- **Two TS inputs: ASI and SPI**

- **2k and 8k modes**

- **Coverage:** 475 - 875 MHz **MO-160**
  45 - 875 MHz **MO-161**

- **Frequency agility (1 Hz steps)**

- **High MER (> 35 dB)**

- **6, 7 & 8 MHz channel bandwidths (user-selectable)**

DVB-T Modulator MO-160 / 161 General overview

The **MO-160** / **161** is a general purpose **DVB-T modulator** contained in a 19" 1U chassis. The unit has one ASI MPEG-2 Transport Stream input.

The **MO-160** / **161** is able to work with any incoming bit rate as long as this is strictly lower than the value given in the DVB-T specification for the modulation parameters in use. The input TS bit rate is adapted to the useful bit rate required by the DVB-T signal by stuffing the TS with NULL packets (packet stuffing). This stuffing process alters the sequence of PCR values embedded in the TS. These values have to be re-stamped for the resultant PCR jitter to remain within the limits specified by the DVB.

The modulator can be configured to generate any of the transmission modes listed in the DVB-T specification. The channel bandwidth can be set by the user to 6, 7 or 8 MHz as required by the application.

The operation of the **MO-160** / **161** is done via the front panel LCD display and controls. The modulator can be easily configured by navigating through the intuitive set of menus.
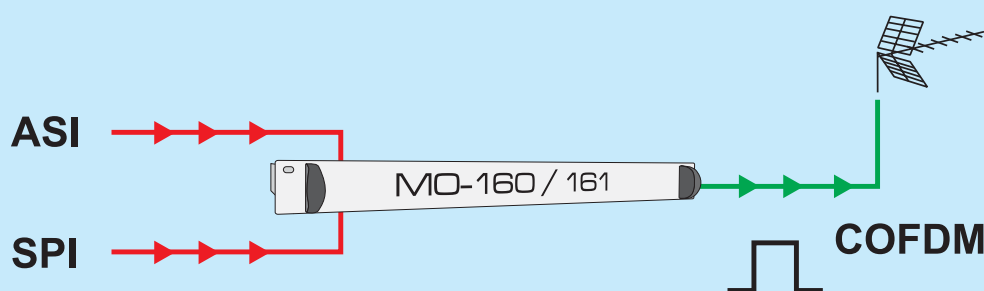
Control interface

- Pushable rotary control on the front panel with navigation key and LCD display
- Two LEDs indicating the power and synchronisation status of the equipment
- RS232 DB9 male connector

SPECIFICATIONS	MO-160 / 161
INPUTS	
MPEG-2 Transport Stream	2xDVB-ASI inputs, 75 Ω female BNC // 1xDVB-SPI input, LVDS DB-85 TS packets of length 188 or 204 bytes (automatic detection) Support for burst and continuous packet mode
Operating modes	
Master	Input TS bit rate strictly below the value given in the DVB-T specification Automatic packet stuffing for bit rate adaptation and PCR re-stamping.
Slave	Input TS bit rate constant and equal to the value given in the DVB-T document (no stuffing). Tolerance ±0.1‰
IF OUTPUT	
Type	50 Ω BNC female connector
Frequency range	Variable (32 to 36) MHz in steps of 1 Hz. Fixed at 36 MHz when RF output is off
Spectrum polarity	Selectable via front panel controls
Power level (average)	0 dBm (107 dBμV) fixed
In-band amplitude ripple	< 0.2 dB
In-band group delay ripple	< 10 ns
Frequency stability	20 ppm
Out-of-band spectral characteristics[1]	
@ ± 3.805 MHz	0 dBc
@ ± 4.25 MHz	-46 dBc (2k), -56 dBc (8k)
@ ± 5.25 MHz	-56 dBc
IQ amplitude imbalance	< 0.02%
IQ quadrature error	< 0.02º
Central carrier suppression	< -55 dBc
Harmonics and spurious	< -60 dBc
MER[2]	> 43 dB
RF OUTPUT	
Type	50 Ω N-type female connector
Frequency range	Adjustable between 475 and 875 MHz in 1 Hz steps (45-875 MHz for MO-161)
Spectrum polarity	Selectable via front panel controls
Power level (average)	-27 to -87 dBm in 1 dB steps (optional up to +6 dBm)
Level of harmonic and spurious	< -50 dBc
Frequency stability	20 ppm
MER	> 36 dB
SSB phase noise	≤ -87 dBc/Hz @ 2 kHz
DVB-T PARAMETERS	
IFFT size	2k, 8k
Guard intervals	1/4, 1/8, 1/16, 1/32
Code rates	1/2, 2/3, 3/4, 5/6, 7/8
Symbol interleaver	Native
Constellations	QPSK, 16QAM, 64QAM
Hierarchical modes	16QAM and 64QAM constellations with constellation ratio α= 1, 2 or 4
MFN operation	Available
TPS signalling	Cell ID
Channel bandwidth	6, 7 and 8 MHz (user selectable)
PROGRAM SELECTION	Service selection without table rebuilding (PID Filtering)
REMOTE CONTROL	RS-232C interface (DB-9 male connector)
OPTIONS	
OP-1xx-P	+6 dBm output.
POWER SUPPLY	
Voltage	90 - 250 V AC (50 - 60 Hz)
Consumption	20 W

[1] Frequencies referred to the central frequency for an 8 MHz channel. Average levels measured using a 10 kHz bandwidth are referred to the carrriers located on either side of the spectrum. Values shown are the worst case and correspond to guard intervals of 1/32.

[2] Value measured in master mode. In slave mode, the MER is greater than 38 dB for 8 MHz chanels, and around 35 dB for 7 and 6 MHz.