

# Combined 2D shifted Profile Sensor LDV System



Fig.1: Combined 2D shifted Profile Sensor

## Overview

The new Combined 2D shifted Profile Sensor consists of a 2D fp50-shift LDV System extended with the capability of measuring one velocity component with the high spatial resolution of a shifted ILA R&D Profile Sensor. This makes it suitable for measurements in strong velocity gradients and for the investigation of boundary layers. A modular design of the probe allows using the combined probe for measurements as well as using just the detachable 2D fp50-shift probe. The Combined 2D shifted Profile Sensor contains three Nd:Yag-Laser (532 nm, 553 nm and 561 nm), works with ILA R&D LDV Controllers and with an adapted version of the proven LDV software *LDA Control Qt*.

## Main Features

- 2D-LDV-Measurement with high spatial resolution
- Simple setup and alignment
- High long term stability
- High laser power transferred to the measurement volume
- Low measurement uncertainty
- Small dispersion effect
- Good visibility
- No optical transmission fibers
- Backward scattering arrangement
- Automatic traversing (optional)
- Robust transportation suitcases



Fig.2: 2D fp50-shift probe detached from combined probe

# Specifications

## Combined 2D shifted Profile Sensor LDV Probe

Dimensions	490 x 112 x 130 mm (L x W x H)
Weight	9.5 kg
Laser Power	75, 100, 150, 200, 300, 500 mW
Power Adjustment	30-100 % (*), optional
Wavelengths	532, 553 and 561 nm
Coherence Length	≥ 100 m
Focal Length	80, 160, 250, 400, 800 mm (**)
Beam Distance	45 mm and 70 mm
Length of measuring volume	0.5 mm-3 mm
Accuracy	0.3 %
Spatial resolution	1 % of MV length

(\*) 50-100 % for wavelength of 553 nm

(\*\*) Other focal lengths are available on request

## 2D and Profile Sensor LDV Controller

Dimensions	330 x 370 x 150 mm (*), 330 x 370 x 78 mm (**)
Weight	8.7 kg and 5.9 kg (**)
Signal Detector	Photomultipliers, separation module (**)
Communication	Ethernet Connection

(\*) LDV Controller also available for 19" rack

(\*\*) External PM Controller unit

## Spectral Analysis Module

Sample rates	50 MHz, 250 MHz, 1 GHz
Resolution	8 Bit, 12 bit, 14 bit
Input range	+/- 100 mV, +/- 200 mV, +/- 500 mV, +/- 1 V
Interface	PCI-ex

## Accessories

- Traversing units with up to 4 axes and displacement from 200 mm up to 2 m
- Traversing software for different suppliers integrated in LDV software *LDA Control Qt*
- Raytracing Software
- Receiving optical fibers
- Integrated IF Converter with 6 analog input channels (4-20 mA)
- ILA Workstation for LDV-Measurements
- Seeder and particles

## Accuracy Certification

Upon request we offer a calibration certificate for the accuracy (deviation of the fringe distance inside the measuring volume) from the German National Metrology Institute (PTB-Braunschweig).