

Single channel MPEG-2 / H.264

Encoder / Transcoder

User's Manual

Version: 1.0 Date: May 2013

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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 from program menu.

The Encoder is intended for real time encoding of SD/HD signal into MPEG-2 SD or H.264 SD/HD format.

The Transcoder is intended for real-time transcoding of an SD/HD program from MPEG-2 to H.264 format or vice versa and for transrating from MPEG-2 to MPEG-2.

The Encoder / Transcoder can output two independent Transport Streams (TS) which are broadcast simultaneously. 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 two TS onto any of the two ASI outputs or any of the two IP addresses.

1.2 The Encoder key features:

- Composite, HDMI, HD/SD-SDI video 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 II audio encoding.
- 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;

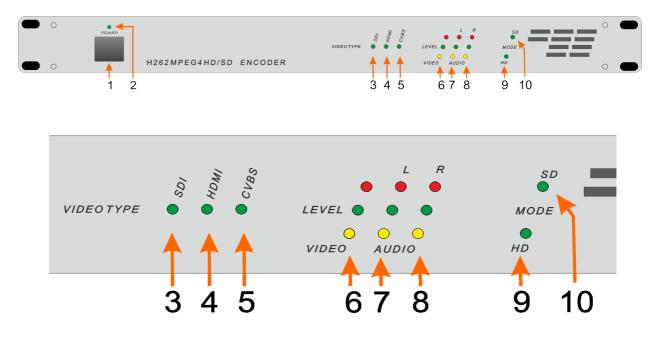
from MPEG-2 (SD/HD) to H.264 (SD/HD) format ;

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 applied to the input;
- PSI generation;
- Supports OTA, EPG, DVCrypt CAS 3000/10000/100000 subscribers;
- Input interface: DVB ASI (1);
- Output interface: DVB-ASI (2) and IP(1).

1.4 Specification

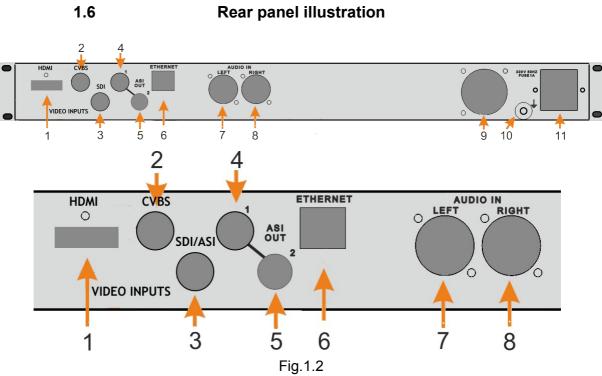
Video Input					
Analog Input:	Composite (BNC, 75Ω)				
Level:	1 Vp-р				
Digital Input:	SDI (BNC, 75Ω) or HDMI (HDMI 19pin)				
Level:	800mVp-p (SDI)				
Aspect Ratio:	4:3, 16:9				
Audio	Input				
Analog Input:	1 Stereo (2 channels, XLR)				
Freq. Range:	20Hz ~ 20KHz				
Impedance:	600 Ω/ 20ΚΩ				
Digital Input:	Embedded SDI or HDMI				
Sampling Rate:	48 KHz				
Video E	Encoder				
Encoding:	MPEG-2 HP@HL, MP@HL, MP@ML				
	MPEG-4 H.264 HP@L4, MP@L3				
Encoding Rate: 0,5~15 Mbps					
Chroma Format: 4:2:0					
Bit Rate Mode:	CBR,VBR				
Audio E	Encoder				
Encoding: MPEG-1 Layer II 64 - 320 Kbps					
Sampling Rate:	48KHz				
TS C	utput				
Transport Stream:	2 ASI				
Connector:	BNC(75Ω)				
TS Bit Rate:	0,5~14 Mbps				
Packet Format:	188 Byte				
IP TS Output and	Ethernet control				
Ethernet type:	10/100 Base-T (RJ-45)				
Format:	UDP/IP, RTP/IP				
IP Address Format:	Multicast, Unicast				
TS Bit rate:	0,5~60 Mbps				
TS Packet format:	188 Byte				
Ger	neral				
Power:	~220V+\-20%				
Power Consumption:	Max 8W				
Size:	19``, 1U 480*45*180 (mm)				
Weight:	3 Kg				



1.5 Front panel illustration

Fig.1	1.1
-------	-----

1							
	Power on/off switch						
2	Power Status Indicator	Power Status Indicator					
3	Input Signal Type Indicator: SDI	Green LED: yes					
		Red LED: no					
4	Input Signal Type Indicator: HDMI	Green LED: yes					
		Red LED: no					
5	Input Signal Type Indicator: CVBS	Green LED: yes					
		Red LED: no					
6	Video Source Status Indicator.	Green LED: signal is available					
		Red LED: no signal					
7	Audio Source Indicator: Left	Green LED: Nominal level					
		Red LED: High level					
		Yellow LED: Low level					
8	Audio Source Indicator: Right	Green LED: Nominal level					
		Red LED: High level					
		Yellow LED: Low level					
9, 10	Input Signal standard: SD or HD	Green LED: yes					



1	HDMI input
2	CVBS input
3	HD/SD-SDI or ASI input
4,5	Two ASI outputs
6	ETHERNET / IP
7	Analog audio input: Left
8	Analog audio input Right
9	Cooling FAN
10	Ground pole
11	Fused Power Inlet

2. How to Work with MPEG-2 /H.264 Encoder/Transcoder

2.1. Main part

- Prepare relevant environment for installation (See 5.1).
- Ground the device (See 5.2).
- Connect Power Cord (14. Fig.1.2).
- Connect ASI OUT to the device with ASI Input (5 or 6, Fig.1.2).
- Connect Ethernet port to PC for setting of the Encoder/Transcoder modes and parameters.(RJ45 (7), Fig.1.2).
- Switch on Power (1, Fig.1.1).
- Set Encoder/Transcoder IP Address using EthernetSetup utilite. (See 5.3).
- Launch PC DVBToolkit program.
- Add the Encoder/Transcoder to the System. The wizard will help you connect it to the system (See 5.4).
- Start DVB_Setting program from the DVBToolkit's client.(See 2.1)

2.2. Setting of the Encoder parameters

- Start DVB_Setting program from the DVB Toolkit's client3.2. (See DVBToolkit installation).
- Set the Encoder parameters you need (See 3.3 Encoder settings).
- Save the new parameters to the Encoder: Click "Set Selected Settings" button. After saving, the Encoder is ready for use.

2.3. Setting of the Trancoder parameters

- Select "Transcoder" Mode (2.3. Trancoder Settings)
- Set the Transcoder parameters you need. (See 3.4. Transcoder Settings)
- Save the new parameters to the Transcoder: Click "Parameters Settings" button. After saving, the Transcoder is ready for use.

2.4. Setting of the Output signal parameters

- Set the IP Output (See 3.5.2. IP Outputs Settings).
- Set the ASI Outputs (See 3.5.3. ASI Outputs Settings).

3. Operation

3.1 DVBSetting program

Setting of the Encoder/Transcoder parameters is done using DVB_Setting utility which is a part of the DVBToolkit program. It allows you to adjust the speed of the output TS bit rate, and change the mode of operation of the encoder, with a constant bit rate (CBR), or a variable (VBR). The output resolution and input signal format are also controlled.

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 and USB interfaces;
- Operating System: Windows XP, Windows Vista, Windows 7, Windows 8.

3. 2.2 Software installation

Run the included *DVBToolkit_Install.exe* installation file and follow the prompts.

3.2.3 Starting the Management Program

The Client Program can be launched from the Start menu. / All Programs / DVBToolkit / Client. When you launch the Client, the program will ask you to choose the connection type.

G. This computer	
 This computer 	
C Remote server	213.182.181.183
Server port	8100
	OK Cance

Fig.3.1

Select "This computer" if the program Server is installed on the same computer, or "Remote server" if it has been 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 the connection to the Server, system of administration "Login" window will appear:

admin	Администратор
operator	Оператор
engineer	Инженер
🕹 info	Информация
EPG .	Оператор телегида

Fig.3.2

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

- DVBToolkit contains several functional modules.
- Administrator is a main user of the DVBToolkit program.
- Administrator enters the program as an "Administrator" with personal password and appoints the other users.
- The Administrator also can on / off some functions of the DVBToolkit program.
- The number of users and their rights determined by the administrator.

All default passwords are empty.

Clicking the "Login" button brings you to the main window:

D/3		۵	VBTo	olkit Client - Modu	les	-	x
Main Vie							
<u>a 🔳</u>	题 🔁 🕇 🔶 🖨 🗉	- 📴 🖻 🖍 IP 🖉	- 5	0			
Module	Settings	Status	# [S	Label	PIDs [DEC]		

Fig.3.3

<u>5</u>5

3.2.4 Adding a device to the configuration program

- 1. Select *View Modules* from the menu or icon.
- 2. Click on Add new module icon

Click "Add new module" icon and the following window will appear (Fig.3.4):

Add new module
Please select connection type for new module
C RS-485
Ethemet
Choose address for new module
(leave blank to automatically choose first available address)
Replace existing module at address
Existing module should be compatible with new one and disconnected
< Back Next > Cancel

Fig.3.4.

Click "Next" and follow the wizard's prompts. You can assign new IP to the device at next step (See Chapter.5.4).

Finally, new Encoder will be added to the main window (Fig.3.5):

B DVCrypt Client	- Modules						_ # ×
Main Mew 2		ぼ 次 43 ② へ 明 10 ラ ノ 今 1					
Module	Settings	Status	#	Label	Scrambling	PIDs	Basic
No: 03 8ASI.CAS [60000] 192.168.0.212 20:8F:DB:00:00:18	Freq: 274.000 MHz DVB-C, QAM 64, SR: 6750 Keymbol/s	OK Ide	1 2 3 4	M6 Boutique la chai Demain! CCTV9 Vesti	Free-to-air Free-to-air Free-to-air Free-to-air	V. 4056, A: 4057, PCR, 4056 V. 4112, A: 4113, PCR, 4113, PCR, 4112 V. 4122, A: 4128, PCR, 4128 V. 4144, A: 4145, PCR, 4144	
<							
Ready						ad	min <mark>5</mark>
			F	-ig.3.5			

When the Encoder has been added, click 🔟 to change the settings (Fig.3.6):

Encoder settings(H.262,H.264(AVC) with	extended channel)
Restory factory settings	Set selected settings
nput signal definition Inpu © SD © HD ©	t signal type SDI OHDMI OCVBS OTest signal
	trate of general remultiplexer 7600 (kBit/
DI signal Set audio type C Analog C Digital Digital audio Set stereo pair C 1 C 2 -6	Set group © 1 0 2 0 3 0 4 0,0 ÷ +6
Recommended Codec Mpeg2 © Mp	peg4 (AVC) 🔽 Enabled extended channel
Bit rate(kBit/s) Transport stream 6000 Video stream Value 4000 2000 1000 4000 Audio stream 7 128 Audio off GOP Struct IBBP Frame interval 12 V	h.264(262) Picture size Profile Preset 720x576 ▼ Width 720 ★ Level Height Level 4.0 ▼ Aspect ratio sd 4/3 ▼ Program Elementary streams ID PCR 256 Video 4096

Fig. 3.6

3.3 Encoder Settings

The encoder has an output re-multiplexer, which allows to set the desired output bit rate of the encoder.

Mode "Test signal " allows you to turn on the pitch sound and the color bar generator.

If any of these parameters have been chosen incorrectly, the following warning appears when you click "Set selected settings" (Fig.3.7).

Encoder settings(H.262,H.264(AVC) with	extended channel	
Restory factor	y settings		et selected settings
Input signal definition		ut signal type SDI C HDMI C	CVBS C Test signal
	Out	pitrate of general remult	iplexer 7600 (kBit/s
SDI signal	Digital audio		
C Analog	Set stereo pair	Set group © 1 C 2	O 3 O 4
C Digital	-6	1	
	Encode	settings	
	Codec		
Not recommend	able parameters of en	coding	×
	ted the out values of para an cause the improper for To write down the entere	ming of build output st	
	Да	Нет	
C VB Max Avera 4000 2000		Level	Height 576
Audio stream 🎵	128 🔽 🗖 Audio off	Program	Elementary streams ID
GOP Struct IBBP	Frame interval 12 💌	Number 2048	PCR 256 Video 4096
	Closed	ID 1024	Audio 4097

Fig.3.7

If you select "Yes", then set parameters will be applied and saved, if you select "No", then the wrong selections are highlighted with red color, and when you hover the mouse on them a hint will appear (Fig.3.8).

	VC)SDI,CVBS input,ext. channels
Restory factory settings Write se	ttings only for selected channel
Frame rate © 50i © 59.94i	Out bitrate of general remultiplexer 12400 (kBit
🖸 On Channel 1	🖸 On Channel 2
	ut signal type SDI CCVBS C Test signal
SDI signal Set audio type O Analog O Digital Units Set stereo pair O 1 O 2	Set stereo group C 1 C 2 C 3 C 4
-6	0,0 ÷
Codec	t(output sig ● Mpeg4 (AVC) □ Enabled extended TS
Bit rate(kBit/s) Transport stream 4000 Video stream C VBR C CBR Max Average Min Value 4000 2000 1000 4000 Audio stream 12 128 C Audio off	h.264(262) Profile MAIN File Level Level Level 3.0 File Program Program Program Program Program Proture size Preset Vidth 720 Aspect ratio sd 4/3 File Profile Profile Proset Preset Pr
GOP Struct IBBP Frame interval 12 Closed	Number 2104 PCR 256 ID 1024 Video 4096 Audio 4097

Fig.3.8

The button "Recommended" restores the operating parameters that can be saved by pressing the "Write settings" (Fig.3.8).

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

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

3.4 Transcoder Settings

1. Select "Transcoder" mode (Fig. 3.9).

Edit module parameters		2
Channels Free-to-air 1 [0800] M6 Boutique la chai	_	Module 01 1+xTranscoder.combo.CAS [100000]
	Edit	Extra Network information settings
	EPG	EPG settings
		OTA settings
		Extra options
		Mode Transcoder 💌
		OK Cancel

Fig.3.9

2. Click OK and wait while the device switches from the "Encoder" to "Transcoder" mode. You can see the progress in the status bar of the DVBToolkit (Fig.3.10). Wait until the color of the device in the system becomes green.

No: 01 2+xTranscoder.combo.CAS [100000] 192.168.32.60 20:BF:DB:00:1A:BE	System bitrate: 53332 Kbit/s	ОК - IP выход включен	
--	------------------------------	-----------------------------	--

Fig. 3.10

3. Scan input ASI streams and take programs for transcoding:

click icon **F** In the main window toolbar (Fig.3.11)

DVBToolkit Client - Modules					-	□ ×	
Main View	Main View ?						
] 🚠 🔳 🗔 .] 🚠 📰 🐺 🎘 🕂 🚸 🖨 🛶 📴 🕼 ∧ 📭 🖉 🚭 🚺						
Module Set	tings	Status	# [S	Label	PIDs [DEC]		

Fig. 3.11

The Multiplexer Window appears (Fig. 3.12):

nput streams(ASI) remultiplexor v3.00.07(2)	_0
ngs Search service information on input streams Remultiplexing Previous remultiplexing Appreciate of bitrate in working stream	
×	
System adress 1 Type of device Transcoder	
Параметры сканирования ASI inputs initiated	
Begin search	
stem adress 1 Type of device Transcoder The signal detected	

Fig. 3.12

Click "Begin search" to start the scanning process. When the scan is complete, the message appears (Fig. 3.13):

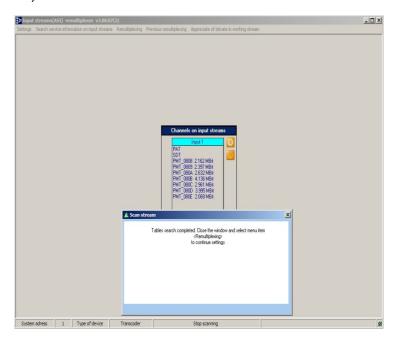
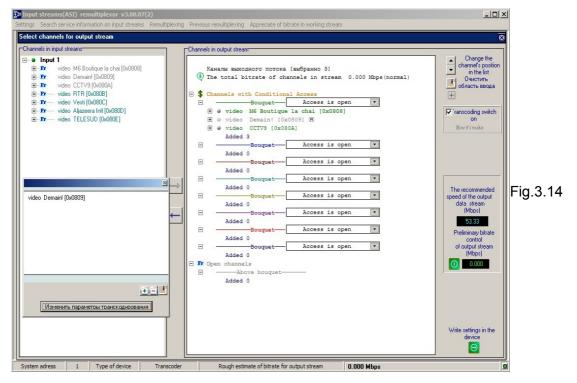


Fig. 3.13

When the scan is complete:

- Select input programs that you wish to add to the output stream and drag them with mouse to the right window (Fig. 3.14).
- Select a program for transcoding in the right window.
- Switch on "Transcoding".



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

Processory Set parameters of input groupers Bit de 2.38 Mpc provide LANARD March 2.38 Mpc provide LANARD De de 100 De 2000 DE	Fig.3.15
---	----------

In this window you can:

- select the output format : MPEG2 or MPEG4;
- switch on an additional stream;
- switch off the program from output stream.

Having made the required changes, click "OK" and the previous window will return(Fig. 3.14) Next Step: Measure the bit rate of the selected stream and compare it with a valid value. If it is valid, click "Write settings in the device" and move on to the next window.

Output stream(ASI) utput stream 0x0070		
-Channels in stream-	Channel number 0x0800	
M6 Boutique la chai	-Audio(maintenance)	Dynamics of bitrate tracking in output stream 🧿
	No extra lang for audio maintenance	Limit of speed 53.33 Mbit
C Demain!		Maximum bitrate was fixed
	PID	
C CCTV9	PCR 0x1000 h	Delete channel in output stream if bitrate out of
	Video 0x1000 h Audio 0x1001 h	
C Tc(M)+Demain!		Return to remultiplexing
		Feturi to remanpiezing
	Video 0x0600 h	
C Tc(Ex)*Demain!	Audio 0x0601 h	Write service information in output stream

Fig.3.16

Click the "Write service information in output stream." Wait until the completion of the process.

Transcoding with 2 output streams is possible only when output is set as H.264.

3.5. Outputs.

The Encoder/Transcoder has 2 IP outputs. IP output may be used for monitoring or IP broadcast. It is possible to output the multiplex. In this case, the main IP output carries the multiplexed TS.

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

1. Channel 1

2. Channel 1 +

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 +

3.5.1 Recommendations.

The maximum bit rate can not exceed 15 Mbit/s.

CBR Mode.

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- transport stream.

TV- video stream. TA- audio stream.

VBR Mode.

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

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

HD Mode:	
1920x1080 50i	1920x1080 60/59, 94i
1440x1080 50i	1440x1080 60/59, 94i
960x1080 50i	960x1080 60/59, 94i
720x1080 50i	720x1080 60/59, 94i

SD Mode:	
720x576 50i	720x480 60/59, 94i
704x576 50i	704x480 60/59, 94i

3.5.2 IP Outputs Settings

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

IP output configuration window appears Fig.3.17.

TV C	ontrol		>
P out	puts		
#	Destination	Status	
1 2	192.168.32.33:1234 192.168.32.53:1236		Configure
	•	IP Output Control	Start
		Source Multiplexed	Stop
		Destination Multiplexed Channel 1 Channel 1+	Start all
		IP 192 Channel 1+ Port 123+************************************	Stop all
^{>} inp	uts	Protocol RTP	
#	Port	No stuffings	Configure
		Start Stop	Start
			Stop
			Start all
			Stop all

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:

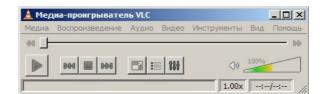
- 1. Output is disabled.
- 2. The output is commutated to channel 1.
- 3. The output is commutated to channel 2.
- 4. The output delivers two multiplexed channels.

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.

When the required parameters are selected, 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	? ×
🗀 Файл 💿 Диск 📲 Сеть 🏾 🥵 Устройство захвата	
Сетевой протокол	
Протокол Адрес	Порт
UDP 192.168.0.32	1234 🛨
—————————————————————————————————————	
Воспроизве	отмена

3.5.3 ASI Outputs Settings

Freq: 674.000 MHz DVB-C, QAM 32, SR: 6875 Ksymbol Edit module parameters	OK /s Idle			×
Channels All channels 1 [0838] P8.1 2 [083A] P8.2		Edit	Module Module Extra ASI1 output ASI2 output Mode	08 2+H.264.HD/ASI.combo Network information settings Multiplexed Multiplexed Channel 1 Channel 2 Multiplexed
	IP output active		2 [1009] - 3 [100A] 4 [1008] 5 [1000]	OK Cancel CCTV9 R1R Tc(M)+Demain1 Tc(EX)-Demain1
System bitrate: 12400 Kbit/s	OK Idle		1 [0838]	P8.1

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.Appendix

5.1 Environment Requirement

- Operating Temperature 5~40, 0~45°C (short time), air-conditioning is recommended.
- Device power, air-conditioning power and lighting power are independent of each other. Device power requires AC power 220V 50Hz. Please carefully check before use.
- 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 is the most important guarantee against electric discharge and interference.
- Coaxial cable's outer conductor and isolation layer must ensure proper electric conductivity 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 of 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

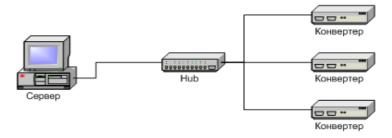
The server computer must be equipped with network adapter with installed TCP/IP. Network adapter properties:

Local Area Connection Properties
General Authentication Advanced
Connect using:
Intel 21140-Based PCI Fast Ethernet
This connection uses the following items:
🗆 📮 QoS Packet Scheduler 📃 🔺
🗹 🐨 Network Monitor Driver
🗹 🐨 Internet Protocol (TCP/IP)
Install Uninstall Properties
Description
Transmission Control Protocol/Internet Protocol. The default wide area network protocol that provides communication across diverse interconnected networks.
✓ Show icon in notification area when connected ✓ Notify me when this connection has limited or no connectivity
Cancel

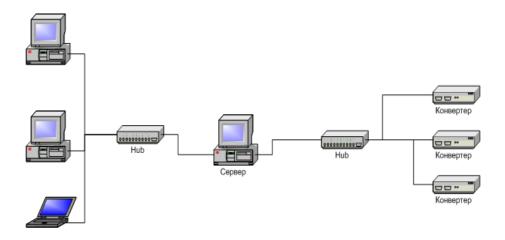
The computer IP address must be assigned statically. As example IP address is 192.168.1.3 (shown at the Figure below).

Internet Protocol (TCP/IP) Properties
General
You can get IP settings assigned automatically if your network supports this capability. Otherwise, you need to ask your network administrator for the appropriate IP settings.
C Obtain an IP address automatically
O Use the following IP address:
IP address: 192.168.1.3
Subnet mask: 255 . 255 . 0
Default gateway:
C Obtain DNS server address automatically
Use the following DNS server addresses:
Preferred DNS server:
Alternate DNS server:
Advanced
OK Cancel

Connection scheme is shown below:



The server is connected to a standard Ethernet hub/switch. The Device is connected to the Ethernet hub/switch. 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:

Settings	<u><</u>
About DVCrypt	Server settings Server port 8100
Ce) 2003 - 2010, DVL	Module interface
License	Ethernet
Licensed to DVLab (0001, 0B00)	Bind to network adapter
Subscribers 100000	192.168.0.32
DVB settings	SMS notifications
Cyrillic encoding ETSI EN 300 468	Enable Setup
Integration	Debug
	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.

Settings	×
About DVCrypt Server ver. 2.4 [Apr 14 2010] (c) 2003 - 2010, DVL	Server settings Server port 8100 Module interface RS-485 COM3
License Licensed to DVLab (0001, 0800) Subscribers 100000 DVB settings Cyrillic encoding ETSLEN 300 468	Ethernet Bind to network adapter 192 . 168 . 0 . 32 SMS notifications Enable Setup
Integration Integration mode Interface language	Debug Enable debug logging Keep debug information (days) 7 Send problem report
Language English	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**

d new module		
Please select connection type for ne	w module	
C RS-485		
C Ethernet		
Choose address for new module	_	
(leave blank to automatically choose	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.

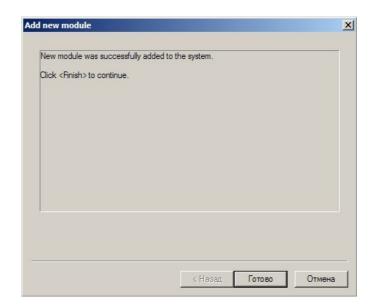
MAC	IP	_
20:BF:DB:00:00:2A	192.168.0.207	Refresh
		Blink

Next step is entering IP address of selected Device.

The server will set the IP address

IP address	192 . 168 . 0 . 207
Network mask	255 . 255 . 255 . 0
Default gateway	0.0.0.0

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 sub-networks 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.



When the Device is added, it should be set. Double click on the Device number and it will appear **Converter setting** window.

Notes

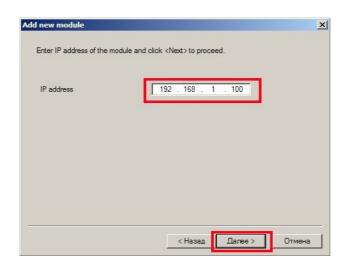
If the distance between the Server and Devices is rather long and there are routers, and automatic search doesn't work - in this case it is necessary to do the following:

Connect the new Device to the local network or to the Server directly and set the IP address as described below.

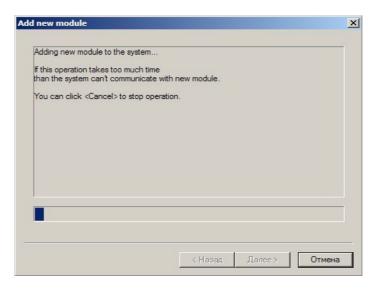
Connect the new Converter to remote network. Run adding procedure and select the option "The module is not listed here. Enter IP address of the module directly"

/AC	IP	Refresh
		Blink

Enter IP address of the Device (Module).



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



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.

Ethernet Setup		2
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

1AC	IP				Engli	sh
20:BF:DB:00:00:1E	192.168.0.222					
20:BF:00:00.00.cp Network paran	102.100.0.101 neters					× fresh
IP address		192 .	168 .	0.	222	
Network mask		255 .	255 .	255 .	0	_ ink
Default gatewa	iy	0.	0.	0.	0	ing
						etup
		OK		Can		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.