



# V 112

Audio / Video into PAL twin modulator



**Direct Digital**   
by ASTRO

## Operating Instructions

## Device specification

The product includes the following parts:

- ☐ V 112 plug-in card
- ☐ 2 AV twin adapters, 300 mm
- ☐ Operating instructions

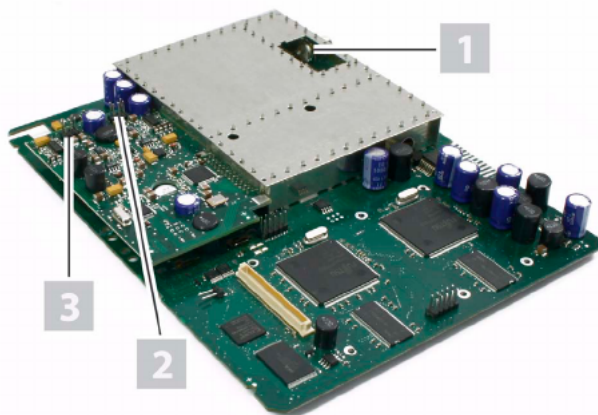


Figure 1: V 112 plug-in card

The V 112 plug-in card is labelled with a CE mark. This confirms that the product complies with the relevant EC directives and satisfies the requirements specified therein.

## Warranty conditions

The general terms and conditions of ASTROBit GmbH apply. These terms are listed in the latest catalogue and also on the Internet at address "[www.astro-kom.de](http://www.astro-kom.de)".

[1] Slot for output channel filter

[2] Input A

[3] Input B



## Technical specification

The V 112 plug-in card is used for modulating signals from two audio/video sources into standards-compliant TV signals in the frequency range 47 to 862 MHz (K2 - K69). It has a common output converter, i.e. two A/V signals can be processed into two adjacent VHF or UHF channels of equal channel spacing. Each output channel can be enabled/disabled independently of the other. This plug-in card is intended solely for signal processing applications in the following ASTRO base units:

- ☐ V 16, software version x.29 and above

Read the following safety advice and operating instructions carefully to ensure you use the card properly.

The V 112 plug-in card has the following technical features:

- ☐ user-selectable input signal and user-selectable output channels (can be set in the frequency range 47 - 862 MHz)
- ☐ the output levels of each plug-in card can be adjusted electronically to the same level using the KC3 external programming unit or the HE programming software
- ☐ the input level can be adjusted using the HE programming software
- ☐ electronic level adjustment for the output signal
- ☐ excellent signal quality even after combining thanks to channel-selective output filters (optional, please see the "Technical Data" section); the card type and output channel must be specified when ordering

***HINWEIS:** The video signals that you input to the card must comply with the FBAS standard (PAL/CCIR 405-1) and have a level of 1 V<sub>ss</sub>. It is essential that you ensure that input signals lie as close as possible to this level, because although the input level can be adjusted, there is no automatic level control. You should also check when you first put the card into use that all the channels have the same output level, and if necessary adjust the level to match other installed equipment.*

## Disposal



All of our packaging materials (cardboard, packing notes, plastic films and bags) are fully recyclable. Electronic equipment is not household waste, but must be disposed of properly, in accordance with the Waste Electrical and Electronic Equipment DIRECTIVE 2002/96/EC OF THE EUROPEAN COUNCIL AND PARLIAMENT of 27 January 2003. At the end of its service life, please take this unit to the designated official collection points for disposal.

ASTRO Bit is a member of „Systemlösung Elektro“ for the disposal of packaging materials. Our contract number is 80395.5.

## Important information!

Read these operating instructions carefully before using the unit, and keep them for future use.

Follow the instructions below to ensure best possible protection from immediate danger:

- ☐ The unit must only be installed and operated by experts (**as specified in EN 60065**) or by persons who have been instructed by experts. Servicing must only be performed by qualified service personnel.
- ☐ The hazard and safety information given in the operating instructions for the base unit, and the relevant safety regulations specified in DIN VDE 0701-1 and 0701-2, must be observed.
- ☐ When populating the base unit with different signal converters, make sure they comply with the maximum power dissipation of the base unit. If in doubt, please contact ASTRO Customer Services to check whether the cards you wish to fit are suitable for the base unit.

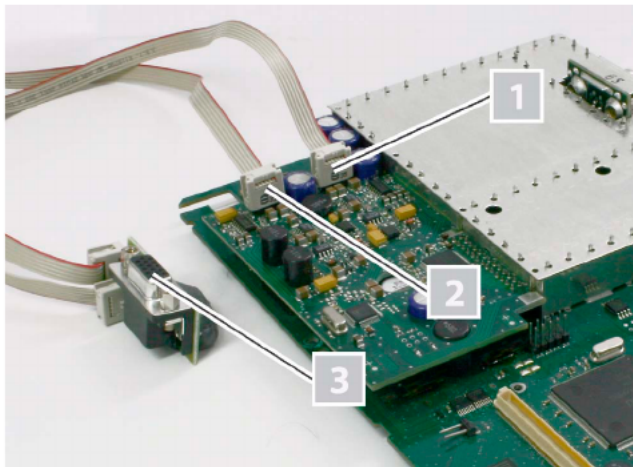
***HINWEIS:** The plug-in cards must only be operated in the ASTRO base units listed in the "Technical specification" section.*

## Connecting the plug-in card

## Connecting the card

Follow the steps below to connect the card:

- [1] Input B
- [2] Input A
- [3] 15-pin D-sub connector



*Figure 2: Cable connections*

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**AUFGABE**

1. Plug each ribbon-cable connector onto the respective input of the plug-in card (see Figure 2, above).

**ERGEBNIS:**

The module is now connected and can be installed.

## Fitting an output channel filter

In order to improve the signal-to-noise ratio, you have the option to fit a selective output channel filter of type V-KF.. to the two outputs of the V 112 (see "Technical Data" section).

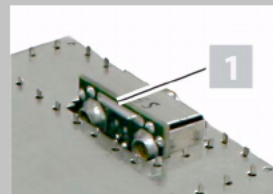
Follow the steps below to fit the output channel filter in the card:

### AUFGABE

1. Plug a V-KF.. type filter into the slot provided for it on the top of the card. Make sure that the filter is facing the direction shown in the figure on the left.

*ERGEBNIS:* You have now installed the output channel filter.

You need to use the HE programming software or the KC3 programming unit to enable the output channel filter. (Please see the sections "Programming with the HE programming software" and "Programming with the KC3").



## Fitting the plug-in card

### VORBEREITUNG:

You need to open the base unit before you can insert the plug-in card. The operating instructions for the base unit describe how to open the base unit. Once you have removed the case cover from the base unit, you can start fitting the plug-in card.

Figure 4 shows the plug-in card once it is fitted.

[1] Contact strip connector

[2] IEC male connector

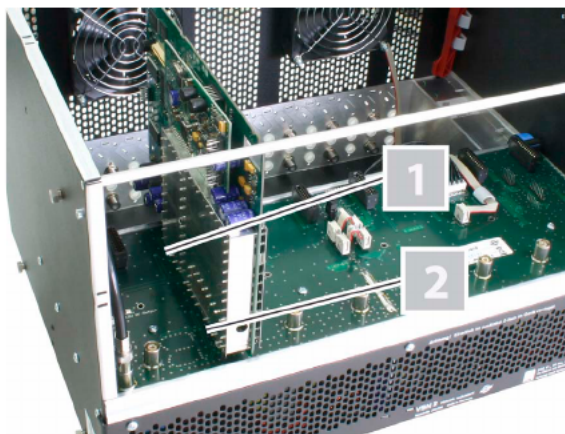


Figure 4: Plug-in card fitted in base unit

Follow the steps below to fit the plug-in card in the base unit:

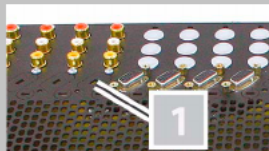
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#### AUFGABE

1. Plug the IEC connector [1] and the contact strip connector [2] (see left) into one of the slots in the base unit, as shown in Figure 4. Each mounting slot for a plug-in card in the base unit comprises the mating connectors to fit those on the card (i.e. an IEC socket and a contact strip socket).
  2. Remove one of the pre-punched cutouts made in the base unit case, which are designed to take a D-sub connector socket [1] (see lower photo on left). Insert the socket connected to the cable in the hole, and screw the socket onto the case.
- 

#### ERGEBNIS:

The plug-in card is now fitted and can be programmed.



## Programming with the HE programming software

### Activating the V 112 in the HE programming software

Once you have fitted the V 112 plug-in card in the base unit, you can start programming it. This section explains how you can do this using the HE programming software. Please refer to the user manual for the programming software for general instructions on how to use this software. First check whether the card is displayed in the Overview of the base unit. To do this, select the menu **Design – Displays base unit**. The Overview of the base unit now opens (see Figure 5, below).

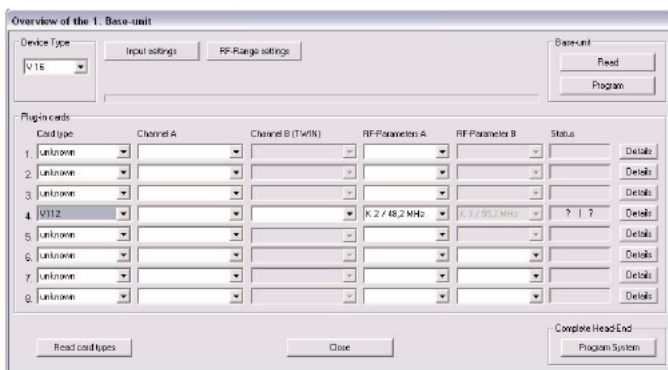


Figure 5: Overview of the base unit

If the plug-in card is not available for selection in the base unit overview of the HE programming software, open the menu **Options – Favoured plug-in cards** (see Figure 6, below).



**Used plug-in cards in the combobox card-type**

Plug-in cards for analog input signal:

<input type="checkbox"/> analog TWIN	<input type="checkbox"/> AV TWIN	<input type="checkbox"/> ADR TWIN	<input type="checkbox"/> Ter. Unstet. 80	<input type="checkbox"/> VHF Plus	<input type="checkbox"/> UHF Plus 600
<input checked="" type="checkbox"/> analog S TWIN	<input checked="" type="checkbox"/> AV M TWIN	<input type="checkbox"/> UKW TWIN	<input type="checkbox"/> Ter. Umsetzer	<input type="checkbox"/> VHF Mono	<input type="checkbox"/> UHF Plus 600
<input type="checkbox"/> V401	<input checked="" type="checkbox"/> V112	<input type="checkbox"/> Audio FN TWIN	<input type="checkbox"/> V301	<input type="checkbox"/> AV UHF Plus 600	<input type="checkbox"/> UHF Mono
	<input type="checkbox"/> AV QUAD	<input type="checkbox"/> UKW Amplifier	<input type="checkbox"/> TWIN Demod.	<input type="checkbox"/> AV UHF Mono	

Plug-in cards for digital input signal:

<input type="checkbox"/> QAM TWIN 1	<input type="checkbox"/> QAM 860	<input type="checkbox"/> QPSK-FAL	<input checked="" type="checkbox"/> DVB-S/FAL TWIN	<input type="checkbox"/> DVB-T/FAL	<input type="checkbox"/> DVB-C/FAL
<input type="checkbox"/> QAM TWIN 1 OP	<input type="checkbox"/> QAM 450A	<input type="checkbox"/> DVB-S/FAL	<input type="checkbox"/> DVB-S/FAL DUD	<input checked="" type="checkbox"/> DVB-T/FAL TWIN	<input type="checkbox"/> DVB-C/FAL TWIN
<input type="checkbox"/> QAM TWIN 1 TP	<input type="checkbox"/> QAM External Product	<input checked="" type="checkbox"/> V501	<input checked="" type="checkbox"/> DVB-S/M TWIN		<input checked="" type="checkbox"/> V911
<input type="checkbox"/> QAM TWIN 3	<input type="checkbox"/> QAM 552		<input type="checkbox"/> V511	<input checked="" type="checkbox"/> DVB-T/M TWIN	
<input type="checkbox"/> QAM TWIN 41			<input type="checkbox"/> V512	<input checked="" type="checkbox"/> V711	
<input type="checkbox"/> QAM TWIN 42	<input type="checkbox"/> QAM TWIN 452	<input type="checkbox"/> QPSK/UKW	<input type="checkbox"/> DVB-S/FM TWIN	<input checked="" type="checkbox"/> V712	<input checked="" type="checkbox"/> Q3AM TWIN 5
<input checked="" type="checkbox"/> QAM TWIN 5	<input type="checkbox"/> QAM TWIN 552		<input checked="" type="checkbox"/> DVB-S/FM Octopus	<input checked="" type="checkbox"/> TQAM TWIN 5	<input type="checkbox"/> Q3AM TWIN 6
<input checked="" type="checkbox"/> QAM TWIN 6	<input type="checkbox"/> QAM TWIN 652			<input checked="" type="checkbox"/> TQAM TWIN 6	<input type="checkbox"/> V504
<input type="checkbox"/> QAM TWIN 6 RP	<input type="checkbox"/> QAM DUD 752	<input checked="" type="checkbox"/> V512	<input type="checkbox"/> COORD DUD S2	<input type="checkbox"/> V503	
<input checked="" type="checkbox"/> V501	<input checked="" type="checkbox"/> V502		<input checked="" type="checkbox"/> V512	<input checked="" type="checkbox"/> DTU	
	<input type="checkbox"/> V522	<input checked="" type="checkbox"/> V532	<input type="checkbox"/> Scan TWIN 1	<input checked="" type="checkbox"/> V311	<input type="checkbox"/> DVB-C/FM TWIN
				<input checked="" type="checkbox"/> DTU DUD	

Plug-in cards with ASI Input:

<input checked="" type="checkbox"/> V202	<input type="checkbox"/> V212	<input checked="" type="checkbox"/> V222
		<input checked="" type="checkbox"/> V238

Plug-in cards with ASI Output:

<input type="checkbox"/> V251	<input type="checkbox"/> V241	<input checked="" type="checkbox"/> V231
<input checked="" type="checkbox"/> V252		

It is not possible to deactivate card types of the current project.

Close

Extended functions

The checkbox belonging to the card must contain a check mark (see top left). If this is not the case, click on the checkbox to activate the card.

The plug-in card is now activated. If you click on the **Read** button (see left) in the **Overview**, the V 112 plug-in card is now shown in the slot being used..

In order to be able to specify the input parameters and baseband parameters, you first need to open the detailed settings for the card. To do this, in the Overview, click on the Details button belonging to the card (see left).

The window for the Parameters of the plug-in card now opens (Figure 7):

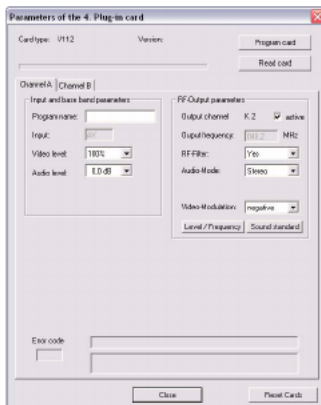


Figure 7: Input parameters

You can specify the input parameters for both channels A and B in this window. To do this, select the channel you currently require by clicking on the relevant tab (see left).

## AUFGABE

1. In the Input and baseband parameters area (see left), enter a program or package name (20 characters maximum) in the relevant input field. The name you enter here is displayed both in the Overview of the base unit and in the frequency/channel overview.
2. To adjust the input signal you can set the video level between 80% and 150% from a drop-down list (see left). The default value is 100% (no adjustment).
3. You can set the audio level between +6 dB and -20 dB (see lower left). The default value is 0 dB.

## ERGEBNIS:

You have now specified the input parameters and baseband parameters.

## Specifying the output parameters

The user is able to select the output parameters for the two output channels of the V 112. In the Overview, specify the parameters for output channel A in the RF parameters A input field and for output channel B in the RF parameters B input field (see left).

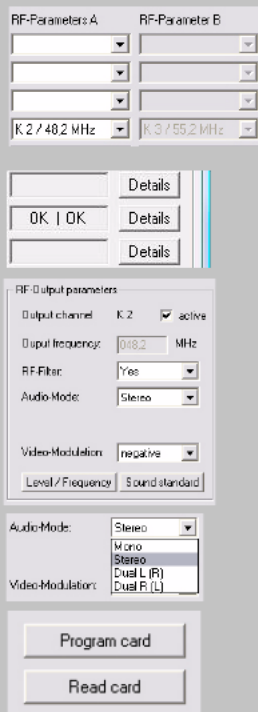
### AUFGABE

1. In the Overview, click on the Details button (see left) to open the window for the Parameters of the plug-in card. You can make all the settings required for operation in this window.
2. In the Output parameters area you can enable or disable the selected channel by placing or removing a check mark in the relevant checkbox.
3. If you have installed the optional output channel filter in the V 112, you must select "Yes" from the "RF channel filter" drop-down list.
4. Use the audio mode drop-down list to set the audio mode (see left). You have the following options available: "Mono", "Stereo", "Dual L (R)" and "Dual R (L)".
5. You can apply the configuration changes to the plug-in card by clicking on the Program card button in the top right of the Parameters of the plug-in card window (see left).

The output frequency display depends on the choice of output channel in the Overview of the base unit. If the "free" option is chosen instead of selecting an output channel in the Overview, then the Frequency field in the window for the Parameters of the plug-in card is enabled and the user can enter any output frequency.

### ERGEBNIS:

You have now set the output parameters.



The screenshot shows the software interface for configuring the V 112. At the top, there are two sections: 'RF-Parameters A' and 'RF-Parameter B'. Each section has a dropdown menu for channel selection and a frequency input field. Below these, there are three 'Details' buttons. The 'Details' button for RF-Parameter A is highlighted. Below the 'Details' buttons, there is a window titled 'RF-Output parameters'. This window contains the following settings:

- Output channel: K 2 (checked active)
- Output frequency: 018.2 MHz
- RF-Filter: Yes
- Audio-Mode: Stereo
- Video-Modulation: negative
- Level / Frequency: Sound standard

Below the 'RF-Output parameters' window, there is a dropdown menu for 'Audio-Mode' with the following options: Mono, Stereo, Dual L (R), and Dual R (L). Below this, there is a 'Video-Modulation' dropdown menu with the following options: Dual L (R) and Dual R (L). At the bottom of the window, there are two buttons: 'Program card' and 'Read card'.

## Setting the audio standard

To set the audio standard, you must first click on the **Sound standard** button in the **Output parameters** area of the window for the **Parameters of the plug-in card**. The settings of the sound standard window now opens (see Figure 8).

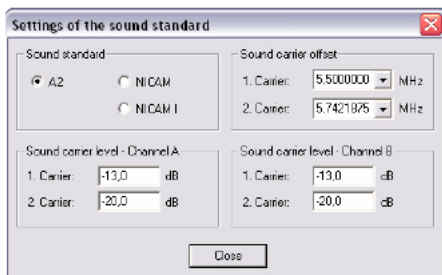


Figure 8: Setting the audio standard

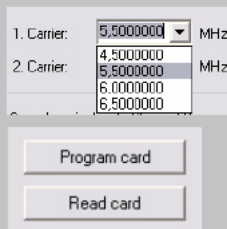
Follow the steps below to set the audio standard:

### AUFGABE

1. Select in the top left corner one of the options "N2", "NICAM" or "NICAM I" by enabling the relevant button.
2. Select the picture/audio carrier spacings for the 1st and 2nd sound carriers from the respective drop-down list (see left).
3. Enter the sound carrier level for channels A and B in the input fields for the 1st and 2nd sound carrier for each channel.
4. You can apply the configuration changes to the plug-in card again by clicking on the **Program card** button in the top right of the **Parameters of the plug-in card** window (see left).

### ERGEBNIS:

You have now set the audio standard.



## Output level adjustment

You can also use the HE programming software to adjust the output level of the V 112. In the Overview, click on the Details button again to open the window for the Parameters of the plug-in card. In this window, click on the Level / Frequency button. The Level / Frequency window now opens (see Figure 9 below).

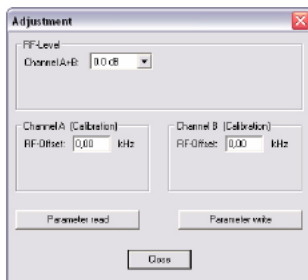


Figure 9: Adjusting the output level

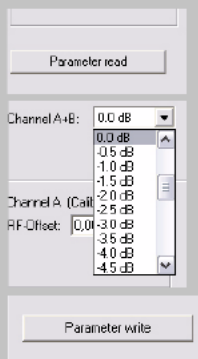
Follow the steps below to adjust the output level for the card:

### AUFGABE

1. Click on the `Parameter read` button to display the values that currently exist (see left).
2. Adjust the output level for channels A and B by selecting the value you require from the drop-down list between +5 dB and -15.5 dB (see left).
3. Calibrate channels A and B by entering an RF offset value (kHz) in the relevant input field for each channel.
4. Activate the values you have just entered by clicking on the `Parameter write` button (bottom left).

### ERGEBNIS:

You have now adjusted the output level for the card.



## Programming with the KC 3

### Grundlagen der Bedienung

**HINWEIS:** The section "Quick reference guide to programming with the KC3" summarizes the operating steps that you need to follow to configure the plug-in card. The following section starts with basic instructions on how to operate the KC3. It then explains how to set all the parameters required for configuration.

**HINWEIS:** Since it is not possible to set all the parameters of the V 112 using the KC3 programming unit, you should preferably program the card using the HE programming software.

If you wish to program the V 112 plug-in card using the KC3 programming unit, you must first connect the serial port of the KC3 to the serial port socket of the base unit being used (see left). Once you have plugged in the KC3 programming unit, the start menu is displayed. The display shows the type of the base unit and the software version number (see left). Please quote this version number if you need to consult Customer Services.

If you wish to display the start menu again after entering programming steps, you will need to disconnect the KC3 from the base unit first, then wait until the display goes blank, and then plug the connector back in.

Pressing the ◀ or ▶ cursor button takes you first into the menu for setting the base unit parameters. In this menu, use the ▽ or △ cursor button to move to the line containing the parameter you wish to set. Press the ◀ or ▶ cursor button to change specific settings for the base unit parameters.

Pressing the Menu / Read button takes you to the menu for setting the card-specific parameters. The following parameters can be adjusted here in the respective lines:

- ☐ Line 1: card type
- ☐ Line 3 / 4: output parameters



Type of base unit

Version x.yz

1=english

( skip <> )

You can enter the parameters directly via the keypad or alter preset parameters incrementally by pressing the ◀ and ▶ cursor buttons.

Once you have entered a parameter value, you should save it immediately by pressing the OK - Store button. The values are then written to the card.

***HINWEIS:** Numerical values must be entered in full. You risk losing data through power failure until settings have been saved!*

Once you have made all your settings, you can check operation at the output of the head end.

The following section explains how to configure the plug-in card in detail:

### Setting the base-unit bus address

If several base units are connected together, you must make sure that all connected base units are set to different bus addresses in order to avoid conflicts on the ASTRO bus. The base units are delivered with the address preset to 241.

Follow the steps below to set the bus address for the base unit:

---

#### AUFGABE

1. After plugging in the connector from the KC3, use the ◀ or ▶ cursor button to access the menu for setting the base unit parameters.
  2. Select line 3 by pressing cursor button ▽ or △ until the cursor sits in line 3.
  3. The value for the bus address can lie between 001 and 020, or equal 241. Press cursor button ◀ or ▶ until the bus address you require is displayed (see left).
  4. Press the OK / Store button to save the setting.
- 

#### ERGEBNIS:

You have now set the bus address of the base unit.

#### V16 Parameters

VMS-Inputs 11-14

**Bus adress** 241

Temperature 34 °C

06: V 112-A OK

PictCr 175,2 MHz

Channel C5

## Selecting the slot

### AUFGABE

1. line 1 by pressing cursor button  $\nabla$  or  $\Delta$  until the cursor sits in line 1.
2. Press cursor button  $\triangleleft$  or  $\triangleright$ , until the display shows the slot and particular channel you require (the example on the left is for slot 6, channel A).

### ERGEBNIS:

You have now selected the slot for the card and the channel you wish to configure. Once you have made all the remaining settings for this channel, you need to configure the other channel by repeating the entire procedure described below.

## Input parameters

**HINWEIS:** The input parameters can only be set using the HE programming software (see the section "Programming with the HE programming software").

## Specifying the output parameters

First set the picture carrier frequency:

### AUFGABE

1. Select line 3 by pressing cursor button  $\nabla$  or  $\Delta$  until the cursor sits in line 3.
2. Press the Menu / Read button until you reach the input carrier submenu (PictureCr) (see left).
3. Use the numeric keypad to enter the required frequency, or change the displayed frequency in steps of 100 kHz by pressing the  $\triangleleft$  or  $\triangleright$  cursor button until you reach the value you require.
4. Press the OK / Store button to save the setting.

06: V 112-A OK

PictCr 175,2 MHz

Channel C5



***HINWEIS:** Instead of setting the output frequency you can set the channel in line 4 of the display. To do this, Press the ◀ or ▶ cursor button to get to the fourth line. Select the channel you require by pressing the ▽ or △ cursor button.*

*ERGEBNIS:*

You have now set the picture carrier and can proceed to select the audio modulation.

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**AUFGABE**

1. Select line 3 by pressing cursor button ▽ or △ until the cursor sits in line 3
  2. Press the Menu / Read button until you reach the audio modulation submenu (AudioMod) (see left).
  3. Select one of the four options ("Stereo", "Mono", "Dual L (R)", "Dual R (L)") by pressing the ◀ or ▶ cursor button until you reach the setting you require.
  4. Press the OK / Store button to save the setting.
- 

*ERGEBNIS:*

You have now set the audio modulation and can proceed to enabling / disabling the output signal.

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**AUFGABE**

1. Select line 3 by pressing cursor button ▽ or △ until the cursor sits in line 3.
  2. Press the Menu / Read button until you reach the output signal submenu (OutpSignal) (see left).
  3. Use the ◀ and ▶ cursor buttons to switch it "On" (see left, output enabled) or "Off" (output disabled).
  4. Press the OK / Store button to save the setting.
- 

*ERGEBNIS:*

You have now enabled/disabled the output signal. You can now get the display to show any error messages that may exist.

06: V 112-A	OK
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<b>AudioMod</b>	Stereo
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Channel	C5
---------	----

06: V 112-A	OK
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<b>OutpSignal</b>	On
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Channel	C5
---------	----

06: V 112-A      OK

**Errors**            none

Channel            C5

## AUFGABE

1. Select line 3 by pressing cursor button  $\nabla$  or  $\triangle$  until the cursor sits in line 3.
2. Press the Menu / Read button until you reach the Errors submenu.
3. If the card is working properly then "none" is displayed. If the display shows any other messages, please contact ASTRO Customer Services.

## ERGEBNIS:

If there is no error message you can proceed with adjusting the output level.

## AUFGABE

1. Select line 3 by pressing cursor button  $\nabla$  or  $\triangle$  until the cursor sits in line 3.
2. Press the Menu / Read button until you reach the RF-level submenu.
3. Use the  $\triangleleft$  and  $\triangleright$  cursor buttons to select the required attenuation level.
4. Press the OK / Store button to save the setting.

## ERGEBNIS:

You have now set the output level and all the other output parameters. If you have installed the optional output channel filter then you still need to enable this filter:

06: V 112-A	OK
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RF-Filter	On
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Channel	C5
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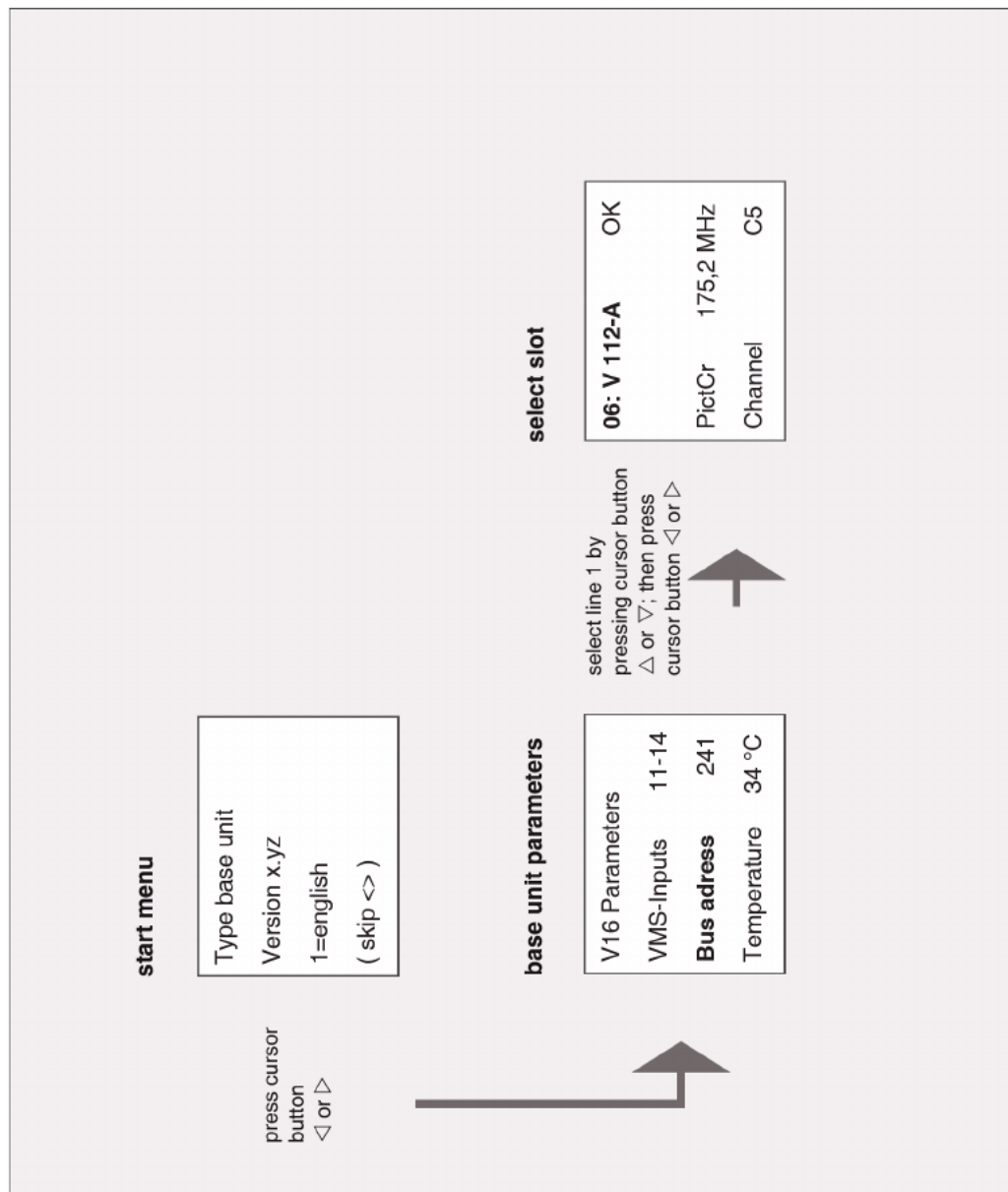
### AUFGABE

1. Select line 3 by pressing cursor button  $\nabla$  or  $\triangle$  until the cursor sits in line 3.
  2. Press the **Menu / Read** button until you reach the **RF filter** submenu.
  3. Use the  $\triangleleft$  and  $\triangleright$  cursor buttons to switch it "On"
  4. Press the **OK / Store** button to save the setting.
- 

### ERGEBNIS:

You have now enabled the output channel filter.

## Quick reference guide to programming with the KC3



**start menu**

Type base unit  
Version x.yz  
1=english  
( skip <> )

press cursor  
button  
◀ or ▶

**base unit parameters**

V16 Parameters      11-14  
VMS-Inputs          241  
**Bus address**        34 °C  
Temperature

**select slot**

06: V 112-A      OK  
PictCr      175,2 MHz  
Channel      C5

select line 1 by  
pressing cursor button  
△ or ▽; then press  
cursor button ◀ or ▶



## Troubleshooting

If the unit is not working correctly, please carry out the following checks:

- ☐ Check that the plug-in contacts of the card are connected to the sockets in the base unit, as described in the section "Fitting the plug-in card".
- ☐ Check that the coaxial cables are connected correctly and that the connectors have not been open-circuited or short-circuited.

If you are unable to correct the problem, please contact ASTRO Customer Services.

## Servicing and repair

Provided all the directions given in these operating instructions are followed, and the device is used in accordance with its intended purpose, then no special servicing is required.

***HINWEIS:*** *If repairs are carried out, the regulations in standard DIN VDE 0701 - 0702 must be observed, where applicable, and in particular the relevant requirements specified in DIN EN 60065. The mains plug must be removed without fail before opening the base unit!*

Type		V 112
Order number		380 321
<b>RF-Modulators</b>		
Output frequency range	[MHz]	47 - 862
Output channels		K2 - K69
Output level	[dBμV]	90 - 100
Intermodulation distance	[dB]	typ. 60
Return loss	[dB]	> 10
Spurious frequency distance	[dB]	typ. 60
TV standard		PAL/SECAM, B/G/D, SECAM L, A2/NICAM
Video-signal to noise ratio	[dB]	typ. 60
<b>Audio / Video</b>		
Input		15-pin SUB-D-jack (per jack 2 A/V-input signals)
<b>Audio</b>		
Input level	[V RMS]	0,5 / 600 Ω
Frequency range	[Hz]	40 - 15000
Signal to noise ratio	[dB]	typ. 45
<b>Video</b>		
Bandwidth		25 Hz - 4,8 MHz
Input level	[Vss]	1 / 75 Ω
<b>Common Daten</b>		
Power consumption	[W]	11.5
Ambient temperature	[°C]	0...+50

Selective output channel filters available (please specify output channel and card type when ordering):

Typ		V-KF...
Order number		380...
Channel range in MHz		111...862



# ASTRO Strobel Kommunikationssysteme GmbH

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