User Guide for Svantek SV 106 for Ground Vibration Measurements

User Information

This document contains information about using the **SV 106 6 Channel Vibration Meter** instrument for ground vibration measurements.

The system can be used for vibration measurements from traffic, piling, and mechanical systems transmitted through the ground or floors to sensitive machines such as micro-balances, electron microscopes, MRI machines etc.

For any specific questions about the correct usage please contact your local distributor or send an email to < **SoundandVibration@sensidyne.com**>

SV 207A

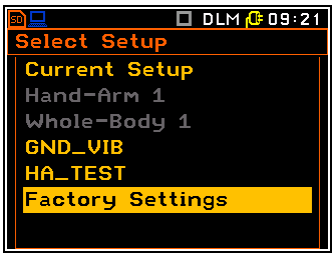
SV 207B

Connections

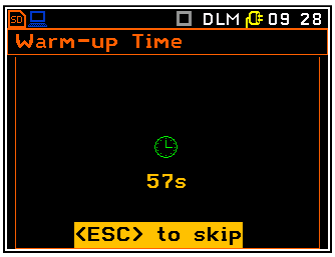
Connect the single SV 207 triaxial ground vibration sensor to input channel 1 - 3 on the top of the SV 106 instrument. If there is a second SV 207 available then this can be connected to the second input socket for channels 4 – 6 to make vibration measurements in two locations simultaneously. Adjust the following instructions accordingly if this is the case as far as setting up the extra channels is concerned.

SWITCHING ON

Ensure that there are 4 good batteries installed in the instrument and switch it on. Highlight the Factory Default setup name shown in the list and press ENTER to select.
This will ensure that a known set of start conditions are in the instrument depending on what other tasks may have been pre-programmed into the meter.



The existing setup will be replaced by the default factory settings to start from a known condition. The sensor calibration information will not be read from the connected SV 207 and must be entered manually.
Press ESC to skip the warm up time screen and arrive at the start screen.

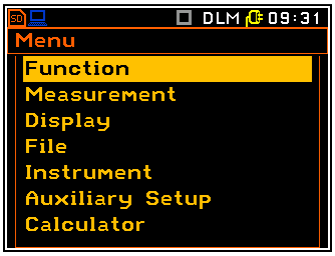


The normal start measurement screen will be shown.

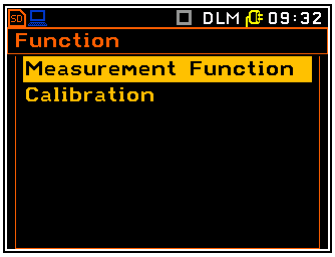
MAIN MENU

FUNCTION SETTINGS

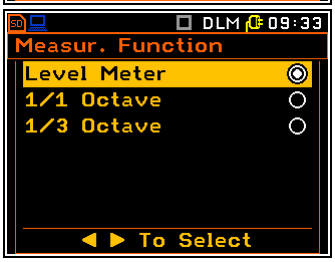
Press SHIFT+MENU to bring up the main menu.

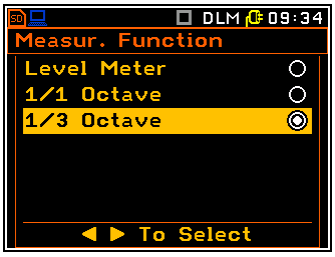


Press ENTER to select the Function menu.



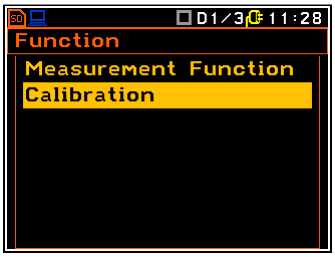
Press ENTER to select the Measurement Function menu. Press the DOWN button to highlight the 1/3 Octave function and then press the RIGHT arrow button to select and return to the previous menu.





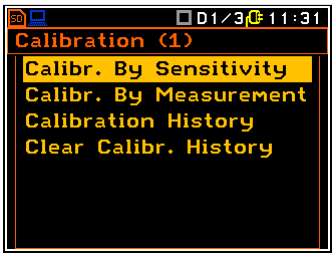
Press ESC to return to the main menu

Press ESC to return to the Function menu. Press the DOWN button to select the Calibration settings and press ENTER.

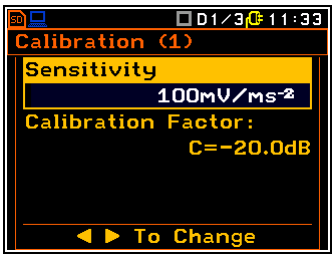


The SV 207 sensors do not store calibration information in the TEDS memory therefore the individual calibration sensitivities must be entered manually for each channel as follows.

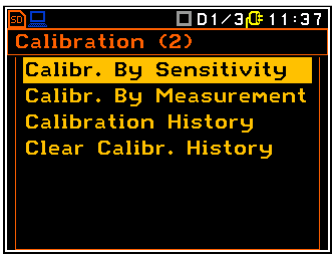
Press DOWN button to select Channel 1 and press ENTER.



Highlight Calibr. By Sensitivity and press ENTER to select. Press the RIGHT arrow button to change the displayed channel sensitivity until the closest value to the one shown on the calibration certificate for the sensor is displayed on screen. The nominal sensitivity of the sensor in the SV 207A and 207B is 100 mV/ms^{-2}. Press ENTER button to accept and store the calibration information and return to the previous menu.

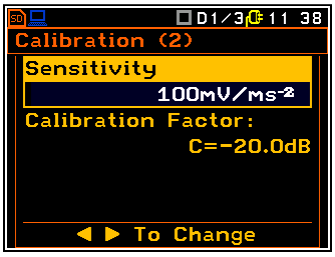


Press ESC to return to the list of channels then press DOWN to select channel 2 and press ENTER to modify the sensitivity for this channel.

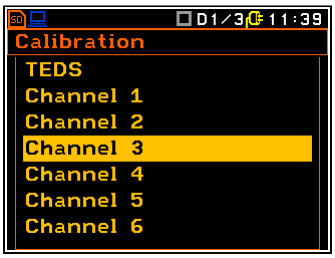


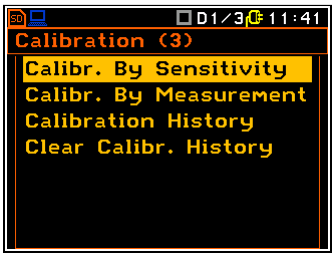
Modify the setting for channel 2 and press ENTER to save and return.

Press ESC to return to the list of channels and select channel 3.



Press ENTER to modify the sensitivity settings for channel 3.

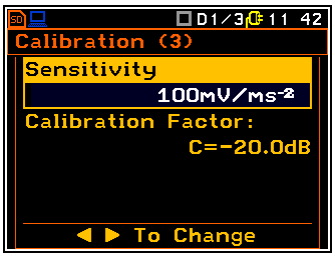




Press ENTER to save and return to the previous menu.

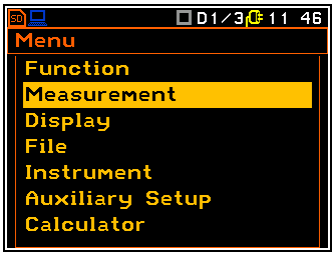
Press ESC to return to the list of channels.

Press ESC to return to the Function menu. Then press ESC to return to the main menu.



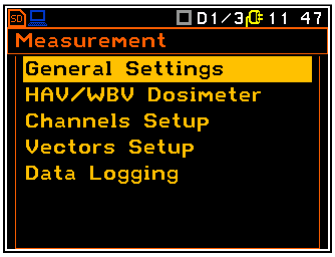
MEASUREMENT SETTINGS

Press the DOWN button to highlight the Measurement menu item and press ENTER to select it.

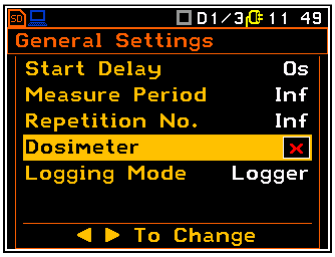


Press ENTER to select and enter the General Setting menu.

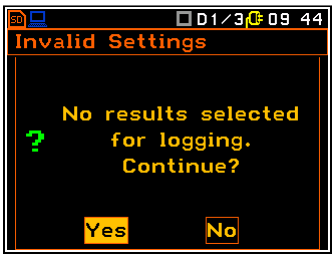
The default General Settings will be shown.



Change the choices on this screen to Start Delay = 0 s, Integration Period = Inf, Repetition No. = Inf, Dosimeter disabled, Logging Mode = Logger. Use the LEFT arrow key at each position to change the displayed values. Press ENTER to save and return to the previous menu.

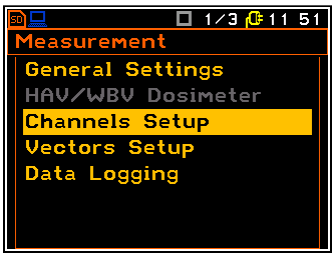


The warning message will be displayed. Press ENTER to accept the YES choice and return to the previous menu.

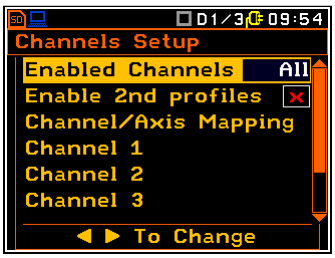


The HAV/WBV Dosimeter selection will be greyed out indicating that these settings are unavailable in this mode.

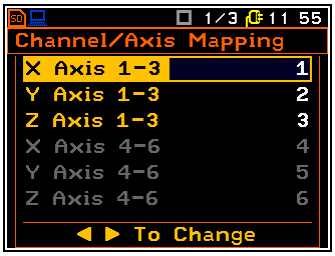
Highlight the Channels Setup menu item and press ENTER to select it.



If GV measurements are to be carried out using a single SV 207 sensor then only channels 1, 2 and 3 need to be configured.

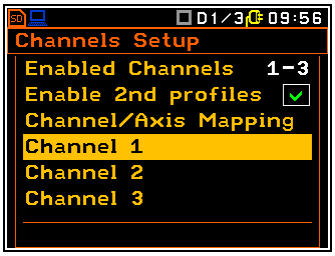


Press the RIGHT arrow button to enable channels 1 – 3, move down to enable the 2nd profiles and highlight the Channel 1 setting. Move DOWN to highlight Channel/Axis Mapping and press ENTER to confirm the default settings shown here.

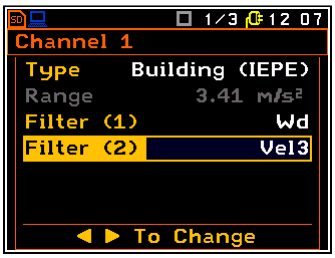


Press ESC to return to the previous menu.

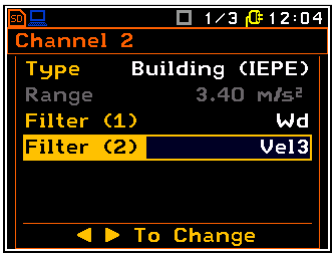
Press DOWN to highlight Channel 1. Press ENTER to select the Channel 1 settings.



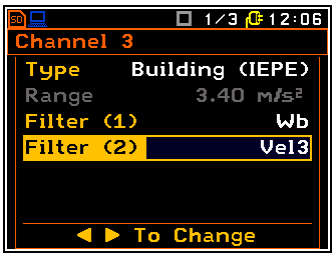
Make sure the Channel 1 settings are as shown, Type = Building (IEPE), Filter 1 = Wm, Filter 2 = VEL3. The range setting will be automatically set depending on the specific calibration information entered during the calibration process. Press ENTER to return to the previous menu.



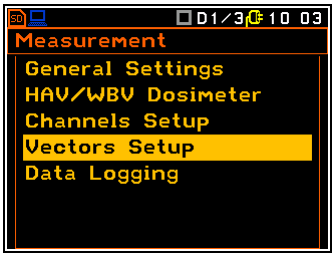
Select and enter the Channel 2 settings and confirm that they are shown as here. Press ENTER to return to the previous menu.



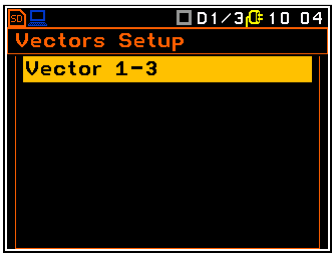
Select and enter the Channel 3 settings and confirm that they are shown as here. Press ENTER to return to the previous menu.



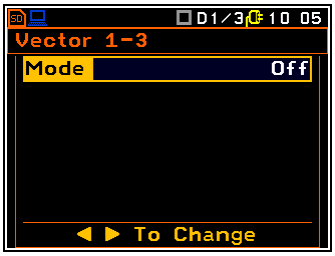
Press ENTER to return to the Channel Setup menu then press ESC to return to the Measurement menu. Highlight the Vector Setup and press ENTER to select this menu item.



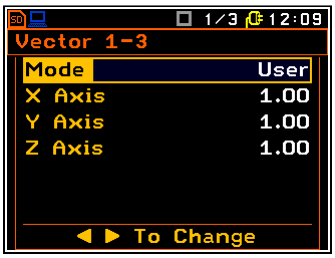
Highlight Vector 1 – 3 and press ENTER to select this menu.



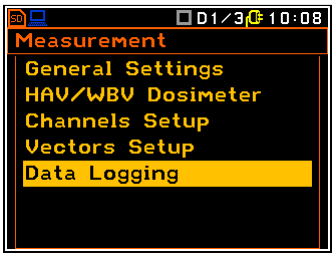
The Vector Mode will initially be shown as OFF.

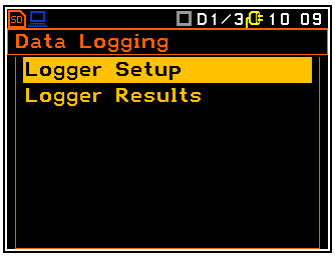


Press the RIGHT arrow button to change to MODE = USER and press ENTER to save this setting and return to the previous menu. Press the ESC button to return to the Vector Setup menu. Press ESC to return to the Measurement menu.

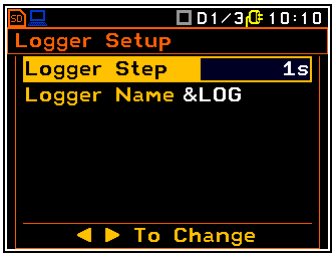


Highlight the Data Logging choice and press ENTER to select it.

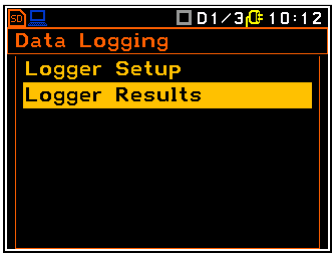




Press ENTER to select the Logger Setup menu, select the Logger Step = 1s to save the time history results at 1 second intervals during the overall measurements. Highlight and edit the name for the Logger Name if required otherwise press ENTER to save and return to the previous menu.

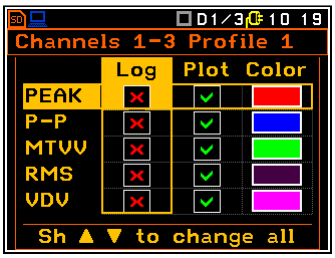


Highlight the Logger Results selection and press ENTER to select and modify the storage of Logger Results as required.

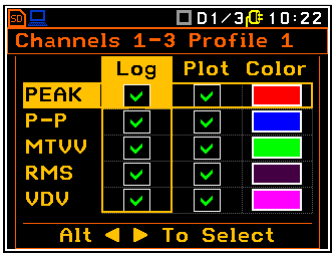


Press ENTER to modify the settings for Profile 1.

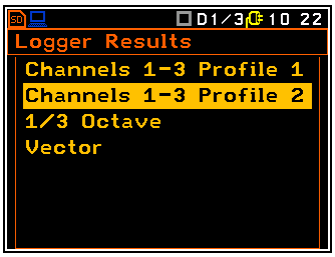
The screen will show 2 columns that can be modified as required. Select the SHIFT+UP buttons to turn on all the selections in the LOG column. These are the results that will be saved to memory. The PLOT column selections will be shown on the screen during the measurements while they take place.



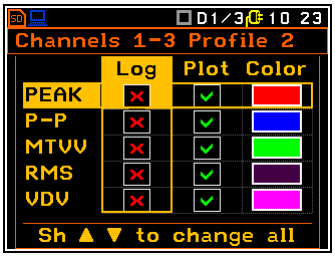
Press ENTER to save and return to the previous menu.



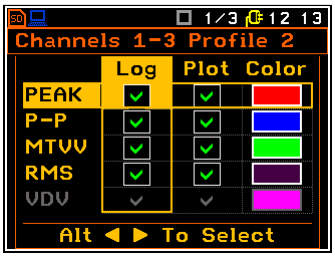
Press ENTER to modify the Profile 2 results.



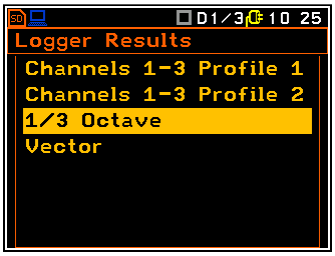
The screen will show 2 columns that can be modified as required. Select the SHIFT+UP buttons to turn on all the selections in the LOG column. These are the results that will be saved to memory. The PLOT column selections will be shown on the screen during the measurements while they take place.



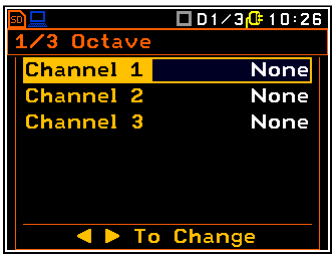
Press ENTER to save and return to the previous menu.



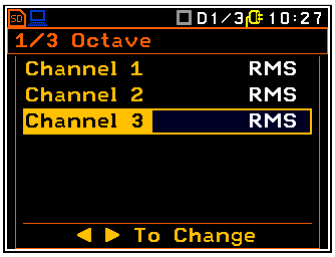
Highlight the 1/3 Octave selection and press ENTER to modify the settings.



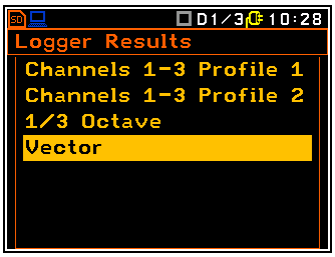
The initial settings will be shown.



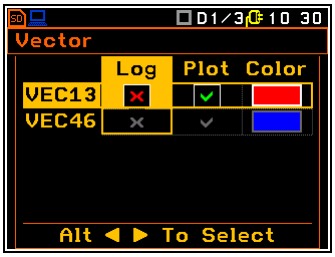
Press the RIGHT arrow button for each channel to set the RMS setting then press ENTER to return to the previous menu.



Highlight the Vector entry and press ENTER to modify the settings.

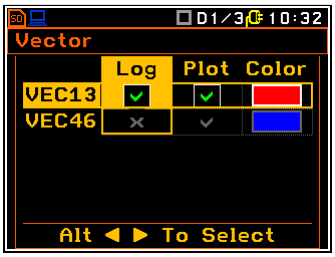


Press ALT+RIGHT buttons to select the vector calculation for channels 4, 5 and 6 to be measured and saved.



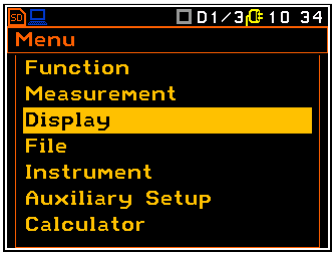
Press ENTER to save the setting and return to the Logger Results menu.

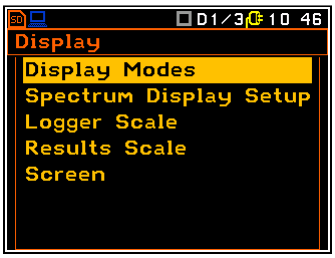
Press ESC 3 times to return to the main menu.



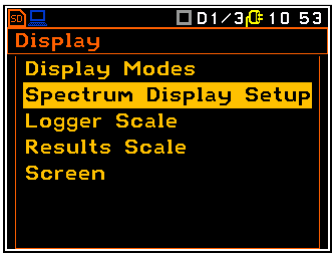
DISPLAY SETTINGS

Highlight the Display selection and press ENTER to select this menu.

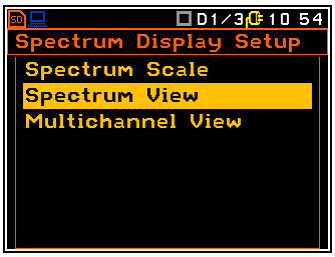




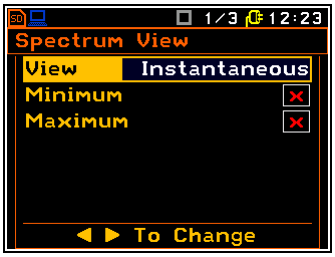
None of the settings in this menu are critical to the measurements taking place other than the Spectrum Display Setup.



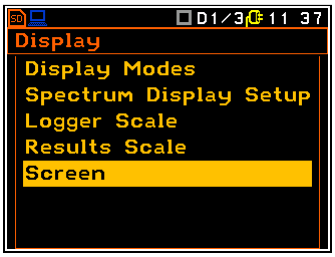
Highlight and press ENTER to modify the Spectrum View settings.

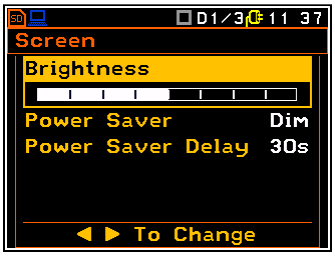


Press the RIGHT arrow button to change from the Averaged display to the Instantaneous display to make it easier to see the changing vibration levels during the measurement. Leave the Minimum and Maximum settings disabled for clarity on the display unless specifically required.

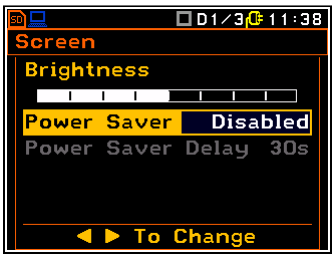


Press ENTER to return to the Spectrum Display Setup screen then press ESC to return to the Display screen. Navigate to the Screen selection and press ENTER.

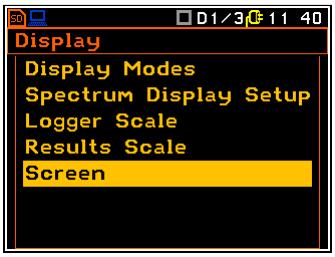




Highlight the Power Saver setting and press the LEFT arrow key to change to Disabled. This will keep the screen on all the time during the measurements to make it easier to see the screen and the results during the run while collecting data. If the measurements are to be done unattended then leave the default settings to dim the screen to save power.



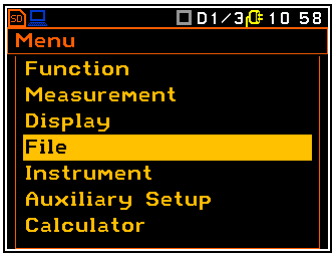
Press ENTER to save the changes and return to the Screen menu.



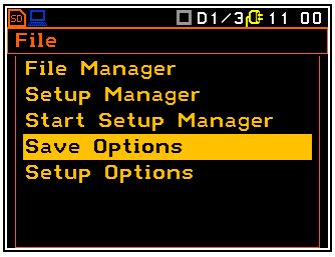
Press ESC to return to the main menu.

FILE SETTINGS

Highlight the File selection and press ENTER to select this menu.

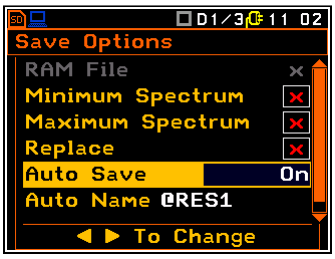


Navigate to the Save Options and press ENTER to select.



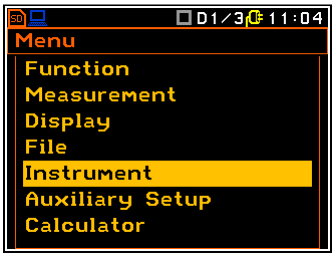
Navigate to the Auto Save selection and press the RIGHT arrow to enable this setting.

Press the RIGHT arrow button to enable the auto save option with the default file name. Edit the auto file name if required otherwise press ENTER to save the changes and return to the File menu. Press ESC to return to the main menu.

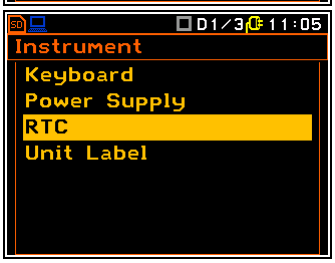


INSTRUMENT SETTINGS

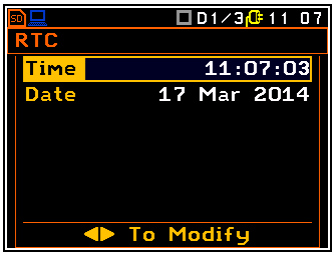
Highlight the Instrument selection and press ENTER to select this menu.



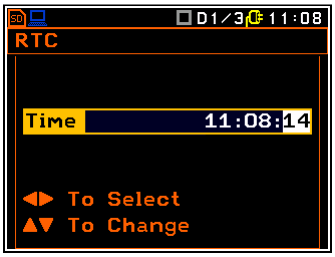
Select the RTC setting and press ENTER to check that the internal real time clock settings are correctly set to local time so that all measurements can be accurately documented during the day.



Check the displayed date and time and edit if necessary by pressing the RIGHT arrow button to enter the screen to modify the settings.

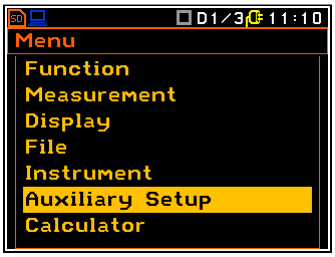


Modify as necessary and press ENTER to save and return to the previous menu. Press ESC twice to return to the main menu.



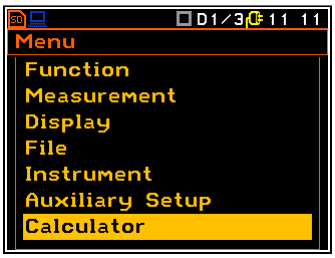
AUXILIARY SETTINGS

There are no critical settings in this menu that need to be modified to make Ground Vibration measurements.



CALCULATOR SETTINGS

There are no critical settings in this menu that need to be modified to make Ground Vibration measurements.

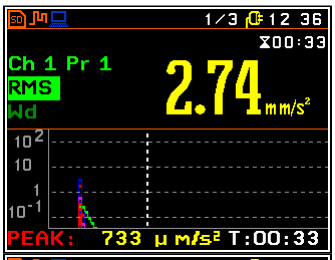


Press ESC to return to the standby measurement screen.

The following screen will be shown.

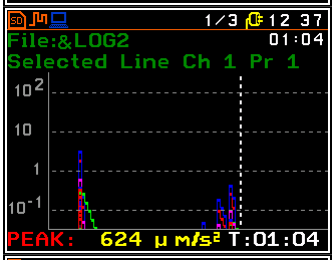
Making measurements

Position the sensor appropriate to the measurement to be carried out making sure to level the unit using the small spirit level in the housing and when ready press the START/STOP button to begin data collection.



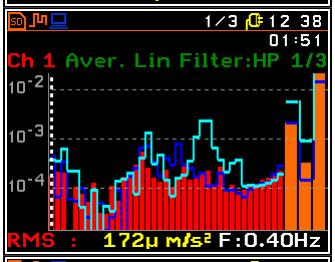
Press ALT+DOWN arrows to change the display screen in a cyclic manner as shown here.

Time history of the selected value (here it is shown as Ch 1 Pr 1)

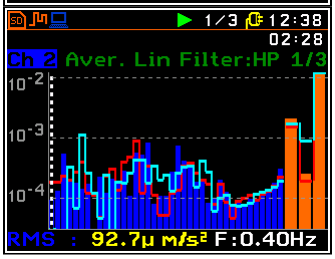


Press ALT+DOWN arrows to change the display screen in a cyclic manner as shown here.

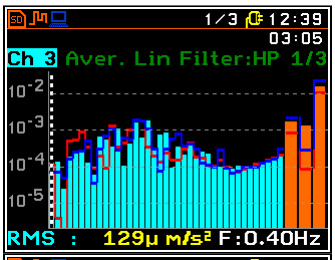
Frequency spectrum 1/3 octave bands of all 3 channels (here it is shown as Ch 1)



Press the UP arrow button to highlight the CH 1 marker in the top left hand corner of the screen and press ALT+RIGHT to change to Ch2 or Ch3.

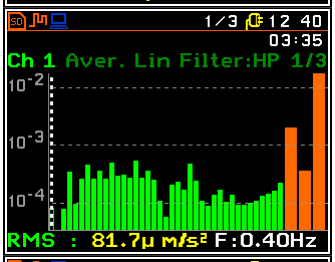


Press the ALT+RIGHT arrow button to change to Ch 3.

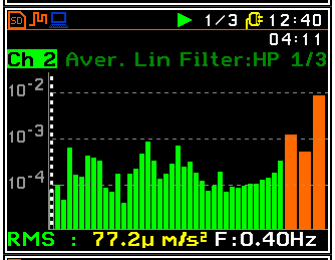


Press ALT+DOWN arrows to change the display screen in a cyclic manner as shown here.

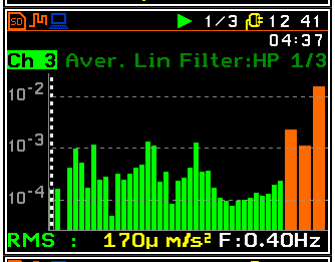
The single Ch 1 spectrum will be shown.



Press the UP arrow button to highlight the CH 1 marker in the top left hand corner of the screen and press ALT+RIGHT to change to Ch2 or Ch3.

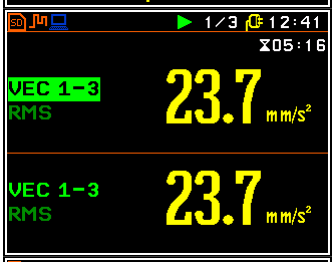


Press the ALT+RIGHT arrow button to change to Ch 3.



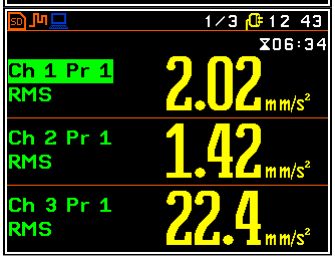
Press ALT+DOWN arrows to change the display screen in a cyclic manner as shown here.

The vector sum results will be shown.



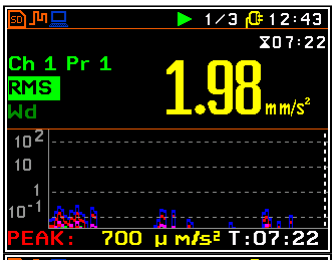
Press the ALT+DOWN buttons to change to the next screen.

The results for all 3 channels will be shown.

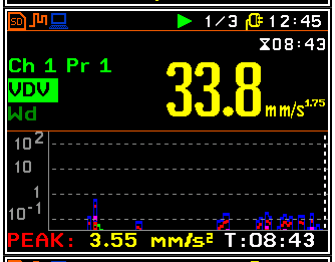


Press the ALT+DOWN buttons to change to the next screen.

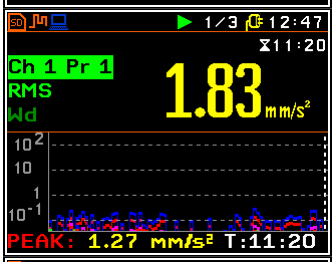
The results for the first channel will be shown as at the beginning of the cycle of screens.



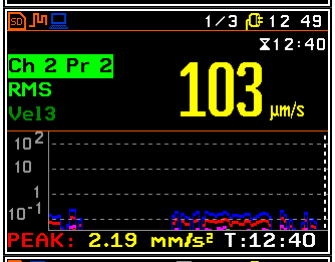
Press the ALT+RIGHT buttons to cycle round the different measured parameters RMS, VDV, CRF, OVL, PEAK, P-P, MTVV back to RMS.



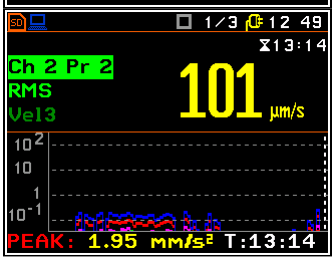
Press the UP button to select the channel and profile number.



Press ALT+RIGHT buttons to cycle around the channels and profiles to view the other parts of the signal being measured.



Press the STOP button to finish the measurement after the required time has elapsed.



Repeat the measurement sequence as outlined above for each position of the ground vibration exposure. Make a note of the start and stop times for each partial measurement so that the record can be adequately identified for each vibration source. Refer to the reference documents for further information about processing the ground vibration results.
Refer to the SV 106 Operator Manual for more details about using the instrument for these measurements.