1 T836/837 General Information

This section provides a brief description of the T836 transmitter and T837 exciter, along with detailed specifications and a list of variants available.

The following topics are covered in this section.

1.1 Introduction

The T836 is a synthesised, FM base station transmitter for single or multichannel operation in the 136 to 174MHz frequency range with a standard power output of 25W. The RF section of the transmitter comprises a frequency synthesiser which provides 170mW of frequency modulated RF drive to a two stage, wide band output driver followed by a 25W power amplifier.

A thermal shutdown feature is provided in the T836 should operating temperatures exceed acceptable levels.

The T837 is a synthesised, FM base station exciter for single or multichannel operation in the 136 to 174MHz frequency range. With a standard power output of only 800mW, the exciter is designed for use with the T838 50W power amplifier. The RF section of the exciter comprises a frequency synthesiser which provides 170mW of frequency modulated RF drive to a two stage, wide band output amplifier.

The synthesiser frequency is programmed via an EPROM which is attached to a separate plug-in memory PCB. A DIP switch on the memory PCB allows fast single channel selection from a multichannel programmed EPROM, but for true multichannel capability the EPROM must be addressed separately via an additional D-range connector at the rear of the set.

A wide selection of audio characteristics may be obtained from the audio processor. Optional circuit blocks are an audio compressor and a pre-emphasis stage. They can be bypassed or linked to one or both audio inputs, and then back into the remaining audio circuitry in almost any combination. All audio processor options are link selectable.

All components except those of the VCO and memory PCBs are mounted on a single PCB. This is secured to a die-cast chassis which is divided into compartments to individually shield each section of circuitry. Access to both sides of the main circuit board is obtained by removing each of the chassis lids. There is provision within the chassis to mount small option PCBs.

1.2 Specifications

1.2.1 Introduction

The performance figures given are minimum figures, unless otherwise indicated, for equipment tuned with the maximum switching band and operating at standard room temperature (+22°C to +28°C).

Where applicable, the test methods used to obtain the following performance figures are those described in the EIA specification. However, there are several parameters for which performance according to the CEPT specification is given.

Details of test methods and the conditions which apply for Type Approval testing in all countries can be obtained from Tait Electronics Ltd.

1.2.2 General

Frequency Range	.. 136-174MHz (refer to Section 1.3)
Modulation Type	.. direct FM
Frequency Increment	.. 5 or 6.25kHz
Switching Range	.. 8MHz
Number Of Channels:	
Standard	.. 1
Optional	.. 8
Internally Selectable	.. 128
Supply Voltage:	
Operating Voltage	.. 10.8 to 16V DC
Standard Test Voltage	.. 13.8V DC
Polarity	.. negative earth only
Polarity Protection	.. diode
Keying Supply (if required)	.. -50V DC
Supply Current:	
Transmit - T836	.. 4.5A (typical)
- T837	.. 600mA
Standby	.. 120mA
Load Impedance	.. 50 ohms
Operating Temperature Range	.. -30°C to +60°C
Frequency Stability (see also Section 1.3)	.. ±2.5ppm, -30°C to +60°C

Dimensions:

Height		.. 191mm
Width		.. 60mm
Length	- T836	.. 322mm
	- T837	.. 316mm

Weight .. 2.1kg

Time-Out Timer (optional) .. 1 to 4 minutes (adjustable)

Tail Timer .. 5ms to 4 seconds (adjustable)

Transmit Key Time .. <25ms

Duty Cycle (T836 Only) .. 100% @ 25W at +25°C
.. 30% @ 25W at +60°C
.. 100% @ 10W at +60°C

1.2.3 RF Section

Adjacent Channel Power (full deviation):

Wide Band (±25kHz / 15kHz B / W)	.. -75dBc
Narrow Band (±12.5kHz / 7.5kHz B / W)	.. -65dBc

Transmitter Side Band Noise:
(no modulation, 15kHz bandwidth)

At ±25kHz	.. -95dBc
At ±1MHz	.. -105dBc

Radiated Spurious Emissions:

Transmit	.. -36dBm to 1GHz -30dBm to 4GHz
Standby	.. -57dBm to 1GHz -47dBm to 4GHz

Conducted Spurious Emissions: (T836 Only)

Transmit	.. -36dBm to 1GHz -30dBm to 4GHz
Standby	.. -57dBm to 1GHz -47dBm to 4GHz

Power Output:

T836	- Rated Power	.. 25W
	- Range Of Adjustment	.. 5-25W
T837		.. 800mW

1.2.4 Audio Processor

Inputs Available .. line, microphone and CTCSS

Line Input:

- Impedance .. 600 ohms (balanced)
- Sensitivity (60% modulation @ 1kHz)-
  - With Compressor .. -50dBm
  - Without Compressor .. -30dBm

Microphone Input:

- Impedance .. 600 ohms
- Sensitivity (60% modulation @ 1kHz)-
  - With Compressor .. -70dBm
  - Without Compressor .. -50dBm

Modulation Characteristics

Frequency Response (below limiting) .. flat or pre-emphasised (optional)

Line And Microphone Inputs:

- Pre-emphasised Response-
  - Bandwidth .. 300Hz to 3kHz
  - Below Limiting .. within +1, -3dB of a 6dB / octave pre-emphasis characteristic
- Flat Response .. within +1, -2dB of output at 1kHz

Above Limiting Response .. within +1, -2dB of a flat response (ref. 1kHz)

Distortion .. 2%

Hum And Noise:

- Narrow Band .. -50dB (CEPT)
- Wide Band .. -55dB (300Hz to 3kHz [EIA]) typical

Compressor (optional):

- Attack Time .. 10ms
- Decay Time .. 800ms
- Range .. 50dB

CTCSS Input:

- Bandwidth .. 65 to 250Hz
- Response .. within ±1dB of a flat response (ref. 150Hz)

1.3 Versions

Description	Version			
	10	15	20	25
136-156MHz	●	●		
148-174MHz			●	●
2.5kHz Deviation		●		●
5kHz Deviation	●		●	
±2.5ppm TCXO (-30°C to +60°C)	●	●	●	●

Note: A TCXO with a stability of ±1ppm (0°C to +60°C) is available to suit specific requirements. Contact your nearest authorised Tait Dealer or Service Centre for further details.