PAD4001A
PAD4003A

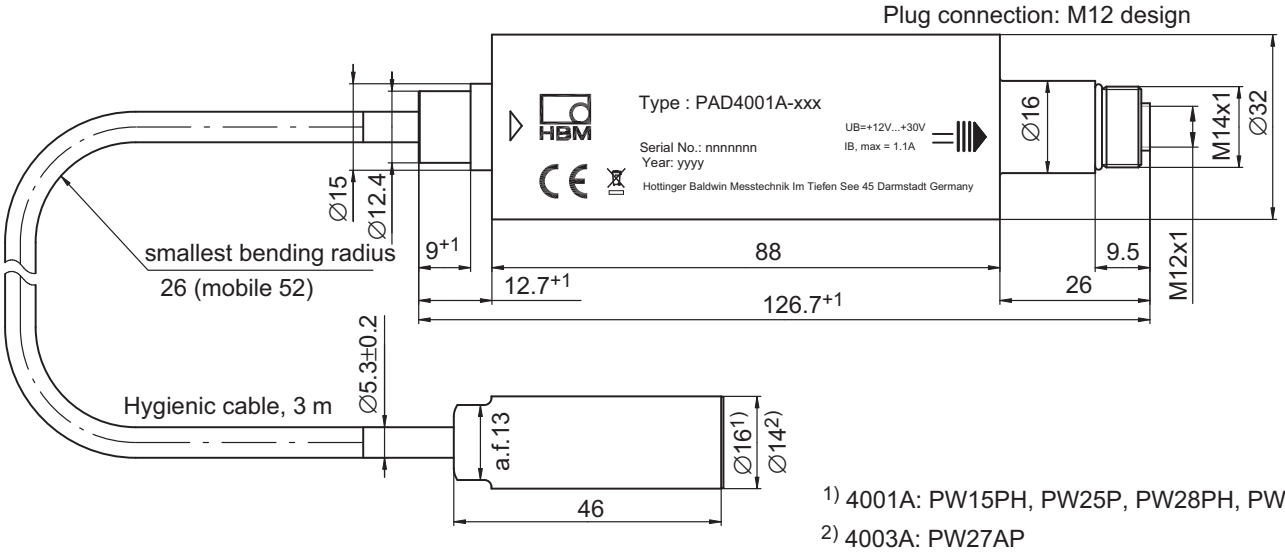
Digital transducer electronics

Data sheet

Special features

- **Connection cable with rugged plug connections, M12, 8-pin**
- **Degree of protection up to IP68/IP69K, depending on which plug is used**
- **Hygienic connection cable version (antibacterial)**
- **2 freely programmable digital I/Os for filling or monitoring applications**
- **Can be combined with HBM load cells of types PW15PH, PW25P, PW28PH, PW29P and PW27AP**
- **The intuitive and user-friendly software PanelX is available free of charge for configuration, measurement and analysis**

Dimensions (in mm; 1 mm = 0.03937 inches)



1) 4001A: PW15PH, PW25P, PW28PH, PW29P

2) 4003A: PW27AP

Specifications

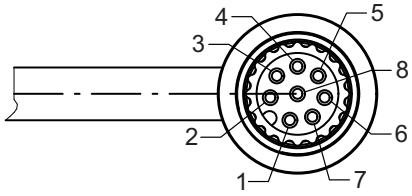
Type		PAD4001A-RS4 PAD4001A-CAN	PAD4003A-RS4 PAD4003A-CAN
Suitable for load cell types		PW15PH, PW25P, PW28PH, PW29P	PW27AP
Maximum number of calibration values as per OIML R76 (Class III, IIII)	d = e	6000	
Multi-range applications	d = e	2 x 3000	
Rated electrical output			
Input sensitivity			
legal-for-trade mode	µV/e	≥0.5	
industrial mode	µV/d	≥0.1	
Measurement range	mV/V	nominal ±2, max. ±3.2	
Minimum transducer resistance	Ω	300	
Maximum transducer resistance	Ω	1200	
Transducer excitation voltage (carrier frequency 1.2 kHz)	V_{AC}	5	
Load cell connection		4-wire circuit	
maximum cable length to transducer	m	3	
Temperature coefficient of the zero signal per 10 K	%	±0.0055	
Temperature coefficient of the sensitivity per 10 K [1]	%	±0.0083	
Non-linearity [1]	% of meas. range	±0.0025	
Power supply			
Supply voltage U_B (DC)	V	+12 … +30, nominal 24 V	
Power consumption (350 Ω transducer resistance)	W	≤ 3	
Max. current	A	1.1	
Digital signal conditioning			
Measurement signal resolution	bit	24	
Resolution of nominal measuring range	digit	5,120,000	
Sample rate	1/s	4 … 1200	
Digital filter bandwidth	Hz	0.1 … 120	
Tare range (subtractive)			
legal-for-trade mode	% of meas. range	+100	
industrial mode		± 100	
Range of zero setting			
legal-for-trade mode	% of meas. range	± 2	
industrial mode		± 2	
Interfaces			
Max. number of bus nodes		90	
CANopen interface		Standard CiA DS301	
Bit rate	bit/s	10,000 … 1,000,000	
Maximum cable length	m	≤5000 (10 kbit/s) … ≤100 (500 kbit/s) … ≤25 (1 Mbit/s)	
RS-485 interface			
Bit rate	bit/s	9600/19,200/38,400/57,600/115,200	
Maximum cable length	m	50	
Digital HCMOS input [2]			
Allowed input voltage	V	0 … +12	
Low level	V	< 1	
High level	V	> 4	
Input resistance	kΩ	70	

Type		PAD4001A-RS4 PAD4001A-CAN	PAD4003A-RS4 PAD4003A-CAN
Digital PLC input [2]			
Allowed input voltage	V	0 … +30	
Low level	V	< 6	
High level	V	> 10	
Input resistance	kΩ	9	
Control outputs [2]			
External supply voltage	V	11 … +30	
Max. current per output	A	< 0.5	
Max. total current of all outputs	A	< 1	
General information			
Nominal (rated) range of the ambient temperature	°C	-10 … +40	
Operating temperature range		-10 … +50	
Storage temperature range		-25 … +75	
Allowed relative humidity	%	10 … 90	
Degree of protection per EN 60529 (IEC 529)		IP68/69K [3]	
Weight including connector plug, approx.	kg	0.4	
Material			
Housing		Stainless steel	
Cable		TPE (suitable for hygienic use)	
Male connector		PVC	
Outside diameter of plug	mm	16 (M12 design)	14 (M12 design)

1) The values for non-linearity and temperature coefficient of sensitivity are recommended values. The sum of these values is within the accumulated error limit specified by OIML R76.
2) The electronics have 2 digital I/Os that can each be connected as a control input or an output, as required. Additional information can be found in the mounting instructions and in the command documentation.
3) When connectors and connection cables are fitted with the appropriate type of protection.

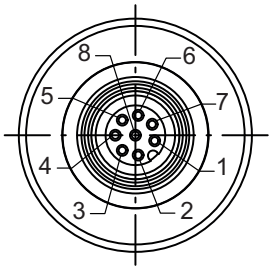
Electrical connection, PAD4001/3A

Transducer connection



M12 connector, 8-pin
PAD4001A: Outside diameter 16 mm
PAD4003A: Outside diameter 14 mm

Digital output



Connector socket, 8-pin; this side has an M12 internal thread (for HBM cable 1-KAB165) and an M14 external thread (for HBM cable 1-KAB173); commercially available M12 plugs can be connected via the M12 internal thread.

Pin	Transducer connection
1	Measurement signal (+)
2	Not in use
3	Additional excitation voltage line[1] (+)
4	Not in use
5	Additional excitation voltage line[1] (-)
6	Bridge excitation voltage[1] (-)
7	Bridge excitation voltage[1] (+)
8	Measurement signal (-)

Pin	Digital output	
	RS-485	CANopen
1	GND	GND
2	IN2/OUT2	IN2/OUT2
3	RA	CAN High IN
4	IN1/OUT1	IN1/OUT1
5	RB	CAN Low IN
6	TB	CAN Low OUT
7	TA	CAN High OUT
8	U_B	U_B

1) Bridge excitation voltage and additional line of the same polarity are connected in the plug, to avoid interference effects.

Product numbers

Type	Explanation	Ordering number
PAD4001A-RS4	Cable connection for transducer, 1 RS-485 socket for output, with digital inputs/outputs	1-PAD4001A-RS4
PAD4001A-CAN	Cable connection for transducer, 1 CAN bus socket for output, with digital inputs/outputs	1-PAD4001A-CAN
PAD4003A-RS4	Cable connection for transducer, 1 RS-485 socket for output, with digital inputs/outputs	1-PAD4003A-RS4
PAD4003A-CAN	Cable connection for transducer, 1 CAN bus socket for output, with digital inputs/outputs	1-PAD4003A-CAN

Installation advice

The diameter of the housing fits into commercially available mounting clamps for electrical installation (size M32).

Accessories

The (free) setting and evaluation software PanelX is available for download from the HBM website: www.hbm.com → Services & Support → Downloads → Firmware & Software → PanelX.

Suitable connection cables (digital output connector socket)

Type	Ordering number
Connection cable with M12 M plug, 8-pin, stainless steel IP68/IP69K, TPE cable sheath, 3 m long [1]	1-KAB173-3-1
Connection cable with M12 M plug, 8-pin, stainless steel IP68/IP69K, TPE cable sheath, 6 m long [1]	1-KAB173-6-1
Connection cable with M12 M plug, 8-pin, IP67, PUR cable sheath (halogen-free), 3 m long [2]	1-KAB165-3
Connection cable with M12 M plug, 8-pin, IP67, PUR cable sheath (halogen-free), 6 m long [2]	1-KAB165-6
Connection cable with M12 M plug, 8-pin, IP67, PUR cable sheath (halogen-free), 12 m long [2]	1-KAB165-12

1) For connecting to the M14 external thread of the PAD4001/3A.
2) For connecting to the M12 internal thread of the PAD4001/3A.

Additional connection cable data can be found in the HBM Cables and Plugs data sheet (B3643).

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