



PC-4000TM

Touch Screen PC

User Manual Preliminary

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We,

INDATA SYSTEMS

27 Fennell Street
Skaneateles, NY 13152-1117

PHONE (315) 685-8311

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declare under our sole responsibility that the product,

Type of Equipment: Touch PC Workstation

Model Number: PC-4000

to which this declaration relates is in conformity with the Title 47 of the US Code of Federal Regulations, Part 15 covering Class B personal computers and peripherals.

Operation is subject to the following two conditions:

- (1) this device may not cause harmful interference, and**
- (2) this device must accept any interference received, including interference that may cause undesired operation.**

This device complies with part 15 of the FCC rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

**Federal Communication Commission
Radio Frequency Interference Statement**

Note: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by using one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Modifications

Changes or modifications not expressly approved by INDATA SYSTEMS could void the user's authority to operate this equipment.

Shielded Cables

Shielded cables must be used with this equipment to maintain compliance with FCC regulations.

Hardware Warranty

One Year Limited Warranty

INDATA SYSTEMS warrants *PC-4000* to be free from hardware defects in workmanship and material under normal use for a period of one (1) year from the date of purchase by the original consumer purchaser. During this warranty period, INDATA SYSTEMS will repair or replace, at its option, any component parts that in its opinion prove to be defective. This warranty does not extend and shall not apply to products that have been subjected to misuse, neglect, accident, or improper installation.

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If your INDATA SYSTEMS PC-4000 is in warranty, you may return it to the point of purchase for warranty service, or return it directly to INDATA SYSTEMS. Proof of purchase may be required. If you return your PC-4000 to INDATA SYSTEMS, a Return Material Authorization (RMA) number must be obtained prior to the return. Contact INDATA SYSTEMS with the serial number of your PC-4000 by telephone at (315) 685-8311 or Fax (315) 685-8312, Technical Support Department, for an RMA number. INDATA SYSTEMS is not responsible for material returned without the RMA number clearly printed on the outside of the shipping container. Products to be returned to INDATA SYSTEMS must be returned, shipping and insurance prepaid, by the original purchaser to the address below.

INDATA SYSTEMS
27 Fennell Street
Skaneateles, NY 13152-1117
Attn: RMA# _____

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Overview

The INDATA SYSTEMS *PC-4000*TM is a complete PC workstation in a space efficient package. The PC-4000 integrates a flat panel display, touch screen, 5x86 or PentiumTM processor, hard disk drive, Ethernet, and three available communication ports into an ergonomic ABS enclosure.

Installation

The INDATA SYSTEMS *PC-4000*TM can be installed in many different locations, including desktop, wall mount, and mobile. The ABS housing includes four brass inserts (1/4 x 20 x .2") for mounting the unit to an adjustable arm such as the RAM mounting system. This three-piece mounting system gives 360 degrees of motion and enormous versatility. The RAM mounting system also provides shock and vibration absorption through the rubberized coating on each base. These mounts can be used to mount the INDATA SYSTEMS *PC-4000*TM just about anywhere!

Installing Software

The INDATA SYSTEMS *PC-4000*TM has been designed as a network computer (NC) and therefore does not have an internal floppy disk drive. Although this makes initial installation of software more difficult the benefits are far more important. For example, entry of foreign software such as non-corporate applications, viruses, games, and non-task specific programs is reduced if not eliminated. In addition, the lack of a floppy drive removes the exit point for critical corporate data.

So how do I install my software? There are three methods currently supported for installation of application specific software. First is the use of parallel type external drive such as a Backpack® 3.5" drive from Micro Solutions or a ZIP drive from Iomega . The second installation method is the use of a network connection using the built in Ethernet capabilities of the INDATA SYSTEMS *PC-4000*TM. Simply connect to your network or another machine and install the application to the target INDATA SYSTEMS *PC-4000*TM. The third installation method supported is more for field serviceability than production installations. This involves the use of Windows 95® Direct Cable Connection to create a temporary network connection between two enabled machines using either the serial or parallel ports.

Touch Screen

The touch screen provides an intuitive user interface while maintaining software compatibility by providing mouse emulation to existing software. Simply touch the desired location on the screen and the mouse cursor will move to the position of your finger and generate a left mouse click. To create a right mouse click use the mouse button swap utility to toggle the active mouse button. Drag and drop functionality is also supported. Touch the screen on the desired object, slide your finger across the screen to the desired location and release your finger to drop the object in the new location.

The touch screen technology implemented in the INDATA SYSTEMS *PC-4000* is analog resistive 4-wire. This technology is pressure based meaning that the slight pressure of a finger touch closes a switch. By measuring the resistance of the switch closure in each axis the exact location of the switch closure can be found. This technology is simple reliable, accurate, and affordable.

Proper care and maintenance of your touch screen:

- 1.) Do not use sharp objects on the touch screen. Although the touch screen is very durable, a sharp object can leave a permanent impression in the mylar layer, which is the top, half of the switch. This impression will permanently short the switch rendering the touch screen inoperable.
- 2.) Do not use chemicals or abrasives to clean the touch screen. To clean the touch screen spray lightly with a mild glass cleaner such as Windex and wipe dry with a non-abrasive tissue.
- 3.) Occasional calibration of the touch screen will improve accuracy. Use the calibration utility included in the drivers. The utility will prompt you to touch specific locations on the screen. Be very accurate when you do this, as these coordinates will be used to calculate all offsets for other touches.

Operating Systems

The INDATA SYSTEMS *PC-4000*[™] being a PC compatible is available with quite a variety of operating systems (OS). The main operating systems shipping to date are DOS, Windows 95®, 98® and Windows NT® Workstation. Also available are remote boot capabilities for Novell NetWare® and Windows NT® Server. Remote boot allows a station to operate without a hard disk drive reducing system cost and maintaining a thin client cost of ownership model. Because of performance criteria this is not recommended for all operating systems.

Software Drivers

All the drivers for the INDATA SYSTEMS *PC-4000*[™] and its peripherals are located on the hard drive of the workstation. This directory structure is listed in Appendix G. The drivers required are typically factory installed with the operating system. All drivers are provided on the hard disk drive for completeness. In the event that you order remote boot capabilities please be certain that you obtain the drivers on floppy disk. They will be necessary to complete the remote boot installation. For assistance with the a particular driver consult its documentation, the operating systems documentation, and/or your dealer prior to installation.

Accessories

Available accessories are:

Base Plate This is a black ABS plate which provides a stable platform for using the INDATA SYSTEMS *PC-4000*TM as a desktop workstation. This is used in conjunction with the RAM mount.

RAM Mount This versatile mount provides a 360 degrees range of motion for adjusting the INDATA SYSTEMS *PC-4000*TM to an ergonomic viewing angle. In addition it provides shock and vibration isolation for the workstation.

Backpack Drive The parallel backpack drive available in 3.5" floppy, 5.25" floppy, or CD-ROM is a quick convenient method for installing software. Also available is a CD-ROM version incorporating a Sound BlasterTM compatible audio card.

MS DOS®, Windows 95®/98®, Windows NT®
These are available operating systems.

CONFIGURATION WORKSHEET

Touch PC Workstation PC-4000

Description PC-4000/ -

I II III IV V VI VII VIII

Example : PC-4000 / A B - 2 2 1 0 0 2

- I) Processor Type:
 PC-4000 /A AMD586-133
 PC-4000 /B P133 (Intel)
 PC-4000 /C P166 (Intel)
- II) Case Color:
 (W) White
 (B) Black
- III) Display Type:
 (1) 10.4 inch Dual InData Systems Mono
 (2) 10.4 inch Dual InData Systems Color
 (3) 10.4 inch Active Color Matrix
 (4)
 (5) 10.4 inch Active Color Matrix – 800 x 600
- IV) Memory Configuration:
 (1) 4 MB RAM
 (2) 8 MB RAM
 (3) 16 MB RAM
 (4) 32 MB RAM
 (5) 64 MB RAM
- V) Hard Drive:
 (0) None
 (1) 1.6 GB
 (2) 2.1 GB
 (3) Solid State IDE Drive (10 MB)
- Note: Exact size of hard drives may vary based on manufacturer availability.
- VI) PCMCIA Adapter:
 (0) None
 (1) One Type III or One Type II Adapter Slot
 (2) PCMCIA slot with Proxim RangeLan2 RF Network Card
 (3) PCMCIA slot with Symbol Technologies Spectrum 24 RF Network Card
- VII) COMM Port Power Setting:
 (0) No power on COMM Port(s)
 (1) +5 VDC on pin 1 of COMM Port(s)
 (2) +12VDC on pin 1 of COMM Port(s)
- VIII) Operating System to be Pre-installed:
 (0) None
 (1) Dos 6.22 / Windows 3.11
 (2) Windows 95 / 98
 (3) Windows NT Workstation

Note: Pricing and configuration on processor and memory selections are subject to market fluctuations. Please consult your sales representative for current availability and pricing.

Below is the configuration worksheet to determine exact part numbers for ordering INDATA SYSTEMS *PC-4000* workstations.

Service & Support

In the event that you should need assistance please contact your dealer or distributor. You may also contact the manufacturer at:

INDATA SYSTEMS
27 Fennell Street
Skaneateles, NY 13152-1117

(315) 685-8311

FAX (315) 685-8312

e-mail: support@indatasys.com

Appendix A Ports & Pin Outs



ON/OFF Switch

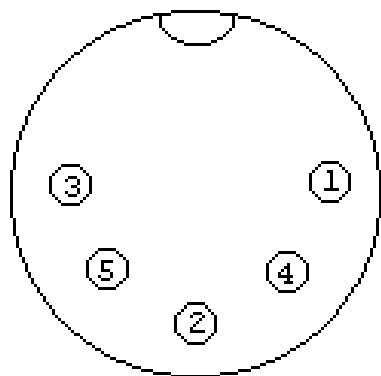
Rocker switch to turn the unit on or off..

Display Brightness / Contrast adjustment

Thumb wheel to adjust the brightness on active-matrix displays or to adjust the contrast on dual scan passive displays.

Power Plug

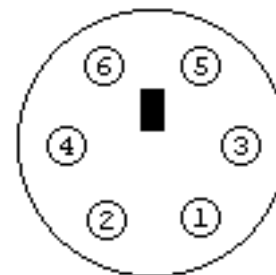
Connection for power supply.
5 Pin Circular DIN Female



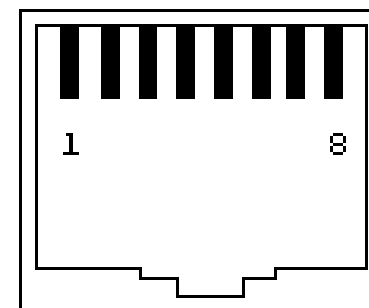
- 1 Ground
- 2 Ground
- 3 +5VDC (4 amps)
- 4 -12VDC (not used)
- 5 +12VDC (1 amp)

Keyboard Port

Connector for AT compatible keyboard with PS/2 style connector.
6 Pin Circular Mini-DIN Female



- 1 Keyboard Data
- 2 Unused
- 3 Ground
- 4 +5 Volts
- 5 Keyboard Clock
- 6 Unused



- 1 TD+
- 2 TD-
- 3 RD+
- 6 RD-

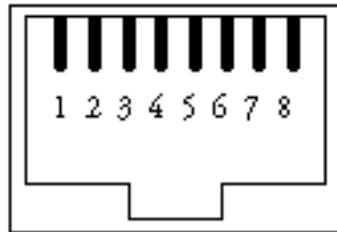
LAN

Ethernet 10Base-T port.
RJ45 8-positions

1	TD+
2	TD-
3	RD+
6	RD-

COM2 COM3 COM4

RS-232 Ports
RJ45 8-positions
Power is jumper configurable (internally).
(COM1 is used for touch input like a mouse)



1	PWR	Power (None, +5VDC, +12VDC)	
2	RD	Receive Data	Input
3	TD	Transmit Data	Output
4	DTR	Data Terminal Ready	Output
5	SG	Signal Ground	
6	DSR	Data Set Ready	Input
7	RTS	Request to Send	Output
8	CTS	Clear to Send	Input

Parallel (Printer)



1	Strobe	Reads in data	Output
2	Data Bit 0	Data line	Output
3	Data Bit 1	Data line	Output
4	Data Bit 2	Data line	Output
5	Data Bit 3	Data line	Output
6	Data Bit 4	Data line	Output
7	Data Bit 5	Data line	Output
8	Data Bit 6	Data line	Output
9	Data Bit 7	Data line	Output
10	ACKNLG	Ack. receipt of data	Input
11	Busy	Printer busy	Input
12	Paper Empty	Printer out of paper	Input
13	SLCT	Online mode indicator	Input
14	Auto Feed XT		Input
15	Fault/Error	Indicates offline mode	Input
16	Input Prime	Resets printer, clears	Output
	of INIT	buffer and initializes	
17	SLCT IN	TTL high level	Output
18-25	Ground		

Appendix B Common Cables

The following two cables can be used with Windows 95® Direct Cable Connection. If you want faster data transfers through the use of ECP/EPP parallel port capabilities order the DirectParallel™ Universal Cable from Parallel Technologies, Inc. at (800) 789-4784.

Null Modem Cable

	PC4000	25-Pin D-Sub		
System 1	RJ-45	Pin	Pin	System 2
TX	3	2	3	RX
RX	2	3	2	TX
RTS	7	4	5	CTS
CTS	8	5	4	RTS
DSR	6	6	20	DTR
DCD		8		DCD
DTR	4	20	6	DSR
GND	5	7	7	GND

Parallel Transfer Cable

DB25M	Pin		Pin	DB25M
Data Bit 0	2	→	15	Fault
Data Bit 1	3	→	13	SCLT
Data Bit 2	4	→	12	Paper Empty
Data Bit 3	5	→	10	ACKNLG
Data Bit 4	6	→	11	Busy
ACKNLG	10	←	5	Data Bit 3
Busy	11	←	6	Data Bit 4
Paper Empty	12	←	4	Data Bit 2
SLCT	13	←	3	Data Bit 1
Fault	15	←	2	Data Bit 0
Ground	18 to 25	---	18 to 25	Ground

Appendix C ASCII Codes

ASCII Character Codes

ASCII Char.	Hex Code	ASCII Char.	Hex Code	ASCII Char.	Hex Code	ASCII Char.	Hex Code
NUL	00H	Space	20H	@	40H	'	60H
SOH	01H	!	21H	A	41H	a	61H
STX	02H	"	22H	B	42H	b	62H
ETX	03H	#	23H	C	43H	c	63H
EOT	04H	\$	24H	D	44H	d	64H
ENO	05H	%	25H	E	45H	e	65H
ACK	06H	&	26H	F	46H	f	66H
BEL	07H	^	27H	G	47H	g	67H
BS	08H	(	28H	H	48H	h	68H
HT	09H	)	29H	I	49H	i	68H
LF	0AH	*	2AH	J	4AH	j	6AH
VT	0BH	+	2BH	K	4BH	k	6BH
FF	0CH	,	2CH	L	4CH	l	6CH
CR	0DH	-	2DH	M	4DH	m	6DH
SO	0EH	.	2EH	N	4EH	n	6EH
SI	0FH	/	2FH	O	4FH	o	6FH
DLE	10H	0	30H	P	50H	p	70H
DC1*	11H	1	31H	Q	51H	q	71H
DC2	12H	2	32H	R	52H	r	72H
DC3+	13H	3	33H	S	53H	s	73H
DC4	14H	4	34H	T	54H	t	74H
NAK	15H	5	35H	U	55H	u	75H
SYN	16H	6	36H	V	56H	v	76H
ETB	17H	7	37H	W	57H	w	77H
CAN	18H	8	38H	X	58H	x	78H
EM	19H	9	39H	Y	59H	y	79H
SUB	1AH	:	3AH	Z	5AH	z	7AH
ESC	1BH	;	3BH	[	5BH	{	7BH
FS	1CH		3CH	\	5CH		7CH
GS	1DH	=	3DH	]	5DH	}	7DH
RS	1EH		3EH	^	5EH	~	7EH
US	1FH	?	3FH		5FH	DEL	7FH

* X-ON + X-OFF

Appendix D Hardware Interrupts

IRQ0	Timer Output
IRQ1	Keyboard
IRQ2	Routes to interrupt controller 2, IRQ8 to 15
IRQ3	Serial Port COM2
IRQ4	Serial Port COM1
IRQ5	Serial Port COM3
IRQ6	Floppy Disk Controller
IRQ7	Parallel Printer Port LPT1:
IRQ8	Real Time Clock
IRQ9	Software redirect to IRQ2 (Int 0A Hex)
IRQ10	Serial Port COM4
IRQ11	Reserved
IRQ12	Reserved
IRQ13	80287 Math Coprocessor
IRQ14	Hard Disk Controller
IRQ15	Watchdog Timer

Appendix E

Hardware I/O Map

Address	Function
000 – 01F	DMA Controller (8237A-5)
020 – 03F	Interrupt Controller #1 (8259A)
040 – 05F	Timer (8254)
060 – 06F	Keyboard (8042)
070 – 07F	NMI – Non Maskable Interrupt & CMOS RAM
080 – 09F	DMA page register (74LS612)
0A0 – 0BF	Interrupt Controller #2 (8259A)
0C0 – 0DF	DMA Controller #2 (8237A)
0F0 – 0FF	80287 Math Coprocessor
1F0 – 1F8	Hard Disk
200 – 20F	Game Port Joystick controller
258 – 25F	Intel Above Board
278 – 27F	Parallel Printer Port 2
2E8 – 2EF	COM4: Serial Port
2F8 – 2FF	COM2: Serial Port
300 – 31F	Prototype Card
378 – 37F	Parallel Printer Port 1
380 – 38F	SDLC or Bisynchronous Comm Port 2
3A0 – 3AF	Bisynchronous Comm Port 1
3B0 – 3BF	MDA – Monochrome Adapter and printer
3D0 – 3D7	CGA – Color Graphics Adapter
3E8 – 3EF	COM3: Serial Port
3F0 – 3F7	Floppy Diskette Controller
3F8 – 3FF	COM1: Serial Port

Appendix F

Memory Map

Address Range	Size	Description
00000 – 003FF	1K	Interrupt Vectors
00400 – 7FFFF	512K	Bios, DOS, 512K RAM Expansion
80000 – 9FFFF	128K	128K RAM Expansion (Top of 640K)
A0000 – AFFFF	64K	EGA Video Bios
B0000 – B7FFF	32K	Monochrome & other screen buffers
B8000 – B8FFF	32K	CGA and EGA Buffers
AT LIM Expanded Memory 64K page is between 768K and 896K		
C0000 – C3FFF	16K	EGA Video Bios
C4000 – C7FFF	16K	ROM Expansion Area
XT LIM Expanded Memory 64K page is between 800K and 960K		
C8000 – CCFFF	20K	XT Hard Disk Controller Bios
CD000 – CFFFF	12K	User Prom, Memory mapped I/O
D0000 – DFFFF	64K	User Prom, normal LIM location for Expanded Memory
E0000 – EFFFF	64K	ROM expansion, I/O for XT
F0000 – FFFFF	56K	ROM BASIC
FE000 – FFFD9	8K	BIOS
FFFF0 – FFFF4	4	1 st Code run after system power on
FFFF5 – FFFFC	8	BIOS Release Date
FFFFE – FFFFF	2	Machine ID (Top of 1 Meg RAM)
100000 – FFFFFFFF	15Meg	AT Extended Memory