

## Device manual



### 8 pole IP-/ ASI-TV Modulator

IP/ SFP/ ASI (H.264/ AVC, MPEG2) → 4x CI → ATV (8x AM)



**A-PALIOS-IPM4CI**  
**Part N°: 5113.81**

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## 1. Safety and operating instructions



When assembling, starting-up and adjusting the devices, it is necessary to consider the system specific references in the instruction manual.



The devices may only be installed and started up by authorized technical personnel.



When assembling the devices into the receiving points, the adherence of the EMC regulations is to be ensured.



The assembly and wiring have to be done without voltage.



With all work the defaults of the DIN EN 50083 have to be considered. It is especially important to follow DIN EN 60728-11[2].



If installed in mounting cabinets a adequate heat circulation must be guaranteed. The mounting in closed cabinets without air sufficient flow is **not allowed**.



The devices come under protection classification I. It is absolutely necessary, therefore, to insert the mains plug into a socket with protective contact.



WEEE-Reg.-Nr. DE 50389067

## 2. Device variants

A-PALIOS-IPM4CI 5113.81 IP/ SFP/ ASI (H.264/ AVC, MPEG 2) → 4x CI → ATV (8x AM)

## 3. General

The 8 pole IP-/ ASI-TV Modulator A-PALIOS-IPM4CI is a device of the head end system A-LINE, which is conceived as a complete system for big and middle sized networks.

The A-PALIOS-IPM4CI selects 8 programs from up to 8 adjacent IP transport streams or from an ASI transport stream and converts these into analogue TV signals to transmit it in cable networks. In this case, a maximum of 8 analogue television channels are generated from the available H.264/ AVC or MPEG2 transport streams. 2 Common Interface slots enables the use of up to 4 CA modules for the reception of scrambled satellite signals/ programmms.

## 4. Main features

- 8x IP SPTS/ MPTS input
- IP streaming via RJ45 or SFP with redundancy
- 1x ASI input
- 4x Common Interface according PCMCIA standard, cascable, multi decryption capable
- MPEG 2/4 HD/ SD decoding
- multi-standard PAL modulator
- IEdge signal processing
- switchable RF output as single or with loop
- control of the module via HTML or SNMP

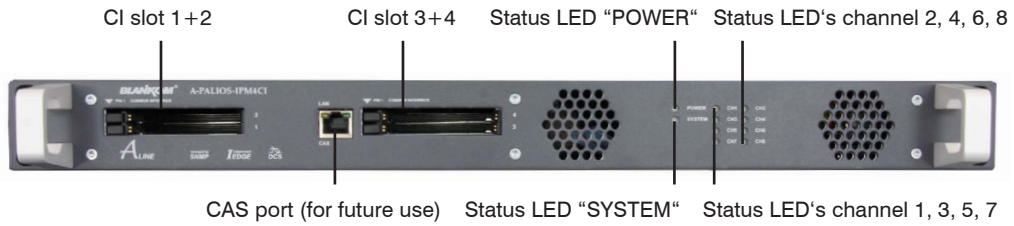
## 5. Functional description

The device receives a data stream via Gigabit Ethernet and can receive 8 transport streams from the included IP encapsulated transport streams. The 8 transport streams are further processed in 8 H.264/ AVC & MPEG2 decoders. The analogue TV modulation and the freely adjustable up-conversion in the cable network range (45 ... 862 MHz) is carried out by a high-performance FPGA. 2 Common Interface slots enables the use of 4 CA modules, which are cascable, for the reception of scrambled satellite signals/ programmms.

The eightfold modulator is adjacent channel compatible. A highly-clocked digital to analogue converter (DAC) is responsible for the spectrally pure output of the cable signal. After amplification and sum level adjustment, the cable signal is coupled through a directional coupler to the output jacks.

## 6. Explanation of the operating elements

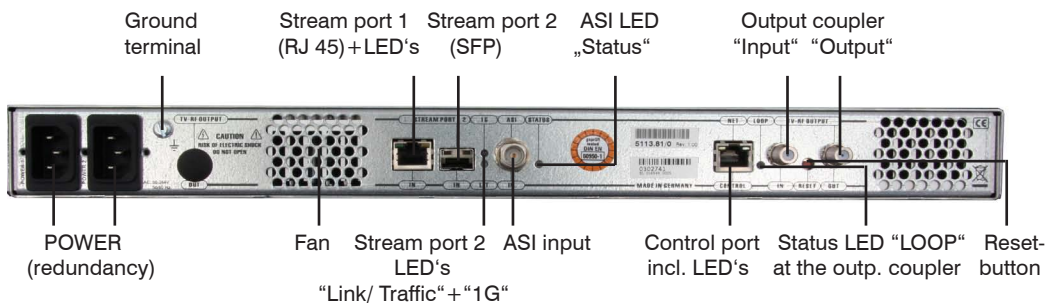
### 6.1 Front view



### 6.2 Meaning of the status LED's

Designation	Colour	Status	Meaning of display
POWER	green	permanently on	device is on
	amber	permanently on	device is in standby
		off	device is off, operating voltage is not applied
SYSTEM	green	permanently on	device is ready for work
		flashing	software update is running
	amber	permanently on	temperature is high, fan is already activated
		flashing	temperature is critical, the device will no longer work or is forced to shut down
		off	device is not ready for work
CH 1 ... CH 8	green	permanently on	channel operates without error
	amber	permanently on	error warnings, depending on signal: - input and/ or output without sync - input sync, but in bad quality (eg. mosaic effect in the TV picture)
		flashing	hardware is faulty
		off	channel is off

### 6.3 Rear view



## 6.4 Meaning of the LED's on rear

### 6.4.1 LED's at the 10/ 100/ 1000 Mbit stream port 1

Designation, colour	Status	Meaning of display
GbE connect LED, green	permanently on	only illuminated when the connection is a GbE connection (does not light up at a 10/ 100 Mbit connection)
	off	no GbE connection
Connect/ data LED yellow	permanently on	cable connection is established
	flashing	data is received
	off	no cable connection

### 6.4.2 LED's at the 10/ 100/ 1000 Mbit stream port 2

Designation	Colour	Status	Meaning of display
1G	green	permanently on	only illuminated when the cable connection is a GbE connection (does not light up at a 10/ 100 Mbit connection)
		off	no GbE connection
LINK/ TRAFFIC	amber	permanently on	cable connection is established
		flashing	data is received
		off	no cable connection or option is not enabled

### 6.4.3 Status LED at the ASI socket

Designation	Colour	Status	Meaning of display
STATUS	green	permanently on	ASI transport stream is present
		flashing	no ASI transport stream
		off	option is not enabled

### 6.4.4 Status LED at the output coupler

Designation	Colour	Status	Meaning of display
LOOP	green	permanently on	loop active, i.e. nominal level range 62 ... 82 dB $\mu$ V
		off	no loop, i.e. nominal level range 74 ... 94 dB $\mu$ V

### 6.4.5 LED's at the 10/ 100 Mbit control port

Designation, colour	Status	Meaning of display
Connect LED, yellow	permanently on	network cable is connected
	off	no cable connection
Data LED, green	flashing	data is exchanged
	off	no data exchange

## 7. Adjusting by web server

### 7.1 Network connection to the computer

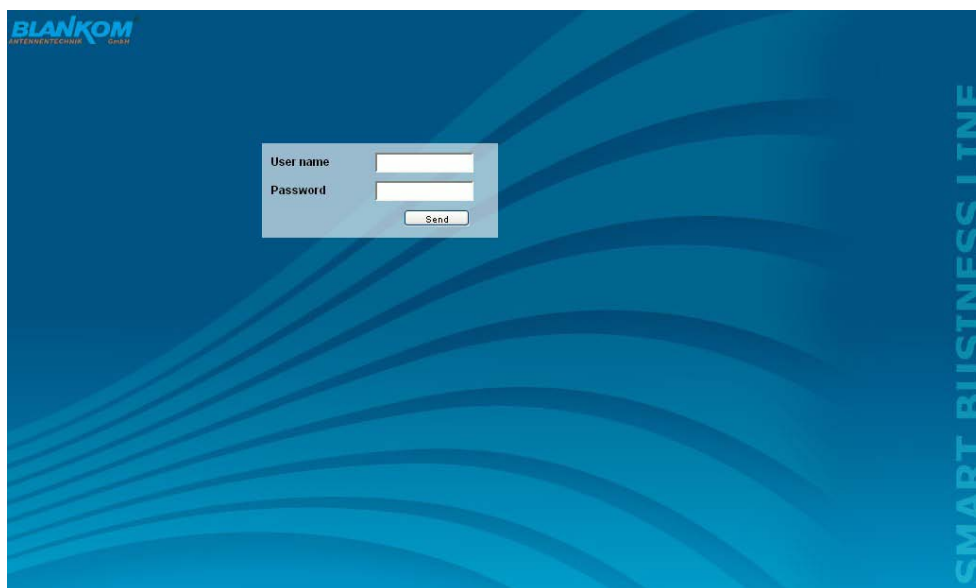
#### System requirements:

- PC/ laptop with 10/ 100 Mbit Ethernet interface
- Internet browser (e.g. Windows Internet Explorer), which accept JAVA script.

#### Setup the connection:

The A-PALIOS-IPM4CI has to be connected to PC network using an Ethernet cable. The IP address of the device is 192.168.1.100 on delivery. If several devices should be controlled or adjusted via an Ethernet switch, each device must first be configured **individually** to its provided IP address within the network. To do so the address of the network port on the PC (temporary) must be adapted to the IP address of the device (subnet mask: 255.255.255.0, IP address: 192.168.1.XXX, where XXX is not the same as the corresponding value of the device IP address).

After the network configuration of the device(s) the IP address of the control PC is converted to the provided IP address and the devices can be accessed through the browser with their new IP addresses. The user must authenticate himself with his credentials (user name and password), if the password and user testing were activated on the setup page (see chapter 7.2.8):



After successful registration or successful connection establishment without password (default setting) the start page of the device is the menu "Overview" (see chapter 7.2.1).

## 7.2 Setting of individual parameters

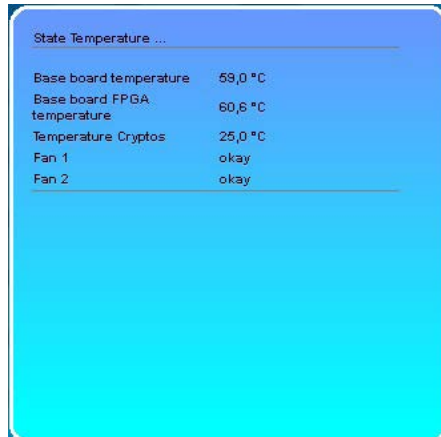
Using the web site, you can set certain parameters of the device or perform configurations on the device or the user interface. The various setting menus can be selected in the navigation tree on the left side. The setting is supported by an online help. Hovering the parameters by the mouse in the lower part of the site an orange colored text box appears with explanations for each parameter. By setting in the "Setup" menu (see chapter 7.2.8) may be selected so that the help appears in the status bar of your browser. If appropriate setting changes in the browser options are necessary.



In addition, in the lower part of the navigation tree status information for the device is displayed. By changing the "Setup" menu, the status information can also be moved to the right (see also chapter 7.2.8). All 8 channels are listed individually. A green LED symbol before the "channel ..." means that both input and output are synchronized and that the channel operates without error. An orange colored symbol indicates that an error has occurred in that channel. An overview of the status of various parameters of the channel is obtained by clicking the corresponding channel. In the GUI a status overview appears.



A transparent LED symbol means that the channel is not configured yet, or the RF output is turned off. Status information about the system is mirrored in the same way. In this case too an orange colored LED symbol displays an error state during which a green LED symbol displays error-free working condition. The detailed status information is available by clicking the name field.



The last displayed point indicates the connection status between the network interface and the device. Green means, that the connection is established. A transparent LED light indicates that there is no connection or the connection is failed. Settings with the selection box or input fields are taken over by pressing the “send” button and stored permanently, and the A-PALIOS-IPM4CI is set on these values after a restart too. Settings with the check box are usually performed immediately but not stored in memory, so they would be lost on a possible restart of the device. To save these settings the “send” button must be pressed. In all menus, the language selection is possible between German and English top right.

### 7.2.1 Menu "Overview"

This page provides a status overview of the 8 channels. If a channel is working without errors, “SYNC” is displayed. If errors occur you will see an “Error” display. If the RF power is switched off the display “Off” appears behind the respective channel.



In addition, below the status window the head end display is visible. There all A-LINE-SBL and SBL devices are listed, which are in the same network and which have been associated with the head end in the “Setup” menu (see 7.2.8). This is significant because functions over all devices such as the NIT processing between devices of the A-QAMOS and QAMOS device group can be extended to all components of the head end. The individual components of a head end are listed with their IP address, which is also provided with a link to this address, so you can switch easily to the next device. If no head end was configured, a “Search” button appears, which forwards to the “Setup” menu and scans the network for other A-LINE-SBL and SBL devices. Then all available devices are listed and can be selected and added to the head end.

By clicking the “Logout” button the user logs out of the device and the login window appears. By pressing the “Standby” button the device is switched to standby, which is indicated by an amber POWER LED on the device. The “Standby” button will be replaced by an “ON” button, and by pressing this the device will be switched back on.



**7.2.2 Menu “IP Input”**

This menu contains the network configuration for the streaming port and for the 8 IP transport streams from which then the 8 desired programs for transmitting can be selected.



On top the configuration options for the two stream ports are displayed. It should be noted that the stream port 2 is available only after enabling the associate software option (see section 7.2.8). The IP address, subnet mask and gateway can be configured for each port. The next step is to configure the setup parameters of the 8 IP input transport streams (IP input channels). Again, IP address, port and transport protocol (UDP or RTP) have to be entered for each IP channel. Everything is confirmed by pressing the “send” button. If not all 8 ports are used, the unused ports can be disabled by entering the IP address 0.0.0.0. Identical settings within these 8 IP channels are not permitted and are automatically marked red.

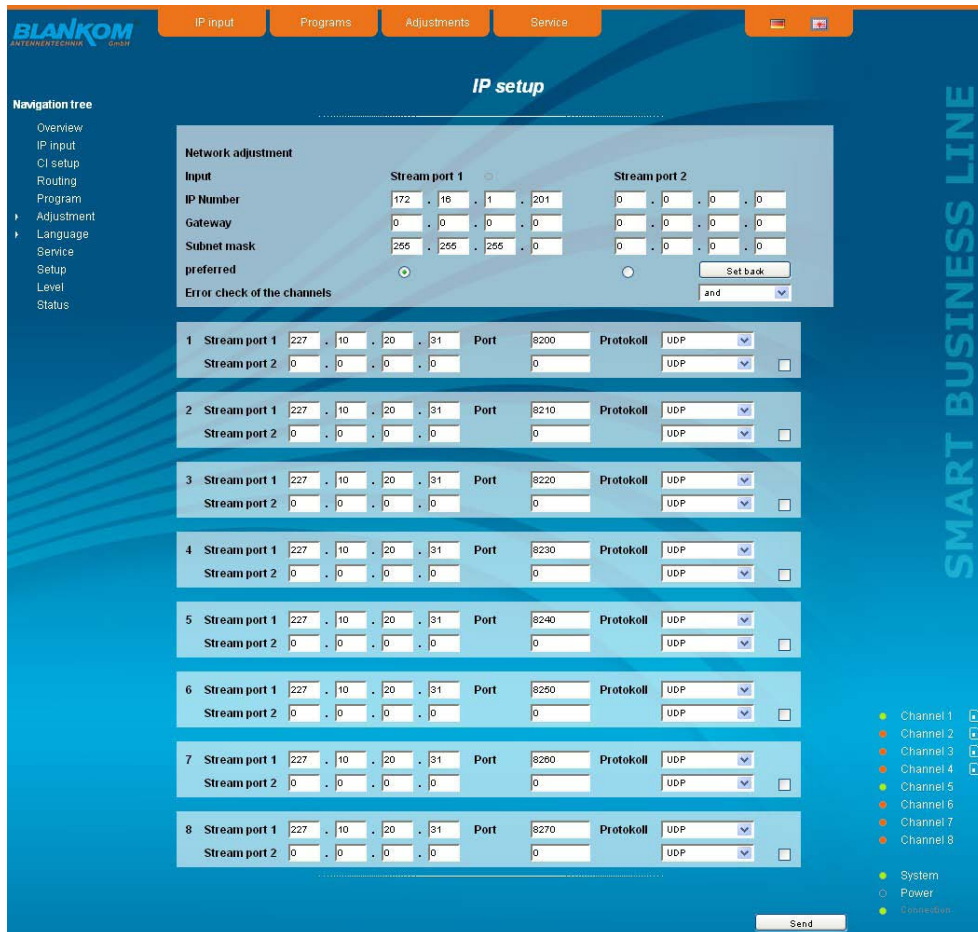
**Note:**

Some switches, it can happen that a configuration change concerning on the multicast group will take effect after the end of the switch set query interval:

Some switches ignore an unsolicited IGMP join message. If the querier is set in the switch to a longer period of time, it may occur, that after a configuration change the stream is not applied immediately, because the switch ignores the directly emitted IGMP message. Upon expiration of the query interval, the switch then asks himself after memberships in multicast groups. Also to this request, the device responds and sends a corresponding response message - this is then accepted by the switch, which thus transmits the stream to the device.

**7.2.2.1 SFP option**

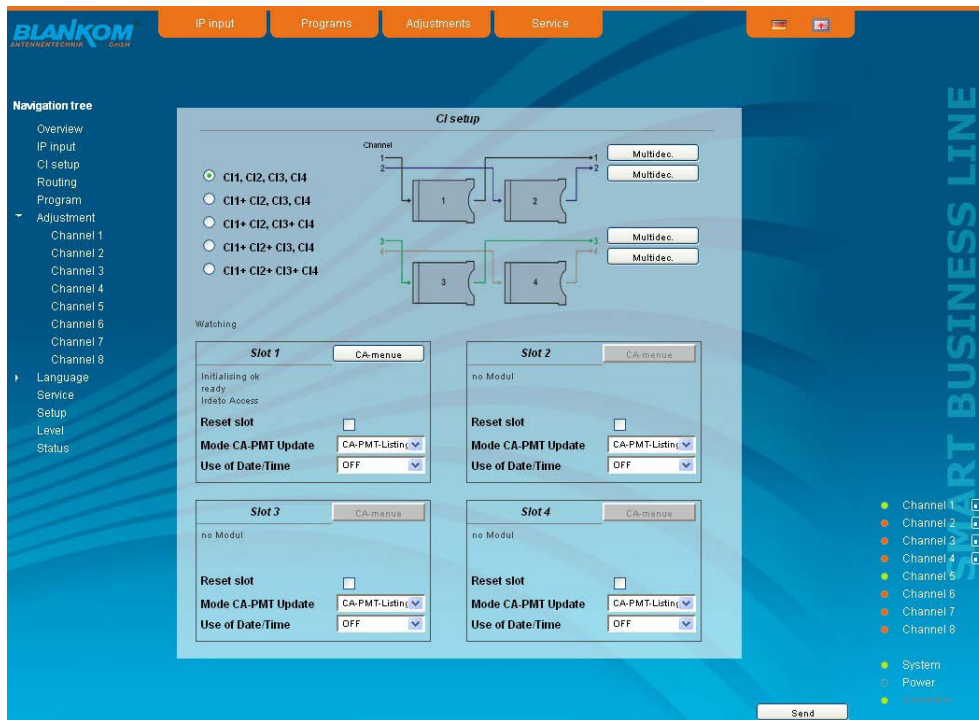
The SFP option allows the connection of different modules for the IP input. Depending on the SFP module thus various management and media types can be connected to the A-PALIOS-IPM4CI. The IP input can be expanded to another IP data source. The SFP module figures as the stream port 2, so that either “Stream port 1” or “Stream port 2” can be used as an IP input. Simultaneously there is the ability to define one of the two IP inputs as the preferred source and the respective other IP input as redundancy source. When an IP data source fails, then switches to the other data source. For this purpose, individual rules can be defined for when and how to switch. Inclusion in the monitoring is configured on a per-channel basis. This is a global option, deciding when to switch: either when an input channel is down or all monitored channels have failed. The switching occurs even when no signal should be present at the redundancy input. Switching back to the preferred IP input is not automatic, but can only be done manually via the user interface. Please note that actual monitoring on a particular channel starts for real one if actually receives data.



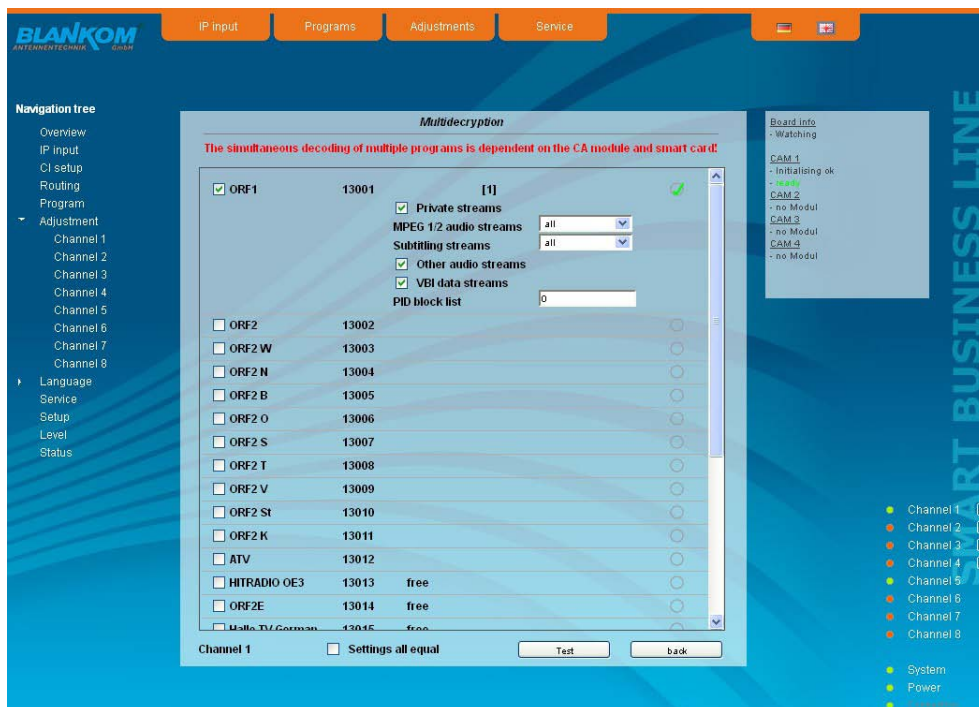
The form of the network settings also includes means for selecting the preferred IP input. The selection is made by pressing the appropriate option button. “Error check of the channels” as described above configures the device for switchover if only one of the monitored channels fails (“or”) or only when all monitored channels have failed (“and”). At the right of the configuration of each of the 8 IP input transport streams, there is a check box. By marking this box, the respective transport stream is included in the monitoring.

**7.2.3 Menu "CI setup"**

In this menu there is the configuration of the Common Interfaces of the device. The A-PALIOS-IPM4CI has 2 double-CI slots for a maximum of 4 CA modules. The modules can be cascaded. That means, that a transport stream can be routed through one up to a maximum of every 4 modules for decryption of services. For this reason, initially there is the decryption configuration, i.e. it determines which transport stream is passed through that module. In A-PALIOS-IPM4CI, set the transponder with the services to be decrypted on the channels 1...4, since only these can be routed by the CA modules. First you select the pathway of transport streams of the 4 channels. The first selection point is, channel 1 to be passed through module 1, ..., channel 4 to be passed through module 4. Next, you can route channel 1 through module 1 and then through module 2, channel 3 through module 3 and channel 4 through module 4 and channel 2 through no module. Correspondingly are the other possibilities. For better illustration of the signal path it is displayed on the right side of the select box graphically. Did you choose the right setting, so this is to confirm by pressing the "Send" button that you can perform all other settings for each module.



After the selection above one can make the multi-decryption settings for each signal path through one or more CA modules, if necessary. For this purpose the "Multidec" button is to press and leads to the following menu:



In this menu all services of the adjusted transponder and their CA status are listed. If you want to make adjustments or changes first the "Refresh" button must be activated to get the current transponder allocation. The services are selectable for decryption. For each of this selected services one can determine, what streams or PID's are to be decrypted. That's important because the maximum number of the decryptable PID's is limited and this limit has a different size per CA module.

In the selection boxes "MPEG 1/ 2 Audio Streams" respective "Subtitling Streams" all, no or individual streams are selectable. If one wants to select more than one stream, but not all, the selection field "all" in the box is to be selected and in the column "PID block list" all PID's have to be entered, that shall not be decrypted.\*

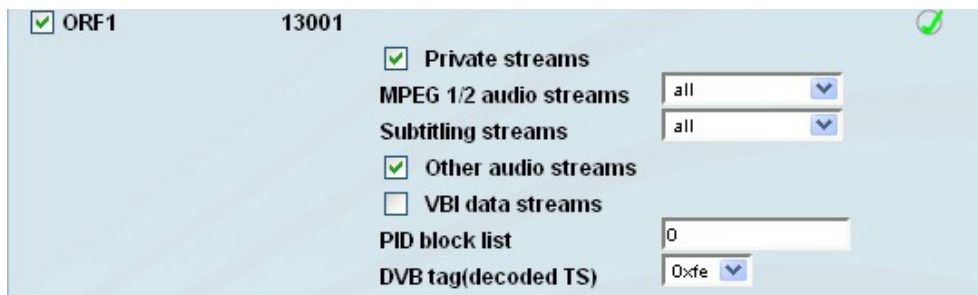
In the column "PID block list" all PID's are listed, that shall not be decrypted. The PID's can be given in decimal or hexadecimal format and have to be separated by a semicolon. The maximum number of PID's is 10.\*\* If "Settings all equal" is clicked, only one service for PID selection is offered and the taken settings are automatically transferred to all other services to be decrypted.

By clicking the "Test" button the CA module will be initialized and all services, which are saved in the CA-service-list, will be tested for the current decryption status. After the end of the test the result of the test appears on right side, where a green check mark means, that the test was successful. On the other hand a red cross means that the test was not successful and the requirements for this service must be corrected, e.g. too much PID's were selected.

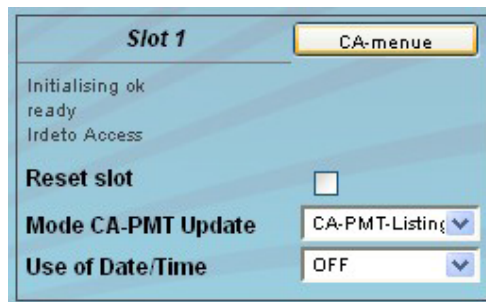
\* "Other Audio Streams" includes all AC3-, DTS- and AAC-Streams. "Private Streams" selects all streams which are not captured by the other selection fields.

\*\* Particularly PID's can be given here, which are active only at times and no authorisation for decryption is available for them.

The default is that the table editing (SDT, PMT, EIT) is performed. Thereby the CA descriptor 0x09 will be replaced in the PMT through the user-defined descriptor 0xFE. If this descriptor is already used by the service provider, in the "Setup" menu and then "GUI settings" (see section 7.2.8), the field "Tag selection (for decoded pid)" must be enabled. Thus, the option "DVB tag (decoded TS)" also appears in multidecryption menu at each service. At this point, a user-defined descriptor from the range of 0x00 to 0xFF will be selected. It should be noted that this descriptor is not already used in the service.



After returning from the multidecryption menu each of the 4 CA modules can be configured. Per slot is shown here that the module is initialized, if there is readiness for work and which type of module it is.



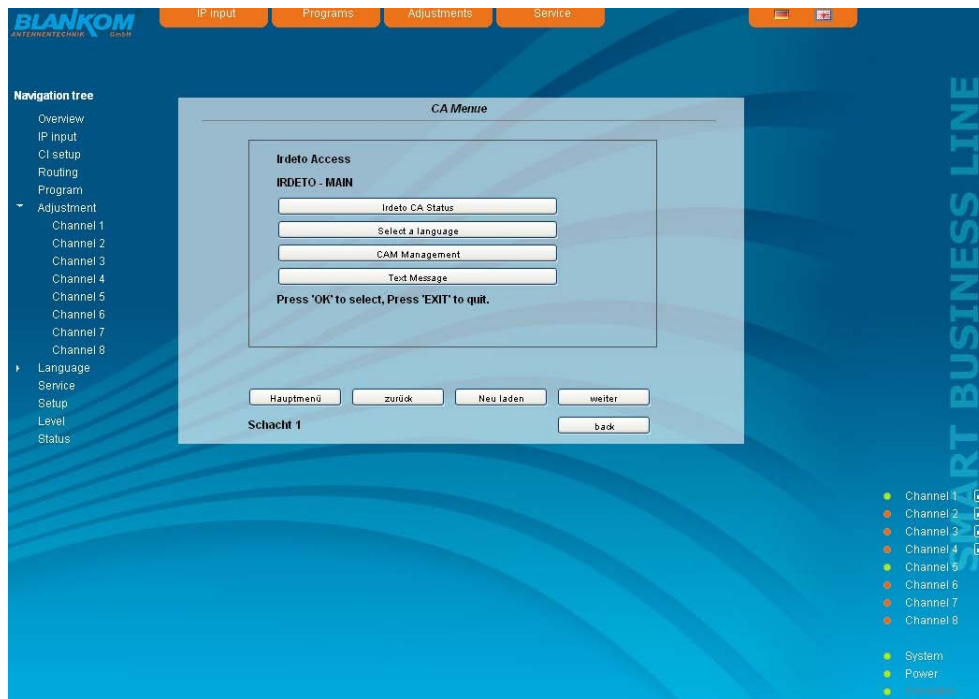
Individual CA modules must be initialized before setting the CA services. For this purpose the box "Reset slot" is clicked.

The mode of the CA-PMT update will be adjusted on the next line. You can select between CA and CA-PMT PMT-list entry, where the latter is not supported by all CAM's.

Some CA modules require the resource "Date & Time" for initializing. For all other modules in this setting should be disabled.

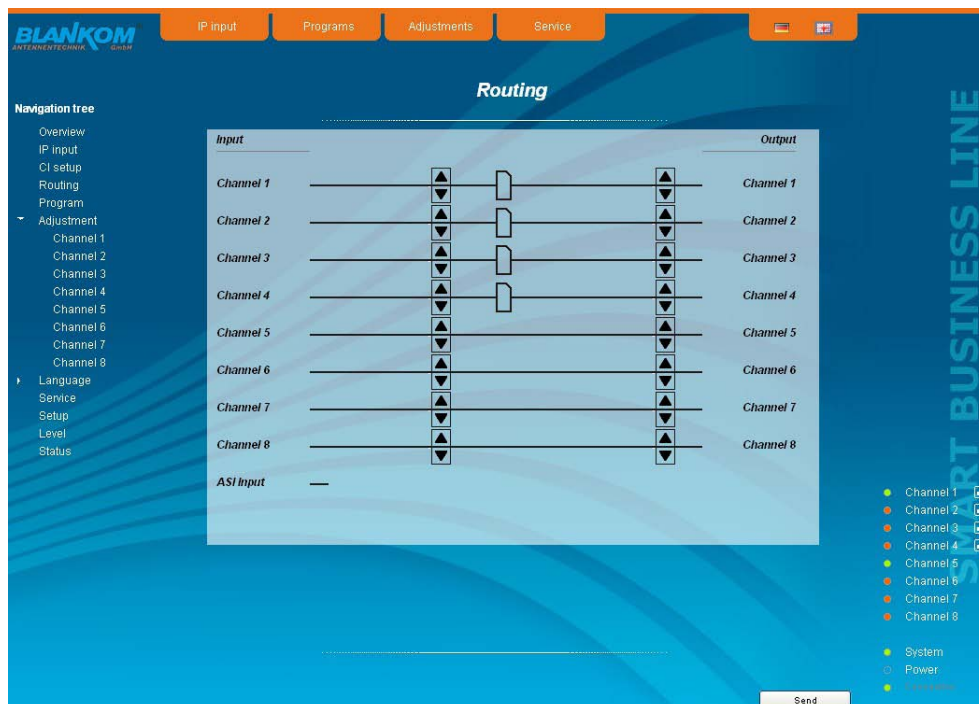
Click the button above right to get into the CA menu. There, the menus implemented in the CA module are offered the user. The menu can be selected individually or sequentially accessed in order to make necessary adjustments or to retrieve information to the CA module.

It should be noted that when changes in the channel (e.g. transponder switching, CA module change or removal) are done, the full menu has to be passed through to update the internal tables. For this purpose, as described above, first the necessary changes in the signal path are to determine and then call the multidecryption menu for the affected channels. First there must be called again the channel list by pressing the "Refresh" button, and then the appropriate stream selection must be made. This is also necessary if a module has been removed and a free transponder is to be transmitted in this channel. Finally, in the "CI setup" the change is to confirm by pressing the "Send" button that this is also taken internally.



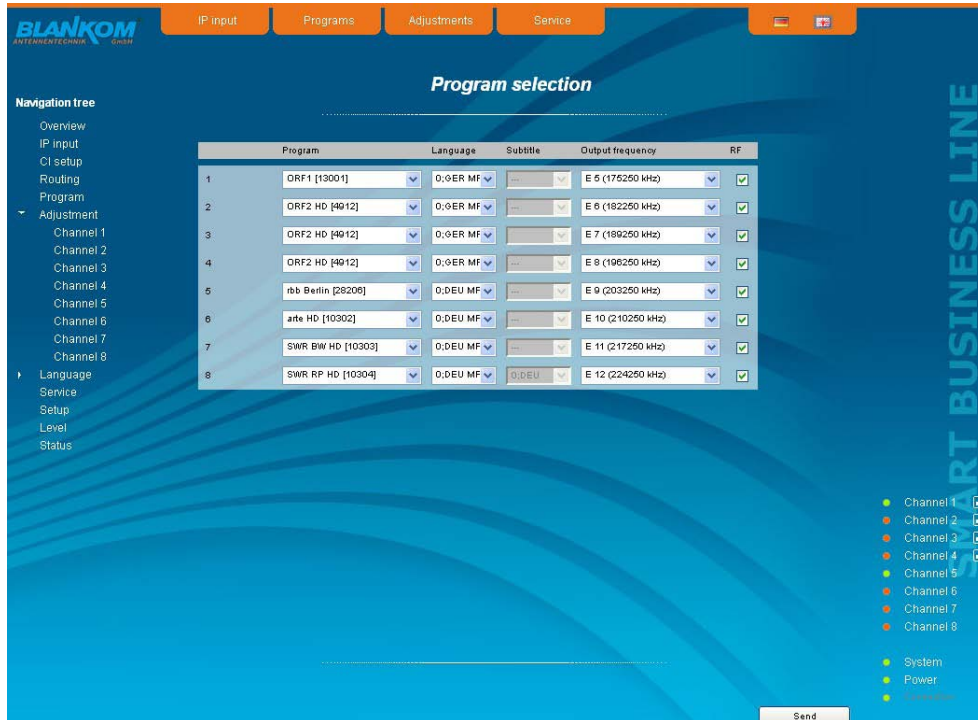
### 7.2.4 Menu "Routing"

In this menu you can make very clear the channel assignment of the inputs and 8 outputs. For each channel, there are two switching options: the first (left in the GUI) at the input and the second (on the right in the GUI) at the output. The setting is done by using the „▲“ or „▼“ button. Both on the input side as well as on the output side the assignment can be freely selected, i.e. on input side per channel the source (IP stream 1...8, ASI TS, player) can be freely selected for further processing, on the output side, however, it can be chosen freely, from which tuner input or media player, the transport stream including the desired TV program comes. Because this matrix of the output channel assignment is after the CA processing, it is thus possible to distribute several decrypted channels of a transponder (if the CA module and card support it) to various output channels.



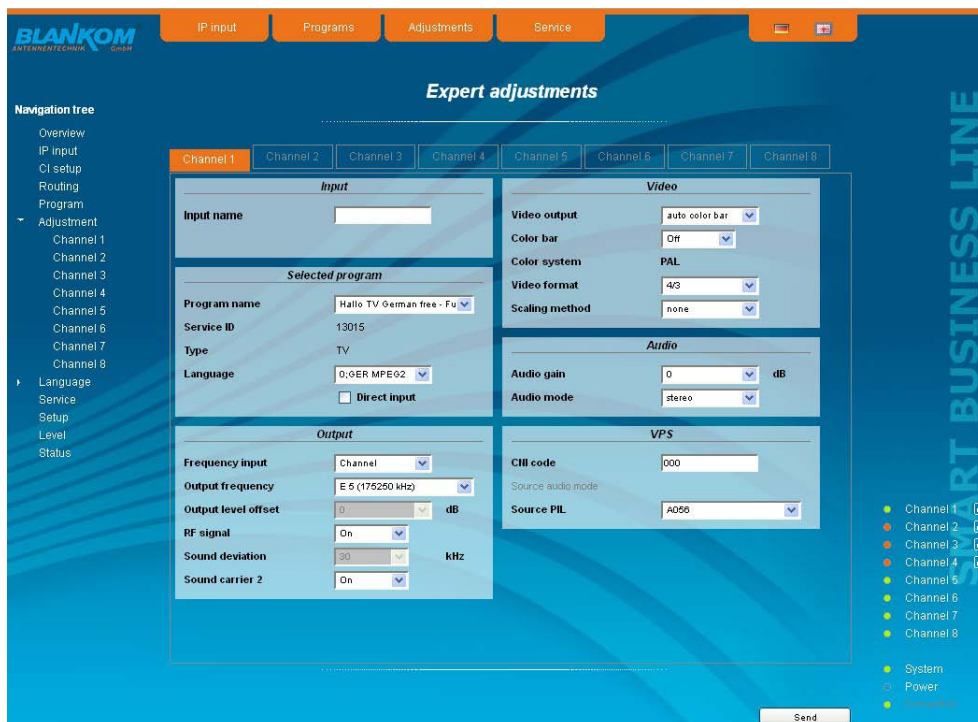
### 7.2.5 Menu "Transponders"

In this menu the program selection is done for all output channels. After call up of the menu at first the actual channel allocation of the A-PALIOS-IPM4CI is listed. The following settings respective changes per channel are possible: in the column "IP" there can be selected the transponder, which contains the program to be transferred. In the next column the requested program can be selected. In the next both columns there can be selected the language respective the language of the subtitles, if there are more than one of them. In the column "Output frequency" there is to be selected the output channel of the program. On double assignments within these 8 channels is called attention to this automatically. With the checkbox "RF" the RF output of the channel is set to "on" or "off". Clicking the "Send" button, the settings are taken and stored.



### 7.2.6 Menu "Adjustment"

In this menu, the settings of the device are made. Each channel can be adjusted individually according to individual requirements. The channel may be selected by clicking either left in the navigation tree or by clicking one of the tabs above the set-up tables.



The following parameters are adjustable:

Program	Service ID	Select
rbb Brandenburg	28205	<input type="radio"/>
rbb Berlin	28206	<input checked="" type="radio"/>
ARD-TEST-1	28221	<input type="radio"/>
NDR FS MV	28224	<input type="radio"/>
NDR FS HH	28225	<input type="radio"/>
NDR FS NDS	28226	<input type="radio"/>
NDR FS SH	28227	<input type="radio"/>
MDR Sachsen	28228	<input type="radio"/>
MDR S-Anhalt	28229	<input type="radio"/>
MDR Thüringen	28230	<input type="radio"/>
SWR Fernsehen RP	28231	<input type="radio"/>
ARD-Data-1	28250	<input type="radio"/>

**Program list (Transponder)**

If "Program selection with select box" in chapter "GUI settings" is deactivated (see also chapter 7.2.8), the form at the left appears for program selection. All programs of the selected transponder are listed with name and service ID. The selection of the program is done by marking of the respective select box. The program name and the other parameters of the program are adopted automatically. In this case the program name in the menu "Selected program", variant 1 is not selectable.

**Input**

**Input name**

input parameters of the channel  
e.g. name of the program, editable

**Selected program**

**Program name**

**Service ID**

**Type**

**Language**

**Direct input**

variant 1: program selection menu  
displays the name of the program, which was selected in the input menu  
displays the service ID of the selected program  
displays the type of the program  
selection of the available language  
selection: selection menu, direct input (see below)

**Selected program**

**Program name**

**Service ID**

**Type**

**Language**

variant 2: direct input  
displays the name of the program, which was selected in the input menu  
input of the service ID of the requested program, adjustment range: 0...65535  
selection of the program type: TV, Radio  
input of the language n°, adj. range: 0..255

**Output**

**Frequency input**

**Output frequency**

**Output level offset**

**RF signal**

**Sound deviation**

**Sound carrier 2**

output parameters of the channel  
selection: channel, frequency <sup>1</sup>  
selection from channel table/ input in kHz <sup>1</sup>  
display of the level offset <sup>2</sup>  
selection: On, Off  
selection: 30, 50 kHz <sup>3</sup>  
selection: On, Off

<sup>1</sup> If at the frequency input "channel" is selected, the output frequency can be chosen in the pre-selected channel spacing (see chapter 7.2.8). If, however, "frequency" is selected, then the output frequency is selectable in kHz steps.

<sup>2</sup> Adjustment of the offset of each channel to the basic level, see chapter 7.2.8

<sup>3</sup> Only selectable, if sound carrier 2 is set to "Off". If sound carrier 2 is set to "On", the sound deviation is permanently 30 kHz

**Video**

**Video output**

**Color bar**

**Color system**

**Video format**

**Scaling method**

setting of the video parameters  
selection: On, auto Off, auto colour palette bar  
selection: On, Off  
displays the selected color system (see 7.2.8)  
selection: 4/3, 16/9  
selection: none, pillar or letter box, fullscreen center cut out

**Audio**

Audio gain: 0 dB

Audio mode: stereo

**Audio**

setting of the audio parameters

**Audio gain**  
**Audio mode**

adjustment range: +6...-20 dB  
selection 1: mono L, mono R, dual, dual invers, stereo, auto<sup>4</sup>  
selection 2: mono L, mono R, mono L+R, auto<sup>5</sup>  
<sup>4</sup> if sound carrier 2 is set to "On"  
<sup>5</sup> if sound carrier 2 is set to "Off"

**VPS**

CNI code: 000

Source audio mode

Source PIL: A056

**VPS**

setting of the VPS parameters

**CNI code**

adjustment range: 0x000...0xFFFF (hexadec.)

**Source PIL**

selection: A056(PDC), A056, PDC, TimerControlCode

**Subtitling**

Mode: Off

**Settings DVB subtitling**

DVB language index: 0

Use extended ID's: no

**Settings Teletext subtitling**

Teletext page: 0

Language group: West

**Subtitling<sup>6</sup>**

adjustment of the parameters

**Mode**

selection: Off, Teletext, DVB

**Settings DVB subtitling**

**DVB language index**  
**Use extended ID's**

adjustment range: 0...255  
selection: yes, no

**Settings teletext subtitling**

**Teletext page**  
**Language group**

adjustment range: 0..65535  
selection: West, East, Russian, Arabic, Farsi

<sup>6</sup> only available, if "Subtitling" option is enabled (see chapter 7.2.8)

**Test lines**

1. Line	17	Off
2. Line	18	Off
3. Line	330	Off
4. Line	331	Off

**Test lines<sup>7</sup>**

The A-PALIOS-IPM4CI offers the opportunity to output test signals on up to 4 image lines from the following selection: Off, CCIR 17, CCIR 18, CCIR 330, CCIR 331, Sin(x)/ x, Ramp. As a default, the image lines 17, 18, 330 and 331 are selected. The image lines selection is editable, i.e. the test lines can be output on each image line in the range 1..625.

<sup>7</sup> only available, if "Test line" option is enabled (see chapter 7.2.8)

**Decryption settings**

BISS key: \*

BISS-E injected ID: \*

**Decryption settings<sup>8</sup>**

**BISS key**

input of the 12-digit code in BISS mode 1 or of the 16-digit code in BISS mode E

**BISS-E injected ID**

input of the 14-digit code in BISS mode E, no input in BISS mode 1

<sup>8</sup> only available, if "BISS" option is enabled (see chapter 7.2.8)



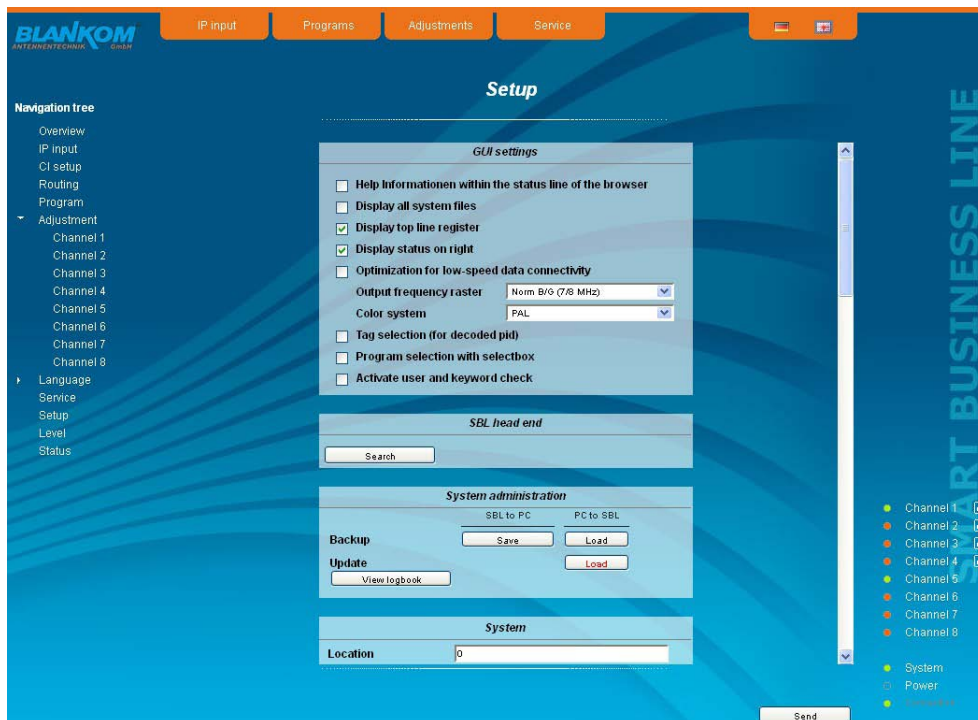
### 7.2.7 Menu "Language"

In this menu, the selection of the user interface language is executed. You can choose between German and English. The transition can be made either to the left in the navigation tree in the subtree of the point "language" or top right via the language selection box.

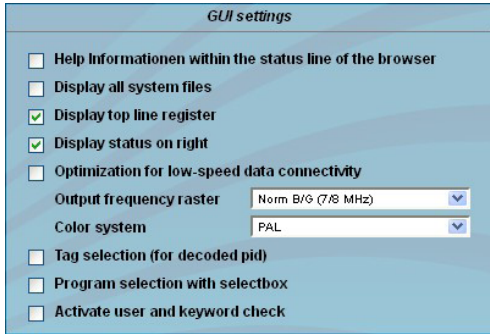


### 7.2.8 Menu "Setup"

In this menu, various administrative and system settings are made.



Specifically, the following can be configured:



**GUI settings**

**Help information within the status line of the browser**

By default, the online help is displayed in an orange text box at the bottom of the page. If you click this option, the help texts are displayed in the status bar of your browser. Depending on your browser sometimes such use has to be allowed in the browser settings.

**Display all system files**

The default is, that the system files can be subjected to upload or download as a package under "Backup" in the submenu "System administration". If you click this box, the system files are listed individually and can be individually subjected to an up- or download.

**Display top line register**

By default, the registers are shown in the upper part of the user interface, to move more quickly to the most frequently used menus. By removing the box marking the registers are hidden.

**Display status on right**

By clicking the box, the status of the channels or the system is shifted to the right of the user interface.

**Optimization for low-speed data connectivity**

By clicking the box the data volume of the browser pages is greatly reduced. So it is possible to adjust the device, if there is only a low-speed connectivity (GSM). The available reduction is achieved by reducing image size.

**Output frequency raster**

It is possible to choose between the standard B/G raster (7 or 8 MHz) and the D/K rasters. In case of D/K1 the sound carriers are at 6,5/ 6,25 MHz, D/K2 at 6,5/ 5,74 MHz and D/K3 at 6,5/ 6,74 MHz. Simultaneously in accordance with the selection, the group delay filter is set for standard B/G or D/K.

**Color system**

In this box you can select in which color standard, the 8 programs are to be transferred. You can choose between PAL and SECAM.

**Tag selection (for decoded pid)**

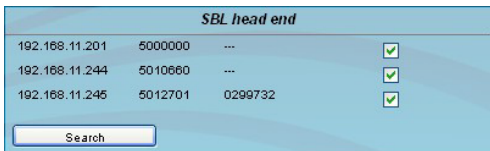
By click there is the possibility that in the PMT processing the CA descriptor is replaced by a self-selected user-defined descriptor of the range 0x00 .. 0xFF. The default value is 0xFE (see chapter 7.2.3)

**Program selection with select box**

If the box is deactivated, the program selection is done with the program list in the adjustment menu. Otherwise the program selection is done in the field "Selected program" (see chapter 7.2.6).

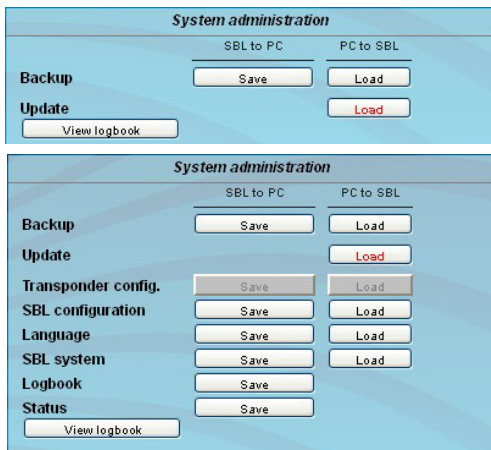
**Activate user and keyword check**

This selection is only available if you are logged in as administrator. If the box is disabled, the log-in is skipped after each GUI reboot. Otherwise, user login and password are required (see chapter 7.1).



**SBL head end**

All A-LINE-SBL and SBL devices, which are located in the same network, are listed. By pressing the "Search" button the list is updated. All marked devices belong to the head end and are displayed on the "Overview" page.



**System administration**

The default is displaying of the shortened list of files (top).

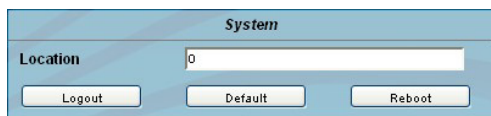
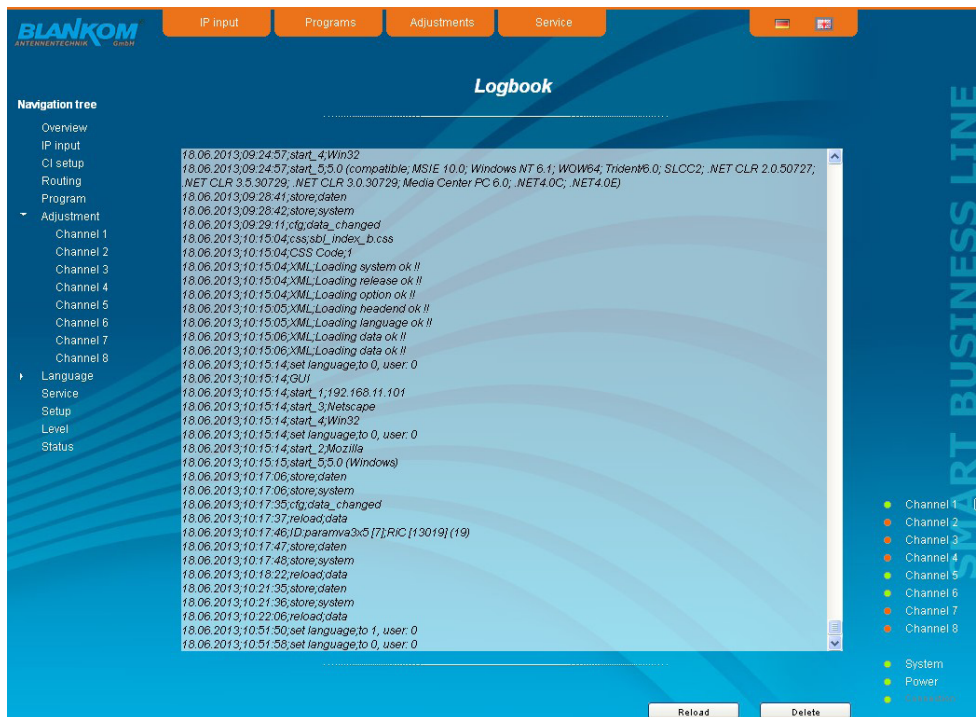
**Backup**

Here the system files can be loaded or saved as a package (except Logbook and Status). Thus, it is possible, for example to copy the system files from an A-PALIOS-IPM4CI to another. If under "GUI setup" "Display all system files" is selected, the system files can also be loaded or saved separately (see figure below).

**Update**

By clicking the "Load" button, the internal software components can always be brought up to date.

Pressing the button "View logbook" leads to an overview, in which all the processes have been documented since the start of the GUI. Each operation is listed by date, time and description. If operations have been executed, the logged on user, who initiated the action, is saved too. By pressing of the "Erase" button all entries are deleted, when you are logged in as administrator.



**System Location**

In this field a name for the A-PALIOS-IPM4CI is made to identify the device easily. This name appears on the top right of the web site under the language selection box and is provided via SNMP with the question of the field: Iso(1)org(3).dod(6).internet(1).mgmt(2).mib.2(1).system(1).sysLocation(6).

**Logout**

restart the user interface

**Default**

delete the settings and reset to default values (including IP address), available only if you have logged in as administrator

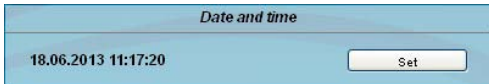
**Reboot**

restart of the A-PALIOS-IPM4CI



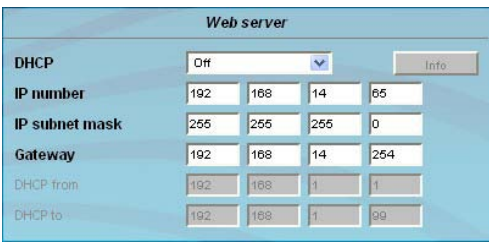
**Enabling of**

In this field, possible software options for the A-PALIOS-IPM4CI can be enabled. The registration code must be entered in the input field and by pressing the "Send" button the option will be activated. Activated options are displayed in black, inactive are grayed out.



**Date and time**

Clicking the "Set" button, the date and time will be set to that of the PC.



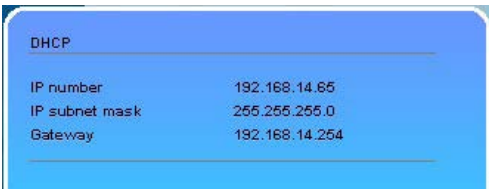
**Web server**

This setting appears only when you are logged in as administrator, and thus you have the authority to make administrative changes. The A-PALIOS-IPM4CI supports the DHCP functionality. DHCP-Client is factory default. Note, that after each factory reset the A-PALIOS-IPM4CI is set "DHCP-Client".

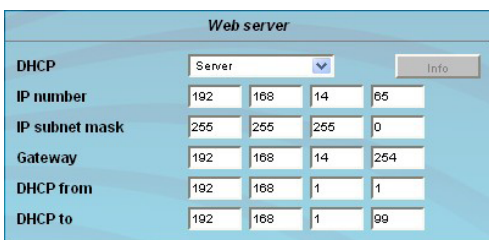
If the **DHCP functionality** is set to "Off", in the appropriate fields the IP number, subnet mask and gateway can be manually entered and then the settings of the A-PALIOS-IPM4CI device are adapted to the network.



If the device is set as "DHCP-Client", it automatically obtains an IP address from the DHCP server on the network. The manual network settings are grayed out and are therefore disabled.



By pressing the "Info" button the automatically assigned network configuration of the device is displayed.



Please note if the device is set as "DHCP-Server", so the IP address 192.168.1.100 should not be set. If you select this address, you will get an error message. In addition to the IP settings you can configure the DHCP range from which the IP addresses of the connected clients are assigned. The address range must match the address range according to IP address and subnet mask of the server and should not be too small. The default is the area 192.168.1.1 to 192.168.1.99. Additionally with the DHCP server will also set up a local DNS (Domain Name Server). To use it in full extent a connected PC/ laptop must be configured as a DHCP client. Please note, that the client unit not only get its IP address from the DHCP server, but also its DNS server.

If the device is configured as a DHCP server or client and the client has received an IP address successfully, so the device can be accessed via a web browser using its name. This name is composed of the prefix "sbl" and the device number that is printed on the back of the device and on the packaging. For example, the device with the number 0123456 can be called under "sbl0123456". Should there be problems with it among the local network conditions, the domain can be added. In the case that the above device is configured as a server, the call using the domain is then "sbl0123456.sbl". If another DHCP server is used, ask your administrator for the domain name.

An example of the simplification of the configuration or operation of the head end via DHCP, is, that an A-LINE-SBL device is as a server, the remaining devices and the connected PC/ laptop are configured as a client. By calling the browser "dhcp.sbl" the GUI of the server device is loaded. If not already done so, now the head end can be read. So all connected components are found and listed. The head end can now be stored in the "Setup" menu under the item "System administration". The head end overview can be changed quickly to the user interface of any other device by selecting the respective devices links.



The screenshot shows the 'SNMP option' configuration page. It includes sections for Mode (Off), Version (Version 1), Community-Read (public), Community-Write (private), Trap (V1 trap, trapping, v3TrapUser), and Receiver IP. There are also buttons for 'Test', 'MIB', 'OK', 'Erase', and 'Append'.

**SNMP option**

In the first section, the SNMP functionality, including the sending of traps is enabled or disabled with the "Mode" selection field. With the selector "Version" you can select the SNMP version (version 1, 2 or 3). In the two boxes below it, the communities for versions 1 and 2 are given separately for reading and writing via SNMP. With version 3, these two fields are disabled because all registered users of the device (see menu "Passwords") have the automatic read access to SNMP. The write access can be enabled or disabled for each user by clicking the SNMP check box in the "Passwords" menu. By clicking the "MIB" button the MIB of the device is generated and offered for download.

In the second section the trap settings are done. First, the trap version is selected:

- V1 trap - normal traps according SNMPv1 with specified community
- V2 trap - normal traps according SNMPv2 with specified community
- V2 inform - sends information traps according SNMPv2 and waits for an acknowledgment
- V3 trap - normal traps according SNMPv3
- V3 inform - sends information traps according SNMPv3 and waits for an acknowledgment

The community can be configured for traps of SNMP versions v1 and v2. User/ password and the using of the network MAC address as the engine ID can be configured for traps of SNMP version v3. These settings must correspond with the configuration of the trap receiver, so traps are successfully transferred. For this purpose a test trap can be sent by clicking the button "Test" to test the transmission of traps. If a test trap triggered, all pre-preserved traps are discarded.

There up to 256 IP addresses to receive the traps can be created or enabled. These are listed under "Receiver IP". Below, the events can be configured, whether and partly with what thresholds they should trigger traps. There are three ways to configure a trap:

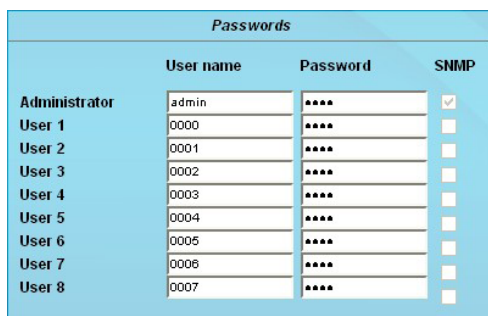
- without parameters, e.g. fan on/ off
- with a freely selectable parameter for a medium priority
- with a selectable parameter from a list for a medium priority

**References and notes:**

All users using SNMPv3 must use passwords with at least 8 characters. For SNMPv3 the A-LINE-SBL supports only the authentication password, not the privacy password. The A-LINE-SBL only supports the MD5 algorithm for authentication password in SNMPv3. Information traps are specific traps that are possible up to SNMPv2. If there is no acknowledgment of the receiver, the transmitter attempts to transmit it later, until the confirmation is received.

An A-LINE-SBL device holds up to 256 information traps that could not be sent successfully. If there are more unconfirmed traps, the older traps are discarded and noted in the logbook as having failed. A successful sent trap is also registered as such in the logbook. In case of power failure or reboot of the device the non-confirmed traps are lost.

Details may be found in the help text for each event. The critical priorities are each covered with fixed values that can not be changed. If the web site of A-PALIOS-IPM4CI is open, no changes are possible via SNMP.



	User name	Password	SNMP
Administrator	admin	.....	<input checked="" type="checkbox"/>
User 1	0000	.....	<input type="checkbox"/>
User 2	0001	.....	<input type="checkbox"/>
User 3	0002	.....	<input type="checkbox"/>
User 4	0003	.....	<input type="checkbox"/>
User 5	0004	.....	<input type="checkbox"/>
User 6	0005	.....	<input type="checkbox"/>
User 7	0006	.....	<input type="checkbox"/>
User 8	0007	.....	<input type="checkbox"/>

**Passwords**

This setting appears only when you are logged in as administrator, having the authority to make administrative changes. In addition the box "User and keyword check" in the submenu "GUI settings" has to be clicked. The user ID and password for the administrator can be set in the first line. The fixing of up to 8 user identification and passwords is possible. The limitations of user rights exist only in the fact that they are not authorized to change web server settings, user rights and password changes and default settings.

The default **password** for the **admin** is: 1111  
and for the **users**: 0000

To the right of each user appears an SNMP check box. By clicking the box, the writing rights for individual users can be awarded for the SNMP version 3 (see also section "SNMP option").

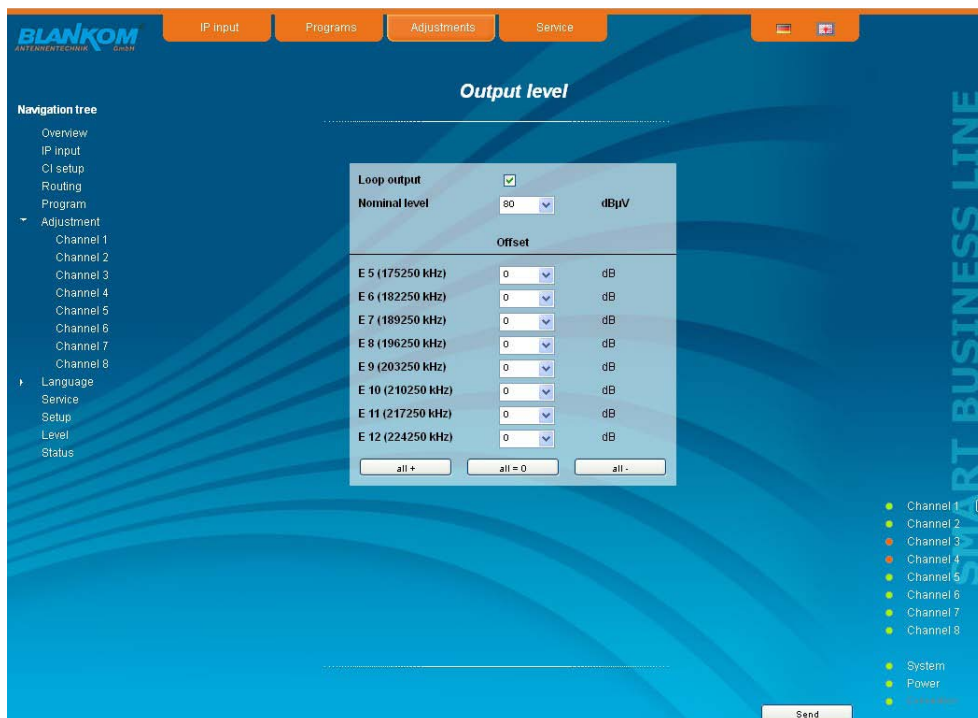
**7.2.9 Menu "Service"**

In this menu you will find all information about the service for the A-PALIOS-IPM4CI in particular the BLANKOM service hotline and the service email address. In addition, the implemented operating instructions may be downloaded or viewed as PDF. If there is an internet connection the BLANKOM homepage can be started, offering the latest software release or descriptions. Finally, the currently installed software release is displayed.



**7.2.10 Menu "Level"**

With the top box, the loop through output (loop) is enabled or disabled. If enabled, the underlying selection of the nominal level for all 8 channels may be set in the range from 62 ... 82 dBµV. If the loop is disabled, the output level of the 8 channels may be set in the range of 74 ... 94 dBµV. Below each channel can be set individually with an offset of +3 ... -6 dB in 0.5 dB steps. The three lower buttons are used to simplify the offset level setting if you want to perform same adjusting for all 8 channels. With the left button the offset for all 8 channels is increased by 0.5 dB, decreased with the right button by 0.5 dB. The offset is set for all 8 channels to 0 dB with the middle button.



**7.2.11 Menu "Status"**

It presents an overview of the status of the various components per channel, it is updated every 5 seconds. It lists only the current values, the naming of the parameter appears in the help box in the lower part of the user interface or in the status bar of the browser (as adopted configuration), if you hover the mouse cursor above the parameter. The listing is in 3 groups: input, modulators and system. With the selection box at the top right you determine whether you have an overall view or only one of the 3 groups is listed.

The screenshot shows the 'Status table' interface with a navigation tree on the left and a data table in the center. The navigation tree includes sections for Overview, IP input, CI setup, Routing, Program, Adjustment, Language, Service, Setup, Level, and Status. The data table displays parameters for 8 channels, including data rates, ASI data rates, and system health indicators like temperature and fan status.

	Channel: 1	Channel: 2	Channel: 3	Channel: 4	Channel: 5	Channel: 6	Channel: 7	Channel: 8
(IP Channel 1)	(IP Channel 2)	(IP Channel 2)	(IP Channel 2)	(IP Channel 5)	(IP Channel 5)	(IP Channel 5)	(IP Channel 2)	(IP Channel 2)
33,811 Mbps	33,811 Mbps	33,811 Mbps	38,022 Mbps	38,022 Mbps	38,022 Mbps	33,811 Mbps	33,811 Mbps	---
---	---	---	---	---	---	---	---	---
064136	064135	064135	1080515	1080515	1080515	064135	064136	---
0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0
active input	Stream port 1							
Start time	08:20:58							
End time	08:24:58							
Datarate read	179,238 Mbps							
Data rate send	0,0 Mbps							
ASI Datarate	0,0 Mbps							
ASI Lock	no lock							
Setup	SYNC.	SYNC.	no_sync	no_sync	SYNC.	SYNC.	SYNC.	SYNC.
Level	SYNC.	SYNC.	no_pid	no_pid	SYNC.	SYNC.	SYNC.	SYNC.
Status	all ok [1]	all ok [2]	all ok [3]	all ok [4]				
Base board temperature	52,7 °C							
Base board FPGA temperature	44,6 °C							
Temperature Cryptos	39,3 °C							
Fan 1	okay							
Fan 2	okay							
Power supply	Power 2 (Redundance)							

## 8. Factory settings

A short pressing of the reset button on the rear of the device causes a reboot, i.e. the device restarts and all stored values are adjusted. If the device is to be reset to factory settings, the reset button must be pressed so long to keep up until the "POWER" and "SYSTEM" LED will illuminate green permanently. This process takes about 15 seconds. In this case the device is set to the following:

### Input parameters

Network adjustment			
Input		Stream port 1	
IP Number	0 . 0 . 0 . 0	0	0
Gateway	0 . 0 . 0 . 0	0	0
Subnet mask	0 . 0 . 0 . 0	0	0
<hr/>			
1 Stream port 1	0 . 0 . 0 . 0	Port 0	Protokoll UDP
2 Stream port 1	0 . 0 . 0 . 0	Port 0	Protokoll UDP
3 Stream port 1	0 . 0 . 0 . 0	Port 0	Protokoll UDP
4 Stream port 1	0 . 0 . 0 . 0	Port 0	Protokoll UDP
5 Stream port 1	0 . 0 . 0 . 0	Port 0	Protokoll UDP
6 Stream port 1	0 . 0 . 0 . 0	Port 0	Protokoll UDP
7 Stream port 1	0 . 0 . 0 . 0	Port 0	Protokoll UDP
8 Stream port 1	0 . 0 . 0 . 0	Port 0	Protokoll UDP

### Output parameters

Standard Values	
<hr/>	
<b>Output</b>	
Sound deviation	30 kHz
Sound carrier 2	On
<hr/>	
<b>Video</b>	
Video output	auto color bar
Color bar	Off
Color system	PAL
Video format	letterbox
<hr/>	
<b>Audio</b>	
Audio gain	0 dB
Audio mode	stereo
<hr/>	
<b>VPS</b>	
CNI code	000
Source audio mode	A056(MPEG)
Source PIL	A056
<hr/>	
<b>Complementary data</b>	
Teletext	On
WSS insertion	On

<b>Loop output</b>	<input checked="" type="checkbox"/>	
<b>Nominal level</b>	80	dBuV
<hr/>		
<b>Offset</b>		
E 5 (175250 kHz)	0	dB
E 6 (182250 kHz)	0	dB
E 7 (189250 kHz)	0	dB
E 8 (196250 kHz)	0	dB
E 9 (203250 kHz)	0	dB
E 10 (210250 kHz)	0	dB
E 11 (217250 kHz)	0	dB
E 12 (224250 kHz)	0	dB
<input type="button" value="all +"/> <input type="button" value="all = 0"/> <input type="button" value="all -"/>		

### Setup settings

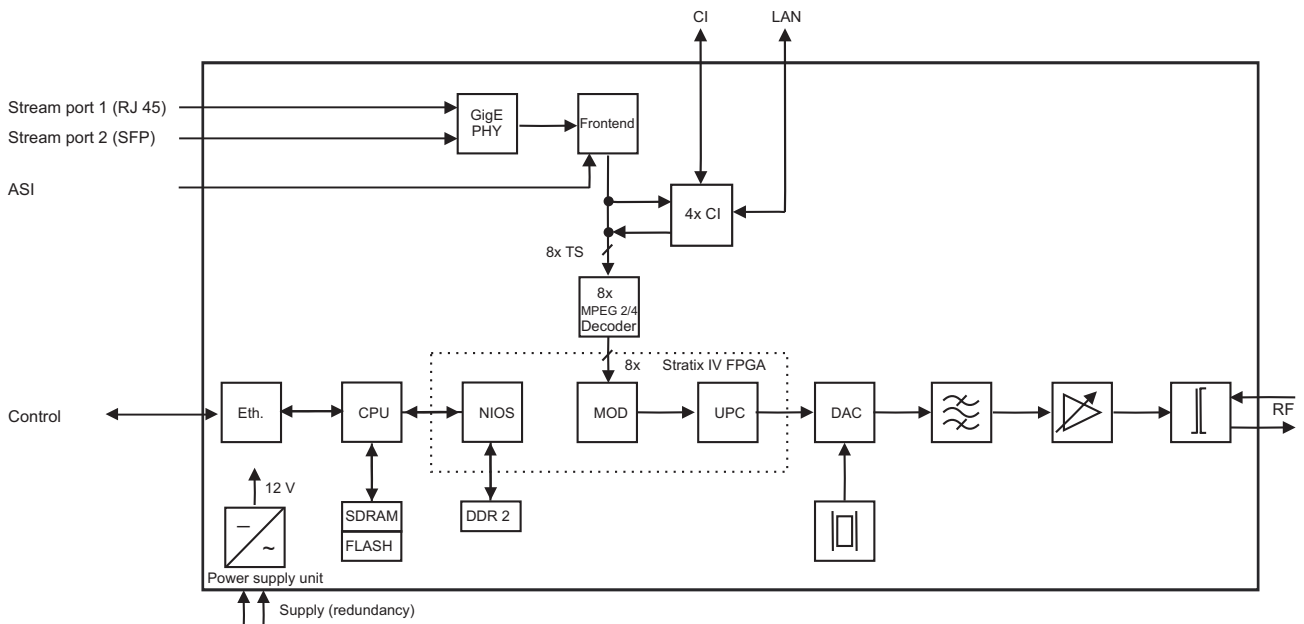
GUI settings	
<input type="checkbox"/>	Help Informationen within the status line of the browser
<input type="checkbox"/>	Display all system files
<input checked="" type="checkbox"/>	Display top line register
<input checked="" type="checkbox"/>	Display status on right
<input type="checkbox"/>	Optimization for low-speed data connectivity
Output frequency raster	Norm B/G (7/8 MHz)
Color system	PAL
<input type="checkbox"/>	Tag selection (for decoded pid)
<input checked="" type="checkbox"/>	Program selection with selectbox
<input type="checkbox"/>	Activate user and keyword check

### Network settings

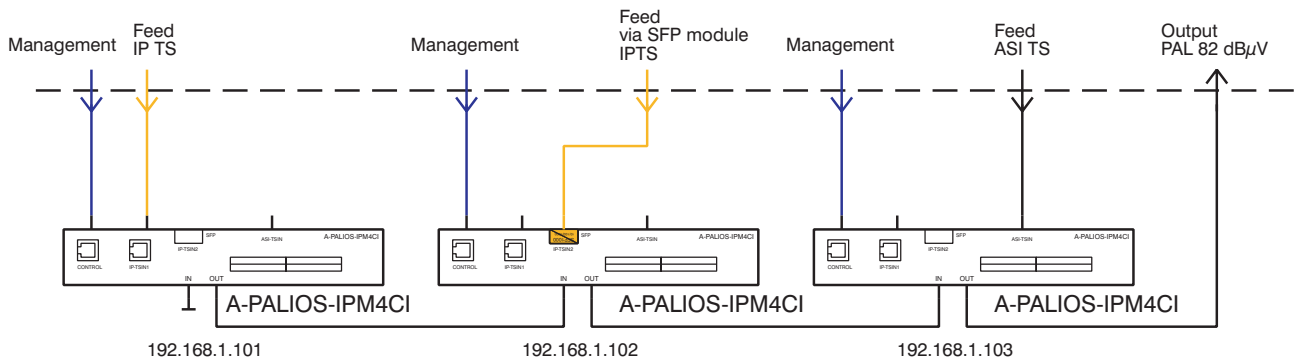
Web server				
<b>DHCP</b>	Client			Info
IP number	192	168	14	85
IP subnet mask	255	255	255	0
Gateway	192	168	14	254
DHCP from	192	168	1	1
DHCP to	192	168	1	99



### 9. Block diagram



### 10. Application example



## 11. Technical data

### IP input (stream port)

Network connection (LAN/ WAN)	Ethernet, 10/ 100/ 1000 Base-T
Connector	1x RJ 45, 1x SFP
Protocols	ARP, PING, IPv4,
Streaming protocols	UDP, RTP, RTP-FEC
Streaming mode	CBR/ VBR

### ASI input

Level range	200 ... 880 mV <sub>pp</sub>
Data rate	270 Mbps
Connector	BNC socket
Impedance	75 Ω
ASI polarity	regular/ inverted

### ASI signal processing

Data rate	0.625...75 Mbps
ASI transfer format	continuous, burst
TS transfer format	188, 204 Byte
Signal processing	EN 50083-9 [1]

### Decryption interface

Common interface	4x PCMCIA-Slot according EN 50221 [5], cascadable
Operating voltage	5 V
Multi-Service decryption	48 services max.
Input data rate	max.75 Mbps acc. adjustment symbol rate & CAM

### MPEG decoder

Video	H.264/ AVC Level 4.1 HP, MPEG-2 MP@HL
Audio	MPEG-1 Layer 1&2

### TV output

TV standard	B/G, D/K
Sound type	double carrier FM
Sound carrier frequencies	B/G 5.5/ 5.742 MHz D/K1 6.5/ 6.25 MHz D/K2 6.5/ 5.742 MHz D/K3 6.5/ 6.742 MHz (each above picture carrier)
Sound mode	mono/ stereo/ dual/ auto (VPS controlled)
Audio deviation 1 mono carrier	30/ 50 kHz
Audio deviation 2 mono carrier	30 kHz
Audio deviation dual sound	30 kHz

Output frequency range	45 ... 862 MHz
Tuning step	1 kHz
Max. output level	97 dBμV (per channel)
Total level settings	
without loop	74 ... 94 dBμV (1 dB steps)
with loop	62 ... 82 dBμV (1 dB steps)
Individual level settings (offset)	+3 ... -6 dB (0.5 dB steps)
Channel allocation	adjacent channel ability
Connector	F socket
Impedance	75 Ω
Return loss	≥ 18 dB 45 MHz - 1.5 dB/ octave

### Signal quality

C/N in channel (BW = 4.8 MHz)	≥ 65 dB
S/N ratio parallel sound (unweighted/ weighted)	≥ 65/ 60 dB
Spurious 45...862 MHz	≥ 60 dB
Max. frequency stability	30 kHz
Output level stability	± 0.5 dB

### Operating parameters

Operating voltage	2x 90 ... 240 V~ 50/ 60 Hz including redundancy function
Power consumption	50 W (without CAM)

### Environmental conditions

Temperature range	-10 ... +55 °C
Temperature range for data keeping	5 ... 45 °C
Relative humidity	≤ 80 % (non condensing)
Method of mounting	horizontal
Location of mounting	splash-proof and drip-proof

### Miscellaneous

Dimensions (w x h x d)	448 x 44 x 390 mm
Installation depth	350 mm
Weight	6,500 g

### Delivery content

2x power cord
1x RJ45 connection cable
1x terminating resistor
1x mounting kit

## 12. Glossary

AAC	Advanced Audio Coding
AM	Amplitude modulation
ARP	Address Resolution Protocol
ASI	Asynchronous Serial Interface
ATV	Analogue Television
BISS	Basic Interoperable Scrambling System
BISS-E	Basic Interoperable Scrambling System with Encrypted keys
CA	Conditional Access
CAT	Conditional Access Table
CNI	Country and Network Identification
DVB	Digital Video Broadcasting (-C Cable, -S Satellite, -S2 Satellite 2, -T Terrestrial)
FPGA	Field Programmable Gate Array
GbE	Gigabit-Ethernet
GUI	Graphical User Interface
HD(TV)	High Definition (Television)
HE-AAC	High Efficiency Advanced Audio Coding
HTTP	Hypertext Transfer Protocol
ID	Identifier
IF	Intermediate Frequency
IGMP	Internet Group Management Protocol

IIC	Inter-Integrated Circuit (I <sup>2</sup> C bus, data bus within device)
IP	Internet Protocol
LED	Light Emitting Diode
MAC	Media Access Control
MPEG	Moving Picture Experts Group
Nios	product name for a processor
NIT	Network Information Table
PCR	Program Clock Reference
PID	Program Identifier
RF	Radio Frequency
SFP	Small Form-factor Pluggable
SNMP	Single Network Management Protocol
TS	Transport Stream
VBI	Vertical Blanking Information
VPS	Video Programming System
WSS	Wide Screen Signalling

### 13. Bibliography

- [1] EN 50083-9: Cabled distribution systems for television, sound and interactive multimedia signals, part 9: Interfaces for CATV/ SMATV head ends and similar professional equipment for DVB/ MPEG-2 transport streams
- [2] EN 60728-11: Cable networks for television signals, sound signals and interactive services Part 11: Safety (IEC 60728-11:2005); German version EN 60728-11:2005
- [3] EN 50083-2 : Cabled distribution systems for television and sound signals. Electromagnetic compatibility for equipment; EN 50083-2:2001
- [4] RFC 1157 Request for Comments (RFC): RFC Database URL: <http://www.rfc-editor.org/rfc.html>
- [5] EN 50221: Common interface specification for conditional access and other digital video broadcasting decoder applications; German version EN 50221:1997 + Corrigendum:2000

### 14. Notes on the device software

Device Software of the A-PALIOS-IPM4CI  
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The source code is available upon request.  
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### 15. Document history

Version	Date	Modification	Author
1.00	24.06.2013	basic version	Häußer

Options available upon request. Subjects to changes due to technical progress.

# CE Declaration of Conformity

**Manufacturer:** BLANKOM Antennentechnik GmbH  
Hermann – Petersilge – Straße 1  
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**Product Name:** 8pole IP-/ASI-TV Transmodulator

**Type Name:** A-PALIOS-IPM4CI

**Type N°:** 5113.81

BLANKOM Antennentechnik GmbH confirms that the mentioned product meets the guideline(s) of the Council for the approximation of legislation of the member states.

Electromagnetic compatibility (2004/ 108/ EC)

The following standards are met:

DIN EN 50083-2: 2007-04 (EN 50083-2:2006-06)

Low voltage guideline (2006/ 95/ EC)

The following standards are met:

DIN EN 60950-1: 2006-04 (EN 60950-1:2006-11)  
Information technology equipment -Safety-

Restriction of hazardous substances (2011/ 65/ EC)

The following standards are met:

DIN EN 50581: 2013-02 (EN 50581:2012)

Bad Blankenburg, Germany, 2013-06-19



Dr. Piero Kirchner  
(Managing Director)