



## J2 225 Integrated Touch Screen Computer

### System Manual

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*April 2012*

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## **Change history**

Version 0.3, Draft

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## Overview

The J2 225 is a new generation of integrated touch screen Point of Sale computer, brilliantly designed to be more compact and cost effective, yet rich in features and versatility. The J2 225 moves away from the traditional POS 4:3 screen form factor and uses the newer LED backlit 16:9 screen. This allows for a smaller overall physical footprint yet allows for the display of more onscreen data. Retaining the core features and capabilities of J2's other tradition POS products, like the J2 615 and J2 630 units, the J2 225 takes advantage of the newer technologies currently available.

This integrated touch screen computer, like other J2 designs, features an “all-in-the-head” design, which means it can be used as a counter top unit, or a wall-mounted or pole-mounted terminal. The new smaller foot print and its unique swing arm, die cast aluminum base allows for even more flexibility, leaving more counter space for other uses. With an extremely wide range of adjustable heights and viewing angles, the versatile J2 225 can be made to work in almost any POS environment. It weighs in at 3.7kg and folds flat for shipping, therefore saving customers tremendously on shipping and storing costs.

The J2 225 uses the latest Intel Atom dual core Cedarview processors, the 1.86GHz D2550. Combining this with the Intel NM10 chipset provides excellent performance capable of running most POS applications with a very low carbon foot print, all at a competitive and attractive low cost.

Even with its small foot print the J2 225 is incredibly feature rich. It comes standard with 2GB of memory, and a choice of either a 160GB hard drive or 16GB solid state drive. With four serial ports, four USB ports, video output, audio in/out, gigabit Ethernet, +12V output, as well as other built in peripherals (like MSR, customer display and more) the J2 225 will perfectly satisfy most POS application requirements, while looking sleek and elegant.

The J2 225 is available with either a zero bezel resistive touch screen or with a multi-touch projected capacitive touch screen. The new zero bezel five-wire resistive touch screen provides the same quick response and feel of a resistive touch screen traditionally used in the POS market. The new projective capacitive touch screen option can be used in environments where multi-touch and gesturing are required, for example such as when using the new Windows 8 operating system.

The J2 225 is designed to require little or no maintenance. The convection cooled fan-less design means it can be used in very harsh environments. High dust, grease or sea air will not affect its operation. High temperatures are also not a problem. With a quick access HDD/SDD slot, a drive can be changed in just seconds if needed! A snap-apart design allows the unit to be fully disassembled and assembled in just a few minutes by just removing a few screws. Also available are optional Snap-on color kits, so that the J2 225 can be customized to your customer's needs.

The J2 225 supports the standard Microsoft operating systems: Windows 7, POSReady 7, Windows 7 Embedded, XP, POSReady 2009 and XP embedded, as well as the soon-to-be-released Windows 8. The J2 225 is equally proficient with the many flavors of Linux.



## Design Concept J2 225

The J2 225, with its smooth modern appearance and capabilities, is perfectly suited for most low cost commodity POS touch screen computer markets. The economical price and outmatched performance will provide a great ROI for the end user, as they find it extremely dependable as well as very easy to use. MSR and Secondary Display options make it a perfect fit for companies in the POS markets, as well as for other industries, including medical and healthcare applications, among many others.

To provide the highest performance at low cost with a long product life the J2 225 unit design is based on the new Intel Atom Cedarview processor. This new 32nm part has higher speed and runs on lower power than the current offering of Atom processors for Intel.

The unit was built using as few screws as possible, providing ease of assembly and disassembly, a major design achievement. This means that the touch screen, J2 225 panel, or systems board can quickly be replaced in less than two minutes if needed (however with the designed-in reliability this should not even be necessary.)

A major goal in the enclosure design is to keep the total size of the unit as thin and as small as possible. The thickness to the head is not much thicker than a standard notebook, except for a slight bulge in the back where the electronics are located. The aluminum die cast swing arm and fully adjustable base of the unit not only provide superb flexibility but are also able to fold flat for shipping. The shipping box for the J2 225 is no bigger than the size of an average notebook shipping box, which is also about 1/3 to 1/4 the size and weight of other POS products.

As with all J2 products our ultimate design goal is always reliability. Reliability is never compromised because to reduce cost at the expense of a dependable product would be a false economy and we stand by our outstanding designs and engineering.

## Specifications J2 225

<b>CPU and Chipset</b>	
Processor	Dual Core Intel Atom D2550 1.86GHz with 1MB Cache, 4 threads with Integrated GMA 3650 Graphics controller
Chipset I/O	NM10
Memory	2 X DDR3 SO-DIMM, 4GB max, 2GB standard, 1067MHz
<b>External Ports</b>	
Serial Ports	4 RS-232 RJ45 with power +12V BIOS controlled
USB Ports	4 USB 2.0
Ethernet	10/100/1000 MHz Ethernet port with status LEDs on connector
Cash Drawer Ports	1 RJ11 support 2 cash drawers +24V and +12V, Dual status lines
Secondary Video	DisplayPort with DVI, HDMI and VGA support
+12 Power	+12 Volt power out for secondary video display or other device
Audio	Combo Audio Jack for headset or headset with microphone
<b>Internal I/O</b>	
Storage	One 3Gb/s SATA Port onboard, slide in/out 2.5" HDD or SSD
J2 225 Display	14.0 inch 16:9 LVDS 1366x768 panel
LED backlight	LED backlight power with auto dimming control
Touch Screen	Resistive True Flat or Projective Capacitive with Multi-touch and gesturing
USB	4 onboard USB ports for optional devices, MSR, Wi-Fi, PCT
MSR	Onboard microcontroller of MSR on PS2
Serial	Serial port header for optional customer display or other option
Mini PCI-Express	Mini PCI Express slot for 802.11 b/g/n WiFi card and other functions
<b>Optional Peripherals</b>	
MSR	Slim line MSR, Keyboard Wedge or virtual serial
iButton	iButton module, Keyboard Wedge or virtual serial
Fingerprint Reader	Digital Persona module, attached to front bottom of display head
Customer Display	J2 225 2x20 customer display, Serial
Secondary Video	10 inch 1024x600 16:9 J2 225 Secondary Display internal connection
Wireless	802.11 b/g/n Mini PCI Express card with internal antennas
<b>Environmental</b>	
Operating Temp.	0-40c
EMI	CE / FCC Class A
Safety	LVD external adaptor UL c/us, CE, TUV, others
Dust & Water	IP 64 front of unit, IP 54 whole unit
Power	100-240V 50-60Hz 19VDC 65 watts power supply
Weight	Head 2.5kg, Base 1.4kg, gross shipping weight 6kg
Dimensions	With base attached and folded: 360x260x80mm, 14.2"x10.2"x3.14" System max height unfolded: 280mm, 11"

## J2 225 Integrated Touch Screen Computer

### I/O Ports

Most I/O ports are accessible in the cable well at the bottom of the unit. Cables are routed through the cable channel in the swing arm base. (See *Cable Routing*)

### I/O Panel



### Off / On Button

The Off /On button is located in the cable well, *as shown below*. This button is located near the side to prevent accidental powering down by the user. The function of the button can be controlled by the OS. If the J2 225 hangs for some reason it can always be powered off by holding the Off /On button in for six seconds.

The J2 225 also supports the following: Restore on AC on power loss, Wake On LAN, and Wake On RTC alarm features to control the system power up. The setting for these features is controlled from the BIOS.

### Off / On Button Location



## Hard Disks

One 2.5 inch SATA hard drive (HDD) or a solid state drive (SSD) are standard with the J2 225. The SATA interface can support data transfer rates up to 3.0 GB/s. The J2 225 offers standard either a 160GB HDD or 16GB SSD, but can be ordered with other size HDD or SSD as well.

The HDD/SSD can be installed or removed in seconds by removing one screw. It is easily accessed by removing the HDD cover retaining screw and sliding the drive out, the HDD cover can then be unclipped from the drive.

*HDD access panel*



*HDD slide in-slide out drive bay*



## Touch Screen

The J2 225 can be ordered with two different touch screen technologies, PCT or TFR.

The PCT unit uses a multi-touch Projected Capacitive Technology touch screen. The PCT touch screen has no known failure mode-- it does not “wear out.” This screen is tempered glass and does not reduce the brightness of the J2 225 panel. When operating in a very high use environment, the PCT is the recommended touch screen technology. The PCT touch screen will work with most gloves and stylus designed to work with tablet computers, and the screen has a smooth glass surface that is reflective.

The TFR uses a five-wire true flat (zero bezel) resistive touch screen rated at 35 million touches per point. The resistive technology is very responsive and is the traditional choice for a hospitality POS system. The screen has an anti-reflective plastic film surface.

Both screens are fully spill proof, dust proof, and can be cleaned with a standard glass cleaner. The J2 225 touch screen was designed to easily be changed, normally in less than two minutes. Depending on operating environment and usage, both the Resistive and PCT touch screens have strengths and weaknesses; therefore J2 offers both touch screen technologies on the J2 225 unit, providing our customers with a choice for any application.

## System Board

POS computers typically have a lifespan of 10 years or longer, therefore product quality is of the utmost importance. J2 225 electronics are built with high-end components to ensure reliability and long lasting product performance.

The system board is designed for quick replacement, just a few screws and cables to unplug. The board can be swapped out in less than three minutes.

### *J2 225 System board*



## J2 225 Display

The J2 225 offers a 1366 x 768 resolution display with 16.2 Million colors, and a 14 inch LED backlight with 16:9 aspect ratio screen. The brightness is rated at 220cd/m<sup>2</sup>. The Intel controller allows for the display to be rotated to 0, 90, 180 or 270 degrees without loss of performance. The driver can also scale the display resolution so that it can work properly with applications written for 1024x768 or 800x600 resolutions.

The J2 225 electronics also supports dimming, and can be controlled directly by Windows 7 or 8, or with J2 supplied utilities for Windows XP. Dimming levels between 5-100% are supported. A hardware auto dimming feature is built-in to ensure the longest LED backlight life and to also provide the lowest power usage.

## Secondary Video Port

The J2 225 supports the newer digital video standard DisplayPort connector. This connector supports a DisplayPort monitor, HDMI display, DVI or VGA monitor. When used with HDMI or DVI displays, a passive adaptor cable must be used. When using a VGA display, an active adaptor is to be used. With HDMI display Audio, support is provided via the same HDMI cable.

The secondary video displays can be configured as Twin, Intel Dual Display Clone, or Extended Desktop. Most all monitor resolutions from 640 x 480, up to 2560 x 1600 are supported.

When the internal secondary J2 225 video display is used the secondary video port is not available.

### *DisplayPort Video Port*



## Serial ports

The J2 225 unit has four external RS232 serial ports, all of which can supply +12V power. The serial ports use a ten pin RJ45 connector. The unit comes standard with four serial cables, three 38cm (15") RJ45 to DB9 adapter cables, and one 152cm (5') RJ45 to DB25 serial printer cable that works with EPSON and EPSON compatible printers.

All serial (COM) ports can be BIOS-enabled to provide +12V power to external devices. This power is supplied via pin 10 of the RJ45 which corresponds to pin 9 on the DB9 adaptor. The maximum current per port is 1 amp, with a total maximum external loading on the +12V of 3 amps.

A set of stick-on color coded labels are supplied with the cable adaptors, so that the cables can be marked. This makes it easy to plug the cable back into the correct port, should you need to service the unit.

### Serial Ports



### BIOS Setting Serial Port(s) Power Enable



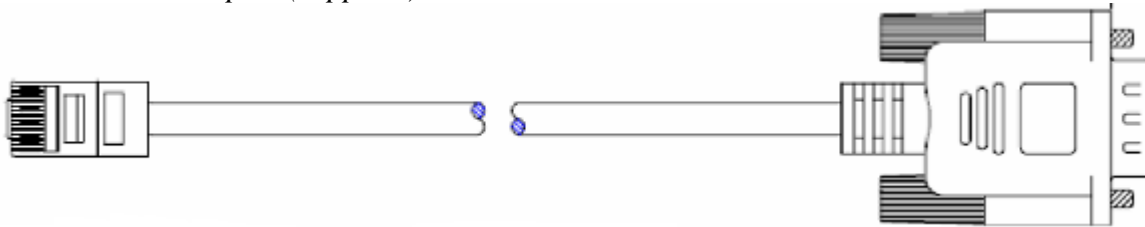
*RJ45 to DB9 J2 Adaptor Cable*

RJ45-10 Pin	DB9	Signal
Pin 1	---	---
Pin 2	Pin 1	DCD
Pin 3	Pin 6	DSR
Pin 4	Pin 2	RD
Pin 5	Pin 7	RTS
Pin 6	Pin 3	SD
Pin 7	Pin 8	CTS
Pin 8	Pin 4	DTR
Pin 9	Pin 5	GND
Pin 10	Pin 9	RI

*Pin-Out when using CAT5/6 Cable*

RJ45- 8 Pin	DB9	Signal
---	---	---
Pin 1	Pin 1	DCD
Pin 2	Pin 6	DSR
Pin 3	Pin 2	RD
Pin 4	Pin 7	RTS
Pin 5	Pin 3	SD
Pin 6	Pin 8	CTS
Pin 7	Pin 4	DTR
Pin 8	Pin 5	GND
---	---	---

*The J2 Cable Adaptor (supplied)*



*RJ45 to DB25 J2 Serial Printer Cable*

RJ45-10 Pin	Signal	DB25	Signal
Pin 1	---	---	---
Pin 2	DCD	---	---
Pin 3	DSR	Pin 20	DTR
Pin 4	RD	Pin 2	SD
Pin 5	RTS	Pin 5	CTS
Pin 6	SD	Pin 3	RD
Pin 7	CTS	Pin 4	RTS
Pin 8	DTR	Pin 6	DSR
Pin 9	GND	Pin 7	GND
Pin 10	---	---	---

*Pin-out when using 8 wire CAT5/6 cable*

RJ45- 8 Pin	Signal	DB25	Signal
---	---	---	---
Pin 1	DCD	---	---
Pin 2	DSR	Pin 20	DTR
Pin 3	RD	Pin 2	SD
Pin 4	RTS	Pin 5	CTS
Pin 5	SD	Pin 3	RD
Pin 6	CTS	Pin 4	RTS
Pin 7	DTR	Pin 6	DSR
Pin 8	GND	Pin 7	GND
---	---	---	---

*Epson or Epson compatible serial printer cable*

## USB Ports

The J2 225 has 4 external and 4 internal USB 2.0 ports. The 4 external ports (*see below*) are located in the cable well. The 4 internal ports are used for different functions, such as using a PCT touch screen, RFID reader and/or other peripherals.

### *USB Ports*



## Ethernet Connection

The J2 225 uses the Realtek RTL8111 Gigabit Ethernet controller. The Ethernet connector is located in the cable well, *as shown below*. The Ethernet controller supports Wake on LAN, and the BIOS supports a PXE boot ROM as well. There is a LED on the LAN connector, this Green LED light turns on when there is LAN activity.

### *Ethernet Connector*



## Audio

The J2 225 uses the VIA1708B HD audio controller. There is one internal speaker. A combo microphone jack and headset jack are located in the cable well of the J2 225, *as seen below*, which allows for the connection of a microphone and headset, or audio out to other devices.

Audio out is also supported on the DisplayPort with used with a HDMI monitor.

### Audio Jack Location



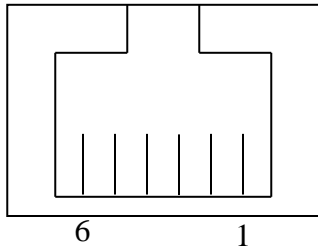
## Cash Drawer Ports

The J2 225 is equipped with one Cash Drawer port that can support one or two drawers. This port is located in the cable well, and uses the industry standard RJ-11 connector and pin-out (*illustrated below*).

### Cash Drawer Ports



### Cash Drawer 1 Pin Assignment



Pin	Signal
1	GND
2	CD1 SOLENOID
3	STATUS / STATUS CD1
4	24V
5	CD2 SOLENOID
6	GND / STATUS CD2

The application may address the Cash Drawer port in two ways:

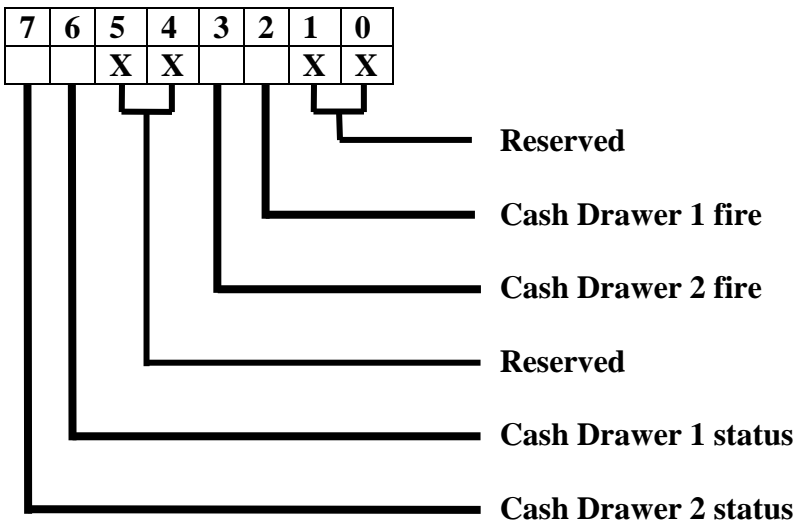
- 1) Using the J2-supplied OPOS drivers for Windows.
- 2) Direct access to the I/O ports

### Cash Drawer Controller Register

The Cash Drawer Controller use one I/O address to control the Cash Drawer.

**Register Location:** 48Ch  
**Attribute:** Read / Write  
**Size:** 8bit

BIT	BIT7	BIT6	BIT5	BIT4	BIT3	BIT2	BIT1	BIT0
Attribute	Read		Reserved		Write		Reserved	



The “Y” cable used to support two cash drawers on the one RJ-11 is the same as is used on Epson printers.

## CMOS Clear

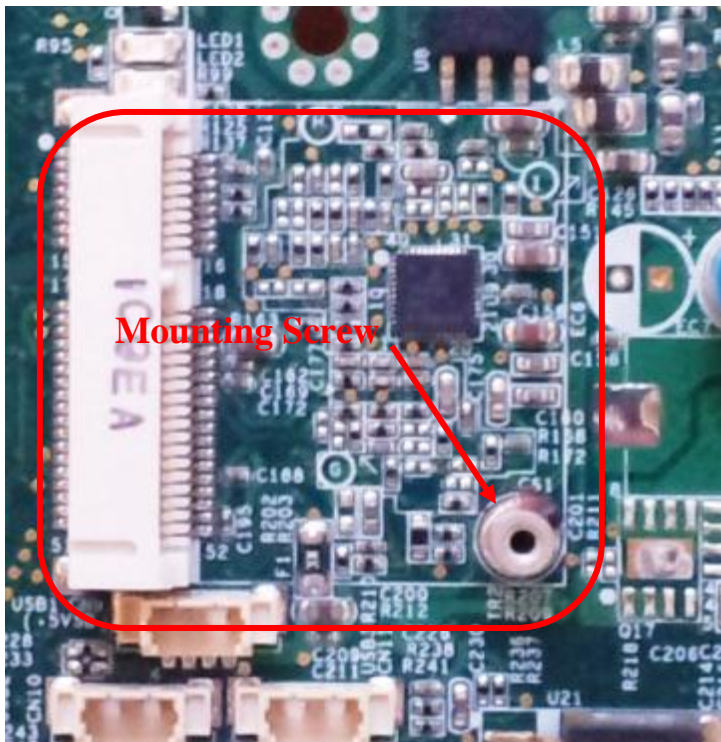
The J2 225 CMOS can be cleared by unplugging the system board CMOS battery for 30 seconds before plugging it back in.

### *CMOS Battery*



## Mini PCI-E

The onboard Mini PCI Express connector is normally used for the optional internal 802.11b/g/n wireless LAN card.



## Memory SODIMM(s)

The J2 225 supports two SODIMM DDR3 memory sockets. The unit comes standard with 2GB of main memory and can support a maximum of 4GB. The memory type is DDR3 800/1066.



## Power Supply

The J2 225 uses a notebook-type power supply that is mounted in the base of the unit. The power supply is rated with an output of 65 watts 18.5 VDC 3.5 Amps, and has an input rating of 100-240VAC at 50~60Hz 1.7Amps maximum. The power supply has an efficiency rating V. The power supply connector is a standard notebook locking type that plugs into the system power input connector, located in the cable well.

### *Power Input connector*



## +12VDV Power Out

The J2 225 has a fused power out connector that supplies a total of 12VDC, up to 2amp. The power supply connector is a standard notebook locking type that plugs into the system power input connector, *located in the cable well*:

*Power Input connector*



## Typical Power Consumption J2 225

The typical power consumption of the J2 225 is lower than a notebook computer and more comparable to a netbook computer. Using the latest generation Intel's Atom processor and chipset allows for much lower power consumption than previous generations of POS computers. When coupled with the proper system configuration, this can greatly reduce the system total carbon foot print.

### Test conditions

Voltage:	220VAC 50Hz, measured voltage 236 VAC
OS:	POSReady 7
Heavy Load Program:	PassMark BurnInTest defaults values
Maximum load:	PassMark BurnInTest Max CPU Temp
Temperature:	26c

All systems are tested in their standard hard drive configuration. Results are +/- 15%.

### J2 225 D2550 1.86GHz

1: Normal application including most POS software	23 watts
2: Very heavy load application	26 watts
3: Maximum load	29 watts
4: Normal POS app, backlight dimmed	20 watts
4: Normal POS app, backlight off	18 watts
5: Standby, unit off, waiting for wake on LAN, RTC or power button	>4 watts

## Service

### Swing Arm Base

The J2 225 is shipped standard with a counter top base which allows for the head to be adjusted from 0-100°, and the height can be from 8cm to 28. This allows for great versatility in height and viewing angles.



The J2 225 swing arm base can be folded down flat for shipping or used for a wall mounting option. Being able to fold flat greatly reduces the size of the shipping box, thereby reducing its shipping cost and storage space. When using the optional wall mount bracket, the base can be attached and allow for an adjustable viewing angle.

The base has a lock-down screw hole to secure the base to the counter top with just a screw, or it can be attached using the wall mount bracket.



The swing arm base is only a base for the unit and is not needed for the operation of the unit. It does act as a holder for the power supply, which can be removed if the base is not needed. When not using the base, the VESA 75mm mounting points may be used to mount the J2 225.

The power supply is mounted in the base, and there are two posts to store the extra DC power cord, *as shown below*.



### Removing the Power Supply

The power supply is normally located in the base but it can be removed if desired. To remove the power supply, two screws need to be removed which hold the power supply bracket, *as can be seen in the above picture*.

## Cable Routing

The swing arm base is designed to allow for clean cable management. There is a cable channel through the base swing arm, which has a quick access cover.

*Use a coin, finger or screw driver to remove cable cover*



*Remove cable cover so cable can be routed*



*Route cables*



*Replace cover*



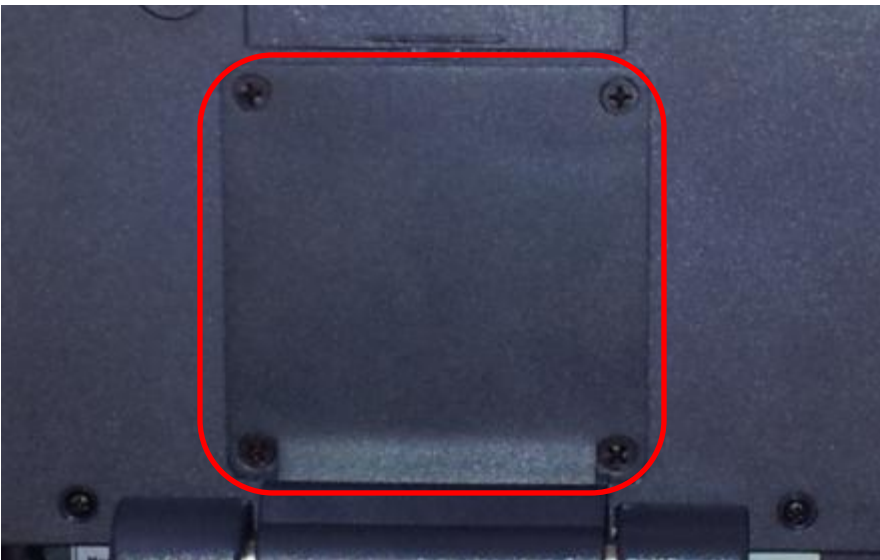
*Cables can route out via the rear of unit or through a hole in the counter top*



## **VESA Mounting**

The J2 225 unit also supports the industry standard 75mm VESA mounting. The same mounting hard point used for the swing arm base is used for VESA mounting. The four points have holes threaded for the 4mm screws.

### *75mm VESA Pattern*



## J2 225 Disassembly Instructions

*Note: This is a preliminary document; apologies for any poor picture quality.*

You will need a Philips screwdriver and a small coin to disassemble the J2 225.

### **Step 1:**

Power down the unit and unplug all cables on the I/O panel.

### **Step 2:**

Remove the HDD/SSD from the system by removing the securing screw and slide it out.

*HDD access panel*



*HDD slide in-slide out drive bay*



### **Step 3:**

If installed, remove the MSR by removing the two attachment screws and unplug the cable.



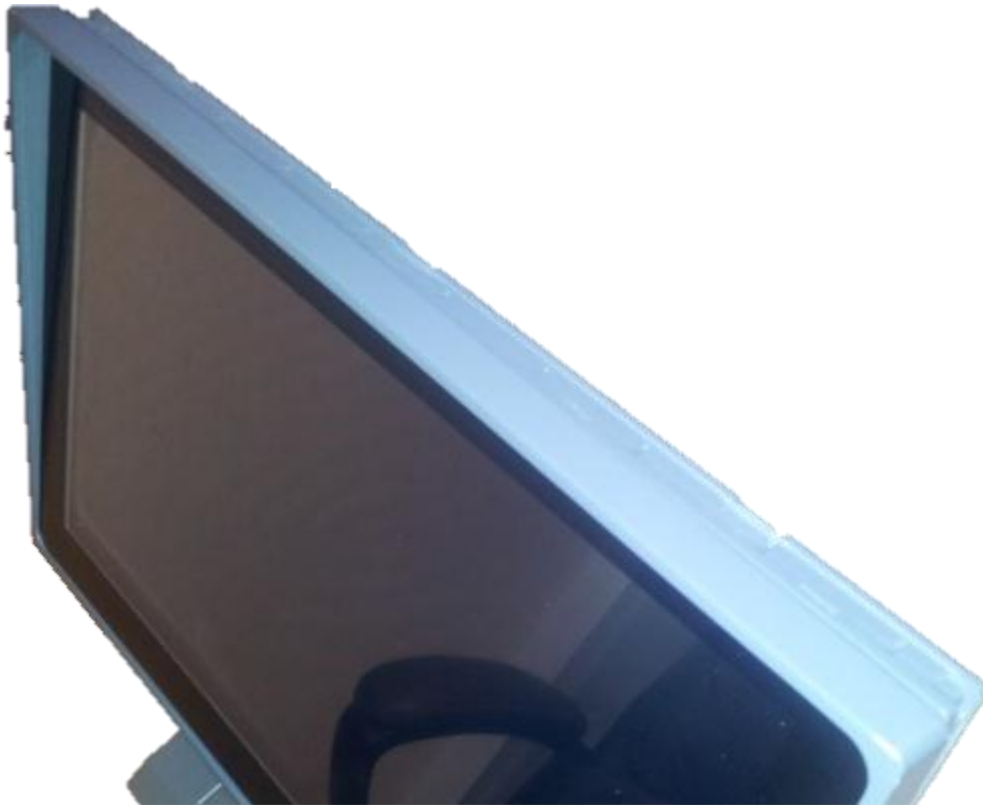
**Step 4:**

Remove the four screws, *shown below*, that are securing the back cover.



**Step 5:**

Unclip the outer bezel from the unit by pulling gently on the edge of the front of the unit.



**Step 6:**

Using a small coin (this works best) at the pry point between the front bezel and back cover, slip the coin in to pry the back cover off.



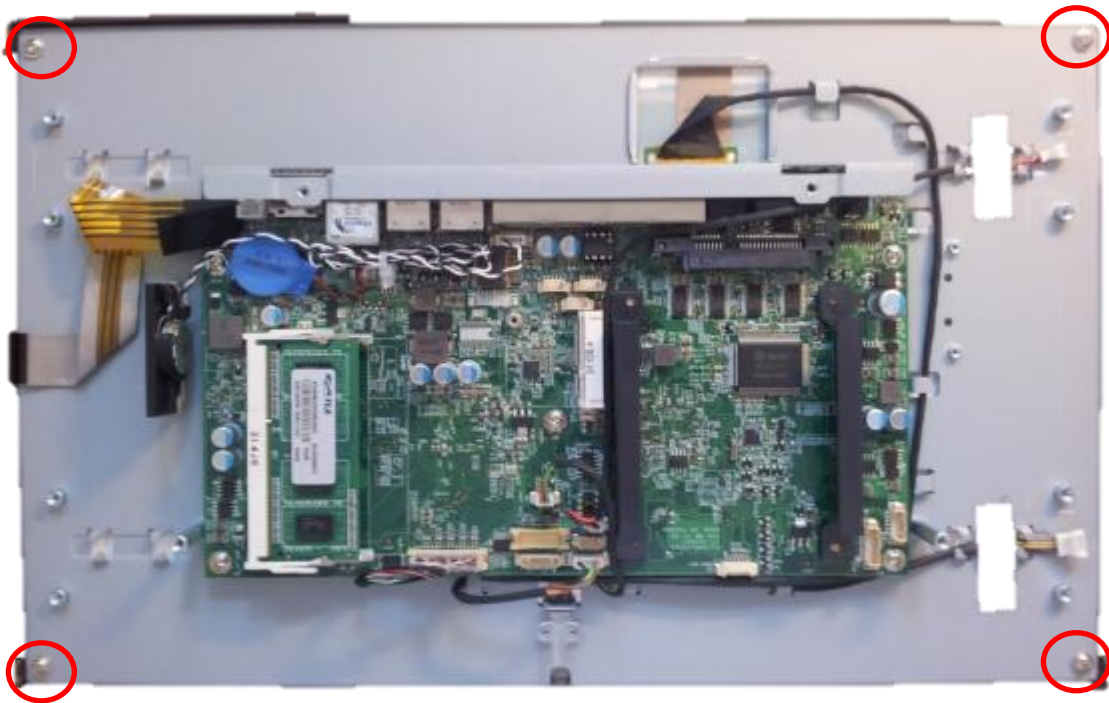
**Step 7:**

Carefully remove the back cover by laying the bezel/LCD/electronics assembly on a clean protected surface that will not scratch or damage the touch screen.



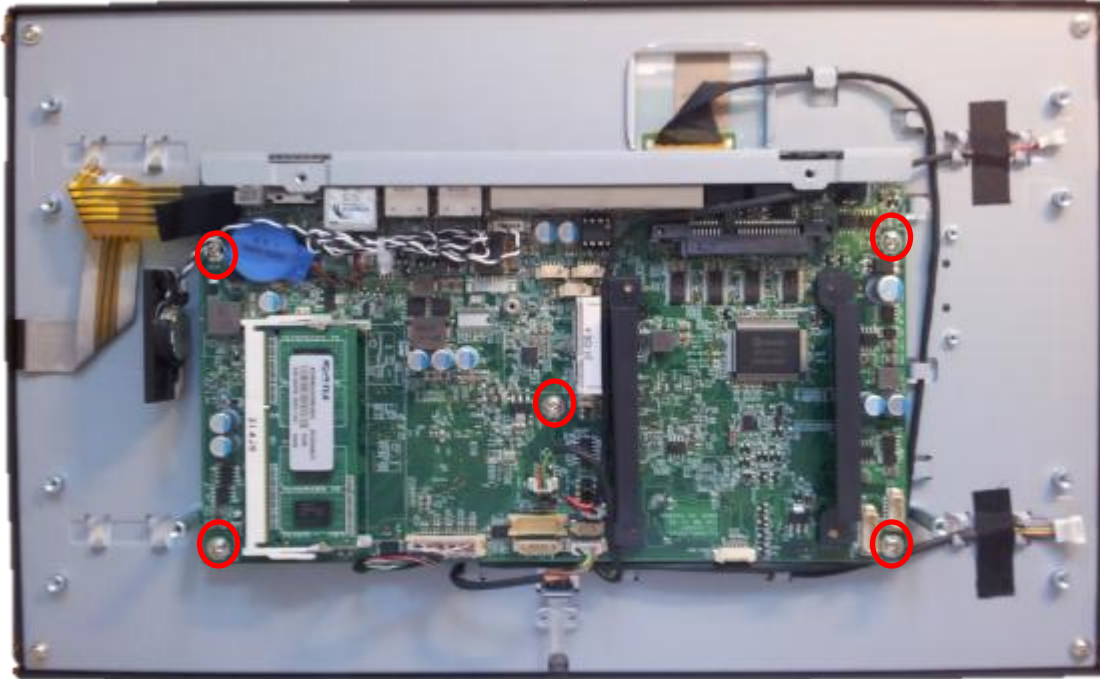
**Touch Screen/LCD Panel removal:**

The touch screen or LCD panel can now be removed by detaching the touch screen cable and removing the four screws *shown below*. Carefully unplug the LCD panel when removing.



**Electronics Removal:**

The J2 225 electronics can be removed by first unplugging the 5-wire cable attached to the board, then removing the five screws, *as shown*. The board will need to be moved gently from side to side to release it from the somewhat sticky thermal pads.



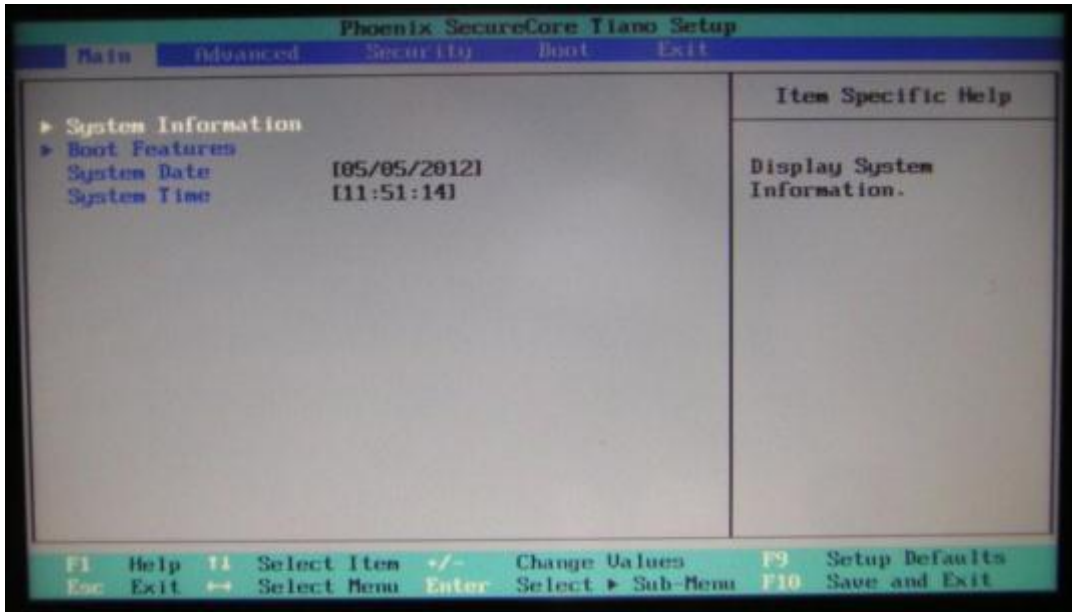
**Reassembly of the J2 225:**

The reassembly of the J2 225 is just the reverse of the simple process above.

# BIOS Setting

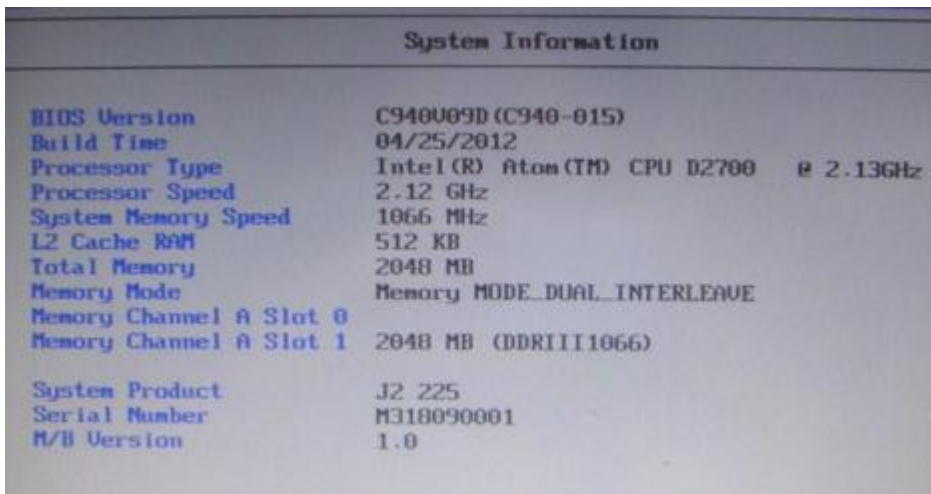
## Main Screen

The main BIOS allows for the display of system information, keyboard boot options, and the setting of the time and date. The time and date may also be set via the operating system.



## System Information

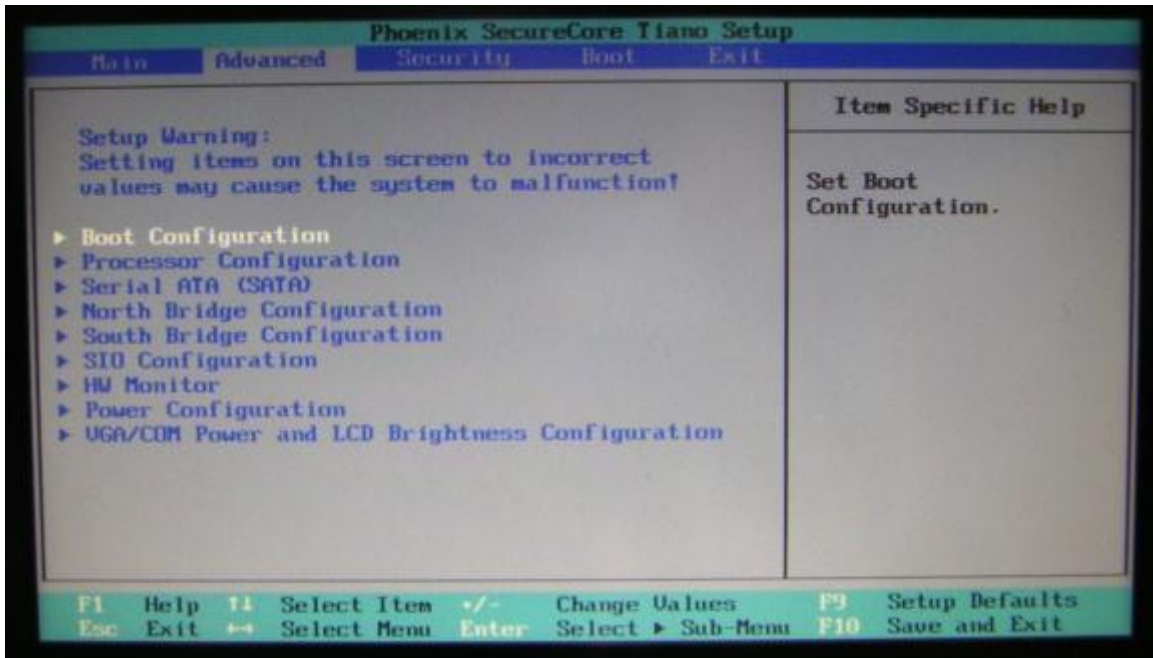
The J2 225 BIOS has a system information screen that displays useful system information, including the serial number of the unit. This information may also be accessed via DMI utilities.



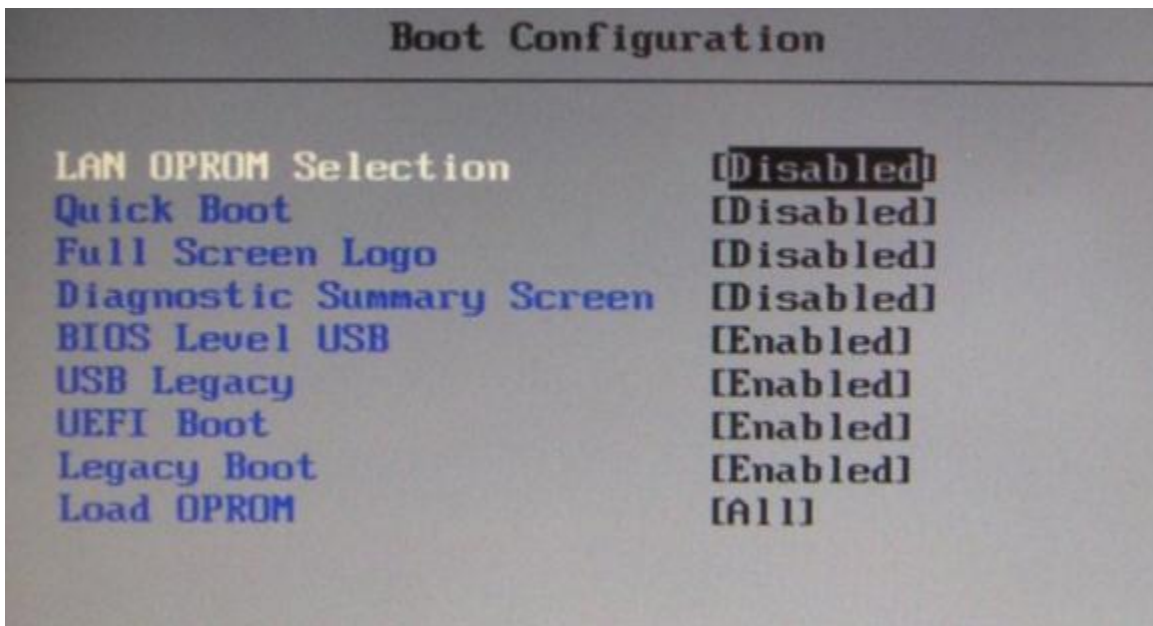
Note: This version of the new Phoenix BIOS does not have a screen shot utility yet. Please excuse the poor quality of the screen pictures. These will be replaced once the screen shot utility is available.

## Advanced Screen

The Advance Screen allows for a number of BIOS options to be accessed. Please use care in changing these options, as some settings can cause the system to malfunction. These options are provided to offer maximum flexibility in configuring the J2 225. The Item Specific Help (*seen on the right hand side of the screen*) explains each option.

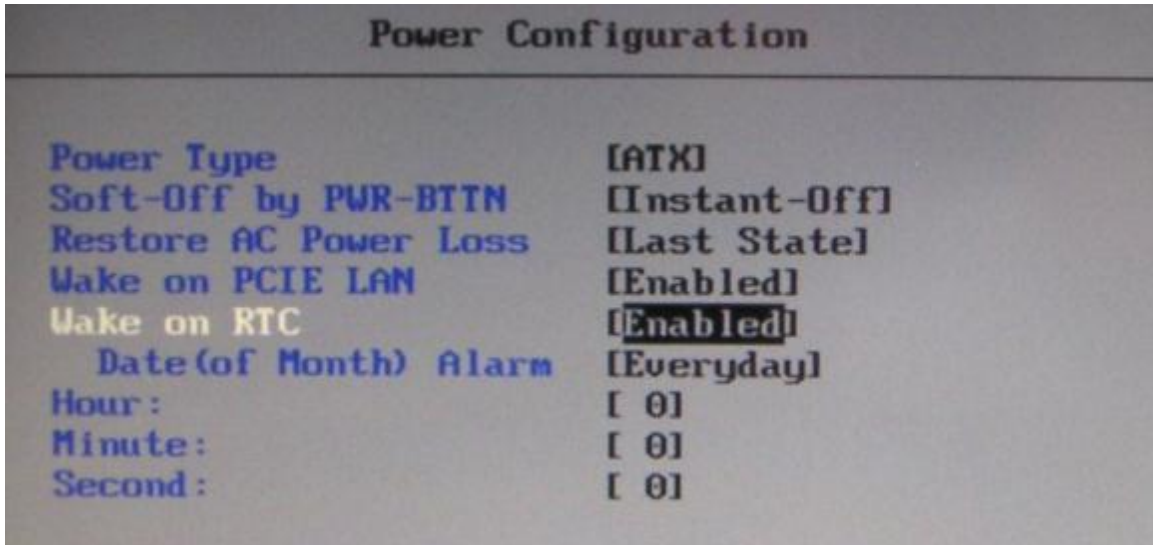


## Boot Configuration



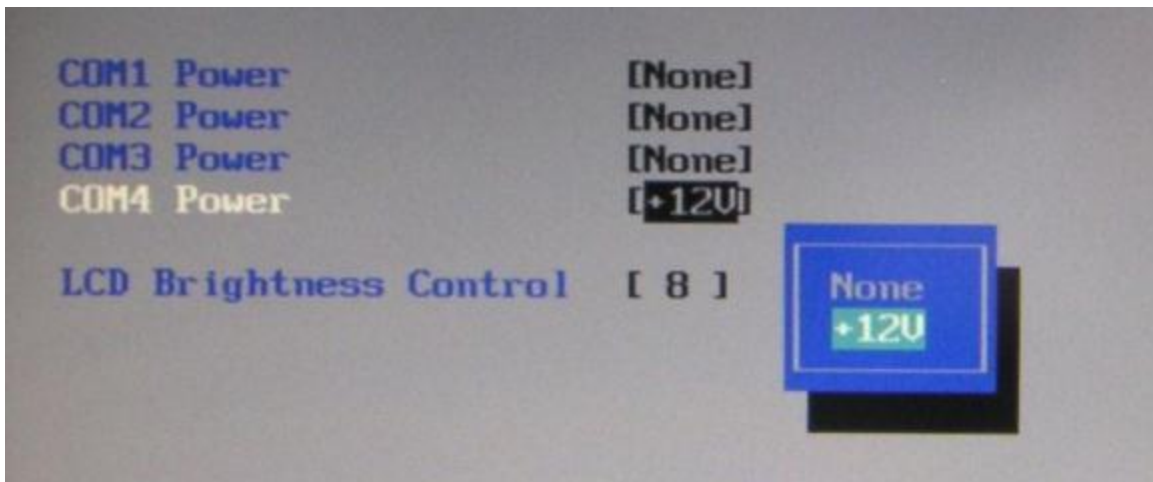
## Power Configuration

The power configuration option allows for changing the behavior of the unit when it is powered up; it also enables changing the auto power-up feature.



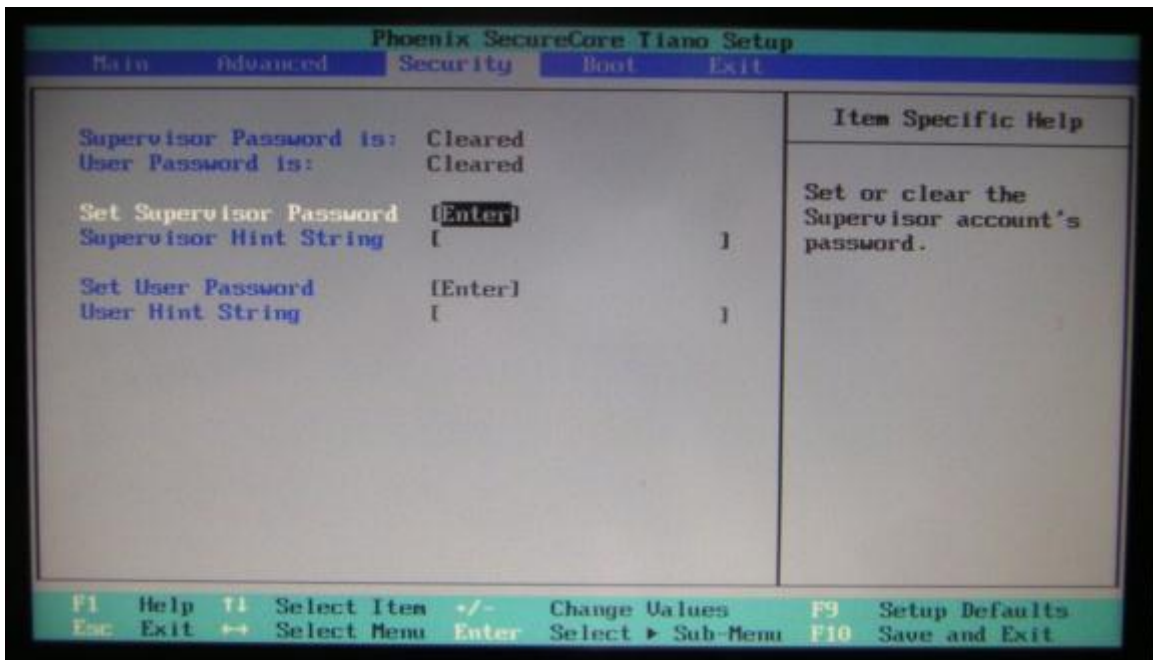
## COM Power and LCD Brightness Configuration

This BIOS screen allows the enabling of the power for the serial ports, and changing the default brightness setting for the LCD screen. The LCD screen brightness can also be set via the Windows OS.



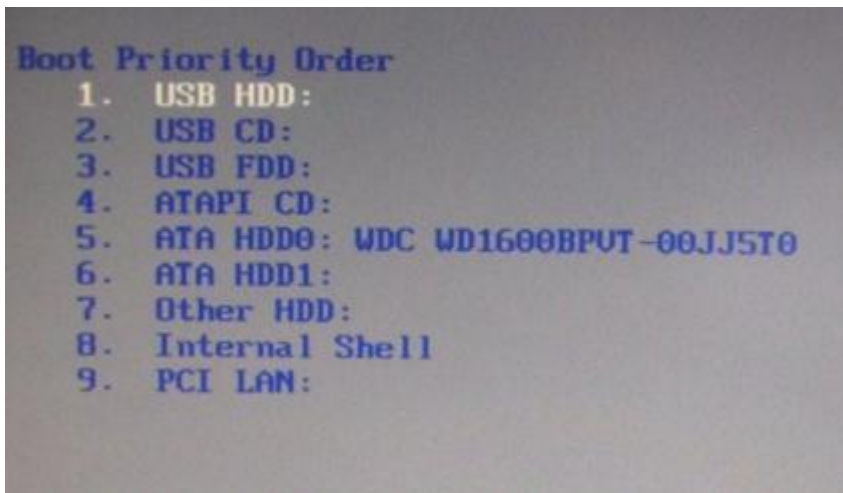
## Security Screen

The Security Screen is used to set BIOS accessed passwords.



## Boot Screen

The boot priority order can be set with the Boot Screen.



Keys are used to view or configure devices:

Use up and down arrows to select a device.

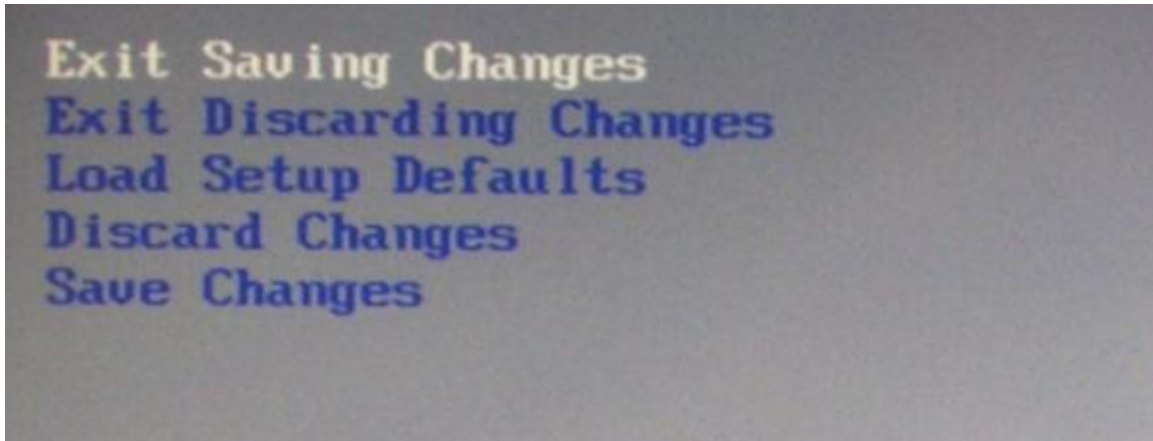
A plus and minus moves the device up or down in the list.

A shift plus the number 1 enables or disables the device.

A "!" will be displayed when a device is disabled in the boot list.

## Exit Screen

The exit screen allows for the saving, discarding, or loading of the default BIOS settings. These functions can also be performed any time using the F9 and F10 key.



## Phoenix SecureCore Tiano BIOS

The J2 225 uses the new Phoenix SecureCore Tiano BIOS. More information about this new UEFI BIOS can be found at the following web link.

<http://www.phoenix.com/pages/phoenix-securecore-tiano-tm>

## Device Drivers

All device drivers for the J2 225 can be downloaded from the J2 web site at:

<http://support.j2rs.com/225/>

Installation instructions are included with each driver.

## OPOS Drivers

J2 supports OPOS drivers for the following J2 225 peripherals:

- 1: Cash Drawer(s)
- 2: LCM 2X20 character customer display
- 3: MSR Reader

The driver and documentation can be downloaded from:

<http://support.j2rs.com/Utilities/OPOS/>

## J2 225 Configuration Utility

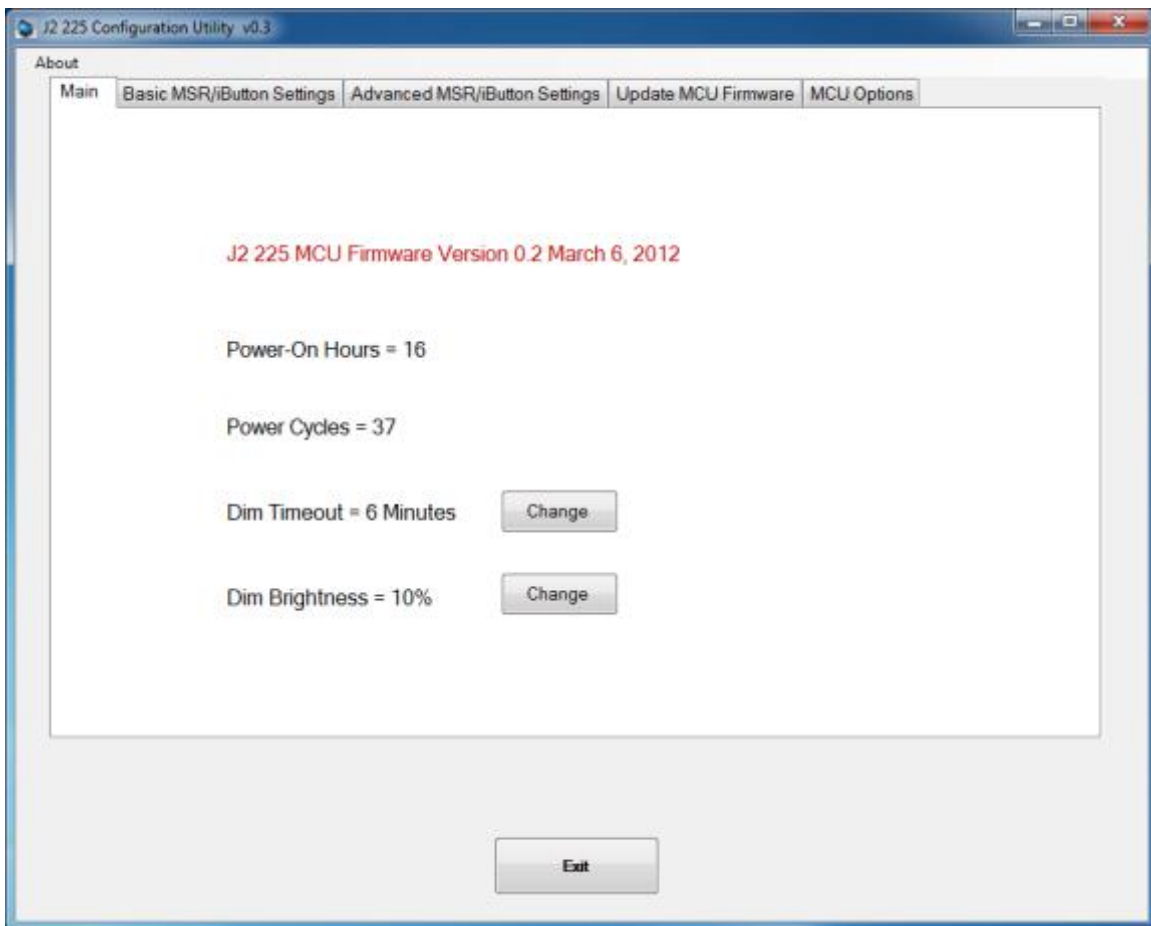
The J2 225 incorporates a microcontroller (MCU) that supports a number of system functions. These include auto LCD backlight dimming, MSR encoder, iButton encoder, power LED control, power-on timer, and power cycle counter. The J2 225 Configuration Utility allows for the configuration of options and for reading the current values of these various functions.

### Installation

The utility can be downloaded from the J2 web site: <http://support.j2rs.com/225/utilities/>  
To install, simply unzip anywhere and run setup. Like other J2 utilities it can be uninstalled through the Windows control panel.

### Main

The main screen displays the following: the current version of firmware, the power on count (in hours), a list of the number of power cycles, and the dim timeout setting and dim brightness settings. (as *shown below*):.



## Power-On Hours

The MCU uses an internal timer to keep track of how many total hours the J2 225 has been up and running in its lifetime. This number shows powered-up hours only, not the powered but off/standby time. The accuracy of this timer is only about +/- 5% and is to be used as an approximate number. The value is stored in the MCU internal EEPROM.

## Power Cycles

The MCU tracks the total number of times the unit has been powered off and on in the power cycle counter. The count is stored in the MCU EEPROM and is used for diagnostic purposes. The power-on and power cycles can only be changed at the factory.

## Dim Timeout

This value is the amount of time the MCU waits if there is no touch activity before dimming the screen. This same function is built into Windows 7 and Windows 8 drivers, and should be used rather than the J2 225 hardware dimming. But for older operating systems (such as XP) the J2 225 hardware dimming default should be used.

The default value for the hardware dim timeout is six minutes, but can be changed with this utility from any value from 0-255 minutes.

Note: a value of zero will disable the hardware auto dimming function.

### J2 225 MCU Firmware Version 0.2 March 6, 2012

	Minutes (0-255 0=Disabled)	<input type="text" value="10"/>		
Power-On Hours =	<input type="button" value="7"/>	<input type="button" value="8"/>	<input type="button" value="9"/>	<input type="button" value="Back Space"/>
Power Cycles =	<input type="button" value="4"/>	<input type="button" value="5"/>	<input type="button" value="6"/>	
Dim Timeout =	<input type="button" value="1"/>	<input type="button" value="2"/>	<input type="button" value="3"/>	<input type="button" value="Enter"/>
Dim Brightness =	<input type="button" value="0"/>	<input type="button" value="Cancel"/>		

Once the dim timeout is reached the LCD screen will dim to the value set in Dim Brightness. Any touch of the screen, such as MSR read, iButton read or keyboard activity that changes the keyboard LED status will take the J2 225 out of auto dim mode. This is all done via hardware, and no software drivers need to be loaded. If it is required, the J2 DimWake driver should be loaded if other activity is required to take the J2 225 out of auto dim. This driver is described in the DimWake section of this manual.

## Dim Brightness

The brightness level that the screen dims to when auto dim is active is controlled by the Dim Brightness setting. This utility is used to change this value whose default value is 10%. The possible range is from 5-95%, in 5% increments.

### J2 225 MCU Firmware Version 0.2 March 6, 2012

Dim Brightness % (5-95%) 5

Power-On Hou

Power Cycles =

Dim Timeout =

Brightness = 10%

7 8 9

4 5 6

1 2 3

0 Cancel

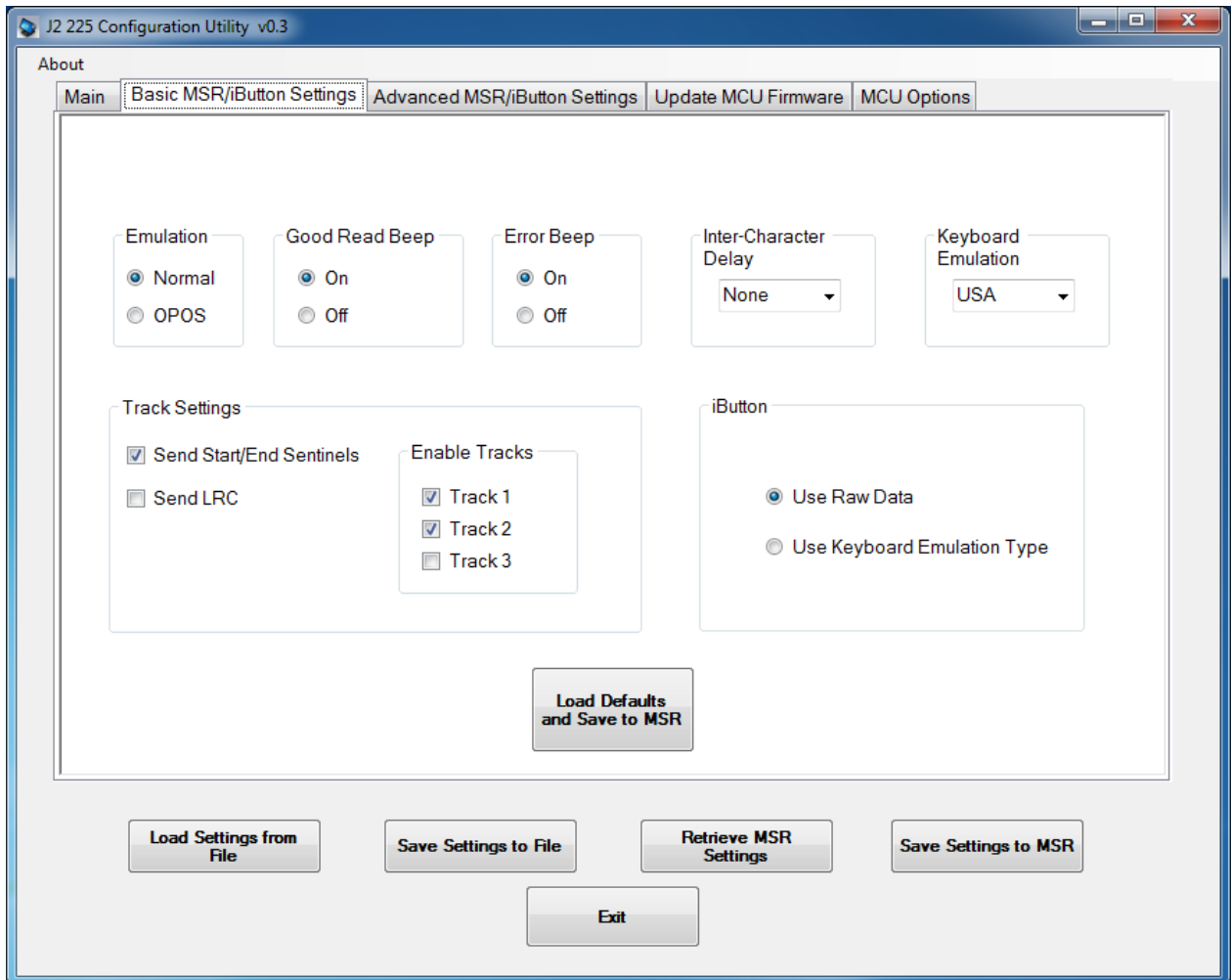
Back Space

Enter

Note: Dimming is important for a few reasons: one is to lower the total power consumption of the unit, another would be to prolong the LCD screen backlight LED life.

## Basic MSR Settings

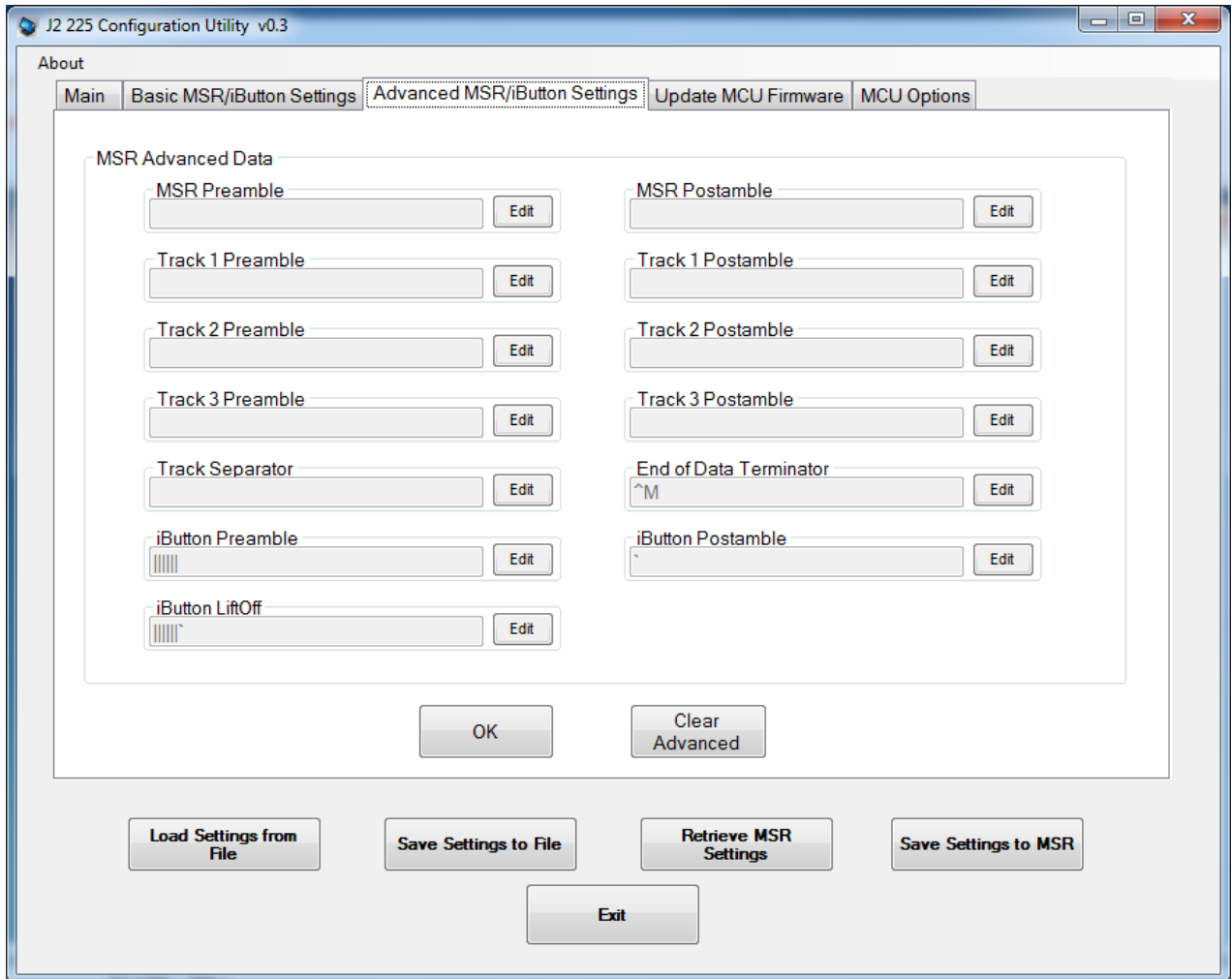
This tab is used to set commonly changed MSR/iButton settings. The default values have been chosen to work with most software without change. Note that these settings can be changed without an MSR installed. It should be noted that the MSR/iButton is a keyboard wedge device. Most settings are self-explanatory.



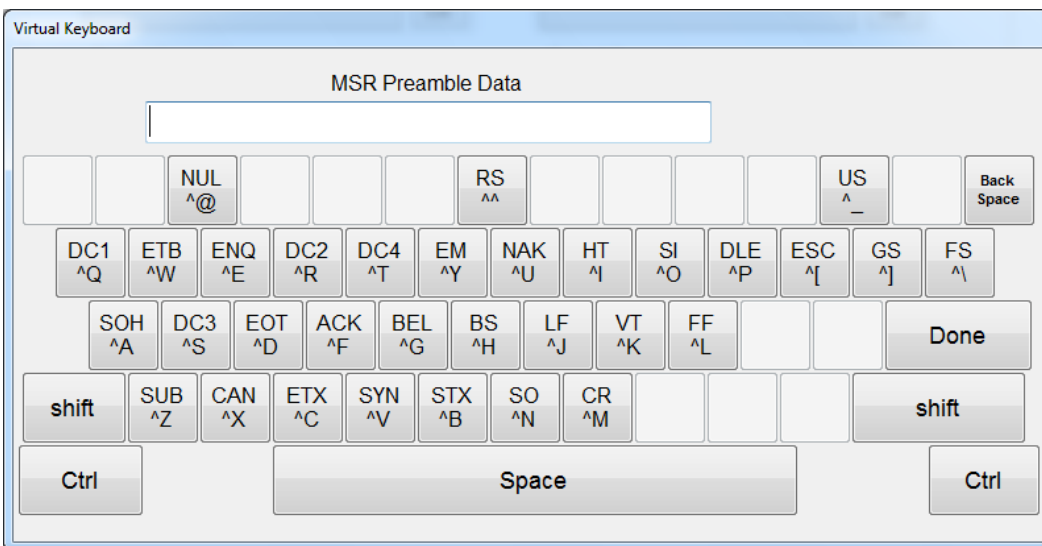
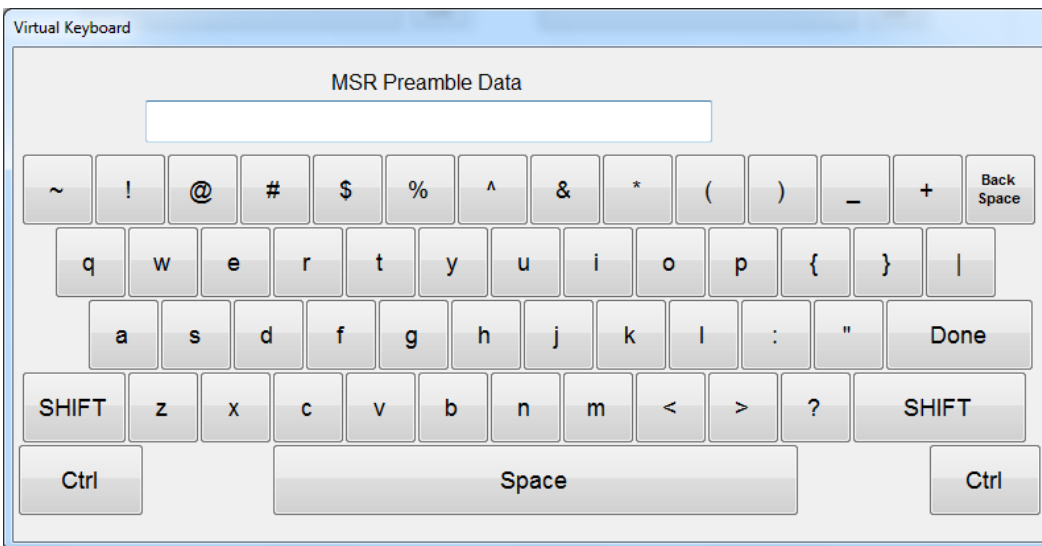
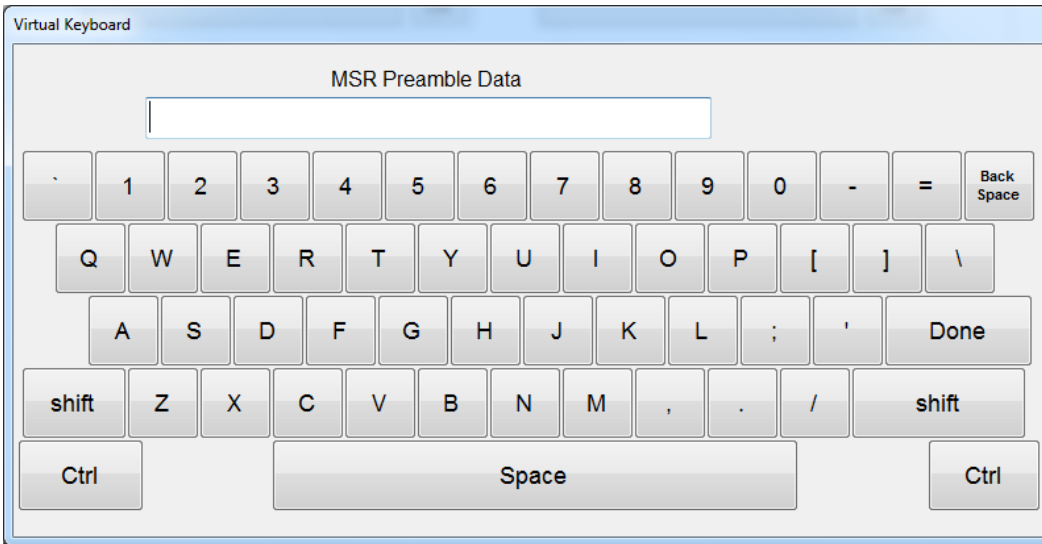
The radio buttons at the bottom of the screen are used to load settings to and from a file, to retrieve current settings, or to save new settings to the MSR/iButton MCU. The “Load Defaults and Save to MSR” button loads the default settings for the MSR/iButton and auto dimming functions.

## Advanced MSR/iButton Settings

The Advanced Settings tab allows preambles and post-ambles to be added, required for the MSR and iButton. By default for the MSR, only an ENTER key needs to be sent at the end of all track data.

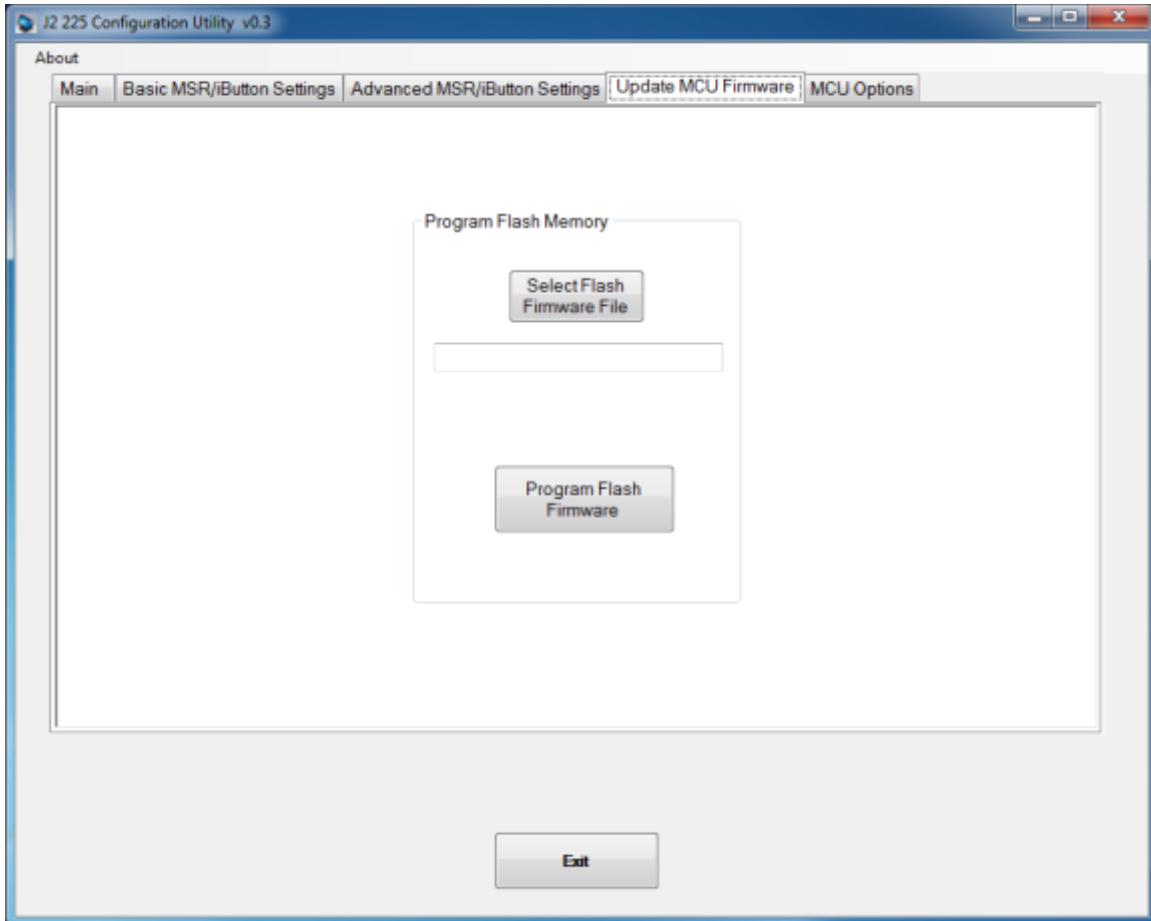


When preamble or postamble data needs to be edited, a touch-friendly onscreen keyboard is displayed. The data may be entered by the onscreen keyboard or by an attached keyboard. The onscreen keyboards *shown below* are for uppercase, lower case and control characters.

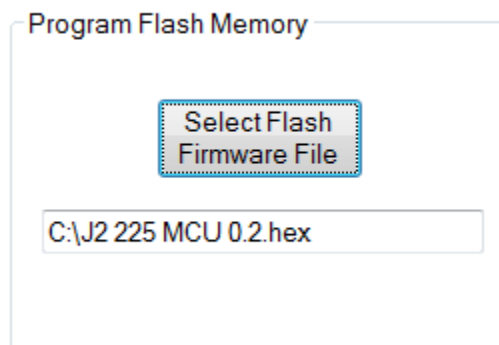


## Update MCU Firmware

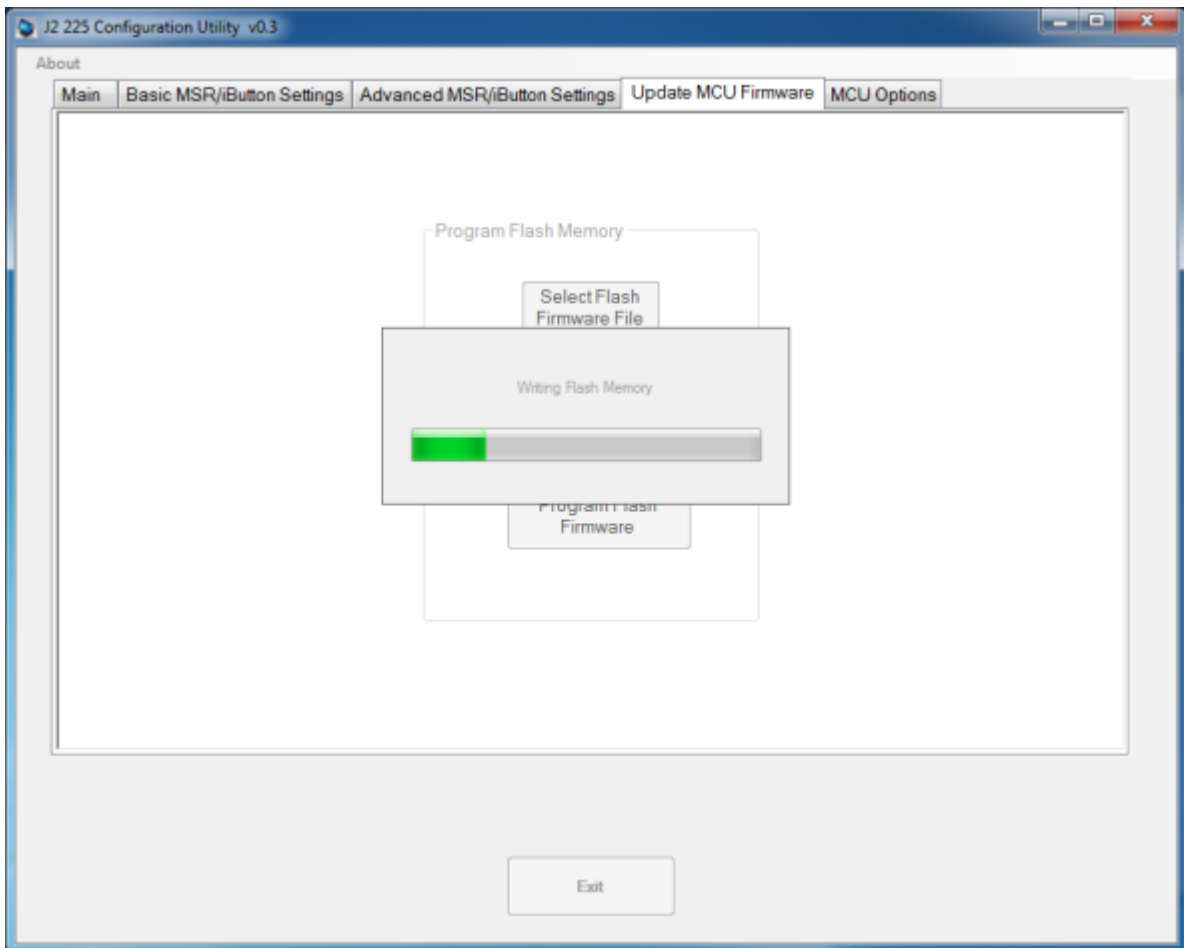
This tab is used to update the MCU firmware when necessary. This may be to add a new feature or function to the MSR/iButton. J2 will supply a firmware file for this when required.



Use the “Select Flash Firmware File” button to start the update, *as shown below*. This will let you browse for the correct file.

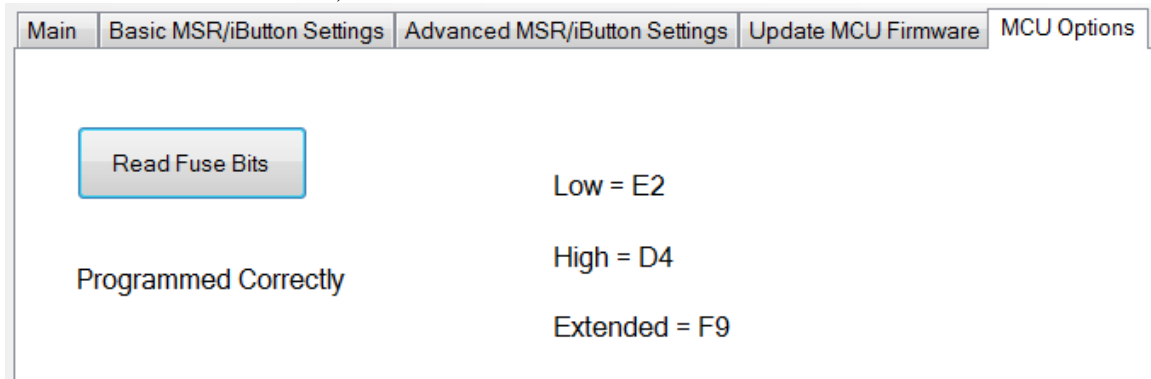


Once the hex file has been selected, touch the “Program Flash Firmware” button to start firmware update. The utility will now update the MCU firmware. It will first write the memory then verify it. **Do not turn off the J2 225 power when updating.**



### MCU Option

This tab is only used for factory programming and verification of the MCU option fuses. It will display the current value of the MCU option fuse, (note that normally end-users would not use this feature).



## DimWake

DimWake is a very small and simple utility that loads on any Windows OS, but normally is only used with variations of the XP operating system (like XP Pro, POSReady 2009, WEPOS, or XP Embedded). The DimWake program is used to take the J2 225 out of auto dim mode. The hardware can only take the system out of dimming by either a touch of the touch screen, MSR read, iButton read, or keyboard activity that changes the keyboard LED status. Sometimes it is desirable for other events to take the system out of dim mode, like a mouse movement. The DimWake program provides this function.

### Installation

The utility can be downloaded from the J2 web site: <http://support.j2rs.com/225/utilities/>  
To install just unzip anywhere and run setup. Like other J2 utilities it can be uninstalled through the Windows control panel.

Once having installed DimWake, you will need to reboot the system for it to take effect. DimWake will then be running in the background.

Once installed and running - any mouse, keyboard or high CPU activity (like playing a video) will bring hardware auto dimming out of dimming mode, or prevent it from going in to dimming. This combination of hardware auto dimming and DimWake provides that same function to XP, as comes standard with Windows 7 and Windows 8. When using Windows 7 or 8 it is best to use the built-in dimming feature.

## J2 Health

J2 has a standard program that works with all its POS products, called J2 Health. This program is used in either a standalone mode or in conjunction with J2 remote monitor/asset tracking software. The J2 Health program monitors different aspects of the POS hardware to ensure the hardware is running within specification. For the J2 225 it monitors critical system voltages, as well as system and CPU temperatures.

### Installation

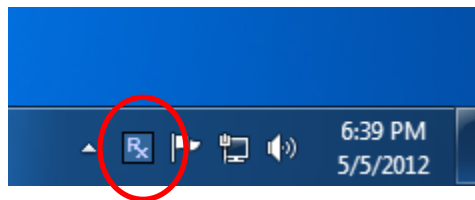
The utility can be downloaded from the J2 web site:

<http://support.j2rs.com/Utilities/Health/> To install just unzip anywhere and run setup.

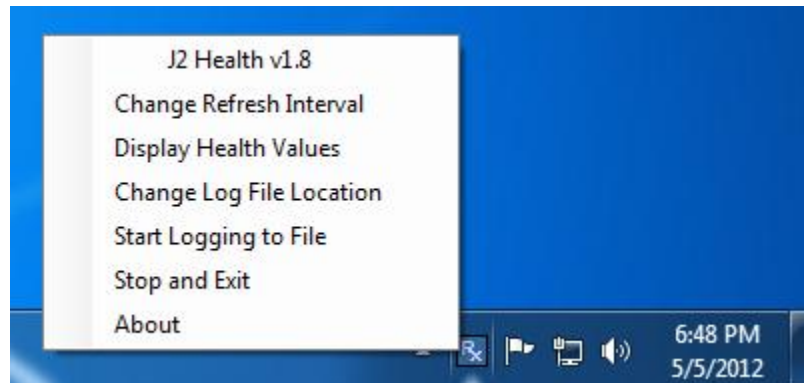
Like other J2 utilities it can be uninstalled through the Windows control panel.

### Tray Icon

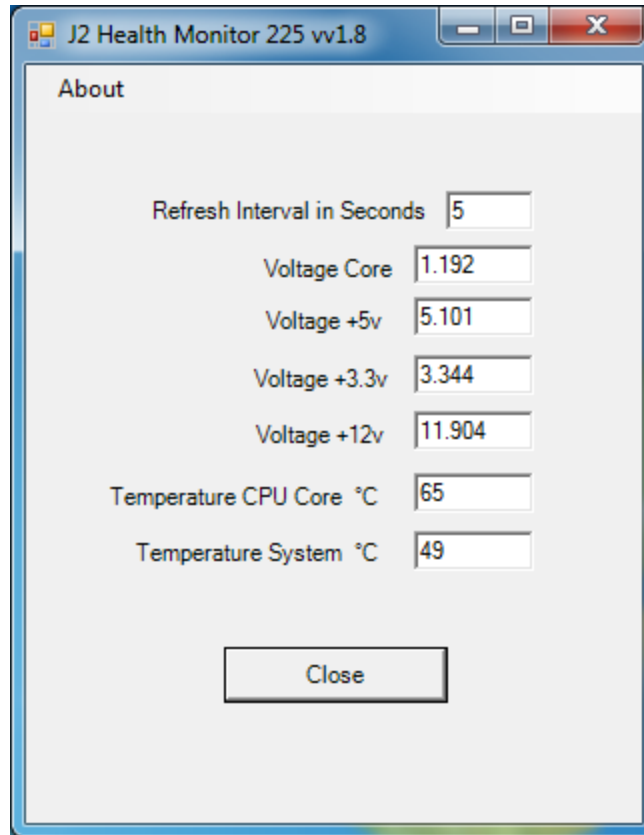
Once installed and the system has rebooted, J2 Health will be running in the background. The J2 health icon will appear in the task bar tray:



Right-clicking on this icon displays different Health options, *shown below*:



The current health values will display by clicking on “Display Health Values”.  
*A sample screen is shown below:*



As can be seen above, when running on the J2 225 the J2 Health program displays critical system voltages and system and CPU Core temperatures. For other J2 POS systems, J2 Health may display more or less information. An example would be the J2 680 unit, which in addition to the above information would also display the fan speed of the two J2 680 fans.

### Logging to File

The J2 Health program can log the health data to a file in the csv text format for importing to other programs, like Excel. This can be handy for finding “time of day” related problems.

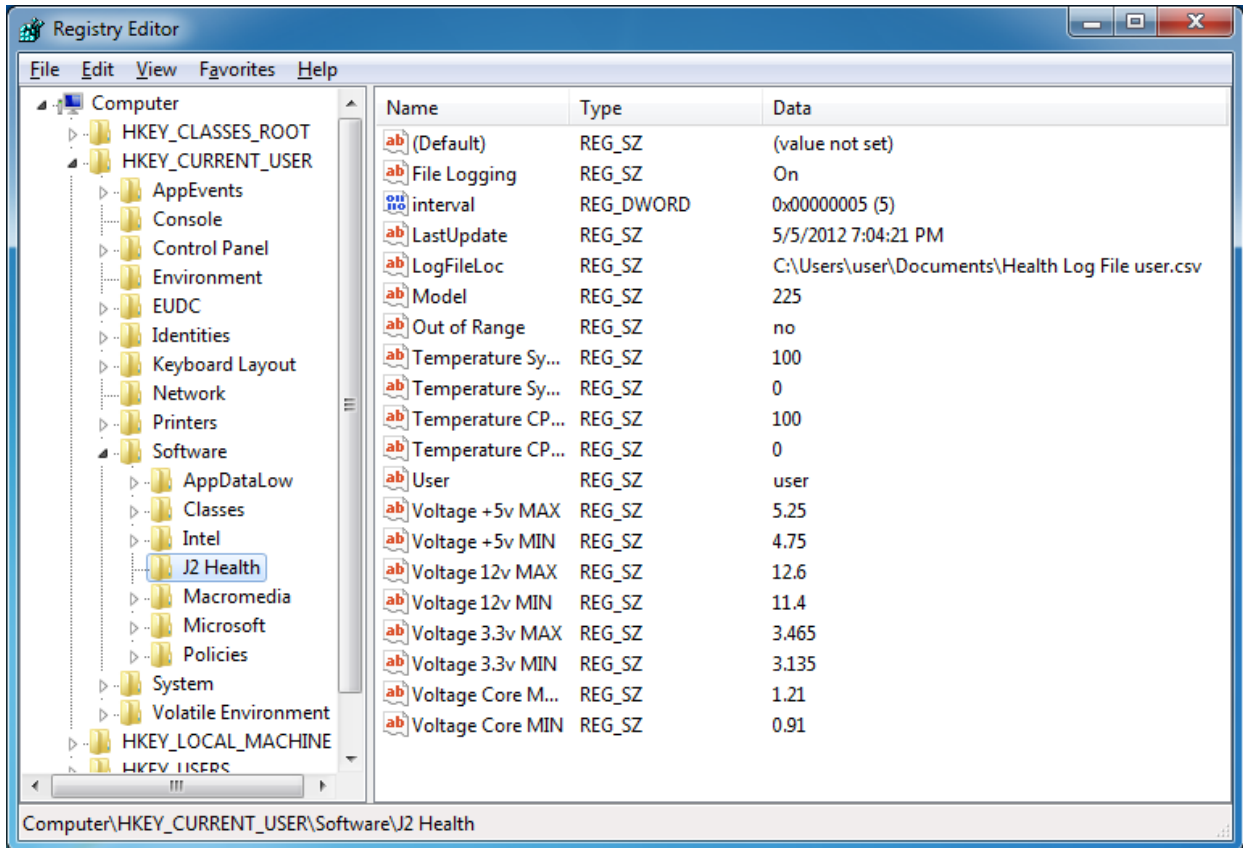
When logging is enabled, the tray icon Rx symbol will change to red to indicate logging in is taking place.



## Registry Entries

The J2 Health program creates registry entries for the different health values. Dynamic values are updated at the user defined interval, which is by default 5 seconds. Other software may use these registry entries to access the J2 health information.

*J2 225 Health keys are shown below:*



## J2 Remote Monitoring Software

J2 now offers a full remote monitoring and asset tracking solution that works in conjunction with J2 Health to ensure the highest uptime possible of your POS hardware. Please contact J2 sales for more information on this fully customizable, remote monitor solution.

For more information, please visit us at

[http://www.j2retailsystems.com/newsarticle.php?news\\_id=57](http://www.j2retailsystems.com/newsarticle.php?news_id=57)

## SMI BIOS Info Utility

The J2 SMI BIOS Info program allows for the reading of all populated BIOS DMI/SMI information. With some J2 products including the J2 225, this information also includes dynamic system health information. Normally this dynamic DMI health information BIOS is only supported on very high end servers. Now J2 brings this feature to POS hardware.

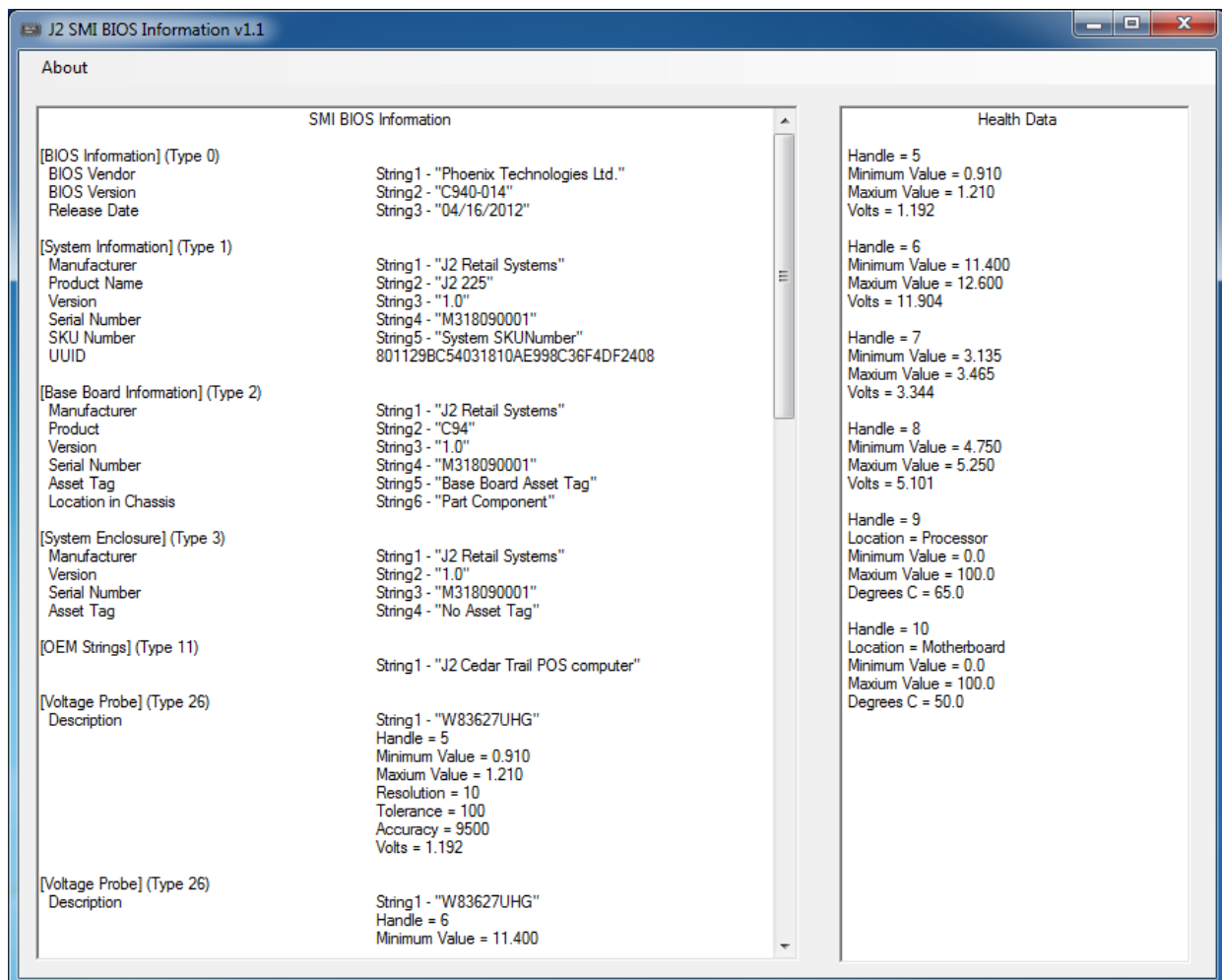
The J2 SMI BIOS Info program will run on any J2 POS hardware or for that fact on any PC hardware. It can display all DMI/SMI information on a formatted form.

### Installation

The utility can be downloaded from the J2 web site: <http://support.j2rs.com/Utilities/>  
To install just unzip anywhere and run as you wish to run the utility form.

### Operations

Just click on the .exe file to run. The following screen will be displayed (*see below*). Note that the health data will only display on newer J2 systems that support the dynamic DMI health BIOS.



## Cash Drawer Test Utility

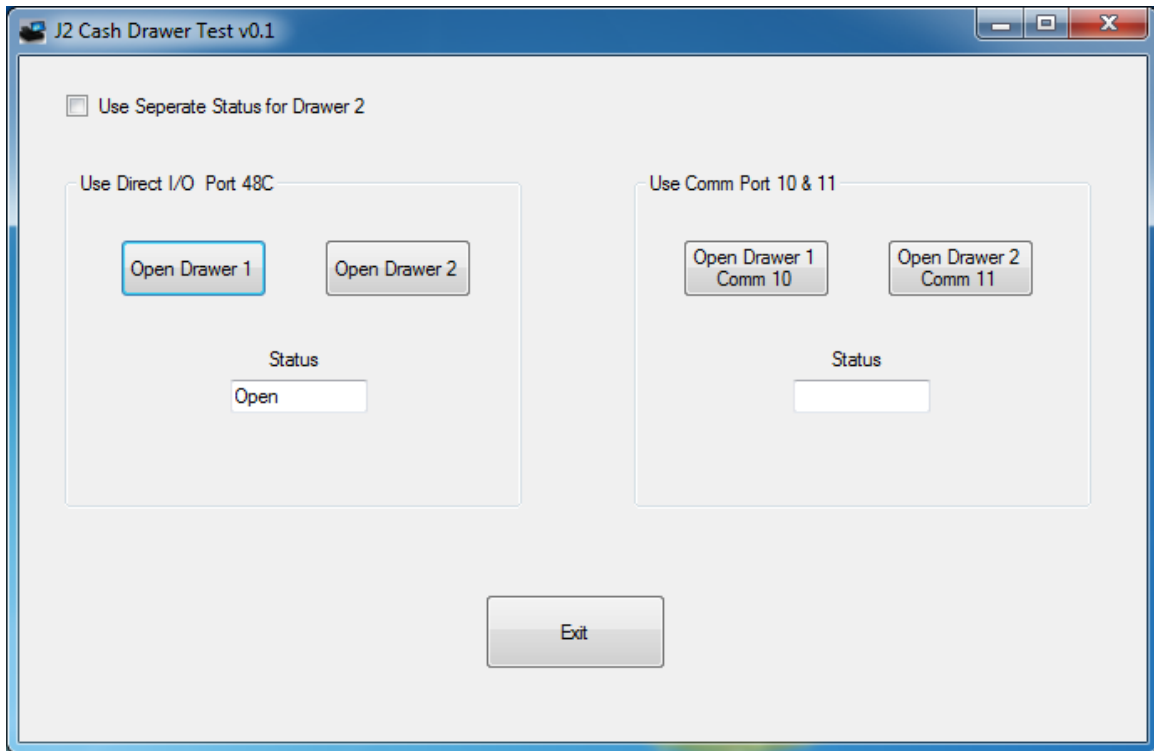
J2 has a generic cash drawer test utility that works on all J2 products, including the new J2 225 computer. This test program also supports the J2 225 separate status lines, such as when the special J2 225 “Y” cable is used, supporting two cash drawers.

### Installation

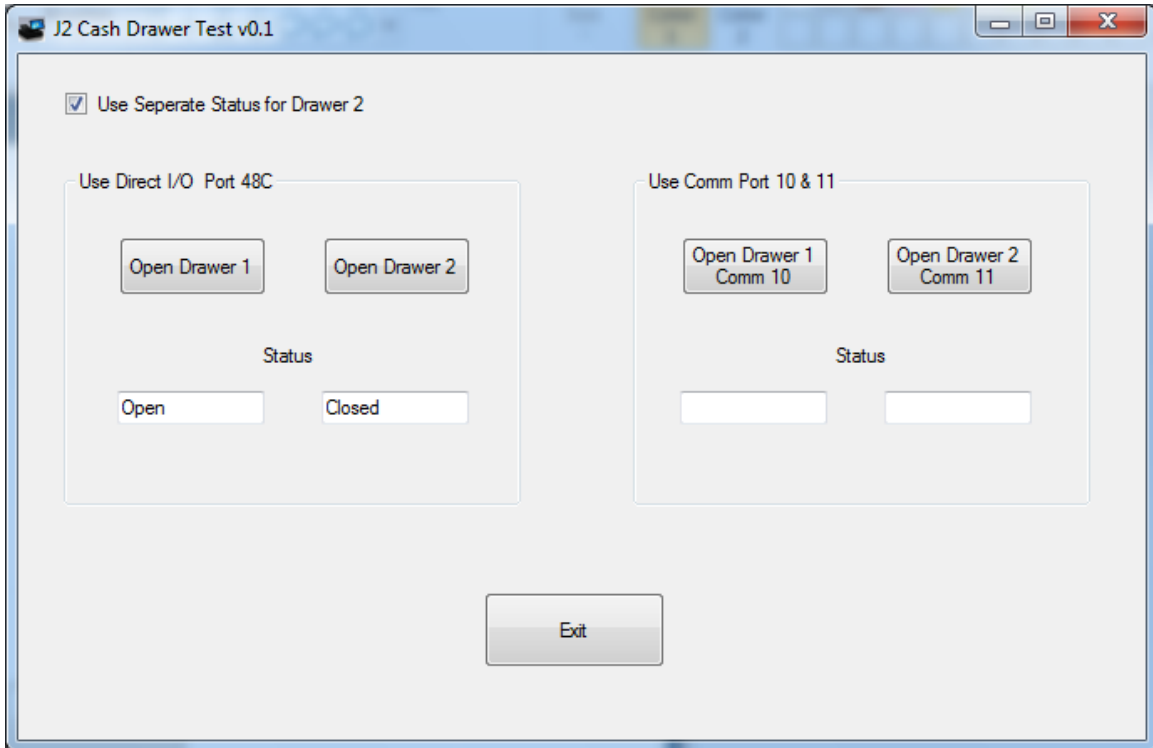
The utility can be downloaded from the J2 web site: <http://support.j2rs.com/Utilities/>  
To install just unzip anywhere and run as you wish to download the utility form.

### Operation

Just run the cash drawer test from whatever folder it was installed into. Use the “Use Direct I/O Port 48c” setting to test the cash drawer(s). (*see example below*)

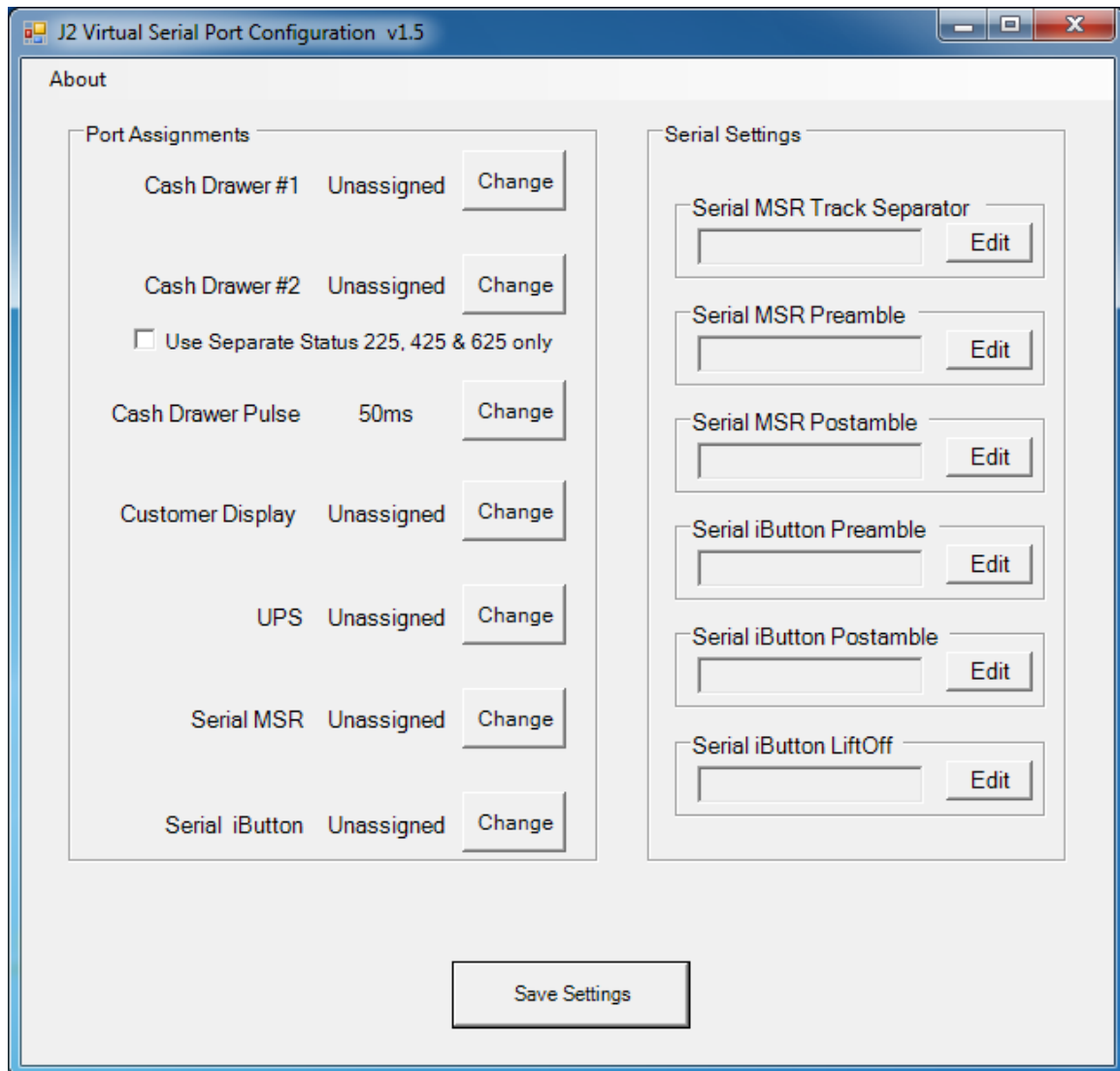


To use two cash drawers with the J2 225 you use a “Y” cable, either the J2 standard “Y” cable that also works with Epson printers or the special J2 225 “Y” cable that supports separate status lines (The standard cable supports shared status lines.). When using the special cable, check the “Use Separate Status for Drawer2” box. The test screen will now look like this:



The “Use Comm Port 10 & 11” option is to test the cash drawer you set up using the J2 virtual serial ports program. The virtual serial port program must be installed with the cash drawer virtual serial ports set to Comm 10 & 11.

## J2 Virtual Serial Ports Drivers



Virtual serial ports can be used for the cash drawers, virtual 2x20 line display on the optional 10.1 LCD, Smart UPS, MSR and iButton.

To open virtual serial cash drawer send a bell character to the Com port it is assigned too. (The bell character is the ASCII 07 hex character “Control G.”) The open/close status of the drawer may be obtained by reading the status bits of its COM port. The drawer open/close status will be reflected on the CTS and RI bits, either bit may be used. This virtual COM port driver is designed to work the same as a hardware serial cash drawer and will work with drivers for serial cash drawers.

## J2 225 LCM 2x20 Character Customer Display

The J2 225 supports an optional two line by twenty character mono color liquid crystal display module (LCM). This LCM display shows black characters on a white background for maximum visibility to the customer. The LCM supports a number of firmware emulations of popular customer displays which allows existing POS software to run without modification.



## Installation

The J2 225 LCM can be installed in just a minute. To install: first power down the system, then remove the secondary display mounting cover (*as shown below*):



After the secondary display cover is removed attach the LCM cable to the unit. This 8 pin cable plugs into the CN8 / LCM connector on the system board. The connector is keyed so that it can only plug in one way. This cable provides power and serial data to the LCM module.



Once the cable is plugged in, feed any extra cable into the unit and attach the LCM with the two 4mm screws provided with the display.



The system can now be powered on. When power is first applied, the LCB will display its current settings before clearing and waiting for serial data from the system.



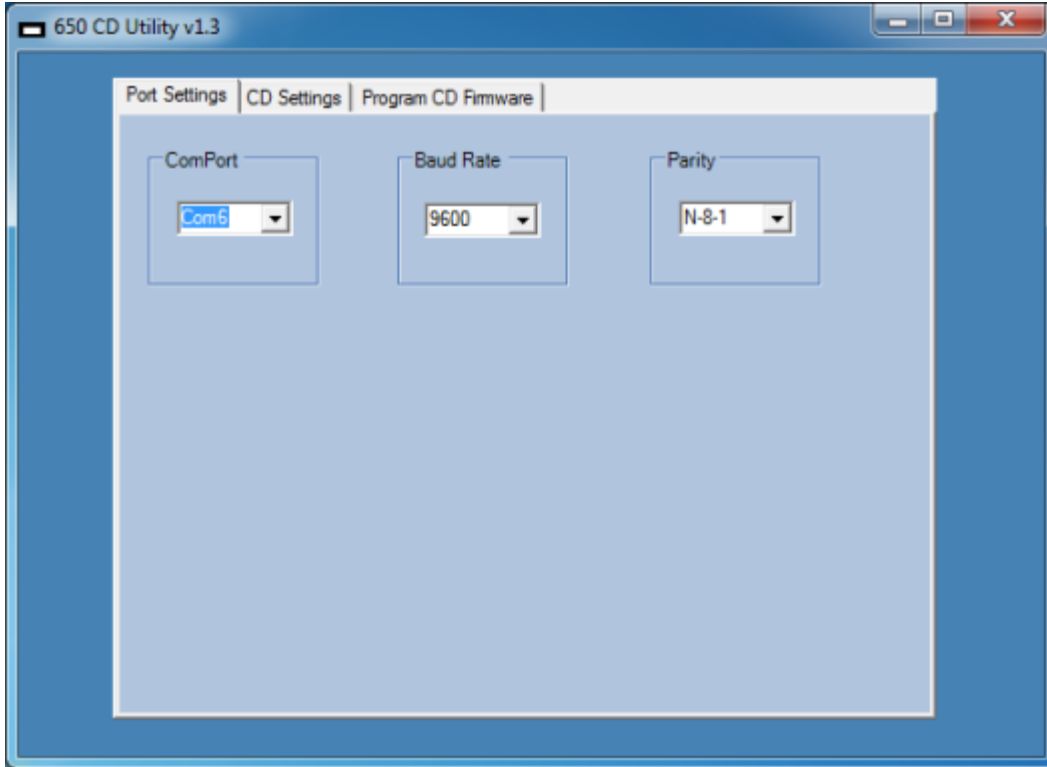
### **J2 225 LCM Configuration Utility**

A configuration utility is provided to change the LCM setting. This utility allows for the setting of serial port baud rate, a data format as well as emulation type and default font. It also allows for the LCM firmware to be updated if required.

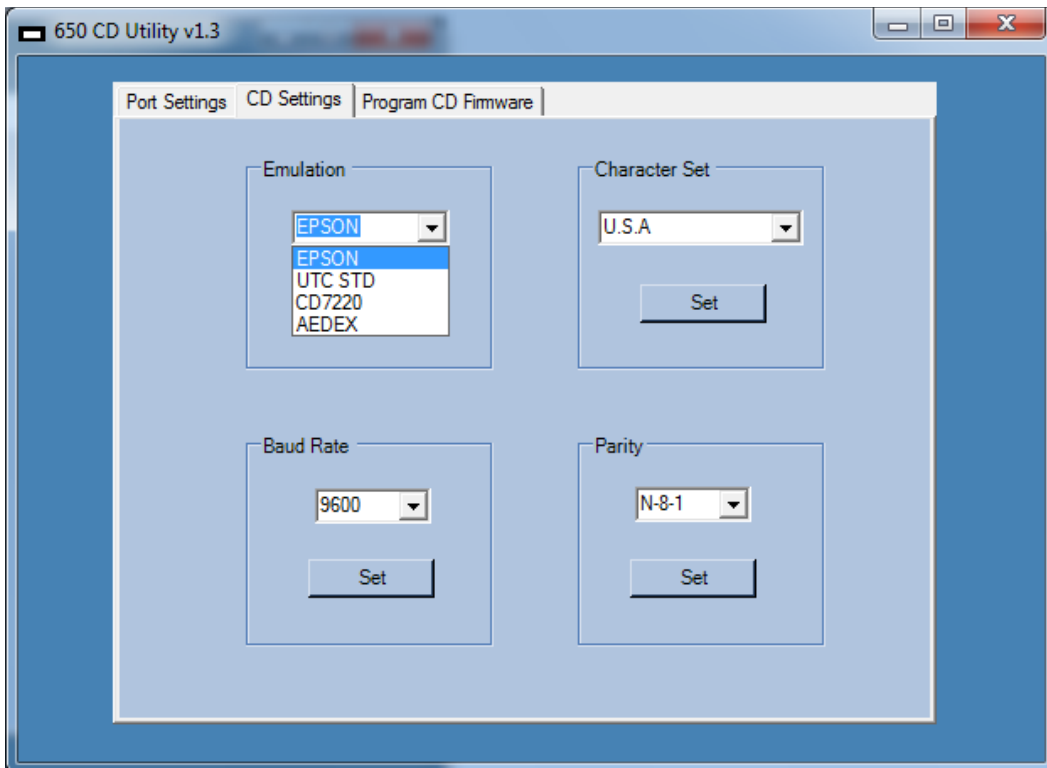
### **Installation**

The utility can be downloaded from the J2 web site: <http://support.j2rs.com/Utilities/>  
To install just unzip anywhere and run setup. Like other J2 utilities it can be uninstalled through the Windows control panel.

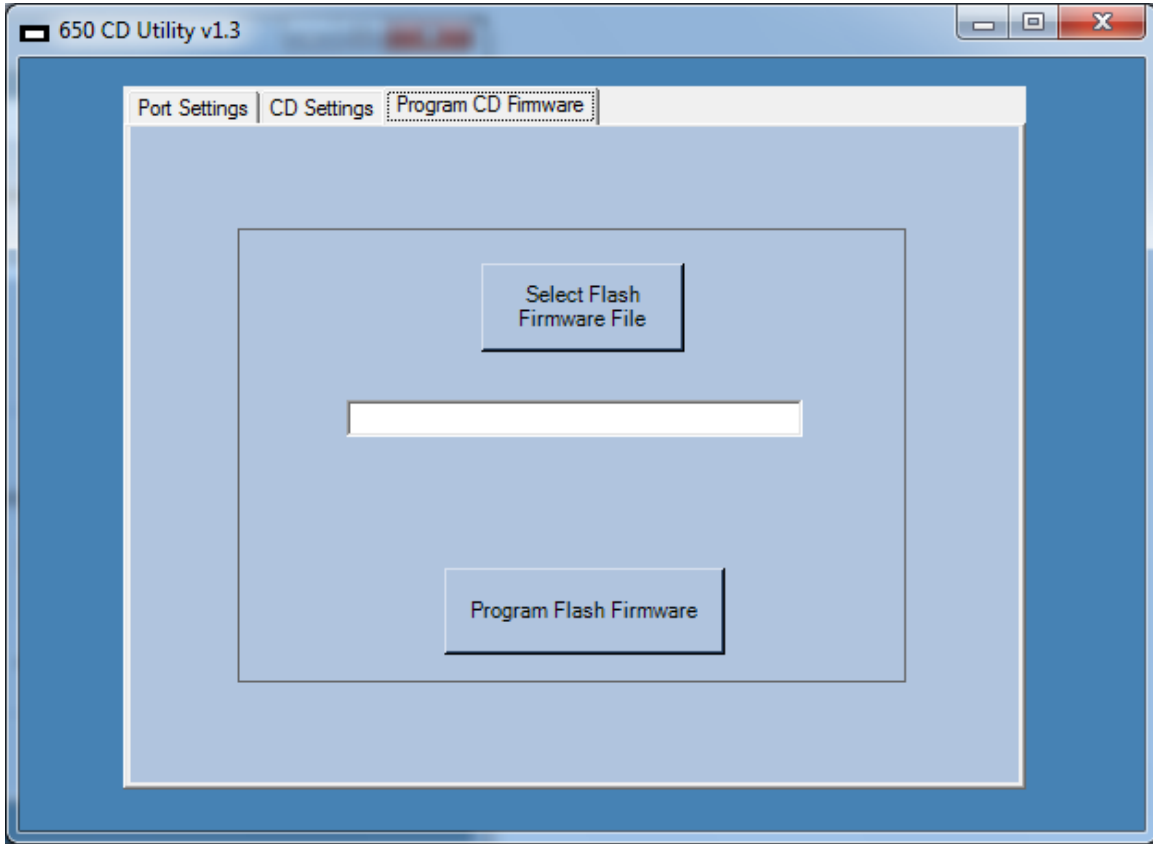
By default the LCM is mapped to ComPort 6, 9600 baud and N-8-1 parity.



The emulation, character set, baud rate and parity can be changed under CD Settings.



The LCM firmware can be updated using the “Program CD Firmware” tab. J2 will supply the necessary file should a firmware update be required.



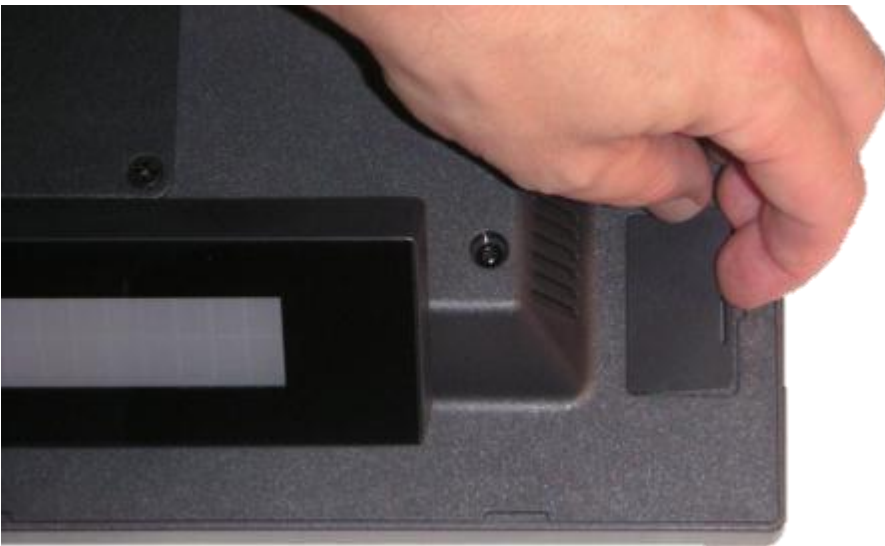
## J2 225 MSR

J2 225 supports an optional magnetic card reader (MSR). This reader supports magnetic stripe cards conforming to ISO 7811/1-6. It can read both high & low coercivity magnetic stripes. The MSR support 3 tracks of data but defaults to having only track one and two enabled. The MSR is a Keyboard Wedge device with all data being sent to the keyboard port. For software that requires a serial port MSR, the J2 Virtual Serial Port driver can be used to allow the J2 225 MSR to function as a serial port MSR.



## Installation

The J2 225 MSR can be installed in just a minute. To install, first power down the system. Then remove the option mounting point cover, *as shown below*:



Once the cover is removed plug in the cable MSR cable.



Once the cable is attached, the MSR may be screwed onto the unit using the 2 screws provided. Make sure the MSR cable is not being pinched when attaching the MSR.



This completes the installation of the J2 225 optional MSR.

Note that the MSR can be mounted to any one of the J2 225 option mounting points. By default the internal MSR cable is routed to the upper right hand corner of the unit, but this cable can be rerouted if need be to use any of the other three option mounting points.

The software configuration of the MSR is covered under the J2 225 Configuration Utility section of this manual.

## J2 225 iButton Reader

J2 225 supports an optional iButton reader; sometimes referred to as a Dallas key. The iButton is a Keyboard Wedge device with all data being sent to the keyboard port. For software that requires a serial port iButton reader, the J2 Virtual Serial Port driver can be used to allow the J2 225 iButton reader to function as a serial port iButton reader.



## Installation

The J2 225 iButton reader can be installed in just a minute. To install, first power down the system, then remove the option mounting point cover, *as shown below*:



Plug in the ibutton cable as shown:.



Attach the iButton reader onto the unit with the 2 screws provided.  
*Make sure the cable is not being pinched when attaching the iButton reader.*



This completes the installation of the J2 225 optional iButton reader.



Note that the iButton reader can be mounted to any one of the J2 225 mounting option points. By default the internal iButton reader cable is routed to the upper right hand corner of the 225, but this cable can be rerouted if need be to use any of the other three option mounting points.

The software configuration of the iButton reader is covered under the J2 225 Configuration Utility section of this manual.

## **J2 225 10 inch 1024 x 600 LCD Customer Display**

To be added