AST Gruppe
Angewandte System Technik

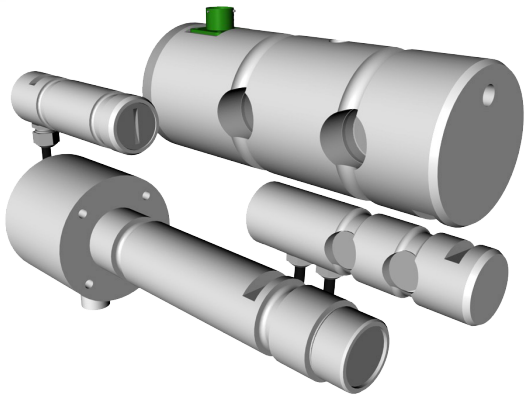
KAL
Load Pin with customizable dimensions and CANopen® interface option

Applications

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

Features

- Application as pin or axle
- Made of stainless steel
- Ultimate overload 500%
- Customizable dimensions
- Hermetically sealed (IP 67)



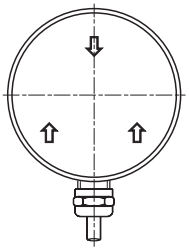
Options

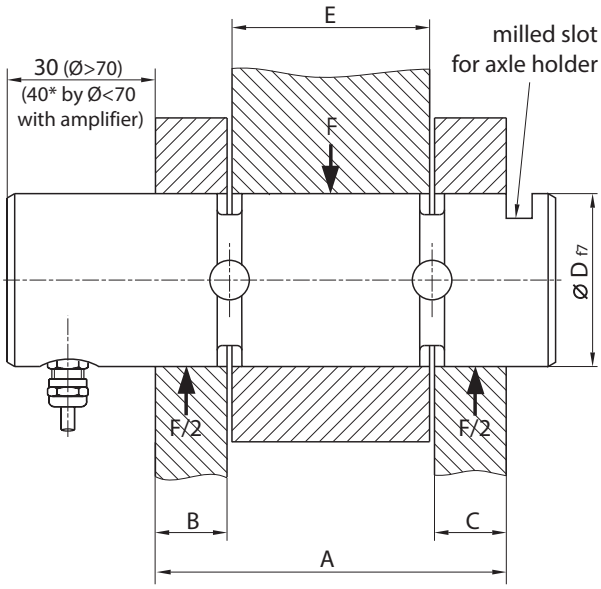
- Integrated amplifier with standard CANopen® interface
- Redundant system with two measuring bridges and two amplifiers
- Inspection certificate 3.1 or 3.2 according to EN 10204

Dimensions (mm)

Fully customizable to fit the machine design

load (force) direction

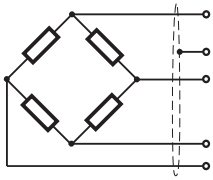




	Nominal load in kN						
KAL type	**20**	**50**	**100**	**200**	**400**	**800**	**1200**
Recommended Ø Df7	25 - 40	30 - 50	40 - 65	50 - 80	65 - 110	80 - 125	110 - 156

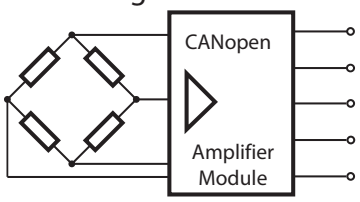
Wiring code

Cable length: 3 Meter



excitation voltage +	(+EX)	brown
shield	(SHI)	black
signal +	(+SI)	green
excitation voltage -	(-EX)	yellow
signal -	(-SI)	white

Cable length: customizable (data rate dependen)



1	Shield	black
2	Supply voltage	brown
3	GND	yellow
4	CAN-High	green
5	CAN-Low	white

Specifications

Accuracy Class[*)]	**% F_{nom}**	**0.5 ... 2**	**0.5 ... 2 (with CANopen®)**
Rated (nominal) force (F_{nom})	kN	3 ... 5000	20 ... 5000
Maximum operating force (F_G)	% F_{nom}	150	
Breaking force (F_B)	% F_{nom}	> 500	
Lateral force limit (F_Q)	% F_{nom}	10	
Rated characteristic value (C_{nom})	mV/V	1.00 ± 0.01	
Zero signal tolerance	%	≤ 3	
Reference excitation voltage (U_{ref})	VDC	5	
Operating range of excitation voltage (B_{UG})	VDC	0.5 12	
Input resistance (R_e)	Ω	380 ± 30	
Output resistance (R_a)	Ω	352 ± 1.5	
Insulation resistance (R_{is})	Ω	> 5 x 10^9	
Relative linearity error (d_{lin}) [*)]	%	≤ 0.5 ... 2	
Relative reversibility error (v) [*)]	%	≤ 0.5 ... 2	
Temperature effect on zero signal (TK_0) [*)]	% / 10K	≤ 0.5 ... 2	
Temp. effect on characteristic value (TK_c) [*)]	% / 10K	≤ 0.5 ... 2	
Relative Creep over 30 minutes ($d_{cr, F+E}$) [*)]	%	≤ 0.5 ... 2	
Supply voltage	VDC		18 ... 24 ... 36
Power consumption without output currents	mW		< 700
Resolution ADU	bit		16
Conversion rate ADU	Sps		20000
Data transfer rate - adjustable	kbit/s		125 (standard) /250 / 500
Protocol			CANopen® CiA 404
Number of PDO´s - adjustable			4
Modul adress - adjustable			1 … 126, 127 reserved
Filter - configurable			Moving average, Repeating average Average over last N values
Channels			1x DMS, 1x PT1000
Status display minimum- maximum value - adjustable	% F_{nom}		±20
Reference temperature (T_{ref})	°C	+23	
Rated temperature range ($B_{T, nom}$)	°C	-20 .... +60	
Operating temperature range ($B_{T, G}$)	°C	-30 .... +70	
Storage temperature range ($B_{T, S}$)	°C	-40 .... +70	
Environmental protection (EN 60529)		IP 67	

All data according to VDI/VDE/DKD 2638

*) Accuracy depends on mounting conditions

Type Code / Order example

Type Code	**Description**
KAL-DI/200kN/D65h6/L232/2xCANopen	Load Pin with 200kN nominal force
	Two amplifiers (redundant) with two CANopen interfaces
	Length in mm
	Diameter in mm and tolerance
	Rated (nominal) force
	DI = with CANopen® interface
	Model