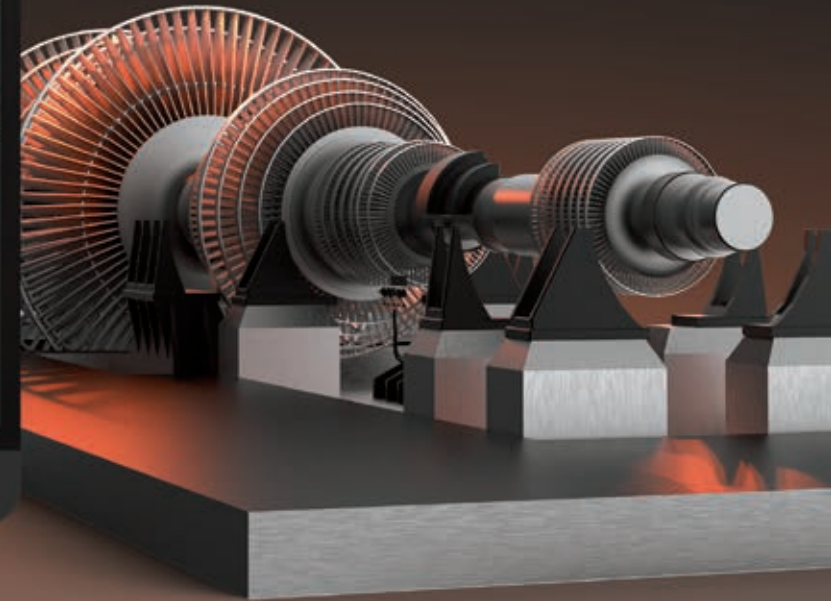


SOLUTION DATASHEET

Orbit Analysis V20-1

Rotor movement measurements.  
Turbomachinery analysis.  
Rotating machinery development and maintenance.



# INTRODUCTION

Measuring vibration data on a rotating machine is a strong diagnostic tool enabling the detection and prevention of many types of potential faults and machinery down-time.

With fully-fledged and wholesome turbomachinery analysis, easy setup, intuitive presentation of measured data and industry leading measurement expandability orbit analysis measurement is reimagined the Dewesoft way.

The Dewesoft Orbit Analysis module matched with DewesoftX software and flexible hardware configurations allows capturing, storing and analyzing all of the data needed whether for research and development or for operational monitoring

purposes. The software approach with free updates and support ensures a future proof solution - totally hassle and cost free.

Out of the box, Dewesoft Orbit Analysis packs the entire set of industry-proven analysis metrics, supporting calculation and graphical representation of: Raw orbit, Averaged orbit, Filtered orbit, Polar plot, Bode plot, shaft centerline, full-motion graph, clearance circle, runout compensation, reference orbit and a complete set of waterfalls.

For a more detailed analysis, other Dewesoft modules can be added to the measurement configuration, e.g. supporting monitoring or in-depth turbomachinery analysis together with Order Tracking.

# FUNCTIONALITY

Steady, continuous operation with as little malfunctions and vibration as possible is essential for maximizing the productivity and ensuring reliable operation of a machine - whether a huge rotating mass in a power plant or a high revving compressor. To achieve this, measurement and analysis of rotational vibration data is crucial.

Dewesoft Orbit analysis is an ideal analysis tool for rotor movements examination, assessment of any motion restrictions causing vibration and consequent prevention of potential, unwanted damages

to rotating machinery that would result in premature wear of components and could cause critical failure. Knowing the rotor movement, different phenomena of lubrication and bearing states can be determined and consequently machine operation optimized.

To make the interpretation of results and entire measurement flow as easy and complete as possible, the software interface is designed with the test engineer in mind - easy to set up and use, however with powerful analysis and advanced features.

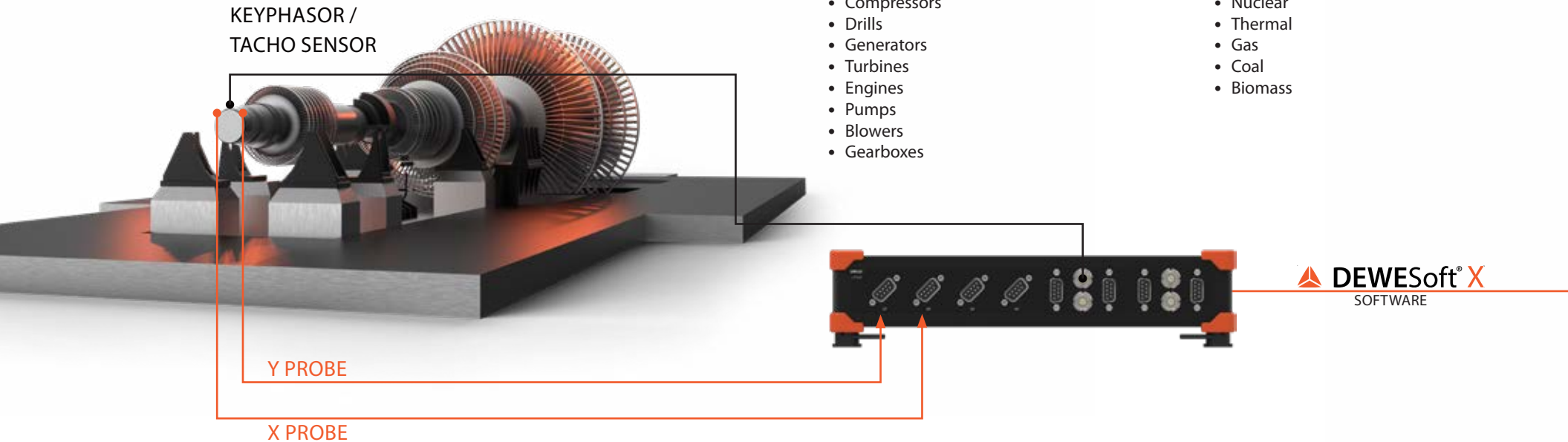
# APPLICATIONS

Turbo machinery provides kinetic energy to operations enabling movement - a function that is widely used in industrial processes to move solids, liquids or gases through drivers, driven components and transmissions such as:

- Compressors
- Drills
- Generators
- Turbines
- Engines
- Pumps
- Blowers
- Gearboxes

Above rotating machinery is applied in a variety of industries, e.g. automotive, chemical, oil and gas, metals, HVAC or mining and in the majority of different power plants:

- Hydroelectric
- Nuclear
- Thermal
- Gas
- Coal
- Biomass



# KEY FEATURES



## MULTI FUNCTIONALITY

Maximum measurement capabilities - functions with any Dewesoft DAQ system and additional sensors can be added to simultaneously capture temperature, vibration, video, strain, etc. in the same SW and perfectly synchronized.

## DEDICATED ADVANCED PACKAGES

Dewesoft Orbit Analysis can be combined with Order Tracking and Advanced FFT with cursors to cover further analysis needs.

## SOFTWARE INCLUDED

Award-winning Dewesoft X software with powerful math and extensive analysis options included free of charge: mathematical analysis with visualization, sequencing and data export to a multitude of formats.

## POWERFUL ANALYSIS

Complete set of functionalities and displays for turbomachinery monitoring: Raw, averaged and harmonic orbits, Bode plot, Waterfalls, runout compensation, reference orbit and many more.

## EASY SETUP

Only a few steps from connecting the sensors to having stored all data. Post analysis: Offline calculation using raw signals from proximity probes.

## MACHINE TRAIN SUPPORT

Simply add the number of desired bearings to the analysis.

## HIGH DYNAMIC CAPABILITIES

Dual ADC converter technology, seamlessly covering 160dB dynamic range out-of-the box.

## HIGH ACQUISITION RATE

200kS/s sample rate enabling analysis of high speed rotors.

## MULTI-BRAND PROXIMITY PROBE SUPPORT

Dewesoft LV input on SIRIUS covers the needed ranges and supplies excitation to the majority of proximity probes.

## TEDS SUPPORT

Plug-and-play with proximity probes that support TEDs.

## MONITORING CAPABILITIES

Orbits (raw, averaged, H1, H2 etc.), FFTs, cascade plots, Bode plots and polar plots can be uploaded to the Historian database for long term condition monitoring.

## UNLIMITED CHANNEL COUNT

Catering any R&D measurement need, regardless of the number of bearings analysed and/or proximity probes used.

# SPECS

DAQ SYSTEM - SIRIUS ACC TYPE INPUT				
Input types	Voltage Full bridge strain Current (ext. Shunt)			
ADC Type	24-bit delta-sigma dual core with anti-aliasing filter			
Sampling Rate	Simultaneous 200 kS/sec			
<b>DUAL CORE RANGES (LOW RANGE)</b>	<b>±200 V (10 V)</b>	<b>±10 V (500 mV)</b>	<b>±1 V (50 mV)</b>	<b>±100 mV (5 mV)</b>
Gain accuracy	±0.05 % of reading			
Offset accuracy (Dual Core)	±40 (20) mV	±2 (1) mV	±0.2 (0.2) mV	±0.1 (0.1) mV
Offset accuracy after Balance Amplifier	2 mV	0.1 mV	0.02 mV	0.01 mV
Typ. Dynamic Range @ 10 kS (Dual Core)	-136 dB (-146 dB)	-137 dB (-152 dB)	-137 dB (-147 dB)	-130 dB (-132 dB)
Typ. Noise floor @ 10 kS (Dual Core)	-109 dB (-118 dB)	-109 dB (-126 dB)	-109 dB (-116 dB)	-97 dB (-97 dB)
Typ. CMR @ 50 Hz / 400 Hz / 1 kHz / 10 kHz	70 / 70 / 60 / 55 dB	95 / 95 / 89 / 84 dB	105 / 105 / 100 / 95 dB	115 / 112 / 107 / 102 dB
Gain Drift	Typical 10 ppm/K, max. 30 ppm/K			
Offset Drift	Typical 0.3 µV/K + 5 ppm of range/K, max: 2 µV/k + 10 ppm of range/K			
Gain Linearity	<0.02 %			
Inter Channel Phase-mismatch	0.02° * fin [kHz] + 0.1° (@ 200 kS/sec and 10 V range)			
Channel Crosstalk	-120 dB @ 10 kHz (range ≤10 V); -95 dB @ 10 kHz (range = 100 V)			
Input Coupling (see 1)	DC, AC 1 Hz (3 Hz, 10 Hz per SW)			
Input Impedance	200 V Range: 1 MΩ; all other ranges 10 MΩ between IN+ or In- against GND			
Max. common mode voltage	Isolated version ±500 V			
Input Overvoltage Protection	Differential version: 200 V range: ±200 V; all other Ranges: ±12 V 200 V Range: 300 V; all other ranges: 100 V (250 V peak for 10 msec)			
EXCITATION VOLTAGE				
Excitation voltage	Unipolar or Bipolar Software selectable (programmable with 16-bit DAC)			
Excitation Level unipolar	0...24 Volt; Predefined levels: 1, 2.5, 5, 10, 12, 15 and 24 VDC			
Excitation Level bipolar	2...30 Volt; Predefined levels: 2.5, 5, 10, 12, 15, 24 and 30 VDC			
Accuracy	±0.1 % ±5 mV			
Drift	±50 ppm/K ±100 µV/K			
Stability	10 % to 90 % load (bipolar) <0.01 %			
Current limit	200 mA (2 Watt max. per channel, 12 Watt max. per Slice)			
Protection	Continuous short to ground			
BRIDGE CONNECTION TYPES				
Bridge type	Full bridge			
Ranges @ 10 Vexc(low range)	2 mV/V...1000 mV/V free programmable with Dual Core			
Input short, Sensor offset adjust	Software selectable			
COUNTERS (ONLY ON LV+ TYPE)				
Inputs	1 digital counter input 3 digital inputs Fully synchronised with analog data Alarm output			
Counter modes	Counting, waveform timing, encoder, tacho, gear-tooth sensor			
General Counter Specifications	See "SIRIUS counter specifications"			
ADDITIONAL SPECIFICATIONS				
Misc function	Excitation control monitoring, Amplifier Short, Single Ended/Differential			
Input connector	DSUB-9, BNC, Banana (others on request)			
TEDS support	Standard + DSI® adapters			
1) In- must be within ±10 V referred to GND (iso); for Ranges >10 V the DC value of In- is not rejected				

SOFTWARE: DEWESoft X3	
Recommended	
Processor:	Intel Core i7 with 4 Cores (3rd generation or higher)
RAM:	8 gigabyte (GB)
Hard drive:	Solid-state drive (SSD)
Graphic card:	Compatible with DirectX 11
Display	1280x720 (HD Ready)
Operating system:	Windows 10 64-bit
*Actual requirements may be different due to specific setup configuration.	

TYPICAL CONFIGURATIONS	
SIRIUSi 4xLV 2xLV+	
<ul style="list-style-type: none"> <li>• 1-8x Micro-Epsilon DT3010 Eddy-current probes</li> <li>• 1-4x DS-TACH01</li> <li>• Dewesoft Orbit Analysis plugin</li> </ul>	
OPTIONAL:	
<ul style="list-style-type: none"> <li>• Orbit Analyzer package (Orbit Analysis +Order tracking +FFT Analyzer)</li> <li>• DS-TACH02</li> <li>• DS-TACH03</li> <li>• DS-TACH04</li> </ul>	

RELATED PRODUCTS	
<ul style="list-style-type: none"> <li>• Order tracking</li> <li>• FFT Analyzer</li> <li>• Torsional vibration</li> </ul>	



**LEARN MORE:**  
<https://dewesoft.com/applications/vibration-analysis/orbit-analysis>

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