

POS Fast Connect Operation

Many POS terminals use a special fast connect protocol handshake at 1200 bps, which greatly reduces the time to establish a communication channel connection. The Teridian 73M2901CE V.22 *bis* single chip modem has special support for making connections to a NAC at a service provider (typically a bank) using a 1200bps PSK fast connect protocol. Asynchronous, synchronous, and quasi-synchronous connections are supported. Only the POS terminal end (originate side) of the connection is supported at this time. There are some fast connect answer modes supported using the Ln command, but these are similar, but not the same as the NAC end handshakes usually used in POS transactions.

Only three registers need to be configured to support the POS fast connect protocol. The registers are used in combination to select the POS handshake, S89, S30, and Yn. S30 is always set to S30=16 for fast connect protocol regardless whether it is in Bell or CCITT mode. S89 bit 6 enables the fast connect protocol. The Y register selects between Asynchronous and Synchronous modes.

Set S30=16 and S89 bit 6 = 1 (S89+\$40). The Y register can be set to select any of the following configurations:

- Y= 0, Asynchronous clear channel connection (no rate buffering), DTE rate = 1200 bps
- Y= 6, Asynchronous rate buffered connection, DTE rate = 2400bps to 9600 bps
- Y= 1, Synchronous clear channel connection (no rate buffering), DTE rate = 1200 bps
- Y= 4, Quasi-Synchronous rate buffered connection, DTE rate = 2400bps to 9600 bps

The following two examples demonstrate how to perform a POS fast connect with the 73M2901CE. Both examples assume clear channel connections and USA central office configuration.

Making Asynchronous POS Fast Connect Call

For this exercise, set your DTE speed to 1200,N, 8,1. For asynchronous connections, Y6 with speed buffering and flow control could also be used.

To make a fast connect call, you should get the phone number of a PSK NAC and type the following commands:

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ATFS99=1Y0X4K0S30=16S89+64 <CR>
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The above command sets the modem as follows:

Y0	Asynchronous mode clear channel mode (no speed buffering)
X4	Extended result codes and dial tone detection
K0	No Flow control
S30=16	CCITT/ Bell mode POS Fast Connect Operation
S99=1	Set modem to perform USA call progress
S89+64	Do POS fast connect

The modem should respond with:

OK

Now proceed with dialing...

ATDTnnn.. <CR>

CONNECT 1200 (DTE line speed)

In order to terminate the call, see the section on terminating the call below.

Making a Synchronous POS Fast Connect Call

There are two possible ways to send or receive synchronous data, either normal synchronous, in which case a synchronous port to the host must be used, or Quasi-synchronous, in which an asynchronous UART port to the host is used. If quasi-synchronous communications are used, the host must handle the data differently than in the case of normal synchronous. In the quasi-synchronous mode the DTE speed must be set to a rate higher than the data rate. See the separate app note for "Implementing Host Based HDLC Using the Quasi-Synchronous Mode" for details in using this mode.

For this exercise, we will use normal synchronous mode, so set your DTE speed to 1200bps.

To make a fast connect call, you should get the phone number of a PSK NAC and type the following commands:

ATFS99=1Y1X4K0S30=16S89+64 <CR>

The above command instructs the modem as follows:

Y1	Synchronous mode (Send FLAGS (7Eh) instead of Marks)
X4	Look for dial tone, full result code reporting, etc.
K0	No Flow control
S30=16	CCITT/ Bell mode POS Fast Connect Operation
S99=1	Set modem to perform USA call progress
S89+64	Do PSK fast connect

The modem should respond with:

OK

Now proceed with dialing...

ATDTnnn <CR>

CONNECT 1200 (DTE line speed)

In order to terminate the call, see the section on terminating the call below.

On-line Command Mode

The 73M2901CE supports the "TIES" Timing Independent Escape Sequence that differs slightly from the Hayes escape sequence. It should be noted that this escape sequence only applies to an asynchronous connection. This is because the escape sequence is character oriented whereas synchronous data is sent in frames, therefore start bit detection is not enabled and character recognition cannot take place in synchronous mode. With this method of returning to the command mode there does not need to be a time window before and after the escape characters are sent. The way it is implemented it is still compatible with terminal software that uses the normal Hayes escape sequence. After a connection has been established and you have finished sending data, or you would like to change one of the parameters of the modem, you may enter the ON-LINE COMMAND MODE. To do this you should stop sending data for a few seconds and type at a steady rate:

+++

The modem should respond with:

OK

If the modem does not respond, repeat the above but type a little faster or slower.

With TIES you can also send a command along with the escape sequence, so +++ATH is also valid and the modem will escape and then hang up. This is useful when you want to quickly escape, change a parameter and then return to the on-line mode as well.

Once the modem responds to the +++ command with an OK, you are now in the ON-LINE COMMAND MODE. In order to stay in the mode the modem must be given a valid AT command or the modem will automatically return to the data mode. All characters sent to the modem will also be sent over the line until a valid command is received by the modem. After a valid command is received, the modem will stop transmitting characters over the line. While in this mode the modem puts the line in an IDLE state so you can type commands to control the modem settings.

To return to DATA MODE type:

ATO <CR>

You should get the response:

CONNECT nnnn (nnnn = connect speed)

Note: Automatic rate selection is disabled while in on-line command mode.

Terminating the Call

In order to terminate an asynchronous connection you may execute the escape sequence and go to ON-LINE COMMAND MODE and type:

ATH <CR>

The modem should hang up and respond with:

OK

In either synchronous or asynchronous modes the serial control interface can also be used to control the state of the call. A call can be terminated using DTR (Data Terminal Ready) with the Rn command. The ATR1 command is an alternate way to go to the On Line Command Mode by using the state of DTR. Setting DTR to the off state will initiate this mode. The ATR2 will make the modem disconnect when DTR is dropped. ATR3 will cause the modem to hang up and reset on dropping DTR.

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