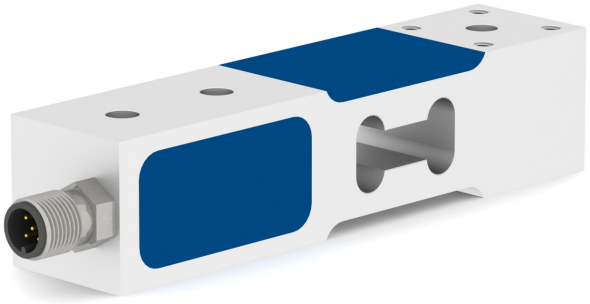
HKM Messtechnik

Force transducer

BR 3.X, BR 4.X



For tension and compression loads
Nominal loads from 100 N to 1000 N
With integrated measuring amplifier
Design adaptation to customer specification

Load and force measurement
Platform scales

Designed, developed and made in Germany

These compact force transducers measure tensile and compression loads in the small to medium load range up to a maximum of 1000 N. A great advantage is that they are insensitive to transverse forces. This means that the force does not have to be applied with absolute centricity.
These force transducers are used for a wide range of load and force measurement applications. In the low load range they are an ideal complement to the shear force transducers.
These force transducers are simply mounted via two holes. The force is applied to the force transducers via another hole. The component by which the force is applied is secured by four threads to prevent it from twisting.
Measuring amplifiers can be integrated into all these force transducers, giving you a wide range of different output signals. The transducers are supplied with an M12x1 plug connector as standard. Alternatively, connection via cable is possible.

Technical data

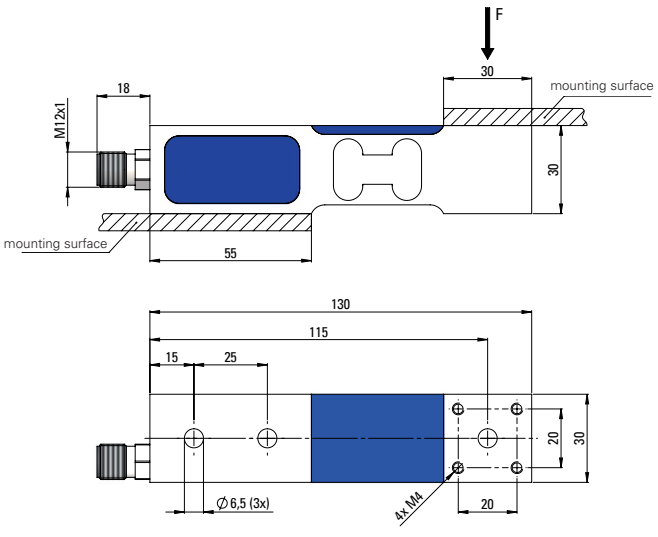
Type	BR 3.0	BR 3.1	BR 4.0	BR 4.1
Nominal load [kg]	10	20	50	100
Dimensions [mm]	H 30 x W 30 x L 130			
Length of mounting surface [mm]	55			
Material	Aluminium			
Self-weight [kg]	0.3			
Maximum working load*	1.2 x nominal load			
Limit load*	1.5 x nominal load			
Breaking load*	> 3 x nominal load			
Accuracy	±0,25% f.s.O. ** under tension *or* compression			
Reference temperature	20°C			
Nominal temperature range	–10°C to +50°C			
Working temperature range	–30°C to +80°C			
Temperature coefficient of gain	< 0.1% f.s.O./10 K **			
Temperature coefficient of zero	< 0.2% f.s.O./10 K **			
Nominal deflection [mm]	< 0.1	< 0.2	< 0.1	< 0.2
Degree of protection	IP 67			

* The sum of the dynamic and static load is decisive
** f.s.O. = full scale Output

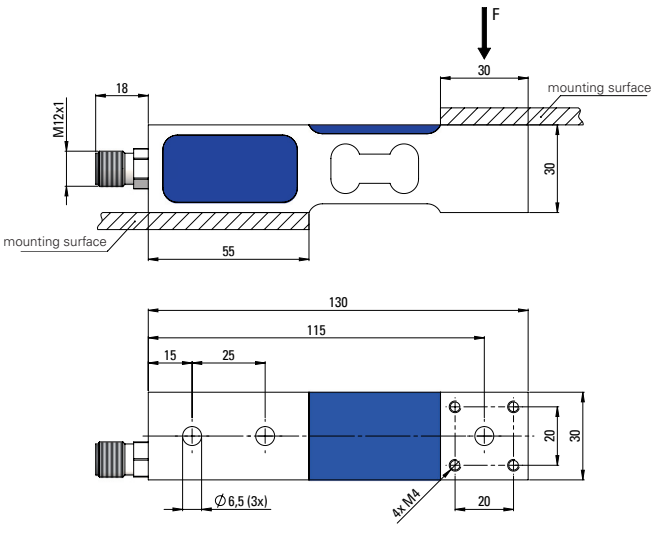
Dimensions

in mm

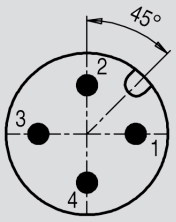
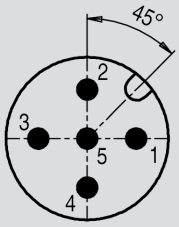
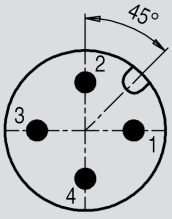
BR 3.x



BR 4.x



Output variants without measuring amplifiers / with integrated measuring amplifiers

Version	Without measuring amplifier**	Measuring amplifier with current output		Measuring amplifier with voltage output			Measuring amplifier with RS 485 interface
		3-conductor	2-conductor **				
Output signal Sig	≈ 1 mV/V for BR 3.0, 4.0 ≈ 2 mV/V for BR 3.1, 4.1	1…9 mA 4…20 mA	4…20 mA	0…5 V	0…10 V	± 5 V ± 10 V	0...32767 digits
Supply U_b [V]	< 10	10…30	10…30	6…30	11…30	12…30	6...30
Resolution [bit]	–	11		11			14
Measuring rate	–	1000 (optional 30….2000) Hz					
Insulation resistance	> 1 GΩ	> 1 GΩ					
Load	–	< (U_b – 6V) / Sig_{max} max. 500 Ω	< (U_b – 8V) / Sig_{max} max. 500 Ω	> 10 000 Ω			–
Max. power consumption	40 mA	40 mA					
Electrical protection	Reverse voltage, overvoltage and short circuit protection			Reverse voltage and overvoltage protection			Reverse voltage, overvoltage and short circuit protection
Electrical connection variants	M12x1 4-pole	M12x1 5-pole	M12x1 5-pole	M12x1 5-pole			M12x1 4-pole
U_b	1	1	1	1			1
Sig (+)	4	4	1	4			
GND	3	3	3	3			3
Sig –	2						
A							4
B							2
Shield	Housing	Housing	Housing	Housing			Housing
not connected		2; 5	2; 4; 5	2;5			
Pole assignement							

* Input bridge resistor ≈ 400 Ω | Output bridge resistor ≈ 350 Ω

** Special version on request | high impedance bridge resistor required

Options

» Design adaptation to customer specification

Accessories: Cable with plug connector

» With axial coupling
» Cable length 5 m, 10 m and 20 m

Cable end connection configuration

Version	Without measuring amplifier	Measuring amplifier with current output		Measuring amplifier with voltage output	Measuring amplifier with RS 485 interface
		3-Leiter	2-Leiter		
U_b	BN (1)	BN (1)	BN (1)	BN (1)	BN (1)
$Sig_{(+)}$	BK (4)	BK (4)	BN (1)	BK (4)	
GND	BU (3)	BU (3)	BU (3)	BU (3)	BU (3)
Sig_-	WH (2)				
A					BK (4)
B					WH (2)
not connected		WH	WH, BK	WH	