

Description	TSR101
Acceleration Sensor	Shock (3 axes)
Accelerometer Type	MEMS Semiconductor
Acceleration Range	*See Table for Details
Acceleration Resolution	
Calibrated Accuracy	
Memory	349,471/channel
Reading Rate	1,024Hz to 1 second
Frequency Response	0Hz to approximately 400Hz (50, 100 g)
Typical Battery Life	7 days
Required Interface Package	IFC200
Baud Rate	115,200
Operating Environment	-20 °C to +60 °C, 0 to 95%RH (non-condensing)
Dimensions	3.5" x 4.4" x 1.0" (89 mm x 112 mm x 26 mm)
Materials	Anodized aluminum
Weight	12 oz (340 g)
Approvals	CE

\*TSR101 Acceleration Range, Resolution and Accuracy

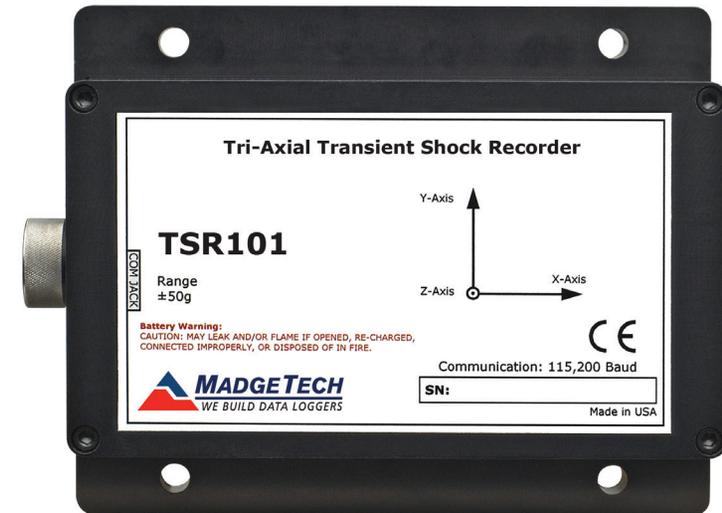
Range (g)	±5	±50	±100	±250
Resolution (g)	0.01	0.05	0.1	0.2
Accuracy (g)	±0.2	±1	±2	±4

### 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 60 °C (140 °F).**

*Specifications subject to change.*

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### TSR101-5

Tri-Axial ±5g, Transient Shock Data Logger

### TSR101-50

Tri-Axial ±50g, Transient Shock Data Logger

### TSR101-100

Tri-Axial ±100g, Transient Shock Data Logger

### TSR101-250

Tri-Axial ±250g, Transient Shock Data Logger

## Product Notes

### How it Works

Once the logger is started samples are taken on each axis (X, Y and Z) every 1024Hz (1 ms). These samples are compared with the trigger values and if it crosses the threshold value then it records the timestamp and starts logging the triggered data.

If the samples are not above the threshold value then it is logged as the pre-trigger data. Since only 50 pre-trigger values can be recorded the data gets overwritten if the logger is not triggered within 50 pre-trigger values.

The sampling frequency is the same for all reading rates therefore the samples are skipped based on the reading rate. For example: if the reading rate is 512Hz the samples are taken every 1ms but every other sample gets logged instead of logging every sample.

### Trigger Settings

Below is a table of default trigger values based on the range of the logger. All axis are enabled to check for triggers at these g levels.

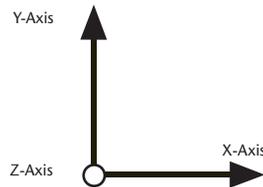
Range	5 g	50 g	100 g	250 g
Trigger Value	2.5 g	25 g	52.5 g	120 g

To edit trigger values, select **Start Device** from the **Start Menu**. Click **Yes**, then select **Trigger Settings**. Click the **Change** button. Each axis can be set to trigger at a certain g force level. Check the **Enable Trigger** box to enable the trigger for that axis. The values can be typed in manually or configured by using the slider control. Click **Save** to save the changes.

To initiate the TSR101 to constantly sample, set the high and low trigger settings to 0 g.

### Axis Orientation

When the TSR101 is laying flat, with the label facing up, the x-axis indicates left to right direction and will read ~0 g when still. The y-axis reads in a top to bottom direction and reads ~0 g when still. The z-axis reads perpendicular to the other two axis, and will read ~1 g when still.



## Installation Guide

### Installing the Interface cable

- IFC200

Insert the device into a USB port. The drivers will install automatically.

### Installing the software

Insert the Software USB Stick in an open USB port. 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.

## Device Operation

### Connecting and Starting the data logger

- Once the software is installed and running, plug the interface cable into the data logger.
- Connect the USB end of the interface cable into an open USB port on the computer.
- The device will appear in the Connected Devices list, highlight the desired data logger.
- For most applications, select **“Custom Start”** from the menu bar and choose the desired start method, reading rate and other parameters appropriate for the data logging application and click **“Start”**. (**“Quick Start”** applies the most recent custom start options, **“Batch Start”** is used for managing multiple loggers at once, **“Real Time Start”** stores the dataset as it records while connected to the logger.)
- The status of the device will change to **“Running”**, **“Waiting to Start”** or **“Waiting to Manual Start”**, depending upon your start method.
- 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

- Highlight the data logger in the Connected Devices list. Click **“Stop”** on the menu bar.
- Once the data logger is stopped, with the logger highlighted, click **“Download”**. You will be prompted to name your report.
- Downloading will offload and save all the recorded data to the PC.

## Device Maintenance

### Battery Replacement

Materials:

3/32" HEX Driver (Allen Key)

Replacement Battery (U9VL-J)

- Remove the cover from the device by unscrewing the four screws.
- Remove the battery from its compartment and unsnap it from the connector.
- Snap the new battery into the terminals and verify it is secure.
- Replace the cover taking care not to pinch the wires. Screw the enclosure back together securely.

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

### Recalibration

The TSR101 standard calibration is performed at 0 g for the X-axis, 0 g for the Y-axis and 1 g for the Z-axis.

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