

# PRODUCT SPECIFICATION

**PRODUCT** : PST SERIES  
**DESCRIPTION** : PC BASED INTEGRATED  
POS TERMINAL  
**REF. NUMBER** : SPEC-601  
**REV. LETTER** : A

MANUFACTURED BY: ***MUSTEK CORP.***

AN **ISO-9002** CERTIFIED MANUFACTURER

# SPECIFICATION OF PST THE INTEGRATED POS TERMINAL

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# 1. OVERVIEW

## 1.1 SCOPE

This specification applies to the integrated PC based point-of-sale terminal PST2000 and PST3000 series

## 1.2 FEATURES

- a) Highest security for business machine
- b) Greatest User's convenience and easiest software programming
- c) Highest profitability for end users
- d) Best compatibility and flexibility to any hardware / software application
- e) Highest performance in most compact size point-of-sale system
- f) Top quality, reliability and serviceability of point-of-sale system at reasonable price

## 1.3 MODEL NUMBERS

<b>CPU TYPE</b>	<b>486 SERIES</b>	<b>586 SERIES</b>
<b>DISPLAY TYPE</b>		
<b>CRT DISPLAY</b>	<b>PST2000</b>	<b>PST3000</b>
<b>LCD DISPLAY</b>	<b>PST2010</b>	<b>PST3010</b>

## 2. GENERAL SPECIFICATION

### 2.1 DISPLAY SPECIFICATION

Display Type	monochrome CRT	monochrome STN LCD
Size	228 mm (9") diag.	182 mm (7.2")
Resolution	640 X 480	640 X 480
Position movable range	back & forth: 48mm (1.890") max. left to right: 30mm (1.181") max.	N.A. (fixed position)
Swivel range	90°left, 90°right	45°left, 30°right
Tilt angle	20°max.	90°max.
Power source	included in VGA display connector	included in LCD display connector
Video memory	512 KB	512 KB

### 2.2 POWER SOURCE SPECIFICATION

Type	Without UPS	With UPS
High range of voltage input	180 ~ 264 Vac	220 ~ 240 Vac
Low range of voltage input	90 ~ 130 Vac	110 ~ 120 Vac
Input frequency	47 ~ 63 Hz	47 ~ 63 Hz

**Power consumption of CRT types: 43W nom., 52W max..**

**Power consumption of LCD types: 31W nom., 38W max..**

**Note on power consumption measurement: measured without printer, yet PD2101 is operating.**

## 2.3 SYSTEM SPECIFICATION

- CPU speed of PST2000 / 2010: 486DX2-80,  
CPU speed of PST3000 / 3010: 586-75
- Easily upgradable PC structure (486 of speed 100, 120, 133 MHz or 586 of speed 90, 100, 120, 133, 150, 166 MHz)
- 4 MB DRAM (expandable to 256 MB max. option)
- 32 KB non-volatile memory (expandable to 64 KB option)
- ISA / PCI bus architecture
- 3.5" FDD 1.44 MB
- Built-in IDE interface supports up to mode 4
- One half length open expansion slot (ISA or PCI for 486, PCI for 586)
- DCI Technology for best compatibility of input devices

## 2.4 LED COLOR

- POWER LED: green
- DRAWER OPEN INDICATOR: yellow
- MSR INDICATOR: dual color (green for good reading, red for invalid reading)

## 2.5 PROGRAMMABLE KEYBOARD SPECIFICATION

- Extension keyboard wedge connector
- 6 position key lock
- Key lock function locks up whole keyboard port
- 5 pages of programmable key definitions defined by 6 position key switch
- 112 fully programmable keys for each page
- 255 bytes max. can be programmed for each key
- Total memory for keys to be programmed: 2 KB (expandable to 8 KB option)
- ASCII - code and Scan - code programming capability
- Multi - level programming

- Time - delay programming
- Transparent key caps over key tops

## **2.6 NVSRAM SPECIFICATION**

- Non-volatile SRAM using built-in battery back-up
- Memory size: 32 KB (28,160 bytes free space for emulated drive) expandable to 64 KB
- Memory map address: D0000h ~ D7FFFh
- Typical data-hold time: 5 years

## **2.7 INPUT / OUTPUT PORT SPECIFICATION**

- 1 X display port (CRT or LCD)
- 1 X LAN port (Ethernet 10 base T)
- 4 X serial communication ports with different IRQ. 2 of the 4 ports (COM 3 and COM 4) can supply both DC +5V and DC +12V at 1A. Default setting is 5VDC only for both ports.
- 1 X parallel port
- 2 X independent control for dedicated cash drawers
- 1 X customer display VFD port (VFD option)
- 1 X 24 VDC / 2 Amp. supply (Option)
- 1 X PCMCIA type 2 & 3 expansion slot (Option)

## **2.8 HDD 630 MB UP**

## **2.9 PRELOAD MS-DOS**

## 2.10 EXTERIOR SPECIFICATION

- **DIMENSIONS:**
  - WIDTH : 408 mm (16.1")**
  - DEPTH : 465 mm (18.0")**
  - HEIGHT: 379 mm (14.9") for CRT models**
    - 165 mm (6.5") for LCD at rest position**
    - 307 mm (12.1") for LCD at maximum height**
- **WEIGHT: 12.5 Kg for CRT models**
  - 8.0 Kg for LCD models**

## 2.11 ENVIRONMENTAL SPECIFICATION

**Temperature range:**

**Operating: 0°C ~ +40°C**

**Non-operating: -20°C ~ +60°C**

**Humidity range:**

**Operating: 20%RH ~ 80%RH, non-condensing**  
**max. wet bulb 26°C**

**Non-operating: 10%RH ~ 80%RH, non-condensing**  
**max. wet bulb 28.9°C**

## 2.12 APPLICABLE CONFORMITY (per customer's request)

- **CE class A**
- **FCC class A**
- **UL**
- **CSA**
- **TUV**

## 2.13 ACCESSORIES

- USER'S MANUAL
- ELECTRONIC KEY FOR PROGRAMMABLE KEYBOARD : 4 PCS (1 SET)
- MECHANICAL KEY FOR FRONT DOOR: 2 PCS
- PST LEGEND SHEET IN 4 COLORS
- CABLE FOR CASH DRAWER CONTROL (CCBLA-162 FOR CR-3XXX)
- DISKETTE FOR DRIVER UTILITY
- COM 1 TERMINATOR
- VFD TERMINATOR
- POWER CORD

## 2.14 OPTIONS

### 2.14.1 VACUUM FLUORESCENT DISPLAY SPECIFICATION

#### PD2101

<b>Number of rows</b>	<b>2</b>
<b>Characters per row</b>	<b>20</b>
<b>Character width</b>	<b>7.2 mm (0.283")</b>
<b>Character height</b>	<b>11.25 mm (0.443")</b>
<b>Character in dot matrix</b>	<b>5 X 7 dots</b>
<b>Color / Wave length</b>	<b>Green, 505 nm</b>
<b>Luminance</b>	<b>700 cd/m<sup>2</sup> (204fL) Typ.</b>
<b>Body width</b>	<b>260 mm (10.2")</b>
<b>Body depth</b>	<b>46 mm (1.8")</b>
<b>Body height from bottom surface</b>	<b>357 mm (14.1") ~ 509 mm (20.0")</b>
<b>Horizontal slide</b>	<b>95 mm (3.7")</b>
<b>Horizontal rotation</b>	<b>360°</b>
<b>Inclined viewing angle</b>	<b>14.5° and 30°</b>
<b>Display area</b>	<b>216 mm (8.5") X 32 mm (1.3")</b>

## 2.14.2 MAGNETIC STRIPE READER SPECIFICATION

### a) Reader application

<b>Applicable card type</b>	<b>ISO 7811</b>
<b>Card feed method</b>	<b>Manual</b>
<b>Card feed direction</b>	<b>Bi-direction</b>
<b>Card feed speed</b>	<b>5 ~ 55 IPS</b>
<b>Read / write function</b>	<b>Read only</b>
<b>Life of head</b>	<b>Approx. 300,000 passes</b>
<b>Error rate</b>	<b>Less than 0.5%</b>
<b>Available models</b>	<b>Tracks 1 &amp; 2 or tracks 1, 2 &amp; 3</b>

### b) Card data format

<b>Card standard</b>	<b>IATA</b>	<b>ABA</b>	<b>THRIFT</b>
<b>Track used</b>	<b>Track 1</b>	<b>Track 2</b>	<b>Track 3</b>
<b>Recording method</b>	<b>F2F (FM)</b>	<b>(FM)</b>	<b>F2F (FM)</b>
<b>Recording density</b>	<b>210 BPI</b>	<b>75 BPI</b>	<b>210 BPI</b>
<b>Recording capacity</b>	<b>79 characters (7 - bit code)</b>	<b>40 characters (5 - bit code)</b>	<b>107 characters (5 - bit code)</b>

### 2.14.3 CASH DRAWER (CR2100 / CR2200 / CR3100 / CR3200)

- **Smooth sliding of drawer under load**
- **Adjustable bill and coin partition for different country requirement**
- **Check slot for non-cash or large-bill transaction**
- **3 position key lock for maximum cash security**
- **Contemporary style, strong structure, screwless from outside**

### 2.14.4 TRAY COVER TO LOCK ON REMOVABLE TRAY OF CASH DRAWER

**2.14.5 40 COL. 9 PIN DOT MATRIX FRICTION TYPE PRINTER  
OR THIRD PARTY DOT MATRIX OR THERMAL POS  
PRINTER**

**The standard optional printer is:**

- **Dot matrix 9 pin**
- **High speed bi-directional**
- **Friction type**
- **40 columns for 15.4 CPI**
- **Accepts paper width 2.25/3/3.25 inches with adjustable paper guide**
- **Prints on ordinary or up to 3-fold carbonless copy paper**

**2.14.6 24 VDC POWER SUPPLY TO POS PRINTER**

- **24 +/- 1.2 VDC AT 2 AMP LOAD**
- **MAX. RIPPLE + NOISE: 120 mV**
- **ACCESSORY: Cable CCBLA-146**

**2.14.7 EXPANSION OF PROGRAMMABLE KEYBOARD**

- **MEMORY SIZE: STANDARD 2 KB, EXPANDED 8 KB**

**2.14.8 EXPANSION OF NVSRAM**

- **NVSRAM SIZE: STANDARD 32 KB, EXPANDED 64 KB (60,928 bytes free space for emulated drive)**
- **Memory map address: D0000h ~ DFFFFh**

**2.14.9 PCMCIA TYPE 2 & 3**

**2.14.10 PRELOAD WINDOWS 3.1 OR WIN95**

**2.14.11 LOW COST BUILT-IN UPS WITH BATTERY**

- **SUPPORTS FULL OPERATION FOR 10 MIN.**

**2.14.12 TECHNICAL MANUAL**

### **3. RELIABILITY SPECIFICATION**

- **POWER SUPPLY MTBF: 100,000 HRS**
- **MONITOR MTBF: 30,000 HRS**
- **HDD MTBF: 50,000 HRS**
- **FDD MTBF: 30,000 HRS**
- **NVSRAM DATA HOLD TIME: 10 YRS**
- **VFD LIFE EXPECTANCY: 30,000 HRS**
- **LCD BACK LIGHT LIFE EXPECTANCY: 10,000 HRS**
- **MSR LIFE EXPECTANCY: 300,000 PASSES**
- **MEMBRANE LIFE EXPECTANCY: 15,000,000 STROKES**
- **RUBBER DOME LIFE EXPECTANCY: 15,000,000 STROKES**
- **6 POSITION KEY LIFE EXPECTANCY: 25,000 TIMES**

## **4. INTERFACES**

### **4.1 DRAWING ON LOCATIONS OF CONNECTORS**

#### **4.1.1 INSIDE FRONT DOOR**

#### **4.1.2 INSIDE BACK COVER**

## 4.2 EXTERNAL KEYBOARD CONNECTOR

PIN ASSIGNMENT OF 5 PIN DIN FEMALE CONNECTOR:

<u>PIN #</u>	<u>DEFINITION</u>
1	CLOCK
2	KEYBOARD
3	NC
4	GROUND
5	+5 VDC

## 4.3 LAN PORT

PIN ASSIGNMENT OF 8 PIN TELEPHONE JACK:

<u>PIN #</u>	<u>DEFINITION</u>
1	TD +
2	TD -
3	RD +
4	NC
5	NC
6	RD -
7	NC
8	NC

**This port is defined as 10 base T LAN port.  
IRQ 10 is used for this port.**

#### 4.4 DISPLAY PORT CONNECTOR

PIN ASSIGNMENT OF 3 X 5 D SUB FEMALE CONNECTOR:

<u>PIN #</u>	<u>CRT CONNECTOR</u>	<u>LCD CONNECTOR</u>
1	RED	+12 VDC
2	GREEN	FLM
3	BLUE	LCLK
4	NC	SCLC
5	GND	ENAVEE
6	GND	VDDSAVE
7	GND	GND
8	GND	UD0
9	+12 VDC	UD1
10	GND	UD2
11	NC	UD3
12	MONITOR	LD0
13	H SYNC	LD1
14	V SYNC	LD2
15	+12 VDC	LD3

IRQ 9 is used by the LCD controller.

#### 4.5 SERIAL PORT COM1

PIN ASSIGNMENT OF 9 PIN D SUB MALE CONNECTOR:

<u>PIN #</u>	<u>DEFINITION</u>
1	DCD
2	RX
3	TX
4	DTR
5	GND
6	DSR
7	RTS
8	CTS
9	RI

IRQ 4 is used for this port.

COM 1 terminator must be applied when there is no device connected.

## 4.6 SERIAL PORT COM2

PIN ASSIGNMENT OF 25 PIN D SUB MALE CONNECTOR:

<u>PIN #</u>	<u>DEFINITION</u>
1	NC
2	TX
3	RX
4	RTS
5	CTS
6	DSR
7	GND
8	DCD
9	NC
10	NC
11	NC
12	NC
13	NC
14	NC
15	NC
16	NC
17	NC
18	NC
19	NC
20	DTR
21	NC
22	RI
23	NC
24	NC
25	NC

**IRQ 3 is used for this port.**

#### 4.7 SERIAL PORT COM3

PIN ASSIGNMENT OF 9 PIN D SUB MALE CONNECTOR:

<u>PIN #</u>	<u>DEFINITION</u>
1	<b>DCD / (+12 VDC)</b>
2	<b>RX</b>
3	<b>TX</b>
4	<b>DTR</b>
5	<b>GND</b>
6	<b>DSR</b>
7	<b>RTS</b>
8	<b>CTS</b>
9	<b>+5 VDC / (RI)</b>

**Default setting: Pin 1 at DCD, pin 9 at +5 VDC. Pin 1 and pin 9 are selectable through internal jumper.**

**FOR LCD MODELS: IRQ 11 or IRQ 12 can be used for this port, selectable by internal jumper. Default at IRQ 11.**

**FOR CRT MODELS: IRQ 9 is used for this port.**

#### 4.8 SERIAL PORT COM4

PIN ASSIGNMENT OF 9 PIN D SUB MALE CONNECTOR:

<u>PIN #</u>	<u>DEFINITION</u>
1	<b>DCD / (+12 VDC)</b>
2	<b>RX</b>
3	<b>TX</b>
4	<b>DTR</b>
5	<b>GND</b>
6	<b>DSR</b>
7	<b>RTS</b>
8	<b>CTS</b>
9	<b>+5 VDC / (RI)</b>

**Default setting: Pin 1 at DCD, pin 9 at +5 VDC. Pin 1 and pin 9 are selectable through internal jumper.**

**FOR LCD MODELS: IRQ 5 or IRQ 10 can be used for this port, selectable by internal jumper. Default at IRQ 5.**

**FOR CRT MODELS: IRQ 5 is used for this port.**

## 4.9 PARALLEL PORT LPT1

PIN ASSIGNMENT OF 25 PIN D SUB FEMALE CONNECTOR:

<u>PIN #</u>	<u>DEFINITION</u>
1	- STROBE
2	D0
3	D1
4	D2
5	D3
6	D4
7	D5
8	D6
9	D7
10	- ACK
11	BUSY
12	PE
13	SLCT
14	- AUTO FEED
15	- ERROR
16	- INIT
17	- SLCT IN
18	GND
19	GND
20	GND
21	GND
22	GND
23	GND
24	GND
25	GND

IRQ 7 is used for this port.

#### 4.10 CASH DRAWER CONTROLLER

PIN ASSIGNMENT FOR BOTH CR1 AND CR2 OF 6 PIN TELEPHONE JACK:

<u>PIN #</u>	<u>DEFINITION</u>
1	CASH DRAWER SOLENOID INPUT
2	NC
3	DRAWER OPEN INDICATOR (-)
4	+12 VDC FOR SOLENOID INPUT
5	CASH DRAWER SOLENOID INPUT
6	DRAWER OPEN INDICATOR (+)

- The cash drawer solenoid input is a 200 msec. grounding signal.
- The command to open cash drawers is decoded through COM 1.
- The drawer open indicator is shorted when drawer open.

#### 4.11 VFD CONNECTOR

PIN ASSIGNMENT OF 10 PIN TELEPHONE JACK:

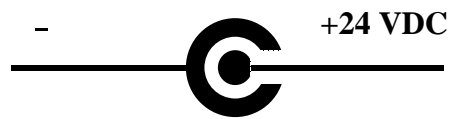
<u>PIN #</u>	<u>DEFINITION</u>
1	VCC
2	VCC
3	VCC
4	TX
5	NC
6	CTS
7	CTSP
8	TXP
9	GND
10	GND

- This port uses COM 1 of the system and data can be passed through to COM 1 connector when proper command is received.
- The CTSP and TXP in the above denote the CTS and TX for pass-through function respectively.
- The VFD terminator must be applied when there is no VFD connected.

## 4.12 24 VDC CONNECTOR

PIN ASSIGNMENT OF 3.5φ DC JACK:

<u>PIN</u>	<u>DEFINITION</u>
<b>CENTER</b>	<b>+24 VDC</b>
<b>OUTER</b>	<b>GND</b>



## 5. BLOCK DIAGRAM

