# Miniature compression force transducer from 10 N Model F1222

WIKA data sheet FO 51.11

## EAC

#### **Applications**

- Construction of plant and apparatus
- Measurement and control plant
- Test benches
- Press in forces and joining forces monitoring

### **Special features**

- Measuring ranges 0 ... 10 N up to 0 ... 5,000 N
- Ease of force input, easy installation
- Compact and small dimensions, low installation height
- Protection class IP65
- Relative linearity error 1 % F<sub>nom</sub>



Miniature compression force transducer, model F1222

## Description

The miniature compression force transducers are specially designed for small installation spaces. They are used to determine the compression forces in a wide range of applications and are suitable for static and dynamic measurement tasks eg. in laboratories and test field.

The spherical calotte (spherical load application button) allows a very simple force introduction. The usual mounting position of the force transducer is horizontal or vertical. The force transducer is splash-proof and works reliably even under harsh operating conditions.

#### Note

In order to avoid overloading, it is advantageous to connect the force transducers electrically during installation and to monitor the measured value. The force transducers are to be mounted on a level, grinded and sufficiently hard surface. The force is applied vertically to the force transducer axis at the spherical calotte.

#### **Options**

- Integrated overload protection
- High temperature version with extended nominal temperature range
- Cable amplifier with ouput 4 ... 20 mA or DC 0 ... 10 V
- Other cable lenghts



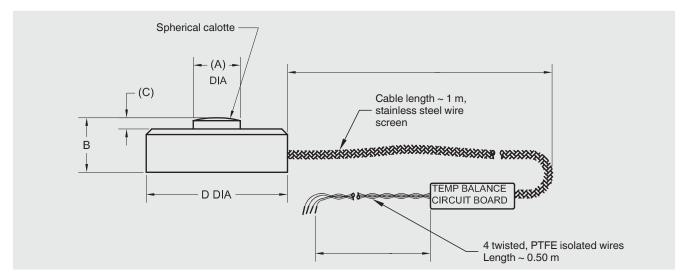
## Technical data in accordance with VDI/VDE/DKD 2638

Rated force $F_{nom}$ N       10/20/50/100/200/500/1,000/2,000/5,000         Relative linearity error $d_{lin}$ ±1 % $F_{nom}$ Relative reversibility error v       ±0.25 % $F_{nom}$ Relative repeatability error in unchanged mounting position $b_{rg}$ ±0.1 % $F_{nom}$ Temperature effect on zero signal TK <sub>0</sub> $< ±0.2 \%/10 \text{ K}$ Temperature effect on characteristic value TK <sub>C</sub> $< ±0.4 \%/10 \text{ K}$ Force limit $F_L$ 150 % $F_{nom}$ Breaking force $F_B$ $> 300 \% F_{nom}$ Permissible oscillation stress acc. to DIN 50100 $F_{rb}$ $70 \% F_{nom}$ Material       Stainless steel         Rated temperature range $B_{T, nom}$ $15 70 \degree C$ Operating temperature range $B_{T, G}$ $-54 + 120 \degree C$ Reference temperature $T_{ref}$ $23 \degree C$ Output signal (rated output) $C_{nom}$ $1.0 \text{ mV/V} (10 \text{ N})$ $2.0 \text{ mV/V} (20 \text{ N up to } 5 \text{ kN})$ Relative deviation of zero signal $d_{S, 0}$ $±2 \% F_{nom}$ Input-/output resistance $R_e/R_a$ $350 \Omega$	Model F1222		
Relative reversibility error v $\pm 0.25 \% F_{nom}$ Relative repeatability error in unchanged mounting position $b_{rg}$ Temperature effect on zero signal $TK_0$ $< \pm 0.2 \%/10  K$ Temperature effect on characteristic value $TK_C$ $< \pm 0.4 \%/10  K$ Force limit $F_L$ $150 \% F_{nom}$ Breaking force $F_B$ $> 300 \% F_{nom}$ Permissible oscillation stress acc. to DIN 50100 $F_{rb}$ Material Stainless steel  Rated temperature range $B_{T, nom}$ $15 70 ^{\circ}C$ Operating temperature range $B_{T, G}$ $-54 +120 ^{\circ}C$ Reference temperature $T_{ref}$ $23 ^{\circ}C$ Output signal (rated output) $C_{nom}$ $1.0 \text{ mV/V} (10 \text{ N})$ $2.0 \text{ mV/V} (20 \text{ N up to 5 kN})$ Relative deviation of zero signal $d_{S, 0}$ $\pm 2 ^{\circ} F_{nom}$ Input-/output resistance $R_e/R_a$ $350 \Omega$	Rated force F <sub>nom</sub> N	10/20/50/100/200/500/1,000/2,000/5,000	
Relative repeatability error in unchanged mounting position $b_{rg}$ Temperature effect on zero signal $TK_0$ $t=0.2 \%/10 K$ Temperature effect on characteristic value $t=0.2 \%/10 K$ Temperature effect on characteristic value $t=0.2 \%/10 K$ Force limit $t=0.2 \%/10 K$ Force l	Relative linearity error d <sub>lin</sub>	±1 % F <sub>nom</sub>	
$\begin{tabular}{lllllllllllllllllllllllllllllllllll$	Relative reversibility error v	±0.25 % F <sub>nom</sub>	
Temperature effect on characteristic value TK <sub>C</sub> $< \pm 0.4 \%/10 \text{ K}$ Force limit F <sub>L</sub> $150 \% F_{nom}$ Breaking force F <sub>B</sub> $> 300 \% F_{nom}$ Permissible oscillation stress acc. to DIN 50100 F <sub>rb</sub> $70 \% F_{nom}$ Material Stainless steel  Rated temperature range B <sub>T, nom</sub> $15 70 \degree C$ Operating temperature range B <sub>T, G</sub> $-54 +120 \degree C$ Reference temperature T <sub>ref</sub> $23 \degree C$ Output signal (rated output) C <sub>nom</sub> $10 \% V (10 \%) (20 \% V) (20 \% V)$ Relative deviation of zero signal d <sub>S, 0</sub> $\pm 2 \% F_{nom}$ Input-/output resistance R <sub>e</sub> /R <sub>a</sub> $350 \Omega$		±0.1 % F <sub>nom</sub>	
Force limit $F_L$ 150 % $F_{nom}$ 200 % $F_{n$	Temperature effect on zero signal TK <sub>0</sub>	< ±0.2 %/10 K	
$ \begin{array}{llllllllllllllllllllllllllllllllllll$	Temperature effect on characteristic value $TK_C$	< ±0.4 %/10 K	
Permissible oscillation stress acc. to DIN 50100 $F_{rb}$ Material  Stainless steel  Rated temperature range $B_{T, nom}$ 15 70 °C  Operating temperature range $B_{T, g}$ Reference temperature $T_{ref}$ 23 °C  Output signal (rated output) $C_{nom}$ 1.0 mV/V (10 N)  2.0 mV/V (20 N up to 5 kN)  Relative deviation of zero signal $d_{S, 0}$ $\pm 2 \% F_{nom}$ Input-/output resistance $R_e/R_a$ 350 $\Omega$	Force limit F <sub>L</sub>	150 % F <sub>nom</sub>	
$\begin{array}{llllllllllllllllllllllllllllllllllll$	Breaking force F <sub>B</sub>	> 300 % F <sub>nom</sub>	
Rated temperature range $B_{T, nom}$ 15 70 °C  Operating temperature range $B_{T, G}$ -54 +120 °C  Reference temperature $T_{ref}$ 23 °C  Output signal (rated output) $C_{nom}$ 1.0 mV/V (10 N) 2.0 mV/V (20 N up to 5 kN)  Relative deviation of zero signal $d_{S, 0}$ $\pm 2$ % $F_{nom}$ Input-/output resistance $R_e/R_a$ 350 $\Omega$		70 % F <sub>nom</sub>	
Operating temperature range $B_{T, G}$	Material	Stainless steel	
Reference temperature $T_{ref}$ 23 °C  Output signal (rated output) $C_{nom}$ 1.0 mV/V (10 N) 2.0 mV/V (20 N up to 5 kN)  Relative deviation of zero signal $d_{S,0}$ $\pm 2 \% F_{nom}$ Input-/output resistance $R_e/R_a$ 350 $\Omega$	Rated temperature range B <sub>T, nom</sub>	15 70 °C	
Output signal (rated output) $C_{nom}$ 1.0 mV/V (10 N) 2.0 mV/V (20 N up to 5 kN)  Relative deviation of zero signal $d_{S, 0}$ $\pm 2 \% F_{nom}$ Input-/output resistance $R_e/R_a$ 350 $\Omega$	Operating temperature range B <sub>T, G</sub>	-54 +120 °C	
$2.0 \text{ mV/V} (20 \text{ N up to 5 kN})$ Relative deviation of zero signal d <sub>S, 0</sub> $\pm 2 \% \text{ F}_{\text{nom}}$ Input-/output resistance R <sub>e</sub> /R <sub>a</sub> $350 \Omega$	Reference temperature T <sub>ref</sub>	23 °C	
Input-/output resistance $R_e/R_a$ 350 $\Omega$	Output signal (rated output) C <sub>nom</sub>		
· ·	Relative deviation of zero signal d <sub>S, 0</sub>	±2 % F <sub>nom</sub>	
	Input-/output resistance R <sub>e</sub> /R <sub>a</sub>	350 Ω	
Insulation resistance $> 2 G\Omega$	Insulation resistance	> 2 GΩ	
Electrical connection Cable (PTFE) 1.5 m, open wires, 4-wire, shielded	Electrical connection	Cable (PTFE) 1.5 m, open wires, 4-wire, shielded	
Supply voltage	Supply voltage		
without amplifier DC 5 V for mV/V output	without amplifier	DC 5 V for mV/V output	
with cable amplifier DC 12 28 V for output 0(4) 20 mA, DC 0 10 V	with cable amplifier	DC 12 28 V for output 0(4) 20 mA, DC 0 10 V	
Protection (acc. to IEC/EN 60529) IP65	Protection (acc. to IEC/EN 60529)	IP65	
Weight 1 g upt to 10 g (9 g up to 18 g incl. cable) depending on rated force	Weight	1 g upt to 10 g (9 g up to 18 g incl. cable) depending on rated force	

## **Approvals**

Logo	Description	Country
CE	EU declaration of conformity  ■ EMC directive  ■ RoHS directive	European Union
ERE	EAC (Option) ■ EMC directive	Eurasian Economic Community

#### **Dimensions in mm**



Rated force		Dimensions in mm		
in N	øD	øΑ	В	С
10 / 20 / 50 / 100 / 200	9.7	2.3	3.3	0.5
500 / 1,000	12.7	3.0	3.8	
2,000 / 5,000	19.1	6.4	6.4	

## Pin assignment

Electrical connection			
Excitation voltage (+)	Red		
Excitation voltage (-)	Black		
Signal (+)	White		
Signal (-)	Green		

#### **Ordering information**

Model / Rated force / Relative linearity error / Temperature range / Output signal / Electrical connection / Options

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