TITLE: *Team***PoS** *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.

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0.0 DOCUMENT CONTROL

0.1 ISSUE LEVEL

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

0.2 CHANGES FROM PREVIOUS ISSUE – (issue 4.4)

All pages –Removed duplicated info found in Installation & Maintenance manual and added references to that manual
Page 5 – Updated Release Schedule
Page 6 – Included Windows XP OS as Supported Software Product
Page 8 – Added CD R/W as an Optional Major Component
Page 9 – Corrected the Depth Dimension of the Standard Chassis
Page 10 – Removed 433MHz CPU from Offered Motherboard CPU's
Page10-13 -Motherboard Updated to Include the SHE Motherboard
Page 14 - Corrected Maximum Port Power on Retail I/O Board
Page14-15 –I/O Board Updated to Include the TeamUSB Board
Page 17 – Updated Printer Listing
Page 19 – Added 92U in Keyboard Section
Page 22 – Updated Display Listing
Page23-24 –Added VF50U Display
Page 27 - Added 15" LCD
Page 36 - Updated Reliability Chart
Page 38 - Changed Reference to Product Quality to Sustaining Eng.
Appendix B-Updated to Include New Motherboard
Appendix C-Updated to Include New TeamUSB Board
Appendix D-Updated Intelligent PIN Description Chart

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
HDD	Hard Disk Drive
MSR	Magnetic Strip Reader
MTBF	Mean Time Between Failures
MTTR	Mean Time To Repair
ORU	Optimum Replaceable Unit
PSU	Power Supply Unit
SPG	Support Planning Guide
TeamPoS	Fujitsu TeamPoS Series of Terminals
VFD	Vacuum Florescent Display

0.5 REFERENCE DOCUMENTS

PA-RH20-00	*Team***PoS** *2000* Series Product Announcement
90000291	*Team***PoS** *2000* Installation and Maintenance Manual

1.0 OVERVIEW

1.1 RELEASE SCHEDULE

Product Description	**Release Date**
Compact Controller	May 2000
Standard Controller	May 2000
Keyboards	
Compact POS Model 104P	Aug 2000
Model 92M, 133PQ, & 136P	Dec 2000
TeamPad for LCD	Feb 2001
133UQ Keyboard	May 2003
92U Keyboard	Apr 2004 est.

1.1 RELEASE SCHEDULE (CONTINUED)

Displays	
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	Oct 2001
D15 LCD/TFT/TCH (Capacitive/Resistive)	May 2004 est.
Printers	
DT-50	Mar 2000
TM-T90 Two Color Thermal Ptr	Oct 2001
DT50II	Apr 2002
DT50II (Upgradeable to TransScan	Jan 2003
DT50II TransScan – Check Imaging	Dec 2003
TM-T88III	Oct 2003
A760 (Hybrid Printer)	Nov 2002
VFD Displays	
VF50 - 5x8, 2x20 Line Standard	June 2000
VFD Local Base (Low Pole)	June 2000
VFD Local Base (High Pole)	June 2000
VF50U – USB Customer Display	Mar 2004
Misc.	
Compact Cash Drawer	June 2000
D12 MSR for LCD	Feb 2001
CD-ROM (DVD)	June 2001
CD - RW	June 2002
PCIX-690 PCI Video Card	May 2001
Motherboard S370, 66/100 FSB, 1GHz	Apr 2001
Motherboard SHE, Pentium M, 1.3–1.6 GHz	May 2004 est.
TeamCOMBO Board	Sept 2001
TeamUSB Board	Apr 2004 est
Pentium III 850MHz CPU	Jan 2002
1 GHz CPU	Feb. 2003
Actiontec 56K Int. Modem	June 2002
Samsung 256MB DIMM	Jan 2002
Symbol Tech Wireless PCI Card	Oct 2001
9950 Scanner	June 2003

1.2 PRODUCT DESCRIPTION

*Team***PoS** *2000* 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 *Team***PoS** *2000* control unit supports Windows 98, Windows NT, Windows 2000, Windows XP, Windows XPe, Linux Red Hat 9.0 (and above), and OS/2 Warp 3 operating systems. Because there are several software options, none is standard with TeamPoS. 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 *Team***PoS** *2000* is equipped with the following features:

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

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

The major components of the *Team***PoS** *2000* control unit are:

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

A summary of the *Team*PoS *2000* control unit specification:

Voltage:	100 or 240 VAC, 50/60 Hz
Power supply:	ACPI compliant, Energy Star
	250 Watt DC Output (Max)
	Battery back-up
Dimensions:	
Compact (C-Series)	340mm (13.4”) Wide x 450mm (17.7”) Deep x 110mm (4.3”) High
Standard (S-Series)	450mm (17.7”) Wide x 488mm (19.2”) Deep x 110mm (4.3”) High
Power Cords:	Standard, Country specific type
Options:	Front panel with lockable front door
	Hard Drive, 2 maximum, front accessible
	Floppy drive, 1 maximum
	CD-ROM or DVD
	Retail I/O, TeamCOMBO or TeamUSB Board

1.4.1 PC Motherboard

The TP2000 supports three different motherboards:

The initial release (PIN 90000153)
This was the original motherboard and is capable of supporting up to a 600MHz Pentium III CPU.

The second release (PIN 90000459)
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 current release (PIN 90000759)
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 next release of the manual expected in May of 2004.

Appendix B shows jumper configurations

1.4.1.1 Release 1 & 2 Motherboard (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: Asiliant 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

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 or TeamUSB Board)

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

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

1.4.1.2 Release 3 Motherboard (90000759)

Features of this motherboard include:

- Celeron M & Pentium M Processors with special heat sink and fan
- 855GME chipset
- ECC Double Data Rate (DDR) memory.
- Disk-on-Chip
- Wireless LAN support
- USB boot option

NOTE: This motherboard cannot be used as a direct replacement with older motherboards because the motherboard component drivers are different.

Release 3 Motherboard (90000759) Specifications:

Processor	Intel Pentium M (Banias, Dothan Upgrade) Processor, Celeron Type of Pentium M (Dothan will be future release) ● Single Socket Micro-FCPGA - 400MHz Processor Side Bus
Core Chipset	Intel Montara GME & ICH4 (82855GME, 82801DB)
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 Supply +12V instead of RI ● DSUB 9 pins, on Connector Panel
Parallel Port	● One Parallel port, supports Standard / EPP/ ECP ● Through the Pin header on board
Mouse & Keyboard	2 x PS/2 connectors for Keyboard and Mouse
USB	6 x USB ports (Version 2.0), 4 ports on connector panel, 2 ports for riser
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)
Graphics	Integrated into Intel Montara GME chipset ● Analog RGB 15 pin connector, up to 1600 x 1200 @ 85Hz ● MDR 26pin connector (supports for Fujitsu's Proprietary LCD monitor with TMDS signaling), VGA, SVGA, XGA ● DVI-D24 Connector, UXGA up to 60 Hz ● Dual Independent Pipe Support 1. Analog VGA (Pipe A) and DVI-D24 (Pipe-B) 2. Analog VGA (Pipe A) and Fujitsu's LCD (Pipe-B) 3. Fujitsu's LCD (Pipe A) and DVI-D24 (Pipe-B) ● (Please refer to dual pipe supported resolutions in the display modes). ● 64MB for dual pipe (32MB – Shared Video) Graphic core Frequency: 250 MHz

Release 3 Motherboard (90000759) Specifications cont.

Real Time Clock and Battery	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.
Speaker	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.
Expansion Capability (Slot)	● PCI slot of max.4, PCI 2.1 Compliant ● Mini PCI Slot x1 (Only socket on the motherboard) ● ISA slot of max. 2 (by the PCI-ISA Bridge Chipset)
Hardware Monitoring	Winbond W83627HF or equivalent (W83627HF is Super I/O and it includes H/W monitor.) ● LANDesk System Manager compatible ● Power supply voltage monitor ● Three FAN speed monitor ● Temperature monitor (CPU inside, CPU case, Environment)
BIOS	● AMI BIOS stored in Flash ROM (FWH SST 49LF004A) ● Support for SMBIOS, ACPI 2.0, APM, Management Level 4.0, and Plug & Play. ● Support USB Boot, LAN Boot, DiskOnChip2000 Boot and system event logging. ● Support update function (to support remote update when available). ● Support clock margining (for test) ● Support for 3 modes in AC Power recovery (Always ON, Always OFF and Last State) ● Post Code display and remote serial console redirection ● Support for ECC memory. ● Boot without Mouse To include Intel Video BIOS
Other features	● PC99 Compliant ● Plug and Play Compatible ● Support for Advanced Power Management (APM) Rev.1.2 ● Support for Advanced Configuration and Power Management Interface(ACPI) Rev.1.0b & 2.0 ● Support for Wired for Management (WfM) V2.0 ● Support for Management Level 4.0 ● Support for DiskOnChip®2000 ● Powered COM

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

There are three types of I/O boards available:

- The standard **Retail I/O board**, which contains seven (7) powered RS232 ports
- The **TeamCOMBO board**, which contains four (4) powered RS232 ports and four (4) powered USB ports
- The **TeamUSB board** which has seven (7) powered USB ports when using the SHE motherboard and six (6) powered USB ports when using the older motherboards.

For reference purposes "Appendix C" of this document has a Retail I/O board illustration and jumper settings.

Below is a summary of each type:

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

A summary of the TeamCOMBO Board 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
Port power (maximum):	1.8 amps @ 24 VDC (sum of all ports)
RS232 and USB combined	3.8 amps @ 12 VDC (sum of all ports)
LCD power	5/12 VDC

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 24VDC (Red) connectors
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 power (maximum):	1.8 amps @ 24 VDC (sum of all ports)
USB combined	3.8 amps @ 12 VDC (sum of all ports)
LCD power	5/12 VDC

1.4.3 Front Operator Panel

The *Team***PoS** *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 *Team***PoS** *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. (see "Installation and Maintenance Manual" for Operator Panel switch positions)

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 Retail I/O card functions.

1.4.4.1 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 has a 27 pin jumper (JP1) in the center of the board used to set the USB configuration for the I/O board. This latest riser card can be used with all different configurations of motherboards and I/O boards.

1.4.5 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.

1.4.6 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 Operator Panel (see "Installation and Maintenance Manual" for Operator Panel switch positions) on the front operator panel of the terminal. The TP2000 supports a 13GB, 20GB and 40GB hard disk drive.

1.4.7 CD-ROM

There are four types of CD-ROM's available, the standard read-only CD-ROM, the read-only DVD, CD-R/CD-RW/DVD and the Read/Write CD ROM.

1.4.8 Peripherals

*Team***PoS** *2000* offers a large assortment of stacked and dispersed peripherals.

1.4.8.1 Printers

Fourteen printers have been validated and are supported:

- Epson Models: TM-U950, TM-U925, TM-H5000II, TM-T88III, TM-T90
- Fujitsu Models: DT50, DT50II, DT50II (Upgradeable to TransScan), and DT50IIT (TransScan)
- Axiohm Models: A793(AT93), A794, A756 (ADT40), A758, A760 and A760 USB

See individual product information for each of these printers

1.4.8.2 Keyboards

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

Model 92R, 92M, & 92U Keyboards

The 92M keyboard utilizes an improved 92R keyboard matrix and key cap. The 92U adds a second interface (USB) and is a programmable keyboard

A summary of the Model **92R,** 92M, & 92U Keyboard Specifications:

Total key positions:	92 maximum
Interface:	92R/M: RS232 (Connects to control unit's Retail I/O) 92U: RS232 & Powered USB
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 (all keyboards) 1, 2, & 3 tracks (92U) 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:	RS232: 0.6 meters (2.0 ft.) 3.0 meters (9.8 ft.) 5.0 meters (16.3 ft.) USB: 0.6 meters (2.0 ft.) 3.8 meters (12.5 ft)
Average Current:	Keyboard only: 0.080 amps @ 24 VDC Keyboard with display: 0.150 amps @ 24 VDC

Model 104P Keyboard (stackable, compact footprint)

The Model 104P keyboard connects directly to the *Team***PoS** *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 *Team***PoS** *2000* 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 Keylock combinations 2 through 5 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 (90000291) TP2K Installation & Maintenance Manual for Switch Settings for 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 133 single key positions, including a QWERTY section. An integrated 3-track MSR, key lock and touch pad are optional. Two interface connectors will be standard: PS/2 and "standard USB." All three options: MSR, integrated touch pad and key lock; will be integrated in the keyboard. The 133UQ is a programmable keyboard.

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

1.4.8.3 Displays

There are nine *Team***PoS** *2000* Display options:

- ❒ 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 interface
- ❒ Model D12D, 12.1" DSTN LCD Display with optional touch, stacked and dispersed **(withdrawn)**
- ❒ Model D12T, 12.1" TFT LCD Display with optional touch,, stacked and dispersed
- ❒ Model A12, 12.1" TFT LCD Display with optional touch
- ❒ Model D15, 15" TFT LCD Display with on board sound and optional, MSR, Touch & Keyboard Options
- ❒ Model C90M, stacked or dispersed 9" monochrome CRT **(withdrawn)**
- ❒ Model C90C, stacked or dispersed 9" color CRT **(withdrawn)**
- ❒ 14" color Monitor, with optional touch

Model VF50 / VF50U Display

The VF50 and VF50U are similar in appearance and both use vacuum fluorescent technology. The VF50U supports both RS-232C and USB interface. The interface is selectable by the type of cable used.

VF50 Display Switches: **Refer to the (90000291) TP2K Installation & Maintenance Manual**

The VF50U contains different switch settings as shown below

VF50U Display Switches

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

Summary of Model VF50 & VF50U specifications:

Technology:	Vacuum Fluorescent
Interface:	RS232 for VF50 / 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
Stand 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), **1.5 meters** and 5.0 meters (dispersed) USB: 0.85 meters (stacked), **1.5 meters** and 3.8 meters (dispersed)
Average current:	150 ma @ 24 VDC VF50U Rated Current: 260 ma @ 24 VDC

12.1" LCD Models

Two LCD technologies, TFT and DSTN, 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:

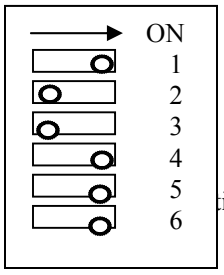
- Touch Screen (factory installed only)
- Speakers (digital LCD only)
- T*eam***KEY,** Magnetic Stripe Reader (MSR) extension
- MSR only extension (mutually excusive with T*eam***KEY)**

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 *Team***PoS** *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 (both LCD's) 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 TeamUSB board. This same power port can drive both the digital and analog LCD flat panels. Stereo speakers are optional only on the digital LCD displays.

The Keypad/MSR has 32 programmable keys and a 4-position key lock , a three-track MSR is optional both on the Keypad/MSR and MSR only 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 can be found in the Installation and Maintenance manual.

Switch Pack Settings For Keypad
(shown in default settings)



Switch 1 & 2 must be set to SW1 "on" and SW2 "off" to support MSR options. This is the default setting and is used for ISO 1/2/3.
Switch 3 is for the 2-key lock. When this is set to "OFF", the keyboard becomes a 2-key lockout operation. In the "ON" position it becomes an F key rolling over operation.
Switch 4 "ON" disables the default operation of the MSR and the data is "Break". In the "OFF" ition, the MSR default is enabled, and the data is only a "Make Break".
Switches 5 & 6 indicate the kind of key map chosen. Both on indicate an "A" setting

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

LCD:	12.1-inch diagonal
Resolution:	SVGA 800 x 600 pixels
Interfaces:	**DSTN** , DFP
	TFT, 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:	**DSTN** , Standard (PC speaker)
	TFT, Standard (PC speaker) (only available on 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 TFT, (only available on digital models)
Touch panel:	Resistive, five-wire
	RS232, COM Interface
Operating Temperature:	0°C - 40°C
Humidity:	10% - 95% absolute humidity 1 g/m^3 - 25g/m^3,
	Condensation is not permitted

15” LCD Monitor

The 15” LCD is connected to the TP2000 motherboard on the DVI or VGA Port using the appropriate cable.
A remote AC power adapter or the powered USB cable can be used to supply power to the D15 display. Due to power restrictions however, the TP2000 can only support one powered D15 LCD at a time. If two LCD’s are required, one must be on an AC adapter.

Optional Touch Screens Available:

Resistive Touch
Capacitive Touch

LCD Specifications:

- 15" TFT Panel Backlight, with a Max resolution 1024 x 768
- Vesa Compliant Mounting for Optional Integrated or Dispersed stands or Wall Mount
- 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
- Contrast Ratio = 300:1 Min
- Audio Speakers with 1.0 watt max per channel audio output
- On board E^2 Prom to store TCO Data
    - LCD Serial number
    - LCD Date of manufacture
    - LCD Type and configuration (Options installed on LCD)
    - Firmware level of LCD
    - LCD Time on (hours), non re-settable
    - LCD Time on (hours), re-settable
    - Backlight life Powered on Hours
- Operator controls
    - OSD – On Screen Display for Brightness, Volume, Contrast, Phase, Clock, Track, R.G.B. contrast, H-position, V-Position, Recall, and Auto-tune
    - Ability to disable OSD
    - Connectors available- D15 VGA, DVI-D, 3.5mm Audio, USB+Power, 2mm Power connector, convenience USB port (100 ma maximum)

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 *Team***PoS** *2000* control unit.

The Model C90C and C90CD color CRTs are Energy Star compliant. Upon a signal from the *Team***PoS** *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:

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 (10.2 in.) W x 310mm (12.2 in.) D x 250mm (9.8 in.) H

14" SVGA/14" SVGA Touch Screen and non-Touch Screen Monitors in *Team*PoS *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
- Touch Screen 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 mm x 375 mm x 450 mm (16.8" x 14.8" x 17.7")

❒ Regulatory
- UL, CSA, FCC Class B
- GS, CB, CE Mark
- MPR-II, EPA Energy Star

1.4.8.4 Cash Drawers

Three (3) cash drawers are available. Model MP5 cash drawer, which is the standard *Team***PoS** *2000* cash drawer for the compact footprint series, the Model TP10 that is the standard *Team***PoS** *2000* cash drawer for the standard footprint series and the NF5 (North American Food) cash drawer for dispersed configurations. A media slot, for checks, coupons or large bills is standard.

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

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

Model MP5/TP10 Cash Drawer

The *Team***PoS** *2000* MP5 cash drawer can be used in stacked or dispersed configurations for the compact footprint series. When in a stacked configuration, the compact *Team***PoS** *2000* control unit is placed on top of it and the cash drawer cable is concealed.

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
Dimensions (mm):	See Installation and Maintenance Manual for Specifications
Cable options:	0.22 meters (8.7 in.)(for stacking) 5.0 meters (16.4 feet) (for dispersing) Dual cash drawer Dual cash drawer extension cable Y cable

Model TP10 Cash Drawer

The TeamPoS 2000 TP10 cash drawer can be used in a stacked or dispersed configuration. Up to two cash drawers are supported. The TP10 cash drawer is available with and without keylocks. Keylock numbers 2, 3, and 4 are available.

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, 3 & 4 (factory installed)
Dimensions (mm):	See Installation and Maintenance Manual for Specifications
Cable options:	0.22 meters (8.7 in.) (for stacking)
	5.0 meters (16.4 ft.) (for dispersing)
	Dual cash drawer
	Dual cash drawer extension cable

NAF Cash Drawer

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

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

Dual NAF cash drawers are not 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):	See Installation and Maintenance Manual for Specifications
Cable options:	0.5 meters (1.6 ft.) 4.0 meters (13.0 ft.) (for dispersing)

NF5 Cash Drawer

The NF5 is similar to the NAF cash drawer except it has a hard wired four meter cable and only one lock option.

Summary of the NF5 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):	See Installation and Maintenance Manual for Specifications
Cable options:	0.5 meters (1.6 ft.) 4.0 meters (13.0 ft.) (for dispersing)

1.4.8.5 Wireless Products

Symbol wireless products are now available on the ***Team*PoS 2000.** Released products include a 11MB PCI adapter, and client bridge.

Please note that all wireless configurations need to be evaluated for technical integrity; only the following configurations have been validated on ***Team*PoS 2000**'s:

- PCI LAN Card (LA 4123) installed in TP2K PCI slot in a Windows environment
- Client Bridge connected directly to TP2K, using 11MB PCI (LA 4121)card.

1.5 PHYSICAL & ENVIRONMENTAL CONSIDERATIONS

See Installation 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) Or Actuations	FIT*
Motherboard	146000	6849
POS-I/O board (TeamCOM compatible)	300000	3333
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” Mo Bd)	3469000	288
Riser Card	3380000	296
Operator Panel	28000000	36
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	
40 Key Keyswitch Matrix - Key Strokes	10,000,000	
15” Optional Keypad - Controller PWB	100000	10000
15” Optional 3 track MSR (Swipes)	500,000	
Keylock – Cash Drawer (Manual Releases)	25,000	
Standard cash drawer	43478	23000
2 x 20 VFD50 Unit	30000	33333
2 x 20 VFD50U Unit (Constant Use)	20000	50000
DT50/DT50II/DT50IIT Slip & Endorsement	180000	5556
DT50/DT50II/DT50IIT Receipt Printer	360000	2778
DT50IIT Image Scanning Mechanism-scans	240,000	

*NOTE: 1 FIT = 1 time error per 10^9 hours

FIT – (Failures In Time)

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

1.6.2 LIFE EXPECTANCY

The design life expectancy for the *Team***PoS** *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 25000 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
Graphic VFD Unit	***More than 20000 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 25ºC) 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 *Team***PoS** *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. Sustaining Engineering 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 Sustaining Engineering should be forwarded to the Sustaining Mailbox (reference the cover page).

Sustaining Engineering 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 *Team***PoS** *2000* terminal should be included in any future standard training provided to Fujitsu CS personnel.

2.3 TECHNICAL PUBLICATIONS

Description	Part Number	PIN
Installation and Maintenance Manual		90000291
TP2K Product Announcement	PARH2000.PDF	

2.4 SPARES

It is assumed that service organizations will spare the *Team***PoS** *2000* terminal at the ORU level. Some customers however, may choose to spare the *Team***PoS** *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.

2.4.1 SPARES LIST

Refer to the Installation and Maintenance Manual for spare part information.

2.4.2 CONSUMABLE PARTS

User consumable parts are available via normal ordering channels and are replaceable by customers.

2.5 REPAIRS

North America Logistics Center (Frisco) offers 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.

Logistics 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 the repair done down to a component level replacement 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 *Team***PoS** *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 – Two 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. Retail I/O Confidence Level Diagnostics (CLD) is the second level of diagnostics. CLD is a 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 Retail I/O CLD on the Internet FTP site.

   Testing for the TeamCOMBO & TeamUSB boards are currently being developed. At this time USB parts and USB peripherals cannot be tested with CLD. Troubleshooting will consist of replacing a non functioning device with an authorized replacement.

Diagnostics for testing of the PC portion of the ***Team*PoS** 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.

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
Sustaining Engineering 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. 'Green Mode' Power On Hours per Year	(B)_____
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 Green Mode Operational Hours:

Device	Power On Hours	/ MTBF Hours	= FPY
*	(B)_____ /	*	= _____
*	(B)_____ /	*	= _____
*	(B)_____ /	*	= _____
*	(B)_____ /	*	= _____
*	(B)_____ /	*	= _____
		Green Mode 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	_____

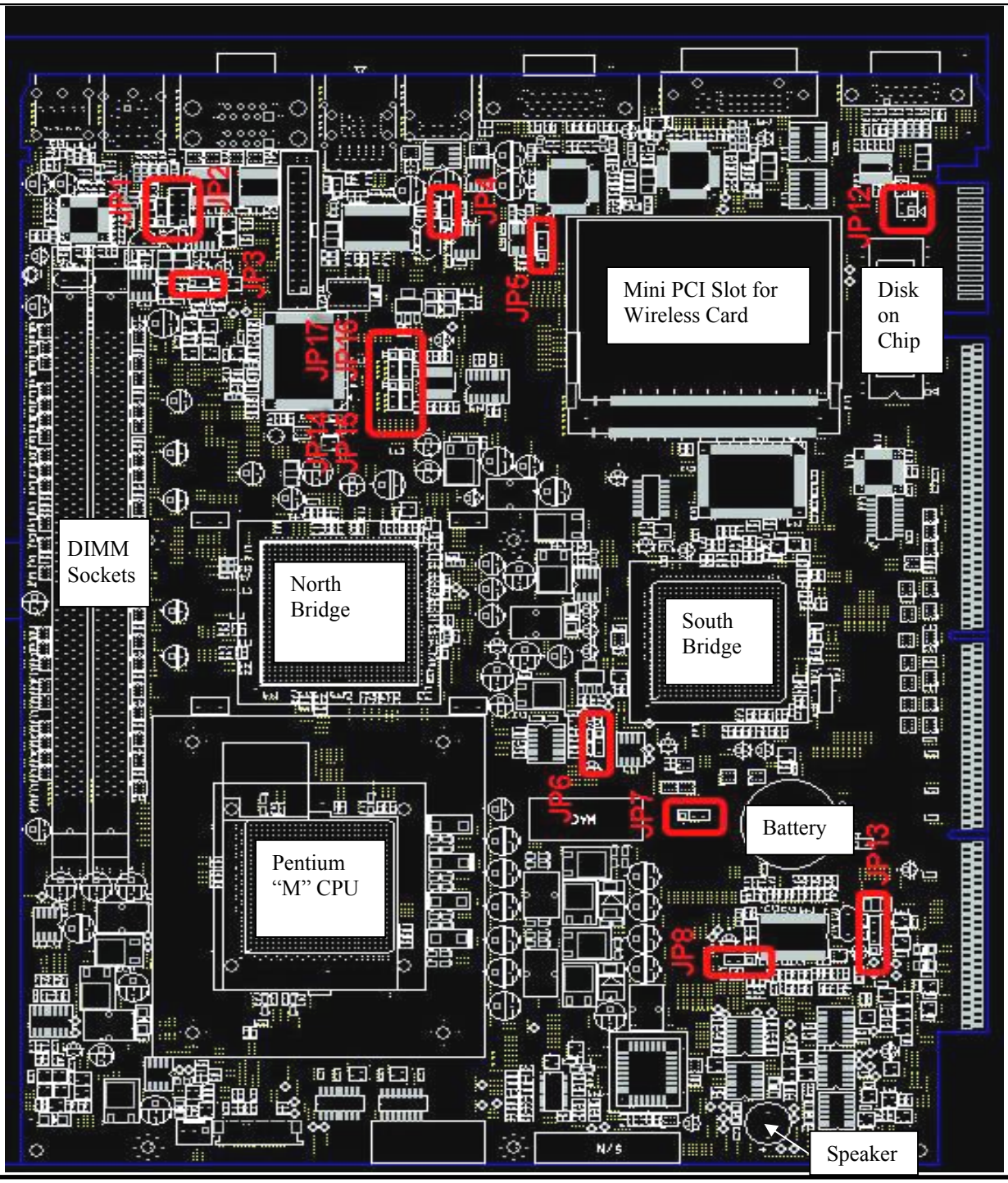
Note: This total does not include failures resulting from use of consumables (batteries, print heads, etc.), cables, software/firmware based problems, no-fault-founds, or resulting from use not considered standard for this type of equipment.

*APPENDIX B: Team*PoS *2000 Motherboard Drawing and Jumper Settings*

See Installation and Maintenance Manual for Release 1 & 2 motherboards

Release 3 Motherboard (90000759)

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



- **Default jumper setting for TP2000 Release 3 Motherboard (90000759)**

No.	Meaning - Factory Settings are Underlined
1	**JP1 -** KB/Mouse power select - Selects whether terminal will wake up from Standby mode if keyboard or mouse is actuated. 1-2 : From +5V 2-3 : From +5V SBY
2	**JP2** - Selected if +12V is required on COMM Lines 1-2 : Normal (COM1) 3-4 : Powered +12V (COM1) 5-6 : Normal (COM2) 7-8 : Powered +12V (COM2)
3	**JP3** - PC BEEP for LINE OUT 1-2 : Enable 2-3 : Disable
4	**JP4-5** - USB Power Select – Selects whether terminal will wake up from USB device 1-2 : +5V 2-3 : +5V STB
5	**JP6 -** VCCA Power Select 1-2 : Banias (100MHz FSB) 2-3 : Dothan (133MHz FSB – future release)
6	**JP7** Clear CMOS 1-2 : Normal 2-3 : CMOS Clear
7	**JP8 -** CPU Clock 1-2 : 100MHz 2-3 : 133MHz
8	**JP12** - DiskOnChip Address 1-2: 0D0000-0D1FFF h 3-4: 0D2000-0D3FFF h 5-6: 0D4000-0D5FFF h 7-8: 0D6000-0D7FFF h 9-10: 0D8000-0D9FFF h 11-12: 0DA000-0DBFFF h 13-14: 0DC000-0DDFFF h 15–16: 0DE000-0DFFFF h
9	**JP13** - PCI AUX POWER SOURCE 1-2 : No power 2-3 : 3.3V Dual 3-4 : 3.3V
10	▪ **JP14- JP17 I2C BUS selection for Display Configuration (Do Not Change These Jumpers Otherwise Display May Not Function)** • **JP14:** 1-2 : MI2CDATA 2-3 : DDCPDATA • **JP15:** 1-2 : MI2CCLK 2-3 : DDCPCLK • **JP16:** 1-2 : MDVIDATA 2-3 : MDDCDATA • **JP17:** 1-2 : MDVICLK 2-3 : MDDCCLK

APPENDIX C: TeamUSB Board Switch and Jumper Settings

Illustrations and switch settings for the *Team***PoS** *2000* Retail I/O and the TeamCOMBO boards may be found in the Installation and Maintenance Manual. The table below shows the TeamUSB board switch and jumper positions along with connections, interrupts and I/O addresses.

Switch and Jumper Positions
TeamUSB Board

Switch		Definition	Settings (Default in **Bold**)
SW1	1	BATL Detect Lead Acid Battery Alarm	**ON Enable** OFF Disable
	2	FAN1 Detect CPU FAN Alarm	**ON Enable** OFF Disable
	3	FAN2 Detect PSU FAN Alarm	**ON Enable** OFF Disable
	4	FAN3 Detect Chassis FAN Alarm	**ON Enable** OFF Disable
JP1			
	1-2 3-4 5-6 7- 8 9-10 11-12 13-14 15–16 17-18 19-20	Configured for setting up TeamUSB board for using six or seven USB ports depending upon the motherboard being used.	See Silkscreen on board for actual jumper settings
JP2			
	1 - 2	Decodes cash drawer open switch from cash drawer. Configured for the type of cash drawer being used. Distinguishes between FJ cash drawer and NCR. FJ is default	**SHORT FJ** OPEN NCR
	3 - 4		**OPEN FJ** SHORT NCR
	5 - 6		**OPEN FJ** SHORT NCR
	7 - 8		**OPEN FJ** SHORT NCR
	9 - 10		**SHORT FJ** OPEN NCR
JP3			
	1 - 2	Determines the power source for the +12V on USB port 6. Options are from +24V power through a DC-DC converter or directly from +12V power	**SHORT +12V** OPEN DC-DC
	3 - 4		**SHORT +12V** OPEN DC-DC
	5 - 6		**OPEN +12V** SHORT DC-DC
	7 - 8		**OPEN +12V** SHORT DC-DC
	9 - 10		**OPEN +12V** SHORT DC-DC

*Team*PoS *2000* TeamUSB Board Connectors

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

APPENDIX D: INTELLIGENT PIN DESCRIPTION

Intelligent Product Identification Number (PIN) Structure