



## User's manual

### Caution

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Following underlined terms used in this manual have the following meanings:

### Caution

Applies to the technical requirements to be respected by the user to ensure perfect functionality of the device.

### Attention

Refers to the instructions, that has to be precisely followed to avoid damage or destroy the device.

### Warning

Refers to the instructions, which failure can jeopardize the operation of the device.



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## 1. Safety precautions

**Before working with FMS037-TV02 please read carefully following safety precautions !**

### Attention



The receiver can be opened only by qualified technician. Before they start to perform service tasks, the receiver has to be disconnected from the power supply. In the opened device can be accessed parts, which can be under dangerous voltage and contact with them can be life-threatening. Any exchange of the component and/or installation of any module can be performed only when the receiver is disconnected from the power supply!

**In case of power failure remain all data stored in the memory of the receiver.**

### Power supply 12V/24V

Device can be operated only in specified voltage range from +9 to +36V DC.

### Connecting cabling



All cabling leading to and from the receiver are necessary to place transitional or other moldings and that mainly in the places, where is expected that people will be moving!

### Humidity and place of installation

Device cannot be exposed to tripping or splashing water.

In case of occurring condensing water wait, until the water from the device will totally evaporate and after that you can connect again to the power supply.

### Ambient temperature and heat influence

Ambient temperature during operation should not exceed +85°C. Ventilating devices cannot be in any way obstructed, so the ventilation of the receiver will be sufficient. Accumulation of the heat in the receiver may negatively effect the lifetime of the device and may be the source of the danger. Device cannot be installed directly over the source of heat or nearby (e.g. heating elements, heating systems or similar devices), where it would be exposed to the thermal radiation or oil vapor. It is recommended, that the device is installed on the non-combustible base.

### Measurements to ensuring of electro-magnetic compatibility (EMC)

All covers and screws has to be firmly mounted and fixed. Contact areas should not be oxidated or deformed.

### Caution



This receiver has to be equipped with the ESD components (ESD = Electrostatic Sensitive Device) !

Electrostatic discharge are electrical current pulses, which can start with the large voltage variations and also via standard insulating materials.

When installing and handling ESD components need to follow these important rules:

- Electrostatically sensitive devices may be operated only on electrostatically protected areas (EPA) !
- Ensure continual balancing of electric potential !
- Ensure the correct grounding of the persons / workers with the grounding bracelets and grounding shoes !
- Avoid using electrostatic rechargeable materials such as PE, PVC, polystyrene and other !
- Avoid electrostatic fields >100V/cm !
- Use only marked and defined packaging and transport materials !

**On damages resulting from incorrect connection caused by improper connection and/or improper handling are not covered by warranty!**



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## 2. Receiver description

DVB-S receiver FMS037-TV02 is designed for two two-channel receivers / modules PSTI series. This ensures reception up to 4TV channels and their integration to MOD system FUNTORO. Internal construction and power supply in range 9 - 35V DC predestinate this device for usage in the means of transport.

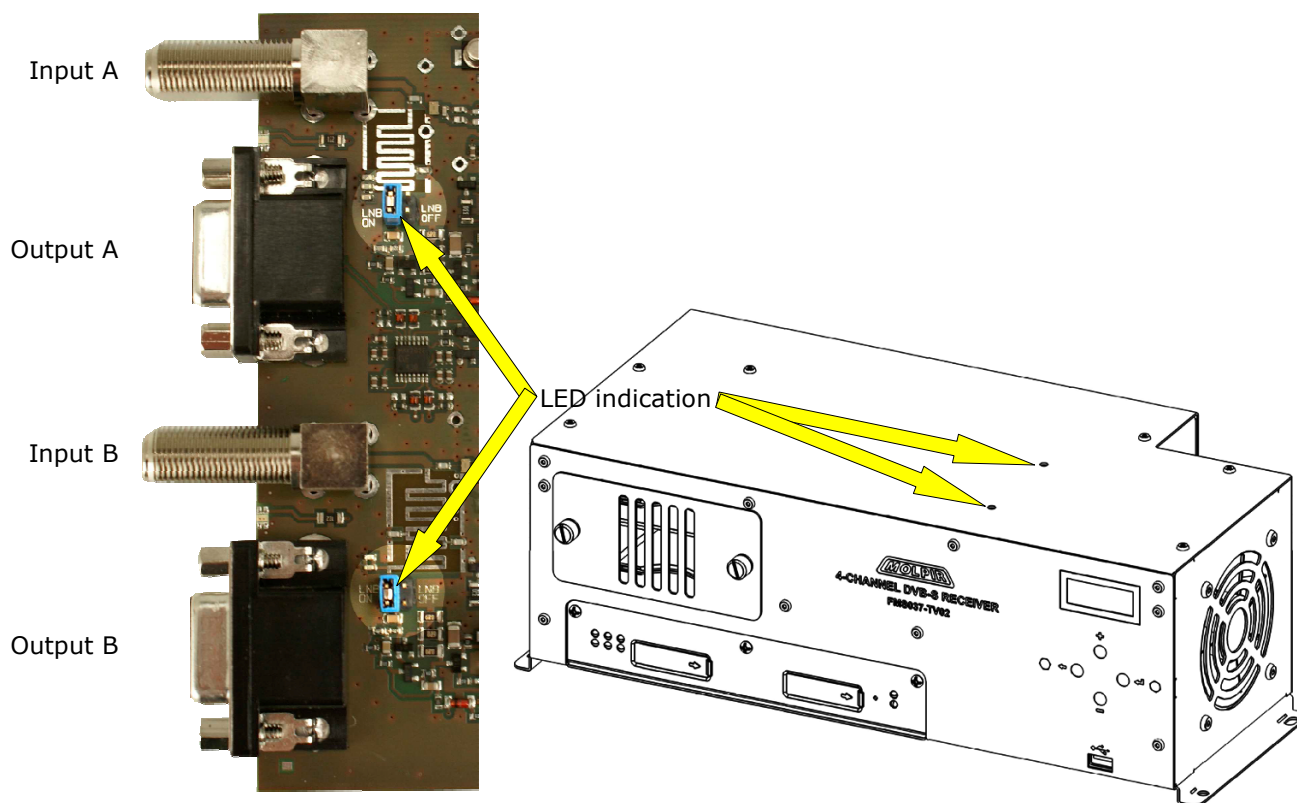
### 2.1 Module description

Receiver module PSTI serves for reception of DVB-S TV signal coded in QPSK into two independent AV signals. Subsequently are these signals converted to digital stream suitable for MOD system FUNTORO. Output AV signals are brought out with Sub-D connectors.

Two independent tuners of each module PSTI supports parallel conversion of two different MPEG2 data streams. In case of usage only one output data stream is tuner B set to mode „slave” and its antennas input can be deactivated, thereby achieving lower power consumption. Each PSTI module is equipped with standard CI (Common Interface) slot, that enables usage of CA module for decoding Smart card. One CA module with one Smart card can decode two TV programmes at the same time.

**!! Basic condition for programming DVB-S receiver is its connection on antenna and setting of requested satellite !**

### 2.2 Connecting of the PSTI modules



### 2.3 LED indication

<b>LNB/5 voltage</b>	<b>Signal</b>	<b>LED indication</b>
TURNED OFF	OK	Green
TURNED OFF	NOT OK	Green flashing
TURNED ON	OK	Orange
TURNED ON	NOT OK	Red/Orange flashing

### 2.4 Installing a new module or replacement

Insert CAM module to edge molding and insert firmly to connector on the backside and subsequently Smart-card. Then fasten the CAM module cover using the crossscrews on the front panel. For replacement of the module or only Smart card loosen the cross screws, remove the module cover and take out the card/ module. Then insert new card/ module.

### 2.5 Programming process of PSTI modules

After the insertion of CAM modules and Smart-cards for reception of coded programs has to be basic unit and modulators programmed in accordance with attached instructions.

Manual programming of digital modules is performed subsequently:

- Connect antenna, whereby measuring device with the screen or TV on RF output of the end station – Reason is: part of the screen is indicated on the screen menu.
- Module of the program modulator on the requested channel output in accordance with the attached instructions. On programming of digital module has to be measuring device and/or screen set to the particular output of the modulator channel.  
(In the double modulators, first channel. And also showing the parameters of the second digital channel)
- Program the digital modules in accordance with program sequence shown on the following pages. Note, that program sequence corresponds to the selected base unit. Selection and confirmation of the operational steps is performed using the keyboard below the screen.

#### Warning

- During the programming process are programming references displayed on the base unit and also on-screen display!
- After changing of the card location or data transfer using the button CopyKey, data needs to be confirmed again.

#### Warning

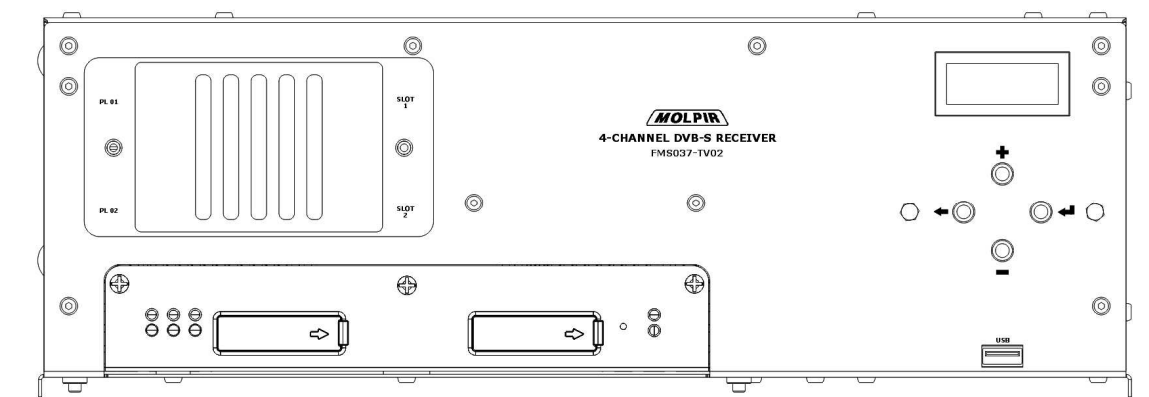
- **Minimal required software version of the base unit for flawless programming is specified on module.**





### 3. Programming

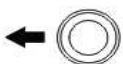
Programming of the unit is carried out with keypad located between the display and USB port on the right side of DVB-S receiver.



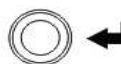
Plus / move to the line on the display upwards




Previous / next number



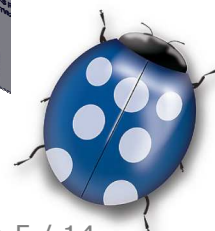
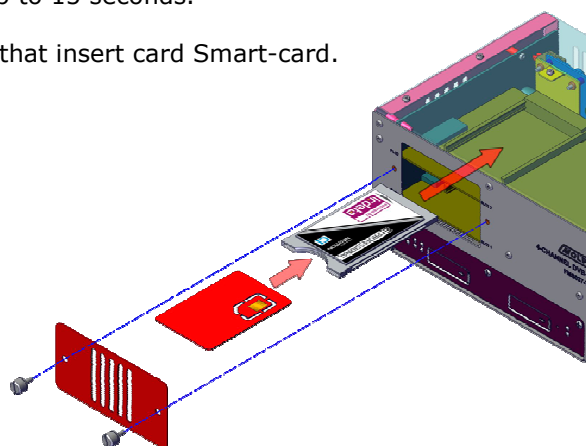
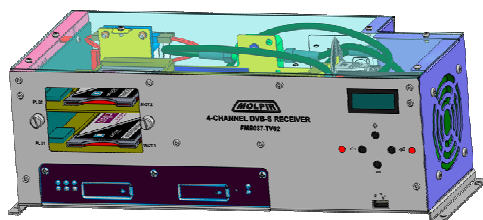
Confirm / Continue



Minus / move to the line on the display downwards

Buttons  are used for selection and confirmation of the operation steps for setting of the values. After turning on the unit. (connection to power supply) are loaded all data and may be set. This process (data loading) lasts up to 15 seconds.

Insert the card reader to the module and after that insert card Smart-card.



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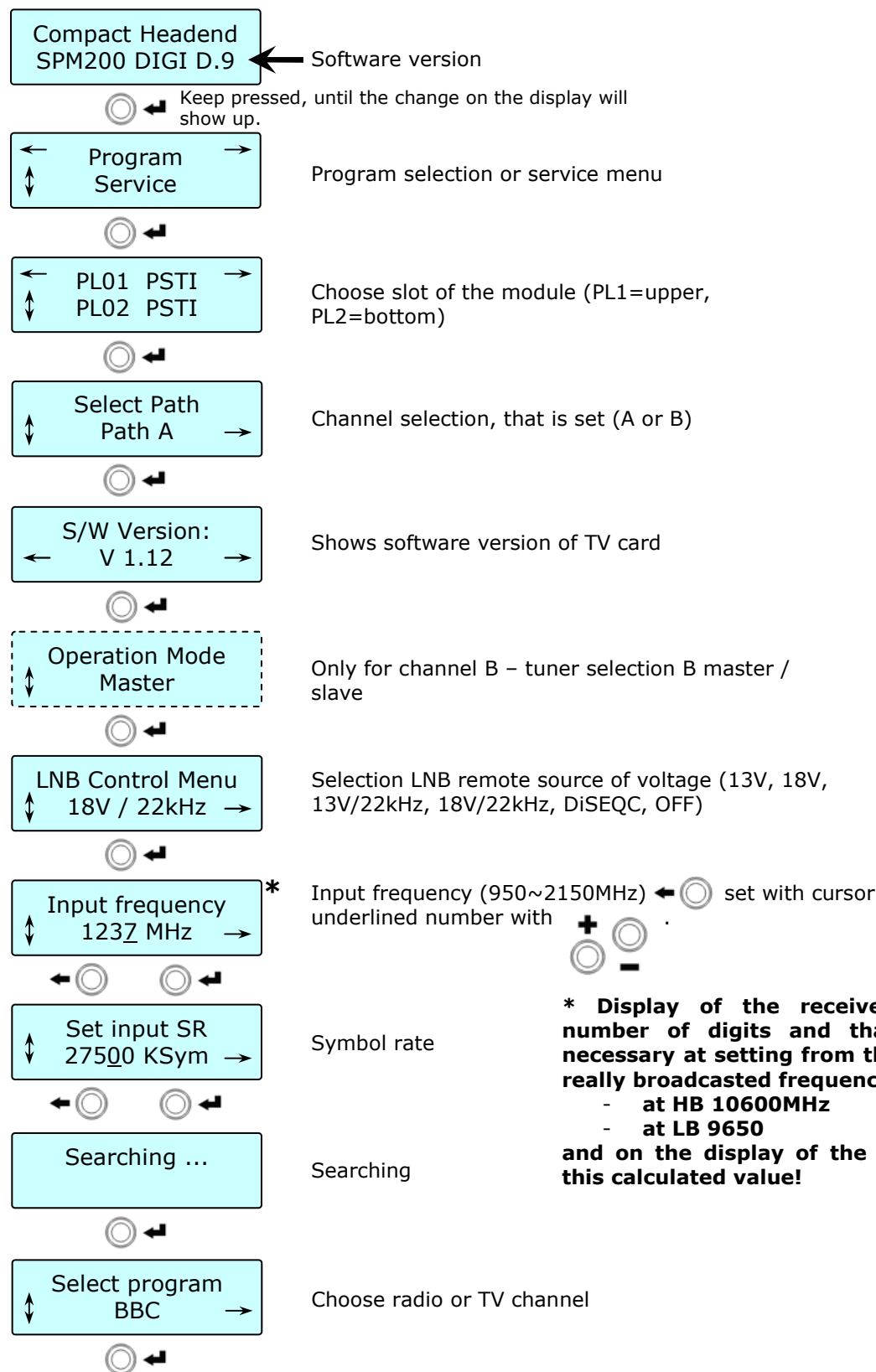
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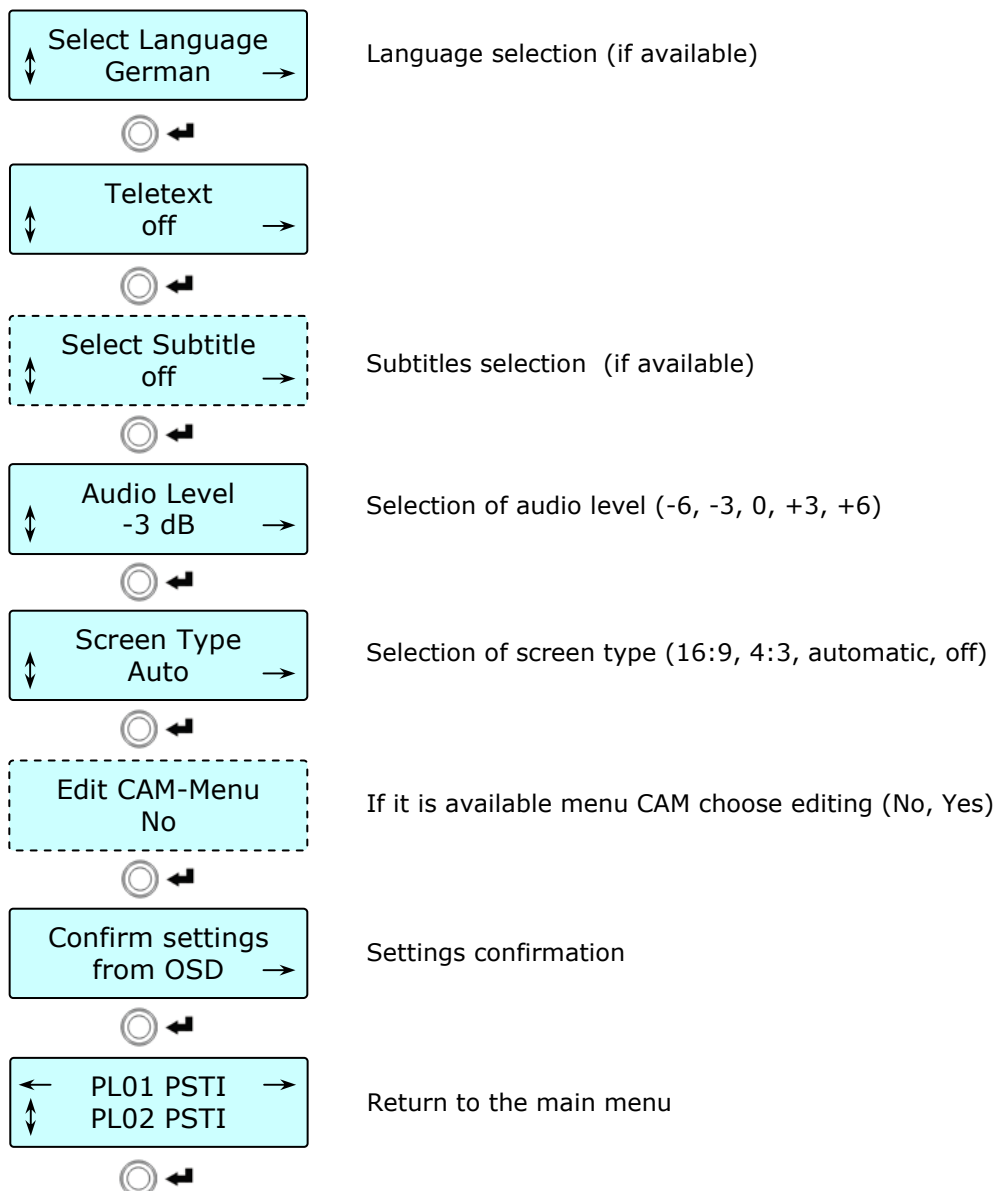


**\* Display of the receiver has limited number of digits and that's why it is necessary at setting from the value on the really broadcasted frequency:**

- at HB 10600MHz
- at LB 9650

**and on the display of the receiver to set this calculated value!**





**In case of power failure all data will remain stored in the unit!**



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### 3.1 Technical data PSTI


<b>RF – input</b>	
Connection (connector)	2 x F / 75Ω
Frequency range	950 ~ 2150MHz
Tuning (steps)	1-MHz
Input level	47 ~ 70dBμV
Bandwidth	automatic
Modulation	QPSK
Symbol rate QPSK	40MBit/s (MCPC + SCPC)
FEC	in accordance with DBV
Code rate Viterbi	1/2, 2/3, 3/4, 5/6, 7/8, 8/9 (automatic switching)
<b>Output (to modulator)</b>	
Connection	15-pin SUB-D female
Video level	1V <sub>pp</sub> /75Ω (1-dB-step, 0 ~ -3dB)
Video bandwidth	20Hz ~ 5MHz
Audio level	1V <sub>pp</sub> /10Ω (3-dB-step, -6dB ~ +6dB)
Audio bandwidth	40Hz ~ 15kHz
Power consumption (typical without CI)	7W





## 3.2 Unit firmware update with USB flash disc

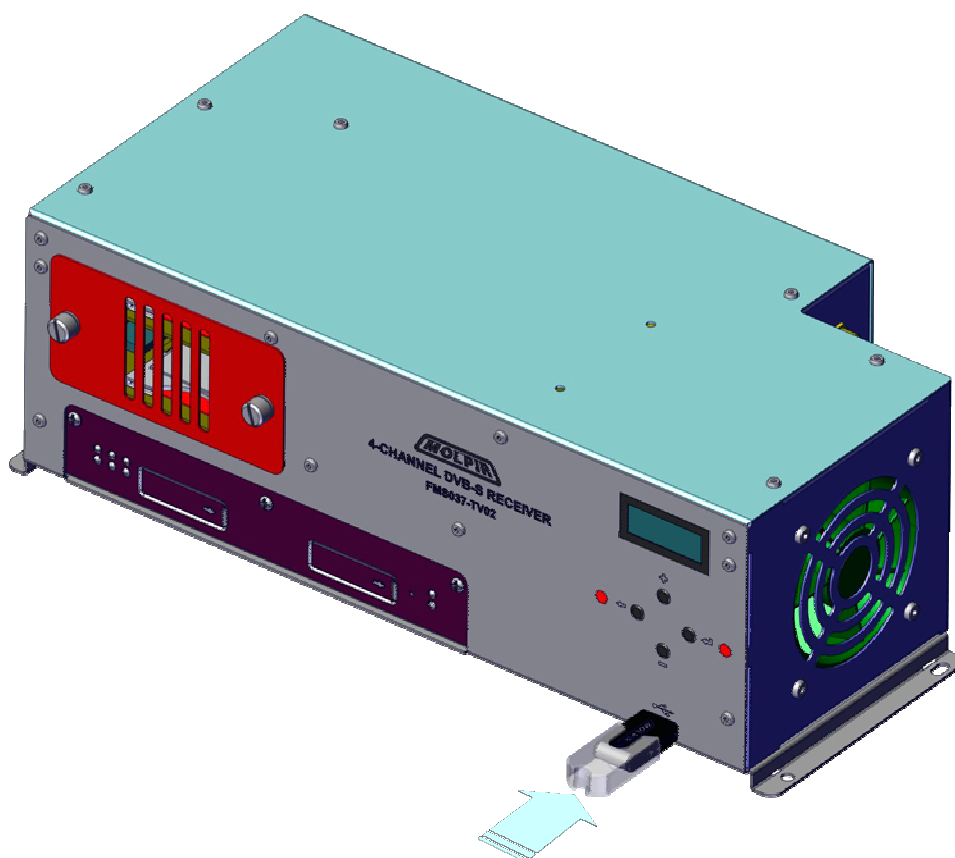
- Request latest version of firmware from the MOLPIR helpdesk!
- Copy the file on the USB-flash disc
- Insert USB-flash disc to USB port of the unit located under the display and 4 buttons on the right side of the receiver
- Open the update menu (shown below)
- Confirm the start of the update
- Wait until the update will be finished
- Remove USB-flash disc from the port

Buttons  are used for selection and confirmation of the operation steps for value settings. After turning on of the unit (connecting to power supply) are all data loaded and can be set. This process (data loading) can last up to 15 seconds.

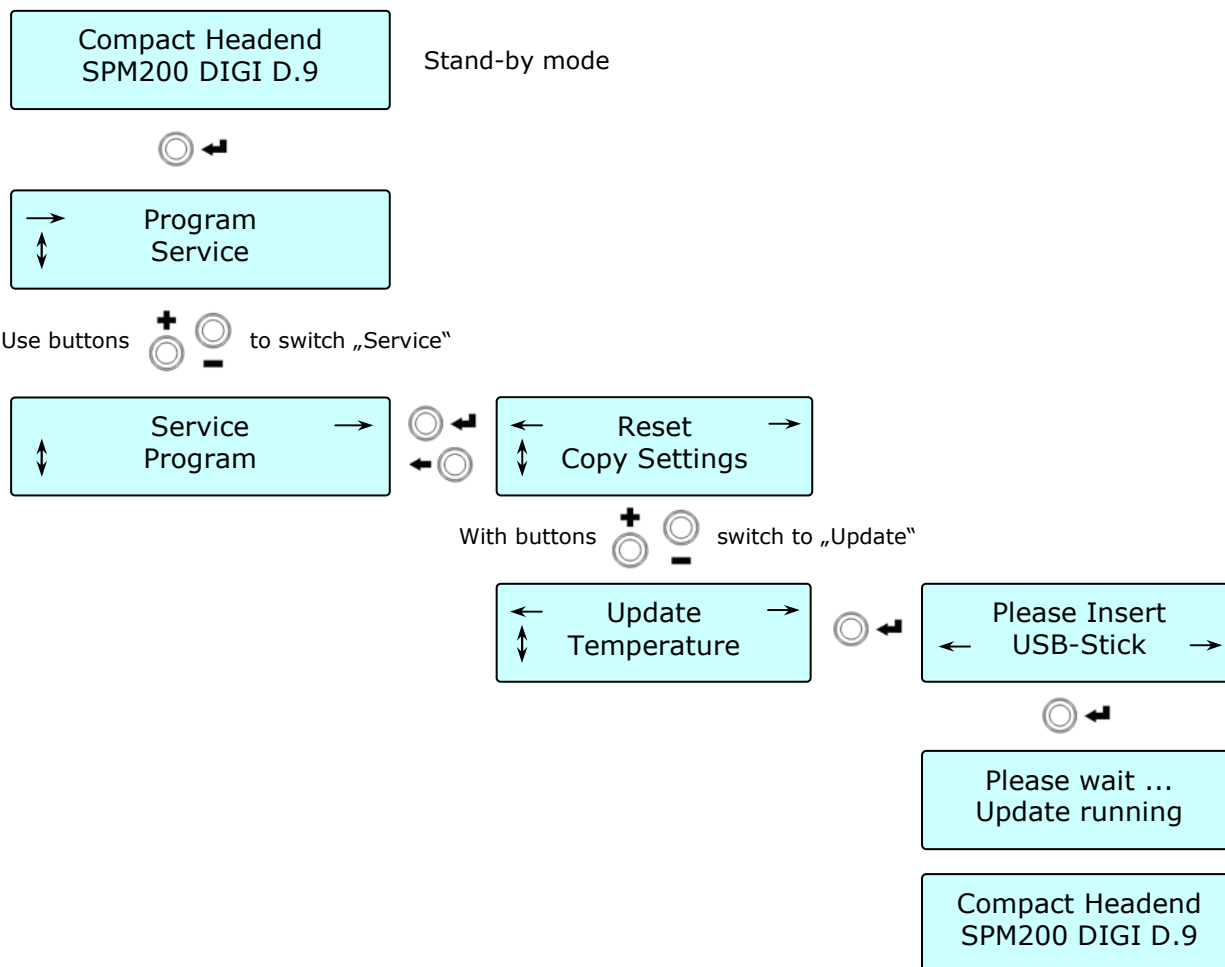
### Attention

If firmware will not recognize the new module in slot or module, in case module will be not displayed or otherwise module cannot be displayed at all on the display (skipped) after that firmware has to be upgraded to the latest version.

### Insert USB to the slot under the adjustment buttons



## Update - process

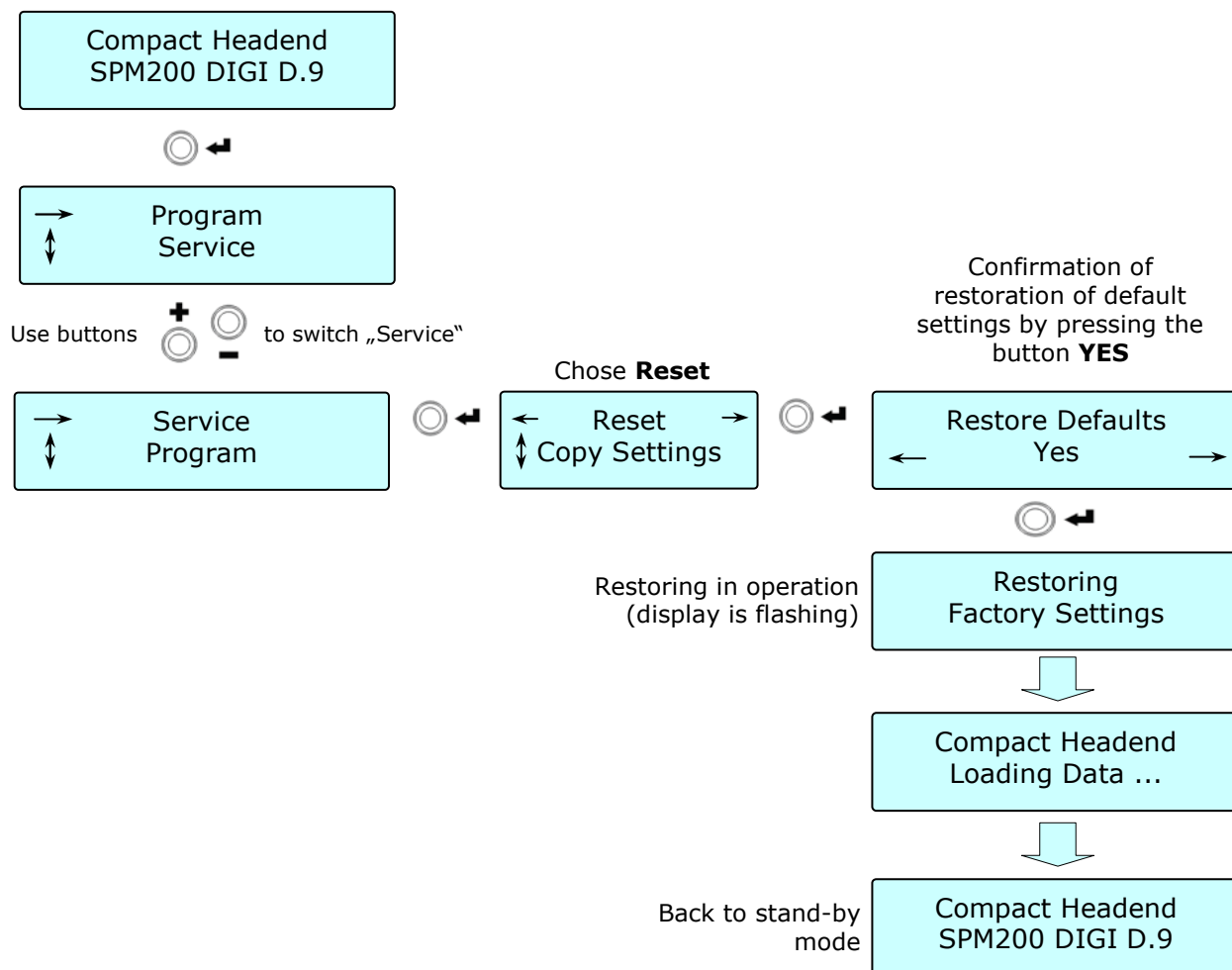


**Update was OK – remove the USB from slot under the adjustment buttons.**

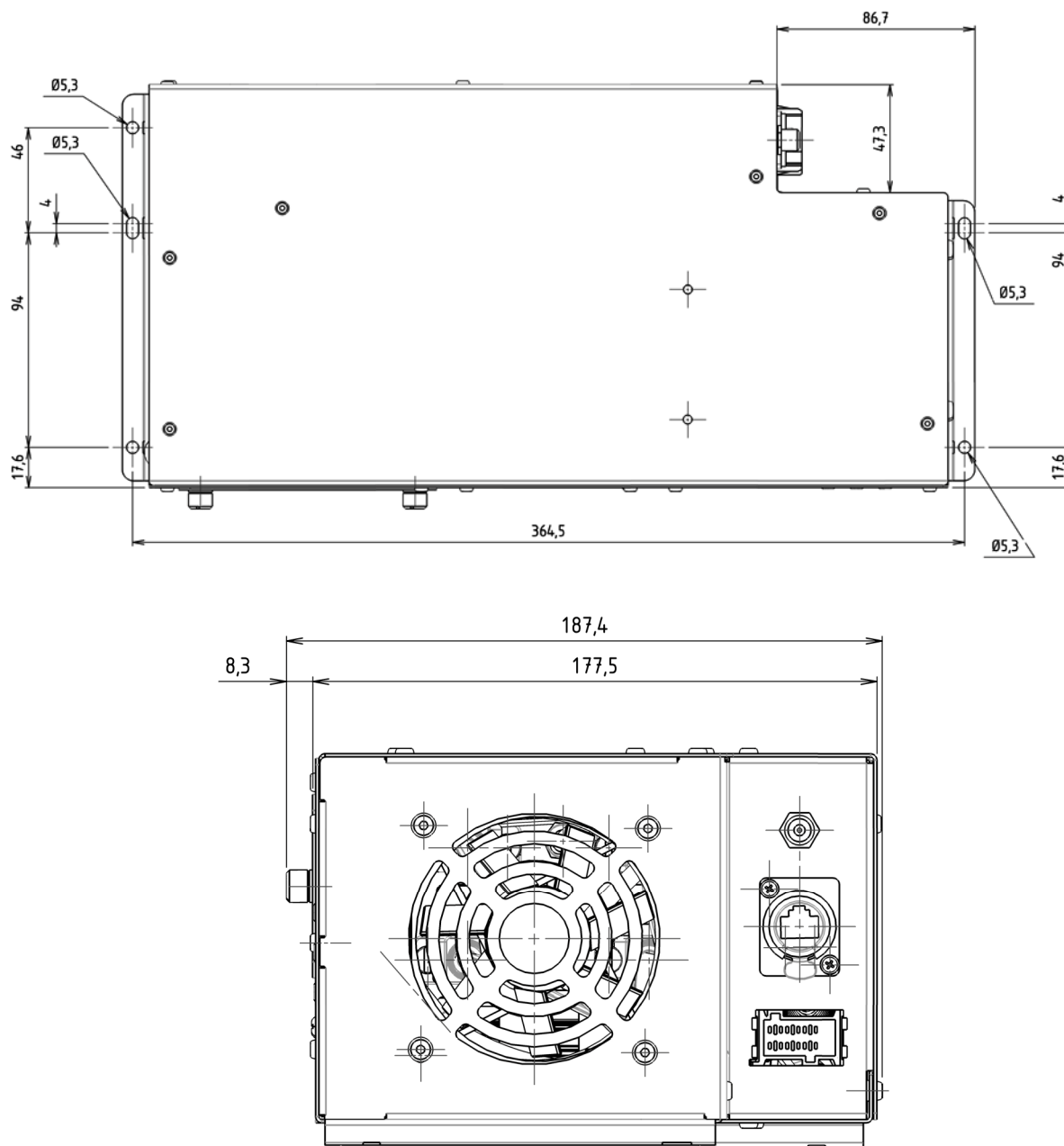


### 3.3 Loading of default settings (defaults)

Default settings of the unit can be restored anytime with service menu.



#### 4. Drilling plan of fixing holes and main dimensions



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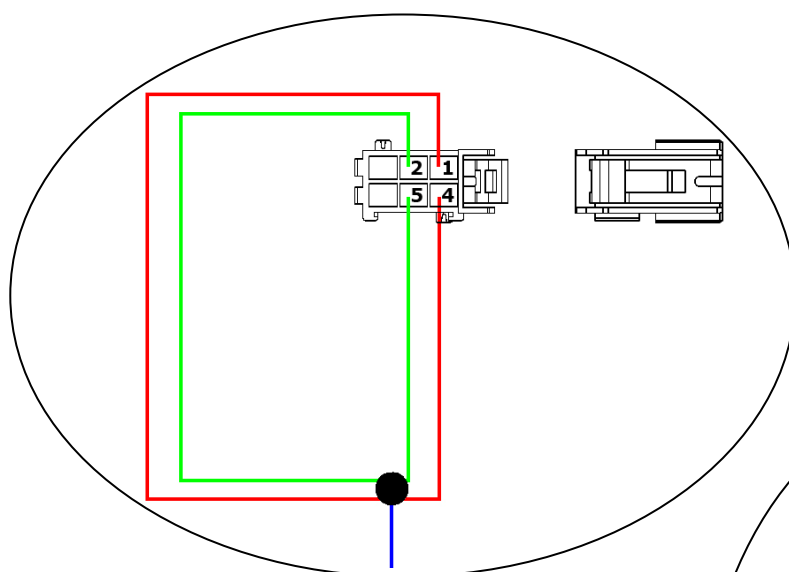
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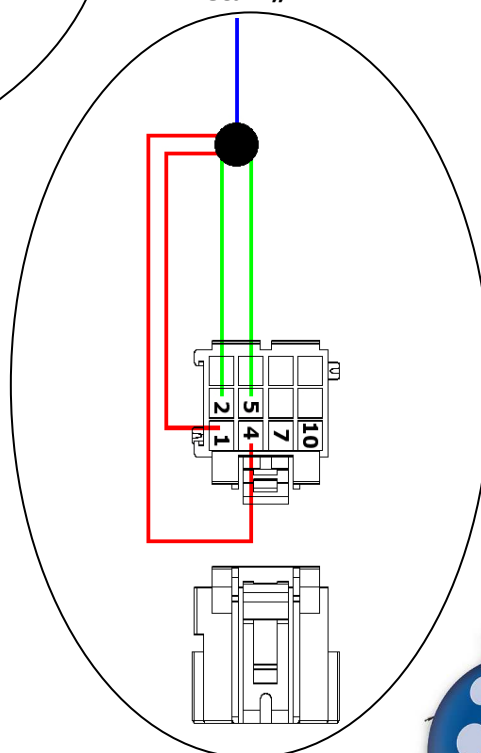
## 5. Technical data

Application	Car and railway industry
Number of plug-in slots	2
Operating voltage range	12V ~ 35 V DC
Max. current consumption	3A
Operating temperature	-20°C ~ +85°C
Main dimensions (W x D x H)	373.5 x 177.5 x 124 mm

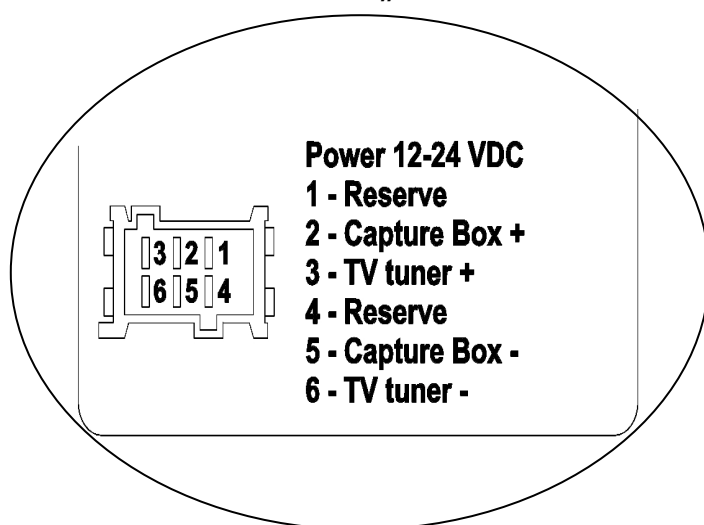
## 6. Scheme of connection Detail „A“



Detail „B“



Detail „C“



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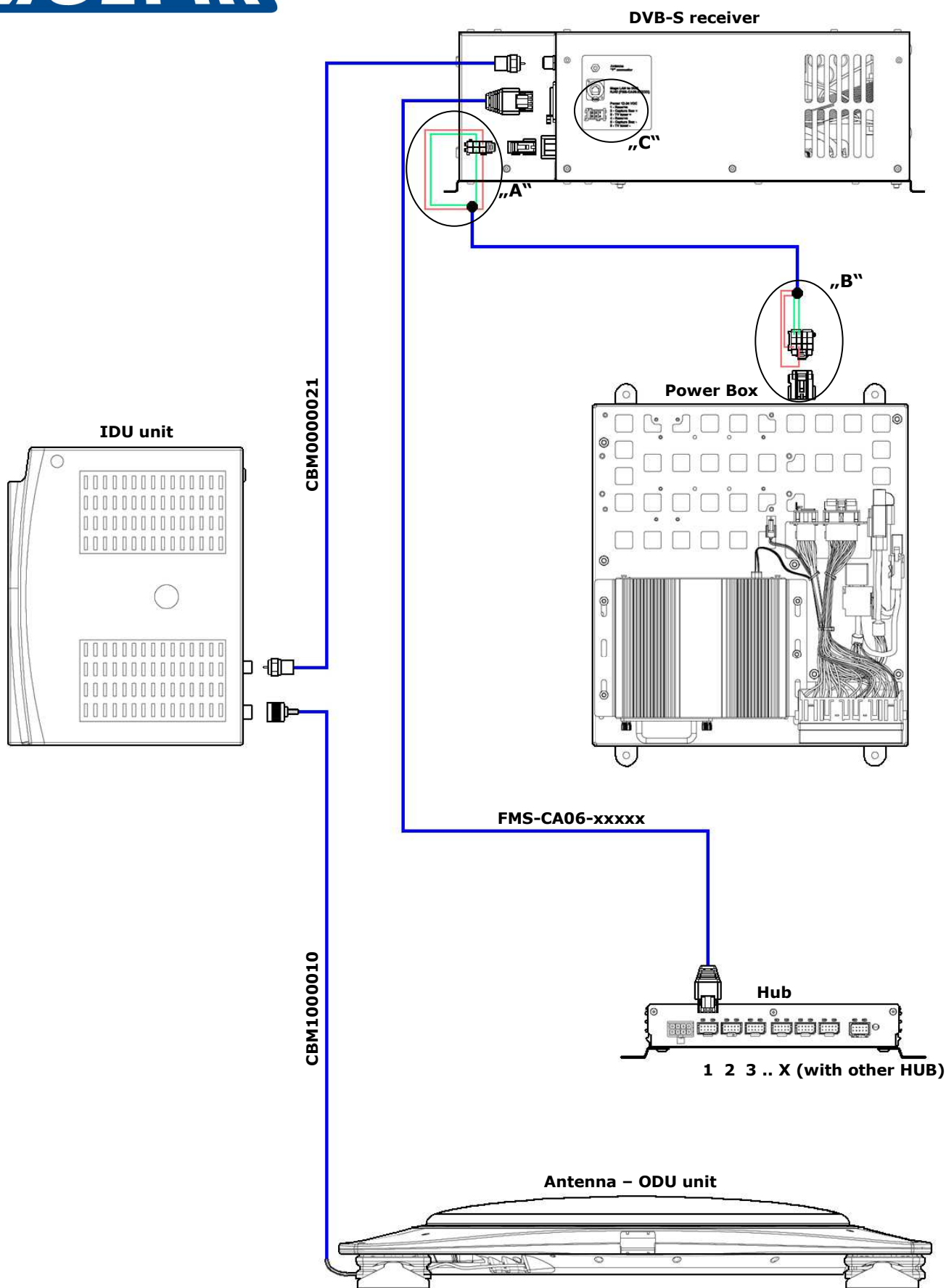
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Note ! Specification may be changed without notice.

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