

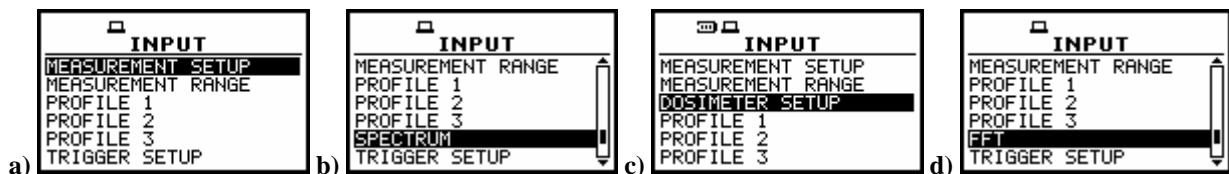
5 MEASUREMENT PARAMETERS SETTING - INPUT

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 finely pressing the **<ENTER>** one.



Main list with INPUT text selected

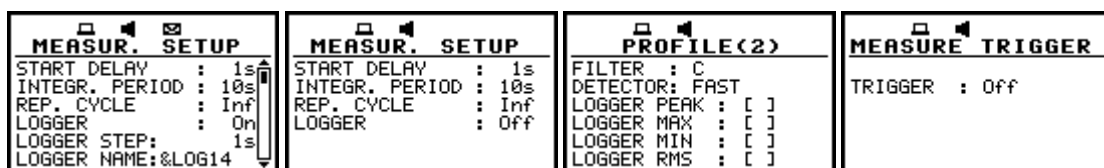
The **INPUT** list in the **LEVEL METER** contains the elements which enable one the independent programming of the measurement parameters (**MEASUREMENT SETUP**), the input range (**MEASUREMENT RANGE**), parameters of three profiles (**PROFILE 1**, **PROFILE 2** and **PROFILE 3**) and the trigger function (**TRIGGER SETUP**). In the case of **1/1 OCTAVE** and **1/3 OCTAVE** on the display appears **SPECTRUM** position. In the case of the **DOSE METER** instead of the trigger function there is **DOSIMETER SETUP**. In the case of **FFT analyser** on the display appears **FFT** position. In the cases of **RT60** there is not any new position in the **INPUT** list – **RT60** position appears in the **SETUP** list.



INPUT list in LEVEL METER (a), in 1/1 OCTAVE and 1/3 OCTAVE analyser (b), in DOSE METER (c), and in FFT analyser (d)



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 displaying inversely 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: In the case of settings for vibration measurements 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 displayed inversely 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.

<pre> MEASUR. SETUP START DELAY : 1s INTEGR. PERIOD : 1s REP. CYCLE : Inf LOGGER : Off </pre>	<pre> MEASUR. SETUP START DELAY : 1s INTEGR. PERIOD : Inf REP. CYCLE : Inf LOGGER : Off </pre>	<pre> MEASUR. SETUP START DELAY : 1s INTEGR. PERIOD : 1s REP. CYCLE : 2 LOGGER : Off </pre>
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Displays with **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 constantly 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.

<pre> MEASUR. SETUP START DELAY : 0s INTEGR. PERIOD : 1s REP. CYCLE : Inf LOGGER : Off </pre>	<pre> MEASUR. SETUP START DELAY : 1s INTEGR. PERIOD : 1s REP. CYCLE : Inf LOGGER : Off </pre>	<pre> MEASUR. SETUP START DELAY : 2s INTEGR. PERIOD : 1s REP. CYCLE : Inf LOGGER : Off </pre>
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MEASUREMENT SETUP windows; the setting of **START DELAY** with 1-second step

<pre> MEASUR. SETUP START DELAY : 10s INTEGR. PERIOD : 1s REP. CYCLE : Inf LOGGER : Off </pre>	<pre> MEASUR. SETUP START DELAY : 20s INTEGR. PERIOD : 1s REP. CYCLE : Inf LOGGER : Off </pre>	<pre> MEASUR. SETUP START DELAY : 60s INTEGR. PERIOD : 1s REP. CYCLE : Inf LOGGER : Off </pre>
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MEASUREMENT SETUP windows; the setting of **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 sound level 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- buttons):

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

MEASUR. SETUP	MEASUR. SETUP	MEASUR. SETUP
START DELAY : 1s INTEGR. PERIOD : 1s REP. CYCLE : Inf LOGGER : Off	START DELAY : 1s INTEGR. PERIOD : 2s REP. CYCLE : Inf LOGGER : Off	START DELAY : 1s INTEGR. PERIOD : 3s REP. CYCLE : Inf LOGGER : Off

MEASUREMENT SETUP windows; the setting of **INTEGR. PERIOD** with 1-second step

MEASUR. SETUP	MEASUR. SETUP	MEASUR. SETUP
START DELAY : 1s INTEGR. PERIOD : 13s REP. CYCLE : Inf LOGGER : Off	START DELAY : 1s INTEGR. PERIOD : 23s REP. CYCLE : Inf LOGGER : Off	START DELAY : 1s INTEGR. PERIOD : 33s REP. CYCLE : Inf LOGGER : Off

MEASUREMENT SETUP windows; the setting of **INTEGR. PERIOD** with 10-seconds step

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

MEASUR. SETUP	MEASUR. SETUP	MEASUR. SETUP	MEASUR. SETUP
START DELAY : 1s INTEGR. PERIOD : 2m REP. CYCLE : Inf LOGGER : Off	START DELAY : 1s INTEGR. PERIOD : 3m REP. CYCLE : Inf LOGGER : Off	START DELAY : 1s INTEGR. PERIOD : 13m REP. CYCLE : Inf LOGGER : Off	START DELAY : 1s INTEGR. PERIOD : 23m REP. CYCLE : Inf LOGGER : Off

MEASUREMENT SETUP windows; the setting of **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	MEASUR. SETUP	MEASUR. SETUP	MEASUR. SETUP
START DELAY : 1s INTEGR. PERIOD : 2h REP. CYCLE : Inf LOGGER : Off	START DELAY : 1s INTEGR. PERIOD : 12h REP. CYCLE : Inf LOGGER : Off	START DELAY : 1s INTEGR. PERIOD : 22h REP. CYCLE : Inf LOGGER : Off	START DELAY : 1s INTEGR. PERIOD : Inf REP. CYCLE : Inf LOGGER : Off

MEASUREMENT SETUP windows; the setting of **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	MEASUR. SETUP	MEASUR. SETUP
START DELAY : 1s INTEGR. PERIOD : 1m REP. CYCLE : Inf LOGGER : Off	START DELAY : 1s INTEGR. PERIOD : 5m REP. CYCLE : Inf LOGGER : Off	START DELAY : 1s INTEGR. PERIOD : 15m REP. CYCLE : Inf LOGGER : Off
START DELAY : 1s INTEGR. PERIOD : 1h REP. CYCLE : Inf LOGGER : Off	START DELAY : 1s INTEGR. PERIOD : 8h REP. CYCLE : Inf LOGGER : Off	START DELAY : 1s INTEGR. PERIOD : 24h REP. CYCLE : Inf 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.



Notice: In the **DOSE METER** the integration period cannot be set for the value greater than 8 hours.

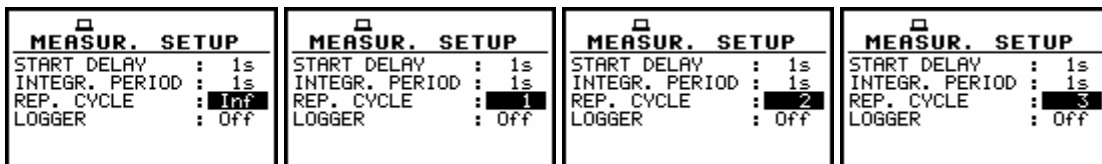
If the user wants to switch on **AUTO SAVE** option (path: **MENU / FILE / SAVE OPTIONS / AUTO SAVE**) the integration period value has to be greater or equal than 10 seconds. When **AUTO SAVE** option was switched on and new entered integration period value is less than 10 seconds **AUTO SAVE** option switches off and **INT.PERIOD TOO SHORT / AUTO SAVE DISABLED** message appears on the display.



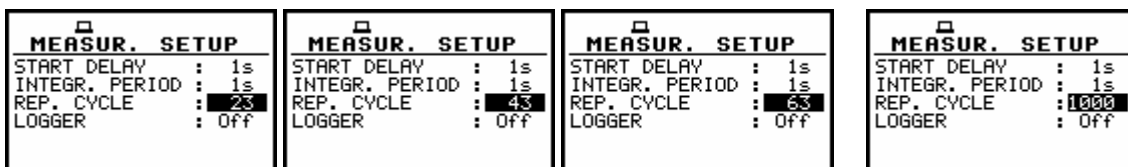
Display, when **INT.PERIOD** is too short for **AUTO SAVE** option

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].



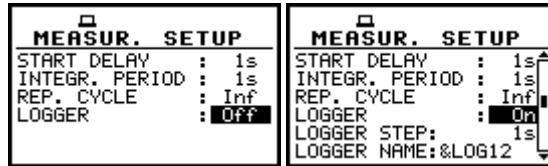
REP. CYCLE setting with the step equal to one



REP. CYCLE setting with the step equal to 20

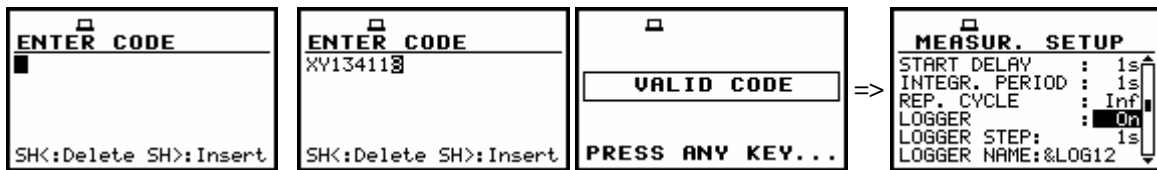
5.1.4 Logger functionality switching On / Off - **LOGGER**

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 LOGGER deactivated and activated

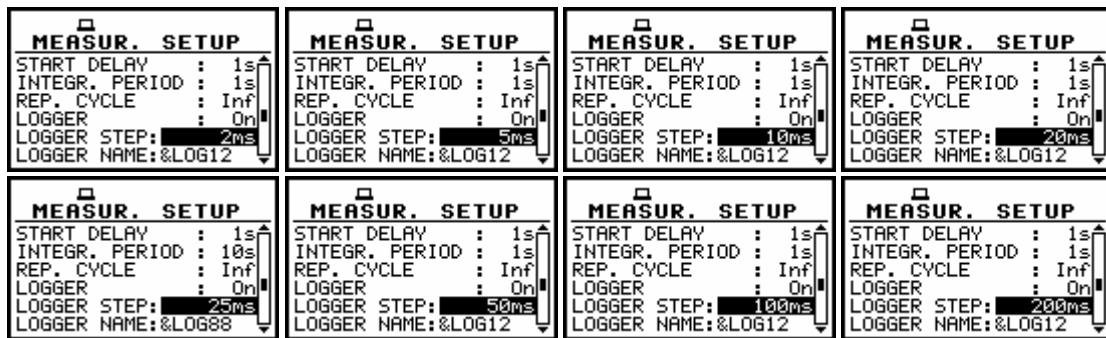
The **LOGGER** functionality is not included in the standard set of the instrument. It can be bought together with the instrument ordering the proper option or can be purchased by the user in the future. In the latter case, after selecting **On** value, the user has to introduce special code activating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



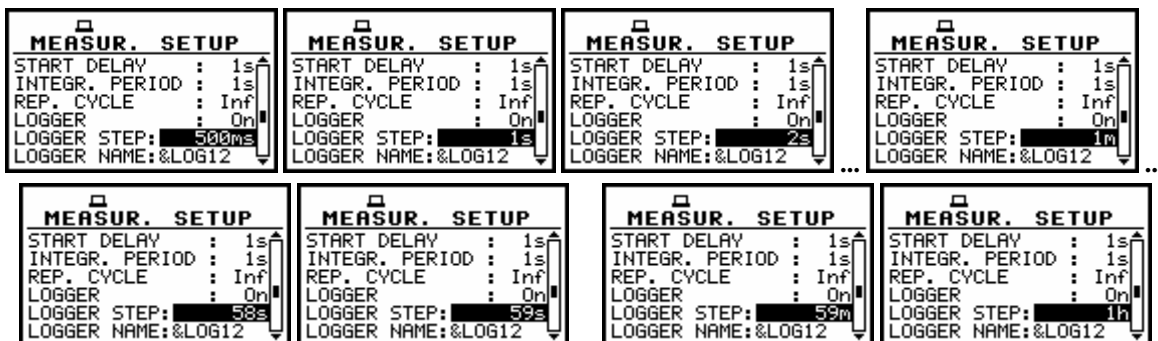
Displays during setting LOGGER STEP; available values in a sequence 1, 2, 5

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

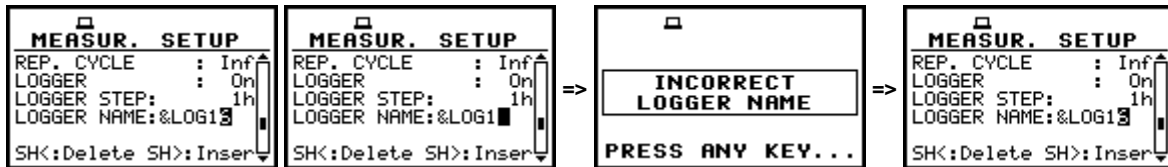
5.1.6 Logger file name edition - LOGGER NAME

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 displayed inversely character is currently edited. The <<>, <>>, <<>, <>> 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. The subsequent digits, underline, big letters and space appear on the display in the inversely displayed position after each pressing of the mentioned above push-buttons.



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

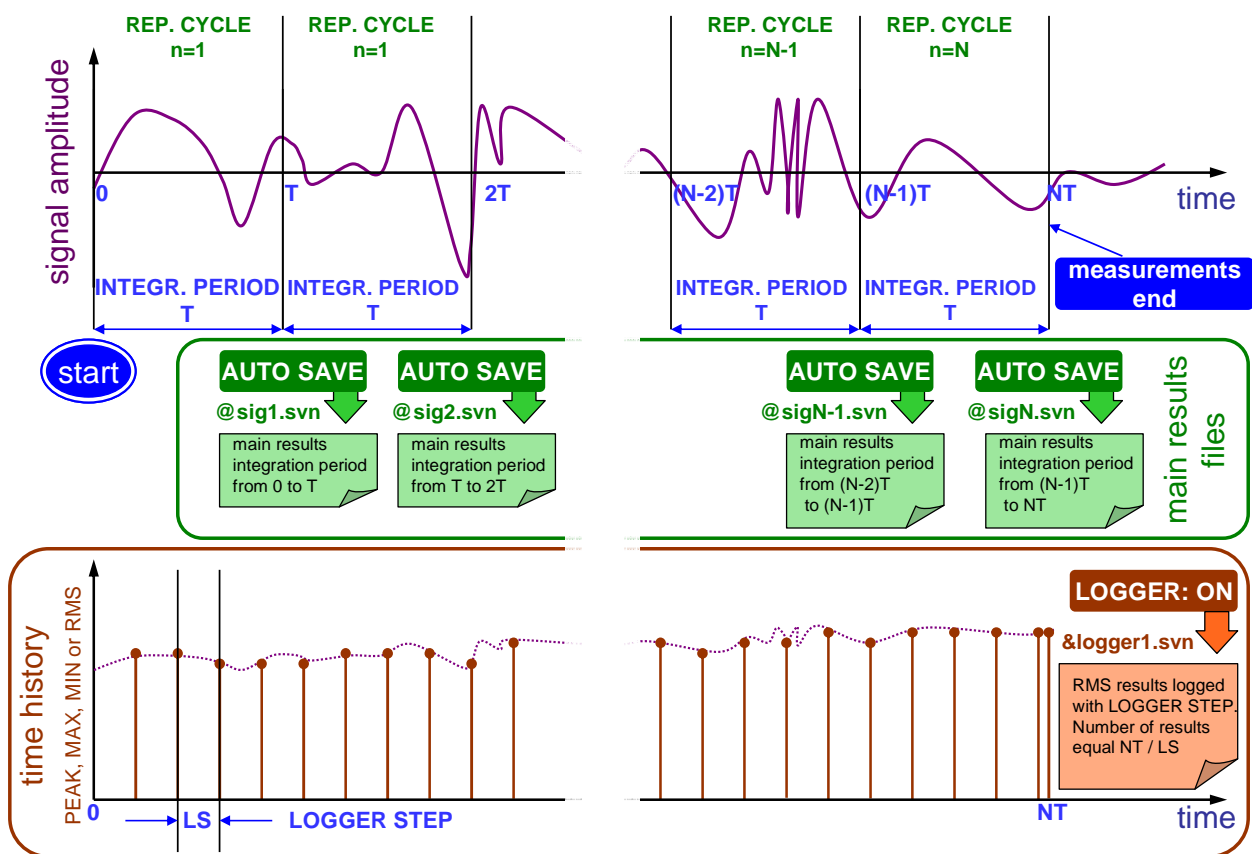
The main measurement results (cf. App. B):

- L_{Peak} , L_{Max} , L_{Min} , **SPL**, **LEQ**, L_{den} , **Ltm3**, **Ltm5** for **SOUND LEVEL METER**, 1/1 OCTAVE, 1/3 OCTAVE, FFT and RT60
- L_{Peak} , L_{Max} , L_{Min} , **SPL**, **LEQ**, L_{den} , **Ltm3**, **Ltm5**, **LAV** and **TLAV** for **DOSE METER**
- **PEAK**, **P-P**, **MAX**, **MIN**, **RMS**, **VDV** for **VIBRATION LEVEL METER**, 1/1 OCTAVE, 1/3 OCTAVE, and FFT

are calculated in the period set in the **INTEGR. PERIOD**. These results can be saved in the result files 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 12 results can be logged simultaneously from three independent profiles of the instrument (**PEAK / MAX / MIN / RMS** for sound measurements or **PEAK / P-P / MAX / RMS** for vibration measurements 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 **SOUND** or **VIBRATION 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.

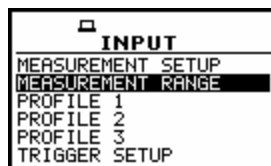
Measurements started by <START/STOP> push-button, ended by last repetition cycle



Relations between INTEGR. PERIOD and LOGGER STEP

5.2 Measurement range setting - MEASUREMENT RANGE

The **MEASUREMENT RANGE** is used to set one of the available measurement ranges in 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 list with MEASUREMENT RANGE selected

There are two ranges available **HIGH** and **LOW**. The detailed description of the measurement ranges parameters is given in App. C. The change of the input range is made by means of the <<>, <>> push-buttons. After pressing the <ENTER> push-button the change is confirmed and the window closes. The return to the **INPUT** list ignoring any changes made in the sub-list is made after pressing the <ESC> push-button.

MEASUR. RANGE	MEASUR. RANGE
RANGE : HIGH	RANGE : LOW
RMS (A) 36.0dB - 143.6dB	RMS (A) 25.0dB - 126.6dB
PEAK 72.0dB - 146.6dB	PEAK 59.0dB - 129.6dB

MEASUREMENT RANGE windows in sound mode; RANGE selection

MEASUR. RANGE RANGE : HIGH RMS (HP) 10.0mm/s ² - 700m/s ² PEAK 316mm/s ² - 1.00km/s ²	MEASUR. RANGE RANGE : LOW RMS (HP) 1.41mm/s ² - 100m/s ² PEAK 31.6mm/s ² - 141m/s ²
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MEASUREMENT RANGE windows in vibration mode, RANGE selection

The range value changes due to the calibration factor (in case of SM changes only upper limit).

BY SENSITIVITY SENSITIVITY: 50.00mV/Pa CAL. FACTOR: C= 0.00dB	=>	MEASUR. RANGE RANGE : HIGH RMS (A) 36.0dB - 137.0dB PEAK 72.0dB - 140.0dB	=>	MEASUR. RANGE RANGE : LOW RMS (A) 25.0dB - 120.0dB PEAK 59.0dB - 123.0dB
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Displays with change of the default range values in sound mode caused by the calibration factor

BY SENSITIVITY SENSITIVITY: 15.00mV/ms ² CAL. FACTOR: C= -3.52dB	=>	MEASUR. RANGE RANGE : HIGH RMS (HP) 6.68mm/s ² - 473m/s ² PEAK 211mm/s ² - 668m/s ²	=>	MEASUR. RANGE RANGE : LOW RMS (HP) 944µm/s ² - 66.8m/s ² PEAK 21.1mm/s ² - 94.4m/s ²
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Displays with change of the default range values in vibration mode 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 displayed inversely **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**, **LOGGER MIN** and **LOGGER RMS** in the case of sound measurements and **LOGGER PEAK**, **LOGGER P-P**, **LOGGER MAX** and **LOGGER RMS** in the case of vibration measurements).

INPUT MEASUREMENT SETUP MEASUREMENT RANGE PROFILE 1 PROFILE 2 PROFILE 3 TRIGGER SETUP	=>	INPUT MEASUREMENT SETUP MEASUREMENT RANGE PROFILE 1 PROFILE 2 PROFILE 3 TRIGGER SETUP	=>	INPUT MEASUREMENT SETUP MEASUREMENT RANGE PROFILE 1 PROFILE 2 PROFILE 3 TRIGGER SETUP
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INPUT list with 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 sound measurements
- Z type 1 according to the IEC 61672-1 standard

- **A** type 1 according to the IEC 651 and IEC 61672-1 standards
- **C** type 1 according to the IEC 651 and IEC 61672-1 standards

PROFILE(3)	PROFILE(1)	PROFILE(2)
FILTER : Z	FILTER : A	FILTER : C
DETECTOR: FAST	DETECTOR: FAST	DETECTOR: FAST
LOGGER PEAK : []	LOGGER PEAK : []	LOGGER PEAK : []
LOGGER MAX : []	LOGGER MAX : []	LOGGER MAX : []
LOGGER MIN : []	LOGGER MIN : []	LOGGER MIN : []
LOGGER RMS : []	LOGGER RMS : []	LOGGER RMS : []

PROFILE(x) windows; the selection of the weighting filter in SM

- in the case of acceleration measurements (vibration): **HP1, HP3, HP10, KB, Wk, Wd, Wc, Wj, Wm, Wh, Wg** and **Wb**

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

PROFILE(1)	PROFILE(1)	PROFILE(1)	PROFILE(1)
FILTER : Wk	FILTER : Wd	FILTER : Wc	FILTER : Wj
DETECTOR: 1.0s	DETECTOR: 1.0s	DETECTOR: 1.0s	DETECTOR: 1.0s
LOGGER PEAK : []	LOGGER PEAK : []	LOGGER PEAK : []	LOGGER PEAK : []
LOGGER P-P : []	LOGGER P-P : []	LOGGER P-P : []	LOGGER P-P : []
LOGGER MAX : []	LOGGER MAX : []	LOGGER MAX : []	LOGGER MAX : []
LOGGER RMS : []	LOGGER RMS : []	LOGGER RMS : []	LOGGER RMS : []

PROFILE(1)	PROFILE(1)	PROFILE(1)	PROFILE(1)
FILTER : Wm	FILTER : Wh	FILTER : Wg	FILTER : Wb
DETECTOR: 1.0s	DETECTOR: 1.0s	DETECTOR: 1.0s	DETECTOR: 1.0s
LOGGER PEAK : []	LOGGER PEAK : []	LOGGER PEAK : []	LOGGER PEAK : []
LOGGER P-P : []	LOGGER P-P : []	LOGGER P-P : []	LOGGER P-P : []
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 acceleration measurements

- in the case of velocity measurements (vibration): **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 P-P : []	LOGGER P-P : []	LOGGER P-P : []	LOGGER P-P : []
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 (vibration): **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 P-P : []	LOGGER P-P : []	LOGGER P-P : []
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: **IMPULSE**, **FAST** and **SLOW** (in the case of sound measurements) and **100ms**, **125ms**, **200ms**, **500ms**, **1.0s**, **2.0s**, **5.0s**, **10.0s** (in the case of vibration measurements). 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(3)	PROFILE(2)	PROFILE(1)
FILTER : Z DETECTOR: IMP. LOGGER PEAK : [] LOGGER MAX : [] LOGGER MIN : [] LOGGER RMS : []	FILTER : C DETECTOR: FAST LOGGER PEAK : [] LOGGER MAX : [] LOGGER MIN : [] LOGGER RMS : []	FILTER : A DETECTOR: SLOW LOGGER PEAK : [] LOGGER MAX : [] LOGGER MIN : [] LOGGER RMS : []

PROFILE(x) windows (SM); the selection of RMS detector

PROFILE(1)	PROFILE(1)	PROFILE(1)	PROFILE(1)
FILTER : HP1 DETECTOR: 100ms LOGGER PEAK : [] LOGGER P-P : [] LOGGER MAX : [] LOGGER RMS : []	FILTER : HP1 DETECTOR: 125ms LOGGER PEAK : [] LOGGER P-P : [] LOGGER MAX : [] LOGGER RMS : []	FILTER : HP1 DETECTOR: 200ms LOGGER PEAK : [] LOGGER P-P : [] LOGGER MAX : [] LOGGER RMS : []	FILTER : HP1 DETECTOR: 500ms LOGGER PEAK : [] LOGGER P-P : [] LOGGER MAX : [] LOGGER RMS : []
PROFILE(1)	PROFILE(1)	PROFILE(1)	PROFILE(1)
FILTER : HP1 DETECTOR: 1.0s LOGGER PEAK : [] LOGGER P-P : [] LOGGER MAX : [] LOGGER RMS : []	FILTER : HP1 DETECTOR: 2.0s LOGGER PEAK : [] LOGGER P-P : [] LOGGER MAX : [] LOGGER RMS : []	FILTER : HP1 DETECTOR: 5.0s LOGGER PEAK : [] LOGGER P-P : [] LOGGER MAX : [] LOGGER RMS : []	FILTER : HP1 DETECTOR: 10.0s LOGGER PEAK : [] LOGGER P-P : [] LOGGER MAX : [] LOGGER RMS : []

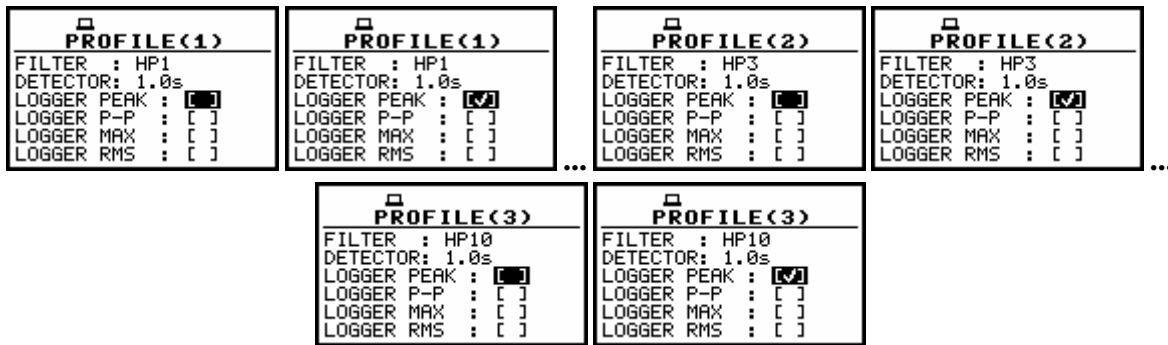
PROFILE(1) windows (vibration mode); the selection of RMS detector

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(1)	PROFILE(1)	PROFILE(2)	PROFILE(2)
FILTER : A DETECTOR: FAST LOGGER PEAK : [] LOGGER MAX : [] LOGGER MIN : [] LOGGER RMS : []	FILTER : A DETECTOR: FAST LOGGER PEAK : [✓] LOGGER MAX : [] LOGGER MIN : [] LOGGER RMS : []	FILTER : C DETECTOR: FAST LOGGER PEAK : [] LOGGER MAX : [] LOGGER MIN : [] LOGGER RMS : []	FILTER : C DETECTOR: FAST LOGGER PEAK : [✓] LOGGER MAX : [] LOGGER MIN : [] LOGGER RMS : []
...			
PROFILE(3)	PROFILE(3)		
FILTER : Z DETECTOR: FAST LOGGER PEAK : [] LOGGER MAX : [] LOGGER MIN : [] LOGGER RMS : []	FILTER : Z DETECTOR: FAST LOGGER PEAK : [✓] LOGGER MAX : [] LOGGER MIN : [] LOGGER RMS : []		

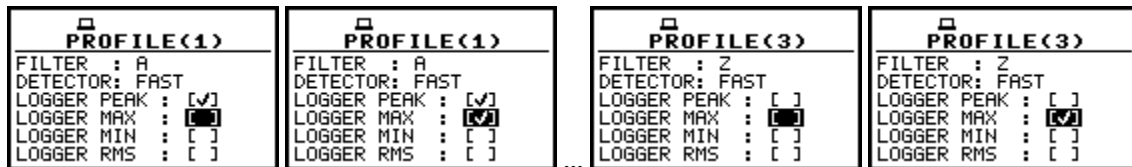
PROFILE(x) windows (sound mode); PEAK result to be not saved or saved in a logger's file



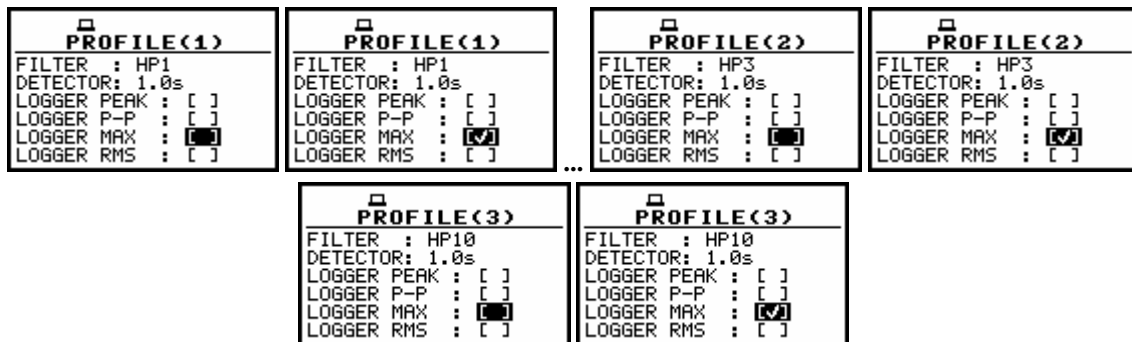
PROFILE(x) windows (vibration); PEAK result to be not saved or saved in a logger's file

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.



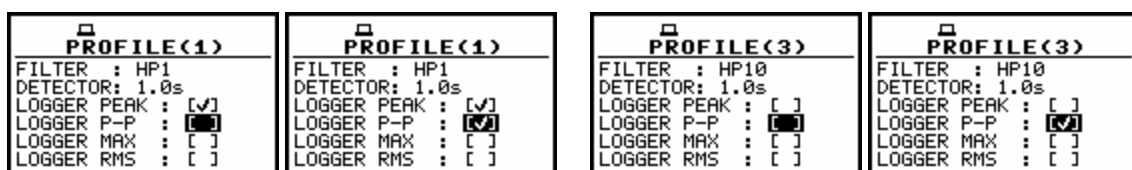
PROFILE(x) windows (SM); MAX result to be not saved or saved in a logger's file



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

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

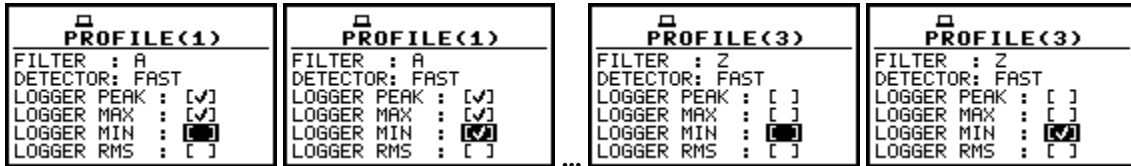
In order to save the **P-P** result (cf. the definition in App. D) the user has to activate this line (by means of the <▲>, <▼> push-buttons) and place a special character in the brackets using the <<◀>, <▶> push-buttons. After pressing the <ENTER> push-button any changes made in the window are confirmed 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. The **LOGGER P-P** position is available only in **VM**.



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

5.3.6 MIN result selection for saving in a logger's file - **LOGGER MIN**

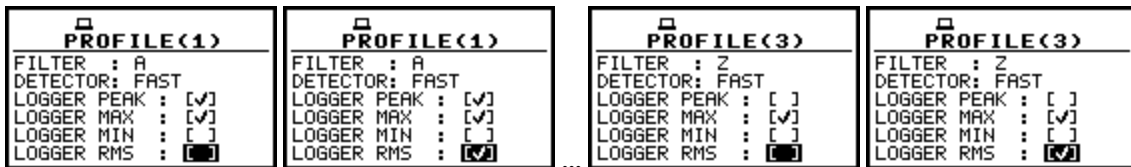
In order to save the **MIN** result (cf. the definition in App. D) the user has to activate this line (by means of the **<▲>**, **<▼>** push-buttons) and place a special character in the brackets using the **<◀>**, **<▶>** push-buttons. After pressing the **<ENTER>** push-button any changes made in the 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. The **LOGGER MIN** position is available only in **SM**.



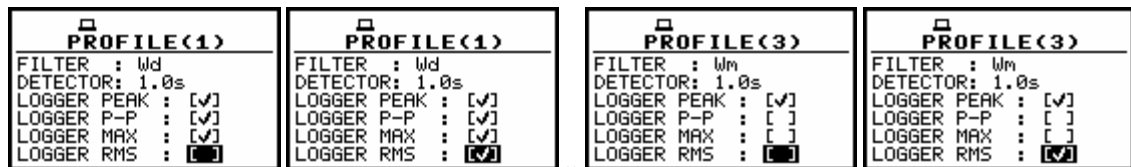
PROFILE(x) windows; MIN result to be not saved or saved in a logger's file

5.3.7 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.



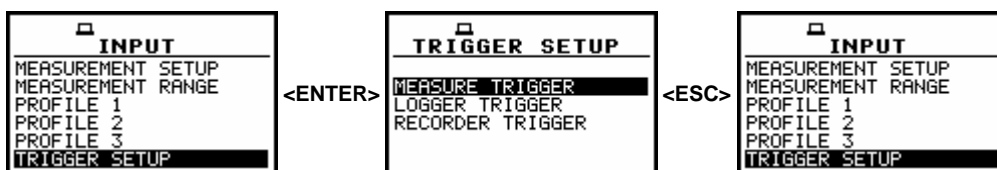
PROFILE(x) window (SM); RMS result to be not saved or saved in a logger's file



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

5.4 Triggering mode and parameters selection - **TRIGGER SETUP**

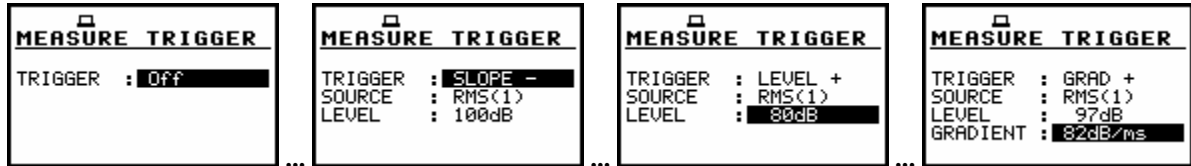
The **TRIGGER SETUP** sub-list enables the user to set the triggering parameters. It is not present for the **DOSE METER** function. This sub-list is opened after the selection of the **TRIGGER SETUP** text from the **INPUT** list by means of the **<▼>**, **<▶>** (or **<▼>**, **<▶>** with **<SHIFT>**) push-buttons and pressing the **<ENTER>** one. The **TRIGGER SETUP** consists of the **MEASURE TRIGGER**, **LOGGER TRIGGER** and **RECORDER TRIGGER** sub-lists. The return to the **INPUT** list is made after pressing the **<ESC>** push-button.



TRIGGER SETUP selected in INPUT list and 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.

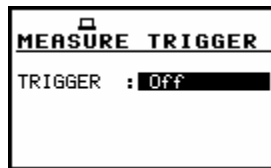


MEASURE TRIGGER windows

In order to change the displayed inversely 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.

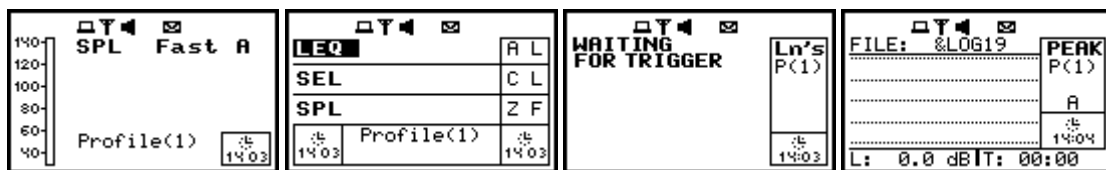
5.4.1.1 Switching the triggering on and off - TRIGGER

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



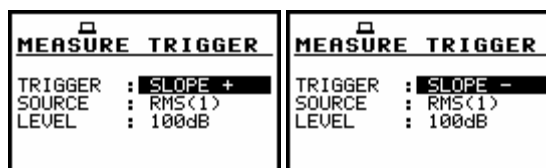
MEASURE TRIGGER window; TRIGGER switched off

The triggering is switched on if one of its five modes is selected: **SLOPE +**, **SLOPE -**, **LEVEL +**, **LEVEL -** or **GRAD +**. 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

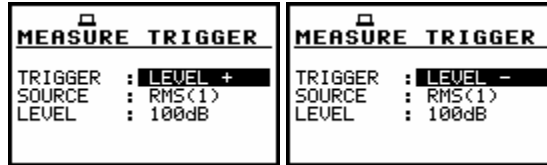
In the case when the **SLOPE +** is selected, the measurement starts when the arising signal will pass the level determined in the **LEVEL**. In the case when the **SLOPE -** is selected, the measurement starts when the falling down signal will pass the level determined in the **LEVEL**. The measurement 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 SLOPE modes selected

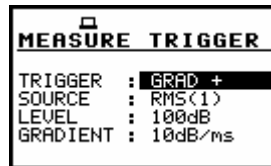
In the case when the **LEVEL +** is selected, in each second of the measurement the triggering condition is checked; the measurement is registered only when the signal has the greater level than this determined in the **LEVEL** and in the other case the measurement result is skipped.

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 LEVEL modes selected

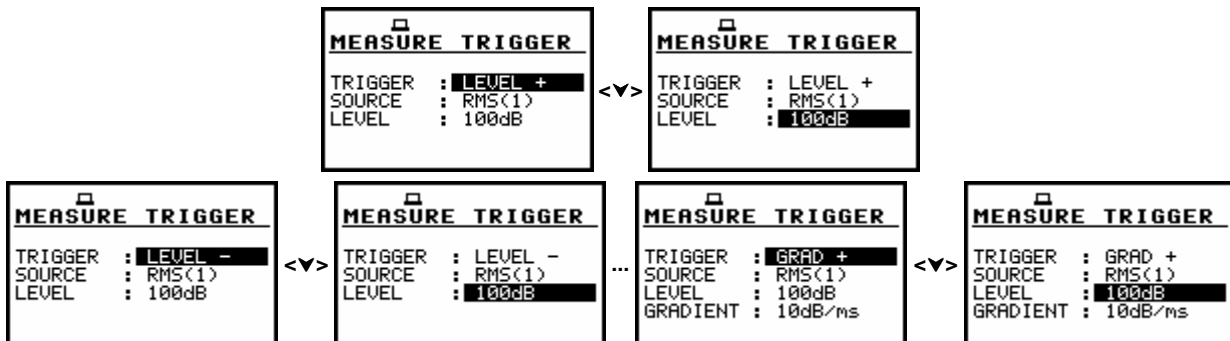
In the case when the **GRAD +** is selected, in each second of the measurement the triggering condition is checked; the measurement is registered only when the signal has the greater level than this determined in the **LEVEL** and the speed of the signal changes is not less than that selected in the **GRADIENT**. In the other case the measurement result is skipped.



MEASURE TRIGGER window with GRAD + mode selected

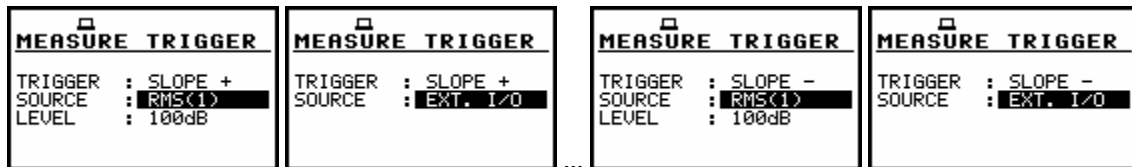
5.4.1.2 Selection of the triggering signal - SOURCE

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 displayed inversely) and the text stated here remains unchanged in the case of **LEVEL +**, **LEVEL -** or **GRAD +** triggering mode. After pressing there the **<▼>** push-button, the **SOURCE** line is skipped.




MEASURE TRIGGER windows with not active SOURCE signal line

In the case of **SLOPE +** and **SLOPE -** as a source of the triggering signal can be used the signal connected to the external input/output socked named **I/O**. The selection of the source of the triggering signal is performed using the **<<>**, **>>>** push-buttons.

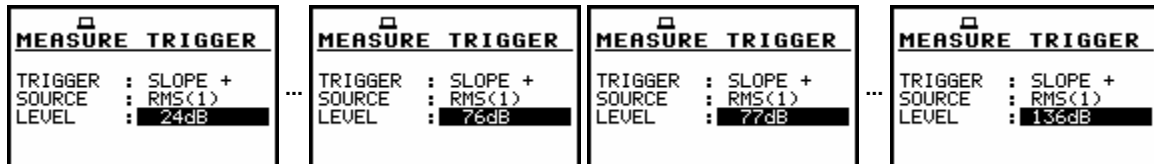


MEASURE TRIGGER windows with SOURCE signal selection


 **Notice:** Only one signal measured in the instrument - the RMS detector in the first profile - can be used as the triggering signal. Additionally, the signal from **Ext.I/O** can be also used as the trigger source in the **SLOPE +** and **SLOPE -** modes.

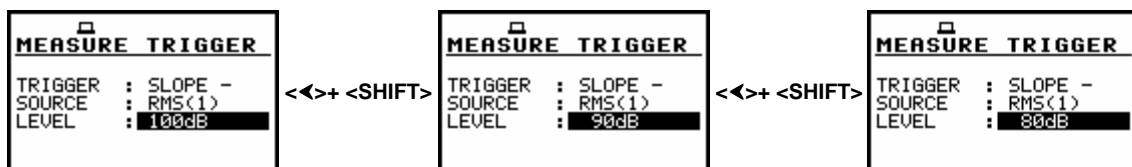
5.4.1.3 Setting the level of the triggering signal - LEVEL

The level of the triggering signal (**LEVEL**) can be set in 1 dB step (or 10 dB steps) from 24 dB to 136 dB range using the <<>, <>> push-buttons (or <<>, <>> with <SHIFT>).

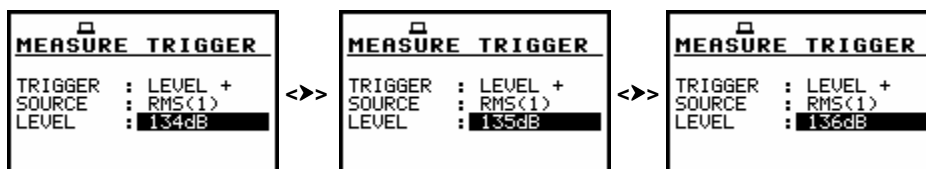


MEASURE TRIGGER windows with LEVEL selection in SLOPE + mode

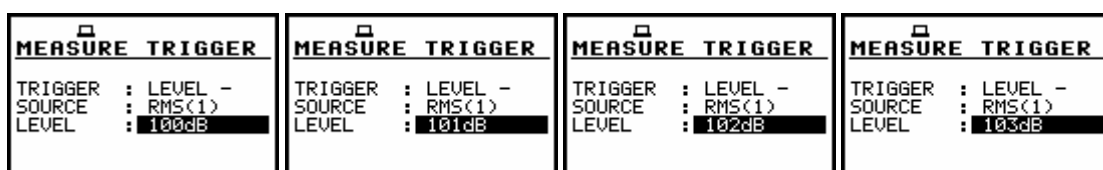
 **Notice:** The **LEVEL** value of the triggering signal refers to the instantaneous value of the RMS result from the first profile calculated during the period depending on selected **DETECTOR** (path: MENU / INPUT / PROFILE 1 / DETECTOR).



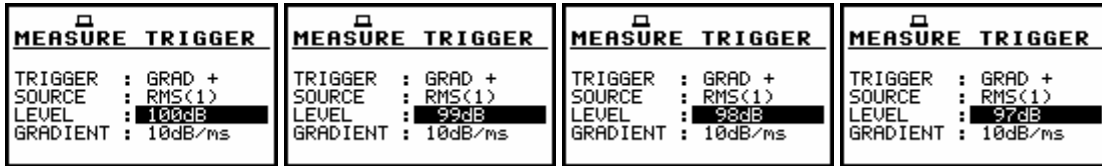
MEASURE TRIGGER windows with LEVEL selection in SLOPE - mode (10 dB step down)



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



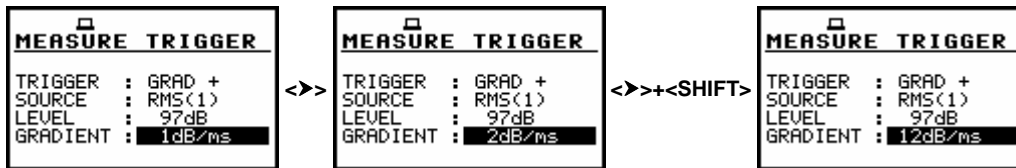
MEASURE TRIGGER windows with LEVEL selection in LEVEL - mode (1 dB step up)



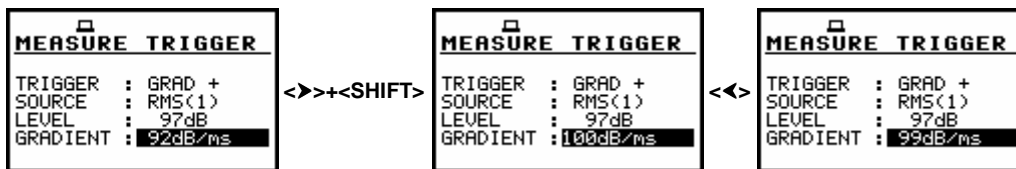
MEASURE TRIGGER windows with LEVEL selection in GRAD + mode (1 dB step down)

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 <<>, <>> push-buttons (or <<>, <>> with <SHIFT>).



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



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

5.4.2 Trigger parameters in logger setting - LOGGER TRIGGER

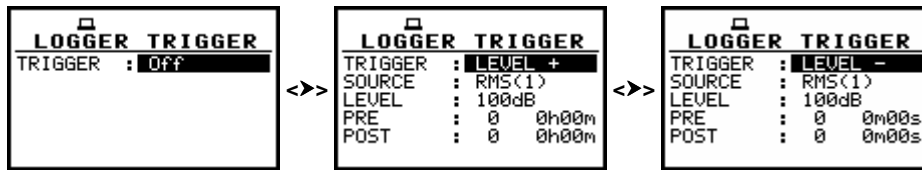
The **LOGGER TRIGGER** parameters influence the way the measurement results are saved in the logger. It is a contexts sub-list in which the triggering in logger can be switched off or on (**TRIGGER**), in the case when on (**LEVEL +**) - the source of the triggering signal is determined (**SOURCE**), 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).

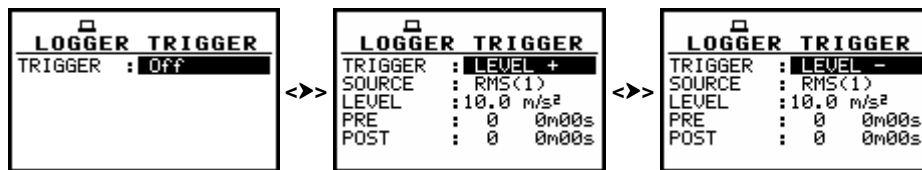
In order to change the displayed inversely parameter the user has to press the <▲>, <▼> push-buttons. The confirmation of any change made in the window requires pressing the <ENTER> push-button, which simultaneously closes the current display. The **LOGGER TRIGGER** window is closed ignoring any changes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



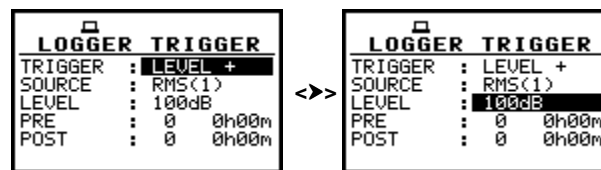
LOGGER SETUP windows in sound mode



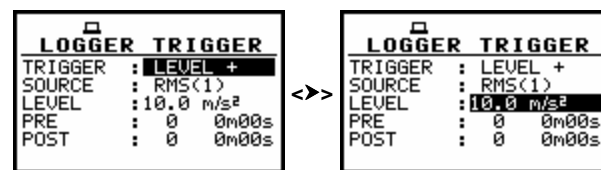
LOGGER SETUP windows in vibration mode

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 displayed inversely) and the text stated here remains unchanged. After pressing the <v> push-button, the **SOURCE** line is skipped.



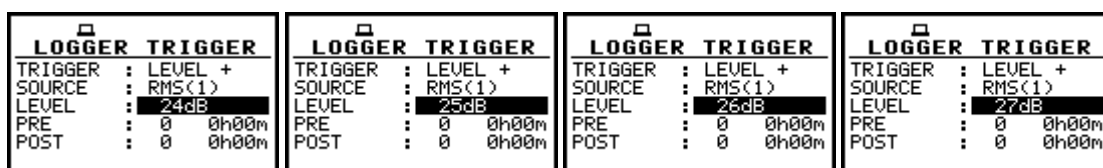
LOGGER TRIGGER windows with the not active SOURCE signal line in sound mode



LOGGER TRIGGER windows with the not active SOURCE signal line in vibration mode

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 sound mode in 1 dB step (or 10 dB steps) from 24 dB to 136 dB range using the <<>, <>> push-buttons (or <<>, <>> with <SHIFT>). In vibration mode the step is equal to 1 dB (or 10 dB) from 1.00 mm/s² to 10.0 km/s².



LOGGER TRIGGER windows with LEVEL selection (1 dB step up) in sound mode

LOGGER TRIGGER TRIGGER : LEVEL - SOURCE : RMS(1) LEVEL : 70dB PRE : 0 0m00s POST : 0 0m00s	LOGGER TRIGGER TRIGGER : LEVEL - SOURCE : RMS(1) LEVEL : 71dB PRE : 0 0m00s POST : 0 0m00s	LOGGER TRIGGER TRIGGER : LEVEL - SOURCE : RMS(1) LEVEL : 72dB PRE : 0 0m00s POST : 0 0m00s	LOGGER TRIGGER TRIGGER : LEVEL - SOURCE : RMS(1) LEVEL : 73dB PRE : 0 0m00s POST : 0 0m00s
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LOGGER TRIGGER windows with LEVEL selection (1 dB step up) in sound mode

LOGGER TRIGGER TRIGGER : LEVEL + SOURCE : RMS(1) LEVEL : 10.0 m/s ² PRE : 0 0m00s POST : 0 0m00s	LOGGER TRIGGER TRIGGER : LEVEL + SOURCE : RMS(1) LEVEL : 11.2 m/s ² PRE : 0 0m00s POST : 0 0m00s	LOGGER TRIGGER TRIGGER : LEVEL + SOURCE : RMS(1) LEVEL : 12.6 m/s ² PRE : 0 0m00s POST : 0 0m00s	LOGGER TRIGGER TRIGGER : LEVEL + SOURCE : RMS(1) LEVEL : 14.1 m/s ² PRE : 0 0m00s POST : 0 0m00s
LOGGER TRIGGER TRIGGER : LEVEL + SOURCE : RMS(1) LEVEL : 20.0 m/s ² PRE : 0 0m00s POST : 0 0m00s	LOGGER TRIGGER TRIGGER : LEVEL + SOURCE : RMS(1) LEVEL : 22.4 m/s ² PRE : 0 0m00s POST : 0 0m00s	LOGGER TRIGGER TRIGGER : LEVEL + SOURCE : RMS(1) LEVEL : 25.1 m/s ² PRE : 0 0m00s POST : 0 0m00s	LOGGER TRIGGER TRIGGER : LEVEL + SOURCE : RMS(1) LEVEL : 28.2 m/s ² PRE : 0 0m00s POST : 0 0m00s

LOGGER TRIGGER windows with LEVEL selection in vibration mode (1 dB step up)



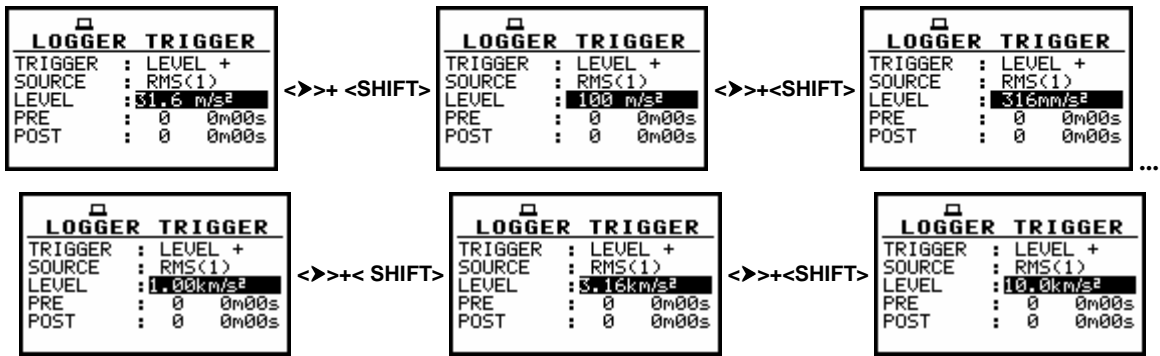
Notice: The **LEVEL** value of the triggering signal in logger refers to the instantaneous value of the RMS result from the first profile calculated during the period depending on selected **DETECTOR** (path: MENU / INPUT / PROFILE 1 / DETECTOR).

LOGGER TRIGGER TRIGGER : LEVEL + SOURCE : RMS(1) LEVEL : 27dB PRE : 0 0h00m POST : 0 0h00m	<>>+<SHIFT>	LOGGER TRIGGER TRIGGER : LEVEL + SOURCE : RMS(1) LEVEL : 37dB PRE : 0 0h00m POST : 0 0h00m	<>>+<SHIFT>	LOGGER TRIGGER TRIGGER : LEVEL + SOURCE : RMS(1) LEVEL : 47dB PRE : 0 0h00m POST : 0 0h00m	...
LOGGER TRIGGER TRIGGER : LEVEL + SOURCE : RMS(1) LEVEL : 117dB PRE : 0 0h00m POST : 0 0h00m	<>>+<SHIFT>	LOGGER TRIGGER TRIGGER : LEVEL + SOURCE : RMS(1) LEVEL : 127dB PRE : 0 0h00m POST : 0 0h00m	<>>+<SHIFT>	LOGGER TRIGGER TRIGGER : LEVEL + SOURCE : RMS(1) LEVEL : 136dB PRE : 0 0h00m POST : 0 0h00m	
LOGGER TRIGGER TRIGGER : LEVEL - SOURCE : RMS(1) LEVEL : 54dB PRE : 0 0m00s POST : 0 0m00s	<>>+<SHIFT>	LOGGER TRIGGER TRIGGER : LEVEL - SOURCE : RMS(1) LEVEL : 64dB PRE : 0 0m00s POST : 0 0m00s	<>>+<SHIFT>	LOGGER TRIGGER TRIGGER : LEVEL - SOURCE : RMS(1) LEVEL : 74dB PRE : 0 0m00s POST : 0 0m00s	

LOGGER TRIGGER windows with LEVEL selection (10 dB step up) in sound mode

LOGGER TRIGGER TRIGGER : LEVEL + SOURCE : RMS(1) LEVEL : 1.00 m/s ² PRE : 0 0m00s POST : 0 0m00s	<>>+<SHIFT>	LOGGER TRIGGER TRIGGER : LEVEL + SOURCE : RMS(1) LEVEL : 3.16 m/s ² PRE : 0 0m00s POST : 0 0m00s	<>>+<SHIFT>	LOGGER TRIGGER TRIGGER : LEVEL + SOURCE : RMS(1) LEVEL : 10.0 m/s ² PRE : 0 0m00s POST : 0 0m00s
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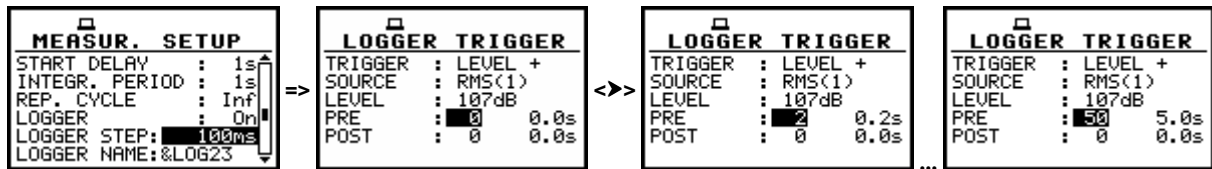
LOGGER TRIGGER windows with LEVEL selection (10 dB step up) in vibration mode



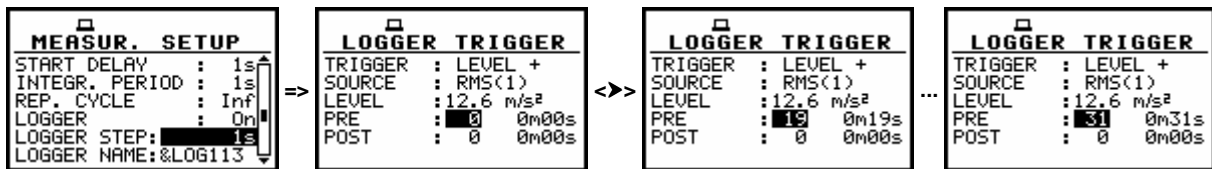
LOGGER TRIGGER windows with LEVEL selection (10 dB step up) in vibration mode

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>.

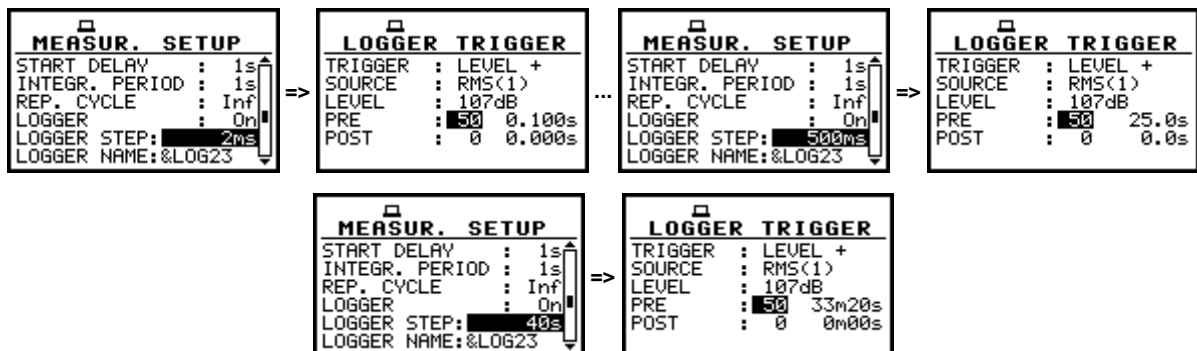


LOGGER TRIGGER windows with PRE selection in sound mode



LOGGER TRIGGER windows with PRE selection in vibration mode

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.

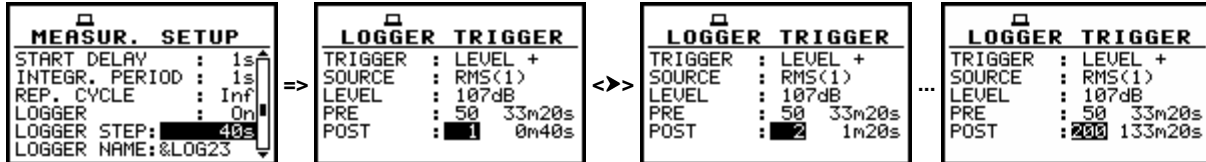


LOGGER TRIGGER windows with PRE selection for different LOGGER STEPS

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**.

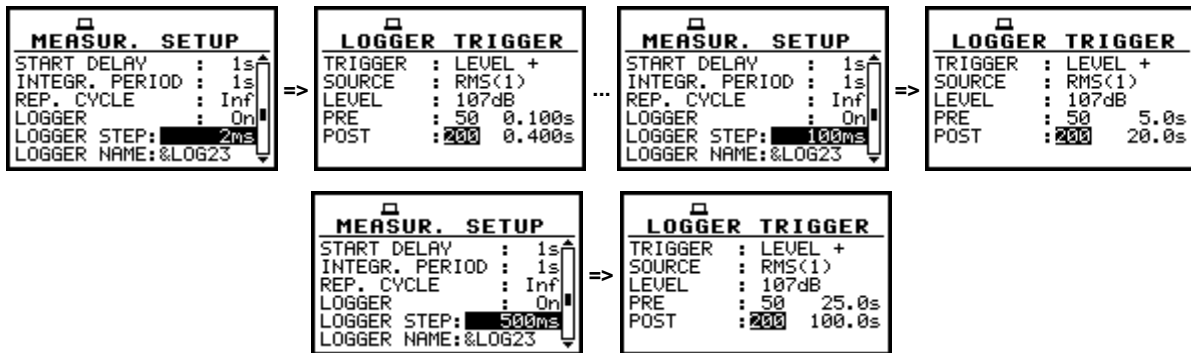
5.4.2.5 Selection of the number of the results to be saved in the logger after the fulfilment of the triggering condition - POST

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>**.

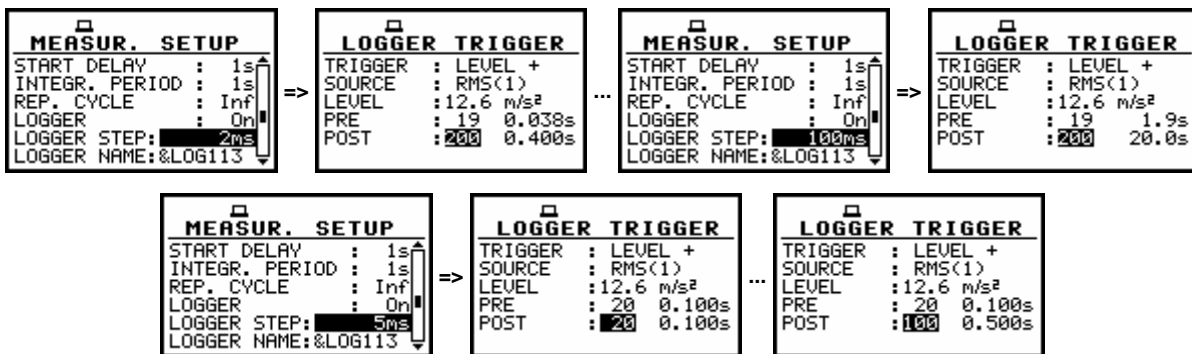


LOGGER TRIGGER windows with POST selection

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 windows with POST selection for different LOGGER STEPS

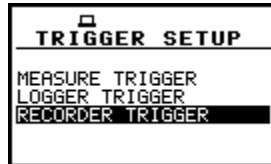


LOGGER TRIGGER windows with POST selection for different LOGGER STEPS in vibration mode

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**.

5.4.3 Trigger parameters for recorder setting - RECORDER TRIGGER

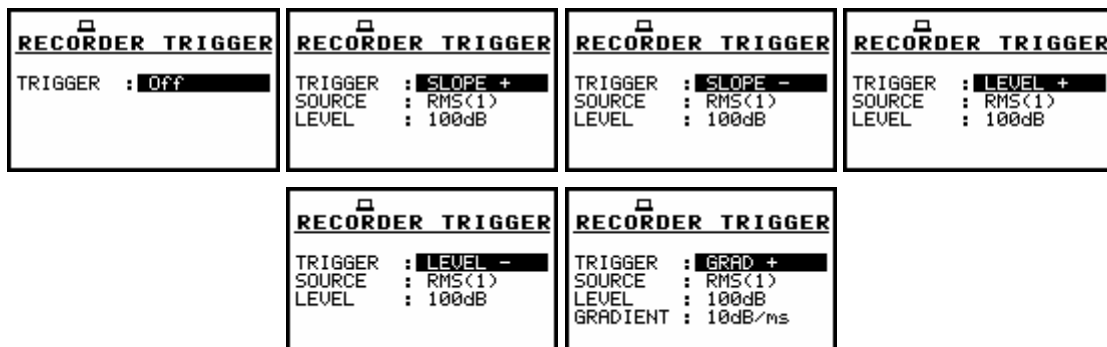
The **RECORDER TRIGGER** enables the user to set the parameters of time domain signal recording on the external USB memory stick (*path: MENU / SETUP / USB-HOST PORT / SRT RECORDING or WAVE RECORDING or EVENT RECORDING*). In order to enter **RECORDER TRIGGER** window the user has to select the **RECORDER TRIGGER** text in the **TRIGGER SETUP** window using the <<>, <>> push-buttons and press <ENTER>.



TRIGGER SETUP window; RECORDER TRIGGER text highlighted

5.4.3.1 Selecting trigger mode - TRIGGER

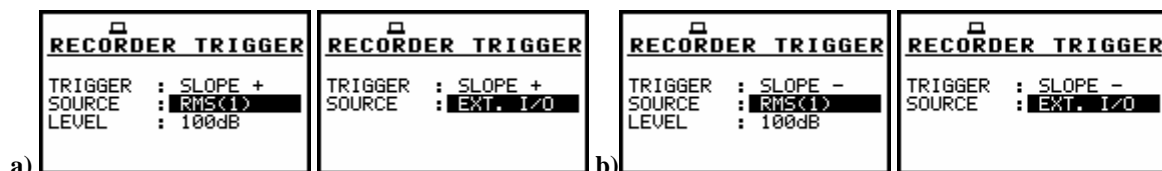
In the **TRIGGER** position following options are available: **Off**, **SLOPE +**, **SLOPE -**, **LEVEL +**, **LEVEL -**, **GRAD +**. The selection is made by pressing <<>, <>> push-buttons and <ENTER> one. The **RECORDER TRIGGER** window is closed ignoring any changes made in there, after pressing any time the <ESC> push-button.



RECORDER TRIGGER windows; TRIGGER selection

5.4.3.2 Selecting the triggering signal - SOURCE

In the case when in the **TRIGGER** position **SLOPE +** or **SLOPE -** is selected it is possible to choose the **SOURCE**. Available sources are **RMS(1)** and **EXT.I/O**. The selection is made using <<>, <>> push-buttons and pressing <ENTER> one. The **RECORDER TRIGGER** window is closed ignoring any changes made in there, after pressing any time the <ESC> push-button.



RECORDER TRIGGER windows; the source selection for SLOPE + (a) and SLOPE - (b)

5.4.3.3 Selecting level for recording trigger- LEVEL

The level of the triggering signal for recording (**LEVEL**) can be set in 1 dB step (or 10 dB steps) from 24 dB to 136 dB range using the <<>, <>> push-buttons (or <<>, <>> with <SHIFT>). In the case

of vibration measurements the level can be expressed not only in decibels (*path: MENU / DISPLAY / DISPLAY SETUP / SCALE / LOG*) but also in linear units (placing in the path *LIN* instead of *LOG*).

<p>RECORDER TRIGGER</p> <p>TRIGGER : SLOPE + SOURCE : RMS<1> LEVEL : 24dB</p>	<p>RECORDER TRIGGER</p> <p>TRIGGER : SLOPE + SOURCE : RMS<1> LEVEL : 25dB</p>	<p>RECORDER TRIGGER</p> <p>TRIGGER : SLOPE + SOURCE : RMS<1> LEVEL : 26dB</p>	<p>RECORDER TRIGGER</p> <p>TRIGGER : SLOPE + SOURCE : RMS<1> LEVEL : 27dB</p>
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RECORDER TRIGGER windows with LEVEL selection (1 dB step up)

a)

<p>RECORDER TRIGGER</p> <p>TRIGGER : LEVEL + SOURCE : RMS<1> LEVEL : 1.00mm/s²</p>	<p>RECORDER TRIGGER</p> <p>TRIGGER : LEVEL + SOURCE : RMS<1> LEVEL : 1.12mm/s²</p>	<p>RECORDER TRIGGER</p> <p>TRIGGER : LEVEL + SOURCE : RMS<1> LEVEL : 1.26mm/s²</p>	<p>RECORDER TRIGGER</p> <p>TRIGGER : LEVEL + SOURCE : RMS<1> LEVEL : 1.41mm/s²</p>
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b)

<p>RECORDER TRIGGER</p> <p>TRIGGER : LEVEL + SOURCE : RMS<1> LEVEL : 316 m/s²</p>	<p>RECORDER TRIGGER</p> <p>TRIGGER : LEVEL + SOURCE : RMS<1> LEVEL : 1.00km/s²</p>	<p>RECORDER TRIGGER</p> <p>TRIGGER : LEVEL + SOURCE : RMS<1> LEVEL : 3.16km/s²</p>	<p>RECORDER TRIGGER</p> <p>TRIGGER : LEVEL + SOURCE : RMS<1> LEVEL : 10.0km/s²</p>
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RECORDER TRIGGER windows with LEVEL selection in vibration mode, level expressed in linear units, 1 dB step up (a) and 10 dB step up (b)

<p>RECORDER TRIGGER</p> <p>TRIGGER : SLOPE + SOURCE : RMS<1> LEVEL : 27dB</p>	<p>RECORDER TRIGGER</p> <p>TRIGGER : SLOPE + SOURCE : RMS<1> LEVEL : 37dB</p>	<p>RECORDER TRIGGER</p> <p>TRIGGER : SLOPE + SOURCE : RMS<1> LEVEL : 47dB</p>	<p>RECORDER TRIGGER</p> <p>TRIGGER : SLOPE - SOURCE : RMS<1> LEVEL : 57dB</p>
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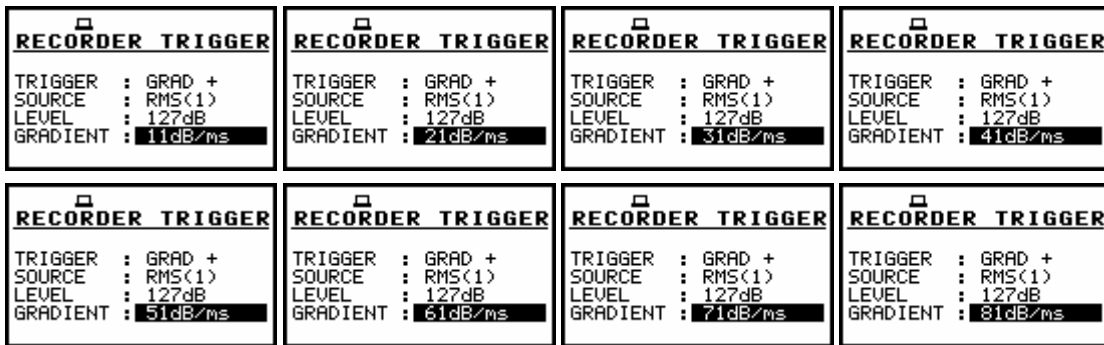
RECORDER TRIGGER windows with LEVEL selection in sound and vibration mode (10 dB step up)

5.4.3.4 Setting the speed of the triggering signal changes - GRADIENT

GRADIENT appears on the display when in the **TRIGGER** position the **GRAD +** option is selected. In the **GRADIENT** position it is possible to select the **GRADIENT** value. The available values are from **1 dB/ms** to **100 dB/ms**. The selection is made by pressing <<>, <>> push-buttons and <ENTER> one. The **RECORDER TRIGGER** window is closed ignoring any changes made in there, after pressing any time the <ESC> push-button.

<p>RECORDER TRIGGER</p> <p>TRIGGER : GRAD + SOURCE : RMS<1> LEVEL : 127dB GRADIENT : 1dB/ms</p>	<p>RECORDER TRIGGER</p> <p>TRIGGER : GRAD + SOURCE : RMS<1> LEVEL : 127dB GRADIENT : 2dB/ms</p>	<p>RECORDER TRIGGER</p> <p>TRIGGER : GRAD + SOURCE : RMS<1> LEVEL : 127dB GRADIENT : 3dB/ms</p>	<p>RECORDER TRIGGER</p> <p>TRIGGER : GRAD + SOURCE : RMS<1> LEVEL : 127dB GRADIENT : 4dB/ms</p>
<p>RECORDER TRIGGER</p> <p>TRIGGER : GRAD + SOURCE : RMS<1> LEVEL : 127dB GRADIENT : 65dB/ms</p>	<p>RECORDER TRIGGER</p> <p>TRIGGER : GRAD + SOURCE : RMS<1> LEVEL : 127dB GRADIENT : 66dB/ms</p>	<p>RECORDER TRIGGER</p> <p>TRIGGER : GRAD + SOURCE : RMS<1> LEVEL : 127dB GRADIENT : 67dB/ms</p>	<p>RECORDER TRIGGER</p> <p>TRIGGER : GRAD + SOURCE : RMS<1> LEVEL : 127dB GRADIENT : 68dB/ms</p>

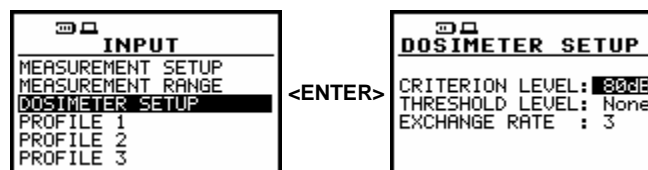
RECORDER TRIGGER windows with GRADIENT selection (1 dB step up)



RECORDER TRIGGER windows with GRADIENT selection (10 dB step up)

5.5 Selection of dose meter parameters - DOSIMETER SETUP

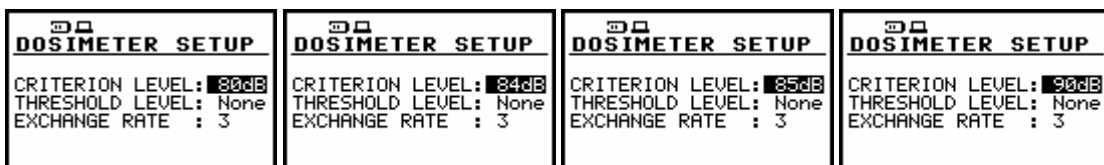
The **DOSIMETER SETUP** is accessible in the **INPUT** list in the **SOUND METER** mode when the **DOSE METER** function is selected (*path: MENU / FUNCTION / MEASUREMENT FUNCTION*). It is not available in the **VIBRATION METER**. This sub-list is opened after the selection of the **DOSIMETER SETUP** text from the **INPUT** list by means of the <▲>, <▼> (or <<>, <>>) push-buttons and pressing the <ENTER> one. The **DOSIMETER SETUP** consists of the parameters, which influence the calculation of the dose meter results: the **CRITERION LEVEL**, **THRESHOLD LEVEL** and **EXCHANGE RATE** (the definitions of the dose meter results are given in App. D).



DOSIMETER SETUP selected in INPUT list and DOSIMETER SETUP window

5.5.1 Setting criterion sound level - CRITERION LEVEL

The criterion sound level influences the calculations of the **DOSE** and **D_8h** results. The **CRITERION LEVEL** line is accessible after pressing the <▲> push-button in the **DOSIMETER SETUP** window. The available values are as follows: **80 dB**, **84 dB**, **85 dB** or **90 dB**. They can be selected by means of the <<>, <>> push-buttons. The confirmation of any change made in the line requires pressing the <ENTER> push-button, which simultaneously closes the window. The **DOSIMETER SETUP** is closed ignoring any changes made in there, after pressing any time the <ESC> push-button.

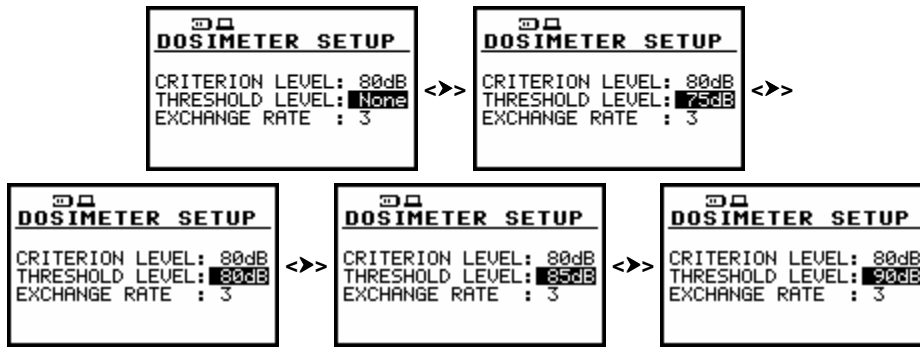


DOSIMETER SETUP windows; CRITERION LEVEL selection

5.5.2 Setting criterion sound level - THRESHOLD LEVEL

The threshold level influences the calculations of the dose meter results, namely **DOSE**, **D_8h** and **LAV**. The **THRESHOLD LEVEL** line is accessible after pressing the <▲>, <▼> push-buttons in the **DOSIMETER SETUP** window. The available values are as follows: **None**, **75 dB**, **80 dB**, **85 dB** or

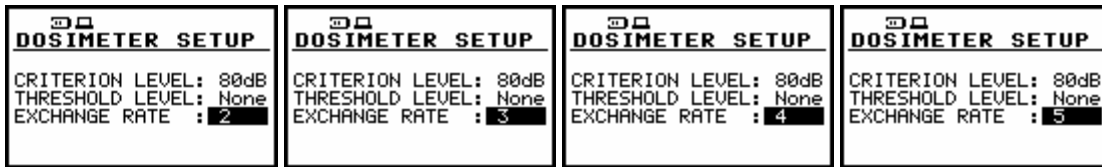
90 dB. They can be selected by means of the <<>, <>> push-buttons. The confirmation of any change made in the line requires pressing the <ENTER> push-button, which simultaneously closes the window. The **DOSIMETER SETUP** is closed ignoring any changes made in there, after pressing any time the <ESC> push-button.



DOSIMETER SETUP windows; THRESHOLD LEVEL selection

5.5.3 Setting criterion sound level - EXCHANGE RATE

The exchange rate influences the calculations of the dose meter results, namely **DOSE**, **D_8h** and **LAV**. The exposure rate equal to three complies with ISO R 1999 “Assessment of Occupational Noise Exposure for Hearing Conservation Purposes”, while equal to five complies with the American “Occupational Safety and Health Act” – OSHA. The **EXCHANGE RATE** line is accessible after pressing the <v> push-button in the **DOSIMETER SETUP** widow. The available values are as follows: **2, 3, 4** or **5**. They can be selected by means of the <<>, <>> push-buttons. The confirmation of any change made in the line requires pressing the <ENTER> push-button, which simultaneously closes the window. The **DOSIMETER SETUP** is closed ignoring any changes made in there, after pressing any time the <ESC> push-button.

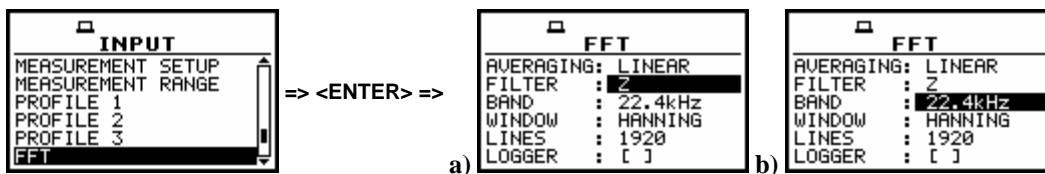


DOSIMETER SETUP windows; EXCHANGE RATE selection

5.6 Selection of FFT analysis parameters - FFT

The **FFT** is accessible in the **INPUT** list when the **FFT** function is selected in **MEASUREMENT FUNCTION** window (*path: MENU / FUNCTION / MEASUREMENT FUNCTION / FFT*). This sub-list is opened after the selection of the **FFT** text from the **INPUT** list by means of the <A>, <v> (or <<>, <>>) push-buttons and pressing the <ENTER> one.

The **FFT** consists of the parameters, which influence the calculation and logging the results of the **FFT** analysis: **AVERAGING**, **FILTER**, **BAND**, **WINDOW**, **LINES** and **LOGGER**. The **FFT** window is closed ignoring any changes made in there, after pressing any time the <ESC> push-button.



FFT selected in INPUT list and FFT window opened in sound mode (a) and in vibration mode (b)

5.6.1 The averaging of spectra in the FFT analysis - AVERAGING

The **AVERAGING** influences the way in which the spectra in the **FFT** analysis are averaged. Up to the internal software version named as 6.04 only **LINEAR** is available (this position can not be accessed and changed).

5.6.2 Selecting the weighting filter during the FFT analysis - FILTER

The **FILTER** influences the calculations of the **FFT**. In the case of sound measurements there are **Z**, **A** and **C** filters available. In the case of vibration measurements, only **Z** filter is available and the position is not accessible after entering the **FFT** window. The frequency characteristics of those filters are given in Appendix D. The selection of this parameter is made by means of the <<<>, <>>> push-buttons. The confirmation of the change made in the line requires pressing the <ENTER> push-button, which simultaneously closes the window.

The following weighting filters are available in the case of the **FFT** analysis in sound mode:

- **Z** type 1 according to the IEC 61672-1 standard,
- **A** type 1 according to the IEC 651 and IEC 61672-1 standards,
- **C** type 1 according to the IEC 651 and IEC 61672-1 standards.

In the case of vibration mode, during the **FFT** analysis the following filter is available:

- **Z** type 1 according to the IEC 61672-1 standard.

<pre> FFT ----- AVERAGING: LINEAR FILTER : Z BAND : 22.4kHz WINDOW : HANNING LINES : 1920 LOGGER : [] </pre>	<pre> FFT ----- AVERAGING: LINEAR FILTER : A BAND : 22.4kHz WINDOW : HANNING LINES : 1920 LOGGER : [] </pre>	<pre> FFT ----- AVERAGING: LINEAR FILTER : C BAND : 22.4kHz WINDOW : HANNING LINES : 1920 LOGGER : [] </pre>
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FFT window; FILTER selection in sound mode

5.6.3 Selecting the analysis band of the signal - BAND

The **BAND** position enables the user to select the band in which the narrow-band analysis of the signal has to be performed. The user has the following possibilities: **22.4 kHz**, **11.2 kHz**, **5.6 kHz**, **2.8 kHz**, **1.4 kHz**, **700 Hz**, **350 Hz**, **175 Hz** and **87.5 Hz**.

The selection of the required value is made by means of the <<<>, <>>> push-buttons. The confirmation of the change made in the line requires pressing the <ENTER> push-button, which simultaneously closes the window. The **FFT** window is closed ignoring any changes made in there, after pressing any time the <ESC> push-button.

<pre> FFT ----- AVERAGING: LINEAR FILTER : Z BAND : 22.4kHz WINDOW : HANNING LINES : 1920 LOGGER : [] </pre>	<pre> FFT ----- AVERAGING: LINEAR FILTER : Z BAND : 11.2kHz WINDOW : HANNING LINES : 1920 LOGGER : [] </pre>	<pre> FFT ----- AVERAGING: LINEAR FILTER : Z BAND : 5.6kHz WINDOW : HANNING LINES : 1920 LOGGER : [] </pre>
<pre> FFT ----- AVERAGING: LINEAR FILTER : Z BAND : 2.8kHz WINDOW : HANNING LINES : 1920 LOGGER : [] </pre>	<pre> FFT ----- AVERAGING: LINEAR FILTER : Z BAND : 1.4kHz WINDOW : HANNING LINES : 1920 LOGGER : [] </pre>	<pre> FFT ----- AVERAGING: LINEAR FILTER : Z BAND : 700Hz WINDOW : HANNING LINES : 1920 LOGGER : [] </pre>
<pre> FFT ----- AVERAGING: LINEAR FILTER : Z BAND : 350Hz WINDOW : HANNING LINES : 1920 LOGGER : [] </pre>	<pre> FFT ----- AVERAGING: LINEAR FILTER : Z BAND : 175Hz WINDOW : HANNING LINES : 1920 LOGGER : [] </pre>	<pre> FFT ----- AVERAGING: LINEAR FILTER : Z BAND : 87.5Hz WINDOW : HANNING LINES : 1920 LOGGER : [] </pre>

FFT window; BAND selection

5.6.4 Selecting the time window for the FFT analysis - WINDOW

The **WINDOW** position enables the user to select the coefficients of time window which are used in the **FFT** analysis. Available time windows of the **FFT** analysis are as follows: **HANNING**, **RECTANGLE**, **FLAT TOP**, **KAISER-BESSEL**.

The selection of the window is made by means of the <<>, <>> push-buttons. The confirmation of the change made in the line requires pressing the <ENTER> push-button, which simultaneously closes the window. The **FFT** window is closed ignoring any changes made in there, after pressing any time the <ESC> push-button.

<pre> FFT ----- AVERAGING: LINEAR FILTER : Z BAND : 22.4kHz WINDOW : HANNING LINES : 1920 LOGGER : [] </pre>	<pre> FFT ----- AVERAGING: LINEAR FILTER : Z BAND : 22.4kHz WINDOW : RECTANGLE LINES : 1920 LOGGER : [] </pre>	<pre> FFT ----- AVERAGING: LINEAR FILTER : Z BAND : 22.4kHz WINDOW : FLAT TOP LINES : 1920 LOGGER : [] </pre>	<pre> FFT ----- AVERAGING: LINEAR FILTER : Z BAND : 22.4kHz WINDOW : KAISER-BES LINES : 1920 LOGGER : [] </pre>
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FFT sublist; WINDOW selection

5.6.5 Selecting the number of the lines of FFT analysis - LINES

The **LINES** position enables the user to select the number of lines of the **FFT** analysis. There are three values available: **1920**, **960** and **480**. The selection of the value 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 **FFT** window is closed ignoring any changes made in there, after pressing any time the <ESC> push-button.

<pre> FFT ----- AVERAGING: LINEAR FILTER : Z BAND : 22.4kHz WINDOW : HANNING LINES : 1920 LOGGER : [] </pre>	<pre> FFT ----- AVERAGING: LINEAR FILTER : Z BAND : 22.4kHz WINDOW : HANNING LINES : 960 LOGGER : [] </pre>	<pre> FFT ----- AVERAGING: LINEAR FILTER : Z BAND : 22.4kHz WINDOW : HANNING LINES : 480 LOGGER : [] </pre>
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FFT window; LINES selection

5.6.6 Enabling the FFT spectra time history logging - LOGGER

The **LOGGER** enables to record spectra of the **FFT** analysis in the logger file. The activation of the logger is possible only if **LOGGER** functionality has been activated in the **MEASUREMENT SETUP** sublist (*path: MENU / INPUT / MEASUREMENT SETUP / LOGGER ON*). In order to switch on the logger of the **FFT** analysis the user has to press the <>> push-button and the <ENTER> one. If, instead of the <ENTER> push-button the <ESC> one is pushed, the selection is ignored and the **FFT** sub-list is closed.

<pre> FFT ----- AVERAGING: LINEAR FILTER : Z BAND : 22.4kHz WINDOW : HANNING LINES : 1920 LOGGER : [] </pre>	<pre> FFT ----- AVERAGING: LINEAR FILTER : Z BAND : 22.4kHz WINDOW : HANNING LINES : 1920 LOGGER : [X] </pre>
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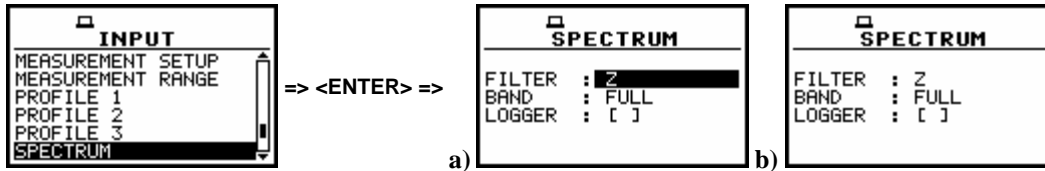
FFT window; LOGGER activation

5.7 Selection of 1/1 octave and 1/3 octave spectrum parameters - SPECTRUM

The **SPECTRUM** appears in the **INPUT** list when the **1/1 OCTAVE** or **1/3 OCTAVE** function is selected in the **MEASUREMENT FUNCTION** (*path: MENU / FUNCTION / MEASUREMENT FUNCTION / 1/1 OCTAVE or 1/3 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** or **1/3 OCTAVE** analysis: **FILTER**, **BAND** and **LOGGER**. The **SPECTRUM** window is closed ignoring any changes made in there, after pressing any time the <ESC> push-button.



SPECTRUM selected in **INPUT** list and **SPECTRUM** window opened in sound mode (a) and in vibration mode (b)

5.7.1 Selecting the weighting filter during 1/1 OCTAVE or 1/3 OCTAVE analysis - FILTER

The **FILTER** influences the calculations of **1/1 OCTAVE** or **1/3 OCTAVE** analysis. In the case of sound measurements there are **Z**, **A** and **C** filters available. In the case of vibration measurements only **Z** filter is available and the position is not accessible after entering the **SPECTRUM** window. The frequency characteristics of those filters are given in Appendix D.

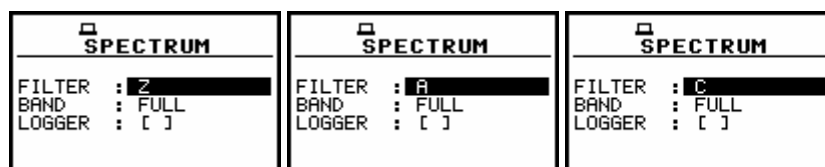
The selection of this parameter is made by means of the <<>, <>> push-buttons. The confirmation of the change made in the line requires pressing the <ENTER> push-button, which simultaneously closes the window.

The following weighting filters are available in the case of **1/1 OCTAVE** or **1/3 OCTAVE** analysis in sound mode:

- **Z** type 1 according to the IEC 61672-1 standard,
- **A** type 1 according to the IEC 651 and IEC 61672-1 standards,
- **C** type 1 according to the IEC 651 and IEC 61672-1 standards.

In the case of vibration mode, during **1/1 OCTAVE** or **1/3 OCTAVE** analysis the following filter is available:

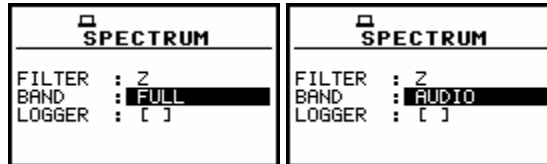
- **Z** type 1 according to the IEC 61672-1 standard.



SPECTRUM window; **FILTER** selection in sound mode

5.7.2 Selecting the band during the 1/1 OCTAVE or 1/3 OCTAVE analysis - BAND

The **BAND** position enables the user to select the band in which the **1/1 OCTAVE** or **1/3 OCTAVE** analysis of the signal has to be performed. Available values of the bands of the analysis are as follows: **AUDIO**, **FULL** - in the case of sound mode - and **FULL** - in the case of vibration mode. The selection of this parameter is made by means of the <<>, <>> push-buttons. The confirmation of the change made in the line 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.



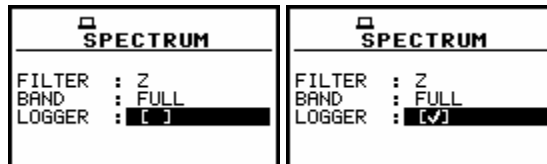
SPECTRUM window; BAND selection in sound mode

5.7.3 Activation of logger for 1/1 OCTAVE or 1/3 OCTAVE analysis results - LOGGER

The **RMS** result from **1/1 OCTAVE** or **1/3 OCTAVE** analysis can be saved in the logger's file of the instrument (or on the USB memory stick).

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; LOGGER selection