



**MINIVLS313 SPEED SENSOR  
USB TACHOMETER  
INSTRUCTIONS**

**Tel: +44 (0)1204 532544**

**Fax: +44 (0)1204 522285**

**[www.compactinstruments.co.uk](http://www.compactinstruments.co.uk)**

**WARNING**

**LASER RADIATION  
DO NOT STARE INTO BEAM  
CLASS II LASER PRODUCT**

## GENERAL FEATURES:

The MiniVLS 313 Speed Sensor USB Laser Tachometer is the first pocket laser tachometer developed to operate on android smartphone or tablet (USB-OTG supported). The Compact Instruments Tachometer app has data-save capability and files can be exported to external devices. To use the MiniVLS 313 on PC or Laptop running Windows, the software can be found on the PDF Downloads & Software tab on the Compact Instruments website. The MiniVLS 313 is primarily designed for speed related applications, including high-speed monitoring and is widely used in research, development and test applications.

## KEY FEATURES:

### Pocket Sized Instrument:

The MiniVLS 313 at just 20mm x 65mm, is a small and compact handheld tachometer.

### Data Save:

All measured data can be saved and exported.

### Sampling Timebase Options:

Sampling times from 0.1s to 5s can be selected.

### No Batteries Required:

The MiniVLS 313 is powered by the connected device i.e. smartphone, tablet or PC.

### Multiple Unit Options:

Different units of measurement can be selected including rps, rpm, metre/minute etc.

### Diameter Setting:

The diameter can be adjusted to the size of the targeted wheel for linear speed measurement without the need of a contact adapter.

## SPECIFICATIONS:

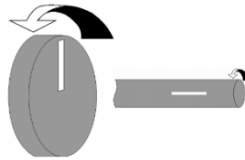
<b>Optical laser range</b>	50mm - 2000mm
<b>Light Source</b>	Red Laser Class II 635nm
<b>Optical angle</b>	± 80 degrees
<b>Speed measurement range</b>	3 - 99,999 rpm
<b>Resolution</b>	0.001 rpm
<b>Operating Temperature</b>	0 to + 50 degree
<b>Baud rate</b>	115200
<b>Connector / Power Source</b>	Mini USB
<b>Time base</b>	0.1s to 5s (adjustable)
<b>Cables</b>	Several options
<b>Dimensions</b>	20mm (W) x 65mm (L)

## STANDARD PACKAGE:

- 1x pack of reflective tape.
- 1x male micro to female USB 2.0 adapter.
- 1x male Type-C to female USB 2.0 adapter.
- 1x mini male to male USB 2.0.
- Instructions.

## INSTRUCTIONS FOR USE:

1. Attach small reflective target to machine shaft (typically 6mm x 25mm)
2. Connect sensor to smartphone using supplied cable.  
Start tachometer app, press start button while pointing to target.



## OPERATION OF APP:

### SETTINGS:

In the 'Units' menu, options are - rpm, rps, m/min, m/sec, ft/min, ft/sec.

In the 'Sampling Timebase' menu, different time intervals can be set. If, for example, 0.1s is selected the tachometer will calculate the speed over 0.1s then send the data to the connected smartphone. Similar for the other settings.

'Diameter in mm' is used where units set are m/min, m/sec, ft/min or ft/sec, and the diameter is known. In this option the diameter can be adjusted to the size of the targeted wheel. The default value is 32 mm.

### DATA FILES:

Data may be saved in a pre-selected file. Files can be created by entering a file name and pressing the 'Create File' button.

When naming a file only the following characters are allowed:

"0,1,2,3,4,5,6,7,8, 9, abcdefghijkl mnopqrstuvwxyz,-,@,\_,#,\$,%,(,)"

If no data file exists, a file will automatically be created when the data is saved. Automatically created files are named using the current date/time.

Files to be written to can be selected via the 'Select File' button.

Files can be deleted via the 'Delete File' button.

Files can be exported/emailed via third party software.

All data files are saved in the Tacho\_data folder.

All data saved is in units of rpm.

## **PROGRAMMING GUIDELINE:**

### **RECEIVING DATA from MiniVLS:**

USB serial data output: 115200 baud rate, parity:none, 8 data bits, 1 stop bit

RPM speed data is sent as a number terminated with `\n <cr>`.

The unit sends data in the form:

```
"sprintf(message_to_send,"%5.3f\n",cal_rpm)"
```

where `cal_rpm` is speed.

Example: if speed is 234.323, then `"234.323\n"<cr>` will be sent.

When coding to read data from MiniVLS, `\n <cr>` events can be used to denote completion of one data transmission.

In Java `readLine()` could be used to input a line a data.

### **SENDING COMMANDS to MiniVLS:**

Sampling frequency can be set by sending the appropriate simple command to the unit.

Commands consist of a single ASCII character between '1' and '9'.

If 'v' is sent, the device firmware version is returned ie 'MiniVLS313 version 1.2'

<b>Number to Send</b>	<b>Sampling Frequency(s)</b>
<b>1</b>	0.1
<b>2</b>	0.5
<b>3</b>	0.8
<b>4</b>	1
<b>5</b>	2
<b>6</b>	3
<b>7</b>	4
<b>8</b>	5
<b>9</b>	Switch off laser
<b>v</b>	Returns firmware version

## **USE WITHOUT REFLECTIVE TAPE:**

Under controlled conditions reflective tape may not be required. If there is an existing difference in reflectivity on part of the object to be monitored then this may be used e.g. keyways and slots in bright shafts, spokes of a wheel, fan blades etc. If there is more than one target per revolution of the shaft then the resulting reading must be divided by the number of targets to obtain the correct reading. In the case of multiple targets these must be equally spaced around the shaft or disc or jitter will occur in the measured value. This effect is most apparent at slow speeds. On bright shafts, it is possible to paint a black non-reflective segment and conversely on non-reflective shafts a white mark can be painted.

## **DOWNLOAD the FREE ANDROID APP:**

App name in Google play store: **MiniVLS Tachometer**

<https://play.google.com/store/apps/details?id=com.compact.minivls>



**Compact Instruments Ltd**

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**Phone: +44 (0)1204 532544**

**Address: 61-65 Lever Street, Bolton,  
Lancashire, BL3 2AB, United Kingdom**