



## ► Overview

The Winersat WTM-860SL is a professional quality, digital headend component providing QPSK to QAM transmodulation and RF upconversion functions in a single module.

The WTM-860SL accepts L-band RF inputs between 950 and 2150 MHz from the LNB at the satellite dish. The transmodulator then tunes selected satellite transponder and demodulates the QPSK signal. The forward error correction (FEC) embedded in the data stream is used to help retrieve an error free MPEG2 digital transport stream (TS) containing the desired digital programming multiplex.

The transmodulator then applies cable environment FEC to the transport stream and remodulates using QAM modulation to an IF QAM signal.

In RF upconverter, the IF QAM signal is SAW filtered and then upconverted to the desired output channel. Any standard CATV output channel may be selected in the range of 54 to 860 MHz. Bandpass flatness and phase noise are closely controlled in the WTM860 to ensure a high MER output signal. This ensures that the transmodulator will not introduce a source of errors into the distribution process. Because the MPEG2 transport stream information is not modified by the transmodulator, all encryption, authorization, and program guide information are passed on to the CATV set top box, without any changes.

## ► Features

- ▲ Operates in DVB.
- ▲ Digital satellite QPSK signal input and a digital QAM signal output in 16/32/64/128 Q or 256 QAM mode
- ▲ Front panel LCD for monitoring, data display and setup.
- ▲ High MER (Modulation Error Rate) ensures a low bit error rate.
- ▲ Switching power supply 90VAC-260VAC, 50Hz/60Hz.
- ▲ With overload protection.
- ▲ Selectable LNB power 13/18 VDC with 22kHz tone control.
- ▲ Standard 19" rack-mount for installation.
- ▲ SAW filtered IF out/in loop.
- ▲ RF modulation output
- ▲ 47-864MHz output frequency agility.
- ▲ 60dBmV output level with Hybrid module IC.
- ▲ Output level adjustable by a 15dB range.
- ▲ Low out-of-band noise and High VSB attenuation.
- ▲ Double PLL synthesized channel control.
- ▲ Available to control multiple and daisy chain transmodulators with our Monitoring & Control Software.

## ► Technical Specifications |

### ▲ SATELLITE QPSK RF INPUT

Frequency Range	950MHz to 2150 MHz
Input Level	-65dBm ~ -25 dBm
Input Impedance	75 Ohms
Mode	QPSK
FEC	DVB
VITERBI Rate	Auto Scan. <span style="float: right;">1/2, 2/3, 3/4, 5/6, 6/7, 7/8</span>
Symbol Rate	2Msps to 45 Msps
Input Impedance	75 Ohms
Connector	F-Type Female

### ▲ QAM MODULATION

ITU-T J.83 Annex	A (i.e. DVB)
Modulation Mode	QAM-16,32,64,128,256
Symbol Rate	1~6.95 Msps
Roll Off	15% Phase Noise @10K -91dBC
MER	37 dB typical
SNR	40 dB typical
Carrier Suppression	53 dB typical
FEC	DVB

### ▲ CABLE RF OUTPUT

Frequency Range	47 MHz to 864 MHz
Bandwidth	6/7/8 MHz
Output Level	> 60 dBmV
Spurious Level	60 dB typical
Out-of-band Noise	60 dB typical
CNR	60 dB typical
Output Impedance	75 Ohms
Connector	F-Type Female

#### ▲ LNB POWER

Voltage	OFF, 13V or 18V ±10%
Current	500mA max.
Tone Frequency	OFF or 22kHz
Protection	Overload protection

#### ▲ CONTROL INTERFACE

Electrical Interface	RS-232C
Data Link	57600bps, No parity, 8-bit data, 1 stop bit
Connector type	DB-9 Male for connection to Host or previous station DB-9 Female for connection to next station

#### ▲ GENERAL

Operating Temperature Range	0°C ~ 50°C
Power Requirement	90 ~ 260 VAC, 50/60Hz
Real size of the unit	482(W) x 283 (D) x 44 (H) mm.
Dimensions	608(W) x328 (D) x 84(H) mm.
Packing	1 set/Inner box, Gross Weight: 3Kgs. 5 PCs/ Carton / 16Kgs/ 625 (W) x 348 (D) x 456 (H) mm /