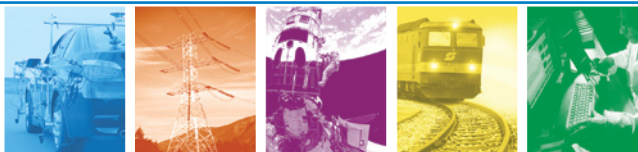


Automotive  
Energy & Power Analysis  
Aerospace  
Transportation  
General Test & Measurement



"Take 20"  
20-channel models

## SureHAND DEWE-3210 series

Portable Data Acquisition Systems

The extreme flexibility of the SureHAND™ series allows to connect all kind of analog signals, digital I/Os, counters, CAN-bus or GPS and even video – all synchronized! One system clock controls the whole instrument, either generated internally or from external sources like GPS-CLOCK or IRIG-CLOCK.

Better yet, our unique BATTERY POWER technology means that the SureHAND runs for hours without any external power connected. How's that for a UPS on steroids? Or plug in the included AC/DC adapter and the system will be powered and recharge the batteries at the same time.

Choose the DEWE-3210 model when you want to use our plug-in DAQ modules with high ISOLATION. Or choose the DEWE-3211 model when MDAQ modules are a better fit for your application. After the conditioning, powerful ORION series A/D cards guarantee measurements with highest precision.

The modular nature of the SureHAND series allows you to upgrade the features over time. Even the entire computer card inside can be replaced when it becomes necessary. We have thought of everything to ensure that your investment is a sound one for many years to come.

### Key Features

- Portable, modular data acquisition instruments
- High accuracy, 16- or 24-bit resolution
- Fast sampling, 100 kS/s up to 1MS/s per channel
- Fast data streaming up to 80 MB/s to hard disk
- Up to 32 simultaneous analog inputs
- Easy to use, intuitive DEWESoft user interface
- 2 synchronous counter inputs (8 max.)
- Optional CAN BUS, ARINC 429, 1553, and PCM interfaces
- Optional video cameras and inertial sensors
- Battery powered, with AC/DC adapter included
- Tough carrying bag, with pouches, handle, strap
- CE Mark approved
- MIL-STD construction, made in USA

### Online Information

[www.dewamerica.com/DEWE-3210](http://www.dewamerica.com/DEWE-3210)

Re-inventing Data Acquisition



# DEWE-3210

- Portable, powerful, tough
- Flexible signal conditioning
- 100% modular design
- Hot-swappable batteries



SureHAND basic specifications			
Input specifications	DEWE-3210 model	DEWE-3211 model	DEWE-3211-20
Slots for DAQ or PAD modules	8	--	--
MDAQ-SUB positions	--	2 (16 channels)	2 (16 channels) + 4 V/IEPE
<b>Main system</b>			
Total PCI slots	3 x half-length PCI slots		
Hard disk	250 GB standard removable drive (optional solid state drive)		
Data throughput to disk	50 MB/s typical		
Power supply	Hot-swappable batteries, operates from 18-24 VDC. Includes DPS-2410 external AC/DC power adapter for recharging the batteries and operating the system from AC mains.		
Display	17" SXGA display, 1280 x 1024 px, with standard resistive touchscreen		
Processor	Intel Core2Duo 2.0 GHz CPU, on a standard industrial grade MiniITX mainboard		
RAM	2 GB (expandable to 4 GB)		
Ethernet	2 x ethernet interfaces standard (one of them is 1 Gb speed)		
USB	Four x USB 2.0 interfaces available		
RS232	One serial interface on a DB9 connector available		
Optical drive	DVD+-CD-RW drive built-in. CD burning capability included		
Operating system	Microsoft Windows7 32-bit included		
Dimensions (W x D x H)	425 x 340 x 191 mm (16.7 x 13.4 x 7.5 in.)		
Weight	10 kg typical (22 lbs)		
Free PCI slots	2	2	1
<b>Environmental specifications</b>			
Operating temperature	-20 to 50C (0 to 45C with batteries installed) (storage temp -20 to 60C)		
Humidity	10 to 80% non-condensing, 5 to 95% relative humidity		
Vibration	MIL-STD-810F, EN 60068-2-6, EN 60721-3-2 class 2M2		
Shock	MIL-STD-810F, EN 60068-2-27		
<b>Required to complete this model</b>			
Conditioners:	Any 8 DAQ series plugin modules	One MDAQ-BASE-5 Any two MDAQ-SUB modules	Any two MDAQ-SUB modules
A/D card(s)	Any 8 or 16-channel Dewetron A/D card (ORION or AD series)	Any 16-channel Dewetron A/D card (ORION or AD series)	N/A - included
Software	DEWESoft-7 (SE or PROF*)	DEWESoft-7 (SE or PROF*)	N/A - included
* PROF is required for more than one A/D card, or cards with more than 16-bit resolution, or multiple video camera support			
<b>Popular upgrades</b>			
RAM upgrade	Increase from 2 to 3 GB		
Hard disk drive upgrade	Add an internal drive, or increase the size of the removable drive, or convert the removable drive to a solid state drive		
Filtering upgrade	N/A - DAQ modules already have on-board filters	MDAQ-FILT option adds user selectable 2 or 4 pole low-pass filtering to the 16 MDAQ input channels.	
CAN BUS interfaces	Add 2 CAN BUS interfaces to your system, (this is added onto the ORION A/D card, or as a separate PCI card if ORION card is not installed)		Add two or four CAN BUS interfaces to this system (ORION card upgrade only)
Time code interface	Adds an internal IRIG or GPS time code interface (does not require a PCI slot)		
<b>Popular interface add-ons</b>			
VIDEO-FG-4	Adds a four channel VIDEO INPUT PCI card to the system. Four BNCs for analog NTSC video input on the right side panel, allowing four video streams to be recorded in sync with the data		
ARINC-429 / 1553 interfaces	Adds a multi-channel ARINC-429 or MIL-STD-1553 interface to the system. Available as a single PCI card with either or both interfaces on it, or as separate external USB interfaces.		
<b>External channel expansion</b>			
EPAD2 series modules	Add one or more EPAD2 series external signal conditioners to your system. Each one provides 8 thermocouple, RTD, low voltage, or low current inputs. EPAD2 modules can be daisy-chained up to 8 modules per system.		
DS-NET series systems	Add a DS-NET system and expand your total channel count with mid and low-frequency channels, up to 128 channels. DS-NET chassis connects via ethernet to the DEWE-321x host.		



DPS-2410 AC/DC adapter

## Hot-swappable batteries

The DEWE-3210 can be operated for up to 3 hours with 3 batteries (BAT-95WH) installed. A convenient LCD shows the battery status at all times, but the best news is that you can HOT SWAP the batteries, even when the system is running from them! In this way, you could run the system indefinitely from batteries. Batteries charge inside the system when external power is applied.

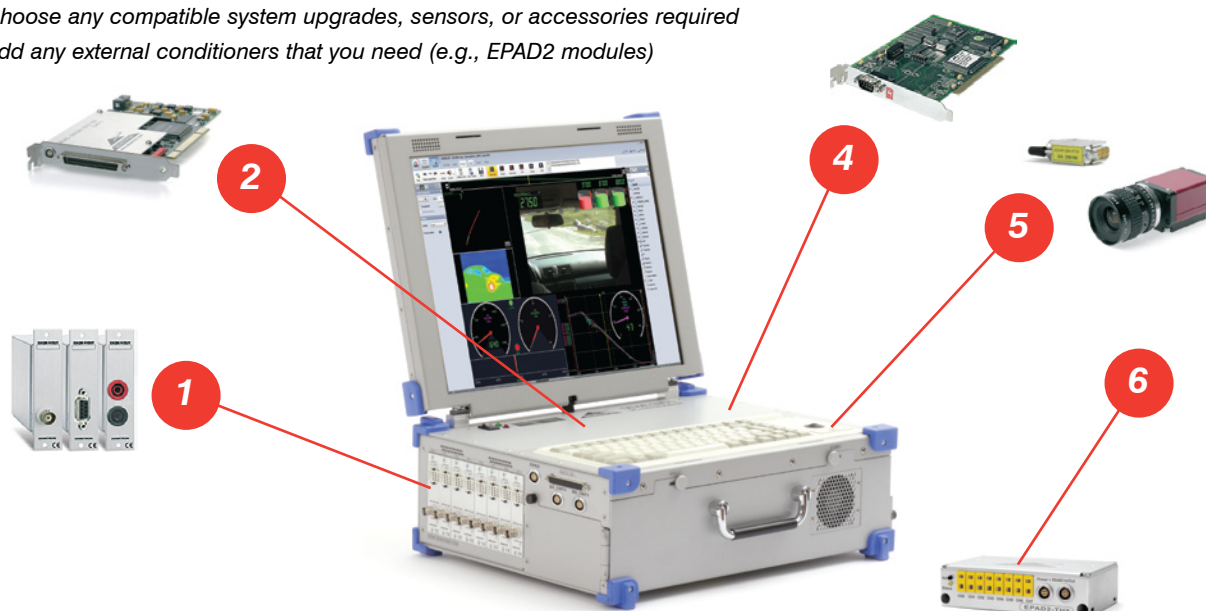
## DEWE-3210 Configuration guide

### REQUIRED:

1. Choose any 8 DAQ / PAD series plug-in modules for the chassis slots
2. Choose any ORION or AD series 8 or 16-ch card (factory installed)
3. Choose DEWESoft-7-SE acquisition and analysis SOFTWARE for 16-bit cards, or -PROF if you have 22/24-bit A/D, or multiple A/Ds, or multiple video inputs, or IRIG

### OPTIONAL:

4. Add any bus interface cards that you need (e.g., ARINC 429, 1553...)
5. Choose any compatible system upgrades, sensors, or accessories required
6. Add any external conditioners that you need (e.g., EPAD2 modules)



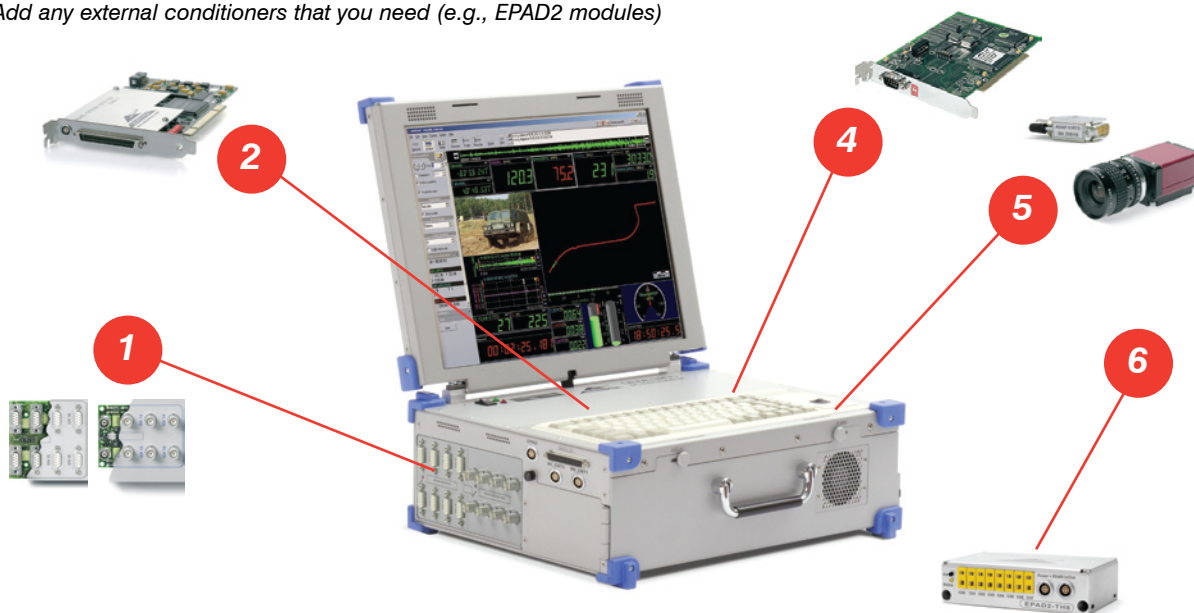
## Configuration guide DEWE-3211

### REQUIRED

1. Choose any two MDAQ-SUB 8-ch modules plus one MDAQ-BASE-5 card to support them
2. Choose any ORION or AD series 16-ch card (factory installed)
3. Choose DEWESoft-7-SE acquisition and analysis SOFTWARE for 16-bit cards, or -PROF if you have 22/24-bit A/D, or multiple A/Ds, or multiple video inputs, or IRIG

### OPTIONAL:

4. Add any bus interface cards that you need (e.g., ARINC 429, 1553...)
5. Choose any compatible system upgrades, sensors, or accessories required
6. Add any external conditioners that you need (e.g., EPAD2 modules)





## “TAKE 20” Model

We'll see your 16 or 18 channels - and raise you two!

The new "Take 20" versions of several Dewetron systems are a great way to add four more dynamic channels, increasing from 16 to 20 in a very affordable way. To make it even easier, we have bundled just about everything into this model: simply choose any two of our MDAQ-SUB 8-channel modules, and we will install them for you.

The result is a stunning 20 dynamic channels in a great portable form factor, with these basic specifications:

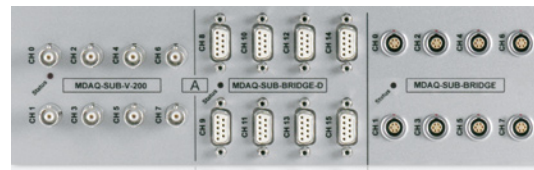
- 20 dynamic channels @ 24-bit resolution
- 204.8 kS/s/ch simultaneous sampling
- Built-in anti-aliasing filtering
- First 16 channels via MDAQ signal conditioners
- Last 4 channels have built-in voltage and IEPE signal conditioning already, on BNC connectors
- Includes the MDAQ-BASE-5 already - just pick any two MDAQ-SUB 8-channel modules to complete this system
- Includes DEWESoft 7 PROF version already
- Bright 17" SXGA touchscreen display
- Hot-swappable batteries
- Made in USA

### DEWE-3211-20 Specifications

General specs	
Data storage capacity	~200 GB
Storage medium	250 GB removable HDD, right side panel
Data throughput to disk	~ 50 MB/s continuous, max.
Recording time:	20 channels @ 10 kS/s/ch sample rate 24-bit resolution: ~ 70 hours 16-bit resolution: ~ 140 hours
Data display	17" (diag) display, SXGA resolution 1280x1024 pixels, with resistive touchscreen
System setups	Millions of setups can be saved and recalled
Input device	Built-in keyboard and trackpad, plus touchscreen display
Optical drive	Standard DVD+-CD-RW drive, and CD burning software
Computer interfaces	4 x USB 2.0 ports, 2 x ethernet interfaces, IEEE-1394, RS232C serial interface
Dynamic input channels	20 fast analog inputs, simultaneously sampled
Analog signal resolution:	24-bits (you can select 16-bit mode to save space)
Dynamic sample rate	208.4 kS/s/ch (each of the 20 analog channels)
A/D converter type	Sigma-delta ADCs (separate ADC per analog ch)
Anti-aliasing	Automatic, on the ORION A/D cards
Signal conditioning, ch 0-15	According to the selected MDAQ-SUB modules (see MDAQ specs later in this brochure for details)
Signal conditioning, ch 16-19	Input ranges: $\pm 10$ V, $\pm 2$ V, $\pm 0.5$ V, $\pm 0.1$ V Configuration: differential or single-ended Input modes: voltage or IEPE accelerometer input Input coupling: DC or AC (0.15 Hz or 3.4 Hz) TEDS compatible when used with IEPE sensors Input impedance (pos to neg): 1 M $\Omega$ ea. @ 60 pF to GND Over-voltage input protection: $\pm 30$ V each side
Trigger input line	TTL Schmitt trigger with pull-up 100k $\Omega$
Digital I/O lines	8 inputs and 8 outputs
Standard counter/encoders	Two (LEMO connectors for each)
Advanced counter/encoders	One (DB9 connector)
Recording modes	Always fast, fast on trigger, always slow, fast on trigger, slow in between
Trigger sources	Any analog, digital, counter, or math channel, or time - in any combination (OR gate)
Trigger evaluation	Actual, average, RMS, or FFT versions of each signal can be used for trigger evaluation
Trigger methods	Edge (positive or negative slope), Window (inside or outside), filtered edge, delta V, pulsewidth, window and pulsewidth,
Alarm outputs	8 alarm outputs (digital output lines) as well as on-screen alarm functions are built-in. Sounds can also be output.
Video inputs (inputs are standard, but cameras are not included)	Direct X cameras: USB and IEEE-1394 interfaces DEWE-CAM-01: via IEEE-1394 interface DEWE-CAM-GIG-E-50: via ethernet Analog cameras require VIDEO-FG-4 PCI card (opt)
EPAD2 connector	EPAD2 LEMO connector, left side panel



Four BONUS channels are located here



Simply choose whichever two MDAQ-SUB modules you want to be installed, to complete this system! See the tables later in this brochure for selections

Standard counter/encoder specs	
Standard counter/encoders	2 x 32-bit (LEMO connectors for each)
Counter timebase	80 MHz (40 MHz max. input frequency)
Measurement modes	Event counting, up/down counting, gated event counting, period time, pulse width, two-edge separation, frequency and encoder measurements
Standard counter/encoder signal levels	TTL/CMOS, pull-up with 100 k $\Omega$ Input low level: -0.7 to +0.7V Input high level: +2 to +5V
Overvoltage input protection	(DI 0 to DI 7): $\pm 25$ V continuous (DI 8 to DI 15): -1 to 6 V

Advanced counter/encoder	
Advanced counter/encoders	1 x 32-bit (located on DSUB-9, right side panel)
Counter timebase	80 MHz (40 MHz max. input frequency)
Measurement modes	Event counting, up/down counting, gated event counting, period time, pulse width, two-edge separation, frequency and encoder measurements
Signal levels	Symmetrical, differential AC/DC coupling selectable
Trigger adjustment range	0 to 40 VDC
Overvoltage input protection	$\pm 100$ V continuous
Max. DC level @ AC coupling:	$\pm 50$ V continuous

Power specifications	
Power system	SideHAND hot-swappable battery power system
Batteries	Three battery slots - 2 batteries are included BATT-95WH 14.4V lithium ion 95 WH batteries
AC/DC adapter	DPS-2410 external adapter included, 24VDC @ 10A, powered from 120/240VDC, fused
Running time on batteries	Approx. 1 hour per battery
Hot-swap	Batteries can be hot-swapped during battery operation, if remaining batteries have sufficient energy to power the system during the swap

Mechanical & environmental specs	
Dimensions:	425 x 340 x 191 mm (16.7 x 13.4 x 7.5 in.)
Weight:	10 kg typical (22 lbs) without batteries (0.68 kg ea.)
Shock	MIL-STD-810F, EN 60068-2-27
Vibration:	MIL-STD-810F, EN 60068-2-6, EN 60721-3-2 class 2M2
Humidity	10 to 80% non-condensing, 5 to 95% relative humidity
Temperature (operating)	-20° to 50°C (0° to 45°C with batteries installed)
Temperature (storage)	-20 to 60°C

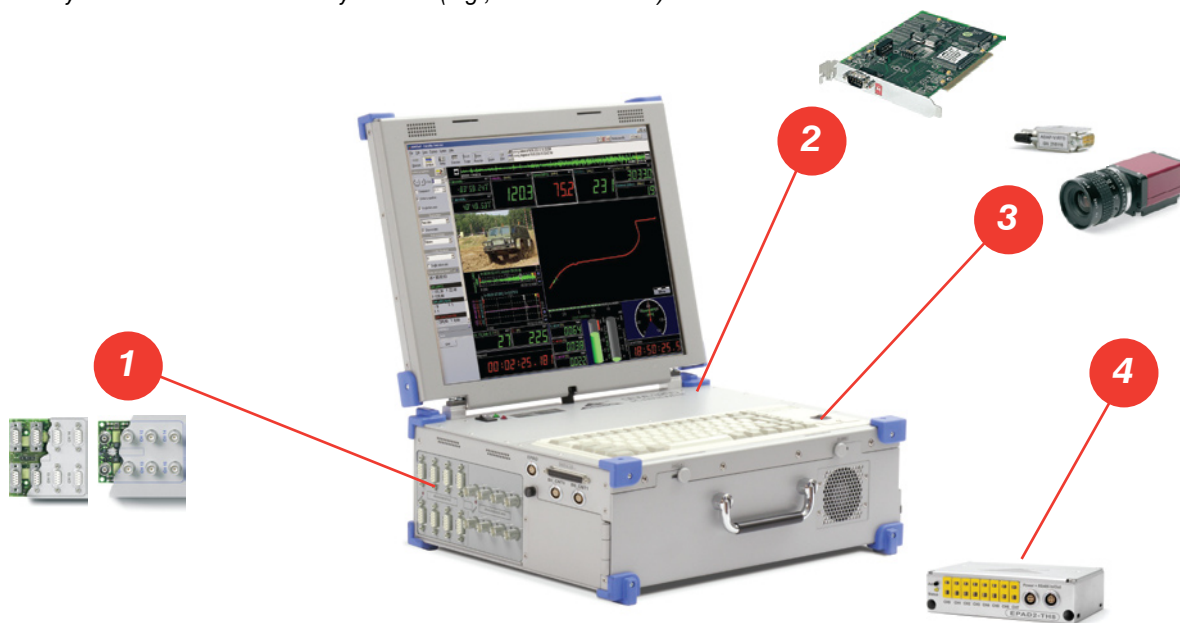
# Configuration guide DEWE-3211-20

## REQUIRED

1. Choose any two MDAQ-SUB 8-ch modules (see tables later in this brochure)

## OPTIONAL:

2. Add any bus interface cards that you need (e.g., ARINC 429, 1553...)
3. Choose any compatible system upgrades, sensors, or accessories required
4. Add any external conditioners that you need (e.g., EPAD2 modules)



## DEWE-3211-20 Specifications (continued)

DEWESoft data analysis specs	
MATH channels	MATH can be created before or after recording Channels created before can execute during recording, or can be executed afterwards Channels created afterwards can be executed any time, across all data or just a portion of the data All MATH channels can be saved into the data file
MATH functions (standard)	Operators: +, -, /, x, ( ), ^ Statistics: RMS, AVE, RMS, STD DEV, MAX, MIN Trigonometry: SIN, COS, TAN, PI, ACOS, ASIN, ATAN Functions: ABS, SQR, SQRT, SGN, TRUNC, ROUND, RND, LOG2, LOG10, LN, EXP Trigonometry: <, >, =, <=, >=, NOT, AND, OR, XOR Signals: SCNT, SR, TIME, SINE, SQUARE, TRIAN, NOISE Measure: Pulsewidth, Stopwatch, Measdiff, Edge, ECNT, ICNT, HOLD, TRIG, IF Events: KEYPRESSED (any key can be used in math)
Software FILTERING	IIR and FIR software filters can be created for any channels, and executed during acquisition or afterward Band pass, band reject, low-pass or high-pass Up to 10th order Bessell, Butterworth, or Chebychev protocols Also: FFT filter function
Integration, Differentiation	INT, DINT, DER, and DDER with selectable orders and scaling factors
Non-linear processing	Polynomial scaling with up to 10 section coefficients
Exact frequency function	Within 0.001 Hz resolution frequency measurement from any analog channel, via software
Reference curve function	Y-T reference curve, X-Y reference curve, and FFT reference curve. Detect signal out of bounds and report an error, which can be counted and displayed using the ECNT math function and display functions
Constant function	User-definable constants can be used in math channels, and displayed in meters

DEWESoft display specs	
Display screens	Default screens: overview, recorder, scope, FFT User can freely define these screens, and add more screens (no preset limit). Screens can be named freely and assigned icons. Screens can be rearranged on the taskbar.
Display objects (standard)	Horizontal recorder graph, vertical recorder graph, scope graph, X-Y graph, digital meter, analog meter, bar graph, status lamp and text indicator, FFT graph, 2D and 3D graph, video window, GPS track

DEWESoft display specs	
Display objects (DSA option)	Third-octave graph (also 1/1, 1/3, 1/6, 1/12, 1/24) Orbit display
Display objects (POWER option)	Vector scope and harmonic FFT (V and A, based on harmonics of the base power frequency)
Limits visual alarms	Digital and bar graph meters can be set to change colors when signals exceed high or low limits Analog meter can be set with one or two "red lines" Status lamps can be set to change colors based on levels Indicators can be set to display different text messages based on discrete levels being reached

DEWESoft top level functions	
Basic functions	User-defined sequences can load setup files, wait for events or signal levels, ask the user for input, go to next steps or back based on inputs of all kinds, access virtually any DEWESoft function, start or stop the acquisition, play Windows media (sound or video)
Security function	Password(s) can be set to protect setup mode. Two access levels can be utilized.
Project definition	Different hardware configurations can be defined as "projects," and freely edited and recalled any time
Setup definition	Each setup file contains all of the hardware configuration selections (channel range, scaling, etc) as well as storage mode, sample rate, trigger settings, and all display settings of all screens. Millions of setups can be defined, edited, and recalled.

DEWESoft options (most popular ones only are shown here)	
OPT-POWER	1-phase and 3-phase power analyzer add-on, including harmonics and interharmonics, watts and VARs, power factor, active, apparent and reactive power, vector scope and harmonic FFT displays
OPT-CAN	Support for Dewetron CAN BUS hardware, import DBC files or manual setup, compatible with CAN 2.0b, J1939 and OBD II protocols
OPT-CAN-OUT	Allows DBC files to be written from the CAN setup, and for user-defined CAN messages to be transmitted back onto the bus (requires OPT-CAN)
OPT-FG-SE (PROF)	Function generator option, allows 2 (or more) analog channels to be created and output during real time, as well as any two channels to be output during replay. Requires compatible analog output hardware.
OPT-ORDTR	Order tracking option

## DEWE-3212 & DEWE-3211-32 expanded model

### ■ Channel expansion via 3210-EXP-MDAQ16 chassis

All new for 2010 is the chassis expansion option for the SureHAND series, which can be added to either the DEWE-3210 model or the DEWE-3211 model. It also allows for the option 3210-EXP-BATT to be added, which adds four more battery slots to the system.



DEWE-3212 model

#### DEWE-3212 model

Adding the 3210-EXP-MDAQ16 to a DEWE-3210 converts it to the DEWE-3212 model, with slots for both DAQ and MDAQ series signal conditioning modules. This system can hold:

- Up to 8 DAQ series modules
- Any two 8-channel MDAQ series modules
- Can accept the 3210-EXP-BATT option (see below)



DEWE-3211-32 model

#### DEWE-3211-32 model

Adding the 3210-EXP-MDAQ16 to a DEWE-3211 converts it to the DEWE-3211-32 model, with slots for twice as many MDAQ series signal conditioning modules. This system can hold:

- Any four 8-channel MDAQ series modules
- Can accept the 3210-EXP-BATT option (see below)

#### 3210-EXP-BATT option

Once the 3210-EXP-MDAQ16 has been added to either the DEWE-3210 or DEWE-3211, you can then also add this option, which adds four more battery slots. Combined with the three slots in the mainframe, there are seven battery slots total - allowing you to run the system for up to 7 or even 8 hours depending on system load.

- Up to 7 batteries total
- Longer running times without any power connected!



The standard SureHAND has three battery slots already - so adding the 3210-EXP-BATT option provides seven slots total!



The 3210-EXP-BATT provides four more battery slots



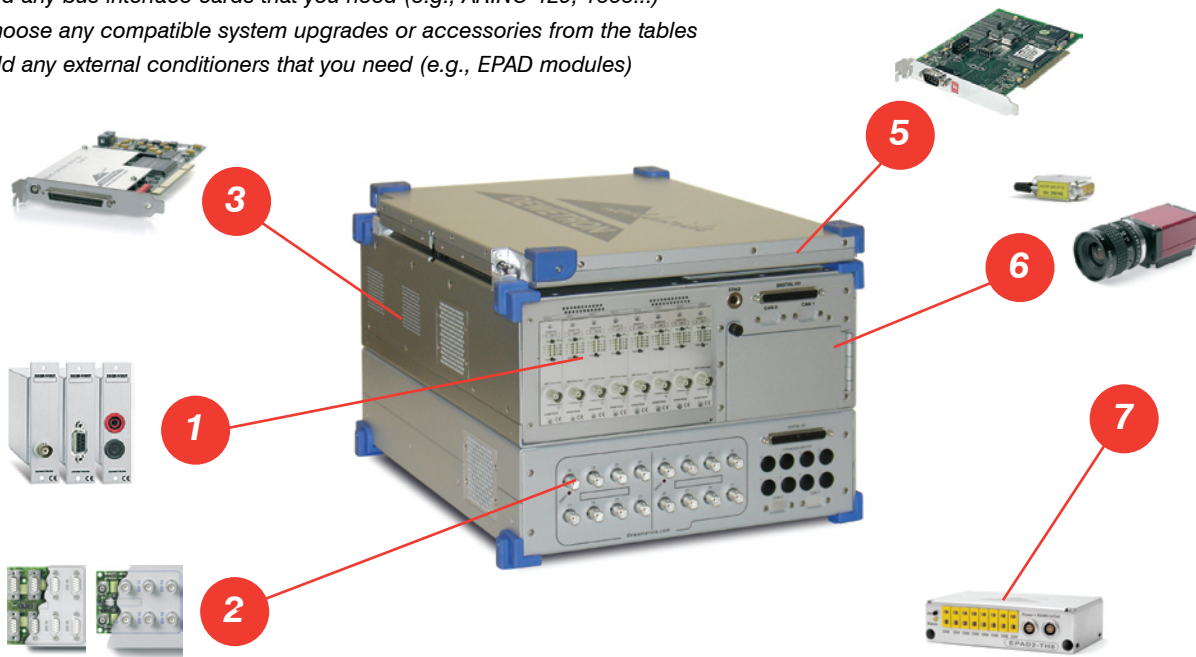
## DEWE-3212 Configuration guide

### REQUIRED:

1. Choose any 8 DAQ / PAD series plug-in modules for the chassis slots
2. Choose any 2 MDAQ-SUB series 8-channel modules and one MDAQ-BASE-5 card (factory installed)\*
3. Choose any 32-channel ORION card to be installed internally (or 2 x 16-channel cards)
4. Choose DEWESoft-7-SE acquisition and analysis SOFTWARE for 16-bit cards, or -PROF if you have 22/24-bit A/D, or multiple A/Ds, or multiple video inputs, or IRIG

### OPTIONAL:

4. Add any bus interface cards that you need (e.g., ARINC 429, 1553...)
5. Choose any compatible system upgrades or accessories from the tables
6. Add any external conditioners that you need (e.g., EPAD modules)



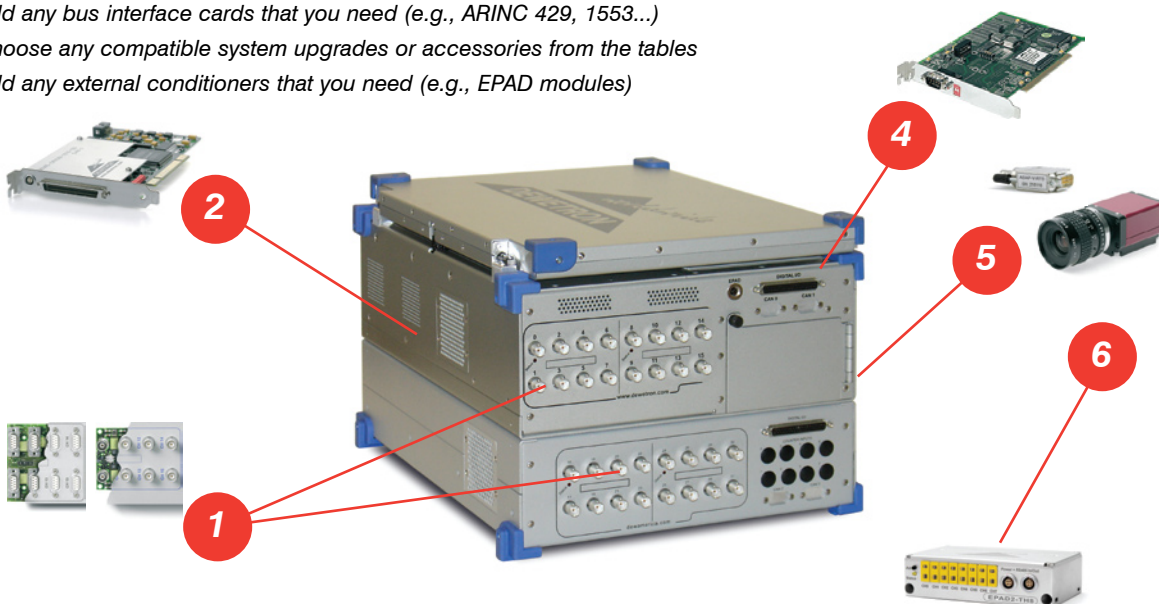
## Configuration guide DEWE-3211-32

### REQUIRED

1. Choose any 4 MDAQ-SUB series 8-channel modules and two MDAQ-BASE-5 cards (factory installed)\*
2. Choose any 32-channel ORION card to be installed internally (or 2 x 16-channel cards)
3. Choose DEWESoft-7-SE acquisition and analysis SOFTWARE for 16-bit cards, or -PROF if you have 22/24-bit A/D, or multiple A/Ds, or multiple video inputs, or IRIG

### OPTIONAL

4. Add any bus interface cards that you need (e.g., ARINC 429, 1553...)
5. Choose any compatible system upgrades or accessories from the tables
6. Add any external conditioners that you need (e.g., EPAD modules)



\* One MDAQ-BASE-5 is needed for every two MDAQ-SUB modules that are installed

# SureHAND Configuration guide

## Channel Expansion

You can select between expansion by:

- Analog cable
- PCI expansion
- Expansion via Ethernet
- Expansion via 3200-EXP-MDAQ16

### ■ Channel expansion by analog cable

A very popular way of expanding the analog inputs is to install more ORION cards into the instrument and connect external signal conditioning amplifiers via analog cables. Each DEWE-3210 instrument has two spare PCI-slots which can be used to install additional ORION cards. Select a suitable external DEWE-30 or DEWE-31 series signal conditioning rack, the required amplifiers and directly connect the analog outputs to the ORION cards by analog signal cables.

User tip: The standard analog cable length is 2 m but these can be as long as 15 m.



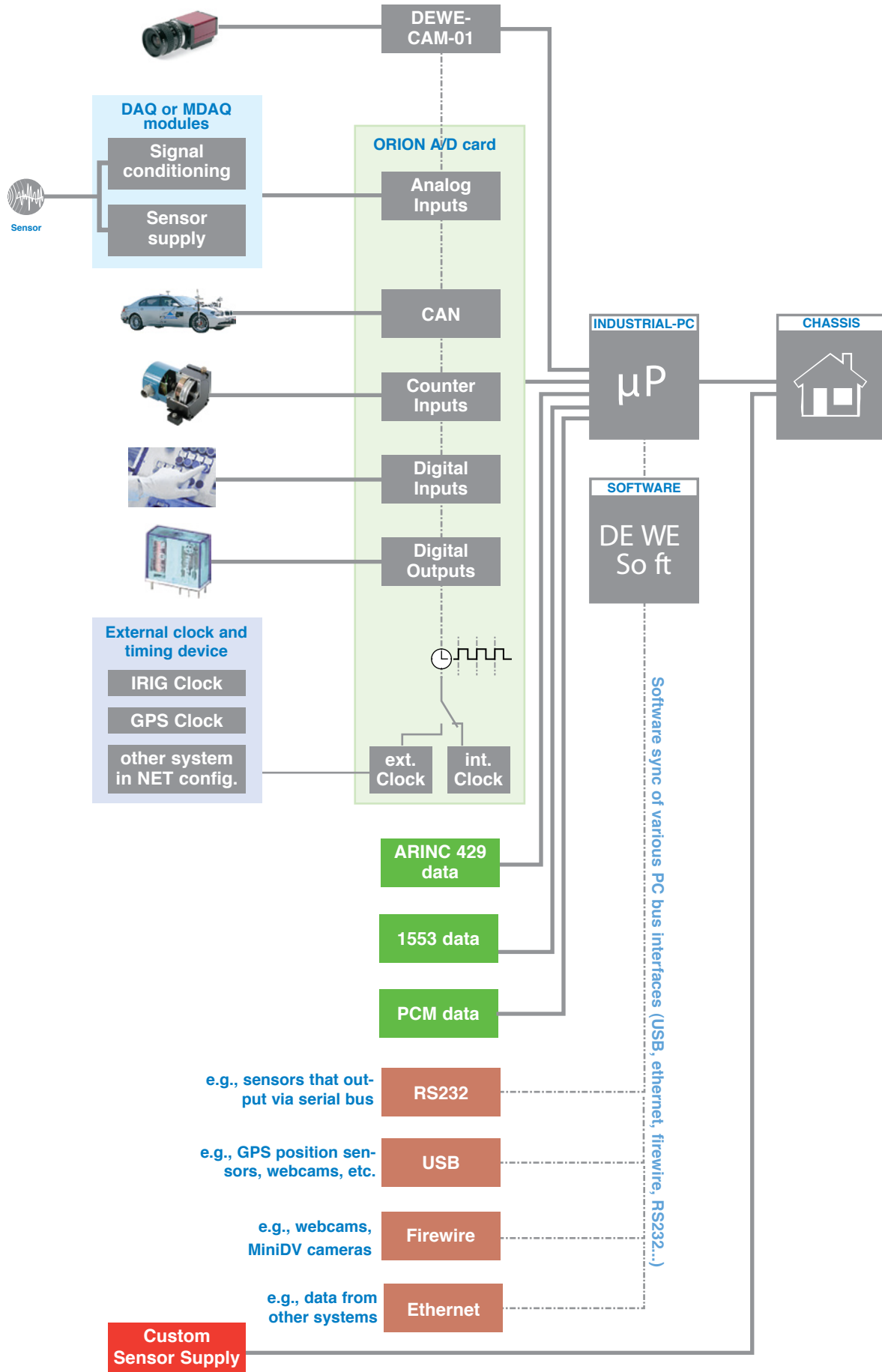
Channel Expansions					
System specifications	DEWE 30-16	DEWE-30-32	DEWE-30-48	DEWE-31-16	DEWE-31-32
DAQ / PAD amplifier slots	16	32	48	-	-
MDAQ amplifier input channels	-	-	-	up to 16 (BNC and/or DSUB)	up to 32 (BNC and/or DSUB)
A/D converter	DEWE-ORION-16xx in main system				
Power supply	115 / 230 V <sub>AC</sub> 50 / 60 Hz	115 / 230 V <sub>AC</sub> 50 / 60 Hz	115 / 230 V <sub>AC</sub> 50 / 60 Hz	Directly from DEWE-ORION-16xx series board	115 / 230 V <sub>AC</sub> 50 / 60 Hz
Dimensions (W x D x H)	435 x 133 x 245 mm 17.1 x 5.2 x 9.6 in.	435 x 223 x 245 mm 17.1 x 8.8 x 9.6 in.	408 x 340 x 200 mm 16.1 x 13.4 x 7.9 in.	208 x 95 x 108 mm 8.2 x 3.7 x 4.3 in.	435 x 133 x 245 mm 17.1 x 5.2 x 9.6 in.
Weight	4 kg (9 lbs)	7 kg (15 lbs)	11 kg (24 lbs)	1.6 kg (3.5 lbs)	4 kg (9 lbs)





# System architecture at a glance

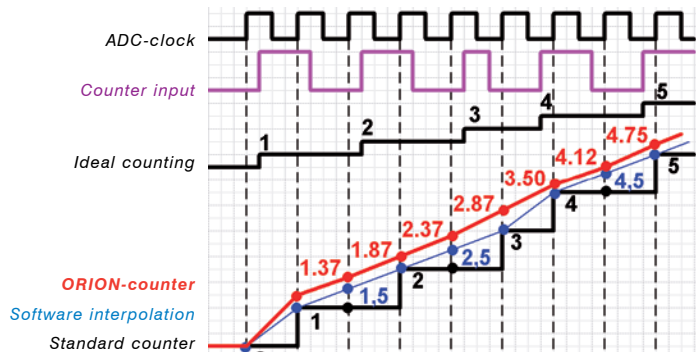
... it's all about DEWE-ORION and system clock



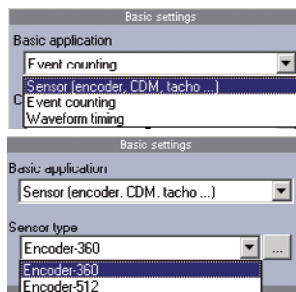
# Counter input features

DEWETRON has advanced the state-of-the-art in counter/encoder inputs in our data acquisition systems, improving yet again our ORION-counters.

The key advancement is that our counters are PHASE SYNCHRONIZED. Referring to the diagram, you can see that a standard counter is always a sample behind. With software interpolation you can get closer, but only with DEWETRON's advanced time shifting technology are both the phase and amplitude fully corrected!



## RPM-Measurement



Encoder



Tacho



Gearhooth, CDM



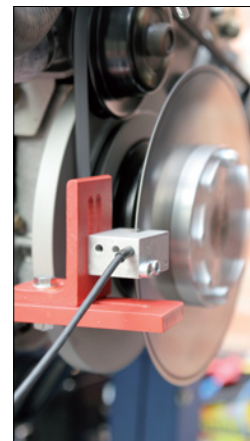
Gearhooth, TRG, CDM and TRG



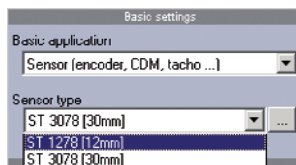
Gearhooth with missing teeth



Gearhooth with double teeth



## Length-measurement



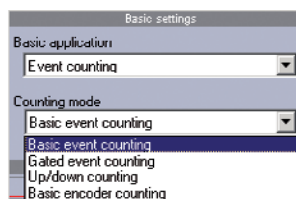
Linear encoder



Linear pulse sensor



## Event Counting



Basic counting



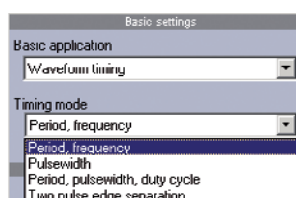
Gated counting



Up/down counting



## Waveform Timing



Period frequency

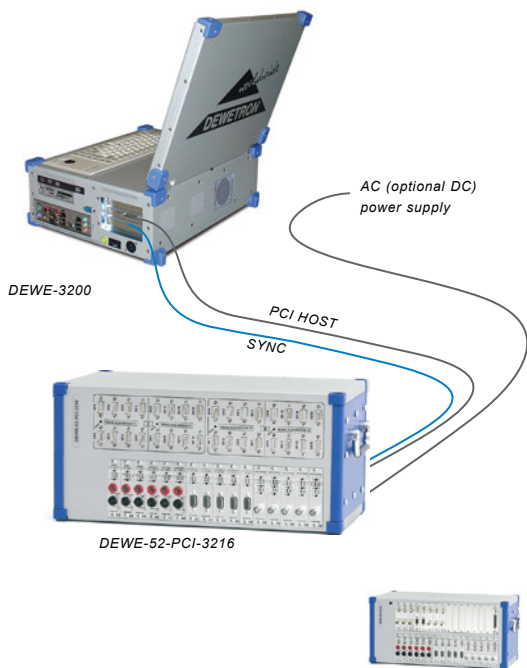


Two pulse edge separation



Period, pulse width, frequency, duty cycle





### ■ PCI expansion

The PCI expansion is an alternative especially if high channel count is needed. When using an expansion only one PCI slot is occupied in the DEWE-3210 instrument by a PCI-HOST-CARD. The DEWE-50, DEWE-51 and DEWE-52 ADC racks can be connected by a 1m PCI cable. The ORION cards are installed inside the DEWE-5x unit and you simply have to select the suitable signal amplifiers for your needs.

**Important notice:** The DEWE-3210 and the DEWE-5x must be equipped with ORION-SYNC option.

**User tip:** with an additional ECARD-34 or 54 the DEWE-5x also can be used as an independent system in combination with a laptop computer.

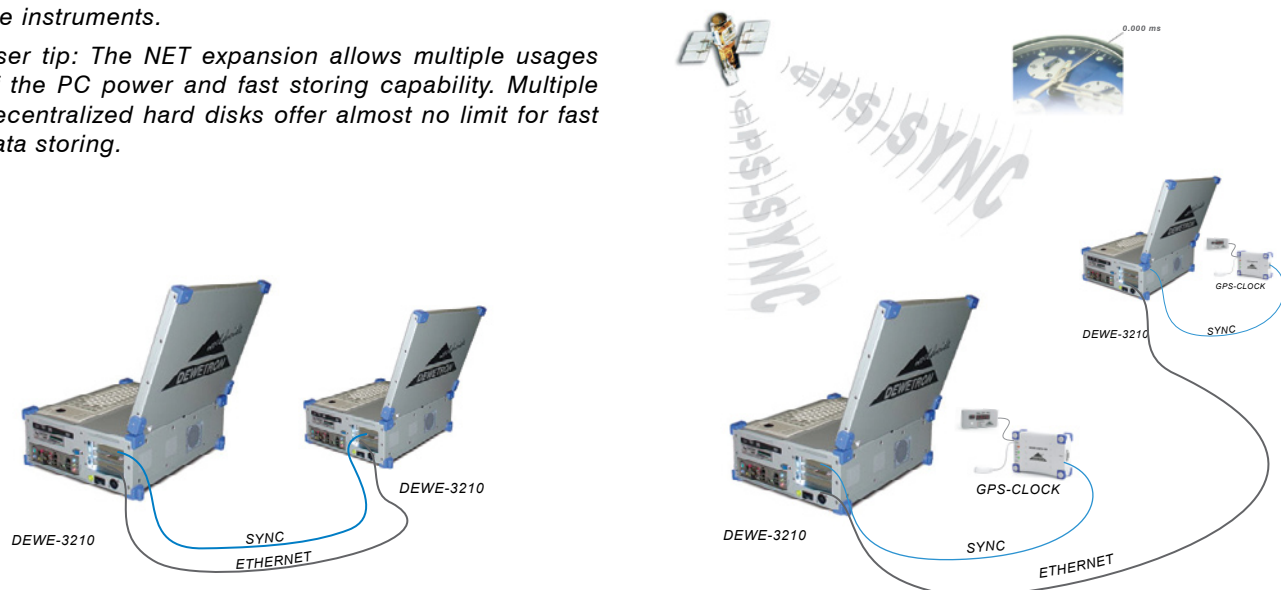


DEWE-5x-PCI Series: ADC Racks					
System specifications	DEWE-50-PCI-32	DEWE-50-PCI-64	DEWE-51-PCI-64	DEWE-51-PCI-128	DEWE-52-PCI-3216
DAQ / PAD amplifier slots	32	64	-	-	16
MDAQ amplifier input channels	-	-	64	128	up to 32
Internal PCI slots	4	7	4	13	4
Power supply	115 / 230 V <sub>AC</sub> 50 / 60 Hz	115 / 230 V <sub>AC</sub> 50 / 60 Hz	115 / 230 V <sub>AC</sub> 50 / 60 Hz	115 / 230 V <sub>AC</sub> 50 / 60 Hz	115 / 230 V <sub>AC</sub> 50 / 60 Hz
Dimensions (W x D x H)	435 x 287 x 223 mm (17.1 x 11.3 x 8.8 in.)	408 x 287 x 410 mm (16.1 x 11.3 x 16.1 in.)	435 x 287 x 178 mm (17.1 x 11.3 x 7.0 in.)	408 x 287 x 267 mm (16.0 x 11.3 x 10.5 in.)	435 x 287 x 223 mm (17.1 x 11.3 x 8.8 in.)
Weight	10 kg (22 lbs)	15 kg (33 lbs)	6 kg (13 lbs)	9 kg (20 lbs)	9 kg (20 lbs)

### ■ Expansion via Ethernet

The NET expansion is a fantastic way to combine two or more DEWE-3210 instruments to one multichannel system. Each instrument must have installed hardware option ORION-SYNC and software option DEWESoft-NET. Synchronization of all units is required too. There are two ways of synchronization: First is a simple cable connection for distances up to 200 m, second one is GPS- or IRIG-CLOCK which is useful for long distances when a cable connection is not possible. DEWESoft-NET software offers full remote setup, online data transfer up to the limit of the network connection and offline data transfer between the instruments.

**User tip:** The NET expansion allows multiple usages of the PC power and fast storing capability. Multiple decentralized hard disks offer almost no limit for fast data storing.

























# DAQ Series Modules

- Single channel
- High bandwidth - for dynamic signals
- Isolation
- Analog signal output ( $\pm 5$  V)
- Exchangeable
- Fits into DEWETRON systems with built-in DAQ rack or
- Pure signal conditioning solution in conjunction with DEWE-30 series racks

















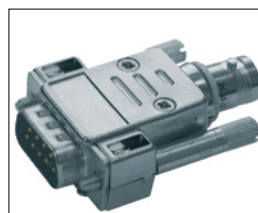
Module	Input type	Ranges	TEDS	Bandwidth (BW), Filters (LP = lowpass, HP = highpass)	Isolation (ISO), Overvoltage protection (OP)
<b>High voltage measurement</b>					
DAQP-HV  	High voltage	$\pm 20, \pm 50, \pm 100$ V $\pm 200, \pm 400, \pm 800, \pm 1400$ V	-	BW: 300 kHz LP: 10, 30, 100, 300 Hz 1, 3, 10, 30, 100, 300 kHz	ISO: 1.8 kV <sub>RMS</sub>
DAQP-DMM  	High voltage	$\pm 10, \pm 40, \pm 100$ V $\pm 200, \pm 400, \pm 1000$ V	-	BW: 20/30 kHz LP: 10, 100 Hz, 1, 3, 20/30 kHz	ISO: 1.5 kV <sub>RMS</sub>
<b>Voltage &amp; current measurement</b>					
DAQP-LV  	Voltage, current with external shunt  ICP <sup>®</sup> via MSI-V-ACC  Pt100, Pt200, Pt500, Pt1000, Pt2000 and resistance via MSI-V-RTD	$\pm 10, \pm 20, \pm 50$ mV $\pm 100, \pm 200, \pm 500$ mV $\pm 1, \pm 2.5, \pm 5, \pm 10, \pm 25, \pm 50$ V $\pm 10, \pm 20, \pm 50, \pm 100, \pm 200$ mV $\pm 500$ mV, $\pm 1, \pm 2.5, \pm 5, \pm 10$ V -200° C to 1000° C and 0 to 6.5 kOhm	■	BW: 300 kHz LP: 10, 30, 100, 300 Hz 1, 3, 10, 30, 100, 300 kHz	ISO: up to 1 kV <sub>RMS</sub> OP: 350 V <sub>DC</sub>
DAQP-V  	Voltage Current with external shunt	$\pm 0.01, \pm 0.1, \pm 1, \pm 5, \pm 10, \pm 50$ V	-	BW: 50 kHz LP: 10, 100 Hz, 1, 10, 50 kHz	ISO: up to 1 kV <sub>RMS</sub> OP: $\pm 500$ V <sub>DC</sub> or 300 V <sub>RMS</sub>
DAQN-AIN  	Voltage	$\pm 10$ V (1:1 input)	-	-	OP: < $\pm 500$ V (jumper selectable)
DAQP-LA-SC  	Current Note: 5 A <sub>RMS</sub> continuous	$\pm 0.1, 0.3, 1, 3$ A $\pm 10$ A peak, $\pm 30$ A peak max. 5 A <sub>RMS</sub> contin. current	-	BW: 300 kHz LP: 10, 30, 100, 300 Hz 1, 3, 10, 30, 100, 300 kHz	ISO: 1.4 kV <sub>RMS</sub>
DAQP-LA-B  	Current Note: typ. 20 mA application	$\pm 2, 6, 20$ mA $\pm 60$ mA, 200 mA, 0.6 A max 0.6 A	-	BW: 300 kHz LP: 10, 30, 100, 300 Hz 1, 3, 10, 30, 100, 300 kHz	ISO: 1.4 kV <sub>RMS</sub>
<b>Bridge / strain gage and carrier frequency amplifier</b>					
DAQP-BRIDGE-A  	Strain gage, bridge sensors  Potentiometric sensors  Thermocouple via MSI-BR-TH-x	$\pm 1, \pm 2, \pm 5, \pm 10, \pm 20, \pm 50$ mV/V (@ 5 V <sub>DC</sub> ) 200 $\Omega$ - 10 k $\Omega$ full range of TC type	-	BW: 20 kHz LP: 10, 100 Hz, 1, 5, 20 kHz	ISO: 350 V <sub>DC</sub> OP: $\pm 10$ V <sub>DC</sub>
DAQP-BRIDGE-B  	Strain gage, bridge sensors  Potentiometric sensors  Thermocouple via MSI-BR-TH-x	$\pm 0.1, \pm 0.2, \pm 0.5, \pm 1, \pm 2, \pm 5, \pm 10, \pm 20, \pm 50, \pm 100$ mV/V (@ 5 V <sub>DC</sub> ) 200 $\Omega$ - 10 k $\Omega$ full range of TC type	■ <sup>1)</sup>	BW: 200 kHz LP: 10, 30, 100, 300 Hz, 1, 3, 10, 30, 100, 200 kHz	OP: $\pm 10$ V <sub>DC</sub>
DAQP-CFB  	AC bridge, strain gage  Inductive sensors, LVDT	Bridge: 0.1 to 1000 mV/V Inductive: 5 to 1000 mV/V Voltage: 0.2 to 1000 mV <sub>RMS</sub>	-	BW: DC to 2.3 kHz LP: 10, 30, 100, 300 Hz, 1 kHz	OP: $\pm 10$ V <sub>DC</sub>

<sup>1)</sup> TEDS support for DAQP-BRIDGE-B revision 2 only

■ = standard



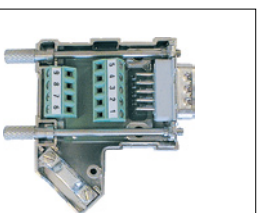
Module	Input type	Ranges	TEDS	Bandwidth (BW), Filters (LP = lowpass, HP = highpass)	Isolation (ISO), Overvoltage protection (OP)
<b>Charge / ICP® measurement</b>					
<b>DAQP-ACC-A</b>  	ICP® sensors	±50, ±166, ±500 mV, ±1.66, ±5 V (Gain: 1, 3, 10, 30, 100)	-	BW: 0.5 Hz to 300 kHz LP: 1, 10, 100, 300 kHz HP: 0.5 Hz, 5 Hz	-
<b>DAQP-CHARGE-A</b>  	ICP® sensors, charge sensors <i>Note: selectable integration and double integration</i>	Charge: 5, 50, 500 pC 5000, 50000 pC ICP®: ±5, ±50, ±500 mV, ±5 V (0, 20, 40, 60 dB)	-	BW: 0.1 Hz to 50 kHz LP: 100 Hz, 1, 3, 10, 50 kHz HP: 0.1 Hz, 1 Hz, 10 Hz	-
<b>DAQP-CHARGE-B</b>  	Charge sensors <i>Note: selectable time constant for static sensors</i>	±100, ±500, ±2 000, ±10 000, ±40 000, ±200 000, ±1 000 000 pC	-	BW: DC to 100 kHz LP: 10, 30, 100, 300 Hz, 1, 3, 10, 30, 100 kHz HP: DC, 0.001 Hz to 0.5 Hz	ISO: 350 V <sub>DC</sub>
<b>Temperature measurement</b>					
<b>DAQN-THERM-x</b>  	Thermocouple <i>Note: internal CJC</i>	K and J type, various ranges	-	BW: 4 Hz	ISO: 1 kV <sub>RMS</sub>
<b>DAQN-RTD-x</b>  	Thermoresistors	Pt100, various ranges	-	BW: 10 Hz	-
<b>Frequency measurement</b>					
<b>DAQP-FREQ-A</b>  	Frequency	100 Hz, 1, 5, 20, 100, 200 kHz	-	BW: according to range LP: 100 Hz, 1, 5, 20, 100, 200 kHz	ISO: 350 V <sub>DC</sub>
<b>Voltage output module</b>					
<b>DAQN-V-OUT</b>  	Voltage output	1:1 output module with isolation Input voltage: ±10 V Output voltage: ±10 V	-	BW: 400 Hz	ISO: 240 V <sub>DC</sub>



ADAP-D9M-BNCF:  
DSUB to BNC adapter  
for DAQP-V series and DAQP-FREQ  
modules



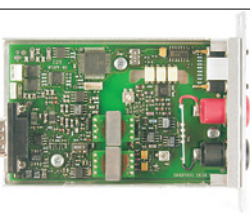
BNC to Microdot adapter (included as  
a standard with  
DAQP-CHARGE-A modules)



CONN-DSUB-9:  
Screw terminal adapter for all  
modules with 9-pin DSUB connector



BNC to banana and banana to BNC  
adaptors

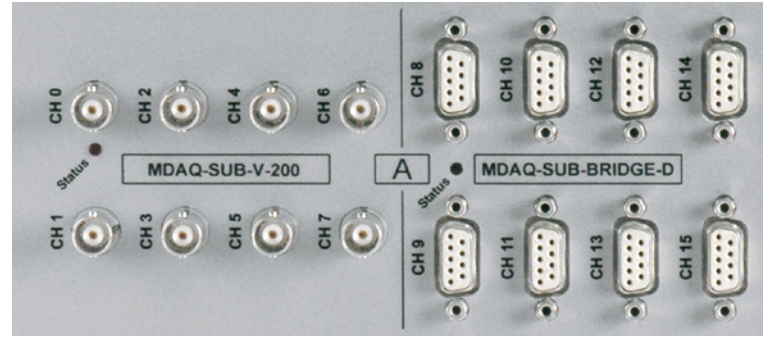


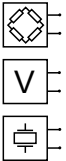

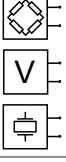











Isolated high-voltage amplifier:  
DAQP-HV module

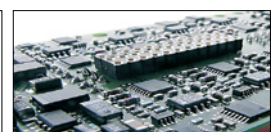
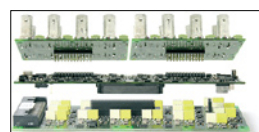
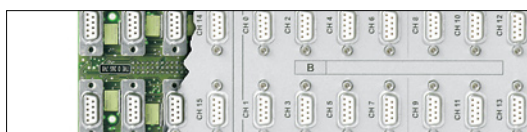
PORTABLE SUREHAND / DEWE-3210 SERIES

# MDAQ Series Amplifiers

- Multi channel
- Small form factor for high channel density
- Cost effective
- High bandwidth up to 300 kHz



SUB Modules for MDAQ-BASE-x						
Module	# CH	Input type	Input ranges	TEDS	Bandwidth (BW), Highpass filters (HP)	Excitation
MDAQ-SUB-STG-D Connector: DB-9	8	* <b>Strain-gage (Full-, half and quarter-bridge, incl. shunt calibration)</b> <i>for strain gage application:</i>	14 ranges from $\pm 0.5$ to 1000 mV/V (@ 5 V <sub>DC</sub> excitation)	■	BW: 30 kHz	0 to 12 V <sub>DC</sub>
		* <b>Voltage up to <math>\pm 10</math> V:</b>	15 ranges from $\pm 2.5$ mV to $\pm 10$ V			
		* ICP via MSI-BR-ACC:	7 ranges from $\pm 0.25$ mV to $\pm 10$ V			
		* Voltage up to 200 V via MSI-BR-V-200:	6 ranges from $\pm 10$ to $\pm 200$ V			
		* Thermocouple via MSI-BR-TH-x:	full range of TC type			
		* Pt100, Pt200, Pt500, Pt1000, Pt2000 and resistance via MSI-BR-RTD:	-200 °C to 1000 °C and 0 to 6.5 kOhm			
MDAQ-SUB-BRIDGE-D Connector: DB-9	8	* <b>Strain-gage (Full-, and half bridge)</b> <i>for strain gage sensors:</i>	14 ranges from $\pm 0.5$ to 1000 mV/V (@ 5 V <sub>DC</sub> excitation)	■	BW: 30 kHz HP: 0.16 Hz	+15 V <sub>DC</sub> and 0 to 12 V <sub>DC</sub>
		* <b>Voltage up to <math>\pm 10</math> V:</b>	15 ranges from $\pm 2.5$ mV to $\pm 10$ V			
		* ICP, via MSI-BR-ACC:	7 ranges from $\pm 0.25$ mV to $\pm 10$ V			
		* Voltage up to 200 V via MSI-BR-V-200:	6 ranges from $\pm 10$ to $\pm 200$ V			
		* Thermocouple via MSI-BR-TH-x:	full range of TC type			
		* Pt100, Pt200, Pt500, Pt1000, Pt2000 and resistance via MSI-BR-RTD:	-200 °C to 1000 °C and 0 to 6.5 kOhm			
MDAQ-SUB-V-200-D Connector: DB-9	8	* <b>Voltage up to <math>\pm 200</math> V:</b>	13 ranges from $\pm 0.125$ to $\pm 200$ V	■	BW: 300 kHz	$\pm 15$ V <sub>DC</sub> and 0 to 12 V <sub>DC</sub>
		* ICP, via MSI-V-ACC:	7 ranges from $\pm 0.25$ mV to $\pm 10$ V			
		* Pt100, Pt200, Pt500, Pt1000, Pt2000 and resistance via MSI-V-RTD:	-200 °C to 1000 °C and 0 to 6.5 kOhm			
		Note: for safety reasons, max. 120 V <sub>DC</sub> or 50 V <sub>AC</sub> are allowed at this connector				
MDAQ-SUB-V-200-BNC Connector: BNC	8	* <b>Voltage up to <math>\pm 200</math> V:</b>	13 ranges from $\pm 0.125$ to $\pm 200$ V	-	BW: 300 kHz	-
		Note: for safety reasons, max. 120 V <sub>DC</sub> or 50 V <sub>AC</sub> are allowed at this connector				
MDAQ-SUB-ACC-BNC Connector: BNC	8	* <b>ICP® or voltage up to <math>\pm 10</math> V:</b>	8 ranges from $\pm 125$ mV to $\pm 10$ V	■	BW: 300 kHz HP: 3.4 Hz	4 / 8 mA
		Single-ended or differential input and one highpass filter 3.4 Hz highpass filter for noise and shock response measurement				
		MDAQ-SUB-ACC-BNC-S1 0,16 Hz for structural and modal analysis, human body vibration measurement (rest same as MDAQ-SUB-ACC-BNC)		■	BW: 300 kHz HP: 0.16 Hz	4 / 8 mA
MDAQ-SUB-ACC-A-BNC Connector: BNC	8	* <b>ICP® or voltage up to <math>\pm 10</math> V:</b>	8 ranges from $\pm 125$ mV to $\pm 10$ V	■	BW: 300 kHz HP: 0.16 Hz, 3.4 Hz	4 / 8 mA
		Single-ended input and two HP filters 0.16 Hz for structural and modal analysis, human body vibration measurement 3.4 Hz for noise and shock response measurement				
MDAQ-SUB-ACC-A-MD Connector: Microdot	8	* <b>ICP® or voltage up to <math>\pm 10</math> V:</b>	8 ranges from $\pm 125$ mV to $\pm 10$ V	■	BW: 300 kHz HP: 0.16 Hz, 3.4 Hz	4 / 8 mA
		Single-ended input, two HP filters and sensor failure detection 0.16 Hz for structural and modal analysis, human body vibration measurement 3.4 Hz for noise and shock response measurement Option: test signal input for all channels				



MDAQ modules - available in most of the DEWETRON multichannel systems.


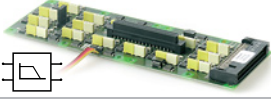
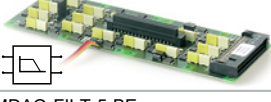
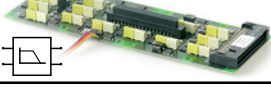
DEWE-51-USB2-32  
2x MDAQ-SUB-BRIDGE-D, 2x MDAQ-SUB-ACC-A modules and USB-I/F

Typical combination with two SUB modules mounted on a BASE module, and FILTER board (optional)






All MDAQ boards are equipped with highest quality components





Filter modules for MDAQ				
Module	# CH	Filter characteristics	Cut-off frequencies	Order
 MDAQ-AAF4-5-BU	16	Butterworth	100 Hz, 1, 10, 30, 100 kHz, Bypass  <i>Note:</i> not possible in all system configurations. Please contact factory for details.	4 <sup>th</sup>
 MDAQ-FILT-5-BU	16	Butterworth	30, 100, 300 Hz, 1, 10 kHz, Bypass	2 <sup>nd</sup>
 MDAQ-FILT-5-BU-S1	16	Butterworth	100 Hz, 1, 10, 30, 100 kHz, Bypass	2 <sup>nd</sup>
 MDAQ-FILT-5-BE	16	Bessel	30, 100, 300 Hz, 1, 10 kHz, Bypass	2 <sup>nd</sup>

### Modular smart interfaces to connect various sensors

MSI interfaces	
 MSI-BR-V-200	Differential voltage adapter, for voltages up to +/-200V. BNC connector. TEDS for automatic MSI identification.
 MSI-BR-RTD	Pt100, Pt200, Pt500, Pt1000, and Pt2000 adapter, for RTD sensors. 5-pin BINDER 710 series input connector. RTD power is provided. 2, 3, and 4 wire connection methods supported. TEDS for automatic MSI identification.
 MSI-BR-ACC	Isotron / IEPE (constant current) conditioner for IEPE accelerometers and microphones. Excitation current 4 mA at 21 VDC, 1.5 Hz high-pass filter, BNC connector. TEDS for automatic MSI identification.
 MSI-BR-CHA-50	Adapter for dynamic charge sensors, range up to 50000 pC, AC coupled with 0.07 Hz, max. 100 kHz bandwidth (or limited to the max. bandwidth of the input that it is plugged into). BNC connector. TEDS for automatic MSI identification.
 MSI-BR-TH-K	Thermocouple adapter, type K, high accuracy cold junction reference built-in. 1 m long thermocouple cable with Mini TC connector. Isolated thermocouple sensors highly recommended for low-noise performance. TEDS for automatic MSI identification.
MSI-BR-TH-J	Same as MSI-BR-TH-K except for type J sensors.
MSI-BR-TH-T	Same as MSI-BR-TH-K except for type T sensors.



# DEWESoft

**DEWESoft** turns your hardware into a powerful data acquisition system. Our award-winning data acquisition package is second to none when it comes to both pure recording power and ease of use. Normally this is a difficult balancing act: providing lots of capability and performance, without making the user interface hard to learn. But we have done it!

DEWESoft is the solution to acquire signals synchronous from different sources, display and store them together and offer the data for post analysis.

Measure



Scope



Recorder



FFT



Video



Export



Print



DEWESoft has set a whole new standard when it comes to easy to use data acquisition systems. Nothing else even comes close!

It starts with easy channel setup, a built-in sensor database that you can populate yourself - or automatically when TEDS sensors are connected.

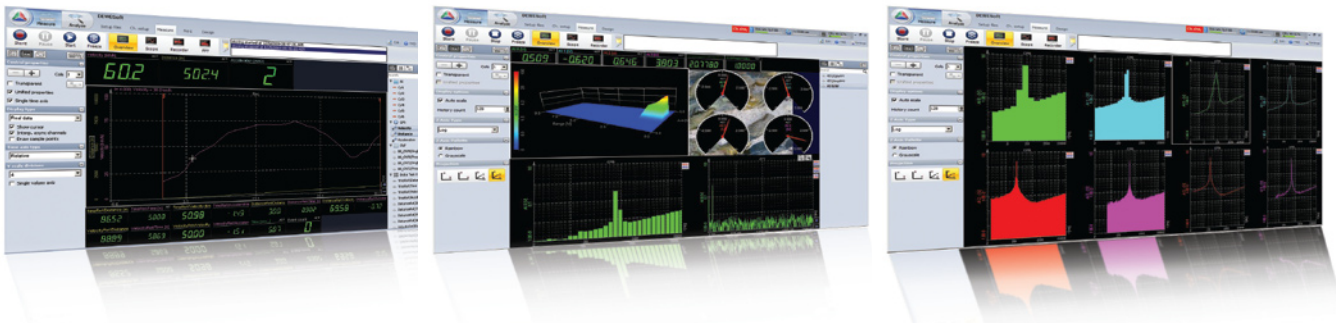
Complete control over all of the hardware and interfaces installed is next ... and not just the A/D card and signal conditioners, but your video camera, GPS sensor, IRIG time code interface, multiple CAN BUS interfaces, ARINC 429 and MIL-STD-1553 ports, and many more. The list of interfaces continues to grow as we add new ones per your requests!



## Measure Mode

### INCREDIBLE DISPLAYS - including create your own screens

Of course we build the basic screens for you, like scope, recorder, FFT, and more... but you can make whatever screens you need. Name and sort them freely. But whatever display types on them that you like: analog and digital meters, graphs, tabular displays, X-Y graphs, GPS tracks, scopes, and more. DEWESoft users tell us that designing their own screens is their favorite part of using DEWESoft.





## Amazing MATH functions ONE-LINE and OFF-LINE CALCULATIONS

Years ago, there were only two basic types of math channels that you could create inside DEWESoft: IIR filters and user-programmed formulas. But today it's a whole new world - there are literally dozens of useful math functions built into DEWESoft, including statistical calculations, IIR, FIR, and FFT filtering, strain gage rosette calculations, a powerful formula writer that allows you to create just about anything, and much more!

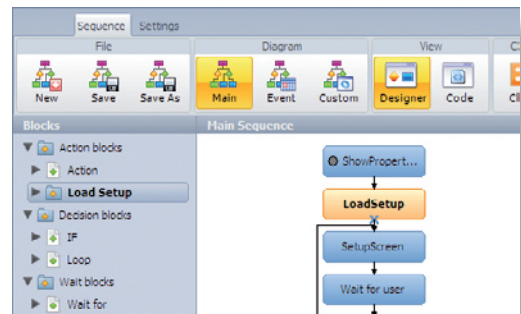
Create a MATH channel and then choose from a wide variety of types, starting with arithmetic functions, trigonometry, algebra, boolean logic, and more. Multiply channels together, and then add a constant, or a third channel. That's simple. Now how about taking the cosine of channel 1, multiplying it by PI, and the dividing by the tangent of another channel -- but only when channel 9 is greater than 112.321? All that and more are possible - even EASY - within DEWESoft. You can even use MATH channels within another MATH channel -- it's that versatile.

There are numerous built-in measurement functions, too, for measuring the distance in time between user-definable conditions -- or delta amplitudes between user-defined conditions, just to name a few.

And starting in version 7 we added the ability of math channels to be created and run AFTER you record your data - so you can record the data "raw" to disk and then apply filters and every other math function afterwards! This is a great addition to the software, and a great additional tool in your chest!

## New advanced features in DEWESoft 7

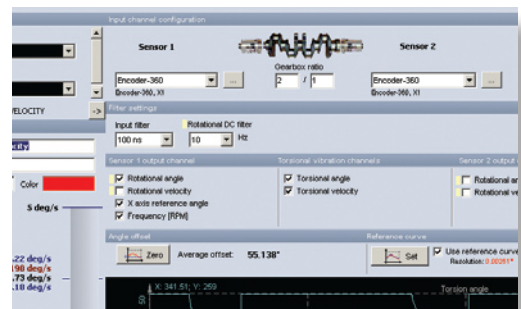
We've also added array based mathematics and three dimensional displays to version 7. And a powerful new sequencer allows you to create an entire test and then let DEWESoft step through it automatically, pausing when you want it to, or need to make a choice, for example. It can even talk to you using text-to-speech technology, and play multimedia audio and video files.



Create, edit, and run sequences right from the main screen in DEWESoft 7.



GPS sensors are simple to set up in DEWESoft - here you can see the satellites visible and in-use.

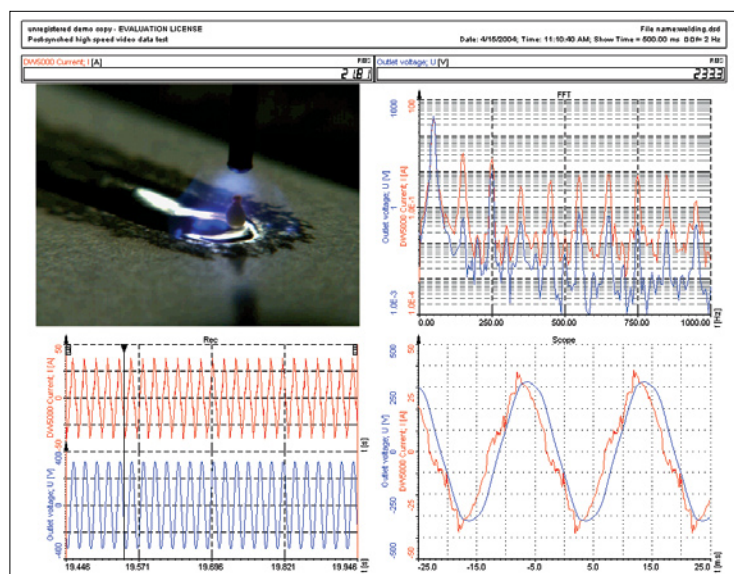


Powerful options like the TORSIONAL VIBRATION analyzer are available for DEWESoft

## Analyze Mode REPLAY, EXPORT, SHARE DATA!

Here you can replay any captured data file, zoom in with the recorder graph cursors, make measurements, print in full color to any Windows printer, and export the data to a wide variety of formats compatible with today's popular analysis software packages, like Flexpro, Matlab, Excel, and many more.

You can even export a AVI video file from your recorded data to create "moving documentation." NO LICENSE is needed to use DEWESoft in the ANALYZE mode, so you can install the software on all your computers, or even distribute it to your customers, and they can install it. In this way, all of your colleagues and customers can replay your data files and do all of the functions that you can - just give them the data file to open.





## Born in the USA...

Each of the models below are built at our USA facility, located in Rhode Island. In a day when it seems like most companies are abandoning America and sending their production overseas, Dewetron is doing exactly the opposite - building more and more products right here. We are making an investment in American jobs, technology, science, and industry. Why? Because we're Americans.



- DEWE-3030 series - the original Dewetron BATTERY POWERED instrument
- DEWE-3100 series - the "DEWE notebook" award-winning innovation
- DEWE-3200 series - the bigger brother to the DEWE-3100 series, with more expandability
- DEWE-901 - top of the line Dewetron rack mounting acquisition systems, used by NASA, et al.

### DEWE-3030 series



- 16 ~ 96 channels
- 17" touchscreen
- Desktop models
- Battery powered
- Made in USA

### DEWE-3100 series



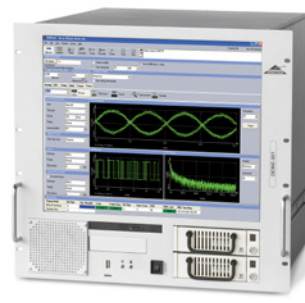
- 8 ~ 16 channels
- 17" touchscreen
- Most portable
- Battery powered
- Made in USA

### DEWE-3210 series



- 8 ~ 32 channels
- 17" touchscreen
- Flip up display
- Battery powered
- Made in USA

### DEWE-901 series



- 16 ~ 64 channels
- 19" display
- Rack-mounting
- Removable HDDs
- Ideal lab unit
- Made in USA

## Service with a Smile!

When you build something, you have to support it. If it's an instrument, then you also need to be able to calibrate it according to international (ISO) and USA (NIST) standards. This is exactly what we can do for you, both in America at Dewetron, Inc., as well as in Europe at Dewetron in Austria. We have comprehensive service and support facilities around the globe, and traceable calibration facilities in the USA and Europe. We stand behind our products, which means that we stand behind you, our valued customer.

We are proud of our products, and we are ready, willing, and able to support them 100%, to ensure your satisfaction and continued patronage. Won't you give us a try, and find out for yourself about the Dewetron difference?

## Re-inventing Data Acquisition

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