sDAQ-Set

Data Acquisition System with 1 channel hot-wire measurement technique

- For experiments in the field of fluid mechanics and aero dynamics
- 8-channel data acquisition system with 16-bit resolution
- 1x eCTA hot-wire bridge + 2x HWP10 hot-wire probes
- 1x PT100 temperature sensor
- 2x ePressure differential pressure sensor
- Integrated barometrical pressure sensor

General Description

The *sDAQ* data acquisition system is specifically designed for experiments in the field of fluid mechanics and aerodynamics.

An 8-channel data acquisition card with 16bit resolution from the company National Instruments is the centrepiece of the device. The in- and outputs of the card are adjoint with plug-in connectors which allows the direct connection of the sensors that are supplied with the product. The necessary sensor supply is already connected with the connectors. The remaining analogous in- and output are placed onto BNC sockets. The connection to the computer consists of a USB interface.

An easy data acquisition software is included in the delivery. With this software the data acquisition card can be configured, the values can be read, and the physical units can be converted and saved. The data acquisition software is written in LabVIEW 2015 and is delivered as independently executable program as well as source code. Based on this program easy adaptations towards the respective measurement task can be made. For this purpose, the program package LabVIEW 2015 or higher from National Instruments is necessary which is not included in the delivery.

Components of Hot-Wire Measurement Technique
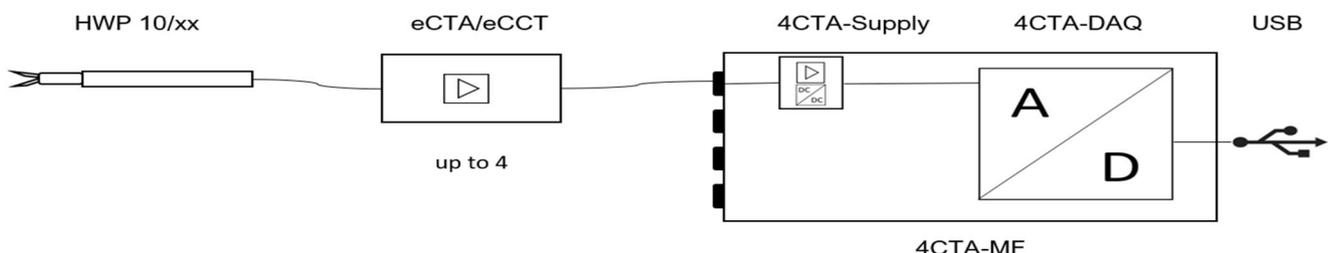
The measurement chain consists of four components:

Hot-wire probe – Hot-wire bridge – Supply and signal conditioning unit – A/D-converter.

Probe and bridge form a unit which must be calibrated as such. It must be considered that probe and bridge are in tune with each other and hence an elongation of the sensor cable is not possible. The connection cable of the eCTA-bridge can be customized.

Technical Specifications

Data acquisition	
8x analogue input	16 bit, ± 10 V, accuracy ±6 mV, total sampling rate 50 kS/s kHz
2x analogue output	16 bit, ± 10 V, accuracy ±7 mV, update rate 5 kS/s
8x digital in-/outputs	TTL (0-5 V)
1x Counter	32 bit / 5 MHz, TTL (0-5 V)
Further internal components	
PT100 amplifier	0…300° C default, configurable
Barometrical pressure sensor	800…1100 hPa
CTA-Mainboard	Supply eCTA and signal conditioning HD
Connections	
1x PT100 temperature sensor	Binder Serie 712, 5 pin
1x eCTA hot-wire probe	Binder Serie 712, 7 pin
2x ePressure pressure sensor	Binder Serie 712, 4 pin
3x analogue input	BNC
2x analogue output	BNC
8x digital in- and output	D-Sub, 9 pin
1x Audio	3.5 mm audio jack (30 Ohm)
Supply	Binder Serie 712, 2 pin
USB-interface	
Scope of delivery – set	
1x sDAQ	
1x plug-in power supply 12 V / 1 A	
1x Pt100 temperature sensor	
1x eCTA hot-wire bridge	
2x HWP10/90 hot-wire probe	
2x ePressure differential pressure sensor, pressure range at buyer's option	
1x headphone	
1x carrying case	
SVMdaq software for the recording of the measured values	