



## DESCRIPTION

The MIP SERIES SFN adapter is an essential building block for establishing a DVB-T Single Frequency Network (SFN), where multiple transmitters broadcast on the same frequency and therefore require precise time and frequency synchronization.

The SFN adapter, installed at the headend, receives a frequency (10 MHz) and time (1 pps) reference signal from a GPS receiver at each transmission site and computes time and control information to build the megafame initialization packet (MIP). The MIP information is then inserted into the MPEG-2 transport stream and used by the transmitters to synchronize the network.

The basic functions performed by the SFN adapter are:

- To insert a megafame initialization packet (MIP), compliant with ETSI TS 101 191, into an MPEG transport stream.
- To adjust the bitrate of the transport stream to be synchronous with an external reference and in accordance with the chosen COFDM transmission mode.
- To provide signaling/mode data for the control of individual transmitter modulators.

The SFN adapter is equipped with two ASI inputs which accept an MPEG transport stream according to DVB recommendations (188 or 204 byte packets).

### TRANSPORT STREAM PROCESSING

Input monitoring	Transport stream presence Clock recovered (serial input) Input data overflow Sync 188 bytes presence Sync 204 bytes presence (+16 dummy bytes or RS coded packet)
Supported modes	IFFT: 2K, 4K, 8K
Guard intervals	1/4, 1/8, 1/16, 1/32
Code rates	1/2, 2/3, 3/4, 5/6, 7/8
Constellations	QPSK, 16QAM, 64QAM
Channel bandwidth	8 MHz, 7 MHz, 6 MHz, 5 MHz
Hierarchical mode	$\alpha$ = none, 1, 2 and 4 for 16QAM and 64QAM
Maximum network delay	0 - 1.0 sec with a resolution of 100 ns (adjustable)
Signal substitution	Output transport stream is replaced with null packets and MIP in case of input data loss

### INPUT SIGNALS

MPEG Transport Stream	2 x ASI inputs: BNC female, 75 $\Omega$
Frequency reference (10 MHz)	Connector: BNC female, 50 $\Omega$ , AC coupled Frequency: 10 MHz $\pm$ 2 ppm Level: 100 mV - 3 Vpp
Time reference (1 PPS)	Connector: BNC female, 50 $\Omega$ Amplitude level: TTL Trigger: Positive transition

### OUTPUT SIGNALS

MPEG Transport Stream	2 x ASI outputs: BNC female, 75 $\Omega$ HP and LP output in hierarchical modes Duplicated outputs in non-hierarchical modes
Sync output	BNC, 50 $\Omega$ Level: TTL (high coincides with the MIP packet)

### CONTROL INTERFACES

Front panel	LCD display and cursor / execute keys
RS-232 serial port	9-pin SUB-D male connector
RS-485 serial port	9-pin SUB-D female connector (optional)
Ethernet interface	RJ45 connector for 10/100 Base-T Ethernet

### GENERAL

Power supply	90 - 250 VAC
Power consumption	25 - 40 W max (depending on model)
Operating temperature	0 $^{\circ}$ C to +40 $^{\circ}$ C
Relative humidity	95 %, non-condensing
Cooling	Natural convection and temperature-controlled fan
Dimensions (W x H x D)	432 x 44 x 432 mm
Size	19" 1HE
Weight	6 Kg