



USER SET UP GUIDE FOR BUILDING ACOUSTICS

SET UP NOR 140 FOR AIRBORNE TESTING

1. Setting up Nor 140

1.1 Measurement Standard

The BS ISO 140-4 is superseded by BS EN ISO 16283-1:2014. The BS ISO 140-4 is no longer current but is cited in the Building Regulations for England and Wales, Northern Ireland and Scotland. The Irish regs (SITRI) use ISO 16238 universally.

Applies to sound insulation within a pair of rooms. Determines the steady state 1/3 octave band filtered white noise level difference and the receiving room equivalent absorption area from which the standardised level difference is derived. The results can be used to determine whether building elements have met acoustic specifications, e.g. Building Regulations.

The Norsonic building acoustic kit meets both the BS ISO 140-4 and BS EN 16283-1:2014 standard.

1.2 Nor 140 field calibration

The field calibration of the Nor 140 for building acoustic testing takes place in the normal mode and will occur as a standard calibration via the orange 'CAL' key. *Note: Used calibrator - Nor 1251 Class 1 calibrator – 114 db at 1kHz*

1.3 Set up Nor 140 for Airborne Testing

To start a measurement for airborne testing you need to select the building acoustic mode – press #7 on the key pad to choose your mode. You will find Building acoustic mode under #4 – see fig 1.1. Select airborne testing via #3 – see fig 1.2

Fig 1.1 #7 Mode Options

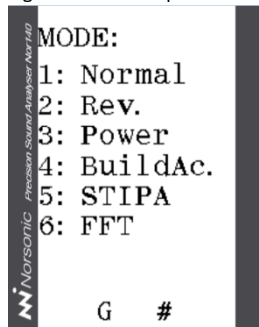
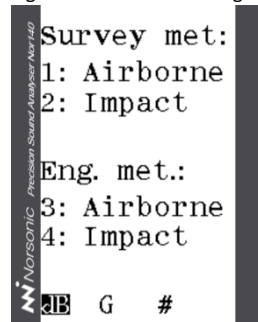


Fig 1.2 #3 Airborne Testing





1.3 Airborne Testing Settings

Figure 1.3 illustrates all the positions that need to be measured.

Fig 1.3 Measurement definitions

	<p>V Volume</p> <p>S Surface Area</p> <p>L1 Source Room</p> <p>L2 Receiver Room</p> <p>T Reverberation time</p> <p>Lb Background Noise</p>
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Press SETUP to select the correct setting to do your assessment.

Fig 1.4 SETUP Screen



Fig 1.5 Noise Gen. Settings

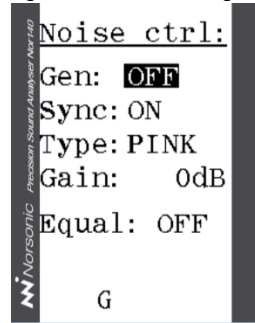
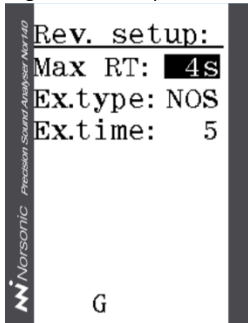


Fig 1.6 Rev. Setup



Type

- NOS** Speaker Output
- IMP** Impulse f.e. Balloon pop
- EXT** External Source

- 1) **Instrument menu:** Set IO Print to RS232 – this allows the meter to control the amplifier for RT's.
- 2) **Measurement duration:** The minimum measurement duration is 6 seconds for fixed positions measurements.
- 3) **Noise generator:** Noise generator off – Sync ON – Type PINK – Gain 0 dB – Equal OFF. See fig 1.5
Note: Equalizer changes spectrum output from speaker – Mainly for RTs usually in larger rooms as its affected by the performance of the room.
- 4) **Reverberation:** Max RT 4s – Ex. Type NOS – Ex.time 5. See fig 1.6



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Reverberation time is defined as the length of time required for sound to decay 60 decibels from its initial level. The excitation is the time the speakers blasts – normally 5 secs is a sufficient amount of time to fill the room with energy.

NOR 280 AMPLIFIER & NOR 276 DODEC SPEAKER & MEASUREMENTS

2. The Equipment

2.1 Setting up the Equipment

The full kit contains:

- Nor 140 EXP Sound level meter
- Nor 280 Amplifier
- Nor 276 Full dodec speaker
- Nor 4514A RT cable

To set up the equipment follow the steps below:

- 1) Connect the Nor 280 amplifier to the Nor 276 dodec speaker via supplied cable and choose your first speaker position;
- 2) Connect the amplifier to mains power;
- 3) Turn amplifier on at -35 dB and select Pink noise. You should be able to hear the speaker softly – you can now control the speaker by using the remote control. The LED on the right top of the amplifier indicates if the speaker is ON or OFF.

The supplied Nor 4514A RT cable only needs to be connected to the amplifier when the RT measurements are taking place. The cable allows the meter to control the speaker – You can test if this is working by turning the noise generator ON and select LINE on the amplifier.

2.2 The Measurements

1) **Source room**

- Choose speaker position;
- Turn speaker OFF with remote control;
- Select PINK noise and -5 dB on the amplifier;
- Put on your hearing protection;
- Turn speaker ON with remote control;
- Do 6 measurements at different representative positions - min 6 sec;
- Turn OFF speaker with remote control and scroll to L2 with the arrow key.

2) **Receiver Room**

- Leave speaker in source room at the same position;
- Turn speaker ON with remote control;





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- Do 6 measurements at different representative positions - min 6 sec;
- Turn OFF speaker with remote control and scroll to Lb with the arrow key.

3) Background Noise – in receiver room

- Do a minimum of 4 (6 recommended) measurements at different representative positions - min 6 sec;
- Scroll up to T with the arrow key.

4) Reverberation time – in receiver room

- Move the speaker to the receiver room;
- Select LINE on the amplifier;
- Plug cable Nor 4514a into the amplifier and connect it to the Nor 140;
- Do a minimum of 4 (6 recommended) measurements at different representative positions.

When all the measurements are done to your satisfaction press the 'store record' key to save the file as a full BA file.

After saving the file select L1 and L2 and press delete. Repeat the measurements for L1 and L2 for the second speaker position.

RESULTS AND REPORTING

3. Results Meter & Software

3.1 Results from the meter

When a complete measurement is stored the results – the Dntw value - can be seen instantly by pressing #3 on the key pad. To get out of this menu press ENTER.

To get an overview of your results and to check the CTR value select 'criteria'. The CTR is the correction for traffic noise and is standard around 1. Test PASS can be determined instantly from the meter. NOTE: this is not required in Ireland for SITRI testing.

For support please contact us on 01371 871 030

or alternatively send an email to hotline@campbell-associates.co.uk and we will assist you.



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