

DATA SHEET



HLCB2... Load cells

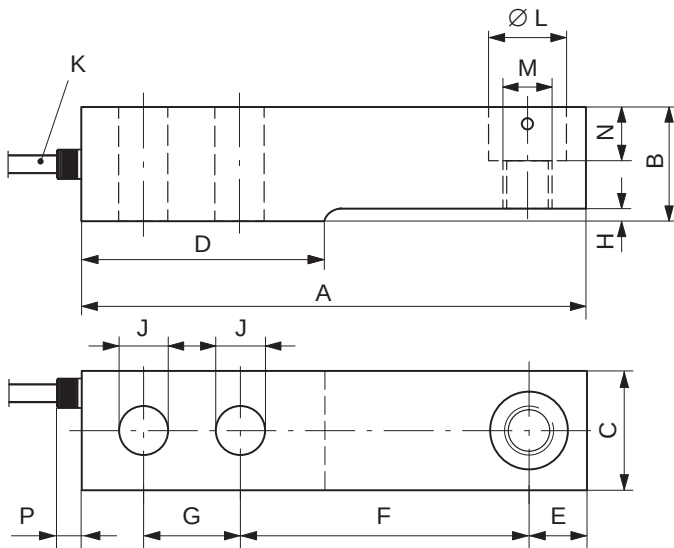
SPECIAL FEATURES

- Hermetically encapsulated (IP68, IP69K)
- Maximum capacities: 110 kg to 10 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)

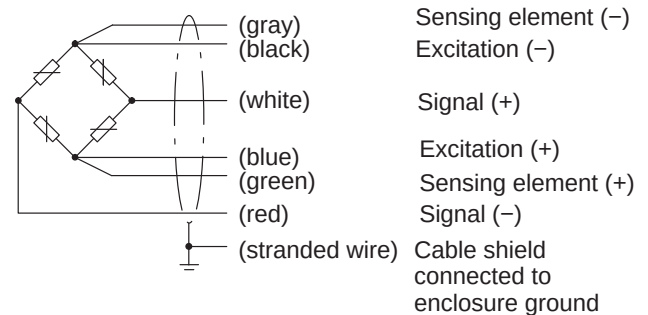
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DIMENSIONS (IN MM; 1 MM = 0.03937 INCHES)



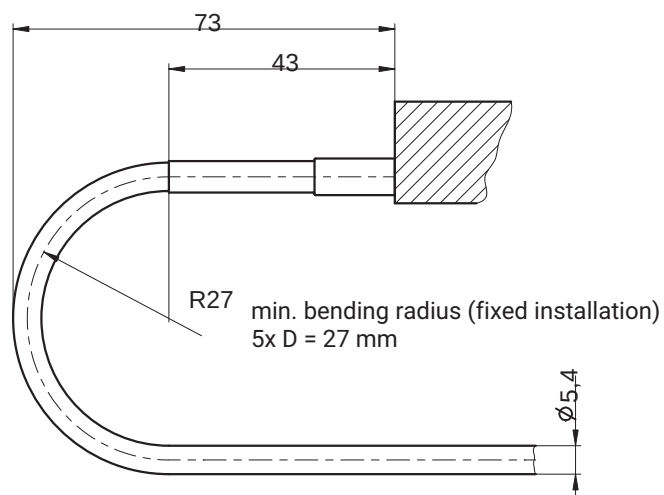
Cable assignment (six-wire configuration)



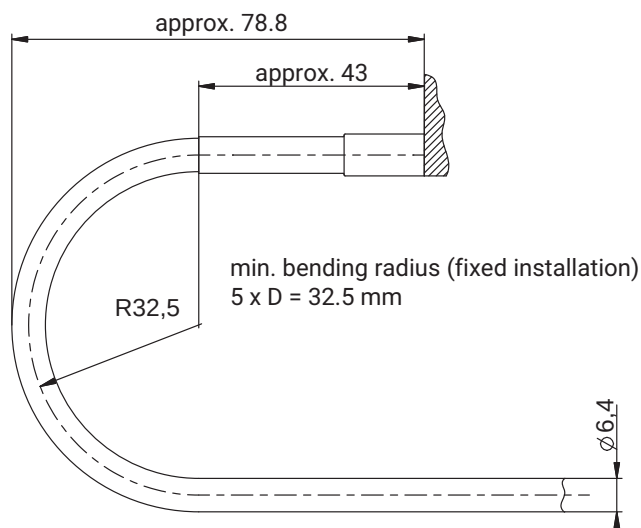
Cable:
Ø 5.4 mm (0.21 in) (standard)
Ø 6.4 mm (0.25 in) with option metal braiding (3R, 6R, 12R)

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
10 t	245.1	72.9	60	119.9	30.2	134.9	50±0.05	11.2	27	6 m	51±0.2	Ø32	20	12

TPE (standard)



TPE with metal braiding (optional)



SPECIFICATIONS

Type			HLCB2			
Accuracy class as per OIML R60 1)			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; 10 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; 10 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; 10 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 (10 t = 2.00 mV/V)			
Sensitivity tolerance		%	±0,5	±0.1		
Temperature effect of zero signal ²⁾	TK ₀	% of C _n / 10 K	±0,0400	±0.0140 (220 kg; 1.76 t; 2.2 t; 4.4 t; 10 t) ±0.0127 (110 kg; 550 kg; + 1.1 t)		
Temp. coefficient of sensitivity ²⁾	TK _C		±0,0420	±0.0140	±0.0105	±0.0070
Relative reversibility error ²⁾	d _{hy}	% of C _n	±0,0500	±0.0166	±0.0125	±0.0083
Non-linearity ²⁾	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	±0.0083

Type			HLCB2			
Accuracy class as per OIML R60 ¹⁾			D1	C3	C4	C6
Input resistance	R _{LC}	Ω	350 ... 480			
Output resistance	R ₀		350 ±2	350 ±0.12		
Reference excitation voltage ³⁾	U _{ref}	V	5			
Nominal (rated) range of the excitation voltage ³⁾	B _U		0.5 ... 15			
Insulation resistance	R _{is}	GΩ	> 5			
Nominal (rated) ambient temp. range ³⁾	B _T	°C	-10 ... +40			
Operating temperature range ³⁾	B _{tu}		-30 ... +70			
Storage temperature range	B _{tl}		-50 ... +85			
Limit load	E _L	% of E _{max}	150 (for 1.76 t: 171 % of E _{max})			
Limit lateral loading	E _{lq}		100			
Breaking load	E _d		300	300		
Relative permissible oscillatory stress (oscillation width per DIN 50100)	F _{srel}		70 (for 1.76 t: 600 kg to 2 t)			
Nominal (rated) displacement at E _{max} , approx.	s _{nom}	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 Measuring body Cable entry Cable sheath (standard) Cable sheath (optional) Measuring point protection			Stainless steel ⁴⁾ Stainless steel ⁴⁾ (seal: Viton®) 5.4 mm (0.21 in) TPE 6.4 mm (0.25 in) outer braided wire Hermetically welded			
Available cable lengths		m (ft) m (ft) m (ft) m (ft)	3 m (9.84 ft) standard m (19.69 ft) optional 12 m (39.37 ft) optional 20 m (65.62 ft) optional			

¹⁾ OIML R60 with $P_{LC} = 0.7$.

²⁾ The values for non-linearity (d_{lin}), relative reversibility error (d_{hy}) and temperature coefficient of sensitivity (TK_C) 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.

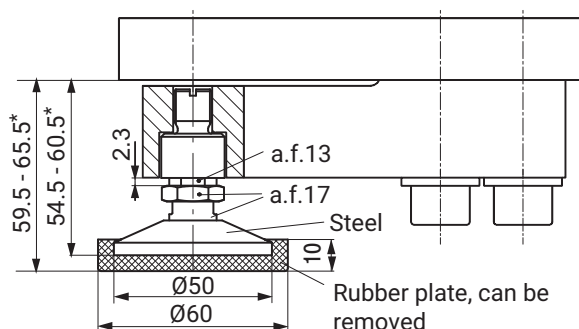
ACCESSORIES

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:

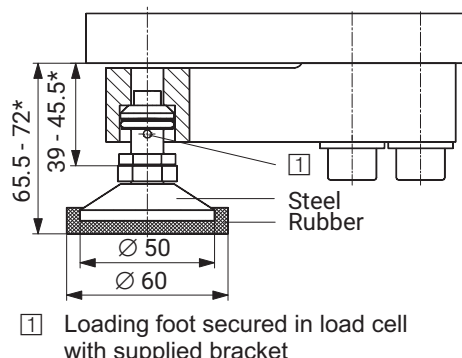
- **HLCB/ZFP/...T** Oscillating loading foot
- **HLCB/PCX/1.76T** Oscillating loading foot
(height adjustable)
- **HLCB/...T/ZEL** Elastomer bearing
- **HLCB/ZDP/...T** Elastomer bearing **Easy Top**
- **HLC/ZPU/...T** Mounting base / mounting kit

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

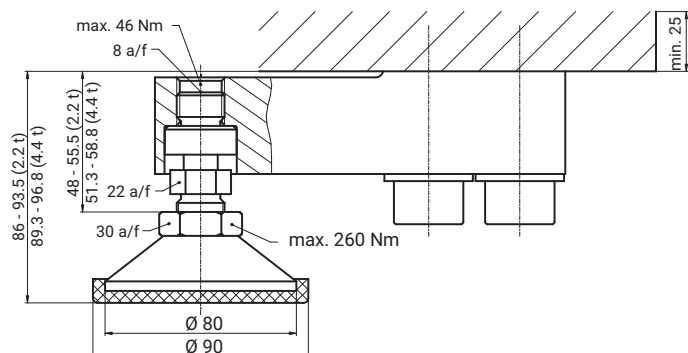


HLCB/ZFP/1.76 T - Oscillating loading foot (stainless steel) for HLC B / 110 kg ... 1.76 t

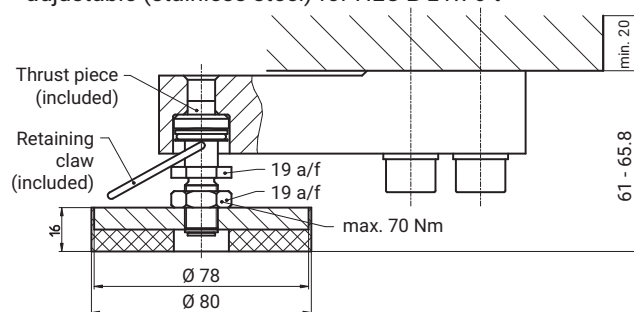


* Height adjustment

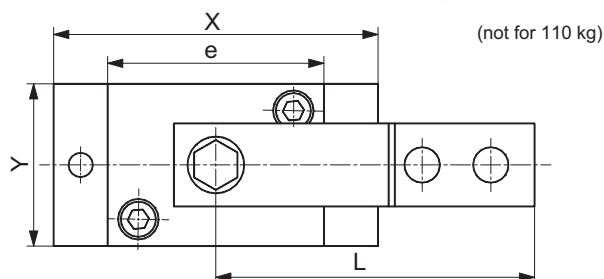
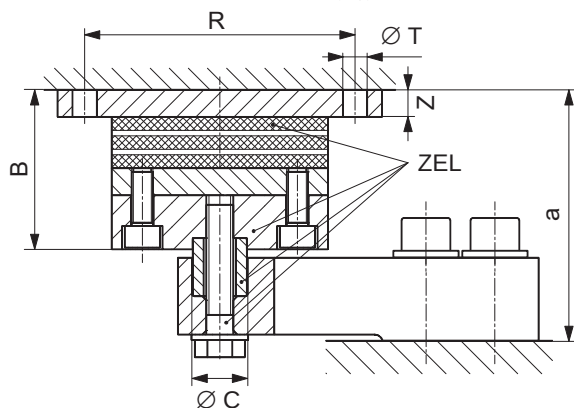
HLCB/ZFP/4.4 T - Oscillating loading foot (stainless steel) for HLC B / 2.2 t + 4.4 t:



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



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

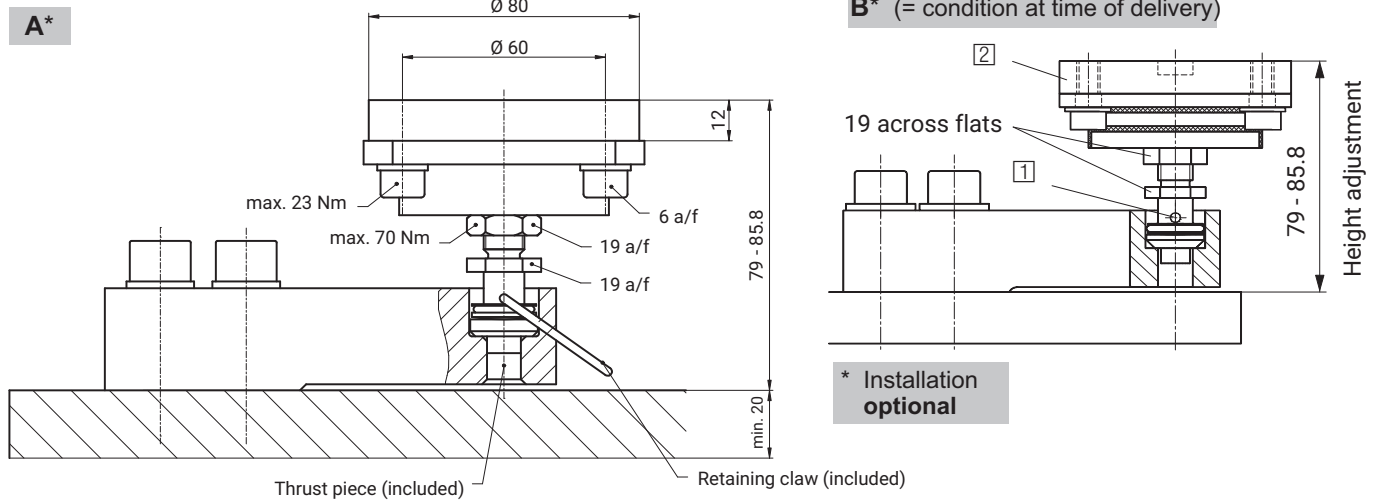


Maximum permissible lateral displacement (under maximum capacity):
HLCB/1.76T/ZEL: 4,5 mm
HLCB/4.4T/ZEL: 8 mm
HLCB/10T/ZEL: 9.5 mm

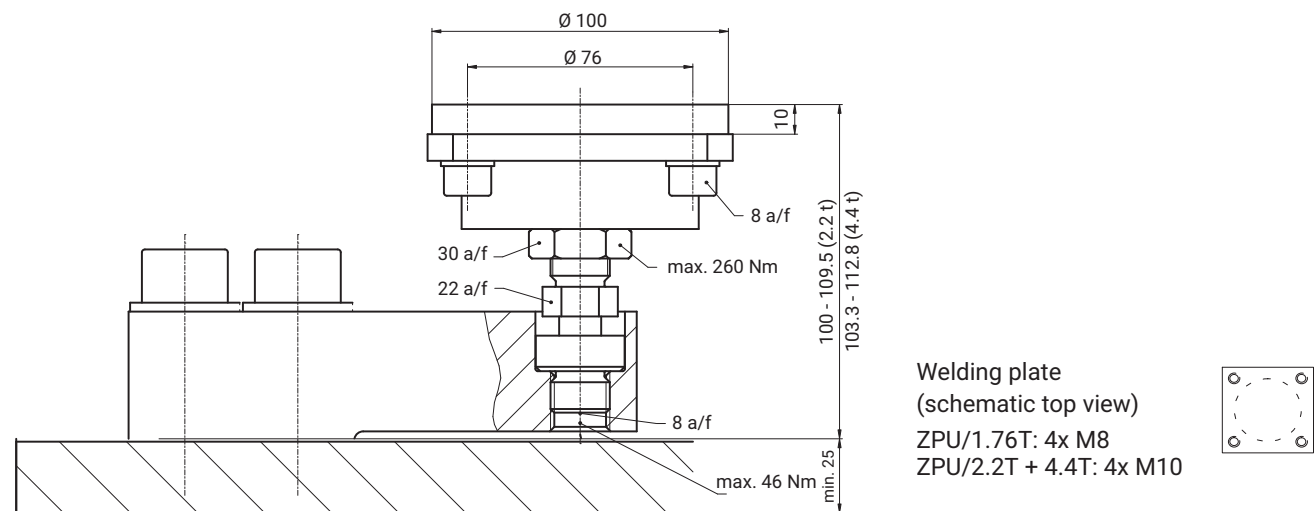
Type	Max. capacity	B	ØC _{0.1}	L	R	ØT	X	Y	Z	a	e
HLCB/1.76T/ZEL HLCB/1.76T/ZELR	220 kg ... 1.76 t	58.8	20	118	100	9	120	60	10	92	80
HLCB/4.4T/ZEL	2.2 t	71.2	30	152.4	125	11	150	100	10	113	100
HLCB/4.4T/ZEL	4.4 t	71.2	30	152.4	125	11	150	100	10	116	100
HLCB/10T/ZEL	10 t	85	50.8	214.9	175	13	200	100	12	167	150

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)

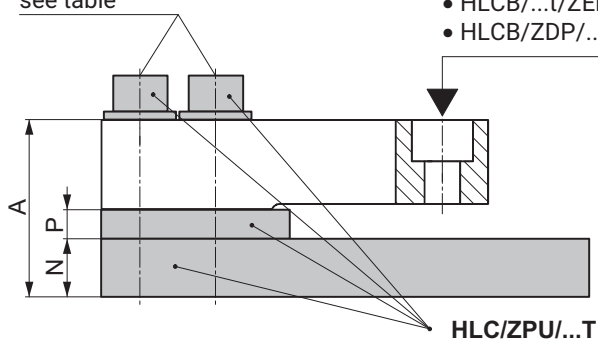


HLC/ZPU/...T - Mounting base / mounting kit (galvanized) for HLC B

Tightening torque M_A :
see table

Load application via:

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



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
110 kg	C3	1-HLCB2C3/110KG-1		
220 kg	D1 C3 C4 C6	1-HLCB2D1/220KG-1 1-HLCB2C3/220KG-1 1-HLCB2C4/220KG 1-HLCB2C6/220KG		
550 kg	D1 C3 C4 C6	1-HLCB2D1/550KG-1 1-HLCB2C3/550KG-1 1-HLCB2C4/550KG 1-HLCB2C6/550KG	1-HLCB2C3/550KG3	
1.1 t	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	
1.76 t	D1 C3	1-HLCB2D1/1.76T-1 1-HLCB2C3/1.76T-1		
2.2 t	C3			1-HLCB2C3/2.2T
4.4 t	C3			1-HLCB2C3/4.4T
10 t	C3			1-HLCB2C3/10T

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	Code	Option 1: Design
	B	Standard (= degree of protection IP69K)
2	Code	Option 2: Accuracy class
	C3	C3 (OIML)
	C4	C4 (OIML) [only with option 3 = 220 / 550 / 1100 + option 5 = S3]
	C6	C6 (OIML) [only with option 3 = 220 / 550 / 1100 + option 5 = S3]
3	Code	Option 3: Maximum capacity
	110	110 kg
	220	220 kg
	550	550 kg
	1100	1.1 t
	1760	1.76 t
	2200	2.2 t
	4400	4.4 t
4	Code	Option 4: Explosion protection
	N	No explosion protection
	AI1/21	ATEX+IECEEx+FM Zone 1/21
	AI2/21	ATEX+IECEEx Zone 2/21
	AI2/21_F	ATEX+IECEEx Zone 2/21 + FM [not with option 3 = 110 / 2200 / 4400]
5	Code	Option 5: Cable length
	S3	3 m (9.84 ft) Standard [only with option 3 = 110, 220, 550, 1100, 1760]
	S6	6 m (19.69 ft) Standard [only with option 3 = 2200 / 4400]
	6	6 m (19.69 ft) Standard [only with option 3 = 110 / 220 / 550 / 1100 / 1760]
	12	12 m (39.37 ft)
	20	20 m (65.62 ft)
	3R	3 m (9.84 ft) Braided wire [only with option 3 = 110 / 220 / 550 / 1100 / 1760]
	6R	6 m (19.69 ft) Braided wire
	12R	12 m (39.37 ft) Braided wire
6	Code	Option 6: Country/Customer
	N	Without
	AU	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!

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

- AI1/21 ^{1), 2)} 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 ¹⁾ 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 ^{1), 3)} 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