

Hardware Installation Manual

for

CC Cards**May 2004****(C) COPYRIGHT
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Declaration of Conformity

The TCL range of CC adapter cards have been verified to conform to the EMC Directive 89/336/ECC as attested by conformity with the following harmonised standards:

EN 55022: Class B, 1987: Limits and Methods of Measurement of Radio Interference characteristics of Information Technology.

EN 50082-1: 1992: Generic Immunity Standard - Part-1: Domestic, Commercial and Light Industry

Warranty

TCL warrants the adapter against defective materials or workmanship for a period of 12-months from the date of original purchase.

This warranty does not apply if the adapter has been damaged by neglect, improper handling or by any other causes not arising directly from defective materials or workmanship.

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Contents

1	Introduction	4
2	CC Adapter Card Configuration	5
2.1	Address allocation	5
2.2	Interrupt level settings	6
2.3	Latch port interrupt bit assignments	7
2.4	CC/8B Interrupt chaining	7
3	Installation	8
3.1	General Instructions	8
3.2	Fitting the CC multiport cable	8
3.3	Attaching the distribution panel	8
	Appendices	9
	Appendix - 1 Technical details	9
	Appendix - 2 Address locations	10
	AP2.1 Base addresses and emulation	10
	AP2.2 Port address ranges	11
	Appendix -3 Wiring details	12
	AP3.1 CC Signals in the RS232 9 way D type connector	12
	AP3.2 CC Signals in the RS422 9 way D type connector	13
	AP3.3 CC/8B Signals in the RS232 25 way D type connector	14
	AP3.4 Cable specification for connecting a terminal.	14
	AP3.5 Cable specification for connecting a Hewlett Packard terminal	15
	AP3.6 Cable specification for connecting a PC (25 way PORT) ...	15
	AP3.7 Cable specification for connecting a PC (9 way PORT)	15

1 Introduction

The TCL CC/8B multiport cards allow eight terminals and other serial devices to be interfaced to a single IBM PC compatible computer.

The 8B incorporates buffered UARTS to allow processor intensive application tasks to be undertaken.

The cards are supplied with interface connectors and appropriate software drivers to enable them to function under the operating system used. Seperate documentation is supplied with the device drivers.

2 CC Adapter Card Configuration

CAUTION

Components on the board can be permanently damaged by Static Electricity. Extreme care must therefore be taken before handling the board. To avoid the possibility of damaging the components in this way, be sure to touch a grounded object to release any static electricity before touching the controller.

2.1 Address allocation

The address at which the CC/8B multiport cards are installed in the system is set by an 8 way switch (see figure 1 below).

The address allocations for the switch settings differ according to the version of PAL installed on the card. The PAL (Programmable Array Logic) is clearly labelled with its code name, and its location on the card is show in figure below.

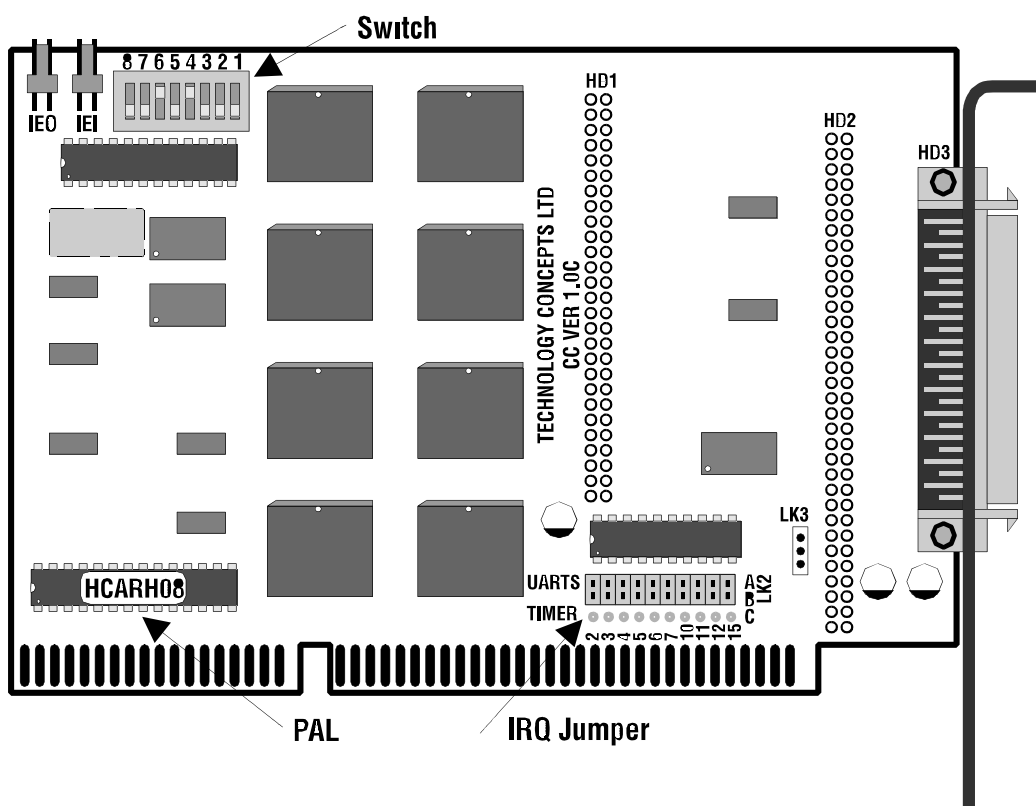


Figure - 2 TCL CC/8B Adapter Card - location of Address Switch and PAL

The TCL multiport cards have factory-set address locations as shown in figure 3 below:-

PORT	PAL VERSION	BASE ADDRESS	LATCH ADDRESS
8	HCARH08	280h	287h
8	HCH08-1	280h	287h

Figure 3 - Factory base address and latch port (see 2.2.3 and appendix 2)

These cards can be configured to emulate AST, HOSTESS and ARNET serial cards. Full details of alternative address locations for each PAL version are listed in appendix 2.

2.2 Interrupt level settings

The interrupt request line used by the TCL CC/8B multiport card is set via a ten pin header (LK2, figure 4). The shorting link should be moved to select the required IRQ level, the link is placed on the A-B row.

The valid CC/8B interrupt levels are IRQ: 2, 3, 4, 5, 6, 7, 10, 11, 12, 15

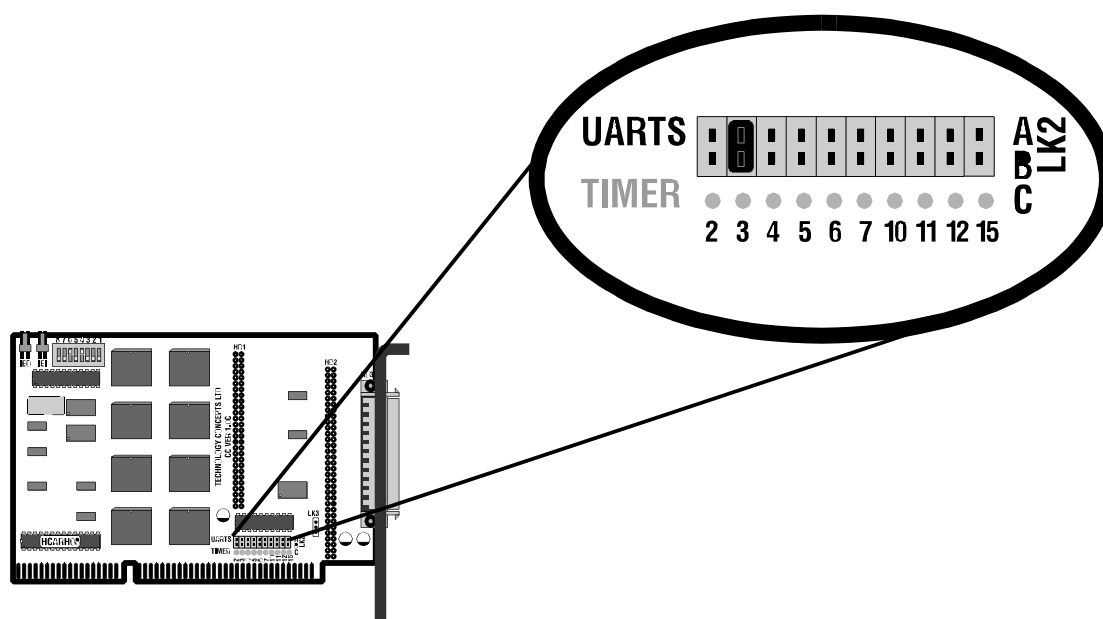


Figure - 4 CC/8B IRQ Jumper Placement

2.3 Latch port interrupt bit assignments - (Info for S/W Programmers)

When an interrupt is generated, a read from the latch port indicates which channels have an interrupt pending. Full details of all latch addresses can be found in Appendix 2. The bits of the latch port are assigned as follows:-

8 port cards	
bit 0	port 1
bit 1	port 2
bit 2	port 3
bit 3	port 4
bit 4	port 5
bit 5	port 6
bit 6	port 7
bit 7	port 8

With certain configurations, a bit is set to indicate a pending interrupt and with others a bit is cleared. These details can be found in Appendix 2.

2.4 CC/8B Interrupt chaining

If more than one card is to be installed then the cards can be set to share a common interrupt onto the bus. The following steps should be taken:-

- 0.0.0.1 An IRQ for the first multiport card must be selected.
- 0.0.0.2 Additional card(s) should be given no IRQ - this is done by removing the shorting link.
- 0.0.0.3 The IEI of the first card should be connected to the IEO of the second card (Figure 2), using the lead supplied free on request by TCL.
- 0.0.0.4 The IEI of the second card is then connected to the IEO of the next in the same way to allow full 'daisy-chaining' of the cards interrupts.

3 Installation

3.1 General Instructions

Always ensure that the mains supply is disconnected before attempting to connect or disconnect any kind of equipment.

All electronic components are extremely susceptible to damage from an electro-static charge. Always touch a grounded object before handling the controller.

Please refer also to manufacturer's guide supplied with the computer system for instructions on installing an expansion card.

3.2 Fitting the CC Multiport card

Disconnect the mains supply from the system unit, then with the power off, disconnect the keyboard and any peripheral devices. Remove the system-unit cover with reference to the manufacturer's instructions.

The multiport card can then be fitted in an expansion slot by first aligning, the TCL card with the appropriate slot then pressing the card firmly into the connector. The system-unit cover should then be replaced.

3.3 Attaching the distribution panel

An external distribution panel is supplied with CC/8 port cards. The connection to the card is by a 68-way SCSI-II type connector in each case. Interface to the terminals and other serial devices is via four or eight 9-pin 'D' type connectors. (25 way 'D' female option on CC/8 port).

Once the card is installed in the machine, the 68-way connector of the distribution panel /fan should be inserted into the housing on the end-plate of the multiport card and pushed firmly home.

Appendices

Appendix - 1 Technical details

Channels:	CC/8B - 8 asynchronous ports
Communication:	CC Data rates up to 115,200 bps.
Interface:	RS 232/ V.24 Serial on all ports. Each port is driven by a 16550 16 byte buffered UART on the CC/B multiport cards.
Surge Protection	Optional on CC/8B.
Handshaking signals implemented:	DTR / DSR RTS / CTS DCD
Connectors:	Standard 68 way SCSI-II connector from card to 8 9-pin 'D'-type connectors. (25 way 'D' female also optional).
Address allocation:	CC/8B Switch selectable (Appendix 2)
Interrupt level:	CC8B Jumper selectable (2.2.2)

Appendix - 2 Address locations

AP2.1 Base addresses and emulation

The Base address allocations of the TCL 'CC' range of multiport cards are given in the diagrams below along with any emulation of other multiport cards:-

AP2-1 CC/8 8 port cards with HCHO8-1 PAL											
SW1 SWITCH SETTINGS								HCH08-1 PAL			
1	2	3	4	5	6	7	8	Ports	Base	Emulation	Latch
OFF	OFF	OFF	ON	OFF	OFF	OFF	OFF	8	140h	HOSTESS	147H
OFF	OFF	OFF	ON	OFF	OFF	OFF	ON	8	180h	HOSTESS	187H
OFF	OFF	OFF	ON	OFF	OFF	ON	OFF	8	280h	HOSTESS	287H
OFF	OFF	OFF	ON	OFF	OFF	ON	ON	8	2c0h	HOSTESS	2C7H
OFF	OFF	OFF	ON	OFF	ON	OFF	OFF	8	300h	HOSTESS	307H
OFF	OFF	OFF	ON	OFF	ON	OFF	ON	8	580h	HOSTESS	587H
OFF	OFF	OFF	ON	OFF	ON	ON	OFF	8	680h	HOSTESS	687H
OFF	OFF	OFF	ON	OFF	ON	ON	ON	8	700h	HOSTESS	707H

AP2-2 CC/8 8 port cards with HCARH08 PAL											
SW1 SWITCH SETTINGS								HCARH08 PAL			
1	2	3	4	5	6	7	8	Ports	Base	Emulation	Latch
OFF	OFF	OFF	ON	OFF	OFF	OFF	OFF	8	140h	HOSTESS	147H
OFF	OFF	OFF	ON	OFF	OFF	OFF	ON	8	180h	HOSTESS	187H
OFF	OFF	OFF	ON	OFF	OFF	ON	OFF	8	280h	HOSTESS	287H
OFF	OFF	OFF	ON	OFF	OFF	ON	ON	8	2C0h	HOSTESS	2C7H
OFF	OFF	OFF	ON	OFF	ON	OFF	OFF	8	580h	HOSTESS	587H
OFF	OFF	ON	ON	OFF	ON	OFF	ON	8	180h	ARNET	1C2H
OFF	OFF	ON	ON	OFF	ON	ON	OFF	8	280h	ARNET	2C2H

Note To indicate a pending interrupt, the latch port bit is **set** on those multiport cards configured to **HOSTESS** emulation, and **cleared** on all other cards.

AP2.2 Port address ranges

AP2.2.2 Address ranges for the 8 port cards

Port	Base Address			
	140h	180h	280h	2C0h
1	140-147h	180-187h	280-287h	2C0-2C7h
2	148-14Fh	188-18Fh	288-28Fh	2C8-2CFh
3	150-157h	190-197h	290-297h	2D0-2D7h
4	158-15Fh	198-19Fh	298-29Fh	2D8-2DFh
5	160-167h	1A0-1A7h	2A0-2A7h	2E0-2E7h
6	168-16Fh	1A8-1AFh	2A8-2AFh	2E8-2EFh
7	170-177h	1B0-1B7h	2B0-2B7h	2F0-2F7h
8	178-17Fh	1B8-1BFh	2B8-2BFh	2F8-2FFh

AP2.2.3 High Address ranges for the 8 port cards

Port	Base Address			
	300h	580h	680h	700h
1	300-307h	580-587h	680-687h	700-707h
2	308-30Fh	588-58Fh	688-68Fh	708-70Fh
3	310-317h	590-597h	690-697h	710-717h
4	318-31Fh	598-59Fh	698-69Fh	718-71Fh
5	320-327h	5A0-5A7h	6A0-6A7h	720-727h
6	328-32Fh	5A8-5AFh	6A8-6AFh	728-72Fh
7	330-337h	5B0-5B7h	6B0-6B7h	730-737h
8	338-33Fh	5B8-5BFh	6B8-6BFh	738-73Fh

Appendix -3 Wiring details

The 9-pin D-Type connectors on the TCL 'CC' range of Multiport cards are connected to the various terminal types as shown in the following diagrams:

AP3.1 CC Signals in the RS232 9 way D type connector

Pin	Signal	Function	Direction
1	DCD	Carrier Detect	INPUT
2	RX	Receive Data	INPUT
3	TX	Transmit Data	OUTPUT
4	DTR	Data Terminal Ready	OUTPUT
5	GND	Signal Ground	Common
6	DSR	Data Set Ready	INPUT
7	RTS	Request To Send	OUTPUT
8	CTS	Clear To Send	INPUT
9	n/c	-	

AP3.2 CC Signals in the RS422 9 way D type connector

TCL Multiport boards supporting RS422/485 may be installed in the same systems as those supporting RS232 enabling the system to be tailored to individual requirements.

Each channel supports standard RS422/485 signal levels.

The 9 way 'D' Female socket pin outs are as follows:

Pin	Signal	Function	Direction
1	RxD+	Receive Data	INPUT
2	CTS+	Request to Send	INPUT
3	TxD-	Transmit Data	OUTPUT
4	DTR+	Data Terminal Ready	OUTPUT
5	TxD+	Transmit Data	OUTPUT
6	RxD-	Receive Data	INPUT
7	CTS-	Clear To Send	INPUT
8	DTR-	Terminal Ready	OUTPUT
9	OV	Signal Out	

The RTS signal is used to enable the Transmit data and DTR control output line drivers. RTS High (1) enables the TxD and DTR drivers, RTS low (0) tri-states the output of the TxD and DTR drivers.

INPUT indicates an input to the Multiport card and OUTPUT an output from the Multiport card.

AP3.3 CC/8B Signals in the RS232 25 way D type connector

TCL CC/8B RS232 25-Way D-Type Connector Pin Out					
Pin	Signal	Function	Pin	Signal	Function
1			14		
2	TxD	Transmit Data	15		
3	RxD	Receive Data	16		
4	RTS	Request to Send	17		
5	CTS	Clear to Send	18		
6	DSR	Data Set Ready	19		
7	Gnd	Signal Ground	20	DTR	Data Terminal Ready
8	DCD	Data Corner Detect	21		
9			22	RI ₁	Ring Indicate
10			23		
11			24		
12			25		
13					

AP3.4 Cable specification for connecting a terminal.

(Port configured for CTS flow control)

Terminal 25 way D male			CC /Port 9 way D female	
TX	2	_____	2	RX
RX	3	_____	3	TX
GND	7	_____	5	GND
DTR	20	_____	8	CTS

¹ The RING Indicate signal is NOT available on the CC adapter cards.

AP3.5 Cable specification for connecting a Hewlett Packard terminal

(Port configured for CTS flow control)

Terminal 25 way D female			CC Port 9 way D female	
TX	2		2	RX
RX	3		3	TX
GND	7		5	GND
DTR	20		8	CTS
			1	DCD
DSR	6		4	DTR

AP3.6 Cable specification for connecting a PC (25 way PORT) running PCTERM/PCMAIN.

(Port configured for CTS flow control)

COM1 / COM2 25 way D female			CC Port 9 way D female	
TX	2		2	RX
RX	3		3	TX
GND	7		5	GND
DTR	20		8	CTS

AP3.7 Cable specification for connecting a PC (9 way PORT) running PCTERM/PCMAIN

(Port configured for CTS flow control)

Terminal 9 way D female			CC Port 9 way D female	
TX	3		2	RX
RX	2		3	TX
GND	5		5	GND
DTR	4		8	CTS

NOTES