

**FM2TS**

**gateway**

Professional, flexible MPEG encoding gateway



# FM2TS gateway



## FM MPX distribution

High quality multi-format audio de/en/transcoding

- ▶ High quality FM MPX distribution via IP (16 ... 24bit, 132 ... 192Khz)

## Hardware

- ▶ Optional: Coder & decoder in the same equipment
- ▶ High end converter (ADC, DAC) for optimal quality
- ▶ Optional: 1pps input for SFN synchronization

## Control

- ▶ Full online remote control of all parameters via IP
- ▶ Configuration via web user interface for easy setup
- ▶ Quick view status page for a fast overview
- ▶ SNMP v2c, relays, inputs

## Codec

- ▶ 100% loss less audio encoding & decoding
- ▶ ProMPEG FEC (Practice #3 release 2) to reduce packet loss and burst errors
- ▶ Optional: Dual streaming

## Monitoring

- ▶ Quality parameters via SNMP v2c and relay
- ▶ FM demodulation with L+R XLR and headphone output monitoring
- ▶ RDS monitoring and optional alarm control (PI, PS)



# Technical details 1/3



## Inputs

### RF

<b>Tuner</b>	8 independent FM tuner
<b>Connector</b>	8x F-Connector
<b>Impedance</b>	75 Ω
<b>Frequency range</b>	87.5...108.0 MHz 50 kHz steps
<b>RF sensitivity (S/N 40 dB, stereo)</b>	20 dBμV
<b>RF input level range</b>	25 ... 120 dBμV
<b>Input frequency accuracy</b>	< ± 2 kHz
<b>Amplitude response</b>	< ± 0,3 dB
<b>SNR (A)</b>	> 65 dB (>63 dB)
<b>SNR quasi peak unweighted</b>	> 63 dB (with 15 kHz low pass)
<b>SNR quasi peak weighted (ITU (CCIR) Rec. 468-2)</b>	> 56 dB
<b>Total harmonic distortion</b>	> 68 dB
<b>Crosstalk attenuation</b>	> 38 dB
<b>Return loss</b>	> 15 dB
<b>De-emphasis</b>	50 μs, 75 μs

## Outputs

<b>MPEG-encoder</b>	MPTS and multiple SPTS RTP, UDP IP Unicast/Multicast
<b>Supported codecs</b>	MPEG 1/2 Layer 1/2/3, AAC-LC, HeAAC-v1/v2, AAC-LD, G.711, G.722, PCM, acc. ETSI TS 101 154 (MPEG-1) ISO/EIE 11172-3(layer II)

### Sampling frequencies

16, 22.05, 24, 32, 44.1 and 48 kHz

### PCM processing

Loudness measurement and compensation (optional)  
Compliant to CALM and EBU R128

### Framework system

TS Multiplexing

### Framework TS format

ISO/IEC 13818-1 MPEG-2 transport stream (TS)

### FEC

Pro-MPEG code of practice #3 release 2 compliant

### Configuration

User configuration for selection of encode and TS-output parameters: PAT/PMT, SDT, PSI/SI tables

### Audio streaming (for monitoring)

MPTS and multiple SPTS  
RTP, UDP IP  
Unicast/Multicast  
Adjustable MPEG encoder quality  
Adjustable sample rates

### Audio level

-6 dB full scale at ± 40 kHz input signal  
frequency shift

### RDS/ancillary data

#### Data output format

UECP (Ver. 6.+ compliant), transparent (other formats possible)

#### Data output

Via serial interface or TCP/IP



## Technical details 2/3

### Headphone (front)

Connector	6.35 mm
Impedance	600 Ω
Output channel selection	Switchable

### Alarm functions / control

#### FM RDS

FM control	Mute enable, mute attenuation, mute threshold (start, end), stereo blend threshold (start, end), tuner mode (auto, stereo, mono)
RDS control	PI, PS, DI, MS, TA, PTY, RT, RT+, CT
RDS decoder	PI, PS, TA, TP, PTY, CT, RT, RT+
RF level alarm	25...120 dBμV, resolution 1 dBμV
FM / audio alarm	Failure monitoring (pilot, RDS sync, silence detection, L, R)
Signal muting alarm	Muting of input signals <= 10 dB below reference value
Hardware alarm	Power supply failure, fan failure, case temp.
Alarm types	Serial interface, potential free relay contact, SNMP, E-mail (e.g. to send automatically SMS)
Alarm report	Can be read out via TCP/IP Enhanced logging functions and local event logging (permanent storage)
NTP Server	Two NTP-Server configurable
Languages	English

### Interfaces

#### Front panel

LCDisplay	Graphical, 264x64 pixel
Jog wheel	Impulse, ENTER button
8 LED's	Power 1, Power 2, warning, status

#### Remote control input

7 opto-isolated inputs (excludes option: 24 relay contacts)

#### Connector

15 pole sub-D female

#### Remote control output

12 floating relays (10x SPST, 2x SPDT) (for DC: max. 30 V, 0.5 A)  
26 pole sub-D male  
24 floating relays (excludes: 7 opto isolated inputs)

#### Optional:

#### Setup

##### RS-232C (front)

1x serial interface for setup data and setup function

##### USB

2x USB 2.0 Interface for service, configuration and firmware updates

##### TCP/IP

##### Type

2x data and 1x control  
Auto switching  
10/100/1000 BASE-T, Unicast, Multicast  
ARP (RFC 826), IPv4 (RFC 791), IPv6 (RFC 2460), ICMP (RFC 792), TCP (RFC 793, RFC 1323), UDP (RFC 768), NTP v3 (RFC 1305), TFTP (RFC 1350, RFC 2347), Telnet (RFC 854 to RFC 861), SNMPv2c (RFC 1901, 1905, 1906), HTTP 1.1 (RFC 2616)

##### Data format

#### Modules

2x SFP slot (according SFF-8724 multi source agreement) 1000BASE-T, 1000BASE-SX (data) 1x RJ45 (control)



## Technical details 3/3

### ASI out

<b>Data</b>	MPEG2 TS
<b>Connector</b>	BNC 270 Mbps

### General data

<b>Power consumption</b>	60 VA
<b>Case dimensions</b>	19", 1 HU, 310/424/484 mm
<b>Weight</b>	5 kg
<b>Housing</b>	Steel plate (aluminum- zinc coated)
<b>Operating temp. range</b>	0...+45°C
<b>Storage temp. range</b>	-40...+70°C
<b>Redundant power supply</b>	2x internal, 90...260 V, 47...63 Hz 2x power port, aut. switchover
<b>Redundant fan technology</b>	2x internal cooling fan aut. switchover