

DATA SHEET

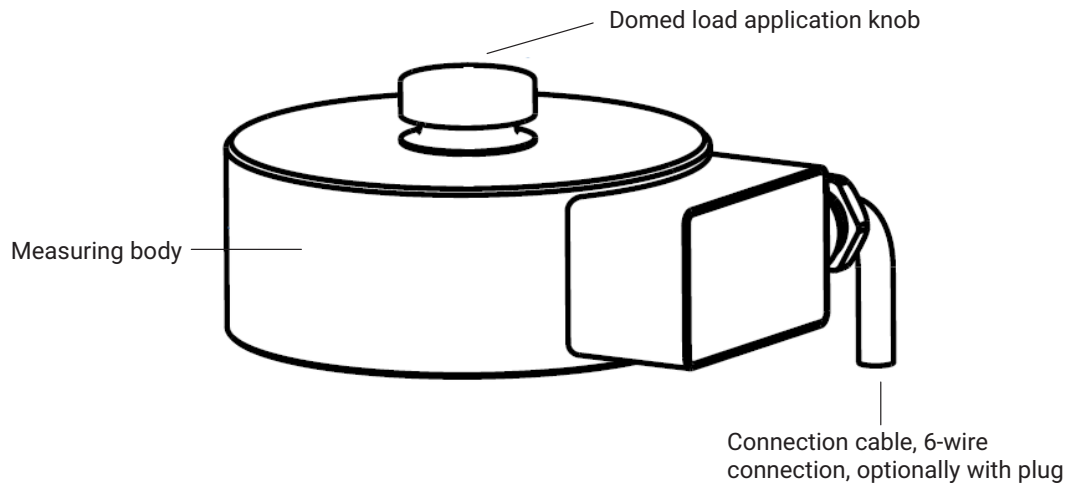
C2 Force Transducer

SPECIAL FEATURES

- Compressive force transducer
- Non-rusting, degree of protection IP67
- Can be configured with different cable lengths, fitted plug, integrated amplifier (0 ...10 V, 4 ... 20 mA) and TEDS chip on request
- Lateral force compensation
- Low overall height
- Nominal (rated) forces 500 N ... 200 kN
- Accuracy class 0.1



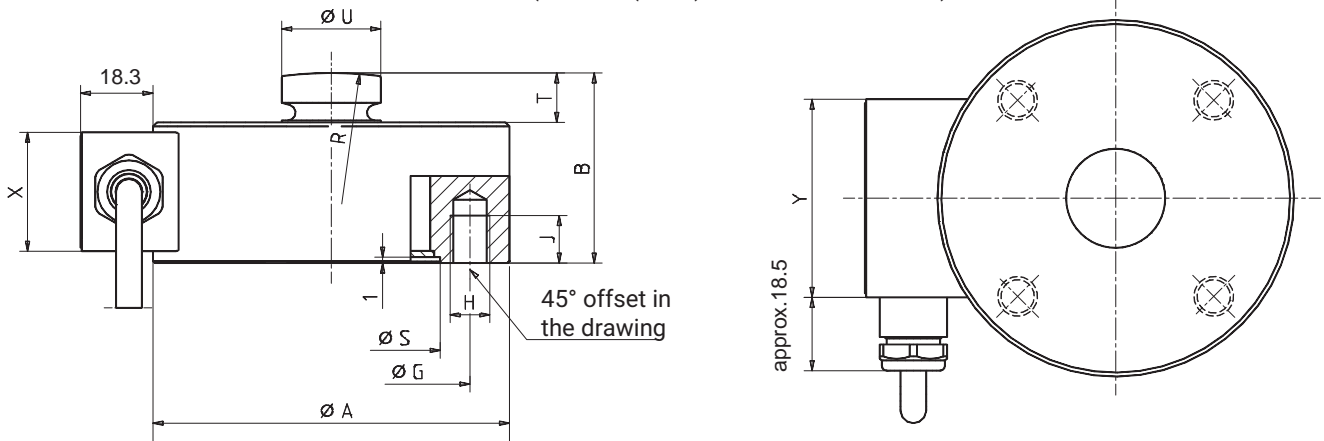
SCHEMATIC DIAGRAM



DIMENSIONS

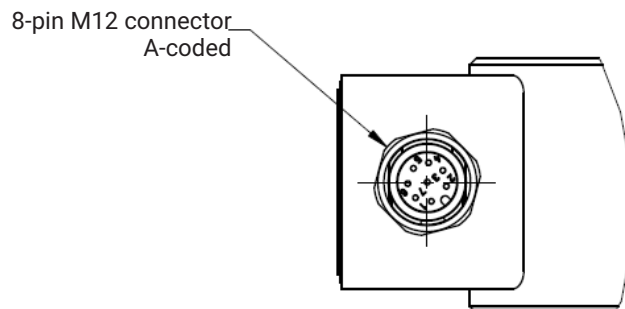
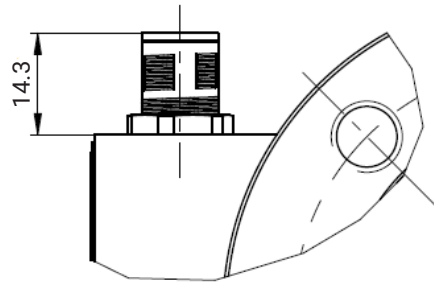
Dimensions in mm (1 mm = 0.03937 inches)

C2 (nominal (rated) forces 500 N...200 kN)



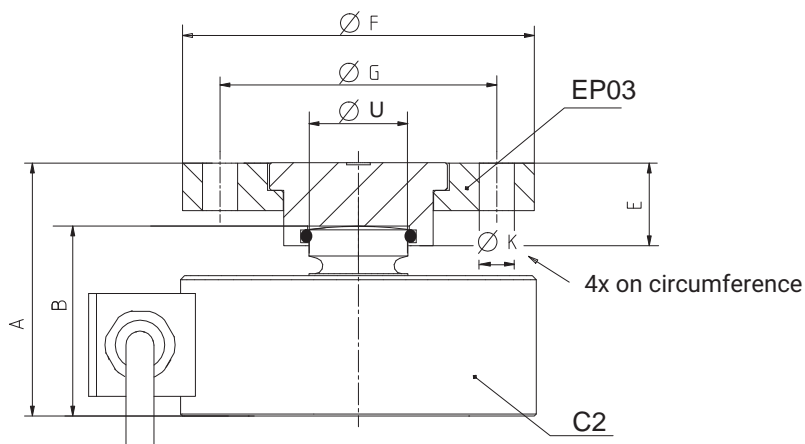
Nominal (rated) force	$\varnothing A_{-0.2}$	B	$\varnothing G$	H	J	R	$\varnothing S^{H8}$	T	$\varnothing U$	X	Y
500 N...10 kN	50	30	42	4xM5	7	60	34	7	13	20	35
20 kN, 50 kN	90	48	70	4xM10	12	100	55	12.5	25	30	50
100 kN, 200 kN	115	60	90	4xM12	16	160	68	12.5	32	30	50

Optionally passive or active
With M12 A-coded plug



ACCESSORIES, TO BE ORDERED SEPARATELY: THRUST PIECE EPO3/EPO3R

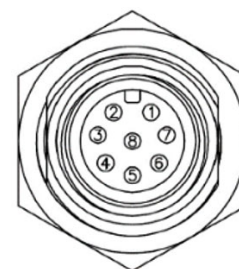
Thrust piece EPO3/EPO3R mounting aid



Nominal (rated) force	Thrust piece ¹⁾	A	B	E	∅F	∅G	∅U	∅K
500 N...10 kN	1-EPO3/200KG	46	30	21	89	70	13	9
20 kN, 50 kN	1-EPO3R/5T	64	48	21	89	70	25	9
100 kN, 200 kN	1-EPO3R/20T	80	60	27.5	110	90	32	13

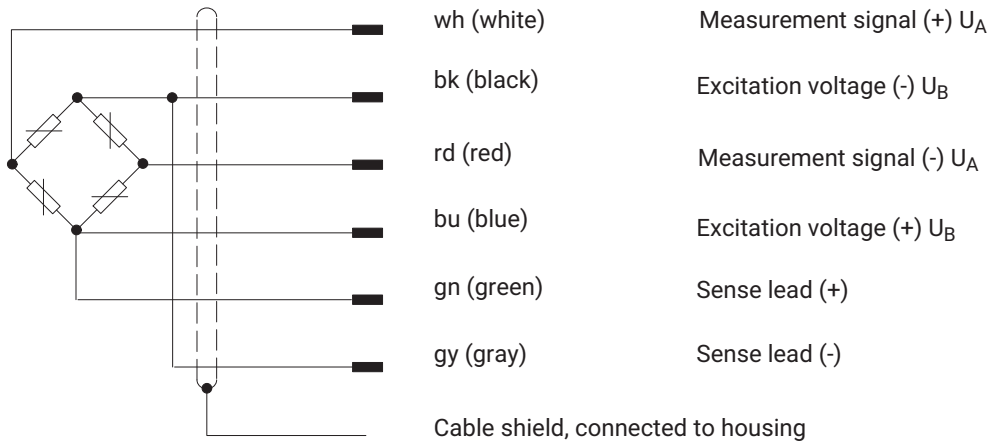
CABLE WIRING PIN ASSIGNMENT (M12 PLUG)

Pin	Wire color	Version VA 1 (voltage output)	Version VA 2 (current output)	Assignment of the connection cable conductors without integrated amplifier
1	white	Supply voltage 0 V (GND)		Measurement signal (+)
2	brown	Not in use		Bridge excitation voltage (-) (TEDS ¹⁾)
3	green	Zero control input		Bridge excitation voltage (+)
4	yellow	Not in use		Measurement signal (-)
5	gray	Output signal 0 ... 10 V	Output signal 4 ... 20 mA	Not in use
6	pink	Output signal 0 V	Not in use	Sense lead (+)
7	blue	Not in use		Sensor lead (-) (TEDS ¹⁾)
8	red	Voltage supply +19 ... +30 V		Not in use
Cable shield, connected to the housing				



¹⁾ TEDS chip only if ordered

CABLE WIRING ASSIGNMENT (WITH FIXED CABLE)



SPECIFICATIONS AS PER DIN/VDE2638

Type			C2									
Nominal (rated) force	F_{nom}	N	500									
		kN		1	2	5	10	20	50	100	200	
Accuracy												
Accuracy class			0.2	0.1								
Relative reproducibility and repeatability errors without rotation	b_{rg}	%	0.1									
Rel. reversibility error ($0.5 * F_{nom}$)	$V_{0.5}$		0.2	0.15								
Non-linearity	d_{lin}		0.2	0.1								
Creep upon loading (30 min)	d_{crF}		0.06									
Effect of eccentricity ²⁾ ($10\% F_{nom} * 10 \text{ mm}$)	d_E		0.3	0.2	0.1							
Temperature effect on sensitivity	TC_S	% /	0.1									
Temperature effect on zero signal	TC_0	10 K	0.1	0.05								
Characteristic electrical values												
Nominal (rated) sensitivity	C_{nom}	mV/V	2									
Rel. zero signal error	$D_{s,0}$	%	1									
Sensitivity error	d_c		0.2									
Input resistance	R_i	Ω	> 340									
Output resistance	R_o		200 ... 400									
Insulation resistance	R_{is}		> 2									
Operating range of the excitation voltage	$B_{U,G}$	V	0.5 ... 12									
Reference excitation voltage	U_{ref}		5									
Connection			6-wire circuit									
Temperature												
Reference temperature	t_{ref}	$^{\circ}\text{C}$	+23									
Nominal (rated) temperature range	$B_{T,nom}$		-10 to +70									
Operating temperature range	$B_{T,G}$		-30 to +85									
Storage temperature range	$B_{T,S}$		-50 to +85									

Type			C2								
Nominal (rated) force	F _{nom}	N	500								
		kN		1	2	5	10	20	50	100	200
Mechanical quantities											
Maximum operating force	F _G	% of F _{nom}	130			150					
Limit force	F _L		130			150					
Breaking force	F _B		300								
Static lateral limit force ³⁾ When loading with nominal (rated) force	F _Q		100			70	40	55	12	15	9
Permissible eccentricity	e _G	mm	5.4	5.3	5.2	4.8	4.2	8.0	2.0	1.5	1.5
Nominal (rated) displacement ±15%	S _{nom}		0.049	0.053	0.047	0.048	0.04	0.069	0.074	0.08	0.10
Fundamental frequency	f _G	kHz	4.4	8.7	9.7	18.5	19.3	13	14	13	14
Relative permissible oscillatory stress	F _{rb}	% of F _{nom}	100								
General information											
Degree of protection per DIN EN 60529 ⁴⁾			IP67								
Spring element material			Non-rusting stainless steel								
SG protection			Hermetically-welded measuring body								
Cable			6-wire, polyethylene insulated								
Cable length (standard version)	m		3				6			12	
Cable length (as requested by the customer)			See page 6 "C2 versions and ordering numbers"								
Weight	kg		0.4				1.8			3	

2) Lateral force effect application point

3) Permissible FQ application point

4) 1 m water column, 0.5 h

SPECIFICATIONS C2 ACTIVE

Module type		VA1	VA2
Rated electrical output			
Output signal		0... 10 V	4 ... 20 mA
Nominal (rated) output		10 V	16mA
Rated output tolerance		±0.1 V	±0.16 mA
Zero signal		0 V	4mA
Range of output signal		-0.3... 11 V	3 ... 21 mA
Cut-off frequency (-3dB)	kHz	2	
Supply voltage	V	19 ... 30	
Nominal (rated) voltage		24	
Max. current consumption	mA	15	30
Temperature			
Reference temperature	°C	+23	
Nominal (rated) temperature range		-10 ... +50	
Operating temperature range		-20 ... +60	
Storage temperature range		-25 ... +85	

C2 VERSIONS AND ORDERING NUMBERS

Code	Measuring range	Ordering number	
500N	500 N	1-C2/500N	The ordering numbers with a gray background are preferred types and can be delivered rapidly. All preferred types come with cables with free ends and without TEDS chip. The ordering number of the preferred type is 1-C2.... The ordering number of the customized version is K-C2-.....
001K	1 kN	1-C2/1kN	
002K	2 kN	1-C2/2kN	
005K	5 kN	1-C2/5kN	
010K	10 kN	1-C2/10kN	
020K	20kN	1-C2/20kN	
050K	50 kN	1-C2/50 kN	
100K	100 kN	1-C2/100kN	
200K	200 kN	1-C2/200kN	

Electrical connection to sensor	Plug version for the "permanently attached cable" option	Transducer identification	Amplifier
8-pin M12 plug, A-coded 00A8	Free ends Y	With TEDS chip T	No amplifier N
1 m 01M0	D-SUB-HD15,15-pin F	Without TEDS chip S	VA1: 0... 10 V VA1
3 m 03M0	D-SUB-HD15, 15-pin Q		VA2: 4 ... 20 mA VA2
6 m 06M0	Plug MS3106PEMV N		
12 m 12M0	No cable available X		
20 m 20M0			

Ordering example: C2 with a nominal (rated) force of 20 kN, M12 plug, no fixed cable on sensor, no TEDS chip, with integrated amplifier (current output)

K-C2-	020K-	00A8-	X-	S-	VA2
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TEDS chip cannot be ordered with internal amplifier.
Internal amplifier only available with M12 plug.

SCOPE OF SUPPLY

- C2 force transducer
- Mounting instructions
- Manufacturing certificate

ACCESSORIES

Accessories (not included in the scope of supply)	Ordering number
Ground cable, 400 mm	1-EEK4
Ground cable, 600 mm	1-EEK6
Ground cable, 800 mm	1-EEK8
Thrust piece for nominal (rated) forces 500 N...10 kN	1-EPO3/200kg
Thrust piece for nominal (rated) forces 20kN...50kN	1-EPO3R/5t
Thrust piece for nominal (rated) forces 100kN...200kN	1-EPO3R/20t
Cable to connect to M12 plug, 20 m long	1-KAB168-20
Cable to connect to M12 plug, 5 m long	1-KAB168-5

Hottinger Brüel & Kjaer GmbH

Im Tiefen See 45 · 64293 Darmstadt · Germany
Tel. +49 6151 803-0 · Fax +49 6151 803-9100
www.hbkworld.com · info@hbkworl.com

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