

# Message Center Connectivity: *Text String Activation*

## Message Center Protocol

Edwards protocol document allows your Edwards Message Center to communicate directly with any device that has a serial port, such as PLCs (programmable logic controllers), or your desktop PC. This allows you to post real time information, production quotas or important company information from your own software application.

### Features Supported

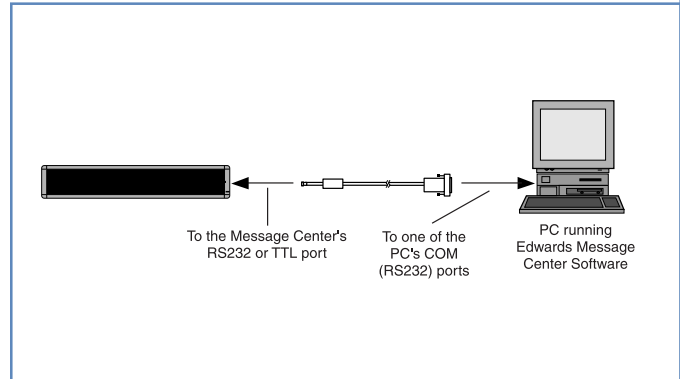
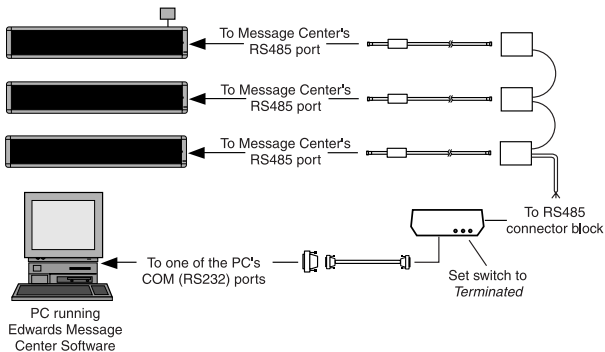
- Set and display time and date
- Set run schedules for particular messages
- Control text with color, font and character height
- Read status from any message center
- Special functions (rotate, scroll, flash, etc.)
- Address messages for specific message centers

### Text String Requirements

- Communicating device such as a PC or PLC must have either a RS232 or RS485 communication output
- Software being utilized must be capable of transmitting an ASCII text string through the communication output.

# Message Center Hardware & Networking Accessories

## MULTIPLE MESSAGE CENTERS



## RS485 ACCESSORIES

**MCNMNARJ11485** - Modular Network Adapter. Used in an RS485 Network. Allows a network drop (MCN485-RJ11-8 or MCN485-RJ11-1) to be connected to an Edwards Message Center.

**MCN485CB2EOLT** - RS232 to RS485 Converter Box. Unit is supplied with 2 end-of-line terminators and power supply. Used when more than one message center is needed on the same network.

**MCN485EOLTCB** - End-of-line terminator. In an RS485 network, an EOL terminator must be used at each end to ensure proper operation.

**MCN485CBAC** - Converter Box power supply adapter. 120VAC input, 9 volt output. Used to power MCN485CB2EOLT Converter Box.

**MCN485NRB** - RS485 Network repeater box. Supports an additional 32 drops on an RS485 network.

**MCN485-RJ11-8** - 8 ft, 4 conductor RS485 network drop. Used in conjunction with a MCNMNARJ11485. One required for each message center in an RS485 network to ensure proper operation.

**MCN485-RJ11-1** - 1 ft, 4 conductor RS485 network drop. Used in conjunction with a MCNMNARJ11485. One required for each message center in an RS485 network to ensure proper operation.

**MCN485-1000** - 1000 ft spool of RS485 cable.

**MCN485-100** - 100 ft length of RS485 cable.

**MCN485BB-8** - 8 ft RS485 cable. Used to interconnect 2 Edwards Messages Centers when connected back-to-back.

## RS232 ACCESSORIES

**MCN23225FRJ11** - 25 pin sub-D/6 position RJ11 Adapter. This is used to convert 25 pin Serial output on a PC to an RJ11 connection.

**MCN2329FRJ11** - 9 pin sub-D/6 position RJ11 Adapter. This is used to convert a 9 pin Serial output on a PC to an RJ11 connection.

**MCN2329F-25M** - 9 pin female/25 pin male RS232 Adapter. Used to connect 25 pin Serial output on a PC to a 9 pin RS232 cable.

**MCN232-6PRJ11** - 6 position coupler for connecting RS232 cable together.

**MCN232-RJ11-25** - 25 foot, 6 conductor RS232 cable. Used to connect Serial output on PC to a Message Center.

**MCN232-RJ11-50** - 50 foot, 6 conductor RS232 cable. Used to connect Serial output on PC to a Message Center.

**MCN485MODCB** - 10 foot, 25 pin female/9 pin male, type "B9" RS232 cable. Used to connect receiving modem to an RS232 to RS485 Converter Box (MCN485CB2EOLT).

**MCN485CB232A9** - 10 foot, 9 pin female/9 pin male, type "A9" RS232 cable. Used to connect Serial output of a PC to an RS232 to RS485 Converter Box

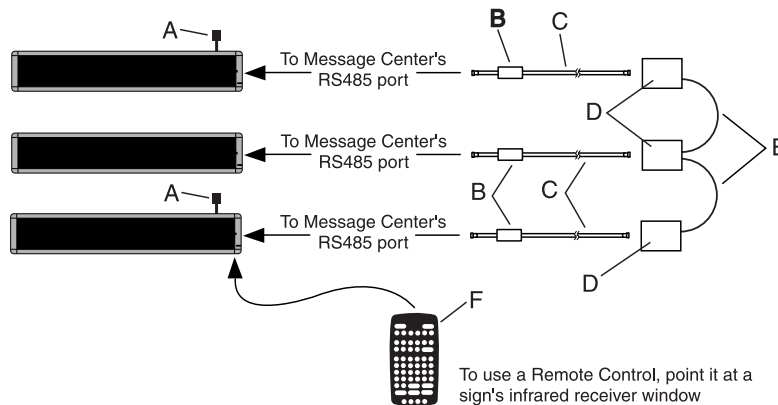
# Message Center Connectivity: Hand Held Wireless Remote

## CABLED NETWORK WITHOUT A PC

- Message centers are interconnected using RS485 cable.
- Message centers are programmed utilizing the hand held remote control.
- Most basic way of networking multiple message centers.

	Cat. No.	Description
A	MCN485EOLTCB	End-of-line (EOL) terminator
B	—	Ferrite (ferrite towards sign; incl. w/cable)
C	MCN485-RJ11-8	8 foot, 4-conductor RS485 cable
	MCN485-RJ11-1	1 foot, 4-conductor RS485 cable
D	MCN485-MNARJ11485	Modular Network Adapter
E	MCN485-1000	RS485 cable 1000 foot spool
F	MC-RP	Infrared Remote Control keypad

Note: The internal jumper must be set for RS485 operation



## Edwards Networking Software

### RS232 - SINGLE MESSAGE CENTER

- This connection method is usually a serial port (communications port) on your computer or a communication **output** on a PLC.
- Limited to one drop (Device)
- Wiring distance is limited to 50 feet

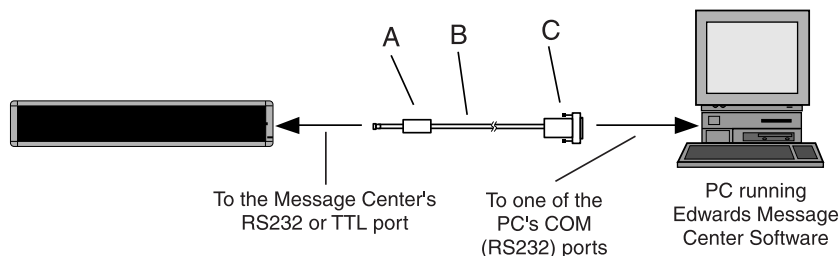
### OTHER RS232 ACCESSORIES

- **MCN2329F-25M** — 9 pin female/25 pin male adapter
- **MCN232-6PRJ11** — 6 position coupler for interconnecting RS232 cable

- **MCN485MODCB** — 10 foot, 25 pin female/9 pin male, type "B9" RS232 cable
- **MCN485CB232A9** — 10 foot, 9 pin female/9 pin male, type "A9" RS232 cable

	Cat. No.	Description
A	—	Ferrite (ferrite towards sign; incl. w/cable)
B	MCN232-RJ11-25	25 foot, 6-conductor RS232 cable
	MCN232-RJ11-50	50 foot, 6-conductor RS232 cable
C	MCN23225FRJ11	25 pin sub-D/to 6 pos. RJ11 adapter
	MCN2329FRJ11	9 pin sud-D/6 pos. RJ11 adapter

Note: The internal jumper must be set for RS232 operation



## Message Center Connectivity: Networking Software

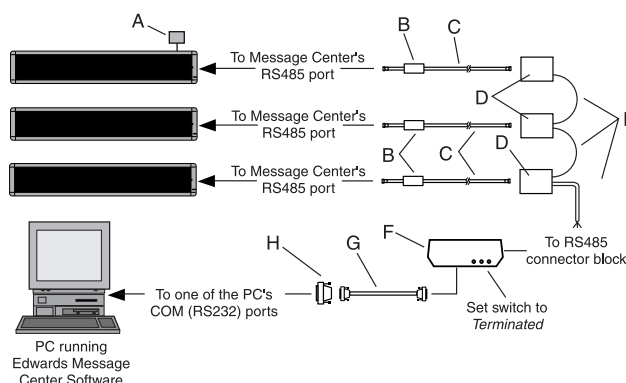
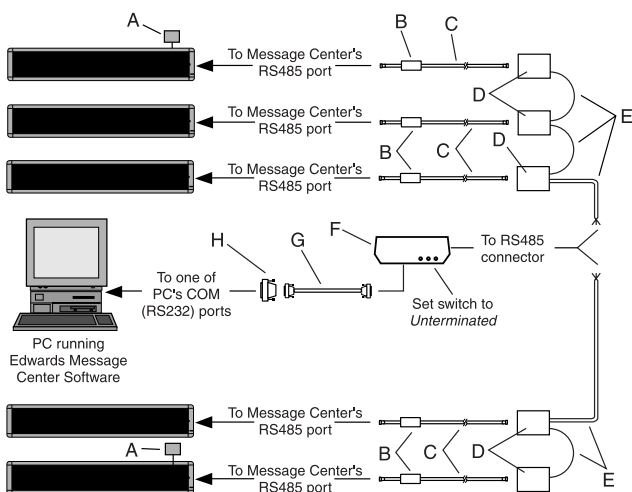
### RS485 MULTIPLE MESSAGE CENTERS

- More than one device may be connected to the network.
- An RS485 Network is made up of smaller 32 drop networks.
- A repeater box is required when more than 32 "Network Drops" are Needed
- Each repeater box is capable of supporting and additional 32 drops.
- The Maximum size for an RS485 Network is 255 drops.
- Each repeater box, converter box and message center count as one drop each.
- Each 32 drop network has a wiring limitation depending on the baud rate (data transmission rate).
  - 9600 baud - 4,000 feet max.
  - 4800 baud - 8,000 feet max.
  - 2400 baud - 10,000 feet max.
  - 1200 baud - 10,000 feet max.

### OTHER RS485 ACCESSORIES

- **MCN485CBAC** - converter box power supply adapter. 120V AC input, 9 volt output
- **MCN485NRB** - RS485 network repeater box. Supports an additional 32 drops
- **MCN485BB-8** - 8 ft. RS485 cable used for back to back configurations

	Cat. No.	Description
A	MCN485EOLTCB	End-of-line (EOL) terminator
B	—	Ferrite (ferrite towards sign; incl. w/cable)
C	MCN485-RJ11-8	8 ft, 4-conductor RS485 cable
	MCN485-RJ11-1	1 ft, 4-conductor RS485 cable
D	MCNMNARJ11485	Modular Network Adaptor
E	MCN485-1000	RS485 cable 1000 ft spool
F	MNC485CB2EOLT	Converter Box with 2 EOL terminators
G	MCN485CB232A9	10 ft, 9 pin-to-pin, type 'A9' RS232 cable
H	—	Serial port DB25-to-DB9 RS232 adapter (may be required by your computer)



# Message Center Connectivity: Dry Contact Closure

## PLC (Programmable Logic Controller)

Any Edwards Message Center can be activated using a PLC. There are two requirements:

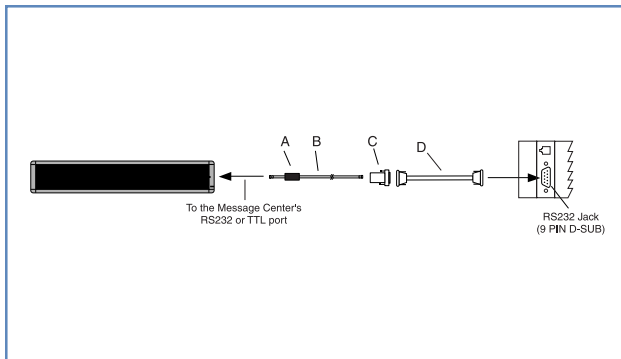
1. The PLC *must* have an RS232 or RS485 **communications output**.
2. The PLC must be capable of outputting an ASCII text string through its communications output.

For single Message Center connection use RS232 wiring method. For multiple Message Center operation use RS485 wiring method.

A PLC can be used to send a complete message to one or more Message Centers. Or the PLC can activate a previously loaded message in one or more Message Centers. A PLC can be used to monitor conditions on a factory floor, production line or process control and translate to an output that sends a message to or activates a pre-loaded message in any Edwards Message Center.

### SINGLE MESSAGE CENTER

#### RS232 WIRING METHOD

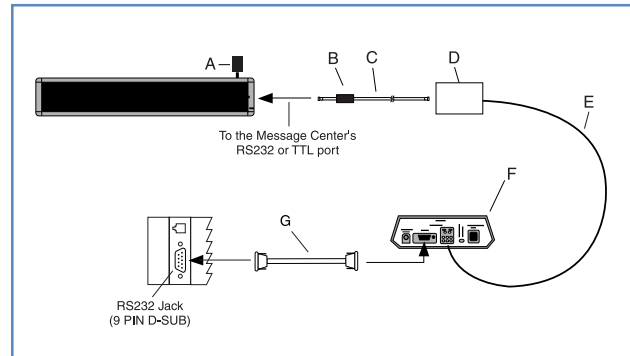


Cat. No.	Description
A	—
B	MCN232-RJ11-25
	MCN232-RJ11-50
C	MCN2329FRJ11
D	MCN485CB232A9

NOTE: Set internal message center jumper to RS232

### MULTIPLE MESSAGE CENTERS

#### RS485 WIRING METHOD



	Cat. No.	Description
A	MCN485EOLTCB	EOL Termination
B	—	Ferrite (ferrite towards sign; incl. w/ cable)
C	MCN485-RJ11-8	8 ft, 4-conductor RS-485 cable
	MCN485-RJ11-1	1 ft, 4-conductor RS-485 cable
D	MCNMNARJ11485	Modular network adapter
E	MCN485-1000	1000 ft spool of RS485 cable
F	MCN485CB2EOLT	Converter box w/2 EOL terminators
G	MCN485CB232A9	10 ft, 9 pin-to-9 pin, type 'A9' RS232 cable

NOTE: Set internal message center jumper to RS485

### PLC TECHNICAL BULLETINS

(Available at [www.edwards-signals.com](http://www.edwards-signals.com))

**970520** - How to display text messages using a PLC.

**970521** - Activating preloaded messages using a PLC.

**970522** - Activating messages using a dry contact closure

# Message Center Connectivity: *Dry Contact Closure*

## Edwards MCDI Series Text Message Annunciator Driver

### OPERATING MODES

**Discrete Fixed** - Displays message assigned to a contact closure as long as contact is closed.

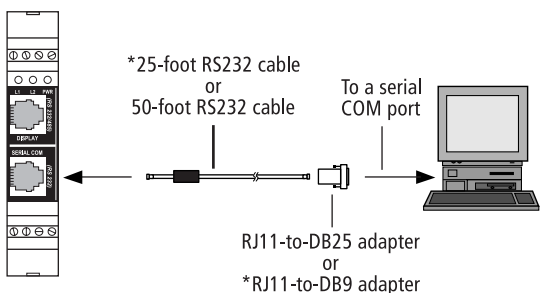
**Momentary Trigger** - Displays message assigned to a contact closure until a new message is activated.

**Binary Coded Decimal (BCD)** - Reads the BCD value of the inputs and runs the message assigned to that number

**Binary** - Reads the binary value of the inputs and runs the message assigned to that number

**Counter** - Count is incremented/decremented using contact closures.

Figure 1: Connect a PC to the CPU Module.



\*Included with the Message Center Software MCN-2-0

Figure 2: Networking a single message center (unshielded).

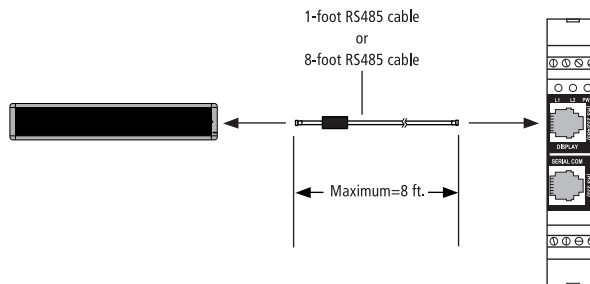
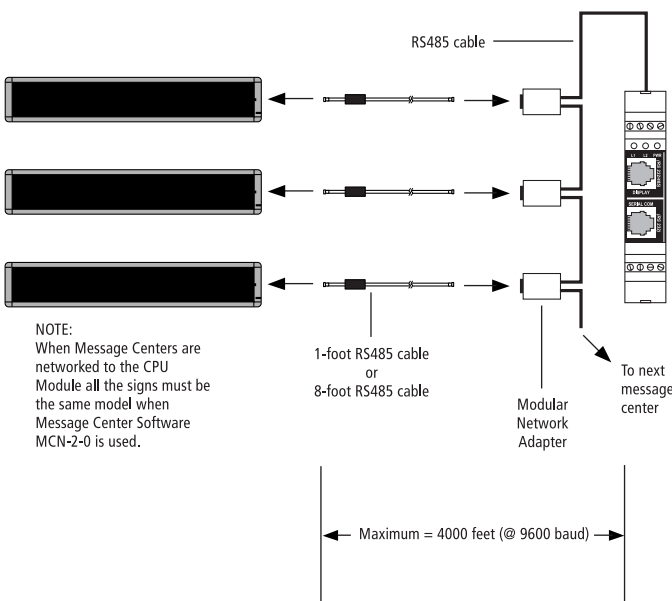


Figure 3: Networking one or more message centers (shielded)

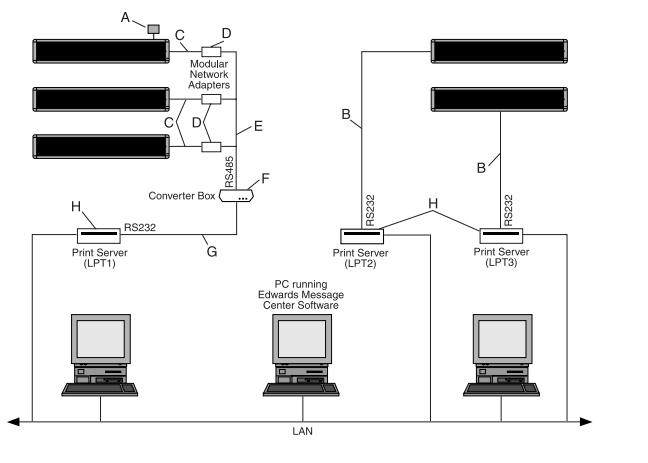


NOTE:  
When Message Centers are networked to the CPU Module all the signs must be the same model when Message Center Software MCN-2-0 is used.

# Message Center Connectivity: Ethernet

## Print Server (NetportExpress PRO) Solution

- Message Centers appear as printers on the Network
- Main Advantage - uses an existing network
- Utilizes Edwards Message Center Software
- Print server application will only work with Windows 95 (It has the ability to capture a printer)
- Limited to 3 print servers on the network.



	Cat. No.	Description
A	MCN485EOLTCB	End-of-line (EOL) terminator
B	MCN232-RJ11-25	25 ft, 6-conductor RS-232 cable
	MCN232-RJ11-50	50 ft, 6-conductor RS-232 cable
C	MCN485-RJ11-8	8 ft, 4-conductor RS485 cable
	MCN485-RJ11-1	1 ft, 4-conductor RS485 cable
D	MCNMNARJ11485	Modular Network Adapter
E	MCN485-1000	RS485 cable 1000 foot spool
F	MNC485CB2EOLT	Converter Box w/ 2 EOL terminators
G	MCN485CB232A9	10 ft, 9 pin-to-9 pin, type 'A9' RS232 cable
H	—	Netport Express PRO or equal print server
I	—	Serial port DB25-to-DB9 RS232 adapter (may be required by your computer)

## MCNET Ethernet Adapter Solution (Page 7-15)

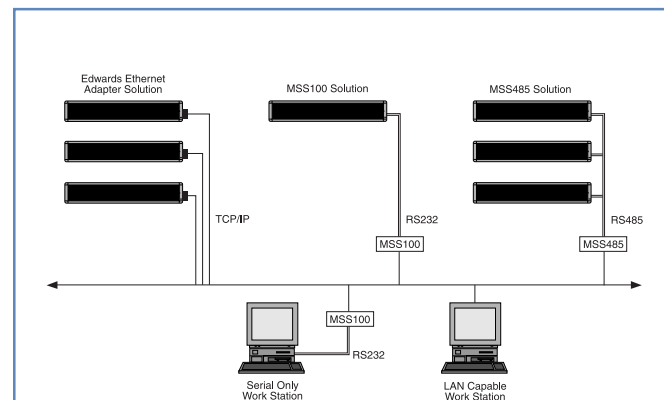
- Allows you to connect an Edwards Message Center a 10BASE-T TCP/IP Network.
- Needs no external power supply, because of this it will work for only the following Edwards Message Centers:
  - MC1-15C2, MC1-15R2, MC1-20C3, MC1-30C3, MC2 indoor Message Centers, MC4 Message Centers.
- One required for every Message Center on the network.

## MSS100 Solution (Page 7-15)

- Allows you to connect an Edwards Message Center a 100BASE-T or 10BASE-T TCP/IP network.
- Requires external power source therefore all Message Centers will work with it.
- Allows a computer with only serial ports to communicate via a TCP/IP network, like a modem.
- Allows non "TCP/IP-ready" software (Edwards Message Center Software) to communicate with Edwards Message Centers on TCP/IP networks.

## MSS485 Solution (Page 7-15)

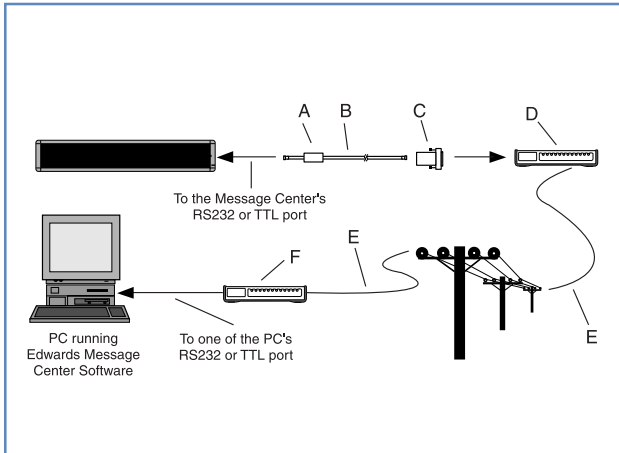
- Allows a network of up to 256 Edwards Message Centers to be connected via an RS485 network to a 10BASE-T TCP/IP network.
- Requires an external power source.



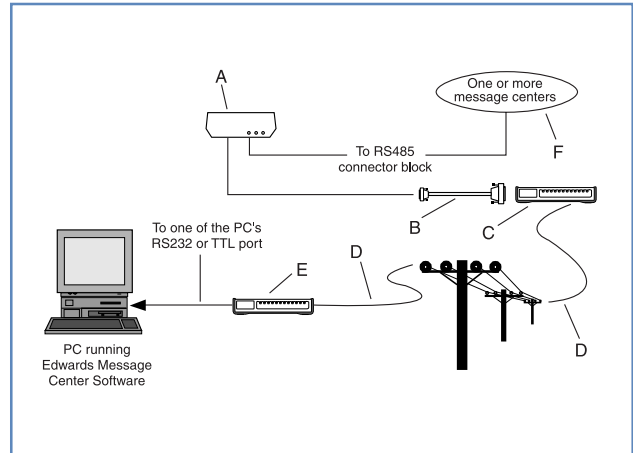
## Message Center Connectivity: *Other Applications*

### Modem Networks

#### Connecting a Single Message Center to a Modem Network



#### Connecting Multiple Message Centers to a Modem Network



Cat. No.	Description
A	— Ferrite (ferrite towards sign; incl. w/cable)
B	MCN232-RJ11-25 25 foot, 6-conductor RS232 cable MCN232-RJ11-50 50 foot, 6-conductor RS232 cable
C	25 pin sud-D/to 6pos. RJ11 Modem Adapter (Pacesetter p/n 2370-0002) This part is available through: Pacesetter Communications, Inc. 1020 Cedar Avenue / St. Charles, IL 60104 630-377-8811 (phone) info@pace-seter.com
D	Receiving Modem* * If you are using a high-speed modem (14.4K and above) to receive messages, your modem may have to be told to "slow down" by sending it special commands. Though these commands vary from modem to modem, the following set of commands work for US Robotics Sportster modems: <b>AT&amp;H0</b> (Disables transmit data flow control.) <b>AT&amp;R1</b> (Disables receive data flow control.) <b>AT&amp;B0</b> (Sets modem's serial port to connect rate.) <b>AT&amp;W0</b> (Makes the above changes permanent.) Also, your modem should be set to ignore DTR and to answer on the first ring (DIP switches 1 and 5 on US Robotics Sportster modems, or <b>ATSO=1</b> for many other modems.)
E	— Phone Line
F	— Transmitting modem (internal or external)

Cat. No.	Description
A	MCN485CB2EOLT Converter Box w/ 2 EOL terminators
B	MCN485MODCB 10 foot, 25 pin-to9 pin, type 'B9' RS232
C	Receiving Modem* * If you are using a high-speed modem (14.4K and above) to receive messages, your modem may have to be told to "slow down" by sending it special commands. Though these commands vary from modem to modem, the following set of commands work for US Robotics Sportster modems: <b>AT&amp;H0</b> (Disables transmit data flow control.) <b>AT&amp;R1</b> (Disables receive data flow control.) <b>AT&amp;B0</b> (Sets modem's serial port to connect rate.) <b>AT&amp;W0</b> (Makes the above changes permanent.) Also, your modem should be set to ignore DTR and to answer on the first ring (DIP switches 1 and 5 on US Robotics Sportster modems, or <b>ATSO=1</b> for many other modems.)
D	— Phone Line
E	— Transmitting modem (internal or external)
F	— Refer to Connecting Multiple Signs to a Cabled PC Network