

# Ring force transducer

## For screw forces up to 1,500 kN

### Model F6215

WIKA data sheet FO 51.28

#### Applications

- Preload force measurement for screw connections
- Plant construction
- Special machine building and tool making
- Measuring and control plants
- Experimental setups



#### Special features

- Measuring ranges 0 ... 15 kN to 0 ... 1,500 kN
- Measuring washer
- Compact design, easy installation
- Ingress protection IP65
- Relative linearity error 1 %  $F_{\text{nom}}$

Ring force transducer, model F6215

#### Description

Ring force transducers are suitable for static measuring tasks. They serve for determining compression forces in diverse fields of application.

The force transducers in miniature design have been designed specifically for small dimensions and developed for measuring compression and preload forces.

Due to its compactness, this force transducer is usable in the widest range of industrial and laboratory applications. Fields of application include the simple determination of bolt preloads where the force transducer is used as a measuring washer or where a ring geometry in a compact form is needed. The series is designed for screw sizes from M6 (15 kN) up to M52 (1,500 kN).

#### Note

To avoid overloading, it is advantageous to connect the force transducer electrically during assembly and to monitor the measured value.

The measuring force must be initiated through the centre and without any shear force. When installing the force transducer, care should be taken that the support surface is flat, ground and sufficiently hard. Due to its small geometry, this force transducer reacts very sensitively to changing or different mounting positions. 2 polished adapter discs are supplied as accessories for protection and optimised force introduction.

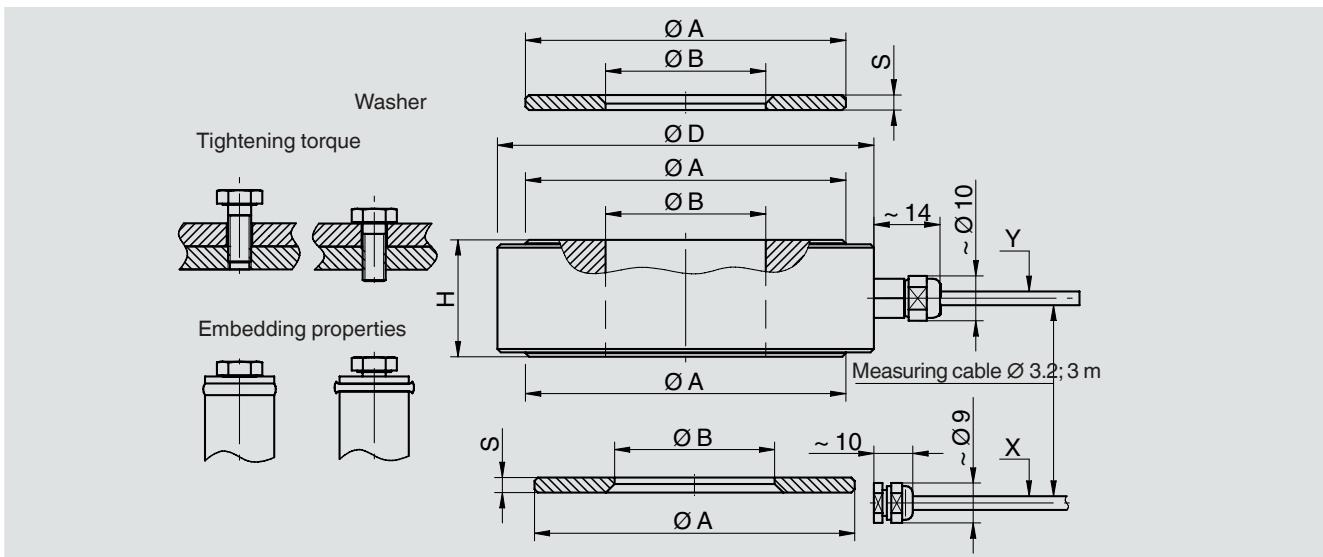
#### Options

- Control function 100 % signal
- Sensitivity calibration 1 mV/V
- Cable amplifier with 4 ... 20 mA or 0 ... 10 V output

## Specifications per VDI/VDE/DKD 2638

Model F6215													
Rated force $F_{\text{nom}}$ kN	15	30	60	80	120	160	350	500	600	720	1,000	1,200	1,500
For thread size	M6	M8	M10	M12	M16	M20	M24	M30	M36	M39	M42	M48	M52
Relative linearity error $d_{\text{lin}}$	$\leq \pm 1\% F_{\text{nom}}$												
Relative span in unchanged mounting situation $b_{\text{rg}}$	$\leq \pm 0.3\% F_{\text{nom}}$												
Relative creep, 30 min.	$\leq \pm 1\% F_{\text{nom}}$												
Temperature effect on the zero signal $TK_0$	$\leq \pm 0.3\% /10\text{ K}$												
Temperature effect on the characteristic value $TK_C$	$\leq \pm 0.3\% /10\text{ K}$												
Limit force $F_L$	150 % $F_{\text{nom}}$												
Breaking force $F_B$	> 300 % $F_{\text{nom}}$												
Permissible vibration loading per DIN 50100 $F_{\text{rb}}$	70 % $F_{\text{nom}}$												
Rated displacement $s_{\text{nom}}$	< 0.1 mm												
Material of the measuring body	Stainless steel												
Rated temperature range $B_{T, \text{nom}}$	-10 ... +70 °C												
Service temperature range $B_{T, G}$	-30 ... +80 °C												
Storage temperature range $B_{T, S}$	-50 ... +95 °C												
Reference temperature $T_{\text{ref}}$	23 °C												
Output signal (rated characteristic value) $C_{\text{nom}}$	1.0 mV/V $\pm 20\%$												
Input-/ Output resistance $R_e/R_a$	350 Ω												
Insulation resistance $R_{\text{is}}$	> 2 GΩ												
Electrical connection	<ul style="list-style-type: none"> <li>■ Standard</li> <li>■ Option</li> </ul>												
Measuring cable, PUR, 3 m with bare cable ends 6-wire													
Excitation voltage $B_{U, \text{nom}}$	DC 2 ... 6 V												
Voltage supply	<ul style="list-style-type: none"> <li>■ Standard</li> <li>■ Option</li> </ul>												
DC 12 ... 28 V Integrated or cable amplifier 0(4) ... 20 mA DC 0 ... 10 V													
Ingress protection (per IEC/EN 60529)	IP65												
Control function (option)	100 % signal												
Weight in kg													
■ 15 kN	0.1												
■ 30 kN	0.1												
■ 60 kN	0.2												
■ 80 kN	0.2												
■ 120 kN	0.3												
■ 160 kN	0.3												
■ 350 kN	0.6												
■ 500 kN	0.9												
■ 600 kN	1.1												
■ 720 kN	1.3												
■ 1,000 kN	1.9												
■ 1,200 kN	2.3												
■ 1,500 kN	3.1												

## Dimensions in mm

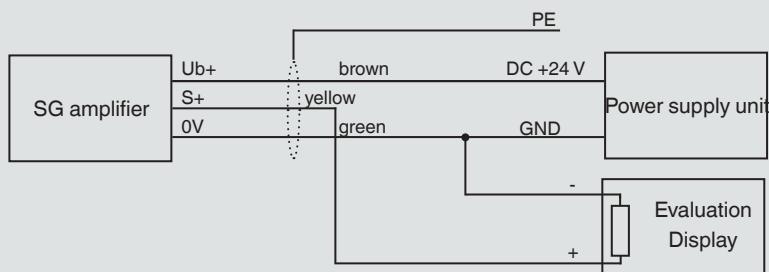


Rated force in kN	Dimensions in mm							
	For screw	ØA	ØB	ØD	H	S	X	Y
15	M6	12	6.3	24	12	2	X	-
30	M8	16	8.3	27	12	2	X	-
60	M10	22	10.3	33	12	2	X	-
80	M12	26	12.3	37	15	2.5	X	-
120	M16	33	16.3	44	15	2.5	X	-
160	M20	39	20.3	50	15	3	X	-
350	M24	54	24.5	65	22	3	X	-
500	M30	66	30.8	79	27	3	-	X
600	M36	74	37	87	27	3.5	-	X
720	M39	80	40	93	27	4	-	X
1,000	M42	93	43	106	30	4	-	X
1,200	M48	103	49	116	30	4.5	-	X
1,500	M52	114	53.5	127	35	4.5	-	X

## Pin assignment

Electrical connection	
Excitation voltage (+)	Brown
Excitation voltage (-)	Green
Signal (+)	Yellow
Signal (-)	White
Control	Grey
Shield $\oplus$	Shield

### Pin assignment with integrated or cable amplifier



© 09/2019 WIKA Alexander Wiegand SE & Co. KG, all rights reserved.  
The specifications given in this document represent the state of engineering at the time of publishing.  
We reserve the right to make modifications to the specifications and materials.

