

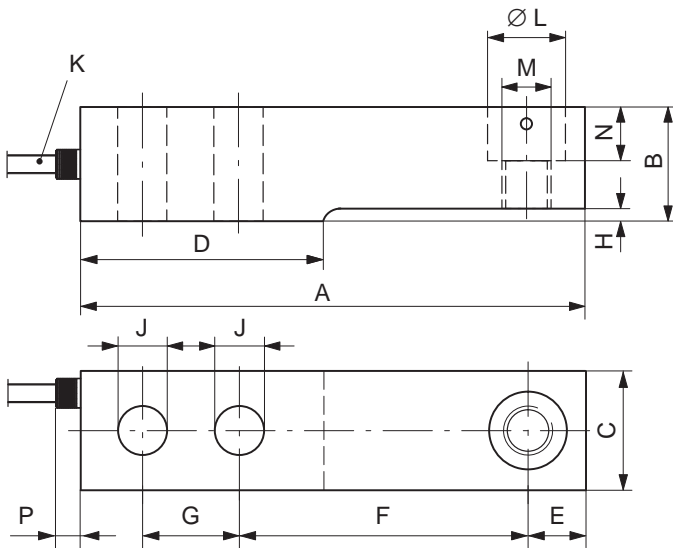
## HLCB2... Load cells

### SPECIAL FEATURES

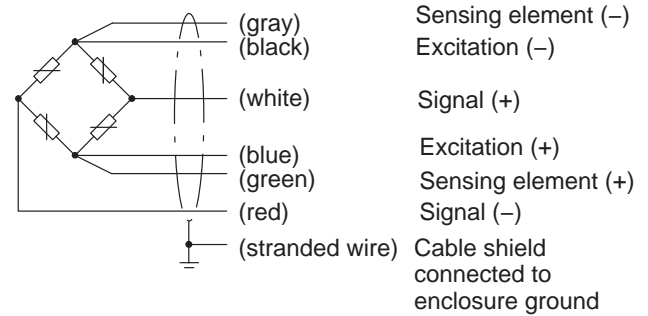
- Hermetically encapsulated (IP68, IP69K)
- Maximum capacities: 110 kg to 4.4 t
- Rust-resistant materials
- Low height of construction
- Six-wire configuration
- Optimized for parallel connection
- Legal for trade per OIML R60 to 6000 divisions
- Legal for trade as per NTEP (USA) III M5000
- Explosion protection versions as per ATEX and IECEx, FM (US/CA)



### DIMENSIONS (IN MM; 1 MM = 0.03937 INCHES)



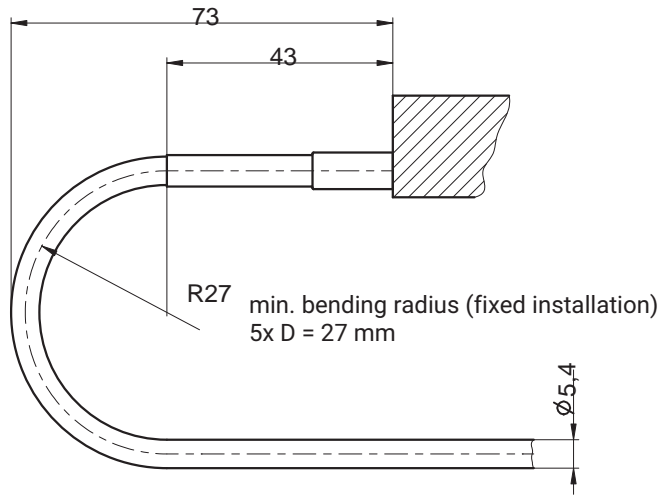
Cable assignment (six-wire configuration)



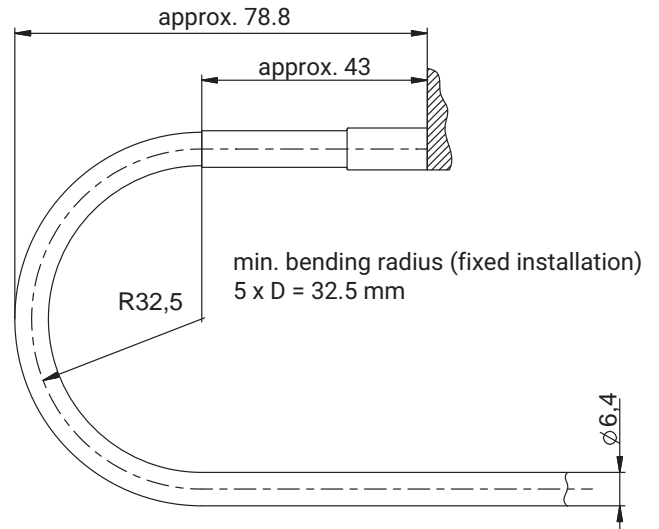
Cable:  
 Ø 5.4 mm (0.21 in) (standard)  
 Ø 6.4 mm (0.25 in) with option metal braiding (3R, 6R, 12R)

Maximum capacity ( $E_{max}$ )	A	B	C	D	E	F	G	H	J	K	ØL	M	N	P
110 kg; 220 kg; 550 kg; 1.1 t	133.4	30.2	30.7	57.7	15.4	76.2	25.4	1.7	13	3 m	20.6	M12	14.2	12
1.76 t	133.4	30.2	30.7	51.7	15.4	76.2	25.4	1.7	13	3 m	20.6	M12	14.2	12
2.2 t	171.5	36.5	36.8	76.2	19.1	95.3	38.1	2.5	20.5	6 m	30.2	M20	17.0	12
4.4 t	171.5	42.9	42.9	76.2	19.1	95.3	38.1	2.5	20.5	6 m	30.2	M20	20.1	12

**TPE (standard)**



**TPE with metal braiding (optional)**



**SPECIFICATIONS**

Type		HLCB2				
Accuracy class as per OIML R60 <sup>1)</sup>		D1	C3	C4	C6	
Number of load cell verification intervals	$n_{LC}$	1000	3000	4000	6000	
Maximum capacity	$E_{max}$	220 kg; 550 kg; 1,1 t; 1,76 t; 2,2 t; 4,4 t	110 kg; 220 kg; 550 kg; 1.1 t; 1.76 t; 2.2 t; 4.4 t	220 kg; 550 kg; 1.1 t		
Minimum load cell verification interval	$v_{min}$	% of $E_{max}$	0,0285	0.0100 (220 kg; 1.76 t; 2.2 t; 4.4 t) 0.0090 (110 kg; 550 kg; 1.1 t)		
Ratio of minimum verification interval Y	Y		3500	10000 (220 kg; 1.76 t; 2.2 t; 4.4 t) 11111 (110 kg; 550 kg; 1.1 t)		
Accuracy class as per NTEP IIIM						
Number of load cell verification intervals	$n_{LC}$		-	5000	-	
Maximum capacity	$E_{max}$		-	110 kg; 220 kg; 550 kg; 1.1 t; 1.76 t; 2.2 t	-	
Minimum load cell verification interval	$v_{min}$	% v. $E_{max}$	-	$E_{max} / 9700$ $E_{max} / 12125$ (550kg)	-	
General specifications						
Nominal (rated) sensitivity	$C_n$	mV/V	1.94			
Sensitivity tolerance		%	±0,5	±0.1		
Temperature effect of zero signal <sup>2)</sup>	$TK_0$	% of $C_n / 10 K$	±0,0400	±0.0140 (220 kg; 1.76 t; 2.2 t; 4.4 t) ±0.0127 (110 kg; 550 kg; + 1.1 t)		
Temp. coefficient of sensitivity <sup>2)</sup>	$TK_C$		±0,0420	±0.0140	±0.0105	
Relative reversibility error <sup>2)</sup>	$d_{hy}$	% of $C_n$	±0,0500	±0.0166	±0.0125	
Non-linearity <sup>2)</sup>	$d_{lin}$		±0,0500	±0.0170	±0.0166	
Creep upon loading over 30 min.	$d_{cr}$		±0,0500	±0.0166		±0.0122
Minimum dead load output return	MDLOR		±0,0500	±0.0166	±0.0125	
Input resistance	$R_{LC}$	$\Omega$	350 ... 480			
Output resistance	$R_0$		350 ±2	350 ±0.12		

Type		HLCB2			
Accuracy class as per OIML R60 <sup>1)</sup>		D1	C3	C4	C6
Reference excitation voltage <sup>3)</sup>	U <sub>ref</sub>	V	5		
Nominal (rated) range of the excitation voltage <sup>3)</sup>	B <sub>U</sub>		0.5 ... 15		
Insulation resistance	R <sub>is</sub>	GΩ	> 5		
Nominal (rated) ambient temp. range <sup>3)</sup>	B <sub>T</sub>	°C	-10 ... +40		
Operating temperature range <sup>3)</sup>	B <sub>tu</sub>		-30 ... +70		
Storage temperature range	B <sub>tl</sub>		-50 ... +85		
Limit load	E <sub>L</sub>	% of E <sub>max</sub>	150 (for 1.76 t: 171 % of E <sub>max</sub> )		
Limit lateral loading	E <sub>lq</sub>		100		
Breaking load	E <sub>d</sub>		300	300	
Relative permissible oscillatory stress (oscillation width per DIN 50100)	F <sub>srel</sub>		70 (for 1.76 t: 600 kg to 2 t)		
Nominal (rated) displacement at E <sub>max</sub> , approx.	S <sub>nom</sub>	mm	0.5 (1.76 t = 1.4 mm)		
Weight, approx.	G	kg	0.9 (110 kg ... 1.76 t); 1.6 (2.2 t); 2.2 (4.4 t)		
Degree of protection per EN 60529 (IEC 60529)			IP 68 / IP 69K	IP 68 / IP 69K	
Material			Stainless steel <sup>4)</sup>		
Measuring body			Stainless steel <sup>4)</sup> (seal: Viton <sup>®</sup> )		
Cable entry			5.4 mm (0.21 in) TPE		
Cable sheath (standard)			6.4 mm (0.25 in) outer braided wire		
Cable sheath (optional)			Hermetically welded		
Measuring point protection					
Available cable lengths		m (ft)	3 m (9.84 ft) standard		
		m (ft)	m (19.69 ft) optional		
		m (ft)	12 m (39.37 ft) optional		
		m (ft)	20 m (65.62 ft) optional		

1) OIML R60 with P<sub>LC</sub> = 0.7.

2) The values for non-linearity (d<sub>lin</sub>), relative reversibility error (d<sub>hy</sub>) and temperature coefficient of sensitivity (TK<sub>C</sub>) are recommended values. The sum of these values is within the cumulated error limit laid down by OIML R60.

3) For use in potentially explosive atmospheres: see the Ex safety instructions

4) Per EN 10 088-1.

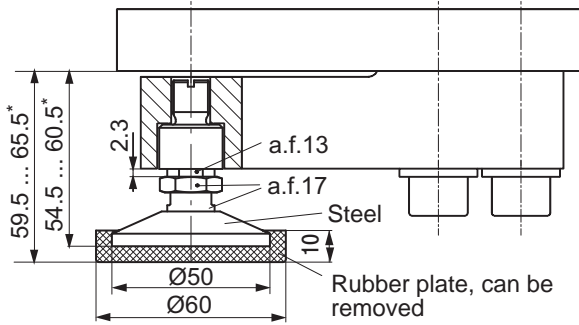
## ACCESSORIES

To minimize error effects from load application, HBM offers different tried and tested load application elements for this type of load cell, according to the mounting conditions:

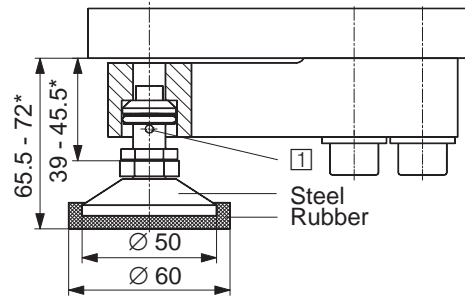
- **HLCB/ZFP/...T** Oscillating loading foot
- **HLCB/PCX/1.76T** Oscillating loading foot (height adjustable)
- **HLCB/...T/ZEL** Elastomer bearing
- **HLCB/ZDP/...T** Elastomer bearing **Easy Top**
- **HLC/ZPU/...T** Mounting base / mounting kit

**ACCESSORIES FOR HLC B ... (TO BE ORDERED SEPARATELY; DIMENSIONS IN MM)**

**HLCB/PCX/1.76 t** - Oscillating loading foot (stainless steel) for HLC B / 110 kg ... 1.76 t, suitable up to accuracy class C6:



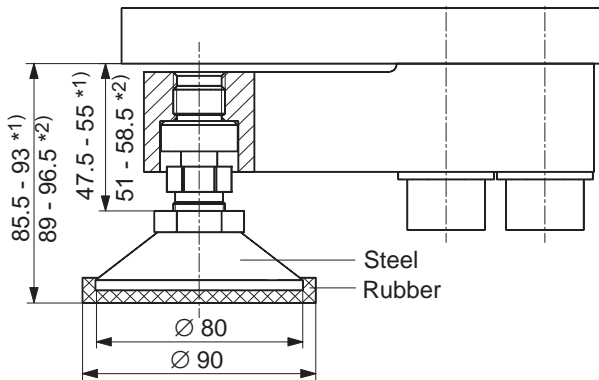
**HLCB/ZFP/1.76 T** - Oscillating loading foot (stainless steel) for HLC B / 110 kg ... 1.76 t:



1 Loading foot secured in load cell with supplied bracket

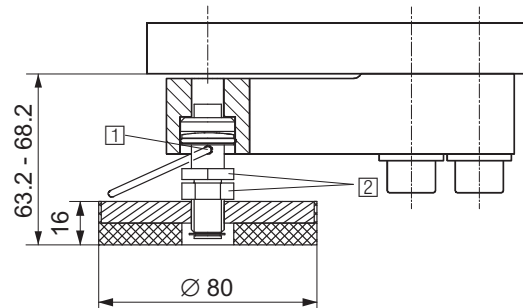
\* Height adjustment

**HLCB/ZFP/4.4 T** - Oscillating loading foot (stainless steel) for HLC B / 2.2 t + 4.4 t:



\* Height adjustment, (1) = Maximum capacity 2.2 t / (2) = Maximum capacity 4.4 t

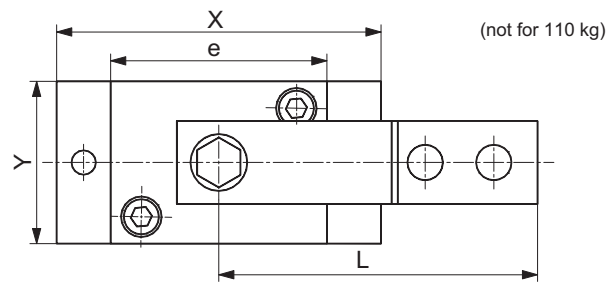
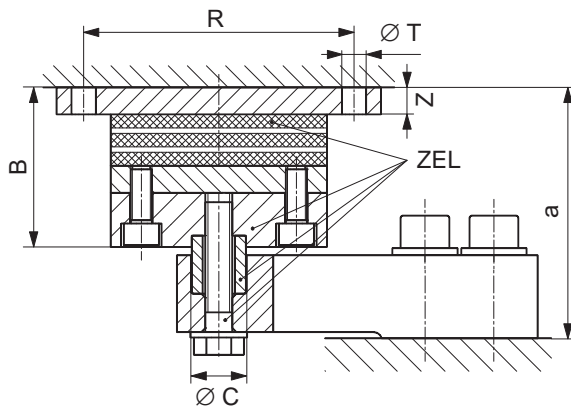
**HLCB/ZAK/1.76T** - Oscillating loading foot, height adjustable (stainless steel) for HLC B ≤ 1.76 t



1 Loading foot secured in load cell with supplied bracket

2 19 across flats

**HLCB/...T/ZEL** - Rubber-metal bearing (galvanized; HLCB/1.76T/ZELR made from rust-resistant material) for HLC B



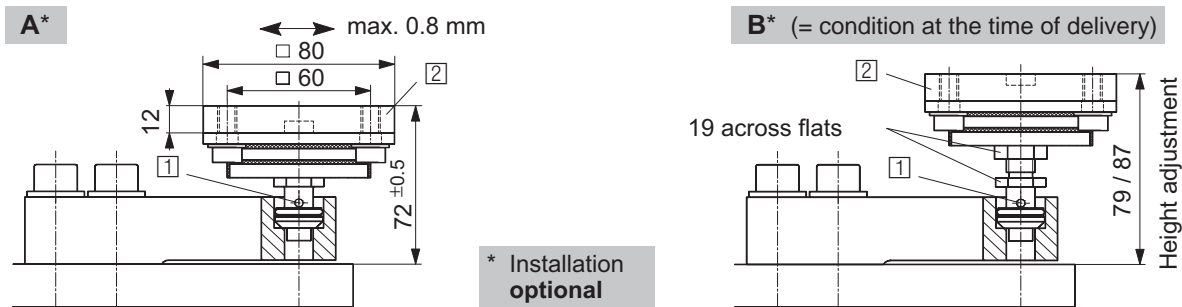
Maximum permissible lateral displacement (under maximum capacity):

- HLCB/1.76T/ZEL: 4,5 mm
- HLCB/4.4T/ZEL: 8 mm
- HLCB/10T/ZEL: 9.5 mm

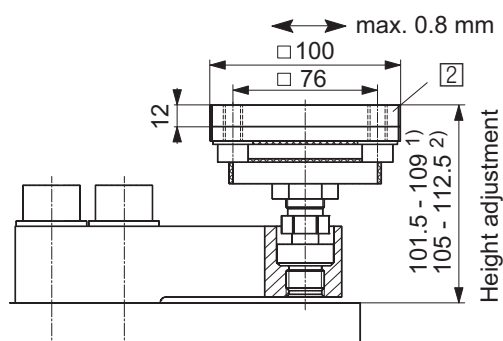
Type	Max. capacity	B	ØC <sub>0.1</sub>	L	R	ØT	X	Y	Z	a	e
HLCB/1.76T/ZEL HLCB/1.76T/ZELR	220 kg ... 1.76 t	58.8	20	118	100	9	120	60	10	92	80
HLCB/4.4T/ZEL	2.2 t	71.2	30	152.4	125	11	150	100	10	113	100
HLCB/4.4T/ZEL	4.4 t	71.2	30	152.4	125	11	150	100	10	116	100

## ACCESSORIES FOR HLC B ... (TO BE ORDERED SEPARATELY; DIMENSIONS IN MM)

**HLCB/ZDP/1.76 T Easy top** - Rubber-metal bearing for HLC B / 220 kg ... 1.76 t  
(Load application: stainless steel, welding plate: galvanized)



**HLCB/ZDP/4.4 T Easy top** - Rubber-metal bearing for HLC B / 2.2 t + 4.4 t  
(Load application: stainless steel, welding plate: galvanized)



1) **Easy top** secured in load cell with supplied bracket

2) Welding plate (schematic top view)

ZPU/1.76T: 4x M8  
ZPU/2.2T + 4.4T: 4x M10



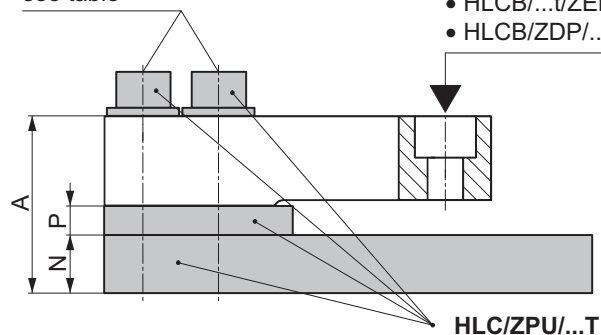
1) = maximum capacity 2.2 t  
2) = maximum capacity 4.4 t

**HLC/ZPU/...T** - Mounting base / mounting kit (galvanized) for HLC B

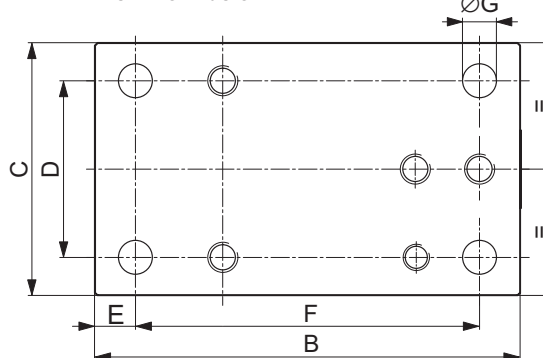
Tightening torque  $M_A$ :  
see table

Load application via:

- HLCB/...t/ZEL
- HLCB/ZDP/...t



View from below



Type	Maximum capacity	Breaking load	A	B	C	D	E	F	G	N	P	$M_A$
HLC/ZPU/1.76 T	110 kg ... 1.76 t	3.52 t	60.5	168	100	70	16	136	13.5	20	10	130 Nm
HLC/ZPU/2.2 T	2.2 t	4.4 t	81.5	212	120	84	18	175	14	25	20	400 Nm
HLC/ZPU/4.4 T	4.4 t	8.8 t	88	212	120	84	18	175	14	25	20	400 Nm

## PRODUCT NUMBERS

		HLCB2		
		3 m (9.84 ft) cable length		6 m (19.69 ft) cable length
		TPE (cover sheet) cable sheath		TPE (cover sheet) cable sheath
Maximum capacity	Accuracy class	Without explosion protection	ATEX+IECEX+FM Zone 1/21	Without explosion protection
<b>110 kg</b>	C3	1-HLCB2C3/110KG-1		
<b>220 kg</b>	D1 C3 C4 C6	1-HLCB2D1/220KG-1 1-HLCB2C3/220KG-1 1-HLCB2C4/220KG 1-HLCB2C6/220KG		
<b>550 kg</b>	D1 C3 C4 C6	1-HLCB2D1/550KG-1 1-HLCB2C3/550KG-1 1-HLCB2C4/550KG 1-HLCB2C6/550KG	1-HLCB2C3/550KG3	
<b>1.1 t</b>	D1 C3 C4 C6	1-HLCB2D1/1.1T-1 1-HLCB2C3/1.1T-1 1-HLCB2C4/1.1T 1-HLCB2C6/1.1T	1-HLCB2C3/1.1T3	
<b>1.76 t</b>	D1 C3	1-HLCB2D1/1.76T-1 1-HLCB2C3/1.76T-1		
<b>2.2 t</b>	C3			1-HLCB2C3/2.2T
<b>4.4 t</b>	C3			1-HLCB2C3/4.4T

Additional variants (cable lengths, explosion protection options, cable types) can be configured (see table of ordering options below).

## OPTIONS

### HLCB2 load cells, optional versions

K-HLCB2		
1	<b>Code</b>	<b>Option 1: Design</b>
	<b>B</b>	Standard (= degree of protection IP69K)
2	<b>Code</b>	<b>Option 2: Accuracy class</b>
	<b>C3</b>	C3 (OIML)
	<b>C4</b>	C4 (OIML) [only with option 3 = 220 / 550 / 1100 + option 5 = S3]
	<b>C6</b>	C6 (OIML) [only with option 3 = 220 / 550 / 1100 + option 5 = S3]
3	<b>Code</b>	<b>Option 3: Maximum capacity</b>
	<b>110</b>	110 kg
	<b>220</b>	220 kg
	<b>550</b>	550 kg
	<b>1100</b>	1.1 t
	<b>1760</b>	1.76 t
	<b>2200</b>	2.2 t
	<b>4400</b>	4.4 t
4	<b>Code</b>	<b>Option 4: Explosion protection</b>
	<b>N</b>	No explosion protection
	<b>A11/21</b>	ATEX+IECEX+FM Zone 1/21
	<b>A12/21</b>	ATEX+IECEX Zone 2/21
	<b>A12/21_F</b>	ATEX+IECEX Zone 2/21 + FM [not with option 3 = 110 / 2200 / 4400]
5	<b>Code</b>	<b>Option 5: Cable length</b>
	<b>S3</b>	3 m (9.84 ft) Standard [only with option 3 = 110, 220, 550, 1100, 1760]
	<b>S6</b>	6 m (19.69 ft) Standard [only with option 3 = 2200 / 4400]
	<b>6</b>	6 m (19.69 ft) Standard [only with option 3 = 110 / 220 / 550 / 1100 / 1760]
	<b>12</b>	12 m (39.37 ft)
	<b>20</b>	20 m (65.62 ft)
	<b>3R</b>	3 m (9.84 ft) Braided wire [only with option 3 = 110 / 220 / 550 / 1100 / 1760]
	<b>6R</b>	6 m (19.69 ft) Braided wire
<b>12R</b>	12 m (39.37 ft) Braided wire	
6	<b>Code</b>	<b>Option 6: Country/Customer</b>
	<b>N</b>	Without
	<b>AU</b>	With Australian type label NMIA NO S498 [not with option 3 = 110]

K-HLCB2 - B -    -    -    -    -    -    -   

1            2            3            4            5            6

**Not all codes can be combined with one another. Take note of the conditions in square brackets!**

## OPTIONS

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### Explosion protection versions per ATEX, IECEx and FM (US/CA)

- AI1/21 <sup>1), 2)</sup> ATEX+IECEx+FM zone 1/21, intrinsically safe;  
- ATEX/IECEx: II 2G Ex ia IIC T6/T4 Gb + II 2D Ex ia IIIC T125°C Db;  
- FM(US/CA): Class I zone 1 AEx/Ex ia IIC T4 Gb + zone 21 AEx/Ex ia IIIC T125°C Db;  
- FM(US): Class I, II, III Division 1, Groups A, B, C, D, E, F, G T4
- AI2/21 <sup>1)</sup> ATEX+IECEx zone 2/21, not intrinsically safe;  
- ATEX/IECEx: II 3G Ex ec IIC T6/T4 Gc + II 2D Ex tb IIIC T125°C Db
- AI2/21\_F <sup>1), 3)</sup> ATEX+IECEx Zone 2/21 + FM, not intrinsically safe;  
- ATEX/IECEx: II 3G Ex ec IIC T6/T4 Gc + II 2D Ex tb IIIC T125°C Db  
- FM(US): Class I, II, III Division 2, Groups A, B, C, D, F, G T4

1) BVS 13 ATEX E 108 X + IECEx BVS 13.0109 X

2) FM 18 US 0176 X + FM 18 CA 0144 X

3) FM 17 US 0159