DVB for ALL!

TROPHY

MVDS
HD&UltraHD TERRESTRIAL
MICROVAWE DVB-S2 BROADCASTING

CONTENTS

TROPHY

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 (or any DVB-S2 STB with COMMON INTERFACE + TROPHY-ACCESS CAM module).

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.
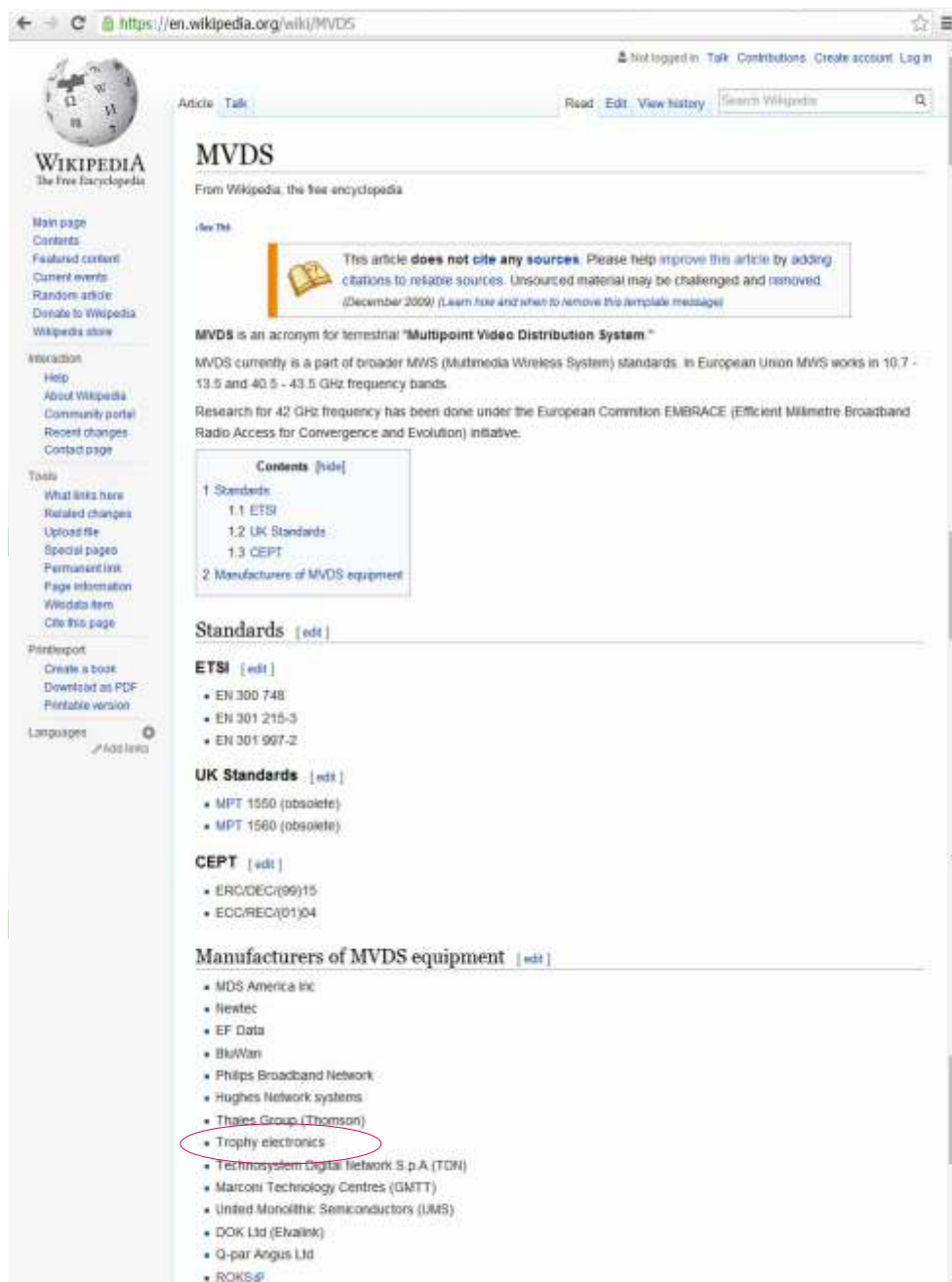
Advantages of TROPHY MVDS solution:

• 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.

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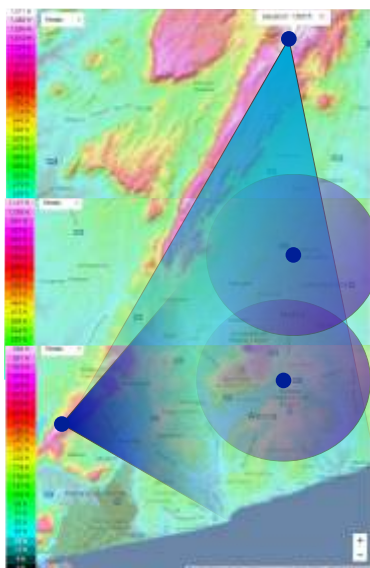
The advantages of MVDS-TROPHY DVB-S2 terrestrial broadcasting:

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 4dB. To work in DVB-T2, it is necessary to achieve a signal-to-noise ratio above 11dB. That is, the received signal in the DVB-S2 standard can be lower by 7 dB or 5 times, compared to DVB-T2.

2W transmitting Converter and Omnidirectional Slot Antenna

Thus, the theoretical energy efficiency of DVB-S2 broadcasting is higher by 36 + 7 = 43 dB or 20000 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 20 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.

Elevation / Degree vs. dBi

Azimuth / Degree vs. dBi
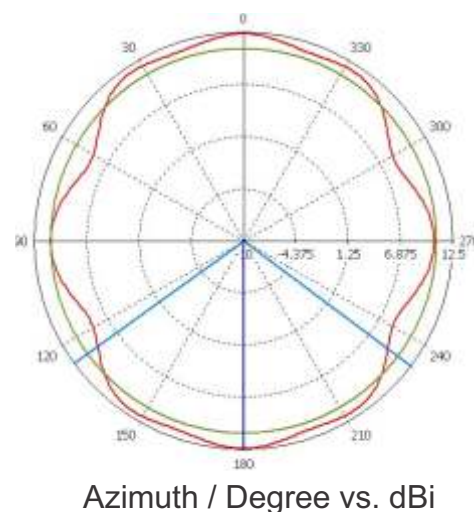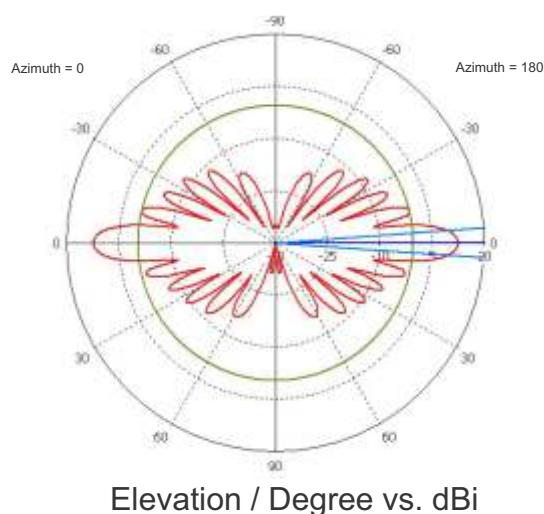
2. The use of standard LNB's and standard satellite receiving 0.4m-0.6m antennas.

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 3.7-4.2 GHz and 10.7-12.75 GHz bands. 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 standard DVB-T2 broadcasting.

Output recovered carriers + 10MHz L.O.

Input carriers

THE ADVANTAGES OF MVDS
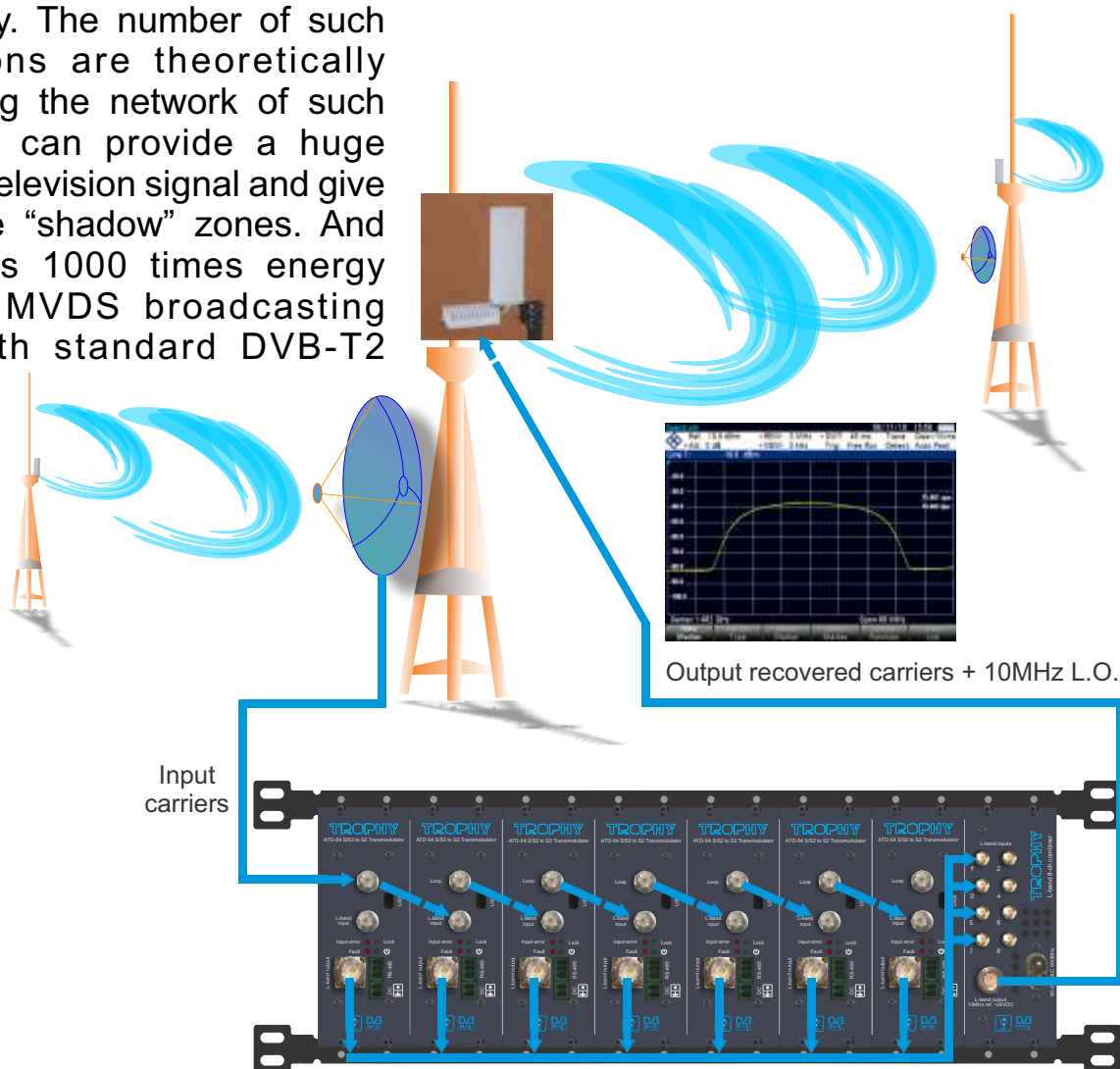
4. The presence of a wide frequency spectrum, compared with the UHF range.

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).
Using a smaller band reduces the number of channels accordingly.

5. Own DVB-S2 modulators/multiplexers and original TROPHY-ACCESS Conditional Access System.

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

List of converters 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)

THE ADVANTAGES OF MVDS

TROPHY MVDS HEAD-END

Design of 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 HEADEND components are based on the Linux software. For example, the streamers, the demultiplexers, transcoding servers, the multiplexers, the modulators - all this, in the long run, are Linux computers. From this fact derives the main advantage of the HEADEND, 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 HEADEND 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.
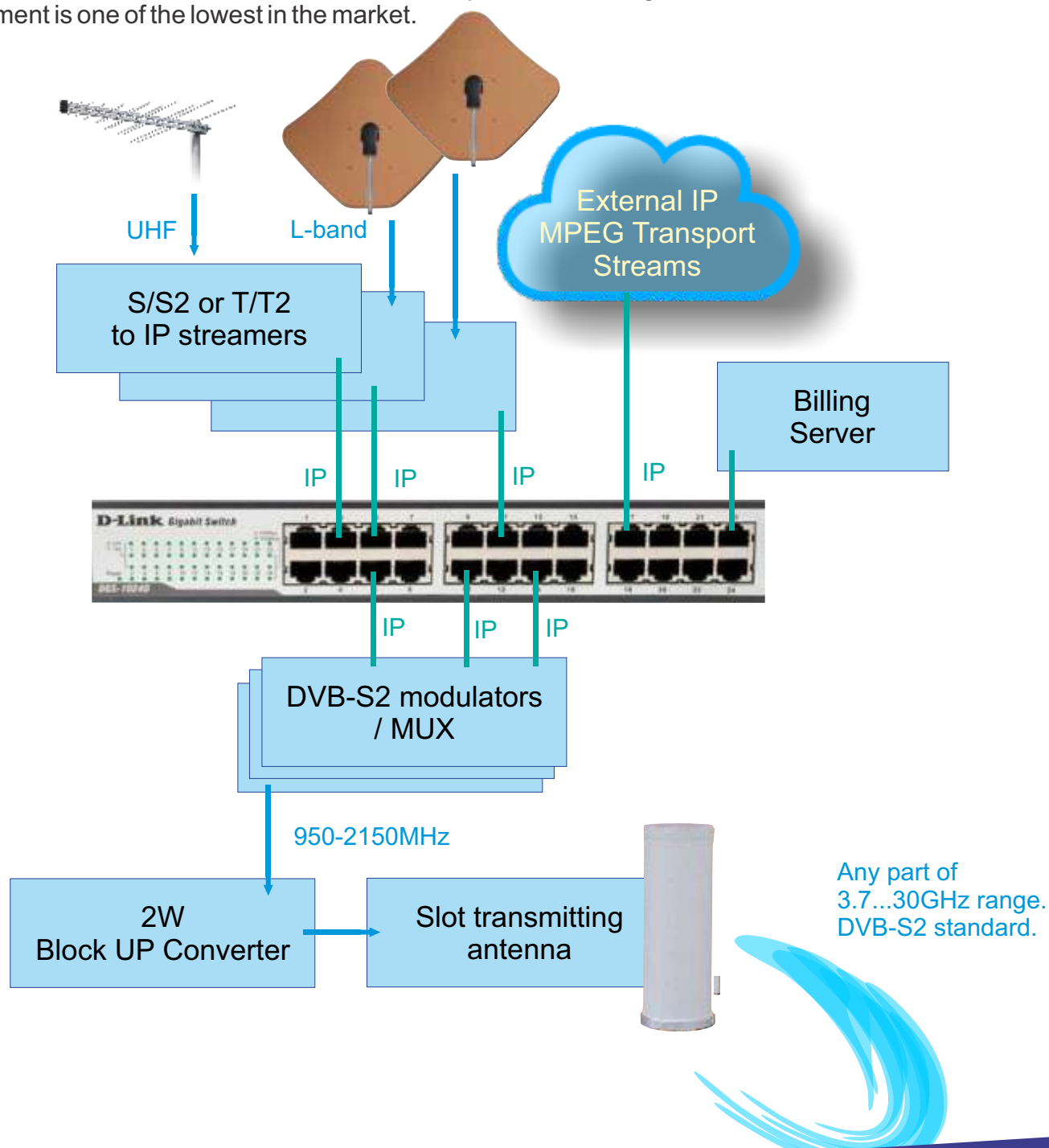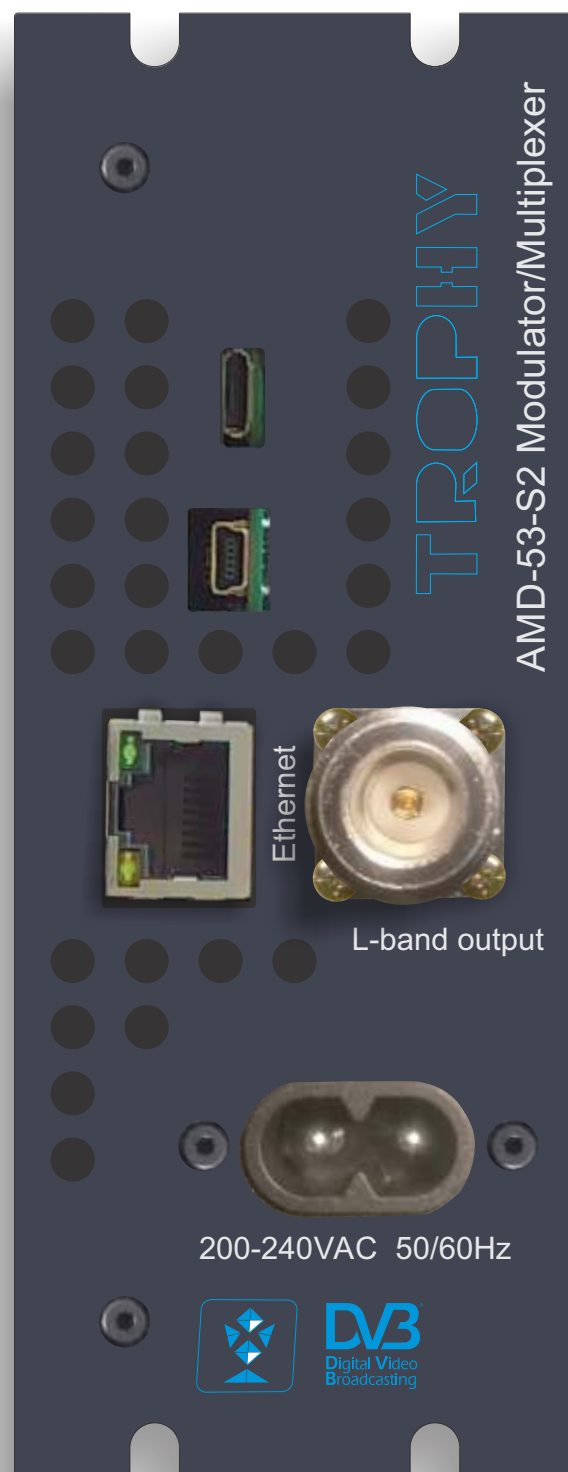
AMD-53-S2
DVB-S2 MODULATOR /
120-CHANNEL MULTIPLEXER

Part No. 1001-1004

AMD-53-S2 Modulator/Multiplexer

TROPHY

Ethernet

L-band output

200-240VAC 50/60Hz

DVB
Digital Video
Broadcasting

AMD-53-S2 MODULATOR/ MUX

GENERAL INFORMATION

• AMD-53-S2 DVB-S2 MODULATOR / MULTIPLEXER is a brand new satellite 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 satellite transmitter or 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&remaping 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, 10/100/1000, UDP
L-band output	N-type connector
200-240 VAC 50/60Hz	SCZ-20 connector
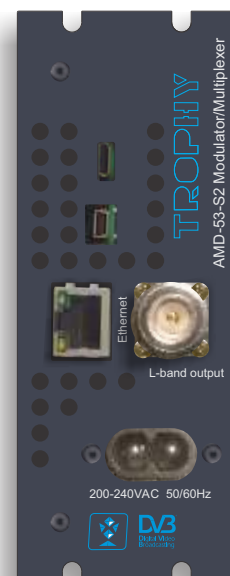
Factory settings:	
IP address:	10.10.10.20
User/password	admin / admin
IP netmask:	255.255.255.0
IP gateway:	10.10.10.1
SNMP trap (IP):	0.0.0.0
System section	
Input mode:	IP-MUX
Scrambler:	Enabled (Part No. 1002, 1004)
EPG support	Enabled (Part No.1003,1004)
Billing Server:	
PSR Restamping:	Enabled
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

SETTINGS FOR THE ETHERNET NETWORK INTERFACE

NETWORK CONNECTION VIA WINDOWS PC

These steps walk you through setting a Windows PC to a Static IP address, to allow an Ethernet connection with the unit on its default IP address of 10.10.10.20.
- Connect your PC to the ETHERNET Port of the Device via Ethernet using a CAT 5E/6 cable.
- On your PC, in the Control Panel, open Network and Sharing Center (Network and Internet for Windows 8 and above)
- Once you have Network and Sharing Center open, click on "Change adapter settings."
- Right Click on your Local Ethernet connection and click on "Properties."
- Once the Ethernet Properties are open click on, "Internet Protocol Version 4 (TCP/IPv4)," and click on, "Properties."
- In the Properties, select "Use the following IP address" and set the static IP: 10.10.10.10.
- Click OK.

You are now ready to connect.

NETWORK CONNECTION VIA MAC OS X

These steps walk you through setting a Mac running OS X to a Static IP address, to allow an Ethernet connection with the Device on its default IP address of 10.10.10.20.
- Connect your Mac to the ETHERNET of the Device via CAT 5E/6 cable.
- From the Apple menu, select System Preferences, then select network.
- Select Ethernet.
- From the Configure IPv4 menu, select Manually.
- Enter the IP address 10.10.10.10.
- Enter the Subnet Mask 255.255.255.0.
- It is not necessary to enter DNS or Router.
- Click Apply.

You are now ready to connect.

INSTALLING MULTIPLE DEVICES

To install multiple Devices on the same network, make sure to CHANGE the IP address of each Device BEFORE you connect them to the same network so there will be no IP Conflicts. Point your web browser to the IP address of the unit (default is 10.10.10.20). Login to the unit, click NETWORK button, change the NETWORK SETTINGS as needed by your application. Save your settings.
As an example, you can set your Device(s) IP addresses to 10.10.10.20, *30, *40, etc. Write down these values or put a sticker on each unit with the new assigned IP address so it will be easy to login to the unit in the future.

TROPHY

IP address: **10.10.10.20**
Subnet: **255.255.255.0**
Gateway: **10.10.10.1**
Default Username: **admin**
Default password: **admin**
It is recommended to change the password for confidential
(See the page 9, SSH ACCESS TO DEVICE)

To connect to the Web interface, we must first connect directly to the ETHERNET port on the front of the Device using an Ethernet patch cable CAT5e/CAT6 or higher.
Once connected, you can verify the physical connection by ping command. This step is not necessary but helpful to ensure a connection can be established before proceeding.

Open a CMD prompt in windows and use the following command: **ping 10.10.10.20**
If you are connected directly to the Device, you should get a response:

```
Microsoft Windows [Version 6.3.9600]
(c) 2013 Microsoft Corporation. All rights reserved.

C:\Users\admin>ping 10.10.10.20

Pinging 10.10.10.20 with 32 bytes of data:
Reply from 10.10.10.20: bytes=32 time<1ms TTL=64
Reply from 10.10.10.20: bytes=32 time<1ms TTL=64
Reply from 10.10.10.20: bytes=32 time<1ms TTL=64
Reply from 10.10.10.20: bytes=32 time<1ms TTL=64

Ping statistics for 10.10.10.20:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 0ms, Average = 0ms

C:\Users\admin>_
```

If not, the following message appears in the command prompt. The Device is not pingable, verify that your connections are secure and that your Static IP of your PC is set up correctly. Refer to Setting up a Static IP section of the guide.

```
Microsoft Windows [Version 6.3.9600]
(c) 2013 Microsoft Corporation. All rights reserved.

C:\Users\admin>
C:\Users\admin>ping 10.10.10.20

Pinging 10.10.10.20 with 32 bytes of data:
Request timed out.
Request timed out.
Request timed out.
Request timed out.

Ping statistics for 10.10.10.20:
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),

C:\Users\admin>_
```

LOGIN INTO THE WEB-INTERFACE

If you can ping the unit successfully, then we can proceed to open your web browsers such as Chrome. In the address bar, enter the default IP of the unit: **10.10.10.20** and hit **Enter.**
The login page prompt appears for the Web interface.

Default Username: **admin**
Default Password: **admin**

SYSTEM MENU

Once you have logged into the Device you will see the SYSTEM page.

SSH ACCESS TO DEVICE

The MODULATOR/MUX uses the Linux Debian 8 OS.
In order to be able to access the Linux configuration
on the SSH connection install the PuTTY program on
your computer. Indicate follow options into PuTTY
menu:

Host Name: 10.10.10.20
Port: 22
Connection type: SSH
Login: root
Password: trophy
It is recommended to change the password for
confidential.
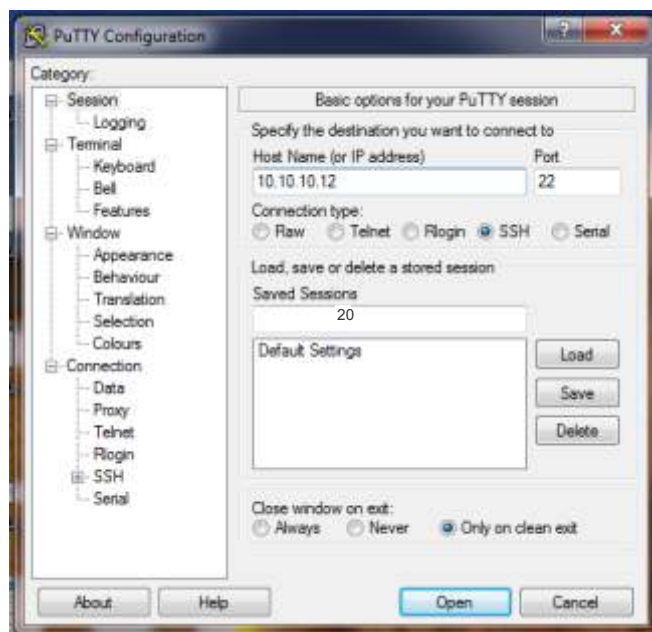
You can use Linux commands, for example:

passwd [ENTER]

Enter new UNIX password:******* [ENTER]

Retype new UNIX password:******* [ENTER]

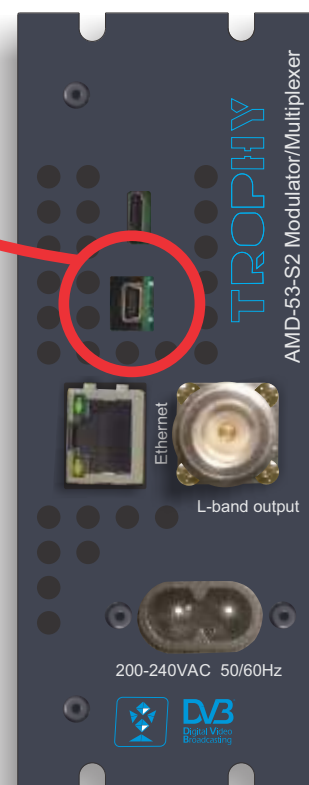# wwwpasswd commands is using for add, delete and change of Users and Passwords of WEB-interface.

wwwpasswd -h   help menu

wwwpasswd -a   add user

wwwpasswd -d   delete user

wwwpasswd admin (to change password of admin)

For more details reads LINUX OS manual.

AMD-53-S2 MODULATOR/ MUX

ACCESS TO DEVICE VIA USB-INTERFACE

Modulator/Multiplexer equipped by Mini USB connector for Virtual COM-port interface. The protocol specification is CDC (Communication Device Class).
In order to be able to configure the device configuration on the SERIAL connection use any terminal program on your computer, for example:
TeraTerm for Windows
USB Terminal for Android
Get Terminal for iOS
Picocom for Linux

USB serial port settings:

- bits per second........115200;
- data bits..................8;
- parity......................none;
- stop bit....................1;
- flow control...............none.

You can use Linux commands, for example:

passwd [ENTER]

Enter new UNIX password:******* [ENTER]

Retype new UNIX password:******* [ENTER]

wwwpasswd commands is using for add, delete and change of Users and Passwords of WEB-interface.

wwwpasswd -h   help menu

wwwpasswd -a   add user

wwwpasswd -d   delete user

ifconfig eth0 [ENTER] Command is using for see the IP-address of WEB-interface.

For more details reads LINUX OS manual.

NETWORK MENU

You can change the Modulator/Multiplexer IP-address, Subnet mask, Default gateway, DNS Server into this menu.

Network Time Protocol (NTP) is a networking protocol for clock synchronization between computer systems over IP. NTP is intended to synchronize all participating computers to Coordinated Universal Time (UTC). You must specify the URL of NTP Server that will synchronize the current time, which will be indicated in the Time and Date Table (TDT) and on the subscribers set-top-boxes.

TDT provide a time reference for the stream. The TDT contains the current UTC time. The Modulator/MUX does not have its own real-time clock. Therefore, if you turned "ON" the function of forming TDT (in SI GENERATOR menu, see page No.13), then you need to provide a connection to the Internet.

AMD-53-S2 MODULATOR/ MUX

CONFIGURATIONS VIA THE ETHERNET INTERFACE

If it is necessary to change the basic configuration, the particular HTML user interface must be called up on a computer connected to the device(s). All the settings can be made via Internet Browser. How the user interface works is almost self-explanatory. Any special features of use will be explained in the following chapters.

To use all functions of the device by WEB-interface activate Java Script in your browser settings. Network connection to the computer System requirements: - PC/ laptop with 10/100/1000 Mbit Ethernet interface - any Internet browser, capable JAVA script (Google Chrome is recommended). The device has to be connected to PC network using an Ethernet cable. The default IP address of the device is 10.10.10.20. In order to access the WEB interface of the device from a PC, the PC has to be in the 255.255.255.0 subnet. If multiple devices are connected to the same network each device must be set to its own unique IP address to avoid address conflicts. After these settings, the IP address of the PC has to be adjusted to match the network.

CONNECTION SETUP

When the IP address for the device has been entered into the address field of the browser, a connection will be made to the relevant device and the appropriate SYSTEM window will be displayed.

There are two options for the menu, depending on the choice of the INPUT MODE line:
IP MODE or IP->MUX MODE.
The multiplexer function is not used when the IP INPUT MODE is selected. The transport stream is fed to the modulator output unchanged.

SERIAL No. is unique for each device. This number must be specified when ordering an additional SW licenses.
BACKUP. You can save all settings of the device as a backup.json file.
RESTORE. You can upload a backup.json file to change the device configuration.
ADD KEY. You have the opportunity to make an additional order for the TROPHY-ACCESS license. The received key must be entered after pressing the ADD KEY button.

The multiplexer function is available when the IP->MUX INPUT MODE is selected. The transport stream is fed to the modulator output through 120-channel multiplexer.

SERIAL No. is unique for each device. This number must be specified when ordering an additional TROPHY-ACCESS license.

SCRAMLER function is working if TROPHY-ACCESS license added.
The license can be included in the factory in case of prior order. Otherwise, the license can be installed by entering the text key received from the manufacturer after confirming the license order.

BILLING SERVER address can be specified if a TROPHY-ACCESS scrambled signal is at the modulator/multiplexer output. In this case, the subscription information (list of included decoders and rights to view of program packages) should be present in the stream.

PCR RESTAMPING (PCR - Program Clock Reference)
Synchronization of the receiver System Time Clock (STC) with the transmitter STC depends on transmitting PCRs through a constant-delay portion of the system. Thus, PCRs are inserted following the encoder buffer and extracted before the receiver buffer. PCRs are inserted with a maximum interval of 100ms.
Synchronization can be adversely affected by transmission over links having a variable delay or time jitter (IP transport, for example), and the accuracy of clock recovery must be studied if such an application is contemplated.
PCRs are also affected by the multiplexing of multiple program streams. In this case, there is additional buffering in the multiplexer, and it may become necessary to re-stamp the PCR values of data that is transmitted earlier or later than expected. Although the MPEG standards provide the means to maintain synchronization in this case, they do not specify the jitter limits, suggesting only that it is "intended" to be +/-4 ms maximum in a well-designed system.

AMD-53-S2 MODULATOR/ MUX

INPUTS

The 120 possible logical stream channels can be defined as a multi-program stream or single program stream and can be operated according to the IP address space specified in multicast mode or unicast.

In the first step, the IP address, netmask and gateway address of stream sources are assigned to the ETHERNET interface for using in the local network. And Port number of streams are individualized! The SOURCE settings can be made separately for each stream channel. The port number must be unique and can not be repeated! After the source of the transport stream has been connected to the ETHERNET switch of the local network, you must press the "+" button and enter the port number of source. The information about the number of programs found on a specific port is displayed in the "Programs" column. In the event that there is no correct transport stream on any port, the icon with a rotating scale is displayed in the "Programs" column. Check the correspondence between the port number and the network parameters of the source and modulator input!

IP-INPUT mode (without DEMUX/MUX processing). The data enters the modulator without any preliminary processing. In this mode, data is received from only one port, except for specific cases.

System	Network	Inputs	Programs	SI Generator	NIT Generator	Output

Unicast packets receiving

Protocol	[Address:]Port	Programs		
UDP	1234	26	⟳	✖

Add source

Protocol: UDP ▼

Port: P

Multicast: ☐

Add

System	Network	Inputs	Programs	SI Generator	NIT Generator	Output

Multicast packets receiving

Protocol	[Address:]Port	Programs		
UDP	1234	26	⟳	✖
UDP	239.0.0.1:12345	⟳		✖

Add source

Protocol: UD ▼

Port: 1 45

Multicast: ☑

Multicast addr: 239.0.0.1

IP->MUX mode (with DEMUX/MUX processing). The data enters the modulator via preliminary processing. In this mode, data is received from one or several ports.

Unicast packets receiving

Multicast packets receiving

PROGRAMS

Program name: The program name is the service designation. By default, for each program, the program name will be automatically generated, which coincides with the name specified in the incoming thread. You can change the name to another one.
These names will be displayed in the table of the receiving devices. They must be unambiguous.

The position information that was specified in the configuration will form the basis for the allocation of PID Service IDs in ascending order. You can change program names, A PID, VPID, SID and TYPE OF PROGRAM (1-TV, 2-Radio, 3-Teletext, 4-Unknown).
VPID and PCR-PID has a same value.

You can change TROPHY ACCESS mode also (FTA, Type1, Type2, Type3).

The multiplex contains a number of different services, where each service contains at least one audio stream, at least one video stream and usually several data streams. You must to indicate the type of the stream (some can't be identified by the software in this case) and the SID number that is the number of the service (or program).
Secondly, you must indicate the PID value for each elementary stream. It's normally good practice to give elementary streams belonging to the same service similar PID values. That way, it's easy to identify which service a given stream belongs to.
The SID/ PID for the slots configured (the programs and channels) is automatically allocated according to a fixed pattern.

If you purchased an additional EPG software license, you can select the source of the EIT (EPG):
- the original EIT from the satellite;
- not present;
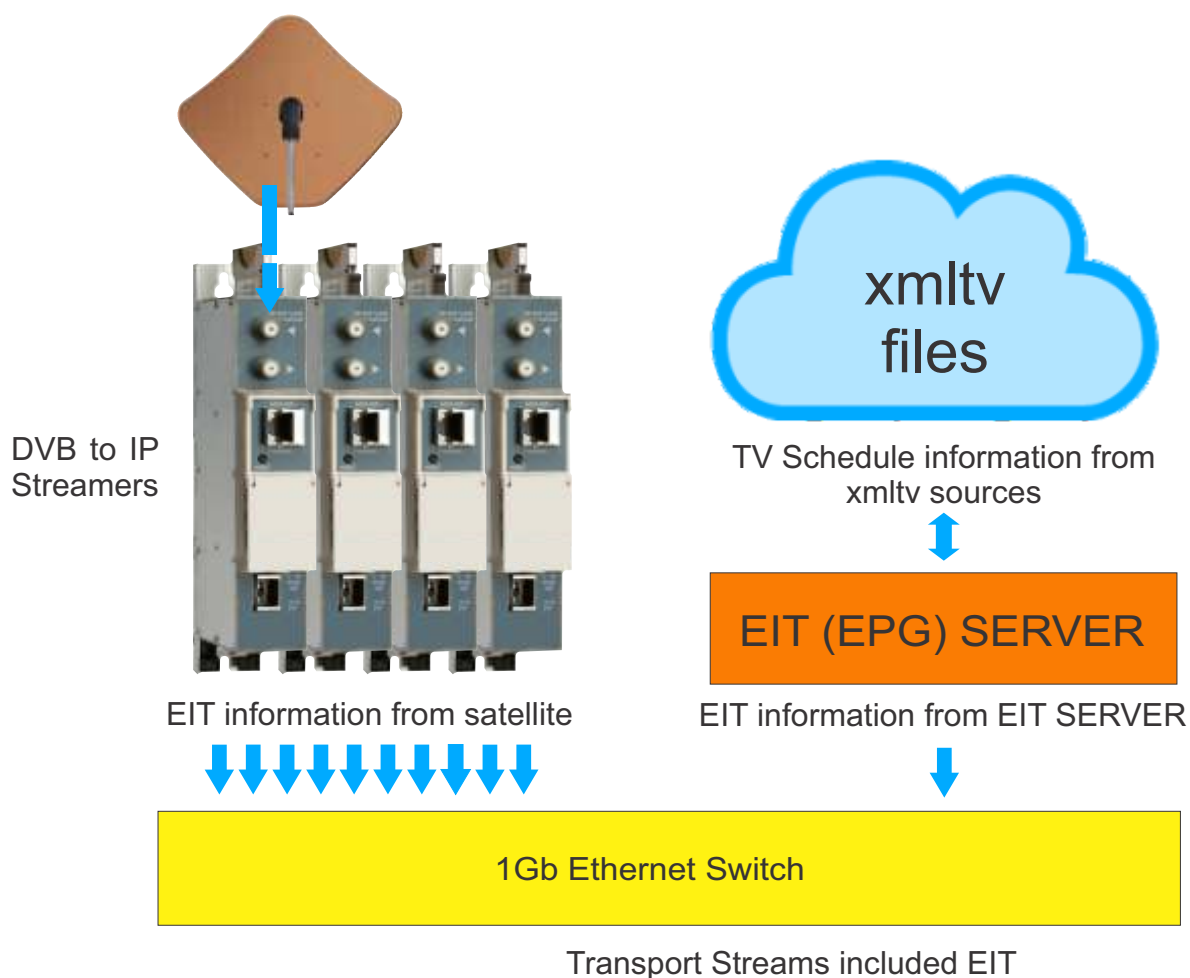- the information from an external EIT server.

TROPHY

EIT (EPG) Server

Basically, the EIT tables are present in satellite broadcasting. The AMD-53 modulator/multiplexer 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.

DVB to IP Streamers

xmltv files

TV Schedule information from xmltv sources

EIT (EPG) SERVER

EIT information from satellite

EIT information from EIT SERVER

1Gb Ethernet Switch

Transport Streams included EIT

TROPHY EIT (EPG) SERVER free software is provided to customers upon request.

Software is provided for Windows and Linux Operating Systems.
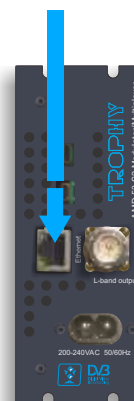
Configuring the server settings is done using the configuration file.
The configuration file structure is indicated below:

```
<config>
<xml-dir>Work</xml-dir>
```
⬅ ▬▬ Pass to directory contained xmltv file(s) (mandatory)

```
<syslog>LOCAL0@10.10.10.1</syslog>
```
⬅ ▬▬ Address of syslog server (optional)

```
<stub-prefix>Program of</stub-prefix>
```
⬅ ▬▬ "Program of XXXXX" is EIT text in case of absent information from source

```
<mux ip="10.10.10.20">
```
⬅ ▬▬ IP Address of AMD-53 modulator/multiplexer

Name of program into xmltv file   SID of program into output MUX   Name of program into output MUX
⬇   ⬇   ⬇

```
  <channel id="prog00"><sid>10</sid><display-name>MUSIC BOX Ukraine</display-name></channel>
  <channel id="prog01"><sid>20</sid><display-name>MTV</display-name></channel>
  <channel id="prog02"><sid>30</sid><display-name>BBC</display-name></channel>
  <channel id="prog03"><sid>40</sid><display-name>CNN</display-name></channel>
</mux>
```

```
<mux ip="10.10.10.21">
  <channel id="prog10"><sid>10</sid><display-name>ITV</display-name></channel>
  <channel id="prog11"><sid>20</sid><display-name>HBO</display-name></channel>
  <channel id="prog12"><sid>30</sid><display-name>TV1000</display-name></channel>
  <channel id="prog13"><sid>40</sid><display-name>Hustler</display-name></channel>
</mux>

</config>
```

AMD-53-S2 MODULATOR/ MUX

XMLTV File Format

The format used differs from most other XML-based TV listings formats in that it is written from the user's point of view, rather that the broadcaster's. It doesn't divide listings into channels, instead all the channels are mixed together into a single unified listing. Each programme has details such as name, description, and credits stored as supplements, but metadata like broadcast details are stored as attributes. There is support for listings in multiple languages and each programme can have 'language' and 'original language' details.

The XMLTV File Format was originally created by Ed Avis, and is currently maintained by the XMLTVProject.

```xml
<?xml version="1.0" encoding="ISO-8859-1"?>
<!DOCTYPE tv SYSTEM "xmltv.dtd">

<tv source-info-url="http://www.schedulesdirect.org/" source-info-name="Schedules Direct" generator-info-name="XMLTV/$Id: tv
  <channel id="I10436.labs.zap2it.com">
    <display-name>13 KERA</display-name>
    <display-name>13 KERA TX42822:-</display-name>
    <display-name>13</display-name>
    <display-name>13 KERA fcc</display-name>
    <display-name>KERA</display-name>
    <display-name>KERA</display-name>
    <display-name>PBS Affiliate</display-name>
    <icon src="file://C:\Perl\site\share\xmltv\icons\KERA.gif" />
  </channel>
  <channel id="I10759.labs.zap2it.com">
    <display-name>11 KTVT</display-name>
    <display-name>11 KTVT TX42822:-</display-name>
    <display-name>11</display-name>
    <display-name>11 KTVT fcc</display-name>
    <display-name>KTVT</display-name>
    <display-name>KTVT</display-name>
    <display-name>CBS Affiliate</display-name>
    <icon src="file://C:\Perl\site\share\xmltv\icons\KTVT.gif" />
  </channel>
  <programme start="20080715003000 -0600" stop="20080715010000 -0600" channel="I10436.labs.zap2it.com">
    <title lang="en">NOW on PBS</title>
    <desc lang="en">Jordan's Queen Rania has made job creation a priority to help curb the staggering unemployment rates amo
    <date>20080711</date>
    <category lang="en">Newsmagazine</category>
    <category lang="en">Interview</category>
    <category lang="en">Public affairs</category>
    <category lang="en">Series</category>
    <episode-num system="dd_progid">EP01006886.0028</episode-num>
    <episode-num system="onscreen">427</episode-num>
    <audio>
      <stereo>stereo</stereo>
    </audio>
    <previously-shown start="20080711000000" />
    <subtitles type="teletext" />
  </programme>
  <programme start="20080715010000 -0600" stop="20080715023000 -0600" channel="I10436.labs.zap2it.com">
    <title lang="en">Mystery!</title>
    <sub-title lang="en">Foyle's War, Series IV: Bleak Midwinter</sub-title>
    <desc lang="en">Foyle investigates an explosion at a munitions factory, which he comes to believe may have been premedit
    <date>20070701</date>
    <category lang="en">Anthology</category>
    <category lang="en">Mystery</category>
    <category lang="en">Series</category>
    <episode-num system="dd_progid">EP00003026.0665</episode-num>
    <episode-num system="onscreen">2705</episode-num>
    <audio>
      <stereo>stereo</stereo>
    </audio>
    <previously-shown start="20070701000000" />
    <subtitles type="teletext" />
```

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.

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.

Type	TS Id	Net Id	Frequency	S.Rate/BW	Modulation/Constellation	FEC/Coderate	Other params	
sat	2	1	11300	30000	8PSK	3/4	RollOff:0.25 Position:E4.9 V	✖
cab	2	2	474	6900	128QAM			✖
ter	2	3	474	8MHz	64QAM	HP:2/3 LP:5/6	TxMode:8K Guard:1/32 Prio:Low, Native ileaver	✖

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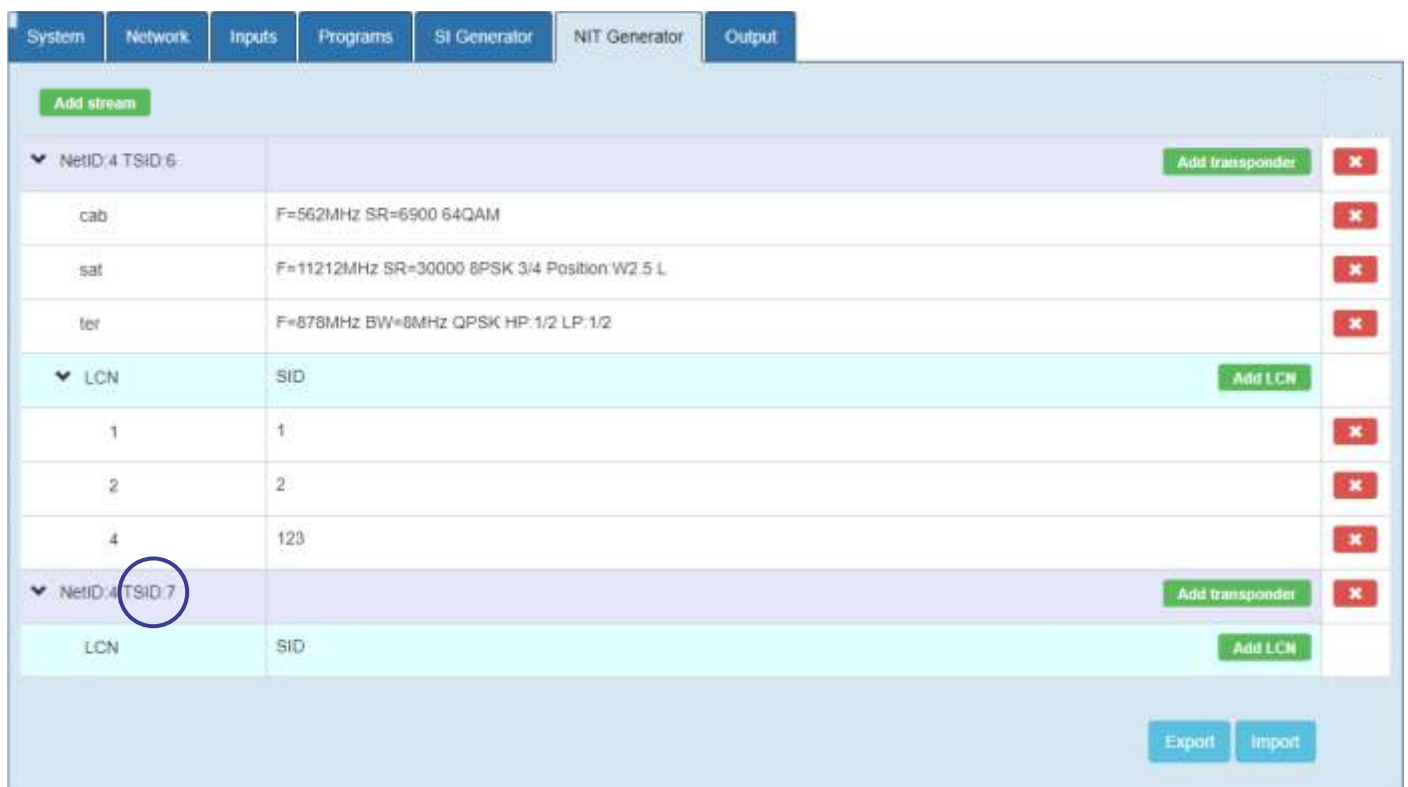
Specify the transponder parameters for this Transport Stream. You can specify transponder parameters for different DVB standards (DVB-S/S2, DVB-C, DVB-T/T2) if the stream is broadcasted in other networks. Click the "Add" button to save the transponder.

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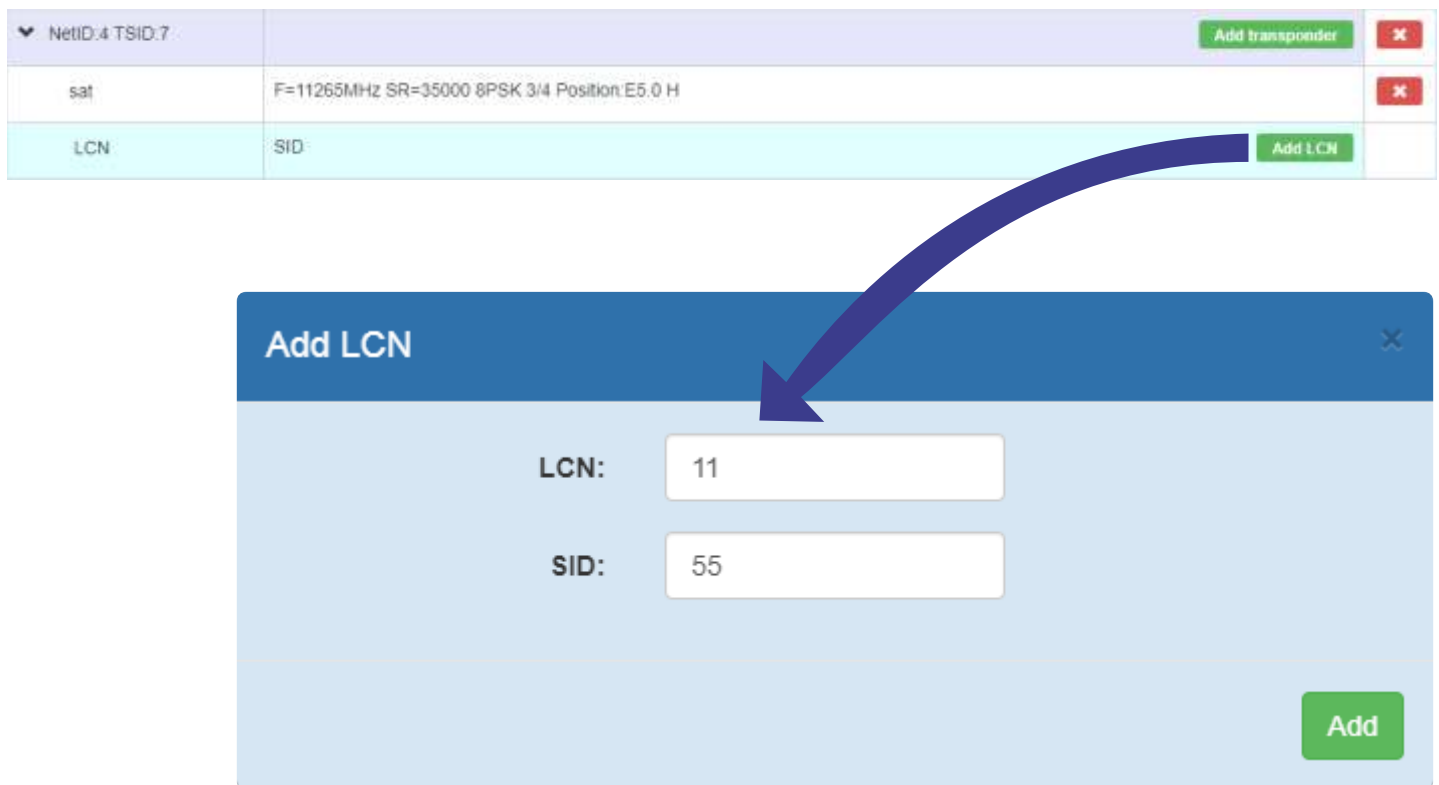
ASSIGNING LOCAL CHANNEL NUMBER (LCN) TO PROGRAM (SID)

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.

NetID:4 TSID:7		Add transponder	✖
sat	F=11265MHz SR=35000 8PSK 3/4 Position:E5.0 H		✖
LCN	SID	Add LCN	

Add LCN ✕

LCN: 11

SID: 55

Add

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 30000 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.
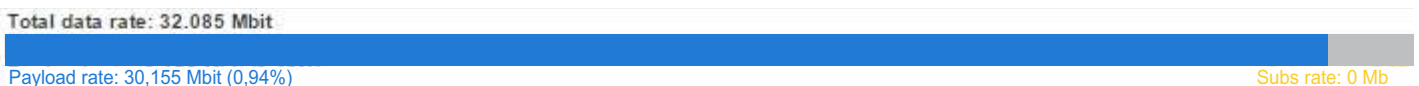
Free capacity is filled with subscription packages if the billing server sends TROPHY-ACCESS CAS data to the modulator. The efficiency of data transmission is maximum. The capacity that the subscription data occupies is indicated in the form of a yellow scale. Thanks to this technology, the CAS data transmission efficiency is maximum.
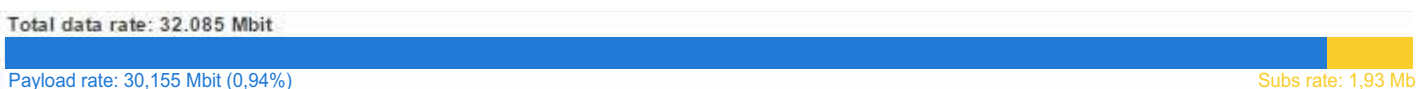
SPECIFICATIONS	
Standards	
Carrier ID	ETSI 103 129
DVB-S2	EN 302 307
MPEG-TS	EN 301 210
DVB MPEG-TS over IP	ETSI TS 102 034
MPEG-2 PSI Tables (PAT,PMT,NIT etc)	EN 300 468 (additional license for EPG table)
IP input	
Stream port + WEB interface	Ethernet, 10/100/1000 Base-T
Connector	RJ-45
Streaming protocol	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 sevices
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
	SeamlessACM: 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	4,294,967,295
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
Individual addressable message	up to 120 characters

SUBS_SEND_V.2

subscription management software

TROPHY

GENERAL INFORMATION

The subs_send program is developed for subscription management. The subs_send program sends the necessary information to each modulator in the system. This program is ideal for small networks, for example, for pay-TV in the hotel. To manage subscription rights in these small networks, there is no need to install a professional billing system. It is enough for the administrator to make adjustments to the simplest text file named decoders.txt.

Sending of subscription information should be done after the modulator is turned on or restarted, and if the subscription is changed.

The program can be easily used for communication between a third-party billing software and the TROPHY-ACCESS 3.0 CAS.

You can get the subs_send program for free by going to the site:

http://dvb4all.com/?product=subs_send-subscription-management-program

and filling out a short questionnaire.

On the site you can download the source code of the subs_send program in the GO language.

Conditional access system (CAS) built into the modulator/multiplexer

In order for the TROPHY-ACCESS scrambling function to be available in the TROPHY modulator/multiplexer, you must purchase a special license:

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

After confirming the payment, a unique key, which is formed on the basis of the serial number of the your modulator/multiplexer, will send to the client. The serial number is indicated in the first line of the SYSTEM menu of WEB interface.

After that, it is enough to click "Add key" button and paste the key in the appeared window.

SUBS_SEND SOFTWARE

Modulators (streams) and groups

Modulators/multiplexers are grouped together.
A group can have any number of modulators.
Modulators belonging to the same group broadcast
the same subscription. The system can have up to 10
groups with numbers 0 ... 9.

The belonging of modulators to groups is defined in
the modulators.lst text file.
Each line describes one modulator in the form:
modulator-ip-address: group-number.

The string to the right of the # character is a comment.
Spaces are ignored.
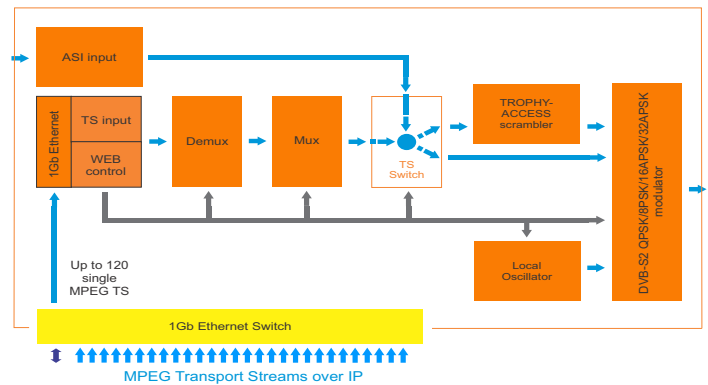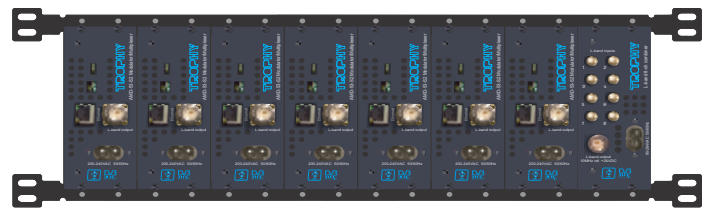
Example

Example of the modulators.lst file.
This is a comment
10.10.10.21: 0 # the modulator 10.10.10.21 (IP-address of modulator) belongs to the group 0

10.10.10.22: 0 # the modulator 10.10.10.22 belongs to the group 0

10.10.10.23: 1 # the modulator 10.10.10.23 belongs to the group 1

10.10.10.24: 2 # the modulator 10.10.10.24 belongs to the group 2

You determine to which group the modulator/multiplexer belongs based on the scheme of tariff plans and
program viewing rights. When you install a Head-End with several modulators, you will need to plan which
programs in which packages will be included, then distribute them over streams (modulators), subscription
groups, etc. In the first step, simply assign group 0 to all modulators/multiplexers.

SUBS_SEND SOFTWARE

TROPHY

In the setting of program that you want to scramble, you need to specify that this program should be closed and select the encoding type in the CONDITIONAL ACCESS field (Type 1, Type 2 or Type 3).
To do this, in the PRORGAMS menu, click the PROGRAM PROPERTIES icon in the line of the corresponding program.

The modulator sends to the decoders the information about subscription that allows or prohibits the viewing of scrambled programs.

Mask and types of scrambling

Subscription allows the decoder to descramble programs depending on the specified mask. The mask is a binary number, the low bit of which corresponds to the first type of scrambling, and the high bit corresponds to the third type.
A unit in the corresponding bit indicates that this decoder is allowed to descramble this type of encoding. For each decoder, a mask is assigned for each group. In this way it is possible to implement separate management of program viewing rights.
Decoders are described in the decoders.txt file. Each line describes one decoder in the form: decoder number: mask.
The string to the right of the # character is a comment.
Spaces are ignored.

Example

Example of decoders.txt file.
This is a comment
12345: 111 111 111
12346: 010 100 000
12347: 000 011 111
12348: 000 000 000

```
12348 : 000 000 000
-----       --- --- ---
  |          |   |   |
  |          |   |   Group mask 0
  |          |  Group mask 1
  |        Group mask 2
  |
  Decoder number
```

A subscriber with a 12345 decoder will be able to watch all programs on all streams

A subscriber with a decoder 12346 will be able to watch:
 - on modulators of group 0 (10.10.10.21 and 10.10.10.22) FTA programs only;
 - on modulators of group 1 (10.10.10.23) programs with encoding type 3, as well as FTA;
 - on modulators of group 2 (10.10.10.24) programs with encoding type 2, and also FTA.

A subscriber with a decoder 12347 will be able to watch:
 - on the modulators of group 0 (10.10.10.21 and 10.10.10.22) all programs;
 - on the modulators of group 1 (10.10.10.23) programs with the types of encoding 1 and 2, as well as FTA;
 - on modulators of group 2 (10.10.10.24) FTA programs only.

A subscriber with a decoder 12348 will only be able to view FTA programs on all threads.

Decoder number and geographic zone

The full decoder number consists of 2 parts - the zone number and decoder number in this zone.
Each provider using TROPHY-ACCESS CAS receives a unique geographic zone number.
For example 42-12345 (Zone No.42, decoder No.12345). The subs_send program comes with a preset zone number and the decoders.txt file specifies the decoder number without a zone (in this case - 12345).

TROPHY

Working with the subs_send program

The subs_send program is a console application, so you need to run it from the Windows console. You can create a command file and run it from the explorer:
Create a file called subs_send.cmd in any text editor, Notepad for example, with one line:

Subs_send_v2.exe -z 42 *
* *The version of the program compiled for the 42nd Geographical Zone.*

Save this file in the directory where is subs_send_v2.exe. Run now subs_send.cmd

You can also create a shortcut to the subs_send_v2.exe program, then in the properties of this shortcut, in the "Target" field add -z 42 key.

subs_send_v2.exe should be run after you create the modulators.lst and
decoders.txt files. This program sends over the network subscription data from the above files to modulators. If the modulator is restarted, the subs_send_v2.exe should be repeated, since subscription data is not stored on modulators. You should also sending (run the program) after making changes to the modulators.lst or
decoders.txt files.

The subs_send_v2.src file that you want to download for free from the site should be created with the number of your geographic zone. In order for you to become acquainted with the program, an example program for Zone 42 is posted on the site.
In the archive there are two files collected with the zone No.42 by default, for Windows x32 and x64.

DVB_BILLING_PRO
Billing SoftWare

DVB_BILLING SOFTWARE

TROPHY

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.

How is everything arranged inside?
- The system is installed on Linux Debian OS.
- The main components of the system are located in the /opt directory.
- PostgreSQL is a database.
- The database is located in the /var/db directory.

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.


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

Modulators (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 Port Number have the same subscription information. The system can have up to 10 Ports numbered 0...9. You assign the Port number to which the modulator/multiplexer belongs, based on the Tariff Plan scheme and channel viewing rights.

When installing a headend with multiple modulators, you will need to plan what programs will be included in the Packages, then distribute them across streams (modulators), subscription Ports, etc. As a first step, simply assign Port "0" to all modulators/multiplexers.
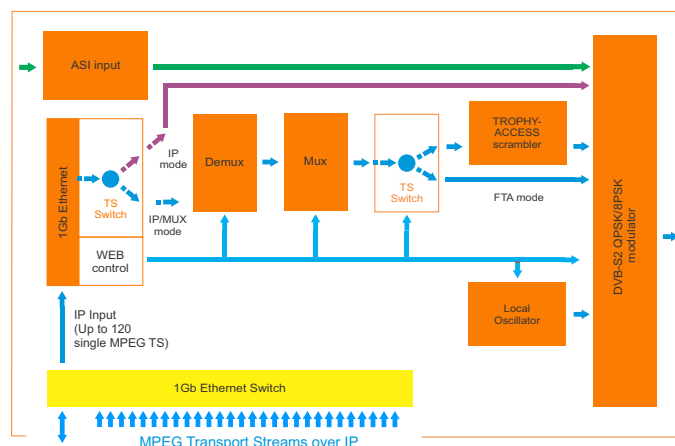
Example:

10.10.10.21: 0 # modulator 10.10.10.21 (modulator IP-address) belongs to the group 0

10.10.10.22: 0 # the modulator 10.10.10.22 belongs to the group 0

10.10.10.23: 1 # the modulator 10.10.10.23 belongs to the group 1

10.10.10.24: 2 # the modulator 10.10.10.24 belongs to the group 2

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 Propeties 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)	0.0.0.0:1234:8506		
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:	30
Name	RUSTAVI2
Type	1	TV
Conditional Access:	FTA

Type		PID	Enabled
MP4 Video (PCR)		121	✔
MP1 Audio (geo)		122	✔

FTA
Type 1
Type 2
Type 3

Accept Cancel

Mask and types of scrambling

The subscription allows the Decoder to decrypt programs depending on the specified mask. The mask is a binary number, the least significant bit of which corresponds to the first scrambling type, and the most significant bit of which corresponds to the third type. A one in the corresponding bit indicates that this Decoder is allowed to descramble this encoding type. For each Decoder, each group is assigned a mask. In this way, you can implement separate management of program viewing rights. Decoders are described in the decoders.txt file.
Each line describes one Decoder in the form: Decoder number: mask.
The line to the right of the # symbol is a comment. Spaces are ignored.

Example

Example of decoders.txt file.
This is a comment
12345: 111 111 111
12346: 010 100 000
12347: 000 011 111
12348: 000 000 000


```
12348 : 000 000 000
-----        —  —  —
  |          |   |   |
  |          |   |   Group mask 0
  |          |   Group mask 1
  |       Group mask 2
  |
  Decoder number
```

- A subscriber with a 12345 decoder will be able to watch all programs on all streams.
- A subscriber with a 12346 decoder will be able to watch:
- on modulators of group 0 (10.10.10.21 and 10.10.10.22) only FTA programs;
- on modulators of group 1 (10.10.10.23) programs with encoding type 3, as well as FTA;
- on modulators of group 2 (10.10.10.24) programs with encoding type 2, as well as FTA.
- A subscriber with decoder 12347 will be able to watch:
- on modulators of group 0 (10.10.10.21 and 10.10.10.22) all programs;
- on modulators of group 1 (10.10.10.23) programs with encoding types 1 and 2, as well as FTA;
- on modulators of group 2 (10.10.10.24) only FTA programs.
- A subscriber with a 12348 decoder will be able to view only FTA programs on all streams.

Decoder number and geographic area

The full Decoder number consists of 2 parts:
- the Zone number and the Decoder number in this Zone. Each provider using TROPHY-ACCESS CAS receives a unique geographic area number. For example 42-12345 (Zone No. 42, Decoder No. 12345). The DVB-BILLING PRO program comes with a preset Zone number, and the Decoders.txt file contains the Decoder number without a Zone number (in this case - 12345).

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

Personal account of subscriber

TROPHY

Access to the site

Enter the **domain name** of the service provider in your browser.
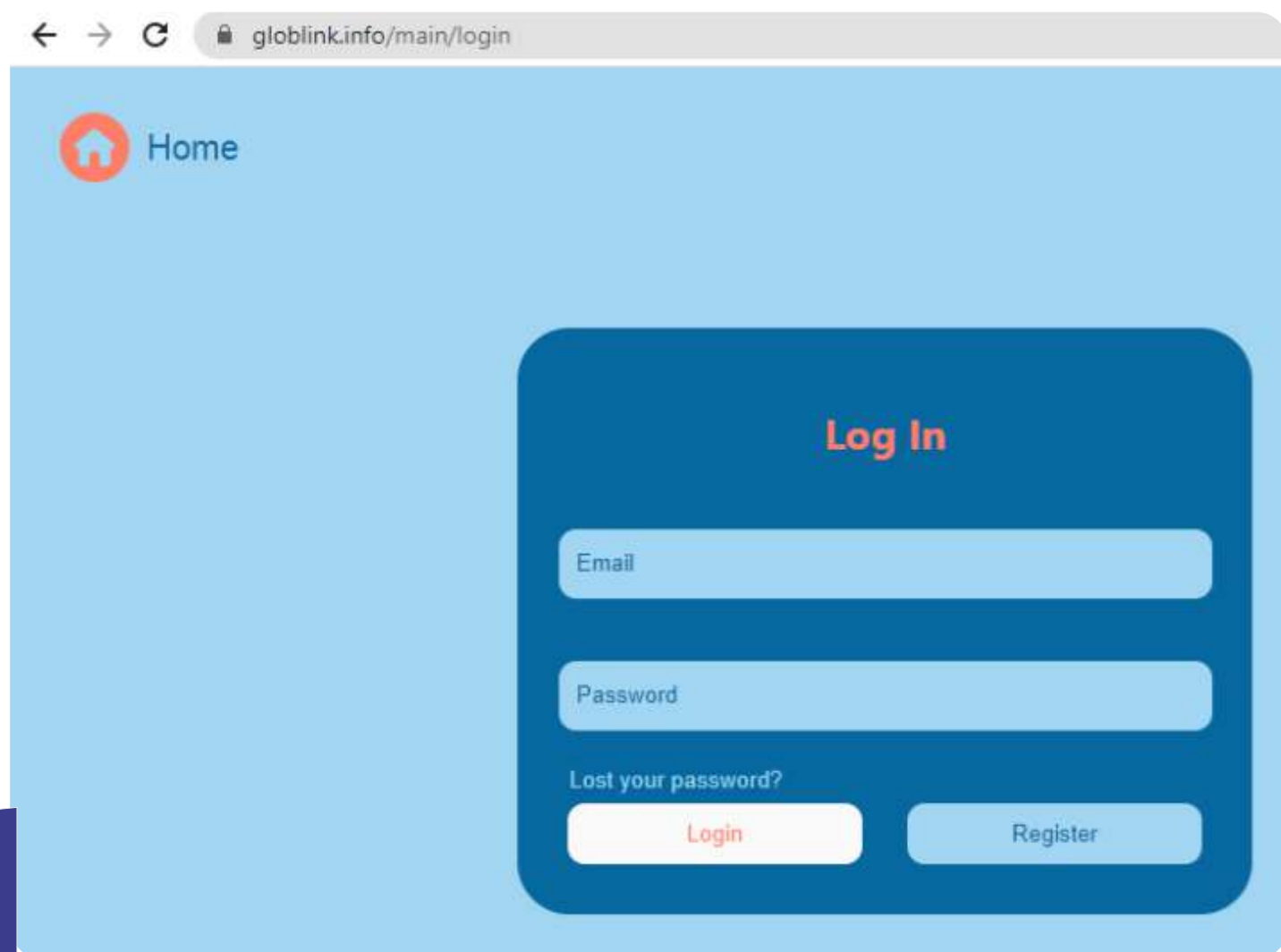
The main page of the site will be displayed on the screen.

Access to your personal account

Click the **Login** button to go to the authorization page.

A registration menu will appear on the screen asking you to log into your account or register on the site. If your account is already registered, enter your email address and password, and click the **Login** button.

If your account has not yet been registered, click the **Register** button.

In the registration window, enter your email address and verification characters, confirm acceptance of the terms of service (after reading it first), and then click the **Send email** button.

Within a few seconds you will receive a message with your account password at this address

globlink.info - Registration Inbox x

Billing <noreply@globlink.info>
to me

Hi,
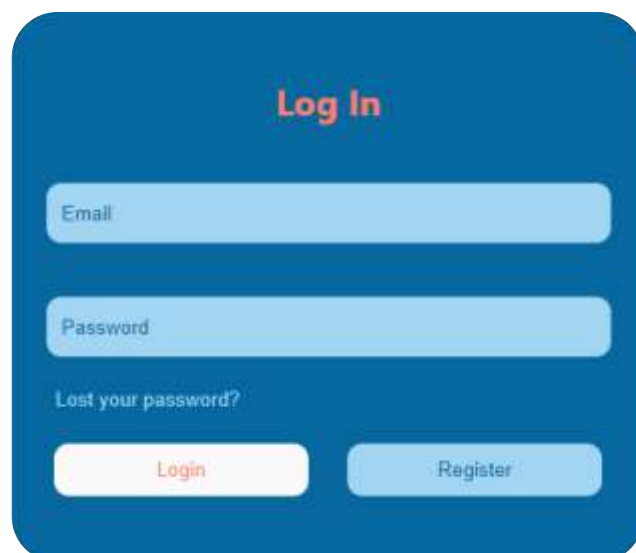
Thanks for creating an account on . Your username is
You can access your account area to view orders, change your password,
and more at: https://globlink.info

Your password has been automatically generated: **oqabx1cr**

We look forward to seeing you soon.

TROPHY

DVB_BILLING SOFTWARE

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.
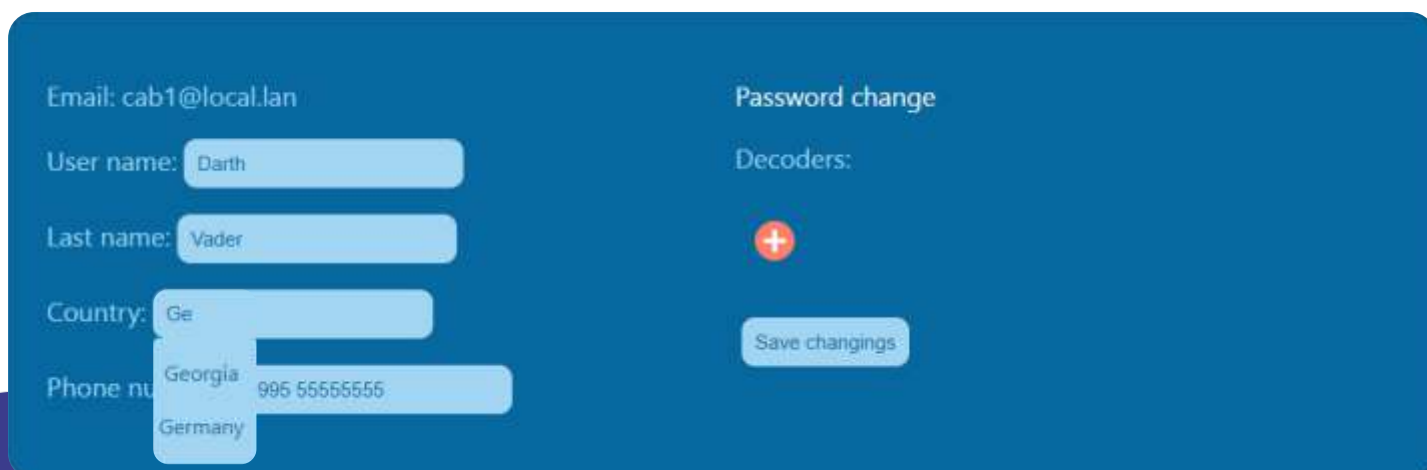
The following pages will be available in your personal account:

• **Balance**

• **Profile**

You can log out of your account by clicking the **Logout** button.
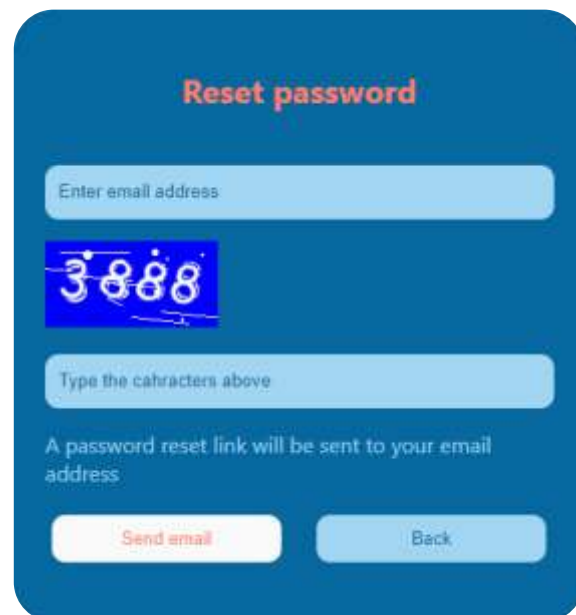
Enter your first name, last name, country of residence and phone number.

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.

FORGOT YOUR PASSWORD?

OBTAINING A NEW PASSWORD

Click the **Login** button. Click **Lost your password?** in the registration window. A password reset window will appear on the screen.
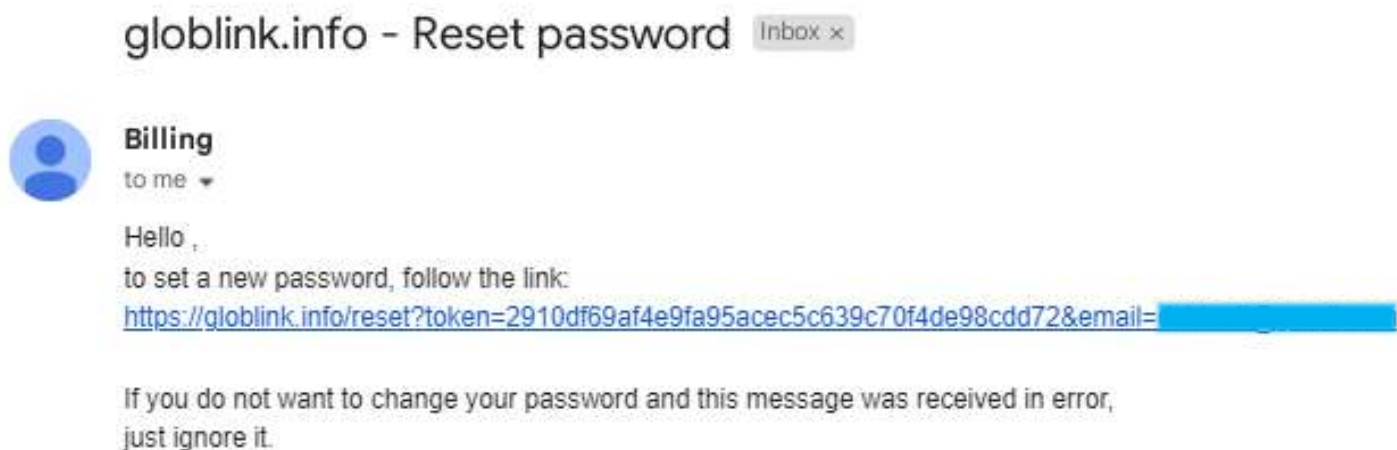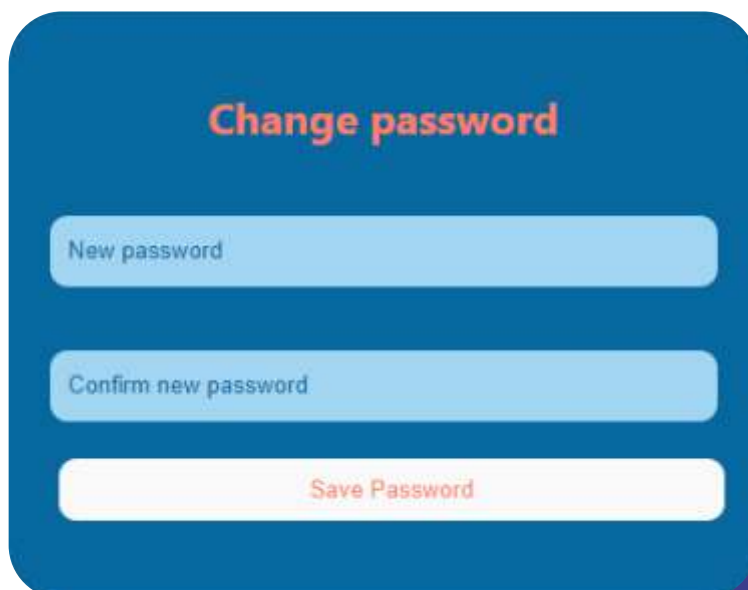

Enter your email and verification characters, then click the **Send email** button. Within a few seconds you will receive an email with your new account password:

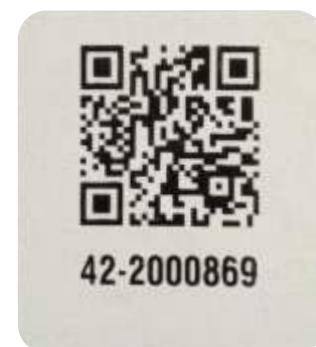Click to link into the letter text to open the **Change password** menu.

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.

42-2000869

Email: cab1@local.lan

User name: Darth

Last name: Vader

Country: Georgia

Phone number: +995 55555555

Password change

Decoders:

95 - 2560446 Delete

Save changings

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.

Submit the action

Are you sure with it?

Ok   Cancel

DVB_BILLING SOFTWARE
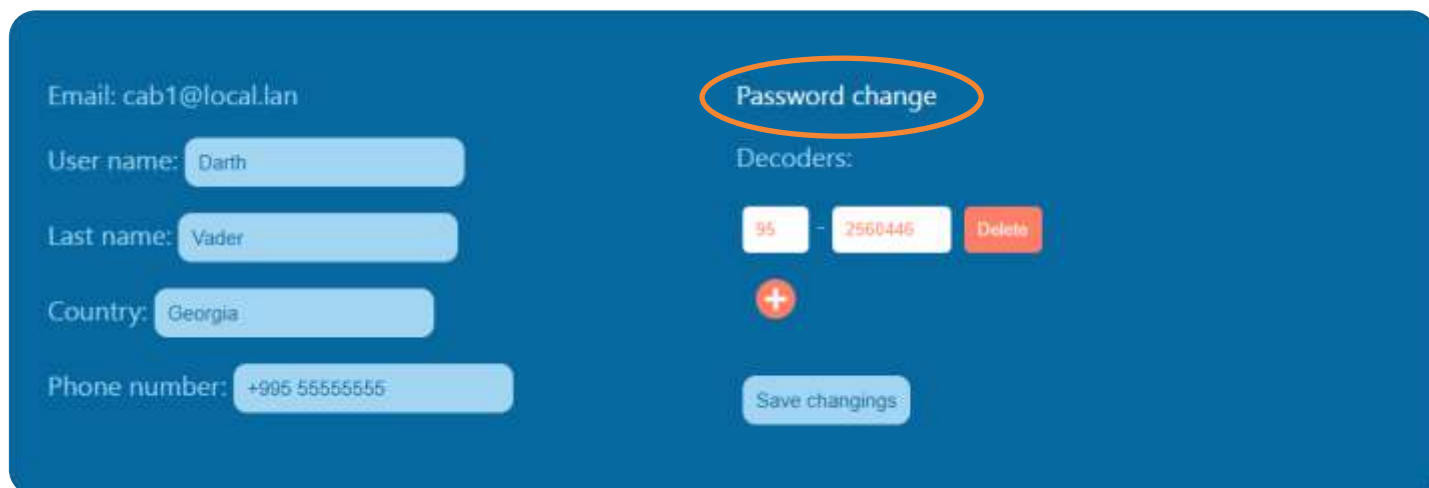
Entering a decoder using a QR code

Using your smartphone, scan the decoder number indicated on the Set-Top-Box sticker. Press the link to the login to the page of the personal account. Follow this link, enter your username and password. Next, you can select program packages for this decoder number on the **Balance** page.
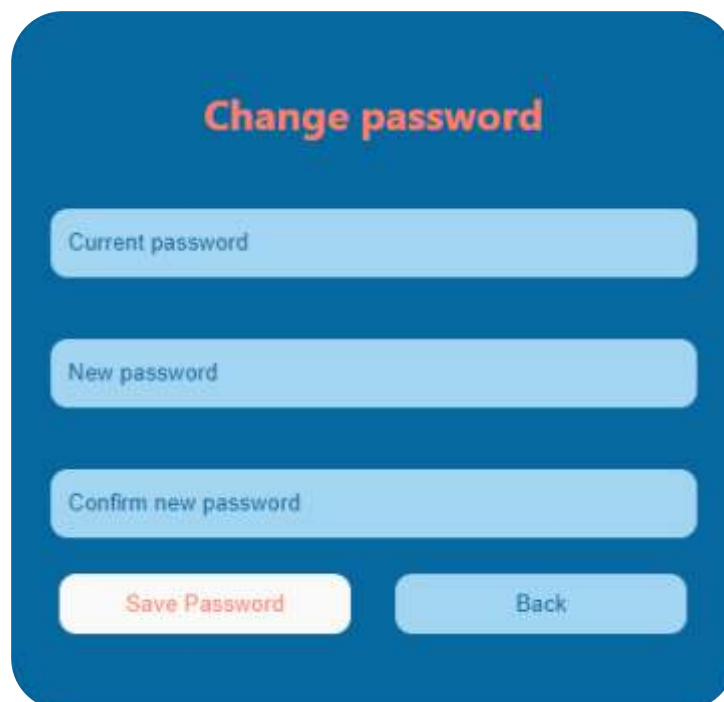

95-255543

DVB_BILLING SOFTWARE
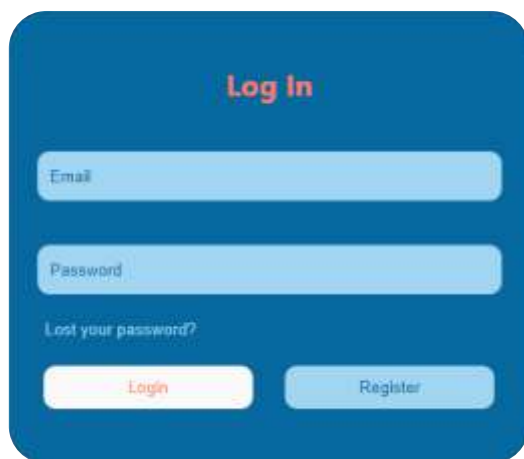
Changing your password on the PROFILE page

To change the password, click the **Password change** line.

Enter your current password and enter your new password twice. Click the **Save** button to save the new password.

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 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.

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.
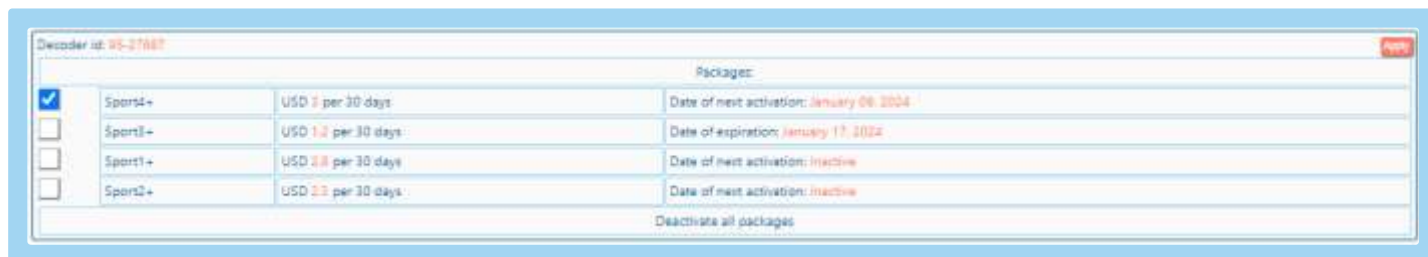
In the following windows you can see information about the Decoders that you have registered in the

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:**".

Pages available operators

Initial system setup

Work with the program is carried out using the WEB interface.

Launch any WEB browser and enter   **https://billing.your_domen_name**
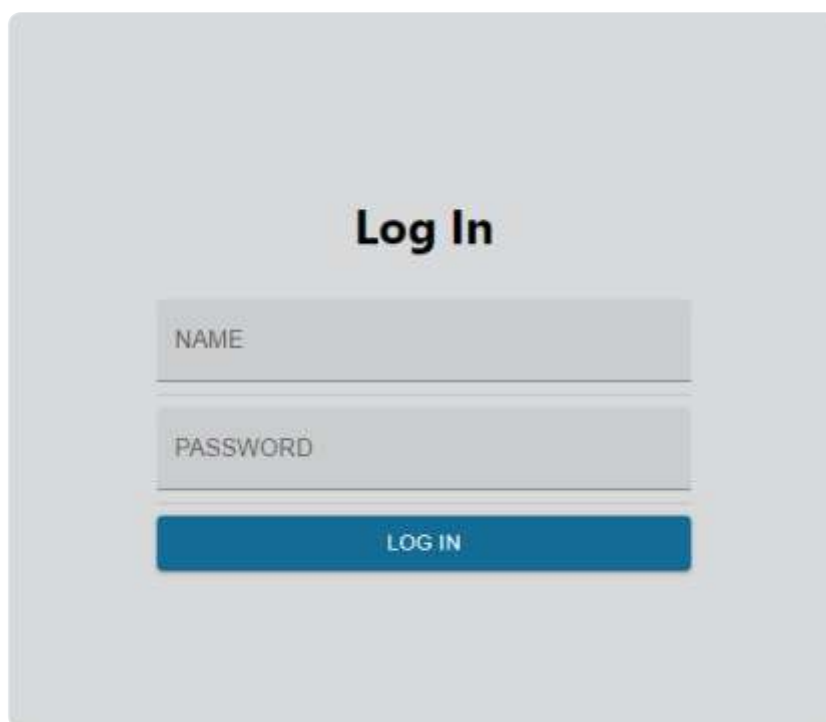
The statistics server administrator sets the Login, Operator Name, Password and Rights for each Operator who has the right to work on the server.

Enter your Login and Password:

Login "********"

Password "*********"

We recommend changing your password to confidential.

PASSWORD menu

On this page the Operator can change his password. Enter your current password and your new password twice. Click the **Save** button to save the new password.

SUBSCRIBERS menu

Press the **SUBSCRIBERS** button to enter the SUBSCRIBERS menu. The page shows a list of Subscribers. The list can be viewed using the scrolling engine and page switcher. You can also dial all or only some characters of the Subscriber's Name, email or phone number.

SUBSCRIBERS details

Click on a line in the list of Subscribers. Below you will see detailed information about the client. Please note that items cannot be edited by the Operator.

PAYMENTS menu

Press the **PAYMENTS** button to enter the PAYMENTS menu. The Operator can only view Subscriber payments. If the Operator has already selected a Subscriber in the SUBSCRIBERS menu, then the PAYMENTS menu should immediately display information about the Subscriber.
The Administrator has the right to make payments manually using a additional plugin.

| SUBSCRIBERS | PAYMENTS | PACKAGES | DECODERS | PASSWORD | REPORTS | CONSTRUCTOR | CURRENCY | LOG OUT |

Find by Email

Date	Amount	Email	Document	Operator name
2022-05-09	185.19	robinhood@gmail.com	BOG. doc 128885990	Zak
2022-05-09	20.37	levantodua@gmail.com	Visa card payment /*1173 last digits	Vasiko
2022-05-10	8.19	dvbtoall@gmail.com	Visa card payment /*2385 last digits	Suliko
2022-05-09	4.44	darthvader@gmail.com	Visa card payment /*1338 last digits	Ann

Rows per page: 10 ▾   1–4 of 4   I< < > >I

PACKAGES menu

Press the **PACKAGES** button to enter the menu. The Administrator has the right to form package names, rename, change prices and delete packages. Package information is sent to the Conctructor from this page. In the Constructor, you must assign the encryption type and package group numbers. Only after this, the Billing program will generate a list of programs for each package.

| SUBSCRIBERS | PAYMENTS | PACKAGES | DECODERS | PASSWORD | REPORTS | CONSTRUCTOR | CURRENCY | LOG OUT |

Name of package	Price	Type of package	Date of Creating	
Sport	6.00	Individual	2020-12-20	Edit
Basic	6.00	Individual	2020-12-20	Edit
Premium	6.00	Individual	2020-12-20	Edit
s	6.00	Corporate	2020-12-20	Edit
a	6.00	Corporate	2020-12-20	Edit
b	6.00	Corporate	2020-12-20	Edit
Sport	6.00	Corporate	2020-12-20	Edit

List of programs

Program 1	Program 11
Program 2	Program 12
Program 3	Program 13
Program 4	Program 14
Program 5	Program 15
Program 6	Program 16
Program 7	Program 17
Program 8	Program 18
Program 9	Program 19
Program 10	Program 20

1-10 of 13

Name of package

Basic

Price, USD

6.00

Type of package

Corporate2

List of packages

Individual
Corporate1
Corporate2
Corporate3
Corporate4
Corporate5
Corporate6
Corporate7
Corporate8
Corporate9

Delete package

Save

DECODERS menu

Press the **DECODERS** button to enter the menu. The Administrator has the right to add new decoders to the database and indicate the type of packet. The Administrator can enter either one decoder or a group of decoders of the same type.

SUBSCRIBERS	PAYMENTS	PACKAGES	DECODERS	PASSWORD	REPORTS	CONSTRUCTOR	CURRENCY	LOG OUT

Decoder number	Type of packet	Date of Creating	
232323	Individual	2020-12-20	Edit
232324	Individual	2020-12-20	Edit
232325	Individual	2020-12-20	Edit
232326	Corporate	2020-12-20	Edit
232327	Corporate	2020-12-20	Edit
232328	Corporate	2020-12-20	Edit
232329	Corporate	2020-12-20	Edit

Add decoder

Upload the file

Number of decoder

555333

Type of package

Corporate2

☐ Delete decoder

Save

List of packages
Individual
Corporate1
Corporate2
Corporate3
Corporate4
Corporate5
Corporate6
Corporate7
Corporate8
Corporate9

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REPORTS menu

Press the **REPORTS** button to enter the menu. To generate a report, you need to select the start date and end date of the reporting period. Click the **Submit** button to generate the report. The results are displayed in the corresponding menu fields. A detailed report in Excel format can be downloaded by clicking the Download Excel file button. It is possible to generate a separate report with payments:

- made manually by the Administrator;
- Select the individual subscribers only;
- Select the corporative clients only.

| SUBSCRIBERS | PAYMENTS | PACKAGES | DECODERS | PASSWORD | REPORTS | CONSTRUCTOR | CURRENCY | LOG OUT |

Date	Last date	Amounts added by Administrator manually	Select the individual subscribers only	Select the corporative clients only
XX-XX-XXXX	XX-XX-XXXX	V	V	V

e-mail	Name	Start Balance USD	Services USD	Payments USD	Last Balance USD
	Total amount	XXXXX.XX	XXXXX.XX	XXXXX.XX	XXXXX.XX
	Total number of decoder				XXXXX.XX
	Deactivated decoder				XXXXX.XX

SUBMIT — Download Excel file

CONSTRUCTOR of Packages

Attention! Changes to the Constructor can only be made by the Administrator.
This page is hidden from Users. The Administrator, when installing the system, performs the following actions:

- indicates the correspondence of multiplexers to groups in the **MUX --> Group** table.
- creates channel packages on the **PACKAGES** page, from where the list of packages is automatically sent to the **Package --> Group** table of the Constructor.
- in the **Package --> Group** table, the Administrator specifies the encrypting type used for each packet in the multiplexers of each group.
- in the menu **PROGRAM-->PROGRAM PROPERTIES** of each multiplexer, the encrypting type is set for each program (C0, C1, C2 or C3). **See page 5**.
- After these steps, the correspondence of packages and programs is formed. The list of programs comes to the Billing server from the multiplexers and now, when you move the cursor to the name of the package, a list of programs in this package appears. To get the current list, press the REFRESH button.

| SUBSCRIBERS | PAYMENTS | PACKAGES | DECODERS | PASSWORD | REPORTS | CONSTRUCTOR | CURRENCY | LOG OUT |

MUX ➡ Group   [Save]

10.10.10.21 ➡ 1	✗
10.10.10.22 ➡ 2	✗
10.10.10.23 ➡ 1	✗
10.10.10.24 ➡ 3	✗

➕

Package ➡ Group   [Save] [Refresh] Press to receive actual data from multiplexers

Package	Group 0			Group 1			Group 2			Group 3			Group 4			Group 5			Group 6			Group 7			Group 8			Group 9		
	C1	C2	C3	C1	C2	C3	C1	C2	C3	C1	C2	C3	C1	C2	C3	C1	C2	C3	C1	C2	C3	C1	C2	C3	C1	C2	C3	C1	C2	C3
Setanta Sport	√			√			√	√																						
Sport Plus		√			√		√	√	√																					
Base			√		√				√																					
Corporate 125	√	√	√	√	√	√			√																					

➕

List of programs

Name

Program 1	Program 11
Program 2	Program 12
Program 3	Program 13
Program 4	Program 14
Program 5	Program 15
Program 6	Program 16
Program 7	Program 17
Program 8	Program 18
Program 9	Program 19
Program 10	Program 20

1–10 of 13 ‹ ›

CURRENCY menu

Press the **CURRENCY** button to enter the menu. The Administrator has the right to enter the name of the currency and the exchange rate to the USD. If there is no new exchange rate to the USD on the current date, then the program applies the last saved rate.

SUBSCRIBERS	PAYMENTS	PACKAGES	DECODERS	PASSWORD	REPORTS	CONSTRUCTOR	CURRENCY	LOG OUT

Date	Name of currency	Rate to USD

➕ Save

AMD series
DC&10MHz reference
INJECTOR

Part No. 8001-8006

+24VDC

L-band output
+10MHz ref.
+24V/6A DC

L-band input

90-264VAC 50/60Hz

L-band 10MHz & DC INJECTOR

TROPHY

+24V

L-band output
+10MHz ref.
+24V/6A DC

L-band input
+18V LNB DC

+33.6 ~ +62.4 VDC

L-band 10MHz & DC INJECTOR

TROPHY

10MHz & DC INJECTOR

TROPHY
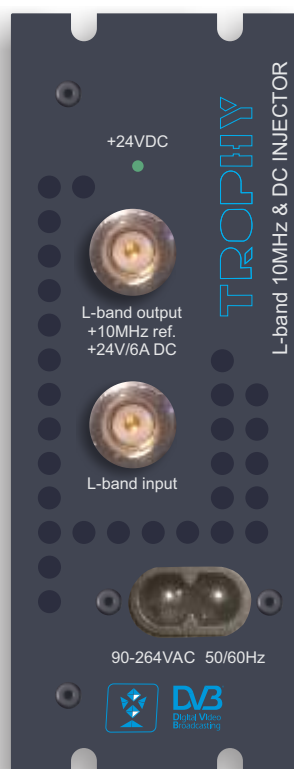
GENERAL INFORMATION

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 / 4.2A 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		+		+		+
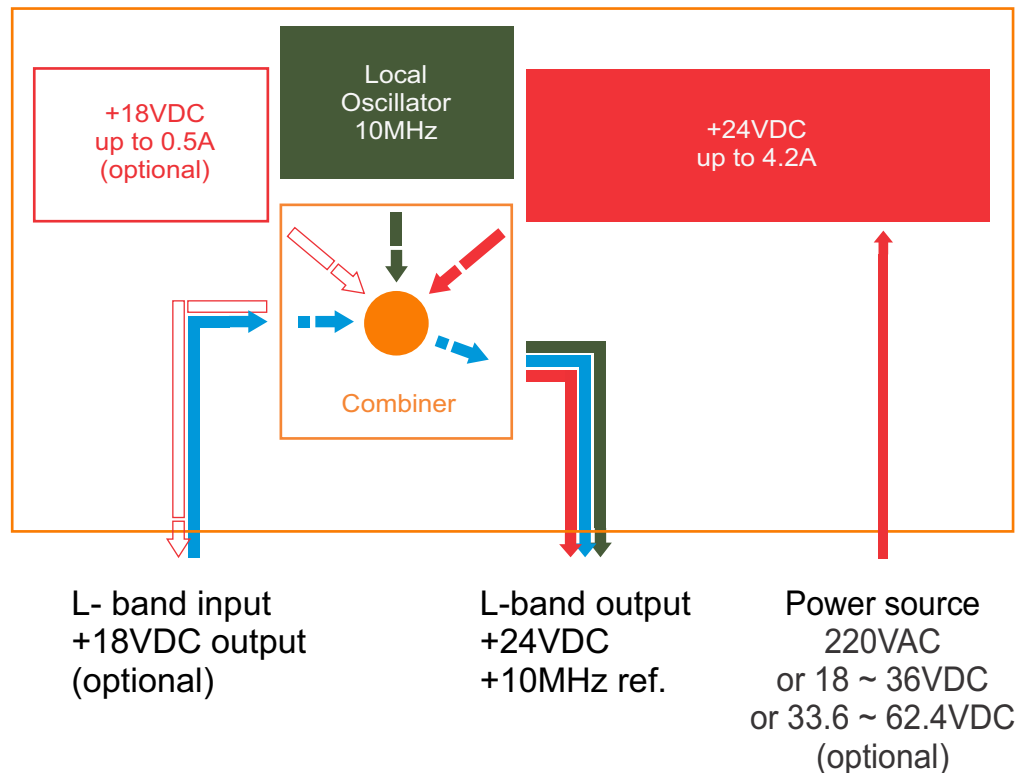
L- band input
+18VDC output
(optional)

L-band output
+24VDC
+10MHz ref.

Power source
220VAC
or 18 ~ 36VDC
or 33.6 ~ 62.4VDC
(optional)

10MHz & DC INJECTOR

INSTALLING AND OPERATING INSTRUCTIONS

SAFETY INSTRUCTIONS

When assembling and commissioning the DC&10MHz reference INJECTOR 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.

10MHz & DC INJECTOR
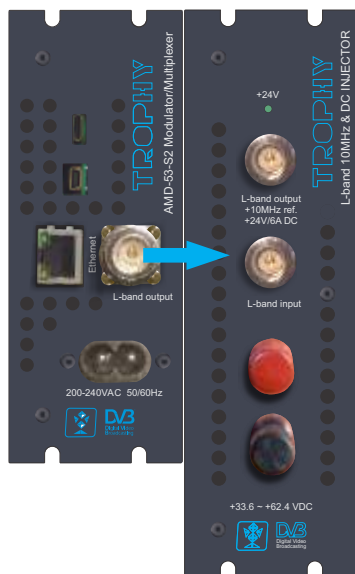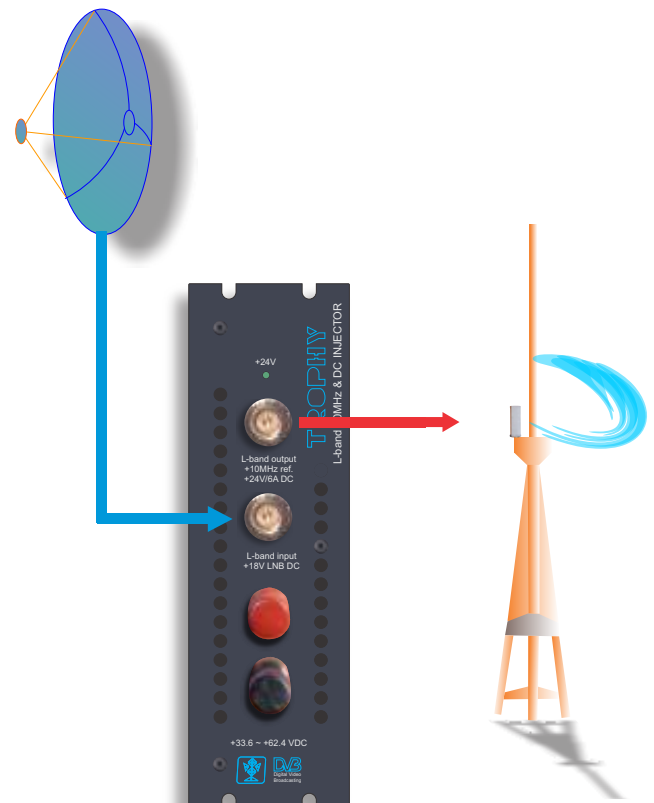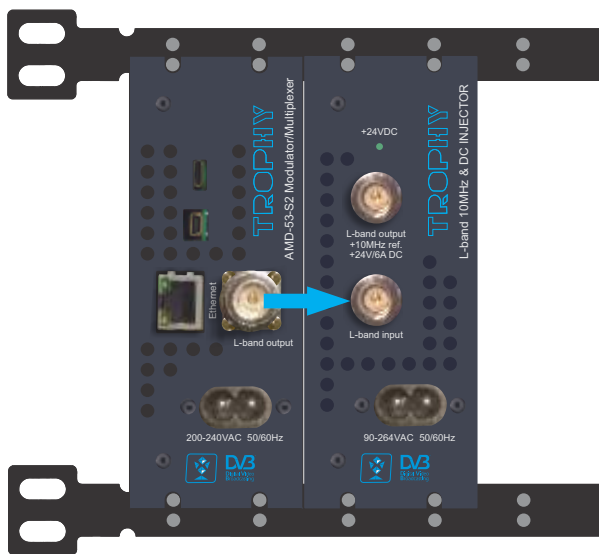
SPECIFICATIONS	
Input signal frequency range	950...2150MHz
Insert loss 950...2150MHz	9 dB max
10MHz reference stability	+/- 10ppm
10 MHz ref. level	+5 dBm
RF interface	2 x N-connectors, 50 Ohm
Injection DC voltage	+ 24VDC / 4.2A
LNB feeding voltage (optional)	+ 18VDC / 0.5A
Cooling	2 FANs, 40x40mm, 12V/24V
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
Weight	2kg Weight

Multichannel Automatic Gain Control Injector

Part No. 5001-5006

TROPHY

The AGC Injector is produced in follow modifications:

Features	Part No.					
	5001	5002	5003	5004	5005	5006
Powered by 220VAC	+			+		
Powered by 18 ~ 36VDC		+			+	
Powered by 33.6 ~ 62.4VDC			+			+
Indoor enclosure	+	+	+			
Outdoor waterproof enclosure				+	+	+

INSTALLING AND OPERATING INSTRUCTIONS

SAFETY INSTRUCTIONS

When assembling and commissioning the INJECTOR 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.

AGC INJECTOR

TROPHY

THE MAIN APPLICATION OF AGC INJECTOR

Experience of MVDS terrestrial broadcasting shows that DVB-S2 carrier can be retransmitted 2 times using Automatic Gain Control device which has a function of monitoring of transponders level.

**Automatic Gain Control
Injector
like a part of
Retransmitter**

AGC INJECTOR

Input
group
signal

L-band input

TROPHY
AUTOMATIC GAIN CONTROL INJECTOR

Fault

DHCP

Router

Internet

Ethernet

Wi-Fi router

USB

L-band output
+10MHz ref.
+24V/6A DC

+24V

Output
group signal
with restored
nominal level
+ 10MHz ref.
+ 24VDC

220VAC
or 18 ~ 36VDC
or 33.6 ~ 62.4VDC

+33.6 ~ +62.4 VDC

DVB
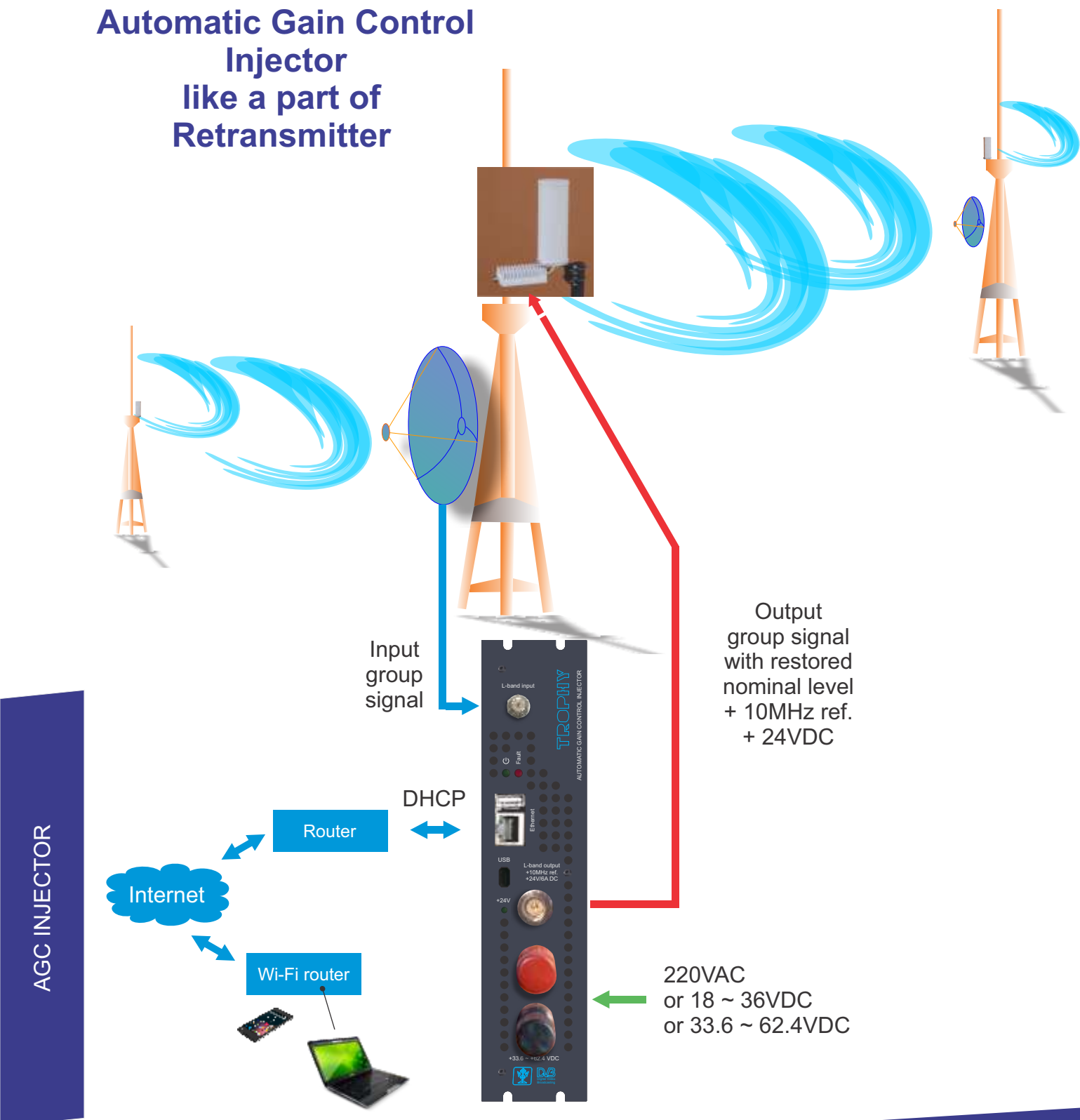
FUNCTIONAL ELEMENTS

Explanation of the functional elements:	
L-band input	F-connector
Power ⏻	Power LED
Fault	Fault LED*
Ethernet	WEB interface, RJ-45
USB (Console)	Micro-USB connector
+24 V	+24V BUC Power LED
L-band output + 10MHz ref.+ 24VDC	N-type connector
DC supply (part No.5002,5003)	Banana connector
220VAC supply (part No.5001,5004)	314 A AC connector

* The FAULT LED is red in case of:
1. The device cannot find any transponder. In this situation, the Injector pathes a signal to the output with zero attenuation.
2. Hardware failure of the device. Try to replace the Micro SD memory with the recorded image (see page https://dvb4all.com/?product=automatic-gain-control-injector).

WEB interface, RJ-45 patch-cord

L-band input

L-band output + 10MHz ref.+ 24VDC

DC supply (part No.5005,5006). Pin1 (+), Pin2 (-)

AGC INJECTOR

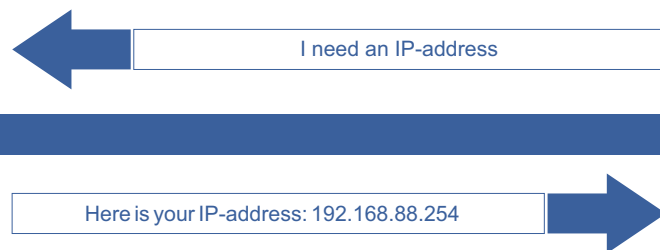## NETWORK MANAGEMENT VIA EMBEDDED REMOTE ACCESS SERVER

Embedded **REMOTE ACCESS SERVER** provides WEB-control&monitoring of Injector parameters via Internet. The SERVER uses the Linux Debian OS.

MANAGEMENT VIA WEB- INTERFACE

To access the global network you must use a Router that assigns its own unique IP address to the AGC Injector connected to Router. Connect the AGC Injector to the Router using an Ethernet patch cord. The assignment of a unique network address is done automatically. Check that the DHCP function is enabled on the Router.

DHCP - Client

Router (DHCP - Server)

I need an IP-address

Here is your IP-address: 192.168.88.254

See the IP-address of AGC Injector into ARP list of the router:

		IP Address	MAC Address	Interface
-	DC	192.168.88.2	60:A4:4C:2E:21:96	bridge
-	DC	192.168.88.254	02:81:05:1F:35:C2	bridge

AGC INJECTOR

The AGC Injector uses a WEB-interface. You can go to the menu knowing the IP-address of the device. You can see the IP-address in the Router settings or you can see the IP-address by connecting to the USB-port of Injector (see section ACCESS TO DEVICE VIA USB-INTERFACE)

192.168.88.254/login

Log-in

admin

•••••

Login

IP address: **xxx.xxx.xxx.xxx**
Default Username: **admin**
Default Password: **1234**

MAIN MENU

Frequency	Symbol Rate	Signal	➕ ⚙
1515	30000	-5 dBm	➖
1635	30000	-4 dBm	➖
1800	30000	No lock	➖
Average		-4 dBm	

AGC INJECTOR

Frequency	IF-frequency of transponder (MHZ)
Symbol Rate	Symbol Rate of transponder (kSymb/s)
Signal	Level of output signal of transponder when attenuation is zero (dBm)
Average	Arithmetical mean of levels of the locked transponders (dBm). If you have not configured any transponder or there is no LOCK on any transponder, then the Injector works with the disabled automatic attenuation function. That is, the signal attenuation will be equal to zero.
➕	Add new transponder
➖	Delete transponder
⚙	SETTINGS button

SETTINGS MENU

Press ⚙ button in MAIN menu

Frequency	Symbol Rate	Settings
1515	30000	Password
1635	30000	
Average		No lock

Press SETTINGS button. You can see the AGC SETTINGS menu.

192.168.88.254

AGC Settings

Signal level (dBm) -10

LNB Power 18V ▾
Off
13V
18V
13V 22kHz
18V 22kHz

cept   Cancel

Signal Level   The average level of the signal (in dBm) that you want to have at the output of the Injector. If the real signal is higher than this value then the attenuator will reduce this value to the level specified in the menu. The attenuation range can vary within 0dB to 31.5dB.

LNB Power   Managing of LNB voltage and 22kHz tone.

Accept   Save the settings

Cancel   Exit without saving

AGC INJECTOR

SETTINGS MENU

Below are diagrams of AGC Injector operation at various settings: -14dB Output Signal Level and -35dB Output Signal Level

AGC Settings: Signal level = -14dBm

Input signal level, dBm

+10
0
-10
-14dBm
-20
-30
-40
-50
-60
-70
-80

Time

Output signal level, dBm

+10
0
-10
-20
-30
-40
-50
-60
-70
-80

Attenuation Range
from -14dBm to +17.5dBm

Time

AGC INJECTOR

AGC Settings: Signal level = -35dBm

Input signal level, dBm

+10
0
-3.5dBm
-10
-20
-30
-35dBm
-40
-50
-60
-70
-80

Time

Output signal level, dBm

+10
0
-10
-20
-30
-40
-50
-60
-70
-80

Attenuation Range
from -35dBm to -3.5dBm

Time
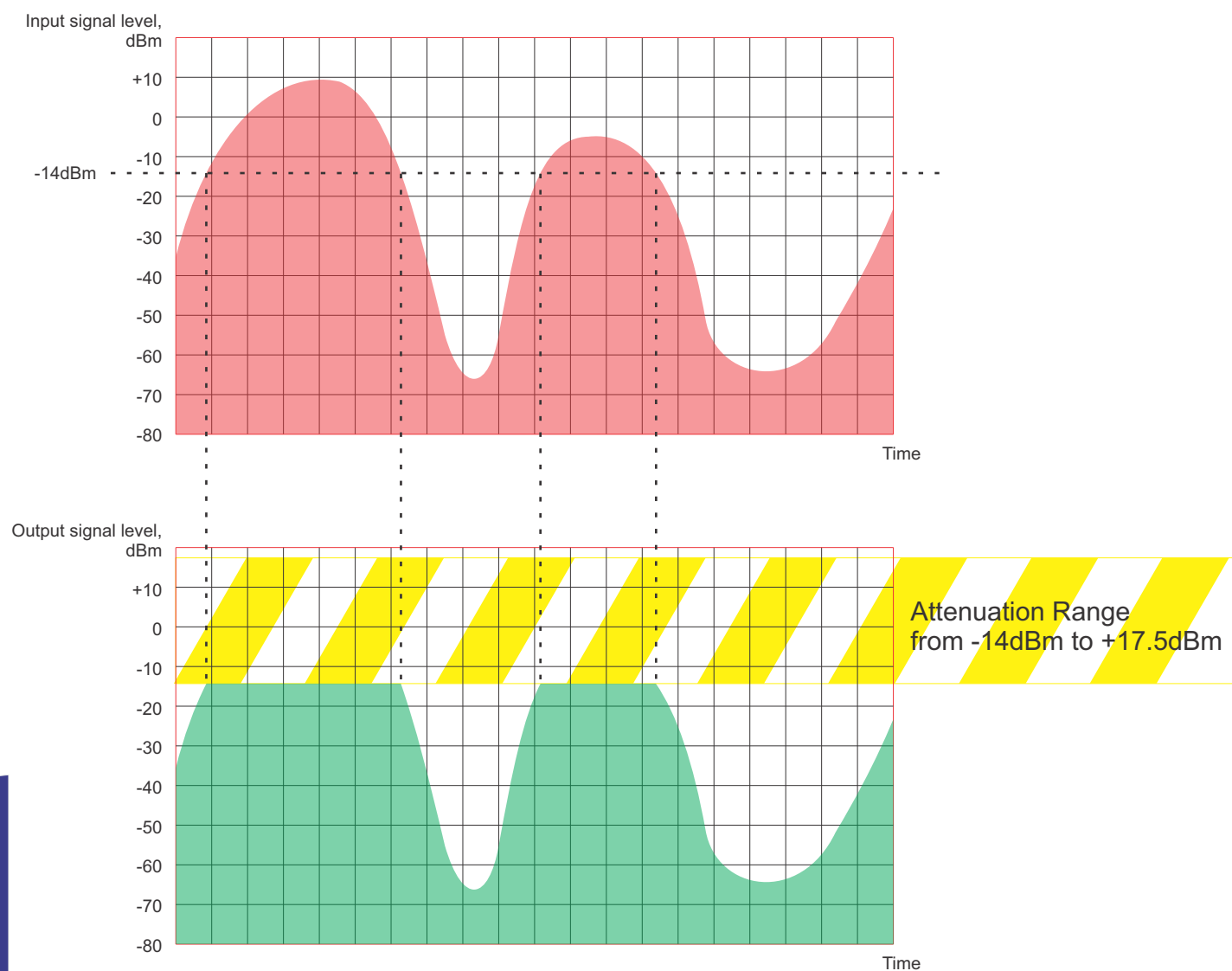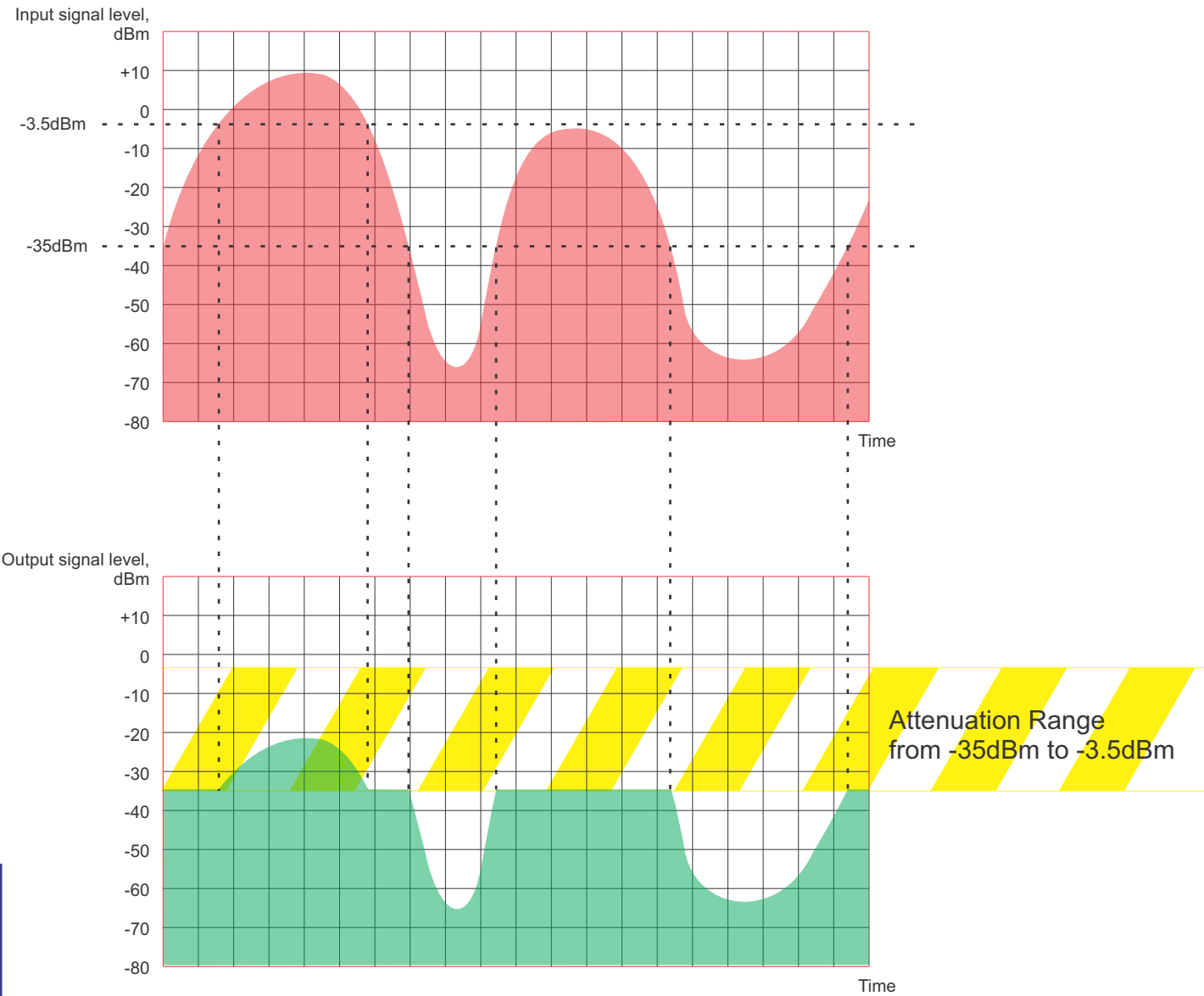
PASSWORD MENU

Press ⚙ button in MAIN menu
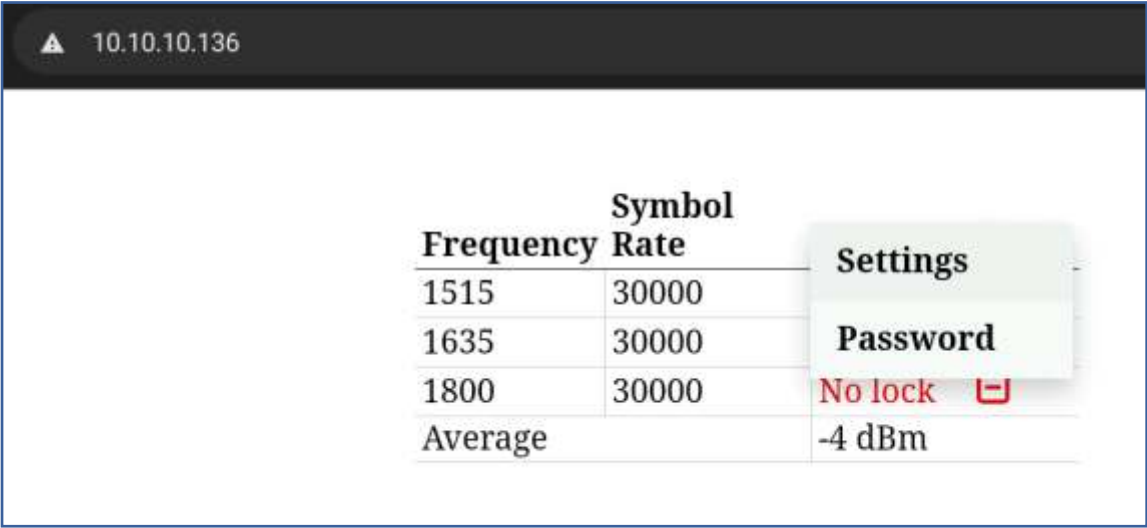
Press PASSWORD button. You can see the PASSWORD menu.

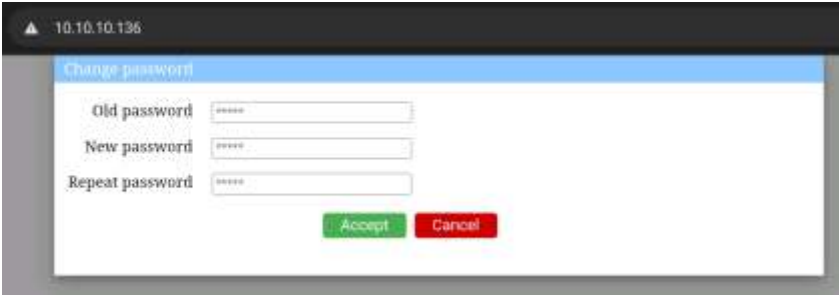| **Old password** | Text the current password |
New password	Text the new password
Repeat password	Repeat the new password
Accept	Save the settings
Cancel	Exit without saving

ACCESS TO DEVICE VIA USB-INTERFACE

AGC Injector equipped by Micro-USB connector for Virtual COM-port interface. The protocol specification is CDC (Communication Device Class).
In order to be able to configure the device configuration on the SERIAL connection use any terminal program on your computer, for example:
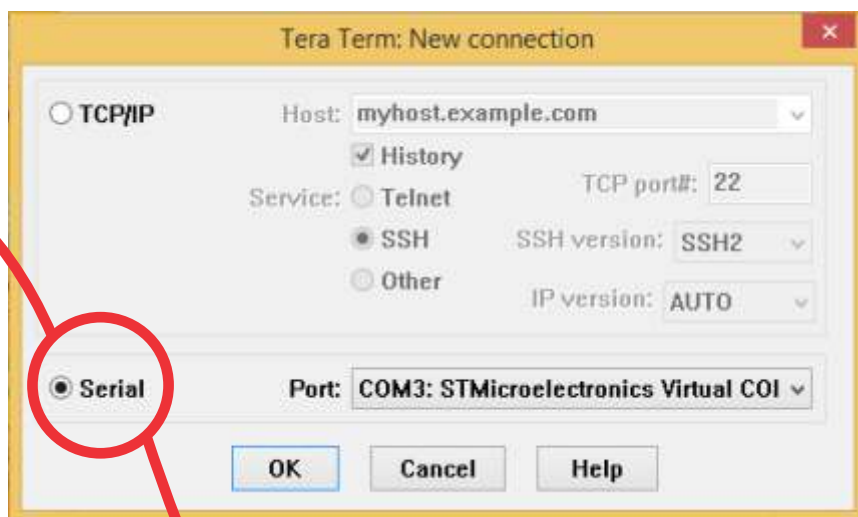**TeraTerm** for Windows
USB Terminal for Android
Get Terminal for iOS
Picocom for Linux

USB serial port settings:

- bits per second........115200;
- data bits..................8;
- parity.......................none;
- stop bit....................1;
- flow control...............none.

You can use Linux commands, for example:

passwd [ENTER]

Enter new UNIX password:******* [ENTER]

Retype new UNIX password:******* [ENTER]

wwwpasswd commands is using for add, delete and change of Users and Passwords of WEB-interface.

wwwpasswd -h   help menu

wwwpasswd -a   add user

wwwpasswd -d   delete user

ifconfig eth0 [ENTER] Command is using for see the IP-address of WEB-interface.

For more details reads LINUX OS manual.

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
RF input	
L-band	900MHz to 2150MHz, 1MHz step
Input signal	DVB-S/S2, from 1 to 45MSymb/s
LNB control	13/18V, on/off, 22 kHz
Connectors	F-connector, 75Ω
RF Output	
L-Band	900MHz to 2150MHz
Connector	N-Type, 50Ω
Insert loss of Combiner	4dB (own loss) and 0...31.5dB (attenuation control)
10 MHz Local Oscillator; +24VDC / 6A	0...+5dBm, injected to output signal
Physical	18~36VDC; 33.6 ~ 62.4VDC or 220VAC optional
	up to 100W;
	Indoor: 0°C to 60°C; 31*22*5cm; 2kg
	Outdoor: -20°C to 50°C; 29*21*8cm; 2.5kg

TROPHY

AMD series
L-band
8-channels COMBINER/
DC&10MHz reference

Part No. 12001-12003

L-band output
10MHz ref. +24VDC

1   2
3   4
5   6
7   8

L-band 8-ch combiner

TROPHY

90-264VAC 50/60Hz

L-BAND 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 of MVDS or VSAT BUC (Block Up Converter). COMBINER has embedded 24V / 6A power supply unit (optional). Modules are intended for indoor use only.
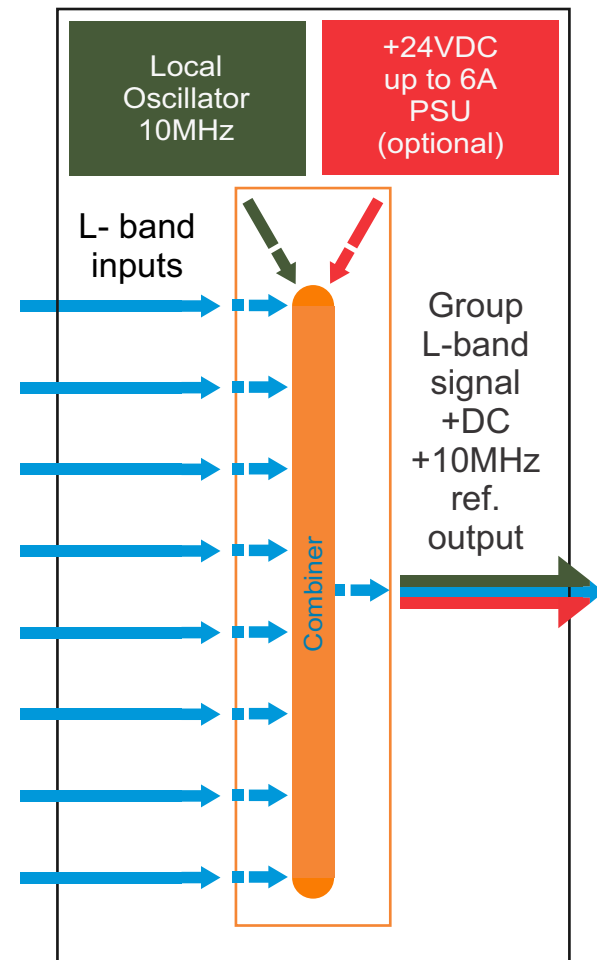
INSTALLING AND OPERATING INSTRUCTIONS

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.

Deliveries are made with the following configurations/ device versions:

Features	Part No.		
	12001	12002	12003
24 VDC embedded PSU	+	+	
Embedded FANs		+	

SPECIFICATIONS

Input signal frequency range	950...2150MHz
Number of inputs	Eight
Insert loss 950...2150MHz	18 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 (Part No. 8001,8002)
DC rated current (convection)	0...4.2A (Part No. 8001)
DC rated current (optional FANs)	0...6.25A (Part No. 8002)
Rated power (convection)	100W
Rated power (optional FANs)	150W
DC Ripple & Noise (max.)	240mVp-p
Input AC voltage	90...264VAC/150W
Power Factor	PF>0.95/230VAC PF>0.98/115VAC at full load
AC current	1.8A/115VAC 1 A/230VAC
AC frequency range	47...63Hz
Physical	
Working temperature	0°C to +70°C
Dimensions	245x132x51mm
Weight	2kg Weight

Optical transmitter (OPT-TX DT) and optical receiver (OPT-RX DT)

Optical transmitter and optical receiver

TROPHY
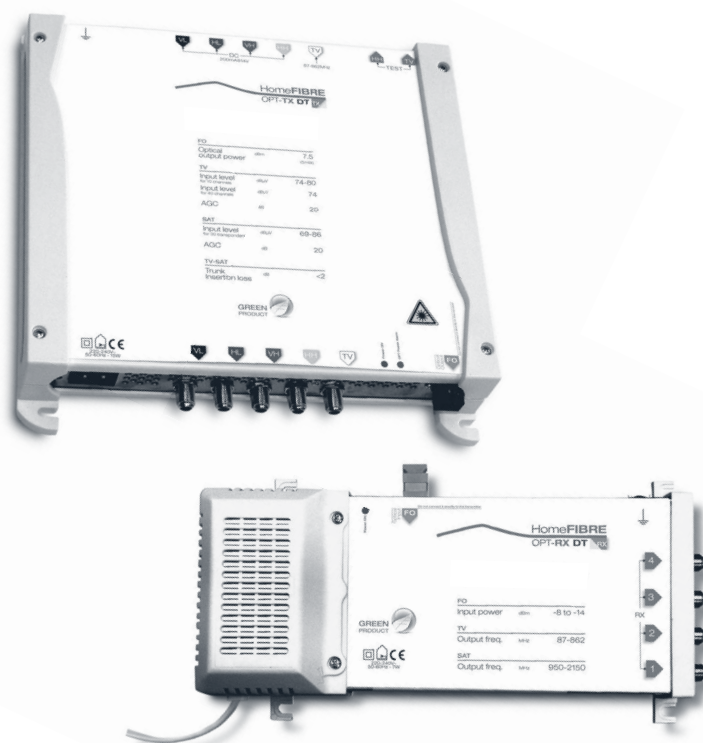
SAFETY WARNING.

The product must be installed by a qualified engineer, according to the local safety standards and regulations. The product is classified as Class II, in accordance with EN 60065, and for this reason it doesn't need to be connected to the protective earth (PE) of the mains supply.

Installation warnings

Only use the original power cable (adaptor) supplied and install the product so that the mains plug is easily accessible. The product must not be exposed to dripping or splashing liquids and so must be installed indoors in a dry place. Humidity and condensation could damage the product. In case of condensation, wait until the product is dry before using it.

Don't install the product above or close to heat sources, in dusty places or where it might come into contact with corrosive substances. Keep the product away from heat sources to prevent some parts or components of the unit to catching fire. To fix the product to the wall use suitable expansion bolts.

Leave enough space around the product housing to ensure sufficient ventilation. "An excessive operating temperature and/or excessive heat may affect the performance and the life span of the product."

Never look inside the product's optical connectors. The laser radiation is not visible with the naked eye and therefore it is not possible to prevent long term damage. When working with the splitter's optical connectors make sure that the lasers of any optical transmitters connected to it are switched off.

In accordance with the European Directive 2004/108/EC (EMC), the product must be installed using devices, cables and accessories that comply with this directives requirements for fixed installations.

Aerial system earth connection The unit must be connected to the ground electrode of the antenna installation according to the standard EN60728-11. We recommend following the provisions of standard EN60728-11 therefore not connecting the ground electrode to the earthing of the power supply network.

IMPORTANT: Only trained and authorised personnel can open the product. In case of failure, do not try to repair the product; otherwise the guarantee will no longer be valid.

Optical transmitter and optical receiver

INVISIBLE LASER RADIATION DO NOT VIEW DIRECTLY WITH OPTICAL INSTRUMENTS (MAGNIFIERS) CLASS 1M LASER PRODUCT

**LASER RADIATION**

Product description

Optical transmitter (OPT-TX DT) and optical receiver (OPT-RX DT) for distributing satellite and digital terrestrial signals through a single-mode fibre optic cable.

The incoming RF signals to the OPT-TX DT transmitter are converted and distributed through a single-mode fibre optic that can be split by splitters and passive taps enabling them to be sent to multiple optical connections (PON=Passive Optical Network) using a single transmitter.

The OPT-RX DT receiver converts the incoming optical signal in to 4 universal outputs, therefore enabling the TV and SAT signal to be available for 4 different users.
The system requires the use of a conventional LNB and provides a traditional 5 core output (4 SAT + 1 TV) to enable a cascadable installation to additional transmitters or to a traditional multiswitch system.

The AGC (Automatic Gain Control) in the transmitter makes the product configuration much easier by automatically adjusting the input signal level to the optical laser.
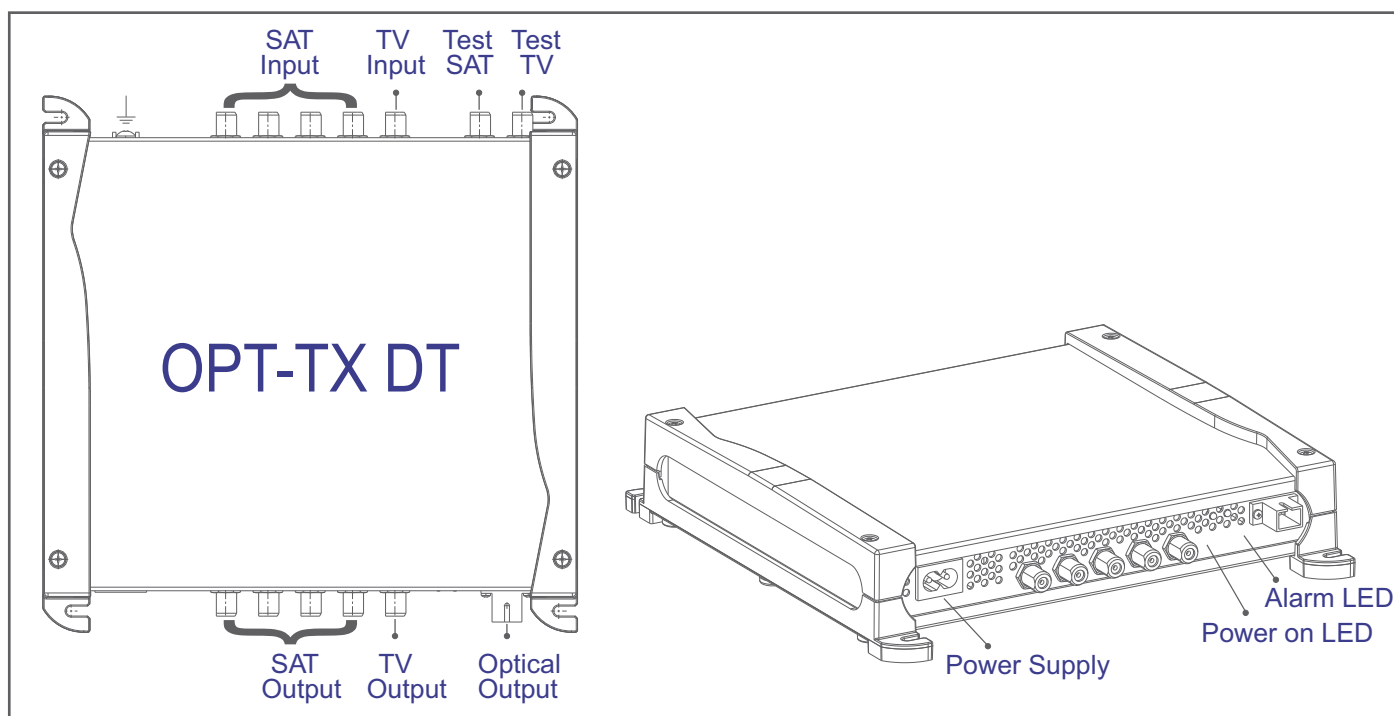
SAT INPUT: F input connectors for the four IF satellite polarities (950 - 2150MHz) with LNB remote power.
TV INPUT: F input connector for the TV signal (87 - 862MHz) .
TEST SAT: F output connector for the SAT test signal, HH polarity (RF level: 60dBµV per transponder).
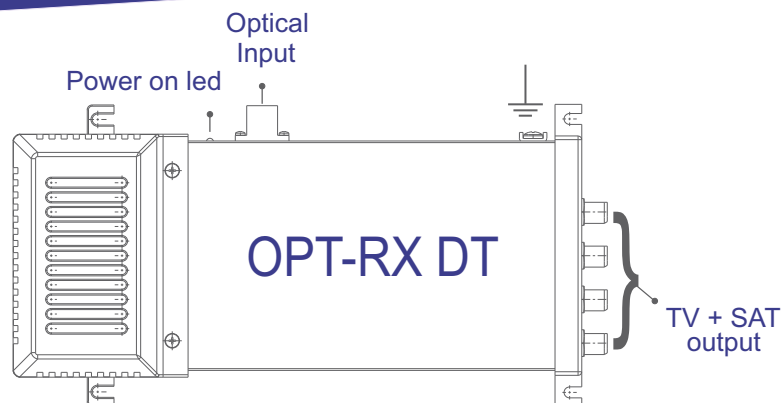**TEST TV:** F output connector for the TV signal 87 - 862MHz (RF level: 74dBµV overall power).
OPTICAL OUTPUT: SC-APC output connector for the optical transmitter for the fibre link.
SAT OUTPUT: F output connectors for the four IF satellite polarities (950 - 2150MHz) for possible cascade applications to other devices TV OUT : F output connector for the TV signal (87 - 862MHz).
POWER ON LED: On (green) to show the product is turned on. ALARM LED: the alarm LED shows that the transmission laser is not working correctly.
⏚ Earthing the antenna installation (according to EN60728-11 standard).

OPTICAL INPUT: SC-APC input connector for the optical receiver. Used for the fibre link for the satellite polarisation and TV signals.

TV+SAT OUT: 4 F connectors for mixed TV+SAT outputs (87 - 862MHz, 950 - 2150MHz).

POWER ON LED: On (green) to show the product is turned on.

Aerial system earth connection (according to EN60728-11 standard).

System Functions:

The headend system in a fibre optic distribution network uses traditional receptive devices, i.e. aerials, dishes and traditional LNB's and any signal equalisation and amplification units. TV and SAT signals are sent to an OPT-TX DT optical transmitter, which converts the electrical signals into luminous signals, therefore enabling the distribution via a fibre optic infrastructure over long distances. Like traditional systems, each time this signal has to be split over a number of lines, a device called an optical divider or optical splitter (VOV or VOT) is used this splits the signal into a number of optical transport lines without any fall in quality even with a calculated attenuation. Once the optical signal is in the vicinity of the unit to be served, it is reconverted into a traditional signal by the OPT-RX DT optical receiver which on output generates the RF signals provided to the end user by means of traditional components (coaxial cables and filtered outlet sockets).

ATTENTION: A direct optical connection cannot be made between the OPT-TX DT and OPT-RX DT. The connection can only be made using optical line attenuators as the overall input power to the OPT-RX DT optical receiver must not exceed -7dBm. Check the optical level of the signal on the fibre using an optical light meter before connecting it to the OPT-RX DT receiver.

Optical transmitter and optical receiver

Connections The OPT-TX DT transmitter and OPT-RX DT receiver both have an SC-APC optical connector. The splitters and dividers in the VOV and VOT series have sockets for MINI connectors. Use the SC-APC -> MINI links (PR ADAPT, code 287226) to connect the OPT devices to the optical distribution (VOV and VOT devices). We provide patch cables with MINI connectors of different lengths for connecting the passive VOV and VOT devices.

SC/APC Fibre Optic Connectors
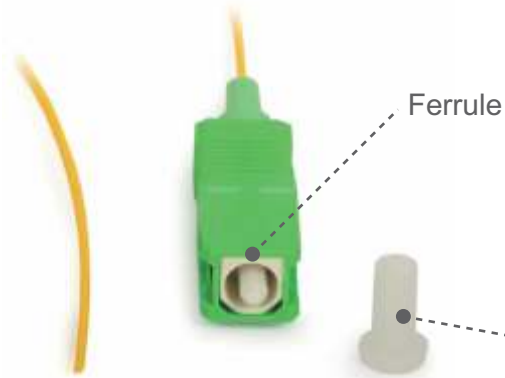
Ferrule

MINI Fibre Optic Connectors
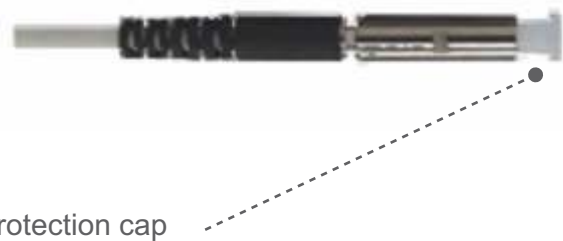
Protection cap

Attention: To conserve and protect the contact surfaces of the optical connectors the bushing and ferrule protectors should be left in position until the connections are made or can be cleaned using the correct tools.

Installing and removing the fibre cable to the VOV and VOT devices:

1) Remove the protective cover from the connector without touching the ferrule.

2) Insert the connector following the guides until it clicks into place.

3) To remove the fibre, press the connector and pull out the cable.

Optical transmitter and optical receiver

USER INSTRUCTIONS.

Dimensioning a Fibre Optic system.

When designing a fibre optic system it is important to consider the optical input level to the OPT- RX DT receivers, suitable attenuation is required and must be calculated at each point to ensure the system falls within the required parameters. The optical output power from the OPT-TX DT transmitter is fixed (+7.5dBm typical).

The OPT-RX DT receivers can guarantee that the correct level of TV and SAT signals are available to the end users sockets. This guarantee is on the proviso that the input level of the optical signal is between -8dBm and -14dBm therefore giving an optical attenuation range of 15 to 21dB.

ATTENTION:
Direct connections are not allowed between the OPT-TX DT and OPT-RX DT, unless the correct line optical attenuators are used. An optical signal reader must be used to check the optical input level to the OPT-RX DT and to prevent damaging the receiving photodiode (damage can be caused if the optical input signal is higher than 0dBm). If the quality of the input signals are not optimised, or if a lot of signals have to be distributed to a lot of sockets, the optical budget should be reduced or professional splitters should be used with SC-APC connectors.

Requirements for the input signal to the OPT-TX DT optical transmitter

For the signals to be correctly transmitted through the fibre optic, the RF signals must respect the following requirements:

TV (DTT/CATV)
To ensure the TV signals are transmitted and received correctly, the input signals to the transmitter should be equalised, especially if a lot of channels are being transmitted.

As an indication, the input signals should respect the following requirements:

1. The transmitter signal level should be ≥ 74dBµV to guarantee correct reception by the OPT- RX DT receivers, even after an optical attenuation of 21dB.

2. Overall input power: -19dBm (90dBµV)

3. The overall power ≤ -19dBm (90dBµV) is guaranteed in the following cases:
 40 TV channels equalised at 74dBµV
 20 TV channels with a maximum level of 77dBµV
 16 TV channels with a maximum level of 78dBµV
 8 TV channels with a maximum level of 81dBµV

If the TV input signal quality is not optimal or not correctly equalised, then the system should be designed considering an optical attenuation lower than 21dB to guarantee correct signal reception at the socket (especially when a lot of channels are being transmitted).

FM and DAB
The FM and DAB signal levels should be at least 10dB lower than the overall input power of the TV signal.

Optical transmitter and optical receiver

SAT

1. Input signal level: 69-86dBμV
The input transponder level to the OPT-TX DT must be between 69 and 86dBμV for the ACG to function correctly.
2. Band flatness: 4dB
The transponders should be equalised within the same polarity so that the maximum difference in level between the transponders transmitting through the fibre is 4dB, to ensure the receiver is able to receive correctly.

The output levels to the OPT-RX DT optical receiver.

The output level to the OPT-RX DT optical receiver depends on the number of signals transmitted through the fibre and the optical attenuation of the section.
Remember that 1dB of optical fall equals 2dBμV of attenuation to the electric level (RF).
Below some reference levels are given for the output signals to the receiver:
TV (DTT/CATV) The overall output power is -27dBm (82dBμV) with 21dB of optical attenuation which means that the fewer multiplexes that are transmitted, the better the output level and quality.

RF output level per MUX		
No. of Muxes	Receiver optical Input -8dBm	Receiver optical Input -14dBm
40	73dBμV	61dBμV
16	77dBμV	65dBμV
8	80dBμV	68dBμV
4	83dBμV	71dBμV

Table 1 Indications of output levels to the OPT-RX DT – TV signal

N.B.: 1dB optical equals 2dB at electric level (RF).

SAT

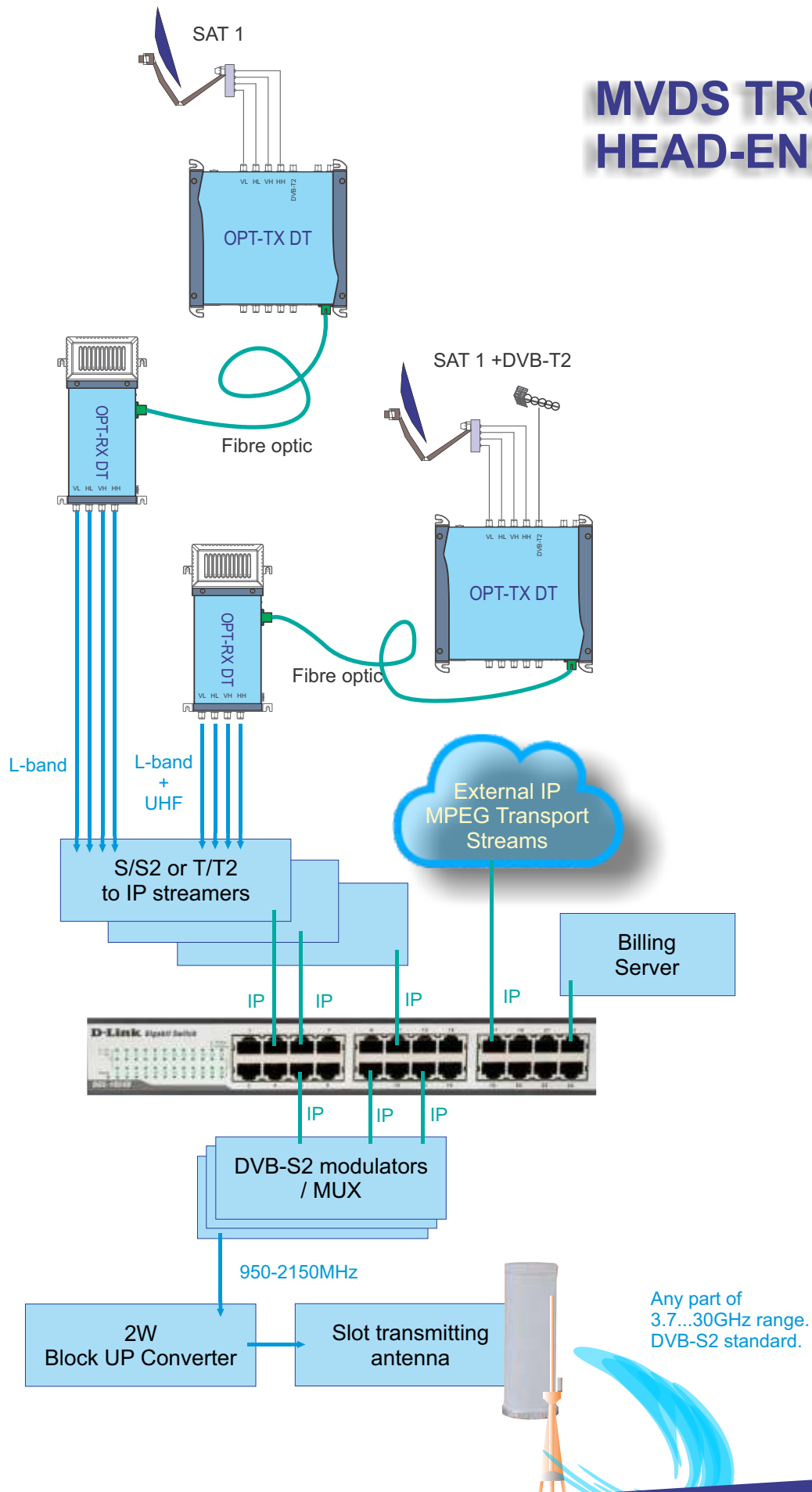The typical output SAT signal level to the OPT-RX DT is:
• 74dBμV for transponders with an optical level of -14dBm input to the receiver (21dB of optical attenuation)
• 86dBμV for transponders with an optical level of -8dBm input to the receiver (15dB of optical attenuation)
•

FM and DAB

The FM and DAB signal levels respect the difference of input level in relation to the TV signal.

N.B.: The signal levels to the user sockets must respect the set points given in the EN50083-7 standard (DTT: 45-74dBμV – SAT: 47-77dBμV). In certain cases the RF output signal from the receiver, or if possible the input optical signal, will have to be attenuated by means of passive components such as optical line faders.

Optical transmitter and optical receiver

SAT 1

MVDS TROPHY HEAD-END

OPT-TX DT

Fibre optic

SAT 1 +DVB-T2

OPT-RX DT

OPT-RX DT

Fibre optic

OPT-TX DT

L-band

L-band
+
UHF

External IP
MPEG Transport
Streams

S/S2 or T/T2
to IP streamers

Billing
Server

IP   IP   IP   IP

IP   IP   IP

DVB-S2 modulators
/ MUX

950-2150MHz

2W
Block UP Converter

Slot transmitting
antenna

Any part of
3.7...30GHz range.
DVB-S2 standard.

TECHNICAL SPECIFICATIONS

Home Fibre Transmitter		OPT-TX DT
Part No.		270694
RF inputs	No.	5 (4SAT + 1TERR)
RF outputs	No.	7 (4 SAT + 1TERR + 2TEST)
Optical output	No.	1 SC/APC
SATELLITE INPUTS		
Bandwidth	MHz	950 - 2150
Connectors type		F Female
Input return losses	dB	10
Trunk line insertion losses	dB	<2
RF input level	dBµV	69 - 86
TERRESTRIAL INPUT		
Bandwidth	MHz	87 - 862
Connector type		F Female
Input return loss	dB	10
Trunk line insertion loss	dB	2
Overall input power	dBµV	90
TEST OUTPUTS		
Bandwidth	MHz	87 - 862/950 - 2150 (HH polarity)
Connectors type		F Female
Output return losses	dB	10
RF Output level	dBµV	74 (TV) overall power 60 (SAT) per transponder
OPTICAL OUTPUT		
Connector type		SC/APC
Wavelength	nm	1310
Optical output power	dBm	+7.5
Optical return loss	dB	>45
Safety class		1M
MAIN FEATURES		
Mains voltage	Vac/Hz	184 - 264/50 – 60
Power consumption	W	15
LNB remote powering	mA	200@14V (4 SAT connectors)
Operating temperature	°C	-5 to +50
AGC RF level dynamics	dB	20
LED information		Power on green LED Extracurrent on laser red LED

Optical transmitter and optical receiver

QUAD Home Fibre Receiver		OPT-RX DT
Part No.		270693
Optical input	No.	1 SC/APC
RF outputs	No.	4 (TERR + SAT)
OPTICAL INPUT		
Optical connector		SC/APC
Wavelength	nm	1310
Optical return loss	dB	>45
Optical power (min - max)	dBm	-8 to -14
RF OUTPUTS		
Bandwidth	MHz	87 - 862/950 - 2150
Connector type		F Female
Return loss	dB	10
RF output level @ optical -14dBm	dBµV	77±5 (TV) overall power 66±5 (SAT) per transponder
Output sat control		DiSEqC
MAIN FEATURES		
Mains voltage	Vac/Hz	184 - 264/50 - 60
Power consumption	W	7
Operating temperature	°C	-5 to +50
LED information		Power on green led
Dimensions L x H x W	mm	250 x 125 x 50

Optical transmitter and optical receiver

DVB-S/S2 to IP/ASI Streamer/Descrambler

Loop

USB

L-band input

Rx error   Lock

Fault

Ethernet

Sync

ASI out

Status

DVB-S2 to IP/ASI streamer

190-240VAC 50/60Hz

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.

Streamer/ Descrambler

TROPHY

Safety Requirements

DVB-S/S2 to IP/ASI STREAMER design complies with international safety standards. However, operation with any electric appliances requires caution. We recommend you to ask a qualified master to install the device. If you choose to install it yourself, please read this Operation Manual carefully. Pay special attention to safety requirements below.

Supply Voltage

Power supply 230VAC.

Overload

Avoid overloading the supply network by extension cords or adapters. It may cause fire or give you an electric shock.

Liquid Substances

Store liquid substances away from the device and make sure no such substances get inside the device.

Foreign Objects

Please keep coins and other small objects away from the device to prevent their getting through the vent slots, which may cause serious damage to device. Getting of insects into the device may also damage the device and, consequently, cause fire.

Cleaning

Disconnect the device from power supply before cleaning. Use soft, slightly damp cloth to clean the surface of the casing. Never use any solvents!

Ventilation

Make sure the vent slots are open and the location where the device is installed allows free air circulation. Never put the device on a soft surface or cloth. Do not operate and never store the device on the heat or under direct sunlight. Never put any other appliances on top of the device.

Connected Devices

Do not connect any unauthorized appliances to the device as it is dangerous and may damage the appliance and this device.

Location

Install the device indoors on hard surface. Make sure the device is well protected from direct sunlight or moisture.

WARNING: Subject to compliance with the instructions, the device life is 5 (Five) years following the manufacture date. Terms and conditions of further operation must be agreed upon by the owner of device and the service company.

Streamer/ Descrambler

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
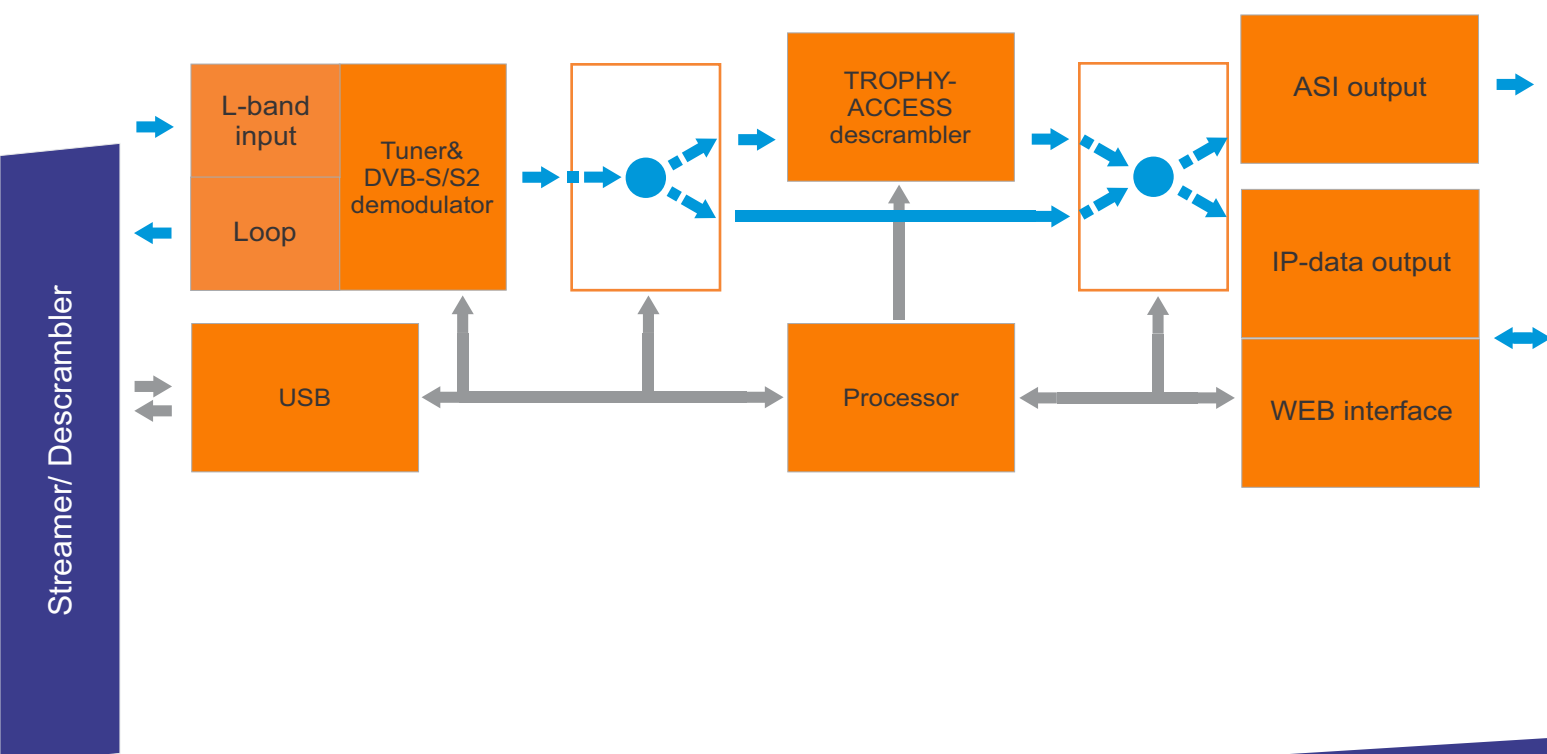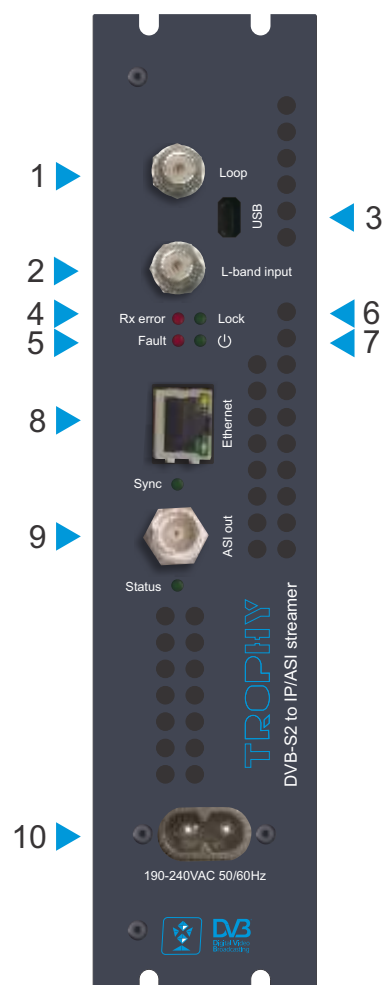
INSTALLING AND OPERATING INSTRUCTIONS

SAFETY INSTRUCTIONS

When assembling and commissioning the device 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.

SETTINGS FOR THE ETHERNET NETWORK INTERFACE

NETWORK CONNECTION VIA WINDOWS PC

These steps walk you through setting a Windows PC to a Static IP address, to allow an Ethernet connection with the unit on its default IP address of 10.10.10.20.
- Connect your PC to the ETHERNET Port of the Device via Ethernet using a CAT 5E/6 cable.
- On your PC, in the Control Panel, open Network and Sharing Center (Network and Internet for Windows 8 and above)
- Once you have Network and Sharing Center open, click on "Change adapter settings."
- Right Click on your Local Ethernet connection and click on "Properties."
- Once the Ethernet Properties are open click on, "Internet Protocol Version 4 (TCP/IPv4)," and click on, "Properties."
- In the Properties, select "Use the following IP address" and set the static IP: 10.10.10.10.
- Click OK.

You are now ready to connect.

NETWORK CONNECTION VIA MAC OS X

These steps walk you through setting a Mac running OS X to a Static IP address, to allow an Ethernet connection with the Device on its default IP address of 10.10.10.20.
- Connect your Mac to the ETHERNET of the Device via CAT 5E/6 cable.
- From the Apple menu, select System Preferences, then select network.
- Select Ethernet.
- From the Configure IPv4 menu, select Manually.
- Enter the IP address 10.10.10.10.
- Enter the Subnet Mask 255.255.255.0.
- It is not necessary to enter DNS or Router.
- Click Apply.

You are now ready to connect.

INSTALLING MULTIPLE DEVICES

To install multiple Devices on the same network, make sure to CHANGE the IP address of each Device BEFORE you connect them to the same network so there will be no IP Conflicts. Point your web browser to the IP address of the unit (default is 10.10.10.20). Login to the unit, click NETWORK button, change the NETWORK SETTINGS as needed by your application. Save your settings.
As an example, you can set your Device(s) IP addresses to 10.10.10.20, *30, *40, etc. Write down these values or put a sticker on each unit with the new assigned IP address so it will be easy to login to the unit in the future.

Streamer/ Descrambler

TROPHY

IP address: **10.10.10.20**
Subnet: **255.255.255.0**
Gateway: **10.10.10.1**
Default Username: **admin**
Default password: **admin**
It is recommended to change the password for confidential
(See the page 9, SSH ACCESS TO DEVICE)

To connect to the Web interface, we must first connect directly to the ETHERNET port on the front of the Device using an Ethernet patch cable CAT5e/CAT6 or higher.
Once connected, you can verify the physical connection by ping command. This step is not necessary but helpful to ensure a connection can be established before proceeding.

Open a CMD prompt in windows and use the following command: **ping 10.10.10.20**
If you are connected directly to the Device, you should get a response:

```
Microsoft Windows [Version 6.3.9600]
(c) 2013 Microsoft Corporation. All rights reserved.

C:\Users\admin>ping 10.10.10.20

Pinging 10.10.10.20 with 32 bytes of data:
Reply from 10.10.10.20: bytes=32 time<1ms TTL=64
Reply from 10.10.10.20: bytes=32 time<1ms TTL=64
Reply from 10.10.10.20: bytes=32 time<1ms TTL=64
Reply from 10.10.10.20: bytes=32 time<1ms TTL=64

Ping statistics for 10.10.10.20:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 0ms, Average = 0ms

C:\Users\admin>_
```

If not, the following message appears in the command prompt. The Device is not pingable, verify that your connections are secure and that your Static IP of your PC is set up correctly. Refer to Setting up a Static IP section of the guide.

```
Microsoft Windows [Version 6.3.9600]
(c) 2013 Microsoft Corporation. All rights reserved.

C:\Users\admin>
C:\Users\admin>ping 10.10.10.20

Pinging 10.10.10.20 with 32 bytes of data:
Request timed out.
Request timed out.
Request timed out.
Request timed out.

Ping statistics for 10.10.10.20:
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),

C:\Users\admin>_
```

Streamer/ Descrambler

LOGIN INTO THE WEB-INTERFACE

If you can ping the unit successfully, then we can proceed to open your web browsers such as Chrome. In the address bar, enter the default IP of the unit: **10.10.10.20** and hit **Enter.** The **Main Page** prompt appears for the Web interface.

DVB-S/S2 to IP/ASI STREAMER

Tuner LOCK ●   Signal Level -123 dBuV   SNR 8.1 dB

Serial No	1234-5678-AB12-CD34-9012-4455
Version	1.02b
Decoder ID	ET7 12-92345
Decoder status	CA1 + CA2
Destination	192.168.100.2:12345
DataRate, Mbps	65
Temperature, °C	45
Status	OK

Settings

You can see the Tuner status:
- LOCK (green LED) or
- UNLOCK (red LED)
- Input signal level
- SNR of input signal

Tuner LOCK ●   Signal Level -123 dBuV   SNR 8.1 dB

You can see the Device details:

Serial No	1234-5678-AB12-CD34-9012-4455
Version	1.02b
Decoder ID	ET7 12-92345
Decoder status	CA1 + CA2
Destination	192.168.100.2:12345
DataRate, Mbps	65
Temperature, °C	45
Status	OK

Press SETTINGS button to enter **Settings** menu.

Default Password: **admin**

Log In

Password

Login

SDI-410C
STI-410C
Common Interface
DVB-S/S2 & DVB-T/T2/C
to IP STREAMERS

PRODUCT DESCRIPTION

DVB-S/S2 (SDI-410C), DVB-T/T2/C (STI-410C) to IP streamers designed to broadcast in multicast on an IP network the services (TV or Radio programmes) issued from FTA or encrypted digital reception; in case of encrypted signal, a CAM containing the operator's smart card must fit the slot. 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 24 simultaneous, IP-encapsulated services (TV or Radio programs), with individual multicast addresses and one MPTS stream.
*   Information filtering of DVB tables.
*   UDP & RTP transmission protocols.
*   Web interface for configuration and setting.
*   SNMP agent for monitoring and alarms.
*   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 or blocking for CAT, EIT, TDT tables.
*   Configurable QoS marking.
*   Configurable Time To Live.

DVB-S2/T2/C to IP STREAMERS

FRONT PANEL

1 - CA module slot. PCMCIA socket.
2 - input of SAT IF signal, DC output for LNB (sdi410C);
RF input of terrestrial TV, cable TV, DC output for preamplifier (sti410C);
3 - RF output (input signal loop-through). F socket.
4 - ETHERNET - control Ethernet interface. RJ45 socket.
5 - ACTIVITY (yellow) indicator of the control Ethernet interface.
6 - LINK (green) indicator of the control Ethernet interface.
7 - RESET button. Press this button shortly to restart the module. Press this button for more than three seconds to set default IP address of the control Ethernet interface.
8 - Power distribution bus connector.
9 - +12 V powering input (screw terminal).
10 - TS/IP OUT - streaming Ethernet interface. RJ45 socket.
11 - LINK/ACTIVITY (yellow) indicator of the streaming Ethernet interface.
12 - status indicator (green).
13 - DVB-ASI output (for another models).
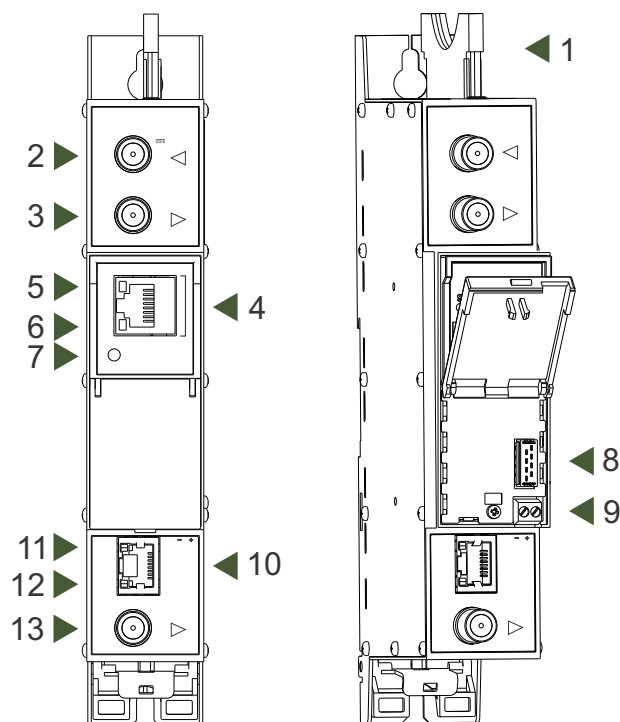
Installation instructions:

Read the safety instruction first.
All settings can be made using the web browser via control Ethernet interface.
Disconnect power supply unit from the mains before make all connections of modules.
Fasten the module on DIN RAIL or individual holder.
Connect all necessary RF, powering and control cables.
Connect the 75 Ω load to the unused RF output F sockets.
Connect power supply in to mains.
Within 5-20 seconds of powering the module will run in normal operation mode.
Comments of the front panel indicators:
if the link with the control Ethernet interface is established - the LINK [6] indicator glows;
if communication via the control Ethernet interface is active - the ACTIVITY [5] indicator blinks;
if IP streaming is active the - LINK/ACTIVITY [11] indicator blinks at frequency about six times per second, if IP streaming
is inactive - indicator blinks at irregular intervals, if no link of the streaming Ethernet interface - indicator not glows;
if the input signal is present - the status indicator [12] blinks at frequency about three times per second, if no input signal
- indicator blinks at frequency about one time per second.

INITIAL CONFIGURATION

All modules leave the factory with this control Ethernet interface IP address: 192.168.1.10. In order to avoid conflicts with other IP addresses, it is necessary to perform an initial configuration in local mode. Subsequently, it will be possible to access the modules via the local area network (LAN), either to re-programme it or to check is operating status.

The modules leave the factory with the following Control Ethernet interface TCP/IP configuration:
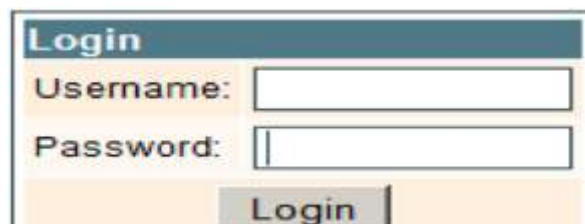
IP address of the control interface: **192.168.1.10**
IP address of the streaming interface: **192.168.1.11**
Subnet mask: **255.255.255.0**
Default Gateway: **192.168.1.1**
Username: **admin**
Password: **admin**

To access each module, use a PC or MAC personal computer equipped with an Ethernet card and RJ-45 cable (CAT-5E or CAT-6). The IP address of the PC/MAC must be configured within the following range: 192.168.1.2 - 192.168.1.254 (do not use 192.168.1.10, since this is the IP address of the module to be configured). To start the configuration of the module, open your web browser and type in the following direction: http://192.168.1.10. The login prompt will appear on the screen.

Access to the site is protected by user name and password. The default user name and password is admin. Enter the user name and password and click on "Login" button.

Note: the default password - admin - can (and must) be changed as explained in the "IP settings".

During initial configuration you need to change the default control and streaming Ethernet interfaces TCP/IP configuration as explained on section in the "IP settings".

Control interface IP address reset to default procedure: press the "RESET" [7] button for more than 3 seconds and release it. After this operation the control interface IP address will be set to 192.168.1.10, user name and password set to admin.

GENERAL CONFIGURATION

Initial program screen

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

[1]

In the top of each configuration screen you will see a main menu tabs [1].

Using it, you can switch between the different configuration menus. The tab highlighted in yellow shows which menu is active at a given moment. The "System menu" tab contains several submenu.

Also common elements for all screens is module title [2] and login information strings [3]. The module title can be changed after pressing the "Change" button in the "Device information" table. Pressing on the "Logout" string you can logout from module control.

Device information table

This shows the data of module:

"Device model": model of the module.

"Serial number": serial number of the module.

"Software version": module software version number.

"Hardware version": module hardware version number.

"IP 1": IP address of the control interface.

"IP 2": IP address of the streaming interface.

"System time": current time, synchronized from the TDT table of the input stream. Local time offset can be selected in the "IP settings" tab.

"Up time": time passed from last power-up or restart of the module.

In the "Common status" table the following parameters are displayed at real time: input bit rate in kbps, output bit rate in kbps, processor load in percents, internal temperature in degrees of Celsius, power voltage in Volts.

In the "Diagnostic information" table all module errors and comments how to eliminate these errors are displayed.

DVB-S2/T2/C to IP STREAMERS

Input settings

This screen consists of three tables: "RF input", "List of services" and "Input status". The "RF input" table is used to configure parameters corresponding to the input satellite transponder (sdi410C module), terrestrial or cable transponder (sti410C module). In the "List of services" table the list of services, available in the input transponder is displayed. In the "Input status" table you can see real time status of the input section.

The "RF input" table is different according the input signal of module.

RF input table

The "RF input" table for sdi410C, sda410C module consists of following parameters:

"LNB LO frequency" - the LNB local oscillator lower frequency in megahertz. Use 9750 MHz for the universal converter.

"LNB HI frequency" - the LNB local oscillator upper frequency in megahertz. Use 10600 MHz for the universal converter.

"LNB voltage" – power supply of the converter – can be set to "Off", "Auto", "13V", "18V", "13V/22kHz", "18V/22kHz". If "Auto" is selected, power supply voltage of the converter is choosen according to set polarisation – 18V Horizontal, 13V Vertical; if the "Frequency" of the satellite exceeds the value F=(950+LNB Hi+2150+LNB Lo)/2, the 22 kHz signal is switched ON and "LNB Hi freq." is selected.

For example: LNB Hi=10,600, LNB Lo=9750, then F=(950+10,600+2150+9750)/2=11,725 MHz. When power supply of the converter is set to value different from "Auto" - "LNB HI frequency", "Satellite", "Polarisation" rows are disabled and the "LNB LO frequency" value is used for IF frequency calculation.

"Satellite" – DISEQC command is used to select the satellite when the switch that supports DISEQC protocol is present.

Possible commands: "None", "SAT A", "SAT B", "SAT C", "SAT D".

"Polarisation" - the polarisation of converter. Can be "Horizontal" or "Vertical".

"Frequency" - the frequency of the satellite transponder in megahertz.

"Symbol rate" - the symbol rate of the satellite transponder in kilo symbols per second.

The "RF input" table for sti410C module consists of following parameters:

"Modulation standard" - used to select from the "DVB-T/T2" and "DVB-C" modulation standards.

"Preamplifier power" - used to switch on/off the power for the RF preamplifier.

"Input bandwidth" - the bandwidth of DVB-T/T2 transponder. Can be selected from values 8 MHz and 7 MHZ.

"Input frequency" - the frequency of the terrestrial or cable transponder in kilohertz.

When the tuner is locked to the DVB-T2 transponder with multi PLP modulation, the additional parameter "PLP number"is displayed in the "RF input" table. When the "Modulation standard" set to DVB-C, the "Preamplifier power" parameter is hidden and power for the RF preamplifier is switched off; instead of the "Input bandwidth" parameter the "Symbol rate" parameter is displayed. Enter the value in kilo symbols per second.

Input status table

The following information is displayed in the table "Input status".
"Lock status" "Locked" - the streamer module has synchronised with the input signal; "Unlocked" – the streamer module has not synchronised with the input signal.
"Input level" - RF signal level at the module input. Level indication – approximate.
The values of the following parameters are displayed only if the streamer module has synchronised with the input signal.
"Modulation standard" – detected standard of the input signal.
Possible values of the standard: DVB-S, DVB-S2 (sdi410C);
DVB-T, DVB-T2, DVB-C (sti410C).
"Frequency" – intermediate frequency (sdi410C, sda410C)
or RF frequency (sti410C) at the module input.
"Modulation" – modulation scheme of the input signal.
Possible values of the modulation scheme:
QPSK, 8PSK (sdi410C, sda410C);
QPSK,QAM16,QAM32,QAM64,QAM128,QAM256 (sti410C)
"Modulation mode" – OFDM modulation mode of the input
signal (sti410C only). Values: 8k or 2k.
"FEC" – forward error correction.
"Guard interval" – guard interval of OFDM signal (sti410C only
"Symbol rate" – the symbol rate of the satellite transponder
in kilo symbols per second (sdi410C only).
"SNR" – RF signal/noise ration at the input of module.
"VBER" – bit error rate after Viterbi corrector. To get the
signal without any errors at the output of the tuner, VBER
shall not exceed 2E-4.
"PER" – ratio of the MPEG transport error packets to the whole number of packets.
If the number of error packet is equal to zero, the opposite value to whole number of packets is displayed. Packet counters are reset during RF input parameters update.
"Input bitrate" – bitrate of the input signal.

▶ Input status

- Lock status: **Locked**
- Modulation standard: **DVB-T**
- Input level: **66** dBµV
- Frequency: **506000** kHz
- Modulation: **QAM64**
- Modulation mode: **8K**
- FEC: **2/3**
- Guard interval: **1/32**
- SNR: **32.2** dB
- VBER: **<1.0E-8**
- PER: **<2.9E-09**
- Input bitrate: **24880** kbps

List of services table

The table shows all of the input transport stream services, including different details (type, name, identifier). Also UDP unicast streaming via the control interface can be started, services for descrambling by CA module can be selected and descrambling status observed.

Service title				Service ID	Descramble	Descrambling status
⊞	TV	NatGeo HD (TEO)	Watch	171	☑	🔓
⊞	TV	Discovery HD (TEO)	Watch	173	☑	🔓
⊞	TV	Eurosport HD (TEO)	Watch	174	☑	🔓

Click on the "Watch" button to see selected channel. The module will start an UDP unicast streaming via the control interface. Maximum output bitrate of the UDP unicast is 8 Mbps. VLC Media Player must be installed, downloadable from http://www.videolan.org
The checkboxes in the "Descramble" column are used to select services for descrambling by CA module. Several services can be selected, if the module supports simultaneous descrambling of several services. The "Descrambling status" icon meanings: - service is descrambled successfully, - service is not descrambled.

Detailed service information

Press "+" the icon at the start of the list of services line. The detailed service information table will appear:

This table is used to see detailed service information and select individual streams for descrambling. The following service information is shown in the table: service title, service provider, service ID, PMT PID, types and PID-s of service streams, PCR PID. After checking the "Descramble" checkbox of service line, all streams of this service are included in a descrambling list of the CA module. Unnecessary streams can be deselected from the descrambling list by unchecking corresponding "Descramble" checkboxes of streams. Close the "+" table by clicking on the icon.

Output settings

This screen consists of three tables: "Streaming settings", "SAP/SDP settings" and "Output streams". The "Streaming settings" table is used specify common streaming parameters to all output streams. The "SAP/SDP settings" table is used to configure the announcement and service description SAP/SDP channel. The "Output streams" table is used to individually configure the output streams.

Streaming settings table

This table is used specify common streaming parameters to all output streams. This table consists of following lines:
"Protocol" - the drop down menu offers two options: UDP and RTP/UDP. UDP is a transport protocol which is not connection oriented and is particularly useful for streaming. RTP/UDP adds extra data fields so that the data flow is served at the correct speed for its projection in real time.
"TS packet count" - count of the MPEG2 TS packets in the UDP packet. Can be selected from one to seven. It is recommended to select the value of seven packets.
"Time To Live" - a parameter used to restrict the stream multicasting range. A number between 1 and 255 is entered in this box. Each time that an IP stream passes through a router, the TTL is reduced by one unit. The stream will be rejected by any router when the TTL value is reduced to zero.

"QoS" - quality of Service. The drop down list offers five differentiated service options or Diffserv. These options relate to the priority that you wish to assign to the streaming packets on their routes through switches or routers that are QoS management capable.

QoS values:

1 - Top priority
2 - High priority video
3 - Low priority video
4 - Video and voice
5 - Best effort (best effort made to correctly deliver the video data and the associated audio data)

"Count of output streams" - count of output streams, displayed in the "Output streams" table bellow. Can be selected from one to twenty five. After updating ot the FR input parameters this count is automatically set to input stream count value.

"Send IGMP query messages" - enable of the IGMP query messages transmitting. Enable this function when the streaming output of module is connected to the menageable Ethernet swith with IGMP snooping support. In order for IGMP snooping to function, a multicast router must exist on the network and generate IGMP queries. The tables created for snooping are associated with the querier. Without a querier the tables are not created and snooping will not work. When the IGMP query messages send enabled, the module acts as the multicast router. It is sufficient to enable the IGMP query in one module per one Ethernet switch.

Once the different data values have been entered, click on "Update" to conclude the streaming settings.

SAP/SDP settings table

This table is used to configure the announcement and service description SAP/SDP channel. SAP and SDP are two protocols for creating an EPG type program guide.

"Enable" - check the box if you wish to transmit the program guide.

"Sending period" - introduce the time interval, in seconds, at which the transmitted programmes guide will refresh.

"Username" - the name entered will be transmitted on the SAP/SDP channel.

"IP address" - multicast address of SAP/SDP messages. It is need to be changed only when your IP receiving equipment use different address.

"Group names" - the names of SAP/SDP groups whose can be assigned to the output streams. Click on "Update" to save the SAP/SDP channel configuration data.

SAP/SDP settings		
Enable	☑	
Sending period	5	sec.
Username	Test	
IP address	224.2.127.254	
Group names	News Entertainment Music	
	Update	

Output streams table

This table is used to individually configure the output streams.

	Enable	IP address	IP port	Service title		Output bitrate,kbps
				Update		
1	☐	239.192.2.0	1234	All transport stream		0
2	☑	239.192.2.1	1234	NatGeo HD (TEO) ▼	⊞	7600
3	☐	239.192.2.2	1234	Discovery HD (TEO) ▼	⊞	0
4	☐	239.192.2.3	1234	Eurosport HD (TEO) ▼	⊞	0

The description of the table columns.
"Enable" - enable streaming of service.
"IP address" - the multicast address required for the stream to be added. The available range is from 224.0.0.0 to 239.255.255.255, but it is recommended to reduce it from 224.0.1.0 to 238.255.255.255.
"IP port" - the IP port required for the stream to be added. The default value is 1234.
"Service title" - select the service from available input services. In the second line sending of the entire transport stream can be enabled.
"Output bitrate" - current output bitrate of stream in kbps. When the streaming Ethernet interface is not connected, all output bitrates will be zero. To confirm the configuration, click on the "Update" button.

Advanced output settings

For advanced users, the possibility exists of opening an additional table with further configuration options related to the output services. To open this table, click on the icon "+" next to the service title.

	Enable	IP address	IP port	Service title		Output bitrate,kbps
				Update		
1	☐	239.192.0.0	1234	All transport stream		0
2	☑	239.192.0.1	1234	tagesschau24 HD ▼	⊟	11800

	Include EPG information ☑
	Include CA information ☐
	SAP/SDP group [News ▼]
	SAP/SDP channel number [1]
📁 Service title: **tagesschau24 HD**	New service title: [ ]
— Service provider: **ARD**	New service provider: [ ]
H.264 Video PID: **5401**	
MPEG1 Audio PID: **5402 deu**	Enable ☑
Teletext PID: **5404**	Enable ☑
AC-3 Audio PID: **5406 deu**	Enable ☑
Private section PID: **170**	Enable ☑
ISO/IEC 13818-6 type B PID: **2171**	Enable ☑
	Update

	Enable	IP address	IP port	Service title		Output bitrate,kbps
3	☑	239.192.0.2	1234	Einsfestival HD ▼	⊞	15900
4	☑	239.192.0.3	1234	EinsPlus HD ▼	⊞	15500

The description of the table rows:

"Include EPG informantion" - check this to include EPG infomation from the input stream.

"Include CA information" - check this to include all conditional access information required to descramble output service at the IP receiving side. Leave this checkbox unchecked when service is descrambled by the inserted CA module.

"SAP/SDP gruop" - select from the drop down menu the SAP group to which you want to link the service. The group will have been previously created through the SAP/SDP settings table.

"SAP/SDP channel number" - enter the order number you want to assign to the service on the subscriber's set-top box or reproducer, if the device supports SAP.

"New service title" - the name given to the service on the subscriber's set-top box or reproducer, if the device supports SAP/SDP protocol. The name that the service has on the input transport stream is the default name. Also this name will be used as the output service name.

"New service provider" - enter the provider name of the output stream. This name will be used in the SDT table.

Within the "Enable" checkboxes next to the stream PIDs is possible to select the streams to be broadcast for eath service (the video PID cannot be disabled). By default, all the PIDs are selected and remain so until this configuration is altered. When you have made your selection, confirm it by clicking on the "Update" button and close the advanced settings table by clicking on the "-" icon.

IP settings

This screen (Figure 21) consists of four tables: "Control interface IP parameters", "Streaming interface IP parameters", "Time parameters" and "IP status". The IP parameters tables are used to configure ethernet connection parameters of both interfaces. In the time parameters table a local time offset can be set. In the IP status table current status of both Ethernet interfaces and total output bitrate is displayed.

The description of the "IP parameters" tables rows.
"MAC Address" - the physical address of the module's ethernet network card is displayed automatically.
"IP Address" - enter the IP address that you wish to assign to the module. This address must fall within the range of local network addresses.
"Subnet mask" - enter the local network mask.
"Gateway" - enter the IP address of this gateway. This information is only required if you want to access the module from the Internet.
It is possible to control the module via streaming interface. Check the enable WEB control from streaming interface checkbox to enable this function.
Note: for security reasons WEB control from streaming interface schould be disabled.

CAM settings

This screen consists of three tables: "CA module monitor", "CA module information" and "CA module menu". In the "CA module monitor" table CAM restart function in case of descrambing error can be enabled. It is recommended to turn off this
option if inactivated conditional access card has been inserted.
The content of the remaining tables depends on the inserted CA module.
In the CA module information table general information about inserted CA module is displayed. When there no CA module insterted, in the "Status" line is a message: "No module inserted" and remaining lines are empty. Otherivse, the "Status" contains message "Initialised" and remaining lines are filled with information read from the CA module. As an example, above "CA module menu" table shows the menu for a particular CAM. Click on the corresponding band to access different options. Click on the "Back" button to return to previous menu, click on the "Home" button to return to start menu.

SNMP settings

This menu tab contains the SNMP configuration table.
The description of the "SNMP configuration" table rows.
"Read Community" - community name acts as a password that is shared by multiple SNMP agents and one or more SNMP managers. The "Read Community" password is used for read-only access to streamer parameters.
"Write Community" - is the password used for read-write access to streamer parameters.
"Enable TRAP" - SNMP traps are alerts generated by agents on a managed device. Check this box to enable TRAP generation. The streamer generates traps when the diagnostic message occurs.
"TRAP Community" - is the password used for accessing of TRAPS.
"Host IP #1","Host IP #2" - IP addresses of hosts with SNMP managers, where TRAPS will be send.

System menu

This menu tab contains following submenu items: "Event logs", "Export parameters", "Import parameters", "Firmware upgrade", "User management", "Restore defaults", "Reset the device", "Language".

Event logs

Move the mouse on the System menu tab then click on the "Event logs" line. The event logs screen will appThis enables you to see a list of the log messages of the module. Log contents remains after the power loss of module.

Events in the log e are sorted by time – the newest are in the beginning. Information events are shown in blue background, error messages are in red. After switching on the unit, the current date is set to 2000:01:01 and time to 00.00.00. When the MPEG stream is received, the information about date and is decoded too, and the values of these parameter are corrected.
Local time offset in the log is used from the time parameters table. You can filter required messages setting corresponding "Logs filtering" checkboxes.

Export parameters

All of the data established on the streamer module can be saved onto a backup file. Inversely, the configuration data saved on an appropriate file can be restored on streamer module. Move the mouse on the System menu tab then click on the "Export parameters" line. A window is displayed which allows you to select the action for the data file for the current streamer configuration. You need to select the "save file to disk" option.

Import parameters

Select this option in "System menu" tab. The Import parameters window is displayed.

Click on "Click to select file" and select the file containing the configuration data that you wish to restore on the streamer module. Once you have selected the file, click on the "Upload" button at the bottom of the screen. The upload confirmation window will be displayed.

Firmware upgrade

If you wish to update the streamer's firmware, select this option in "System menu". The card displayed shows the firmware version that the streamer has at the present time.

Click on "Click to select file" and select the firmware update file from the hard drive. When the file name is in the box, click on "Upload". The new firmware will be installed on the streamer.

User management

Select this option in "System menu" tab. The user management window is displayed.

This window consits of two tables: "Change password" and "User mamagement". The "Change password" table allows you to change the password. Enter the new password in the "New password" field and confirm the new password retyping it in the "Repeat new assword" field. The change of password will not take effect until you press the "Modify" button.

In the "User mamagement" table you can manage users, who will be able to login into the streamer. Enter the new username

and password in the appropriate fields, select desired role for user and press the "Add" button to add new user or "Update" button to change settings of the user. User role "Admin" enables the password change function and user management function. User role "User" enables only password change function. Press the "Remove" button to remove user from list.

Restore defaults

Clicking on the "Restore defaults" submenu in the "System menu" tab resets the configuration of the streamer module to the factory default values. The Control and streaming interfaces IP parameters remains unchanged.

Reset the device

Clicking on the "Reset the device" submenu in the "System menu" tab causes the streamer module to restart.

Language

If you wish to change the streamer's menu language, select this option in the "System menu".

Specifications

SAT mode (SDI-410C)

Demodulation	QPSK, 8PSK
Input level	45…85 dBuV
Input resistance	75 Ohm
Symbol rate	2...45 Msymb/s (QPSK) 2… 37 Msymb/s (8PSK)
FEC	1/2_2/3_3/4_5/6_6/7_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
Tuning step	1 MHz
LNB control	0/14/18 V, 300 mA max, DiSEqC 1.0

TERRESTRIAL mode(STI- 410C)

Demodulation	OFDM 2K, 4K, 8K, 16K, 32K modes
Guard Interval	1/128, 1/32, 1/16, 19/256, 1/8, 19/128, 1/4
FEC	½, 3/5, 2/3, ¾, 4/5, 5/6
Pilot Signals	PP1-PP8
Input level	30 dBuV … 80 dBuV
Input frequency range	47MHz… 862MHz
Input resistance	75 Ohm
Active antenna voltage	+12V, up to 100mA

IP TS output

Standard	IEE802.3 10/100 Base-T
Stream rate	до 100 Mbps
Output TS quantity	up to 24
Output protocols	UDP/RTP
multicast, MPTS, SPTS	Yes
Control port	Standard IEE802.3 10/100 Base-T
Supply voltage	12 V ± 1 V
Current consumption	0.2 A (without external load and CAM-module); 0.4A with CAM
Temperature range	0° ÷ +50°C
Dimensions	36x198x107.5 mm
Weight	0.84 kg

DVB-S2/T2/C to IP STREAMERS

KU-BAND BLOCK-UP-CONVERTERS (BUC)

www.dvb4all.com TROPHY

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	$2*10-6$
L.O. 10MHz level	-5 … +5 dBm
Output power	2W (33dBm)
Power supply voltage	+18 … +24V
Current comsumption	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

KU-BAND BLOCK UP CONVERTER

TROPHY

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

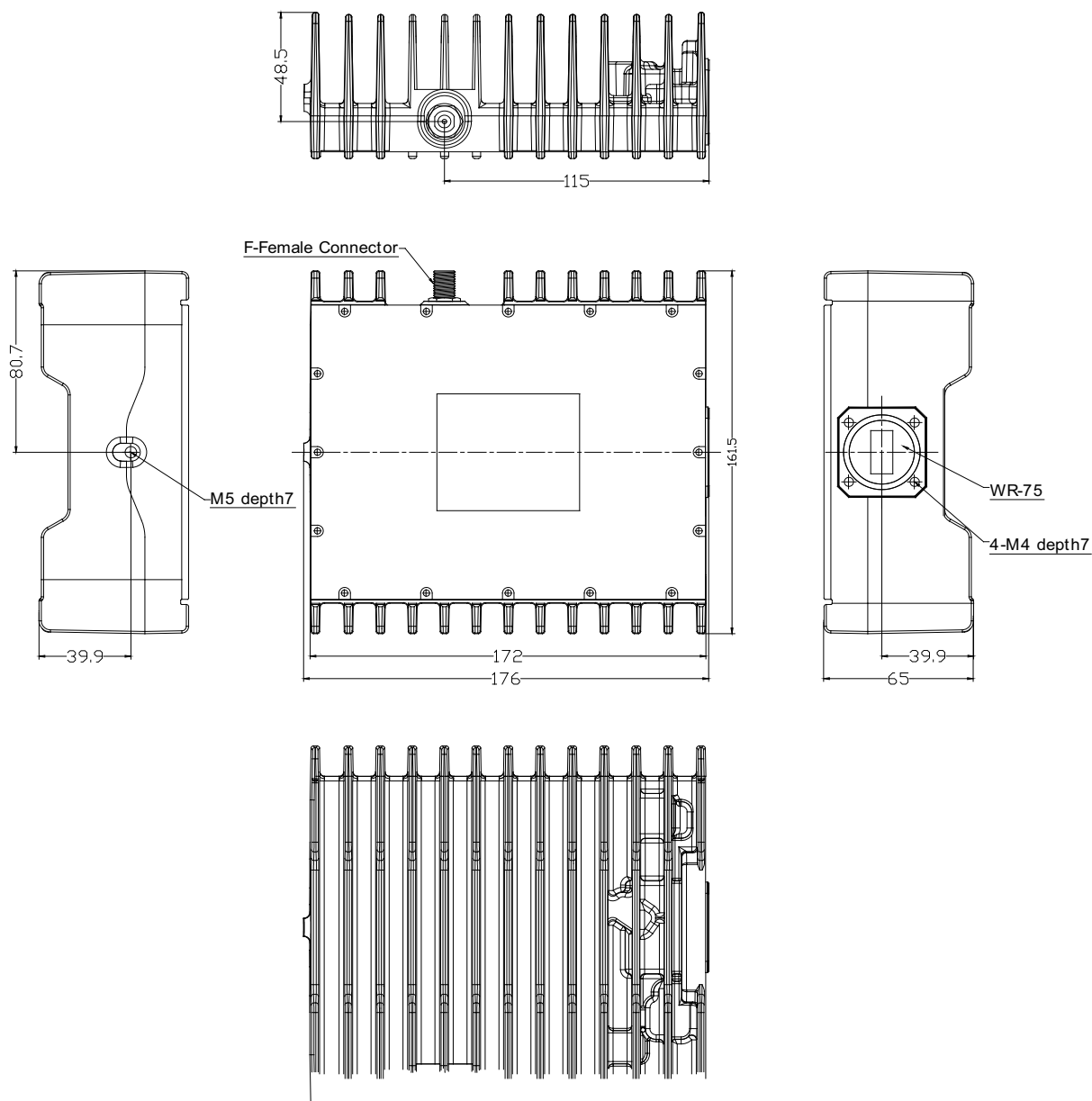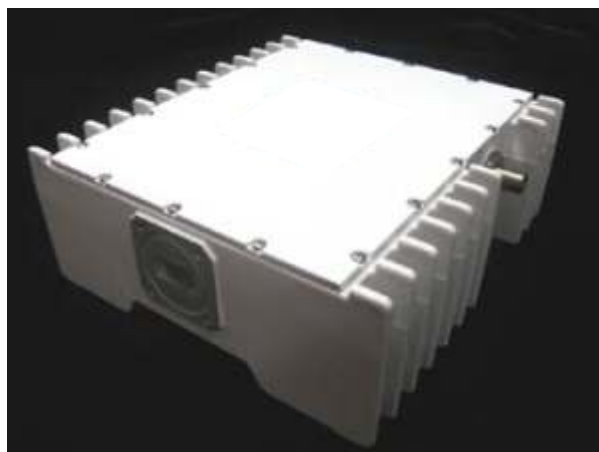The 4W BUC converts a 950...1750 MHz range signal to the 10,7...11,5GHz or 11,7...12,5 GHz range.

- 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%;

48.5

115

F-Female Connector

80.7

M5 depth7

39.9

172

176

161.5

WR-75

4-M4 depth7

39.9

65

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 comsumption		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

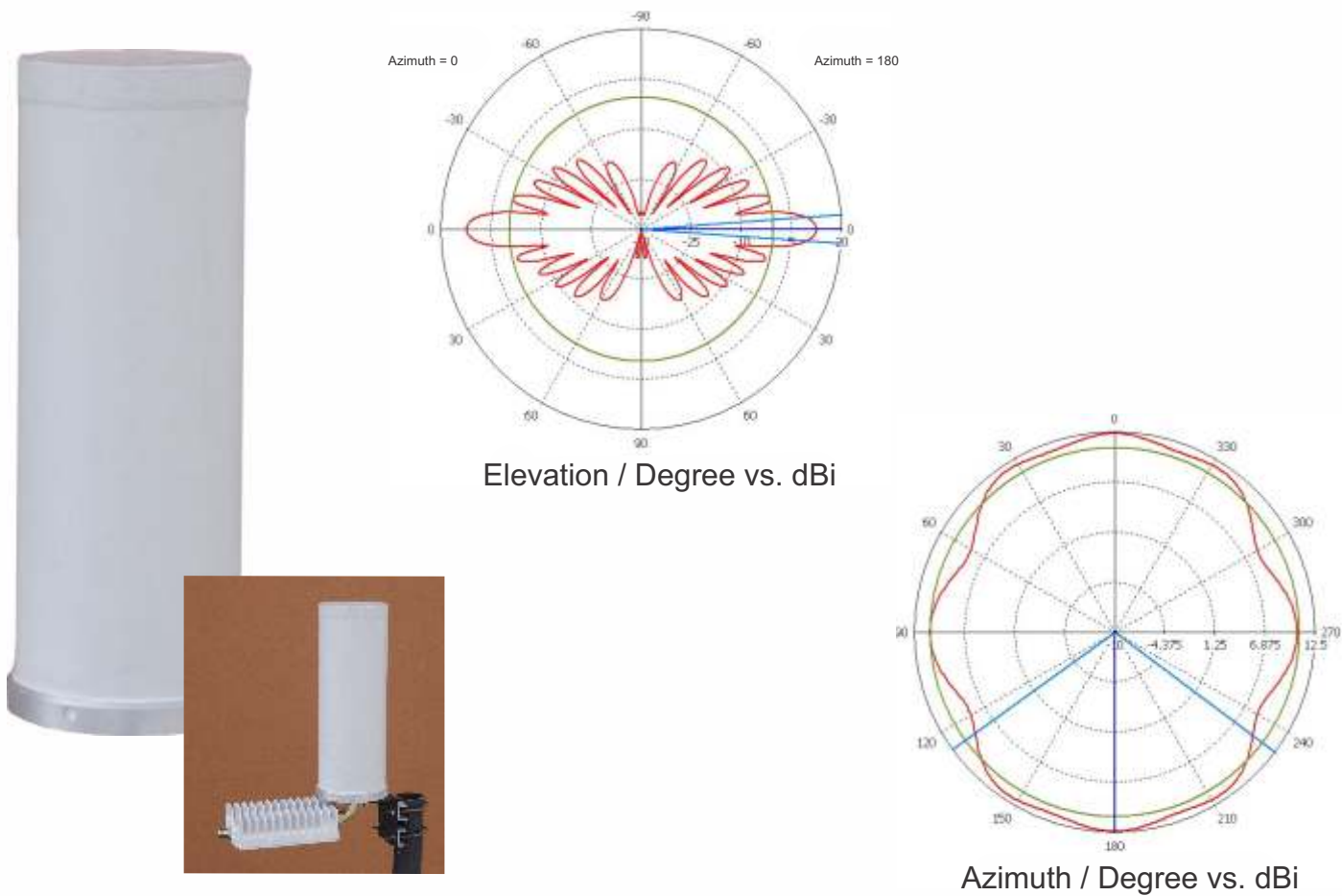# OMNIDIRECTIONAL
SLOT
ANTENNA

TROPHY

OMNIDIRECTIONAL SLOT ANTENNA

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

Elevation / Degree vs. dBi

Azimuth / Degree vs. dBi

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
Tipe of flange	WR75G
Weight	2 kg
Tipe of performance	Waterproof

ATD-54
DVB-S/S2 to DVB-S2
Transmodulator

Part No. 4001-4004

ATD-54 S/S2 to S2 Transmodulator

Loop

USB

L-band input

Input error

Lock

Fault

L-band output

RS-485

DC

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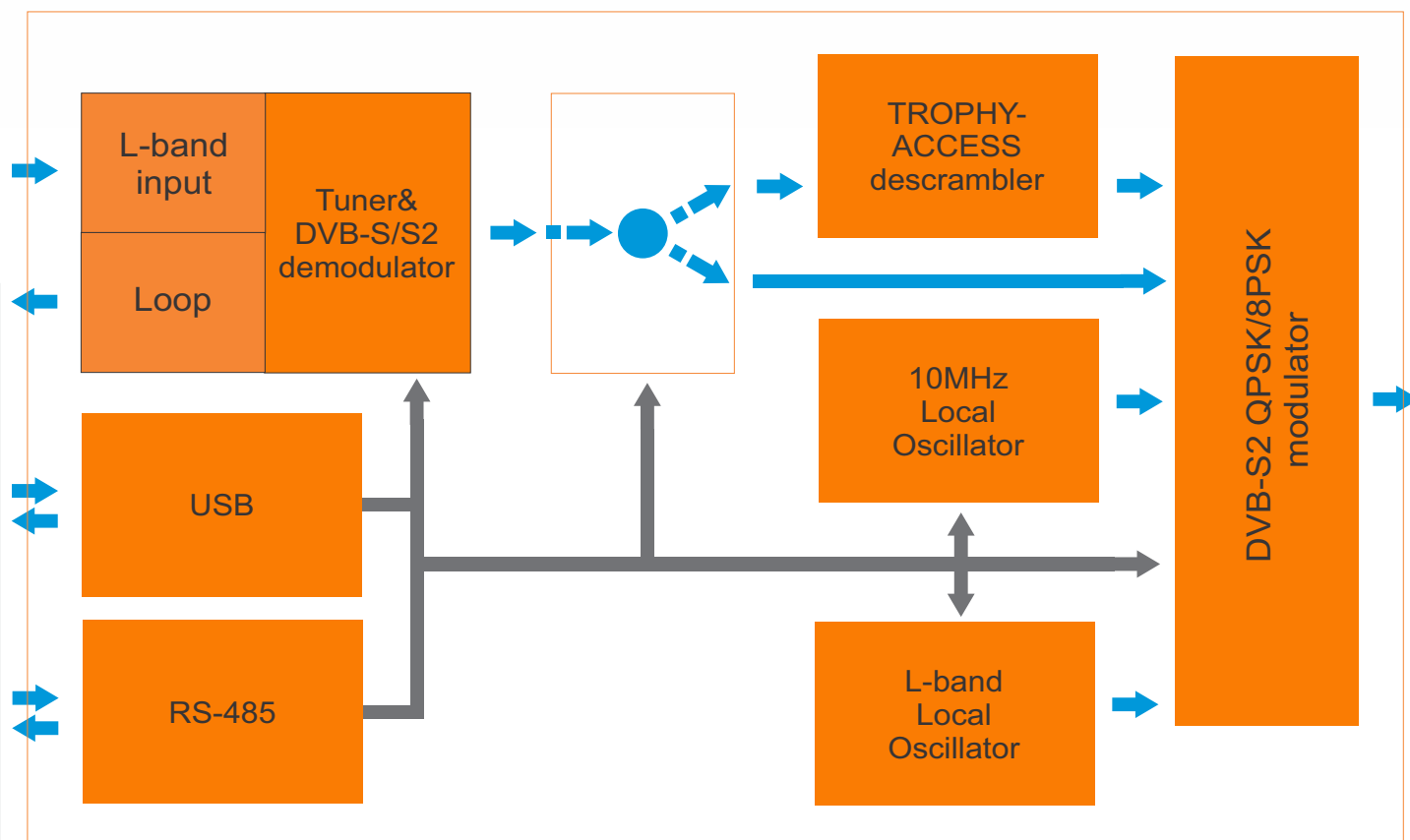
A high-performance FPGA does the analogue TV modulation and the freely adjustable up-conversion into L-band range (950 ... 2150MHz). A high-speed digital→analogue converter (DAC) is responsible for the excellent output signal.

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

*   covers the full L-Band range (900...2150 MHz) and offers bit rate from1 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 (see page 16). 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.
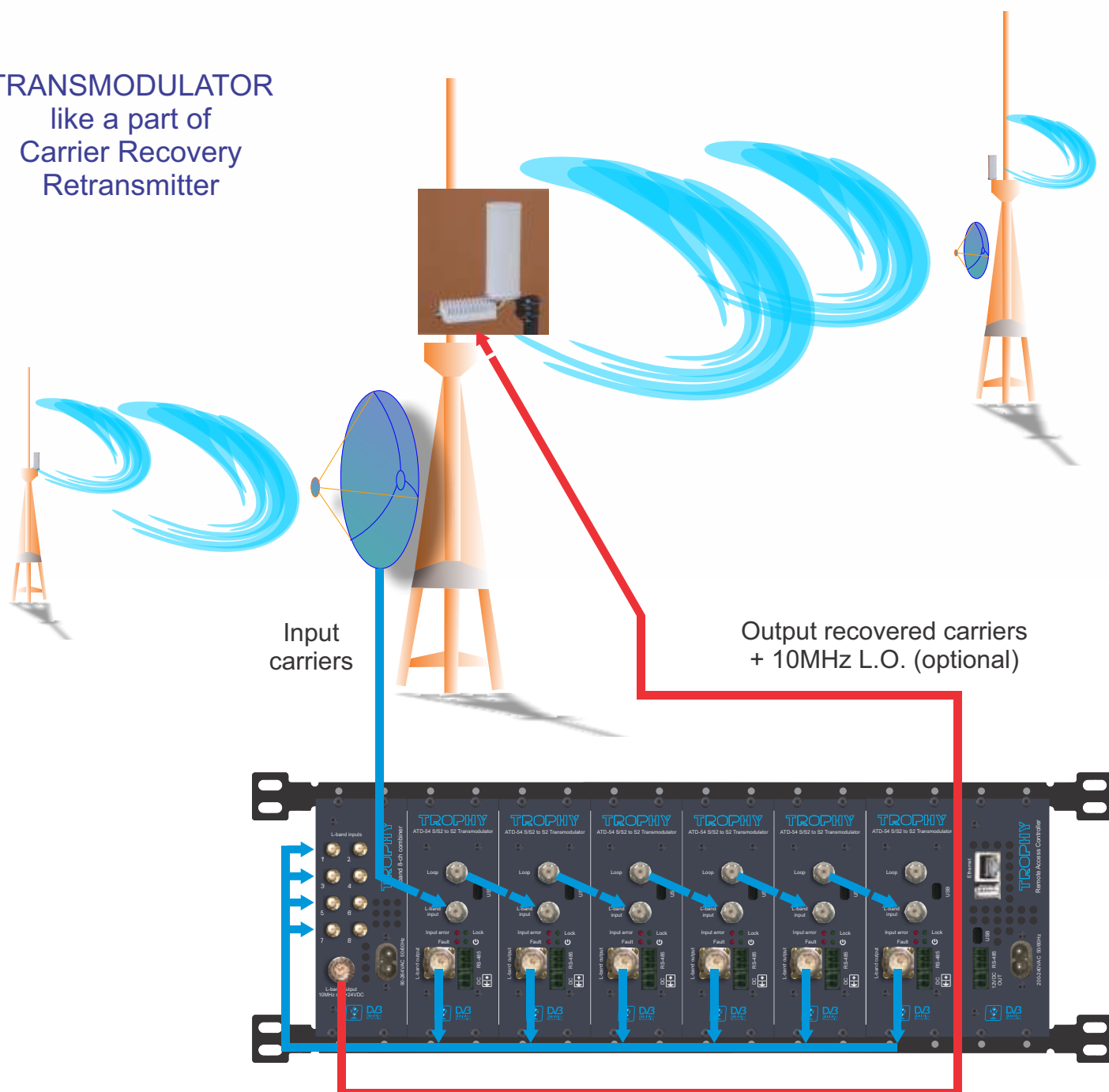
ATD-54 S2 to S2 TRANSMODULATOR

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

TROPHY

THE MAIN APPLICATION OF DVB-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.
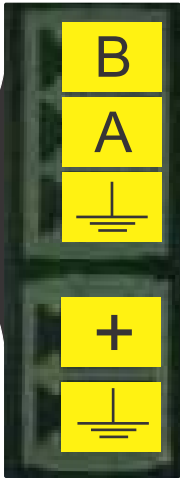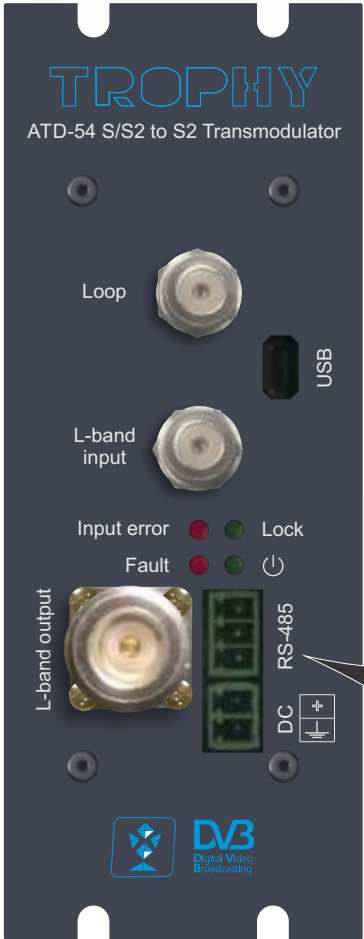In addition, possible to form a new frequency grid, if necessary.

TRANSMODULATOR
like a part of
Carrier Recovery
Retransmitter

Input carriers

Output recovered carriers
+ 10MHz L.O. (optional)

ATD-54 S2 to S2 TRANSMODULATOR

FUNCTIONAL ELEMENTS

Explanation of the functional elements:	
⏻ Power LED (green)	Power ON/OFF
Lock LED (green)	Input signal lock
Fault LED (red) Blinking frequently Blinking slowly Light constantly	Boot process or HardWare error Default configuration or Configure error Data overflow
Input error LED (red)	Input signal errors
Input L-band signal/ Loop	2xF-connectors
USB control	(Virtual COM-port) Micro-USB
RS-485 control (optional)	Screw connector
L-band + 10MHz ref. output	N-type connector
+12V DC / 2A	Screw connector

TROPHY

ATD-54 S/S2 to S2 Transmodulator

Loop

USB

L-band input

Input error   Lock

Fault   ⏻

L-band output

RS-485

DC

B

A

⏚

+

⏚

ATD-54 S2 to S2 TRANSMODULATOR

INSTALLING AND OPERATING INSTRUCTIONS

SAFETY INSTRUCTIONS

When assembling and commissioning the ATD-54-S/S2 to DVB-S2 TRANSMODULATOR 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 DVB-S/S2 to DVB-S2 transmodulator. The output signal are provided via RF-output and configurable by USB, RS-485 or WEB interfaces (additional Remote Access Controller option). The signal can be broadcast into MVDS network. Using the integrated user interface, the operating parameters can be varied within wide limits.

All input PIDs inserts into the output DVB-S2 carrier with maximum bit rate of 94 Mbps and transmits via the N-type connector. The output signal contains all the tables necessary to the program and associated services which contains into input signal (PAT, PMT, SDT, TDT etc).

Depending on the application, the device are pre-configured by hardware. Deliveries are made with the following configurations/ device versions:

Features	Part No.			
	4001	4002	4003	4004
TROPHY-ACCESS embedded descrambler		+		+
10 MHz reference embedded			+	+

MANAGEMENT BY USB-INTERFACE

Transmodulator equipped by Micro USB connector for Virtual COM-port interface. The protocol specification is CDC (Communication Device Class).
In order to be able to configure the Transmodulator configuration on the SERIAL connection use any terminal program on your computer, for example:
HyperTerminal for Windows
USB Terminal for Android
Get Terminal for iOS
Picocom for Linux

USB serial port settings:

* bits per second........115200;
* data bits..................8;
* parity.......................none;
* stop bit.....................1;
* flow control...............none.

Command "Help" indicates all available commands for Transmodulator parameters managing.

```
cmd>help

Trophy(tm) DVB-S2 Transmodulator

Available commands are:
rxfreq <frequency>     - receiver frequency (900..2150MHz)
rxsr <symbolrate>      - receiver symbol rate (1000..45000kSpS)
lnb <mode>             - lnb power mode

txfreq <frequency>     - transmitter frequency (900..2150MHz)
txsr <symbolrate>      - transmitter symbol rate (1000..35000kSpS)
txrolloff <rolloff>    - transmitter rolloff (0.2/0.25/0.35)
txmod <modulation>     - transmitter modulation
txatt <attenuation>    - transmitter attenuation (dB)
txref <on/off>         - transmitter 10MHz reference (on/off)

rs485addr <address>    - RS485 device address (1..255)

show config            - show current configuration
show state             - show system state
show ver               - show software version
help                   - displays available commands

cmd>
```

"rxfreq" command indicate Intermediate Frequency (IF) of receiving signal.
"rxfreq␣XXXX" command changes current IF. "XXXX" must be from 900MHz to 2150MHz.

```
cmd>
cmd>rxfreq

Receiver frequency: 1635MHz
cmd>rxfreq 1222

Receiver frequency: 1222MHz
cmd>
```

"rxsr" command indicate Symbol Rate (SR) of receiving signal.
"rxsr␣XXXXX" command changes current SR. "XXXXX" must be from 1000kSymb/s to 45000kSymb/s.

```
cmd>
cmd>rxsr

Receiver symbol rate: 11160kSpS
cmd>
cmd>rxsr 45000

Receiver symbol rate: 45000kSpS
cmd>
```

"lnb" command indicate voltage and 22kHz meander of input LNB.
"lnb␣X" command changes current LNB mode. "X" must be from 0 to 4, see below.

```
cmd>
cmd>lnb

Current LNB power: 13v
To change the LNB power mode use this command: lnb <mode>

mode   LNB power
----   ---------
  0...off
  1...13v
  2...18v
  3...13v/22kHz
  4...18v/22kHz
---------------
cmd>lnb 3

LNB power mode set to: 13v/22kHz
cmd>
```

"txfreq" command indicate frequency of transmitting signal.
"txfreq␣XXXX" command changes current frequency. "XXXX" must be from 900MHz to 2150MHz.

```
cmd>
cmd>txfreq

Transmitter frequency: 1462MHz
cmd>
cmd>txfreq 2050

Transmitter frequency: 2050MHz
cmd>
```

"txsr" command indicate Symbol Rate (SR) of transmitting signal.
"txsr␣XXXXX" command changes current output SR. "XXXXX" must be from 01000kSymb/s to 35000kSymb/s.

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

```
cmd>
cmd>txsr

Transmitter symbol rate: 14400kSpS
cmd>
cmd>txsr 35000

Transmitter symbol rate: 35000kSpS
cmd>
```

"txrolloff" command indicate output carrier Roll Off.
"txrolloff␣X.XX" command changes current Roll Off. "X.XX" mut be 0.2 or 0.25 or 0.35.

```
cmd>
cmd>txrolloff

Transmitter rolloff: 0.35

cmd>txrolloff 0.25

Transmitter rolloff: 0.25
```

ATD-54 S2 to S2 TRANSMODULATOR

TROPHY

"txmod" command indicate modulation parameters of transmitting signal.
"txmod␣XX" command changes current parameters of modulation. "XX" must be from 1 to 16, see below.

```
cmd>
cmd>txmod

Current modulation: 8PSK 2/3

To change the modulation use this command: txmod <code>

code   modulation       code   modulation
----   ----------       ----   ----------
  1...QPSK 1/3            9...QPSK 8/9
  2...QPSK 2/5           10...QPSK 9/10
  3...QPSK 1/2           11...8PSK 3/5
  4...QPSK 3/5           12...8PSK 2/3
  5...QPSK 2/3           13...8PSK 3/4
  6...QPSK 3/4           14...8PSK 5/6
  7...QPSK 4/5           15...8PSK 8/9
  8...QPSK 5/6           16...8PSK 9/10
------------------------------------------
cmd>
```

Front panel "FAULT" LED will constantly lighting if overflow take place.
"Show␣state" command indicate common state of transmodulator and overflow of data.

```
cmd>
cmd>txmod 3

Modulation set to: QPSK 1/2
*** WARNING: Input data rate is greater then output! ***
Input  symbol rate: 30000kSpS, data rate: 65325kbpS
Output symbol rate: 35000kSpS, data rate: 34606kbpS
cmd>
```

"txatt" command indicate attenuation of transmitting signal.
"txatt␣XX.X" command changes current attenuation of signal level. "XX.X" must be from 0 to 31.5.

```
cmd>
cmd>txatt
Transmitter attenuation: 25.0dB
cmd>txatt 31.5
Transmitter attenuation: 31.5dB
cmd>
```

Embedded combiner (optional for Part No. 4003, 4005, 4006, 4008) injects 10MHz reference signal into output carrier.
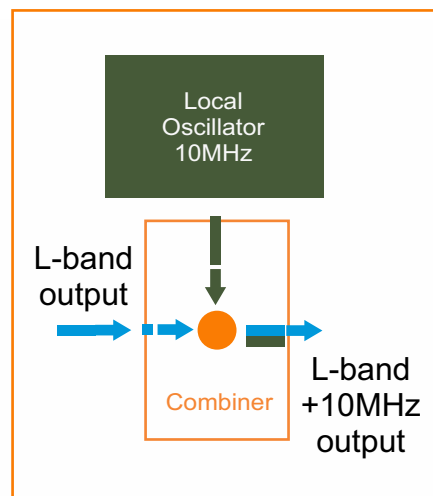"txref" command indicate 10MHz Local Oscillator on/off mode.
"txref‿on" and "txref‿off" commands turn on/off 10MHz Local Oscillator.

```
cmd>
cmd>txref

10MHz reference on
cmd>
cmd>txref off

10MHz reference off
```

Local Oscillator 10MHz

L-band output

Combiner

L-band +10MHz output

```
cmd>
cmd>rs485addr
RS485 address: 1
cmd>
cmd>rs485addr 12
RS485 address: 12
cmd>
```

"rs485addr" command indicate number of RS-485 port. "rs485addr‿XXX" command changes current number of port. "XXX" must be from 1 to 255.

"show config" command indicate current configuranion of transmodulator.

```
cmd>
cmd>show config
Current configuration are:
RS485 address : 12
Receiver     +
             | Frequency    : 1635MHz
             | Symbol rate  : 30000kSpS
             | LNB power    : 18v

Transmitter +
             | Frequency    : 2050MHz
             | Symbol rate  : 35000kSpS
             | Modulation   : QPSK 1/2
             | Rolloff      : 0.25
             | Attenuation  : 31.5dB
             | 10MHz reference off
cmd>
```

"show state" command indicate common state of Transmodulator:
- Input signal LOCK/UNLOCK
- Input signal LEVEL
- Input signal S/N ratio
- Mode of input carrier
- Input Symbol Rate and data rate (if tuner is LOCK)
- Output Symbol Rate and data rate
- CPU temperature
- Overflow of data

```
cmd>
cmd>show state
Tuner: Locked. Signal level: -24dBm, Signal/noise ratio: 11.4dB
        Carrier: DVB-S2 8PSK 3/4.

*** WARNING: Input data rate is greater then output! ***
Input  symbol rate: 30000kSpS, data rate: 65325kbpS
Output symbol rate: 35000kSpS, data rate: 34606kbpS

CPU temperature: 57C

*** Overflow! ***
cmd>
```

"show ver" command indicate HardWare and SoftWare versions of device.

```
cmd>
cmd>show ver
Hardware revision: A1
Software version : 1.02 build 513
cmd>
```

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

ATD-54 S2 to S2 TRANSMODULATOR

8-CHANNEL 2U/19" BOX for DVB-S/S2 to DVB-S2 TRANSMODULATORS

Remote Access Controller
8-ch L-band Combiner
24VDC/6A Power Supply
10MHz ref. Injector

BOX for TRANSMODULATORS
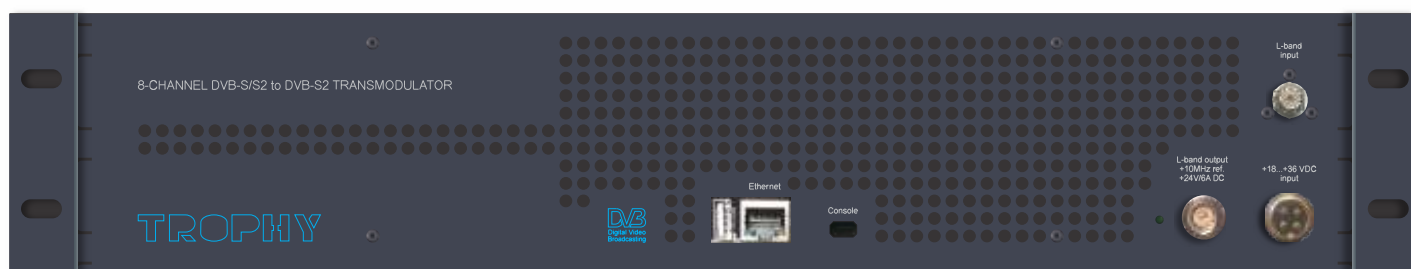
GENERAL INFORMATION

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;
- powered by 18 ... 36VDC supply.
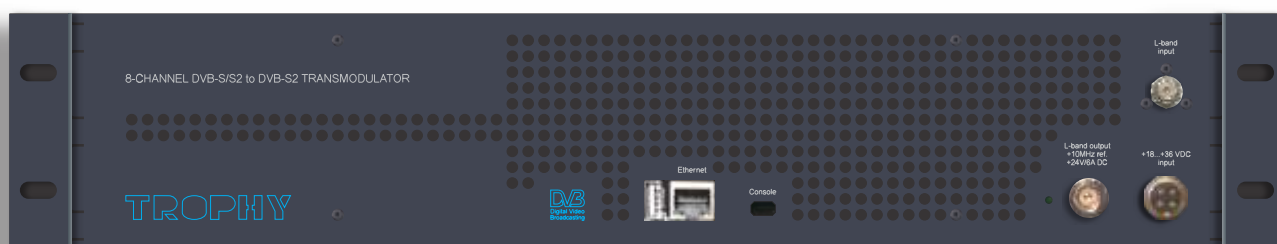
THE MAIN APPLICATION OF DVB-S2 to DVB-S2 TRANSMODULATORS

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.

TRANSMODULATOR
like a part of
Carrier Recovery
Retransmitter

Input carriers

Up to 8
recovered carriers
+ 10MHz ref. + 24VDC

8-CHANNEL DVB-S/S2 to DVB-S2 TRANSMODULATOR

TROPHY

L-band output
+10MHz ref.
+24V/6A DC

+18...+36 VDC
input

L-band
input

Ethernet   Console

220VAC
or
+18...+36VDC

Wi-Fi router   LAN
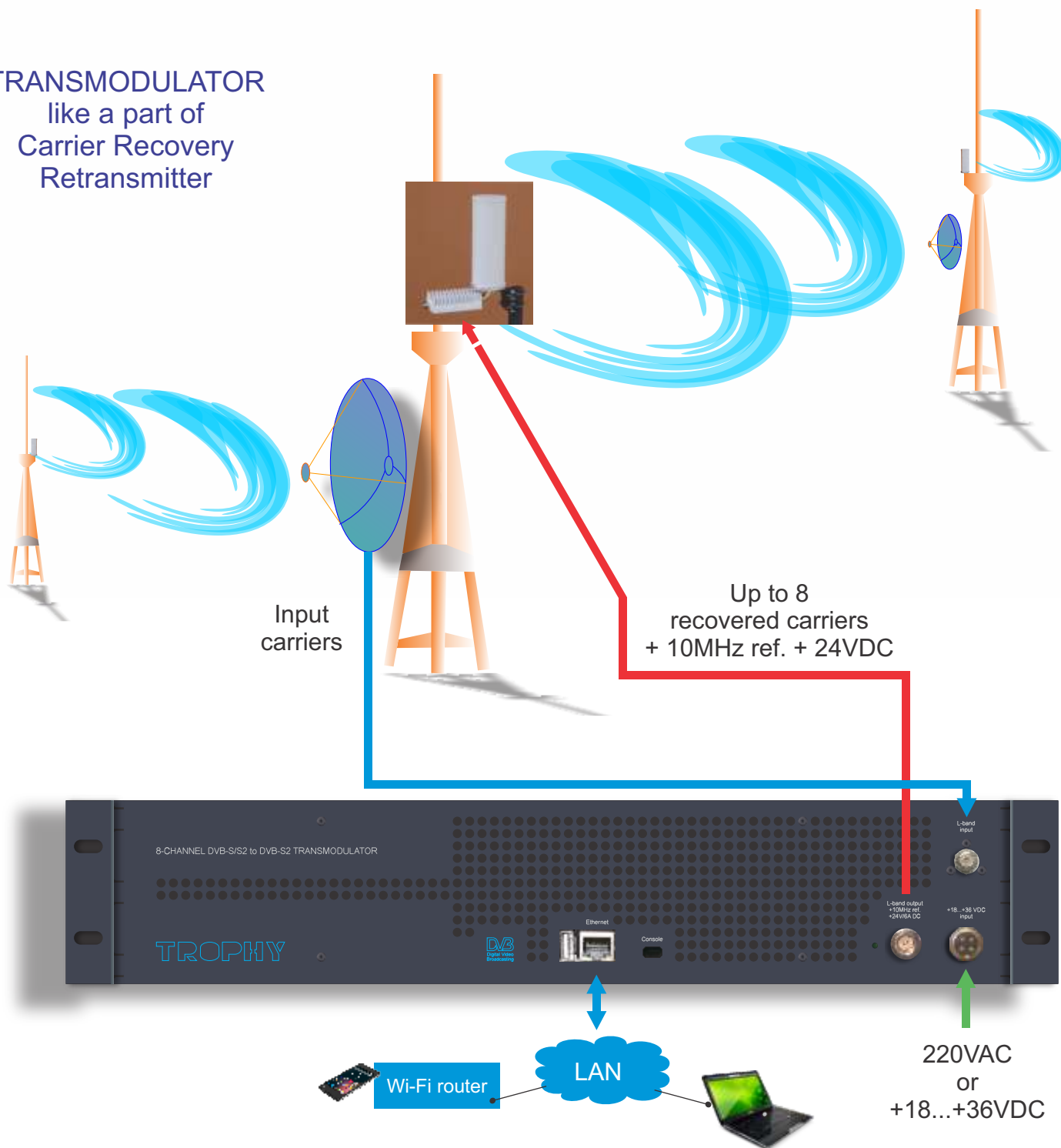
BOX for TRANSMODULATORS

FUNCTIONAL ELEMENTS
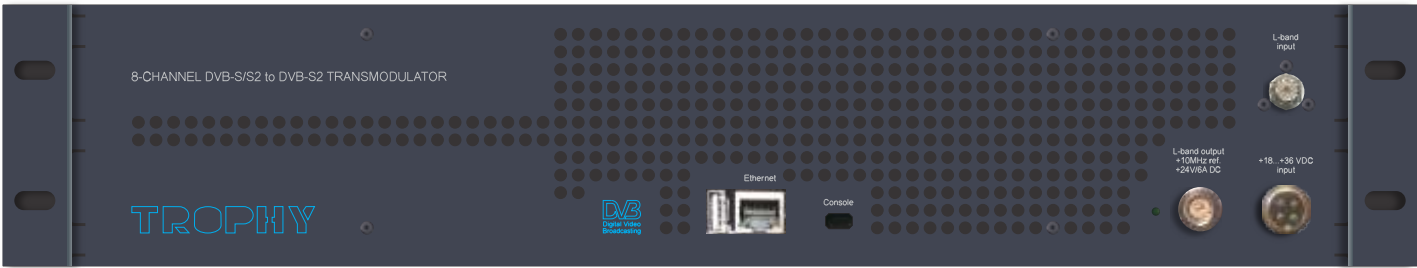
Explanation of the functional elements:	
24 VDC power LED (green)	Power ON/OFF
L-band signal input	F-connector
Console	Virtual COM-port, Micro-USB
Ethernet port	WEB interface, RJ-45 connector
USB port	A-Type connector
L-band output + 10MHz ref.+ 24VDC	N-type connector
+18...+36VDC supply (part No.14002)	SP13 4P SOCKET 5A 200V Ip6 connector
220VAC supply (part No.14001)	314 A AC connector
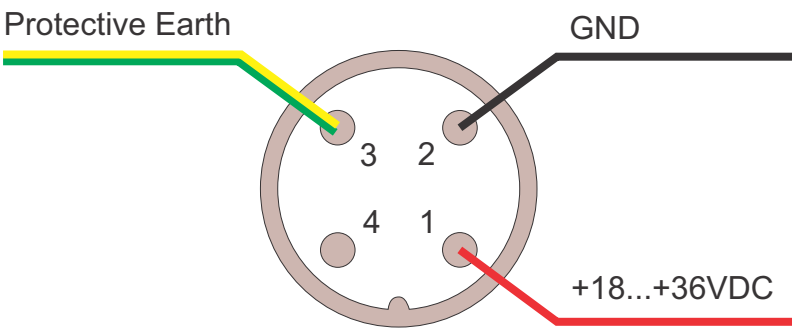
+18...+36VDC connector pins

INSTALLING AND OPERATING INSTRUCTIONS

SAFETY INSTRUCTIONS

When assembling and commissioning the 8-CHANNEL 2U/19" BOX for DVB-S/S2 to DVB-S2 TRANSMODULATORS 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 8-CHANNEL 2U/19" BOX for DVB-S/S2 to DVB-S2 TRANSMODULATORS. The output signal are provided via RF-output and configurable by WEB interface. The signal can be broadcast into MVDS network. 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.	
	14001	14002
Powered by 220VAC	+	
Powered by 18 ... 36VDC supply		+

BOX for TRANSMODULATORS

NETWORK MANAGEMENT VIA EMBEDDED REMOTE ACCESS CONTROLLER

Embedded Remote Access Controller provides WEB-control and monitoring of Transmodulators parameters via Internet. Remote Access Controller connects with Transmodulators modules by RS485 BUS.

CONFIGURATIONS VIA ETHERNET INTERFACE

If it is necessary to change the basic configuration, the particular HTML user interface must be called up on a computer connected to the device(s). All the settings can be made via Internet Browser. How the user interface works is almost self-explanatory. Any special features of use will be explained in the following chapters.

To use all functions of the device by WEB-interface activate Java Script in your browser settings. Network connection to the computer System requirements: - PC/ laptop with 10/100/1000 Mbit Ethernet interface - any Internet browser, capable JAVA script (Google Chrome is recommended). The device has to be connected to PC network using an Ethernet cable. The default IP address of the device is 10.10.10.20. In order to access the WEB interface of the device from a PC, the PC has to be in the 255.255.255.0 subnet. If multiple devices are connected to the same network each device must be set to its own unique IP address to avoid address conflicts. After these settings, the IP address of the PC has to be adjusted to match the network.

The Remote Access Controller uses a modern WEB-interface. You can go to the Controller's menu, knowing the IP-address (url) of the device. To gain local access to the Controller, you can connect to it via an Ethernet cable.

In order to connect to the Controller remotely, it is necessary to connect the Controller to the Internet router. You can manage the Controller locally or remotely from a laptop or smartphone.
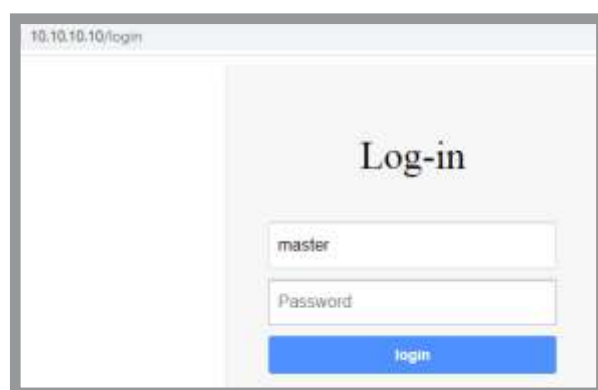
MANAGEMENT VIA WEB-INTERFACE

IP address: **10.10.10.10**
Default Username: **master**
Default Password: **master**

Embedded REMOTE ACCESS CONTROLLER   uses the Linux Debian OS.

REMOTE ACCESS CONTROLLER configuration

Install the terminal program (PuTTY for Windows) on your computer for setup the REMOTE ACCESS CONTROLLER configuration via the SSH-connection.
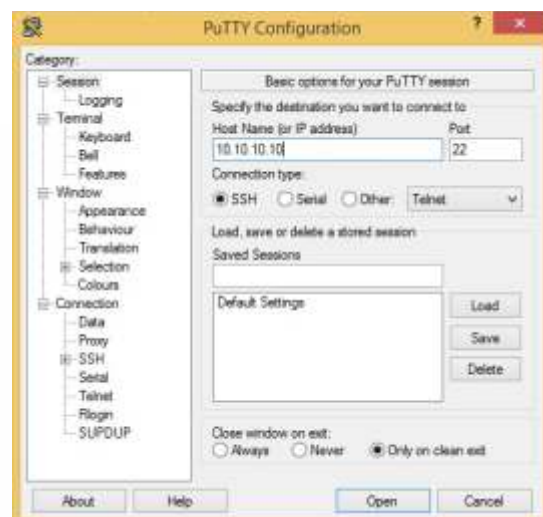
IP address by default: **10.10.10.10**

Protocol: **SSH**

Login: **admin**

Password: **admin**

It is mandatory to change the root password for confidential !

You can use Linux commands, for example:

passwd [ENTER]

Enter new UNIX password:******* [ENTER]

Retype new UNIX password:******* [ENTER]

wwwpasswd commands is using for add, delete and change of Users and Passwords of WEB-interface.

wwwpasswd -h   help menu

wwwpasswd -a   add user

wwwpasswd -d   delete user

For more details reads LINUX OS manual.

Use your favorite editor for edit the configuration file

/etc/tmod_ctrl.conf

For Midnight Commander:
root@nanopineo: sudo mc
(enter admin password)

Find /etc directory:
root@nanopineo: cd /etc
Find and edit the file tmod_ctrl.conf
Use sudo reboot command after editing.
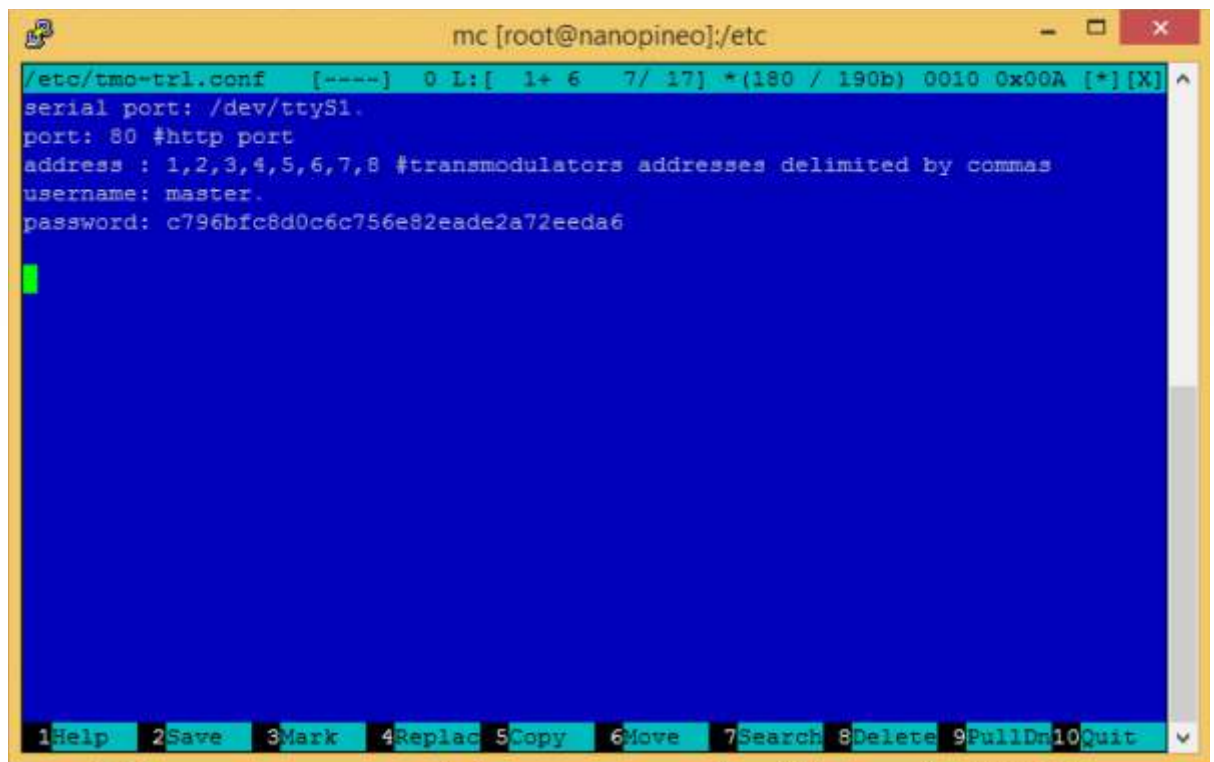
- Serial port. /dev/ttyS1 is serial port by default;
- HTTP port. 80 is http port by default;
- Address. You can indicate original numbers of RS-485 ports of your Transmodulators. You can see these port numbers on the stickers on the modules (From 1 to 8 numbers by default). In addition, you have the ability to change the port number from 1 to 255 by sending commands via the USB control port of each Transmodulator;
- Username. WEB-interface username. Change the login and password for confidential !
- Password. WEB-interface password. The program will automatically scramble password after restarting of this service.

When the IP address for the REMOTE ACCESS CONTROLLER has been entered into the address field of the browser, a connection will be made to the device and the appropriate check-in window will be displayed. Enter your confidential username and password.

TRANSMODULATORS LIST MENU

First of all, you can see numbers of RS-485 ports of Transmodulators which connects to the RS-485 BUS. You can see these port numbers on the stickers on the modules. In addition, you have the ability to change the port number from 1 to 255 by sending commands via the USB control port of each Transmodulator (see page10 of ATD-54-S_S2 to S2 transmodulator datasheet).

#	Tuner	Rx Freq.	Signal	SNR	Transm.	Tx Freq.	Temp	
1	Lock	1635MHz	-115dBm	6.3dB	Ok	1462MHz	23°C	Edit
2	Errors	1635MHz	-35dBm	7.4dB	Ok	1462MHz	32°C	Edit
3	Lock	1635MHz	-54dBm	8.5dB	Fault	1462MHz	107°C	Edit
4	Lock	1635MHz	-122dBm	5.6dB	Ok	1462MHz	21°C	Edit
24	Lock	1635MHz	-123dBm	5.2dB	Ok	1462MHz	21°C	Edit

#	Number of RS-485 port of Transmodulator
Tuner	Current mode (LOCK, UNLOCK, ERRORS) of Transmodulator's NIM
Rx Freq.	Frequency of input DVB-S/S2 transponder, MHz
Signal	Level of input signal, dBm
SNR	Signal / Noise ratio of input signal
Transm.	Common state of Transmodulator (OK, FAULT)
Tx Freq.	Frequency of output DVB-S2 transponder, MHz
Temp	Current temperature of chipset, °C
Edit	PARAMETERS MENU button

BOX for TRANSMODULATORS

PARAMETERS MENU

Press EDIT button and manage parameters of each Transmodulator.

Modal Header	
Input Frequency (MHz)	1635
Input Symbol Rate (kSpS)	30000
LNB Power	18V ▼
Output Frequency (MHz)	1462
Output Symbol Rate (kSpS)	35000 ⇕
Modulation - FEC	8PSK - 5/6 ▼
Roll-off	0.25 ▼
Output attenuation (dB)	-11

Accept   **Cancel**

Input Frequency   Frequency of input transponder, 950...2150 MHz

Input Symbol Rate   S/R of input transponder, 1...45000 kSpS

LNB Power   Mode of LNB control

Off
13V
18V
13V 22kHz
18V 22kHz

Output Frequency   Frequency of output transponder, 950...2150 MHz

Output Symbol Rate   S/R of output transponder, 1...35000 kSpS

Modulation - FEC   Mode of output carrier

QPSK
QPSK - 1/3
QPSK - 2/5
QPSK - 1/2
QPSK - 3/5
QPSK - 2/3
QPSK - 3/4
QPSK - 4/5
QPSK - 5/6
QPSK - 8/9
QPSK - 9/10
8PSK
8PSK - 3/5
8PSK - 2/3
8PSK - 3/4
8PSK - 5/6
8PSK - 8/9
8PSK - 9/10
16APSK
16APSK - 2/3
16APSK - 3/4
16APSK - 4/5
16APSK - 5/6
16APSK - 8/9
16APSK - 9/10
32APSK
32APSK - 3/4
32APSK - 4/5
32APSK - 5/6
32APSK - 8/9
32APSK - 9/10

Roll-off   Roll-off factor, 0,2 ; 0,25 ; 0,35

Output attenuation   Attenuation of level of output carrier, 0...-31.5 dB

BOX for TRANSMODULATORS

USB CONTROL PORTS OF TRANSMODULATOR MODULES

You have the ability to change the port number from 1 to 255 by sending commands via the USB control port of each Transmodulator (see page10 of ATD-54-S_S2 to S2 transmodulator datasheet). To gain access to the Transmodulator ports unscrew 9 fixing screws and remove the top cover of the box.

USB port of Transmodulator
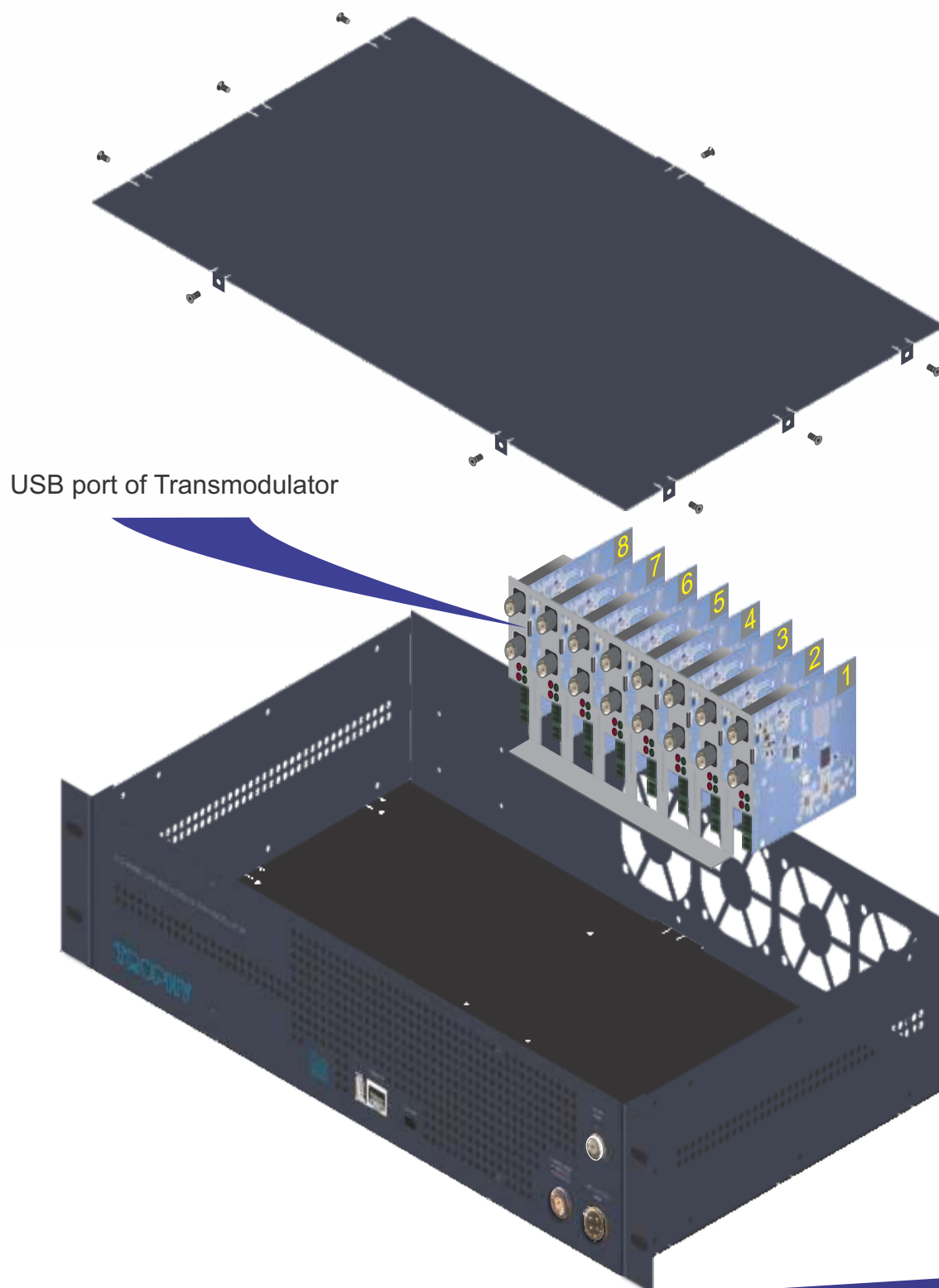
DATA BETWEEN REMOTE ACCESS CONTROLLER AND THE TRANSMODULATORS

The RS-485 interface is used as the communication between embedded Remote Access Controller and Transmodulator modules. When a Transmodulator is connected to a data bus you can see original number of the RS-485 port into TRANSMODULATORS LIST MENU.
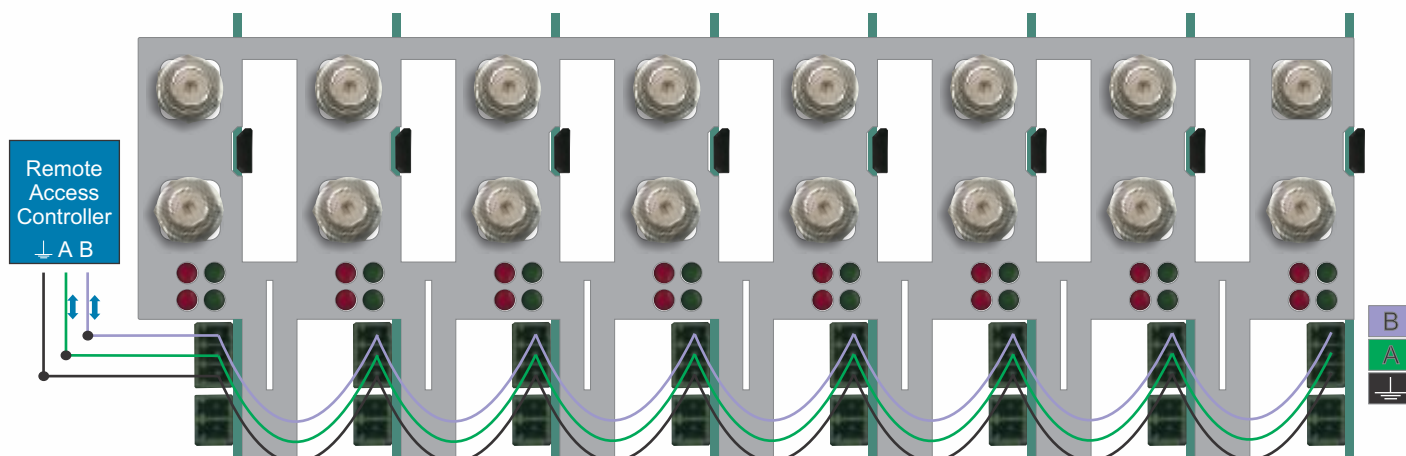
RS-485 COMMUNICATION LINE

RS-485 (English Recommended Standard 485), the physical layer standard for the asynchronous interface. Regulates the electrical parameters of a half-duplex multi-drop differential link of the "common bus" type. In the RS-485 standard, one twisted pair of wires is used to transmit and receive data, sometimes accompanied by a shield braid or a common wire. Data transmission is carried out using differential signals. The voltage difference between conductors of the same polarity means a logical unit, the difference of the other polarity is zero.

The basis of the RS-485 interface is the principle of differential (balanced) data transmission. Its essence lies in the transmission of one signal over two wires. And, on one wire (conditionally A) there is an original signal, and on another (conditionally B) - its inverse copy. In other words, if there is "1" on one wire, then "0" on the other and vice versa. Thus, there is always a potential difference between the two wires of the twisted pair: at "1" it is positive, at "0" - negative. It is this potential difference that the signal is transmitted. Such a transmission method provides high resistance to common mode interference.

BOX for TRANSMODULATORS

TROPHY
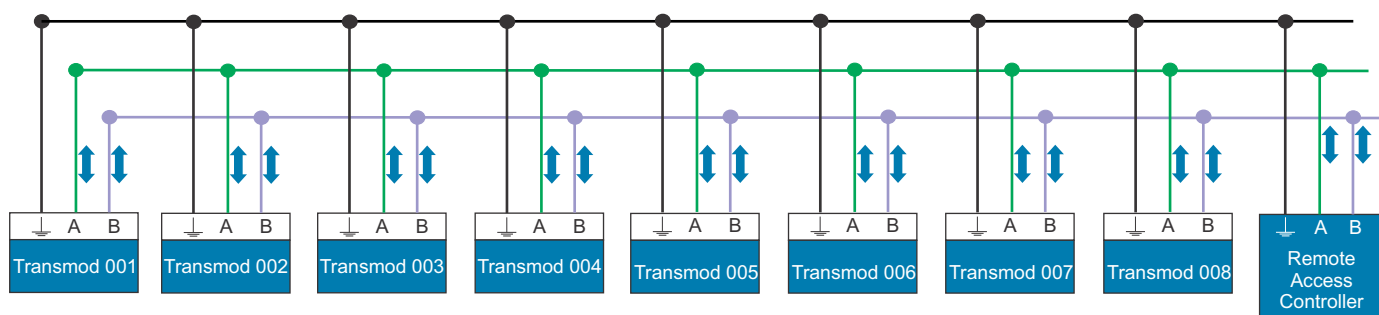
12VDC SUPPLYING

8-CHANNEL 2U/19" BOX for DVB-S/S2 to DVB-S2 TRANSMODULATORS has embedded 12VDC/6A power supply unit for supplying up to 8 Transmodulators.
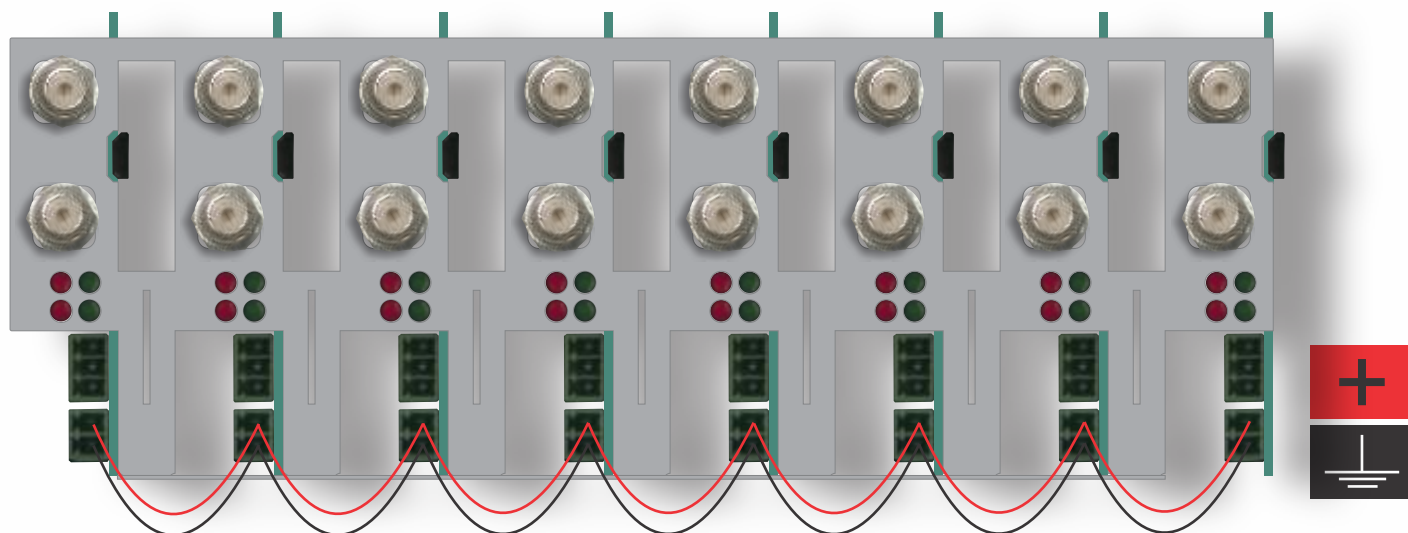
EMBEDDED L-BAND 8-CHANNELS COMBINER/ DC&10MHz REFERENCE

There is special L-BAND 8-CHANNELS COMBINER/ DC&10MHZ REFERENCE which passes 8 x L-band signals and injects 10MHz reference signal and 24VDC voltage for feeding of MVDS or VSAT BUC (Block Up Converter). COMBINER has embedded 24V / 6A power supply unit.

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	0 dB
Insert loss of Combiner	18 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	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
	up to 250W; 6kg Weight; 0°C to 60°C

BOX for TRANSMODULATORS

TDX-480
TDQ-480
8 DVB-S/S2 to
8 DVB-T/C
transmodulators

"Last mile" of MVDS broadcasting can be Digital Cable TV, built on cluster technology.
The source of the signal for a single apartment building or group of buildings is a DVB-S2 to DVB-C/T transmodulators.

8-channel DVB-S/S2 Network Interface Module

8-channel DVB-C/T Modulator

Output Stage

8-ch S2 to T/C TRANSMODULATOR
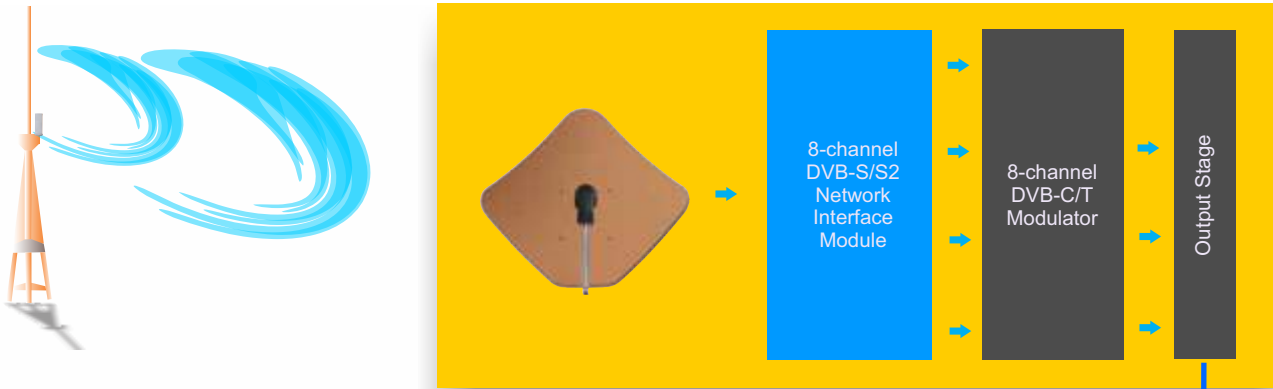
FTA or TROPHY-ACCESS DVB-C/T Mini-Cable Network

TV set with DVB-C NIM

UHF TAP

UHF Splitter
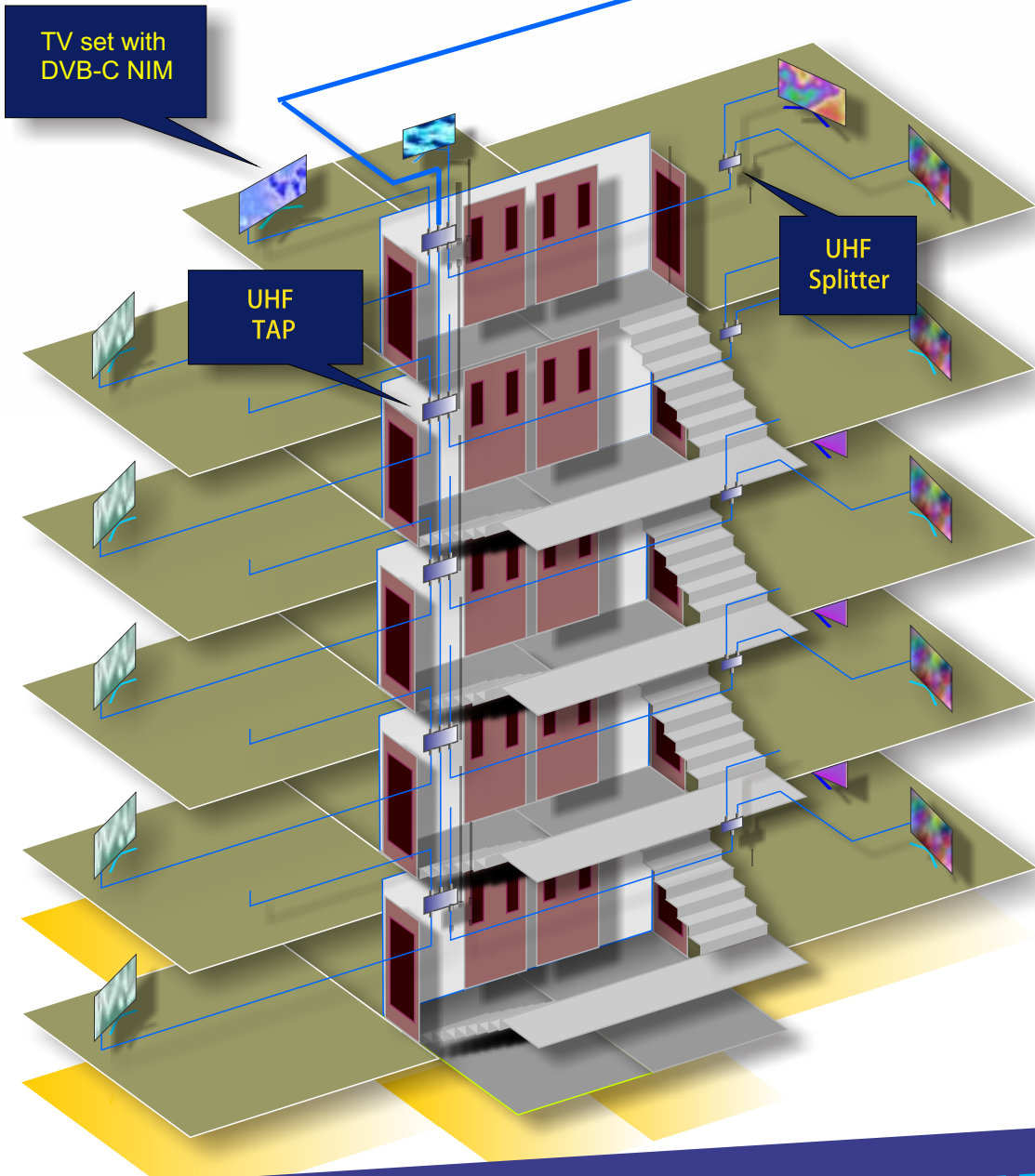
Product description

The devices are transmodulators with 8 DVB-S/S2 input channels and 8 DVB-T (tdx480) or 8 DVB-C (tdq480) output channels. The devices are designed for digital transmodulation with Transport Stream Processing of TV or Radio programmes issued from FTA (Free to air) or encrypted digital reception. Devices filter services, modify SI (Service Information), generate NIT (Network Information table), LCN (Local Channel Number), can remultiplex services from any input to any output. All of the configurations can be changed by using the Web Interface.

tdx480 – octal transmodulator - with eight DVB-S/S2 input channels and eight DVB-T output channels.
tdq480 – octal transmodulator - with eight DVB-S/S2 input channels and eight DVB-C output channels.

Transmodulators can be used as stand alone devices.
The product is intended for indoor usage only.

Characteristics:

- Integrated 2x8 multiswitch
- TS processing: any service to any output
- PCR restamping
- service filtering
- PSI/SI regeneration
- NIT generation
- PMT version monitoring
- BISS descrambling
- Web control and SNMP monitoring
- loop through RF distributing at input and output
- DIN rail or wall mounting
- robust die-cast housing
- connectors:
RF input/output - type F
Ethernet control interface - RJ-45
screw terminal block for DC entry power distribution bus

VHF band I		
1	-	-
2	58..66	62
VHF band II		
3	76..84	80
4	84..92	88
5	92..100	96
Cable special band I		
S1	110..118	114
S2	118..126	122
S3	126..134	130
S4	134..142	138
S5	142..150	146
S6	150..158	154
S7	158..166	162
VHF band III		
6	174..182	178
7	182..190	186
8	190..198	194
9	198..206	202
10	206..214	210
11	214..222	218
12	222..230	226
Cable special band II		
S11	230..238	234
S12	238..246	242
S13	246..254	250
S14	254..262	258
S15	262..270	266
S16	270..278	274
S17	278..286	282
S18	286..294	290
S19	294..302	298
UHF Hyperband special band III		
S20	302..310	306
S21	310..318	314
S22	318..326	322
S23	326..334	330
S24	334..342	338
S25	342..350	346
S26	350..358	354
S27	358..366	362
S28	366..374	370
S29	374..382	378
S30	382..390	386
S31	390..398	394
S32	398..406	402
S33	406..414	410
S34	414..422	418
S35	422..430	426
S36	430..438	434
S37	438..446	442
S38	446..454	450
S39	454..462	458
S40	462..470	466

IV UHF band		
21	470..478	474
22	478..486	482
23	486..494	490
24	494..502	498
25	502..510	506
26	510..518	514
27	518..526	522
28	526..534	530
29	534..542	538
30	542..550	546
31	550..558	554
32	558..566	562
33	566..574	570
34	574...582	578
V UHF band		
35	582..590	586
36	590..598	594
37	598..606	602
38	606..614	610
39	614..622	618
40	622..630	626
41	630..638	634
42	638..646	642
43	646..654	650
44	654..662	658
45	662..670	666
46	670..678	674
47	678..686	682
48	686..694	690
49	694..702	698
50	702..710	706
51	710..718	714
52	718..726	722
53	726..734	730
54	734..742	738
55	742..750	746
56	750..758	754
57	758..766	762
58	766..774	770
59	774..782	778
60	782...790	786
Additional UHF band		
61	790..798	794
62	798..806	802
63	806..814	810
64	814..822	818
65	822..830	826
66	830..838	834
67	838..846	842
68	846..854	850
69	854..862	858

TROPHY

Specifications

RF input		
Demodulation	QPSK, 8PSK	
Input level	55…95 dBuV	
Input resistance	75 Ohm	
Symbol rate	2...45 Msymb/s (QPSK) 2… 37 Msymb/s (8PSK)	
FEC	1/2_2/3_3/4_5/6_6/7_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	
Tuning step	1 MHz	
LNB control	0/14/18 V, 300 mA max, DiSEqC 1.0 EN50494, EN50607	
RF output	**TDX480**	**TDQ480**
DVB standard	OFDM (DVB-T)	QAM (DVB-C)
Frequency range	170-230 MHz / 470-862 MHz	96-862 MHZ
Channel allocation	4 + 4	
Level / impedance	90 dBuV (0 ÷ -15.0 dB by 1 dB step) / 75 Ohm	
TS bit rate	< 31 Mbit/s	< 53 Mbit/s
MER	35dB	40dB
Modulation	QPSK, QAM16, QAM64	QAM16, 32, 64,128, 256
Channel bandwidth	7MHz / 8MHz	4...8,3MHz
Guard Interval	1/32, 1/16, 1/8, 1/4	
FEC	1/2, 2/3, 3/4, 5/6, 7/8	
Symbol Rate		3.5...7.2 Msymb/s
Transmission mode	2K	
Management port	standard IEE802.3 10/100 Base T	
Current consumption	12V / 1A	12V / 1.1A
Temperature range	0° ÷ +45°C	
Dimensions / Weight	48.5x198x112 mm/0.9 kg	

Supported bandwidth of DVB-C channel		
	Frequency bandwidth (MHz)	
MODULATION	**6 MHz**	**8MHz**
16QAM	19,23 Mbit	25,64 Mbit
32QAM	24,04 Mbit	32,05 Mbit
64QAM	28,85 Mbit	38,47 Mbit
128QAM	33,66 Mbit	44,88 Mbit
256QAM	38,47 Mbit	51,29 Mbit

8-ch S2 to T/C TRANSMODULATOR

Front Panel
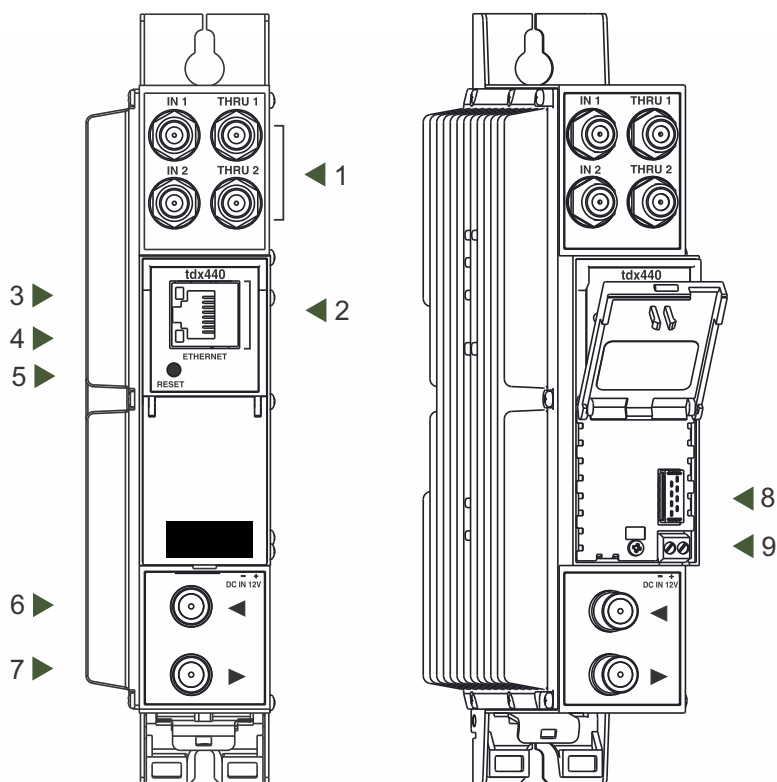
1 - IN 1, IN 2 - RF input of SAT IF signal, DC output for LNB. F sockets.

THRU 1, THRU 2 - RF output (input signal loop-through). F sockets.

2 - ETHERNET - control Ethernet interface. RJ45 socket.

3 - ACTIVITY (yellow) indicator of the control Ethernet interface.

4 - LINK (green) indicator of the control Ethernet interface

5 - RESET button. Press this button shortly to restart the module.

Press this button for more than three seconds to set default IP address of the control Ethernet interface.

6 - RF input (output signal loop-through). F socket.

7 - RF output. F socket.

8 - Power distribution bus connector.

9 - +12 V DC powering input. Screw terminal.

Installation instructions:

Read the safety instruction first.

All settings can be changed using the web browser via control Ethernet interface.

Disconnect power supply unit from the mains before making any changes in the connections of the module. Fasten the module on DIN RAIL or individual holder. The module or mounting bracket must be fixed with steel screws Ø 3.5-4 mm. The screws are not included in a package.

Connect all necessary RF, powering and control cables. Shielded Ethernet cable is recommended.

Connect the 75 W load to the unused RF output F sockets.

Connect power supply in to the mains.

Within 30-40 seconds of powering the module will run in normal operation mode.

Comments of the front panel indicators:

the LINK [4] green indicator is on when the link with the control Ethernet interface is established. Indicator is off when there is no link.

the ACTIVITY [3] indicator blinks, if communication via the control Ethernet interface is active.

8-ch S2 to T/C TRANSMODULATOR

OPERATING

Initial configuration

All modules leave the factory with this control Ethernet interface IP address: 192.168.1.10. In order to avoid conflicts with other IP addresses, it is necessary to perform an initial configuration in local mode. Subsequently, it will be possible to access the modules via the local area network (LAN), either to re-programme it or to check is operating status.
The modules leave the factory with the following Control Ether[...]

IP address of the control interface: **192.168.1.10**
Subnet mask: **255.255.255.0**
Default Gateway: **192.168.1.1**
Username: **admin**
Password: **admin**

To access each module, use a PC or MAC personal
computer equipped with an Ethernet card and RJ-45
cable (CAT-5E or CAT-6). The IP address of the
PC/MAC must be configured within the following range: 192.168.1.2 - 192.168.1.254 (do not use 192.168.1.10, since this is the IP address of the module to be configured). To start the configuration of the module, open your web browser and type in the following direction: http://192.168.1.10. The login prompt will appear on the screen.
Access to the site is protected by user name and password. The default user name and password is admin. Enter the user name and password and click on "Login" button.
Note: the default password - admin - can (and must) be changed as explained on section 12.
During initial configuration you need to change the default control and streaming Ethernet interfaces TCP/IP configuration as explained on section 6.12.

NOTE: If you are using Internet Explorer Web browser, supported versions are version 10 or higher.
Control interface IP address reset to default procedure: press the "RESET" [5] button for more than 3 seconds. When the LINK [4] indicator will start blinking, release it. After this operation the control interface IP address will be set to 192.168.1.10, user name and password set to admin.

General configuration

Initial Web interface screen

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

In the top of each configuration screen you will see a main menu tabs [1]. Using it, you can switch between the different configuration menu. The tab highlighted in yellow shows which menu is active at a given moment. The "System menu" tab contains several submenu items. Common elements for all screens are module title [2] and login information strings [3]. Pressing on the "Logout" string you can logout from module control.

Device information table

This shows the following data of module:

"Device model": model of the module.

"Serial number": serial number of the module.

"Software version": module software version number.

"Title": user may assign a title to the device for easier management. Press the button "Change" to modify it. This title will be written at [2] place. Also it will be visible in other devices, and by computers in network devices (if PC supports SSDP).

"Regions": Device supports several preinstalled regions. The RF channel list depends on which region is selected. Region can be changed without restarting the device. Just select needed region by pressing "Change" button in "Device information" table. Additional regions can be installed under request. Contact our distributors for such possibility.

"Software version": module software version number.

"System time": current time, synchronized from the TDT table of the input stream or NTP server. Local time offset can be selected in the System menu/Date,Time.

"Up time": time passed from last power-up or restart of the module.

Output bitrates table

It displays the output bitrate status of each channel in real time, Horizontal bar shows the percentage of used available bandwidth in the channel. The 1st number right to the bar shows actual bitrate in Mbps. Next number shows maximum allowed bitrate in the channel and it depends on modulation parameters. Ensure that actual bitrate would not reach more than 95% of available bandwidth. Otherwise bitrate overflow may occur.

System status table

It represents the following parameters at real time: Processor load in percents, internal temperature in degrees of Celsius, power voltage in Volts.

Other device in the network

If there are any modules in the network their status and diagnostic information will be displayed as it is in Figure 7 "General information screen". If modules status is red press the down arrow and diagnostic errors will be displayed. Make sure, that Ethernet router is configured properly to pass SSDP packets (239.255.255.250:1900 and 239.255.255.246:7900). Also make sure that all modules are connected to the same Ethernet network.

Diagnostic information table

It displays all module errors and comments (if possible) how to eliminate them.

Diagnostic Information	
Demodulator 2 unlocked	
Demodulator 1 unlocked	

Input status table

	Lock status	RF level	Modulation	FEC	SNR	VBER	PER	Input bitrate
Input 1 status	Locked	76 dBμV	QPSK	5/6	13.9 dB	<1.8E-9		33791 kbps
Input 2 status	Locked	69 dBμV	QPSK	5/6	14.0 dB	<1.8E-9		33791 kbps
Input 3 status	Locked	73 dBμV	QPSK	5/6	12.4 dB	<1.8E-9		33790 kbps
Input 4 status	Locked	70 dBμV	QPSK	5/6	14.5 dB	<1.8E-9		33791 kbps
Input 5 status	Locked	71 dBμV	8PSK	2/3	14.7 dB		1.4E-9	42573 kbps
Input 6 status	Locked	74 dBμV	8PSK	2/3	15.1 dB		1.4E-9	42573 kbps
Input 7 status	Locked	75 dBμV	8PSK	2/3	14.0 dB		1.4E-9	42591 kbps
Input 8 status	Locked	75 dBμV	QPSK	5/6	14.9 dB	<1.8E-9		33791 kbps

Transport Streams

One input channel at a time can be configured in this page. Select proper channel from the list at „Choose input channel" combobox. A list of services in the selected channel will appear ("List of services").

„List of services" table shows a list of available services. Icon before the service name indicates service type. Bitrate of each service is measured in real time. Services that currently are not running will be displayed as grayed. They can be selected and will be outputted normally when the services starts running. „LCN" field is a Logical Channel Number. Every service can have a „channel number" and TV will sort channels according to it. Just ensure, that all services in all channels have different numbers. Value "0" means, that LCN for that service is not used at all and TV will sort these channels according to it's own rules.

Services can be passed to any output number, independing on the input demodulator number.

BISS scrambled services have a checkbox for descrambling.

Press "+" icon onto sign and service information will be extended (see Figure "Service details" below).

RF inputs

Input type selection	Input source type = dSCR	Input source type = SCR

"Input type selection" table consists of the following parameters:
"LNB LO frequency" - the LNB local oscillator lower frequency in megahertz. Use 9750 MHz for the universal converter.
"LNB HI frequency" - the LNB local oscillator upper frequency in megahertz. Use 10600 MHz for the universal converter.
"LNB Power" - power supply of the converter – can be set to "0", "13V", "18V", "13V/22kHz", "18V/22kHz".
"Polarization" - the polarization of converter. Can be "Horizontal" or "Vertical".

"Source type" - the LNB types, there are several: Universal, Quadro, DiSEqC, dSCR EN50607, SCR EN50494 - see **Input source type = dSCR**.
dSCR and SCR options are available in "Input 1" only.

"Universal LNB" - power supply voltage of the converter is chosen according to the selected polarization – 18 V Horizontal, 13 V Vertical; the 22 kHz is set depending on given "LNB HI frequency" "LNB LO frequency" and "Input frequency" parameters.

"DiSEqC" - then DISEQC commands are used to select the satellite. Possible commands: "Satellite A", "Satellite B", "Satellite C", "Satellite D", Vertical or Horizontal polarization.

"dSCR" – first select source type as shown in Figure, then select "dSCR/SCR mode" Master or Slave (Master for module which has direct connection to Unicable multiswitch or LNB and Slave for modules connected by loop through). If Slave was selected, additionally type the IP address of Master module. All the modules in the dSCR/SCR group must be in the same Ethernet network. Next select "SAT input" and "User band", type in frequencies, symbol rate press "Update" button and observe "dSCR" status.
"SCR" - same as "dSCR", just the user band frequencies must be typed in manually.

„SAT input" - a parameter that can switch demodulator off or connect to any available RF input.
"User band" - parameter used in dSCR/SCR switches.
"Modulation standard" - a selection between DVB-S and DVB-S2 standards
„Input frequency" - parameter is a frequency of transponder in MHz.
„Symbol rate" - parameter is a symbol rate of transponder in kSymb/s.

Demodulator settings table

	SAT input	User band	Modulation standard	Input frequency, MHz	Symbol rate, Ks/s
Demod. 1	Input 1	Off	DVB-S2	10773	22000
Demod. 2	Input 2	Off	DVB-S2	10773	22000
Demod. 3	Input 1	Off	DVB-S	10744	22000
Demod. 4	Input 2	Off	DVB-S	10744	22000
Demod. 5	Input 1	Off	DVB-S	10744	22000
Demod. 6	Input 2	Off	DVB-S	10744	22000
Demod. 7	Input 1	Off	DVB-S2	10773	22000
Demod. 8	Input 2	Off	DVB-S2	10773	22000

Service title and provider can be edited (multilanguage character support). „Scrambled flag" will be inserted into SDT (Service Description Table). Unchecking this checkbox will not descramble the content. It only carries information about the scrambling status of the service.

BISS scrambled services have a BISS key input field "BISS Code". Enter the BISS code (12 or 16 characters) in hex format.

Individual streams can be disabled as well. PID number can be remapped manually by selecting checkbox "Other PID". Keep in mind that PID must be unique, otherwise PID remapping is done automatically.

Press onto „Update" button to save changes and execute.

NOTE: If transparent mode is selected, all services of transponder will be passed to the output, including original PAT, SDT, PMT, EIT, CAT, NIT tables. All changes that were made to these tables (new titles, LCN) will be disregarded. No more than 95% of output bandwidth usage is recommended, otherwise bitrate overflow might occur.

NIT

Several tables related to NIT generation exist in this section. Figure 16 "Global TS parameters" describes following TS parameters:

"Network ID": is unique number within the geographical region defined by the "country code". For a cable network usually this is a single country code plus 0x2000 (8192). If there are more connected modulators in the network, they must have the same Network ID.

Proper value depending on your country and operator can be found here:
http://www.dvbservices.com/identifiers/network_id?page=1

"Private data specifier (in hex format)": can be inserted in the NIT table for proper LCN description. This value is described in TS 101162 specification. NorDig standard requires 00 00 00 29 value, UK should use 00 00 23 3A value.

Other options can be found here:
http://www.dvbservices.com/identifiers/private_data_spec_id?page=1

The parameter will not be inserted into NIT if value is set to zero.

„Network name" is the name of the network.

The 2nd table in the page describes Transport stream ID and Original network ID of each channel (see Figure below).

Each stream in a network must have unique ID, called „Transport stream ID". An Original_Network_ID is defined as the "unique identifier of a network". It can be linked to NetworkID or used value from this location:
http://www.dvbservices.com/identifiers/original_network_id?page=1

www.dvb4all.com
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Every channel in the network must be described in NIT. Otherwise TV automatic channel tuning function will not find all channels. All other modules in the network will be monitored via standard SSDP protocol. NIT tables will be regenerated if any change is detected in other modulators with the same Network ID. Make sure, that Ethernet router is configured properly to pass SSDP packets (239.255.255.250:1900 and 239.255.255.246:7900). Also make sure that control ports of all modules are connected to the same Ethernet network.

RF outputs

Transmodulator has two independent groups of four adjacent channels.

"Output frequency" parameter can be entered manually or selected as a channel from combobox. Channels that can be selected from the list depend on which region is selected. If you need any other frequency – select "Manual" and type the needed frequency. Frequency step is 0.1 MHz. „Enable" checkbox will enable channel to the output. Global attenuator can be entered up to 15 dB. Also there is individual precise attenuator up to 2.5 dB in step of 0.5 dB.

Press „Update" to change settings. In case, if any modulation parameter was changed, both channels will be restarted with new settings. Exception is „Attenuator", changes in this parameter will not restart the modulator.

Figure above shows DVB-C output settings. The step of RF channels can be selected to one of these values: 7.0, 7.5, 8.0, 8.3, 8.5 MHz. Actual bandwidth of each channel depends on the symbol rate, and can be calculated as SR x 1.15 (1.15 here is roll off factor of 15%). Symbol rates of all channels must be the same, from the range of 3500..7200 kSym/s.

Output channel enumeration depends on the region selected from the main page. However, it's allowed to enter any frequency you want in a range of 100..858 MHz in all devices.

Only the first output frequency/channel of the group can be entered by the user. Other frequencies will be calculated automatically according to the selected step/bandwidth.

8-ch S2 to T/C TRANSMODULATOR

IP settings

All device IP settings can be configured here – IP address, subnet mask, gateway, DNS (Domain Name System), see Figure.

IP parameters will be updated immediately after pressing „Update" button and redirect to new location.

NOTE: IP address can be reset to default (192.168.1.10) by pressing RESET button for at least 3 seconds. Ethernet "link" led will start to blink quickly to inform, that the reset IP address request has been accepted. Device will be restarted with default IP address.

E-mail-settings

The device can send e-mail reports if errors were detected. SMTP protocol is used for that. Figure "E-mail settings table" shows parameters related to this feature. "Enable e-mail error report" checkbox enables error monitoring. All errors within "timeout" period will be gathered, and send to the e-mail address, provided in "Receiver e-mail address" input box. Comma separated e-mail addresses can be used to send report to multiple addresses. The timer will be started as soon, as the first error is detected, and stopped when e-mail is sent. The timer will be restarted again if a new error will appear.

"Sender e-mail address" can be used as authentication in the SMTP server side.

SSL (SMTPS) protocol is not supported.

SNMP settings

"SNMP settings table" is located in "IP parameters" tab.

The description of the SNMP configuration parameters:

"Read Community" - community name acts as a password that is shared by multiple SNMP agents and one or more SNMP managers. "Read Community" password is used for read-only access to the modules parameters.

"Write Community" - is the password used for read-write access to the modules parameters.

"Enable TRAP" - SNMP traps are alerts generated by agents on a managed device. Check this box to enable TRAP generation. The module generates traps when the diagnostic message occurs.

"TRAP Community" - is the password used for accessing of TRAPS.

"Host IP #1","Host IP #2""Host IP #3" - IP addresses of hosts with SNMP managers, where TRAPS will be send.

System menu

This menu tab contains following submenu items: "Event logs", "Export parameters", "Import parameters", "Firmware upgrade", "User management", "Restore defaults", " Reset the device", "Date,Time", "Language". Mouse over to show the list of this submenu.

Event logs

Various important events, errors, warnings will be logged into "Event logs". Each record has an event type, which can be used to filter particular messages. Just select checkboxes in the „Logs filtering" table and press „apply". Other messages will be hidden.

„Erase logs" button will erase all logs from the system.

"Export logs" button forms the file (log.html) which will be downloaded to PC.

Each record has a log time when the event appeared. Refer to 6.10.8 "Date, Time" settings for instructions how to configure time settings.

Export parameters

All settings of transmodulator can be exported for backup or copying to another device. Press "Export parameters" and "parameters.xml" file will be downloaded to PC. This file can be imported only to the same type of device.

Import parameters

Exported parameters can be imported back to the device. Press onto "Click to select file" button (see "Import parameters") to select exported file.

Press "Upload" button to send the file to the device. It will take several seconds to update all parameters after file upload. After that, device will function with new configuration. No restart is required.

Firmware upgrade

Device firmware can be upgraded via web browser. Press the "Click to select file" button and select firmware binary file. If valid file was selected, a version number of new firmware will be displayed. Otherwise an error message will appear. Press the "Upload" button to upload new firmware to the device. Upload progress bar will appear and may take several seconds to upload, depending on the size of a file and a network connection speed. A message will be displayed asking to restart the device when the file was sent to the device. New firmware will be programmed into the device only after restart. It may take additional minute or more to flash new program. Device will start up with a new firmware and continue to operate with previous parameters. Additional new firmware features (if any) may need to setup additionally to take effect.

Avoid power supply interruption when a programming process is going on.

Device has possibility to load software revision history and check availability for new software release. Click the "Check online" link. If computer (not device!) has internet access, it will show a list of all software releases with links to binary files. Binary file can be downloaded and saved to computer (see Figure below). After that, use the firmware upgrade method as described above.

TROPHY-TA1005HD

DVB-S/S2 & DVB-T/T2 & DVB-C Set-Top-Box

Specifications

Satellite mode	
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	
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	
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, USB2.0, JTAG
Output resolution	480p_60 / 480i_30 / 576h_50 /576i_50/ 720p_60 / 720p_50 / 1080i_30 / 1080i_50 / 1080p_60 / 1080p_50
Color system	PAL, NTSC
Sound	MPEGI/II, MP3, MPEG4 AAC
Trophy-Access 3.0 Decoder	Embedded FPGA IC
Chipset	GX6706S5
EPG	yes
Interface language	13 languages
Supply voltage	+12VDC 2A, external
Wattage	up to 14W
Dimensions	180x120x45
Weight	1 kg

TA-1005HD STB

Set-Top-Box connections

TA-1005HD STB

DVB-T2 & DVB-C tuner	Satellite tuner

Satellite demodulator

TROPHY-ACCESS decoder

QAM/COFDM demodulator

GX6706S5 H.264/H.265 chipset

USB

HDMI 2.0

CVBS   Infra-red remote control

Audio L/R   +12VDC

TA-1005HD Set-Top-Box

Front Panel

TA1005HD DVB-S2/T2 Set-Top-Box

TROPHY

TROPHY-ACCESS 2.0
Embedded Decoder

H.265 HEVC

DVB Digital Video Broadcasting

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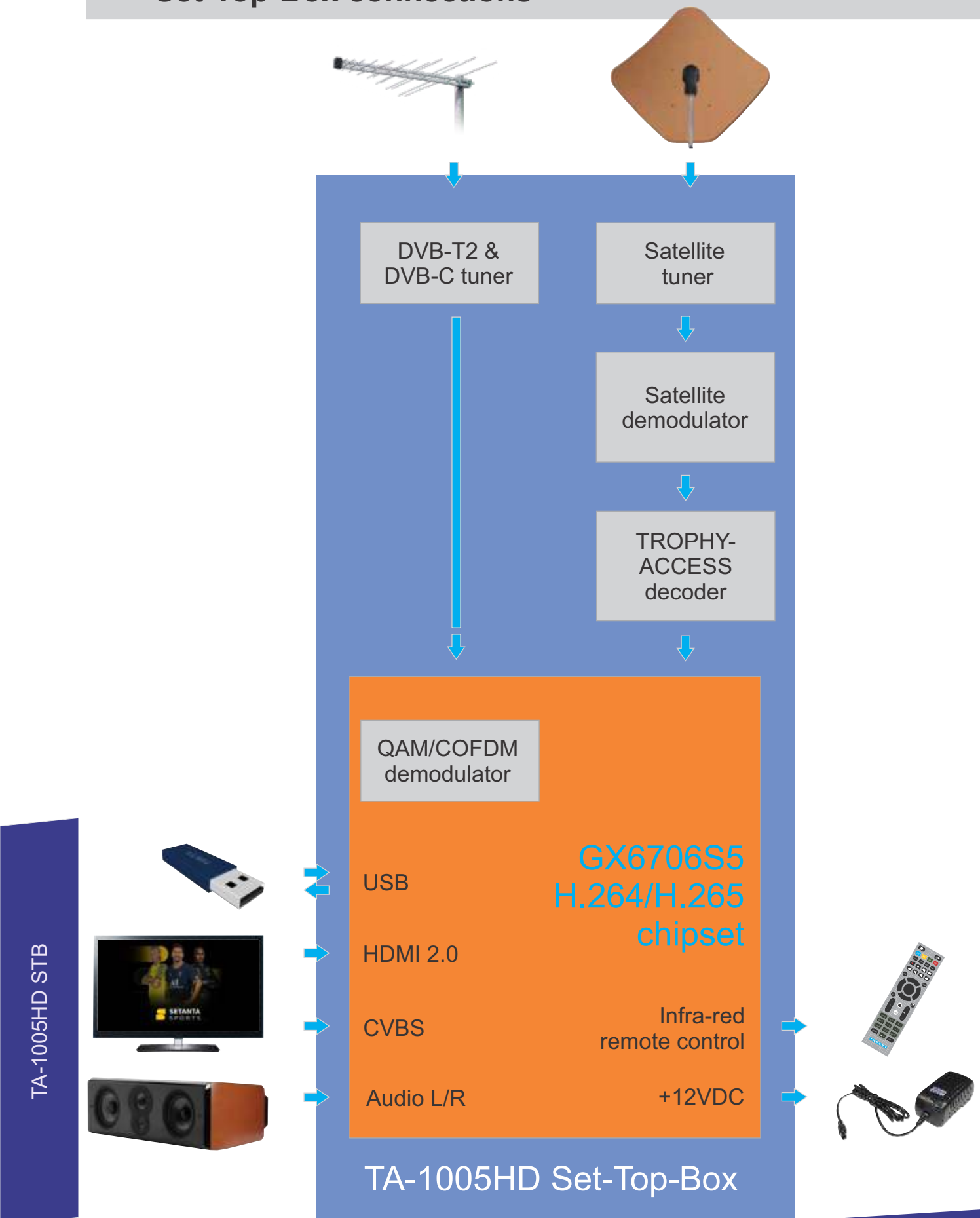
1	Power on/off
2	Menu button
3	USB port
4	LED display
5	Channel Down
6	Channel Up
7	Sound level Down
8	Sound level UP
9	OK

Back Panel

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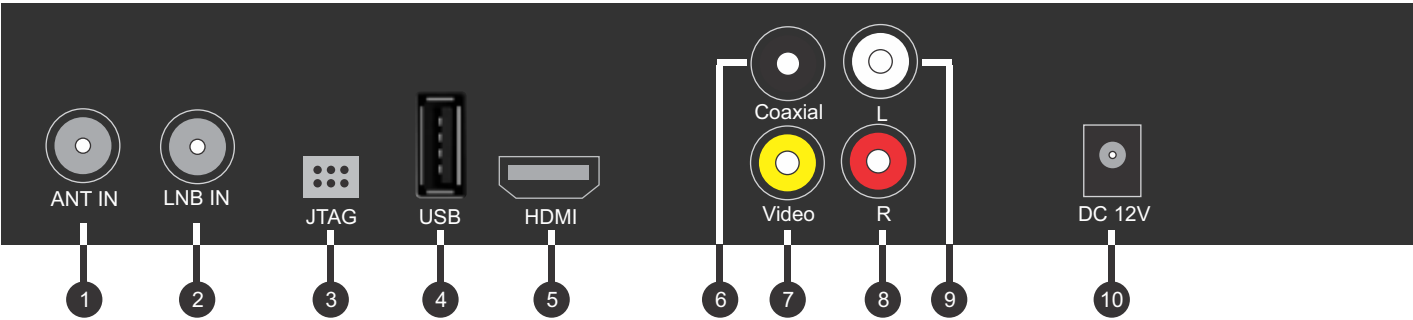
1	Terrestrial / cable signal input
2	LNB input
3	JTAG connector
4	USB connector
5	HDMI output
6	Coaxial audio output
7	Composite VIDEO output
8 9	Left/Right audio channel output
10	DC 12V connector

Remote Control Unit

#	Description
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
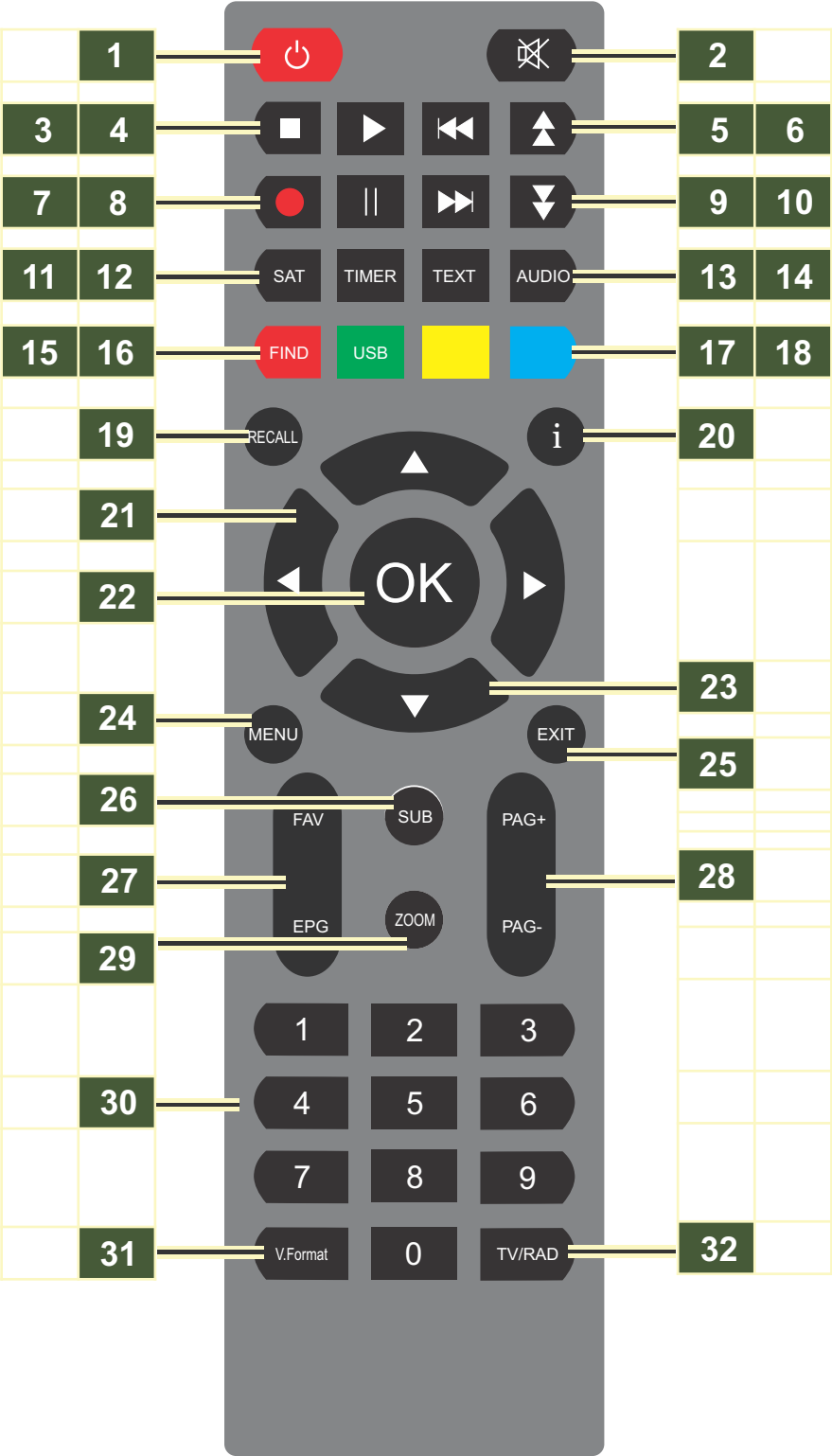
TA-1005HD STB

TROPHY

TROPHY-ACCESS decoder number

The decoder serial number is located on a sticker on the bottom cover of the device.
You can register the decoder by going to the **Login** on the **globlink.info** website.

See **Profile** page.

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Email: cab1@local.lan

User name: Darth

Last name: Vader

Country: Georgia

Phone number: +995 55555555

Password change

Decoders:

95 - 2560446 Delete

Save changings

Entering a decoder using a QR code

Using your smartphone, scan the decoder number indicated on the Set-Top-Box sticker. Press the link to the login to the page of the personal account. Follow this link, enter your username and password. Next, you can select program packages for this decoder number on the **Balance** page.

Result

95-255543

Go to website

Balance

On this page you can see the current balance of your account, current packages and the number of each decoder. Here you can enable or disable packages and top up your balance.

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 software packages to your decoders.