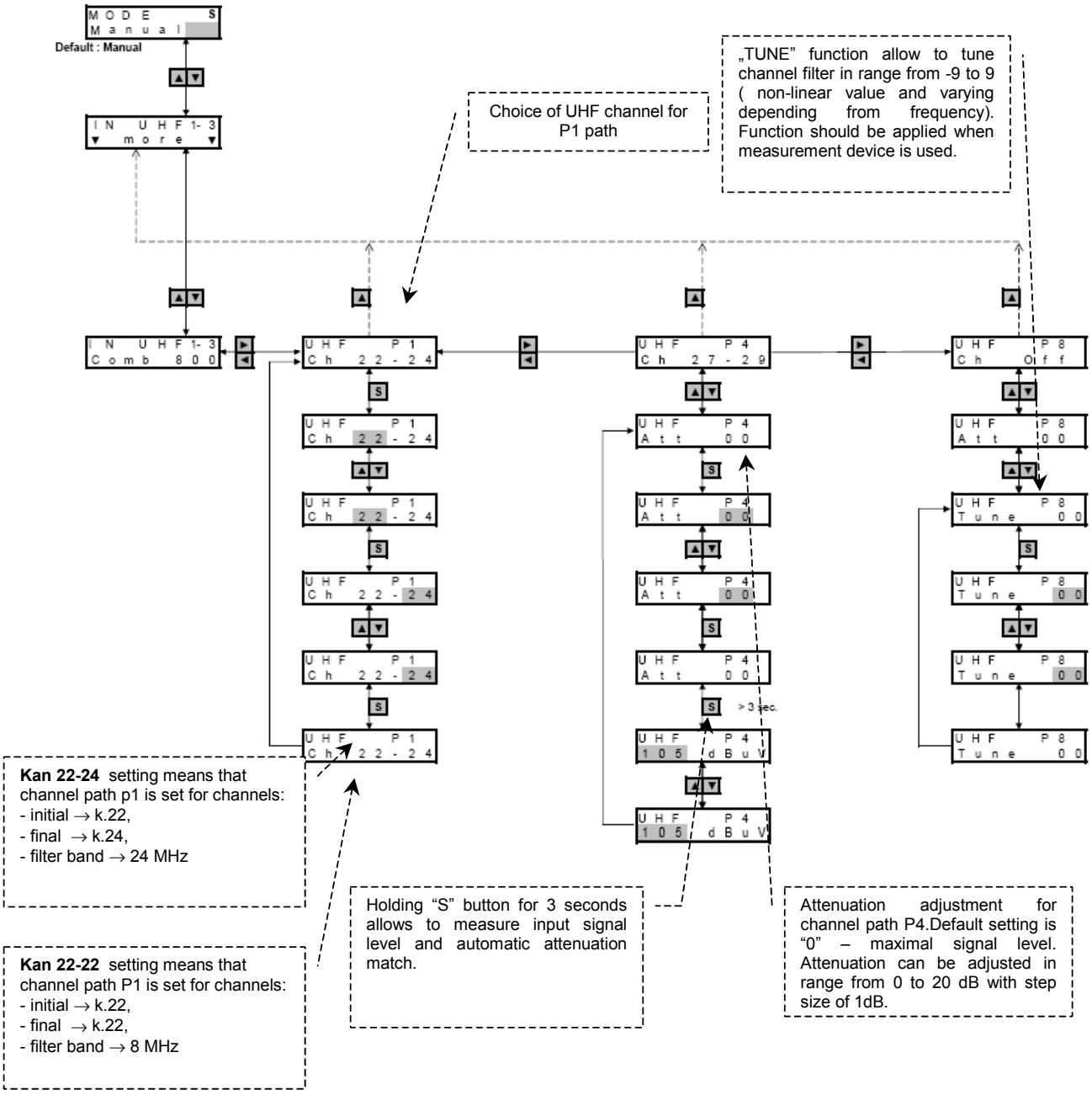


3. Power supply settings for preamplifier



4. Programming of channel paths UHF 1 – UHF 3

Each of P1…P8 channel paths is designated for transmission from 1 up to 6 adjacent TV channels (filter's frequency band is 8 MHZ up to 48 MHZ).

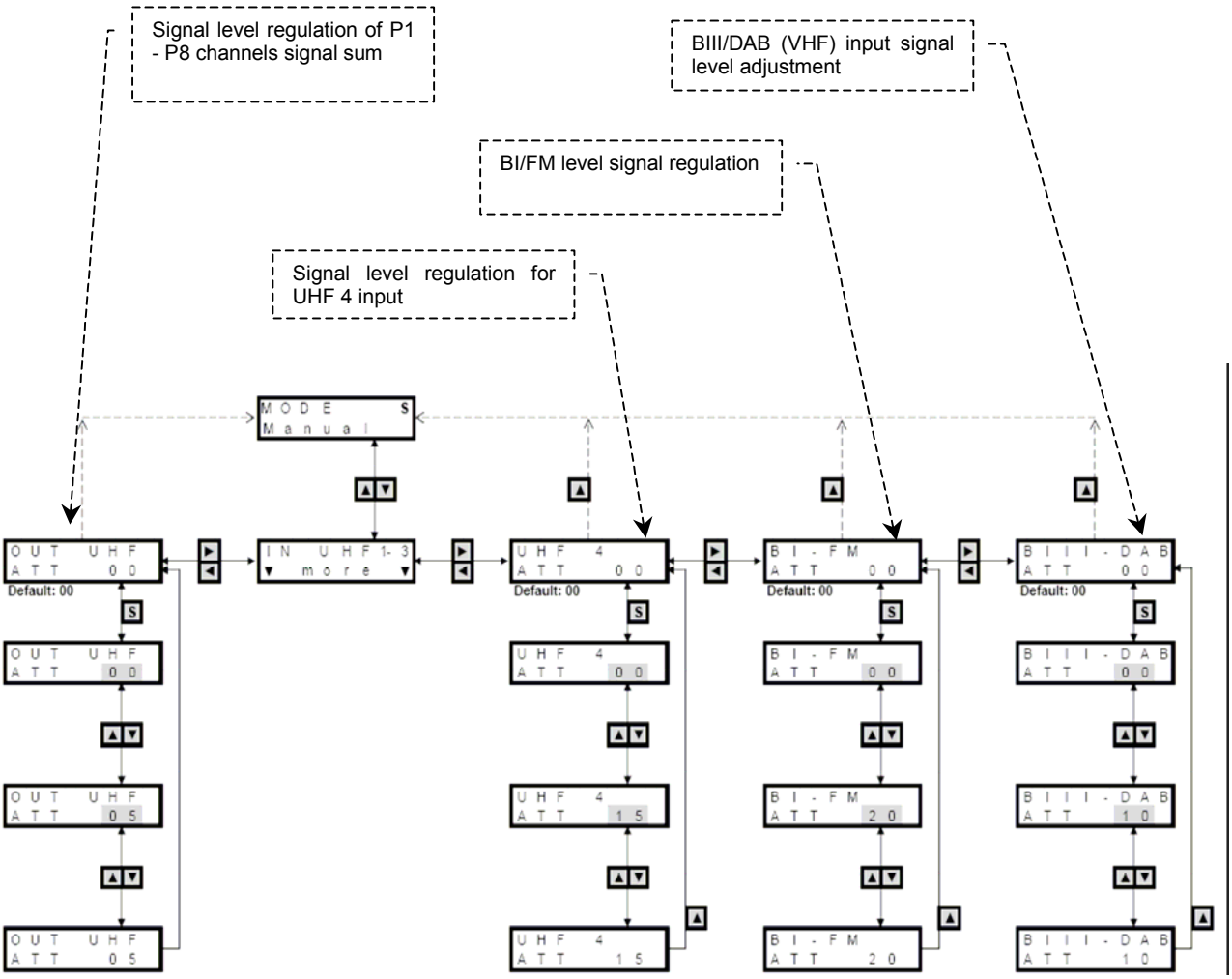


5. Fine tuning function

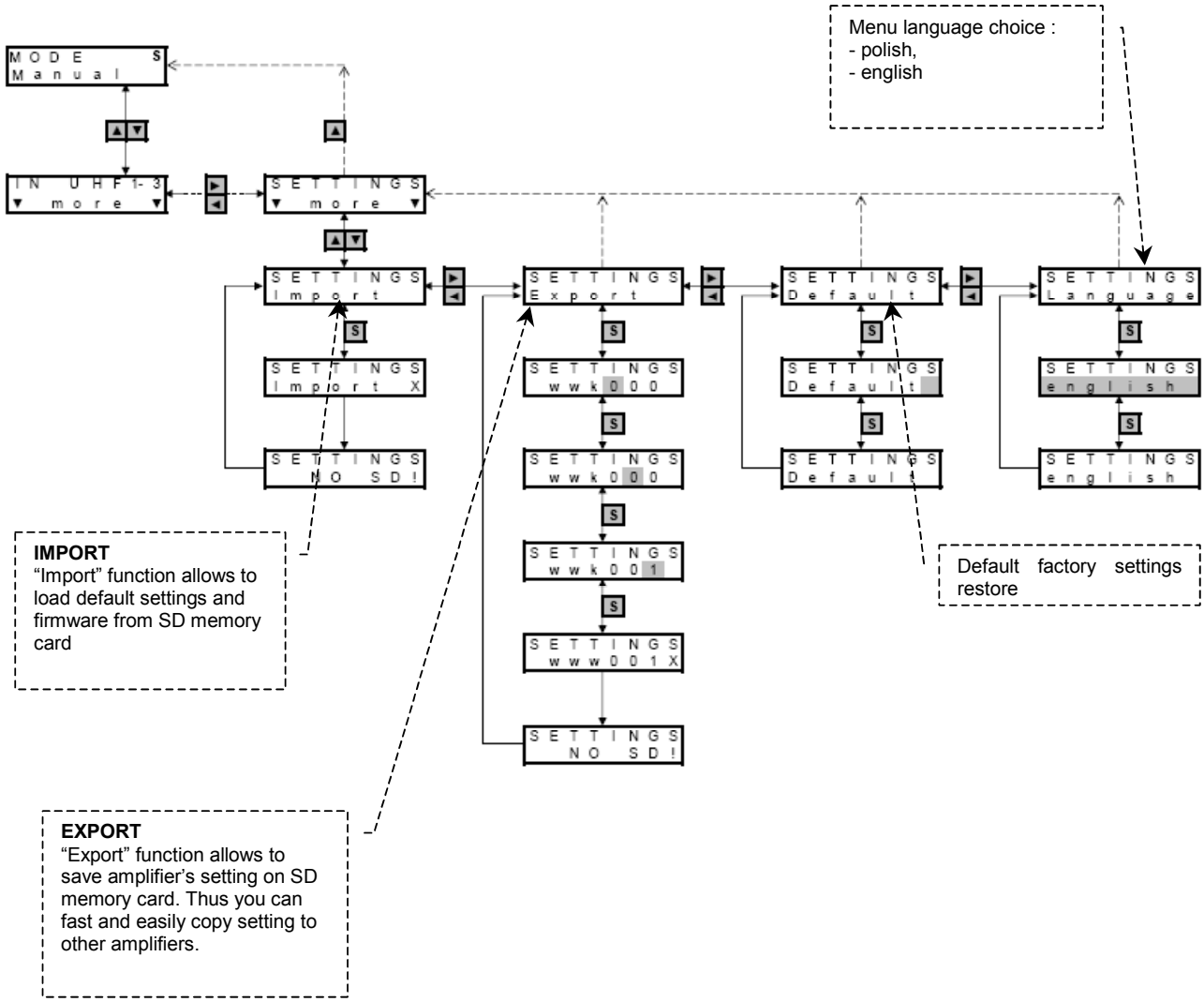
In particular cases, when automatic tuning to middle frequency of the channel is not giving subjective effect, manual retuning of some channel paths might be needed. This might happen in several cases:

- Cross - distortion (figure contour occurrence ), caused by receiving strong signal near weak signal from the same antenna – in this situation it's recommended to "move away" filters from each one
- Reflection appearance (two images occurring – the correct one and moved one ), caused by receiving strong signal near weak signal from different antennas – in this situation it's recommended to "move away" filters from each one
- Weak signal reception – "Fine tuning" is used for filter tuning to vision carrier of TV channel.

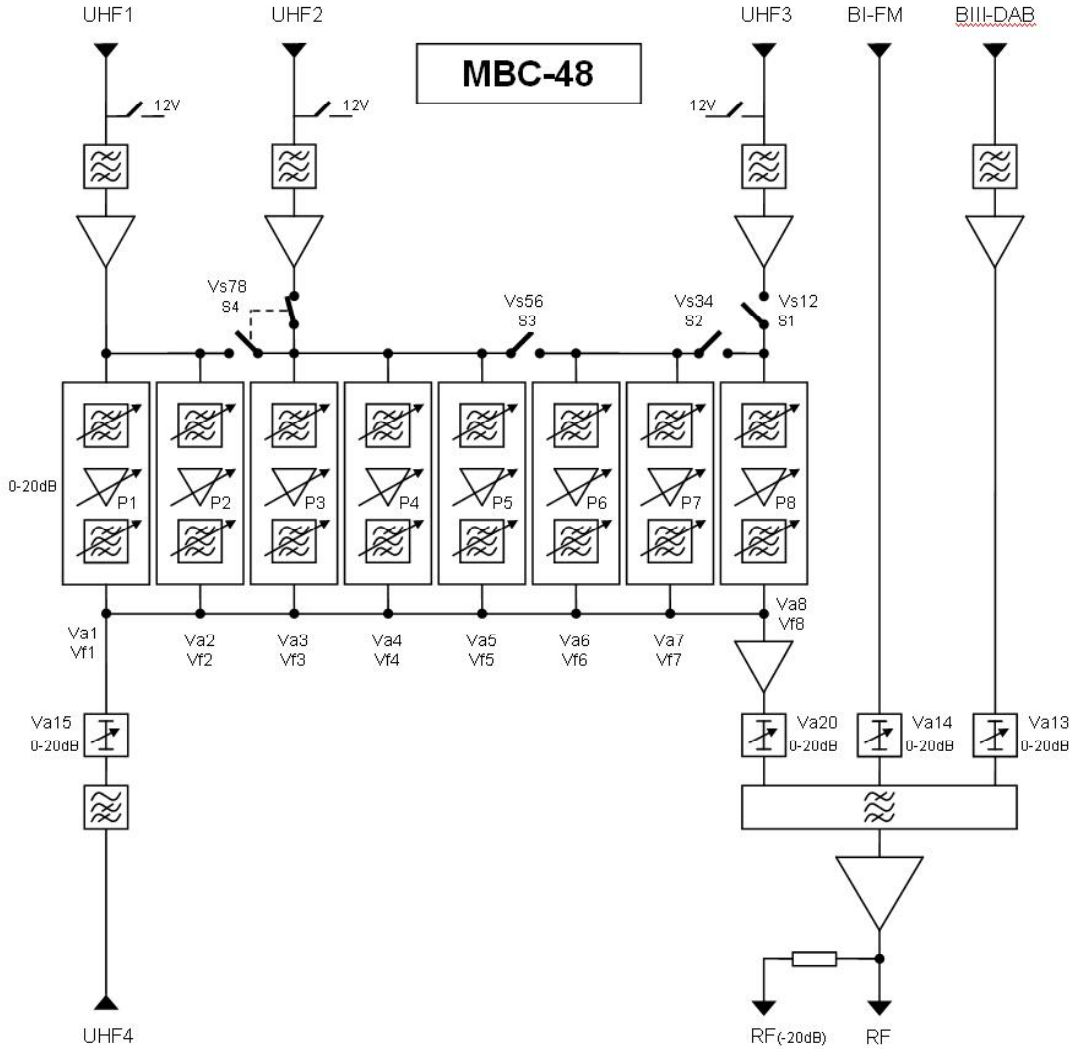
6. Input signal regulation



7. Extra functions



8. Block diagram



9. Technical specification

| **TYPE** | | | | | | | |
|---|---|---|---|---|---|---|---|
| *Inputs* | | **BI / FM** | **VHF** | **UHF1** | **UHF2** | **UHF3** | **UHF4** |
| *Frequency range* | *MHz* | *47-108* | *174-230* | *470-862* | | | *470-862* |
| *Possible combinations of S1-S4 switches for UHF1-UHF3 inputs* | */* | */* | */* | *2* | *3* | *3* | */* |
| | | | | *2* | *5* | *1* | |
| | | | | *2* | *6* | *0* | |
| | | | | *5* | *0* | *3* | |
| | | | | *7* | *0* | *1* | |
| | | | | *8* | *0* | *0* | |
| *Gain* | *dB* | *26 ±2* | *45 ±2* | *44 ±3* | | | *30 ±3* |
| *Gain regulation* | *dB* | *20 ±2* | *20 ±2* | *20 ±2 (for each filter)* | | | *20 ±2* |
| *Gain regulation after channel paths summing* | *dB* | *--* | | *20 ±2 (for signal sum)* | | | *--* |
| *Channel path selectivity* | *dB* | *--* | *--* | *? 22 ±20MHz* | | | *--* |
| *Noise coefficient* | *dB* | *9* | *4* | *9* | | | *17* |
| *Max input level* | *dBuV* | *90* | *80* | *80* | | | *80* |
| *Max output level [1)]* | *dBuV* | *114* | | *114* | | | |
| *Selectivity for f=$f_p$ ±16MHz* | *dB* | *--* | | *? 14* | | | *--* |
| *Return loss* | *dB* | *10* | | *8* | | | *8* |
| *Programmable filter band* | */* | *--* | | *1…6 x channels (8…48MHz)* | | | *--* |
| *Characteristics irregularity – filter width for 1 TV channel (8MHz)* | *dB* | *--* | | *Max. 3* | | | *--* |
| *Characteristics irregularity – filter width for 2..6 TV channel (8..48MHz)* | *dB* | *--* | | *Max. 6* | | | *--* |
| *Test Point* | *dB* | *-20 ±2* | | | | | |
| *Impedance input / output* | *?* | *75 / 75* | | | | | |
| **OTHERS** | | | | | | | |
| *Preamplifier's power supply* | *V DC / mA* | *--* | | *0-12-24 / 50* | | | *--* |
| *Preamplifier's closed circuit indicator* | */* | *--* | | *yes, LED diode – red color* | | | *--* |
| *Temperature work range* | *K (°C)* | *-5….+50* | | | | | |
| *Power supply* | *V AC / Hz* | *230 / 50-60* | | | | | |
| *Power consumption* | *VA* | *20* | | | | | |