

Load cell

For mobile elevating work platforms

Model F4822

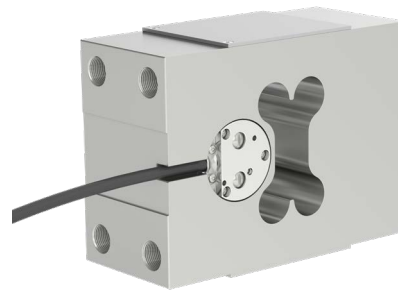
WIKA data sheet FO 51.21

Applications

- Overload protection in mobile elevating work platforms
- Industry
- Logistics sector
- Facility cleaning and maintenance
- Energy utilities in indoor and outdoor areas

Special features

- Measuring ranges 0 ... 2,000 kg [0 ... 4,409 lb]
- Diverse redundant electronics
- Easy mounting by means of a defined hole pattern
- Special protective circuit for high EMC
- Fatigue-proof measuring body



Load cell, model F4822

Description

Fatigue-proof measuring body

The model F4822 load cell for mobile elevating work platforms (MEWP) is designed for static and dynamic measuring requirements in both tension and compression force direction. It is made from coated aluminium, which has particularly suitable properties for overload protection in mobile elevating work platforms.

Diverse redundant electronics

Due to two redundant, opposing channels, the model F4822 ensures precise and reliable load monitoring of the cages of mobile elevating work platforms.

Special protective circuit for high EMC (electromagnetic compatibility)

Through a special protective circuit, harmful high electrical voltages, which can occur in electromagnetic instruments through self-induction, are limited and the voltage rise rate is reduced. This contributes to the increase of reliability, service life and immunity – EMC – and reduction of emitted interference. Its safe operation is crucial for the safety of personnel and machinery.

The model F4822 load cell enables carefree use of mobile elevating work platforms in the industry, logistics sector, facility cleaning and maintenance in public spaces as well as for energy utilities and buildings in indoor and outdoor areas.

The measured force is output as a diverse redundant opposing electrical output signal (4 ... 20 mA/20 ... 4 mA, 3-wire) to reduce possible sources of errors to an absolute minimum.

Depending on the application, corresponding technical and regional approvals are available.

Technical data

Basic information / Version per standard	
Standard	In accordance with directive VDI/VDE/DKD 2638
Material of the measuring body	Aluminium
Ingress protection (per IEC/EN 60529)	IP67 and IP69K
Screw quality	10.9 / M16 x 1.5 galvanized or chromated
Weight	Approx. 4 kg [8.82 lb]

Measuring element / Measurement principle / Sensor element	
Type of measuring element	Measuring spring (aluminium) with strain gauges
Force introduction	Compression force

Accuracy specifications / Repeatability	
Relative linearity error d_{lin}	$\leq 0.5 \% F_{nom}$
Influence of torque on the measuring signal	$\leq 10 \% F_{nom}$
Temperature effect on zero signal TC_0	$\leq \pm 0.2 \% F_{nom}/10 K$
Temperature effect on characteristic value TC_C	$\leq \pm 0.2 \% F_{nom}/10 K$
Reference conditions	
Load	■ $\leq (U_B - 10 V) / 0.02 A$ (channel 1) ■ $\leq (U_B - 7 V) / 0.02 A$ (channel 2)

Rated load F_{nom}	
kg	lb
2,000	4,409

Further information to rated load F_{nom}	
Force limit F_L	→ See chapter „ Work load limit (WLL) “
Breaking force F_B	→ See chapter „ Work load limit (WLL) “

Output signal	
Rated characteristic value C_{nom}	4 ... 20 mA / 20 ... 4 mA, 3-wire, diverse redundant opposing
Auxiliary power	
Supply voltage U_B	DC 9 ... 32 V
Current/power consumption	Voltage output: < 8 mA per channel
Time response/Dynamic behaviour	
Response time	< 2 ms (within 10 % ... 90 % F_{nom}) → Further response times on request

Voltage supply and performance data	
Electrical safety	Reverse polarity and surge protection and short-circuit resistance

Electrical connection	
Connection type	Cable outlet, flying leads
Cable diameter	6.6 mm [0.260 in]
Cable length	3 m [9.84 ft]
Insulation resistance R_{is}	> 2 GΩ / 100 V
Material	PUR

Pin assignment

Electrical connection: cable outlet, flying lead

Output signal: 4 ... 20 mA/20 ... 4 mA, 3-wire, diverse redundant opposing

Signal		channel	Cable colour
UB ₊ (CH1)	Sensor voltage supply (+)	1	Brown
UB ₊ (CH2)	Sensor voltage supply (+)	2	White
0 V/S ₋ (CH1)	0-V-potential/output signal (-)	1	Green
0 V/S ₋ (CH2)	0-V-potential/output signal (-)	2	Grey
S ₊ (CH1)	Output signal (+)	1	Yellow
S ₊ (CH2)	Output signal (+)	2	Pink
Shield ⊕	Grounding	-	Green-yellow

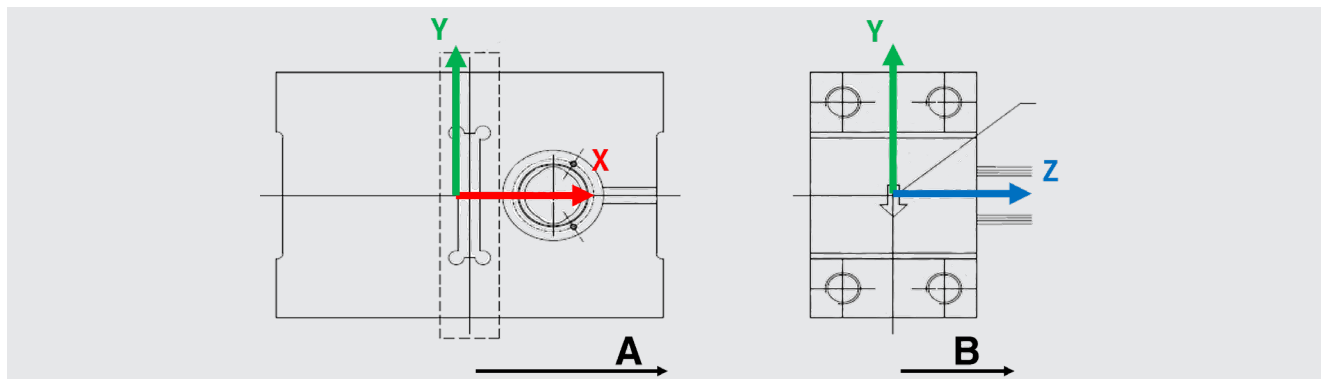
Operating conditions	
Rated temperature range B _{T, nom}	-20 ... +80 °C [-4 ... +176 °F]
Operating temperature range B _{T, G}	-40 ... +80 °C [-40 ... +176 °F]
Storage temperature range B _{T, S}	-40 ... +85 °C [-40 ... +185 °F]
Humidity	35 ... 85 % relative humidity (non-condensing)
Vibration resistance F _{rb} (per DIN 50100)	50 % F _{nom}
Operating altitude	Up to 2,500 m [6,562 ft] above sea level
Pollution degree in accordance with UL certification	Degree 4: "Electrical equipment for outdoor use"

Packaging and instrument labelling	
Packaging	■ Individual packaging ■ Multiple packaging (up to 20 pieces possible)
Instrument labelling (product label)	■ WIKA product label, glued ■ Customer-specific product label on request

Work load limit (WLL)

The instrument's permissible working load was determined based on the safety against breaking load. A factor of 2 was assumed for this, meaning that the equivalent stress in the critical cross-section is at most half the tensile strength of the material.

This results in the WLL as follows:



Rated load kg		A in mm						
		0	250	500	750	1,000	1,250	1,500
B in mm	0	5,600	5,600	5,423	3,625	2,721	2,178	1,815
	250	5,600	5,600	5,328	3,596	2,709	2,172	1,812
	500	5,600	5,600	5,070	3,513	2,673	2,153	1,801
	750	5,600	5,600	4,712	3,388	2,616	2,123	1,783
	1,000	5,600	5,600	4,318	3,232	2,543	2,083	1,759
	1,250	5,600	5,037	3,932	3,060	2,456	2,035	1,730
	1,500	4,741	4,347	3,577	2,883	2,362	1,980	1,696

Rated load lb		A in Inch						
		0	9.84	19.69	29.53	39.37	49.21	59.06
B in Inch	0	12,346	12,346	11,956	7,992	5,999	4,802	4,000
	9.84	12,346	12,346	11,746	7,928	5,972	4,788	3,995
	19.69	12,346	12,346	11,177	7,745	5,893	4,747	3,971
	29.53	12,346	12,346	10,388	7,469	5,767	4,680	3,931
	39.37	12,346	12,346	9,520	7,125	5,606	4,592	3,878
	49.21	12,346	11,105	8,669	6,746	5,415	4,486	3,814
	59.06	10,452	9,583	7,886	6,365	5,207	4,365	3,739

From a metrological perspective, 5,600 kg [12,346 lb] is the limit.

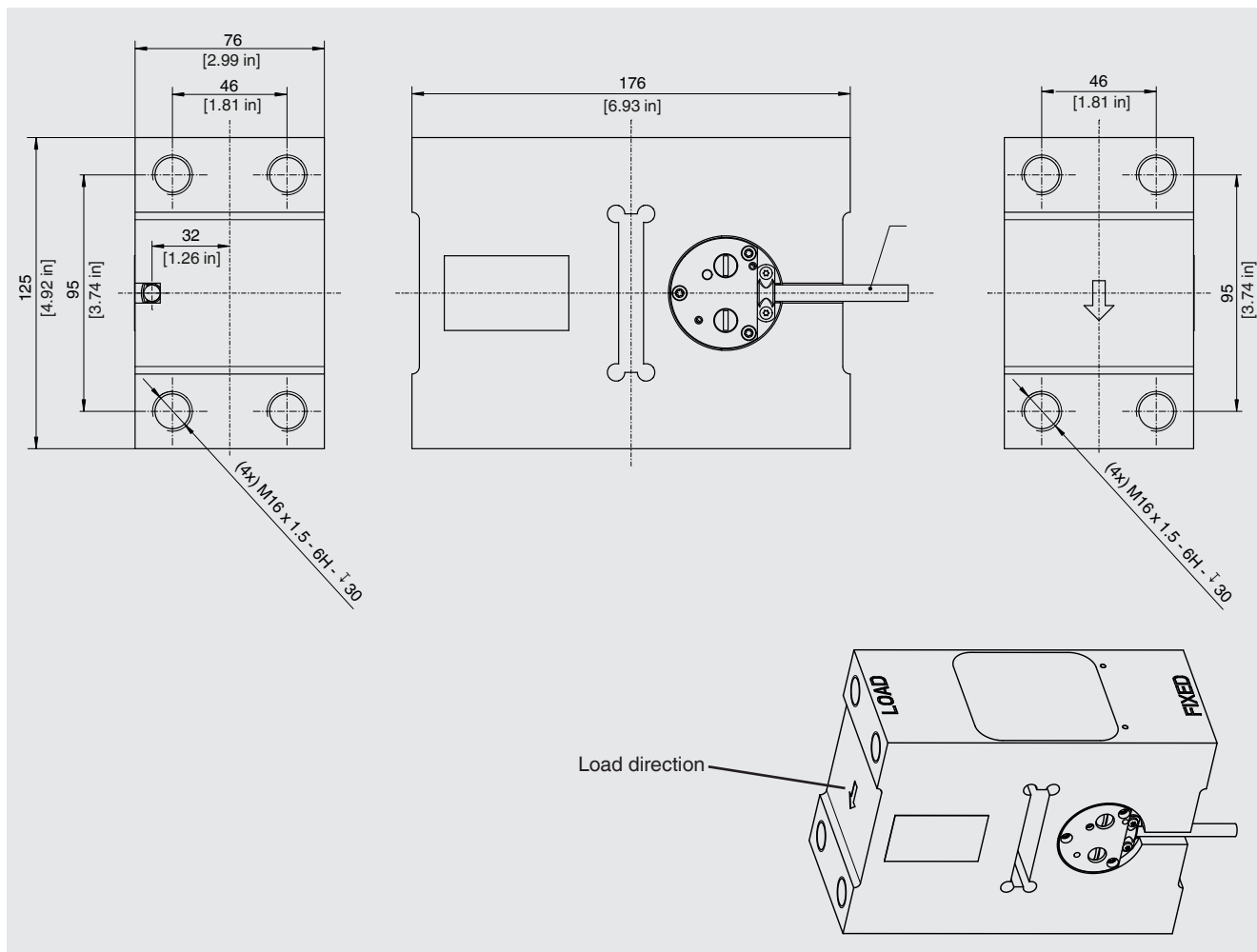
Beyond that, a zero point offset is likely. From a strength perspective, higher loads can also be accommodated.

Approvals

Logo	Description	Region
CE	EU declaration of conformity	European Union
	EMC Directive	
	EN 61326 emission (group 1, class A) and immunity (industrial environment)	
	RoHS directive	

→ For approvals and certificates, see website

Dimensions in mm [in]



Ordering information

Model / Relative linearity error / Rated load / Force limit / Breaking force / Output signal / Electrical connection / Pin assignment / Rated temperature range / Approvals

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