

DATA SHEET

P3 Absolute pressure transducer

SPECIAL FEATURES

- Nominal (rated) pressure 10 bar to 3,000 bar
- For static and dynamic pressure variance, pressure peaks and pressure fluctuations
- Principle of measurement: foil strain gage

Top Class

- Better temperature response
- Individually documented values
- Improved accuracy class
- Closer sensitivity tolerance (suitable for parallel connection, for differential pressure measurement, for example)
- PT100 for temperature compensation in four-wire circuit



P3 Top Class

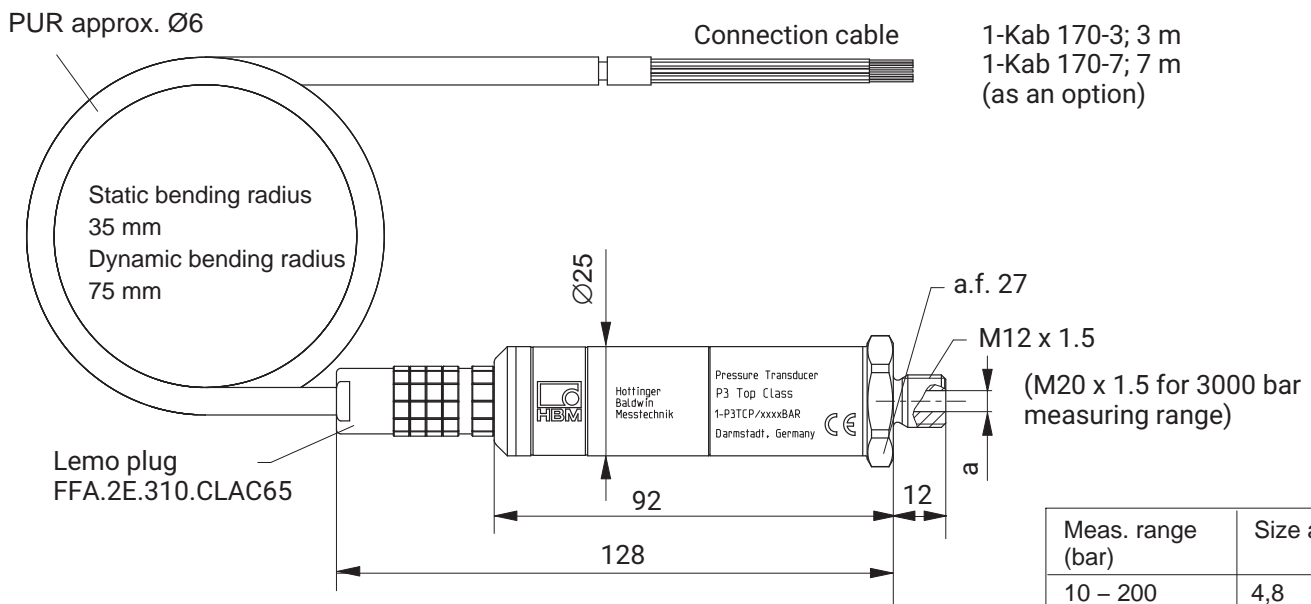


P3MB version with fixed cable



P3MBP version with plug connection

DIMENSIONS




Dimensions (in mm; 1 mm = 0.03937 inches) for P3 Top Class

SPECIFICATIONS FOR P3, P3MB AND P3MBP PER DIN 16086

Type	P3, P3MB, P3MBP									
Mechanical input quantities										
Pressure type	absolute pressure									
Principle of measurement	foil strain gage									
Measuring range, 0 bar...	bar	10	20	50	100	200	500	1000	2000	3000
Accuracy class ¹⁾		0.2	0.15	0.2	0.15	0.1	0.2			
Output characteristics										
Nominal (rated) sensitivity	mV/V	2								1.5
Sensitivity tolerance	%	0.25	0.2	0.15						
Effect of temperature on zero signal in the nominal (rated) excitation voltage range per 10 K, rel. to nominal (rated) sensitivity										
	in the nominal (rated) temperature range	%	± 0.1							
	in the operating temperature range	%	± 0.15							
Effect of temperature on sensitivity in the nominal (rated) excitation voltage range per 10 K, rel. to actual value										
	in the nominal (rated) temperature range	%	± 0.1							
	in the operating temperature range	%	± 0.2							
Characteristic curve deviation (setting of initial point)	%	± 0.20	± 0.15	± 0.2	± 0.15	± 0.10	± 0.2			
Repeatability per DIN 1319	%	± 0.05								

1) Accuracy class is not a DIN 16086 concept. The figure conforms to the maximum single deviation; that is the characteristic curve deviation (setting of initial point) and deviations as a result of temperature, related to a difference of 10 K.

Test report P3MB, P3MBP



Prüfprotokoll

test certificate / protocole d'essai

Typ: P3	Auftrag: 801103344
<small>Type / type</small>	<small>order no / commission</small>
Nennmessbereich: 500 bar	Prüfer: Goebel
<small>range / portée</small>	<small>examiner / contrôleur</small>
Ident.Nr.: 121910237	Datum: 2010-09-30
<small>serial no / ID - ident</small>	<small>test date / date d'essai</small>

Prüfergebnisse:
test results / résultats d'essai

Eingangsgröße des Messbereichs [%] <small>input quantity / échelle d'essai</small>	Ausgangsgröße [mV/V] <small>output quantity / résultats</small>
0	0.0000
50	0.9992
100	1.9980
50	1.0001
0	0.0001

Aus den Prüfergebnissen berechnete und sonstige messtechnische Eigenschaften:
metological characteristics calculated from the measuring results and others
valeurs caractéristiques calculées à partir des résultats d'essai

Kennwert C [mV/V] <small>sensitivity / sensibilité</small>	1.9980
Kennlinienabweichung, Anfangspunkteinstellung [%vC] <small>combined error / erreur combinée</small>	0.036
Relative Umkehrspanne [%vC] <small>relative hysteresis / hystérésis relatif</small>	0.045

Allgemeine Zusatzinformationen:
general remarks / remarques complémentaires

Alle weiteren messtechnischen Eigenschaften des Aufnehmers sind durch Typprüfungen und laufende Produktkontrollen des Qualitätswesens abgesichert.
All other metrological characteristics of the transducer are verified by type testing and regular product audits of the quality department.
Toutes les autres caractéristiques techniques de ce capteur sont garanties par le service Qualité, au moyen d'essais et de contrôles effectués sur le produit.

Zertifiziert nach ISO 9001 und ISO 14001 (DQS-69091) Akkreditiertes DKD Kalibrierlaboratorium und BHM-Prüflaboratorium
ISO 9001 and ISO 14001 certified / Certification selon ISO 9001 et ISO 14001 Accredited DKD calibration laboratory and BHM testing laboratory
Laboratoire accrédité en la DKD et laboratoire d'essais BHM
DKD-K-00101; D-PL-12029-01

Hoffinger Baldwin Messtechnik GmbH Im Tiefen See 45 D-64293 Darmstadt 233.00-1043PP
Ausgabe 19246 Version b 05/01/2011 Moor KPS 16

Information on the linearity of the individual transducer

Information on the sensitivity, characteristic curve deviation and rel. reversibility error of the individual transducer.

SPECIFICATIONS P3 TOP CLASS PER DIN 16086

Type	P3 Top Class												
Mechanical input quantities													
Pressure type	absolute pressure												
Principle of measurement	foil strain gage												
Measuring range, 0 bar...	bar	10	20	50	100	200	500	750	1000	2000	3000	2500	
Accuracy class ²⁾		0.2	0.15	0.15	0.13	0.1							
Output characteristics													
Nominal (rated) sensitivity	mV/V	2 ± 0.15%										1.5 ± 0.15%	
Sensitivity tolerance	%	0.2	0.15			0.10							
Zero signal tolerance	%	± 1											
Creep upon unloading 15 min.	%	0.2	0.15	0.05	0.03								
Effect of temperature on zero signal in the nominal (rated) excitation voltage range per 10 K, rel. to nominal (rated) sensitivity	%	± 0.05											
in the nominal (rated) temperature range	%	± 0.10											
in the operating temperature range	%												
Effect of temperature on sensitivity in the nominal (rated) excitation voltage range per 10 K, rel. to actual value	%	± 0.05											
in the nominal (rated) temperature range over 0 °C	%	± 0.1											
in the nominal (rated) temperature range below 0 °C	%	± 0.2											
in the operating temperature range	%												
Characteristic curve deviation (setting of initial point)	%	0.20	0.15	0.15	0.13	0.10							
Rel. interpolation error (max. deviation) of a cubic interpolation function over the test series	%	0.10	0.08	0.05									
Long-term stability of zero signal and span (data per year)	%	0.4					0.20						
Repeatability per DIN 1319	%	± 0.05											

²⁾ Accuracy class is not a DIN 16086 concept. The figure conforms to the maximum single deviation; that is the characteristic curve deviation (setting of initial point) and deviations as a result of temperature, related to a difference of 10 K.

Extended test report

Page 1

Test report P3 Top Class

Page 2

Information on the linearity of the individual transducer

Information on the sensitivity, characteristic curve deviation and rel. reversibility error of the individual transducer.

Information on the max. interpolation error as a % and the coefficient of the cubic compensation function in the form $X = R \cdot Y^3 + S \cdot Y^2 + T \cdot Y$ of the individual transducer

Information on the temperature dependency of the individual transducer

Information on the temperature coefficient of the zero signal and on the temperature coefficient of the output span of the individual transducer.

THE FOLLOWING DATA APPLIES TO P3 AND P3 TOP CLASS

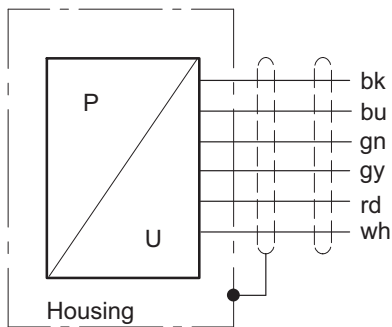
Mechanical input quantities												
Measuring range, 0 bar...	bar	10	20	50	100	200	500 750	1000	2000 2500	3000		
Initial value	bar	0										
Operating range at reference temperature	%	0...200				0...150						
Overload limit at reference temperature	%	250				200						
Test pressure	%	250				200				150		
Dynamic loading												
Permissible pressure	%	100										
Permissible oscillation width to achieve a typical 10,000,000 DIN 50100 load cycles	%	70										
Dead volume	mm ³	2500			2000			800		900		
Control volume	mm ³	9		7				1.5				
Output characteristics												
Fundamental resonance frequency	kHz	13	15	26	38	67	100					
Input resistance at reference temperature	Ω						350 ±5					
Output resistance at reference temperature	Ω						350 ±5					
Insulation resistance	MΩ						5000					
Electrical strength	V						90					
Excitation voltage												
Reference excitation voltage	V						5					
Nominal (rated) excitation voltage	V						0.5 ... 7.5					
Operating range	V						0.5 ... 12					
Ambient conditions												
Permissible voltage between measuring circuit and transducer ground at reference temperature	V						50					
Materials for parts which come into contact with the environment		1.4301; 1.4541; 1.4542; 1.4548; 1.6354 PU / chrome-plated and nickel-plated brass										
Reference temperature	°C						23					
Nominal (rated) temperature range	°C						-10 ... +80					
Limiting temperature range	°C						-40 ... +100					
Storage temperature range	°C						-40 ... +100					
Impact resistance (tested to DIN 40046)												
Impact acceleration	m/s ²						1000					
Impact duration	ms						4					
Impact form	-						Half sine wave					
Acceleration sensitivity per 10 m/s ² for exciting frequencies of 20% of the natural frequency	%						<±0.001					
Mechanical specifications												
Pressure connection		M12 x 1.5							M20 x 1.5			
Electrical connection		Lemo connector ERA.2E.310.SSL or a fixed 3 m cable or an HS6P device plug										
Bending radius of the connection cable, min. static	mm						35					
dynamic	mm						75					
Mounting position							any					
Weight without cable approx.	g						approx. 200					
Degree of protection (per DIN 40050, IEC 529)							IP67					

ECONOMICAL, STANDARD VERSIONS AVAILABLE FROM STOCK:

Measuring range, 0 bar to ...	Product number		
	P3 Top Class Lemo FFA 2E.310	P3MB cable connection 3 m cable, free ends	P3MBP with HS6P plug connection
10 bar	1-P3TCP/10BAR	1-P3MB/10BAR	1-P3MBP/10BAR
20 bar	1-P3TCP/20BAR	1-P3MB/20BAR	1-P3MBP/20BAR
50 bar	1-P3TCP/50BAR	1-P3MB/50BAR	1-P3MBP/50BAR
100 bar	1-P3TCP/100BAR	1-P3MB/100BAR	1-P3MBP/100BAR
200 bar	1-P3TCP/200BAR	1-P3MB/200BAR	1-P3MBP/200BAR
500 bar	1-P3TCP/500BAR	1-P3MB/500BAR	1-P3MBP/500BAR
750 bar	1-P3TCP/750BAR	-	-
1 000 bar	1-P3TCP/1000BAR	1-P3MB/1000BAR	1-P3MBP/1000BAR
2 000 bar	1-P3TCP/2000BAR	1-P3MB/2000BAR	1-P3MBP/2000BAR
2 500 bar	1-P3TCP/2500BAR	-	-
3 000 bar	1-P3TCP/3000BAR	1-P3MB/3000BAR	1-P3MBP/3000BAR

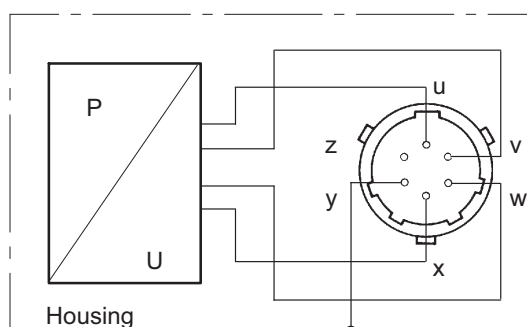
PIN ASSIGNMENT P3MB AND P3MBP

P3MB Pin assignment



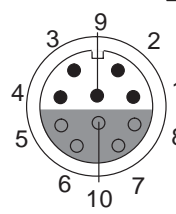
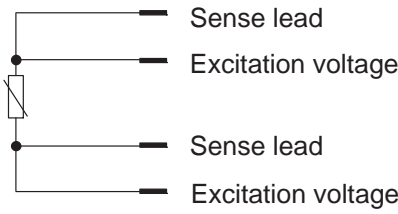
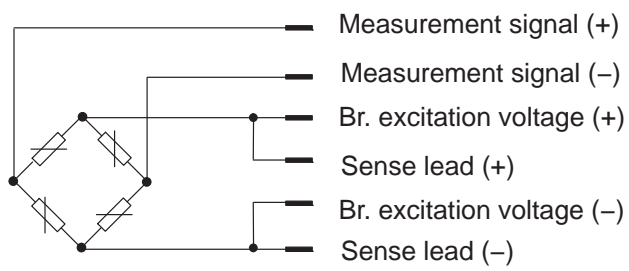
Standad version

P3MBP Pin assignment

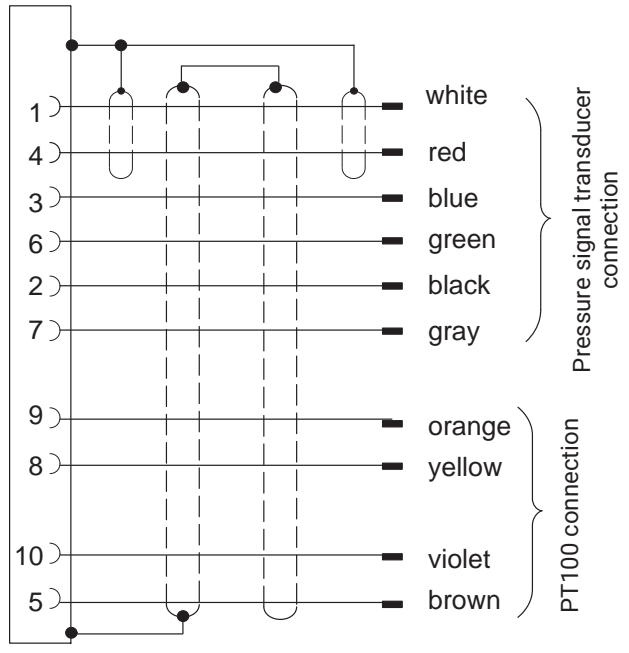


Option with HS6P plug

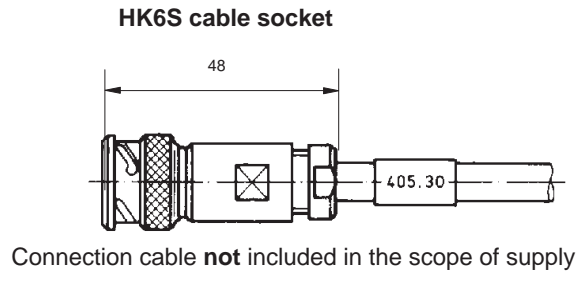
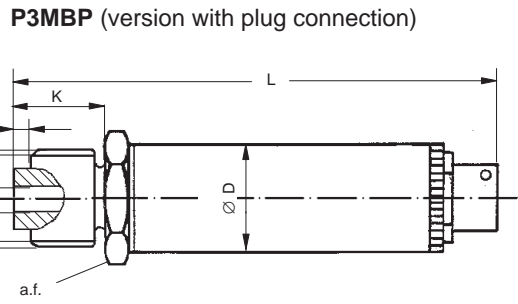
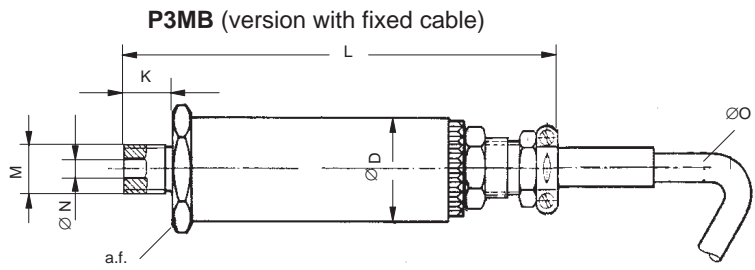
PIN ASSIGNMENT P3 TOP CLASS



Lemo socket FFA.2E.310.CLAC65
View: pressure transducer



DIMENSIONS FOR P3MB AND P3MBP VERSIONS (P3 TOP CLASS SEE FIRST PAGE)



P3MB		D	K	L	M	N	O	P	a.f.	R
with cable connection	10 bar...2000 bar	25	12	112	M12 x 1.5	5	6.5	-	27	-
	3000 bar	25	20	129	M20 x 1.5	5	6.5	17.5	27	3
with plug connection	10 bar...2000 bar	25	12	97	M12 x 1.5	5	-	-	27	-
	3000 bar	25	20	105	M20 x 1.5	5	-	17.5	27	3

ACCESSORIES

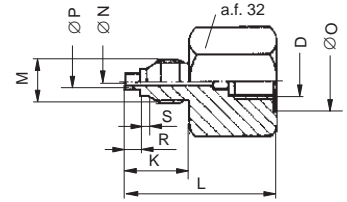
Included in scope of supply

1 USIT ring U12.7 x 20 x 1.5 for P3MB.../ 10 bar to 500 bar
 1 double-cone seal, 1.4305, for P3MB / 500 bar ... 3000 bar;
 Bag with 2 x conical seals made of material 1.4305

To be ordered separately

Connecting branches for measuring ranges to 500 bar
 Material: stainless steel 1.4305

Type	D	K	L	M	N	O	P	R	S
P3M/500/M20	M12 x1.5	25	50	M20 x 1.5	4	20.2	5	5	3
P3M/500/R1/2	M12 x 1.5	20	50	G1/2	4	20.2	5	5	3



All dimensions in mm

Connection cable P3TCP 1-Kab170-3 or 1-Kab170-7; Connection cable 1-KAB405.30A-3 (for variants with HS6P plug, to be ordered separately); Connection cables 1-Kab170-3 or 1-Kab170-7 must be ordered separately.

HK6S cable socket, Order no. 3-3312.0095

Cable plug for Greenline Order no. 1-MS3106PEMV

15-pin D-Sub plug, Order no. 2-9278.0321

Seal accessories

10 to 200 bar	3-4218.0002	U seal/USIT ring U12.7 x 20 x 1.5, max. 500 bar
500 bar	3-4218.0002	U seal/USIT ring U12.7 x 20 x 1.5, max. 500 bar
	2-9278.0376	bag, conical seal P3MB/500-3000 bar
1000 to 3000 bar	2-9278.0376	bag, conical seal P3MB/500-3000 bar

OPTIONS FOR K-P3 ABSOLUTE PRESSURE TRANSDUCER

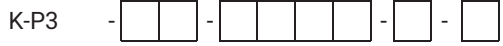
Order No.
K-P3

Code	Option 1: Design
MB	MB - Classic, with cable connection [not with option 3 = P]
MBP	MPB - Classic, with plug H6SP [only with option 3 = P]

Code	Option 2: Measuring range
010B	10 bar
020B	20 bar
050B	50 bar
100B	100 bar
200B	200 bar
500B	500 bar
01KB	1000 bar
02KB	2000 bar
03KB	3000 bar

Code	Option 3: Electrical connection
K	Connection cable, 3 m, unterminated [only with option 1 = MB]
Y	Connection cable, 20 m, unterminated [only with option 1 = MB]
M	Connection cable, 3 m, connector MS [only with option 1 = MB]
N	Connection cable, 20 m, connector MS [only with option 1 = MB]
D	Connection cable, 3 m, connector D15 [only with option 1 = MB]
F	Connection cable, 20 m, connector D15 [only with option 1 = MB]
Q	Connection cable, 3 m, connector D-Sub-HD [only with option 1 = MB]
R	Connection cable, 20 m, connector D-Sub-HD [only with option 1 = MB]
P	With plug HS6P, welded [only with option 1 = MBP]

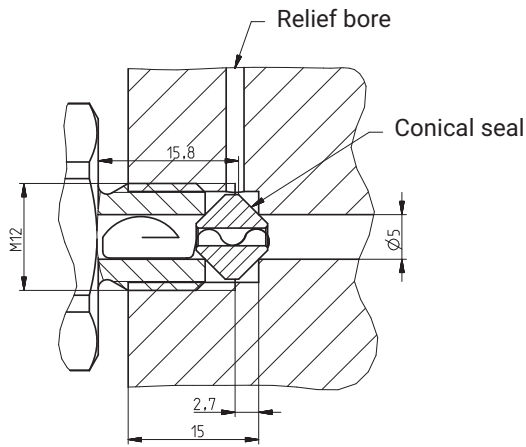
Code	Option 4: Transducer Identification
S	Without Transducer Identification (TEDS)



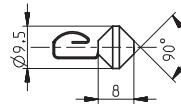
PRESSURE TRANSDUCER MOUNTING

P3 10 bar to 500 bar: USIT ring U12.7 x 20 x 1.5 (not shown)

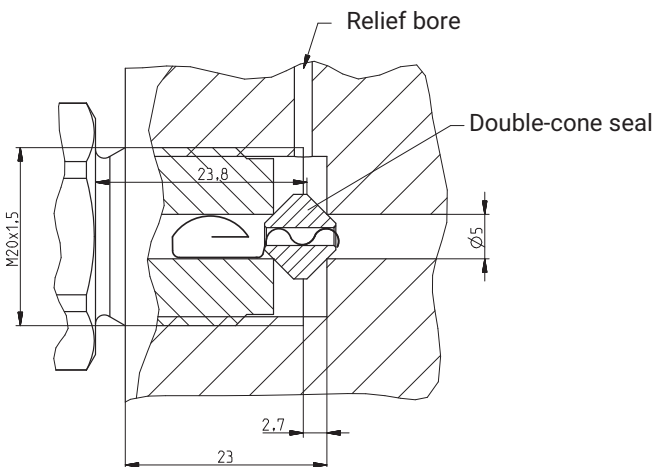
P3 500-2500 bar



Conical seal
500-3000 bar



P3 3000 bar



Double-cone seal
with retaining spring

