



TITLE: TeamPoS 2000 Series Hardware Platform  
Support Planning Guide

SYNOPSIS:

This document is intended to supply sufficient information to North American service planners to enable them to plan for the introduction of the above product(s).

This SPG is the generic version, released by the product authority, Fujitsu Transaction Solutions (FTXS) – Sustaining Engineering. Each group releasing the product will use the information contained as the basis for their logistics and CS planning activities.

This document details only the corporate philosophies, and does not seek to cover such subjects as additional services offered by Managed Services, third party service providers, low level repairs, or the local sourcing of components and consumable items.

The service descriptions in this document are guidelines, detailing the recommendations of the product authority. The information within this document has been reviewed for accuracy, but as with most documents, errors may be found and corrected in future revisions. Consequently, Fujitsu cannot be held liable for any inaccurate information found in this document.

SPG Authorization:

Date:

\_\_\_\_\_  
MGR Sustaining Engineering

\_\_\_\_\_

\_\_\_\_\_  
Product Manager

\_\_\_\_\_

\_\_\_\_\_  
Document Control

\_\_\_\_\_

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INQUIRIES TO:

Fujitsu Transaction Solutions  
MS Exchange: Product Quality  
Internet: SustainingEngineering@.ftxs.fujitsu.com  
FAX: 7888x4781 (858-731-4781)  
Mail: USA04, San Diego, Ca.

AUTHORITY:

Gene Wright  
Manager  
Sustaining Engineering  
FTXS Retail, USA04  
858-731-4631 (7888-4631)

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## 0.0 DOCUMENT CONTROL

### 0.1 ISSUE LEVEL

This is the tenth issue of this document, introducing the *TeamPoS 2000* Series hardware platform into the Fujitsu Retail product line.

### 0.2 CHANGES FROM PREVIOUS ISSUE – (issue 5.0)

Page 1	Updated Synopsis
Page 4	Deleted reference to User’s Guide in Reference Documents
Page 5	Updated Release Schedule
Page 7	Updated Software Product Description
Page 8	Updated Hardware Product Descriptions
Page 10	Updated reference to I & M manual, and removed Appendix “B”
Page 11	Included Celeron M processors as “M” motherboard option
Page 12-13	Updated Super High End Motherboard Specifications
Page 14-17	Rewrote I/O board specifications to include new releases
Page 19	Updated Disk Drive section
Page 20	Updated Printer section
Page 21	Updated 92U keyboard specifications
Page 22	Updated 104P keyboard section
Page 24	Updated 133UQ Keyboard and Displays section
Page 27-28	Updated 12.1” LCD Models
Page 29	Updated 15” LCD Monitor section
Page 33	Modified Cash Drawer offerings
Page 35	Updated NF5 Cash Drawer
Page 36	Updated Wireless Offerings
Page 37-38	Updated Reliability section
Page 41	Updated Technical Publications
Page 42	Updated Diagnostic section
Page 43	Updated Preventive Maintenance section
Page 47	Added TeamUSB board connections
Page XX	Removed Appendix D, & E
All Pages	Changed “Sustaining Engineering” and “Product Quality” to “Retail Platform Software and Support”

### **0.3 CHANGES FORECAST**

Review comments will be incorporated into this document.

### **0.4 TERMS AND ABBREVIATIONS**

CLD	Confidence Level Diagnostic Software
CS	Customer Service
EMI	Electromagnetic Interference
ESD	Electrostatic Discharge
FDD	Floppy Disk Drive
FRU	Field Replacement Units
FPY	Failures Per Year
HCS	Fujitsu, Hardware Consulting Services Group
HDD	Hard Disk Drive
MSR	Magnetic Strip Reader
MTBF	Mean Time Between Failures
MTTR	Mean Time To Repair
Obs	Obsolete
ORU	Optimum Replaceable Unit
PSU	Power Supply Unit
SPG	Support Planning Guide
	Fujitsu Series of Terminals
VFD	Vacuum Florescent Display

### **0.5 REFERENCE DOCUMENTS**

PA-RHW-2000	<i>TeamPoS 2000</i> Series Announcement
90000291	<i>TeamPoS 2000</i> Installation and Maintenance Manual

## 1.0 OVERVIEW

### 1.1 RELEASE SCHEDULE

<b>Product Description</b>	<b>Release Date</b>
<b>Chassis</b>	
Compact Controller Chassis	Sept 2000
Standard Controller Chassis	Sept 2000
Standard Controller Chassis for Chevron	Nov 2002
Compact Controller Chassis w/New Riser Card	June 2004
Standard Controller Chassis w/New Riser Card	June 2004
<b>Keyboards</b>	
Compact POS Model 104P	Sept 2000
TeamPad for LCD	Sept 2000
Model 92M, 133PQ, & 136P	Apr 2001
133UQ Keyboard	Mar 2003
D15 Keypad	June 2005
92U Keyboard	Nov 2004
<b>Displays</b>	
12.1" Color TFT	Sept 2000
12.1" Color DSTN	Sept 2000
Speaker Option	Sept 2000
Base Stand (Int.) 1 Arm	Sept 2000
Base Stand (Kiosk) No Arm	Sept 2000
A12 12.1" LCD/TFT/TCH	Apr 2001
A12 12.1" LCD/TFT/Non-TCH	Apr 2001
Base Stand, Dual Display	Sept 2001
D15 LCD/TFT/TCH (Capacitive/Resistive)	Feb 2004
D15 LCD/TFT/ no TCH	Feb 2004
<b>Printers</b>	
A758	July 1999
A794	Dec 1999
DT-50	Mar 2000
TM-T90 Two Color Thermal Ptr	Oct 2001
DT50II	Apr 2002
A760 (Hybrid Printer)	Nov 2002
DT50II (Upgradeable to TransScan)	Feb 2003
TM-T88III	Oct 2003
DT50II TransScan – Check Imaging	Dec 2003

<b>VFD Displays</b>	
VF50 - 5x8, 2x20 Line Standard	Sept 2000
VFD Local Base (Low Pole)	Sept 2000
VFD Local Base (High Pole)	Sept 2000
VF50U – USB Customer Display	June 2005
<b>TeamPoS 2000 Components</b>	
Retail I/O Board	Apr. 2000
Riser Card 1.1 USB	May 2000
CD-ROM	Aug. 2000
64MB DIMM	Aug. 2000
Hard Disk Drive, 20GB	Sept 2000
PCIX-690 PCI Video Card	Apr. 2001
Motherboard S370, 66/100 FSB, 1GHz	Apr. 2001
Symbol Tech Wireless PCI Card	Sept 2001
Cisco Wireless PCI Card	Jun 2005
Pentium III 850MHz CPU	Apr. 2002
TeamCombo I Board	June 2002
CD-ROM RW	June 2002
Actiontec 56K Int. Modem	Sept 2002
1 GHz CPU	Jan. 2003
Hard Disk Drive, 40GB	Nov. 2003
CD - DVD	Jan. 2004
Motherboard, SHE, Pentium M & Celeron M	Apr. 2004
DDR Memory for “M” Motherboard	Apr. 2004
CPU, Celeron M - 1.3 GHz, Pentium M – 1.6 –Hz	Apr. 2004
Riser Card 2.0 USB	June 2004
TeamUSB Board	June 2004
TeamCombo II Board	July 2004
CD-RW/DVD	Feb. 2005
<b>Misc. Peripherals</b>	
Compact Cash Drawer	Sept 2000
D12 MSR for LCD	Apr 2001
MP5 Cash Drawer	Sept 2001
NF5 Cash Drawer	Oct. 2002
9950 Scanner	June 2003

## **1.2 PRODUCT DESCRIPTION**

*TeamPoS 2000* Chassis is available in the following models:

- Compact (C-Series)
- Standard (S-Series)

No tools are required for major component replacement. Hard disk drives are user swappable and are easily accessible by removing the front panel.

## **1.3 SOFTWARE PRODUCT DESCRIPTION**

The *TeamPoS 2000* control unit with the “H” and “A” motherboards has been validated and supports MS-DOS, Windows 98, Windows NT, Windows 2000, Windows XP, Windows XPe, Linux Red Hat 9.0 (and above), and OS/2 Warp 3 operating systems. The *TeamPoS 2000* control unit with the “M” motherboard has been certified with all of the same software as the “H” and “A” motherboards with the exception of MS-DOS and OS/2.

Because there are several software options, none is standard with the *TeamPoS 2000*. Other software components such as, device drivers and applications are configuration and customer specific. Also available are Remote Management and Confidence Level Diagnostics (Retail I/O CLD) to assist in isolating problems to major replaceable units without involving the POS application.

## **1.4 HARDWARE PRODUCT DESCRIPTION**

The *TeamPoS 2000* is equipped with the following features:

- Remote Systems Management (DMI 2.0)
- Warm swap of PoS peripherals
- Disk drives removable from front of terminal
- Mean Time to Repair major ORUs is 4 minutes
- Power Savings feature
- Battery backup
- On-board audio, video, and on-board LAN
- USB support
- Powered RS232 ports
- Support for most 5000 PoS peripherals



Pictured above is a *TeamPoS 2000* Compact unit without Cash Drawer:

The major components of the *TeamPoS 2000* control unit are:

- PC Motherboard
- Retail I/O Board, TeamCombo I & II Boards, or TeamUSB
- Power Supply
- Batteries (Lead Acid and Lithium)
- Optional Floppy and Hard Disk Drives
- Optional CD-ROM, CD R/W, DVD (Read Only), or CD-RW/DVD

### 1.4.1 PC Motherboard

The *TeamPoS 2000* supports three different motherboards:

#### **The initial release (PIN 90000153 – “H” motherboard)**

This was the original motherboard and is capable of supporting up to a 600MHz Pentium III CPU.

#### **The second release (PIN 90000459 – “A” motherboard)**

This motherboard supports up to a 1GHz Pentium III CPU. The 1GHz CPU requires a BIOS level of 3.63 or later on the motherboard. The new BOIS cannot be used on the older (90000153) motherboard. See Product Support Bulletin PSB-01-006 and PSB 03-003 for additional information.

#### **The third release (PIN 90000759 – “M” motherboard)**

This is completely new motherboard architecture. It uses a Pentium “M” or Celeron “M” processor.

BIOS settings for both the 90000153 and 90000459 are similar and can be found in the TP2K Installation and Maintenance Manual (90000291) version 2.4 or later. The BIOS settings for the 90000759 are completely different and can be found in the Installation and Maintenance Manual (90000291) version 3.0 or later.

#### **1.4.1.2 Release 1 & 2 (90000153 & 90000459) Specifications:**

NLX format (Width: 9.0 x Depth: 11.2 inches)  
66 or 100 MHz front side bus  
Core chipset: Intel 440BX  
Intel 82443BX PCI/AGP Controller  
Intel 82371EB PCI/ISA IDE Xcelerator (PIIX4E)  
Video chip: Asilant 69030  
On-board audio, Sound Blaster compatible  
On-board LAN, 10/100 Ethernet interface  
Wake-on LAN support

Processors: Socket 370 Celeron 566MHz,  
Pentium III 600MHz, 850MHz, and 1GHz (only on 90000459)  
Features: Lithium battery type CR2450  
Award BIOS stored in Flash ROM  
Plug N Play, APM 1.2 support, ACPI support (Rev 1.0)  
WfM V2.0 support, DMI 2.0 support, & Year 2000 compliant

**Release 1 & 2 Motherboard (90000153 & 90000459) Specifications cont.**

Expansion Slots:	2 x PCI
IDE support:	Enhanced IDE, 2 hard disks, 1 floppy disk, and CD-ROM/DVD-ROM support
Memory:	ECC, 8ns, gold leads, DIMMS 3 x 168 pin DIMM sockets 768 MB, maximum (3 x 256MB SDRAM DIMMs)
Graphic/Video	4MB video RAM Analog RGB 15-pin interface Digital MDR 26-pin interface VGA/SVGA/XGA/SXGA support
Ports:	2 x RS232 1 x Mouse, PS/2 1 x Parallel 1 x Keyboard, PS/2 2 x USB (1 with TeamCombo Board)
Hardware Monitoring:	Winbond W83782D Intel LAN Desk Client Manager compatible Power Supply voltage monitor Three FAN speed monitor Chassis and CPU temperature sensors
Safety/EMI	CE, CB, FCC Class A, CSA, and TUV

**1.4.1.3 Release 3 Motherboard (90000759)**

New Features of this motherboard include:

- 1.3GHz Celeron M or 1.5/1.6GHz Pentium M Processors with heat sink and fan
- 855GME chipset
- ECC Double Data Rate (DDR) memory.
- Disk-on-Chip
- Wireless LAN support
- USB boot option

**NOTE: The Pentium M motherboard is not a direct replacement for the “H” or “A” motherboard. A TP2000 terminal with an “H” or “A” motherboard can be upgraded to an “M” motherboard, but only after new software and hardware considerations. See upgrading to Pentium M on our web site: <http://www.ftxs.fujitsu.com> under Support and Downloads/ Drivers.**

**Super High End Motherboard (90000759) Specifications**

Processor	Intel Pentium M Processor, and Celeron M ● Single Socket Micro-FCPGA – 400MHz Front Side Bus
Core Chipset	Intel 855GME & ICH4
PCI-ISA Bridge	Winbond83628F&83629D PCI-ISA Bridge Chipset (Full-Set of Bridge)
I/O Control	Winbond W83627HF Super-I/O
Memory	● Two 184 pin DIMM sockets ● Support for up to 2GB of PC2100/2700 DDR (DDR 266/333) ● Support for ECC and non ECC memory
IDE Interface	● Support for up to four IDE devices (Hard Disk, CD, CD-R, MO, DVD, etc) ● Support for PIO mode 4 and Ultra DMA100 ● Through the NLX Edge
Floppy Disk Interface	● Support 720K/1.2M/1.44M/2.88M 2x devices ● Through the NLX Edge
Serial Port	● 2 serial ports, Standard RS232C and Supplies +12V instead of RI when jumper JP2 is set and BIOS settings are enabled for powered COM ports (“Other” tab). Note: +12V not available if using dual disks ● DSUB 9 pins, on Connector Panel
Parallel Port	● One Parallel port (internal on motherboard), supports Standard / EPP/ ECP. Optional card is available that uses an expansion slot to access the parallel port from the rear of the terminal. ● Through the Pin header on board
Mouse & Keyboard	● 2 x PS/2 connectors for Keyboard and Mouse
USB	4 USB controllers control the 4 USB ports on the motherboard (version 2.0) and the 2 USB (version 2.0) signals that go to the riser card feeding the TeamCombo I, TeamCombo II, or TeamUSB boards.
LAN	Intel 82562ET PHY 10/100Mbps ● RJ-45 LAN connector ● Support for WfM V2.0 (PXE function, WOL, etc)
Audio	Audio CODEC ALC202/202A(Realtek) or equivalent ● Back panel connectors (3.5mm mini jacks with shield) - Line-out - Mic-in ● Support for the auxiliary Audio NLX connector ● Circuit to support an external speaker (On board Amplifier for Speaker)

**Super High End Motherboard (90000759) Specifications cont.**

Graphics	<p>Integrated into Intel 855GME chipset</p> <ul style="list-style-type: none"> <li>● Analog RGB 15 pin connector, up to 1800 x 1350 @ 85Hz</li> <li>● MDR 26pin connector (supports for Fujitsu's Proprietary LCD monitor with TMDS signaling), VGA, SVGA, XGA</li> <li>● DVI-D24 Connector, UXGA up to 60 Hz</li> <li>● Dual Independent Pipe Support               <ol style="list-style-type: none"> <li>1. Analog VGA (Pipe A) and DVI-D24 (Pipe-B)</li> <li>2. Analog VGA (Pipe A) and Fujitsu's LCD (Pipe-B)</li> <li>3. Fujitsu's LCD (Pipe A) and DVI-D24 (Pipe-B)</li> </ol> </li> <li>● (Please refer to dual pipe supported resolutions in the display modes).</li> <li>● Support up to UMA32MB (Maximum totally 64MB for dual pipe)</li> <li>● Graphic core Frequency: 250 MHz</li> </ul>
Real Time Clock and Battery	<p>The Real Time Clock Integrated into the Intel ICH4 Battery CR2450 type Lithium battery on the motherboard (soldered on MB) Accuracy of the clock : 30 seconds per month.</p>
Speaker	<p>Piezoelectric Speaker on board Optional (front panel) speaker is attached to chassis through NLX interface. The front panel speaker sound can be disabled by jumper pin.</p>
Expansion Capability (Slot)	<ul style="list-style-type: none"> <li>● PCI slot of max.4, PCI 2.2 Compliant (only 2 available on the TP2000)</li> <li>● Mini PCI Slot x1 (Only socket on the motherboard)</li> <li>● ISA slot of max. 2 (none available with the TP2000)</li> </ul>
Hardware Monitoring	<p>Winbond W83627HF or equivalent (W83627HF is Super I/O and it includes H/W monitor.)</p> <ul style="list-style-type: none"> <li>● LANDesk System Manager compatible</li> <li>● Power supply voltage monitor</li> <li>● Three FAN speed monitor</li> <li>● Temperature monitor (CPU inside, CPU case, Environment)</li> </ul>
BIOS	<ul style="list-style-type: none"> <li>● AMI BIOS stored in Flash ROM (FWH SST 49LF004A)</li> <li>● Support for SMBIOS, ACPI 2.0, APM, Management Level 4.0, and Plug &amp; Play.</li> <li>● Support USB Boot, LAN Boot, DisdOnChip2000 Boot and system event logging.</li> <li>● Support update function (to support remote update when available).</li> <li>● Support clock margining (for test)</li> <li>● Support for 3 modes in AC Power recovery (Always ON, Always OFF and Last State)</li> <li>● Post Code display and remote serial console redirection</li> <li>● Support for ECC memory.</li> <li>● Boot without Mouse</li> <li>● To include Intel Video BIOS</li> </ul>
Other features	<ul style="list-style-type: none"> <li>● PC99 Compliant</li> <li>● Plug and Play Compatible</li> <li>● Support for Advanced Power Management (APM) Rev.1.2</li> <li>● Support for Advanced Configuration and Power Management Interface(ACPI) Rev.1.0b &amp; 2.0</li> <li>● Support for Wired for Management (WfM) V2.0</li> <li>● Support for Management Level 4.0</li> <li>● Support for DiskOnChip®2000</li> <li>● Powered COM</li> </ul>

## 1.4.2 PoS I/O Board (Retail I/O Board, TeamCombo, & TeamUSB)

### There are five types of I/O boards in use:

1. The **Retail I/O Board** (90000161) contains six RS-232 ports, one printer connector, one cash drawer connector, and one LCD Power connector for the 12" LCD.
2. The **original TeamCOMBO Board** (90000273) contains four RS-232 ports, four powered USB ports (three +24V and one +12V port), one cash drawer connector, and one LCD power connector for the 12" LCD. The powered USB ports are all black in color and cannot support the power requirements of the D15 LCD. The A12 and D12 LCD's are still supported through the LCD power connector.
3. The new version of the TeamCOMBO called **TeamCOMBO I Board** has the same part number as the original board, but is distinguishable from the original board by the colored powered USB ports and has the capability of supporting one D15 display. There are three +24V, one +12V powered USB connectors, a cash drawer connector and LCD power connector for the 12" LCD. The TeamCOMBO I board replaces the original TeamCOMBO board.
4. The **TeamCOMBO II Board** (90001036) is the same as the new TeamCOMBO I Board except this board has two +12V and two +24V powered USB ports. It is also capable of supporting the 15" LCD on a powered +12V USB connector.
5. The new **TeamUSB Board** (90000803) contains seven USB ports when using the Pentium "M" Release 3 motherboard. Three +12V powered USB ports (Green connectors), and four 24V powered USB ports (red connectors). The board also contains a cash drawer connector and a LCD power connector for the 12" LCD. This board is also capable of supporting the D15 on a powered +12V USB connector

Below is a summary of the different I/O boards used in the *TeamPoS 2000* terminal:

**1.4.2.1**

**A summary of the Retail I/O Board specifications:**

Communications:	ISA (does not require an add-in card slot)
CMOS:	32 KB available to application software
RS232 ports:	Port 3, 4, & 6: 5/24 VDC Port 1, 2 & 5: 5 VDC
Cash drawer port:	Supports up to 2 cash drawers, 24 VDC, accommodates drawer open switch (up to 2)
Port Config. (RS232):	Male connector for 5 VDC devices Female connector for 24 VDC devices
Port power (maximum):	1.0 amp @ 5 VDC per port (3.0 amps is maximum sum of all ports) 3.0 amps @ 24 VDC (sum of all ports)
LCD power	5/12 VDC

**1.4.2.2**

**A summary of the Original TeamCombo Board (90000273) specifications:**

Communications:	ISA and USB Bus via the riser edge connector
CMOS:	32 KB – available to the application software
RS232 ports:	Port 1 & 2 = +5VDC, Port 3 & 4 = +24VDC
Retail USB ports:	USB 1, 2, & 3 = 24VDC, USB 4 = +12VDC
Cash drawer port:	Supports up to 2 cash drawers, 24 VDC, accommodates drawer open switch (up to 2)
Port Config.(USB):	Keyed connectors for 12VDC and 24 VDC devices
Port Config.(RS232):	Male connector for 5 VDC devices Female connector for 24 VDC devices
RS232 and USB combined power capabilities	5.0 amps @ 5VDC maximum (sum of all ports) 3.8 amps @ 12VDC maximum (sum of all ports) 3.0 amps @ 24 VDC (sum of all ports)
RS232 port power	1.0 amp per port @ 5VDC 3.0 amps per port @ 12VDC 3.0 amps per port @24VDC
Powered USB ports	0.5 amps per port @ 5VDC 1.5 amps per port @12VDC (black in color) 3.0 amps per port @24VDC (black in color)
LCD power	5/12 VDC
Note:	Not capable of supporting a D15 LCD on a powered USB port

**1.4.2.3 A summary of the TeamCombo I Board (90000273) specifications:**

Communications:	ISA and USB Bus via the riser edge connector
CMOS:	32 KB – available to the application software
RS232 ports:	Port 1 & 2 = +5VDC, Port 3 & 4 = +24VDC
Retail USB ports:	USB 1, 2, & 3 = 24VDC, USB 4 = +12VDC
Cash drawer port:	Supports up to 2 cash drawers, 24 VDC, accommodates drawer open switch (up to 2)
Port Config.(USB):	Keyed color connectors for 12VDC and 24 VDC devices
Port Config.(RS232):	Male connector for 5 VDC devices Female connector for 24 VDC devices
RS232 and USB combined	5.0 amps @ 5VDC maximum (sum of all ports)
Power capabilities	3.8 amps @ 12VDC maximum (sum of all ports) 3.0 amps @ 24 VDC (sum of all ports)
RS232 Port Power	1.0 amp per port @ 5VDC 3.0 amps per port @ 12VDC 3.0 amps per port @24VDC
Powered USB ports	0.5 amps per port @ 5VDC 2.5 amps per port @12VDC (green in color) 3.0 amps per port @24VDC (red in color)
LCD power	5/12 VDC
Note:	Can support a D15 LCD on a powered USB port

**1.4.2.4 A summary of the TeamCombo II Board (90001036) specifications:**

Communications:	ISA and USB Bus via the riser edge connector
CMOS:	32 KB – available to the application software
RS232 ports:	Port 1 & 2 = +5VDC, Port 3 & 4 = +24VDC
Retail USB ports:	USB 1 & 2 = 24VDC, USB 3 & 4 = +12VDC
Cash drawer port:	Supports up to 2 cash drawers, 24 VDC, accommodates drawer open switch (up to 2)
Port Config.(USB):	Keyed color connectors for 12VDC and 24 VDC devices
Port Config.(RS232):	Male connector for 5 VDC devices Female connector for 24 VDC devices
RS232 and USB combined	5.0 amps @ 5VDC maximum (sum of all ports)
Power capabilities	3.8 amps @ 12VDC maximum (sum of all ports) 3.0 amps @ 24 VDC (sum of all ports)
RS232 Port Power	1.0 amp per port @ 5VDC 3.0 amps per port @ 12VDC 3.0 amps per port @24VDC
Powered USB ports	0.5 amps per port @ 5VDC 2.5 amps per port @12VDC (green in color) 3.0 amps per port @24VDC (red in color)
LCD power	5/12 VDC
Note:	Can support a D15 LCD on a powered USB port

**1.4.2.5 A Summary of the TeamUSB Board Specifications:**

Communications:	USB Bus via Riser edge connector
CMOS:	64KB
USB Ports:	USB 1-7 (w/ "M" motherboard) USB 1-6 (w/ "A" motherboard)
Port Conf(USB):	Keyed connectors for 12VDC (Green) and 24 VDC (Red) connectors
Cash drawer port:	Supports up to 2 cash drawers, 24 VDC, accommodates drawer open switch (up to 2)
Port Config.(USB):	Keyed color connectors for 12VDC and 24 VDC devices
RS232 and USB combined port power	3.5 amps @ 5 VDC (sum of all ports) 3.8 amps @ 12 VDC (sum of all ports-includes Hard Disk Drives and LCD power port) 3.0 amps @ 24 VDC (sum of all ports)
Individual USB Ports:	0.5 amps per port @ 5 VDC (every port) 2.5 amps per port @ 12 VDC (ports 5 to 7)* ** 3.0 amps per port @ 24 VDC (ports 1 to 4)
LCD power	5 VDC @ 1.0 amp, 12 VDC @ 1.5 amp

\* Note 1: Port 7 not available using "A" or "H" motherboard)

\*\*Note 2: Port 6 can derive 12 VDC from the 24 volt line by setting  
the jumpers on the TeamUSB board (JP3)

### 1.4.3 Front Operator Panel

The *TeamPoS 2000* has a switch (PORTSW) to turn power off and on to all I/O Ports on the back of the Retail I/O board. This is to prevent damage to the peripherals and Retail I/O board during service or an exchange of a device. The *TeamPoS 2000* has self-healing fuses to protect the board in the event of a device being Hot-Plugged. It is recommended that the PORTSW switch on the operator panel be used during any peripheral exchange activity.

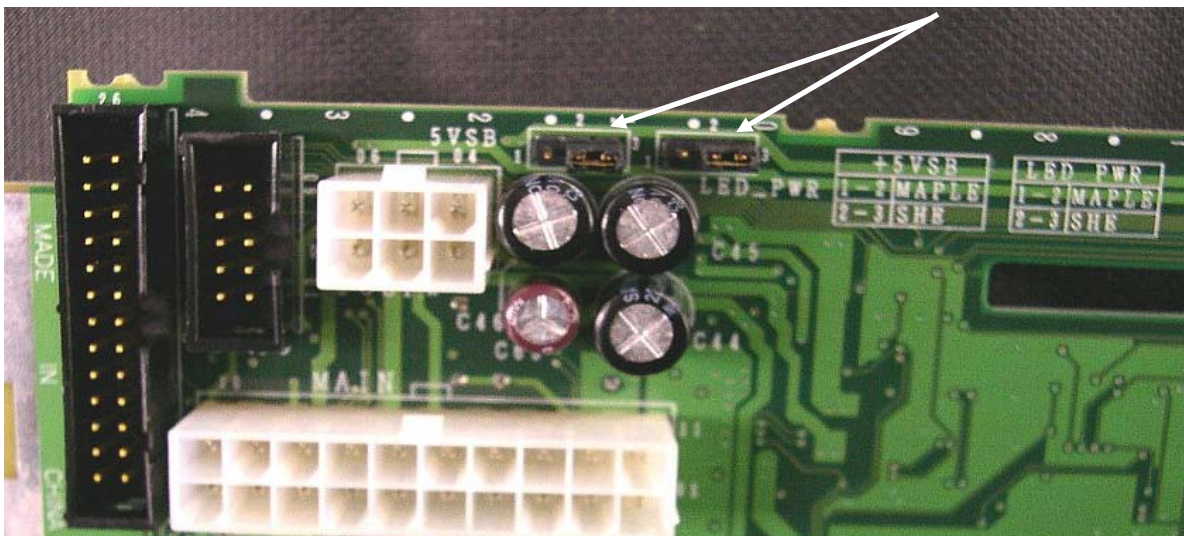
### 1.4.4 Power Supply Unit (PSU)

The power supply is internal to the control unit. It provides power to the control unit and peripherals. The DC output power is 250 watts maximum for PC board and I/O board functions.

### 1.4.5 Riser Card

The riser card acts as a backplane to distribute the power from the power supply to the different devices plugged into the riser. It also routes signals from the motherboard and I/O board to various devices.

There are two different riser cards available which are not easily distinguishable. The original riser card (CA21259-B21X) is not compatible with the TeamUSB board. The USB 2.0 riser card (KD20033-B41X) released in 2004 replaced the original riser card and is the only riser card that can support the TeamUSB board. The USB 2.0 riser card has two jumpers that need to be set depending upon the type of motherboard used. When using the H or A motherboard the +5VSB and LED PWR needs to be set to the “Maple” configuration, and when using the M motherboard the jumpers need to be set to SHE (Super High End). The picture below shows them set for the M motherboard (2-3).



## 1.4.6 Batteries

The lead acid battery is offered on most models. It provides reserve power for the PC board, PCI option cards, and disk drives for up to 10 minutes on loss of AC power. When building AC power fails, the transaction in process is protected and the Ethernet LAN or modem communications, as well as other PCI add-in cards can continue to operate.

Battery operation requires that it be activated by the application software.

The TP2000's lead-acid battery is fused and does not require the battery to be disconnected during shipping and reconnected during install.

A lithium battery protects the PC and Retail I/O board's CMOS memory when normal AC power is unavailable. The application software for non-re-settable totals, error log data, etc. can use Retail I/O CMOS memory.

## 1.4.7 Disk Drives

Up to two 3.5-inch hard disk drives and a 1.44MB floppy disk drive are available as options. Floppy drives can be used for initial program loading, set-up, diagnostics, or any other purpose dictated by the application program. Upon a loss of power, both hard and floppy disks will continue to operate from power provided by the lead acid battery. Dual drive support is also provided. Primary and secondary drives can both be accessed from the switch (HDDSW) on the front operator panel of the terminal. The TP2000 supports 13GB, 20GB, and 40GB Seagate Hard Disk Drives.

## 1.4.8 CD-ROM

There are three types of CD-ROM's available, the standard read-only CD-ROM, the read-only DVD, and the Read/Write CD ROM. CD-ROM's can be used for initial program loading and set-up, diagnostics, any other purposes dictated by the application program as well as multi-media applications. Upon a loss of power, the CD-ROM will continue to operate from power provided by the lead acid battery.

## 1.4.9 Peripherals

*TeamPoS 2000* offers a large assortment of peripherals. Many are color and style compatible with the *TeamPoS 2000* control unit and they can be stacked on the control unit and/or cash drawer to form an integrated unit.

### 1.4.9.1 Printers

Numerous printers have been validated and are supported:

- Epson Models TM-U950, TM-U925, TM-H5000II DT50, DT50II, DT50II (Upgradeable to TranScan), DT50IIT (TranScan), and TM-T88
- TMG (Axiohm) Models A793(AT93), A794, A756 (ADT40), A758, A760, and A770.

### 1.4.9.2 Keyboards

Six keyboards have been validated and are available for use on the *TeamPoS 2000*.

#### Model 92R & 92M Keyboards

The 92M keyboard is the enhanced version of the Model 92R and has a more reliable keyboard matrix.

The model 92M keyboard's interface is RS232. It connects to one of the 24 VDC RS232 ports on the Retail I/O board. The maximum cable distance is 5 meters (16.3 ft.).

A summary of the Model 92M Keyboard Specifications:

Total key positions:	92 maximum
Interface:	RS232 (Connects to control unit's Retail I/O)
Keylock:	Standard, 4 position
Speaker:	Standard, fixed volume
Keycaps:	1 X 2: 14 legendable, 1 engraved 0 1 X 1: 25 legendable 1 engraved '00' Engraved '1' through '9' Engraved 'X' 38 Blank tiles (fills unused key positions)
Options:	MSR tracks 1 & 2 or tracks 2 & 3 Keylock combinations 2,3,4 or 5 Vertical keylock Keycaps, 2 x 2 Additional 1 x 1 keycaps Additional 1 x 2 keycaps

Dimensions:	Basic: 386mm (15.2 in.) W x 140mm (5.5 in.) D x 64mm (2.5 in.) H Basic with MSR: 434mm (17.1 in.) W x 140mm (5.5 in.) D x 80mm (3.1 in.) H Basic Vertical keylock: 440 (17.3 in.) W x 140 (5.5 in.) D x 70 (2.8 in.) H
Cable lengths:	0.6 meters (2.0 ft.) 3.0 meters (9.8 ft.) 5.0 meters (16.3 ft.)
Average Current:	Keyboard only: 0.080 amps @ 24 VDC Keyboard with display: 0.150 amps @ 24 VDC

### **Model 92U Keyboard**

The 92U keyboard is the USB version of the Model 92M & 92R. It is also capable of running on the standard serial interface selectable

The model 92U keyboard's interface connects to one of the USB ports on the motherboard or one of the two I/O boards that contain USB ports. The maximum cable distance is 3.6 meters (11.8 ft.).

The Model 92U Keyboard has the same specifications as the 92R and 92M except for the following:

Interface:	USB (Connects to any USB port)
Keylock:	Standard, 4 position
Speaker:	Standard, fixed volume
Keycaps:	1 X 2: 14 legendable, 1 engraved 0 1 X 1: 25 legendable 1 engraved '00' Engraved '1' through '9' Engraved 'X' 38 Blank tiles (fills unused key positions)
Options:	MSR tracks 1 & 2, 2 & 3, & 1,2,& 3 (Selected by Address Switch)
Cable lengths:	0.6 meters (2.0 ft.) 3.8 meters (12.5 ft.)
Average Current:	Keyboard only: Less than 0.200 amps @ 24 VDC Keyboard with display: 0.150 amps @ 24 VDC

**Model 104P Keyboard (stackable, compact footprint)**

The Model 104P can be configured with a QWERTY section and is only available in the compact format.

The Model 104P keyboard connects directly to the *TeamPoS 2000*-control unit PC board's keyboard port. Standard features are a speaker with volume control, and a 4-position keylock. The keylock positions are Operator (OP), Manager (MGR), Auxiliary (AUX) and Lock.

A summary of the Model 104P keyboard specifications:

Total key positions:	104 maximum
Interface:	PS/2 (connects to <i>TeamPoS 2000</i> PC board)
Keylock:	Standard, 4 position
Speaker:	Standard with volume control
Keycaps:	2 x 2: 1 legendable 1 x 2: 4 legendable, 1 engraved '0' 1 x 1: 88 legendable 1 engraved '00' 1 each '1' through '9'
Blank tiles:	24 (fills unused positions)
Options:	MSR tracks 1,2 & 3 Additional keycaps, 1 x 1 legendable Additional keycaps, 1 x 2 legendable Additional keycaps, 2 x 2 legendable
Dimensions:	340mm (13.4 in.) W x 169mm (6.7 in.) D x 40mm (1.6 in.) H
Cable lengths:	1.2 meters (~4.0 ft.) (stacked) 2.0 meters (6.5 ft.) (dispersed)

**Refer to the Installation and Maintenance manual for switch pack settings on the 104P keyboard**

### **Model 133PQ Keyboard**

The keyboard has a full set of 58 QWERTY keys plus 75 non-QWERTY single key positions for a total of 133 key positions.

#### **Technical Specifications of the Model 133PQ Keyboard:**

Total key positions:	133 maximum
Interface:	PS/2
Key lock:	4 positions, standard
Speakers:	Standard, with volume control
Keycaps:	58 QWERTY 66 non-QWERTY 2 X 2: 1 legend able 1 X 2: 5 legend able, 1 engraved '0' 1 X 1: 49 legendable 1 engraved '00' 1 each '1' through '9'
Options:	MSR tracks 1 & 2 MSR tracks 2 & 3 Key lock combinations 2 through 5 Additional keycaps, 1 X 1 legend able Additional keycaps, 1 X 2 legend able Additional keycaps, 2 X 2 legend able Country variant QWERTY keycap kits: Belgium, Denmark, French, German, Italy, Holland, Norway, Portugal, Spain, Sweden, Switzerland and U.K.
Dimensions (approx. in mm):	450 (W) X 202 (D) X 42 (H)
Cable lengths:	0.65 meters (stacked) 2.0 meters (dispersed)

### **Model 133UQ Keyboard**

The Model 133UQ keyboard has 132 single key positions, including a QWERTY section. A 3-track MSR, key lock and touch pad is optional. The footprint of the keyboard is the same as the Model 133PQ keyboard and the *TeamPoS 2000* keyboard-stacking bracket will accommodate the 133UQ keyboard. Two interface connectors will be standard: one is for legacy PS/2 interface and the other for “standard USB.” New keyboards will come from the factory with 12.13 firmware which has a factory default setting as “USB only”. If the keyboard is installed in a PS2 configuration a key sequence will need to be invoked as power is applied to change the keyboard to “PS2 only”. An instruction sheet will be included with the keyboard.

A Model 133UQ keyboard can replace a Model 133PQ keyboard but this must be done at the customer and application developers level.

Key lock operation on the Model 133UQ duplicates key lock functions on the Model 133PQ, although the lock is different and keys are not interchangeable between the 133PQ and 133UQ.

#### **1.4.8.3 Displays**

There are a number of *TeamPoS 2000* Display options listed below are the most common.

- Model VF50, 2 line X 20 character vacuum fluorescent display (operator or customer display)
- Model VF50U, 2 line X 20 characters vacuum fluorescent display with USB or RS232 interface
- Model D12D, 12.1” DSTN LCD Display, stacked and dispersed (Obs)
- Model D12DT, 12.1” DSTN LCD Display with touch, stacked and dispersed (Obs)
- Model D12T, 12.1” TFT LCD Display, stacked and dispersed
- Model D12TT, 12.1” TFT LCD Display with resistive touch, stacked and dispersed
- Model A12, 12.1” TFT LCD Display with resistive touch
- Model A12, 12.1” TFT LCD Display without touch
- Model D15, 15” TFT LCD Display without touch
- Model D15, 15” TFT LCD Display with any combination of options such as touch (resistive or capacitive), MSR, & Keyboard
- Model C90M, stackable 9” monochrome CRT, standard footprint
- Model C90C, stackable 9” color CRT, standard footprint
- Model C90MD, dispersed 9” monochrome CRT
- Model C90CD, dispersed 9” color CRT
- 14” color Monitor, with touch options
- 14” color Monitor, without touch options

**Model VF50 / VF50U Display**

The Model VF50 and VF50U are similar in appearance and both use vacuum fluorescent technology. Each character is formed by a 5 (wide) x 7 (high) dot matrix. There are actually 8 dots usable in the height of the display, but only 7 are used to display characters, the remaining dot is used for underlining and commas.

The VF50 has dip switch settings for FJ or ESC/POS command set. The switch settings available are found below.

VF50 Display Switches

Switch No.	
1	<b>ON</b> = Katakana <b>OFF</b> = International character set
2	<b>ON</b> = Test mode <b>OFF</b> = Operational
3 & 4	<b>ON, OFF</b> = ESC/POS <b>OFF, OFF</b> = FJ Mode

The VF50U contains different switch settings as shown below

VF50U Display Switches

Switch No.	
1	<b>ON</b> = Japanese <b>OFF</b> = English
2	<b>ON</b> = Comm8 <b>OFF</b> = Comm7
3	<b>ON</b> = Esc Mode <b>OFF</b> = FJ Mode
4	<b>ON</b> = "Program Loading...Please Wait" Displayed on Power Up <b>OFF</b> = No Display on Boot Up
ALL	<b>ON</b> = Test Mode

**NOTE:** At the time of the release of this SPG the VF50U can only be used on the TeamCombo Interface card. The TeamUSB card is not compatible.

**Summary of Model VF50 & VF50U Specifications:**

Technology:	Vacuum Fluorescent
Interface:	RS232 for VF50 and USB or RS232 for VF50U
Display Color:	Blue-green
Lines:	2
Characters per line:	20
Fonts:	5 (W) x 8 (H) dot matrix
Character size:	6.5mm x 11.4mm
Rotation:	Horizontal:330° Vertical:30°
Dimensions (mm),	Only display and display hardware. Does not include terminal hardware:
Stacked mounting:	Operator only: 250 (W) x 299 (D) x 206 (H) Operator and customer: 250 (W) x 391 (D) x 206 (H)
Remote mounting:	0.3 Meter pole: 130 (W) x 239 (D) x 424 (H) 0.6 Meter pole: 130 (W) x 239 (D) x 724 (H)
Cables:	0.85 meters (stacked), <b>1.5 meters</b> and 5.0 meters (dispersed)
Average current:	0.150 amps @ 24 VDC

## 12.1” LCD Models

Two LCD technologies, TFT and DSTN(Obs), and two interfaces, digital and analog are available. Digital models begin with a “D” in the model number, and analog models begin with an “A” as the first character. LCD’s have the following options:

- Resistive Touch Screen (factory installed only)
- Speakers (digital LCD only)
- **TeamKEY**, **Keypad** and Magnetic Stripe Reader (MSR) extension
- MSR only extension (mutually exclusive with **TeamKEY**)

The digital flat panel is connected to the control unit via the digital interface. The analog flat panel is connected via the standard analog RGB interface. Both interfaces are available on the *TeamPoS 2000* control unit motherboard and therefore do not require additional hardware. The available analog RGB interface is also used to connect VGA compatible monitors in the event that an LCD analog flat panel is not used. Dual LCD screens (with optional touch) are supported and can be independent of each other in terms of application usage. Power is obtained from the LCD power port available on the Retail I/O, the TeamCombo, or the TeamUSB board. This same power port can drive both the digital and analog LCD flat panels. Stereo speakers are optional only for the digital LCD displays.

The optional Keypad/MSR has 32 programmable keys, a 4-position keylock, and a three-track MSR option. The Keypad/MSR or the MSR only provides the capability to read magnetic card data from all three tracks. The default keypad layout for the Keypad/MSR interface attachment is shown below:

Diagrams illustrating the cable requirements for configuring the D12 and A12 LCD Flat panels and switch pack settings for the Keypad can be found in the Installation and Maintenance manual.

A summary of the DSTN & TFT Touch Screen LCD specifications:

LCD:	DSTN, 12.1-inch diagonal
Resolution:	SVGA 800 x 600 pixels
Interfaces:	<b>DSTN</b> = DFP (Obs) <b>TFT</b> = DFP or Analog RGB
Cables:	Not included
Physical (requires optional stand):	
Tilt (vertical):	0° (horizontal) to 40° maximum
Swivel (horizontal):	180° (if footed stand is not fastened to counter)
Speaker:	<b>DSTN</b> = Standard (PC speaker) TFT = Standard (PC speaker – only available in digital models)
Operator Controls:	Contrast, brightness and speaker volume
Dimensions (mm):	310 (12.2 in.) (W) X 45 (1.8 in.) (D) X 235 (9.3 in.) (H) 310 (12.2 in.) (W) X 45 (1.8 in.) (D) X 260 (10.2 in.) (H) (w/ speakers)
Options:	Integrated/Distributed VESA Adapter Stereo Speakers
Touch panel:	Resistive, five-wire RS232, COM Interface Anti-reflection glass protective layer
Operating Temperature:	0°C – 40°C
Humidity:	10% - 95% absolute humidity Condensation is not permitted

## 15" LCD Monitor

The D15 is a 15" LCD that can be connected to the TP2000 using either analog or DVI interface depending upon the cable selected. A remote AC power adapter or the powered USB cable (with TeamCombo or TeamUSB boards installed only) can be used to supply power to the D15 display. Due to power restrictions however, the TP2000 can only support one powered LCD on the TeamCombo or TeamUSB board at a time. If two LCD's are required, one must be on an AC adapter.

### **Optional Touch Screens Available:**

Resistive Touch – Relatively inexpensive, reliable, but easily damaged by sharp objects

Capacitive Touch – Reliable, able to withstand more abuse than the resistive (Moh rating 6.5), but more expensive

### **LCD Specifications:**

- 15" TFT Panel Backlight, with a Max resolution 1024 x 768 (XGA)
- Vesa Compliant Mounting for Optional Integrated or Dispersed stands or Wall Mount (req in counter mounting kit)
- Operates on +12V + - 5% power at a max of 2.5A
- Energy Star Compliant
- Integrated 4 Port USB 2.0 Compliant Hub to support Options (Touch, Keypad, MSR, Ext USB)
- Power LED Indicator
- Touch Controller and USB 2.0 Hub integrated on separate serviceable board.
- Optional Touch Screens (Resistive or Capacitive)
- Brightness = 250 cd/m2 Min (without touch), 200 cd/m2 Min (with touch)
- Contrast Ratio = 300:1 Min
- Audio Speakers with 1.0 watt max per channel audio output
- On board E<sup>2</sup> Prom to store TCO Data
  - o LCD Serial number
  - o LCD Date of manufacture
  - o LCD Type and configuration (Options installed on LCD)
  - o Firmware level of LCD
  - o LCD Time on (hours), non resettable
  - o LCD Time on (hours), resettable
  - o Backlight life Powered on Hours
- Operator controls
- OSD – Adjustments for Brightness, Volume, Contrast, Phase, Clock, Track, R.G.B. contrast, H-position, V-Position, Recall, Auto-tune
- Ability to disable OSD
- Connectors available- D15 VGA, DVI-D, 3.5mm Audio, USB+Power, 2mm Power connector, and convenience

**Models C90M, C90C, C90MD and C90CD CRTs**

All four models have non-glare faceplates and operate on 100 to 230 VAC power, 50 to 60Hz. The C90M and C90C come with one-meter power and data cables. The C90MD and C90CD come with 1.8-meter (5.9 ft.) data and power cables. The power cord, which has an IEC plug and data cable, are connected directly to the *TeamPoS 2000* control unit.

The Model C90C and C90CD color CRTs are Energy Star compliant. Upon a signal from the *TeamPoS 2000* control unit, the monitor will go into a reduced power state. Both models can be powered off completely by an application command.

Summary of common specifications for all four CRTs:

Size:	9" (measured diagonally)
Voltage:	100 to 240 VAC, 50/60Hz
Interface:	PC-AT SVGA
Resolution:	800 X 600 interlaced, maximum

A summary of the Model C90M CRT specifications:

Cables (included):	1.0-meter (3.3 ft.) data, 1.0-meter (3.3 ft.) power (IEC320 connector)
Physical,	
Tilt (vertical):	- 5° to 15°
Swivel (horizontal):	Stacked, -16° to 25° Dispersed, -150° to 180°
Operator Controls:	Power switch, contrast, brightness, vertical size and vertical center
Power:	30 watts, maximum
Dimensions (mm):	260mm (10.2 in.) W x 292mm (11.5 in.) D x 294mm (11.6 in.) H

**A summary of the Model C90MD CRT specifications (Obsolete):**

Cables (included):	1.8-meter (5.9 ft.) data, 1.8-meter (5.9 ft.) power (IEC320 connector)
Physical,	
Tilt (vertical):	+10° to -5°
Swivel (horizontal):	+/- 45°
Operator Controls:	Power switch, contrast, brightness, vertical size and vertical center
Power:	30 watts, maximum
Dimensions (mm):	249mm (9.8 in.) W x 250mm (9.8 in.) D x 230mm (9.1 in.) H

A summary of Model C90C CRT Specifications:

Green mode:	Standard
Cables (included):	1.0-meter (3.3 ft.) data, 1.0-meter (3.3 ft.) power (IEC320 connector)
Physical,	
Tilt (vertical):	-5° to 15°
Swivel (horizontal):	Stacked: -16° to 25° Dispersed: -150° to 180°
Operator Controls:	Power switch, contrast and brightness
Power:	60 watts, maximum
Dimensions (mm):	280mm (11.0 in.) W x 308mm (12.1 in.) D x 318mm (12.5 in.) H

A summary of Model C90CD CRT Specifications:

Green Mode:	Standard
Cables (included):	1.8-meter (5.9 ft.) data, 1.8-meter (5.9 ft.) power (IEC320 connector)
Physical,	
Tilt (vertical):	+10 to -5°
Swivel (horizontal):	+/- 45°
Operator Controls:	Power switch, contrast and brightness
Power:	60 watts, maximum
Dimensions (mm):	260mm (W) x 310mm (D) x 250mm (H)

**14" SVGA/14" SVGA (Obsolete) Touchscreen and non-Touchscreen Monitors in *TeamPoS 2000* Matching Color**

These monitors are standard 14" SVGA color monitors and offer the following important features:

- Picture Tube
  - 14" (13.2" diagonal viewing area)
  - Non-glare, Silica/ASN coating
  - Touchscreen model has 5 wire resistive coating
  - 0.28mm Pitch
  - 272x203mm active display area
  - 1024x768 flicker-free @ 60Hz
  - 800x600 flicker-free @ 85Hz
  
- User Controls
  - Digital brightness
  - Digital contrast
  - Digital horizontal and vertical positioning
  - Digital horizontal and vertical size
  - Digital trapezoid and pincushion adjustment
  - On/Off
  
- External Dimensions
  - 27.5 lbs.
  - 427 x 375 x 450 mm
  
- Regulatory
  - UL, CSA, FCC Class B
  - GS, CB, CE Mark
  - MPR-II, EPA Energy Star

### 1.4.8.2 Cash Drawers

Four (4) cash drawers are available. Model MP5 cash drawer, which is the standard *TeamPoS 2000* cash drawer for the compact footprint series, the Model TP10 that is the standard *TeamPoS 2000* cash drawer for the standard footprint series, the NF5 (North American Food) cash drawer for dispersed configurations, and the NP5 cash drawer.

NOTE: The NAF cash drawer has been replaced by the NF5 cash drawer.

The MP5/TP10 cash drawer comes with two metal guides for positioning and preventing movement of the *TeamPoS 2000* control unit. For *TeamPoS 2000* configurations that disperse the control unit and stack the peripherals on top of the cash drawer, the guides that is provided with the *TeamPoS 2000* control unit can be installed on the cash drawer. The existing guides must be removed. Up to two cash drawers are supported. For dual cash drawers, a Y cable is required for stacked configurations and a Y cable and extension cable for dispersed configurations.

#### Model MP5 Cash Drawer

The *TeamPoS 2000* MP5 cash drawer can be used in stacked or dispersed configurations for the compact footprint series. When in a stacked configuration, the *TeamPoS 2000* control unit is placed on top of it and the cash drawer cable is concealed. A media slot, for checks, coupons or large bills, is standard. The MP5 is available with Keylock numbers 2, and 3.

The cash drawer comes with a media tray, which includes three adjustable vertical bill compartments, a horizontal bill compartment, and a six coin tray insert. Additional media trays and six coin tray inserts are available.

#### Summary of the Model MP5 Cash Drawer Specifications:

Maximum number:	2
Activating voltage:	24 VDC
Status switch:	Open when drawer opens
Media tray:	3 vertical adjustable note compartments and 1 horizontal note compartment
Coin tray:	6 coin compartments
Options:	Media tray locking cover Additional media tray Keylock #2 Keylock #3
Dimensions (mm):	450 (17.7") W x 340 (13.4") D x 114 (4.5") H
Cable options:	0.22 meters (for stacking) h.6.□ meters (for dispersing) Dual cash drawer Dual cash drawer extension cable

**Model TP10 Cash Drawer**

The *TeamPoS 2000* TP10 cash drawer can be used in a stacked or dispersed configuration. When in a stacked configuration, the *TeamPoS 2000* control unit is placed on top of it and the cash drawer cable is concealed. Up to two cash drawers are supported.

A media slot, for checks, coupons or large bills, are standard.

The TP10 is available with and without keylocks. Keylock numbers 1, 2, and 3 are available.

The cash drawer comes with a media tray, which includes 5 adjustable bill compartments and a 6 coin tray insert. Additional media trays and 6 coin tray inserts are available. Eight coin tray inserts and locking covers are also available options. The eight coin tray insert replaces the six coin tray insert. Locking covers cover the bill and coin compartments for security when transporting the media tray to and from the terminal.

The optional keylock has 3 positions: (1) locked, (2) manual open and (3) electrically operated (under application software control).

**Summary of the Model TP10 Cash Drawer Specifications:**

Maximum number:	2
Activating voltage:	24 VDC
Status switch:	Open when drawer opens
Media tray:	Standard, 5 adjustable note compartments
Coin tray:	6 coin, standard
Options:	8 Coin insert tray Media tray locking cover Additional media tray (does not include coin tray) Additional 6 coin insert tray Keylock #2 (factory installed) Keylock #3 (factory installed)
Dimensions (mm):	450(17.7 in) W x 500(19.7 in) D x 123(4.8 in)H
Cable options:	0.22 meters (8.6 ft.) (for stacking) 6.0 meters (16.3 ft.) (for dispersing) Dual cash drawer Dual cash drawer extension cable

**NAF Cash Drawer (Obsolete)**

The NAF cash drawer is only used in North America in dispersed checkstand/counter configurations. The media tray has 4 non-adjustable bill compartments and 5 coin compartments.

NAF cash drawers was available with six different 3 position keylocks (Locked, manual open and electrically operated). Locking covers are also available.

The NAF cash drawer does not have a media slot and only one cash drawer is supported.

## Summary of the NAF Cash Drawer Specifications:

Maximum number:	1
Activating voltage:	24 VDC
Status switch:	Open when drawer opens
Media tray:	4 non-adjustable bill and 5 coin
Options:	Media tray Media tray locking cover Keylock number 1, 2, 3, 4, 5 and 6 (factory installed)
Dimensions (mm):	454mm (17.0 in.) W x 353mm (13.9 in.) D x 92mm (3.6 in.) H
Cable options:	0.5 meters (1.6 ft.) 4.0 meters (13.0 ft.) (for dispersing)

**NF5 Cash Drawer**


The NF5 cash drawer replaces the NAF cash drawer. The NF5 is similar in most respects to the NAF cash drawer except a four meter cable is hard wired to the back of the NF5 cash drawer and only one variation of lock is available.

## Summary of the NAF Cash Drawer Specifications:


Maximum number:	1
Activating voltage:	24 VDC
Status switch:	Open when drawer opens
Media tray:	4 non-adjustable bill and 5 coin
Options:	Media tray Media tray locking cover Keylock number 1 (factory installed)
Dimensions (mm):	454mm (17.0 in.) W x 353mm (13.9 in.) D x 92mm (3.6 in.) H
Cable options:	4.0 meters (13.0 ft.)- hard wired

**1.4.8.3 Wireless Products**

There are currently two wireless cards released for wireless connectivity to the *TeamPoS 2000*. The Cisco 802.11 b PCI Card is now End-Of-Life and is no longer available. The PCI 802.11 a/b/g PCI card is available through factory installation via the Intelligent PIN or through field upgrade by the Fujitsu Transaction Solutions part numbers listed below.

Part Number	Description	Picture
90001373	Cisco PCI Wireless Card, 802.11 a/b/g (Cisco Part Number AIR-PI21AG-A-K9) LINK: <a href="#">Cisco AIR-PI21AG-A-K9 Data Sheet</a>	

Additionally, the following part has now become EOL from Cisco. For completeness, we have added the following tables for a comparison.

Part Number	Description	Picture
END OF LIFE 90001372	END OF LIFE Cisco PCI Wireless Card, 802.11 b (Cisco Part Number AIR-PCI352) LINK: <a href="#">Cisco AIR-PCI352 Data Sheet</a>	

	90001372 802.11b PCI Card Connected Antenna	90001373 802.11 a/b/g PCI Card Dispersed Antenna
TP2K A Motherboard – Old Riser Card (AC21259-B21X)	X	
TP2K A Motherboard – New Riser Card (KD20033-B41X)	X	X
TP2K M Motherboard	X	X
DOS	X	
Win2000	X	X
WinXP	X	X

## 1.5 **PHYSICAL & ENVIRONMENTAL CONSIDERATIONS**

See Installations and Maintenance Manual for Specifications.

## 1.6 **PRODUCT PERFORMANCE**

### 1.6.1 **RELIABILITY**

Appendix A contains a work sheet for calculating the anticipated failure rate of a typical customer installation.

Component	MTBF (h)	FIT*
“A” or “H” Motherboard	146000	6849
“M” Motherboard	79130	12637
Retail I/O board	300000	3333
TeamCombo, TeamCombo I & II Boards	901244	1110
TeamUSB Board	633932	1577
CPU	10000000	100
HDD Unit	500000	2000
FDD Unit (Duty 10%)	100000	10000
CD-ROM Unit (Duty 10%)	30000	33333
CD-RW/DVD (Duty 10%)	100000	10000
PSU	100000	10000
64MB DIMM (Hard Error)	704000	1420
(Soft Error)	111111	9000
128MB DIMM (Hard Error)	352000	2840
(Soft Error)	55600	18000
256MB DIMM (Samsung Specs)	12820000	78
512MB DDR DIMM (Micron Spec “M” MB)	3469000	288
1 GB DDR DIMM (Micron Spec “M” MB)	13888889	72
Riser Card	3380000	296
Operator Panel	28000000	36

**Device MTBF/Fail Rate FIT**

Device	MTBF	FIT
<b>Displays</b>		
12.1" Color LCD (all types)	50000	20000
Inverter of 12.1" LCD (all types)	50000	20000
LCD/TP board I/F board	1167000	857
Backlight 12.1" - DSTN	10000	100000
Backlight 12.1" - TFT	20000	50000
15" LCD PWB	90000	11111
15" CCFL Backlight	50000	20000
15" Touch Controller	74000	13514
15" Touch Panel (Resistive) - Touches	35,000,000	
15" Touch Panel (Capacitive)- Touches	35,000,000	
15" Optional Keypad - Controller PWB	100000	10000
15" Optional 3 track MSR (Swipes)	500,000	
2 x 20 VFD50 Unit	100000	10000
<b>Cash Drawers (Typically)</b>		
NF5 Keylock - Cash Drawer (Manual Releases)	1,000,000	
NF5 Cash drawer Number of openings and closings	4,000,000	
<b>Keyboards</b>		
133UQ	170,000	5882
133UQ Keystrokes per key	10,000,000	
133PQ/TeamKey MSR (num of swipes)	>300,000	
92U	200,000	5000
92U Keystrokes per key	20,000,000	
40 Key TeamKey - Key Strokes	10,000,000	
<b>Printers</b>		
DT50/DT50II/DT50IIT Receipt Printer (lines of print)	15,000,000	
DT50/DT50II/DT50IIT Endorsement Printer(lines of print)	1,350,000	
DT50IIT Image Scanning Mechanism-scans	240,000	
DT50/DT50II/DT50IIT auto cutter number of cuts	1,500,000	
Axiohm A758/A760/A794 Thermal Receipt (lines of print)	45,000,000	
Axiohm A758/A760 Slip mech. (lines of print)	15,000,000	
Axiohm A758/A760/A794 Knife cuts	1,500,000	
Axiohm A758/A760 Check flips	200,000	

\*NOTE: 1 FIT = 1 time error per 10<sup>9</sup> hours  
FIT - (Failures In Time)

MTBF=  $\frac{10^9}{\text{FIT}}$  hours

### 1.6.2 LIFE EXPECTANCY

The design life expectancy for the *TeamPoS 2000* Terminal components are as follows.

Component	Life
HDD Unit	*5 years or 20000 Power-on hours 4000 Working hours Start stop cycle:50000 times
PSU FAN	**More than 50000 hours
CPU FAN	**More than 50000 hours
Chassis FAN	**More than 60000 hours
Lithium Battery	More than 10 years
Lead Battery	More than 2 years
Back light of 12.1" DSTN color LCD	***More than 10000 hours
Back light of 12.1" TFT color LCD	***More than 20000 hours
2 x 20 VFD Unit (RS232C Type)	***More than 30000 hours
Drawer Open (Standard Drawer)	More than 500000 times opened
Drawer Open (Compact Drawer)	More than 500000 times opened
MSR Scan	****More than 300000 times scanned
Keystroke (19mm pitch key)	More than 8 million times pushed
Printer head of 2 station thermal printer	75km of paper ran
Touch Panel	More than 10 million touches
CD-ROM drive unit	3000 hours (at 25°C) 30000 times loading of disk tray

Note: The temperature condition is 25°C.

\*Note: The life span is chosen from the parameter obtained first.

\*\*Note: The life span is defined as maintaining 70% of specific rotation speed.

\*\*\*Note: The life span is defined as maintaining 50% of specific brightness.

\*\*\*\*Note: The MSR head cleaning per regular maintenance.

## **2.0 RESOURCES**

This section estimates the needs for the CS, Logistics, and other resources required to support the *TeamPoS 2000* terminal.

The following sections list support, training, documentation, spares, repairs, and diagnostics available for this product.

### **2.1 SKILLS REQUIRED**

#### Customer Service Representative:

A good working knowledge of Intel-based PC components, POS peripherals, I/O card installation and supported operating systems is required. Prior experience and knowledge of POS terminals and their associated peripherals, Confidence Level Diagnostics (CLD), and commercial off-the-shelf PC diagnostics is assumed.

#### Consultant/Project Manager:

Good working knowledge of PCs, supported operating systems, and specific application experience is assumed.

#### Repair Center Technician:

An in-depth understanding of Intel-based PC components, POS peripherals, I/O cards, and supported operating systems is required. Knowledge of Confidence Level Diagnostics (CLD) and commercial off-the-shelf PC diagnostics is assumed.

Experience with troubleshooting multilayer PWAs, including surface mount technology (SMT) is required.

### **2.2 TRAINING**

CS training is under the discretion of each specific business unit. Retail Platform Software and Support will provide 'train the trainer' operations. The schedule and funding for training will be established on an individual case by case basis. All requests for training by Retail Platform Software and Support should be forwarded to the Sustaining Mailbox (reference the cover page).

Retail Platform Software and Support estimates that the Technical Publications listed are adequate for this product and additional training will not be necessary for CS personnel currently trained on similar Fujitsu products. The *TeamPoS 2000* terminal should be included in any future standard training provided to Fujitsu CS personnel.

## 2.3 **TECHNICAL PUBLICATIONS**

Description	Part Number	PIN
Programmers Reference Manual		D900000125
Installation and Maintenance Manual		90000291

## 2.4 **SPARES**

It is assumed that North America will spare the *TeamPoS 2000* terminal at the ORU level. Some customers however, may choose to spare the *TeamPoS 2000* at a major assembly level with the ORU repair performed at a central repair center or depot. The spares list takes both of these methods into consideration.

Spares will be stocked at the North America Logistics Center (Dallas).

Spares lead time from suppliers can be as long as 16 weeks.

### 2.4.1 **SPARES LIST**

The parts list is available in the Installation and Maintenance Manual.

## 2.5 **REPAIRS**

North America Logistics Center (Frisco, TX.) offer repair services for the items they consider to be repairable. The OEM vendor also offers repair services that may be contracted by one of these repair centers or other organizations.

Logistic and CS organizations should utilize their own services to provide a test of units being returned from the field before shipment to repair centers as history has shown that not all units being returned from the field are actually faulty.

If faulty, logistics organizations may elect to have a lower level of service performed by their service center or technician if parts and resources permit. However, this would be a local decision.

### 2.5.1 REPAIR TIME

The following are time estimates for removing and replacing major assemblies. These time estimates do not include the time to diagnose the problem, gain clear access to the *TeamPoS 2000* Terminal, or perform any software reloading to return the unit to full customer functionality.

Component	Maximum replacing time of component
Power Supply Unit	10.0 min.
Mother board	3.0 min.
POS-I/O board	3.0 min.
HDD unit	2.0 min.
Floppy unit	3.0 min.
CD-ROM unit	3.0 min.
Riser Card	10.0 min.
Battery	2.0 min.

Based upon these times and adjusted by the probability of a specific component failing, the MTTR for the complete unit is estimated at a total MTTR of 4 minutes by a qualified field engineer.

### 2.5.2 SERVICE AIDS & DIAGNOSTICS

Diagnostics – Three levels of diagnostics are provided.

1. The first level consists of BIOS diagnostics, which are executed at power-on and test basic operations of the PC Motherboard.
2. Confidence Level Diagnostics (CLD) is the second level of diagnostics. CLD is a DOS based standalone utility that allows a service engineer to identify POS problems to the ORU by performing Loopback tests on the RS232 ports and exercising the POS peripherals that are attached. Specific instructions for executing CLD can be found along with the latest version of CLD on the Internet FTP site.
3. Windows CLD (WINCLD) is a Windows based diagnostic that can be run in a Windows environment. This is also available on the FTP site.

Diagnostics for testing of the PC portion of the TeamPoS 2000 is accomplished via a commercially available diagnostic program. Check-It is the diagnostic certified and recommended by Fujitsu. It can be obtained at a local computer sales facility. QA Plus is also being utilized during initial build and integration of each unit. Future PC diagnostics software will be accessible on the hard disk.

The following is a list of test/repair tools needed:

- 80303084 RS232 Loopback Plug-Male (used with CLD)
- 80203280 Printer Loopback Plug (used with CLD)
- 80203279 RS232 Loopback Plug-Female (used with CLD)
- 7737171 MSR Cleaner Cards
- 80064971 MSR Test Cards

## **3.0 SERVICE PROFILES**

### **3.1 PREVENTATIVE MAINTENANCE**

See Installation and Maintenance manual for specifications.

### **3.2 CORRECTIVE MAINTENANCE**

In the event of a failure the customer should be expected to confirm the malfunction by carrying out his or her own internal problem resolution procedures. If their procedures are unable to resolve the problem, they should contact their local CS/Support organization.

CS/Support organizations should provide a support desk facility whereby customers can telephone for advice before logging a service request. If telephone assistance is unable to resolve the problem, the local CS/Support organization should send a representative to assist, unless the RFR option/maintenance agreement was selected. CS/Support should affect on-site repairs to the ORU level recommended by their CS/Logistics management.

### **3.3 ESCALATION PROCEDURES**

The escalation of product error reports or requests for assistance should take place in the following order:

Customer's Internal Service	First Line Support Service
CS Organization	First Line Support Service
National Tech Support Organization	Second/Third Line Support Service
Retail Platform Software and Support Services	Fourth Line Support Service

Product reports raised on supported products or general inquiries should be sent to the Sustaining mailbox (reference the cover page).

**APPENDIX A FAILURE PER YEAR WORKSHEET**

The following are specific variables that need to be determined for your specific customer configuration when calculating Failures Per Year (FPY).

Description	Variables
Avg. Power On Hours per Year (8736 max)	(A) _____
Avg. Transactions per Trading Hour	(C) _____
Avg. Trading Hours per day	(D) _____
Avg. Trading Days per Week	(E) _____
Avg. Keystrokes per Transaction	(F) _____
Avg. Keylock Cycles per Transaction	G) _____
Avg. MSR Usage's per Transaction (1 out of 3=.33)	H) _____
Avg. Print Lines per Transaction	(I) _____
Avg. Cash Drawer Openings per Transaction	(J) _____
Avg. Transaction per Terminal Year (C*D*E*52wks)	(K) _____

Units Affected by Power On Hours:

Device	Power On Hours	/ MTBF Hours	= FPY
*	(A) _____	/ *	= _____
*	(A) _____	/ *	= _____
*	(A) _____	/ *	= _____
*	(A) _____	/ *	= _____
*	(A) _____	/ *	= _____
Power On Total			_____

Units Affected by Mechanical Usage:

Keyboard:	(F) x (K) / *	= _____
Keylock:	(G) x (K) / *	= _____
MSR:	(H) x (K) / *	= _____
Printer:	(I) x (K) / *	= _____
Cash Drawer:	J) x (K) / *	= _____
Mechanical Total		_____

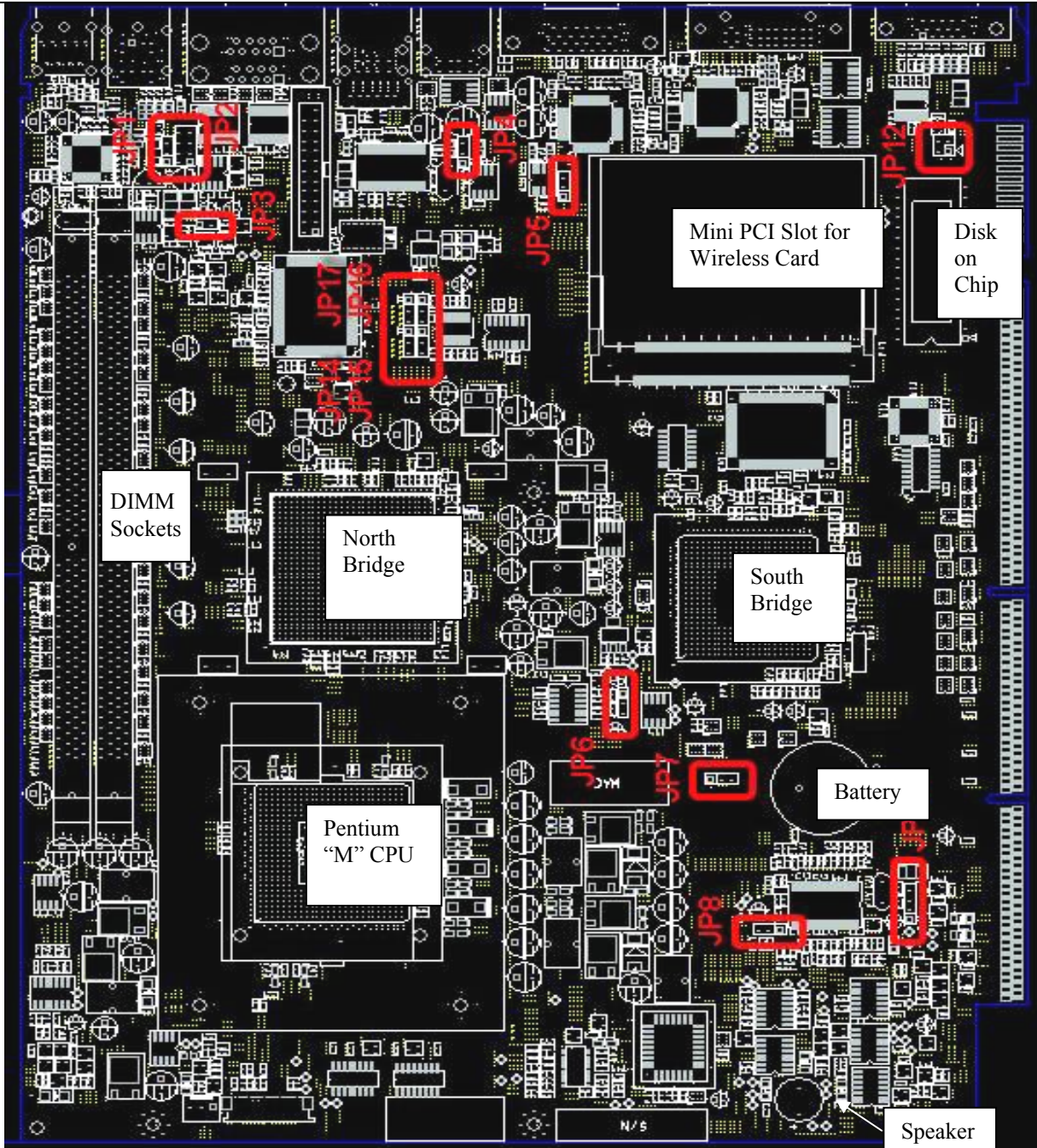
Total for your customer configuration (per lane):

Power On Total	_____
Green Mode Total	_____
Mechanical Total	_____
Total FPY Per Lane	_____

Note: This total does not include failures resulting from use of consumables (batteries, print heads, etc.), cables, software/firmware based problems, no-fault-founds, or resulting from use not considered standard for this type of equipment.

**APPENDIX B: TeamPoS 2000 Super High End Motherboard (90000759)**

Output Connectors – L – R Audio Connections, Kybd & Mouse, Comm1&2, LAN & USB, Digital Video, MVI, & Analog



**Default jumper setting for TP2000 Super High End Motherboard (90000759)**

No.	Meaning - Factory Settings are Underlined
1	<p><b>JP1</b> - KB/Mouse power select - Selects whether terminal will wake up from Standby mode if keyboard or mouse is actuated.  <u>1-2 : From +5V</u>            2-3 : From +5V SBY</p>
2	<p><b>JP2</b> - Selected if +12V is required on COMM Lines  <u>1-2 : Normal (COM1)</u>            3-4 : Powered +12V (COM1)  <u>5-6 : Normal (COM2)</u>            7-8 : Powered +12V (COM2)</p>
3	<p><b>JP3</b> - PC BEEP for LINE OUT  <u>1-2 : Enable</u>            2-3 : Disable</p>
4	<p><b>JP4-5</b> - USB Power Select – Selects whether terminal will wake up from USB device  <u>1-2 : +5V</u>            2-3 : +5V STB</p>
5	<p><b>JP6</b> - VCCA Power Select  <u>1-2 : Banias (100MHz FSB)</u>            2-3 : Dothan (133MHz FSB – future release)</p>
6	<p><b>JP7</b> Clear CMOS  <u>1-2 : Normal</u>            2-3 : CMOS Clear</p>
7	<p><b>JP8</b> - CPU Clock  <u>1-2 : 100MHz</u>            2-3 : 133MHz</p>
8	<p><b>JP12</b> - DiskOnChip Address            1-2: 0D0000-0D1FFF h            3-4: 0D2000-0D3FFF h            5-6: 0D4000-0D5FFF h            7-8: 0D6000-0D7FFF h  <u>9-10: 0D8000-0D9FFF h</u>            11-12: 0DA000-0DBFFF h            13-14: 0DC000-0DDFFF h            15-16: 0DE000-0DFFFF h</p>
9	<p><b>JP13</b> - PCI AUX POWER SOURCE  <u>1-2 : No power</u>            2-3 : 3.3V Dual            3-4 : 3.3V</p>
10	<ul style="list-style-type: none"> <li>• <b>JP14- JP17 I2C BUS selection for Display Configuration (Do Not Change These Jumpers Otherwise Display May Not Function)</b></li> <li>• <b>JP14:</b> 1-2 : MI2CDATA                – <u>2-3 : DDCPDATA</u></li> <li>• <b>JP15:</b> 1-2 : MI2CCLK                – <u>2-3 : DDCPCLK</u></li> <li>• <b>JP16:</b> <u>1-2 : MDVIDATA</u>                – 2-3 : MDDCDATA</li> <li>• <b>JP17:</b> <u>1-2 : MDVICLK</u>                – 2-3 : MDDCCLK</li> </ul>

**APPENDIX C: I/O Board Drawings, Jumper Settings and Rear Panel View**

**Note: See Installation and Maintenance Manual for Retail I/O, TeamCombo I, and TeamCombo II boards.**

**TeamPoS 2000 TeamUSB Board Connectors**

	Cash Drawer	LCD Power	USB +24V	USB +12V
	Cash Drawer		Ports 1,2, 3, & 4	Ports 5, 6 & 7
	9 Pin Female		Powered USB - keyed	Powered USB - keyed
1	+24V Return		5V USB Pwr	5V USB Pwr
2	CD0-Open		Data -	Data -
3	CD0-Sol		Data +	Data +
4	N/C		Gnd	Gnd.
5	Gnd		+24V Return	+12V Return
6	N/C		+24V Pwr	+12V Pwr
7	CD1-Sol		+24V Pwr	+12V Pwr
8	CD1-Open		+24V Return	+12V Return
9	+24V Return			
10				
11				
12				
13				
14				
15				

**TeamUSB Board Interrupts & I/O Address**

Interrupt selectable by jumper

	USB 1	USB 2	USB 3	USB 4	USB 5	USB 6	USB 7
Connector	Pwr USB	Pwr USB	Pwr USB	Pwr USB	Pwr USB	Pwr USB	Pwr USB
Power	+5, +24V	+5, +24V	+5, +24V	+5, +24V	+5, +12V	+5, +12V	+5, +12V
Typical Use	Various Peripherals						
<b>WIN</b>							
<b>NT/95/98/2000</b>							
COM Port #	USB Hub	USB Hub	USB Hub	USB Hub	USB Hub	USB Hub	USB Hub