

CHAPTER 5

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DTE vs. DCE

The ESTeem is configured as a Data Communication Equipment (DCE) device. The following signals are available at the RS-232C connector located at the front of the unit.

	Pin	Description
DCE	1	FG Shield Ground
	2	TXD Transmit Data (Input)
	3	RXD Receive Data (Output)
	4	RTS Request To Send (Input)
	5	CTS Clear to Send (Output)
	7	SG Signal Ground
	8	DCD Data Carrier Detect (Output)
	12	RTS Request To Send (Output)
	20	DTR Data Terminal Ready (Input)
	22	Ring Ring Indicator (Output)

The important thing to remember is that for the ESTeem to communicate with an external device, the data output from pin 3 of the ESTeem RS-232C connector must be connected to the data input of the device you are connected to; otherwise, the ESTeem won't work. Likewise, the data input to pin 2 of the ESTeem must be connected to the data output of the device you are connected to. Normally, if the equipment you are connecting to looks like a terminal or computer (DTE), its input, Receive Data (RXD), will be on pin 3 its output, Transmit Data (TXD), will be on pin 2. Therefore, the ESTeem can be connected directly.

If the device you are connecting to is configured as a modem (DCE), its output will be on pin 3. If this configuration is connected to the ESTeem, damage may result to the ESTeem or the connecting device. In this case, you can purchase a null connector that internally reverses pins 2 and 3.

Whatever your situation may be, it is always best to check the manual on your particular device and connect accordingly.

Purchase or fabricate a RS-232C shielded cable for your ESTeem. The ESTeem requires a standard male 25 pin D connector on one end of the cable for proper connection.

Remember to install the small retaining screws on either side of the cable connector. Tightening these screws keeps you from accidentally losing connection with your ESTeem.

Notes:

- The ESTeem requires a shielded RS-232 cable. This is to prevent unwanted electrical noise from entering the ESTeem and also to prevent any electrical noise from getting out of the ESTeem.
- Remember -- always use a shielded RS-232C cable.
- Pins 9, 10, 14, & 16 are used for RS-422/485 interfacing and should be left open if not used.

FLOW CONTROL

The ESTeem can be enabled to support SOFTWARE or HARDWARE flow control.

Software Flow Control

Software flow control is enabled by the XSFLOW (on/off) command in the ESTeem. When XSFLOW is ON the ESTeem will respond to <XOFF>, (stop) and <XON>, (off) commands from the RS-232 port. The factory default setting is ON. The default value for START is 17 (CTRL Q) and for STOP is 19 (CTRL S).

Hardware Flow Control

Hardware flow control is enabled by the XHFLOW (on/off) command in the ESTeem. The factory default value is OFF.

When XHFLOW is enabled (on) the control signal lines, Request To Send (RTS, pin 4), Data Carrier Detect (DCD, pin 8), and Clear To Send (CTS, pin 5) are available to the user at the RS-232C connector. The CTS and RTS signals are used to control the flow of data into and out of the ESTeem.

The CTS signal on pin 5 is used to control the data into the ESTeem. When CTS is set (high on pin 5) the modem is ready to receive data. When CTS is reset (low on pin 5) the ESTeem is not ready to receive data.

The RTS signal is used to control data out of the ESTeem. RTS is set (high on pin 4), by the user to indicate to the ESTeem that the user is ready to receive data. When reset, the user is not ready to receive data.

Note: Low = On, High = Off.

MEMORY BUFFERS

The ESTeem has a 4000 byte buffer on the TRANSMIT SIDE (outgoing data) and a 4000 byte buffer on the RECEIVE SIDE (incoming data).

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Transmit Buffer

The outgoing data buffer will hold two data blocks before the ESTeem will enable its RS-232C hardware/software flow control on data coming into the modem if the network is busy. A data block in this example is a block of data that is defined by the PACKLENGTH or SENDPAC character which ever occurs first.

Therefore, if PACKLENGTH = 10 the modem will input a maximum of 20 bytes before it enables its hardware/software handshake line (two 10 byte packets). In another example, if PACKLENGTH = 2000 but the data block is terminated by the SENDPAC character before the input buffer reaches the full 2000 bytes, the buffer will still hold only two data blocks if the network is busy.

In order to utilize the 2000 bytes storage for small data packets (bar code readers, etc.), program the modem using the following guidelines:

PACKLENGTH = 2000 SENDPAC = 255
TERMC = ON TERMT = 10

Note: Set the TERMT time greater than the pause between data bursts.

By programming the above parameters the ESTeem will buffer the incoming data packets and automatically transmit the data when the 2000 byte buffer is filled or the TERMT time limit is met. This will allow the customer to use two blocks of 2000 or 4000 bytes before the modem enables the respect hardware/software control.

Receive Buffer

If the device that the receiving ESTeem is outputting data to, enables its respective hardware or software control, the modem will store 4000 bytes of data before flow controlling off the transmitting ESTeem.

DATA TERMINAL READY (DTR)

A software switch, DTR_ENAB (ON/OFF) is provided in the ESTeem for monitoring the status of a device connected to pin 20 of the RS-232C connector. The factory default setting is OFF. When this command is enabled the ESTeem will monitor the DTR signal on pin 20. If the DTR line being supplied to the ESTeem, from the user, is at a SPACE

(high) condition then the ESTeem is enabled. If the DTR line is at a MARK (low) condition then the ESTeem is disabled.

This signal is normally used by the ESTeem modem as an indication that connection is made to a device that is on line and ready to transmit/receive data.

RS-422/485 CONFIGURATION

The ESTeem will support the requirements of the EIA Standard RS-422/485. This is a four (4) wire interface consisting of the TRANSMIT DATA (-), TRANSMIT DATA (+), RECEIVE DATA (-), AND RECEIVE DATA (+). These signals are available at the 25 pin RS-232C connector on the modem.

	Pin		Description
	9	BTR (-)	TRANSMIT DATA (-)
	10	BTR (+)	TRANSMIT DATA (+)
DCE	14	BRX (+)	RECEIVE DATA (+)
	16	BRX (-)	RECEIVE DATA (-)

This interface is designed to provide unipolar differential drive to twisted pair or parallel wire transmission lines.

Note: The ESTeem can be factory configured for 2-wire RS-485 interfacing. Call EST Customer Support on 509-735-9092.

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Refer to Chapter 1 “Starting Out” to set the ESTeem RS-232 data rate.

**ESTeem RS-232C/422/485
Port Pin-Out Table**

Pin No.	Function
1	Shield Ground
2	Transmit Data (TxD)
3	Receive Data (RxD)
4	Request To Send (RTS Input)
5	Clear To Send (CTS)
6	Data Set Ready (DSR)
7	Signal Ground
8	Data Carrier Detect (DCD)
19	Mode Control
20	Data Terminal Ready (DTR)
22	Ring Indicator (RI)
12	Request To Send (RTS Output)
9	RS-422/485 Transmit Data (-)
10	RS-422/485 Transmit Data (+)
14	RS-422/485 Receive Data (+)
16	RS-422/485 Receive Data (-)