

CMN-16 Module CMN-C8



Sync/Async Short Range Modem Card



DESCRIPTION

- CMN-C8 is a Sync/Async Short Range Modem card suitable for mounting in the CMN-16, and is compatible with SRM-8 and ASM-10/8. CMN-C8 is used for local data distribution, connecting full or half duplex async terminals to computers, over unconditioned 4-wire dedicated lines.
- CMN-C8 operates at data rates up to 19.2 kbps, and for distances up to 17 km (10 miles), depending on wire gauge and data rate in use (see Table 1).

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	mile	km	miles	km	mile
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	4.2	5.0	3.0
1.2	17.0	10.5	8.0	4.5	4.5	3.4

- The CMN-C8 card performs diagnostic loops in compliance with the ITU V.54 standard. Two V.54 loops are available:
 - Analog loop (V.54 Loop 3)
 - Remote digital loop (V.54 Loop 2).
 These loops are activated by either a three-position switch on the front panel, or by the DTE interface Circuits 141 (Pin 18) and 140 (Pin 21). The TEST LED lights when any diagnostic loop is ON.
- Asynchronous transmission is provided by internal conversion from async to sync in compliance with ITU V.14 (V.22 bis) standard. Different formats are switch selectable (see Table 2).

Table 2. Async Character Length Setting (see Table 4, ASY Length)

Start Bit	Data Bits	Parity	Stop Bit	No. of Bits
1	5	None	2	8
1	6	None	1, 1.5, 2	8
1	6	Odd	1, 1.5, 2	9
		Even		
1	7	None	1, 1.5, 2	9
1	7	Odd	1, 1.5, 2	10
		Even		
1	8	None	1, 1.5, 2	10
1	8	Odd	1, 1.5, 2	11
		Even		

- Stop bit shortening on the receive end is used to handle frequency differences between an async terminal and a CMN-C8, and is selectable to 12.5% or 25% of the stop bit, according to ITU V.14 (V.22 bis).
- In synchronous mode, transmit timing can be provided by three alternative sources: an internal oscillator, an external clock, or a loopback clock derived from the receive signal.
- 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-C8 features a switch selectable DTE/DCE option (see Table 3). This allows it to operate as a DTE – for connection to another DCE, such as a multiplexer port – without requiring a cross cable.

FEATURES

- Synchronous or asynchronous operation
- Compatible with SRM-8, 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
- Internal, external or receive clock
- Transmission range up to 17 km (10 miles)
- DCE/DTE switch
- Lightning protected
- Five LED display status

Sync/Async Short Range Modem Card

Table 3. 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	N.C.
6	DSR	From Modem	To Modem
7	GND	GND	GND
8	CD	From Modem	To Modem
15	TX CK	From Modem	
17	RX CK	From Modem	To Modem
18	ANA LOOP	To Modem	To Modem
20	DTR	To Modem	To Modem
21	REM LOOP	To Modem	To Modem
24	EXT CK	To Modem	From Modem
25	TEST	From Modem	From Modem

- Data is transmitted and received over a balanced line, ensuring excellent immunity to circuit noise. The low transmit level signal minimizes crosstalk onto adjacent circuits within the same cable. Additionally, CMN-C8 is coupled to the dedicated line through isolation transformers which, in conjunction with other circuitry, protect against AC or DC overvoltages.

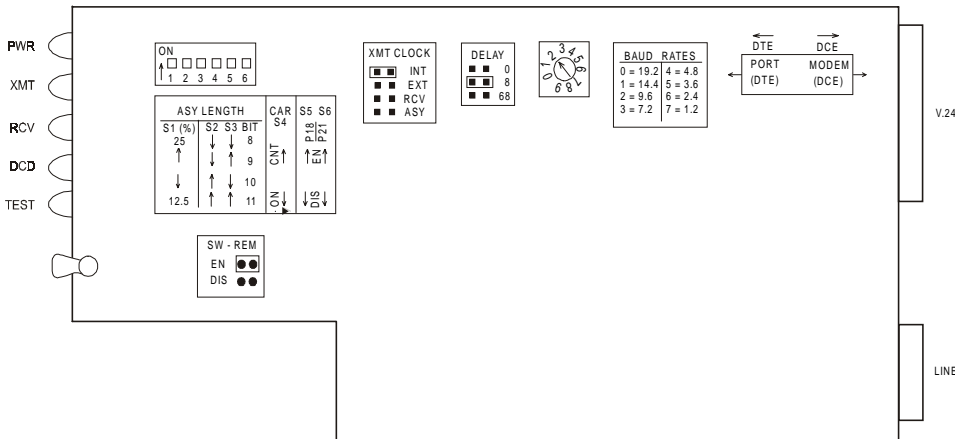


Figure 1. Strapping Diagram

SPECIFICATIONS

- Data Rates (Sync or Async)**
1.2, 2.4, 3.6, 4.8, 7.2, 9.6, 14.4, 19.2 kbps
Selectable by a rotary switch
- Numbers of Data Bits (Async Mode)**
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% allowed deviation;
25.0%: for -2.5 to +2.3% allowed deviation
- Transmission Line**
4-wire unconditioned dedicated line (two twisted pairs)
- Transmission Mode**
Sync or async, full or half duplex
- Transmission Controls**
DCD (Circuit 109) turns ON after recognizing the receive signal from the line;
CTS (Circuit 106) turns ON 0, 8 or 68 msec (selectable) after the terminal raises RTS (Circuit 105);
DSR (Circuit 107) is ON whenever the modem is powered and is in the normal mode or analog loop state. DSR turns OFF when the modem is in digital loop state;
TEST Mode (Circuit 142) turns ON when the modem is in one of its diagnostic loops.
- Transmission Level**
0 dBm
- Front Panel LED Indicators**

PWR	Power
XMT	Transmit Data
RCV	Receive Data
DCD	Data Carrier Detect
TST	Test
- Controls**
The front panel loop switch controls the CMN-C8 test modes, allowing 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**
EIA RS-232-C/ITU V.24 25-pin female connector
- Line Interface**
RJ-45 socket (see Table 5)
- Power**
0.4W, derived from the CMN-16 power supply
- Physical**
Length: 177 mm / 6.96 in
Width: 67 mm / 2.64 in
Height: 15 mm / 0.59 in
Weight: 110 g / 3.9 oz
- Environment**
Temperature: 0-50°C (32-122°F)
Humidity: Up to 95% non-condensing

Sync/Async Short Range Modem Card

INSTALLATION

1. CMN-C8 is factory set to DCE. For DTE operation, set the switch to DTE position (see *Table 3*).
2. Set the Loop Switch to center position for normal operation and make sure that the Test LED is OFF.
3. Set SW5 and SW6 to DIS (OFF position), if the attached DTE does not use Pins 18 and 21 for test purposes and the cable between DTE and CMN-C8 does not contain these pins (see *Figure 1*).

FOR SYNC MODE:

- 4a. Set the baud rate.
Set CTS delay (DELAY).
Set Clock mode: (RCV, INT, EXT).
- 5a. Set Carrier (CAR, S4 of the dip switch) according to application requirements (see *Table 4*).

FOR ASYNC MODE:

- 4b. Set the baud rate, CTS delay (DELAY), ASY LENGTH (S1, S2, S3 of the dip switch) and carrier (CAR, S4 of the dip switch), according to the application requirements (see *Tables 2 and 4*).
- 5b. Strap the clock mode (XMT CLK) to ASYNC.

FOR MULTIDROP MODE:

- 4c. Strap the carrier (CAR, S4 of the dip switch) to CNT (controlled carrier).
- 5c. Strap the RTS-CTS delay (DELAY) as follows:
 - For data rates of 9.6 kbps and more, 8 msec or 68 msec
 - For data rates of 4.8 kbps and less, 68 msec only.

Table 4. Strap Selection

Strap Identity	Function	Possible Settings	Factory Setting
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
DELAY	Selects RTS-CTS delay	0 msec 8 msec 68 msec	8 msec
XMT CLK	Selects timing clock and async mode	INTERNAL, EXTERNAL, RECEIVE, ASYNC	INTERNAL
ASY Length	Selects the character length in async mode (see <i>Table 2</i>)	S2 S3 Bits OFF OFF 8 OFF ON 9 ON OFF 10 ON ON 11	10 bits
	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 control of analog loop via DTE Pin 18.	S5 ON -Enable OFF -Disable	Disable
S6	Enables or disables control of remote loop via DTE pin 21.	S6 ON -Enable OFF -Disable	Disable
SW-REM	Enables manual switch control of remote loop.	SW-REM Enable Disable	Enable

6. Insert the card through the rear of CMN-16.
7. Install the front panel which is supplied with the card.
8. Prepare the line cable connecting the XMT pair on the CMN-C8 modem to the RCV pair on the remote SRM-8 or ASM-10/8.
9. Connect the RS-232/V.24 cable to the 25-pin socket.
10. Connect the line cable to the RJ-45 jack (see *Table 5 and Figure 2*).

Table 5. RJ-45 Connections

Pin No.	Signal Name	Description
1	NC	Not Connected
2	GND	Ground
3	RCV	Receive
4	XMT	Transmit
5	XMT	Transmit
6	RCV	Receive
7	NC	Not Connected
8	NC	Not Connected

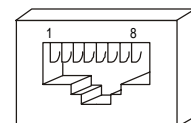


Figure 2. RJ-45 Socket Pins

CMN-C8

Sync/Async Short Range Modem Card

OPERATION

TESTING

CMN-C8 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 and Pin 25 (Circuit 142) is operand 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 & 21) controlled by the S5 and S6 jumpers (see *Table 4*).

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 (see *Figure 3*).

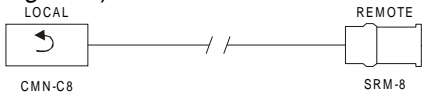


Figure 3.- Analog Loop Tests

REMOTE DIGITAL LOOP (V.54 LOOP 2)

This loop tests the local modem, the line and the remote modem (see *Figure 4*).

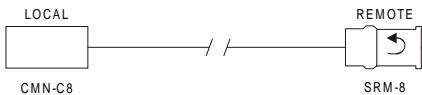


Figure 4. Remote Loop Test

To perform 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 will then go off.

To enable a loopback test via the DTE interface:

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

ORDERING

CMN-C8

Sync/Async Short Range Modem Card for CMN-16 Rack



data communications

<http://www.rad.com>

- **Corporate Headquarters**
12 Hanechoshet Street
Tel Aviv 69710, Israel
Tel: (972) 3-6458181
Fax: (972) 3-6498250, 6474436
Email: rad@rad.co.il
- **U.S. Main Office**
900 Corporate Drive
Mahwah, NJ 07430
Tel: (201) 529-1100
Fax: (201) 529-5777
Email: market@radusa.com

697-110-06/99