Configuring a TTClock with an External Modem

Introduction
In many applications it is desirable to install TTClock devices in multiple remote locations and download the data through a dial up telephone connection. This can be accomplished using an external modem connected to the TTClock device and using the TTClock Utility Program (TTCUP32.EXE) for Windows. This application note will describe how to configure a system using a TTClock equipped with an external serial modem to create a remote dial up application.

System Overview
The host computer is to be located at the home office facility and the TTCUP32 program will be installed to dial up the remote TTClock device(s). Each remote TTClock device must be installed with an external auto answer modem connected to a phone line at the remote facility. The host computer at the home facility will be used to download the data from the TTClock devices into an ASCII file which can then be processed by other software such as a time and attendance program (TAW32.EXE).

Hardware Configuration
Host Computer
The host computer can be any standard PC (386 or higher) running the Windows operating system and having a spare RS-232 serial COM port. A phone line and an internal (or an external connected to a serial COM port) "Hayes" modem will be required. The PC should have the TTClock utility program (TTCUP32.EXE) installed.

Time Clock
The TTClock devices should be configured BEFORE they can be installed at the remote location. For most applications the factory default configuration should be acceptable as long as the device address is set to zero (0). Normally, the TTClock communications should be left at 9600 baud, no parity and 8 data bits. Any other required configuration can be accomplished using the utility program and a direct connection to a serial COM port on the PC.

External Modem
An external serial "Hayes" modem is used to provide the interface between the TTClock device and the telephone line. The modem must be configured BEFORE it is installed. Most serial modems can be configured using a PC computer and a terminal emulator (i.e. HyperTerminal) to issue specific commands to the modem. An RS-232 "modem" (straight through) cable should be used to provide the connection between the modem and the serial COM port on the computer. Specific configuration will be dependant upon the individual modem selected but the following sequence is typical as a minimum.

Modem Command	Purpose of function.
ATS0=1<CR>	Set the modem for auto-answer on the first ring
AT&N6<CR>	Force modem to only connect at 9600 baud (or as desired)
AT&W0<CR>	Save configuration to NV memory page 0
AT&Y0<CR>	Use page 0 configuration as default after reset
Power down/up modem	Reset modem to verify changes
AT&I4<CR>	Display current default modem configuration

Once the modem is properly configure it can be installed. The TTClock is connected to the modem using a standard RS-232 "modem" (straight through) cable. A standard telephone line cable is used to connect the modem to an RJ-11 telephone line jack.

Software Configuration
Utility Program Software
The TTClock utility program (TTCUP32.EXE) can be used to download data from the remote TTClock device(s). Each remote TTClock requires a unique entry in the program Address Book. Select the "Address Book" item from the "Options" menu and enter the "Connection Data" for the remote TTClock device. The "Description" field might be "TTClock #1", the "Phone Number" field should match the location of the remote TTClock modem, and the "Device" field should normally be set to "0" address. Click the "Add" button and the connection is inserted into the Address Book. Repeat the process for any additional TTClock devices as required.

The utility program should now be able communicate with the remote TTClock device(s). From the "File" menu make a new connection with the "Select Connection" function. Select a TTClock from the address book list and click the "Connect" button. The phone number will be dialed and a connection will be established. From the "Functions" menu click "Retrieve Status" and the associated TTClock should display the device status. Other utility program functions (Counters, Set Time/Date, Alarms, etc.) can also be used in a similar way. Care must be taken not to re-configure the TTClock in such a way that it will no longer communicate with the external modem (changing baud rate, etc.). The remote connection can be closed by selecting the "Disconnect" item from the "File" menu.

Downloading Data
The utility program is used to download the data from the TTClock devices and store it in an ASCII file. From the "File" menu select "Download File Name" to specify the path\name of the ASCII download file as would normally be the case. Select "Download" from the "Functions" menu. Set the "Options" menu items to enable "Clear Data" and "Sync Time/Date" but do not select "Entire Address Book". Click the "Download" button and the program will ask you to select a TTClock connection. Once the connection is established the data will be downloaded from the TTClock in to the data file.

When the "Entire Address Book" option is enabled, the "Download" button will sequentially connect and download data from every TTClock in the Address Book. The "Clear Data" and "Sync Time/Date" options will be applied to every TTClock in the list.