

# DATASHEET



COD802MS

Dual channel scrambler/multiplexer  
(briefly Coder COD802MS)

---

### 1. Contents

1.Contents .....	2
2. General .....	3
3. Features.....	4
4. Front and Rear view of COD802MS.....	5
5. Block Diagram .....	7
6. Technical specification.....	8
7. Used Abbreviations.....	9

## 2. General

The DVB scrambler/multiplexer COD802MS is a part of a Digital Video Broadcasting System produced by Crypton Company. This device should be used with two MUX841 devices – the DVB MPEG2 encoder/multiplexer (4 programs per each device). COD802MS has as input two SLVDS sources and in output there is QPSK modulated L-band signal. Output (SLVDS) to the foreign modulator is also available.

It is possible to have up to 8 DTV programs which might be scrambled with unique per program dynamic keys. Subscribers Message System (SMS) is allow to have up to 16 millions subscribers for the entire device (eight programs). PID's substitution, PSI and SI information was implemented in according to EN50083-9 DVB specification.

All management tasks are performed by control computer running "DVB Master" software. Communication media between scrambler and computer is a regular TCP/IP network (100BaseTX, UTP5 cable, RJ45 socket, can run via switches or hubs). There are no limits to use several devices in the same network.

Typical applications of the COD802MS are head-end stations of digital cable, MITRIS, MMDS- and LMDS-networks.

### 3. Features

- **Two-channel remultiplexer.** There is two transport stream inputs which in summary can handle up to the eight different digital TV programs. The result of multiplexing is pushed to the scrambler module for the further processing.
- **DVB compliant scrambler.** A Common Scrambler Algorithm is implemented according to DVB-CAS specification ETR-289.
- **QPSK L-band modulator.** High performance QPSK modulator can drive up to  $-1\text{dbm}$  50 Ohm load with the frequency tolerance less then  $\pm 5\text{ kHz}$ .
- **TCP/IP network.** Communication between device and control computer is done via regular TCP/IP network hardware.
- **Reliable software.** "DVB Master" is the software to perform all management and monitoring tasks within COD802MS devices network.

### 4. Front and Rear view of COD802MS

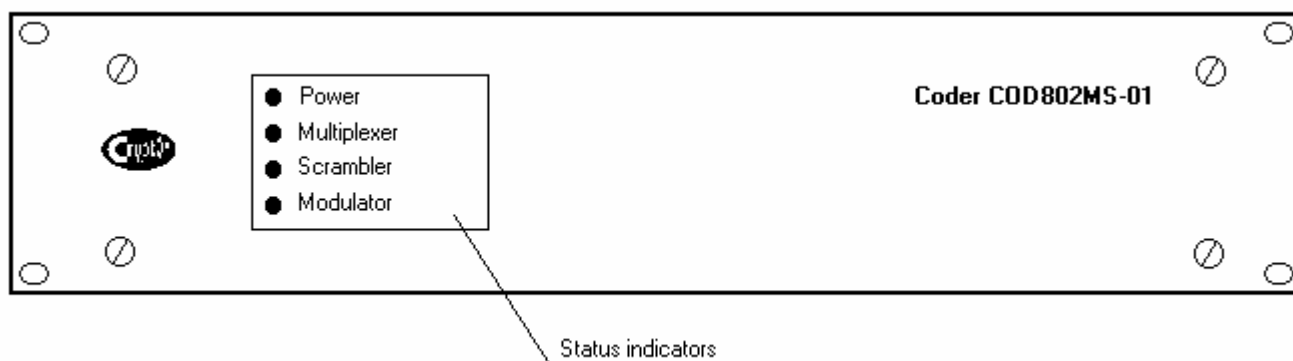


Fig. 1 Front Panel

Status indicators in front panel shows “Green” when appropriate module is OK, and “Red” or blanking when the module feels bad. The “Power” indicator constantly shows “Red” when the power supply is OK.

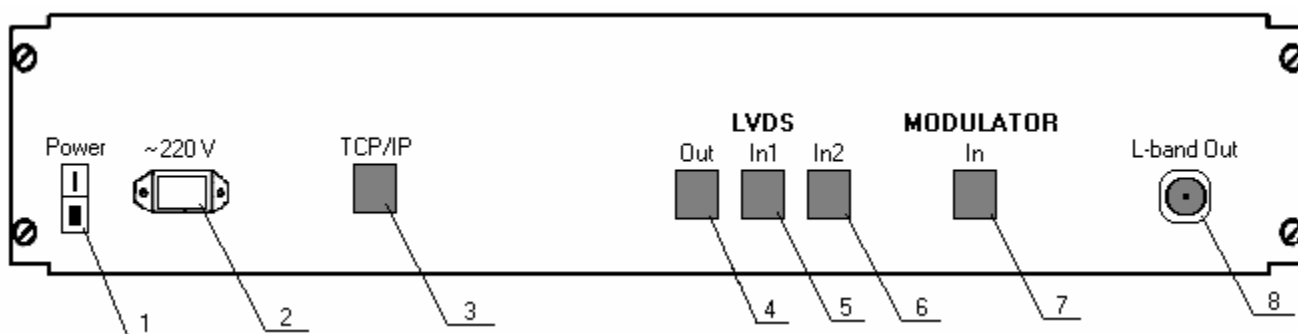


Fig. 2 Rear Panel

#### Rear panel description in short

1. Power switch;
2. Power socket. Plug it in only to AC 90...260 V 50/60Hz;
3. RJ45 TCP/IP socket for communication with computer. Use “crossover” cable for point-to-point connection between device and computer, or use “patch” cable if the device is connected via Ethernet hub or switch;
4. LVDS Output from scrambler/multiplexer. Use “patch” cable to connect the scrambler/multiplexer output with modulator input;

5. LVDS Channel #1 Input. Connect this socket with MUX841 output. Use “patch” cable here;
6. LVDS Channel #2 Input. Connect this socket with MUX841 output. Use “patch” cable here;
7. Modulator Input. This socket should be connected with scrambler/modulator output (see 4.);
8. Modulator Output. At this connector (F-type) QPSK L-band signal present with nominal output power  $-1\text{dbm}$  (50 Ohm). Use only 50 Ohm feeder there (RG8, RG213) to provide modulator signal to the up-converter input.

### 5. Block Diagram

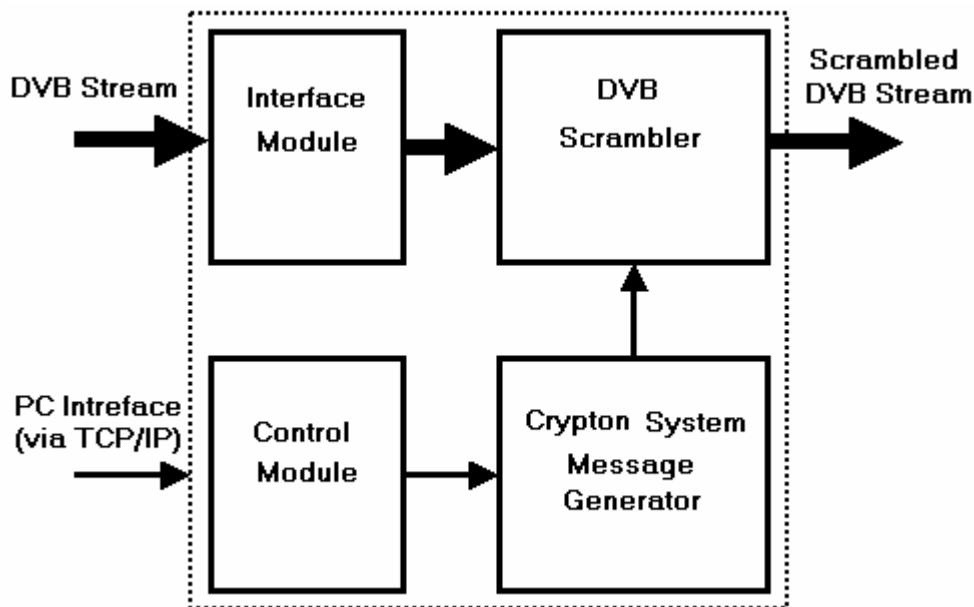


Fig 3. COD802MS functional diagram

Figure 3 shows COD802MS functional diagram with the internal data flow.

#### Device Modules Description in Short

**Interface Module.** The Interface Module converts DVB stream to the Synchronous Parallel Interface (SPI) needed by Scrambler and Remultiplexer.

**DVB Scrambler.** The Scrambler used there is the DVB-compliant scrambler implemented according to DVB-CAS specification ETR-289. It is used for scramble DTV programs chosen by operator. The main purpose of this operation is to grant or deny access to the broadcasted programs. The scrambled stream at the output of DVB scrambler is feeded modulator and then to the up-converter and then travels by air to the subscribers with DVB-receivers and TV-sets. The end point of the described system is the subscriber's TV screen where the picture comes from the receiver in-built descrambler.

**Message Generator.** The Crypton System Message Generator performs control messages injection, so the receivers can decide what to do with the selected TV program.

**Control Module.** The Control Module is used for performing usual operators tasks: subscribers managements, status monitoring and so on.

### 6. Technical specification

Characteristic	Notes	Ratings			Unit
		Min	Typ	Max	
Input: <ul style="list-style-type: none"> <li>Serial LVDS</li> <li>DVB-SPI(optional)</li> <li>DVB-ASI(optional)</li> </ul>	Maximum summary stream data rate	1	32	45	Mbps
Scrambled Programs		0	–	8	
Modulator Input Data Rate		1	32	70	Mbps
Modulator Output	QPSK L-band, –1dBm max., $\pm 5$ kHz frequency tolerance	970	–	2150	MHz
Modulator Symbol Rate		4	27,5	45	Msps
Modulator FEC Modes	Several FEC modes is available	1/2	3/4	7/8	
Power Supply	AC 50/60 Hz	90	220	260	V
Power Dissipation		–	–	40	W
Operating Temperature		0	20	45	°C
Dimensions					
Length		–	295	–	mm
Width		–	483	–	mm
Height		–	89	–	mm



### 7. Used Abbreviations

<b>DVB</b>	– Digital Video Broadcasting
<b>SPI</b>	– Synchronous Parallel Interface
<b>ASI</b>	– Asynchronous Serial Interface
<b>PID</b>	– Packet Identifier
<b>SI</b>	– Service Information
<b>QPSK</b>	– Quaternary Phase Shift Keying
<b>MMDS</b>	– Multichannel Multipoint Distribution System
<b>SMS</b>	– Subscriber Management System
<b>FEC</b>	– Forward Error Correction