

CMN-16 Module CMN-C11

Async Short Range Modem Card



DESCRIPTION

- CMN-C11 is an Asynchronous Short Range Modem card suitable for mounting in the CMN-16 rack. It is compatible with ASM-11, SRM-8 and ASM-10/8. CMN-C11 is used for local data distribution, connecting full duplex async terminals to computers, over unconditioned 4-wire dedicated lines.
- CMN-C11 operates at data rates up to 19.2 kbps, and distances up to 17 km (10 miles), depending on wire gauge and data rate (see Table 1).
- CMN-C11 performs diagnostic loops in compliance with the ITU V.54 standard. Two V.54 loops are available: analog loop (V.54 Loop 3) and remote digital loop (V.54 Loop 2). These loops are activated by either a 3-position switch on the front panel, or by the DTE Interface Circuit 141 (Pin 18) and Circuit 140 (Pin 21). The TEST LED lights up when any of the diagnostic loops is ON.
- Asynchronous transmission is provided by internal conversion from async to sync in compliance with the ITU V.14 (V.22 bis) standard. Different async formats are switch selectable.
- The modem's carrier can be strapped for either continuous operation (point-to-point application) or switched operation, controlled by the RTS signal (multipoint application).
- CMN-C11 features a switch selectable DTE/DCE option. This allows it to operate as a DTE, in order to connect to another DCE, such as a multiplexer port, without requiring a cross cable.

- Data is transmitted and received over a balanced line, ensuring excellent immunity to circuit noise. The low transmit level minimizes crosstalk onto adjacent circuits within the same cable. Additionally, CMN-C11 is coupled to the dedicated line through isolation transformers which, in conjunction with other circuitry, protect against AC or DC overvoltages.

Table 1. Approximate Range, Point to Point

Data Rate	19 AWG (0.9 mm)		24 AWG (0.5 mm)		26 AWG (0.4 mm)	
	km	miles	km	miles	km	miles
19.2	11.0	6.5	5.0	3.0	3.5	2.0
9.6	14.5	9.0	6.5	4.0	4.5	2.5
4.8	15.0	9.0	6.5	4.0	5.0	3.0
2.4	16.0	10.0	8.0	4.5	5.0	3.0
1.2	17.0	10.5	8.0	4.5	5.5	3.4

FEATURES

- Asynchronous transmission
- Compatible with ASM-11, SRM-8 and ASM-10/8
- Data rates up to 19.2 kbps
- V.54 diagnostics including local and remote test
- Full or half duplex, point-to-point or multipoint
- Transmission range up to 17 km (10 miles)
- DCE/DTE switch
- Lightning protected
- Five LEDs display status

SPECIFICATIONS

- **Data Rates**
Selectable by a rotary switch:
1.2, 2.4, 3.6, 4.8, 7.2, 9.6, 14.4, or 19.2 kbps
- **Numbers of Data Bits**
8, 9, 10 or 11 including 1 start and 1 stop bit, with or without parity
- **Frequency Allowance**
Selectable stop bit shortening on receive end:
12.5%: for -2.5 to +1.0%
25.0%: for -2.5 to +2.3%
- **Transmission Line**
4-wire unconditioned dedicated line (two twisted pairs)
- **Transmission Mode**
Async, full or half duplex

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- Transmission Controls**
 - DCD** (circuit 109)
ON after recognizing the receive signal from the line
 - CTS** (circuit 106)
ON 0, 8 or 68 msec (selectable) after the terminal raises RTS (Circuit 105)
 - DSR** (Circuit 107)
ON when the modem is powered and is in the normal mode or in analog loop state. OFF when the modem is in digital loop state
 - TEST Mode** (Circuit 142)
ON when the modem is in one of its diagnostic loops.
- Transmission Level**
0 dBm
- Front Panel LED Indicators**
 - PWR Green Power
 - XMT Yellow Transmit Data
 - RCV Yellow Receive Data
 - DCD Yellow Data Carrier Detect
 - TST Red Test
- Controls**
The front panel loop switch controls the CMN-C11 test modes, giving access to normal operation (NOR), local analog loop (ANA) and remote digital loop (REM), from the front panel.
- Transmission Range**
Up to 17 km (10 miles) (see Table 1)

Terminal Interface

RS-232-C/V.24 25-pin female connector

- Line Interface**
RJ-45 socket (see Table 3)
- Power**
0.4W, derived from the CMN-16 power supply
- Physical**
 Height: 8.4 cm / 3.2 in
 Width: 2.5 cm / 1.0 in
 Depth: 19.5 cm / 7.5 in
 Weight 110g / 3.9 oz
- Environment**
 Temperature: 0-50°C (32-122°F)
 Humidity: Up to 95%, non-condensing

- Prepare the line cable connecting the XMT pair on the CMN-C11 modem to RCV on the remote ASM-11, and vice versa.
- Connect the line cable to the RJ-45 socket (see Table 3 and Figure 2).

Table 2. DTE/DCE Switch Configuration

Pin No.	Signal Name	DCE Position	DTE Position
2	TD	To Modem	From Modem
3	RD	From Modem	To Modem
4	RTS	To Modem	From Modem
5	CTS	To Modem	NC
6	DSR	From Modem	To Modem
7	GND	GND	GND
8	CD	From Modem	To Modem
18	ANA Loop	To Modem	To Modem
20	DTR	To Modem	To Modem
21	REM Loop	To Modem	To Modem
25	Test	From Modem	From Modem

INSTALLATION

- Set the DCE/DTE switch (SW2) of CMN-C11 to the required position (factory set to DCE) (see Table 2 and Figure 1).
- Set straps according to Async or Multidrop mode (see below).
- Insert the card through the rear of the CMN-16 rack.
- Install the front panel supplied with the card.
- Connect the RS-232/V.24 cable to the 25-pin socket.

Table 3. Line Connections RJ-45

Pin No.	Name	Signal Description
1	No Connection	-
2	GND	GROUND
3	RCV	RECEIVE
4	XMT	TRANSMIT
5	XMT	TRANSMIT
6	RCV	RECEIVE
7	No Connection	-
8	No Connection	-

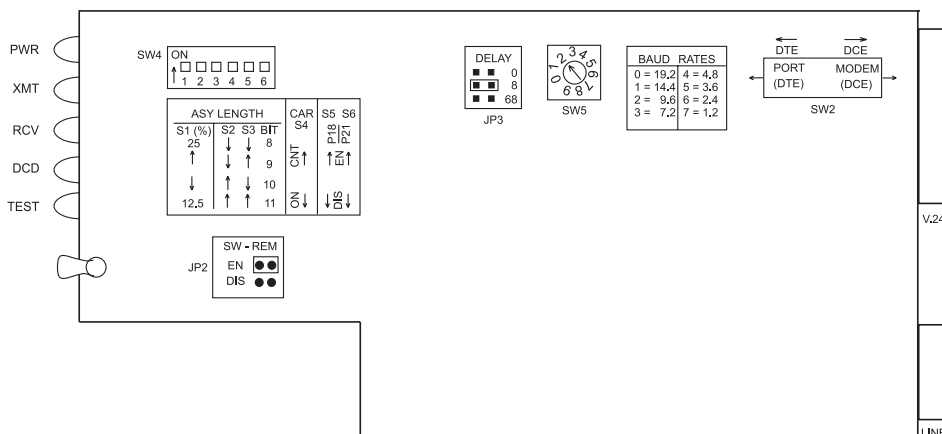


Figure 1. Strapping Diagram

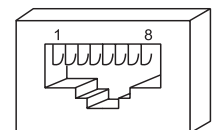


Figure 2. RJ-45 Socket

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FOR REGULAR ASYNC MODE:

1. Set the baud rate (SW5).
2. Set CTS delay (JP3 – DELAY).
3. Set ASY LENGTH (S1, S2, S3 of the DIP switch).
Make the settings according to the application requirements (see Table 4 and Table 5).

FOR MULTIDROP MODE:

1. Strap the carrier (CAR, S4 of the DIP switch) to ON (controlled carrier).
2. Strap the RTS-CTS delay (DELAY) as follows:
 - For data rates of 9.6 kbps and above: 8 msec or 68 msec
 - For data rates of 4.8 kbps and below: 68 msec only.

Table 4. Async Character Length Setting

Start Bit	Data Bit	Parity	Stop Bit	No. of Bits
1	5	NONE	2	8
1	6	NONE	1, 1.5, 2	9
1	6	ODD EVEN	1, 1.5, 2	9
1	7	NONE	1, 1.5, 2	9
1	7	ODD EVEN	1, 1.5, 2	10
1	8	NONE	1, 1.5, 2	10
1	8	ODD EVEN	1, 1.5, 2	11

Table 5. Strap Selection

Strap Identity	Function	Possible Settings	Factory Setting															
SW5 Data Rates	Selects data transmit rate	0 – 19.2 kbps 1 – 14.4 2 – 9.6 3 – 7.2 4 – 4.8 5 – 3.6 6 – 2.4 7 – 1.2	9.6 kbps															
JP3 DELAY	Selects RTS-CTS delay	0, 8, 68 msec	8 msec															
SW4	6 section DIP switch for ASY LENGTH, CAR, S5, S6																	
ASY Length	Selects the character length in async mode (see Table 4)	<table border="1"> <thead> <tr> <th>S2</th> <th>S3</th> <th>Bits</th> </tr> </thead> <tbody> <tr> <td>OFF</td> <td>OFF</td> <td>8</td> </tr> <tr> <td>OFF</td> <td>ON</td> <td>9</td> </tr> <tr> <td>ON</td> <td>OFF</td> <td>10</td> </tr> <tr> <td>ON</td> <td>ON</td> <td>11</td> </tr> </tbody> </table>	S2	S3	Bits	OFF	OFF	8	OFF	ON	9	ON	OFF	10	ON	ON	11	10 bits
S2	S3	Bits																
OFF	OFF	8																
OFF	ON	9																
ON	OFF	10																
ON	ON	11																
	Selects the amount of stop bit shortening to be used in async mode	S1 ON – 25% OFF – 12.5%	12.5%															
CAR	Selects carrier constantly ON or controlled by RTS	S4 ON – CONTROLLED OFF – CONSTANTLY ON	CONSTANTLY ON															
S5	Enables or disables DTE control of analog loop by pin 18	S5 ON – ENABLE OFF – DISABLE	DISABLE															
S6	Enables or disables DTE control of remote digital loop by pin 21	S6 ON – ENABLE OFF – DISABLE	DISABLE															
JP2 SW-REM	Enables manual switch control of remote loop	SW-REM ENABLE DISABLE	ENABLE															
SW2	Selects DCE or DTE	DCE DTE	DCE															



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OPERATION

NORMAL OPERATION

- For normal operation set the loop switch to center position (NOR). The TEST LED is OFF.
- If the attached DTE does not use pins 18 and 21 for test purposes, or if the cable between CMN-C11 and the DTE does not contain those pins, set S5 and S6 of the DIP switch to the DIS position (see Figure 1 and Table 5).

TEST MODE

CMN-C11 performs two of the V.54 test loops: analog loop (ANA - V.54 Loop 3) and remote digital loop (REM -V.54 Loop 2). The red TEST LED lights up and pin 25 (Circuit 142) is operant when the modem is in one of the diagnostic loops. The unit is factory-strapped for test loops control via the front panel switch.

Alternatively, you can activate the loops from the DTE interface (pins 18 and 21) controlled by the S5 and S6 jumpers (see Table 5).

- **Analog loop (V.54 Loop 3)**

This loop tests the local modem only. The XMT signal to the line is looped back to the receiver.

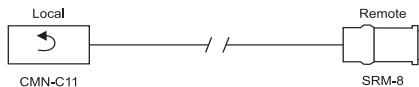


Figure 3. Local Loop Test

- **Remote digital loop (V.54 Loop 2)**

This loop tests the local modem, the line and the remote modem.

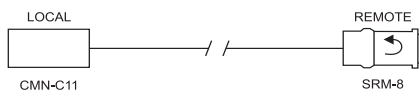


Figure 4. Remote Loop Test

To run a loopback test via the front panel:

1. Set the front panel switch to either ANA or REM position.
2. Run the loopback test.
3. To return to normal operation, set the front panel switch to the NOR position. The TEST LED turns off.

To enable a loopback test via the DTE interface:

1. Set the S5 (for Analog Loop) or S6 jumper (for Remote Loop) to ON.
2. To disable loopback tests via the DTE interface, return the S5 or S6 jumper to the OFF position.

ORDERING

CMN-C11

Asynchronous Short Range Modem Card for CMN-16 Rack



data communications

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