

Configuring a Modem for Remote Access Control Communication

Modems provide the ability to set-up and monitor sites remotely through the telephone lines

Almost any modem can be used

Both the remote and local modems must be configured to disable any features that will delay the communication signal

More than one modem can be used to access multiple sites simultaneously

1. Introduction
2. How to Configure the Modem
 - *Entering AT Commands in HyperTerminal*
 - *Identifying the Modem*
 - *Useful AT Commands*
3. Modem Configuration Requirements
4. Configuring PC3 and the Modem at the PC's End
 - *Dialling to more than one Site Simultaneously*

1. Introduction:

In many access control scenarios it is desired to have remote programming and monitoring of a site that is not directly connected to the PC. This can be done using modems - one modem that connects directly to the PC running PC3, and other modems located at each remote site.

It is important that the remote modems be correctly configured for communication with their controllers and with the PC. This involves making sure that they answer the phone correctly, that they ignore various control pins which are not connected to the controller, that they pass all data through directly rather than doing error correction, and that they communicate at a correct fixed speed.

This technical note describes how to set up the modems for installation at a remote site.

2. How to Configure the Modem:

Modems support the standard and extended Hayes AT command set. The AT prefix (also known as the Attention Code), signals to the modem that one or more commands are to follow. These commands are industry standard language used to communicate with the modem. Commands may be entered from the terminal mode of most communications software packages such as **HyperTerminal**.

Entering AT Commands in HyperTerminal:

1. Power the modem up and connect it to your PC
2. Start HyperTerminal (Hypertrm.exe).
3. Enter a name for the connection (for example, Test) in the Name box.
4. In the Connect Using box, click Direct To Com X (where X is the port your modem is connected to) and then click OK.
5. Set the 'Bits per second' to 9600 baud on the Port Settings tab. Then click OK.
6. On the File menu, click Properties. On the Settings tab, click ASCII Set-up.
7. Click the 'Send Line Ends With Line Feeds' and 'Echo Typed Characters Locally' check boxes to select them. Click OK.

You can now type AT commands.

Identifying the Modem:

Unfortunately different modems can have different AT commands. You can identify your modem chipset by typing in the command **AT+FMFR?**. You should get a response naming the chipset. If the response is ERROR, type in **ATI6**.

The general chipset manufacturer types that this bulletin covers are the 'Rockwell, Cirrus Logic or AT&T' modem manufacturers. The other possible type is 'Texas Instruments'. In general most of the commands are the same for each modem and should work for most modems. In the case for 'Texas Instruments' we have provided an alternative command that is a common alternative.

If the command is accepted by the modem, it responds with OK. You MUST determine the correct AT commands by looking in the manual for the modem. We do not guarantee that the general commands we provide will work with the type of modem you are trying to configure.

Useful AT Commands:

Command	Response
AT	OK if modem is responding
ATI3	Modem ID
AT+FMFR?	Returns Chip set Manufacturer
ATDTx	Instructs modem to dial number x.
AT&V	View the configuration settings

3. Modem Configuration Requirements:

Now you can enter the configuration strings for the modem. The configuration should be set up as below:

Configuration settings step by step	Possible commands
1. Reset to Factory Settings	AT&F
2. Ignore the DTR Signal	AT&D0
3. Disable Flow Control (Error Correction)	AT&K0
4. Set to Asynchronous mode	AT&Q0
5. Set to Direct Mode	AT\N1
6. Disable Data Compression	AT%C0
7. Auto Answer on First Ring	ATS0=1
8. Set the Baud Rate to 9600	ATS37=9 or AT+MS=10,0,9600,9600
9. Turn the Echo of Commands off	ATE0
10. Write the Active Profile to Memory	AT&W

Note: it is best to write the commands line by line to ensure they are accepted by the modem. The modem will respond with **OK** if accepted. (You can check all the configuration settings by typing the command **AT&V**). It is also possible to enter the commands in one line e.g. **AT&F&D0&K0\N1%C0S0=1S37=9E0&W**

Note: For multiple AT commands in the same command line, the commands are executed in the order received from the DTE. Should execution of a command result in an error, or a character be not recognised as a valid command, execution is terminated, the remainder of the command line is ignored, and the ERROR result code is issued. Otherwise, if all commands execute correctly, only the result code associated with the last command shall be issued.

Once the remote modem is configured with the AT&W command it will save all the settings and can be installed at the remote site. Connections from the modem to the controller are as follows:

PIN 2 → Controller TX
 PIN 3 → Controller RX
 PIN 7 → Controller GND

4. Configuring PC3 and the Modem at the PC's End:

The modem at the PC end is typically being used for several different functions depending on the programs, which are being used. To save having to re-initialise all of these parameters every time it is desired to connect to a remote site, the CS Technologies PC3 software incorporates (in the '**Modem ini**' string box found in the Technical / Site menu selection) a field that allows the relevant commands to be sent to the modem every time it dials a remote site. The modem needs to be configured the same as mentioned above ('Auto answer of first call' and 'write the active profile to memory' need not be entered).

You may still initially configure the modem (connect the modem to the PC using the cable supplied with the modem, and enter communications mode via a terminal program as described above). Initially configuring the modem will also check that the commands were accepted by the modem.

Therefore an example string to enter in the PC3 software - `&D0&Q0\N1&K0%C0`

Note: The AT can be dropped from the command line as PC3 will automatically insert the command.

Dialling to more than one site simultaneously:

When dialling to more than one site (i.e. connecting two or more modems to the PC) we need to also store the number to be dialled in the modem. This be done by using the command string **AT&Z0=x** where x is the phone number required to dial.

If the phone number in PC3 is set to **S=0**, it will tell all the modems connected to the controllers data bus to dial their last dialled number (the phone number that was entered above).

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