



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

DEWE-818

Technical reference manual



Test & Measurement Solutions



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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-818?

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 ($\pm 50V$ max.), D-SUB connectors ($\pm 50V$ max.), thermocouple connectors ($\pm 50V$ max.), BINDER® connectors ($\pm 50V$ max.), SMB connectors ($\pm 50V$ max.), μ dot connectors ($\pm 50V$ max.), LEMO® connectors or RJ-45 connectors.

Preface

Notes

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Training

DEWETRON offers training at various offices around the world several times each year. DEWETRON headquarters in Austria have a very large and professional conference and seminar center, where training classes are conducted on a regular basis starting with sensors and signal conditioning, A/D technology and software operation. For more information about training services, please visit:
<http://www.dewetron.com/support/training>

Dewetron Inc. in the USA also has a dedicated training facility connected to its headquarters, located in Rhode Island. For more information about training services in the US, please visit:
<http://www.dewamerica.com/support/training>

Calibration

Every instrument needs to be calibrated at regular intervals. The standard norm across nearly every industry is annual calibration. Before your DEWETRON data acquisition system is delivered, it is calibrated at our DEWETRON headquarter. Each of this system is delivered with a certificate of compliance with our published specifications. Detailed calibration reports from our calibration system are available for purchase with each order. We retain them for at least one year, so calibration reports can be purchased for up to one year after your system was delivered.

Support

DEWETRON has a team of people ready to assist you if you have any questions or any technical difficulties regarding the system. 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
Web: <http://www.dewetron.com>

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

Service/repairs

The Team of DEWETRON also performs any kinds of repairs to your system to assure a safe and proper operation in future. For information regarding service and repairs please contact your local distributor first or DEWETRON directly.

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
Web: <http://www.dewamerica.com>

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

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.

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

Printing History

Please refer to the page bottom for printing version.

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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

Your safety is our primary concern! Please be safe!

General safety and hazard warnings for all DEWETRON systems

- Use this system under the terms of the specifications only to avoid any possible danger.
- Maintenance will be executed by qualified staff only.
- During the use of the system, it might be possible to access another parts of a more comprehensive system. Please read and follow the safety instructions provided in the manuals of all other components regarding warning and security advices for using the system.
- With this product, only use the power cable delivered or defined for the host country.
- DO NOT connect or disconnect sensors, probes or test leads, as these parts are connected to a voltage supply unit.
- The system is grounded via a protective conductor in the power supply cord. To avoid electric shocks, the protective conductor has to be connected with the ground of the power network. Before connecting the input or output connectors of the system, make sure that there is a proper grounding to guarantee potential free usage. For countries, in which there is no proper grounding, please refer to your local legally safety regulations for safety use.

DC systems: Every DC system has a grounding connected to the chassis (yellow/green safety banana plug).

- Please note the characteristics and indicators on the system to avoid fire or electric shocks. Before connecting the system, please carefully read the corresponding specifications in the product manual.
- The inputs are not, unless otherwise noted (CATx identification), for connecting to the main circuit of category II, III and IV.
- The power cord separates the system from the power supply. Do not block the power cord, since it has to be accessible for the users.
- DO NOT use the system if equipment covers or shields are removed.
- If you assume the system is damaged, get it examined by authorised personnel only.
- Any use in wet rooms, outdoors or in adverse environmental condition is not allowed!
Adverse environmental conditions are:
 - Moisture or high humidity
 - Dust, flammable gases, fumes or dissolver
 - Thunderstorm or thunderstorm conditions (except assembly PNA)
 - Electrostatic fields, et cetera.
- The measurement category can be adjusted depending on module configuration.
- Any direct voltage output is protected with a fuse against short cut and reverse-polarity, but is NOT galvanically isolated (except it is explicit marked on the system).
- The system must be connected and operated to an earthed wall socket at the AC mains power supply only (except for DC systems).
- Any other use than described above may damage your system and is attended with dangers like shortcut, fire or electric shocks.
- The whole system must not be changed, rebuilt or opened (except for changing DAQ, DAQP, PAD modules).

Safety instructions

- If you assume a more riskless use is not provided anymore, the system has to be rendered inoperative and should be protected against inadvertent operation. It is assumed that a more riskless operation is not possible anymore, if
 - the system is damaged obviously or causes strange noises.
 - the system does not work anymore.
 - the system has been exposed to long storage in adverse environmental.
 - the system has been exposed to heavy shipment strain.
 - DO NOT touch any exposed connectors or components if they are live wired. The use of metal bare wires is not allowed. There is a risk of short cut and fire hazard!
 - Warranty void if damages caused by disregarding this manual. For consequential damages NO liability will be assumed!
 - Warranty void if damages to property or persons caused by improper use or disregarding the safety instructions.
 - Unauthorized changing or rebuilding the system is prohibited due to safety and permission reasons (CE). Exception: changing modules like DAQ, DAQP or PAD.
 - The assembly of the system is equivalent to protection class I. For power supply, only the correct power socket of the public power supply must be used, except the system is DC powered.
 - Be careful with voltages >25 VAC or >35 VDC! These voltages are already high enough in order to get a perilous electric shock by touching the wiring.
 - The product heats during operation. Make sure there is adequate ventilation. Ventilation slots must not covered!
 - Only fuses of the specified type and nominal current may be used. The use of patched fuses is prohibited.
 - Prevent using metal bare wires! Risk of short cut and fire hazard!
 - DO NOT use the system before, during or shortly after a thunderstorm (risk of lightning and high energy overvoltage). An advanced range of application under certain conditions is allowed with therefore designed products only. For details please refer to the specifications.
 - Make sure that your hands, shoes, clothes, the floor, the system or measuring leads, integrated circuits and so on, are dry.
 - DO NOT use the system in rooms with flammable gases, fumes or dust or in adverse environmental conditions.
 - Avoid operation in the immediate vicinity of:
 - high magnetic or electromagnetic fields
 - transmitting antennas or high-frequency generators
- For exact values please refer to enclosed specifications.
- Use measurement leads or measurement accessories aligned to the specification of the system only. Fire hazard in case of overload!
 - Do not switch on the system after transporting it from a cold into a warm room and vice versa. The thereby created condensation may damage your system. Acclimatise the system unpowered to room temperature.
 - Do not disassemble the system! There is a high risk of getting a perilous electric shock. Capacitors still might be charged, even the system has been removed from the power supply.
 - The electrical installations and equipments in industrial facilities must be observed by the security regulations and insurance institutions.

Safety instructions

- The use of the measuring system in schools and other training facilities must be observed by skilled personnel.
- The measuring systems are not designed for use at humans and animals.
- Please contact a professional if you have doubts about the method of operation, safety or the connection of the system.
- Please be careful with the product. Shocks, hits and dropping it from already lower level may damage your system. For exact values please refer to enclosed specifications.
- Please also consider the detailed technical reference manual as well as the security advices of the connected systems.

This product has left the factory in safety-related flawless and proper condition.

In order to maintain this condition and guarantee safety use, the user has to consider the security advices and warnings in this manual.

EN 61326-3-1:2008

IEC 61326-1 applies to this part of IEC 61326 but is limited to systems and equipment for industrial applications intended to perform safety functions as defined in IEC 61508 with SIL 1-3.

The electromagnetic environments encompassed by this product family standard are industrial, both indoor and outdoor, as described for industrial locations in IEC 61000-6-2 or defined in 3.7 of IEC 61326-1. Equipment and systems intended for use in other electromagnetic environments, for example, in the process industry or in environments with potentially explosive atmospheres, are excluded from the scope of this product family standard, IEC 61326-3-1.

Devices and systems according to IEC 61508 or IEC 61511 which are considered as “operationally well-tried”, are excluded from the scope of IEC 61326-3-1.

Fire-alarm and safety-alarm systems, intended for protection of buildings, are excluded from the scope of IEC 61326-3-1.

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.

Windows updates and antivirus/security software

Before installing Windows software updates consult with DEWETRON for compatibility guidance. Please also keep in mind that the use of any antivirus or other security software may slow down your system and may cause data loss.

Problematic network stacks

Often intrusive IT software or network processes can interfere with the primary function of the DEWETRON system: to record data. Therefore we recommend strongly against the installation of IT/MIS software and running their processes on any DEWETRON data acquisition system, and cannot guarantee the performance of our systems if they are so configured.



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 its 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.

First steps

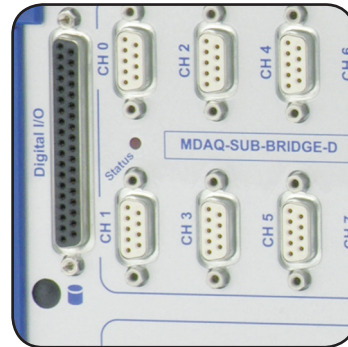
First steps

1



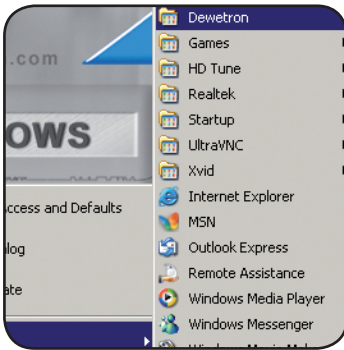
Power-on your system.

2



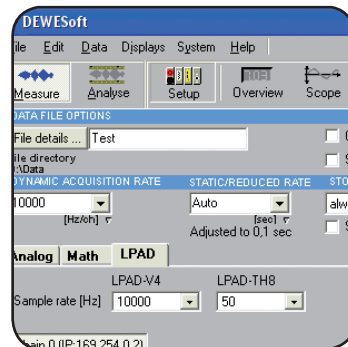
Connect your sensors to the system.

3



Run DEWESoft usually via "Start" > "Programs" > "Dewetron" > "DEWESoft x.x" > "DEWESoft x.x"

4



Start recording your data!

DEWE-818 - Standard instrument without display

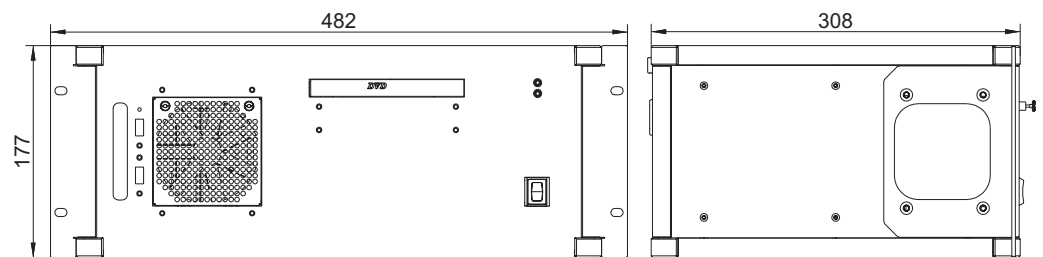
- Portable industrial PC
- Up to 6 PCI slots



System specifications

DEWE-818	
Power supply:	<input type="checkbox"/> 400 W AC ATX power supply MPM-842P <input type="checkbox"/> 400 W AC ATX power supply BEA-640 <input type="checkbox"/> 320 W DC ATX power supply STC-12300 <input type="checkbox"/> 320 W DC ATX power supply STC-24300 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 D x H):	approx. 437 x 308 x 177 mm (17.2 x 12.1 x 7 in.)
Weight:	typ. 15 kg (33 lbs), depending on configuration

Dimensions*



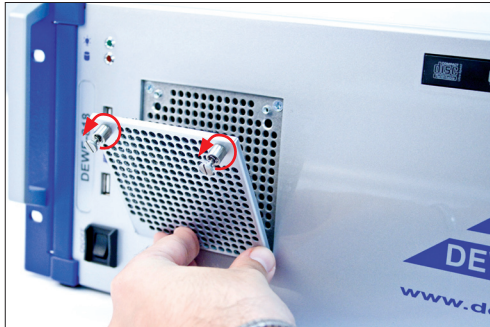
* Dimensions in mm
(1 inch = 25.4 mm)

Main System

Cleaning the filter pad

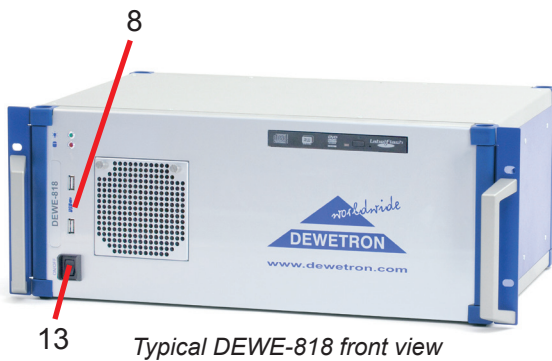
Note: Check the filter pad frequently! A polluted filter pad may cause an overheating of the system! The cleaning interval depends on the environmental conditions.

To clean or exchange the filter pad you only have to open two knurled screws on the left front of the system and pull out the filter-drawer.

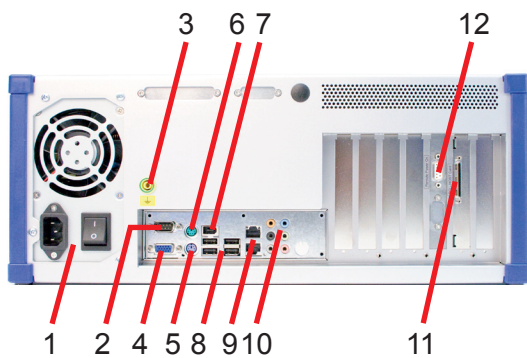


Filter-drawer with filter pad

Connectors



Typical DEWE-818 front view



Typical DEWE-818 rear view

Connector overview:

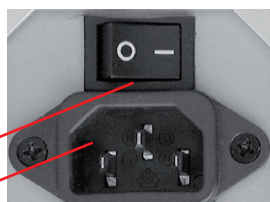
1. Power supply connector with general power switch
2. RS-232 interface connector
3. Ground connectors
4. VGA connector
5. PS/2 keyboard connector
6. PS/2 mouse connector
7. IEEE-1394 (FireWire®) connector
8. USB interface connectors
9. Ethernet LAN connector
10. Audio interface connectors
11. PCI-Host Card
12. Remote power on connector
13. Power-on button

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

Power supply connectors

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)

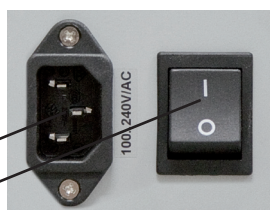


AC power switch

AC power supply

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

Main System

320 W DC power supply

320 W DC power supply		STC-12300	
Input:			
Input range:	9 to 18 V _{DC} (12 V _{DC} nom.)		
Input frequency:	DC		
Max. input current:	50 A		
Output:			
Output power:	320 W		
Output voltages:	+3.3 V (max. 15 A)		
	+5 V (max. 30 A, min. 1.5 A)	-5 V	(max. 1 A)
	+5 Vsb (max. 2 A)		
	+12 V (max. 12 A, min. 0.2 A)	-12 V	(max. 0.8 A)

Power supply pin assignment:



Connector type
2-pin. male
LEMO EGJ.2B.302

320 W DC power supply

320 W DC power supply		STC-24300	
Input:			
Input range:	18 to 36 V _{DC} (24 V _{DC} nom.)		
Input frequency:	DC		
Max. input current:	<20 A		
Output:			
Output power:	320 W		
Output voltages:	+3.3 V (max. 21 A)		
	+5 V (max. 40 A, min. 1.5 A)	-5 V	(max. 1 A)
	+5 Vsb (max. 2 A)		
	+12 V (max. 20 A, min. 0.2 A)	-12 V	(max. 0.8 A)

Power supply pin assignment:



Connector type
2-pin. male
LEMO EGJ.2B.302

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

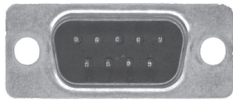
The keyboard connector is used to connect PS/2 keyboard to DEWE-818 system. The connector meets standard PS/2 pin assignment.

USB interface connectors (Universal Serial Bus)

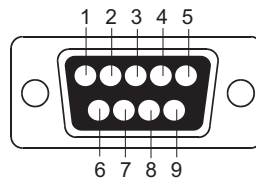
The USB interface connectors meets standard USB pin assignment.

RS-232 interface connector (COM1)

The RS-232 interface connector (male) is located on the rear side of the DEWE-818. 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)



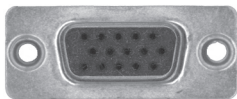
Schematic

Pin assignment

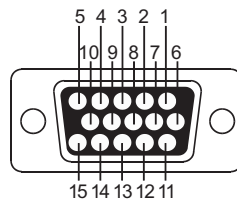
- 1: DCD (Data Carrier Detector)
- 2: RD (Received Data)
- 3: TD (Transmitted Data)
- 4: DTR (Data Terminal Ready)
- 5: GND (Ground)
- 6: DSR (Data Set Ready)
- 7: RTS (Request To Send)
- 8: CTS (Clear To Send)
- 9: RI (Ring Indicator)

VGA connector

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



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



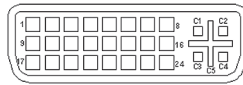
Schematic

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

Main System

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-818 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.

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_{DC}. Fused with an 1.8 A self-healing fuse.



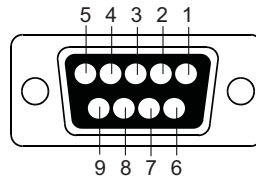
Connector type
2-pin. female
LEMO EGG.1B.302.CLL

Remote power on connector

The remote power on signals are available on a female 9-pin DSUB connector. The output signal of this remote connector is protected by a 0.2 A self recovering fuse.



9-pin SUB-D connector (female)



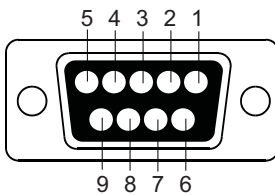
Schematic

Pin assignment

- 1: n.c.
- 2: +5 V
- 3: n.c.
- 4: n.c.
- 5: GND (Ground)
- 6: n.c.
- 7: n.c.
- 8: n.c.
- 9: n.c.

WATCHDOG (optional)

The WATCHDOG card is used for function monitoring on a PC. If a running software is causing problems and the PC can't handle it resulting in a crash, the WATCHDOG interface switches one or two relays in order to restart the PC or shut down an external modem. Pinning of this 9-pin male SUB-D connector:



9-pin male SUB-D connector

Pin assignment

- 1: n.c.
- 2: n.c.
- 3: Opener Relais 1
- 4: Together Relais 1
- 5: Closer Relais 1
- 6: Opener Relais 2
- 7: Together Relais 2
- 8: Closer Relais 2
- 9: n.c.

Main System

System performance

Motherboard: see attached manual

Processor: Intel Pentium IV 2.8 GHz
 Intel Pentium M 1.8 GHz

System Memory:

Memory type: DDR RAM
 DDR2 RAM

1024 MB x
 2048 MB x
 3072 MB x
 4096 MB x

Harddisk:

Interface: S-ATA
 ATA-100/133
 S-ATA RAID

Capacity: 250 GB
 GB

Removeable HDD: yes
 no

Additional S-ATA: RAID-10
 GB

CD / DVD Drive: DVD +/-RW Writer
 DVD-ROM / CD Writer

Network connection: RJ45

Sound: yes
 no

Display / Graphic interface

External display:

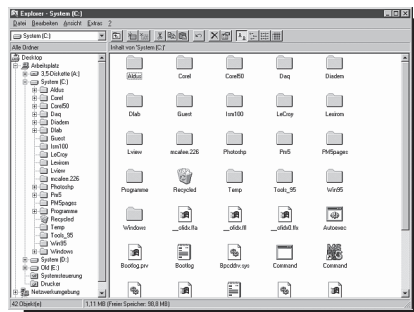
- Size: 19"
Resolution: 1280 x 1024 pixel
Touchscreen: yes
 no

Graphic interface:

- Bus system:
 PCI
 PCI-Express

- Video memory: 16 MB
 32 MB
 64 MB
 128 MB
 256 MB

- Connector for external display: VGA
 DVI-I



Keyboard

- Keyboard: 83 / 84 keys
Protection: standard
 splash keyboard
Interface: PS/2
 USB



Standard keyboard

Trackpad / Trackball:

- Interface: PS/2
 USB



Splash keyboard

Main System

Notes

CE-Certificate of conformity



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-818

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:

L V E M C	Safety	IEC/EN 61010-1:1992/93 IEC/EN 61010-2-031	IEC 61010-1:1992/300 V CATIII PoI. D. 2 IEC 1010-2-031
	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
