

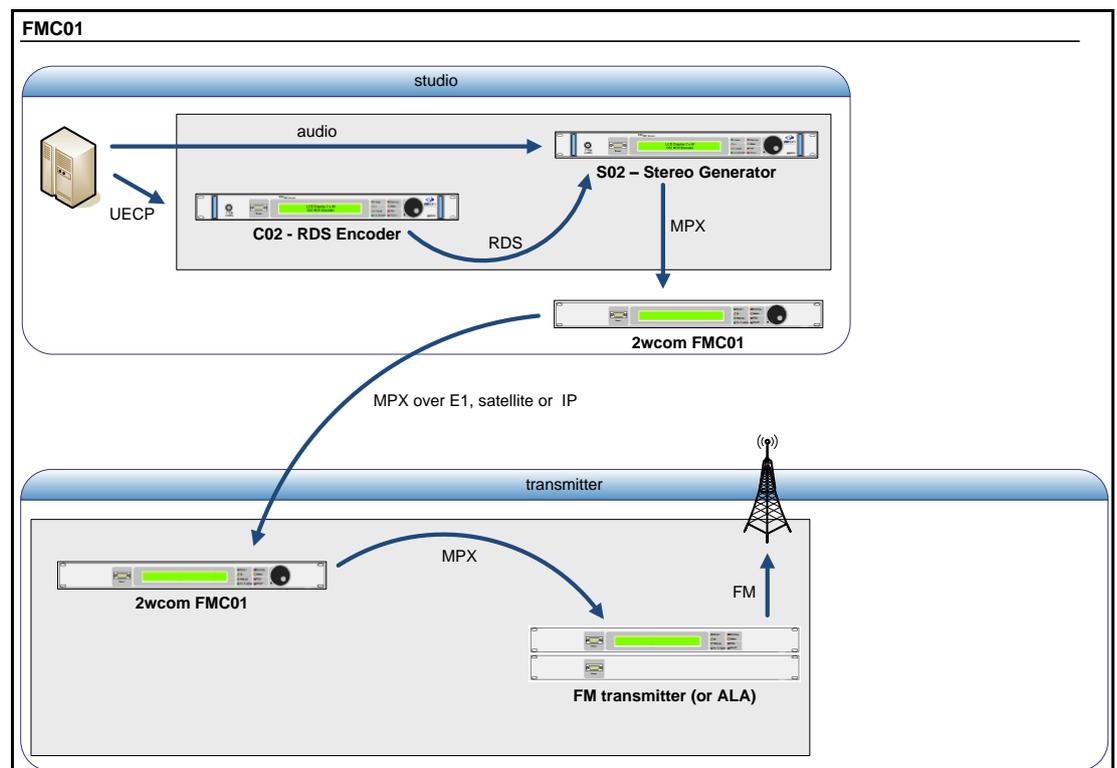
# FMC01 over E1/IP

## Description

The FMC01s main function is to distribute FM MPX signal via **E1 (G703)** line with a data rate of 2.048 kbps and using the Internet Protocol (**IP**) via a 10/100/1000-Base-T network interface<sup>1</sup>. The device has two main operation modes:

- transmitting FM MPX over IP or E1 line;
- receiving FM MPX over IP or E1 line.

Thus, the FMC01 is used at **both ends** of the transmission chain: in the FM studios where signals are generated, and in the FM stations where signals are received and distributed. Both the E1 and IP data streams are protected by a forward error correction (FEC) scheme to account for bit errors (E1) or packet loss (IP).



**Figure 1: Overview of the FM MPX transmission chain for the FMC01**

## Control

### HTTP Web interface

The unit is controlled via a built-in web user interface.

### SNMP

Additional monitoring of the device using SNMP is possible. Rudimentary device control, status information and alarm trap generation is featured.

### LCD and jog wheel

Simple configurations can be made via LCD menu and jog wheel.

<sup>1</sup> In this manual referred as E1/IP.

Table 1 shows the main functions of the FMC01:

<b>STANDARD</b>	Encoding FM MPX → E1	The FMC01 can: <ul style="list-style-type: none"> <li>- reduce the bandwidth of the FM MPX signal for E1/IP,</li> <li>- reduce the bit depth to increase the quality of an error correction</li> <li>- digitize/encode the FM MPX signal and output it over E1/IP.</li> </ul>
	Decoding E1 → FM MPX	The FMC01 can: <ul style="list-style-type: none"> <li>- receive data stream over E1 or IP,</li> <li>- decode FM MPX signal from the E1/IP data stream and output it.</li> </ul>
<b>OPTIONAL</b>	The FMC01 can: <ul style="list-style-type: none"> <li>- switch over input source between E1 and Gigabit IP in case of failure</li> </ul>	

**Table 1: Overview of the main functions of the FMC01**

User

Only experienced technical personal or engineers should operate the FMC01. Basic knowledge about FM and E1/IP networks is required.

Process

**FM MPX digitalization**

- analog MPX signal reception via BNC or XLR connector
- reduction of MPX signal bandwidth to 66kHz bandwidth, with no attenuation up to 59,4kHz
- reduction of MPX samples to 15bits, for increased error protection, samples can be reduced further down to 12bits (only impacts E1 transmission)

**FM MPX → E1/IP encoding**

- signal encoding
- adding CRC information to the data stream
- adding error correction data to the data stream
- output of the data stream over E1 or 1000-Base-T

**E1/IP → FM MPX decoding**

- data stream reception over E1/IP
- error detection and correction
- sample rate synchronization
- MPX signal decoding

**Conversion to analog MPX signal**

- digital to analog conversion of the signal
- output of the analog MPX signal over BNC and XLR connectors