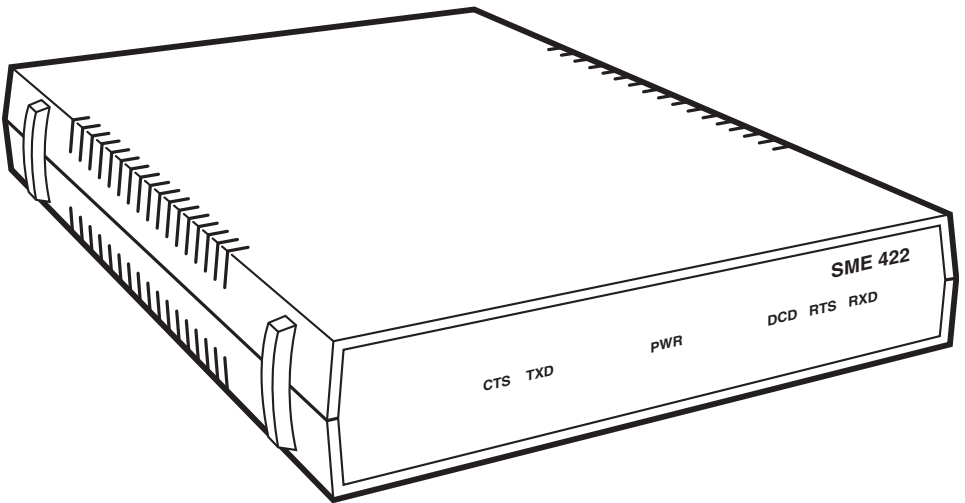




ME101A-R2	ME101AE-R2	ME101-C
ME102A-R2	ME102AE-R2	ME102C-R2
ME103A-R2	ME103AE-R2	ME103C-R2
ME105A-R2	ME105AE-R2	

Synchronous Modem Eliminator

- SME-422
- SME-V.35
- SME-530
- SME-X.21



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1. Specifications

System

Requirements — SME-422 card (ME101-C) only: RM011 or compatible rack;
SME-V.35 card (ME102C-R2) and SME-530 card (ME103C-R2) only: RM060 or compatible rack

Interface — SME-422: EIA RS-449/RS-422
SME-V.35: CCITT V.35
SME-530: EIA RS-530
SME-X.21: CCITT X.21

Clock — Internal or external from either attached device (user-selectable)

Data Rate — Any speed up to 1.344 Mbps that evenly divides 2.688 Mbps (user-selectable)*

*Special versions of our SMEs are available that support slightly different ranges of data rates from the standard model's. Selected data rates supported by the two most popular specials are listed in Tables 3-6 and 3-7 on pages 14 and 15. Call our technical support for more information.

Maximum

Distance — Up to 2,000 ft. (609.6 m) on each side, depending on cable quality and data rate

User Controls — All models: (2) Internal 6-position DIP switches for selecting the data rate;
All models but SME-V.35: (11) Internal jumpers for setting various options;
SME-V.35: (5) Internal jumpers for setting various options

Indicators — (6) LEDs: TXD, RXD, RTS, CTS, DCD or RLSD, and PWR

Connectors — All models: (1) 5-pin Molex® female: low-voltage AC power;
Card models (1) 3-position card-edge connector: Rack power;

SYNCHRONOUS MODEM ELIMINATORS SME-422, -V.35, -530, -X.21

SME-422: (2) DB37 female
SME-V.35: (2) 34-pin M-block female
SME-530: (2) DB25 female
SME-X.21: (2) DB37 female; provided with
(2) adapter cables, DB37 male to DB15 female

Power —	120-VAC standalone models: From wallmount power supply PS146: Optimal input: 115 VAC, 60 Hz at 100 mA; Input range: 104 to 127 VAC, 45 to 65 Hz; Output: 17 VAC CT at 700 mA; 240-VAC standalone models: From wallmount power supply PS145E: Optimal input: 230 VAC, 50 Hz at 50 mA; Input range: 207 to 253 VAC, 45 to 65 Hz; Output: 17 VAC CT at 700 mA Card models: From rack's power-supply interface All models: Consumption: 7.5 to 13 W
Temperature —	32 to 122°F (0 to 50°C)
Humidity —	0 to 95% noncondensing
Enclosure (Standalone Units) —	Plastic
Size —	Standalone models: 2.1"H x 8.8"W x 11.5"D (5.3 x 22.4 x 29.2 cm); Card models: 7.5"H x 11"D (19.1 x 27.9 cm)
Weight —	Standalone models: 2 lb. (0.9 kg); Card models: 0.9 lb. (0.4 kg)

2. Introduction

2.1 Overview

With a Synchronous Modem Eliminator (SME), you can establish communication between two synchronous devices (terminals, CPUs, etc.) at greater distances than would be possible without an SME, without having to buy a modem or line driver. We offer four different SME models, one for each of four different synchronous interfaces:

- The SME-422 (our product codes are ME101A-R2 for the 120-VAC standalone, ME101AE-R2 for the 240-VAC standalone, and ME101-C for the card version) connects devices that use the RS-422 interface.
- The SME-V.35 (our product codes are ME102A-R2 for the 120-VAC standalone, ME102AE-R2 for the 240-VAC standalone, and ME102C-R2 for the card version) connects devices that use the CCITT V.35 interface.
- The SME-530 (our product codes are ME103A-R2 for the 120-VAC standalone, ME103AE-R2 for the 240-VAC standalone, and ME103C-R2 for the card version) connects devices that use the RS-530 interface.
- The SME-X.21 (our product codes are ME105A-R2 for the 120-VAC standalone and ME105AE-R2 for the 240-VAC standalone) connects devices that use the CCITT X.21 interface.

Before you install your SME, you'll have to configure it by setting its internal straps (jumpers) and switches. Two options are configured with DIP switches: clock source and data rate. (All SME models except the SME-X.21 can either provide internal clocking or use an external source. The SME-X.21 uses its internal clock only. All SME models can be set to use a variety of data rates up to 1.344 Mbps.) Besides the DIP switches, all SME models have additional straps for customizing their interface leads.

Once the unit is configured, installation is simple: Run cable from the devices to connectors J1 and J2 on the rear panel of the SME, then plug in the SME's power cord.

Figure 2-1 on the next page shows typical SME applications.

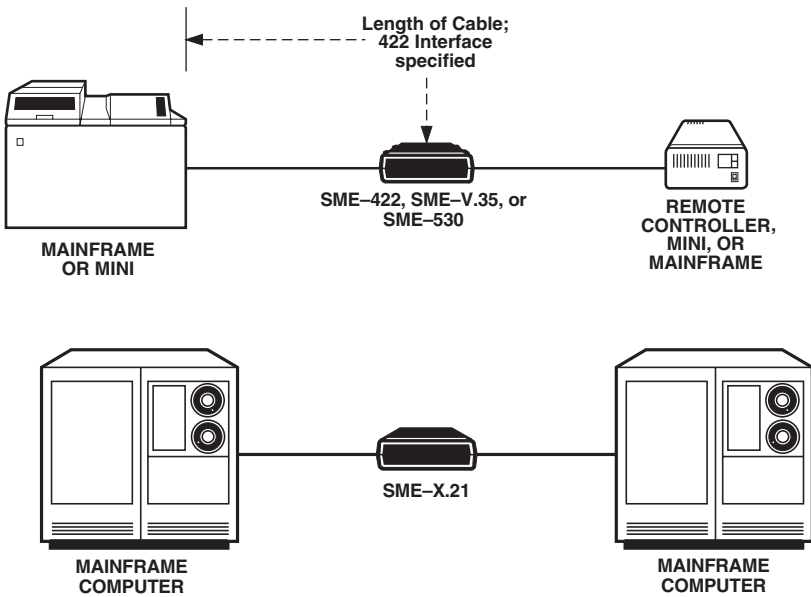


Figure 2-1. Typical SME applications.

2.2 LED Indicators

The six LED indicators on the front panel of the SMEs function as follows:

2.3.1 TRANSMIT DATA (TXD)

Lit when the device connected to J1 is sending data.

2.3.2 RECEIVE DATA (RXD)

Lit when the device connected to J1 is receiving data.

2.3.3 REQUEST TO SEND (RTS)

Lit when the device connected to J1 raises RTS.

2.3.4 CLEAR TO SEND (CTS)

Lit when J1 is clear to send.

2.3.5 POWER (PWR)

Lit when power is applied to the unit (that is, when the unit's power supply is working and is plugged into a working outlet).

2.3.6 DATA CARRIER DETECT (DCD) OR RECEIVE LINE SIGNAL DETECT (RLSD)

SME-422: Lit when the device connected to J1 raises RTS.

SME-V.35: Lit when the device connected to J2 raises RTS.

SME-530: Lit when the device connected to J1 outputs RLSD (DCD).

SME-X.21: Lit when the SME raises Receiver Ready on J1.

2.3 Power Supply

All 120-VAC standalone models of the SME come with UL® listed wallmount power supply PS146, whose input is rated at 115 VAC/60 Hz. All 240-VAC standalone models of the SME come with VDE listed wallmount power supply PS145E, whose input is rated at 230 VAC/50 Hz. The output of both power supplies is 17 VAC center-tapped at 0.7 amps. Their output connectors, which you should plug into connector P1 on the SME when you're ready to finish the installation, are indexed to help prevent incorrect insertion.

2.4 Guidelines for Cable Lengths

The maximum length of cable you can run between the SME and either of the devices you want to attach to it depends on:

- the cabling standards of the interface that your SME uses.
- the data rate you select (higher data rates often require shorter cable runs).
- noise sources between the SME and the device (cable run too close to noise sources will not be able to successfully carry data).

Other concerns not mentioned here might also affect the maximum distance attainable in your application. For additional information, refer to the published standards for your SME's interface (EIA RS-422 or RS-530, CCITT V.35 or X.21).

3. Configuration

The pages that follow this one contain charts and diagrams that will help you configure your SME:

- Tables 3-1 through 3-4 discuss the possible settings of the individual straps (jumpers) inside each SME model. Use the straps to configure several different options for your SME.

NOTE

Clock timing is supplied to each port (J1 and J2) in the form of a “send timing” signal (derived from that port’s clock source) and a “receive timing” signal (derived from the other port’s clock source). The straps that determine how the SME gets its clock for each port are among those described in Tables 3-1 through 3-4. In the descriptions of these straps, the A position is called “internal,” the B position is called “recovered,” and the C position is called “external.” When a port’s timing is internal, the clock is the SME’s internal clock signal. When a port’s timing is external, the SME gets the clock from that port’s “terminal timing” signal. When a port’s timing is recovered, the SME gets the clock from the *opposite* port’s “terminal timing” signal. For most applications both ports’ straps would be set to A (internal clock). A small number of applications (those in which one device supplies the timing across the line) would require one strap set to B and the other set to C. Extremely few if any applications would require both straps set to C, or one strap set to C and the other to A. The SME will not work at all if both straps are set to B, or if one strap is set to B and the other to A. The CCITT X.21 standard does not include a “terminal timing” signal, so SME-X.21 units won’t work if either strap is set to B or C.

- Table 3-5 gives the possible settings of the data-rate switches S1 and S2 inside each standard SME model. Use these switches to set the SME’s data rate to that used in your system. Tables 3-6 and 3-7 show the data-rate settings for SMEs with special clock modifications (see the notes on pages 1, 14, and 15).
- Figures 3-1 through 3-3 show the printed-circuit-board layout for each SME model.

Use the appropriate tables and figures to set your SME’s internal straps and switches (substitute Table 3-6 or 3-7 for Table 3-5 if necessary):

- For the SME-422, use Tables 3-1 and 3-5 and Figure 3-1.
- For the SME-V.35, use Tables 3-2 and 3-5 and Figure 3-2.
- For the SME-530, use Tables 3-3 and 3-5 and Figure 3-3.
- For the SME-X.21, use Tables 3-4 and 3-5 and Figure 3-1.

Table 3-1. SME-422 Strap Settings

STRAP	FUNCTION
W1	This strap is used to tie the chassis ground and signal ground together. The unit comes from the factory without the grounds tied common.
W2	Incoming Call (IC) on J1 (Pin 15) is connected to either ground (A-B) or +5V (B-C). The unit comes from the factory connected to ground (A-B).
W3	Incoming Call (IC) on J2 (Pin 15) is connected to either ground (A-B) or +5V (B-C). The unit comes from the factory connected to ground (A-B).
W4	In the A-B position, Data Mode on J1 (Pins 11 and 29) is "OFF" and connected to Terminal Ready (Pins 12 and 30). In the B-C position, Data Mode is "ON." The unit is shipped from the factory with Data Mode OFF (A-B).
W5	In the A-B position, Data Mode on J2 (Pins 11 and 29) is "OFF" and connected to Terminal Ready (Pins 12 and 30). In the B-C position, Data Mode is "ON." The unit is shipped from the factory with Data Mode OFF (A-B).
W6	Determines the Clear to Send delay on J1: Position A = 0 ms (no delay) Position B = 10 ms Position C = 50 ms The unit is shipped from the factory with the delay set for 10 ms.
W7	Determines the Clear to Send delay on J2: Position A = 0 ms (no delay) Position B = 10 ms Position C = 50 ms The unit is shipped from the factory with the delay set for 10 ms.
W8	In the A-B position, Receiver Ready on J2 (Pins 13 and 31) is derived from Request to Send on J1 (Pins 7 and 25). In the B-C position, Receiver Ready on J2 is connected to Signal Ground and is constantly held ON. The unit is shipped from the factory with Receiver Ready derived from Request to Send (A-B).

Table 3-1. SME-422 Strap Settings (cont.)

STRAP	FUNCTION
W9	In the A-B position, Receiver Ready on J1 (Pins 13 and 31) is derived from Request to Send on J2 (Pins 7 and 25). In the B-C position, Receiver Ready on J1 is connected to Signal Ground and is constantly held ON. The unit is shipped from the factory with Receiver Ready derived from Request to Send (A-B).
W10	Determines the clock source for J1 (Pins 5 and 23—Send Timing—on J1, Pins 8 and 26—Receive Timing—on J2). In the A position, timing is internal (from the SME's internal clock). In the B position, timing is recovered (from J2's Pins 17 and 35, Terminal Timing). In the C position, timing is external (from J1's Pins 17 and 35, Terminal Timing). The unit is shipped from the factory in the "A," internal, position. See the note on page 6.
W10	Determines the clock source for J2 (Pins 5 and 23—Send Timing—on J2, Pins 8 and 26—Receive Timing—on J1). In the A position, timing is internal (from the SME's internal clock). In the B position, timing is recovered (from J2's Pins 17 and 35, Terminal Timing). In the C position, timing is external (from J1's Pins 17 and 35, Terminal Timing). The unit is shipped from the factory in the "A," internal, position. See the note on page 6.

Table 3-2. SME–V.35 Strap Settings

STRAP	FUNCTION
W1	This strap is used to tie the chassis ground (Pin A) and signal ground (Pin B) together. The unit comes from the factory without the grounds tied common.
W2	Sets the Clear to Send delay on J2: Position A = 0 ms (no delay) Position B = 10 ms Position C = 50 ms The unit is shipped from the factory with the delay set for 10 ms.
W3	Sets the Clear to Send delay on J1: Position A = 0 ms (no delay) Position B = 10 ms Position C = 50 ms The unit is shipped from the factory with the delay set for 10 ms.
W4	Determines the clock source for J1 (Pins Y and AA—Serial Clock Transmit—on J1, Pins V and X—Serial Clock Receive—on J2). In the A position, timing is internal (from the SME's internal clock). In the B position, timing is recovered (from J2's Pins U and W, Serial Clock Transmit Ext). In the C position, timing is external (from J1's Pins U and W, Serial Clock Transmit Ext). The unit is shipped from the factory in the "A," internal, position. See the note on page 6.
W5	Determines the clock source for J2 (Pins Y and AA—Serial Clock Transmit—on J2, Pins V and X—Serial Clock Receive—on J1). In the A position, timing is internal (from the SME's internal clock). In the B position, timing is recovered (from J1's Pins U and W, Serial Clock Transmit Ext). In the C position, timing is external (from J2's Pin U and W, Serial Clock Transmit Ext). The unit is shipped from the factory in the "A," internal, position. See the note on page 6.

Table 3-3. SME-530 Strap Settings

STRAP	FUNCTION
W1	This strap is used to tie the chassis ground (Pin 1) and signal ground (Pin 19) together. The unit comes from the factory without the grounds tied common.
W2	Test Mode (TM) on J1 (Pin 25) is either connected to -5 V (A-B) or +5V (B-C).
W3	Test Mode (TM) on J2 (Pin 25) is either connected to -5 V (A-B) or +5V (B-C).
W4	In the A-B position, DCE Ready on J1 (Pins 6 and 22) is "OFF" and connected to DTE Ready (Pins 20 and 23). In the B-C position, DCE Ready is "ON." The unit is shipped from the factory with DCE Ready OFF (A-B).
W5	In the A-B position, DCE Ready on J1 (Pins 6 and 22) is "OFF" and connected to DTE Ready (Pins 20 and 23). In the B-C position, DCE Ready is "ON." The unit is shipped from the factory with DCE Ready OFF (A-B).
W6	Sets the Clear to Send delay on J1: Position A = 0 ms (no delay) Position B = 10 ms Position C = 50 ms The unit is shipped from the factory with the delay set for 10 ms.
W7	Sets the Clear to Send delay on J2: Position A = 0 ms (no delay) Position B = 10 ms Position C = 50 ms The unit is shipped from the factory with the delay set for 10 ms.
W8	In the A-B position, Received Line Signal Detector (RLSD) on J2 (Pins 8 and 10) is derived from Request to Send on J1 (Pins 4 and 19). In the B-C position, RLSD on J2 is constantly held ON. The unit comes from the factory with RLSD derived from Request to Send (A-B).

Table 3-3. SME-530 Strap Settings (cont.)

STRAP	FUNCTION
W9	In the A-B position, Received Line Signal Detector (RLSD) on J1 (Pins 8 and 10) is derived from Request to Send on J2 (Pins 4 and 19). In the B-C position, RLSD on J1 is constantly held ON. The unit comes from the factory with RLSD derived from Request to Send (A-B).
W10	Determines the clock source for J1 (Pins 12 and 15—Transmitter Signal Element Timing DCE—on J1, Pins 9 and 17—Receiver Signal Element Timing DCE—on J2). In the A position, timing is internal (from the SME's internal clock). In the B position, timing is recovered (from J2's Pins 11 and 24, Transmitter Signal Element Timing DTE). In the C position, timing is external (from J1's Pins 11 and 24, Transmitter Signal Element Timing DTE). The unit is shipped from the factory in the "A," internal, position. See the note on page 6.
W11	Determines the clock source for J2 (Pins 12 and 15—Transmitter Signal Element Timing DCE—on J2, Pins 9 and 17—Receiver Signal Element Timing DCE—on J1). In the A position, timing is internal (from the SME's internal clock). In the B position, timing is recovered (from J1's Pins 11 and 24, Transmitter Signal Element Timing DTE). In the C position, timing is external (from J2's Pins 11 and 24, Transmitter Signal Element Timing DTE). The unit is shipped from the factory in the "A," internal, position. See the note on page 6.

Table 3-4. SME-X.21 Strap Settings

STRAP	FUNCTION
W1	This strap is used to tie the chassis ground (Pin 1) and signal ground (DB37 Pin 19, DB15 Pin 8) together. The unit comes from the factory without the grounds tied common.
(Straps W2 through W7 are not used.)	
W8	In the A-B position, Indication (DB37 Pins 13 and 31, DB15 Pins 5 and 12) on J2 is derived from Control (DB37 Pins 7 and 25, DB15 Pins 3 and 10) on J1. In the B-C position, Indication on J2 is constantly held ON. The unit is shipped from the factory with Indication derived from Control (A-B).
W9	In the A-B position, Indication (DB37 Pins 13 and 31, DB15 Pins 5 and 12) on J1 is derived from Control (DB37 Pins 7 and 25, DB15 Pins 3 and 10) on J2. In the B-C position, Indication on J1 is constantly held ON. The unit is shipped from the factory with Indication derived from Control (A-B).
W10	Keep this strap set for internal timing on J1 (Position A, the factory-default setting). The SME's internal clock is provided on Signal Element Timing (DB37 Pins 5 and 23, DB15 Pins 6 and 13) on J1 and Byte Timing (DB37 Pins 8 and 26, DB15 Pins 7 and 14) on J2.
W11	Keep this strap set for internal timing on J2 (Position A, the factory-default-setting). The SME's internal clock is provided on Signal Element Timing (DB37 Pins 5 and 23, DB15 Pins 6 and 13) on J2 and Byte Timing (DB37 Pins 8 and 26, DB15 Pins 7 and 14) on J1.

Table 3-5. Data-Rate-Switch Settings, Std. 5.376-MHz Crystal*

DATA RATE (bps)	SWITCH S1 POSITION						SWITCH S2 POSITION					
	1	2	3	4	5	6	1	2	3	4	5	6
1200	OFF	ON	OFF	OFF	OFF	ON	ON	ON	ON	ON	ON	ON
2400	ON	OFF	OFF	OFF	ON	OFF	ON	ON	ON	ON	ON	OFF
4800	OFF	OFF	OFF	ON	OFF	OFF	ON	ON	ON	ON	OFF	ON
9600	OFF	OFF	ON	OFF	OFF	OFF	ON	ON	ON	OFF	ON	OFF
19200	OFF	ON	OFF	OFF	OFF	OFF	ON	ON	OFF	ON	OFF	OFF
38400	ON	OFF	OFF	OFF	OFF	OFF	ON	OFF	ON	OFF	OFF	OFF
48000	OFF	OFF	OFF	OFF	OFF	OFF	ON	ON	ON	OFF	ON	ON
56000	OFF	OFF	OFF	OFF	OFF	OFF	ON	ON	ON	ON	OFF	ON
64000	OFF	OFF	OFF	OFF	OFF	OFF	ON	OFF	OFF	ON	OFF	ON
76800	OFF	OFF	OFF	OFF	OFF	OFF	OFF	ON	OFF	OFF	OFF	ON
84000	OFF	OFF	OFF	OFF	OFF	OFF	ON	ON	ON	ON	ON	OFF
96000	OFF	OFF	OFF	OFF	OFF	OFF	ON	ON	OFF	ON	ON	OFF
112000	OFF	OFF	OFF	OFF	OFF	OFF	ON	ON	ON	OFF	ON	OFF
128000	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	ON	OFF	ON	OFF
192000	OFF	OFF	OFF	OFF	OFF	OFF	ON	OFF	ON	ON	OFF	OFF
224000	OFF	OFF	OFF	OFF	OFF	OFF	ON	ON	OFF	ON	OFF	OFF
336000	OFF	OFF	OFF	OFF	OFF	OFF	ON	ON	ON	OFF	OFF	OFF
384000	OFF	OFF	OFF	OFF	OFF	OFF	OFF	ON	ON	OFF	OFF	OFF
448000	OFF	OFF	OFF	OFF	OFF	OFF	ON	OFF	ON	OFF	OFF	OFF
896000	OFF	OFF	OFF	OFF	OFF	OFF	OFF	ON	OFF	OFF	OFF	OFF
1344000	OFF	OFF	OFF	OFF	OFF	OFF	ON	OFF	OFF	OFF	OFF	OFF

*Only the most popular of the speeds that standard SMEs can reach are listed here. The SMEs are capable of any data rate up to 1.344 Mbps that evenly divides 2.688 Mbps. That is, if you don't get a remainder when you divide 2,688,000 bps by your desired speed, the SME can be set to that speed. Call us for technical support if your desired data rate isn't shown here.

SYNCHRONOUS MODEM ELIMINATORS SME-422, -V.35, -530, -X.21

Table 3-6. Data-Rate-Switch Settings, Special 4.9152-MHz Crystal*

DATA RATE (bps)	SWITCH S1 POSITION						SWITCH S2 POSITION					
	1	2	3	4	5	6	1	2	3	4	5	6
600	ON	ON	ON	ON	ON	ON	ON	ON	ON	ON	ON	ON
1200	ON	ON	ON	ON	ON	OFF	ON	ON	ON	ON	ON	ON
2400	ON	ON	ON	ON	OFF	OFF	ON	ON	ON	ON	ON	ON
4800	ON	ON	ON	OFF	OFF	OFF	ON	ON	ON	ON	ON	ON
9600	ON	ON	OFF	OFF	OFF	OFF	ON	ON	ON	ON	ON	ON
12800	OFF	ON	OFF	OFF	OFF	OFF	ON	ON	ON	ON	ON	ON
19200	ON	OFF	OFF	OFF	OFF	OFF	ON	ON	ON	ON	ON	ON
25600	ON	OFF	OFF	OFF	OFF	OFF	ON	ON	ON	ON	ON	OFF
38400	OFF	OFF	OFF	OFF	OFF	OFF	ON	ON	ON	ON	ON	ON
51200	OFF	OFF	OFF	OFF	OFF	OFF	ON	ON	ON	ON	OFF	ON
76800	OFF	OFF	OFF	OFF	OFF	OFF	ON	ON	ON	ON	ON	OFF
102400	OFF	OFF	OFF	OFF	OFF	OFF	ON	ON	ON	OFF	ON	OFF
153600	OFF	OFF	OFF	OFF	OFF	OFF	ON	ON	ON	ON	OFF	OFF
204800	OFF	OFF	OFF	OFF	OFF	OFF	ON	ON	OFF	ON	OFF	OFF
307200	OFF	OFF	OFF	OFF	OFF	OFF	ON	ON	ON	OFF	OFF	OFF
409600	OFF	OFF	OFF	OFF	OFF	OFF	ON	OFF	ON	OFF	OFF	OFF
614400	OFF	OFF	OFF	OFF	OFF	OFF	ON	ON	OFF	OFF	OFF	OFF
819200	OFF	OFF	OFF	OFF	OFF	OFF	OFF	ON	OFF	OFF	OFF	OFF
1228800	OFF	OFF	OFF	OFF	OFF	OFF	ON	OFF	OFF	OFF	OFF	OFF

*To enable them to reach certain normally unsupported speeds, we can modify SMEs at our factory by swapping in special replacement clock crystals. The major data rates supported by the two most frequently requested crystals are shown here and on the next page. Only the most popular of the speeds that SMEs with the 4.9152-MHz customization can reach are listed here. These modified SMEs are capable of any data rate up to 1.2288 Mbps that evenly divides 2.4576 Mbps. That is, if you don't get a remainder when you divide 2,457,600 bps by your desired speed, these SMEs can be set to that speed. Call us for technical support if your desired data rate isn't shown here.

Table 3-7. Data-Rate-Switch Settings, Special 6.144-MHz Crystal*

DATA RATE (bps)	SWITCH S1 POSITION						SWITCH S2 POSITION					
	1	2	3	4	5	6	1	2	3	4	5	6
1200	ON	ON	ON	OFF	OFF	ON	ON	ON	ON	ON	ON	ON
2400	ON	ON	OFF	OFF	ON	OFF	ON	ON	ON	ON	ON	ON
4800	ON	OFF	OFF	ON	OFF	OFF	ON	ON	ON	ON	ON	ON
9600	OFF	OFF	ON	OFF	OFF	OFF	ON	ON	ON	ON	ON	ON
19200	OFF	ON	OFF	OFF	OFF	OFF	ON	ON	ON	ON	ON	OFF
38400	ON	OFF	OFF	OFF	OFF	OFF	ON	ON	ON	ON	OFF	OFF
48000	OFF	OFF	OFF	OFF	OFF	OFF	ON	ON	ON	ON	ON	ON
64000	OFF	OFF	OFF	OFF	OFF	OFF	ON	ON	ON	ON	OFF	ON
76800	OFF	OFF	OFF	OFF	OFF	OFF	ON	ON	ON	OFF	OFF	ON
96000	OFF	OFF	OFF	OFF	OFF	OFF	ON	ON	ON	ON	ON	OFF
128000	OFF	OFF	OFF	OFF	OFF	OFF	ON	ON	ON	OFF	ON	OFF
153600	OFF	OFF	OFF	OFF	OFF	OFF	ON	ON	OFF	OFF	ON	OFF
192000	OFF	OFF	OFF	OFF	OFF	OFF	ON	ON	ON	ON	OFF	OFF
256000	OFF	OFF	OFF	OFF	OFF	OFF	ON	ON	OFF	ON	OFF	OFF
307200	OFF	OFF	OFF	OFF	OFF	OFF	ON	OFF	OFF	ON	OFF	OFF
384000	OFF	OFF	OFF	OFF	OFF	OFF	ON	ON	ON	OFF	OFF	OFF
512000	OFF	OFF	OFF	OFF	OFF	OFF	ON	OFF	ON	OFF	OFF	OFF
614400	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	ON	OFF	OFF	OFF
768000	OFF	OFF	OFF	OFF	OFF	OFF	ON	ON	OFF	OFF	OFF	OFF
1024000	OFF	OFF	OFF	OFF	OFF	OFF	OFF	ON	OFF	OFF	OFF	OFF
1536000	OFF	OFF	OFF	OFF	OFF	OFF	ON	OFF	OFF	OFF	OFF	OFF

*(See the note on the previous page.) Only the most popular of the speeds that SMEs with the 6.144-MHz customization can reach are listed here. These modified SMEs are capable of any data rate up to 1.536 Mbps that evenly divides 3.072 Mbps. That is, if you don't get a remainder when you divide 3,072,000 bps by your desired speed, these SMEs can be set to that speed. Call us for technical support if your desired data rate isn't shown here.

SYNCHRONOUS MODEM ELIMINATORS SME-422, -V.35, -530, -X.21

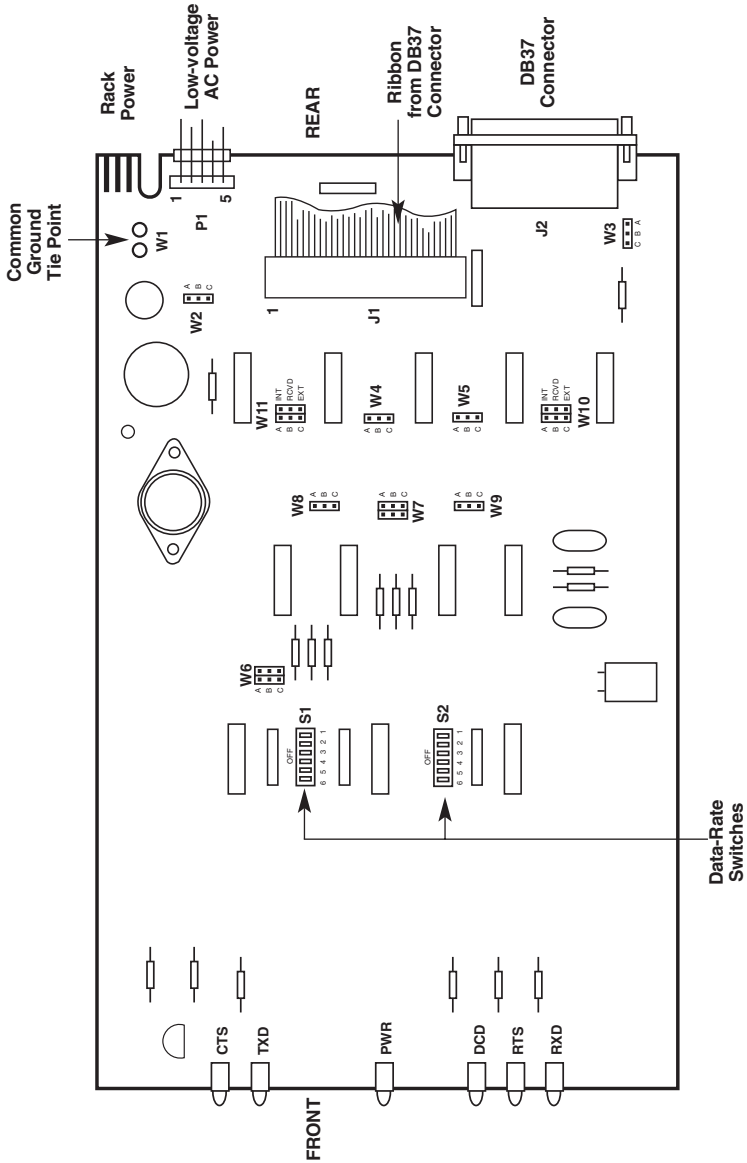


Figure 3-1. SME-422 and SME-X.21 Printed-Circuit-Board Layout.

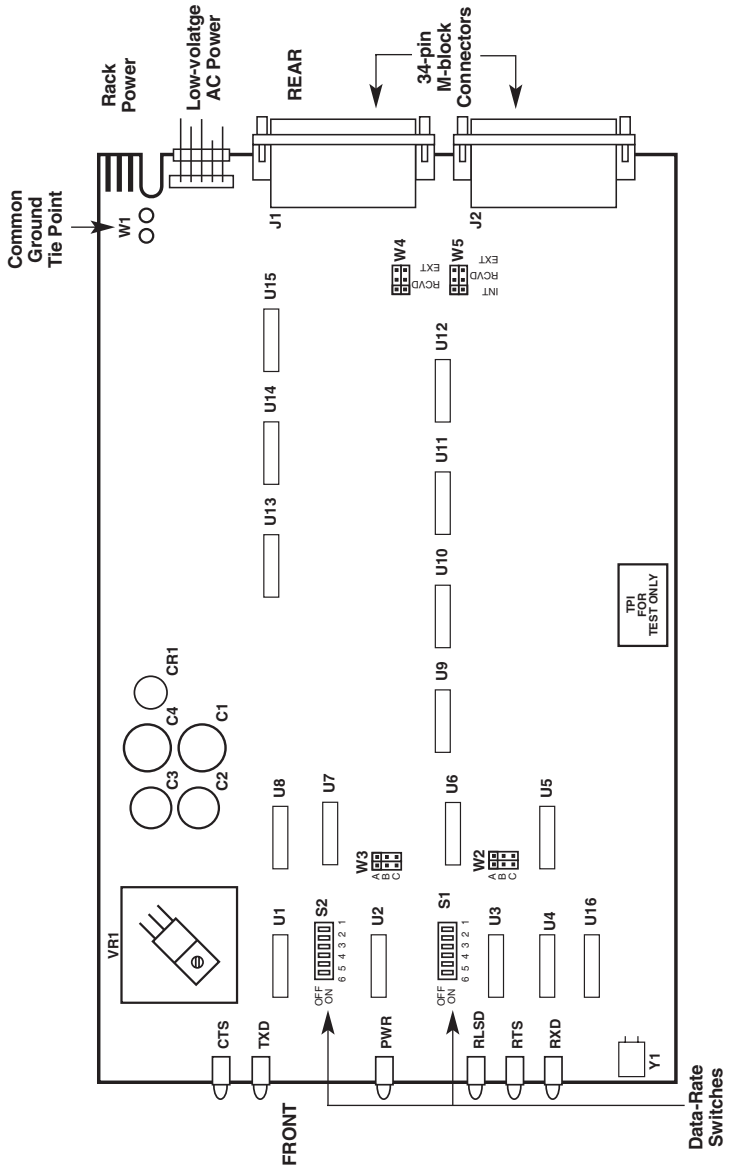


Figure 3-2. SME-V.35 Printed-Circuit-Board Layout.

SYNCHRONOUS MODEM ELIMINATORS SME-422, -V.35, -530, -X.21

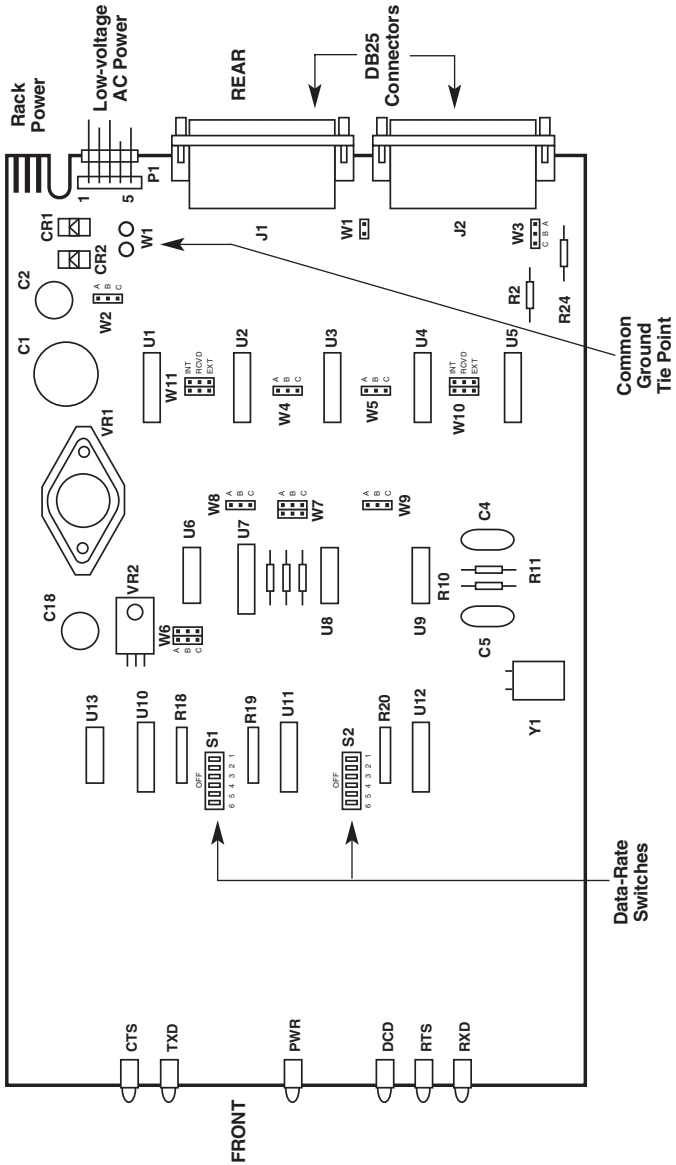


Figure 3-3. SME-530 Printed-Circuit-Board Layout.

4. Installation

To install your SME after you've finished configuring it:

Card units only:

1. Slide the card into an available slot on a compatible rack (our product code RM011 for SME-422 units or RM060 for SME-V.35 or SME-530 units). If your unit is an SME-V.35 or SME-530, make sure that the gold contacts on its upper rear corner are firmly wedged into the rack's power-supply groove.

SME-X.21 units only:

2. If your SME is an X.21 model, attach the DB37 connectors on the two provided adapter cables to those on the SME (J1 and J2). Then, in Step 3, substitute the cables' DB15 female connectors for J1 and J2.

All units:

3. Run a cable from one of the SME's rear-panel connectors, labeled J1 or J2, to one of the devices you want to connect. Run a second cable from the other device to the SME's other connector. (Make sure the cables don't exceed the recommended cable length specified for your system's interface.) Make sure all cable connections are tight.

Standalone units only:

4. Plug the power supply's output cord into the SME. Plug its input cord into a power outlet.

Your SME is now ready for continuous operation.

5. Troubleshooting

5.1 Calling Black Box

If you determine that your SME is malfunctioning, *do not attempt to alter or repair the unit*. Contact Black Box Technical Support at 724-746-5500. The problem may be solvable over the phone.

Before you do, make a record of the history of the problem. We will be able to provide more efficient and accurate assistance if you have a complete description, including:

- the nature and duration of the problem.
- when the problem occurs.
- the components involved in the problem.
- any particular application that, when used, appears to create the problem or make it worse.

5.2 Shipping and Packaging

If you need to transport or ship your SME:

- Package it carefully. We recommend that you use the original container.
- If you are shipping the SME for repair, include its power supply and (if it's an SME-X.21 model) its adapter cables. If you are returning the SME, make sure you include everything you received with the unit. Before you ship, contact us to get a Return Materials Authorization (RMA) number.

Appendix: Connector Pinouts

Any signal or pin designation that does not appear in one of the following charts is not supported by the corresponding SME.

Table A-1. SME-422: Pinout for DB37 Connectors J1 and J2

PIN	SIGNAL	DESCRIPTION	SIGNAL TYPE	DIRECTION
1	—	Shield	Ground	—
4	SD (A)	Send Data (A)	Data	To DCE
5	ST (A)	Send Timing (A)	Timing	From DCE
6	RD (A)	Receive Data (A)	Data	From DCE
7	RS (A)	Request to Send (A)	Control	To DCE
8	RT (A)	Receive Timing (A)	Timing	From DCE
9	CS(A)	Clear to Send (A)	Control	From DCE
11	DM (A)	Data Mode (A)	Control	From DCE
12	TR (A)	Terminal Ready (A)	Control	To DCE
13	RR (A)	Receiver Ready (A)	Control	From DCE
15	IC	Incoming Call	Control	From DCE
17	TT (A)	Terminal Timing (A)	Timing	To DCE
19	SG	Signal Ground	Ground	—
20	RC	Receive Common	Ground	—
22	SD (B)	Send Data (B)	Data	To DCE
23	ST (B)	Send Timing (B)	Timing	From DCE
24	RD (B)	Receive Data (B)	Data	From DCE
25	RS (B)	Request to Send (B)	Control	To DCE
26	RT (B)	Receive Timing (B)	Timing	From DCE
27	CS (B)	Clear to Send (B)	Control	From DCE
29	DM (B)	Data Mode (B)	Control	From DCE
30	TR (B)	Terminal Ready (B)	Control	To DCE
31	RR (B)	Receiver Ready (B)	Control	From DCE
35	TT (B)	Terminal Timing (B)	Timing	To DCE
37	SC	Send Common	Ground	—

Table A-2. SME-V.35: Pinout for 34-Pin Connectors J1 and J2

PIN	SIGNAL	DESCRIPTION	SIGNAL TYPE	DIRECTION
A	FG	Frame (Protective) Ground	Ground	—
B	SG	Signal Ground	Ground	—
C	RTS	Request to Send	Control	To DCE
D	CTS	Clear to Send	Control	From DCE
E	DSR	Data Set Ready	Control	From DCE
F	RLSD	Received Line Signal Detector	Control	From DCE
H	DTR	Data Terminal Ready	Control	To DCE
K	LT	Test Mode	Control	From DCE
P	SD (A)	Send Data (A)	Data	To DCE
R	RD (A)	Receive Data (A)	Data	From DCE
S	SD (B)	Send Data (B)	Data	To DCE
T	RD (B)	Receive Data (B)	Data	From DCE
U	SCTE (A)	Serial Clock Transmit Ext (A)	Timing	To DCE
V	SCR (A)	Serial Clock Receive (A)	Timing	From DCE
W	SCTE (B)	Serial Clock Transmit Ext (B)	Timing	To DCE
X	SCR (B)	Serial Clock Receive (B)	Timing	From DCE
Y	SCT (A)	Serial Clock Transmit (A)	Timing	From DCE
AA	SCT (B)	Serial Clock Transmit (B)	Timing	From DCE

Table A-3. SME–530: Pinout for DB25 Connectors J1 and J2

PIN	SIGNAL	DESCRIPTION	SIGNAL TYPE	DIRECTION
1	—	Shield	Ground	—
2	SD (A)	Transmitted Data (A)	Data	From Terminal
3	RD (A)	Receive Data (A)	Data	To Terminal
4	RS (A)	Request to Send (A)	Control	From Terminal
5	CS(A)	Clear to Send (A)	Timing	To Terminal
6	DM (A)	DCE Ready (A)	Control	To Terminal
7	SG	Signal Ground	Ground	—
8	RR (A)	Received Line Signal Detector (A)	Control	To Terminal
9	RT(B)	Receiver Signal Element Timing DCE (B)	Timing	To Terminal
10	RR (B)	Received Line Signal Detector (B)	Control	To Terminal
11	TT (B)	Transmitter Signal Element Timing DTE (B)	Timing	From Terminal
12	ST (B)	Transmitter Signal Element Timing DCE (B)	Timing	To Terminal
13	CS (B)	Clear to Send (B)	Control	To Terminal
14	SD (B)	Transmitted Data (B)	Data	From Terminal
15	ST (A)	Transmitter Signal Element Timing DCE (A)	Timing	To Terminal
16	RD (B)	Receive Data (B)	Data	To Terminal
17	RT (A)	Receiver Signal Element Timing DCE (A)	Timing	To Terminal
19	RS (B)	Request to Send (B)	Control	From Terminal
20	TR (A)	DTE Ready (A)	Control	From Terminal
22	DM (B)	DCE Ready (B)	Control	To Terminal
23	TR (B)	DTE Ready (B)	Control	From Terminal
24	TT (A)	Transmitter Signal Element Timing DTE (A)	Timing	From Terminal
25	TM	Test Mode	—	—

Table A-4. SME-X.21: Pinout for DB37 Connectors J1 and J2

PIN	SIGNAL	DESCRIPTION	SIGNAL TYPE	DIRECTION
1	—	Shield	Ground	—
4	T (A)	Transmit (A)	Data	To DCE
5	S (A)	Signal Element Timing (A)	Timing	From DCE
6	R (A)	Receive (A)	Data	From DCE
7	C (A)	Control (A)	Control	To DCE
8	B (A)	Byte Timing (A)	Timing	From DCE
13	I (A)	Indication (A)	Control	From DCE
19	SG	Signal Ground	Ground	—
20	RC	Receive Common	Ground	—
22	T (B)	Transmit (B)	Data	To DCE
23	S (B)	Signal Element Timing (B)	Timing	From DCE
24	R (B)	Receive (B)	Data	From DCE
25	C (B)	Control (B)	Control	To DCE
26	B (B)	Byte Timing (B)	Timing	From DCE
31	I (B)	Indication (B)	Control	From DCE
37	SC	Send Common	Ground	—

Table A-5. SME-X.21: Pinout for DB15 Connectors on Adapter Cables

PIN	SIGNAL	DESCRIPTION	SIGNAL TYPE	DIRECTION
1	—	Shield	Ground	—
2	T (A)	Transmit (A)	Data	To DCE
3	C (A)	Control (A)	Control	To DCE
4	R (A)	Receive (A)	Data	From DCE
5	I (A)	Indication (A)	Control	From DCE
6	S (A)	Signal Element Timing (A)	Timing	From DCE
7	B (A)	Byte Timing (A)	Timing	From DCE
8	G	Signal Ground	Ground	—
9	T (B)	Transmit (B)	Data	To DCE
10	C (B)	Control (B)	Control	To DCE
11	R (B)	Receive (B)	Data	From DCE
12	I (B)	Indication (B)	Control	From DCE
13	S (B)	Signal Element Timing (B)	Timing	From DCE
14	B (B)	Byte Timing (B)	Timing	From DCE



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