

## Content

<b>General Information, Safety Instructions</b>	<b>5</b>
Warranty Information .....	5
Support .....	5
Printing History.....	5
Safety symbols in the manual .....	6
Safety instructions for all DEWETRON systems .....	7
Environmental Considerations .....	8
<b>Main System</b>	<b>9</b>
DEWE-510 Battery Powered Instrument.....	9
System specifications .....	9
Connectors .....	10
<b>A/D &amp; D/A Conversion</b>	<b>A1</b>
<b>Internal Wiring</b>	<b>B1</b>
<b>Declaration of conformity</b>	<b>C1</b>

# Technical Reference

---

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

DEWETRON elektronische Messgeraete Ges.m.b.H. (DEWETRON) shall not be liable for any errors contained in this document. DEWETRON MAKES NO WARRANTIES OF ANY KIND WITH REGARD TO THIS DOCUMENT, WHETHER EXPRESS OR IMPLIED. DEWETRON SPECIFICALLY DISCLAIMS THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. DEWETRON shall not be liable for any direct, indirect, special, incidental, or consequential damages, whether based on contract, tort, or any other legal theory, in connection with the furnishing of this document or the use of the information in this document.

## 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.  
Parkring 4  
A-8074 Graz-Grambach  
AUSTRIA  
Tel.: +43 316 3070  
Fax: +43 316 307090  
Email: [support@dewetron.com](mailto: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:

DEWETRON, Inc.  
10 High Street, Suite K  
Wakefield, RI 02879  
U.S.A.  
Tel.: +1 401 284 3750  
Toll-free: +1 877 431 5166  
Fax: +1 401 284 3755  
Email: [support@dewamerica.com](mailto:support@dewamerica.com)  
Web: <http://www.dewamerica.com>

The telephone hotline is available  
Monday to Friday between  
08:00 and 17:00 GST (GMT -5:00)

## Restricted Rights Legend

Use austrian law for duplication or disclosure.

DEWETRON GesmbH  
Parkring 4  
A-8074 Graz-Grambach / Austria

## Printing History

Please refer to the page bottom for printing version.

Copyright © DEWETRON elektronische Messgeraete Ges.m.b.H.

This document contains information which is protected by copyright. All rights are reserved. Reproduction, adaptation, or translation without prior written permission is prohibited, except as allowed under the copyright laws.

All trademarks and registered trademarks are acknowledged to be the property of their owners.

# 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](http://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-510 Battery Powered Instrument

- Portable, battery powered data acquisition system
- 3 PCI slots for up to 3 DEWETRON ORION-series cards
- Up to 16 internal slots for DEWE-DAQ/PAD modules
- Optional counter- / encoder inputs
- A/D converter specs see appendix A

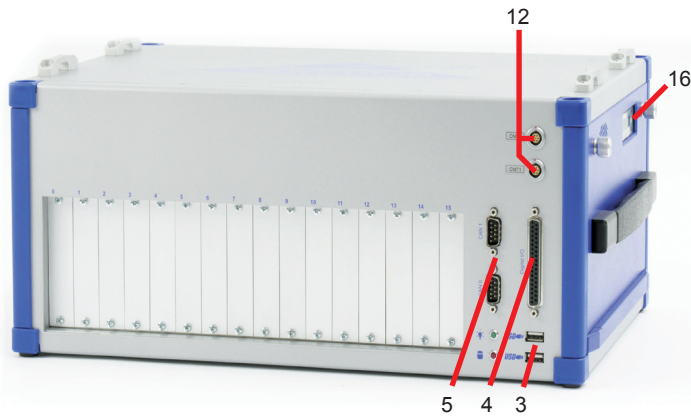


## System specifications

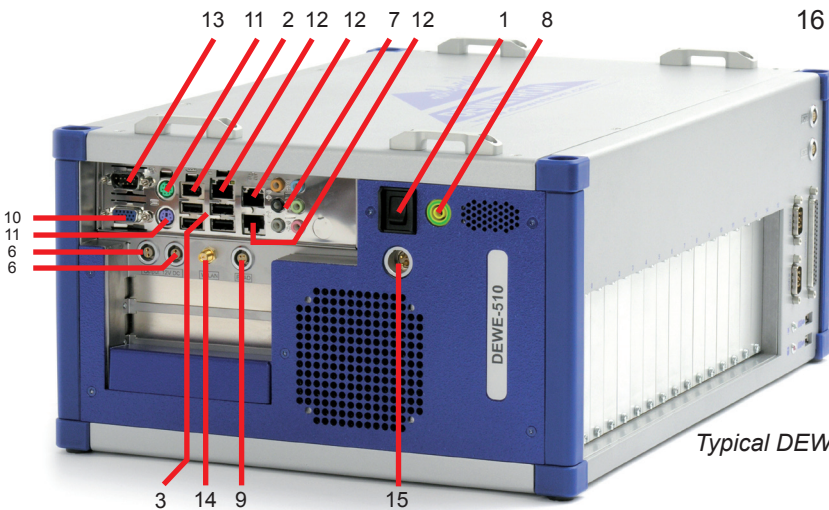
	DEWE-510 DC	
Power supply	18 to 24 V <sub>DC</sub>	
Battery management	<input type="checkbox"/> BBDC-02 (120 W) <input type="checkbox"/> BB-04 (150 W) <input type="checkbox"/> MP-04 (192 W) <input type="checkbox"/> XP-04 (320 W)	
DC-DC converter	<input type="checkbox"/> Dual DC-DC converter module <input type="checkbox"/> DC-023 <input type="checkbox"/> DC-023-12V <input type="checkbox"/> DC-123 for details see next pages	
Operating temperature	-10 °C to +50 °C	
Storage temperature	-20 °C to +60 °C	
Humidity (operating)	10 % to 80 %, non condensing 5 % to 95 %, rel. humidity	
Vibration test EN 60068-2-6	Shape	Sine
	Frequency range	10 - 150 Hz
	Acceleration	2 g
	Sweep rate	1 oct./min.
	Duration	20 Cycles
	Test in 3 directions	
Vibration test EN 60721-3-2 Class 2M2	Shape	Random
	Frequency range	10 - 200 Hz
	Power spectral density	1 m/s <sup>2</sup> / Hz from 10 – 200 Hz
	Duration	30 Minutes per axis
Shocktests EN 60068-2-27	Shape	Half-sine
	Acceleration amplitude	15 g
	Duration	11 ms
	Test in 3 axis, 3 shocks in each axis and direction	
Dimensions (W x D x H)	DEWE-510: 438.5 x 308 x 180.5 mm (17.3 x 12.1 x 7.1 in.)	
Weight	typ. 6 to 10 kg (13.2 to 22 lbs), depending on configuration	

# Main System

## Connectors



Typical DEWE-510 front view



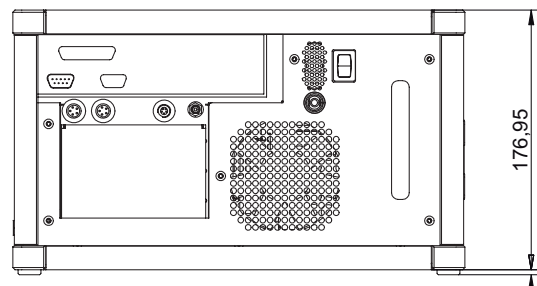
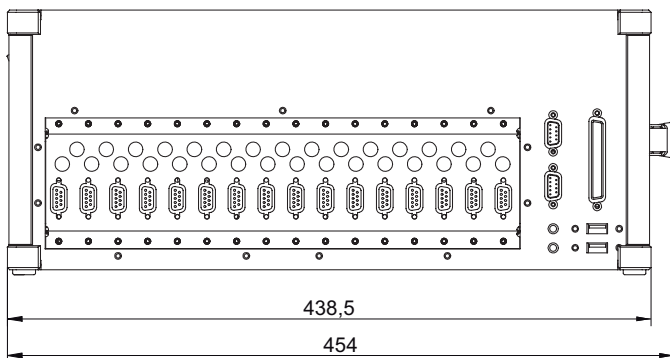
Typical DEWE-510 side view

### Connector overview:

- 1 Power-on button
- 2 IEEE1394 interface connector
- 3 USB interface connectors
- 4 Digital I/O connector
- 5 CAN interface
- 6 Power supply for accessories (12 V<sub>DC</sub> / 1.8 A) Lemo FGG1B-302
- 7 Audio interface
- 8 Ground connector
- 9 EPAD interface
- 10 VGA connector
- 11 PS/2 connector
- 12 Counter inputs
- 13 RS-232 interface connector
- 14 WLAN connector
- 15 Power supply input (Lemo FGJ3B-30)
- 16 Battery status display

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

## Dimensions\*



\* Dimensions in mm  
(1 inch = 25.4 mm)

## Internal DC power supply

DC power supply			
Input:			
Input range:	18 to 24 V <sub>DC</sub> (nom. 18 V <sub>DC</sub> )		
Input frequency:	DC		
Max. input current:	12 A		
Output:			
Output power:	120 W with BBDC-02 (battery management and DC-DC on a single board)		
	150 W with BB-04 battery management		
	192 W with MP-04 battery management		
	320 W with XP-04 battery management (only single DC-DC)		
Output voltages:	Single DC-DC converter	Dual DC-DC converter	BBDC-02
	+3.3 V (max. 10 A)	+3.3 V (max. 19 A)	+3.3 V (max. 10 A)
	+5 V (max. 10 A)	+5 V (max. 19 A)	+5 V (max. 10 A)
	+12 V (max. 7 A / 12 A*)	+12 V (max. 13 A)	+12 V (max. 7 A)
DC-023-12V option:	-12 V (max. 0.25 A)	-12 V (max. 0.45 A)	-12 V (max. 0.3 A)

<sup>\*)</sup> max. current with XP-04 battery management

## External DC power supply (option)

DC/DC Power supply	DEWE-DCDC-24-300-ISO
Input:	
Input voltage:	10 to 36 V <sub>DC</sub> (the input is protected against wrong polarity)
Max. input current:	36 A @ 10 V <sub>DC</sub> input voltage (15 A @ 24V <sub>DC</sub> )
Input connector:	2-pin LEMO connector male, type: EGJ.3B.302.CLA
Output:	
Output voltage:	24 V
Output power:	300 W
Output current:	12.5 A
Output connector:	2-pin LEMO connector female, type: EGG.3B.302.CLL
Operating temperature:	
	-20 °C to 60 °C
Derating above 45 °C:	8 Watt/°C
Isolation Voltage:	500 V <sub>DC</sub>
Status LED:	Green LED indicates an output voltage > 21 V <sub>DC</sub>
Dimensions (W x D x H):	approx. 219 x 122 x 50 mm (8.6 x 4.8 x 2 in.)
Weight:	1.3 kg (2.9 lbs)
Power-on sequence:	
First: Connect the system and the DCDC! Followed by the DCDC and the power supply connection.	

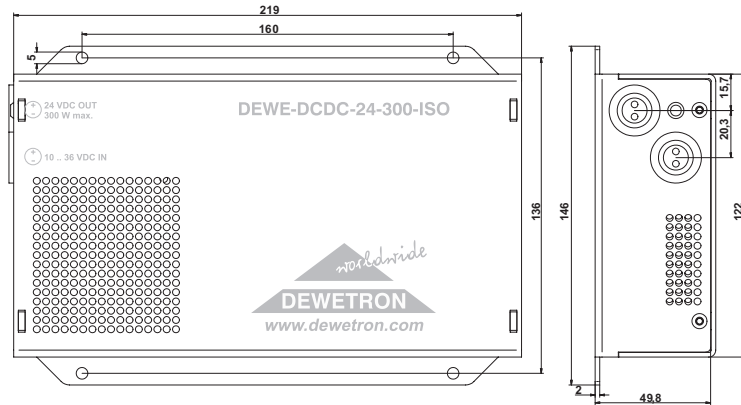
As an option the DEWE-501 is shipped with the DEWE-DCDC-24-300-ISO. This power supply serves galvanic isolated voltage with a wide input range from 10 to 36 V<sub>DC</sub>. The output voltage is fixed with 24 V<sub>DC</sub> with a maximum output power of 300 W.

Depending on the configuration, the DEWE-501 takes usually not more than 150 W. The typical power consumption is just around 70 W. However, if the batteries are empty the input current can go up to 12 Ampere which is an equivalent power consumption of 280 Watt! If the unit is supplied from a typical board supply of 12 V it needs an input current of 28 A!

# Main System

If this high power is not available in the board supply please operate the DEWE-501 without or with charged batteries.

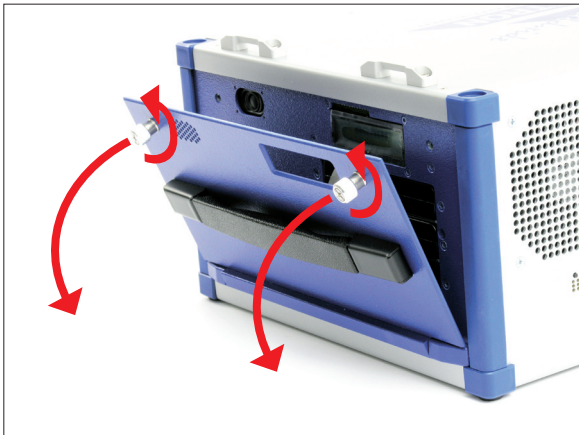
## Dimensions\*



\* Dimensions in mm  
(1 inch = 25.4 mm)

## Changing batteries

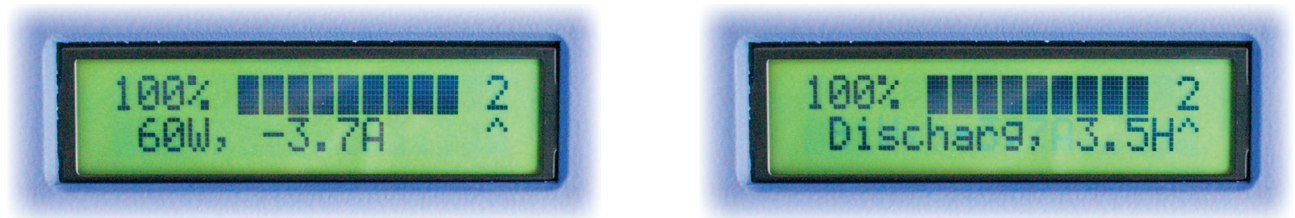
The DEWE-510 DC comes with 3 batterie slots. To change the batteries, just open the screws on the right side of the system and flip down the sidepanel as shown in the picture below.



*Note: If you don't use your DEWE-510 for a longer time, please make sure to remove your batteries and store them separately. Otherwise your system may get damaged!*

## LCD display for battery status

The LCD Display contains two lines of information. One line is used for a bar graph displaying the amount of charge left in the battery system. The bar graph also indicates if the battery is charging or discharging.



The second line of the LCD display can show the power consumption and the current entering or leaving the battery subsystem. The second line of the display can also show the time of fully charged when charging the batteries or the time to fully discharge the batteries when power to the system is being supplied by the batteries.

## PS/2 mouse / keyboard connector

The mouse / keyboard connector could be used to connect a keyboard or an external PS/2 mouse. The connector meets standard PS/2 pin assignment.

## USB interface connectors (Universal Serial Bus)

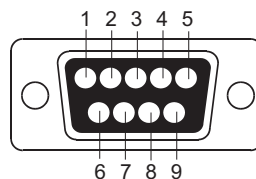
The USB interface connectors meets standard USB pin assignment.

## RS-232 interface connector (COM1)

The RS-232 interface connector (male) is located on the rear side of the DEWE-510. 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

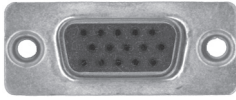
### Pin assignment

- 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)

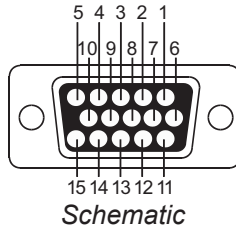
# Main System

## VGA connector

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



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



Schematic

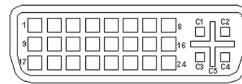
### Pin assignment

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

## Ethernet connector

The DEWE-510 system supports 10/100/1000 BaseT Ethernet with standard RJ45 connector.

## WLAN connector

The DEWE-510 system supports 802.11b and 802.11g standards for Wireless LAN with max. speed of 54 MBit/s.

## Power-on button

The power-on button has to be used to switch on the system. To shut down the system exit windows and press the power-on button for more than 3 seconds.

## 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 connector

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

## Power supply for accessories

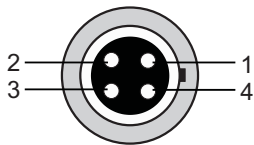
To supply your accessories with 12 V<sub>DC</sub>. Fused with an 1.8 A self-healing fuse.



Lemo EGG.1B.302

## EPAD connector

To connect DEWETRON EPAD modules to the system.



4-pin. LEMO  
connector (female)

Pin assignment

1: RS-485 A

2: RS-485 B

3: +12 V

4: GND

Shield is connected on housing



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

# Main System

---

Notes

# A/D & D/A Conversion

---

## **A/D Conversion**

Detailed information about the A/D card are not included in this manual.

For detailed information see the manufacturer's A/D card manual.

## **D/A Conversion**

Detailed information about the D/A card are not included in this manual.

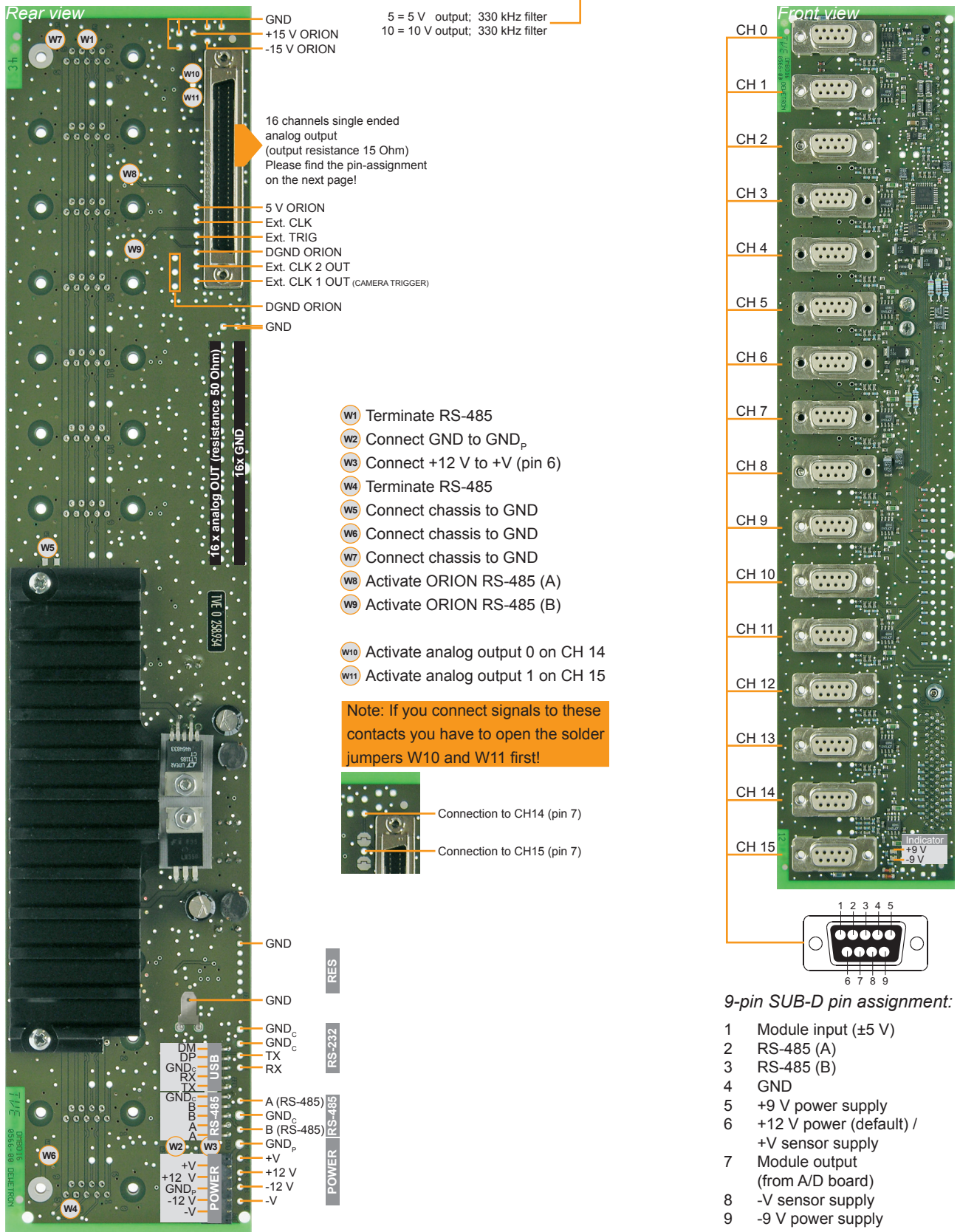
For detailed information see the manufacturer's D/A card manual.

# A/D & D/A Conversion

---

Notes

## 16 slot DEWE-MOTHERBOARD DAQ-MOTH-16-DE-x

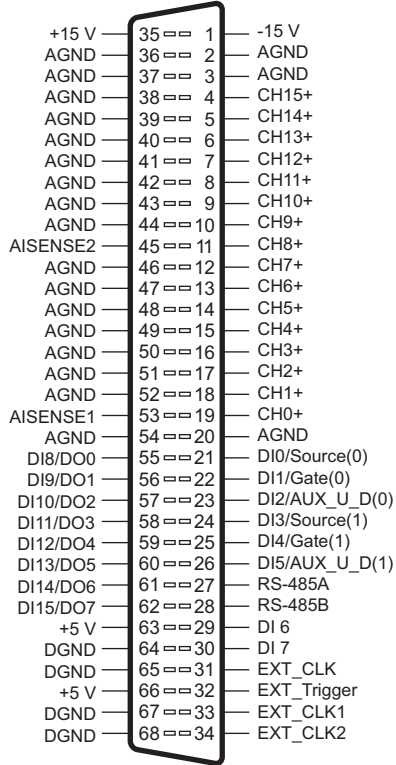


The 16 slot DEWE-MOTHERBOARD receives the  $\pm 12$  V<sub>DC</sub> power supply via a DC/DC converter from the internal power supply.

# Internal Wiring

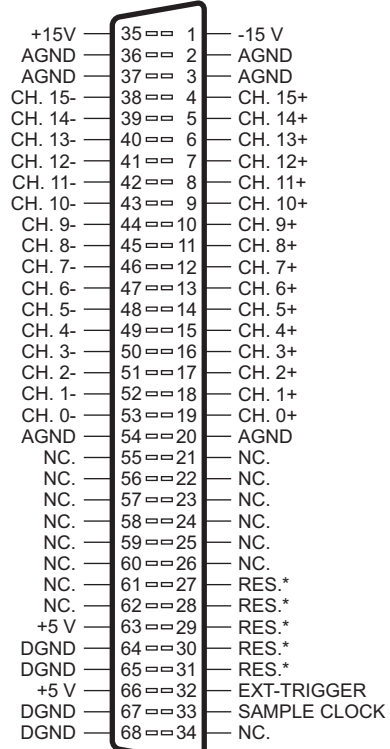
## Analog output connector pin-assignment

Connector for DEWE-ORION-1616 cards



68-pin high density connector

Connector for DEWE-ORION-1624 cards



\* DONT CONNECT

68-pin high density connector

# Declaration of conformity

---

Following products are in conformity with EN50081 (Electromagnetic compatibility, generic emission standard for light and heavy industry) and EN50082 (Electromagnetic compatibility, generic immunity standard for light and heavy industry):

**DEWE-2000 / DEWE-2010 / DEWE-2500 series**

**DEWE-3000 / DEWE-3010 / DEWE-3020 series**

**DEWE-4000 / DEWE-4010 series**

**DEWE-200 series**

**DEWE-500 series**

**DEWE-5000 series**

**DEWE-600 series**

**DEWE-800 series**

**DEWE-900 series**

**DEWE-BOOK series**

**DEWE-RACK series**

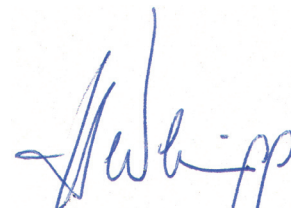
**DAQ / MDAQ modules series**

**PAD / EPAD modules series**

Note: Enhanced EMC specifications are achieved when using DC power supply input.

Manufacturer: DEWETRON Elektronische Messgeraete Ges.m.b.H.  
Parkring 4  
A-8074 Graz-Grambach  
Austria  
Tel.: +43 316 3070 0  
Fax: +43 316 3070 90  
e-mail: [sales@dewetron.com](mailto:sales@dewetron.com)  
<http://www.dewetron.com>

Graz, Nov. 15th, 2004



Ing. Herbert Wernigg  
Managing director

# Notes

---