COD 881MS
DTV server Crypton with QPSK-modulator

Description:

COD881MS is a perfect solution for converting analog signals into DVB digital stream. L-band (1100-1700 MHz) signal at the output of built-in QPSK modulator by aid of frequency converter can be carried to a desired SHF frequency (for instance, into Ku-band for satellite broadcast systems or MITRIS).

In arbitrary order COD881MS can scramble 8 digital TV-programs by aid of dynamic keys, which are unique for every program. Subscribers message system (SMS) allows to having 16 million subscribers in aggregate for all of the eight channels. According to ETS-300468 specification COD881MS inserts PSI and SI information into the stream.

Typical applications of COD881MS are head-end stations of digital cable, MITRIS, MMDS- and LMDS networks.

Scope:

- **Eight analogue inputs.** Video and stereo audio for each of the eight channels are converted into eight DVB-compliant streams (MPEG2-video, MPEG1 Layer2-audio). Then, each stream is multiplexed into one common DVB stream.
- **A set of bitrate for video and audio.** A desirable bit rate can be set for every channel. Flexible setting allows to using frequency resource more effectively. Channels with dynamic image could be set at the high bit rate. For the channels where the still images are dominant a bit rate can be reduced without a significant decrease in quality.
- **TV and radio channels.** Each channel could be set as a TV channel (video and stereo sound) or as a radio channel (stereo sound only).
- **Channels disabling (if required).** Any channel can be disabled during the pre-check works (or for other reasons). When channel is disabled the stream is fully removed from an aggregate output stream without affecting any other channel.
- **Self-contained channels reset.** In order to maintain an operational status of device for a long period of time, it is required to have a mechanism that quickly eliminates the possible defects. Any of eight MPEG encoders can be reset and reloaded in accordance with the channel settings within a short period of time.
- **DVB-compatible scrambler.** The scrambler is a realization of Common Scrambler Algorithm, described in DVB-CAS ETR-289 specification.
- **L-band QPSK modulator.** Frequency tolerance is 5 kHz, 50-Ohm output.
- **TCP/IP network.** Connection between COD881MS and operator's control computer is done via regular TCP/IP network equipment.
- **Reliable software.** “Crypton DTV Master” software package allows controlling and monitoring the status of network devices in real time.

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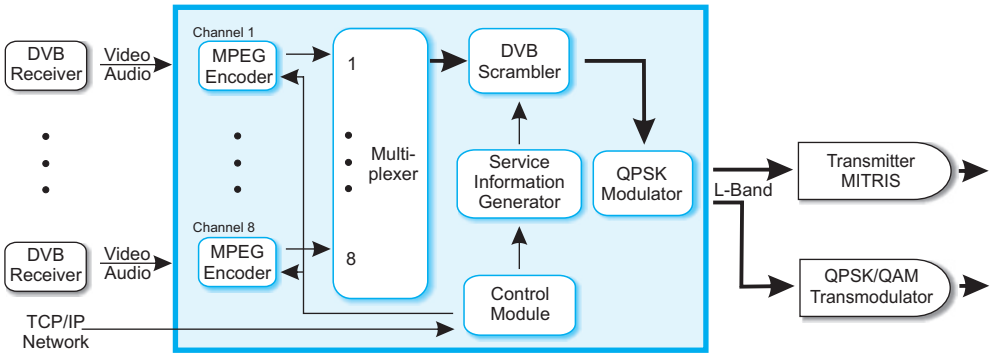
The COD 881MS block diagram:



Concise description of COD 881MS units.

MPEG Encoder. MPEG encoder module converts analogue video and audio signals into digital stream.
Multiplexer generates one aggregate stream out of 8 digital channels.
DVB Scrambler. The Scrambler produces a random scrambling of Digital TV- programs excluding unauthorized viewing of TV- programs. At the output of the scrambler the DVB-stream is fed to the modulator, then, to the frequency converter and at last to the digital receiver with encoding system "Crypton".
Service Information Generator performs control messages insertion, so the receiver may decide what to do with the selected TV-channel.
Control Module is used for the following operational tasks: subscribers control, status information gathering, encoders control and so on.
QPSK modulator. Frequency tolerance is 5 kHz, 50-Ohm output.

Technical characteristics.

Inputs	**Video** •Quantity: 8 •Formats: PAL/SECAM •Analog interface: composite (CVBS) •10 bit A/D •Input voltage: 0,1 – 1 V •Automatic gain setting •Connector: BNC	**Audio** •8 stereo channels (analog) •Input voltage: 0,1 – 1 V •Connector: RCA **Inputs operating mode:** •TV, radio, disabled
Processing	**Coding parameters of video** •MPEG-2 4:2:0 P@ML •Bit rates: 3, 4, 5, 6 Мбит/с (CBR), 4 Мбит/с (VBR) **Coding parameters of audio** •MPEG I Layer II •Sampling rate: 44.1 Khz •Bit rates: 64, 128, 192, 224, 256, 384 Kbps **Multiplexer** •Multiplex of up to 8 DVB transport streams •PID-assignment	**PSI/SI tables generator** •PSI/SI tables insertion according to ETS-300468 •SI tables: SDT – programs' description table ECM – conditional access information •PSI tables PAT – programs table PMT – program's content table **Conditional access** •Built-in DVB-compliant scrambler •Conditional Access System "Crypton" corresponds to ETR-289, DVB Simulcrypt •Maximum quantity of the scrambling channels – 8
Output	**Modulator** •QPSK modulation: accords to EN 304421 •Bandwidth: 1100-1700 MHz (3 subbands) 1100-1300 MHz 1300-1500 MHz 1500-1700 MHZ •Frequency tolerance is 5 kHz	•Frequency tuning step: 1Hz •FEC modes: 1/2, 2/3, 3/4, 5/6, 7/8 •Output resistance: 50 Ohm •Connector: SMA •Input stream bit rate: 1-50 Mbit/sec •Symbol bitrate: 25-30 Msymb/sec (step 0,125 Msymb/sec)
Control and monitoring	•Ethernet (TCP/IP)	•Software «CryptOn DTV Master»
Physical characteristics	**Size** •2U(19" rack) •93mm x 482,6mm x 336mm •3.65" x 19" x 13.25" •Weight: 4,3 kg	**Power** •90-260V AC 50/60 Hz •Power consumption: 80W max
Environmental conditions	**Operation** •Temperature 0 °C - +45 °C •Humidity: 5-85 % (non-condensing) •Forced ventilation	**Storage and transportation** •Temperature: -40 °C - +70 °C •Humidity: 0% - 85% (non-condensing)

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