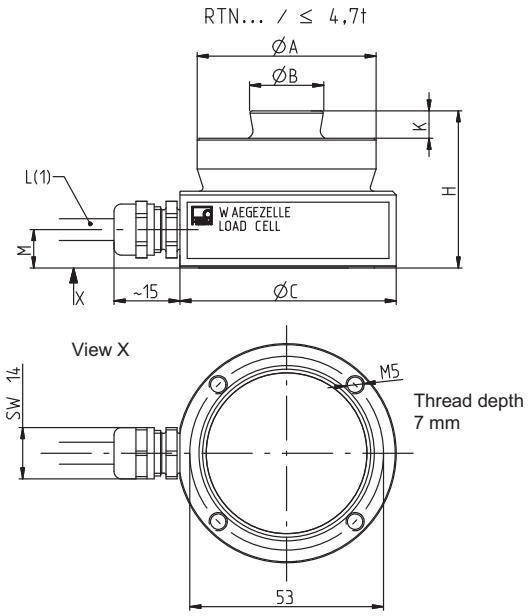
Data sheet

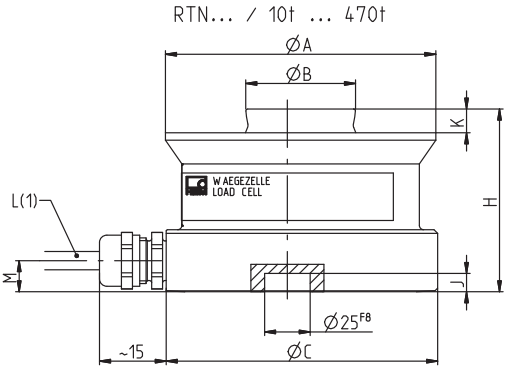
RTN...

Load cell

Special features

- **Low height of construction**
- **Maximum capacities 1 t ...470 t**
- **Legal for trade in accordance with OIML**
- **Stainless materials**
- **Hermetically encapsulated, equipment protection level IP68 (optional: IP68/IP69K)**
- **Options facilitate adaptation to a wide variety of environmental conditions**
- **Explosion protection (optional)**





RTN...	1 t	2.2 t	4.7 t	10 t	15 t	22 t	33 t	47 t	68 t	100 t	150 t	220 t	330 t	470 t
ØA	49	49	49	74	75	75	95	130	130	150	150	225	225	270
ØB	20	20	20	30	30	30	40	60	60	70	70	100	100	100
ØC	60	60	60	75	75	75	95	130	130	150	150	225	225	270
H	43	43	43	50	50	50	65	75	85	90	100	130	144	170
J	-	-	-	7	7	7	7	7	7	7	7	10	10	10
K	7.5	7.5	7.5	6.5	6.5	6.5	10	14	14	16	16	24	24	28
L	5 m	5 m	5 m	5 m	5 m	15 m	15 m	15 m	15 m	15 m	5 m	5 m	5 m	5 m
M	10.5	10.5	10.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	11	11	11

Specifications

Type			**RTN 0.05**													
Accuracy class			0.05													
Number of load cell verification intervals	n_{LC}		-													
Maximum capacity	E_{max}	d	1	2.2	4.7	10	15	22	33	47	68	100	150	220	330	470
Minimum load cell verification interval	V_{min}	g	-													
Temperature coefficient of zero signal	TC_0	% of Cn/ 10K	±0.3													
Rated output (nominal)	C_n	mV/V	2.85 ±0.00285													
Temperature coefficient of sensitivity	TC_S	% of C_n / 10K	±0.05													
Relative reversibility error	d_{hy}	% of C_n	±0.05													
Non-linearity	d_{lin}		±0.05													
Dead load output return	MDLOR		±0.03													
Input resistance	R_{LC}	Ω	4450 ±100													
Output resistance	R_O		4010 ±2													
Reference excitation voltage	U_{ref}	V	5													
Nominal (rated) range of the excitation voltage	B_U		5 … 30													
Carrier frequency of excitation voltage		Hz	< 600													
Maximum excitation voltage		V	60													
Insulation resistance	R_{is}	GΩ	>20													
Nominal (rated) range of the ambient temperature	B_T	°C	-10 … +40													
Operating temperature range	B_{tu}		-30 … +80 (option: up to +110)[1)] (Option 5: Plug: -25…+80)													
Storage temperature range	B_{tl}		-50…+85[1)] (option 5: Plug: -25…+85)													
Breaking load	E_d		4	9	19	40	60	88	130	190	270	400	600	770	1100	1500
Rated displacement at Emax, approx.	s_{nom}	mm	0.13	0.12	0.12	0.17	0.18	0.21	0.25	0.33	0.35	0.45	0.57	0.67	0.80	1.00
Weight, approx.	m	kg	0.6	0.6	0.7	1.2	1.3	1.3	2.1	4.3	4.8	7.0	8.6	22	29	50
IP rating			IP68[2)] (Option 6: IP68/ IP69K)[3)]													
Material																
Measuring body			Stainless steel 1.4545[4)]													
Cable entry			Nickel-plated brass													
Cable sheath			Thermoplast. Elastomer, RAL 7000 (gray), Ø 6.5 mm													

1) Mechanical fittings can be used to set limits.
2) Test condition water resistant 1 m/100h
3) As per EN 60 529
4) As per EN 10088-1

Type			RTN C3				
Accuracy class[5]			C3				
Number of load cell verification intervals	n_{LC}		3000				
Maximum capacity	E_{max}	d	1	2.2	4.7	10	15
Minimum load cell verification interval	V_{min}	g	50	110	235	500	750

Maximum capacity	E_{max}	d	22	33	47	68	100	150	220	330	470
Minimum load cell verification interval	V_{min}	kg	1.1	1.65	2.35	3.4	5	7.5	11	16.5	23.5
Temperature coefficient of zero signal	TC_0	% of Cn/ 10K	±0.007								
Temperature coefficient of sensitivity[6]	TC_S	% of C_n / 10K	±0.008								
Relative reversibility error[6]	d_{hy}	% of C_n	±0.02								
Non-linearity[6]	d_{lin}		±0.02								
Dead load output return	MDLOR		±0.0167								
Output resistance	R_O	Ω	4010 ±0.5								

5) As per OIML R60
6) The values for the temperature coefficient of sensitivity (TCS), relative reversibility error (dhy), and linearity deviation (dlin) are recommended values. The sum of these values is within the accumulated error limit specified by OIML R60.

Static limit lateral loading

If the load cell is subjected to normal load, friction on the dedendum flank can allow for the transmission of greater lateral forces, depending on the normal load. The values for maximum allowed lateral force (static), when the load cell is not loaded with a normal load, are shown in this table:

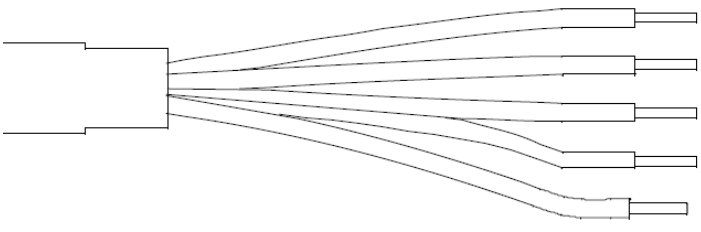
Maximum capacity	[t]	1	2.2	4.7	10	15	22	33	47	68	100	150	220	330	470
Limit lateral loading (static)	[kN]	1	1	1	10	10	10	12	20	20	26	26	50	50	90

If high lateral forces are to be expected during application, it is advisable to use the pendulum bearing offered by HBM in order to minimize the lateral force depending on the normal force applied to the load cell.

Cable assignment RTN...

Connection with 4-wire cable with TPE cable sheath

Schematic diagram with free ends



Shield (green-yellow) = cable shield connected to load cell body

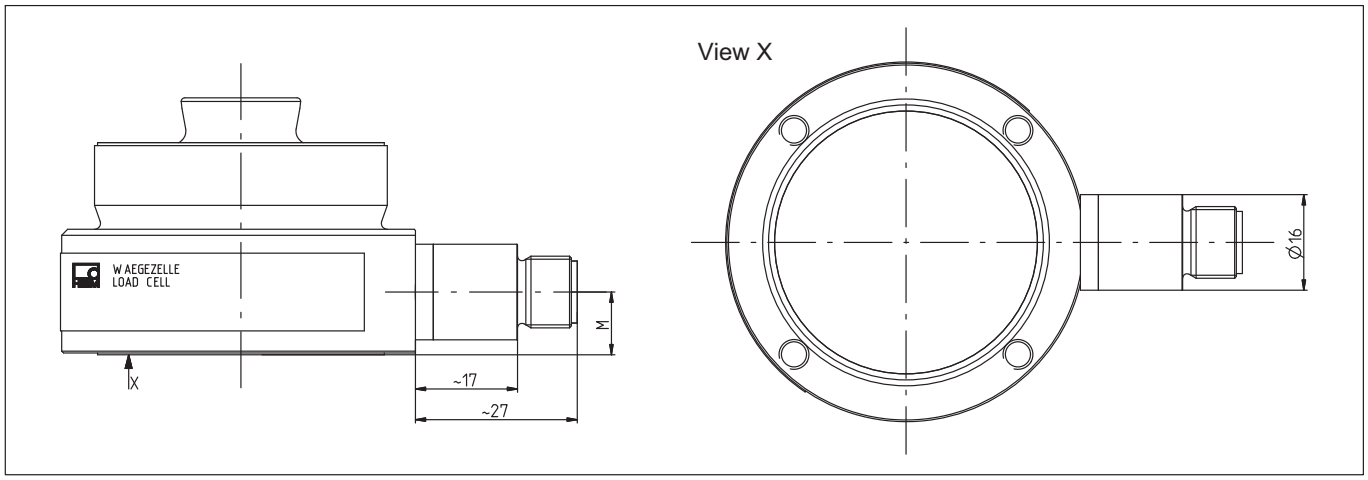
Free end 1 (black) = excitation voltage (+)

Free end 2 (red) = measurement signal (+)

Free end 3 (white) = measurement signal (-)

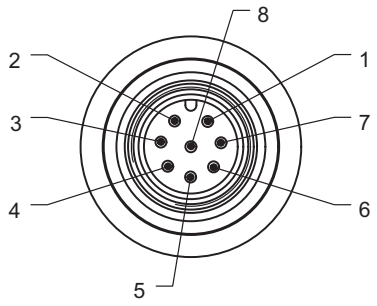
Free end 4 (blue) = excitation voltage (-)

Dimensions RTN with plug (optional)



RTN…	[t]	1	2.2	4.7	10	15	22	33	47	68	100	150
M	mm	10.5	10.5	10.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5

Cable assignment (optional) RTN...



Plug-in contact 1 = measurement signal (-)
Plug-in contact 2 = not in use
Plug-in contact 3 = sense lead (-)
Plug-in contact 4 = not in use
Plug-in contact 5 = sense lead (+)
Plug-in contact 6 = excitation voltage (+)
Plug-in contact 7 = excitation voltage (-)
Plug-in contact 8 = measurement signal (+)

Product numbers (overview)

Type	**RTN**		
Accuracy class	0.05 C3 (OIML R60)		
Maximum capacity [t]	**Ordering number**		**Comment**
1	1-RTN0.05/1T	1-RTNC3/1T	Cable length 5 m
2.2	1-RTN0.05/2.2T	1-RTNC3/2.2T	Cable length 5 m
4.7	1-RTN0.05/4.7T	1-RTNC3/4.7T	Cable length 5 m
10	1-RTN0.05/10T	1-RTNC3/10T	Cable length 5 m
15	1-RTN0.05/15T	1-RTNC3/15T	Cable length 5 m
22	1-RTN0.05/22T	1-RTNC3/22T	Cable length 15 m
33	1-RTN0.05/33T	1-RTNC3/33T	Cable length 15 m
47	1-RTN0.05/47T	1-RTNC3/47T	Cable length 15 m
68	1-RTN0.05/68T	1-RTNC3/68T	Cable length 15 m
100	1-RTN0.05/100T	1-RTNC3/100T	Cable length 15 m
150	1-RTN0.05/150T	1-RTNC3/150T	Cable length 5 m
220	1-RTN0.05/220T	1-RTNC3/220T	Cable length 5 m
330	1-RTN0.05/330T	1-RTNC3/330T	Cable length 5 m
470	1-RTN0.05/470T	1-RTNC3/470T	Cable length 5 m

Ordering options

Ordering number
K-RTN

Code	Option 1: Mechanical design
S	Standard
M	RTN 3xM6 (3 tapped holes in root of measuring body)

Code	Option 2: Accuracy class
5	0.05
C3	C3 (OIML)

Code	Option 3: Max. capacity	Code	Option 3: Max. capacity	Code	Option 3: Max. capacity
1	1 t [only with Option 1=S]	**22**	22 t	**150**	150 t
2.2	2.2 t[only with Option 1=S]	**33**	33 t	**220**	220 t
4.7	4.7 t[only with Option 1=S]	**47**	47 t	**330**	330 t
10	10 t	**68**	68 t	**470**	470 t
15	15 t	**100**	100 t		

Code	Option 4: Explosion protection
N	No explosion protection
AI1/21	IECEx+ATEX Zone 1/21 + FM, intrinsically safe II 2G Ex ia IIC T6/T4 Gb / II 2D Ex ia IIIC T125°C Db[1)]
AI2/21	IECEx+ATEX Zone 2/21, not intrinsically safe II 3G Ex ec IIC T6/T4 Gc / II 2D Ex tb IIIC T125°C Db[1)]
AIM1	IECEx+ATEX M1, intrinsically safe, I M1 Ex ia I Ma
R1/21	EAWU Zone 1/21 TR ZU 012/2011 ex certificate, 1 Ex ia IIC T6/T4 Gb X / Ex ia IIIC T125°C Db X[2)]
R2/21	EAWU Zone 2/21 TR ZU 012/2011 ex certificate, 2 Ex nA IIC T6/T4 Gc X / Ex tb IIIC T125°C Db X[2)]
RM1	Ex Russia/EAWU M1

Code	Option 5: Cable length	
N	Plug	[only for Option 4 = N], [not for Option 3 = 220, 330, 470]
S5	5 m standard	[not for Option 3 = 22, 33, 47, 68, 100]
S15	15 m standard	[only for Option 3 = 22, 33, 47, 68, 100]
15	15 m	[not for Option 3 = 22, 33, 47, 68, 100]
25	25 m	
50	50 m	
15R	15 m, stainless braided wire cable	

Code	Option 6: Other	
N	None	
110	Application temperature 110 °C	[not for Option 5 = plug]
IP	IP68/IP69K with screwed cable gland made of stainless steel	

Code	Option 9: Test record	
N	No protocol	
C	Protocol with sensitivity parameter measurement	
T	Protocol with stepped envelope curve	[only for Option 2 = C3]

Code	Option 10: Overvoltage protection	
N	No overvoltage protection	
L	Overvoltage protection	[not for Option 3 = 1, 2.2, 4.7]

K-RTN - □ - □□ - □□□ - □□□□□□ - □□□ - □□□ - □ - □

1) With EC type examination certificate/Certificate of Conformity BVS 13 ATEX E 108 X/IECEx BVS 13.0109 X
2) With certificate “СЕРТИФИКАТ СООТВЕТСТВИЯ No TC RU C-DE.ГБ08.В.01138”

Accessories

Cable for Option 5: Male connector

Ordering number	Comment
1-KAB168-5	Cable length 5 m, equipment protection level IP67, halogen-free
1-KAB168-20	Cable length 20 m, equipment protection level IP67, halogen-free
1-KAB175-3-1	Cable length 3 m, equipment protection level IP68/IP69K, halogen-free
1-KAB175-6-1	Cable length 6 m, equipment protection level IP68/IP69K, halogen-free
1-KAB175-12-1	Cable length 12 m, equipment protection level IP68/IP69K, halogen-free

Pendulum bearing VPN

	Ordering number	Comment
	1-RTN/2.2T/VPN	Pendulum bearing, 1 t and 2.2 t
	1-RTN/4.7T/VPN	Pendulum bearing, 4.7 t
	1-RTN/10T/VPN	Pendulum bearing, 10 t
	1-RTN/15T/VPN	Pendulum bearing, 15 t
	1-RTN/22T/VPN	Pendulum bearing, 22 t
	1-RTN/33T/VPN	Pendulum bearing, 33 t
	1-RTN/47T/VPN	Pendulum bearing, 47 t
	1-RTN/68T/VPN	Pendulum bearing, 68 t
	1-RTN/100T/VPN	Pendulum bearing, 100 t
	1-RTN/220T/VPN	Pendulum bearing, 220 t
	1-RTN/330T/VPN	Pendulum bearing, 330 t
	1-RTN/470T/VPN	Pendulum bearing, 470 t

For more detailed information, see Technical Drawings B04957 (1-100t) and B04956 (150-470t)

Rubber-metal bearing VEN

	Ordering number	Comment
	1-RTN/2.2T/VEN	Rubber-metal bearing, 1 t...2.2 t
	1-RTN/4.7TVEN	Rubber-metal bearing, 4.7 t
	1-RTN/22T/VENR	Rubber-metal bearing, 10 t … 22 t, stainless
	1-RTN/22T/VEN	Rubber-metal bearing, 10 t … 22 t
	1-RTN/33T/VEN	Rubber-metal bearing, 33 t
	1-RTN/47T/VEN	Rubber-metal bearing, 47 t
	1-RTN/68T/VEN	Rubber-metal bearing, 68 t
	1-RTN/100T/VEN	Rubber-metal bearing, 100 t
	1-RTN/220T/VEN	Rubber-metal bearing, 220 t
	1-RTN/330T/VEN	Rubber-metal bearing, 330 t
	1-RTN/470T/VEN	Rubber-metal bearing, 470 t

For more detailed information, see Technical Drawings B04958 (1-100t) and B04955 (150-470t)

Hottinger Baldwin Messtechnik GmbH
Im Tiefen See 45 · 64293 Darmstadt · Germany
Tel. +49 6151 803-0 · Fax +49 6151 803-9100
Email: info@hbm.com · www.hbm.com

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