

Data acquisition

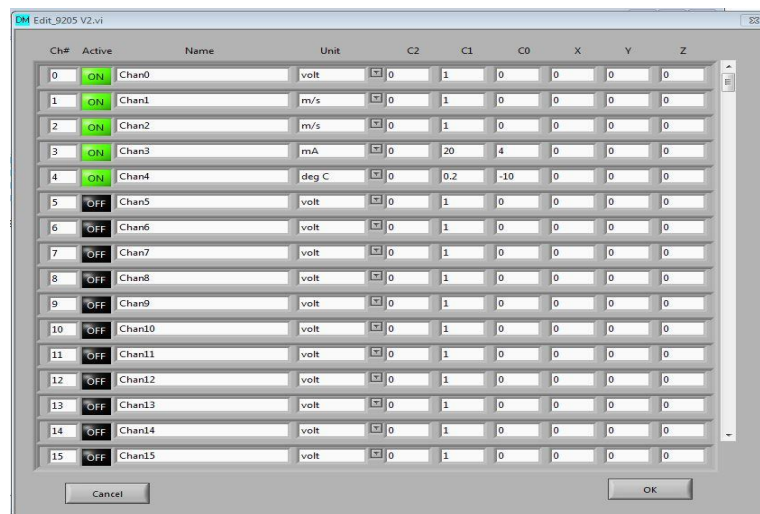
Delft-Measure 2

Delft-Measure is a data acquisition system, comprising both hardware and software. It is configured for operation in a PC environment under Windows. The standard version is primarily intended to acquire data of analogue instruments. On request digital instruments, e.g. counters and serial devices can also be supported. The operator controls Delft-Measure via a graphical user interface. Essential functions like setup, data acquisition and performance monitoring are supported. While data acquisition is in progress, acquired data is graphically visualized in strip chart fashion and also displayed numerically. Most importantly, the data values are recorded in file (ASCII or binary).

Hardware

Delft-Measure supports a large variety of data acquisition hardware, e.g. internal cards, external cards, USB based, Ethernet based and others. The performance depends upon the capabilities of the data acquisition hardware, the type of PC interface and the performance of the PC. Typical data acquisition hardware supports 4 to 64 analogue input channels at a digital resolution of 14, 16 or 24 bits. Input channels can be single ended or differential (hardware dependant). On most data acquisition hardware, the input gain can be adjusted under software control.

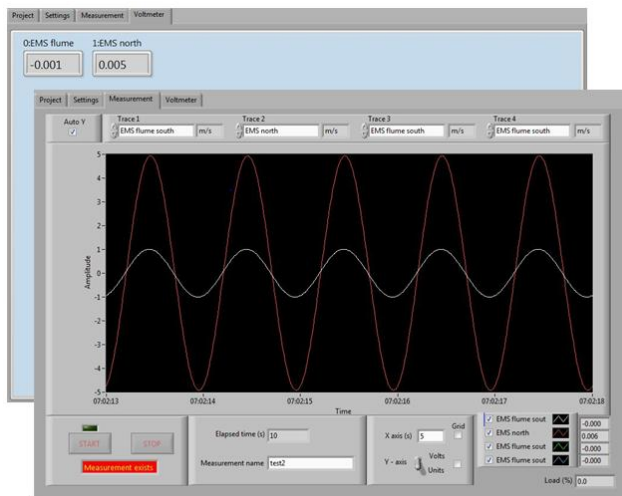
Essential for the data acquisition hardware is that it supports the range of the signal voltages to be acquired. Some standard industrial output signal ranges are 0 to 5, 1 to 5, 0 to 10, -10 to +10, 2 to 10 Volt. The 1 to 5 (and 2 to 10) voltage ranges typically pertain to current loop signals (4 to 20 mA) with the loop closed by a resistor. The output signals of the Deltares standard laboratory instruments like PEMS, UHCM, OSLIM, OPCON, ASTM, WAVO, GHM and PV-09/11, have output ranges from -10 to +10 volts or 0 to 10 volts. However, Delft-Measure supports any instrument of any manufacturer provided the instruments analogue output signal is compatible with the input range of the data acquisition hardware.



Most data acquisition hardware can accommodate instruments producing smaller output signals by stepping-up the input gain, support of mixed input gain settings is rather common. The input impedance is high, which limits signal loss over longer cables. The standard hardware supports BNC input connectors, bulkhead version. To accommodate easy access, the input connectors have been installed in one or more rows on a terminal box, the latter is connected to the data acquisition hardware. Other connection techniques, e.g. by screw terminals, can be delivered upon request.

Software

The Delft-Measure software assists the operator in setting up a measurement, provides supervision of the data acquisition process and stores acquired data in various file types. File naming can be automatic or manual; the automatic file naming system also supports recording in consecutive files of equal length. This feature is in



particular advantageous to limit file size when acquiring data from a large number of channels at a high sampling rate. The pass-over from the one file to the next is loss free, i.e. no samples will be skipped when closing the running file and opening the next. Several file formats are supported, e.g. numbered comma separated columns, tabbed columns and binary (AUKE compatible). In setup files also naming, scaling, offset, units and other parameters of individual data acquisition channels are recorded.

The graphic output supports visualization of any combination of four out of n channels versus time. Both time and parameter axes can be adjusted to the specific needs of the project. The scale of the time axis is operator adjustable over a wide range, e.g. 1 second for fast signals to 3600 seconds for very slow signals, with a maximum of 10000 seconds.

Specifications

The standard version of Delft-Measure does not support RS232 interfaces. However, specific instruments can be supported upon request provided that the communication protocol is well defined.

It should be noted that the specifications are typical for the supported hardware; the actual specifications of a specific product may be different. Please contact Deltares for technical details about specific products.

Delft-Measure software and hardware are delivered as a fully working combination together with the required drivers and installation software. Installation is straight forward and simple to execute.

Delft-Measure is AUKE compatible.

Technical specifications

Interfaces	USB, PCI, Ethernet, RS232
Input channels	4, 8, 16 or 64
Mixed gain	e.g. 1, 2, 4, 8 or 1, 10, 100 (depending on model)
Resolution	14, 16 or 24 bits
Data rate	several kS/s
Connection type	single ended / differential
Input impedance	1 MOhm

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