



# TYPE EVALUATION REPORT

N° 1.12-4093445

on the  
Type Examination of a  
Load cell family

Type: Z16A

Manufacturer: Hottinger Baldwin Messtechnik GmbH  
Im Tiefen See 45  
64293 Darmstadt  
Germany

The type was tested under the following requirements:

R 60-1, edition 2000

This report belongs to the OIML Certificate N° R60/2000-A-DE1-2019.02 and includes 6 pages.

**CONTENTS**

	page
SUMMARY.....	3
GENERAL INFORMATION CONCERNING THE PATTERN.....	4

**ANNEX 1 TEST REPORT N° 1.12-4062385-1: TYPE Z16A, LOAD CELL**  
**(Class C3, Max 7,5 t)**  
See separate test report (33 pages)

The Certificate and Test-Reports are based of the OIML-MAA-Certificate R60/2000-DE1-13.02 and have been transferred due to Procedural Documents OIML-CS PD-07.

Summary of the examination

The metrological characteristics of the load cells type Z16A are listed in Table 1. Further technical data are listed in the data sheet of the manufacturer in section "Data sheet and dimensions" of this annex.

Accuracy class		C3	D1
Maximum number of load cell intervals $n_{LC}$		3000	1000
Rated output	mV/V	2	
Maximum capacity $E_{max}$	t	7,5 / 15 / 20	
Minimum load cell verification interval $v_{min} = (E_{max} / Y)$		$E_{max} / 12000$	$E_{max} / 5000$

Minimum dead load:  $0\% \cdot E_{max}$ ; Safe overload:  $150\% \cdot E_{max}$ ; Input impedance:  $700 \Omega$

The determination of the load cell error, the stability of the dead load output, repeatability and creep in the temperature range of  $-10^{\circ}\text{C}$  to  $+40^{\circ}\text{C}$  as well as the tests of barometric pressure effects and the determination of the effects of cyclic damp heat have been performed according to OIML R60 (2000) with fraction  $p_{LC} = 0.7$  as shown in Table 2 and provided in the following test report:

- Test Report No. PTB 1.12-4062385-1, dated August 24, 2013:  $E_{max}=7,5 \text{ t}$ ;  $D_{max}=5 \text{ t}$ ; SN: zzzz291; C3;  $Y=12000$ ;  $Z=3000$ ;

Table 2: Tests performed

Test	R60 (2000)		Tested samples	Result
Temperature test and repeatability at ( $20^{\circ}\text{C} / 40^{\circ}\text{C} / -10^{\circ}\text{C} / 20^{\circ}\text{C}$ )	5.1.1; 5.4	A.4.1	7,5 t	+
Temp. effect on min. dead load output at ( $20^{\circ}\text{C} / 40^{\circ}\text{C} / -10^{\circ}\text{C} / 20^{\circ}\text{C}$ )	5.5.1.3	A.4.1.16	7,5 t	+
Creep test at ( $20^{\circ}\text{C} / 40^{\circ}\text{C} / -10^{\circ}\text{C} / 20^{\circ}\text{C}$ )	5.3.1	A.4.2	7,5 t	+
Minimum dead load output return at ( $20^{\circ}\text{C} / 40^{\circ}\text{C} / -10^{\circ}\text{C} / 20^{\circ}\text{C}$ )	5.3.2	A.4.3	7,5 t	+
Barometric pressure effects at room temperature	5.5.2	A.4.4	7,5 t	+
Damp heat test, cyclic, marked CH or (not marked)	5.5.3.1	A.4.5	7,5 t	+

Result

On the basis of the performance tests and the examination of the instruments mentioned above and the documentation, the weighing instruments are permitted to comprise the functions, devices and characteristics features stated in the "general information concerning the pattern"; they fully meet the requirements of R 60-1.

Date of report: 03.06.2019

Signature: J. Denzel

GENERAL INFORMATION CONCERNING THE PATTERN

**1. Description of the load cell**

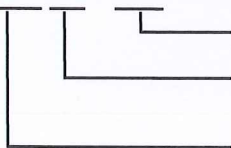
The load cells of the series Z16A are tension load cells. They are made of stainless steel, the strain gauge application is hermetically sealed. Further essential characteristics are given in the data sheet, see section 6 of this annex.



Figure 1: Load cell type Z16A / 7,5 t

The type designation is indicated as follows in the example on the name plate:

**Z16A C3 / 7.5t**



Maximum capacity  $E_{max}$

For weighing instruments class (III), max. number of load cell intervals in  $n_{LC} / 1000$

Load cell type

**2. Documentation**

The technical documents relating to this Certificate are deposited in the respective Set of Certification Documents at PTB. The Table of Contents of the Set of Certification Documents was sent to the owner of the Certificate.

**3. Further information**

The manufacturing process, material and sealing of the produced load cells have to be in accordance with the tested patterns; changes are only allowed with the permission of the PTB.

The typical errors related to linearity, hysteresis and temperature coefficient as indicated in the data sheet point out possible single errors of a pattern; however the overall error of each pattern is determined by the maximum permissible error according to OIML R60 No 5.1.

The technical data, the dimensions of the load cell are given on page 6 of this annex, have to be complied with. The load cells also can be used in weighing instruments of class (III).



#### 4. Data sheet and dimensions

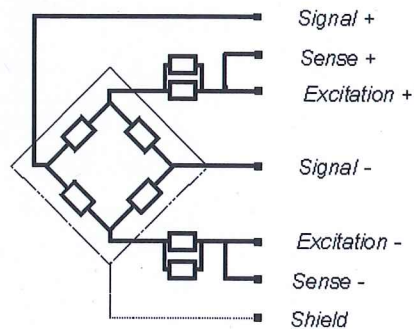
##### Specifications of the Load Cell Family

Accuracy class acc. to OIML R60			C3	D1
Nominal capacity	$E_{max}$	t	7,5 / 15 / 20	
Rated output	$C_n$	mV/V	$2,0 \pm 0,5 \%$	
Max. number of load cell scale intervals	$n_{LC}$		3000	1000
Min. load cell verification scale interval	$v_{min}$		$E_{max} / 12000$	$E_{max} / 5000$
Temperature coefficient of zero	$TC_0$	% $C_n / 10^\circ K$	$\pm 0,0140$	$\pm 0,0285$
Temperature coefficient of sensitivity <sup>1)</sup>	$TK_C$	% $C_n / 10^\circ K$	$\pm 0,0080$	$\pm 0,0250$
Non-Linearity <sup>1)</sup>	$d_{lin}$	% $C_n$	$\pm 0,0180$	$\pm 0,0300$
Hysteresis error <sup>1)</sup>	$d_{hy}$	% $C_n$	$\pm 0,0170$	$\pm 0,0330$
Creep error (30 minutes) / DR	$d_{cr}$	% $C_n$	$\pm 0,0167$	$\pm 0,0330$
Input resistance	$R_{LC}$	$\Omega$	$700 \pm 20$	
Output resistance	$R_0$	$\Omega$	$706 \pm 3,5$	
Reference excitation voltage	$U_{ref}$	V	5	
Nominal range of excitation voltage	$B_U$	V	0,5...12	
Insulation resistance	$R_{is}$	M $\Omega$	> 5000	
Nominal temperature range	$B_T$	$^\circ C$	- 10 ... + 40	
Operating temperature range	$B_{tu}$	$^\circ C$	- 30 ... + 70	
Storage temperature range	$B_{tl}$	$^\circ C$	- 50 ... + 85	
Safe load limit	$E_L$	% $\cdot E_{max}$	150	
Ultimate load	$E_d$	% $\cdot E_{max}$	> 350	
Degree of protection according to EN60529			IP68	
Cable length		m	12	
Load cell material			Stainless steel	
Cable entry			Stainless steel	
Cable sheath			Thermoplastisches Elastomer	
Sealing			Viton®	

1) The data for Non-linearity ( $d_{lin}$ ), Hysteresis error ( $d_{hy}$ ) and Temperature effect on sensitivity ( $TK_C$ ) are typical values. The sum of these data meets the requirements according to OIML R60.

#### Wiring

The load cell is provided with a shielded 6 conductor cable. The cable length is indicated in the accompanying document. The shield will be connected.



**Connections**

Connections		6-wires
Excitation	+	blue
Excitation	-	black
Signal	+	white
Signal	-	red
Sense	+	green
Sense	-	grey
Shield		metallic

**Load cell dimensions in mm**

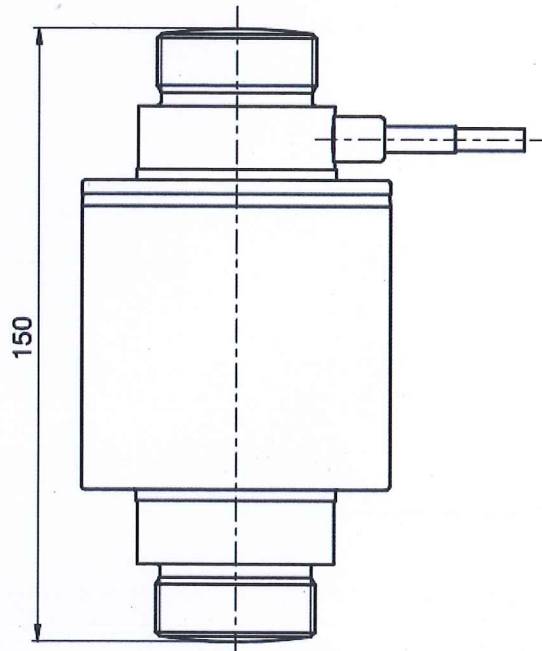


Figure 2: Dimensions of the load cell type Z16A