

# PT3063 ATSC 3.0 Exciter



World's first ATSC 3.0 compliant exciter for both South Korea and U.S.A. with Multiple PLP, Multiple Subframes and Layer Division Multiplex support.

The PT3063 ATSC 3.0 ProTelevision Technologies Exciter provides maximum efficiency for Broadcasters and Transmitter Manufacturers.

- ◆ Future proof technology based on a fully reconfigurable, software defined implementation allowing **ATSC 1.0/ ATSC 3.0 dual configuration**.
- ◆ **SNMP** client Get/Set/Trap.
- ◆ **Layer Division Multiplex (LDM)** support (Option PT3730).
- ◆ **4x Ethernet Gigabit** interfaces for control and data transport.
- ◆ **OPTIPOWER®** - market leading enhanced adaptive precorrection and PAPR clipping technology for maximum optimization of transmitter power efficiency (Option PT3756)
- ◆ Multiple PLP and Multiple Subframes
- ◆ Integrated Multi Standard Global Navigation Satellite System (GNSS) receiver for time and frequency reference based on **GPS and GLONASS** systems (Option PT3711).
- ◆ **VHF and UHF** (selectable frequency from 30MHz to 860 MHz in steps of 1Hz)
- ◆ Three choices of internal precision (Local Oscillator) according to the network requirements 2ppm, 0.25ppm or 0.01ppm.
- ◆ Power Output selectable from -10dBm to +20dBm in steps of 0.1dB (Option PT3740).
- ◆ Available SW based **Automatic Level Control** to regulate any third party power amplifier output. (Option PT3770/00).
- ◆ **Seamless switching.**



## Application

The **PT3063 ATSC 3.0 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.

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.

ProTelevision Technologies' ATSC 3.0 Exciter offers a unique value proposition for Broadcasters and transmitter manufacturers providing a cost effective product based on our established software defined hardware platform.

ProTelevision Exciter hardware platform also offers the capability for **software upgrade from ATSC 1.0 to ATSC 3.0** which enables operators remotely to change the modulation standard for testing and verification purposes.

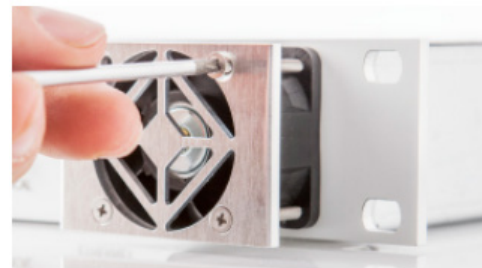
The PT3063 exciter provides **fully IP interface connectivity** with 4 Gigabit IP ports; two of them dedicated for IP content input and the other two for control and management. Supporting seamless switching on the IP inputs, gives customers a full IP redundancy and robustness in the transmitting signal.

The PT3063 modulator is designed according to the ATSC 3.0 standard and supports all the approved modes including the **LDM** feature (Option PT3730).

The ATSC 3.0 Exciter is **fully STL compliant**, with Multiple PLP, Multiple Subframes and Layer Division Multiplex and the world's first flexible exciter with full support for South Korea and U.S.A.



Easy navigation



Easily exchangeable fan

## OPTI POWER<sup>®</sup>

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.



## SIGNAL PROCESSING ATSC 3.0

System bandwidth:	6 MHz, 7 MHz and 8 MHz
Multiple PLP:	64 PLP
PLP modulation:	QPSK, 16QAM, 64QAM, 256QAM, 1024QAM, 4096QAM
PLP LDPC code rate:	2/15, 3/15, 4/15, 5/15, 6/15, 7/15, 8/15, 9/15, 10/15, 11/15, 12/15, 13/15
FFT Size:	8K, 16K, 32K
Guard intervals (samples):	192, 384, 512, 768, 1024, 1536, 2048, 2432, 3072, 3648, 4096 and 4864
Pilot pattern:	SP3_2, SP3_4, SP4_2, SP4_4, SP6_2, SP6_4, SP8_2, SP8_4, SP12_2, SP12_4, SP16_2, SP16_4, SP24_2, SP24_4, SP32_2, SP32_4
Signalling FEC Type	Modes 1 to 7 for LI-Basic and LI- Detail
Network modes:	MFN & SFN
Test modes:	Single carrier, PRBS, NULL-Bootstrap and OFDM PAPR 3

## 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 (+20dBm with Option PT3740)
Stability:	± 0.5 dB
Return loss:	> 12 dB

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

Harmonics and spurious:	< -55 dBc
Shoulders:	< -50 dB (typically -55 dB)
MER:	> 45 dB (typically 50 dBc)

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)
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### RS232/RS485 interface

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

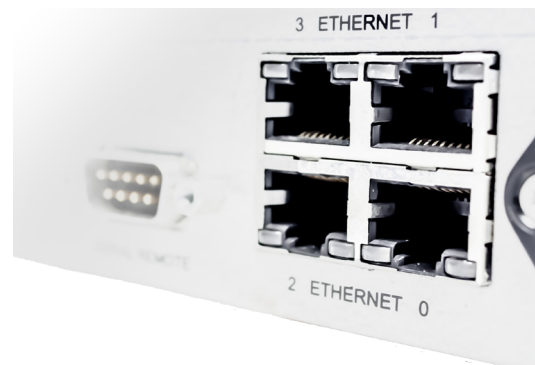
## ELECTRICAL SPECIFICATIONS

### Inputs

No. of inputs:	2
Input mode:	Ethernet RJ45 (IP Gigabit)
Redundancy:	User selectable switching policy between "Primary" and "Secondary" source

Ethernet ports (1GBit/sec)

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



2x Control & Management

2x IP inputs

GNSS Receiver Input (Option PT3711)

Connector:	TNC 50 ohm
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 k ohm, user selectable
Coupling:	AC

Time reference (SFN timing)

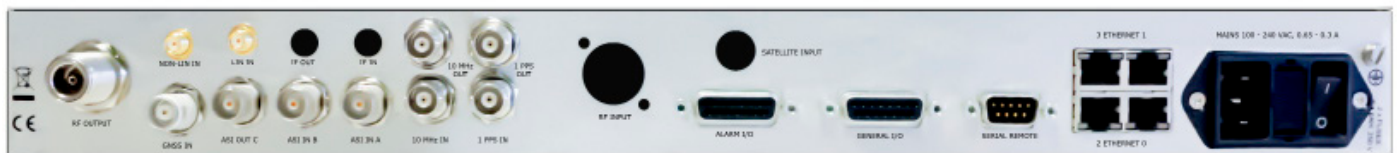
Connector:	BNC
Frequency:	1 PPS
Level:	0-5 V, user selectable trigger point 1V or 1.6V
Trigger:	Rising / falling edge, user selectable
Impedance:	50 ohm/ > 1 k ohm, user selectable
Coupling:	DC

## 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



ASI available for dualcast configuration  
ATSC 1.0/ATSC 3.0

## Ordering codes:

### ATSC 3.0 Exciter

PT3063 ATSC 3.0 Exciter

### Options, software

PT3754 Adaptive digital Pre-corrector  
 PT3756 OPTIPOWER®:  
 Enhanced pre-correction and adaptive PAPR clipper  
 PT3770/00 Automatic Level Control  
 PT3730/00 Layered Division Multiplexing (LDM)  
 PT3740 +20dBm 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

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