TB8100 base station

Using the Tait TB8100 in TaitNet Trunked Networks

Tait radio
communications

The TB8100 base station is suitable for use as channel equipment in MPT 1327 trunked networks with Tait infrastructrure. This application note aims to explain what you specifically need to do to use the TB8100 base station in a trunking system: order the correct TB8100 equipment, make the necessary hardware connections, and configure the TB8100 base station (using the Service Kit application).

TB8100 Equipment Required

If you intend to use the TB8100 base station in a trunking system, make sure that you specify these modules when you order the TB8100:

- Reciter with a TaitNet, MPT Trunked system interface (order codes TBA40H1-0T11 (400-440 MHz); TBA40H2-0T11 (440-480MHz); TBA40H3-0T11 (470-520MHz)).

- PMU with internal 13.8 V DC 40 Watt auxiliary power supply (order code TBA30X0-0101). This is used to supply power to the T1711 Channel Management Modules (CMMs) via the reciter's 15-pin system interface connector.

Connecting the TB8100 to the CMM

You need to connect the equipment as follows:

1. Route the auxiliary power supply to the reciter's rear DC connector.

2. Using the extension cable supplied with the CMM, connect the D-range 15-pin system interface connector to the D-range 15-pin socket on the channel controller.
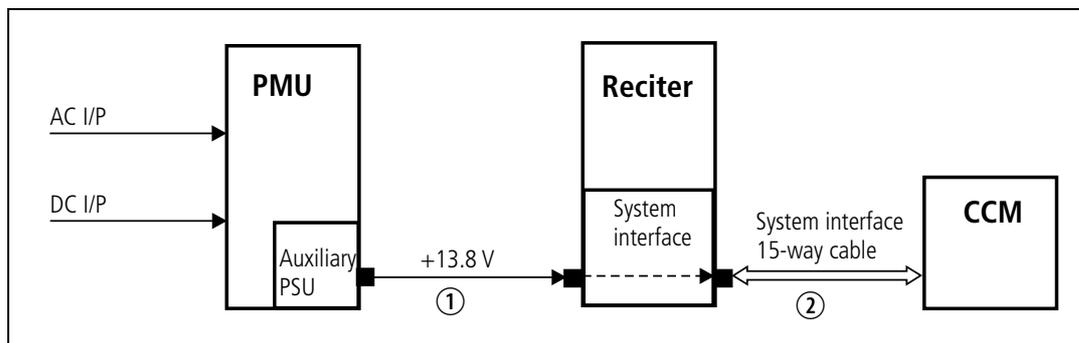
Configuring the TB8100 Base Station

The specific changes that you will need to make to the TB8100 base station's configuration file (using the Service Kit application) are as follows. (For further information on using the Service Kit, please refer to the Service Kit User's Manual or the online Help.)

Configuring the Auxiliary Power Supply

The auxiliary power supply must be set to 'Task Manager' to prevent it from starting the CMM before the TB8100 base station channel is ready for service (otherwise the CMM will shut down the channel and move to the next one). Using the Task Manager feature in the TB8100 Service Kit software, the auxiliary power supply is turned on once the channel is available.

1. Set the Auxiliary Power Control to 'Task Manager' (Configure > Base Station > Miscellaneous).

2. Create a task manager action: IF Base station in run mode THEN Enable auxiliary supply (Configure > Base Station > Task Manager).
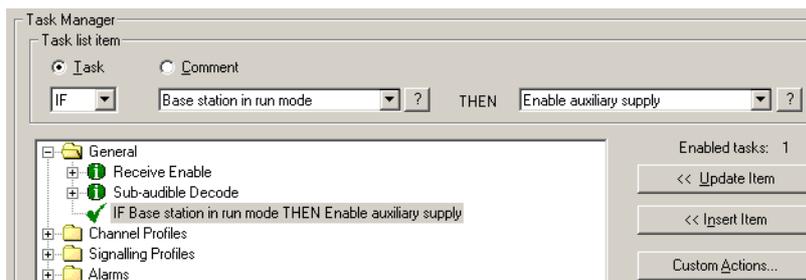

Direct Signal Path

So that the FFSK data has a minimum time delay through the TB8100 base station, the receive and transmit path B filters are bypassed.

The Rx and Tx path A filters remain unchanged: a normal voice band de-emphasised received signal should be passed to the balanced line outputs of the reciter to the CMM. Conversely, a normal voice band pre-emphasised transmitted signal should be passed from the balanced line inputs of the reciter from the CMM.

> **Note:** If you are using the Default Profile, you must specify the Rx and Tx path A filters in the Channel Table (Configure > Base Station > Channel Table), not in the Signal Path tab as described below.
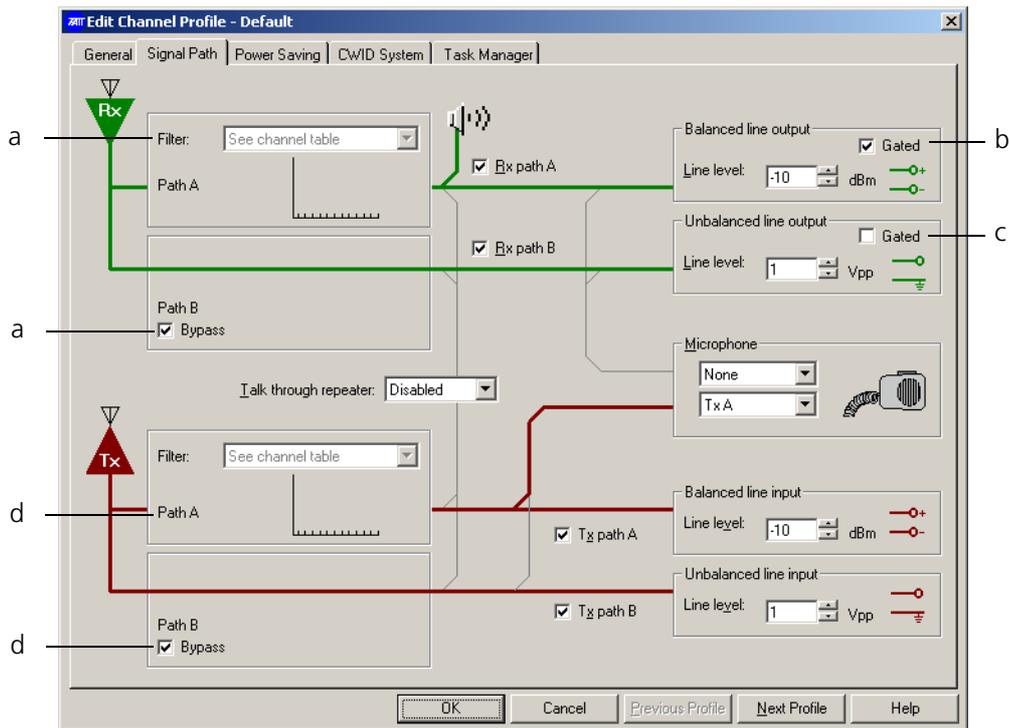
1. On the Signal Path tab in Edit Channel Profile window (Configure > Base Station > Channel Profiles > Edit), specify the following:

   a. For the receive path A, select the de-emphasised speech band filter; for path B, select the Bypass checkbox.

   b. Ensure the balanced line output Gated checkbox is selected.

   c. Clear the unbalanced line output Gated checkbox.

   d. For the transmit path A, select the pre-emphasised speech band filter; for path B, select the Bypass checkbox.

2. Select the General tab, and set the SINAD gating at an appropriate level. You can also select a low RSSI level, if required. (If you select both options, gating is enabled once both values reach the required level.)

Channel Selection

Ordinarily, if you want the channel to be selected by equipment external to the base station, external channel selection is usually enabled. However, because the TaitNet MPT Trunked system interface has only one digital input, which the CCM does not use for channel selection, it is recommended that you disable this function by clearing the Channel Selection check box (Configure > Base Station > System Interface).

(You should select the default channel in the Configuration > Base Station > General screen.)

Alarm Configuration

If the control channel fails, it is important that another channel takes over that function within seconds so that the network continues to operate. For this to happen, CMM alarms need to be triggered.

This is done by configuring the digital outputs 1 and 2 of the TB8100 base station to deactivate on sensing low forward power and high reverse power respectively. (The CMM requires inverted logic.) Also, you must set the CMM links for forward and reverse power to 1–2.

1. Create four task manager actions (Configure > Base Station > Task Manager) as follows:
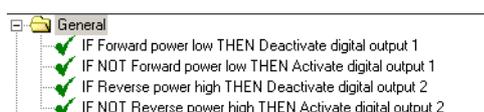
IF Forward power low THEN Deactivate digital output 1

IF NOT Forward power low THEN Activate digital output 1

IF Reverse power high THEN Deactivate digital output 2

IF NOT Reverse power high THEN Activate digital output 2

2. Specify the power output thresholds (that are appropriate for the PA you are using) in the Thresholds screen (Configure > Alarms > Thresholds).

T1711 Channel Management Modules

The following should be taken into consideration:

■ Normal CMM alignment should take place.

■ FFSK and talk–through gain adjustment should be carried out, followed by Intersite gain adjustment.

■ When setting voice audio transmit deviations, you need to manually key the transmitter using, for example, a 15–pin D-range extender that has a switch between TXKEY and GROUND.

Position and Layout of Equipment

During operation, the TB8100 base station can become hot. This is normal since it is designed to operate at high temperatures. (The power amplifier (PA) fan turns on when the PA temperature reaches 80° Celsius.) Consequently, any equipment placed directly above the TB8100 base station, such as the channel controller, will also become hot. It is therefore important that the layout and position of equipment is carefully considered.

Issuing Authority

This TN was issued by: John Crossland
Technical Publications Manager

Publication History

Publication Date	Author
31 July 2003	D Whitlock

Amendment Record

Publication Date	Page	Amendment
31 July 2003		First release

Tait Contact Information

Corporate Head Office New Zealand	Tait Electronics Ltd, P.O. Box 1645, Christchurch, New Zealand E-mail (Marketing): taitnet@taitworld.com E-mail (Sales): sales@taitworld.com
Technical Support	Technical Support Manager Tait Electronics Ltd, P.O. Box 1645, Christchurch, New Zealand E-mail: support@taitworld.com
Internet	http://www.taitworld.com