PT3060 ATSC 1.0 Exciter

The PT3060 ATSC 1.0 ProTelevision Technologies Exciter provides maximum efficiency for Broadcasters and Transmitter Manufacturers.

Besides a high RF and MER performance, the exciter offers the posibillity to be upgraded to ATSC 3.0 by a software license installation.

- Software upgradable to ATSC 3.0.
- High performance digital adaptive linear and nonlinear precorrection for maximum transmitter performance.
- OPTIPOWER® - market leading enhanced adaptive precorrection and PAPR clipping technology for maximum optimization of transmitter power efficiency (Option PT3756)
- VHF and UHF (selectable frequency from 30MHz to 860 MHz in steps of 1Hz)
- Integrated Multi Standard Global Navigation Satellite System (GNSS) receiver for time and frequency reference based on GPS and GLONASS systems (Option PT3711).
- Three choices of internal precision (Local Oscillator) according to the needs of the system: 2ppm, 0.25ppm or 0.01ppm.
- 4x Ethernet Gigabit interfaces for control and data transport.
- User friendly intuitive WEB GUI control for use with standard Web Browser (Internet Explorer, Mozilla Firefox, Google Chrome and Opera compatible).
- SNMP client Get/Set/Trap.
- Avaliable SW based Automatic Level Control to regulate any third party power amplifier output. (Option PT3770/00).
- Modes M/H and SFN supported.

ATSC

OPTI POWER®

ATSC 3.0 UPGRADABLE

PRO TELEVISION TECHNOLOGIES

Application

The PT3060 ATSC 1.0 Exciter is characterized by a high RF and MER performance and by its unique ability to optimize efficiency of any DTT amplifier using its patented OptiPower Technology.

The PT3060 ATSC 1.0 modulator is designed in accordance with the ATSC standard A/53 with respect to ATSC channel coding and modulation.

Support for ATSC M/H transmission in accordance to the A/153 standard and support for SFN transmission in accordance with the A/110:B and A/110:2011 revisions of the SFN standard are available as optional features.

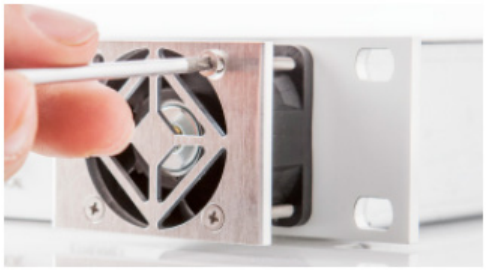
When the A/153 M/H option is installed the PT3060 modulator will o er a free choice between manual selection of either A/53 or A/153 mode and, if preferred, automatic toggling between A/53 and A/153 mode.

The automatic toggling between A/53 and A/153 mode is controlled by the content of the applied input stream (A/153 mode activated whenever the input stream contains the M/H PID that is characteristic of M/H transmission).

The automatic selection of mode facilitates trouble free configuration of the transmitters based on the content of the input stream. The automatic mode selection is ideal for the typical scenario where day time transmissions carry legacy as well as M/H content while the night/ prime time transmissions reserve all bandwidth for legacy content only.
ProTelevision's highly advanced adaptive pre-correction technology operating in thousands of installations worldwide has proven its worth and provided Broadcasters a reduction in OPEX cost due to the reduced power consumption.

The software flexibility within the PT3000 platform enables the broadcasters and transmitter manufactures to upgrade their systems to the ATSC 3.0 standard by a simple installation of a software licence.

Easy navigation


Easily exchangeable fan

OPTI POWER®

Optipower is a ProTelevision Technologies' proprietary solution developed to provide an increase of quality (MER) and efficiency to new or existing TV transmitters.

Optipower consists of:

1) Enhanced Nonlinear Precorrection algorithm with DEEP MEMORY EFFECTS based on the Volterra polynomial series.
2) Adaptive PAPR clipper.

These two adaptive mechanisms, allow achieving the maximum MER value on any transmitter system (VHF, UHF, Class AB, Doherty, etc...) compared with other precorrection solutions on the market.

This MER extra increase, can be used to enhance the overall efficiency of the transmitter system.

In addition, ProTelevision Optipower (Option PT3756) will provide live measurements on the WEB Graphical User Interface: Shoulders, MER, PAPR, MER vs Carrier and a Spectrum graphic on the channel transmitted (see picture).

Main specifications for (Optipower) precorrection and feedback signals: Connectors: SMA 50 ohm // Level: -10dBm to +10dBm // Return Loss > 20dB //Frequency: 30MHz to 860MHz.

Supported modulator modes

A/53 ATSC

A/153 ATSC M/H (option PT3713)

A/110:B and A/110:2011 SFN mode (option PT 3714)

Test modes:	Single carrier, 8VSB spectrum driven by null-packet input (PRBS mode)

Output

RF-output

Connector:	N female, 50 ohm
Center frequency:	Adjustable 30-860 MHz in steps of 1 Hz
Frequency stability:	Internal ref 2 ppm to 0.01 ppm or in accordance with external ref. accuracy
Spectrum polarity:	Inverted and non-inverted, user selectable
Level:	Adjustable [-10, +10] dBm (up to +20 dBm with PT 3740 Option)
Stability:	± 0.5 dB
Return loss:	> 16 dB

Spectrum outside band (for RF Output 0 dBm @ 6 MHz)

+/-3,8 MHz:	0db
+/-4,25 MHz (shoulders):	<-50 dB (typically -55 dB)
Harmonics and spurious:	< -55 dBc
MER:	> 45 dB (typically 50 dB)

Internal frequency reference

Selectable Local Oscillator for customer's specific requirements

PT3710/00	TCXO 2 ppm (default)
PT3710/10	OCVCXO 0.25 ppm (optional)
PT3710/20	OCVCXO 0.01 ppm (optional)

Control Interface

Ethernet interface

Connector:	RJ45 (1 in front panel, 4 in rear panel)

RS232/RS485 interface

Connector:	9-pin SUB-D Male in rear panel

HW interface

Connector:	15-pin SUB-D Female in rear panel
Alarm output:	Two user programmable alarms via separate floating relays, common make-break contacts, contact rating 60V/0.2 A (5 W max)
Input:	Separate Reset control and Output muting control, user programmable activation: ground closure or open

Power supply

Voltage:	Accepts all the DC range from 100-240 VAC
Frequency:	47-63 Hz
Power consumption:	Max. 40 W

Electrical specifications

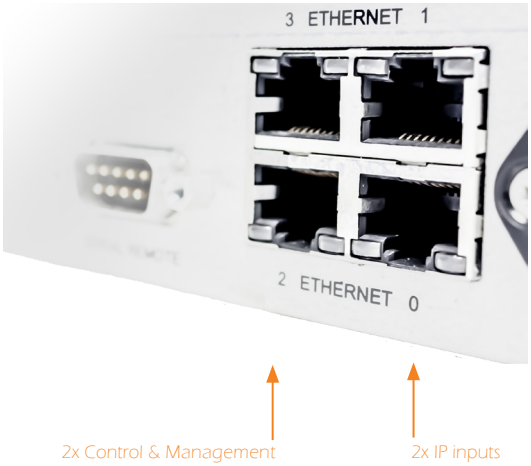
Inputs

ASI Inputs/SMTPE-310M inputs

No. of ASI inputs:	2
Connector:	BNC
Input Impedance:	75 ohm
Return Loss:	> 13 db
Redundancy:	User selectable switching policy between "Primary" and "Secondary" ASI source
Seamless Switching:	Suported for any combination of inputs (ASI/IP) in SFN Configuration

Ethernet ports (1GBit/sec)

Total No. of ports:	4 (2 of them optimized for Data Input)
Connector:	RJ45 quadruple PCB connector



GNSS Receiver Input (Option PT3711)

Connector:	TNC 50 ohm PCB connector
Frequency:	1.575 GHz (GPS) / 1.598-1.606 GHz (Glonass)
Antenna net gain range:	0 to +32 dB
Antenna:	Passive or active antenna (not included)
Antenna DC supply:	OFF, 3 Vdc or 5 Vdc (±0.5 V) user selectable
Antenna DC current:	max 50 mA

External Clock reference (carrier frequency and SFN timing):

Connector:	BNC
Frequency:	10 MHz
Level:	100 mV-3 Vpp
Impedance:	50 ohm/ > 1 kohm, user selectable
Coupling:	AC

Time reference (SFN timing)

Connector:	BNC
Frequency:	1 PPS
Level:	0-5 V, user selectable trigger point1V or 1.6V
Trigger:	Rising / falling edge, user selectable
Impedance:	50 ohm/ > 1 k ohm, user selectable

Environmental Specification

Climatic Temperature range operating:	-5°C to +55°C (+23 F to +131 F)
Temperature range within specs:	+5°C to +45°C (+41 F to +113 F)
Temperature range storage:	-30°C to +70°C (-22 F to +158 F)
Humidity operating:	max 90% RH
Humidity storage:	max 90% RH
EMC	Compliant to EN55022 (emission) and EN55024 (immunity)
Safety	Compliant to EN60950-1
RoHs	Compliant with directive 2011/65/EU

Mechanical Specification

Cabinet:	19" wide, 1RU high
Width:	19"
Depth:	440 mm
Height:	44 mm (1.75")
Weight :	6 kg (16 lbs)
Cooling:	Long life externally mounted chassis fans to assist natural convection
Transport and storage:	Vibration acc. to IEC Publ. 68

Ordering codes:

ATSC Exciter

PT3060	ATSC 1.0 Exciter

Options, software

PT3713	A/153 ATSC M/H mode*
PT3714	A/110:B and A/110:2011 SFN timing*
PT3754	Adaptive digital Pre-corrector
PT3756	OPTIPOWER®: Enhanced precorrection and adaptive PAPR clipper
PT3770/00	Automatic Level Control
PT3263	ATSC 3.0 License
PT3740	+20 dBm output amplifier

Options, hardware

PT3711	GNSS module (GPS and GLONASS support)
PT3710/10	Medium Precision Oscillator OCVCXO 0.25 ppm
PT3710/20	High Precision Oscillator OCVCXO 0.01 ppm

*For transmission to air of these transmission modes/features, it is required a license from the patent owner.
Please check: http://atsc.org/policies/patent-statements/

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