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

DEWE-5001

Technical reference manual

ISO9001

Test & Measurement Solutions

worldwide

DEWETRON

www.dewetron.com

Thank you!

Thank you very much for your investment in DEWETRON's unique data acquisition systems. These are top-quality instruments which are designed to provide you years of reliable service. This guide has been prepared to help you get the most from your investment, starting from the day you take it out of the box, and extending for years into the future.

This guide includes important startup notes, as well as safety notes and information about keeping your DEWETRON system in good working condition over time.

We strongly suggest that you read this entire manual, especially the safety and care sections, as well as to avoid damaging your DEWETRON system.

What is the DEWE-5001?

This product is used for measuring of different physical and/or electrical sizes (depending on model or configuration). The connection is depending on model or configuration and takes place via safety banana plugs, BNC connectors (± 50V max.), D-SUB connectors (± 50V max.), thermocouple connectors (± 50V max.), BINDER® connectors (± 50V max.), SMB connetcors (± 50V max.), μdot connectors (± 50V max.), LEMO® connectors or RJ-45 connectors.

Preface

Notes

Content

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Notice

The information contained in this document is subject to change without notice.

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Warranty Information

A copy of the specific warranty terms applicable to your DEWETRON product and replacement parts can be obtained from your local sales and service office.

Support

For any support please contact your local distributor first or DEWETRON directly.

For Asia and Europe, please contact:

DEWETRON Ges.m.b.H.
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A-8074 Graz-Grambach
AUSTRIA
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Fax: +43 316 307090
Email: support@dewetron.com
Web: http://www.dewetron.com

The telephone hotline is available
Monday to Friday between
08:00 and 17:00 CET (GMT +1:00)

For the Americas, please contact:

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Web: http://www.dewamerica.com

The telephone hotline is available
Monday to Friday between
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Printing History

Please refer to the page bottom for printing version.

Safety instructions

Safety symbols in the manual

Indicates hazardous voltages.

WARNING	*Calls attention to a procedure, practice, or condition that could cause bodily injury or death.*

CAUTION	*Calls attention to a procedure, practice, or condition that could possibly cause damage to equipment or permanent loss of data.*

WARNINGS

The following general safety precautions must be observed during all phases of operation, service, and repair of this product. Failure to comply with these precautions or with specific warnings elsewhere in this manual violates safety standards of design, manufacture, and intended use of the product. DEWETRON Elektronische Messgeraete Ges.m.b.H. assumes no liability for the customer's failure to comply with these requirements.

All accessories shown in this document are available as option and will not be shipped as standard parts.

For safety reasons max. 50 V may be applied to the BNC input-connectors!
Refer to the regulation of maximum allowable touch potential.

Safety instructions for all DEWETRON systems

- The DEWETRON data acquisition systems may only be installed by experts.
- Read your manual before operating the system.
- Observe local laws when using the instrument.
- Ground the equipment: For Safety Class 1 equipment (equipment having a protective earth terminal), a non interruptible safety earth ground must be provided from the mains power source to the product input wiring terminals or supplied power cable.
- DO NOT operate the product in an explosive atmosphere or in the presence of flammable gases or fumes and do not bring the system in contact with water.
- DO NOT operate damaged equipment: Whenever it is possible that the safety protection features built into this product have been impaired, either through physical damage, excessive moisture, or any other reason, REMOVE POWER and do not use the product until safe operation can be verified by service-trained personnel. If necessary, return the product to a DEWETRON sales and service office for service and repair to ensure that safety features are maintained.
- Keep away from live circuits: Operating personnel must not remove equipment covers or shields. Procedures involving the removal of covers or shields are for use by service-trained personnel only. Under certain conditions, dangerous voltages may exist even with the equipment switched off. To avoid dangerous electrical shock, DO NOT perform procedures involving cover or shield removal unless you are qualified to do so.
- No modifications are allowed at the instrument. The fuse in the power module has to be replaced by the same type. For continued protection against fire, replace the line fuse(s) only with fuse(s) of the same voltage and current rating and type. DO NOT use repaired fuses or short-circuited fuse holder labels and print on the power module may not be removed.
- DO NOT service or adjust alone. Do not attempt internal service or adjustment unless another person, capable of rendering first aid and resuscitation, is present.
- DO NOT substitute parts or modify equipment: Because of the danger of introducing additional hazards, do not install substitute parts or perform any unauthorized modification to the product. Return the product to a DEWETRON sales and service office for service and repair to ensure that safety features are maintained.
- Before opening the instrument (experts only) or exchanging the fuse in the power module disconnect power!
- Don’t touch internal wiring!
- Don’t use higher supply voltage than specified and take care of the correct polarity, otherwise the system will be damaged!
- Use only original plugs and cables for harnessing.
- Install filler-panels in unused slots.
- The power-cable and -connector serve as Power-Breaker. The cable must not exceed 10 feet, disconnect function must be possible without tools.
- Keep the ventilation slots free and check them frequently to avoid an overheating of the system. The cleaning interval of the filter pads depends on the environmental conditions.
- Safety of the operator and the unit depend on following these rules.
- DEWETRON is not responsible for any damage or injury that could result from improper connection or misuse!

General Information

CAUTION

- The system BIOS is protected by password. Any change in the BIOS may cause a system crash. When the system is booting, do not press ESC-button on keyboard. This may clear the BIOS settings and cause system faults.
- Any change in the file structure as deleting or adding files or directories might cause a system crash.
- Before installing software updates contact DEWETRON or your local distributor. Use only software packages which are released by DEWETRON. Further informations are also available in the internet (http://www.dewetron.com).
- After power off the system wait at least 10 seconds before switching the system on again. Otherwise the system may not boot correct. This prolongs also the life of all system components.

Environmental Considerations

Information about the environmental impact of the product.

Product End-of-Life Handling

Observe the following guidelines when recycling a DEWETRON system:

System and Components Recycling

Production of these components required the extraction and use of natural resources. The substances contained in the system could be harmful to your health and to the environment if the system is improperly handled at it's end of life! Please recycle this product in an appropriate way to avoid an unnecessary pollution of the environment and to keep natural resources.

This symbol indicates that this system complies with the European Union's requirements according to Directive 2002/96/EC on waste electrical and electronic equipment (WEEE). Please find further informations about recycling on the DEWETRON web site www.dewetron.com

Restriction of Hazardous Substances

This product has been classified as Monitoring and Control equipment, and is outside the scope of the 2002/95/EC RoHS Directive. This product is known to contain lead.

DEWE-5001 PC instrument series

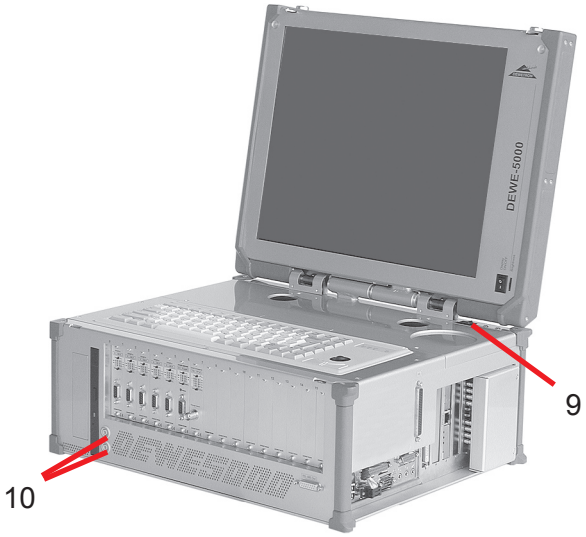
- Portable data acquisition system
- Up to 256 channels with external expansion racks or PAD modules
- A/D converter specs see appendix A
- Prepared for 2 MDAQ modules
- DEWE-5001-B1 with fixed BNC connectors
- DEWE-5001-B2 with fixed DSUB connectors
- up to 32 MDAQ input channels possible

System specifications

	DEWE-5001																
	❑ MDAQ-DIRECT	❑ MDAQ-V-10	❑ MDAQ-V-100	❑ MDAQ-SUB-V-200	❑ MDAQ-SUB-ACC-x	❑ MDAQ-SUB-ACC-A-x	❑ MDAQ-SUB-BRIDGE	❑ MDAQ-SUB-STG	❑ MDAQ-BASE-5	❑ MDAQ-BASE-10	❑ MDAQ-FILT-5-BU	❑ MDAQ-FILT-5-BE	❑ MDAQ-FILT-5-BU-S1	❑ MDAQ-FILT-10	❑ MDAQ-FILT-10-S1	❑ MDAQ-AAF4-5-BU
Channel 0 to 7 Channel 8 to 15	❑	❑	❑	❑ ❑	❑ ❑	❑ ❑	❑ ❑	❑ ❑	❑	❑	❑	❑	❑	❑	❑	❑
Channel 16 to 23 Channel 24 to 31	❑	❑	❑	❑ ❑	❑ ❑	❑ ❑	❑ ❑	❑ ❑	❑	❑	❑	❑	❑	❑	❑	❑
Power supply:	❑ 400 W 100 to 240 V_{AC} ATX power supply BEA-640 ❑ 400 W 100 to 240 V_{AC} ATX power supply MPM-842P ❑ 300 W 9 to 18 V_{DC} ATX power supply DX 300HEW ❑ 300 W 18 to 36 V_{DC} ATX power supply APT-DY300H for details see next pages															
Operating temperature:	-5 °C to 50 °C (standard)															
Storage temperature:	-20 °C to +70 °C															
Humidity (operating):	10 % to 80 %, non condensing 5 % to 95 % rel. humidity															
Vibration:	MIL-STD 810F 514.5 procedure I operating test procedure frequency range: 5 to 200 to 5 Hz; 5 x 12 min each direction displacement amplitude ±3.5 mm (5 to 8.45 Hz) acceleration amplitude 1 g (8.45 to 92 Hz) displacement amplitude 92 to 113 Hz: ±0.029 mm acceleration amplitude 1.5 g (113 to 200 Hz)															
Shock:	MIL-STD 810F 516.5 procedure I non operating test procedure ½ sinus 11 ms 10 g, 3 shocks positive, 3 shocks negative															
Dimensions (W x H x D):	approx. 453 x 200 x 351 mm (17.8 x 7.9 x 13.8 in.)															
Weight:	typ. 17 kg (37.4 lbs), depending on configuration															

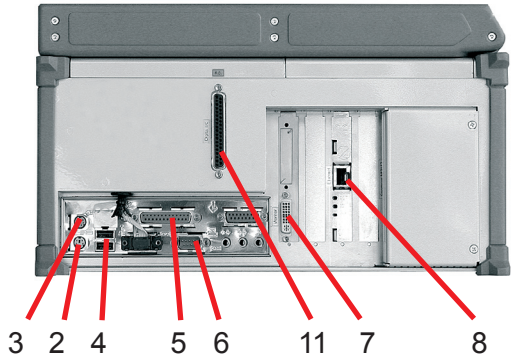
Main System

Connectors



Typical DEWE-5001 front view

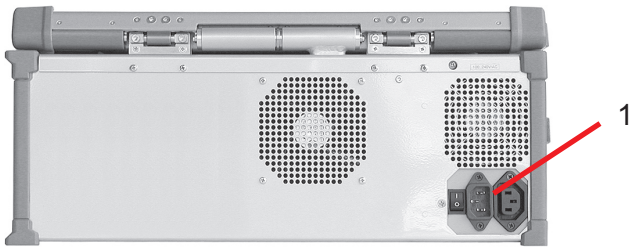
Combustion Analyzer option



Typical DEWE-5001 side view

Connector overview:

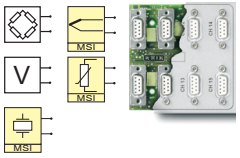
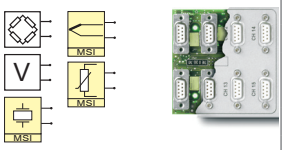
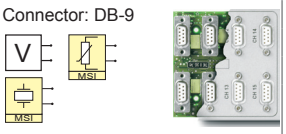
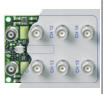
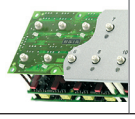
1. Power supply connector with general power switch
2. PS/2 keyboard connector
3. PS/2 mouse connector
4. USB interface connectors
5. LPT interface connector
6. 2x RS-232 interface connectors
7. VGA connector
8. Ethernet LAN connector
9. Power-on button
10. Ground connectors
11. Digital I/O connector
12. Combustion Analyzer connectors (DEWE-5000-CA only)



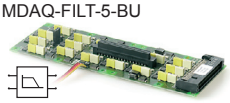
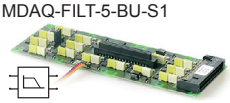
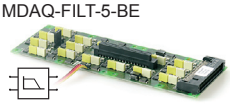
Typical DEWE-5001 rear view

Note: The location of the connectors might vary from system to system and depends on system configuration

MDAQ modules for MDAQ-BASE-x

SUB Modules for MDAQ-BASE-x						
Module	**# CH**	**Input type**	**Ranges**	**TEDS**	**Bandwidth (BW), Highpass filters (HP)**	**Excitation**
MDAQ-SUB-STG-D Connector: DB-9 	8	Strain-gage (Full-, half and quarter-bridge, incl. shunt calibration) for strain gage application	14 ranges from ±0.5 to 1000 mV/V (@ 5 V_{DC} excitation	✓	BW: 30 kHz	0 to 12 V_{DC}
		Voltage up to ±10 V	15 ranges from ±2.5 mV to ±10 V			
		ICP via MSI-BR-ACC	7 ranges from ±0.25 mV to ±10 V			
		Voltage up to 200 V via MSI-BR-V-200	6 ranges from ±10 to ±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	Strain-gage (Full-, and half bridge) for strain gage sensors	14 ranges from ±0.5 to 1000 mV/V (@ 5 V_{DC} excitation	✓	BW: 30 kHz HP: 0.16 Hz	+15 V_{DC} and 0 to 12 V_{DC}
		Voltage up to ±10 V	15 ranges from ±2.5 mV to ±10 V			
		ICP, via MSI-BR-ACC	7 ranges from ±0.25 mV to ±10 V			
		Voltage up to 200 V via MSI-BR-V-200	6 ranges from ±10 to ±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	Voltage up to ±200 V	13 ranges from ±0.125 to ±200 V	✓	BW: 300 kHz	±15 V_{DC} and 0 to 12 V_{DC}
		ICP, via MSI-V-ACC	7 ranges from ±0.25 mV to ±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_{DC} or 50 V_{AC} are allowed at this connector*				
MDAQ-SUB-V-200-BNC Connector: BNC 	8	Voltage up to ±200 V	13 ranges from ±0.125 to ±200 V	-	BW: 300 kHz	-
		Note: *for safety reasons, max. 120 V_{DC} or 50 V_{AC} are allowed at this connector*				
MDAQ-SUB-ACC-BNC Connector: BNC 	8	ICP® or voltage up to ±10 V	8 ranges from ±125 mV to ±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	ICP® or voltage up to ±10 V	8 ranges from ±125 mV to ±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	ICP® or voltage up to ±10 V	8 ranges from ±125 mV to ±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				

Filter modules for MDAQ

Filter Modules for MDAQ				
Module	**# CH**	**Filter characteristics**	**Cutt-off frequencies**	**Order**
MDAQ-AAF4-5-BU 	16	Butterworth	100 Hz, 1, 10, 30, 100 kHz, Bypass *Note: not possible in all system configurations. Please contact factory for details.*	4th order
MDAQ-FILT-5-BU 	16	Butterworth	30, 100, 300 Hz, 1, 10 kHz, Bypass	2nd order
MDAQ-FILT-5-BU-S1 	16	Butterworth	100 Hz, 1, 10, 30, 100 kHz, Bypass	2nd order
MDAQ-FILT-5-BE 	16	Butterworth	30, 100, 300 Hz, 1, 10 kHz, Bypass	2nd order

MDAQ-BASE boards

MDAQ-BASE boards			
	Sub modules	**Bandwidth**	**Output**
MDAQ-BASE-5 	2	300 kHz	±5 V
MDAQ-BASE-10 	2	30 Khz	±10 V

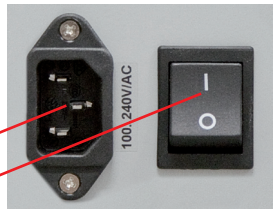
Modular smart interfaces to connect various sensors

Modular Smart Interfaces for DAQP / MDAQ modules, DEWE-43 and DEWE-101							
	MDAQ-SUB-STG-D	**MDAQ-SUB-BRIDGE-D**	**MDAQ-SUB-V-200-D**	**DAQP-STG-D**	**DAQP-LV-D**	**DEWE-43**	**DEWE-101**
MSI-BR-ACC	✓	✓	-	✓	-	✓	✓
	Isotron (constant current powered) adapter for MDAQ-SUB-BRIDGE / -STG modules with DB9 connector Excitation current 4 mA at 21 V, High pass filter 1.5 Hz, BNC connector Bandwidth and ranges are defined by connected amplifier Automatic adapter identification						
MSI-BR-V-200	✓	✓	-	✓	-	✓	✓
	200 V input adapter for MDAQ-SUB-BRIDGE / -STG modules with DB9 connector Differential input configuration, BNC connector Bandwidth and ranges are defined by connected amplifier Automatic adapter identification						
MSI-BR-RTD	✓	✓	-	not needed	-	✓	✓
	Pt100, Pt200, Pt500, Pt1000 and Pt2000 adapter for MDAQ-SUB-BRIDGE / -STG modules with DB9 connector 2, 3 and 4 wire connection methods, 5-pin Binder 710 series connector Automatic adapter identification						
MSI-BR-CH-x	✓	✓	-	✓	-	✓	✓
	Charge input interface for DAQP-STG and MDAQ-SUB-BRIDGE / -STG with DB9 connector Range up to 50000 pC, AC coupled with 0.07 Hz, BNC signal connection Max. 100 kHz bandwidth (dependent on the max. bandwidth of the amplifier) Automatic adapter identification						
MSI-BR-TH-x	✓	✓	-	✓	-	✓	✓
	isolated TC sensor			any TC sensor		isolated TC sensor	
	Thermocouple type K / J / T adapter for DAQP-BRIDGE-x and MDAQ-SUB-BRIDGE / -STG modules with DB9 connector For use with **isolated** thermocouple sensors only ! (except in combination with DAQP-BRIDGE-A*) High accuracy cold junction reference measurement, 1 m thermo cable with Mini TC connector Automatic adapter identification						
MSI-V-ACC	-	-	✓	-	✓	-	-
	Isotron (constant current powered) adapter for DAQP-LV and MDAQ-SUB-V-200 modules with DB9 connector Excitation current 4 mA at 21 V, High pass filter 1.5 Hz, BNC connector Bandwidth and ranges are defined by connected amplifier Automatic adapter identification						
MSI-V-RTD	-	-	✓	-	✓	-	-
	Pt100, Pt200, Pt500 and Pt1000 adapter for DAQP-LV and MDAQ-SUB-V-200 modules with DB9 connector 2, 3 and 4 wire connection methods, 5-pin Binder 710 series connector Automatic adapter identification						
MSI-V-CH-50	-	-	✓	-	✓	-	-
	Charge input interface for DAQP-LV, MDAQ-SUB-V-200 modules with DB9 connector Range up to 50000 pC, AC coupled with 0.07 Hz, BNC signal connection Max. 100 kHz bandwidth (dependent on the max. bandwidth of the amplifier) Automatic adapter identification						

Power supply connectors

400 W AC power supply

400 W AC power supply	BEA-640
Input:	
Input range:	100 to 240 V_{AC} (active PFC)
Input frequency:	47 to 63 Hz
Max. input current:	7 A (115 V_{AC}), 3.5 A (230 V_{AC})
Output:	
Output power:	400 W continuous
Output voltages:	+3.3 V (max. 28 A) +5 V (max. 35 A) -5 V (max. 0.5 A) +5 Vsb (max. 2 A) +12 V (max. 30 A) -12 V (max. 0.8 A)

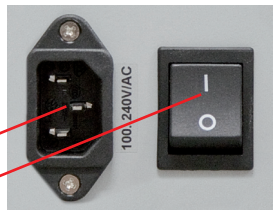


AC power supply

AC power switch

400 W AC power supply

400 W AC power supply	MPM-842P
Input:	
Input range:	100 to 240 V_{AC} (auto selecting)
Input frequency:	47 to 63 Hz
Max. input current:	8 A (115 V_{AC})
Output:	
Output power:	400 W continuous (450 W peak)
Output voltages:	+3.3 V (max. 22 A) +5 V (max. 21 A) +5 Vsb (max. 1.5 A) +12 V (max. 22 A) -12 V (max. 0.8 A)

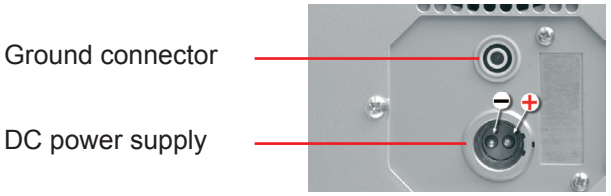


AC power supply

AC power switch

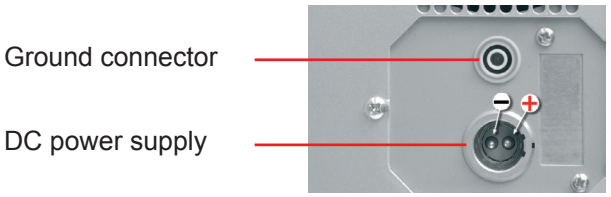
300 W DC power supply

300 W DC power supply	DX 300HEW		
Input:			
Input range:	9 to 18 V_{DC} (12 V_{DC} nom.)		
Input frequency:	DC		
Max. input current:	50 A		
Output:			
Output power:	300 W		
Output voltages:	+3.3 V (max. 20 A)		
	+5 V (max. 35 A, min. 3 A)	-5 V	(max. 0.3 A)
	+5 Vsb (max. 2 A)		
	+12 V (max. 18 A, min. 0.5 A)	-12 V	(max. 2 A)



300 W DC power supply

300 W DC power supply	APT-DY300HEW		
Input:			
Input range:	18 to 36 V_{DC} (24 V_{DC} nom.)		
Input frequency:	DC		
Max. input current:	25 A		
Output:			
Output power:	300 W		
Output voltages:	+3.3 V (max. 28 A)		
	+5 V (max. 30 A, min. 3 A, peak 35 A)	-5 V	(max. 1 A)
	+5 Vsb (max. 1.5 A)		
	+12 V (max. 12 A, min. 1 A, peak 15 A)	-12 V	(max. 2 A)



PS/2 mouse connector

The mouse / trackball connector is used to connect the trackball embedded in the keyboard or an external PS/2 mouse. The connector meets standard PS/2 pin assignment.

PS/2 keyboard connector

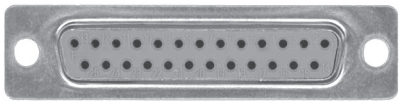
The keyboard connector is used to connect PS/2 keyboard to DEWE-5001 system. The connector meets standard PS/2 pin assignment.

USB interface connectors (Universal Serial Bus)

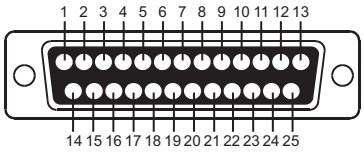
The USB interface connectors meets standard USB pin assignment.

LPT printer interface connector

The printer interface connector (female) is located on the right side of the DEWE-5001. It is configured as standard LPT interface.



25-pin SUB-D connector (female)



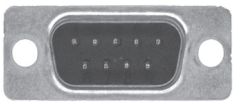
Schematic

Pin assignment

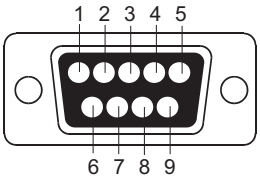
1:	Strobe	14:	Auto FD
2:	Data 1	15:	Error
3:	Data 2	16:	Init
4:	Data 3	17:	Select In
5:	Data 4	18:	GND
6:	Data 5	19:	GND
7:	Data 6	20:	GND
8:	Data 7	21:	GND
9:	Data 8	22:	GND
10:	ACK	23:	GND
11:	Busy	24:	GND
12:	PE	25:	GND
13:	Select		

RS-232 interface connector (COM1)

The RS-232 interface connector (male) is located on the right side of the DEWE-5001. It is configured as standard RS-232 interface COM 1 and can be used for mouse or other peripheral units.



9-pin SUB-D connector (male)



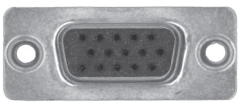
Schematic

Pin assignment

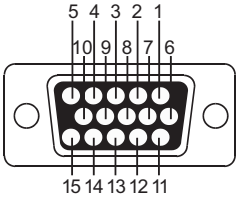
1: DCD (Data Carrier Detector)
2: RD (Received Data)
3: TD (Transmitted Data)
4: DTR (Data Terminal Ready)
5: GND (Ground)
6: DSR (Data Set Ready)
7: RTS (Request To Send)
8: CTS (Clear To Send)
9: RI (Ring Indicator)

VGA connector

The VGA connector offers the possibility to connect an external CRT or other standard VGA displays to the system.



15-pin mini-SUB-D connector (male)

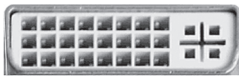


Schematic

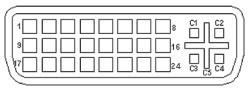
Pin assignment

1: Red video
2: Green video / Sync on green
3: Blue video
4: -
5: -
6: Red video ground
7: Green video ground
8: Blue video ground
9: -
10: Ground
11: Ground
12: Data line
13: H-Sync / HV-Sync
14: V-Sync
15: Clock line

Some systems have a DVI connector instead or additionally to the VGA.



15-pin mini-SUB-D connector (male)



Schematic

Pin assignment

1: TDMS-data 2-
2: TDMS-data 2+
3: Shield TDMS-data 2,4
4: TDMS-data 4-
5: TDMS-data 4+
6: DDC clock
7: DDC data
8: Analog: V-Sync
9: TDMS-data 1-
10: TDMS-data 1+
11: Shield TDMS-Daten 1,3
12: TDMS-data 3-
13: TDMS-data 3+
14: +5 volt
15: Ground for +5 volt
16: Hotplug-Detect
17: TDMS-data 0-
18: TDMS-data 0+
19: Shield TDMS-data 0,5
20: TDMS-data 5-
21: TDMS-data 5+
22: Shield TDMS-Takt
23: TDMS-clock+
24: TDMS-clock -
C1: Analog: red
C2: Analog: green
C3: Analog: blue
C4: Analog: H-Sync
C5: Analog: ground

Ethernet connector

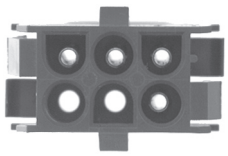
The DEWE-5000 system supports 10/100 BaseT Ethernet with standard RJ45 connector.

Power-on button

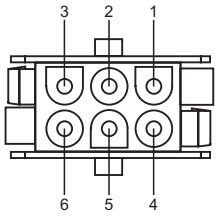
The power-on button has to be used to switch on the system. It only works when the main power switch is on.

Power supply backplane / cooling fan

The AMP connector is the internal power supply connection to the internal rack and the cooling fan, mounted on the backplane of the DEWE-5001 system.



6-pin AMP connector



Schematic

Pin assignment
1: +15 V
2: GND
3: not connected
4: -15 V
5: GND (EPAD supply)
6: +12 V (EPAD supply)

Digital I/O connector

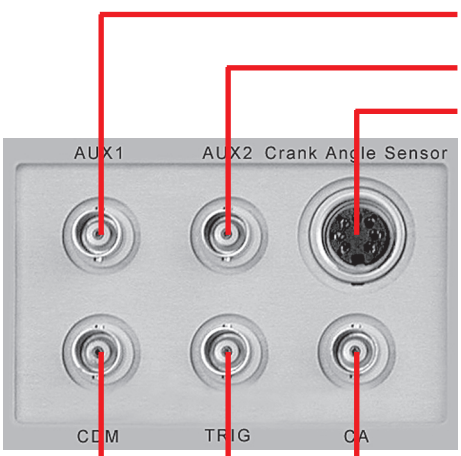
This connector supports digital input and output lines of the built-in A/D board. If this board does not support digital I/O's, the connector is not available.
The pin assignment is depending on the used A/D board - details are available in appendix B.

Ground connectors

For some kind of measurements, it's necessary to give the system an additional ground connection.

Combustion Analyzer I/O connectors (DEWE-5000-CA)

The Combustion Analyzer requires several special input signals to work. Please refer to appendix B (wirings) for details.



Signal output 1 (wiring according to appendix B)

Signal output 2 (wiring according to appendix B)

Crank Angle Sensor

CA Connector

'Zero position' signal (upper death point signal), TTL level input

CDM - angle position signal from high resolution encoders, TTL level input

EPAD connector (option)

The pin assignment of the EPAD connector is depending on the used connector type. For more informations please refere to appendix B

DEWESoft™

DEWESoft™ Software Turns our 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 it is a difficult balancing act to provide lots of capability and performance, without making the user interface cumbersome and hard to learn. But with careful and innovative design, we have done exactly that!

The software can act as a simple multi-meter or recorder as well as a sophisticated combustion analyzer or power analyzer. Or anything in between these extremes, like a FFT analyzer, transient recorder, etc.

Over 10 years DEWESoft™ evolved into a great data acquisition software and is Nr.1 in synchronous acquisition of vastly different signals like analog, digital, CAN, GPS, PCM, counter, video, etc. In 2010 with the release of version 7, DEWESoft™ takes a big step toward become a very powerful data analysis tool for a wide range of test & measurement applications. Since many years you can utilize math channels in the measure mode for online calculations. Starting with version 7.0, captured data can be re-calculated in the analyze mode using the large suite of calculation (math) functions available in the measure mode. This eliminates the CPU performance limitations and thus provides unlimited offline calculation power.

Key Features of DEWETRON systems running DEWESoft™

- *Fast and easy setup*
- *Perfect sync of vastly different signals like analog, digital, counter, CAN, XCP, GPS, Video, ARINC, 1553, etc.*
- *Powerful online data processing, MATH functions, filters, statistics, reference curves*
- *Attractive online display of all kind of data, creation of displays is a matter of seconds*
- *Analog, digital or CAN data output; powerful function generator, alarms, CAN messages*
- *Build test procedures in a form of workflow diagram by means of sequencer*
- *Fast data analysis, reload GByte files in seconds*
- *Post processing, large suite of calculation (math) functions*

Example: Performing a 10th order notch filter on 128 channels being sampled at 200 kS/s each. This is not possible online. But in analyze mode it´s easy. Simply record the data and then filter it afterwards (math functions are non-destructive, i.e., they do not affect the raw channels).

Another important new feature is the sequencer which provides a way to automate test procedures.

Hardware Support

DEWESoft™ supports DEWETRON hardware cards as well as some third-party cards, like Spectrum cards for transient recording. Multiple cards of the same family are supported for high channel counts.

There is also a huge range of DEWETRON signal conditioners which are all perfectly implemented into the software.

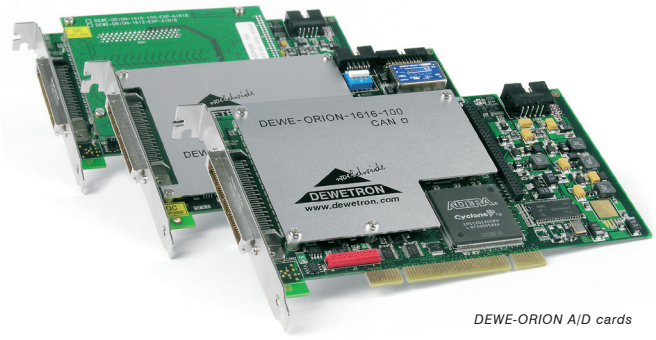
Besides the analog inputs DEWESoft™ supports the digital I/Os, counters and CAN interfaces of DEWETRON hardware.

To acquire video streams in sync with the analog data there is a selection of DEWE-CAM cameras.

Further bus systems like PCM telemetry, XCP, ARINC, 1553, etc. are supported, too. DEWETRON offers the appropriate hardware for all of these.

For position and speed measurements there is a choice of high performance DEWE-VGPS sensors. Or use low-cost sensor which is NMEA compatible for simple position plotting and mapping applications.

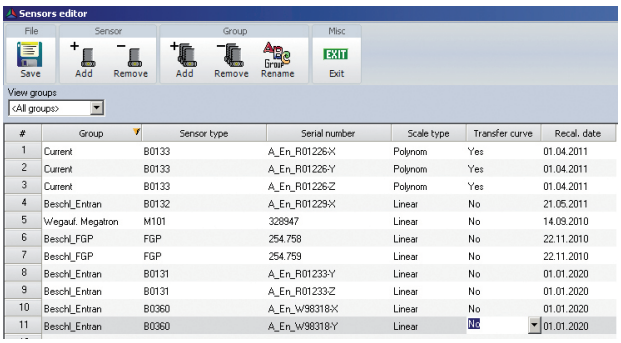
DAQx modules



DEWE-ORION A/D cards

Sensor Database and TEDS (Technical Electronic Data Sheet)

The DEWESoft™ data acquisition software suite was developed especially for measurement technicians, thus simple sensor "connection" is a major topic. Basic settings like sensor setup are easily done. TEDS technology of newer sensors is supported on both the hardware and software side, so that all settings follow automatically, preventing user errors and saving a huge amount of time. For sensors without TEDS, there are numerous options for manual scaling as well as an integrated sensor database to make settings as efficient as possible.

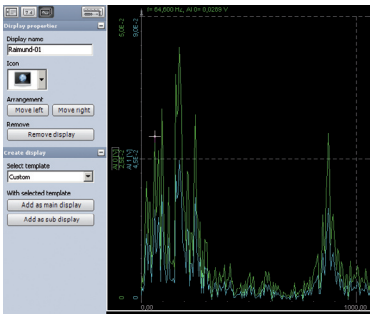


#	Group	Sensor type	Serial number	Scale type	Transfer curve	Recal. date
1	Current	B0133	A_En_R01226-X	Polynom	Yes	01.04.2011
2	Current	B0133	A_En_R01226-Y	Polynom	Yes	01.04.2011
3	Current	B0133	A_En_R01226-Z	Polynom	Yes	01.04.2011
4	Beschl_Entran	B0132	A_En_R01229-X	Linear	No	21.05.2011
5	Wegaul. Megatron	M101	328947	Linear	No	14.09.2010
6	Beschl_FGP	FGP	254.758	Linear	No	22.11.2010
7	Beschl_FGP	FGP	254.759	Linear	No	22.11.2010
8	Beschl_Entran	B0131	A_En_R01233-Y	Linear	No	01.01.2020
9	Beschl_Entran	B0131	A_En_R01233-Z	Linear	No	01.01.2020
10	Beschl_Entran	B0360	A_En_W98318-X	Linear	No	01.01.2020
11	Beschl_Entran	B0360	A_En_W98318-Y	Linear	NL	01.01.2020

Video Recording

A camera is a perfect sensor for many applications and a lot of people like to use it in their data acquisition. Video is a useful test documentation, providing a visual record of the test conditions and setup. I can also be used for more in-depth analysis, as you can imagine. There is nothing quite like seeing your data replayed with synchronized video – this DEWETRON innovation provides a whole new level of context and understanding of your test data than you could ever imagine.

3D Graph

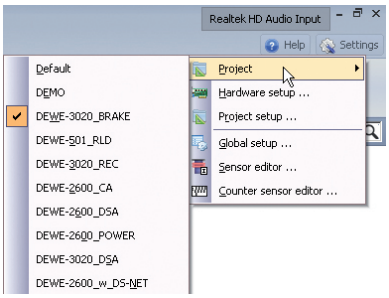


In the properties panel there is a function that allows you to edit the properties of the selected display, and to create new displays, and rearrange them. You can rename any display, and select a different icon for it. Of course you can add sub-displays to any main display.

Display Screens

One of the most powerful and yet easy to use aspect of DEWESoft™ is the creation of displays. Of course a few standard displays like Recorders, Oscilloscope, FFT, Meters, Bars, 2D and 3D graphs, etc. are built-in for you. But this is only the beginning. You simply can create custom displays according to the needs of specific test.

Project Setup

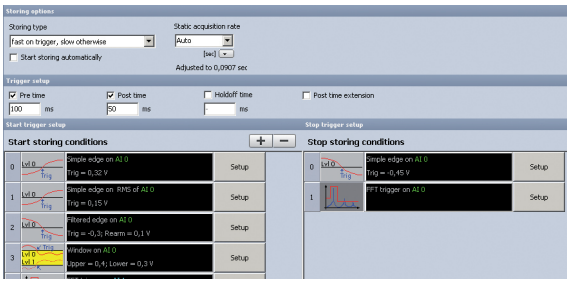


The project files setup the measurement instruments in seconds including complete hardware setup, measurement configuration, and sensor calibration.

Since DEWESoft version 7 you can create "Projects" at the hardware setup screen level, where each project contains all of the settings for any hardware that you own. You can have an unlimited number of hardware setups, which you can freely name and edit. When you start DEWESoft 7, it will automatically load the last hardware setup that you used, of course … but if you have changed the hardware, you can simply choose a different project from the "Settings" menu, and a completely different hardware setup will be loaded.

Even when using the same hardware, projects allows using different folders for setup, data and exported files. So you can create John and George projects for different users and work without interfering or you can create e.g. Road-Load and DSA projects for different tasks.

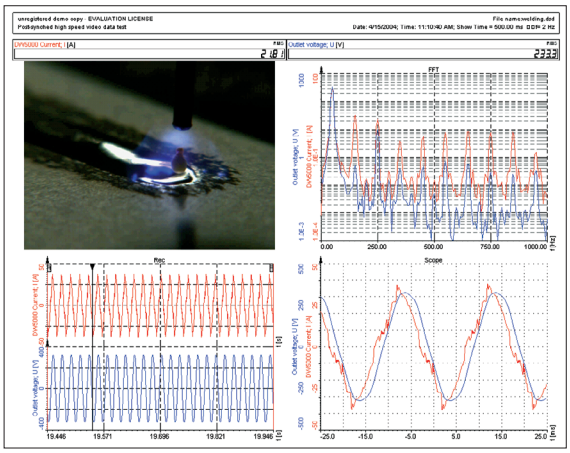
Recording



You can control recording as simple as pressing the START, STORE and STOP buttons. But there are also versatile trigger options to e.g. only store data if a trigger event occurs or to store at a slow rate usually but store at a fast rate at a trigger event with definable pre- and post times.

There is a large suite of calculation (math) functions which can be applied to any channels.

Analyze – Replay, Re-calculate, Export



In Analyze mode you can replay any captured data file, zoom in, make cursor measurements, print reports and export the data to a wide variety of formats, like Flexpro, Excel, Matlab, Diadem and many more.

Since version 7 all the powerful math functions such as math formulas, filtering, statistics, power analysis, frequency response function, order tracking, torsional vibration, engine combustion analysis, sound analysis, human vibration analysis, and others can also be applied off-line to captured data. So you can simply store the raw data and do all the processing off-line, on any computer, anywhere. This allows you to work with the data as you were at the test bench or on the proving ground.

Notes

A/D Conversion

Please find information about the A/D conversion in the attached DEWE-ORION series manual.
The latest version of the manual can be downloaded from:

http://download.dewetron.com/dl/components/adboards

Informations regarding different manufacturer's see the corresponding D/A card manual.

Notes

Internal Wiring

Please find information about the MDAQ amplifiers in the attached DEWE-MDAQ series manual. The latest version of the manual can be downloaded from:

http://download.dewetron.com/dl/products/signal/mdaq

Internal Wiring

Notes

CE-Certificate of conformity

CE

Manufacturer:

DEWETRON Elektronische Messgeraete Ges.m.b.H.

Address:

Parkring 4
A-8074 Graz-Grambach Austria

Tel.: +43 316 3070 0
Fax: +43 316 3070 90
e-mail: sales@dewetron.com
http://www.dewetron.com

Name of product: **DEWE-5001**

Kind of product: *Data acquisition instrument*

The product meets the regulations of the following EC-directives:

73/23/EEC
"Directive on the approximation of the laws of the Member States relating to electrical equipment designed for use within certain voltage limits amended by the directive 93/68/EEC"

89/336/EEC
"Directive on the approximation of the laws of the Member States relating to electromagnetic compatibility amended by the directives 91/263/EEC, 92/31/EEC, 93/68/EEC and 93/97/EEC

The accordance is proved by the observance of the following standards:

LV	**Safety**	IEC/EN 61010-1:1992/93 IEC/EN 61010-2-031	IEC 61010-1:1992/300 V CATIII Pol. D. 2 IEC 1010-2-031
EMC	**Emissions**	EN 61000-6-4	EN 55011 Class B
	Immunity	EN 61000-6-2	Group standard

Graz, April 28, 2010

Place / Date of the CE-marking

Dipl.-Ing. Roland Jeutter / Managing director

Notes