

# Load Pin with Customizable Dimensions

## Applications

- Overload protection
- Cranes and hoisting devices
- Elevators and wire rope winches
- Direct load measurements such as pins, axle or shafts
- Oil production facilities
- Coal mining

## Features

- Application as pin or axle
- Made of stainless steel
- Customizable dimensions
- Hermetically sealed (IP 67)

## Options

- Integrated amplifier with standard signal output 0/4 ... 20 mA, -10 ... 0 ... +10 V
- Redundant system with two measuring bridges and two amplifiers
- CAN Bus/ CANopen interface
- ATEX for 10kN ... 5000kN (without amplifier)
- ATEX for 1kN ... 5000kN (with amplifier)
- Safety integrity level SIL 2 or SIL 3

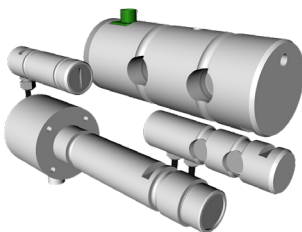
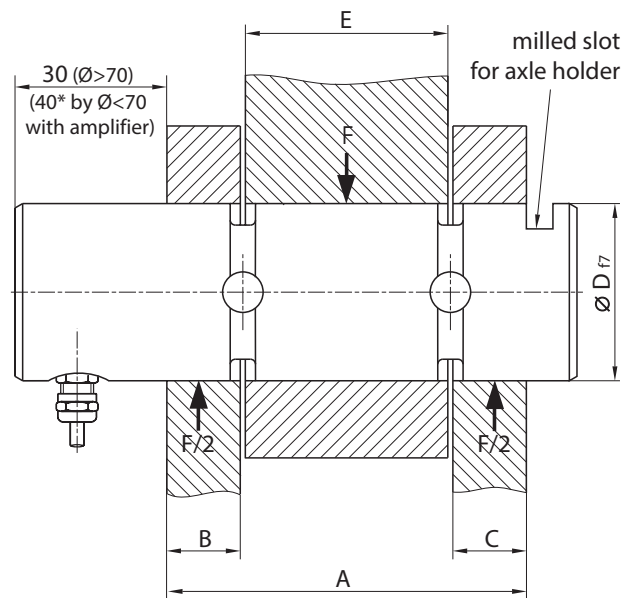
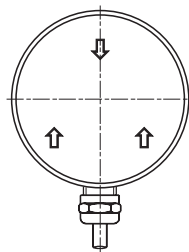
## Dimensions (mm)

Fully customizable to fit the machine design



Typical shackle application with various signal options

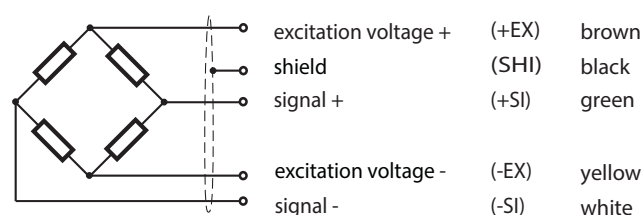
load (force) direction



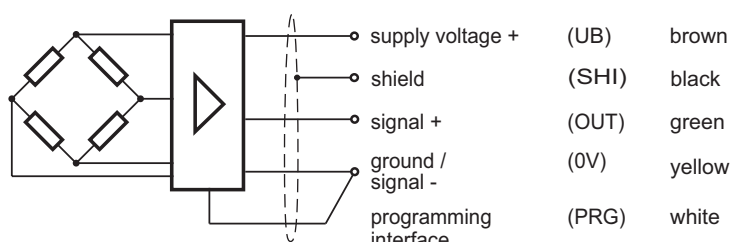
KAL Type	Nominal Load in kN						
	20	50	100	200	400	800	1200
Recommended $\varnothing D_{f7}$ (mm)	25 - 40	30 - 50	40 - 65	50 - 80	65 - 110	80 - 125	110 - 156

## Wiring Code

Cable length 3m



with integrated amplifier



(0V and PRG to be connected by the customer)

## Specifications

Accuracy Class *)	% F <sub>nom</sub>	0.5 ... 2	1 ... 2 (with Integrated Amplifier)
Rated (nominal) force (F <sub>nom</sub> )	kN	1 ... 5000	1 ... 5000
Maximum operating force (F <sub>G</sub> )	% F <sub>nom</sub>	150	150
Breaking force (F <sub>B</sub> )	% F <sub>nom</sub>	> 500	> 500
Lateral force limit (F <sub>Q</sub> )	% F <sub>nom</sub>	10	10
Rated characteristic value (C <sub>nom</sub> )	mV/V	1.00 ± 0.01	
Zero signal tolerance	%	≤ 3	
Reference excitation voltage (U <sub>ref</sub> )	VDC	5	
Operating range of excitation voltage (B <sub>UG</sub> )	VDC	0.5 ... 12	
Input resistance (R <sub>e</sub> )	Ω	380 ± 30	
Output resistance (R <sub>a</sub> )	Ω	352 ± 1.5	
Insulation resistance (R <sub>is</sub> )	Ω	> 5 × 10 <sup>9</sup>	
Relative linearity error (d <sub>lin</sub> )	%	≤ 0.5 ... 2	≤ 1 ... 2
Relative reversibility error (v)	%	≤ 0.5 ... 2	≤ 1 ... 2
Temperature effect on zero signal (TK <sub>0</sub> )	%/10K	≤ 0.5 ... 2	≤ 0.5 ... 2
Temp. effect on characteristic value (TK <sub>c</sub> )	%/10K	≤ 0.5 ... 2	≤ 0.5 ... 2
Relative creep over 30 minutes (d <sub>cr,F+E</sub> )	%	≤ 0.5 ... 2	≤ 0.5 ... 2
Supply voltage	VDC		19 ... 28
Input current	mA		35 (at 24V)
Current output signal	mA		0/4 ... 20
Voltage output signal (max. load 5mA)	V		0 ... 10/ -10 ... +10
Maximum resistance	Ω		300
Reference temperature (T <sub>ref</sub> )	°C		+23
Rated temperature range (B <sub>T,nom</sub> )	°C		-20 ... +60
Operating temperature range (B <sub>T,G</sub> )	°C		-30 ... +70
Storage temperature range (B <sub>T,s</sub> )	°C		-40 ... +70
Environmental protection (EN 60529)			IP 67

All data according to VDI/VDE/DKD 2638

\*) Accuracy depends on mounting conditions

## Order Example

Type Code	Description
KAL-E/200kN/1/D65h6/L232/2x4...20mA	Load pin 200kN with 1% accuracy Two amplifiers (redundant) with 4 ... 20 mA Length in mm Diameter in mm and tolerance Accuracy class Rated (nominal) force E = Integrated amplifier Model

## Options

	Type Code	Description
ATEX-Certificate	KAL-EX KAL-E-EX	for 10kN ... 5000kN. Please note ATEX data sheet! for 1kN ... 5000kN Please note data sheet „ATEX with integrated amplifier“!
CANopen interface	KAL-DI	for 1kN ... 5000kN Please note data sheet „Force Transducer with CANopen Interface“!
Safety integrity level SIL 2	KAL-SIL2	Please note data sheet „Force transducer with internal measuring amplifier - SIL 2“!
Safety integrity level SIL 3	KAL-SIL3	Please note data sheet „Force transducer with internal measuring amplifier - SIL 3“!