DEWETRON

EPAD2/CPAD2/CPAD3 Modules

TECHNICAL REFERENCE MANUAL

WELCOME TO THE WORLD OF DEWETRON!

Congratulations on your new device! It will supply you with accurate, complete and reproducible measurement results for your decision making.
Look forward to the easy handling and the flexible and modular use of your DEWETRON product and draw upon more than 30 years of DEWETRON expertise in measurement engineering.

ISO9001

EN ISO 14001

THE MEASURABLE DIFFERENCE.

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Training

DEWETRON offers training at various offices around the world several times each year. DEWETRON headquaters 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/services/dewetron-academy/

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.dewetron.us/service-support/system-training-usa/

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 headquater. 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 GmbH
Parkring 4
8074 Grambach
AUSTRIAU.S.A.
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)

For the Americas, please contact:

DEWETRON Inc. (HQ USA)
2850 South County Trail, Unit 1
East Greenwich, RI 02818

Tel.: +1 401 284 3750
Toll-free: +1 866 598 3393
Fax: +1 401 284 3755
Email: us.support@dewetron.com
Web: http://www.dewetron.us

The telephone hotline is available
Monday to Friday between
08:00 and 04:30 EST

Service/Repair Policy

We are very sorry that your DEWETRON product is not operating properly. Our team is here to ensure that your DEWETRON product is returned to peak performance as quickly as possible.
Please help us to help you by following the RMA policy.

Some problems can be solved remotely by our support team. To facilitate a quicker resolution to the problem and save unnecessary shipping costs, we ask you to first have your problem investigated by our technical support before sending your product. Contact details for our support can be found on our website. Please describe the error accurately and with as much detail as possible. This helps expedite the repair process.

If a repair is necessary, please complete our online RMA form. You will then receive an RMA (Return Material Authorization) number and detailed instructions that identify where to ship the damaged product.

Please note: Products arriving at our repair department without RMA require follow-up calls and investigation, which lead to longer turnaround. Only the team of DEWETRON is allowed to perform any kinds of repairs to your system to assure a safe and proper operation in future.

Any spare parts (screws, backplanes, cables,...) must be obtained from DEWETRON only.

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.

Restricted Rights Legend

Use austrian law for duplication or disclosure.

DEWETRON GmbH
Parkring 4
8074 Grambach / Austria

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

Printing History

Please refer to the page bottom for printing version.

Safety convention

Observe precautions for handling electrostatic sensitive devices!

This icon denotes a caution, which advises you of precautions to take to avoid injury, data loss, or a system crash. When this symbol is marked on the product, refer to the technical reference 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.*

Electromagnetic compatibility

Class A

Federal communications commission

This equipment has been tested and found to comply with the limits stated in EN55011 for Class A products. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment.

This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications.

Operation of this equipment in a residential area is likely to cause harmful interference in which case the user is required to correct the interference at their own expense.

SAFETY INSTRUCTIONS

Safety instructions for all EPAD2/CPAD2/CPAD3 modules

- > The EPAD2/CPAD2/CPAD3 modules may only be installed by experts.
- > Read your manual before operating the module.
- > Observe local laws when using the module.
- > DO NOT operate the product in an explosive atmosphere or in the presence of flammable gases or fumes.
- > 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.
- > DO NOT try to service or adjust the module.
- > DO NOT substitute parts or modify equipment.
- > Before opening the instrument or computer (experts only) disconnect power!
- > Don’t touch internal wiring (electrostatic damage is possible).
- > Don’t use higher supply voltage than specified!
- > Use only original plugs and cables for harnessing.
- > Safety of the operator and the unit depend on following these rules.
- > Using the board for medical applications only at owner’s risk

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.

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.

GENERAL MODULE INFORMATION

Calibration information

All DEWETRON modules are calibrated at 25 °C and meet their specifications when leaving the factory.
The time interval for recalibration depends on environmental conditions. Typically, the calibration should be checked once a year.

Calibration certificates are available from DEWETRON as an option. DEWETRON offers two types:

> ISO traceable DEWETRON certificate
> Calibration certificate according to ÖKD (equivalent to DKD)

This manual contains no calibration information. For self calibration, there is a seperate calibration kit available. The CAL-KIT contains the required cables, software and instructions.

General Module Specifications

Environmental (unless otherwise noted)

Temp. range storage:	-30 °C to +85 °C	(-30 °F to 185 °F)
Temp. range operating:	-5 °C to +60 °C	(-4 °F to 140 °F)
Enhanced temp. range:	on request	
Relative humidity (MIL202):	0 to 95 % at 60 °C, non-condensing	

All modules are produced according ISO9001 and ISO14001.

EPAD2 interface-module for attaching EPAD2 modules to USB

- Mini USB interface with 1.8 m USB cable
- Virtual COM interface
- RS-485 interface
- LEMO EGG.1B.304 socket for connecting EPAD2 modules

Module specifications

EPAD2-USB	
Inputs	
RS-485 input speed	9600, 19200, 38400, 57600, 115200 Baud
Outputs	
USB	USB 2.0 compatible
General	
Power supply voltage	7 to 40 V_{DC}
Power consumption	max. 3 W
Dimensions Base module (W x D x H) Mounting holes distance	 129 x 72 x 34.2 mm (5.1 x 2.8 x 1.3 in.) incl. mounting holes 119 x 7 mm (4.7 x 0.3 in.), 4.2 mm (0.165 in.) diameter
Weight	typically 140 g
Operating temperature	-20 to 60 °C
Storage temperature	-40 to 85 °C
Humidity	95 % RH non condensing @ 60 °C

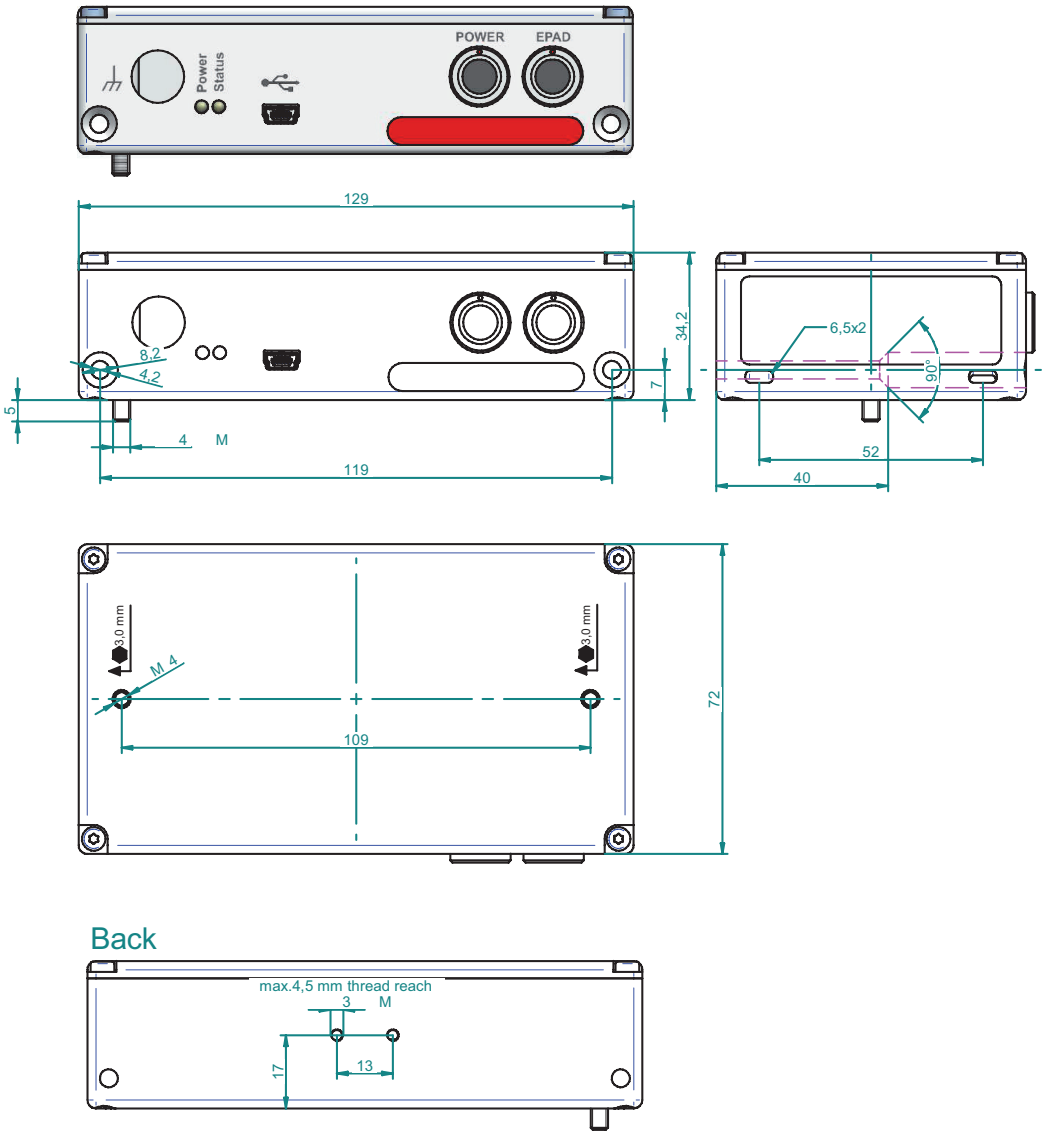
General description

The EPAD2-USB can be used as a standalone device with EPAD2 modules connected to it. The EPAD2-USB is shipped with an external power supply (100 .. 240 V / 15 V_{DC}) to ensure power supply for up to 16 connected EPAD2 modules.

The EPAD2-USB reads the data from connected EPAD2 modules and provides them via native USB interface to the PC/ Laptop or any other DEWETRON instrument. The independently working EPAD2-USB module also offers the possibility to create a virtual COM interface in Microsoft Windows® to be used with any software (e.g. DASYLab).

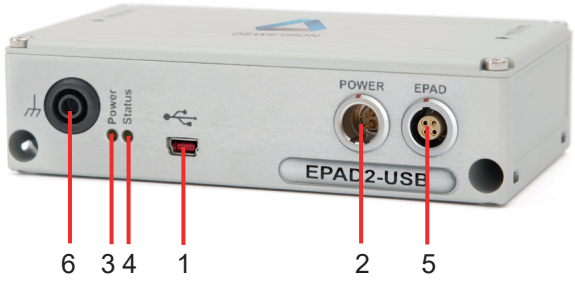
EPAD2-USB Module

Dimensions*



* Dimensions in mm
(1 inch = 25.4 mm)

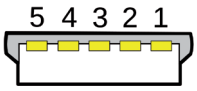
Connection



1 Mini USB interface connector
2 Power connector
3 Power LED
4 Status LED
5 EPAD interface connector
6 Chassis terminal

1 Mini USB-B interface connector

The mini USB-B interface connectors meets standard USB pin assignment.

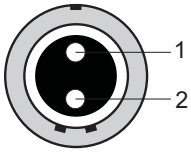


5-pin USB connector shematic

Pin assignment
1: +5 V
2: D-
3: D+
4: ID
5: GND

2 POWER connector

This connector is used for power supply connected EPAD2 modules.



Pin assignment
1: +7 .. 40 V_{DC}
2: GND

2-pin LEMO EGJ.1B.302

3 Status LED

This LED indicates data transmissions.

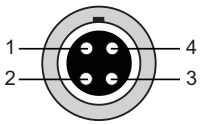
4 Power LED

This LED indicates power supply state. The EPAD2-USB is powered via USB but ***NOT*** with the external power supply! The Power LED is only active when connected to a USB port of your PC/Laptop and ***NOT*** when connected to the external power supply!

5 EPAD interface connector

This connector can be used to connect the EPAD2-USB to other EPAD2 series modules

4 pin LEMO series connector



Schematic

Pin assignment EPAD2:
1 RS-485 (A)
2 RS-485 (B)
3 Power supply (+)
4 GND

6 Chassis terminal

For some kind of measurements, it's necessary to provide the module with an additional ground connection

EPAD2-USB Module

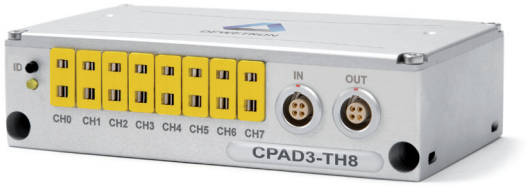
Installing USB drivers

Before connecting the EPAD2-USB device to your PC/Laptop make sure to install the USB drivers for your instrument.
To install the corresponding drivers insert the ***DEWETRON Install Media USB drive*** shipped with your system and klick <start.exe>. Navigate to ***"Drivers" > "USB & RS485" > "dewetron_usb"***.
Execute the <setup.exe> and follow the steps of the installation wizard.

How to setup EPAD2-USB in OXYGEN

Information on how to setup the EPAD2-USB in OXYGEN can be found in the chapter '*Using EPADs in OXYGEN with any DEWE/DEWE2/DEWE3 instrument*'.

8 channel thermocouple amplifier



- Intelligent amplifier with integrated A/D conversion
- 8 input channels for thermocouples
- Available thermocouple types:
  xPAD2-TH8-x: K, J, T standard type
  xPAD2-TH8-UNIVERSAL: Universal type
- Standard CAN interface

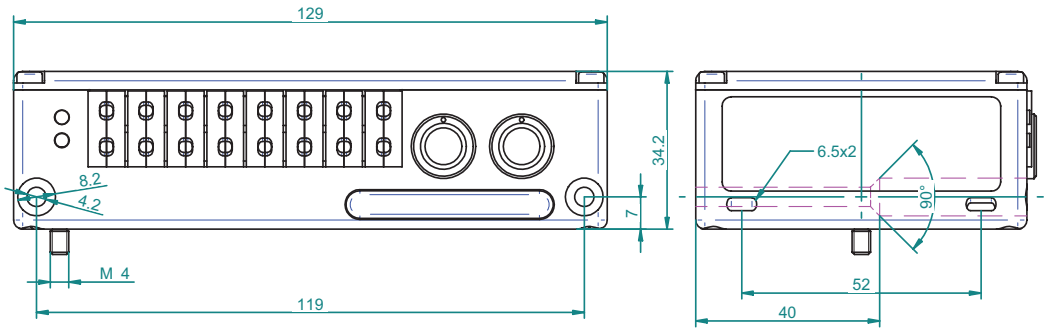
Module specifications

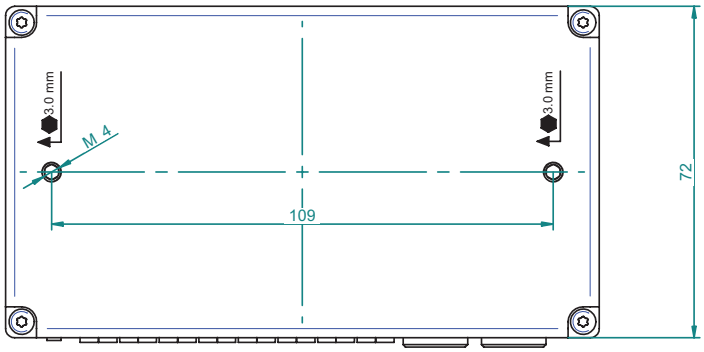
	CPAD3-TH8-x		
Input channels	8 isolated Thermocouple Channels		
Input signals CPAD3-TH8-x CPAD3-TH8-UNIVERSAL	 Thermocouple type K, J, T (others on request) Thermocouple type K, J, T, R, S, N, E, C, U, B		
Sampling rate	max. 100 S/sec per channel		
Bandwidth (-3 dB)	48 Hz		
ADC type	20 Bit Delta Sigma Converter		
Input connector	mini Thermocouple connector		
Resolution	0.01 °C for all types		
Input impedance	10 kΩ		
Input noise (Type K)	0.2 °C @ 100 S/s; 0.05 °C @ 10S/s; 0.03 °C @ 1 S/s		
Bias current	<1 nA		
Open thermocouple detection	module indicates fullscale if input is open		
Accuracy* Standard models CPAD3-TH8-K /-J / -T Type K (-270 to 1372 °C): Type J (-210 to 1200 °C): Type T (-270 to 400 °C): Special models on request CPAD3-TH8-x Type R, S (-50 to 1760 °C): Type N (-270 to 1300 °C): Type E (-270 to 1000 °C): Type C (0 to 2300 °C): Type U (-200 to 600 °C): Type B (0 to 1820 °C): *) +1.0 °C when using CPAD3-TH8-UNIVERSAL	 ±1.0 °C @ -200 to -25 °C ±1.0 °C @ -210 to -100 °C ±1.0 °C @ -250 to -150 °C ±1.6 °C @ -50 to 0 °C ±1.2 °C @ -200 to -100 °C ±1.0 °C @ -200 to -50 °C ±0.6 °C @ 0 to 800 °C ±1.0 °C @ -200 to -50 °C ±20 °C @ 0 to 400 °C	 ±0.4 °C @ -25 to 1000 °C ±0.3 °C @ -100 to 760 °C ±0.4 °C @ -150 to 400 °C ±1.0 °C @ 0 to 100 °C ±0.5 °C @ -100 to 1300 °C ±0.4 °C @ -50 to 1000 °C ±0.8 °C @ -800 to 1500 °C ±0.4 °C @ -50 to 200 °C ±0.6 °C @ 400 to 1000 °C	 ±0.5 °C @ 1000 to 1372 °C ±0.4 °C @ 760 to 1200 °C ±0.4 °C @ 100 to 1760 °C ±1.5 °C @ 1500 to 2300 °C ±0.3 °C @ 200 to 600 °C ±0.5 °C @ 1000 to 1800 °C
Max. gain drift	25 ppm /°C		
Max. offset drift	25 ppm of range /°C		
Isolation[1] voltage	1500 V_{DC} (channel to channel and channel to Bus, Power and Chassis)		
Rated input voltage to earth according to IEC/EN 61010-2-30	70 V_{DC} (46.7 V_{PK})		
Overvoltage protection	50 V_{DC}		
CMRR (50/60 Hz) @ 0.01 to 10 S/sec	>110 dB		
CPAD3-TH8			
Interface	highspeed CAN		
Specification	CAN 2.0B		
Communication speed	50 kBaud to 1000 kBaud		
Data Format	16 Bit Intel or Motorola		
Identifier Types	standard; extended		
Standard settings	500 kBaud; Intel Format		
Readout speed	100 Hz, 50 Hz, 20 Hz, 10 Hz, 5 Hz, 2 Hz, 1 Hz, 0.5 Hz, 0.2 Hz or 0.1 Hz, 0.05 Hz, 0.02 Hz, 0.01 Hz, programmable		
Bus/Power Connector	LEMO EGG.1B.304		
Power Supply Voltage	7 to 40V		
Power consumption	1 W		
Dimensions Base module (W x D x H) Mounting holes distance:	 129 x 72 x 34.2 mm (5.1 x 2.8 x 1.3 in.) incl. mounting holes 119 x 7 mm (4.7 x 0.3 in.), 4.2 mm (0.165 in.) diameter		
Weight	typically 405 g (~0.9 lbs)		

[1] For safety reasons maximum allowed voltage: 70 V_{DC} (46.7 V_{PK})

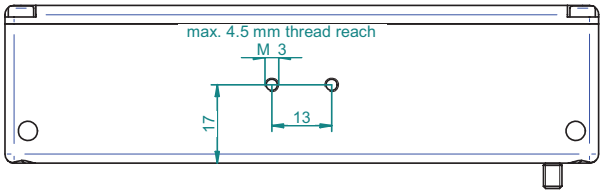
CPAD3-TH8-x Module

Dimensions*





rear view

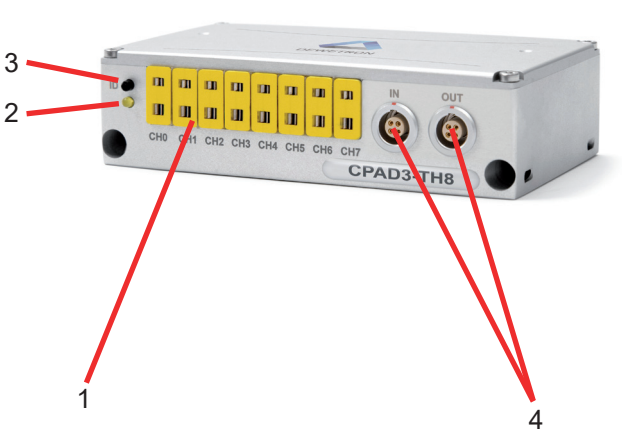


* Dimensions in mm
(1 inch = 25.4 mm)

Push button

Use the ID button to define the module address via software. Detailed information how to use the button is available in chapter: "Module reset".

Connection



1 8x thermocouple connector
2 State LED
3 ID button
4 2x xPAD2/CPAD3 interface connector

Thermocouple connectors

The CPAD3-TH8-x module supports up to 8 thermocouples. Connect only thermocouple types which match with the connector types. If the module is equipped with type K connectors, you are allowed to connect type K thermocouples only. The white universal connector supports all types of thermocouple connectors.

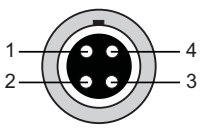
Thermocouple types						
Type	IEC color code	ANSI color code	Temperature range °C [°F]	Alloy combination +	-	Comments
K	green	yellow	-270 to 1372 [-454 to 2501]	Ni	CrNi	Wide temperature range, most popular calibration
J	black	black	-210 to 1200 [-346 to 2193]	Fe	CuNi	Used in vacuum, reduced and inert atmosphere
T	brown	blue	-270 to 400 [-454 to 752]	Cu	CuNi	Low temperature & cryogenic applications
R	orange	green	-50 to 1760 [-58 to 3214]	Pt13Rh	Pt	High temperature
S	orange	green	-50 to 1760 [-58 to 3214]	Pt10Rh	Pt	High temperature
U	orange	green	-200 to 600 [-328 to 1112]	Cu	CuNi	Also known as RX & SX extension wire.
N	rose	orange	-270 to 1300 [-450 to 2372]	NiCrSi	NiSi	Alternative to type K. More stable at high temp.
E	purple	purple	-270 to 1000 [-454 to 1832]	NiCr	CuNi	Highest EMF change per degree
B	grey	grey	0 to 1820 [32 to 3308]	Pt30Rh	Pt6Rh	High temperature. Common use in glass industry
C*	no standard IEC color	red*	0 to 2300 [32 to 4172]	W5Re	W26Re	Highest temperature range

*) no official symbol or standard designation

xPAD2/CPAD3 interface connector

This connector can be used to connect the module to other xPAD2/CPAD3 series modules.

4 pin LEMO series connector



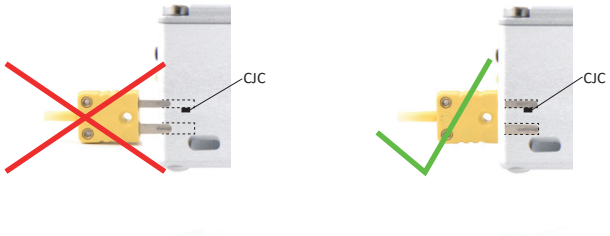
Schematic

Pin assignment CPAD3:

1 CAN high
2 CAN low
3 Power supply (+)
4 GND

CJC

The CPAD3-TH8-x comes with an integrated cold junction compensation sensor with an absolute accuracy of ±0.2 °C. In order to archieve this accuracy the sensor has to be connected for at least 2 minutes to the thermocouple connector (CJC equilibrium time).



NOTE: With the CPAD3-TH8-UNIVERSAL it is possible to get almost the same accuracy under laboratory conditions compared to the CPAD3 with dedicated TC-connectors. If the environmental temperature is rapidly changing, the accuracy may decrease three times more compared to the standard thermocouple types! So the CPAD3-TH8-UNIVERSAL is not recommended for automotive measurements!

Programming information

The CPAD3-TH8-x programming information is available in the *DEWE-MODULES Programmers Reference Manual.*

8 channel voltage amplifier

- Intelligent amplifier with integrated 20-bit A/D conversion
- 8 channel isolated data acquisition
- Standard CAN interface

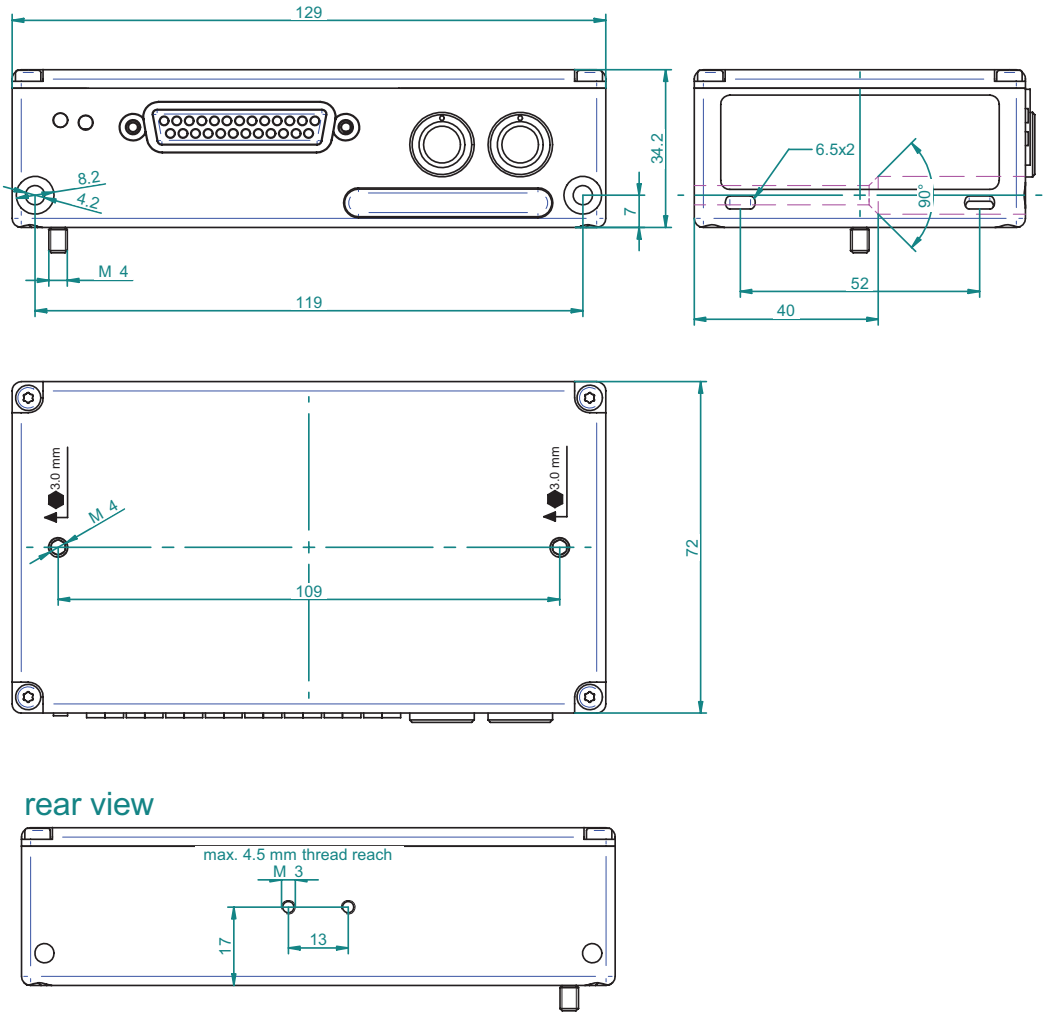
Module specifications

	CPAD3-V8
Input channels	8 isolated voltage input channels
Input ranges	Physical input range: ±50 V Software selectable: ±100 mV, ±500 mV, ±1 V, ±2.5 V, ±5 V, ±10 V
Resolution	100 µV for all ranges
DC accuracy	±0.02 % of reading ±900 µV
Max. gain drift	20 ppm/°C
Max. offset drift	20 ppm of range /°C
Linearity	0.002 %
Input impedance	0.97 MΩ
Input connector	SUB-D 25
Sampling rate	max. 100 S/sec per channel
Bandwidth (-3 dB)	48 Hz
ADC Type	20 bit Delta Sigma Converter
Isolation[1)] voltage	1500 V_{DC} (channel to channel and channel to Bus, Power and Chassis)
Rated input voltage according to IEC/ EN 61010-2-30	70 V_{DC} (46.7 V_{PK})
Overvoltage protection	350 V_{DC}
CMRR (50/60 Hz) @ 0.01 to 10 S/sec	110 dB (130 dB @ DC)
CPAD3-V8	
Interface	highspeed CAN
Specification	CAN 2.0B
Communication speed	50 kBaud to 1000 kBaud
Data format	16 Bit Intel or Motorola
Identifier types	standard; extended
Standard settings	500 kBaud; Intel Format
Readout speed	100 Hz, 50 Hz, 20 Hz, 10 Hz, 5 Hz, 2 Hz, 1 Hz, 0.5 Hz, 0.2 Hz or 0.1 Hz, 0.05 Hz, 0.02 Hz, 0.01 Hz, programmable
Bus/Power connector	LEMO EGG.1B.304
Power supply voltage	7 to 40V
Power consumption	1 W
Dimensions Base module (W x D x H) Mounting holes distance	 129 x 72 x 34.2 mm (5.1 x 2.8 x 1.3 in.) incl. mounting holes 119 x 7 mm (4.7 x 0.3 in.), 4.2 mm (0.165 in.) diameter
Weight	typically 310 g (~0.7 lbs)

[1)] For safety reasons maximum allowed voltage: 70 V_{DC} (46.7 V_{PK})

CPAD3-V8 Module

Dimensions*



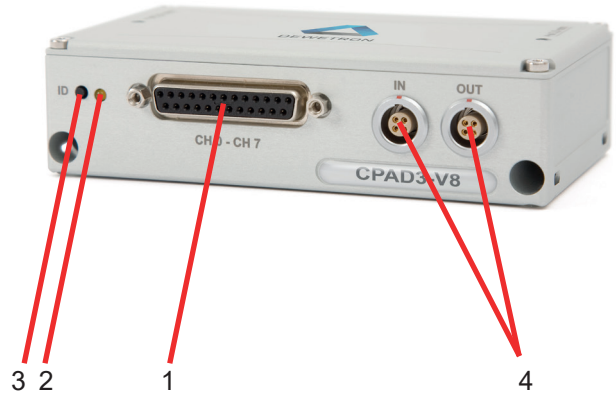
rear view

* Dimensions in mm
(1 inch = 25.4 mm)

Push button

Use the ID button to define the module address via software. Detailed information how to use the button is available in chapter: "Module reset".

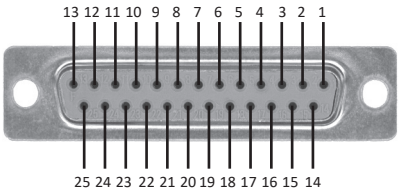
Connection



1 Voltage input connector
2 State LED
3 ID button
4 2x xPAD2/CPAD3 interface connector

Voltage input connector

The CPAD3-V8 module offers 8 differential voltage input channels.



25-pin female DSUB connector

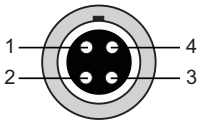
Pin assignment:

1	Channel 0	(+)	13	Channel 6	(+)
2	Channel 0	(-)	14	Channel 6	(-)
3	Channel 1	(+)	15	Channel 7	(+)
4	Channel 1	(-)	16	Channel 7	(-)
5	Channel 2	(+)	17	Reserved	
6	Channel 2	(-)	18	Reserved	
7	Channel 3	(+)	19	Reserved	
8	Channel 3	(-)	20	Power supply (+)	
9	Channel 4	(+)	21	Reserved	
10	Channel 4	(-)	22	GND	
11	Channel 5	(+)	23	Reserved	
12	Channel 5	(-)	24	Reserved	
			25	Reserved	

xPAD2/CPAD3 interface connector

This connector can be used to connect the module to other xPAD2/CPAD3 series modules.

4 pin LEMO series connector



Schematic

Pin assignment CPAD3:

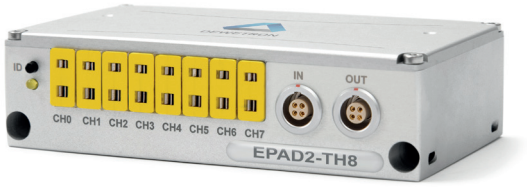
1 CAN high
2 CAN low
3 Power supply (+)
4 GND

CPAD3-V8 Module

Programming information

The CPAD3-V8 programming information is available in the *DEWE-MODULES Programmers Reference Manual*.

8 channel thermocouple amplifier



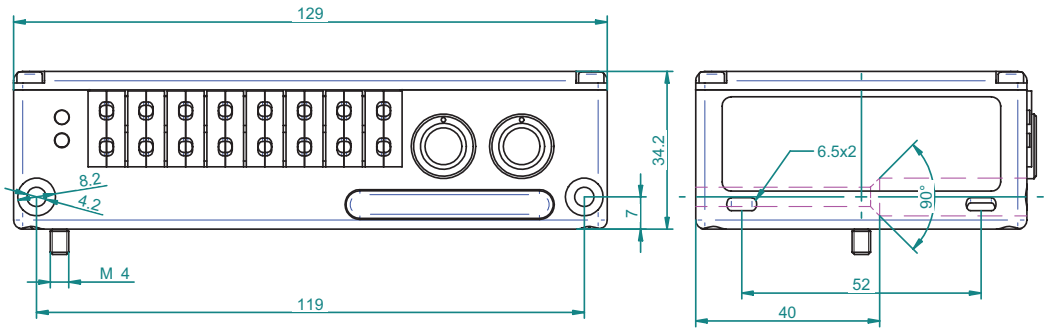
- Intelligent amplifier with integrated A/D conversion
- 8 input channels for thermocouples
- Available thermocouple types:
  xPAD2-TH8-x: K, J, T standard type
  xPAD2-TH8-UNIVERSAL: Universal type
- RS-485 or CAN interface

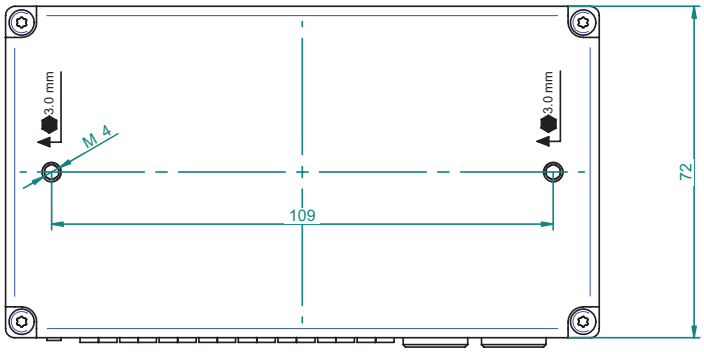
Module specifications

	xPAD2-TH8-x						
Input channels	8 isolated Thermocouple Channels						
Input signals xPAD2-TH8-x xPAD2-TH8-UNIVERSAL	 Thermocouple type K, J, T (others on request) Thermocouple type K, J, T, R, S, N, E, C, U, B						
Sampling rate	max. 12.5 S/sec per channel						
Bandwidth (-3 dB)	6 Hz						
ADC type	24 Bit Delta Sigma Converter						
Input connector	mini Thermocouple connector						
Resolution	0.01 °C for all types						
Input impedance	typically 1.4 MΩ						
Bias current	typically 10 nA						
Open thermocouple detection	module indicates fullscale if input is open						
Accuracy* (including CJC error)	**-270 to -200 °C**	**-200 to -100 °C**	**-100 to 0 °C**	**0 to 100 °C**	**100 to 400 °C**	**400 to 1000 °C**	**> 1000 °C**
Type K (-270 to 1372 °C):	10.0 °C**	1.0 °C	0.5 °C	0.4 °C	0.5 °C	0.7 °C	1.0 °C
Type J (-210 to 1200 °C):	0.9 °C**	1.0 °C	0.4 °C	0.3 °C	0.4 °C	0.6 °C	1.0 °C
Type T (-270 to 400 °C):	6.5 °C**	1.0 °C	0.5 °C	0.4 °C	0.4 °C	-	-
Type R (-50 to 1760 °C):	-	-	2.6 °C	1.8 °C	1.3 °C	1.1 °C	1.3 °C
Type S (-50 to 1760 °C):	-	-	2.4 °C	1.8 °C	1.4 °C	1.1 °C	1.5 °C
Type N (-270 to 1300 °C):	16.0 °C**	1.3 °C	0.6 °C	0.5 °C	0.5 °C	0.6 °C	0.8 °C
Type E (-270 to 1000 °C):	5.5 °C**	0.8 °C	0.4 °C	0.3 °C	0.3 °C	0.5 °C	-
Type L (0 to 900 °C):	-	-	-	0.4 °C	0.4 °C	0.5 °C	-
Type C (0 to 2300 °C):	-	-	-	0.8 °C	0.7 °C	1.0 °C	1.4 °C
Type U (-200 to 600 °C):	-	1.0 °C	0.6 °C	0.4 °C	0.4 °C	0.4 °C	-
Type B (0 to 1820 °C):	-	-	-	90.2 °C**	9.0 °C	2.3 °C	1.2 °C
*) +1.0 °C when using xPAD2-TH8-UNIVERSAL. **) calculated specification; not verified.							
Max. gain drift	25 ppm/°C						
Max. offset drift	25 ppm of range /°C						
Isolation[1] voltage	350 V_{DC} (channel to channel and channel to Bus, Power and Chassis)						
Rated input voltage to earth according to IEC/EN 61010-2-30	70 V_{DC} (46.7 V_{PK})						
Overvoltage protection	15 V_{DC}						
CMRR (50/60 Hz)	130 dB						
EPAD2-TH8							
Interface	RS-485						
Communication speed	9600 bps (2400 to 115200 programmable)						
Standard settings	9600 bps, 8 data bits, 1 stop bit, no parity, module address 00 hex						
Readout speed	depending on baudrate and number of channels (typ. 80 ch/sec. @ 9600bps)						
CPAD2-TH8							
Interface	highspeed CAN						
Specification	CAN 2.0B						
Communication speed	50 kBaud to 1000 kBaud						
Data Format	16 Bit Intel or Motorola						
Identifier Types	standard; extended						
Standard settings	500 kBaud; Intel Format						
Readout speed	12.5Hz, 10Hz, 5Hz, 2Hz, 1Hz, 0.5Hz, 0.2Hz or 0.1Hz programmable						
Bus/Power Connector	LEMO EGG.1B.304						
Power Supply Voltage	7 to 40V						
Power consumption	max 0.5 W						
Dimensions Base module (W x D x H) Mounting holes distance:	 129 x 72 x 34.2 mm (5.1 x 2.8 x 1.3 in.) incl. mounting holes 119 x 7 mm (4.7 x 0.3 in.), 4.2 mm (0.165 in.) diameter						
Weight	typically 360 g						
[1] For safety reasons maximum allowed voltage: 70 V_{DC} (46.7 V_{PK})							

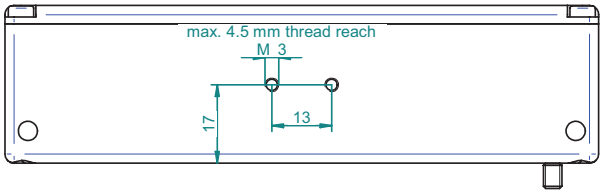
EPAD2/CPAD2-TH8-x Module

Dimensions*





rear view

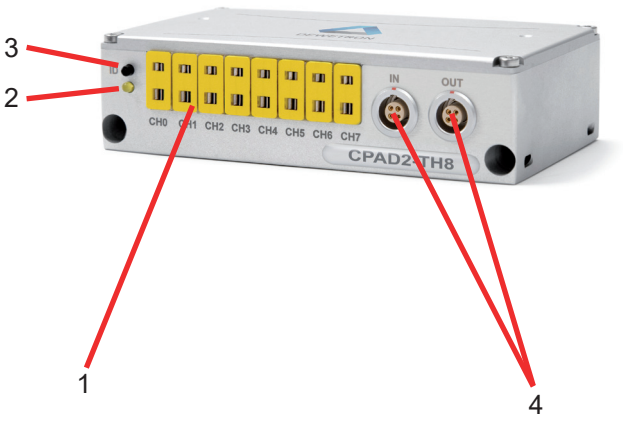


* Dimensions in mm
(1 inch = 25.4 mm)

Push button

Use the ID button to define the module address via software. Detailed information how to use the button is available in chapter: "Installing EPAD2/CPAD2 modules in DEWESoft, Module reset".

Connection



1 8x thermocouple connector
2 State LED
3 ID button
4 2x xPAD2 interface connector

Thermocouple connectors

The xPAD2-TH8-x module supports up to 8 thermocouples. Connect only thermocouple types which match with the connector types. If the module is equipped with type K connectors, you are allowed to connect type K thermocouples only. The white universal connector supports all types of thermocouple connectors.

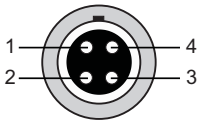
Thermocouple types						
Type	IEC color code	ANSI color code	Temperature range °C [°F]	Alloy combination +	-	Comments
K	green	yellow	-270 to 1372 [-454 to 2501]	Ni	CrNi	Wide temperature range, most popular calibration
J	black	black	-210 to 1200 [-346 to 2193]	Fe	CuNi	Used in vacuum, reduced and inert atmosphere
T	brown	blue	-270 to 400 [-454 to 752]	Cu	CuNi	Low temperature & cryogenic applications
R	orange	green	-50 to 1760 [-58 to 3214]	Pt13Rh	Pt	High temperature
S	orange	green	-50 to 1760 [-58 to 3214]	Pt10Rh	Pt	High temperature
U	orange	green	-200 to 600 [-328 to 1112]	Cu	CuNi	Also known as RX & SX extension wire.
N	rose	orange	-270 to 1300 [-450 to 2372]	NiCrSi	NiSi	Alternative to type K. More stable at high temp.
E	purple	purple	-270 to 1000 [-454 to 1832]	NiCr	CuNi	Highest EMF change per degree
B	grey	grey	0 to 1820 [32 to 3308]	Pt30Rh	Pt6Rh	High temperature. Common use in glass industry
C*	no standard IEC color	red*	0 to 2300 [32 to 4172]	W5Re	W26Re	Highest temperature range

*) no official symbol or standard designation

xPAD2 interface connector

This connector can be used to connect the module to the EPAD2-BASE module or other xPAD2 series modules.

4 pin LEMO series connector



Schematic

Pin assignment EPAD2:

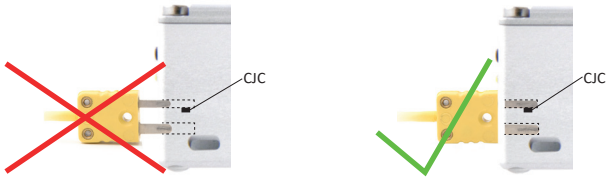
1 RS-485 (A)
2 RS-485 (B)
3 Power supply (+)
4 GND

Pin assignment CPAD2:

1 CAN high
2 CAN low
3 Power supply (+)
4 GND

CJC

The xPAD2-TH8-x comes with an integrated cold junction compensation sensor with an absolute accuracy of ±0.2 °C. In order to archieve this accuracy the sensor has to be connected for at least 2 minutes to the thermocouple connector (CJC equilibrium time).



NOTE: With the xPAD2-TH8-UNIVERSAL it is possible to get almost the same accuracy under laboratory conditions compared to the xPAD2 with dedicated TC-connectors. If the environmental temperature is rapidly changing, the accuracy may decrease three times more compared to the standard thermocouple types! So the XPAD2-TH8-UNIVERSAL is not recommended for automotive measurements!

Programming information

The xPAD2-TH8-x programming information is available in the *DEWE-MODULES Programmers Reference Manual.*

8 channel voltage amplifier

- Intelligent amplifier with integrated 24-bit A/D conversion
- 8 channel isolated data acquisition
- RS-485 or CAN interface

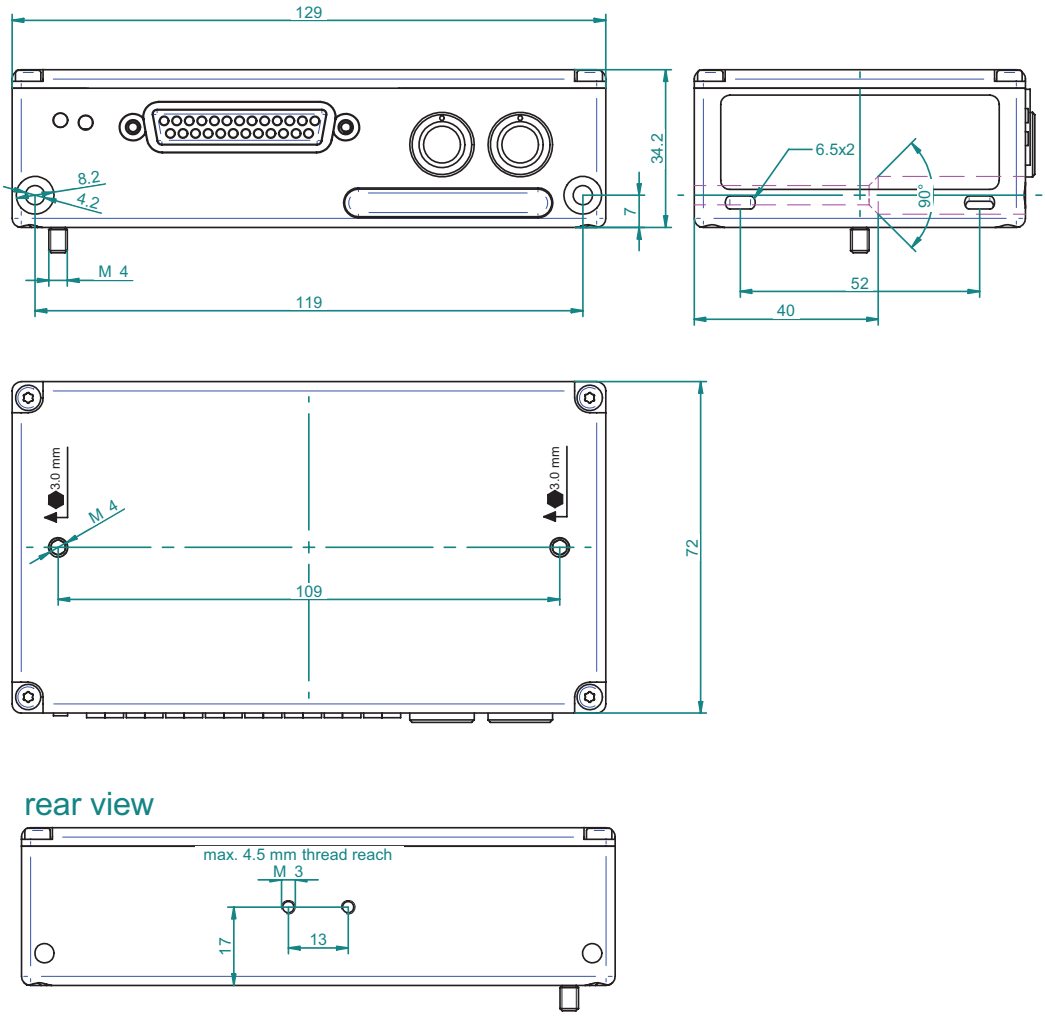
Module specifications

	xPAD2-V8
Input channels	8 isolated voltage input channels
Input ranges	Physical input range: ±50 V Software selectable: ±100 mV, ±500 mV, ±1 V, ±2.5 V, ±5 V, ±10 V
Resolution	10 µV for all ranges
DC accuracy	±0.02 % of reading ±900 µV
Max. gain drift	20 ppm /°C
Max. offset drift	20 ppm of range /°C
Linearity	0.001 %
Input impedance	1 MΩ
Input connector	SUB-D 25
Sampling rate	max. 12.5 S/sec per channel
Bandwidth (-3 dB)	6 Hz
ADC Type	24 bit Delta Sigma Converter
Isolation[1] voltage	350 V_{DC} (channel to channel and channel to Bus, Power and Chassis)
Rated input voltage to earth according to IEC/EN 61010-2-30	70 V_{DC} (46.7 V_{PK})
Overvoltage protection	350 V_{DC}
Common mode voltage	350 V_{DC} / 250 V_{AC} @ 50 Hz
CMRR (50/60 Hz)	110 dB (140 dB @ DC)
EPAD2-V8	
Interface	RS-485
Communication speed	9600 bps (2400 to 115200 programmable)
Standard settings	9600 bps, 8 data bits, 1 stop bit, no parity, module address 00 hex
Readout speed	depending on baudrate and number of channels (typ. 80 ch/sec. @ 9600 bps)
CPAD2-V8	
Interface	highspeed CAN
Specification	CAN 2.0B
Communication speed	50 kBaud to 1000 kBaud
Data format	16 Bit Intel or Motorola
Identifier types	standard; extended
Standard settings	500 kBaud; Intel Format
Readout speed	12.5 Hz, 10 Hz, 5 Hz, 2 Hz, 1 Hz, 0.5 Hz, 0.2 Hz or 0.1 Hz programmable
Bus/Power connector	LEMO EGG.1B.304
Power supply voltage	7 to 40V
Power consumption	max. 0.5 W
Dimensions Base module (W x D x H) Mounting holes distance	 129 x 72 x 34.2 mm (5.1 x 2.8 x 1.3 in.) incl. mounting holes 119 x 7 mm (4.7 x 0.3 in.), 4.2 mm (0.165 in.) diameter
Weight	typically 310 g

[1] For safety reasons maximum allowed voltage: 70 V_{DC} (46.7 V_{PK})

EPAD2/CPAD2-V8 Module

Dimensions*



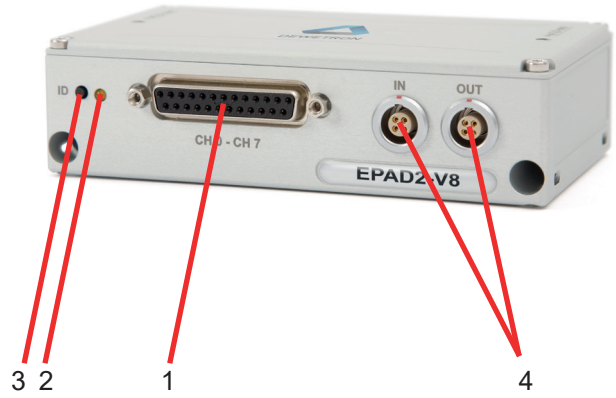
rear view

* Dimensions in mm
(1 inch = 25.4 mm)

Push button

Use the ID button to define the module address via software. Detailed information how to use the button is available in chapter: "Installing EPAD2/CPAD2 modules in DEWESoft, Module reset".

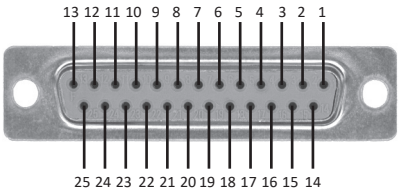
Connection



1 Voltage input connector
2 State LED
3 ID button
4 2x xPAD2 interface connector

Voltage input connector

The xPAD2-V8 module offers 8 differential voltage input channels.



25-pin female DSUB connector

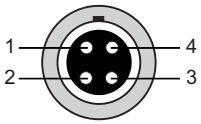
Pin assignment:

1	Channel 0	(+)	13	Channel 6	(+)
2	Channel 0	(-)	14	Channel 6	(-)
3	Channel 1	(+)	15	Channel 7	(+)
4	Channel 1	(-)	16	Channel 7	(-)
5	Channel 2	(+)	17	Reserved	
6	Channel 2	(-)	18	Reserved	
7	Channel 3	(+)	19	Reserved	
8	Channel 3	(-)	20	Power supply (+)	
9	Channel 4	(+)	21	Reserved	
10	Channel 4	(-)	22	GND	
11	Channel 5	(+)	23	Reserved	
12	Channel 5	(-)	24	Reserved	
			25	Reserved	

xPAD2 interface connector

This connector can be used to connect the module to the EPAD-BASE2 module or other xPAD2 series

4 pin LEMO series connector



Schematic

Pin assignment EPAD2:

1	RS-485 (A)
2	RS-485 (B)
3	Power supply (+)
4	GND

Pin assignment CPAD2:

1	CAN high
2	CAN low
3	Power supply (+)
4	GND

Programming information

The xPAD-V8 programming information is available in the *DEWE-MODULES Programmers Reference Manual*.

8 channel voltage amplifier

- Intelligent amplifier with integrated 24-bit A/D conversion
- 8 channel isolated data acquisition
- RS-485 or CAN interface

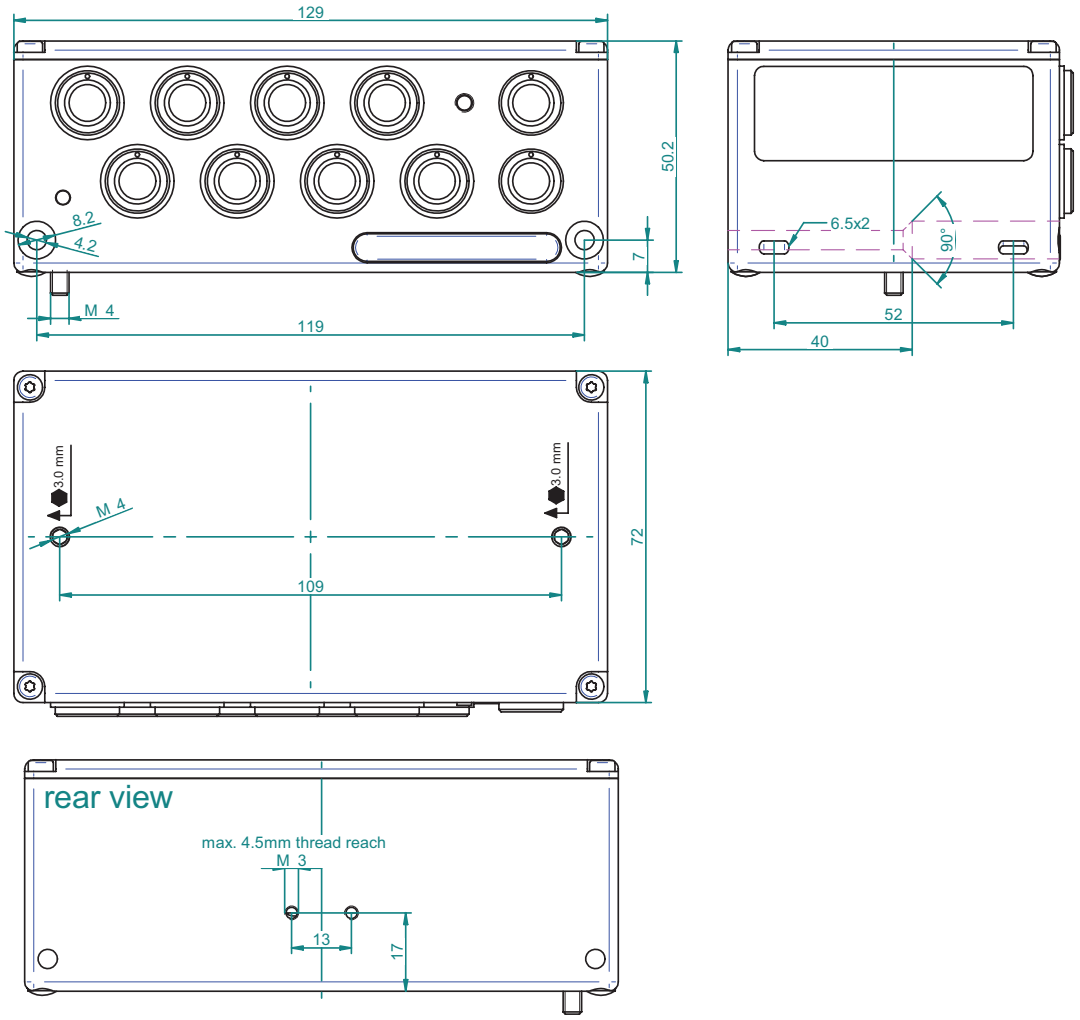
Module specifications

	xPAD2-V8-L1B
Input channels	8 isolated voltage input channels
Input ranges	Physical input range: ±50 V Software selectable: ±100 mV, ±500 mV, ±1 V, ±2.5 V, ±5 V, ±10 V
Resolution	10 µV for all ranges
DC accuracy	±0.02 % of reading ±900 µV
Max. gain drift	20 ppm /°C
Max. offset drift	20 ppm of range /°C
Linearity	0.001 %
Input impedance	1 MΩ
Input connector	LEMO ECA.1B.304
Sampling rate	max. 12.5 S/sec per channel
Bandwidth (-3 dB)	6 Hz
ADC Type	24 bit Delta Sigma Converter
Isolation[1] voltage	350 V_{DC} (channel to channel and channel to Bus, Power and Chassis)
Rated input voltage to earth according to IEC/EN 61010-2-30	70 V_{DC} (46.7 V_{PK})
Overvoltage protection	350 V_{DC}
Common mode voltage	350 V_{DC} / 250 V_{AC} @ 50 Hz
CMRR (50/60 Hz)	110 dB (140 dB @ DC)
EPAD2-V8-L1B	
Interface	RS-485
Communication speed	9600 bps (2400 to 115200 programmable)
Standard settings	9600 bps, 8 data bits, 1 stop bit, no parity, module address 00 hex
Readout speed	depending on baudrate and number of channels (typ. 80 ch/sec. @ 9600 bps)
CPAD2-V8-L1B	
Interface	highspeed CAN
Specification	CAN 2.0B
Communication speed	50 kBaud to 1000 kBaud
Data format	16 Bit Intel or Motorola
Identifier types	standard; extended
Standard settings	500 kBaud; Intel Format
Readout speed	12.5 Hz, 10 Hz, 5 Hz, 2 Hz, 1 Hz, 0.5 Hz, 0.2 Hz or 0.1 Hz programmable
Bus/Power connector	LEMO EGG.1B.304
Power supply voltage	7 to 40 V
Power consumption	max. 0.5 W
Dimensions Base module (W x D x H) Mounting holes distance	 129 x 72 x 50.2 mm (5.1 x 2.8 x 2 in.) incl. mounting holes 119 x 7 mm (4.7 x 0.3 in.), 4.2 mm (0.165 in.) diameter
Weight	typically 310 g

[1] For safety reasons maximum allowed voltage: 70 V_{DC} (46.7 V_{PK})

EPAD2/CPAD2-V8-L1B Module

Dimensions*

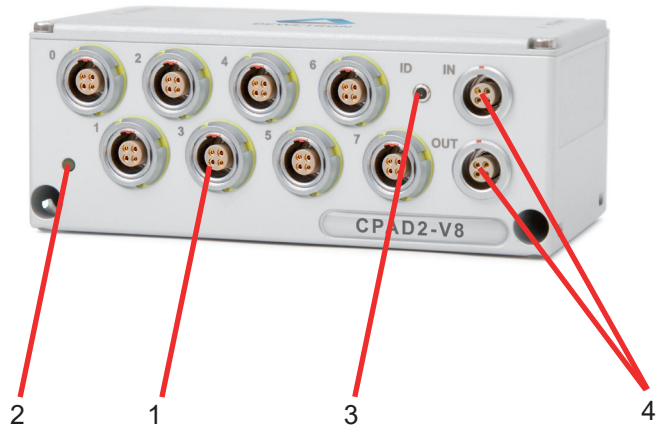


* Dimensions in mm
(1 inch = 25.4 mm)

Push button

Use the ID button to define the module address via software. Detailed information how to use the button is available in chapter: "Installing EPAD2/CPAD2 modules in DEWESoft, Module reset".

Connection

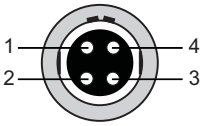


1 Voltage input connectors
2 State LED
3 ID button
4 2x xPAD2 interface connector

Voltage input connector

The xPAD2-V8-L1B module offers 8 differential voltage input channels.

ECA.1B.304



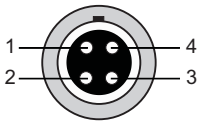
Schematic

Pin assignment:
1 Power supply (+)
2 IN (+)
3 IN (-)
4 Power supply (-)
Shield is on housing

xPAD2 interface connector

This connector can be used to connect the module to the EPAD-BASE2 module or other xPAD2 series

4 pin LEMO series connector



Schematic

Pin assignment EPAD2:
1 RS-485 (A)
2 RS-485 (B)
3 Power supply (+)
4 GND

Pin assignment CPAD2:
1 CAN high
2 CAN low
3 Power supply (+)
4 GND

Programming information

The xPAD2-V8-L1B programming information is available in the *DEWE-MODULES Programmers Reference Manual*.

Notes

8 channel Resistance Temperature Detector amplifier

- Amplifier with integrated 24-bit A/D conversion
- 8 isolated Resistance Temperature Detector channels
- RS-485 or CAN interface

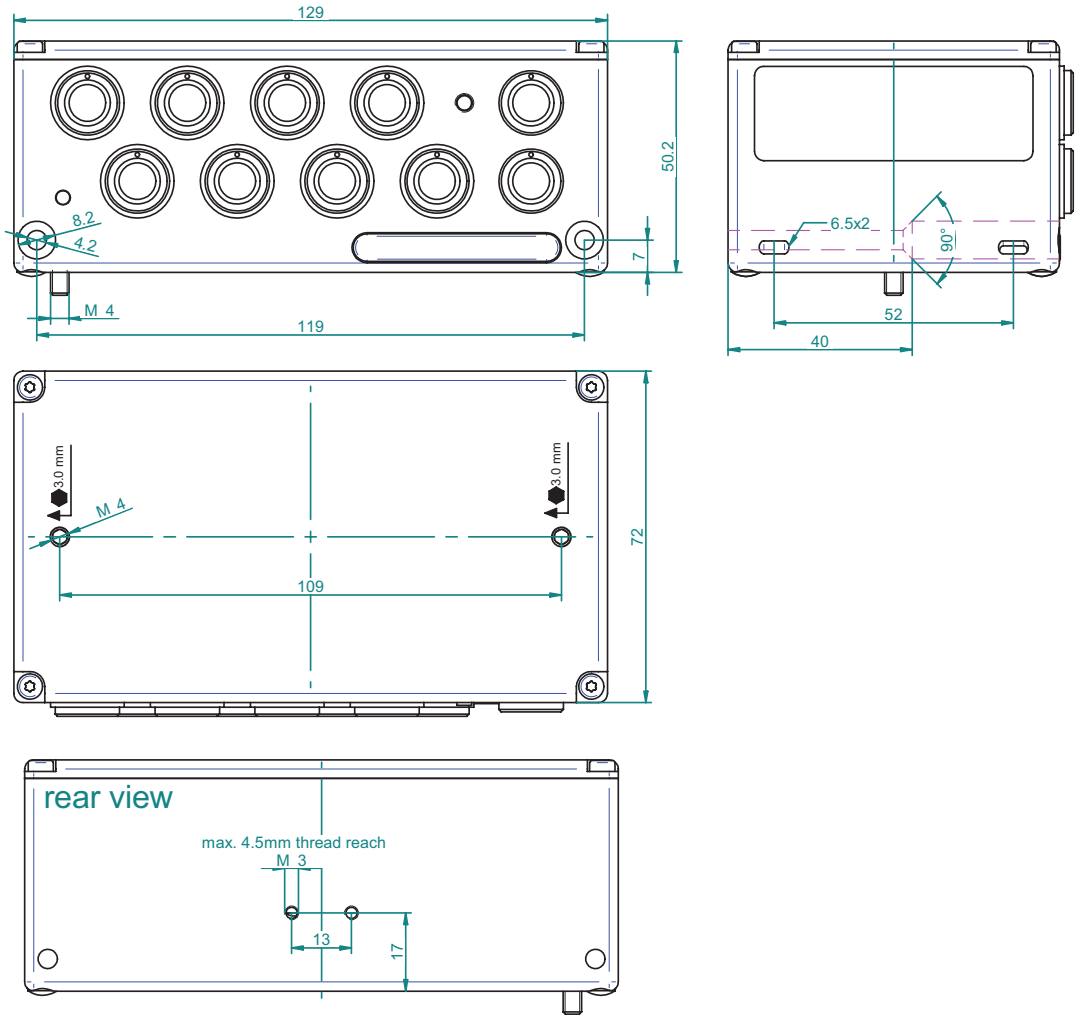
Module specifications

	xPAD2-RTD8-L1B		
Input channels	8 isolated Resistance Temperature Detector channels		
Input ranges	Resistor: 0 to 999.99Ohm RTD: PT100(385); PT200(385); PT500(385); PT1000(385); PT2000(385); PT100(3961)		
Accuracy	Pt100 a = 0.00385 ±0.25 °C @ -200 to 100 °C ±0.4 °C @ 100 to 400 °C ±0.8 °C @ 400 to 800 °C	Pt100 a = 0.003916 ±0.25 °C @ -200 to 100 °C ±0.4 °C @ 100 to 400 °C ±0.8 °C @ 400 to 800 °C	Pt200 a = 0.00385 ±0.25 °C @ -200 to 100 °C ±0.4 °C @ 100 to 400 °C ±0.5 °C @ 400 to 630 °C
	Pt500 a = 0.00385 ±0.25 °C @ -200 to 100 °C ±0.4 °C @ 100 to 250 °C	Pt1000 a = 0.00385 ±0.25 °C @ -200 to 100 °C ±0.4 °C @ 100 to 400 °C ±0.8 °C @ 400 to 600 °C	Pt2000 a = 0.00385 ±0.25 °C @ -200 to 100 °C ±0.4 °C @ 100 to 200 °C
Resistance accuracy	0.03 % of reading ±0.1 Ω		
Sampling rate	max. 12.5 S/sec per channel		
Bandwidth (-3 dB)	6 Hz		
ADC type	24 bit Delta Sigma Converter		
Input connector	ERA.1S.304		
Connection type	2-wire, 4wire		
Noise	typically 0.02 °C		
Resolution	0.01 °C for all types		
Constant current	400 µA		
Input impedance	typically >100 MΩ		
Bias current	typically 10 nA		
Sensor fault detection	module indicates fullscale if input is open		
Max. gain drift	25 ppm /°C		
Max. offset drift	25 ppm of range /°C		
Isolation[1] voltage	350 V_{DC} (channel to channel and channel to Bus, Power and Chassis)		
Rated input voltage to earth according to IEC/EN 61010-2-30	70 V_{DC} (46.7 V_{PK})		
Overvoltage protection	15 V_{DC}		
CMRR (50/60 Hz)	130 dB		
EPAD2-RTD8			
Interface	RS-485		
Communication speed	9600 bps (2400 to 115200 programmable)		
Standard settings	9600 bps, 8 data bits, 1 stop bit, no parity, module address 00 hex		
Readout speed	depending on baudrate and number of channels (typ. 80 ch/sec. @ 9600 bps)		
CPAD2-RTD8			
Interface	highspeed CAN		
Specification	CAN 2.0B		
Communication speed	50 kBaud to 1000 kBaud		
Data format	16 bit Intel or Motorola		
Identifier types	standard; extended		
Standard settings	500 kBaud; Intel Format		
Readout speed	12.5 Hz, 10 Hz, 5 Hz, 2 Hz, 1 Hz, 0.5 Hz, 0.2 Hz or 0.1 Hz programmable		
Bus/Power Connector	LEMO EGG.1B.304		
Power Supply Voltage	7 to 40 V		
Power consumption	typically 0.5 W		
Dimensions Base module (W x D x H) Mounting holes distance	 129 x 72 x 50.2 mm (5.1 x 2.8 x 2 in.) incl. mounting holes 119 x 7 mm (4.7 x 0.3 in.), 4.2 mm (0.165 in.) diameter		
Weight	typical 420 g		

[1] For safety reasons maximum allowed voltage: 70 V_{DC} (46.7 V_{PK})

EPAD2/CPAD2-RTD8-L1B Module

Dimensions*

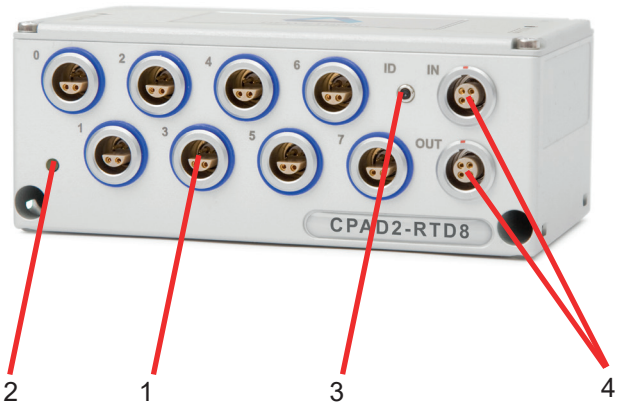


* Dimensions in mm
(1 inch = 25.4 mm)

Push button

Use the ID button to define the module address via software. Detailed information how to use the button is available in chapter: "Installing EPAD2/CPAD2 modules in DEWESoft, Module reset".

Connection



1 RTD input connectors
2 State LED
3 ID button
4 2x xPAD2 interface connector

RTD input connector

The xPAD2-RTD8-L1B module offers 8 isolated Resistor Temperature Detector input channels.

ERA.1S.304.CLL

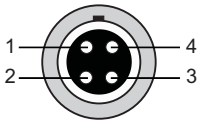
Schematic

Pin assignment:
1 Excitation (+)
2 Sense (+)
3 Sense (-)
4 Excitation (-)
Shield is on housing

xPAD2 interface connector

This connector can be used to connect the module to the EPAD-BASE2 module or other xPAD2 series

4 pin LEMO series connector



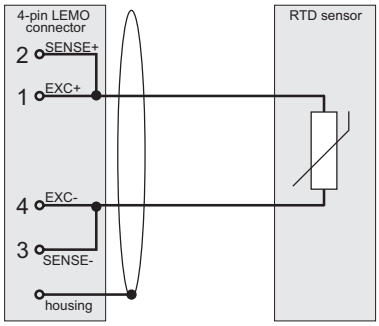
Schematic

Pin assignment EPAD2:
1 RS-485 (A)
2 RS-485 (B)
3 Power supply (+)
4 GND

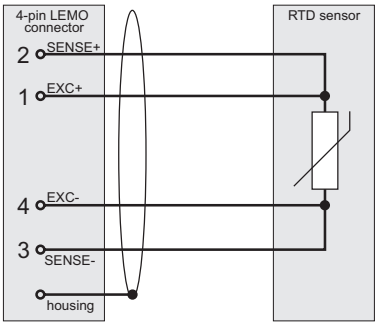
Pin assignment CPAD2:
1 CAN high
2 CAN low
3 Power supply (+)
4 GND

Sensor connection

2-wire connection



4-wire connection



Programming information

The xPAD-RTD8-L1B programming information is available in the *DEWE-MODULES Programmers Reference Manual*.

8 channel thermocouple and RTD amplifier

- Intelligent amplifier with integrated 24-bit A/D conversion
- 8 galvanically isolated input channels
- External CJC
- Automatic sensor block detection
- Signal connection via 25-pin SUB-D connector
- Supported breakout boxes:
  PAD-CB8-x-P2: standard thermocouple breakout box
  PAD-CB8-x-M: small size thermcouple breakout box
  PAD-CB8-RTD: RTD breakout box

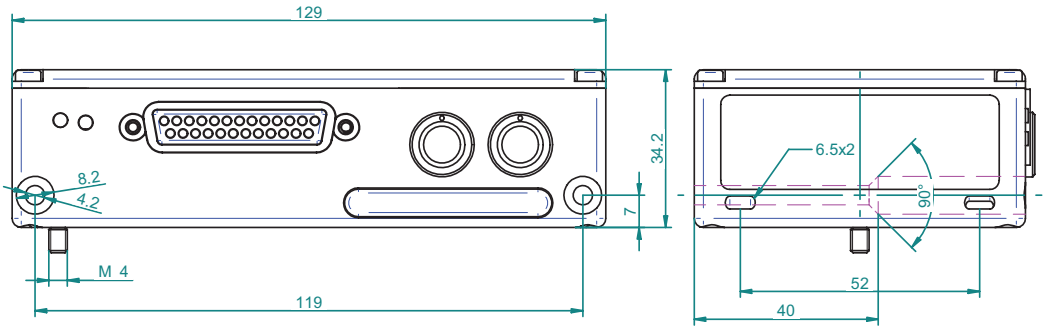
Module specifications

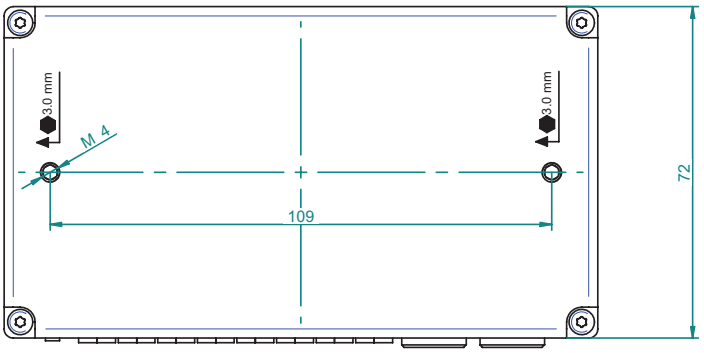
	xPAD2-TH8-P	
Input channels	8 isolated voltage inputs	
Input range	±1.5 V	
Sampling rate	max. 12.5 S/sec per channel	
Accuracy	0.05 % of reading ±15 µV	
Bandwidth (-3 dB)	6 Hz	
ADC type	24 Bit Delta Sigma Converter	
Input connector	SUB-D 25	
Resolution	1 µV	
Input impedance	typically 1.4 MΩ	
Bias current	typically 10 nA	
Max. gain drift	25 ppm /°C	
Max. offset drift	25 ppm of range /°C	
Isolation[1)] voltage	350 V_{DC} (channel to channel and channel to bus, power and chassis)	
Rated input voltage to earth according to IEC/EN 61010-2-30	70 V_{DC} (46.7 V_{PK})	
Overvoltage protection	15 V_{DC}	
CMRR (50/60 Hz)	130 dB	
Supported breakout boxes	PAD-CB8-x-P2 PAD-CB8-x-M PAD-CB8-RTD	standard thermocouple breakout box small size thermocouple breakout box RTD breakout box
EPAD2-TH8-P		
Interface	RS-485	
Communication speed	9600 bps (2400 to 115200 programmable)	
Standard settings	9600 bps, 8 data bits, 1 stop bit, no parity, module address 00 hex	
Readout speed	depending on baudrate and number of channels (typ. 80 ch/sec. @ 9600 bps)	
CPAD2-TH8-P		
Interface	highspeed CAN	
Specification	CAN 2.0B	
Communication speed	50 kBaud to 1000 kBaud	
Data Format	16 Bit Intel or Motorola	
Identifier Types	standard; extended	
Standard settings	500 kBaud; Intel Format	
Readout speed	12.5 Hz, 10 Hz, 5 Hz, 2 Hz, 1 Hz, 0.5 Hz, 0.2 Hz or 0.1 Hz programmable	
Bus/Power connector	LEMO EGG.1B.304	
Power supply voltage	7 to 40 V	
Power consumption	max. 0.5 W	
Dimensions Base module (W x D x H) Mounting holes distance	 129 x 72 x 34.2 mm (5.1 x 2.8 x 1.3 in.) incl. mounting holes 119 x 7 mm (4.7 x 0.3 in.), 4.2 mm (0.165 in.) diameter	
Weight	typical 310 g	

[1)] For safety reasons maximum allowed voltage: 70 V_{DC} (46.7 V_{PK})

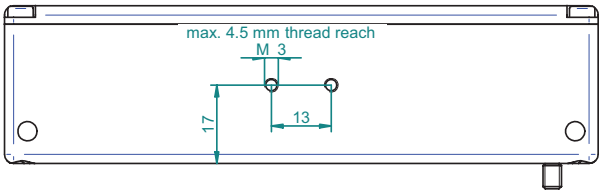
EPAD2/CPAD2-TH8-P Module

Dimensions*





rear view



* Dimensions in mm
(1 inch = 25.4 mm)

General

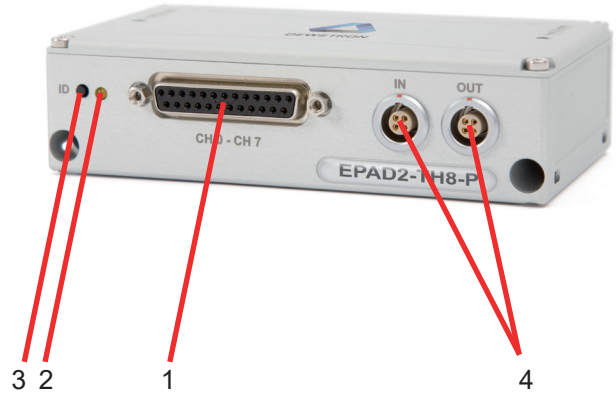
To use the full power of the xPAD2-TH8-P module, a supported breakout box for RTD and thermocouple sensors should be ordered together with the module.

Supported breakout boxes:	PAD-CB8-x-P2	standard thermocouple breakout box
	PAD-CB8-x-M	small size thermocouple box
	PAD-CB8-RTD	RTD breakout box

Push button

Use the ID button to define the module address via software. Detailed information how to use the button is available in chapter: "Installing EPAD2/CPAD2 modules in DEWESoft, Module reset".

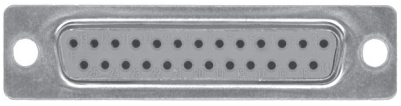
Connection



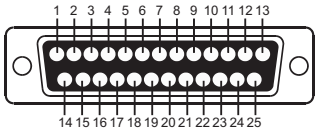
1 Voltage input connector
2 State LED
3 ID button
4 2x xPAD2 interface connector

Voltage input connector

The xPAD2-TH8-P module offers 8 differential voltage input channels.



25-pin female DSUB connector



Schematic

Pin assignment:

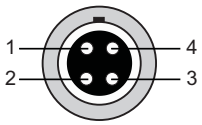
1	Channel 0	(+)	13	Channel 6	(+)
2	Channel 0	(-)	14	Channel 6	(-)
3	Channel 1	(+)	15	Channel 7	(+)
4	Channel 1	(-)	16	Channel 7	(-)
5	Channel 2	(+)	17	Reserved	
6	Channel 2	(-)	18	Reserved	
7	Channel 3	(+)	19	Reserved	
8	Channel 3	(-)	20	Power supply (+)	
9	Channel 4	(+)	21	Reserved	
10	Channel 4	(-)	22	GND	
11	Channel 5	(+)	23	Reserved	
12	Channel 5	(-)	24	Reserved	
			25	Reserved	

EPAD2/CPAD2-TH8-P Module

xPAD2 interface connector

This connector can be used to connect the module to the EPAD-BASE2 module or other xPAD2 series

4 pin LEMO series connector



Schematic

Pin assignment EPAD2:

1	RS-485 (A)
2	RS-485 (B)
3	Power supply (+)
4	GND

Pin assignment CPAD2:

1	CAN high
2	CAN low
3	Power supply (+)
4	GND

Programming information

The xPAD2-TH8-P-x programming information is available in the *DEWE-MODULES Programmers Reference Manual*.

8 channel high precision amplifier for 4 to 20 mA sensors

- Intelligent amplifier with integrated 24-bit A/D conversion
- 8 galvanically isolated input channels
- RS-485 or CAN interface

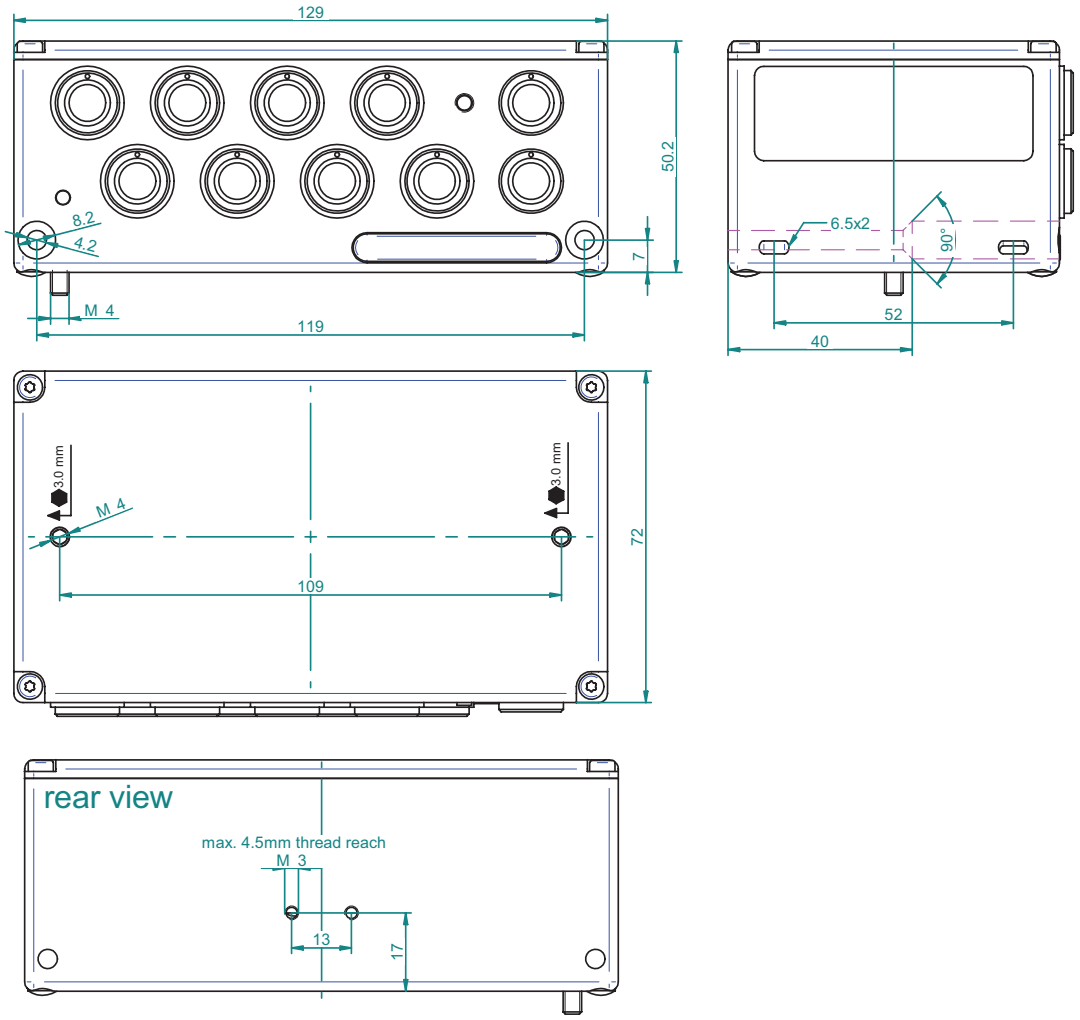
Module specifications

	xPAD2-LA8-L1B
Input channels	8 isolated current inputs
Input range	0 to 20 mA, ±20 mA; ±30 mA
Accuracy	0.03 % of reading ±0.3 µA
Sampling rate	max. 12.5 S/sec per channel
Bandwidth (-3 dB)	6 Hz
ADC type	24 bit Delta Sigma Converter
Input connector	LEMO EGB.1B.304
Resolution	0.3 µA
Input impedance	50 Ω 0.1 %
Max. gain drift	23 ppm /°C
Max. offset drift	25 ppm of range /°C
Isolation[1)] voltage	350 V_{DC} (channel to channel and channel to bus, power and chassis)
Rated input voltage to earth according to IEC/EN 61010-2-30	70 V_{DC} (46.7 V_{PK})
Overcurrent protection	70 mA continuous
CMRR (50/60 Hz)	130 dB
EPAD2-LA8-L1B	
Interface	RS-485
Communication speed	9600 bps (2400 to 115200 programmable)
Standard settings	9600 bps, 8 data bits, 1 stop bit, no parity, module address 00 hex
Readout speed	depending on baudrate and number of channels (typ. 80 ch/sec. @ 9600 bps)
CPAD2-LA8-L1B	
Interface	highspeed CAN
Specification	CAN 2.0B
Communication speed	50 kBaud to 1000 kBaud
Data format	16 bit Intel or Motorola
Identifier types	standard; extended
Standard settings	500 kBaud; Intel Format
Readout speed	12.5 Hz, 10 Hz, 5 Hz, 2 Hz, 1 Hz, 0.5 Hz, 0.2 Hz or 0.1 Hz programmable
Bus/Power connector	LEMO EGG.1B.304
Power supply voltage	7 to 40 V
Power consumption	max. 0.5 W
Dimensions Base module (W x D x H) Mounting holes distance	 129 x 72 x 50.2 mm (5.1 x 2.8 x 2 in.) incl. mounting holes 119 x 7 mm (4.7 x 0.3 in.), 4.2 mm (0.165 in.) diameter
Weight	typical 360 g

[1)] For safety reasons maximum allowed voltage: 70 V_{DC} (46.7 V_{PK})

EPAD2/CPAD2-LA8-L1B Module

Dimensions*

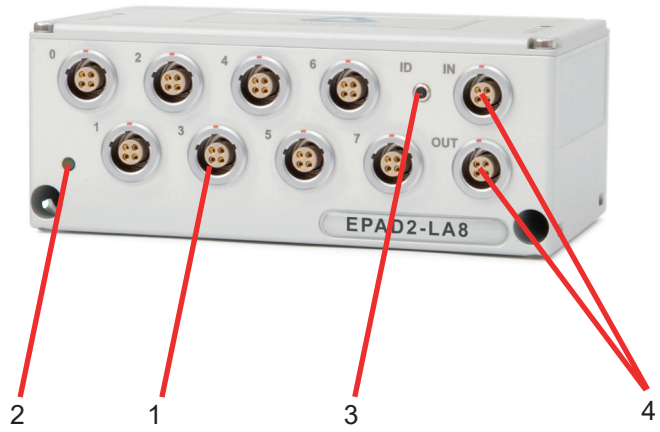


* Dimensions in mm
(1 inch = 25.4 mm)

Push button

Use the ID button to define the module address via software. Detailed information how to use the button is available in chapter: "Installing EPAD2/CPAD2 modules in DEWESoft, Module reset".

Connection

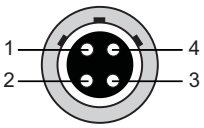


1 Current input connectors
2 State LED
3 ID button
4 2x xPAD2 interface connector

LA input connector

The xPAD2-LA module offers 8 isolated current input channels.

EGB.1B.304



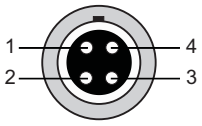
Schematic

Pin assignment:
1 Power supply (+)
2 Current (+)
3 Current (-)
4 Power supply (-)
Shield is on housing

xPAD2 interface connector

This connector can be used to connect the module to the EPAD-BASE2 module or other xPAD2 series

4 pin LEMO series connector



Schematic

Pin assignment EPAD2:
1 RS-485 (A)
2 RS-485 (B)
3 Power supply (+)
4 GND

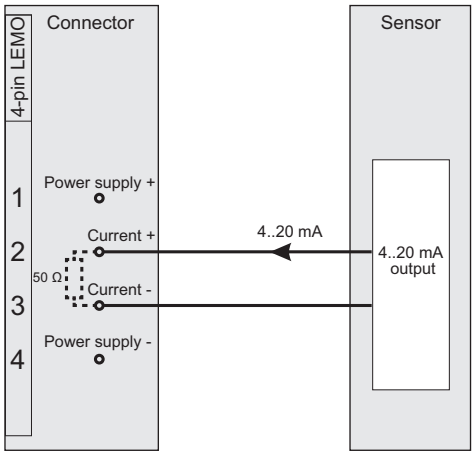
Pin assignment CPAD2:
1 CAN high
2 CAN low
3 Power supply (+)
4 GND

Programming information

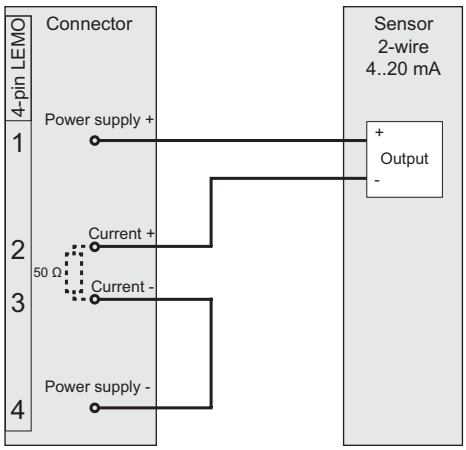
The xPAD2-RTD8 programming information is available in the *DEWE-MODULES Programmers Reference Manual*.

Signal connection

Current measurement (4 to 20 mA loop)



Loop powered sensor



4 channel analog output module

- 4 channel analog output
- RS-485 interface

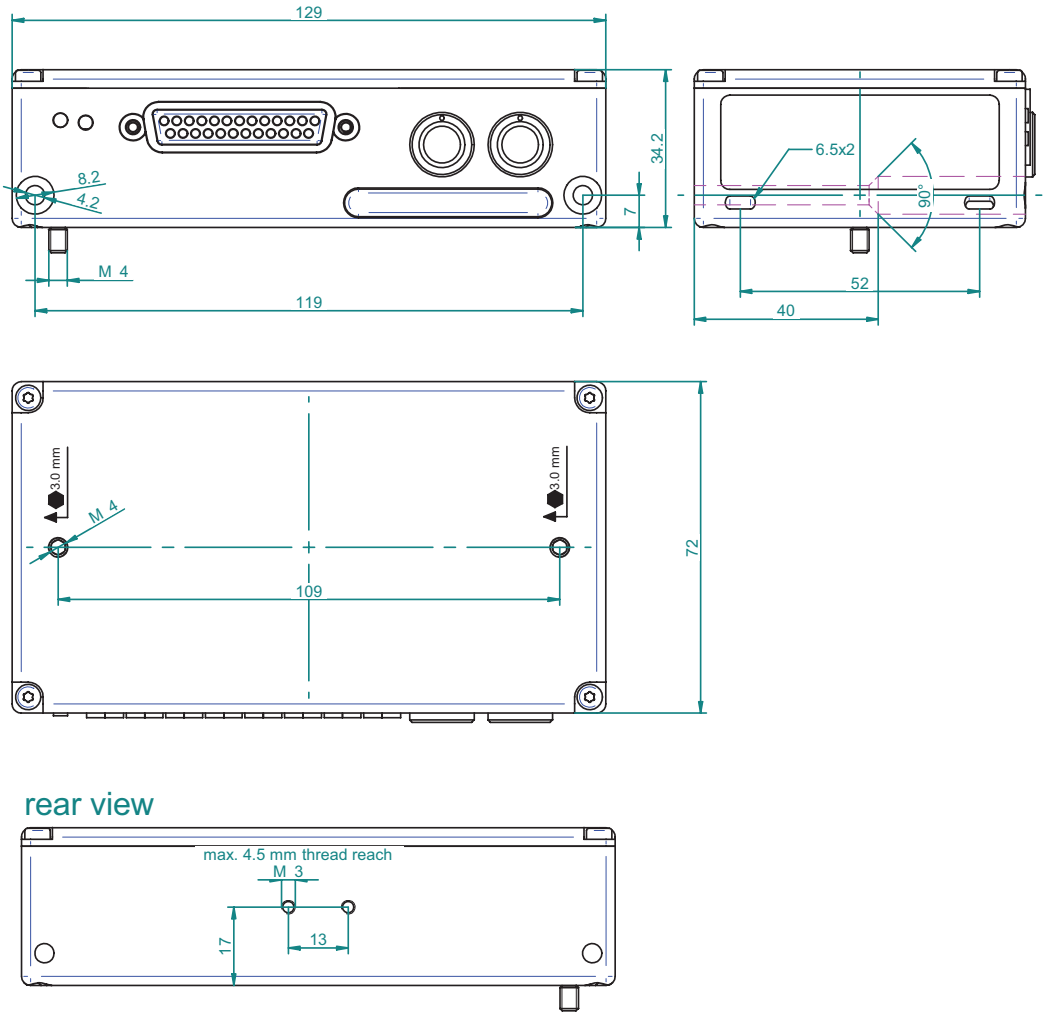
Module specifications

	EPAD2-AO4
Output channels	4 output channels
Output modes	Voltage output or current output; current sinking only
Output ranges	±10 V; ±5 V; 0 to 5 V; 0 to 10 V; 0 to 20 mA; 4 to 20 mA
Resolution	±0.02 % of full scale
DC accuracy	±0.1 % of full scale
Voltage output	max. load: 5 mA
Current output	max. external compliance voltage: 50 V
Connector	DSUB-25 socket
Isolation voltage	350 V_{DC} (channel to Bus, Power and Chassis)
Channel to channel isolation	not available! all channels have a common ground!
Interface	RS-485
Communication speed	9600 bps (2400 to 115200 programmable)
Standard settings	9600 bps, 8 data bits, 1 stop bit, no parity, module address 00 hex
DA output response time	10 ms
Bus/Power connector	LEMO EGG.1B.304 sockets
Power supply voltage	10 to 30V CAUTION: not standard supply voltage range!
Power consumption	2 W
Dimensions Base module (W x D x H) Mounting holes distance	 129 x 72 x 34.2 mm (5.1 x 2.8 x 1.3 in.) incl. mounting holes 119 mm (4.7 in.), 4.2 mm (0.165 in.) diameter
Weight	typ. 310 g

NOTE: There is no CPAD2 version available with this module!
The EPAD2-AO4 is not supported in OXYGEN!

EPAD2-AO4 Module

Dimensions*



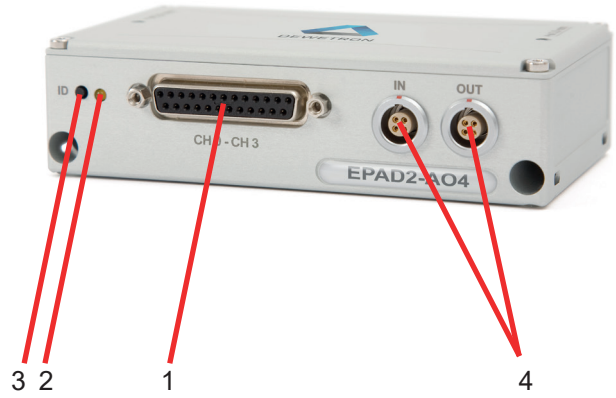
rear view

* Dimensions in mm
(1 inch = 25.4 mm)

Push button

The ID button is used to RESET the module. To reset the module just unplug all cables from the module. Press and hold the ID button. Plug-in the RS-485 to power up the module. Now the module is set to standard settings.

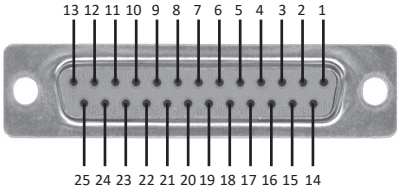
Connection



1 Analog output connector
2 State LED
3 ID button
4 2x EPAD2 interface connector

Analog output connector

The EPAD2-AO4 module offers 4 differential voltage/current output channels.



25-pin female DSUB connector

Pin assignment:

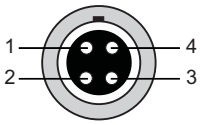
Voltage output	1	Channel 0	(+)	17	Reserved
	2	GNDi		18	Reserved
	3	Channel 1	(+)	19	Reserved
	4	GNDi		20	Power supply (+)
	5	Channel 2	(+)	21	Reserved
	6	GNDi		22	GND
	7	Channel 3	(+)	23	Reserved
	8	GNDi		24	Reserved
Current output	9	Channel 0	(+)	25	Reserved
	10	GNDi			
	11	Channel 1	(+)		
	12	GNDi			
	13	Channel 2	(+)		
	14	GNDi			
	15	Channel 3	(+)		
	16	GNDi			

Module power supply

xPAD2 interface connector

This connector can be used to connect the module to the EPAD-BASE2 module or other xPAD2 series

4 pin LEMO series connector

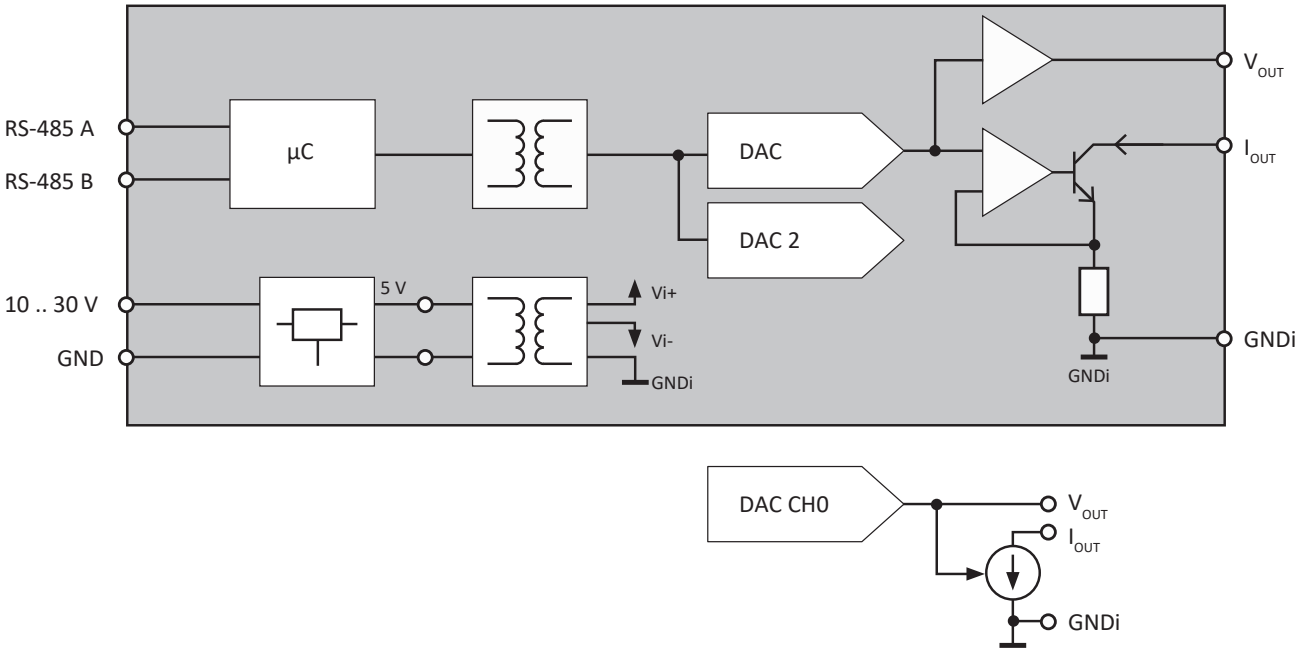


Schematic

Pin assignment EPAD2:

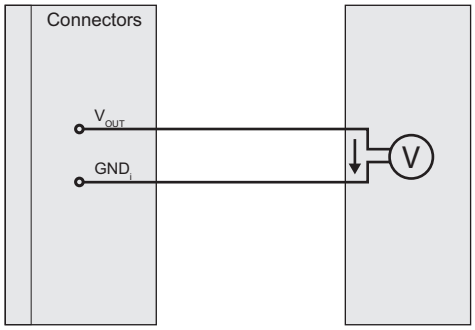
1 RS-485 (A)
2 RS-485 (B)
3 Power supply (+)
4 GND

Blockdiagram

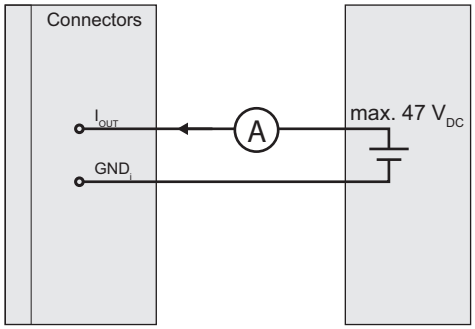


Signal connection

Voltage output



Current output



Using EPAD2S with OXYGEN on a DEWE/DEWE2/DEWE3 system

For connecting an EPAD2-module with your hardware, the DEWE/DEWE2/DEWE3-series products (except TRIONet) have a connector on the housing marked with the word **"EPAD"** (see figure 1).

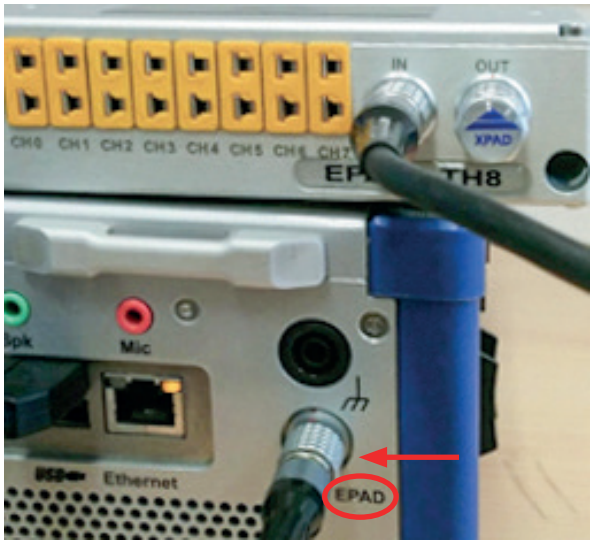


Figure 1: Connection of EPAD-modules

> Expand the *System Settings* menu fully across the screen
> Select the *DAQ Hardware* section and ensure the slider button next to the EPAD Series is activated (see Figure 2) (Changes take effect on application restart)

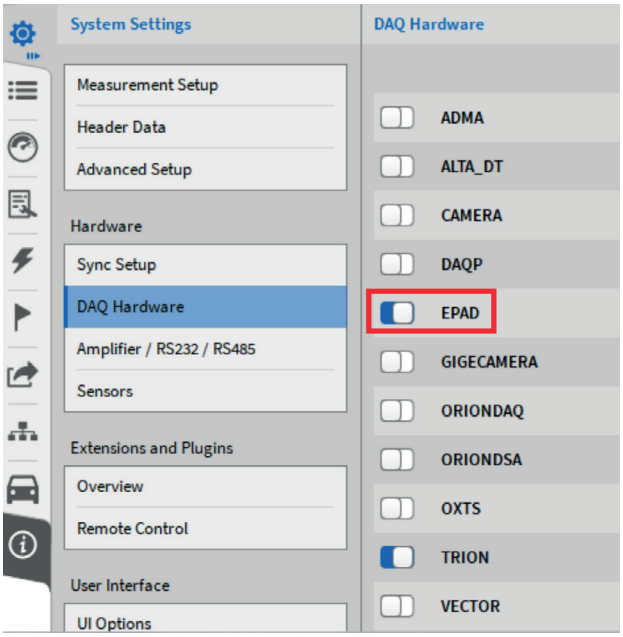


Figure 2: Enabling the EPAD Series in the DAQ Hardware setup

> Select the proper Serial Port for your EPAD2-module by clicking on the *Select ports…* button (see Figure 3). Systems in **Europe** are typically assigned to **COM2** and systems in the **USA** are typically assigned to **COM3**).

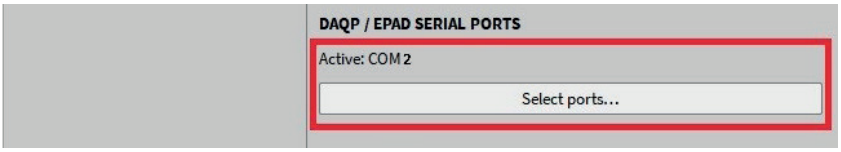


Figure 3: Selection of the proper COM port

> Press the *Scan for modules* button (see Figure 4). The system will scan the selected Serial Port for any present EPAD2-modules. The status can be seen in the lower right corner of the software.

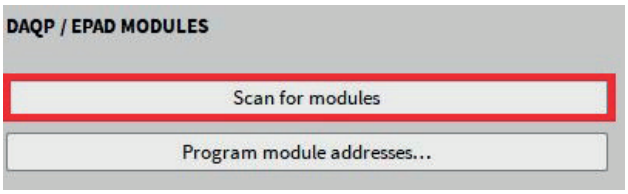


Figure 4: Scan for modules button

> If an EPAD2-module is found, the user will be presented with a message in the lower right corner of the software (see Figure 5) stating that the software has found an EPAD2-module.

Figure 5: EPAD found message

If you have multiple EPAD2-modules daisy chained together, the user can select the Program module addresses… button (see Figure 6)

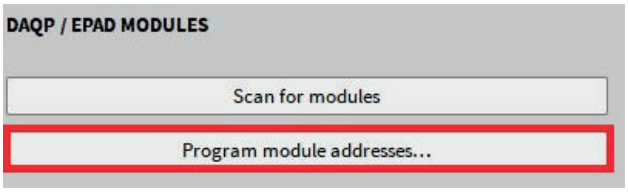


Figure 6: Program module addresses button

> Next, select the starting EPAD2 address (cannot be 0) and then select *Start programming* (see Figure 7)
> Once the programming has begun, the software will ask you to press the black ID button (see Figure 8) on the first EPAD2-module. Then it will increment the address in the software by one. At this point you will press the second EPAD2s' black *ID* button and so on.
> When finished programming, select the Stop Programming button (see Figure 7).

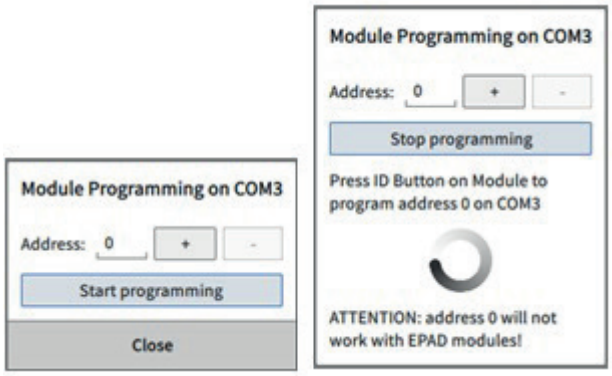


Figure 7: EPAD-programming procedure

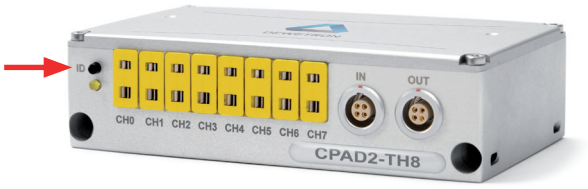


Figure 8: ID-Button at the front of an EPAD2-module

Using EPADs with OXYGEN via EPAD2-USB module

EPAD2 modules can also be used as stand-alone measurement solution (CVT-Logger) without DEWE or DEWE2 hardware. Therefore, they can be connected via the EPAD2-USB module to the measurement PC. This is also a solution for using EPAD2 modules in combination with a TRIONet which has no EPAD connector.

Please make sure that the driver for the EPAD2-USB module is installed on the measurement PC. The **setup.exe** file can be found in the folder **\files\drivers\3_communication\dewetron_usb** of the Install Media USB stick which is delivered with the EPAD2-USB module. After finishing the driver installation, the EPAD2 module can be programmed in OXYGEN in the same manner which is explained in previous section. The correct COM port can be found in the Device Manager of your PC in this case. The COM port which is called TUSB3410 DEVICE is the correct one (see Figure 9).

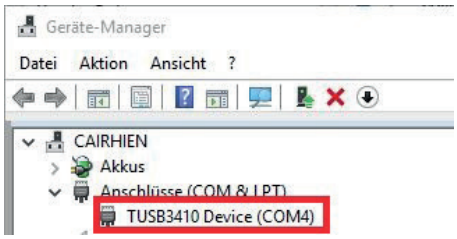


Figure 9: COM port section in the Device Manager

Using EPAD2 with OXYGEN

Troubleshooting

If no EPAD module is found during the scan for modules although it is connected, check the following items and then rescan for EPAD2-modules:

> Ensure your EPAD2 is compatible with OXYGEN (in OXYGEN 3.x and higher all EPAD-modules except EPAD2-USB and are supported. EPAD2-AO4 module is not supported in OXYGEN at all.)
> Check to see if the EPAD2 is properly connected to the system
> Make sure the LED beneath the ID push button is illuminated when the EPAD2 is connected to the system
> Choose another COM port, and rescan for the EPAD2 modules
> If using several EPAD2-modules, ensure that the terminating resistor is in place

EPAD channel list

> After the programming of the EPAD2-module(s) is finished, close the System Settings menu and fully open the Data Channels menu across the screen
> The EPAD2-module(s) are now visible in the system overview at the top of the Channel List (①) and are available in an own EPAD-channel section in the Channel List (②) (see figure 10)
> The Channel List can also be filtered to EPAD-channels
> By clicking the Up and Down arrow next to the picture of the EPAD-module, the user can quickly navigate between several EPAD-modules connected to the system

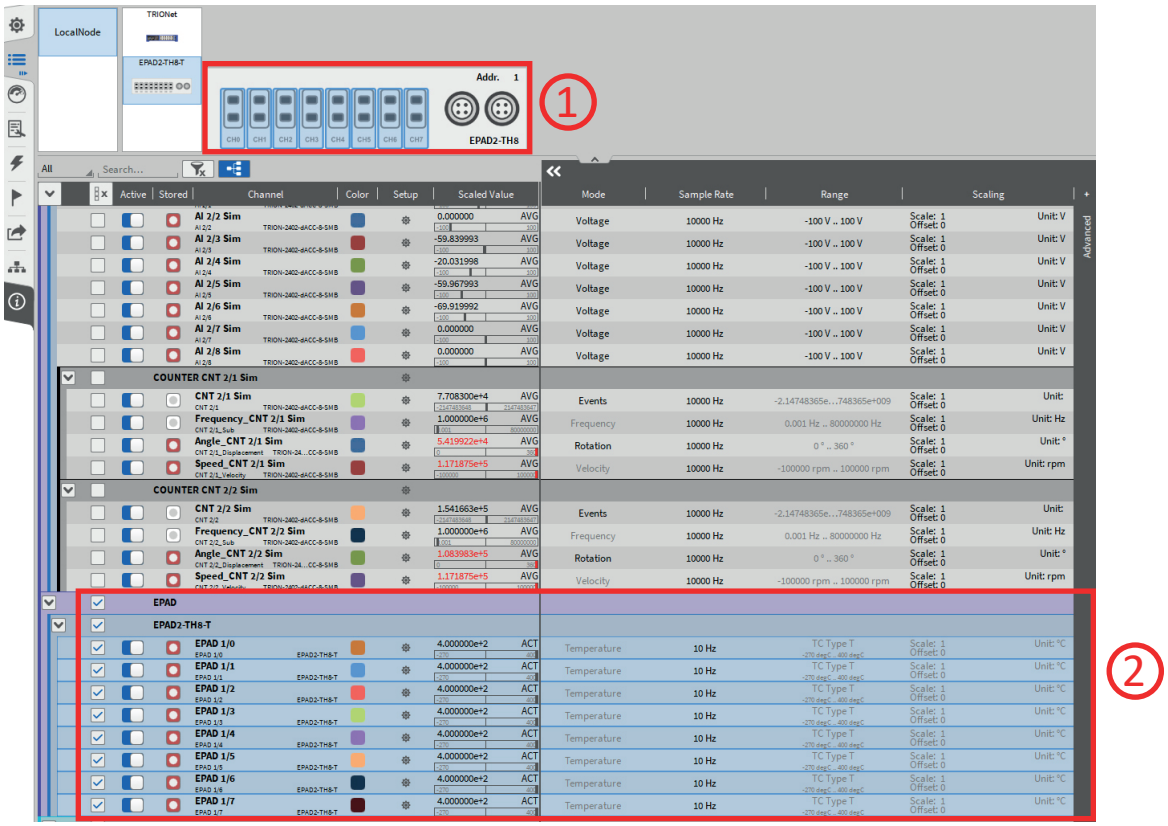


Figure 10: EPAD channel list

Note: If no thermocouple is connected to an EPAD-channel, the value 2501.6 °F (1372.0 °C) is displayed.

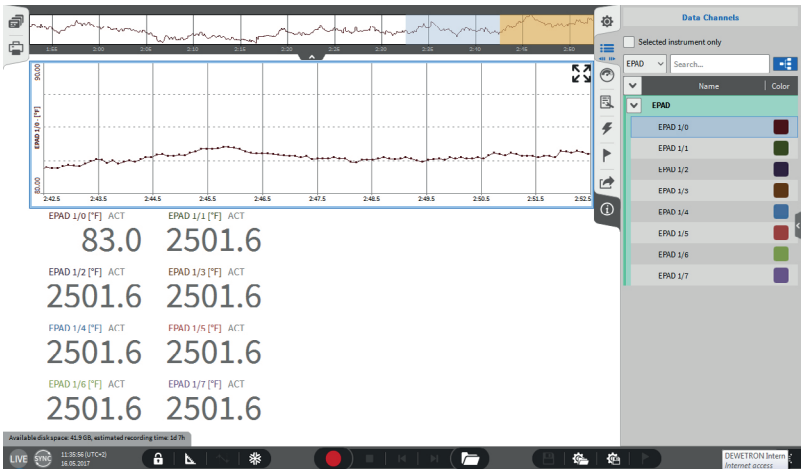


Figure 11: Displaying EPAD2 data

Max. cable length & modules per CAN bus

Maximum Cable Length and Modules per CAN Bus

There are several parameters that have to be considered when building a CAN bus network with CPAD modules.

- Baud rate

A higher baud rate allows a higher sample rate or using more CPADs. On the other hand, it reduces the maximum cable length.

- Sample rate

Every baud rate allows a certain aggregated sample rate. Lowering the baud rate allows using more modules at the full sample rate.

- Cable Length

The baud rate and the number of connected modules limit the cable length. Every module limit the bus length by 2 meter.

- Number of modules

The maximum is 30 CPADs per bus.

			Recommended maximum	
	Baud rate [kbaud]	Sample rate [S/sec]	Bus cable length [m]	Modules [Pcs.]
CPAD3	1000	100	10	10
	500	100	50	10
	500	50	50	20
	250	100	120	5
	250	50	120	10
	125	100	400	3
	50	100	800	1
CPAD2	1000	10	10	10
	500	10	10	30
	500	10	50	10
	250	10	120	30
	125	10	400	30
	50	10	800	10

Staying below the above mentioned limits allow a stable CAN bus communication. If more modules are required, use a separate CAN bus.

CAUTION: *Never set the baud rate higher than the cable length allows. This will end up in an unstable bus. In worst You will have to disconnect and reset the modules one by one in worst case.*

Power Supply considerations

Depending on the power supply only a certain number of modules can be connected. If longer cables are used this number is reduced because of the cable resistance.

Typical configurations:

12 V, 200 mA (DSUB-9 from ORION board)		
5 m bus length	max. 5 xPAD2 modules	max. 2 CPAD3 modules
50 m bus length	max. 4 xPAD2 modules	max. 2 CPAD3 modules
12 V, 1 A (EPAD connector)		
10 m bus length	max. 20 xPAD2 modules	max. 10 CPAD3 modules
50 m bus length	max. 12 xPAD2 modules	max. 6 CPAD3 modules
100 m bus length	max. 6 xPAD2 modules	max. 3 CPAD3 modules
24 V, 1.5 A (External power supply)		
10 m bus length	max. 60 xPAD2 modules	max. 30 CPAD3 modules
50 m bus length	max. 45 xPAD2 modules	max. 22 CPAD3 modules
100 m bus length	max. 25 xPAD2 modules	max. 12 CPAD3 modules

NOTE: Please consider that the CPAD3 modules do have an increased power consumption (1 W each module). Compared to xPAD2, the amount of CPAD3 modules is reduced by half when using CPAD3 modules only!

Module reset

EPAD2 Module reset:

If the Module could not be detected from the software anymore a possible reason could be that the module has been set to a different address or baud rate. With the reset function you can set the module back to its default settings:

Baud rate: 9600 baud
Checksum: deactivated
Address: 0x00

Procedure: Press the ID button while powering on the module, and keep it pressed for at least 5 seconds.

CPAD2/CPAD3 Module reset:

If the module is not responding on the CAN bus anymore, or you have applied unwanted settings to the module it can be easily set to the default settings.

Identifier type: Extended
Data Identifier: Bit 29 to Bit 25 = 0
Bit 24 to Bit 1: = Module Serial Number
Bit 0: = ChnBit (0 for Channel 0 to 3; 1 for Channel 4 to 7)
Data Format: Intel
Baud Rate: 500 kbaud
Sample Rate: 1 Hz

Procedure: Press the ID button while powering on the module, and keep it pressed for at least 5 seconds. After that the module starts automatically measuring with 1Sample/Second. The status LED will indicate that by blinking with 1 Hz. The module will send the data of the eight channels with two identifiers that differ in the last bit.

Default Data Identifier Example:

Module Serial Number: 0341581
The module will send the data of channel 0 to 3 on identifier:

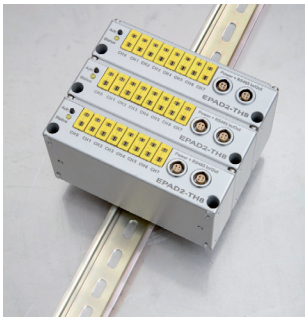
341581*2= 683162 = 0xA6C9A
Data of channel 5 to 7 on identifier:
341581*2+1= 683163 = 0xA6C9B

For detailed information how to change the identifier refer to the Programmers manual.

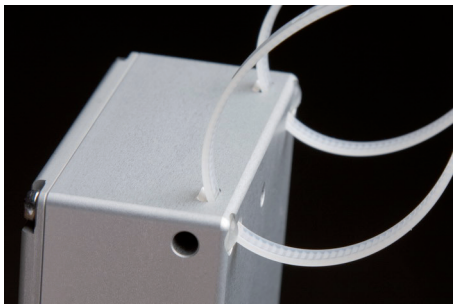
Mounting examples

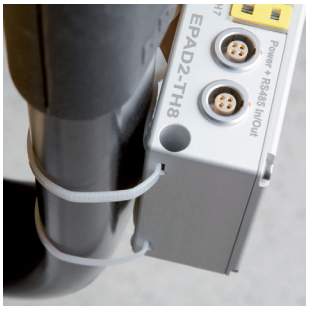
The EPAD2/CPAD2/CPAD3 modules are prepared for various mounting options:

- DIN rail



- Cable strap



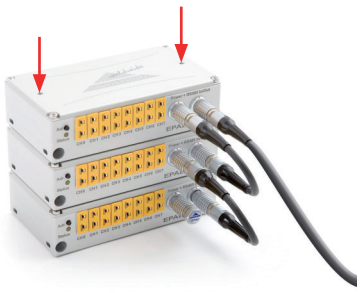


- Bolt down

For the mounting option "bolt down":

two screws with 4.2 mm diameter are required.

- Stack

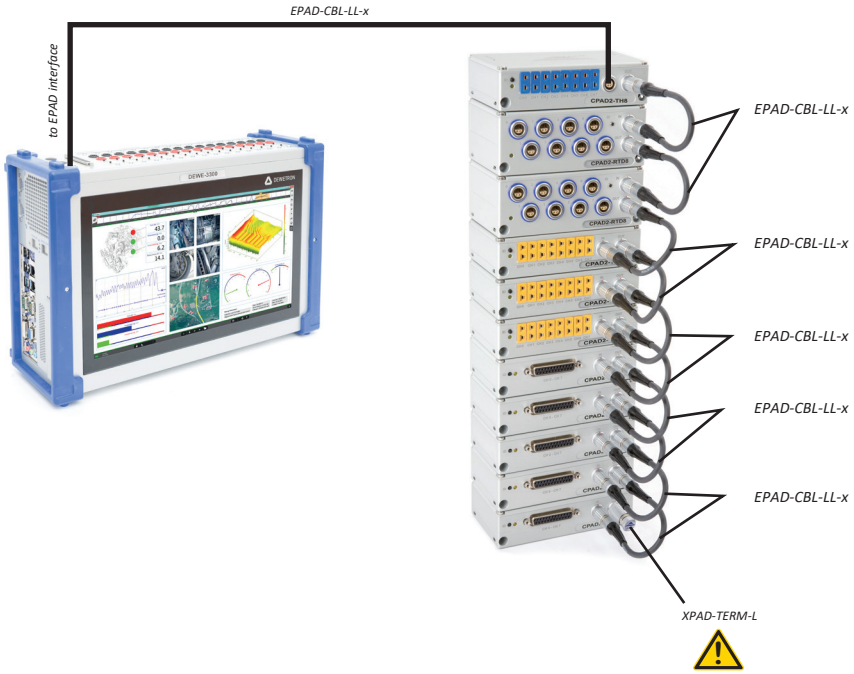


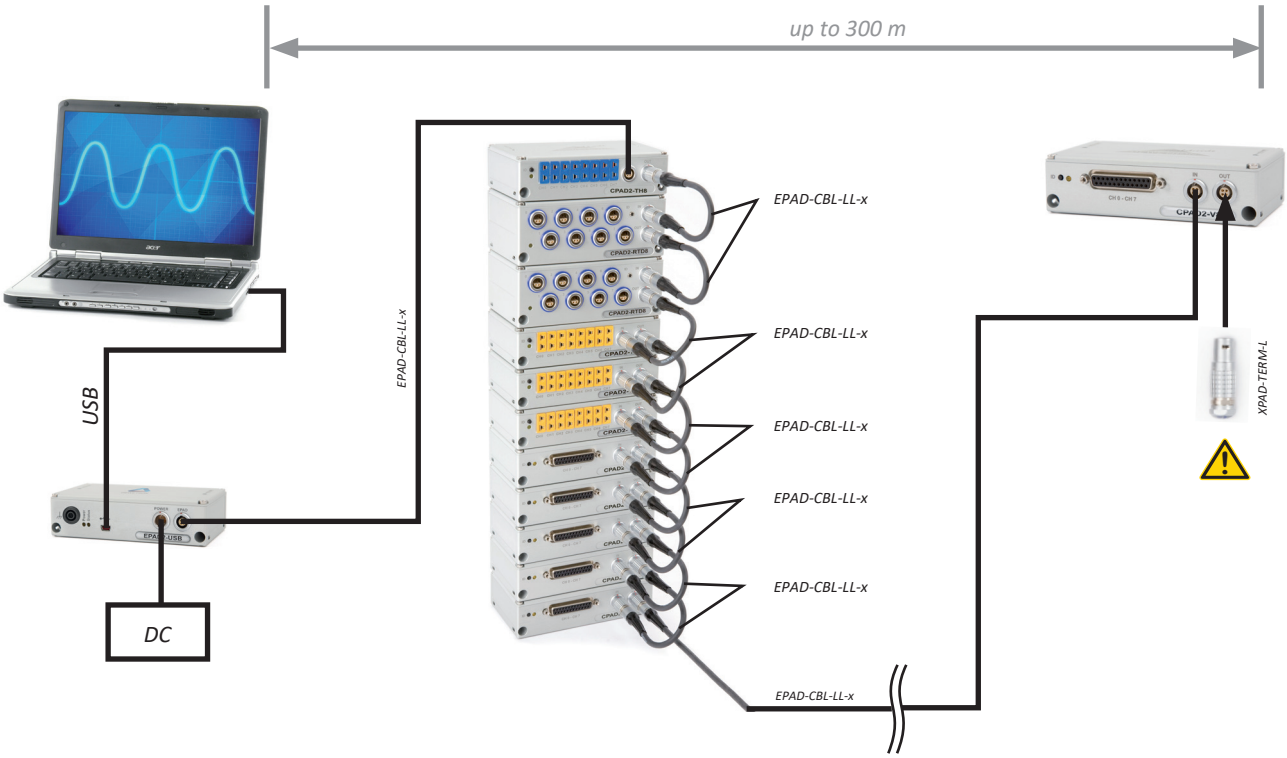
For the mounting option "stack":

two long M4 Allen head screws® are required.

Configuration examples

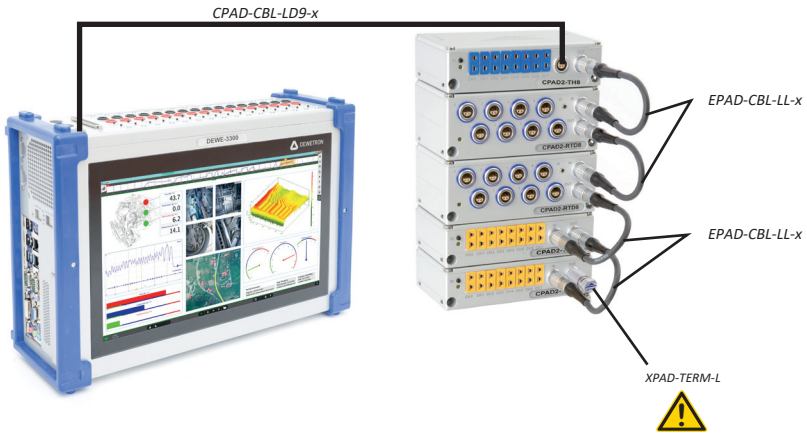
Configuration example with EPAD2 modules





Note: In each case the last DEWE-xPAD2 module has to be terminated!

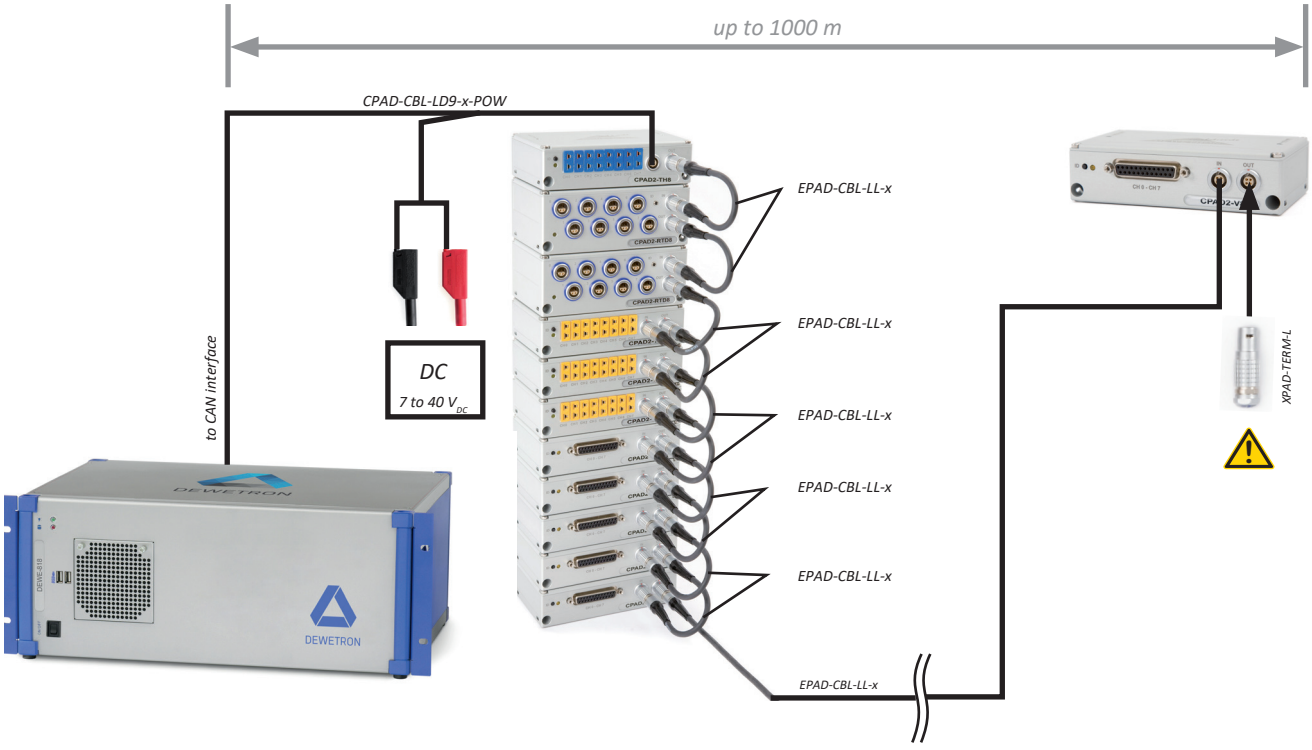
Configuration example with CPAD2/CPAD3 modules



CAN bus length*:

1 Mbit/s:	30 m
800 kbit/s:	35 m
500 kbit/s:	70 m
250 kbit/s:	150 m
125 kbit/s:	400 m
50 kbit/s:	800 m

*) Each additionally connected CPAD2/CPAD3 module reduces the maximum cable length by 2m.



Note: In each case the last xPAD2/CPAD3 module has to be terminated!

Accessories

Accessories & Options

General accessories and options for xPAD2/CPAD3 modules

XPAD-TERM-L

Termination connector for xPAD2/CPAD3 modules with Lemo EGG.1B.304 connector, the last module of the RS-485/CAN bus must be terminated with this connector.

XPAD-CBL-LL-0.2

xPAD2/CPAD3 connecting cable 0.2 m with Lemo FGG.1B.304 connector on both sides, for daisychaining stacked xPAD2/CPAD3 modules.

XPAD-CBL-LL-0.5

xPAD2/CPAD3 connecting cable 2 m with Lemo FGG.1B.304 connector on both sides, for connecting xPAD2/CPAD3 series modules to an instrument with Lemo EGG.1B.304 EPAD interface or to EPAD-BASE2 or for daisychaining xPAD2/CPAD3 modules.

XPAD-CBL-LL-x

xPAD2/CPAD3 connecting cable 2 m with Lemo FGG.1B.304 connector on both sides, for connecting xPAD2/CPAD3 series modules to an instrument with Lemo EGG.1B.304 EPAD interface or to EPAD-USB2 or for daisychaining xPAD2/CPAD3 modules

2: 2 m cable lenght
5: 5 m cable lenght
10: 10m cable lenght

EPAD-ADAP-BL

Adapter cable 0.1 m, converts Binder 712-series plug to Lemo 1B.304 socket

> required to connect new xPAD2 modules to old instruments with Binder 712-series EPAD interface using EPAD-CBL-LL-x cables.

> required to connect EPAD modules with Binder 712-series connector to new instruments with Lemo EGG.1B.304 EPAD interface using EPAD-CBL-LL-x cables.

EPAD-ADAP-LB

Adapter cable 0.1 m, converts from Lemo 1B.304 plug to Binder 712-series socket

> required to connect existing EPAD modules with Binder 712-series connector to new instruments with Lemo EGG.1B.304 EPAD interface using existing EPAD-CBL-BB-x cables.

EPAD-ADAP-D15L

Adapter to convert EPAD interface from SUB-D-15 connector to Lemo 1B.304.

XPAD-DIN-RAIL

Adapter to snap EPAD2 and CPAD2/CPAD3 modules onto a DIN rail.

CPAD-CBL-LD9-2

Adapter cable 2 m to connect CPAD series modules to CAN interface, LEMO FGG.1B.304 plug to a SUB-D-9 socket, use only for DEWETRON systems with power supply on CAN connector.

CPAD-CBL-LD9-2-POW

Adapter cable 2 m to connect CPAD series modules to CAN interface, LEMO FGG.1B.304 plug to a SUB-D-9 socket, additional 2 banana plugs for module power supply.

DEWE-POW-XPAD-24W

24 W external power supply for EPAD-BASE2 & EPAD2-USB module.

Rated input voltage:	100 to 240 V_{AC} (max. 90 to 264 V_{AC})
Output:	15 V_{DC} (1.6 A)

PAD-OPT2

25-pin DSUB connector with screw terminal, for all PAD modules with 25-pin SUB-D socket, except PAD-TH8-P and xPAD2/CPAD3-TH8.

XPAD-OPT-EXT-TEMP

Extended operating temperature range from -40°C to +85°C for EPAD modules

Mating connectors for xPAD2-RTD8 and xPAD2-LA8 modules

LEMO-FFA.1S.304.CLAD42Z	LEMO FFA.1S.304 mating connector, cable diameter 3.1 to 4.0 mm
LEMO-FFA.1S.304.CLAD52Z	LEMO FFA.1S.304 mating connector, cable diameter 4.1 to 5.0 mm
LEMO-FFA.1S.304.CLAD62Z	LEMO FFA.1S.304 mating connector, cable diameter 5.1 to 6.0 mm

Mating connector for xPAD2-V8-L1B module

LEMO-FGA.1B.304.CLADxxZ

LEMO FGA.1B.304 mating connector.
Cable diameter 3.1 to 6.0 mm.

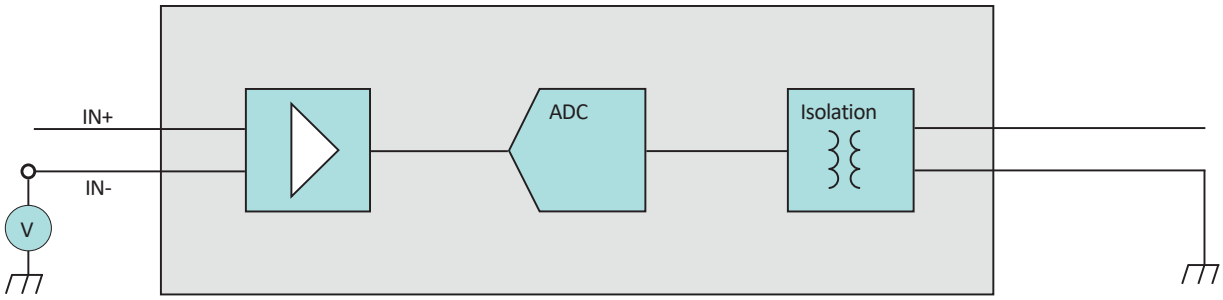
DESCRIPTION OF VOLTAGE SPECIFICATIONS

Isolation voltage

This value indicates the highest voltage which can be applied between an input pin and the reference potential without causing an isolation breakdown (uncontrolled current flow).

The *'Isolation voltage'* is basically limited by creepage- and clearance distances, the insulation material, and the used components. The given specification is proofed by high voltage tests on a systematical basis and by sample testing on the released product.

Exceeding the *'isolation voltage'* causes the damage of the measurement input in most every case, also other components inside the measurement unit could be affected. Exceeding the isolation voltage is furthermore a threat to life and physical condition (electric shocks, burn).



Isolation Voltage

Input ranges

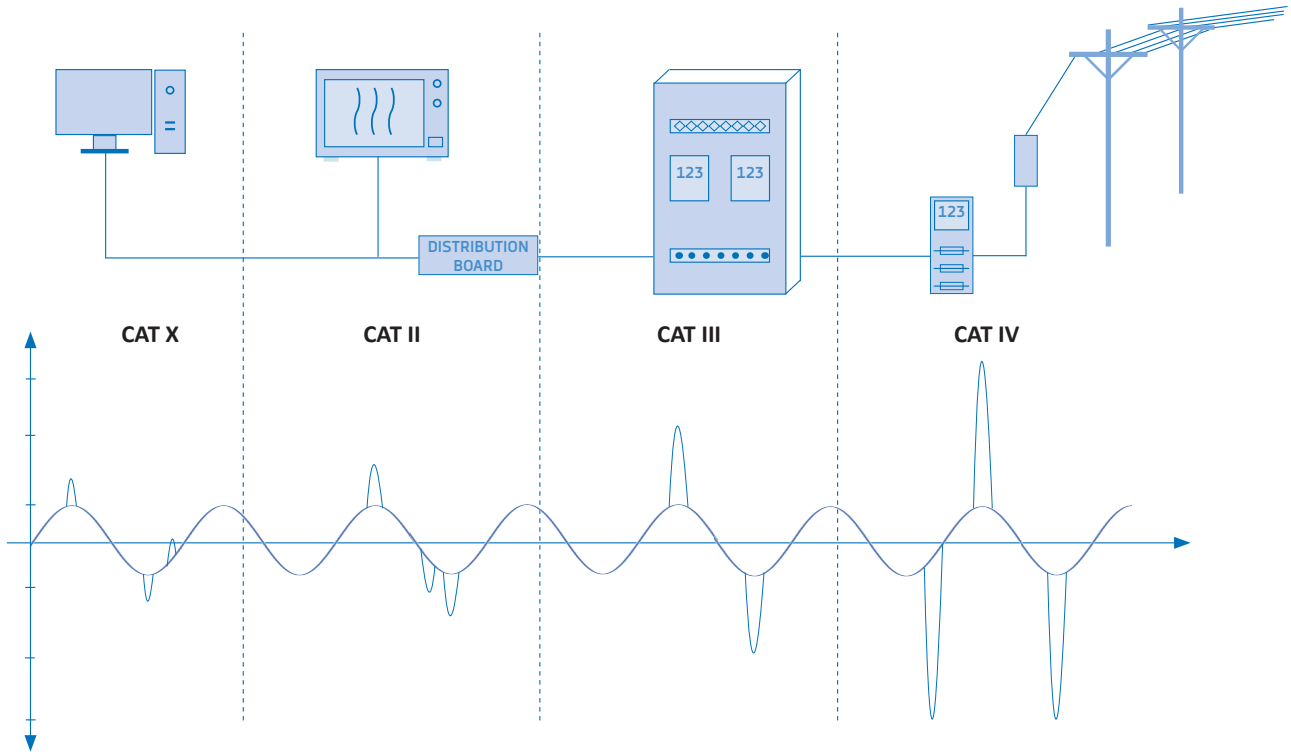
Like all measurement devices DEWETRON measurement equipment provides one or more *'Input ranges'*.
An *'input range'* indicates the highest possible value which can be displayed, similar to the limit position of a dial instrument.

Note: The value of the 'input range' does not give any information concerning the allowable scope of application (please refer to rated input according to IEC/EN 61010-2-30).

Rated input according to IEC/EN 61010-2-30

'*Rated input*' indicates the allowable scope of application of a measurement input according to the IEC/EN 61010-2-30 (Safety Requirements for Electrical Equipment for Measurement, Control, and Laboratory Use - Part 2-030: Particular Requirements for Equipment Having Testing or Measuring Circuits). DEWETRON equipment (respectively measurement inputs) are always specified according to this stated standard, the compliance tests are done by a 3rd party laboratory.

The value '*rated input*' specifies the highest possible voltage which can be applied to the measurement input. The IEC/EN 61010-2-30 additionally describes certain measurement categories within a public power grid (see also overvoltage categories IEC/EN 60664-1). Thus, measurement circuits are allowed to be applied according to their specification to the power grid categories as stated on the next page.



The isolation is tested according to the IEC/EN 61010-2-30. The level of the isolation voltage depends on the rated input voltage and on the measurement category. Since potential overvoltage phenomena are higher within higher power grid categories, the isolation voltage needs to be higher too.

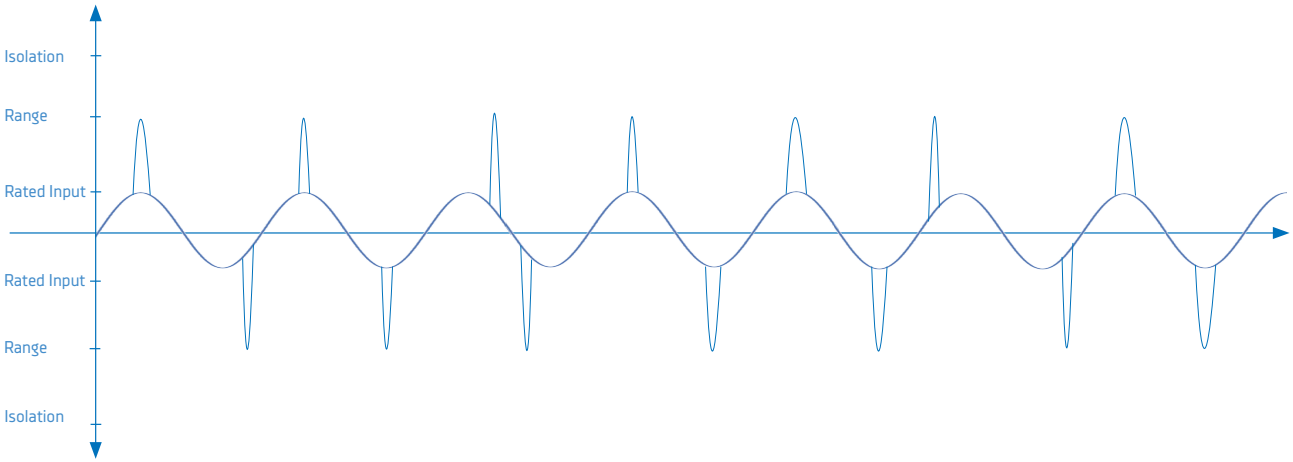
If there is no measurement category specified, the measurement input is not appropriate to be applied to a public power grid.

Examples:

> **Rated input 600 V CAT II:** The measurement input can be connected to a public power grid within the category II as long as the voltage of the grid does not exceed 600 VRMS. If there is a measurement category specified, the voltage value stated is always considered to be RMS.

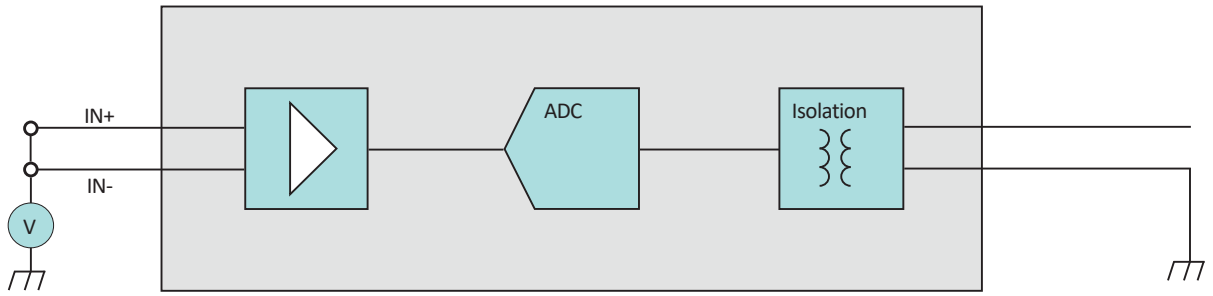
> **Rated Input 600 VRMS:** This measurement input is not intended to be connected to a public power grid. The input would be suitable for measurements within an on-board power system of a train for instance.

Relation between rated input, input ranges and isolation voltage



Common mode voltage

'*Common mode voltage*' indicates the highest possible voltage between the two input pins of a channel (e.g. IN+ and IN-) and the reference potential (GND) without clipping the wanted signal.



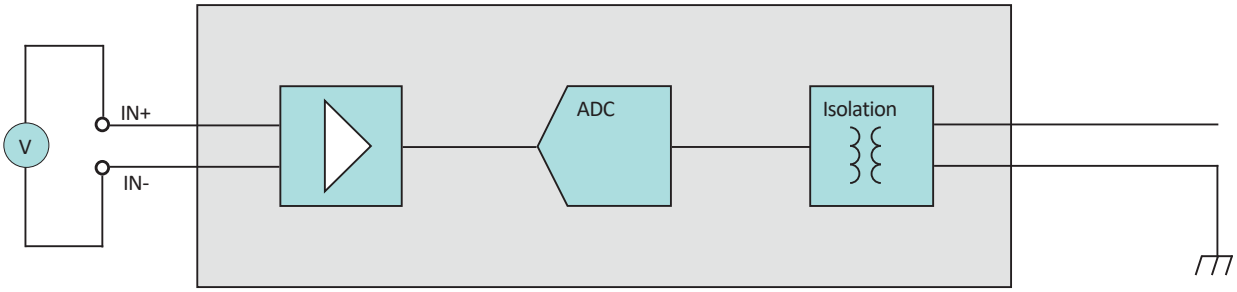
Common Mode Voltage

In the very most cases the value of the '*common mode voltage*' corresponds to the value of the '*isolation voltage*'.

Overvoltage protection

This value indicates the highest possible voltage which will not overload the input protection circuit when applied between two pins of one channel.

Exceeding this value causes the damage of the measurement input in most every case, also other components inside the measurement unit could be affected and it is furthermore a threat to life and physical condition (electric shocks, burn).



Overvoltage Protection

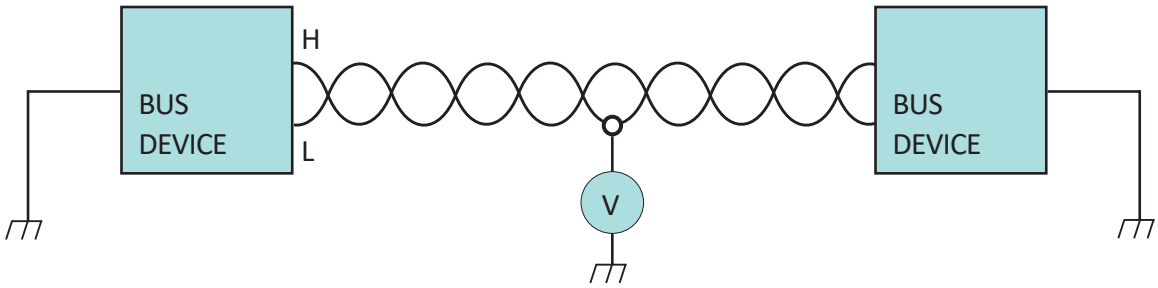
Max. DC voltage @AC coupling

The given value refers to input AC coupled inputs only.

'*Max. DC voltage @AC coupling*' specifies the highest allowed direct voltage component on the measurement input, when the coupling mode is switched to '*Coupling AC*'.

Bus pin fault protection

The specification '*Bus pin fault protection*' refers to the wiring of bus systems (e.g. CAN, RS-485, etc.) only. The value indicates the highest voltage which will not destroy the bus input or output when applied between the bus wiring and ground by accident.



CE-Certificate of conformity

Manufacturer:

Address:

DEWETRON GmbH

Parkring 4
8074 Grambach, Austria

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

Name of product: **EPAD2/CPAD2 series modules**

Kind of product: *Amplifiers with integerated A/D conversion*

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

CE-Certificate of Conformity

Manufacturer: **DEWETRON GmbH**

Address:

Parkring 4
8074 Grambach, Austria

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

Name of product: **CPAD3 series modules**

Kind of product: *Amplifiers with integrated A/D conversion*

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

2014/35/EU
"Directive of the European Parliament and of the Council of 26 February 2014 on the harmonisation of the laws of the Member States relating to the making available on the market of electrical equipment designed for use within certain voltage limits"

2014/30/EU
"Directive of the European Parliament and of the Council of 26 February 2014 on the harmonisation of the laws of the Member States relating to electromagnetic compatibility (recast)"

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

LV	Safety	IEC 61010-1:2020	
EMC	Emissions	EN 61000-6-4	EN 55011 Class B
	Immunity	EN 61000-6-2	Group standard

Graz, August 07, 2014
Place / Date of the CE-marking

Ing. Thomas Propst / Manager Total Quality

NOTES