

FEATURES

- Static and dynamic measurements of displacement (measures also DC)
- High accuracy
- Different measurement ranges
- Visible red type class 2 laser
- Calibration by user possible
- Measurement of the reflected light intensity
- Good cost-performance ratio
- Ideal for loudspeaker measurements

The Distortion Analyzer equipped with a Laser displacement sensor allows the measurement of electrical and mechanical states. Transducer measurements are thereby simplified and shortened considerably.

The Laser displacement sensors based on optical triangulation measures not only AC components but also a DC-part of the displacement accurately. A variety of Laser sensor heads are provided to get optimal performance in the particular application.

The combination with a Driver Stand allows the easy mounting of the sensor heads and allows also calibrating the sensor by the user. Management for multiple laser sensor heads is provided by dB-Lab and allows to choose a specific laser according to measurement demands (e.g. small signal, large signal measurements, woofers or tweeters).

CAUTION ! Laser Radiation !

Avoid direct or indirect (e.g. reflection) exposure of human eyes to beam.

CONTENTS:

Components	2
Class 2 Laser Heads and positioning aid	3
Laser Controller	3
Application Guide	5

Components

Distortion Analyzer

The Distortion Analyzer hardware provides a special laser sensor input and a built in power supply (for ANR sensor series only). A buffered output (BNC) provides the analog displacement signal for any Postprocessing such as visualizing on a oscilloscope. Each laser sensor can be calibrated using the Laser Displacement Meter functionality of the Distortion Analyzer Hardware (Spec. S9). Calibration data for multiple sensor heads can be stored permanently and easily selected within the Analyzer frame software dB-Lab.

Laser Sensor Heads

A variety of different laser heads is provided to customize the Displacement Meter for the particular application. The following criteria should be considered for the selection of the sensor head:

- high resolution (2µm, 10 kHz) required for measurement of tweeter and mid-range drivers.
- large peak to peak (up to 50mm peak) measurement range for woofer systems.

ANR 1282



Laser Controller

All of the laser sensor heads require a controller. All heads of the ANR-series are operated with the controller ANR5131. This controller is powered by the Distortion Analyzer. An additional extension cable may be used between sensor head and controller. The laser head series LD 1605 is operated by the controller optoNCDT1605 and the G37 by the controller G3001V. Both come with an external power supply.

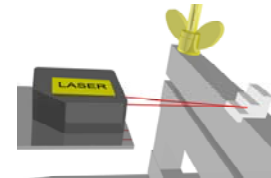


ANR 5132

ANR series:

Spacer for Calibration

The laser displacement sensor of the ANR series may be calibrated using a special spacer (stair part) having a diffuse reflecting surface of required preciseness. It is part of the laser stand package (Standard or Pro).



(Art. 2201-001)

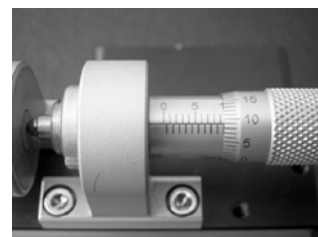
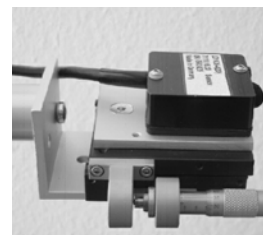
G32:

Translation stage for positioning and calibration

(Art. 2300-001)

The G32 sensors provide high resolution in a small range. For easy and accurate positioning a translation stage is provided. Equipped with a high resolution micrometer (adjustable to 1µm) also the calibration process can be easily performed.

The translation stage and the micrometer is a recommended accessory of the 1607 and the G37 sensor.



Class 2 Laser Heads and positioning aid				
		G32	1282	1215
ARTICLE NUMBER		2102-020	2102-001	2102-003
Maximal displacement (mm peak for a linearity error < 3 %)		±5 (@ 50 µs sampling rate)	±20	±50
Minimal displacement (mm peak for a linearity error < 3 %)		± 0.02	± 0.5	+ - 1.5
Linearity Error	absolute (µm):	±3	±80	±200
	relative:	±0.05% F.S.	±0.2 % F.S.	
Resolution (Noise in µm , no averaging *)		0.5	40	200
Max. Signal Frequency (in kHz @ 3dB)		25	1	
Center Point Distance (mm)		30	80	130
Light source		visible laser diode (650 nm)	visible laser diode (685 nm)	
Laser Class	Class 2 / IEC825 (closing the eyelids will protect the eyes, avoid the laser beam)			
Max. Output		1 mW	1.6 mW (Peak Values)	
Beam Spot Diameter (mm)		0,03 x 0,85	0.7x1.2	0.7x1.4
Ambient Light Level		Max. 10,000 lx	Max. 3,000 lx	
Weight (with cable)		280 g	240 g	
Length of the cable		2 m Extension cable is available on request	ca. 1.2 m Extension cable 5 or 10 m available	
Translation Stage		Recommended, max. travel: 13mm Scaling resolution: 1µm	Not included (available on request with higher travel distance)	

* improved by averaging with measurement software

Laser Controller			
		G3001V for G32	5132 for Laser 1282 and 1215
ARTICLE NUMBER		PART OF 2102-020	2110-001
Analog Output		± 10V/F.S. (Max. 10 mA)	± 5V/F.S. (Max. 2 mA)
Output Impedance		approx. 100 Ohm	50 Ohm
Temperature Drift		0,01 %/°C	Max. ± (0.03 % of F.S.)/°C
Zero-Point Adjustment		adjustable	± 10% of F.S.
Response Frequency (-3dB)		-	1 kHz / 100 Hz / 10 Hz (switchable)
Response Time (10- 90 %)		-	0.4 / 4 / 40ms (switchable)
Sampling Rate		20/50/100/200/500/ 1000 µs	-

Intensity Output		-	± 5V
Indication		LED (Range,OK,)	Sensor: LED (RANGE)
Gain Selection		switchable	AUTO, LOW (switchable)
Operating Ambient Temp.		0 to 50 °C(+32 to +122°F)	0 to 50 °C (+32 to +122°F)
Operating Ambient Humidity		35 % to 85 % RH (no condensation)	35 % to 85 % RH
Safety Certificate		Complies with CDRH 1040.10 / IEC 60825 / JIS C6802	Complies with 21 CFR 1040.10 and 1040.11
External Power Supply		Input: 100 –240 V~ / 47 – 63 Hz / 400 mA complies with IEC 950, UL US 6P85	powered by Distortion Analyzer

Application Guide

X = best performance, a = applicable

Small signal analysis

Large signal analysis

	MODULES	G32	ANR 1282	ANR 1215
ARTICLE		2102-020	2102-001	2102-003
APPLICATION				
Long throw Woofer				
Small signal analysis	LPM	X	X	a
Large signal analysis	LSI Woofer, DIS, TRF			X
Woofer				
Small signal analysis	LPM	X	a	
Large signal analysis	LSI Woofer, DIS, TRF		X	
Midrange Driver/ Exciter				
Small signal analysis	LPM	X		
Large signal analysis	LSI Woofer, DIS, TRF	X	X	
Tweeter				
Small signal analysis	LPM	X		
Large signal analysis	LSI Woofer, DIS, TRF	X		
Headphone				
Small signal analysis	LPM	X		
Large signal analysis	LSI Woofer, DIS, TRF	X	a	
Horn Compression Driver				
Small signal analysis	LPM	X		
Large signal analysis	LSI Woofer, DIS, TRF	X		
Micro-speakers				
Small signal analysis	LPM	X		
Large signal analysis	LSI Woofer, DIS, TRF	X		
Suspension Part Measurement	SPM	a	X	
Material Parameter Measurement (E- Modulus)	MPM	X		
Cone Vibration Measurement	SCN, TRF	X		
Enclosure Vibration	SCN, TRF	X		

Find explanations for symbols at <http://www.docs.klippel.de/symbols.pdf>