

## Connecting Multiple TTClocks

### Introduction

Often times it is desirable to have more than one TTClock device installed in a facility to expedite employee in/out times. Using the device address feature of the TTClock allows up to 250 devices to be installed on a single RS-232 computer port. This application note will describe by example how to install three (3) TTClock devices connected to a serial COM port of a host PC computer.

### System Overview

The host computer is to be located in an office somewhere in the facility and the three (3) TTClock devices are to be installed near employee entrances. Each TTClock device must be configured with a unique device address and will be connected to the host computer via a TLD3 line driver. The TTClock utility program (TTCUP32.EXE for Windows) will be used to configure the TTClock devices and download data from them into an ASCII file. The ASCII data file can then be processed by other software such as a time and attendance program.

### Host Computer Setup

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. The PC should have the TTClock utility program (TTCUP32.EXE) installed. A TLD3 line driver device should be connected to the RS-232 serial COM port using a standard modem (straight through) cable.

### Time Clock Setup

The TTClock devices must be configured BEFORE they can be installed at their final location. The factory defaults for the TTClock have the device address set to zero (0). The device address will have to be changed in each device and then it can be installed. To change connect it to the TLD3 device with a RJ-45 modular (straight through) cable. This can be a short cable used for configuration.

Start the utility program (TTCUP32.EXE) and set up the serial communication port parameters to the TTClock default values (9600,8,N,1). Set up an Address Book connection with a device address of zero (0) and no phone number (normally the "Default" connection). From the "File" menu select "Select Connection" and open the default connection to the TTClock device. Select "Configuration Registers" from the "Configuration" menu and click the "Retrieve" button to get the current TTClock register values. Change the "Device Address" value to valid address (for example 65). Use the "Program" button to save the new value in the TTClock device. Configure any other changes (normally defaults are acceptable) using the utility program and then disconnect the unit from the TLD3. Repeat this process of the other TTClock devices, giving each a different device address (for example 66 & 67).

The TTClock devices are now ready to be installed at their proper location. They should be connected to the TLD3 device using RJ-45 modular (straight through) cables up to 2000 feet long. If the cable is less than 100 feet the TTClock can be powered directly from the TLD3 line driver. Otherwise, the TTClock must be powered by the provided power adapter.

### Utility Program Software

The TTClock utility program (TTCUP32.EXE) must be set up to communicate with the installed TTClock devices. Each TTClock requires a unique entry in the program Address Book.

Select the "Address Book" item from the "Options" menu. Enter the "Connection Data" fields for the first TTClock device leaving the "Phone Number" field blank. For example, the "Description" field might be "TTClock #1" and the "Device" field should be set to "65" address. Click the "Add" button and the

connection is inserted into the Address Book. Repeat the process for the other TTClock devices giving each one a unique "Description" and a corresponding "Device" (66 & 67) address.

The utility program can now communicate with the connected TTClock devices. From the "File" menu make a new connection with the "Select Connection" function. Select the one of the TTClock connections from the address book list and click the "Connect" button. From the "Functions" menu click "Retrieve Status" and the associated TTClock should display the device status.

### **Downloading Data**

The utility program "Download" function is used to download the data from the TTClock devices and store it in an ASCII file. Each TTClock can be individually connected and downloaded OR the "Entire Address Book" can be downloaded. In either case, the TTClock data can be automatically cleared and/or the time & date can be synchronized with the host computer clock.

### **Using a Modem**

The same concepts used for this example can be extended to remote locations where multiple TTClock devices are connected to a single dial up modem. A TLD3 device can be connected to an auto answer modem using a "null" modem cable. Each individual TTClock device must be configured with a device address unique at that location. The Address Book entries would include the phone number for the modem. (For more information on connecting remote TTClocks via modem see application note AN9811 - "Connecting Remote TTClocks with Modems".)

### **Using the DOS Utility**

The TTClock DOS utility program (CLOCKUP.EXE) could be used to create a similar directly connected system. The primary difference is that it contains no address book and cannot do remote modem connections. However, a batch file can be used to call the program multiple times with different device addresses and (in effect) performing an "Entire Address Book" download. (See the CLOCKUP.DOC file for more details on using the DOS utility).