Application Note #116:

Operation of Cermetek Leased Line Modem Modules

INTRODUCTION

This application note briefly describes the two commonly used methods for operating of Cermetek leased line (i.e., dry line or non-DC voltage) modem modules.

GENERAL DISCUSSION

A leased line modem is typically used in applications where a permanent or semi-permanent connection is desired between two modems. Cermetek leased line modems support off-hook control but do not support ring detection. For typical applications, both the answering and originating leased line modems are placed in the off-hook state via commands issued from their respective controllers. Once a connection is established between originating and answering modems, the connection is usually left intact indefinitely. This means that even during periods of inactivity (i.e., no data transfer between modems) a carrier tone will be present on the leased line. Should a power failure or some other event occur such that the connection between the modems is terminated, the leased line modems will default to the on-hook condition. Each controller must then re-issue the commands to place their respective modems in the off-hook state.

METHOD 1

To implement this method some *a priori* knowledge concerning the originating modem's off-hook schedule and/or some external coordination between the originating and the answering modem is required.

Procedure to Place The Originating Modem In The Off-Hook State.

1. Ensure DTE or controller is properly connected to the modem via the RS232 port.
2. Issue command: **ATX1<CR>** for blind dialing (ignore dial tone)
3. Issue command: **ATD<CR>**

These commands instruct the originating modem to ignore dial tone and to blind dial. This will cause the originating modem to go off-hook while suppressing answer tone generation.

Procedure to Place The Answering Modem In Off-Hook State.

1. Ensure DTE or controller is properly connected to the modem via RS232 port.
2. Issue command: **ATA<CR>**

This will place the answering modem in the off-hook state and will cause the answering modem to generate an answer tone. This command must be issued within the time specified by Register S7 (typically set at 30 seconds) of the originating modem.

METHOD 2

Method 2 does not rely on *a priori* knowledge or external coordination but does require a software loop to be executed by both the originating and the answering modem's controller.

Procedure to Place The Originating Modem In The Off-Hook State.

1. Ensure DTE or controller is properly connected to the modem via the RS232 port.
2. Issue command: **ATX1<CR>** for blind dialing (ignore dial tone)
3. Embed the command **ATD<CR>** in a loop that re-issues this command with periodicity such that the time limit specified in register S7 (typically set at 30 seconds) is exceeded by at least 2 seconds.

This will cause the originating modem to blind dial (ignore dial tone) and will cause the originating modem to go off-hook while suppressing answer tone generation. Further, the **ATD<CR>** command will be re-issued periodically until a response is received from the answering modem.

Procedure to Place Answering Modem In Off-Hook State.

1. Ensure DTE or controller is properly connected to the modem via RS232 port.

2. Embed the command **ATA<CR>** in a loop that re-issues this command with periodicity such that the time limit specified in register S7 (typically set at 30 seconds) is exceeded by at least 2 seconds.

This will cause the answering modem to go off-hook and to generate an answering tone. Further, the **ATA<CR>** command will be re-issued periodically until a response is received from the originating modem.

PROCEDURE TO TRANSFER DATA BETWEEN ORIGINATING AND ANSWERING MODEMS

Once the originating modem detects the answering modem's answer tone, the two modems begin protocol negotiation and establish a connection link. Upon establishment of the link, each modem will issue the appropriate connection result code to it's DTE/controller. Data may be transferred at any time after receipt by the DTE/Controller of the connection result code.

Refer to the CH179X data sheet and/or Cermetek's "AT Command and S-Registers for CH1786, CH1787, CH1794/8/9" guide for a detailed discussion of AT command usage and modem control.

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