We know that quality is not just what we put into the product, but what you get out of it. We know that your work depends on the reliability of your tools. That’s why we design and produce to give you a product of high performance and efficiency.

We build our equipment to last. We guarantee you that your hardware will be free from defects and functional. Our warranty covers that the instruments function as promised for a period of 7 years from the day of the delivery. When you buy our data acquisition systems, we make sure they work. Enjoy this unique add-on to Dewesoft quality products and services!
THE DEWESOFT 7-YEAR WARRANTY APPLIES TO OUR DATA ACQUISITION SYSTEMS. YOU BUY IT, OWN IT, USE IT, AND OUR WARRANTY KEEPS YOU COVERED. THE 7-YEAR WARRANTY COMES WITH NO EXTRA CHARGE.
“The setup and measurement process in the FRF module is really fascinating. Among the systems that I have seen, it is the absolutely most straightforward. Geometry and the measurement setup are available as files. It’s a matter of minutes to have the final FRF’s and the animation to get an impression of the vibrations. That’s great!” - IABG

“I wanted to personally write to you and tell you how impressed I am with Dewesoft products. The whole Dewesoft team impressed me as extremely happy, smart, and dedicated.” - IRISENSORS

“We absolutely enjoy using the Dewesoft data acquisition equipment and its software. I think of it as the Porsche 911 of data acquisition (my dream car/our dream test equipment).” - AGI

“We recommend SIRIUS as a great unit to anyone that asks how we like it.” - SPACE X

“Again, thanks for all of the new features that are being included in DewesoftX. It is already a fantastic product and deserves to become the “Microsoft Word” of data acquisition software.” - Goodrich

“I think I mentioned in previous emails how Dewesoft has mushroomed here, but even I didn’t know how much. I was informed today that the data was being reviewed by up 50 to 60 different centers, along with NASA personnel as high as the manager of the entire Space Shuttle program.” - NASA KSC

“Again, thanks for all the efforts on this project! I greatly appreciate everything you guys have provided to us.” - BAYER
OUR VISION IS TO DESIGN TEST EQUIPMENT THAT SIMPLIFIES THE ADVANCEMENT OF HUMANITY.

We are on a mission to revolutionize the measurement industry by developing innovative solutions that are tailored to our customers' needs.
More than 20 years ago, as young engineers we dreamed of creating a revolution in the world of measurement. We dreamed of creating data acquisition software that was versatile and powerful - and yet easy to use - something that didn’t exist.

We are who we are because of you - our customers - working in the most advanced labs around the world. You had the same dream; you introduced us to the challenge that drives our passion for constant improvement, keeping our minds sharp and our spirits free.

**IN PARTNERSHIP WITH YOU, WE BUILT SOLUTIONS THAT EXTENDED FAR BEYOND WHAT WE EVER IMAGINED WAS POSSIBLE TWO DECADES AGO. THANK YOU!**

Today, we offer a variety of hardware and software solutions made just for you. And you’re still our greatest asset. That will never change.
Tell us what you need, and we will continue to push the limits.

Dr. Jure Knez
president and co-founder
DEWESOFT IS MORE THAN A COMPANY.
DEWESOFT IS PEOPLE.

WE BUILT OUR COMPANY TO LAST, STRONGLY INVESTING IN PEOPLE, OUR TECHNOLOGY AND OUR OWN SALES NETWORK.
DEWESOFT IS
100%
EMPLOYEE-OWNED
AND COMPLETELY
SELF-FINANCED,
WITH AAA RATING.

The best solutions can be made only by a motivated team of people who love their work - those who design and build instruments with a spark in their eyes and those who light up when they have an idea for improvement. Together with you we are the ones creating Dewesoft.
ONE SOFTWARE.
ONE HARDWARE.
YOUR SOLUTION.
EASY TO LEARN
Intuitive user interface. Free PRO on-line training courses. Free webinars. Large user community. Local support also in your country.

SAVE TIME
Advanced technology aimed at easy setup and rock solid results. Our real-time “live” data visualization means instant data qualification.

SAVE MONEY
No hidden costs! Software is included with all of our instruments. Free lifetime software upgrades. Free data analysis. No maintenance fees. You buy it, you own it.
No other software allows you to connect so many different kinds of data sources and record them all synchronously, see them in real time, and record them to a single data file. That IS the Dewesoft advantage.
**ADVANCED TRIGGERING**
Using triggering, only the data you need are stored. Dewesoft supports Pre trigger, Post trigger, Hold off, Post time extension, Simple edge trigger, Filtered edge trigger, Window and Pulsewidth, Slope, Delta amplitude, Relative time trigger, Absolute time trigger and FFT trigger.

**MORE THAN 500MB/SEC STORING**
High performance engine allowing high data storing write speeds. Advanced data structure allows data files, even GBs long, to be loaded instantly.

**BIG DATA**
For big data and Industry 4.0 applications, data can be stored to the cloud and reviewed using standard OPC UA interface.

**DISTRIBUTED NETWORKED DATA ACQUISITION**
Precise synchronization allows flexible configurations of thousands of channels.

---

**STORE **

**DEWESoft® X**

**RAW DATA AND MATH CHANNELS**
Raw data are always stored from the hardware interface channels and kept untouched. You can easily create new math channels based on the raw data, leaving the original data untouched.

**HISTORIAN**
Dewesoft historian provides a versatile solution for cloud or local networked data storage in powerful Influx time series database. Standard OPC UA interface allows communication between measurement units and database and between database and clients, so any standard SCADA, MES or mobile solution can be used for data analysis.

**High performance storing >500MB/sec, instant file loading, triggering, networked acquisition and cloud storage.**
EXTENSIVE LIBRARY
OF STANDARD DISPLAYS:

- **Recorders**: horizontal, vertical and XY recorder
- **Oscilloscope**: scope, 3D scope, vectorscope
- **FFT**: FFT, 3D FFT, Harmonic FFT and Octave
- **Meters**: digital, analog, horizontal/vertical bar meters
- **Graphs**: 2D, 3D graph, Octave, Orbit, Campbell plot
- **Video**: standard video display and thermal video display with temperature indicators
- **GPS**: positioning display with Satellite and OpenStreetMap layers
- **Control**: button, switch, knob, slider, user input
- **Combustion analysis**: P-V diagram and combustion scope
- **Rotor balancer**: for field balancing
- **Orbit Analysis**: Orbit plot, Polar plot, Bode plot, Full motion graph
- **Automotive**: 3D polygon for displaying moving objects
- **Aerospace**: attitude or artificial horizon indicator
- **DSA/NVH**: Modal circle
- **Other**: 2D/3D table, image, text, line, overload indicator, indicator lamp, note

FLEXIBLE VISUALIZATION
Simple drag-drop and assign channel generates your perfect display. Create any number of different displays.

FILE REPLAY
During analysis, data replay looks the same as when it was being recorded. With integrated video you can easily follow the measurement process.

Optimized Graphics
Using the latest CPU and GPU technologies, graphics run smoothly even on basic computers.

Extensive widget library, flexible displays, optimized graphics.
An extensive and easy-to-use mathematics library for data and signal processing - all developed to match specific applications.

MATH LIBRARY FUNCTIONALITIES:
- **Formula:** Custom formula editor
- **Filtering:** FIR, IIR, FFR, integration, derivation
- **Statistics:** RMS, Average, Min, Max, Std deviation, variance, classification, counting, array statistics …
- **Reference curve:** Time and frequency domain, vector and XY reference curves
- **Time domain analysis:** Delay channel, Integral, derivative, Latch value math, Scope math, Time-to-vector transform
- **Frequency domain analysis:** Cepstrum, Correlation, Exact frequency, Fourier transform, Full spectrum, Octave analysis, Short-time Fourier transform
- **Control systems:** PID control
- **Strain, stress:** Strain rosette
- **Constants:** Vectors, Matrix constant

ADVANCED APPLICATION ANALYSIS:

**POWER ANALYSIS**
Power Analyzer, Power Quality, Hybrid Vehicle Analysis, Inverter Motor Analysis, efficiency measurements.

**VEHICLE ANALYSIS**

**ACOUSTICS**
Acoustic Weighting Filters, Sound Level Meter, Sound Power, Sound Intensity, Sound Quality, RT60.

**MACHINERY DIAGNOSTICS**
Modal Analysis, Order Tracking, Torsional Analysis, Balancing, Angle Sensor Math, Envelope Detection, Sine Processing (COLA), Tracking Filter.
You can add DewesoftX on any computer to freely view and analyze files. Export data and create reports in standard formats.
DewesoftX offers a wide variety of BUILT-IN functions, but it is also completely open to adapt to various applications.

**DCOM INTERFACE**
Integrate Dewesoft systems as components in custom applications.

**REAL TIME EtherCAT® INTERFACE**
For control applications, Dewesoft brings together the words of data acquisition and control.

**OPEN EXPORT INTERFACE**
Create your own unique export format using our open export programming interface.

**OPEN DISPLAY INTERFACE**
Our built-in displays cover 99% of application requirements, however you can extend our visual displays using the plugin programming interface for special cases.

**OPC UA INTERFACE**
Exchange data between Industry 4.0 systems with standard OPC UA interface.

**NET INTERFACE**
Control remotely and exchange data with our simple, but powerful exchange protocol.

**PLUGIN INTERFACE**
Using plugins you can add just about any external device to your system. Plugins can be created in virtually any programming language.

**BUILT-IN C++ COMPILER**
Extend your processing capability with our built-in C++ script editor. No need for external programming tools.

**SEQUENCER**
Automate test workflow with easy-to-use build-in flowchart programming tool.
## Key features

<table>
<thead>
<tr>
<th>Feature</th>
<th>Lite</th>
<th>Professional</th>
<th>DSA</th>
<th>Enterprise</th>
</tr>
</thead>
<tbody>
<tr>
<td>All applications/interfaces in one software</td>
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<tr>
<td>Synchronized data acquisition</td>
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<td>✓</td>
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<tr>
<td>Unlimited number of configurable channels</td>
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<tr>
<td>Live visualization of data</td>
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<td>Triggered storing</td>
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<tr>
<td>Distributed acquisition (Dewesoft NET)</td>
<td>Option</td>
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<td>Option</td>
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<tr>
<td>Offline analysis (Post-processing)</td>
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<tr>
<td>Reporting</td>
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<tr>
<td>Localization (software translation)</td>
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<td>✓</td>
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<tr>
<td>Lifetime free upgrades</td>
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## Configuration management

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<td>Sensor database</td>
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<td>Adjustable physical quantities</td>
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<tr>
<td>Modular security, encryption, access restriction</td>
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## Input/output interfaces

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<td>✓</td>
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<tr>
<td>Function generator</td>
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<td>Option</td>
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<tr>
<td>TEDS support</td>
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<td>✓</td>
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<tr>
<td>Gantner Ethernet devices</td>
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<td>Option</td>
<td>✓</td>
</tr>
<tr>
<td>Gyro platform - LORD MicroStrain</td>
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## Data processing and analysis

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<td>Industrial interfaces</td>
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<td>MODBUS TCP/IP (slave)</td>
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## General

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<tr>
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<th>Enterprise</th>
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<td>Dewesoft analog/digital inputs</td>
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<td>Gyro platform - LORD MicroStrain</td>
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## Vehicle interfaces

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<td>Kistler iKRoad</td>
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## Aerospace interfaces

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We build our equipment to last. We guarantee you that your hardware will be free from defects and functional. Our warranty covers that the instruments function as promised for a period of 7 years from the day of the delivery.
SOFTWARE INCLUDED

FLEXIBLE DAQs
Ready to be used for any measurement application, more at the same time.

ANY NUMBER OF CHANNELS
Our DAQ systems are modular by design. Expand to 1000’s of channels.

PLUG AND PLAY
Our DAQ devices are plug and play. Technologies like smart sensors and TEDS offer automatic sensor detection and configuration.

FULLY SYNCHRONIZED
Data from various sources are aligned: Analog, digital, counter, digital data buses, video, etc.

ONE HARDWARE.

FLEXIBLE DAQ systems

FULLY SYNCHRONIZED

PLUG AND PLAY

EXPANDABLE
**TECHNOLOGY OVERVIEW**

**HIGH ISOLATION**
SIRIUS instruments come with high galvanic channel-to-channel and channel-to-ground isolation (CAT II 1000 V with ranges up to 1600 V), and even include isolated sensor excitation.

Our high isolation means that you have no problem measuring high voltage potentials or common mode voltages. You are also safe with measurements like vibration, temperature, or any other measurement where non-isolated sensors are placed next to the high voltage potential against the DAQ system ground. In such cases, a non-isolated DAQ system would burn or at least give faulty results. With SIRIUS it is just one thing less to worry about.

**HIGH DYNAMIC RANGE (SIRIUS*)**
The most common problems you face when recording data are signal overloads, noise, and false signals recorded into the data due to aliasing. When signal levels are higher than expected, they are clipped by the ADC, resulting in wrong measurements, which means you have to do the test all over again.

DualCoreADC* technology prevents these problems. Each channel amplifier has two ADC's that always measure the high and low gain of the input signal. This results in the full possible measuring range of the sensor and prevents the signal from being clipped.

With DualCoreADC* technology SIRIUS achieves more than 130 dB signal to noise ratio and more than 160 dB in dynamic range. This is 20 times better than 24-bit systems and 20 times less noise.
HYBRID ADC TECHNOLOGY
Offers everything you ever wanted out of a high-end data acquisition system. High bandwidth and high dynamic mode available in parallel, software selectable per channel.

High bandwidth mode: with 5 MHz bandwidth and 15 MS/sec sampling rate, SIRIUS XHS can perfectly acquire impulse, step, and square signals without any ringing or overshoot. Such a mode is perfect for transient recording and power analysis. Such acquisition mode is typically found in SAR ADCs.

High dynamic alias-free mode: Up to 1 MS/sec data can be acquired up to 150 dB dynamic range. This alias-free filter with a bandwidth close to the Nyquist criteria is used for frequency domain analysis of the signal like sound and vibration. This behavior is similar to classical Sigma-Delta ADCs.

SYNCHRONIZATION
SIRIUS hardware is capable of reading different signals like voltage, strain, ICP/IEPE, charge, CAN, counter, encoder, and digital. Additionally, with the included DewesoftX software, you can easily acquire and combine data from additional interfaces like GPS, Flexray, Ethernet, Serial, PCM telemetry, and many more. Even though each data source have different sampling rates, all your data will be perfectly synchronized down to microsecond accuracy. All this thanks to our timing and GPS synchronization technologies.

PRECISE COUNTER AND ENCODER MEASUREMENT
SIRIUS® uses a patented technology called SuperCounter® in all of its counter/encoder inputs. Counter inputs can measure RPM and angle when testing rotating machines. Standard counters only provide integer resolution (like 1, 1, 2, 2) and their data is one sample behind the data. However, SuperCounter® can extract floating point values like 1.37, 1.87, 2.37, and time-align them precisely with the rest of your data. This is done by measuring the exact time of the rising edge of the signal with an additional counter. Our SuperCounter® work on a 102.4 MHz time base, independent from the current sampling rate.

Counter inputs are fully synchronized with analog, CAN bus, and other data sources to enable easy applications like balancing, order tracking, and torsional vibrations.
SIRIUS® HIGH-END DAQ SYSTEMS

SIRIUS® XHS

High-speed data acquisition system (15 MS/sec) with the new Hybrid ADC technology capable of high-bandwidth transient recording and very high-dynamic, alias-free data acquisition.

SIRIUS® R4/R4rt/R4-HUB

Integrated solution with 4 SIRIUS slices and powerful SBOX computer or USB hub in one unit with real-time EtherCAT® slave interface.

SIRIUS® SBOX

Synchronized, highly reliable data logger and powerful data processing computer.

SIRIUS® MODULAR

Most flexible and distributable single slices with USB and EtherCAT® interface.

SIRIUS® MODULAR

Most flexible and distributable single slices with USB and EtherCAT® interface.

ANALOG OUTPUTS

SIRIUS slices can be configured with 8 analog outputs and function as a multi-channel function generator, can also do real-time signal conditioning, analog replay of data in analysis, and perform manual or automated control output with output voltage levels of up to +/- 10V.

HYBRID ADC TECHNOLOGY

Offers everything you ever wanted out of a high-end data acquisition system. High bandwidth and high dynamic mode available in parallel, software selectable per channel.

ISOLATED CAN BUS INTERFACE

High-speed CAN 2.0b channels with 1 Mbit/sec data throughput with additional support for CCP, OBDII, J1939, and CAN output.

Our data acquisition systems are versatile, modular, easy to use and can work with any sensor with the highest precision imaginable. Input channel configurations are flexible and the input channel count can vary from 1 to 1000’s of channels. Our measurement systems are flexible and can grow with you at any time in your measurement process.
ONE HARDWARE.

**UNIVERSAL ANALOG INPUTS**
A wide variety of universal and analog amplifiers that accept voltage and full/half/quarter bridge signals natively as well charge and IEPE accelerometers, thermocouple and RTD temperature sensors, current, resistance, and even LVDT sensors, with the use of DSI adapters.

**DIGITAL/COUNTER/ENCODER INPUTS**
Each counter channel is capable of 3x digital inputs, 1x event counter, encoder, period, pulse-width, duty-cycle, and precise frequency and angle measurement using patented SuperCounter® technology.

**HIGH ISOLATION**
High channel-channel and channel-ground isolation prevents ground loops and damage to the system from excessive voltage.

**SENSOR POWER SUPPLY**
Amplifiers provide channel-independent, programmable power supply for sensor excitation.

**DEWESOFT 7-YEAR WARRANTY**
Our warranty covers that the instruments function as promised for a period of 7 years from the day of the delivery.

**SIRIUS® R8DB/R8rt**
Integrated instrument with 8 SIRIUS slices, powerful SBOX computer, optional 19" display (R8D) and batteries (R8DB) and real-time EtherCAT® slave interface (R8rt).

**SIRIUS® R1DB/R2DB**
Small-size instrument with embedded computer, 12" display and batteries.

**SIRIUS® R3**
Up to 3 SIRIUS slices in a rack mounted lab unit with standard easy-to-upgrade computer.
The future is here - and it is in the form of a single device. 15 MS/s sampling rate. 5 MHz Bandwidth. Up to 150 dB Dynamic Range. Meet our new Hybrid ADC data acquisition technology.

**HYBRID ADC TECHNOLOGY**
Offers everything you ever wanted out of a high-end data acquisition system. High bandwidth and high dynamic mode available and software selectable per channel.

**VARIETY OF AMPLIFIERS**
High voltage amplifiers that can measure 2 kV peak directly. Low voltage amplifiers for connecting almost any current sensor. ACC amplifiers for connecting high-speed accelerometers and pressure sensors. The XHS range of amplifiers available will grow in the future and will also include charge and strain gauge amplifiers.

**SMALLEST FORM FACTOR**
With the standard SIRIUS sized chassis you can easily carry the SIRIUS XHS in your backpack along with your laptop for field measurements.

**HIGH GALVANIC ISOLATION**
High channel-to-channel and channel-to-ground isolation prevents damage to the systems from excessive voltage and avoids ground loops.

**ALIAS FREE MODE**
Up to 1 MS/s data can be acquired with an extremely high dynamic range, similar to our dual 24-bit SIRIUS DualCoreADC devices. The data is totally alias-free, so all higher frequencies are fully rejected. Such an acquisition mode is typically found in Sigma-delta ADCs, and general data recording applications.

By today’s standard, you would need two totally separate data acquisition devices for those measurements and applications. But the new SIRIUS XHS data acquisition system allows you to select per channel, depending on the measurement application, the appropriate mode of ADC operation.
The SIRIUS XHS-PWR is a DAQ device designed for direct in-vehicle measurement of current, voltage, and power. It features an integrated patented DC-CT current transducer for very precise current measurements in the most demanding applications such as very high current peaks as well as leakage current measurement.

**HIGH BANDWIDTH MODE**
This mode offers more than 5 MHz bandwidth and 15 MS/s sampling rate, SIRIUS XHS can acquire impulse, step, and square signals without any ringing or overshoot. Such an acquisition mode is perfect for transient recording and power analysis, and would usually be found in SAR ADCs.

**PERFECT SYNCHRONIZATION**
Even though you can select some channels to be high bandwidth and some to be alias free, filtering is made in the way that all signals are perfectly time aligned with zero phase shift.
**SCALABLE**
SIRIUS DAQ systems can grow with needs at any time - from a single channel to a system with thousands of channels.

**FLEXIBLE**
SIRIUS single slices provide you the most flexible configuration. Slice-based systems can be split or combined at any time, to handle different measurement tasks.

**DISTRIBUTABLE**
SIRIUS EtherCAT® slices can be located up to 100 meters (328 feet) apart from each other, using a single cable that carries data, sync, and power!

Versatile USB and EtherCAT® data acquisition systems. Any signal, any sensor - packed with cutting edge technology.

**USB/EtherCAT® INTERFACE**
You can connect SIRIUS DAQ systems via USB or EtherCAT® to any data acquisition computer, or to one of our high-performance data loggers.

**UP TO 8 ISOLATED ANALOG CHANNELS OF SIRIUS DUAL-CORE OR HIGH-SPEED**

**UP TO 16 ANALOG CHANNELS WITH HD AMPLIFIERS**
Highly reliable SBOX data logger with powerful data processing computer. The perfect companion to your SIRIUS data acquisition system.

100 Hz GPS WITH RTK
An optional 10 Hz or 100 Hz GPS receiver with additional RTK support can be built straight into SBOX.

HIGHLY RELIABLE SSD STORAGE
SBOX provides highly reliable data recording with a typical 180 MB per second write speed to the internal fast SSD. This drive is removable so that you can swap and replace it quickly.

3 NETWORK INTERFACES
Two gigabit LAN ports and a wireless WLAN interface with external antenna ensure maximum connectivity.

HIGH-PERFORMANCE DATA PROCESSING COMPUTER
With an 8-thread Intel Core i7 CPU and 8 GB of memory, SBOX is a powerhouse computer for worry-free, real-time data recording and processing.

EtherCAT® INTERFACE
Built-in EtherCAT® interface port for synchronized data acquisition from Dewesoft EtherCAT® DAQ devices.

6 USB INTERFACES
SBOX includes four USB3.0 ports and two USB2.0 ports. All USB ports feature screw-lock connectors to prevent accidental disconnection.
SIRIUS® R4 BOXED

COMPACT DATA ACQUISITION SYSTEM WITH UP TO 64 ANALOG INPUTS, 32 COUNTER INPUTS AND 32 ANALOG OUTPUTS, AND A BUILT-IN HIGH PERFORMANCE, HIGHLY RELIABLE DATA PROCESSING COMPUTER AND SSD DATA LOGGER.

**POWERFUL AND RELIABLE COMPUTER**
R4 DAQ system offers a powerful built-in data processing computer and fast and reliable SSD data logging capabilities for a stand-alone operation or a USB hub for connecting R4 to an external computer.

**HIGH-END SIGNAL CONDITIONING**
R4 data acquisition systems are built around SIRIUS DAQ technology and feature the same versatile and powerful amplifiers for prime signal conditioning.

**UP TO 64 ANALOG INPUTS**
Systems can be configured with up to 4 SIRIUS DAQ slices for a total of 64 analog inputs for connecting virtually any sensor.

**UP TO 4 ISOLATED CAN PORTS**
Configure up to 4 high-speed CAN 2.0b channels with 1 Mbit/sec data throughput and additional support for CCP, OBDII, J1939, and CAN output.

**ALL INTERFACES**
Interfaces for wireless LAN, dual GLAN, 4x USB 3.0, GPS, HDMI and 2x synchronization are available.

**UP TO 32 COUNTER/ENCODER INPUTS**
The system can be configured with up to 32 counter/encoder inputs, or 96 digital inputs - all equipped with our patented SuperCounter® technology.

**DUAL MODE**
The EtherCAT® slave interface provides real-time data to a 3rd party control system, while the internal bus allows full-speed data to be recorded via DewesoftX in parallel. For the first time, the worlds of data acquisition and control are merged into a single system!

**EtherCAT® MASTER PORT**
R4 DAQ systems include an EtherCAT® master port with built-in synchronization, for easy connection to and extension of any of our EtherCAT® based DAQ systems - including KRYPTON DAQ modules or SIRIUS hardware.

**100 Hz GPS WITH RTK**
Optional 10 Hz or 100 Hz GPS receiver with additional RTK support can be built straight into the R4 DAQ system.
Compact, mobile data acquisition system with a built-in data logger, powerful data processing computer, multi-touch display and internal batteries for maximum portability.

**ALL INTERFACES**
Interfaces for wireless LAN, dual GLAN, 4x USB 3.0, GPS, HDMI, 2x synchronization are available.

**ALL-IN-ONE INSTRUMENT**
R1DB/R2DB instruments are stand-alone DAQ systems with the built-in touchscreen LED display, keyboard, a powerful data processing computer, SSD data logging capabilities, and internal Li-Ion batteries (R1DB/R2DB). A version without batteries is also available (R2D).

**HIGH-END SIGNAL CONDITIONING**
R1DB/R2DB data acquisition systems are built on solid SIRIUS DAQ technology, and feature the same powerful, world-leading signal conditioning amplifiers. See the SIRIUS product page for more details.

**UP TO 16 COUNTER/ENCODER INPUTS**
Up to 16 counter/encoders or 48 digital input channels, all equipped with our patented SuperCounter® technology.

**100 Hz GPS WITH RTK**
An optional 10 Hz or 100 Hz GPS receiver with additional RTK support can be built right into R1DB/R2DB DAQ system.

**EtherCAT® MASTER PORT**
R1DB / R2DB DAQ systems include an EtherCAT® master port with built-in synchronization, for easy connection to and extension of any of our EtherCAT® based DAQ systems - including KRYPTON DAQ modules or SIRIUS hardware.

**UP TO 32 ANALOG INPUTS**
Systems can be configured with one (R1DB) or two (R2DB) SIRIUS DAQ slices for a total of 32 analog inputs capable of connecting virtually any sensor.

**UP TO 2 ISOLATED CAN PORTS**
Up to 2 high speed CAN 2.0b channels with 1 Mbit/sec data throughput with additional support for CCP, OBDII, J1939, and CAN output.
ONE HARDWARE.

SIRIUS® R8 PORTABLE INSTRUMENT

HIGH-END SIGNAL CONDITIONING
R8 data acquisition systems are built around SIRIUS DAQ technology and feature the same versatile and powerful amplifiers for world-leading signal conditioning.

ALL-IN-ONE INSTRUMENT
R8 instruments are high-channel-count, standalone DAQ systems with a built-in powerful data processing computer, SSD data logging capabilities, touch-screen LED display (R8D and R8DB), and internal Li-Ion batteries (R8B/R8DB) for maximum portability.

UP TO 128 ANALOG INPUTS
Systems can be configured with up to eight SIRIUS DAQ slices for a total of 128 analog inputs for virtually any sensor.

UP TO 8 ISOLATED CAN PORTS
Configure up to 8 high-speed CAN 2.0b channels with 1 Mbit/sec data throughput with additional support for CCP, OBDII, J1939, and CAN output.

High-channel-count data acquisition system with built-in data logger, a powerful data processing computer, touch screen display (R8D) and internal batteries (R8B, R8DB) for maximum portability.

UP TO 64 ANALOG OUTPUTS
R8/R8B can be configured with up to 64 analog outputs and can function as a multi-channel function generator, analog replay, or control device with the output voltage signal of +/- 10V.

EtherCAT® MASTER PORT
R8 DAQ systems include an EtherCAT® master port with built-in synchronization, for easy connection to and extension of any of our EtherCAT® based DAQ systems - including KRYPTON DAQ modules or SIRIUS hardware.

ALL INTERFACES
Interfaces for wireless LAN, dual GI/LAN, 4x USB 3.0, GPS, HDMI, 2x synchronization are available.

100 Hz GPS WITH RTK
Optional 10 Hz or 100 Hz GPS receiver with additional RTK support can be built straight into R8 DAQ system.
One Hardware.

**RACK SYSTEM SIRIUS® R8RT**

High-channel-count DAQ system with high-end signal conditioning, a powerful computer, data logger, and real-time data output capability to EtherCAT® real-time controller.

**UP TO 128 ANALOG INPUTS**
Systems can be configured with up to eight SIRIUS DAQ slices for a total of 128 analog inputs for virtually any sensor.

**DUAL MODE**
The EtherCAT® slave interface can be used to provide real-time data to a 3rd party control system, while the internal bus allows full-speed recording via DewesoftX software in parallel. Finally, the worlds of data acquisition and control have come together in one system!

**DAQ AND CONTROL**
The R8RT instrument is an upgrade of our R8 DAQ system. It uses the same DAQ technology, and provides the same data logging and data processing capabilities as the R8. However, the R8RT includes an additional EtherCAT® slave port that can send your real-time data to any 3rd party EtherCAT® master controller.
**FULLY SYNCHRONIZED**
Every single channel - analog, digital, and CAN - is synchronized with microsecond accuracy.

**19” RACK MOUNTABLE**
The included PC chassis can be mounted in any 19” rack cabinet.

**HIGH-END SIGNAL CONDITIONING**
The R3 data acquisition system is built upon SIRIUS DAQ technology, and features the same powerful world-class signal conditioning amplifiers. Check out the SIRIUS product page for more details.

**UP TO 3 ISOLATED CAN PORTS**
Up to 3 high-speed CAN 2.0b channels with 1 Mbit/sec data throughput, with additional support for CCP, OBDII, J1939, and CAN output.

**DIGITAL/COUNTER/ENCODER INPUTS**
Each channel is capable of 3x digital inputs, 1x event counter, encoder, period, pulse-width, duty-cycle. Precise frequency and angle measurement uses patented SuperCounter® technology.

**HIGH PERFORMANCE COMPUTER**
The PC computer inside is built with standard, off-the-shelf computer components, allowing for easy upgrades of drive, memory, CPU, and other components.

**UP TO 48 ANALOG INPUTS**
Systems can be configured with up to eight SIRIUS DAQ slices for a total of 48 analog inputs for virtually any sensor.

**UP TO 24 COUNTER/ENCODER INPUTS**
Up to 24 counter/encoder or 72 digital input channels, all equipped with our patented SuperCounter® technology.
COMPACT SYSTEM SOLUTION SIRIUS® MINI

**UNMATCHED PRICE**
SIRIUS MINI ships off-the-shelf with high-quality signal conditioning, award-winning data acquisition software for the best price on the market.

**USB POWERED**
SIRIUS MINI does not require any external power supply. It can be powered straight from the USB connection, for example, through a laptop.

Small and highly portable, USB powered data acquisition system ideal for acoustic, vibration, and rotating machinery analysis.

**SMALLEST DAQ**
SIRIUS MINI is our smallest, 4-channel data acquisition system. Fits almost anywhere, suitable for acoustic, vibration, and angle measurements.

**COUNTER/ENCODER/DIGITAL INPUTS**
The system includes one counter/encoder input which can be used as 3x digital inputs, 1x event counter, encoder, period, pulse-width, duty-cycle. Precise frequency and angle measurement use patented SuperCounter® technology.

**4 IEPE/VOLTAGE INPUTS**
The system includes four high-dynamic analog inputs, dual sigma-delta ADCs with 200 kS/s/channel sample rate, and up to 160 dB dynamic range.
**HIGH-DYNAMIC - DualCoreADC® SIRIUS®**

Our DualCoreADC® technology boosts dual 24-bit delta-sigma ADC’s with an anti-aliasing filter on each channel, achieving an astonishing 160 dB of dynamic range in the time and frequency domains, with up to 200 kS/s/ch sampling rate per channel. Up to 8 channels per SIRIUS module.

**Counter input:** Most amplifiers can be also ordered with additional counter input featuring event counting, waveform timing, angle, encoder and speed measurements. Each counter has 3 digital inputs and 1 digital output.

<table>
<thead>
<tr>
<th>Connectors</th>
<th>STG</th>
<th>STGM</th>
<th>ACC</th>
<th>CHG</th>
<th>HV</th>
<th>LV</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>DB9, L1B7f, L2B10f</td>
<td>DB9, L2B7f, L2B10f</td>
<td>BNC, TNC</td>
<td>BNC, TNC</td>
<td>BANANA</td>
<td>DB9, BNC, BANANA</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Channels per slice</th>
<th>8</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Data rate / channel</th>
<th>200 kS/sec USB, 20 kS/sec EtherCAT®</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Resolution</th>
<th>24 bit DualCoreADC®</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Bandwidth</th>
<th>70 kHz</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Voltage ranges</th>
<th>±50 V, ±10 V, ±1 V, ±100 mV</th>
<th>±10 V, ±1 V, ±100 mV, ±10 mV</th>
<th>±10 V, ±500 mV</th>
<th>±10 V, ±500 mV</th>
<th>±1200 V, ±50 V</th>
<th>±200 V, ±20 V, ±10 V, ±1 V, ±100 mV</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Input coupling</th>
<th>DC, AC 1 Hz (3, 10 Hz SW)</th>
<th>DC</th>
<th>DC, AC 0.1 Hz, 1 Hz</th>
<th>DC, AC 0.1 Hz, 1 Hz, 10 Hz, 100 Hz</th>
<th>DC</th>
<th>DC, AC 1 Hz (3, 10 Hz SW)</th>
</tr>
</thead>
</table>

| Sensor excitation | 0..20 V max. 0.8W, 0.60mA max 0.5W | 0..15 V max. 44 mA | IEPE 2,4,8,12,16, 20 mA | IEPE 4,8,12 mA | - | 2..30 V bipolar, 0..24 V unipolar, max. 0.2 A/2 W |

| Bridge connection | Full, ½, ¼ 350Ω, ¼ 1200Ω 3, 4 wire | Full, ½, ¼ 350 Ω, ¼ 120 Ω 3 wire | - | - | - | Full |

| Programmable shunt | 59.88 kΩ, 175kΩ bipolar | 100 kΩ bipolar | - | - | - | - |

| IEPE input | DSI-ACC | DSI-ACC | ✓ | ✓ | ✓ | DSI-ACC |

| Resistance | ✓ | - | - | - | - | - |

| Temperature (PtX) | ✓ | DSI-RTD | - | - | - | DSI-RTD |

| Thermocouple | DSI-TH | DSI-TH | - | - | - | DSI-TH |

| Potentiometer | ✓ | ✓ | - | - | - | - |

| LVDT | DSI-LVDT | DSI-LVDT | - | - | - | DSI-LVDT |

| Charge | DSI-CHG | DSI-CHG | - | 100k, 10k pC | - | DSI-CHG |

| Current | ext. shunt, DSI-20mA, DSI-5A | ext. shunt, DSI-20mA, DSI-5A | ext. shunt | ext. shunt | - | ext. shunt, DSI-20mA, DSI-5A |

| TEDS | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |

| Isolation voltage | 1000 V | 1000 V | 1000 V | 1000 V | CATII 1000 V | 1000 V |

| Power consumption per channel | 2W/ch | 1.3 W/ch | 1 W/ch | 1.2 W/ch | 1 W/ch | 1.2 W/ch |

| Advanced functions | Supports all strain types and high input range | Low power, sensor and amplifier balance, bipolar shunt | Sensor error detection, high dynamic range | Sensor error detection in IEPE and CHG mode (injection) | High voltage, high isolation | High sensor power and multi range |
### High-Density HD SIRIUS®

High-density SIRIUS module with up to 16 channels per SIRIUS slice is the perfect choice for high channel count applications.

### High-Speed HS SIRIUS®

1 MHz 16 bit SAR technology with software selectable alias-free filtering is the perfect choice for transient recording. Up to 8 channels per SIRIUS module.

<table>
<thead>
<tr>
<th>HD-STGS</th>
<th>HD-LV</th>
<th>HD-ACC</th>
<th>HS-HV</th>
<th>HS-LV</th>
<th>HS-ACC</th>
<th>HS-CHG</th>
<th>HS-STG</th>
</tr>
</thead>
<tbody>
<tr>
<td>DB9, L1B10f</td>
<td>DB9, BNC</td>
<td>BNC</td>
<td>BANANA</td>
<td>DB9, BNC</td>
<td>BANANA</td>
<td>BNC</td>
<td>BNC, TNC</td>
</tr>
<tr>
<td>200 kS/sec USB, 10 kS/sec EtherCAT*</td>
<td>200 kS/sec USB, 10 kS/sec EtherCAT*</td>
<td>200 kS/sec USB, 10 kS/sec EtherCAT*</td>
<td>200 kS/sec USB, 10 kS/sec EtherCAT*</td>
<td>200 kS/sec USB, 10 kS/sec EtherCAT*</td>
<td>200 kS/sec USB, 10 kS/sec EtherCAT*</td>
<td>200 kS/sec USB, 10 kS/sec EtherCAT*</td>
<td>200 kS/sec USB, 10 kS/sec EtherCAT*</td>
</tr>
<tr>
<td>±10 V, ±10 V, ±100 mV, ±100 mV</td>
<td>±10 V, ±10 V, ±100 mV, ±100 mV</td>
<td>±10 V, ±10 V, ±100 mV, ±100 mV</td>
<td>±10 V, ±10 V, ±100 mV, ±100 mV</td>
<td>±10 V, ±10 V, ±100 mV, ±100 mV</td>
<td>±10 V, ±10 V, ±100 mV, ±100 mV</td>
<td>±10 V, ±10 V, ±100 mV, ±100 mV</td>
<td>±10 V, ±10 V, ±100 mV, ±100 mV</td>
</tr>
<tr>
<td>70 kHz</td>
<td>70 kHz</td>
<td>70 kHz</td>
<td>70 kHz</td>
<td>70 kHz</td>
<td>70 kHz</td>
<td>70 kHz</td>
<td>70 kHz</td>
</tr>
<tr>
<td>±10 V, ±10 V, ±100 mV, ±100 mV</td>
<td>±10 V, ±10 V, ±100 mV, ±100 mV</td>
<td>±10 V, ±10 V, ±100 mV, ±100 mV</td>
<td>±10 V, ±10 V, ±100 mV, ±100 mV</td>
<td>±10 V, ±10 V, ±100 mV, ±100 mV</td>
<td>±10 V, ±10 V, ±100 mV, ±100 mV</td>
<td>±10 V, ±10 V, ±100 mV, ±100 mV</td>
<td>±10 V, ±10 V, ±100 mV, ±100 mV</td>
</tr>
<tr>
<td>DC</td>
<td>DC</td>
<td>DC, AC 0.1 Hz, 1 Hz</td>
<td>DC</td>
<td>DC</td>
<td>DC, AC 0.1 Hz, 1 Hz</td>
<td>DC, AC 0.1 Hz, 1 Hz</td>
<td>DC, AC 0.1 Hz, 1 Hz</td>
</tr>
<tr>
<td>0.12 V max. 44 mA</td>
<td>2.30 V bipolar, 0.24 V unipolar, max. 0.2 A/2 W</td>
<td>IEPE 4.8, 12 mA</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Full, ½, ¼ 350 Ω, ¼ 120 Ω 3 wire</td>
<td>Full</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>100 kΩ</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>DSI-ACC</td>
<td>DSI-ACC</td>
<td>✓</td>
<td>-</td>
<td>DSI-ACC</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>DSI-RTD</td>
<td>DSI-RTD</td>
<td>-</td>
<td>-</td>
<td>DSI-RTD</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>DSI-TH</td>
<td>DSI-TH</td>
<td>-</td>
<td>-</td>
<td>DSI-TH</td>
<td>-</td>
<td>-</td>
<td>✓</td>
</tr>
<tr>
<td>✓</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>✓</td>
</tr>
<tr>
<td>DSI-LVDT</td>
<td>DSI-LVDT</td>
<td>-</td>
<td>-</td>
<td>DSI-LVDT</td>
<td>-</td>
<td>-</td>
<td>✓</td>
</tr>
<tr>
<td>DSI-CHG</td>
<td>DSI-CHG</td>
<td>-</td>
<td>-</td>
<td>DSI-CHG</td>
<td>-</td>
<td>-</td>
<td>✓</td>
</tr>
<tr>
<td>100 kΩ ext. shunt, 1k pC</td>
<td>100 kΩ ext. shunt, 1k pC</td>
<td>100 kΩ ext. shunt, 1k pC</td>
<td>100 kΩ ext. shunt, 1k pC</td>
<td>100 kΩ ext. shunt, 1k pC</td>
<td>100 kΩ ext. shunt, 1k pC</td>
<td>100 kΩ ext. shunt, 1k pC</td>
<td>100 kΩ ext. shunt, 1k pC</td>
</tr>
<tr>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>500 V in pairs</td>
<td>500 V in pairs</td>
<td>500 V in pairs</td>
<td>500 V in pairs</td>
<td>500 V in pairs</td>
<td>500 V in pairs</td>
<td>500 V in pairs</td>
<td>500 V in pairs</td>
</tr>
<tr>
<td>1.3 W/pair</td>
<td>1.3 W/pair</td>
<td>1.3 W/pair</td>
<td>1.3 W/pair</td>
<td>1.3 W/pair</td>
<td>1.3 W/pair</td>
<td>1.3 W/pair</td>
<td>1.3 W/pair</td>
</tr>
<tr>
<td>Low power, sensor and amplifier balance</td>
<td>High sensor power and multi range</td>
<td>Sensor error detection</td>
<td>Low power, sensor and amplifier balance</td>
<td>High sensor power and multi range</td>
<td>Sensor error detection</td>
<td>High sensor power and multi range</td>
<td>Sensor error detection</td>
</tr>
</tbody>
</table>

- DSI-20mA, DSI-5A
- DSI-20mA, DSI-5A ext. shunt
- DSI-20mA, DSI-5A ext. shunt
- DSI-20mA, DSI-5A ext. shunt
EXTRA-HIGH-SPEED XHS SIRIUS®
SIRIUS XHS is a high-speed data acquisition system (15 MS/s) with the new Hybrid ADC technology capable of high-bandwidth transient recording and very high-dynamic, alias-free data acquisition.

<table>
<thead>
<tr>
<th>EXTRA-HIGH-SPEED XHS SIRIUS®</th>
<th>XHS-HV</th>
<th>XHS-LV</th>
<th>XHS-ACC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Connectors</td>
<td>BANANA</td>
<td>DB9, BNC</td>
<td>BNC</td>
</tr>
<tr>
<td>Channels per slice</td>
<td>8</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Data rate / channel</td>
<td>15 MS/s</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Resolution</td>
<td>16-bit (24-bit @ 1 MS/s)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bandwidth</td>
<td>5 MHz</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Voltage ranges</td>
<td>±2000 V ... ±200 V</td>
<td>±100 V ... ±50 mV</td>
<td>±10 V ... ±200 mV</td>
</tr>
<tr>
<td>Input coupling</td>
<td>DC</td>
<td>DC, AC 1 Hz</td>
<td>DC, AC 0.1 Hz, AC 1 Hz</td>
</tr>
<tr>
<td>Sensor excitation</td>
<td>-</td>
<td>2.5..30 V bipolar, 2..24 V unipolar, max. 0.2 A / 2 W</td>
<td>IEPE 2 mA, 4 mA, 8 mA, 12 mA, 16 mA, 20 mA</td>
</tr>
<tr>
<td>Bridge connection</td>
<td>-</td>
<td>Full</td>
<td></td>
</tr>
<tr>
<td>Programmable shunt</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>IEPE input</td>
<td>-</td>
<td>DSI-ACC</td>
<td>✓</td>
</tr>
<tr>
<td>Resistance</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Temperature (PTx)</td>
<td>-</td>
<td>DSI-RTD</td>
<td>-</td>
</tr>
<tr>
<td>Thermocouple</td>
<td>-</td>
<td>DSI-TH</td>
<td>-</td>
</tr>
<tr>
<td>Potentiometer</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>LVDT</td>
<td>-</td>
<td>DSI-LVDT</td>
<td>-</td>
</tr>
<tr>
<td>Charge</td>
<td>-</td>
<td>DSI-CHG</td>
<td>-</td>
</tr>
<tr>
<td>Current</td>
<td>-</td>
<td>ext. shunt DSI20mA, DSI5A</td>
<td>ext. shunt</td>
</tr>
<tr>
<td>TEDS</td>
<td>-</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Isolation voltage</td>
<td>CAT II 1000 V</td>
<td>1000 V</td>
<td>1000 V</td>
</tr>
<tr>
<td>Power consumption per channel</td>
<td>1 W/ch</td>
<td>1.2 W/ch</td>
<td>-</td>
</tr>
<tr>
<td>Advanced functions</td>
<td>High voltage, high bandwidth, high isolation</td>
<td>High sensor excitation and multi range</td>
<td>Sensor error detection, high speed</td>
</tr>
</tbody>
</table>
SIRIUS® XHS HAS TWO WAYS OF TRANSMITTING DATA TO THE PC:

**Ethernet interface (GLAN)**
is intended for distributed data acquisition

**USB 3.0 (type C connector)**
is intended for very high-speed transmission.

The system is acquiring the data with a very low CPU load. We are using DMA transfer on the system level to reduce loads. In today’s world of open tool chain and intercommunication, devices should be compliant with standard protocols. SIRIUS XHS can serve acquired data via these standard protocols - all in parallel.

**ALIAS FREE MODE**
Up to 1 MS/s data can be acquired with an extremely high dynamic range, similar to our dual 24-bit SIRIUS DualCoreADC devices. The data is alias-free, so all higher frequencies are fully rejected. Such a mode is perfect for sound, vibration, and general data recording applications. such an acquisition mode is typically found in Sigma-delta ADCs.

By today’s standard, you would need two totally separate data acquisition devices for the mentioned measurements and applications. But the new SIRIUS XHS data acquisition system allows you to select per channel, depending on the measurement application, the appropriate mode of ADC operation. Both modes are available also in parallel acquiring two channels at different rates per one input slot.

**HybridADC TECHNOLOGY**
Offers everything you ever wanted out of a high-end data acquisition system. High bandwidth and high dynamic mode available in parallel, software selectable per channel.

**HIGH BANDWIDTH MODE**
This mode offers more than 5 MHz bandwidth and 15 MS/s sampling rate, SIRIUS XHS can perfectly acquire impulse, step, and square signals without any ringing or overshoot. Such an acquisition mode is perfect for transient recording and power analysis and would usually be found in SAR ADCs.

**USB 3.0 (type C) or Ethernet (1 GB GLAN)**

**XCP**
Data via XCP to:
- ECU calibration software like ETAS INCA or Vector CANape

**OPC UA**
Data via OPC UA to:
- DewesoftX
- Time-series DB, Cloud, SCADA

**OPC UA**
is the industry standard. Actually, it is more than a standard, it is a perfect framework where the device can be described and set up in any system, including SCADA, MES, ERP, mobile devices, and others.
We build our equipment to last. We guarantee you that your hardware will be free from defects and functional. Our warranty covers that the instruments function as promised for a period of 7 years from the day of the delivery.
CAPACITY & COMPATIBILITY
Our devices are capable of storing hundreds of analog and digital channels at full speed while allowing in parallel data to be sent out in real-time to any 3rd party EtherCAT® master controller.

RUGGED AND BUILT TO LAST
Made on our own CNC machines, designed by our mechanical engineers. Proven tough.

SOFTWARE INCLUDED WITH FREE LIFETIME UPGRADE
Award winning DewesoftX software is included with every instrument. All upgrades to the software are free forever with no hidden licensing costs.
IOlITE®R8/R8r
SIRIUS form chassis with up to eight slots, dual EtherCAT® interface and redundant power supply - also available in rugged chassis.

IOlITE®R12
19" rack version with up to twelve slots, dual EtherCAT® interface and redundant power supply.

IOlITE®LX R8
Embedded data acquisition system based on a low power ARM processor with Linux-based open architecture. IOlITE LX can act as a standalone data logger, real-time control system, and signal conditioning front-end - all at the same time.

DUAL EtherCAT®
IOlITE uses two EtherCAT® buses in parallel. The EtherCAT® primary bus is used for full speed buffered data acquisition to a computer. The EtherCAT® secondary bus is mainly used for real-time data to any 3rd party control system.

REDUNDANT POWER SUPPLY
Together with dual EtherCAT® interface provides maximum system reliability.

GREAT SIGNAL CONDITIONING
IOlITE features high-quality amplifiers which offer great signal quality and up to 20 kHz sampling rate.

Our data acquisition devices are capable of storing hundreds of analog and digital channels at full speed while allowing parallel data to be sent out in real-time to any 3rd party EtherCAT® master controller. We have brought the worlds of data acquisition and real-time control closer together - this will save you time and money in a big way.

WIDE OPERATING TEMPERATURE RANGE
While IOlITE DAQ systems are labelled to run at -10°C.. 50°C, certain configurations can operate in the -40°C .. +85°C temperature range.

GREAT PRICE/PERFORMANCE
IOlITE offers great price/performance ratio and is suitable for test-bed and industrial applications.
IOLITE®
Standalone, distributed, and cost-effective data acquisition device with high-end signal conditioning for monitoring and industrial applications.

IOLITE®
Distributed, cost-effective single channel data acquisition device with high-end signal conditioning.

SIRIUS® R8DB/R8rt
Integrated instrument with 8 SIRIUS slices, powerful SBOX computer, optional 19" display (R8D) and batteries (R8DB) and real-time EtherCAT® slave interface (R8rt).

DUAL MODE
The EtherCAT® slave interface can be used to provide real-time data to a 3rd party control system, while the internal bus allows full-speed recording via DewesoftX software in parallel. Finally, the worlds of data acquisition and control have come together in one system!

MULTIPLE CHASSIS OPTION
IOLITE can be configured in the 19-inch cabinet compatible chassis or in more rugged SIRIUS-like compatible chassis.

DEWESOFT
7-YEAR WARRANTY
Our warranty covers that the instruments function as promised for a period of 7 years from the day of the delivery.
### IOLITE® Modules

<table>
<thead>
<tr>
<th>IOLITE Module</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>IOLITE 8xTH</strong></td>
<td>8-channel-channel isolated universal thermocouple input module with mini TC connector. Accepts K, J, T, R, S, N, E, C, B thermocouple types.</td>
</tr>
<tr>
<td><strong>IOLITE 8xRTD</strong></td>
<td>8-channel-channel isolated PTx temperature, resistance and voltage with Lemo 08 connector.</td>
</tr>
<tr>
<td><strong>IOLITE 8xLV</strong></td>
<td>8-channel-channel isolated voltage inputs with BNC or screw terminal connectors.</td>
</tr>
<tr>
<td><strong>IOLITE 16xLV</strong></td>
<td>16-channel voltage input module with a terminal block connector and channel to ground isolation.</td>
</tr>
<tr>
<td><strong>IOLITE 8xLA</strong></td>
<td>8-channel isolated current input module with BNC or terminal block connector.</td>
</tr>
<tr>
<td><strong>IOLITE 6xSTG</strong></td>
<td>Universal 6 channel differential voltage, current and full/half/quarter bridge input with DSUB9 connector. Compatible with DSI adapters for IEPE, CHG, 200V, RTD, TH measurements.</td>
</tr>
<tr>
<td><strong>IOLITE 8xSTGS</strong></td>
<td>8-channel strain gauge module supporting full/half/quarter bridge configurations with terminal block or D-SUB37 (optional) input connectors.</td>
</tr>
</tbody>
</table>

**IOLITE 16xA0** | 16-channel analog voltage output module with a terminal block connectors. |

**IOLITE 32xDI** | 32-channel isolated digital input module with screw terminal connection. |

**IOLITE 32xDO** | 32-channel digital output module with screw terminal connections and integrated watchdog function. |

**IOLITE 8xDI-4xDO** | 8 digital input and 4 digital output channels. |

**IOLITE 4xCNT** | 4 channel digital counter input with SuperCounter® technology. |
<table>
<thead>
<tr>
<th>Connectors</th>
<th>6xSTG</th>
<th>8xSTGS</th>
<th>8xLV</th>
<th>16xLV</th>
<th>8xLA</th>
<th>8xTH</th>
<th>8xRTD</th>
<th>32xDI</th>
<th>32xDO</th>
<th>8xDI-4xDO</th>
<th>4xCNT</th>
<th>16xAO</th>
</tr>
</thead>
<tbody>
<tr>
<td>#ch per module</td>
<td>6x</td>
<td>8x</td>
<td>8x</td>
<td>16x</td>
<td>8x</td>
<td>8x</td>
<td>8x</td>
<td>32x</td>
<td>32x</td>
<td>8x digital in, 4x digital out</td>
<td>4x</td>
<td>16x</td>
</tr>
<tr>
<td>Data rate / channel</td>
<td>20 kS/sec</td>
<td>20 kS/sec</td>
<td>20 kS/sec</td>
<td>20 kS/sec</td>
<td>20 kS/sec</td>
<td>20 kS/sec</td>
<td>20 kS/sec</td>
<td>20 kS/sec</td>
<td>20 kS/sec</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Resolution</td>
<td>24-bit</td>
<td>24-bit</td>
<td>24-bit</td>
<td>24-bit</td>
<td>24-bit</td>
<td>24-bit</td>
<td>24-bit</td>
<td>digital</td>
<td>digital</td>
<td>digital</td>
<td>digital</td>
<td>digital</td>
</tr>
<tr>
<td>Bandwidth</td>
<td>0.49*fs</td>
<td>0.433*fs</td>
<td>0.49*fs</td>
<td>0.433*fs</td>
<td>0.49*fs</td>
<td>0.49*fs</td>
<td>0.49*fs</td>
<td>100 MHz</td>
<td>timebase 5 ppm, 20 ppm max</td>
<td>16-bit</td>
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<td></td>
</tr>
<tr>
<td>Voltage ranges</td>
<td>±50 V, ±10 V, ±1 V, ±100 mV, ±200 mV, ±1 V, ±100 mV (±10 V, ±1 V on request)</td>
<td>±1 V, ±10 V, ±1 V, ±100 mV (±10 V, ±1 V on request)</td>
<td>±1 V, ±100 mV, ±1 V, ±100 mV</td>
<td>±1 V, ±100 mV</td>
<td>±1 V, ±100 mV</td>
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<td>±1 V, ±100 mV</td>
<td>±1 V, ±100 mV</td>
<td>±1 V, ±100 mV</td>
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<tr>
<td>Input coupling</td>
<td>DC, AC 1 Hz</td>
<td>DC</td>
<td>DC</td>
<td>DC</td>
<td>DC</td>
<td>DC</td>
<td>DC</td>
<td>DC</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sensor excitation</td>
<td>0..12 V (bipolar), 0..24 V (unipolar)</td>
<td>0..12 V (bipolar), 0..24 V (unipolar)</td>
<td>0..12 V (bipolar), 0..24 V (unipolar)</td>
<td>0..12 V (bipolar), 0..24 V (unipolar)</td>
<td>0..12 V (bipolar), 0..24 V (unipolar)</td>
<td>0..12 V (bipolar), 0..24 V (unipolar)</td>
<td>0..12 V (bipolar), 0..24 V (unipolar)</td>
<td>0..12 V (bipolar), 0..24 V (unipolar)</td>
<td>0..12 V (bipolar), 0..24 V (unipolar)</td>
<td>0..12 V (bipolar), 0..24 V (unipolar)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bridge connection</td>
<td>Full, ½, ¼ 350 Ω, ¾ 120 Ω 3-wire</td>
<td>Full, ½, ¼ 350 Ω, ¾ 120 Ω 3-wire</td>
<td>Full, ½, ¼ 350 Ω, ¾ 120 Ω 3-wire</td>
<td>Full, ½, ¼ 350 Ω, ¾ 120 Ω 3-wire</td>
<td>Full, ½, ¼ 350 Ω, ¾ 120 Ω 3-wire</td>
<td>Full, ½, ¼ 350 Ω, ¾ 120 Ω 3-wire</td>
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<td>Full, ½, ¼ 350 Ω, ¾ 120 Ω 3-wire</td>
<td>Full, ½, ¼ 350 Ω, ¾ 120 Ω 3-wire</td>
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<td></td>
</tr>
<tr>
<td>Programmable shunt</td>
<td>100 kΩ</td>
<td>100 kΩ</td>
<td>100 kΩ</td>
<td>100 kΩ</td>
<td>100 kΩ</td>
<td>100 kΩ</td>
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<td>100 kΩ</td>
<td>100 kΩ</td>
<td>100 kΩ</td>
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<tr>
<td>Current</td>
<td>20 mA (internal shunt, DSI-SA)</td>
<td>±20 mA, ±2 mA</td>
<td>±20 mA, ±2 mA</td>
<td>±20 mA, ±2 mA</td>
<td>±20 mA, ±2 mA</td>
<td>±20 mA, ±2 mA</td>
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<td>±20 mA, ±2 mA</td>
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<tr>
<td>Temperature (PTx)</td>
<td>DSI-RTD</td>
<td>PT100, 200, 500, 1000, 2000</td>
<td>PT100, 200, 500, 1000, 2000</td>
<td>PT100, 200, 500, 1000, 2000</td>
<td>PT100, 200, 500, 1000, 2000</td>
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<td>PT100, 200, 500, 1000, 2000</td>
<td>PT100, 200, 500, 1000, 2000</td>
<td>PT100, 200, 500, 1000, 2000</td>
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<td>Resistance</td>
<td>1 kΩ, 10 kΩ</td>
<td>1 kΩ, 10 kΩ</td>
<td>1 kΩ, 10 kΩ</td>
<td>1 kΩ, 10 kΩ</td>
<td>1 kΩ, 10 kΩ</td>
<td>1 kΩ, 10 kΩ</td>
<td>1 kΩ, 10 kΩ</td>
<td>1 kΩ, 10 kΩ</td>
<td>1 kΩ, 10 kΩ</td>
<td>1 kΩ, 10 kΩ</td>
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<td>Potentiometer</td>
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<td>✓</td>
<td>✓ (except DB37)</td>
<td>✓</td>
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<td></td>
</tr>
<tr>
<td>LVDT</td>
<td>DSI-LVDT</td>
<td>DSI-LVDT</td>
<td>DSI-LVDT</td>
<td>DSI-LVDT</td>
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<td>DSI-LVDT</td>
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<td>DSI-LVDT</td>
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<tr>
<td>Charge</td>
<td>DSI-CHG</td>
<td>DSI-CHG</td>
<td>DSI-CHG</td>
<td>DSI-CHG</td>
<td>DSI-CHG</td>
<td>DSI-CHG</td>
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<tr>
<td>TEDS</td>
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<td>✓</td>
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</tr>
<tr>
<td>Isolation voltage</td>
<td>Differential</td>
<td>Differential</td>
<td>1000 V</td>
<td>250 V</td>
<td>250 V</td>
<td>1000 V</td>
<td>1000 V</td>
<td>1000 V</td>
<td>1000 V</td>
<td>1000 V</td>
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<td></td>
</tr>
<tr>
<td>Power consumption per module</td>
<td>Typ. 5.4 W, Max. 11.1 W</td>
<td>Typ. 2.7 W, Max. 5.1 W</td>
<td>Typ. 2.4 W, Max. 3.5 W</td>
<td>Typ. 2.4 W, Max. 4.2 W</td>
<td>Typ. 2.4 W, Max. 3.5 W</td>
<td>3.2 W</td>
<td>Typl. 2.1 W, Max. 2.7 W</td>
<td>Typ. 1.2 W, Max. 1.9 W</td>
<td>Typ. 1.2 W, Max. 2.0 W</td>
<td>Typ. 1.1 W, Max. 1.8 W</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Advanced functions</td>
<td>Supports all strain types, high input range</td>
<td>Supports all strain types, low power consumption</td>
<td>High isolation, high input range</td>
<td>High isolation, high input range</td>
<td>High isolation, support of main TC types</td>
<td>High isolation</td>
<td>Watchdog</td>
<td>High sink current, watchdog</td>
<td>Supercounter technology</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
We build our equipment to last. We guarantee you that your hardware will be free from defects and functional. Our warranty covers that the instruments function as promised for a period of 7 years from the day of the delivery.
RUGGED DAQ SYSTEMS

RUGGED
Instruments are rugged enough to sustain the harshest environments: water, dust, shock, vibration, and extreme temperature ranges from -45 up to 85 °C.

DISTRIBUTABLE
Devices can be distributed close to the source of data - close to the sensors, down to a single measurement node.

STANDARD INTERFACE
The EtherCAT® bus can be connected to 3rd party masters, as well as DewesoftX, thanks to the buffered mode.

SOFTWARE INCLUDED WITH FREE LIFETIME UPGRADE
Award-winning DewesoftX software is included with every instrument. All upgrades to the software are free - FOREVER - and there are never any hidden licensing fees.
KRYPTON® RUGGED SYSTEMS

KRYPTON®

Ultra rugged and distributable data acquisition devices from -40 to +85 °C operating range.

KRYPTON® CPU
Compact, highly portable logger for data recording in harsh environments from -40 to +70 °C operating range.

KRYPTON® 1 SERIES
Distribute your measurements down to a single channel.

MADE TO BE EXTREME
IP67, dust proof, waterproof, 100 g shock and vibration resistant, wide temperature operating range.

Rugged DAQ system that can be distributed down to a single channel and placed close to sensors. All DAQ systems offer IP67 degree of protection and are thus waterproof, dustproof, shock resistant up to 100G, and can withstand a temperature range up to -40 °C to 85 °C.

SINGLE CABLE
With up to 100 m between devices for power, data and synchronization.

DISTRIBUTABLE DEVICES
Locate your data acquisition hardware close to the sensors.
ONE HARDWARE.

RUGGED SYSTEMS SIRIUS® AND SBOX

SIRIUS®iwe
High-end signal conditioning in rugged form factor from -40 to +60 °C.

SBOXwe
Ultra rugged and powerful data logger from -40 to +50 °C.

DEWESOFT 7-YEAR WARRANTY
Our warranty covers that the instruments function as promised for a period of 7 years from the day of the delivery.

SIRIUS® DAQ TECHNOLOGY
DualCoreADC®, high dynamic range 160 dB, high isolation, SuperCounter®.

MADE TO BE IP67 EXTREME
Dust-proof, water-proof, 100g shock and vibration resistant, wide temperature operating range.

Extremely rugged (IP67 degree of protection) and fully isolated data acquisition system for the most demanding testing in harsh environments. High-precision, high-dynamic, and high-bandwidth for all types of analog signals from IEPE to strain gages.

MADE TO BE IP67 EXTREME
Dust-proof, water-proof, 100g shock and vibration resistant, wide temperature operating range.

Our warranty covers that the instruments function as promised for a period of 7 years from the day of the delivery.

SIRIUS® DAQ TECHNOLOGY
DualCoreADC®, high dynamic range 160 dB, high isolation, SuperCounter®.
KRYPTON® WATERPROOF

**UP TO 100 m BETWEEN UNITS**
KRYPTON units can be distributed over the large area with distances of up to 100 meters (328 feet) between DAQ nodes.

**DISTRIBUTED DAQ**
Distributed measurement hardware that can be located close to sensors. Compared to traditional DAQ systems, this has many advantages such as shorter cable runs and less potential for signal noise. KRYPTON systems can be distributed down to a single channel.

**EtherCAT® DAQ**
Protocol with 100Mb/s bus speed is used for data transmission, data synchronization, and power supply. KRYPTONs are connected with a single cable for data, power, and sync.

**RUGGED IP67**
These modules are built with tough-as-nails IP67 protection - they’re ready to go to work in extreme weather and under the harshest conditions.

**UP TO 20 kS/sec/CH SAMPLING RATE**
Most KRYPTON channels in the EtherCAT® line can achieve sampling rates up to 20 kS/second.

**FROM 3 TO 16 CHANNEL UNITS**
Modules are available from a 3 channel unit, ranging up to larger 8 and 16 channel modules.

Rugged and distributable data acquisition modules. EtherCAT® interface for analog and digital I/O and IP67 degree of protection.
## KRYPTON® WATERPROOF SPECS

<table>
<thead>
<tr>
<th></th>
<th>STG</th>
<th>TH</th>
<th>RTD</th>
<th>ACC</th>
<th>LV</th>
<th>LA</th>
<th>DIO</th>
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</thead>
<tbody>
<tr>
<td>Connectors</td>
<td>DB9, L2810f</td>
<td>Thermocouple</td>
<td>L086f</td>
<td>BNC</td>
<td>BNC</td>
<td>BNC</td>
<td>DB25</td>
</tr>
<tr>
<td>#ch per module</td>
<td>3x, 6x</td>
<td>8x, 16x</td>
<td>8x</td>
<td>4x, 8x</td>
<td>4x, 8x</td>
<td>8x</td>
<td>16xDI, 16xDI, 8xDI, 8xDO</td>
</tr>
<tr>
<td>Data rate/channel</td>
<td>20 kS/sec</td>
<td>100 S/sec</td>
<td>100 S/sec</td>
<td>20 kS/sec</td>
<td>20 kS/sec</td>
<td>20 kS/sec</td>
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<tr>
<td>Resolution</td>
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<td>24 bit</td>
<td>24 bit</td>
<td>24 bit</td>
<td>24 bit</td>
<td>24 bit</td>
<td>digital</td>
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<tr>
<td>Bandwidth</td>
<td>0.49 fs</td>
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<td>0.49 fs</td>
<td>0.49 fs</td>
<td>0.49 fs</td>
<td>-</td>
</tr>
<tr>
<td>Voltage range</td>
<td>±10V, ±1V, ±100mV, ±10mV</td>
<td>±1V, ±100mV</td>
<td>±1V, ±100mV</td>
<td>±10V, ±5V, ±1V, ±200mV</td>
<td>±50 V</td>
<td>±20 mA</td>
<td>CMOS compatible</td>
</tr>
<tr>
<td>Input coupling</td>
<td>DC</td>
<td>DC</td>
<td>DC</td>
<td>DC, AC</td>
<td>0.1Hz, 1Hz</td>
<td>DC</td>
<td>DC</td>
</tr>
<tr>
<td>Sensor excitation</td>
<td>0...15 V max, 0.4W/ch (45mA limit)</td>
<td>-</td>
<td>-</td>
<td>IEPE 4 mA, 8 mA</td>
<td>-</td>
<td>5 V / 300 mA</td>
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<tr>
<td>Bridge connection</td>
<td>Full, 1/3, 350Ω, 1/4, 120Ω 3 wire</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>12 V / 120 mA</td>
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<tr>
<td>Programmable shunt</td>
<td>100 kΩ</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>Vsupply / 200 mA</td>
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<tr>
<td>IEPE input</td>
<td>DSI-ACC</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
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<tr>
<td>Resistance</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
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<tr>
<td>Temperature (PTx)</td>
<td>DSI-RTD</td>
<td>-</td>
<td>PT100, 200, 500, 1000, 2000</td>
<td>-</td>
<td>-</td>
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<tr>
<td>Thermocouple</td>
<td>DSI-TH</td>
<td>K, J, T, R, S, N, E, C, B</td>
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<td>-</td>
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<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>LVDT</td>
<td>DSI-LVDT</td>
<td>-</td>
<td>-</td>
<td>-</td>
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<td>-</td>
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</tr>
<tr>
<td>Charge</td>
<td>DSI-CHG</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Current</td>
<td>ext. shunt</td>
<td>DSI20mA, DSI5A</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>TEDS</td>
<td>✓</td>
<td>-</td>
<td>-</td>
<td>✓</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Isolation voltage</td>
<td>Differential</td>
<td>1000 V</td>
<td>1000 V</td>
<td>Differential</td>
<td>1000 V</td>
<td>1000 V</td>
<td>250 V</td>
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<tr>
<td>Power consumption per module</td>
<td>2.4W (4W 120Ω @ 5V load)</td>
<td>3xSTG; 5.9W (8.9W 120Ω @ 5V load)</td>
<td>6xSTG</td>
<td>2.5 W (8xTH)</td>
<td>4 W (16xTH)</td>
<td>2.5 W</td>
<td>4.6 W</td>
</tr>
<tr>
<td>3xSTG, 6xSTG</td>
<td>4.6 W</td>
<td>3.5 W (4xLV)</td>
<td>6.7W (8xLV)</td>
<td>6.8W</td>
<td>2W</td>
<td></td>
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<tr>
<td>Advanced functions</td>
<td>Supports all strain types, TEDS support</td>
<td>High isolation, support of main TC types</td>
<td>High isolation</td>
<td>TEDS support</td>
<td>High isolation, high input range</td>
<td>High isolation, 4-20 mA current loop</td>
<td>-</td>
</tr>
</tbody>
</table>

### AMPLIFIER SPECS

- **3xSTG, 6xSTG**: Differential universal and strain module
- **8xTH, 16xTH**: Isolated universal thermocouples module
- **8xRTD**: Isolated module for measurements with resistance temperature detectors
- **4xACC, 8xACC**: IEPE accelerometer amplifier
- **4xLV, 8xLV**: Isolated voltage input module
- **8xLA**: Isolated low current amplifier
- **16xDI, 16xDI, 8xDI-8xDO**: Isolated digital input/output module
- **GPS JUNCTION**: Module for synchronization between SIRIUS or KRYPTON EtherCAT® devices to SIRIUS USB device, IRIG-B-DC or GPS
- **Sync junction**: Module used to inject IRIG-B-DC sync signal from USB device to EtherCAT® line
- **KRYPTON CPU**: Rugged data logger
**KRYPTON® 1 WATERPROOF**

**UP TO 40 kS/sec SAMPLING RATE**
Most devices in the KRYPTON 1 product line can achieve sampling rate up to 40 kS/sec.

**RUGGED IP67**
All KRYPTON modules are rugged with the IP67 degree of protection and ready for testing in extreme weather and harsh environments.

**UP TO 100 m BETWEEN UNITS**
KRYPTON units can be distributed over the large area with distances of up to 100 meters (328 feet) between DAQ nodes.

**DISTRIBUTED TO SINGLE CHANNEL**
KRYPTON 1 allows distributing DAQ units down to single channel.

Smallest size single channel rugged and distributable data acquisition modules with EtherCAT® interface.

**EtherCAT® DAQ**
The EtherCAT® protocol with 100Mb/s bus speed is used for data transmission, data synchronization, and for powering the module. KRYPTON 1 modules are connected with a single cable for data, sync, and power.
# KRYPTON® 1 WATERPROOF SPECS

<table>
<thead>
<tr>
<th>AO</th>
<th>DI</th>
<th>DO</th>
<th>ACC</th>
<th>STG</th>
<th>LV</th>
<th>HV</th>
<th>TH-HV</th>
<th>CNT</th>
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</thead>
<tbody>
<tr>
<td>Connectors</td>
<td>BNC</td>
<td>DSUB15HD Male</td>
<td>DSUB15HD Female</td>
<td>BNC</td>
<td>D9</td>
<td>BNC</td>
<td>Banana jack</td>
<td>K-type thermocouple</td>
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<tr>
<td># per module</td>
<td>1</td>
<td>4</td>
<td>4</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Data rate / channel</td>
<td>1 kS/sec</td>
<td>40 kS/sec</td>
<td>40 kS/sec</td>
<td>40 kS/sec</td>
<td>40 kS/sec</td>
<td>40 kS/sec</td>
<td>100 S/sec</td>
<td>20 kS/sec</td>
</tr>
<tr>
<td>Data interface</td>
<td>EtherCAT®, 100 Mbit/s</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Data interface connectors</td>
<td>Lemo 1T (1 cable for data, power and sync, daisy chainable)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Resolution</td>
<td>18 bit</td>
<td>digital</td>
<td>digital</td>
<td>24 bit</td>
<td>24 bit</td>
<td>24 bit</td>
<td>24 bit</td>
<td>24 bit</td>
</tr>
<tr>
<td>Bandwidth</td>
<td>Analog 50kHz</td>
<td>0.49 fs</td>
<td>0.49 fs</td>
<td>0.49 fs</td>
<td>0.49 fs</td>
<td>0.5 fs</td>
<td>10 MHz</td>
<td></td>
</tr>
<tr>
<td>Voltage ranges</td>
<td>±10V (DC only)</td>
<td>±10 V, ±5 V, ±1 V, ±200 mV</td>
<td>±50 V, ±10 V, ±100 mV</td>
<td>±50 V, ±10 V, ±1 V, ±100 mV</td>
<td>±1000V</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Input coupling</td>
<td>DC, AC 0.1 Hz, 1 Hz</td>
<td>DC, AC 1 Hz</td>
<td>DC, AC 1 Hz</td>
<td>DC</td>
<td>DC</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Excitation</td>
<td>±10 V</td>
<td>-</td>
<td>-</td>
<td>4 mA, 8 mA</td>
<td>0.12 V (bipolar), 0.24 V (unipolar), 0.42 mA, max. 0.4 W/ch</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Bridge connection</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>Full, ½ 350 Ω, ¼ 120 Ω 3 wire</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Programmable shunt</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>100 kΩ</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>IEPE input</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>DSI-ACC</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Resistance</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Temperature (PTx)</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>DSI-RTD</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Thermocouple</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>DSI-TH</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Potentiometer</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>LVDT</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>DSI-LVDT</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Charge</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>DSI-CHG</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Current</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>ext. shunt</td>
<td>20 mA (internal shunt), DSI-5A</td>
<td>ext. shunt</td>
<td>-</td>
</tr>
<tr>
<td>TEDS</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Isolation voltage</td>
<td>Non-isolated</td>
<td>Functional isolation Ch-Ch and Ch-GND</td>
<td>Galvanically isolated Ch-GND</td>
<td>125 Vrms Ch-GND isolation</td>
<td>125 Vrms Ch-GND isolation</td>
<td>125 Vrms Ch-GND isolation</td>
<td>CAT II 1000 V</td>
<td>CAT II 1000 V</td>
</tr>
<tr>
<td>Power consumption per module</td>
<td>2 W</td>
<td>1.5 W</td>
<td>2 W</td>
<td>2 W</td>
<td>3 W</td>
<td>1.5 W</td>
<td>1 W</td>
<td>1.3 W</td>
</tr>
<tr>
<td>Temperature range</td>
<td>-40 to 85°C</td>
<td>-40 to 85°C</td>
<td>-40 to 85°C</td>
<td>-40 to 85°C</td>
<td>-40 to 85°C</td>
<td>-40 to 85°C</td>
<td>-40 to 85°C</td>
<td>-40 to 85°C</td>
</tr>
</tbody>
</table>

## AMPLIFIER SPECS

- **4xDI, 4xDO**: Four channel digital I/O amplifier
- **1xAO**: Analog output
- **1xCNT**: Single channel SuperCounter® module
- **1xLV**: Isolated low voltage module
- **1xSTG**: Isolated universal and strain amplifier
- **1xA ACC**: Isolated IEPE accelerometer amplifier
- **1xHV**: Isolated high voltage module
- **1xTH-HV**: Isolated thermocouple module (CAT II 1000 V)
SIRIUS® WATERPROOF

IP67 DEGREE OF PROTECTION
SIRIUS waterproof is designed for testing in extremely harsh environments. The unit is waterproof, dustproof and can withstand shocks up to 100G.

160 dB DYNAMIC RANGE
With our DualCoreADC® technology all analog inputs boost dual 24-bit delta-sigma with an anti-aliasing filter, achieving astonishing 160 dB dynamic range in time and frequency domain with 200 kHz sampling rate per channel.

-40 TO 60 °C
Extreme testing means extreme temperatures. SIRIUS waterproof is ready.

FULLY SYNCHRONIZED
Each channel, either analog, digital or CAN is synchronized with microsecond accuracy.

universal analog inputs
Universal analog amplifiers can accept voltage and full/half/quarter bridge signals natively as well as IEPE, charge, thermocouples, RTD, current, resistance and LVDT signals with the use of DSI adapters.

Digital/counter/encoder inputs
Each channel is capable of 3x digital inputs, 1x event counter, encoder, period, pulse-width, duty-cycle. Precise frequency and angle measurement using patented SuperCounter® technology.

Sensor power supply
Each channel provides power for sensor excitation.

High isolation
High channel-to-channel and channel-to-ground isolation prevents ground loops and damage to the systems from excessive voltage.

Rugged modules configuration examples:

<table>
<thead>
<tr>
<th>Rugged modules configuration examples:</th>
<th>8-channel universal strain gage amplifiers</th>
</tr>
</thead>
<tbody>
<tr>
<td>SIRIUSiwe 8xSTGM</td>
<td></td>
</tr>
<tr>
<td>SIRIUSiwe 6xSTGM, 2xSTGM+</td>
<td></td>
</tr>
<tr>
<td>SIRIUSiwe 16xHD-STGGS</td>
<td></td>
</tr>
</tbody>
</table>

Extremely rugged, isolated, IP67 rated, data acquisition system with EtherCAT® and USB interface for testing in harsh environment. Fast, precise and distributable!

Highly isolated, EtherCAT® and USB interface for testing in harsh environment.
ONE HARDWARE.

WATERPROOF SBOX®

Extremely rugged, IP67 rated data logger and powerful data processing computer. The perfect companion for your SIRIUS waterproof DAQ system.

-40 TO 50 °C
Extreme testing means extreme temperatures. SBOX waterproof is ready.

IP67 LEVEL PROTECTION
SBOX waterproof is designed for testing in extremely harsh environments. The unit is waterproof, dustproof, and can withstand shocks up to 100G.

100 Hz GPS WITH RTK
Optional 10Hz or 100Hz GPS receiver with additional RTK support can be built straight into SBOX waterproof.

5 USB PORTS
SBOX includes five USB 2.0 ports. All USB ports feature screw-lock connectors.

PERFORMANCE COMPUTER
With built-in Intel Core i7 CPU and 4GB memory, SBOX waterproof is also very capable computer for worry-free, real-time data processing.

EtherCAT® INTERFACE
Built-in EtherCAT® interface port with synchronization for EtherCAT® DAQ devices.

3 NETWORK INTERFACES
Two gigabit LAN ports and wireless WLAN interface with external antenna ensure maximum connectivity.

HIGHLY RELIABLE SSD STORAGE
SBOX waterproof provides highly reliable data recording with typical 180 MB/sec write speeds straight into its fast, reliable solid state drive.
MOUNTING PLATES
DISPLAYS
VIDEO CAMERAS
ACCELEROMETERS
ANGLE SENSORS
CURRENT SENSORS
SIGNAL ADAPTERS
ACCESSORIES, SENSORS & MORE
ONE HARDWARE.
DSI ADAPTERS
TEDS equipped adapters that convert our DSUB9 universal signal conditioners into direct IEPE, charge, thermocouple, shunt, voltage, LVDT or RTD inputs.

DISPLAYS, VIDEO CAMERAS AND BATTERY PACKS
All you need for our data acquisition systems for stand-alone, in-vehicle or remote test and measurement applications.

GPS AND IMU DEVICES
High accuracy 100Hz GPS receivers and Inertial Measurement Units (IMU) with Real-time Kinematics (RTK) support for the most precise position based test and measurement applications.

WIDE VARIETY OF SENSORS
Current clamps, transducers, accelerometers, angle sensors, microphones, and more.
The system can send combustion analysis results to the testbed via AK-protocol or to ETAS INCA® and similar systems via CAN or XCP.

The same system can be used to perform simultaneous online analysis of torsional and rotational vibration, order tracking, combustion noise, sound power and more…

Analog inputs with 1 MS/sec sampling rate and sensor supply. Any sensor and signal type — Charge, IEPE, High voltage, Current, Strain, Torque, Temperature...

Versatile yet easy to use works everywhere and anytime!

AFTER MORE THAN TEN YEARS CUSTOMERS STILL LOVE IT.

DEWE-43A
TECH BRIEFS MAGAZINE
2009 Readers’ Choice - Product of the Year Award
DEWESOFT 7-YEAR WARRANTY
Our warranty covers that the instruments function as promised for a period of 7 years from the day of the delivery.

SENSOR POWER SUPPLY
Each channel provides power for sensor excitation.

ISOLATED POWER SUPPLY
The DEWE-43A power supply is internally isolated, completely preventing ground loops.

COUNTER/ENCODER/DIGITAL INPUTS
Each of the 8 counter inputs can be used as 3x digital inputs, 1 event counter, encoder, period, pulse-width, duty-cycle. Precise frequency and angle measurement use patented Super-Counter® technology.

Award-winning versatile USB data acquisition system with unmatched price/performance ratio - all in compact small size.

FULLY SYNCHRONIZED
Each channel, either analog, digital or CAN is synchronized with microsecond accuracy.

ISOLATED CAN INPUTS
High speed CAN 2.0b channels with 1 Mbit/sec data throughput with additional support for CCP, OBDII, J1939, and CAN output. All fully isolated.

SENSOR POWER SUPPLY
Each channel provides power for sensor excitation.

UNIVERSAL ANALOG INPUTS
The DEWE-43A natively accepts analog voltages and full bridge sensors. With DSI adapters it can even interface with IEPE and charge accelerometers, thermocouple and RTD temperature sensors, half and quarter bridge configurations, current, resistance, and LVDT sensors. The sample rate is up to 200 kS/s/ch using sigma-delta 24-bit ADCs.
DSI® ADAPTERS

**DSI-ACC, DSI-ACC-0.16HZ, DSI-ACC-20MA:**
Adapters for connecting IEPE sensors.

**DSI-CHG:**
Adapter for connecting charge sensors.

**DSI-CHG-DC:**
DC coupled adapter for connecting charge sensors with high input range and large time constant.

**DSI-RTD:**
Adapter for connecting DSI RTD temperature sensors (Pt100, Pt200, Pt500, Pt1000, Pt2000).

**DSI-Th-K, TH-J, TH-T, TH-C, TH-E:**
Adapter for connecting thermocouples.

**DSI-V-200, DSI-V-20:**
Adapter for extending voltage range of amplifiers.

**DSI-20MA, DSI-5A, DSIi-10A, DSIi-20A:**
Adapters for current measurements.

**DSI-LVDT:**
Adapter for connecting LVDT sensors.

**DEWESOFT 7-YEAR WARRANTY**
Our warranty covers that the instruments function as promised for a period of 7 years from the day of the delivery.
VIBISO MOUNT
The VIBISO mount provides a vibration-isolated base for SIRIUS waterproof and SBOX waterproof DAQ instruments. Measurement units which are mounted on the VIBISO mount are suspended on rubber dampers which isolate instruments from high-frequency vibrations for extreme conditions.

DS-MOUNT-19
Mounting plate for fitting SIRIUS and SBOX data loggers into a 19” rack cabinet.

DS-MOUNT-DISP-12
Mount that fits DS-DISP-12, our 12” multi-touch LED screen DS-DISP-12, on a SIRIUS or SBOX slice.

DS-MOUNT-1
This mount can be used to mount SIRIUS data acquisition systems and SBOX data processing computers to the wall, floor or any other flat surface.

DS-MOUNT-2K
Top mounting plate for binding KRYPTON DAQ modules to SIRIUS and MINITAURs data acquisition systems, SBOX data loggers and battery packs.

DS-MOUNT-2
General top mount for SIRIUS data acquisition systems and/or SBOX data loggers. Mount can be used to fit small instruments, such as DS-CAN2, or any accessory that needs to be firmly fixed to the DAQ system.
DISPLAYS AND BATTERY PACKS

**DS-BP2I, DS-BP4I**
Hot-swappable Li-ion battery solutions with the best weight-to-energy ratio (90 Wh for BP2i, and 180 Wh for BP4i).

**DS-DISP12**
Rugged, high brightness and resolution LED display for mobile, in-vehicle test and measurement applications.

**ISOLATED POWER SUPPLY**
For in-vehicle measurements, an isolated power supply on battery packs will guard you against unwanted ground loops.

**RUGGED AND RELIABLE**
Battery packs are built in rugged aluminum chassis, machined out of a single brick of aluminum for reliable operation on the field. Only high-quality Li-Ion batteries are used.

**HOT-SWAP FUNCTIONALITY**
Internal Li-Ion batteries are hot-swappable, meaning they can be replaced during the measurement to ensure your data acquisition system never runs out of power.

**LARGE CAPACITY**
Battery packs have up to 384 Wh capacity. This will ensure 3 hours of operation for SBOX data logger with 32 channel SIRIUS DAQ system without replacing batteries.

**HIGH BRIGHTNESS**
With high brightness of 700 cd/m2, display ensures visibility even in harshest testing conditions.

**RUGGED DISPLAY**
DS-DISP-12 is 12" industrial grade LED display built into rugged aluminum chassis for use in mobile applications - can operate from -20°C to 60°C.

**MULTI-TOUCH**
Display has multi-touch functionality for easy touch-enabled operation. DewesoftX has smart gesture-based supported visual displays that allow easy control of software.
DS-CAM VIDEO CAMERAS

HIGH-SPEED VIDEO
DS-CAM cameras offer high frame rates with continuous storage. Lowering the resolution you can achieve even higher speeds.

IP67 LEVEL PROTECTION
Some camera models are available in IP67 version. Fully waterproof, dustproof and ready for applications in harsh environments.

HIGH-SPEED VIDEO WITH FULL SYNCHRONIZATION CAPABILITY AND REAL-TIME PICTURE COMPRESSION.

REAL-TIME COMPRESSION
Dewesoft offers real-time or offline compression and video streaming directly to computer's hard drive.

SYNCHRONIZED TO ANALOG
Cameras offer hardware synchronization link to all analog data acquisition instruments. Video and analog data is synchronized frame by frame.

DIRECT X CAMERA SUPPORT
Free support for all DirectX compatible cameras. Video from this cameras will be software synced to analog and other sources with ~10ms accuracy.

HIGH SPEED VIDEO CAMERA
Extreme high-speed video cameras from Photron are directly supported and perfectly synchronized to other data.

THERMOVISION CAMERAS
Supports OPTRIS infrared thermal cameras.

VIDEO POST SYNC
Any video file from additional cameras can be synchronized in analysis mode and merged with Dewesoft data files.

GIGE VISION V2 SUPPORT
JPEG compression and support for cameras using GigE v2 standard.

ADDITIONAL CAMERA SUPPORT
GPS AND IMU DEVICES

<table>
<thead>
<tr>
<th></th>
<th>DS-GPS-CLOCK</th>
<th>DS-VGPS-HS/HSC</th>
<th>DS-IMU1</th>
<th>DS-IMU2</th>
<th>DS-GYRO3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standalone/SBAS/RTK (horizontal positioning)</td>
<td>2.5 m</td>
<td>1.2 m</td>
<td>2 m</td>
<td>1.2 m</td>
<td>-</td>
</tr>
<tr>
<td>Velocity accuracy</td>
<td>0.05 m/s</td>
<td>0.02 m/s</td>
<td>0.05 m/s</td>
<td>0.007 m/s</td>
<td>-</td>
</tr>
<tr>
<td>Roll &amp; Pitch accuracy (dynamic)</td>
<td>-</td>
<td>-</td>
<td>0.1 °</td>
<td>0.1 °</td>
<td>0.1 °</td>
</tr>
<tr>
<td>Heading accuracy (dynamic with GNSS)</td>
<td>-</td>
<td>-</td>
<td>0.2 °</td>
<td>0.1 °</td>
<td>0.1 °</td>
</tr>
<tr>
<td>Slip angle accuracy</td>
<td>-</td>
<td>-</td>
<td>0.3 °</td>
<td>0.1 °</td>
<td>-</td>
</tr>
<tr>
<td>Output data rate</td>
<td>10 Hz</td>
<td>20/100 Hz</td>
<td>Up to 100 Hz</td>
<td>Up to 500 Hz</td>
<td>up to 1600 Hz</td>
</tr>
</tbody>
</table>

GNSS

- **Supported navigation systems**
  - GPS L1, GLONASS L1
  - GPS L1, L2*, GLONASS L1, L2*
  - GPS L1C/A, GLONASS L1OF, BeiDou B1I
  - GPS L1, L2*, L5*, GLONASS L1, L2*, GALileo E1*, E5*, BeiDou B1*, B2*

- **Supported SBAS systems**
  - WAAS, EG-NOS, MSAS, GAGAN, QZSS
  - WAAS, EGNOS, MSAS, GAGAN, QZSS, Omnisar HP/XP/BZ, Trimble RTX

**ADDITIONAL FEATURES**

- Dual antenna heading
  - -
- RTK positioning
  - - - ✅ -

**HARDWARE**

- Operating voltage
  - 5 V *USB powered
  - 9 to 36 V
- Operating temperatures
  - -5 °C to 75 °C
  - 0 °C to 60 °C
  - -40 °C to 85 °C
  - -40 °C to 85 °C
  - -40 °C to 85 °C

**INERTIAL SENSORS**

- Accelerometers
  - -
- Gyroscope
  - -
- Magnetometer
  - -

High accuracy 100Hz GPS receivers and Inertial Measurement Units (IMU) with Real-time Kinematics (RTK) support for the most precise position based test and measurement applications.

**USB, CAN, RS232**

GPS instruments offer a variety of data connection interfaces from USB, CAN and RS232.

**RTK 1 CM ACCURACY**

Optional RTK upgrade of all GPS and IMU units, improving positioning accuracy down to 1 cm.

**INERTIAL MEASUREMENT UNITS**

Very rugged IMU units - IP67 degree of protection - which in addition to GPS receivers have an integrated 3-axis accelerometer and 3-axis gyroscope to improve dead reckoning.
**CAN BUS AND CAN FD INTERFACES**

**DEWESOFT 7-YEAR WARRANTY**
Our warranty covers that the instruments function as promised for a period of 7 years from the day of the delivery.

**CAN FD, XCP, FLEXRAY AND LIN**
Using third party hardware, additional interfaces are supported.

**RAW DATA ANALYZER**
Graphical interface for easy CAN decoding and finding signals without a CAN DBC.

**OBDII AND J1939 SUPPORT**
CAN interfaces have XCP/CCP, OBDII, J1939 and other standard support.

**Multichannel USB and single channel EtherCAT® CAN BUS. Software with support for OBDII, J1939, XCP/CCP, CAN transmit, DBC and AUTOSAR XML files.**

**NATIVE CAN FD SUPPORT**
SIRIUS can be ordered with CAN FD or with standard CAN port.

**PLUG-AND-PLAY CAN INTERFACES**
Robust and easy to use interfaces. Connect your CAN device to the USB port of any laptop or PC, or to any SBOX or KRYPTON CPU computer. The device will be recognized automatically, and be ready to use in a moment.

**1, 2, 4 OR 9 CAN PORTS**
Multiple CAN devices can be connected together to expand to more CAN ports.

**DBC AND ARXML FILE SUPPORT**
Included DewesoftX software enables import of DBC or AUTOSAR XML files which will automatically set the CAN channel list.

**FANLESS CHASSIS AVAILABLE**
1, 2 and 4 port CAN port are fanless by default, and even the 9 port CAN device can also be built into a fanless aluminium chassis with IP50 degree of protection for worry-free CAN acquisition in harsh, dusty environments.
CLAMPS & TRANSDUCERS

68 ONE HARDWARE.

-40°C TO +85°C
Dewesoft offers current transducers with wide temperature range - ideal for both winter (-40°C) and summer testing (+85°C).

FLEXIBLE
Dewesoft instruments allow connecting any type of current transducers. There are more than 1000 different current sensors available on the market. If you want to connect your own or other sensors we are happy to help you.

UP TO 30 000 AMPS
Dewesoft offers a very wide range of current measurement ranges up to 30 000 (30 thousand) amps.

AC/DC CURRENT MEASUREMENT
Dewesoft offers high-accuracy zero-flux current transducers, Rogowski coils, current clamps and shunts for AC and/or DC current measurement.

HIGH ACCURACY
Highly precise zero flux current transducers or fluxgate compensated clamps are a perfect fit for most demanding power measurements for E-mobility and inverter motors applications.

INTEGRATED SENSOR POWER SUPPLY
Current clamps and zero-flux transducer can be powered straight from the DAQ instrument like R2DB, R8 or with external SIRIUS slice compatible chassis.

High-accuracy sensors for AC/DC current measurement and power analysis. From current clamps, high-precision zero flux current transducers, shunts and Rogowski coils.
## CURRENT TRANSDUCTORS

<table>
<thead>
<tr>
<th>Current Transducers</th>
<th>IT 60-S</th>
<th>IT 200-S</th>
<th>IT 400-S</th>
<th>IN 500-S</th>
<th>IT 700-S</th>
<th>IN 1000-S</th>
<th>IN 2000-S</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Primary Current Range DC RMS Sinus</strong></td>
<td>60 A</td>
<td>200 A</td>
<td>400 A</td>
<td>500 A</td>
<td>700 A</td>
<td>1000 A</td>
<td>2000 A</td>
</tr>
<tr>
<td><strong>Overload Ability Short Time (100 ms)</strong></td>
<td>300 Apk</td>
<td>1000 Apk</td>
<td>2000 Apk</td>
<td>5000 Apk</td>
<td>3500 Apk</td>
<td>5000 Apk</td>
<td>10000 Apk</td>
</tr>
<tr>
<td><strong>Max. burden resistor (100 % of Ip)</strong></td>
<td>10 Ω</td>
<td>10 Ω</td>
<td>2.5 Ω</td>
<td>2.5 Ω</td>
<td>2.5 Ω</td>
<td>4 Ω</td>
<td>3.5 Ω</td>
</tr>
<tr>
<td><strong>di/dt (accurately followed)</strong></td>
<td>25 A/μs</td>
<td>100 A/μs</td>
<td>100 A/μs</td>
<td>100 A/μs</td>
<td>100 A/μs</td>
<td>100 A/μs</td>
<td>100 A/μs</td>
</tr>
<tr>
<td><strong>Temperature influence</strong></td>
<td>&lt; 2.5 ppm/K</td>
<td>&lt; 2 ppm/K</td>
<td>&lt; 1 ppm/K</td>
<td>&lt; 0.2 ppm/K</td>
<td>&lt; 1 ppm/K</td>
<td>&lt; 0.3 ppm/K</td>
<td>&lt; 0.1 ppm/K</td>
</tr>
<tr>
<td><strong>Output Ratio</strong></td>
<td>100 mA at 60 A</td>
<td>200 mA at 200 A</td>
<td>200 mA at 400 A</td>
<td>666 mA at 500 A</td>
<td>400 mA at 200 A</td>
<td>666 mA at 1000 A</td>
<td>1 A at 2000 A</td>
</tr>
<tr>
<td><strong>Bandwidth (0.5 % of Ip)</strong></td>
<td>DC ... 800 kHz</td>
<td>DC ... 500 kHz</td>
<td>DC ... 500 kHz</td>
<td>DC ... 520 kHz</td>
<td>DC ... 250 kHz</td>
<td>DC ... 440 kHz</td>
<td>DC ... 140 kHz</td>
</tr>
<tr>
<td><strong>Linearity</strong></td>
<td>&lt; 0.002 %</td>
<td>&lt; 0.001 %</td>
<td>&lt; 0.001 %</td>
<td>&lt; 0.003 %</td>
<td>&lt; 0.001 %</td>
<td>&lt; 0.003 %</td>
<td>&lt; 0.003 %</td>
</tr>
<tr>
<td><strong>Offset</strong></td>
<td>&lt; 0.025 %</td>
<td>&lt; 0.008 %</td>
<td>&lt; 0.004 %</td>
<td>&lt; 0.001 %</td>
<td>&lt; 0.005 %</td>
<td>&lt; 0.0012 %</td>
<td>&lt; 0.0012 %</td>
</tr>
<tr>
<td><strong>Frequency Influence</strong></td>
<td>0.04 %/kHz</td>
<td>0.06 %/kHz</td>
<td>0.06 %/kHz</td>
<td>0.01 %/kHz</td>
<td>0.12 %/kHz</td>
<td>0.1 %/kHz</td>
<td>0.1 %/kHz</td>
</tr>
<tr>
<td><strong>Angular Accuracy</strong></td>
<td>&lt; 0.025 ° + 0.06 °/kHz</td>
<td>&lt; 0.025 ° + 0.05 °/kHz</td>
<td>&lt; 0.025 ° + 0.09 °/kHz</td>
<td>&lt; 0.01 °</td>
<td>&lt; 0.025 ° + 0.18 °/kHz</td>
<td>&lt; 0.01 ° + 0.05 °/kHz</td>
<td>&lt; 0.01 ° + 0.075 °/kHz</td>
</tr>
<tr>
<td><strong>Rated isolation voltage RMS, single isolation CAT III, pollution deg. 2, IEC 61010-1 standards, EN 50178 standards</strong></td>
<td>2000 V</td>
<td>1000 V</td>
<td>2000 V</td>
<td>1000 V</td>
<td>1000 V</td>
<td>1600 V</td>
<td>1000 V</td>
</tr>
<tr>
<td><strong>Test voltage 50 / 60 Hz, 1 min</strong></td>
<td>5.4 kV</td>
<td>5.4 kV</td>
<td>5.4 kV</td>
<td>4.2 kV</td>
<td>4.6 kV</td>
<td>4.2 kV</td>
<td>6 kV</td>
</tr>
<tr>
<td><strong>Inner diameter</strong></td>
<td>26 mm</td>
<td>26 mm</td>
<td>26 mm</td>
<td>38 mm</td>
<td>30 mm</td>
<td>38 mm</td>
<td>70 mm</td>
</tr>
<tr>
<td><strong>Dimension</strong></td>
<td>93 x 77 x 47</td>
<td>93 x 77 x 47</td>
<td>93 x 77 x 47</td>
<td>128 x 106 x 54</td>
<td>128 x 106 x 67</td>
<td>128 x 106 x 54</td>
<td>231 x 220 x 76</td>
</tr>
<tr>
<td><strong>Dewesoft® Shunt</strong></td>
<td>5 Ω</td>
<td>5 Ω</td>
<td>2 Ω</td>
<td>1 Ω</td>
<td>2 Ω</td>
<td>1 Ω</td>
<td>1 Ω</td>
</tr>
<tr>
<td><strong>PWR-MCT52 needed</strong></td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>
## CURRENT CLAMPS AC/DC

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>DS-CLAMP-200DC</td>
<td>200 A DC or AC RMS</td>
<td>Flux Gate sensor</td>
<td>± 10 mV/A</td>
<td>0.3 % of reading</td>
<td>DC to 500 kHz</td>
<td>Fully supported</td>
<td>max. ± 0.1 % of reading</td>
<td>max. ± 10 mA</td>
<td>153 x 67 x 25</td>
<td>± 11 V to ± 15 V</td>
<td>Yes</td>
</tr>
<tr>
<td>DS-CLAMP-500DCS</td>
<td>500 A DC or AC RMS</td>
<td>Flux Gate sensor</td>
<td>± 4 mV/A</td>
<td>0.3 % of reading</td>
<td>DC to 200 kHz</td>
<td>Fully supported</td>
<td>max. ± 0.1 % of reading</td>
<td>max. ± 250 mA</td>
<td>153 x 67 x 25</td>
<td>± 11 V to ± 15 V</td>
<td>Yes</td>
</tr>
<tr>
<td>DS-CLAMP-500DC</td>
<td>500 A DC or AC RMS</td>
<td>Flux Gate sensor</td>
<td>± 4 mV/A</td>
<td>0.3 % of reading</td>
<td>DC to 100 kHz</td>
<td>Fully supported</td>
<td>max. ± 0.2 % of reading</td>
<td>max. ± 250 mA</td>
<td>238 x 114 x 35</td>
<td>± 11 V to ± 15 V</td>
<td>Yes</td>
</tr>
<tr>
<td>DS-CLAMP-1000DC</td>
<td>1000 A DC or AC RMS</td>
<td>Flux Gate sensor</td>
<td>± 2 mV/A</td>
<td>0.3 % of reading</td>
<td>DC to 20 kHz</td>
<td>Fully supported</td>
<td>max. ± 0.2 % of reading</td>
<td>max. ± 50 mA</td>
<td>238 x 114 x 35</td>
<td>± 11 V to ± 15 V</td>
<td>Yes</td>
</tr>
<tr>
<td>DS-CLAMP-150DC</td>
<td>200 A DC or 150 A AC RMS</td>
<td>Hall sensor</td>
<td>20 mV/A</td>
<td>1 % of reading</td>
<td>DC to 100 kHz</td>
<td>Fully supported</td>
<td>± 0.5 %</td>
<td>± 10 mV</td>
<td>205 x 60 x 15</td>
<td>± 10 V</td>
<td>No</td>
</tr>
<tr>
<td>DS-CLAMP-150DCS</td>
<td>250 A DC or 150 A AC RMS</td>
<td>Hall sensor</td>
<td>20 mV/A</td>
<td>1 % + 2 mA</td>
<td>DC to 100 kHz</td>
<td>Fully supported</td>
<td>± 0.5 %</td>
<td>± 10 mV</td>
<td>106 x 100 x 25</td>
<td>+ 9 V</td>
<td>No</td>
</tr>
<tr>
<td>DS-CLAMP-1800DC</td>
<td>1800 A DC or AC RMS</td>
<td>Hall sensor</td>
<td>1 mV/A</td>
<td>1 % + 2 mA</td>
<td>DC to 20 kHz</td>
<td>Fully supported</td>
<td>± 1.5 %</td>
<td>± 10 mV</td>
<td>205 x 60 x 15</td>
<td>± 10 V</td>
<td>No</td>
</tr>
</tbody>
</table>

- **Type**: Flux Gate sensor or Hall sensor
- **Sensitivity**: ± 10 mV/A to ± 1 mV/A
- **Accuracy**: 0.3 % of reading to ± 1.5 %
- **Bandwidth**: DC to 500 kHz to DC to 20 kHz
- **Conductor Position Sensitivity**: max. ± 0.1 % of reading to ± 1.5 %
- **Zero Offset (+25°C)**: max. ± 10 mA to ± 10 mV
- **Dimensions [mm]**: 153 x 67 x 25 to 205 x 60 x 15
- **Max. Conductor Size**: 20 mm to 32 mm
- **Power Supply**: ± 11 V to ± 15 V to ± 10 V
- **PWR-MCTS2 needed**: Yes to No
<table>
<thead>
<tr>
<th>DS-CLAMP-5AC</th>
<th>DS-CLAMP-15AC</th>
<th>DS-CLAMP-200AC</th>
<th>DS-CLAMP-1000AC</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Type</strong></td>
<td>Iron-Core</td>
<td>Iron-Core</td>
<td>Iron-Core</td>
</tr>
<tr>
<td><strong>Range</strong></td>
<td>5 A AC RMS</td>
<td>15 A AC RMS</td>
<td>200 A AC RMS</td>
</tr>
<tr>
<td><strong>Sensitivity</strong></td>
<td>100 mA/A</td>
<td>100 mA/A</td>
<td>10 mA/A</td>
</tr>
<tr>
<td><strong>Accuracy (+25 °C)</strong></td>
<td>5 mA - 0.5 A ± 2 ° 0.5 A - 1 A ± 1° 1 A - 12 A ± 0.5° of reading</td>
<td>0.5 A - 10 A ± 3.5° of reading 10 A - 100 A ± 2.5° of reading 100 A - 240 A ± 1° of reading</td>
<td>&lt; 1 A ± 2 ° of reading 10 A - 100 A ± 0.5 ° of reading 100 A - 1200 A ± 0.3 ° of reading</td>
</tr>
<tr>
<td><strong>Phase Error</strong></td>
<td>5 mA - 0.5 A ± 2 ° 0.5 A - 1 A ± 1° 1 A - 12 A ± 0.5° of reading</td>
<td>0.5 A - 10 A not specified 10 A - 100 A ± 5 ° 100 A - 240 A ± 2.5 °</td>
<td>&lt; 1 A not specified 10 A - 100 A ± 1 ° 100 A - 1200 A ± 0.7 °</td>
</tr>
<tr>
<td><strong>Bandwidth</strong></td>
<td>2 Hz to 5 kHz</td>
<td>2 Hz to 10 kHz</td>
<td>2 Hz to 10 kHz</td>
</tr>
<tr>
<td><strong>Resolution</strong></td>
<td>0.01 A</td>
<td>0.01 A</td>
<td>0.5 A</td>
</tr>
<tr>
<td><strong>TEDS</strong></td>
<td>Fully supported</td>
<td>Fully supported</td>
<td>Fully supported</td>
</tr>
<tr>
<td><strong>Overload Capability</strong></td>
<td>1.5 x I nominal</td>
<td>1.3 x I nominal</td>
<td>1.3 x I nominal</td>
</tr>
<tr>
<td><strong>Dimensions [mm]</strong></td>
<td>102 x 34 x 24</td>
<td>135 x 51 x 30</td>
<td>135 x 51 x 30</td>
</tr>
<tr>
<td><strong>Conductor Diameter</strong></td>
<td>15 mm</td>
<td>20 mm</td>
<td>20 mm</td>
</tr>
</tbody>
</table>

Other Current Transducers for AC and DC measurement from 300 mA up to 4000 A on request.
### ACCELEROMETERS

<table>
<thead>
<tr>
<th>Model</th>
<th>Number of axis</th>
<th>Sensitivity</th>
<th>Range</th>
<th>Type</th>
<th>Frequency range</th>
<th>TEDS</th>
<th>Features</th>
<th>Dimensions</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>I1T-50G-1</td>
<td>1</td>
<td>100 mV/g</td>
<td>50 g</td>
<td>IEPE</td>
<td>+/- 5 %: 0.3 to 5000 Hz</td>
<td>yes</td>
<td>Miniature size</td>
<td>10.2 x 10.2 x 10.2 mm</td>
<td>4.3 g</td>
</tr>
<tr>
<td>I3T-50G-1</td>
<td>3</td>
<td>100 mV/g</td>
<td>50 g</td>
<td>IEPE</td>
<td>+/- 10 %: 2 to 5000 Hz</td>
<td>yes</td>
<td>Case isolated, triaxial</td>
<td>1.55 x 15 x 15 mm</td>
<td>10 g</td>
</tr>
<tr>
<td>I1T-50G-2</td>
<td>1</td>
<td>100 mV/g</td>
<td>50 g</td>
<td>IEPE</td>
<td>+/- 10 %: 0.3 to 10 000 Hz</td>
<td>no</td>
<td>Case isolated, industrial</td>
<td>17.5 x 42.2 mm</td>
<td>44 g</td>
</tr>
<tr>
<td>C1T-100G-1</td>
<td>1</td>
<td>50 pC/g</td>
<td>100 g</td>
<td>Charge</td>
<td>+/- 8 %: up to 5000 Hz</td>
<td>no</td>
<td>High temperature</td>
<td>12.7 x 24.4 mm</td>
<td>25 g</td>
</tr>
<tr>
<td>I1TI-500G-1</td>
<td>1</td>
<td>10 mV/g</td>
<td>500 g</td>
<td>IEPE</td>
<td>+/- 10 %: 1 to 10 000 Hz</td>
<td>yes</td>
<td>Case isolated, modal</td>
<td>19.4 x 12.7 x 16.1 mm</td>
<td>10 g</td>
</tr>
<tr>
<td>I1AI-500G-1</td>
<td>1</td>
<td>10 mV/g</td>
<td>500 g</td>
<td>IEPE</td>
<td>+/- 10 %: 1.1 to 10 000 Hz</td>
<td>yes</td>
<td>Ultra-miniature</td>
<td>9 x 6 mm</td>
<td>2 g</td>
</tr>
<tr>
<td>I3T-50G-1</td>
<td>3</td>
<td>100 mV/g</td>
<td>50 g</td>
<td>IEPE</td>
<td>+/- 10 %: 0.3 bis 10 000 Hz</td>
<td>yes</td>
<td>Low noise, triaxial</td>
<td>12 x 12 x 11 mm</td>
<td>5.6 g</td>
</tr>
</tbody>
</table>

**Notes:**
- The models listed are types of accelerometers with varying specifications including number of axes, sensitivity, range, type, frequency range, TEDS, features, dimensions, weight, and temperature range.
## Angle Sensors

<table>
<thead>
<tr>
<th></th>
<th>DS-TACHO2</th>
<th>DS-TACHO3</th>
<th>DS-TACHO4</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Light source</strong></td>
<td>LED</td>
<td>Laser (red class 2)</td>
<td>LED</td>
</tr>
<tr>
<td><strong>Housing</strong></td>
<td>Stainless steel</td>
<td>Stainless steel</td>
<td>Stainless steel</td>
</tr>
<tr>
<td><strong>Cable length</strong></td>
<td>2.5m cable</td>
<td>2.5m cable</td>
<td>5m optical fiber and trigger box</td>
</tr>
<tr>
<td><strong>Frequency range</strong></td>
<td>Up to 4kHz</td>
<td>Up to 4kHz</td>
<td>up to 1MHz</td>
</tr>
<tr>
<td><strong>Distance to object</strong></td>
<td>Up to 1m</td>
<td>Up to 7.5m</td>
<td>from 1-10 mm</td>
</tr>
<tr>
<td><strong>Power supply</strong></td>
<td>3-15VDC, 45mA</td>
<td>3-15VDC, 45mA</td>
<td>10-30VDC</td>
</tr>
<tr>
<td><strong>Operating temperature</strong></td>
<td>-10°C to +70°C</td>
<td>-10°C to +70°C</td>
<td>-10°C to +70°C</td>
</tr>
<tr>
<td><strong>Dimensions</strong></td>
<td>73mm length, 16mm diameter</td>
<td>73mm length, 16mm diameter</td>
<td>M6 x 20mm with 2.5m cable</td>
</tr>
<tr>
<td><strong>Connector</strong></td>
<td>L1B7m connector for SIRIUS and DEWE-43 counter input</td>
<td>L1B7m connector for SIRIUS and DEWE-43 counter input</td>
<td>L1B7m connector for SIRIUS and DEWE-43 counter input</td>
</tr>
<tr>
<td><strong>Accessories</strong></td>
<td>30cm reflector band</td>
<td>30 cm reflector band</td>
<td>1m reflector band with 2mm black/white grid</td>
</tr>
</tbody>
</table>

### DS-TACHO1 - tacho level adapter

- **Description**: Converts analog tacho signal to digital signal with adjustable trigger level
- **Trigger/re-trigger level**: ±10 mV … ±2 V (adjustable with screwdriver)
- **Max input voltage**: ±50 Vdc, ±100 Vac
- **Power supply output**: 5VDC (max current depending on used Dewesoft device: e.g. DEWE-43 max 800 mA)
### MICROPHONES

<table>
<thead>
<tr>
<th></th>
<th>46AE - 1/2” CCP Free-field Standard Microphone Set</th>
<th>146AE - 1/2” CCP Free-field Rugged Microphone Set IP67</th>
<th>46BE 1/4” CCP Free-field Standard Microphone Set w/o cable</th>
<th>46DE 1/8” CCP Pressure Standard Microphone Set</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency range</td>
<td>5-10 kHz</td>
<td>5-10 kHz</td>
<td>10-40 kHz</td>
<td>10 - 25 kHz</td>
</tr>
<tr>
<td>Frequency range</td>
<td>3.15-20 kHz</td>
<td>3.15-20 kHz</td>
<td>4-80 kHz</td>
<td>6.5 - 70 kHz</td>
</tr>
<tr>
<td>Dynamic range lower limit with GRAS preamplifier</td>
<td>17 dB(A)</td>
<td>18 dB(A)</td>
<td>35 dB(A)</td>
<td>52 dB(A)</td>
</tr>
<tr>
<td>Dynamic range upper limit with GRAS CCP preamplifier</td>
<td>138 dB</td>
<td>138 dB</td>
<td>160 dB(A)</td>
<td>174 dB</td>
</tr>
<tr>
<td>Set sensitivity @ 250 Hz (±2 dB)</td>
<td>50 mV/Pa</td>
<td>50 mV/Pa</td>
<td>3.6 mV/Pa</td>
<td>/</td>
</tr>
<tr>
<td>Set sensitivity @ 250 Hz (±3 dB)</td>
<td>/</td>
<td>/</td>
<td>/</td>
<td>0.8 mV/Pa</td>
</tr>
<tr>
<td>IEC 61094-4 Compliance</td>
<td>WS2F</td>
<td>WS2F</td>
<td>WS3F</td>
<td>manufactured within same tolerances</td>
</tr>
<tr>
<td>Temperature range, operation</td>
<td>-30 to 85 °C</td>
<td>-40 to 125 °C</td>
<td>-30 to 85°C</td>
<td>-30 to 70°C</td>
</tr>
<tr>
<td>Temperature range, storage</td>
<td>-40 to 85 °C</td>
<td>-40 to 85 °C</td>
<td>-40 to 85°C</td>
<td>-40 to 85°C</td>
</tr>
<tr>
<td>TEDS</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>Weight</td>
<td>33 g</td>
<td>35 g</td>
<td>8 g</td>
<td>7 g</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Sound-intensity microphone pair 40GK, phase-matched</th>
<th>1/2” Free-field</th>
</tr>
</thead>
<tbody>
<tr>
<td>Preamplifiers 26CB</td>
<td>Phase-matched</td>
</tr>
<tr>
<td>Frequency response and phase-matching IEC 61043 Class 1</td>
<td></td>
</tr>
<tr>
<td>Frequency range (±2 dB)</td>
<td>IEC 61043 Class 1</td>
</tr>
<tr>
<td>Frequency range with 100 mm spacer</td>
<td>30 Hz – 1 kHz</td>
</tr>
<tr>
<td>Frequency range with 50 mm spacer</td>
<td>80 Hz – 1.5 kHz</td>
</tr>
<tr>
<td>Frequency range: with 25 mm spacer</td>
<td>120 Hz – 5 kHz</td>
</tr>
<tr>
<td>Frequency range: with 12 mm spacer</td>
<td>200 Hz – 10 kHz</td>
</tr>
<tr>
<td>TEDS</td>
<td>yes</td>
</tr>
<tr>
<td>Weight</td>
<td>400g</td>
</tr>
</tbody>
</table>

### IH-440N-1 MODAL HAMMER

<table>
<thead>
<tr>
<th>Number of axis</th>
<th>1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sensitivity</td>
<td>50 mV/lbf (=11,24 mV/N)</td>
</tr>
<tr>
<td>Range</td>
<td>100 lbf (=444,82 N)</td>
</tr>
<tr>
<td>Type</td>
<td>IEPE</td>
</tr>
<tr>
<td>Frequency range</td>
<td>75 kHz resonance frequency</td>
</tr>
<tr>
<td>TEDS</td>
<td>yes</td>
</tr>
<tr>
<td>Features</td>
<td>modal hammer with TEDS</td>
</tr>
<tr>
<td>Dimensions</td>
<td>221 x 71 mm</td>
</tr>
<tr>
<td>Weight</td>
<td>100 g (head)</td>
</tr>
<tr>
<td>Temperature range</td>
<td>-40 °C ... +65 °C</td>
</tr>
<tr>
<td></td>
<td>DS-PM-20</td>
</tr>
<tr>
<td>----------------</td>
<td>----------</td>
</tr>
<tr>
<td>Output Force (Sinus)</td>
<td>20 N</td>
</tr>
<tr>
<td>Frequency range</td>
<td>0 – 12 kHz</td>
</tr>
<tr>
<td>Displacement (Pk-Pk)</td>
<td>5 mm</td>
</tr>
<tr>
<td>Max Acceleration</td>
<td>30 g</td>
</tr>
<tr>
<td>Amplifier (Integrated, External)</td>
<td>I</td>
</tr>
</tbody>
</table>

- Embedded power amplifier and sine generator for PM-20 and PM-100
- Lightweight, durable, portable and easy to use
- Adjustable trunnion base provides high degree of flexibility
- Broad frequency range

<table>
<thead>
<tr>
<th></th>
<th>DS-MS-20</th>
<th>DS-MS-100</th>
<th>DS-MS-250</th>
<th>DS-MS-440</th>
</tr>
</thead>
<tbody>
<tr>
<td>Output Force (Sinus)</td>
<td>20 N</td>
<td>100 N</td>
<td>250 N</td>
<td>440 N</td>
</tr>
<tr>
<td>Frequency range</td>
<td>0 – 12 kHz</td>
<td>0 – 7.5 kHz</td>
<td>0 – 5 kHz</td>
<td>0 – 5 kHz</td>
</tr>
<tr>
<td>Displacement (Pk-Pk)</td>
<td>5 mm</td>
<td>10 mm</td>
<td>25 mm</td>
<td>25 mm</td>
</tr>
<tr>
<td>Max Acceleration</td>
<td>40 g</td>
<td>60 g</td>
<td>100 g</td>
<td>100 g</td>
</tr>
<tr>
<td>Amplifier (Integrated, External)</td>
<td>I</td>
<td>I</td>
<td>E</td>
<td>E</td>
</tr>
</tbody>
</table>

- Embedded power amplifier and sine generator for MS-20 and MS-100
- Modal stinger can be easily adjusted by the through-hole armature
- Lightweight, durable, portable and easy to use
- Adjustable trunnion base provides high flexibility
- Up to 25mm stroke and broad frequency range

<table>
<thead>
<tr>
<th></th>
<th>DS-IS-5</th>
<th>DS-IS-10</th>
<th>DS-IS-20</th>
<th>DS-IS-40</th>
</tr>
</thead>
<tbody>
<tr>
<td>Output Force (Sinus)</td>
<td>5 N</td>
<td>10 N</td>
<td>20 N</td>
<td>40 N</td>
</tr>
<tr>
<td>Frequency range</td>
<td>10-1000 Hz</td>
<td>10-3000 Hz</td>
<td>10-3000 Hz</td>
<td>10-3000 Hz</td>
</tr>
<tr>
<td>Displacement (Pk-Pk)</td>
<td>1 mm</td>
<td>5 mm</td>
<td>8 mm</td>
<td>8 mm</td>
</tr>
<tr>
<td>Shaker mass</td>
<td>0.06 kg</td>
<td>0.21 kg</td>
<td>0.28 kg</td>
<td>0.5 kg</td>
</tr>
<tr>
<td>Amplifier (Integrated, External)</td>
<td>E</td>
<td>E</td>
<td>E</td>
<td>E</td>
</tr>
</tbody>
</table>

- Compact and lightweight design
- Superior low-frequency performance
- Any angle mounting
- Low friction bearing guided

- Any angle mounting
- Low friction bearing guided
DS-WIFI device is a Wi-Fi modem for long-range wireless data transfer between our data acquisition systems. It is perfectly suited for testing moving objects and for remote measurement applications.

2.4/5 GHz SOFTWARE SELECTABLE WITH AC SUPPORT
Gigabit Ethernet port supports 2.4 GHz, 5GHz, and all the legacy wireless modes with up to 80 MHz wide channel - 802.11 b/g/n for 2.4 GHz / 802.11 a/n/ac for 5 GHz.

SMALL SIZE
Because of the small and compact size of the wireless modems, they can be placed anywhere on the vehicle, motorcycle, or any other object.

RUGGED, RELIABLE, AND WATERPROOF
The modems are built in a rugged, waterproof sealed industrial-grade metal case.

MOUNTING ACCESSORIES INCLUDED
The DS-WIFI kit includes all mounting and cabling accessories that you need to connect to your DAQ systems.

LONG RANGE
With high output power DS-WIFI4 now provides a longer data transfer range up to 2km in an open environment.
**EtherCAT® ACCESSORIES**

**DEWESOFT 7-YEAR WARRANTY**
Our warranty covers that the instruments function as promised for a period of 7 years from the day of the delivery.

**EtherCAT® GPS JUNCTION**
Used similarly as ECAT sync junction for synchronization between USB and EtherCAT® based data acquisition devices using GPS as a synchronization time source.

**EtherCAT® REPEATER**
EtherCAT® repeater is a part of EtherCAT® accessories used for extension of EtherCAT® hybrid cables allowing maximum connection of two 50m long cables.

**EtherCAT® HUB**
EtherCAT® HUB allows connection and power injection for up to 7 EtherCAT® slave devices (KRYPTON, SIRIUSe, IOLITE).

**EtherCAT® POWER JUNCTION**
Used to connect any EtherCAT® data acquisition device like KRYPTON or SIRIUS with the power supply and standard PC computer with the RJ45 Ethernet port.

**EtherCAT® POWER INJECTOR**
Used to inject additional power into the EtherCAT® measurement chain. It is simply connected into the EtherCAT® chain as any other EtherCAT® DAQ module. ECAT power injector will inject and supply fresh power for all the DAQ nodes.

**EtherCAT® SYNC JUNCTION**
Used to synchronize acquisition from Dewesoft EtherCAT® based data acquisition devices like KRYPTON with USB data acquisition devices like SIRIUS USB and DEWE-43A.

**Power and synchronization accessories**
for KRYPTON and SIRIUS EtherCAT® and USB data acquisition systems.
REAL-TIME CONTROL FRONT-END

FULLY SYNCHRONIZED INPUTS

STRAIN

VOLTAGE

TEMPERATURE

DATA RECORDING & CONTROL

YOUR SOLUTION.

DATA ANALYSIS

STORING
DATA RECORDING & CONTROL

SYNCHRONIZED DATA RECORDING FROM A WIDE VARIETY OF SOURCES
All data sources: analog, vehicle interfaces, inertial, video and make others are perfectly synchronized and recorded simultaneously.

PARALLEL REAL-TIME CONTROL INTERFACE
In parallel-to-lossless data acquisitions all signals are available in real time to act as front-end of control systems.

TRIGGERED TRANSIENT RECORDING
Vast variety of trigger conditions can be set for capturing transients.

NETWORKED DATA ACQUISITION
Systems can be easily combined to create large array of channels for largest tests performed in the industry.

ALL APPLICATIONS AND INDUSTRIES
Automotive, aerospace, industrial ... whether it’s a few channels or thousands.
Testing isn’t just analog inputs from one source any more. Today’s complex tests can involve outputs from inertial platforms, bus data (CAN, ARINC, etc.), video, and so much more. Only Dewesoft puts it all together, synchronously.

**NO HIDDEN COSTS**
Free lifetime software upgrades, no maintenance fees, free online training courses.

**AWARD-WINNING DewesoftX**
One software for all measurement applications. Easy to use, fast learning curve, no programming needed.

**PLUG AND PLAY**
Any device, sensor or signal.

**EASY TO USE AND VERSATILE**
Get your measurements in 30 seconds.

**FULLY SYNCHRONISED**
Data from various sources are perfectly aligned. Analog, digital, counter, vehicle buses, video ...

**TOTAL SOLUTION**
Dewesoft hardware and software forms a total solution for all test and measurement applications.

**MODULAR AND EXPANDABLE**
Systems can be gradually expanded from one to thousands of channels for any measurement challenge.
REAL-TIME CONTROL SYSTEM FRONT-END

REAL TIME OUTPUT
Measured data can be transmitted in real-time to test bench control systems (such as the Syclone from Clemessy) with latencies below 1 ms using a second EtherCAT® output, fully parallel with the data acquisition. This greatly reduces system complexity and costs - and improves results.

COST SAVING
Conditioned data are sent digitally, reducing complexity and eliminating conversion and re-conversion errors and inefficiencies.

FLEXIBLE CONFIGURATION
More than 1000 simultaneous channels – and extreme storage speeds.

DATA MONITORING
Test operators can monitor the tests from a safe distance using Dewesoft NET distributed technology.

TIME SAVING
By using one system for data acquisition and control, the time required to setup the test bench is reduced typically by 40%.

ALL-IN-ONE SYSTEM
Performance testing, vibration, noise, order tracking, balancing, power analysis, thermal and stress testing – these are just a few Dewesoft application areas.

REAL-TIME DATA
EtherCAT®
CONTROL FEEDBACK
EtherCAT®

SENSORS
ACTUATORS
UNIT UNDER TEST

DAQ DEVICE
< 1 msec
REAL TIME

ERP, MES, SCADA
Dewesoft File

CONTROLLER SOFTWARE
Clemessy Syclone
Beckhoff TwinCAT
Acontis
MTS® FlexTest®
AVL Puma
Instron
....

REPRESENTATIVE SYSTEMS
Dewesoft File, ERP, MES, SCADA, OPC UA
Dewesoft system are widely used for data acquisition for launch platforms all around the world.

**RUGGED SYSTEMS**
Dewesoft systems are qualified to be used in the most rugged conditions with high temperature, shock and vibration.

**REAL TIME VIEW CLIENTS**
Data can be observed in real-time by any number of view clients, located anywhere on the network.

**DISTRIBUTED DATA RECORDING**
Virtually unlimited number of channels, synchronized to any external time source. Example: install systems with small or large channel counts at different locations (launch gantry, control room, etc.) and stream data in real-time to a central client. Data are also stored locally in case of network fault, and can be re-synchronized with the central data.

**UNLIMITED CHANNEL COUNT**
Dewesoft systems can acquire data from thousands of channels from any combination of sensors – even at extremely high sample rates.
HIGH-SPEED AND TRANSIENT RECORDING

VARIOUS SOURCES
Dewesoft can acquire high-speed video and other data sources with perfect synchronization.

ROBUST, ISOLATED CONDITIONING
Dewesoft signal conditioners acquire voltage, IEPE, charge, strain, high voltage or current signals—and all fully isolated from other channels and ground.

TRANSIENT RECORDING
Advanced triggering capabilities in all Dewesoft systems allow you to capture any event.

STREAMING
When there’s no way to predict the trigger event in advance, data can be streamed continuously to disk, at speeds up to and beyond 500 MB/sec! This is also ideal for unrepeatable events like spacecraft launch, or destructive tests.

Dewesoft can acquire high-speed data from transient events including lightning, power supply interruption, blast and explosion testing.

BALLISTICS AND MUNITIONS TESTING
These applications typically require synchronization of a variety of data sources, including pressure sensors, and other sensors distributed at the impact site. Dewesoft can synchronize remote and local measurements, and even integrate high-speed video with the data.
HIGH BANDWIDTH > 5 MHz
HIGH PRECISION: <0.03%
HIGH ISOLATION: 1600 V DC
PRECISE
EN50160
SCALABLE
HIGHLY ACCURATE
YOUR SOLUTION.
POWER ANALYSIS

SMALLEST FORM FACTOR
SIRIUS technology allows us to build the smallest Power Analyzer in the world.

HIGHLY ACCURATE
Though extremely small, the Dewesoft Power Analyzer is highly accurate - within 0.03% accuracy.

FLEXIBLE AND SCALABLE
Dewesoft is much more than just a Power Analyzer. Due to the modular design of the measurement devices the channel count can easily be extended by adding more SIRIUS devices - enabling more applications.

YOUR SOLUTION.

POWER QUALITY TESTING

HYBRID ANALYZER

SMALLEST FOOTPRINT
POWER ANALYZER

FULLY ISOLATED
Our worry-free solution provides sensor isolation (channel-to-ground), as well as channel-to-channel isolation, and even excitation isolation! Less noise, no ground loops, and the best possible signal quality.

2000 V DC / CAT II 1000 V / CAT III 600 V
Direct input and acquisition of high voltage signals.

0.03 % ACCURACY
We offer high-accuracy amplifiers and sensors for voltage and current measurement with accuracy as high as 0.03 %.

15 MS/s SAMPLING RATE
Dewesoft data acquisition hardware features high sampling rate amplifiers with 15 MS per second sampling rate. Making it ideal for fast transient behavior.

CURRENT SENSORS
We offer high-accuracy current sensors such as zero-flux current transducers, flux-gate current transducers, AC/DC current clamps, Rogowsky coils and shunts with the power supply directly from the system.

ADVANCED ONLINE AND OFFLINE MATH PROCESSING
DewesoftX includes an easy-to-use mathematics engine. You can apply math functions during the measurement, as well as during post-processing.
EXTENDABLE MODULAR DESIGN
Multiple power modules can be stacked to extend channel count - all perfectly synchronized to each other.

DISTRIBUTABLE
Several devices can be over long distances and still be perfectly synchronized for fault location analysis.

HIGH PRECISION POWER ANALYSIS
High-accuracy Dewesoft hardware combined with DewesoftX Power software guarantees reliable measurement results.

Our Power Analyzer isn’t just the smallest one in the market - it’s also the most capable. Flexible hardware combined with DewesoftX creates a whole new world of testing possibilities for applications across a plethora of industries.

SCOPE AND FFT
In addition to the power analysis other useful tools and visualisations are available such as a Scope, Vector Scope, Harmonic FFT, 2D FFT, and 3D FFT. For example the 3D FFT of a motor run-up will yield valuable information about the behavior of the machine in a single plot.

RAW DATA
Raw data storage is essential for detailed analysis of all measured signals. Transients and Oscillations can be captured continuously or by means of a trigger. Power values in conjunction with raw data allow for immediate anomaly detection.

POWER CALCULATIONS
The system will calculate more than 100 power parameters such as P, Q, S, PF, cos phi and many others. All these calculations can be done during the measurement or in post-processing.

STATIC AND DYNAMIC TESTING
Our sophisticated power calculation algorithms ensure amazing results during both static and dynamic recording conditions. Analysis of both low-speed wind turbine power (<10 Hz), and high-speed electric vehicle motors (>5 kHz) is possible. Detailed analysis with period-based values is also included.
E-MOBILITY

ELECTRIC VEHICLE TESTING

ONLINE ANALYSIS OF EFFICIENCY – RECUPERATION – ENERGY BALANCE

The Dewesoft Power Analyzer combining the comprehensive DewesoftX software and the SIRIUS measurement device is the perfect solution for an all-in-one measurement experience for electric vehicles. Measuring any type of motor, be it single phase or multiphase (up to 12 phases), inverter (DC/DC, AC/AC, DC/AC) testing capabilities into the multiple hundred kHz region, as well as measuring battery parameters. Please see the section: Battery testing.

MODULAR HARDWARE DESIGN

The modular hardware design makes it possible to measure power (AC or DC) at multiple measurement points perfectly synchronised. This unique feature provides the flexibility to do a comprehensive analysis of different types of electric drive trains (Single motor, motor-generator, multiple motor configuration from 2 to 4 motors). All the auxiliary loads can be measured and analyzed simultaneously - including heating, air-conditioning, 24 V loads, and 12 V loads to name just a few.

THE HIGH SAMPLING RATE AND BANDWIDTH

The high sampling rate (up to 15 MS/s) and high bandwidth (up to 5 MHz) ensures that the data has the highest quality for the analysis.

The Dewesoft system is also able to measure various other types of signals such as GPS, vibration, CAN, video, torque, acceleration etc.

The data that is acquired is very versatile, analysis can be done during the measurement as well as in the powerful post processing tool enabling analysis such as energy flow diagrams, influence factors on efficiency, comparison to other vehicles, charging analysis, comparison of different driver behaviour on different drive cycles. By virtue of the small form factor of the Dewesoft devices they can be used in even the smallest electric vehicles.

ANALYZING DIFFERENT DRIVING SITUATIONS

There are various parameters that can influence the energy consumption of an electric vehicle. These could be:

• ambient influences, such as temperature or weather,
• the quality of the road surfaces, or different driving situations (uphill, downhill, city, highway, overland or combined drives), and
• the driver profile, as no two drivers have the exact same driving behavior.

The Dewesoft Power Analyzer is able to do an energy analysis considering all of these parameters during the test drives.

ADDITIONAL AUTOMOTIVE TESTING POSSIBILITIES

The Dewesoft measurement devices can also be used for a variety of other automotive testing procedures see the list of applications. More details can be found in the Vehicle Analysis Solutions brochure.

- Autonomous driving
- Vehicle dynamics
- Ride and handling tests
- Brake testing
- Advanced driver assistance systems
- Pass-by noise
- Combustion analysis
- Torsional and rotational vibration
- Order tracking
- Road load data
- Performance testing
- Component testing
- Modal analysis
- Structural testing
- Crash tests
- Structural testing

On-road testing considering different driving conditions and driver profiles.

SIRIUSi XHS-PWR provides 1000 A calibrated range and up to 2000 A peak current and over 500 kHz bandwidth.
HYBRID & HYDROGEN TESTING

COMBINED POWER AND COMBUSTION ANALYSIS
Combining internal combustion engines and electric motors to propel vehicles can prove to be quite the challenge when measurements of the two propulsion methods need to be compared. This is not the case with the Dewesoft Combustion Analyzer and Power Analyzer.

SYNCHRONISED MEASUREMENT
Due to the modular design of the Dewesoft data acquisition devices these two very different types of propulsion systems can be measured and analyzed perfectly synchronised.

COMBUSTION ANALYZER
The Dewesoft Combustion Analyzer enables the user to display and compare measured parameters using several different diagrams such as, pV-diagrams (pressure of angle) or the CA-Scope (pressure over angle). All CA specific calculations like the mean effective pressure (IMEP, PMEP), heat release, start/end of combustion (SOC, EOC), start/end of injection (SOI, EOI), indicated power, maximum pressure (Pmax), derivate pressure (dp/da) are presented either as colour diagrams or as data tables. For more detailed analysis, statistical calculations per cylinder or over the complete engine can be performed.

KNOCKING DETECTION AND COMBUSTION NOISE
Dewesoft provides a dedicated knocking detection and combustion noise algorithm. The basis for all of these calculations are precise angle position data and cylinder pressure measurement. Dewesoft provides the ideal hardware for this: the galvanically isolated SIRIUS® charge inputs (with up to 24 Bit resolution) are in perfect sync with the Dewesoft Super-pressure relief devices that are temperature dependant for safety reasons in the event of an emergency. These are just a few of the additional parameters that have to be measured. The flexibility and modular design of the Dewesoft data acquisition devices makes it possible to measure all the additional parameters and more - GPS, torque, speed, vibration, CAN, video etc.

ELECTRIC VEHICLE TESTING
For more information on the measurements of the electrical parameters please refer to the electric vehicle testing section of this catalog.

HYDROGEN TESTING
Fuel cell vehicles (FCV) use a fuel cell to store hydrogen that is then converted to electrical power by a chemical reaction in the fuel cell that is used to drive the electric. As a FCV has a tank that stores the hydrogen there are a few additional parameters that must be measured. The pressure of the tank needs to be monitored through pressurizing and de-pressurizing tests. The flow velocity of the hydrogen to the fuel cell needs to be monitored. Testing of pressure relief devices that are temperature dependant for safety reasons in the event of an emergency. These are just a few of the additional parameters that have to be measured. The flexibility and modular design of the Dewesoft data acquisition devices makes it possible to measure all the additional parameters and more - GPS, torque, speed, vibration, CAN, video etc.

High-accuracy combustion analyzer system for engine research, development and optimization as well as testing of ignition systems, exhaust systems, and valve control gear.
E-MOBILITY

MOTOR/INVERTER TESTING

Combined motor and inverter testing is the Power Analyzers domain. It offers a high number of input channels for both voltage and current measurements, and provides synchronized data acquisition on all channels.

The Dewesoft R&D Power Analyzer can measure 8 x 3-phase systems simultaneously using a single measurement device. This enables the measurement of an entire power system (e.g. electric vehicle, aircraft, ship etc.) completely synchronous.

The analyzer combines the functionalities of motor and inverter testing and analysis as well as the capability to measure other parameters such as speed, torque, temperature, video, GPS, and CAN.

Earlier typical test bed applications required the use of multiple measurement instruments - Power Analyzer, Scope, Data Logger, CAN reader etc. The Dewesoft Power Analyzer facilitates the measurement and analysis of all the data that would have been measured with such devices in a single measurement device.

- Efficiency
- Power & power quality analysis
- Analyzing 1-12 phase motors
- Raw data analysis
- Transient recording
- Data logging
- Scope
- VectorScope
- Measurements such as speed, torque, temperature, etc...

BATTERY TESTING

The batteries in battery electric vehicles (BEVs) are exposed to conditions not optimal for batteries. These include extreme temperatures both hot and cold, humidity, as well as vibrations and shocks. These all have an effect on the stability of power delivery and efficiency of the battery.

EXTENSIVE TESTS

This makes it crucial to do extensive tests on batteries: starting from the cell-characteristics leading up to the complete powertrain of the BEV. Detailed analysis requires temperature and voltage measurement at multiple points e.g. 50x cell voltage and 50x cell temperature measurements.

The flexible and scalable solution from Dewesoft can be configured to encompass over 1000 channels with many different sensors - all synchronised for a detailed analysis.

Battery testing has a broad spectrum of testing requirements, Dewesoft covers them all with ease, whether only one or a combination, the Power Analyzer and Power Quality Analyzer delivers the best results all of the time.

BATTERY DEVELOPMENT

Cell characterisation, endurance and aging tests, shock and vibration, misuse tests such as crash tests, short-circuit tests, overheating-, overloading-, overcharge- tests, forced discharge tests, impact/crush test, thermal misuse,

GENERAL BATTERY TESTING

Voltage and current, power and energy, temperature and humidity, pressure and vibration,

BATTERY CHARGING ANALYSIS

AC/DC charging, charging energy, charge-/discharge efficiency, charging process and time, harmonic analysis as well as inductive and conductive charging.

BATTERY TROUBLE SHOOTING

Such as voltage drops, voltage commutation unbalance and inrush currents.

APPLICATIONS

- Battery monitoring
- Transient recording
- Charge and discharge analysis
- Charging profiles
- Energy delivery
- Efficiency and losses
- State of charge
- Cell voltages and temperatures
EV CHARGING ANALYSIS

CONDUCTIVE AND INDUCTIVE CHARGING
Charging whether conductive (plug-in charging) or inductive (wireless charging) can be analyzed with Dewesoft data acquisition devices, for both alternating current (AC) and direct current (DC).

With higher switching frequencies of the inverter (up to 150 kHz), high sampling rates of up to 15 MS/s ensure that even the fastest transients can be monitored and analyzed.

CHARGING PROFILE AND TIME
This type of tests include analyzing the charging station itself over the different charging levels. Furthermore, they involve analyzing the charging process of the battery starting at the power delivery to the charging station to bulk, as well as the absorption and floating stages of charging.

CHARGE AND DISCHARGE EFFICIENCY
During charging and discharging some energy is lost through heat. The quotient of the amount of energy that is delivered by the battery and the amount of energy that was delivered to the battery, can be measured. Additionally, the efficiency of the drive train from the battery over the inverter to the electrical motor, auxiliary power consumption and finally the actual power that arrives at the wheels, can be measured and analyzed.

TESTBED / ON-ROAD TESTING
Dewesoft data acquisition devices offer the modular design and flexibility that is suited for both testbench testing and in-vehicle testing.

SUPPLY FOR SENSORS
For real-drive tests no auxiliary power is needed from the vehicle. The Dewesoft battery packs - which are hot swappable - can power the Dewesoft system as well as the current transducers and other sensors. With SIRIUSi-PWR-MCTS2 even zero flux transducers that need up to 20 W per unit can be powered. This ensures a true measurement without external influences.

IN-VEHICLE USE
Measurements on BEVs under real-drive conditions require a powerful, mobile, and extra compact measurement system due to the constraints in space. The system also needs to be able to power measurement sensors and other auxiliary systems such as screens directly. Dewesoft Power Analyzers well-suited for this application.

TESTBENCH
Test benches use several important interfaces such as CAN, OPC-UA, DCOM, etc. to receive and relay information. The Dewesoft NET option provides a remote control feature for Dewesoft data acquisition systems, enabling you to control the entire test procedure from a single PC in the control room.

TYPICAL CONFIGURATION

**IOLITE® modules** 
for temperature monitoring 
(8x TH, 8x RTD)

**SIRIUS® XHS** 
for inverter monitoring
GRID POWER ANALYZER

GRID ANALYSIS

SMART GRID & ENERGY MANAGEMENT

In conventional power supply systems, the power is produced in big power generation plants (thermal, nuclear, hydro...) and transported via lines to substations, transformers to the customer.

In recent years, the trend toward more renewable energy power plants (wind, solar, etc.) has pushed power supply systems to start moving away from the centralized model. The power grid operators are now facing some inherent challenges.

The systems are designed and built for centralized supply - not for the variable, and intermittent power generation from renewable energy sources, larger loads such as heat pumps and EV charging stations, which are causing transients and voltage quality problems such as dips, swells, or sags.

There is a move toward so-called smart grids, where producers and consumers of energy communicate and interact with each other to avoid problems. They allow for a greater increase in the number of renewable energy systems entering the power grid. However, the design process and the equipment for such smart grids need comprehensive testing.

With synchronized and distributed measurement capability, the Dewesoft Power Analyzer can measure both power generation and power consumption at multiple points in the grid - a solid foundation for the design and planning of smart grids.

POWER QUALITY ANALYSIS

The power quality can be analyzed and a energy management plan for the operation of both energy production plants and energy consumers, can be compiled. Energy management has the objective of optimizing the energy consumption for the industrial as well as the residential sectors. This includes many activities that will lead to a stable decentralized power grid. These activities include reducing the overall energy consumption, move toward more efficient equipment and technologies and thereby also reducing the costs. The Dewesoft Power Analyzer combined with the ability to measure multiple points in the grid simplifies the identification of numerous parameters and faults. These include identifying big loads, inefficient equipment, standby consumption, peak loads, harmonic interference, different types of transients, estimation of line parameters, detection of reverse power flows, voltage and frequency behaviour and many more.

TYPICAL CONFIGURATION

SIRIUS R8
4 x Voltage
16 x Current

High Voltage Direct Current Cable

• Power and efficiency analysis
• Multiple power modules analyzed simultaneously
• Synchronous distributed data acquisition
• Interaction between power generation & consumption
• Estimation of line parameters HVDC transmission system analysis
MOTOR TESTING
Motors have to fulfill higher and higher requirements concerning energy efficiency. Since 2011 all asynchronous motors have to be at least level IE2 according to the IEC 60034. Before this standard was established losses were considered with 0.5 %. Now they have to be determined.

EFFICIENCY DETERMINATION
There are two ways of determining the efficiency of the motor, the direct and indirect method. The direct method requires a measurement of the input power using a Power Analyzer, and a measurement of the output power by measurement of the rotational speed and the torque that is applied to the motor.

The indirect method is based upon loss segregation and then building a sum of all the losses. There are six measurement points defined in the standard, these are summed together and subtracted from the power input, yielding an output power for efficiency determination.

POWER ANALYZER
The Dewesoft Power Analyzer and the capability of additional software sensor calibration guarantees the highest accuracy measurement results.

The modular hardware concept is able to measure multiphase (1 to 12-phase) motors as well as the mechanical parameters such as speed and torque. Furthermore, additional parameters such as vibration, sound level, temperature, etc. can also be measured effortlessly.

POWER QUALITY
Power Quality analysis (Fundamental Power, Harmonics, THD, etc.) complements the analysis capabilities. Dewesoft offers a complete tool for motor analysis for effortless analysis of motor efficiency, d/q transformation, and efficiency mapping.

INVERTER TESTING
The Dewesoft Power Analyzer allows for comprehensive and highly accurate analysis of all kinds of inverters. The combination of modular, highly accurate hardware and powerful software can measure any in- and output configuration up to a 7-phase AC system.

• Efficiency analysis
• Raw data analysis
• Voltage rise time analysis (dU/dt)
• Transient recording
• Filter analysis

Fundamental frequencies from 0.5 Hz up to 3 kHz can be analyzed as well as switching frequencies into the multiple hundred kHz region. The analysis possibilities reach from efficiency determination to a detailed analysis of each switching pulse.

Raw data storing enables detailed analysis and depiction of each individual switching pulse (e.g. transient behavior in the scope). The power quality library automatically calculates THD, harmonics, etc. with the click of a button. A transient recording captures voltage peaks (e.g. with long cable lengths) or captures current peaks which can be any multiple of the nominal current.

High edge steepness of the inverter output (up to 10 kV/µs) can also create capacitive leakage currents or high motor bearing currents (due to the parasitic motor- and line capacities). All these factors can harm the motor and often make the use of filters necessary. The Dewesoft Power Analyzer is not only capable of measuring all these parameters, the analysis of these parameters can be done during the actual measurement. Using the powerful integrated math library in DewesoftX, the voltage steepness (dU/dt) of every impulse can be determined and statistically classified for example.

POWER TRANSFORMERS
Power transformer testing as described in the international standard IEC 60076, establishes multiple measurement parameters that must be done on the unit. With tools such as the scope and vector scope, voltage ratios and phase displacements of various primary and secondary configurations (e.g star, delta, and interconnected star) can be analyzed effortlessly.

POWER AND POWER QUALITY ANALYSIS
The transient recording functionality with the ability to store all signals at the full sampling rate (up to 15MS/s) ensures a detailed analysis. Combining this with the trigger functionality both failure and transient events (including long-term transformer testing) can be captured and analyzed with ease. The power quality library enables harmonic measurements of voltage and current into the multiple hundred kHz region. The data can be represented as a percentage of the fundamental frequency as required for the no-load current according to IEC 60076.

SYMMETRICAL COMPONENTS
Additionally, the calculation of the zero-sequence impedance is required, this function is built into the DewesoftX power quality library. Power and efficiency analysis of transformers requires the highest measurement accuracy for the phase angles. This is especially important when analyzing units with a low power factor, which is difficult with conventional measurement equipment.

MULTIPLE SENSOR MEASUREMENT
The IEC 60076-1 also requires the correction of the temperature dependant power losses. With the Dewesoft Power Analyzer, the measurement of the temperatures for these losses (e.g. winding, oil, ambient, etc.) are easy and completely synchronized to all other measured parameters. The corrected power losses can be calculated using the comprehensive DewesoftX math toolbox. Furthermore, the measurement of the power consumption of auxiliary loads (e.g. oil pumps, fan motors, etc.) is also possible, as well as the sound level according to the standard IEC 60551.

TYPICAL CONFIGURATION
8x Voltage, 8x Current
3x Temperature
Sound
Additional Sensor calibration

<table>
<thead>
<tr>
<th>Type of inverter</th>
<th>Input</th>
<th>Output</th>
</tr>
</thead>
<tbody>
<tr>
<td>Industry inverter</td>
<td>1 to 3~AC</td>
<td>3~AC</td>
</tr>
<tr>
<td>Electric vehicle inverter</td>
<td>DC</td>
<td>3 to 12~AC</td>
</tr>
<tr>
<td>Photovoltaic inverter</td>
<td>DC</td>
<td>1 to 3~AC</td>
</tr>
<tr>
<td>Wind power inverter</td>
<td>3~AC</td>
<td>3~AC</td>
</tr>
<tr>
<td>Electric two-wheeler</td>
<td>DC</td>
<td>1 to 12~AC</td>
</tr>
</tbody>
</table>
GRID POWER ANALYZER

FAULT/TRANSIENT RECORDING

Power system conditions such as switching operations (capacitor bank connection or disconnection) or some unforeseen system conditions can cause switching transients, voltage interruptions, over-voltages, harmonics, etc. These can affect the function of power system operation, and lead to outages of delivery lines or even cause a complete black-out of the entire power system.

The effects of these unwanted conditions more than often lead to devices seizing to work or even getting completely destroyed, this is especially true for sensitive electronic equipment. The impact of these faults can be very expensive, and time-consuming in the mitigation of these faults.

- High sampling rate up to 15 MS/s
- Storing raw data
- Triggering on different channels (analog, digital, math, power, power quality, etc.)
- Analysis of all line frequencies (16.7 Hz, 50 Hz, 60 Hz, etc.)

DewesoftX SOFTWARE

Being able to store raw data for analysis and the diverse triggering functions offered in the DewesoftX software makes it easy to identify and analyze any kind of fault that may occur. The triggers in DewesoftX can be triggered on any input channel (analog, digital, etc.), as well as being triggered on mathematical channels and standard power channels.

Analysis can be done on all line frequencies (16.7 Hz, 50 Hz, 60 Hz, 400 Hz, 800 Hz) as well as variable frequencies for variable frequency drives (VDF) and inverters. Power quality parameters such as system unbalance, harmonics, THD, flicker, rapid voltage changes etc. can also be acquired and analyzed by the click of a button, all power quality parameters are measured according to international standards.

DewesoftX TRIGGERING

The possibility to acquire the data using the fast-on trigger, slow otherwise option data is stored at a reduced rate (min, max, average and RMS), as soon as an event happens the data is stored at full speed enabling all power parameters for analysis. In addition, it is possible to utilize pre and post times which will store the data at full speed before and after the event for as long as the user-determined pre measurement. This reduces the amount of data that is stored which is handy for long time measurements.

The possibility to use math channels to create combined trigger conditions offers the user the freedom to determine the trigger events for individual events or combinations thereof.

TYPICAL CONFIGURATION

SIRIUS R3
12 x Voltage
12 x Current

STANDBY POWER

The IEC 62301, is the internationally recognized standard for the measurement of the standby power consumed by consumer electronic devices. It is estimated that household appliances consume between 5 and 15 % of the entire power requirement of a standard household, while on standby mode.

Lowering the level of power consumed by standby mode can be beneficial for the environment as well as financially.

MEASUREMENT REQUIREMENTS

There are several requirements set for the measurement of the standby power. Measurement devices must be able to measure very low currents (< 1mA) and very low power with specified accuracies depending on the wattage (<0.5 W with an accuracy of 0.01 W, >0.5 W with an accuracy of 2 %). Harmonic analysis up to the 49th order (2.5 kHz @ 50 Hz fundamental) is required and a Data logging capability is strongly recommended. The testing process requires the measurement of the power supply voltage, as well as the THD, temperatures etc. all within the specified limits. With the Dewesoft Power Analyzer all of the required parameters can be measured and analyzed.

DEWESOFT DUAL-CORE TECHNOLOGY

The biggest challenge with measuring standby power is measuring currents with a high crest factor. The high crest factor is caused by the pulsed current of the power supply units. Furthermore, input filters often produce reactive currents which can be a multiple of the active current. In older DAQ systems these issues forced measurement ranges to be set much higher than required by the pure sinusoidal signal, which decreased the accuracy: The Dewesoft Dual-core technology (incorporates two 24-bit AD converters in parallel: One measuring the full input range and the other measuring 5 % of the range. This ensures high accuracy for both high and low ranges and makes it possible to have a high range and best accuracy simultaneously. This technology is revolutionary for standby power measurements and reaches never-seen accuracies.

TYPICAL CONFIGURATION

1x Voltage, 1x Current
Additional current transducer calibration for 50 or 60Hz

*Comparison of a transient signal captured at 1 MS/s and 15 MS/s.
GRID POWER QUALITY ANALYSIS

The different Power Quality parameters describe the deviation of the voltage from its ideal sinusoidal waveform at a certain frequency. The Dewesoft Power Analyzer is rated to the IEC 61000-4-30 Class A acquisition and measurement devices. When compared to other Power Quality Analyzers Dewesoft offers a more detailed power analysis considering its ability to store raw data, powerful post processing capability, analyzing behavior at faults, and the ability to calculate many additional parameters in the extensive math library. An overview of some of the analyses that can be done at the click of a button is presented below.

HARMONIC ANALYSIS

With the DewesoftX software harmonics for voltage and current as well as active and reactive power can be analyzed up to the 3000th order. All flicker calculations are implemented according to the IEC61000-4-7 standard, and the number of sidebands and halfbands are user-definable. For higher frequency analysis harmonics can be grouped into 200 Hz and 2 kHz bands up 150 kHz. The calculation of THD (Total Harmonic Distortion) for voltage and current up to the 3000th order as well as inter-harmonics rounds up the harmonic analysis with Dewesoft.

FFT WATERFALL ANALYSIS

In addition to the FFT analysis, the harmonic FFT analysis can also be depicted in either a 2D or 3D FFT Waterfall plot. The visualization is user-definable to be either linear or logarithmic, 2D or 3D, and can also be sorted by harmonic order or frequency. This visualization is especially useful for the analysis of variable-frequency drives (VFD).

FLICKER AND FLICKER EMISSION

The Dewesoft Power Analyzer measures flicker according to the IEC 61000-4-15 standard. Flicker emission is calculated according to the IEC 61000-21 and is, therefore, able to evaluate the flicker emission into the grid by wind turbines as well as other power generation units.

RAPID VOLTAGE CHANGES

Rapid Voltage Changes (RVC), describes voltage changes that changes more than 3.3 % in a predefined time interval. This is added as a supplement to the flicker standard. This is a special calculation in DewesoftX, calculating the maximum voltage drop (Dmax), the stationary deviation after the voltage drop (dc) and the specific time where the voltage dropped under 3.3 % of the nominal voltage as specified in the IEC 61000-4-15.

UNBALANCE - SYMMETRICAL COMPONENTS

Normally an electric power system operates in a balanced, symmetrical three-phase sinusoidal steady-state mode. Unbalance in such a system means that the voltages and/or the currents are unsymmetrical. The Dewesoft Power Analyzer has the ability to measure over 50 different parameters for a comprehensive analysis of an unbalanced system (positive, negative and zero sequences ). This enables you to calculate multiple parameters for voltage, current, active, reactive, and apparent power. Unbalanced systems can cause the flow of current in the neutral line, heating of conductors and equipment which decreases efficiency, as well as increasing harmonic currents.

FREQUENCY DEVIATION

Frequency deviation is caused by the connection and disconnection of generation units and loads to the grid. These can have severe consequences to the grid stability and even lead to a blackout. The Dewesoft Power Analyzer can be used to monitor the frequency on the grid, as well as for testing the frequency behavior of power generation units when they are in development.

POWER QUALITY ANALYZER

OVERVIEW OF THE POWER QUALITY STANDARDS SUPPORTED BY DEWESOFT

- IEC 61000-4-30, IEC 61000-4-7,
- IEC 61000-4-15, Requirements for Power Quality Analyzers, Calculation of Harmonics, Flicker etc.
- EN50160, EN 50163, IEE519, IEC 61000-2-4, etc. Power Quality limits of public grid, industries and railway applications
- IEC 61400-21, IEC 61400-12, FGW-TR3, VDE-AR4105 etc. Power Quality Analysis of Renewables
- IEC 61000-3-3, IEC 61000-3-11 EMC of voltage changes and Flicker
- IEC 61000-3-2, IEC 61000-3-12 EMC of harmonic current

- Harmonics and THD up the 3000th order
- Interharmonics & higher frequencies
- Flicker, Flicker emission, RVCs
- FFT, harmonic FFT, waterfall-FFT
- Symmetrical components
To maintain a stable and secure power grid operation with a large share of renewable generation, certain standards must be adhered to. DewesoftX provides measurements supported with reporting tools according to FGW-TR3 and VDE-AR4105.

**ACTIVE & REACTIVE POWER**

The power analysis module provides a comprehensive set of power measurements. Combined with the statistics function the user can apply various statistic operations such as, minimum, maximum, averaged values, etc. to any of the output power measurement channels. This, for instance, allows you to capture maximum power, or check output power deviation, for a specific time interval.

Power plants operate at different setpoints for the injection of active and reactive power. Testing that the regulation controller behaves correctly under changing demand conditions (i.e. if power reduction is within tolerance as the frequency increases if reactive power injection increases as the voltage drops, etc.) is essential for ensuring a reliable network operation with integrated renewables. DewesoftX enables you to perform measurement campaigns storing the data for later in-depth analysis.

**POWER QUALITY**

Implemented parameters enable you to check equipment compliance to power quality standards such as IEC 61000-3-2/-12, voltage changes according to IEC 61000-3-3/-11, and CE conformity of electrical devices (Harmonics/Flicker) to name just a few.

- Electrical stability testing
- Fan and pump testing
- Circuit breaker and switch testing
- Filter analysis
- Castor testing
- Rod-drop testing
- Harmonics analysis according to IEC 61000-3-2/-12
- Voltage changes according to IEC 61000-3-3/-11
- CE conformity of electrical devices (Harmonics/Flicker)

**MAINTENANCE AND SAFETY**

These tests are done for user safety and liability issues. Handling electrical equipment could pose serious hazards such as electric shock, fires, and even explosions. Furthermore, these tests are done to ensure the quality of the equipment and that they adhere to strict safety standards.

**FAULT DETECTION**

Testing is the only way that faults in the manufacturing can be identified before the equipment is released into the field. Furthermore, it ensures that the electrical equipment has the ability to be used for its intended function. Tests such as electrical stability testing, fan, and pump testing, circuit breaker and switch testing, filter analysis, castor testing, rod-drop testing, harmonics analysis according to IEC 61000-3-2/-12, voltage changes according to IEC 61000-3-3/-11, and CE conformity of electrical devices (Harmonics/Flicker) to name just a few.

**ELECTRICAL TESTING**

The modular hardware design and the powerful DewesoftX software offer a complete solution for the testing of various types of electrical equipment. The testing of modern electrical equipment in this day and age extends well beyond just fundamental testing. It encompasses so much more ranging from safety, energy requirements, electrical performance, and operation to name just a few. Monitoring In-Rush currents, voltage transients, leakage, load tests, polarity testing, currents, harmonics, and power quality analysis are just a few of the possible applications.
WIND POWER TESTING

TEST REQUIREMENTS
These tests include electrical measurements such as power performance, power quality, and behavior at faults to name just a few. Additionally, mechanical measurements need to be performed, these include testing structural integrity, power generation sound level, and many more.

Power performance analysis according to the IEC 61400-12, in order to determine the power performance of the power plant requires measurements of the voltage and currents but also includes measurements such as wind speed, wind direction, and temperatures. The averaged values from these measurements are classified in BINS, from these BINS indicators such as the performance factor (CP), and the annual energy production (AEP) can be determined.

DewesoftX
The flexible measurement screen visualization setup in the DewesoftX software enables users to analyze graphs such as power factor over wind speed, or tabling the different BINS, wind speed over time, power performance factor, and any other required power parameters round up the complete measurement package.

COMMISSIONING THE POWER PLANT
Before commissioning wind power plants, must fulfill the local requirements from local regulators and grid operators. The FGW-TR3 and the IEC 61400-12 are the most popular standards worldwide for testing the power quality behavior and behavior at faults of wind power plants. Parameters such as flicker emission, flicker coefficient, harmonics, interharmonics, and higher frequency emissions are just a few of the test results needed.

These results are handed to the grid operators for confirmation that the wind power plant fulfills all the necessary requirements set by local and international standards and that all the power quality emissions are within the set limits. Other tests are also possible with the Dewesoft Power Analyzer these include switching operations and low and high voltage ride troughs.

TYPICAL CONFIGURATION
3 x Voltage
3x Current
Additional:
Wind direction, Windspeed, Temperature, pressure, etc.
LIGHTING DEVICES

The Dewesoft Power Analyzer is able to measure both Efficiency and Power Quality as well as do a full analysis of Lighting systems using a single instrument. This is a new and innovative lighting test experience. The trend towards energy-saving lighting makes fluorescent and LED lights more and more popular. In comparison to incandescent light bulbs, both fluorescent and LED technologies have higher efficiencies.

DIFFERENT CHARACTERISTICS

These technologies have different characteristics that have to be taken into account when doing measurements on them. For instance, fluorescent lighting makes use of ballast units which make use of high switching frequencies of up to 150 kHz.

LEDs are more energy-efficient than incandescent bulbs, but they also have some disadvantages. Using a light-emitting diode that produces a non-linear load can impact the power quality negatively, by introducing noise into the grid. This puts unwanted strain on the AC circuit.

DewesoftX

The high Sample Rate (15 MS/s) of the Dewesoft Power Analyzer guarantees reliable analysis of any kind of lighting system. The power quality library automatically calculates parameters such as Harmonics, THD, Flicker, etc. The extensive math library is able to calculate efficiency, energy consumption, and many other parameters. For example, the current through a fluorescent lamp can be determined via the math library out of the secondary current and the cathode current.

TYPICAL CONFIGURATION

SIRIUS XHS
3x Voltage
3x Current
1x Low Voltage input for luminance meter

• High switching frequencies
• High bandwidth Harmonics
• THD
• Flicker
• Energy
• Efficiency
**POWER ANALYSIS**

<table>
<thead>
<tr>
<th>Functionality</th>
<th>Dewesoft Power Analyzer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power Analysis for DC and AC</td>
<td>✓</td>
</tr>
<tr>
<td>Power Analysis</td>
<td>P, Q, S, PF, cos φ, D (Distortion), DH (Harmonic distortion), QH (reactive power of harmonics) (for each phase and total)</td>
</tr>
<tr>
<td>Fundamental Power</td>
<td>P, _H1, Q, _H1, 5, _H1, cos φ, _H1, phi, _H1 (for each phase and total)</td>
</tr>
<tr>
<td>Voltage and Current</td>
<td>RMS, RM, AVE (star and delta)</td>
</tr>
<tr>
<td>Energy Calculation</td>
<td>Total, positive and negative (e.g. Recuperation)</td>
</tr>
<tr>
<td>Efficiency</td>
<td>✓</td>
</tr>
<tr>
<td>Wiring Schematics</td>
<td>DC, 1-phase, 2-phase, 3-phase delta, 3-phase star, 3-phase V, 3-phase Aron, 6-phase (R2, R4, R8), 7-phase (R2, R4, R8, 12-phase (R4, R8))</td>
</tr>
<tr>
<td>Star-Delta Calculation</td>
<td>✓ (waveform and RMS values)</td>
</tr>
<tr>
<td>Frequencies</td>
<td>16.7 Hz, 25 Hz, 50 Hz, 60 Hz, 400 Hz, 800 Hz, Variable from 0.5 Hz up to 3 kHz</td>
</tr>
<tr>
<td>Frequency Source</td>
<td>Voltage, current, external</td>
</tr>
<tr>
<td>Period Values</td>
<td>U, I, P, Q, S, symmetrical components for 1/1, 1, 2 or 4 periods and selectable Overlap up to 99 %</td>
</tr>
<tr>
<td>Number of Cycles for Power Calculation</td>
<td>5 - 12</td>
</tr>
<tr>
<td>Power Averaging</td>
<td>Selectable - starting from 1ms, multiple Averaging (e.g. 20 ms, 60 s, 600 s) possible</td>
</tr>
</tbody>
</table>

**SOFTWARE FUNCTIONALITY**

<table>
<thead>
<tr>
<th>Functionality</th>
<th>Dewesoft Power Analyzer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power Analysis</td>
<td>✓</td>
</tr>
<tr>
<td>Power Quality Analysis</td>
<td>✓</td>
</tr>
<tr>
<td>Database Storing</td>
<td>✓</td>
</tr>
<tr>
<td>Post Processing</td>
<td>✓</td>
</tr>
<tr>
<td>Math Library</td>
<td>✓</td>
</tr>
<tr>
<td>Data logging - Raw data storing</td>
<td>✓ (data Storing at Full Sampling rate of 15 MS/s per channel)</td>
</tr>
<tr>
<td>Scope</td>
<td>✓ (up to 8 graphs in one diagram, Zoom In- and Out)</td>
</tr>
<tr>
<td>Vector Scope</td>
<td>✓ (1-, 2-, 3-phase systems)</td>
</tr>
<tr>
<td>FFT</td>
<td>✓ (up to 1/2 of Sampling Rate)</td>
</tr>
<tr>
<td>Transient Recording</td>
<td>✓ (up to 15 MS/s)</td>
</tr>
<tr>
<td>Triggering Channels</td>
<td>Analog, Digital, Counter, Math, Power, etc.</td>
</tr>
<tr>
<td>Triggering options</td>
<td>Simple edge (rising, falling), Window (two-levels: entering, leaving), Pulseswidth (longer or shorter than duration), Window and Pulseswidth, Slope Trigger (rising or falling slope with steepness)</td>
</tr>
<tr>
<td>Higher Frequencies</td>
<td>up to 150 kHz (grouping in 200 Hz bands, 2 kHz bands optional available)</td>
</tr>
<tr>
<td>Flicker</td>
<td>selectable PST and PLT</td>
</tr>
<tr>
<td>Flicker Emission</td>
<td>(according to IEC61400-21)</td>
</tr>
<tr>
<td>Rapid Voltage Changes</td>
<td>selectable steady state and hysteresis</td>
</tr>
<tr>
<td>Symmetrical Components</td>
<td>Zero-, positive- &amp; negative system for voltage and current (absolute or relative to fundamental)</td>
</tr>
<tr>
<td>Additional Symmetrical Components</td>
<td>Active and reactive parts for zero-, positive- &amp; negative system</td>
</tr>
</tbody>
</table>

**POWER QUALITY**

<table>
<thead>
<tr>
<th>Functionality</th>
<th>Dewesoft Power Analyzer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Harmonics (according to IEC61000-4-7)</td>
<td>up to 150 kHz for voltage, current, active-, reactive power, phase angle and impedance</td>
</tr>
<tr>
<td>Variable Sidebands and Half Sidebands (according to IEC61000-4-7)</td>
<td>✓</td>
</tr>
<tr>
<td>Harmonic Smoothing Filter (according to IEC61000-4-7)</td>
<td>✓</td>
</tr>
<tr>
<td>Interharmonics (according to IEC61000-4-7)</td>
<td>✓</td>
</tr>
<tr>
<td>Total Harmonic Distortion (THD) (according to IEC61000-4-7)</td>
<td>Voltage and current (Total, odd and even) - selectable up to 150 kHz</td>
</tr>
<tr>
<td>Total Interharmonic Distortion (TIHD) and k-factor (according to IEC61000-4-7)</td>
<td>Voltage and current (Total, odd and even) - selectable up to 150 kHz</td>
</tr>
</tbody>
</table>
VEHICLE ANALYSIS

WIDE VARIETY OF SOURCES - ALL SYNCHRONIZED
Dewesoft supports wide variety of analog and digital measurements, vehicle bus systems, GPS, inertial platforms, video, … everything perfectly synchronized.

EXTREMELY DEEP IN FUNCTIONALITY
A single software provides perfect analysis tools for vehicle dynamics, road load data analysis, ADAS, electric, hybrid and combustion analysis, harsh testing, brake test, brake squeal and others.

SOFTWARE INCLUDED WITH FREE LIFETIME UPGRADE
Award winning Dewesoft software is included with every instrument. All upgrades to the software are free forever with no hidden licensing costs.
ROAD LOAD DATA ANALYSIS

IN VEHICLE DATA COLLECTION
Virtually any analog, counter, and digital sensor can be connected to the system. Measure vibration, strain & stress, acceleration, forces, wheel speed.

OTHER DATA SOURCES
Additional synchronized acquisition of other sources is possible within the same system – Kistler RoaDyn, Kistler Kiroad wheel force transducers, GPS, inertial sensors, CAN, CAN FD, OBDII, J1939, LIN, FlexRay, XCP/CCP, Video, etc.

PERFECT SYNCHRONIZATION
Acquired data from various sources are synchronized with microseconds accuracy.

RPCIII EXPORT
Data analysis and replay data can be directly exported to standard RPCIII format.

Durability measurements during actual test drives or on testbeds, either for entire vehicle or certain components. Various smart technologies eliminate re-testing, and dramatically shorten test time.

ADDITIONAL ANALYSIS
Combine different applications and analysis with the same system. Vehicle dynamics, combustion analysis, vibration, etc. can be combined in one synchronized data file.
SINGLE MEASUREMENT
Dewesoft system can store synchronized data from SIRIUS devices with data from Kistler KiRoad or Roadyn2000 and other WFTs, along with vehicle CAN FD, Flexray, LIN, SENT, XCP, CCP and other sources.

ROAD LOAD DATA / FIELD TESTING
Analog signal transfer is a thing of the past with Dewesoft’s all-in-one durability test solution. Save time and money by using the same system for acquisition and driving the testbed - using a single EtherCAT® cable.

TEST BENCH INTEGRATION
The EtherCAT® slave port on the R8RT and R4RT can feed the data to any EtherCAT® master controller in real-time. This solution offers easy integration with MTS and Instron road load simulators, with just one cable.

REDUCED COMPLEXITY
Compared to traditional sensor input -> analog out -> analog in the conditioned data is sent digitally and therefore greatly reduces complexity of the system.

TEST BED INTEGRATION
The Dewesoft R8 with optional rear analog outputs is the perfect solution for replaying recorded data, and transmitting analog signals to control the test bed.

ANALOG OUTPUT
Save your money! A single Dewesoft system can be used to record data on real or proving ground roads - and also in the lab, to replay the recorded data into the road load simulator.

PORTABLE SETUP FILES
Dewesoft allows easy transfer of the channel setup to MTS testbed reducing setup time and risk of error.
MULTIPLE DATA INTERFACES
CAN, CAN FD, J1939, XCP, CCP, LIN, SENT, Mod-Bus, OPC UA, Flexray, Ethernet, GPS, Video,

DIRECT SENSOR SUPPORT
Integrated charge type amplifier for cylinder pressure sensors and direct connection of any RPM sensor (stock - 60-2, encoder, CDM+trig).

NEW KNOCKING ALGORITHM
Knocking can be accurately detected and measured with the updated knocking algorithm with an output of the actual knocking signal curve.

PERFECT INTEGRATION
Interface to testbed via AK-protocol for laboratory use. CAN or XCP compatible with ETAS INCA, Vector CANape, or ATI Vision for mobile use.
ADVANCED CALCULATIONS
Knock detection, thermodynamics, polytropic coefficient, compression curve...

READY FOR ANY ENGINE
Cylinder deactivation, variable compression ratio, dual polytropic coefficient with automatic detection and input.

STANDARD OUTPUTS
Maximum pressure, MEP, power, work, torque, temperature, average outputs...

HIGHEST ACCURACY
Angle resolution from 2° to 0.025° crank angle.

Complex measurements made easy with our new combustion analyzer. From the smallest single cylinder engines to the largest multi-cylinder ones. Simultaneous use of the combustion analyzer with the power module makes the perfect solution for hybrid engine test!
BRAKE NOISE

VDA 303 AND SAE J2521
Software is developed according to VDA 303 guideline and compatible with SAE J2521.

SQUEAL TRACKING
Each detected squeal is tracked. During the squeal event, statistics on squeal parameters and other DewesoftX channels (temperatures, RPMs, vehicle speed...) can be calculated.

CALCULATION SETTINGS
Squeals are detected from amplitudes of sound and mechanical vibration. Fourier transformation settings are integrated. Only direct time-domain measurements are needed to detect squeal events.

Detect and track brake noise events from microphone and accelerometer measurements.

EASY PAIR DEFINITION
Detects squeal events from paired microphone and accelerometer measurements. Pairs are generated automatically from specified accelerometer and microphone channels.

FLEXIBLE CONFIGURATION
The number of microphone and accelerometer channels is not limited by the software.
The brake test system from Dewesoft is very flexible and covers all kind of brake tests, braking comfort and testing vehicles with regenerative braking.

**ONLINE CALCULATIONS**
Instant calculation of outputs like MFDD, start speed, stopping time, corrected brake distance, brake deceleration, maximum deceleration and custom outputs.

**REAL-TIME RESULTS**
Results validated and visualized in real-time during the test allow an easy check if the tests are successful.

**SUPPORTS STANDARDS**
Brake tests according to several international standards like ECE13H, FMVSS 135, etc.

**BRAKE PEDAL SENSOR**
Direct brake pedal force, travel, and pressure sensor inputs via analog or CAN interface.

**WIDE RANGE OF APPLICATIONS**
Built-in analysis of standard brake tests, plus ABS testing, braking comfort, and brake squeal allow for additional test standards or maneuvers to be performed, such as tire, acceleration, handling, and/or fuel consumption tests.

**BRAKE TEMPERATURE**
Measures and logs multiple brake temperature and pressure channels.

**AUTOMATED WORKFLOW AND REPORTS**
Automated testing procedures and reporting.
**POLYGON AND GPS SOLUTIONS**

**3D VISUALIZATION**
Freely definable view angles gives a perfect view of the manoeuvre.

**ANY GPS DATA SOURCE**
GPS data from various sources can be used for measurement, and as inputs for the Polygon module. CAN, Ethernet or RS232 data can be read directly from 3rd party devices.

**UNIVERSAL**
Suitable for ground, air (high G testing, performance testing) or sea (handling tests, pass by noise, obstacle avoidance test) applications.

**EXACT VEHICLE SHAPE**
2D shape of the vehicle can be defined for exact front and rear vehicle reference point outputs.

**PERFECT HARDWARE**
Synchronous acquisition of 2 cm RTK GPS and IMU sensor with additional analog, digital and vehicle bus channels.

The Dewesoft polygon option is the most versatile and widely used tool for performance tests. Along with the new OpenStreetMaps widget, it makes the ideal vehicle testing suite.

**PARAMETER OUTPUTS**
Each calculated parameter like distance, position, angle or gate crossing are available as output channels.

**NEW MAP WIDGET**
Uses a tile server hosted by Dewesoft (OpenStreetMap). Online or offline (pre-downloaded) map usage possible. Multiple tracks can be displayed at once with channel based color tracking.
Easy-to-use ADAS validation system with the latest GPS and IMU technologies with 2 cm accuracy. Advanced driver assistance systems are automated, which increase safety and improve the driving experience.

**PRECISE GPS AND IMU**
Rugged and reliable miniature GPS aided inertial navigation system with high dynamic, 500 Hz update rate and static initialization. High-accuracy GPS or IMU with optional RTK support, offering 2 cm positioning accuracy.

**POLYGON WIDGET**
Powerful 3D visualization of moving and static objects at any position.

**POLYGON MATH**
Math functions to place several moving and static objects and calculations of real-time positions, distances and angles from any object to another as well as collision calculations.

**3RD PARTY DEVICE INPUT**
Direct support for OxTS, Genesys and LORD inertial platforms.

**RANGE OF APPLICATIONS**
Collision avoidance testing, blind spot detection, adaptive cruise control testing, autonomous vehicles testing, lane departure warning, and lane assist system testing.
The Vehicle Testing Suite (VTS) is a suite of automated test workflows and standard test maneuvers for vehicle dynamics with quick pass/fail evaluation for the driver.

### VEHICLE DYNAMICS - VTS

#### Automated Workflow
Pre-defined testing maneuvers and easy-on-screen controls for the operator to configure and run the tests.

#### Real-time Results
Results are visualized and validated in real time as the test is running, allowing instant verification of test success or failure.

#### Automated Results and Statistics
Summary table with statistics and overlay results from a batch of test runs provides quick analysis of results.

#### Standard Vehicle Test Maneuvers
Dewesoft Vehicle Test Suite provides easy-to-use automated testing for multiple standard test maneuvers. For every type of test, validation criteria and other objective parameters are calculated and made available as calculated channels in the measurement files.

#### Ins/GNSS for Automotive Testing
DS-IMU devices with single or dual antenna GPS provide accurate positioning and on-device calculations of slip angle, velocities, distances…

<table>
<thead>
<tr>
<th>Test type</th>
<th>Ref. standard</th>
</tr>
</thead>
<tbody>
<tr>
<td>Steady-state cornering</td>
<td>ISO 4138</td>
</tr>
<tr>
<td>Step steer input</td>
<td>ISO 7401</td>
</tr>
<tr>
<td>Step steer non-linear</td>
<td>Based on ISO 7401</td>
</tr>
<tr>
<td>On center sinus steer</td>
<td>ISO 13674-1</td>
</tr>
<tr>
<td>Pseudo-Random Steer</td>
<td>ISO 7401, ISO TR-8726</td>
</tr>
<tr>
<td>Pulse Input Method</td>
<td>ISO 17288-2</td>
</tr>
<tr>
<td>Slowly increasing steer</td>
<td>ECE 13H</td>
</tr>
<tr>
<td>Sine with dwell</td>
<td>ECE 13H</td>
</tr>
</tbody>
</table>
MASTER OR SLAVE DAQ SYSTEM
Dewesoft can be the master DAQ system and gather synchronized data from multiple sources and buses, or be used as a signal conditioner where measured analog data is sent to other systems over CAN or XCP (Vector Canape, ETAS INCA, ATI Vision,…).

MULTIPLE BUS SUPPORT
Support for CAN, CAN FD, Ethernet, J1939, OBDII, Flexray, CCP, XCP, LIN, SENT, Modbus, OPC UA,…

Forget exporting data from multiple sources and having to use various DAQ systems at once. Dewesoft’s support for all major vehicle buses will replace your complete measurement lab with a single system.

XCP MASTER/SLAVE
XCP is available as a software plugin where any channel can be transmitted over XCP. While the native XCP support on XHS and IOLITE is limited to 1 MS/s, XCP Master plugin can read synchronized data from multiple devices at 5 MS/s.

NATIVE CAN FD SUPPORT
Full speed CAN FD is available on SIRIUS devices with read or write functionality. DBC or ARXML configuration import is supported as standard.
HARSH ENVIRONMENT TESTING

-40°C TO 85°C TEMPERATURE RANGE
The SIRIUS waterproof and KRYPTON lines of DAQ system offer a wide temperature range from -40°C up to 85°C suited for the harshest environments on Earth.

SYNCHRONIZED SOURCES
Acquisition of additional data sources like GPS, inertial platforms, gyros, CAN, CAN FD, LIN, XCP/CCP, FlexRay, video, high-speed video with perfect synchronization.

LOW POWER CONSUMPTION
Ideal for air-conditioning testing.

> 100 G SHOCK RATING
Instruments offer high 100G shock rating.

DUST, SHOCK, MUD AND WATER PROOF
IP67 degree of protection from water, dust, mud and high shock. Instruments are tested in highly sophisticated labs to ensure quality and maximum reliability.

Robust DAQ systems with IP67 degree of protection, operating temperature between -40°C and +85°C and high shock protection provide a reliable solution for testing in extreme and harsh environments.

THOUSANDS OF CHANNELS
Systems can be expanded from 1 to thousands of channels.

DISTRIBUTED
DAQ systems can be distributed down to a single channel - keeping costs of sensor cabling low while ensuring high signal quality.
STANDARD COUNTING ALGORITHMS
Standard counting algorithms like ASTM and Markov counting are implemented.

INSTANT RESULTS
Temporary fatigue results available online including additional math channels.

Safety is an important aspect in designing automotive components. Fatigue analysis is a DewesoftX software extension for predicting fatigue damages based on measured strain and stress.

POST PROCESSING MADE EASY
Export to many different file formats and analysis of huge data files is also possible with DewesoftX.

PREPROCESSING
Direct pre-processing or local extreme detection, counting methods with algorithm settings, rainflow filtering, discretization, visualization and analysis software support.
YOUR SOLUTION.

MODAL TEST & ANALYSIS

FFT ANALYZER

SLM

ORBIT ANALYSIS

DYNAMIC SIGNAL ANALYSIS & NVH

ORDER TRACKING

SOUND INTENSITY
YOUR SOLUTION

DYNAMIC SIGNAL ANALYSIS & NVH

PERFECT HARDWARE
SIRIUS DualCoreADC® with 160 dB dynamic range is perfect for sound and vibration measurements. SuperCounter® technology provides precise data synchronization with angular domain.

EXTREMELY DEEP IN FUNCTIONALITY
One software program provides analysis tools for FFT analysis, octave analysis, sound level meter, sound power, sound intensity, RT60, order tracking, orbit analysis, balancing, modal analysis, human body vibration, SRS and more.

FLEXIBLE AND SCALABLE
Dewesoft is much more than just an NVH & acoustic analyzer. All other capabilities of Dewesoft like mechanical measurements or combustion analysis are just a click away.
**ORBIT ANALYSIS**

**INDUSTRIES**
Complete solution that improves the operating efficiency, lower wear, and prevent any potential critical failures of rotating machinery. 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.

**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.

**SOFTWARE INCLUDED**
Award-winning DewesoftX 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.

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

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

**DEDICATED ADVANCED PACKAGES**
Dewesoft Orbit Analysis can be combined with Order Tracking and Advanced FFT with cursors to cover further analysis needs.
Out of the box, Dewesoft Orbit Analysis packs the entire set of industry-proven analysis metrics, supporting calculation and graphical representation of: Raw/Direct 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.

MACHINE TRAIN SUPPORT
Simply add the number of desired bearings to the analysis.

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

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.

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

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

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

POST ANALYSIS
Offline calculation using raw signals from proximity probes.

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

MULTI-BRAND PROXIMITY PROBE SUPPORT
Dewesoft LV input on SIRIUS covers the needed ranges and supplies excitation to the majority of proximity probes.
The FFT analyzer in Dewesoft has it all: top performance, advanced cursor functions, high freely selectable line resolution, flexible averaging as well as advanced functions for in-depth analysis.

MULTIPLE MARKERS
Maximum marker, free marker, zoom marker, sideband marker, harmonic marker, RMS marker. Linked marker technology enable easy cuts from 3D to 2D graph, export and further analysis. Any edits on each of the graphs automatically applies it to the other as well. Including a dedicated marker table.

AVERAGING
Overall and block history averaged FFT with linear, energy, energy exponential and maximum averaging are available. Including different amplitudes settings: Linear, ASD, PSD, Power, ESD are available in Peak, RMS or Peak-Peak scaling.

ANY LINE RESOLUTION
Selectable line resolution up to 64k lines for most demanding tasks.

CURSOR VALUE ESTIMATE
Innovative window interpolation technique allows precise amplitude and frequency estimation.

ADVANCED MATH
Auto-power spectrum, cross-power spectrum, complex spectrum, waterfall spectrum, cepstrum (for bearing faults, speech processing), full FFT (for rotor whirl analysis), STFT (for non stationary signals), envelope detection (for bearing fault analysis). Including direct integration & derivation of input parameters.
Octave analysis is an indispensable tool for sound measurement as well as predictive monitoring. Dewesoft octave analysis solution meets all of the IEC and ANSI Class I specifications for octave filters.

**True Octave Analysis**
True octave filters exactly represent the filter sets defined by the IEC 61260 standards and offer the user a real time response for vivid live visualization of data, crucial for advanced acoustic analysis.

**Synthesized Octave Analysis**
Extremely fast calculation based on the narrow band FFT. Offering the same high level of accuracy with optimal speed - especially useful with high channel count systems where performance is crucial.

**Resolution Up to 1/24 Octave**
For deep analysis of data very narrow band analysis up to 1/24th octave.

**Seamless Acoustic Suite Integration**
The Octave analysis module is perfectly integrated with sound level, sound power, sound intensity and other modules for advanced sound analysis.

**Frequency Sound Weighting**
Standard frequency weighting curves (A, B, C, D and Z) can be applied directly in frequency domain for analysis of sound.

**Averaging**
Linear, peak and exponential averaging or block-based calculation.
**ORDER TRACKING**

**RICH VISUALIZATION**
Frequency and order 3D waterfall plots provide a great tool to determine machine condition. Nyquist, Bode and Campbell plots are available for presentation of the data. Orbit analysis with raw or order view is an efficient tool for turbo-machinery analysis.

**TIME, FREQUENCY AND ORDER DOMAIN - AT THE SAME TIME**
Due to high sampling rate (support) and advanced alias free resampling mechanism, data are available in all three domains (time, frequency and order), everything at the same time in one screen and data file, perfectly synchronized.

**ANGLE SENSOR SUPPORT**
All angle sensors from tacho, encoder, geartooth, geartooth with missing or double teeth, tape sensors and others are supported to determine angle and rotational speed with 10nsec resolution using SuperCounter® technology.

**ADVANCED MATH**
Any order and time-domain harmonics can be easily extracted with amplitude and phase, available versus rotational speed or time in run-up or coast down modes.

Determine the operation condition of rotating machines (resonances, stable operation points, determining causes of vibrations), even more powerful in combination with other math modules like torsional analysis, combustion or power analysis - the true EKG for machines.
Rotational and torsional vibration module along with order tracking are a strong tool to troubleshoot shafts in automotive, industrial or power-generation applications.

**EASY SENSOR SETUP**
The Math module supports any type of sensor output, and the sensor type can be totally different at each end of the rotor. SuperCounter® technology provides 10ns resolution in determining rotational angle and speed.

**ORDER TRACKING INTEGRATION**
Closely combined with order tracking, advanced data analysis is available based on the same angle sensors as the source of frequency.

**ADVANCED MATH**
Different input filters and rotational DC filters are available as well as the option to enter rotational speed ratio for gearbox analysis.

**ACCESS TO ALL DATA**
All data, such as reference angle, individual sensor rotational angle, speed and acceleration, torsional angle and velocity are readily available for advanced analysis.
Balanced rotors are essential for smooth operation of rotating machinery. Imbalance will create high vibrations, reducing machine life, causing material defects and down times. The balancing module is the tool to eliminate imbalance on site.

**SINGLE OR DUAL PLANE BALANCING ON SITE**
Perform single plane (narrow disc) or dual plane (long shaft) balancing.

**WEIGHT SPLITTING**
Adds the possibility to split needed balancing weight into equidistantly spaced points, for example holes on the rotor.

**SIMPLE STEP-BY-STEP PROCEDURE**
You are guided through the balancing steps for flawless operation including setup of angle sensor with live preview. Multiple modules can be combined for multi-axis balancing to save time and improve the quality of balancing.

**RICH VISUALIZATION**
Results from all runs are displayed in order to ease a decision for the next steps and to evaluate the stability of the measurement. RPM display has color indicator to determine in-out range.

**STORAGE OF INFLUENCE VECTOR**
Influence vectors can be stored so that additional test runs are not needed for repetitive balancing of the same machine.
Mechanical shock pulses are often analyzed in terms of the shock response spectrum. The SRS assumes that the shock pulse is applied as a base input to an array of independent single-degree-of-freedom systems.
MODAL TEST / ANALYSIS

ODS
Operating Deflection Shapes (ODS) is a simple way to do dynamic analysis and see how a machine or a structure moves within its operational conditions. ODS tests are fully supported in Dewesoft X.

RICH VISUALIZATION
Sophisticated animation of measured structure with interpolation in all three axes is available - both during and after the measurement. Complete integration with the Modal Test & Modal Analysis modules allows for trivial selection of transfer functions or mode shapes to animate.

Structures can easily be created with a dedicated geometry editor that supports everything from individual points, up to simple objects, in both Cartesian and cylindrical coordinate systems. Alternatively, geometry can also be imported from an UNV file.

The Modal Circle tool determines the exact resonance and calculates the viscous or structural damping factor.

FINE-TUNING OF MEASURED DATA
With its rich displays, Dewesoft X allows for real-time quality control of the measurement, as well as the ability to repeat the measurement of any point, all during acquisition. Additionally, all the time-domain data is stored into a datafile, which allows for offline recalculation with different parameters.

Multiple measurements done on a large structure can easily be combined into a single datafile, to analyze the entire structure at once.

ADVANCED MODAL ANALYSIS
With the help of CMIF (complex mode indicator function) and LSCF curve fitting, finding the modes on the stabilization diagram is easy. Selected modes can be used to calculate mode frequencies, damping ratios, mode shapes, complexity, participation factors, synthesize FRFs, …

Calculated mode shapes can be animated on a modal geometry widget. AutoMAC matrix can be displayed on a 3D bar graph to ensure the modes are well selected.

UNV EXPORT
All data, from raw time domain signals and FRFs, to all the advanced outputs from Modal analysis, can be exported into a standard UNV file.

IMPACT HAMMER TEST (SIMO/MISO)
Hammer testing has never been easier than with Dewesoft X. Grouping, rejecting and remeasuring of measurement points is fully supported. Ability to move excitation and/or response points (roving hammer or responses) allows for full flexibility when performing measurements.

In addition to frequency response functions, coherence, (cross) PSD and MIF can also be calculated.

SHAKER TEST (MIMO)
To analyse the most complex structures, Dewesoft X supports tests with any number of shakers. Externally driven shakers are supported, as is controlling the shakers via AO using Dewesoft’s function generator (burst random, continuous random, sine sweep, step sine tests).

H1 or H2 estimators are supported for calculating the FRFs. Multiple coherence (MCOH) can be calculated to help with the setup and measurement when using multiple shakers.

Modal test is an indispensable tool to determine the natural frequencies and mode shapes of any structure - offers easy to use operation with fast setup while providing rich visualization and animation of results.
Structural dynamics characterization, durability and fatigue testing, design validation and qualification.

**REAL-TIME CALCULATION**
Peak, RMS, THD, phase, transfer functions for each available point in real-time and post-analysis.

**FUTURE-PROOF APPLICATION**
Lifetime free upgrades and support.

**STORE AUTOMATICALLY**
Automatic storing on desired trigger conditions.

**TEDS SUPPORT**
Save time by using TEDS accelerometers which are supported by DewesoftX and all Dewesoft hardware.

**DATA EXPORT**
Data can be exported in virtually any data format used for NVH analysis.

**ONLINE AND OFFLINE ANIMATION**
Determine the quality of results - animation of structure in all three directions with different projections during (and after) measurement.

**EASY TO SET UP AND USE**
Simply connect the accelerometers and COLA signal, assign the correct channels and start measuring.

**UNLIMITED NUMBER OF CHANNELS**
Supports real-time calculation of an unlimited number of channels.

**COMPLETE SINE PROCESSING TESTS**
Directly integrates with your existing shaker and controller, needing only the COLA signal to sync perfectly.

**DIFFERENT MODES OF FREQUENCY DETECTION**
Zero crossing and Hilbert transform for detecting the exact frequency of the sweep produced by the shaker controller and driving the shaker through an amplifier.

**UNMATCHED POWER OF CALCULATION**
Runs octave and FFTs simultaneously on all channels and all in real-time.

**DEWESOFT QUALITY AND FLEXIBILITY**
Add additional parameters to the same measurement system and expand your measurement chain in seconds.
SOUND LEVEL METER

Compliance with international standards. Maximum accuracy and high dynamic range have been re-imagined with the Dewesoft approach. Regardless of the acoustics measurement, SLM plugin is always at the heart of it.

UNMATCHED FLEXIBILITY
SLM supports sound measurements in both air or water, and can be combined with all other physical measurement parameters, vehicle bus systems, video, GPS and other math to build a thorough image of circumstances.

SUPPORTED STANDARD
IEC 61672 Class 1 sound level meter

ADVANCED MATHEMATICS - ALL AT THE SAME TIME
Predefined standard frequency weighting (A, B, C, D, and Z), time weighting (Fast, Slow or Impulse), sound pressure level, equivalent, peak, minimum & maximum sound pressure levels, sound energy, impulsivity of sound, statistical noise level (LAF1, 5, 10, 50, 90, 95 and 99 % classes of values) are all available at the same time.

RICH VISUALIZATION
Flexible displays offering digital meters, analog bars, time domain recorders, narrow band FFT and octave analyzers can be freely combined to show your SLM data in real-time as well as in post-processing.

HIGH DYNAMIC RANGE
Our top-of-the-class data acquisition hardware with 160 dB dynamic range in the time and frequency domain allows direct input of IEPE compatible microphones. Supports automatic recognition of microphones with TEDS. Dewesoft data acquisition systems can be scaled for any number of microphones which can be effortlessly calibrated with a calibrator.
SUPPORTED STANDARDS

RAPID REAL-TIME AND OFFLINE CALCULATION
All calculated parameters are available during measurement as well as offline; rapid calculation of correction factors K1 (background noise measurement), K2 (room correction with integrated RT60 module), C1, C2 and C3 (deviations due to meteorological reasons - temperature and barometric pressure); support for raw time domain data storing and offline sound power calculation.

HEAVY MACHINERY
Includes measurement procedures for testing heavy machinery.

PREDEFINED REPORT
After testing, present your results using our pre-defined and yet flexible report templates.

GUIDED STEP-BY-STEP PROCEDURE
You will be guided step by step through the entire measurement procedure, with our clear and comprehensive user interface.

REVERBERATION TIME RT60
Expand your measurement with RT60 and perform room ratings yourself, using the same software interface. Template for absorption coefficient included!

*RT60 plugin sold separately.

Widely established sound power measurements with familiar, distinctive user interface and industry unmatched flexibility. Rating and comparison of different noise sources with ease and exactness while simultaneously monitoring any number of additional process parameters.
Noise source determination brought to an entirely new level. Sound intensity measurements in a simple and intuitive way with precision and flexibility unmatched in the industry. For example: measuring process parameters and recording video in parallel.

**SUPPORTED STANDARDS**
Complies to Sound Intensity-based Sound Power calculation - *Discrete points method* (ISO 9614-1) and *Scanning method* (ISO 9614-2).

**IEC 61260 & IEC 61672**
Using octave filters in compliance with IEC 61260 and complete measurement chain in compliance with IEC 61672 - worldwide valid calibrations can be ordered together with the system or done in your local calibration lab.

**ADAPTED FOR INDUSTRY**
No need for a special environment - perfect for measuring on big chillers, transformers and other large-scale industrial applications.

**SUPPORTED HARDWARE**
Plug and play support for different intensity probes from all major manufacturers, integrating full remote control functionality.

**UNMATCHED FLEXIBILITY**
Measurement of additional process parameters like vibration, video and others, everything perfectly synchronized.

**PHASE CALIBRATION**
Straightforward, automated phase calibration and correction with a single button click. Evaluation of PRI index and all the standard indicators including the dedicated table for output of results and needed actions.

**QUICK SOUND SOURCE IDENTIFICATION**
Identify noise sources smoothly with an easy-to-use interface.
Product sound engineering Analysis and characterization of product sound. The indispensable tool for sound engineering - make your product sound right.

**SOUND QUALITY**

**POWERFUL DAQ SYSTEM**
Bundled with renowned SIRIUS DAQ system supporting sampling rates of 200kHz.

**MEASUREMENT EXPANDABILITY**
Bundled with award-winning DewesoftX Professional - advanced and easy-to-use data acquisition and analysis software.

**FUTURE-PROOF APPLICATION**
Lifetime free upgrades and support - our solutions are constantly being improved.

**REAL-TIME AND POST ANALYSIS**
Calculation of metrics is supported in real-time as well as in post-analysis.

**MONOURAL AND BINAURAL ANALYSIS**
Select desired measurement method before measuring or measure both at the same time.

**TIME-VARYING AND STATIONARY SIGNALS SUPPORT**
No limits when it comes to different use cases.

**POWERFUL METRICS**
Articulation index, speech intelligibility, noise rating and criterion.

**LOUDNESS & SHARPNESS**
Calculation according to ISO 532-1 and ISO 532-2.

**PROMINENCE RATIO**
Calculation according to ISO 7779, freely definable frequency range and desired resolution.
When room acoustics properties are the issue, RT60 solution represents an essential tool. Easy setup enables reliable measurement for effective modification of room parameters and achieving desired reverberation time.

**REVERBERATION TIME RT60**

**PARAMETER ESTIMATION**
Estimation of modal decay parameters from noise measurements of reverberant and resonating systems using Lundeby method.

**ABSORPTION COEFFICIENT CALCULATION**
Calculate absorption coefficient and make a report with provided template.

**EVALUATION RANGES**
Different evaluation ranges for reverberation of time estimation are supported (T10, T15, T20, T30 & T60).

**SUPPORTED STANDARDS**
Fully complies with the ISO 354 standard using integrated response method.

**DIRECT MICROPHONE INPUT**
Our data acquisition hardware with 160 dB dynamic range allows direct input of IEPE compatible microphones with support for TEDS recognition. Data acquisition system can be scaled for any number of microphones.
Measure the effect of vibration on the body of a human being. The extracted parameters allow the judgment of risks for workers exposed to vibration. Whole-body and hand-arm measurement is supported according to international standards.

**HAND-ARM VIBRATION**
Sensors are installed using special adapters for fixing on a handle or between fingers and dedicated hand-arm calculations are available including risk assessment of vascular disorders.

**WHOLE-BODY VIBRATION**
Applicable to motions transmitted from workplace machines and vehicles to a person’s body through a supporting surface.

**SUPPORTED STANDARDS**

**ADVANCED MATH**
All data like RMS, Peak, Crest, VDV, MSDV, MTVV, Weighted raw, al (ISO 2631-5), al and D (ISO 2631-5) are available.

**DATA ANALYSIS**
With its deep data analysis functionality, DewesoftX is the basis for R&D work related to the reduction of vibration.
MONITORING

BEST IN CLASS SOFTWARE
Our software meets the requirements of any monitoring user. High-level web-based software provides a remote overview of the monitored machine/infrastructure state and trends over time, relevant for decision-makers. For engineers, DewesoftX software is available with in-depth analysis features, essential to detect failures and root cause identification.

ANY SENSOR
Input amplifiers offer support for almost any sensor used in Structural Health monitoring and Machine Condition Monitoring applications.

AFFORDABLE AND TOTALLY DISTRIBUTED SYSTEM
Dewesoft IOLITE devices are designed to be affordable and distributed under any condition. EtherCAT® technology allows devices to be placed near the sensors and connected with a single cable for power, data, and synchronization. The cable can span up to 100 m between DAQ nodes or virtually unlimited using EtherCAT® to fiber optic converters.
Space-grade measurement technology brought into machine condition monitoring. Accurate, highly reliable, easy to use, and cost-effective condition monitoring solution.

**MACHINE CONDITION MONITORING**

**ACCESS**
Data accessible from the local computer, control system or remotely.

**PRICE/PERFORMANCE RATIO**
Price-effective hardware technologies with the powerful, yet easy to use Dewesoft Machine Condition Monitoring software.

**DISTRIBUTED SYSTEM**
EtherCAT® technology allows devices to be placed far apart and near the sensors - connected through a single cable for power, data and synchronization.

**HIGH-LEVEL WEB-BASED SOFTWARE**
Overview of the machinery state via a pre-configured web browser application. Monitoring software built on top of 20 years of experience in high precision test and measurement applications.

**CONNECTIVITY**
Data can be integrated into any 3rd party control system using OPC UA protocol.

**TOTAL SOLUTION**
Sensors, DAQ devices, low level software and high level overview including database storage from the same vendor.

**UNLIMITED INPUT CHANNELS**
DAQ systems with virtually unlimited input channel configurations.

**HISTORICAL DATA**
Data permanently stored in a database on local or cloud servers for trend tracking as well as in-depth analysis and root cause identification.

**ANY SENSOR**
Input amplifiers offer support for any type of sensors needed to detect rotating machinery issues.

**IN-DEPTH MACHINE CONDITION ANALYSIS**
Multiple software features suited for PDM experts.
Dewesoft data acquisition systems are used in structural health and seismic bridge monitoring projects ranging from structural mechanics to continuous monitoring of large, complex structures. The systems provide distributed, high-channel-count and remote monitoring for highway overpasses, roads, buildings, and bridges.

**Remote Operation**
The entire system can be remotely operated offering triggered storing, alarms and other monitoring features with capabilities to store data locally or at distant remote locations.

**Any Sensor**
Input amplifiers offer support for any strain gage sensor, and low-frequency accelerometer sensors for seismic activity monitoring, temperature, and weather factors.

**Distributed**
Dewesoft devices are designed to be distributed under any condition. EtherCAT® technology allows devices to be placed near the sensors and connected with a single cable for power, data, and synchronization. The cable can span up to 100 m between DAQ nodes or virtually unlimited using EtherCAT® to fiber optic converters. We have instrumented world’s longest bridge - Hong Kong - Macao, spanning over 50 kilometres.

**IOLITE® LX**
IOLITE LX is able to serve real-time data via OPC UA interface to database servers while logging the data in parallel to overcome issues with transmission.

**IOLITEdi 3xMEMS-ACC**
IOLITEdi 3xMEMS-ACC is an integrated sensing device. Acceleration is measured by a triaxial MEMS accelerometer inside the device that is tightly attached to the mechanical chassis.
CHAPTER 4

PCM TELEMETRY

FULLY SYNCHRONIZED WITH THE OTHER DATA
Each channel from these interfaces is synchronized with other data with no less than millisecond accuracy.

COMPATIBLE WITH ARINC-429 AND MIL-STD-1553
Dewesoft can directly connect and decode data from these standard aerospace bus systems, either directly from the aircraft or from telemetry stream.

FULLY SYNCHRONIZED WITH THE OTHER DATA
Each channel from these interfaces is synchronized with other data with no less than millisecond accuracy.

USED BY NASA, AIRBUS, RAYTHEON LOCKHEED MARTIN, BOEING...
Dewesoft systems are in use by the biggest and best aerospace facilities and manufacturers all around the world.

AEROSPACE

YOUR SOLUTION.
TELEMETRY IRIG CHAPTER 4 PCM

INDUSTRY STANDARD
Dewesoft Decom is widely used in most advanced telemetry labs around the world working closely together with major vendors of flight recorders and ground equipment.

PCM TELEMETRY FRAME SYNC
The SIRIUS PCM-FS2 instrument is a dual frame sync IRIG Class II decommutator with up to 40 MBit/s data rates.

SOFTWARE DECOM
Our software decommutator offers full range of decoding for normal commutated, super and sub commutated parameters, embedded frames, and fast switching.

Decode and visualize data from telemetry IRIG Chapter 4 PCM compliant data interfaces.

PCM ENCODER
Dual PCM output up to 40 MBit/s in real time from Dewesoft analog data, Chapter 10, simulated data and other sources.
ONE SYSTEM SOLUTION
A single system solution with integrated digital receiver and PCM processing.

ONLINE AND OFFLINE MODE
DewesoftX can read and process stored CH10 files as well as connect live to an Ethernet CH10 stream during the mission.

Complete IRIG-106 Chapter 10 acquisition and analysis solution for every kind of data source used today.

IRIG-106 CHAPTER 10
DewesoftX can fully decode, visualize and analyze Chapter 10 data from PCM, analog, video, MIL-STD-1553, ARINC-429, serial, Ethernet, CAN and GPS streams inside the CH10.

iNET
Data decoding from up-to-date telemetry standards.

RAW DATA
Raw data are always stored - providing optimal possibilities for offline data processing.

SYNCHRONIZED ACQUISITION
All data sources are synchronized down to microsecond accuracy using GPS or IRIG time.
EVERYTHING IN HOUSE

Slovenia is our operational center which houses all of our development and manufacturing facilities. In this location you’ll find our R&D offices, testing facilities, mechanical workshop, production facilities, and a marketing and communications center.

HIGHEST QUALITY

We are fully committed to the highest standards of quality for our development and manufacturing processes as well as to preserving the environment. As such, Dewesoft is a TÜV SÜD certified ISO 9001 and 14001 company.
IT’S NOT JUST ABOUT GREAT PRODUCTS
Emotions and values are what makes us human. They shape passionate work, strong products, and long-lasting relationships. Cooperation and mutual trust is important when it comes to business.

That’s why we operate worldwide on the base of our core values.

WE ARE

COMMİTTED, ACCOUNTABLE, TRANSPARENT, CARİNG AND İNNOVATİVE

We care for you - our clients, we care for our co-workers, for society, and the environment. We can only create great and long-lasting business cooperation on the basis of common core values.

IT’S ABOUT

SHARING VALUES
“BE THE CHANGE YOU WANT TO SEE IN THE WORLD”

-Gandhi

We feel responsible to improve the world that we all share, and leave it better for the generations that follow. Our kids, your kids, and grandchildren.

The most meaningful thing we can do is help others to achieve their goals. That’s why we share our knowledge, equipment, and labs with young entrepreneurs in our own start-up community - now of more than 20 technology innovation companies.

IT’S NOT JUST ABOUT US IT’S ABOUT THE FUTURE OF THE SOCIETY WE LIVE IN.
**EUROPE**

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<th>Address 2</th>
<th>City</th>
<th>Phone 1</th>
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<tr>
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**LEANE INTERNATIONAL S.r.l.**

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<tr>
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<td>Germany</td>
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**AMERICAS**

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