

DATA SHEET

U93 Force Transducer

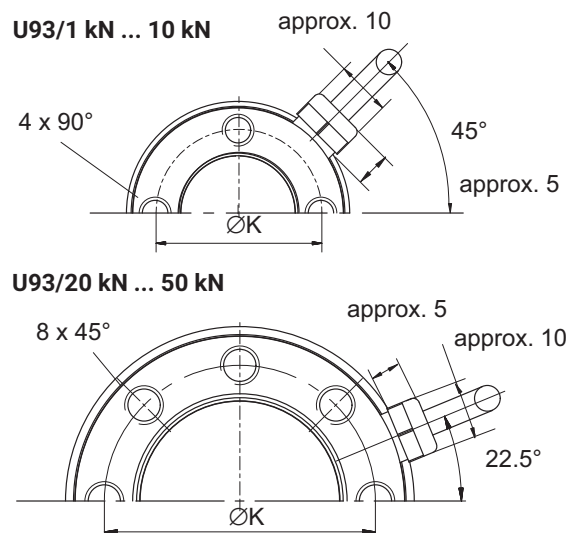
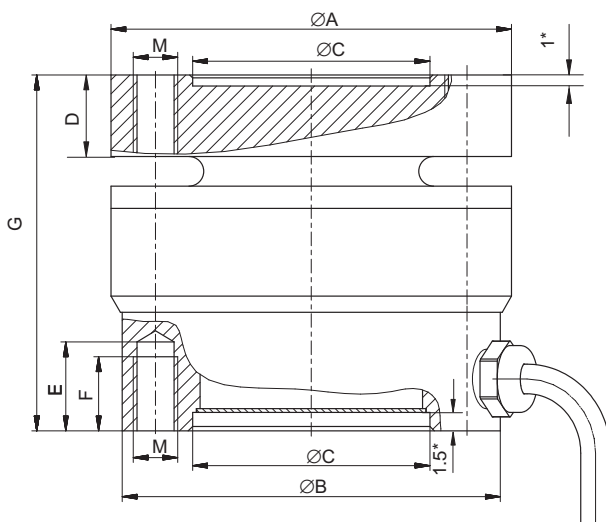
SPECIAL FEATURES

- Tensile/compressive force transducer
- Simple installation thanks to flange connection on both sides
- Integrated TEDS electronic data sheet, optional
- Compact
- Robust
- Stainless steel transducer
- Suitable for cable drag chains



DIMENSIONS

Dimensions (in mm; 1 mm = 0.03937 inches)



Nominal (rated) force	ØA	ØB	ØC ^{H8}	D	E	F	G	ØK ^{±0.1}	M
U93/1 kN ...10 kN	35	33	18	6.2	9	7	30.5	26	M5
U93/20 kN ...50 kN	54	51	32	11	12	10	48	42	M6

* admissible centering depth

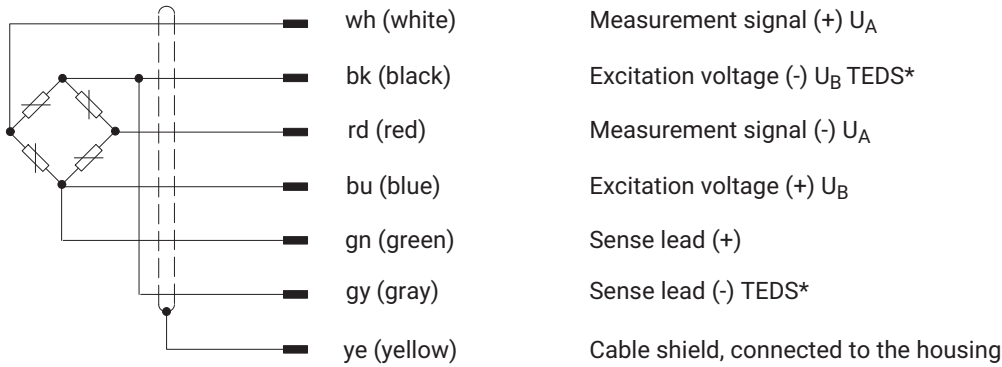
SPECIFICATIONS (DATA PER VDI/VDE 2638 STANDARDS)

Type	U93								
	F_{nom}	kN	1	2	5	10	20	50	
Nominal (rated) force	C_{nom}	mV/V	0.5	1	0.5	1	0.5	1	
Relative sensitivity error (compression)	d_c	%	<±0.5						
Relative zero signal error	$d_{s,0}$	mV/V	<±0.075						
Rel. reversibility error (0.5 F_{nom})	$v_{0.5}$	%	<±0.5						
Relative linearity error	d_{lin}	%	<±0.5						
Effect of temperature on sensitivity/ 10 K, related to nominal (rated) sensitivity	TK_C	%	<±0.5						
Effect of temperature on zero signal/ 10 K, related to nominal (rated) sensitivity	TK_0	%	<±0.8	<±0.5	<±0.8	<±0.5	<±0.8	<±0.5	
Relative creep over 30 min	d_{crF+E}	%	<±0.2						
Effect of lateral forces (lateral force 10%F_{nom})¹⁾	d_Q	%	< 0,2		< 0,5		< 0,4		
Effect of eccentricity per mm	d_E	%	< 0.07		< 0.03		< 0.12		
Input resistance	R_i	Ω	> 295						
Output resistance	R_o	Ω	190 ... 400						
Isolation resistance	R_{is}	Ω	>1·10 ⁹						
Reference excitation voltage	U_{ref}	V	5						
Operating range of the excitation voltage	$B_{U,G}$	V	0.5...12						
Nominal temperature range	$B_{t,nom}$	°C	-10...+70						
Operating temperature range	$B_{t,G}$	°C	-30...+85						
Storage temperature range	$B_{t,S}$	°C	-50...+85						
Reference temperature	t_{ref}	°C	+23						
Max. operating force	F_G	%	180						
Breaking force	F_B	%	> 400		> 300		> 300		
Lateral force limit¹⁾	F_Q	%	100		80		40		
Permissible force application eccentricity	e_G	mm	1.5		3		6		
Nominal (rated) displacement (±15%)	S_{nom}	mm	0.01	0.02	0.02	0.04	0.01	0.03	
Fundamental resonance frequency	f_G	kHz	7.9		11.7		10.3		
Weight with cable, approx.		g	200						600
Relative permissible oscillatory stress	F_{rb}	%	15 0						
Cable connection, six-wire connection			3 m cable length; outside diameter 4 mm; 6 x 0.08 mm ² ; polyurethane sheath; min. bending radius R10						
Degree of protection per DIN 60529			IP67						
Transducer identification, optional			TEDS, as per IEEE 1451.4						

¹⁾ relative to a point of contact on the force application surface

PIN ASSIGNMENT

Six wire circuit



* TEDS chip only if ordered

ORDER NUMBERS: FORCE TRANSDUCER

The ordering number for the preferred version is 1-U93..., the ordering number for customized versions is K-U93...

Preferred version available at short notice

Preferred version

Nominal (rated) force	Ordering number
1 kN	1-U93/1 kN
2 kN	1-U93/2 kN
5 kN	1-U93/5 kN
10 kN	1-U93/10 kN
20 kN	1-U93/20 kN
50 kN	1-U93/50 kN

U93 force transducer, version options

Nominal (rated) force	Cable length	Cable version	TEDS
1 kN 1K00	3 m 3	Free ends Y	With TEDS chip T
2 kN 2K00	6 m 06	D-sub-HD15, 15-pin F	Without TEDS chip S
5 kN 5K00	12 m 12	D-SUB-HD15, 15-pin Q	
10 kN 10K0		Male connector MS3106PEMV N	
20 kN 20K0			
50 kN 50K0			

Ordering example

K-U93-	2K00-	03-	Y-	S
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Force transducer U93 with a nominal (rated) force of 2 kN, 3 m cable, free ends, without TEDS chip

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