

SIRIUSi -HS

Transient Recorder

Dewesoft brings a new faster version of the well-known and reliable **SIRIUS** hardware. The new version is called **SIRIUS** (high speed) and has the following highlights:

- 1 MS/s/ch sampling rate
- 16 bit resolution
- Measurement Modules (bandwidth 300kHz):
 - HS-ACC (ACC+): Voltage (+super-counters)
 - HS-STG-M: Bridge measurement
 - HS-HV: High voltage measurement

For maximum flexibility, you can choose from any of the following hardware solutions:

Single Slice Version

- Connect via USB to any PC
- Connect several slices via the click mechanism...
- ...or use the slices independently on different PCs
- Optionally connect an S-BOX (see below) to the slices via the smart click mechanism

S-BOX (embedded PC) Version

- One single robust housing
- Up to 4 SIRIUS vslices (32 channels)
- Integrated ultra fast Intel[®] Core[™] i7 processor
- Removable SSD with 180 MB/s write rate
- Perfect GPS timing

Rack Version

- Rack mount version
- Up to 4 SIRIUS islices (32 channels)
- Integrated S-BOX: ultra fast Intel[®] Core[™] i7 processor
- Removable SSD with 180 MB/s write rate
- Perfect GPS timing

NET-Option

For high-channel measurement tasks you can use the DEWESoft™ NET option to combine several Transient Recorders to one big system of up to 512 channels.











Transient Recorder



Mission & Vision

The mission of Dewesoft is to provide the best possible hard- and software, working closely together with our customers. The solution starts with a robust mechanical housing, including top of the notch electronics and is completed by the most powerful and easy-to-use software on the measurement market: DEWESoft™.

The goal of our software development is to provide a single program that covers all application areas whilst retaining the ease-of-use that DEWESoft[™] is well known for. This gives YOU a turn-key system that can handle even the most demanding measurement tasks.

But the optimal solution for YOU does not stop with the best hard- and software. We have a global network of highly experienced people providing local support and service for all our customers. The fast response time to YOUR requests is a foundation of our success. Our motivation and inspiration for our further work lies in the great relation we have established with our customers worldwide.

What sets Dewesoft apart from most other DAQ-companies is the complete development and manufacturing of the mechanics (enclosure), electronics (hardware), software, instruments know-how and customized solutions.

5 Instruments In One System

DAQ Applications

The versatile high resolution Data Acquisition can handle virtually any sensor/any signal: from low speed temperature, GPS, CAN, video cameras up to high speed transient signals. All perfectly synchronized!

Real-time FFT Applications

The powerful FFT features make dynamic signal analysis easier than ever before.

- Phase synchronous rpm input
- Order tracking (2D/3D waterfall diagram to draw orders or narrow band FFT)
- Octave analysis including frequency weighting
- Sound power measurement
- Transient Applications

The flexible storing trigger options give you precise control of when to start and stop your measurement. You can also record reduced data continuously and record at full rate only when a trigger condition occurs.

Scope Applications

The number of channels that the high resolution Scope can handle, is only limited by the processing power of your PC. The scope also features scaling, reference curves and powerful triggers.

CAN Bus Applications

Each SIRIUS chassis, has an optically isolated CAN 2.0B interface on the back side for vehicle CAN, OBDII and J1939 (up to 1MBit/sec). You can even output data to the CAN bus.









Sensor Setup

Innovative channel setup

It's a breeze to setup your channels with the innovative and highly intuitive DEWESoft[™] user interface.

At the moment you connect your measurement hardware to the PC, DEWESoft[™] will automatically detect it and you are ready to go.

The channel setup will already show you the default measurement settings and you can change them in no time. In the very same dialogue you can already see the required sensor connection diagram and the pinout.

In the left-bottom section you can see a live-data preview in different visual controls (Bar, Scope, FFT) so that you can verify your setup and optional scaling settings immediately.

In the newest versions of DEWESoft[™] you can access the channel setup even directly during measurement.

Sensor Database and TEDS

All sensor data is stored and maintained in the sensor database. This database keeps a comprehensive list of sensors and all their parameters, including scaling, units and calibration date info.

One click and the entire channel is set up and scaled correctly. If necessary, it's possible to zero the sensor or even to renew the calibration parameters. This guarantees the reproducibility, traceability and quality of the measurement results.

The next and final step is to use TEDS, which makes the sensor setup a no-brainer. With TEDS, the configuration of the sensor is stored directly in a TEDS chip on the sensor: i.e. When you connect the sensor to the SIRIUS is system, it will automatically read the TEDS information and all the setup is done – Plug&Play at its best!

Transducer Electronic DataSheet (TEDS) is a standardized "smart sensor interface". It is a table of parameters (manufacturer ID, model number, serial number, version, and many more) that identifies the transducer.

But what if your sensor does not support TEDS? Don't worry. DEWESoft[™] can even help you in this case. You can use a custom TEDS chip, do the setup once in DEWESoft[™] and then write the TEDS information to the chip with only a single mouse-click: It's that easy!









High Speed Streaming

Fast Data Storing

Through the entire history of Dewesoft the performance in storing was one of the most important issues.

The PC technology has advanced through the years and we are using all possible resources to get more from the system: multi-core technology, RAID systems, dual PCI bus technology and others helped to improve the performance.

But the most important thing is the ingenious DEWESoft[™] data file structure, which makes our systems so reliable and lightning fast.

- The complete setup, all events, fast analogue data and slow asynchronous data can be stored in one single file
- For long term measurement DEWESoft™ offers to roll-over the file automatically when certain file size is reached or after a specified time (for example after 24 hours the current file is closed and a new one is created automatically). DEWESoft™ makes sure that no data is lost during the file roll-over.
- DEWESoft[™] can reload even the largest data files in seconds and you can zoom into the data until you see every individual data point
- Even in disastrous events, such as complete power-loss during recording, your data files will not be corrupted. You will lose some of the last samples immediately before the power-loss but you can open the datafile and analyse it without any problem.
- Even during recording of the measurement you can freeze the measurement screen and analyse the current data (in the meanwhile storing to the data-file will continue uninterrupted and you will not lose a single data point)

S-BOX (embedded PC)

The S-BOX is an integrated powerful PC in a rugged SIRIUS chassis: with an Intel[®] Core[™] i7 processor and a fast SSD drive, performance problems belong to the past.

High speed CPU

Intel[®] Core[™] i7 is the most powerful processor of the Intel[®] Core[™] processor family.

High speed interfaces

USB 3.0 (nearly 10 times faster than USB 2.0) and GLAN interfaces provide highest bandwidth for data-transfer from and to the S-BOX.

Removable High speed SSD

With 180 MB/s write rate to the Solid State Disk, there is enough capability not only for transient recording, but also for e.g. external high-speed video cameras.

Flash option

For even better performance and maximum safety and convenience, we recommend separating the operating system from the measurement data. With the S-BOX-FLASH32 option, the operating system is stored on an internal flash disk with 32 GB, while the measurement data is stored on the exchangeable SSD.

This allows for a quick exchange of the SSD where your valuable data is stored on.

This feature also allows to continue storing on a new media immediately.





Data Acquisition

Sophisticated Trigger Functions & Alarms

The versatile trigger condition setup of DEWESoft[™] leaves nothing to be desired.

The flexible trigger conditions can be used to start/stop the acquisition or to control a digital alarm channel: i.e. You could use this to to stop the engine in case of certain alarm conditions.

When using the data-trigger conditions you can choose to trigger on

- The real data
- Average
- RMS (root mean square)
- Minimum
- Maximum



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Simple edge: either rising or falling slope Filtered edge: edge plus a rearm level, either slope

Window trigger: two levels: entering or leaving logic

Pulse-width trigger: longer or shorter-than-duration logic

Window and pulse-width: completely selectable as above

Slope trigger: either rising or falling slope

to force an acquisition at any time.



It is possible to define a trigger within the Fourier spectrum using a FFT trigger for a certain range of frequency - so you can

trigger from frequency and magnitude.

Video Input

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

For applications requiring video which is truly synchronized to the dynamic sample rate, DEWESoft™ supports the DEWE-CAM-01 from DEWETRON: a high quality image with automatic gain and iris, and even shutter speed (selectable) is controlled directly by the SIRIUS i A/D card, which generates a pulse to drive the camera. The result is a stunning correlation between each frame and the data. The DEWE-CAM-01 can acquire video at 640x480 up to 72 fps, and at 320x240 up to 240 fps.

Thermo cameras are supported from FLIR, NEC and MICRON.

High speed cameras from Photron which can acquire more than 100000 frames per second are supported for post analysis.



Advanced GPS support and capabilities

GPS technology is used in three main application areas: to find the position on earth, to determine the velocity of an object and to get precise absolute time information. DEWESoft™ 7 uses all three areas. For basic positioning, DEWESoft™ supports NMEA GPS interfaces. If you have a GPS receiver which

sends the data according to the NMEA specification, it will work in DEWESoft[™] up to a real-time rate of 100 Hz.



Even relative or absolute time as a trigger

source can be set to trigger an action. You

can always press the manual TRIG button





Math & FFT



Online and Offline Mathematics

Number crunching has always been one of the key points of DEWESoft™.

Over the past years we have covered lots of application areas with expert modules, so that the user is only a click away from the total solution.

With the new post-processing feature of DEWESoft™ version 7, this processing power can now also be used for the already stored data. So you can simply record raw data and apply the CPU intensive mathematics later!

You can choose from a myriad of predefined Math features with dedicated configuration dialogues for maximum ease-of-use. If the predefined Math are not enough, you can easily create your own formulae or we can even dynamically add new dedicated Math features for you via our DCOM based add-on system.

Real-time Spectral Analysis

In the easy-to-use analyse screens data can be shown and analysed in many different ways. So you could draw orders or narrow band FFT in 2D and 3D waterfall diagrams. Either displayed with time history or RPM.

Specific orders or phase information could be recorded over time, RPM or any other physical value. All analysis screens can be completely customized and the visual controls can be arranged via drag&drop.

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



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Automation

Sequencer

The DEWESoft[™] Sequencer is a tool to predefine process steps in a sequential format. The sequences can easily be defined by drag&drop of action-blocks.

This graphical definition makes it easy to see what's happening at a glance and allows for maximum user convenience.

Sequences are stored in separate files, so that it's possible to easily manage these sequences centrally (i.e. store them on a network-drive) to guarantee a standardized and defined measurement procedure.

Within the sequencer you can access all relevant DEWESoft™ features. In addition you can apply actions, calculate formulas and make control decisions (i.e. If-condition), wait for user interaction or a pre-set delay.

You can even call other sequences from within a sequence, so that you can modularize your measurement-tasks.

The sequences can be controlled by the user or can run automatically reacting to specific events and conditions.

DCOM

Another way to automate tasks with DEWESoft[™] is to use the DCOM interface which allows your software engineers to control DEWESoft[™] from any other programming languages that support DCOM (e.g. Visual Basic, C/C++, Delphi, Matlab, ...).

This is even more flexible as the sequencer. You can even read the live data from DEWESoft™ and do the data-processing and visualisation online in the programming environment of your choice.





Even more ways to automate DEWESoft™

- We also provide an Active-X control, that let's you easily drop the DEWESoft[™] application in to any program that supports the Active-X technology
- We provide a dll file that allows you to easily read the recorded DEWESoft[™] data files and process the data in your programming language of choice
- You can implement the TCP/IP based protocol of the DEWESoft[™] NET option to access the live data



Distributed Acquisition

DEWESoft[™] NET allows Ethernet based communication between different systems running the DEWESoft[™] software and can thus be used as a full remote control of the system.

For example: If the DEWESoft[™] Transient Analyser is located in the a test chamber and connected to your LAN, you can remote control it from any other PC (typically outside of the test chamber) which runs DEWESoft[™] and is connected to the same LAN. You can start/stop the measurement, change the setup and even look at all the data during the measurement.

For high-channel measurement tasks you can use the DEWESoft™ NET option to combine several S-BOXes to one big system of up to 512 channels and more: simply



connect them via GLAN and configure the synchronisation. When using the DEWE-NET option this way, the load can be distributed over the individual S-BOXes. And since each S-BOX has more than enough power, even for most demanding Math operations of its 32 channels, all performance problems belong to the past!

When the measurement is done, you can collect the measurement files from the systems and analyse them in the post-processing data suite of your choice (e.g. Flexpro, Matlab).

The S-BOX supports synchronisation via: GPS-(with PPS pulses), IRIG- and NTP.

Wireless Remote Control

The WLAN of the SIRIUS in combination with a VNC server (which is automatically installed when you select the DEWESoft™-NET option) allows you to completely remote-control the S-BOX and thus DEWESoft™.

It's easy to integrate the S-BOX in your local WLAN or, if you don't have any (e.g. In-car use), then the Hosted Network feature of Windows 7 let's you create a software based wireless access point, so that you can connect to it from any other PC, Laptop, Netbook or Tablet (it just needs to support WiFi connections and VNC) – no matter if the Operating System is Windows, Android or iOS:





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Analyse & Publish

DEWESoft™ Report Generation

In Analyse mode, you can replay any captured data file, zoom in with the recorder graph cursors, make measurements, prepare reports and print them in full colour to any printer. You can even export the whole measurement view to an AVI video file to create dynamic documentation.

No license is needed to use DEWESoft[™] in the Analyse mode. So you can install the software on all your computers, or even distribute it to your customers, and they can view the results. In this way, all of your colleagues and customers can replay your data files – just by sharing the files!

Export

DEWESoft[™] has extensive support for exporting the data to other file formats for post processing. You can choose different export file types, use scripting for direct reporting and export raw, reduced or angle based data.

DEWESoft[™] also has templates for Flexpro, MS excel[®] and Famos which allow you to prepare the reports once and execute them when DEWESoft[™] finishes the data export. In this way you can automate report generation and simplify the measurement process.

Supported Formats: Microsoft Excel®, Flexpro, Text, ASCII, MATLAB®, Diadem®, UNV, FAMOS, NSOFT, Sony®, RPC III, Comtrade®, WAV, Google Earth® KML, BWF, ATI, SDF, WFT, CSV, TDM, TDF

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DIAdem (*.dat) Matlab (* mat)	Yes	4	Math 0 (To	5000	Scalar	1	TV_Frequency
Universal file format 58 (*.unv)	Yes	5	Math 0 (To	5000	Scalar	1	RotAngle_1
NSoft time series (*.dac)	Yes	6	Math 0 (To	3.1	Scalar	1	Rev. count
Text (*.txt) Sony (*.log)	Yes	7	Math 1 (Or	2.5	Scalar	1	OT_Frequency
RPCIII (*.rsp) Comtrade (*.cfn)	Yes	8	Math 1 (Or	2.5	Scalar	1	RotAngle_1/RMS
ATI (*.at)	Yes	9	Math 1 (Or	single	Matrix (256x	1	RotAngle_1/OrderFFT
Standard Data File (*.dat)	Yes	10	Math 1 (Or	single	Matrix (2048	1	RotAngle_1/TimeFFT
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Exports							
Up Down							

After the data acquisition in DEWESoft™ it's easy to export the DEWESoft™ data via the File export function to Flexpro. You can even use the Sequencer or the Auto-Export plugin to do this automatically after every data-acquisition.





Specifications

Acquisition

Acquisition Specifications

Acquisition Specifications			
Transient Memory	limited by HD size typical 128 GB		
Sweep Length	limited by HD size typical 128 GB		
Pre-trigger	limited by internal memory		
Post-trigger	limited by HD size typical 128 GB		
Trigger modes	Data/FFT/Time triggers on any channels		
Trigger conditions	Simple edge, Window, Pulse-width, Slope + any logical combinations		
Number of triggers	Unlimited by multi-file feature		
Bandwidth	300kHz		
Filter type	All kinds of software filters		

Acquisition Modes			
Scope/Transient	300kHz bandwidth, 1MS/s, 16-bit ADC per channel single-shot or continuous		
Frequency Analyser	Real-time FFT analysis up to 1MHz with simultaneous time-domain displays		
Signal Averaging	Both time- and frequency-domain averaging are available to reduce noise and increase resolution		

S-BOX

Power Supply 9-36V_{DC} Max. Power Consumption 70W Physical Dimensions 265x150x75 [mm] Operating Temperature -20 to 50°C Storage Temperature -40 to 85°C Humidity (@60°C) 95% RH non-condensing USB Front: 4x USB 3.0 Back: 2x USB 2.0 Ethernet GLAN, WLAN

Technical	Specifications
Processor	Intel [®] Core™ i7 processor
CPU cock frequency	2GHz
RAM	4 GB
Disk drive	128 GB SSD removable 480 GB option
Flash	S-BOX-FLASH32 option
GPS	1 Hz standard 20Hz option, 100Hz option
Chipset	Intel QM57

Embedded PC



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SIRIUS - HS Modules

Specifications

Measurement Channels

	ACC	ACC+	STG-W	HV OO Digoov Max
Module Type	HS-ACC	HS-ACC+	HS-STG-M	HS-HV
Data Rate (up to)	1MHz	1MHz	1MHz	1MHz
Vertical Resolution	16 bit	16 bit	16 bit	16 bit
Isolation Voltage	1000 V	1000 V	1000 V	1500 V (4kV peak)
Analogue				
Voltage Range	10V ±1V	±10V ±1V	±10V ±1V ±0.1V ±0.05V	±1000V ±400V ±200V ±50V
IEPE/ICP Sensors			MSI option	
Sensor (excitation) Supply	4 or 8 mA, max. 25 V	4 or 8 mA, max. 25 V	programmable 010V–50mA	
Bridge Connection Types			3,4,5,6 wire connection	
Bridge Ranges			2000mV/V 200mV/V 20mV/V 10mV/V	
Bridge Completion Programmable			full bridge, ½ bridge 1 kΩ ¼ bridge 120 and 350 Ω	
TEDS support	IEPE	IEPE	Yes	
Pt100, Pt1000			MSI option	
Thermocouple			MSI option	
Charge			MSI option	
Digital				
Counter				
Digital Input Channels		3		
Digital Output				
Connectors				
BNC				
DSUB-9				
Banana				
(Counter) LEMO 7pin				

Notes: You can only use max. 2 counters on a single slice with the full sample rate



SIRIUS i-HS Slices

Up To 8 Modules

Each SIRIUS HS slice can have up to 8 SIRIUS HS modules.

Physical Specifications			
Power Supply	9-36V _{DC}		
Max. Power Consumption	30W		
Physical Dimensions	265x150x65 [mm]		
Operating Temperature Storage Temperature	-20 to 50°C -40 to 85°C		
Humidity (@60°C)	95% RH non-condensing		
Synchronization (In(Out)	2 LEMO sync connectors		
USB	Back: 1x Mini USB 3.0		

Technical	Specifications
Sample Rate	1MS/s/ch
Analogue Channels	up to 8 (2 @ full-speed)
Counter Channels	up to 8
Clock Accuracy	<50 ppm standalone synchronized to national standards with GPS, IRIG, NTP
Abs. Time Accuracy	with IRIG/GPS option < 1µs NTP available
CAN	1x DSUB9 for CAN 2.0B, up to 1MBit/s OBDII, J1939, CAN output



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