



Remotely Monitoring and Configuring the TB8100 Base Station

Application Note TN-742

1 June 2003

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 dealer or nearest Tait office.

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

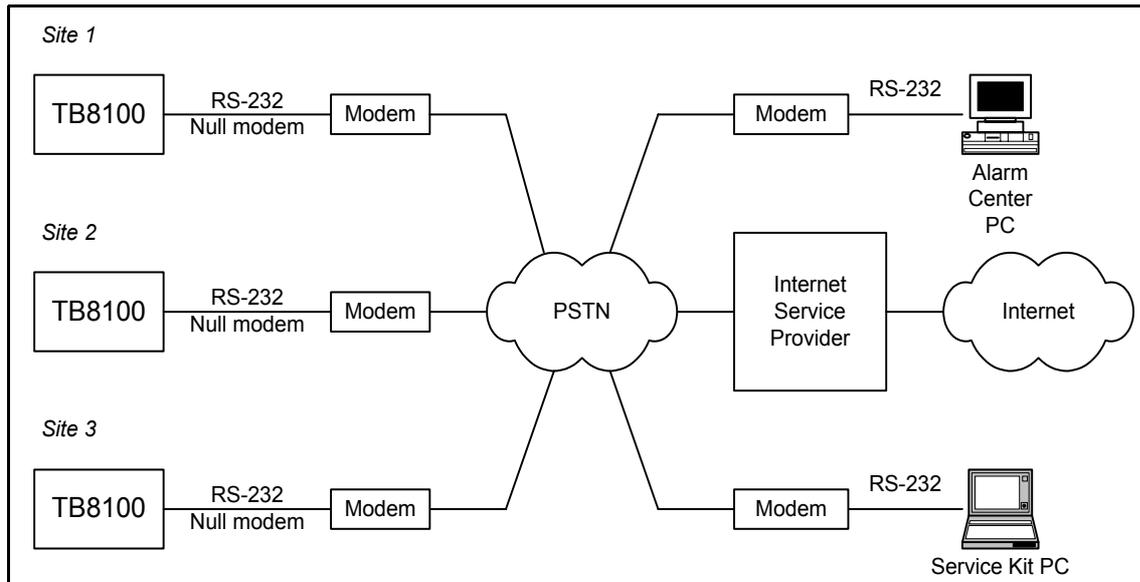


Figure 1 Example System

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 Manager 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:

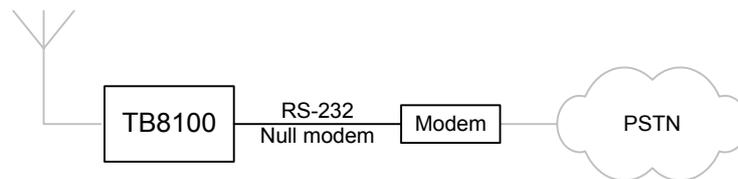
Issue	Suggestion
What types of power are available at the remote site (AC, DC only, Generator, Batteries, Solar)	Will the modem run from the available power or does it need a converter of some kind (AC-DC, DC-DC). Consider using the TB8100's auxiliary power output if the modem can operate on DC power.
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 CCDI2.
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.



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)

Note A null modem cable is NOT the same as the cable normally distributed with a modem; pins 2 and 3 swap over on a null modem cable.

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

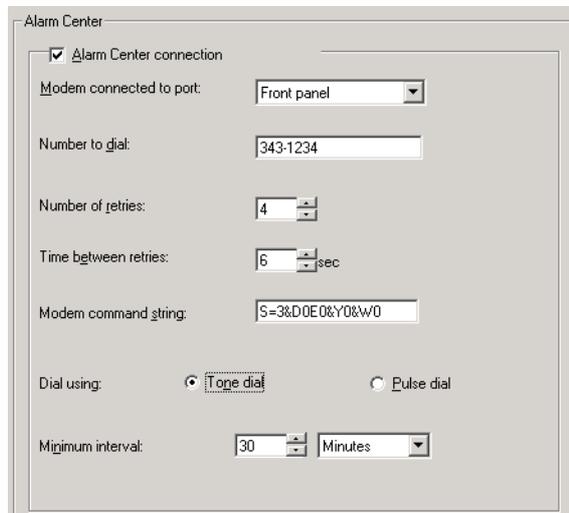
Configuration for Service Kit and Alarm Center

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).

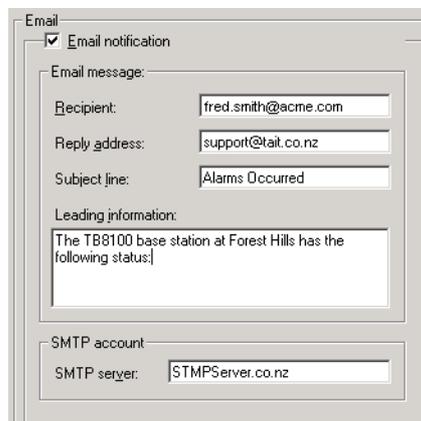
1. Install the Service Kit on the PC.
2. Power up the base station and connect the serial port on the control panel to the PC's available serial port using the straight through cable supplied.

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 'S=3&D0E0&Y0&W0'
This means:

S=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).



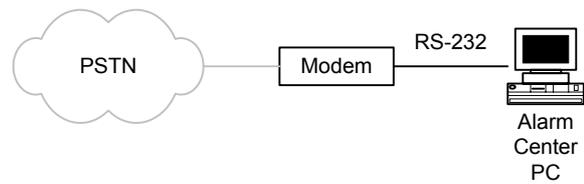
9. Select Configure > Base Station >Task Manager and add suitable tasks that configure the notification of alarms. For example:
IF Base station alarm on THEN Send alarm log now
OR:
IF Base station alarm on THEN Email status now
10. Save the configuration then program it into the Base Station.
11. Connect 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.

Configuration for Service Kit Only

Follow these instructions if the remote connection will be used by the Service Kit and not to connect to an Alarm Center.

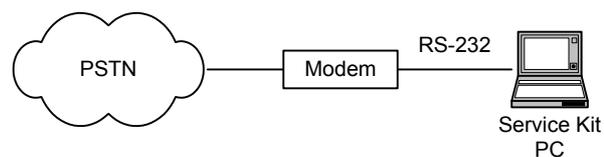
1. Plug the modem into one of the PC's com ports using the straight through cable.
2. Open a terminal program (Hyperterminal or similar) and configure the communications settings to Data bits:8, Stop Bit:1 and Parity: None at 115200 Baud.
3. Connect to the modem and type 'AT' (this should return 'OK').
4. The modem needs to be configured to answer an incoming call, so complete the following:
AT&F0 [Enter] *(Reset the modem to Factory defaults)*
ATS=3 [Enter] *(Auto Answer On and Set to pick up after 3 rings)*
AT&D0 [Enter] *(Ignore the DTR line – assume it is on)*
ATE0 [Enter] *(Disable the modem's command echo feature)*
AT&Y0&W0 [Enter] *(Save the configuration and start up on it at power up)*
Each command should return 'OK.' If it doesn't, check the modem manual to see if the command is supported.
5. Connect the modem to the Base Station control panel using a null modem cable.
6. 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



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.
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).

