Norsonic 140 User Guide

Getting the Settings Right

Nor-140 - Front/Standby Screen Explained

Current Measurement Duration

Current Date

Current Time

Time Constant & Function (Currently Fast Sound Pressure Level). Adjusted using keys 8 for Time Constant and 3 to change display function

A-weighted and 2nd network Weighted readings

Display Range Values. Adjusted using inc & dec keys. Note this Does not alter the measurement Range

Graphical dB reading

Corrections Applied (G is pre-amp, W is windscreen)

199:59:59
191008
18:13:40

F SPL:

A: **49.3**
Z: 58.6

dB WG

90
50
10

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Nor-140 Storing Methods

```
SETUP:
1: Instrument menu
2: Meas. duration
3: L(t) parameters
4: Frequency mode
5: Moving Leq
6: Trigger
7: Noise generator
8: Recording
9: RPM

    WG      #
```

```
Instr.menu:
1: Storing
2: IO/Print
3: Clock
4: Input
5: 2nd network

7: Version
8: Reference tone
9: Misc. parameters

    WG      #
```

```
Storing:
Mode:
  Automatic
Setup:
  Internal
Result:
  SD-card

Free space

    WG
```

Automatic – Automatic saving, Repeat – Repeat measurement duration and save until stopped, Syncro – Synchronise with the clock, Manual – Waits for Store/Record key to be pressed before saving.
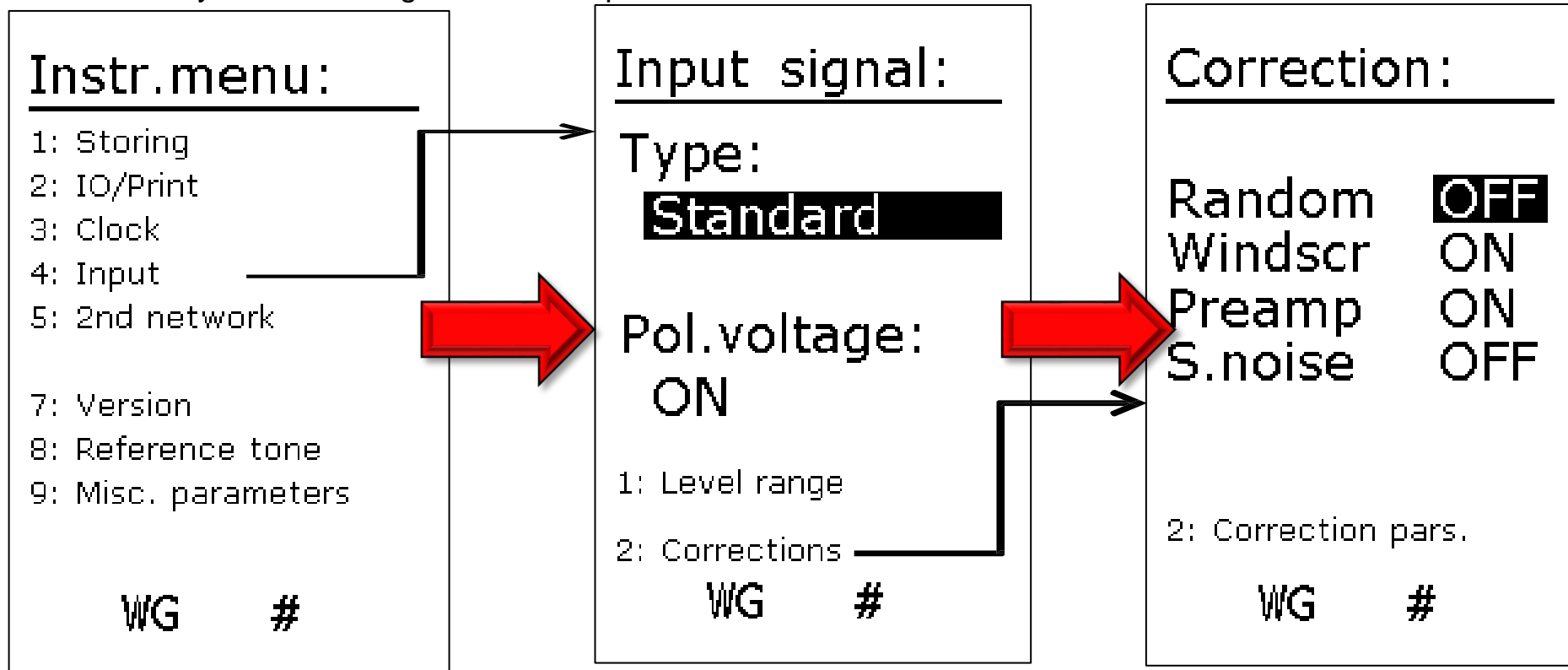
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Nor-140 - Clock

SETUP:
1: Instrument menu
2: Meas. duration
3: L(t) parameters
4: Frequency mode
5: Moving Leq
6: Trigger
7: Noise generator
8: Recording
9: RPM
WG   #

Instr.menu:
1: Storing
2: IO/Print
3: Clock
4: Input
5: 2nd network
7: Version
8: Reference tone
9: Misc. parameters
WG   #

Clock:
Y : M : D
19:10:08
H : M : S
18:16:32
Set clock
WG   #
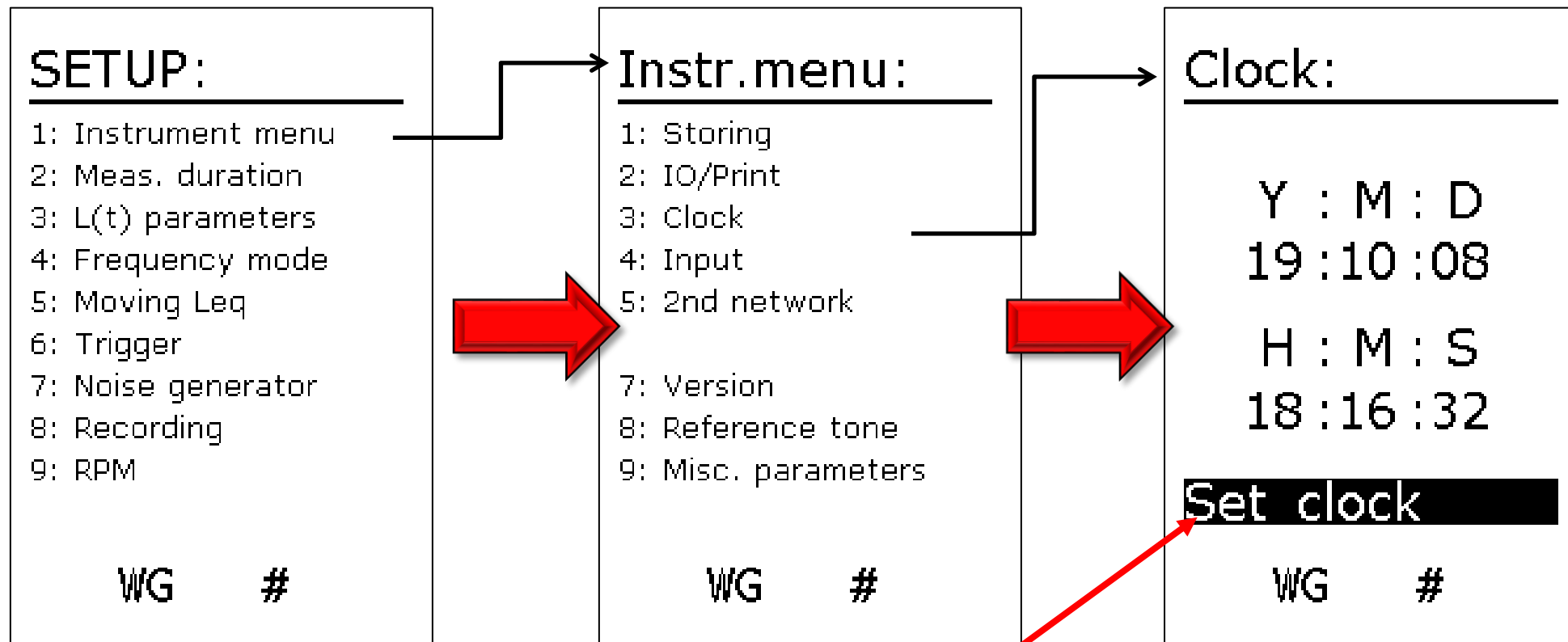
Make sure 'set clock' is highlighted before pressing enter.

Nor-140 – Input & Corrections

For most assessments the input type should be standard with the Pol. Volts set to On. If very low levels are measured on the front screen then it is likely that the voltage to the microphone is turned off.

Instr.menu:

1: Storing
2: IO/Print
3: Clock
4: Input
5: 2nd network

7: Version
8: Reference tone
9: Misc. parameters

WG   #

Input signal:

Type:
Standard

Pol.voltage:
ON

1: Level range

2: Corrections

WG   #

Correction:

Random   OFF
Windscr   ON
Preamp   ON
S.noise   OFF

2: Correction pars.

WG   #

Active corrections are displayed by letters at the base of every screen. W is the windshield correction and G is the preamp correction

Nor-140 – Outdoor Mic Corrections

Instr.menu:
1: Storing
2: IO/Print
3: Clock
4: Input
5: 2nd network

7: Version
8: Reference tone
9: Misc. parameters

WG   #

Input signal:
Type:
Standard

Pol.voltage:
ON

1: Level range
2: Corrections
WG   #

Input signal:
Type:
1214/16/17 Horizontal

Pol.voltage:
ON

1: Level range
2: Corrections
WG   #
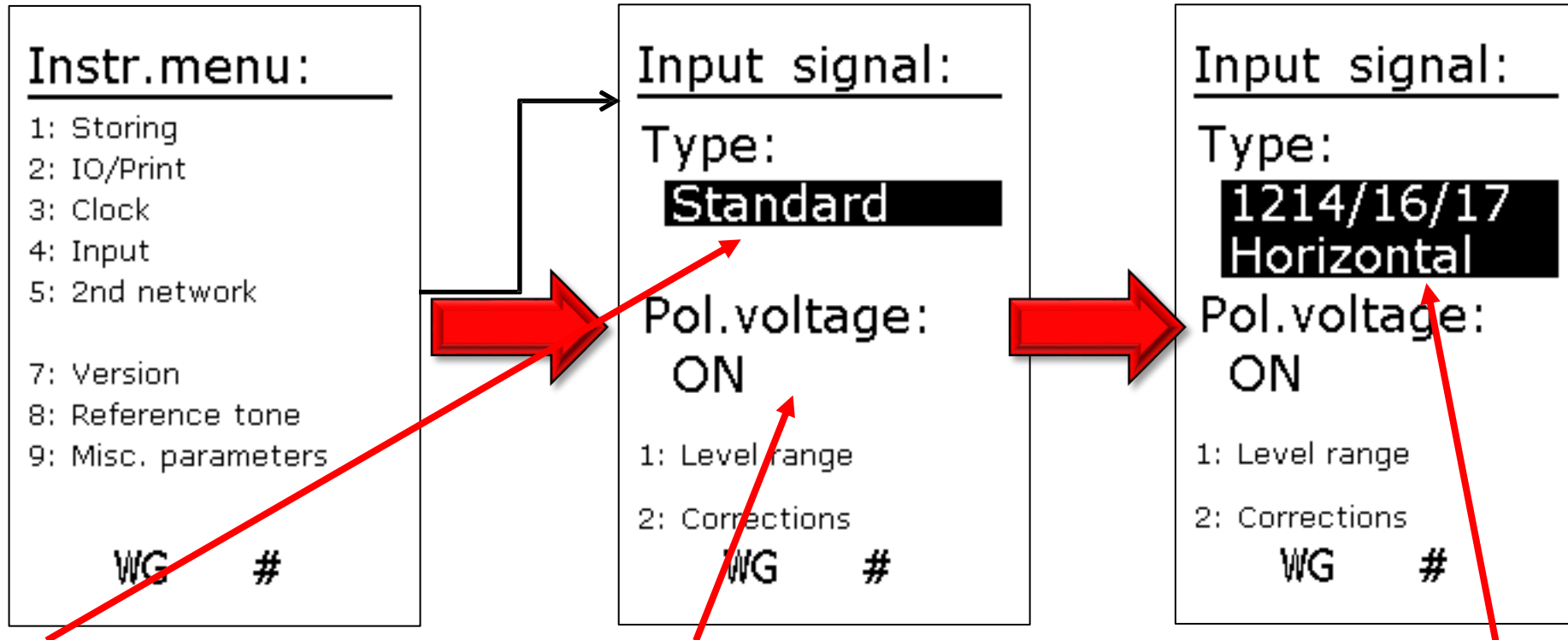
Use 'inc' or 'dec' keys to cycle through the input type settings. Options in here depend on the age of your 140

Pol Volt needs to be on for standard free-field microphones to work (Nor-1225). This is turned off for Electret Mics

Horizontal/Vertical is the direction of sound hitting the microphone. Typically Vertical is only used for aircraft measurements where the source is above the microphone

Nor- 140 Measurement Durations

```
SETUP:

1: Instrument menu
2: Meas. duration
3: L(t) parameters
4: Frequency mode
5: Moving Leq
6: Trigger
7: Noise generator
8: Recording
9: RPM


      WG     #
```

```
Measurement
duration:
Duration:
  199 :59 :59
Resolution:
     25 ms


N:  28799960
Mx:28256363
    WG      #
```

```
Measurement
duration:
Duration:
  199 :59 :59
Resolution:
  000 :00 :01


N:      719999
Mx:28256363
    WG      #
```
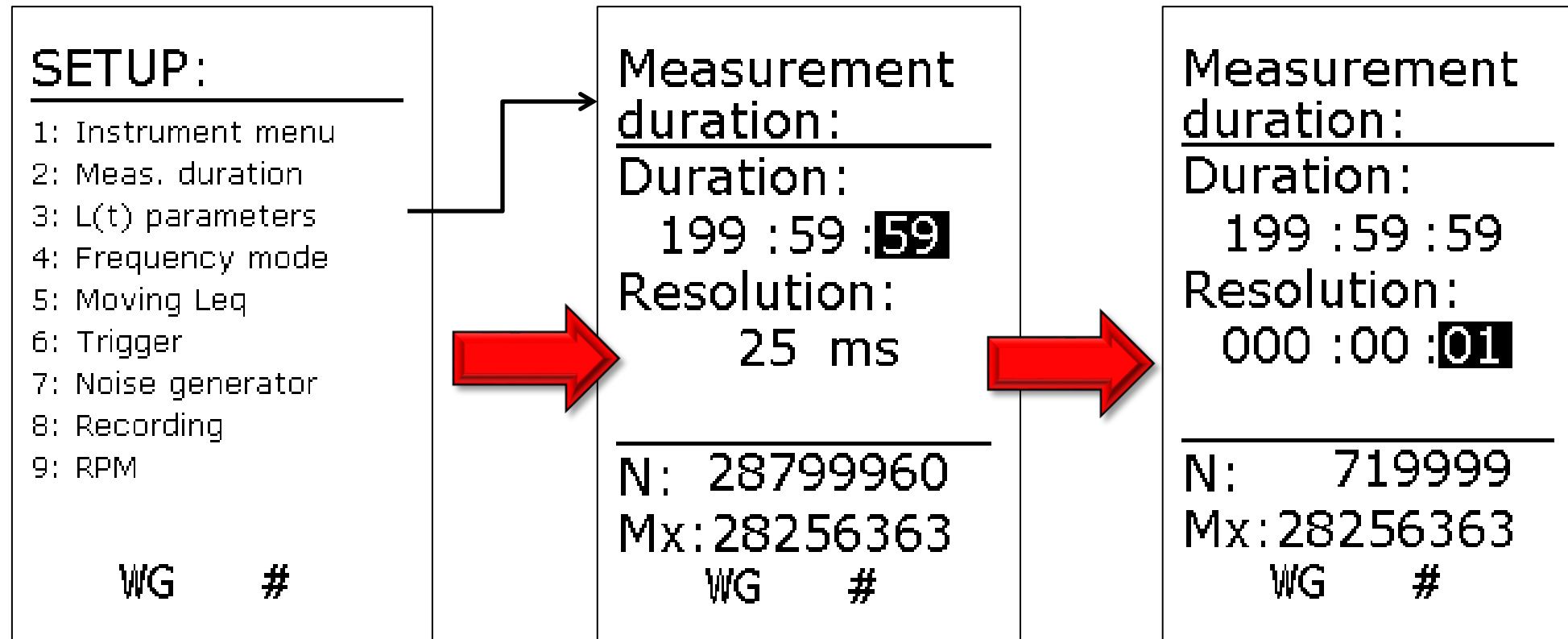
To move between boxes – type the number, press enter, use arrow keys to move to next box.
Resolution reduced using 'inc' and 'dec' keys.

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Nor-140 L(t) Parameters

```
SETUP:
1: Instrument menu
2: Meas. duration
3: L(t) parameters
4: Frequency mode
5: Moving Leq
6: Trigger
7: Noise generator
8: Recording
9: RPM

   WG      #
```

```
L(t) par.:
            F  S  I
A  SPL: [1] 0  0
A  Leq :    1  0
A  Max:  0  0  0
A  Min :  0  0  0
A  LE  :    0  0
A  Peak:    0

   WG      #
```

```
L(t) par.:
            F  S  I
Z  SPL: [0] 0  0
Z  Leq :    0  0
Z  Max:  0  0  0
Z  Min :  0  0  0
Z  LE  :    0  0
Z  Peak:    1

   WG      #
```

```
L(t) par.:
            F  S  I
⅓  SPL: [1] 0  0
⅓  Leq :    1  0
⅓  Max:  0  0  0
⅓  Min :  0  0  0
⅓  LE  :    0  0

   WG      #
```
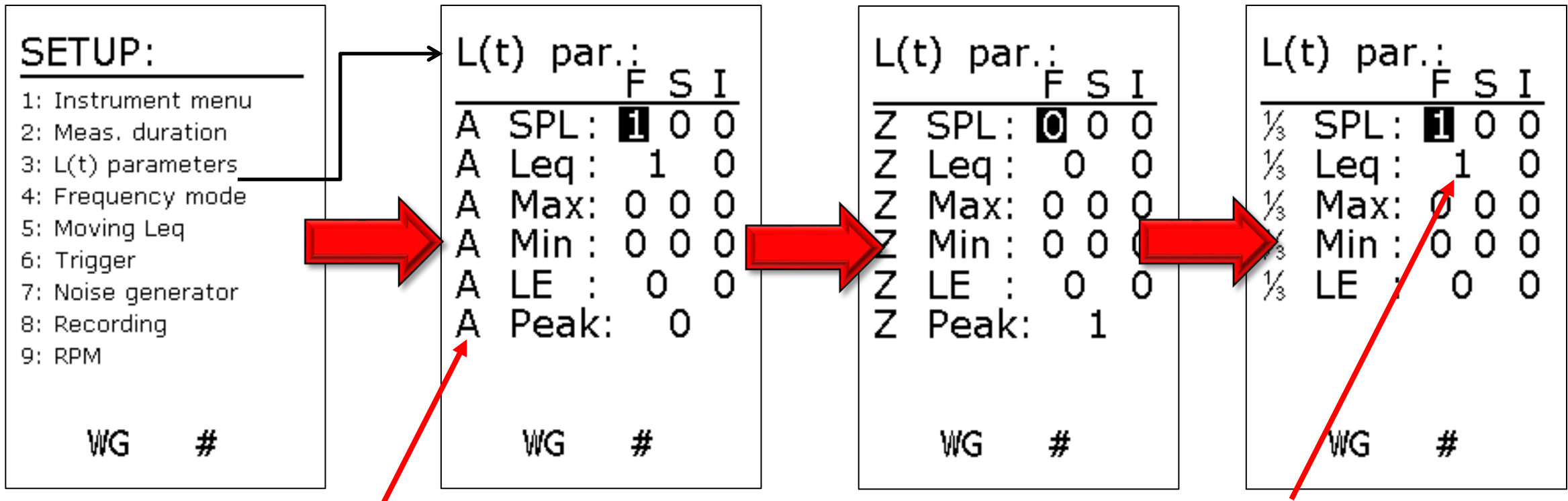
If you have option 7 on the Nor-140 you will see 'A' down the side, otherwise it will be straight to the last screen

Press button 5 to scroll between weighting networks
(if you have the option)

For Noise Nuisance you only really need Leq. SPL is required for BS4142. 1/3 Leq gives 1/3 octave spectrums per second (or per resolution setting) for tonal investigations

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Nor-140 Frequency Mode

SETUP:

1: Instrument menu
2: Meas. duration
3: L(t) parameters
4: Frequency mode
5: Moving Leq
6: Trigger
7: Noise generator
8: Recording
9: RPM

WG   #

Freq mode:

Mode: On
Bandw.:   1/3

L△eq:

LF: 20Hz
UF: 200Hz

1: Reference curves
                #

Σ
        0:29
A-network
    Leq :   76.9
F Max :   98.0
F Min :   25.1
    LE   :   91.7

    L△eq: 52.6
dB
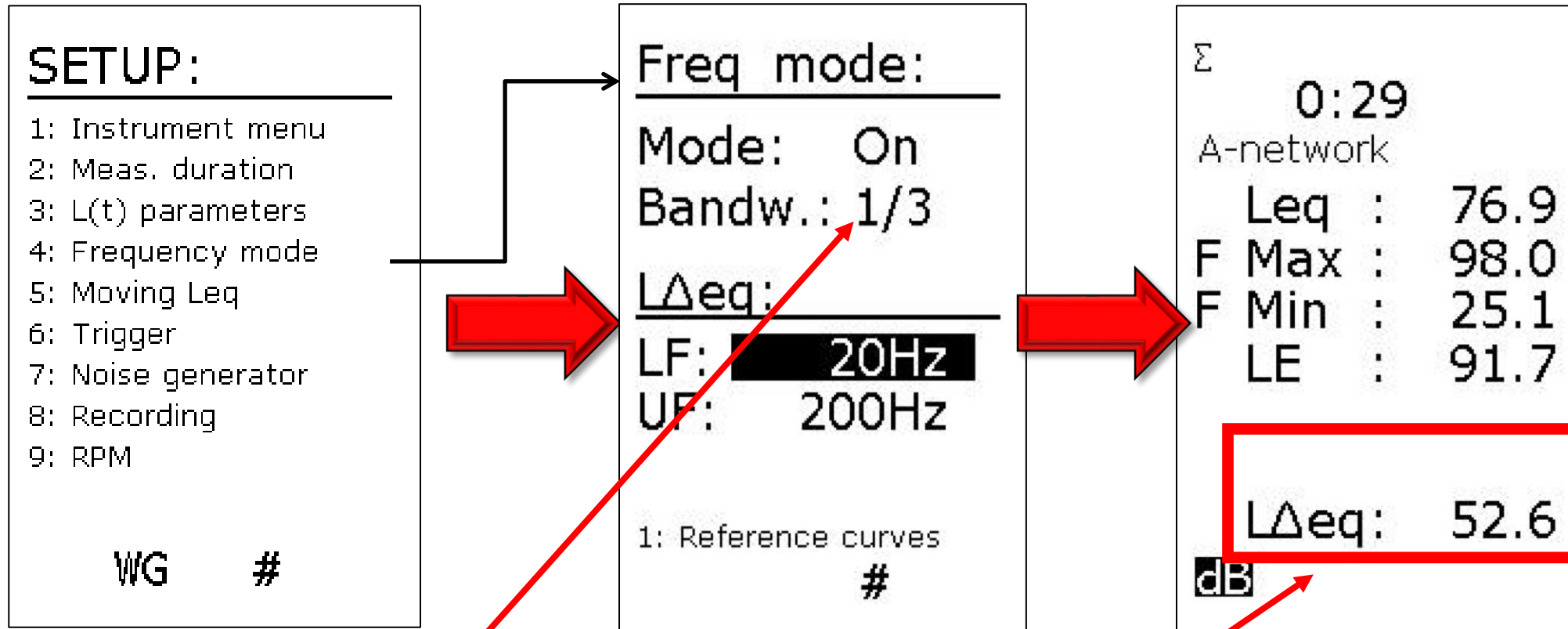
1/3 = 6.3Hz – 20kHz
(standard microphone measurement capabilities)
1/3w = 0.4Hz – 20kHz (for use with
accelerometer)

The latest version of the 140 can now show the Leq for
specific frequency ranges in the table view.
This does not affect the standard results

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Nor-140 Measurement Trigger

```
SETUP:
_____

1: Instrument menu
2: Meas. duration
3: L(t) parameters
4: Frequency mode
5: Moving Leq
6: Trigger
7: Noise generator
8: Recording
9: RPM


    WG      #
```

```
Trigger:
_____

1: Measurement

2: Recording




    WG      #
```

```
Measurement
Trigger:
_____

 Manual
 Clock
 External
 Level above


1: Trigger parameters

    WG
```
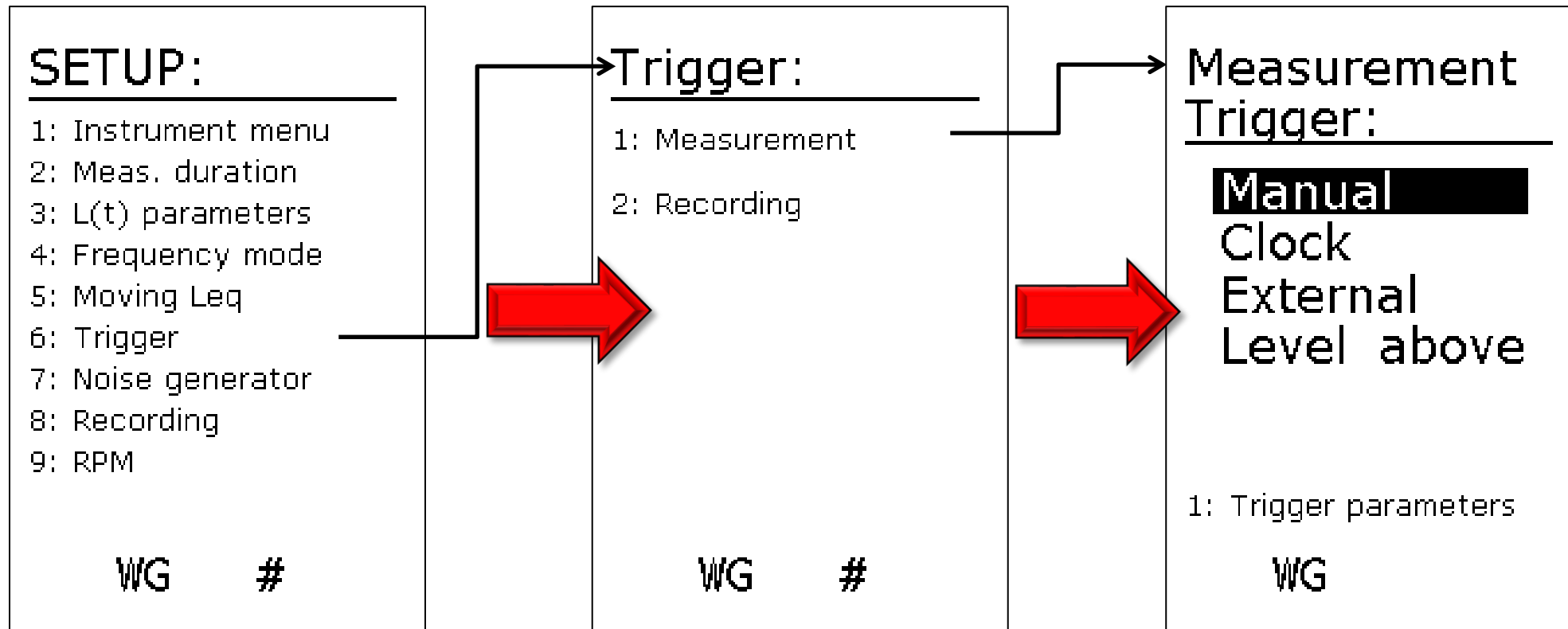
Manual – Start key starts measurement, **Clock** (press 1 when highlighted) – measurement starts at specified time and runs for measurement duration, **External** – Link to external control, **Level Above** – (press 1 when highlighted) set dB level to exceed before measurement starts.

Nor-140 Level Trigger

SETUP:

1: Instrument menu
2: Meas. duration
3: L(t) parameters
4: Frequency mode
5: Moving Leq
6: Trigger
7: Noise generator
8: Recording
9: RPM

WG　#

Trigger:

1: Measurement

2: Recording

WG　#

Record Trigger:

External: ON
Level:　OFF
Delay:　-30 s

1: Trigger parameters

WG

Trigger Level Above:

Threshold:
　80.0　dB

Freq/Netw:
　A-netw.

WG　#
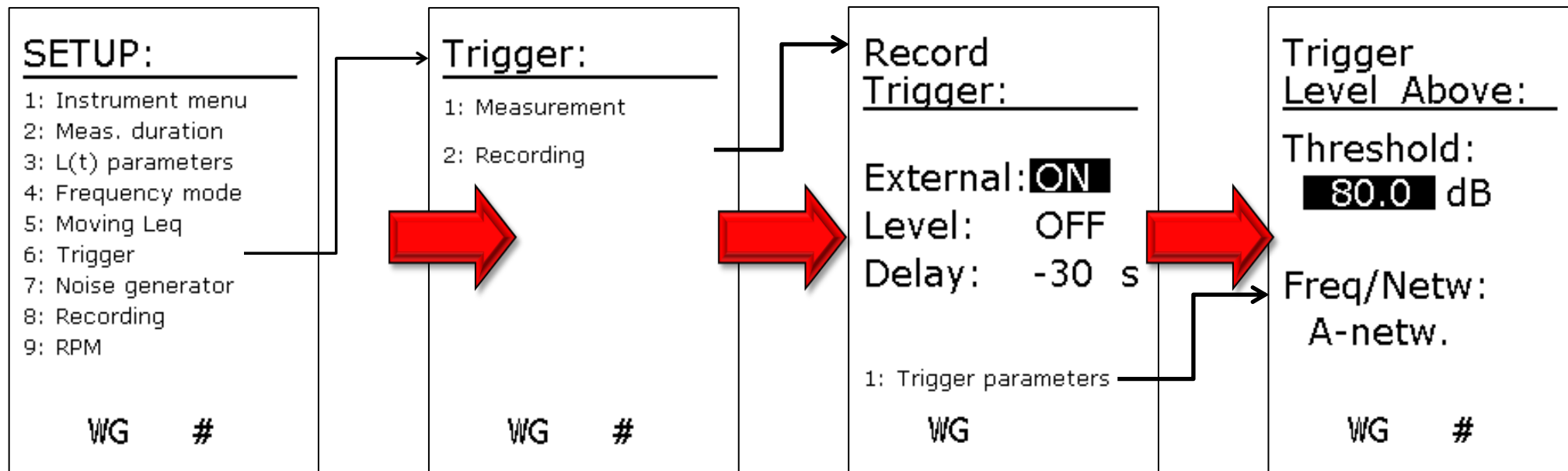
To activate audio recordings without the handswitch you can use the level trigger option. This is in set-up 6) Trigger – 2) Record Trigger and then change the external to off (handswitch) and the level to on. Press button 1 with the Level 'On' highlighted to change the dB level. With this set the meter will record audio every time the noise goes above this Threshold. Be careful when using this as manned properties will set the trigger off more often.

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Nor-140 Recording Settings

```
SETUP:

1: Instrument menu
2: Meas. duration
3: L(t) parameters
4: Frequency mode
5: Moving Leq
6: Trigger
7: Noise generator
8: Recording
9: RPM

        WG      #
```

```
Recording:

Max.duration:
      60  s

Gain:
      48 dB
Format:
  16 bit
Sampling:
  48kHz
      WG      #
```
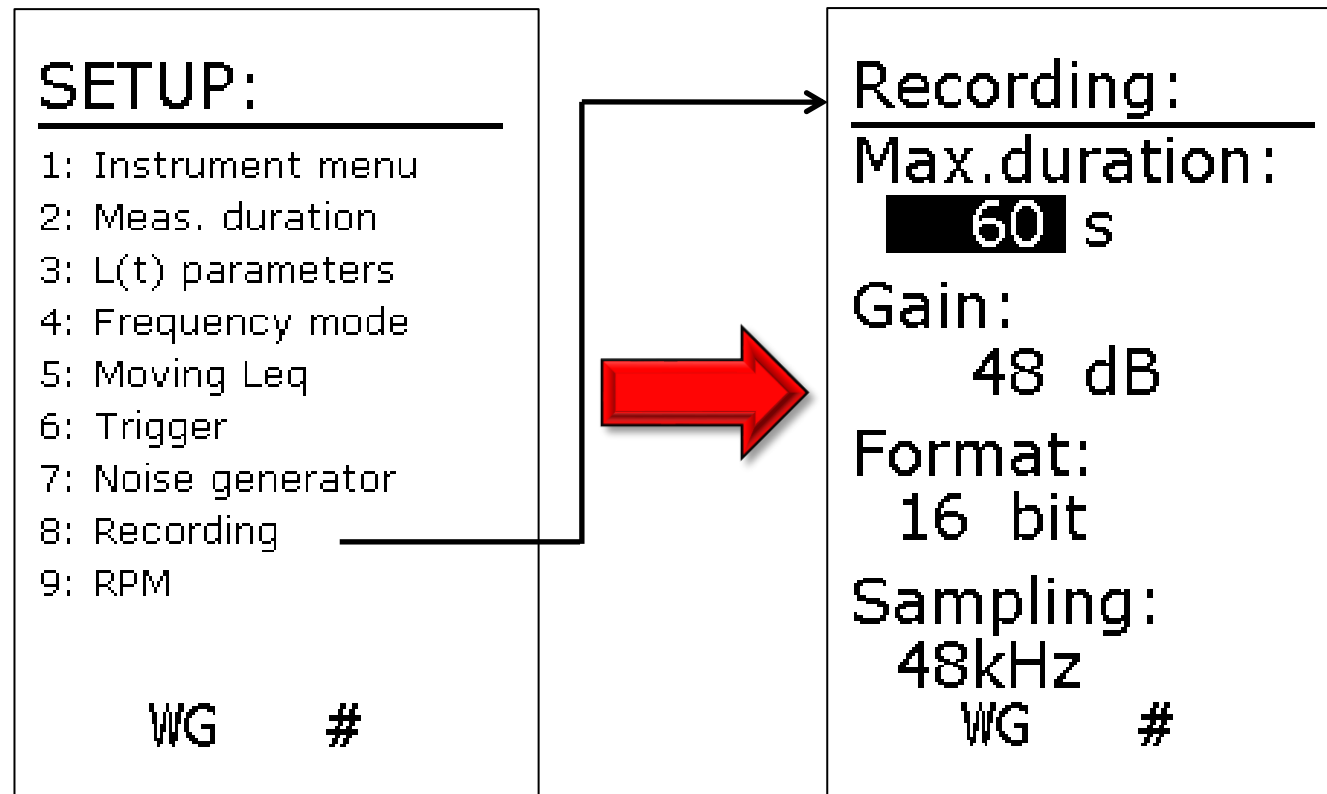
Enter Max duration at the top. The other settings should be as above for best quality audio that can be played on the average PC. In order to have the hamdswitch as a start/stop button – set the duration to 0

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Nor-140 Saving Settings & Recalling
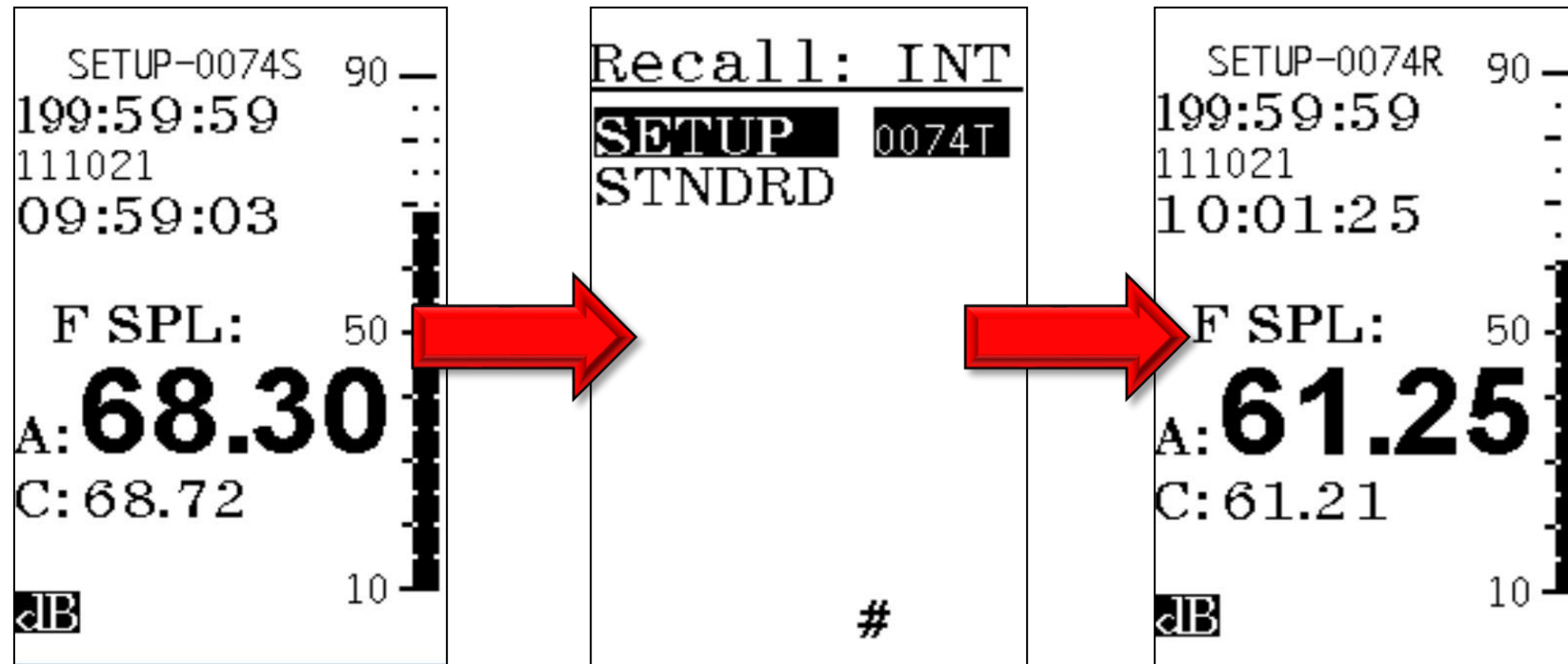
When in the main standby screen press the Store/Record key and a set-up number will appear at the top of the screen with a 'S' to indicate it has been saved. To load the set-up press the 'Recall' key and make sure the letters In the top right say 'INT' for internal memory (SDC is SD card and you will need to press the inc or dec key to change). Find the correct set-up number and press enter. The set-up number will then appear at the top of the screen with the letter 'R' next to it to indicate it has been recalled.

Running Measurements

Nor-140 Button 1 - Table Functions
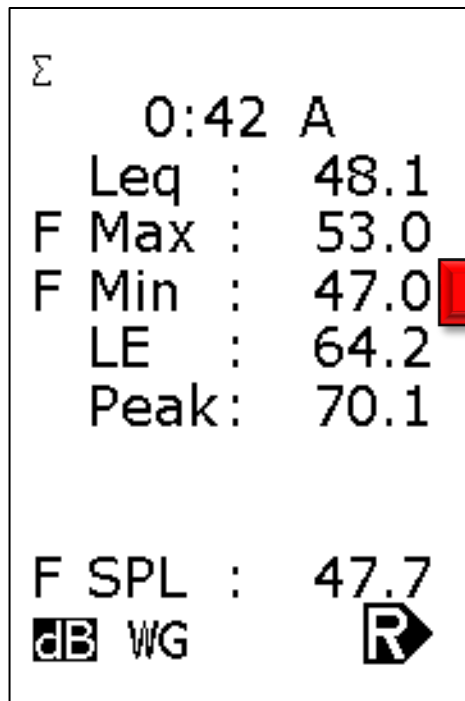
Button 1 displays table of figures.
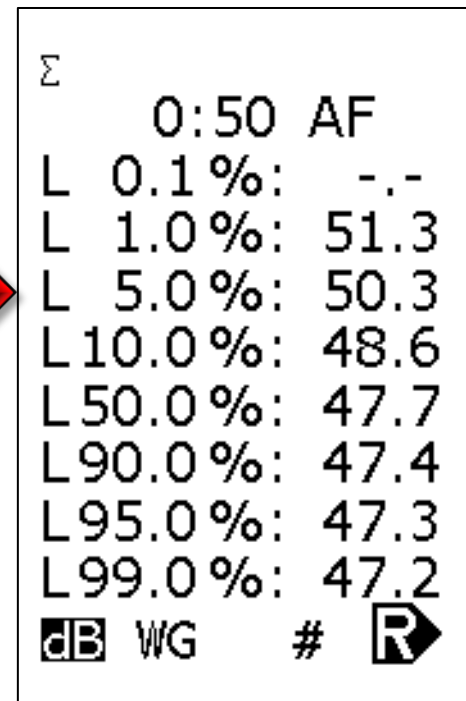
Button 1 again displays table of percentiles.
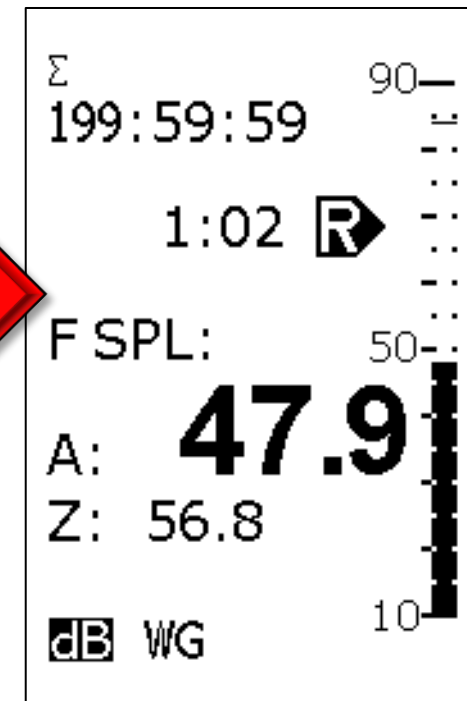
Button 1 again returns you to the main screen

Nor-140 Button 2 – Frequency Analysis
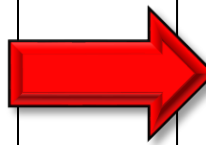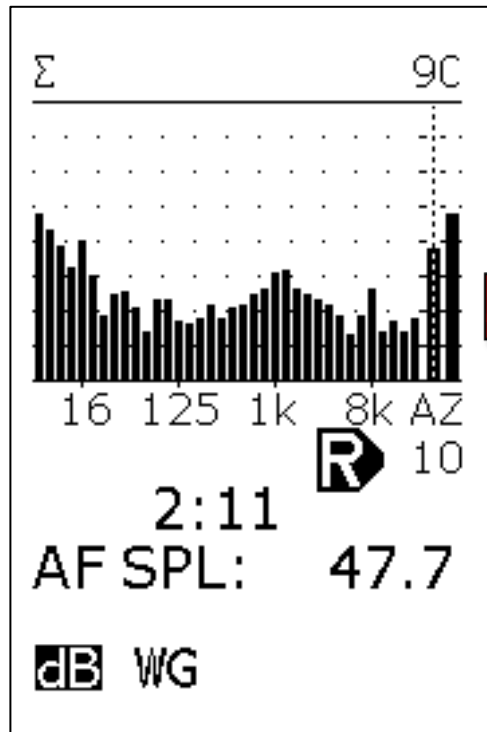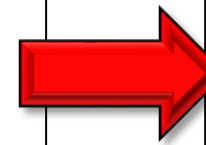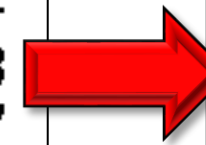
Use cursor to select frequency

Button 1 displays table of figures.

Button 1 again shows stats at that highlighted frequency

Nor-140 Button 2 – NR Values
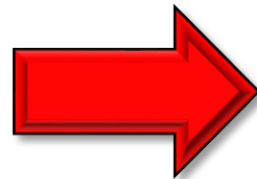

In the frequency screen – scroll right to the bottom

NR and NC rating displayed at the end of the measurement. This is in the latest version of the 140 and due out next year on the 145s and 150s

Nor-140 Button 3 – Function Display
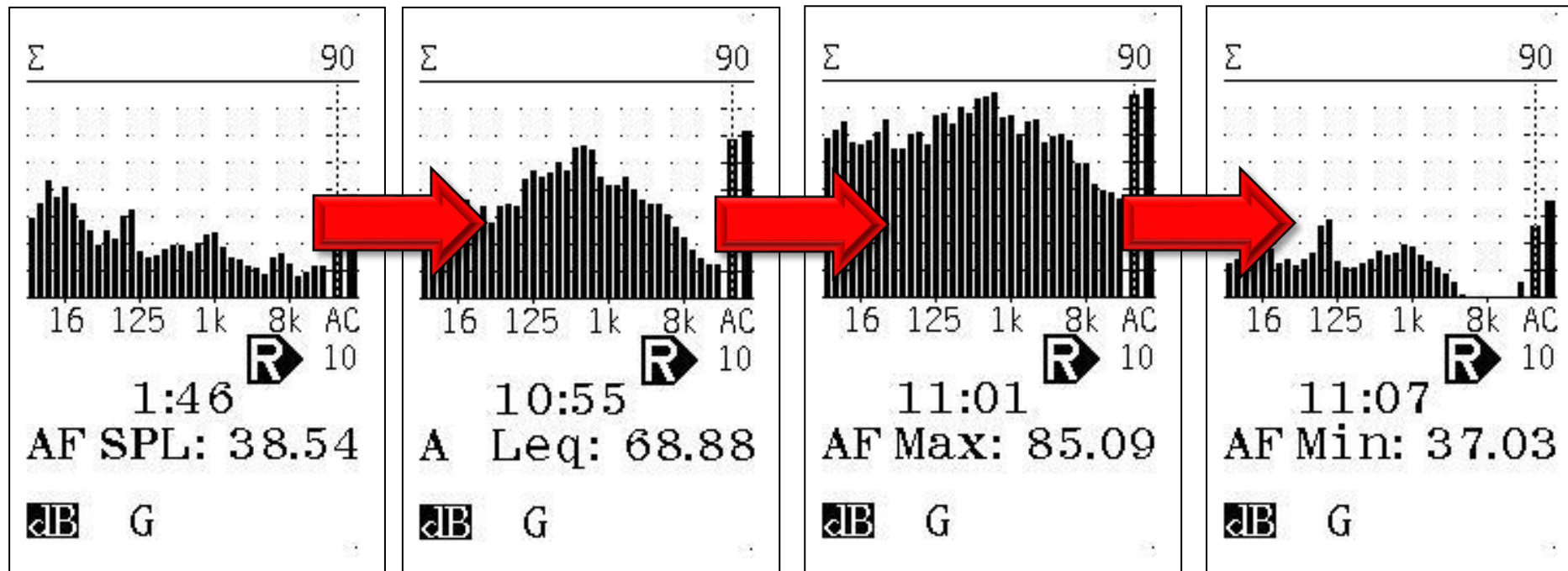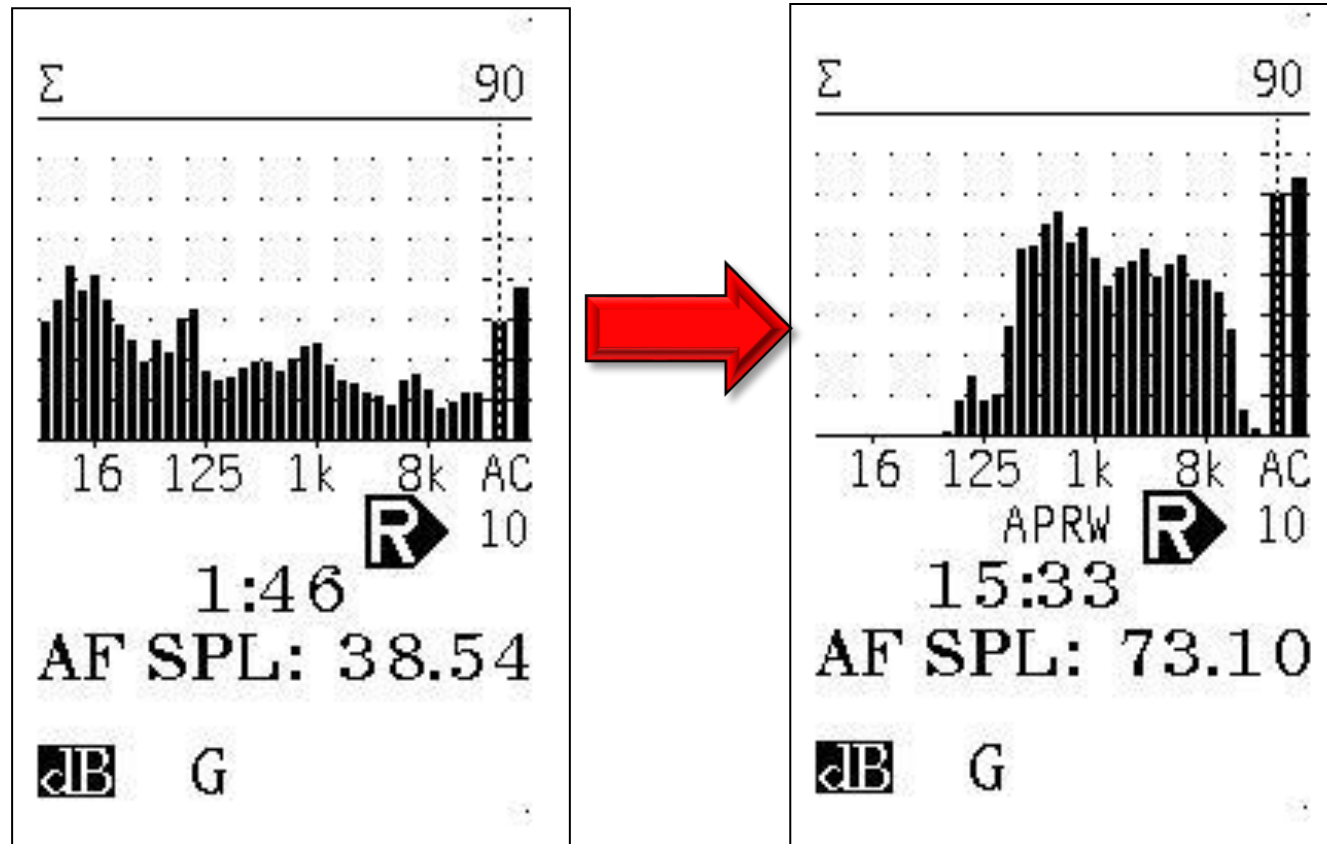

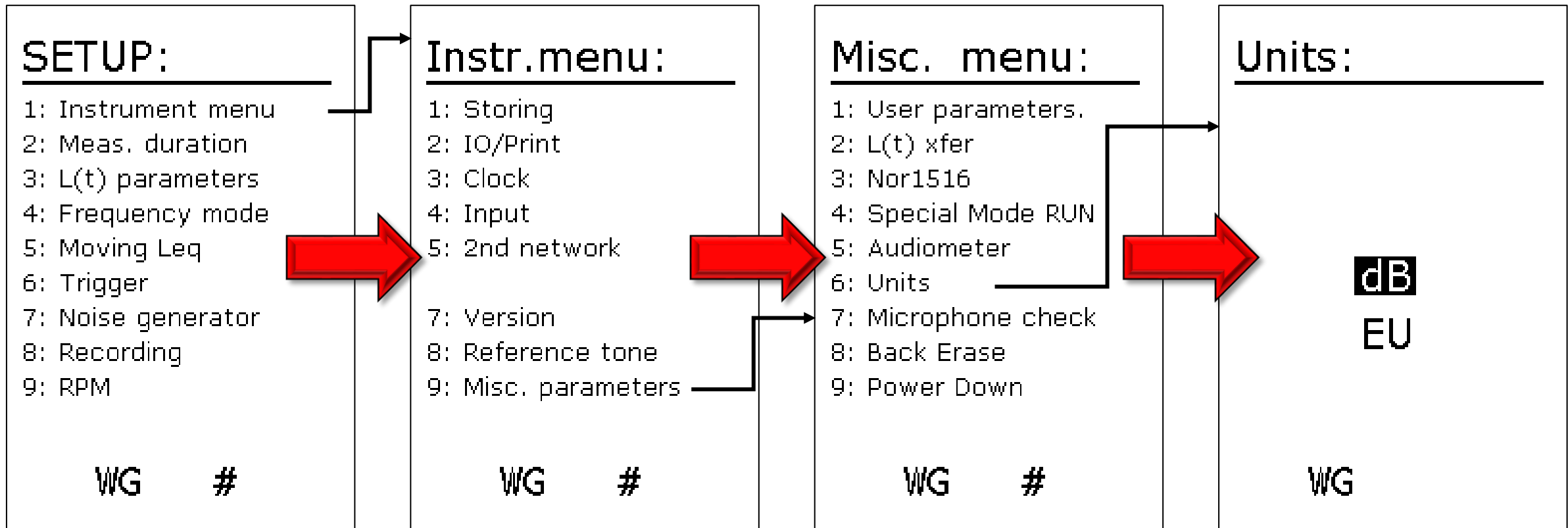| Sound Pressure Level | Leq | Max | Min |

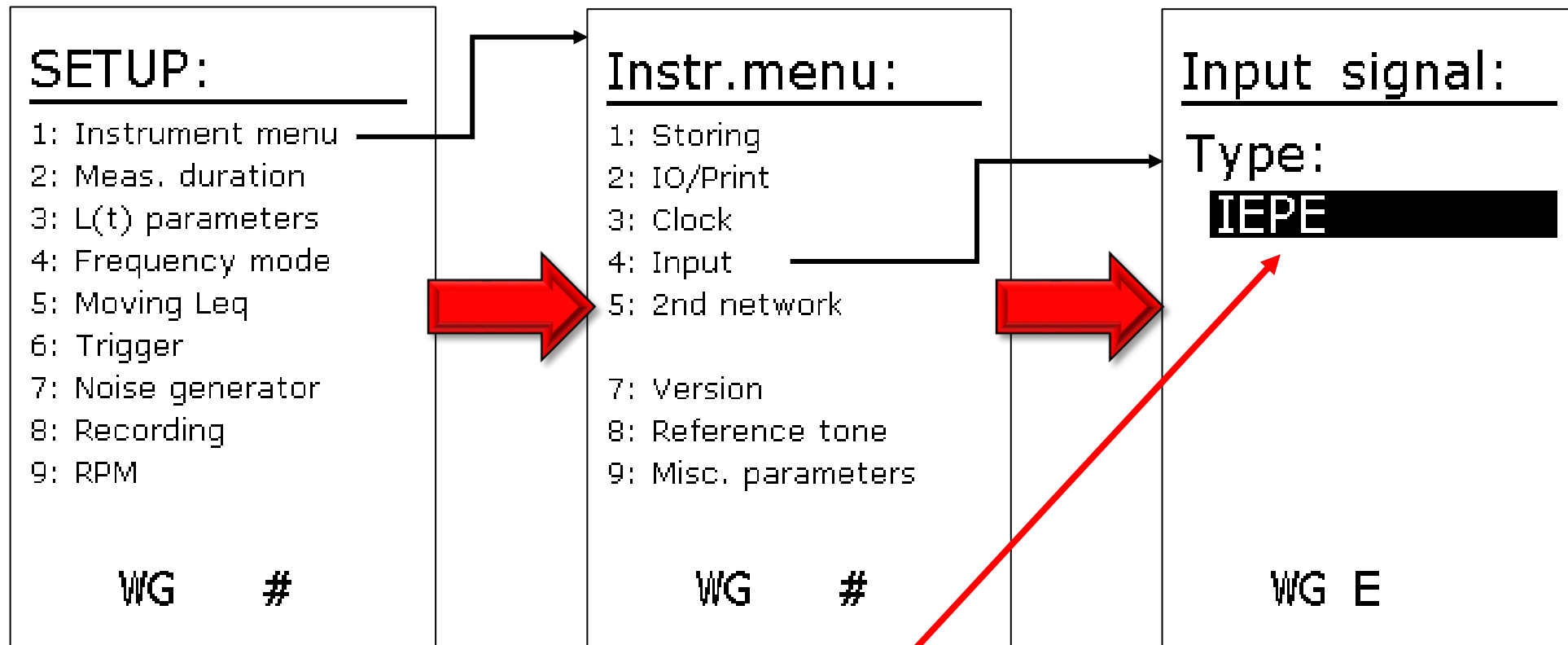# Nor-140 Button 9 – A Pre-weighting Display

Single Axis Vibration & FFT Assessment

Nor-140 Vibration

SETUP:

1: Instrument menu
2: Meas. duration
3: L(t) parameters
4: Frequency mode
5: Moving Leq
6: Trigger
7: Noise generator
8: Recording
9: RPM

WG   #

Instr.menu:

1: Storing
2: IO/Print
3: Clock
4: Input
5: 2nd network

7: Version
8: Reference tone
9: Misc. parameters

WG   #

Misc. menu:

1: User parameters.
2: L(t) xfer
3: Nor1516
4: Special Mode RUN
5: Audiometer
6: Units
7: Microphone check
8: Back Erase
9: Power Down

WG   #

Units:

dB

EU

WG

The units for the front screen can be changed in the Miscellaneous menu screen

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Nor-140 Vibration

SETUP:

1: Instrument menu
2: Meas. duration
3: L(t) parameters
4: Frequency mode
5: Moving Leq
6: Trigger
7: Noise generator
8: Recording
9: RPM

WG   #

Instr.menu:

1: Storing
2: IO/Print
3: Clock
4: Input
5: 2nd network

7: Version
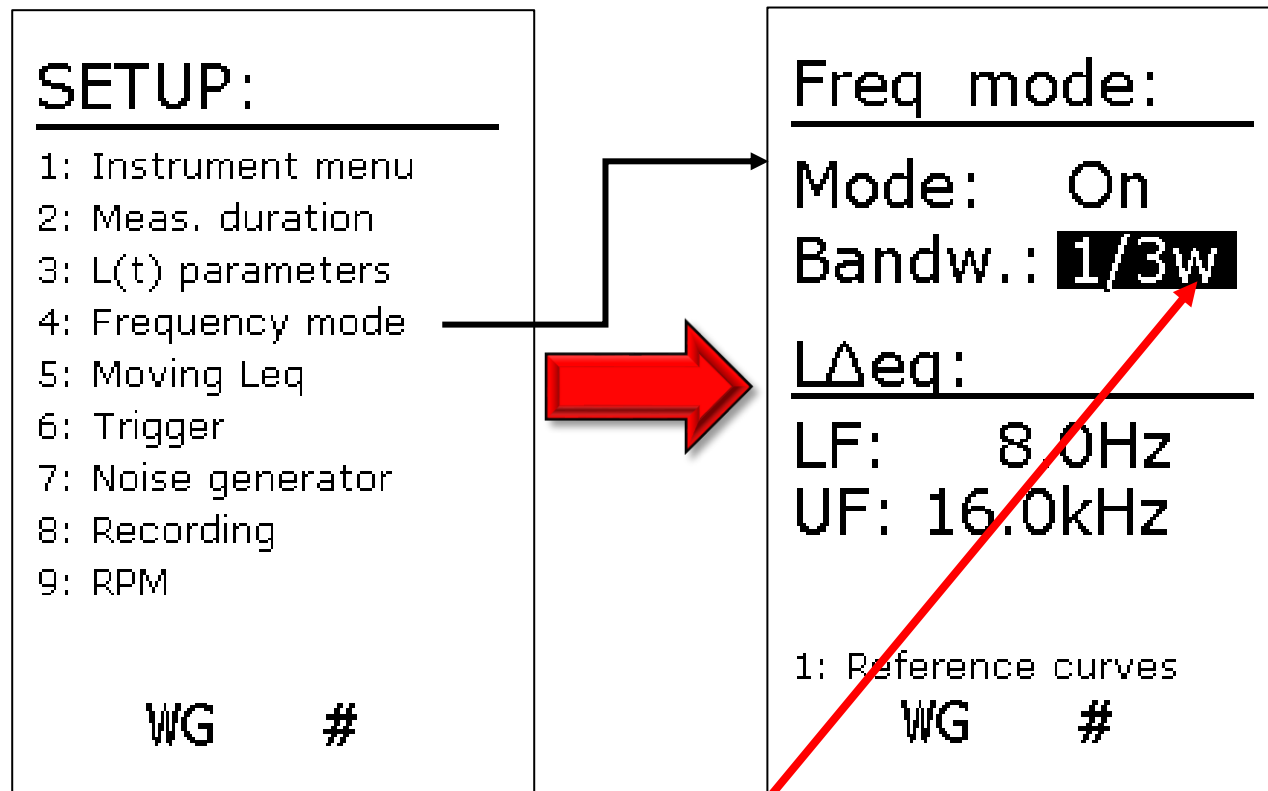8: Reference tone
9: Misc. parameters

WG   #

Input signal:

Type:
IEPE

WG E

To power the accelerometer you need to change the input type to IEPE
(or ICP on older versions of the Nor-140)

Nor-140 Vibration

SETUP:

1: Instrument menu
2: Meas. duration
3: L(t) parameters
4: Frequency mode
5: Moving Leq
6: Trigger
7: Noise generator
8: Recording
9: RPM

WG   #

Freq mode:

Mode: On
Bandw.: 1/3w

LΔeq:

LF: 8.0Hz
UF: 16.0kHz

1: Reference curves
WG   #

Change the frequency mode to have a 'w' next to 1/3 to widen the frequency bands down to 0.4Hz

Nor-140 FFT Option

Select 'Mode' (button 7) and option 6
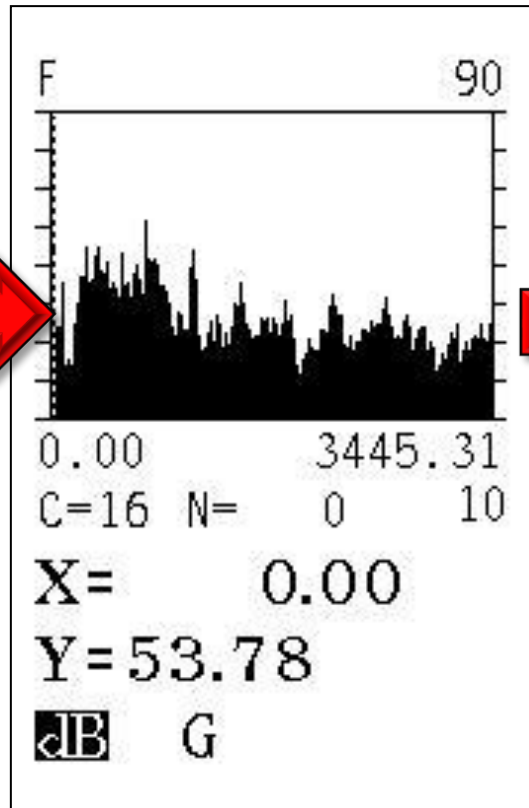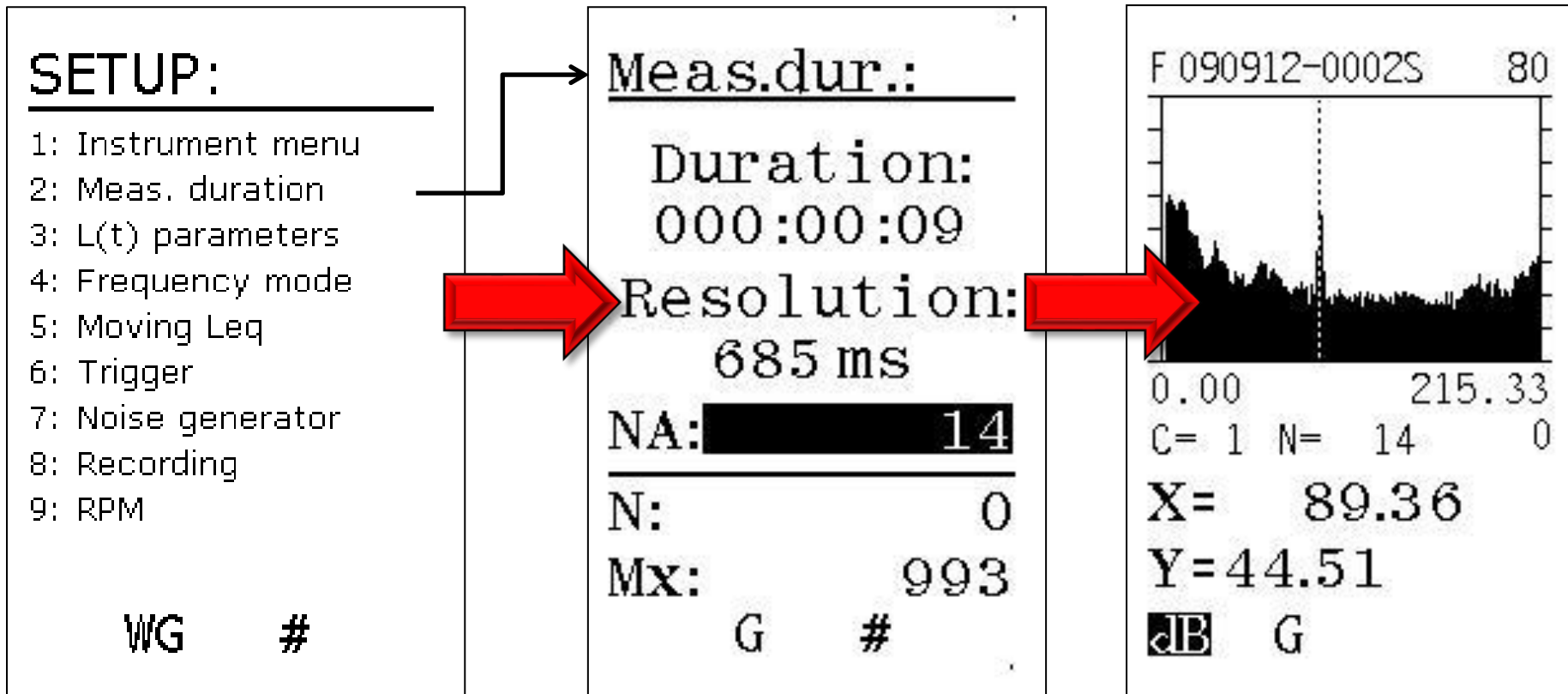
**X = Frequency
Y = Level**
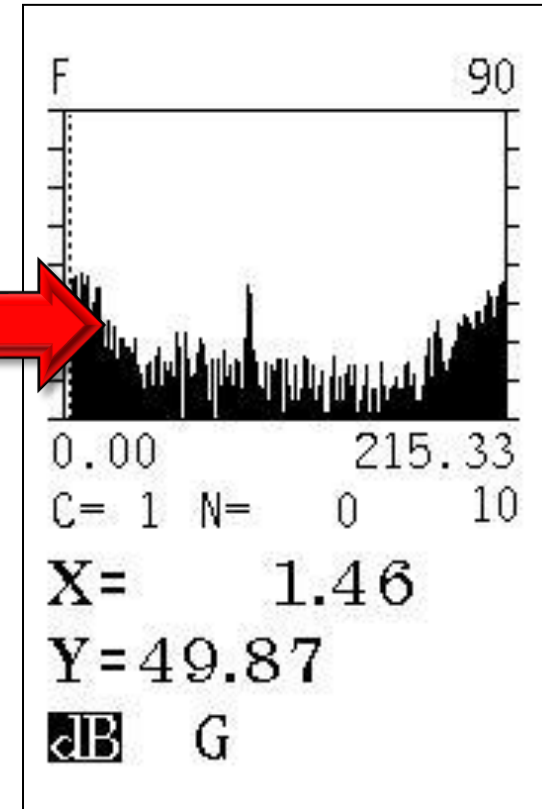
View window can be changed by using the up and down arrow keys

Nor-140 FFT - Set-up and Measurement

Use set up and measurement duration to set the number of averages (NA), the duration of sample and the resolution. Use the left and right cursor keys to highlight the tonal frequency (89.36Hz in this example)

Notes