

2.6.05-11 LDA – Laser Doppler Anemometry with Cobra3



What you can learn about ...

- Interference
- Doppler effect
- Scattering of light by small particles (Mie scattering)
- High- and low-pass filters
- Sampling theorem
- Spectral power density
- Turbulence

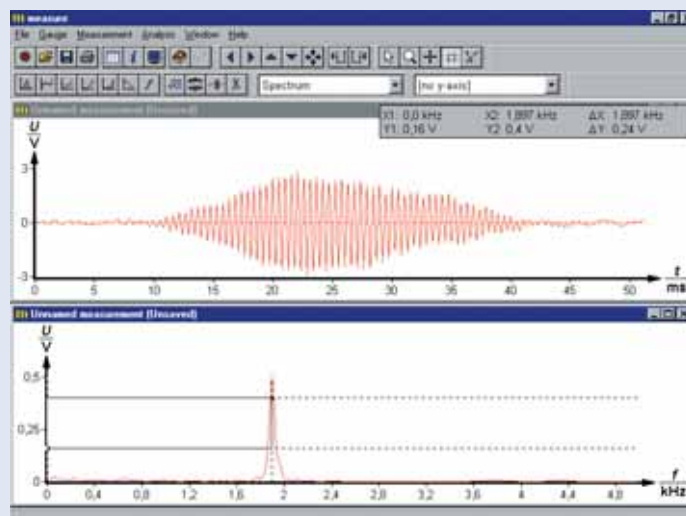
Principle:

Small particles in a current pass through the LDA measuring volume and scatter the light whose frequency is shifted by the Doppler effect due to the particle movement.

The frequency change of the scattered light is detected and converted into a particle or flow velocity.

What you need:

Optical base plate with rubberfeet	08700.00	1
He/Ne Laser, 5 mW with holder	08701.00	1
Power supply for laser head 5 mW	08702.93	1
Adjusting support 35 x 35 mm	08711.00	2
Surface mirror 30 x 30 mm	08711.01	2
Magnetic foot for optical base plate	08710.00	8
Holder for diaphragm/ beam splitter	08719.00	1
Lens, mounted, $f = +100$ mm	08021.01	1
Lens, mounted, $f = +50$ mm	08020.01	1
Lens, mounted, $f = +20$ mm	08018.01	1
Iris diaphragm	08045.00	1
Beam splitter 1/1, non polarizing	08741.00	1
Si-Photodetector with Amplifier	08735.00	1
Control Unit for Si-Photodetector	08735.99	1
Adapter BNC socket/4 mm plug pair	07542.27	1
Screened cable, BNC, $l = 750$ mm	07542.11	1
Prism table with holder for optical base plate	08725.00	1
Lens holder for optical base plate	08723.00	3
Screen, white, 150 x 150 mm	09826.00	1
XY-shifting device	08714.00	1
Pin hole 30 micron	08743.00	1
LDA-Accessory-Set	08740.00	1
Support rod -PASS-, square, $l = 630$ mm	02027.55	2
Right angle clamp -PASS-	02040.55	2
Universal clamp	37718.00	2
Support base -PASS-	02005.55	1
Aspirator bottle, clear glass, 1000 ml	34175.00	2
Silicone tubing, $d = 7$ mm	39296.00	4
Pinchcock, width 10 mm	43631.10	3
Glass tube, AR-glass, straight, $d = 8$ mm, $l = 80$ mm, 10 pcs.	36701.65	1
Rubber stopper, $d = 32/26$ mm, 1 hole	39258.01	2
Rubber stopper, $d = 22/17$ mm, 1 hole	39255.01	2
Measuring tape, $l = 2$ m	09936.00	1
Spatulas, double bladed, $l = 150$ mm, wide	33460.00	1
Beaker, DURAN®, short form, 150 ml	36012.00	1
Cobra3 BASIC-UNIT	12150.00	1



Measurement of the signal spectrum with a signal peak

Tasks:

1. Measurement of the light-frequency change of individual light beams which are reflected by moving particles.
2. Determination of the flow velocities.

Power supply 12V/2A	12151.99	1
Data cable 2 x SUB-D, plug/socket, 9 pole	14602.00	1
Software Cobra3 Fourier Analysis	14514.61	1
Sliding device, horizontal	08713.00	1
PC, Windows® 95 or higher		

Complete Equipment Set, Manual on CD-ROM included
LDA – Laser Doppler Anemometry
with Cobra3 P2260511