TB8100 base station

Remotely
Monitoring and
Configuring the
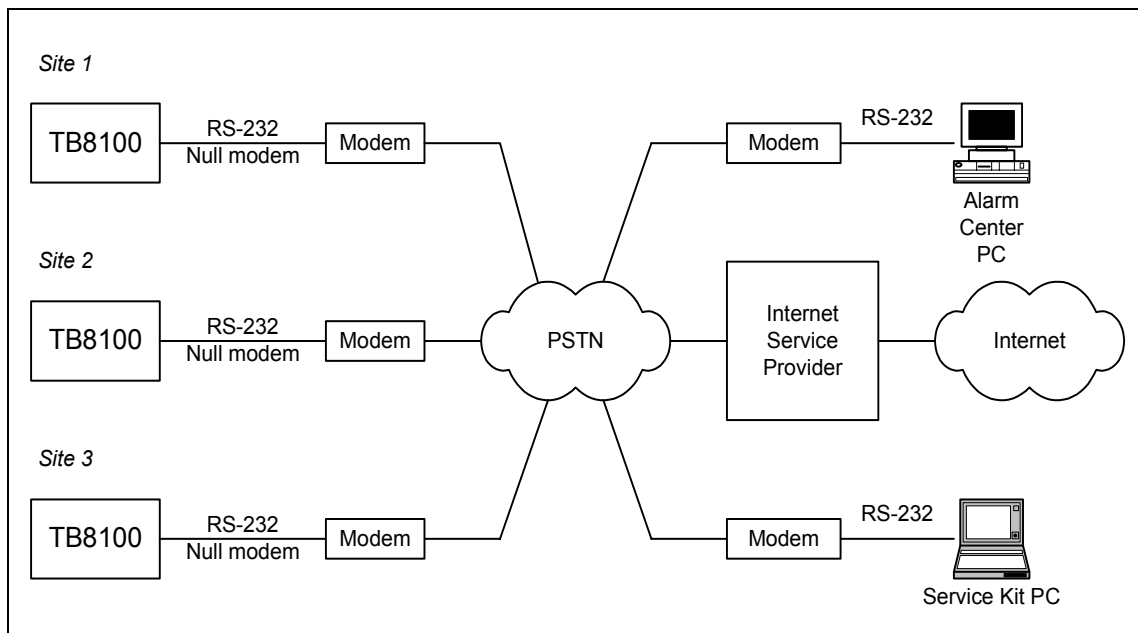TB8100 Base Station

Contents

Typographical Conventions

'Configure > Communications > Alarm Center' means 'click the
Configure icon on the toolbar, then in the navigation pane find the
Communications group, and select Alarm Center from it'.

This Application Note provides information on how to install and set up modem communications for a system of TB8100 base stations. It is intended for system designers and integrators who need to implement remote monitoring and configuration. For more detail or answers to specific questions, consult the documentation for the TB8100 base station and Service Kit or contact your nearest Tait Dealer or Customer Service Organisation.

Figure 1 shows a small example system. Each base station has a modem link and can dial the Alarm Center when an alarm occurs. The Alarm Center PC is set up to use its modem to send emails via an ISP.

Figure 1   Example System

Here's how communications might proceed in a typical scenario when an alarm occurs and the technician responds:

1.   An alarm occurs at one of the base stations. In response, Task Man–ager instructs the TB8100 to dial the Alarm Center and send either the alarm log or a status message.

2.   The Alarm Center receives the alarm log or the status message and adds the new alarm to its log.

3.   If the Alarm Center received a status message, it forms it into an email and sends it via an ISP to the address(es) provided by the base station.

4.   The maintenance technician receives the e-mail (via modem to the ISP). The status message contains the status of all alarms and a record of recent alarms.

5.   The maintenance technician can now use the TB8100 Service Kit software to remotely connect and log on to the TB8100. This

connection uses the same modem at the site. Now the technician can use the full capabilities of the Service Kit to monitor the base station, carry out diagnostic tests, and make configuration changes.

Site Planning

Remote sites require careful planning and implementation. The following issues are worth thinking through prior to installation to reduce potentially expensive trips back to site:

Issue	Suggestion
What types of power are available at the remote site (AC, DC only, Generator, Batteries, Solar)	Will the modem run from the available power or does it need a converter of some kind (AC-DC, DC-DC). Consider using the TB8100's auxiliary power output if the modem can operate on DC power.
What happens if the Power for the site fails, is there a backup supply (generator)? How is this switched in (manual/automatic)?	Before installation, test that the modem can operate on both normal power and generator power, Consider installing surge protection and smoothing equipment.
What type of modem are you going to use at site?	For remote sites, industrial modems are recommended as they are designed to be more rugged and cope better with temperature variations and power fluctuations. They also typically have more robust watch-dog timers that reset them in case of software error, so that you don't need to visit the site to switch the modem off and back on again.
Where will the modem be mounted at site?	Consider heat and other factors like dust and humidity. Also the length of communications cables available.
Is there more than one Base Station to be monitored at site?	If there is only one telephone line available, consider using a small PABX to enable the Service Kit to dial individual base stations.
How many sites are to be monitored?	Do you need different connection scenarios for each or can you use a standard solution?
What can you do if there are no phone lines available?	Consider using a Cellular Modem (GPRS or CDMA). If there is no cellular coverage, over-the-air alarm pips can provide basic alarm monitoring. If your system doesn't use an Alarm Center, consider radio modems or a radio that supports Computer Controlled Data Interface Version 2 (CCDI2). CCDI2 is a proprietary Tait interface protocol supported on most mobile and portable radios.
How many alarms do you want to receive?	Define Task Manager tasks only for the alarms you want to know about.

Setting up on the Bench

It is best to set up the equipment on the bench, configure it, and verify that it works before installing it on site. This application note assumes that the equipment is being set up and tested on a bench before being installed.

Base Station to Modem Connection

If the base station will dial an Alarm Center, the modem is configured by configuring the base station using the Service Kit. If not, use a terminal program to configure the modem.
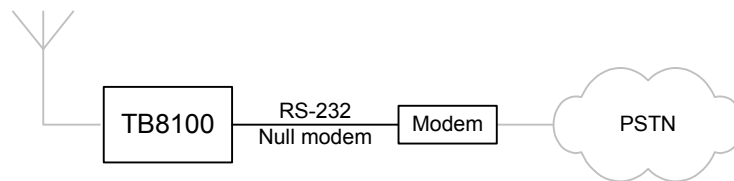
Important You must save all modem configuration strings into internal NVRAM using the appropriate AT commands. This will ensure the modem is correctly configured after a power–up/reset.

Important Check the documentation that applies to your modem to make sure the modem commands used in this TN match the commands needed to carry out the required task. Some AT commands appear to have been implemented differently in a small number of modems.

Equipment Required
- PC
- Base Station (with an Alarm Reporting license if you want it to communicate with an Alarm Center and possibly also with an Advanced Profiles and Task Manager license if a total of more than 40 tasks are needed)
- Modem (for the base station)
- Two phone lines
- Straight through cable: D9 (female) to D9 (male)
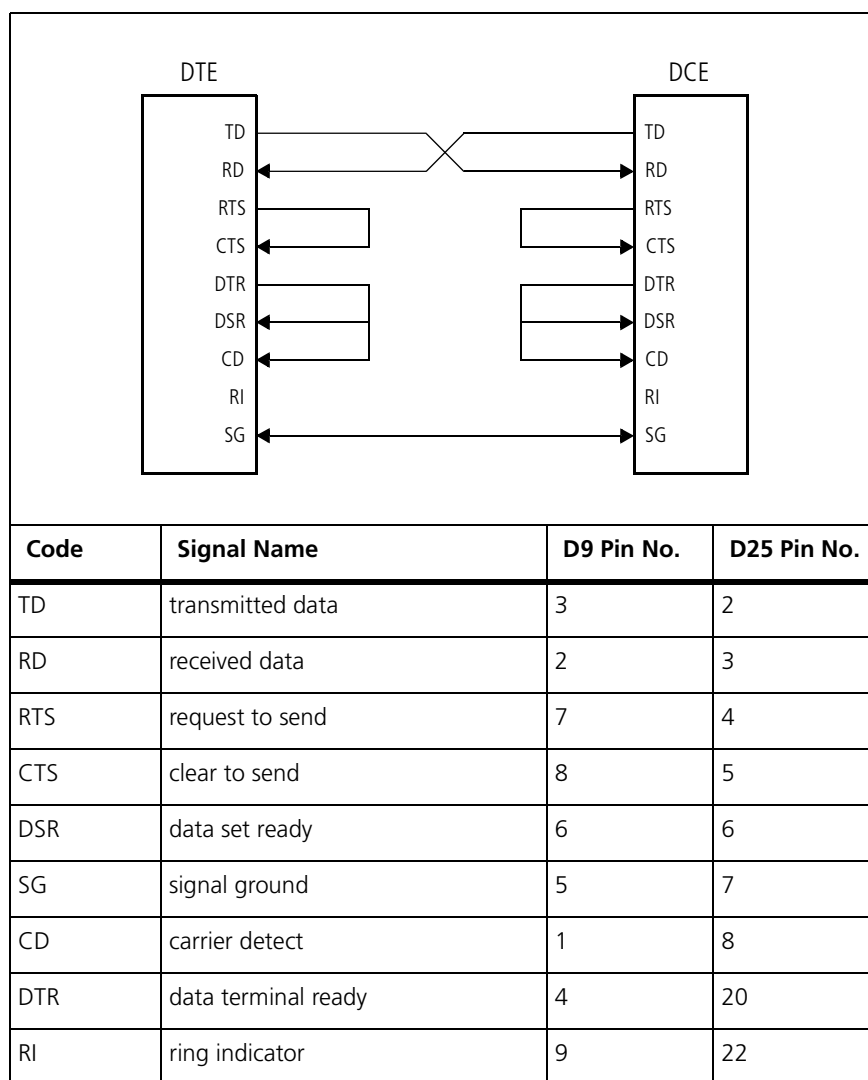- Null modem cable: D9 (male) to D9/D25 (male)

A null modem cable is **NOT** the same as the cable normally distributed with a modem. The configuration and pin allocations for a null modem cable are shown in Figure 2.

Note Some external modems use a D25 connector, others a D9 connector. Obtain the appropriate cable/converter for your setup.

Figure 2   Null Modem Cable Configuration

Code	Signal Name	D9 Pin No.	D25 Pin No.
TD	transmitted data	3	2
RD	received data	2	3
RTS	request to send	7	4
CTS	clear to send	8	5
DSR	data set ready	6	6
SG	signal ground	5	7
CD	carrier detect	1	8
DTR	data terminal ready	4	20
RI	ring indicator	9	22

Configuring the Base Station Modem

Follow these instructions to configure the modem which will be connected to the base station. You will need to carry out these instructions whenever the modem is replaced or if the 'restore factory defaults' Haytes AT command (AT&F0) is used.

1.   Connect the modem to one of the PC's COM ports using a straight through cable.

2.   Open a terminal program (such as HyperTerminal) and configure the communications settings to:

■   data bits – 8

■   stop bit – 1

■   parity – none

■   baud rate – 115200.

3.   Connect to the modem and type 'AT'. This should return 'OK' or '0'.

4. The modem needs to be configured so that the base station will understand responses from the modem correctly, so complete the following:

    AT&F0 [Enter]   *(Reset the modem to factory defaults)*
    ATV0 [Enter]   *(Enable numeric responses to the base station)*
    ATE0 [Enter]   *(Disable the modem's echo feature)*
    ATX0 [Enter]   *(Report basic call progress result codes)*
    AT&D0 [Enter]   *(Ignore the DTR line - assume it is always on)*

5. If the modem is also to auto-answer remote log-in requests from the Service Kit, enter the following:

    ATS0=3 [Enter]   *(Auto-answer 'On' and set to pick up after 3 rings)*

6. Save the new configuration so it is used from power-up:

   AT&Y0&W0 [Enter   *(Save the configuration and start up on it at power-up)*

Note   It is possible to do all these commands at once by entering AT&F0V0E0X0&D0&Y0&W0.

Configuring the Base Station for Alarm Center and Remote Service Kit Operation

Follow these instructions if the remote connection will be used by the Service Kit to dial the base station, and by the base station to dial the Alarm Center.

1. Install the Service Kit on the PC.

2. Power up the base station and connect the serial port on the control panel to the PC's available serial port using the straight through cable supplied.

3. Load the Service Kit and connect to the base station using the direct connection configured for the serial port you used.

4. Read the base station's configuration (do not work directly from a configuration file).

5. Select Configure > Communications > Alarm Center.

6. In the Alarm Center form, enable the Alarm Center connection and fill in the details (use the on-line help system if required). In the Modem Command String field, enter 'ATS0=3&D0E0&Y0&W0'. This means:

    S0=3   *(Auto Answer on and set to pick up after 3 rings)*
    &D0   *(Ignore the DTR line – assume it is on)*
    E0   *(Disable the modem's command echo feature)*
   &Y0&W0   *(Save the configuration and use it at power up)*
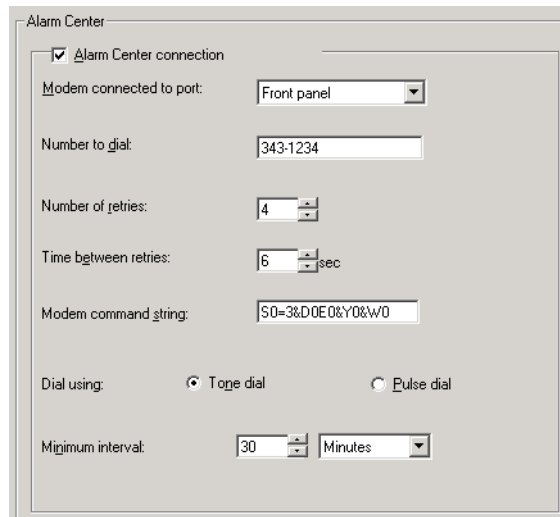
7. If you also want email notification, select Configure > Communications > Email.

8. Enable email and fill in the details (use the on-line help system if required).
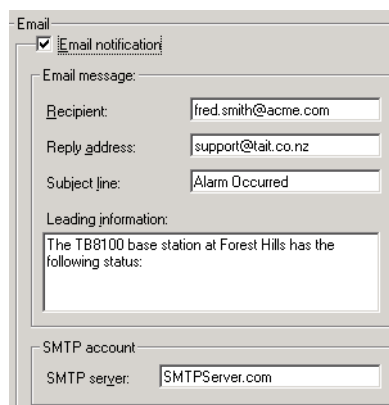
9. Select Configure > Base Station >Task Manager and add suitable tasks that configure the notification of alarms. For example:

    IF **Base station alarm on** THEN **Send alarm log now**

    OR:

    IF **Base station alarm on** THEN **Email status now**

10. Save the configuration then program it into the Base Station.

11. Connect the modem to the Base Station using the null modem cable.

12. Use a phone to ring the modem's number and check that it answers after three rings and attempts to make a connection.

Alarm Center PC to Modem Connection
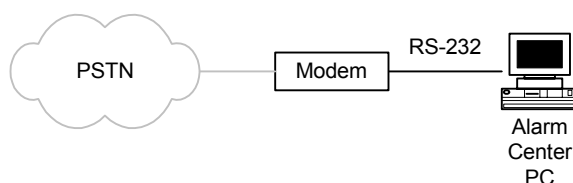
Configuring the Alarm Center Modem

Follow these instructions if the modem will be connected to an Alarm Center and will answer incoming emails.

1. Connect the modem to one of the PC's COM ports using a straight through cable.

2. Open a terminal program (HyperTerminal or similar) and configure the communications settings to:
   - data bits – 8
   - stop bit – 1
   - parity – none
   - baud rate – 115200.

3. Connect to the modem and type 'AT'. This should return 'OK' or '0'.

4. Configure the modem as follows:
   AT&F0 [Enter]   *(Reset the modem to factory defaults)*
   ATE0 [Enter]   *(Disable the modem's echo feature)*
   ATV1 [Enter]   *(Word responses)*
   ATX4 [Enter]   *(All response and dial tone and busy signal detection)*
   ATL0 [Enter]   *(Low speaker volume)*
   ATS0=0 [Enter]   *(Auto-answer 'Off'; the Alarm Center will answer when required)*

5. If the user does not want the speaker left on, use the following command:
   ATM0 [Enter]   *(Internal speaker 'Off')*

6. Save the configuration so it is used from power-up:
   AT&Y0&W0 [Enter]   *(Save the configuration and start up on it at power-up)*

Each command should return 'OK' (word response) or '0' (numeric response). If it doesn't, check the modem's manual to see if the command is supported.

7. Close the terminal program and start the Alarm Center.

8. Use a phone to ring the modem's number and check that it answers after three rings and attempts to make a connection.

9. Have the base station send an alarm message to the Alarm Center. Check that the Alarm Center receives and processes it correctly.

Configuring the Alarm Center PC

1. Install the modem software drivers following the manufacturer's instructions (either an external or internal modem is suitable).

2. Connect the modem to the PC and to a telephone line, using the cables provided with the modem.

3. Select Start > Programs > Tait Programming Applications > TB8100 Alarm Center.

4. Configure the Alarm Center to use the modem installed (use the online Help if required).

5. Set up the PC's Internet settings to dial out for a connection (Control Panel > Internet Settings)

6. Verify that the Alarm Center is operating by using a phone to call the Alarm Center. It should pick up after a few rings and attempt to make a connection.

7. Get a base station to send a test email (Diagnose > Reciter > Misc I/O) to check the communications path.

8. Confirm that the email was received.

Service Kit PC to Modem Connection
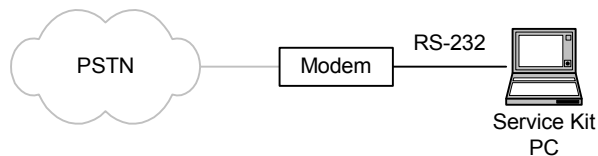
1. In the Service Kit PC, install the modem software drivers following the manufacturer's instructions (either an external or internal modem is suitable).

2. Run the Service Kit, select File > Configure Connections and use the New button to set up modem dialup connections for each base station system. Make sure that you enter the correct phone number.

3. Using these connections, connect and log on to each base station in turn. Verify that the Base Station information can be viewed over the modem link.

Preparing for Installation at Site

1. If the Alarm Center's permanent phone number is different to the one you used when setting up on the bench, connect the Service Kit PC to the base station. Using the modem connection or a direct connection, program the base station with the correct Base Station dial out phone number (under Configuration > Communications > Alarm Center).

2. Set up the Alarm Center before installing any sites. This way you can verify each site is dialing and getting an answer before continuing.

At Site

1. Install the equipment, making sure that you have a null modem cable between the modem and the base station.

2. If you have a laptop with an internal modem, verify modem operation by dialing the phone number of the Base Station (otherwise, use a phone to verify that the modem is at least answering).

3. Verify alarm dial-out by generating an alarm and verifying that the modem is used to dial the Alarm Center PC (if possible, have a colleague available to confirm that the email or the alarm log arrives).

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	4	CCDI2 description added
	5	'Important' alerts added
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	7	Step 6: Modem Command String corrected
	8	'Email Notification' screen shot corrected
	9	'Configuring the Alarm Center Modem' added minor layout changes

Tait Contact Information