FORCE COMPUTERS
A SOLECTRON COMPANY

PENT/IOBP-CPU720

Installation Guide

P / N 213873 Revision AC
September 2001

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Using This Manual

This Installation Guide is intended for users qualified in electronics or electrical engineering. Users must have a working understanding of Peripheral Component Interconnect (PCI), Compact Peripheral Component Interconnect (CPCI), and telecommunications.

Other Sources of Information

For further information refer to:

- PENT / CPCI-720 / 2 / 3 Installation Guide (P / N 213127)
- PENT / CPCI-721 Installation Guide (P / N 213235)
- PENT / CPCI-72x AccKit Installation Guide (P / N 205235)
- PENT / CPCI-730 Installation Guide (P / N 212399)
- PENT / CPCI-760 / 761 Installation Guide (P / N 213122)

Conventions

Notation	Description
Bold	Character format used to emphasize a word
Note:	No danger encountered. Pay attention to important information marked using this layout.
Caution 	Possibly dangerous situation: slight injuries to people or damage to objects possible

Revision History

Order No.	Edition/ Revision	Date	Description
210615	1.0	October 1998	First print
210615	2.0	March 1999	J1 connector removed
210615	3.0	September 1999	Revised safety notes, editorial changes

Order No.	Edition/ Revision	Date	Description
213873	AA	December 2000	Added IDE connector information (see the “IDE Connectors” section on page 1-5); editorial changes
213873	AB	August 2001	Added the “Sicherheitshinweise” section on page -xv
213873	AC	September 2001	Corrected the “Sicherheitshinweise” section on page -xv

Safety Notes

This section provides safety precautions to follow when installing, operating, and maintaining the PENT/IOBP-CPU720.

We intend to provide all necessary information to install and handle the PENT/IOBP-CPU720 in this Installation Guide. However, as the product is complex and its usage manifold, we do not guarantee that the given information is complete. If you need additional information, ask your Force Computers representative.

The PENT/IOBP-CPU720 has been designed to meet the standard industrial safety requirements. It must not be used except in its specific area of office telecommunication industry and industrial control.

Only personnel trained by Force Computers or persons qualified in electronics or electrical engineering are authorized to install, maintain, and operate the PENT/IOBP-CPU720. The information given in this manual is meant to complete the knowledge of a specialist and must not be taken as replacement for qualified personnel.

EMC

The board has been tested in a Standard Force Computers system and found to comply with the limits for a Class A digital device in this system, pursuant to part 15 of the FCC Rules respectively EN 55022 Class A. These limits are designed to provide reasonable protection against harmful interference when the system is operated in a commercial, business or industrial environment.

The board generates, uses and can radiate radio frequency energy and, if not installed properly and used in accordance with this Installation Guide, may cause harmful interference to radio communications. Operating the system in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at his own expense.

If you use the board without a PMC module, cover empty slots with blind panels to ensure proper EMC shielding. If boards are integrated into open system, always cover empty slots.

Installation

Electrostatic discharge and incorrect board installation and removal can damage circuits or shorten their life. Therefore:

- **Before installing or removing the IOBP, read this Installation Guide.**
- **Verify in the CPU board's Installation Guide that the IOBP is designed for your CPU board.**
- **Only use the type of IOBP connectors indicated in the Installation Guide of the respective CPU board. If CPU boards uses several PCBs, check the Installation Guide of the CPU board for information on which connectors of the IOBP are to be used with the different PCBs.**
- **If the IOBP is delivered as part of a system, do not change the cabling of the IOBP unless otherwise explicitly stated in the System's Guide.**
- **Before installing or removing the CPU board, read the CPU board's Installation Guide and ensure to apply all safety notes given by that guide.**
- **Before touching boards or electronic components, ensure that you are working in an ESD-safe environment.**
- **When plugging the board in or removing it, do not press on the front panel but use the handles.**
- **Before installing the IOBP in or removing it from a CPCI system:**
  - **Check all installed boards for steps that have to be taken before turning off the power.**
  - **Take those steps.**
  - **Finally, turn off the power.**

Operation

When operating the board in areas of electromagnetic radiation, ensure that the board is bolted on the CompactPCI system and that the system shielded by enclosure.

Make sure that contacts and cables of the board cannot be touched while the board is operating.

RJ-45 Connector

The RJ-45 connector type is used for telephone connectors and for twisted pair Ethernet (TPE) connectors. Mismatching these two connectors may destroy your telephone as well as your PENT/IOBP-CPU720. Therefore:

- **Make sure that TPE connectors are clearly marked as network connectors.**
- **Make sure that the TPE bushing of the system is connected only to safety extra low voltage (SELV) circuits.**
- **Verify that the total length of an electric cable connected to a TPE bushing does not exceed 100 m.**

If in doubt, ask your system administrator.

Environment

Always dispose of old boards according to your country's legislation, if possible in an environmentally acceptable way.

Sicherheitshinweise

Dieser Abschnitt enthält Sicherheitshinweise, die bei Einbau, Betrieb und Wartung des PENT/IOBP-CPU720 zu beachten sind.

Wir sind darauf bedacht, alle notwendigen Informationen zum Einbau und zum Umgang mit dem PENT/IOBP-CPU720 in diesem Handbuch bereit zu stellen. Da es sich jedoch bei dem PENT/IOBP-CPU720 um ein komplexes Produkt mit vielfältigen Einsatzmöglichkeiten handelt, können wir die Vollständigkeit der im Handbuch enthaltenen Informationen nicht garantieren. Falls Ihnen Informationen fehlen sollten, wenden Sie sich bitte an Ihren Vertreter von Force Computers.

Das PENT/IOBP-CPU720 erfüllt die für die Industrie geforderten Sicherheitsvorschriften und darf ausschliesslich für Anwendungen in der Telekommunikationsindustrie und im Zusammenhang mit Industriesteuerungen verwendet werden.

Einbau, Wartung und Betrieb dürfen nur von durch Force Computers ausgebildetem oder im Bereich Elektronik oder Elektrotechnik qualifiziertem Personal durchgeführt werden. Die in diesem Handbuch enthaltenen Informationen dienen ausschliesslich dazu, das Wissen von Fachpersonal zu ergänzen, können dieses jedoch nicht ersetzen.

EMV

Das Board wurde in einem Force Computers Standardsystem getestet. Es erfüllt die für digitale Geräte der Klasse A gültigen Grenzwerte in einem solchen System gemäß den FCC-Richtlinien Abschnitt 15 bzw. EN 55022 Klasse A. Diese Grenzewerte sollen einen angemessenen Schutz vor Störstrahlung beim Betrieb des Boards in Geschäfts-, Gewerbe- sowie Industriebereichen gewährleisten.

Das Board arbeitet im Hochfrequenzbereich und erzeugt Störstrahlung. Bei unsachgemäßem Einbau und anderem als in diesem Handbuch beschriebenen Betrieb können Störungen im Hochfrequenzbereich auftreten. Wird das Board in Wohngegenden betrieben, ist der Benutzer verpflichtet, entstehende Störungen auf seine Kosten beheben zu lassen.

Wenn Sie das Board ohne ein PMC Modul verwenden, schirmen Sie freie Steckplätze mit einer Blende ab, um einen ausreichenden EMV Schutz zu gewährleisten. Wenn Sie Boards in Systeme einbauen, schirmen Sie freie Steckplätze mit einer Blende ab.

Installation

Elektrostatische Entladung und unsachgemäßer Ein- und Ausbau des Boards kann Schaltkreise beschädigen oder ihre Lebensdauer verkürzen. Beachten Sie deshalb die folgenden Punkte:

- **Lesen Sie vor Ein- oder Ausbau des IOBPs dieses Benutzerhandbuch.**
- **Vergewissern Sie sich im Benutzerhandbuch des CPU Boards, dass das IOBP speziell für dieses CPU Board entwickelt wurde.**
- **Verwenden Sie nur IOBPs mit Steckern, die zu den im Benutzerhandbuch des CPU Board beschriebenen Steckern kompatibel sind. Falls das CPU Board aus mehreren Platinen besteht, informieren Sie sich im Benutzerhandbuch des CPU Boards darüber, welche Stecker des IOBPs für die verschiedenen Platinen verwendet werden müssen.**
- **Wurde das IOBP als Teil eines Systems geliefert, ändern Sie die Verkabelung des IOBPs nur, wenn dies ausdrücklich in der Systemdokumentation beschrieben steht.**
- **Lesen Sie vor Ein-oder Ausbau des CPU Boards das dazugehörige Installationshandbuch, und befolgen Sie die darin enthaltenen Sicherheitshinweise.**
- **Bevor Sie Boards oder elektronische Komponenten berühren, vergewissern Sie sich, dass Sie in einem ESD-geschützten Bereich arbeiten.**
- **Drücken Sie bei Ein- oder Ausbau des Boards nicht auf die Frontplatte, sondern benutzen Sie die Griffe.**
- **Beachten Sie folgendes vor Ein- oder Ausbau aus einem CompactPCI System:**
  - **Überprüfen Sie die Benutzerhandbücher aller installierten Boards auf Schritte, die vor dem Abschalten des Stroms unternommen werden müssen.**
  - **Führen Sie diese Schritte durch.**
  - **Schalten Sie dann die Stromversorgung ab.**

Betrieb

Achten Sie darauf, dass die Umgebungs- und die Leistungsanforderungen während des Betriebs eingehalten werden.

Wenn Sie das Board in Gebieten mit elektromagnetischer Strahlung betreiben, stellen Sie sicher, dass das Board mit dem CompactPCI

System verschraubt ist und das System durch ein Gehäuse abgeschirmt wird.

Stellen Sie sicher, dass Anschlüsse und Kabel des Boards während des Betriebs nicht berührt werden können.

RJ-45 Stecker

Das CPU Board ist mit RJ-45 Steckern ausgestattet. Dieser Stecker wird sowohl für Telefonanschlüsse als auch für Netzwerkkabel (Twisted Pair Ethernet - TPE) verwendet. Die Verwechslung dieser Anschlüsse kann sowohl das Telefon als auch das Board zerstören. Beachten Sie deshalb die folgenden Punkte:

- **Vergewissern Sie sich, dass Anschlüsse an Ihrem Arbeitsplatz deutlich als Netzwerkanschlüsse gekennzeichnet sind.**
- **Schließen Sie TPE-Stecker/Netzwerkstecker Ihres Systems nur an Sicherheitskleinspannungskreise (SELV) an.**
- **Vergewissern Sie sich, dass die an einem TPE-Anschluss angeschlossene Leitung eine Gesamtlänge von 100 Metern nicht überschreitet.**

Falls Sie Fragen haben, wenden Sie sich an Ihren Systemadministrator.

Umweltschutz

Entsorgen Sie alte Boards gemäß der in Ihrem Land gültigen Gesetzgebung, wenn möglich umweltfreundlich.

1

Installation

General

The IOBP-CPU720 is an I/O backpanel board which provides easy access to the I/O signals of the following CPU boards via the Compact-PCI rack:

- PENT/CPCI-72x
- PENT/CPCI-730
- PENT/CPCI-76x

It may be delivered as part of an accessory kit compiled for CPU boards and as part of a system design.

If delivered as part of a system design, the IOBP-CPU720 is already installed in the system. For information on the system connectors available for user-defined system configuration, refer to the respective System's Guide. The cabling of all other connectors of the rear I/O panel must remain as configured at system delivery.

If delivered as part of an accessory kit, cables to be used with the IOBP-CPU720 or with connectors on the CPU board's front panel are usually shipped with the accessory kit. The CPCI-720/CPUP-5AccKit is delivered with the following items:

- IOBP-CPU720
- Cabling
- Installation Guide.

Note: Check that the items listed were shipped together with the Accessory Kit.

Connecting the Devices

The following picture provides an overview of the location of on-board connectors on the IOBP-CPU720.

Note: You must install the on-board devices before plugging the IOBP-CPU720 into the backpanel.

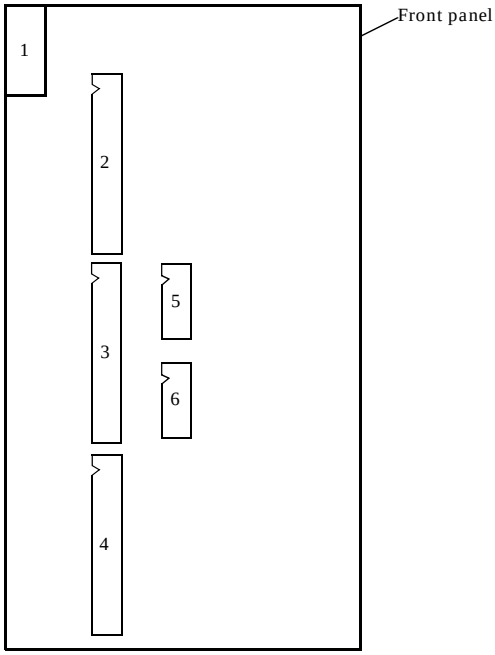


Figure 1: *On-Board Connectors*

No.	Description	No.	Description
1	J5	4	Floppy
2	Primary IDE	5	COM1
3	Secondary IDE	6	COM2

If the IOBP-CPU720 is to be incorporated into larger systems and adapted to specific needs, the following connector pinouts are useful in giving information on how the pins are assigned.

IDE Connectors

The IOBP-CPU720 provides two IDE connectors, the primary and the secondary IDE connector.

Caution

Before connecting IDE devices to the connectors on-board the IOBP-CPU720, system power has to be turned off to avoid personal injury or damage to other boards and the system.

Note: The primary IDE interfaces on the PENT/CPCI-730 and the PENT/CPCI-76x are not connected to the primary IDE connector of the IOBP-CPU720. Any devices connected to its primary IDE connector will not be accessible from the PENT/CPCI-730 and PENT/CPCI-76x. In order to avoid excessive load on the bus, do not connect any devices at all to the primary IDE device on the IOBP-CPU720.

It is possible to connect up to two IDE devices to the secondary IDE connector of the PENT / IOBP-CPU720. If you connect two IDE devices, one must be configured as master, the other one as slave. If you connect only one IDE device, this device must always be configured as master.

Note: In order to install the IDE devices, use the standard IDE ribbon cable and make sure its length does not exceed 40 cm.

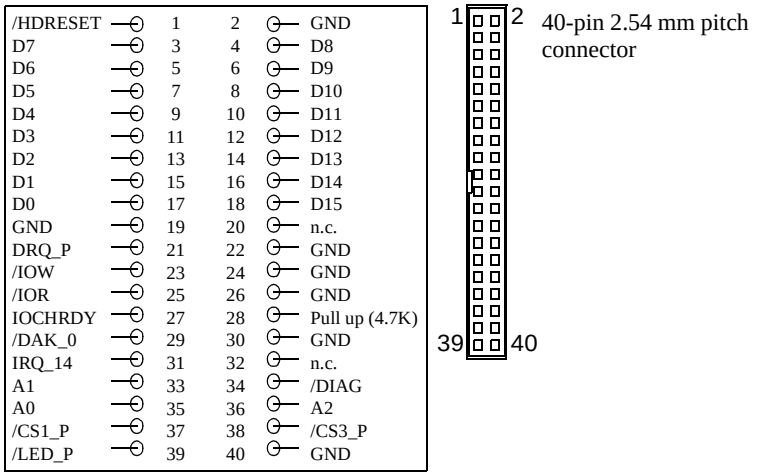


Figure 2: *Primary IDE Connector Pinout*

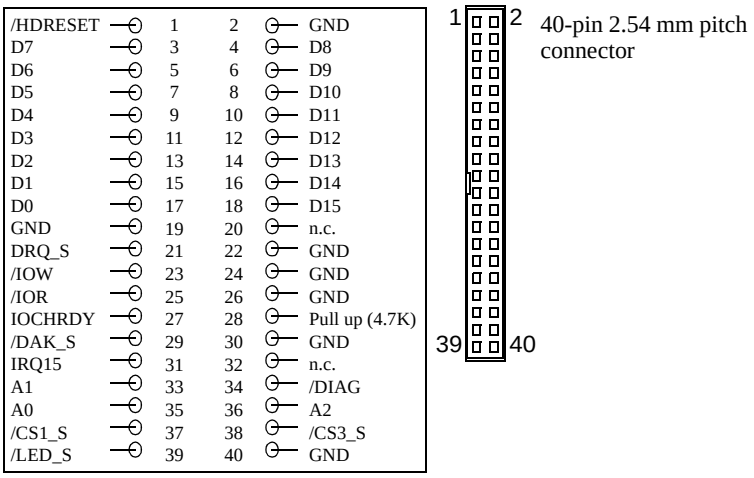


Figure 3: *Secondary IDE Connector Pinout*

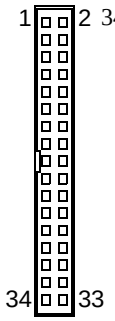
Floppy Connector

The floppy connector serves to connect the floppy drive to the IOBP-CPU720 by plugging the cable of the floppy drive into the floppy connector on the IOBP-CPU720.

Caution

Before connecting the floppy drive to the connector on-board the IOBP-CPU720, system power has to be turned off to avoid personal injury or damage to other boards and the system.

GND	1	2	DENSEL
GND	3	4	n.c.
GND	5	6	DRATE0
n.c.	7	8	/INDEX
GND	9	10	/MTR0
GND	11	12	/DRV1
n.c.	13	14	/DRV0
GND	15	16	/MTR1
GND	17	18	/DIR
GND	19	20	/STEP
GND	21	22	/WDATA
GND	23	24	/WGATE
GND	25	26	/TRK0
MSN0	27	28	/WP
GND	29	30	/RDATA
GND	31	32	/HDSEL
GND	33	34	/DSKCHG



34-pin 2.54 mm pitch connector

Figure 4: *Floppy Connector Pinout (up to two Drives)*

Note: Make sure not to bend any pins when plugging the floppy cable into the floppy connector.

Plugging In the Board

The IOBP-CPU720 is plugged into the CompactPCI backplane from its rear. The backplane I/O signals are available on the J5 connector of the IOBP-CPU720 and depend on the pinout implemented on the board under consideration which is installed in the CompactPCI slot .

Caution

- **Only install and use the IOBP-CPU720 with the CPU boards especially designed for the IOBP-CPU720. Otherwise, both the CPU board and the IOBP may be damaged.**
- **For installation and removal of the IOBP-CPU720, system power must always be turned off.**
- **Make sure to use the rear slot position only.**

Installing the IOBP-CPU720

In order to install the IOBP-CPU720, proceed as follows:

Caution

Check all installed board for steps which have to be taken before turning off power and take those steps.

1. Turn off power

Note: When inserting the board, make sure not to bend any pins.

2. Insert IOBP-CPU720 carefully from rear into same slot as CPU board

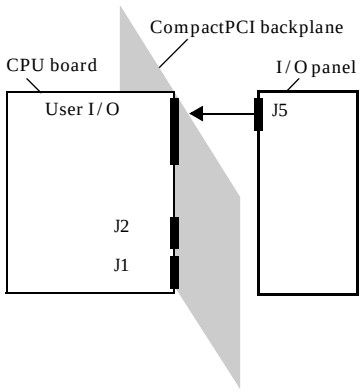


Figure 5: *Installation of IOBP-CPU720*

3. Press handles of I/O backpanel board so that IOBP-CPU720 is completely installed on CompactPCI connector J5
4. Fasten two screws of front panel to fix I/O backpanel on rack frame
5. Turn on power

Removing the IOBP-CPU720

In order to remove the IOBP-CPU720, proceed as follows:

1. Check all installed boards for steps that have to be taken before turning off power, take those steps, and finally, turn off power
2. Unfasten two screws of front panel until IOBP-CPU720 is detached from rack frame
3. Disconnect IOBP-CPU720 from backplane by opening front panel handles
4. Carefully remove IOBP-CPU720 from slot without bending any pins
5. Turn on power

CompactPCI Backplane Connectors

The IOBP-CPU720 provides one CompactPCI backplane connector, the J5. If the IOBP-CPU720 is to be incorporated into larger systems and adapted to specific needs, the J5 connector pinout will be useful in giving information on how the pins are assigned.

A	B	C		D	E
SMI	reserved	reserved	1	reserved	ETH RX–
ETH TX–	reserved	ETH TX+	2	ETH RX+	reserved
KBD clock	KBD data	MSE clock	3	MSE data	IDE /DIAG
1st IDE A2	2nd IDE A2	1st IDE /CS3	4	USB P1–	USB P1+
2nd IDE A0	1st IDE /CS1	2nd IDE /CS1	5	2nd IDE /CS3	IDE /RST
1st IDE IRQ	2nd IDE IRQ	1st IDE A1	6	1st IDE /LED	2nd IDE /LED
1st IDE /IOR	2nd IDE /IOR	IDE IORDY	7	2nd IDE A1	1st IDE A0
IDE D15	1st IDE DRQ	2nd IDE DRQ	8	1st IDE DAK	2nd IDE DAK
IDE D10	IDE D11	IDE D12	9	1st IDE /IOW	2nd IDE /IOW
IDE D5	IDE D6	IDE D7	10	IDE D13	IDE D14
IDE D0	IDE D1	IDE D2	11	IDE D8	IDE D9
FD /DR1	FD DENSEL	FD DRATE0	12	IDE D3	IDE D4
FD /DSKCHG	FD /WP	FD /MTR0	13	FD MSEN0	Vcc
FD /HDSEL	FD /DIR	FD /STEP	14	FD /MTR1	FD /DR0
Vcc	LPT Pe	FD /RDATA	15	FD /TRK0	FD /INDEX
LPT Busy	LPT /Init	LPT Slct	16	FD /WDATA	FD /WGATE
LPT /Autofeed	LPT Data 5	LPT /Slctin	17	LPT /Error	LPT /Ack
LPT Data 4	LPT Data 0	LPT Data 6	18	LPT Data 7	LPT Strobe
COM2 RI	/PBRESET	LPT Data 1	19	LPT Data 2	LPT Data 3
COM2 RxD	COM2 TxD	COM2 DTR	20	COM2 RTS	COM2 CTS
COM1 RTS	COM1 CTS	COM1 RI	21	COM2 DCD	COM2 DSR

Figure 6: *CompactPCI J5 Connector Pinout*

Note: If the IOBP-CPU720 is used together with the PENT/CPCI-730 or PENT/CPCI-76x, some signals listed in the above pinout will not be provided by the respective CPU board. For detailed information, refer to the Installation Guide of the CPU board under consideration.

Connecting the Peripherals

The front panel of the IOBP-CPU720 allows to connect the peripherals to the rear I/O panel.

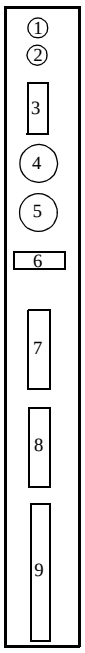


Figure 7: *Front Panel*

No.	Description	No.	Description
1	Reset key [1)]	6	USB
2	Abort key [1)]	7	COM1
3	ETH - Ethernet	8	COM2
4	KBD - Keyboard	9	LPT
5	MS - Mouse		

1) The key performs the same functions as the keys on the front panel of the CPU board. For further information, refer to the respective board's Installation Guide.

The connector pinouts for the front panel connectors are shown in the following figures.

RJ-45

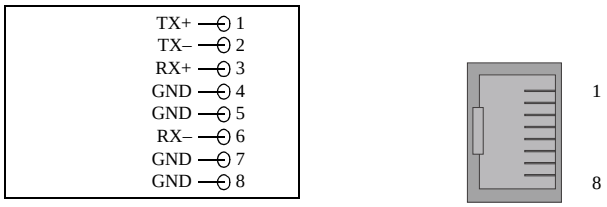


Figure 8: *Ethernet Connector Pinout*

6-pin mini DIN

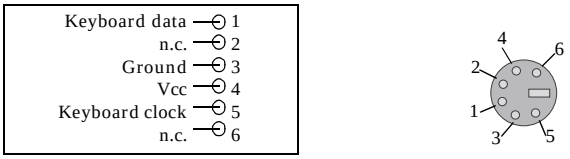


Figure 9: *KBD - Keyboard Connector Pinout*

6-pin mini DIN

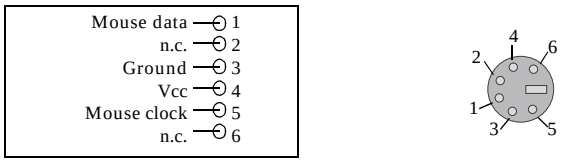


Figure 10: *MS - PS/2 Mouse Connector Pinout*

USB

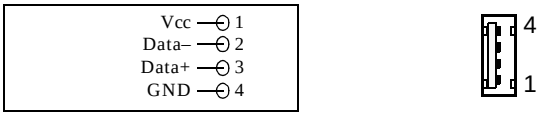


Figure 11: *USB Connector Pinout*

25-pin D-Sub

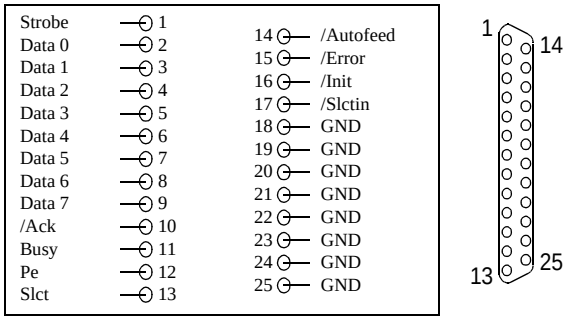


Figure 12: *LPT Connector Pinout*

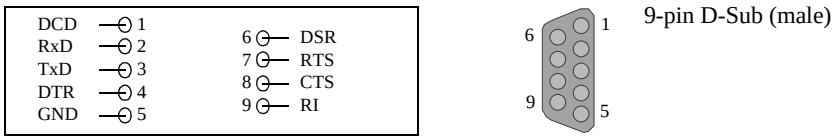


Figure 13: *COM1 and COM2 Connector Pinout*

Product Error Report

Product:	Serial No.:
Date Of Purchase:	Originator:
Company:	Point Of Contact:
Tel.:	Ext.:
Address:	
Present Date:	
Affected Product: ❑ Hardware ❑ Software ❑ Systems	Affected Documentation: ❑ Hardware ❑ Software ❑ Systems
Error Description:	

This Area to Be Completed by Force Computers:

Date:

PR#:

Responsible Dept.: ❑ Marketing ❑ Production

Engineering ➠ ❑ Board ❑ Systems

☞ Send this report to the nearest Force Computers headquarter listed on the address page.