Zypcom Application Note

Product:
Z34-SX, Z34-RX, Z34-SE, Z34-RE, Z32t-SX, Z32t-SE,
Z32t-RX, Z32b-SX, Z32b-SE, Z32b-RE and Z32b-RX

Application:

DTR Dial with Synchronous Data

When selecting speed it is important to remember that the serial port speed and the line speed are the same when using synchronous communications. When a modem changes speed during a retrain the synchronous clocks will also change speed to reflect the new line speed.   Since this is the case, it is usually a good idea to force the line speed in synchronous applications.

Synchronous dial-on-DTR modem configuration is setup up using AT commands.   One uses an asynchronous device (PC or terminal) to send AT commands to the modem which will set it for synchronous dial-on-DTR operation. Once you send the &Q3 command to the modem you can no longer send additional AT commands. If you need to start the setup over after sending the &Q3 command to the modem then do a power reset (Chapter 4) to return the modem to its default settings.

Note: Power reset - Turn off the modem, press the Data and Test keys in, turn on the modem. Release the Data and Test keys after 5 seconds. The power reset was successful if the SYN LED goes OFF and the CTS/DSR/CXR/AA LEDs are ON.

Two basic dial-on-DTR setups are described below. Your application may require some additional commands.

Synchronous Dial-on-DTR application considerations are:

Synchronous modem (&Q)   Pure sync. (&Q3)

Note: Only use &Q3 synchronous modem for dial-on-DTR applications

Sync. clocks (&Xn)   Internal (&X0), external (&X1), slave (&X2)

Note: Most applications can have both modems with &X0 clock settings (two separate clocks). Some applications like T1 muxes tail circuits and some routers require only one clock be used hence one modem has to be in slave mode (&X2) and one in internal mode (&X0)

Line speed (S37=nn)   Auto (S37=0) or selectable (S37=nn)

Line speed forced (Nn)   Yes (N0) or No (N1)

Note: N1 allows the modem to select the best line rate and allows the modem to lower speed if lines conditions change. The command N0 forces the line to a specific speed. It is a good idea to use N1 with line rates above 21,600bps and use N0 on 19,200bps line rates and below.

Messages off (Qn)   On (Q0) or Off (Q1)

Note: After setup usually turn off (Q1)

Echo off (En)   On (E1) or Off (E0)

Note: After setup usually turn off (E0)

EIA signals: CXR (&Cn) Normal (&C1) or Forced (&C0)
                       DSR (&Sn) Normal (&S1) or Forced (&S)
                       DTR (&Dn) should be set to &D4 for originate side
                       CTS (&Rn) Follow RTS (&R0), Always ON (&R1) or
                              follow CXR (&R2)

Note: Use &R1 if you are unsure which selection to use and why. Use &R0 if your DTE's RTS lead toggles with data. Use &R2 if your DTE sends data anytime the CTS lead is high.

Phone number to dial: _____

Dial-Up Telco Cable:

Zypcom has several different dial-up cables depending on the modem model. For all RX-/RE-Series modems use 91009-200 an octopus chassis cable for dial-up operation. For the SE-Series and SX-Series modems use cable 15047-004 for dial-up operation. On external modems all dial-up telco cables are installed into the modems modular phone jack labelled WALL.

AT Command Setup

Modem options use AT commands to setup dial-on-DTR operation.   You will need a device (Win95 PC or terminal) to send your commands to the modem you are optioning.

19,200bps Dial-on-DTR with Synchronous Data

19,200bps DTR Dial—Answer Side
The following procedure explains how to setup DTR dial operation for an answer-side modem using AT commands. The following sample command strings might need to be changed slightly for your application. The command &W writes the command settings to memory.

1.   Set the EIA and any other options required for your application. Often CXR (&C1) and DSR (&S1) need to be set to normal and CTS should be ON (&R1). Also, set the line speed and synchronous clocks (N0 S37=21 &X0) for your application.

19,200 Sync. DTR Dial Setup: 19,200bps line speed, internal clocks, and EIAs normal.

> AT &C1 &S1 &R1 N0 S37=21 &X0 %Q1 &W<ENTER>

2.   Issue the sync command, register S0 setting and turn off echo/ messages.

> AT &Q3 &D0 S0=1 E0 Q1 &W<ENTER>

NOTE: The OK message is not sent after the command in step 2 due to Q1 command.

3.   Turn power off and then on.

19,200bps DTR Dial—Originate Side

1.   Set the EIA and any other options required for your application. Often CXR (&C1) and DSR (&S1) need to be set to normal and CTS should be ON (&R1). Also, set the line speed and synchronous clocks (N0 S37=21 &X0) for your application. Store the telephone number in memory location 0 (&Z0=tel.number).

19,200 Async. DTR Dial Setup: 19,200bps line speed, internal clocks, EIAs normal and store the telephone number to be dialed in memory location 0.

> AT &C1 &S1 &R1 N0 S37=21 &X0 &W<ENTER>

> AT&Z0=T 123 456 7890<ENTER>

2.   Issue the sync. data command, register S0 setting, turn off echo/ messages and DTR command for dial-on-DTR (&D4).

AT &Q3 &D4 S0=0 E0 Q1 &W<ENTER>

NOTE: The OK message is not sent after the command in step 2 due to Q1 command.

3.   Turn power off and then on. If the modem starts to dial and you want to cancel it push the Data key one time to hang up the modem.

1200bps Dial-on-DTR Synchronous

1200bps Dial-on-DTR with Synchronous Data—Answer Side
1200 Sync. Setup: 1200bps line speed, slave clock, and EIAs normal.

AT &C1 &S1 &R1 N0 S37=5 &X2 %Q1 &W<ENTER>

AT &Q3 &D0 S0=1 E0 Q1 &W<ENTER>

1200bps Dial-on-DTR with Synchronous Data—Originate Side
1200 Sync. Setup: 1200bps line speed, internal clock, EIAs normal and store phone number (&Z0).

AT &C1 &S1 &R1 N0 S37=5 &X0 &W<ENTER>

AT&Z0=T 123 456 7890<ENTER>

AT &Q3 &D4 S0=0 E0 Q1 &W<ENTER>