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## **ZN Series**

### **Load Cells**

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#### **FEATURES**

- 5 t to 40 t (50 kN to 400 kN)
- High precision
- Hermetically-sealed case (IP 67)
- Appliances for easy assembly
- Option : integrated amplifier



#### **DESCRIPTION**

The load cells of the ZN series have been designed especially for use in vehicle weighing systems up to class C2 (OIML RI 60), for which calibration is obligatory. They are also used successfully everywhere where severe environmental conditions require a high degree of protection (e.g. for tank scales used in industrial conditions). Due to their rugged construction, these load cells are able to withstand high transverse forces. The sensing element is an upsetting body fitted with metal foil strain gauges, located in an hermetically sealed chamber filled with dry nitrogen. This ensures stable measuring characteristics irrespective of environmental influences. There is a second hermetically sealed chamber containing components for

compensation and adjustment, which are required for the exact setting of the guaranteed technical parameters. The load cell is subjected to pressure forces. The assembly appliances, which can be delivered as a separate order, enable the user to integrate the load cell in his weighing system without any problem or safety risk. As a standard, the load cells are equipped with a 3 m connection cable. It is a matter of course that these load cells, after calibration in Newtons, can also be supplied as high-precision force transducers up to the class of accuracy 0.05%. Moreover, the load cells can be supplied with an integrated amplifier (model ZN-E). The output signals (0 to 10) V or (0/4 to 20) mA can be selected.

**FORCE TRANSDUCER / LOAD CELL RATINGS**

<b>Accuracy Class</b>		<b>0,1</b>	<b>0,05</b>	<b>C1</b>	<b>0,2* with Integrated Amplifier</b>	
Nominal force (=F <sub>N</sub> )	kN	50/100/200/400		---	50/100/200/400	
Nominal load (=F <sub>N</sub> )	t	---		5/10/20/40	---	
Max. permissible force/load	%F <sub>N</sub>	150			150	
Ultimate overload	%F <sub>N</sub>	>500			>500	
Max. transverse force/load	%F <sub>N</sub>	100			100	
Minimum application range	%F <sub>N</sub>	---		18	---	
Reference temperature	°C	+23			+23	
Nominal temperature range	°C	-20 to +60		-10 to +40	-20 to +60	
Operating temperature range	°C	-30 to +70			-30 to +70	
Storage temperature range	°C	-40 to +70			-40 to +70	
Enclosure protection (EN 60529)		IP 67			IP 67	
Nominal sensitivity (=S)	mV/V	2,000 ±0,002			---	
Zero tolerance band	%S	≤1			---	
Max. supply voltage	V	20			---	
Input resistance	Ω	380 ±30			---	
Output resistance	Ω	352 ±1,5			---	
Insulation resistance	Ω	>5×10 <sup>9</sup>			---	
Combined error **	%S	---		≤0,030	---	
Variability **	%S	---		≤0,030	---	
Linearity error ***	%S	≤0,10	≤0,050	---	0,1	
Width of backlash ***	%S	≤0,10	≤0,050	---	---	
Tolerance of output signal	%	---	---	---	0,1	
Tolerance of zero	%	---	---	---	≤3	
Temperature effect on zero/10K	%S	≤0,05	≤0,025	≤0,025	0,2	
Temperature effect on output/10K	%S	≤0,10	≤0,050	≤0,017	---	
Temperature coefficient of output signal under load/10K	%	---	---	---	0,1	
Zero recovery error (30 min)	%S	≤0,10	≤0,050	≤0,050	---	
Creepage error (30 min)	%S	≤0,10	≤0,050	≤0,049	0,2	
Excitation voltage	VD	---			19 to 28	11 to 15
Input signal	mA	---			35 (at 24V)	20 (at 12V)
Output signal for compressive force (0 to F <sub>N</sub> ) alternatively :						
• Voltage output (max. load 5 mA)	V	---			0 to 10	0 to 5
• Current output	mA	---			0 (4) to 20 (max. burden 300 Ω)	0 (4) to 20 (max. burden 100 Ω)

\* Accuracy class 0,1 on request

\*\* According to VDI / VDE 2637

\*\*\* According to VDI / VDE 2638

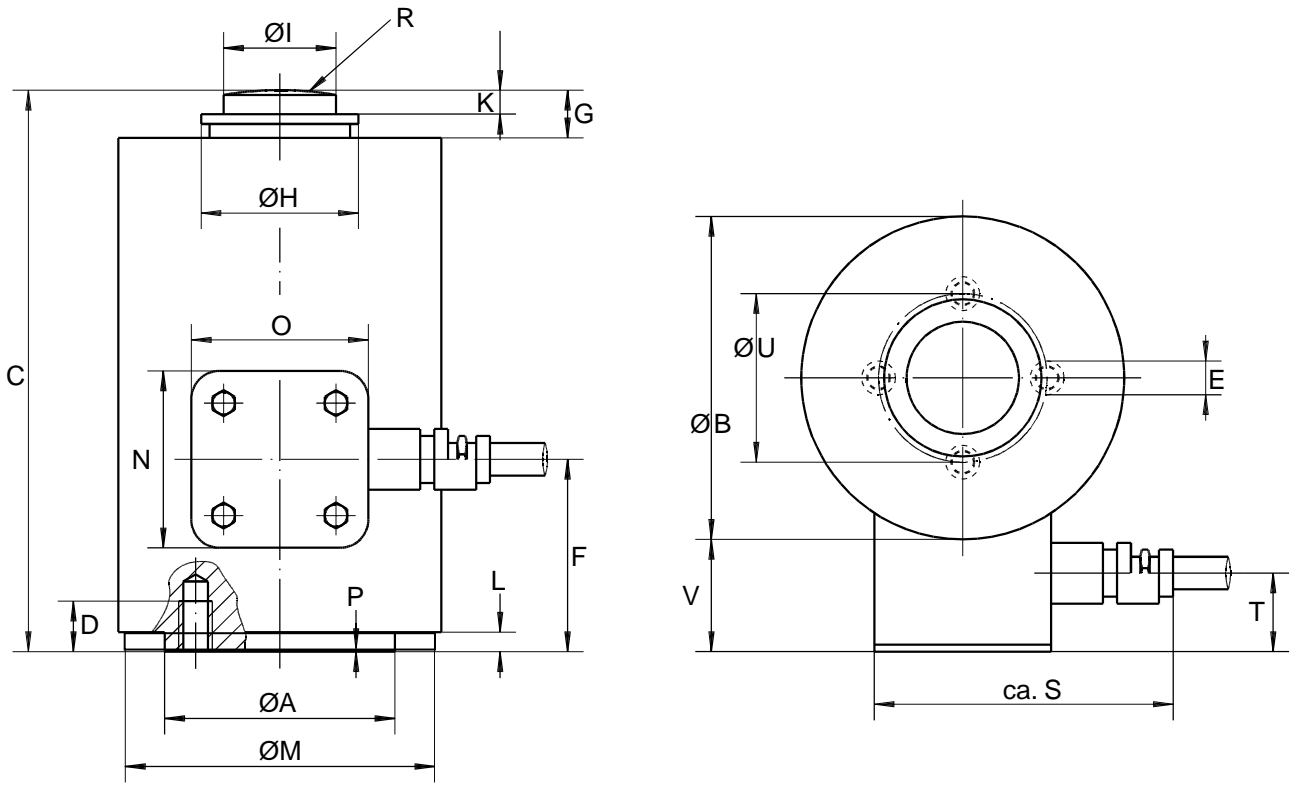
**PIN CONNECTIONS**

<b>Pin</b>		<b>To DIN</b>
Supply voltage (+)	red	brown
Supply voltage (-)	blue	yellow
Measuring voltage (+)	green	green
Measuring voltage (-)	natural	white
Sensing line (+) *	---	grey
Sensing line (-) *	---	pink
Shield	black	black
Cable length	3 m	

**Note :** In model ZN-E load cells, the pins for supply voltage (-) and measuring voltage (-) are interconnected internally.

\* In 6-wire configuration only

**DIMENSIONS**



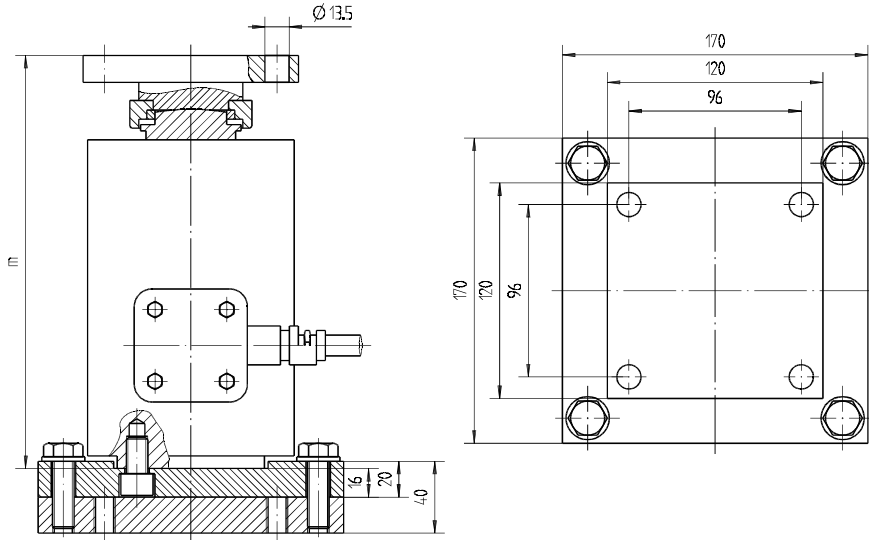
Model	$\varnothing A$	$\varnothing B$	C	D	E	F	G	$\varnothing H$	$\varnothing I$	K
ZN 5 t (50 kN)	72 -0,1	90	154±0,4	12	M8	55	14	46	30 f7	5
ZN 10 t / ZN 20 t (100/200 kN)	82 -0,1	115	200±0,5	18	M12	68,5	17	56	40 f7	6,5
ZN 40 t (400 kN)	78	117,5	187	16	M12	61	15,4	62	43,5	9,5

Model	L	M	N	O	P	R	S	T	$\varnothing U$	V	Weight
ZN 5 t (50 kN)	7	---	63	63	---	100	120	28	60	40	4.5 kg
ZN 10 t / ZN 20 t (100/200 kN)	7	---	63	63	---	125	120	28	60	40	9.5 kg
ZN 40 t (400 kN)	7,5	115	58	64	2	100	*	18	50	26	11 kg

\* cable compression gland

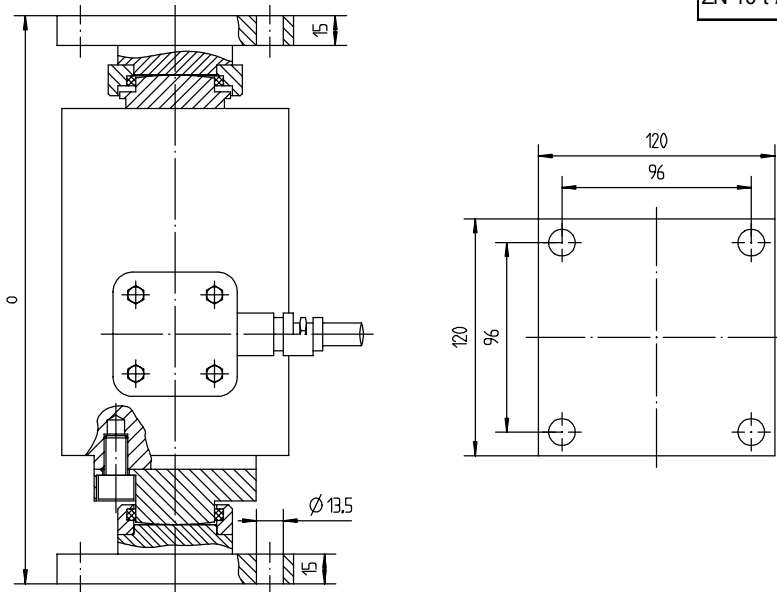
## ZN with pendulum support

ZN with pendulum support, above AM 010 (5 t) or AM 014 (10 t / 20 t), with assembly plate AM 015 (5 t) or AM 018 (10 t / 20 t) and with plate to weld on AM 013 (5 t) or AM 017 (10 t / 20 t)



ZN with pendulum supports, complete AM 012 (5 t) or AM 016 (10 t / 20 t)

Model	m	o
ZN 5 t	184	242
ZN 10 t / 20 t	230	288



## ORDERING INFORMATION FOR MECHANICAL ACCESSORIES

### ZN 5 t

AM 010	Pendulum support, above
AM 012	Pendulum support, complete
AM 013	Plate to weld on for pendulum support, above or below
AM 015	Assembly plate for ZN 5 t
AC 018	Protective cable for ZN

### ZN 10 t / 20 t

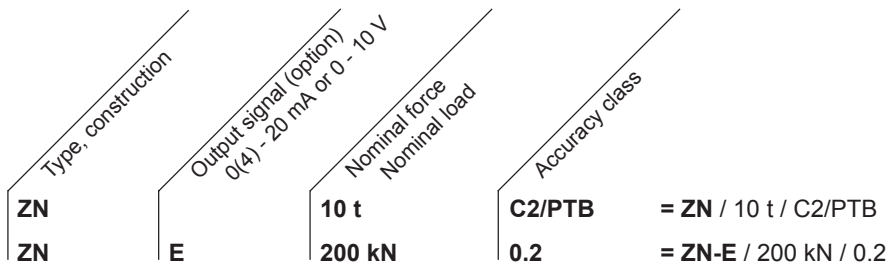
AM 014	Pendulum support, above
AM 016	Pendulum support, complete
AM 017	Plate to weld on for pendulum support, above or below
AM 018	Assembly plate for ZN 10 t and 20 t
AC 018	Protective cable for ZN

## ORDERING INFORMATION

### Explanation of Type Code (Ordering Example)

for Load Cells

for Force Transducers



## SYSTEM OPTIONS

Model No.	Product Description	Ordering Number
LMU 112	Load monitoring unit containing 2 level detectors, 1 current and 1 voltage O/Ps	224-112-000-XXX
LMU 116	Load monitoring unit containing 4 level detectors, taring and 4 summer functions	224-116-000-XXX
LMU 117	Dual channel load monitoring unit (2 × LMU 112)	224-117-000-XXX
AN 2000 C	Digital process monitor for strain gauge transducers	AN 2000 C /X/X/XX/XX/X

ZNDS www 07/04

*Due to the continual development of our products, we reserve the right to modify specifications without forewarning.*



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