

T.OX SERIES



**5 YEARS**  
LIMITED  
WARRANTY

## 8PSK/QAM TWIN TRANSMODULATOR

### A Complete Family of Digital Cable Headend Products

These products include satellite QPSK and 8PSK to QAM transmodulators, universal modulators and RFoG (RF over Glass) transmitters, amplifiers, splitters and receivers. The T.OX family of products all fit in a standard 19" rack chassis that contains a power supply and room for 7 modules.

**They can also be wall-mounted in tight space situations.**

**Televes**<sup>®</sup>



## Description

Each of the T.OX Q/8PSK transmodulators contain 2 completely independent transmodulators that are capable of being feed from either the same or different sources with output frequencies able to be set independently across the entire range in order to provide maximum flexibility.

The entire transponder's multiplex is converted to a single QAM channel so all content regardless of whether it is video or music, MPEG2 or MPEG4, SD or HD, encrypted or not, will be output unaltered eliminating the need for additional costly encoding or encryption equipment in the headend.

Additionally, both inputs and outputs can be daisy-chained with the input/output of a module being added to the input/output of all the preceding modules thus eliminating the need for RF splitters and combiners.

Configuration and Control of the modules can either done through the handheld controller or from any internet connection with the use of the CDC headend controller module. The remote control of the system provides two easy to use options with the TSuite computer application or through any internet browser for maximum customer choice.



## Main Features

- ✓ **TWIN modules** (two independent tuners per module) allowing up to 14 transcoded transponders/channels per chassis.
- ✓ **User friendly interface** allowing simple selection of which satellite transponder is output on which QAM channel including a decoded view of the satellite tables, output channel mode, and DISH Network™ installation mode.
- ✓ **Two completely independent and fully agile outputs** from 54 to 1002MHz (EIA Ch. 2-158) for easier organization of wider-than-6MHz QAM carriers.
- ✓ **Input switching matrix** allows for either of the two inputs to be routed to either demodulator including either one of the two inputs routed to both of the demodulators simultaneously.
- ✓ **Up to 1024QAM** output capability.
- ✓ **Remotely upgradeable firmware** allows for future updates without having to visit the headend.
- ✓ **Carrier wave and null packets output mode for easy system balancing** without an input signal or without a digital meter.
- ✓ **Extensive monitoring information for easy troubleshooting** (current and lowest input SNR, current and highest temperature reached, number of lock loss conditions over a period of time, etc.) with LED indicators on the front of the unit.
- ✓ **Back-lit LCD display handheld programmer or TSuite PC** application options for both on-site and remote configuration and troubleshooting.
- ✓ **Copy configurations from one module to another** with the handheld programmer for fast and easy module swaps (copy/paste).
- ✓ **Web page configuration and remote** management using the CDC system, including "DISH mode" for easy set-up.
- ✓ **Input/Output daisy-chain** architecture to avoid external splitters/combiners.
- ✓ **High performance**, MER>39dB over the full frequency range of 54-1002MHz.
- ✓ **High output level**, greater than 37dBmV with over 20dB of attenuation margin for easy balance and integration

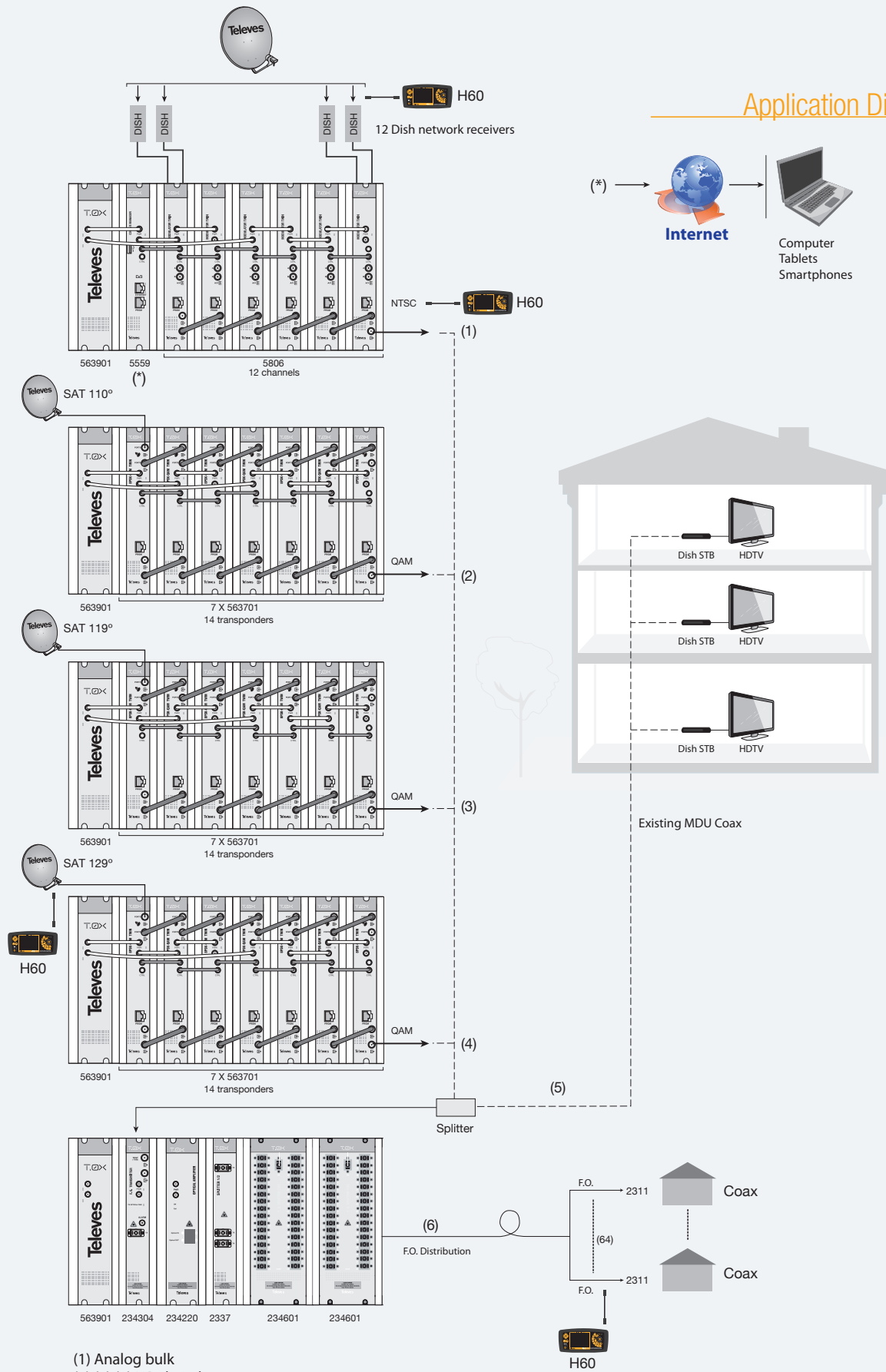
## Ordering Information

SMATV	
563701	8PSK-QAM TWIN Transmodulator
5806	Universal TWIN Modulator
563901	Power Supply Unit 110Vac UL

FIBER OPTICS	
2333	Optical Transmitter (1310nm/6dBm)
233310	Optical Transmitter (1310nm/10dBm)
2334	Optical Transmitter (1310nm/6dBm) / Return Path Receiver
233410	Optical Transmitter 1310nm/10dBm / Return Path Receiver
234304	Optical Transmitter (1550nm/4dBm)
234310	Optical Transmitter (1550nm/10dBm)
234220	EDFA Optical Amplifier (1550nm/20dBm)
2335	Optical Receiver
2336	Optical Receiver / Return Path Transmitter (1310nm/3dBm)
2337	Optical Splitter 2 way
2339	Optical Splitter 4 way
234401	Optical Splitter 8 way
234501	Optical Splitter 16 way
234601	Optical Splitter 32 way
2310	Outdoor Optical Receiver/Amplifier w/ Return Path Transmitter 1310nm)
231201	Outdoor Optical Receiver/Amplifier
2311	Domestic Optical Receiver

ACCESSORIES	
7234	Portable Universal Programmer
5301	19in Chassis, 7 modules+1PSU
5071	Wall Mounting Rail, 7 modules+1PSU
5239	Wall Mounting Rail, 12 modules+1PSU
507202	Lockable cabinet with Ventilation Unit, 7 modules+1PSU
422601	Power Bus Jumper (15.75 inches)
422602	Control Bus Jumper (15.75 inches)

# Application Diagram



- (1) Analog bulk
- (2) (3) (4) HD digital content
- (5) Regular coax distribution
- (6) Additional F.O. distribution

# Technical Specifications

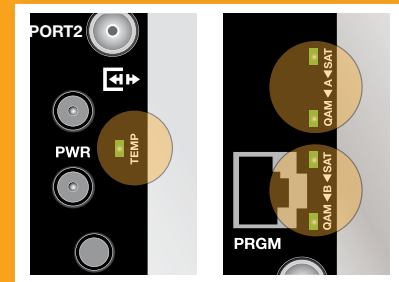
SATELLITE INPUT	Input frequency (agile)	MHz	950 - 2150	Input level	dBm	-70...-20	
	Frequency steps	MHz	1	Symbol rate	Mbaud	10-30	
	Input modulation	QPSK Legacy (EN300421) Turbo 8PSK - Turbo QPSK		FEC	QPSK Legacy	Viterbi 1/2, 2/3, 3/4, 5/6, 7/8 Reed Solomon (204, 188)	
	Input selection options	PORT 1 input-> TUNERS A and B (loop-through mode) PORT 1 input-> TUNER A / PORT 2 input-> TUNER B PORT 2 input-> TUNERS A and B			8PSK	Interactive Turbo Error Correction Reed Solomon (204, 188)	
	In/Out connectors	type	"F" female	Transmission filter		Square Root Raised Cosine	
	Input impedance	ohm	75	Roll-off Factor	%	QPSK legacy	35
	Loophthru losses	dB	0 ± 1			8PSK-TC QPSK-TC	20
QAM MODULATOR	Modulation format	QAM	16, 32, 64, 128, 256, 512, 1024	Symbol rate (max)	Mbaud	6,9	
				Roll-off factor	%	15 (12 for 1024 QAM)	
RF OUTPUT	Frequency range (agile)	MHz	57 ... 999 (EIA Ch 2 to 158))	Loophthru losses	dB	< 1,5	
	Frequency steps	MHz	1	MER (typ.)	dB	> 39	
	Output level (max.)	dBmV	35 ± 2	In/Out connectors	type	"F" female.	
	Adjustable level (min.)	dB	20	Out Impedance	ohm	75	
GENERAL	Powering voltage	Vdc	24	Consumption 24V	mA	600	
	Protection index	IP	20	Working temp.	°F	113 (forced ventilation for higher temp)	

## FRONT UNIT LED ALARMS

TEMPERATURE			
LED Color		Unit internal temperature (°F)	Remarks
	steady green	below 149	SAFE
	slow blink orange	between 149 ...185	ALARM
	fast blink red	above 185	DANGER

SAT TUNER STATUS A and B			
LED Color		Tuner status	Remarks
	steady green	LOCKED	good input C/N
	steady orange	LOCKED	low input C/N
	steady red	UNLOCKED	MANUAL mode
	fast blink red	UNLOCKED & SCANNING INPUT SIGNAL	AUTO mode

QAM output channels			
LED Color		QAM channel status	Remarks
	steady green	LOCKED	NORMAL mode
	fast blink green	LOCKED	CW, MUTED, & NULL modes
	steady orange	OVERFLOW	MANUAL mode
	fast blink orange	OVERLAP	between QAM output channels
	steady red	UNLOCKED	-
	fast blink red	DEACTIVATED	rainfade



# Televes®

PASSION for QUALITY

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