

SEISMOMETER INTERFACE (USB)

(CODE: SEP 064)



The USB Seismometer Interface replaces the older (RS-232 port based) SEP Seismometer electronics. The default gain and sample rate settings match those recommended for use with the SEP Seismometer, meaning it can be used as a drop in replacement without any configuration. The device appears as a Virtual Com Port when connected via USB, hence can still be used with software such as Amaseis. The sample rate defaults to 20.032Hz and the gain defaults to the lowest setting, equivalent to $0.64\mu\text{V}$ /count, which is the closest to the original electronics.

Driver installation

On Windows systems a driver needs to be installed to allow the interface to show as a Virtual Com Port. The driver file 'SeismometerV2.inf' can be downloaded from www.mindsetsonline.co.uk. When the device is connected for the first time, Windows will ask for a driver. Enter the location of the driver file, and Windows should then complete the installation.

Note: the current driver is not digitally signed: it may be necessary to disable 'require driver signing' in Windows.

Sample rate

Three sample rate settings are available at approx. 20, 40 and 80 SPS. On board, low-pass anti-aliasing filters are adjusted automatically when changing the sample rate. The following sample rates are available:

20.032 SPS
39.860 SPS
79.719 SPS



Gain

Three gains are available, the lowest, $\times 1$, is roughly equivalent to the original electronics set to $\times 100$ with a sensitivity of $0.64\mu\text{V}/\text{count}$. The following gains are available:

$\times 1 = 0.64\mu\text{V}/\text{count}$
 $\times 2 = 0.32\mu\text{V}/\text{count}$
 $\times 4 = 0.16\mu\text{V}/\text{count}$

USB Interface

Data is sent as ASCII text, one value per line (−32,768 to +32,767).

The gain and SPS can be adjusted by sending single characters to the Virtual Com Port (for example in a terminal emulator):

'1': $\times 1 = 0.64\mu\text{V}/\text{count}$

'2': $\times 2 = 0.32\mu\text{V}/\text{count}$

'4': $\times 2 = 0.32\mu\text{V}/\text{count}$

'a': 20.032 SPS

'b': 39.860 SPS

'c': 79.719 SPS

Input

The input uses a screw-less terminal connector. Push down on the yellow buttons to insert/remove wire.

Solid core or tinned wire should be used.

There is a small bias current present at the input meaning the input offset will vary slightly with load. The current version of the firmware does not compensate for the offset, hence, it needs to be done in software.

Input impedance: 10k.

Typical input offset: 100 μV

Firmware upgrades

The device can be switched into firmware upgrade mode by pressing the recessed button through the hole in the case (while inserted into a USB port). The device should then appear as a flash drive with a single file, 'firmware.bin'. To upgrade the firmware, first delete the 'firmware.bin' file then copy a the new firmware to the drive. Remove the device from the USB port and reinsert.

Firmware updates will be available from www.mindsetsonline.co.uk.



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