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*Team*PoS® *3000* XL²
Windows XP Pro SP2 Controller Device Installation Primer

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1. **Overview**

*Team***PoS***3000* XL² introduces a new motherboard option to the *Team***PoS***3000* point-of-sale terminal family. Basic differences between the original *Team***PoS***3000* XL and the new *Team***PoS***3000* XL² are summarized below:

	*Team***PoS***3000* XL	*Team***PoS***3000* XL²
CPU	Intel® Celeron-M Intel® Pentium-M	Intel® Core 2 Duo
Chipset	Intel® 855GME & ICH4	Intel® GME965 & ICH8-M
FSB	400mhz	800mhz
Max. Memory/ Type	Up to 2GB 333mhz ECC memory	Up to 4GB* DDR2 Non-ECC memory
Video	Intel® integrated	Intel® integrated
Video Memory	64MB Shared	256MB Shared
Video Driver	Intel® Extreme Graphics	Intel® Graphics Media Accelerator
RAID	Promise 579 Controller RAID 0/1	Intel® ICH8-M Matrix Storage RAID 0/1
Hard Drive Type	SATA	SATA
BIOS	Award	Phoenix TrustedCore™
Trusted Platform Module	None	Infineon v1.2 TPM
LAN	10/100Mbit	10/100/1000Mbit

* Note:

Windows XP may report significantly less memory than the configured 4GB RAM actually installed. This is due to the way the operating system handles system resources that require addressing which overlaps physical memory below 4 GB, such as:

– System BIOS
– Motherboard Resources (I/O APIC)
– Memory Mapped I/O
– PCI Express Configuration Space*
– Additional PCI Device Memory
– VGA Memory (Video aperture)
– Other chipset and system devices

These requirements may reduce the addressable memory space available to and reported by Windows. These memory ranges, while unavailable to the OS, are still being utilized by subsystems such as I/O, PCI, and Integrated Graphics.

With these changes, a different set of drivers will be required between *Team***PoS***3000* XL and *Team***PoS***3000* XL².

This document addresses the steps necessary to setup the *Team***PoS***3000* XL² controller slice system devices using a fresh installation of Microsoft Windows XP SP2.

2. *Team*PoS*3000* XL² Harddisk Subsystem

The *Team***PoS***3000* XL² harddisk subsystem utilizes Serial ATA (SATA) harddrives via the integrated Intel® SATA Host Controller. The *Team***PoS***3000* XL² also incorporates Intel® Matrix Storage Technology providing both Advanced Host Controller Interface (AHCI) and software RAID 0/1 capability for improved storage speed and data redundancy.

AHCI and RAID functionality are *"Enabled"* by BIOS setting. By default, *Team***PoS***3000* XL² will have RAID *"Enabled"*, facilitating, but not requiring, RAID 0 or RAID1 array configurations. Also, IOAPIC should be *"Enabled"* as well. The screens below depict these BIOS settings.

Note: the AHCI BIOS selection option is hidden if SATA RAID is "Enabled". See image below.

With these BIOS settings, initial Microsoft Windows XP installations require adding of mass storage device drivers during the install process. *Team***PoS3000 XL²** Windows XP images received from FTXS Foothill Ranch will already have gone through this process.

3. Initial *Team*PoS3000 XL² Setup

Install Windows XP SP2 from release media. Use the F6 method to add third party SCSI or RAID mass storage drivers during XP installation.

Windows XP Pro installation only accepts floppy drive input for these additional drivers. On the *Team***PoS3000 XL²**, an external USB floppy drive must be used for this purpose.

When prompted, select Intel® 82801HEM SATA RAID Controller (Mobile ICH8M-E) from the device list.

The SATA RAID drivers can be located on release images in folder ..\TeamPoS3000XL2_Software_Support\BaseDrivers\ICH8ME_RAID\InstallFloppy, or from the FTXS support website:

http://www.fujitsu.com/us/services/retailing/support/drivers/index.html

Once Windows XP Pro is installed and loads to the desktop, a look at the Device Manager will show several devices not yet setup, as depicted below.

The following steps depict installation of drivers for the remaining devices.

4. *Team*PoS3000 XL² Chipset

*Team***PoS3000 XL²** utilizes the Intel® GME965 chipset with ICH8-M I/O controller hub. Out-of-the-box Microsoft Windows XP Pro does not include all supporting drivers for this chipset.

Install GME965 chipset support with the following steps:

Launch Setup.exe from

..\ TeamPoS3000XL2_Software_Support\Control Unit\Base TeamPos3000 Drivers\Chipset\infinst_autol_8.3.1.1011

and run to completion.

Restart the system and the following devices remain uninstalled:

5. *Team*PoS3000 XL² Video

The *Team*PoS3000 XL² utilizes the Intel® GME965 chipset, which includes on-motherboard dual-head video support for analog and DVI output, and Intel Graphics Media Accelerator Driver.

a. Video Driver Installation

Locate the folder containing *Team*PoS3000 XL² Video Drivers and launch Setup.exe.

In this example, the drivers are located in

C:\TeamPoS3000XL2_Software_Support\Control Unit\Base TeamPos3000 Drivers\Graphics\win2k_xp_6.14.10.4906

The screen will blink several times and a Found New Hardware pop-up may be displayed for a short time. It will be closed when the installation completes.

This single installation instance installs support for both video channels. Restart the computer at the end of the process.

The two Display Adapters are now configured in Device Manager

b. *Video Display Configuration*

Use the Intel Graphics Media Accelerator Driver video setup utility to manage video settings. The utility can be launched from the task tray icon *Intel Graphics Media Accelerator Driver for Mobile*; select "Graphics properties", or launch from *Display Control Panel/Settings/Advanced/Intel Media Accelerator Driver for Mobile/Graphics Properties*

Graphics modes, such as single, extended, etc., can be manipulated from this screen. Display properties, such as resolution, can be found by clicking the *Display Settings* tab on the left navigation pane.

Note the entries under the *Single Display* area in the picture below. Three displays are itemized, *Monitor*, *Digital Display*, and *Notebook*.

Monitor refers to the display connected via the analog (VGA) connection.

Digital Display refers to the display connected via the DVI connection.

Notebook refers to the LVDS (Low Voltage Differential Signaling) display connection that is used with the *Team***PoS***3000* XT KIOSK units. The Notebook display type is itemized even though no display device is attached because the internal circuitry to drive this display is present in the Intel Chipset. This is the method typically used in notebook/laptop configurations that utilize this chipset, and is used in *Team***PoS***3000* XT KIOSK.

c. *Display_Select Utility*

i. Background

*Team***PoS3000**XL²

*Team*PoS3000 XL² utilizes Intel's GME965 chipset, which supports multiple video channel output. This chipset is typically targeted at the notebook computer market. It is used in *Team*PoS3000 XL² because of its dual-monitor capability. Either analog or DVI monitors can be utilized in single or dual configurations on *Team*PoS3000 XL².

This section discusses video management under Microsoft Windows® operating systems.

Intel's Graphics Media Accelerator Driver is used for video display. Display can be configured for:

- single display, either analog or DVI,
- dual display, one analog and one DVI monitor, in "Clone" mode where the same display is presented on both monitors
- dual display, one analog and one DVI monitor, in "Extended" windows mode.

At system start-up, the Graphics Media Accelerator Driver determines the physical display devices, analog and/or DVI, attached to the *Team*PoS3000 XL². If the physical configuration has changed from the previous session, either due to accidental cable removal, or intentional re-configuring, less than desirable conditions may result.

For example, if the *Team*PoS3000 XL² is configured with a single DVI display, and the system is shut-down in this configuration, and for some reason the DVI display cable is removed, and the system restarted, the result would be no display. If the error condition is recognized and the system is shut-down, the DVI cable reconnected, and system restarted, the result will be a dark, blank screen with no easy way to recover the video.

This is due to the fact the Graphics Media Accelerator Driver reverts to default "*Notebook*" video mode when this error condition is recognized, since this driver typically targets the notebook market. This condition persists across system cold or warm restarts.

To mitigate this situation, *Team*PoS3000 XL² is supplied with the **Display_Select** utility to set the video mode, and restore the desired video configuration should problems occur. It only needs to be run once, after final video configuration is set. This state is saved.

A companion utility program, **SetDisp**, runs at Windows user logon and attempts to set the current video state as the saved state (/r command line option). If it detects an error (saved configuration cannot be set), SetDisp manipulates the video configuration to mitigate a failed video condition if a display (but not the expected primary display) is still physically connected. It first attempts to set a single DVI configuration, if this fails it will attempt to set a single CRT configuration. If this fails no other action is taken. SetDisp makes associated Application EventLog entries for the error and if an alternate display was selected (see figure below).

When the system is shut-down, and the physical display connects re-attached to the "saved" state, SetDisp.exe will, on the subsequent system start-up, change the displays back to the "saved" configuration. This change may take a few moments after the desktop loads depending on other start-up process.

Note: For SetDisp to work automatically, you should use Windows auto logon. SetDisp runs at logon.

Command line options for SetDisp:

- /r - Saved configuration from Display_Select
- /e - Extended - DVI primary, CRT secondary
- /x - Extended - CRT primary, DVI secondary
- /c - Clone - DVI & CRT
- /s - Single DVI
- /m - Single CRT
- /t - Test Mode GUI

Following are example scenarios and screen shots:

ii. Display_Select Set Video Mode Utility Installation and Setup

- To install the Display_Select utility, navigate to the folder location containing the Set Video Mode install.bat file. In this example:

..\TeamPoS3000XL2_Software_Support\Control Unit\Base TeamPos3000 Drivers\Graphics\Set Video Mode

- Select and run the file *install.bat or install_Vista.bat (Windows Vista)*.

Starting the Display_Select utility

- The Display_Select utility program has been added to the Start Menu, and the SetDisp.exe program added to the system to run automatically at system start-up.
- Select and start the *Display_Select* utility from the Start Menu.

Display_Select options screen

- The Display_Select utility presents a single, simple screen.
- Select the desired video mode from the list provided, and click "*Register*". The video mode is now saved and will be used by SetDisp.exe as the benchmark comparison at system start-up.

6. *Team*PoS3000 XL² Network Adapter

The *Team*PoS3000 XL² on-motherboard supplied network adapter is an Intel 82566DC chip, and enumerates as *Intel 82566DC Gigabit Network Connection* named device.

Navigate to the folder containing *Team*PoS3000 XL² LAN drivers and launch Pro2KXP.exe. In this example, the drivers are located in

C:\TeamPoS3000XL2_Software_Support\Control Unit\Base TeamPos3000 Drivers\LAN

7. *Team*PoS3000 XL² Audio

The *Team*PoS3000 XL² on-motherboard supplied audio is a Realtek High Definition audio device.

Navigate to the folder containing *Team*PoS3000 XL² Audio drivers and launch Pro2KXP.exe. In this example, the drivers are located in:

c:\TeamPoS3000XL2_Software_Support\BaseDrivers\Audio\Realtek

Run the installation to completion, and restart the system when requested. A Found New Hardware pop-up may be displayed for a short time. It will be closed when the installation completes.

8. *Team*PoS3000 XL² Trusted Platform Module

The *Team*PoS3000 XL² incorporates the Infineon Trusted Platform Module (TPM) Solution.

Device Manager shows the device as "Unknown Device" in the Other Devices category.

To install TPM driver support:

- Enter Device Manger, right-click on the Unknown Device, and select *Update Driver*.

- Select *No, not at this time* at the Hardware wizard prompt, and click *Next*.
- Check *Install from a list or specific location (Advanced)* from the selection menu, and click *Next*.
- Check *Include this location in the search*, and click *Browse*.
- Navigate to the directory containing the TPM Module drivers. In this example, drivers are located in:

  c:\TeamPoS3000XL2_Software_Support\BaseDrivers\TPM\IFX_TPM_Professional_Package_SW_3[1].0_SP1\Win32\TPM Driver

- Click Next.

- The TPM Module driver will be loaded and the device is listed in Device Manager \System Devices

This process satisfies the device driver portion of the install, and leaves no “unknown device” entries lingering in Device Manager. If TPM Module support is not needed, no further action is necessary.

If TPM Module use is desired, supporting TPM application software must be installed. This can be accomplished by running the TPM Application setup.exe found in folder:

c:\TeamPoS3000XL2_Software_Support\BaseDrivers\TPM\IFX_TPM_Professional_Package_SW_3[1].0_SP1

Run the installation to completion, restarting the system when prompted.

A tray icon is added.

When starting Windows, a balloon pop-up message is displayed, indicating the TPM module is not initialized. As desired, initialize the TPM for use with the Infineon Security

Platform Solution application – *Start\Programs\Infineon Security Platform Solution\Manage Security Platform.* On-line help is available.

It is also possible to disable TPM feature support entirely in BIOS. Navigate to the *Security Tab* and set *TPM Support* to "*Disabled*". The Infineon TPM module device will not be enumerated in Device Manager at all.

9. *Team*PoS3000 XL² I/O Options

The *Team***PoS3000 XL²** motherboard/backplane supports several I/O board configurations, from all-USB, to support for legacy devices via a combination of USB/RS232 I/O boards.

*Team***PoS***3000* XL supports a Combo + COM that adds serial ports 3 thru 7. *Team***PoS3000 XL²** does not support Combo + COM, but only Combo (depicted below) which adds COM 3-4 support.

Refer to the *Team***PoS3000 XL²** Installation and Maintenance manual for I/O and motherboard configuration and jumper information.

Note: Due to the Team***PoS3000 XL²*** *USB Controller architecture, the far left 12v Retail USB port is not active. This port may be blanked in the future.*