

Dual channel MPEG-2 / H.264 Encoder / Transcoder M58 User's Manual

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1. Product Outline

1.1 Outline

The device can work in two modes "Encoder" or "Transcoder". The necessary mode is selected by program witching. The dual channel Encoder is intended for real time encoding of CVBS or SD/HD SDI signals into MPEG-2 SD or H.264 SD/HD format. The dual channel Transcoder is intended for real-time transcoding/ transrating of two SD/HD program from two Transport Streams (TS) from MPEG-2 to H.264 format or vice versa. Each channel generates up to two TS. One of the two TS provides high resolution (1920x1080 or less) for high quality broadcasting, the other TS provides low resolution (320x240 or less) for broadcasting to mobile devices or Internet. The Encoder/Transcoder enables multiplexing of the four TS onto any of the two ASI outputs or any of the four IP addresses. Built-in multiplexer: each output can be configured to carry either a Single Program Transport Stream (SPTS), or a Multi Program Transport Stream (MPTS).

1.2 The Encoder key features:

- Two SDI / two CVBS inputs.
- Full HD 1080i support.
- Analog XLR and Serial Digital embedded audio inputs.
- Provides internally generated PSI.
- Selectable MPEG-2 SD or H.264 SD/HD real-time video encoding.
- Simultaneous output of 2xTS (ASI) with UDP/IP or RTP/IP transport stream.
- CBR or VBR outputs.
- User selectable resolution and bit rate.
- MPEG-1 Layer audio encoding. II
- Built-in multiplexer can output 2 individual or one multiplexed ASI and IP streams.
- Control and monitoring via LAN (Ethernet).

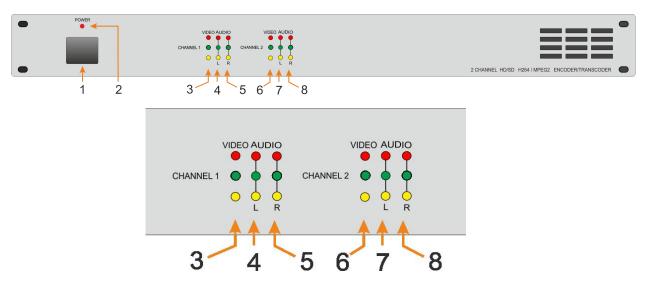
1.3 The Transcoder key features:

- Transcoding of an SD/HD program: from MPEG-2 (SD/HD) to MPEG-2 (SD) format; from MPEG-2 (SD/HD) to H.264 (SD/HD) format ; from H.264 (SD/HD) to MPEG-2 (SD) format;
- Digital to digital decode and re-encode with minimum loss in video quality;
- Supports multi-bitrate transcoding
- Up to 1080i HD output;
- Audio is passed trough;
- PID filtering;
- Built-in multiplexer allows to generate output TS with transcoded programs and/or original programs which are being applied at the input;
- PSI generation;
- Supports OTA, EPG, DVCrypt CAS 3000/10000/100000 subscribers;
- Input interface: DVB ASI (2);
- Output interface: DVB-ASI (2) and IP(1);

	ecincation	Specificaion
		Inputs
Video	Ddigital Video inputs	2 x SDI (BNC, 75Ω) 800mVp-p or 2 x HDMI (HDMI 19pin) switchable.
	Video inputs Resolution	1080p@ (50/59/60 SDI only)
		1080i @ (50/59/60)
		576i @50
		480i @59.94
	Encoding	MPEG-2 SD; H.264 HD/SD
	Bit-rate	до~15Mbps
	Rate Control	CBR / VBR
	GOP Structure	IPB, IBBP, IPPP.
Analog Audio	Connectors	2 x Stereo (2 channels, XLR) Connector.
Inputs	Freq. Range:	20Hz ~ 20KHz
	Impedance:	600 Ω/ 20ΚΩ
Digital Audio	Sources	Embedded SDI or HDMI
Inputs	Sampling Rate:	48 KHz
	Signal / noise	75db
		Outputs
Video	Resolution	1920x1080, 1440x1080, 960x1080, 720x1080, 1280x704, 1280x768, 1024x768, 720x576, 704x576, 544x576, 480x576, 720x480, 704x480, 640x480, 544x480, 480x480, 480x256, 320x224, 240x180
	Encoding	MPEG-2/H.264; H264/MPEG2; H264/H264; MPEG2/MPEG2
	Bit-rate	4 -15 Mbps
	Aspect Ratio	4:3; 16:9;
Audio	Encoding	MPEG-1 Layer II, audio output level adjustment +6/-6.7 db
	Sampling rate	48KHz
	Resolution	24-bit
	Bit-rate	64Kbps~384Kbps
Stream output		2×ASI output, 2 -BNC
		4xIP, MPTS/SPTS over UDP/RTP,
		10/100 Mbit/s Control Ethernet interface(RJ45)
		UDP/RTP multicast /unicast
General	Dimensions	440 mm x 190 mm x 44 mm (W x D x H),rack 1U.
	Approx weight	3.5Kg
	· · · · · ·	-

1.4 Specification

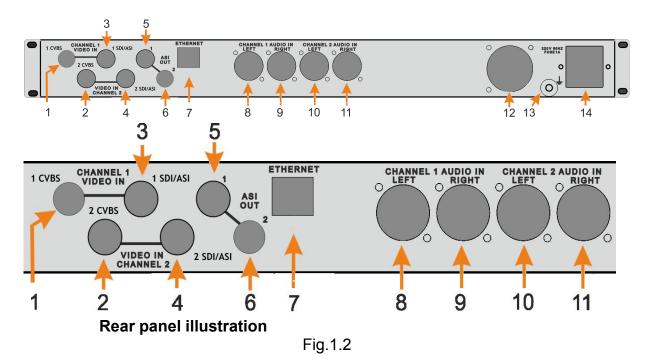
Power requirement	External power supply +12 V, 1.5 A (not included)



1.5 Front panel illustration



1	Power: the device is working	
2	Power Indicator LED	
3	Channel 1 Video Source Indicator	Green LED: signal is exists
3	Charmer 1 video Source Indicator	Red LED: no signal
		Green LED: Nominal level
4	Channel 1 Audio Source Indicator. Left	Red LED: Hi level
		Yellow LED: Low level
		Green LED: Nominal level
5	Channel 1 Audio Source Indicator. Right	Red LED: Hi level
		Yellow LED: Low level
6	Channel 2 Video Source Indicator	Green LED: signal is exists
		Red LED: no signal
		Green LED: Nominal level
7	Channel 2 Audio Source Indicator. Left	Red LED: Hi level
		Yellow LED: Low level
		Green LED: Nominal level
8	Channel 2 Audio Source Indicator. Right	Red LED: Hi level
		Yellow LED: Low level



1.	Channel 1 CVBS input interface Digital audio input interface: AES/EBU, XLR
2.	Channel 2 CVBS input interface
3.	Channel 1 HD/SD-SDI or ASI input interface
4.	Channel 2 HD/SD-SDI or ASI input interface
5, 6	Two same ASI output interfaces
7.	ETHERNET / IP
8.	Channel 1 Analog audio Left input interface
9.	Channel 1 Analog audio Right input interface
10.	Channel 2 Analog audio Left input interface
11.	Channel 2 Analog audio Right input interface
12.	FAN
13.	Ground pole
14.	Power and FUSE

2. How to Work with encoder/Transcoder MPEG 4/MPEG 2

1 Encoder/Transcoder main part

- Preparing relevant environment for installation (See 5.1 Page 25).
- Grounding Requirement (See 5.2 Page 25).
- Connecting Power Cord (14. Fig.1.2).
- Connecting ASI OUT to the device with ASI Input (5 or 6. Fig.1.2)
- Connecting communication port to PC via Ethernet for the Encoder Settings.(RJ45 7.Fig.1.2).
- Switch on Power (1.Fig.1.1).
- Set Encoder/Transcoder IP Address (using EthernetSetup.exe utilite). (See 5.3 Page 24).
- Start on PC DVBToolkit program.
- Add the Encoder/Transcoder to System. The wizard will help you connect it to the system (See 5.4 Page 30).
- Start DVB_Setting program from the DVBToolkit's client.(See 2.1 Page 9.)

2 Encoder Mode Settings

- Start DVB_Setting program from the DVB Toolkit's client3.2. (See DVBToolkit installation Page 11)
- Preset Encoder parameters you need..(See 3.3 Encoder settings . Page 14)
- Load the new parameters to the Encoder: Click "Parameters Settings" button. After recording, the Encoder is ready for use.

3Trancoder Mode Settings

- Select Transcoder Mode (2.3 Trancoder Settings, Page 9)
- PresetTranscoder parameters you need. (See 3.4 Transcoder Settings. Page 16)
- Load the new parameters to the Transcoder: Click "Parameters Settings" button. After recording, the Transcoder is ready for use.

4 Output Settings

- IP Outputs Settings (See 3.5.2 IP Outputs Settings . Page 22)
- ASI Outputs Settings (See 3.5.4 ASI Outputs Settings . Page 24)

3. Operation

3.1 DVBSetting program

Control of the parameters encoder is using a utility DVB_Setting, which is part of the program DVBToolkit, which allows you to adjust the speed of the output flow rate of the audio stream, and change the mode of operation of the encoder, with a constant bit rate (CBR), or a variable (VBR). The output resolution and format of the input signal can also be selected programmatically.

3.2. DVBToolkit installation

3.2.1 Server PC requirements:

please check that following requirements are met:

- CPU: 1 GHz or faster;
- RAM: 1 GB or more;
- HDD: at least 1 GB of free space;
- LAN adapter and/or USB for modules interface;
- Operating System: Windows XP, or Windows server 2003/2008.

3. 2.2 Software installation

Simply run the included DVBToolkit_Install.exe installation file and follow the prompts.

3.2.3 Starting the Management Program

The Management (или Configuration?) Program is started from the Start menu. / All Programs / DVBToolkit / Management Program

When you start the program will require to choose the type of connection:

Connection		×
This computer		
C Remote server	213.182.181.183	
Server port	8100	
	OK Cancel	

Fig.3.1

Locally, if the program Server installed on the same computer, or to a server, if it is installed on another PC. Then it is necessary to enter the IP address and port of the PC on which you have installed the server.

After selecting the connection window will open system of administration "Login":



Fig.3.2

The program uses a system of administration which is structured as follows:

- DVBToolkit contains several functional modules.
- There is a main user of the program DVBToolkit Administrator.
- All rights to use these functions (on / off) belong to the administrator.
- Administrator is enters to the program as an "administrator" with personal password and appoints the other users.

- The administrator also can on / off some of the functions of the program DVBToolkit, necessary for the user.
- The number of users and their rights determined by the administrator.

All default passwords is empty.

By clicking the Login button brings you to the main window:

0/3		DVBToolkit Client - Modules					
Main Vi	ew ?						
ക 🔳	ا 🖈 🛃	9 - 1 🖻 🖝 🔨	1P / 🗗 🛛	9			
Module	Settings	Status	# [S	Label	PIDs [DEC]		

Fig.3.3.

3.2.4 Adding device to the configuration program

Select View – Modules from the menu or icon.
 Click on Add new module icon



The "Add new module" window is appear (Fig.3.4):

Please select connection type for new m	nodule
C RS-485	
Ethemet	
Choose address for new module	_
(leave blank to automatically choose firs	t available address)
Replace existing module at address	<u> </u>
Existing module should be compatible w	ith new one and disconnected

Fig.3.4.

Click "Next" and follow the wizard prompts (See Chapter.5 Page ____).

After finishing the new Encoder will added to the main window (Fig.3.5):

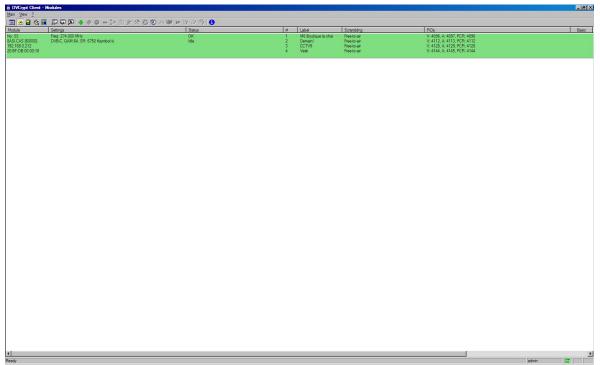


Fig.3.5.

After Encoder/Transcoder is added, double-click on green field to change the settings (Fig.3.6):

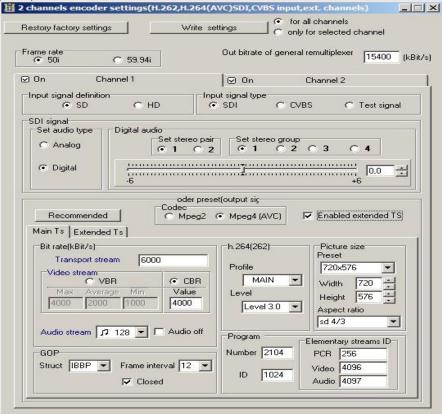


Fig. 3.6

3.3 Encoder Mode settings

The encoder has an output re-multiplexer, which allows to set the desired output flow rate of the encoder. Output flow rate should not be less than the maximum flow rate of both channels plus 200 kbits / sec.

Setting the encoder is to choose the required parameters for each of the devices. Fig.3.6.

Moreover, the selected settings can be saved in the device for each channel separately or for both channels simultaneously. This is done so that if the encoder in the broadcast mode you can change the settings on the same channel without disturbing the broadcast that comes from a different channel. So you can select the " selected " or " all channels " radio button.

Mode "Test Tone " allows you to turn on the sound output of the encoder and the color bar generator.

If any of these parameters have been chosen correctly, then when you click "Install the setup." warning appears Fig.3.7.

Restory factory s	ettings	Write setti	ings (only for sele	cted channel	
Frame rate	C 59.94i	.264 update s		general remultip	lexer 54400	(kBi
🖸 On	Channel 1		🖸 On	Channe	12	
−Input signal de ເ€ SE			signal type SDI	C CVBS	C Test sign	al
SDI signal Set audio typ	Set			Č 2 C 3	C 4	
Digital						
	Detected the out value that can cause the in	ues of paran mproper form	neters encodir ing of build ou	tput stream.	m recommenda	ble
	Detected the out val	ues of paran mproper form	neters encodir ing of build ou	tput stream.	m recommendal	-
Transpo Video stre	Detected the out val that can cause the in To write down int stream 45000 am 7 VBR 4 Average Min	ues of param mproper form n the entered	neters encodir ing of build ou l parameters?	Pres 72 Wid Heiu Aspu	et 0x576 💌 ght 576 📻 ect ratio	-
Transpo Video stre Max 4000	Detected the out val that can cause the in To write down int stream 45000 am 7 VBR 4 Average Min	ues of paran mproper form in the entered Aa CBR Value 4000	heters encodir ing of build ou parameters? Heτ Profile MAIN Level	Pres 72 Wid Hein Sci 4 Elemen	et 0x576 V ght 576 sect ratio	ble

Fig.3.7

If you select "Yes", then set parameters will be recorded, if you select "No", then the wrong selections are highlighted in red, and when you hover the mouse on them will appear showing a hint of how to change the setting to set it right. Fig.3.8.

Restory factory settings	Writ	a actionate	all channels for selected channel
Frame rate	○ 59.94i	Out bitrate of general	remultiplexer 12400 (I
🖸 On Cha	nnel 1	🛛 On	Channel 2
Input signal definition	C HD	Input signal type	3S C Test signal
SDI signal			
C Analog	Digital audio Set stereo I 1 0	pair Set stereo group	C 3 C 4
Oigital		<u></u>	
	oderu	preset(output sic	
Recommended	Codec	p2 Mpeg4 (AVC)	Enabled extended TS
Bit rate(kBit/s) Transport stream Video stream C VBI Max Averag 4000 2000	R GEF	h. 264(262) Profile MAIN V Level Level 3.0 V	Picture size Preset 720x576 Width 720 Height 576 Aspect ratio
Audio stream 🎵	128 💌 🗖 Audio o	ff Program	Elementary streams ID
GOP	E	Number 2104	PCR 256
Struct IBBP 💌	Frame interval 12	ID 1024	Video 4096 Audio 4097

The button "Recommended" sets the operating parameters that can be recorded by pressing the "Save settings" (Fig.3.8).

The button "Restore factory settings" is used to return the encoder The "Restore factory settings" to return the encoder to the working condition in the event of incorrect settings. in a case of incorrect settings parameters.

You can change the PID, and the ID number of the elementary stream.

Fig.3.8.

3.4 Transcoder Mode Settings

1. Select "Transcoder" Fig. 3.9.

Edit module parameters				×
Channels All channels 1 (0838) P8.1 2 (083A) P8.2	Edit	Module Module	08 2+H.264.HD/ASI.combo	
	DVCrypt Client Do you really want to Да Не		Network information settings Multiplexed Transcoder OK Cancel	

Fig.3.9

2. Click OK and wait until the device goes from the "Encoder" to "Transcoder" that can be seen in the status bar DVBToolkit Fig..3.10.

192.16	L anscoder.combo.C 68.32.60 :DB:00:1A:BE	CAS [100000]	System bi	trate: 53332		ыход включен	
				Fig. 3.10			
	3 . Scai	n inputs ASI	streams	and take	programs for tra	anscoding:	
		* *	• cl	ick icon l	n the main wind	ow toolbar (F	-ig3.11)
D/3			DVBTo	olkit Client - N	lodules		_ 🗆 🗙
Main Vie	ew ?						
	🗔 🔉 💠 🔷 🖨	- D 🗊 🖗 ∧	P / 1	9			
ಹ 🛅		1				1	
Module	Settings	Status	# [S	Label	PIDs [DEC]		

• The Multiplexer Window is appears (Fig. 3.12):

🕫 Input streams	(ASI) re	nultiplexor v3.00.0	07(2)			
Settings Search se	rvice infor	mation on input stream	ns Remultiplexing Pre	vious remultiplexing Appreciate of bitrate in working stream		
			(ASI	Type of device Tornscoder Occasigoe aless ASI inputs initiade initiat I I V Begin search		
		Type of device	Transcoder	The signal detected	BB	Fig. 3.1

- Click "Start scan"
- After the scan is complete the message appears (Fig. 3.13):

t e a a b pl e: Tables search completed. Does the window and select menu item (Remultiplearing) to continue settings		streams(A Search serv		 	_	xing	Previous	remultiple:	ing Ap	opreciati	of bitrate	in working	j stream			_	. □
Tables search completed. Close the window and select menu item (Remultiplexing)	1					C	PAT SDT PMT_08 PMT_08 PMT_08 PMT_08 PMT_08	s on input Input 1 08 1.833 M 09 2.726 N 03 2.726 N 04 2.726 N 06 4.277 N 06 2.431 N 06 2.431 N 06 2.431 N	i strean Bit Bit Bit Bit Bit Bit Bit								
					A Scan			earch comp	<re< td=""><td>emultiple</td><td>(ing></td><td>d select m</td><td>enu item</td><td>X</td><td></td><td></td><td></td></re<>	emultiple	(ing>	d select m	enu item	X			

the Input program for output stream formation and drag them by mouse to the right window (Fig. 3.14).

- In the right window highlight programms for transcoding.
- ٠
- •

Settings Search service in formation on input streams) temultiplexing Previous remultiplexing Appreciate of bitrate in working stream	_02
Select channels for output stream □Dannels in input stream □ Imput 1 If Imput 1 Imput 2 Imput 2 <t< td=""><td>Charvels in oulput steam Kassams sacconcor noroxs [subpasso 4] Charvels in oulput steam Kassams sacconcor noroxs [subpasso 4] Kassams sacconcor noroxs 4</td><td>Change the channels point of the stat Outerture of an coding switch with a stat Outerture of an coding switch with a stat of the stat of the stat of the stat states of the states of th</td></t<>	Charvels in oulput steam Kassams sacconcor noroxs [subpasso 4] Charvels in oulput steam Kassams sacconcor noroxs [subpasso 4] Kassams sacconcor noroxs 4	Change the channels point of the stat Outerture of an coding switch with a stat Outerture of an coding switch with a stat of the stat of the stat of the stat states of the states of th
	Transcoder Rough estimate of bitrate for output stream	Write settings in the device
Enddein output neam Enddein output neam Doared gasanete: Enddein output neam Select transCodes III III Doared gasanete: Enddein output neam Select transCodes III III Doared gasanete: Enddein output neam Select transCodes III III Oessee Enddein output neam Select transCodes IIII Enddein output neam Select transCodes III Enddein output neam Select transCodes IIII Enddein output neam Select transCodes IIII Enddein output neam Select transCodes III Enddein output neam Select transCodes IIII Select transCodes IIII Select transCodes Select tra	Fig. 3.14.	
System adress 8 Type of device Transcoder Rough estimate	e of bitrate for output stream	

If necessary, you can Click "Change the Transcoding parameters" and Settings window will appear (Fig.3.15):

Fig.3.15.

Once the options are selected click "OK" - come back previous window (Fig. 3.14) Nex Step: Measure the velocity of the selected stream and compare it with a valid value. If it is valid, click "Save settings in the device" and move on to the next window .

)utput stream(ASI)		
utput stream 0x0070		
Channels in stream	Channel number 0x11C2	
	Audio(maintenance)	Dynamics of bitrate tracking in output stream
C Demain!	audio maintenance	Limit of speed 53.33 Mbit
C CCTV9		Maximum bitrate was fixed
© RTR	-PID	
€ Tc1•Demain!	PCR 0x1030 h Video 0x1030 h Audio 0x1031 h	Delete channel in output stream if bitrate out of
C Tc1(Ex)+Demain!		Return to remultiplexing
C Tc2+CCTV9	PCR [0x0986]h Video [0x0986]h	
○ Tc2[Ex]+CCTV9	Audio 0x0987 h	Write service information in output stream

Fig.3.16.

• Select the "Save service information to the stream." Wait until the end of recording and producing an output stream that is completed. The output stream will be present transcoding programs.

3.5. Outputs.

The Encoder/Transcoder has 4 IP output.

IP output may be used for monitoring or IP broadcast

It is also possible multiplex mode, in that case main IP stream has 4 IP stream Device's outputs.

Each IP output of the encoder may have its own IP address:

1. channel 1

- 2. Channel 1 +
- 3. Channel 2
- 4. Channel 2 +

The channel with "+" is the channel with the lower resolution. Supported protocols UDP, RTP.

The Encoder has two equal ASI outputs, each of which may operate in one of the following modes:

- 1. Channel 1
- 2. Channel 1 +
- 3. Channel 2
- 4. Channel 2 +

3.5.1 Recommendations.

The maximum rate of traffic flow can not be more than 15 Mbit / s.

Mode CBR.

The difference in speed between the transport stream and the video stream is recommended to choose TS-(TV + Ta), at least 400 kbit / s. Where TS- traffic flow.

TV- video stream. TA- audio stream.

Mode VBR.

The minimum bitrate (min) 0-0,75 the average bit rate (average) Maximum bit rate (max) 1.2-2 medium (average) bit rates Bitrate transport (transport stream) not less than 400 kbit / s bit rate greater than the maximum bitrate + audio.

It should be borne in mind that the recommended resolution mode for encoder

Mode HD:

1920x1080 50i 1440x1080 50i 960x1080 50i 720x1080 50i

1920x1080 60/59, 94i 1440x1080 60/59, 94i 960x1080 60/59, 94i 720x1080 60/59, 94i Mode SD:

720x576 50i 704x576 50i

720x480 60/59, 94i 704x480 60/59, 94i

3.5.2 IP Outputs Settings

Click icon «IP» on the toolbar (Fig..3.11)

ŧ.	Destination	Status	
2	192.168.32.33:1234 192.168.32.53:1236 192.168.32.53:1237		Configure
4	192.168.32.53:1238	IP Output Control	Start
		Source Multiplexed Destination Multiplexed	Stop
		IP 192 Channel 1 Channel 1+ Channel 2	Start all
		Port 123+	Stop all
P inp		Protocol RTP	-
#	Port	No stuffings	Configure
		Start Stop	Start
			Stop
			Start all
			Stop all

IP output configuration window appears Fig.3.17.

The encoder has the opportunity to work with two IP addresses sent in one IP stream. Each encoder channel may have its own IP address. There are several operation modes for each IP channel:

- 1. Output is disabled.
- 2. The output is commutated to channel 1.
- 3. The output is commutated to channel 2.
- 4. The output delivers two multiplexed channels

The second channel works in the same mode. If two channels work in the "Multiplex mode", stuffing should be switched off (disabled), or one channel should be disconnected, while the second may work in the "multiplex" mode both with the enabled and disabled stuffing.

In the "channel1" and "channel2" modes stuffings are disabled.

It is necessary to choose IP address and port that the stream will be broadcast to, as well as the protocol (RTP, UDP, RTP +) for each of the channels.

After selecting the required parameters you should click "start" and close the window. It is possible to check (monitor) work of IP inputs using VLC player.



Select Media / Network and enter the necessary parameters. An example is given on Figure below.

Открыть медиа-файл	?
Сетевой протокол Протокол Адрес UDP ▼ 192.168.0.32	Порт
Показать дополнительные параметры	
Воспроизве	ести Отмена

3.5.4 ASI Outputs Settings

Каналы Все каналы 1 (1920) EZ 1		Конвертер 07 2+H.264.HD/ASI
1 [0830] P7.1 1+ [0831] P7.1+ 2 [0832] P7.2 2+ [0833] P7.2+	Изменить	Дополнительно
		Выкод ASI1 Мультиплекс Канал 1 Выкод ASI2 Канал 1+ Канал 2+ Канал 2+ Мультиплекс
		OK Cance

Fig.3.18.

4.Warranty

Warranty period – 24 months from the selling date

The manufacturer does not take any responsibility for defects occurred at the customer's fault or trading company's during careless transportation, improper storage, technical service or usage, mechanical damages, violating the operation rules.

The software is delivered "as is" unless mentioned otherwise. The manufacturer does not bear responsibility for any consequences of using the software. The software can be used without any limitations. Additional information on the software interfaces can be sent upon request.

The manufacturer reserves a right to bring any changes to the product, software or description without notice. Please ask manufacturer for latest information and updates.

Dear customers!

We make improvements and/or changes in our products and we reserve the right to make changes without notice. Though every effort has been made to ensure that this document is current and accurate, more information may have become available subsequent to the production of this guide.

Our products are under continual improvement, so we would like to draw your attention to the fact that the old-model devices may not be supported by the most recent version of our software. It is caused by using in our equipment advanced technical solutions and new electronic components.

We are pleased to receive at info@dv-lab.com comments and remarks regarding our products and software. At the same address we are ready to provide further information about the products application and updated software.

5.Apps

5.1 Environment Requirement

• Environment Temperature 5~40°C(sustainable), 0~45°C(short time),

installing air-conditioning is recommended

- Power Requiring device power, air-conditioning power and lighting power are independent to each other. Device power requires AC power 220V 50Hz. Please carefully check before running.
- Machine Hall Floor Electric Isolation, Dust Free, Ground anti-static material.

5.2 Grounding Requirement

- Good grounding is the basis of reliability and stability of devices. Good grounding are the most important guarantee of lightning arresting and interference rejection.
- Coaxial cable's outer conductor and isolation layer should keep proper electric conducting with the metal housing of device.
- Grounding conductor must adopt copper conductor in order to reduce high frequency impedance, and the grounding wire must be as thick and short as possible.
- It is prohibited to use any other device as part of grounding electric circuit
- The area of the conduction between grounding wire and device's frame should be no less than 25mm².

5.3. How to connect new Device to the System through Ethernet (TCP / IP)

Server computer setting

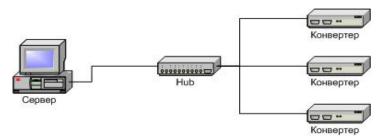
The server computer should be equipped with network adapter with installed TCP/IP. Network adapter properties:

local Area Connection Properties	?
eneral Authentication Advanced	
Connect using:	
Intel 21140-Based PCI Fast Ethernet	<u>C</u> onfigure
This connection uses the following items:	
🗆 📮 QoS Packet Scheduler	
✓ The Network Monitor Driver	
Internet Protocol (TCP/IP)	
1	
Install	P <u>r</u> operties
Description	- 1
Transmission Control Protocol/Internet Protoc wide area network protocol that provides con across diverse interconnected networks.	
Show icon in notification area when connect	ted
 Notify me when this connection has limited 	
ive meany me when this connection has inniced t	of the contractivity

The computer IP address can be assigned statically or dynamically (DHCP). As example IP address is 192.168.1.3 (shown at the Figure below).

net Protocol (TCP/IP) Prope	erties
neral	
	utomatically if your network supports d to ask your network administrator for
C <u>O</u> btain an IP address automa	itically
Use the following IP address:	
IP address:	192.168.1.3
S <u>u</u> bnet mask:	255 . 255 . 255 . 0
<u>D</u> efault gateway:	
C Obtain DNS server address a	automatically
Use the following DNS serve	r addresses:
Preferred DNS server:	
<u>A</u> lternate DNS server:	· · ·
	Ad <u>v</u> anced

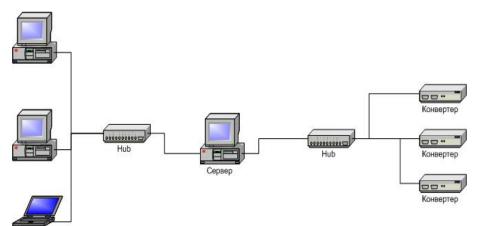
Connection scheme is shown below:



The server is connected to a standard Ethernet hub/switch. The Device are connected to the Ethernet hub/switch, too. There can be other computers in this local network.

If the server is connected to a local network containing other PC, it is recommended to install the second network adapter in the server in order to guarantee fail-safe and secure connection.

In this case the connection scheme should be the following:



First network adapter and Device are attached to a hub. The second network adapter is attached to other hub connected to other PC.

Select "Module interface/Ethernet" option in Server settings:

ettings	<u>i</u>
About	Server settings
DVCrypt	Server port 8100
Col 2003 - 2010, DVL	Module interface
License	Ethernet
Licensed to DVLab (0001, 0800)	Bind to network adapter
Subscribers 100000	192 . 168 . 0 . 32
DVB settings	SMS notifications
Cyrillic encoding ETSI EN 300 468	Enable Setup
	Debug
Integration	Enable debug logging
Billing software integration mode	Keep debug information (days) 7
Interface language	Send problem report
Language English	
Edit New	OK Cancel

If the server contains special network adapter for connection to Device, it is necessary to select "**Bind to network adapter**" option and assign its IP address.

About	Server settings
DVCrypt	Server port 8100
 Server ver. 2.4 [Apr 14 2010] (c) 2003 - 2010, DVL 	Module interface
License	Ethernet
Licensed to DVLab (0001, 0800)	🔽 Bind to network adapter
Subscribers 100000	192.168.0.32
DVB settings	SMS notifications
Cyrillic encoding ETSI EN 300 468	Enable Setup
	Debug-
Integration	I Enable debug logging
Billing software integration mode	Keep debug information (days) 7
Interface language	Send problem report
Language English 💌	
Edit. New	OK Cancel

5.4 How to add a new Device to the system.

To add a new Device to the system connect it to the hub by a cable and switch it on. Press button **Add new module**

Select connection type **Ethernet**

dd new module	
Please select connection type fo	or new module
C RS-485	
C Ethernet	
Choose address for new module	
(leave blank to automatically cho	bose first available address)

New Device connected to the system will be searched, their MAC and IP addresses will be listed. Search can be repeated by pressing **Refresh** button. If there are a few Devices, it is difficult to determine the Device among others. In this case you can select the Device in the list and press **Blink** button. The selected Device will flash red LED (built in Ethernet connector) three times.

Next step is entering IP address of selected Device.

IAC	IP.	
20:BF:DB:00:00:2A	192.168.0.207	Refresh
		Blink

IP address	192 . 168 . 0 . 207
Network mask	255 . 255 . 255 . 0
Default gateway	0.0.0

The server will set the IP addres

Select any free IP address in the range of this local network (for example, we use addresses from 92.168.1.100 to 192.168.1.200) and enter it. Network mask and Default gateway should be set only if the Device will work in other subnetwors for the new Device and add it to the system. The IP address and MAC will be shown in Devices window in Control Software. It will be impossible to change the Device IP address hereafter. To change the Device IP address it is necessary to delete the Device from the system and add it again.

New module was successfully ac	dded to the system.	
Click <finish> to continue.</finish>		

After adding the Device it should be set. Double click on the Device number and it will appear **Converter setting** window,

Notes

If the distance between the Server and Devices is rather long and there are routers, and automatic search doesn't work - in this case it is necessary to do the following:

Connect the new Device to the local network or to the Server directly and set the IP address as described above. Not waiting that the system will find and add the Converter, interrupt the adding procedure.

Connect the new Converter to remote network. Run adding procedure and select the

option "The module is not listed here. Enter IP address of the module directly"

AC	IP	Refresh
		Blink
		UIIIIN

Enter IP address of the Device (Module).

ditter in address of the m	nodule and click <next> to proceed.</next>
IP address	192 . 168 . 1 . 100

The server will try to communicate with the Device and add it to the system:

l new module			×
Adding new module to the system			
If this operation takes too much time	h manu madula		
than the system can't communicate wit			
You can click <cancel> to stop operati</cancel>	ion.		
			2
		Далее >	

Attention!

All Devices are delivered set to the IP address 192.168.0.254 or 192.168.0.253,

network mask 255.255.255.0.

The Devices should have different IP addresses when you add them to the system. The delivery set includes **EthernetSetup.exe** utility which makes it possible to change Device IP address and network mask. The utility doesn't require installation. Before changing the IP address connect the Device to Ethernet hub/switch, connect to it also a PC having installed network board (network board IP address should be in the Device IP address range. For example, the Device IP address is 192.168.0.254, then network board IP address can be in 192.168.0.1. 192.168.0.254 range, network mask 255.255.255.0). Then run **EthernetSetup.exe**, the program will find the Device.

MAC	IP	English
20:BF:DB:00:00:1E	192.168.0.222	
20:BF:DB:00:08:FB	192.168.0.191	Refresh
		Blink
		Ping
		Setup
		Passport
		Close

Select the device and press Setup button

MAC		IP			Engli	ish
	B:00:00:1E	192.168.0.222				
20:BF:	n.00.00.ED	100 100 0 101				× fresh
· · ·	Network parame	eters				<u>×</u>
	IP address		192 .	168 . 0	. 222	-
	Network mask	1	255	255 . 255	0	ink
	NEWOIK HIDSK	1	200 .	200 . 200	. 0	ing
Default gatewa	Default gateway		0.	0.0	. 0	
				_		etup
			OK	C	ancel	sport
					-	

The **Network parameters** window will appear, where you can change the Device IP address and network mask. The procedure of assigning IP address should be performed for all Devices before adding them to the system. Pressing **Ping** button

you can check connection between the PC and the Device. If you press **Blink** button, the selected Device will flash red LED (built in Ethernet connector) three times.

Attention!

It is not recommended to change the Device IP address after the Device has been already added to the system as it will cause connection failure. To re-establish connection it is necessary to repeat procedure of adding the Device to the system again.