

# MachineLogic Runtime Hardware Installation

## Introduction

This document describes the procedures for installing and configuring the MachineLogic Slot Card (MLSC). The MLSC is an expansion card that you must install in your runtime workstation in order to run MachineLogic projects. The MLSC comes in PCI format.

The installation instructions are specific to CTC Parker PowerStations. For non-CTC workstations, refer to the manufacturer's documentation for instructions on installing an expansion card.

## Electrostatic Discharge Precautions

Modern integrated electronic devices, especially CPUs and memory chips, are extremely sensitive to electrostatic discharges (ESD) and fields. Before you install the MLSC, be sure to follow these simple precautions to protect you and the runtime workstation from harm resulting from ESD.



1. To avoid electric shock, always disconnect the power from the workstation before you remove the covers. Do not touch any internal components while the workstation is on.
2. Disconnect power before making any hardware configuration changes. The sudden rush of power as you connect a jumper or install a card may damage sensitive electronic components.
3. Only handle internal components in an ESD-safe location using appropriate grounding methods.
  - Be particularly careful not to touch the chip connectors.
  - Keep the control adapter card in its anti-static packaging when it is not installed in the workstation, and place it on a static-dissipative mat when you are working on it.
  - Wear a grounding wrist strap for continuous protection.

If you have read and understand the ESD safety precautions, you are ready to disassemble the workstation.

## Disassembling the CTC Workstation

If you have read and understand the ESD safety precautions, you are ready to disassemble the CTC workstation.

**To disassemble the CTC workstation, complete the following steps:**

1. Turn off the power to the workstation.
2. Disconnect the workstation from the power source.
3. Place the unit on a static-dissipative mat in a location free from dirt and moisture and protected against static discharge. You must also wear an ESD wrist strap connected to a good known earth ground.
4. Remove the screws securing the covers.
5. Remove the covers from the unit.

## Installing the MLSC

When you finish disassembling the CTC workstation, you are ready to install the MLSC. The MLSC is available in PCI format.

## Temperature Guideline

You can safely operate the MLSC within the ambient air temperature range of 32 to 122F (0 to 50C). However, if you are using a protective enclosure, remember that the temperature outside the enclosure is generally lower than the internal temperature. Thus, if the MLSC is operating inside an enclosure at temperature levels above its rated ambient temperature, it is necessary to cool the enclosure.

## PCI Installation

You must have version 2.1 or later of the PCI bus for the MLSC to operate.

**To install the MLSC into a PCI slot, complete the following steps:**

1. Remove the hold-down bracket. The hold-down bracket keeps the slot card from vibrating out of place and disconnecting.

2. Align the MLSC connector over the available PCI slot.

**Note** The MLSC cannot be used in slot 2 (the middle slot) of PS series PowerStations.

3. Press down firmly on the MLSC board until the module is completely seated in the PCI slot.

**Important** Be careful not to bend any of the pins on the PCI module as you press the MLSC card into place.

4. Attach the fastening screw for the MLSC board. The screw fastener hole should line up with the hole in the computer.

5. Reattach the hold-down bracket.

6. Secure the MLSC board. On the hold-down bracket, tighten the screws with rubber tips on the ends. The rubber tips should press gently but firmly against the MLSC board.

**Note** The PowerStation CPU card requires metric screw and standoffs. For your convenience, metric screws and standoffs have been provided with the MachineLogic package.

7. If you are using Ethernet I/O, connect that Ethernet cable to the Ethernet port on the MLSC.

**Note** There is a PC/104 connector on the MLSC where you can connect a card such as a Profibus or DeviceNet card onto the MLSC itself. For installation instructions see the documentation that comes with your third-party card.

## Relay Connector

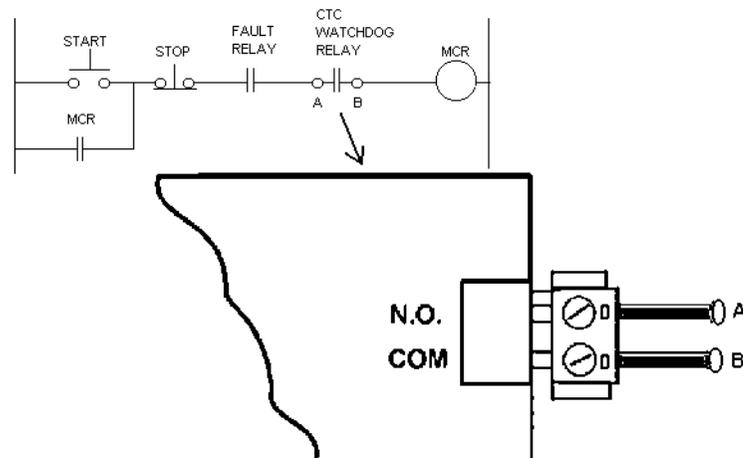
Once you have installed the MLSC, you should wire it to the Relay Connector. The MLSC includes a hardware watchdog timer. In the event that the MachineLogic watchdog times out, a relay on the card can be used as an external indicator of a control system failure.

When you enable the watchdog timer, the relay closes. If the watchdog timer is tripped, for instance because of a system failure, the relay will then open.

The card features a single pole single throw (SPST), normally open relay. This relay is Class 1, Div 2 rated, and is designed to interface directly into a machine's MCR circuitry.

When performing field wiring, always use copper wire with 60C or 60/75C insulation and a tightening torque of 7.0 lb./in. (0.79 N-m).

Below is a sample diagram showing how to implement the control relay:



Relay switching capacity:

240 VAC @ 0.5 amps (180 Watts)  
115 VDC @ 0.3 amps (69 Volt-Amps)  
24 VDC @ 2.0 amps

## Installing the I/O Card

The I/O card is the hardware device that lets MachineLogic send and receive data from your equipment over an I/O bus. The I/O card is available from a third party manufacturer. Refer to the manufacturer's documentation for information on installing and configuring the I/O card.

## Re-assembling the CTC Parker Workstation

Once you have finished installing the MLSC, you can re-assemble the workstation.

**To re-assemble the CTC workstation, complete the following steps:**

1. Install the cover on the workstation.
2. Install the screws that secure the cover.
3. Re-connect the workstation to the power source.
4. Turn on the workstation.

## Configuring the MLSC

The procedure for configuring the MLSC differs depending on whether you using the MLSC with Windows or DOS.

### MLSC for Windows

If you are using the MLSC in a Windows runtime system, set all the configurations using the MLSC Control Panel. For more information, see the online Help that comes with the Control Panel.

The MLSC is compatible with Windows NT, NTe, 2000, and XP.

**To install the driver in Windows 2000 and XP, complete the following steps:**

1. Plug the MLSC into the PCI slot on your system.
2. Reboot your system.
3. The operating system automatically detects the MLSC and launches the New Hardware wizard. Follow the wizard to complete the driver installation.

**To install the driver in Windows NT and NTe, complete the following steps:**

1. Plug the MLSC into the PCI slot on your system.
2. Reboot your system.
3. Select the Windows Control Panel from the Start menu.

4. Select Network.
5. Select Adapters.
6. Select Add.
7. Select Have Disk, enter the path for the MLSC driver, and then select OK.
8. On the Select OEM Options dialog box, make sure the driver is selected and then select OK.
9. Select Close.

### MLSC for DOS (Interact)

If you are using the MLSC in a DOS runtime system, set all the configurations using the MachineShop Shell. For instructions on how to use MachineShop Shell, refer to the *MachineShop Shell Runtime User Guide*.

You must designate 16K of memory to reside on a 16K boundary in an upper memory block (UMB). Make sure the 16K of memory you designate is unused so you do not overwrite any existing data.

To designate the memory you must modify the AUTOEXEC.BAT file in two places. In the example below, the memory addresses in the two lines you must modify appear in bold.

```
REM *****
REM Check for the presence of a MachineLogic Slot Card (MLSC).
REM Set up MachineLogic environment variables for MS Shell.
REM *****
IF NOT EXIST C:\MACHLOG\MUL.EXT MD C:\MACHLOG
SET MACHINELOGIC=C:\MACHLOG
IF NOT EXIST C:\CTC\TST4MLSC.EXE GOTO NO_MLSC
TST4MLSC C:\NET\TCPIP.INI 0x7E MLSC 0xD000
IF ERRORLEVEL 2 GOTO BAD_MLSC
IF ERRORLEVEL 1 GOTO GOOD_MLSC
GOTO NO_MLSC

:GOOD_MLSC
REM *** MLSC Present and has IP - launch packet driver
SET MLSC=GOOD
C:\NET\MLSC_PKT 0x7E 0xD000
GOTO DO_TOUCH
```

First, modify the base address, which is the hexadecimal address 0xD000 in the bolded example. The base address must be the same

in each line. For example you cannot enter 0xD000 in the first line and 0xC000 in the second.

Modify the base address to any of the following valid boundaries, depending on which addresses are free in your memory:

- C000, C400, C800, or CC00
- D000, D400, D800, or DC00

And so on.

Next, modify the software interrupt, which is the hexadecimal address 0x7E in the bolded example. Again, the software interrupt address must be the same in each line.

Modify the software interrupt to any address in the range 0x68 through 0x80, depending on which addresses are free in your memory.

