

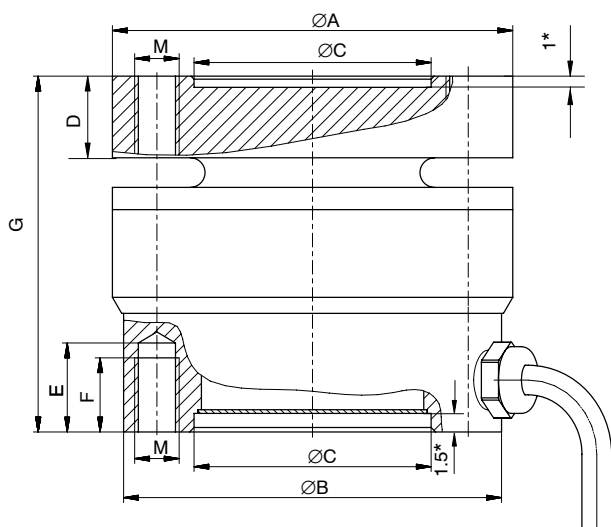
# U93

## Force Transducer

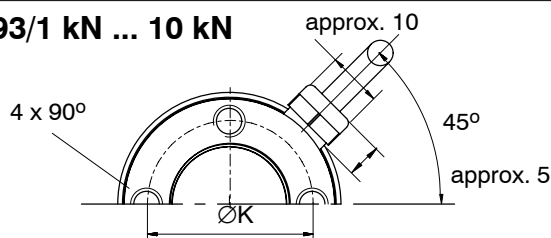


### Special features

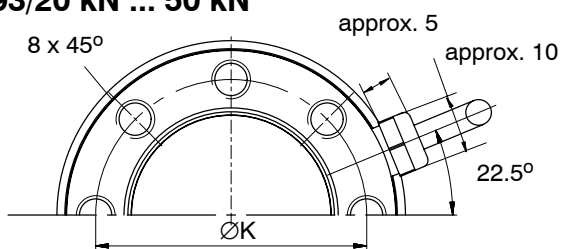
- Tensile/compressive force transducer
- Simple installation thanks to flange connection on both sides
- Integrated TEDS electronic data sheet
- Compact
- Robust
- Stainless steel transducer
- Suitable for cable drag chains



### U93/1 kN ... 10 kN



### U93/20 kN ... 50 kN



All dimensions in mm

Nominal (rated) force	$\varnothing A$	$\varnothing B$	$\varnothing C$ <sup>H8</sup>	D	E	F	G	$\varnothing K \pm 0.1$	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

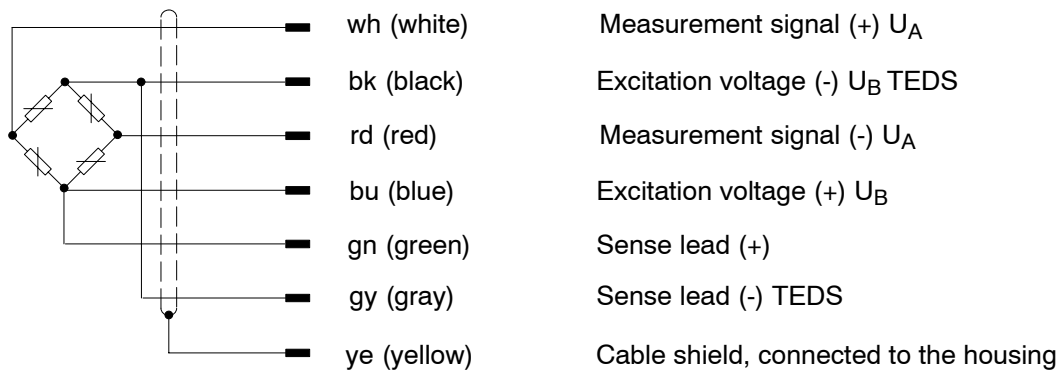
## Specifications (data per VDI/VDE 2638 standards)

Type	U93							
Data as per VDI 2638								
Nominal (rated) force	$F_{nom}$	kN	1	2	5	10	20	50
<b>Nominal (rated) sensitivity</b>	$C_{nom}$	mV/V	0.5	1	0.5	1	0.5	1
Relative sensitivity error (compression)	$d_c$	%	< ± 0.5					
Relative zero signal error	$d_{s,o}$	mV/V	< ± 0.075					
<b>Rel. reversibility error (0.5 <math>F_{nom}</math>)</b>	$v_{0.5}$	%	< ± 0.5					
<b>Relative linearity error</b>	$d_{lin}$	%	< ± 0.5					
<b>Effect of temperature on sensitivity/ 10 K,</b> related to nominal (rated) sensitivity	$TK_C$	%	< ± 0.5					
<b>Effect of temperature on zero signal/ 10 K,</b> related to nominal (rated) sensitivity	$TK_0$	%	< ± 0.8	< ± 0.5	< ± 0.8	< ± 0.5	< ± 0.8	< ± 0.5
<b>Relative creep over 30 min</b>	$d_{crF+E}$	%	< ± 0.2					
<b>Effect of lateral forces (lateral force 10% <math>F_{nom}</math>)<sup>1)</sup></b>	$d_Q$	%	< 0,2		< 0,5		< 0,4	
<b>Effect of eccentricity per mm</b>	$d_E$	%	< 0.07		< 0.03		< 0.12	
<b>Input resistance</b>	$R_i$	Ω	< 345					
<b>Output resistance</b>	$R_o$	Ω	300-400					
<b>Isolation resistance</b>	$R_{is}$	Ω	> 1·10 <sup>9</sup>					
<b>Reference excitation voltage</b>	$U_{ref}$	V	5					
<b>Operating range of the excitation voltage</b>	$B_{U,G}$	V	0.5...12					
<b>Nominal temperature range</b>	$B_{t,nom}$	°C	-10...+70					
<b>Operating temperature range</b>	$B_{t,G}$	°C	-30...+85					
<b>Storage temperature range</b>	$B_{t,S}$	°C	-50...+85					
<b>Reference temperature</b>	$t_{ref}$	°C	+23					
<b>Max. operating force</b>	$(F_G)$	%	180					
<b>Breaking force</b>	$(F_B)$	%	> 400		> 300		> 300	
<b>Lateral force limit <sup>1)</sup></b>	$(F_Q)$	%	100		80		40	
<b>Permissible force application eccentricity</b>	$e_G$	mm	1.5		3		6	
<b>Nominal (rated) displacement (± 15%)</b>	$S_{nom}$	mm	0.01	0.02	0.02	0.04	0.01	0.03
<b>Fundamental resonance frequency</b>	$f_G$	kHz	7.9		11.7		10.3	
<b>Weight with cable, approx.</b>		g	200					600
<b>Relative permissible oscillatory stress</b>	$F_{rb}$	%	15 0					
<b>Cable connection, six-wire connection</b>	3 m cable length; outside diameter 4 mm; 6 x 0.08 mm <sup>2</sup> ; polyurethane sheath; min. bending radius R10							
<b>Degree of protection per DIN 60529</b>	IP67							
<b>Transducer identification</b>	TEDS, as per IEEE 1451.4							

<sup>1)</sup> relative to a point of contact on the force application surface

## Pin assignment

### Six wire circuit




## Order Nos.: Force Transducer

Order Code	Nominal (rated) force						Unit
	1	2	5	10	20	50	
1-U93 ...							kN

## Options:

### U93 force transducer, version options

Code	Nominal (rated) force
1K00	1 kN
2K00	2 kN
5K00	5 kN
10K0	10 kN
20K0	20 kN
50K0	50 kN

 Preferred version available soon

Code	Cable length
03	3 m
06	6 m
12	12 m

Code	Cable version
Y	free ends
F	15-pin D-Sub plug
N	MS3106PEMV plug

**K-U93 - 2K00 - 03 - Y**

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