

CM-DLV11-J

4-CHANNEL SERIAL INTERFACE

INSTALLATION

MANUAL

CAMINCONN

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MANUAL CM-DLV11J

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MANUAL CM-DLVLJ

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1.1 INTRODUCTION

This manual provides the information necessary to install and operate the CM-DLV11J serial line interface manufactured by Camintonn Corporation, Santa Ana, California.

This material is arranged into the following sections:

Section 1 - GENERAL INFORMATION. This section contains a brief general description of CM-DLV11J and the specifications for the interface.

Section 2 - INSTALLATION AND OPERATION. This section explains the procedures for equipment installation.

1.2 GENERAL DESCRIPTION

The CM-DLV11J is a 4-channel asynchronous serial line interface between the LSI-11* bus and standard I/O devices. The interface receives parallel data from the LSI-11 bus, converts it to a serial word and transmits it to the peripheral device. The CM-DLV11J also receives a serial data word and converts it to parallel data for output to the LSI-11 bus.

There are two control status registers per channel: a receiver CSR (RSCR) and a transmitter CSR (XCSR). The CSRs maintain information on the status of the operation and contain bits which control the mode of operation. There are two data buffer registers per channel: a receiver (RBUF) and a transmitter (XBUF). The buffer registers hold the data received from or transmitted to an external device.

The module has the ability to act as a polled or interrupting peripheral dictated by processor (software) commands. The fourth channel can be configured as a dedicated console device interface.

The CM-DLV11J can respond to any address in the upper 4K peripheral page (16000_g to 17776_g). It operates in sixteen contiguous registers unless Channel 4 is configured otherwise. In that case, twelve contiguous addresses are required, and Channel 4 port operates at 17756_g thru 17756_g for console.

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All standard baud rates are supported. Each channel has independent baud rate jumper switch selects.

The serial line can be jumper switch selected for compatibility with EIA RS232, RS422, or RS423.

The CM-DLV11J is hardware and software equivalent to four DLV11's. It can be used to replace the DEC DLV11J. If not otherwise specified, the CM-DLV11J will be shipped in the configuration shown in Table 1-1.

TABLE 1-1. FACTORY CONFIGURATION

| Channel | Address | Register | Vector | Baud Rate | Break Response | UART Operation | Serial Interface |
|---------|---------|----------|--------|-----------|----------------|--------------------------------------|------------------|
| 1 | 176500 | RCSR1 | 300 | 9600 | None | 8 Data bits, no parity, one stop bit | EIA RS232C |
| | 176502 | RBUF1 | 304 | | | | |
| | 176504 | XCSR1 | | | | | |
| | 176506 | XBUF1 | | | | | |
| 2 | 176510 | RCSR2 | 310 | 9600 | None | 8 Data bits, no parity, one stop bit | EIA RS232C |
| | 176512 | RBUF2 | 314 | | | | |
| | 176514 | XCSR2 | | | | | |
| | 176516 | XBUF2 | | | | | |
| 3 | 176520 | RCSR3 | 320 | 9600 | None | 8 Data bits, no parity, one stop bit | EIA RS232C |
| | 176522 | RBUF3 | 324 | | | | |
| | 176524 | XCSR3 | | | | | |
| | 176526 | XBUF3 | | | | | |
| 4 | 177560 | RCSR4 | 60 | 9600 | HALT | 8 Data bits, no parity, one stop bit | EIA RS232C |
| | 177562 | RBUF4 | 64 | | | | |
| | 177564 | XCSR4 | | | | | |
| | 177566 | XBUF4 | | | | | |

1.3 SPECIFICATIONS

1.3.1 PHYSICAL SPECIFICATIONS

The CM-DLV11J is contained on a single dual-wide printed circuit board.

Width 5.2 inches (13.2 cm)
Height 8.9 inches (22.8 cm)

The circuit board is a multilayer etch board with ground plane.

1.3.2 POWER REQUIREMENT

+5VDC 1.3A
+12VDC 0.20A

1.3.3 ENVIRONMENTAL SPECIFICATIONS

Temperature: Operating 0°C to 50°C
Non-operating -40°C to 85°C

Relative Humidity 10% to 90% without condensation.

2.1 UNPACKING AND INSPECTION

The CM-DLV11J is shipped in a special packing carton designed to keep the board from vibrating and to give it maximum protection during shipment. The packing carton should be retained in case the unit requires reshipment.

To unpack the CM-DLV11J, remove any packing materials and visually inspect for physical damage.

2.2 INSTALLATION

Refer to Figure 2-1 for specific switch and jumper locations.

2.2.1 ADDRESS SELECT SWITCHES

The base address for the CM-DLV11J is selected through switch A. Refer to Table 2-1.

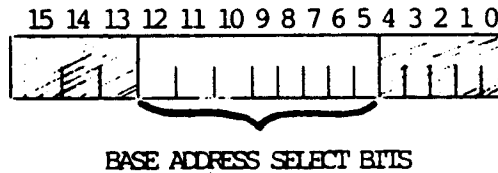


TABLE 2-1. ADDRESS SELECT BIT JUMPER SHUNT CONFIGURATION

| Address Bit | Jumper Shunt A- |
|-------------|-----------------|
| 5 | 5 |
| 6 | 6 |
| 7 | 7 |
| 8 | 8 |
| 9 | 9 |
| 10 | 10 |
| 11 | 11 |
| 12 | 12 |

JUMPER IN = 0
OUT = 1

RS-232 XMITTER (4 Places)

RS-422 XMITTER (4 Places)

CHANNEL 1 thru 4 Receiver RS232, RS422 Option

See Table 2-6 For Detail

Vector Selection See Table 2-3

Baud Rate Selection

Interrupt Level Option See Table 2-10

Break Response See Table 2-5

Base Address Select Bit Jumper Shunt Configuration See Table 2-1

Master Reset of the UART See Table 2-9

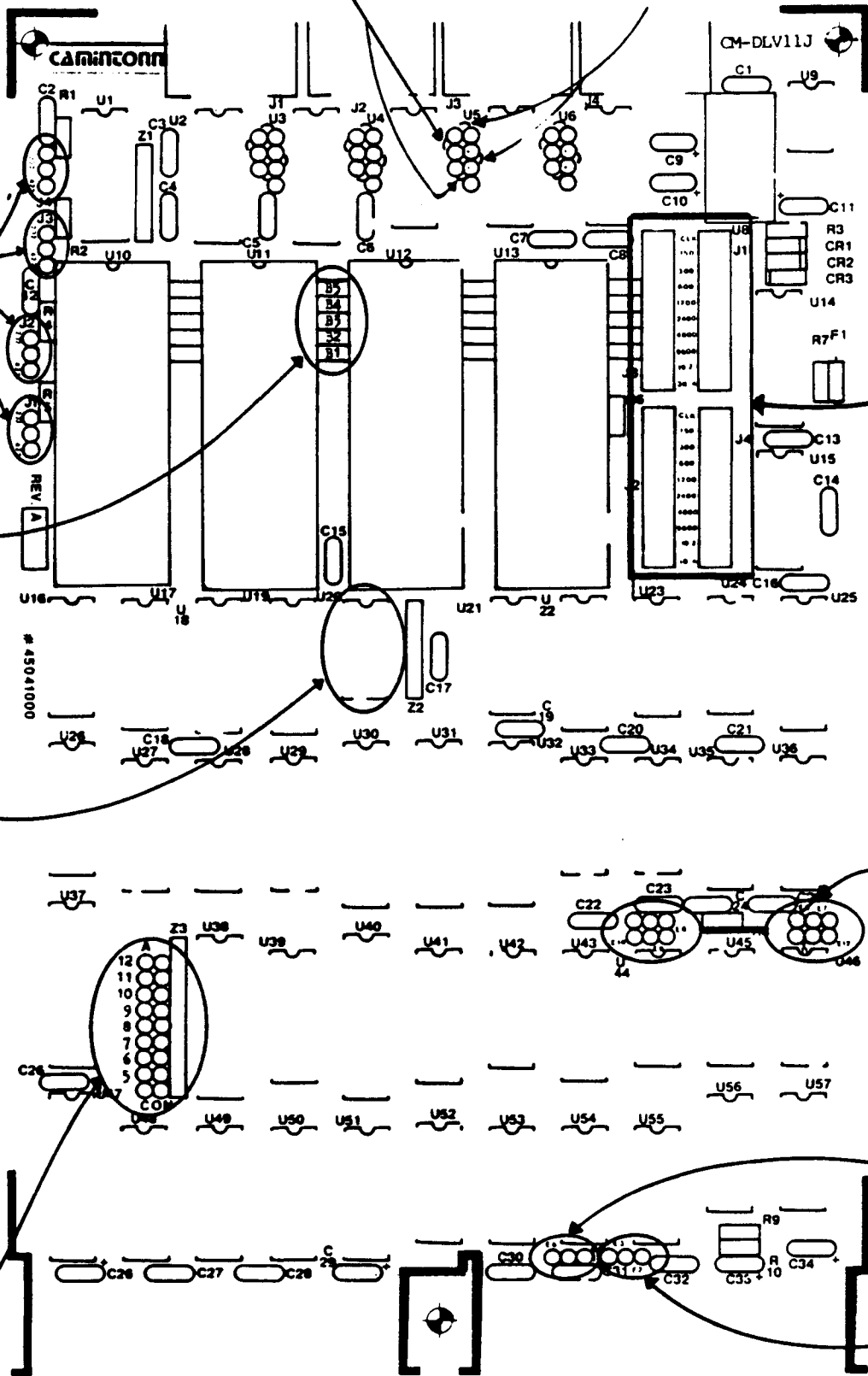


Figure 2-1. Switch & Jumper Locations

A jumper set to the IN position corresponds to an inactive signal on the bus. For example, the switch settings for base address 176500 (factory configuration) and alternate base addresses 176540, 176600 and 176640 are shown in Table 2-2.

TABLE 2-2 SWITCH SETTING FOR BASE ADDRESS

| Jumper A | Base Address | | | |
|----------|--------------|--------|--------|--------|
| | 176500 | 176540 | 176600 | 176640 |
| 12 | out | out | out | out |
| 11 | out | out | out | out |
| 10 | out | out | out | out |
| 9 | in | in | in | in |
| 8 | out | out | out | out |
| 7 | in | in | out | out |
| 6 | out | out | in | in |
| 5 | in | out | in | out |

2.2.2 VECTOR SELECT SWITCHES

The base interrupt vector for the CM-DLV11J is selected through switch S1 (U20). Refer to Table 2-3.

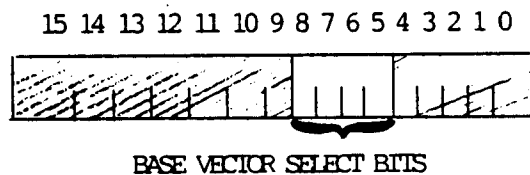


TABLE 2-3. VECTOR SELECT BIT SWITCH

| Address Bit | Switch U20- |
|-------------|-------------|
| 5 | 6 |
| 6 | 5 |
| 7 | 4 |
| 8 | 3 |

A switch set to ON corresponds to an INACTIVE signal on the bus: For example, the switch settings for base vector 300 (factory configuration) and alternate vector settings 340, 400 and 440 are shown in Table 2-4.

TABLE 2-4. SWITCH SETTING FOR BASE VECTORS

| U20 | Base Vectors | | | |
|-----|--------------|-----|-----|-----|
| | 300 | 340 | 400 | 440 |
| 6 | ON | OFF | ON | OFF |
| 5 | OFF | OFF | ON | ON |
| 4 | OFF | OFF | ON | ON |
| 3 | ON | ON | OFF | OFF |

*** 2.2.3 SELECTION OF CHANNEL 4 (J4)

Channel 4 can be used as the console or a fourth serial port. Remove jumper shunt at location "CON" when configured for console port.

2.2.4 THE CONSOLE

When Channel 4 is set up as a console, it will automatically respond to the console device address at 177560 and vector to location 60.

2.2.5 BREAK RESPONSE

When the break key on the console is pressed, the UART detects a framing error. The processor response to the error detection is jumper selectable as shown in Table 2-5. See Figure 2-1 for jumper locations.

TABLE 2-5. BREAK RESPONSE JUMPER

| Break Response | Install Jumper at |
|----------------|-------------------|
| Halt | E4 |
| Re-Boot | E5 |
| No Response | No Jumper |

*** Note:

If Channel 4 is not used as the console device interface, be sure to remove the jumper block.

2.2.6 BAUD RATE SELECTION

Baud rates for each of the four channels on the CM-DLV11J are set independently by jumper selection. The jumper pins labeled J1 through J4 control the baud rate for the corresponding channel.

2.2.7 DATA WORD FORMAT

The data word format for each channel on the CM-DLV11J is independently jumper selectable. The number of data bits, the number of stop bits and the parity mode are determined as shown in Table 2-7.

TABLE 2-6. DATA, STOP BIT, AND PARITY SELECT

UART*

| Number of Data Bits | Jumper B3 | Jumper B4 |
|---------------------|------------|-----------|
| 5 | Install | Install |
| 6 | Install | Remove |
| 7 | Remove | Install |
| 8 | Remove | Remove |
| Parity Mode | Jumper B5 | Jumper B1 |
| Odd | Install | Install |
| Even | Remove | Install |
| No Parity | Don't Care | Remove |
| Number of Stop Bits | Jumper B2 | |
| 1 | Install | |
| 2 | Remove | |

*UART for Channel 1 is U10, Channel 2 is U11, Channel 3 is U12, Channel 4 is U13

2.2.8 SERIAL INTERFACE SELECTION

The CM-DLV11J can interface with standard EIA RS-232C, RS-423 and RS-422 devices. The serial interface for each channel is independently jumper selectable as shown in Fig. 2-1.

2.2.9 SERIAL CONNECTOR PIN LAYOUT AND SIGNAL DESIGNATION

The serial interface connector (J1, J2, J3 or J4) is shown in Figure 2-2. The respective interface connection pin designations are defined in Table 2-9.

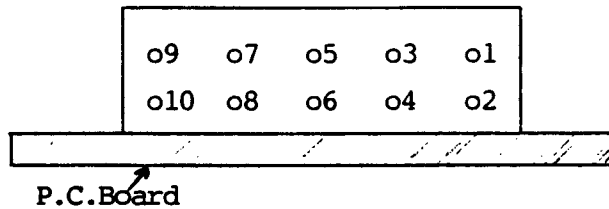


Figure 2-2. I/O Connector

TABLE 2-7. I/O PIN DESIGNATIONS

| I/O Connector Pin Number | Signal |
|-----------------------------|---------------------------------|
| 1 | CLK (16 x Baud Rate) |
| 2 | Signal Ground |
| 3 | XMT DATA+ (EIA-RS-232C, RS-423) |
| 4 | XMT DATA- |
| 5 | Signal Ground |
| 6 | KEY (No Pin) |
| 7 | RCV DATA- |
| 8 | RCV DATA+ |
| 9 | Signal Ground |
| 10 | +12VDC |

2.2.10 INTERRUPT PRIORITIES

Interrupt priorities within the CM-DLV11J module are structured as shown in Table 2-10.

TABLE 2-8. INTERRUPT PRIORITIES

| Priority | Register |
|----------|----------|
| 7 (high) | CH1 RBUF |
| 6 | CH2 RBUF |
| 5 | CH3 RBUF |
| 4 | CH4 RBUF |
| 3 | CH1 XBUF |
| 2 | CH2 XBUF |
| 1 | CH3 XBUF |
| 0 (low) | CH4 XBUF |

2.2.11 MASTER RESET OF THE UART

The UARTs can be jumper selected to do a Master Reset on DCOKL or INITH. See Table 2-11.

TABLE 2-9. MASTER RESET OF THE UART

| Master Reset Signal | Install Jumper at |
|---------------------|-------------------|
| DCOKL | E3 |
| INITH | E2 |

TABLE 2-10. INTERRUPT LEVEL

| INTREQ LEVEL | Install Jumper at |
|--------------|-------------------|
| 4 | E10, E7, E12 |
| 5 | E8, E6, E12, E10 |
| 6 | E9, E11, E6 |
| 7 | |

L I M I T E D W A R R A N T Y

CAMINTONN CORPORATION warrants products of its manufacture to be free from defects in material and workmanship for a period of 5 years from date of shipment. If a unit fails during the warranty period, buyer shall notify CAMINTONN CORPORATION and request a return authorization. After receiving return authorization, the defective unit shall then be returned to the CAMINTONN CORPORATION manufacturing facility with a failure report attached, freight prepaid. If product is returned by mail, buyer agrees to fully insure the product and assume the risk of loss or damage in transit, regardless of whether it will be repaired or replaced by a new or reconditioned part or product at CAMINTONN CORPORATION's option. All replaced parts and products become the property of CAMINTONN CORPORATION. This warranty does not apply to damage caused by misuse, failure to maintain the unit properly, abuse, accident, alteration other than by CAMINTONN CORPORATION or an act of God. THIS WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING THE WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. IN NO EVENT SHALL CAMINTONN CORPORATION BE LIABLE FOR SPECIAL, INDIRECT OR CONSEQUENTIAL DAMAGES EVEN IF NOTIFIED OF SUCH DAMAGES.