

T R O P H Y



AMD-53-C DVB-C MODULATOR / MULTIPLEXER

HEADEND SYSTEM

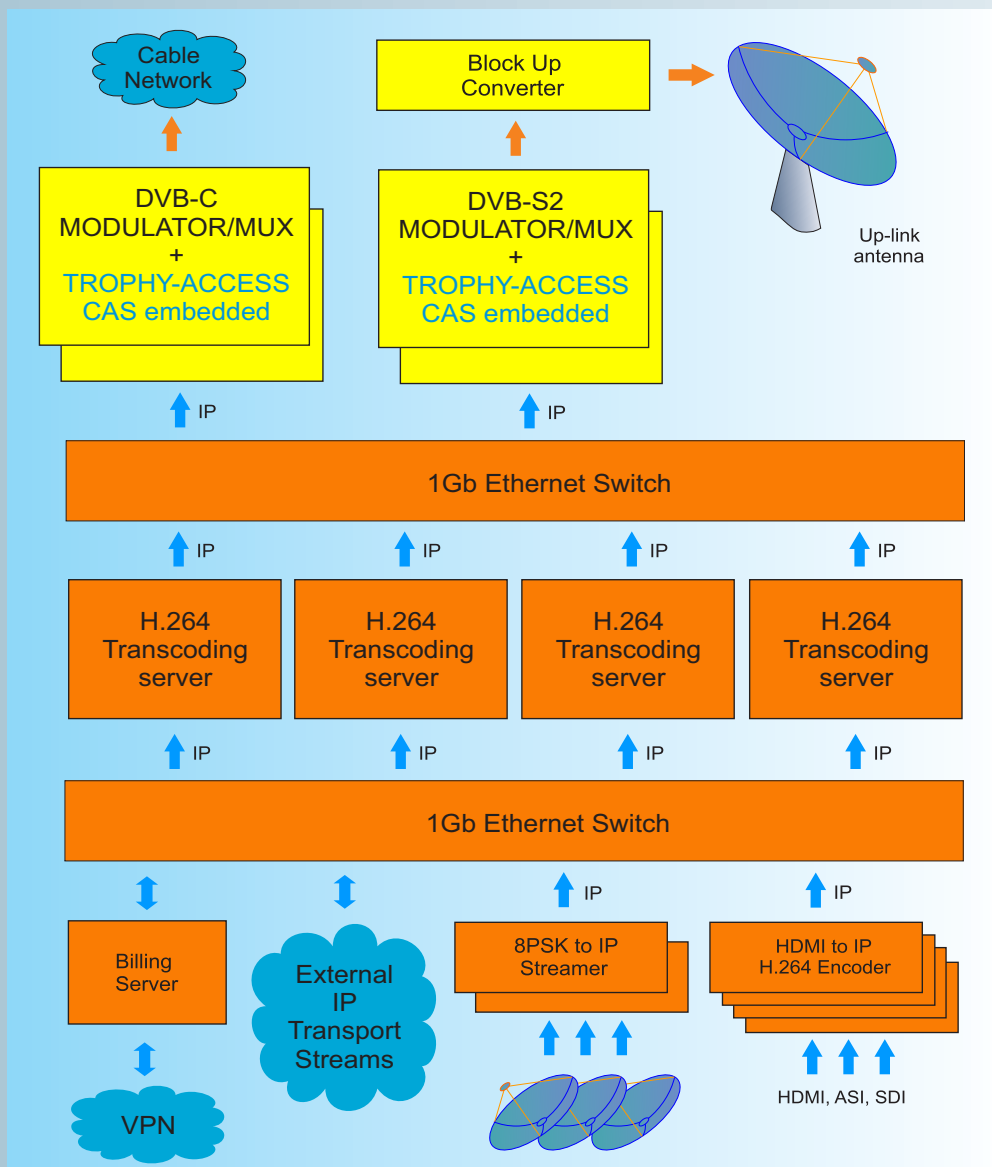
H.264 TRANSCODING_DVB-S2/CABLE/_TROPHY HEADEND is the most convenient and versatile for digital multichannel satellite&cable solution.

The advantages of the equipment:

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.

HEADEND intra-protocol of control and data transmission protocol are Ethernet. This determines the high degree of integration with the existing equipment and determines minimum cost of a components.

Using the most advanced mathematical compression methods allows you to broadcast the quality video at a speed of about 0,8 Mbps for SD channels and about 2 Mbps for HD channels.



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, the system of monitoring of broadcasting quality and the set-top-boxes of its own design 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-C TWIN DVB-C MODULATOR / MULTIPLEXER

AMD-53-C TWIN DVB-C MODULATOR / MULTIPLEXER is a brand new Cable modulator/multiplexer designed for applications over cable network in full compliance with DVB-C standard.












The AMD-53-C TWIN DVB-C MODULATOR / MULTIPLEXER converts transponders included IP or ASI transport stream into 16QAM/32QAM/64QAM/128QAM/256QAM signal to transmit them in Cable amplifier or Cable optical transmitter.

Two DVB-C carriers from available 2x60 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 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 -band range (58 ... 862MHz). A high-speed digital→analogue converter (DAC) is responsible for the excellent output signal.

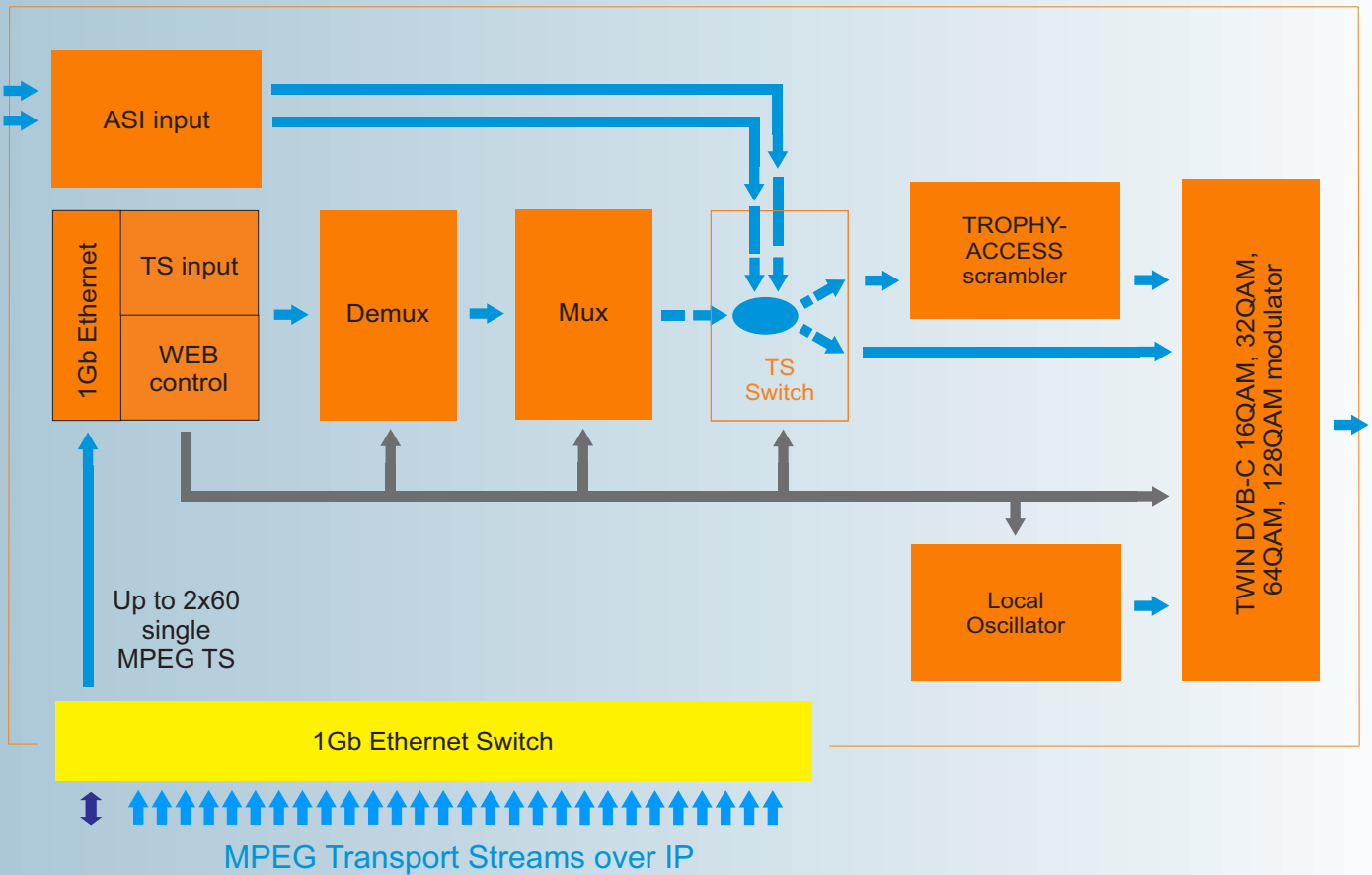
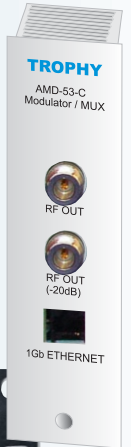
AMD-53-C MODULATOR / MULTIPLEXER:

-  covers the 58...862 MHz range and offers bit rate from 0.1 MSymb up to 7 Msymb;
-  provides up to 2x60 independent multiplexed MPEG transport streams to a two carrier, with built-in support for TROPHY-ACCESS Conditional Access System for content protection. Software license to enable TROPHY-ACCESS scrambler solution;
-  also equipped ASI transport stream input (Optional);
-  takes full advantages of the IP technology to provide a cost effective, highly reliable and flexible solution;
-  has highly efficient multiplexing algorithms;
-  provides transport Stream rates up to 7 MSymb/s;
-  supports all PIDs of input services;
-  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-C TWIN MODULATOR/MULTIPLEXER integrates the Cyclone V 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-C TWIN MODULATOR / MULTIPLEXER provides a high performance channel spectrum. This results gives an efficient transmission in 16QAM, 32QAM, 64QAM, 128QAM, 256QAM mode. 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 and PIDs filtering&remapping. WEB-interface also offers monitoring of all input streams.

AMD-53-C MODULATOR / MULTIPLEXER integrates the core technology required to perform high quality modulation based on TROPHY expertise.



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. The device has to be connected to PC network using an Ethernet cable. The default IP address of the device is 10.10.10.99. In order to access the WEB interface of the device from a PC, the PC has to be in the same subnet (10.10.10.XX), where XX is not used by any other device in this 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.

Specifications	
Standards	
DVB-C	EN 300429
MPEG-TS	EN 301 210
DVB MPEG-TS over ASI	EN50083-9; ETSI TR 101 891
DVB MPEG-TS over IP	ETSI TS 102 034
MPEG-2 PSI Tables (PAT&PMT)	EN 300 468
ASI input (optional)	EN 50083-9
TS transfer format	MPEG-TS, 188 bytes over ASI
Level range	200...880 mV
Data rate	0,625...75 Mbps
ASI transfer format	continuous, burst
Connector	BNC socket
Impedance	75 Ohm
IP input (stream port + WEB interface)	Ethernet, 10/100/1000 Base-T
Connector	RJ-45
Streaming protocol	UDP
Streaming mode	CBR/VBR
Ambedded Encryption	TROPHY-ACCESS (additional license)
RF Outputs	
Channels S1-S7, 6-12, S11-S40, 21-69	110MHz to 862MHz, 10kHz step
Output level	-15...-35 dBm
MER	> 43 dB
C/N	>78 dB
Attenuation step	0,5 dB
Max output level instability	+/- 0,5 dB
Max frequency instability	+/- 30kHz

Multiplexer	
Quantity of multiplexed channels	up to 2x600
PID quantity supported	All PIDs of input services
Modulation	
DVB-C	QAM16, QAM32, QAM64, QAM128, QAM256
Supported DVB modes	CCM: Constant Coding and Modulation
	VCM: Variable Coding and Modulation
	SeamlessACM: Adaptive Coding and Modulation
Variable symbol rate	From 0,1 to 7 MSymb, step 100 MSymb
Control & Monitoring	Web Browser Control & Monitoring
	10/100/1000 Base-T Ethernet ports
	90 to 240VAC/50Hz/30W (+12V DC optional)
Physical	2kg Weight
	0°C to 50°C temperature range
TROPHY-ACCESS 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

The table below contains QAM channel bandwidth at different modulation levels. It is necessary to limit the total rate of input services to avoid QAM carrier overflow.

Supported bandwidth of DVB-C channel		
Modulation	Frequency bandwidth (MHz)	
	6	8
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

★ **Modulator is controlled by a WEB interface.**

Factory settings:
 IP address: **10.10.10.99**
 Login: **admin**
 Password: **admin**

★ **Reset of settings to the factory configuration.**

If you forgot the IP address of the modulator this function will help you. RESET button is mounted in the front panel of the modulator. If you turn on the modulator power when the button is pressed, the modulator configuration will correspond to the factory settings. At the same time the **STATUS** LED will blink of green color. You can set now the required parameters and save the new settings using the ACCEPT button of screen menu.

★ **STATUS LED.**

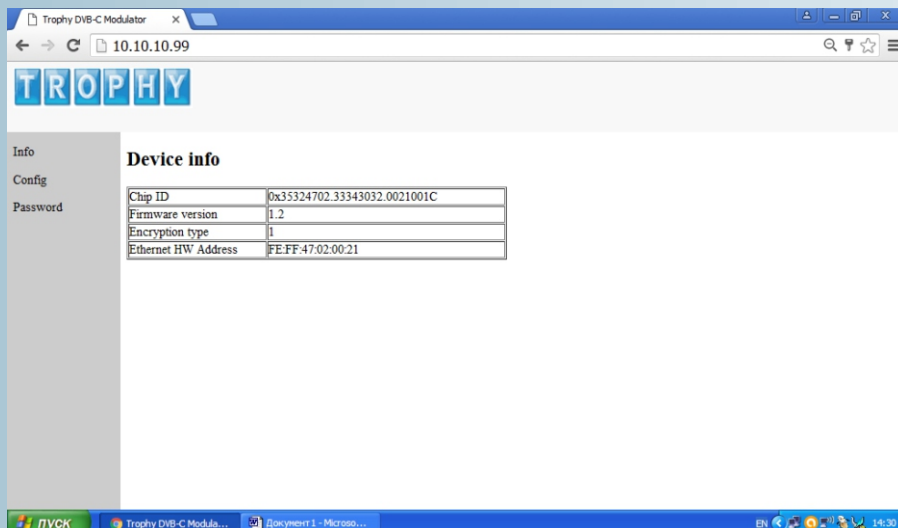
If the LED is green, the device is in normally. If the **STATUS** LED briefly blinks in red it indicates that the incoming transport stream has a bitrate greater than the bandwidth ability of DVB-C channel. You need to either go to the higher levels of QAM modulation or decrease the amount of data arriving at the input of the modulator.

★ **SYNK LED.**

If the LED is green correct ASI transport stream enters to modulator ASI input.

★ **DEVICE INFO menu.**

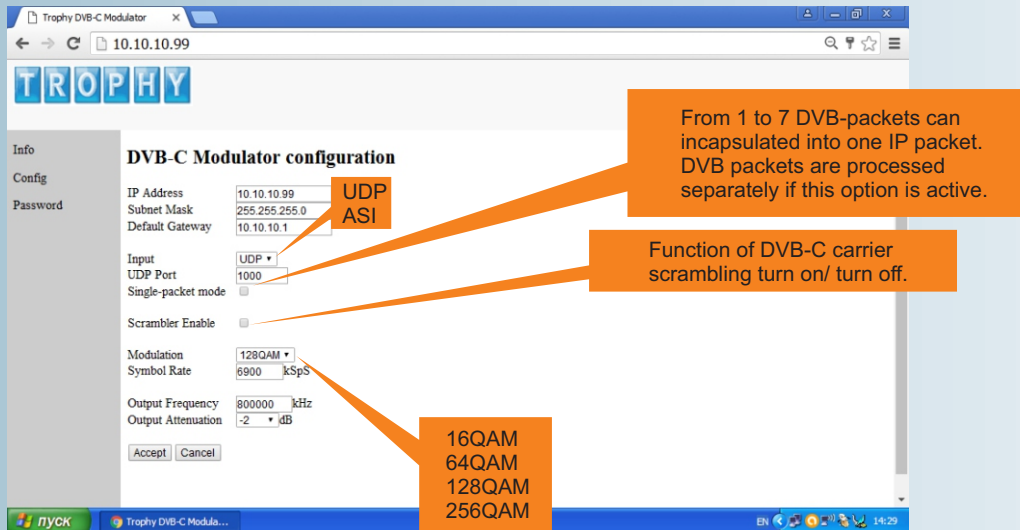
This menu is for information only. You can get information here about the software version of modulator. In addition, the type of TROPHY-ACCESS CAS is indicate. The value can be ranging from 1 to 15. You must specify what type of encoding used on your network in case of ordering of modulator.



VHF band I			IV UHF band		
1	-	-	21	470..478	474
2	58..66	62	22	478..486	482
VHF band II			23	486..494	490
3	76..84	80	24	494..502	498
4	84..92	88	25	502..510	506
5	92..100	96	26	510..518	514
Cable special band I			27	518..526	522
S1	110..118	114	28	526..534	530
S2	118..126	122	29	534..542	538
S3	126..134	130	30	542..550	546
S4	134..142	138	31	550..558	554
S5	142..150	146	32	558..566	562
S6	150..158	154	33	566..574	570
S7	158..166	162	34	574..582	578
VHF band III			V UHF band		
6	174..182	178	35	582..590	586
7	182..190	186	36	590..598	594
8	190..198	194	37	598..606	602
9	198..206	202	38	606..614	610
10	206..214	210	39	614..622	618
11	214..222	218	40	622..630	626
12	222..230	226	41	630..638	634
Cable special band II			42	638..646	642
S11	230..238	234	43	646..654	650
S12	238..246	242	44	654..662	658
S13	246..254	250	45	662..670	666
S14	254..262	258	46	670..678	674
S15	262..270	266	47	678..686	682
S16	270..278	274	48	686..694	690
S17	278..286	282	49	694..702	698
S18	286..294	290	50	702..710	706
S19	294..302	298	51	710..718	714
UHF Hyperband special band III			52	718..726	722
S20	302..310	306	53	726..734	730
S21	310..318	314	54	734..742	738
S22	318..326	322	55	742..750	746
S23	326..334	330	56	750..758	754
S24	334..342	338	57	758..766	762
S25	342..350	346	58	766..774	770
S26	350..358	354	59	774..782	778
S27	358..366	362	60	782..790	786
			Additional UHF band		
S28	366..374	370	61	790..798	794
S29	374..382	378	62	798..806	802
S30	382..390	386	63	806..814	810
S31	390..398	394	64	814..822	818
S32	398..406	402	65	822..830	826
S33	406..414	410	66	830..838	834
S34	414..422	418	67	838..846	842
S35	422..430	426	68	846..854	850
S36	430..438	434	69	854..862	858
S37	438..446	442			
S38	446..454	450			
S39	454..462	458			
S40	462..470	466			

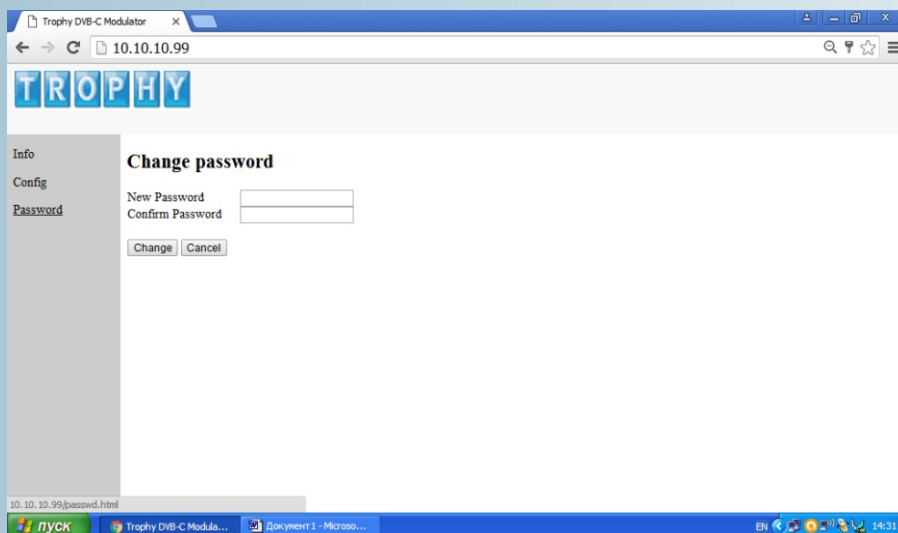
★ **CONFIG menu**

You can specify the parameters of the modulator in the configuration menu. You can save the new settings by clicking on the ACCEPT button of menu.



★ **PASSWORD menu**

In this menu you can change the password on the privacy for restrictions of unauthorized access to the configuration menu of the modulator.



TROPHY-ACCESS CAS

The TROPHY-ACCESS CAS (Conditional Access System) developed without CSA algorithm, which ensures high reliability and lack of pirate viewing (named Cardsharing). Scrambler is performed within the hardware of the AMD-53-S2 DVB-S2 MODULATOR/MUX.

There is ASI to ASI TROPHY-ACCESS scrambler too.

The Billing server provides office. The decoder automatically switches off at a zero balance in the subscriber account number. Billing data are fed to the DSC-01 SERVER and to the AMD-53-S2 MODULATOR/MUX over Ethernet or ASI.

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	4,294,967,295
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
Individual addressable message	up to 120 characters

