TB9400 Antenna Relay (TBCA03-10)
TB7300 Antenna Relay (TBDA03-10)
Installation Instructions

Introduction

For simplex applications, the Tait TB9400 and TB7300 base stations can be set up with an antenna relay (also known as a coaxial relay or a transmit relay). This enables the receiver and transmitter to share the same antenna. Before the transmitter keys up, the base station activates the relay, disconnecting the receiver and connecting the transmitter to the antenna. It then powers the transmitter up. After it powers the transmitter down, it opens the relay again, so that the base station is ready to receive.

If the transmit and receive frequencies are equal, the base station automatically increases the transmitter frequency by 25kHz when the base station is not transmitting, to prevent receiver blocking. When the base station is transmitting, the receiver is disabled.

The TBCA03-10 Coaxial Relay Assembly kit contains all the equipment for a TB9400 base station antenna relay system. The TBDA03-10 Coaxial Relay Assembly kit contains all the equipment for a TB7300 base station antenna relay system, including the wiring for the relay coil. The antenna relay will handle 66–560MHz. This document shows how to install the kit.

Notice Do not manually operate the relay while the base station is transmitting. The PA is protected against a mismatched load, but not against removing the load while transmitting.

The TB9400 must have a PMU with an auxiliary 13.8VDC output to supply power to the relay.

Notice Ensure the receiver coax cable is connected to the correct relay port. See photos on page 2 for guidance.

Notice When on a TB7300 the relay is powered from the same DC supply that powers the base station. The relay requires an additional 200mA.

The antenna relay driver output (‘Coax relay out’ in the WUI) is an open drain FET and the output is pulled to ground whenever the transmitter is keyed. Internally, within the reciter there is a zener diode between the source and drain of the antenna relay output FET to provide reverse voltage protection (refer to “Simplified Antenna Relay Circuit” on page 7).

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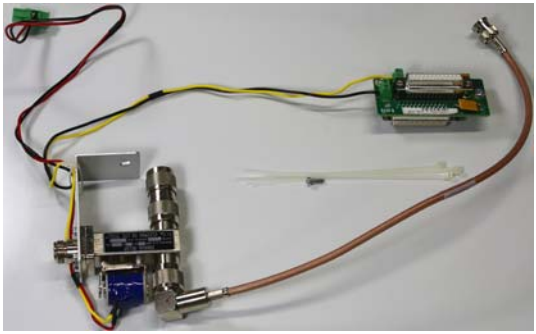
402-00119-03

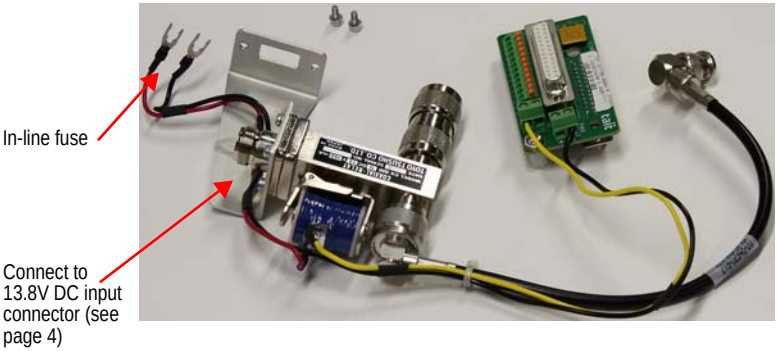
Contents of the TB9400 Antenna Relay Kit

- Bracket
- Antenna relay assembly
- Cabling
- Screw x1
- Cable ties
- Coaxial relay interface (T01-01138-AAAA)
- Spade connectors x2



Contents of the TB7300 Antenna Relay Kit

- Bracket
- Antenna relay assembly
- Cabling
- Screw x2
- Coaxial relay interface (T01-01138-AAAA)

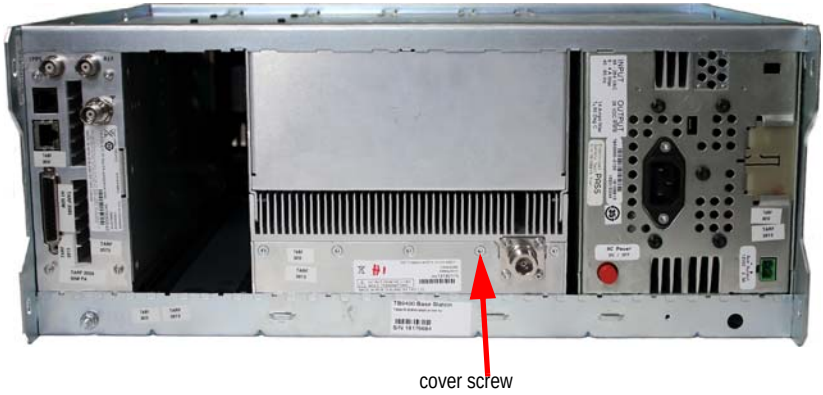


Installation

Mount the antenna relay assembly on the back of the Power Amplifier (PA). Use the PA cover screw adjacent to the N-type connector to secure the bracket to the PA. Screw the antenna relay N-type transmit connector to the PA N-type antenna connector using the N male-to-male adapter. The photos show a 100W PA, but the instructions apply equally to a base station with a 50W PA (see photos on page 4), and a TB7300 (see photos on page 4).

Follow these steps.

1. At the rear of the PA, remove the cover screw next to the N-type connector.



2. Fit the male-to-male barrel connector on to the PA N-type connector. Secure the antenna relay bracket by fitting the supplied M3 x 8mm screw (x2 for the TB7300) through the bracket to the PA chassis.

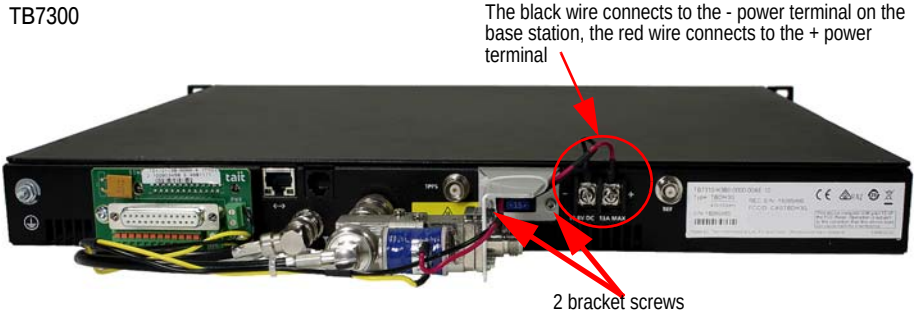
3. Fit the supplied cable (N-type to BNC) from the antenna relay to the receiver RF input.
4. Connect the antenna relay coil to the reciter DB25 with the supplied module, T01-01138, as follows. Refer to the photos below.

If the system requires the use of other digital inputs or outputs, connect them to the appropriate digital pins.

100W PA

50W PA

TB7300

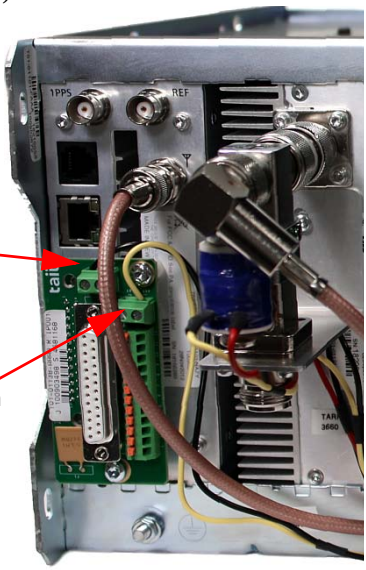


Note: The red wire is fitted with a non-replaceable, inline 1A fuse to protect relay wiring and circuitry

Attaching the Simplex Module

The Simplex Relay Module (T01-01138-AAAA) should be connected as follows:

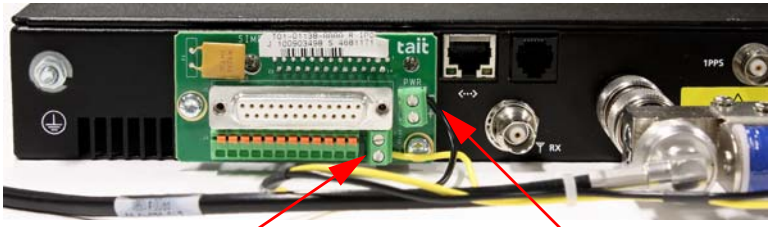
TB9400



Black wire (negative from supply) connects to '-' on the 'pwr' terminal block

Yellow wire (relay coil) connect to 'terminal 1' on the 'ant relay' terminal block

TB7300



Black wire (negative from supply) connects to '-' on the 'pwr' terminal block

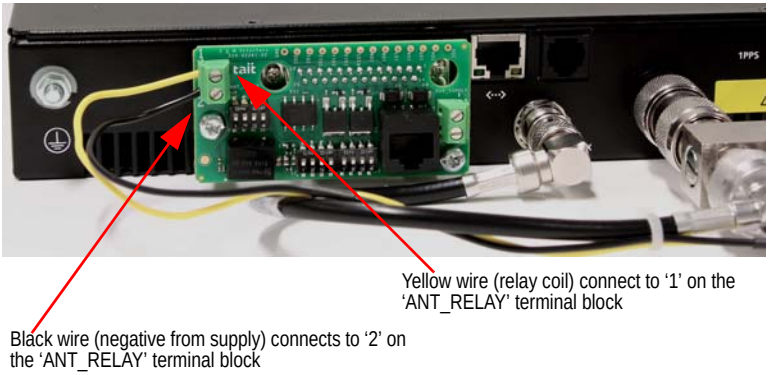
Yellow wire (relay coil) connect to 'terminal 1' on the 'ant relay' terminal block

Attaching the E&M Module

The antenna relay can also be used with the E&M Interface Module (T01-01137-AAAA):

TB9400

TB7300

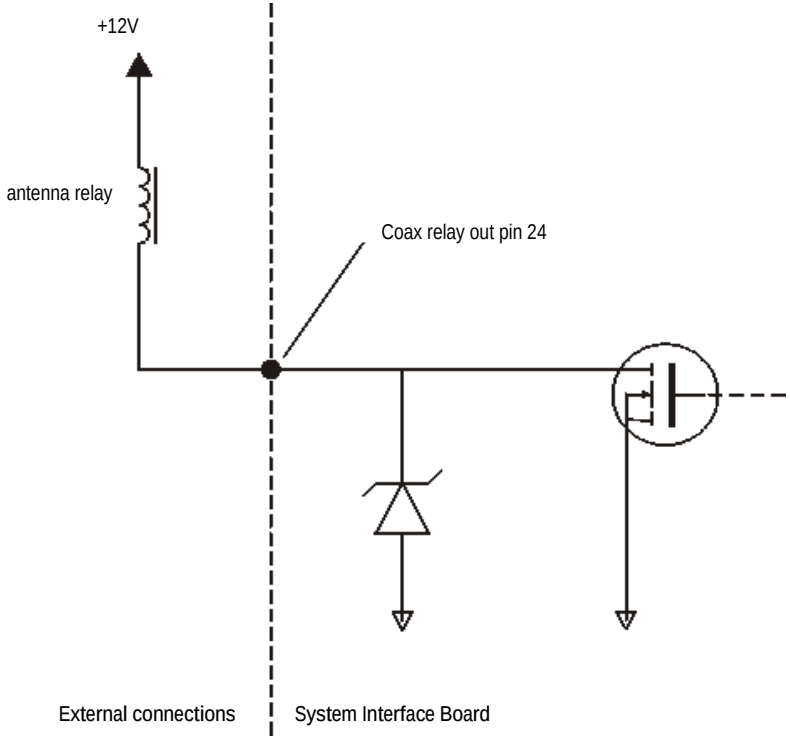


Enabling and Configuring Antenna Relay Operation

Using the base station WUI, enable antenna relay operation.

1. Open the base station WUI.
2. Select Configure > Base Station > Programmable I/O.
3. Select the antenna relay control check box.
4. Save your changes.

Simplified Antenna Relay Circuit



Simplex Relay Adapter Module Schematic