

**Device Maintenance**

**Battery Replacement**

Materials:  
Small Phillips Head Screwdriver  
Replacement Battery (LTC-7PN)

- Puncture the center of the back label with the screw driver and unscrew the enclosure.
- Remove the battery by pulling it perpendicular to the circuit board.
- Insert the new battery into the terminals and verify it is secure.
- Screw the enclosure back together securely.

**Note: Be sure not to over tighten the screws or strip the threads.**

**Battery Warning**

**WARNING: FIRE, EXPLOSION, AND SEVERE BURN HAZARD. DO NOT SHORT CIRCUIT, CHARGE, FORCE OVER DISCHARGE, DISASSEMBLE, CRUSH, PENETRATE OR INCINERATE. BATTERY MAY LEAK OR EXPLODE IF HEATED ABOVE 80°C (176°F).**

**Recalibration**

Bridge110 standard calibration values:

Logger Voltage	10mV	25mV	100mV	1000mV
Calibration (V)	0V and 9-10mV	0V and 22.5-25mV	0V and 90-100mV	0V and 900-1000mV

**Pricing:**

Recalibration traceable to NIST \$60.00  
Recalibration \$40.00

**Additional:**

As Found Data \$15.00 per parameter/channel  
Verification Point \$15.00 per point

To send the devices back, visit [www.madgetech.com](http://www.madgetech.com), select Services then RMA Process.

Part Number	Bridge110
Range	
Resolution	See Table Below*
Accuracy	
Memory	32,767
Sample Rate	1 second up to 12 hours
Units	V, mV, $\mu$ V, Engineering Units specified through software
Reg. Interface	IFC110 or IFC200
Baud rate	57,600
Battery Life	10 years
Operating Environment	-40 to +80°C 0 to 95%RH non-condensing
Material	ABS plastic
Dimensions	1.7" x 2.7" x 0.8" (44mm x 69mm x 21mm)
CE Approval	Yes

\*Bridge110 Range, Resolution and Accuracy

Nominal Range	$\pm$ 10mV	$\pm$ 25mV	$\pm$ 100mV	$\pm$ 1000mV
Measurement Range	$\pm$ 15mV	$\pm$ 37.5mV	$\pm$ 120mV	$\pm$ 1200mV
Resolution	1 $\mu$ V	2.5 $\mu$ V	5 $\mu$ V	50 $\mu$ V
Accuracy	$\pm$ 0.25%FSR	$\pm$ 0.10%FSR	$\pm$ 0.05%FSR	$\pm$ 0.01%FSR
Input Range	0 to 2.5V	0 to 2.5V	0 to 2.5V	0 to 2.5V
Reference Voltage	2.5V	2.5V	2.5V	2.5V

Specifications subject to change.

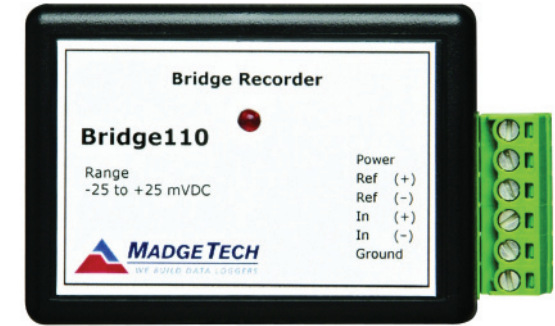
See MadgeTech's terms and conditions at [www.madgetech.com](http://www.madgetech.com)

MadgeTech, Inc.

PO Box 50 • Warner, NH 03278

Phone 603.456.2011 • Fax 603.456.2012

[www.madgetech.com](http://www.madgetech.com) • [info@madgetech.com](mailto:info@madgetech.com)



**Bridge110-10**

10mV Bridge Recorder

**Bridge110-25**

25mV Bridge Recorder

**Bridge110-100**

100mV Bridge Recorder

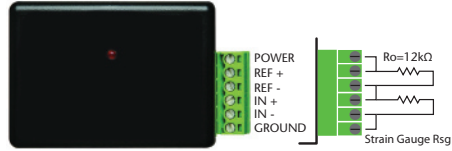
**Bridge110-1000**

1000mV Bridge Recorder

## Configuring the Data Logger

### Voltage Divider Configuration

The Voltage Divider configuration is a simple and frequently used setup to measure bridge strain.



1. Jumper between POWER and REF+
2. Place a 12kΩ resistor between REF+ and REF-
3. Jumper between REF- and IN+
4. Place the strain gage between IN+ and IN-
5. Jumper between IN- and GROUND

### Conversions

To convert the Voltage values into Ohms, use the following formula:

$$\Omega_{in} = 120\Omega \times \left( \frac{V_{in}}{mV_{ref}} \right) \Rightarrow 4.8 \times V_{in}$$

**Example:** The MadgeTech software reports a voltage of 20mV in the circuit described above. The strain gage resistance is therefore:

$$\Omega_{in} = 4.8 \times V_{in} = 4.8 \times 20mV = 96\Omega$$

The resistor  $R_o$  between REF+ and REF- and the strain gage value form the mV reference ( $mV_{ref}$ ). This may be expressed as:

$$mV_{ref} = 2.5 \times \frac{R_{sg}}{R_o}$$

The Bridge110-25 has a resolution of about 2μV. If the resistance of the strain gage changes by ±1, the device would measure a change of approximately ±20μV. Conversely, this voltage resolution translates in Ohms to approximately:

$$120\Omega \times \frac{0.020mV}{25mV_{ref}} \approx 0.096\Omega$$

**Note:** The maximum voltage must be kept within the specified input range. See data sheet for details.

### Product Notes

#### LEDs

Once started, the LED will flash at the selected reading rate to indicate that the device is running.

## Installation Guide

### Installing the Interface cable

- IFC200, IFC202 or IFC300  
Refer to the “Quick Start Guide” included in the package.

- IFC110, IFC102 or IFC103  
Plug the serial cable into the port and verify it is secure.

- USB-1 or USB-101  
Install the USB drivers from the CD provided in the kit, then plug the USB cable into the computer and the serial cable into the serial port.

### Installing the software

Insert the Software CD in the CD-ROM Drive. If the autorun does not appear, locate the drive on the computer and double click on **Autorun.exe**. Follow the instructions provided in the Wizard.

### Connecting the data logger

- Once the software is installed and running, plug the interface cable into the data logger.

- Click the **Communication Menu**, then **Auto Configure Port**.

- After a moment, a box similar to the following will appear;



- Click **OK**. The **Device Status** box will appear. Click **OK**.

- At this point, communications have been configured for your logger. These settings can be found under the **Communication Menu**.

**Note:** For additional installation instructions refer to your “Data Logger & Software Operating Manual”.

## Device Operation

### Starting the data logger

- Click **Device Menu** then **Start Device**.

- Choose the desired start method.

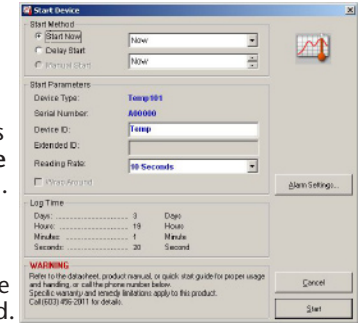
- Choose the start parameters by selecting a **Reading Rate** suitable for your application.

- Enter in any other desired parameters and click **Start**.

- A box will appear stating the data logger has been started. Click **OK**.

- Disconnect the data logger from the interface cable and place it in the environment to measure.

**Note:** The device will stop recording data when the end of memory is reached or the device is stopped. At this point the device cannot be restarted until it has been re-armed by the computer.



### Downloading data from a data logger

- Connect the data logger to the interface cable.

- Click the **Device Menu** then **Read Device Data**. This will offload all recorded data onto the PC.

## Technical Support

Visit [www.madgetech.com](http://www.madgetech.com), or call (603) 456-2011. Technical support is also available by e-mailing [support@madgetech.com](mailto:support@madgetech.com)

Additional product information is available by e-mailing [info@madgetech.com](mailto:info@madgetech.com).