Version 2.00

Hardware Manual

M6000

Controller

Marel hf.
Austurhraun 9 • IS-210 Gardabaer • ICELAND
Tel: +354 563 8000 • Fax: +354 563 8001
info@marel.is • www.marel.com

Printed in Iceland, May 2007.

070518ENG

SAFETY NOTICE FOR MAREL M6000 CONTROLLER

All persons involved in the use and/or installation of this product should be aware of the following instructions.

Failure to follow these instructions or other safety instructions in the manual voids all warranties and may result in malfunction of the product, property damage, serious personal injury, or death.

WARNING

- ***The installation and use of this product must comply with all applicable national, state, and local codes.***
- ***Turn the electrical power off when servicing the equipment.***
- ***Electrical installations and repairs must be performed by a licensed electrician, in accordance with manufacturer's specifications and national and local electrical codes.***
- ***There are no user serviceable parts inside the housing. Do not open the housing as there is hazardous voltage inside.***

Do Not

drop the M6000 Controller. Some types of the M6000 contain a hard disk drive which is sensitive to shock.

ATTENTION!

The M6000 is a Class I equipment and MUST have a protective earthing connection for safe operation.

ONLY USE A EARTHED MAINS CONNECTION

Power supply cords, color coding:

	International	**North-American**
Earth	Green/Yellow	Green or Green/Yellow
Neutral	Light Blue	White
Live	Brown	Black

Contents

Technical Specifications

Manufacturer:	Marel hf.
Dimensions:	
Outer Dimensions:	534 x 510 x 120 mm (W x H x D), brackets included
Weight:	10 kg (22 lb)
Construction:	
Material:	AISI 316 stainless steel
Environment protection:	IEC 529-IP67 washdown environment (NEMA 6)
Cleaning:	Wash with water and ordinary soap. Do not use high-pressure water jets for cleaning.
Mounting:	Adjustable wall or table mounting bracket.
Hardware:	
Computer/Processor:	VIA C7 V4 Bus Processor running on 1.3 GHz
Operating System:	Windows or Linux
Memory:	512 MB DIMM, 240 pin, DDR2 533/400 SDRAM
Disk Space:	3.5” Hard disk drive, 20GB
Display:	15” TFT color display, 1024 x 768 dots Backlight lifetime: min. 20,000 hours without screen saver
Compact Flash Socket:	Type II for Compact Flash or IBM Microdrive
Status Indicators:	One dual color LED LED status: Green: Normal operation Yellow (red + green): Screen saver or no VGA signal Red: Fault
Touch Screen:	Resistive, 4-wire technology, accuracy 3%
Connectivity:	
Serial I/O:	1 x DB-9 RS232 bi–directional interface, 16CC50 compatible
Ethernet:	1 x IEEE 802.3, 10/100BASE-T twisted pair interface
PS/2:	1x keyboard 1 x mouse (the PS/2 mouse port is occupied for the touch screen)
USB:	4 x USB ports, USB 2.0 compliant
Power:	
Voltage:	110 – 230 V type: 110 –230Vac universal power supply 24V type: 24Vdc
Current Consumption:	110 – 230 V type: 0.8 A max. on 110Vac, 0.4 A on 230 Vac 24V type: 2A max. (1.3 A nominal)
Frequency:	110 – 230 V type: 50 – 60 Hz
iButton Inputs:	
Number of Inputs:	1 ID reader

Introduction

About This Manual

The *M6000 Controller, Hardware Manual* contains descriptions of the controller's basic components and instructions in how to use its basic functions.

It is intended for your assistance in installing and operating the M6000 controller.

Improvements

You can help improve this manual and the equipment you purchased. If you find any errors in the manual, please let us know. You can contact us at: Marel hf., Austurhraun 9, IS-210 Gardabaer, Iceland;
phone (+354) 563-8000, fax (+354) 563-8001, attn. Documentation & Localization, email: documentation@marel.is.

Warranty Information

Warranties given by Marel hf. are revoked if the equipment in question has not been used according to specifications. The same applies if the equipment has been modified in any way without Marel's consent.

The M6000 Controller

About the M6000

The M6000 industrial controller is built on a PC-compatible architecture. The controller is encased in a water-resistant stainless steel housing rated to IP67 standards. The controller's user-friendly display is a 15" 1024 x 768 pixel LCD color monitor and a very tough touch screen designed to withstand the harshest treatment.

The controller is mounted on a stainless steel wall bracket with a tilting option. The bracket can be fastened with screws on other equipment or on a tabletop.

Initial Inspection

Prior to use, inspect the controller for damages incurred during shipment. If the controller has been damaged, contact your local Marel service center immediately.

Cleaning

Note: A thorough daily rinse of the controller is very important to help prevent corrosion and rust problems. Use clean cold water. Never rinse with seawater.

- Clean the controller with detergents approved for use in the food industry. Follow the manufacturer's instructions for use.

- Do not use excessively strong solutions of detergent. The use of chlorine can cause rust spots to appear on the stainless steel.
- Do not use high-pressure jets on the controller. Instead, use low water pressure or pour water over by hand.

Detergents

The acidity of detergents used on Marel equipment should preferably be pH 12-13.

Strong base solutions are the main ingredients in most cleaning agents, for example potassium hydroxide (KOH) or caustic soda (NaOH). Because of its corrosive effects, caustic soda is not a desirable detergent for the M6000. If possible, use detergent solutions with KOH instead.

Always use detergents according to the detergent manufacturer's instructions.

Do not use a detergent containing sodium hypochlorite for daily cleaning. Sodium hypochlorite is a common ingredient in detergents, but as it contains chlorine it should be used with great care because of chlorine's corrosive effect on stainless steel.

Daily cleaning

- Use high alkaline foaming detergent, ph 1% 12-13, for regular daily cleaning. Do not use a detergent containing sodium hypochlorite for daily cleaning. The foaming detergent must be selected carefully and should contain some corrosion inhibitors and preferably potassium hydroxide (KOH) instead of sodium hydroxide (NaOH).
- Spray the detergent on all surface areas and leave to work for approximately 20 minutes. Rinse the detergent off.
- To kill any remaining bacteria, it is necessary to finish the daily cleaning procedure by spraying a quarternary ammonium solution over the area and onto surfaces (after drying), using a 300 ppm active ingredient.
- Before you resume processing the next morning or after breaks, rinse the quarternary ammonium solution off surfaces in contact with the raw material using clean water.

Disinfectants

When choosing a disinfecting agent, please note that chlorine corrodes stainless steel. Chlorine is, however, an effective disinfectant, so occasional use of chlorine may be necessary to control the growth of microorganisms.

Marel recommends the following procedure:

- Use chlorine to disinfect once a week after performing the regular cleaning with a high alkaline foaming detergent.
- Make sure the strength of chlorine does not exceed 200 ppm.
- Spray the disinfectant on surfaces and leave to work for approximately 30 minutes.
- After disinfecting, carefully rinse the equipment.
- On days when chlorine is not used, use a disinfectant containing quarter ammonium compounds instead.
- Make sure the strength of quarter ammonium compounds does not exceed 750 ppm.

Note: Rotating different disinfectants (e. g. chlorine, peracid or acid-anionic) in your hygiene program may ensure more effective sanitation.

As chlorine evaporates very quickly, its disinfecting effects will fade soon after it is sprayed on the equipment. Letting chlorine stay on the equipment will not improve the disinfecting effect, but only damage the equipment. Quarter ammonium compounds are considerably more stable and are active for a much longer time. Therefore, the benefit of leaving them on the equipment for an extended period of time is much greater.

Training staff

It is important that new cleaning personnel receive proper training and are made aware of areas on the equipment which are difficult to clean.

The User Interface

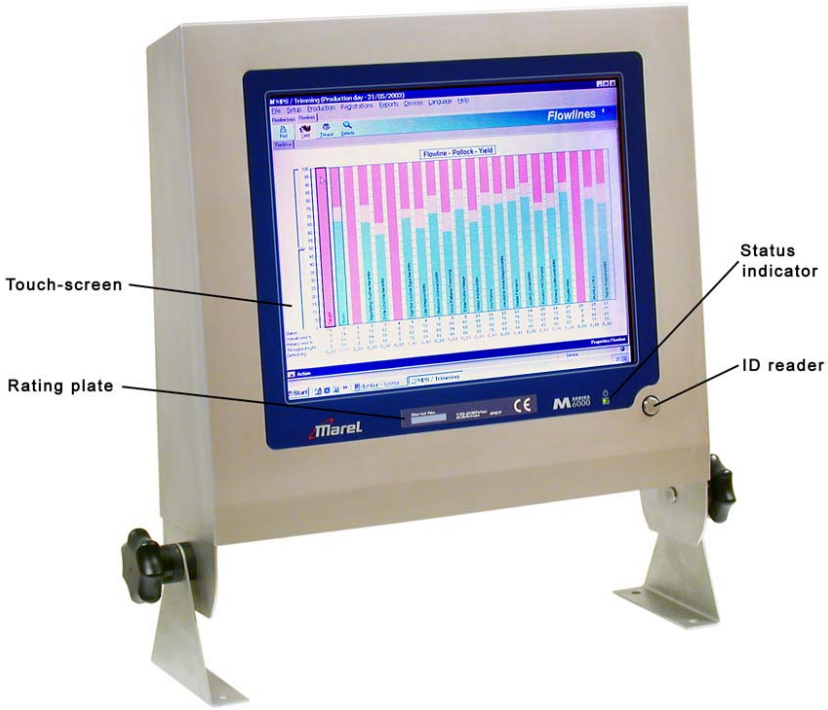

Figure 1 M6000 Controller, front view.

Because the controller is designed to run any Windows® or Linux® based applications[1], the M6000 user interface in the context of this manual is the touch screen itself.

The rating plate at the bottom of the touch screen shows the controller's production serial number, voltage and current rating.

The LED status indicator on the touch screen indicates the status of M6000:

Green:	normal operation
Yellow (red + green):	screen saver active or no VGA signal
Red:	fault

The ID reader is intended for future expansion.

[1] Windows® is a registered trademark of Microsoft Corporation.
Linux® is a registered trademark of Linus Thorvalds.

Connecting Ready-made Cables Inside M6000

The M6000 user (installer) can put ready-made cables with connectors through the glands on the M6000. This is easily done, for example with Ethernet cables, USB cables and keyboard cables, because the glands are equipped with a split insert specifically intended for such cases (see Figure 2).

Figure 2 M6000 Controller, special glands for cables with connectors.

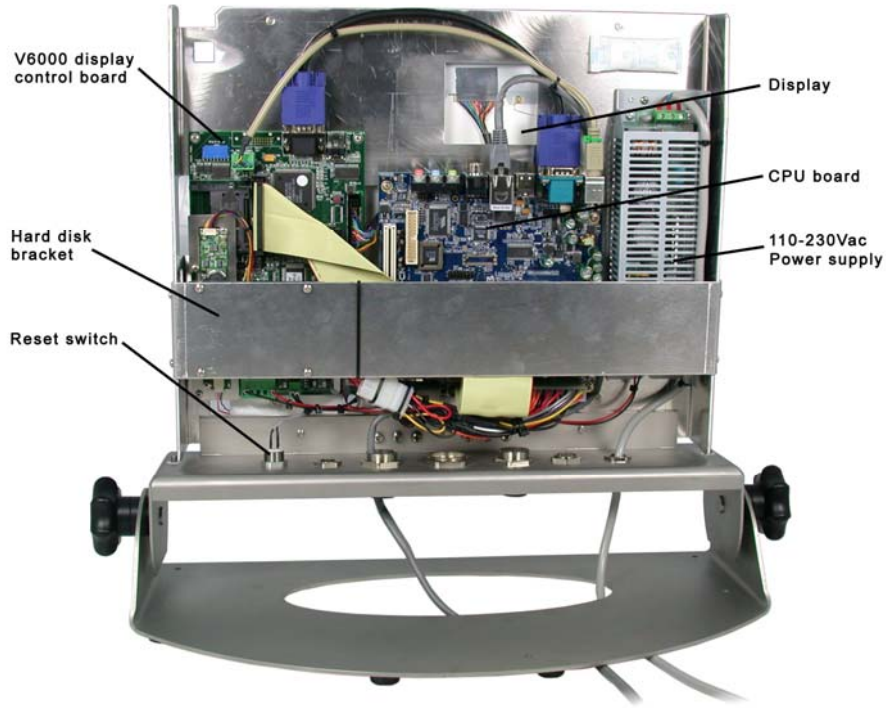

Figure 3 M6000 Controller, inside view.

The hardware inside the M6000 consists of two printed circuit boards and a TFT display. The hard disk and the 110-230 Vac power supply are optional components, available in some M6000 controller types.

The printed circuit boards in M6000 are:

1. The CPU board. It contains the microprocessor and all the communication interfaces which are described in Figure 4.

   The green PS/2 mouse port is reserved for the touch screen. Other ports are available to the M6000 user.

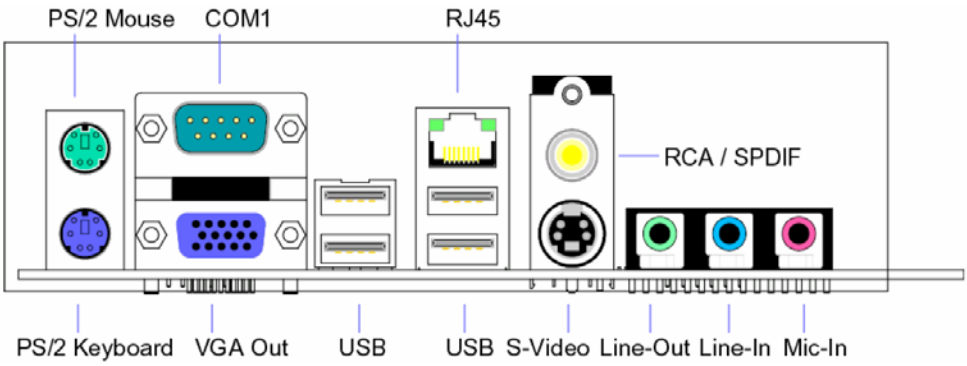

Figure 4 M6000 Controller, the CPU board connectors.

2 The V6000 display control board contains:

- 24 Vdc power input
- ATX connector power output
- Power-on switch connector output
- 24 V temperature regulated heater output connector
- Display backlight connector
- CompactFlash socket of TYPE II for CompactFlash or IBM Microdrive
- IDE (ATA) connector connected to the Compact-Flash socket
- Touch screen connector
- PS/2 mouse data output connector from the touch screen
- Push buttons for screen adjustments
- Display connector for connecting the TFT display

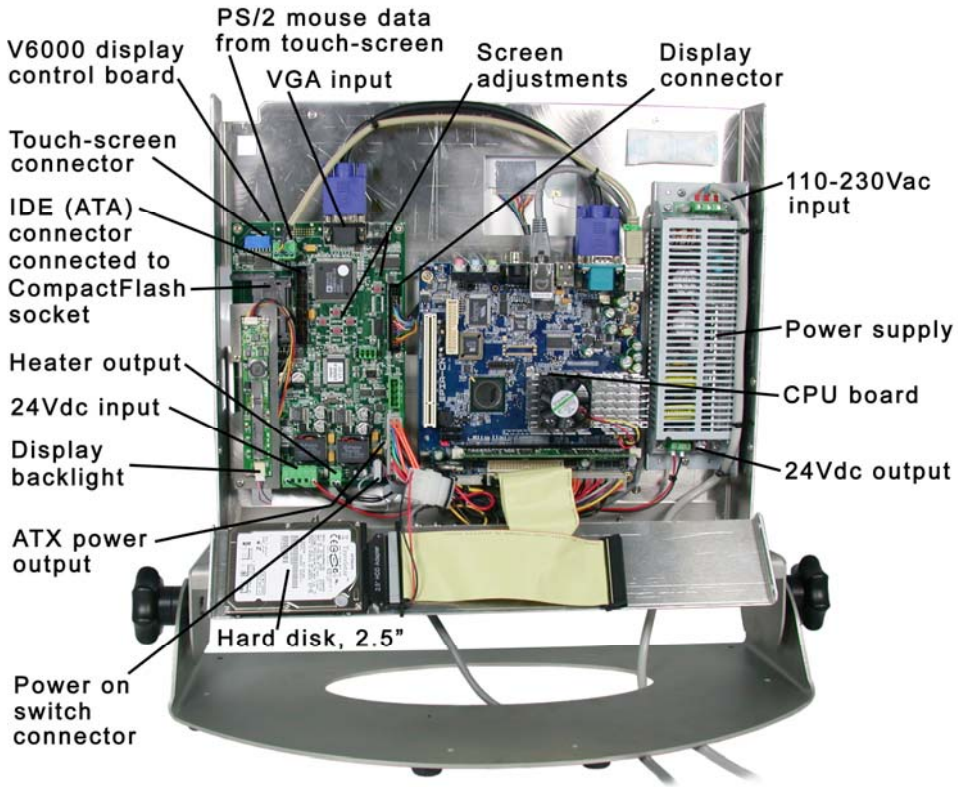

Figure 5 M6000 Controller, description of internal components and connections.

A power-on switch cable between the V6000 board and the CPU board is necessary for starting the CPU board. Figure 6 and Figure 7 show the power-on switch cable connection.

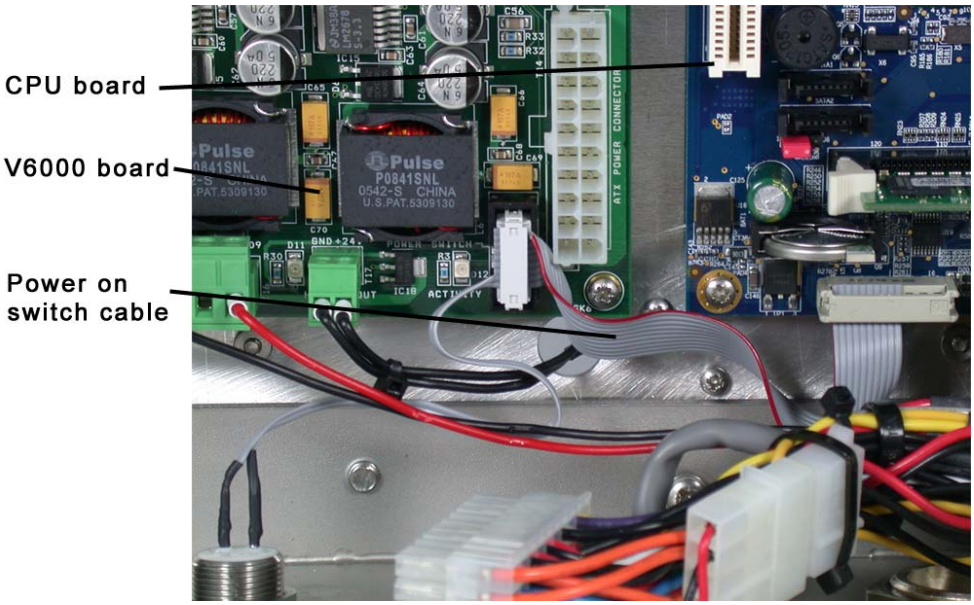

Figure 6 M6000 Controller, power-on switch cable connection between the V6000 board and the CPU board.

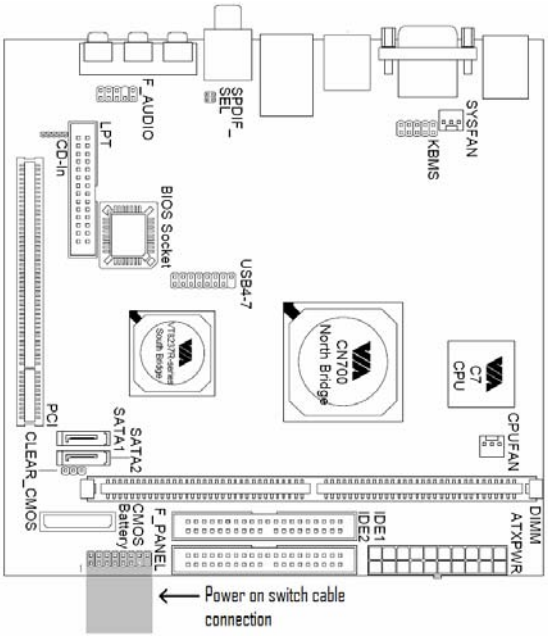

Figure 7 M6000 Controller, power-on switch cable connection on the CPU board.

The V6000 board is equipped with a CompactFlash socket. The socket is of type II and fits a CompactFlash card and an IBM micro drive. If it becomes necessary to use the CompactFlash socket in the M6000, the IDE connector beside the CompactFlash socket must be connected to the CPU board with an IDE flat cable. A jumper above the CompactFlash socket decides whether the CompactFlash device is to be set up as master or slave on the IDE bus.

The master/slave jumper functions as follows:

Master:	Jumper open
Slave:	Jumper closed (shorted)

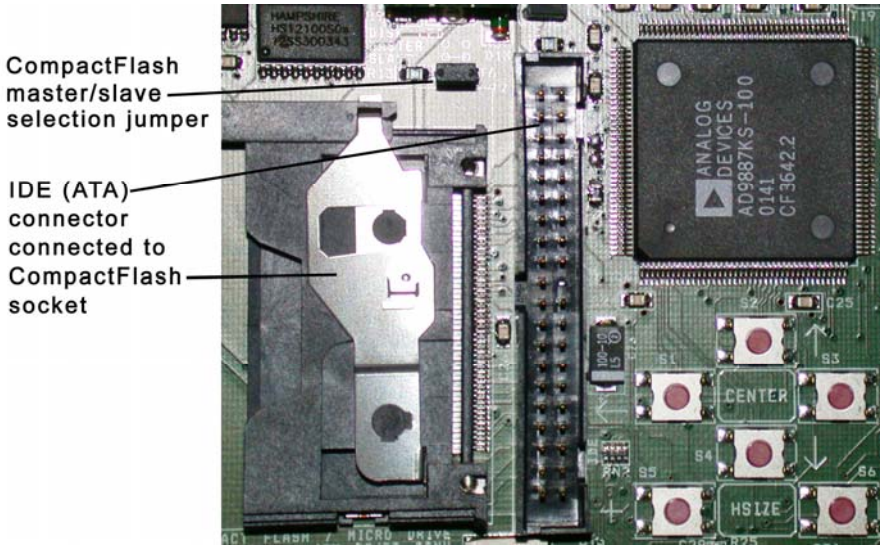

Figure 8 M6000 Controller, CompactFlash master/slave selection.

Display Settings

There are several push buttons on the V6000 board:

- four push buttons, **up, down, left, right,** for centering the picture on the M6000 display
- two optional **HSIZE** buttons +/– for adjusting the horizontal size of the picture
- the **PHASE** push button for adjusting the display focus.

In most cases it is not necessary for the M6000 user to center the picture or adjust the horizontal size or focus of the picture. These adjustments are already done at the factory.

For default display settings, simultaneously press the **right, left** and **up** picture centering buttons.

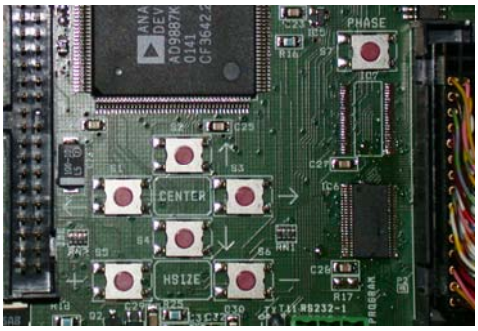

Figure 9 M6000 Controller, screen adjustments.

For best results when adjusting the focus on the M6000 display, use the file C:\M6000_WIN_TOOLS\BackGround_Pictures\test [1].bmp as a centered background picture and press the **PHASE** button in steps until the center of the test [1].bmp picture is clear.
The test [1].bmp picture is also ideal for centering the M6000 display.

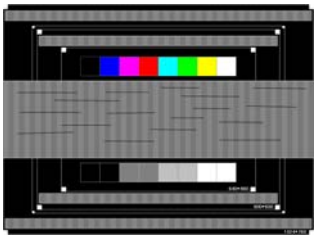

Figure 10 M6000 Controller, test picture not in focus.

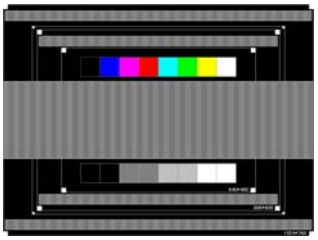

Figure 11 M6000 Controller, test picture in focus.

Applying Power to the M6000

The M6000 does not have an On/Off switch, because it is preferable to keep power on the M6000 at all times. Constant power generates heat that will prevent moisture from condensing in the M6000.

- Therefore, for initial start of the M6000 controller, simply plug the electrical cord into the nearest suitable power outlet.

After power has been applied, the M6000 starts up.

If the M6000 is installed in a cold environment with temperatures inside the controller going below 20°C, a regulated heater inside the M6000 keeps the temperature as stable as possible.

Figure 12 M6000 Controller, the heater is located under the display.

Entering BIOS Setup On M6000

To enter BIOS setup on M6000 it is necessary to open the M6000 cabinet by loosening the two screws under the cabinet, and to connect a PC keyboard with the PS/2 keyboard interface on the CPU board (see Figure 4).

You can then power up the M6000 and immediately press the Delete key on the keyboard to enter the BIOS setup menu. For further instructions, follow the CPU-Board (main board) user's manual which is delivered with the M6000.

The Operating System on the M6000

It is possible to run different operating systems on the M6000, for example Windows or Linux.

On some M6000 models the Windows operating system is preinstalled. In such cases a “Certificate of Authenticity” label for the Windows operating system is affixed inside the M6000 as shown in Figure 13. The label is kept inside the housing to prevent it from being ruined during cleaning.

The “Certificate of Authenticity” label contains the product key for the preinstalled Windows operating system.

Another label with a Marel production serial number, identical to the one on the touch screen’s rating plate, is also affixed in the same place.

Figure 13 M6000 Controller, location of the Certificate of Authenticity label for Windows.

Touch Screen Settings

M6000 uses a touch screen controller produced by Hampshire Company, Inc. http://www.hampshirecompany.com.

The touch screen controller is a Type: TSHARC-12 with a PS/2 communication interface.

If the M6000 is delivered with a Windows operating system, the setup program for the touch screen is delivered with the M6000 on a CD-ROM as well as being installed on the hard disk drive under:

C:\M6000_WIN_TOOLS\TouchScreen_Driver_WinXP_Sp2\UniWinDriver620a\

1. To install the touch screen driver run:

2. To set up the touch screen driver, select the controller type **TSHARK-10/12 PS/2** as shown in Figure 14.

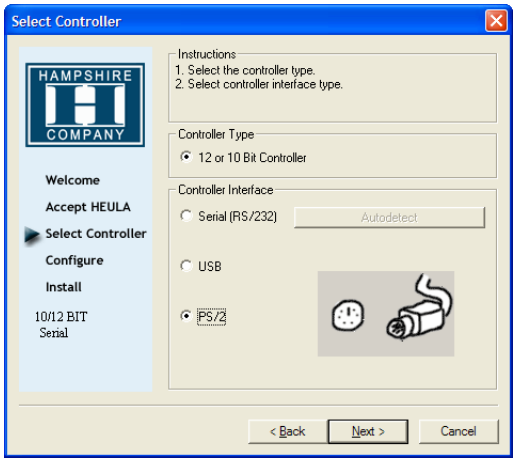

Figure 14 M6000 Controller, touch screen controller installation.

3. After setting up the touch screen driver you must calibrate the touch screen using the Hampshire TSHARC Control Panel program:

4. After the calibration program has started, select **Calibration** and press the **Configure** button as shown in Figure 15.

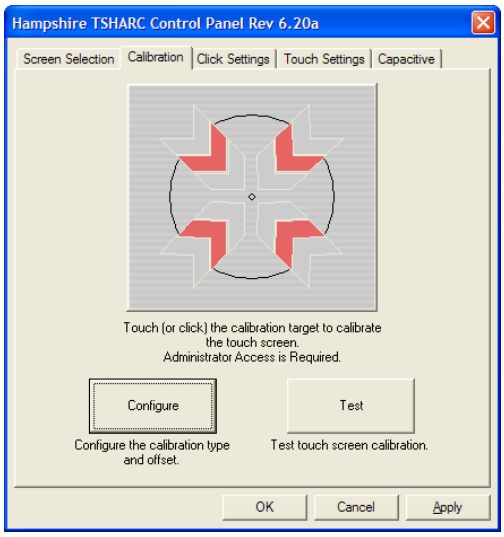

Figure 15 M6000 Controller, touch screen controller setup.

For optimal calibration results we recommend that you select a 20 point calibration type as shown in Figure 16.

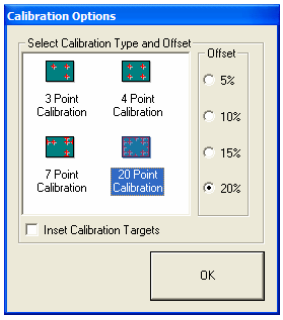

Figure 16 M6000 Controller, touch screen controller calibration type.

5 After selecting the calibration type, proceed with the calibration process by pressing the Calibration target, shown in Figure 15.

6 To calibrate, press the calibration target as shown in Figure 17, and follow the calibration target step by step, until the calibration has been completed.

Figure 17 M6000 Controller, touch screen calibration.

7 The right mouse button function for the touch screen is enabled as shown in Figure 18. After that you can perform a right mouse

button click by pressing the touch screen longer than the time specified in the “Right button click time” field. The default time is 2 seconds.

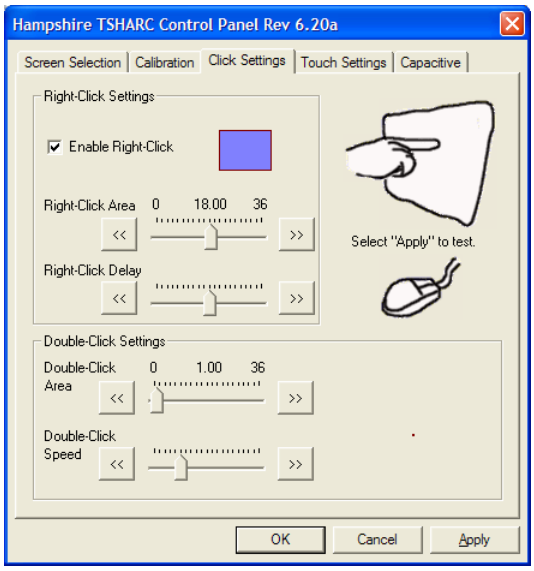

Figure 18 M6000 Controller, touch screen calibration.

A double-click mouse function is not very comfortable to use on a touch screen. Therefore, we recommended that you change the double-click function to a single click. In Windows XP the procedure is as follows:

- Open Windows Explorer, go to the Tools menu and select Folder Options.
- The dialog box in Figure 19 appears.
- Select Single-click to open an item, and press OK.

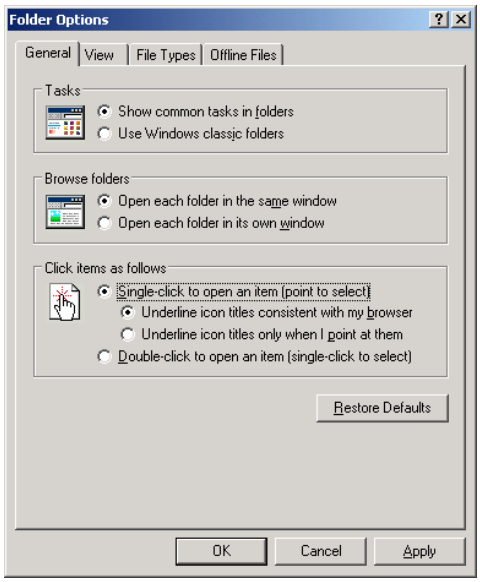

Figure 19 M6000 Controller, replacing double-click with single-click.

Figure 20 shows how to enable a sound when the screen is touched.

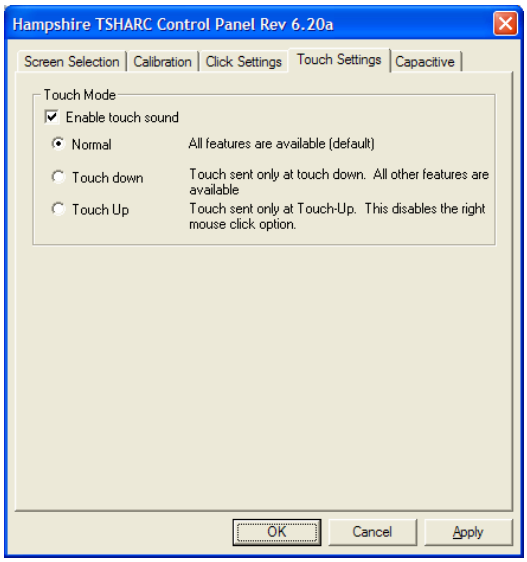

Figure 20 M6000 Controller, enabling touch screen sound.

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