

GageWayTM SM

Connect Single Mitutoyo Gage
to an RS232 or USB Port

User's Guide



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GageWay SM Operations Manual

The GageWay SM is an easy-to-use interface designed to connect a Mitutoyo or Mitutoyo compatible gage to an serial or USB port. A serial communications test program (ComTestSerial) is included so that you can test and become familiar with the operation of the GageWay SM. When using the USB version of the GageWay SM, the USB connection looks like a standard RS232 serial port to your PC application.



GageWay SM
with RS232 Output



GageWay SM
with USB Output

Features and Benefits of the GageWay SM

- No baud rate or communication parameters setup required. The GageWay SM is pre-configured to operate at 9600-N-8-1.
- Initiate single and continuous readings with the read button on the gage, an optional foot or hand switch, or a simple computer command.
- An LED flashes when a gage reading has been obtained.
- Plugs directly into a standard 9-pin PC serial port or USB port.
- Powered by the serial port or USB port. No external AC adapter is required.
- Firmware (software program in the GageWay SM) can be upgraded via the serial or USB port. Check

the MicroRidge web site at www.microridge.com for software updates.

- ComTestSerial communications test program included with the GageWay SM.
- Available with any cable length from 12 to 72 inches. Standard lengths are 18 and 72 inches.
- Supports Mitutoyo gages and any gage that provides a standard Mitutoyo output (CDI, Federal μ Maxum, etc.).
- Standard Mitutoyo cables can be used without modification. These Mitutoyo gage cables can be purchased from any Mitutoyo dealer or can be purchased from MicroRidge.
- If you are using CDI or Federal gages with a Mitutoyo output, you may need to purchase the gage cables from MicroRidge.

Driver Installation for USB Version

Before you connect the USB version of the GageWay SM to your PC, you must install the USB and virtual serial port drivers. These drivers are located on the CD that you received with the GageWay SM. After installing the drivers, connect the GageWay SM to a USB port. Once the GageWay SM is connected, you will get a message about new hardware found.

Operation

To become familiar with the operation of the GageWay SM, we suggest you follow the steps outlined below. You can check communications with the GageWay SM even if you do not have a gage connected to the interface.

1. Connect the GageWay SM to a serial or USB port. If you have purchased a GageWay SM with an RS232 connector and do not have a serial port on your PC, refer to “My Computer Does Not Have a Serial Port” on page 6.
2. Start the ComTestSerial communications program.
3. If necessary, change the serial port number. The Registry Description in the Select & Configure Serial Port dialog for the USB version will have a description similar to \Device\VCP0. In order to use the USB version, you must select the virtual serial port that was created for the currently connected GageWay SM.
4. Use the computer commands on page 4 and the command buttons at the bottom of the ComTestSerial window to test the communications with the GageWay SM.

When the GageWay SM is powered up, the LED will blink about 6 times. When the blinking stops, the GageWay SM is ready to receive commands and send data to the PC.

The RS232 version of the GageWay SM is powered by the serial port handshake lines. Power up and power down of the GageWay SM is performed by the application controlling the serial port handshake lines. Refer to page 5 for more details.

The USB version of the GageWay SM is powered by the USB port and will be powered up when the GageWay SM is connected to a USB port.

Computer Commands

The GageWay SM can be controlled with a set of computer commands. You should test these commands with ComTestSerial so that you fully understand the response and the format of the response.

The user commands that consist of a letter can be upper or lower case. To request a reading you can send R or r. A carriage return (enter key) is not required at the end of any of the commands. If you send an invalid command, the command will be discarded by the GageWay SM.

User commands (commands can be upper or lower case):

- R Read gage.
- B Begin continuous gage read.
- S Stop continuous gage read.
- C Begin continuous gage read when read switch (foot switch, hand switch, read button on gage, etc.) is pressed and held.
- D Stop (disable) continuous gage read when the read switch is released.
- H Display a list of the computer commands.
- L Turn the LED on for 50 milliseconds (msec).
- V Version information.
- Z Reset to power up configuration. This will also disable the continuous read that was controlled by a remote read switch. The LED will flash 4 times when this command is received.
- * Copyright information.

How the GageWay SM is Powered

The RS232 version of the GageWay SM is designed to draw its power from the serial port and does not require an external AC adapter. On the standard serial port there are 2 handshake lines that can be used to supply power to devices that have very low power needs. On the standard 9-pin PC serial port, the 2 pins that are used are pin 4 (DTR) and pin 7 (RTS). In order for your application to use the GageWay SM, one or both of these pins must be high. Typically when an application opens a serial port, the application sets both of these pins to the high state. You can manually set these handshake pins high and low when testing the GageWay SM with the ComTestSerial communications program.

The USB version of the GageWay SM is powered directly by the USB port and it does not matter whether the handshake lines are high or low.

Output Data Format

The data format of a reading from a Mitutoyo device is fixed and cannot be modified by the user. The GageWay SM sends the measurement left justified and the measurement is terminated with a carriage return. There are no leading, trailing or embedded blanks in the measurement string. The length of the measurement string will vary based on the number of digits in the measurement. A few examples are shown below.

1.3265

.1455

-.5725

13.26

My Computer Does Not Have a Serial Port

This topic is only pertinent if you are trying to connect an RS232 version of the GageWay SM to your PC. If you have purchased the RS232 version and really need the USB version, contact your dealer or MicroRidge Systems.

Many of the computers that are being sold today do not contain any RS232 serial ports. If your computer does not have any serial ports, it will have several USB ports. You will need to obtain a USB to serial converter cable in order to connect the RS232 version of the GageWay SM to your PC. This cable will convert one of your USB ports to a serial port. These USB to serial cables are available directly from MicroRidge at a very reasonable price.

Why Do I Need an Interface?

We often get asked “Why do I need to purchase a gage interface to connect my gage to a PC?” The Mitutoyo compatible gages use a signaling method referred to as clocked serial.

The clocked serial data is not sent at a constant rate like RS232 data; therefore, the Mitutoyo signals require special signal processing to convert them into a standard RS232 format. Remember that when using the USB version of the GageWay SM, the firmware in the GageWay SM and the USB drivers make this USB interface look like a regular RS232 serial port to your PC application.

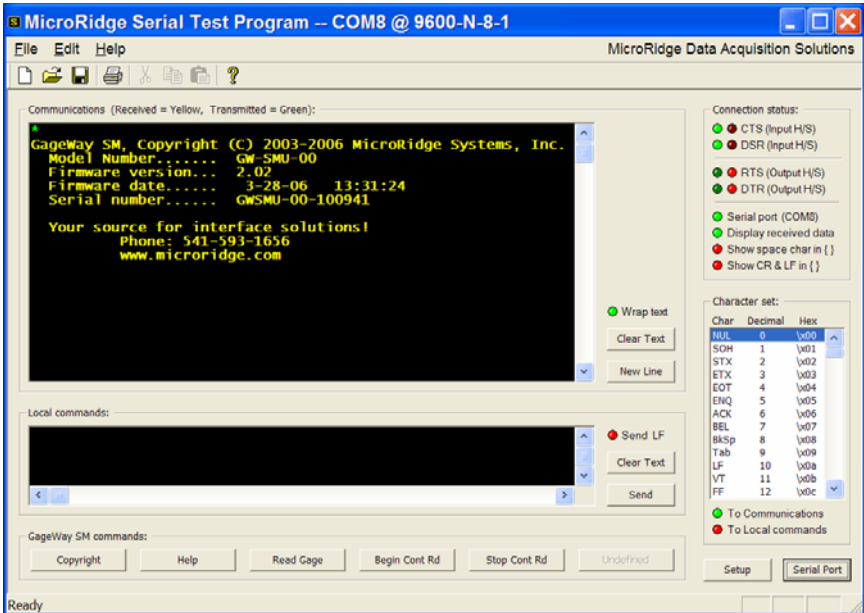
There are a few calipers and digital indicators that have an RS232 output; however, one should carefully analyze the cost before purchasing the RS232 ready devices.

You must consider the gage cables to be a consumable item, and factor gage cable replacement into the cost of your measurement system. People have reported that gage cable consumable rates may be measured in days, weeks or months. Another limitation with RS232 ready devices is that the range of products available is small when compared to the products with a Mitutoyo compatible output.

ComTestSerial Communications Test Program

A serial communications test program is included on a CD with the GageWay SM. This test program is much easier to use than the HyperTerminal (hypertrm.exe) included with Windows. The default communication parameters in ComTestSerial match those of the GageWay SM. The only setting you may have to change is the serial port selection. By default, COM1 is selected. If your GageWay SM is connected to a different serial port, press the Serial Port button in the lower right corner and select the appropriate port.

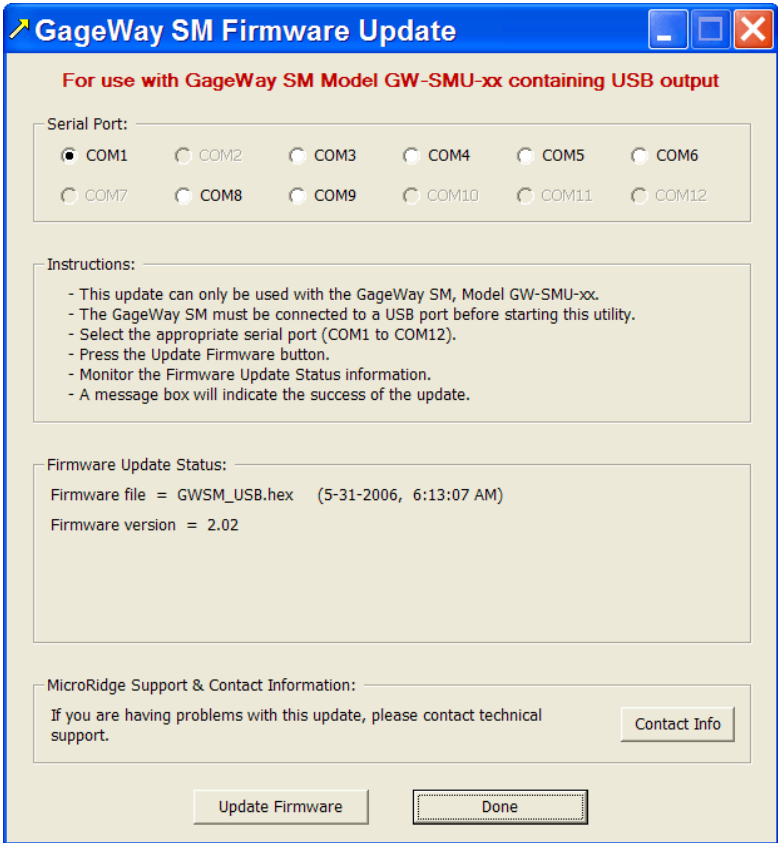
ComTestSerial can be loaded on as many computers as required. To install this test program, select the ComTestSerial installation option on the CD included with your GageWay SM. ComTestSerial is designed for use on Windows 2000, XP and later. MicroRidge does not support the use of ComTestSerial on Windows 9x systems.



Firmware Updates

The firmware in the GageWay SM can be updated via the serial or USB port. Firmware updates are posted on the MicroRidge web site at www.microridge.com.

To update the firmware, download the appropriate update and run the file to install the program and new firmware files on your PC. If you select the default installation, the software will be installed in C:\GageWaySM_Firmware. Connect the GageWay SM to your serial or USB port and run the program from the shortcut installed on your desktop. Follow the instructions shown in the program. To remove the update software from your PC, select the uninstall option from the Start menu or use the Add or Remove Programs icon in the Control Panel



About MicroRidge

MicroRidge designs and builds hardware and software solutions for RS232, USB and network data acquisition. We offer a full range of interfaces that support digital gages (calipers, micrometers, digital indicators, etc.) and RS232 devices. Interface products include the GageWay SM, GageWay Series and GageWay wireless systems. Our WedgeLink keyboard wedge family of products include both software and hardware wedges.

Sales & Technical Support

MicroRidge provides full technical support for all of its products. If you are having problems or need more information, please contact us.

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