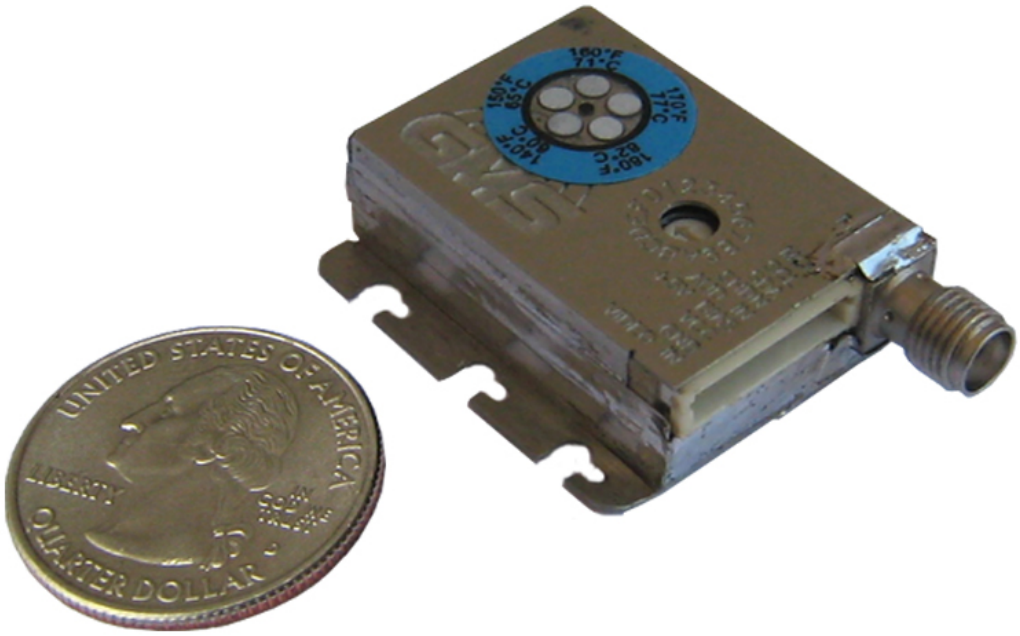
User's Manual

The most important thing we build is trust.

# NT Series Transmitters

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## Table of Contents



## List of Tables



## List of Appendixes

## Revision History

| Version | Date | Main Changes from Previous version | Created by |
|---|---|---|---|
| X1 | 04/25/05 | Initial Release | TM |
| X2 | 02/24/10 | Change doc format | RM |
| | | | |

# 1. Introduction

## 1.1 About the Manual

The NT Series Transmitters are fully synthesized, microprocessor controlled FM transmitters for wireless transmission of broadcast quality video and audio. A single audio channel is FM modulated on a sub-carrier, and combined with the video signal. The NT can operate in bands from 900 MHz to 6 GHz with a typical RF output level of either 1 mW or 250 mW (factory set) into a 50 Ω load.

An optional sub-miniature 1 W Power Amplifier (PA) is available, which was designed as a companion unit to the NT. The picture below shows how the NT mounts onto the 1 W PA. It accepts 250 mW RF from the NT and boosts it to over 1 Watt. A control signal from the NT (PA shutdown) keeps the PA off until the NT has locked on frequency. This TTL signal can also be driven externally.

# 2. Functional Description

## 2.1 Power

The NT Series Transmitter operates between +11 to +15 VDC. @150mA (typical) for all frequencies at 250 mW RF output. DC is applied through the miniature header connector (J1), Pin 3 VCC and Pin 2 GND.

## 2.2 RF Output

The unit has a typical RF output of 250 mW or 1 mW (model dependent) into a 50 Ω load. A threaded female SMA connector is supplied on the unit.

## 2.3 Audio

The unit is supplied with one audio sub-carrier. The miniature header connector (J1-Pin 5 & 2 [GND]) is used to provide unbalanced audio input. The NT can be ordered with either Line or Microphone input. The Microphone input level is set to -34 dBm. Line level is configured for +8 dBm. A +5 VDC is supplied for Microphone Bias.

## 2.4 Video

Video is applied though the miniature header connector (J1-Pin 1 & 2 [GND]). Nominal input level is 1 V peak-to-peak. The video input is terminated into 75 Ω.

## 2.5 Operating Frequency

A 16 position rotary switch on top of the unit adjusts the frequency of the transmitter. The exact frequencies that each position represents are determined during the ordering process and programmed by the factory.

# 3. Specifications for NT Series Transmitter

## 3.1 RF

| | |
|---|---|
| Frequency Range | 0.9 – 6.0 GHz standard<br>(consult factory for additional frequencies) |
| Frequency Stability | +/-0.005% |
| Power Out | Typical 250 mW or 1mW (optional) |
| Spurious | Lower than -25 dBm |
| Antenna mismatch | Open/short no damage |

## 3.2 Power

| | |
|---|---|
| Voltage | +11 to +15 VDC |
| Current | 150 mA typical for 250 mW RF output<br>80 mA typical for 1 mW RF output |

## 3.3 Video

| | |
|---|---|
| Input Impedance | 75 ohm |
| Input Level | 1 Volt (peak to peak) |
| Pre-emphasis | Per CCIR 525/625 line |
| Frequency Response | 10 Hz – 5 MHz (NTSC) or 5.5 MHz (PAL) |

## 3.4 Audio

| | |
|---|---|
| Sub-carriers available: MHz | 4.83, 5.8, 6.0, 6.2, 6.5, 6.8, 7.02, 7.5, 8.3, 8.5, 8.59 MHz (any one) |
| Frequency Response | 50 Hz – 15 KHz, 1 dB peak-to-peak |
| Injection Level | -26 dBc typical |
| DEV Sensitivity | ±75 KHz/2.45 Vrms (Line level)<br>±75 KHz/-38 dBm (MIC level) |
| MIC bias | +5 VDC |
| Audio pre-emphasis | Factory set for 50 (PAL) or 75 (NTSC) µSec |

## 3.5 Environmental

| | |
|---|---|
| Temperature Range | -20° C to +60°C |
| Humidity | 0 to 100% non-condensing |

## 3.6 Mechanical

| | |
|---|---|
| Size | 0.9 in. X 1.30 in. X 0.38 in. (0.44 cu. in.) |
| Weight | < 1 oz. (28.4 g) |
| Input Connector J1 | JST, ZR |

The following details the pin-out of the PTO connector:

| PIN # | DESCRIPTION |
|---|---|
| 1 | Video In |
| 2 | Ground |
| 3 | DC Input |
| 4 | MIC Bias, 5 VDC |
| 5 | Audio In |
| 6 | Pa Shutdown |
| 7 | SDA |
| 8 | SCL |
| 9 | MCU |

**Table 1: PTO Connector**

Note: Pins 7-9 are used for factory set-up.

Output connector J2 (RF out) SMA-F

## Appendix A – Cable Drawing NT Series PWG Cord