

PULSE TRANSMITTER SYSTEM PTS SERIES: PRODUCT DESCRIPTION

Transmitter Overview

The transmitter is a modular system comprised of one or more pulse transmitter modules (PTMs). The output power of a PTM is typically specified at a maximum of 7.5 kW, although this may vary depending on other specifications of the transmitter.

Each PTM has a single output port which may be used to directly drive an antenna or antenna group. Alternatively, optional multi-port power combiners may be used to combine the outputs of multiple PTMs to provide a reduced number of higher power ports.

A Pulse Transmitter System comprised of four PTM's is shown in the image below.



Pulse Transmitter System Comprised of Four Pulse Transmitter Modules

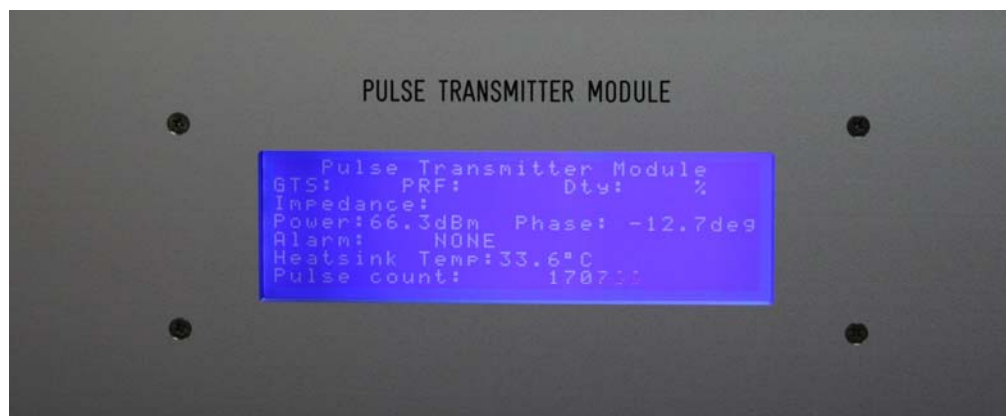
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Genesis Software Pulse Transmitter Module

A Genesis Software pulse transmitter module (PTM) is shown in the above image. The PTM incorporates extremely sophisticated inbuilt monitoring and diagnostics and error reporting, and measurements are both displayed on the front panel LCD and routinely recorded to a log file during operation. Examples of parameters that are measured included output power, output phase and the complex impedance of the load (antenna) during operation under full power.

The front panel display format is shown in the following image.



Pulse Transmitter Module Display Format

The Pulse Transmitter Module is comprised of four power amplifiers. These are controlled and driven by a microcontroller-based transmitter control module, which incorporates sophisticated monitoring of the operational characteristics of each power amplifier. The outputs of the four power amplifiers are combined to provide a single 7.5 kW output port.

The modular design of the transmitter facilitates ease of maintenance and troubleshooting, and in event of a failure, modules may be readily replaced to make restitution.

The internal arrangement of a PTM is shown in the following image.

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Internal View of Genesis Software Pulse Transmitter Module

The PTM includes a directional coupler that provides the means to measure the forward and reflected power during transmission. This allows the complex impedance characteristics of the antenna groups to be measured under full power, useful both for monitoring purposes during normal operation and for automatic transmitter shutdown in the event of a load fault. The phase of the transmitted output is also measured enabling the system to automatically check this critical calibration.

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Specifications

RF	
Frequency Range	Fixed frequency, e.g., 30 MHz
Peak Envelope RMS Power	15 kW (two ports)
Harmonics	< 60 dBc
Spurious	< 60 dBc
Duty cycle	5%, 7.5%
Efficiency	> 60%
Maximum pulse length	400 µs
Minimum pulse length	1 µs
Occupied bandwidth	200 kHz (typical). Modulation dependent
RF drive level	10 dBm CW or gated
Modulation shape	Square, shaped, triangular
Max VSWR	< 1.4
Protection	Active load monitoring pulse-to-pulse
Status Readouts	
Pulse count	
Output power	dBm
Output phase	Degrees
PA temperature	
Alarm conditions	VSWR, fan failure, etc.
Controls	
Modulation voltage	2V (differential)
Trigger	CMOS (differential)
Communication	RS485
Power	
Mains supply	110V to 240V
Mains power	Duty cycle dependant – 2kW typical maximum
Mechanical	
Control connector	D25 (twisted pairs)
RF out	N-type
Drive input	BNC
Sample output	BNC
Housing	19" equipment cabinet, 600mm deep