



NorProtector 1025

- Hearing protector selection based on manufacturers data
- Works with Nor 110, Nor118, Nor121, Nor131/132 and Nor140
- Seamless integration with NorXfer - transfer files directly from instrument
- Measurements in 1/3-octave converted to 1/1-octave
- Built-in hearing protector database





NorProtector 1025

- Easy to activate/deactivate a protector
- Easy to add new protectors
- Calculates the level inside the protector
- Shows time to reach 100% dose
- Equivalent noise level the operator will be exposed to
- Deemed acceptable protectors are clearly marked





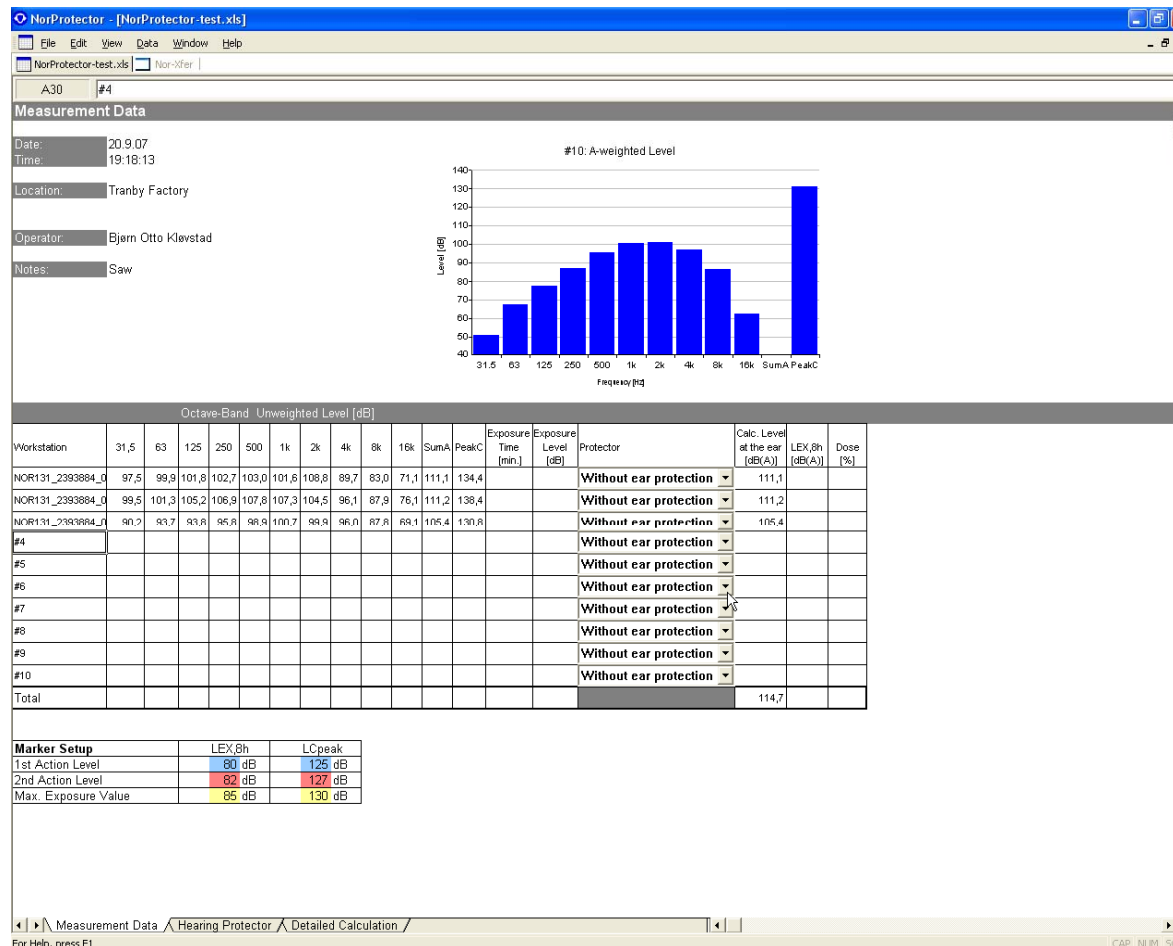
Measurement dragged directly into program

The screenshot displays the Nor-Xfer software interface. At the top right, a file explorer window shows a list of files under 'My Instruments'. An orange arrow points from the file '0013' in the explorer to a bar chart in the main window. The bar chart shows 'Level [dB]' on the y-axis (40 to 140) and 'Frequency [Hz]' on the x-axis (31.5, 63, 125, 250, 500, 1k, 2k, 4k, 8k, 16k, SumA, PeakC). Below the chart is a table titled 'Octave-Band Unweighted Level [dB]' with columns for frequency bands and various measurement parameters.

Workstation	31,5	63	125	250	500	1k	2k	4k	8k	16k	SumA	PeakC	Exposure Time [min.]	Exposure Level [dB]	Protector	Calc. Level at the ear [dB(A)]	LEX,8h [dB(A)]	Dose [%]
NOR131_2393884_0	97,5	99,9	101,8	102,7	103,0	101,6	108,8	89,7	83,0	71,1	111,1	134,4			Without ear protection	111,1		
NOR131_2393884_0	99,5	101,3	105,2	106,9	107,8	107,3	104,5	96,1	87,9	76,1	111,2	138,4			Without ear protection	111,2		
NOR131_2393884_0	90,2	93,7	93,8	95,8	98,9	100,7	99,9	96,0	87,8	69,1	105,4	130,8			Without ear protection	105,4		
#4															Without ear protection			
#5															Without ear protection			
#6															Without ear protection			
#7															Without ear protection			



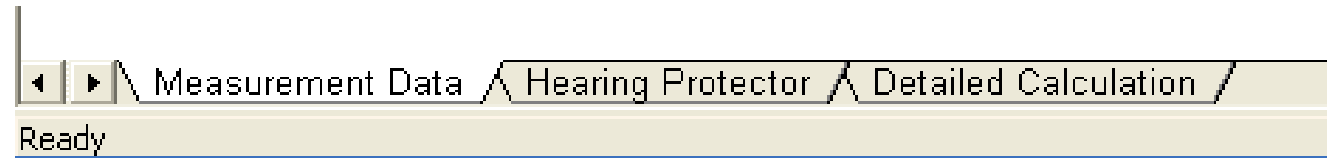
Measurement transferred



- Levels can be shown Linear or A- or C-weighted
- Date and time recorded automatically
- Comments can be added by user



Worksheets



- Nor-Protector's three worksheets:
 - 'Measurement Data'
 - 'Hearing Protector'
 - 'Detailed Calculation'
- Reports are based on an Excel template file
- Can be modified but with some restrictions. It is allowed to change text or insert a logo.
- Spectrum can be shown A-weighted

Levels



- Holds up to 10 measurement data series and the calculated total values.
- SumA - postprocessed A-weighted sum of the measured spectrum.
- Exposure time can be specified.
- Sum A level exposure level is calculated
- and the total time.
- For each measurement a hearing protection device can be selected from a list box.
- For each selected protector sound pressure level at the ear, the Daily Personal Noise Exposure LEX,8h (LEP,d) and the dose is calculated.
- The total values represent the energetic sum according to the exposure time



Marker Setup

- Action level selectable
both for LEX, 8h and Lcpeak
- Colors selectable
- Load old or new regulations

Marker Setup

LEX, 8h (LEP, d)

1st Action Level:	80 dB	Color:	Light Blue
2nd Action Level:	82 dB	Color:	Orange
Max. Exposure Value:	85 dB	Color:	Red

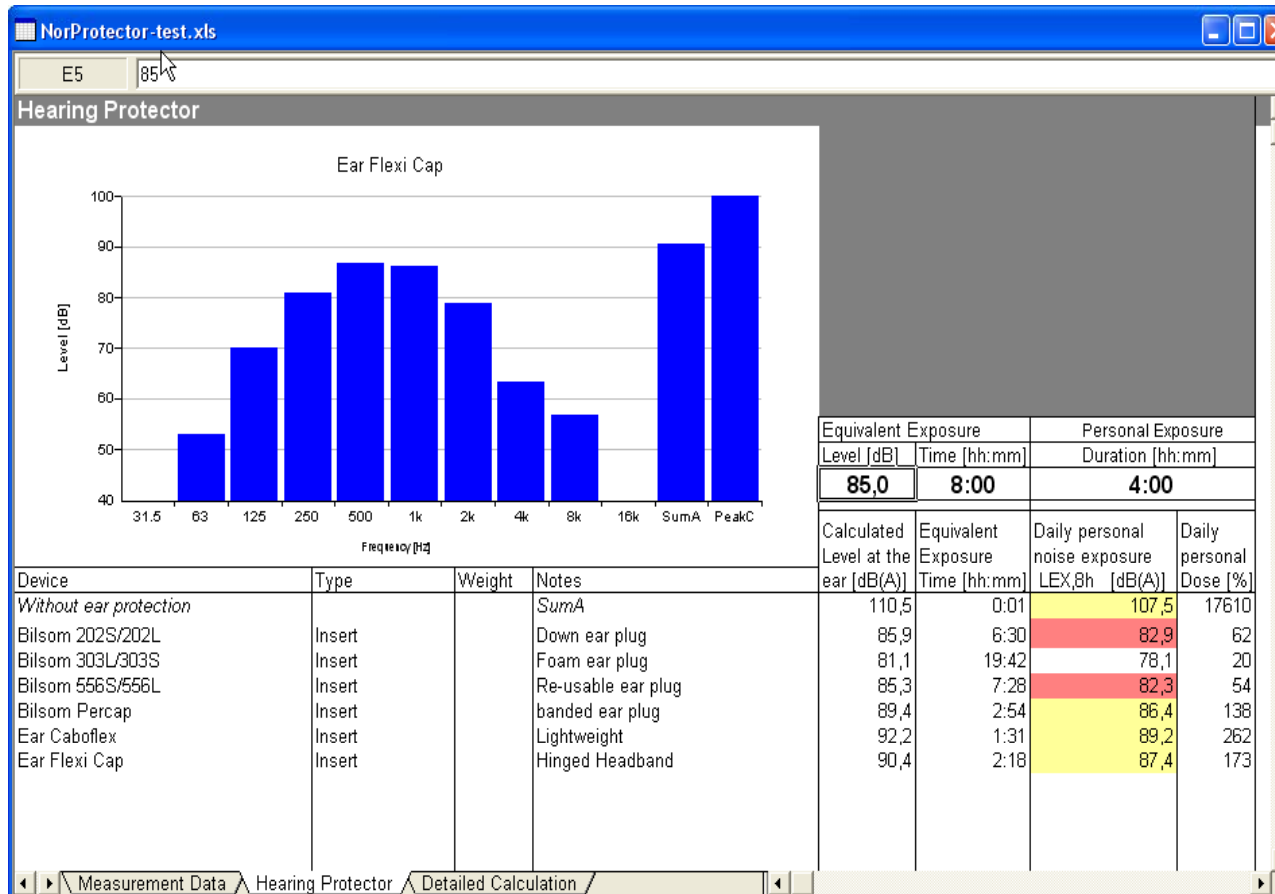
LCpeak

1st Action Level:	125 dB	Color:	Light Blue
2nd Action Level:	128 dB	Color:	Orange
Max. Exposure Value:	130 dB	Color:	Red

Buttons: Load Old Regulations, Load New Regulations, OK, Cancel



Calculation



➤ Graph shows selected protector

➤ Non-colored are below limit

➤ Exposure for 4 hours to the right



Detailed calculation

V31																					
Detailed Calculation Total																					
Octave-Band																					
Frequency [Hz]	31,5	63	125	250	500	1k	2k	4k	8k	16k											
Measurement [dB]	97,8	99,9	103,0	104,4	105,3	104,7	106,4	94,5	86,5	73,6											
A-Weighting [dB]	-39,4	-26,2	-16,1	-8,6	-3,2	0,0	1,2	1,0	-1,1	-6,6											
Meas. A-Weighted [dB]	58,4	73,7	86,9	95,8	102,1	104,7	107,6	95,5	85,4	67,0											
	Assumed protection value APV [dB]										Level with ear protection [dB]										
Device	31,5	63	125	250	500	1k	2k	4k	8k	16k	31,5	63	125	250	500	1k	2k	4k	8k	16k	
Bilsom 202S/202L		16,9	20,8	20,8	21,9	23,0	27,6	32,9	35,9		56,8	66,1	75,0	80,2	81,7	80,0	62,6	49,5			
Bilsom 303L/303S		22,0	28,3	28,7	29,4	28,1	30,0	37,6	41,7		51,7	58,6	67,1	72,7	76,6	77,6	57,9	43,7			
Bilsom 556S/556L			23,2	23,0	22,9	23,8	27,3	34,4	35,4			63,7	72,8	79,2	80,9	80,3	61,1	50,0			
Bilsom Percap		16,6	19,0	17,9	16,1	19,9	27,2	31,5	34,5		57,1	67,9	77,9	86,0	84,8	80,4	64,0	50,9			
Ear Caboflex		14,0	12,9	13,7	13,5	16,8	26,6	37,6	28,0		59,7	74,0	82,1	88,6	87,9	81,0	57,9	57,4			
Ear Flexi Cap		20,9	16,8	15,1	15,3	18,6	28,6	32,2	28,7		52,8	70,1	80,7	86,8	86,1	79,0	63,3	56,7			

➤ Total levels for all measurements

Detailed Calculation Workstation

Workstation NOR131_2393884_070920_0011.NBF											
Frequency [Hz]	31,5	63	125	250	500	1k	2k	4k	8k	16k	Sum
Measurement [dB]	97,5	99,9	101,8	102,7	103,0	101,6	108,8	89,7	83,0	71,1	112,1
A-Weighting [dB]	-39,4	-26,2	-16,1	-8,6	-3,2	0,0	1,2	1,0	-1,1	-6,6	
Meas. A-Weighted [dB]	58,1	73,7	85,7	94,1	99,8	101,6	110,0	90,7	81,9	64,5	111,1
APV [dB]		16,9	20,8	20,8	21,9	23,0	27,6	32,9	35,9		
Level with protection		56,8	64,9	73,3	77,9	78,6	82,4	57,8	46,0		85,2
Workstation NOR131_2393884_070920_0012.NBF											
Frequency [Hz]	31,5	63	125	250	500	1k	2k	4k	8k	16k	Sum
Measurement [dB]	99,5	101,3	105,2	106,9	107,8	107,3	104,5	96,1	87,9	76,1	114,0

➤ Levels for each measurement



Edit the database

Database Table

ID	ACTIVATED	DEVICE	TYPE	WEIGHT	NOTES	31_HZ	63_HZ	125 ▲
1	Yes	Bilsom 202S/202L	Insert		Down ear plug		16,9	
2	No	Bilsom 303L/303S	Insert		Foam ear plug		22,0	
3	No	Bilsom 556S/556L	Insert		Re-usable ear plug			
4	No	Bilsom Percap	Insert		banded ear plug		16,6	
5	No	Bilsom Perfit Det.	Insert					
6	Yes	Bilsom Perfit M/L	Insert					
7	No	Bilsom Perfit S	Insert					
8	Yes	Bilsom Perflex	Insert		Banded ear plugs			
9	No	Bilsom Perflex Det.	Insert					
10	No	Ear Amigo						
11	No	Ear Cabocord						
12	Yes	Ear Caboflex						
13	No	Ear Caps						
14	Yes	Ear Classic						
15	No	Ear Express						

Add Remove Edit

Database Record

ID: Activated

Device: Type:

Notes: Weight:

Mean attenuation

31.5 Hz	63 Hz	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	8 kHz	16 kHz
	21,7	23,7	26,1	30,4	30,1	33,8	42,6	36,4	

Standard Deviation

	6,3	5,6	5,2	5,7	5,3	4,6	4	5,7	
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OK Cancel



European Directive exposure levels

➤ In use Years	1989 - 2005	2006 onward
➤ Unit to use	LEP,d	LEX,8h
➤ Action level 1	85 dBA	80 dBA
➤ Action level 2	90 dBA	85 dBA
➤ Limit value	N/a	87 dBA
➤ 1st Peak action level	N/a	135 dBC
➤ 2nd Peak action level	N/a	137 dBC
➤ Peak limit value	140 dBC	140 dBC

➤ The change from LEP,d to LEX,8h is simply a change of name of the unit. The basis of the unit is still Leq normalised to an 8hr period		
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European Directive 2003/10/EC

“on the minimum health and safety requirements regarding the exposure of workers to the risks arising from physical agents (noise)”

- Exposure limit values:
 - $LEX_{8h} = 87$ dBA
 - $p_{peak} = 140$ dBC re 20 μ Pa
- Upper exposure action values:
 - $LEX_{8h} = 85$ dBA
 - $p_{peak} = 137$ dBC re 20 μ Pa
- Lower exposure action values
 - $LEX_{8h} = 80$ dBA
 - $p_{peak} = 135$ dBC re 20 μ Pa



NorProtector 1025

- If operator stays in noise area more/less than 8 hours, key in the actual exposure time. A new calculation will be performed.
- Runs on Windows 95/98/ME/NT4/2000/XP/Vista
- NorProtector – a selection guide
- It can hardly get easier !



Prices

- NorProtector Nor1025 420€ / NOK 3360
- Additional user licence, add per user 30%
- Nor1035 is included in the price for Nor131/K1 and Nor132/K2 Noise at work packages

