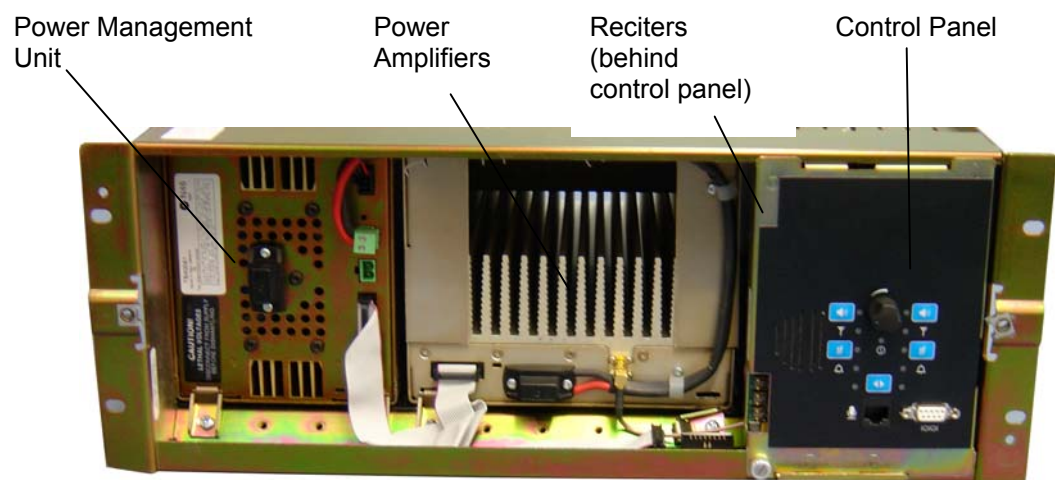


# TB9100 Product Overview

## Introduction

The Tait TB9100 is a digital base station intended for APCO Project 25 conventional, trunked, or simulcast applications. It is equally suitable as a talk-through repeater or as a line-connected base station. A flexible software-based radio system, it provides 5 W, 50 W or 100 W channel in a 4U sub rack.



TB9100 sub rack with front panel removed

This modular design makes replacement easy. Rugged construction with generous heatsinks and a front-to-rear fan-forced cooling system mean that the base station can transmit continuously at full power with an air intake temperature from  $-30^{\circ}\text{C}$  to  $+60^{\circ}\text{C}$  ( $-22^{\circ}\text{F}$  to  $+140^{\circ}\text{F}$ ).

## Reciter

The reciter contains the receiver, exciter and network board. It is also the brains of the base station, with the following functions:

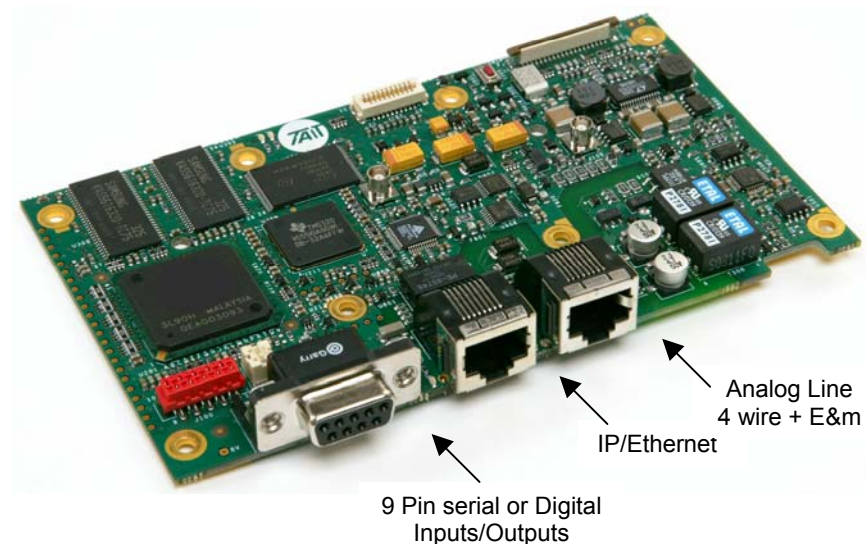
- controlling base station operation
- storing the channel table and other configuration information
- holding licenses for optional features
- collecting faults from other modules and generates alarms
- running Task Manager

The reciter's state-of-the-art RISC processor and DSP enables it to carry out these functions. It communicates with other modules in the sub rack over a control bus.

A reciter covers one sub band (a 40-50 MHz window). The receiver and exciter can be independently tuned to any frequency within the switching range of the receiver and exciter.

## Network Board

The Network Board provides Ethernet, line audio, digital inputs and outputs, and other interfaces such as a coaxial relay drive output, Tx Key, and Rx Gate.



Network board.  
Each Network Board is fitted inside the reciter.

## Power Amplifier

The power amplifier (PA) is available as 5 W, 50 W, and 100 W modules. It receives the RF signal from the reciter and amplifies it to the required level. The reciter controls the frequency based on its channel table and it tells the PA what power level to use. The PA then waits for the key-up signal.

## Power Management Unit

The power management unit (PMU) has been designed specifically for the TB9100 base station. It is therefore sized to provide sufficient power for one sub rack (50 Watt channel or one 100 W channel). It has the following features:

- Power factor corrected
- Can operate with mains supply from 88-264 V AC (no switching required)
- DC supplies have floating inputs, so that the supply can be negatively or positively earthed
- Optional auxiliary power output (12, 28 & 48V at 40 W) for powering external equipment.
- Optional standby module for maximum power saving capability

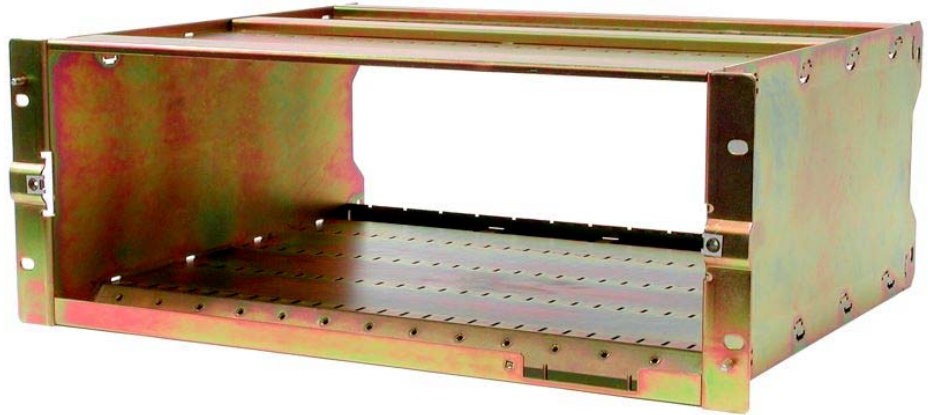
The PMU design is modular, so you only need to purchase the sub modules needed for the available power supplies. For mains supply only, you buy a PMU that only has an AC-DC converter. For DC power supply only, you buy a PMU with a DC-DC converter. For AC/DC operation, you need sub modules for both power sources. For power saving operation, a low current standby sub module is added, which provides just enough power for the receiver when the base station is in Deep Sleep mode and the main PMU is switched off.

Currently, the DC power supply sub modules and the auxiliary power output are in 12 V, 24 and 48 V versions. You are able to select input and output voltages independently. For example, it is possible to have a 12 V DC supply to the PMU and an auxiliary output of 24 V DC, or a -48 V supply and a 12 V output.

## Sub rack, Front Panel, and Control Panel

The TB9100 is enclosed in a sub rack with a front panel and control panel.

An empty sub rack



The **sub rack** is made of passivated steel and is designed to fit into a standard 19 inch rack or cabinet. It is 4 rack units high, making it very compact.

The **front panel** is mounted onto the sub rack with two quick-release fasteners. It incorporates the cooling fans for the PA and the PMU. Both the front panel and the individual fans are user-replaceable.

The control panel is mounted onto the sub rack independently of the front panel. It features a microphone socket, controls keys, LEDs, speaker and volume control knob.

In future releases, a streamlined version with fewer controls and an enhanced version with a keypad and LCD display will become available. The enhanced version lets you do basic diagnostics and channel changing directly from the control panel.