

# Smart Table ST-200

## SmartTable Controller



## User's Manual



**Newport®**  
Experience | Solutions

## EU Declaration of Conformity

We declare that the accompanying product, identified with the **CE** mark, complies with requirements of the Electromagnetic Compatibility Directive, 2004/108/EC and the Low Voltage Directive 2006/95/EC.

**Model Number:** Model ST-200 Smart Table Controller

**Year **CE** mark affixed:** 2004

**Type of Equipment:** Electrical equipment for measurement, control and laboratory use

**Manufacturer:** Newport Corporation

1791 Deere Avenue  
Irvine, CA 92606

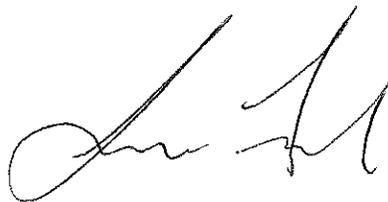
### **Standards Applied:**

Compliance was demonstrated to the following standards to the extent applicable:

BS EN61326-1: 2006 "Electrical equipment for measurement, control and laboratory use – EMC requirements"

This equipment meets the CISPR 11:2006 Class A Group 1 radiated and conducted emission limits.

IEC 61010-1:2001 second edition "Safety requirements for electrical equipment for measurement, control and laboratory use"



James Fisher  
Group Director, Vibration Control  
Newport Corporation  
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## Warranty

Newport Corporation warrants that this product will be free from defects in material and workmanship and will comply with Newport's published specifications at the time of sale for a period of one year from date of shipment. If found to be defective during the warranty period, the product will either be repaired or replaced at Newport's option.

To exercise this warranty, write or call your local Newport office or representative, or contact Newport headquarters in Irvine, California. You will be given prompt assistance and return instructions. Send the product, freight prepaid, to the indicated service facility. Repairs will be made and the instrument returned freight prepaid. Repaired products are warranted for the remainder of the original warranty period or 90 days, whichever first occurs.

### Limitation of Warranty

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First printing 2004

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1791 Deere Avenue  
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USA

Part No. 41399-01, Rev. B

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### **Service Information**

This section contains information regarding factory service for the source. The user should not attempt any maintenance or service of the system or optional equipment beyond the procedures outlined in this manual. Any problem that cannot be resolved should be referred to Newport Corporation.

## Technical Support Contacts

### North America & Asia

#### Newport Corporation Service Dept.

1791 Deere Ave. Irvine, CA 92606

Telephone: (949) 253-1694

Telephone: (800) 222-6440 x31694

### Europe

Newport/MICRO-CONTROLE S.A.

Zone Industrielle

45340 Beaune la Rolande, FRANCE

Telephone: (33) 02 38 40 51 56

### Newport Corporation Calling Procedure

If there are any defects in material or workmanship or a failure to meet specifications, promptly notify Newport's Returns Department by calling 1-800-222-6440 or by visiting our website at [www.newport.com/returns](http://www.newport.com/returns) within the warranty period to obtain a **Return Material Authorization Number (RMA#)**. Return the product to Newport Corporation, freight prepaid, clearly marked with the RMA# and we will either repair or replace it at our discretion. Newport is not responsible for damage occurring in transit and is not obligated to accept products returned without an RMA#.

E-mail: [rma.service@newport.com](mailto:rma.service@newport.com)

When calling Newport Corporation, please provide the customer care representative with the following information:

- Your Contact Information
- Serial number or original order number
- Description of problem (i.e., hardware or software)

To help our Technical Support Representatives diagnose your problem, please note the following conditions:

- Is the system used for manufacturing or research and development?
- What was the state of the system right before the problem?
- Have you seen this problem before? If so, how often?
- Can the system continue to operate with this problem? Or is the system non-operational?
- Can you identify anything that was different before this problem occurred?

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# 1 Safety Precautions

## 1.1 Definitions and Symbols

---

The following terms and symbols are used in this documentation and also appear on the Smart Table Controller where safety-related issues occur.

### 1.1.1 General Warning or Caution



*Figure 1 General Warning or Caution Symbol*

The Exclamation Symbol in the figure above appears in Warning and Caution tables throughout this document. This symbol designates an area where personal injury or damage to the equipment is possible.

### 1.1.2 Electric Shock



*Figure 2 Electrical Shock Symbol*

The Electrical Shock Symbol in the figure above appears throughout this manual. This symbol indicates a hazard arising from dangerous voltage. Any mishandling could result in irreparable damage to the equipment, and personal injury or death.

### 1.1.3 CSA Mark with “C” and “US” Indicators



*Figure 3 CSA mark with “C” and “US” Indicators*

The presence of the CSA mark with “C” and “US” indicates that it has been designed, tested and certified as complying with all applicable U.S. and Canadian safety standards.

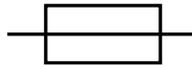
### 1.1.4 European Union CE Mark



*Figure 4 CE Mark*

The presence of the CE Mark on Newport Corporation equipment means that it has been designed, tested and certified as complying with all applicable European Union (CE) regulations and recommendations.

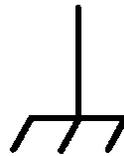
### 1.1.5 Fuses



*Figure 5 Fuse Symbol*

The fuse symbol in the figure above identifies the fuse location on the Smart Table Controller.

### 1.1.6 Frame or Chassis



*Figure 6 Frame or Chassis Terminal Symbol*

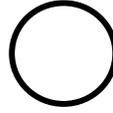
The symbol in the figure above appears on the Smart Table Controller. This symbol identifies the frame or chassis terminal.

### 1.1.7 On



*Figure 7 On Symbol*

The On Symbol in the figure above represents a power switch position on on the Model ST-200 Smart Table controller. This symbol represents a Power On condition.

**1.1.8 Off**

*Figure 8 Off Symbol*

The Off Symbol in the figure above represents a power switch position on the Model ST-200 Smart Table controller. This symbol represents a Power Off condition.

**1.1.9 Protective Conductor Terminal**

*Figure 9 Protective Conductor Terminal Symbol*

The protective conductor terminal symbol in the above figure identifies the location of the bonding terminal, which is bonded to conductive accessible parts of the enclosure for safety purposes. The intent is to connect it to an external protective earthing system through the power cord.

**1.1.10 USB Connector Symbol**

*Figure 10 USB connector Symbol*

The USB connector symbol in the above figure identifies the location of the USB communications connector.

**1.1.11 Mounting precaution**

The dampers are installed at two corners of the table adjacent to a long side. The exact position of each damper is indicated by three flat-head screws visible flash with the table top. Please have in mind that four sealed holes in each damper area are only 0.457 in (11.6 mm) deep. If you need to use some of these holes, choose the length of the screws accordingly. An attempt to use too long screws may cause damage to the dampers and de-lamination of the table face sheet.

## 1.2 Warnings and Cautions

---

The following are definitions of the Warnings, Cautions and Notes that are used throughout this manual to call your attention to important information regarding your safety, the safety and preservation of your equipment or an important tip.

	<b>WARNING</b> Situation has the potential to cause bodily harm or death.
---	--

	<b>CAUTION</b> Situation has the potential to cause damage to property or equipment.
---	---

---

### NOTE

Additional information the user or operator should consider.

---

### 1.2.1 General Warnings

Observe these general warnings when operating or servicing this equipment:

- Heed all warnings on the unit and in the operating instructions.
- Do not use this equipment in or near water.
- This equipment is grounded through the grounding conductor of the power cord.
- Route power cords and other cables so they are not likely to be damaged.
- Disconnect power before cleaning the equipment. Do not use liquid or aerosol cleaners; use only a damp lint-free cloth.
- To avoid fire hazard, use only the specified fuse(s) with the correct type number, voltage and current ratings as referenced in the appropriate locations in the service instructions or on the equipment. Only qualified service personnel should replace fuses.
- To avoid explosion, do not operate this equipment in an explosive atmosphere.
- Qualified service personnel should perform safety checks after any service.

## 1.2.2 General Cautions

Observe these cautions when operating or servicing this equipment:

- If this equipment is used in a manner not specified in this manual, the protection provided by this equipment may be impaired.
- To prevent damage to equipment when replacing fuses, locate and correct the problem that caused the fuse to blow before re-applying power.
- Do not block ventilation openings.
- Use only the specified replacement parts.
- Follow precautions for static sensitive devices when handling this equipment.
- This product should only be powered as described in the manual.
- There are no user-serviceable parts inside the ST-200 Smart Table Controller.
- To prevent damage to the equipment, read the instructions in the equipment manual for proper input voltage.

## 1.3 Location of Warnings

### 1.3.1 Rear Panel

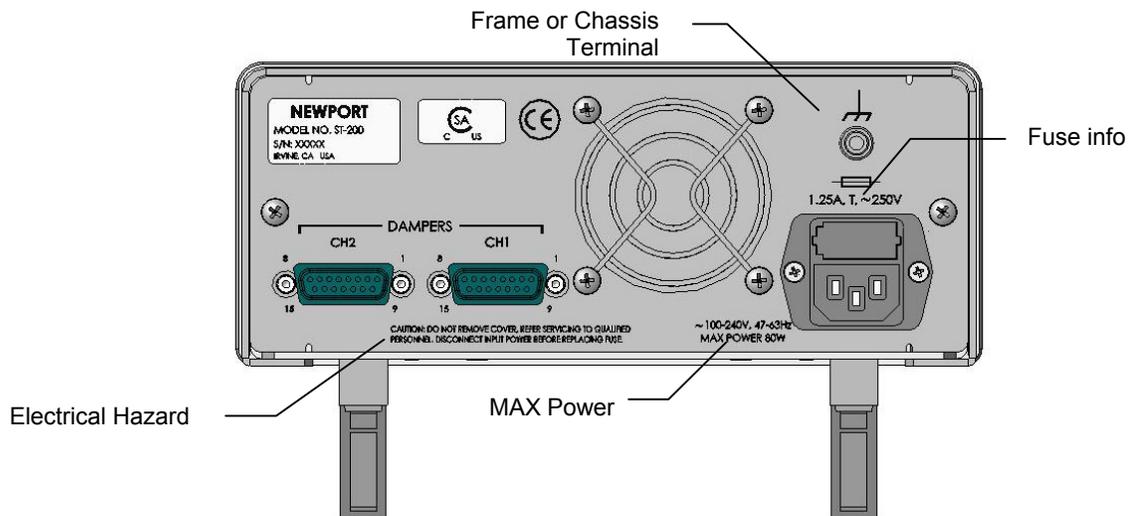


Figure 11 Locations of warnings on the rear panel

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## 2 General Information

### 2.1 Introduction

---

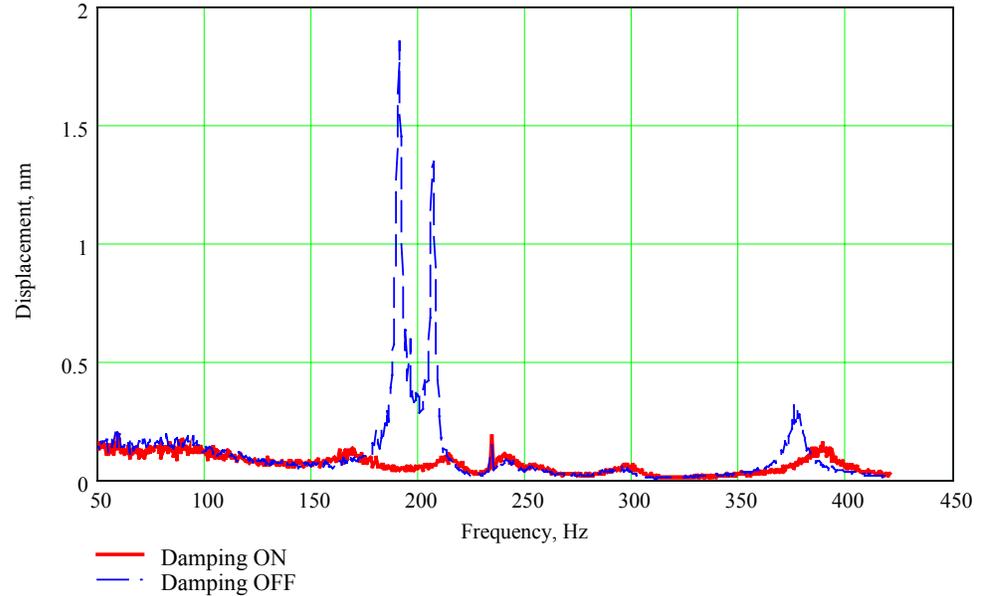
The Smart Table is a combination of the structurally damped vibration isolation table with electronics that can monitor vibration in real time and active elements that use the vibration data to suppress the vibration.

Vibration state of the optical table is an important characteristic, in many cases defining its suitability for a task at hand. Reducing vibration, especially the dynamic deviation of the table from a rigid-body type behavior, is one of the most important criterions of the table design. It is achieved mainly by the vibration isolation. Vibration isolation by passive isolating legs, such as Newport I-2000, reduces the vibration transmitted to the table from the floor. Although excellent isolation from floor vibration can be achieved in these systems, the table will deviate from the ideal rigid-body behavior at natural frequencies of its flexural vibrations. External sources acting on the tabletop (air turbulence or acoustical waves) or the dynamic events generated in the payload excite resonance vibration in the table's own free-state modes such as bending and torsion. This can lead to deterioration of the payload performance, in particular, misalignment of the optical equipment.

The Smart Table includes two active vibration dampers that add dissipation to all natural vibration modes of the table in a wide frequency range without creating any additional resonances at lower frequencies. If the load on the table changes, the dampers maintain their efficiency and stability after simple auto-tuning of control gains.



Vibration linear spectrum 25 cm from edges near an instrumented corner

*Figure 13 Effect of damping on table vibration levels*

The Smart Table uses the same materials and has the same main mechanical characteristics as passively damped Newport RS series table. The dampers are installed at two corners of the table adjacent to a long side. The exact position of each damper is indicated by three flat-head screws that are flush with the table top at the corners.

	<b>CAUTION</b>
	<p><b>Please keep in mind that four sealed threaded holes in each damper area are only 0.457 in (11.6 mm) deep. If you need to use some of these holes, choose the length of the screws accordingly. An attempt to use too long screws may cause damage to the dampers and de-lamination of the table face sheet.</b></p>

### Smart Table Controller Specifications

<b>Output Power</b> Continuous current	0.4A @ 12VDC
<b>Output Voltage</b> Maximum effective output voltage at continuous power	@ 12V @ 0.4A
<b>Input Power</b> Voltage	12V $\pm$ 5%
Average Current @ continuous output rating	0.6A
Peak Current @ continuous output rating	0.7A

Table 2 Smart Table Controller Specifications

### System Environmental Specifications

AC Input	100-240VAC $\pm$ 10% 47-63Hz, 1.25A, 80W
Operating Temperature	5°C to 40°C
Operating Humidity	<85% relative humidity non-condensing
Storage Temperature	0-60°C RH - <85% non-condensing
Altitude	<3000
Electrical Class	1
Installation Category	2
Pollution Degree	2
Use Location	Indoor use only

Table 3 Environmental Specifications

# 3 Getting Started

## 3.1 Unpacking and Handling

---

It is recommended that the Smart Table Controller is unpacked in a lab environment or work site. Unpack the system carefully; small parts and cables are included with the instrument. Inspect the box carefully for loose parts before disposing of the packaging. You are urged to save the packaging material in case you need to ship your equipment in the future.

## 3.2 Inspection for Damage

---

The Smart Table Controller is carefully packaged at the factory to minimize the possibility of damage during shipping. Inspect the box for external signs of damage or mishandling. Inspect the contents for damage. If there is visible damage to the instrument upon receipt, inform the shipping company and Newport Corporation immediately.



### **WARNING**

**Do not attempt to operate this equipment if there is evidence of shipping damage or you suspect the unit is damaged. Damaged equipment may present additional hazards to you. Contact Newport technical support for advice before attempting to plug in and operate damaged equipment.**

## 3.3 Parts List

---

The following is a list of parts included with the Smart Table System.

1. ST Series table with dampers already installed inside table
2. ST-200 Controller
3. Two 15 pin damper cables
4. Power cord
5. User's Manual

If you are missing any hardware or have questions about the hardware you have received, please contact Newport.

### 3.4 Choosing and Preparing a Suitable Work Surface

---

Smart Table Controller may be placed on any reasonably firm table or bench during operation. Position the controller so that there is easy access to the power cord. The front legs of the unit can be pulled out to tilt the unit at an angle, if desired. Do not put the Controller on or attach to the isolated table. Manual operation of front panel controls will disturb mechanically the normal operation of the system.

### 3.5 Electrical Requirements

---

Before attempting to power up the unit for the first time, the following precautions must be followed:



#### **WARNING**

**To avoid electric shock, connect the instrument to properly earth-grounded, 3-prong receptacles only. Failure to observe this precaution can result in severe injury.**

- Have a qualified electrician verify the wall socket that will be used is properly polarized and properly grounded.
- Provide adequate distance between the Smart Table Controller and adjacent walls for ventilation purposes. Approximately 2-inch spacing for all surfaces is adequate.
- Set the mains selector tumbler to the voltage that matches the power outlet AC voltage.

### 3.6 Power Supplies

---

AC power is supplied through the rear panel input power connector that provides in-line transient protection and RF filtering. The input power connector contains the fuses and the switch to select series or parallel connection of the transformer primaries for operation at 100VAC, 120VAC, 220VAC or 240VAC.

### 3.7 Operating Temperature

---

Smart Table Controller is designed for operation in a laboratory environment. Recommended ambient operating temperatures are between 20 - 25°C. Operation at higher or lower ambient temperatures for limited periods (e.g. several hours) will not cause any harm but may slightly reduce the performance.

# 4 System Operation

	<p style="text-align: center;"><b>WARNING</b></p> <p>Before operating the Model Smart Table Series, please read and understand all of Section 1.</p>
--	--

## 4.1 Front Panel

The front panel of the Smart Table Controller is arranged for easy operation. Seven distinct indicators and controls are located on the front panel that allows the user to operate the system as well as provide system status. The front panel is shown in Figure 14 below.

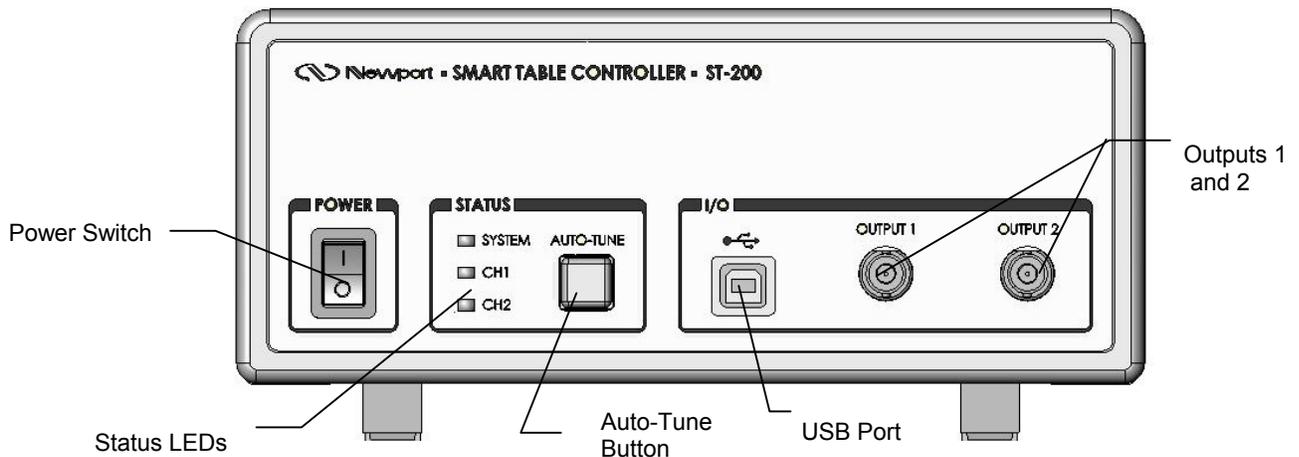


Figure 14 Front Panel Layout.

### 4.1.1 AC Power Switch

When AC power is turned on the unit starts up in a default configuration with the OUTPUT off and the display in the SETPOINT mode. The power switch is located in the lower left corner of the instrument front panel.

### 4.1.2 Status

The table below shows the meaning of the various colors of SYSTEM, CH1 and CH2 status LED's.

Item	Level	Category	Comment	Ch1 LED	Ch2 LED	System LED
1	System	Unpowered	AC not connected or Power Switch off	OFF	OFF	OFF
2	System	Unpowered	Blown fuse	OFF	OFF	OFF
3	System	Unpowered	Defective power supply	OFF	OFF	OFF
4	System	Powered	Controller performing self-check	-	-	AMBER
5	System	Powered	No system problem	-	-	GREEN
6	System	Fault	Controller firmware non-functional	-	-	RED
7	Channel 1	Fault	Damper not connected	RED	-	GREEN
8	Channel 1	Fault	Channel shutdown due to 'Damper Fault'	B-RED	-	GREEN
9	Channel 1	Fault	Channel shutdown due to 'Payload Change'	B-AMBER	-	GREEN
10	Channel 1	Warning	Channel operating in 'overload' condition	AMBER	-	GREEN
11	Channel 1	Tuning	Auto-tuning in process	B-GREEN	-	GREEN
12	Channel 1	Damping	Normal operation	GREEN	-	GREEN
13	Channel 1	Disabled	Channel shutdown via software	OFF	-	GREEN
14	Channel 2	Fault	Damper not connected	-	RED	GREEN
15	Channel 2	Fault	Channel shutdown due to 'Damper Fault'	-	B-RED	GREEN
16	Channel 2	Fault	Channel shutdown due to 'Payload Change'	-	B-AMBER	GREEN
17	Channel 2	Warning	Channel operating in 'overload' condition	-	AMBER	GREEN
18	Channel 2	Tuning	Auto-tuning in process	-	B-GREEN	GREEN
19	Channel 2	Damping	Normal operation	-	GREEN	GREEN
20	Channel 2	Disabled	Channel shutdown via software	-	OFF	GREEN

Table 4 Definition of SYSTEM, CH1 and CH2 status LED's.

### 4.1.3 I/O

The vibration can be monitored independently by connecting signal processing equipment such as a signal analyzer or an oscilloscope to the BNC jacks on the front panel of the controller. The measurement parameters are listed in Table 5 below.

Measurement parameters

Sensitivity	30 V/(mm/s) ± 12%
Measurement range (0 – p)	0.16 mm/s
Frequency range (-3 dB)	18 Hz to 820 Hz

Table 5 Measurement Parameters

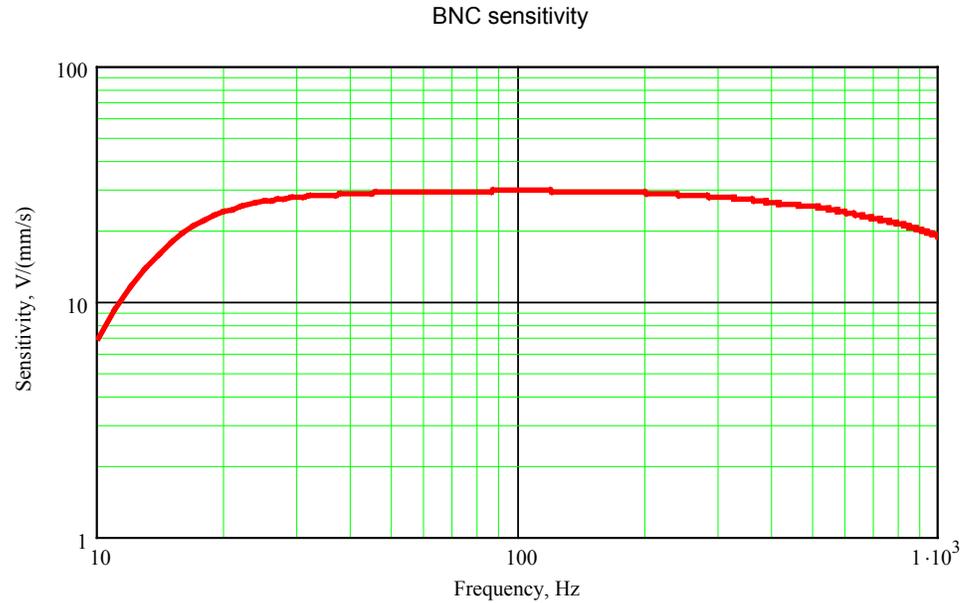


Figure 15 BNC output sensitivity

#### 4.1.4 Auto-Tune

The auto-tune button allows the user to retune the system. The auto-tuning process takes normally 30 to 40 seconds. Care must be taken not to disturb the table during this time. If there is equipment on the table that can be a source of non-stationary vibration or noise, it should be shut down. If the table was inadvertently disturbed by mechanical shock or loud noise during the auto-tuning, it is recommended to repeat the process.

Beeping or tonal sounds can be heard from the dampers during the auto-tuning process. Please have in mind that during the auto-tuning process the table may experience higher vibrations than during the normal operation.

The controller comes pre-set for the optimal performance of the lightly loaded table. If additional load is put on the table or, subsequently, taken from the table, it is recommended to perform auto-tuning. Auto-tuning must be performed also in the following cases:

- Amber blinking lights of one or both of CH1 and CH2 status LEDs.
- Audible sound from any of the two dampers.

#### 4.1.5 USB Interface

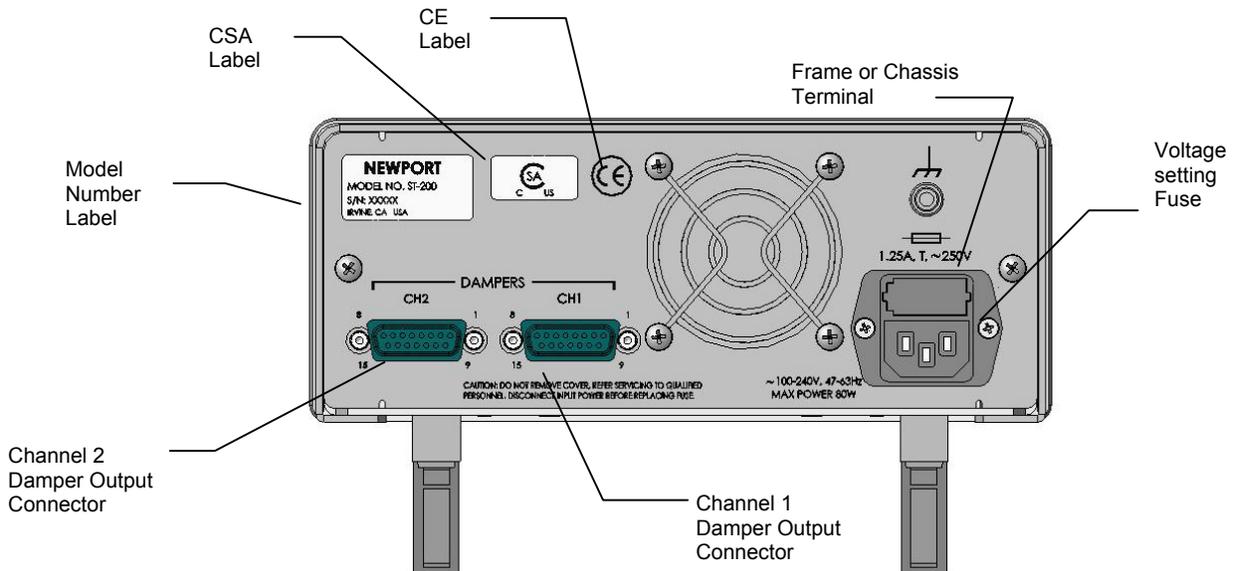
The instrument is designed to communicate with standard USB interfaces. The cable required is a USB A/ B connection cable.

## NOTE

With critical applications the radio frequency emissions, while using the USB cable, may be reduced by routing the USB cable through one or more ferrite cores, such as the Fair-Rite Products Corporation part number # 0443164251."

## 4.2 Rear Panel

The Smart Table Controller rear panel shows the OUTPUT connectors and the AC power inlet.



*Figure 16 Rear Panel*

### 4.2.1 Damper Output connectors

Two 15-pin connectors labeled CH1 and CH2 are the connection points for the Smart Table active dampers

### 4.2.2 Frame or Chassis Terminal

This terminal provides access to frame or chassis connection.

### 4.2.3 AC Power Inlet Socket

Plug the included power cord into the Power Inlet Socket on the rear of the instrument, then plug the power cord into a wall socket with proper earth grounding.

# 5 Software Application

## 5.1 Overview

---

Provided on the CD that comes with the Smart Table Controller is an installation package for SmartTable-Util application and USB drivers. This application communicates with the Smart Table Controller through USB communication interface. The application is designed to allow the user to remotely control all the features supported by the controller.



*Figure 17 Smart Table-Util Software Icon*

---

### NOTE

Install the software and USB drivers before connecting USB cable to the controller for the first time.

---

1. Minimum requirements for the computer are:
  - A personal computer with a 486DX or higher processor
  - Microsoft Windows 98 operating system or Microsoft Windows 2000/XP operating system
  - 64 MB of memory for Windows
  - 10 MB of hard disk space
  - USB port (version 1.1 minimum)
  - VGA or higher-resolution video adapter
  - Microsoft Mouse or compatible pointing device
  - CD-ROM drive (for installation only)
  
1. Place the CD that accompanies the controller in your CD-ROM drive. Installation of the SmartTable-Util application and USB drivers will start automatically. If it does not start, initiate installation by double-clicking on the SETUP.EXE file in the CD.

2. Connect the USB cable to the Controller and Power it on.
3. Start the application by double-clicking on the newly created Smart Table-Util icon in Start->Programs->Newport->Smart Table Controller folder.

The SmartTable-Util application has five (5) main tabs: About, Status, Auto-tune, Manual Tune and Options. The features available in these tabs are explained in the following sub-sections.

### 5.1.1 About Tab

When the application is opened, it will default to the “About” tab. It will also start communication with the controller connected to USB interface. The application and controller firmware version numbers are displayed on this screen.



Figure 18 About Tab Screen

Click on “Firmware Download” button to update the controller’s firmware. The software will prompt the user to select a “DSP Firmware File at the beginning of the firmware download process”. This file has an “FWR” extension, and is located in the Firmware subdirectory by default. Once this file is selected, the application will initiate the download process. This process consists of the following steps:

- Erase Firmware: At this stage, the controller’s existing firmware is erased from its non-volatile flash memory.

- Download New Firmware: If the firmware erase was successful, the software will download the selected firmware to the controller.
- Reset Controller: If the firmware download was successful, the software will perform a soft reset of the controller in order for the newly downloaded firmware to take affect.

Ensure that USB communication is not lost between the controller and PC due to power outage/unplugged USB cable during the firmware download process.

### 5.1.2 Status Tab

A few seconds after the “About” screen appears, the application will switch to the “Status” Tab.

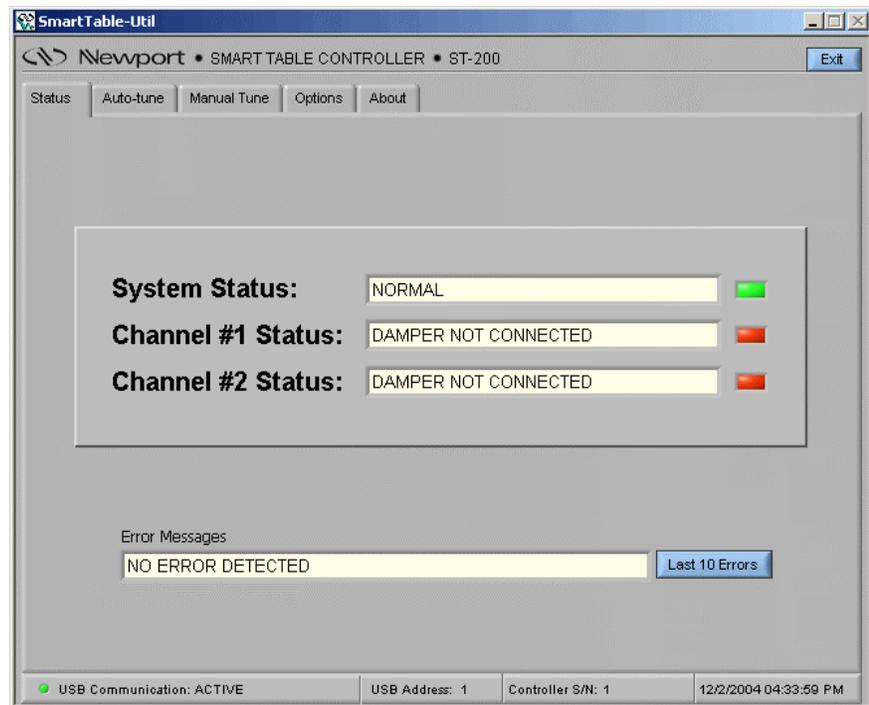


Figure 19 Status Tab Screen

This tab provides the current status of the controller.

The status of System, Channel #1 and Channel #2 LEDs shown here match the corresponding values on the controller’s front-panel. A text message with brief description of the status is provided along side the LEDs.

If the controller generates any errors, they are displayed in the “Error Messages” text box. Click on the “Last 10 Errors” to view old errors.

### 5.1.3 Auto -Tune Tab

This tab provides access to initiating the auto-tuning process remotely, as well as to observe the controller performance.

Adjust the control loop gain stability margin to a desired level (low, medium or high) and click on “Auto-Tune” button. Clicking on the “Auto-Tune” button here is similar to pushing “Auto-Tune” button on the controller’s front-panel, with added control over the control loop gain stability margin. The controller uses “medium” stability setting when auto-tuning process is started locally.

Clicking on “Enable Damping” or “Disable Damping” buttons will enable or disable damping. If the damping is enabled, the “Disable Damping” button is visible, and vice versa.

Click on “Measure Un-damped Vibration Level” button to record vibration level with damping disabled. The software will disable damping on both channels and measure vibration levels over a period of 500ms. The data will be averaged over several time frames. Number of averages can be set on the “Options” tab (Section 5.1.5.2)

Click on “Measure Damped Vibration Level” button to record vibration level with damping enabled. The software will enable damping on both channels and measure vibration levels over a period of 500ms. The data will be averaged over several time frames. Number of averages can be set on the “Options” tab (Section 5.1.5.2)

Both un-damped and damped vibration level data can be displayed in either frequency domain or time domain. Select either FFT or Time Resp. from the pull-down menu for desired view. The FFT resolution is 2 Hz. The software also provides access to viewing the measurements for only one channel or both channels. Check the “Show Graph” box for showing either single-channel or dual-channel display.

Click on “Save Data” button to save the measured data. If “HTML” file option is selected in the “Options” tab, all the graphs are saved in the form of a report in HTML file format.

If “Text” file option is selected in the “Options” tab, the measured data will be saved in two (2) files: one for time response data, and the other for frequency response data. Users will be prompted to select desired filenames for these files. The time response file contains five (5) columns in the following order: time stamp, damped data for channel #1, un-damped data for channel #1, damped data for channel #2, un-damped data for channel #2. The frequency response file contains five (5) columns in the following order: frequency bins, damped data for channel #1, un-damped data for channel #1, damped data for channel #2, un-damped data for channel #2.



Figure 20 Auto Tune Tab Screen showing dual-channel display

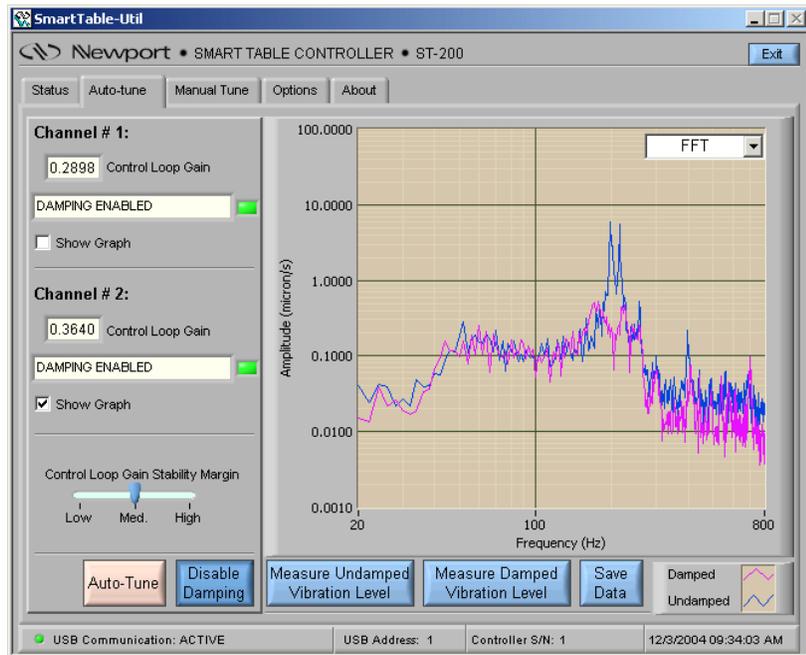


Figure 21 Auto Tune Tab Screen showing single-channel display

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## NOTE

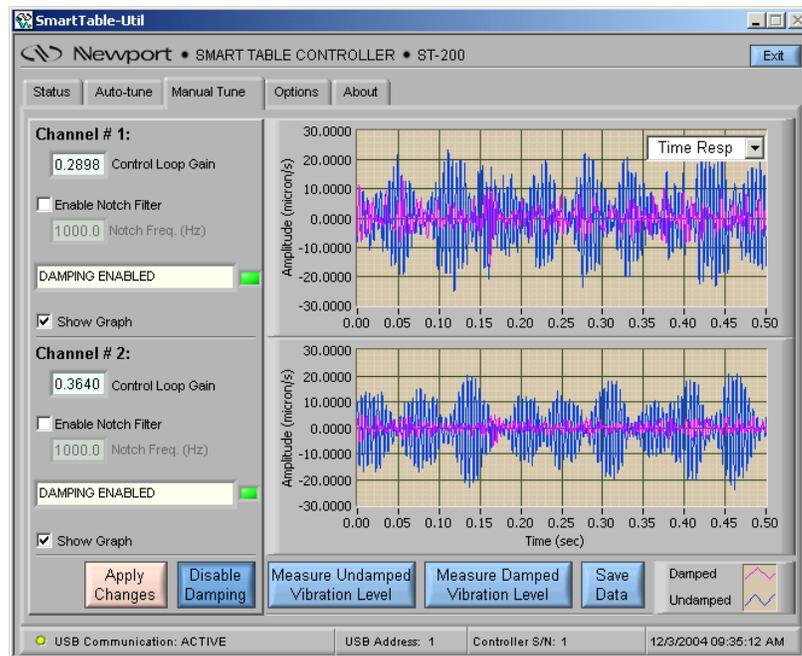
If the background color for a window is set to light blue, then it is a control, where users can enter values. If the background color for a window is set to off-white, then it is a status window.

---

### 5.1.4 Manual Tune Tab

This tab provides direct control over the control loop gain used by the controller. It is recommended that users Auto-Tune their system first, and use the loop gains determined by the controller as a basis for fine-tuning the loop gains. Click on “Apply Changes” button in order for the application to send the desired loop gains to the controller, and save them in the controller’s non-volatile flash memory. In case your changes produces undesirable effect manifested by tonal noise from the dampers, blinking amber lights of the Status LEDs on the front panel, or blinking amber lights on the “Status” tab, click the “Disable damping” button and reverse the erroneous changes

The “Enable Damping”, “Measure Un-damped Vibration Level”, “Measure Damped Vibration Level” and “Save Data” buttons behave the same way as described in the Auto-Tune Tab section.



*Figure 22 Manual Tune Tab Screen*

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## NOTE

“Apply Changes” button needs to be pushed every time the settings are changed, so that the changes can be sent to the controller.

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After examining the damped vs. un-damped vibration levels, if the users find some undesirable amplified resonance peak, that peak can be reduced by enabling the optional notch filter. Check the “Enable Notch Filter” box, specify the desired frequency and click on “Apply Changes” button. Note that selecting this option can destabilize the controller depending upon the notch frequency. Click the “Disable damping” button and reverse the erroneous changes to return to stable work.

### 5.1.5 Options Tab

The Options Tab allows the user to customize the controller and the SmartTable-Util functionality to their requirement. It provides access to the following:

#### 5.1.5.1 Auto-tuning

- Enable the front panel switch: Uncheck this box to disable initiation of auto-tuning process locally.
- Low, Medium and High control loop gain margins: Specify the desired percentage by which control loop gain has to be reduced at the end of auto-tuning process. The gain stability margin and the control loop gain determined by the controller have inverse relation. While lower loop gain may be desired if the system is being used in an environment where the payload is continuously changing, such lower gain will also result in reduced damping performance.

#### 5.1.5.2 Data Acquisition

- Enable FFT averaging: Uncheck this box to cancel averaging by the application. If this box is not checked, the application will collect un-damped or damped vibration levels only once.
- Number of averages: Specify the number of times un-damped damped vibration levels have to be collected, and the FFT has to be averaged.

#### 5.1.5.3 Monitoring & Diagnostics

- Payload change detection: Uncheck this box to prevent the controller from detecting changes in the Smart Table payload that might necessitate tuning of control loop gains.
- Feedback overload detection: Uncheck this box to prevent the controller from monitoring the ambient vibration levels.

- Overload duration: If feedback overload detection is enabled, specify the amount of time for which feedback signal overload is allowed before the controller generates a warning message.
- Enable auto-ranging. Uncheck this box if you do not want the pre-amplifier gains adjust to vibration environment. The box should be unchecked if the payload operation involves high vibration levels for short periods of time.

#### 5.1.5.4 Miscellaneous

- Click on “Apply Settings” button in order for the application to send any changes made on this tab to the controller.
- Click on “Save Settings to File” button to save the controller’s settings to a file on user’s PC.
- Click on “Restore Settings from File” button to restore the controller’s settings from a file on user’s PC.
- Click on “Restore Default Settings” button to restore the controller’s settings to default values.

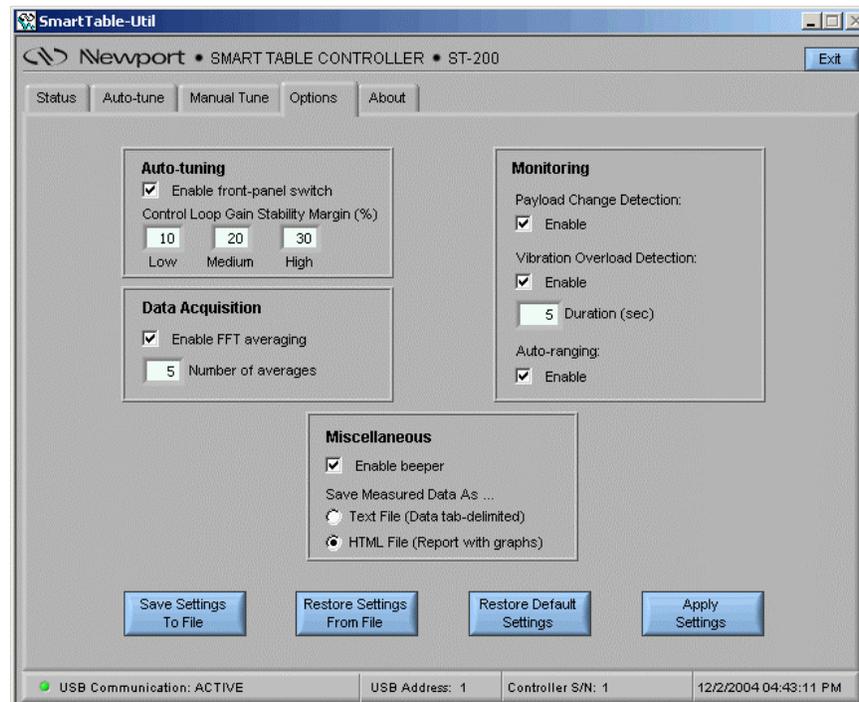


Figure 23 Options Tab Screen.

# 6 Maintenance and Service



## CAUTION

There are no user serviceable parts inside the Smart Table Controller. Work performed by persons not authorized by Newport Corporation will void the warranty.

### 6.1 Enclosure Cleaning

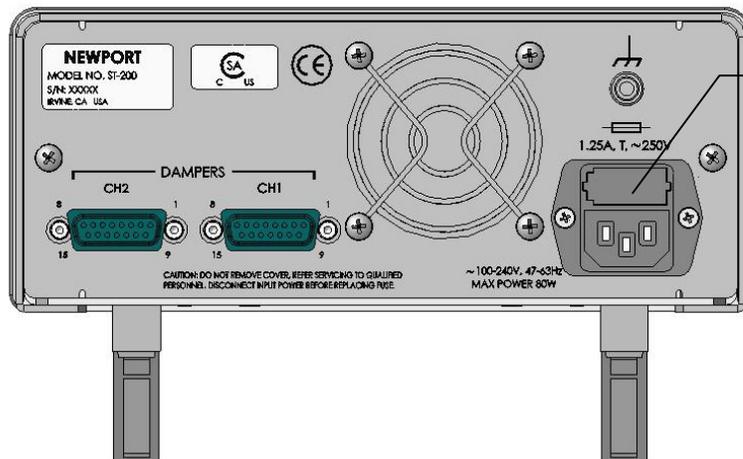


## WARNING

Before cleaning the enclosure of the Smart Table Controller, the AC power cord must be disconnected from the wall socket.

The enclosure may be cleaned with a soft cloth dampened with either a mild soapy water solution or Isopropyl Alcohol. Do not use any other chemicals or solutions. **Danger: Flammable cleaning liquid- avoid sources of ignition and clean in well ventilated area.**

### 6.2 Fuse Replacement



Pry open cover to remove fuses

Figure 24 Fuse Replacement

	<b>WARNING</b> <b>To reduce the risk of electric shock or damage to the instrument, turn the power switch off and disconnect the power cord before replacing a fuse.</b>
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If a fuse blows:

1. Disconnect the power cord from the controller
2. Pry out the fuse cover and remove the fuse holders.
3. Replace the fuse(s).

*Use only 5 \* 20mm time lag fuses as indicated below*

Fuse Replacement

1.25Amp, (T), 250V

4. Reconnect the power cord and turn on the instrument.
5. If the problem persists, contact Newport Corporation for service.

### **6.3 Obtaining Service**

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The Smart Table Controller contains no user serviceable parts. To obtain information regarding factory service, contact Newport Corporation or your Newport representative. Please have the following information available:

1. Instrument model number (on the rear panel)
2. Instrument serial number (on rear panel)
3. Description of the problem.

If the instrument is to be returned to Newport Corporation, you will be given a Return Number, which you should reference in your shipping documents. Please fill out a copy of the service form, located on the following page, and have the information ready when contacting Newport Corporation. Return the completed service form with the instrument.

## 6.4 Service Form



**Newport®**  
Experience | Solutions

Newport Corporation  
U.S.A. Office: 800-222-6440  
FAX: 949/253-1479

Name \_\_\_\_\_ **Return Authorization #** \_\_\_\_\_  
(Please obtain RA# prior to return of item)

Company \_\_\_\_\_  
(Please obtain RA # prior to return of item)

Address \_\_\_\_\_ Date \_\_\_\_\_

Country \_\_\_\_\_ Phone Number \_\_\_\_\_

P.O. Number \_\_\_\_\_ FAX Number \_\_\_\_\_

***Item(s) Being Returned:***

Model # \_\_\_\_\_ Serial # \_\_\_\_\_

Description \_\_\_\_\_

Reason for return of goods (please list any specific problems):

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