

DVB for ALL!

TROPHY



DATA-SHEET

MVDS

HD&UltraHD TERRESTRIAL
MICROVAWE DVB-S2 BROADCASTING

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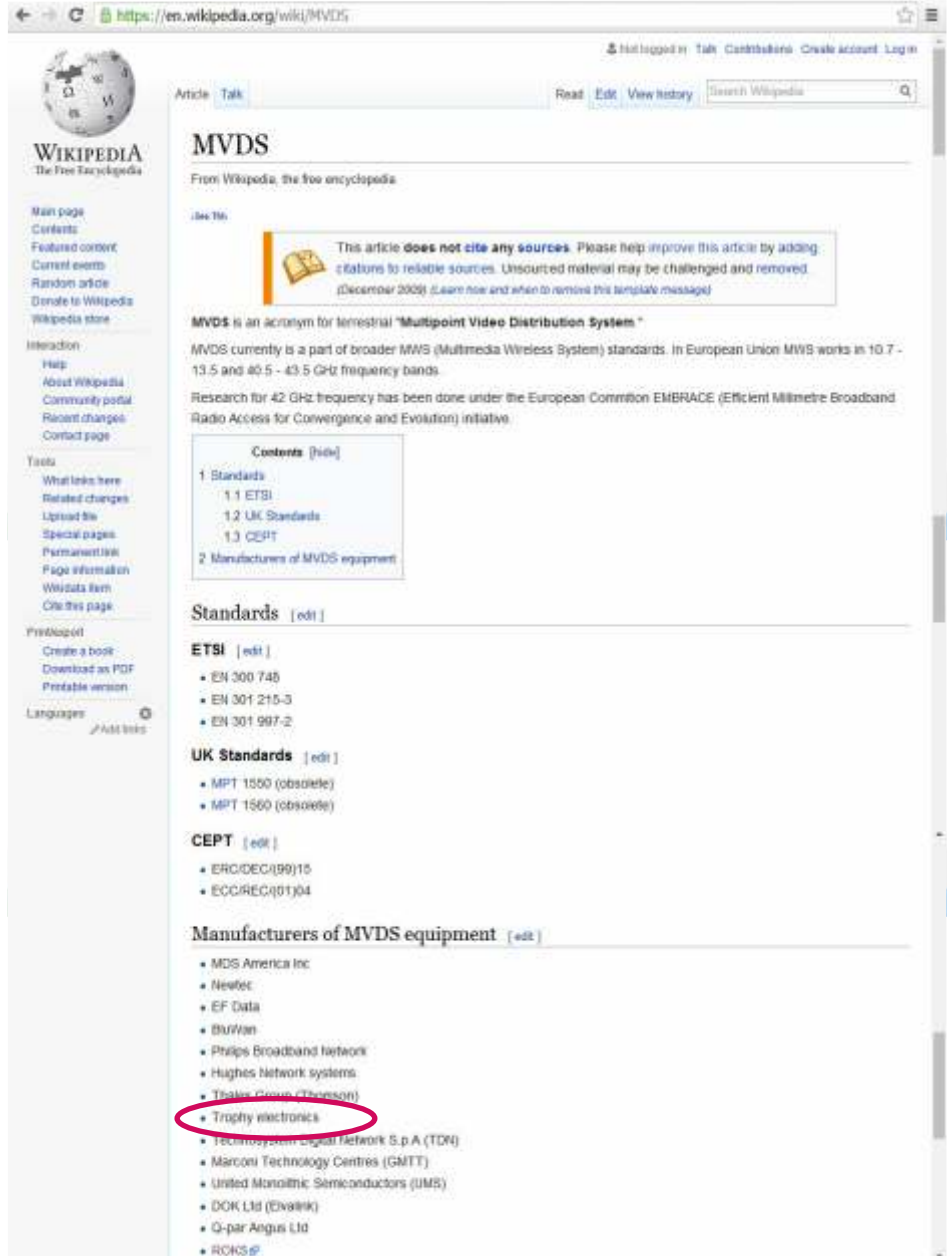
INTRODUCTION

TROPHY MVDS System is a high-tech, based on know-how, cost-effective business solution. In particular, it helps customers take full advantage of digital TV. TROPHY MVDS System offers two main services:

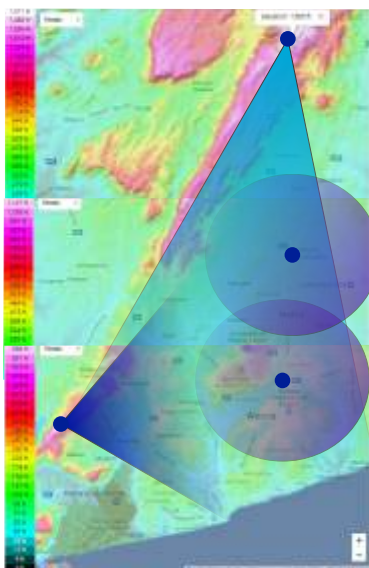
1. Wireless Digital TV - direct terrestrial broadcasting of SD, HD and Ultra HD DVB-S2 digital TV in any part of the 3.7...30GHz range. Users of services are individual and corporate clients, medium-sized businesses and the hotel industry.

Customers installs: 0.4 ... 0.6 m antenna with LNB; DVB-S2 Set-Top-Box with embedded TROPHY-ACCESS decoder.

2. Digital wired cable television built on cluster technology. The source of the signal for a single apartment building or group of buildings is an inexpensive DVB-S2 to DVB-C transmodulators.



INTRODUCTION



Advantages of TROPHY MVDS solution:

100% coverage of the territory of city without cabling. 100% guaranteed delivery to all customers high-quality television service at a competitive price.

unique headend equipment and unique equipment of DVB-S2 to DVB-C transmodulation with descrambling of the full transponder package.

Terrestrial microwave broadcasting implies the obligatory presence of the line of sight between transmitting antenna and receiving antenna of subscriber.

The exact location of the MVDS repeaters must be determined in the special Project Documentation.

The advantages of MVDS-TROPHY DVB-S2 terrestrial broadcasting:

1. Extremely low transmitter power (2-4W) to cover a radius up to 30km.

Due to what is achieved such energy efficiency?

The fact is that, for example, in the range of 10.7-12.5 GHz, the gain of a subscriber 0.6m offset antenna is equal to 36 dB or 4000 times in signal power.

For example, the T2 UHF antenna gain is, on average, 12 dB or 16 times in power.

That is, the transmitter power in the range of 10.7-12.5GHz may be less than the transmitter power in the UHF range by 300 times!

Secondly, for the receiver to work correctly in the DVB-S2 standard, you need to maintain a threshold signal-to-noise ratio above 7dB. To work in DVB-T2, it is necessary to achieve a signal-to-noise ratio above 11dB.



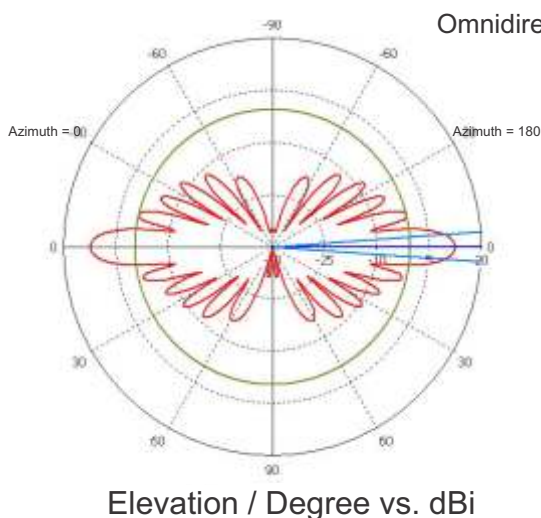
2W transmitting Converter and Omnidirectional Slot Antenna

Thus, the theoretical energy efficiency of DVB-S2 broadcasting is higher by $36 + 4 = 40$ dB or 10000 times! That is, the transmitter power in the range of 10.7-12.5GHz may be less than the transmitter power in the UHF band 10 thousand times!

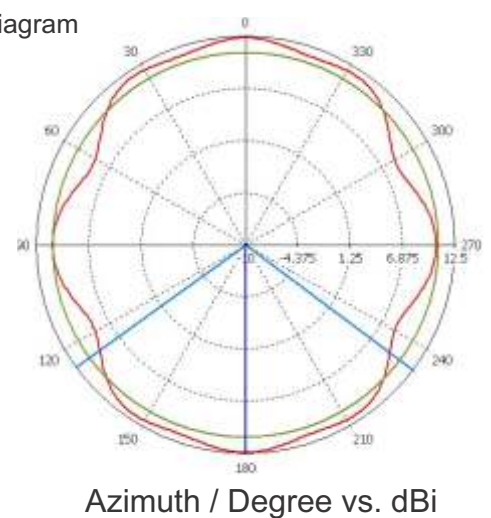
Of course, the losses in the atmosphere in the range of 10.7-12.5 GHz are much higher than the losses in the UHF range. Practical broadcasting showed, however, the energy efficiency of MVDS broadcasting at least 1000 times.

Therefore, MVDS Block Up Converter with a group power of 2W (0.025W on carrier!) serves a territory with a radius up to 30 km.

THE ADVANTAGES OF MVDS



Omnidirectional Slot Antenna diagram



2. Using of the standard LNB's and standard satellite receiving 0.4m-0.6m

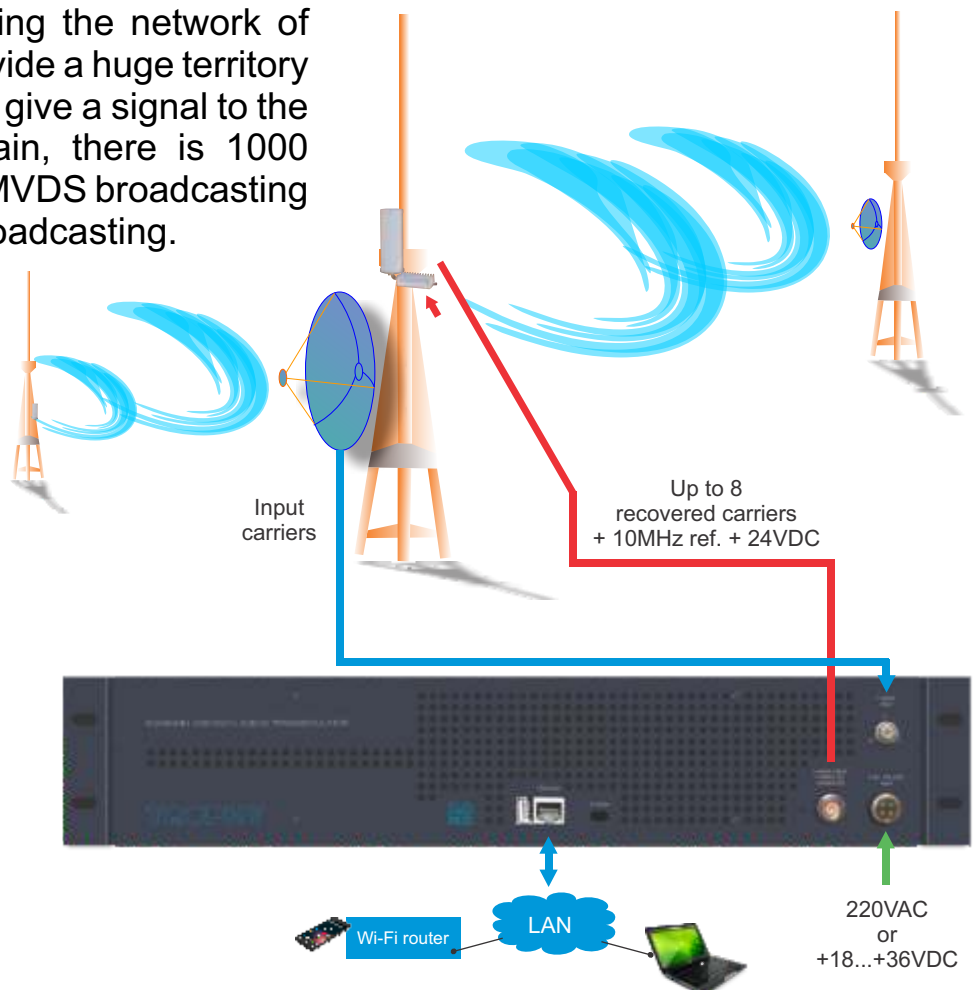
In MVDS, we use two types of signal modulation: QPSK and 8PSK, that is phase modulations. To receive a signal it is sufficient to use inexpensive down-converters with low linear mixer requirements.

For example, in MMDS broadcasting, amplitude modulation methods of the 16QAM and 64QAM signal are used, which implies the use of ultra-linear modes in receiving equipment. And this, in turn, leads to higher prices for down-converters.

The most significant reduction in the cost of creating a subscriber network is achieved in the 10.7-12.75 GHz band. Here can be used household LNB worth \$1-2. In other ranges, non-standard converters have to be used, which increases the cost of down-converters and prices become comparable with MMDS converters.

3. Extremely simple and inexpensive way to retransmitting a signal.

ATD-54 transmodulators, 2W transmitting converter and slot antenna are used to retransmit the signal with full carrier recovery. The number of such retransmissions are theoretically unlimited. Using the network of such repeaters we can provide a huge territory with a television signal and give a signal to the "shadow" zones. And again, there is 1000 times energy efficiency of MVDS broadcasting compared with DVB-T2 broadcasting.



4. The presence of a wide frequency spectrum, compared with the UHF range.

Practically, one transmitting converter provides a signal bandwidth up to 800 MHz. With such a band, it is possible to broadcast up to 1700 Mbit of useful data. For example, using multi-pass transcoding technology, it is possible to form a packet of 100SD channels (1 Mbit each) + 300HD channels (2 Mbit each) + 40UltraHD channels (25 Mbit each).

5. Own DVB-S2 modulators/multiplexers, original TROPHY-ACCESS Conditional Access System and low-cost Set-Top-boxes.

This factors allows you to install an extremely inexpensive Head-End with the highest functionality and quality.

List of BUCs which are producing now:

CN : 3.700 ~ 4.200 GHz (LO=5.15 GHz)

CA : 5.850 ~ 6.425 GHz (LO=4.9 GHz)

CF : 5.850 ~ 6.725 GHz (LO=4.9 GHz)

CB : 6.425 ~ 6.725 GHz (LO=5.275 GHz)

CE : 6.425 ~ 7.025 GHz (LO=5.275 GHz)

CC : 6.725 ~ 7.025 GHz (LO=5.75 GHz)

XA : 7.9 ~ 8.4 GHz (LO Freq = 6.95 GHz)

L : 10.7 ~ 11.5 GHz (LO Freq = 9.75GHz)

E : 11.70 ~ 12.50 GHz (LO Freq = 10.75GHz)

D : 12.25 ~ 12.75 GHz (LO Freq. = 11.3GHz)

G : 12.75 ~ 13.25 GHz (LO Freq. = 11.80GHz)

F : 13.00 ~ 13.25 GHz (LO Freq. = 12.05GHz)

B : 13.75 ~ 14.25 GHz (LO Freq = 12.80GHz)

C : 13.75 ~ 14.50 GHz (LO Freq = 12.80GHz)

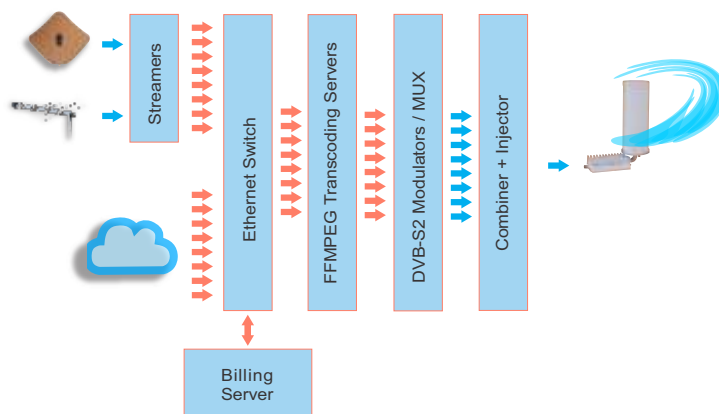
A : 14.00 ~ 14.50 GHz (LO Freq = 13.05GHz)

R: 14.50 ~ 14.80 GHz (LO Freq = 13.55GHz)

O : 17.30 ~ 17.70 GHz (LO Freq. = 16.35GHz)

KA : 29.5 ~ 30.0 GHz (LO Freq = 28.55 GHz)

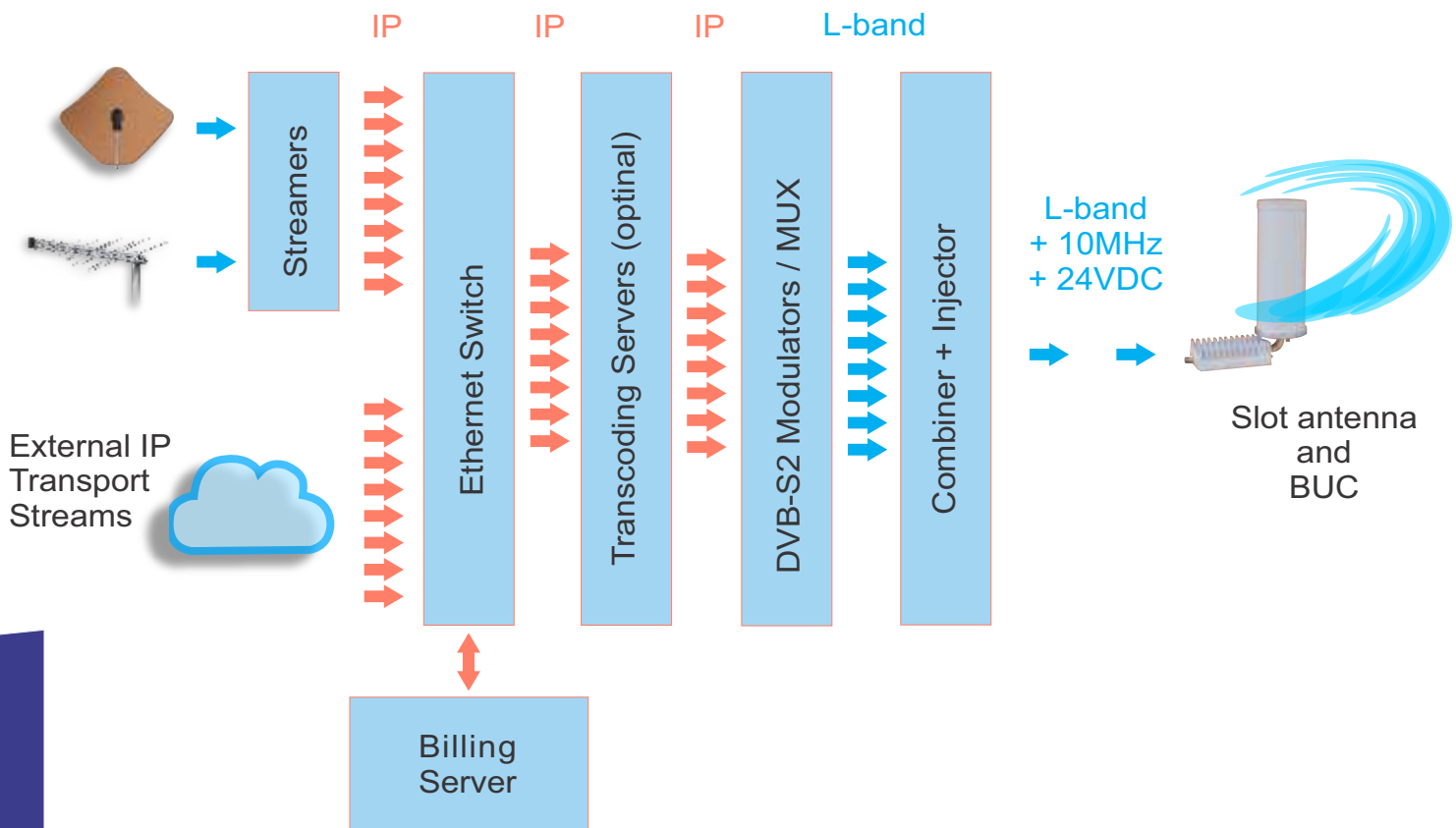
TROPHY



TROPHY MVDS Head End

Design of the TROPHY MVDS Head-End is very simple due to using of IP connection between modules. Heart of system is low-cost and high-efficient DVB-S2 Modulator / 120ch Multiplexer. Almost all the major Head-End components are based on the Linux software. For example, the streamers, the transcoding servers, the multiplexers, the modulators - all this are Linux computers. From this fact derives the main advantage of the Head-End, namely the fact that due to the constant improvement of the software we allow all our customers to respond quickly to the demands of time.

The Head-End is the part of a complete system of commercial broadcasting, which the TROPHY company offers its customers. The Billing System, the Conditional Access System and the Set-Top-Boxes allow our customers to get out “turnkey” broadcasting business. Trough the use of modern electronic FPGA components and original software solutions the cost of the equipment is one of the lowest in the market.



TROPHY MVDS HEAD-END

TROPHY



AMD-53-S2 Modulator / MUX

GENERAL INFORMATION

- AMD-53-S2 DVB-S2 MODULATOR / MULTIPLEXER is a brand new modulator/multiplexer designed for applications over satellite in full compliance with DVB-S2 standard.
- The AMD-53-S2 DVB-S2 MODULATOR / MULTIPLEXER converts MPEG Transport Stream over IP into QPSK/8PSK signal to transmit them in MVDS Block UP Converter (BUC).
- DVB-S2 carrier from available up to 120 transport streams are multiplexed and generated. The internal processing allows the output of DVB signals in full HD resolution.
- The device receives a data stream via Gigabit Ethernet. It can receive up to 120 transport streams from the TROPHY HeadEnd or from another IP sources included MPEG transport streams.
- A high-performance FPGA does the analogue TV modulation and the freely adjustable up-conversion into L-band range (950 ... 2150MHz). A high-speed digital→analogue converter (DAC) is responsible for the excellent output signal.

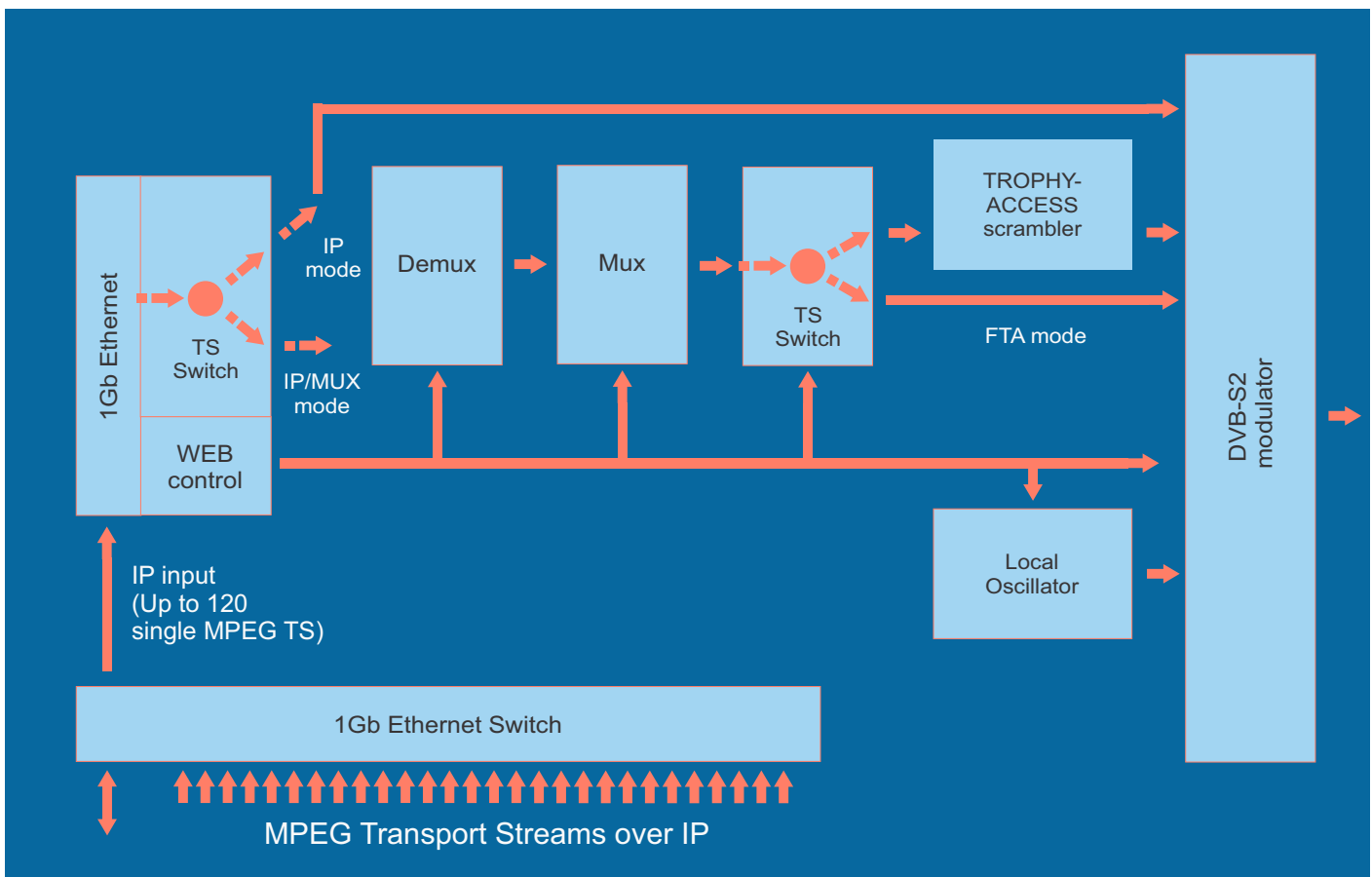


MAIN FUNCTIONS OF AMD-53-S2 MODULATOR / MULTIPLEXER:

- covers the full L-Band range (950...2150 MHz) and offers bit rate from 2 Mbps up to 100 Mbps; provides up to 120 independent multiplexed MPEG transport streams to a single carrier, with built-in support for TROPHY-ACCESS 3.0 Conditional Access System for content protection.
- software license to enable TROPHY-ACCESS 3.0 scrambler solution;
- takes full advantages of the IP technology to provide a cost effective, highly reliable and flexible solution;
- has highly efficient multiplexing algorithms with PCR correction;
- provides transport Stream rates up to 100 Mbit/s;
- supports all PIDs of services, including EIT and LCN;
- supports Full PID remapping;
- provides effective compensation of network jitter;
- supports Control and Set-Up via WEB-interface;
- has high performance and reliability.

AMD-53-S2 MODULATOR/MULTIPLEXER integrates the CycloneV core technology required to perform high quality modulation based on TROPHY expertise. It provides customers with a best in class performance, providing a high SNR value, excellent shoulder levels and lowest phase noise.

AMD-53-S2 MODULATOR / MULTIPLEXER provides a high performance channel spectrum. This results gives an efficient transmission in QPSK and 8PSK modes. The user-friendly Embedded Web Browser ensures ease of use and enables full configuration of the modulator and multiplexer, including signal input management, selection of modulation type, control of the mute/unmute conditions for the RF output signal, PIDs filtering&remapping and PCR correction. WEB-interface also offers monitoring of all input streams.



AMD-53-S2 MODULATOR/ MUX

INSTALLING AND OPERATING INSTRUCTIONS

SAFETY INSTRUCTIONS

When assembling and commissioning the AMD-53-S2 MOD/MUX and executing the settings, always follow the accompanying instructions exactly.

The devices are not to be assembled and brought into use by anybody who is not an authorised technician.

When components are being installed in areas where reception is important, ensure that EMC regulations are observed.

All assembly, installation and cable connection must take place when no electricity has been connected.

The provisions of DIN EN 50083 must be observed at all times when working with the equipment. In particular, DIN EN 60728-11 regarding safety may on no account be ignored.

GENERAL DESCRIPTION OF FUNCTIONS

The device is transport stream multiplexer and DVB-S2 modulator. With them the user's own digital program "bouquets" in the DVB-S2 carrier can be produced. The output signal are provided via RF-output and configurable by IP interface. The signal can be broadcast or fed into the MVDS or satellite TV network. Depending on the application, the device are pre-configured by hardware. Using the integrated user interface, the operating parameters can be varied within wide limits.

Deliveries are made with the following configurations/ device versions:

Features	Part No.			
	1001	1002	1003	1004
TROPHY-ACCESS CAS		+		+
EPG (EIT) supporting			+	+

Up to 120 input elementary transport streams are multiplexed at device and inserted into the output DVB-S2 carrier with maximum bit rate of 100 Mbps and is transmitted via the N-type connector.

The output signal contains all the tables necessary to the program and associated services (PAT, PMT, SDT, NIT and TDT). Part No. 1003 and 1004 supports EPG (EIT tables) too.

MULTIPLEXER/REMULTIPLEXER/PID FILTER

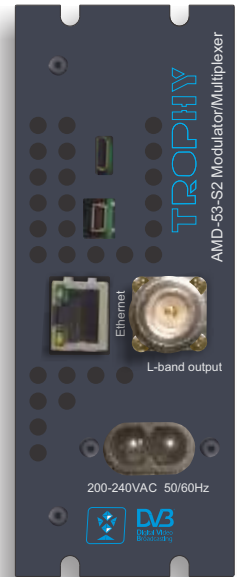
A multiplexer has been integrated into the AMD-53-S2 device for processing the incoming transport streams. On condition that in these transport streams an adequate transmission rate is available, or additional transport volume is achievable by raising the transport streams bit rate, new services and/or program components can be added.

PID filtering is enable in case of IP-input mode only. A raw MPEG Transport Stream consists data of all the services transmitted on a particular transponders. The task on the remux/mux side is to filter out the interesting packets and schedule them to their target DVB-S2 carrier.

MPEG TS packets are identified by the Packet ID, the PID. This is a 13-bit number located in the 2nd and 3rd byte of a TS packet.

INSTALLING FUNCTIONAL ELEMENTS AND FACTORY SETTINGS

Explanation of the functional elements:	
Power (green LEDs scale)	Switched ON, 30 sec after power restart
Input stream + WEB interface	Ethernet, RJ-45, 1Gb, UDP/RTP
L-band output	N-type connector
200-240 VAC 50/60Hz	SCZ-20 connector



Factory settings:	
IP address:	10.10.10.20
User/password	admin / admin
IP netmask:	255.255.255.0
IP gateway:	10.10.10.1
SNMP trap (IP):	0.0.0.0
System section	
Input mode:	IP-MUX
Scrambler:	Enabled (Part No. 1002, 1004)
EPG support	Enabled (Part No.1003,1004)
Billing Server:	
PSR Restamping:	Enabled
Inputs section	
Protocol/Port:	UNICAST UDP:1234
SI generator section	
Provider name:	no name
Transport Stream ID:	2
Original Network ID:	4
TDT generator:	ON
Auxiliary SI Port:	901
Modulator section	
Output Frequency (MHZ)	1462
Symbol Rate (kSpS)	35000
Modulation – FEC	8PSK 3/4
Roll-off	0,25
FEC Frame length	Normal
Pilot tone	off
Spectrum inversion	off
Output attenuation (dB)	-10

AMD-53-S2 MODULATOR/ MUX

CONFIGURE OF THE OUTPUT PROGRAM LIST IN THE TROPHY MULTIPLEXERS

The program name is the service designation. By default, the multiplexer generates the same name for each program as specified in the incoming stream. You can change the name to another one. The program names will be displayed in the Set-Top-Box table. Names must be unique.

You can select the source of the EIT (EPG):

- the original EIT from the program source;
- not present;
- the information from an external EIT-Server.

Basically, the EIT tables are present in satellite broadcasting. All TROPHY multiplexers processes this information and transmits it to the output stream. In order to use the satellite program tables, it is necessary to specify the ORIGINAL (FROM PROGRAM SOURCE) mode.

If there is no EIT information from the satellite and you do not accept this information from external resources, it is necessary to specify NOT PRESENT mode.

In case of using the TROPHY EIT (EPG) SERVER you must select the PRESENT + SCHEDULE mode.

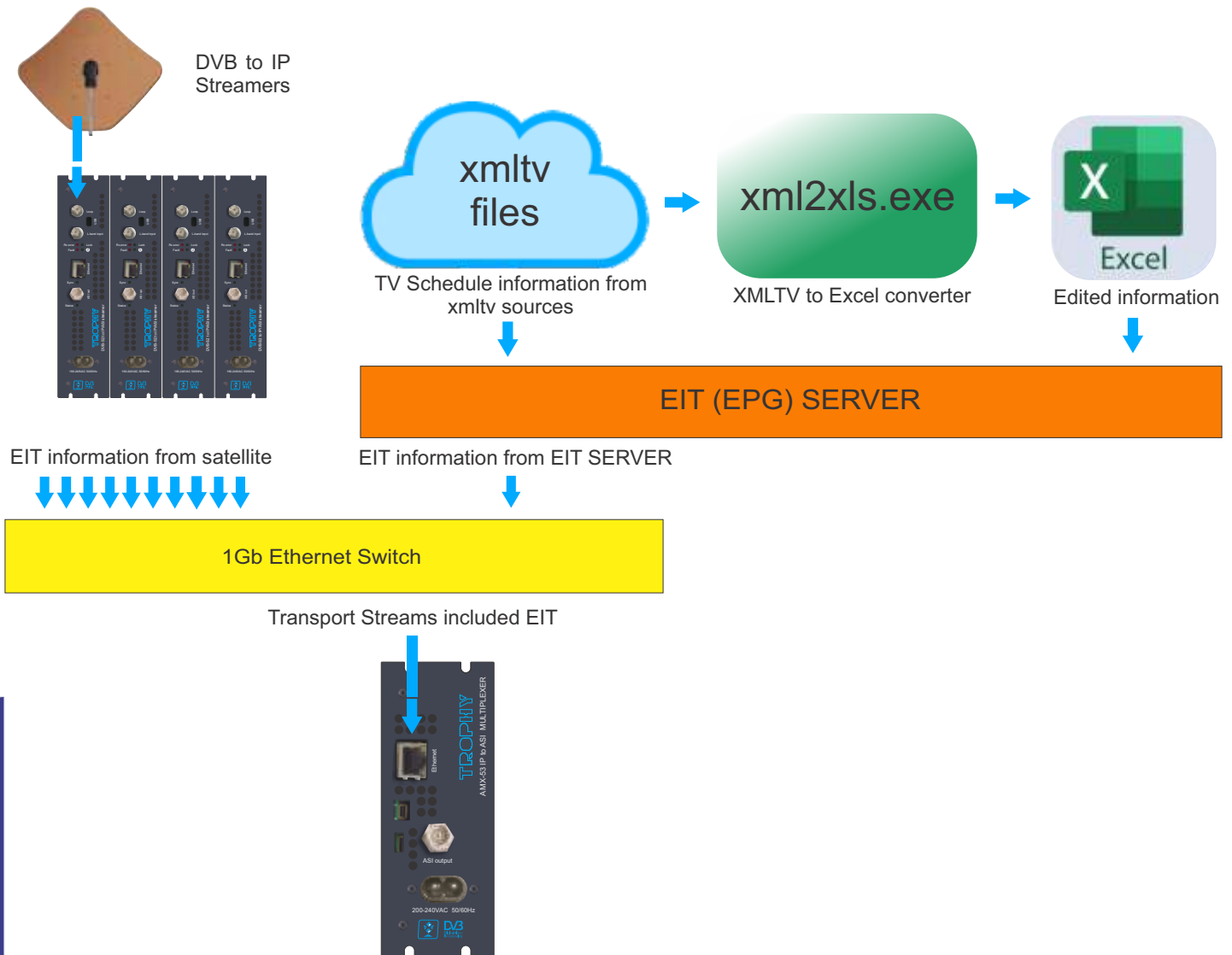
In the case of using other EIT servers, you must specify the mode corresponding to this server.

The screenshot displays the 'Programs' tab in the TROPHY software. A table lists programs with columns for SID, Program name, Type, Port:SID, and Rate Mbit/s. A 'Program properties' dialog box is open for SID 8150, showing fields for Name (BBC World), PMT PID (140), Type (1), and EIT source (Original (from program source)). The Conditional Access dropdown is set to FTA. Below the dialog, two dropdown menus are shown: one for EIT source with options like 'Original (from program source)', 'Not present', and 'External: "Present"'; and another for Conditional Access with options like 'FTA', 'Type 1', 'Type 2', and 'Type 3'.

AMD-53-S2 MODULATOR/ MUX

EIT (EPG) MODES OF THE MULTIPLEXER

- **ORIGINAL mode.** Basically, the EIT tables are present in satellite or terrestrial broadcasting. All TROPHY multiplexers processes this information and transmits it to the output stream. In order to use the broadcaster program tables, it is necessary to specify the ORIGINAL (FROM PROGRAM SOURCE) mode.
- **NOT PRESENT mode.** If there is no EIT information from the satellite and you do not accept this information from external resources it is necessary to specify NOT PRESENT mode.
- **PRESENT + SCHEDULE mode.** In case of using the TROPHY EIT SERVER you have select the PRESENT + SCHEDULE mode. You can send ready-made XMLTV files to the EIT-Server. Also, you can convert an XMLTV file to an Excel file to edit the content and even add information in other languages for multilingual broadcasting. The edited file can be send directly to the EIT-Server.



AMD-53-S2 MODULATOR/ MUX

EIT-SERVER

The EIT (EPG) Server SoftWare is designed to form multilingual EIT tables from xmltv or Excel sources. The information generated by the server is compatible with all TROPHY multiplexers. The EIT Server Software is sufficient for broadcasting the EIT tables according to the standard.

The main functions of the EIT (EPG) Server SoftWare are:

- convert TV Schedule information from xmltv sources to EIT DVB tables;
- convert TV Schedule information from Excel to EIT DVB tables;
- sending EPG data to the appropriate SIDs of output MUX;
- operative replacement of EPG data in case of changes in xmltv or Excel files.

Software is provided for Windows and Linux Operating Systems:

- linux_arm
- linux_arm64
- linux_x32
- linux_x64
- windows_x32
- windows_x64

INSTALLATION OF EIT-SERVER

*** These actions require root privileges ***

- Install eit-server to /usr/local/sbin
sudo cp eit-server /usr/local/sbin
- Install config file to /etc/dvb
sudo mkdir /etc/dvb
cp eit-server.conf /etc/dvb
- Edit config - add muxes, programs, etc. Make sure the database path is correct.
- Install utilities to /usr/local/bin
sudo cp eit-import /usr/local/bin
sudo cp xmltv2xlsx /usr/local/bin

Let systemd control EIT-Server

-
- Copy eit-server.service file to /etc/systemd/system
sudo cp eit-server.service /etc/systemd/system
 - Reload services
sudo systemctl daemon-reload
 - Enable eit-server to autostart
sudo systemctl enable eit-server.service
 - Run server
sudo systemctl start eit-server.service
 - Check eit-server status
sudo systemctl status eit-server.service

CONFIGURE OF THE EIT-SERVER

Configuring the EIT-Server settings is done using the configuration file. The configuration file structure is indicated below:

```

eit-server.conf.example
1  database: /var/db/eit/eit.db #path to sqlite3 database (mandatory)
2
3  log: debug # log level settings (optional)
4  send-period: 10 # EIT sending period in milliseconds (optional)
5
6  lang-order: geo, eng, ukr, ita # language order (mandatory)
7
8  net-id: 0x77 # original network id - from mux settings (mandatory)
9
10
11 [mux : tcp://10.10.10.20] # multiplexer session begin (mandatory)
12   ts-id: 11           # transport stream id (mandatory)
13   program: 10 : GMS           # program specification (mandatory) format: program: service-id : Program name
14   program: 20 : Setanta Sports 1
15   program: 30 : Setanta Sports 2
16   program: 40 : Setanta Sports 3
17   program: 50 : Football TV
18   program: 60 : Rugby TV
19   program: 100 : 1 Arkhi Sport1
20   program: 200 : Promo
21
22 #[mux : 10.10.10.12] # next multiplexer session begin
23 #  ts-id: 0x2
24 #  program: 200 : <ua>Ukrainian program2
25 #  program: 201 : <ge>Georgian program2
26 #  program: 202 : <en> English program2
27 #  program: 203 : English program2
28
29
30 #[mux :10.10.10.13]
31 #  ts-id: 0x3
32 #  program: 300 : <ua>Ukrainian program3
33 #  program: 301 : <ge>Georgian program3
34 #  program: 302 : <en> English program3
35 #  program: 303 : English program3
36
37

```

SI GENERATOR

Service information is a special set of elementary streams that contain a set of database tables describing the structure of transport stream, the services within it and some useful information that digital TV receivers can show the user, such as the name of the service and schedule information for the services. These tables are collectively known as Service Information (SI). Every DVB transport stream has some service information that the MPEG standard declares mandatory.

System	Network	Inputs	Programs	SI Generator	Modulator
				Transport Stream ID	<input type="text" value="2"/>
				Original Network ID	<input type="text" value="4"/>
				Provider Name	<input type="text" value="Trophy"/>
				TDT generation	<input type="text" value="On"/>
				Auxiliary SI Port	<input type="text" value="901"/>
				<input type="button" value="Accept"/>	

Every service in a DVB network can be uniquely identified by three values. These values are the Original Network ID (the ID of the network that originally broadcast the service), the Transport Stream ID (to identify a particular transport stream from that network) and a Service ID to identify a service within that transport stream.

Transport stream identification (TS-ID): Unique identification of the transport stream is generated. The TS ID can be any number between 1 and 65 535.

Original Network ID [1..65535]. Information to identify the origin.

Time and Date Table (TDT) provide a time reference for the stream. The TDT contains the current UTC (Universal / GMT) time. The device does not have its own real-time clock. Therefore, if you turned "ON" the function of forming TDT, then you need to provide a connection to the Internet or to a real-time server. You must specify a server name that will synchronize the current time in the NETWORK menu (see page No.6). If this option is not available, you must set "OFF" value in the TDT GENERATION line.

In multiplexer mode, the device automatically generates the following service tables:

Program Association table (PAT) - defined by the MPEG standard. The Program Association Table is the fundamental table for service information. It describes which PID contains the Program Map Table for each service (see below) as well as the Network Information Table for the transport stream in those networks that use it.

Program Map Table (PMT) - defined by the MPEG standard. The Program Map Table is the table that actually describes how a service is put together. This table describes all the streams in a service, and tells the receiver which stream contains the MPEG Program Clock Reference for the service. The PMT is not broadcast on a fixed PID, and a transport stream will contain one PMT for each service it contains.

Together, the PAT and PMT are known as Program Specific Information (PSI) and are defined by MPEG. All other tables are specific to DVB systems.

Service Description Table (SDT)

The Service Description Table gives more user-oriented information about services in a transport stream. Unlike the PMTs, there is only one SDT in a transport stream, and that contains the information for every service. The SDT typically contains information such as the name of the service, the service ID, the status of the service (e.g. running/not running/starting in a few seconds) and whether the service is scrambled or not.

NIT GENERATOR

Network Information Table (NIT) conveys information relating to the physical organization of the multiplexes carried via a given network, and the characteristics of the network itself. The combination of original_network_id and transport_stream_id allow each TS to be uniquely identified throughout the ETS application area. Networks are assigned individual network_id values, which serve as unique identification codes for networks. In the case that the NIT is transmitted on the network on which the TS was originated, the network_id and the original_network_id shall take the same value.

NIT generator supports the NIT transitions between delivery media boundaries, e.g. from satellite to cable or terrestrial systems. IRDs may be able to store the NIT information in non-volatile memory in order to minimize the access time when switching between channels ("channel hopping"). It is also possible to transmit a NIT for other networks in addition to the actual network.

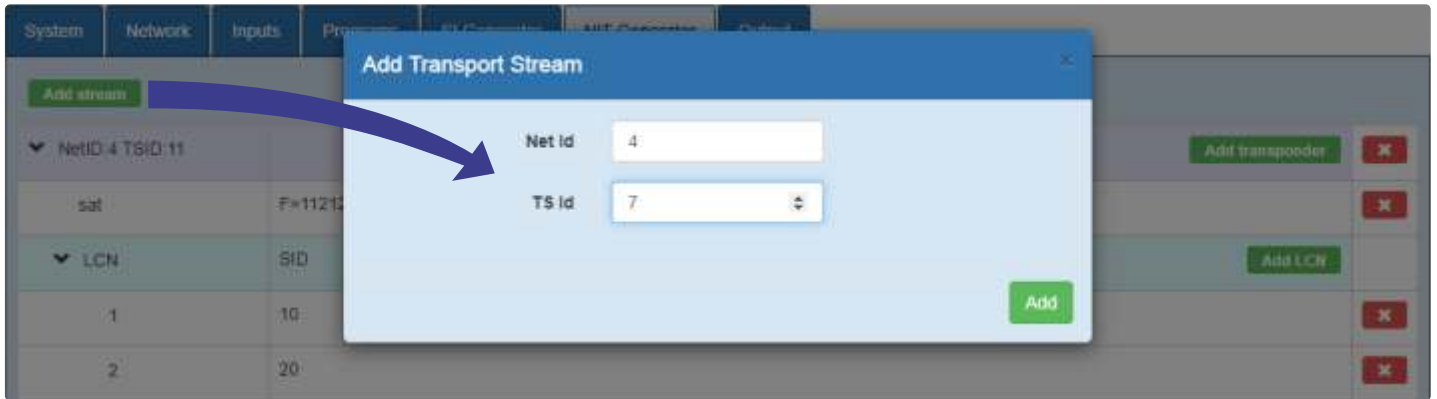
The screenshot shows the 'NIT Generator' tab in a software interface. At the top, there are navigation tabs: System, Network, Inputs, Programs, SI Generator, NIT Generator, and Output. Below the tabs is a table with two main sections: 'NetID:4 TSID:6' and 'LCN'. Each section has an 'Add' button and a delete button (X). The 'NetID:4 TSID:6' section lists three transponders: 'cab', 'sat', and 'ter'. The 'LCN' section lists three LCNs: 1, 2, and 4. At the bottom right, there are 'Export' and 'Import' buttons.

NetID:4 TSID:6		Add transponder	X
cab	F=562MHz SR=6900 64QAM		X
sat	F=11212MHz SR=30000 8PSK 3/4 Position:W2.5 L		X
ter	F=878MHz BW=8MHz QPSK HP:1/2 LP:1/2		X
LCN		Add LCN	
1	1		X
2	2		X
4	123		X

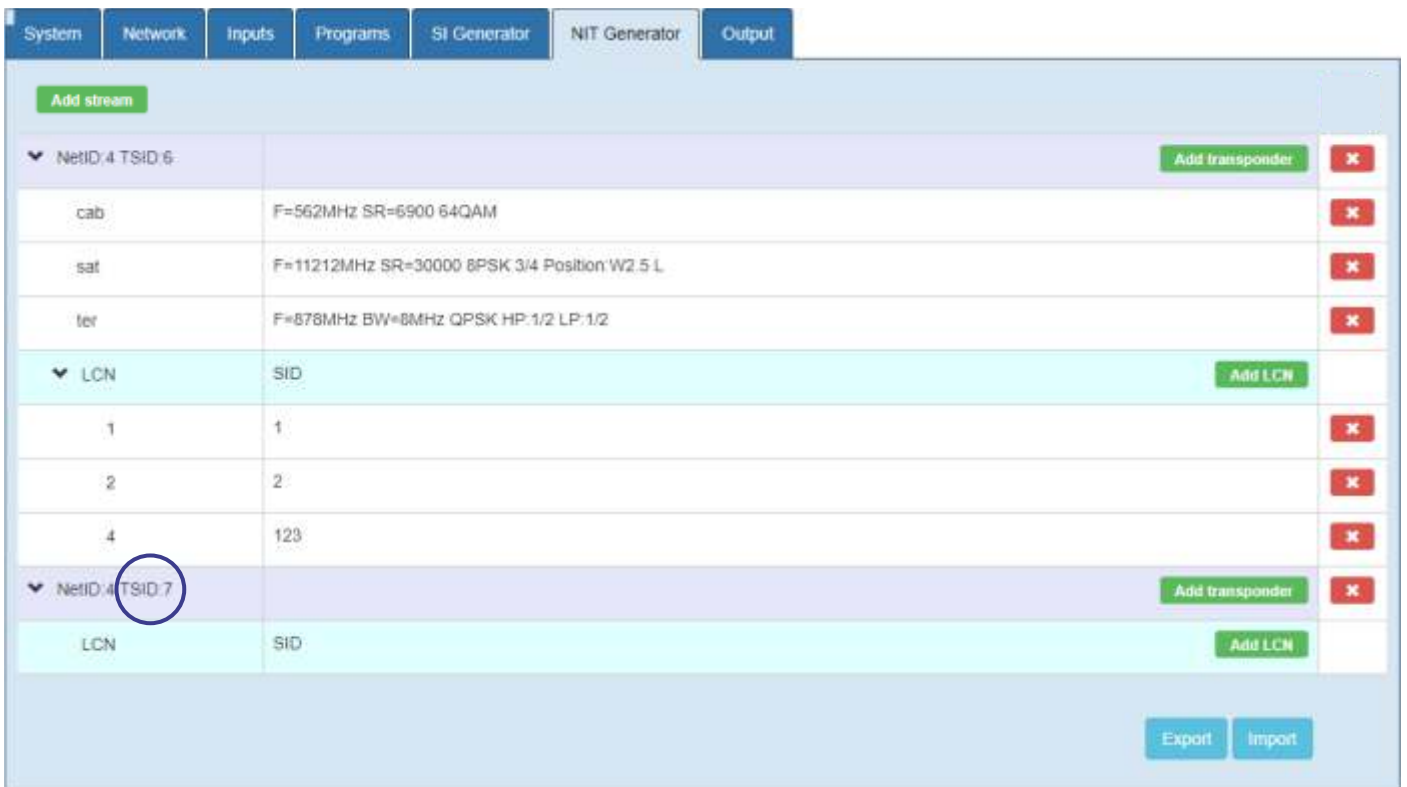
Export Import

ADDING A TRANSPORT STREAM ID TO THE NIT TABLE

Click the “Add stream” button and specify the Network ID number and original Transport Stream number. Click the “Add” button to save the new Transport Stream ID. To exit without saving press the “X” in the upper right corner.



New transport stream added to the NIT table now.



Specify the transponder parameters for this Transport Stream. You can specify transponder parameters for different DVB standards (DVB-S/S2, DVB-C, DVB-T/T2) if the stream is broadcasted in other networks. Click the “Add” button to save the transponder.

Add transponder
✕

Type: Satellite ▼

Frequency (MHz)

Symbol Rate (kSpS)

Modulation ▼

FEC ▼

East/West flag ▼

Orbital position

Polarization ▼

Add

Add transponder
✕

Type: Terrestrial ▼

Frequency (MHz)

Bandwidth ▼

Constellation ▼

Code rate HP ▼

Code rate LP ▼

Guard interval ▼

Transmit mode ▼

Hierarchy ▼

Priority ▼

MPE-FEC ▼

Time slicing ▼

Other frequency ▼

Add transponder
✕

Type: Cable ▼

Frequency (MHz)

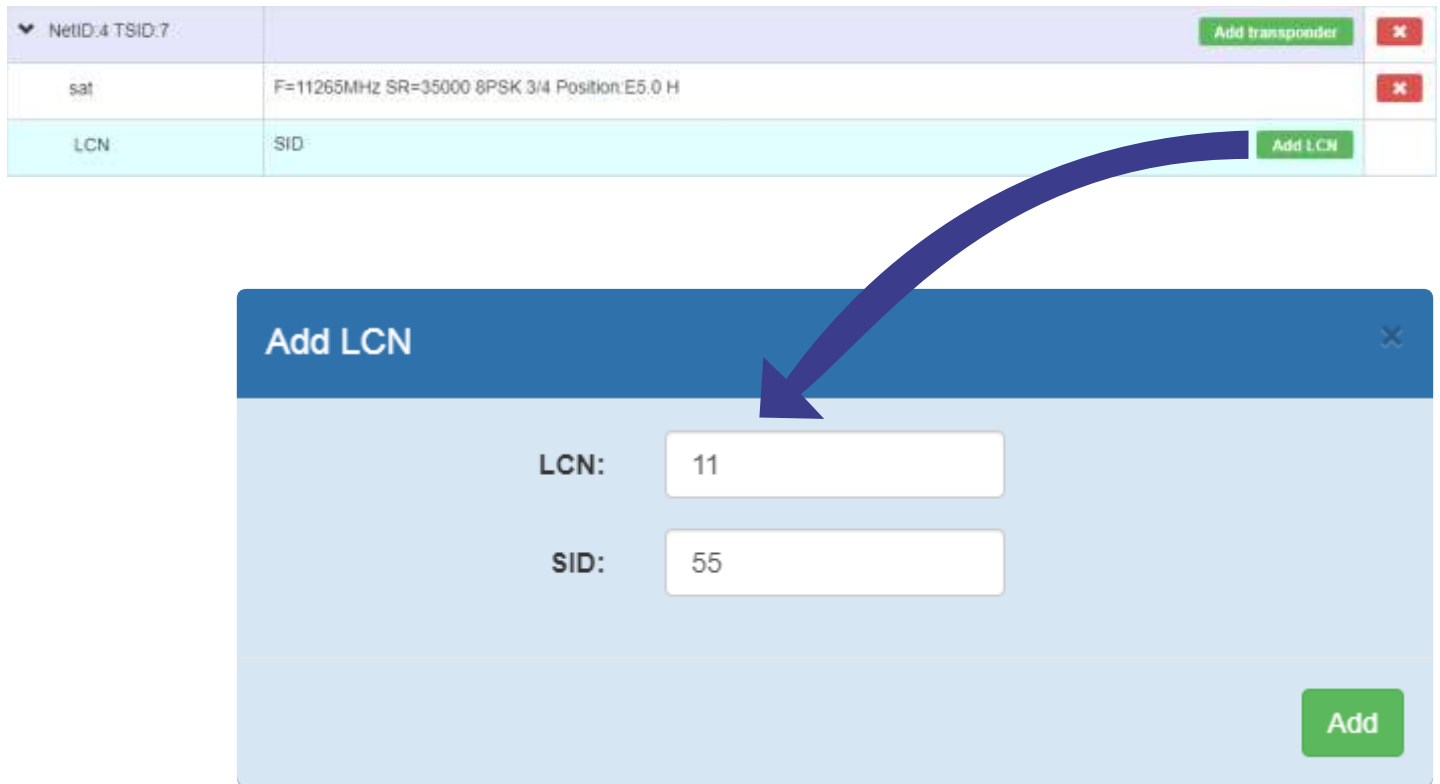
Symbol Rate (kSpS)

Modulation ▼

Add

ASSIGNING LOCAL CHANNEL NUMBER (LCN) TO PROGRAM (SID)

Some receiver models arrange programs according to the LCN table. To customize this table, click the “Add LCN” button and specify the appropriate LCN and SID numbers in the Transport Stream.

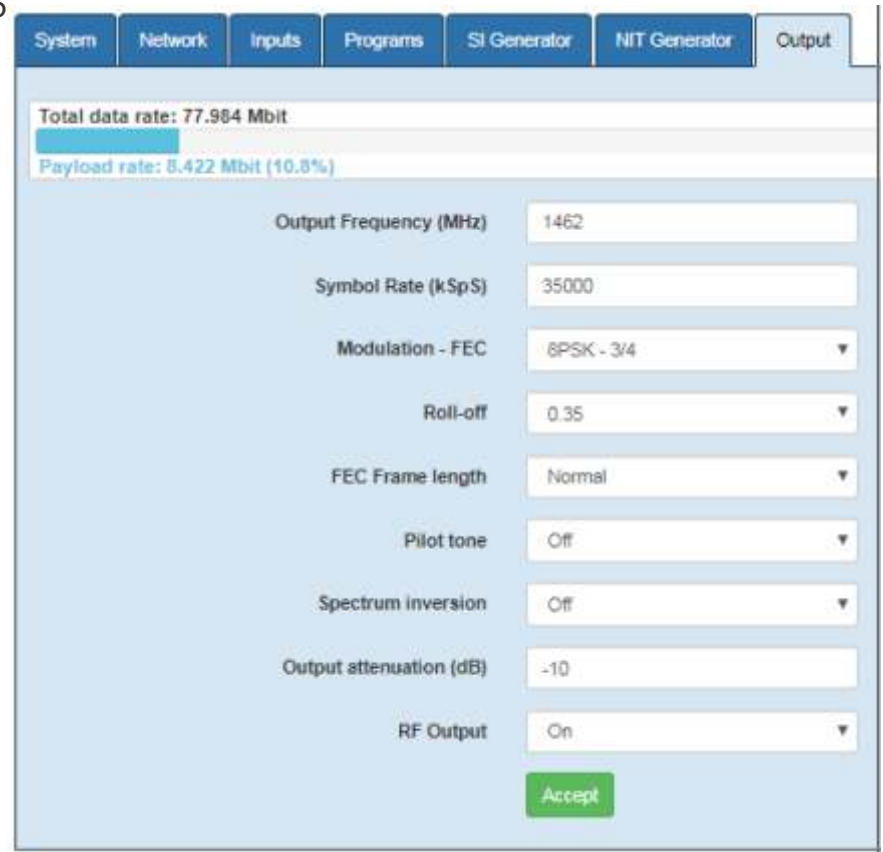


Repeat the operation for all programs of Transport Stream. If several Transport Streams are broadcast on the network you can use the “EXPORT” and “IMPORT” buttons to enter the NIT and LCN tables on other TROPHY AMD-53 modulators.

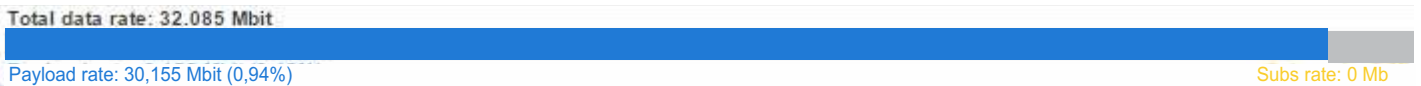
MODULATOR PARAMETERS

In this menu you need to specify the parameters of the output carrier:

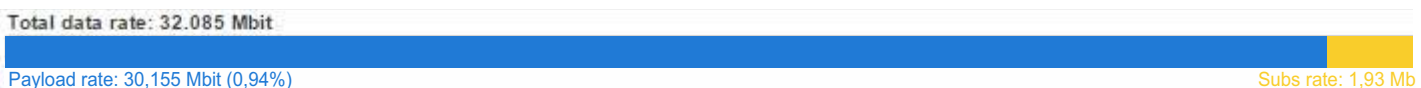
- Output frequency up 900 to 2150MHz;
- Symbol Rate up 1000 to 35000 kSymb per Second
- Modulation/FEC QPSK: 1/3, 2/5, 1/2, 3/5, 2/3, 3/4, 4/5, 5/6, 8/9, 9/10
8PSK: 3/5, 2/3, 3/4, 5/6, 8/9, 9/10
- Roll-off 0,2 ; 0,25 ; 0,35
- FEC Frame length Normal/short
- Pilot tone On/off
- Spectrum Inversion On/off
- Output attenuation up to -31.5
- RF output On/Off



The actual bitrate at the output of the modulator is displayed as a blue scale at the top of the menu. Free capacity of the transponder is filled with zero packets if the subscription data does not come to the modulator from the billing server. The capacity occupied by zero packets is indicated in the form of a gray scale.



Free capacity is filled with subscription packages if the billing server sends TROPHY-ACCESS CAS data to the modulator. The efficiency of data transmission is maximum. The capacity that the subscription data occupies is indicated in the form of a yellow scale. Thanks to this technology, the CAS data transmission efficiency is maximum.



AMD-53-S2 MODULATOR/ MUX

SPECIFICATIONS	
Standards	
Carrier ID	ETSI 103 129
DVB-S2	EN 302 307
MPEG-TS	EN 301 210
DVB MPEG-TS over IP	ETSI TS 102 034
MPEG-2 PSI Tables (PAT,PMT,NIT etc)	EN 300 468 (additional license for EPG table)
IP input	
Stream port + WEB interface	Ethernet, 10/100/1000 Base-T
Connector	RJ-45
Streaming protocol	UDP/RTP, Unicast/Multicast
Streaming mode	CBR/VBR
Encryption 0,25 to 120Mbps	TROPHY-ACCESS (additional license)
RF Output	
L-Band	900MHz to 2150MHz, 10kHz step
SNR	> 40dB @ -10dBm – 8PSK – 30Mbaud
Shoulders rejection	< -50dB @ -10dBm & f/fN=1,5 for 20% roll-off
Main RF output	N Type, 50 Ohm
Attenuation range	-10dBm to -41.5dBm; 0,1dB step

Multiplexer	
Quantity of multiplexed channels	up to 120
PID quantity supported	All PIDs of input services
Modulation	
DVB-S2	QPSK: 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
Supported DVB modes	CCM: Constant Coding and Modulation
	VCM: Variable Coding and Modulation
	Seamless ACM: Adaptive Coding and Modulation
DVB-S2 frames	Short (16200), Normal (64800)
Pilots	On or Off
Variable symbol rate	From 1 to 35Mbaud, step 1Baud
Control & Monitoring	Web Browser Control & Monitoring
	10/100/1000 Base-T Ethernet ports
	90 to 240VAC/50Hz/15W
Physical	2kg Weight
	0°C to 50°C temperature range
TROPHY-ACCESS 3.0 options	
Type of CAS	FPGA based, doesn't match CSA algorithm
Size of the decoder address field	32 bits
Quantity of addressable decoder	16 millions
The number of serviced channels	without any restrictions
The number of packets serviced	without any restrictions
Automatic decoder disconnection	with zero balances in the subscriber account



DVB-BILLING PRO software



DVB BILLING PRO SoftWare

DVB-BILLING PRO Software and Statistics Server

The DVB-BILLING PRO program is designed to manage the subscriber base and manage subscriber decoders in large commercial DVB broadcasting networks using the TROPHY-ACCESS 3.0 Conditional Access System.

The DVB-BILLING PRO software is supplied with the Billing Server. Depending on the order, the Billing Server can be either the simplest (demo version) or the most complex, up to a group of servers assembled using cluster technology.

The main functions of the Statistics Server are:

- management of subscriber decoders;
- keeping records of subscriber payments;
- creating various reports on payments;
- integration of the Billing Server with the system of bank payment terminals and bank acquiring.

OPERATORS menu

Press the **OPERATORS** button to enter the menu. The administrator has the right to add operators and set Rights.

The screenshot shows the OPERATORS menu with a navigation bar at the top containing: Subscribers, Packages, Decoders, Password, Constructor, Currency, Reports, Operators, and a Log Out button. Below the navigation bar is a Refresh button. The main area contains a table with the following columns: User Name, Name, Email, Phone, Rights, and an Edit button for each row.

User Name	Name	Email	Phone	Rights	
root2	Andrii	ar[redacted]l.com	5[redacted]3	63	Edit
Administrator	Byrlyk	bi[redacted].com	2222222222	63	Edit
testAdmin2	Birlik	bir[redacted].com	333333333333333333	63	Edit
Operator	Byrlyk	birli[redacted].m	1111111111	3	Edit
TBC	TBC	None	None	4	Edit

At the bottom left of the table area is an Add button. At the bottom right, there is a pagination control showing '1 ... 1 ... 1'.

Click the **Add** button to add a new Operator.

Click the **Edit** button to edit Operator information.

The 'Add' form contains the following input fields: User Name, Password, Name, Email, and Phone. At the bottom, there are Save and Cancel buttons.

The 'Edit' form contains the following input fields: User Name (pre-filled with 'root2'), Name (pre-filled with 'A'), Email (pre-filled with '[redacted].com'), and Phone (pre-filled with '5[redacted]3'). Below the input fields is a table of permissions:

View users (1)	View payments (2)	Add payments (4)	Add currencies rates (8)	View operators (16)	Administrator (all rights are included) (32)
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

At the bottom, there are Save and Cancel buttons.

CURRENCY menu

Press the **CURRENCY** button to enter the menu.

The Administrator has the right to indicate the name of the payment currencies and the current exchange rate to the internal currency of the billing program.

The cost of packages is indicated in internal currency. Payment archive is stored in internal currency. If there is no new exchange rate for the payment currency to the internal currency on the current date, the program applies the last saved rate. If the exchange rate of the internal currency to any state currency is equal to 1.00, then, in fact, the billing program will keep records in this state currency.

Date	Name of currency	Rate to domestic currency
2024-06-15 15:44:16	GEL	1
2024-08-29 16:14:36	USD	2.85

The Administrator has the right to indicate the current exchange rate to the internal currency of the billing program

The list of the state currencies available to the Administrator is indicated in the **accn.conf** file.

The names of currencies are entered separated by commas in the currencies line, for example:

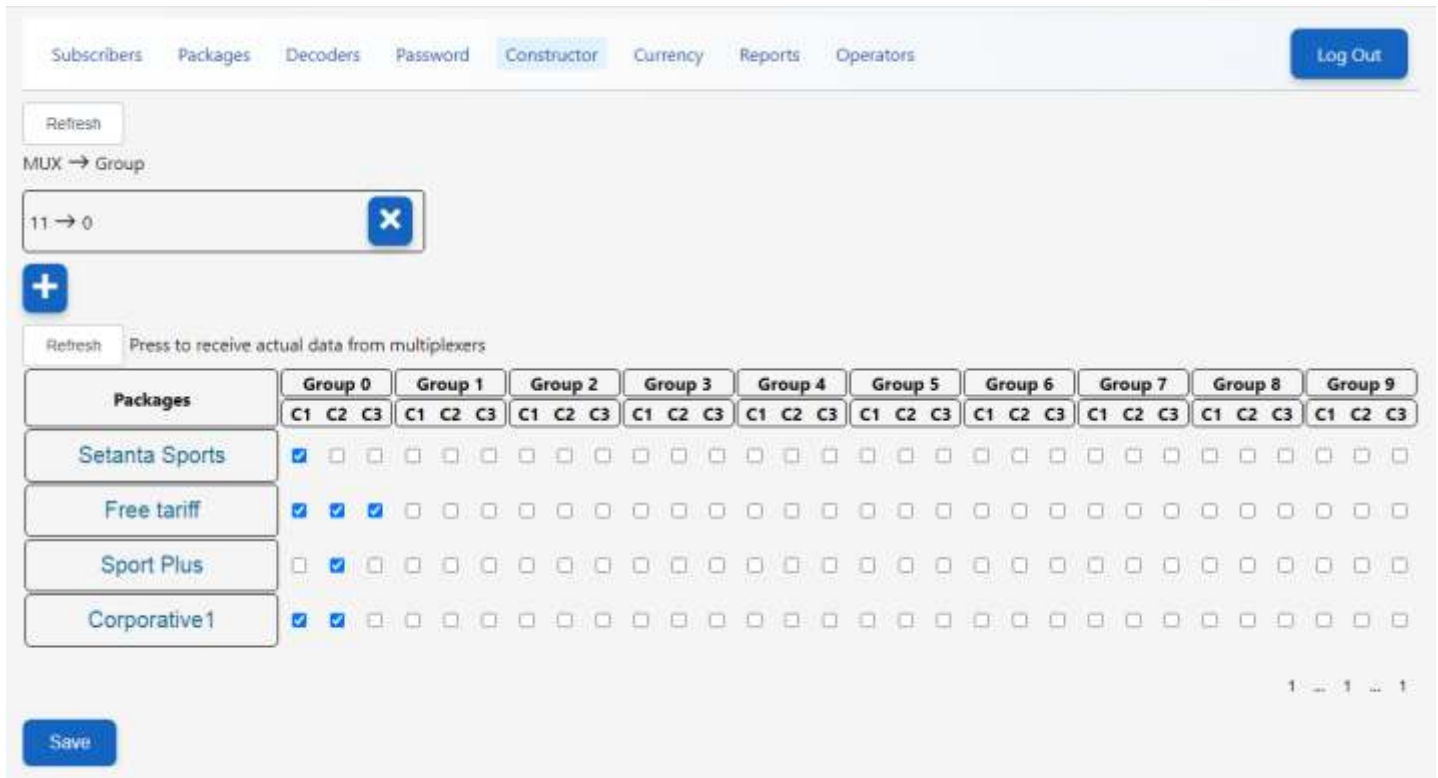
currencies = USD, GEL

```

File Edit Search View Encoding Language Settings
accn.conf
1
2 http_listen = :8802
3
4 db_host = 127.0.0.1
5 db_name = accn
6 db_user = accn
7 db_password = masterkey
8 db_port = 5432
9 db_max_conn = 10
10
11 currencies = USD, GEL
12
13
    
```

CONSTRUCTOR of Packages

Attention! Changes to the **Constructor** can only be made by the Administrator.
This page is hidden from Operators.



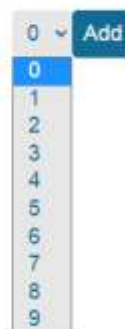
The administrator, when installing the system, can perform the following actions:

- add a new multiplexer (MUX) by pressing the + button (the next Transport Stream ID value is automatically generated);
- remove multiplexer;
- indicate the group number for the new TS ID in the **Choose group** column:

DVB_BILLING SOFTWARE

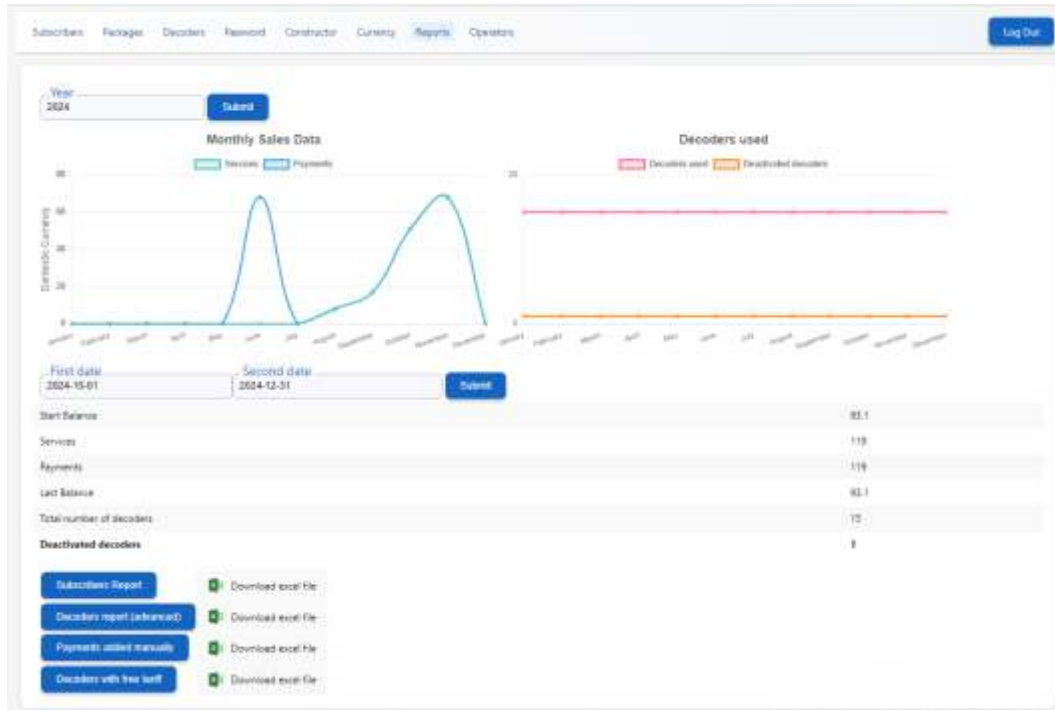


Choose group:



REPORTS menu

Press the **REPORTS** button to enter the menu.



You can see the **Monthly Sales Data** and **Decoders Used** diagrams.

Select **Year** and press **Submit** button.

To generate a report, you need to select the start date and end date of the reporting period.

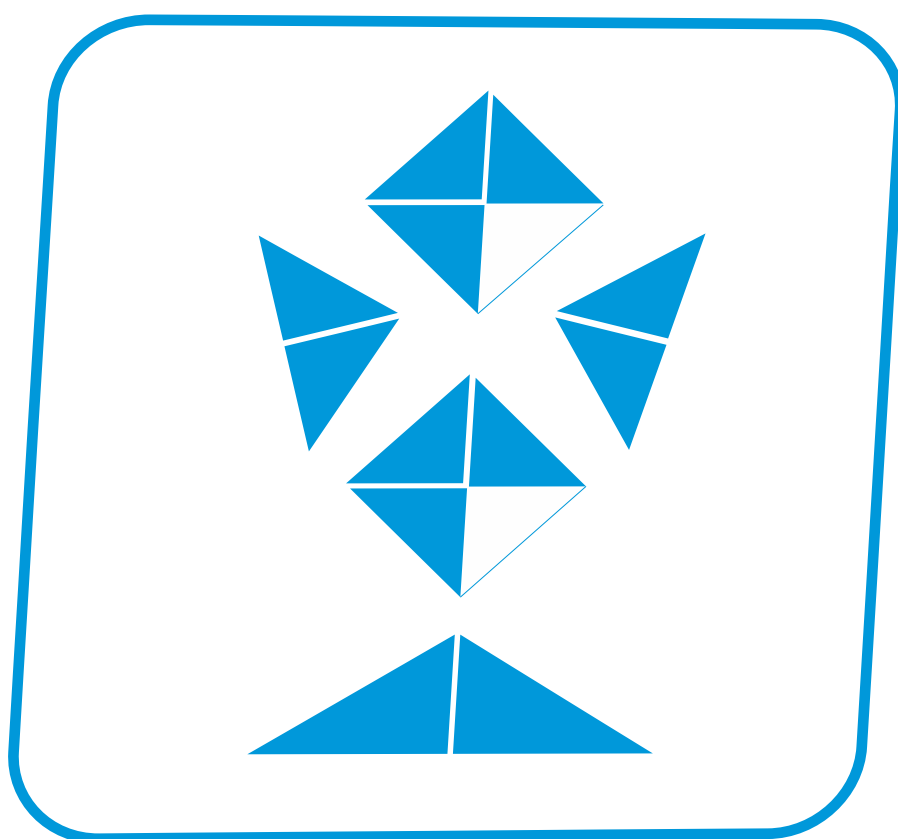
Click the **Submit** button. The results are displayed in the corresponding menu fields:

- **Start Balance,**
- **Services** (funds withdrawn from subscriber accounts for the period),
- **Payments** (payments for the period),
- **Last Balance,**
- **Total numbers of decoders,**
- **Deactivated decoders.**

To generate reports, click one of the buttons:

- **Subscribers report;**
- **Decoders report** (full information about payments, decoders and subscribers);
- **Payments added manually;**
- **Decoders with free tariff** (information about service decoders).

After you have selected the period and type of report, the billing server will prepare the corresponding file in Excel format.



TROPHY ACCESS CAS

TROPHY-ACCESS CAS

The TROPHY-ACCESS 3.0 Conditional Access System does not use the CSA algorithm, which ensures high reliability and the absence of the possibility of pirated viewing, called Card-sharing.

The scrambler is integrated into the hardware of TROPHY brand modulators/multiplexers.

The Decoder is integrated into the hardware of TROPHY DVB Set-Top-Boxes.

The Billing Server and DVB-BILLING PRO software provide the ability to manage subscriptions. The Decoder automatically turns off if the subscriber account balance is insufficient.

Subscription data is transmitted to the MODULATOR/MULTIPLEXER via Ethernet.

Options	
Type of CAS	Cardless, doesn't match CSA algorithm
Polynomial length	2048 bits
The size of the decoder address field	32 bits
Quantity of addressable decoders	16 millions
The number of serviced channels	without any restrictions
The number of packets serviced	without any restrictions
Automatic disconnection of the decoder	with zero balances in the account

TROPHY-ACCESS Conditional Access System (CAS) integrated into the modulator/multiplexer

The TROPHY-ACCESS 3.0 scrambler is built into the modulator/multiplexer FPGA. In order for the TROPHY-ACCESS 3.0 scrambling function to be available in the modulator, you must purchase a special license:

<http://dvb4all.com/?product=software-license-to-enable-trophy-access-scrambler-solution>

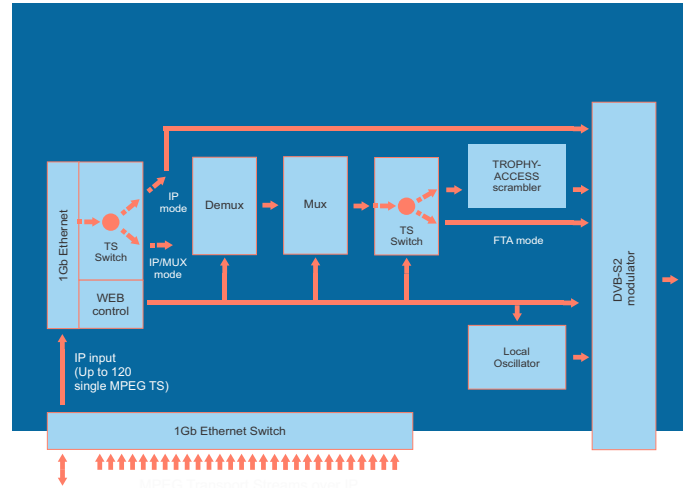
After confirmation of payment, the client is received an unique key, which is generated based on the serial number of your modulator/multiplexer. The **serial number** is indicated in the first line of the System menu of the modulator WEB interface.

The screenshot displays the 'System' menu of the modulator WEB interface. The 'Serial No' field is highlighted with an orange circle and contains the value '0x1C0000B0'. Other fields include 'Hardware ID' (0x0401), 'FW / SW version' (2.03 / 3.02 build 1134), 'Input mode' (IP-MUX), 'Scrambler TA-3/9' (Enabled), 'Billing server' (10.10.20.250), and 'PCR Restamping' (Enabled). The 'System configuration' section contains buttons for 'Backup', 'Restore', 'Add key', and 'Change password'. The 'Add key' button is also highlighted with an orange circle. A temperature indicator 'T=30°C' is visible in the top right corner.

After receiving the key, you can enter its number in the System menu by clicking the **Add key** button.

Multiplexers (Transport Streams) and groups (ports)

Modulators/multiplexers are grouped depending on the broadcasting features. For example, it is necessary to transmit streams in different ranges or in different standards. For this purpose, separate groups of modulators are created. A group located on one port can have any number of modulators. All modulators with the same group number have the same subscription information. The system can have up to 10 groups with numbers 0...9. You assign the group number to which the modulator/multiplexer belongs, based on the tariff plan scheme and channel viewing rights. When installing a Head-end with multiple modulators/multiplexers, you will need to plan what programs will be included in the packages, then distribute them across streams (modulators), subscription groups, etc. As a first step, simply assign port "0" to all multiplexers.



Example:

- TSID 1: 0 # multiplexer TSID 1 belongs to the group 0
- TSID 2: 0 # multiplexer TSID 2 belongs to the group 0
- TSID 3: 1 # multiplexer TSID 3 belongs to the group 1
- TSID 4: 2 # multiplexer TSID 4 belongs to the group 2

MUX → Group

1 → 0	X
2 → 0	X
3 → 1	X
4 → 2	X

Enabling scrambling mode

The modulator/multiplexer can transmit programs in FTA or encrypted form. In order for the program to be encrypted, the scrambling function of the program(s) must be enabled.

In the **Programs** menu, in the line of each program, click the **Program Properties** icon and specify the scrambling type (Type 1, Type2, Type3).

The modulator sends subscription information to Decoders, which allows or denies viewing of encrypted programs.

SID	Program name	Type	In Address:Port:SID		
10	GEOSAT radio	1 (TV)	0.0.0.0:1234:8509		
20	ITV	1 (TV)	0.0.0.0:1234:8507		
30	BBC One	1 (TV)	0.0.0.0:1234:8508		
40	DW	1 (TV)	0.0.0.0:1234:8505		
50	KAVKASIA	1 (TV)	0.0.0.0:1234:8504		
60	RUSTAVI2	1 (TV)	0.0.0.0:1234:8501		
70	COMEDY	1 (TV)	0.0.0.0:1234:8502		
80	MARAO	1 (TV)	0.0.0.0:1234:8503		
90	Nat Geo Wild Europe	1 (TV)	0.0.0.0:12345:101		
100	BNT World	1 (TV)	0.0.0.0:12345:102		
110	Lucky Balls	1 (TV)	0.0.0.0:12345:201		
120	Dog Racing	1 (TV)	0.0.0.0:12345:202		
130	Virtual Football	1 (TV)	0.0.0.0:12345:203		

Program properties

SID:

Name:

Type: (TV)

Conditional Access:

Type	PID	Enabled
MP4 (video (PCR))	121	<input type="checkbox"/>
MP1 Audio (geo)	122	<input type="checkbox"/>

FTA
Type 1
Type 2
Type 3

Email: cab1@localian

User name:

Last name:

Country:

Phone number:

Password change:

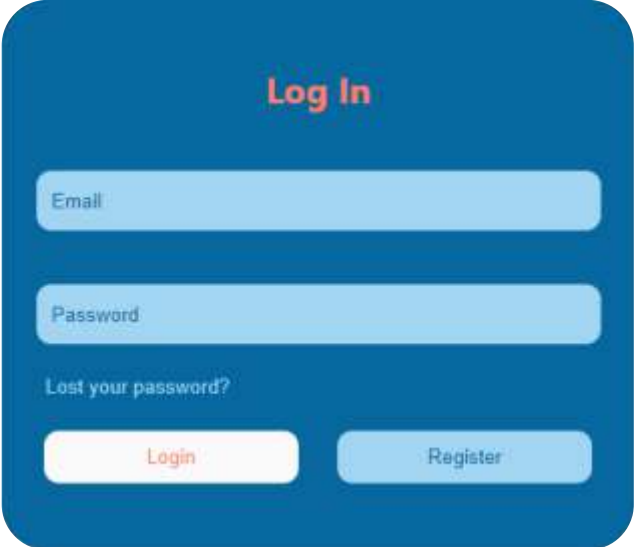
Decoders:

SN	2141040	Delete
SN	2141040	Delete
SN	2141040	Delete
SN	2141040	Delete
SN	2141040	Delete
SN	2141040	Delete
SN	2141040	Delete
+		

Personal account of Subscriber

LOGIN TO YOUR PERSONAL ACCOUNT

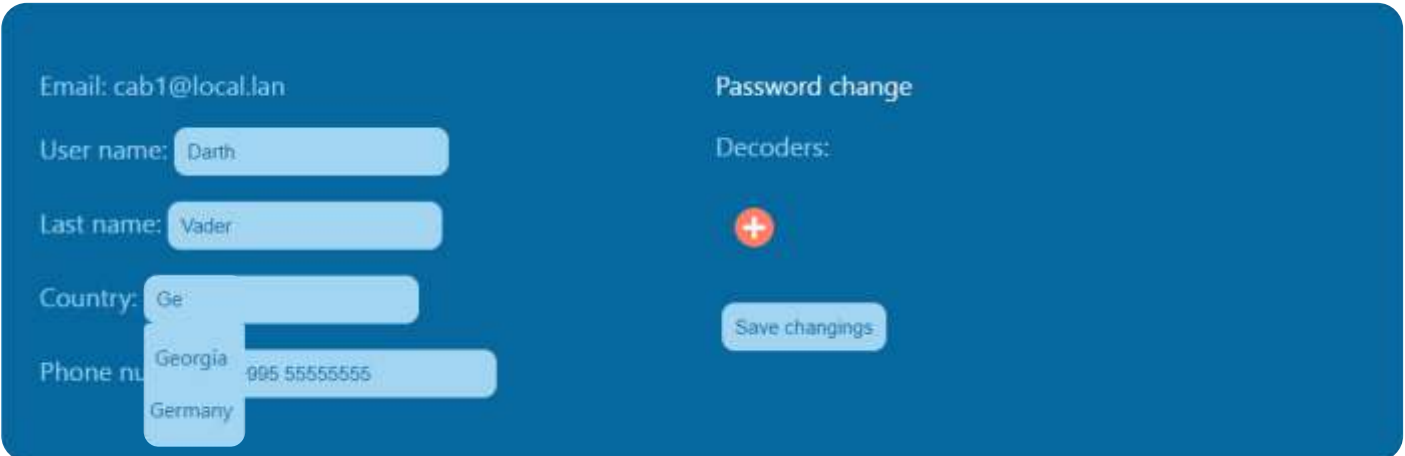
After receiving your password by email, enter your email address and the received generated password. Click the **Login** button to log in to the your account page.



The following pages will be available in your personal account:

- **Balance**
- **Profile**

You can log out of your account by clicking the **Logout** button.



Enter your first name, last name, country of residence and phone number.

When you enter the first letters of the country name, a list of countries appears from which you must select your country. The list is generated according to the ISO_3166-1 standard. The front-end displays the name of the country and the database receives a 2-digit country identifier. Please note that selecting a country is required. If this line is not filled in, you will not be able to assign program packages to your decoders in the **Balance** menu.

Entering the decoder number on the PROFILE page


Enter the serial number of your Decoder (or Decoders).

The decoder serial number is located on a sticker on the bottom cover of the Set-Top-Box.



95 - 255543

The screenshot shows a user profile form with the following fields: Email: cab1@local.lan, User name: Darth, Last name: Vader, Country: Georgia, and Phone number: +905 55555555. On the right, there is a 'Password change' section and a 'Decoders' section. The 'Decoders' section displays a list with two entries: '95' and '2550446', each with a 'Delete' button. A red '+' button is located below the list, and a 'Save changings' button is at the bottom right.

You can add a new decoder serial number by clicking the  button.

The Billing Administrator must enter all decoder numbers into the database in advance. When the Subscriber enters a decoder on the **Profile** page, the following checks occur:

- checking the checksum to avoid number entry errors (checked on the front-end);
- the decoder number should not contain more than 12 characters (checked on the front-end);
- presence of the decoder number in the database;
- whether the decoder is free or already in use.

If you specified an incorrect decoder number, the program will display the following error message:

“There is no decoder with this number or it is already in use”

Here you can remove the decoder. Confirm decoder removal by clicking **OK**. If the decoder has a prepaid package, then disabling the decoder will take effect during the next tariff activation, which occurs every 30 days. You can see the next activation date on the **Balance** page.



BALANCE

On this page you can see the current balance of your account, current packages and the number of each Decoder. Here you can top up your balance, turn-on or turn-off the packages.

The screenshot displays the 'BALANCE' section of the DVB Billing Software. At the top, it shows the 'Current balance: 0.0' and 'Amount refill' options with buttons for '0.0000', '0.0000', '0.0000', and '0.0000'. Below this, there is a 'Virtual recommended amount' field with the value '0.0000'. The main area lists four decoders, each with a 'Decoder id' and a 'Packages' table. Each decoder has a 'Deactivate all packages' button. A Windows activation watermark is visible in the bottom right corner of the interface.

Decoder id	Package	Price	Next Activation
05-27637	Sport4+	USD 3 per 30 days	January 09, 2024
	Sport3+	USD 1.2 per 30 days	January 17, 2024
	Sport1+	USD 2.8 per 30 days	Inactive
	Sport2+	USD 3.3 per 30 days	Inactive
05-27661	Sport4+	USD 3 per 30 days	January 14, 2024
	Sport1+	USD 3.8 per 30 days	Inactive
	Sport2+	USD 3.3 per 30 days	Inactive
	Sport3+	USD 1.2 per 30 days	Inactive
05-27219	Sport3+	USD 1.2 per 30 days	January 19, 2024
	Sport4+	USD 3 per 30 days	January 26, 2024
	Sport1+	USD 2.8 per 30 days	Inactive
	Sport2+	USD 3.3 per 30 days	Inactive
05-27933	Sport1+	USD 3 per 30 days	January 17, 2024
	Sport1+	USD 2.8 per 30 days	Inactive
	Sport2+	USD 3.3 per 30 days	Inactive
	Sport3+	USD 1.2 per 30 days	Inactive
	Sport4+	USD 3 per 30 days	Inactive

The list of available packages is sent to the frontend from the billing database.

Various types of decoders are possible, both individual and corporate. For all types of decoders, the Administrator creates special packages, depending on the terms of the contract with subscribers. The Billing program offers only packages authorized by the Administrator for the decoder. Typically, only a single special package is available to a corporate subscriber.

Please note that selecting a country on the Profile page is required. If this line is not filled in, you will not be able to assign packages to your decoders.

The screenshot shows a user interface for DVB Billing Software. On the left, it displays 'Current balance: 20 \$'. Below this are two buttons: 'VISA' (with a Visa logo) and 'Bank transfer'. On the right, under 'Amount refill:', there are four buttons: '30 days', '60 days', '90 days', and '360 days'. Below these buttons is a section for 'Minimal recommended amount' with a dollar sign and a text input field containing the number '0'.

In the top window you can see your current balance.

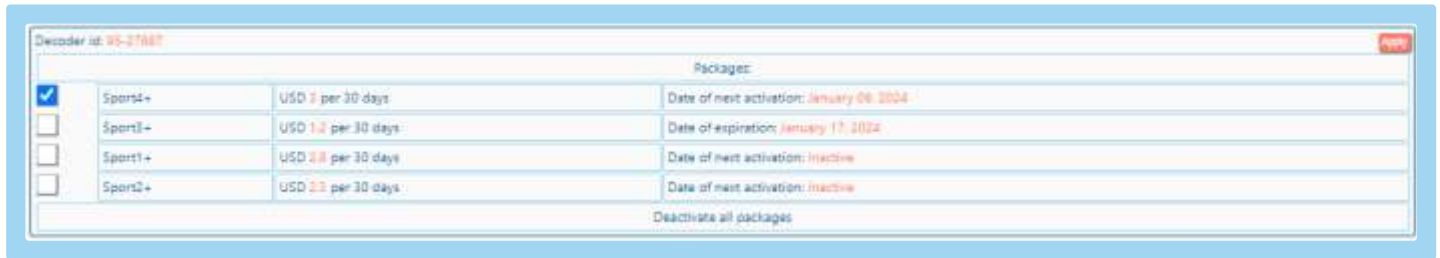
Here you can top up your balance for 30, 60, 90 or 360 days.

In addition, you can deposit any amount. Please note that the payment period is a multiple of 30 days. If the remaining amount is not enough to activate the next 30 days of the service, the service will be deactivated and the remaining amount will remain on the client's balance until the appropriate replenishment of the amount.

The front-end calculates the minimum replenishment amount for the next 30 days and this amount is displayed in the payment entry window. The recommended minimum payment amount is calculated using the formula:

- The current tariff is multiplied by the number of 30-day payment periods (1, 2, 3 or 12, depending on the choice of payment period) and the current balance is subtracted from this amount. The default period is 30 days.

You can pay for the service using a **Visa/Master card** by selecting the appropriate icon. When you click the **Bank Transfer** button, an Invoice is generated and will be sent to your email address.



In the following windows you can see information about the Decoders that you have registered in the **Profile** menu:

- Decoder serial number;
- Date of next activation or deactivation of packages;
- Current packages for this Decoder;
- List of available packets.
- Button for deactivating all packets (disabling the Decoder).
-

Note. The package is activated immediately if there is a sufficient balance. Deactivation of the package will take effect the next time the tariff is activated, which occurs every 30 days at 00:00 UTC. You can see the next activation date in the same window. Also, you have the opportunity to add packages. These changes take effect immediately and the cost of the new package will be debited from your balance. The programs in each package will be available for viewing until the next package activation date, which occurs every 30 days.

If, when adding a package, there are not enough funds on the balance, the front-end displays a message:

Attention. Please, fill your balance before next payment cycle

If the subscriber has turned-off one of the packages for the Decoder or pressed the **DELETE ALL PACKAGES** button, the text of the “**Date of next activation:**” line will change to “**Date of expiration:**”.





FFMPEG Transcoder

FFMPEG Multichannel Transcoder designed to digital-to-digital conversion of one type of encoded data (video or audio) to another using FFMPEG solution.

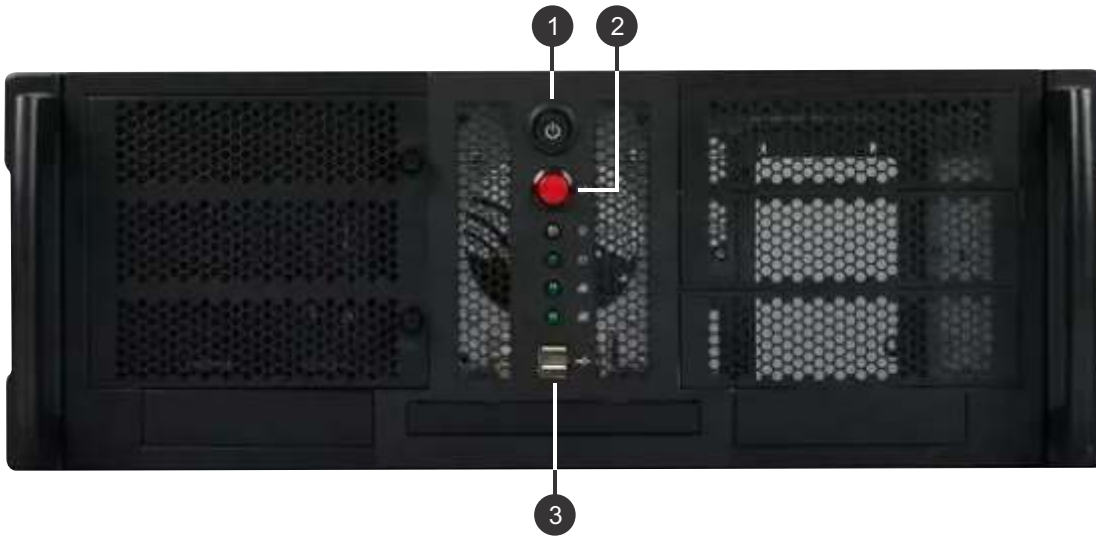
Module are intended for indoor use only.

Characteristics:

- LINUX OS.
- Transcoder converts audio or video formats. Device has possibility to transcode up to 14 HDTV services. It can encode in real-time from various hardware and software sources.
- Convenient WEB-interface for setting transcoding parameters.
- Possibility to enter advanced FFMPEG commands using the command-line for video and audio editing: FFMPEG provides a variety of editing features, such as cutting, merging, and trimming video and audio files. Users can also add or remove audio tracks, adjust volume levels, and modify other properties, such as framerate and resolution.

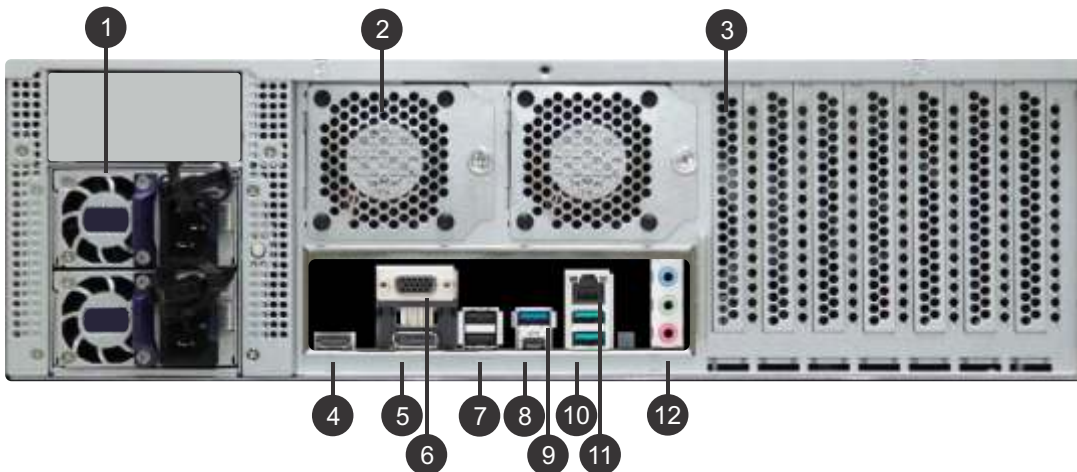
HardWare	
Processor	Intel i9-14900K
RAM	16G DDR5
SSD	256G
Front panel connectors	
LAN	Realtek Ethernet 2.5Gb
HDMI	HDMI 2.0
DisplayPort	DP 2.0
Rear panel connectors	
USB	4*3.2USB, 4*2.0USB
TypeC	1*TypeC
Mic	3*3.5mm Jack
Control&Monitoring	
WEB	Web browser control
USB Virtual COM-port	USB connector
SoftWare	
OS	Linux / Ubuntu
FFMPEG	Version _____
Phisical	
Interface language	English
Supply voltage	220VAC
Wattage	up to 500W
Temperature range	0...40 C
Dimensions	4U, 465.2 x 430.0 x 176.0 (mm)
Gross Weight	15 kg

Front Panel



- 1 Power on/off
- 2 Reset button
- 3 2*USB2.0 ports

Rear Panel



- | | |
|--------------------------------|-----------------------------|
| 1 Power supply | 7 2*USB2.0 ports |
| 2 FANs | 8 USB3.2 Gen2x2 TypeC |
| 3 1*PCIe 5.0, 3*PCIe 4.0 slots | 9 USB3.2 Gen1 port TypeA |
| 4 HDMI | 10 2*USB3.2 Gen2 port TypeA |
| 5 Display Port | 11 Realtek 2.5Gb Ethernet |
| 6 VGA port | 12 3*Audio jacks |

FFMPEG TRANSCODER

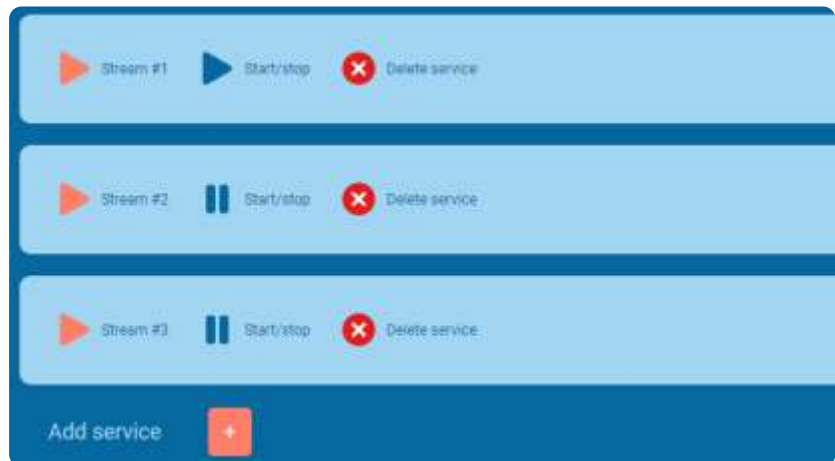
Press **Add service** button to create new transcoding service.
 The ▶ and ▼ buttons allows you to expand and collapse the lists of parameters.
 Use **Apply** button to save the parameters.
 You can start/stop the service using ▶ and || buttons.
 You can delete the service using ✖ button.



FFMPEG TRANSCODER

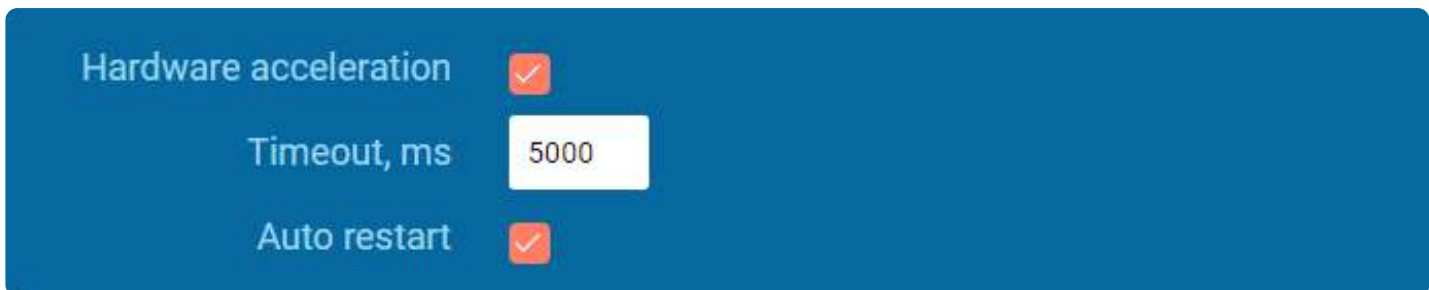
Parameters menu

Select the Service and press ► button to expand the list of the service parameters.



Hardware acceleration

You can use the Graphics Processing Unit (GPU) of the device to transcode the stream. To do this, select the **Hardware accelerator** option. Note that the WEB-interface does not show the percentage of GPU load. Use LINUX commands to see this parameter.



Timeout and Auto restart

For some reason the service may be missing data. You can set the time to stopping the service by **Timeout**. In this case, the corresponding information will sent to the log.

If the **Auto restart** mode is enabled then in this case the service starts again automatically.

TROPHY



10 MHz and DC Injectors

GENERAL INFORMATION

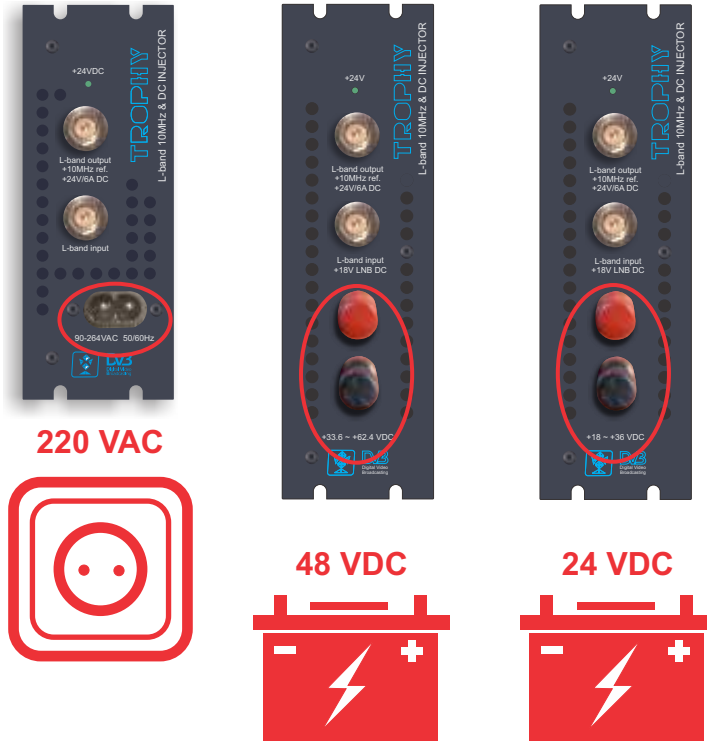
AMD series DC & 10MHz reference INJECTOR passes L-band signal and injects 10MHz reference signal and 24VDC voltage for feeding of BUC (Block Up Converter). Injector has 24V / 6.3A power supply unit sourced by 220 VAC or 18~36VDC, or 33.6 ~ 62.4VDC (see the Part. No table). Injector has embedded 18V / 0.5A source for feeding of LNB (optional, Part No.8002, 8004,8006). Modules are intended for indoor use only.

GENERAL DESCRIPTION OF FUNCTIONS

The device is DC&10MHz reference INJECTOR. The input and output signals are provided via N-connectors.

Deliveries are made with the following configurations/ device versions:

Features	Part No.					
	8001	8002	8003	8004	8005	8006
Powered by 220VAC	+	+				
Powered by 18 ~ 36VDC			+	+		
Powered by 33.6 ~ 62.4VDC					+	+
Embedded +18DC for LNB		+		+		+



10MHz & DC INJECTOR

SPECIFICATIONS	
Input signal frequency range	950...2150MHz
Insert loss 950...2150MHz	7 dB max
10MHz reference stability	+/- 10ppm
10 MHz ref. level	+5 dBm
RF interface	2 x N-connectors, 50 Ohm
Injection DC voltage	+ 24VDC/ 6.3A
LNB feeding voltage (optional)	+ 18VDC / 0.5A
Cooling	2 FANs, 40x40mm, 12V/24V
Power Factor	Part No 8001, 8002 90...264VAC/150W
	Part No 8003, 8004 18 ~ 36VDC/150W
	Part No 8005, 8006 33.6 ~ 62.4VDC/150W
Physical	
Working temperature	0°C to +60°C
Dimensions	245x132x51mm (8001-2); 285x148x51 (8003-6)
Weight	2kg (8001-8002); 3kg (8003-8006)

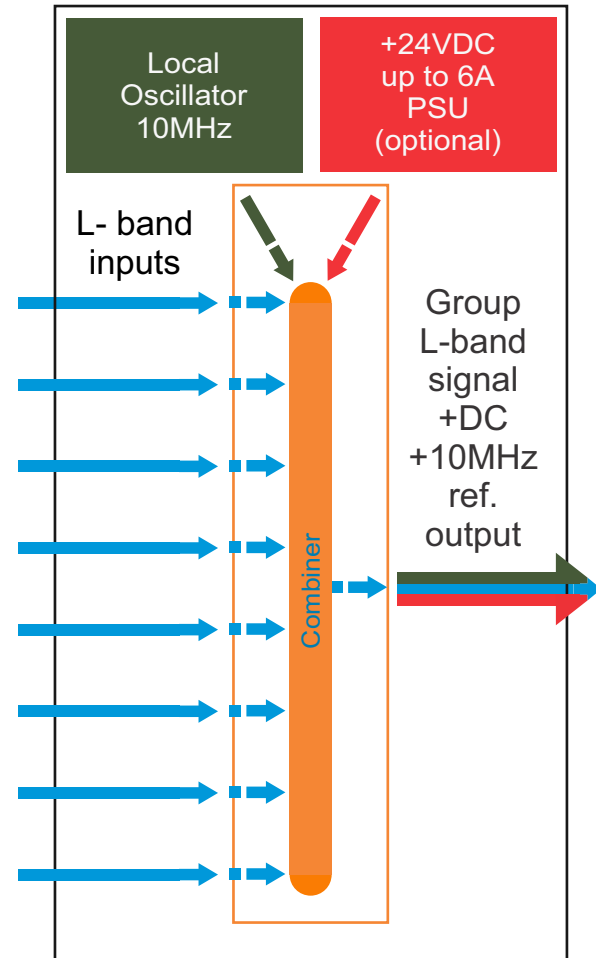
TROPHY



8-channel Combiner

GENERAL INFORMATION

AMD series L-BAND 8-CHANNELS COMBINER/ DC&10MHZ REFERENCE combines eight L-band carriers, injects 10MHz reference signal and 24VDC voltage (optional) and passes group signal for feeding to Block Up Converter. COMBINER has embedded 24V / 6A power supply unit. Modules are intended for indoor use only.



INSTALLING AND OPERATING INSTRUCTIONS

SAFETY INSTRUCTIONS

When assembling and commissioning the COMBINER and executing the settings, always follow the accompanying instructions exactly.

The devices are not to be assembled and brought into use by anybody who is not an authorised technician.

When components are being installed in areas where reception is important, ensure that EMC regulations are observed.

All assembly, installation and cable connection must take place when no electricity has been connected.

The provisions of DIN EN 50083 must be observed at all times when working with the equipment. In particular, DIN EN 60728-11 regarding safety may on no account be ignored.

GENERAL DESCRIPTION OF FUNCTIONS

The device is L-BAND 8-CHANNELS COMBINER/ DC&10MHZ REFERENCE. The input signals are provide via SMA-connectors and output signal is provided via N-connector.

L-BAND 8-channel COMBINER

SPECIFICATIONS	
Input/output signal frequency range	950...2150MHz
Number of inputs	Eight
Insert loss 950...2150MHz	17 dB
10MHz reference stability	10ppm
10 MHz ref. level	+5 dBm
RF interfaces	8 x SMA connectors, 1 x N-connectors, 50 Ohm
Injection DC voltage	+ 24VDC
DC rated current	0...6.2A
Rated power	150W
DC Ripple & Noise (max.)	240mVp-p
Input AC voltage	90...264VAC
Physical	
Working temperature	0°C to +70°C
Dimensions	245x132x51mm
Weight	2kg Weight



DVB-S/S2 to IP/ASI streamer

GENERAL INFORMATION

DVB-S/S2 to IP/ASI Streamer/Descrambler designed to broadcast in unicast/multicast on an IP network or ASI interface the services (TV or Radio programs) issued from FTA or TROPHY-ACCESS digital reception; in case of TROPHY-ACCESS encrypted signal, a Software license to enable TROPHY-ACCESS professional descrambler solution has been enabled. The IP streams can be viewed using an IPTV set-top box or a software video player. Modules are intended for indoor use only.

Characteristics:

Input: one DVB transport stream (MPTS).

Output: up to 120 simultaneous, IP-encapsulated services (TV or Radio programs), with individual multicast addresses and one MPTS stream.

Descrambling up to 120 TROPHY-ACCESS channels.

Information filtering of DVB tables.

UDP & RTP transmission protocols.

Web interface for configuration and setting.

PID filtering.

PSI/SI parsing.

PAT, PMT and SDT table regeneration.

Routing or blocking for CAT, EIT, TDT tables.

Streamer/Descrambler is designed to:

receive full DVB-S/S2 transponder;

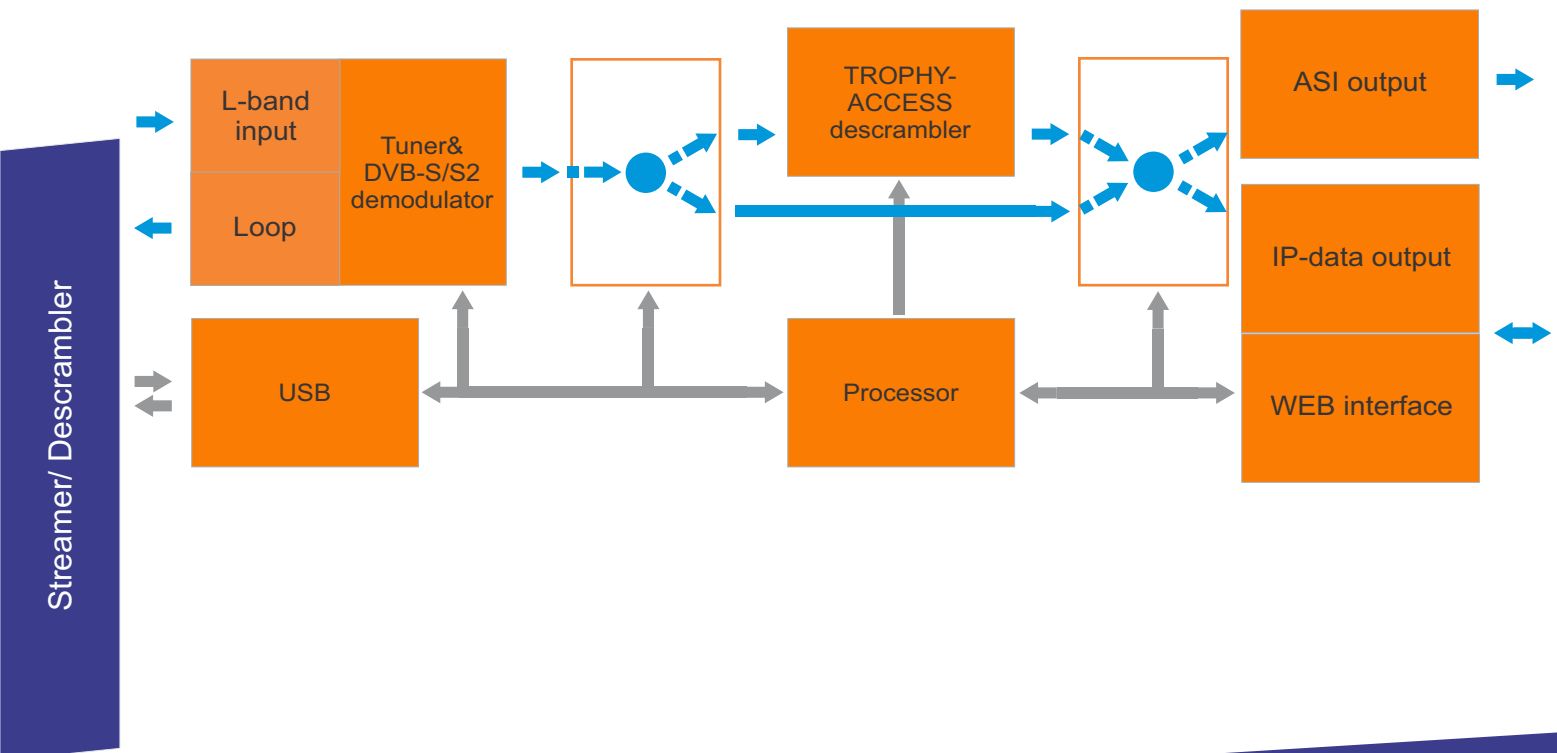
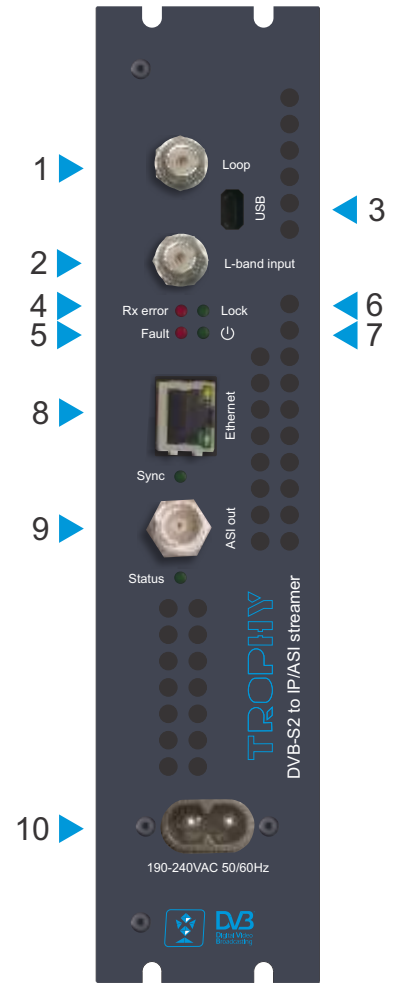
encapsulate Transport Stream to unicast/multicast UDP/RTP-packets;

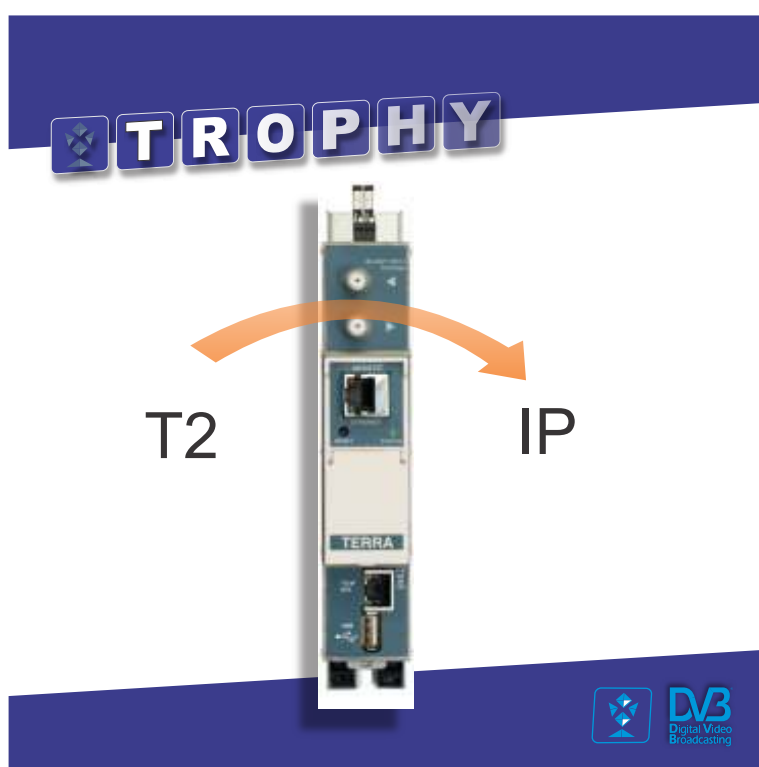
transmit Transport Stream to ASI-output;

descrambling all TROPHY-ACCESS services.

FUNCTIONAL ELEMENTS

- 1 - RF output (input signal loop-through). F socket
- 2 - Input of SAT IF signal, DC output for LNB
- 3 - Virtual COM-port, micro USB
- 4 - Rx error (red) Input signal error
- 5 - Fault (red)
Blinking frequently (*Boot process or HardWare error*)
Blinking slowly (*Default configuration or Configure error*)
Light constantly (*Data overflow*)
- 6 - Lock (green) Input signal lock
- 7 - Power (green) Power ON/OFF
- 8 - ETHERNET - interface. RJ45 socket
- 9 - ASI - interface. BNC connector
- 10 - Power connector





4 x DVB-T/T2/C to IP streamer

Product description

STI441C DVB-T/T2/C to IP streamer designed to broadcast in multicast on an IP network the services (TV or Radio programmes) issued from FTA or encrypted digital reception. The IP streams can be viewed using an IPTV set-top-box or a software video player. The streamer can descramble encrypted services by two conditional access (CA) modules.

Modules are intended for indoor use only.

Characteristics:

- Input: four DVB multi program transport streams (MPTS).
- Output: up to 256 simultaneous, IP-encapsulated services (TV or Radio programs), with individual multicast addresses and 4 MPTS streams.
- • Information filtering of DVB tables.
- • UDP & RTP transmission protocols.
- • Web interface for configuration and setting.
- • SAP & SDP protocols that facilitate automatic service selection on the user's STB and provide information to external servers.
- • PID filtering.
- • PSI/SI parsing.
- • Transparent ECM & EMM messaging.
- • PAT, PMT and SDT table regeneration.
- • Routing of CAT, EIT, TDT tables.
- • Configurable QoS marking.
- • Configurable Time To Live.
- • TS file streaming from USB flash.
- • Single cable interface (EN50494, EN50607) support.

Initial program screen

The first screen that appears when the module accessed contains the "Main" window, which gives general information on the device.

In the left of each configuration screen you will see a main menu table. Using it, you can switch between the different configuration menus. The "RF inputs" and "System menu" lines contains several submenu. Also common elements for all screens is module title and login information strings. The module title can be changed after pressing the "Change" button in the "Device information" table.



RF inputs



Four demodulators can be set up in this section. Each demodulator has a corresponding input table.

Transport streams

Input services

Input source
Demod. 1 ✕
Demod. 2 ✕
Demod. 3 ✕
+
Demod. 4 ✕
USB 1 ✕

Demod. 1	Bitrate	
All TS Demod. 1	19.13	+
LRT TELEVIŽIJA HD	4.94	+
LRT TELEVIŽIJA	1.75	+
LRT PLIUS	3.39	+
LRT PLIUS HD	8.44	+

Demod. 2	Bitrate	
All TS Demod. 2	18.76	+
Lietuvos Rytas	1.13	+
CurrentTime	2.39	+
LNK	1.16	+
Info TV	1.58	+
2TV	1.48	+
TV8	2.25	+
TV1	1.59	+
TV3	2.37	+
TV6	1.03	+
BTV	0.70	+
Delfi TV	2.47	+

Demod. 3	Bitrate	
All TS Demod. 3	0.10	+
SLO-TV1	0.00	+
SLO-TV2	0.00	+
TV K-C	0.00	+
SLO-TV3	0.00	+
HRT-TV1	0.00	+
HRT-HR1	0.00	+
RBC-TV	0.00	+

Demod. 4	Bitrate	
All TS Demod. 4	0.00	+
SLO-TV1	0.00	+
SLO-TV2	0.00	+
TV K-C	0.00	+
SLO-TV3	0.00	+
HRT-TV1	0.00	+
HRT-HR1	0.00	+
RBC-TV	0.00	+

USB 1	Bitrate	
LTV World	3.60	+

Output streams

Services	IP address	IP port	Bitrate	Enable
LRT TELEVIŽIJA HD	239.192.11.0	1234	4.94	✓
LRT PLIUS HD	239.192.11.4	1234	8.44	✓
LNK	239.192.11.2	1234	1.16	✓
Info TV	239.192.11.3	1234	1.58	✓
2TV	239.192.11.5	1234	1.48	✓
SLO-TV1	239.192.11.6	1234	0.00	✓
SLO-TV2	239.192.11.7	1234	0.00	✓
LTV World	239.192.11.8	1234	3.60	✓
LTV World	239.192.11.9	1234		Append

This is the home page for configuring device output streams. It consists of two tables: "Input services" and "Output streams". At the top of the input services table, you can select the input sources whose services will be displayed at the bottom of the table. Press the "+" icon on the upper right corner of table to add the input source or the "x" icon on the input source to remove them. Input services are grouped according to the selected input sources. The first row of the source's services shows its total bit rate. In the following lines - its services.

Specifications

RF input	
Standard	DVB-T/T2/C
AGC range	45...80 dBuV
Number of channels	4
Input frequency range	47...862 MHz
Impedance	75Ohm
DC output for preamplifier	12V / 100mA
IP output	
Standard	IEE802.3 1000 Base-T (10/100 Base-T is not supported)
Stream rate	up to 200 Mbps
Transmission protocols	UDP/RTP
multicast, MPTS, SPTS	Yes
CA modules	2 slots
Control port	IEE802.3 10/100 Base-T
Current consumption	12V / 0.6A without external DC feeding and CAM 1.1A with two CAM's and maximal external load
Operating temperature range	0 ÷ +50 C
Dimensions/Weight (packed)	36x198x112 mm/0.84 kg

TROPHY



8 x DVB-S/S2/S2X to IP streamer

Product description

SDI482C DVB-S/S2/S2X to IP streamer designed to broadcast in multicast on an IP network the services (TV or Radio programmes) issued from FTA or encrypted digital reception. The IP streams can be viewed using an IPTV set-top-box or a software video player. The streamer can descramble encrypted services by two conditional access (CA) modules.

Modules are intended for indoor use only.

Characteristics:

- Input: eight (sdi482C) DVB multi program transport streams (MPTS).
- Output: up to 512 simultaneous, IP-encapsulated services (TV or Radio programs), with individual multicast addresses and 8 MPTS streams.
 - Information filtering of DVB tables.
 - UDP & RTP transmission protocols.
 - Web interface for configuration and setting.
 - SAP & SDP protocols that facilitate automatic service selection on the user's STB and provide information to external servers.
 - PID filtering.
 - PSI/SI parsing.
 - Transparent ECM & EMM messaging.
 - PAT, PMT and SDT table regeneration.
 - Routing of CAT, EIT, TDT tables.
 - Configurable QoS marking.
 - Configurable Time To Live.
 - TS file streaming from USB flash.
 - Single cable interface (EN50494, EN50607) support.

Specifications

RF input	
Standard	DVB-S/S2/S2X
AGC range	45...85 dBuV
Symbol rate	2...45 Msymb/s
FEC	1/2_2/3_3/4_5/6_7/8 (QPSK) 1/2_3/5_2/3_3/4_4/5_5/6_8/9_9/10 (8PSK)
Number of channels	8
Input frequency range	950...2150 MHz
Impedance	75Ohm
IP output	
Standard	IEE802.3 1000 Base-T (10/100 Base-T is not supported)
Stream rate	up to 0.6Gbps
Transmission protocols	UDP/RTP
multicast, MPTS, SPTS	Yes
CA modules	2 slots
Control port	IEE802.3 10/100 Base-T
Current consumption	12V / 1A without external DC feeding and CAM 3.2A with two CAM's and maximal external load
Operating temperature range	0 ÷ +50 C
Dimensions/Weight (packed)	48.5x198x112 mm/0.97 kg

Initial program screen

The first screen that appears when the module accessed contains the "Main" window, which gives general information on the device.

In the left of each configuration screen you will see a main menu table. Using it, you can switch between the different configuration menus. The "RF inputs" and "System menu" lines contains several submenu. Also common elements for all screens is module title and login information strings. The module title can be changed after pressing the "Change" button in the "Device information" table.



Input settings

All demodulators of module can be set up in this section.

"Enable" - used to activate the demodulator.

"SAT input" – used to select input of the SCIF switch.

"User band" - used to select the user band of SCIF switch. The „SAT input“ and "User band" columns are shown when the "Source type" set to "SCR" or "dSCR".

"Frequency" - the frequency of transponder in MHz. Ensure, that SAT IF frequency (FR transponder - LNB Lo/Hi) fits into demodulator's input frequency range.

"Symbol rate" - the symbol rate of transponder in kSym/s.

Press the "Update" button to set new parameters.

There are tree status columns in the "Input settings" table.

"Lock status" can have following icons:

- empty, when the input channel (demodulator) is turned off;
- green icon, when demodulator is locked to the transponder;
- red icon, when demodulator is unlocked. This state generates error in diagnostic window as well. If the channel is not used, it's recommended to turn it off instead of leaving unlocked. It will save power consumption. "RF level" and "LM" (Link Margin) are measured parameters of the input signal.

		Enable	SAT input	User band	Frequency, MHz	Symbol rate, Ks/s	Lock status	RF level, dBµV	LM,dB
Demod. 1	▶	✓	B V/Hi ▼	UB 1 ▼	11766	29900	🟢	85	4.4
Demod. 2	▶	✓	B V/Lo ▼	UB 2 ▼	10992	27500	🟢	81	9.4
Demod. 3	▶	✓	A H/Lo ▼	UB 3 ▼	10891	22000	🟢	80	6.2
Demod. 4	▶	✓	A H/Lo ▼	UB 4 ▼	11053	22000	🟢	83	8.3
Demod. 5	▶	✓	A V/Lo ▼	UB 5 ▼	11229	22000	🟢	83	6.9
Demod. 6	▶	✓	A V/Lo ▼	UB 6 ▼	11347	22000	🟢	80	7.5
Demod. 7	▶	✓	A H/Lo ▼	UB 7 ▼	11362	22000	🟢	81	7.4
Demod. 8	▶	✓	A V/Lo ▼	UB 8 ▼	11377	22000	🟢	82	5.9
Select all		<input type="checkbox"/>							

Update

Transport streams

This is the home page for configuring device output streams. It consists of two tables: "Input services" and "Output streams". At the top of the input services table, you can select the input sources whose services will be displayed at the bottom of the table. Press the "+" icon on the upper right corner of table to add the input source or the "x" icon on the input source to remove them. Input services are grouped according to the selected input sources. The first row of the source's services shows its total bit rate. In the following lines - its services.

Input services

Input source

Demod. 1 x Demod. 2 x +

Demod. 3 x Demod. 4 x

Demod. 5 x Demod. 6 x

Demod. 7 x Demod. 8 x

Demod. 1	Bitrate	
All TS Demod. 1	63.99	+
Rai 1 HD	8.35	+
Rai 2 HD	7.60	+
Rai 3 HD	6.25	+
Rai Sport + HD	6.16	+
Rai 4 HD	5.65	+
Rai Movie HD	4.19	+
Rai 4K	22.80	+
Rai Radio 1	0.36	+
Rai Radio 2	0.36	+
Rai Radio 3	0.36	+
Rai Radio3 Classica	0.36	+
Rai GR Parlamento	0.30	+
Rai Isoradio	0.30	+
Rai Radio	0.36	+

Output streams

Services	IP address	IP port	Bitrate	Enable
Rai 1 HD	239.192.11.2	1234	7.85	<input checked="" type="checkbox"/>
Rai 2 HD	239.192.11.3	1234	7.86	<input checked="" type="checkbox"/>
Rai 3 HD	239.192.11.4	1234	6.48	<input checked="" type="checkbox"/>
Rai Sport + HD	239.192.11.5	1234	6.15	<input checked="" type="checkbox"/>
Rai 4 HD	239.192.11.6	1234	5.64	<input checked="" type="checkbox"/>
Rai Movie HD	239.192.11.7	1234	4.21	<input checked="" type="checkbox"/>
Rai Movie	239.192.11.8	1234	1.50	<input checked="" type="checkbox"/>
Rai 4	239.192.11.9	1234	1.54	<input checked="" type="checkbox"/>
MDR Sachsen HD	239.192.11.11	1234	12.30	<input checked="" type="checkbox"/>
hr-fernsehen HD	239.192.11.12	1234	9.36	<input checked="" type="checkbox"/>
tagesschau24 HD	239.192.11.13	1234	5.69	<input checked="" type="checkbox"/>
ONE HD	239.192.11.14	1234	5.93	<input checked="" type="checkbox"/>
ARD alpha HD	239.192.11.15	1234	6.10	<input checked="" type="checkbox"/>
SR Fernsehen HD	239.192.11.16	1234	9.34	<input checked="" type="checkbox"/>
Radio Bremen HD	239.192.11.17	1234	3.44	<input checked="" type="checkbox"/>
BBC World News Europe HD	239.192.11.18	1234	8.90	<input checked="" type="checkbox"/>
NHK WORLD-JPN	239.192.11.19	1234	9.05	<input checked="" type="checkbox"/>
Al Jazeera English HD	239.192.11.20	1234	7.89	<input checked="" type="checkbox"/>
3sat HD	239.192.11.21	1234	15.42	<input checked="" type="checkbox"/>
TVRUS	239.192.11.55	1234		<input type="checkbox"/>

Append

Press the icon to add the input service as new stream to output streams. Also you can drag and drop the input service to the output streams table "Services" column. This method allows you to form a multiple program output transport stream. Scrambled services are displayed with icon. After pressing on this icon additional submenu appears. This submenu allows to descramble service with selected CA module. When the service is selected for descrambling, the icon changes to .

 **T R O P H Y**



Block Up Converters

2W KU-BAND BLOCK-UP-CONVERTER (BUC)

The BUC converts a 950...1750 MHz range signal to the 10,9...11,7GHz or 11,7...12,5 GHz range



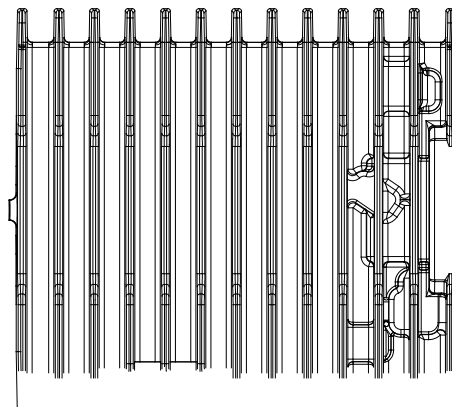
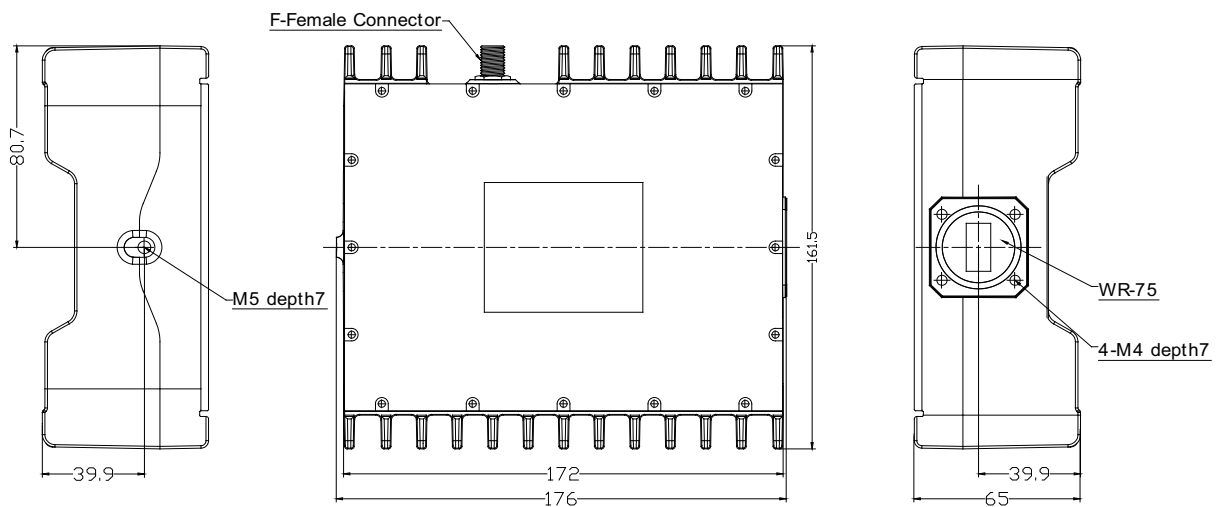
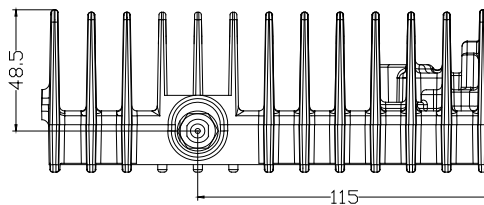
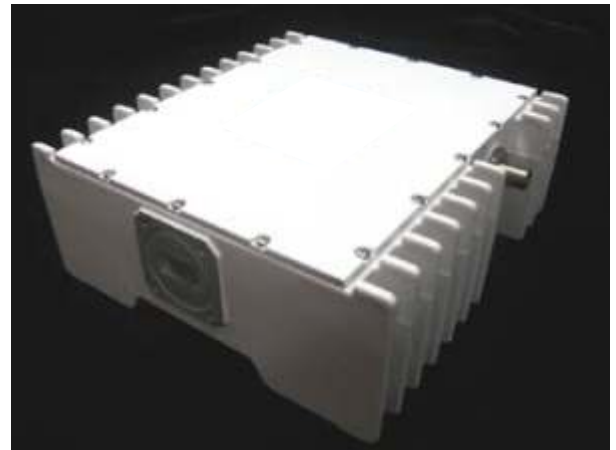
Specifications

Input frequency range	950 ... 1750 MHz
Output frequency range	10700 ... 11500 MHz (Variant A)
	11700 ... 12500 MHz (Variant B)
L.O. frequency	9750,00 MHz (Variant A)
	10750,00 MHz (Variant B)
Gain	55.0 dB (typical)
Nonuniformity of the gain	1.0 dB
L.O. temperature instability	$2 \cdot 10^{-6}$
L.O. 10MHz level	-5 ... +5 dBm
Output power	2W (33dBm)
Power supply voltage	+18 ... +24V
Current consumption	1,4 A
Typical input signal level	70dB
Input impedance	50 Ohm
Operation temperature	-40 ... +55 C
Dimensions, mm	181,4 x 106,7 x 50
Weight	1,2 kg
Interfaces	
Input interface	N-type
Output interface	WR75G

4W KU-BAND BLOCK-UP-CONVERTER (BUC)

The 4W BUC converts a 950...1750 MHz range signal to the 10,7...11,5GHz or 11,7...12,5 GHz range.

- BUC is ideal for Broadband VSAT RF terminals and MVDS broadcasting;
- 36dBm output power;
- Optional Internal Reference source;
- RoHS Compliant;
- Small Size & Mass;
- Power Consumption : 35W Max;
- Air Humidity : up to 100%;



KU-BAND BLOCK UP CONVERTER

Specifications		
Input frequency range		950 ... 1750 MHz
Output frequency range		10700 ... 11500 MHz (Variant A)
		11700 ... 12500 MHz (Variant B)
L.O. frequency		9750,00 MHz (Variant A)
		10750,00 MHz (Variant B)
Linear Gain		58.0 dB (typical)
Nonuniformity of the gain		1.0 dB
Frequency Sense		Non-inverted
Spurious	In band	-60dBc
	Out of band	-50dBc
Phase Noise	100Hz	-60dBc/Hz
	1kHz	-70dBc/Hz
	10kHz	-80dBc/Hz
	100kHz	-90dBc/Hz
10MHz External Reference level		-5 ... +5 dBm
Output power		4W (36dBm min 1dB Compression Point)
Operating voltage		+15 ... +24VDC
Power consumption		35W
Typical input signal level		70dB/uV
Input impedance		75 Ohm ; 50 Ohm
Operation temperature		-40 ... +55 °C
Dimensions, mm / Weight, kg		176,1 x 161,5 x 65 / 1,8
Interfaces		
Input interface		F-connector or N-type
Output interface		WR75G

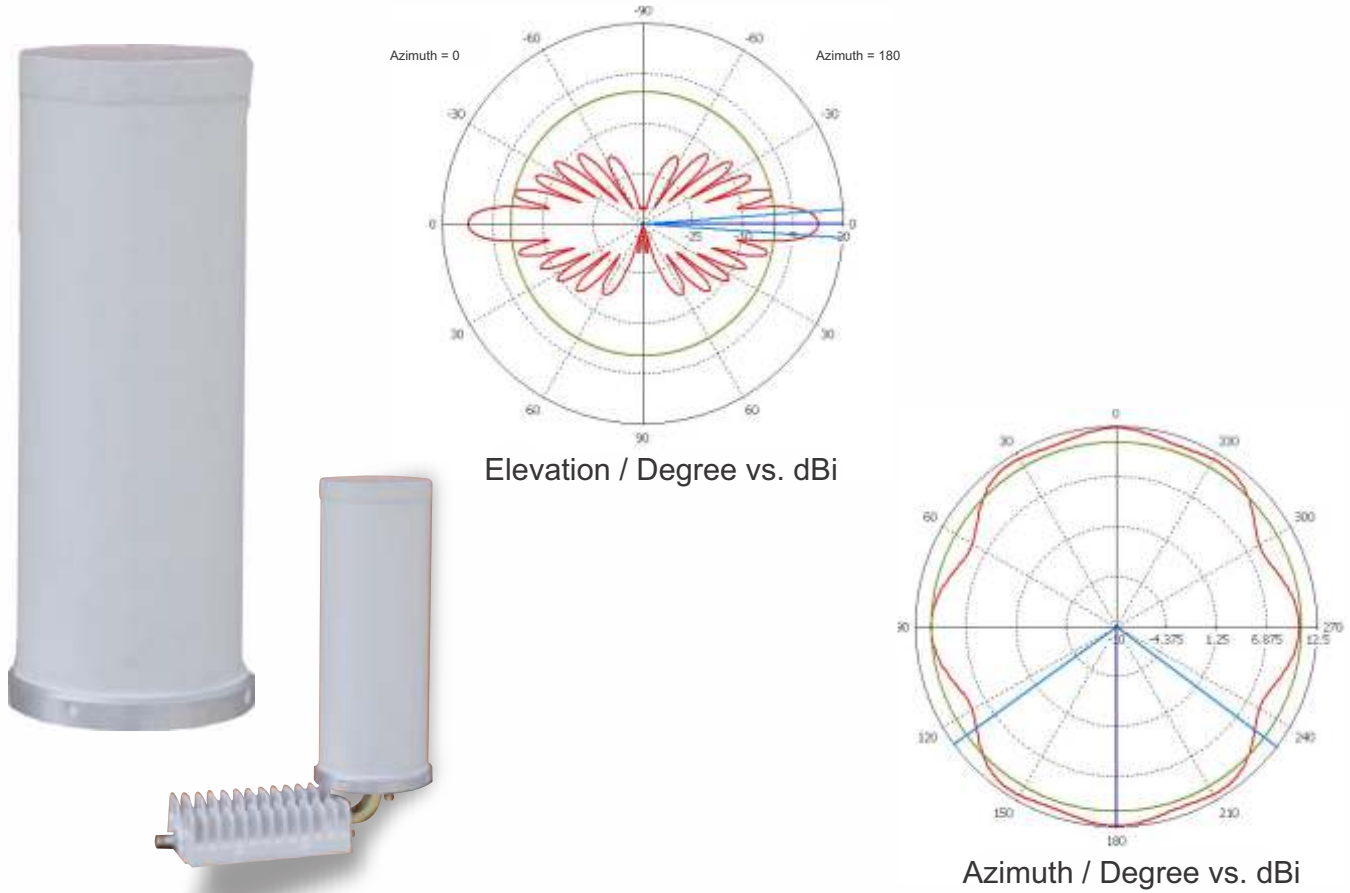
 T R O P H Y



Omnidirectional Slotted Antenna

OMNIDIRECTIONAL SLOTTED ANTENNA

Antenna is used like transmit outdoor antenna for terrestrial Ku-band broadcasting.



Specifications

Specifications	
Operation band	
Variant A	10,75...11,5 GHz
Variant B	11,7...12,5 GHz
Signal polarization	Horizontal
Gain	12,3 dBi max
Elevation plane Beamwidth	8,3 degrees
VSWR in operation band	No more than 1,6
Type of flange	WR75G
Weight	2 kg
Type of performance	Waterproof

OMNIDIRECTIONAL SLOT ANTENNA



DVB-S2 to DVB-S2 Transmodulator

GENERAL INFORMATION

ATD-54-S/S2 to DVB-S2 TRANSMODULATOR is a brand new transmodulator from DVB-S/S2 to DVB-S2 designed for applications over satellite or MVDS in full compliance with DVB-S2 standard.

The ATD-54-S/S2 to DVB-S2 TRANSMODULATOR:

- receives&demodulates DVB-S or DVB-S2 transponder;
- descrambles all TROPHY-ACCESS channels (optionally);
- modulates new DVB-S2 transponder to transmit in satellite transmitter or MVDS Block UP Converter (BUC). As a result, the maximum MER value for the new carrier is restored. The form and quality of the repeater signal becomes the same as that of the base station signal.

Attention! Symbol rate of output transponder must be equal to or bigger than symbol rate of input transponder. But output symbol rate must not exceed more than 20% value of input symbol rate.

A high-performance FPGA does the analogue TV modulation and the freely adjustable up-conversion into L-band range (950 ... 2150MHz). A high-speed digital→analogue converter (DAC) is responsible for the excellent output signal.

MAIN FUNCTIONS OF ATD-54-S/S2 to DVB-S2 TRANSMODULATOR:

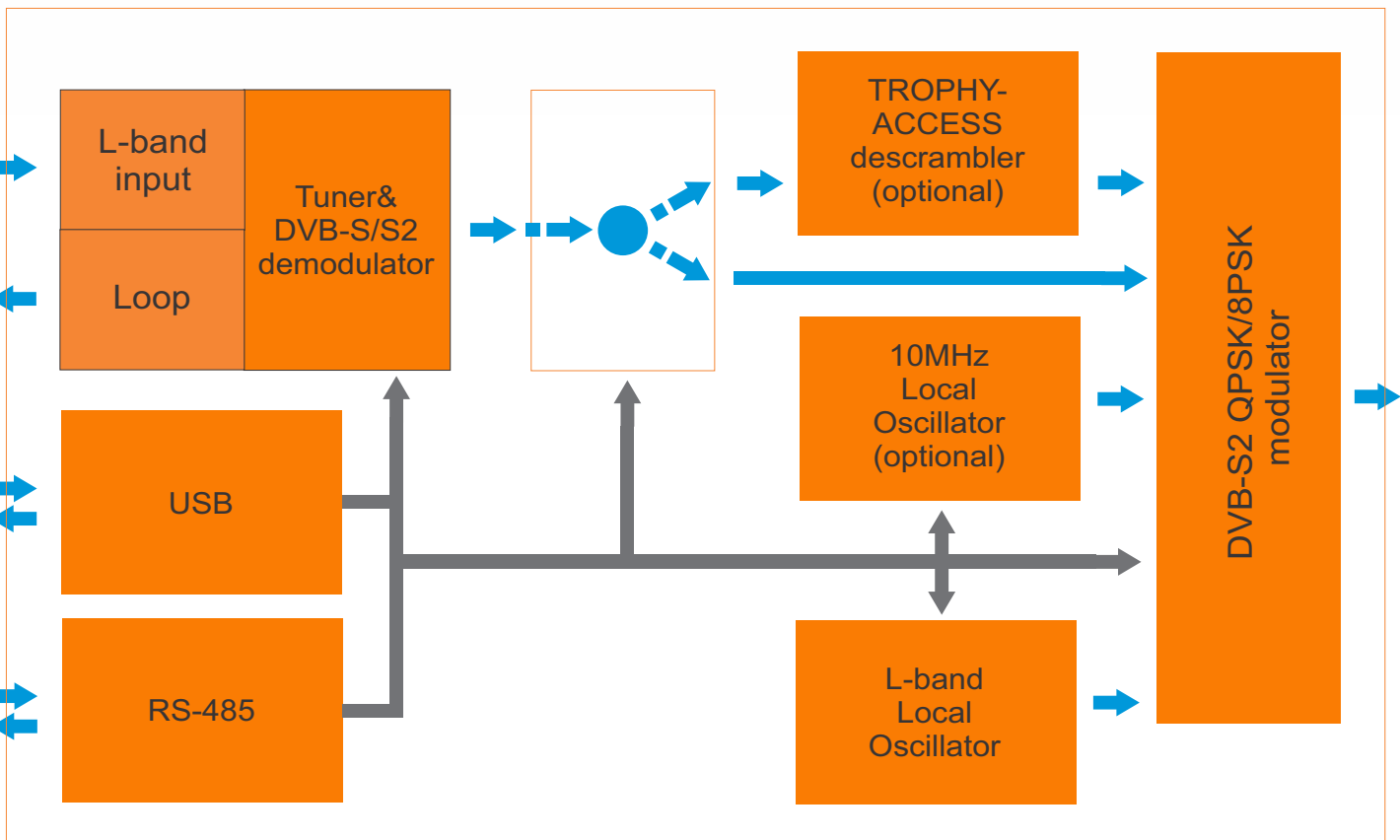
- covers the full L-Band range (900...2150 MHz) and offers bit rate from 1 Mbps up to 94 Mbps;
- provides all input channels to a single carrier, with built-in support for TROPHY-ACCESS descrambler (optionally). Software license to enable TROPHY-ACCESS descrambler solution;
- provides transport Stream rates up to 94 Mbit/s;
- supports all PIDs of input services;
- supports Control and Set-Up via USB and RS-485 interfaces;
- has high performance and reliability.
- network management is optional, using a special Remote Access Controller. The Remote Access Controller provides WEB monitoring of the input parameters of the transmodulator/ transmodulators.

ATD-54-S/S2 to DVB-S2 TRANSMODULATOR integrates the CycloneV core technology required to perform high quality modulation based on TROPHY expertise. It provides customers with a best in class performance, providing a high SNR value, excellent shoulder levels and lowest phase noise.

ATD-54 S/S2 to S2 TRANSMODULATOR provides a high performance channel spectrum. This results gives an efficient transmission in QPSK and 8PSK modes. The USB interface ensures ease of use and enables full configuration of the transmodulator, including signal input management, selection of modulation parameters, control of the mute/unmute conditions for the RF output signal. The Remote Access Controller provides WEB monitoring of the input parameters of the transmodulator (transmodulators).

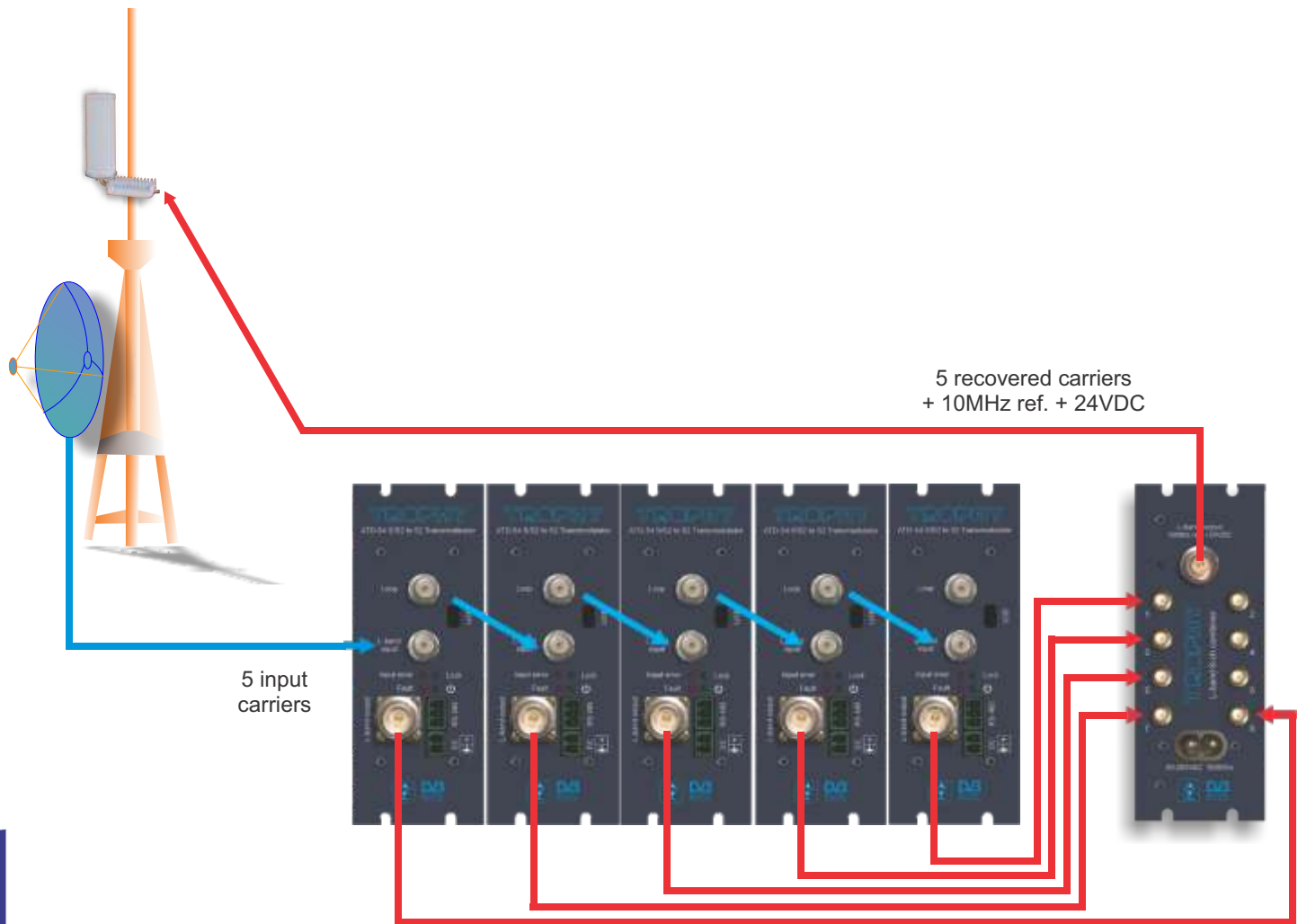


ATD-54 S2 to S2 TRANSMODULATOR



THE MAIN APPLICATION OF DVB-S/S2 to DVB-S2 TRANSMODULATORS

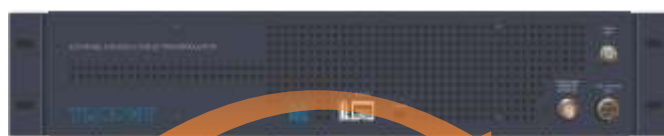
Experience of MVDS terrestrial broadcasting shows that DVB-S2 carrier must be restored after a second signal receiving/transmission. This fully restored signal parameters. The output signal coincides with the signal characteristics (MER, VBER, CBER, C/N etc.), which is transmitted from the Head-End. In addition, possible to form a new frequency grid, if necessary.



ATD-54 S2 to S2 TRANSMODULATOR

SPECIFICATIONS	
Standards	
Carrier ID	ETSI 103 129
DVB-S2	EN 302 307
Control&Monitoring	
USB Virtual COM-port	Micro USB
WEB-Interface / RS-485	By REMOTE ACCESS CONTROLLER connected via RS-485 BUS
Descrambler mode	TROPHY-ACCESS (additional license)
RF Input	
L-band	900MHz to 2150MHz, 1MHz step
Input Symbol rate	From 1 to 45MSymb/s, 1KSymb/s step
LNB control	13/18V(on/off), 22 kHz
Connectors	2xF-connectors, 50Ω (IN+LOOP)
RF Output	
L-Band	900MHz to 2150MHz, 1MHz step
Connector	N-Type, 50Ω
10 MHz Local Oscillator (optional)	0...+5dBm, injected to output signal
SNR	> 40dB @ 0dBm
Attenuation range	0dB to -31.5dB, 0.5dB step
Modulation	
DVB-S2	QPSK: 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
Output Symbol rate	From 1 to 35MSymb/s, equal to or higher (not more 20%) than the input Symbol Rate
Symbol rate step	1KSymb/s
Physical	
12V DC/15W, 1kg Weight, 0°C to 50°C	

TROPHY



S2

S2

8-ch box for Transmodulators

GENERAL INFORMATION

8-CHANNEL 2U/19" BOX FOR DVB-S/S2 to DVB-S2 TRANSMODULATORS designed for MVDS retransmitters.

2U/19" BOX has:

- Embedded Remote Access Controller;
- Embedded 8-channel L-band Combiner;
- Embedded 24VDC/6A Power Supply for Block Up Converter feeding;
- Embedded 10MHz ref. Injector;
- 8 slots for ATD-54 Transmodulator modules installing;
- Embedded 12VDC/6A Power Supply for Transmodulators feeding;
- 4x60mm FANs.

The BOX is produced in two modifications:

powered by 220VAC



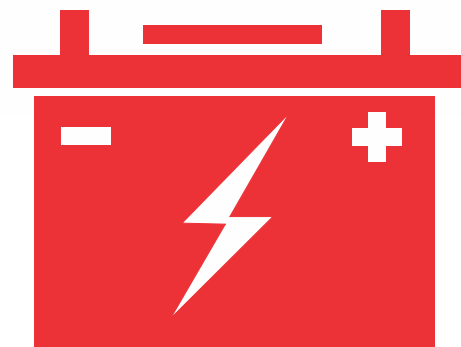
220 VAC



powered by 18 ... 36VDC supply

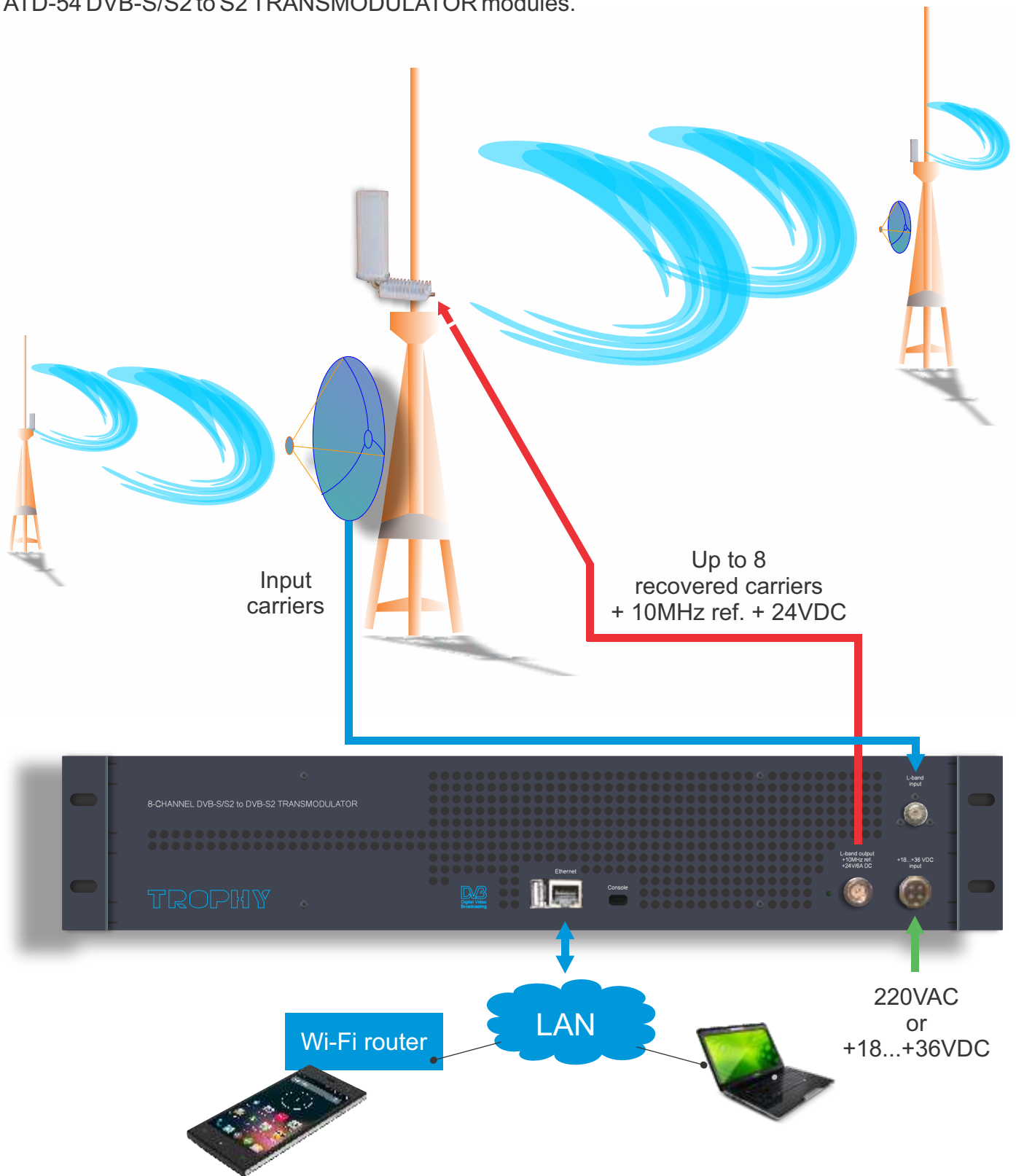


24 VDC



BOX for TRANSMODULATORS

The Remote Access Controller provides WEB monitoring of the input parameters of the transmodulators. The Remote Access Controller is embedded to the special 19-inch box with up to eight of ATD-54 DVB-S/S2 to S2 TRANSMODULATOR modules.



BOX for TRANSMODULATORS

Standards	
Carrier ID	ETSI 103 129
DVB-S2	EN 302 307
Control&Monitoring	
WEB-Interface	Ethernet 10/100 Mb, RJ-45 connector
Virtual COM-port	Micro USB connector
Descrambler mode	TROPHY-ACCESS (additional licenses)
RF input	
L-band	900MHz to 2150MHz, 1MHz step
Input Symbol rate	From 1 to 45MSymb/s, 1KSymb/s step
LNB control	13/18V, on/off, 22 kHz
Connectors	F-connector, 75Ω
RF Output	
L-Band	900MHz to 2150MHz, 1MHz step, up to 8 carriers
Connector	N-Type, 50Ω
Output level of each Transmodulator	-5dBm
Insert loss of Combiner&Injector	12 dB
10 MHz Local Oscillator; +24VDC / 6A	0...+5dBm, injected to output signal
SNR	> 40dB @ 0dBm
Attenuation range	From 0dB to -31.5dB; 0.5dB step
DVB-S2 FEC	QPSK: 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
Output Symbol rate	From 1 to 35MSymb/s, 1KSymb/s equal to or higher than the input Symbol Rate
Physical	+18V...+36VDC or 220VAC optional; 250W; 48cmx31cmx8.5cm; 6kg weight; 0°C to 60°C

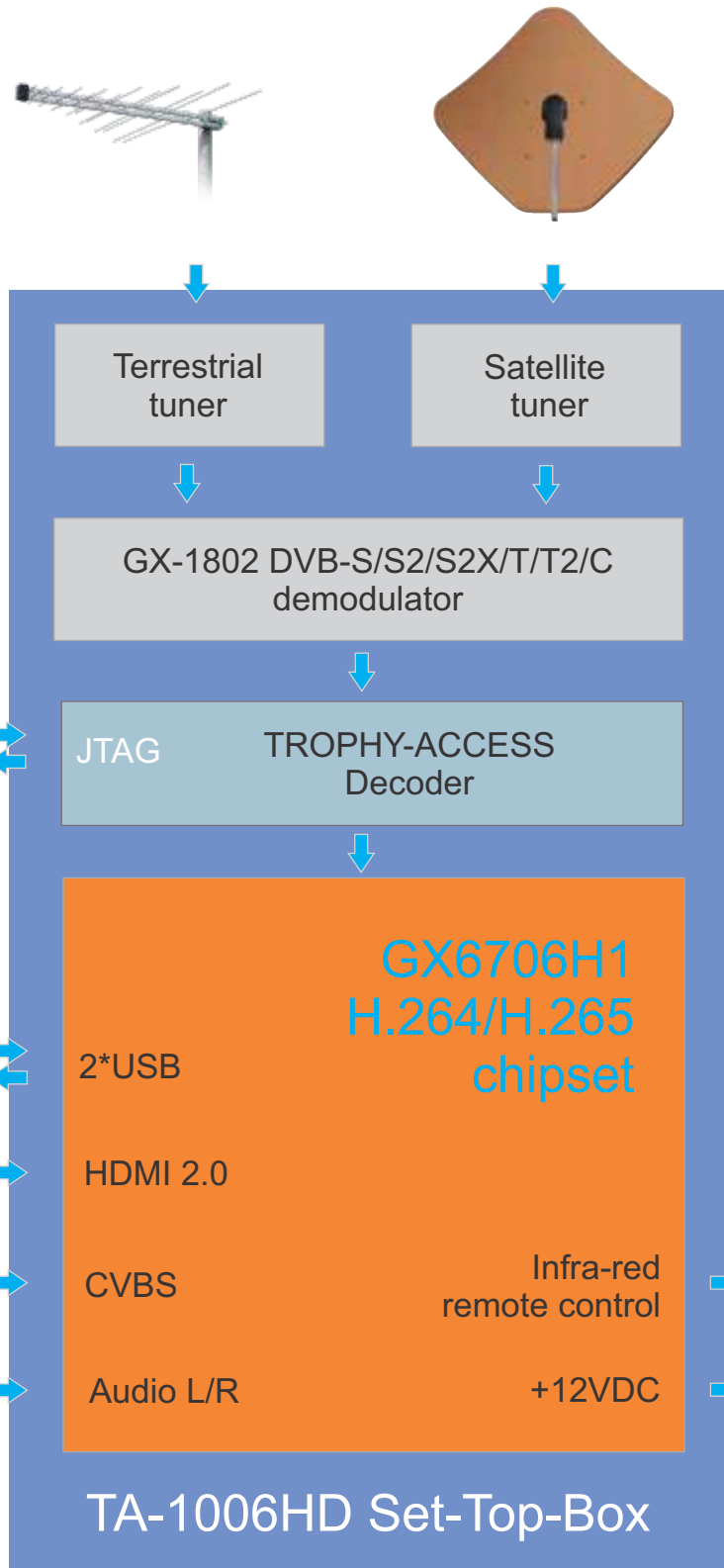
TROPHY



TROPHY-ACCESS Set-Top-Box

Specifications

Satellite mode	
Standards	EN 300 421 (DVB-S); EN 302 307 (DVB-S2); EN 302 307-2V1.4.1 (DVB-S2X)
Demodulation	QPSK, 8PSK
Input level	-65...-25 dBm
Symbol rate	1...55 Msymb/s (QPSK); 1... 45 Msymb/s (8PSK)
FEC	1/2_2/3_3/4_5/6_7/8 (QPSK) 1/2_3/5_2/3_3/4_4/5_5/6_8/9_9/10 (8PSK)
Input frequency range	950...2150 MHz
Terrestrial mode	
Standard	EN 300 744 (DVB-T); EN 302 755 v1.3.1 (DVB-T2)
Demodulation	BPSK/QPSK/16QAM/64QAM/256QAM
Minimum input level	from -96dBm(QPSK, 1/2) to -76dBm (256QAM, 5/6)
Symbol rate	0.45~8.5Mbauds
Guard interval	1/4, 19/256, 1/8, 19/128, 1/16, 1/32, 1/128
Pilot pattern	PP1~PP8
FFT mode	1k,2k,4k,8k,16k,32k
Bandwidth	7MHz/ 8MHz
Input frequency range	470...870 MHz
Cable mode	
Standard	EN 300 429 ITU J.83 Anex A/B/C (DVB-C)
Demodulation	64/128/256QAM
Symbol rate	5~7.1Mbauds
Input frequency range	62~858MHz
Common specs	
Input resistance	75 Ohm
Tuning step	1 MHz
Video Coding	MPEG-2/ H.264/ H.265
Picture ratio	4:3; 16:9
Connectors	LNB in, RF in, HDMI, A/V output, 2*USB2.0, JTAG
Output resolution	up to 1920×1080p@60fps
Color system	PAL, NTSC YUV4:2:2/YUV4:4:4
Sound	MPEG1/II, MP3, AAC
Trophy-Access 3.0 Decoder	Embedded FPGA IC
Chipset	GX6706H1
EPG	Multilanguage
Interface language	6 languages
Supply voltage	+12VDC 2A, external
Wattage	up to 14W
Dimensions	180x120x45
Weight	1 kg



TA-1006HD STB

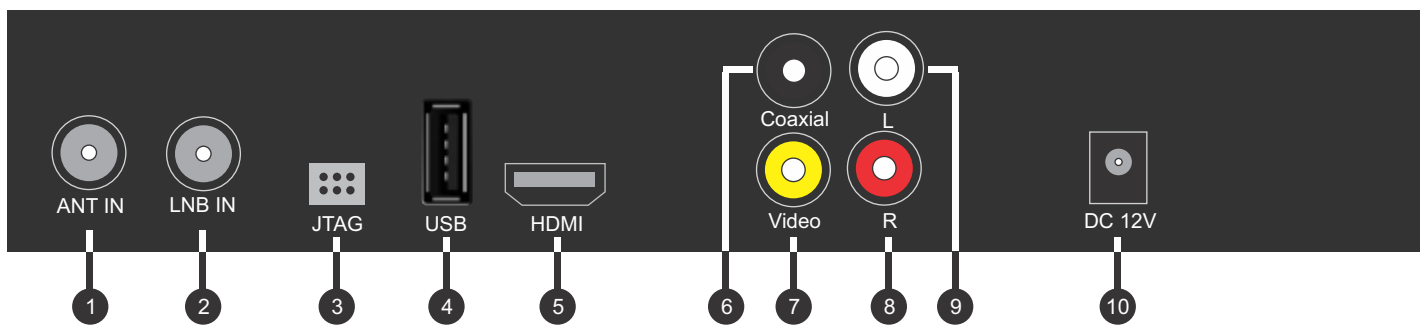


Front Panel



1	Power on/off
2	Menu button
3	Front USB port
4	LED display
5	Channel Down
6	Channel Up
7	Sound level Down
8	Sound level UP
9	OK

Back Panel



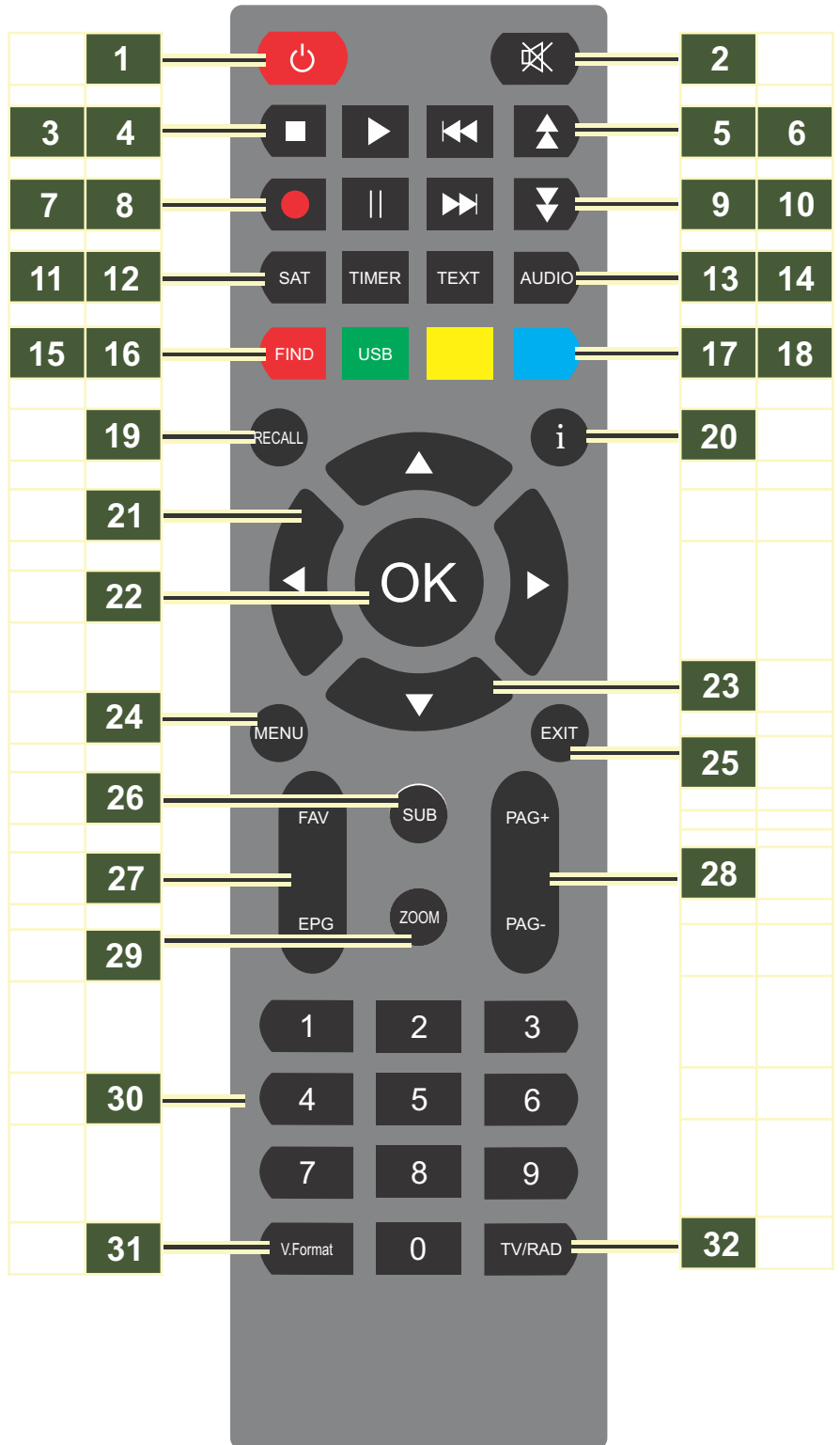
1	Terrestrial / cable signal input
2	LNB input
3	JTAG connector
4	Rear USB port
5	HDMI output
6	Coaxial audio output
7	Composite VIDEO output
8 9	Left/Right audio channel output
10	DC 12V connector

TA-1006HD STB

Remote Control Unit

TA-1006HD STB

- 1 STANDBY mode button
- 2 MUTE button
- 3 STOP button
- 4 PLAY button
- 5 BACK button
- 6 PAGE UP button
- 7 RECORD button
- 8 PAUSE button
- 9 FORWARD button
- 10 PAGE DOWN button
- 11 SAT button
- 12 TIMER button
- 13 TEXT button
- 14 AUDIO button
- 15 RED button
- 16 GREEN button
- 17 YELLOW button
- 18 BLUE button
- 19 RECALL button
- 20 INFO button
- 21 VOLUME up/down buttons
- 22 OK button
- 23 CHANNEL up/down buttons
- 24 MENU button
- 25 EXIT button
- 26 SUB button
- 27 VOLUME up/down button
- 28 CHANNEL up/down button
- 29 ZOOM button
- 30 Digits 0 to 9
- 31 VIDEO FORMAT button
- 32 TV/RADIO button



Installation Guide

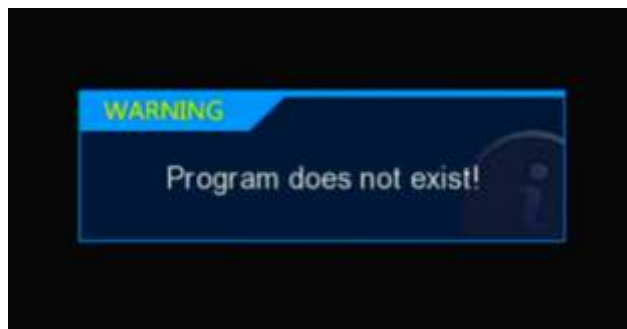
After connecting:

- the signal cable (s),
- the HDMI cord (or the video/audio cord),
- and the power supply unit,

"boot" appears on the front panel LED display and the receiver's download process begins.

After several seconds the device is ready for use.

If Set-Top-Box was turned on with an empty list of programs, the WARNING text will appear on the screen.



Satellite TV Installation

Press the Menu button to go to the Installation page. Select the Antenna Setting line and press the OK button.

Select the Satellite line and press the OK button.

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Satellite TV Installation

Select the satellite name, Eutelsat 36, for example and press the **OK** button.



Install the LNB and DiSEqC parameters. Press the **GREEN** button.



You will see the **Transponder List** menu. Press the **GREEN** button to add a transponder.



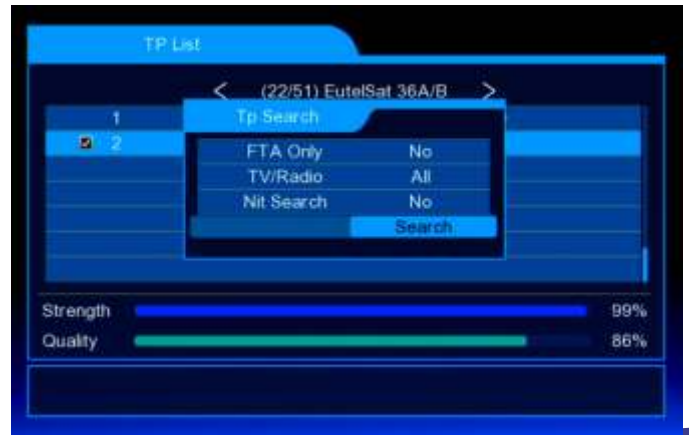
Enter the parameters of the new Transponder.



Click **OK**. If the parameters you entered were correct, the Quality scale will turn green.



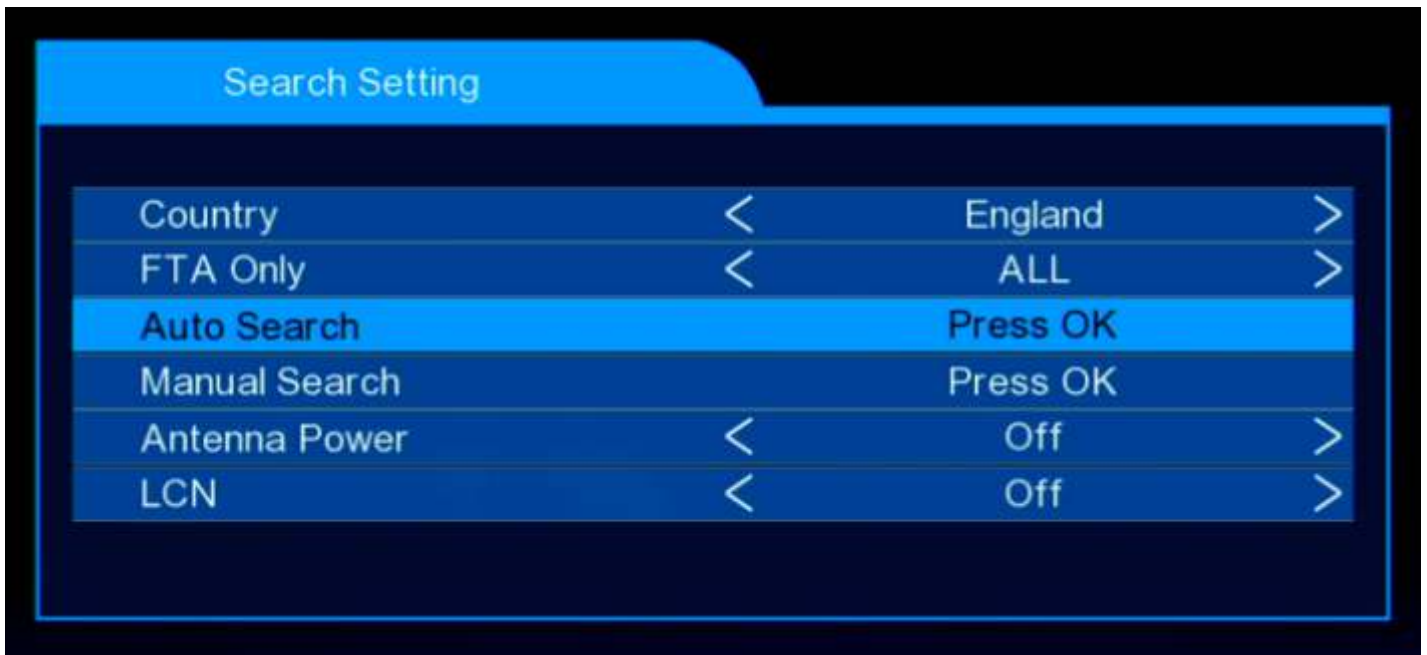
Press the **BLUE** button to start searching for programs.



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Terrestrial TV Installation

Select the **Auto Search** line and press the **OK** button.



An automatic search for terrestrial channels will begin, according to the frequency plan adopted in your country. At the end of the search, the terrestrial channels will be added to the general list of programs.



TA-1006HD STB

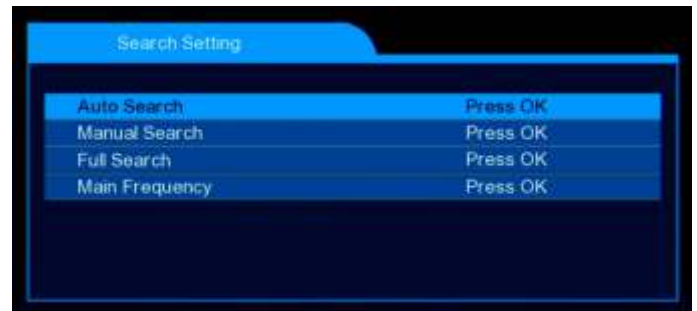
Cable TV Installation

You have the opportunity to receive digital cable programs. Select the **DVB-C** line and press the **OK** button.



Select the **Manual Search** line.

Or select the **Auto Search** line.



Specify the starting frequency and NIT search mode using the cable operator's table. Click **OK** on the **Start** line.

Click **OK**. An automatic search will begin.



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TROPHY-ACCESS decoder number

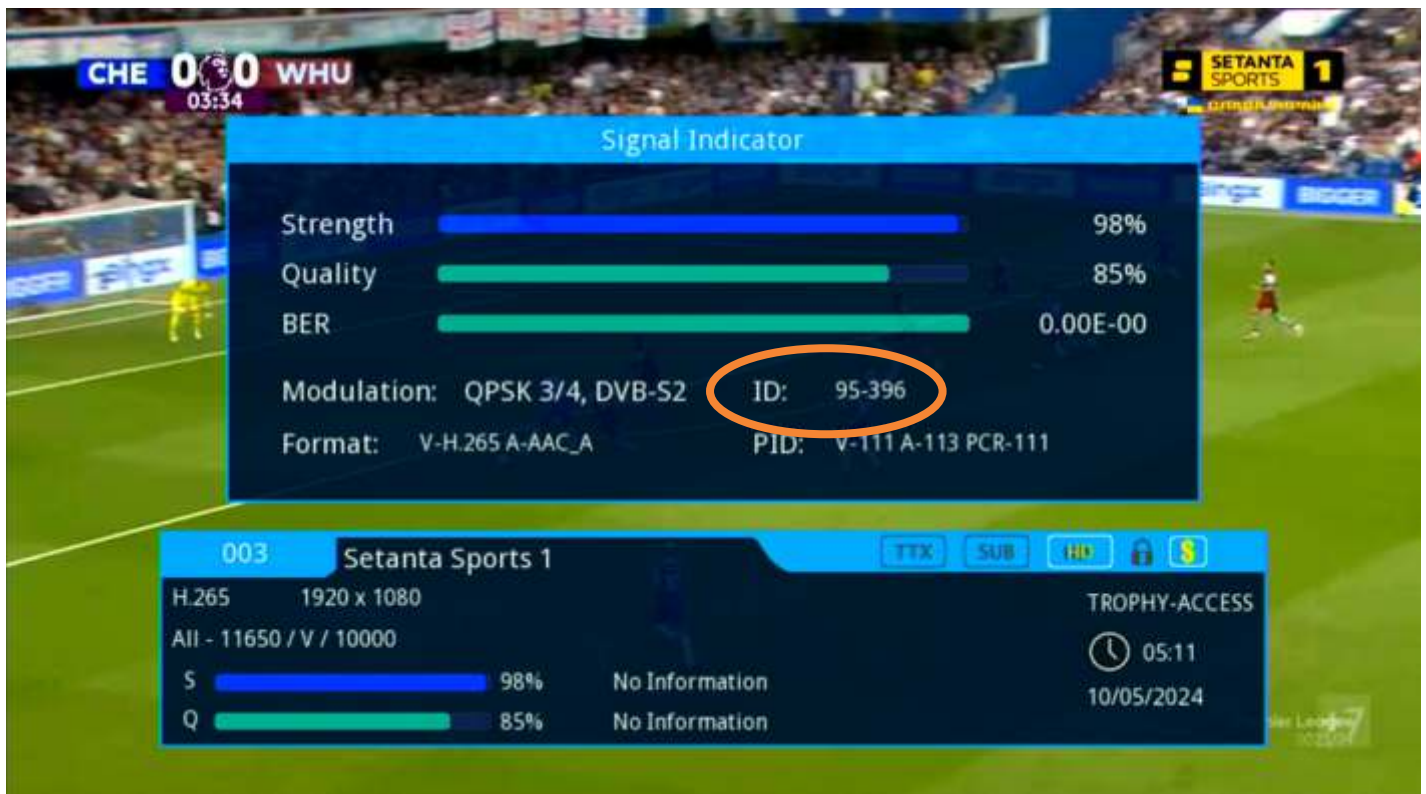
The decoder serial number is located on a sticker on the bottom cover of the device.



95 - 000396

INFO menu and Decoder ID

The decoder serial number is located on the INFO menu. Click  button twice to see the Decoder ID into the advanced INFO menu.



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