

5. AUXILIARY FUNCTIONS

5.1. DATA AVAILABLE ON THE DISPLAY - DISPLAY LIST

In order to open the *DISPLAY* list the user has to:

- press the <MENU> push-button,
- select from the main list, using the <^>, <v> (or <◀>, <▶>) push-buttons, the **DISPLAY** text (highlight it inversely),
- press finely the <ENTER> push-button.

Pressing the <SHIFT> and <^> (or <SHIFT> and <◀>) results in a movement to the first position of the opened list and pressing the <SHIFT> and <v> (or <SHIFT> and <▶>) results in a movement to the last position of the opened list.



The view of the display in the main list; the **DISPLAY** text highlighted (displayed inversely)

The *DISPLAY* list is used for setting the various parameters which are mainly dedicated for the control of the display. The following items are present on this list:

DISPLAY MODES	enables one to select the mode of the measurement results presentation;
DISPLAY SETUP	enables one to change the scale in the graphical modes of result's presentation, select the results presented as Total values, choose the type of the presented spectrum for each channel separately;
BUFFER VIEW	enables one to view at the results stored in the files of the buffer;
BATTERY	enables one to check the state of the internal battery of the unit;
CONTRAST	enables one to set the contrast of the unit's display;
BACKLIGHT	enables one to set the brightness of the backlight of the display and the keyboard;
UNIT LABEL	informs the user about the serial number of the unit, the version of the internal software and the standards to which conform the measurement results.

In each available position any change is performed by means of the <◀>, <▶> push-buttons. In order to confirm the selection the <ENTER> push-button has to be pressed. After this confirmation the opened window or list is closed. In order to ignore any changes made in the opened window or list the user has to press the <ESC> push-button.



The view of the displays with the *DISPLAY* list

Selection of the modes of measurement results presentation - DISPLAY MODES

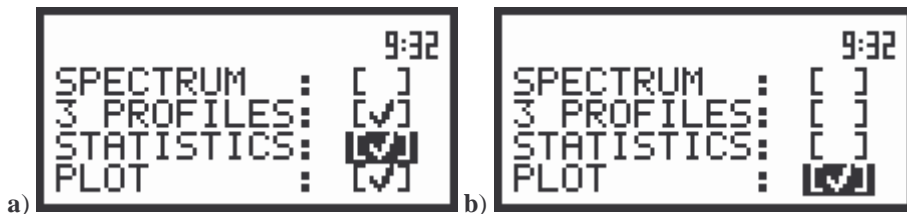
The **DISPLAY MODES** (*path: MENU / DISPLAY / DISPLAY MODES*) sub-list enables one the selection of the currently available modes of displaying the results of measurement. The selection

is made by placing or replacing the special character in the inversely displayed position of the **DISPLAY MODES** sub-list by means of the <◀>, <▶> push-buttons. In order to confirm the selection the user has to press the <ENTER> push-button. The mode of the displaying the results is related with the selection of the instrument's function (**SLM** or **VLM**, **1/1 OCTAVE**, **1/3 OCTAVE** or **FFT** analyser). Only One Profile mode cannot be switched off independently from the current mode of the instrument.

For the **Sound Level Meter** or **Vibration Level Meter** the following possibilities of the measurement results presentation are available:

- **One Profile**,
- **3 PROFILES**,
- **STATISTICS**,
- **PLOT** (time history).

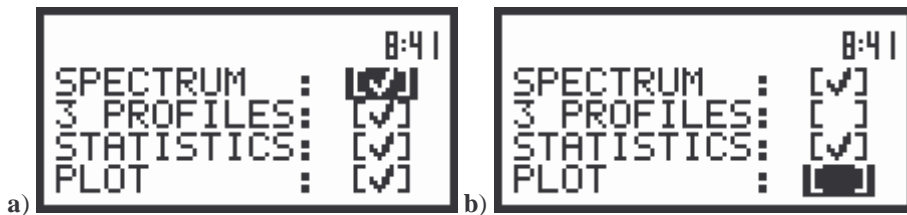
The **SPECTRUM** position is never available for the **Sound Level Meter** or **Vibration Level Meter** (it is never displayed inversely).



The view of **DISPLAY MODES** (path: MENU / DISPLAY / DISPLAY MODES) sub-list for the **SLM** or **VLM** with all possibilities switched on (a) and **STATISTICS** and **PLOT** switched off (b)

For the frequency analysis of the measured signal (**1/1 OCTAVE**, **1/3 OCTAVE** the following modes of the measurement results presentation are available:

- **One Profile**,
- **SPECTRUM**,
- **3 PROFILES**,
- **STATISTICS**,
- **PLOT** (time history).



The view of the **DISPLAY MODES** sub-list with all possibilities of results presentation for the frequency analysis switched on (a) and **STATISTICS** and **PLOT** switched off (b)

The **PLOT** mode of results presentation is available if data from at least one channel are logged in the buffer's file. If the **BUFFER** position, in **BUFFER SETUP** sub-list, is switched **ON** but there was nothing stored in the buffer's file (in the selected channel there was nothing switched on ([√])) instead of **PEAK**, **MAX**, **MIN** or **RMS**), the **NO RESULTS** text is displayed after the first input to this mode (see Figure below). When the **BUFFER** are selected as non-active **BUFFER:OFF** and for all channels are set, the **PLOT** mode of results presentation is skipped.

There is **PLOT** display, when the **BUFFER** position is switched **ON** and user selected position to display in **BUFFER SETUP/ CHANNEL x** ([√])

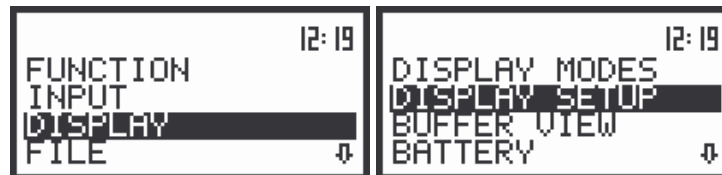


The view of the display in the **PLOT** mode when there is nothing in the buffer to be displayed (after setting **PLOT** as active)

Each position of the **DISPLAY MODES** sub-list can be switched on or off independently. The sub-list is closed and the instrument returns to the **DISPLAY** list after pressing the **<ESC>** or **<ENTER>** push-button (in the first case without taking into account any changes made in the **DISPLAY MODES** sub-list and in the latter case - confirming all changes done in the sub-list).

Selection of the parameters in graphical results presentations - DISPLAY SETUP

The **DISPLAY SETUP** (*path: MENU / DISPLAY / DISPLAY SETUP*) sub-list enables the user to change several parameters of the graphical results presentations for each channel separately. Namely one can select, using the **DISPLAY SCALE** sub-list, the scale in the available modes of graphical presentation of the measurement results (time history in the **PLOT** and so-called spectra in the **SPECTRUM**). Using the **TOTAL VALUES** sub-list it is possible to select the weighted filters used in the calculation of the Total values. This sub-list appears on the display only in the case of **1/1 OCTAVE** or **1/3 OCTAVE** analyser. Using the **SPECTRUM TYPE** sub-list it is possible to select the type of the spectrum which has to be presented during vibration measurements. This sub-list appears on the display only in the case of the **VIBR. METER** mode selection. In order to enter the **DISPLAY SETUP** list one has to press the **<ENTER>** push-button on the inversely displayed **DISPLAY SETUP** text of the **DISPLAY** list. The **DISPLAY SETUP** sub-list is closed and the instrument returns to the **DISPLAY** list after pressing the **<ESC>** push-button, which ignores any changes in the positions of the sub-list or the **<ENTER>** push-button, which confirms the changes.



The view of the display with the **DISPLAY** list, the **DISPLAY SETUP** text highlighted

The **DISPLAY SCALE** (*path: MENU / DISPLAY / DISPLAY SETUP / CHANNEL x / DISPLAY SCALE*) sub-list enables the user to change the scale in the available modes of graphical presentation of the measurement results (time history in the **PLOT** and so-called spectra in the **SPECTRUM**). It can be done in the **SCALE** position of the **DISPLAY SCALE** sub-list. The user can set the parameters for each channel separately. It is also possible to change the "dynamics" of the vertical axis by means of the **DYNAMIC** position. In order to enter this list one has to press the **<ENTER>** push-button on the inversely displayed **DISPLAY SCALE** text of the **DISPLAY SETUP/ CHANNEL x** list. The **DISPLAY SCALE** sub-list is closed and the instrument returns to the **CHANNEL x** list after pressing the **<ESC>** push-button, which ignores any changes in the positions of the sub-list or the **<ENTER>** push-button, which confirms the changes.



The view of the display with the **DISPLAY SETUP** list, the **DISPLAY SCALE** text highlighted

Selection of the scale in graphical results presentations - DISPLAY SCALE

The **DISPLAY SCALE** (path: MENU / DISPLAY / DISPLAY SETUP / CHANNEL x / DISPLAY SCALE) sub-list enables the user to change the scale in the available modes of graphical presentation of the measurement results (time history in the **PLOT** and so-called spectra in the **SPECTRUM**). It is possible to change the scale of the vertical axis only. In order to enter this list one has to press the **<ENTER>** push-button on the inversely displayed **DISPLAY SCALE** text of the **DISPLAY SETUP** sub-list. The **DISPLAY SCALE** sub-list is closed and the instrument returns to the **DISPLAY SETUP** sub-list after pressing the **<ESC>** push-button, which ignores any changes in the positions of the sub-list or the **<ENTER>** push-button, which confirms the changes.



The view of the display with the *DISPLAY* list, the **DISPLAY SCALE** text highlighted

This position can be active only in the case of vibration measurements (when in the **MODE** sub-list the **VIBR. METER** is selected). Two options are available: **LIN** (linear) and **LOG** (logarithmic). In the case of the first one the graphical presentation and the units both are linear. In the latter case the graphical presentation is given in the logarithmic scale and the measurement results are expressed in decibels (the result is related to the values set in the **REFERENCE LEVEL**). It is possible to set the required option using the **<◀>**, **<▶>** push-buttons. The confirmation of the selection is made by pressing the **<ENTER>** push-button. The return without taking into account any change is made after pressing the **<ESC>** push-button.



The view of the displays with the possible options of the **VIBRATION SCALE**

Scaling of the vertical axis of the graphical presentation - DYNAMIC

In the case of the vertical axis the user can obtain the double, four times and eight times expansion (as the default the vertical axis corresponds to 80 dB, after expansion it corresponds to 40 dB, 20 dB and 10 dB – respectively) using the **<◀>**, **<▶>** push-buttons. This setting is always valid only for the measurements of sound and for vibrations if the **LOGarithmic** scale was selected.



The view of the displays with the possible values of the vertical axis in **PLOT** and **SPECTRUM** presentations

Scaling of the horizontal axis of the graphical presentation - X-ZOOM

It is not possible, up to the version 4.05 of the internal software, to change by means of the **<◀>**, **<▶>** push-buttons the horizontal axis (the default value of the multiplier of this axis is equal to 1).

Selection of the weighted Filters - TOTAL VALUES

The **TOTAL VALUES** (path: MENU / DISPLAY / DISPLAY SETUP / CHANNEL x / TOTAL VALUES) sub-list which is available only in **1/1 OCTAVE** or **1/3 OCTAVE** analysis; enables the user to select the weighted filters. In order to enter this list one has to press the **<ENTER>** push-button on the inversely displayed **TOTAL VALUES** text of the **DISPLAY SETUP/ CHANNEL x** list. The **TOTAL VALUES** sub-list is closed and the instrument returns to the **CHANNEL x** list after pressing the **<ESC>** push-button.

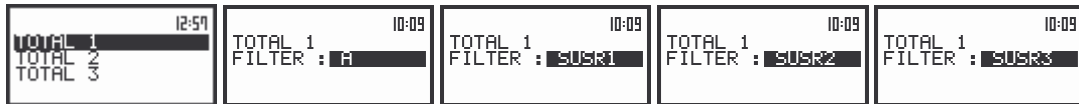


The view of the display with the **DISPLAY SETUP** list, the **TOTAL VALUES** text highlighted
(path: MENU / DISPLAY / DISPLAY SETUP / CHANNEL x / TOTAL VALUES)

Selection of the Weighted Filters for the 1st profile - TOTAL 1

The **TOTAL 1** sub-list enables one to select the weighted filter to be used for the calculation of the **TOTAL** value in the first profile (**FILTER**). In the case of vibration measurements it is also possible to determine the type (**TYPE**) of the filter and the calibration coefficient (**CAL. F.**). The **TOTAL 1** sub-list is closed and the instrument returns to the **TOTAL VALUES** list after pressing the **<ESC>** push-button, which ignores any changes in the positions of the sub-list or the **<ENTER>** push-button, which confirms the changes.

- ∇ **FILTER**: (position); available values of the weighted filters:
 - in the case of sound measurements: **A**, **SUSR1**, **SUSR2**, **SUSR3** or any other sent to the unit by means of the interface,



The view of the displays with the **TOTAL 1** list opened in the case of sound measurements

- in the case of vibration measurements: **HP**, **VUSR1**, **VUSR2**, **VUSR3** or any other sent to the unit by means of the interface.



The view of the displays with the **TOTAL 1** list opened in the case of vibration measurements

- ∇ **TYPE**: (position available only for vibration measurements); available values if **VUSR1**, **VUSR2**, or **VUSR3** was selected in the previous position: **ACC**, **VEL** and **DIL**; if the **HP** filter was selected this position is not displayed.



The displays with the **TOTAL 1** list opened in the case of vibration measurements; **USER3** filter selected

- ▽ **CAL. F.:** (position available only for vibration measurements); accessible if **VUSR1**, **VUSR2**, or **VUSR3** was selected in the **FILTER** position; if the **HP** filter was selected this position is not displayed; available values (from **-60.0dB** to **60.0dB** with **0.1dB** step by pressing the **<◀>**, **<▶>** push-buttons the **<◀>**, **<▶>** or with **1 dB** step by pressing **<SHIFT>** with **<◀>**, **<▶>** push-buttons).

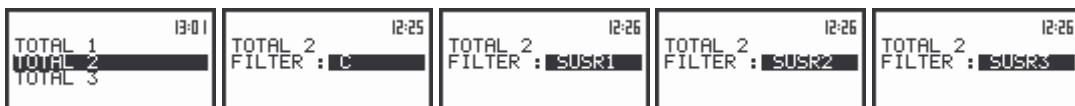


The displays with the **TOTAL 1** list opened in the case of vibration measurements; calibration factor setting

Selection of the Weighted Filters for the 2nd profile - TOTAL 2

The **TOTAL 2** sub-list enables one to select the weighted filter to be used for the calculation of the **TOTAL** value in the second profile (**FILTER**), its type (**TYPE**) and the calibration coefficient (**CAL. F.**). The **TOTAL 2** sub-list is closed and the instrument returns to the **TOTAL VALUES** list after pressing the **<ESC>** push-button, which ignores any changes in the positions of the sub-list or the **<ENTER>** push-button, which confirms the changes.

- ▽ **FILTER:** (position); available values of the weighted filters:
 - in the case of sound measurements: **C**, **SUSR1**, **SUSR2**, **SUSR3** or any other sent to the unit by means of the interface,



The view of the displays with the **TOTAL 2** list opened in the case of sound measurements

- in the case of vibration measurements: **CH**, **VUSR1**, **VUSR2**, **VUSR3** or any other sent to the unit by means of the interface.



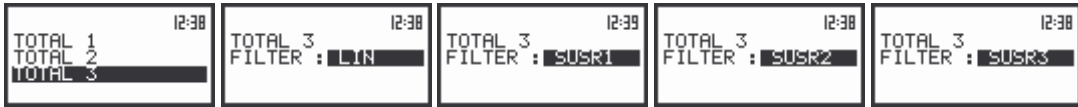
The view of the displays with the **TOTAL 2** list opened in the case of vibration measurements

- ▽ **TYPE:** (position available only for vibration measurements); available values if **VUSR1**, **VUSR2** or **VUSR3** was selected in the previous position: **ACC**, **VEL** and **DIL**; if the **CH** filter was selected (the filter which was set in the 2nd channel) this position is not displayed.
- ▽ **CAL. F.:** (position available only for vibration measurements); accessible if **VUSR1**, **VUSR2** or **VUSR3** was selected in the **FILTER** position; if the **CH** filter was selected (the filter which was set in the 2nd channel) this position is not displayed; available values (from **-60.0dB** to **60.0dB** with **0.1dB** step by pressing the **<◀>**, **<▶>** push-buttons or with **1 dB** step by pressing **<SHIFT>** with **<◀>**, **<▶>** push-buttons).

Selection of the Weighted Filters for the 3rd profile - TOTAL 3

The **TOTAL 3** sub-list enables one to select the weighted filter to be used for the calculation of the **TOTAL** value in the third profile (**FILTER**), its type (**TYPE**) and the calibration coefficient (**CAL. F.**). The **TOTAL 3** sub-list is closed and the instrument returns to the **TOTAL VALUES** list after pressing the **<ESC>** push-button, which ignores any changes in the positions of the sub-list or the **<ENTER>** push-button, which confirms the changes.

- ▽ **FILTER:** (position); available values of the weighted filters:
 - in the case of sound measurements: **LIN**, **SUSR1**, **SUSR2**, **SUSR3** or any other sent to the unit by means of the interface,



The view of the displays with the TOTAL 3 list opened in the case of sound measurements

- in the case of vibration measurements: **CH**, **VUSR1**, **VUSR2**, **VUSR3** or any other sent to the unit by means of the interface.

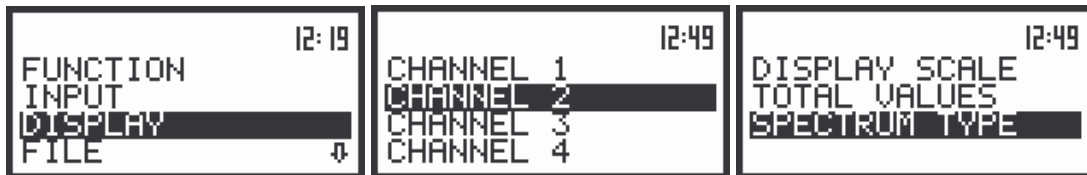


The view of the displays with the TOTAL 3 list opened in the case of vibration measurements

- ▽ **TYPE:** (position available only for vibration measurements); available values if **VUSR1**, **VUSR2** or **VUSR3** was selected in the previous position: **ACC**, **VEL** and **DIL**; if the **CH** filter was selected (the filter which was set in the 3rd channel) this position is not displayed.
- ▽ **CAL. F.:** (position available only for vibration measurements); accessible if **VUSR1**, **VUSR2** or **VUSR3** was selected in the **FILTER** position; if the **CH** filter was selected (the filter which was set in the 3rd channel) this position is not displayed; available values (from **-60.0dB** to **60.0dB** with **0.1dB** step by pressing the <◀>, <▶> push-buttons or with **1 dB** step by pressing <SHIFT> with <◀>, <▶> push-buttons).

Selection of the Spectrum Type - SPECTRUM TYPE

The **SPECTRUM TYPE** (*path: MENU / DISPLAY / DISPLAY SETUP / CHANNEL x / SPECTRUM TYPE*) (position) enables the user to change the spectrum type; available values of this position: **ACCELERATION**, **VELOCITY** and **DISPLACEMENT**. This sub-list is available only for the vibration measurements. In the case of sound measurements there are two other values of this position: **RMS** – for filter **LIN** and **C**, **LEQ** – for filter **A**. The user can select filter in **FILTER** position (*path: MENU / INPUT / CHANNELS SETUP / CHANNEL x / FILTER*). In order to enter in this list one has to press the <ENTER> push-button on the inversely displayed **SPECTRUM TYPE** text of the **DISPLAY SETUP/ CHANNEL x** list. The **SPECTRUM TYPE** sub-list is closed and the instrument returns to the **CHANNEL x** list after pressing the <ESC> push-button, which ignores any changes in the positions of the sub-list or the <ENTER> push-button, which confirms the changes.



The view of the display with the DISPLAY list, the SPECTRUM TYPE text highlighted
(*path: MENU / DISPLAY / CHANNEL x / SPECTRUM TYPE*)



The view of the display with the SPECTRUM TYPE with the available values for VIBRATION measurements



The view of the display with the SPECTRUM TYPE with the available values for SOUND measurements

Selection of the buffer's file to the display presentation - BUFFER VIEW

The **BUFFER VIEW** sub-list enables the user to examine the contents of the buffer. In order to open this sub-list the user has to press the <ENTER> push-button when the **BUFFER VIEW** text is displayed inversely. The following parameters of the buffer are presented on the instrument's display:

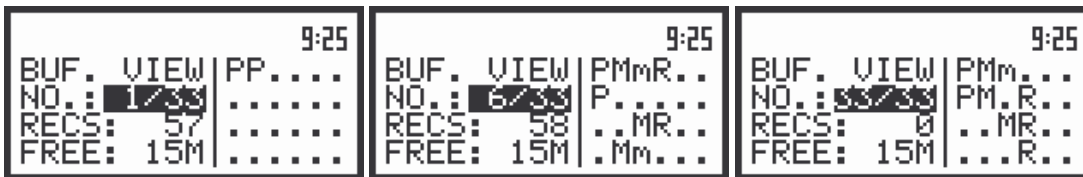
- The selected number of the file in the buffer and the number of all saved files (**NO:**).
- The number of the records in the file, which number is displayed in the previous line (**RECS:**).
- The size of the empty, still available memory (**FREE:**).



The view of the display with the **DISPLAY** list, the **BUFFER VIEW** text highlighted

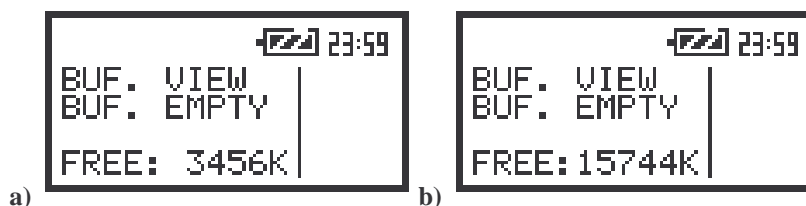
(path: MENU / DISPLAY / BUFFER VIEW)

The type of the measurement results stored in the buffer in channel 1, 2, 3, 4 (chosen in the **CHANNEL x** sub-list of the **CHANNELS SETUP** sub-list) as well as the results selected for the registration in the case of **1/1 OCTAVE** or **1/3 OCTAVE** analysis (chosen in the **BUFFERS SETUP** sub-list of the **INPUT** sub-list) are given on the right side of the display. The change of the number of the file in the buffer is done after pressing the <←>, <→> push-buttons.



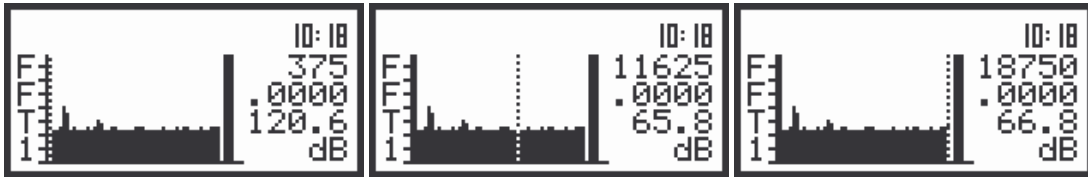
The view of the displays with the **BUFFER VIEW** sub-list opened: the selection of the file to be seen

The display of the instrument after entering the **BUFFER VIEW** sub-list looks as on the figure below in the case when the buffer is empty (there was no measurement or the measurements were performed but with the settings for all channels and the spectrum **BUFFER: ON** on the **1/1 OCTAVE SETUP**, **1/3 OCTAVE SETUP** sub-list).



The view of the display with **BUFFER VIEW** sub-list in the case when there are no files in the buffer in the unit with 8 MB of internal memory (a) and with 32 MB of internal memory (b)

The contents of the selected file from the buffer is displayed after pressing the **<ENTER>** push-button. The cursor position is changed after pressing the **<◀>**, **<▶>** push-buttons. The type of the registered result, the number of the channel the result is coming from, the related time from the beginning of the registration, the value with the units and the indicator of the filter are presented on the right side of the display.

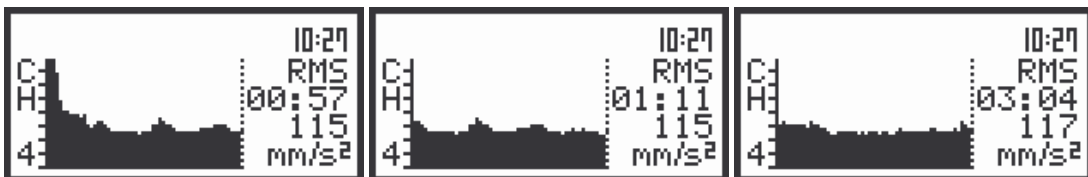


The view of the displays with the selected file from the buffer; the change of the cursor position

The scrolling of the display is made when the cursor is at one of two limits of the graphical presentation space and the **<◀>**, **<▶>** push-buttons are still pressed and in the file there are still the results.

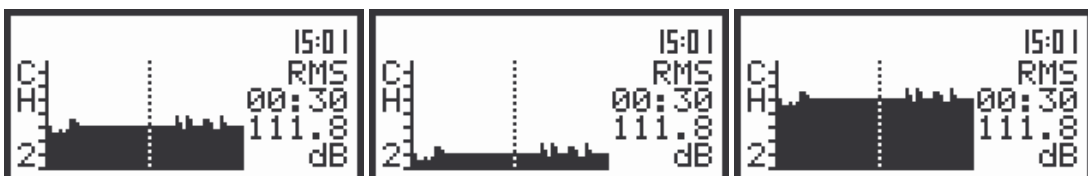


The view of the displays with the selected file from the buffer; the scrolling to the right



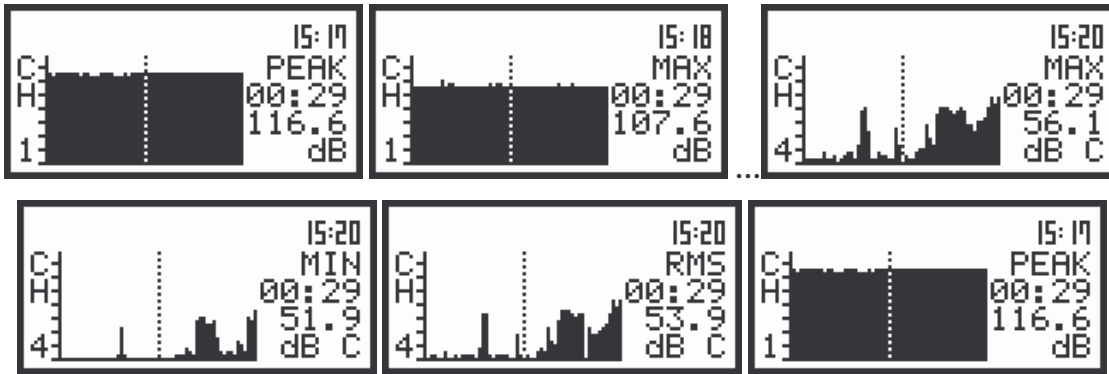
The view of the displays with the selected file from the buffer; the scrolling to the left

The position of the horizontal axis in relation to the vertical one can be changed after pressing the **<▲>**, **<▼>** push-buttons together with the **<SHIFT>** one.



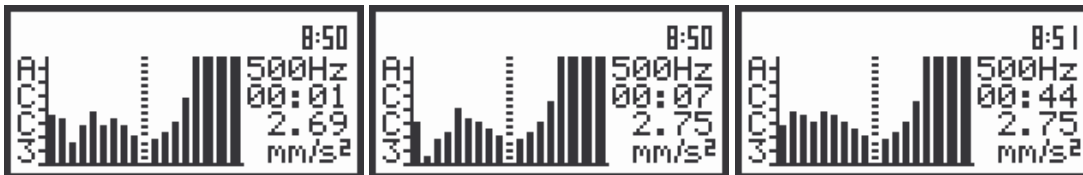
The view of the displays with the selected file from the buffer; the change of the axis relation

The selected file in the buffer can contain the measurement results from up to 4 channels (i.e. **PEAK1, MAX1, PEAK3, MIN3, PEAK4, MAX4, MIN4, RMS4, PEAK1, MAX1**) and the spectra. The change of the displayed result is possible after pressing the **<▲>** or **<▼>** push-button. The results on the display are in this case changed in the cycle (i.e. **CH1: PEAK -> CH1: MAX -> CH3: PEAK -> CH3: MIN -> CH4: PEAK -> CH4: MAX -> CH4: MIN -> CH4: RMS-> CH1: PEAK** and so on).



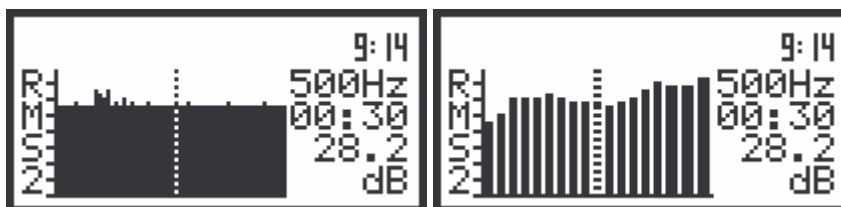
The view of the displays with the selected file from the buffer; the change of the result after pressing <^> or <v> push-button

The spectra are registered in the file's buffer with the same step as selected in the **BUF. STEP** position of the **MEASURE SETUP** sub-list. In order to display the registered spectra the user has to press the <SHIFT> push-button together with <^> for the spectra stored later and to press the <SHIFT> one together with <v> for the spectra saved earlier.



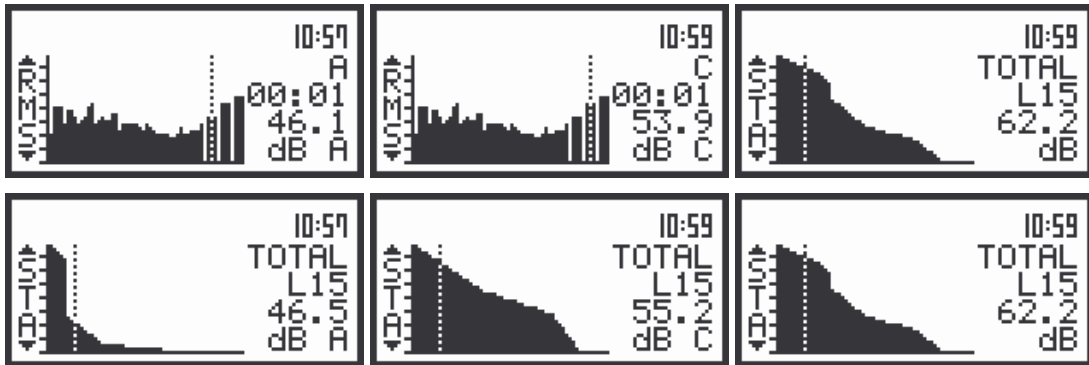
The view of the displays with the selected file from the buffer containing spectra; the change of the spectra after pressing <SHIFT> together with <^> or <v>

In the file of the buffer containing the results of **1/1 OCTAVE** or **1/3 OCTAVE** analysis also the time history for each filter is stored. The user can observe these values pressing the <ENTER> push-button. The next pressing of <ENTER> or <ESC> causes the return to the displaying of spectrum.



The view of the displays with the selected file from the buffer containing spectra; the change between spectrum and time history after pressing <ENTER>

The user can observe the time history plot on the output of each octave or third octave filter as well as for the whole band (**TOTAL** value). In the case of sound measurements the **TOTAL** values depend on the **USER FILTERS** setting in the **SETUP** list. If those filters are not active (switched to **Off**) three **TOTAL** values are displayed which were calculated with the **A**, **C** and **LIN** filters respectively. In the case when those filters are active only one **TOTAL** (calculated with the **A** filter) is displayed together with the value calculated for **SUSR1** and **SUSR2** filters. In the case when only one filter is active on the display **TOTAL (A)**, **TOTAL (C)**, **SUSR2** or **TOTAL (A)**, **SUSR1**, **TOTAL (LIN)** are presented, depending on which filter is active. Additionally, the view presented in the **BUFFER VIEW** depends on the selected **MODE**. The **SUSR1** and **SUSR2** values are available only when **SOUND METER** is chosen. In the case when the user wants to observe the sound measurements saved in the buffer but the **VIBR. METER** is selected, all three **TOTAL** values calculated with the **A**, **C** and **LIN** filters are displayed in the **BUFFER VIEW**.

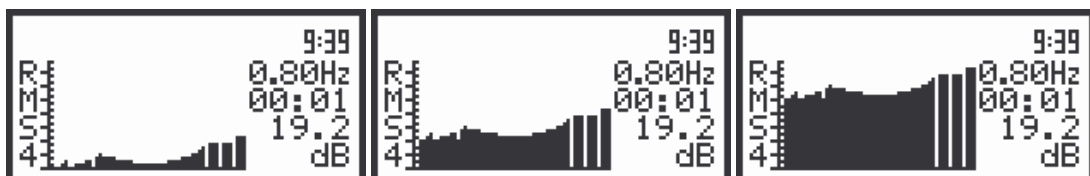


The view of the displays with the selected file from the buffer containing spectra; the **TOTAL** values and their time histories

Settings of the meter: **DISPLAY SCALE:** LOGarithmic (path: MENU / DISPLAY / DISPLAY SETUP / CHANNEL x / DISPLAY SCALE / LOG), **TOTAL 1:** HP (path: MENU / DISPLAY / DISPLAY SETUP / CHANNEL x / TOTAL VALUES / TOTAL 1); **TOTAL 2:** CH: HP1 (path: MENU / DISPLAY / DISPLAY SETUP / CHANNEL x / TOTAL VALUES / TOTAL 2); **TOTAL 3:** CH: VUSR1 (path: MENU / DISPLAY / DISPLAY SETUP / CHANNEL x / TOTAL VALUES / TOTAL 3); **SPECTRUM TYPE:**ACCELERATION (path: MENU / DISPLAY / DISPLAY SETUP / CHANNEL x / SPECTRUM TYPE)

In the case of the vibration measurement results the **ACC** and **VEL** filters are always switched on. The values presented in the **BUFFER VIEW**, in the case when the **VIBR. METER** is selected, contain one **TOTAL** value calculated for the whole band with the **HP** filter and the values calculated with the **ACC** and **VEL** filters respectively. In the case when the user wants to examine the contents of the buffer with the vibration measurements but the **SOUND METER** is active, the values for the **ACC** and **VEL** filters are not available. In this case only one **TOTAL** value is presented.

As it was mentioned above, the user can observe the time history for all 1/1 and 1/3 octave filters as well as **TOTAL** values after pressing the **<ENTER>** push-button on a required filter. In order to observe the time history for another filter (while being in time history window) the user has to press the **<^>** or **<v>** push-buttons. After pressing the **<^>** push-button the time history for the higher frequency filter can be seen.



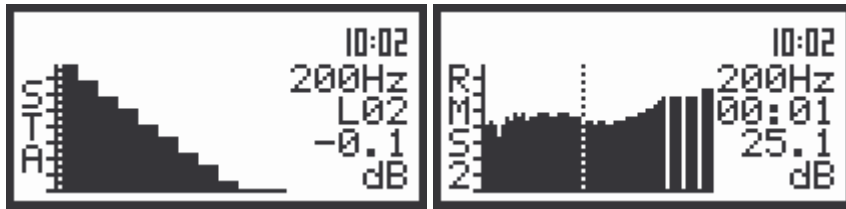
The view of the displays with the selected file from the buffer containing spectra; the change of the time histories of the filters (and the filters) after pressing the **<^>** push-button

After pressing the **<v>** push-button the time history for the lower frequency filter can be seen.



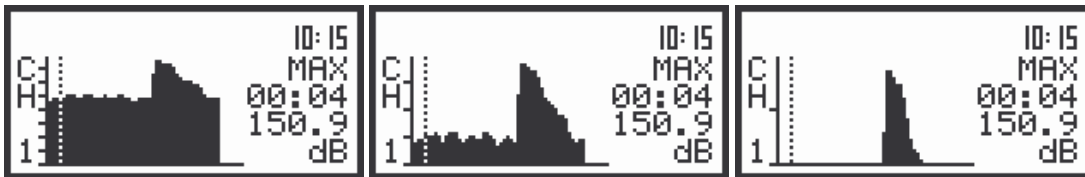
The view of the displays with the selected file from the buffer containing spectra; the change of the time histories of the filters (and the filters) after pressing the **<v>** push-button

After pressing the **<ESC>** (or **<ENTER>**) push-button in time history the display presents the spectra corresponding to the previously seen view.



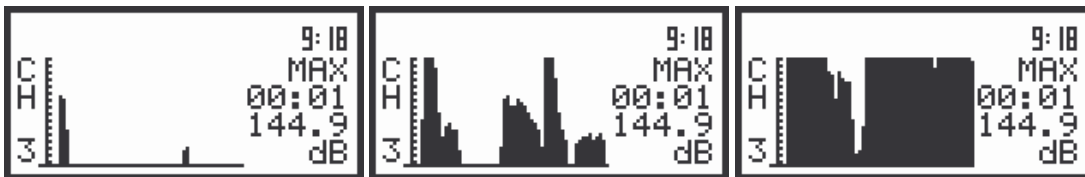
The view of the displays with the selected file from the buffer containing spectra; the change between time history and spectra after pressing <ENTER> push-button for 500 Hz filter

Additionally, during the presentation of the results saved in the buffer, the dynamic of the drawing can be changed. The required value has to be set in the **DYNAMIC** position of the **DISPLAY SCALE** sub-list of the **DISPLAY** list.



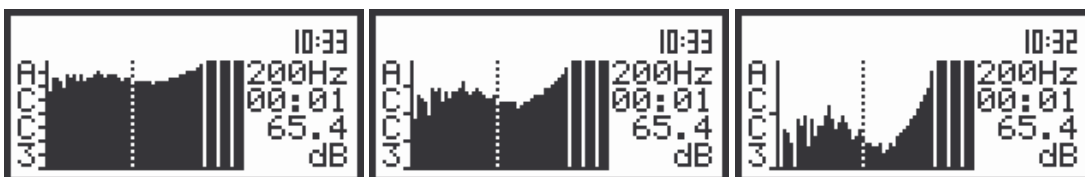
The view of the displays with the selected file from the buffer containing spectra; the time history of the MAX value from the third profile displayed with 80 dB, 40 dB and 20 dB dynamic (set in the DISPLAY SCALE)

Also in this case (the different values of **DYNAMIC**) it is possible to change the relation of the axis (after pressing the <SHIFT> and <^> or <SHIFT> and <v> push-buttons).



The view of the displays with the selected file from the buffer; the change of the axis relation

The change of the axis relation for the time histories of the octave and third octave filters (after pressing the <SHIFT> and <^> or <SHIFT> and <v> push-buttons) and the change of the dynamic of the presentation (the **DISPLAY SCALE** sub-list of the **DISPLAY** list) is also available. Below the time history for 250 Hz filter is presented with the 80 dB, 40 dB and 20 dB dynamic after the change of the axis relation.



The view of the displays with the selected file from the buffer containing spectra; the time histories for 250 Hz filter displayed with 80 dB, 40 dB and 20 dB dynamic and with the different relation of the axis

The window is closed and the instrument returns to the **BUFFER VIEW** sub-list after pressing the <ESC> push-button the required number of times (this number depends on the displayed result).

Checking the state of the internal battery - BATTERY

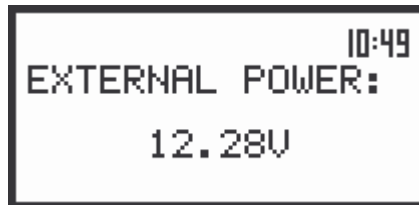
The **BATTERY** (path: MENU / DISPLAY / BATTERY) position enables the user to check the internal battery condition. The current battery voltage is displayed together with its approximate state (in

the graphical form). The position is opened after pressing the <ENTER> push-button on the highlighted (displayed inversely) **BATTERY** text.



The view of the displays with the **BATTERY** position when the external supplier is not connected

If the instrument is switched on when the external supplier is connected the special message is displayed in the **BATTERY** position.



The view of the **BATTERY** (path: MENU / DISPLAY / BATTERY) position when the external supplier is connected to the instrument

The position is closed and the instrument returns to the **DISPLAY** list after pressing the <ESC> or <ENTER> push-button.

Setting the contrast of the display - **CONTRAST**

The **CONTRAST** (path: MENU / DISPLAY / CONTRAST) position enables the user to set the proper contrast of the display (by means of the <◀>, <▶> push-buttons). The position is opened after pressing the <ENTER> push-button on the highlighted (displayed inversely) **CONTRAST** text. The user can select 11 different values of this parameter.



The view of the display with the **DISPLAY** list, the **CONTRAST** text highlighted



Notice: The new value of the contrast is confirmed after each pressing of the <◀> or <▶> push-buttons (new value is selected without any confirmation from the <ENTER> push-button).

The position is closed and the instrument returns to the **DISPLAY** list after pressing the <ESC> or <ENTER> push-button.



The view of the displays with the **CONTRAST** position; the change of the display contrast

Setting the backlight parameters - BACKLIGHT

The **BACKLIGHT** (path: MENU / DISPLAY / BACKLIGHT) sub-list enables one to set the parameters of the backlight of the display and the keyboard (using the <◀>, <▶> or <▲>, <▼> push-buttons). The user can switch on the automatic switch off of the backlight after a certain period as well as set its brightness. The sub-list is opened after pressing the <ENTER> push-button on the highlighted (displayed inversely) **BACKLIGHT** text.



The view of the display with the **DISPLAY** list, the **BACKLIGHT** text highlighted

Automatic switch off of the backlight - TIMEOUT

Taking into account the saving of the internal source of the instrument power the backlight should be used relatively rare. It is possible to set the automatic switch off of the backlight. In the case when this option is set, after 30 seconds from pressing **any push-button** the backlight is switched off. If it happened, the first pressing of any push-button would cause the switch on of the backlight. The confirmation of the selection is made by pressing the <ENTER> push-button. The return without taking into account any change is made after pressing the <ESC> push-button.



The view of the displays in the **BACKLIGHT** sub-list; the **TIMEOUT** position active

Setting the brightness of the backlight - BRIGHTNESS

It is possible to change the brightness of the backlight using the <◀>, <▶> pushbuttons. The user can select five different values of this parameter.



Notice: The new value of the brightness is confirmed after each pressing of the <◀> or <▶> push-buttons (new value is selected without any confirmation from the <ENTER> push-button).

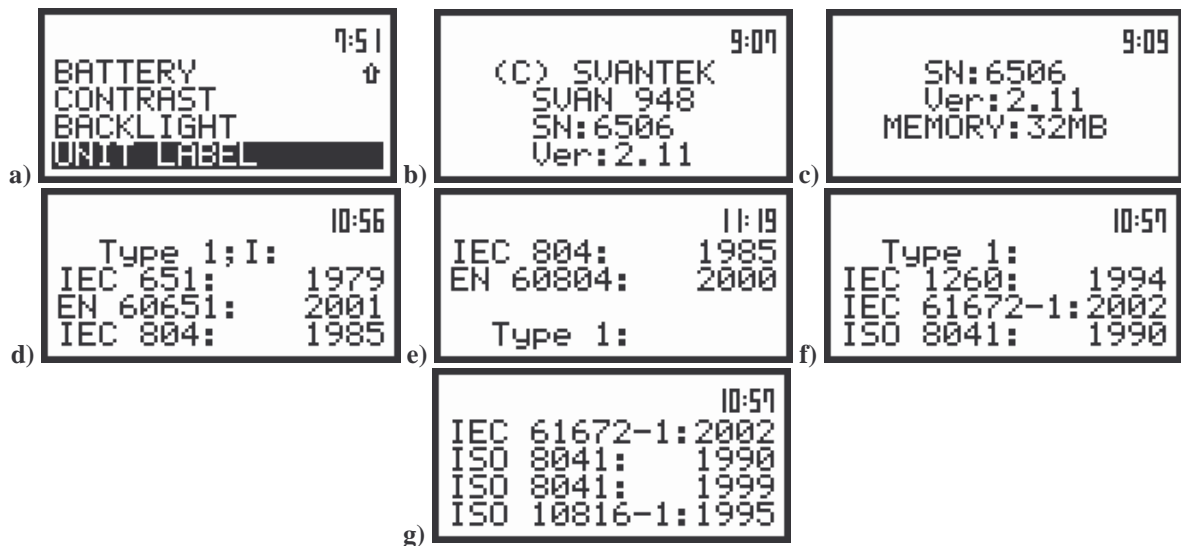


The view of the displays in the BACKLIGHT sub-list; the BRIGHTNESS position active

The position is closed and the instrument returns to the *DISPLAY* list after pressing the <ESC> or <ENTER> push-button.

Checking specification of the instrument - UNIT LABEL

The **UNIT LABEL** position (*path: MENU / DISPLAY / UNIT LABEL*) displays **the type of the instrument, its serial number and the current software version installed in it**. After pressing the <^>, <^> or <^>, <^> push-buttons the displayed text is scrolled on the display and the user can check the total size of internal memory and the number of standards fulfilled by the instrument. The position is closed and the instrument returns to the *DISPLAY* list after pressing the <ESC> or <ENTER> push-button.



The view of the displays with the UNIT LABEL position selected (a) and entered (b) and after scrolling with the <^>, <^> or <^>, <^> push-buttons (c), (d), (e), (f) and (g)

5.2. SETUP MENU

The **SETUP** (path: *MENU / SETUP*) list contains different sub-lists and positions. Some of them are directly related with sound measurements, some of them depend on the mode of the instrument (sound or vibration meter) and some are related with the settings of the instrument's hardware components. In order to open the **SETUP** list the user has to:

- press the **<MENU>** push-button,
- select from the main list, using the **<▲>**, **<▼>** (or **<◀>**, **<▶>**) push-buttons, the **SETUP** text (highlight it inversely),
- press the **<ENTER>** push-button.



The view of the display in the main list; the **SETUP** text highlighted (displayed inversely)

In the **SETUP** list the following items are available:

TIMER	position which enables the user to set the Timer function;
RTC	position which enables the user to set the Real Time Clock;
FIELD CORRECTION	position which enables the user to switch on the weighting filter for the measurements performed in the conditions of the diffuse or free field; this position is available only in the case of sound measurements;
USER FILTERS	sub-lists which enables the user to select, switch on or off and set the correcting values for all 1/1 and 1/3 octave filters in the case of sound measurements; in the case of vibration measurements the weighting filters are always switched on, the user can set the correcting coefficients;
STAT. LEVELS	(sub-list) position available only in the sound meter mode. It enables the user to select ten statistics results to be saved in a file together with the main results (cf. the description of the files in App. B). This position is taken off from the menu in the vibration meter mode.
EXT. I/O SETUP	enables to connect meter with other device;
SHIFT MODE	sub-list which enables the user to set the operating mode of the <SHIFT> and the <START / STOP> push-buttons;
CLEAR SETUP	position which enables the user to return to the producer's set up, except the coefficients set in the USER FILTERS ;
RMS INTEGRATION	position which enables the user to select the way of integration for the RMS measurement in the case of vibration meter or the LEQ measurement in the case of sound level meter;
REFERENCE LEVEL	position which enables the user to select the reference level for the vibration measurements and which informs the user about the reference level in the sound measurements;
VIBRATION UNITS	position which enables the user to select the vibration units in which the results of the measurements are to be given;
WARNINGS	sub-list which enables the user to switch on or off the warnings which can be displayed during the operation of the instrument;
VECTOR DEF.	sub-list which enables the user to select coefficients needed to calculate vibration vector, which is taken into account during the calculation of the measurement results;
HAV/WBV DOSE	sub-list which enables the user to select parameters presenting the EXPOSURE and VIBRATION DOSE measurements.

Pressing the <SHIFT> and <^> (or <SHIFT> and <^>) push-buttons results in a movement to the first position of the opened list and pressing the <SHIFT> and <v> (or <SHIFT> and <v>) results in a movement to the last position of the opened list.

In each available position any change is performed by means of the <^>, <v> push-buttons. In order to confirm the selection the <ENTER> push-button has to be pressed. After this confirmation the opened window or list is closed. In order to ignore any changes made in the opened window or list the user has to press the <ESC> push-button.



The view of the displays with the *SETUP* list

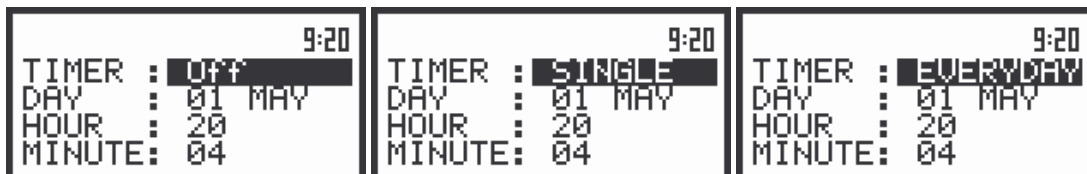
Programming of the instrument's internal timer - *TIMER*

The **TIMER** (*path: MENU / SETUP / TIMER*) position enables one to programme the internal timer. The instrument can be switched on by itself in the programmed time and can perform the measurements using the set up which was used before its switching off. In order to enter this position the user has to select the **TIMER** text in the *SETUP* list (using the <^> or <^> push-buttons) and press the <ENTER>.



The view of the display in the *SETUP* list in the **TIMER** text highlighted (displayed inversely)

The operation of the **TIMER** (*path: MENU / SETUP / TIMER*) setting is performed in the same way as it was described in the case of the **FILE NAME** window. The selection of the setting parameter is performed using the <^>, <v> push-buttons and the change of its value – using the <^>, <v> push-buttons pressed together with the <SHIFT>. The parameter, which value has to be changed, is flashing.



The view of the **TIMER** position



Notice: The new value of a parameter is confirmed after each pressing of the <◀> or <▶> together with the <SHIFT> push-buttons (new value is selected without any confirmation from the <ENTER> push-button).

The position is closed and the instrument returns to the *SETUP* list after pressing the <ENTER> or <ESC> push-button.

Programming of the instrument's internal Real Time Clock - RTC

The **RTC** (*path: MENU / SETUP / RTC*) position enables one to programme the internal **Real Time Clock**. This clock is displayed in the top right corner of the instrument's display. In order to enter this position the user has to select the **RTC** text in the *SETUP* list, using the <▲>, <▼> (or <◀>, <▶>) push-buttons and press the <ENTER>.



a)

The view of the display in the *SETUP* list in the **RTC** text highlighted (displayed inversely)

The operation of the **RTC** setting is performed in the same way as it was described in the case of the **FILE NAME** window. The selection of the setting parameter is performed using the <◀>, <▶> push-buttons and the change of its value – using the <▲>, <▼> push-buttons. The parameter, which value has to be changed, is flashing.



The view of the RTC position



Notice: The new value of a parameter is confirmed after each pressing of the <▲>, <▼> (new value is selected without any confirmation from the <ENTER> push-button).

The position is closed and the instrument returns to the *SETUP* list after pressing the <ENTER> or <ESC> push-button.

Setting the conditions for the diffuse field measurements - FIELD CORRECTION

The **FIELD CORRECTION** (*path: MENU / SETUP / FIELD CORRECTION*) position is available only in the case of the sound measurements (in the **MODE** sub-list **SOUND METER** position is selected). It enables the user to set the proper conditions for making the measurements in the diffuse field. In order to

enter this position the user has to select the **FIELD CORRECTION** text in the *SETUP* list, using the <▲>, <▼> (or <◀>, <▶>) push-buttons, and press the <ENTER>.



The view of the display in the *SETUP* list in sound measurements, the **FIELD CORRECTION** text highlighted (displayed inversely)

In the **FIELD CORRECTION** position two options are available: **FREE** (for the measurement performed in the free field conditions) and **DIFFUSE** (for the measurement performed in the diffuse field conditions). The microphone supplied with the SVAN 948 instrument (SV 22) is designed for the measurement performed in the free field conditions. In order to make the measurements in the diffuse field conditions the user has to switch on an additional correcting filter. The frequency characteristic of this filter is given in App. D. The **FREE** option selection means that the correcting filter for the diffuse field conditions is switched off. For the measurements performed with the use of the microphones for the diffuse field conditions the option **DIFFUSE** should never be used.

In order to select the filter the user has to press the <◀>, <▶> push-buttons. The position is closed and the instrument returns to the *SETUP* list after pressing the <ENTER> (with the confirmation of a change made in the position) or <ESC> push-button (ignoring a change made in the position).



The displays in the **FIELD CORRECTION** position, the field conditions selection for sound measurements

Introduction the filter coefficients for 1/3 (1/1) OCTAVE analysis - USER FILTERS

The **USER FILTERS** (*path: MENU / SETUP / USER FILTERS*) sub-list enables the user to introduce the values of the correcting coefficients taken into account in **1/1 OCTAVE** or **1/3 OCTAVE** analysis. The results of the analysis can be modified by the introduced factors and so calculated **TOTAL** values for one or two active (set to **On**) sets of the filters presented on the display. In order to enter this sub-list the user has to select the **USER FILTERS** text in the *SETUP* list, using the <▲>, <▼> (or <◀>, <▶>) push-buttons and press the <ENTER>. The texts which appear after pressing <ENTER> depends on the position set in the **MODE** sub-list.



The view of the display in the *SETUP* list the **USER FILTERS** text highlighted (displayed inversely)

USER FILTERS (sub-list) contains 2 sub-lists:

∅ **VIBR. FILTERS**

- **VIEW**

- **VIEW** enables the user to select which filter should be viewed; the available options are **VUSR1, VUSR2, VUSR3** and any other transmitted to the instrument from a PC by means of the interface

After pressing the **<ENTER>** push-button another sub-list opens containing the values of filters used in **1/1 OCTAVE** or **1/3 OCTAVE** analysis and saved under the name **VUSR1, VUSR2, VUSR3** or any other

- **EDIT**

- **EDIT**- enables the user to select which filters should be edited; the available options are as follows: **VUSR1, VUSR2, VUSR3** or any other transmitted to the instrument from a PC by means of the interface

After pressing the **<ENTER>** push-button another sub-list opens containing the values of the filters used in **1/1 OCTAVE** or **1/3 OCTAVE** analysis; the user can set the values of correcting coefficients for all **1/3 OCTAVE** filters:

- ▽ **0.80 Hz:** available values of 0.8 Hz centre frequency filter: **-100.0dB ... 100.0dB**
- ▽ **1.00 Hz:** available values of 1Hz centre frequency filter: **-100.0dB ... 100.0dB**
- ▽
- ▽ ...
- ▽ ...
- ▽ **20.0kHz:** available values of 20 kHz centre frequency filter: **-100.0dB ... 100.0dB**

- **CLEAR** (position)

- **CLEAR** enables the user to select which filters should be cleared; the available options are as follows: **ALL, VUSR1, VUSR2, VUSR3** or any other

∅ **SOUND FILTERS**

- **VIEW**

- **VIEW** enables the user to select which filter should be viewed; the available options are **SUSR1, SUSR2, SUSR3** and any other transmitted to the instrument from a PC by means of the interface

After pressing the **<ENTER>** push-button another sub-list opens containing the values of filters used in **1/1 OCTAVE** or **1/3 OCTAVE** analysis and saved under the name **SUSR1, SUSR2, SUSR3** or any other

- **EDIT**

- **EDIT**- enables the user to select which filters should be edited; the available options are as follows: **SUSR1, SUSR2, SUSR3** or any other transmitted to the instrument from a PC by means of the interface

After pressing the **<ENTER>** push-button another sub-list opens containing the values of the filters used in **1/1 OCTAVE** or **1/3 OCTAVE** analysis; the user can set the values of correcting coefficients for all **1/3 OCTAVE** filters:

- ▽ **0.80 Hz:** available values of 0.8 Hz centre frequency filter: **-100.0dB ... 100.0dB**
- ▽ **1.00 Hz:** available values of 1Hz centre frequency filter: **-100.0dB ... 100.0dB**
- ▽
- ▽ ...
- ▽ ...
- ▽ **20.0kHz:** available values of 20 kHz centre frequency filter: **-100.0dB ... 100.0dB**

- **CLEAR** (position)

- **CLEAR** enables the user to select which filters should be cleared; the available options are as follows: **ALL, SUSR1, SUSR2, SUSR3** or any other

The selection of the position in this sub-list is performed by means of the **<▲>**, **<▼>** (or **<◀>**, **<▶>**) push-buttons. The sub-list is closed and the instrument returns to the **SETUP** list after pressing the

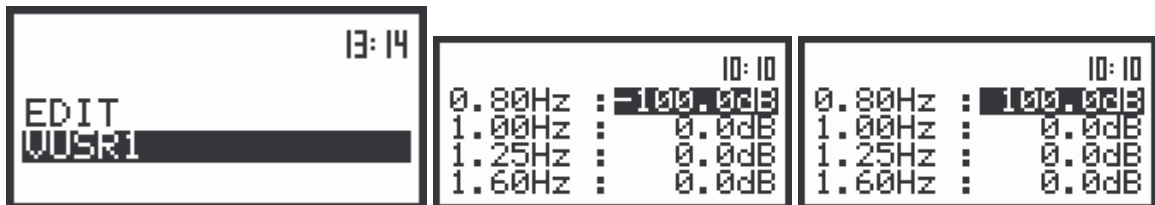
<ESC> push-button (ignoring a change made in the position). After pressing the <ENTER> push-button on the displayed inversely text the proper sub-list is opened.



The display's view in the USER FILTERS sub-list in vibration measurements, the selection of the position

Setting the coefficients of the user filters set - EDIT (position)

After pressing the <ENTER> push-button when the **VUSR1** (in the EDIT position) text is displayed inversely, the sub-list containing the status of the selected set and the values of the coefficients for all **1/3 OCTAVE** filters is opened. The status position informs the user that the set is switched on. It is not possible to change the status.



The view of the display in the EDIT sub-list, setting the coefficients

The selection of the position in the set is performed by means of the <▲>, <▼> push-buttons. The value is introduced by pressing the <◀>, <▶> push-buttons. The sub-list is closed and the instrument returns to the **USER FILTERS** sub-list after pressing the <ENTER> (with the confirmation of all settings made in the sub-list) or <ESC> push-button (ignoring all settings made in the sub-list).

Clearing the coefficients of the user filters - CLEAR

The **CLEAR** position enables the user to clear the values of the user coefficients of octave or third octave filters. It is possible to clear all sets of coefficients (**ALL**), to clear the first set (**VUSR1**), to clear the second set (**VUSR2**) or to clear the third one (**VUSER3**) in vibration measurements as well **ALL**, **SUSR1**, **SUSR2** and **SUSR3** in sound measurements respectively.



The view of the displays in the USER FILTERS; the CLEAR position selected

The coefficients of a set (or sets) are cleared after the selection of the proper text by means of the <◀>, <▶> push-buttons and after pressing the <ENTER> one.



The view of the displays in the CLEAR position in sound measurements



The view of the displays in the CLEAR position in vibration measurements

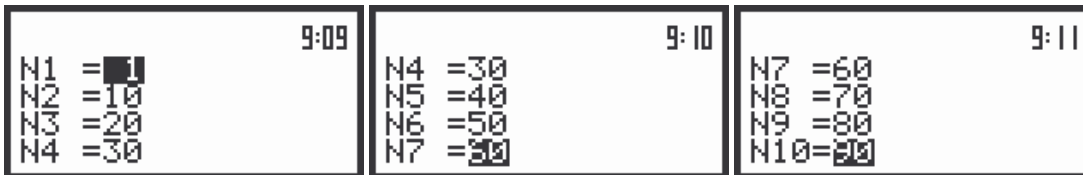
Selection of statistics levels to be saved in a file - STAT. LEVELS

The **STAT. LEVELS** (path: MENU / SETUP / STAT. LEVELS) sub-list enables the user to select ten statistics from one hundred calculated in the instrument to be saved in a file together with the main results of the measurements. This sub-list is available only in sound mode; in vibration mode it is taken off from the **SETUP** list.



The view of the display in the **SETUP** list in sound measurements, the **STAT. LEVELS** text highlighted (displayed inversely)

In order to enter this sub-list the user has to select the **STAT. LEVELS** text in the **SETUP** list, using the <▲>, <▼> (or <◀>, <▶>) push-buttons and press the <ENTER> one.



The view of the displays in the **STAT. LEVELS** sub-list

The selection of the position in the sub-list (the proper **Ni**, where $i = 1, \dots, 10$) is performed by means of the <▲>, <▼> push-buttons. The selection of a number from 1 to 99 in all ten **Ni** positions is done by means of the <◀>, <▶> push-buttons (with the step equal to 1) or by means of the <◀>, <▶> push-buttons together with the <SHIFT> one (with the step equal to 10). The sub-list is closed and the instrument returns to the **SETUP** list after pressing the <ENTER> (with the confirmation of all settings made in the sub-list) or <ESC> push-button (ignoring all settings made in the sub-list).

Selection of the external mode - EXT. I/O SETUP

The **EXT. I/O SETUP** sub-list (path: MENU / SETUP / EXT. I/O SETUP) enables the user to select the output or input device. The additional output socket, called **AC / Int**, enables one to connect meter with another device. On this socket the signal from the input or output of the analogue / digital converter (before the correction) is available. This signal can be registered with using the magnetic recorder, observed on the oscilloscope or trigger measurement. It is possible to connect three types of input/output devices: **ANALOG**, **DIGITAL IN** and **DIGITAL OUT**.

This position enables the user to set the proper external device. In order to enter this position the user has to select the **EXT. I/O SETUP** text in the *SETUP* list, using the <▲>, <▼> (or <◀>, <▶>) push-buttons, and press the <ENTER>.



The view of the display in the *SETUP* list in sound measurements, the **EXT. I/O SETUP** text highlighted (displayed inversely)

In the **MODE** position of **EXT. I/O SETUP** sub-list three options are available: **ANALOG**, **DIGITAL IN** and **DIGITAL OUT**. In order to select the external device user has to press the <◀>, <▶> push-buttons. The position is closed and the instrument returns to the *SETUP* list after pressing the <ENTER> (with the confirmation of a change made in the position) or <ESC> push-button (ignoring a change made in the position).



The displays in the **EXT. I/O SETUP** position, the selection different I/O devices

- **ANALOG** – in this mode the meter can give signals to the output device. For example the signal can be observed on the oscilloscope from the selected CHANNEL. The user has possibility to choose between **CHANNEL 1, 2, 3 and 4**.

The channel position enables the user to set the external channel. In order to enter this position the user has to select the **CHANNEL** text in the *EXT. I/O SETUP* list, using the <▲>, <▼> push-buttons. After selection of the **CHANNEL** the user has to press the <◀>, <▶> push-buttons. The position is closed and the instrument returns to the *SETUP* list after pressing the <ENTER> (with the confirmation of a change made in the position) or <ESC> push-button (ignoring a change made in the position).



The displays in the **EXT. I/O SETUP** position, the channel selection for output signal

- **DIGITAL IN** – in this mode the meter is connected to the output device which triggers it to undertake measurements. It starts to measure, when on its input there is a triggering impulse. In this mode the instrument works in **EXT.TRIGGER** function.
- **DIGITAL OUT** – in this mode the meter is connected to output device which is triggers by meter to measure. It sends digital trigger pulse to another device. In this mode the instrument works in **TRIGGER PULSE** function.

It is especially important, when the user wants to measure the noise or vibration in more then 4 channels simultaneously. In this connection both instruments works synchronized.

Selection of few push-buttons mode - SHIFT MODE

The **SHIFT MODE** (*path: MENU / SETUP / SHIFT MODE*) sub-list enables the user to programme the operation mode of the <SHIFT> and <START / STOP> push-buttons.



The view of the display in the *SETUP* list the **SHIFT MODE** text highlighted (displayed inversely)

In order to enter this position the user has to select the **SHIFT MODE** text in the *SETUP* list, using the <▲>, <▼> (or <◀>, <▶>) push-buttons and press the <ENTER>. The selection of a parameter in both positions is done by means of the <◀>, <▶> push-buttons and confirmed by the <ENTER> one.

Selection of the working mode of <SHIFT> push-button - SHIFT

In the **SHIFT** (*path: MENU / SETUP / SHIFT MODE*) position the user can choose between **Shift** and **2nd Fun.**. When the **Shift** text is selected the push-button with this name operates as in the keyboard of a computer – in order to achieve the desired result the second push-button has to be pushed in conjunction with the <SHIFT> one.

When the **2nd Fun.** text is selected the <SHIFT> push-button operates in the sequence with the other one. This mode is additionally signalled by the flashing **2n dF** text placed instead of the **Clock** icon. This flashing starts after pressing the <SHIFT> and lasts till pressing any other push-button with double meaning.

In order to select a desired mode of the <SHIFT> push-button the <◀>, <▶> should be pressed. In order to confirm the selection the <ENTER> push-button has to be pressed. Such pressing closes the sub-list. After pressing the <ESC> push-button the sub-list is also closed but all changes which were made are ignored.



The view of the displays in the **SHIFT MODE** sub-list; the available settings in the **SHIFT** position

Selection of the working mode of <START / STOP> push-button - ST/SP

In the **ST/SP** (*path: MENU / SETUP / SHIFT MODE*) position the user can choose between **Normal** and **Inverse**. When the **Normal** text is selected the <START / STOP> push-button operates as it is described in Chapter 2 – the instrument reacts on each of its pressing, starting or stopping the measurements.

When the **Inverse** text is selected the <START / STOP> push-button operates in conjunction or in a sequence with the <SHIFT> one. The measurements are started or stopped after pressing both push-buttons.

In order to select a desired mode of the <START / STOP> push-button the <◀>, <▶> should be pressed. In order to confirm the selection the <ENTER> push-button has to be pressed. Such pressing closes the sub-list. After pressing the <ESC> push-button the sub-list is also closed but all changes which were made are ignored.



The view of the displays in the SHIFT MODE sub-list; the available settings in the ST/SP position

Return to the factory made settings - CLEAR SETUP

The **CLEAR SETUP** (path: MENU / SETUP / CLEAR SETUP) position enables the user to return to the producer's set up of the instrument. In order to enter this position the user has to select the **CLEAR SETUP** text in the *SETUP* list, using the <^>, <v> (or <◀>, <▶>) push-buttons and press the <ENTER>. After entering this position the request for the confirmation is displayed. The position is closed without any action and the instrument returns to the *SETUP* list after pressing the <ESC> push-button.



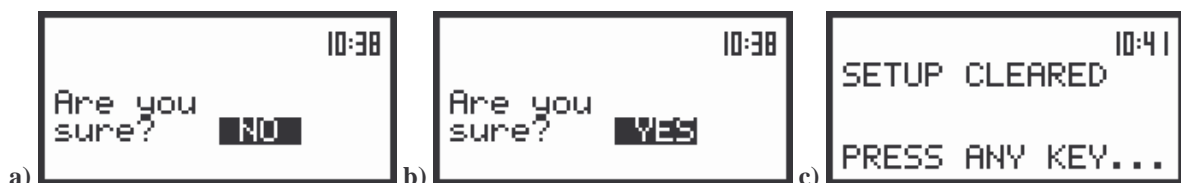
The view of the display in the *SETUP* list, the CLEAR SETUP text highlighted (displayed inversely)

The proper answer for the request is selected by means of the <◀>, <▶> push-buttons. The instrument returns to the default set up after pressing the <ENTER> push-button in the case when the answer **YES** was chosen. During the process of the resetting the message is displayed:



The view of the display during the execution of the CLEAR SETUP operation

The following message is displayed after the return to the default settings and the instrument waits for the user's reaction.



The displays with the request for the confirmation for the CLEAR SETUP position execution (a), (b) and after the execution of the function (c)

The window is closed and the instrument returns to the *SETUP* list after pressing any push-button with an exception of the **<SHIFT>** one.

Selection of detector's type in the LEQ (RMS) calculations - RMS INTEGRATION

The **RMS INTEGRATION** (*path: MENU / SETUP / RMS INTEGRATION*) position enables the user to select the detector type for the calculations of the **LEQ** function (in the case of sound measurements) or the **RMS** function (in the case of vibration measurements). In order to enter this position the user has to select the **RMS INTEGRATION** text in the *SETUP* list, using the **<▲>**, **<▼>** (or **<◀>**, **<▶>**) push-buttons and press the **<ENTER>**.



The view of the display in the *SETUP* list with the **RMS INTEGRATION** text highlighted (displayed inversely)

Two options are available: **LINEAR** and **EXPONENTIAL**. The required parameter can be selected by means of the **<◀>**, **<▶>** push-buttons. The position is closed and the instrument returns to the *SETUP* list after pressing the **<ENTER>** (with the confirmation of a change made in the position) or the **<ESC>** push-button (ignoring a change made in the position).

The expressions used for the **LEQ** or **RMS** calculations are given in Appendix D. Setting **LINEAR** is required for the IEC 61672-1 standard (for getting the true RMS value of the measured signal). When this option is selected in the case of sound measurements, the value of the **LEQ** and **SEL** function (the SLM case) does not depend on the detector time constant (the results are displayed **without** the indicator of the detectors selected in the profiles).



The view of the displays with the available options of the **RMS INTEGRATION** position

Setting **EXPONENTIAL** enables the user to fulfil the requirements of the IEC 804 standard for the **LEQ** measurements. When this option is selected in the case of sound measurements, the value of the **LEQ** and **SEL** function (the SLM case) depends on the detector time constant (the results are displayed **with** the indicator of the detectors selected in the profiles).

In the case of sound measurements, setting **EXPONENTIAL** enables the user to fulfil the requirements of the IEC 804 standard for the **RMS** measurements. When this option is selected the value of the function depends on the detector time constant (the results are displayed **with** the indicator of the detectors selected in the profiles).

Setting the reference signal in vibration measurements - REFERENCE LEVEL

The **REFERENCE LEVEL** (*path: MENU / SETUP / REFERENCE LEVEL*) sub-list enables the user to set the reference level of the signal in vibration or sound measurements. The values which are set here

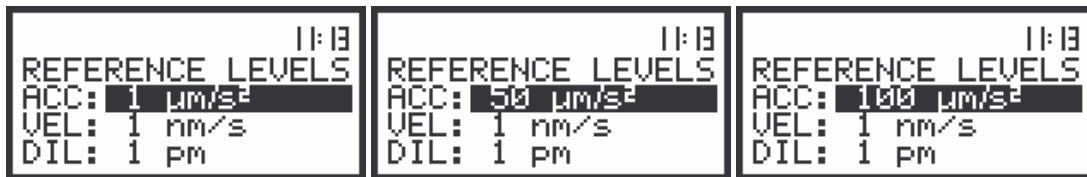
are taken into account during the calculations of the measurement results expressed in the logarithmic scale (with the dB as the units). In order to enter this position the user has to select the **REFERENCE LEVEL** text in the *SETUP* list, using the <▲>, <▼> (or <◀>, <▶>) push-buttons and press the <ENTER>. The selection of a parameter which level has to be set is done by means of the <▲>, <▼> push-buttons.



The view of the display in the *SETUP* list, the **REFERENCE LEVEL** text highlighted (displayed inversely)

Setting the reference level of the acceleration signal - ACC

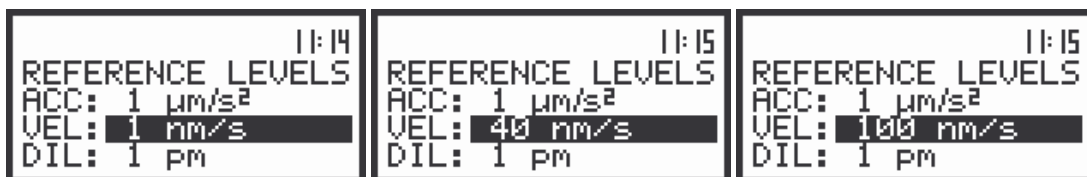
In the **ACC** position the user can set the reference level of the acceleration signal. It is possible to set this level from $1 \mu\text{m/s}^2$ to $100 \mu\text{m/s}^2$ with $1 \mu\text{m/s}^2$ step pressing the <◀>, <▶> push-buttons. The step can be increased to $10 \mu\text{m/s}^2$ pressing the <SHIFT> with the <◀>, <▶> push-buttons. In order to confirm the setting the <ENTER> push-button has to be pressed. Such pressing closes the sub-list. After pressing the <ESC> push-button the sub-list is also closed but all changes which were made are ignored.



The display's view in the **REFERENCE LEVEL** sub-list; the reference level setting of acceleration signal

Setting the reference level of the velocity signal - VEL

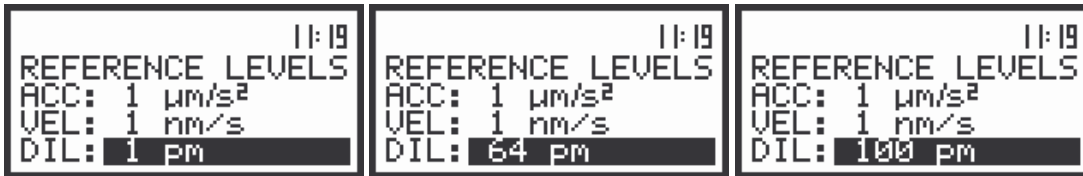
In the **VEL** position the user can set the reference level of the velocity signal. It is possible to set this level from 1nm/s to 100nm/s with 1nm/s step pressing the <◀>, <▶> push-buttons. The step can be increased to 10nm/s pressing the <SHIFT> with the <◀>, <▶> push-buttons. In order to confirm the setting the <ENTER> push-button has to be pressed. Such pressing closes the sub-list. After pressing the <ESC> push-button the sub-list is also closed but all changes which were made are ignored.



The display's view in the **REFERENCE LEVEL** sub-list; the reference level setting of velocity signal

Setting the reference level of the displacement signal - DIL

In the **DIL** position the user can set the reference level of the displacement signal. It is possible to set this level from 1 pm to 100 pm with 1 pm step pressing the <◀>, <▶> push-buttons. The step can be increased to 10 pm pressing the <SHIFT> with the <◀>, <▶> push-buttons. In order to confirm the setting the <ENTER> push-button has to be pressed. Such pressing closes the sub-list. After pressing the <ESC> push-button the sub-list is also closed but all changes which were made are ignored.



The display's view in the REFERENCE LEVEL sub-list; the reference level setting of displacement signal

In the case of sound measurements the REFERENCE LEVEL sub-lists is used only to inform the user that the reference level of the acoustic signal is equal to 20 μPa. After pressing the <ESC> or <ENTER> push-buttons the sub-list is closed.



The view of the display in the REFERENCE LEVEL sub-list; the reference level of the acoustic signal

Selection of the vibration units - VIBRATION UNITS

The VIBRATION UNITS (path: MENU / SETUP / VIBRATION UNITS) position enables the user to select the units for the vibration measurements. In order to enter this position the user has to select the VIBRATION UNITS text in the SETUP list, using the <^>, <v> (or <◀>, <▶>) push-buttons and press the <ENTER>.



The view of the display in the SETUP list, the VIBRATION UNITS text highlighted (displayed inversely)

It is possible to select the METRIC units (e.g. m/s², m/s, m etc.) or NON-METRIC units (e.g. g, ips, mil etc.). The selection is done by means of the <◀>, <▶> push-buttons. In order to confirm the selection the <ENTER> push-button has to be pressed. Such pressing closes the sub-list. After pressing the <ESC> push-button the sub-list is also closed but all changes, which were made, are ignored.



The view of the displays with the available options of the VIBRATION UNITS position

Selection of the warnings - WARNINGS

The **WARNINGS** (path: MENU / SETUP / WARNINGS) sub-list enables the user to select the messages which could be displayed during the operation of the instrument. In order to enter this sub-list the user has to select the **WARNINGS** text in the **SETUP** list, using the <▲>, <▼> (or <◀>, <▶>) push-buttons and press the <ENTER>. In the internal software version 4.05 this sub-list contains only one position.



The view of the display in the **SETUP** list, the **WARNINGS** text highlighted (displayed inversely)

Saving the measurement results in a file - RES.NOT SAVE

In order to switch on the displaying of this message the user has to place, by means of the <◀>, <▶> push-buttons, the special character in the warning's position. The position is closed and the instrument returns to the **SETUP** list after pressing the <ENTER> (with the confirmation of a change made in the position) or <ESC> push-button (ignoring a change made in the position).



The view of the displays in the **WARNINGS** sub-list; the selection of the **RES.NOT SAVE** position

When the position is set to be active the special warning can be displayed on the display after pressing the <START / STOP> push-button. It will be happened in a case when the result of the previous measurement was not saved in a file of the instrument. The warning which will appear on the display is presented below.



The view of the displays with the warning that the previous results were not saved and the confirmation

The default value of the **CONTINUE** position is **NO**. After pressing the <ESC> or <ENTER> push-button the instrument returns to the active mode of measurement result's presentation without starting the new measurement process. Using the <◀>, <▶> push-buttons one can change the value of the **CONTINUE** position to **YES**. To confirm the change the <ENTER> should be pressed, after which the instrument returns to the active mode of measurement result's presentation starting the new measurement process.

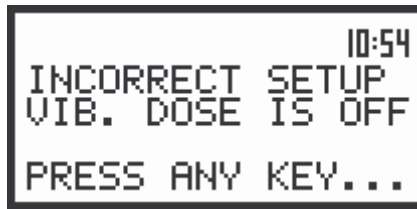
Selection of the vector coefficient - VECTOR DEF.

The **VECTOR DEF.** position (*path: MENU / SETUP / VECTOR DEF.*) is used to select the coefficient needed to calculate vibration vector. The values presented below are taken into account during the calculations of the measurement results. **VECTOR** is calculated like following:

$$VECTOR = \sqrt{k_1x_1^2 + k_2x_2^2 + k_3x_3^2 + k_4x_4^2}$$

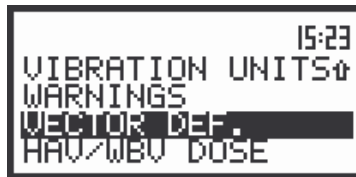
Where k_1, k_2, k_3 and k_4 are coefficients and x_1, x_2, x_3 and x_4 are RMS results for different channels. It is important that the user should choose only coefficients corresponding with the proper channels. The user should switch on three from the four possibilities. The **VECTOR** influences the calculated results. If the user selects all k-vectors, the result will be incorrect.

To obtain correct results, the user has to select suitable filters in **CHANNEL x**. If the filters are incorrect, it appears on the display the message presented below:



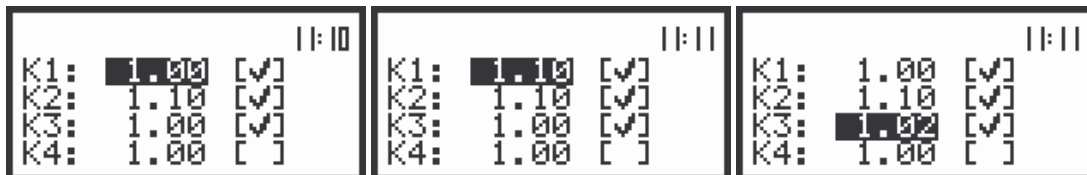
The view of the display in the starting measurements when user selects incorrect filters in INPUT/ CHANNELS SETUP/ CHANNEL x

In order to enter this position the user has to select the **VECTOR DEF.** text in the **SETUP** list, using the **<▲>**, **<▼>** (or **<◀>**, **<▶>**) push-buttons. After the selection the **<ENTER>** push-button must be pressed.



The view of the display in the **SETUP** list, the **VECTOR DEF.** text highlighted (displayed inversely)

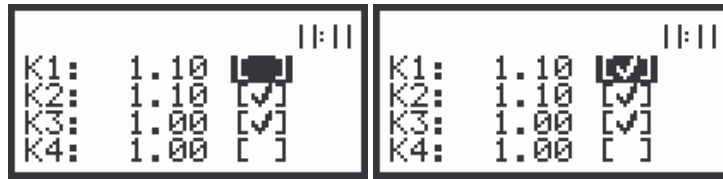
The selection of the position in the set is performed by means of the **<▲>**, **<▼>** push-buttons. The value is introduced by pressing the **<SHIFT>** and **<◀>** or **<SHIFT>** and **<▶>** push-buttons. The sub-list is closed and the instrument returns to the **SETUP** sub-list after pressing the **<ENTER>** (with the confirmation of all settings made in the sub-list) or **<ESC>** push-button (ignoring all settings made in the sub-list).



The view of the displays in the **VECTOR DEF.** (*path: MENU / SETUP / VECTOR DEF.*) position; the setting of the value coefficient

The user can select the following coefficients: **K1, K2, K3** and **K4**. The selection of the parameter from the **VECTOR DEF.** sub-list is made by pressing the **<▲>**, **<▼>** and **<◀>**, **<▶>** push-buttons. In order to switch on the displaying of vector's parameters the user has to place, by means of the **<SHIFT>** and **<◀>** or **<SHIFT>** and **<▶>** push-buttons special character in the chosen position; available values: **[✓]** or **[]**. The user can pass to the selection of the next parameter from the **VECTOR DEF.** sub-list pressing the **<▲>**, **<▼>** and **<◀>**, **<▶>** push-buttons. After pressing the **<ENTER>** push-button any

changes made in the sub-list are confirmed and the sub-list is closed. The return to the **SETUP** sub-list ignoring any changes made in the sub-list after pressing the **<ESC>** push-button.

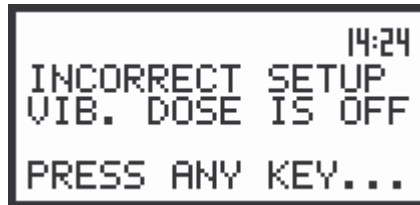


The view of the displays in the **VECTRO DEF.** (path: *MENU / SETUP / VECTOR DEF.*) position; the selection of the parameters



Notice: It is **possible** to change the values during the measurements

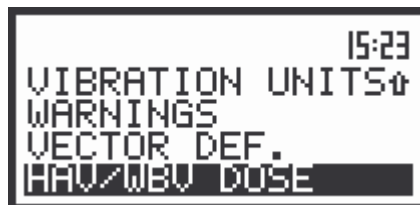
If the user selects wrong **k-coefficient**, it appears on the display the text: **INCORRECT SETUP, VIB. DOSE IS OFF** and measurements of dose will not be done. Otherwise the measurement will be continued. The selected coefficient should be consistent with the number of selected channel in **AXIS SETUP** (path: *MENU / SETUP / HAV/WBV DOSE / AXIS SETUP*).



The view of the displays informed about wrong selected settings

Selection of the vibration dose - HAV/WBV DOSE

The **HAV/WBV DOSE** position (path: *MENU / SETUP / HAV/WBV DOSE*) is used to determine the vibration dose. In order to enter this sub-list the user has to select the **HAV/WBV DOSE** text in the **SETUP** list, using the **<^>**, **<v>** (or **<^>**, **<v>**) push-buttons and press the **<ENTER>**. The selection of a parameter which level has to be set is done by means of the **<^>**, **<v>** push-buttons.



The view of the display in the **SETUP** list in the **HAV/WBV DOSE** text highlighted (displayed inversely)

The selection of a parameter which level has to be set is done by means of the **<^>**, **<v>** push-buttons.

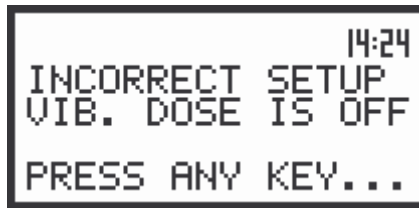


The view of the displays with the **HAV/WBV DOSE** list

In each available position any change is performed by means of the <◀>, <▶> push-buttons. In order to confirm the selection the <ENTER> push-button has to be pressed. After this confirmation the opened window or list is closed. In order to ignore any changes made in the opened window or list the user has to press the <ESC> push-button.

Selection of the parameters of vibration dose - MEASURE DOSE

In the **EXPOSURE TIME** position (*path: MENU / SETUP / HAV/WBV DOSE / MEASURE DOSE*) there are two possibilities: the user can switch on (**ENABLED**) or switch off (**DISABLED**) the measurement of vibration dose. If the user selects **ENABLED** in **MEASURE DOSE**, he should also select the correct filter in **INPUT/ CHANNELS SETUP/ CHANNEL x**. If it is chosen an incorrect filter, it appears on the display the message: **INCORRECT SETUP, VIB. DOSE IS OFF** and measurements of dose are not done. Otherwise the measurement is continued.



The view of the display informing about wrong selected setting

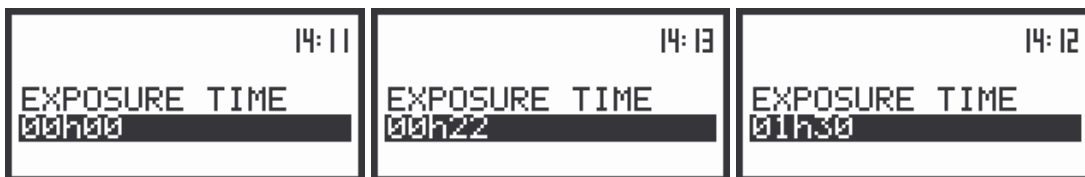
The measure (**MEASURE DOSE**) can be switched on or switched off using the <◀>, <▶> push-buttons. In order to confirm the setting the <ENTER> push-button has to be pressed. Such pressing closes the sub-list. After pressing the <ESC> push-button the sub-list is also closed but all changes which were made are ignored.



The view of the displays in the MEASURE DOSE window, the selection of setting

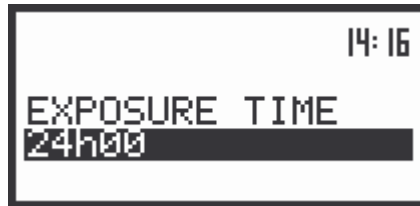
Selection of the parameters of vibration dose - EXPOSURE TIME

In the **EXPOSURE TIME** position (*path: MENU / SETUP / HAV/WBV DOSE / EXPOSURE TIME*) the user can set the exposure time of the vibration signal. It is possible to set maximum 24 hours with 1 s step pressing the <◀>, <▶> push-buttons or with 30 s step pressing the <SHIFT> with <◀>, <▶> push-buttons. In order to confirm the setting the <ENTER> push-button has to be pressed. Such pressing closes the sub-list. After pressing the <ESC> push-button the sub-list is also closed but all changes which were made are ignored.



The view of the displays during the setting of the EXPOSURE TIME

(*path: MENU/ SETUP/ HAV/WBV DOSE/ EXPOSURE TIME*); exposure time expressed in hours



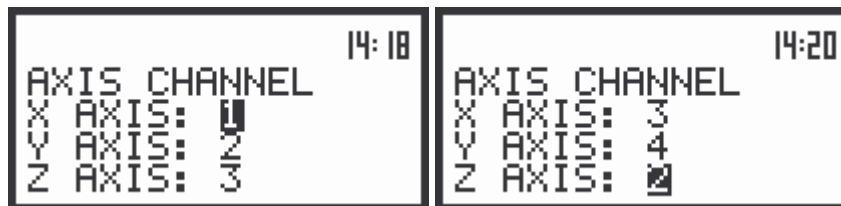
The view of the display with maximum EXPOSURE TIME



Notice: It is possible to change the time during the execution of the measurements.

Selection of the parameters of vibration dose - AXIS SETUP

In the **AXIS SETUP** position (*path: MENU / SETUP / HAV/WBV DOSE / AXIS SETUP*) the user can assign each axis of triaxial accelerometer to the number of channels. It could be three different accelerometers assigned to the number of channels. It is possible to set this channel using the <◀>, <▶> push-buttons. The user can change position using the <▲>, <▼> push-buttons. In order to confirm the setting the <ENTER> push-button has to be pressed. Such pressing closes the sub-list. After pressing the <ESC> push-button the sub-list is also closed but all changes which were made are ignored.



The view of the displays with the **AXIS CHANNEL**
(*path: MENU/ SETUP/ HAV/WBV DOSE/ AXIS SETUP*) some position selected

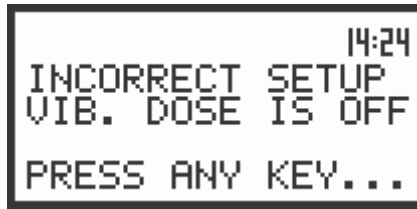


Notice: It is not possible to set the axis channel of the measurements during the execution of the measurements. It is possible to open different lists and sub-lists but the positions in these lists are not displayed inversely and so - not accessible. The "Loudspeaker" icon indicates that the instrument is in the measurement process. In order to change the range the measurement must be finished!



The view of the displays with **AXIS CHANNEL** position not accessible

If the user assigns any wrong axis of accelerometer (not corresponding to the number of channels), it appears on the display the text: **INCORRECT SETUP, VIB. DOSE IS OFF** and measurements of dose will not be done. Otherwise the measurement will be continued.



The view of the displays informed about wrong selected setting

Selection of the standards of vibration dose - STANDARDS

The **STANDARDS** (path: MENU / SETUP / HAV/WBV DOSE / STANDARDS) position enables the user to select standard of the measurement of vibration dose. Selected standard determines the limits of measured vibration. Up to the internal software version named as 2.11 the **UNITED KINGDOM (U.K.)** and **ITALY** standards are available (there position can not be accessed and changed). Those positions inform about the limits of vibration dose in defined standard. It is possible to set the standard using the <◀>, <▶> push-buttons. In order to confirm the setting the <ENTER> push-button has to be pressed. Such pressing closes the sub-list. After pressing the <ESC> push-button the sub-list is also closed but all changes which were made are ignored. The user can rewind the limit list using the <▲>, <▼> (or <◀>, <▶>) push-buttons.



The view of the displays in the STANDARDS window for U.K. standard



The view of the displays in the STANDARDS window for U.K. standard

The user can define the standards by him. In order to set own limits, the user has to select the position **USER**.



The view of the displays in the STANDARDS window for USER standard

The user can select the following limits in **HA** mode - **EAV** and **ELV**, in **WB** mode – **EAV** and **ELV**, The selection of the position in the set is performed by means of the <▲>, <▼> push-buttons. The value

is introduced by pressing the <SHIFT> and <◀> or <SHIFT> and <▶> push-buttons. In the case of **WB** limits, the user can change the units too.



The view of the displays in the STANDARDS window for USER standard, the selection of the limits value



The view of the displays in the STANDARDS window for USER standard, the selection of the unit's position

The selection of the units position in the set is performed by means of the <^>, <v> push-buttons. The sub-list is closed and the instrument returns to the **SETUP** sub-list after pressing the <ENTER> (with the confirmation of all settings made in the sub-list) or <ESC> push-button (ignoring all settings made in the sub-list).

5.3. SAVING THE MEASUREMENT RESULTS

The registration of the measurement results is an essential task for the efficient use of the instrument. All available measurement results can be stored in the FLASH type memory of the instrument.

There are two main ways for storing the measurement data in the instrument:

1. Saving files in the FLASH DISC using the *FILE* list.
2. Logging data in the files of the buffer.



Notice: The instrument's buffer memory is independent from the FLASH DISC memory. The capacity of available memory is equal to 32 MB.

Saving files

In the case of the **SVAN 948** instrument there are six different types of files containing data:

- from **Sound Level Meter** mode;
- from **Vibration Level Meter** mode;
- from **1/1 OCTAVE** analysis;
- from **1/3 OCTAVE** analysis;
- stored in the instrument's buffer.



Notice: The files in the buffer are created automatically (the usage of the **SAVE** position is not required).

Each file consists of some elements which are the same for all kind of files:

- a file header;
- the unit and software specification;
- the user's text stored together with the measurement data;
- the parameters and global settings;
- the special settings for channels;
- the marker of the end of the file.

The other elements of the file structure depend on the type of the file (**SLM**, **VLM**, **1/1 OCTAVE** or **1/3 OCTAVE** analysis, buffer) and on the setting of **SAVE STAT.** position from **SAVE OPTIONS** sub-list of the *FILE* list. These elements are as follows:

- the main results;
- the results coming from **1/1 OCTAVE** analysis;
- the results coming from **1/3 OCTAVE** analysis;
- the statistics header;
- the results of statistical analysis;
- the header of the statistical analysis performed in **1/1 OCTAVE** or **1/3 OCTAVE** analysis;
- the results of the statistical analysis performed in **1/1 OCTAVE** or **1/3 OCTAVE** analysis;
- the header of the buffer's file;
- the data stored during the measurements in the files of the buffer.



Notice: The detailed description of all types of file structures is given in the Appendix B.

Selection of the file's operation - FILE

Storing the sound measurement results as files in the instrument's FLASH DISC can be done by means of the **FILE** list. In order to open this list the user has to:

- press the **<MENU>** push-button,
- select from the main list, using the **<^>**, **<v>** (or **<◀>**, **<▶>**) push-buttons, the **FILE** text (highlight it inversely),
- press the **<ENTER>** push-button.



The view of the display in the main list; the **FILE** text highlighted (displayed inversely)

The **FILE** list contains the following items:

SAVE	enables one to save the measurement results as a file in the instrument memory;
SAVE OPTIONS	enables one to set the options of the measurement result savings;
LOAD	enables one to load to the working space of the instrument's memory the measurement results saved in a file;
DELETE	enables one to delete a selected file from the instrument's memory;
DELETE ALL	enables one to delete all files from the instrument's memory;
DEFRAGMENTATION	enables one to recover the memory which was used by the deleting files;
CLEAR BUFFER	enables one to delete all files from the buffer of the instrument;
CATALOGUE	enables one to overview the catalogue of the files saved in the instrument's memory;
FREE SPACE	informs the user about the capacity of the instrument's memory still available for storing the measurement results;
SAVE SETUP	enables one to set the configuration of the meter;
LOAD SETUP	enables one to load to the configuration saved in a file;

Pressing the **<SHIFT>** and **<^>** (or **<SHIFT>** and **<◀>**) results in a movement to the first position of the opened list and pressing the **<SHIFT>** and **<v>** (or **<SHIFT>** and **<▶>**) results in a movement to the last position of the opened list.



The view of the displays with the **FILE** list of the instrument

In each available position any change is performed by means of the **<◀>**, **<▶>** push-buttons. In order to confirm the selection the **<ENTER>** push-button has to be pressed. After this confirmation the opened window or list is closed. In order to ignore any changes made in the opened window or list the user has to press the **<ESC>** push-button.

Saving files in the instrument's memory - SAVE and SAVE NEXT

The **SAVE** (path: MENU / FILE / SAVE) position is used for storing data in the internal non-volatile (FLASH DISC) memory as a file (see Appendix B for the file formats). In order to enter this position the user has to select the **SAVE** text in the **FILE** list, using the <^> (or <^>) push-button. After the selection the <ENTER> push-button must be pressed. The additional function for results saving (the **SAVE NEXT** – save a file with the name increased by one) is available after pressing the <^>, <^> push-buttons.



The view of the displays in the **FILE** sub-list with the **SAVE** text highlighted (displayed inversely)

The additional function for results saving (the **SAVE NEXT** – save a file with the name increased by one) is available after pressing the <^>, <^> push-buttons. The return to the **FILE** sub-list is possible after pressing the <ESC> push-button.



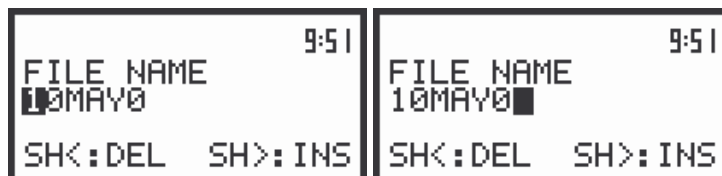
The view of the displays with the **SAVE** position opened

The name of the file, in which the measurements or the analysis results are to be saved, is displayed under the **SAVE** or **SAVE NEXT** text. The default name for a file is displayed in the case of the first entering to this position (after power on) and the last saved file's name – in the case of the next entering. It is possible to edit this name in two ways: full and simplified.

The window of the full edition of the file's name (the **FILE NAME**) is opened after pressing the <ENTER> push-button in the case when the **SAVE** function was selected for saving the results of the measurements.

The user can skip the full edition of the file's name pressing once more the <ENTER> push-button. It will result in the passing to the phase of the file's saving described just after the **FILE NAME** window.

The **FILE NAME** window is presented on the Figure below. The displayed inversely character is currently edited. The <^>, <^>, <^>, <^> and <SHIFT> push-buttons are used for editing the name which can not exceed 8 characters.



The view of the displays during the process of setting the character in the edited name

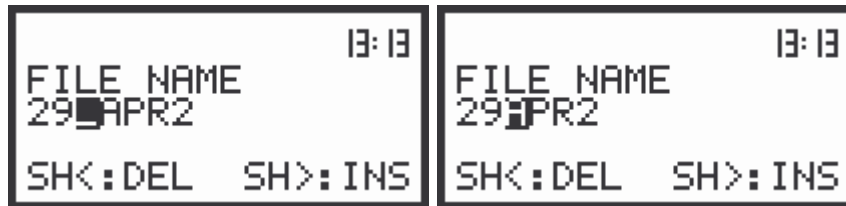
One can select the proper position of the character in the edited text using the <^>, <^> push-buttons. The available ASCII characters can be changed using the <^>, <^> push-buttons. The subsequent big letters, digits, space and underline appear on the display in the inversely displayed position after each pressing of the mentioned above push-buttons.

The empty space is created for the introduction of a new character in the edited name (the **INS** operation is executed) when the **<SHIFT>** push-button is pressed together with the **<▶>**.



The view of the displays in the FILE NAME edition after pressing the **<SHIFT>** and **<▶>** push-buttons

The character, which is displayed inversely, is deleted from the edited name (the **Del** operation is executed) when the **<SHIFT>** and **<◀>** push-buttons are pressed.



The view of the displays in the FILE NAME edition after pressing the **<SHIFT>** and **<◀>** push-buttons

The edited name is accepted and the file is saved after pressing the **<ENTER>** push-button (cf. the description of the **SAVE NEXT** function). The instrument waits then for a reaction of the user (any push-button should be pressed except the **<SHIFT>** one). All changes introduced to the file name during the edition are ignored after pressing the **<ESC>** push-button. This pressing causes the return to the list from which the **SAVE** option was entered.

The simplified edition consists in the addition at the end of the file name the natural number. The increase by one of the number is achieved by each pressing the **<▶>** push-button together with the **<SHIFT>** one and the decrease – by pressing the **<◀>** push-button together with the **<SHIFT>**. The number can be changed from 0 to N, when the only limitation of the N value is the length of the file name, which cannot be longer than 8 characters.



The view of the displays in the simplified edition of the file name

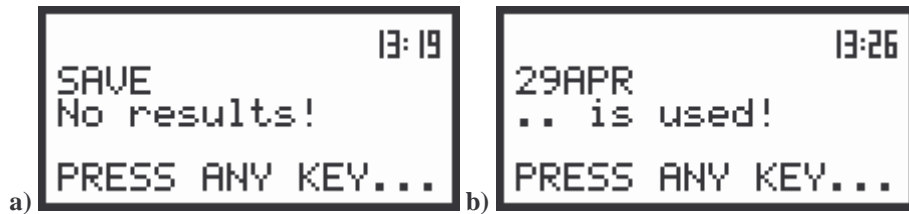
The instrument attempts to save a file after pressing the **<ENTER>** push-button. The saving is not possible in the case when the instrument is measuring the signal. The message with the changing letters from big to small and small to big is displayed on the display in this case (see below).



The view of the displays with the message stating the reason for unfeasibility of the required operation

The **SAVE** position is displayed once more after about 3 seconds. The presented below message (Fig. a) is displayed after pressing the **<ENTER>** push-button in the case when no measurements were

performed and there are no results to be saved. The operation can not be done also in a case when the file of the selected name already exists in the instrument's memory (Fig. b). The instrument then waits for the reaction of the user (any push-button should be pressed except the <SHIFT> one) and after pressing a push-button it returns to the **SAVE** position.



The view of the displays after the **SAVE** operation when the results for storing are not available (a) and the file with the selected name already exists in the instrument's memory (b)

The data are saved in the file with the name increased by one in relation to the name displayed after **SAVE NEXT** text after pressing the <ENTER> push-button (if the instrument is not measuring and there are the results to be stored).



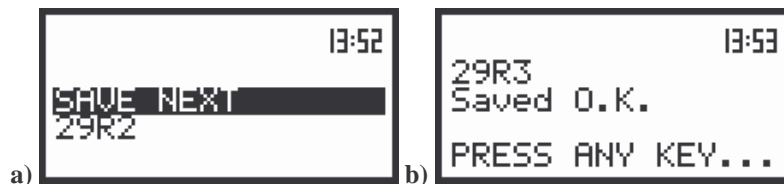
Notice: In the **SAVE NEXT** function it is possible to save a file (pressing the <ENTER> push-button) skipping the full or simplified edition of the file's name.

The following message containing the name of the file and the operation performed is displayed during the file's saving:



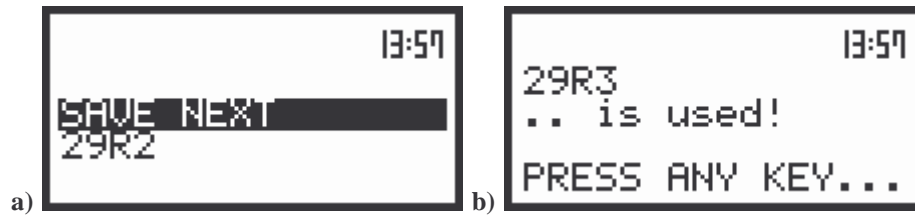
The view of the display during the execution of the **SAVE** operation

Another message is displayed after successful saving of the file in the memory and then the instrument waits for the reaction of the user (any push-button should be pressed except the <SHIFT>) and after pressing a push-button it returns to the **FILE** list. The assumptive file's name is displayed after repeated enter to the **SAVE** position of the **FILE** list (after pressing the <ENTER> push-button).



The displays with the **SAVE NEXT** function (a); after saving the file with the increased name (b) and after repeated enter to the **SAVE NEXT** function (c)

It is not possible to store the data in the file, which already exists, when the **REPLACE** position is not active ([]). The presented below message is displayed after pressing the <ENTER> push-button in the case when during the name edition process the user selected the name which was used before. The instrument then waits for the reaction of the user (any push-button should be pressed except the <SHIFT> one) and after pressing a push-button it returns to the **FILE** list.



The displays after the file's name selection (a) and with the message if the REPLACE position is not active (b)

Controlling the data storing in the instrument's memory - SAVE OPTIONS

The **SAVE OPTIONS** (*path: MENU / FILE / SAVE OPTIONS*) sub-list is used for the selection of the options of data storing in the **FLASH DISC** memory of the instrument. The sub-list is opened after pressing the <ENTER> push-button when the **SAVE OPTIONS** text in the *FILE* list is displayed inversely (selected using the <^>, <v> (or <^>, <v>) push-buttons). The return to the *FILE* list is possible after pressing the <ESC> push-button.

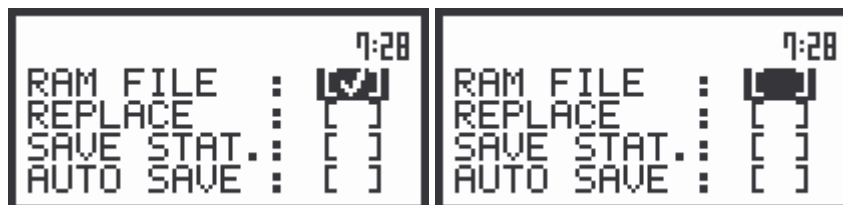


The view of the displays in the *FILE* sub-list with the SAVE OPTIONS text highlighted (displayed inversely)

It is possible to replace the existing in the memory file by the new with the same name (the **REPLACE** position), to add to the results the statistics of the measurements (the **SAVE STAT.** position, valid only for sound measurements) and to save automatically the results of the measurements (the **AUTO SAVE** position). The position of the sub-list is changed after pressing the <^>, <v> push-buttons. In order to confirm the selection the <ENTER> push-button has to be pressed. Such pressing closes also the opened sub-list.

Saving of the files to the RAM memory - RAM FILE

The **RAM FILE** position enables the user to save the results of the measurement in the special file at RAM memory (the name of the file is defined as a "RAMfile"). The activation or deactivation of the **RAM FILE** position is done by pressing the <^>, <v> push-buttons. This option is useful when remote reading is necessary; available values: [√] or [].

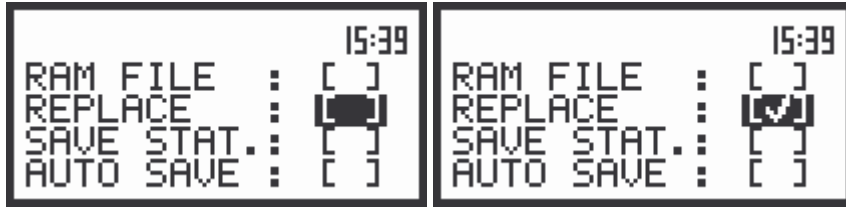


The displays during the execution of the SAVE OPTIONS – the selection of the RAM FILE parameters

Replacement of the existing files by the new ones - REPLACE

The result of the attempt to save the file with the name which already exists in the memory depends on the setting of the **REPLACE** position. It is possible to erase the old file and to save the new one with

the same name if the position is active ([√]). The message is displayed that such operation is not available in the case when this position is not active ([] – cf. the description of the **SAVE** position. The activation or deactivation of the **REPLACE** position is done by pressing the <◀>, <▶> push-buttons.



The displays during the execution of the SAVE OPTIONS – the selection of the REPLACE parameters

After pressing the <ENTER> push-button the selections made in any position of the sub-list (in particular also in the **REPLACE** position) are confirmed and the sub-list is closed. In the case when the **AUTO SAVE** option was active ([√]), after pressing the <ENTER> push-button the **FILE NAME** window is opened for editing the names for **AUTO SAVE** files.

The **SAVE OPTION** sub-list is closed ignoring all settings made in it after pressing the <ESC> push-button.

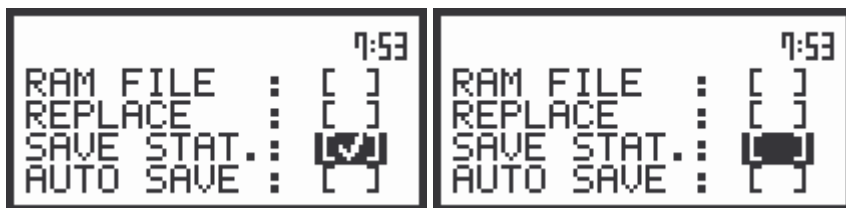
The next position from the **SAVE OPTIONS** sub-list becomes available after pressing the <▼> push-button.

Controlling of the measurement statistics savings - SAVE STAT.

The **SAVE STAT.** position is used to set self saving, together with the sound measurement results, the statistics of the measurements ([√]) or to switch off ([]) this possibility. Together with the sound measurements 100-class statistics is performed (the values named from **L01** to **L99**). The statistics are not calculated for the vibration measurements. The activation or deactivation of the **SAVE STAT.** position is done by pressing the <◀>, <▶> push-buttons.



Notice: This position was created to save the memory of the instrument in the case when the knowledge of the statistics is not necessary. **Each registration of the statistics requires 600 bytes of the memory!**



The displays during the execution of the SAVE OPTIONS – the selection of the SAVE STAT. parameters

After pressing the <ENTER> push-button the selections made in any position of the sub-list (in particular also in the **SAVE STAT.** position) are confirmed and the sub-list is closed.

Controlling of the measurement results savings - AUTO SAVE

Using the **AUTO SAVE** position one can set the self saving of the measurement results ([√]) or to switch off ([]) this possibility. The activation or deactivation of the **AUTO SAVE** position is done by

pressing the <◀>, <▶> push-buttons. This position was also established in order not to waste too much memory of the instruments when the self saving is not necessary.



The displays during the execution of the SAVE OPTIONS – the selection of the AUTO SAVE parameters

The window for the edition of the base name for the self saved files is opened (the **FILE NAME**) after pressing the <ENTER> push-button in the case when the **AUTO SAVE** position is activated. This window is not accessed in the case when the instrument is performing the measurements or when they are paused. In such a case the message with the changing letters is displayed (see below) and the instrument returns to the list from which the **SAVE OPTION** sub-list was called.



The view of the displays with the message stating the reason for unfeasibility of the required operation

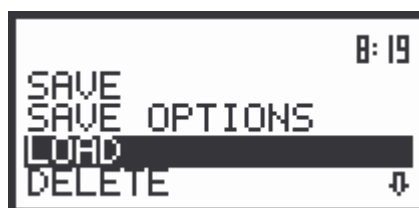
When the **AUTO SAVE** option is not active ([]), after pressing the <ENTER> push-button the instrument returns to the **FILE** list. The name of the **AUTO SAVE** files is up to eight characters long starting with the special character @.



The view of the displays after entering the FILE NAME edition mode for the files saved with the AUTO SAVE option active (after pressing the <ENTER> push-button in the SAVE OPTIONS sub-list, the AUTO SAVE switched on)

Loading the files with the measurement results – LOAD

The **LOAD** position (*path: MENU / FILE / LOAD*) is used for loading data file from the FLASH DISC (e.g. for the verification or comparison). The position is opened after pressing the <ENTER> push-button when the **LOAD** text in the **FILE** list is displayed inversely (selected using the <▲>, <▼> (or <◀>, <▶>) push-buttons). The return to the **FILE** list is possible after pressing the <ESC> push-button.

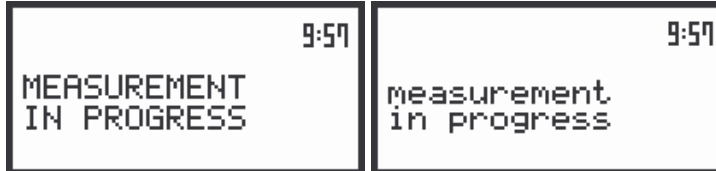


The view of the displays in the FILE sub-list with the LOAD text highlighted (displayed inversely)



Notice: It is not possible to load the file during the execution of the measurements. On such attempt the message: „*measurement in progress / MEASUREMENT IN PROGRESS*” is displayed for about 2 seconds.

After pressing the **<ENTER>** push-button the instrument checks its current state. In the case when the measurements are performed the file loading is impossible. In such case the message with the changing letters is displayed (see below) and the instrument returns after few seconds to the list from which the **LOAD** position was called.



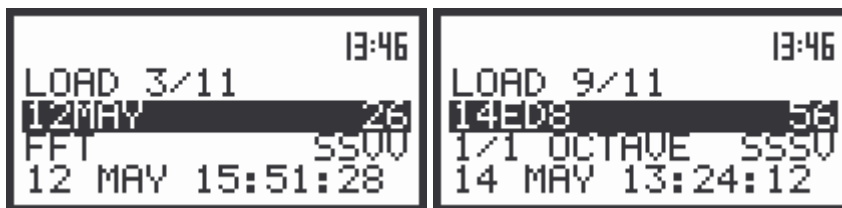
The view of the displays with the message stating the reason for unfeasibility of the required operation

In the case when the instrument memory is empty (no file is stored), after entering the **LOAD** position the **NO FILES** text is displayed and the instrument waits for the reaction of the user. The user should press then the **<ESC>**, **<ENTER>** or **<START / STOP>** push-button.



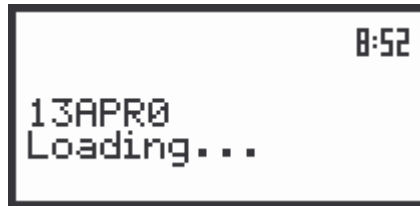
The view of the displays during the execution of the **LOAD** operation

The current number of the file and the total number of the saved files is displayed in the first line. The name of the file is displayed inversely in the second line (its current number is presented in the first line). If the file contains the results from the buffer, the number of the buffer is displayed at the right end of this line. The type of the current file (**LEVEL METER**, **1/1 OCTAVE**, **1/3 OCTAVE** etc.) and measure mode in each of four channels (**SOUND** or **VIBRATION**) are given in the third line. Date and time of the **SAVE** operation is displayed in the fourth line. The change of the current file with the unit step can be done after pressing the **<◀>**, **<▶>** push-buttons. After pressing the **<◀>** with **<SHIFT>** push-button the first file is available and after pressing the **<▶>** with **<SHIFT>** push-button - the last one is displayed.



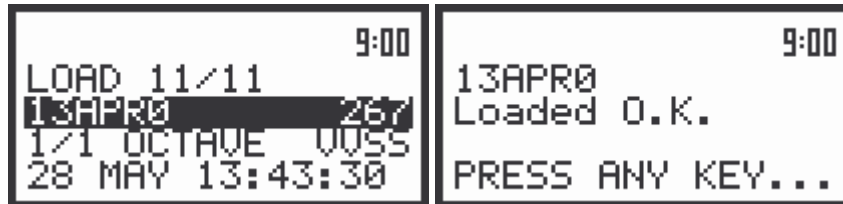
The view of the displays during the overview of the file list

The name of the file is accepted and the file is loaded after pressing the **<ENTER>** push-button. The message is displayed with the name of the selected file during the execution of the operation i.e.:



The view of the display during the execution of the LOAD operation

The next message is displayed after successful end of loading operation. The instrument waits for the reaction of the user (any push-button should be pressed except the <SHIFT> one) and after pressing a push-button it returns to the *FILE* list.



The view of the displays after the execution of the LOAD operation

Removing a file with the measurement results from memory - DELETE

The **DELETE** (*path: MENU / FILE / DELETE*) is used to remove a file from memory. After pressing the <ENTER> push-button the instrument checks its current state. In the case when the measurements are performed, the **DELETE** position entering is impossible. In such case the message with the changing letters is displayed (see below) and the instrument returns after few seconds to the list from which the **DELETE** was called.



The view of the displays with the message stating the reason for unfeasibility of the required operation

In the case when the instrument memory is empty (no file is stored), after entering the **DELETE** position the **NO FILES** text is displayed and the instrument waits for the reaction of the user. The user should press then the <ESC>, <ENTER> or <START / STOP> push-button.



The view of the displays in the *FILE* sub-list with the DELETE text highlighted (displayed inversely)

The same data about the existing in the instrument files as in the **LOAD** position are displayed on the display after successful opening the **DELETE** position (pressing the <ENTER> push-button). In the consecutive lines of the display the current file number, the total number of the files, the file name, the file type, date and time of registration are presented. The change of the current file with the unit step can be

done pressing the <◀>, <▶> push-buttons. After pressing the <◀> with <SHIFT> push-button the first file is available and after pressing the <▶> with <SHIFT> push-button - the last one is displayed. The return to the *FILE* list is possible after pressing the <ESC> push-button.



The view of the displays during the execution of the DELETE operation

The name of the file is accepted and the file is deleted after pressing the <ENTER> push-button. The message is displayed after the successful end of the operation. The instrument waits for the reaction of the user (any push-button should be pressed except the <SHIFT> one) and after pressing a push-button it returns to the *FILE* list.



The view of the displays after the execution of the DELETE operation

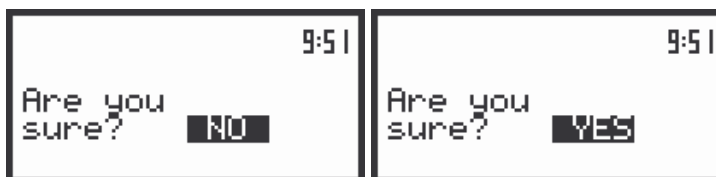
Removing all files with measurement results from memory - DELETE ALL

The **DELETE ALL** (path: MENU / FILE / DELETE ALL) position is used to remove all files from memory. In order to enter this position the user has to select the **DELETE ALL** text in the *FILE* list, using the <▲>, <▼> (or <◀>, <▶>) push-buttons and press the <ENTER>.



The view of the displays in the *FILE* sub-list with the **DELETE ALL** text highlighted (displayed inversely)

The instrument requests the confirmation of the operation after entering this position (after pressing the <ENTER> push-button). The next pressing the <ENTER> push-button, when the **NO** option is selected, causes the closing of the position and the return to the *FILE* list. The selection of the **NO** or **YES** option is possible using the <◀>, <▶> push-buttons. The return to the *FILE* list is possible after pressing the <ESC> push-button.



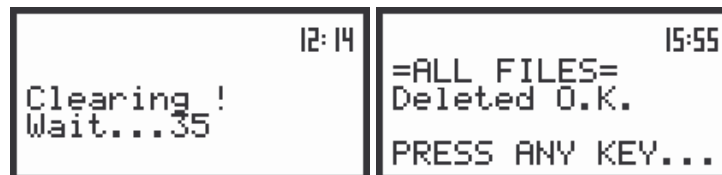
The view of the displays during the execution of the DELETE ALL operation

After pressing the **<ENTER>** push-button the instrument checks its current state. In the case when the measurements are performed, the execution of the **DELETE ALL** operation is not possible. In such case the message with the changing letters is displayed (see below) and the instrument returns after few seconds to the list from which the **DELETE ALL** position was called.



The view of the displays with the message stating the reason for unfeasibility of the required operation

The **<ENTER>** push-button pressing, when the **YES** option is selected and the instrument is not performing the measurements, deletes all existing files. In this case the following text is displayed (see below Fig. a) where 35 denotes the number of blocks to be deleted. In this time the instrument recovers the memory which was used by saved files and then clears it.



The view of the display during the execution of the **DELETE ALL** operation (a) and after the execution (b)

The message is displayed after the successful execution of the operation. The instrument waits for the reaction of the user (any push-button should be pressed except the **<SHIFT>** one) and after pressing a push-button it returns to the **FILE** list.

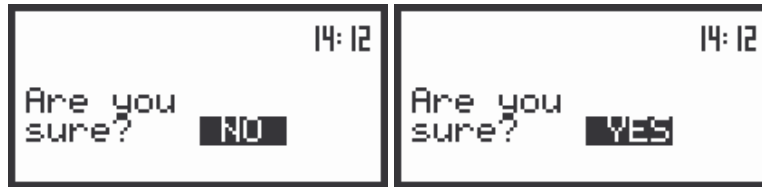
Memory merging - DEFRAGMENTATION

The **DEFRAGMENTATION** (*path: MENU/ FILE/ DEFREGMENTATION*) position is used to merge the blocks of the memory which were released after the delete operation. In order to enter this position the user has to select the **DEFRAGMENTATION** text in the **FILE** list, using the **<^>**, **<v>** (or **<^>**, **<v>**) push-buttons and press the **<ENTER>**.



The view of the displays in the **FILE** sub-list with the **DEFRAGMENTATION** text highlighted

The instrument requests the confirmation of the operation after entering this position (after pressing the **<ENTER>** push-button). The next pressing the **<ENTER>** push-button, when the **NO** option is selected, causes the closing of the position and the return to the **FILE** list. The selection of the **NO** or **YES** option is possible using the **<^>**, **<v>** push-buttons. The return to the **FILE** list is possible after pressing the **<ESC>** push-button.



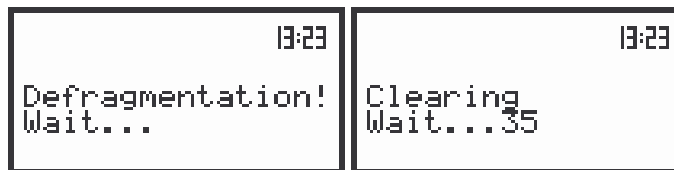
The view of the displays before the execution of the **DEFRAGMENTATION** operation

The **<ENTER>** push-button pressing, when the **YES** option is selected and the instrument is not performing the measurements, merges the memory. The presented below message is displayed in the case when the operation is not required. The instrument waits for the reaction of the user (any push-button should be pressed except the **<SHIFT>** one) and after pressing a push-button it returns to the **FILE** list. The operation is not executed in a case when **FREE SPACE** is equal to **TOTAL AVAILABLE**.



The view of the display in the case when the **DEFRAGMENTATION** operation is not required

In the case when the **DEFRAGMENTATION** operation is performed, the following texts are displayed (see below Fig. a and b).



The view of the displays during the execution of the **DEFRAGMENTATION** operation

In this time the instrument recovers the memory which was used by the deleted files, clears it and merges in one block. The presented below message is displayed after successful memory merging (see Fig. c). The instrument waits for the reaction of the user (any push-button should be pressed except the **<SHIFT>** one) and after pressing a push-button it returns to the **FILE** list. The result of the **DEFRAGMENTATION** operation is visible in Fig. c, while the state of the memory before the execution of this operation is given in Fig. a.



The view of the displays with the state of the file's memory (a), after the execution of the **DEFRAGMENTATION** operation (b) and the state of the memory after the execution of the operation (c)

Removing all files with results from buffer's memory - **CLEAR BUFFER**

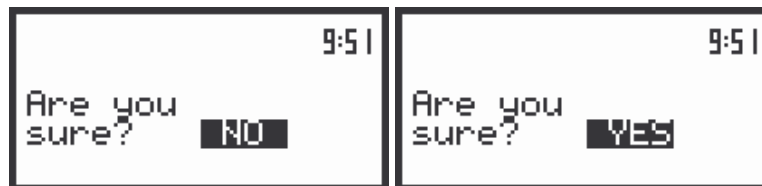
The **CLEAR BUFFER** (*path: MENU / FILE / CLEAR BUFFER*) position is used to delete the whole contents of the buffer's memory of the instrument (all files are erased). It is not possible to leave any data

in the buffer. In order to enter this position the user has to select the **CLEAR BUFFER** text in the *FILE* list, using the <▲>, <▼> (or <◀>, <▶>) push-buttons and press the <ENTER>.



The view of the displays in the *FILE* sub-list with the **CLEAR BUFFER** text highlighted (displayed inversely)

The instrument requests the confirmation of the operation after entering this position (after pressing the <ENTER> push-button). The next pressing of the <ENTER> push-button, when the **NO** option is selected, causes the closing of the position and the return to the *FILE* list. The selection of the **NO** or **YES** option is possible using the <◀>, <▶> push-buttons. The return to the *FILE* list is possible after pressing the <ESC> push-button.



The view of the displays during the execution of the **CLEAR BUFFER** operation

After pressing the <ENTER> push-button the instrument checks its current state. In the case when the measurements are performed, the execution of the **CLEAR BUFFER** operation is not possible. In such case the message with the changing letters is displayed (see below) and the instrument returns after few seconds to the list from which the **CLEAR BUFFER** position was called.



The view of the displays with the message stating the reason for unfeasibility of the required operation

The instrument returns to the *FILE* list after the successful execution of the **CLEAR BUFFER** operation.

Checking the contents of the memory - CATALOGUE

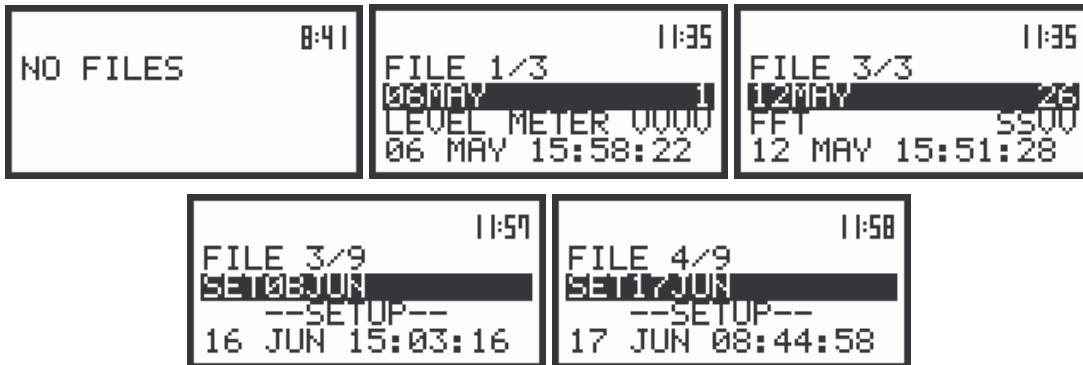
The **CATALOGUE** position is used for checking the contents of the memory (the list of the files). In order to enter this position the user has to select the **CATALOGUE** text in the *FILE* list, using the <▲>, <▼> (or <◀>, <▶>) push-buttons and press the <ENTER>.



The view of the displays in the *FILE* sub-list with the **CATALOGUE** text highlighted (displayed inversely)

In the case when the instrument memory is empty (no file is stored), after entering the **CATALOGUE** position the **NO FILES** text is displayed and the instrument waits for the reaction of the user. The user should press then the **<ESC>**, **<ENTER>** or **<START / STOP>** push-button.

The same data about the existing in the instrument files as in the **LOAD** position are displayed on the display after opening **CATALOGUE** position. In the consecutive lines of the display the current file number, the total number of the files, the file name, the file type, date and time of registration are presented. The change of the current file with the unit step can be done pressing the **<◀>**, **<▶>** push-buttons. After pressing the **<◀>** with **<SHIFT>** push-button the first file is available and after pressing the **<▶>** with **<SHIFT>** push-button - the last one is displayed. The return to the **FILE** list is possible after pressing the **<ESC>** or **<ENTER>** push-button.



The view of the displays during the execution of the CATALOGUE operation

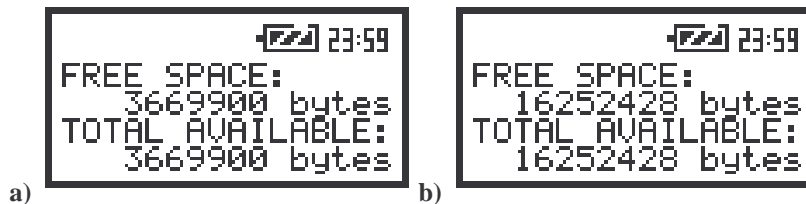
Checking the free space in the memory - FREE SPACE

The **FREE SPACE** (*path: MENU / FILE / FREE SPACE*) position is used to read out the free space in the FLASH DISC memory of the instrument. In order to enter this position the user has to select the **FREE SPACE** text in the **FILE** list, using the **<^>**, **<v>** (or **<◀>**, **<▶>**) push-buttons and press the **<ENTER>**.



The view of the displays in the **FILE** sub-list with the **FREE SPACE** text highlighted (displayed inversely)

The number of available space depends on the memory option installed in the unit and the history of the measurements. The position is closed and the instrument returns to the **FILE** list after pressing the **<ENTER>**, or **<ESC>** push-buttons or after starting / continuation the measurements (the **<PROCEED>** or **<START / STOP>** push-buttons).



The view of the displays during the execution of the **FREE SPACE** operation in the units with 8 MB (a) and 32 MB of internal memory (b)

Saving setup in the instrument's memory – SAVE SETUP and SAVE SETUP NEXT

The **SAVE SETUP** (path: *MENU / FILE / SAVE SETUP*) position is used for storing data in the FLASH DISC memory of the instrument as a file (see Appendix B for the file formats). In order to enter this position the user has to select the **SAVE** text in the *FILE* list, using the <^> (or <^>) push-button. After the selection the <ENTER> push-button must be pressed. The additional function for results saving (the **SAVE NEXT** – save a file with the name increased by one) is available after pressing the <^>, <^> push-buttons.



The view of the displays in the *FILE* sub-list with the **SAVE SETUP** text highlighted (displayed inversely)

The additional function for results saving (the **SAVE NEXT** – save a file with the name increased by one) is available after pressing the <^>, <^> push-buttons. The return to the *FILE* sub-list is possible after pressing the <ESC> push-button.

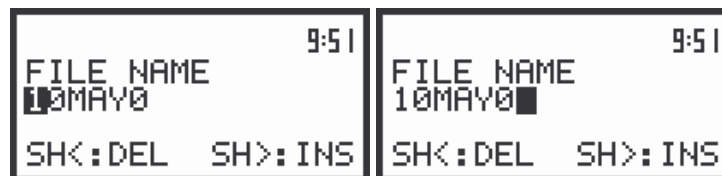


The view of the displays with the **SAVE SETUP** position opened

The name of the file, in which the configuration of meter is saved, is displayed under the **SAVE** or **SAVE NEXT** text. The default name for a file is displayed in the case of the first entering to this position (after power on) and the last saved file's name – in the case of the next entering. It is possible to edit this name in two ways: full and simplified.

The window of the full edition of the file's name (the **FILE NAME**) is opened after pressing the <ENTER> push-button in the case when the **SAVE** function was selected for saving the results of the measurements.

The user can skip the full edition of the file's name pressing once more the <ENTER> push-button. It will result in the passing to the phase of the file's saving described just after the **FILE NAME** window.



The view of the displays during the process of setting the character in the edited name

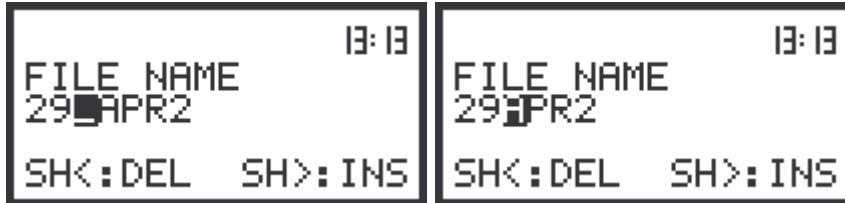
One can select the proper position of the character in the edited text using the <^>, <^> push-buttons. The available ASCII characters can be changed using the <^>, <^> push-buttons. The subsequent big letters, digits, space and underline appear on the display in the inversely displayed position after each pressing of the mentioned above push-buttons.

The empty space is created for the introduction of a new character in the edited name (the **INS** operation is executed) when the <SHIFT> push-button is pressed together with the <^>.



The view of the displays in the FILE NAME edition after pressing the <SHIFT> and <▶> push-buttons

The character, which is displayed inversely, is deleted from the edited name (the Del operation is executed) when the <SHIFT> and <◀> push-buttons are pressed.



The view of the displays in the FILE NAME edition after pressing the <SHIFT> and <◀> push-buttons

The edited name is accepted and the file is saved after pressing the <ENTER> push-button (cf. the description of the **SAVE NEXT** function). The instrument waits then for a reaction of the user (any push-button should be pressed except the <SHIFT> one). All changes introduced to the file name during the edition are ignored after pressing the <ESC> push-button. This pressing causes the return to the list from which the **SAVE SETUP** option was entered.

The simplified edition consists in the addition at the end of the file name the natural number. The increase by one of the number is achieved by each pressing the <▶> push-button together with the <SHIFT> one and the decrease – by pressing the <◀> push-button together with the <SHIFT>. The number can be changed from 0 to N, when the only limitation of the N value is the length of the file name, which cannot be longer than 8 characters.



The view of the displays in the simplified edition of the file name

The **SAVE** position is displayed once more after about 3 seconds. The presented below message is displayed after pressing the <ENTER> push-button in the case in a case when the file of the selected name already exists in the instrument's memory. The instrument then waits for the reaction of the user (any push-button should be pressed except the <SHIFT> one) and after pressing a push-button it returns to the **SAVE** position.



The view of the displays after the SAVE operation when the file with the selected name already exists in the instrument's memory

The data are saved in the file with the name increased by one in relation to the name displayed after **SAVE NEXT** text after pressing the **<ENTER>** push-button (if the instrument is not measuring and there are the results to be stored).



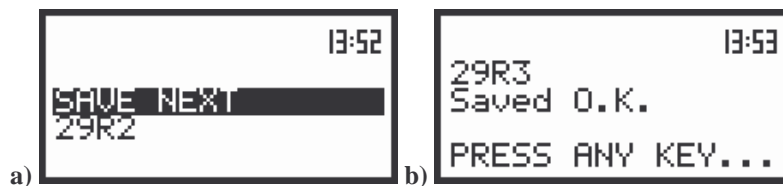
Notice: In the **SAVE NEXT** function it is possible to save a file (pressing the **<ENTER>** push-button) skipping the full or simplified edition of the file's name.

The following message containing the name of the file and the operation performed is displayed during the file's saving:



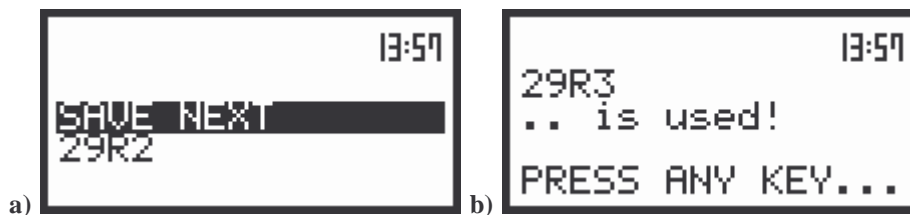
The view of the display during the execution of the SAVE operation

Another message is displayed after successful saving of the file in the memory and then the instrument waits for the reaction of the user (any push-button should be pressed except the **<SHIFT>**) and after pressing a push-button it returns to the **FILE** list. The assumptive file's name is displayed after repeated enter to the **SAVE** position of the **FILE** list (after pressing the **<ENTER>** push-button).



The displays with the SAVE NEXT function (a); after saving the file with the increased name (b) and after repeated enter to the SAVE NEXT function (c)

It is not possible to store the data in the file, which already exists, when the **REPLACE** position is not active ([]). The presented below message is displayed after pressing the **<ENTER>** push-button in the case when during the name edition process the user selected the name which was used before. The instrument then waits for the reaction of the user (any push-button should be pressed except the **<SHIFT>** one) and after pressing a push-button it returns to the **FILE** list.



The displays after the file's name selection (a) and with the message if the REPLACE position is not active (b)

Loading the files with the configuration – LOAD SETUP

The **LOAD SETUP** (*path: MENU/ FILE/ LOAD SETUP*) position is used for loading data file from the FLASH DISC. The position is opened after pressing the **<ENTER>** push-button when the **LOAD SETUP** text in the **FILE** list is displayed inversely (selected using the **<▲>**, **<▼>** (or **<◀>**, **<▶>**) push-buttons). The return to the **FILE** list is possible after pressing the **<ESC>** push-button.

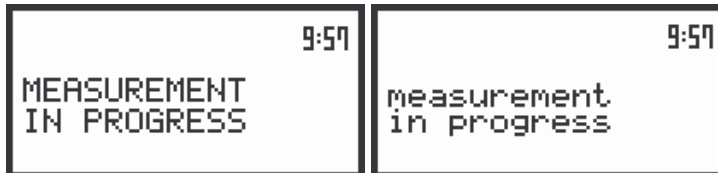


The view of the displays in the *FILE* sub-list with the **LOAD SETUP** text highlighted (displayed inversely)



Notice: It is not possible to load the file during the execution of the measurements. On such attempt the message: „*measurement in progress / MEASUREMENT IN PROGRESS*” is displayed for about 2 seconds.

After pressing the **<ENTER>** push-button the instrument checks its current state. In the case when the measurements are performed the file loading is impossible. In such case the message with the changing letters is displayed (see below) and the instrument returns after few seconds to the list from which the **LOAD** position was called.



The view of the displays with the message stating the reason for unfeasibility of the required operation

In the case when the instrument memory is empty (no file is stored), after entering the **LOAD SETUP** position the **NO FILES** text is displayed and the instrument waits for the reaction of the user. The user should press then the **<ESC>**, **<ENTER>** or **<START / STOP>** push-button.



The view of the displays during the execution of the **LOAD SETUP** operation

The current number of the file and the total number of the saved files is displayed in the first line. The name of the file is displayed inversely in the second line (its current number is presented in the first line). The **SETUP** type of the current file is given in the third line. Date and time of the **SAVE** operation is displayed in the fourth line. The change of the current file with the unit step can be done after pressing the **<◀>**, **<▶>** push-buttons. After pressing the **<◀>** with **<SHIFT>** push-button the first file is available and after pressing the **<▶>** with **<SHIFT>** push-button - the last one is displayed.



The view of the displays during the overview of the file list

The name of the file is accepted and the file is loaded after pressing the <ENTER> push-button. The message is displayed with the name of the selected file during the execution of the operation i.e.:



```
8:52
SET17JUP
Loading...
```

The view of the display during the execution of the LOAD operation

The next message is displayed after successful end of loading operation. The instrument waits for the reaction of the user (any push-button should be pressed except the <SHIFT> one) and after pressing a push-button it returns to the *FILE* list.



```
12:06
LOAD 3/3
SET17JUP
--SETUP--
17 JUN 09:05:02

12:08
SET17JUP
Loaded O.K.
PRESS ANY KEY...
```

The view of the displays after the execution of the LOAD operation

Operations in buffer

The buffer is the selected part of the instrument's memory dedicated for storing the huge number of the measurement results. Its capacity is ca 3.4 Mbytes (for the unit with 8 MB of internal memory). The buffer operation is strongly dependent on the operation mode of the instrument (the selected function).



Notice: The new file in the buffer is created after each start of the new measurement. The contents of the buffer (all registered files) are erased after execution the **CLEAR BUFFER** operation from the **FILE** list. It is not possible to erase only one or few selected files from the buffer!

1. In the **Sound Level Meter** mode selected results from each of four channels can be logged in the buffer's file with the time step defined in the **BUF. STEP** position. If the value set in this position is equal to 1 sec, thus for three profile results logging the buffer is fulfilled after 168 hours (or 7 days) of the continuous work. If the results from only one profile are saved the buffer will be filled after 500 hours (21 days) of work!

EXAMPLE 1.

Assuming that the following settings are selected:

MEASURE SETUP sub-list **INT. TIME: 10 m,**
REP. CYCLE: 1,
BUF. STEP: 1 s,
BUFFERS SETUP sub-list **CHANNEL 1: BUFFERS: PEAK,**
CHANNEL 2: BUFFERS: RMS,
CHANNEL 3: BUFFERS: None.
CHANNEL 4: BUFFERS: None

Then after 10 minutes (the value set in **INT. TIME** position) and after one measurement cycle (the value set in the **REP. CYCLE** position) the current file in the buffer will contain 600 **PEAK** values from the channel 1 and 600 one second **RMS** values (one second set in the **BUF. STEP** position) from the channel 2.

EXAMPLE 2.

Assuming that the instrument set-up is as follows:

MEASURE SETUP sub-list **INT. TIME: 1 m,**
REP. CYCLE: 1,
BUF. STEP: 7 s,
BUFFERS SETUP sub-list **CHANNEL 1: BUFFERS: PEAK,**
CHANNEL 2: BUFFERS: RMS,
CHANNEL 3: BUFFERS: None.
CHANNEL 4: BUFFERS: None.

Then after the end of the measurement the current file in the buffer will contain 8 **PEAK** values (for each 7-seconds period set in the **BUF. STEP** position) from the channel 1 and 8 **RMS** values from the channel 2.



Notice: The setting in a profile **BUFFER: ON** will result in bypassing the registration of the measurement results from this profile in the current file in the buffer. In the same time it will create more space in the buffer for the results from other profiles (independent instruments)!

2. In **1/1 OCTAVE** or **1/3 OCTAVE** analysis one selected result from each of three profiles together with the spectra can be logged in the current file of the buffer with the step selected in the **BUF. STEP** position.

EXAMPLE 3.

To force the every second spectra logging in a file of the buffer without the results measured in three profiles the user has to set:

MEASURE SETUP sub-list **INT. TIME: <any value>**,
REP. CYCLE: <any value>,
BUF. STEP: 1 s,
BUFFERS SETUP sub-list **CHANNEL 1: BUFFERS: None**,
CHANNEL 2: BUFFERS: None,
CHANNEL 3: BUFFERS: None.
SPECTRUM: BUFFER: RMS,
FILE list **SAVE OPTIONS: AUTO SAVE [√]**.

5.4. CALCULATION OF THE DOSE PARAMETERS - AUX. FUNCTIONS

In order to open the *AUX. FUNCTIONS* list the user has to:

- press the <MENU> push-button,
- select from the main list, using the <▲>, <▼> (or <◀>, <▶>) push-buttons, the **AUX. FUNCTIONS** text (highlight it inversely),
- press finely the <ENTER> push-button.

Pressing the <SHIFT> and <▲> (or <SHIFT> and <◀>) results in a movement to the first position of the opened list and pressing the <SHIFT> and <▼> (or <SHIFT> and <▶>) results in a movement to the last position of the opened list.



The view of the display in the main list; the *AUX. FUNCTIONS* text highlighted (displayed inversely)

The **AUX. FUNCTIONS** list is used to calculate the various parameters which are mainly dedicated for the control of the VIBRATION. In the internal software version 2.11 this sub-list contains only one position: **HAV/WBV CALC.** The **HAV/WBV CALCULATOR** (*path: MENU / AUX. FUNCTIONS / HAV/WBV CALC. / HAV CALCULATOR or WBV CALCULATOR*) position is used to calculate the characteristics parameters for these measurements. It enables to calculate the **HAV** and **WBV** value, **PARTIAL EXPOSURE** and **DAILY EXPOSURE**.

The following items are presented on the **HAV/WBV CALC.** list:

- HAV CALCULATOR** enables to calculate the various **H-A** parameters;
- WBV CALCULATOR** enables to calculate the various **WB** parameters.

In order to confirm the selection the <ENTER> push-button has to be pressed. After this confirmation the opened window or list is closed. In order to ignore any changes made in the opened window or list the user has to press the <ESC> push-button.



The view of the displays with the *HAV CALCULATOR* list

Selection of the calculation results - HAV CALCULATOR

The **HAV CALCULATOR** (*path: MENU / AUX. FUNCTIONS / HAV/WBV CALC. / HAV CALCULATOR*) position is used to calculate the various **H-A** parameters which are mainly dedicated for the control of the vibration dose. There are calculated: the **PARTIAL EAV/ELV**, **PARTIAL EXPOSURE** and **DAILY EXPOSURE** of vibration. All results are counted according to the standard selected in the **STANDARD** position (*path: SETUP/ HAV/WBV DOSE/ STANDARDS*). In order to enter this sub-list the user has to select the **HAV CALCULATOR** text in the **HAV/WBV CALC.** list, using the <▲>, <▼> (or <◀>, <▶>) push-buttons and press the <ENTER>. The selection of a parameter which level has to be set is done by means of the <▲>, <▼> push-buttons.

This function is available only in **VLM** mode.

In the **HAV CALCULATOR** list the following items are available:

- RESULTS SEL.** position which enables the user to select files with measurement's results with **H-A** data;
- PARTIAL EAV/ELV** position which displays the partial result of dose;
- PARTIAL EXP.** position which displays the result of exposure;
- DAILY EXPOSURE** position which displays the result of daily exposure.

The user can select available position select from the main list, using the <^>, <v> (or <^>, <v>) push-buttons, the display text is highlight inversely. In order to confirm the selection the <ENTER> push-button has to be pressed. After this confirmation the opened window or list is closed. In order to ignore any changes made in the opened window or list the user has to press the <ESC> push-button.



The view of the displays with the HAV CALCULATOR sub-list

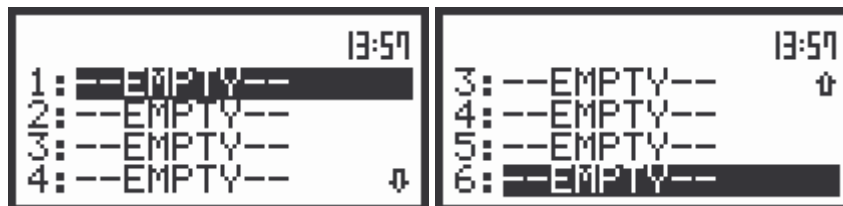
Selection of the file with result of measurement - RESULT SEL.

The **RESULT SEL.** position (*path: MENU / AUX. FUNCTIONS / HAV/WBV CALC. / HAV CALCULATOR / RESULTS SEL.*) is used to load data file from the FLASH DISC. User selects which files of measurement should be used to determine results of measurements. It is possible to select 6 files, which include measurement's results with **H-A** data. The position is opened after pressing the <ENTER> push-button when the **RESULTS SEL.** text in the **HAV CALCULATOR** list is displayed inversely (selected using the <^>, <v> (or <^>, <v>) push-buttons). The return to the **AUX. FUNCTIONS** list is possible after pressing the <ESC> push-button.



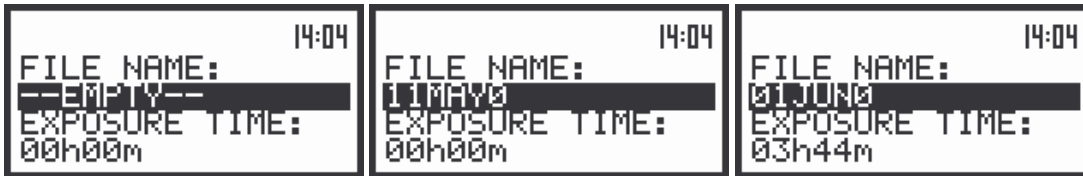
The view of the display in the HAV CALCULATOR sub-list the RESULT SEL text highlighted (displayed inversely)

After pressing the <ENTER> push-button the position is closed and the instrument opens new sub-list. It consists of six positions. The user can rewind the list using the <^>, <v> (or <^>, <v>) push-buttons and select position after pressing <ENTER>.



The view of the display in the RESULTS SEL. list

In order to enter the file the user has to select position using the <^>, <v> (or <^>, <v>) push-buttons and press the <ENTER>.



The view of the displays during the execution of the selected file operation

The current file is displayed in the first line. The name of the file is displayed inversely in the second line. The change of the current file with the unit step can be done after pressing the <◀>, <▶> push-buttons. After pressing the <◀> with <SHIFT> push-button the first file is available and after pressing the <▶> with <SHIFT> push-button - the last one is displayed.

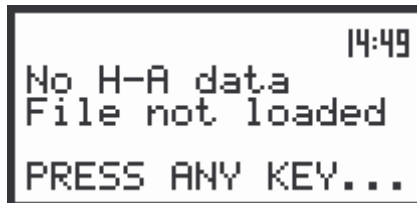
The name of the file is accepted and the file is loaded after pressing the <ENTER> push-button. The name of this file appears in a list:



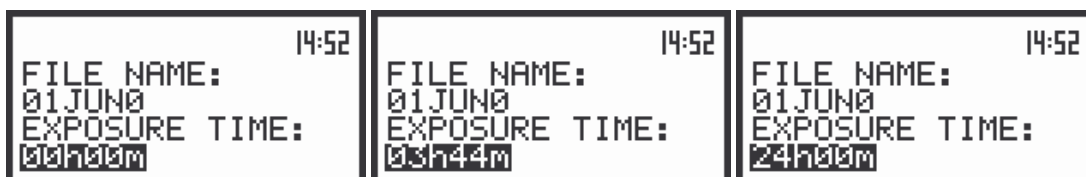
The view of the display with the selecting file (a) and after the execution of the operation (b), (c)

The figure in the brackets on the right side of the **RESULTS SEL.** indicates the number of selected files.

The message is displayed when the selected file does not include **H-A** data. The instrument waits for the reaction of the user till pressing any push-button except the <SHIFT> one. After that it returns to the **RESULTS SEL.** list.



The view of the displays after the execution of the operation



The view of the displays during the execution of the setting the EXPOSURE TIME operation

The **EXPOSURE TIME** position defines the time during that the measurement results are extrapolated. The required parameter can be set by means of the <◀>, <▶> and confirmed by the <ENTER> push-button. The integration time (**EXPOSURE TIME**) can be set (from **00h00m** to **24h00m** with **1m** step by pressing the <◀>, <▶> push-buttons or with **30m** step by pressing <SHIFT> with <◀>, <▶> push-buttons). The user can set the **EXPOSURE TIME** for each file separately.

Selection of the partial results - PARTIAL EAV/ELV

The **PARTIAL EAV/ELV** position (*path: MENU / AUX.FUNCTIONS / HAV/WBV CALC. / HAV CALCULATOR / PARTIAL EAV/ELV*) is used to display partial results, for each file separately. The results are displayed in two columns – the first column for **EAV** results and the second for **ELV** results. The position is opened after pressing the **<ENTER>** push-button when the **PARTIAL EAV/ELV** text in the **HAV CALCULATOR** sub-list is displayed inversely (selected using the **<^>**, **<v>** (or **<◀>**, **<▶>**) push-buttons). The return to the **HAV CALCULATOR** sub-list is possible after pressing the **<ESC>** push-button.

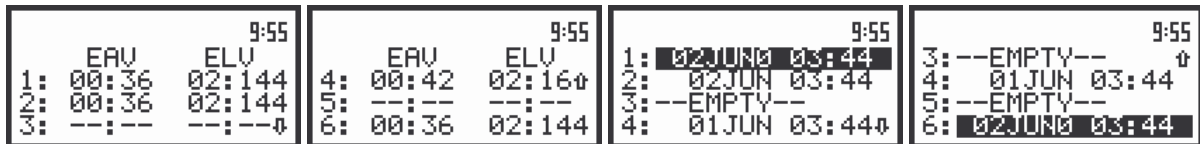


The view of the display in the HAV CALCULATOR sub-list the PARTIAL EAV/ELV text highlighted (displayed inversely)



The view of the display with the empty partial result list (a), the selecting file in RESULT SEL. sub-list (b) and the PARTIAL EAV/ELV results for selecting file (b), (c)

The user can rewind the **RESULTS SEL.** sub-list and **PARTIAL EAV/ELV** list using the **<^>**, **<v>** push-buttons. The return to the **HAV CALCULATOR** sub-list is possible after pressing the **<ESC>** push-button.



The view of the display with the selected file in RESULT SEL. sub-list and the PARTIAL EAV/ELV results for select file

Selection of the partial exposure - PARTIAL EXP.

The **PARTIAL EXP.** position (*path: MENU / AUX.FUNCTIONS / HAV/WBV CALC. / HAV CALCULATOR / PARTIAL EXP.*) is used to display **EXPOSURE** results, for each selected file separately. The results are displayed in one column, there are six positions for each file separately. The position is opened after pressing the **<ENTER>** push-button when the **PARTIAL EXP.** text in the **HAV CALCULATOR** sub-list is displayed inversely (selected using the **<^>**, **<v>** (or **<◀>**, **<▶>**) push-buttons). The return to the **HAV CALCULATOR** sub-list is possible after pressing the **<ESC>** push-button.



The view of the display in the HAV CALCULATOR sub-list the PARTIAL EXP. text highlighted (displayed inversely)

The user can rewind the **EXPOSURE** list and **EAV/ELV** list using the <▲>, <▼>. The return to the **HAV CALCULATOR** sub-list is possible after pressing the <ESC> push-button.

15:22	10:23	8:55	8:55
EXPOSURE	EXPOSURE	EAV ELV	EAV ELV
1: 5.49 m/s ²	3: ----- ↑	1: 00:36 02:144	4: ---:--- ---:---↑
2: -----	4: 5.75 m/s ²	2: 00:36 02:144	5: 00:46 03:185
3: 3.16 m/s ² ↓	5: ----- ↓	3: 00:36 02:144	6: ---:--- ---:---

The view of the display with the **EXPOSURE** and **EAV/ELV** results for selected file

Selection of the daily exposure - DAILY EXPOSURE

The **DAILY EXPOSURE.** position (*path: MENU / AUX. FUNCTIONS / HAV/WBV CALC. / HAV CALCULATOR / DAILY EXPOSURE*) is used to display **DAILY EXPOSURE** results, for each selected file separately. The result is counted relatively to **EXPOSURE TIME**. The position is opened after pressing the <ENTER> push-button when the **DAILY EXPOSURE** text in the **HAV CALCULATOR** list is displayed inversely (selected using the <▲>, <▼> (or <◀>, <▶>) push-buttons). The return to the **HAV CALCULATOR** sub-list is possible after pressing the <ESC> push-button.



The view of the display in the **HAV CALCULATOR** sub-list the **DAILY EXPOSURE.** text highlighted (displayed inversely)



The view of the display with the **DAILY EXPOSURE** result for selecting file

Selection of the calculation results - WBV CALCULATOR

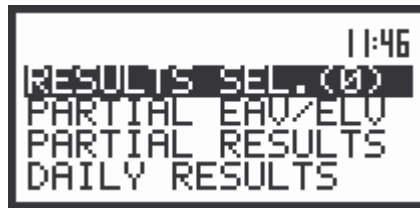
The **WBV CALCULATOR** position (*path: MENU / AUX. FUNCTIONS / HAV/WBV CALC. / WBV CALCULATOR*) is available in VLM mode and used to calculate the various **WBV** parameters. It enables to analyse results based on data saved in files. There are calculated the **PARTIAL EAV/ELV**, **PARTIAL EXPOSURE**, **DAILY EXPOSURE** and **DAILY DOSE** of vibration. All results are calculated according to the standard selected in **STANDARD** position (*path: SETUP / HAV/WBV DOSE / STANDARDS*).

In order to enter this sub-list the user has to select the **WBV CALCULATOR** text in the **HAV/WBV CALC.** list, using the <▲>, <▼> (or <◀>, <▶>) push-buttons and press the <ENTER>. The selection of a parameter which level has to be set is done by means of the <▲>, <▼> push-buttons.

In the **WBV CALCULATOR** sub-list the following items are available:

- RESULTS SEL.** position which enables the user to select files with measurement's results;
- PARTIAL EAV/ELV** position which displays the partial result of dose;
- PARTIAL RESULTS** position which displays the result of partial exposure;
- DAILY RESULTS** position which displays the results of daily exposure and daily dose.

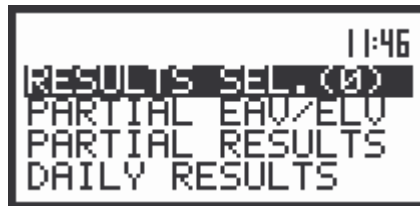
The user can select available position select from the main list, using the <▲>, <▼> (or <◀>, <▶>) push-buttons, the display text is highlight inversely, In order to confirm the selection the <ENTER> push-button has to be pressed. After this confirmation the opened window or list is closed. In order to ignore any changes made in the opened window or list the user has to press the <ESC> push-button.



The view of the displays with the WBV CALCULATOR list

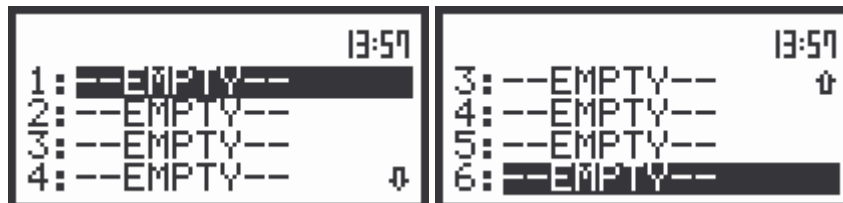
Selection of the file with result of measurement - RESULT SEL.

The **RESULT SEL.** position (*path: MENU / AUX. FUNCTIONS / HAV/WBV CALC. / WBV CALCULATOR / RESULTS SEL.*) is used to load data file from the FLASH DISC. User selects which files of measurement should be used to determine results of measurements. It is possible to select at most 6 files, which include measurement's results with **WBV** data. The position is opened after pressing the <ENTER> push-button when the **RESULTS SEL.** text in the **WBV CALCULATOR** list is displayed inversely (selected using the <▲>, <▼> (or <◀>, <▶>) push-buttons). The return to the **AUX. FUNCTIONS** list is possible after pressing the <ESC> push-button.



The view of the display in the WBV CALCULATOR sub-list the RESULT SEL text highlighted (displayed inversely)

After pressing the <ENTER> push-button the position is closed and the instrument opens new sub-list. It consists of six positions. The user can rewind the list using the <▲>, <▼> (or <◀>, <▶>) push-buttons and select the position after pressing <ENTER>.



The view of the display in the RESULTS SEL. list

In order to enter the file the user has to select position using the <▲>, <▼> (or <◀>, <▶>) push-buttons and press the <ENTER>.



The view of the displays during the execution of the selected file operation

The current file is displayed in the first line. The name of the file is displayed inversely in the second line. The change of the current file with the unit step can be done after pressing the <◀>, <▶> push-buttons. After pressing the <◀> with <SHIFT> push-button the first file is available and after pressing the <▶> with <SHIFT> push-button - the last one is displayed.

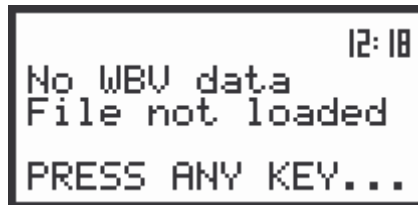
The name of the file is accepted and the file is loaded after pressing the <ENTER> push-button. The name of this file appears in a list:



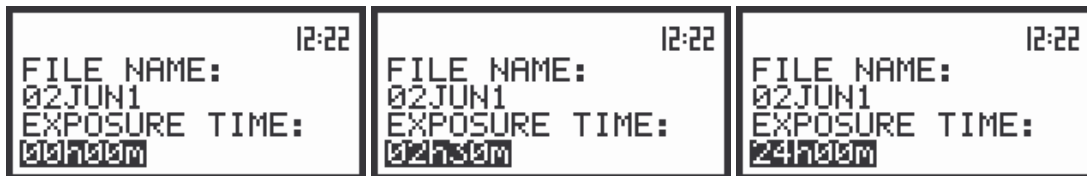
The view of the display with the select file (a) and after the execution of the operation (b), (c)

The figure in the brackets on the right side of the **RESULTS SEL.** indicates number of selected files.

The message below is displayed when the selected file does not include **WBV** data. After pressing any push-button except the <SHIFT> one it returns to the **RESULTS SEL.** sub-list.



The view of the displays after the execution of loading a file without WBV data

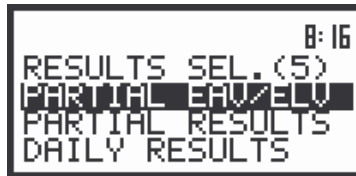


The view of the displays during the execution of the setting the EXPOSURE TIME operation

The **EXPOSURE TIME** position defines the time for the extrapolation of measurement results. The required parameters can be set by means of the <◀>, <▶> and confirmed by the <ENTER> push-button. The integration time (**EXPOSURE TIME**) can be chosen from **00h00m** to **24h00m** with **1m** step by pressing the <◀>, <▶> push-buttons or with **30m** step by pressing <SHIFT> with <◀>, <▶> push-buttons. The user can set the **EXPOSURE TIME** for each file separately.

Selection of the partial results - PARTIAL EAV/ELV

The **PARTIAL EAV/ELV** position (*path: MENU / AUX. FUNCTIONS / HAV/WBV CALC. / WBV CALCULATOR / PARTIAL EAV/ELV*) is used to display partial results, for each file separately. The results are displayed in two columns – the first column for **EAV** results and the second for **ELV** results. The position is opened after pressing the <ENTER> push-button when the **PARTIAL EAV/ELV** text in the **WBV CALCULATOR** sub-list is displayed inversely (selected using the <▲>, <▼> (or <◀>, <▶>) push-buttons). The return to the **WBV CALCULATOR** sub-list is possible after pressing the <ESC> push-button.

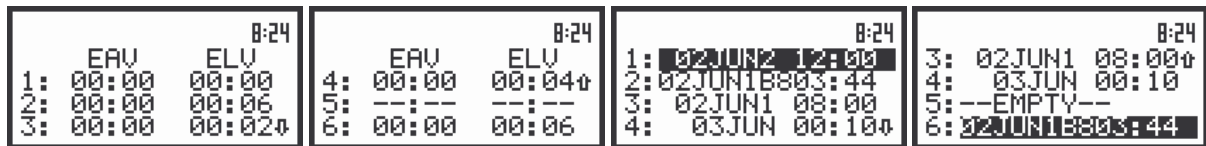


The view of the display in the WBV CALCULATOR sub-list the PARTIAL EAV/ELV text highlighted (displayed inversely)



The view of the display with the empty partial result list (a), the selecting file in RESULT SEL. sub-list (b) and the PARTIAL EAV/ELV results for selecting file (b), (c)

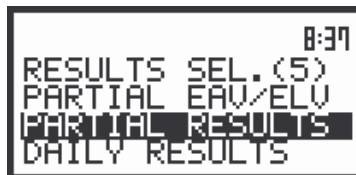
The user can rewind the RESULTS SEL. sub-list and PARTIAL EAV/ELV list using the <^>, <v> push-buttons. The return to the WBV CALCULATOR sub-list is possible after pressing the <ESC> push-button.



The view of the display with the selecting file in RESULT SEL. sub-list and the PARTIAL EAV/ELV results for selecting file

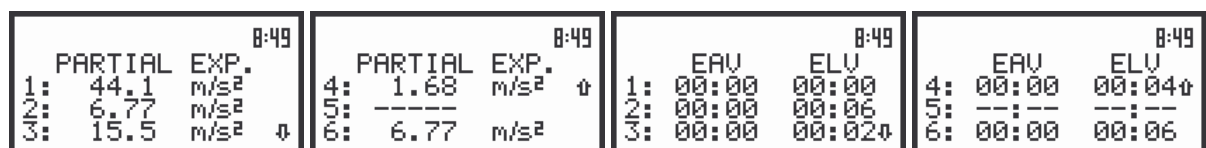
Selection of the partial results - PARTIAL RESULTS

The PARTIAL RESULTS position (path: MENU / AUX. FUNCTIONS / HAV/WBV CALC. / HAV CALCULATOR / PARTIAL RESULTS) is used to display PARTIAL EXPOSURE results. The results are displayed in one column and represented by six positions for each file separately. The position is opened after pressing the <ENTER> push-button when the PARTIAL EXP. text in the WBV CALCULATOR sub-list is displayed inversely (selected using the <^>, <v> (or <^>, <v>) push-buttons). The return to the WBV CALCULATOR sub-list is possible after pressing the <ESC> push-button.



The view of the display in the WBV CALCULATOR sub-list the PARTIAL RESULTS. text highlighted (displayed inversely)

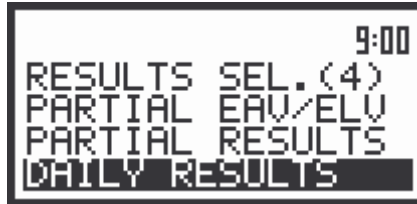
The user can rewind the PARTIAL EXP. sub-list and EAV/ELV list using the <^>, <v>. The return to the WBV CALCULATOR sub-list is possible after pressing the <ESC> push-button.



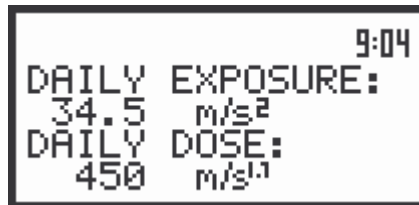
The view of the display with the PARTIAL EXPOSURE and EAV/ELV results for selected file

Selection of the daily result - DAILY RESULTS

The **DAILY RESULTS.** position (*path: MENU / AUX. FUNCTIONS / HAV/WBV CALC. / WBV CALCULATOR / DAILY EXPOSURE*) is used to display **DAILY EXPOSURE** and **DAILY DOSE** results, for each selected file separately. The result is calculated relatively to **EXPOSURE TIME**. The position is opened after pressing the **<ENTER>** push-button when the **DAILY RESULTS** text in the **WBV CALCULATOR** sub-list is displayed inversely (selected using the **<▲>**, **<▼>** (or **<◀>**, **<▶>**) push-buttons). The return to the **WBV CALCULATOR** sub-list is possible after pressing the **<ESC>** push-button.



The view of the display in the **WBV CALCULATOR** sub-list; the **DAILY RESULTS.** text highlighted (displayed inversely)



The view of the display with the **DAILY EXPOSURE** and **DAILY DOSE** results for selecting file