

Hardware Installation Manual
for the
Superport Range
of
Programmable Communication Controllers

July 2004

CD00090.wpd

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Superport Hardware Installation Manual

Radio Frequency Interference (RFI)

The TCL range of multiport adapter cards (Superport-RISC and Superport-186) have been verified to comply with the following international standards on RFI emissions:-

FCC PART 15 LIMIT A
VDE 0871 LIMIT A
BS 6527 (EN 55022) LIMIT A
CSA C108.8 M1983 LIMIT A

In order to meet these standards screened cable must be used between the Superport card and the equipment to which it is connected. (Belden 9927 screened cable was used for the above verification tests).

These multiport cards generate and use radio frequency energy and if not installed and used properly, that is, in strict accordance with the manufacturer's instructions, may cause interference to radio and television reception. They have been type tested and found to comply with the limits for a Class A computing device in accordance with the specifications in Subpart J of Part 15 of FCC Rules, which are designed to provide reasonable protection against such interference in a residential installation. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

Reorient the receiving antenna

Relocate the computer with respect to the receiver

Move the computer away from the receiver

Plug the computer into a different outlet so that computer and receiver are on different branch circuits.

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If necessary, the user should consult the dealer or an experienced radio/television technician for additional suggestions. The user may find the following booklet prepared by the Federal Communications Commission helpful:

"How to Identify and Resolve Radio-TV Interference Problems".

This booklet is available from the U.S. Government Printing Office, Washington, DC 20402, Stock No. 004000003454.

WARRANTY

TCL provides a 12 month (from date of purchase) return to base warranty, to cover the Superport range of equipment against defective materials or workmanship.

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.

Notice

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1. Introduction

1.1 Features

The **Superport** is an intelligent serial communications controller which allows up to 256 terminals and other serial devices to be interfaced to a single IBM PC type (ISA / EISA / MCA / PCI) compatible computer.

The (**ISA / EISA / MCA**¹) **Superport** controller card incorporates either an IDT 3051 RISC Processor with 128K bytes of RAM (expandable to 640K bytes of memory) or an AMD 80C186 20MHz Processor with 64K bytes of RAM (expandable to 1M byte of memory). The (**PCI**) **Superport** controller card incorporates an AMD EM186 40MHz Processor with 1M bytes of RAM. The **Superport** controller is responsible for controlling data transfer to and from the attached terminals or serial devices; thus reducing the workload on the PC host processor.

Control software is downloaded to the card at system power up, allowing total flexibility in system application and configuration.

No interrupts are used by TCL supplied device drivers.

1.2 Options

Great flexibility is provided by the **Superport** system. It is of modular design, the base unit incorporating the power supply and circuitry to interface to the **Superport** card through a high performance multi-way cable. Up to 8 expansion layers may be fitted onto the **Superport** base unit to allow a configuration of up to 64 ports. TCL Drivers support up to four cards in one host machine to give a maximum of 256 ports.

The **Superport** RS232 layers are available with 9 Pin D-Type male connectors or RJ-45 connectors. An option for RS422 / RS485 line drivers is also available (9 Pin D-Type male connectors only). All serial lines are surge protected. A **Superport** layer supporting four V34+ modems is also available.

¹ The MCA Adapter card is only available with the AMD-80C186 processor.

2. 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, or use an earth strap before touching the controller.

2.1 Configuring the Superport Card (EISA/ISA bus)

2.1.1 ISA Bus Memory Address allocation

The memory address at which the **Superport-RISC** or **Superport-186** card will be installed (the base address of the dual-ported RAM window) is set via an 8- way switch SW1, (see figure 2 and 3). The setting of the switch is the same for both types of **Superport** card.

Cards are factory set with a 4K+4K window at a base address of D6000h. This is compatible with most systems. It is essential, however, to ensure that no other board in the system occupies the same memory address location. The switch settings for the base address of D6000h are shown in figure 1.

SW1 SWITCH	1	2	3	4	5	6	7	8
POSITION	OF F	OF F	ON	OF F	ON	OF F	OF F	OFF

Figure 1 - switch settings for D6000h base address

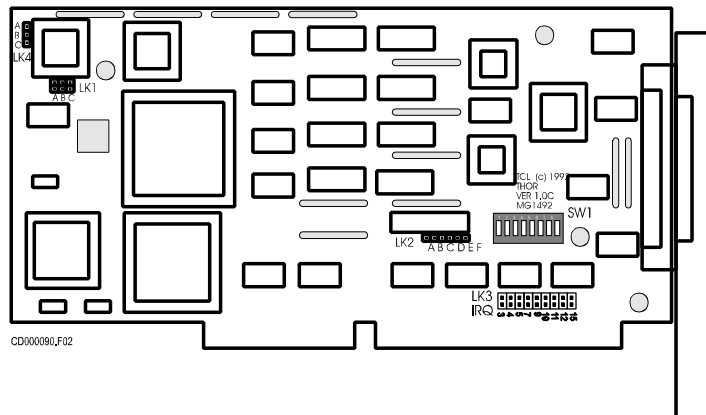


Figure 2 **Superport-RISC** location of SW1 and IRQ select header LK3

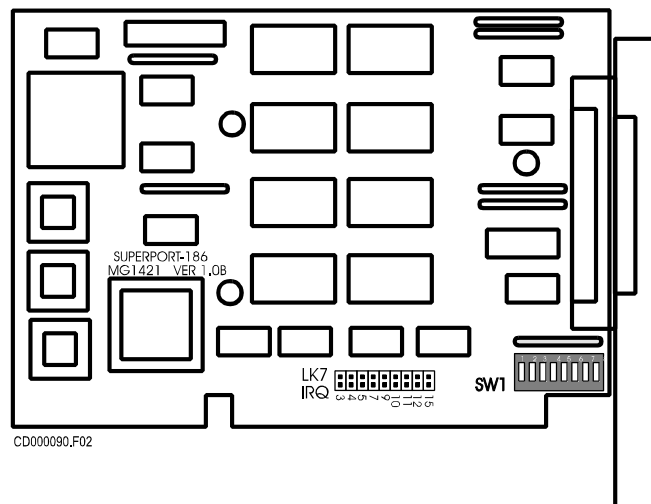


Figure 3 **Superport-186** Location of SW1 Switch and IRQ select header LK7.

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If more than one **Superport** card is to be installed, the address of one of the other cards must be altered. The alternative recommended address is D8000h ,the required switch settings for which are shown in figure 4.

SW1 SWITCH	1	2	3	4	5	6	7	8
POSITION	ON	ON	OFF	OFF	ON	OFF	OFF	OFF

Figure 4 - switch settings for D8000h base address

Full details of possible switch settings and their addresses are listed in Appendix 2. If more than one **Superport** card is to be installed, a note of the card's respective addresses should be made. On configuring the system, the cards should be numbered in order of these addresses.

2.1.2 ISA Bus Interrupt level

The interrupt level of the **Superport** is selected via a 9 way header (IRQ, see figure 2 or 3). The supported interrupts are:

IRQ 3, 4, 5, 7, 9, 10, 11, 12 and 15.

No interrupt is used by the device drivers supplied by TCL and the cards are factory set with no interrupt selected. It should not be necessary to alter this setting.

NOTE: The **Superport-186** adapter card must be placed in a EISA/ISA 16-Bit slot to gain access to IRQs 9, 10, 11, 12, and 15.

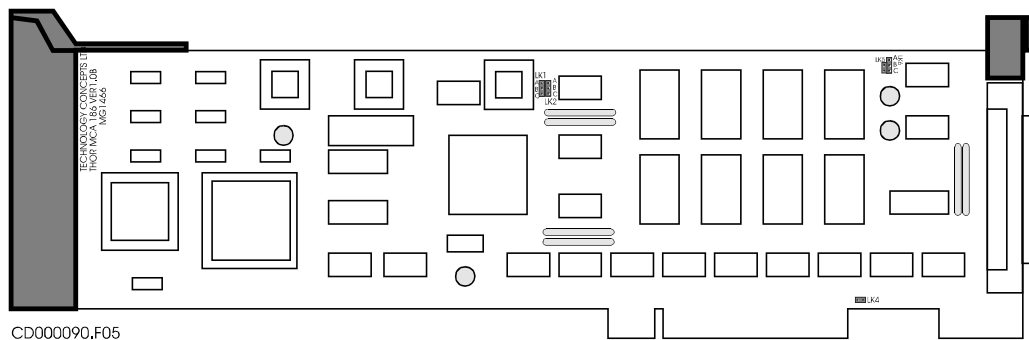


Figure 5 **Superport-186/MCA** Card Outline.

2.2.1 POS Utility

The I/O configuration of the MCA system bus version of the **Superport-186/MCA** adapter card (e.g. memory address, interrupt number) is set using the Programmable Option Select (POS) and configuration utilities. This technique is standard for systems which use the MCA bus. An option diskette is supplied with the **Superport-186/MCA** adapter which contains the adapter definition file (@7109.ADF) required by the POS utility.

Before installing the **Superport-186/MCA** adapter, the reference diskette supplied with your machine (also called Product 2 Diskette) must be updated so as to contain the new adapter definition file. The adapter card can then be configured.

2.2.2 Updating the reference diskette

To update the reference diskette the POS utility 'Copy Option Diskette' is used.

- i) The computer should be booted with the backup copy of the original reference diskette in drive A:
- ii) Select option 5: '**COPY AN OPTION DISKETTE**' from the opening menu and proceed according to instructions given.

2.2.3 Hardware installation

For details on installing the adapter card please refer to Section 3, 'Installation'.

The **PCI Superport-186** requires no user settings. The card will automatically be configured by the PC's ROM BIOS at boot time. The ROM BIOS will allocate 1M byte of memory space for the adapter card in the protected mode I/O reserved area [typically in the top of the 4th Gigabyte of PC address space], an interrupt will also be allocated.

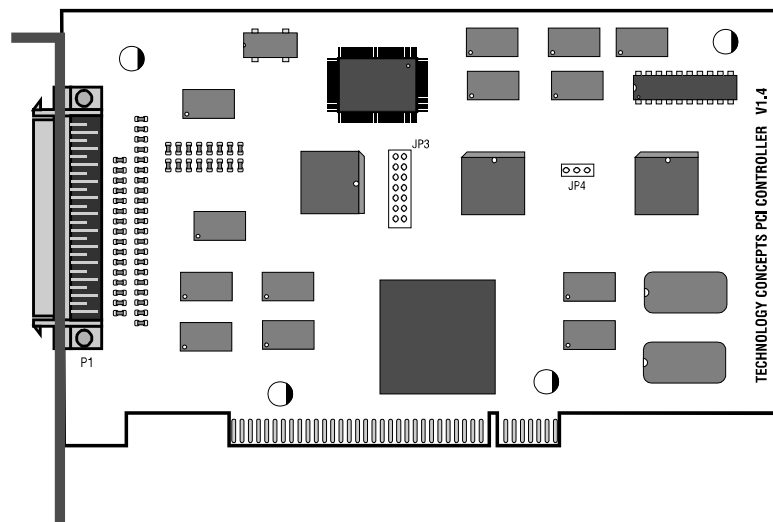


Figure 6 PCI Superport-186 Controller Card Outline.

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2.4 Superport Interface System

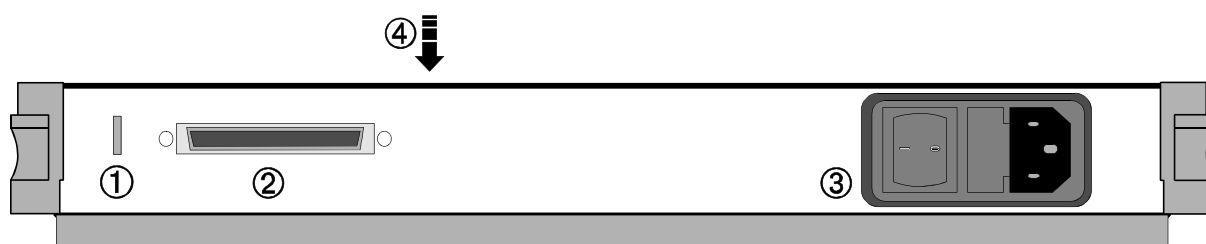
The **Superport** interface system is made up of one **Superport Base Unit** and one or more **Superport Layers**. Each **Superport layer** providing an additional eight serial I/O ports or four modem or parallel ports. A maximum of EIGHT **Superport Layers** may be added to the **Superport Base Unit**.

2.4.1 Superport Base Unit Features

The **Superport Base Unit** provides an interface between the **Superport** Adapter card in the Host PC and the Serial I/O ports. The **Superport Base Unit** is connected to the **Superport** via a cable using the 68-Way connector (2).

The **Superport Base Unit** contains its own mains powered supply for the serial I/O circuitry. The mains power is connected via an IEC socket and switch (3). A power on indicator light (1) is positioned to the left of the 68-Way connector. A label adjacent to the IEC mains power socket (3) of the **Superport Base Unit** will indicate the mains voltage/frequency range the unit has been configured for.

The top surface of the **Superport Base Unit** supports a connector (4) for adding the **Superport Layers**. This connector is normally protected by a ventilation grille which is removed when adding an **Superport Layer**.



CD000090.F06

- [1] Power On indicator light (Red).
- [2] Interface connector to **Superport** adapter card.
- [3] IEC mains connector.
- [4] **Superport** layer connector.

Figure 7 - Superport Base Unit Block Diagram

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2.4.2 Superport Layer Unit Features

Superport Layers are available to support Eight Serial I/O channels or Four Modem Channels. Each channel has associated with it an indicator light (2) to show data is being transmitted or received. NOTE: At high bit rates it may be difficult for the eye to detect single character indications as they are too fast to see.

The bottom surface of the **Superport layer** supports a connector by which the **Superport Layer** is connected to an existing unit. The top surface supports a connector by which an additional **Superport Layer** may be added.

- [1] Eight serial I/O connectors (i.e. 9-Pin D-Type or 10-Way RJ-45)
- [2] Eight Receive / Transmit indicator lights (Green).

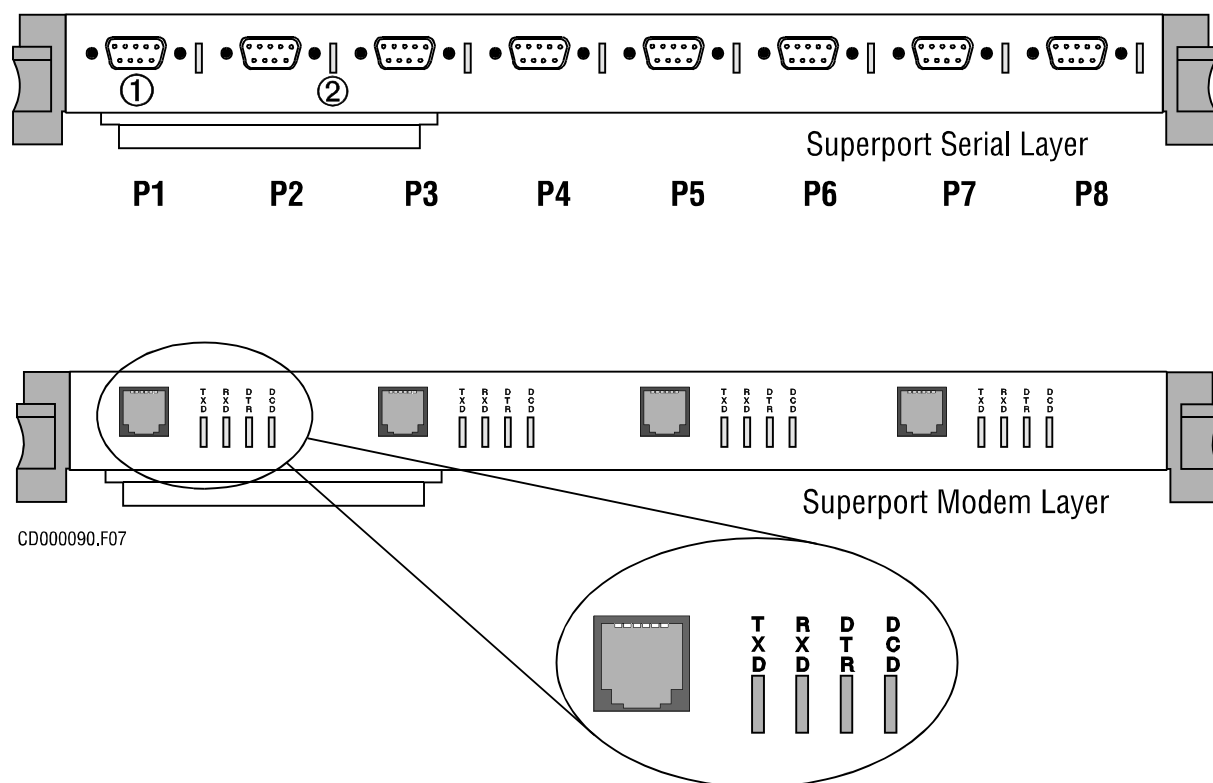


Figure 8 - Superport Layer Block Diagram

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2.4.3 Configuration of Base Unit and Superport Layers.

There are no configuration switches or jumpers to be set on the **Superport Base unit**. Simply check that the Mains Voltage label by the IEC switch on the front panel of the unit displays the correct voltage range for your installation.

There are no configuration switches or jumpers to be set in the standard RS232 and V34+ Modem **Superport Layers**. RS422 / RS485 **Superport Layers** may be configured for various modes (see Appendix 4 for details). **Disconnect** the **Superport Base Unit** from the Mains Power supply, while adding or removing layers.

2.4.4 Power Supply Loading and Superport Layers.

The power supply of the base unit is designed to power eight RS232 layers. The RS422 and V34+ Modem layers require double the power of the RS232 layers. Any combination of layers may be used, however **the user must ensure that the sum of the units of power used does not exceed eight.**

Superport RS232 Layer	1 Unit Power
Superport RS422/RS485 Layer	2 Units Power
Superport V34+ 4 Modem Layer	2 Units Power

Maximum power loading of standard **Superport Base** unit is 8 units of power.

(Contact I for extended range Base unit power supplies.)

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2.5 Assembly of the Superport Base Unit

The **Superport Base Unit** must be assembled before it is connected to the **Superport** controller card.

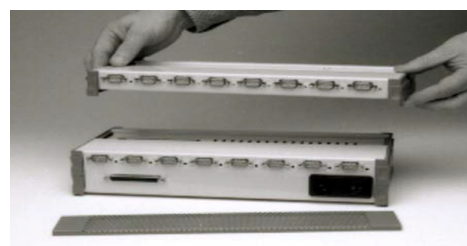


2.5.1 Adding an 8-Port Superport Layer

Remove the ventilation grille on the top surface of the **Superport Base Unit**.



Offer up new **Superport Layer** to the **Superport Base Unit**.



Ensure the **Superport Layer** snaps correctly into place. You should hear the plastic locks "click" into place.



Place the ventilation grille into position on the top surface of the **Superport Layer**.



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2.5.2 Removing an 8-Port Superport Layer

Remove the ventilation grille on the top surface of the **Superport** Unit.



Insert a small screw driver into the locking slot. (In the centre of the right hand plastic side plate between the top and next layers.)



Gently lever the screw driver down to a near vertical position and then gently push the screw driver up, lifting the top layer over the locking catch.



Remove the complete layer.



Replace the ventilation grille into position on the top surface of the remaining **Superport Layers**.



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.

Please ensure that the Superport Base unit is installed near the mains supply socket outlet and that the socket outlet is easily accessible.

3.2 Installing the Superport controller card

See section 2. to ensure that the **Superport** card is configured correctly. The ISA and MCA **Superport** cards occupy 8K bytes of memory address space so it is important that it does not clash with other I/O adapters such as network and disk controller cards.

If other ISA adapter cards are fitted in the computer check that their installed addresses do not conflict with the ISA or MCA **Superport**, if they do, adjust the **Superport** card base address so there is no conflict.

Switch off the mains supply at the wall socket, then disconnect the mains cable from the system unit.

Disconnect the keyboard and any peripheral devices. Remove the system-unit cover with reference to the manufacturer's instructions.

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The **Superport** card can then be fitted in an appropriate PCI, MCA or ISA16-bit slot by first aligning, then pressing the card firmly into the connector. The end bracket of the **Superport** card should be screwed to the computer chassis. The system-unit cover should then be replaced.

NOTE: The ISA **Superport-186** adapter card may also be used in an ISA 8-Bit slot. Only IRQs 3, 4, 5, and 7 will be available to the adapter card. See section 2.1.2.

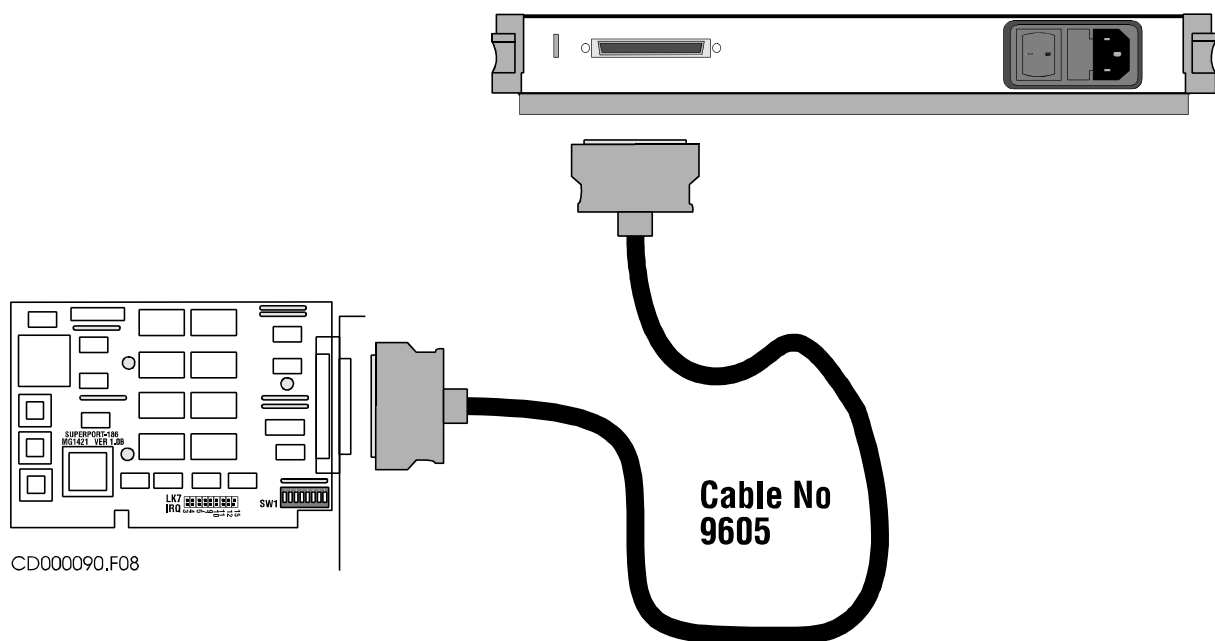


Figure - 9 Connection of Superport Controller to Superport Base Unit.

3.3 Connecting the Superport Base Unit.

The **Superport** controller card is connected to the **Superport Base Unit** via a cable which is terminated at each end with a SCSI-II type 68 way connector, see figure 9.

- Ensure that the computer is disconnected from the mains supply.
- Ensure the **Superport Base Unit** is disconnected from the mains supply.
- Install the **Superport** card as described in 3.2. One end of the 68-way cable should be carefully but firmly inserted into the connector on the **Superport** card. The connector has a self locking latch which operates automatically. A slight tug on the connector should be enough to show whether the connector is locked on to the card or not.
- The other end of the 68-way cable should be inserted into the connector on the **Superport Base Unit**.
- The mains supply may now be connected to the computer and the **Superport Base Unit**.

NOTE-1: To disconnect the 68-way cable press in the two release catches on either side of the connector, then gently pull the connector away from the card or unit.

NOTE-2: The **Superport Base Unit** contains an air circulation fan on the back panel. Care should be taken to ensure that the air flow to the back panel is not obstructed. (ie. Do not place the back panel up against a wall.)

Appendices

Appendix 1 Technical details

AP1.1 Superport-RISC Host Adapter

Processor:	IDT-3051 20MHz
Memory:	128K Bytes Onboard Memory with 640K Bytes Option.
Interface:	8K Byte Dual Ported Memory Window interface to Host PC. Switch Selectable in the Host computer address range A0000h...EFFFFh. Requires one AT 16-Bit ISA bus slot.
Interrupts:	Jumper selectable for IRQs 3, 4, 5, 7, 9, 10, 11, 12, and 15.
External Interface:	68 way SCSI-II connector to Superport Base Unit.
Power:	5v @ 500mA Typical.
Size:	233mm x 127mm X 21mm Overall Dimensions 219mm x 106.5mm x 14mm PCB Dimensions
Weight:	185g

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AP1.2 Superport-186 Host Adapter

Processor:	AMD 80C186 20MHz
Memory:	512K Bytes Onboard Private Memory with or 1024K Byte Option.
Interface:	8K Byte Dual Ported Window interface to Host PC. Switch Selectable in the Host Computer address range A0000h...EFFFFh. Requires one 8-Bit or 16-Bit ISA bus slot.
Interrupts:	Jumper selectable for IRQs 3, 4, 5, 7. (9, 10, 11, 12, and 15 on 16-Bit ISA Bus).
External Interface:	68 way SCSI-II type connector to Superport Base Unit.
Power:	5v @ 500mA Typical.
Size:	170mm x 127mm X 21mm Overall Dimensions 155mm x 106.5mm x 14mm PCB Dimensions
Weight:	145g

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AP1.3 Superport-186/MCA Host Adapter

Processor:	AMD 80C186 20MHz
Memory:	1024K Bytes Onboard Private Memory (Build option for only 512K Bytes Memory).
Interface:	8K Byte Dual Ported Window interface to Host PC. POS Selectable in the Host Computer address range A0000h...EFFFFh. Requires one 16-Bit MCA bus slot.
Interrupts:	POS selectable for IRQs 3, 10, 11, and 15.
External Interface:	68 way SCSI-II type connector to Superport Base Unit.
Power:	5v @ 500mA Typical.
Size:	320mm x 107mm X 23mm Overall Dimensions 292mm x 88mm x 12mm PCB Dimensions
Weight:	170g

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AP1.4 PCI-Superport-186 Host Adapter

Processor:	AMD EM186 40MHz
Memory:	1024K Bytes Onboard Private Memory.
Interface:	1024K Byte Dual Ported Window interface to Host PC. Base address automatically allocated by PCI ROM BIOS - (typically at 0xFEAO,0000). Requires one PCI bus slot.
Interrupts:	Automatically configured by PCI ROM BIOS.
External Interface:	68 way SCSI-II type connector to Superport Base Unit.
Power:	5v @ 750mA Typical.
Size:	188mm x 126mm X 18mm Overall Dimensions 175mm x 107mm x 13mm PCB Dimensions
Weight:	116g

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AP1.5 Superport Base Unit

Host Adapter

Interface: 68-Way SCSI-II type Connector to Host Adapter card. Cable uses screened twisted pair.

Power

Supply: Mains Input IEC Filtered, Switched and fused Socket.
90 - 260 VAC / 47 - 63Hz 60VA
Fuse 2.0 Amp.

Regulated

Power: +5v @ 6.0A (Peak 8.0A)
+12v @ 1.5A
-12v @ 1.5A

Cooling

Fan. 40mm x 40mm +12VDC @ 80mA

Size: 340mm x 152mm x 64mm (W x D x H)

Weight: 1.1 Kg

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AP1.6 RS232 / RS422 / RS485 Superport Layer

Serial I/O

Controllers: Two Cirrus Logic CD1400 Four channel Asynchronous Serial Communications Engine. System Clock 20.2752MHz

Twelve bytes of FIFO buffering for each transmitter and each receiver, with programmable threshold for receive FIFO-interrupt generation.

CD1400 Data Processing Performance

4 Ch Transmit	115K2	100% throughput
1 Ch Full Duplex	115K2	93% throughput
4 Ch Full Duplex	115K2	60% throughput
4 Ch Full Duplex	70K0	100% throughput

Baud Rates: 50, 62.5, 75, 110, 134.5, 150, 200, 300, 600, 1200, 1800, 2000, 2400, 3600, 4800, 7200, 9600, 19200, 38400, 57600, 76800, 115200. Other baud rates are programmable subject to the maximum value of 115200. RX and TX baud rates may be set independently.

Parity: None, Odd, Mark, Even, Space.

Data Bits: 5, 6, 7, 8.

Stop Bits: 1, 1.5, 2

Handshake

RS232 Signals:

Full Modem Handshake Signals.

DTR, RTS (Outputs RS232)

DSR, CTS, DCD, RI (Inputs RS232)

The RS232 input control lines (CTS,DCD,DSR,RI) may be biased high (ON), low (OFF), or left floating. Standard production units are biased high (ON).

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Handshake Signals:

RS422 / RS485

DTR	(Output RS422 / RS485)
CTS	(Input RS422 / RS485)
RTS	(Optional control of TxD and DTR output drivers for RS485 operation)

Serial I/O

Interfaces: As standard V.24/RS-232 Serial drivers on all eight ports. All serial RS232, RS422 / RS485 I/O signal and control lines are protected by 600W transorbs. (Protects lines from noise transients.)

Serial I/O

Termination RS422 / RS485 differential inputs are terminated with 120R resistor.

Serial I/O RS232 9-pin D-type male IBM standard.

Connectors: RS232 10-pin RJ-45 female.

RS485/RS422 9-pin D-type male only.

Power: +5v @ 500mA RS232 8 Ports.
+12v @ 125mA
-12v @ 125mA

Power +5v @ 800mA RS422 8 Ports
+12v n/a
-12 n/a

Size: 340mm x 150mm x 40mm (W x D x H)

Weight: 732g RS232 8 Ports
736g RS422 8 Ports

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AP1.7 v34+ Modem Superport Layer

Serial I/O

Controllers: One Cirrus Logic CD1400 Four channel Asynchronous Serial Communications Engine. (See AP1.6 for Technical details).

Modem: Rockwell SocketModem V34+

Handshake

Signals: DTR, RTS (Outputs)
DSR, CTS, DCD, RI (Inputs)
(RTS/CTS or XON/XOFF Flow control)

PTT

Connectors: 6-pin RJ-12 socket.

Fax Modes: Fax V.17 14400bps
Fax V.27ter 4800bps, 14400bps
Fax V.29 9600bps
(Fax class 1 and Fax class 2 commands supported)

Data Modes: Data V.21 300bps
Data V.22 1200bps, V.22bis 2400bps
Data V.23 1200bps
Data V.32 4800bps, 9600bps
Data V.32bis 14400bps, 12000bps, 7200bps
Data V.Fast 28800bps.... 14400bps
Data V.34 28800bps.... 2400bps
Data V.34+ 33600bps.... 2400bps
E.C. V.42 Error Control
E.C. MNP 2-4 Error Control
Comp V.42bis Data Compression
Comp MNP 5, MNP10, MNP-10EC Data Compression

Power +5v @ 1000mA Four V34+ Modems

Size: 340mm x 150mm x 40mm (W x D x H)

Weight: 860g Four V34+ Modems

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AP1.8 RS232 9-Way D-Type (M) Pin Out

RS232 9-Way D-Type Male Connector Pin Out			
Pin	Signal	Function	Direction
1	DCD	Carrier Detect	INPUT
2	RxD	Receive Data	INPUT
3	TxD	Transmit Data	OUTPUT
4	DTR	Data Terminal Ready	OUTPUT
5	GND	Signal Ground	
6	DSR	Data Set Ready	INPUT
7	RTS	Request to Send	OUTPUT
8	CTS	Clear to Send	INPUT
9	RI	Ring Indicate	INPUT

Figure 10 V.24/RS-232 signals supported on Superport

INPUT indicates an input to the **Superport** unit and OUTPUT an output from the **Superport** unit.

The 9-Way D-Type connector chassis is connected to mains earth.

RS422 / RS485 9-Way MALE D-Type Connector Pin Out			
Pin	Signal	Function	Direction
1	TxD+	Transmit Data	OUTPUT +
2	DTR-	Data Terminal Ready	OUTPUT -
3	CTS+	Clear To Send	INPUT +
4	RxD+	Receive Data	INPUT +
5	0v	Signal Ground	
6	TxD-	Transmit Data	OUTPUT -
7	CTS-	Clear To Send	INPUT -
8	DTR+	Data Terminal Ready	OUTPUT +
9	RxD-	Receive Data	INPUT -

Figure 11 RS422/RS485 (Male Connector) signals supported on Superport.

NOTE: All input signals are terminated with a 120R resistor across the input pair.

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. See Appendix-4.

The 9-Way D-Type connector chassis is connected to mains earth.

Refer to Section 2.4.4 concerning Power limitations when using RS422 layers.

RS422 / RS485 9-Way D-Type Female Connector Pin Out			
Pin	Signal	Function	Direction
1	0v	Signal Ground	
2	RxD+	Receive Data	INPUT +
3	CTS+	Clear To Send	INPUT +
4	DTR-	Data Terminal Ready	OUTPUT -
5	TxD+	Transmit Data	OUTPUT +
6	RxD-	Receive Data	INPUT -
7	DTR+	Data Terminal Ready	OUTPUT +
8	CTS-	Clear To Send	INPUT -
9	TxD-	Transmit Data	OUTPUT -

Figure 12 RS422/RS485 (Female Connector) signals supported on Superport.

Female connectors were an available option during 1993 ~1998. All RS422/RS485 Superport layers are now only available in 9-D-Male.

NOTE: All input signals are terminated with a 120R resistor across the input pair.

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. See Appendix-4.

The 9-Way D-Type connector chassis is connected to mains earth. Refer to Section 2.4.4 concerning power limitations when using RS422 layers.

RS232 RJ-45 10-Way Connector Pin Out			
Pin	Signal	Function	Direction
1	RI	Ring Indicate	INPUT
2	DSR	Data Set Ready	INPUT
3	RTS	Request to Send	OUTPUT
4		Chassis Ground	
5	TxD	Transmit Data	OUTPUT
6	RxD	Receive Data	INPUT
7	0v	Signal Ground	
8	CTS	Clear to Send	INPUT
9	DTR	Data Terminal Ready	OUTPUT
10	DCD	Carrier Detect	INPUT

Figure 13 V.24/RS-232 signals supported on Superport using 10-Way RJ45 Type connector.

INPUT indicates an input to the **Superport** unit and OUTPUT an output from the **Superport** unit.

Parallel 25-Way D-Type Female Connector Pin Out					
Pin	I/O	Signal Name	Pin	I/O	Signal Name
1	O	-STROBE	14	O	-AUTO FEED
2	O	Data 0	15	I	-ERROR
3	O	Data 1	16	O	-INIT
4	O	Data 2	17	O	-SLCT IN
5	O	Data 3	18		Ground
6	O	Data 4	19		Ground
7	O	Data 5	20		Ground
8	O	Data 6	21		Ground
9	O	Data 7	22		Ground
10	I	-ACK	23		Ground
11	I	BUSY	24		Ground
12	I	PE	25		Ground
13	I	SLCT			

Figure 14 Connector pin out for Parallel Printer 25-Way D-Type female.

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Appendix 2 ISA Bus Memory Address Allocation

Each switch of the SW1 bank selects the value of one address bit (see figure 16). The OFF position of each switch sets an address bit equal to 1. The ON position sets it equal to 0.

Switch SW1	1	2	3	4	5	6	7	8
Address Bit	SA13	SA14	SA15	SA16	SA17	SA18	SA19	---

Figure 15 SW1 switch bit assignments

The full range of possible address locations is shown in figure 16.

ADDRESS	1	2	3	4	5	6	7	8
A0000..A1FFF	ON	ON	ON	ON	OFF	ON	OFF	OFF
A2000..A3FFF	OFF	ON	ON	ON	OFF	ON	OFF	OFF
A4000..A5FFF	ON	OFF	ON	ON	OFF	ON	OFF	OFF
A6000..A7FFF	OFF	OFF	ON	ON	OFF	ON	OFF	OFF
A8000..A9FFF	ON	ON	OFF	ON	OFF	ON	OFF	OFF
AA000..ABFFF	OFF	ON	OFF	ON	OFF	ON	OFF	OFF
AC000..ADFFF	ON	OFF	OFF	ON	OFF	ON	OFF	OFF
AE000..AFFFF	OFF	OFF	OFF	ON	OFF	ON	OFF	OFF
B0000..B1FFF	ON	ON	ON	OFF	OFF	ON	OFF	OFF
B2000..B3FFF	OFF	ON	ON	OFF	OFF	ON	OFF	OFF
B4000..B5FFF	ON	OFF	ON	OFF	OFF	ON	OFF	OFF
B6000..B7FFF	OFF	OFF	ON	OFF	OFF	ON	OFF	OFF
B8000..B9FFF	ON	ON	OFF	OFF	OFF	ON	OFF	OFF
BA000..BBFFF	OFF	ON	OFF	OFF	OFF	ON	OFF	OFF
BC000..BDFFF	ON	OFF	OFF	OFF	OFF	ON	OFF	OFF

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ADDRESS	1	2	3	4	5	6	7	8
BE000..BFFFF	OFF	OFF	OFF	OFF	OFF	ON	OFF	OFF
C0000..C1FFF	ON	ON	ON	ON	ON	OFF	OFF	OFF
C2000..C3FFF	OFF	ON	ON	ON	ON	OFF	OFF	OFF
C4000..C5FFF	ON	OFF	ON	ON	ON	OFF	OFF	OFF
C6000..C7FFF	OFF	OFF	ON	ON	ON	OFF	OFF	OFF
C8000..C9FFF	ON	ON	OFF	ON	ON	OFF	OFF	OFF
CA000..CBFFF	OFF	ON	OFF	ON	ON	OFF	OFF	OFF
CC000..CDFFF	ON	OFF	OFF	ON	ON	OFF	OFF	OFF
CE000..CFFFF	OFF	OFF	OFF	ON	ON	OFF	OFF	OFF
D0000..D1FFF	ON	ON	ON	OFF	ON	OFF	OFF	OFF
D2000..D3FFF	OFF	ON	ON	OFF	ON	OFF	OFF	OFF
D4000..D5FFF	ON	OFF	ON	OFF	ON	OFF	OFF	OFF
D6000..D7FFF	OFF	OFF	ON	OFF	ON	OFF	OFF	OFF
D8000..D9FFF	ON	ON	OFF	OFF	ON	OFF	OFF	OFF
DA000..DBFFF	OFF	ON	OFF	OFF	ON	OFF	OFF	OFF
DC000..DDFFF	ON	OFF	OFF	OFF	ON	OFF	OFF	OFF
DE000..DFFFF	OFF	OFF	OFF	OFF	ON	OFF	OFF	OFF
E0000..E1FFF	ON	ON	ON	ON	OFF	OFF	OFF	OFF
E2000..E3FFF	OFF	ON	ON	ON	OFF	OFF	OFF	OFF
E4000..E5FFF	ON	OFF	ON	ON	OFF	OFF	OFF	OFF
E6000..E7FFF	OFF	OFF	ON	ON	OFF	OFF	OFF	OFF
E8000..E9FFF	ON	ON	OFF	ON	OFF	OFF	OFF	OFF
EA000..EBFFF	OFF	ON	OFF	ON	OFF	OFF	OFF	OFF
EC000..EDFFF	ON	OFF	OFF	ON	OFF	OFF	OFF	OFF
EE000..EFFFF	OFF	OFF	OFF	ON	OFF	OFF	OFF	OFF

Figure 17 SW1 Switch settings for a given memory address.

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Appendix 3 RS232 Wiring details

The RS232 9-pin D-Type connectors on the **Superport** range of Serial I/O cards may be connected to the various terminal types as shown in the following tables. TCL can also supply ready made terminal cables:

Part No. 9603 Standard Terminal to **Superport**.
 5 Metre Length
 25D-Type male to 9D-Type female

Part No. 9606 PC COM1/COM2 to **Superport** or
 NyCE Terminal to **Superport**
 5 Metre Length
 9D-Type female to 9D-Type female

Standard Terminal to Superport		
Terminal 25 Way D-Type male (Set for DTR flow control)		Superport 9 Way D-Type Female (Set for CTS flow control)
TX 2	<----->	2 RX
RX 3	<----->	3 TX
GND 7	<----->	5 GND
DTR 20	<----->	8 CTS

Figure 18 Standard Terminal to **Superport** Wiring Details TCL Part No 9603.

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PC COM1 or COM2 (25 Way) to Superport		
COM1/COM2 25 Way D-Type male (Set for DTR flow control)		Superport 9 Way D-Type Female (Set for CTS flow control)
TX 2	<----->	2 RX
RX 3	<----->	3 TX
GND 7	<----->	5 GND
DTR 20	<----->	8 CTS

Figure 19 PC COM Port (25 Way) to **Superport**

PC COM1 or COM2 (9 Way) to Superport		
COM1/COM2 9 Way D-Type female (Set for DTR flow control)		Superport 9 Way D-Type Female (Set for CTS flow control)
TX 3	<----->	2 RX
RX 2	<----->	3 TX
GND 5	<----->	5 GND
DTR 4	<----->	8 CTS

Figure 20 PC COM1/COM2 port (9 Way) to **Superport** Wiring Details TCL Part No. 9606

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Modem to Superport		
Modem 25 Way D-Type male		Superport 9 Way D-Type Female
DCD 8	<----->	1 DCD
RX 3	<----->	2 RX
TX 2	<----->	3 TX
DTR 20	<----->	4 DTR
GND 7	<----->	5 GND
DSR 6	<----->	6 DSR
RTS 4	<----->	7 RTS
CTS 5	<----->	8 CTS
RI 22	<----->	9 RI

Figure 21 Modem (25 Way) to **Superport**

Note: The Modem wiring details shown in figure 21 represent a general specification for standard DCE to DTE connections. In certain cases various modifications may need to be made, as all the signals shown above are not supported by some modems. Please contact your dealer or modem supplier for details.

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Appendix 4 RS422 / RS485 Jumper Options

The Superport layers may be factory fitted with RS422 / RS485 line drivers. On pre-1998 Superport layers two daughter boards are fitted to the top side of the **Superport** circuit board see Figure 23. The left hand daughter board in Figure 23 contains the drivers for ports 1..4 the right hand board contains the drivers for ports 5..8. (RS422/485 layers manufactured after 01/01/1998 have the circuitry built on to the **Superport** layer circuit board, and are only available with 9-Way D Male connectors. See figure 23)

Both types of RS422 / RS485 **Superport** layer support the RS422 / RS485 line drivers and jumpers selecting various line operational modes. The Jumpers allow each of the RX, TX, CTS, and DTR I/O signals to be inverted or non inverted, and control whether the outputs TX, and DTR are either permanently enabled or that their outputs are controlled by the state of the RTS signal.

For straight RS422 or full duplex point to point connections the TX and DTR outputs should either be jumpered for permanently enabled or the software driver should permanently set the RTS signal high (1) see figure 25.

For Multidrop or two wire half duplex RS485 connections the TX and DTR connections should be jumpered for outputs controlled by RTS see figure 25. [NOTE: The users software is expected to handle the necessary line control protocol.]

RS422 / RS485 Output Options				
	TX-Data		DTR	
	Normal	Inverted	Normal	Inverted
Port [1], [5]	LKB 1-2*	LKB 2-3	LKE 2-3*	LKE 1-2
Port [2], [6]	LKF 1-2*	LKF 2-3	LKJ 1-2*	LKJ 2-3
Port [3], [7]	LKK 2-3*	LKK 1-2	LKN 1-2*	LKN 2-3
Port [4], [8]	LKP 2-3*	LKP 1-2	LKR 2-3*	LKR 1-2

An asterisk (*) indicates the factory default settings

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Figure 22 **Superport** RS422/RS485 Layer Output Jumper Options.

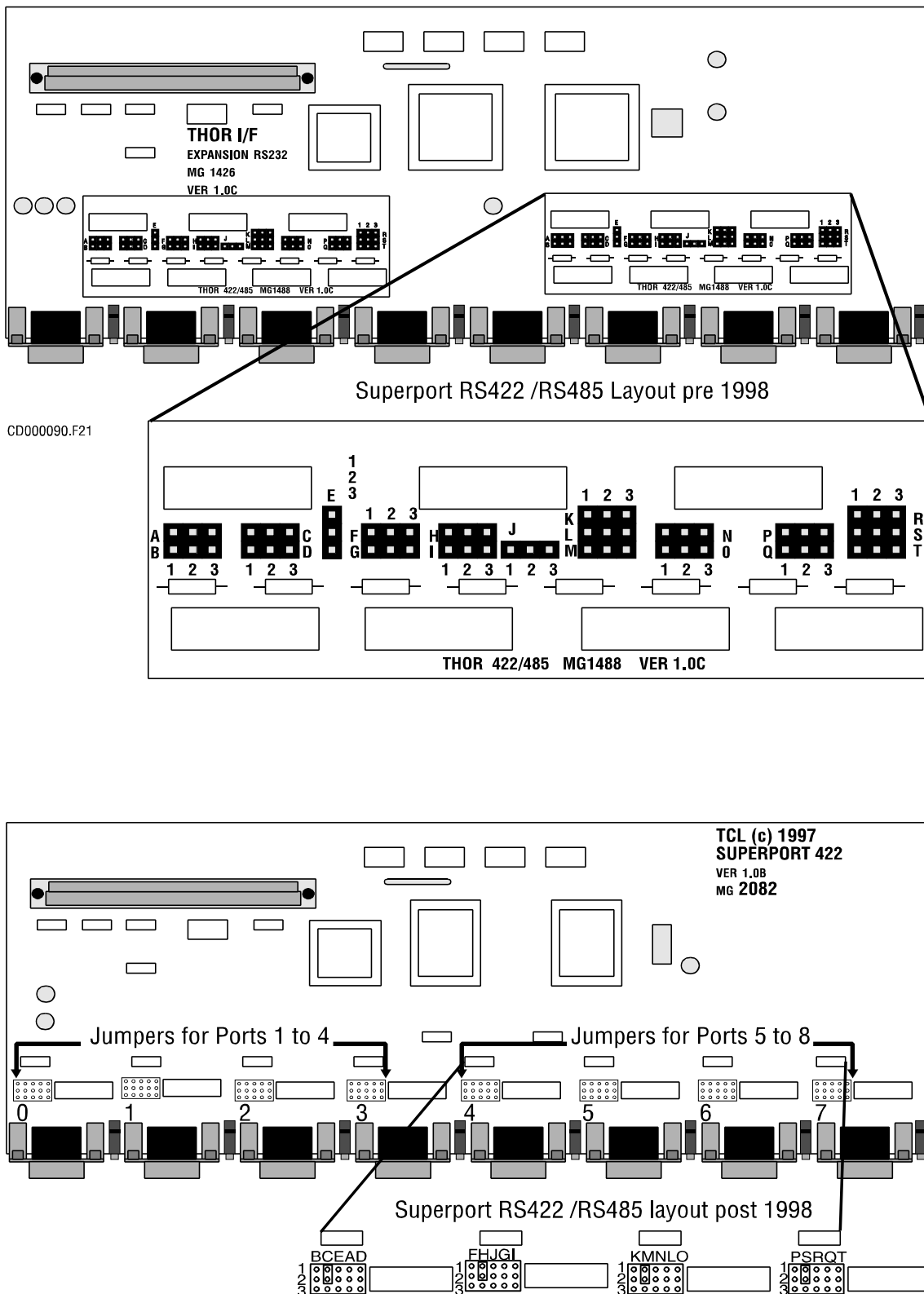


Figure 23 **Superport Layer** PCB showing position of RS422/RS485 Jumpers

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RS422 / RS485 Input Options				
RX-Data		CTS		
	Normal	Inverted	Normal	Inverted
Port [1], [5]	LKA 1-2*	LKA 2-3	LKD 1-2*	LKD 2-3
Port [2], [6]	LKG 1-2*	LKG 2-3	LKI 1-2*	LKI 2-3
Port [3], [7]	LKL 1-2*	LKL 2-3	LKO 1-2*	LKO 2-3
Port [4], [8]	LKQ 1-2*	LKQ 2-3	LKT 1-2*	LKT 2-3

An asterisk (*) indicates the factory default settings

Figure 24 **Superport** RS422/RS485 Layer Input Jumper Options

Outputs Controlled By:		
	O/P Drivers Controlled by RTS	O/P Drivers Permanently Enabled
Port [1], [5]	LKC 1-2*	LKC 2-3
Port [2], [6]	LKH 1-2*	LKH 2-3
Port [3], [7]	LKM 1-2*	LKM 2-3
Port [4], [8]	LKS 1-2*	LKS 2-3

An asterisk (*) indicates the factory default settings

Figure 25 **Superport** RS422/RS485 Layer Output Driver Enable Jumper Options

NOTE: On the RS422 / RS485 boards manufactured after 01/01/1998 only the jumper options listed in Figure 25 (“Outputs Controlled by”) are populated at manufacture. The other jumpers are hardwired on the printed circuit board and cannot be changed by the user.

NOTES