

## Operating instructions



### SAT-TV Transmodulator

DVB-S/ -S2 (8x QPSK/ 8PSK) → (MUX) → DVB-C (8x QAM)



**QAMOS**  
**QAMOS-MEDIA(-MUX)**  
**Part N°: 5100.01/ .02**



**Contents**

1. Safety and operating instructions .....	3
2. Device variants .....	3
3. Software options .....	3
4. General .....	3
5. Front view .....	4
6. Functional description .....	4
7. Meaning of the LED's .....	4
7.1 LED's at the satellite signal ports .....	4
7.2 Status LED's .....	5
7.3 LED's at the 10/ 100 Mbit control port .....	5
8. Adjusting by web server .....	6
8.1 Network connection to the computer .....	6
8.2 Initial installation using the wizard .....	7
8.3 Setting of individual parameters .....	9
8.3.1 Menu "Overview" .....	10
8.3.2 Menu "SAT selection" .....	12
8.3.3 Menu "Multiplexers" .....	14
8.3.4 Menu "Transponders" .....	15
8.3.5 Menu "Adjustment" .....	16
8.3.6 Menu "Language" .....	18
8.3.7 Menu "Service" .....	18
8.3.8 Menu "Setup" .....	19
8.3.9 Menu "Level" .....	25
8.3.10 Menu "Status" .....	25
8.3.10.1 Status display at QAMOS and QAMOS-MEDIA .....	25
8.3.10.2 Status display at QAMOS-MEDIA-MUX .....	26
8.3.11 Menu "NIT" .....	27
8.3.11.1 Automatic NIT processing .....	27
8.3.11.2 Manual NIT processing .....	28
8.3.12 Menu "LCN" .....	29
8.3.13 Menu "Program table" .....	29
9. Factory settings .....	30
10. Conversion tool to produce a compliant TS file for QAMOS-MEDIA .....	31
10.1 Functional scope .....	31
10.2 Installation requirements .....	31
10.3 Installation and integration of the conversion tool on a Windows (XP) system .....	31
10.4 Error prevention .....	33
10.5 Glossary - parameter declaration [min. ... max. range] .....	33
11. Block diagram .....	34
12. Application example .....	34
13. Technical data .....	35
14. Glossary .....	35
15. Bibliography .....	36
16. Notes on the device software .....	37
17. Document history .....	37
☺ Declaration of Conformity .....	38

## 1. Safety and operating instructions



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



The modules may only be installed and started up by authorized technical personnel. There are only permitted the mounting styles indicated in the quick start guide, which is included each module.



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



The assembly and wiring have to be done without voltage. For installation, the supplied accessories (DIN rail clip with screws and 19" accessories) may only be used.



All active modules may only be operated with the power supplies of the HELIOS family or QUASARIOS. Only connect the module with the accessory cables provided



The mains voltage and the operating voltage of the modules working by DC have to be in compliance to the operating parameters described in the technical data.



With all work the defaults of the DIN EN 50083 have to be considered. It is especially important to follow DIN EN 60728-11[4].



The unit should be mounted only vertically. The ventilation slots as well as the circulation perforation of the modules are not be obstructed in any way.



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



For **DIN rail mounting** is important to note that between the heat sink and a neighboring building, a distance of 2 cm is required. If the modules mounted on top of each, so they must be spaced 20 cm apart.



For **19" mounting** all devices in the rack must be fitted with 19" Edge Guide. Mounting the device using only the screw holes at the front panel is insecure and discouraged. Furthermore, the operation of a fully occupied rack is only allowed with an underlying 1-U fan box (at least 3 fans, 176 mm deep).



WEEE-Reg.-Nr. DE 50389067

## 2. Device variants

QAMOS	5100.01	DVB-S/ -S2 (8x QPSK/ 8PSK) → DVB-C (8x QAM)
QAMOS-MEDIA	5100.02	DVB-S/ -S2 (8x QPSK/ 8PSK) → DVB-C (8x QAM)
QAMOS-MEDIA-MUX	5100.02	DVB-S/ -S2 (8x QPSK/ 8PSK) → MUX → DVB-C (8x QAM) (software option)

## 3. Software options

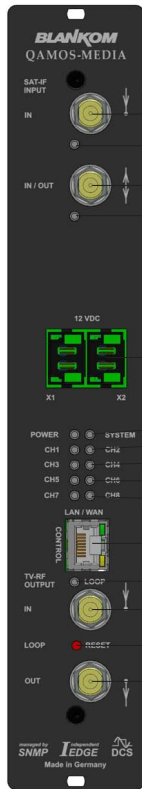
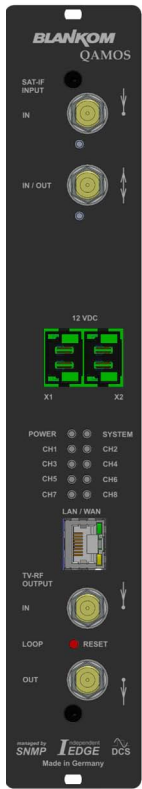
<b>QAMOS</b>		
CKB 200	5100.50	activation SNMP v3
CKB 205	5100.55	activation advanced NIT processing

<b>QAMOS-MEDIA</b>		
CKB 200	5100.50	activation SNMP v3
CKB 205	5100.55	activation advanced NIT processing
CKB 213	5100.63	activation satellite multiplexer
CKB 214	5100.64	activation media player/ SD card

## 4. General

The Smart Business Line (SBL) is a modern head end system, that is distinguished by its modular and compact design. A user-friendly operating concept facilitates setup, configuration and maintenance of the system. The module converts digital satellite signals into QAM signals to transmit it in cable networks. In this case, up to 8 QAM channels from the available satellite IF signals are generated, which are attached via a maximum of two inputs. In particular, the internal processing allows the output of DVB signals in full HD resolution.

## 5. Front view



- Satellite IF input coupler "input 1"
- LED input 1
- Satellite IF input coupler "input 2/ output"
- LED input 2/ output
- Power connections
- Status LED "POWER" / "SYSTEM"
- Status LED channel 1/ channel 2
- Status LED channel 3/ channel 4
- Status LED channel 5/ channel 6
- Status LED channel 7/ channel 8
- Control port (LAN/ WAN)
- Status LED "LOOP" <sup>1</sup>
- Output coupler "input"
- Reset button
- Output coupler "output"

<sup>1</sup> only available in QAMOS-MEDIA (5100.02)

*Independent*  
**EDGE**



*managed by*  
**SNMP**

## 6. Functional description

The satellite IF signal is fed through 2 inputs or a loop-through input by means of a switching matrix to 8 DVB-S/ S 2 input parts and their QPSK/ 8PSK demodulators. The resulting 8 transport streams are fed a high-performance FPGA. The transport stream processing or filtering, the QAM modulation and the freely adjustable up-converting in the cable network range (45 ... 862 MHz) take place in the FPGA.

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.

## 7. Meaning of the LED's

### 7.1 LED's at the satellite signal ports

Colour	Status	Meaning of display
green	permanently on	satellite signal port has been configured as input, works properly
amber	permanently on	satellite signal port has been configured as output (only port "IN/ OUT")
	flashing	LNB overcurrent (e.g. by short circuit) and/ or LNB overheated, port is disabled temporarily
	off	no tuner is locked on this input or port is deactivated (only port "IN/ OUT")



## 7.2 Status LED's

Designation	Colour	Status	Meaning of display
POWER	green	permanently on	module is on
		off	module is off, operating voltage is not applied
SYSTEM	green	permanently on	module is ready for work
		flashing	software update is running
	amber	permanently on	temperature is high, fan is activated
		flashing	temperature is critical, the device will no longer ensured or forced shutdown
	off	module is not ready for work	
CH 1 ... CH 8	green	permanently on	channel operates without error
		permanently on	error warnings, depending on signal: - input and/ or output without sync - input sync, but in bad quality (e.g. small blocks in the TV picture)
	flashing	hardware is faulty	
	off	channel is off.	
LOOP <sup>1</sup>	green	permanently on	off 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

<sup>1</sup> only available in QAMOS-MEDIA and QAMOS-MEDIA-MUX (5100.02)

## 7.3 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

## 8. Adjusting by web server

### 8.1 Network connection to the computer

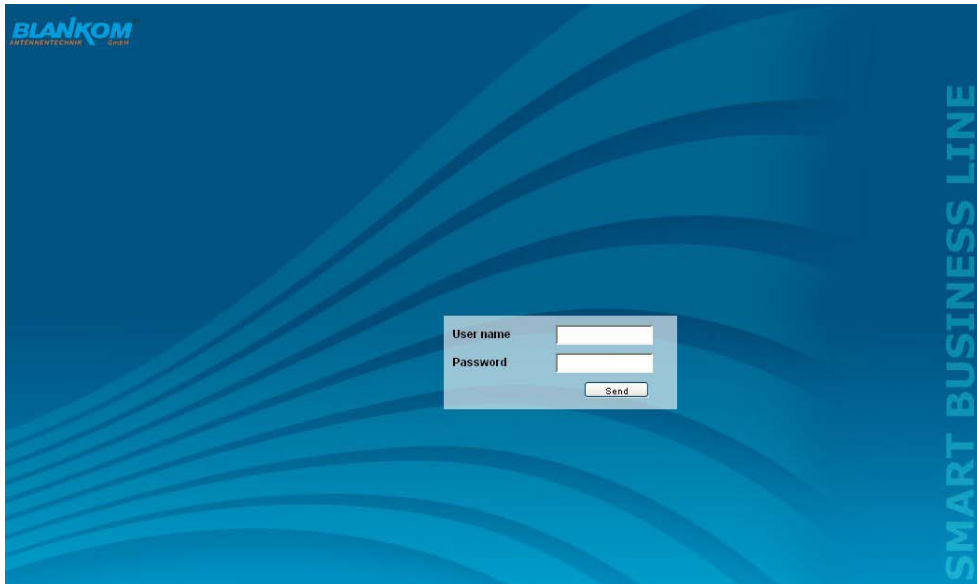
**System requirements:**

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

**Setup the connection:**

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

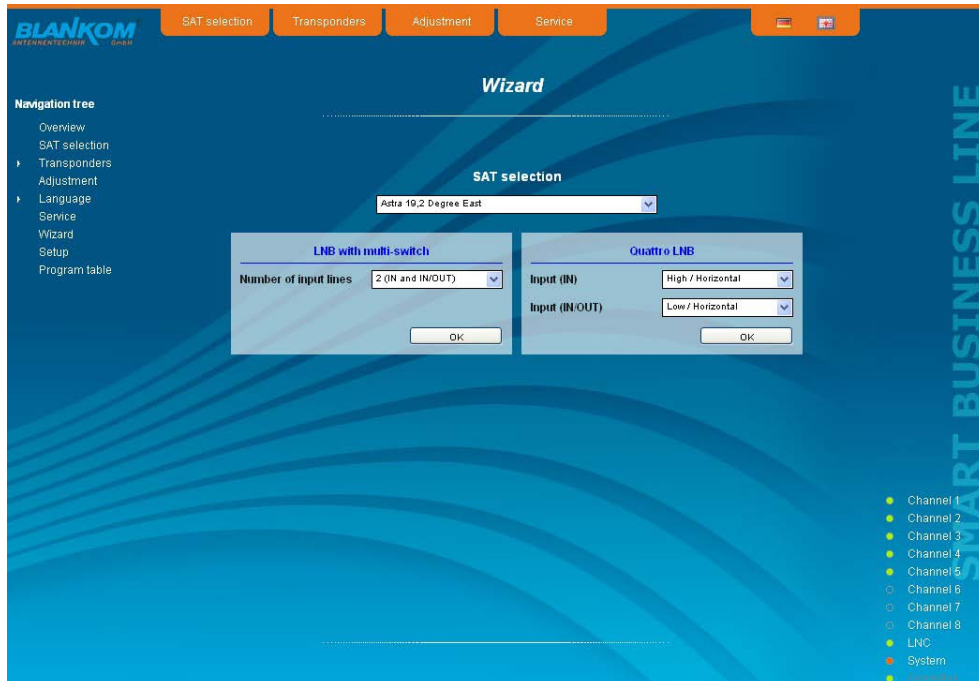
After the network configuration of the module(s) the IP address of the control PC is converted to the provided IP address and the modules can be accessed through the browser with their new IP addresses. The user must authenticate himself with his credentials (user name and password), if the password and user testing were activated on the setup page (see chapter 8.3.8):



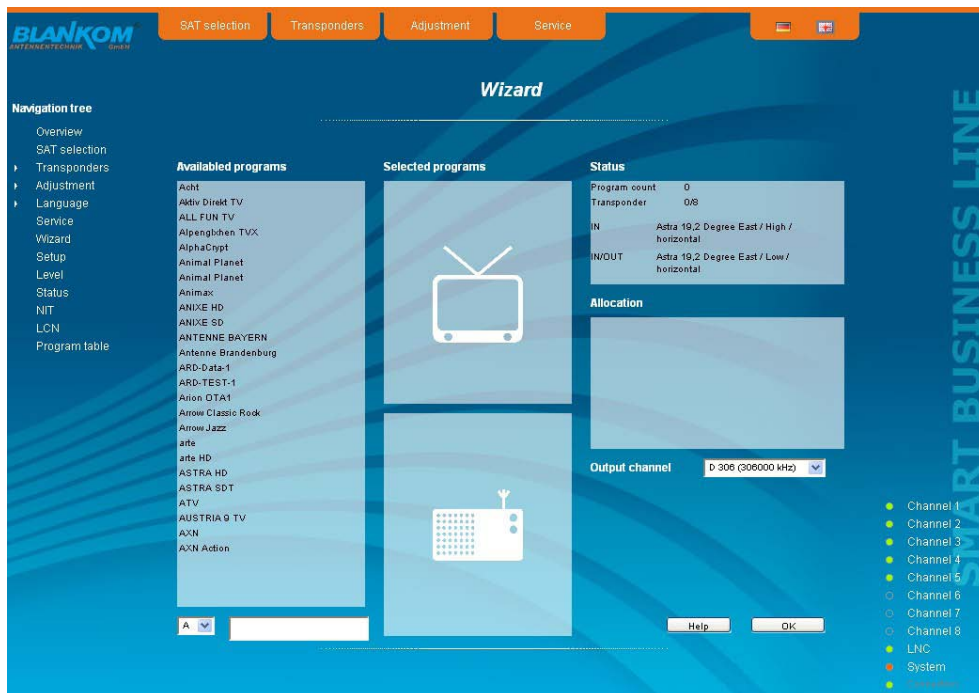
After successful registration or successful connection establishment without password (default setting) the start page of the module is the menu "Overview" (see chapter 8.3.1).

## 8.2 Initial installation using the wizard

The easiest way to set the module is to use the wizard. However, setting is limited in **QAMOS MEDIA MUX** (QAMOS MEDIA with enabled software option “activation satellite multiplexer”) **exclusively** on the input channels, because the composition of the transport stream to be transmitted per channel is in the multiplexer. Following is to be called the menu item “Multiplexer” (see chapter 8.3.3). By clicking the “Wizard” menu in the navigation tree you get to the home page of the wizard. As with any other browser page at the top right hand it can also change the language.



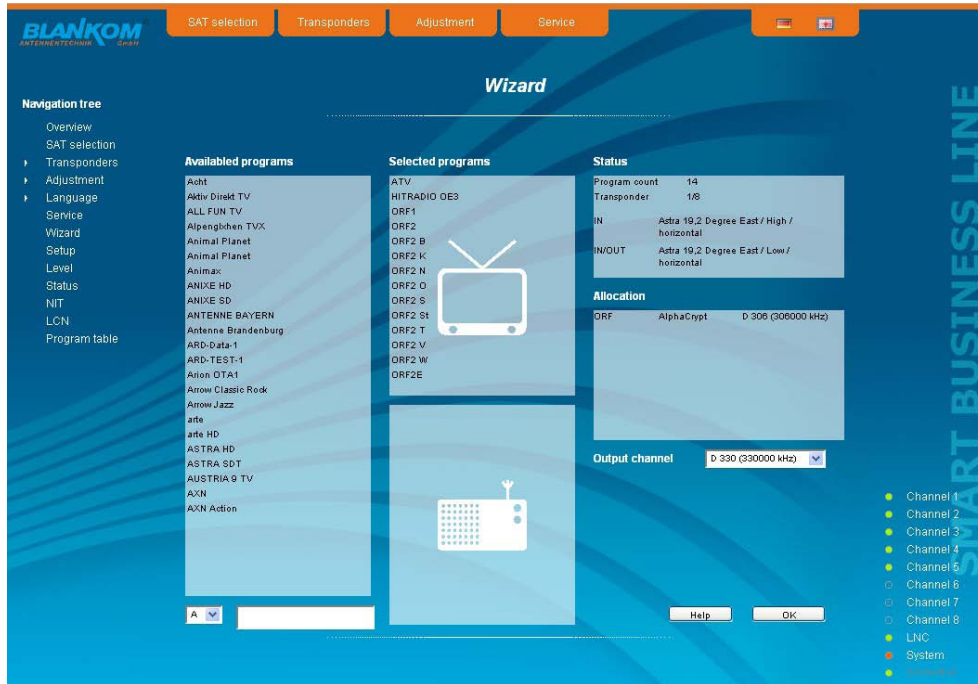
First choose the configuration of the system. If the system is equipped with LNB and multiswitch, so you can select the number of feeds on the left. If the system is operated with a Quattro LNB, so you choose from the right side, which satellite level contact with the corresponding input jack. Press the “OK” button, the corresponding data are loaded and you will be forwarded to the selection of the channel or transponder.



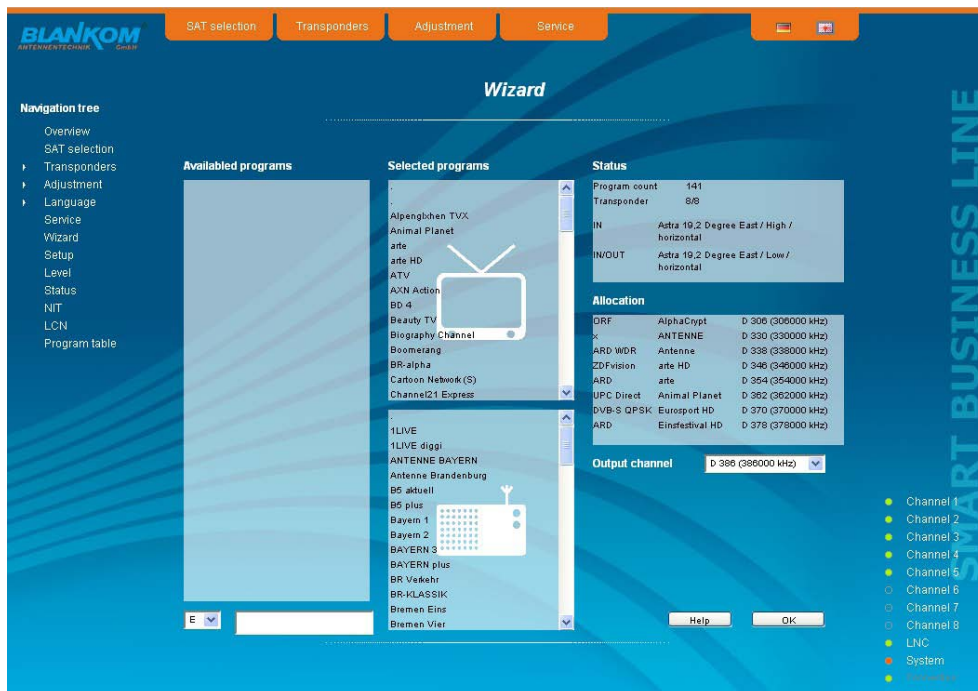
In the left column, all available channels are loaded according to the selected satellite from the database. The listing is in alphabetical order, the start of the list can be selected under the list by selecting the first letter. Alternatively, you can also enter a string (e.g. “HD”) in the text box next to the letter sequence. In this case all the channels are listed that contain that search string in their names.

At **QAMOS** and **QAMOS-MEDIA** you select the output channel in the selection box right before the transmitter or transponder selection is made. The selection begins with channel S 21 and D 306 (306.00 MHz). But the channels of the entire frequency range of 45 ... 862 MHz can be chosen freely in the selected channel spacing (see chapter 8.3.8). When **QAMOS-MEDIA-MUX** this selection is eliminated. There only the transponders are selected, which are then made available to the 8 inputs, to compile the required 8 channel packages from the existing programs that are to be transferred.

From the channel list on the left you can select by double click the desired program, and thus the entire transponder (which contains this program), which is then transmitted in that output channel. After the selection all channels in this package will be listed in the middle list box. In the upper part the television programs are listed and in the lower part the radio programs. In the upper right list box status information will appear for the selected transponder. In the right list box below there is the list of already selected transponder to the output channel in which they are to be transmitted.



In this way, up to 8 transponders per **QAMOS/ QAMOS-MEDIA** module can be selected now to be transferred. First, as the output channel the next higher channel to the last selected program package is offered. But for each packet the output channel can be chosen freely in the total frequency range. If an incorrect selection is made, it can be removed by double-clicking the unwanted selected transponder in the right field .





Clicking the "OK" button, the selection is accepted and set in the module. The browser will be redirected to the home page (see chapter 8.3.1).

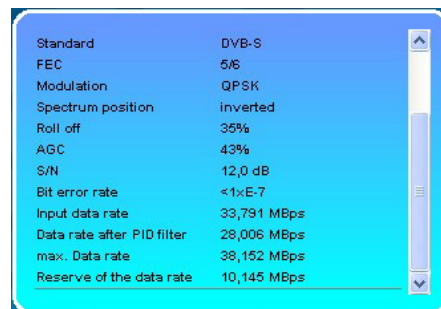
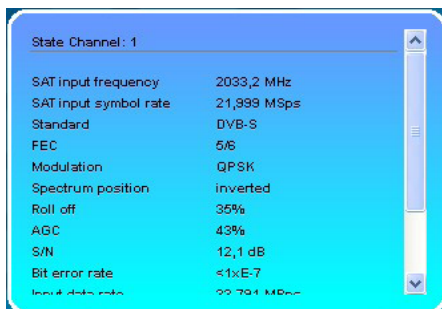
By a reopening of the wizards left in the navigation tree you can always do a complete reinitialization of the module. The changes will be accepted and set only by pressing of the "OK" button. Additional or specific settings can be made by using the adjustment menus.

### 8.3 Setting of individual parameters

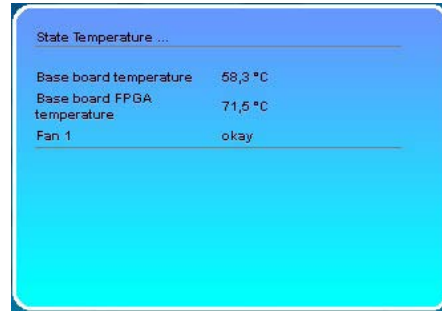
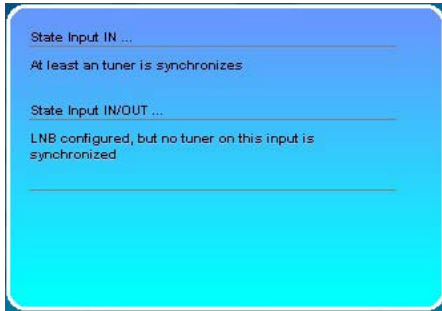
Using the web site, you can set certain parameters of the module or perform configurations on the module or the user interface. The various setting menus can be selected in the navigation tree on the left side. The setting is supported by an online help. Hovering the parameters by the mouse in the lower part of the site an orange colored text box appears with explanations for each parameter. By setting in the "Setup" menu (see chapter 8.3.8) 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 module is displayed. By changing the setup menu, the status information can also be moved to the right (see also chapter 8.3.8). 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 browser interface, a status overview appears.



A transparent LED symbol means that the channel is not programmed and set, or the RF output is turned off. Furthermore, we obtain the same way status information about the inputs and about the system parameters. 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 module. Green means that the connection is established. A transparent LED light indicates that there is no connection or the connection is failed. Settings by selection box or input fields are taken over by pressing the “send” button and stored permanently, and the module is set on these values after a restart too. Settings by check box are usually performed immediately but not stored in memory, so they would be lost on a possible restart of the module. To save these settings the “send” button must be pressed. In all menus, the language selection is possible between German and English top right.

### 8.3.1 Menu "Overview"

This page provides a status overview of the 8 channels. If a channel is working without errors at **QAMOS or QAMOS-MEDIA**, “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.



**BLANKOM** INTERNETECHNIK GMBH

SAT selection Transponders Adjustment Service

**QAMOS (5100.01)**

Navigation tree

- Overview
- SAT selection
- Transponders
- Adjustment
- Language
- Service
- Wizard
- Setup
- Level
- Status
- NIT
- LCN
- Program table

**Status information**

Channel 1: SYNC  
Channel 2: SYNC  
Channel 3: SYNC  
Channel 4: SYNC  
Channel 5: SYNC  
Channel 6: SYNC  
Channel 7: SYNC  
Channel 8: SYNC

**SBL head end**

192.168.30.123	5007437	---
192.168.30.165	5007467	0000888
192.168.30.166	5000000	0004815
192.168.30.167	5000000	1000815
192.168.30.168	5000000	0003815
192.168.30.169	5000000	0002815
192.168.30.236	5001082	

Standby  
Logout

- Channel 1
- Channel 2
- Channel 3
- Channel 4
- Channel 5
- Channel 6
- Channel 7
- Channel 8
- Input
- System
- Power

When **QAMOS-MEDIA-MUX**, however, the display is more detailed, separately for input, multiplexers and output. When each part is working without error, a green “SYNC” is displayed. If errors occur, it will appear as a red “Error” indicator. In the off condition a “QAM: Off” appears at the output after the channel, in question in a non-activated multiplexer no display appears.



In addition, below the status window the head end display is visible. There all SBL modules are listed, which are in the same network and which have been associated with the head end in the “Setup” menu (see 8.3.8). This is significant because functions over all modules such as the NIT processing between modules of the QAMOS product 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 module. If no head end was configured, a “Search” button appears, which forwards to the “Setup” menu and scans the network for other SBL modules. Then all available modules are listed and can be selected and added to the head end.

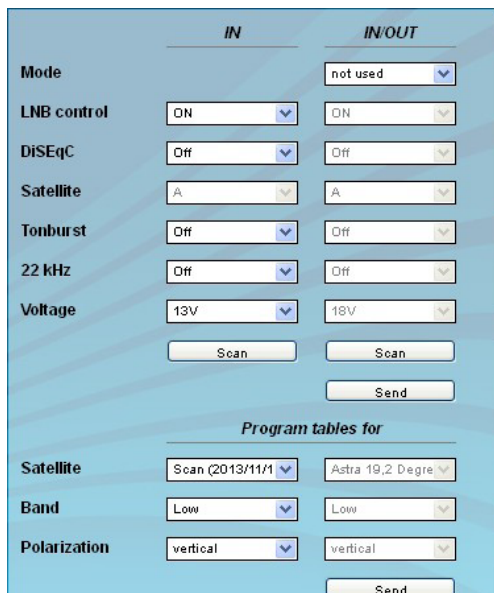
By clicking the “Logout” button the user logs out of the module and the login window appears. By pressing the “Standby” button the module is switched to standby, which is indicated by an amber POWER LED on the module. The “Standby” button will be replaced by an “ON” button, and by pressing of that the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

### 8.3.2 Menu "SAT selection"

In this menu you can make the the choice of the satellites and the input configuration of the module. In the left part of the user interface there is the configuration menu of the input part.



The setting screen is divided into two sections "LNB Control" and "Program tables for", for the two satellite jacks 1 (IN) and 2 (IN/ OUT). The parameters of both sections can be adjusted separately by using the "send" button below and then transferred. If the second sat jack (IN/ OUT) is configured as a loop-through output, or not used, then the input configuration parameters of the LNB control and program table are grayed out and not adjustable. For the satellite positions Astra 19.2 ° East, Eutelsat 13 ° East and Euro Bird 9 ° East satellite tables are stored at delivery. For other satellite positions or for updates of the above positions a satellite scan is implemented, is looking for available transponders at the set polarization/ frequency band and created a list that can be saved in addition to the above, and so for following settings is available.



selection of sat jack 1 (IN) and 2 (IN/ OUT)

**Mode**<sup>1</sup>  
**LNB control**

selection: not used, input, output  
selection: on, off (remote supply off completely), unicable

**DiSEqC**  
**Satellite**<sup>2</sup>

selection: on, off

**Tonburst**

selection: off, A (unmodulated), B (modulated)

**22 kHz**

selection: on, off

**Voltage**

selection: 13 V, 18 V

**Scan**

starts the satellite scan

<sup>1</sup> only for sat jack 2 (IN/ OUT) adjustable

<sup>2</sup> only adjustable, if DiSEqC is on

**Satellite**

selection: Astra 19,2° East, Eutelsat 13° East, Eurobird 9° East

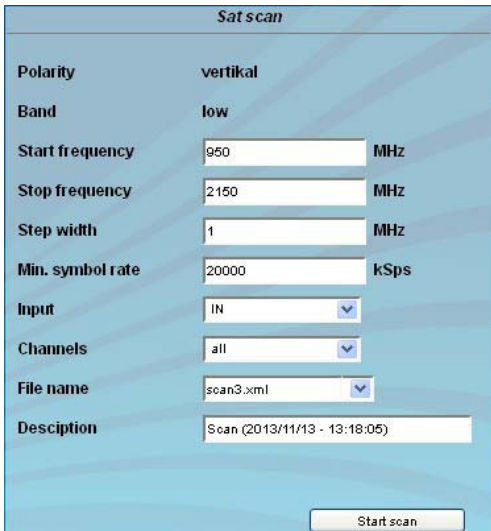
**Band**

selection: Low, High

**Polarization**

selection: vertical, horizontal

By pressing the "Scan" button it will be scanned (according to the settings "22 kHz" and "Voltage" ) to existing transponders at the selected polarization/ frequency band and stored in an additional list. In the input mask, the parameters for the satellite scan (start and stop frequency, step size, minimum symbol rate, scan input) can now be set. Furthermore, it can be selected whether the input of the first channel or of the 8 channels is to be used for the scan. This is significant because during the scanning process, the transmission of the set transponder in the used channels is interrupted. On the other hand, the scanning process is accelerated by the use of all 8 inputs. After scanning all channels in use are automatically returned to the stored data. In addition, the file name and a description can be given, under which the list of scanned transponders and also the contained programs is stored.



**SAT Scan**

**Polarity**

displays the selected polarization/ frequency band for search according the settings (22 kHz, Voltage) in the previous menu

**Start frequency**

input of the start frequency for search (MHz)

**Stop frequency**

input of the stop frequency for search (MHz)

**Step width**

input of the step size for search (MHz)

**Min. symbol rate**

input of the minimum symbol rate of Transpond.

**Input**

selection of the input for search (IN, IN/ OUT)

**Channels**

selection whether the scan is only with one or all 8 inputs

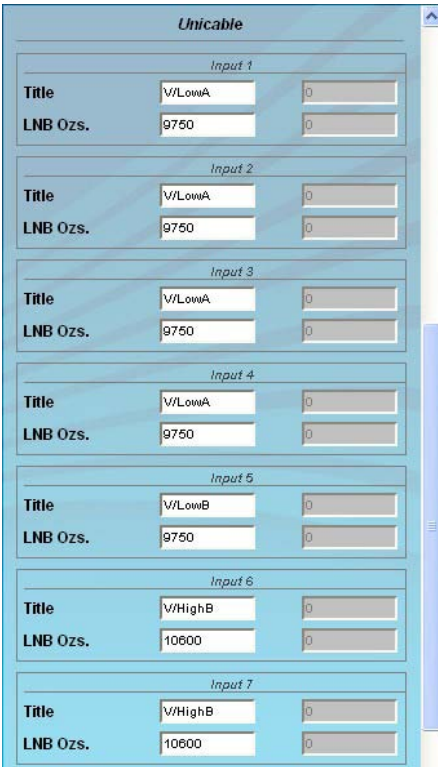
**File name**

name of the file in which the list of scanned transponder is stored

**Description**

description of the file above

In the selection field “LNB control” the item “unicable” is available for both satellite ports. Thus, it is possible that before the respective satellite input a unicable module can be switched on then the transponder selection can be made according to the receiving equipment installed there. So it is possible, to assign up to 8 satellites levels (one or more satellites) to the unicable module. From this assigned levels the required transponders can then be selected and assigned.



Outputfrequency [MHz]	
User band 1	974
User band 2	1076
User band 3	1178
User band 4	1280
User band 5	1382
User band 6	1484
User band 7	1586
User band 8	1688

If the point is “unicable” selected for one or both satellite ports, the input mask is expanded by the unicable settings. If only one satellite port is set to unicable, the settings for the other port is disabled and grayed out. For an active unicable port the other settings are inactive and grayed out.

First is for a maximum of 8 satellite accesses the input of the corresponding LNB oscillator frequency and a freely selectable name for each satellite level. This name is then found in the “Adjustment” menu (see also section 8.3.5) again, because in the case of unicable use, you have to enter in the the downlink frequency input field the corresponding satellite level, that is identified by this name.

Next, for the up to 8 resulting user bands the intermediate frequency must be entered on which the unicable module converts the respective satellite transponder. These values, which are given in the documents of the unicable module, have to enter, then confirm by pressing the “send” button. The trouble-free functionality was tested using the SUS 4481 F unicable module of the company Spaun. For stable operation, we recommend using a separate power supply for these modules. Trouble-free operation can not be guaranteed when using other unicable assemblies.

If unicable is not used on an input port, in the right part of the GUI a table of available transponders, which is updated according to the selected satellite, band and polarization, appears. The transponders are listed by name, downlink frequency, sat-socket assignment and contained programs. This is based on an internal database with the current assignments of the satellite transponder positions Astra 19.2° East, Eutelsat 13° East and Eurobird 9° East. If the transponder allocations should change, you can customize this table and even edit. By double-clicking the relevant transponder number you entry into the edit menu and can change the data accordingly.

**Edit of the transponder**

Transponder:

Downlink:  MHz

Symbol rate:  kSps

Input:

Erase all programs of the tp.

Save entries

Append Erase Apply Cancel

Existing entries can be changed or new ones are attached. By clicking the appropriate box the program list of the transponder can be deleted and changes or additions can be stored into the database permanently. If the box "Save entries" is not clicked, the changes will remain only as long as the user interface is open. With the next start of the user interface the changes are lost. In this simple way, the program data is kept up to date.

### 8.3.3 Menu "Multiplexer"

This menu item is only available for **QAMOS-MEDIA-MUX**. In this menu the compilation of the channel packages, that are transferred to the output channels, is done.

The screenshot shows the 'Multiplexer' interface with a navigation tree on the left and a main area divided into two columns. The left column lists 9 input channels (1-9) with their respective services and input assignments. The right column lists 8 output channels (1-8) with their respective services and input assignments. A 'Send' button is located at the bottom right.

The overview consists of two parts: on the left the maximum of 9 inputs (8 satellite tuner + media player ) is shown, on the right the 8 output channels. To make adjustments or changes, choose at first the desired output channel by clicking on the top right. The active channel is highlighted in orange. It appears the list of services that are already transferred in the channel. If no services have been transferred, the list is empty. If you want to remove a service, so you click the "X" box behind the service. To add a service, you select it from the left table. To do it, first select the input (input 1 ... 8, media player) above. You can also select multiple inputs simultaneously. After selecting the scan of the chosen inputs is done and the services with input assignment are listed. By pressing the button "All loading" right below the services of all inputs are listed. By pressing the ">>" button behind the service name this service is added to the list of services in the right part to be transferred.

If you have compiled the list of services to be transferred in this way, it is now possible to make additional settings for each service on the right of the overview. If you click the check box before the respective service, the expanded list of the service will appear:

Service ID	Service Name	Stream Type	Stream ID	Stream Rate	Stream Language	Stream Selection
<input checked="" type="checkbox"/>	Das Erste [28106]	Priv.	undefined	0	--	<input checked="" type="checkbox"/>
84	Priv.	undefined	0	--	--	<input checked="" type="checkbox"/>
101	Video	PCR	0	--	--	<input checked="" type="checkbox"/>
102	Audio	Audio	0	deu	--	<input checked="" type="checkbox"/>
103	Audio	Audio	0	mis	--	<input checked="" type="checkbox"/>
104	Priv.	Teletext	0	deu	--	<input checked="" type="checkbox"/>
105	Priv.	Subtitle	0	deu	--	<input checked="" type="checkbox"/>
106	Priv.	Audio	0	deu	--	<input checked="" type="checkbox"/>
2070	Priv.	undefined	0	--	--	<input checked="" type="checkbox"/>
2171	DSMCC_B	undefined	0	--	--	<input checked="" type="checkbox"/>

Here all individual streams of the service are listed. By clicking the checkbox behind every stream it can be selected, which of these streams is transmitted. So you can filtered out unwanted individual streams if necessary.

If the checkbox of extended list isn't pressed, all contained individual streams are transferred automatically.

Furthermore, for each service it can be selected using the following selection field, with which the priority the transfer of services is done. The selection is possible between high, middle and low. This is significant because, due to the dynamic transmission rate of the services the brutto bit rate of the channel may be exceeded, which can lead to malfunctions up to total failure of services. In this case, at first services with the lowest priority are to be restricted, to continue the transmission of high-priority services trouble-free.

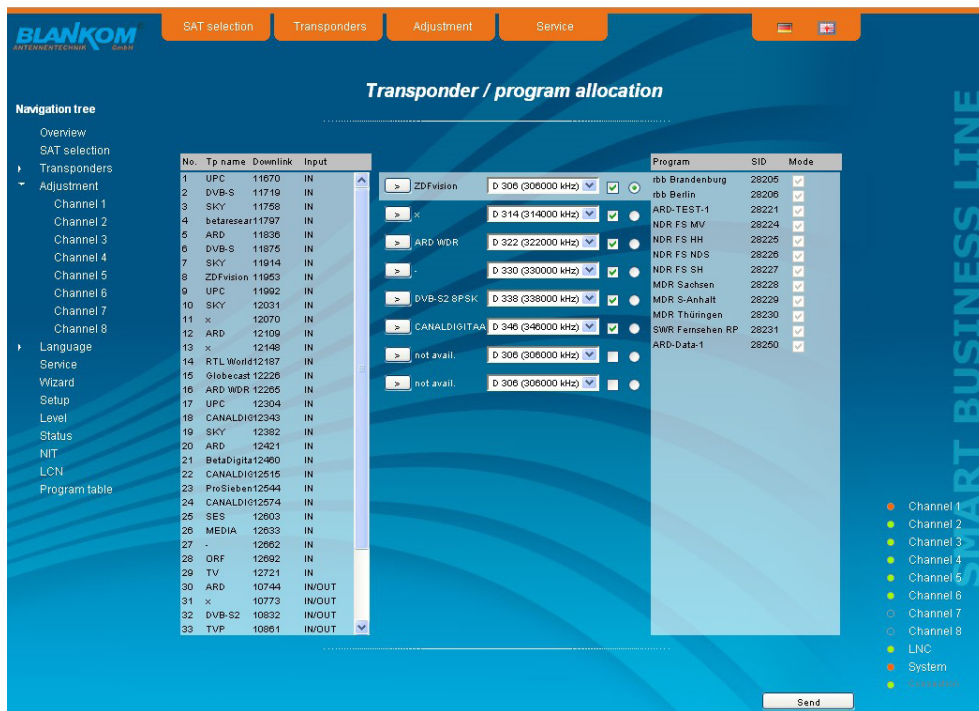
Generally when selecting the services to be transferred, the brutto bit rate of the channel can be exceeded, because too many services were selected. This is indicated by a red LED of the channel and in the "Status" menu (see chapter 8.3.10) it can be read in the display of output parameters that the overflow bit rate is > 0 MBps. In this case the number of services to be transmitted is to be reduced so much that the channel bit rate does not exceed the brutto bit rate, and thus the overflow bit rate = 0 MBps.

Finally the settings with the "Send" button are to be confirmed. Thus, the multiplexer starts with the made service selection, which is stored in the memory simultaneously.

### 8.3.4 Menu "Transponders"

In this menu, at **QAMOS** and **QAMOS-MEDIA** the transponder selection, and so the program selection too, is done for all output channels. At **QAMOS-MEDIA-MUX** there is separated the selection of up to 8 transponders at the input as well as the selection of the 8 output channels. With this device, the compilation of transponders that are transferred to the 8 output channels is done in the menu "Multiplexers" (see chapter 8.3.3).

The user interface is divided into three tables. To the left there is the list of the selectable satellite transponders. This list results automatically from the selected satellite setting (see chapter 8.3.2). The transponders are listed with their name, the downlink and the input allocation. In the middle there is the current transponder allocation of the 8 channels, where on left side there is the selected satellite transponder and on right side there is the corresponding output channel. Outside right next to the output channel there are two selectors: with the first the RF signal of the respective channel is turned on or off, with the second you can select one of the 8 channels for setting. In the right table, the television and radio programs, that are transmitted on the selected channel, are listed with their name and service ID. At **QAMOS-MEDIA-MUX** this table appears only if a program bouquet was compiled in the "Multiplexer" menu for each output channel.



To make changes at **QAMOS** or **QAMOS-MEDIA**, you must first select the desired channel. This is done either by clicking the appropriate selector outside right next to the output channel in the middle of the channel list or by clicking "Channel" in the navigation tree on the left side, which is listed as a point of the menu "Transponders".

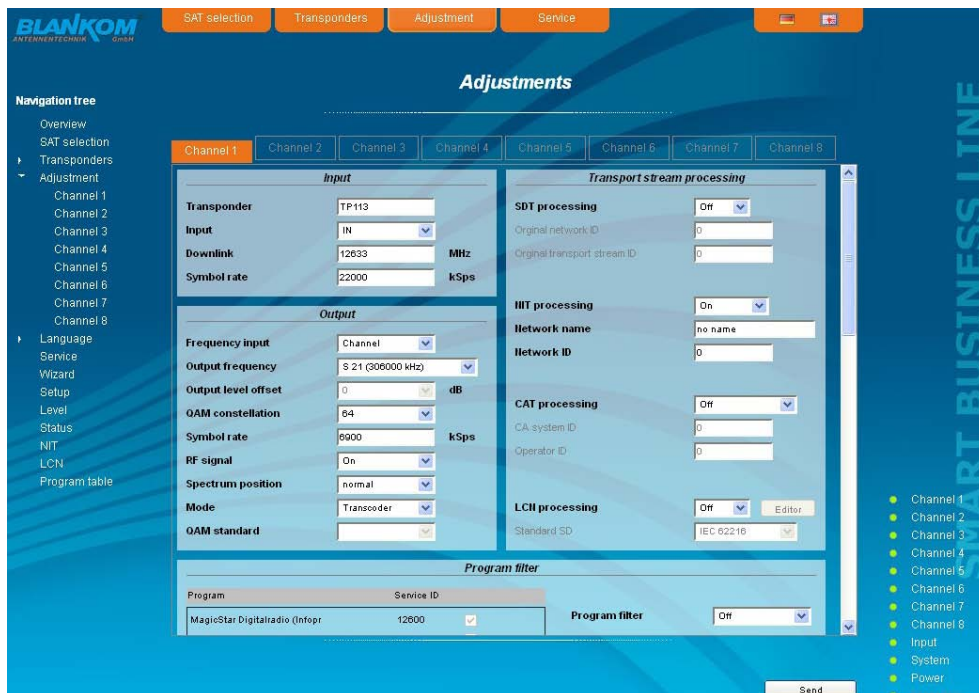
If you want to change the input settings, one marked the first desired transponder with a single click in the left table. By pressing the button ">" left next to the input transponder in the middle of this overview, the transponder is adopted into the channel. At the same time the channel assignments associated with the service ID and filter check box is listed in the right table. With this box you can select which channels of the transponder are transmitted and which are filtered out of the package. To transmit a program, it must be selected in that box. If you want to change the output channel, so you click the select box in this channel and select the desired output channel. On double assignments within these 8 channels is called attention to this automatically.

At **QAMOS-MEDIA-MUX** here is only the change in the input assignments and output channels. A change in the composition of the transmitted programs for each output channel is exclusively done in the "Multiplexers" (see chapter 8.3.3).

Clicking the "Send" button, the settings are taken and stored.

### 8.3.5 Menu "Adjustment"

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



The following parameters are adjustable:

Input	
Transponder	TP 65
Input	IN/OUT
Downlink	Astra H/H 11720 MHz
Symbol rate	27500 kSps

#### Input

input parameters of the channel

**Transponder**  
**Input**  
**Downlink** <sup>2</sup>

name of the transponder, editable  
selection of the sat. input: IN, IN/ OUT, player <sup>1</sup>  
input in MHz, if unicable is used, selector of the satellite level additionally (see chapter 8.3.2)  
input in kSps

**Symbol rate** <sup>2</sup>  
<sup>1</sup> setting "player" only available in QAMOS-MEDIA-(MUX) (5100.02)  
<sup>2</sup> not adjustable, if input is "player"

Output	
Frequency input	Channel
Output frequency	D 306 (306000 kHz)
Output level offset	0 dB
QAM constellation	256
Symbol rate	6900 kSps
RF signal	On
Spectrum position	normal
Mode	Transcoder
QAM standard	DVB-C (Annex A)

#### Output

output parameters of the channel

**Frequency input**  
**Output frequency**  
**Output level offset**  
**QAM constellation**  
**Symbol rate**  
**RF signal**  
**Spectrum position**  
**Mode**  
**QAM standard**

selection: channel, frequency <sup>3</sup>  
selection from channel table/ input in kHz <sup>3</sup>  
display of the level offset <sup>4</sup>  
selection: 16, 32, 64, 128, 256 QAM  
input in kSps  
selection: on, off  
selection: normal, inverted  
selection: Transcoder, Test signal, Test level  
DVB-C/ ITU-T J.83 Annex A (fixed)

<sup>3</sup> If selected at the frequency input "channel", so you can select the output frequency in the pre-selected channel spacing (see chapter 8.3.8). If, however, at the frequency input "frequency", then the output frequency is selectable in kHz steps.  
<sup>4</sup> Adjustment of the offset of each channel to the basic level, see chapter 8.3.8

Transport stream processing	
SDT processing	Off
Original network ID	0
Original transport stream ID	0
IIT processing	Off
Network name	no name
Network ID	11

#### Transport stream processing

**SDT processing**  
**Original network ID**  
**Original transport stream ID**

selection: on, off  
adjustment range: 0...65535  
adjustment range: 0...65535

**IIT processing**  
**Network name**  
**Network ID**

selection: on, off  
name of the network (max. 30 characters)  
adjustment range: 0...65535



**CAT processing**

CA system ID

Operator ID

---

**LCN processing**

Standard SD

**CAT processing**  
**CA system ID**  
**Operator ID**

selection: on, on with CA filter, off  
adjustment range: 0...65535  
adjustment range: 0...65535

**LCN processing**  
**Standard SD**

selection: on, off  
selection: IEC 62216, NorDig (V1)

If the LCN processing was turned on, you can switch by pressing the “Editor” button to LCN editor to make the necessary adjustments (see chapter 8.3.12).

In the table “Program filter”, at **QAMOS and QAMOS-MEDIA** the program filter function of the channel can be executed. If the program filter is turned off, all programs of the received transponder can be transmitted. At the left of the overview all programs with the associated service ID are listed. To the right is one check box to tag the program. In the right part of the overview there is the selector of the filter activation at the top. In the second box “Filter mode”, you choose whether the selected channels are blocked or allowed to pass. In the box “Information of other transponders”, it may be selected if additional information about SDT data from other transponders, which are transferred in the data stream under the “Other”, are filtered out or are transmitted. Possible EPG information from other transponders, which can also be transferred under the “Other” in the data stream, are always transmitted with. With the first of the 4 buttons right below the current program list can be loaded, the other 3 are used to simplify the selection of the program list.

**Program filter**

Program	Service ID	Select
RTL Television	12003	<input checked="" type="checkbox"/>
RTL Regional NRW	12004	<input checked="" type="checkbox"/>
RTL HB NDS	12005	<input checked="" type="checkbox"/>
RTL FS	12006	<input checked="" type="checkbox"/>
RTL2	12020	<input checked="" type="checkbox"/>
RTL Living	12030	<input type="checkbox"/>
SUPER RTL	12040	<input type="checkbox"/>
SUPER RTL CH	12041	<input type="checkbox"/>
VÖX	12060	<input type="checkbox"/>
RTLNITRD	12061	<input type="checkbox"/>
Channel 21	12080	<input type="checkbox"/>
n-tv	12090	<input type="checkbox"/>
Channel 21 ALT	12095	<input type="checkbox"/>

**Program filter**

**Filter mode**

**Information of other transponders**

At **QAMOS-MEDIA-MUX** there is the setting of the multiplexers parameter instead of the program filter setting. Adjustable are the source TOT/ TDT, EIT mode, CA mode and the source of the NIT.

**Multiplexer**

**Source of TOT/TDT**

**EIT mode**

**CA mode**

**Source of NIT**

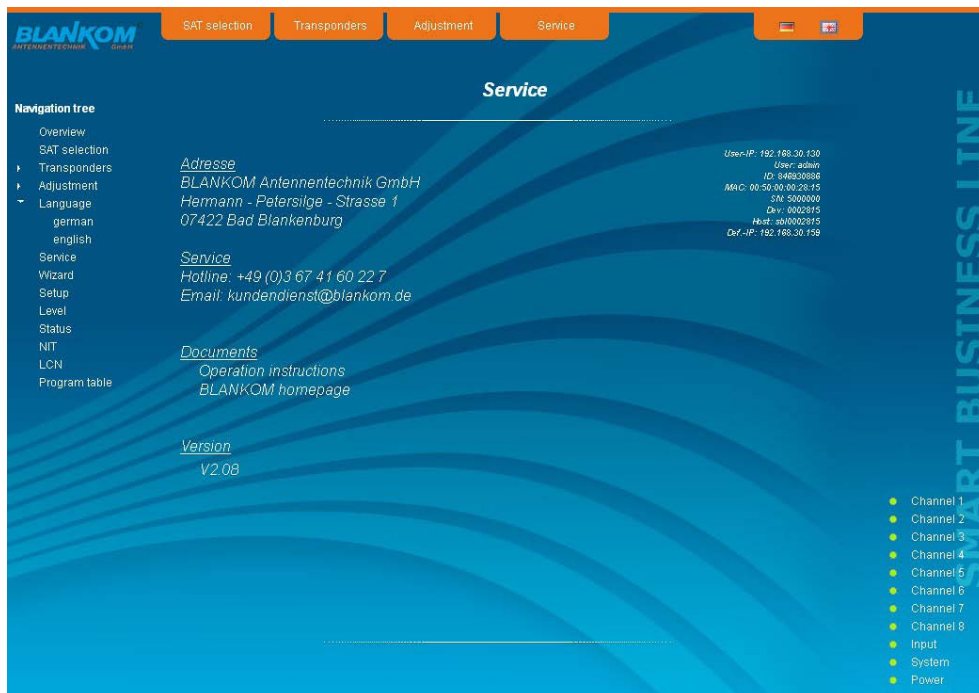
### 8.3.6 Menu "Language"

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 of the language selection box.



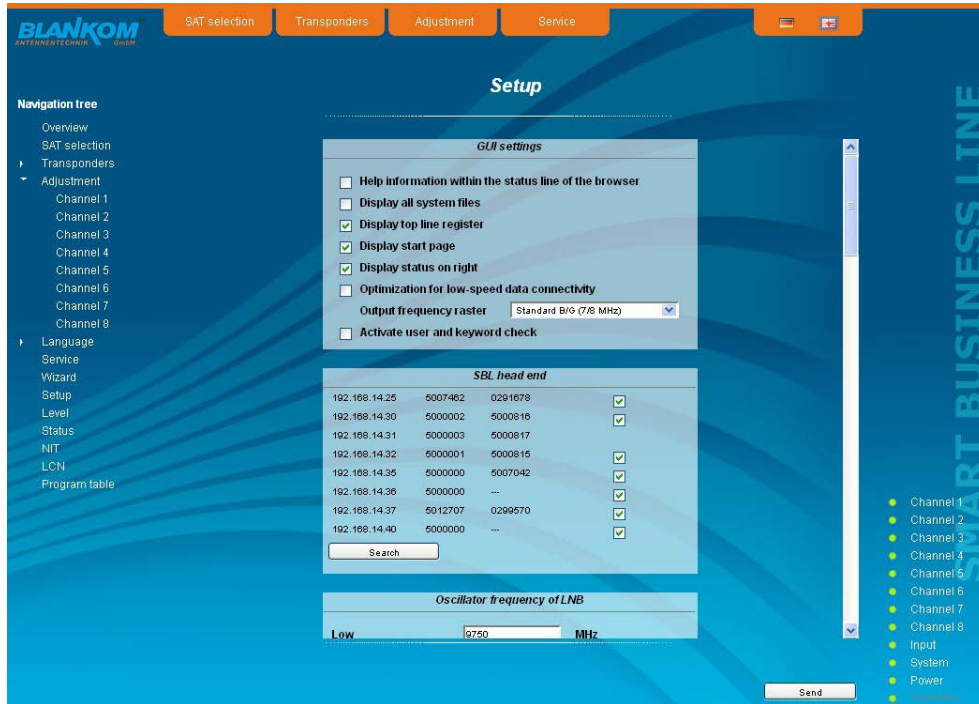
### 8.3.7 Menu "Service"

In this menu you will find all information about the service for the module 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.

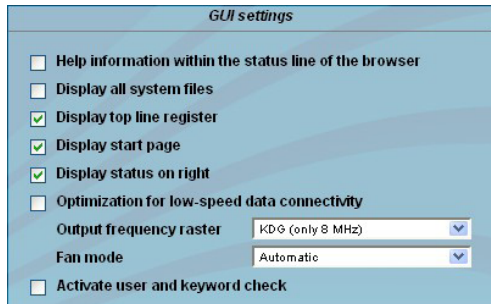


### 8.3.8 Menu "Setup"

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. By clicking 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". By clicking 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 start page

The default is to start with the menu selection by the command buttons after every restart of the user interface (see chapter 8.1), where you can select the desired setup menu. If this item is disabled, this page will be skipped and you reach instantly the "Overview".

##### 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 module, if there is only a low-speed connectivity (GSM). The restrictions are: there are no wizard and no program respective transponder lists. Furthermore, the size of all pictures is reduced.

##### Output frequency raster

With this selection box you can set the output channel spacing, which is pre-set for adjustment of the QAM channels. To choose there are the standard B/G raster, the standard G raster (continuous 8 MHz) and the channel spacing of the cable company Kabel-Deutschland-Gesellschaft (KDG).



**Fan mode**

In this field you can select whether the internal fan for cooling the modules controls automatically or is permanently in operation.

**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 8.1).

SBL head end			
192.168.30.158	5000009	0001234	<input checked="" type="checkbox"/>
192.168.30.159	5000018	001235	<input checked="" type="checkbox"/>
192.168.30.175	5000027	001236	<input type="checkbox"/>

Search

**SBL head end**

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

Oscillator frequency of LNB		
Low	<input type="text" value="9750"/>	MHz
High	<input type="text" value="10600"/>	MHz
Changeover frequency (Downlink)	<input type="text" value="11550"/>	MHz

**Oscillator frequency of LNB**

**Low**

input of the Lo-frequency for receiving of the low band (in MHz)

**High**

input of the Lo-frequency for receiving of the high band (in MHz)

**Changeover frequency (Downlink)**

input of the frequency for point of entry from the low into the high band (in MHz)

System administration		
	SBL to PC	PC to SBL
Backup	<input type="button" value="Save"/>	<input type="button" value="Load"/>
Update		<input type="button" value="Load"/>
	<input type="button" value="View logbook"/>	

**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 a QAMOS module 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). Moreover, additional system files can be added (e.g. other satellite assignments).

**Update**

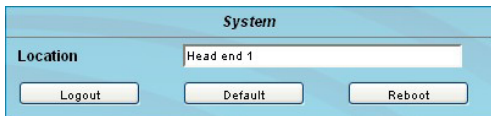
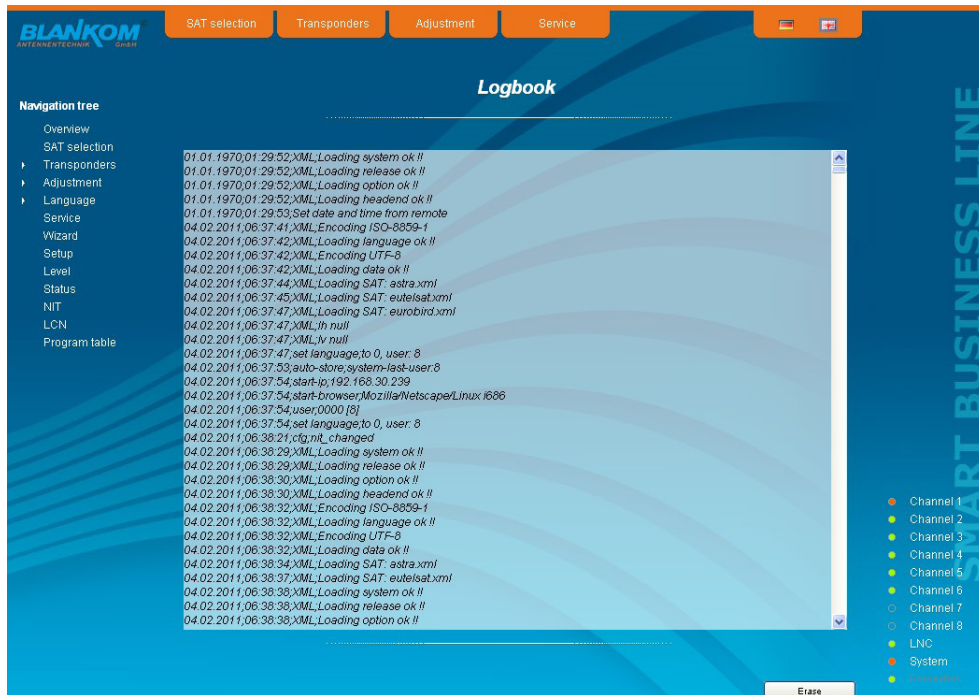
By clicking the "Load" button, the internal software components can always be brought up to date.

**note:**

An update from a release lower than 2.08 to 3.x is not possible in a direct way. First, an update from the version lower than 2.08 to the last 2.x must be done, after that the update to release 3.x is possible. Because that the last release 2.x is available parallel with the current release 3 on the BLANKOM homepage.

System administration			
	SBL to PC	PC to SBL	
Backup	<input type="button" value="Save"/>	<input type="button" value="Load"/>	
Update		<input type="button" value="Load"/>	
Transponder config.	<input type="button" value="Save"/>	<input type="button" value="Load"/>	
SBL configuration	<input type="button" value="Save"/>	<input type="button" value="Load"/>	
Language	<input type="button" value="Save"/>	<input type="button" value="Load"/>	
SBL system	<input type="button" value="Save"/>	<input type="button" value="Load"/>	
NIT configuration	<input type="button" value="Save"/>	<input type="button" value="Load"/>	
Logbook	<input type="button" value="Save"/>		
Status	<input type="button" value="Save"/>		
astra.xml	<input type="button" value="Save"/>	<input type="button" value="Load"/>	
eutelsat.xml	<input type="button" value="Save"/>	<input type="button" value="Load"/>	
eurolbird.xml	<input type="button" value="Save"/>	<input type="button" value="Load"/>	<input type="button" value="Delete"/>
eutelsat.xml	<input type="button" value="Save"/>	<input type="button" value="Load"/>	<input type="button" value="Delete"/>
	<input type="button" value="View logbook"/>	<input type="button" value="Append"/>	

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 module is made to identify the module 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**

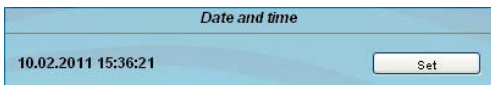
restart the user interface

**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 module



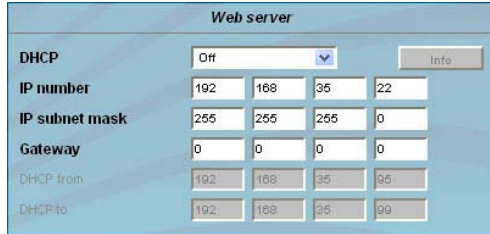
**Date and time**

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



**Enabling of**

In this field, possible software options for the module 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.



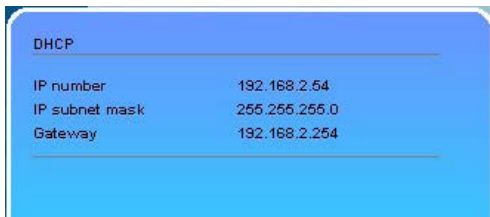
**Web server**

This setting appears only when you are logged in as administrator, and thus you have the authority to make administrative changes. Beginning with release 2.0 the QAMOS supports the DHCP functionality. There DHCP-Client is factory default. After an update from a release 1.x to a release 2.x the DHCP support is off. Note, that after each factory reset the module 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 QAMOS module are adapted to the network.



If the module 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 module is displayed.



Please note if the module is set as "DHCP-Server", that 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 it 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 module is configured as a DHCP server or client and the client has received an IP address successfully, so the module can be accessed via a web browser with a name. This name is composed of the prefix "sbl" and the device number that is printed on the back of the module and on the packaging. For example, the device with the number 0123456 is called "sbl0123456". Should there be problems with it among the local network conditions, the domain can be added. In the case that the above module 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 SBL module is as a server, the remaining modules and the connected PC/ laptop are configured as a client. By calling the browser "dhcp.sbl" the surface of the server module 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". In the head end overview can be changed quickly to the user interface of any other module by selecting the respective modules links.



**SNMP option**

Mode: On

Version: Version 1

Community-Read: public

Community-Write: private

**Trap**

Version: V1 trap

Community: trapping

User: v3TrapUser

Password: \*\*\*\*\*

Send MAC as engine ID

**Receiver IP**

192.168.2.234

**Events**

Device temperature to high/Ok: 85

Cooler On/Off

SAT AGC to low: 20000

**SNMP option**

The SNMP adjustment is only available after the “SNMP” option was enabled (see chapter “Enabling of”). 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. In version 3, these two fields are disabled. There, all registered users of the module (see menu “Passwords”) have an 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 module 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 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 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 parameters 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 SBL supports only the authentication password, not the privacy password. The 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. A SBL module 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 module 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 the module is open, no changes are possible via SNMP.

**Passwords**

**Passwords**

	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"/>

Again, 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 then 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. If the SNMP option is enabled, 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).



Player file system

Name	Description	MByte
5100_02-91_0	...	1167

Upload file

**Player file system** <sup>1</sup>

displays the stored files in media player with file name, description and file size

<sup>1</sup> only available in QAMOS-MEDIA and QAMOS-MEDIA-MUX (5100.02) with enabled media player option

The media player offers the opportunity to install a file from a PC/ laptop to the SBL cassette via network. The file must be available in a transport stream format that corresponds to the DVB standard. The data rate of the whole data stream must be constant and shall not exceed 40 Mbit/s. The content of the data stream can be single or multiple transport streams (SPTS or MPTS). To create a transport stream file the free software ffmpeg is recommended ([www.ffmpeg.org](http://www.ffmpeg.org)).

To upload the file you select the menu item "Setup". In the section "Player file system" the uploaded file is already displayed with their name, description and file size in kilobytes. To upload or change the transport stream file, click the button "Upload File". In the following dialog you select a file and can optionally specify a text description for this file. **Note, that neither in the file name nor in the text description are umlauts or special characters.** By clicking the "Upload" button, the previously selected file is transferred to the SBL cassette. A previously existing file is automatically deleted. For the time of file uploads the GUI is locked. A dialog shows the progress in percent. If necessary, the file upload may be aborted by pressing the "Cancel" button.

Subsequently, the file can be used as input to any output channel. Do this, select as the input the entry "player" in the channel settings, item "Input", and confirm your settings by clicking the "Send" button (see chapter 8.3.5).

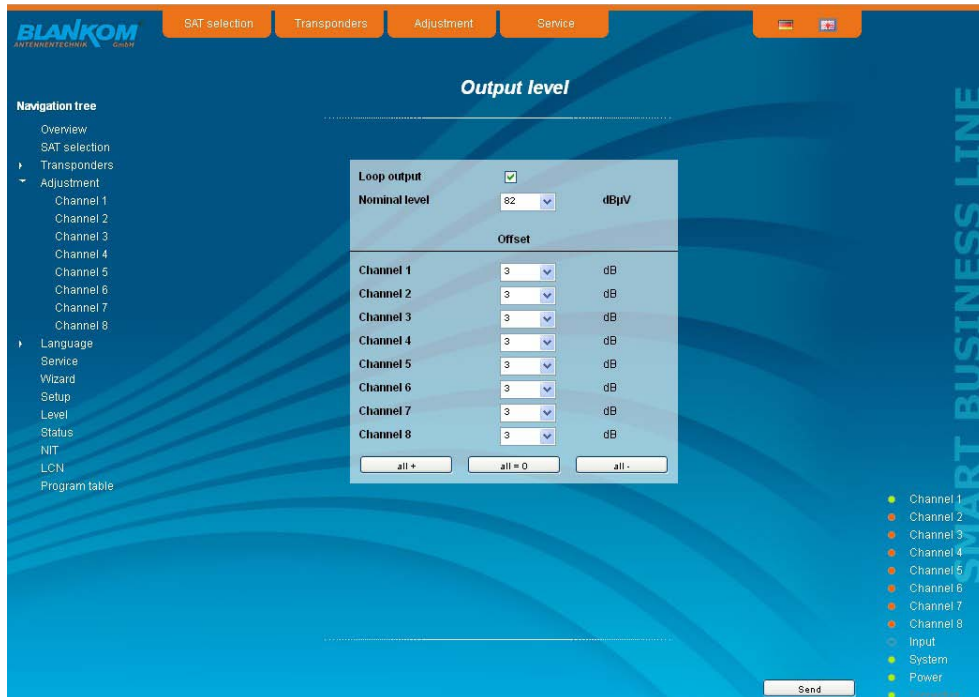
To produce a transport stream file in the appropriate format, the company BLANKOM provides a corresponding conversion tool. This may generate a corresponding file in the transport stream format, which the QAMOS-MEDIA can handle. A detailed description of the conversion tool can be found in chapter 10.



### 8.3.9 Menu "Level"

When **QAMOS-MEDIA** or **QAMOS-MEDIA-MUX** (5100.02), 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 dB $\mu$ V. If the loop is disabled, the output level of the 8 channels may be set in the range of 74 ... 94 dB $\mu$ V. When **QAMOS** (5100.01), the nominal level can be set for all 8 channels (i.e. in common) only in the range of 62 ... 82 dB $\mu$ V with the top box.

In both modules, 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 to 0 dB with the middle button for all 8 channels.



### 8.3.10 Menu "Status"

#### 8.3.10.1 Status display at QAMOS and QAMOS-MEDIA

It presents an overview of the status of the various components per channel, which 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 approach the mouse cursor to the parameter.



**8.3.10.2 Status display at QAMOS-MEDIA-MUX**

Again, the display is updated every 5 seconds. In addition, it can be selected at the top right if you want to have a list of input, output or system parameters.

The screenshot shows the 'Status table' interface with a navigation tree on the left and a table of channel parameters. The table has columns for Kanal 1 through Kanal 8. The parameters listed include frequency (MHz), bit rate (MSps), modulation (DVB-S, QAM, QPSK), and other channel-specific settings. A dropdown menu at the top right is set to 'Input'.

	Kanal: 1	Kanal: 2	Kanal: 3	Kanal: 4	Kanal: 5	Kanal: 6	Kanal: 7	Kanal: 8
Channel 1	1509,6 MHz	1509,6 MHz	1236,7 MHz	1821,0 MHz	1107,6 MHz	1107,6 MHz	1107,6 MHz	1107,6 MHz
Channel 2	27,499 MSps	27,499 MSps	27,499 MSps	27,499 MSps	27,499 MSps	27,499 MSps	27,499 MSps	27,499 MSps
Channel 3	DVB-S	DVB-S	DVB-S	DVB-S	DVB-S	DVB-S	DVB-S	DVB-S
Channel 4	3/4	3/4	3/4	3/4	3/4	3/4	3/4	3/4
Channel 5	QPSK	QPSK	QPSK	QPSK	QPSK	QPSK	QPSK	QPSK
Channel 6	---	---	---	---	---	---	---	---
Channel 7	invertiert	invertiert	invertiert	invertiert	invertiert	invertiert	invertiert	invertiert
Channel 8	35%	35%	35%	35%	35%	35%	35%	35%
Language	11,2 dB	11,3 dB	11,5 dB	13,9 dB	12,0 dB	12,0 dB	12,1 dB	11,9 dB
Service	<1xE-7	<1xE-7	<1xE-7	<1xE-7	<1xE-7	<1xE-7	<1xE-7	<1xE-7

When listing the output parameters for each channel the available brutto bit rate, already used channel bit rate and possibly the existing overflow bit rate are displayed. The used channel bit rate should always be less than the brutto bit rate, since this will cause disturbances or even failure of the transferred services. Therefore, it is to check the utilization and possibly reduce the number of transferred services when setting the channel assignment in menu "Multiplexers" (see chapter 8.3.4). The individual services and their status are listed by clicking the checkbox before "Services".

This screenshot shows a detailed view of the 'Status table' for Channel 1. It lists parameters such as Channel frequency (306000 kHz), Brutto bit rate (50,870 MBps), Channel bit rate (22,288 MBps), and Overflow bit rate (0,0 MBps). A 'Services' section is visible with a checked checkbox, listing services like 'Das Erste', 'Bayerisches FS Süd', 'Mikroschen', 'Bayerisches FS Nord', 'WDR Köln', and 'SWR Fernsehen BW' with their respective frequencies and status (e.g., 'Okay').

This screenshot shows the 'Status table' with the dropdown menu set to 'System'. It displays various system parameters including Base board temperature (53,3 °C), Base board FPGA temperature (57,8 °C), Fan 1 status (damaged), Player Init. (initialized), Kartentyp (SDHC), ID (110), Seriennummer (4E98B950), Speicher (4095 MByte), and Filesystem (FAT32).

When listing the system parameters the parameters of the module and the media player are displayed.

### 8.3.11 Menu "NIT"

The NIT processing for all to a head end associated modules of the QAMOS product group can be done in 2 ways: as an automatic or manual NIT processing. The simplest and by installation and support expense safest way is the automatic NIT processing. The precondition is that all to the head end associated above mentioned modules have a different IP address and an Ethernet switch must be connected to each other so that the data exchange can take place automatically. The NIT settings must be made here only in one of the above mentioned modules of the head end and after confirmation they are automatically included of all other modules.

The Ethernet connection among each other is not necessary for the manual NIT processing, but the settings must be made or maintained separately **in each module** of the head end, which means a much higher expense.


To start the NIT processing it is first necessary to put together the head end in the user interface. At first in the menu "Setup" (see chapter 8.3.8) at the point "SBL head end" the "Search" button is to press. Alternatively, you can press the "Read" button in the menu "Overview" (see Section 8.3.1) under the item "SBL head end" overview in the case of factory setting. First all modules of the QAMOS product group are listed that are within the network. If there is no network connection between the mentioned modules (the case of manual NIT processing), here only this one module appears on which the settings are being implemented. The next step, all mentioned modules are selected, which should belong to the head end (in the case of the manual NIT processing the module itself) and the selection has to be confirmed with the "send" button. In the case of an automatic NIT distribution now the data of all selected modules are exchanged. Further adjustments must be performed only in one module and be adopted by all the other automatically.

In the case of a manual NIT processing this step must be implemented **in each module** of the head end. The data of the other modules must be taken manually in each module, as explained in subsequent chapters.

#### 8.3.11.1 Automatic NIT processing

As explained above, all modules of the QAMOS product group of the head end must be connected via an Ethernet switch for automatic NIT processing. The creation or editing of the NIT settings must only be done on one module of the head end and is then applied from all other modules automatically.

It presents the last created NIT table of the whole head end with continuous listing of the following parameters: transport stream ID, original network ID, output frequency in kHz, QAM constellation, symbol rate in kSps, insert and delete fields. A characteristic of the automatic NIT processing is that all channels of the modules are listed in frequency-ascending blue colored table cells. If the first time an NIT is created, a list appears with no table entries. The loading or update of the NIT is then in edit mode. By clicking the "Export" button, the NIT of the head end is saved as a .xml file on the PC. In the editing mode this settings can be changed.



No.	TS-ID	NW-ID	Output frequency	Constellation	Symbol rate	Insert	Delete
1	1073	1	306000	256	6900		
2	7	133	314000	256	6900		
3	1057	1	322000	256	6900		
4	1079	1	338000	256	6900		
5	1051	1	370000	256	6900		
6	1101	1	610000	256	6900		
7	1079	1	818000	256	6900		
8	1073	1	828000	256	6900		
9	1089	1	834000	256	6900		
10	1107	1	842000	256	6900		
11	1093	1	850000	256	6900		
12	1201	1	858000	256	6900		
13	1117	1	866000	256	6900		

By clicking the box "Edit" in the top right of the user interface you can switch to edit mode and edit the NIT entries. With the "+" button, an entry will be added. The settings of the last table entry are accepted and must be adjusted accordingly. With the "Delete" button the table entry is removed. Also in this mode, you can save the NIT of the module with the "Export" button as .xml file on the PC. By clicking the "Import" button, another NIT can be added, which was previously stored as a .xml file on the PC. In this way it's possible to create a NIT of a system with multiple modules of the QAMOS product group. In the NIT processing all the selected table entries are included.

In the lower part of the GUI it appears additionally an overview of the settings for the NIT processing of all the channels of the head end. Here the NIT transmission per channel can be switched on or off and the network name and network ID can be changed. The settings are identical to the section "Transport stream processing" in the menu "Adjustment" (see chapter 8.3.5).

If all settings have been made, by pressing the "send" button this NIT is automatically stored in all other modules of the QAMOS product group of the head end.

**Network information table (NIT)**

No.	TS-ID	NW-ID	Output frequency	Constellation	Symbol rate	Insert	Delete
1	1073	1	305000	256	6900	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
2	7	133	314000	256	6900	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
3	1057	1	322000	256	6900	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
4	1079	1	338000	256	6900	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
5	1051	1	370000	256	6900	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
6	1101	1	610000	256	6900	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
7	1079	1	618000	256	6900	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
8	1073	1	626000	256	6900	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
9	1089	1	634000	256	6900	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
10	1107	1	642000	256	6900	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
11	1093	1	650000	256	6900	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
12	1201	1	658000	256	6900	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
13	1117	1	666000	256	6900	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

**Network name**

Channel	Frequency	Network name	Network ID
<input checked="" type="checkbox"/> Channel 1	D 306 (306000 kHz)	BLANKOM	112
<input type="checkbox"/> Channel 2	D 314 (314000 kHz)		
<input type="checkbox"/> Channel 3	D 322 (322000 kHz)		
<input type="checkbox"/> Channel 4	D 338 (338000 kHz)		
<input checked="" type="checkbox"/> Channel 5	D 370 (370000 kHz)		
<input type="checkbox"/> Channel 6	D 610 (610000 kHz)		
<input type="checkbox"/> Channel 7	D 618 (618000 kHz)		
<input type="checkbox"/> Channel 8	D 626 (626000 kHz)		

Buttons: Read, Import, Export, Send

### 8.3.11.2 Manual NIT processing

After the preparation or initializing of the NIT, described in 8.3.11, first it must be called the edit mode of the NIT in **each module of the QAMOS product group** of the head end, read the NIT of the module and stored on the PC by clicking the “Export” button. Then you append the NIT of the other mentioned modules, which belong to the head end, by repeatedly pressing the “Import” button in edit mode. As opposed to the automatic NIT processing here appear the added tables in white color. After the appropriate selection of channels of the NIT and any change in the network name or network ID the NIT of this module is stored and transferred by pressing the “Send” button. To facilitate the setting of all other mentioned modules the head end, this head end NIT can be stored in the PC by clicking the “Export” button. Now all the other modules of the QAMOS product group of the head end have called successively, these stored NIT loaded by pressing the “Import” button and then adopted and saved by pressing the “Send” button.

**Network information table (NIT)**

No.	TS-ID	NW-ID	Output frequency	Constellation	Symbol rate	Insert	Delete
1	1101	1	306000	256	6900	<input checked="" type="checkbox"/>	Delete
2	1073	1	314000	256	6900	<input checked="" type="checkbox"/>	Delete
3	1201	1	322000	256	6900	<input checked="" type="checkbox"/>	Delete
4	1051	1	330000	256	6900	<input checked="" type="checkbox"/>	Delete
5	1093	1	338000	256	6900	<input checked="" type="checkbox"/>	Delete
6	1117	1	346000	256	6900	<input checked="" type="checkbox"/>	Delete
7	1007	1	354000	256	6900	<input checked="" type="checkbox"/>	Delete
8	1089	1	362000	256	6900	<input checked="" type="checkbox"/>	Delete
9	1107	1	370000	256	6900	<input checked="" type="checkbox"/>	
10	1017	1	378000	256	6900	<input checked="" type="checkbox"/>	
11	1078	1	386000	256	6900	<input checked="" type="checkbox"/>	
12	1011	1	394000	256	6900	<input checked="" type="checkbox"/>	
13	7	133	402000	256	6900	<input checked="" type="checkbox"/>	
14	1111	1	410000	256	6900	<input checked="" type="checkbox"/>	
15	1011	1	418000	256	6900	<input checked="" type="checkbox"/>	
16	12	133	426000	256	6900	<input checked="" type="checkbox"/>	

**NIT processing**

Channel	Frequency	Network name	Network ID
<input type="checkbox"/> Channel 9	D 370 (370000 kHz)	Headend	1234
<input type="checkbox"/> Channel 10	D 378 (378000 kHz)		
<input type="checkbox"/> Channel 11	D 386 (386000 kHz)		
<input type="checkbox"/> Channel 12	D 394 (394000 kHz)		
<input type="checkbox"/> Channel 13	D 402 (402000 kHz)		
<input type="checkbox"/> Channel 14	D 410 (410000 kHz)		
<input type="checkbox"/> Channel 15	D 418 (418000 kHz)		
<input type="checkbox"/> Channel 16	D 426 (426000 kHz)		

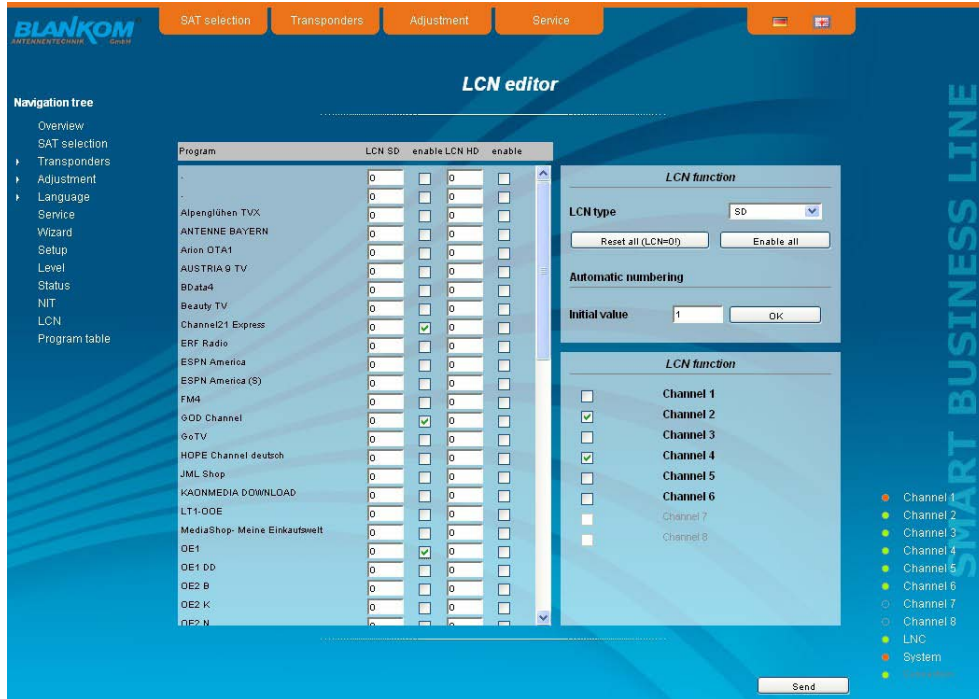
Buttons: Read, Import, Export, Send

For changes of the NIT is to be noted that these changes must be made in the NIT **of each module**. It is therefore recommended to prefer the automatic NIT processing of the manual NIT processing.

### 8.3.12 Menu "LCN"

The allocation of a logical channel number (LCN) is a service that allocates a serial number to each TV program in all the channels, which are enabled for this service. If the set-top box supports this service at the subscriber, the TV programs are offered in the order established by program numbers.

To use this service, the LCN processing of all appropriate channels must be turned on. Then you can set the program order. It should be noted that the numbering is done separately for HD and SD programs. When you first load the LCN editor there in the left table cell, all the transferred services of the channels are listed that were marked in the lower right table for LCN processing. TV channels are already pre-selected, separated for HD and SD programs, all services are still provided with the number 0. You can now assign the LCN for the selected program automatically by pressing the "OK" button in the right box "automatic numbering", starting with the number registered there. The numbers can also be selected manually: individually by clicking the corresponding box in the left table, or all programs of a type by pressing the "Enable all" button. The numbering itself is performed again by pressing the "OK" button. In order to reverse the numbering for HD or SD programs, one selects the corresponding LCN type in the right table field and press the "Reset all (LCN = 0)".



### 8.3.13 Menu "Program table"

The program table gives an overview of the channel allocation of the module. The overview begins with the output frequency and output channel identifier for each transmission channel. Under them all TV and radio programs are listed, which are transmitted in this channel. By clicking the "Save" button, the program table can be saved as a text file on the connected PC.



## 9. Factory settings

A short pressing of the reset button on the front of the module causes a reboot, i.e. it will restart the module and all stored values are adjusted. If the module 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 module is set to the following:

### Input parameters

	IN	IN/OUT
Mode		Input
LNB control	On	On
DiSEqC	Off	Off
Satellite	A	A
Tonburst	Off	Off
22 kHz	On	Off
Voltage	18V	18V
	Scan	Scan
		Send
<i>Program tables for</i>		
Satellite	Astra 19,2 Degree	Astra 19,2 Degree
Band	High	Low
Polarisation	horizontal	horizontal

### Output parameters

*Output level*

Nominal level: 82 dBµV

---

*Standard Values*

QAM constellation	256
Symbol rate	6900
Spectrum position	normal
QAM standard	DVB-C (Annex A)
Mode	Transcoder
NIT processing	Off
SDT processing	Off
CAT processing	Off
Program filter	Off
LCN processing	Off

### Channel settings

No.	Tp name	Downlink	Input	Program	SID	Mode
1	UPC	11670	IN	ARD digital	D 306 (306000 kHz)	arte 28724
2	DVB-S	11719	IN	ARD HD	D 314 (314000 kHz)	EinsExtra 28721
3	SKY	11758	IN	ARD digital	D 322 (322000 kHz)	Einsfestival 28722
4	betarear11797	11797	IN	ZDF Vision	D 330 (330000 kHz)	EinsPlus 28723
5	ARD	11836	IN	ARD digital	D 338 (338000 kHz)	Phoenix 28725
6	DVB-S	11875	IN	ARD digital	D 346 (346000 kHz)	Test-R 28726
7	SKY	11914	IN	ProSiebenSat.1	D 354 (354000 kHz)	
8	ZDFvision	11953	IN	RTL World	D 362 (362000 kHz)	
9	UPC	11992	IN			
10	SKY	12031	IN			
11	x	12070	IN			
12	ARD	12109	IN			
13	x	12148	IN			
14	RTL World	12187	IN			
15	Globecast	12226	IN			
16	ARD WDR	12265	IN			
17	UPC	12304	IN			
18	CANALDIG	12343	IN			
19	SKY	12382	IN			
20	ARD	12421	IN			
21	BetaDigita	12460	IN			
22	CANALDIG	12515	IN			
23	ProSieben	12544	IN			
24	CANALDIG	12574	IN			
25	SES	12603	IN			
26	MEDIA	12633	IN			
27	-	12662	IN			

### Setup settings

*GUI settings*

- Help information within the status line of the browser
- Display all system files
- Display top line register
- Display start page
- Display status on right
- Optimization for low-speed data connectivity

Output frequency raster: Standard B/G (7.8 MHz)

Fan mode: Automatic

Activate user and keyword check

### Network settings

*Web server*

DHCP Client: Info

IP number	192	168	35	22
IP subnet mask	255	255	255	0
Gateway	0	0	0	0
DHCP from	192	168	35	95
DHCP to	192	168	35	99

## 10. Conversion tool to produce a compliant TS file for QAMOS-MEDIA

With the media player option of QAMOS-MEDIA it offers the opportunity to install a TS file from a PC connected via network with the SBL module. The file must be present in a transport stream format conforming to the DVB standard. To create a file in a compliant transport stream format, the BLANKOM provides a conversion tool. This can generate from a large number of video file formats a corresponding file in the transport stream format, which process the QAMOS-MEDIA and can provide as an additional channel to the customer.

### 10.1 Functional scope

“VideoKonverter.jar” intended for conversion of video files into the required transport stream format of the player. Thereby it is ensured that the resulting file has a constant bit rate, audio and video bit rate are set correctly and the meta data of the transport stream can be configured as desired. The user can choose between 3 resolutions SD, HD 720 and HD 1080.

“tsmux.exe” is an application that optimizes the generated transport stream for the player: the player is able to process transport streams, in which the null packets are compressed. This compression can be activated by means of “tsmux.exe”.

The generation of the transport stream takes place by means “FFmpeg”. However, it is based on a buffer model that is different from the player. Therefore, „tsmux.exe“ offers the possibility to arrange the packets in the transport stream so that caused by the wrong buffer model continue count error can be suppressed.

### 10.2 Installation requirements

The conversion tool “VideoKonverter.jar” is a Java program, which offers the advantage, that it is platform independent. For the preparation and installation of the program the following conditions are necessary:

1. Check the installed version of Java on your PC

For this check it necessary to establish an internet connection to the PC. To test it, the following link is called in the used browser:

<http://www.java.com/de/download/testjava.jsp>

If necessary, the Java software must be brought up to date by means of update offered there.

Alternatively, the Java version to be tested without an internet connection using command prompt as follows:

Open the command prompt by typing

java-version

followed by <Enter>.

Result is either an error message if Java is not installed or the version information of the existing Java installation.

2. Installing the necessary software “FFmpeg” to run the program

The software “ffmpeg”, necessary for the execution of the conversion tool, is available at the following link:

[www.ffmpeg.org](http://www.ffmpeg.org)

By clicking the “Download” button on this page you take to the corresponding versions, which are available for the individual operating systems. We recommend going to use only the 32-bit versions.

The current download link addresses are for

Linux: <http://ffmpeg.gusari.org/static/>

Windows: <http://ffmpeg.zerano.com/builds/>

MacOS: <http://www.evermeet.cx/ffmpeg/>

An installation of FFmpeg in the sense of a self-running process is not required. The downloaded, compressed files must be extracted into a target path freely chosen. This path should be reminded, because it is used later in the “VideoKonverter” software as an auxiliary path.

3. To preview the selected video the player installed as the default program is used. In Windows, this is for example the media player.

By BLANKOM falls the recommendation of a video player on the VLC player, because this player knows how to deal with non-standard video formats. If even one other video player is used, it can be used.

If you want to use the VLC player, the download is available at the following link:

<http://www.videolan.org/vlc/#download>

The installation of the VLC player runs on a self-running routine, which starts by calling the vlc.exe. This makes the program binds into the operating environment and can be easily “found” by the video converter tool.

When you install the software (Java, VLC player) it should take some time and read the message window to not allow third-party programs or other promotional activities.

For the following software releases, the functionality of the video converter tool has been tested successfully:

Operating systems: - Windows XP and 7

Java: - from version 6

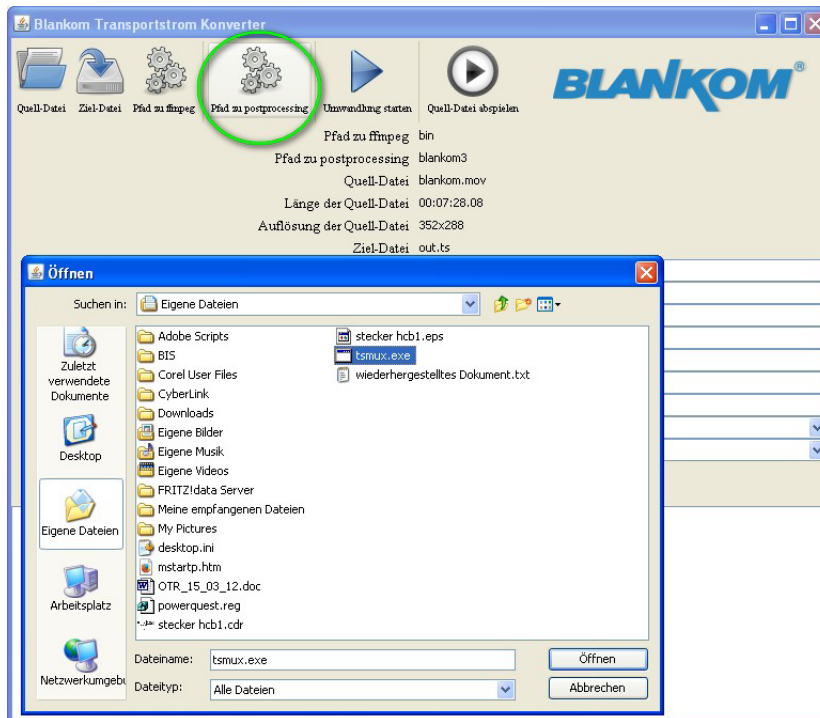
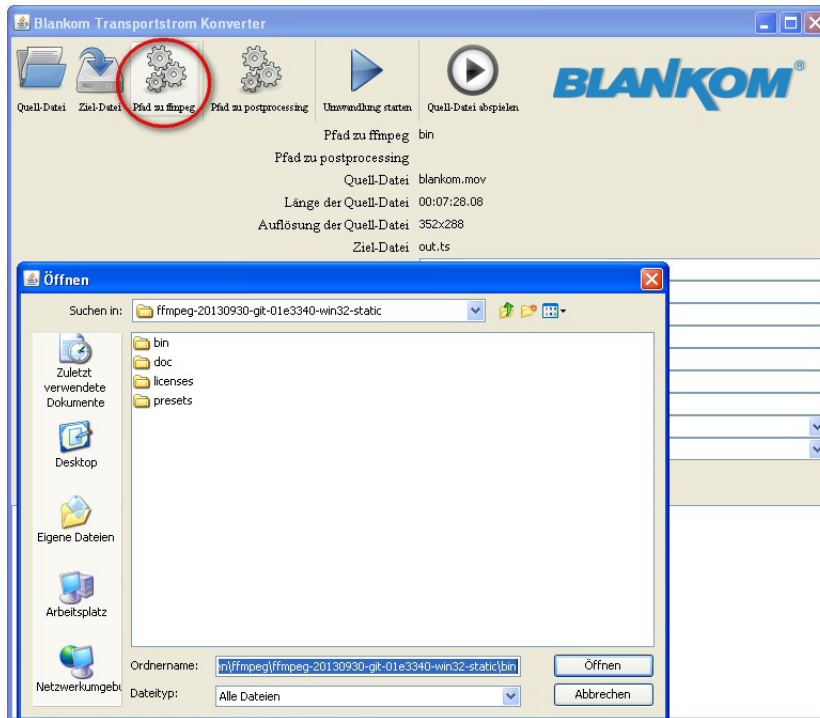
FFmpeg: - for Windows XP/ 7- 32bit from version 01e3340

### 10.3 Installation and integration of the conversion tool on a Windows (XP) system

First, the inclusion of the auxiliary path and the first conversion is illustrated.

After the files are unpacked from FFmpeg to the selected folder, you can also link this path in the converter. You simply select the button “path to ffmpeg” (pictured in red) and click their way there through their own folder structure to the path where the file was unzipped. There, select the “bin” folder and confirm by clicking the button “Öffnen” or “Open”.

In order to perform post processing, you have to link the path to "tsmux.exe" in the converter. Then, click the button "path to post-processing" (pictured in green) and click it there by their own folder structure to the path where the file is located. There, choose the file "tsmux.exe" and confirmed with the click on the button "Öffnen" or "Open".





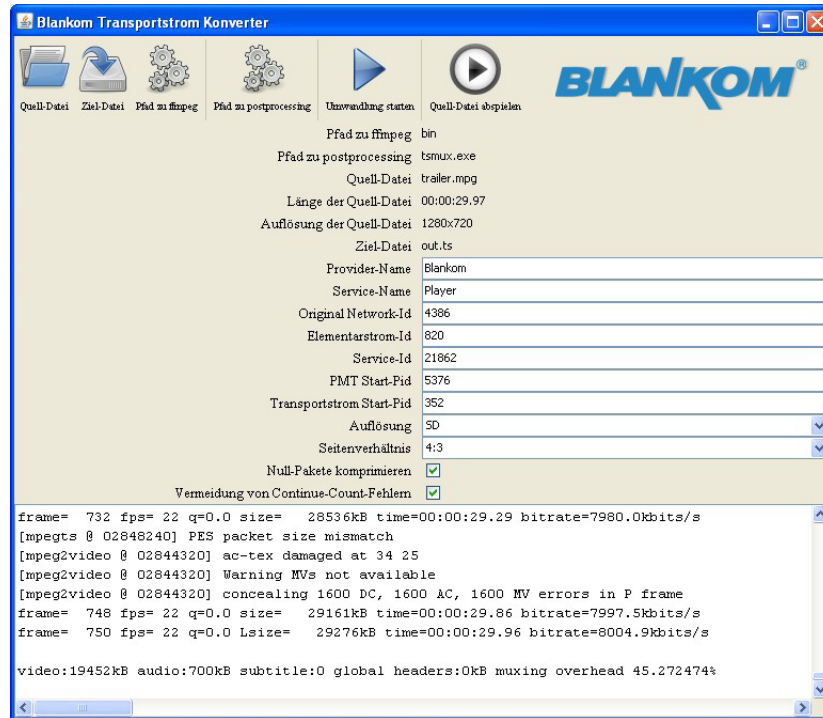
After the successful completion of the installation of the playback tool, you can select video converter already in a file. In the following, a video file is selected and clicked "Quell-Datei abspielen". This will open the video player and returns the selected file.

Using the button "Ziel-Datei" the path and name for the file is to be created are defined. The file extension will be denominated in any case \*.ts and can not be changed. For a distinction between the individual films a unique name should be used, e.g. Infofilm.WBG.SD.4:3.PID65535.ts

If an error was made when entering - as a numerical figure is outside the permitted range - or were required fields not filled in, the start of transformation is blocked. Incorrectly filled fields are highlighted in red. The boundaries of the allowed values are displayed as a tooltip when the mouse pointer rests over the input field a long period of time.

After that the setting of the desired output parameters for the conversion follows. A detailed overview of the range and standard information found in the glossary of the program (see chapter 10.5). It should be stated only briefly that it is possible to create from SD also HD content, however considering that image information is added. The quality is therefore not to be compared with original HD content.

It should be noted that without configuring the path for post-processing is not possible to optimize the transport stream file, i.e. the two checkboxes "Null-Pakete komprimieren" and "Vermeidung von Continue-Count-Fehlern" remain inactive.



## 10.4 Error prevention

1. If you want to create HD video from SD material so it is to be reckoned with qualitative degradation because there data be added that were not in the original.
2. Provider name, service name, and original network ID are system dependent and are used to allocate the net sites of the operator and adjust its network.
3. To avoid serious disturbances in the network, the elementary stream ID should be unique throughout the network.

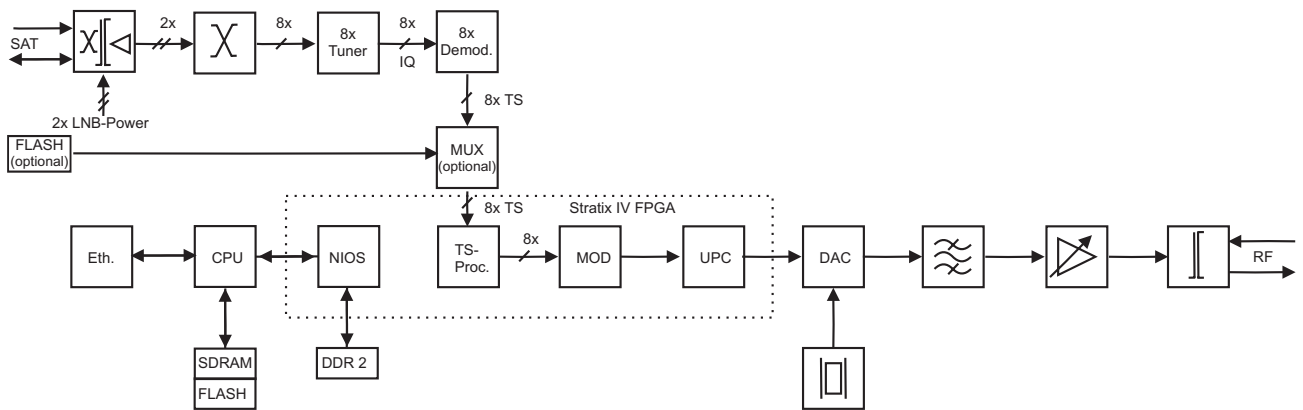
## 10.5 Glossary - parameter declaration [min. ... max. range]

Provider-Name	[freely selectable]	(provider name)
Service-Name	[freely selectable]	(service name)
Original Network-Id	[0 ... 65.536]	(original network ID)
Elementarstrom-Id	[256 ... 8.191]	(elementary stream ID)
Service-Id	[0 ... 65.536]	(service ID)
PMT Start-Pid	[4.096 ... 8.191]	(PMT start PID)
Transportstrom Start-Pid	[0 ... 65.536]	(transport stream start PID)
Auflösung	SD, HD 720, HD 1080	(resolution)
Seitenverhältnis	4:3, 16:9, 24:10	(aspect ratio)
Null-Pakete komprimieren <sup>1</sup>	yes, no	(compress null packets)
Vermeidung von Continue-Count-Fehlern <sup>2</sup>	yes, no	(avoid continue count errors)

<sup>1</sup> This switch enables the compression of null packets in the transport stream. Thus, a significant reduction in file size is achieved especially for files that have a big difference between video and transport stream bit rate. However, the resulting files are not compatible with conventional software programs. These compressed files are used only by the QAMOS-MEDIA or compatible devices of BLANKOM company.

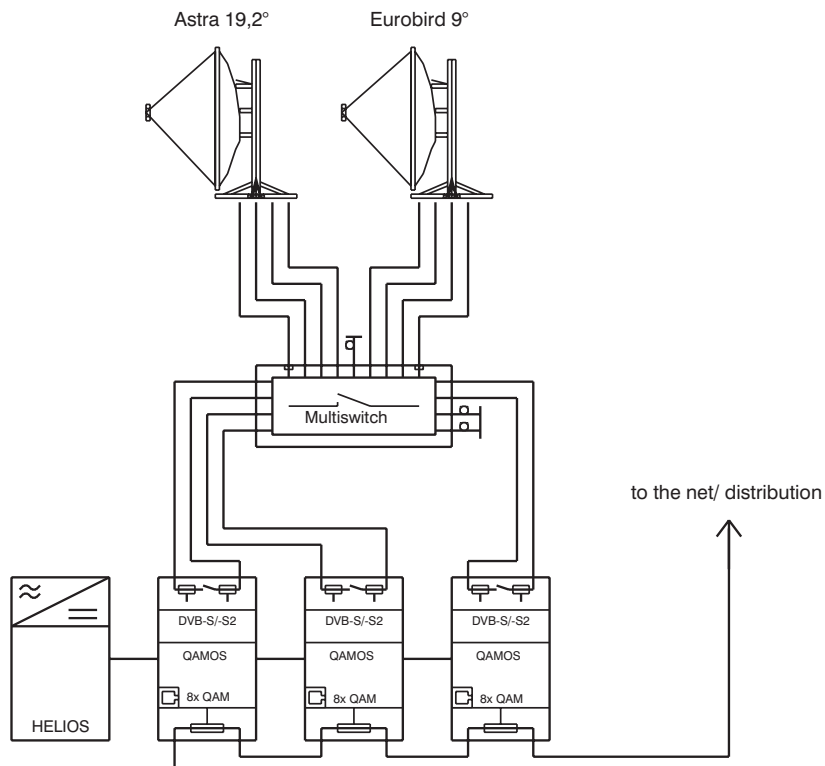
<sup>2</sup> This switch activates a function which suppresses the conversion resulting from the continue count errors due to the different buffer models. It is strongly recommended to enable this option in order to achieve optimal results.

## 11. Block diagram



## 12. Application example

Conversion of 24 transponders into DVB-C (256 QAM)





### 13. Technical data

#### SAT IF input

Frequency range	950...2150 MHz
Frequency step	1 MHz
AFC range	± 3 MHz (SR < 10 MSps) ± 5 MHz (SR ≥ 10 MSps)
AGC level range	64 ... 94 dBμV
Connector	F socket
Through loss	≤ 3 dB
Impedance	75 Ω
LNB voltage	14/ 18 V
LNB current	max. 1x 0.4 A
DiSEqC	1.0

#### DVB-S demodulator (QPSK)

Symbol rate	1...45 MSps
Code rate (Viterbi)	1/2, 2/3, 3/4, 5/6, 7/8
Roll off	35 %
Signal processing	EN 300 421 [1]

#### DVB-S2 demodulator (QPSK, 8PSK)

Symbol rate	QPSK	2...47 MSps
	8PSK	2...31.5 MSps
Code rate (LDPC)	QPSK	1/4, 1/3, 2/5, 1/2, 3/5, 2/3, 3/4, 4/5, 5/6, 8/9, 9/10
	8PSK	3/5, 2/3, 3/4, 5/6, 8/9, 9/10
Roll off		20, 25, 35 %
Signal processing		EN 302 307 [2]

#### QAM modulator

Input data rate	max. 75 Mbps acc. adjustment symbol rate & QAM constell.
Symbol rate	1.0 ... 7.2 MSps
QAM modulation	DVB-C
QAM constellation	16; 32; 64; 128; 256
Roll off	15%
Interleaving	Conv. l=12
Forward error correction/ FEC	Reed Solomon/ (204, 188.8)
PSI-/ SI processing	disconnectable
Zero stuffing	continuously
Signal processing	EN 300 429 [3]
Test signals:	
QAM test signal	according adjustment symbol rate & QAM constellation
Measurement signal	unmod. carrier (signal level)

#### RF output

Output frequency range	45 ... 862 MHz
Tuning step	1 kHz

#### 5100.01:

Max. output level	85 dBμV (per channel)
Total level settings	62 ... 82 dBμV (1 dB steps)

#### 5100.02:

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

MER	≥ 45 dB
Shoulder attenuation	≥ 53 dB
Spurious 45...862 MHz	≥ 60 dB
max. frequency stability	30 kHz
Output level stability	± 0.5 dB

#### Operating parameters

Voltage/ current	12 V ± 0.2 V/ max. 2.6 A
Residual ripple of the supply voltage	10 mV <sub>pp</sub>

#### Environmental conditions

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

#### Miscellaneous

Dimensions (l x w x h)	46 x 262 x 167 mm
Weight	1,190 g

#### Delivery content

1x supply cable
1x network cable
2x F connecting cable 140 mm
2x terminating impedance
1x DIN rail clip
1x mounting accessories

### 14. Glossary

8PSK  
AFC  
AGC  
BW  
CA  
CAT  
DAC  
DHCP  
DIN  
DiSEqC  
DNS  
DVB  
EMC  
EPG  
ETSI  
FEC  
FPGA  
GSM

8 Phase Shift Keying  
Automatic Frequency Control  
Automatic Gain Control  
Bandwidth  
Conditional Access  
Conditional Access Table  
Digital-to-Analog-Converter  
Dynamic Host Configuration Protocol  
Deutsches Institut für Normung  
Digital Satellite Equipment Control  
Domain-Name-Server  
Digital Video Broadcasting (-C Cable, -S Satellite, -S2 Satellite 2, -T Terrestrial)  
Elektro magnetic conformity  
Electronic Program Guide  
European Telecommunications Standards Institute  
Forward Error Correction  
Field Programmable Gate Array  
Global System for Mobile Communications



GUI	Graphical User Interface
HD TV	High Definition Television
HTTP	Hypertext Transfer Protocol
ID	Identifier
IF	Intermediate Frequency
IIC	Inter-Integrated Circuit (I <sup>2</sup> C bus, data bus within device)
IP	Internet Protocol
LAN	Local Area Network
LCN	Logical Channel Number
LDPC	Low Density Parity Check Code
LED	Light Emitting Diode
LNB	Low Noise Block Converter
MAC	Media Access Control
MER	Modulation Error Ratio
MIB	Management Information Base
MPEG	Moving Picture Experts Group
MPTS	Multi Program Transport Stream
Nios	product name of a processor
NIT	Network Information Table
PC	Personal Computer
PSI	Program Service Information
QAM	Quadrature Amplitude Modulation
QPSK	Quadrature Phase Shift Keying
RF	Radio Frequency
RU	Rack unit
SDT	Service Description Table
SD TV	Standard Definition Television
SI	Service Information
SNMP	Single Network Management Protocol
SPTS	Single Program Transport Stream
TS	Transport Stream
TV	Television
URL	Uniform Resource Locator
WAN	Wide Area Network

## 15. Bibliography

- [1] EN 300 421: Digital Video Broadcasting (DVB): Framing structure, channel coding and modulation for 11/ 12 GHz satellite services
- [2] EN 302 307: Digital Video Broadcasting (DVB): Second generation framing structure, channel coding and modulation systems for Broadcasting, Interactive Services, News Gathering and other broadband satellite applications
- [3] EN 300 429: Digital Video Broadcasting (DVB): Framing structure, channel coding and modulation for cable systems
- [4] 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
- [5] EN 50083-2 : Cabled distribution systems for television and sound signals. Electromagnetic compatibility for equipment; EN 50083-2:2001
- [6] RFC 1157 Request for Comments (RFC): RFC Database URL: [Http://www.rfc-editor.org/rfc.html](http://www.rfc-editor.org/rfc.html)



## 16. Notes on the device software

Device Software of the QAMOS and QAMOS-MEDIA  
Copyright (C) BLANKOM Antennentechnik GmbH Bad Blankenburg

This device software based on top of Linux 3.6.8 are free software: you can redistribute it and/ or modify it under the terms of the GNU General Public License as published by the Free Software Foundation, either version 2 of the License, or (at your option) any later version.

You should have received a copy of the GNU General Public License along with FooBar. If not, see <<http://www.gnu.org/licenses/>>.

The source code is available upon request.  
Please address requests to:

BLANKOM Antennentechnik GmbH  
Hermann-Petersilge-Straße 1

07422 Bad Blankenburg  
Germany

## 17. Document history

Version	Date	Modification	Author
1.00	16.11.2010	basic document	Häußer
1.01	01.12.2010	first revision	Häußer
1.02	15.02.2011	revision	Häußer
1.03	17.03.2011	revision chapter 7.3.10	Häußer
1.04	19.01.2012	insert changes of software release 2.0	Häußer
1.05	13.09.2012	revision chapter 7, 11	Häußer
1.06	28.05.2013	insert unicable	Häußer
1.07	09.07.2013	insert QAMOS-MEDIA	Häußer
1.08	23.10.2013	insert conversion tool (chapter 9)	Häußer
1.09	07.11.2013	insert multiplexers (QAMOS-MEDIA-MUX)	Häußer
1.10	14.11.2013	insert satellite scan	Häußer
1.11	05.12.2013	revision conversion tool	Häußer

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

# CE Declaration of Conformity

**Manufacturer:** BLANKOM Antennentechnik GmbH  
Hermann – Petersilge – Straße 1  
07422 Bad Blankenburg  
Germany

**Product Name:** SAT-TV Transmodulator

**Type Name:** QAMOS, QAMOS-MEDIA

**Type N°:** 5100.01, 5100.02

BLANKOM Antennentechnik GmbH confirms that the mentioned products meet 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, 2010-11-16



Dr. Piero Kirchner  
(Managing Director)