T-900 Series Multi-Mode Programmable Transmitters

Transmitter Features:

- **S-Band and L-Band Multifunction Ruggedised Airborne Environment Data and Video Transmitter Series**
- **Unique Apollotek Design enables User Selection of PCM/FM modulation, PCM / SOQPSK modulation, Analogue / FM or Analogue Pre-modulation Filtered unclocked PCM Data with FM or SOQPSK Modulation**
- **Internal Pre-Modulation Digital Filtering linked to PCM Bit Rate**
- **Internal Pre-Modulation Digital Filtering linked to Analogue Frequency Response**
- **Internal IRIG 106 Randomizer Option when configured for NRZ-L PCM Data and Clock inputs**
- **FM frequency response up to 15 MHz**
- **Programmable Centre Frequency Range of up to 200 MHz with user defined frequency steps**
- **RF Power Output Options from 10 milliwatts up to 10 Watts**
- **Programmable through a Serial Data Port to a host PC using Apollotek supplied Windows GUI utility software.**
- **100 KHz/Volt to 10 MHz/Volt nominal carrier deviation sensitivity can be user programmable for an analogue modulation input signal**
- **28 Volts ± 4 Volts DC Power as standard. Alternative DC Supply options available.**
- **Single Microminiature D-Type connector for Power Supply and Modulation Input as standard**
- **50 Ohm SMA RF Output Connector**
- **Designed and Manufactured in the UK**

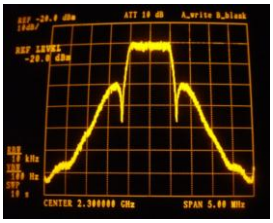
The Apollotek T-900 Multi-Mode series of Telemetry and Video Transmitters are designed using modern efficient components and are qualified for aerospace and similar severe operational environment applications.

C-Band, S-Band, and L-Band variants versions are available with typically a 200 MHz centre frequency tuning range.

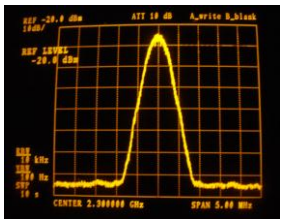
This range of Apollotek Digital transmitters utilises design concepts based on FPGA and DSP technology to provide a uniquely programmable transmitter capable of operation as a traditional PCM/FM Transmitter and as an SOQPSK bandwidth efficient Transmitter and also as an Analogue Input FM Transmitter.

The T-900 Series can also be user configured to take a pre-modulation filtered serial PCM stream from an Encryption Support Unit and then translate the signal into SOQPSK Modulation.

T-900 Series Modulated RF Bandwidth Spectrum examples for a PCM input signal with the same bit rate is shown here for both PCM/FM and SOQPSK Modulation schemes:



PCM/FM Configuration



SOQPSK Configuration

The T-900 Series transmitter housing is machined from solid aluminium sections using precision machining processes to provide a very high mechanical strength transmitter assembly. The T-900 Transmitter series can also be supplied in custom mechanical assembly configurations to meet new application specific requirements and they can also be supplied in configurations which match the mounting arrangements of legacy telemetry transmitters for existing applications.

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STANDARD SPECIFICATIONS

General:

Standard Frequency Bands (Other frequency bands can be supported)	200 MHz programmable tuning range over 1400 MHz to 1600 MHz frequency band. 200 MHz tuning range over 2200 MHz to 2400 MHz
Nominal Frequency Stability	± 0.002 %
Output Power	Can be supplied in mechanical and electrical configurations providing from 10 milliwatts up to 10 Watts.
VSWR	Protected against damage from any VSWR

Modulation:

Modulation Type	User Selectable PCM/FM or SOQPSK Modulation or Analogue Voltage / FM.
Analogue Frequency Response	DC to 15 MHz ± 1.5 dB as standard (other ranges available) for Analogue Input Signal
Analogue Input Carrier Deviation Sensitivity Range	Nominal 100 KHz to 10 MHz per Volt rms range – user defined
TTL Clock and Data Bit Rate Range for PCM/FM and SOQPSK Modulation	10 MBPS for NRZ PCM Codes as standard. Externally Pre-modulation filtered analogue unclocked PCM signal input option available for both PCM/FM and SOQPSK Modulation schemes

Power Requirements:

Voltage	28V ±4 Volts DC (Other DC Power supply voltage options including 12 V DC are available)
Current	Nominal 950 mA for 5 Watts output at 25^{O} Centigrade with 28 V DC power supply. Current will vary depending on configuration
Isolation	Power and Modulation return are common to case ground as standard

Mechanical:

Nominal Dimensions	Up to 5 Watts: Standard 55 mm wide 80 mm long and 28 mm high excluding connectors 5 Watts to 10 Watts: Standard 65 mm wide 90 mm long 35mm high excluding connectors 10 Watt minimum footprint package Option: 55 mm wide 80 mm long and 38 mm high excluding connectors.
Power, Modulation and Programming Connector	15 way microminiature D-Type
RF Output Connector	SMA as standard. Other options available

Environmental:

Normal Operating Temperature	-30 ^{O} Centigrade to +70 ^{O} Centigrade baseplate temperature
Vibration	>20g sine, 0.1 g^2 random, 20Hz to 2000Hz, in any axis
Shock	100g for 1 ms in three mutually perpendicular axes
Acceleration	100g in three mutually perpendicular axes