



SVANTEK

INSTRUMENTATION FOR SOUND & VIBRATION
MEASUREMENTS AND ANALYSIS



SVAN 954

VIBRATION LEVEL METER & ANALYSER

USER'S MANUAL (DRAFT VERSION)



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Notice: This user's manual presents the software revision named 6.06 / 6.06.9 (cf. the description of the **UNIT LABEL** position of the **DISPLAY** list). The succeeding software revisions (marked with the bigger numbers) can slightly change the view of some displays presented in the text of the manual.

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1 INTRODUCTION

The **SVAN 954** is digital, Type 1 vibration level meter along with analyser. The instrument is intended to general vibration measurements, machinery condition monitoring. It can be used by consultants, maintenance services and industry R&D departments etc.

Instrument allows the parallel acceleration, velocity and displacement measurements. Three vibration profiles allow parallel measurements with independently defined filters and RMS detector time constants. Each profile provides significant number of results (like **RMS**, **PEAK** or **Max**). The advanced time history logging for each profile provides the complete information about measured signal stored in non-volatile 16 MB internal memory. Measurement data can be downloaded to any PC using the USB interface and SvanPC+ software.

Most of required weighting filters, like VelMF, meeting ISO 10816 standard requirements, are available with this instrument.

Using the computational power of its digital signal processor the **SVAN 954** instrument can perform additionally the real time 1/1 octave analysis. The **SVAN 954** offers also, parallel to the vibration measurement, the RPM measurement with Monarch laser tachometer. Instrument is powered from four AA standard or rechargeable batteries (i.e. NiMH - separate charger is required). The powering of the instrument from the USB interface is also provided.

1.1 SVAN 954 as Vibration Meter & Analyser

- parallel **RMS**, **PEAK**, **MAX** results
- simultaneous measurement in three profiles with independent set of filters and detector time constants
- **HP1**, **HP3**, **HP10**, **Vel1**, **Vel3**, **Vel10**, **VelMF**, **Dil1**, **Dil3**, **Dil10** weighting filters
- **1/1 OCTAVE** real time analysis (optional) - 15 filters with centre frequencies 1 Hz ÷ 16 kHz, Type 1 – IEC 61260

1.2 Accessories included

- **SV 3185D** accelerometer with **SC 27** coil cable
- **SC 56** cable
- **Four AA** batteries
- **SvanPC+** for windows 2000/XP software

1.3 Accessories available

- **SVRPM_PROB** - Laser Tachometer with SC 69 cable
- **SA 27/ 3185D** - mounting magnet for the accelerometer
- **SA 18** - carrying bag for SVAN 95x and accessories (leather)
- **SA 47** - carrying bag for SVAN 95x and accessories (fabric material)



Notice: The software options can be purchased in any time as only the introduction of the special code is required for their activation.



SVAN 954 instrument with the accelerometer

2 MANUAL CONTROL OF THE INSTRUMENT

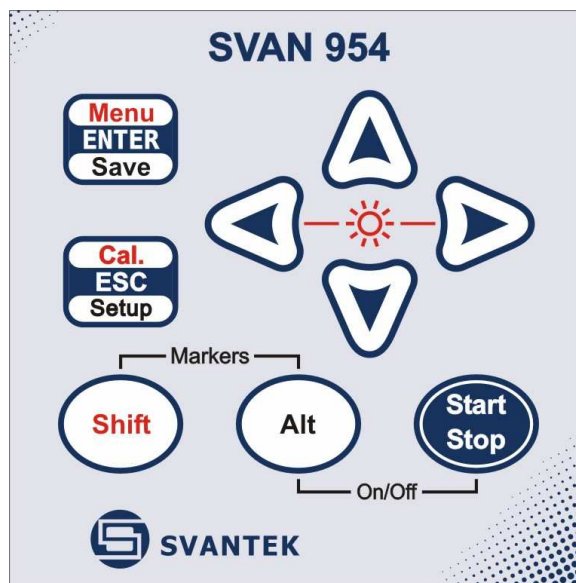
The control of the instrument is developed in the fully conversational way. The user can operate the instrument by selecting the proper position from the MENU list. Thanks to that, the number of the control push-buttons of the instrument is reduced to nine.

2.1 Control push-buttons on the front panel

On the front panel of the instrument, there are located the following control push-buttons:

1. <ENTER>, (<Menu>), [<Save>],
2. <ESC>, (<Cal.>), [<Setup>],
3. <Shift>, [Markers]
4. <Alt>, [Markers]
5. <▲>,
6. <◀>,
7. <▶>,
8. <▼>,
9. <Start / Stop>.

The name given in (...) brackets denotes the second push-button function which is available after pressing it in conjunction (or in sequence) with the <Shift> push-button. The name given in square brackets [...] denotes the third push-button function which is available after pressing it in conjunction (or in sequence) with the <Alt> push-button.



Control push-buttons of the SVAN 954 instrument

<Shift>

The second function of a push-button (written in red colour on a push-button) can be used when the <Shift> push-button is pressed. This push-button can be used in two different ways:

- as **Shift** in the keyboard (e.g. while typing the filename); both <Shift> and the second push-button **must be pressed in parallel**;
- as **2nd Fun**; this push-button can **be pressed and released before pressing the second one** or **pressed in parallel** (while operating in "2nd Fun" mode, see the following notice) with the second push-button.

The **<Shift>** push-button pressed in conjunction with the **<Alt>** one enables the user to enter the **Markers** on the logger plots during the measurement.



Notice: The operation of this push-button can be set as the “**Shift**” mode or the “**2nd Fun.**” mode in the **SHIFT** position (path: **SETUP / SHIFT MODE / SHIFT**) - see description of the **SETUP** list.

<Alt>

This push-button enables one to choose the third push-button function in case of [**<Save>**] and [**<Pause>**] push-buttons. In order to select the third function the user must press the **<Alt>** and the second push-button simultaneously.

This push-button can be used in two different ways:

- as **Alt** in the keyboard; both **<Alt>** and the second push-button **must be pressed in parallel**;
- as **2nd Fun**; this push-button can **be pressed and released before pressing the second one or pressed in parallel** (while operating in “**2nd Fun**” mode) with the second push-button.

The **<Alt>** push-button pressed together with the **<Shift>** one enables the user to enter the **Markers** on the plots during the measurement.



Notice: The simultaneous pressing of the **<Alt>** and **<Start / Stop>** push-buttons switches the instrument on and off.

<Start / Stop>

This push-button enables one to start the measurement process, when the instrument is not measuring or to stop it, when the instrument is in course of the measurement. It is also possible to set such mode of this push-button, in which in order to start or stop the measurements the user has to press it simultaneously with the **<Shift>** one.



Notice: The change of the **<Start / Stop>** push-button mode is performed in the **SHIFT MODE** window of the **SETUP** list (see description of the **SETUP** list).

<ENTER>

This push-button enables one to enter the selected operation mode or to confirm the control options. Some additional functions of this push-button will be described in the following chapters of this manual.

(<Menu>)

This push-button (pressed together with the **<Shift>** one) enables the user to enter the main list containing six sub-lists: **FUNCTION**, **INPUT**, **DISPLAY**, **FILE** and **SETUP**. Each of the mentioned above sub-lists consists of the sub-lists, elements and data windows. These main sub-lists will be described in details in the following chapters of the manual. Double pressed **<Menu>** push-button enters the list

containing eight last opened sub-lists. It often speeds up the control of the instrument as the user has the faster access to the frequently used sub-lists.

[<Save>]

This push-button (pressed together with the **<Alt>** one) enables the user to save measurement results as a file in the internal instrument's memory or on the USB memory stick. There are two available functions: **SAVE NEXT** - save a file with the name increased by one (e.g. 02JAN0, 02JAN1, 02JAN3) and **SAVE** - save a file with the edited name.

<ESC>

This push-button closes the control lists, sub-lists or windows. It acts in opposite to the **<ENTER>** push-button. When the window is closed pressing the **<ESC>** push-button, any changes made in it are ignored in almost all cases.

[<Cal.])

This push-button (pressed together with the **<Shift>** one) enters the **CALIBRATION** sub-list in which the user can enter one of the available sub-lists (**BY SENSITIVITY**, **BY MEASUREMENT**, and **LAST CALIBRATION**).

[<Setup>]

This push-button (pressed together with the **<Alt>** one) opens the **SETUP** menu in which the user can set various options and parameters of the instrument (**LANGUAGE**, **CLEAR SETUP**, **EXTERNAL I/O SETUP**, **IEPE CURRENT**, **RMS INTEGRATION**, **RPM MEASUREMENT**, **RTC**, **SHIFT MODE**, **TIMER**, **VIBRATION UNITS**, **WARNINGS**).

<<>, <>>

These push-buttons enable one, in particular, to:

- select the options in an active position in the "horizontal direction" (e.g. filter **HP1**, **HP3**, **HP10**, Integration period: **1s**, **2s**, **3s**, ... etc.)
- select the measurement result to be displayed (e.g. **RMS**, **OVL**, **PEAK** etc.) in one profile and **3 PROFILES** modes of result's presentation)
- control the cursor in **LOGGER** and **SPECTRUM** mode of result's presentation
- select the position of the character in the text edition (i.e. in the **FILE NAME** menu)
- switch on/ off the **BACKLIGHT** of the display (**<<>+<>>** pressed together)
- activate markers 2 and 3

(<<>, <>>)

The **<<>**, **<>>** push-buttons pressed in conjunction (or in sequence) with the **<Shift>** enable one, in particular, to:

- speed up the changing of the numerical values of the parameters (i.e. the step is increased from 1 to 10 in the setting of **START DELAY** - *path: MENU / INPUT / MEASUREMENT SETUP / START DELAY*)

- insert or delete a character in the text edition modes

Some other possible reactions of the instrument on the pressing of these push-buttons will be described in details in the following chapters.

<▲>, <▼>

The <▲>, <▼> push-buttons enable one, in particular, to:

- change the mode of result's presentation
- select the proper character from the list in the text edition mode
- switch the active sub-list in a list
- programme the Real Time Clock (**RTC**) and **TIMER**
- activate markers 1 and 4

Some other possible reactions of the instrument on the pressing of these push-buttons will be described in details in the following chapters.

(<▲>, <▼>)

The <▲>, <▼> push-buttons pressed in conjunction (or in sequence) with the <Shift> enable one, in particular, to:

- change the relation between the Y-axis and X-axis of all plots presented on the screen
- switch the active profile in **3 PROFILES** mode of result's presentation

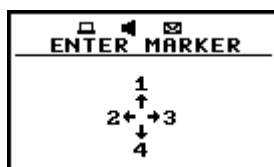
Some other possible reactions of the instrument on the pressing of these push-buttons will be described in details in the following chapters.

[Markers]

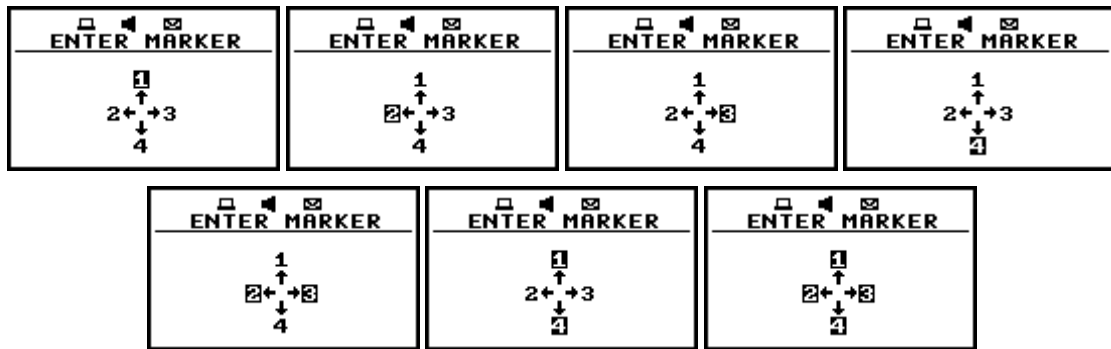
The **Markers** enable the user to mark special events, which occurred during the performed measurements. In order to activate the markers the logger has to be switched on (*path: MENU / INPUT / MEASUREMENT SETUP / LOGGER On*) and one or more logger options (**LOGGER PEAK**, **LOGGER MAX**, **LOGGER RMS**) in profiles have to be chosen (*path: MENU / INPUT / PROFILE x*). In order to enter the marker the user must press <Shift> and <Alt> push-buttons simultaneously during the measurement. The **ENTER MARKER** window opens and there are four available marker numbers. To choose marker number 1 the user must press <▲> push button (number 2 - <◀>, number 3 <▶> and number 4 - <▼>).

The **ENTER MARKER** window closes automatically and chosen marker is activated (after pressing <Shift> + <Alt> again active marker number will be highlighted). In order to switch off the marker, the user has to open the **ENTER MARKER** window and press this push-button, which refers to the marker to be switched off.

The current state of the markers is indicated in the logger's file (cf. App. B for details) and can be used to show them using dedicated presentation software.

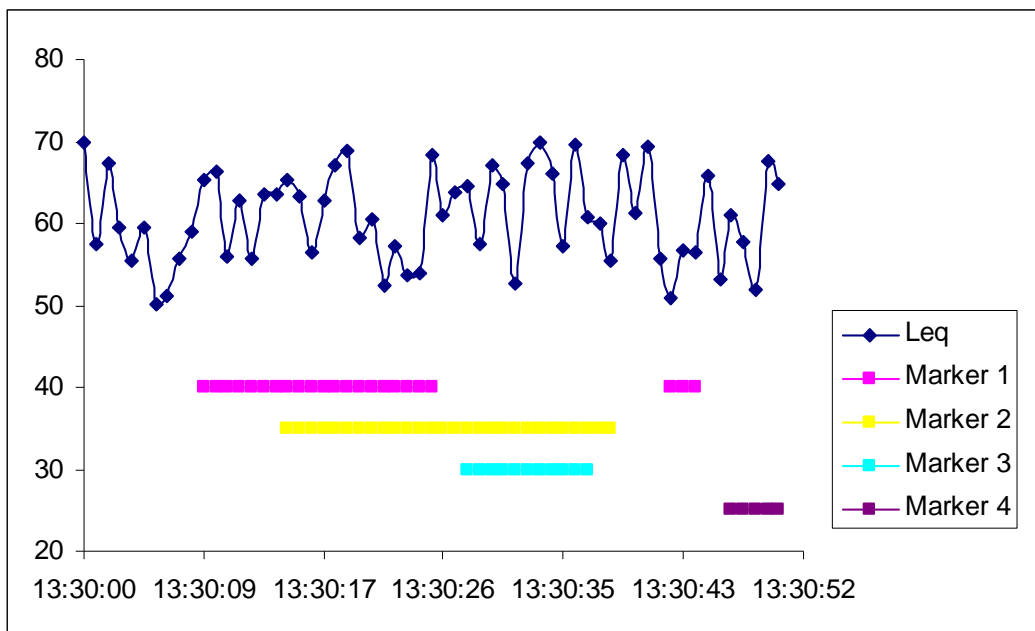


Display with the “MARKERS” (after pressing <Alt> and <Shift> together)



Displays with the activated markers

The exemplary presentation of the markers on the time history plot is shown below (to view a plot with markers the user has to transfer data to the proper software).



Time history plot with the indication of the active markers

2.2 Input and output sockets of the instrument

The instrument inputs, called **Input** and **Probe** are placed in the centre of the instrument's top cover. The **Input** may work in three modes (**ACCELER. IEPE**, **ACCELER. CHARGE**, **VOLTAGE**) and the user has to connect proper accelerometer to this input or voltage using TNC connector. The **Probe** is dedicated for connection with the tachometer.

After plug in the accelerometer to the measurement input, the screw should be twisted to the light resistance. The full description of the signals connected to the sockets is given in the Appendix C.



Top cover of the SVAN 954 instrument in 1:1 scale

In the bottom cover there are two sockets: **USB** and **I/O**. The clamping screw is located between the two sockets.



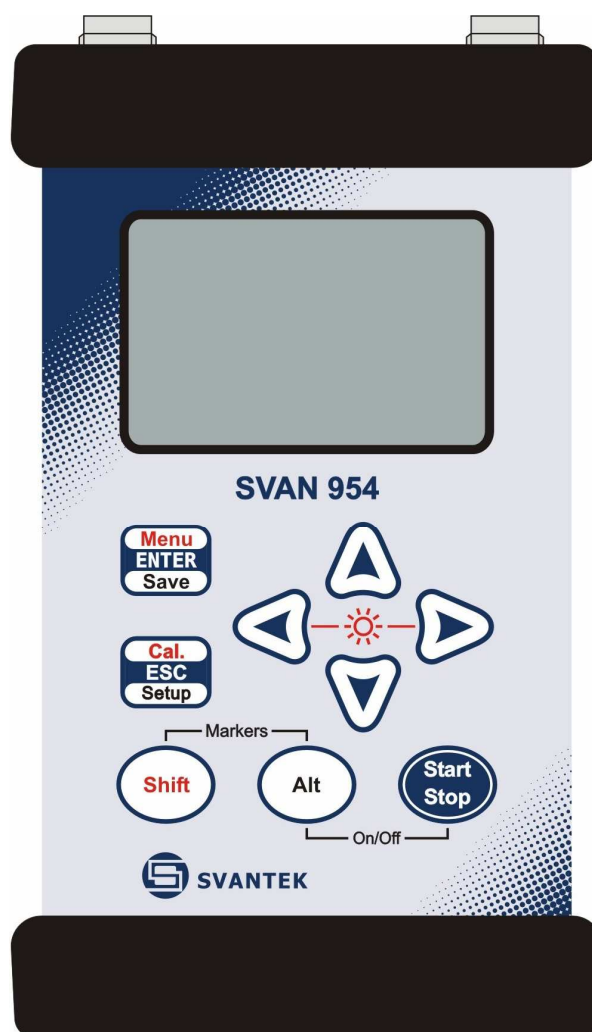
Bottom cover of the SVAN 954 instrument in 1:1 scale

The **USB 1.1** interface is the serial interface working with 12 MHz clock. Thanks to its speed, it is widely used in all PC. In the instrument, the standard 4-pins socket is used described in details in Appendix C.

The additional multi purpose input / output socket, called **I/O**, is a 3-pins 3,5mm minijack socket. On this socket, the user may simultaneously apply the Analogue Output functionality and Digital Input / Output functionality. To the Analogue Output pin is fed the signal from the input of the analogue / digital converter (without frequency-weighted correction) of the instrument. This signal can be registered using signal recorder with it's own analogue input, observed on the oscilloscope or listen by headphones (monoaural type) etc. The user may select Digital Input / Output functionality in the program menu of the instrument (*path: SETUP/ EXTERNAL I/O SETUP*). The Digital Input functionality enables the external trigger, while the Digital Output is used to generate the trigger pulse or alarm pulse from the instrument, which may be sent to external systems. Detailed description of the signals connected to the I/O socket is given in the Appendix C.



Notice: Switch the power off before connecting the instrument to any other device (e.g. a Personal Computer).



Front panel of the SVAN 954 instrument in 1:1 scale



Rear panel of the SVAN 954 instrument in 1:1 scale

3 SETTING THE INSTRUMENT

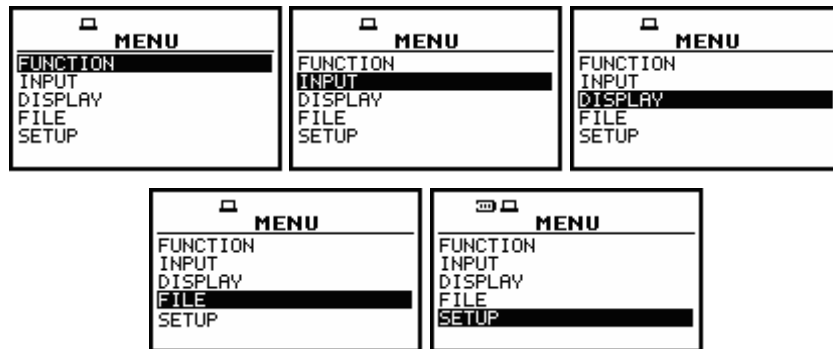
In order to perform the measurements using the instrument the user has only to plug-in the proper transducer and to switch the power on.



Notice: The user has to press the **<Alt>** and **<Start / Stop>** push-buttons in parallel in order to switch the power On/Off.

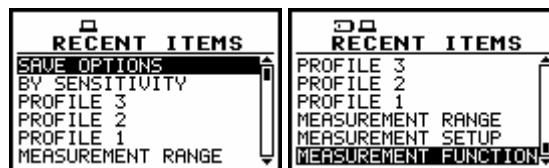
3.1 Basis of the instrument's control

The instrument is controlled by means of nine push-buttons of the keyboard. Using these push-buttons one can access all available functions. The functions are placed in the system of lists and sub-lists. The main list contains the headers of **six lists**, which also contain sub-lists or positions (elements). The main list is opened after pressing the **<Menu>** push-button. This list contains the following lists: **FUNCTION**, **INPUT**, **DISPLAY**, **FILE** and **SETUP**. The elements of each list are described in details in Chapters 4 ÷ 8. Only one list can be accessed at a time, the one which name is highlighted. The change of the highlighted line is done after pressing the **<▲>**, **<▼>** (or **<◀>**, **<▶>**) push-buttons.



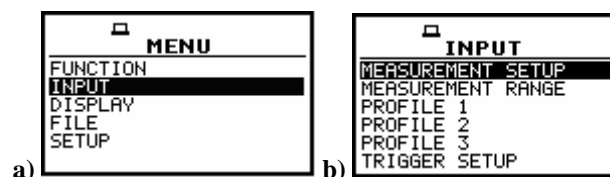
Displays with the highlighted elements of the main list

After double pressing of the **<Menu>** push-button the scrolled list of recently accessed menu items appears on the display. The example of this list is presented below. Such solution enables one to access the most frequently used lists quickly, without the necessity of passing the whole path.



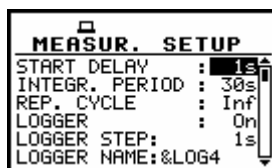
Display with the recently accessed menu items (after double pressing of the **<Menu>** push-button)

After the selection of the desired list (the **<▲>** or **<▼>** push-buttons), the user has to press the **<ENTER>** push-button in order to enter it. After this new sub-lists, positions (elements) or various data specification appear on the display.



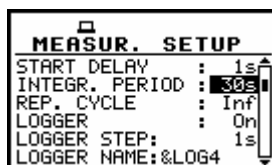
Displays with the main list (a) and the elements of the **INPUT** list (b)

Next pressing of the **<ENTER>** push-button enables one to access mentioned above sub-lists.



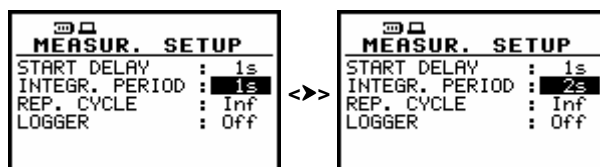
MEASUREMENT SETUP window opened (path: MENU / INPUT / MEASUREMENT SETUP)

The desired position of a list is accessed after pressing the **<▲>** or **<▼>** push-button.



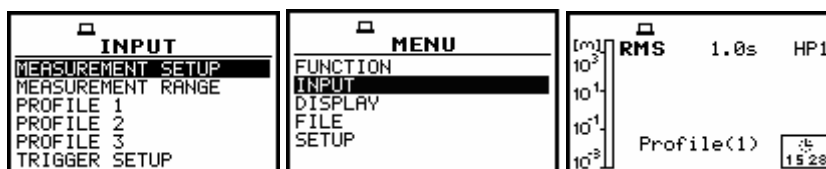
MEASUREMENT SETUP window; the INTEGR. PERIOD position accessible

The change of the value in a selected position is performed by pressing the **<<>** or **<>>** push-buttons.



Displays with the accessed INTEGR. PERIOD position after pressing the <<> or <>> push-buttons, respectively

The **<ENTER>** push-button is used for the confirmation of the selection in a position and for closing the opened sub-list. The sub-list is closed ignoring any changes made in a sub-list by pressing the **<ESC>** push-button.



Displays after three consecutive pressing of the <ESC> push-button from the MEASUR. SETUP sub-list

As it was mentioned, some of the sub-lists end with the windows informing the user about the state of the instrument, available memory, not existing files or loggers, standards fulfilled by the unit, etc. In order to close such window the user has to press the **<ESC>** push-button.



Displays during and after the accessing the FREE SPACE window (path: MENU / FILE / FREE SPACE)

In the instrument, there are also windows, which are used for entering text (i.e. the name of the file).

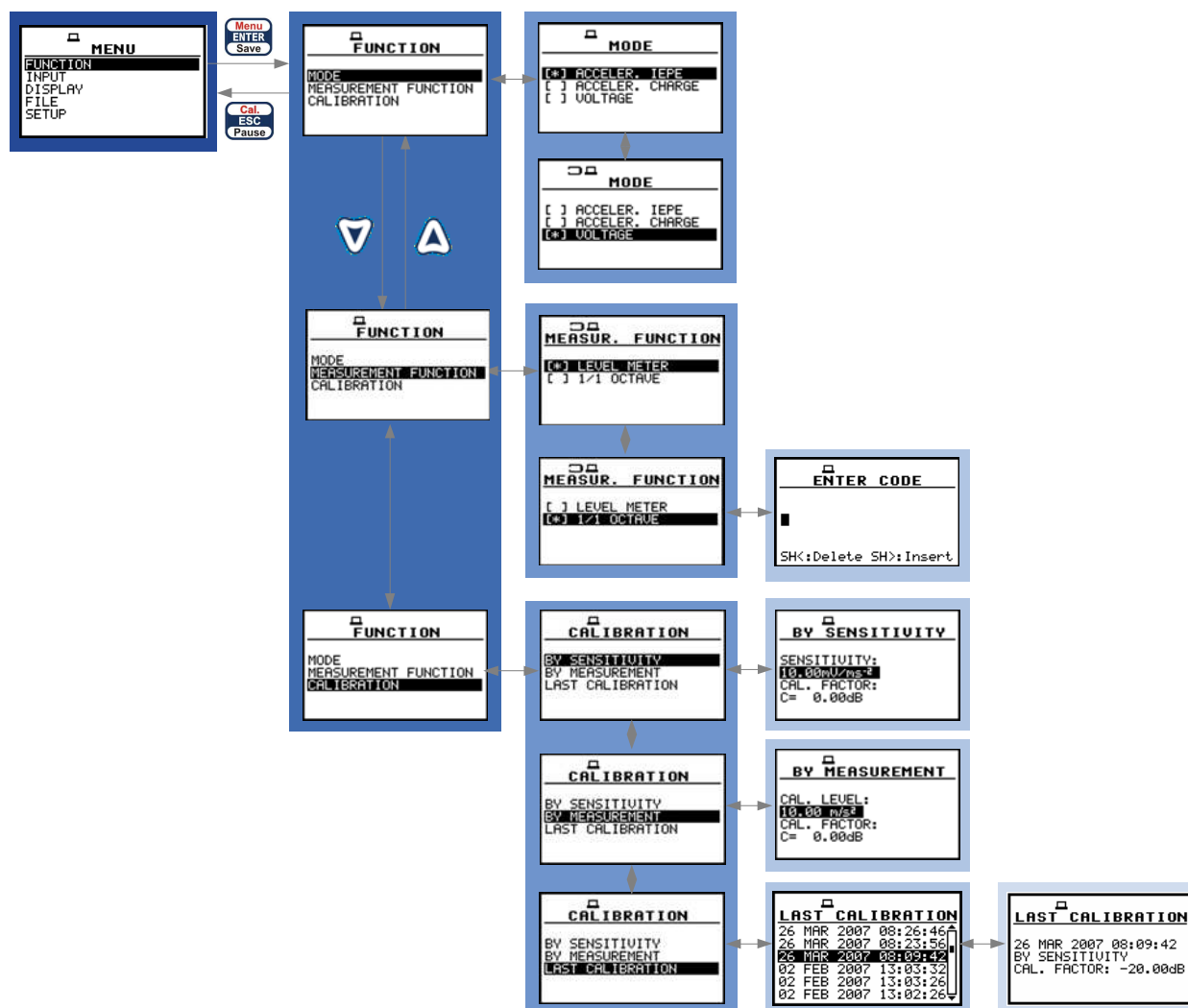


Displays during the edition of the text

Below the structure of the elements of the main list is presented. The more detailed description of the **FUNCTION**, **INPUT**, **DISPLAY**, **FILE** and **SETUP** lists is given in the following chapters.

❖ **FUNCTION** (one of the main lists available after pressing the **<Menu>** push-button)

- **MODE**
 - **ACCELER. IEPE**; available values: [] / [*]
 - **ACCELER. CHARGE**; available values: [] / [*]
 - **VOLTAGE** ; available values: [] / [*]
- **MEASUREMENT FUNCTION** (sub-list)
 - **LEVEL METER**; available values: [] / [*]
 - **1/1 OCTAVE**; available values: [] / [*]
- **CALIBRATION** (sub-list)
 - **BY SENSITIVITY**
 - **SENSITIVITY**; available values of sensitivity in $\text{mV} / \text{ms}^{-2}$ (or mV/g in case of non-metric units):
 - $10 \mu\text{V} / \text{ms}^{-2} \dots 10 \text{V} / \text{ms}^{-2}$
 - **CAL. FACTOR**; it displays calculated calibration factor
 - **BY MEASUREMENT** (sub-list)
 - **CAL. LEVEL**; available values of calibration level:
 - $100 \text{ mm} / \text{s}^2 \dots 1 \text{ km} / \text{s}^2$ in the case of vibration measurements (or $100 \text{ dB} \dots 180 \text{ dB}$ if the reference level was set to $1 \mu\text{m} / \text{s}^2$ and the **LOGARITHM** scale was selected in the **DISPLAY SCALE** sub-list)
 - **CAL. FACTOR**; it displays calculated calibration factor after the measurement
 - **LAST CALIBRATION**; it enables the user to view the last calibration records



Control diagram of the FUNCTION list

❖ **INPUT** (one of the main lists available after pressing the **<Menu>** push-button)➤ **MEASUREMENT SETUP** (sub-list)

- **START DELAY**; available values of the delay before starting the execution of the measurements: **1s .. 60s**
- **INTEGR. PERIOD**; available values of the integration time: **Inf, 1s .. 24h**
- **REP. CYCLE**; available values for the measurement cycles, which has to be repeated: **Inf, 1 .. 1000**
- **LOGGER off/ on**; saving measurement results in instrument's logger memory
 - **LOGGER STEP**; available values of the step with which the measurement results are saved in an instrument's logger: **2 ms .. 1 h**
 - **LOGGER NAME**; editing the name of the logger's file

➤ **MEASUREMENT RANGE**; range of the vibration level measurements

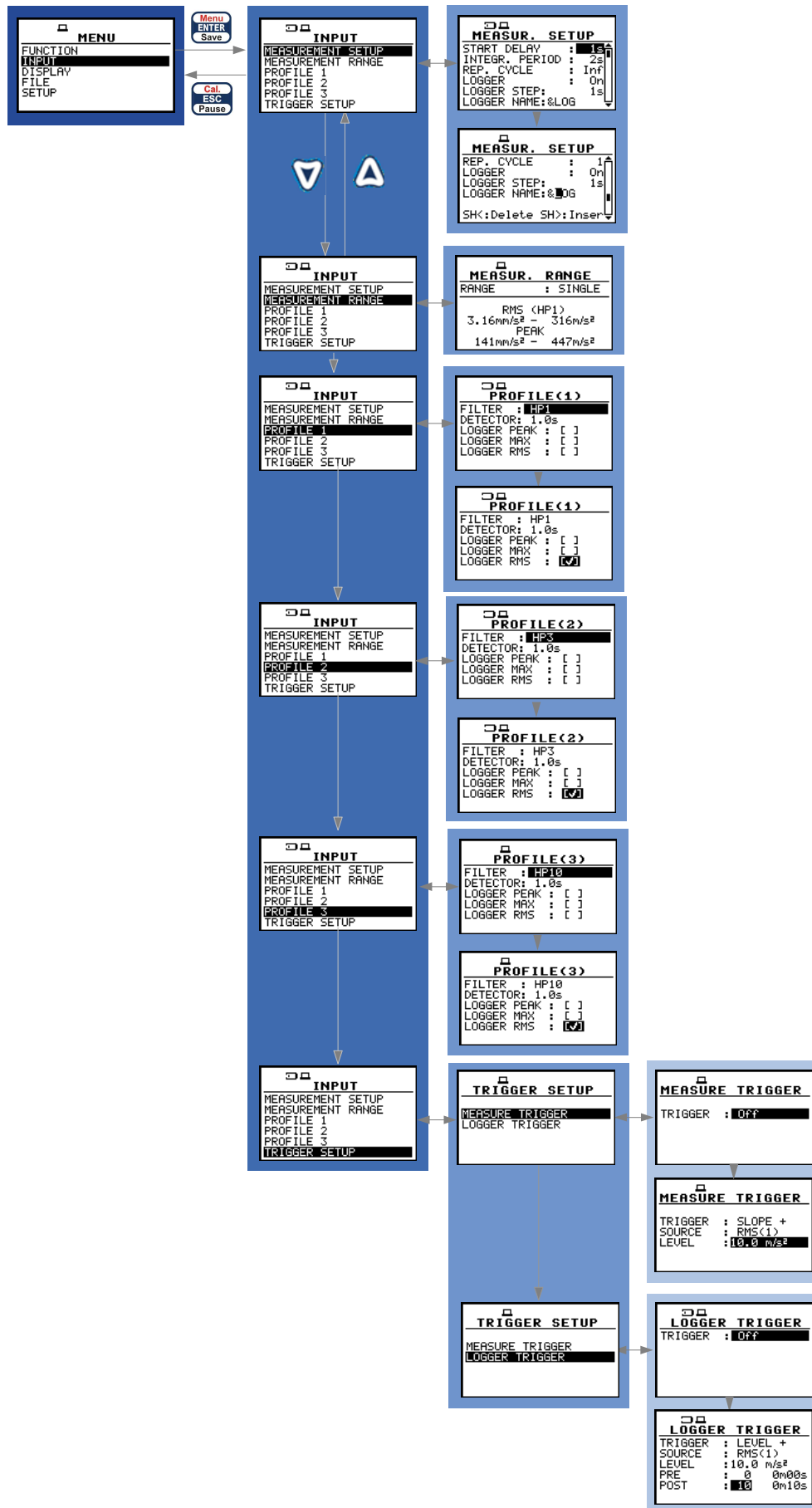
- **SINGLE RMS (HP1)**: **3,16 m/s² - 316 m/s²**, **PEAK 141 mm/s² - 447 m/s²**

➤ **PROFILE 1** (sub-list)

- **FILTER**; available digital weighting filters used in the first profile during the measurements:
 - **HP1, HP3, HP10, Vel1, Vel3, Vel10, VelMF, Di11, Di13, Di10**; available filters in vibration measurements

- **DETECTOR**; available values of the detector time constant used in the first profile:
 - **100ms, 125ms, 200ms, 500ms, 1.0s, 2.0s, 5.0s, 10.0s**; available detector time constants
- **LOGGER**; available measurement results which has to be saved in the instrument's logger from the first profile (setting possible only when **LOGGER** is switched on (*path: MENU / INPUT / MEASUREMENT SETUP / LOGGER On*))
 - **PEAK, MAX, RMS**
- **PROFILE 2** (sub-list)
 - **FILTER**; available digital weighting filters used in the second profile during the measurements:
 - **HP1, HP3, HP10, Vel1, Vel3, Vel10, VelMF, Di1, Di3, Di10**
 - **DETECTOR**; available values of the detector time constant used in the second profile:
 - **100ms, 125ms, 200ms, 500ms, 1.0s, 2.0s, 5.0s, 10.0s**
 - **LOGGER**; available measurement results which has to be saved in the instrument's logger from the second profile
 - **PEAK, MAX, RMS**
- **PROFILE 3** (sub-list)
 - **FILTER**; available digital weighting filters used in the third profile during the measurements:
 - **HP1, HP3, HP10, Vel1, Vel3, Vel10, VelMF, Di1, Di3, Di10**
 - **DETECTOR**; available values of the detector time constant used in the third profile:
 - **100ms, 125ms, 200ms, 500ms, 1.0s, 2.0s, 5.0s, 10.0s**
 - **LOGGER**; available measurement results which has to be saved in the instrument's logger from the third profile
 - **PEAK, MAX, RMS**
- **SPECTRUM** (sub-list); this sub-list appears on the display in the case of **1/1 OCTAVE** measurement function
 - **FILTER** (position); only Z filter is available for **1/1 OCTAVE** analysis
 - **BAND: FULL**
 - **LOGGER** (position); it enables the user to save RMS results from **1/1 OCTAVE** measurement function; available values: [] or [√]
- **RPM** (sub-list) this sub-list appears on the display after activation of **RPM MEASUREMENT** option in **SETUP** list
 - **RPM**; it enables the user to switch on the rotation measurement option, available [] or [√]
 - **PULSE/ROT.**; it enables the user to select the number of pulses / rotations, available values: **1, 2, .. 360**
 - **UNIT**; available values: commonly used **RPM** (revolutions per minute) or **RPS** (revolutions per second)
- **TRIGGER SETUP** (sub-list) (in **LEVEL METER** mode, *path: MENU / FUNCTION / MEASUREMENT FUNCTION / LEVEL METER*)
 - **MEASURE TRIGGER**; it enables the user to switch **on** or **off** the triggering
 - **TRIGGER**; available options: **SLOPE+, SLOPE-, LEVEL+, LEVEL-, GRAD+, EXT.I/O**
 - **SOURCE**; available sources are **RMS (1)**
 - **LEVEL**; available values **1000 μm/s² .. 10.0km/s²**
 - **LOGGER TRIGGER**; it enables the user to switch **on** or **off** the triggering in logger
 - **TRIGGER**; available values **LEVEL+, LEVEL-**
 - **SOURCE: RMS (1)**
 - **LEVEL**; available values **1000 μm/s² .. 10.0km/s²**
 - **PRE**; available values **0 .. 50**, (e.g. for **LOGGER STEP** equal to 100 ms => **0.0 .. 5.0 s**)

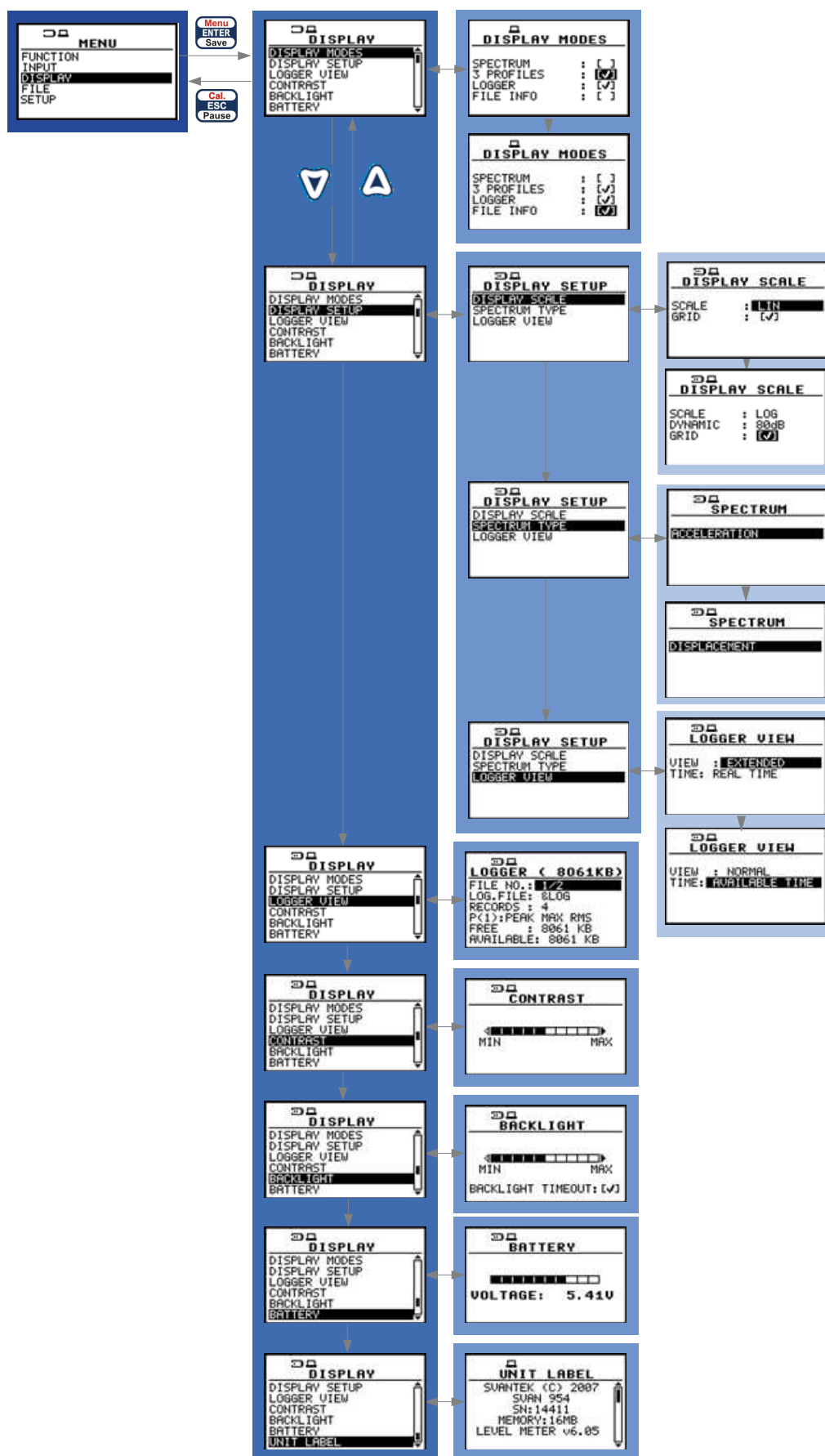
- **POST**; available values **0 .. 200**, (e.g. for **LOGGER STEP** equal to 100 ms => **0.0 .. 20.0 s**)



Control diagram of the INPUT list

- ❖ **DISPLAY** (one of the main lists available after pressing the **<Menu>** push-button)
 - **DISPLAY MODES** (sub-list); it enables the user to activate (**[√]**) or switch off (**[]**) the available modes of result's presentation
 - **SPECTRUM**; available values: **[√]** or **[]**; this position is active only for **1/1 OCTAVE**
 - **3 PROFILES**; available values: **[√]** or **[]**
 - **LOGGER**; available values: **[√]** or **[]**
 - **FILE INFO**; available values: **[√]** or **[]**
 - **DISPLAY SETUP** (sub-list)
 - **DISPLAY SCALE**
 - **SCALE**; available values: **LIN, LOG**
 - **DYNAMIC**; position appears when in **SCALE** position **LOG** option is selected; available values: **10 dB, 20 dB, 30 dB, 40 dB**
 - **GRID**; available values **[]** or **[√]**
 - **SPECTRUM VIEW** (in the case of **1/1 OCTAVE**)
 - **VIEW**; available spectrum views: **NORMAL, FULL, EXTENDED**
 - **TYPE** available types of spectrum views: **AVERAGED, INSTANTANEOUS, MAX, MIN**
 - **MAX**; position is accessible if in **TYPE** position **AVERAGED** or **INSTANTANEOUS** were selected; available values: **[]** or **[√]**
 - **MIN**; position is accessible if in **TYPE** position **AVERAGED** or **INSTANTANEOUS** were selected; available values **[]** or **[√]**
 - **SPECTRUM TYPE**; available spectrum types (in the case of vibration only: **ACCELERATION, VELOCITY, DISPLACEMENT**)
 - **LOGGER VIEW**;
 - **VIEW**; available logger views: **NORMAL, FULL, EXTENDED**
 - **TIME**; available time settings for logger: **REAL TIME, AVAILABLE TIME**
 - **LOGGER VIEW** (sub-list)
 - **FILE NO.**; number of the files in the instrument's logger containing the results of the measurements
 - **LOG. FILE**; name of the viewed logger's file
 - **RECORDS**; number of records in the viewed logger's file
 - **P(1)**; settings for logger in PROFILE 1 (**INPUT** list), available values **PEAK, MAX, RMS**
 - **P(2)**; settings for logger in PROFILE 2 (**INPUT** list), available values **PEAK, MAX, RMS**
 - **P(3)**; settings for logger in PROFILE 3 (**INPUT** list), available values **PEAK, MAX, RMS**
 - **SPECTRUM:1/1**; this position is visible in the case of **1/1 OCTAVE** measurements when the spectra logging option is switched on
 - **FREE**; it informs the user about the size of remaining free memory for logger files
 - **AVAILABLE**; it informs the user about the size of the available memory for logger files
 - **CONTRAST**; it enables the user to select one from twenty one possibilities of the contrast level of the instrument's display
 - **BACKLIGHT TIMEOUT**, it enables the user to select one from twenty one possibilities of the contrast level of the instrument's display and to switch on/off backlight time out; available values **[√]** or **[]**; if **[√]** is chosen it will cause the self-made backlight switching off in the case when the keyboard is not used during the last 30 seconds. If it happened the first pressing of any push-button switches the backlight on

- **BATTERY**; it informs the user about the source of powering of the instrument and current power supply voltage; available sources: **BATTERY, USB POWER**
- **UNIT LABEL**; it informs the user about the type of the instrument, the serial number of the unit, the internal memory size, available measurement modes and it's software version and the standards which the instrument fulfils



Control diagram of the DISPLAY list

❖ **FILE** (one of the main lists available after pressing the **<Menu>** push-button)➤ **SAVE: [name of the file];** available values: **SAVE NEXT, SAVE**

- **SAVE NEXT** option simplifies the way of saving the file, the file name is generated automatically, basing on the date set in the instrument or on the last name given for the file, next result is saved as a file with the name increased by one (e.g. 11JAN0, 11JAN1, 11JAN2)
- In the **SAVE** option the name of the file can be fully edited in the **FILE NAME** window after pressing the **<▲>** push-button. The cursor is moved with **<<>**, **<>>** push-buttons. The current character is changed with **<Shift>+<▲>**, **<Shift>+<▼>** push-buttons. The combination **<Shift>+<<>** deletes the character currently pointed by the cursor
- The combination **<Shift>+<>>** inserts a new character in the position of the cursor
- **No results!** text will be displayed if the instrument did not perform any measurement in prior to choosing the **SAVE** option

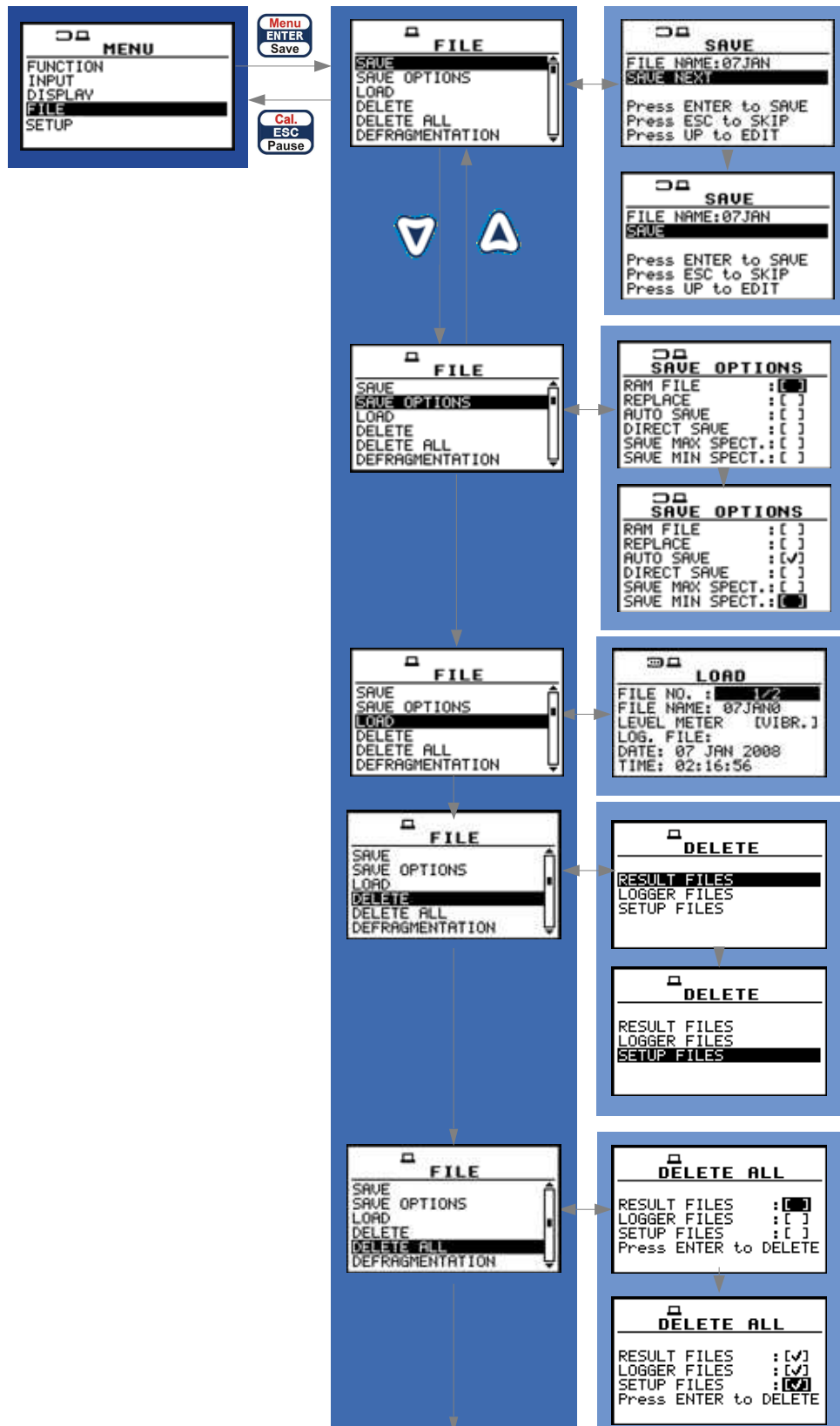
➤ **SAVE OPTIONS** (sub-list)

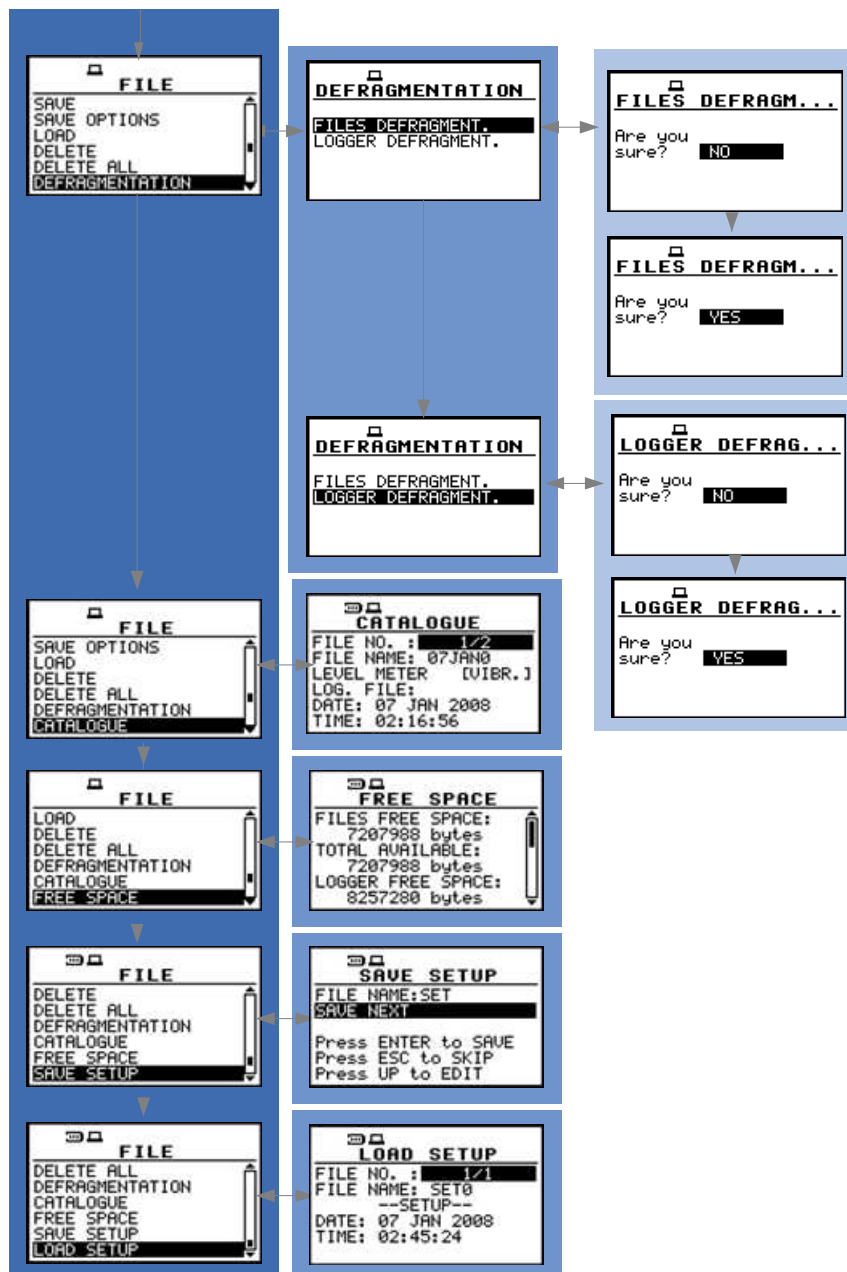
- **RAM FILE;** gives the user a possibility to save data in RAM file. Each time the data are saved, the previous file is overwritten, available values **[√]** or **[]**
- **REPLACE;** it enables the user to replace the existing files in the instrument's memory by the files having the same name; available values: **[√]** or **[]**
- **AUTO SAVE;** it enables the user to save the measurement results in the instrument's memory automatically without entering **SAVE** or **SAVE NEXT** position (in order to perform this operation the **INT. PERIOD** should be set to at least **10 s**); available values: **[√]** or **[]**
- **DIRECT SAVE;** this option enables saving the results with the automatically incremented name after pressing the **<ENTER>** and **<Alt>** push-buttons together
- **SAVE MAX SPECT.;** it enables the user to save the maximal values of the spectrum occurred during the performed analysis; available values: **[√]** or **[]**
- **SAVE MIN SPECT.;** it enables the user to save the minimal values of the spectrum occurred during the performed analysis; available values: **[√]** or **[]**

➤ **LOAD;** enables one to load to the working space of the instrument's memory the measurement results saved in a file; the **NO FILES** text is displayed in the case when the instrument's memory is empty➤ **DELETE;** it enables the user to verify the list of files in the memory and to delete the selected one from **RESULT FILES, LOGGER FILES, SETUP FILES** lists; the **NO FILES** text is displayed in the case when the instrument's memory is empty➤ **DELETE ALL;** it enables the user to delete all files saved in the instrument's memory; user can choose to delete either **RESULT FILES, LOGGER FILES** or **SETUP FILES**; the confirmation is required before the erasing of all files: „**Are you sure?**”➤ **DEFRAGMENT;**(sub list)

- **FILES DEFRAGMENT.;** it enables the user to recover the memory, which was previously used by the deleted files; the confirmation is required before the execution of this operation: „**Are you sure?**”
- **LOGGER DEFRAGMENT.;** it enables the user to recover the memory, which was previously used by the deleted logger files; the confirmation is required before the execution of this operation: „**Are you sure?**”
- The text **DEFRAGMENTATION .. unnecessary PRESS ANY KEY** is displayed when the instrument's memory was empty before trial of the defragmentation or when there were no deleted files

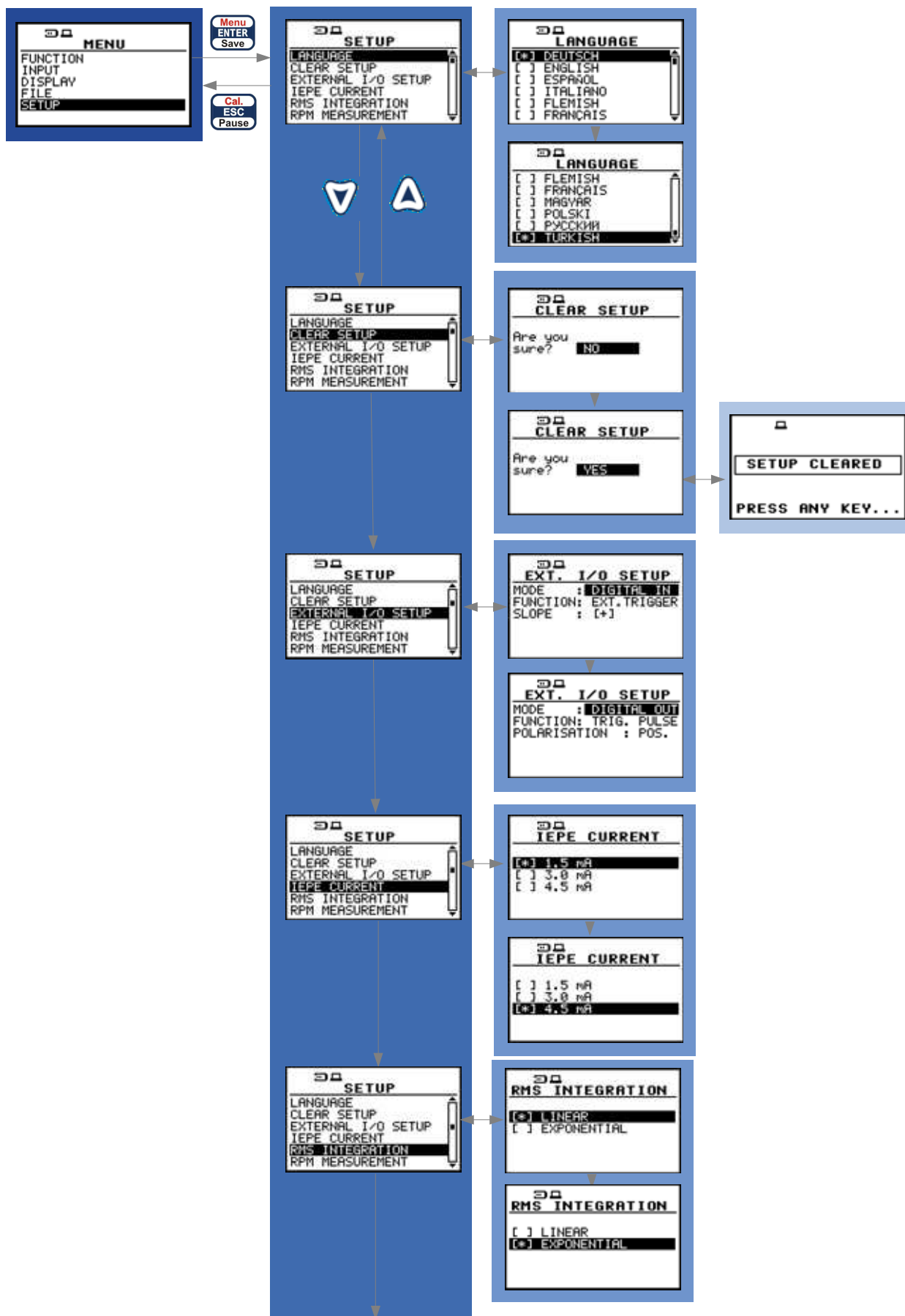
- **CATALOGUE**; it enables the user to verify the list of files in the memory; the **NO FILES** text is displayed in the case when the instrument's memory is empty
- **FREE SPACE**; it informs the user about the size of the available memory for saving the measurement results in the file (**FILES FREE SPACE**), the **TOTAL AVAILABLE** bytes of the memory (the number displayed in the **FILES FREE SPACE** increased by the memory which was previously used by the deleting files), the next two numbers given in the **FREE SPACE** window, named **LOGGER FREE SPACE** and **LOGGER AVAILABLE** characterize the logger files memory in the same way
- **SAVE SETUP**; saves the current settings of the instrument; with <<>, <>> push-buttons one can choose between two modes: **SAVE NEXT** and **SAVE**. These are similar to the options available while saving result files. The **SAVE** mode enables to choose the file name manually. In the **SAVE NEXT** mode the file name will be set automatically
- **LOAD SETUP**; it enables the user to verify the list of setup files in the memory and to load the previously saved settings of the instrument; the **NO FILES** text is displayed in the case when there is no setup files

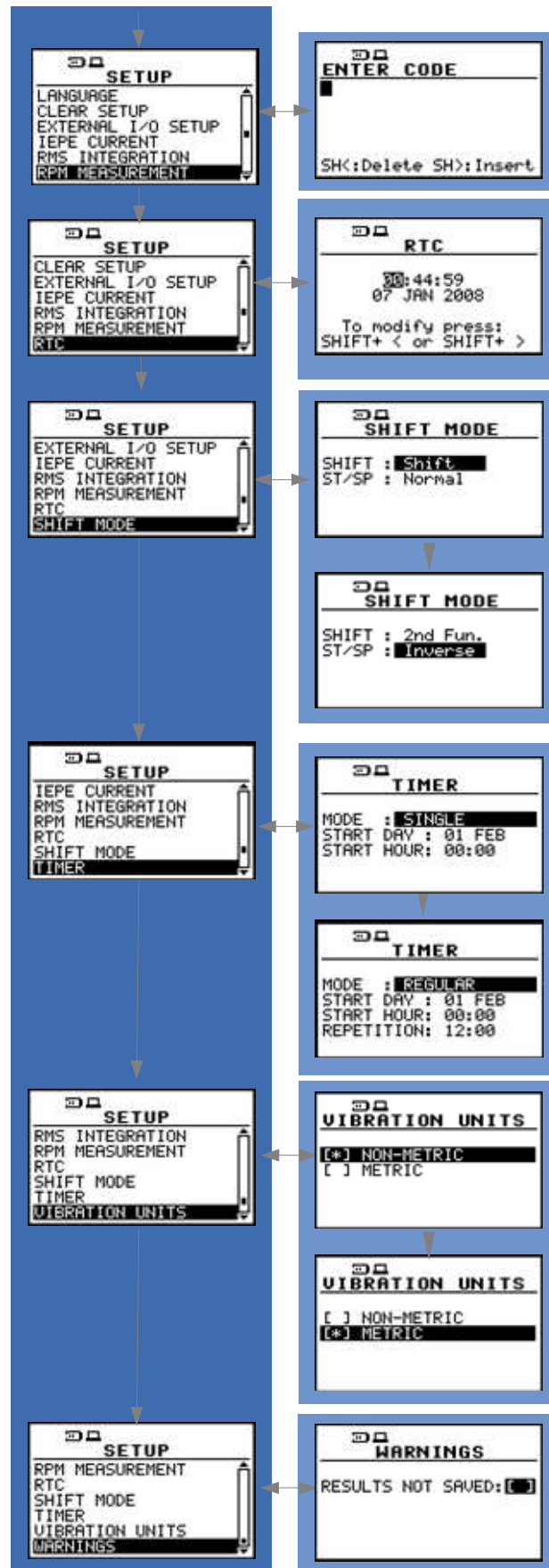




Control diagram of the FILE list

- ❖ **SETUP** (one of the main lists available after pressing the **<Menu>** push-button)
 - **LANGUAGE**; it allow the user to choose the instrument's interface language; available values: **GERMAN, ENGLISH, SPANISH, ITALIAN, FLEMISH, FRENCH, HUNGARIAN, POLISH, RUSSIAN, TURKISH**
 - **CLEAR SETUP**; it enables the user to return to the factory settings of the instrument; the confirmation has to be done before the execution of this function
 - **Are you sure?**
 - **EXTERNAL I/O SETUP**
 - **MODE**;
 - **DIGITAL IN**;
 - **FUNCTION: EXT. TRIGGER**
 - **SLOPE**; available values **[+]/[-]**
 - **DIGITAL OUT**;
 - FUNCTION**:
 - **TRIG. PULSE (POLARISATION: POS. / NEG.)**
 - **IEPE CURRENT**; it enables the user to select current IEPE supply, available values **1.5 mA, 3 mA** or **4.5 mA**
 - **RMS INTEGRATION**
 - **RMS INTEGRATION**; available values of detector's type: **LINEAR** or **EXPONENTIAL**
 - **RPM MEASUREMENT**, it enables the user to activate rotation measurement option; after the activation of this option the RPM position appears in the INPUT list
 - **RTC**
 - **RTC**; it enables the user to set the internal real time clock and date of the instrument
 - **SHIFT MODE**
 - **SHIFT**; available modes of the **<Shift>** push-button: **Shift** or **2nd Fun.**
 - **ST/SP**; available modes of the **<Start / Stop>** push-button: **Normal** or **Inverse**
 - **TIMER** (sub-list); it enables the user to set time of the self switching on of the instrument
 - **MODE**; specifies the mode of automatic power on; available values:
 - **Off**
 - **SINGLE**; (**START DAY**; specifies the date of automatic power on; **START HOUR**; specifies the time of automatic power on)
 - **REGULAR**; (**START DAY**; specifies the date of automatic power on; **START HOUR**; specifies the time of automatic power on, **REPETITION**; specifies time after which next automatic measurement will be executed)
 - **VIBRATION UNITS** (sub-list which has the meaning only for vibration measurements)
 - **METRIC** (e.g. **m/s², m/s, m**) (position); available values: **[] / [*]**
 - **NON-METRIC** (e.g. **g, ips, mil**) (position); available values: **[] / [*]**
 - **WARNINGS**
 - **RESULTS NOT SAVED**; it enables the user to switch on or off the warning that the results of the measurement were not saved in the memory; available values: **[√]** or **[]**





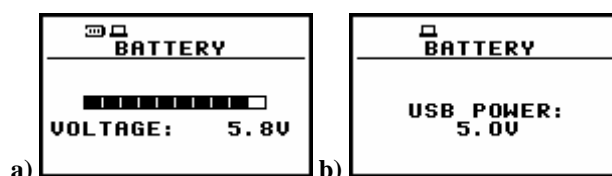
Control diagram of the SETUP list

3.2 Powering of the instrument

The **SVAN 954** can be powered by one of the following sources:

- Four AA standard **batteries**. In the case of alkaline type, fully charged set can operate more than 12 h (6.0 V / 1.6 Ah). Instead of the ordinary, four AA rechargeable **batteries** can be used (for charging them the separate charger is required). In this case, using the NiMH type, the operation time can be increased up to 16 h (4.8 V / 2.6 Ah)
- **USB** interface – 500 mA HUB

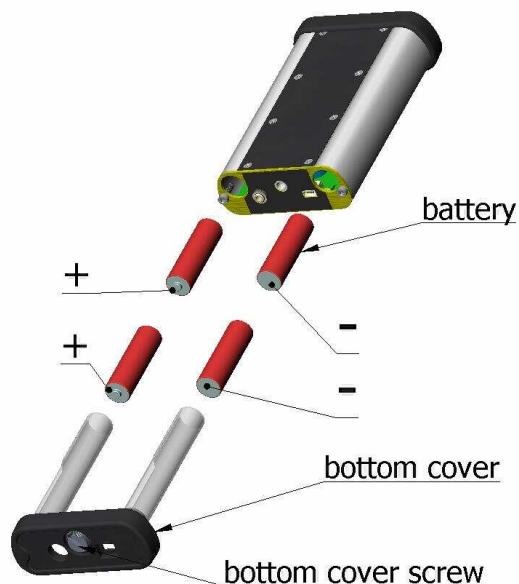
The **BATTERY** window (path: *MENU / DISPLAY / BATTERY*) looks differently, depending on the current powering source



BATTERY windows with different sources powering the instrument: internal batteries (a) and USB power (b)

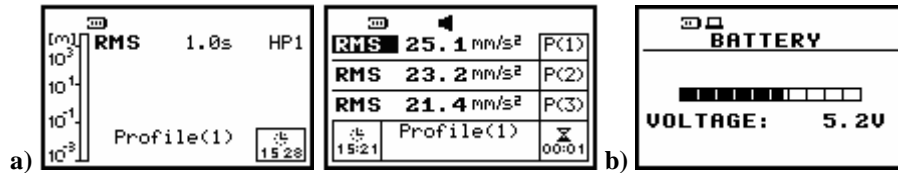
When the instrument is powered from batteries, the “**Battery**” icon is presented on the top of the display. When voltage of the batteries is too low, the icon is flashing and during attempt of switching on the **LOW BATTERY** message occurs on the display for 2 seconds and the instrument switches off by itself. To change the batteries the user has to:

- switch off the instrument,
- unscrew the black bottom cover of the instrument (e.g. using a coin),
- change the batteries
- reassemble the instrument

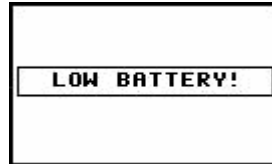


Battery exchange

The fully charged battery ensures more than 12 hours of the continuous work of the instrument (with the backlight off). The operation time is decreased about 20 % with the backlight switched on. The battery condition can be checked by means of the **POWER SUPPLY** function. It is also presented continuously on the display by means of the “**Battery**” icon.

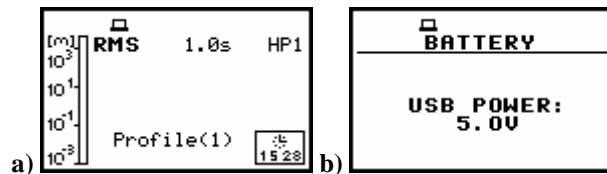


Displays with the "Battery" icon (a) and in the BATTERY window (path: MENU / DISPLAY / BATTERY) (b)



Display with LOW BATTERY message

When there is a connection to the USB interface (USB Device socket is connected by means of the cable to a PC), the "Computer" icon is presented on the top of the display and in the BATTERY window, there is the USB POWER 5.0 V message.

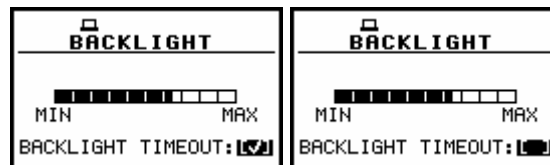


Displays with the "Computer" icon (a) and in the BATTERY window (b)



Notice: In the case when "Battery" icon is flashing, it is strongly recommended to use as soon as possible the USB interface. In the other case the instrument after a while will be switched off by itself!

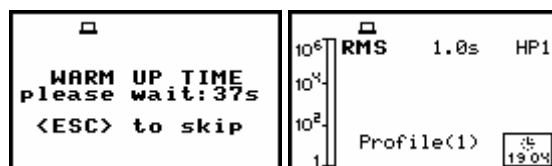
The backlight of the display can be activated by means of the <<> + <>> push-buttons pressed together. For saving the power of the battery, in the normal "day-light" operation it is recommended to **keep the backlight off**. The user can set the **BACKLIGHT TIMEOUT** (path: MENU / DISPLAY / SCREEN SETUP / BACKLIGHT TIMEOUT), which will cause the self-made backlight switching off in the case when the keyboard is not used during the last 30 seconds. If it happened the first pressing of any push-button switches the backlight on.



BACKLIGHT windows; BACKLIGHT TIMEOUT switched on and off

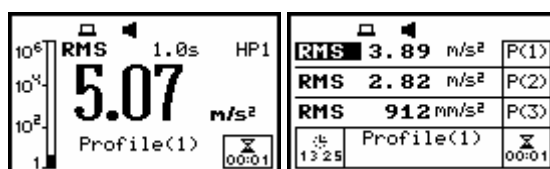
3.3 Initial setup of the instrument

The instrument passes the self-test after switching on (in this time the producer and the name of the instrument is displayed on the display) and then it enters the vibration mode. The default display mode for result's presentation is one profile.



Displays after switching on the instrument

To start the measurements the user has to press the **<Start / Stop>** push-button. The result of the measurement is displayed with the unit of the measurement in so-called one profile mode. On the left side of the display, the analogue-like indicator is presented. On the bottom of the display, there is a profile from which comes the measurement (**Profile (1)**, **Profile (2)** or **Profile (3)**). On the top of the display (under the icons line) there are the following data: the function name (**RMS**, **VDV**, **OVL**, **PEAK**, **MAX** (or **MTVV**), the detector time constant (**100 ms**, **125 ms**, .. **10.0 s**, .. - when the detector is exponential or **Lin** when the detector is linear) and the weighted filter (**HP1**, **HP3**, **HP10**, **Vel1**, **Vel3**, **Vel10**, **VelMF**, **Dil1**, **Dil3**, **Dil10**). The real time clock / time of the measurement are presented on the right side of the bottom.



Displays in one profile (a) and 3 PROFILES display mode (b) with the VLM measurement results

The results of the measurements can be presented in one profile, in **3 PROFILES** and in **LOGGER** (these are the available display modes set by the producer; cf. *path: MENU / DISPLAY / DISPLAY MODES*). It is also possible to activate **FILE INFO** display mode (*path: MENU / DISPLAY / DISPLAY MODES / FILE INFO*). It is possible to change the display mode pressing the **<▲>** or **<▼>** push-buttons together with the **<Shift>** one. In so-called **3 PROFILES** display mode the results of the measurement from all profiles are displayed simultaneously. The units, weighted filter and detector time constant are also shown. The default settings (set up by the producer) for the profiles are as follows:

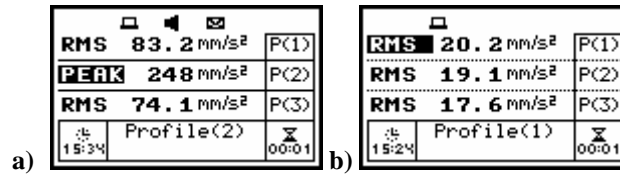
- PROFILE 1** - **HP1** weighting filter (**FILTER: HP1**); **1.0s** type of the RMS detector (**DETECTOR: 1.0s**), the results of the measurements are not stored in the logger's file (**LOGGER PEAK: []**, **LOGGER MAX: []**, **LOGGER RMS: []**);
- PROFILE 2** - **HP3** weighting filter (**FILTER: HP3**), **1.0s** type of the RMS detector (**DETECTOR: 1.0s**), the results of the measurements are not stored in the logger's file (**LOGGER PEAK: []**, **LOGGER MAX: []**, **LOGGER RMS: []**);
- PROFILE 3** - **HP10** weighting filter (**FILTER: HP10**), **1.0s** type of the RMS detector (**DETECTOR: 1.0s**), the results of the measurements are not stored in the logger's file (**LOGGER PEAK: []**, **LOGGER MAX: []**, **LOGGER RMS: []**);

PROFILE(1)	PROFILE(2)	PROFILE(3)
FILTER : HP1	FILTER : HP3	FILTER : HP10
DETECTOR: 1.0s	DETECTOR: 1.0s	DETECTOR: 1.0s
LOGGER PEAK : []	LOGGER PEAK : []	LOGGER PEAK : []
LOGGER MAX : []	LOGGER MAX : []	LOGGER MAX : []
LOGGER RMS : []	LOGGER RMS : []	LOGGER RMS : []

Default settings for the profiles

The user can change all mentioned above settings using **PROFILE x** sub-list of the **INPUT** list. The instrument remembers all changes. The return to the default settings (set up by the producer) is possible after the execution of the **CLEAR SETUP** position available in the **SETUP** list.

The instrument can be used not only as the vibration level meter (**VLM**) but also as **1/1 OCTAVE** analyser. In order to distinguish the **LEVEL METER** function from the **1/1 OCTAVE** in **3 PROFILES** display mode, two continuous horizontal lines in **1/1 OCTAVE** analysis are dotted.

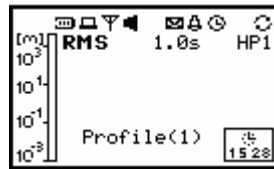


Displays in **3 PROFILES** display mode with the measurements results, which are from **LEVEL METER** mode (continuous lines) (b) and with the results, which are not from the **1/1 OCTAVE** (dotted lines)





Notice: See next chapters for more details concerning different settings.

More data about the instrument's state are given by means of the icon's row visible in the top of the display ("**Battery**", "**Computer**", "**Antenna**" ("**Tree**"), "**Loudspeaker**", "**Envelope**", "**Bell**", "**Timer**" and "**Arrows**"). The meanings of the icons are as follows:



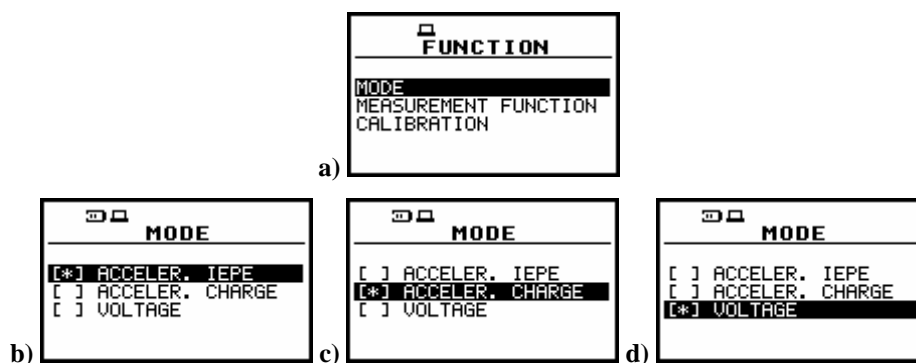
Display with all available icons

ICON	DESCRIPTION
	" Battery " is displayed when the instrument is powered from the batteries. Icon corresponds to the state of the batteries (three, two, one or none vertical bars inside of the icon). When voltage of the batteries is too low, the icon is flashing.
	" Computer " is displayed when there is a USB connection with the PC; the icon is flashing during RT (Real Time) transmission.
	" Antenna " (" Tree ") icon is displayed in a flashing mode together with the " Loudspeaker " when the measurement is started, the trigger is switched on and the level of the signal is too low to start the registration.
	" Loudspeaker " icon is displayed when the measurement is started and executed.
	" Envelope " icon is presented when the current measurement results are logged in the instrument's logger file. Together with this icon, the " Loudspeaker " icon is always displayed. In the case when the " Envelope " icon starts flashing, it means that the whole logger memory of the instrument is filled out. The new measurement result is not saved in it. If the user wants to save these results, he has to DELETE some logger files and execute LOGGER DEFRAGMENTATION (path: FILE / DEFRAGMENTATION / LOGGER DEFRAGMENTATION).
	" Bell " is displayed when overload has taken place during the last measurement cycle (the icon is displayed also after the measurement and after loading the file with

	the overloaded results)
	“ Timer ” icon flashing means that the instrument’s Timer is switched on and the instrument is waiting for the set time of the measurement. When the Timer started the measurement, the icon is presented without flashing.
	“ Arrows ” are flashing after pressing the <Shift> or <Alt> push-button when the 2nd Fun is selected in the SHIFT MODE (path: <i>SETUP / SHIFT MODE / SHIFT / 2nd FUN</i>), that means other push-buttons have second meaning (i.e. after pressing the <Shift> the meaning of <ENTER> push-button is <ESC>).

3.4 Selection of the working mode

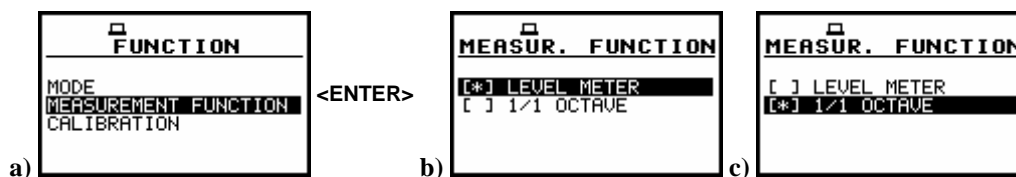
The device can work in three modes – **ACCELERATION IEPE**, **ACCELERATION CHARGE** and **VOLTAGE**. A mode is selected by placing the asterisk in the line with the mode’s name. The position of the character can be changed using the **<▲>**, **<▼>** push-buttons. After placing the character in the line with the option’s name the user has to press the **<ENTER>** push-button.



Displays with the **FUNCTION** list opened, **MODE** selected (a) and **MODE** sub-list opened with **ACCELERATION IEPE** (b), **ACCELERATION CHARGE** and **VOLTAGE** (c) mode selected

3.5 Activation of optional functions

The **1/1 OCTAVE**, time history data **LOGGER** and **RPM** are the optional functions broadening the applications of the instrument. Some of the additional functions are specified in the **MEASUR. FUNCTION** (path: *MENU / FUNCTION*) others – in the other lists.



Displays with the **FUNCTION** list opened, **MEASUREMENT FUNCTION** selected (a) and **MEASUR. FUNCTION** sub-list opened with all available options (b), (c)

A function is selected by placing the special character in the line with the function’s name. The position of the character can be changed using the **<▲>**, **<▼>** push-buttons. After placing the character in the line with the function’s name the user has to press the **<ENTER>** push-button. The window for entering the access code to a function is opened in the first essay of its execution (after pressing the **<ENTER>** push-button) in the case when a function was not purchased together with the instrument.

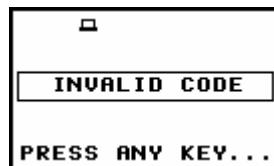


Displays during the entering of the access code to a function



Notice: The number of the attempts for the access code entering is limited. After three unsuccessful essays, the possibility is blocked.

The introduction of the access code is performed in the same way as the edition of the other text variables using the <<>, <>> push-buttons (the selection of the character's position), the <Shift> and <>> push-buttons (the **Insert** function), the <Shift> and <<> push-buttons (the **Delete** function) and the <▲>, <▼> push-buttons (the codes of characters). The verification is made after pressing the <ENTER> push-button. If the entered code was wrong, the message is displayed and the instrument waits for the reaction of the user. After pressing the <ENTER> or the <ESC> push-button the information that the function is not available is displayed and the instrument once more waits for the reaction of the user.



Display after the unsuccessful verification of the access code

After pressing the <ENTER> or the <ESC> push-button the instrument returns to the **FUNCTION** list displaying the list of the functions implemented in the unit (cf. the first Figure in this chapter). After successful verification of the access code, the windows described above are no more displayed. Once activated function is always available.

3.6 Memory organisation

All available measurement results can be stored in the internal FLASH type memory of the instrument. The internal memory of the instrument is divided into two separate parts. One part is dedicated for saving the **result** and **setup** file, the second part is used for saving the logger files and its size is equal. To save a **result file** the user has to choose one of the available options: **SAVE NEXT** (path: MENU / FILE / SAVE or pressing <ENTER> and <Alt> together), **SAVE** (path: MENU / FILE / SAVE or pressing <ENTER> and <Alt> together), **AUTO SAVE** (path: MENU / FILE / SAVE OPTIONS) or **DIRECT SAVE** (path: MENU / FILE / SAVE OPTIONS). To save a setup file the user has to choose **SAVE SETUP** option from the **FILE** list. The **logger files** are created automatically (the usage of the **SAVE** is not required).



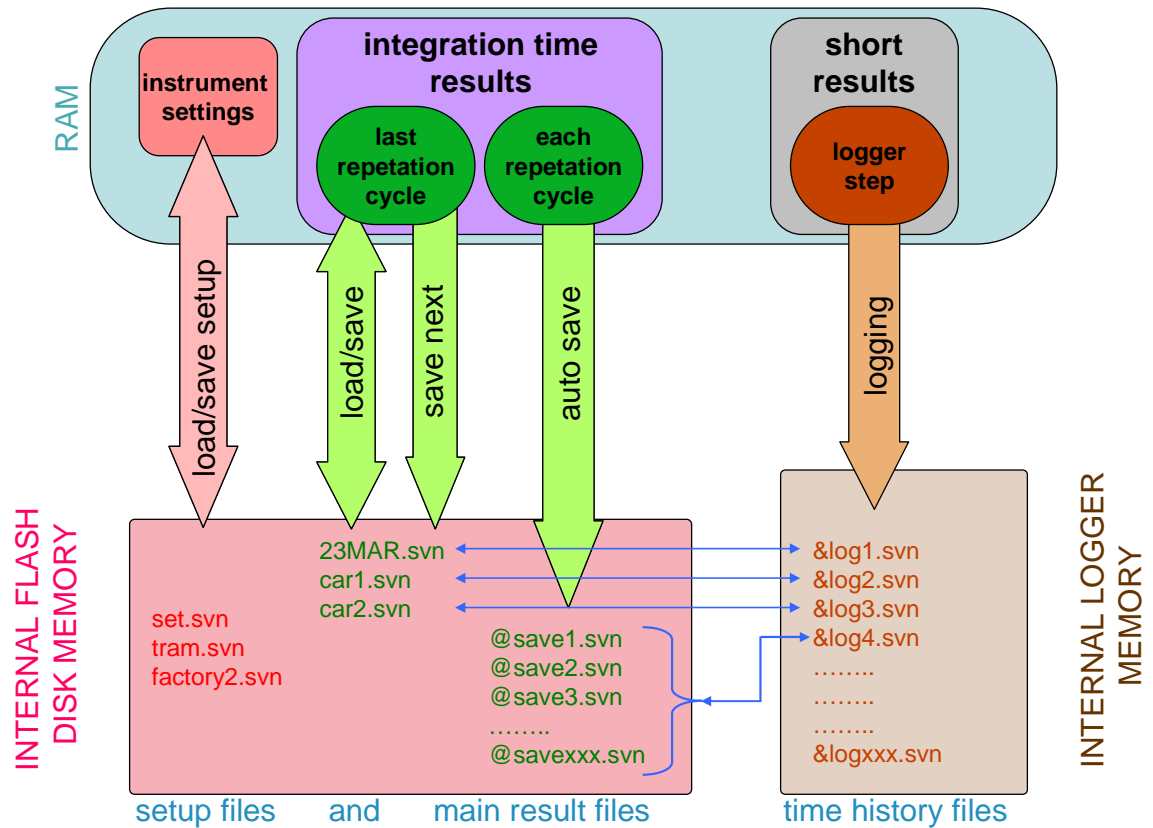
memory.

Notice: The instrument's logger memory is independent from the results and setup



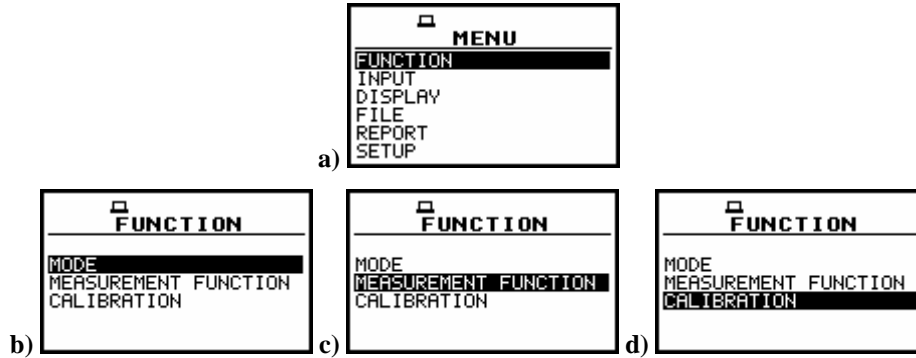
Notice: The **logger** files are created automatically (the usage of the **SAVE** is not required).

MEMORY ORGANIZATION OF THE SVAN 954 INSTRUMENT



4 FUNCTIONS OF THE INSTRUMENT – FUNCTION

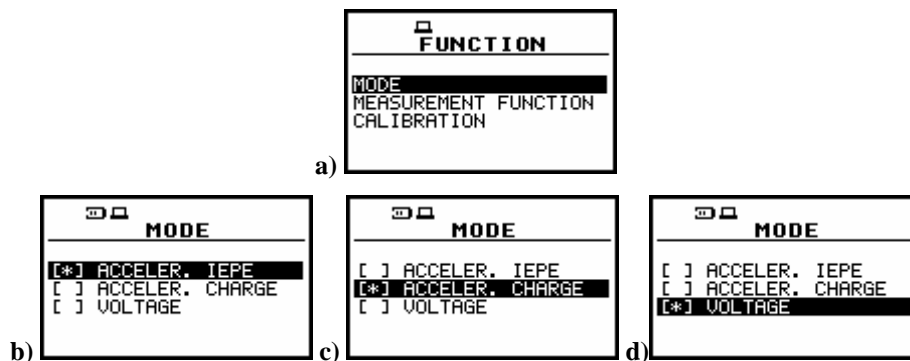
In order to select the **FUNCTION** list one has to press the **<Menu>** push-button, select by means of the **<▲>**, **<▼>** (or **<◀>**, **<▶>**) push-buttons the **FUNCTION** text and press the **<ENTER>**. The **FUNCTION** list contains three elements: **MODE**, **MEASUREMENT FUNCTION** and **CALIBRATION**. The list is closed and the instrument returns to the presentation mode after pressing the **<ESC>** push-button.



Displays with the main list; the **FUNCTION** text selected (a) and the **FUNCTION** list opened; the **MODE** selected (b) the **MEASUREMENT FUNCTION** selected (c) and the **CALIBRATION** selected (d)

4.1 Selecting the mode of the instrument - MODE

In order to select the required mode the user has to enter the **MODE** position in the **FUNCTION** sub-list using **<▲>**, **<▼>** push-buttons and press the **<ENTER>** one. The available modes are **ACCELER. IEPE**, **ACCELER. CHARGE** and **VOLTAGE**. The first mode is dedicated for measurements performed with **IEPE** transducer (**ACCELER. IEPE**). For measurements made with charge transducer the second mode should be selected (**ACCELER. CHARGE**). The **VOLTAGE** mode is dedicated for the measurements made with the voltage connected directly to input of the instrument (e.g. for laboratory applications). A mode is selected by placing the asterisk in the line with the mode's name. The position of the character can be changed using the **<▲>**, **<▼>** push-buttons. After placing the asterisk in the line with the option's name the user has to press the **<ENTER>** push-button.



FUNCTION list opened; **MODE** selected (a) and **MODE** sub-list opened with all available modes (b), (c), (d)

4.2 Measurement functions of the instrument - MEASUREMENT FUNCTION

In order to select the required function the user has to enter the **MEASUREMENT FUNCTION** sub-list (to select the **MEASUREMENT FUNCTION** text using the **<▲>**, **<▼>** or **<◀>**, **<▶>** push-buttons and press the **<ENTER>** one, when this text is highlighted).

After entering the **MEASUREMENT FUNCTION** sub-list, the set of the available functions appears on the display (**LEVEL METER**, **1/1 OCTAVE**). The special character marks currently active function.



MEASUREMENT FUNCTION windows opened (a) and the activation of the optional function (b)

The main function of the instrument is the **measurement of vibration level**. The **1/1 OCTAVE** analysis function is optional and it broadens the applications of the instrument. It can be supported by the producer or purchased later. The producer activates the **1/1 OCTAVE** analysis function bought with the instrument. The user should activate by himself the function purchased later.

The **vibration LEVEL METER (VLM) mode** provides the user with the functions of the functions of **VLM** meeting the ISO:10816 standard.

The **required function** is selected by placing the special character in the line with the **proper** text. The position of the character can be changed using the <▲>, <▼> (or <◀>, <▶>) push-buttons. After placing the character in the line with the function's name the user has to press the <ENTER> push-button, which closes the **MEASUR. FUNCTION** sub-list.

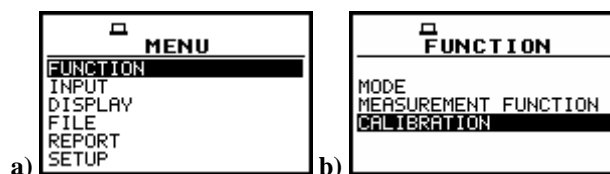


Notice: It is not possible to change the mode and measurement function during the measurements. The instrument displays in this case for about 3 seconds the text: **"MEASUREMENT IN PROGRESS"**. In order to change the mode of the instrument the measurement must be finished!

4.3 Instrument's calibration - CALIBRATION

In order to select a calibration function the user has to enter the **CALIBRATION** sub-list (to select the **CALIBRATION** text using the <▲>, <▼> or <◀>, <▶> push-buttons and press the <ENTER> one, when this text is highlighted).

The **CALIBRATION** sub-list consists of four positions: **BY SENSITIVITY**, **BY MEASUREMENT**, which are used to perform the calibration and **LAST CALIBRATION**, which contains the list of the performed in the past the calibration measurements.



Displays with the main list; the **FUNCTION** text selected (a), the **FUNCTION** list opened, the **CALIBRATION** text selected (b)



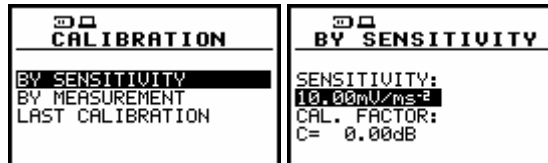
Note: The calibration level and the calibration result is expressed in different units depending on the settings of the instrument. The metric or non-metric vibration units are set in the **VIBRATION UNITS** (path: **MENU / SETUP / VIBRATION UNITS**). Additionally, the linear or

logarithmic units are set in the **DISPLAY SCALE** (path: MENU / DISPLAY / DISPLAY SETUP / DISPLAY SCALE).

4.3.1 Calibration BY SENSITIVITY

The calibration by the accelerometer's sensitivity introduction can be conducted in the following way:

1. Select this type of the calibration (highlight the **BY SENSITIVITY** text) from the **CALIBRATION** sub-list and press the <ENTER> push-button.



Displays with the selected calibration mode and after entering this mode



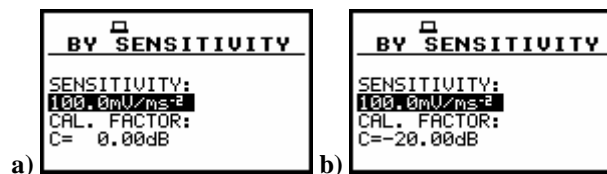
Notice: It is not possible to calibrate the instrument during the execution of the measurements. It is possible to open different lists and sub-lists but the positions in these lists are not highlighted and so - not accessible. The “Loudspeaker” icon indicates that the instrument is in the measurement process. In order to change the sensitivity the measurement must be finished!



Displays with the SENSITIVITY positions (path: MENU / FUNCTION / CALIBRATION / BY SENSITIVITY) not accessible

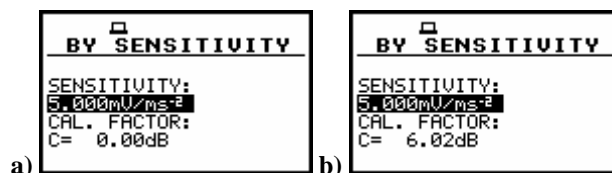
2. Set the sensitivity of the accelerometer taken from its calibration certificate using the <<>, <>> push-buttons and then press the <ENTER> one.

The calibration factor is calculated, after pressing the <ENTER> push-button, in the relation to $10.0 \text{ mV} / \text{ms}^{-2}$. In order to avoid the calculation the user has to leave the **CALIBRATION** without pressing <ENTER>. For the sensitivity of the accelerometer higher than $10.0 \text{ mV} / \text{ms}^{-2}$ the calibration factor is negative.



Displays during setting the sensitivity higher than $10.0 \text{ mV} / \text{ms}^{-2}$ (a) and after pressing the <ENTER> push-button with the calibration factor calculated (b)

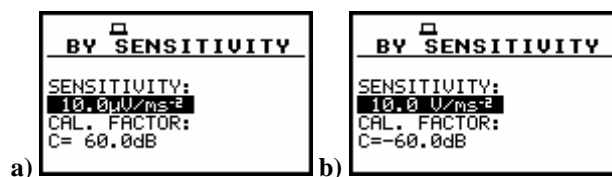
For the sensitivity of the accelerometer lower than $10.0 \text{ mV} / \text{ms}^{-2}$ the calibration factor is positive.



Displays during setting the sensitivity lower than 10.0 mV / ms⁻² (a) and after pressing the <ENTER> push-button with the calibration factor calculated (b)

The lowest applicable value of the sensitivity to be introduced is equal to 10.0 $\mu\text{V} / \text{ms}^{-2}$ (it conforms to the calibration factor equal to 60.0 dB) and the highest one – 10.0 V / ms⁻² (calibration factor equal to -60.0 dB).

In order to return to the **CALIBRATION** sub-list the user has to press the <ESC> push-button.



Displays with the lowest possible sensitivity and the highest calibration factor (a) and the highest sensitivity and the lowest calibration factor (b)

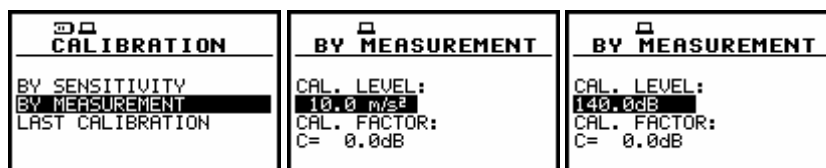


Note: The calibration factor is always added to the results (in dB) in the **LEVEL METER** mode (LM) and 1/1 **OCTAVE** analysis mode.

4.3.2 The calibration BY MEASUREMENT

The calibration by measurements can be conducted in the following way:

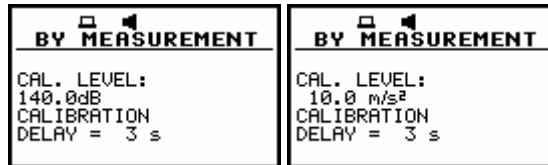
1. Select the calibration by measurement (highlight the **BY MEASUREMENT** text) from the **CALIBRATION** sub-list and press the <ENTER> push-button.



Displays with the selected calibration mode and after entering this mode (linear and logarithmic scale)

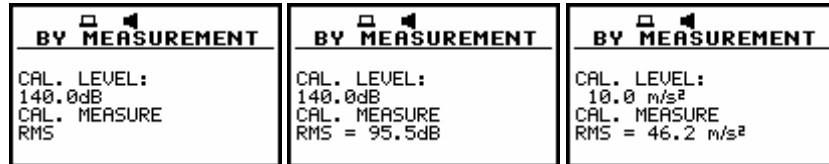
2. Attach the vibration calibrator to the instrument's accelerometer.
3. Switch on the calibrator and wait approximately 30 seconds before starting the calibration measurement.
4. Start the calibration measurement by pressing the <Start / Stop> push-button.

The measurement starts after 5 seconds delay. The measurement time is also predefined to 5 seconds. During the calibration period, the <ESC> and <Pause> push-buttons do not operate but it is possible to stop the measurement using the <Start / Stop> push-button. Waiting for the calibration measurement to begin, a **DELAY** is counted down.

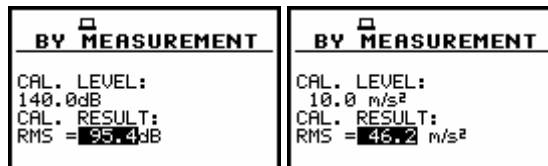


Displays while the instrument is waiting for the calibration measurement to commence

At the end of the measurement, the result is displayed on the display in the bottom line.



Displays during the calibration measurements



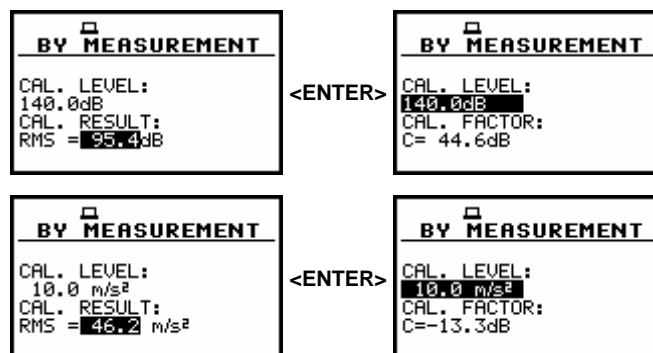
Displays after the calibration measurements

The calibration procedure should be repeated a few times to ensure the integrity of the calibration. The obtained results should be almost identical (with ± 0.1 dB difference). The reasons for unstable results are as follows:

- the transducer is not properly attached to the calibrator,
- there are external disturbances,
- the calibrator or the measurement channel (the accelerometer or the instrument itself) are damaged.

5. Press the <ENTER> push-button in order to accept the measurement result.

The calibration factor is calculated, stored and displayed (cf. Fig. below for logarithmic and linear scale – path: MENU / DISPLAY / DISPLAY SETUP / DISPLAY SCALE / SCALE) after pressing the <ENTER> push-button.



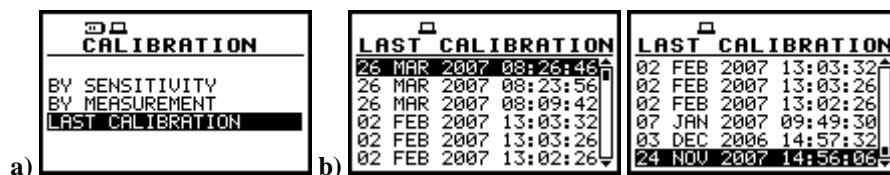
Displays after pressing the <ENTER> push-button (after calculation of the calibration factor value)



Note: The calibration factor is always added to the measurement results (in dB) in the **LEVEL METER** mode and to those coming from the frequency analysis (1/1 OCTAVE).

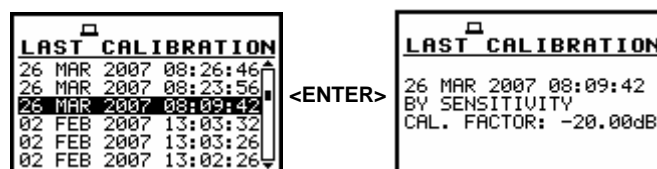
4.3.3 History of the calibration - LAST CALIBRATION

In order to enter the **LAST CALIBRATION** window in which up to last ten calibration records are remembered, the user has to select the proper text in the **CALIBRATION** window using the <▲>, <▼> push-buttons and press the <ENTER> one.



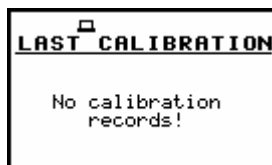
Displays in the **CALIBRATION** window; the **LAST CALIBRATION** text selected (a)
the **LAST CALIBRATION** window opened with ten calibration records (b)

In order to review the calibration record, the user has to select the required line in the **LAST CALIBRATION** window using the <▲>, <▼> push-buttons and press the <ENTER> one. The opened window contains the date and time of the performed calibration measurement, the way the calibration was done (**BY MEASUREMENT** or **BY SENSITIVITY**), the desired calibration level (**CAL. LEVEL**) in the case of the measurements and the obtained calibration factor (**CAL. FACTOR**).



Displays with the **LAST CALIBRATION** record

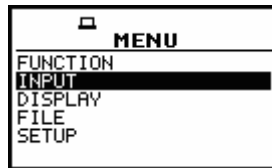
In the case when the calibration measurements were not performed, the **LAST CALIBRATION** window does not contain any record. The contents of this window is cleared after the **CLEAR SETUP** operation.



Display with the empty **LAST CALIBRATION** window

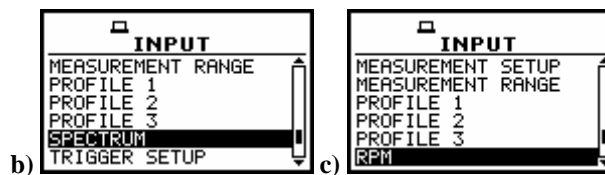
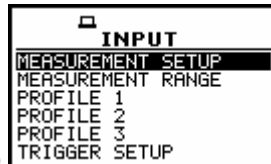
5 MEASUREMENT PARAMETERS SETTING - INPUT

The profile parameters can be set in the **INPUT** list, which can be entered after pressing the **<Menu>** push-button, then selecting by means of the **<▲>**, **<▼>** (or **<◀>**, **<▶>**) push buttons the **INPUT** text and finally pressing the **<ENTER>** one.



Main list with the INPUT text selected

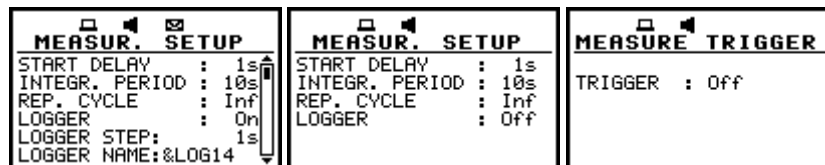
The **INPUT** list in the **LEVEL METER** contains the elements which enable one the independent programming of the measurement parameters (**MEASUREMENT SETUP**), the input range (**MEASUREMENT RANGE**), parameters of three profiles (**PROFILE 1**, **PROFILE 2** and **PROFILE 3**) and the trigger function (**TRIGGER SETUP**). In the case of **1/1 OCTAVE** on the display appears **SPECTRUM** position. After activation (with a special code) of **RPM** option (**MENU / SETUP / RPM**) on the display appears additionally **RPM** position.



INPUT list in the LEVEL METER (a), in 1/1 OCTAVE (b) and after activation of RPM option (c)



Notice: Any parameter in the **INPUT** list can be changed only when the instrument does not execute a measurement. The possibility of a change is signalled by highlighting a parameter's field. Moreover, normally displayed field means that the parameter cannot be changed. The "Loudspeaker" icon indicates that the instrument is performing the measurements.



Displays with not active sub-lists of INPUT list during measurement



Notice: The parameters can be presented in **LOGARITHMIC** (decibels) or **LINEAR** (m/s^2) units. It depends on the **DISPLAY SCALE** position (path: **MENU / DISPLAY / DISPLAY SETUP / DISPLAY SCALE / LOG** or **LIN**), e.g. $10 m/s^2$ can be presented as **140 dB**.

5.1 Selection of measurement parameters - MEASUREMENT SETUP

The **MEASUREMENT SETUP** is opened after the selection of the **MEASUREMENT SETUP** text from the **INPUT** list by means of the **<▲>**, **<▼>** (or **<▲>**, **<▼>** with **<Shift>**) push-buttons and pressing the **<ENTER>** one. The **MEASUREMENT SETUP** consists of the parameters, which can be set or switched on / off, namely: the delay of the start of measurements (**START DELAY**), the integration period (**INTEGR. PERIOD**), the repetition of the measurement cycles (**REP. CYCLE**) and the logger activation or deactivation (**LOGGER**). If the logger is active, the user can set the logging period (**LOGGER STEP**) and give a name to the logger's file (**LOGGER NAME**). In order to change the highlighted parameter the user has to press the **<▲>**, **<▼>** push-buttons. The confirmation of any change made in the sub-list requires pressing the **<ENTER>** push-button, which simultaneously closes the sub-list. The **MEASUREMENT SETUP** is closed ignoring any changes made in there, after pressing any time the **<ESC>** push-button.

MEASUR. SETUP	MEASUR. SETUP	MEASUR. SETUP
START DELAY : 1s	START DELAY : 1s	START DELAY : 1s
INTEGR. PERIOD : 1s	INTEGR. PERIOD : Inf	INTEGR. PERIOD : 1s
REP. CYCLE : Inf	REP. CYCLE : Inf	REP. CYCLE : 2
LOGGER : Off	LOGGER : Off	LOGGER : Off

Displays with the **MEASUREMENT SETUP** window

5.1.1 Setting time delay before the start of measurements - START DELAY

The **START DELAY** defines the delay period from the **<Start / Stop>** push-button pressing to the start of the measurements (the digital filters of the instrument analyse continuously the input signal even when the measurements are stopped). This delay period can be set from **0 second** to **60 seconds** (with 1 second step by means of the **<<<>**, **<>>>** push-buttons and with 10 seconds step with the **<<<>**, **<>>>** push-buttons pressed together with the **<Shift>** one). The **<ENTER>** push-button must be pressed for the confirmation of the selection, which closes simultaneously the **MEASUREMENT SETUP** window.

MEASUR. SETUP	<>>>	MEASUR. SETUP
START DELAY : 0s		START DELAY : 1s
INTEGR. PERIOD : 1s		INTEGR. PERIOD : 1s
REP. CYCLE : Inf		REP. CYCLE : Inf
LOGGER : Off		LOGGER : Off

MEASUREMENT SETUP windows; the setting of the **START DELAY** with 1-second step

MEASUR. SETUP	<Shift>+<>>>	MEASUR. SETUP
START DELAY : 10s		START DELAY : 20s
INTEGR. PERIOD : 1s		INTEGR. PERIOD : 1s
REP. CYCLE : Inf		REP. CYCLE : Inf
LOGGER : Off		LOGGER : Off

MEASUREMENT SETUP windows; the setting of the **START DELAY** with 10-seconds step



Notice: The minimum delay period is equal to 0 second. In the **CALIBRATION** mode, the delay period is equal to 5 seconds.

5.1.2 Setting the integration period - INTEGR. PERIOD

The **INTEGR. PERIOD** defines the period in which the signal is being averaged during the measurements. The definitions of the measurement results in which the integration period is used is given

in App. D. The required value of this parameter can be set by means of the <<>, <>> and confirmed by the <ENTER> push-button.

The integration period (**INTEGR. PERIOD**) can be set (by pressing the <>> (or <>> with <Shift>) push-button):

- From **1 s** to **59 s** (with **1 second** or **10 seconds** step).

MEASUR. SETUP START DELAY : 1s INTEGR. PERIOD : 1s REP. CYCLE : Inf LOGGER : Off	<>>	MEASUR. SETUP START DELAY : 1s INTEGR. PERIOD : 2s REP. CYCLE : Inf LOGGER : Off
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MEASUREMENT SETUP windows; the setting of the **INTEGR. PERIOD** with 1-second step

MEASUR. SETUP START DELAY : 1s INTEGR. PERIOD : 10s REP. CYCLE : Inf LOGGER : Off	<Shift>+<>>	MEASUR. SETUP START DELAY : 1s INTEGR. PERIOD : 20s REP. CYCLE : Inf LOGGER : Off
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MEASUREMENT SETUP windows; the setting of the **INTEGR. PERIOD** with 10-seconds step

- From **1 m** (min) to **59 m** (with **1 minute** or **10 minutes** step).

MEASUR. SETUP START DELAY : 1s INTEGR. PERIOD : 1m REP. CYCLE : Inf LOGGER : Off	MEASUR. SETUP START DELAY : 1s INTEGR. PERIOD : 10m REP. CYCLE : Inf LOGGER : Off	...	MEASUR. SETUP START DELAY : 1s INTEGR. PERIOD : 13m REP. CYCLE : Inf LOGGER : Off	MEASUR. SETUP START DELAY : 1s INTEGR. PERIOD : 23m REP. CYCLE : Inf LOGGER : Off
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MEASUREMENT SETUP windows; the setting of the **INTEGR. PERIOD** with 1 and 10-minutes step

- From **1 h** to **24 h** (with **1 hour** or **10 hours** step). It is also possible to set **Inf** value.

MEASUR. SETUP START DELAY : 1s INTEGR. PERIOD : 1h REP. CYCLE : Inf LOGGER : Off	MEASUR. SETUP START DELAY : 1s INTEGR. PERIOD : 10h REP. CYCLE : Inf LOGGER : Off	MEASUR. SETUP START DELAY : 1s INTEGR. PERIOD : 22h REP. CYCLE : Inf LOGGER : Off	...	MEASUR. SETUP START DELAY : 1s INTEGR. PERIOD : Inf REP. CYCLE : Inf LOGGER : Off
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MEASUREMENT SETUP windows; the setting of the **INTEGR. PERIOD** with 10-hours step

Additionally, the predefined periods: **1 m**, **5 m**, **15 m**, **1 h**, **8 h** and **24 h**, which are enumerated in the standards, are also available (by pressing the <<> push-button or <<> with <Shift>; these values are placed in the mentioned above sequence on the left in relation to **1 s**).

MEASUR. SETUP START DELAY : 1s INTEGR. PERIOD : 1m REP. CYCLE : Inf LOGGER : Off	MEASUR. SETUP START DELAY : 1s INTEGR. PERIOD : 5m REP. CYCLE : Inf LOGGER : Off	MEASUR. SETUP START DELAY : 1s INTEGR. PERIOD : 15m REP. CYCLE : Inf LOGGER : Off
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MEASUR. SETUP	MEASUR. SETUP	MEASUR. SETUP
START DELAY : 1s	START DELAY : 1s	START DELAY : 1s
INTEGR. PERIOD : 1h	INTEGR. PERIOD : 8h	INTEGR. PERIOD : 24h
REP. CYCLE : Inf	REP. CYCLE : Inf	REP. CYCLE : Inf
LOGGER : Off	LOGGER : Off	LOGGER : Off

Displays during setting the predefined INTEGR. PERIOD sequence



Notice: In the case of switching on the **AUTO SAVE** function, the minimum value of the integration period should be equal to 10 seconds.

In the case of switching on **AUTO SAVE** option (path: **MENU / FILE / SAVE OPTIONS / AUTO SAVE**) the integration period value has to be equal or greater than 10 seconds. When the integration period is less than 10 seconds **AUTO SAVE** option switches off and **INT.PERIOD TOO SHORT / AUTO SAVE DISABLED** message appears on the display.

MEASUR. SETUP
INT.PERIOD TOO SHORT AUTO SAVE DISABLED
PRESS ANY KEY...

Display, when the INT.PERIOD is too short for AUTO SAVE option

5.1.3 Setting the number of repetition of measurement cycles - REP. CYCLE

The **REP. CYCLE** defines the number of cycles (with the measurement period defined in the **INTEGR. PERIOD**) which should be performed by the instrument. The required parameter can be set by means of the **<<>**, **<>>** push-buttons (with the step equal to 1) or by means of the **<<>**, **<>>** push-buttons pressed together with the **<Shift>** one (with the step equal to 20). The selected value is accepted by pressing the **<ENTER>** push-button, which closes the **MEASUREMENT SETUP** window. The **Inf** value denotes the infinite repetition of the measurements (until the pressing the **<Start / Stop>** push-button or after receiving the remote control code). The **REP. CYCLE** number values are within the limits [1, 1000].

MEASUR. SETUP		MEASUR. SETUP		MEASUR. SETUP
START DELAY : 1s		START DELAY : 1s		START DELAY : 1s
INTEGR. PERIOD : 1s		INTEGR. PERIOD : 1s		INTEGR. PERIOD : 1s
REP. CYCLE : Inf	<>>	REP. CYCLE : 1	<>>	REP. CYCLE : 2
LOGGER : Off		LOGGER : Off		LOGGER : Off

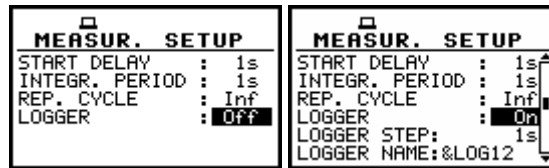
REP. CYCLE setting with the step equal to one

MEASUR. SETUP		MEASUR. SETUP
START DELAY : 1s		START DELAY : 1s
INTEGR. PERIOD : 1s		INTEGR. PERIOD : 1s
REP. CYCLE : 23	<Shift>+<>>	REP. CYCLE : 43
LOGGER : Off		LOGGER : Off

REP. CYCLE setting with the step equal to 20

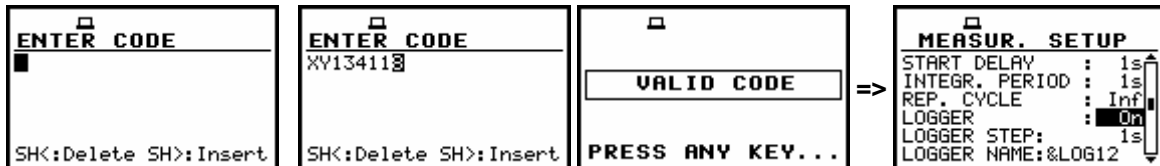
5.1.4 Logger functionality switching On / Off - LOGGER

The **LOGGER** switches on and off the functionality, which enables the user to save in a file the selected results from three profiles with the defined period. The **LOGGER** can be activated and deactivated by means of the <◀>, <▶> push-buttons and accepted by the <ENTER> one. The acceptance closes simultaneously the **MEASUREMENT SETUP** window. Any changes are ignored after pressing the <ESC> push-button.



Displays with the **LOGGER** deactivated and activated

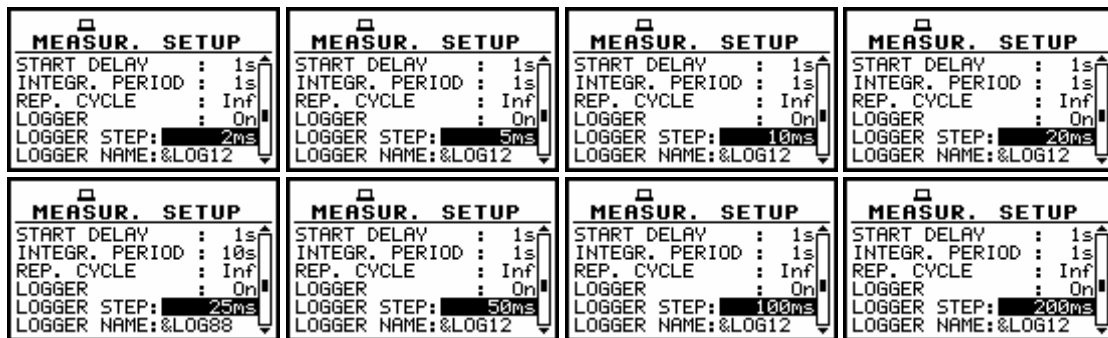
The **LOGGER** functionality is not included in the standard set of the instrument. It can be bought together with the instrument ordering the proper option or can be purchased by the user in the future. In the latter case, after selecting **On** value, the user has to introduce special code activating the functionality. After successful activation, the logger remains available and the instrument never more asks for the code.



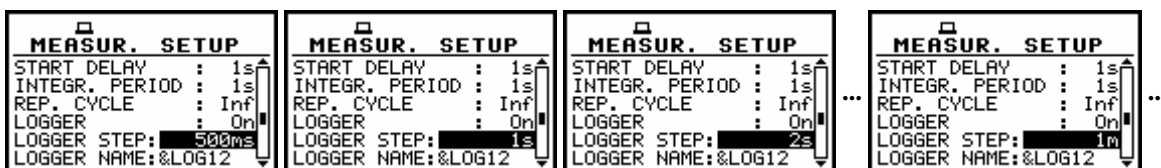
Displays during setting the **LOGGER STEP**; available values in a sequence 1, 2, 5

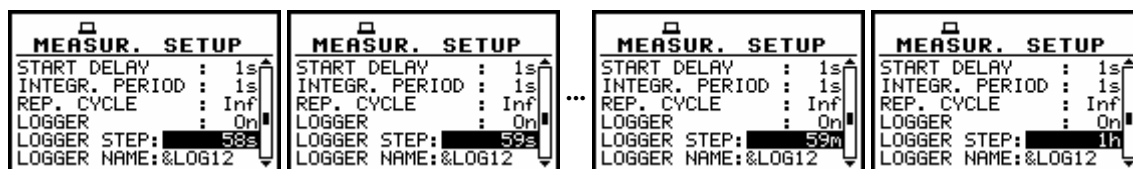
5.1.5 Setting time period between two writings to the logger's file - **LOGGER STEP**

The **LOGGER STEP** defines the period of the data logging in a file. It can be set from **2 ms** to **1 s** in 1, 2, 5 sequence, the values from 1 second to 59 seconds, the values from 1 minute to 59 minute and 1 hour. The required parameter can be set by means of the <◀>, <▶> push-buttons with the single step and by means of the <◀>, <▶> with <Shift> with the incremented one. The selection is accepted by the <ENTER> one, which closes simultaneously the **MEASUREMENT SETUP** window. Any changes are ignored after pressing the <ESC> push-button.



LOGGER STEP setting; available values in milliseconds

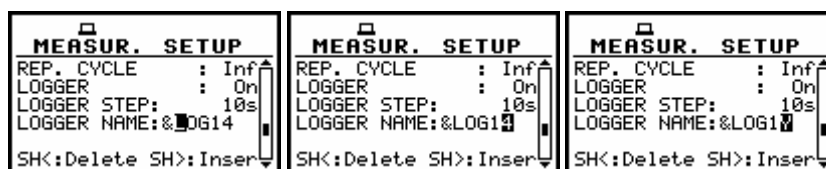




LOGGER STEP setting; available values from 500 milliseconds to 1 hour

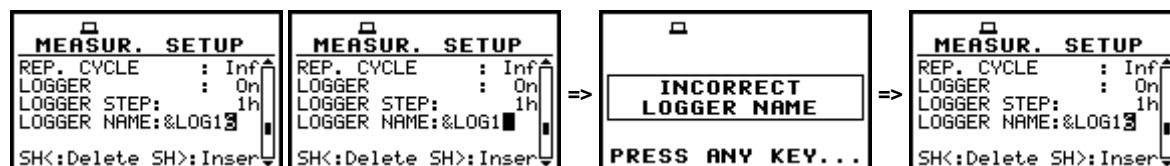
5.1.6 Logger file name edition - LOGGER NAME

The **LOGGER NAME** enables the user to name the logger file. The default one is &LOG. The name cannot be longer than eight characters including not edited first one character &. After entering this line, the special help is displayed in the display's last line. The name edition is performed similarly to the name edition in the **FILE NAME** line of the **SAVE** or **SAVE SETUP** window. The edition process is presented below. The highlighted character is currently edited. The <<>, <>>, <A>, <V> and <Shift> push-buttons are used for editing the 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 <A> (or <V>) push-button pressed together with the <Shift> one.



LOGGER NAME edition in MEASUREMENT SETUP

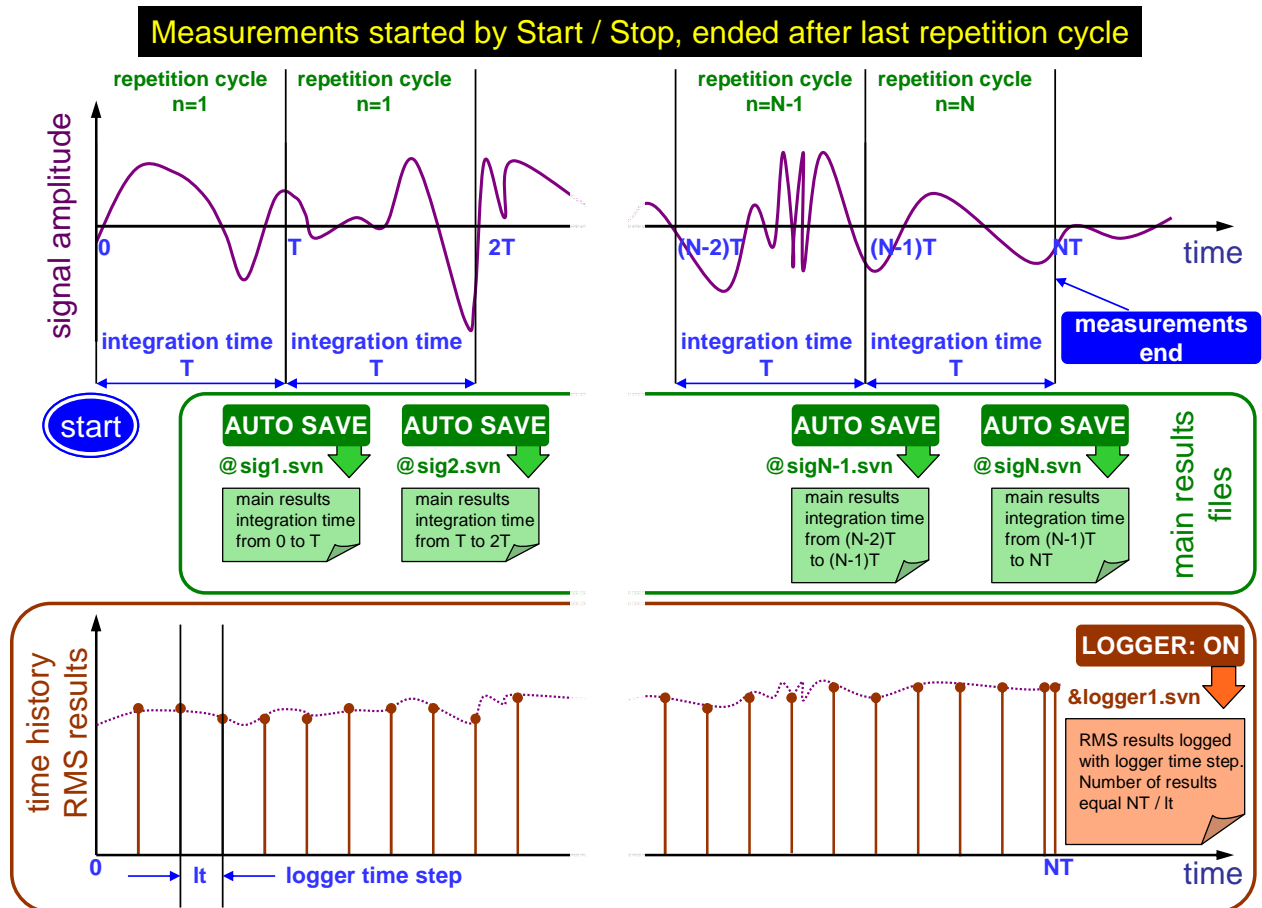
The edited name is accepted and the file is saved after pressing the <ENTER> push-button. The special warning is displayed in the case the file with the edited name already exists in the memory. The instrument waits then for a reaction of the user (any push-button should be pressed except the <Shift> or the <Alt> one).



Displays during the attempt of overwriting the existing file

The main measurement results (cf. App. B) (**RMS**, **OVL**, **PEAK**, **MAX** (or **MTVV**), for **LEVEL METER**, **1/1 OCTAVE** are calculated in the period set in the **INTEGR. PERIOD**. These results can be saved in the result file of the instrument's memory by means of the **SAVE** or **SAVE NEXT** function (*path: MENU / FILE / SAVE*). In the case the **INTEGR. PERIOD** is greater than 9 seconds, it can be done also by means of the **AUTO SAVE** operation. The name of the file for that operation is set in the **FILE NAME** window (*path: MENU / FILE / AUTO SAVE / FILE NAME*). In the case the **REP. CYCLE** is greater than one, the **AUTO SAVE** operation will be performed after the period set in the **INTEGR. PERIOD**. The name of the file with the main results is changed after each saving.

In the same, when the **LOGGER** is **On**, the partial measurement results are calculated in the period set in the **LOGGER STEP**. Up to 9 results can be logged simultaneously from three independent profiles of the instrument (**PEAK/ MAX/ RMS**) from each profile (*path: MENU / INPUT / PROFILE x*, where $x = 1, 2$ and 3) with time step down to 2 ms. These results are saved in one logger's file memory of the instrument in the **LEVEL METER** as well as for other functions. The name of the file is set in the **LOGGER NAME** position. The registration in the logger's memory is stopped after the period, which is equal to **INTEGR. PERIOD** multiplied by **REP. CYCLE**, after pressing the <Start / Stop> push-button or after stopping the measurements remotely.



Relations between INTEGR. PERIOD and LOGGER STEP

5.2 Measurement range setting - MEASUREMENT RANGE

The **MEASUREMENT RANGE** window informs the user about the measurement range of the instrument. In order to open this window the user has to select the **MEASUREMENT RANGE** text in the **INPUT** list by means of the `<<>`, `<>>` push-buttons and press the `<ENTER>` one.

INPUT	MEASUR. RANGE
MEASUREMENT SETUP	RANGE : SINGLE
MEASUREMENT RANGE	
PROFILE 1	RMS <HP1>
PROFILE 2	3.16mm/s ² - 316m/s ²
PROFILE 3	PEAK
TRIGGER SETUP	141mm/s ² - 447m/s ²

INPUT list with the MEASUREMENT RANGE selected and MEASUREMENT RANGE window opened

The range values change due to the calibration factor.

BY SENSITIVITY	MEASUR. RANGE
SENSITIVITY:	RANGE : SINGLE
100.0mV/ms ²	
CAL. FACTOR:	RMS <HP1>
C=-20.00dB	316μm/s ² - 31.6m/s ²
	PEAK
	14.1mm/s ² - 44.7m/s ²

Displays with change of the default range values caused by the calibration factor

5.3 Setting parameters in a profile - PROFILE x

The user enters the **PROFILE x** sub-list after pressing the **<ENTER>** push-button on the highlighted **PROFILE x** text, which has to be selected by means of the **<<>**, **<>>** push-buttons. In the **PROFILE x** sub-list the following parameters can be programmed independently for each profile: weighting filter (**FILTER**), RMS detector type (**DETECTOR**) and profile's results logged in a file (**LOGGER PEAK**, **LOGGER MAX** and **LOGGER RMS**).

INPUT	INPUT	INPUT
MEASUREMENT SETUP	MEASUREMENT SETUP	MEASUREMENT SETUP
MEASUREMENT RANGE	MEASUREMENT RANGE	MEASUREMENT RANGE
PROFILE 1	PROFILE 1	PROFILE 1
PROFILE 2	PROFILE 2	PROFILE 2
PROFILE 3	PROFILE 3	PROFILE 3
TRIGGER SETUP	TRIGGER SETUP	TRIGGER SETUP

INPUT list with the PROFILE 1, PROFILE 2 and PROFILE 3 selected



Notice: The change of the profile parameters is not possible when the measurement is performed. The user has to finish the current measurement.

5.3.1 Weighting filter selection in a profile - FILTER

The following weighting filters are available in a profile of the instrument:

- in the case of acceleration measurements: **HP1**, **HP3**, **HP10**, **Vel1**, **Vel3**, **Vel10**, **VelMF**, **Dil1**, **Dil3**, **Dil10**,

PROFILE(1)	PROFILE(1)	PROFILE(1)
FILTER : HP1	FILTER : HP3	FILTER : HP10
DETECTOR: 1.0s	DETECTOR: 1.0s	DETECTOR: 1.0s
LOGGER PEAK : []	LOGGER PEAK : []	LOGGER PEAK : []
LOGGER MAX : []	LOGGER MAX : []	LOGGER MAX : []
LOGGER RMS : []	LOGGER RMS : []	LOGGER RMS : []

PROFILE(1) windows; the selection of the weighting filter in acceleration measurements

- in the case of velocity measurements: **Vel1**, **Vel3**, **Vel10** and **VelMF**

PROFILE(1)	PROFILE(1)	PROFILE(1)	PROFILE(1)
FILTER : Vel1	FILTER : Vel3	FILTER : Vel10	FILTER : VelMF
DETECTOR: 1.0s	DETECTOR: 1.0s	DETECTOR: 1.0s	DETECTOR: 1.0s
LOGGER PEAK : []	LOGGER PEAK : []	LOGGER PEAK : []	LOGGER PEAK : []
LOGGER MAX : []	LOGGER MAX : []	LOGGER MAX : []	LOGGER MAX : []
LOGGER RMS : []	LOGGER RMS : []	LOGGER RMS : []	LOGGER RMS : []

PROFILE(1) windows; the selection of the weighting filter in velocity measurements

- in the case of displacement measurements: **Dil1**, **Dil3** and **Dil10**

PROFILE(1)	PROFILE(1)	PROFILE(1)
FILTER : Dil1	FILTER : Dil3	FILTER : Dil10
DETECTOR: 1.0s	DETECTOR: 1.0s	DETECTOR: 1.0s
LOGGER PEAK : []	LOGGER PEAK : []	LOGGER PEAK : []
LOGGER MAX : []	LOGGER MAX : []	LOGGER MAX : []
LOGGER RMS : []	LOGGER RMS : []	LOGGER RMS : []

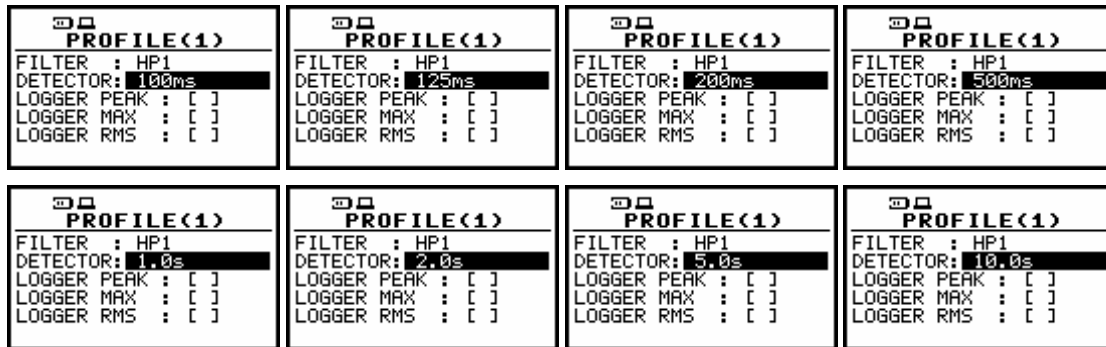
PROFILE(1) windows; the selection of the weighting filter in displacement measurements

The characteristics of the filters are given in App. D. The selection of the required filter is made with the **<<>**, **<>>** push-buttons. The user can enter the **FILTER** line in the **PROFILE x** sub-list pressing the **<▲>**, **<▼>** push-buttons. After pressing the **<ENTER>** push-button any changes made

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

5.3.2 RMS detector selection - DETECTOR

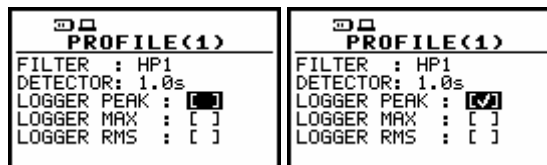
In the instrument the following RMS detectors are available: **100ms**, **125ms**, **200ms**, **500ms**, **1.0s**, **2.0s**, **5.0s**, **10.0s**. The selection of the required detector is made with the **<◀>**, **<▶>** push-buttons. The user can enter the **DETECTOR** line in the **PROFILE x** sub-list pressing the **<▲>**, **<▼>** push-buttons. After pressing the **<ENTER>** push-button any changes made in the sub-list are confirmed and it is closed. The return to the **INPUT** list ignoring any changes made in the sub-list is made after pressing the **<ESC>** push-button.



PROFILE(1) windows; the selection of the RMS detector

5.3.3 PEAK result selection for saving in a logger's file - LOGGER PEAK

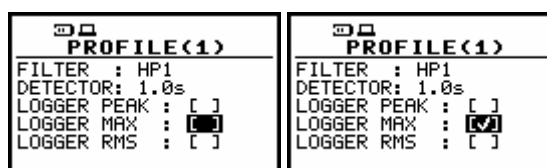
Up to four measurement results from each profile can be saved in the logger's file of the instrument. In order to save the **PEAK** result (cf. the definition in App. D) the user has to activate this line (by means of the **<▲>**, **<▼>** push-buttons) and place a special character in the brackets using the **<◀>**, **<▶>** push-buttons. After pressing the **<ENTER>** push-button any changes made in the window are confirmed and it is closed. The return to the **INPUT** list ignoring any changes made in the window is made after pressing the **<ESC>** push-button.



PROFILE(x) windows; the PEAK result to be not saved or saved in a logger's file

5.3.4 MAX result selection for saving in a logger's file - LOGGER MAX

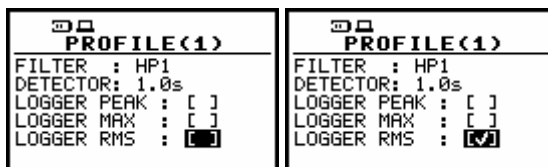
In order to save the **MAX** result (cf. the definition in App. D) the user has to activate this line (by means of the **<▲>**, **<▼>** push-buttons) and place a special character in the brackets using the **<◀>**, **<▶>** push-buttons. After pressing the **<ENTER>** push-button any changes made in the window are confirmed and it is closed. The return to the **INPUT** list ignoring any changes made in the window is made after pressing the **<ESC>** push-button.



PROFILE(x) windows ; the MAX result to be not saved or saved in a logger's file

5.3.5 RMS result selection for saving in a logger's file - LOGGER RMS

In order to save the **RMS** result (cf. the definition in App. D) the user has to activate this line (by means of the **<▲>**, **<▼>** push-buttons) and place a special character in the brackets using the **<◀>**, **<▶>** push-buttons. After pressing the **<ENTER>** push-button any changes made in the window are confirmed and it is closed. The return to the **INPUT** list ignoring any changes made in the window is made after pressing the **<ESC>** push-button.



PROFILE(x) windows; the RMS result to be not saved or saved in a logger's file

5.4 Triggering mode and parameters selection - TRIGGER SETUP

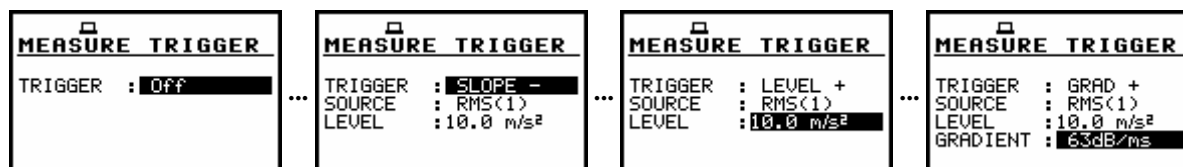
The **TRIGGER SETUP** sub-list enables the user to set the triggering parameters. This sub-list is opened after the selection of the **TRIGGER SETUP** text from the **INPUT** list by means of the **<▼>**, **<▲>** push-buttons and pressing the **<ENTER>** one. The **TRIGGER SETUP** consists of the **MEASURE TRIGGER**, **LOGGER TRIGGER**. The return to the **INPUT** list is made after pressing the **<ESC>** push-button.



TRIGGER SETUP selected in the INPUT list and the TRIGGER SETUP window

5.4.1 Trigger parameters setting - MEASURE TRIGGER

The **MEASURE TRIGGER** is a contexts sub-list in which the triggering can be switched off or on (**TRIGGER**), in the case when on - the source of the triggering signal can be determined (**SOURCE**), its level (**LEVEL**) and sometimes also the speed of changes (**GRADIENT**). In order to enter this sub-list the user has to select by means of the **<▲>**, **<▼>** push-buttons the **MEASURE TRIGGER** text in the **TRIGGER SETUP** sub-list and press the **<ENTER>** one.

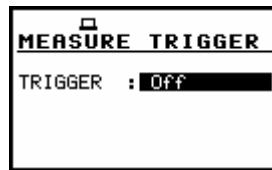


MEASURE TRIGGER windows

In order to change the highlighted parameter the user has to press the **<▲>**, **<▼>** push-buttons. The confirmation of any change made in the window requires pressing the **<ENTER>** push-button, which simultaneously closes the current display. The **MEASURE TRIGGER** window is closed ignoring any changes made, after pressing any time the **<ESC>** push-button.

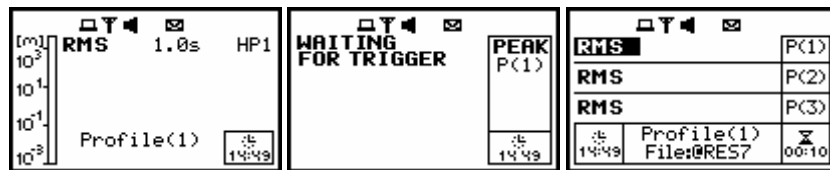
5.4.1.1 Switching the triggering on and off - TRIGGER

The triggering of the measurements (**TRIGGER**) can be switched off using the <>> push-button.



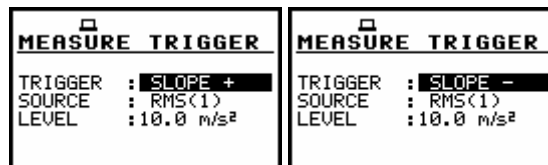
MEASURE TRIGGER window; TRIGGER switched off

The triggering is switched on if one of its five modes is selected: **SLOPE +**, **SLOPE -**, **LEVEL +**, **LEVEL -**, **GRAD +** or **EXT. I/O**. The selection of the triggering mode is performed using the <<>, <>> push-buttons. If the instrument works with the triggering switched on, the "Antenna" icon is flashing on the display in the case when the triggering condition was not fulfilled.



Displays during the measurements while the triggering condition is not fulfilled

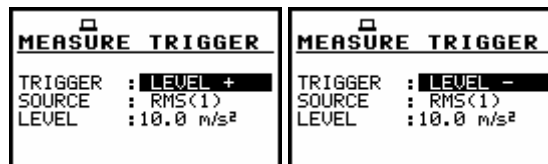
In the case when the **SLOPE +** is selected, the one cycle of measurement starts when the arising signal will pass the level determined in the **LEVEL**. In the case when the **SLOPE -** is selected, the measurement starts when the falling down signal will pass the level determined in the **LEVEL**. The measurement is stopped when the conditions set in the **MEASUREMENT SETUP** sub-list are fulfilled, after pressing the <Start / Stop> push-button or after receiving the proper control code remotely.



MEASURE TRIGGER windows with the SLOPE modes selected

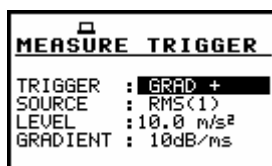
In the case when the **LEVEL +** is selected, in each second of the measurement the triggering condition is checked; the measurement is registered only when the signal has the greater level than this determined in the **LEVEL** and in the other case the measurement result is skipped.

In the case when the **LEVEL -** is selected, in each second of the measurement the triggering condition is checked; the measurement is registered only when the signal has the lower level than this determined in the **LEVEL** and in the other case the measurement result is skipped.



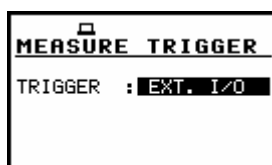
MEASURE TRIGGER windows with the LEVEL modes selected

In the case when the **GRAD +** is selected, one cycle of the measurement starts when the arising signal will pass the level determined in the **LEVEL**. The signal level is not less than this determined in the **LEVEL** and the speed of the signal changes is not less than that selected in the **GRADIENT**. In the other case the measurement result is skipped.



MEASURE TRIGGER window with the GRAD + mode selected

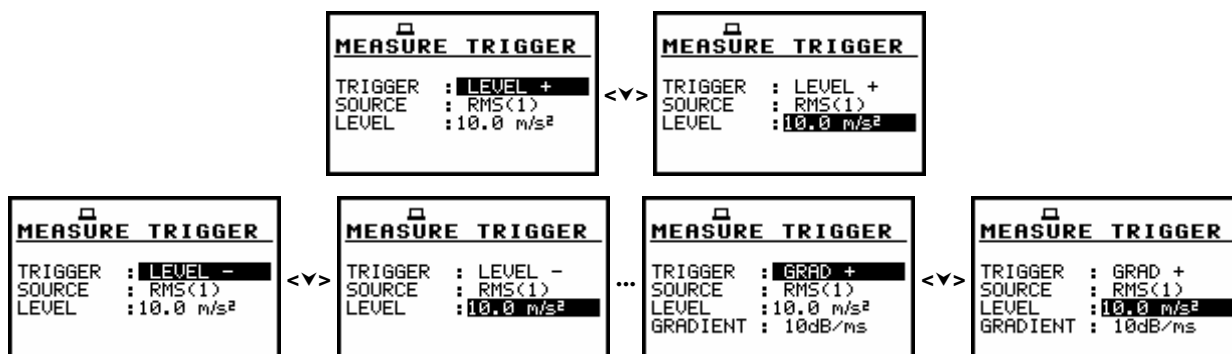
In the case when **EXT. I/O** is selected, the source of triggering is the signal coming from **EXT. I/O** input of the instrument. The settings made in the **SETUP / EXTERNAL**



MEASURE TRIGGER window with the EXT. I/O mode selected

5.4.1.2 Selection of the triggering signal - SOURCE

It is assumed that only one measured result can be used as a source of the triggering signal in the **LEVEL METER** mode, namely the output signal from the RMS detector coming from the first profile which is denoted here as **RMS(1)**. This position does not become active (it is not highlighted) and the text stated here remains unchanged in the case of **LEVEL +**, **LEVEL -** or **GRAD +** triggering mode. After pressing there the **<v>** push-button, the **SOURCE** line is skipped.



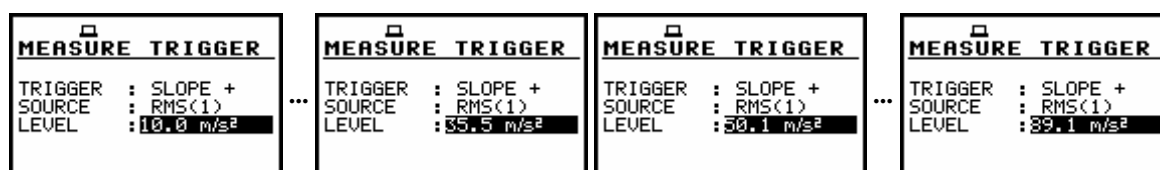
MEASURE TRIGGER windows with not active SOURCE signal line



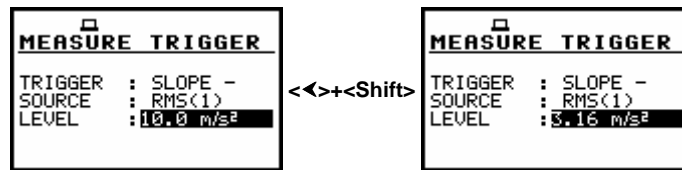
Notice: Only one signal measured in the instrument - the RMS detector in the first profile - can be used as the triggering signal.

5.4.1.3 Setting the level of the triggering signal - LEVEL

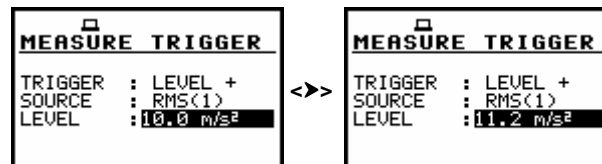
The level of the triggering signal (**LEVEL**) can be set in 1 dB step (or 10 dB steps) from 1 mm/s² to 10.0 km/s² (60 dB to 140 dB) range using the **<<>**, **>>>** push-buttons (or **<<>**, **>>>** with **<Shift>**).



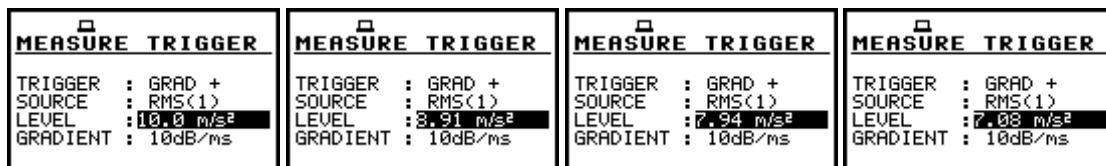
MEASURE TRIGGER windows with the LEVEL selection in the SLOPE + mode



MEASURE TRIGGER windows with the LEVEL selection in the SLOPE – mode (10 dB step down)



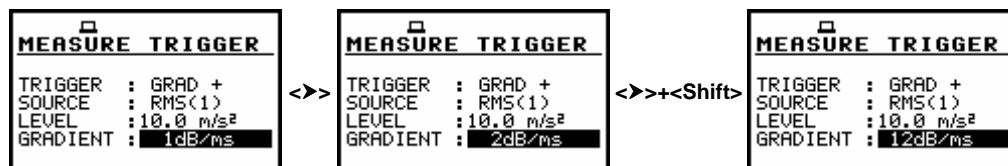
MEASURE TRIGGER windows with the LEVEL selection in the LEVEL + mode (1 dB step up)



MEASURE TRIGGER windows with the LEVEL selection in the GRAD + mode (1 dB step down)

5.4.1.4 Setting the speed of the triggering signal changes - GRADIENT

The speed of the triggering signal changes (**GRADIENT**) can be set in 1 dB/millisecond step (or 10 dB/millisecond steps) from 1 dB/ms to 100 dB/ms range using the $\langle \rangle$, $\langle \rangle \rangle$ push-buttons (or $\langle \rangle$, $\langle \rangle \rangle$ with $\langle \text{Shift} \rangle$).



MEASURE TRIGGER windows with the GRADIENT selection (1 dB/ms and 10 dB/ms step up)

5.4.2 Trigger parameters in logger setting - LOGGER TRIGGER

The **LOGGER TRIGGER** parameters influence the way the measurement results are saved in the logger. It is a contexts sub-list in which the triggering in logger can be switched off or on (**TRIGGER**), in the case when on (**LEVEL +**) - the source of the triggering signal is determined (**SOURCE**), its level can be selected (**LEVEL**), the number of the results saved in the logger before the fulfilment of the triggering condition (**PRE**) and the number of the results saved in the logger after the fulfilment of the triggering condition (**POST**). If the triggering signal is greater than the selected in the **LEVEL**, the logger contains:

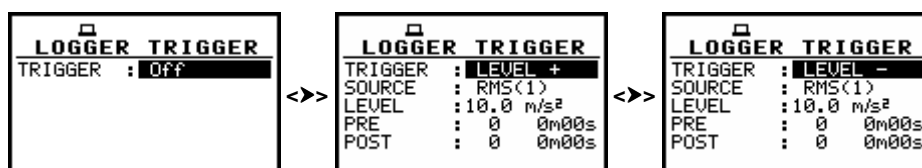
- the measurement results registered directly before the fulfilment of the triggering condition; time of the registration can be calculated by multiplying the value set in the **PRE** by the time period taken from the **LOGGER STEP** (path: MENU / INPUT / MEASUREMENT SETUP / LOGGER STEP);
- all measurement results up to the moment the triggering signal falls down the **LEVEL**;

- the results registered directly after the fulfilment of the triggering condition; time of the registration can be calculated by multiplying the value set in the **POST** by the time period taken from the **LOGGER STEP** (path: MENU / INPUT / MEASUREMENT SETUP / LOGGER STEP).

In order to change the highlighted parameter the user has to press the **<▲>**, **<▼>** push-buttons. The confirmation of any change made in the window requires pressing the **<ENTER>** push-button, which simultaneously closes the current display. The **LOGGER TRIGGER** window is closed ignoring any changes made, after pressing any time the **<ESC>** push-button.

5.4.2.1 Switching the logger triggering on and off - TRIGGER

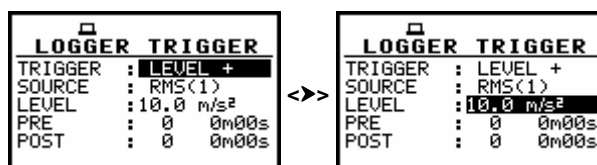
The logger triggering of the measurements (**TRIGGER**) can be switched off using the **<◀>** push-button (or **<◀>** with **<Shift>**). The triggering is switched on if the **LEVEL +** or **LEVEL -** mode is selected using the **<▶>** push-button (or **<▶>** with **<Shift>**).



LOGGER SETUP windows, trigger mode selection

5.4.2.2 Selection of the triggering signal in logger - SOURCE

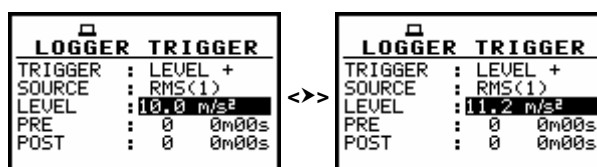
It is assumed that only one measured result can be used as a source of the triggering signal in the logger, namely the output signal from the RMS detector coming from the first profile which is denoted here as **RMS(1)**. This position does not become active (it is not highlighted) and the text stated here remains unchanged. After pressing the **<▼>** push-button, the **SOURCE** line is skipped.



LOGGER TRIGGER windows with the not active SOURCE signal line

5.4.2.3 Setting the level of the triggering signal in the logger - LEVEL

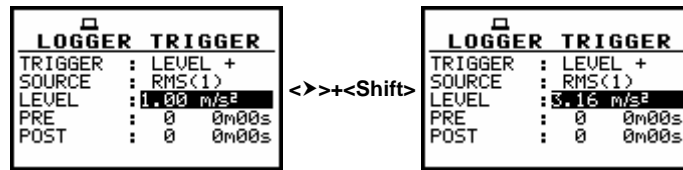
The level of the triggering signal in logger (**LEVEL**) can be set in 1 dB step (or 10 dB steps) from 1.00 mm/s² to 10.0 km/s² (24 dB to 136 dB) range using the **<◀>**, **<▶>** push-buttons (or **<◀>**, **<▶>** with **<Shift>**).



LOGGER TRIGGER windows with the LEVEL selection (1 dB step up)



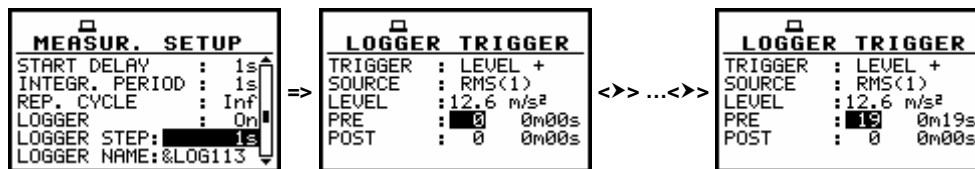
Notice: The **LEVEL** value of the triggering signal in logger refers to the instantaneous value of the RMS result from the first profile calculated during the period depending on selected **DETECTOR** (path: MENU / INPUT / PROFILE 1 / DETECTOR).



LOGGER TRIGGER windows with the LEVEL selection (10 dB step up)

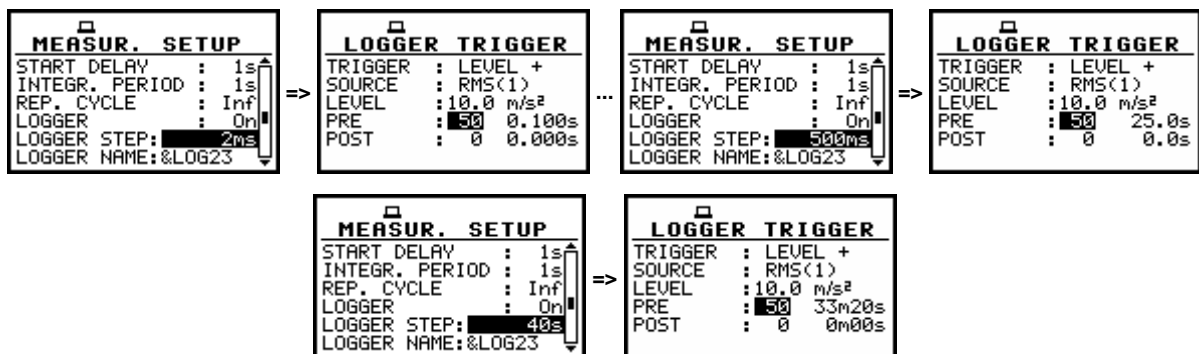
5.4.2.4 Selection of the number of the results to be saved in the logger before the fulfilment of the triggering condition - PRE

In the **PRE** line the number of the results registered in the logger's file before the fulfilment of the triggering condition can be set. This number is within the limits 0..50 and can be set with the step equal to one using the <<>, <>> push-buttons or with the step equal to 10 using the <<>, <>> with <Shift>.



LOGGER TRIGGER windows with the PRE selection

Time period of the measurements which are saved in the logger before the fulfilment of the triggering condition can be calculated multiplying the value set in the **PRE** by the value set in the **LOGGER STEP** (path: MENU / INPUT / MEASUREMENT SETUP). The result of the calculation is presented in the same line, at the right side of the display.

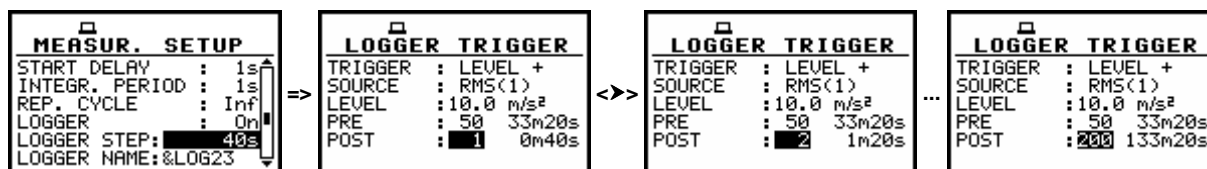


LOGGER TRIGGER windows with the PRE selection for different LOGGER STEPS

The value set in the **PRE** is confirmed and the window is closed after pressing the <ENTER> push-button. After pressing the <ESC> push-button the window is closed ignoring the settings made in the **PRE**.

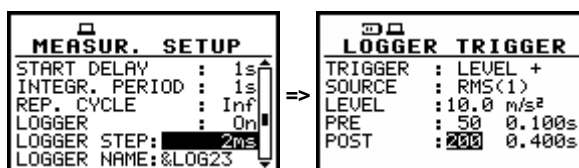
5.4.2.5 Selection of the number of the results to be saved in the logger after the fulfilment of the triggering condition - POST

In the **POST** line the number of the results registered in the logger's file after the fulfilment of the triggering condition can be set. This number is within the limits 0..200 and can be set with the step equal to one using the <<>, <>> push-buttons or the step equal to 10 using the <<>, <>> with <Shift>.

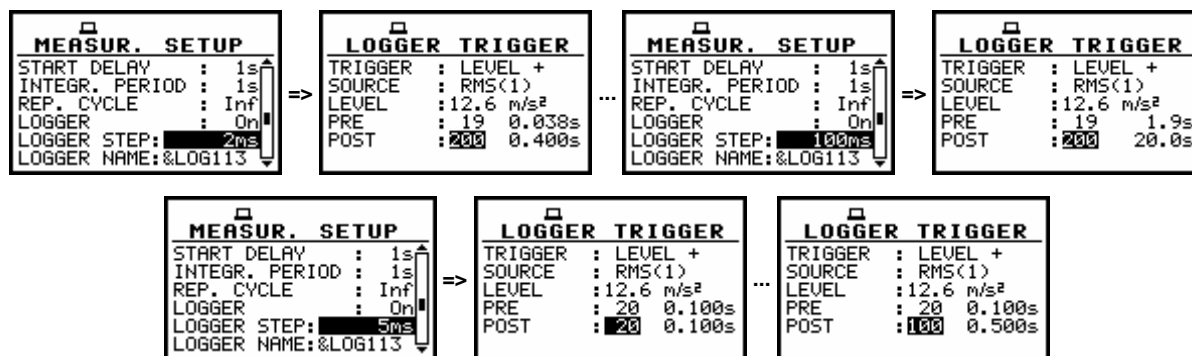


LOGGER TRIGGER windows with the POST selection

Time period of the measurements which are saved in the logger after the fulfilment of the triggering condition can be calculated multiplying the value set in the **POST** by the value set in the **LOGGER STEP** (path: MENU / INPUT / MEASUREMENT SETUP). The result of the calculation is presented in the same line, at the right side of the display.



LOGGER TRIGGER window



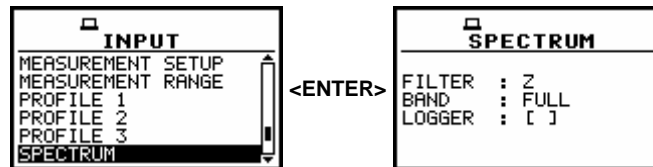
LOGGER TRIGGER windows with the POST selection for different LOGGER STEPS

The value set in the **POST** is confirmed and the window is closed after pressing the **<ENTER>** push-button. After pressing the **<ESC>** push-button the window is closed ignoring the settings made in the **POST**.

5.5 Selection of 1/1 octave spectrum parameters – SPECTRUM

The **SPECTRUM** appears in the **INPUT** list when the **1/1 OCTAVE** function is selected in the **MEASUREMENT FUNCTION** (path: MENU / FUNCTION / MEASUREMENT FUNCTION / 1/1 OCTAVE). This sub-list is opened after the selection of the **SPECTRUM** text from the **INPUT** list by means of the **<▲>**, **<▼>** (or **<◀>**, **<▶>**) push-buttons and pressing the **<ENTER>** one.

The **SPECTRUM** consists of the parameters, which influence the calculation and logging the results of **1/1 OCTAVE** analysis: **FILTER**, **BAND** and **LOGGER**. The **LOGGER** position is highlighted if the logger functionality is switched on (path: INPUT / MEASUREMENT SETUP / LOGGER). The **SPECTRUM** window is closed ignoring any changes made in there, after pressing any time the **<ESC>** push-button.



SPECTRUM selected in the INPUT list and the SPECTRUM window opened

5.5.1 Selecting the weighting filter during 1/1 OCTAVE analysis - FILTER

During 1/1 OCTAVE analysis only **Z** filter (type 1 according to the IEC 61672-1 standard) is available.

5.5.2 Selecting the band during the 1/1 OCTAVE analysis - BAND

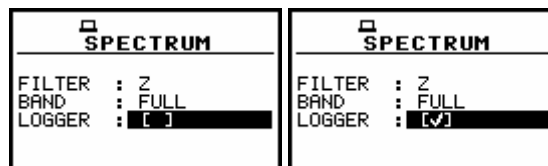
In SVAN 954 instrument only **FULL** band is available.

5.5.3 Activation of logger for 1/1 OCTAVE analysis results - LOGGER

The **RMS** result from 1/1 OCTAVE analysis can be saved in the logger's file of the instrument.

The activation is made by placing a special character [**✓**] in the **LOGGER** position. The activation is possible when the **LOGGER** functionality is switched on in the **MEASUREMENT SETUP** window (path: MENU / INPUT / MEASUREMENT SETUP / LOGGER).

If the **LOGGER** functionality is switched off, the position is not accessible. The confirmation of the change made in the position requires pressing the **<ENTER>** push-button, which simultaneously closes the window. The **SPECTRUM** window is closed ignoring any changes made in there, after pressing any time the **<ESC>** push-button.

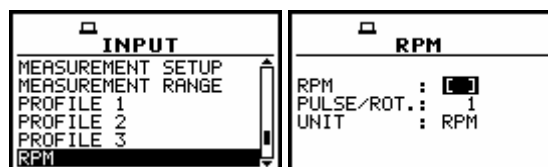


SPECTRUM window, the LOGGER selection

5.6 Selection of RPM measurements parameters - RPM

The **RPM** (Revolutions Per Minute) position appears in the **INPUT** list when the **RPM** function was activated with a special code in the **SETUP** list (path: MENU / SETUP / RPM).

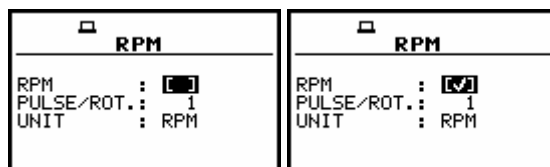
This sub-list is opened after the selection of the **RPM** text from the **INPUT** list by means of the **<▲>**, **<▼>** (or **<◀>**, **<▶>**) push-buttons and pressing the **<ENTER>** one. The **RPM** consists of three positions: **RPM**, **PULSE/ROTATION** and **UNIT**. The **RPM** window is closed ignoring any changes made in there, after pressing any time the **<ESC>** push-button.



RPM selected in the INPUT list and the RPM window opened

5.6.1 Switching on the RPM measurement - RPM

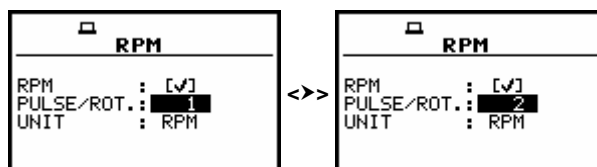
The placing a special character [✓] in the line with **RPM** text enables the **RPM** function. The selection is made by means of the <◀>, <▶> push-buttons. The confirmation of the activation requires pressing the <ENTER> push-button, which simultaneously closes the window. The **RPM** window is closed ignoring any changes made in there, after pressing any time the <ESC> push-button.



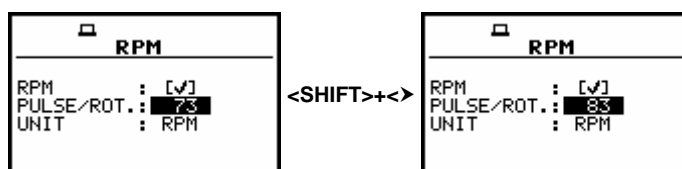
RPM window; the RPM selection

5.6.2 Selecting the number of pulses / rotations - PULSE / ROTATION

The **PULSE / ROTATION** enables the user to select the number of pulses / rotations. Available values are as follows: 1, 2, .. 360. The required parameter can be set by means of the <◀>, <▶> push-buttons (with the step equal to 1) or by means of the <◀>, <▶> push-buttons pressed together with the <Shift> one (with the step equal to 10). The confirmation of the change made in the position requires pressing the <ENTER> push-button, which simultaneously closes the window. The **RPM** window is closed ignoring any changes made in there, after pressing any time the <ESC> push-button.



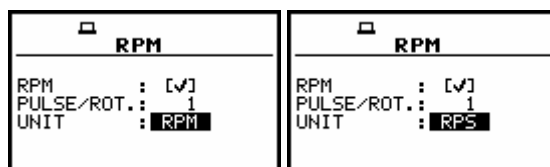
RPM window; the PULSES/ROTATIONS selection with 1 unit step



RPM window; the PULSES/ROTATIONS selection with 10 unit step

5.6.3 Selecting the unit of RPM measurement - UNIT

The **UNIT** enables the user to select the unit of the measurement. In this position two options are available **RPM** – **revolutions per minute** and **RPS** – **revolutions per second**. The selection of the unit is made by means of the <◀>, <▶> push-buttons. The confirmation of the change made in the position requires pressing the <ENTER> push-button, which simultaneously closes the window. The **RPM** window is closed ignoring any changes made in there, after pressing any time the <ESC> push-button.



RPM window; the UNIT selection

6 DATA AVAILABLE ON THE DISPLAY - DISPLAY

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

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



Display in the main list; **DISPLAY** text highlighted

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 and the parameters of the logger's result presentation;
LOGGER VIEW	enables one to select and present the results stored in the logger's files;
CONTRAST	enables one to set the contrast of the instrument's display;
BACKLIGHT	enables one to set the brightness of the instrument's backlight and switch on/off the backlight's timeout;
BATTERY	it informs the user about the source of powering of the instrument and current power supply voltage;
UNIT LABEL	informs the user about the serial number of the instrument, 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 **<▲>**, **<▼>** and **<◀>**, **<▶>** 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.



DISPLAY list; **DISPLAY MODES** text selected

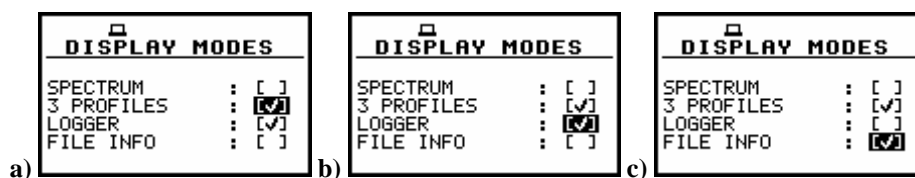
6.1 Selection of the modes of measurement results presentation - DISPLAY MODES

The **DISPLAY MODES** window 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** window 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 results presentation is related with the selection of the instrument's function (**LM**, **1/1 OCTAVE**). Only One Profile mode cannot be switched off independently from the current mode of the instrument.

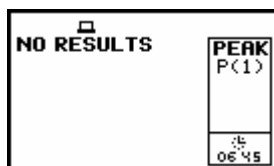
For the **Level Meter** the following possibilities of the measurement results presentation are available:

- **One Profile**,
- **3 PROFILES**,
- **LOGGER** (time history),
- **FILE INFO**.



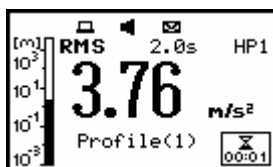
DISPLAY MODES windows

The **LOGGER** mode of results presentation is available if, and only if, the data from at least one profile are logged in the logger's file. If the **LOGGER** position is switched on ([✓]) but there was nothing stored in the logger's file (in the selected profile there were **selected results (PEAK, MAX or RMS)** but the instrument still **waits** for the logger results, i.e. the **LOGGER STEP** is long, the **NO RESULTS** text is displayed. When the **LOGGER** is selected as active and the **LOGGER** positions in all profiles are not selected, the **LOGGER** mode of results presentation is skipped.



LOGGER's display when there is nothing in the logger to be displayed (after setting **LOGGER** as active)

The display with the measurement result in so-called one profile mode is presented below. On the top of the display (under the icons line) there are the following data: the function name (**RMS**, **OVL**, **MTVV** (or **MAX**), **PEAK**) the detector time constant (**100 ms**, **125 ms**, .., **10.0 s**).



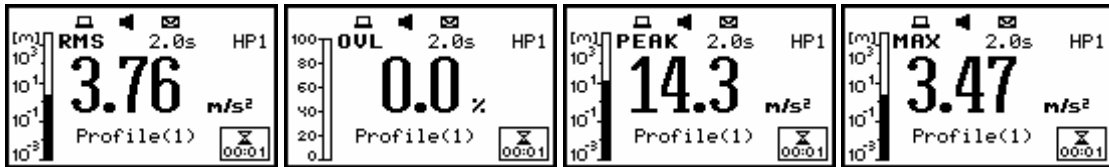
One Profile mode of results presentation



Notice: There is not any indication of the detector in the case of **PEAK** and **OVL** results.

The name of the implemented filter (*path: MENU / INPUT / PROFILE x / FILTER*) is presented as the last element of the first line (**HP1**, **HP3**, **HP10**, **Vel1**, **Vel3**, **Vel10**, **VelMF**, **Dil1**, **Dil3**, **Dil10**).

The result of the measurement together with its units (m/s^2 for almost all results and % only for **OVL**) is given in the second line. The profile, the results are coming from, is visible in the bottom of the display (**Profile(1)**, **Profile(2)** or **Profile(3)**). The vertical line showing the value of the result in the analogue-like form together with the scale is presented at the left side of the display. The real time clock is visible in the bottom right corner of the display. The selection of the result is made by pressing the **<<>**, **<>>** push-buttons.



Measurement results presented in one profile mode

The profile is changed after pressing the **<Shift>** and **<▲>** or **<Shift>** and **<▼>** push-buttons. The same result can be achieved after pressing the **<Alt>** and **<<>** or **<Alt>** and **<>>** push-buttons.

There is also possible to present differently the measurement data in one profile after pressing the **<Alt>** and **<▲>** or **<Alt>** and **<▼>** push-buttons. In this case, the result is displayed with the biggest possible fonts. The name of the result together with the units is given in the bottom line. The current result from a selected profile is changed after pressing the **<>>** or the **<<>** push-buttons. The profile the results are coming from is changed after pressing the **<Shift>** and **<▲>** or **<Shift>** and **<▼>** but the **profile's number is not visible** on the display. The same result can be achieved after pressing the **<Alt>** and **<<>** or **<Alt>** and **<>>** push-buttons.

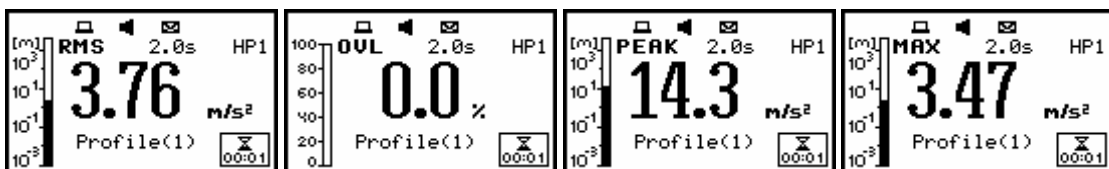
The presentation mode is changed (to **3 PROFILES** and **LOGGER** or **FILE INFO** if all of them are currently available) after pressing the **<▲>** or **<▼>** push-buttons.



Measurement results in unknown profile presented with the biggest fonts in one profile mode

When the measurements are performed, what is indicated on the display by the **loudspeaker** icon, the clock displayed in the right bottom shows the current second of the measurement. The value presented there belongs to the range [1, **INTEGRATION PERIOD**].

The **envelope** icon visible below indicates that the selected results from the profiles (*path: MENU / INPUT / PROFILE x*) are logged.



Displays during the measurement performed with the active LOGGER (an envelope icon)

The results can be saved using **SAVE**, **SAVE NEXT** or **AUTO SAVE** functions after the end of the measurements caused by any reason (remote control, pressed **<Stop>** push-button or fulfilment of the **INTEGR. PERIOD / REP.CYCLE** condition).

It is not possible to save the results during the execution of the measurements.

6.1.1 Switching on/off spectrum view - SPECTRUM

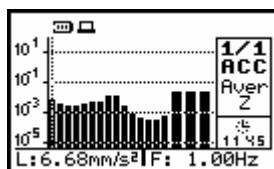
The **SPECTRUM** position is accessible only in **1/1 OCTAVE** (path: *MENU / FUNCTION / MEASUREMENT FUNCTION*). The possibility of the measurement results presentation in **SPECTRUM** can be switched on or off placing or replacing the special character in the displayed inversely line with the **SPECTRUM** text by means of the <◀>, <▶> push-buttons.

In order to confirm the selection the user has to press the <ENTER> push-button. This confirmation closes also the **DISPLAY MODES** window. The window can be also closed after pressing the <ESC> push-button but the settings made there are ignored.

DISPLAY MODES	
SPECTRUM	: [✓]
3 PROFILES	: [✓]
LOGGER	: [✓]
FILE INFO	: []

DISPLAY MODES	
SPECTRUM	: []
3 PROFILES	: [✓]
LOGGER	: [✓]
FILE INFO	: []

DISPLAY MODES windows; SPECTRUM position accessible



Displays in SPECTRUM mode for 1/1 OCTAVE analysis

6.1.2 Switching on/off three profiles view - 3 PROFILES

The possibility of the measurement results presentation in **3 PROFILES** can be switched on or off placing or replacing the special character in the displayed inversely line with the **3 PROFILES** text by means of the <◀>, <▶> push-buttons.

In order to confirm the selection the user has to press the <ENTER> push-button. This confirmation closes also the **DISPLAY MODES** window. The window can be also closed after pressing the <ESC> push-button but the settings made there are ignored.

DISPLAY MODES	
SPECTRUM	: []
3 PROFILES	: [✓]
LOGGER	: [✓]
FILE INFO	: []

DISPLAY MODES	
SPECTRUM	: []
3 PROFILES	: []
LOGGER	: [✓]
FILE INFO	: []

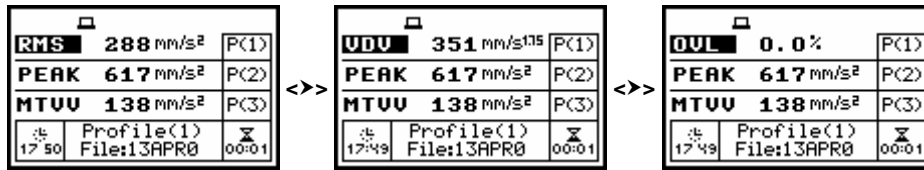
Setting on and off the accessibility of three profiles presentation mode

The exemplary measurement results presented in the **3 PROFILES** mode when the results from three profiles are on the display are given below. In the case of the **3 PROFILES** in three consecutive lines the following data are seen: the name of the function, the result together with the units and the profile number (**P(1)**, **P(2)**, **P(3)**). The current real time, the profile from which the result is displayed inversely and the name of the file, in which the results are saved, are displayed at the bottom. At the right bottom, there is another clock, which displays real time in the case when the measurements are performed and the current second of the measurement – in the opposite case.

RMS		P(1)
288	mm/s²	P(1)
PEAK		P(2)
617	mm/s²	P(2)
MTVV		P(3)
138	mm/s²	P(3)
17:50	Profile(1)	File:13APR0
		00:01

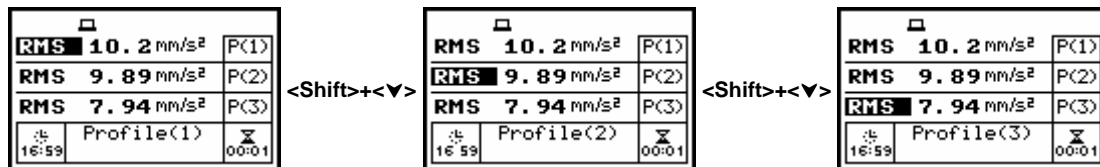
Measurement results in 3 PROFILES mode

The presented result in a selected profile is changed using the <<>, <>> push-buttons as presented below.



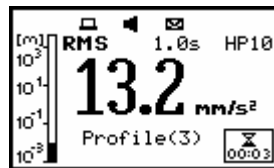
Results in 3 PROFILES mode; selection of the result in a profile

The change of the selected (displayed inversely) profile is done pressing the <Shift> and <V> or <Shift> and <A> push-buttons. The same result can be achieved after pressing the <Alt> and <<> or <Alt> and <>> push-buttons.



Results in 3 PROFILES mode; selection of the profile

During the measurements, which are indicated by the **loudspeaker** icon, the current time from the range [1, **INTEGRATION PERIOD**] is displayed on the right bottom clock. The **envelope** icon indicates that results selected in the profiles (path: MENU / INPUT / PROFILE x) are logged.



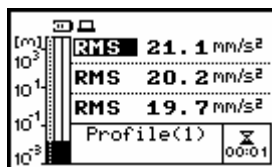
Displays during the measurement performed with the active **LOGGER** (envelope icon)

There is also possible to present differently the measurement data in **3 PROFILES** after pressing the <Alt> and <A> or <Alt> and <V> push-buttons. In this case, at the left side of the display three analogue-like indicators are shown, each one for the selected result from a profile. The currently active profile is marked by the cursor and inversely displayed name of the function. The filter selected in that profile and the integration type (in the case of the linear one) or the detector type (in the case of exponential) are written below the measurement results.

During the measurements, the bottom right clock displays the current time from the range [1, **INTEGRATION PERIOD**]. The current result from a selected profile is changed after pressing the <>> or the <<> push-buttons. The profile, the results are coming from, is changed after pressing the <Shift> and <A> or <Shift> and <V>.

The same result can be achieved after pressing the <Alt> and <<> or <Alt> and <>> push-buttons. When the statistics level **Lxx** is presented, the another levels from the set of ten values are available after pressing the <Shift> and <<> or <Shift> and <>> push-buttons.

The results can be saved using **SAVE**, **SAVE NEXT** or **AUTO SAVE** functions after the end of the measurements caused by the selected reasons. It is not possible to save the results during the execution of the measurements. In the case when the saving was done, the name of the logger's file is presented in the bottom line of one profile display and the clock starts to show the real time. The presentation mode is changed (to one profile and **LOGGER** or **FILE INFO** if all of them are currently available) after pressing the <A> or <V> push-buttons.



Displays during the measurement performed in LEVEL METER mode with the active **LOGGER** (the first three) and after saving the results (the last one)

6.1.3 Setting on/off logger view - **LOGGER**

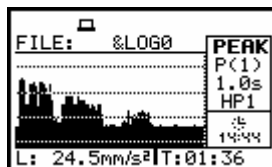
The possibility of the presentation of the measurement results, which are saved in the logger, on the instrument's display can be switched on or off placing or replacing the special character in the displayed inversely line with the **LOGGER** text by means of the <<>, <>> push-buttons.

In order to confirm the selection the user has to press the <ENTER> push-button. This confirmation closes also the **DISPLAY MODES** window. The window can be also closed after pressing the <ESC> push-button but the settings made there are ignored.

DISPLAY MODES		DISPLAY MODES	
SPECTRUM	: []	SPECTRUM	: []
3 PROFILES	: [✓]	3 PROFILES	: [✓]
LOGGER	: [✓]	LOGGER	: []
FILE INFO	: []	FILE INFO	: []

Setting on and off the accessibility of **LOGGER** presentation mode

The results saved in the logger can be presented in three different modes which differ slightly each other. These modes are changed after pressing the <Alt> and <▲> or the <Alt> and <▼> push-buttons or they can be set in the **VIEW** (path: MENU / DISPLAY / DISPLAY SETUP / **LOGGER VIEW** / **VIEW**).



Exemplary displays with the measurement results saved in the logger

6.1.4 Setting on/off the view of the file description - **FILE INFO**

The possibility of the additional file description presented on the instrument's display can be switched on or off placing or replacing the special character in the displayed inversely line with the **FILE INFO** text by means of the <<>, <>> push-buttons.

In order to confirm the selection the user has to press the <ENTER> push-button. This confirmation closes also the **DISPLAY MODES** window. The window can be also closed after pressing the <ESC> push-button but the settings made there are ignored.

DISPLAY MODES		DISPLAY MODES	
SPECTRUM	: []	SPECTRUM	: []
3 PROFILES	: [✓]	3 PROFILES	: [✓]
LOGGER	: [✓]	LOGGER	: [✓]
FILE INFO	: []	FILE INFO	: [✓]

Setting on and off the file description presentation mode

In the **FILE INFO** window the file name, its size, date and time of the registration of the main results (cf. App. B) and time (so-called **ELAPSED TIME**) during which the main results saved in the logger were measured. The value presented there belongs to the range [1, **INTEGRATION PERIOD**] and depends on the moment and the way the measurements were stopped.

FILE INFO	FILE INFO
FILE NAME: 16OCT0	FILE NAME: 19MAR63
FILE SIZE: 374B	FILE SIZE: 466B
DATE: 16 OCT 2006	DATE: 19 MAR 2007
TIME: 09:13:14	TIME: 18:00:22
ELAPSED TIME:00:00:01	ELAPSED TIME:00:00:01

Exemplary contents of FILE INFO window

6.2 Setting the parameters of the graphical modes - DISPLAY SETUP

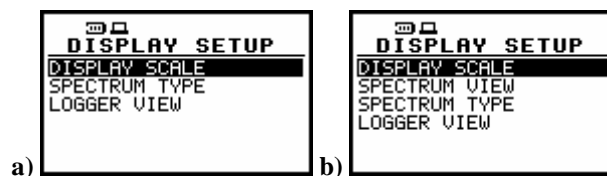
The **DISPLAY SETUP** window enables the user to change several parameters of the graphical results presentations. Using the **DISPLAY SCALE** window for example, one can select the scale in the available modes of graphical presentation of the measurement results (time history in the **LOGGER** and spectra in the **SPECTRUM**). Using the **TOTAL VALUES** window it is possible to select the weighting filters used in the calculation of the Total values. This window appears on the display only in the case of **1/1 OCTAVE** analyser. Using the **SPECTRUM TYPE** window it is possible to select the spectrum type which has to be presented during the vibration measurements. 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** window is closed and the instrument returns to the **DISPLAY** after pressing the **<ESC>** push-button, which ignores any changes in the positions of the window or the **<ENTER>** push-button, which confirms the changes.



DISPLAY list with DISPLAY SETUP selected

6.2.1 Setting the scale of the presentation and the display's grid - DISPLAY SCALE

The **DISPLAY SCALE** window enables the user to change the scale in the available modes of graphical presentation of the measurement results and switch on/off the grid. 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** window. The **DISPLAY SCALE** window is closed and the instrument returns to the **DISPLAY SETUP** window after pressing the **<ESC>** (the settings made there are not confirmed) or the **<ENTER>** push-button (the settings are confirmed).

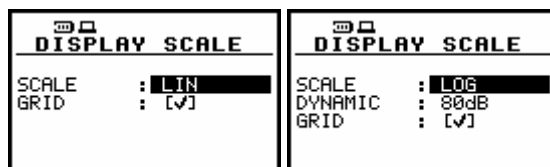


DISPLAY SETUP windows in LM (a) and in 1/1 OCTAVE (b)

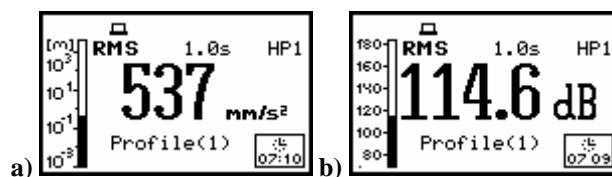
6.2.1.1 Setting the scale of the measurement results presentation - SCALE

In the **SCALE** position 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** – path: **MENU / SETUP / 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.



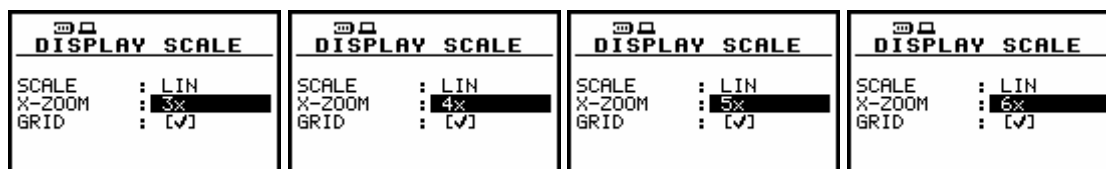
Displays with the possible options of SCALE



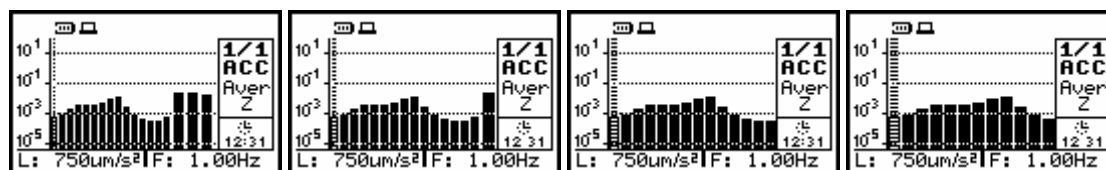
Measurement results presented in linear [mm/s²] (a) and logarithmic [dB] (b) scale

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

The **X-ZOOM** enables the user to change the horizontal axis in the **SPECTRUM** presentation mode by means of the <◀>, <▶> push-buttons. In order to confirm the selection the user has to press the <ENTER> push-button, which closes also the **DISPLAY SCALE** window. The window can be also closed after pressing the <ESC> push-button but the settings made there are ignored. In **1/1 OCTAVE** mode available values are **3x**, **4x**, **5x** and **6x**. In **1/1 OCTAVE** in spectrum presentation mode the **X-ZOOM** can be changed by pressing **SHIFT** and <▶> push-buttons.



DISPLAY SCALE windows; X-ZOOM selection

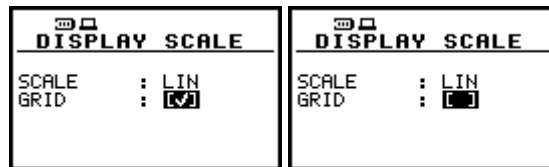


Displays in 1/1 OCTAVE SPECTRUM 3x, 4x, 5x and 6x X-ZOOM

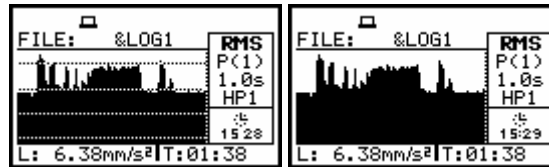
6.2.1.3 Switching on/off the grid in the graphical mode presentation - GRID

The **GRID** enables the user to switch on or off the grid in any graphical presentation placing or replacing the special character in the displayed inversely line with the **GRID** text by means of the <◀>, <▶> push-buttons.

In order to confirm the selection the user has to press the <ENTER> push-button. This confirmation closes also the **DISPLAY SCALE** window. The window can be also closed after pressing the <ESC> push-button but the settings made there are ignored.



DISPLAY SCALE windows with the grid switched on and off



Displays with the grid switched on and off

6.2.2 Setting the parameters of the logger files presentation - SPECTRUM VIEW

The **SPECTRUM VIEW** enables the user to change the shape of the graphical presentation (**VIEW**) and a **TYPE** parameter as well as to activate the presentation on the display the **MAX** and **MIN** spectrum.

In the **VIEW** position the **EXTENDED**, **FULL** and **NORMAL** views are available (by means of the <<>, <>> push-buttons). In the **TYPE** position the **AVERAGED**, **INSTANTANEOUS**, **MAX** and **MIN** texts are available (by means of the <<>, <>> push-buttons).

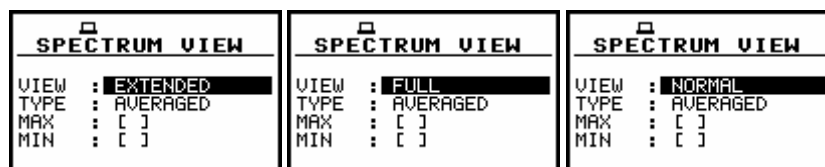
In order to enter this window one has to press the <ENTER> push-button on the inversely displayed **LOGGER VIEW** text of the **DISPLAY SETUP** window. The **LOGGER VIEW** window is closed and the instrument returns to the **DISPLAY SETUP** window after pressing the <ESC> (the settings made there are not confirmed) or the <ENTER> push-button (the settings are confirmed).



DISPLAY SETUP window; SPECTRUM VIEW text highlighted

6.2.2.1 Selection of the graphical presentation type - VIEW

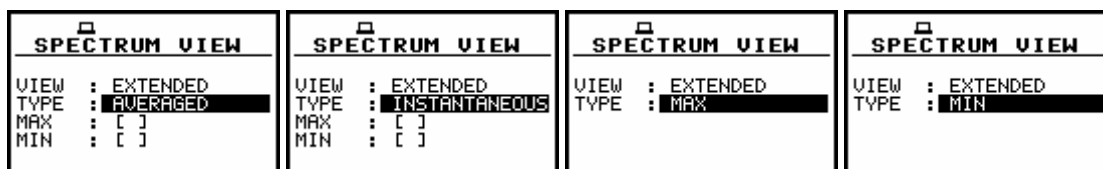
In the **VIEW** position the **EXTENDED**, **FULL** and **NORMAL** texts are available after pressing the <<>, <>> push-buttons. These texts correspond to the slightly different data presented on the display in the graphical presentation modes.



SPECTRUM VIEW windows; VIEW selection

6.2.2.2 Selection of the spectrum type for the presentation - TYPE

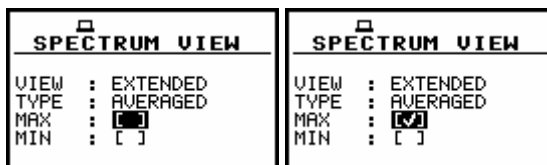
In the **TYPE** position the **AVERAGED**, **INSTANTANEOUS**, **MAX** and **MIN** texts are available after pressing the <<>, <>> push-buttons. Each text corresponds to the different spectrum type to be presented on the display in the graphical presentation modes.



SPECTRUM VIEW windows; TYPE selection

6.2.2.3 Selection of the MAX spectrum for the presentation - MAX

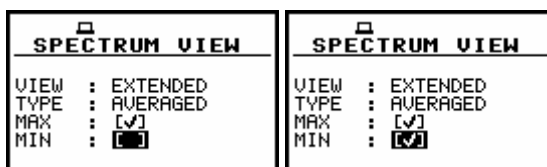
In the **MAX** the corresponding spectrum can be selected (by means of the <<>, <>> push-buttons) to be presented on the display in the graphical presentation modes.



SPECTRUM VIEW windows; MAX selection

6.2.2.4 Selection of the MIN spectrum for the presentation - MIN

In the **MIN** the corresponding spectrum can be selected (by means of the <<>, <>> push-buttons) to be presented on the display in the graphical presentation modes.



SPECTRUM VIEW windows; MIN selection

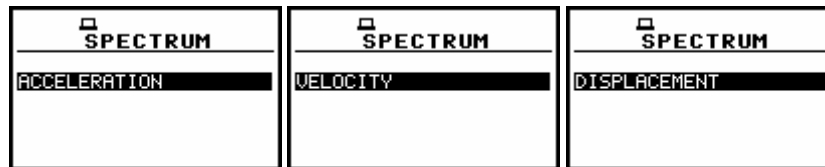
6.2.3 Selection of the Spectrum Type - SPECTRUM TYPE

The **SPECTRUM TYPE** enables the user to change the spectrum type. This window contains three positions: **ACCELERATION**, **VELOCITY** and **DISPLACEMENT**.

In order to enter this window one has to press the <ENTER> push-button on the inversely displayed **SPECTRUM TYPE** text of the **DISPLAY SETUP** window. The user can selected the required type of the spectrum presented on the display by means of the <<>, <>> push-buttons. The **SPECTRUM TYPE** window is closed and the instrument returns to the **DISPLAY SETUP** list after pressing the <ESC> push-button, which ignores any changes in the positions of the window or the <ENTER> push-button, which confirms the changes.



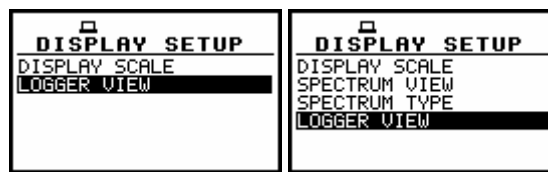
DISPLAY SETUP window; SPECTRUM TYPE text highlighted



SPECTRUM TYPE windows with the available values

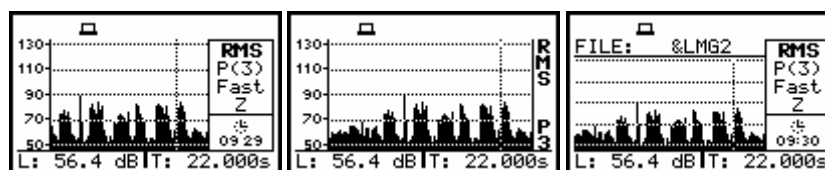
6.2.4 Setting the parameters of the logger files presentation - **LOGGER VIEW**

The **LOGGER VIEW** enables the user to change the shape of the graphical presentation and a **TIME** parameter. In order to enter this window one has to press the **<ENTER>** push-button on the inversely displayed **LOGGER VIEW** text of the **DISPLAY SETUP** window. The **LOGGER VIEW** window is closed and the instrument returns to the **DISPLAY SETUP** window after pressing the **<ESC>** (the settings made there are not confirmed) or the **<ENTER>** push-button (the settings are confirmed).

DISPLAY SETUP windows; **LOGGER VIEW** text highlighted

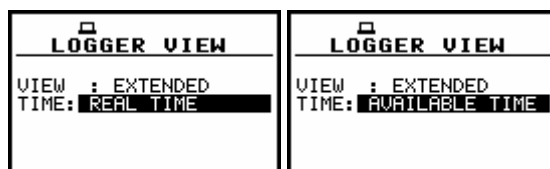
6.2.4.1 Selecting the shape of the graphical presentation - **VIEW**

The **VIEW** enables the user to select the shape of the graphical mode presentation. Three different views are available which are called as **NORMAL**, **FULL** and **EXTENDED**. The selection is made by means of **<<>**, **<>>** push-buttons and pressing the **<ENTER>** for the confirmation. The user can achieve the same effect after pressing the **<Alt>** and **<^>** or the **<Alt>** and **<v>** push-buttons.

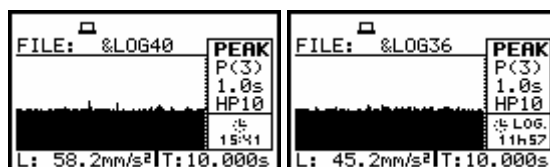
LOGGER VIEW windows with the possible values of **VIEW** parameterDisplays with the possible values of **VIEW** parameter

6.2.4.2 Setting the time to be presented - **TIME**

The **TIME** enables the user to select the time to be presented with the logger's file results. The **REAL TIME** selection means that on the display the real time is visible, while **AVAILABLE TIME** means that time after which the logger's memory will be filled up by the current measurement result is given there. The selection is made using the **<<>**, **<>>** push-buttons and pressing the **<ENTER>** for the confirmation.



LOGGER VIEW windows with the possible values of TIME parameter



Displays with the possible values of TIME parameter

6.3 Selection of the logger's file to the display presentation - LOGGER VIEW

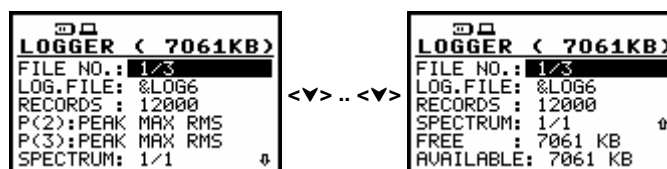
The **LOGGER** enables the user to examine the contents of the logger files. In order to open this window the user has to press the <ENTER> push-button when the **LOGGER VIEW** text is displayed inversely.



DISPLAY list; LOGGER VIEW text highlighted

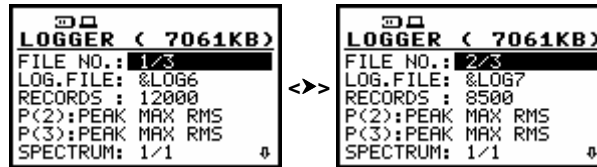
In the first line the available still logger's memory is displayed followed by:

- The selected number of the logger's file and the number of all saved files (**FILE NO.:**).
- The name of the logger's file (**LOG.FILE:**).
- The number of the records in the file, which name is displayed in the previous line (**RECORDS:**).
- The results saved (if any are present) in the logger from the first profile (**P(1):**).
- The results saved (if any are present) in the logger from the second profile (**P(2):**).
- The results saved (if any are present) in the logger from the third profile (**P(3):**).
- The type of spectrum (if any results from the logger of 1/1 octave analysis are present) (**SPECTRUM: 1/1**).
- The size of the remaining free memory for logger files (**FREE:**).
- The size of the available memory for logger file (**AVAILABLE:**).



Displays in LOGGER VIEW window

The selection of the logger's file to be viewed is done by pressing the <<>, <>> push-buttons.

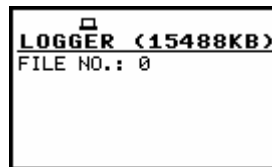


Displays in LOGGER VIEW window; the selection of the file to be viewed

The size of the **FREE** memory for logger files is equal to the size of the **AVAILABLE** memory for logger file in the case when the logger files were not deleted from the memory. If it has happened, the **FREE** memory is always smaller than **AVAILABLE**.

In order to increase the free memory space and achieve the available one, the user has to perform the defragmentation (*path: MENU / FILE / DEFRAGMENTATION / LOGGER DEFRAGMENT.*).

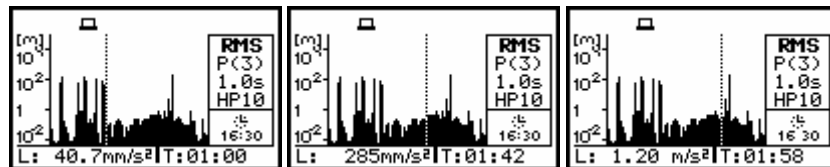
The display of the instrument after entering the **LOGGER VIEW** looks as on the figure below in the case when the logger's file does not exist (there was no measurement or the measurements were performed but with the settings **LOGGER: Off** - *path: MENU / INPUT / MEASUREMENT SETUP*).



Display in LOGGER VIEW window in the case when the files do not exist

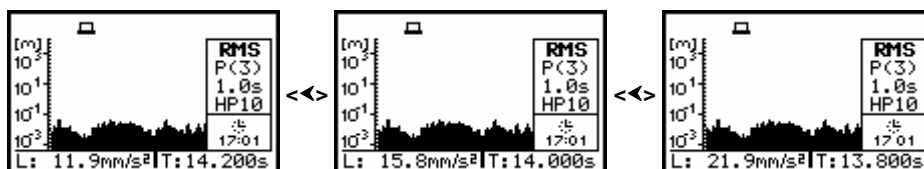
The contents of the selected logger's file is displayed after pressing the **<ENTER>** push-button. The cursor position is changed after pressing the **<<>**, **<>>** push-buttons. The left end of the graphical presentation is reached immediately after pressing the **<Shift>** and **<<>** while the right end - after pressing the **<Shift>** and **<>>** push-buttons.

The type of the registered result, the number of the profile 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 in the **NORMAL** and **EXTENDED** logger's view mode on the right side of the display.



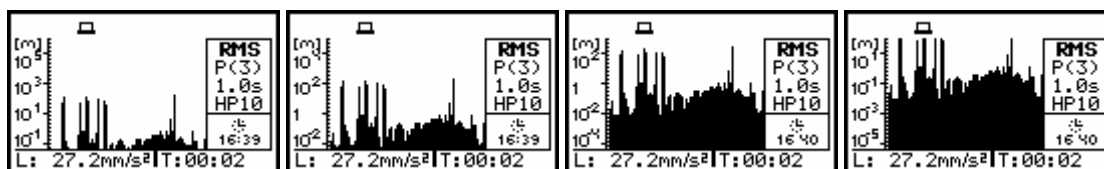
Displays with the selected logger's file; the change of the cursor position

The scrolling of the display to the right/left is made when the cursor is at the left/right end of the graphical presentation space and the **<<>**, **<>>** push-button is still pressed and in the file there are still the results.



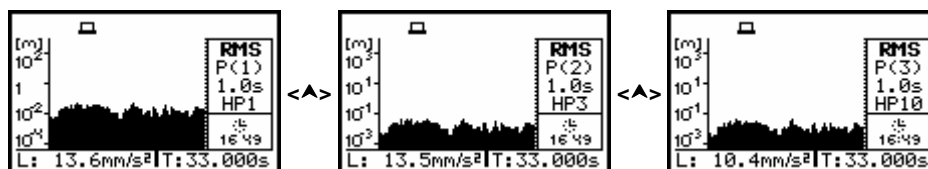
Displays with the selected logger's file; the scrolling to the left

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.



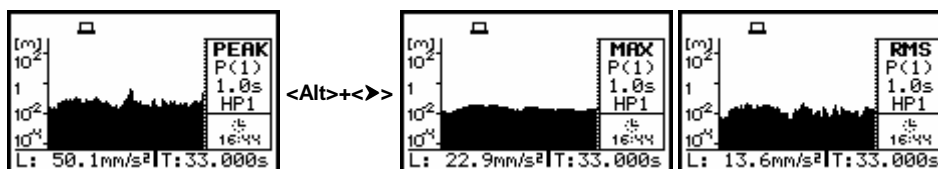
Displays with the selected logger's file; the change of the axis relation

The results from logger's file, coming from different profiles, are changed after pressing the **<▲>** or **<▼>** push-buttons – after each pressing the result from the next profile is displayed.



Displays with the selected logger's file; the change of the profile

The results from logger's file, coming from the same profile, are displayed after each pressing of the **<Alt>** and **<◀>** or **<Alt>** and **<▶>** push-buttons.



Displays with the selected logger's file; the change of the result from a profile

6.4 Setting the contrast of the display - CONTRAST

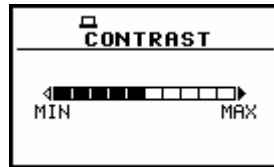
The **CONTRAST** window enables the user to set the proper contrast of the display. In order to enter the window one has to press the **<ENTER>** push-button on the inversely displayed **CONTRAST** text of the **DISPLAY** list. The user can select 21 different values of this parameter. The **CONTRAST** window is closed and the instrument returns to the **DISPLAY** list after pressing the **<ESC>** or the **<ENTER>** push-button.



DISPLAY list; 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).



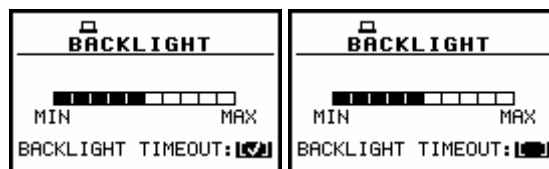
SCREEN SETUP windows; the change of the contrast

6.5 Setting the backlight of the display and the backlight timeout - BACKLIGHT

In the **BACKLIGHT** window, the user is able to set the brightness of the instrument's **BACKLIGHT** and switch on/off the **BACKLIGHT TIMEOUT**.



DISPLAY list; BACKLIGHT text highlighted



BACKLIGHT window; BACKLIGHT TIMEOUT switched on and off

Taking into account the saving of the internal source of the instrument's power, the backlight should be used relatively rare. It is possible to set the backlight's automatic switch off. 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.

6.6 Checking the state of the internal battery - BATTERY

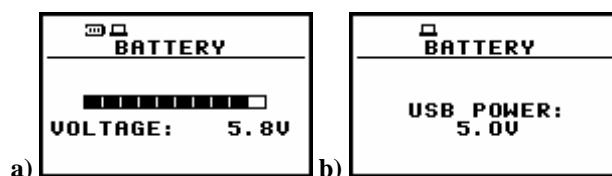
The **BATTERY** enables the user to check the internal battery condition. In order to enter the window one has to press the **<ENTER>** push-button on the inversely displayed **BATTERY** text of the **DISPLAY** list. The **BATTERY** window is closed and the instrument returns to the **DISPLAY** list after pressing the **<ESC>** or the **<ENTER>** push-button.



DISPLAY list; BATTERY text highlighted

The instrument can be powered from four AA standard (or AA rechargeable) batteries or from the USB interface when its USB Device socket is connected by means of the cable to a PC.

The view presented on the display in each case is different. The current battery voltage is displayed together with its approximate state (in the graphical form).



BATTERY window when the instrument is powered from the batteries (a) and from the USB interface (b)

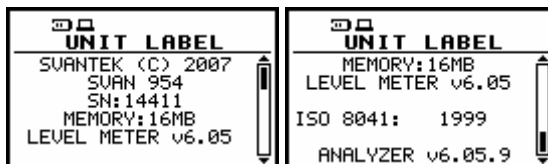
6.7 Checking specification of the instrument - UNIT LABEL

The **UNIT LABEL** enables the user to check the type of the instrument, its serial number, the current software versions installed in it and the standards, which the instrument fulfils. In order to enter the list one has to press the **<ENTER>** push-button on the inversely displayed **UNIT LABEL** text of the **DISPLAY** list. The **UNIT LABEL** window is closed and the instrument returns to the **DISPLAY** list after pressing the **<ESC>** or the **<ENTER>** push-button.



DISPLAY list; **UNIT LABEL** text highlighted

After pressing the **<<>**, **<>>** (or **<▲>**, **<▼>**) push-buttons the displayed text is scrolled on the display and the user can check the number of the standard fulfilled by the instrument and the current software version. The window is closed and the instrument returns to the **DISPLAY** list after pressing the **<ESC>** or **<ENTER>** push-button.



UNIT LABEL windows opened and scrolled with **<▲>**, **<▼>** push-buttons



Notice: The contents of the **UNIT LABEL** should be always transmitted to the Svantek's service in the case of any problems faced by the user during the instrument's operation.

7 SAVING THE MEASUREMENT RESULTS - FILE

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. **Save files containing the main results and setup settings using the FILE list.**
2. **Save data in the logger's file.**



Notice: *The instrument's logger memory is independent from the results and setup memory.*

Saving files

In the case of the **SVAN 954** instrument there are files containing data:

- from Vibration **LEVEL METER**;
- from **1/1 OCTAVE** analysis;
- stored in the instrument's logger (accessible in the **DISPLAY / LOGGER VIEW** window).



Notice: *The logger files are created automatically (the usage of the **SAVE** 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 profiles;
- the marker of the end of the file.

The other elements of the file structure depend on the type of the file (**VLM**, **1/1 OCTAVE**, logger). These elements are as follows:

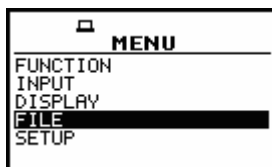
- the main results;
- the results coming from **1/1 OCTAVE** analysis;
- the header of the file from the logger;
- the data stored during the measurements in the logger's file.



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

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

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

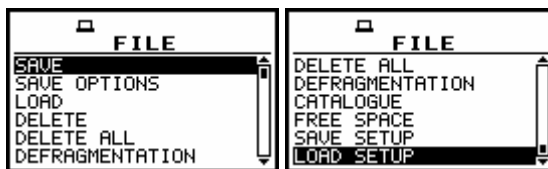


Main list; FILE text highlighted

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

SAVE	enables one to save the measurement results as a file in the instrument's 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 consolidate the flash memory after deleting some files from it;
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 save the setup as a file in the instrument memory;
LOAD SETUP	enables one to load to the working space of the instrument's memory the selected setup 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 **<▼>** (or **<Shift>** and **<▶>**) results in a movement to the last position of the opened list.



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.

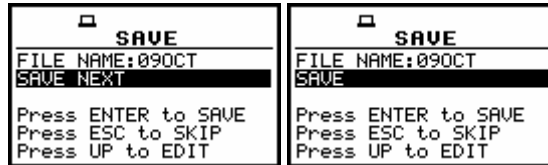
In the case when the measurement is performed, the execution of the options from the **FILE** list is impossible (only access to **SAVE OPTIONS**, **CATALOGUE** and **FREE SPACE** is still possible) and the **MEASUREMENT IN PROGRESS** message appears on the display.



Display after the attempt to perform an unavailable operation during measurement in progress

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

The **SAVE** is used for storing data in the internal non-volatile (FLASH DISC) memory (files are always written at the beginning of a free continuous space) as a file (see Appendix B for the file formats). In order to enter the window the user has to select the **SAVE** text in the **FILE** list, using the **<▲>** (or **<◀>**) push-button and press the **<ENTER>** push-button. There are two available functions: the **SAVE NEXT** – save a file with the name increased by one, and **SAVE** – save a file with the edited name. These functions are available after pressing the **<◀>**, **<▶>** push-buttons.



SAVE window in FILE list

The name of the file, in which the measurements results are to be saved, is displayed above 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). The default name consists of the day and the month's abbreviation. The line of the file's name edition (**FILE NAME**) is opened after pressing the **<▲>** push-button.

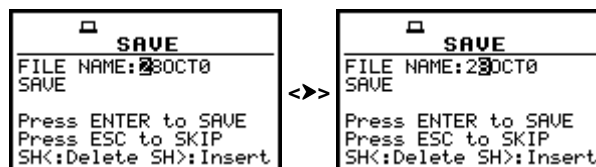
The user can skip the file's name edition and start saving file pressing the **<ENTER>** push-button or return to the **FILE** list pressing the **<ESC>** one.

The edition process is presented on the Figure below. The highlighted character is currently edited. The **<◀>**, **<▶>** and **<▲>**, **<▼>** pressed together with **<Shift>** push-buttons are used for editing the name which cannot exceed eight characters.



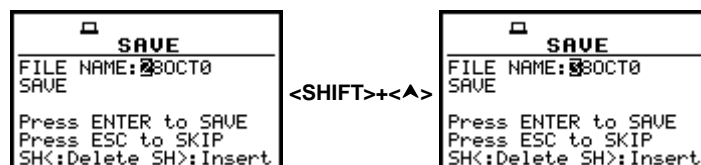
Display during the process of setting the character in the edited name

One can select the position of the character in the edited text using the **<◀>**, **<▶>** push-buttons.

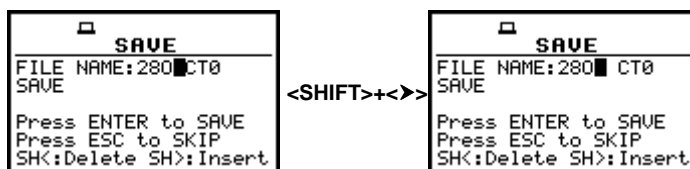


Display during the selection of the character's position to be edited

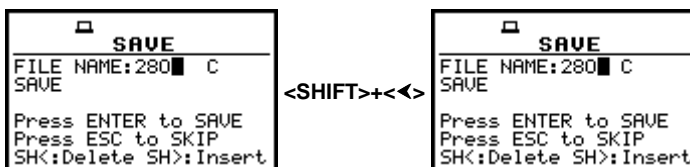
The available ASCII characters can be changed using the **<▲>** (or **<▼>**) push-button pressed together with the **<Shift>** one. The subsequent digits, underline, big letters and space appear on the display in the highlighted position after each pressing of the mentioned above push-buttons.



Display during the selection of the character



FILE NAME edition after pressing <Shift> and <>> push-buttons



FILE NAME edition after pressing <Shift> and <<< push-buttons

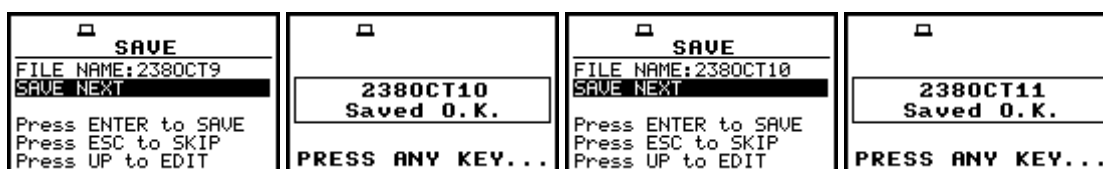
The edited name is accepted and the file is saved after pressing the <ENTER> push-button. The special warning is displayed in the case the file with the edited name already exists in the memory. The instrument waits then for a reaction of the user (any push-button should be pressed except the <Shift> or the <Alt> one).



Displays during the attempt of overwriting the existing file, changing the name and saving data

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 return after the edition to the line with the **SAVE** or **SAVE NEXT** text is possible after pressing the <▼> push-button.

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 made automatically. After the execution of the saving operation the new file name is displayed and the instrument waits then for a reaction of the user (any push-button should be pressed except the <Shift> or the <Alt> one). In the next attempt of saving data, the new name is displayed in the **FILE NAME** line and that name is increased by one during the saving operation.



Displays in the simplified edition of the file name and the execution of the saving operation

The number can be changed from 0 to 999999. In the case, when such limitation is achieved and the instrument can not change automatically the file's name the only possibility is to edit new base file name.



Notice: The files can be overwritten (the use of the same file name) **without any warning** if the **REPLACE** option is switched on (path: MENU / FILE / SAVE OPTIONS / REPLACE).

SAVE FILE NAME:12380CT8 SAVE NEXT Press ENTER to SAVE Press ESC to SKIP Press UP to EDIT	12380CT9 Saved O.K. PRESS ANY KEY...	SAVE FILE NAME:12380CT9 SAVE NEXT Press ENTER to SAVE Press ESC to SKIP Press UP to EDIT	12380CT9 .. is used! PRESS ANY KEY...
--	---	--	--

Displays in the simplified edition of the file name, saving and the “saturation” of that operation

As it was already written, 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 special message is displayed for about 3 seconds in this case and the instrument returns to the **SAVE** window.

MEASUREMENT IN PROGRESS	SAVE FILE NAME:380CT0 SAVE NEXT Press ENTER to SAVE Press ESC to SKIP Press UP to EDIT
------------------------------------	--

Displays after the attempt to perform unavailable saving operation and the return to SAVE NEXT

The presented below message is displayed after trying to execute the save operation in the case when no measurements were performed and there are no results to be saved. The instrument then waits for the reaction of the user (any push-button should be pressed except the **<Shift>** or the **<Alt>** one) and after pressing a push-button it returns to the **SAVE** window.

SAVE No results! PRESS ANY KEY...
--

Display after SAVE operation when there were no results for storing

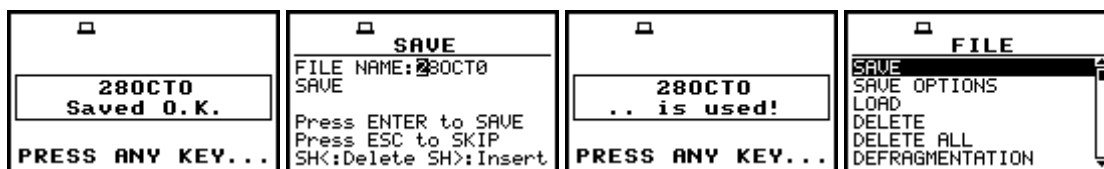


Notice: During the execution of the **SAVE** or **SAVE NEXT** function an additional window is displayed informing about the operation performed. In the case of short files, this window can be unnoticed by the user.

SAVE FILE NAME:01JAN21 SAVE Press ENTER to SAVE Press ESC to SKIP SH<Delete SH>:Insert	01JAN21 Saving...	01JAN21 Saved O.K. PRESS ANY KEY...	FILE SAVE SAVE OPTIONS LOAD DELETE DELETE ALL DEFRAGMENTATION
--	-----------------------------	--	--

Displays during and after the execution of SAVE operation

As it was already written, it is not possible to store the data in the file, which already exists, when the **REPLACE** is not active ([1]) (path: MENU / FILE / SAVE OPTIONS / REPLACE). The presented below sequence of displays illustrates the situation when during the name edition process the user selected the name, which was used before. The instrument displays a special message and waits for the reaction of the user (any push-button should be pressed except the **<Shift>** or the **<Alt>** one) and after pressing a push-button it returns to the **FILE** list.



Displays after the attempt to overwrite a file if REPLACE is not active



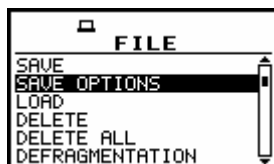
Notice: The direct access to the **SAVE / SAVE NEXT** function is possible after pressing simultaneously the **<ENTER>** and **<Alt>** push-buttons if the **DIRECT SAVE** option is switched off (path: MENU / FILE / SAVE OPTIONS / DIRECT SAVE). In another case, (**DIRECT SAVE** option is switched on) the results are saved, after pressing these push-buttons, in the file with the automatically incremented name.



Notice: After the usage of the **<ENTER>** and **<Alt>** push-buttons (if the **DIRECT SAVE** option is switched on) the measurement results are saved only once. The following pressing will not cause any instrument's reaction unless next measurement is performed. The same result can be saved in the multiply number of files only using the **SAVE / SAVE NEXT** function.

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

The **SAVE OPTIONS** window is used for the selection of the options of data storing in the **FLASH DISC** memory of the instrument. The window is opened after pressing the **<ENTER>** push-button when the **SAVE OPTIONS** text in the **FILE** list is highlighted (selected using the **<▲>**, **<▼>** (or **<◀>**, **<▶>**) push-buttons). The return to the **FILE** list is possible after pressing the **<ESC>** push-button.



FILE list with SAVE OPTIONS text highlighted

It is possible to write data into the same part of the memory starting all the time with the same address (**RAM FILE**), to replace the existing in the memory file by the new with the same name (**REPLACE**), to save automatically the results of the measurements (**AUTO SAVE**), to save the results of measurements directly (**DIRECT SAVE**), to save maxima / minima from the spectrum (**SAVE MAX SPECT.**, **SAVE MIN SPECT.**). The position of the window is changed after pressing the **<▲>**, **<▼>** push-buttons. In order to confirm the selection the **<ENTER>** push-button has to be pressed. Such pressing closes also the opened window.

7.2.1 Saving data starting from the same address - RAM FILE

The measurement data usually are saved in the different files in the flash memory of the instrument. There is also possibility to save data in RAM file starting from the same address. It means that each time the data are saved the previous file is overwritten. This option is useful for the permanent monitoring and remote reading data from the instrument by means of any available

interface with the proper period. In order to read data saved in a RAM file one has to use **#4,3** function described in details in App. A.

The **RAM FILE** is switched on after placing the special character ([√]) in the highlighted position in the line with the **RAM FILE** text. The activation or deactivation of the **RAM FILE** is done by pressing the <<>, <>> push-buttons.

SAVE OPTIONS		SAVE OPTIONS	
RAM FILE	: []	RAM FILE	: [√]
REPLACE	: []	REPLACE	: []
AUTO SAVE	: []	AUTO SAVE	: []
DIRECT SAVE	: []	DIRECT SAVE	: []
SAVE MAX SPECT.:	[]	SAVE MAX SPECT.:	[]
SAVE MIN SPECT.:	[]	SAVE MIN SPECT.:	[]

SAVE OPTIONS window; the selection of RAM FILE

After pressing the <ENTER> push-button the selections made in any position of the window (in particular also in the **RAM FILE**) are confirmed and the window is closed. In the case when the **AUTO SAVE** was active ([√]), after pressing the <ENTER> push-button the **FILE NAME** window is opened for editing the names for the **AUTO SAVE** files. The **SAVE OPTION** is closed ignoring all settings made in it after pressing the <ESC> push-button.

7.2.2 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**. It is possible to erase the old file and to save the new one with the same name if the position is active ([√]). The activation or deactivation of the **REPLACE** is done by pressing the <<>, <>> push-buttons.

SAVE OPTIONS		SAVE OPTIONS	
RAM FILE	: []	RAM FILE	: []
REPLACE	: [√]	REPLACE	: [√]
AUTO SAVE	: []	AUTO SAVE	: []
DIRECT SAVE	: []	DIRECT SAVE	: []
SAVE MAX SPECT.:	[]	SAVE MAX SPECT.:	[]
SAVE MIN SPECT.:	[]	SAVE MIN SPECT.:	[]

SAVE OPTIONS window; the selection of REPLACE

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**. In the other case, the existing file is overwritten.

12380CT9 .. is used!		12380CT9 Saved O.K.	
PRESS ANY KEY...		PRESS ANY KEY...	

Displays during the file saving when REPLACE is switched off and on

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

7.2.3 Controlling the measurement results savings - AUTO SAVE

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

SAVE OPTIONS		SAVE OPTIONS	
RAM FILE	: []	RAM FILE	: []
REPLACE	: []	REPLACE	: []
AUTO SAVE	: [✓]	AUTO SAVE	: [✓]
DIRECT SAVE	: []	DIRECT SAVE	: []
SAVE MAX SPECT.	: []	SAVE MAX SPECT.	: []
SAVE MIN SPECT.	: []	SAVE MIN SPECT.	: []

SAVE OPTIONS window; the selection of AUTO SAVE



Notice: The **AUTO SAVE** function can be performed only in the case when the **INTEGR. PERIOD** (path: MENU / INPUT / MEASUREMENT SETUP) is not less than 10 seconds. If it is less than 10 seconds, the measurement results are not saved without any indication of that fact! There is only one exception - when the **REP. CYCLE** (path: MENU / INPUT / MEASUREMENT SETUP) is equal to one, the **AUTO SAVE** function is executed disregarding the value of the integration period.

The **FILE NAME** window is opened after switching on the **AUTO SAVE** function and pressing the **<ENTER>** push-button. After pressing the **<ESC>** push-button the **FILE NAME** window is closed and the instrument returns to the **SAVE OPTION**, but with the **AUTO SAVE** function switched off.

SAVE OPTIONS		FILE NAME	
RAM FILE	: []	@3ES5	
REPLACE	: []		
AUTO SAVE	: [✓]		
DIRECT SAVE	: []		
SAVE MAX SPECT.	: []		
SAVE MIN SPECT.	: []	SH<:Delete SH>:Insert	

Displays during the execution of AUTO SAVE switching on

When the integration period is too short for switching on the **AUTO SAVE** option the following message appears on the display:

INT.PERIOD TOO SHORT AUTO SAVE DISABLED	
PRESS ANY KEY...	

Display after attempt of switching on AUTO SAVE option with too short INT. PERIOD

The **FILE NAME** window is closed after pressing the **<ENTER>** push-button with the confirmation of the **AUTO SAVE** function switched on and the user interface returns to the **FILE** list.

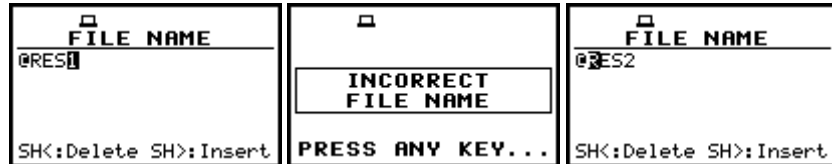
SAVE OPTIONS		FILE NAME	
RAM FILE	: []	@3ES5	
REPLACE	: []		
AUTO SAVE	: [✓]		
DIRECT SAVE	: []		
SAVE MAX SPECT.	: []		
SAVE MIN SPECT.	: []	SH<:Delete SH>:Insert	

Displays during the execution of AUTO SAVE switching on

The edition of the file name in the **FILE NAME** window is performed almost in the same way as it was described in the case of the **SAVE / SAVE NEXT** function. The highlighted character is currently edited. The **<<>**, **<>>**, **<^>**, **<v>** push-buttons are used for editing the name which cannot exceed eight characters including the starting special character @ which cannot be edited. One can select the proper position of the character in the edited text using the **<<>**, **<>>** push-buttons. The available

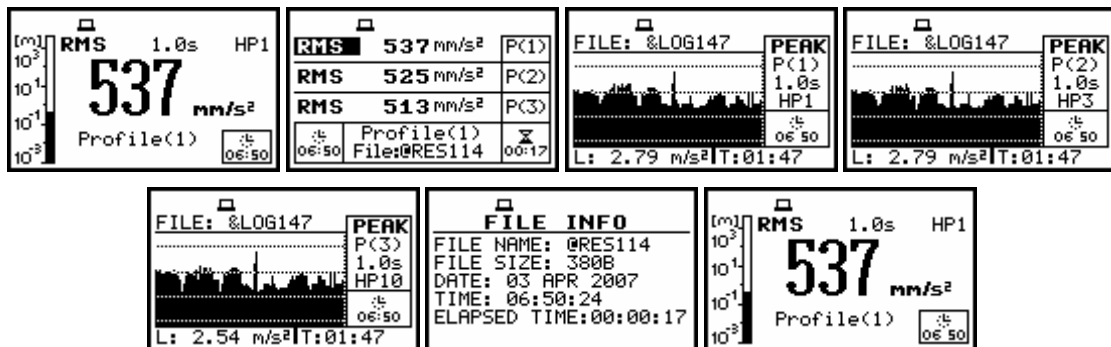
ASCII characters can be changed using the $\langle \blacktriangle \rangle$ or $\langle \blacktriangledown \rangle$ push-buttons. The subsequent digits, underline, big letters and space appear on the display in the highlighted position after each pressing of the mentioned above push-buttons.

The edition is finished after pressing the $\langle \text{ENTER} \rangle$ push-button. The edited name is compared with the file names existing in the catalogue. In the case when the file with the same name already exists, the special message is displayed and after pressing any character except the $\langle \text{Shift} \rangle$ or $\langle \text{Alt} \rangle$ one, the instrument returns once more to the **FILE NAME** window.



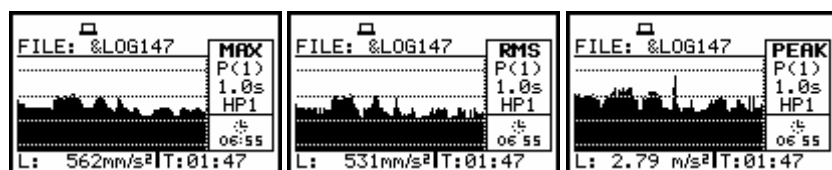
Displays after the incorrect file name edition

When the **AUTO SAVE** option is active (\sqrt{I}), after starting the measurements by pressing the $\langle \text{Start / Stop} \rangle$ push-button the results are saved in the file with the selected name. Depending on the instrument's mode and selected options the sequence of the displays available after each pressing of the $\langle \blacktriangle \rangle$ or $\langle \blacktriangledown \rangle$ could be as presented below.



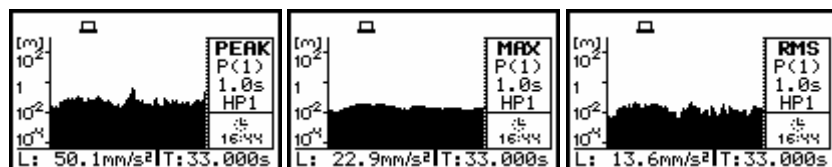
Measurement results presented after pressing $\langle \blacktriangle \rangle$ or $\langle \blacktriangledown \rangle$ push-buttons

In the case when from a profile more than one result was saved in the logger's file, the other results are presented after pressing the $\langle \blacktriangleleft \rangle$, $\langle \blacktriangleright \rangle$ push-buttons together with the $\langle \text{Alt} \rangle$ one.



Results saved from a profile presented after pressing $\langle \blacktriangleleft \rangle$ or $\langle \blacktriangleright \rangle$ and $\langle \text{Alt} \rangle$ push-buttons

After pressing the $\langle \blacktriangle \rangle$ or $\langle \blacktriangledown \rangle$ and $\langle \text{Alt} \rangle$ push-buttons the **VIEW** is changed (*path: MENU / DISPLAY / DISPLAY SETUP / LOGGER VIEW / VIEW*). So, after pressing these push-buttons and then repeating the previous sequence (the $\langle \blacktriangleleft \rangle$, $\langle \blacktriangleright \rangle$ push-buttons together with the $\langle \text{Alt} \rangle$ one) the user can observe the displays presented below.



Results saved from a profile presented after pressing $\langle \blacktriangleleft \rangle$ or $\langle \blacktriangleright \rangle$ and $\langle \text{Alt} \rangle$ push-buttons

Another measurement is started after next pressing of the **<Start / Stop>** push-button. The measurement is stopped after the selected **INTEGR. PERIOD** (path: *MENU / INPUT / MEASUREMENT SETUP / INTEGR. PERIOD*) names of the next saved files are automatically incremented by one. The same remarks are valid in this case as it was already stated in the description of the **SAVE NEXT** function.

7.2.4 Direct access to the SAVE / SAVE NEXT function - DIRECT SAVE

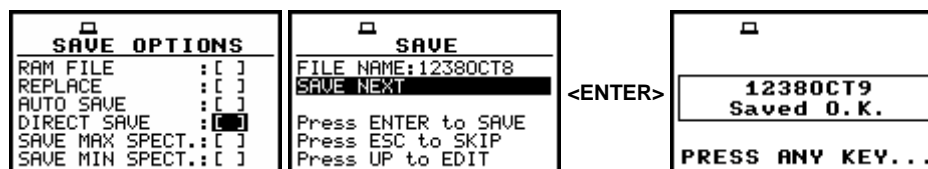
The **DIRECT SAVE** enables one to select the instrument's reaction on the simultaneous pressing of the **<ENTER>** and **<Alt>** push-buttons. If this option is not active ([]), after pressing these push-buttons the **SAVE** window is accessed (if the measurements are not performed). If the option is active ([✓]), after pressing the **<ENTER>** and **<Alt>** push-buttons the results are saved in the file with the automatically incremented name and the proper message is displayed for a few seconds. The proper setting of the **DIRECT SAVE** is done by pressing the **<<>**, **<>>** push-buttons.

SAVE OPTIONS	
RAM FILE	: []
REPLACE	: []
AUTO SAVE	: []
DIRECT SAVE	: [✓]
SAVE MAX SPECT.	: []
SAVE MIN SPECT.	: []

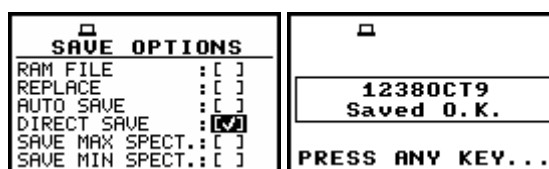
SAVE OPTIONS window; the selection of DIRECT SAVE

After pressing the **<ENTER>** push-button the selections made in any position of the window (in particular also in the **DIRECT SAVE**) are confirmed and the window is closed. In the case when the **AUTO SAVE** was active ([✓]), after pressing the **<ENTER>** push-button the **FILE NAME** window is opened for editing the names for the **AUTO SAVE** files. The **SAVE OPTION** window is closed ignoring all settings made in it after pressing the **<ESC>** push-button.

The presented below displays illustrates the difference in the user interface execution after pressing the **<ENTER>** and **<Alt>** push-buttons in the case when the measurements are not performed and the **DIRECT SAVE** is not active ([]) and active ([✓]).



Saving file with DIRECT SAVE not active



Saving file with DIRECT SAVE option active

7.2.5 Saving maximum values in the spectrum - SAVE MAX SPECT.

The **SAVE MAX SPECT.** enables the user to save the highest values of the **INSTANTANEOUS** spectra (calculated with 100-milliseconds time step) in **1/1 OCTAVE** analysis, which occurred during the **INTEGR. PERIOD** set in the **INPUT** list (path: *MENU / INPUT / MEASUREMENT SETUP / INTEGR. PERIOD*).

The activation or deactivation of the **SAVE MAX SPECT.** is done by pressing the <◀>, <▶> push-buttons. After pressing the <ENTER> push-button the activation is confirmed. The **SAVE OPTION** window is closed ignoring all settings made in it after pressing the <ESC> push-button.

SAVE OPTIONS		SAVE OPTIONS	
RAM FILE	: []	RAM FILE	: []
REPLACE	: []	REPLACE	: []
AUTO SAVE	: []	AUTO SAVE	: []
DIRECT SAVE	: []	DIRECT SAVE	: []
SAVE MAX SPECT.:	[]	SAVE MAX SPECT.:	[✓]
SAVE MIN SPECT.:	[]	SAVE MIN SPECT.:	[]

SAVE OPTIONS window; the selection of SAVE MAX SPECT.

To see the **MAX** values on the display during the the real-time **1/1 OCTAVE** analysis measurement the user has to activate the option in the **DISPLAY** list (path: MENU / DISPLAY / DISPLAY SETUP / SPECTRUM VIEW / MAX) when the SPECTRUM mode is switched on (path: MENU / DISPLAY / DISPLAY MODES / SPECTRUM).

7.2.6 Saving the lowest values in the spectrum - SAVE MIN SPECT.

The **SAVE MIN SPECT.** enables the user to save the lowest values of the **INSTANTANEOUS** spectra (calculated with 100-milliseconds time step) in **1/1 OCTAVE** analysis, which occurred during the **INTEGR. PERIOD** set in the **INPUT** list (path: MENU / INPUT / MEASUREMENT SETUP / INTEGR. PERIOD).

The activation or deactivation of the **SAVE MIN SPECT.** is done by pressing the <◀>, <▶> push-buttons. After pressing the <ENTER> push-button the activation is confirmed. The **SAVE OPTION** window is closed ignoring all settings made in it after pressing the <ESC> push-button.

SAVE OPTIONS		SAVE OPTIONS	
RAM FILE	: []	RAM FILE	: []
REPLACE	: []	REPLACE	: []
AUTO SAVE	: []	AUTO SAVE	: []
DIRECT SAVE	: []	DIRECT SAVE	: []
SAVE MAX SPECT.:	[]	SAVE MAX SPECT.:	[]
SAVE MIN SPECT.:	[]	SAVE MIN SPECT.:	[✓]

SAVE OPTIONS window; the selection of SAVE MIN SPECT.

To see the **MIN** values on the display during the real-time **1/1 OCTAVE** analysis the user has to activate the option in the **DISPLAY** list (path: MENU / DISPLAY / DISPLAY SETUP / SPECTRUM VIEW / MIN with active SPECTRUM mode) when the SPECTRUM mode is switched on (path: MENU / DISPLAY / DISPLAY MODES / SPECTRUM).

7.3 Loading the files with the measurement results - LOAD

The **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 highlighted (selected using the <▲>, <▼> (or <◀>, <▶>) push-buttons). The return to the **FILE** list is possible after pressing the <ESC> push-button.

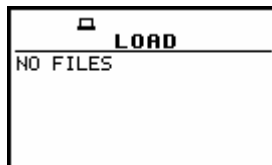
FILE	
SAVE	
SAVE OPTIONS	
LOAD	
DELETE	
DELETE ALL	
DEFRAGMENTATION	

FILE list with LOAD text highlighted



Notice: It is not possible to load the file during the execution of the measurements. On such attempt the message: **MEASUREMENT IN PROGRESS** is displayed for about 3 seconds.

In the case when the instrument memory is empty (no file is stored), after entering the **LOAD** window the **NO FILES** text is displayed and the instrument waits for the reaction of the user. The user should press then the **<ESC>**, **<ENTER>** (the instrument returns to the **FILE** list) or **<Start / Stop>** push-button (the instrument starts the measurement).



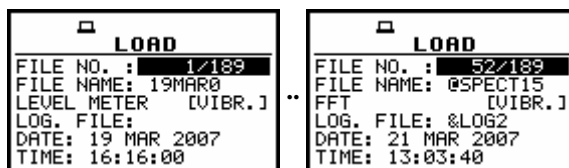
Display during the execution of **LOAD** operation

The current number of the file and the total number of the saved files is displayed in the first line of the **LOAD** window. The name of the file is displayed in the second line (its current number is presented in the first line). The name of the file suggests the operation the file was created-in. The names in which the first character is @ are coming from the **AUTO SAVE** function. The file with the default name @Timer@ is coming from the **AUTO SAVE** function executed in the **TIMER** operation. The other names suggest the **SAVE** / **SAVE NEXT** function. The type of the current file (**LEVEL METER**, **1/1 OCTAVE**) and the mode (**[VIBR.]**) are given in the third line. If during the measurements which results are saved in the file, the logger file was also created its name is displayed in the fourth line.



Notice: The logger file can be deleted from the instrument's memory in the **FILE / DELETE / LOGGER FILES** window and this deleting operation does not modify the contents of the fourth line of the **LOAD** window.

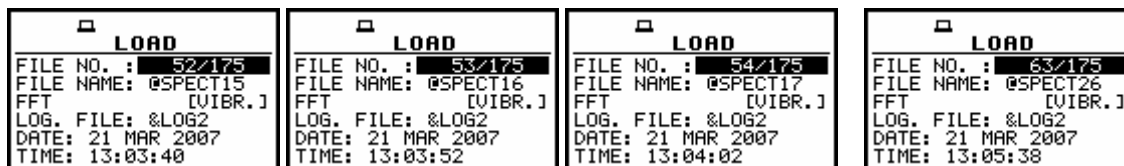
The date and time of the **SAVE** operation are displayed in the fifth and sixth line, respectively. The change of the current file with the unit step can be done after pressing the **<<>**, **<>>** push-buttons. The first file is available after pressing the **<<>** with **<Shift>** push-button (or **<v>** with **<Shift>**) and the last one is displayed after pressing the **<>>** with **<Shift>** push-button (or **<^>** with **<Shift>**).



Exemplary contents of **LOAD** window

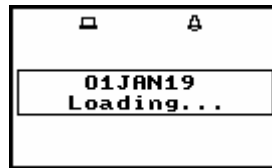


Notice: Many result files can be associated with one logger file, i.e. during the execution of the **AUTO SAVE** function.



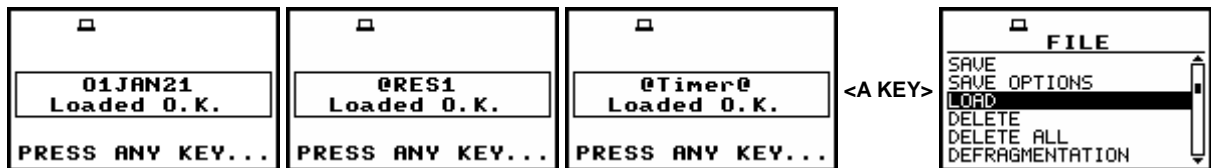
Exemplary result files associated with the same logger file (**&LOG2**)

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



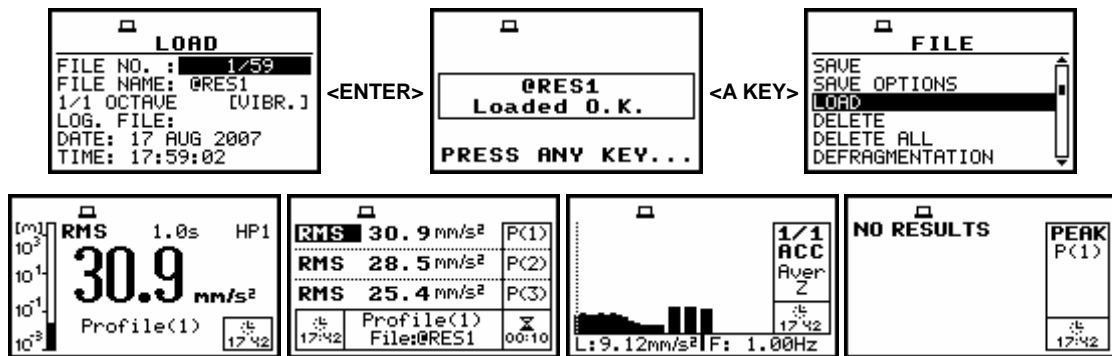
Display during the execution of the loading function

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>** or **<Alt>** one) and after pressing a push-button it returns to the **FILE** list.



Displays after the execution of LOAD operation

The contents of the loaded file is displayed in the available result presentation modes (after pressing the **<▲>**, **<▼>** push-buttons) depending on the current settings of the instrument.



Exemplary displays during the loading and checking the contents of 1/1 OCTAVE file

7.4 Removing a file with the measurement results from memory - DELETE

The **DELETE** is used to remove a file from memory. In order to enter the window the user has to select the **DELETE** text using the **<▲>**, **<▼>** push-buttons and then press the **<ENTER>** one.



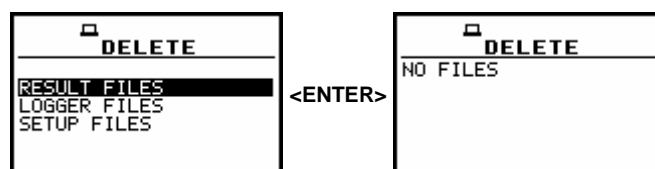
FILE list with DELETE text highlighted

In the **DELETE** window, there are three elements: **RESULT FILES**, **LOGGER FILES** and **SETUP FILES**. In order to enter the selected window the user has to select the proper text (to highlight it) using the **<▲>**, **<▼>** (or **<◀>**, **<▶>**) push-buttons and then press the **<ENTER>** one. The **DELETE** window is closed and the instrument returns to the **FILE** list after pressing the **<ESC>** one.

7.4.1 Deleting files with the main results - RESULT FILES

In order to enter the window one has to press the **<ENTER>** push-button on the inversely displayed **RESULT FILES** text of the **DELETE** window using the **<A>**, **<L>**, **<A>** with **<Shift>** or **<L>** with **<Shift>** push-buttons. The **DELETE** window is closed and the instrument returns to the **FILE** list after pressing the **<ESC>** push-button.

In order to enter the list of the saved result files in the flash memory one has to press the **<ENTER>** push-button. In the case when the result files were not saved in the memory, the special message is displayed and the instrument waits for the reaction of the user. The user should press any push-button except the **<Shift>** and **<Alt>**.



RESULT FILES selected to be deleted and the flash memory does not contain any file

The same data about the existing in the instrument files as in the **FILE / LOAD** window are displayed after successful opening the **FILE / DELETE / RESULT FILES** one (pressing the **<ENTER>** push-button).

The current number of the file and the total number of the saved files is displayed in the first line of the window.

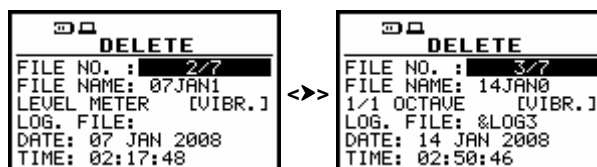
The name of the file is displayed in the second line (its current number is presented in the first line).

The name of the file suggests the operation the file was created-in. The names in which the first character is @ are coming from the **AUTO SAVE** function. The file with the default name @Timer@ is coming from the **AUTO SAVE** function executed in the **TIMER** operation. The other names suggest the **SAVE / SAVE NEXT** function. The type of the current file **LEVEL METER**, **1/1 OCTAVE**) and **[VIBR.]** text is given in the third line. If during the measurements which results are saved in the file, the logger file was also created its name is displayed in the fourth line.



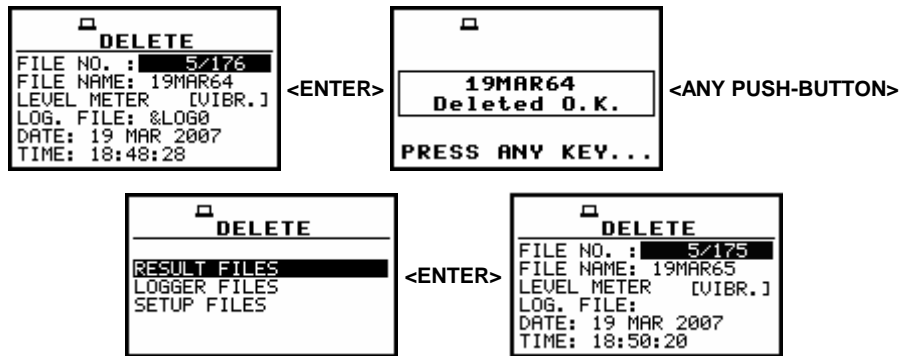
Notice: The logger file can be deleted from the instrument's memory in the **FILE / DELETE / LOGGER FILES** window and this deleting operation does not modify the contents of the fourth line of the **DELETE** window.

The **DATE** and **TIME** of the **SAVE** operation are displayed in the fifth and sixth line, respectively. The change of the current file with the unit step can be done after pressing the **<L>**, **<R>** push-buttons. The first file is available after pressing the **<L>** with **<Shift>** push-button (or **<V>** with **<Shift>**) and the last one is displayed after pressing the **<R>** with **<Shift>** push-button (or **<A>** with **<Shift>**).



Selection of RESULT FILES to be deleted

The selected 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>** and **<Alt>** one) and after pressing a push-button it returns to the **DELETE** window.



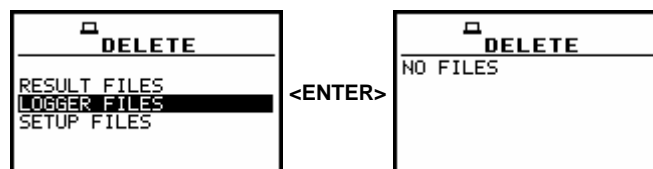
Execution of RESULT FILES deletion

After the execution of the result files removing from the memory usually the **FREE SPACE** memory (path: MENU / FILE / FREE SPACE) rests the same as before the deletion but **TOTAL AVAILABLE** memory is increased. It is because erased file was somewhere in the file's space. The file is no longer accessible but the recuperated memory is still unused for the next saving. This memory becomes available after the defragmentation process (path: MENU / FILE / DEFRAGMENTATION) in which all files are moved to the continuous space.

7.4.2 Deleting logger files - **LOGGER FILES**

In order to enter the window one has to press the **<ENTER>** push-button on the inversely displayed **LOGGER FILES** text of the **DELETE** window using the **<▲>**, **<◀>**, **<▲>** with **<Shift>** or **<◀>** with **<Shift>** push-buttons. The **DELETE** window is closed and the instrument returns to the **FILE** list after pressing the **<ESC>** push-button.

In order to enter the list of the saved logger files in the memory one has to press the **<ENTER>** push-button. In the case when the logger files were not saved in the memory, the special message is displayed and the instrument waits for the reaction of the user. The user should press any push-button except the **<Shift>** and **<Alt>**.



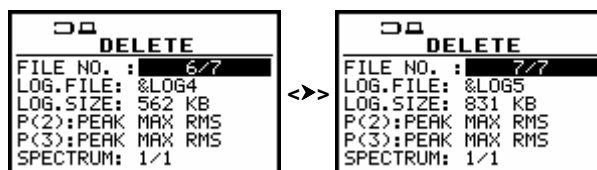
LOGGER FILES selected to be deleted and the memory does not contain any file

The similar data about the existing in the instrument logger files as in the **DISPLAY / **LOGGER VIEW**** window are displayed after successful opening the **FILE / DELETE / **LOGGER FILES**** one (pressing the **<ENTER>** push-button).

In the first line, the available still logger's memory is displayed followed by:

- The selected number of the logger's file and the number of all saved files (**FILE NO.:**).
- The name of the logger's file (**LOG.FILE:**).
- The size of the logger file which name is displayed in the previous line (**LOG.SIZE:**).
- The results saved (if any are present) in the logger from the first profile (**P(1):**).
- The results saved (if any are present) in the logger from the second profile (**P(2):**).
- The results saved (if any are present) in the logger from the third profile (**P(3):**).
- The results saved (if any are present) in the logger from 1/1 OCTAVE analysis (**SPECTRUM:**).

The change of the current file with the unit step can be done after pressing the <<>, <>> push-buttons. The first file is available after pressing the <<> with <Shift> push-button (or <v> with <Shift>) and the last one is displayed after pressing the <>> with <Shift> push-button (or <A> with <Shift>).



Selection of **LOGGER FILES** to be deleted

The selected 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> and <Alt> one) and after pressing a push-button it returns to the **DELETE** window.



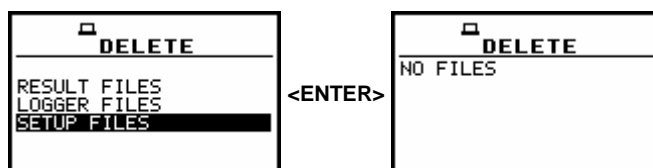
Execution of **LOGGER FILES** deletion

After the execution of the logger files deletion from the memory, usually the logger free space rests the same as before the deletion but the total logger available memory is increased. It is because erased file was somewhere in the file's space. The file is no longer accessible but the recuperated memory is still unused for the next saving. This memory becomes available after the defragmentation process (*path: MENU / FILE / DEFRAGMENTATION / LOGGER DEFRAGMENT.*) in which all files are moved to the continuous space.

7.4.3 Deleting files with setup settings - **SETUP FILES**

In order to enter the window one has to press the <ENTER> push-button on the inversely displayed **SETUP FILES** text of the **DELETE** window using the <v>, <>>, <v> with <Shift> or <>> with <Shift> push-buttons. The **DELETE** window is closed and the instrument returns to the **FILE** list after pressing the <ESC> push-button.

In order to enter the list of the saved setup files in the memory one has to press the <ENTER> push-button. In the case when the setup files were not saved in the memory, the special message is displayed and the instrument waits for the reaction of the user. The user should press any push-button except the <Shift> and <Alt>.

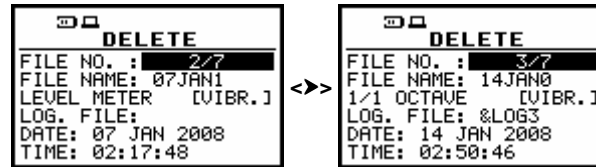


SETUP FILES selected to be deleted and the instrument's memory does not contain any file

The data about the existing in the instrument setup files are displayed after successful opening the **FILE / DELETE / LOGGER FILES** window (pressing the **<ENTER>** push-button).

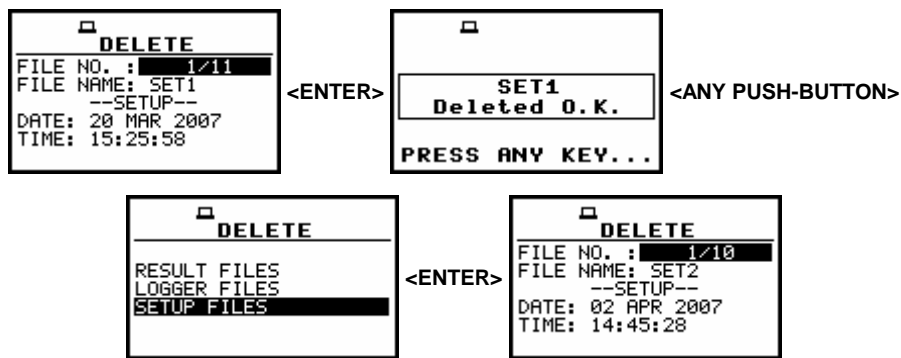
The current number of the file and the total number of the saved setup files is displayed in the first line of the window. The date and time of the **SAVE SETUP** operation is displayed in the last two lines respectively.

The change of the current file with the unit step can be done after pressing the **<<>**, **<>>** push-buttons. The first file is available after pressing the **<<>** with **<Shift>** push-button (or **<V>** with **<Shift>**) and the last one is displayed after pressing the **<>>** with **<Shift>** push-button (or **<A>** with **<Shift>**).



Selection of SETUP FILES to be deleted

The selected 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>** and **<Alt>** one) and after pressing a push-button it returns to the **DELETE** window.



Execution of RESULT FILES deletion

After the execution of the setup files removing from the memory usually the **FREE SPACE** memory (path: **MENU / FILE / FREE SPACE**) rests the same as before the deletion but **TOTAL AVAILABLE** memory is increased. It is because erased file was somewhere in the file's space. The file is no longer accessible but the recuperated memory is still unused for the next saving.

This memory becomes available after the defragmentation process (path: **MENU / FILE / DEFRAGMENTATION / FILES DEFRAGMENT.**) in which all files are moved to the continuous space.

7.5 Removing all files with measurement results from memory - DELETE ALL

The **DELETE ALL** is used to remove all files from memory. In order to enter the position the user has to select the **DELETE ALL** text in the **FILE** list, using the **<A>**, **<V>** (or **<<>**, **<>>**) push-buttons and press the **<ENTER>** one.

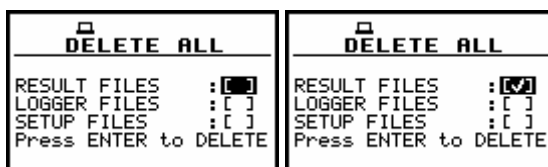
The **DELETE ALL** window consists of three positions: **RESULT FILES**, **LOGGER FILES** and **SETUP FILES**.



DELETE ALL text highlighted in FILE list

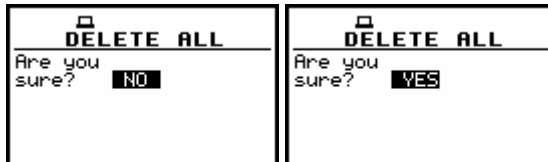
7.5.1 Deleting all result files - RESULT FILES

In order to activate the position the user has to place the special character in the line with the **RESULT FILES** text using the <>> push-button. The **DELETE ALL** window is closed and the instrument returns to the **FILE** list after pressing the <ESC> push-button. In order to enter the **DELETE ALL** window one has to press the <ENTER> push-button.



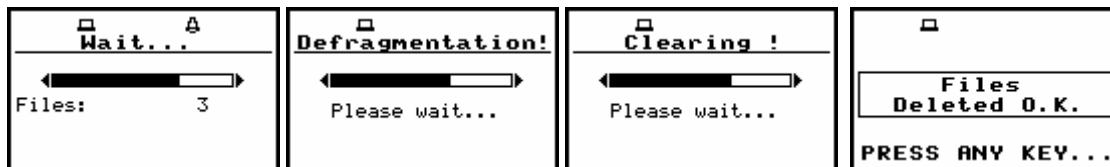
RESULT FILES selected to the execution of DELETE ALL operation

If the measurements are not performed the instrument requests the confirmation of the operation after entering this window (after pressing the <ENTER> push-button). After next pressing the <ENTER> push-button, when the **NO** option is selected, the window is closed and the instrument returns 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 also possible after pressing the <ESC> push-button.



Displays with the confirmation window during the execution of DELETE ALL operation

All files from the selected type are deleted after the <ENTER> push-button pressing, when the **YES** option is selected. The message is displayed after the successful execution of all stages of the operation. The instrument waits for the reaction of the user (any push-button should be pressed except the <Shift> and <Alt> one) and after pressing a push-button it returns to the **FILE** list.

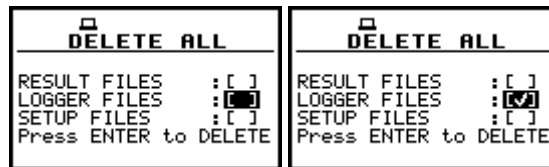


Execution of DELETE ALL operation in the case of RESULT FILES selection

7.5.2 Deleting all logger files - LOGGER FILES

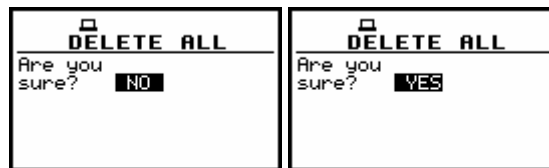
In order to activate the position the user has to place the special character in the line with the **LOGGER FILES** text using the <>> push-button. The **DELETE ALL** window is closed and the instrument returns to the **FILE** list after pressing the <ESC> push-button.

In order to enter the **DELETE ALL** window one has to press the <ENTER> push-button.



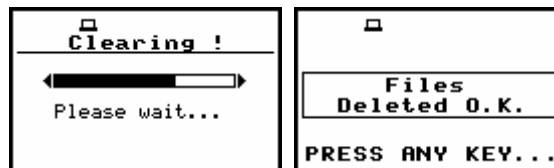
LOGGER FILES selected to the execution of DELETE ALL operation

If the measurements are not performed the instrument requests the confirmation of the operation after entering this window (after pressing the **<ENTER>** push-button). After next pressing the **<ENTER>** push-button, when the **NO** option is selected, the window is closed and the instrument returns 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 also possible after pressing the **<ESC>** push-button.



Displays with the confirmation window during the execution of the DELETE ALL operation

All files from the selected type are deleted after the **<ENTER>** push-button pressing, when the **YES** option is selected. The message is displayed after the successful execution of all stages of the operation. The instrument waits for the reaction of the user (any push-button should be pressed except the **<Shift>** and **<Alt>** one) and after pressing a push-button it returns to the **FILE** list.

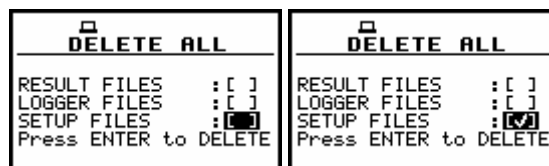


Execution of DELETE ALL operation in the case of LOGGER FILES selected

7.5.3 Deleting all setup files - SETUP FILES

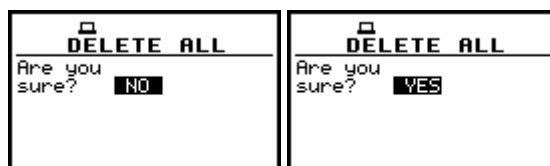
In order to activate the position the user has to place the special character in the line with the **SETUP FILES** text using the **<>>** push-button. The **DELETE ALL** window is closed and the instrument returns to the **FILE** list after pressing the **<ESC>** push-button.

In order to enter the **DELETE ALL** window one has to press the **<ENTER>** push-button.



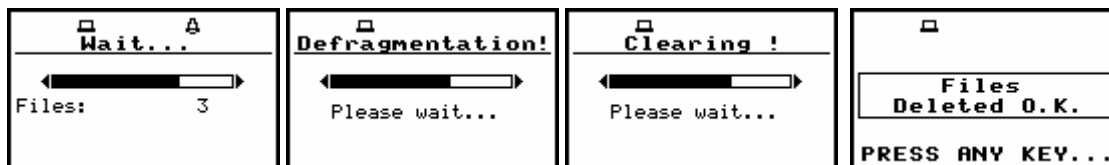
SETUP FILES selected to the execution of DELETE ALL operation

If the measurements are not performed the instrument requests the confirmation of the operation after entering this window (after pressing the **<ENTER>** push-button). After next pressing the **<ENTER>** push-button, when the **NO** option is selected, the window is closed and the instrument returns 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 also possible after pressing the **<ESC>** push-button.



Displays with the confirmation window during the execution of DELETE ALL operation

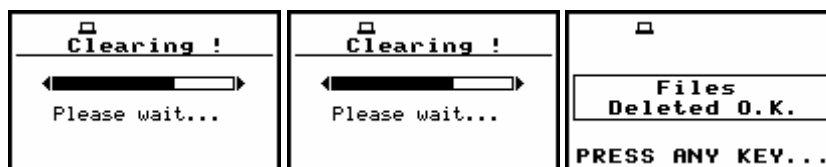
All files from the selected type are deleted after the **<ENTER>** push-button pressing, when the **YES** option is selected. The message is displayed after the successful execution of all stages of the operation. The instrument waits for the reaction of the user (any push-button should be pressed except the **<Shift>** and **<Alt>** one) and after pressing a push-button it returns to the **FILE** list.



Execution of DELETE ALL operation in the case of SETUP FILES selection



Notice: The execution of the **DELETE ALL** function described above takes place in the case when only one type of the files is selected in the **DELETE ALL** window. If all types are selected simultaneously and the logger, result and setup are saved, only **Clearing** operation is performed but two times – one time in logger files memory and one time in result and setup files memory. After clearing all memory, the defragmentation is not done. The memory merging is done only in the case of setup and results memory, as these two different types of files are saved together in the same space.



Execution of DELETE ALL operation for all type files simultaneously

7.6 Merging file space - DEFRAGMENTATION

The **DEFRAGMENTATION** is used to make the file memory continuous. All new files are saved starting from the beginning of the free memory space. The memory occupied by the deleted file, assuming that the file was not the last one, remains unused for the next files saving. After the removing a file the files memory becomes discontinuous, with unused parts, which cannot be utilized in the future.

The situation changes after the process called defragmentation. During this process, the files saved in the files memory are moved in order to obtain the continuous occupied space. The files merging is performed separately for two parts of the instrument's memory: the **FILES DEFRAGMENT.** is used to join the result and setup files and **LOGGER DEFRAGMENT.** is used in the case of the logger.

Before the defragmentation the **FILES FREE SPACE** and **TOTAL AVAILABLE**, characterizing the result memory (*path: MENU / FILE / FREE SPACE*), usually differ between each other. After this operation, these two parts are equal.

The same situation is in the case of the **LOGGER FREE SPACE** and **TOTAL AVAILABLE** characterizing the logger file. In order to enter the **DEFRAGMENTATION** window the user has to select the **DEFRAGMENTATION** text in the **FILE** list, using the **<▲>**, **<▼>** (or **<◀>**, **<▶>**) push-buttons and press the **<ENTER>**.



DEFRAGMENTATION text highlighted in FILE list



Notice: The **DEFRAGMENTATION** must not be broken – the user should never press **<ESC>** or any other push-button during the **DEFRAGMENTATION** process.

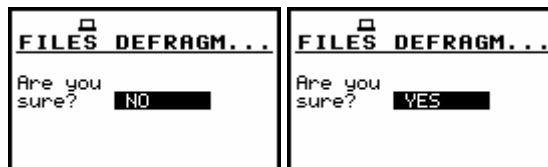
7.6.1 Merging result and setup files memory - FILES DEFRAGMENTATION

The **FILES DEFRAGMENT.** is used to join the result and setup files memory. In order to select this, the user has to display inversely the **FILES DEFRAGMENT.** text in the **DEFRAGMENTATION** window using the **<▲>** (or **<◀>**) push-button.



FILES DEFRAGMENT. selected to the execution of DEFRAGMENTATION operation

The **DEFRAGMENTATION** window is closed and the instrument returns to the **FILE** list after pressing the **<ESC>** push-button. In order to continue the execution of the function one has to press the **<ENTER>** push-button. The instrument requests the confirmation of the operation. The next pressing of the **<ENTER>** push-button, when the **NO** option is selected, causes the closing of the window and the return to the **DEFRAGMENTATION** window. The selection of the **NO** or **YES** option is possible using the **<◀>**, **<▶>** push-buttons. The return to the **DEFRAGMENTATION** window is also possible after pressing the **<ESC>** push-button.



Confirmation windows during the execution of FILES DEFRAGMENTATION operation

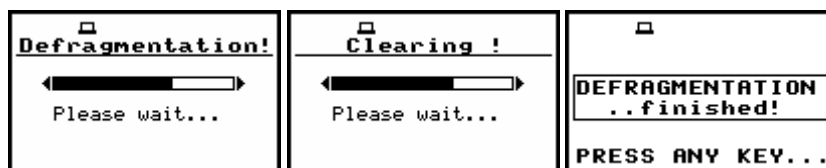
If the measurements are not performed, after pressing the **<ENTER>** push-button on the active **YES** option, the instrument checks whether the used result and setup files memory is continuous or not. If this memory is continuous, the **DEFRAGMENTATION** operation is not executed and the special message is displayed. The instrument waits for the reaction of the user (any push-button should be pressed except the **<Shift>** and **<Alt>** one) and after pressing a push-button it returns to the **DEFRAGMENTATION** window.



Message in the case when the execution of DEFRAGMENTATION operation is unnecessary

If there are conditions to execute the **DEFRAGMENTATION** operation, it is done and the current progress is shown on the display.

After the successful execution, the special message is displayed and the instrument waits for the reaction of the user. Any push-button should be then pressed except the **<Shift>** and **<Alt>** one. After pressing a push-button, the instrument returns to the **DEFRAGMENTATION** window.

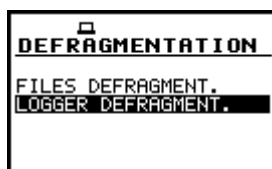


Execution of **DEFRAGMENTATION** operation

After the of the **FILES DEFRAGMENT.** – the **FILES FREE SPACE** and **TOTAL AVAILABLE** become equal while the **LOGGER FREE SPACE** and **LOGGER AVAILABLE** remain unchanged.

7.6.2 Merging logger files memory - **LOGGER DEFRAGMENT.**

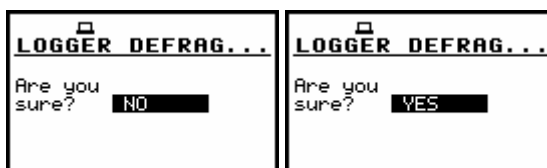
The **LOGGER DEFRAGMENT.** is used to join the logger files memory. In order to select this, the user has to display inversely the **LOGGER DEFRAGMENT.** text using the **<▲>** (or **<◀>**) push-button.



LOGGER DEFRAGMENT. selected to the execution of **DEFRAGMENTATION** operation

The **DEFRAGMENTATION** window is closed and the instrument returns to the **FILE** list after pressing the **<ESC>** push-button.

In order to continue the execution of the function one has to press the **<ENTER>** push-button. The instrument requests the confirmation of the operation. The next pressing of the **<ENTER>** push-button, when the **NO** option is selected, causes the closing of the window and the return to the **DEFRAGMENTATION** window. The selection of the **NO** or **YES** option is possible using the **<◀>**, **<▶>** push-buttons. The return to the **DEFRAGMENTATION** window is also possible after pressing the **<ESC>** push-button.



Confirmation windows during the execution of **LOGGER DEFRAGMENTATION** operation

If the measurements are not performed, after pressing the **<ENTER>** push-button on the active **YES** option, the instrument checks whether the used logger files memory is continuous or not. If this memory is continuous, the **DEFRAGMENTATION** operation is not executed and the special message is displayed. The instrument waits for the reaction of the user (any push-button should be pressed except the **<Shift>** and **<Alt>** one) and after pressing a push-button it returns to the **DEFRAGMENTATION** window.



Message in the case when the execution of DEFAGMENTATION operation is unnecessary

If there are conditions to execute the **DEFAGMENTATION** operation, it is done and the current progress is shown on the display. After the successful execution, the special message is displayed and the instrument waits for the reaction of the user. Any push-button should be then pressed except the **<Shift>** and **<Alt>** one. After pressing a push-button the instrument returns to the **DEFAGMENTATION** window.



Execution of DEFAGMENTATION operation

After the execution of the **LOGGER DEFAGMENT.** the **LOGGER FREE SPACE** and **LOGGER AVAILABLE** become equal while the **FILES FREE SPACE** and **TOTAL AVAILABLE** remain unchanged.

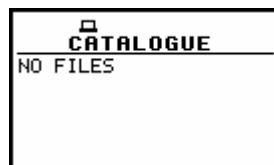
7.7 Checking the contents of the memory - CATALOGUE

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



CATALOGUE text highlighted in FILE list

In the case when the instrument memory is empty (no file is stored), after entering the **CATALOGUE** the **NO FILES** text is displayed and the instrument waits for the reaction of the user. The user should press then the **<ESC>**, **<ENTER>** (the instrument returns to the **FILE** list) or **<Start / Stop>** push-button (the instrument starts the measurement).



CATALOGUE window when the memory is empty

In the case when the result and setup files memory in the instrument is not empty (some files are stored) another window is displayed in which the same data about the existing in the instrument files as in the **FILE / LOAD** window are presented.

The current number of the file and the total number of the saved result and setup files is displayed in the first line of the window. The name of the file is displayed in the second line (its current number is presented in the first line).

The name of the file suggests the operation the file was created-in. The names in which the first character is @ are coming from the **AUTO SAVE** function. The file with the default name @Timer@ is coming from the **AUTO SAVE** function executed in the **TIMER** operation. The other names suggest the **SAVE / SAVE NEXT** function. The type of the current file (**LEVEL METER**, **1/1 OCTAVE**) and the **[VIBR.]** text is given in the third line. If during the measurements which results are saved in the file, the logger file was also created its name is displayed in the fourth line.



Notice: The logger file can be deleted from the instrument's memory in the **FILE / DELETE / LOGGER FILES** window and this deleting operation does not modify the contents of the fourth line of the **CATALOGUE** window.

The date and time of the **SAVE** operation are displayed in the fifth and sixth line, respectively. The change of the current file with the unit step can be done after pressing the <<>, <>> push-buttons. The first file is available after pressing the <<> with <Shift> push-button (or <v> with <Shift>) and the last one is displayed after pressing the <>> with <Shift> push-button (or <a> with <Shift>). The setup file is indicated by the **SETUP** text displayed in the third line instead of the **LEVEL METER**.

CATALOGUE FILE NO. : 2/175 FILE NAME: 19MAR61 LEVEL METER [VIBR.] LOG. FILE: &LOG DATE: 19 MAR 2007 TIME: 16:20:20	CATALOGUE FILE NO. : 5/175 FILE NAME: 19MAR64 LEVEL METER [VIBR.] LOG. FILE: &LOG0 DATE: 19 MAR 2007 TIME: 18:48:28
CATALOGUE FILE NO. : 49/175 FILE NAME: SET1 --SETUP-- DATE: 20 MAR 2007 TIME: 15:25:58	CATALOGUE FILE NO. : 119/175 FILE NAME: @RES39 FFT [VIBR.] LOG. FILE: DATE: 23 MAR 2007 TIME: 14:32:02

Contents of CATALOGUE window



Notice: Many result files can be associated with one logger file, i.e. during the execution of the **AUTO SAVE** function.

CATALOGUE FILE NO. : 52/183 FILE NAME: @SPECT15 FFT [VIBR.] LOG. FILE: &LOG2 DATE: 21 MAR 2007 TIME: 13:03:40	CATALOGUE FILE NO. : 53/183 FILE NAME: @SPECT16 FFT [VIBR.] LOG. FILE: &LOG2 DATE: 21 MAR 2007 TIME: 13:03:52
CATALOGUE FILE NO. : 54/183 FILE NAME: @SPECT17 FFT [VIBR.] LOG. FILE: &LOG2 DATE: 21 MAR 2007 TIME: 13:04:02	CATALOGUE FILE NO. : 59/183 FILE NAME: @SPECT22 FFT [VIBR.] LOG. FILE: &LOG2 DATE: 21 MAR 2007 TIME: 13:04:58

Exemplary result files associated with the same logger file &LOG2 in CATALOGUE window

7.8 Checking the free space in the memory - FREE SPACE

The **FREE SPACE** is used to read out the free space in the **FLASH DISC** memory of the instrument. In order to enter the window the user has to select the **FREE SPACE** text in the **FILE** list, using the <▲>, <▼> (or <◀>, <▶>) push-buttons and press the <ENTER> one.

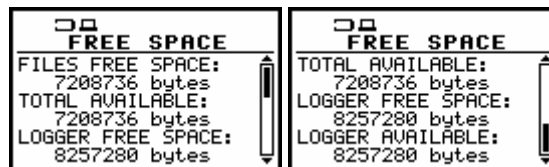


FREE SPACE text highlighted in FILE list

The files memory in the instrument is divided into two separate parts.

One part is dedicated for saving the result and setup files and its size is equal to 16252428 bytes. The second part is used for saving the logger files and its size is equal to 15859224 bytes.

The **FREE SPACE** window in the instrument after the execution of the **DELETE ALL** operation is presented below.



FREE SPACE window after the execution of DELETE ALL operation

The **FREE SPACE** window contains four numbers. First two, named **FILES FREE SPACE** and **TOTAL AVAILABLE**, characterize the result and setup files memory.

The files are always saved starting from the beginning of the continuous memory space. The size in bytes of this space is given in the **FILES FREE SPACE** position.

If the result and setup files were not deleted from the memory the number of bytes displayed in the **TOTAL AVAILABLE** position is the same as in the **FILES FREE SPACE**. However, if some of them were deleted, assuming that they were not the last saved, the memory used by them is empty but it does not increase the continuous space.

In such case, the number given in the **TOTAL AVAILABLE** position is greater than that in the **FILES FREE SPACE**. The **DEFRAGMENTATION** operation, which merges files, should be used to increase the **FREE SPACE**.

The next two numbers given in the **FREE SPACE** window, named **LOGGER FREE SPACE** and **LOGGER AVAILABLE** characterize the logger files memory where the saving mechanism is the same. Therefore, the numbers presented in the **FREE SPACE** window depend on the history of the measurements and the operations performed by the user.

The window is closed and the instrument returns to the **FILE** list after pressing the <ENTER> or <ESC> push-buttons or it starts the measurements (after pressing the <Start / Stop> one).

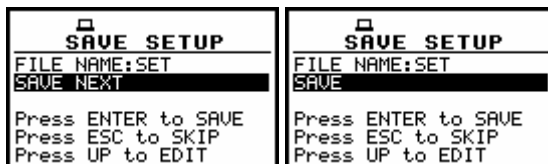
7.9 Saving setup files in the instrument's memory - SAVE SETUP

The **SAVE SETUP** is used for storing setup settings in the internal non-volatile (FLASH DISC) memory (files are always written at the beginning of a free continuous space) as a file (see Appendix B for the file formats). In order to enter the window the user has to select the **SAVE SETUP** text in the **FILE** list, using the <▲>, <▼> (or <◀>, <▶>) push-button and press the <ENTER> one.



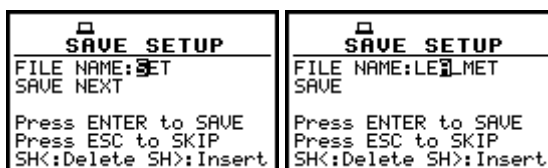
SAVE SETUP text highlighted in FILE list

There are two available functions: the **SAVE NEXT** – save a setup file with the name increased by one, and **SAVE** – save a setup file with the edited name. These functions are available after pressing the <◀>, <▶> push-buttons.



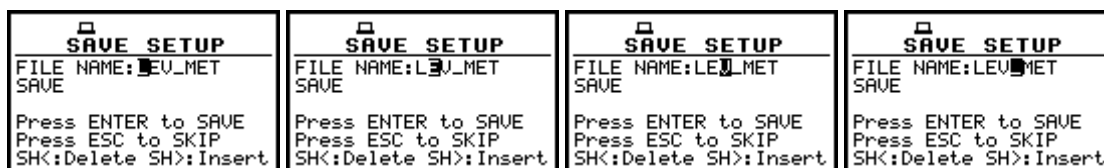
SAVE SETUP window in FILE list

The name of the file, in which the setup settings are to be saved, is displayed above the **SAVE** or **SAVE NEXT** text. The default name for a setup file is displayed in the case of the first entering to this position (after power on). The default file name for setup settings is **SET**. The line of the setup file's name edition (**FILE NAME**) is opened after pressing the <▲> push-button. The user can skip the setup file's name edition and start saving file pressing the <ENTER> push-button or return to the **FILE** list pressing the <ESC> one. The edition process is presented on the Figure below. The highlighted character is currently edited. The <◀>, <▶> and <▲>, <▼> pressed together with the <Shift> push-button are used for editing the name which cannot exceed eight characters.



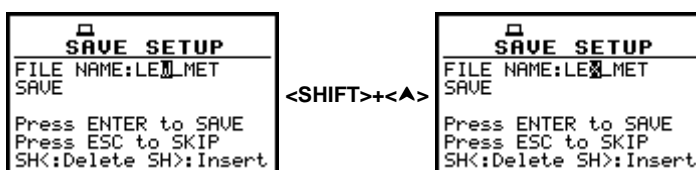
Display during the process of setting the character in the edited name

One can select the proper position of the character in the edited text using the <◀>, <▶> push-buttons.

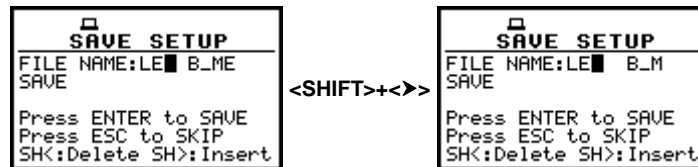


Display during the selection of the character's position to be edited

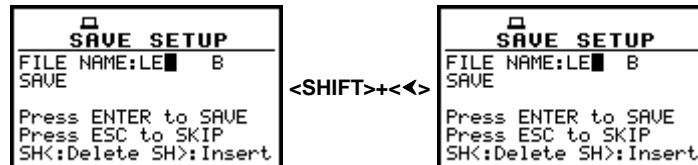
The available ASCII characters can be changed using the <▲> (or <▼>) push-button pressed together with the <Shift> one. The subsequent digits, underline, big letters and space appear on the display in the highlighted position after each pressing of the mentioned above push-buttons.



Display during the selection of the character

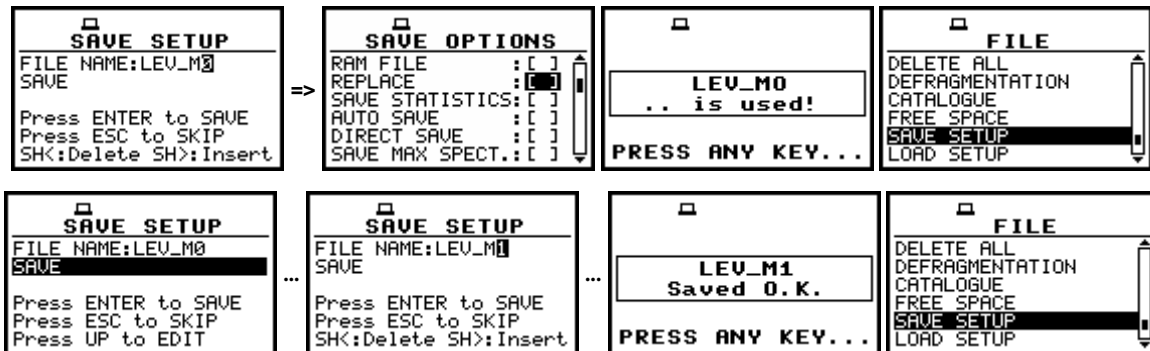


Displays in FILE NAME edition after pressing <Shift> and <>> push-buttons



Displays in FILE NAME edition after pressing <Shift> and <<> push-buttons

The edited name is accepted and the setup file is saved after pressing the <ENTER> push-button. The special warning is displayed in the case the file with the edited name already exists in the memory, if the **REPLACE** position is not activated (*path: MENU / FILE / SAVE OPTIONS*). The instrument waits then for a reaction of the user (any push-button should be pressed except the <Shift> or the <Alt>).

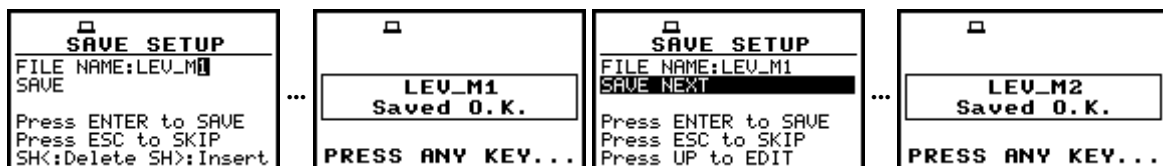


Displays during the attempt of overwriting the existing file, changing the name and saving data

All changes introduced to the setup 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 return after the edition to the line with the **SAVE** or **SAVE NEXT** text is possible after pressing the <V> push-button. 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 made automatically.

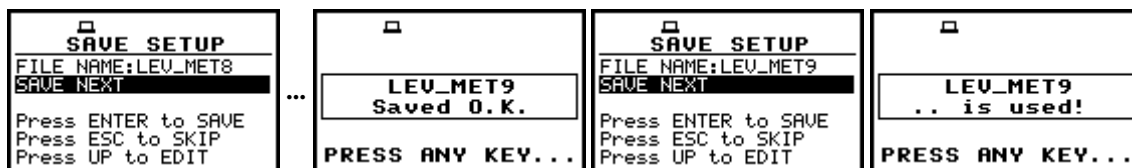
After the saving operation execution the new setup file name is displayed and the instrument waits then for a reaction of the user (any push-button should be pressed except the <Shift> or the <Alt> one). In the next attempt of saving data, the new name is displayed in the **FILE NAME** line and that name is increased by one during the saving operation. The number can be changed from 1 to 999999.



Displays in the simplified edition of the setup file name and saving operation execution

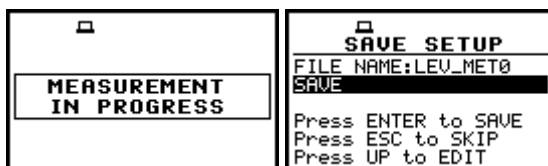


Notice: The files can be overwritten (the use of the same file name) **without any warning** if the **REPLACE** option is switched on (path: MENU / FILE / SAVE OPTIONS / REPLACE).



Displays in the simplified edition of the file name, saving and the “saturation” of that operation

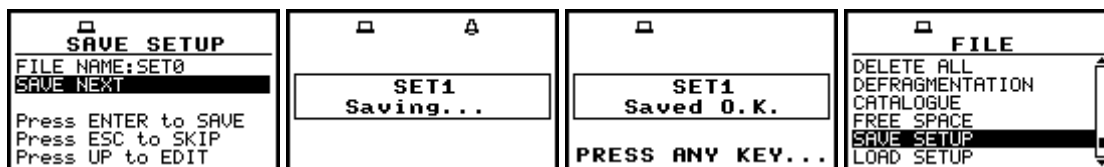
As it was already written, the instrument attempts to save a file after pressing the **<ENTER>** push-button. The saving is not possible in the case when the instrument is measuring the signal. The special message is displayed for about 3 seconds in this case and the instrument returns to the **SAVE SETUP** window.



Displays after the attempt to perform unavailable saving operation; the return to SAVE SETUP

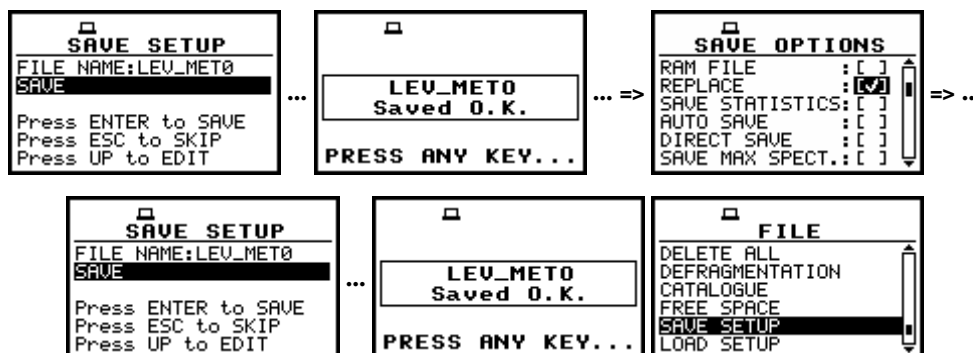


Notice: During the execution of the **SAVE** or **SAVE NEXT** function an additional window is displayed informing about the operation performed. This window can be unnoticed by the user as it appears for the short time.



Displays during and after the execution of SAVE operation

As it was already written it is not possible to store the data in the file, which already exists, when the **REPLACE** is not active (**[]**) (path: MENU / FILE / SAVE OPTIONS / REPLACE).



Displays after the attempt to overwrite a file if REPLACE is active

The presented above sequence of displays illustrates the situation when during the name-edition process, the user selected the name that was used before but this time the **REPLACE** is active. The setup file is overwritten, the instrument displays a special message and waits for the reaction of the user (any push-button should be pressed except the **<Shift>** or the **<Alt>** one) and after pressing a push-button it returns to the **FILE** list.

7.10 Loading the files with the setup settings - LOAD SETUP

The **LOAD SETUP** is used for loading setup setting file from the FLASH DISC (e.g. for performing different type of measurements with different instrument's settings). The position is opened after pressing the **<ENTER>** push-button when the **LOAD SETUP** text in the **FILE** list is highlighted. The return to the **FILE** list is possible after pressing the **<ESC>** push-button.



FILE list with LOAD SETUP text highlighted



Notice: It is not possible to load the file during the execution of the measurements. On such attempt the message: **MEASUREMENT IN PROGRESS** is displayed for about 3 seconds.

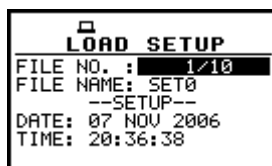
In the case when the setup files were not saved, after entering the **LOAD SETUP** window, the **NO FILES** text is displayed and the instrument waits for the reaction of the user. The user should press then the **<ESC>**, **<ENTER>** (the instrument returns to the **FILE** list) or **<Start / Stop>** push-button (the instrument starts the measurement).



LOAD SETUP window with NO FILES message

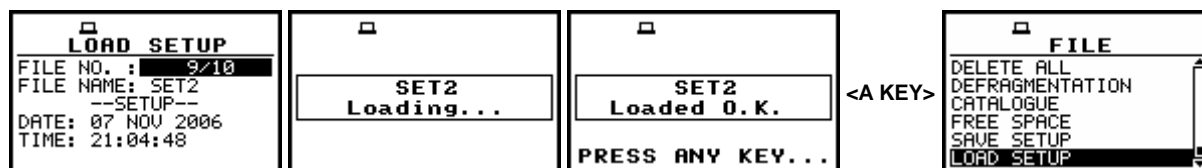
The current number of the setup file and the total number of the saved setup files is displayed in the first line of the **LOAD SETUP** window. The name of the file is displayed in the second line (its current number is presented in the first line).

The date and time of the **SAVE SETUP** operation is displayed in the fourth and fifth line respectively. The change of the current file with the unit step can be done after pressing the **<<>**, **<>>** push-buttons. The first file is available after pressing the **<<>** with **<Shift>** push-button (or **<V>** with **<Shift>**) and the last one is displayed after pressing the **<>>** with **<Shift>** push-button (or **<A>** with **<Shift>**).



LOAD SETUP window

The name of the file is accepted and the file is loaded after pressing the **<ENTER>** push-button. The message with the name of the selected file is displayed during the execution of the loading 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>** or **<Alt>** one) and after pressing a push-button it returns to the **FILE** list.

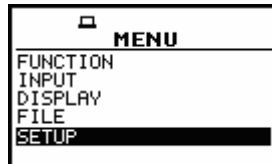


Displays after the execution of LOAD SETUP operation

8 SETUP MENU - SETUP

The **SETUP** list (window) contains different windows and positions. Some of them are directly related to vibration measurements, and some - with the settings of the hardware components of the instrument. 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.



Display in the main list; **SETUP** text highlighted

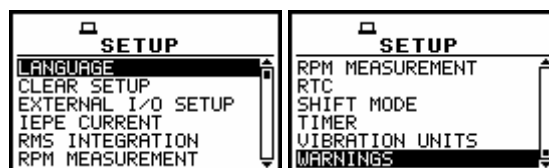
In the **SETUP** list, the following items are available:

LANGUAGE	it enables the user to set language of the user interface.
CLEAR SETUP	it enables the user to return to the default, factory setup.
EXTERNAL I/O SETUP	it enables the user to select the available functionality of the Ext. I/O port.
IEPE CURRENT	it enables the user to choose current IEPE supply.
RMS INTEGRATION	it enables the user to select the way of integration for the RMS measurement.
RPM MEASUREMENT	it enables the user to activate the RPM (Revolution Per Minute) measurement option. This position does not appear after activation of the function.
RTC	it enables the user to set the Real Time Clock .
SHIFT MODE	it enables the user to set the operating mode of the <Shift> and the <Start / Stop> push-buttons.
TIMER	it enables the user to set the Timer function.
VIBRATION UNITS	it enables the user to select the vibration units in which the results of the measurements are to be given.
WARNINGS	it enables the user to switch on or off the warnings that can be displayed during the operation of the instrument.

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 **<▼>** (or **<Shift>** and **<▶>**) – results in a movement to the last position of the opened 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.



SETUP window

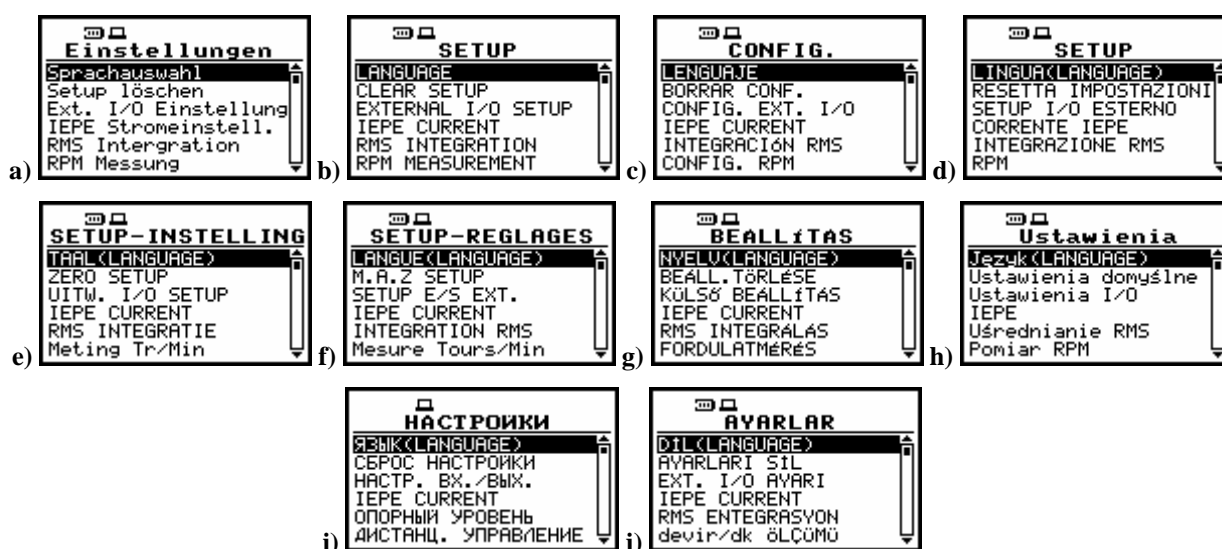
8.1 Setting the language of the user interface - LANGUAGE

The **LANGUAGE** enables one to select the language of the user interface. In order to enter the list one has to press the **<ENTER>** push-button on the inversely displayed **LANGUAGE** text of the **SETUP** list. The selection is made by placing a special character by means of the **<◀>**, **<▶>** push-buttons in the line with the selected language. 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 **<▼>** (or **<Shift>** and **<▶>**) – results in a movement to the last position of the opened list.

The selection is confirmed and the list is closed after pressing the **<ENTER>** push-button. The list is closed without any confirmation after pressing the **<ESC>** push-button.



SETUP window with LANGUAGE text highlighted and all available languages



Displays with available language versions of the user interface: german (a), english (b), spanish (c), italian (d) flemish (e), french (f), hungarian (g), polish (h), russian (i), turkish (j)

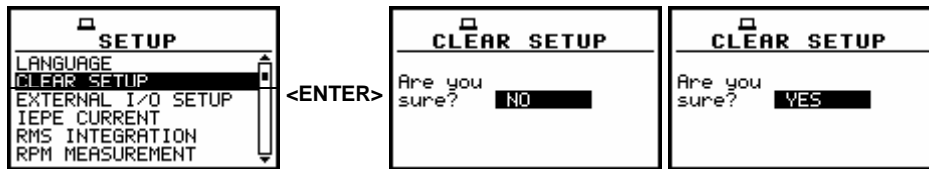
For activation of the Russian version of the user interface, the special code has to be entered.



Displays during the entering of the access code to the Russian version of the user interface

8.2 Return to the factory settings - CLEAR SETUP

The **CLEAR SETUP** enables the user to return to the default setup of the instrument. In order to enter the position the user has to select the **CLEAR SETUP** text in the **SETUP** list, using the **<▲>**, **<▼>** (or **<◀>**, **<▶>**) push-buttons and press the **<ENTER>**.

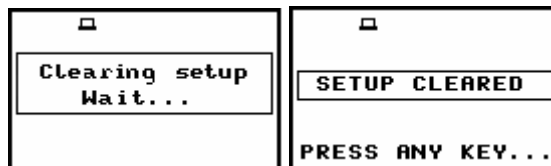


SETUP with CLEAR SETUP text selected and the request for the confirmation for CLEAR SETUP execution

After entering this position, the request for the confirmation is displayed. The proper answer for the request is selected by means of the <◀>, <▶> push-buttons. The instrument returns to the default setup after pressing the <ENTER> push-button in the case when the answer **YES** was chosen.

During the clearing process the message **Clearing setup Wait ...** is displayed. Then the **SETUP CLEARED** message is displayed after the return to the default settings and the instrument waits for the user's reaction.

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



Displays during and after the execution of CLEAR SETUP function

8.3 Setting parameters of the I/O port - EXTERNAL I/O SETUP

The **EXTERNAL I/O SETUP** enables the user to select the available functionality of the **I/O** port. In order to enter the window the user has to select the **EXTERNAL I/O SETUP** text in the **SETUP** list, using the <▲>, <▼> (or <◀>, <▶>) push-buttons and press the <ENTER> one.



SETUP window; EXTERNAL I/O SETUP text highlighted

In order to select a value in a position of the window the <◀>, <▶> should be pressed. The position is changed after pressing the <▲>, <▼> push-buttons. In order to confirm the selection the <ENTER> push-button has to be pressed. Such pressing closes the window. After pressing the <ESC> push-button the sub-list is also closed but all changes, which were made, are ignored.

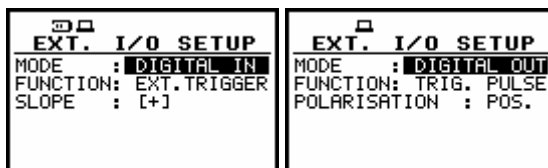
8.3.1 Mode selection of the I/O port - MODE

In the **MODE**, it is possible to select the function of the instrument's socket named as **I/O**. This socket can be used as

- the input of the digital signal used as an external trigger to start the measurements (**DIGITAL IN**) in the "slave" instrument,
- the digital output (**DIGITAL OUT**) used for triggering other "slave" instrument from the "master" one,

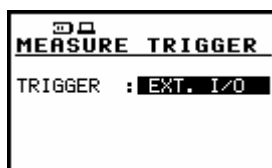
The more detailed description of the **I/O** socket is given in App. C.

To select the mode, the user has to use the <<>, <>> push-buttons in the line with the **MODE** text. The window is closed and the instrument returns to the **SETUP** list after pressing the <ENTER> (with the confirmation of all changes made there) or <ESC> push-buttons (ignoring all changes).



EXT. I/O SETUP windows; MODE selection

In the case of **DIGITAL IN** selection the signal appearing on the **I/O** socket will be treated as the external trigger if the **EXT. I/O** is chosen in the **MEASURE TRIGGER** window (*path: MENU / INPUT / TRIGGER SETUP / MEASURE TRIGGER / TRIGGER / EXT. I/O*)



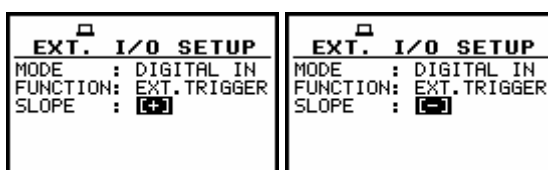
MEASURE TRIGGER windows; EXT. I/O selection

8.3.2 Digital output function of the I/O socket - FUNCTION

The **I/O** socket is used as the external trigger (**EXT.TRIGGER**) in the **DIGITAL IN** mode or as the source of trigger pulse (**TRIG. PULSE**) which starts the measurement in another “slave” instrument linked to the “master” one.

8.3.3 Selection of the slope - SLOPE [+] / SLOPE [-]

In the **SLOPE** position the user can select the active slope of trigger pulse as the **[+]** or **[-]** option. In the case when **[+]** is selected the measurement will be triggered when the slope is rising and in the case when **[-]** is selected the measurement will be triggered when the slope is falling.

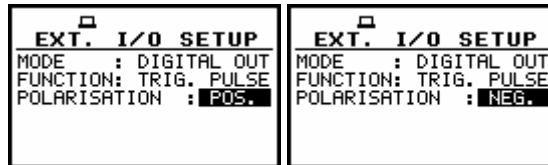


EXT. I/O window; SLOPE selection

8.3.4 Polarisation selection of the digital output signal - POLARISATION

In the **POLARISATION**, it is possible to select which polarisation of the signal (negative or positive) will be valid.

In order to select the polarisation the user has to use the <<>, <>> push-buttons in the active line with the **POLARISATION** text. The window is closed and the instrument returns to the **SETUP** list after pressing the <ENTER> (with the confirmation of all changes made there) or <ESC> push-buttons (ignoring all changes).



EXT. I/O SETUP windows; POLARISATION selection

8.4 Selection of the current IEPE supply - IEPE CURRENT

The **IEPE CURRENT** influence directly Slew Rate (SR) of the IEPE transducer preamplifier. The only disadvantage of higher value of **IEPE CURRENT** is shorter battery operating time. The **1.5 mA IEPE CURRENT** is completely enough for almost all standard applications. The higher values (**3.0 mA** and **4.5 mA**) should be used in the case of long cable connection between instrument and transducer, in the case of very high level of measured signal or in the case of special IEPE trasducers which require higher **IEPE CURRENT** value or in the case of applying cable with unusually high own capacity per meter.

Usually, in the case of the **SC 26** type cable, the **IEPE CURRENT** value should be:

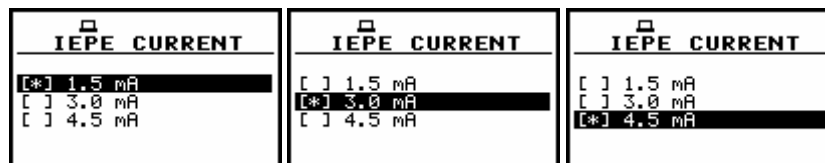
- **1.5 mA** when
 - the level is below 130 dB and the cable should not be longer than 15 meters
 - the level is above 130 dB and the cable should not be longer than 15 meters
- **3.0 mA** and **4.5 mA** should be used in other cases

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



SETUP window; IEPE CURRENT text highlighted

The selection of the option is made by placing a special character in the required position by means of the <◀>, <▶> (or <▲>, <▼>) push-buttons. The window 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-buttons (ignoring a change made in the position).

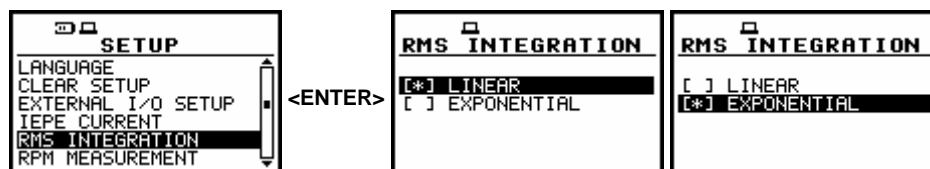


IEPE CURRENT windows; IEPE supply selection

8.5 Detector's type selection in the RMS calculations - RMS INTEGRATION

The **RMS INTEGRATION** enables the user to select the detector type for the calculations of the **RMS** function.

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



SETUP window with RMS INTEGRATION text highlighted and options of RMS INTEGRATION

Two options are available: **LINEAR** and **EXPONENTIAL**. The required parameter can be selected by means of the <▲>, <▼> (or <◀>, <▶>) push-buttons. The window 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-buttons (ignoring a change made in the position).

The formulae used for the **RMS** calculation are given in Appendix D. Setting **LINEAR** is required for getting the true RMS value of the measured signal. When this option is selected the value of the **RMS** function does not depend on the detector time constant: 100ms, 125ms, 200ms, 500ms, 1.0s, 2.0s, 5.0s, 10.0s. In this case, the indicator **Lin.** (or **L**) is displayed in the different modes of the result presentation.

Setting **EXPONENTIAL** enables the user to fulfil the requirements of another standard for the **RMS** measurements. When this option is selected the value of the **RMS** function depends on the detector time constant (the results are displayed **with** the indicator of the detectors selected in the profiles (*path: MENU / INPUT / PROFILE x / DETECTOR*: 100ms, 125ms, 200ms, 500ms, 1.0s, 2.0s, 5.0s, 10.0s).

8.6 Activation of RPM measurement function - RPM MEASUREMENT

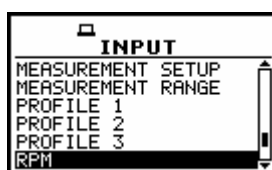
The **RPM MEASUREMENT** (RPM - Revolutions Per Minute) position enables the user to activate the **RPM** measurement function, which is not included in the standard set of the instrument. It can be bought together with the instrument or can be purchased by the user in the future. In the latter case, after selecting the **RPM MEASUREMENT** text in the **SETUP** list, using the <▲>, <▼> (or <◀>, <▶>) push-buttons, and pressing <ENTER>, the user has to introduce special code for activation of the function. After successful activation the **RPM MEASUREMENT**, this text does not appear on the **SETUP** list any more (**RMP** position appears then in the **INPUT** list) and the instrument never more asks for the code.



SETUP window; RPM MEASUREMENT text highlighted



Displays during the entering of the access code to a function



INPUT window after activation of RPM MEASUREMENT function

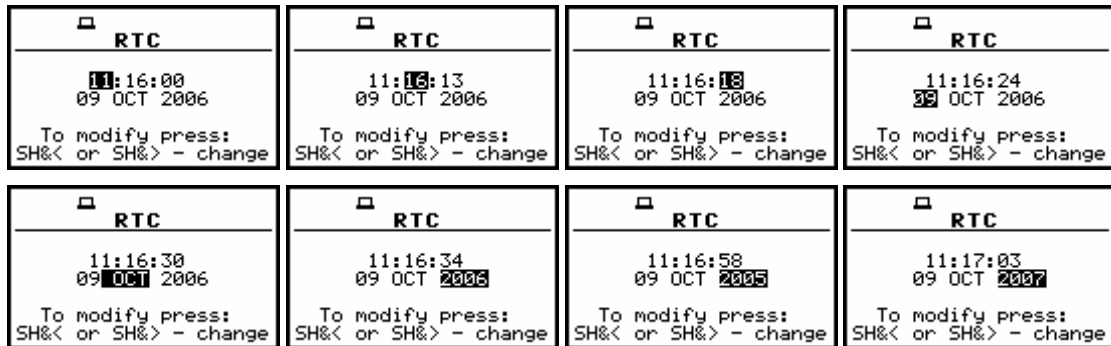
8.7 Programming the instrument's internal Real Time Clock - RTC

The **RTC** enables one to programme the internal **Real Time Clock**. This clock is displayed in the different places depending on the selected presentation mode. In order to enter the position the user has to select the **RTC** text in the **SETUP** list, using the <▲>, <▼> (or <◀>, <▶>) push-buttons and press the <ENTER> one.



SETUP window; RTC text highlighted

The selection of the setting parameter (hour, minute, second, day, month and year) is performed using the <◀>, <▶> push-buttons and the change of its value – using the <◀>, <▶> push-buttons pressed together with the <Shift>.



RTC windows with the different parameters to be set

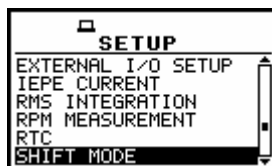


Notice: The new value of a parameter is confirmed after each pressing of the <◀> or <▶> together with the <Shift> push-buttons (new value is selected without any confirmation from the <ENTER> push-button).

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

8.8 Selection of few push-buttons mode - SHIFT MODE

The **SHIFT MODE** enables the user to programme the operation mode of the <Shift>, <Alt> and <Start / Stop> push-buttons.



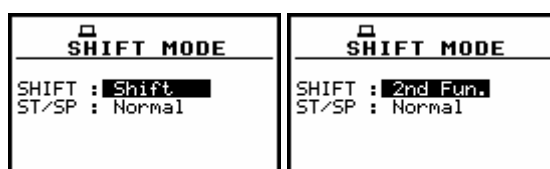
SETUP window; SHIFT MODE text highlighted

In order to enter the position the user has to select the **SHIFT MODE** text in the **SETUP** list, using the **<▲>**, **<▼>** (or **<◀>**, **<▶>**) push-buttons and press the **<ENTER>** one. The selection of a parameter in both positions is done by means of the **<◀>**, **<▶>** push-buttons and confirmed by the **<ENTER>** one. Any changes made in the window are not confirmed in the case of pressing the **<ESC>** push-button but the window is closed.

8.8.1 <Shift> / <Alt> push-button working mode selection - SHIFT

In the **SHIFT**, the user can choose between **2nd Fun.** and **Shift**. When the **Shift** text is selected, the **<Shift>** and **<Alt>** push-buttons operates as in the keyboard of a computer – in order to achieve the desired result, the second push-button has to be pressed in conjunction with the **<Shift>** / **<Alt>** one. When the **2nd Fun.** text is selected the **<Shift>**/**<Alt>** push-button operates in the sequence with the other one.

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 window. After pressing the **<ESC>** push-button the window is also closed but all changes, which were made, are ignored.



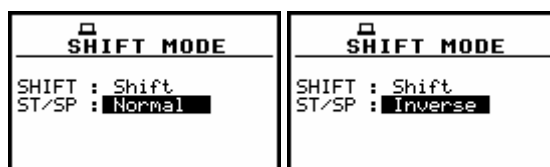
SHIFT MODE windows; available SHIFT settings

8.8.2 <Start / Stop> push-button working mode selection - ST/SP

In the **ST/SP** the user can choose between **Normal** and **Inverse**. When the **Normal** text is selected the instrument reacts on each of the **<Start / Stop>** push-button 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 window. After pressing the **<ESC>** push-button the window is also closed but all changes, which were made, are ignored.



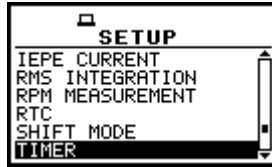
SHIFT MODE windows; available ST/SP settings

8.9 Programming the instrument's internal timer - TIMER

The instrument can be switched on by itself in the programmed time and it can perform the measurements using the setup, which was used before its switching off.

The selection of the parameter to be set is performed using the **<▲>**, **<▼>** and the change of its value – using the **<◀>**, **<▶>** push-buttons pressed together with the **<Shift>**.

In order to enter the position the user has to select the **TIMER** text in the **SETUP** window (using the **<▲>**, **<▼>** or **<◀>**, **<▶>** push-buttons) and press the **<ENTER>** one.



SETUP window; TIMER text highlighted

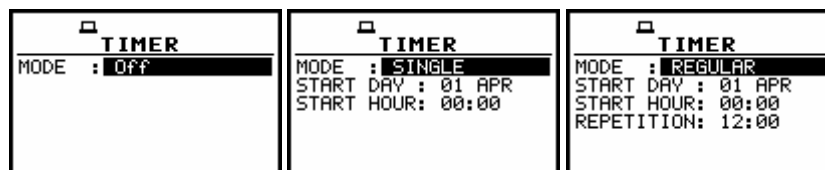
8.9.1 Selecting the mode of the timer function - MODE

The **MODE** of the timer function is selected pressing the **<◀>**, **<▶>** push-buttons when the **MODE** text is displayed inversely in the **TIMER** window.

The timer can be switched off – **Off**, switched on only once – **SINGLE**, switched on many times regularly – **REGULAR** with the period between two consecutive measurements set in the **REPETITION** line

The selected value has to be confirmed by pressing the **<ENTER>** push-button, which causes the simultaneous return to the **SETUP** window. All settings are ignored after the return to the **SETUP** window by pressing the **<ESC>** push-button.

In the case the timer function is active (**SINGLE** or **REGULAR**) the clock icon starts blinking up to switching timer function off or up to finishing programmed measurements.

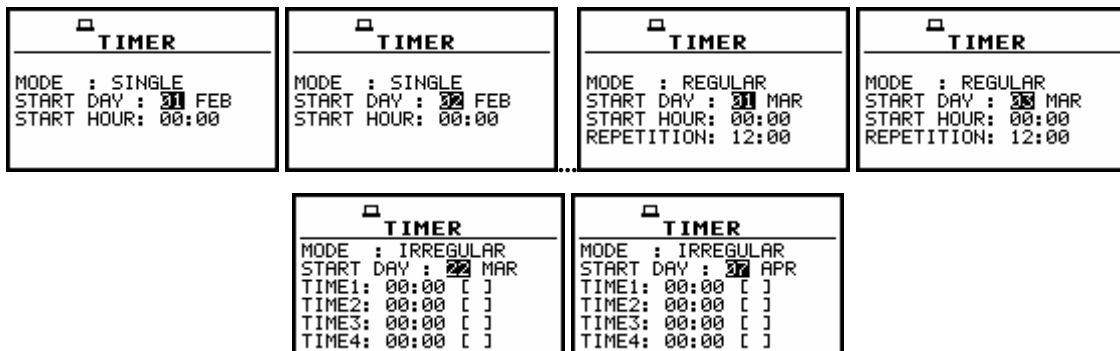


TIMER windows; mode selection

8.9.2 Setting day of the instrument's switch on - START DAY

The **START DAY** determines the date of the measurement start. The timer can be programmed up to one month ahead and during the date setting the current state of the Real Time Clock is taken into account.

The required date can be selected pressing the **<◀>**, **<▶>** push-buttons when the **START DAY** text is displayed inversely in the **TIMER** window.



TIMER windows; setting day of the instrument's switch on

The selected value has to be confirmed by pressing the **<ENTER>** push-button, which causes the simultaneous return to the **SETUP** window. All settings are ignored after the return to the **SETUP** window by pressing the **<ESC>** push-button.

8.9.3 Setting hour of the instrument's switch on - START HOUR

The **START HOUR** determines hour of the measurement start. The required hour can be selected pressing the **<<>**, **<>>** push-buttons when the **START HOUR** text is displayed inversely in the **TIMER** window.

In order to set minutes, one has to enter their position pressing the **<▲>**, **<▼>** push-buttons and then pressing the **<<>**, **<>>** push-buttons to select the proper value. The selected value has to be confirmed by pressing the **<ENTER>** push-button, which causes the simultaneous return to the **SETUP** window. All settings are ignored after the return to the **SETUP** window by pressing the **<ESC>** push-button.

TIMER MODE : SINGLE START DAY : 01 FEB START HOUR: 01:00	TIMER MODE : SINGLE START DAY : 01 FEB START HOUR: 01:10	TIMER MODE : SINGLE START DAY : 01 FEB START HOUR: 02:00
TIMER MODE : REGULAR START DAY : 03 MAR START HOUR: 01:00 REPETITION: 12:00	TIMER MODE : REGULAR START DAY : 03 MAR START HOUR: 02:00 REPETITION: 12:00	TIMER MODE : REGULAR START DAY : 03 MAR START HOUR: 02:10 REPETITION: 12:00

TIMER windows; setting hour and minute of the instrument's switch on

8.9.4 Selecting the period between two consecutive measurements - REPETITION

The **REPETITION** enables to repeat measurement after selected time (it is counted from **START HOUR**). This parameter can be programmed from **00:00** up to **99:59**.

In order to set the proper value one has to select hours or minutes pressing the **<▲>**, **<▼>** push-buttons and then, pressing the **<<>**, **<>>** push-buttons, to select the proper value. The selected value has to be confirmed by pressing the **<ENTER>** push-button, which causes the simultaneous return to the **SETUP** window. All settings are ignored after the return to the **SETUP** window by pressing the **<ESC>** push-button.

TIMER MODE : REGULAR START DAY : 03 MAR START HOUR: 01:00 REPETITION: 12:00	TIMER MODE : REGULAR START DAY : 03 MAR START HOUR: 01:00 REPETITION: 11:00	TIMER MODE : REGULAR START DAY : 03 MAR START HOUR: 01:00 REPETITION: 11:30	TIMER MODE : REGULAR START DAY : 03 MAR START HOUR: 01:00 REPETITION: 11:59
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TIMER windows; setting REPETITION parameter

8.9.5 Description of the exemplary timer function execution

The **TIMER** function is used to programme the instrument's switch on at the given time and perform the measurements with the parameters set in the **INPUT** window. Let us assume that the user wants to switch on the instrument the 1st of February, at 13:25, measure vibration during 10 seconds without using logger and save the results in a file @RES2.

In order to do this, the user has to set the parameters of the **TIMER** function (*path: MENU / SETUP / TIMER*), the measurement parameters (*path: MENU / INPUT / MEASUREMENT SETUP*), activate the **AUTO SAVE** function (*path: MENU / FILE / SAVE OPTIONS*), name the file (the **FILE NAME** window is opened after switching on the **AUTO SAVE** function) and finally – switch off the instrument.

TIMER MODE : SINGLE START DAY : 01 FEB START HOUR: 13:25	MEASUR. SETUP START DELAY : 1s INTEGR. PERIOD : 10s REP. CYCLE : 1 LOGGER : Off	SAVE OPTIONS RAM FILE : [] REPLACE : [] AUTO SAVE : [*] DIRECT SAVE : [] SAVE MAX SPECT.: [] SAVE MIN SPECT.: []	FILE NAME 03ES2 SHK:Delete SH:Insert
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Exemplary settings made for the desired execution of the **TIMER** function

The instrument will be switched on the 1st of February at 13:25 and will be warmed up for the period of 60 seconds decrementing by one second the counter visible on the display.

WARM UP TIME please wait: 55s <ESC> to skip	WARM UP TIME please wait: 4s <ESC> to skip
--	---

Counting down during the warming up of the instrument after switching it on

After warming up the instrument and the preset **DELAY** time, the measurements are performed for a period of ten seconds. Then, the results are saved in the file which name was given or accepted (the proper information is displayed) and finally – the instrument is switched off.

DELAY = 1 s	RMS 1.0s HP1 5.13 mm/s ² Profile(1) 14.52
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Displays during the executing of **TIMER** function (timer icon is active)



Notice: The instrument's **TIMER** function can be used for multiply measurements (at the programmed day and time with the selected repetition). The first switch on of the instrument **must** be within one month ahead.

8.10 Selection of the vibration units - VIBRATION UNITS

The **VIBRATION UNITS** enables the user to select the units for the vibration measurements. In order to enter the position the user has to select the **VIBRATION UNITS** text in the **SETUP** window, using the <▲>, <▼> (or <◀>, <▶>) push-buttons and press the <ENTER>.

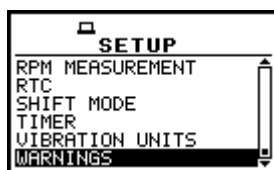
SETUP RMS INTEGRATION RPM MEASUREMENT RTC SHIFT MODE TIMER VIBRATION UNITS	<ENTER>	VIBRATION UNITS [*] NON-METRIC [] METRIC	VIBRATION UNITS [] NON-METRIC [*] METRIC
--	---------	---	---

SETUP window with **VIBRATION UNITS** text highlighted and available positions

It is possible to select the **NON-METRIC** units (e.g. g, ips, mil etc.) or **METRIC** units (e.g. m/s², m/s, m 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 window. After pressing the <ESC> push-button the window is also closed but all changes, which were made, are ignored.

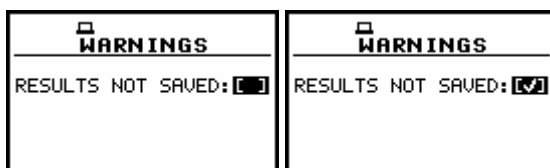
8.11 Warnings selection - WARNINGS

The **WARNINGS** enables the user to activate the **RESULTS NOT SAVED** warning message, which will be displayed in the case when the measurement results has not been saved. In order to enter the window the user has to select the **WARNINGS** text in the **SETUP** list, using the <▲>, <▼> (or <◀>, <▶>) push-buttons and press the <ENTER>. This window contains only one position.



SETUP window; WARNINGS text highlighted

In order to switch on the displaying of the message the user has to place, by means of the <◀>, <▶> push-buttons, the special character in the warning's position. The window 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).



WARNINGS windows; RESULTS NOT SAVED selected

When the position is set to be active the special warning can be displayed 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.



Displays with LAST RESULTS NOT SAVE warning

The question **Continue?** appears with the warning message. The default value of the **CONTINUE** position is **SAVE NEXT**. After pressing the <ENTER> push-button the instrument saves last results with the name number increased by one. Using the <◀>, <▶> push-buttons one can change the value of the **CONTINUE** position to **YES** or **NO**.

If **YES** is chosen (to confirm the change the <ENTER> should be pressed), the instrument returns to the active mode of result presentation starting the new measurement process.

If **NO** is chosen (to confirm the change the <ENTER> should be pressed), the instrument returns to the active mode of measurement result's presentation without starting the new measurement process.

