



DEWETRON



EPAD2/CPAD2/CPAD3 Modules

Modules with CAN or RS-485 Interface

The EPAD2 and CPAD2/CPAD3 series are multichannel modules and combine analog signal conditioning and A/D converter in an extremely rugged box. EPAD2/CPAD2 support 24 bit whilst CPAD3 modules support 20 bit A/D converter per channel, synchronized sampling, channel to channel and channel to system isolation. The sampling rate is 12 samples for EPAD2/CPAD2 modules and 100 samples per second for CPAD3 modules. The target applications are

- precision measurement of slow signals in rough environments, e.g. in an engine bay of a vehicle
- distributed monitoring of slow signals in industrial plants
- high quality logging of environmental conditions
- quasi-static channel expansion of dynamic DEWETRON instruments

Key Features

- Extremely rugged
- Up to 24 bit A/D converter per channel
- Channel to channel isolation
- Channel to system isolation
- Flexible connectivity
- Flexible mounting
- High channel count by daisy-chaining

EPAD2 and CPAD2/CPAD3 series modules can be daisy-chained to achieve a high channel count even over very long distances. Data output of CPAD2/CPAD3 series is available on CAN bus while EPAD2 series has a RS485 interface.

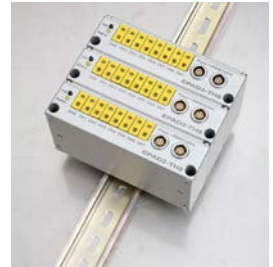
For EPAD2 series there is an interface module (EPAD2-USB) available, which connects EPAD2 modules to a USB interface.

Mounting Examples

The EPAD2 and CPAD2/CPAD3 series modules are extremely rugged and offer a wide range of mounting options.

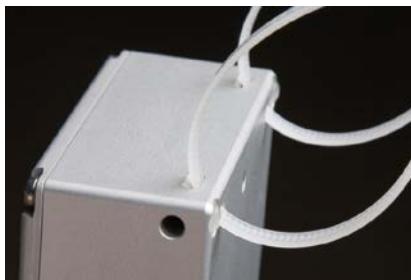
■ DIN rail

By ordering option XPAD-DIN-RAIL an adapter to snap EPAD2 and CPAD2/CPAD3 modules onto a DIN rail is included. A typical application for this is using EPAD2/CPAD2/CPAD3 inside 19" cabinets.



■ Cable strap

All modules have four trenches to provide maximum flexibility, most popular is fixing the modules by means of cable straps. A typical application for this is installing modules inside an engine bay of a vehicle.



■ Bolt down

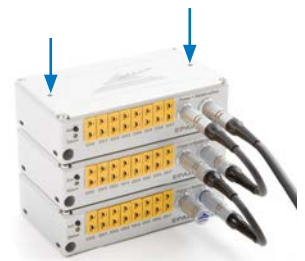
All modules offer two holes which allow bolting them down onto wooden or metal sheets. This kind of fixing modules is mainly used for quick instrumentation of single tests.

Note: No screws are provided with the modules, 2x 4.2 mm wood or sheet metal screws are required.





■ Stack

A unique mechanism to stack any number of modules is provided. Simply put one module on top of the other, take an adequate Allen key, press down the integrated screw and fasten it. Do the same for the 2nd screw and the two modules are locked. Making a stack is useful if more than eight channels need to be measured in a portable configuration.



CPAD3 Module Overview

- Extremely rugged
- Up to 24 bit A/D converter per channel
- Channel to channel isolation
- Channel to system isolation
- CAN interface
- Flexible mounting
- High channel count by daisy-chaining

Module	Input type	Input ranges	Isolation	Overvoltage protection
 <p>CPAD3-TH8-x</p>	Dedicated modules for type J, K, T Universal module for types K, J, T, E, R, S, B, N, C, U	According to thermocouple type	1500 V _{DC} (channel to channel and channel to BUS, power and chassis)	50 V _{DC}
 <p>CPAD3-V8</p>	8 isolated voltage input channels	Physical input range: ±50 V Software selectable: ±100 mV, ±500 mV, ±1 V, ±2.5 V, ±5 V, ±10 V	1500 V _{DC} (channel to channel and channel to BUS, power and chassis)	350 V _{DC}

Options & accessories



xPAD-CBL-LL-x:
Connecting cable with LEMO FG.1B.304 connector on both sides



CPAD-CBL-LD9-x:
Adapter cable to connect CPAD modules to CAN interface



CPAD-CBL-LD9-x-POW:
Adapter cable to connect CPAD modules to CAN interface, additional 2 banana plugs for power supply



EPAD-ADAP-BL:
Binder 712-series to LEMO 1B.304 converter



xPAD-TERM-L
Termination connector for the last module in a chain

CPAD3-TH8-x

- Intelligent amplifier with integrated A/D conversion
- CAN interface
- 8 input channels for thermocouples
- Available thermocouple types:
 - CPAD3-TH8-x: K, J, T standard type
 - CPAD3-TH8-UNIVERSAL: Universal type



Specifications

CPAD3-TH8-x	
Input channels	8 isolated Thermocouple Channels
Input signals	Thermocouple type K, J, T (others on request)
CPAD3-TH8-x	Thermocouple type K, J, T, R, S, N, E, C, U, B
CPAD3-TH8-UNIVERSAL	
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	>1 MΩ
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):	±1.0 °C @ -200 to -25 °C ±0.4 °C @ -25 to 1000 °C ±0.5 °C @ 1000 to 1372 °C
Type J (-210 to 1200 °C):	±1.0 °C @ -210 to -100 °C ±0.3 °C @ -100 to 760 °C ±0.4 °C @ 760 to 1200 °C
Type T (-270 to 400 °C):	±1.0 °C @ -250 to -150 °C ±0.4 °C @ -150 to 400 °C
Special models on request CPAD3-TH8-x	
Type R, S (-50 to 1760 °C):	±1.6 °C @ -50 to 0 °C ±1.0 °C @ 0 to 100 °C ±0.4 °C @ 100 to 1760 °C
Type N (-270 to 1300 °C):	±1.2 °C @ -200 to -100 °C ±0.5 °C @ -100 to 1300 °C
Type E (-270 to 1000 °C):	±1.0 °C @ -200 to -50 °C ±0.4 °C @ -50 to 1000 °C
Type C (0 to 2300 °C):	±0.6 °C @ 0 to 800 °C ±0.8 °C @ -800 to 1500 °C ±1.5 °C @ 1500 to 2300 °C
Type U (-200 to 600 °C):	±1.0 °C @ -200 to -50 °C ±0.4 °C @ -50 to 200 °C ±0.3 °C @ 200 to 600 °C
Type B (0 to 1820 °C):	±20 °C @ 0 to 400 °C ±0.6 °C @ 400 to 1000 °C ±0.5 °C @ 1000 to 1800 °C
¹⁾ ±1.0 °C when using CPAD3-TH8-UNIVERSAL	
Max. gain drift	25 ppm /°C
Max. offset drift	25 ppm of range /°C
Isolation voltage	1500 V _{DC} (channel to channel and channel to Bus, Power and Chassis)
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)	129 x 72 x 34.2 mm (5.1 x 2.8 x 1.3 in.) incl. mounting holes
Mounting holes distance:	119 x 7 mm (4.7 x 0.3 in.), 4.2 mm (0.165 in.) diameter
Weight	typically 405 g (~0.9 lbs)

CPAD3-V8

- Intelligent amplifier with integrated A/D conversion
- CAN interface
- 8 isolated voltage input channels



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 μ V for all ranges
DC accuracy	± 0.02 % of reading ± 900 μ V
Max. gain drift	20 ppm/ $^{\circ}$ C
Max. offset drift	20 ppm of range / $^{\circ}$ C
Linearity	0.002 %
Input impedance	0.97 M Ω
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 voltage	1500 V _{DC} (channel to channel and channel to Bus, Power and Chassis)
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)	129 x 72 x 34.2 mm (5.1 x 2.8 x 1.3 in.) incl. mounting holes
Mounting holes distance	119 x 7 mm (4.7 x 0.3 in.), 4.2 mm (0.165 in.) diameter
Weight	typically 310 g (~0.7 lbs)









CPAD3-V8 LEMO version

CPAD2 / EPAD2 Module Overview

- Extremely rugged
- Up to 24 bit A/D converter per channel
- Channel to channel isolation
- Channel to system isolation
- Flexible connectivity, CAN, USB,
- Flexible mounting
- High channel count by daisy-chaining



Module	Input type	Input ranges	Isolation	Overvoltage protection
 EPAD2/CPAD2-TH8-x Dedicated modules for type J, K, T Universal module for types K, J, T, E, R, S, B, N, C, U		According to thermocouple type	350 V _{DC} (channel to channel and channel to BUS, power and chassis)	15 V _{DC}
 EPAD2/CPAD2-V8 8 isolated voltage input channels		Physical input range: ±50 V Software selectable: ±100 mV, ±500 mV, ±1 V, ±2.5 V, ±5 V, ±10 V	350 V _{DC} (channel to channel and channel to BUS, power and chassis)	350 V _{DC}
 EPAD2/CPAD2-RTD8 8 isolated Resistance Temperature Detector channels		Resistor: 0 to 999.99 Ω RTD: PT100(385), PT200 (385), PT500(385), PT1000 (385), PT2000(385), PT100 (3961)	350 V _{DC} (channel to channel and channel to BUS, power and chassis)	15 V _{DC}
 EPAD2/CPAD2-LA8 8 isolated current inputs		0 to 20 mA, ±20 mA, ±30 mA	350 V _{DC} (channel to channel and channel to BUS, power and chassis)	70 mA cont.
 EPAD2-USB USB-interface module for EPAD2		n/a	-	-

Module	Output type	Output ranges	Isolation
 EPAD2-AO4 4 voltage or current output channels		±10 V; ±5 V; 0 to 5 V; 0 to 10 V; 0 to 20 mA; 4 to 20 mA	350 V _{DC} (channel to BUS, power and chassis)

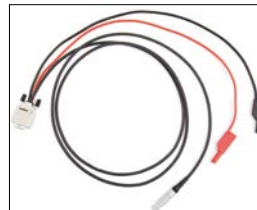
Options & accessories



xPAD-CBL-LL-x:
Connecting cable with LEMO FGG.1B.304 connector on both sides



CPAD-CBL-LD9-x:
Adapter cable to connect CPAD modules to CAN interface



CPAD-CBL-LD9-x-POW:
Adapter cable to connect CPAD modules to CAN interface, additional 2 banana plugs for power supply



EPAD-ADAP-BL:
Binder 712-series to LEMO 1B.304 converter



xPAD-TERM-L
Termination connector for the last module in a chain

EPAD2/CPAD2-TH8-x

- 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
- CPAD2-TH8-x: CAN interface
- EPAD2-TH8-x: RS485 interface (optional USB, RS232, CAN via EPAD-BASE2 interface)



Specifications

xPAD2-TH8-x	
Input channels	8 isolated Thermocouple Channels
Input signals	Thermocouple type K, J, T (others on request)
xPAD2-TH8-x	Thermocouple type K, J, T, R, S, N, E, C, U, B
xPAD2-TH8-UNIVERSAL	
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*	
Standard models xPAD2-TH8-K /-J / -T	
Type K (-270 to 1372 °C):	±1.0 °C @ -200 to -25 °C ±0.4 °C @ -25 to 1000 °C ±0.5 °C @ 1000 to 1372 °C
Type J (-210 to 1200 °C):	±1.0 °C @ -210 to -100 °C ±0.3 °C @ -100 to 760 °C ±0.4 °C @ 760 to 1200 °C
Type T (-270 to 400 °C):	±1.0 °C @ -250 to -150 °C ±0.4 °C @ -150 to 400 °C
Special models on request xPAD-TH8-x	
Type R, S (-50 to 1760 °C):	±1.6 °C @ -50 to 0 °C ±1.0 °C @ 0 to 100 °C ±0.4 °C @ 100 to 1760 °C
Type N (-270 to 1300 °C):	±1.2 °C @ -200 to -100 °C ±0.5 °C @ -100 to 1300 °C
Type E (-270 to 1000 °C):	±1.0 °C @ -200 to -50 °C ±0.4 °C @ -50 to 1000 °C
Type C (0 to 2300 °C):	±0.6 °C @ 0 to 800 °C ±0.8 °C @ -800 to 1500 °C ±1.5 °C @ 1500 to 2300 °C
Type U (-200 to 600 °C):	±1.0 °C @ -200 to -50 °C ±0.4 °C @ -50 to 200 °C ±0.3 °C @ 200 to 600 °C
Type B (0 to 1820 °C):	±20 °C @ 0 to 400 °C ±0.6 °C @ 400 to 1000 °C ±0.5 °C @ 1000 to 1800 °C
* ±1.0 °C when using xPAD2-TH8-UNIVERSAL.	
Max. gain drift	25 ppm/°C
Max. offset drift	25 ppm of range /°C
Isolation voltage	350 V _{DC} (channel to channel and channel to Bus, Power and Chassis)
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)	129 x 72 x 34.2 mm (5.1 x 2.8 x 1.3 in.) incl. mounting holes
Mounting holes distance:	119 x 7 mm (4.7 x 0.3 in.), 4.2 mm (0.165 in.) diameter
Weight	typically 360 g

EPAD2/CPAD2-V8

- Intelligent amplifier with integrated 24-bit A/D conversion
- 8 isolated voltage input channels
- RS-485 or CAN interface
- CPAD2-V8: CAN interface
- EPAD2-V8: RS485 interface (optional USB, RS232, CAN via EPAD-BASE2 interface)



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 μ V for all ranges
DC accuracy	± 0.02 % of reading ± 900 μ V
Max. gain drift	20 ppm / $^{\circ}$ C
Max. offset drift	20 ppm of range / $^{\circ}$ C
Linearity	0.001 %
Input impedance	1 M Ω
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 voltage	350 V _{DC} (channel to channel and channel to Bus, Power and Chassis)
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)	129 x 72 x 34.2 mm (5.1 x 2.8 x 1.3 in.) incl. mounting holes
Mounting holes distance	119 x 7 mm (4.7 x 0.3 in.), 4.2 mm (0.165 in.) diameter
Weight	typically 310 g

EPAD2/CPAD2-V8-L1B

- Intelligent amplifier with integrated 24-bit A/D conversion
- 8 isolated voltage input channels
- RS-485 or CAN interface
- CPAD2-V8-L1B: CAN interface
- EPAD2-V8-L1B: RS485 interface (optional USB, RS232, CAN via EPAD-BASE2 interface)



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 μ V for all ranges
DC accuracy	± 0.02 % of reading ± 900 μ V
Max. gain drift	20 ppm / $^{\circ}$ C
Max. offset drift	20 ppm of range / $^{\circ}$ C
Linearity	0.001 %
Input impedance	1 M Ω
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 voltage	350 V _{DC} (channel to channel and channel to Bus, Power and Chassis)
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)	129 x 72 x 50.2 mm (5.1 x 2.8 x 2 in.) incl. mounting holes
Mounting holes distance	119 x 7 mm (4.7 x 0.3 in.), 4.2 mm (0.165 in.) diameter
Weight	typically 310 g

EPAD2/CPAD2-RTD8

- Intelligent amplifier with integrated 24-bit A/D conversion
- 8 isolated Resistance Temperature Detector channels
- RS-485 or CAN interface
- CPAD2-RTD8: CAN interface
- EPAD2-RTD8: RS485 interface (optional USB, RS232, CAN via EPAD-BASE2 interface)



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	<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 33%;">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</td> <td style="width: 33%;">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</td> <td style="width: 33%;">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</td> </tr> <tr> <td>Pt500 a = 0.00385 ±0.25 °C @ -200 to 100 °C ±0.4 °C @ 100 to 250 °C</td> <td>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</td> <td>Pt2000 a = 0.00385 ±0.25 °C @ -200 to 100 °C ±0.4 °C @ 100 to 200 °C</td> </tr> </table>	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
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 voltage	350 V _{DC} (channel to channel and channel to Bus, Power and Chassis)						
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)	129 x 72 x 50.2 mm (5.1 x 2.8 x 2 in.) incl. mounting holes						
Mounting holes distance	119 x 7 mm (4.7 x 0.3 in.), 4.2 mm (0.165 in.) diameter						
Weight	typical 420 g						

EPAD2/CPAD2-LA8

- Intelligent amplifier for 4 to 20 mA sensors
- 8 galvanically isolated current inputs
- RS-485 or CAN interface
- CPAD2-LA8: CAN interface
- EPAD2-LA8: RS485 interface (optional USB, RS232, CAN via EPAD-BASE2 interface)



Analog input 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 μ A
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 μ A
Input impedance	50 Ω 0.1 %
Max. gain drift	23 ppm / $^{\circ}$ C
Max. offset drift	25 ppm of range / $^{\circ}$ C
Isolation voltage	350 V _{DC} (channel to channel and channel to bus, power and chassis)
Overcurrent protection	70 mA continuous
CMRR (50/60 Hz)	130 dB
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)	129 x 72 x 50.2 mm (5.1 x 2.8 x 2 in.) incl. mounting holes
Mounting holes distance	119 x 7 mm (4.7 x 0.3 in.), 4.2 mm (0.165 in.) diameter
Weight	typical 360 g

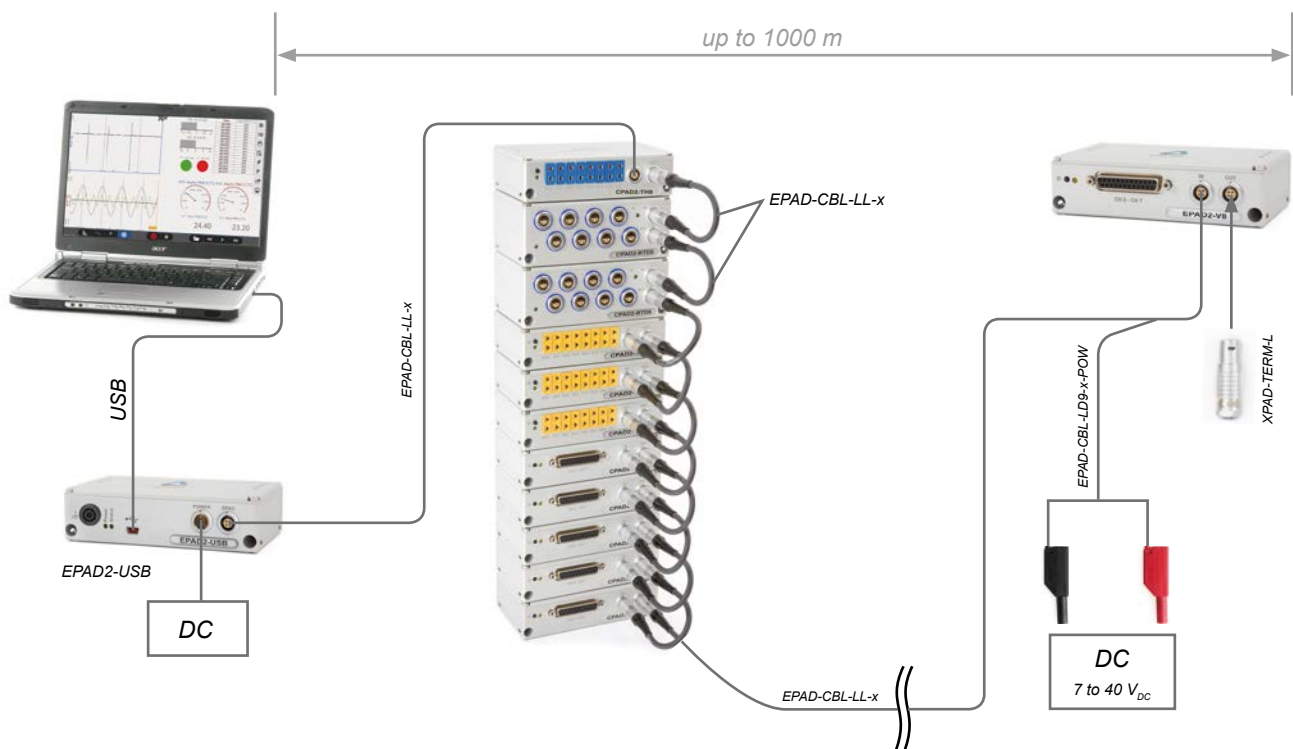
EPAD2-USB

- EPAD2 interface module for attaching EPAD2 modules to USB
- OPEN SYSTEM compatible, creates a virtual COM interface
- Mini USB interface with 1.8 m USB cable
- RS-485 interface for connecting EPAD2 modules
- Included external power supply



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)	129 x 72 x 34.2 mm (5.1 x 2.8 x 1.3 in.) incl. mounting holes
Mounting holes distance	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



EPAD2-AO4

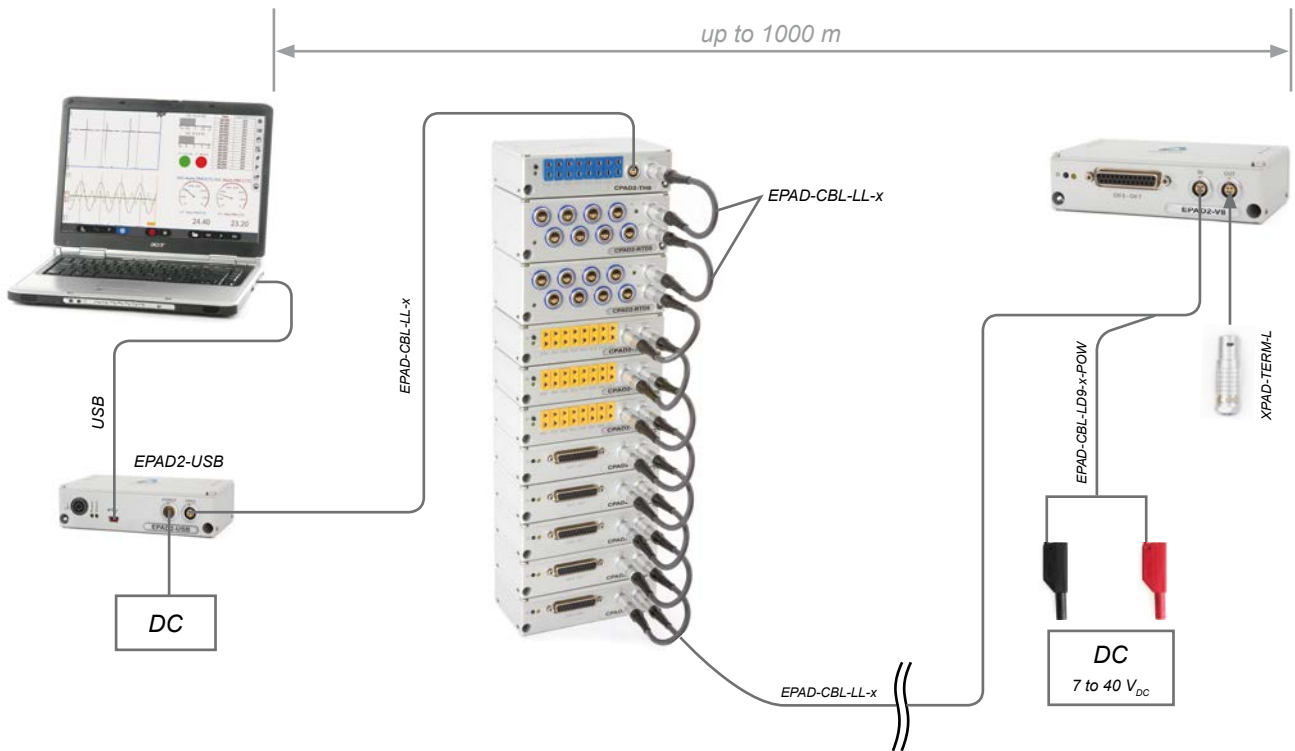
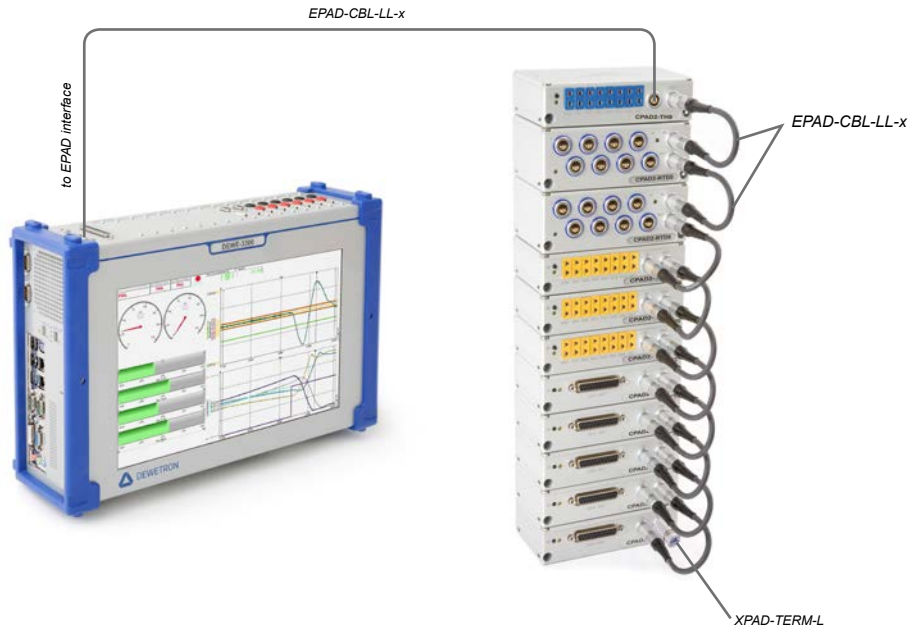
- 4 channel isolated analog output module
- Voltage or current output (current sinking only)
- RS-485 interface



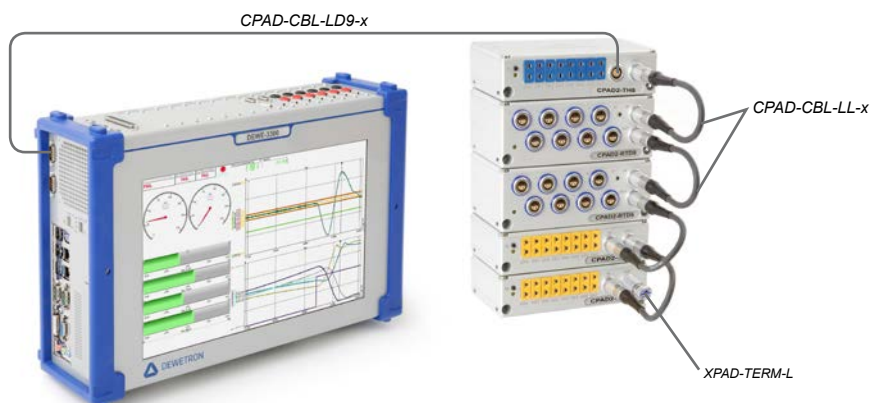
Specifications

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)	129 x 72 x 34.2 mm (5.1 x 2.8 x 1.3 in.) incl. mounting holes
Mounting holes distance	119 mm (4.7 in.), 4.2 mm (0.165 in.) diameter
Weight	typ. 310 g

Configuration examples with EPAD2 modules



Configuration examples with CPAD2/3 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

