Scientific Production Company

# SPETS-TV

PRODUCT CATALOG

Your ideas - our solutions!

# CONTENT

AUDIO RECEIVER DTN-1FM....3
EIGHT-CHANNEL TUNER DST-3R....4
EIGHT-CHANNEL TUNER DST-2USW....5
DESCRAMBLING TUNER DTN-1K....6
DESCRAMBLING TUNER DTN-1KE....7
QAM MODULATOR QTX-2X....8
CONVERTER/STREAMER 6xASI - IP IPS-01....9
CONVERTER/STREAMER IP - 6xASI IPR-01....10
CONVERTER/STREAMER IP - ASI IPG-01....11
MULTICHANNEL DESCRAMBLER DMX-1....12
MULTI-PROGRAM MPEG DECODER DMX-2....13
SCRAMBLER - CONTROLLER SCR-1....14
CONDITIONAL ACCESS SYSTEM STV-CRYPT....15
STV EPG SERVER....16

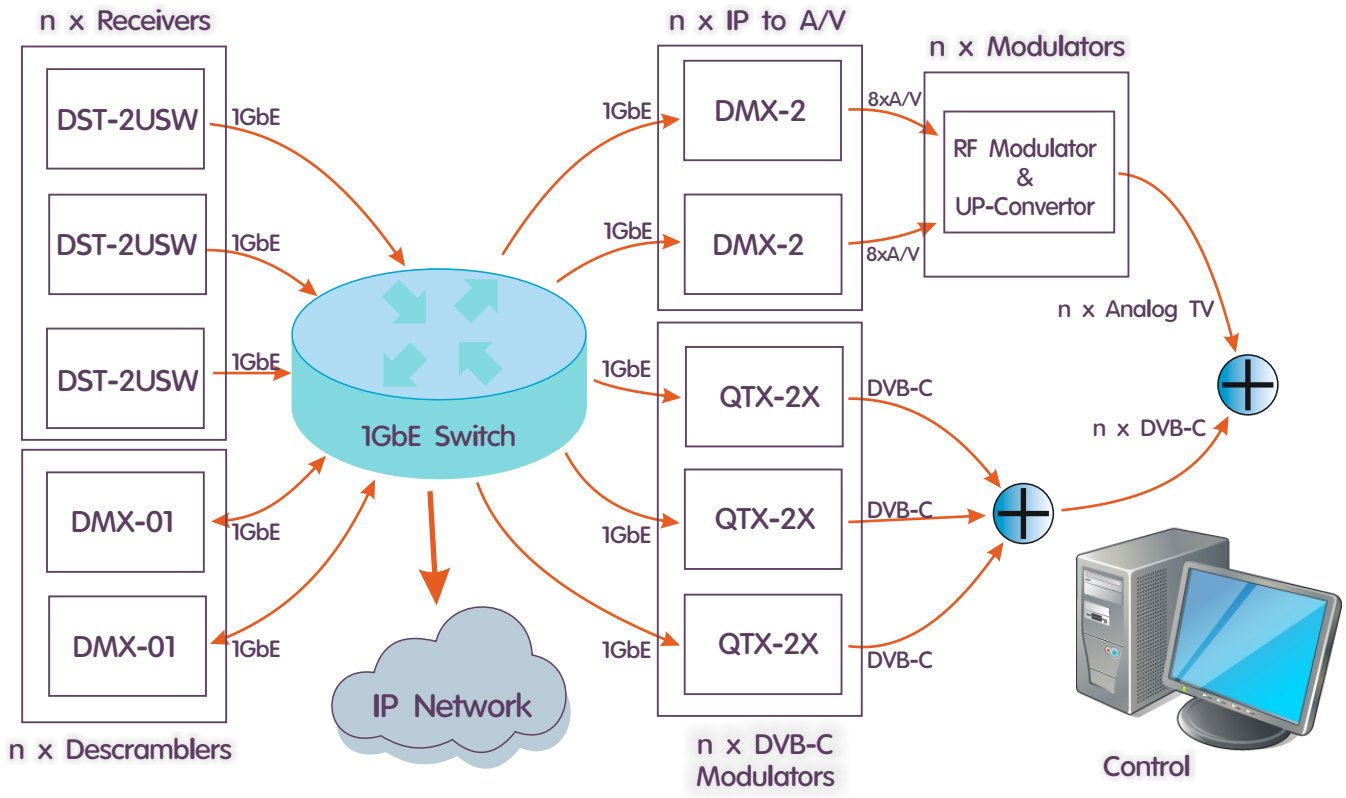
# EQUIPMENT FOR ORGANIZATION DIGITAL BROADCASTING

SPETS-TV equipment has block structure making it easy to arrange configuration of the head station required by a customer and, if necessary, easily change it. Our equipment supports ASI and ETHERNET standards that allows using our system devices with equipment by another vendors. We provide our clients high-quality hardware and software solutions and their support. All devices have standard 1U enclosures for installation in a 19" rack.

**Equipment:**

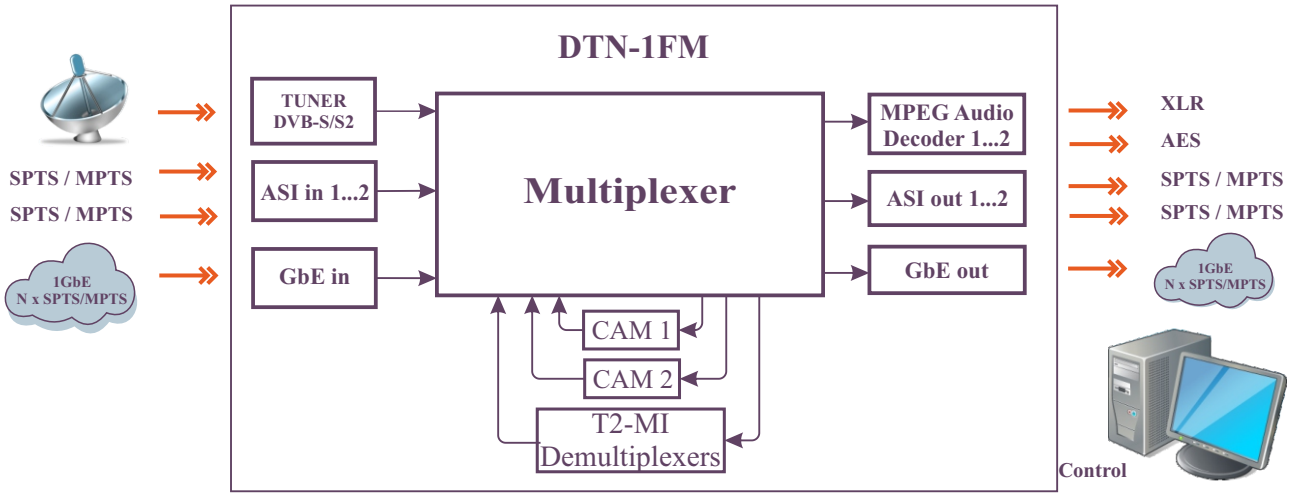
- Audio receiver DTN-1FM
- Eight-channel tuner DST-3R / DST-2USW
- Descrambling tuner DTN-1K / DTN-1KE
- QAM modulator QTX-2X
- Converter / streamer 6xASI - IP IPS-01
- Converter / streamer IP - 6xASI IPR-01
- Converter / streamer IP - ASI IPG-01
- Multichannel descrambler DMX-1
- Multi-program MPEG decoder DMX-2
- Scrambler-controller SCR-1
- Conditional access system STV-Crypt
- STV EPG Server

## An example of building broadcasting system:



# AUDIO RECEIVER


DTN-1FM is a digital satellite receiver designed to work on broadcast FM radio stations. DTR-1FM tuner descrambler is designed to receive 1transponder in DVB-S/S2 format, descramble it using standard decoder plug-in modules (CAM), multiplex and transfer selected services to output transport interfaces. The receiver is equipped with two high-quality analog stereo audio outputs (XLR) and two digital audio outputs (AES / EBU) for connecting to FM transmitters. The presence of TS input interfaces allows multiplexing of streams from external sources. Demultiplexing T2-MI streams is optional. Monitoring the operation and control of the DTN-1FM can be carried out remotely via 100 Mbit Ethernet (WEB interface). Support for Simple Network Management Protocol (SNMP) allows to control current state of the device.

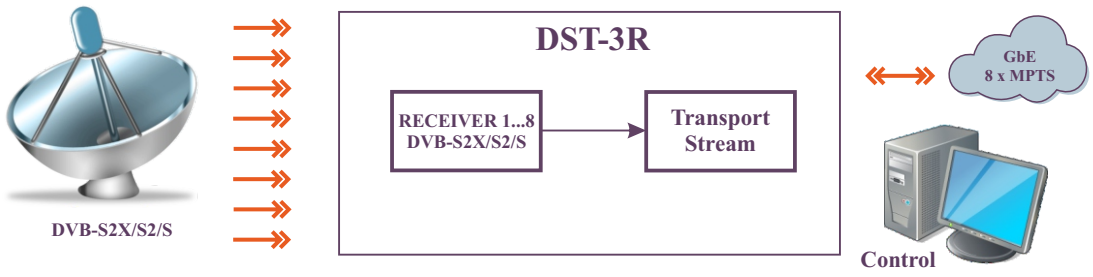



| SPECIFICATIONS | |
|---|---|
| Input Interfaces | 1xGbE / 2xASI |
| Output Interfaces | 1xGbE / 2xASI |
| Number of channels DVB-S/S2 | 1 |
| Character Speed Range | 1-45 MS/s |
| Number of services | ≤ 48 |
| Number of CI slots | 2 |
| GbE protocol | DVB over UDP, Multicast |
| Management and control | WEB-interface, SNMP |
| Power supply | 100-240 V AC, 50/60 Hz, <40 W |
| Dimensions | 19", 1U |

# DST-3R

# MULTICHANNEL RECEIVER

A low-cost eight-channel tuner is designed to receive 8 DVB-S2X/S2/S independent RF signals and transmit multi-program transport stream (8 x MPTS) to IP Gigabit Ethernet (GbE) network. Each received streams has unique IP address/port. Optionally the multiplexer could be embedded in the device. Total output bitrate of GbE can be up to 615 Mbit/s. Managed and Controlled by embedded WEB server. Standard web browsers (Chrome, Mozilla etc.) are supported. Management Protocol (SNMP v.2) supported. All changes and settings are saved in non-volatile memory of the device.

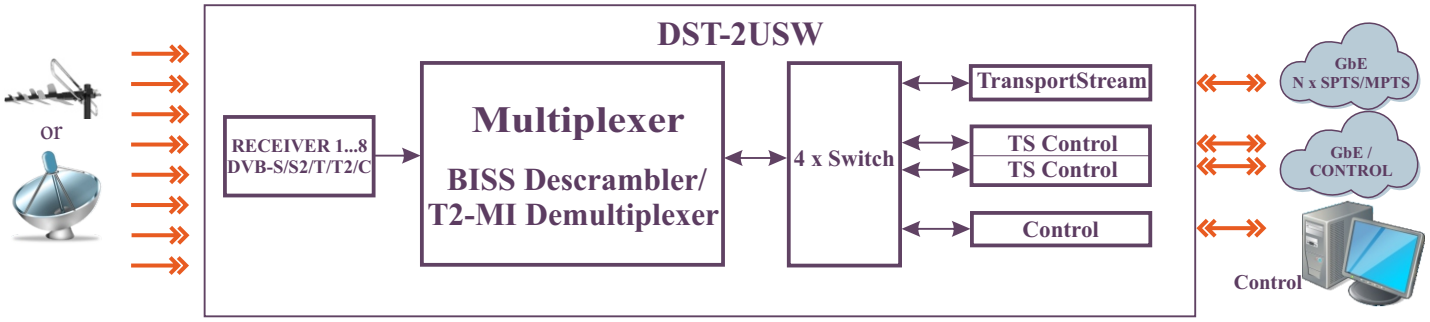



| SPECIFICATIONS | |
|---|---|
| Number of tuners DVB-S2X/S2/S | 8 |
| Frequency range | 950-2150 MHz |
| Modulation type | QPSK, 8PSK, 16PSK, 32PSK |
| Input signal | -65...-25 dB/mkV |
| Character Speed Range | 1-45 MS/s |
| Number of threads MPTS | < 8 |
| Transmission speed | < 615 Mbps |
| Protocol | DVB over UDP, UDP/RTP |
| Broadcasting mode | MULTICAST |
| Number of DVB packets in 1 IP | < 7 |
| Management and control | 10/100 BASE-TX, protocol HTTP/WEB-interface, IGMP v.2, SNMP |
| Power supply | 100-240 V AC, 50/60 Hz, <40 W |
| Dimensions | 19", 1U |

# EIGHT-CHANNEL TUNER

DST-2USW

An eight-channel tuner with a built-in multi-channel BISS decoder (optional T2MI demultiplexer) is designed to receive 8 DVB-S2/S/T2/T/C signals, decode them using the built-in multi-channel decoder of the BISS system and transmit single program / multiprogram (SPTS/MPTS) traffic flows to IP Gigabit Ethernet (GbE) line. It can also be used to organize IPTV services in IP networks - so that allows generating up to 127 single program transport streams (SPTS), the total output bitrate of which can reach 615 Mbit/s. Management and configuration, selection of programs intended for transmission to the IP network, as well as setting the parameters of the output IP packages are made using a WEB browser. All changes and settings are saved in non-volatile memory of the device.



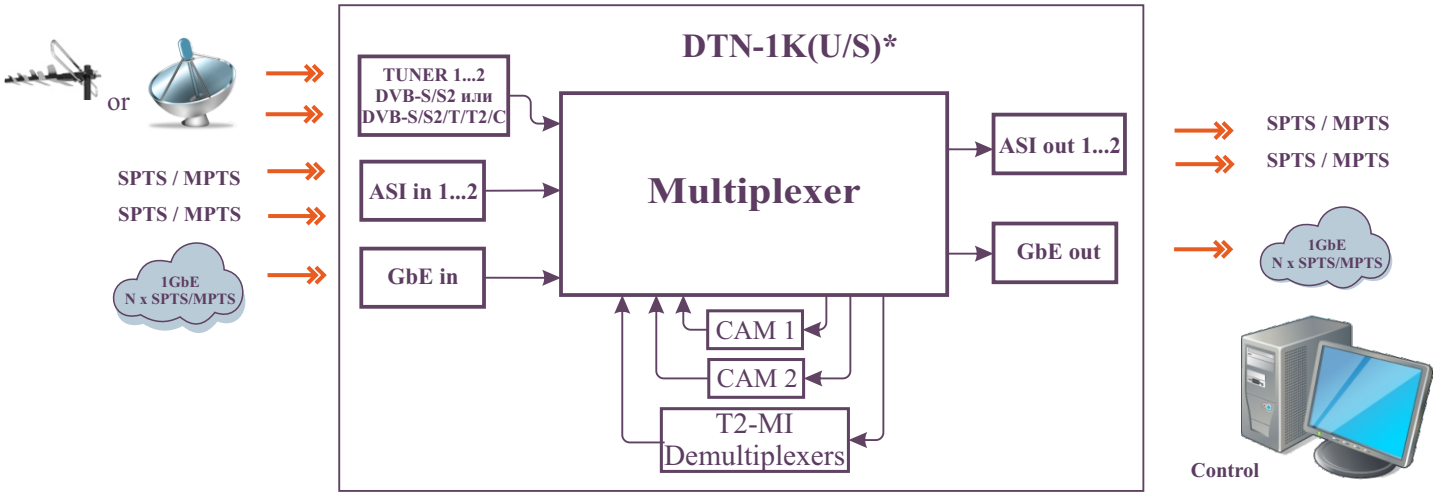

| SPECIFICATIONS | |
|---|---|
| Number of tuners DVB-S/S2/T/T2/C | 8 |
| Frequency range | 950-2150 MHz (DVB-S/S2)<br>44-1002 MHz (DVB-T/T2/C) |
| Modulation type | QPSK, 8PSK (DVB-S/S2)<br>QPSK, 16 QAM...256 QAM (DVB-T/T2/C) |
| Input signal | -65...-25 dB/mkV |
| Character Speed Range | 1-45 MS/s (DVB-S/S2)<br>0.2-7.2 MS/s (DVB-T/T2/C) |
| Number of threads SPTS/MPTS | < 127 / < 8 |
| Transmission speed | < 615 Mbps |
| Protocol | DVB over UDP, UDP/RTP |
| Broadcasting mode | MULTICAST |
| Number of DVB packets in 1 IP | < 7 |
| BISS descrambler | + |
| T2-MI demultiplexer | Optionally |
| Management and control | 10/100 BASE-TX, protocol HTTP/WEB-interface, IGMP v.2, SNMP |
| Power supply | 100-240 V AC, 50/60 Hz, <40 W |
| Dimensions | 19", 1U |

# DTN-1K

# DESCRAMBLING TUNER


DTR-1K descrambler tuner is designed to receive up to 2 transponders in DVB-S/S2/T/T2/C format, descramble them using standard decoder plug-in modules (CAM), multiplex them and transfer selected services to output transport interfaces. The presence of TS input interfaces allows multiplexing of streams from external sources.

Demultiplexing T2-MI streams is optional. Monitoring the operation and control of the DTN-1K can be carried out remotely via 100 Mbit Ethernet (WEB interface). Support for Simple Network Management Protocol (SNMP) allows to control current state of the device.

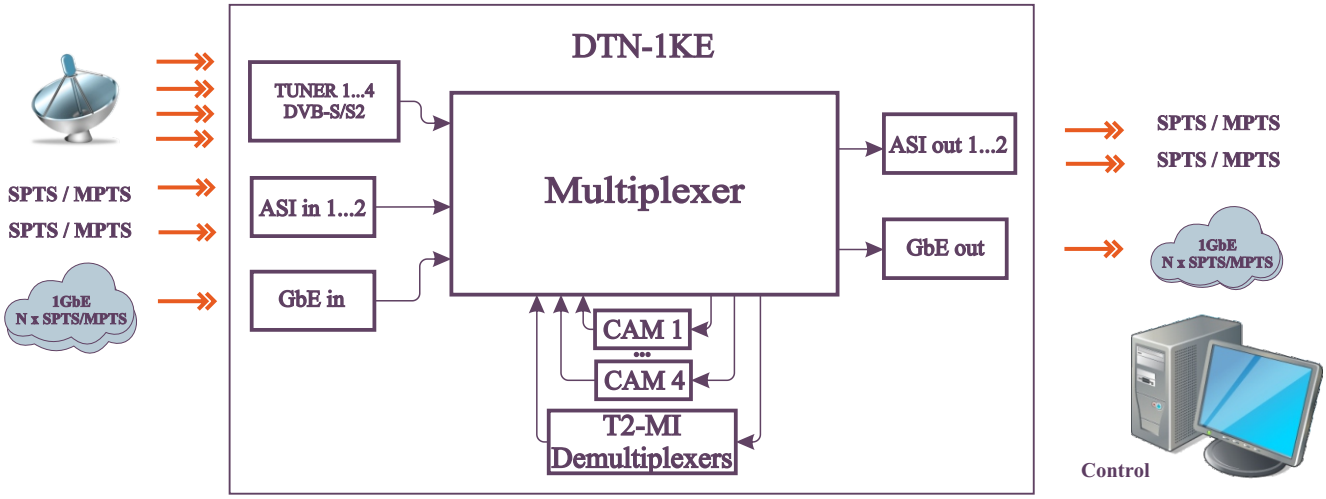



*** model U - TUNER 1...2 DVB-S/S2/T/T2/C**
**model S - TUNER 1...2 DVB-S/S2 supports MULTISTREAM**

| SPECIFICATIONS | |
|---|---|
| Input Interfaces | 1xGbE / 2xASI |
| Output Interfaces | 1xGbE / 2xASI |
| Number of channels DVB-S/S2/T/T2/C | 2 |
| Character Speed Range | 1-45 MS/s |
| Number of TV services | ≤ 48 |
| Number of CI slots | 2 |
| GbE protocol | DVB over UDP, Multicast |
| Management and control | WEB-interface, SNMP |
| Power supply | 100-240 V AC, 50/60 Hz, <40 W |
| Dimensions | 19", 1U |

# DESCRAMBLING TUNER


Descrambling tuner DTN-1KE is designed to receive up to 4 transponders in DVB-S/S2 format (including Multistream), descramble them using standard replaceable decoder modules (CAM), multiplex them and transfer selected services to output transport interfaces. The presence of TS input interfaces allows multiplexing of streams from external sources. Demultiplexing T2-MI streams is optional. Monitoring the operation and control of the DTN-1KE can be carried out remotely via 100 Mbit Ethernet (WEB interface). Support for Simple Network Management Protocol (SNMP) allows you to control the current state of the device.



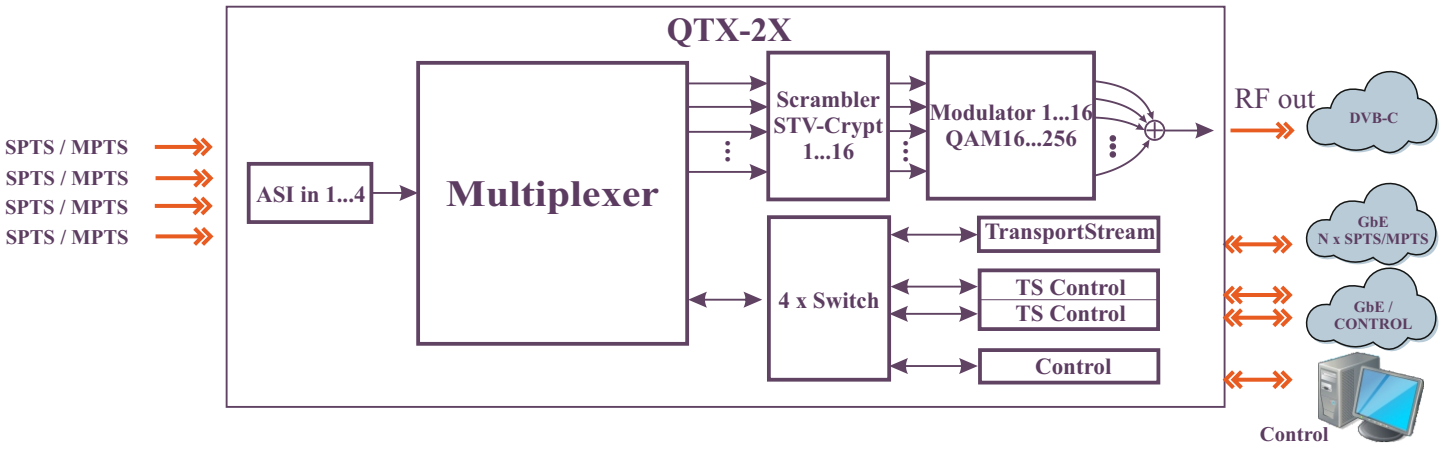

| SPECIFICATIONS | |
|---|---|
| Input Interfaces | 1xGbE / 2xASI |
| Output Interfaces | 1xGbE / 2xASI |
| Number of channels DVB-S/S2 | 4 |
| Character Speed Range | 1-45 MS/s |
| Multistream Reception | + |
| Number of TV services | ≤ 48 |
| Number of CI slots | 4 |
| GbE protocol | DVB over UDP, Multicast |
| Management and control | WEB-interface, SNMP |
| Power supply | 100-240 V AC, 50/60 Hz, <50 W |
| Dimensions | 19", 1U |

# QTX-2X

# QAM MODULATOR


The QTX-2X device is designed to form 16 transport streams in DVB-C format, transfer them to the frequencies of selected TV channels and transmission to the cable TV network. The device can include up to 16 scramblers of the STV-Crypt conditional access system, to complete the SCR-1 (Scrambler Controller) device a paid access system for watching television programs on cable TV networks.

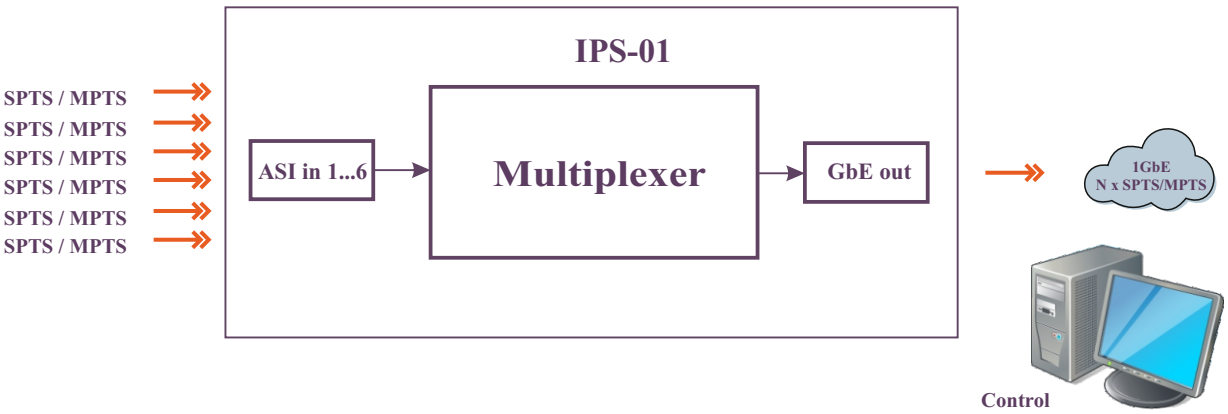
The presence of a built-in multiplexer allows to transfer programs from any of the inputs of the transport stream (4xASI, 2xGbE) to any output (16xQAM(16-256),2xGbE). Management and configuration is performed via 100Mbit Ethernet (WEB-browser). Support for Simple Network Management Protocol (SNMP) allows to control the current state of the device.




| SPECIFICATIONS | QTX-2 | QTX-2X |
|---|---|---|
| Number of input interfaces ASI/IP | 4 (BNC, 75 Ом) / 1xGbE | 4 (BNC, 75 Ом) / 2xGbE |
| IP reception protocol | DVB over UDP/RTP | |
| Number of QAM channels | 8 | 16 |
| Modulation Type | QAM16-QAM256 | |
| Character Speed Range | 5-7MS/s | |
| MER | >46 dB | |
| Working frequency range | 47-1000 MHz | |
| Output level | 75-105 dB/mkV | |
| Suppression of out-of-band emissions | 60 dB (channel to channel) | |
| PID filtering | + | |
| PID remapping | + | |
| Management and control | 100 BASE-TX, protocol HTTP/WEB-interface, SNMP | |
| Power supply | 100-240 V AC, 50/60 Hz, <40 W | |
| Dimensions | 19", 1U | |

# CONVERTER / STREAMER 6xASI - IP


The IPS-01 device is a high-performance IP streamer designed to organize IPTV services over IP networks. IPS-01 allows to generate up to 128 MPEG streams (SD, HD, MPEG-4, MPTS), the total bit rate of it reaches 615 Mbps (in 1000 Base-T mode). ASI input transport interfaces allow to receive streams from six sources, the bitrate of which can reach 216 Mbps. The selection of programs intended for transmission to the IP network, as well as setting the parameters of output IP packages (such as the IP address of the program, UDP/RTP protocol, the number of DVB packages in one IP, etc.) is made using a WEB browser. All changes and settings are remembered in the device. The display of the current output parameters is carried out in digital and graphical form on the WEB-page of the device.Support for SNMP v.2 protocol, as well as LED indicators on the front panel, allow to organize control of the current state of the device, input and output interfaces.

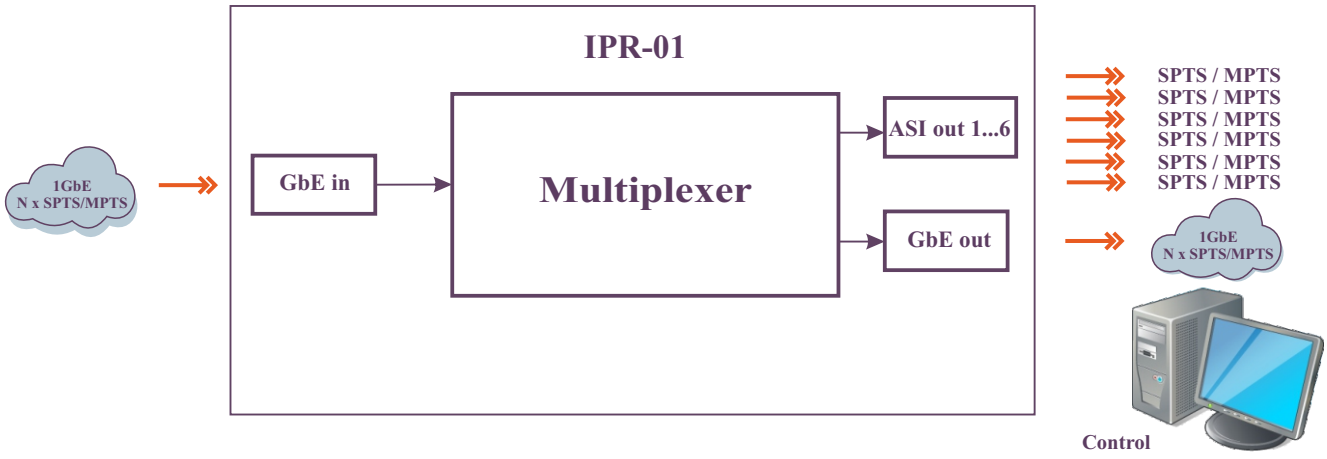



| SPECIFICATIONS | |
|---|---|
| The number of input interfaces ASI | 6 (BNC, 75 Om) |
| ASI input speed range | < 216 Mbps |
| Output interface | 100 BASE-TX/1000 BASE-T (IEEE 802.3) |
| Number of threads SPTS/MPTS | < 127 / < 6 |
| Transmission speed | < 615 Mbps |
| GbE protocol | DVB over UDP |
| Broadcasting mode | MULTICAST |
| PID filtering | + |
| Ethernet - MTU | < 1500 byte |
| Management and control | protocol HTTP/WEB-interface, SNMP |
| Power supply | 100-240 V AC, 50/60 Hz, <40 W |
| Dimensions | 19", 1U |

# IPR-01

# CONVERTER / STREAMER IP - 6xASI

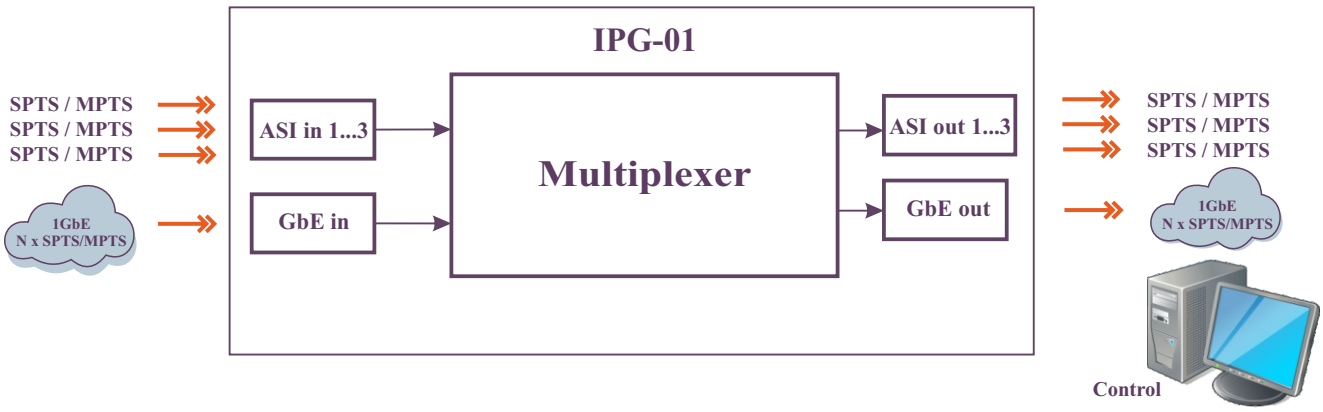

A multi-channel IP-receiver IPR-01 is designed to receive MPTS/SPTS streams from an IP network, decapsulate DVB packets, and transmit streams to ASI/IP outputs. The built-in multiplexer allow to flexible form up to 128 MPEG output streams (SD, HD, UHD, MPEG-2, MPEG-4) and route them to the specified transport interface (6xASI, GbE). Output transport streams can be either single-program (SPTS) - for transmission to subscribers, or multiprogram (MPTS) - for transmission to other nodes of the head station. The device also has a function of “forwarding” the transport stream from the selected input to the specified output without any changes. Setting, management and display of the current state is done using the WEB-interface. SNMP v.2 protocol is supported. Parameters of output streams (PID, SID, program name, provider name) can be assigned both in manual and automatic mode. For the convenience of monitoring the parameters, there are indicators on the front panel showing the current state of the outputinterfaces and device status.




| SPECIFICATIONS | |
|---|---|
| Transport input interface | 1xGbE |
| Input Speed Range | < 615 Mbps |
| Number of SPTS/MPTS streams | < 127 / <6 |
| Transport output interface | 6xASI, 1xGbE |
| Maximum total streaming rate 1GbE IP | < 615 Mbps |
| Transmission/Reception Protocol 1GbE IP | DVB over UDP/RTP |
| Broadcasting mode | MULTICAST |
| Management and control | protocol HTTP/WEB-interface, SNMP |
| Power supply | 5 W |
| Dimensions | 19", 1U |

# CONVERTER / STREAMER IP - ASI


The IPG-01 device is a high-performance multiplexer/ converter for GbE / 3xASI transport streams into GbE / 3xASI output streams. The built-in multiplexer allows to flexibly form up to 128 MPEG output streams (SD, HD, MPEG-2, MPEG-4) and route them to the specified transport interface (3xASI, GbE). Output Transport streams can be either single-program (SPTS) - for transmission to subscribers, or multi-program (MPTS) - for transmission to other nodes of the head station. The device also has a function of “forwarding” the transport stream from the selected input to the specified output without any changes. Setting, management and display of the current state is done using the WEB-interface. SNMP v.2 protocol is supported. Parameters of output streams (PID, SID, program name, provider name) can be assigned both in manual and automatic mode. For the convenience of monitoring the parameters, there are indicators on the front panel showing the current state of the output interfaces and the state of the device.

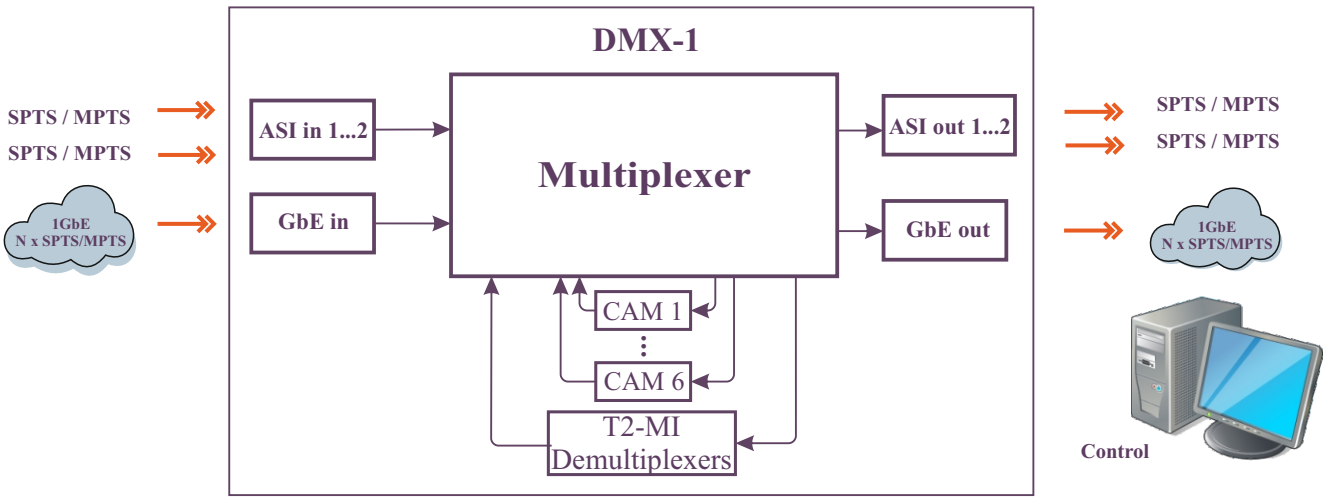



| SPECIFICATIONS | |
|---|---|
| Input Interfaces | 1xGbE / 3xASI |
| Output Interfaces | 1xGbE / 3xASI |
| Input Speed Range | < 615 Mbps |
| Number of SPTS/MPTS streams | < 127 / < 6 |
| Maximum total streaming rate 1 GbE IP | < 615 Mbps |
| GbE protocol | DVB over UDP/RTP, Multicast |
| Management and control | WEB-interface, SNMP v.2 |
| Power supply | 100-240 V AC, 50/60 Hz, 5 W |
| Dimensions | 19", 1U |

# DMX-1

# MULTICHANNEL DESCRAMBLER

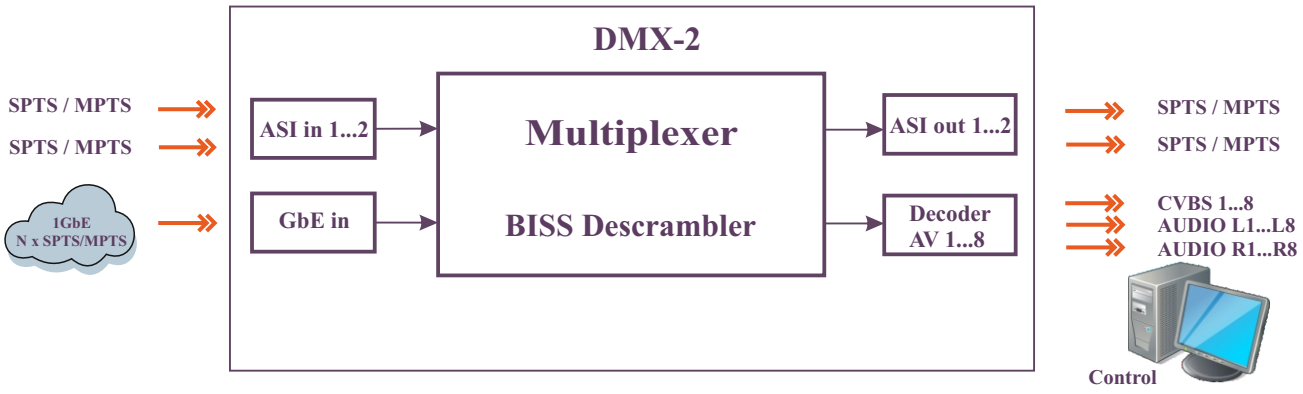

DMX-1 multichannel descrambler designed to descramble digital television programs using standard plug-in decoder modules (CAM). For input and output of DVB transport streams, the DMX-1 is equipped with a 1Gb Ethernet interface and two inputs and two DVB ASI outputs. The DMX-1 is equipped with seats for 6 decoder modules (CAM). Any of the input transport streams to the DMX-1 can be sent through one or more CAMs to descramble selected programs. Management and control of the DMX-1 operation is carried out remotely via 100 Mbit Ethernet (WEB control). Support for Simple Network Management Protocol (SNMP), as well as LED indicators on the front panel, allows to organize monitoring of the current state of the device.




| SPECIFICATIONS | |
|---|---|
| Number of CAM seats | 6 |
| Number of decoded programs | ≤ 48 |
| Input/output IP 1000 Base-T (IEEE-802.3) | 1 RJ-45 |
| Input DVB ASI | 2 |
| Output DVB ASI | 2 |
| Management and control | 10/100 BASE-TX, protocol HTTP/WEB-interface, SNMP |
| Power supply | 100-240 V AC, 50/60 Hz, <50 W |
| Dimensions | 19", 1U |

# MULTI-PROGRAM MPEG DECODER

The eight-channel DMX-2 decoder converter is designed to receive a transport stream over one of the digital interfaces (ASI or 1Gb Ethernet), and decode up to 8 selected programs into an analog CVBS signal for further forwarding to transmitter. The device has 2 ASI receivers and one 1Gb Ethernet receiver, as well as 2 ASI outputs. The input multiplexer selects the required programs and transmits them to MPEG-2, MPEG-4, H.264 decoders. The zoom function realizes the conversion from HD or SD resolution to the format of a standard TV signal. Output signal formats are PAL, SECAM. Also, device has a multiplexer that allows to redirect programs from any input to any output. Optionally, it is possible to demultiplex T2-MI streams. A 100 Mbit Ethernet interface is used to control the device. All settings are saved in the device memory. For online monitoring of the current state of the device, there is a set of indicator lights.




| SPECIFICATIONS | |
|---|---|
| The number of input interfaces ASI | 2 |
| The number of output interfaces ASI | 2 |
| Number of inputs 1 Gb Ethernet | 1 |
| Number of CVBS Outputs | 8 |
| Number of audio outputs | 8x2 |
| Control input 100 Mbit Ethernet | 1 |
| Maximum number of SPTS / MPTS streams | 127/8 |
| Maximum input rate | < 615 Mbps |
| GbE protocol | UDP, MULTICAST |
| ASI Maximum Transport Rate | < 216 Mbps |
| Supported Video Decoding Formats | MPEG-2, MPEG-4, H.264 |
| Supported Audio Decoding Formats | MPEG-1, MPEG-2 |
| Presence of scaling | + |
| Video Formats | PAL, SECAM CCIR (SECAM III), NTSC 50/60 Hz |
| The possibility of issuing teletext | + (PAL) |
| Dimensions | 19", 1U |

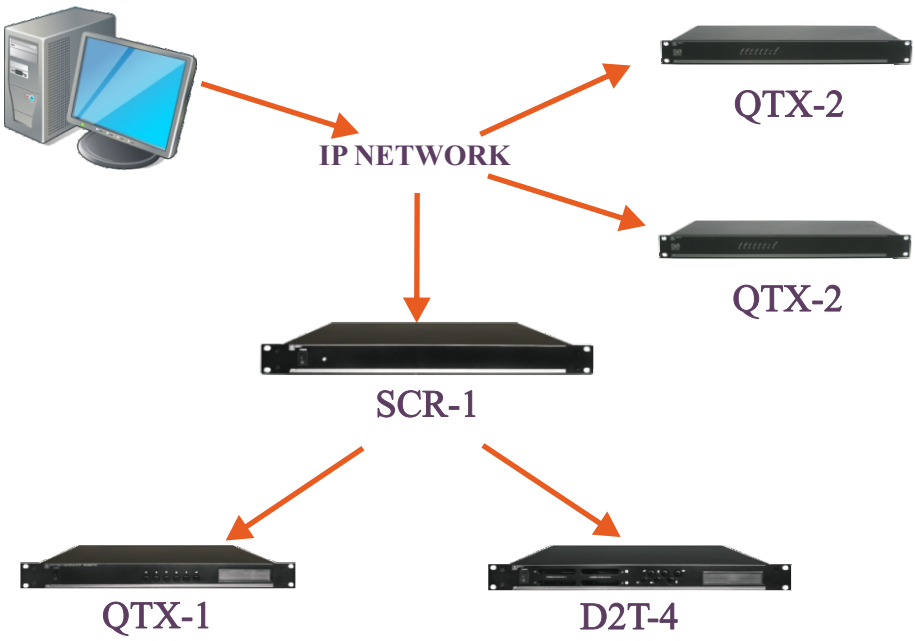
# SCR-1

# SCRAMBLER - CONTROLLER


The SCR-1 (Scrambler Controller) device is intended for organizing a system of paid access to watching television programs transmitted in digital format. It uses a cyclic transfer of service information to network subscribers using DVB-C digital transmitting devices (QTX-2), as well as storing the STV-Crypt conditional access system subscribers database. The package includes a subscriber accounting program that runs on a PC running Windows XP. After transferring the data to the SCR-1 controller, the PC can be disabled. It is possible to use an external manufacturer subscriber accounting program.

**FEATURES:**

- number of served subscribers - up to 500000;
- number of digital trunks of the system - up to 62;
- number of programs in the trunk - up to 15;
- display of the current balance at the subscriber;
- high degree of protection against hacking due to fast coding key changes;
- the ability to update software subscriber decoders, up to full change of software decoders at the subscriber during the broadcast.




**Usage Scheme for Coding Management System**

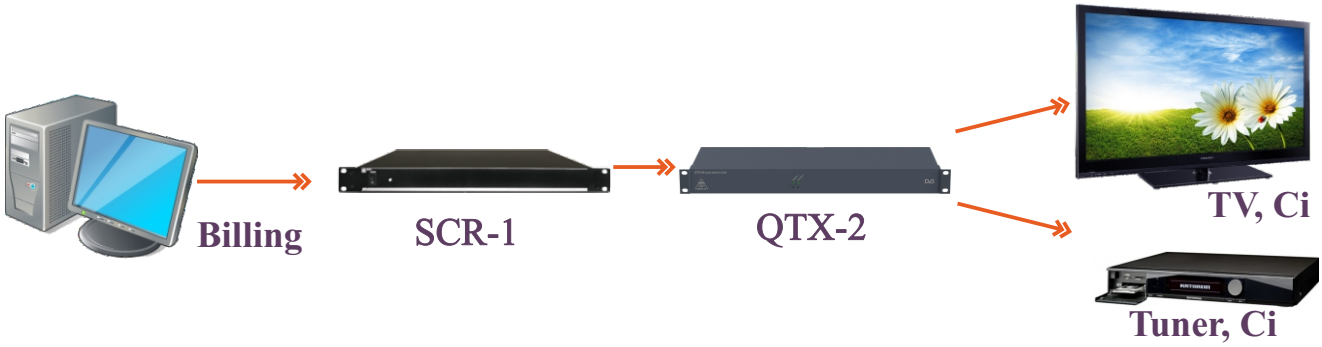
# CONDITIONAL ACCESS SYSTEM

The conditional access system is a key link in the cable television network. Of great importance is the reliability of the system, ease of installation, ease of management, and most importantly - functionality. Also an important criterion is the cost of the system, which includes capital and operating costs. Capital payments include one-time payments - the direct purchase of equipment and software for the conditional access system, the subscriber management system, additional systems at the request of the operator, as well as the installation of the equipment and the software listed above. Operating payments include regular payments in the future, among which the main one will be the regular procurement of CAM-modules. The system is designed to distribute pay-TV services and suggests the possibility of using authorization systems for access of cable television subscribers to watching television programs transmitted in digital format. The system consists of a coding device installed at the studio and subscriber decoders, made in the form of a standard CAM-module for receivers with a Ci-slot, or, built-in in certain models, receivers.


**FEATURES:**

- number of digital trunks up to 62;
- number of programs in the trunk up to 15;
- a high degree of protection against hacking due to a quick change of coding keys and the possibility of updating (up to a complete change) the coding architecture, decoders software from the head station during the broadcast;
- flexible access rights management system: from one TV program to the preparation of an individual package to one subscriber;
- management of the system by a personal computer using a specialized program that is included in the package;
- PC connects to SCR-1 controller via Ethernet or COM port;
- subscriber decoders made in the form of standard CAM modules allow operators and users of CTV networks to be free in the choice of subscriber receivers;
- the ability to display the current account status of the subscriber.

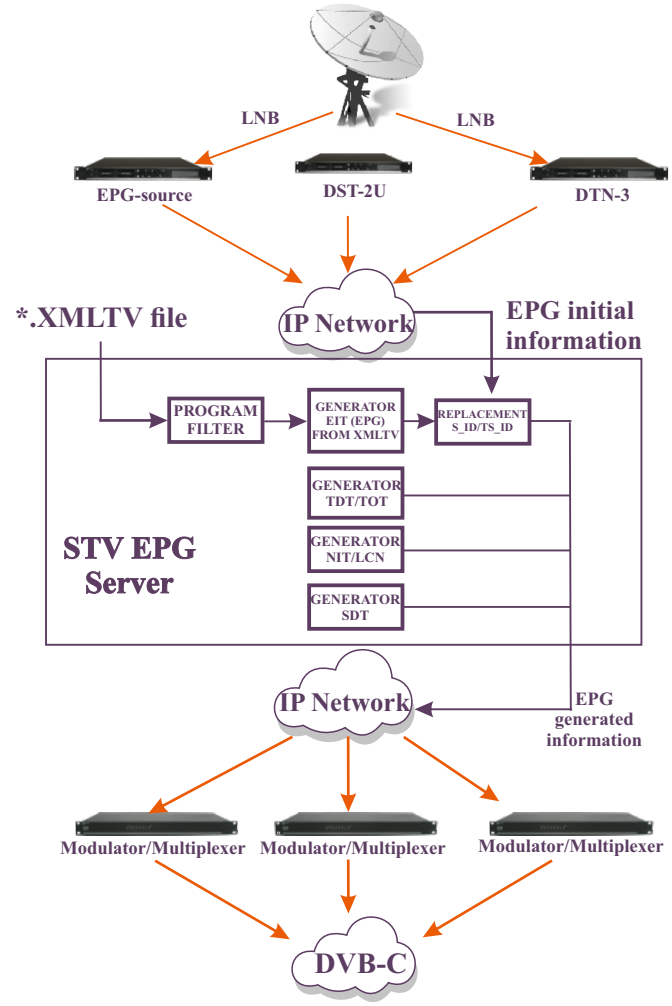
There are also specialized tuners with built-in decoders of the STV-Crypt system.




**STV-Crypt Usage Scheme**

# STV EPG SERVER

STV EPG Server is a program designed to form a transport stream containing an electronic program guide (EPG) and service information (DVB-SI) in DVB-C, DVB-T networks.
EPG (Electronic Program Guide) is an on-screen menu that displays the schedule of television or radio programs.
NIT (Network Information Table) - tables containing information about the frequency channels of a cable television system (frequency, QAM, speed, flow identifiers and networks).
LCN (Logical Channel Number) - logical program number. Addition to the NIT table, which allows to set programs on the subscriber receiver in order specified by the cable operator.
TDT & TOT - time tables that are needed to set the time in the subscriber receivers and correctly display the EPG.
SDT (Service Description Table) - tables containing service information about programs, such as the name of the program.
XMLTV - XML based syntax format. A single file that contains all the channels at once.




**Usage scheme STV EPG Server**


**FEATURES:**

- Generate TDT and TOT time and date tables. When creating a system time using Windows.
- Generation of NIT network search tables with parameters set by the user. The ability to set a logical program number (LCN).
- EIT television program table generation (EPG- electronic program guide) from an XMLTV file. Generate EPG of current - next program, weekly schedules.
- Generate SDT tables (containing program names, etc.).
- Ability to accept EIT (EPG) over Ethernet and change the transport stream (NID, TSID, SID) identifiers of the program and transfer to Ethernet.
- Unlimited number of inputs and outputs.
- Unlimited programs and events.
- Management of generation intervals S1 tables and the speed of the output streams.
- ETHERNET inputs / outputs.

| SPECIFICATIONS | |
|---|---|
| Data sources | XML files, TS over IP |
| Data output | TS over IP |
| Compliance | ETSI EN 300 468, ETSI TR 101 211, ISO/IEC 13818-1 |
| System requirements | processor: at least 2 GHz; RAM: at least 1 GB; network card: at least 100 Mbps; operating system: Windows XP |
| DVB-SI Table Generation | EIT present / following, EIT schedule, NIT (Network Information Table), TDT (Time and Data Table), TOT (Time Offset Table), SDT (Service Description Table) |

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About us

SPETS-TV was founded in Ukraine in 1995 by specialists of Odessa Scientific Television Engineering Research Institute. The firm specializes in development of equipment for organization of television broadcasting and radio electronic products.

"SPETS-TV" develops steadily and we are proud of that our employees have been working in the company for over 20 years. Company is equipped with modern measuring and computing equipment, equipped rooms, qualified specialists.

ASK OUR ENGINEER!

Are you working on an interesting project and you need help in finding an individual solution? Ask our engineer! Our engineers can adapt product manufactured by SPETS-TV in accordance with your task. We will find a solution to integrate your requirements into the final system.