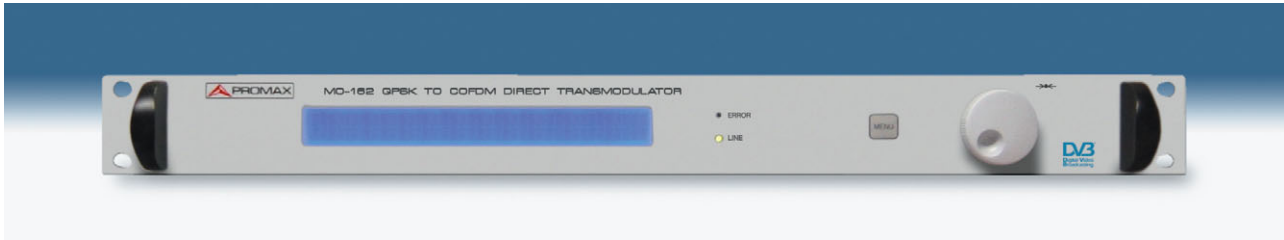


MO-162 / MO-163



The **MO-162 / MO-163** are direct **QPSK to COFDM transmodulators**. They convert a satellite transponder into a Digital Terrestrial Television channel.

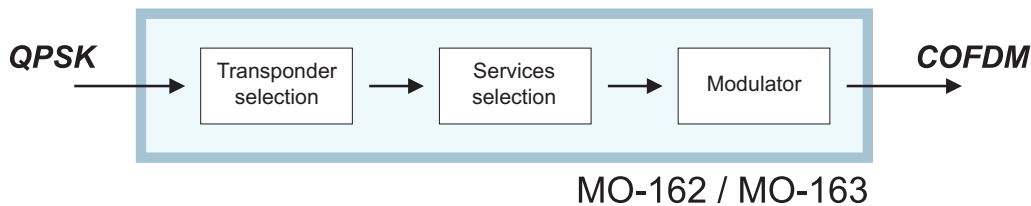
For it, the **MO-162 / MO-163** allow the selection of the satellite transponder at the entrance and the output channel for the resulting multiplex. Obviously, it must be taken into consideration that the transport capacity of a DTT multiplex is lower to that one of a satellite transponder. Therefore, not all the services of a satellite transponder can fit into a single multiplex. For that reason the **MO-162 / MO-163** allow the selection of the services to be transferred.

The equipment is constructed on 1 unit chassis for assembly in a 19 " rack. It has one F type IF satellite input (950 MHz to 2150 MHz).

The output coverage ranges from 475 MHz to 875 MHz for **MO-162** and 45 to 875 MHz for **MO-163** in 1 MHz steps. The output can be adjusted in steps of 1 dB and the MER is higher than 35 dB in all the channels. The COFDM modulation mode can be 2k or 8k carriers.

The **MO-162 / MO-163** are ideal for use in Terrestrial Digital Television distribution systems at hotels, hospitals and in general in any cable distribution system.

The control of the operation of the **MO-162 / MO-163** is been made very easy through an LCD on the frontal panel. All the functions of the transmodulator can be easily selected by means of an intuitive set of menus.

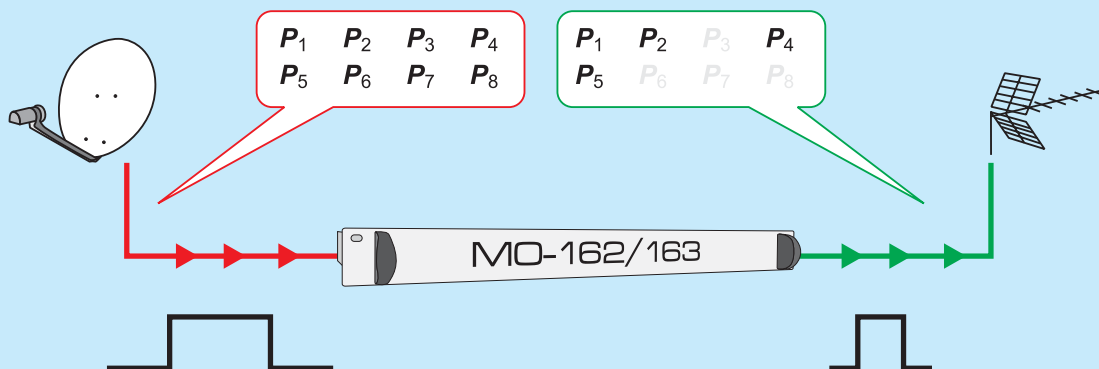


In this sample case, we use one **MO-162 / MO-163** to select up to four services from a **QPSK transponder** and pack them in a **COFDM multiplex**.

The **MO-162 / MO-163** allow the **selection of any of the transponders** at the input.

The next step will be to **select the services** that we wish to insert in the resulting multiplex.

Finally, we can **select the output channel** or frequency for this resulting multiplex.



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
- Ethernet connector

SPECIFICATIONS	MO-162 / 163
INPUTS QPSK MPEG-2 Transport Stream Operating modes Master Slave	F female connector, 950-2150 MHz (between -65 to -25 dBm) Two DVB-ASI inputs, 75 Ω female BNC TS packets of length 188 or 204 bytes (automatic detection) Support for burst and continuous packet mode Input TS bit rate strictly below the value given in the DVB-T specification Packet stuffing for bit rate adaptation and PCR re-stamping are carried out automatically Input TS bit rate constant and equal to the value given in the DVB-T document (no stuffing). Tolerance $\pm 0.1\%$
IF OUTPUT Type Frequency range Spectrum polarity Power level (average) In-band amplitude ripple In-band group delay ripple Frequency stability Out-of-band spectral characteristics ¹ @ ± 3.805 MHz @ ± 4.25 MHz @ ± 5.25 MHz IQ amplitude imbalance IQ quadrature error Central carrier suppression Harmonics and spurious MER ²	50 Ω BNC female connector Variable between 32 and 36 MHz in steps of 1 Hz Fixed at 36 MHz when RF output is off Selectable via front panel controls 0 dBm (107 dBmV) fixed < 0.2 dB < 10 ns 20 ppm 0 dBc -46 dBc (2k), -56 dBc (8k) -56 dBc < 0.02% < 0.02° < -55 dBc < -60 dBc > 43 dB
RF OUTPUT Type Frequency range Spectrum polarity Power level (average) Level of harmonic and spurious Frequency stability MER SSB phase noise	50 Ω N-type female connector Adjustable between 475 and 875 MHz in 1 Hz steps (45-875 MHz for MO-163) Selectable via front panel controls -87 to -27 dBm in 1 dB steps (optional up to +6 dBm) < -50 dBc 20 ppm > 36 dB ≤ -87 dBc/Hz @ 2 kHz
DVB-T PARAMETERS IFFT size Guard intervals Code rates Symbol interleaver Constellations Hierarchical modes MFN operation TPS signalling Channel bandwidth	2k, 8k 1/4, 1/8, 1/16, 1/32 1/2, 2/3, 3/4, 5/6, 7/8 Native QPSK, 16QAM, 64QAM 16QAM and 64QAM constellations with constellation ratio $\alpha = 1, 2$ or 4 Available Cell ID 6, 7 and 8 MHz (user selectable)
PROGRAM SELECTION	Service selection without table rebuilding (PID Filtering)
REMOTE CONTROL	Fast Ethernet (RJ-45 connector)
ETHERNET RJ-45 INTERFACE	
OPTIONS OP-1xx-S OP-1xx-P	SNMP Protocol +6 dBm output
POWER SUPPLY Voltage Consumption	90 - 250 V AC (50 - 60 Hz) 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 carriers located on either side of the spectrum.

² Value measured for an 8 MHz channel. MER value for a 7 and 6 MHz channels is approx. between 36.5 and 36 dB.