DEWESoft™
measurement innovation

DS-NET

DS-NET is a measurement and control system designed for many demanding applications, especially in the fields of

- Component Testing
- Engine Testing
- Process Performance Testing
- Structural Monitoring

The DS-NET system is rugged and scalable from e.g. a 2 channel control unit to a large synchronized measurement grid with thousands of channels. It is as flexible as being a stand alone data logger, a channel expansion of DEWESoft™ instruments, an Ethernet based distributed measurement system or a complete data acquisition instrument on its own.

The completely modular architecture ensures always a perfect fit of the system configuration for the application at hand. A wide range of DS-NET modules is available to support almost any type of input and output signals. These multi-function modules can be combined in countless ways and provide top notch data recording and process control.

The system is designed for practical industrial appliance and thus is comprised of all metal housings and robust electronics offering galvanic isolation. Popular connector options enable convenient sensor connection and in combination with the easy-to-use software ensure time saving system setup.

Considering all these facts, DS-NET will serve you many years and is a safe investment.

Key Features

- Medium speed data acquisition up to 10 kS/s/ch
- Application areas
  - Distributed data acquisition, Ethernet based
  - Stand alone data logging
  - Complete Instrument running local DEWESoft™ software
  - Customized LabVIEW™ based solution
  - Channel expansion for DEWESoft™ instruments
- Completely modular and thus very flexible in configuration
- Scalable from two to several thousand channels
- Portable and 19" rack-mount lines
- REAL-TIME performance
- Redundant data storage
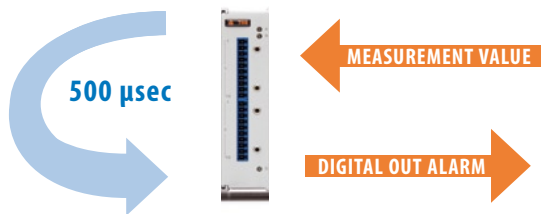- Operating temperature -20° C to +60° C

Application areas

Ethernet Data Acquisition System

DS-NET is a very flexible and compact Ethernet based data acquisition system. There is a portable line as well as a 19" rack-mount line. Both lines offer very precise galvanically isolated signal conditioning and enhanced features and reliability. Usually the DS-NET system is connected to a host computer running DEWESoft™ online data acquisition software. Up to 160 kS/s can be received from a single DS-NET system and then be processed, visualized and stored on the host computer.

But DS-NET also offers real-time performance! Since Microsoft Windows® is no real-time operating system it can not guarantee certain reaction times. DS-NET runs its own internal real-time operating system and can handle output and alarm functions directly inside the instrument. Thus defined response times are guaranteed - completely independent of any PC.

Measurement PC

Ethernet Switch

DS-NET; Gate and Modules

Fixed latency time

Alarm handling inside module

SYNC

DS-NET; Gate and Modules

500 µsec

MEASUREMENT VALUE

DIGITAL OUT ALARM

Stand alone data logging

Every DS-NET system is ready to be used as a rugged stand-alone data logger - without any additional costs! The logging process is configured by a single click in DEWESoft™ software. Measurement data and calculated values can be stored to a USB memory-stick; up to a limit of 32 GB.

For triggered storing an aggregate sampling rate of max. 160 kS/s and up to 2 million samples per trigger event are the limit.

For continuous storing an aggregate sampling rate of max. 20 kS/s is the limit. Data is stored into files of max. 2 million samples each without any gap between the files.

USB sticks can be hot-swapped during measurement without loosing any data thanks to the internal buffer memory.

Data analysis can be done offline in DEWESoft™ software.

Redundancy in data acquisition

The combination of the data logging feature and DEWESoft™ online recording software gives you redundancy in data acquisition for maximum reliability. Both, a USB stick and a measurement PC (via Ethernet), are connected to the DS-NET system in parallel. Data is logged to the USB stick while you are using DEWESoft™ to process, analyze and store the very same data at the same time!

As a result, even if your Ethernet connection should break during a measurement, your data is safe, since it is logged to the USB stick.
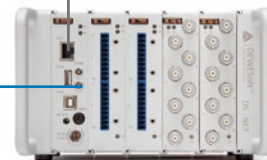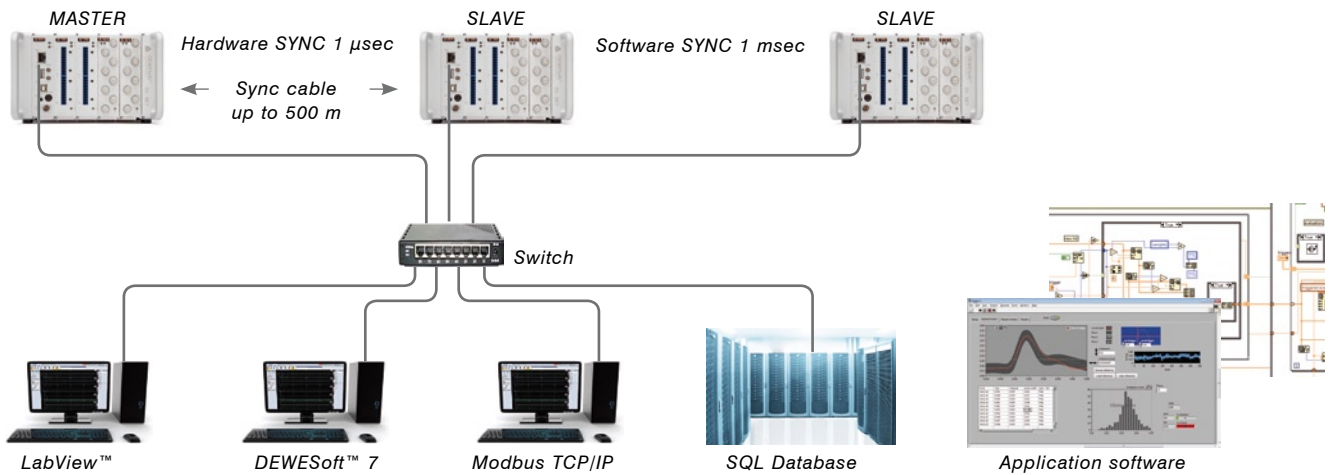
Parallel data logging on two media

Industrial Monitoring – Data Cloud

Multiple DS-NET systems are connected to an Ethernet LAN so that the measurement data can be processed, analyzed and stored by any computers within the network. For highest data quality all the measurement nodes are synchronized to each other either by hardware for best performance (time skew typ. 1 µs) or software (time skew typ. 1 ms).

Usually LabVIEW™ software applications are created for each particular installation.

Clients also can read the online values via Modbus TCP/IP and of course data can be stored to your SQL database, even to a remote server over the Internet!
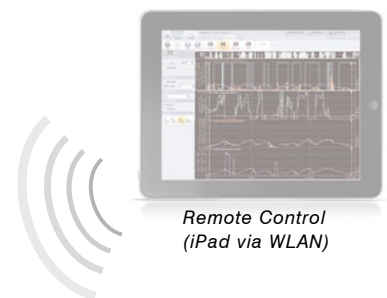
Of course DEWESoft™ software can be used, too.

MASTER   SLAVE   SLAVE

Hardware SYNC 1 µsec   Software SYNC 1 msec

← Sync cable up to 500 m →

Switch

LabView™   DEWESoft™ 7   Modbus TCP/IP   SQL Database   Application software

Complete Instrument running local DEWESoft™ software

For maximum portability there is a compact CPU module available which adds a full-featured PC to your DS-NET system and turns it into a complete instrument. The CPU module enables you to run DEWESoft™ software locally. Measurement data is stored directly onto the internal flash disk and the local PC can be remote accessed via WLAN! Attach a keyboard and a display to the instrument for full control and to display the measurement data.

- Analog IN
- Digital / Counter In
- CAN BUS
- WLAN
- GPS
- UPS Power supply

Remote Control
(iPad via WLAN)

WLAN

CAR-UPS

12 V

DS-NET;
Gate and Modules

GPS ANALOG SENSORS DIGITAL CAN   USB

DEWESoft Display
MOB-DISP-10
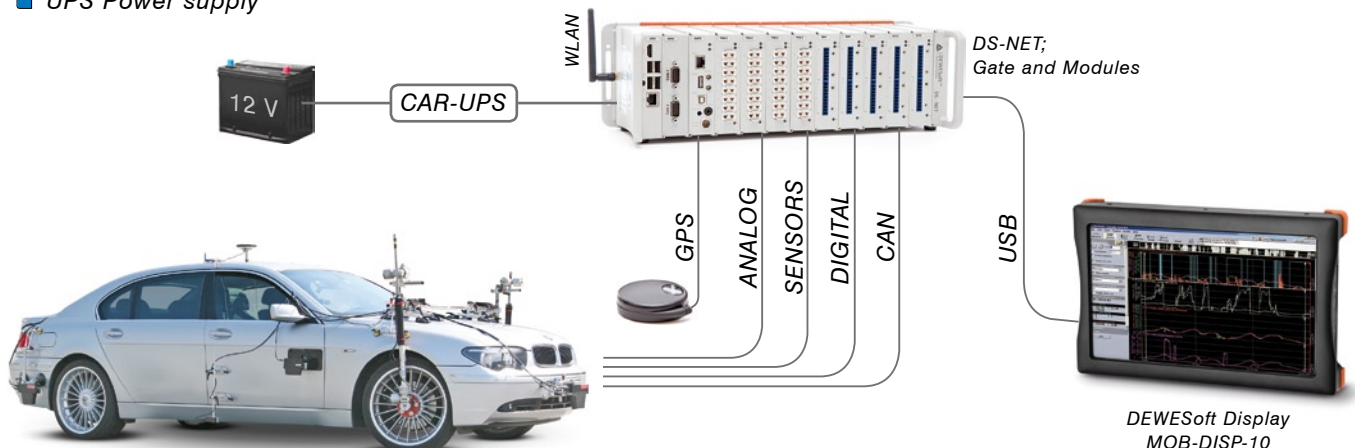
System Architecture

Any DS-NET system starts with one DS-GATE as the base and then up to 16 DS-NET-modules can be chosen to complete one system. An optional DS-NET CPU module can be added to include a local computer.

The ingenious mechanics and electronics designs of the portable systems enable configurations of any number of modules without wasting any space. This way a configuration of e.g. one GATE with 4 modules is exactly 5 slots wide − plus handles on both sides.

Option:
DS-NET CPU

DS-GATE

DS-GATE

The DS-GATE is the central controller for each node. It powers and controls the DS-NET-modules and provides an Ethernet TCP/IP interface to a host computer. A 12 MB data buffer guarantees gap-free data transmission.

The DS-GATE has Sync In/Out interfaces to daisy-chain multiple systems and offers a serial interface for GPS or IRIG-B devices. One USB interface is included for direct data logging to a USB memory stick.

Advanced calculations, alarm handling, Boolean combinations, etc. can be defined and run within the DS-GATE independent from any PC or Windows operating system. The max. total sampling rate supported by one DS-GATE is 160 kS/s.

Option: DS-NET CPU

The DS-NET CPU adds a full-featured PC to your DS-NET system and turns it into a complete instrument. The CPU module enables you to run DEWESoft™ software locally.

The module includes an INTEL® Atom 1.6 GHz CPU with 1 GB RAM and a 64 GB flash disk. It connects to DS-GATE via Ethernet and offers further interfaces like 4x USB, WLAN and DVI.

CPU	Intel Atom Z530 1.6GHz
RAM	1GB
Hard-disk	64 GB FLASH hard disk MLC
Operating System	Windows XP or Windows 7
Display & Graphics	DVI Digital output up to 1920 x 1200 through HDMI connector HDMI to DVI adapter included
Networking	1x 1000 BaseT Ethernet
802.11g WLAN	WiFi antenna included
USB	4 USB 2.0 High Speed ports
Operating Temperature	0 to 50° C
Power Consumption	max. 8 W at full CPU load

**This module is not available for the rack line.**
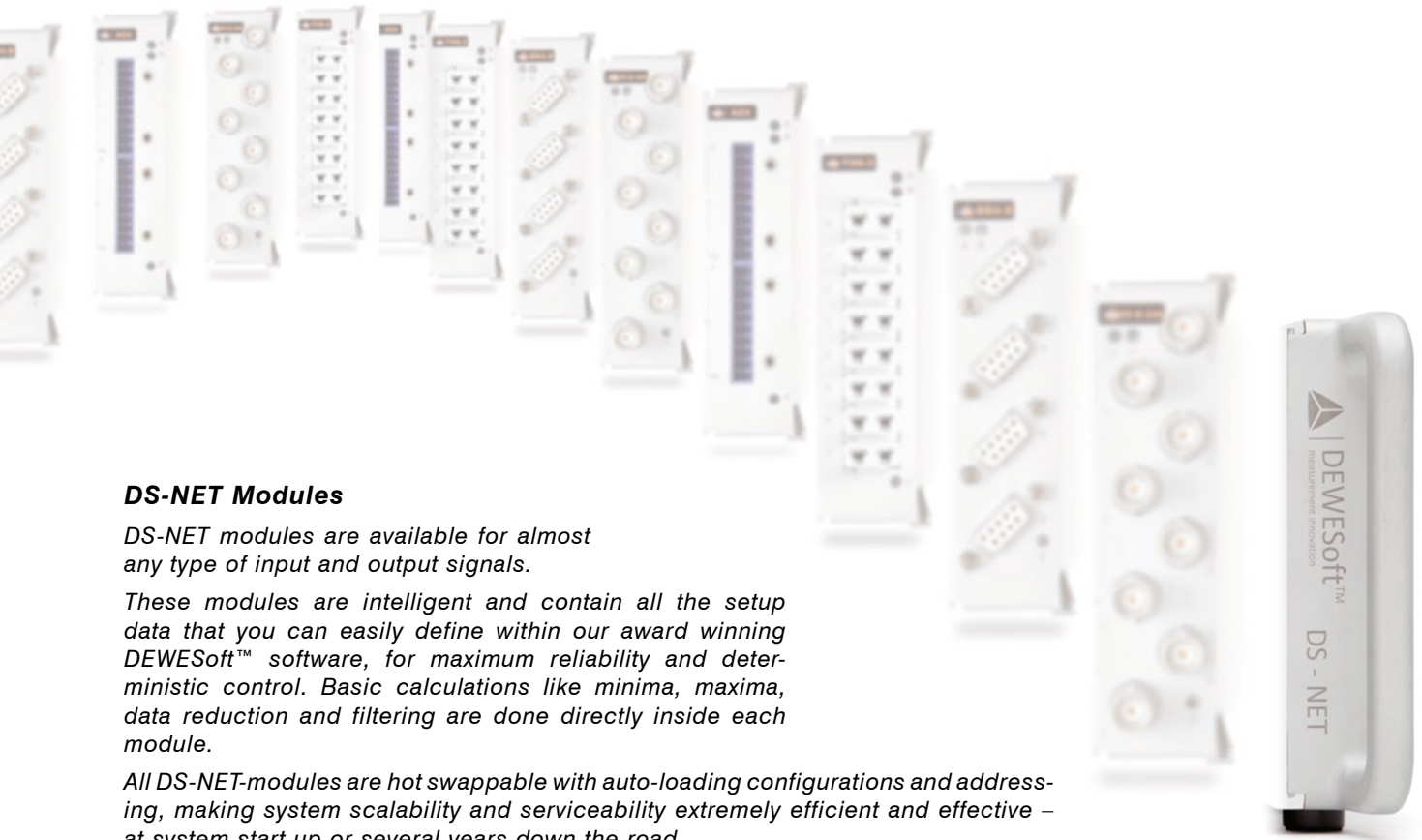
DS-NET Modules

DS-NET modules are available for almost any type of input and output signals.

These modules are intelligent and contain all the setup data that you can easily define within our award winning DEWESoft™ software, for maximum reliability and deterministic control. Basic calculations like minima, maxima, data reduction and filtering are done directly inside each module.

All DS-NET-modules are hot swappable with auto-loading configurations and addressing, making system scalability and serviceability extremely efficient and effective − at system start up or several years down the road.

|	
Ethernet interface	for configuration and data output Protocols: TCP/IP, UDP, PING, ASCII, Modbus TCP/IP Services: DHCP, FTP-Server, FTP-Client, e-mail-send-client (SMTP)
High data rate over Ethernet	160 kS/s total sampling speed per system example: 16 channels with 10 kS/s per channel 80 channels with 2 kS/s per channel
Synchronization and clock	Master Slave principle, IRIG standard, DCF77, AFNOR etc. GPS time and position data NMEA0183, SNTP over Ethernet (all channels synchronized)
12 MB int. data buffer memory	Data buffer for block transfer of measurement data, different logger possibilities, expandable by USB device
PAC functionality	data logger, alarm handling, mathematics, numeric, boolean combinations, functions generator
Module Connection	up to 16 DS NET modules via 2 UARTS, Baud rate up to 24 MBaud each UART
Galvanic isolation	all channels and power supply 500 V_{DC}

Fixed installation
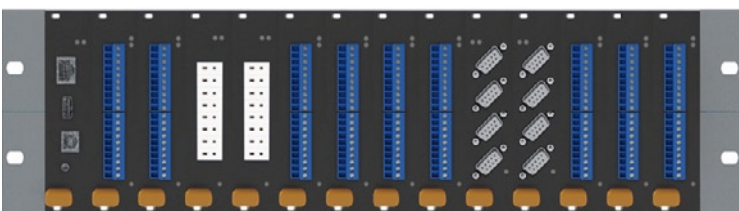
The 19" rack-mount systems have a backplane for one DS-GATE and 13 slots for DS-modules. Filler panels are installed into unused slots.

DEWESoft Measurement Innovation

DS-NET

	ACC2	CFB2	BR4	V8	V8-200	V4	V4-HV	TH4	TH8	DIO8	AO4
Number of Channels	2	2	4	8	8	4	4	4	8	8	4
Data Rates [Hz]	10k	10k	10k	10k	10k	10k	10k	1k	100	10k	10k
Isolation Voltage [V]	500	500	500	500	500	1.2k	1.5k	1.2k	500	500	500

Input Types

	ACC2	CFB2	BR4	V8	V8-200	V4	V4-HV	TH4	TH8	DIO8	AO4
Voltage / **max. Range**	■ ±60V		■ ±10V	■ ±10V	■ ±200V	■ ±10V	■ ±1.2kV	■ ±100 mV	■ ±80mV		
Current (0..25 mA)	■		■	■		■		■			
Resistance	■		■								
Potentiometer	■		■								
Pt100, Pt1000	■		■								
Thermocouple	■		■					■	■		
Full, half and quarter bridges	■	■	■								
Inductive full and half bridges		■									
LVDT		■									
IEPE/ICP Sensors	■										
Frequency Signal										■	■
Pulse Width										■	■
Counter										■	■
Time										■	■
Status	■	■		■						■	■

Output Signal

	ACC2	CFB2	BR4	V8	V8-200	V4	V4-HV	TH4	TH8	DIO8	AO4
Voltage (±10 V)		■									■
Current		■									■
Frequency Signal										■	■
Pulse Width										■	■
Status	■	■		■						■	■

Optional Connectors

	ACC2	CFB2	BR4	V8	V8-200	V4	V4-HV	TH4	TH8	DIO8	AO4
BNC				V8-B							
DSUB			BR4-D								
Thermocouple									TH8-C		

Special Modules

CAN 2	max. 2 modules (4 CAN channels) connected to one DS-NET CPU
SENSOR power supply	max. 1 module per system

DS-NET ACC2
Multiple Input Module

2 universal analogue input channels	voltage: ±60 V, ±10 V, ±1 V, ±100 mV current: 0..25 mA, potentiometer, resistance: 100 kΩ, 4 kΩ, 400 Ω, Pt100 & Pt1000: -200..850 °C, thermocouple types: B, E, J, K, L, T, U, N, R, S bridge: ±2.5 mV/V, ±50 mV/V, ±500 mV/V (@ 2.5 V excitation), IEPE sensors: ±10 V; constant current 4 mA
Resolution	24 bit
Sampling rate	10 kHz per channel (thermocouple 8 Hz)
2 digital I/O channels	input: state, tare, memory reset output: state alarm, threshold voltage: max. 30 V
Signal processing	linearisation, digital filter, average, scaling, min/max storage, RMS, arithmetic, alarm
TEDS	class 1 and class 2, according IEEE 1541.4
Galvanic isolation	of I/O-signals (each channel), power supply and interface isolation voltage 500 V

DS-NET CFB2
Carrier Frequency and AC/DC Bridge Module

2 analogue input channels	Strain gauge and inductive measuring bridges (full, half, quarter), LVDT, RVDT
DC and carrier frequency (CF) principle	DC excitation, 600 Hz CF excitation, 4.8 kHz CF excitation for bridges
1 analogue output	Voltage ±10 V, 10 kHz
Resolution	24 bit
2 digital I/O channels	input: state, tare, memory reset output: state, alarm, thresh hold
Signal processing	linearisation, digital filter, average, scaling, min/max storage, RMS, arithmetic, alarm
Galvanic isolation	of I/O-signals (each channel), power supply and interface isolation voltage 500 V

DS-NET BR4
Multiple Input Module

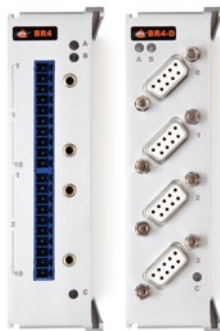|	
4 universal analogue input channels	voltage: ±10 V, ±1 V, ±100 mV current: 0..25 mA, potentiometer, resistance: 100 kΩ, 4 kΩ, 400 Ω, Pt100 &Pt1000: -200..850 °C, thermocouple types: B, E, J, K, L, T, U, N, R, S bridge: ±2.5 mV/V, ±50 mV/V, ±500 mV/V (@ 2.5 V excitation)
Resolution	24 bit
Sampling rate	10 kHz per channel (thermocouple 8 Hz)
Signal processing	linearisation, digital filter, average, scaling, min/max storage, RMS, arithmetic, alarm
Galvanic isolation	of I/O-signals (each channel), power supply and interface isolation voltage 500 V
Option	D-SUB connectors model: DS-NET BR4-D

DS-NET V8
Voltage Module

8 galvanically isolated input channels	differential voltage ±10 V , current via shunt 25 mA (V8-SHUNT), common mode voltage: 100 V permanent
Resolution	24 bit
Sampling rate	10 kHz
2 digital I/O channels	input: state, tare, reset output: state alarm max. 30 V
Signal processing	linearisation, digital filter, average, scaling, min/max storage, RMS, arith-metic, alarm
Galvanic isolation	of I/O-signals (each channel), power supply and interface isolation voltage 500 V
Option	BNC connectors model: DS-NET V8-B

DS-NET V8-200
Voltage Module

8 galvanically isolated input channels	isolated differential input voltage ±200 V
Resolution	24 bit
Sampling rate	10 kHz
2 digital I/O channels	input: state, tare, reset output: state alarm max. 30 V
Signal processing	linearisation, digital filter, average, scaling, min/max storage, RMS, arithmetic, alarm
Galvanic isolation	of I/O-signals (each channel), power supply and interface isolation voltage 500 V

DS-NET V4
High Isolation Voltage Module

4 galvanically isolated input channels	Voltages at high potential, ranges 100 mV, 1 V, 10 V current via shunt 25 mA
Resolution	24 bit
Sampling rate	10 kHz per channel
Signal processing	linearisation, digital filter, average, scaling, min/max storage, RMS, arithmetic, alarm
Galvanic isolation	1200 V short-term 5 kVpk

DS-NET V4-HV
High Voltage Module

4 galvanically isolated input channels	Voltages, range 40 V, 120 V, 400 V, 1200 V
Resolution	24 bit
Sampling rate	10 kHz per channel
Signal processing	linearisation, digital filter, average, scaling, min/max storage, RMS, arithmetic, alarm
Galvanic isolation	1500 V short-term 5 kVpk

DS-NET TH4
High Isolation Thermocouple Module

4 galvanically isolated input channels	for non-isolated thermocouples at high potential
Cold junction compensation	internal
Dynamic linearisation	Optimum positioning of interpolation points in selected range, types B, E, J, K, L, T, U, N, R, S programmable
Resolution	24 bit
Sampling rate	1 kHz per channel
Signal processing	digital filter, average, scaling, min/max storage, arithmetic, alarm
Galvanic isolation	1200 V short-term 5 kVpk

DS-NET TH-8
Thermocouple Module

8 galvanically isolated input channels	thermocouples and voltages in the range of ±80 mV, common mode voltage: 100 V permanent
Cold junction compensation	DS-NET TH8-C: internal DS-NET TH8: TH8-CJC connectors available (option)
Dynamic linearisation	Optimum positioning of interpolation points in selected range, types B, E, J, K, L, T, U, N, R, S programmable
Resolution	24 bit
Sampling rate	100 Hz per channel
Signal processing	digital filter, average, scaling, min/max storage, arithmetic, alarm
Galvanic isolation	of I/O-signals (each channel), power supply and interface isolation voltage 500 V
Options	DS-NET TH8-C: with integrated CJC DS-NET TH8-C-HS: high speed with with integrated CJC: 1 kHz (@2 channels) 400 Hz (@4 channels) 100 Hz (@ 8 channels)

DS-NET DIO8
Digital Input/Output Module

8 digital inputs and 8 digital outputs	configurable as counter, frequency, PWM and time inputs, frequency or PWM output, state in or output
State in and outputs	process- and host controlled
Frequency in and outputs	frequency measurement up to 1 MHz (Chronos method), frequency output up to 10 kHz
Counter	forward/backward counter, quadrature counter with reference zero recognition (reset/enable), up to 1 MHz
PWM in and outputs	measurement of duty cycle and frequency, output with variable frequency and/or duty cycle
Time measurement	
Galvanic isolation	of I/O-signals (group/group), power supply and interface isolation voltage 500 Veff

DS-NET AO4
Analogue Output Module

4 galvanically isolated analogue outputs	voltage ±10 V, current 4..20 mA selectable
DAC resolution 16 bit	10 kHz sample rate
4 digital input and 4 digital output channels	configurable as 2 counter, 2 frequency, or 2 PWM inputs, 2 frequency or PWM output, state in- or output, max. 30 V
Frequency in and outputs	frequency measurement up to 1 MHz (Chronos method), frequency output up to 10 kHz
Counter	Forward/backward counter, quadrature counter with reference zero recognition (reset/enable), up to 1 MHz
PWM in and output	measurement of duty cycle and frequency, output with variable frequency and/or duty cycle
Time measurement	
Outputs freely scalable	
Galvanic isolation	of I/O-signals (each channel), power supply and interface isolation voltage 500 V

DS NET CAN2
CAN Bus Input Module

2 high speed CAN interface channel 1Mbaud
Isolated CAN input 500V
VECTOR technology inside
Supports CAN 2.0B standard
Functions: send, receive, listen (silent), buffer
Needs DS-NET-CPU !

DS NET SUPPLY
Sensor Power Supply Module

4 galvanically isolated DC sensor supply voltages	+5 V +12 V +15 V +24 V
Voltages combinations	the voltages can be can be connected to get any possible voltage combination (e.g. 17 V, 20 V, ...)
Supplied Power	5 W per output voltage
Galvanic isolation	each voltage is galvanically isolated with 1.5 kV

This module is not available for the rack line.
Only one SUPPLY module can be used per DS NET system.

DEWESoft™
measurement innovation

DEWESoft™ is the solution to acquire signals simultaneously from different sources even with different sampling rates, display and store them in one file. The new post processing features in version 7 offer all the mathematic and signal analysis features in the analysis mode.
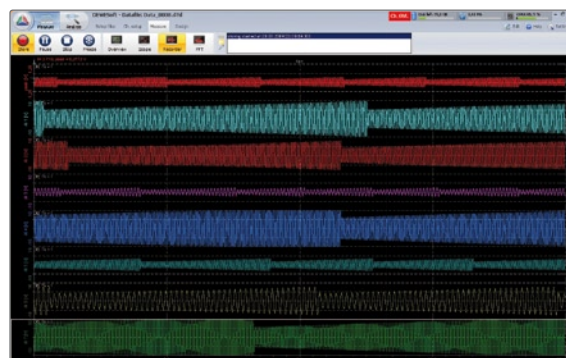
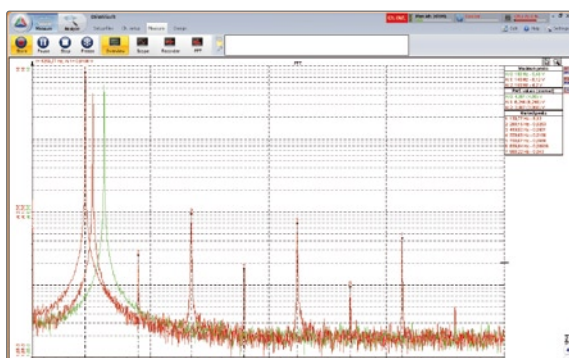## The Acquisition

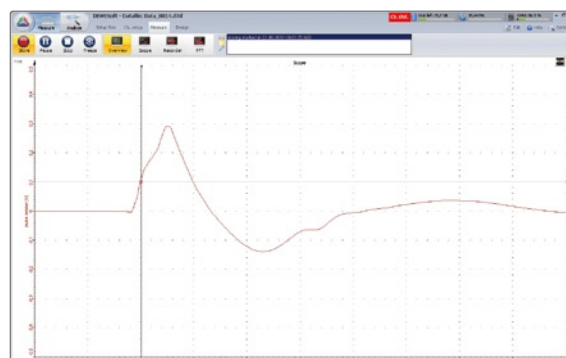*Ready to use predefined instruments like:*

Digital and Analog Meter


Recorder

FFT Analyzer


Scope Mode/Trigger

Multiple Triggers
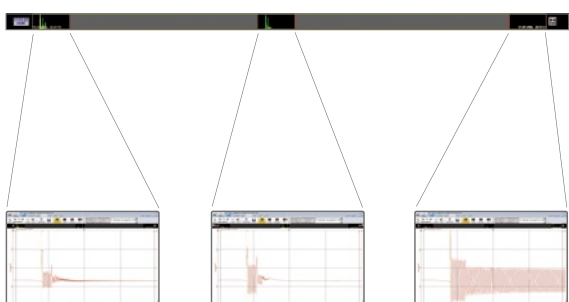
Trigger Types

*Simple edge
(either rising or falling slope)*

*Window trigger
(two levels; entering or leaving logic)*

*Pulsewidth trigger
(longer or shorter than duration logic)*

*Window and Pulsewidth
(completely selectable as above)*

*Slope Trigger
(rising or falling slope with steepness selection)*

Or define the combination of many more instruments ...

Measure	Scope	Recorder	FFT	Video	Export	Print
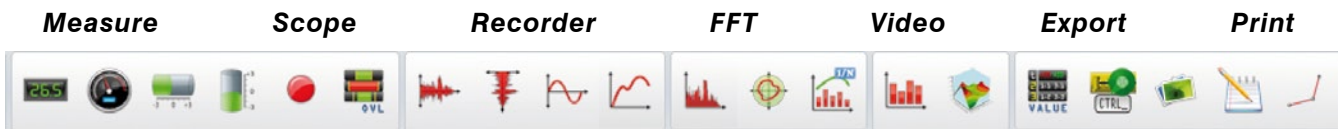
Key Features

- *Perfect sync of analogue, digital, counter, CAN, GPS, Video, ARINC, 1553 data ... and even more*

- *Fast and easy setup of all kinds of input channels*

- *Failsafe and simple sensor setup by TEDS or sensor database*

- *Powerful online data processing, MATH functions, filters, statistics, reference curves*

- *Attractive online display of all kind of data, creation of displays is a matter of seconds*

- *Various storing strategies, stream data to hard disk (up to 100 MB/s), triggered storing or database storing*

- *Analogue, digital or CAN data output, powerful function generator, alarms, CAN messages*

- *Build test procedures in a form of workflow diagram by means of our sequencer*

- *Fast data analysis, reload GB files in seconds*

- *Post processing the data files is possible on any computer*

- *Ready to use applications, Power calculations, Combustion analysis, Torsional Vibration, Order tracking, Sound analysis, Frequency response function, Human vibrations, Balancing ...*

IN and OUTPUTS

Analog inputs

*Voltage, current, temperature, vibration, strain gages*

DEWESoft™ offers the interface to most popular A/D systems like DEWE-43, DS-NET DEWETRON ORION, Spectrum, National Instruments. Many interfaces are supported like PCI, PXI, USB, FireWire or Ethernet. Up to 2000 analogue channels with sampling rates from kS/s to MS/s up to 24 bit vertical resolution are supported.

Counter inputs

From basic counting to advanced counter modes

There are several types of counters: our so called super counters (DEWE-43, DS MINITAUR) allow very precise timing and counting measurement. The counting is also performed between the counts and DEWESoft™ calculates the counter values interpolated to each acquired sample

ADC-clock
Counter input
Ideal counting
ORION-counter
Software interpolation
Standard counter
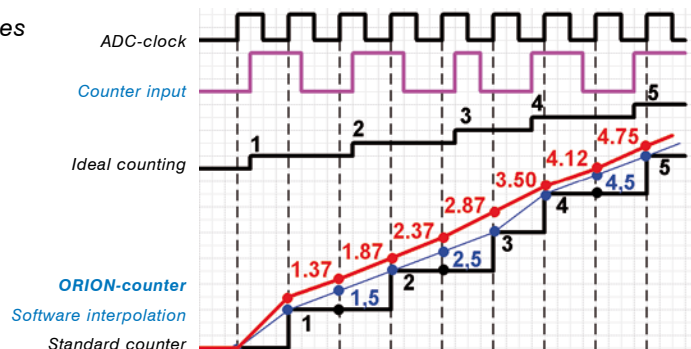
Video input

Synchronized video acquisition from web-, thermo- and high speed cameras

For applications requiring video which is truly synchronized to the dynamic sample rate, there is support for **DEWE-CAM-01** from DEWETRON. A high quality image with automatic gain and iris, and even shutter speed (selectable) are controlled directly by the A/D card, which generates a pulse to drive the camera. The result is a stunning correlation between each frame and the data. It is also possible to sync the camera to the angle-based output of a rotation ... this allows the camera to be put in phase with a fan or other rotating component, even when the speed is changing continuously. The **DEWE-CAM-01** can acquire video at 640x480 up to 72 fps, and at 320x240 up to 240 fps. Other speeds are possible with different image sizes.

Thermo Cameras as supported from FLIR, NEC and MICRON. High speed cameras from Photron which can acquire more than 100000 frames per second are supported for post analysis
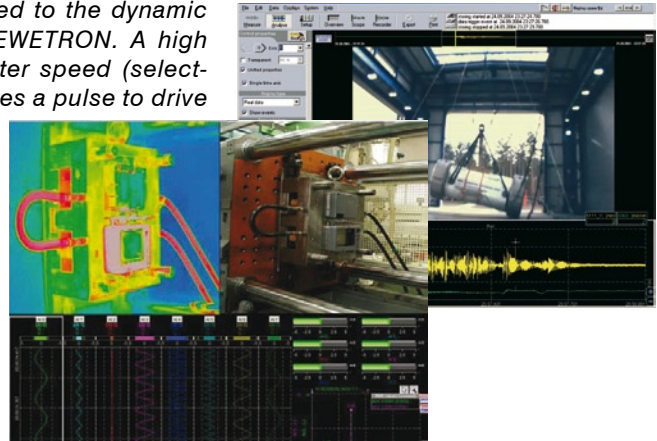
Vehicle bus interfaces

CAN, OBDII on CAN, J1939 and J1587 interface support

One of the most important vehicle buses today is the CAN (controller area network) bus. DEWESoft™ 7 supports following CAN devices on PCI, PCMCIA or USB interfaces: DEWESoft™ DEWE-43 and DS MINITAUR, DEWETRON CAN devices, National Instruments, Softing, Vector, and more...

Today the CAN bus is present in cars, trucks, boats, tanks, tractors, harvesters and basically anything which has a modern engine built in.

GPS interfaces

Advanced GPS support and capabilites

GPS technology is used in three main application areas: to find the position on earth, to determine the velocity of an object and to get precise absolute time information.

DEWESoft™ 7 uses all three areas. For basic positioning, DEWESoft™ supports NMEA GPS interfaces. If you have a GPS receiver which sends the data according to NMEA specification, it will work in DEWESoft™ up to a real-time rate of 100 Hz.

Aerospace interfaces

*PCM telemetry, ARINC and MIL-STD-1553 interaces support*

Aircrafts as well as space vehicles such as the US Space shuttle acquire on-board data, digitize them, then send the data to ground stations. They do this via pulse code modulated data stream, also known as PCM. DEWESoft™ supports the Ulyssix Tarsus PCM-01 card to decode, visualize and store this PCM data. The data is equipped with an IRIG clock time stamp and therefore can be matched to the analog FM channels, video channels, and other data sources. For more info, see the PCM data solution report.
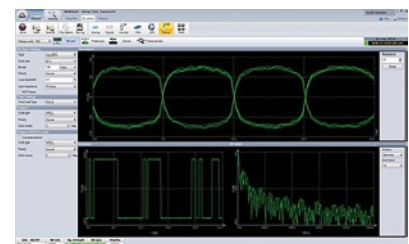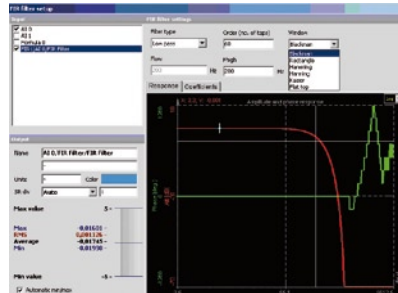
Data processing capabilities

are one of the key points of Dewesoft. Over the past years we have covered lots of application areas with expert modules that the user is only a click away from the total solution. With version 7 we have expanded these that all the processing power is available also on already stored data. So you can simply record raw data and apply the math afterwards.
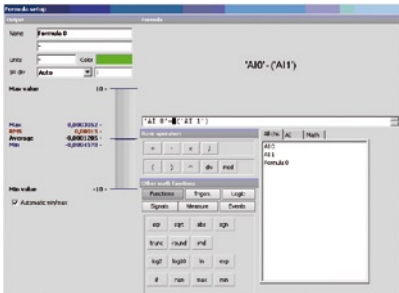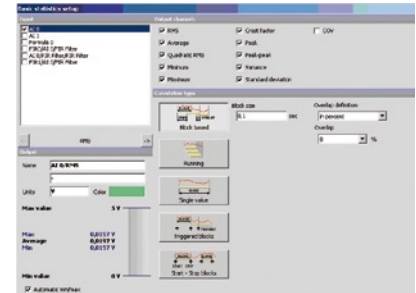
*any Math Formular*   *IIR and FIR Filters*   *Statistical Functions*

All this and many more functions are available ONLINE in the measure and OFFLINE in the analysis mode!

DEWESoft™ options

POWER Analysis

The Power module is a very extensive module which can calculate power and power quality parameters from measurement of voltage and current. It has a software PLL which measures the base frequency down to 1 mHz resolution. The line frequency can be 50, 60, 400, 800 and also variable. In fact, DEWESoft™ power module is, as we hear from our customers, the only PC based software which can measure correctly variable frequency sources, like frequency inverters. DEWESoft™ calculates single or three phase power with or without current channels. It calculates active, reactive and total power. It also calculates base and higher harmonics of voltage, current, power, and impedances. The background harmonics can be easily subtracted to allow differential measurement to normal operating conditions. The power module calculates also line unbalance, periods and flicker values according to the power quality standard.
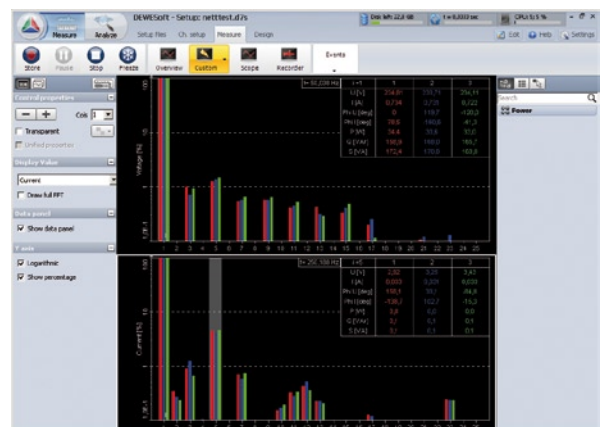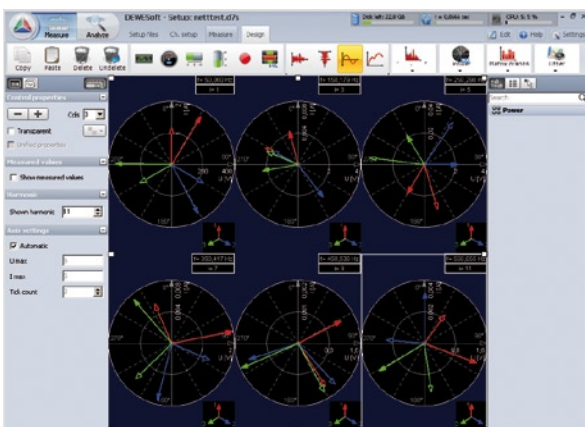
Dynamic Signal Analysis

1. Structural analysis:

One big part when developing new products in the structural test. Also measuring operation states of a system is often necessary to be sure that no dangerous excitation state occurs on the structure. DEWE-DSA provides all necessary functions for structural analysis data acquisition. The file export capability stores the measurements in .uff format, which is used by most of the popular modal analysis programs.

Features

- Transfer Function Measurement (FRF)
- Coherence Spectrum
- Shock Response Spectrum (SRS: offline calculation in FlexPro)
- SISO, SIMO, MISO, MIMO configuration
- Deflection mode animation
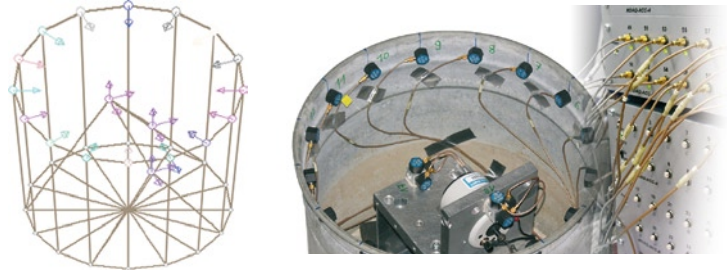
2. Machine Diagnostics

Machinery diagnostics is now, more important than ever to ensure long operation cycles and low service costs. The measurement and analysis of vibration to detect bearing damage or resonance effects is a cost-effective method. DEWE-DSA provides functions to make fast and accurate machinery diagnostics, such as time and angle based order analysis or waterfall diagrams.

- **Torsional and Rotatational Analysis**
  - Reference angle [deg]
  - RPM [rpm]
  - Rotational angle [deg]
  - Rotational velocity [deg/s]
  - Rotational acceleration [w/s]
  - Torsion angle [deg]
  - Torsion velocity
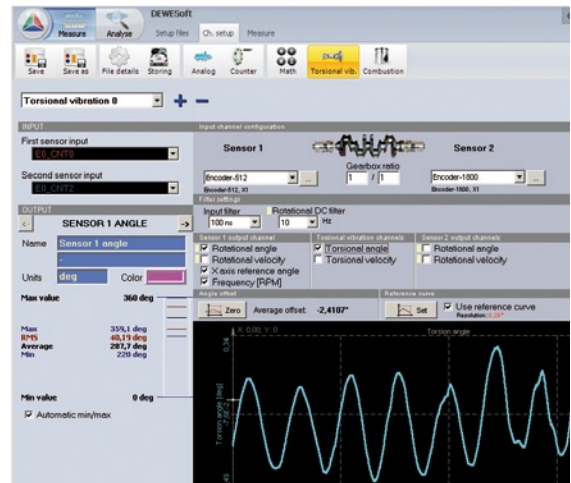
- **Balancing**

DEWESoft™ provides an in-field-balancing method, which enables balancing of the machine. This saves time and money because balancing can be done in situ and the rotor is balanced in its operating condition, which includes the whole structure of the machine.

Balancing includes in general five steps:

1. Measuring the imbalance
2. Add a trial mass
3. Add the correction mass (balancing)
4. Measuring the balanced system
5. Repeat steps 2 to 4 if needed

Balancing is done either for one plane or two planes. One plane is used for small rotors, where two plane is used for long rotors.

3. Order Tracking

Features

- ■ *Dedicated re-sampling method for sharp orderseparation*
- ■ *Measurement in time domain to keep all benefits*
- ■ *2D, 3D waterfall in order or frequency domain*
- ■ *Amplitude, phase extraction*
- ■ *Recalculation in post processing*
- ■ *Phase synchronous rpm input with 12.5 ns resolution*
- ■ *Easy to setup*
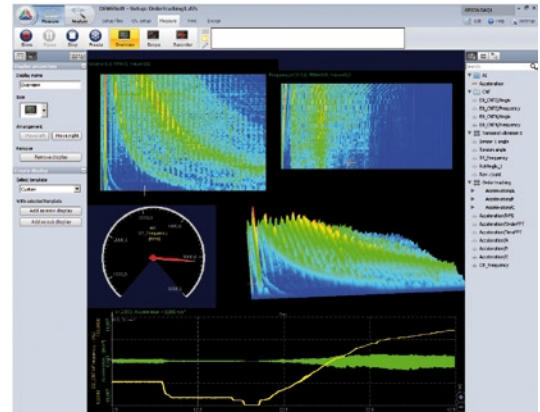
Analysis

In the easy to use analyze screens data could be shown and analyzed in many different ways. So you could draw orders or narrow band FFT in 2D and 3D waterfall diagrams. Either displayed with time history or rpm. Specific orders or phase information could be recorded over time, rpm or any other physical value. All analysis screens could be arranged in a convenient way.

4. Acoustics

Features

- ■ *Real time narrow band FFT*
- ■ *1/1, 1/3, 1/12, 1/24 band octave spectrum*
- ■ *A-, B-, C-, D-weighting (frequency weighting)*
- ■ *Fast-, Slow-, Impulse-weighting (time weighting)*
- ■ *Leq-Calculation*
- ■ *Sound Level Meter*
- ■ *FFT, octave analysis and weighting*
- ■ *Sound Level Meter*
- ■ *Sound Power Measurement*
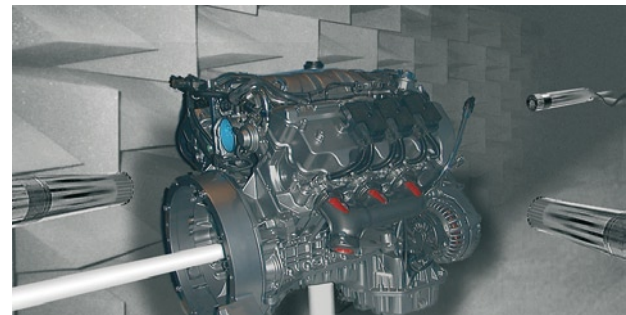
Sound Power Measurement

Sound power measurements are important for noise measurements and qualification of noise emission from machines and products (CE mark). They can be done with two measurement procedures, measuring the sound pessure or the sound intensity. Both are supported with DS MOD DSA system. Following corrections will also be done:
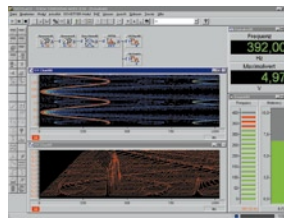
- ■ *Barometric pressure and temperature (K0)*
- ■ *Background noise (K1)*
- ■ *Surrounding correction (K2)*
- ■ *Measurement aread (Ls)*
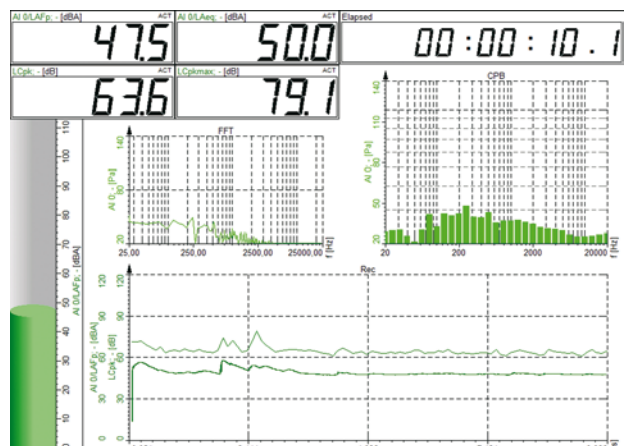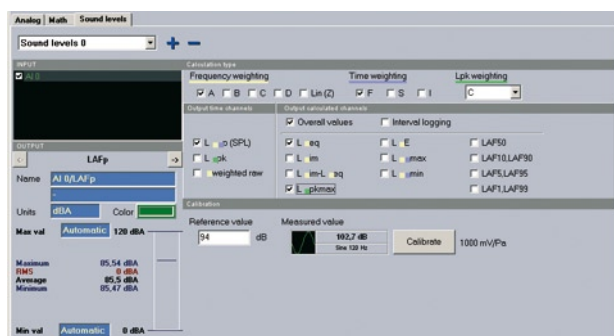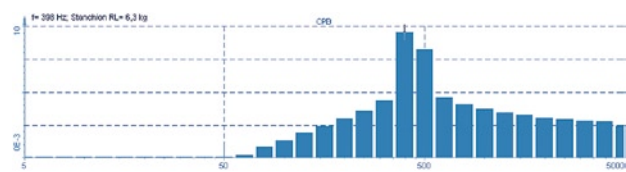
Additional Software support
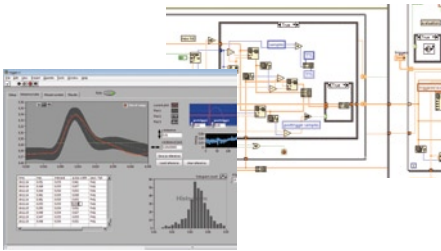

LabVIEW supported

DASYLab supported

*Standard language supported*

Channel Expansion

In certain applications DEWESoft™ dynamic instruments need to be combined with low/medium speed channels. One typical example is a recording instrument for dynamic signals like acceleration, sound, strain, etc. which also needs a bunch of 100 Hz low speed temperature inputs. In such an application a combination of a DEWESoft™ instrument with a DS-NET system is the perfect fit.

LAN

SYNC
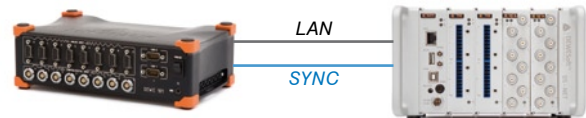
DEWE-101
16 chs up to 200 kS/s/ch
24 bit, 8 counters, 2 CAN

Expansion: DS-NET
Multiple channels up to
160 kS/s aggregate

Another way to mix low/medium and dynamic channels is that DS-NET is setup as the instrument – with DS-NET CPU running DEWESoft™ software – and a DEWE-43 is connected to a USB port of the CPU module. This way hardware synchronized high-speed analog inputs, counters and CAN interfaces are added to the DS-NET system.

USB

SYNC
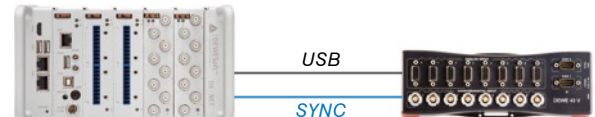
DS-NET with CPU option
Multiple channels up to
160 kS/s aggregate

Expansion: DEWE-43
8 chs up to 200 kS/s/ch
8 counters, 2 CAN

Optional Connector-Adapters

TH8-CJC   *Module: TH8*

4 channel connector block
with integrated CJC

BR4-CJC   *Module: BR4*

2 channel connector block
with integrated CJC

ACC2-CJC   *Module: ACC2*

1 channel connector block
with integrated CJC

ACC2-BNC   *Module: ACC2*

screw connector to BNC adapt.
ICP® input

ACC2-120   *Module: A CC2*

1 channel quarter bridge
completion 120 Ω

ACC2-350   *Module: ACC2*

1 channel quarter bridge
completion 350 Ω

BR4-120   *Module: BR4*

2 channel quarter bridge
completion 120 Ω

BR4-350   *Module: BR4*

2 channel quarter bridge
completion 350 Ω

BR4-D-120   *Module: BR4-D*

1 channel quarter
bridge completion 120 Ω

BR4-D-350   *Module: BR4-D*

1 channel quarter
bridge completion 350 Ω

DSUB-BNC   *Module: BR4-D*

DSUB9 to BNC adapter
Voltage input

V8-SHUNT   *Module: V8*

4 channel Shunt connector for
current measurement (25 mA)

Local representative

DEWESoft™
measurement innovation