

Automotive
Energy & Power Analysis
Aerospace & Defense
Transportation
General Test & Measurement



DEWE-3023-DSA

Compact Dynamic Signal Analyzer



The DEWE-3023-DSA is a very compact Dynamic Signal Analyzer covering a wide range of applications in the fields of rotating machines, modal analysis, sound measurements, human body vibration analysis and recording.

It includes a full-featured PC but is yet very rugged by ingenious mechanical design. Locally stored data can be transferred by USB stick or LAN. Of course online data transfer while running the measurement via LAN is possible too.

The instrument features a great combination of simultaneous sampled analog inputs and synchronous counters. It supports a wide range of sensors to measure

- Voltage
- Acceleration
- Sound
- Position
- Torque
- Current
- Pressure
- Velocity
- RPM
- Frequency

Key Features

- Rugged instrument with full-featured PC inside
- 4/8/12 simultaneous sampled voltage / IEPE® inputs
- 24-bit resolution, 204.8 kS/s per channel
- High dynamic range 108 dB, anti-aliasing filter
- TEDS support
- 1/2/3 "super" counters

The powerful DEWESoft application software offers popular displays like Recorder, Scope, FFT Analysis, Orbit View etc. and provides ready-to-use templates for rotational and torsional vibration, sound level meter, human body vibrations, order tracking and more.

Considering all these possibilities the DEWE-3023-DSA is the perfect instrument for all

- Mobile measurements
- Field service
- Maintenance
- Debug and diagnostic tasks
- Bringing into service tasks

Connectivity

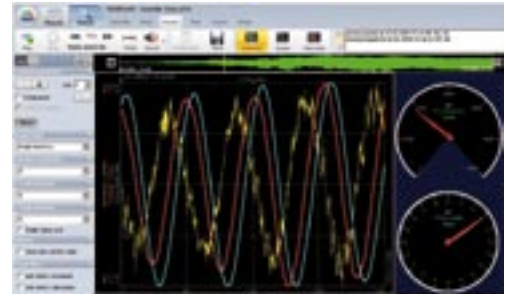
Analog input

There are 4, 8 or 12 analog inputs which can be configured for voltages from ± 0.1 V to ± 10 V or for IEPE accelerometers / microphones. The input configuration can be set to differential or single-ended, AC or DC coupling. A high-pass filter 0.15 Hz or 3.4 Hz, a DC current source 4 mA or 8 mA as well as TEDS sensor support are available. Measurement of 0 – 20 mA current is possible using an external shunt.

Each input has its own sigma-delta A/D converter and is sampled at up to 204.8 kS/s at 24-bit resolution. Anti-aliasing filters are included for each channel. The analog inputs offer a high dynamic range of 108 dB and high accuracy (typically 0.002 dB inter channel gain mismatch!)

Counter

The DEWE-3023-DSA offers 1 advanced counter / encoder interface per 4 channel card. As a special feature these channels offer programmable threshold levels (0..40 V) and a wide input voltage range of -35 to 60 V as well as AC or DC coupling. Thanks to the unique DEWETRON technology the counter inputs are acquired absolutely synchronous to the analog channels.



DEWETRON counters are able to perform:

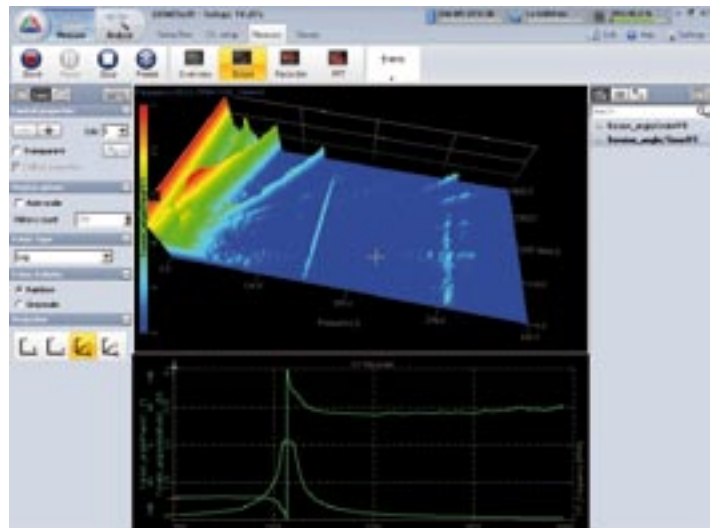
- basic counting
- up/down counting
- frequency measurement
- period time measurement
- gated counting
- two pulse edge separation
- pulse width measurement
- duty cycle

DEWESoft-DSA - Data Acquisition Software

The powerful DEWESoft-DSA software package turns the DEWE-3023-DSA into an extremely flexible instrument.

Some key features:

- Easy-to-use
- Synchronous data acquisition of different sources
- Built-in sensor database
- Versatile trigger capabilities
- Powerful online mathematics and filtering
- Mathematics in analyze mode
- Data export to almost any analysis package
- Networkable operation with synchronization





SPECIFICATIONS	DEWE-3023-DSA-4	DEWE-3023-DSA-8	DEWE-3023-DSA-12
ANALOG INPUT*			
Number of dynamic channels	4 (simultaneously sampled)	8 (simultaneously sampled)	12 (simultaneously sampled)
Resolution	24-bit		
Type of ADC	Sigma-Delta		
Sampling rate	204.8 kS/s		
-3 dB bandwidth	76 kHz @ 204.8 kS/s		
Voltage input ranges	±0.1 V, ±0.5 V, ±2 V, ±10 V		
Input modes	Voltage or IEPE		
voltage modes	differential or single ended, DC or AC coupled(0.15 or 3.4 Hz)		
Current measurement	with external shunt (0-20 mA with 100 Ω shunt for example)		
TEDS support	Yes		
DC-accuracy	±0.5 % of reading, ±0.01 % of range (±10 V range)		
Input impedance	1 MΩ with 60 pF to GND		
CMRR ($f_{in} < 1$ kHz)	> 100 dB (±0.1 V range), >60 dB (±10 V range),		
Overvoltage protection	±30 V		
Signal to noise ($f_s \leq 51.2$ kS)	108 dB (±10 V range), 93 dB (±0.1 V range)		
Crosstalk (f_{in} 0 to 10 kHz)	120 dB		
Interchannel phase mismatch	±0.002 dB		
COUNTER			
Number of channels	1 counter	2 counters	3 counters
Counter modes	Event counting, encoder input, period, pulsewidth, duty cycle, frequency measurement		
Resolution	32-bit		
Time base	80 MHz		
Input signal levels	-35 to 60 V, adjustable trigger level 0 to 40 V		
Input voltage protection	±100 V continuous		
MAIN SYSTEM			
Data storage	1000 GB		
Data throughput	Typ. 70 MB/s		
Power supply	95 to 260 V _{AC}		
Display	15" TFT display, 1024 x 768 pixel		
Processor / RAM	Intel® Core™ 2 Duo, 2 GHz / 2 GB RAM		
Interfaces	2 x 1 Gbit LAN, 3 USB interfaces, 1 FireWire® interface		
Operating system	Microsoft® WINDOWS® 7		
Dimensions (W x D x H)	377 x 168 x 284 mm (14.8 x 6.6 x 11.2 in.)		
Weight	Typ. 8.5 kg (18 lbs)		
ENVIRONMENTAL			
Operating temperature	0 to +50 °C, down to -20 °C with prewarmed unit		
Storage temperature	-20 to +70 °C		
Humidity	10 to 80 % non cond., 5 to 95 % rel. humidity		
Vibration	MIL-STD 810 F 514.5, procedure I		
Shock	MIL-STD 810 F 516.5, procedure I		
SOFTWARE			
Displays	Recorder, Scope, FFT, 3D Waterfall FFT, Octave, ...		
Triggers	Edge, Filtered Edge, Window, Pulsewidth, Slope, FFT, ...		
Online standard mathematics	Formula editor, FIR-, IIR-, FFT-filter, basic statistics, reference curve		
Online special mathematics	Human Body Vibration, Order Tracking, Rotational & Torsional Vibration, Sound Level, Frequency Response Function*-		
* For detailed specifications please refer to the DEWE-ORION-0424 A/D card manual			

Applications

Recorder

Synchronous recording of different signals

- Voltage
- Acceleration
- Pressure
- Force
- Temperature
- Sound
- Position
- RPM
- Torque
- Frequency
- Velocity
- And more



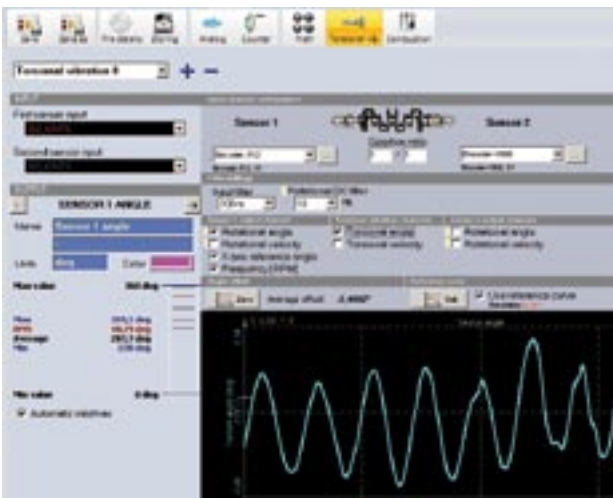
Order Tracking

- Dedicated re-sampling method for sharp order separation
- 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



Torsional and Rotational Vibration

- Time domain measurement
- Angle based view
- Additional to all other functions (analog, CAN, GPS, video, ...)
- Configurable display
- Direct sensor connection
- 80 MHz time base
- High resolution $\pm 0.03\text{rpm} \pm 2 \text{ mdeg}@12000 \text{ rpm}$



Balancing

- User interface which guides through all steps
- Order tracking based balancing method
- Single or dual plane
- Multiple balancing for two directions saves time
- 2D graph for plane view
- RPM channel with color indicator (RPM range)
- Alarm output if velocity exceeds predefined value
- Displays tachometer time signal to set trigger
- Vector polar plots of 1st order of all runs (initial, trail, ...)
- Weight splitting
- Acceleration, velocity, displacement in recorder
- Time domain measurement



The shown applications are only a few examples, many more can be covered using the DEWE-3023-DSA instrument.