

- Low profile package saves space
- Excellent resistance to shock and vibration
- 30mm standard through shaft, PEEK reduction hub available
- High protection level of IP66
- High performance in temperatures from  $-40^{\circ}\text{C}$  to  $+100^{\circ}\text{C}$
- HTL or TTL electronic
- Programmable resolutions from 1 to 10000 PPR
- Terminal box connection (also available with M12 or cable output)



### Certifications:

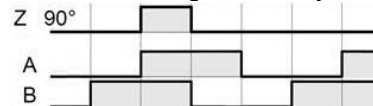
The LP Incremental Encoder is available with the following certifications



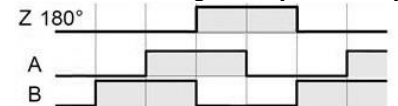
### Output Waveform:

Waveform AA/ BB/ 00/ Channel B before A Clockwise

Index calibration gated A & B (code 9)



Index calibration gated B (code V/US)



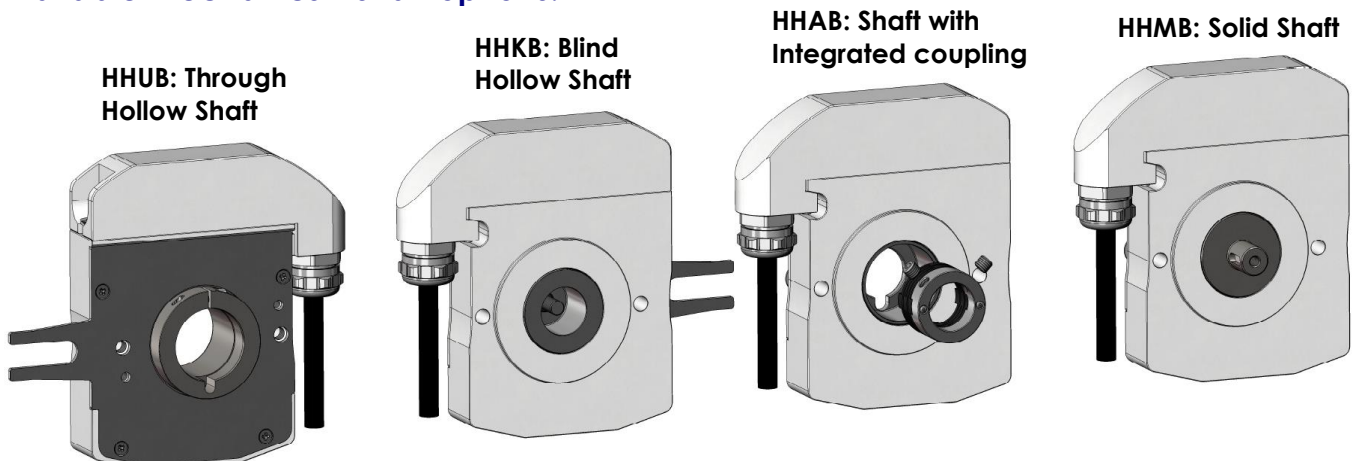
### Mechanical Characteristics:

Material	Cover : anodised aluminum	Vibrations (EN60068-2-6)	$\leq 200\text{m.s}^{-2}$ (55 ... 2 000 Hz)
	Body : anodised aluminum	Shaft inertia	$< 84000\text{ g.mm}^2$
	Shaft : AISI 303 stainless steel	Static/Dynamic torque	30 / 300 mN.m
Ball bearings	6807 - Sealed	Continuous max. speed*	$6000\text{ min}^{-1}$
Maximum loads	Axial: 40 N	Theoretical mechanical lifetime $L_{10h}^{**}$	$> 18.10^9$ turns / 100000 hours
	Radial: 80 N	Encoder weight (approx.)	790g
Shocks (EN60068-2-27)	$\leq 3000\text{m.s}^{-2}$ (during 5 ms)		

\* please reference the user manual heat derating curves

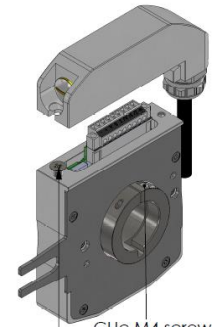
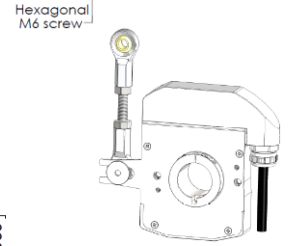
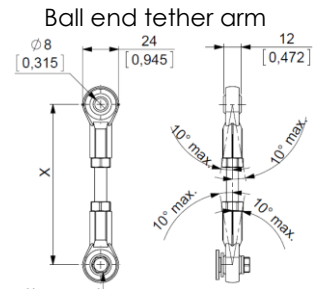
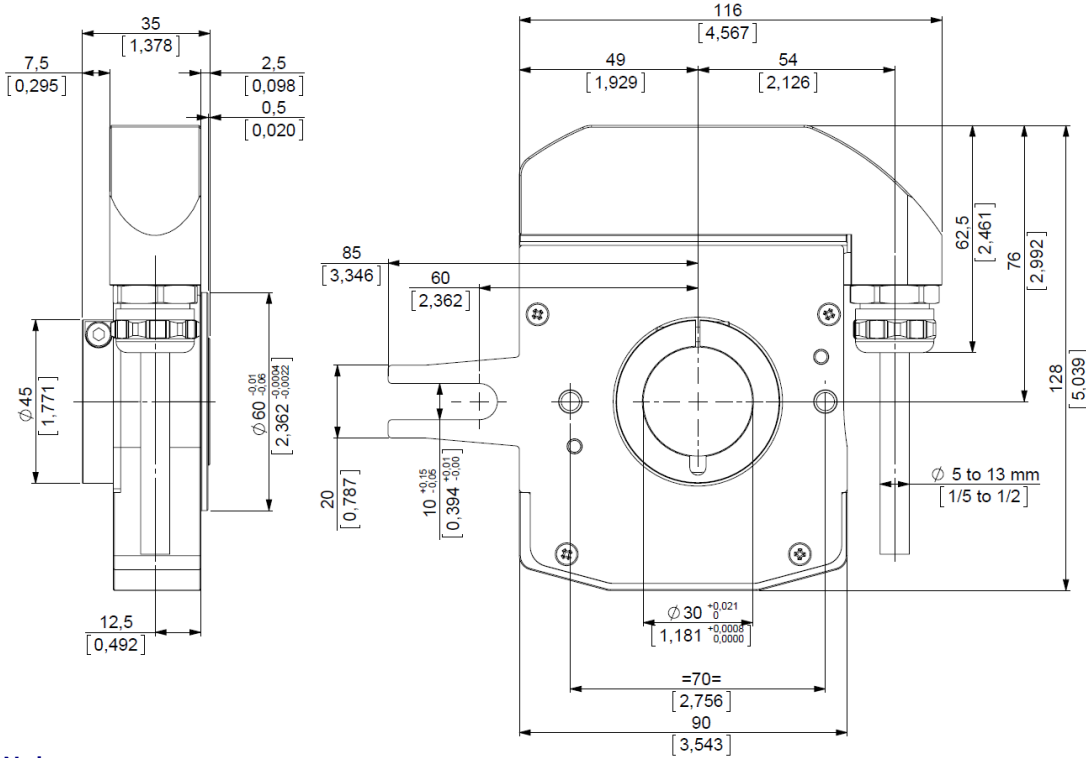
\*\* continuous max. speed –  $\frac{1}{2}$  max. load – ISO 281,  $L_{10}$

### Available mechanics – shaft options:



#### Dimensions

HHUB – Through hollow shaft – with terminal box



#### Note :

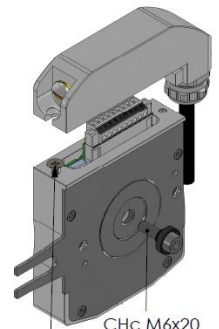
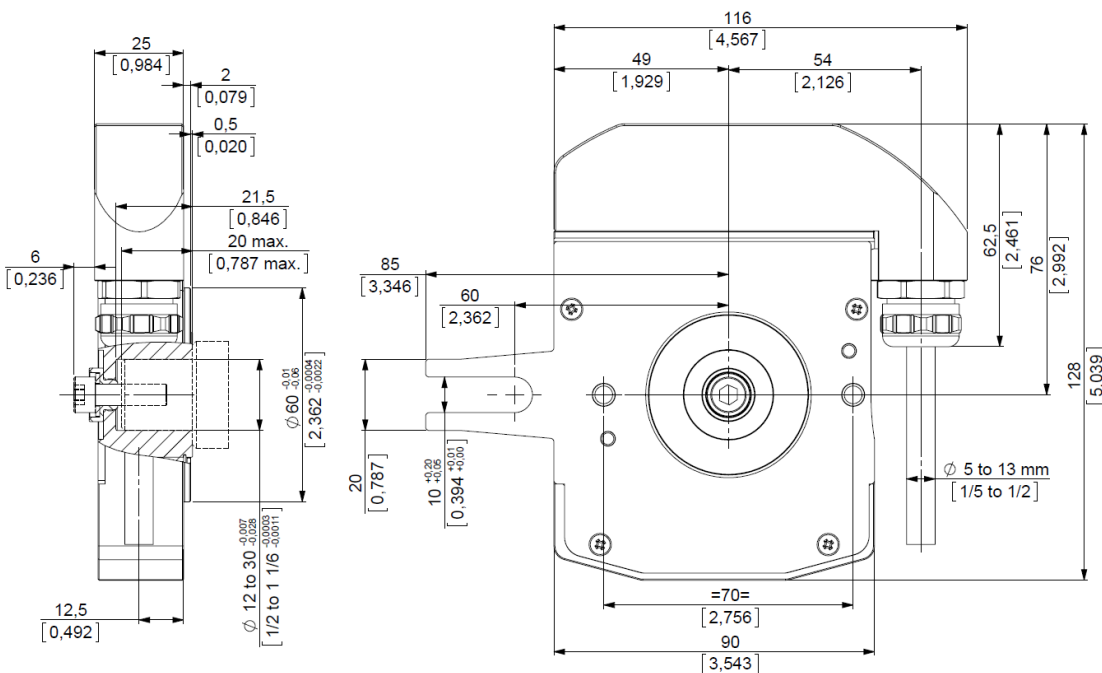
CHc : Hexagonal Socket head cap screws

HC : Hexagonal socket set screws

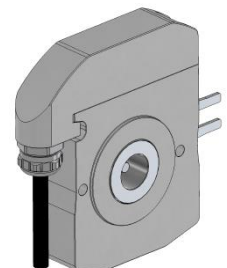
CHc M4 screw (SW3)  
M5 Flat countersunk head machine screw

#### Dimensions

HHKB – Blind hollow shaft – with terminal box

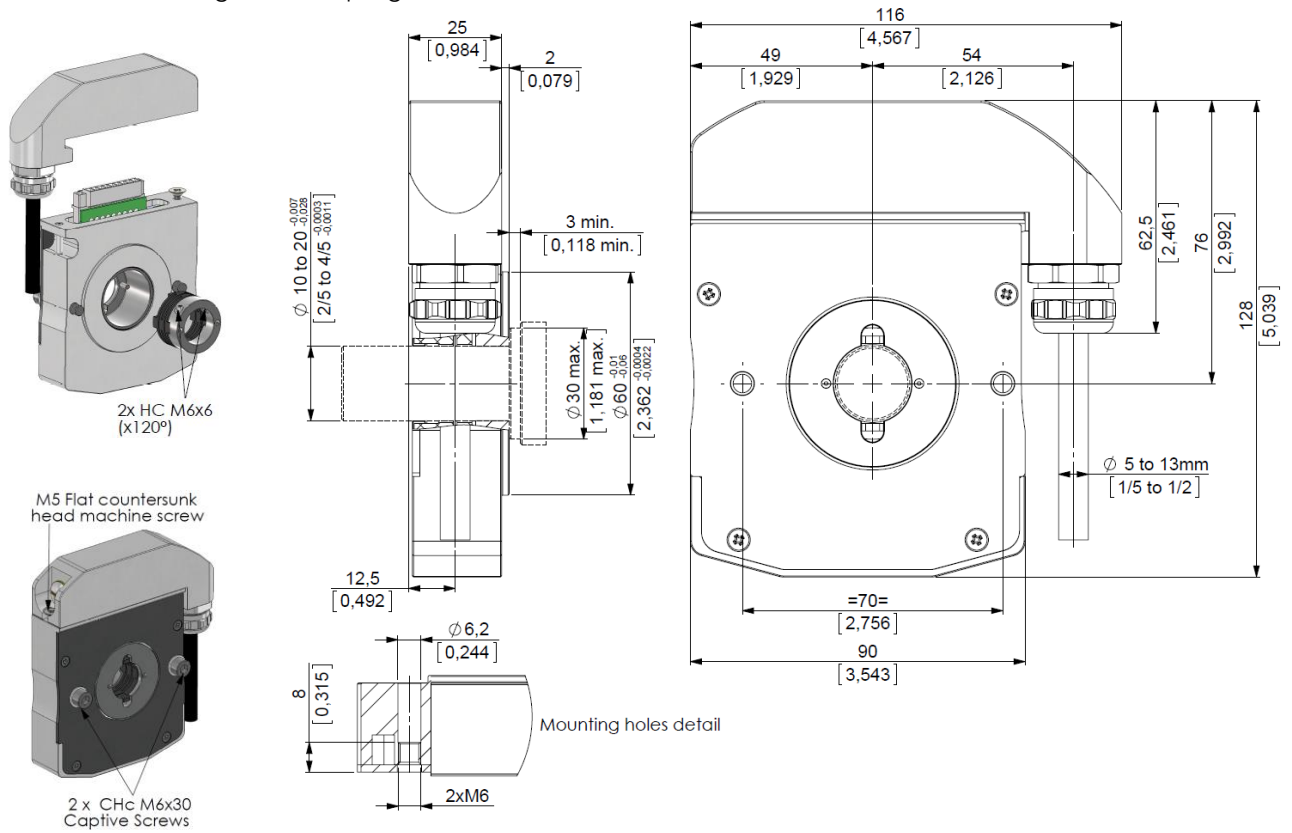


CHc M6x20 screw (SW5)  
M5 Flat countersunk head machine screw



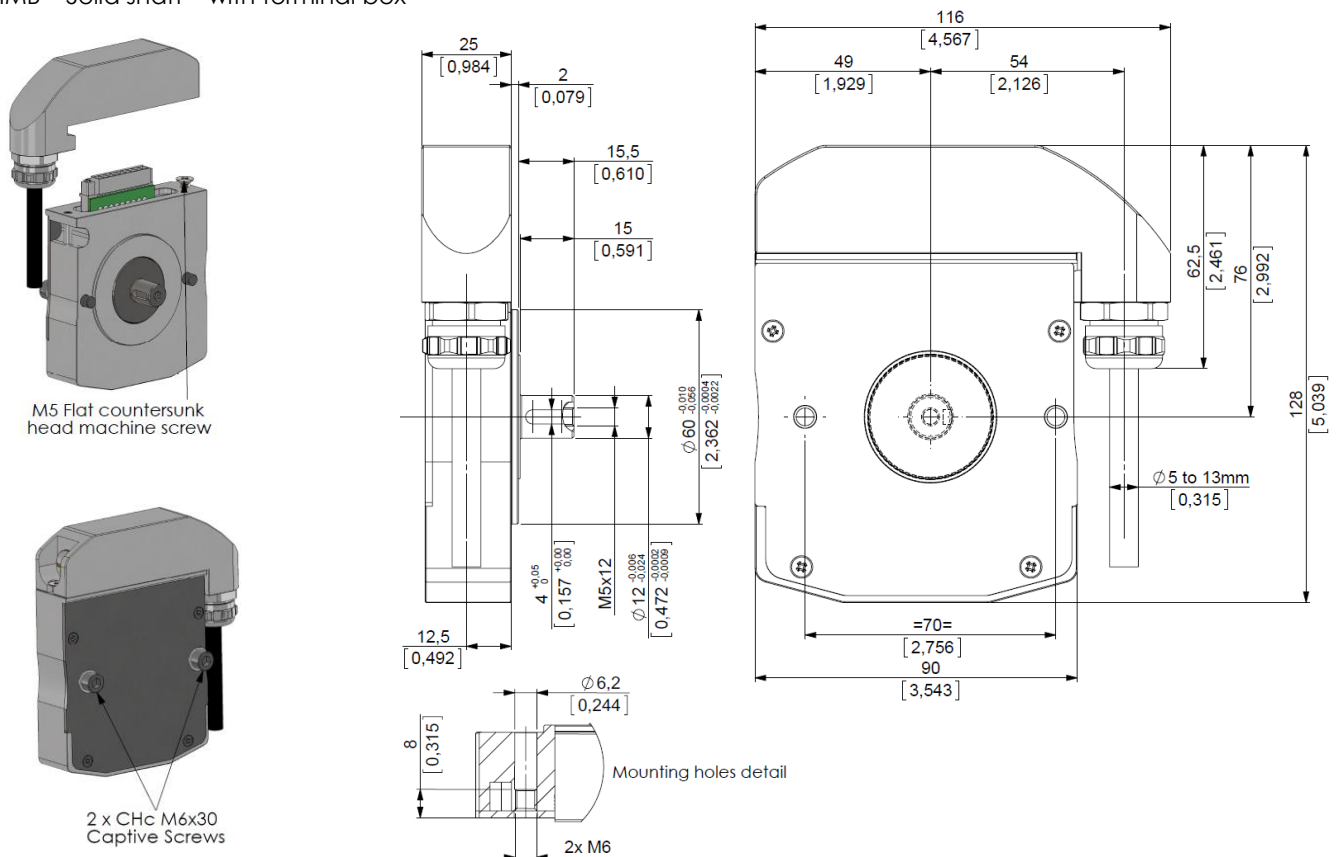
#### Dimensions

HHAB – Shaft with integrated coupling – with terminal box



#### Dimensions

HHMB – Solid shaft – with terminal box



### Electrical Characteristics:

Version	Output signals	Resolution	Operating Voltage Vcl	Supply current (no loads)	Current per channel pair	Output Levels (Is=20mA)	Frequency capability	Short circuits proof	Reverse polarity tolerant	Wiring fault tolerant & Overvoltage protection	Temperature range
5PE	HTL	1 to 10000	11-30V --- 250mA	100mA	75mA	Low max: 1.5V High min: Vcl - 3.5V	Up to 300kHz	Yes	Yes	Yes	-40°C +85°C (!)
PP5			5-30V --- 250mA	75mA	40mA	Low max: 0.5V High min: Vcl - 2.5V					Up to 1MHz
RP2	TTL RS422		4.75-30V --- 250mA	75mA	40mA	Low max: 0.5V High min: 4V					

(!) UL listed: -20°C +80°C. Device must be supplied by a Class 2, LPS or SELV limited energy source.

### Connection:

		-	+	A	B	Z	A/	B/	Z/	Ground
<b>GX</b>	Terminal box - 9 pins	1	2	3	4	5	6	7	8	9

### Programmable possibility:

The programmable LP incremental encoder features a patented dynamic encoder resolution capability that allows users to easily program the encoder resolution to any value between 1 and 10000 counts per turn. The LP allows for virtually unlimited resolution variations. Index calibration and index position can also be programmed.

Using the simple programming interface software and USB interface cable, users can program the encoder resolution as needed. In the software, type the encoder resolution and click 'Program'. A new resolution is now programmed. It's that easy!

With the LP, resolution can be programmed and reprogrammed at any time by the user.

For users with multiple requirements, LP can be kept in stock and programmed as needed.

LP programming cable has to be ordered separately: consult us.

### LP Incremental Ordering Options

Use this diagram, working from left to right to construct your model number (Example : **HHAB\_E6//PP5X//XPROG//GXR//U6\*\*\*\***)

HH_B	--	//	---	X	//	XPROG	//	GXR	//	--	--**
TYPE:	SHAFT BORE:		VOLTAGE/ OUTPUT:	CHANNELS:		CYCLES/ TURN:		OUTPUT TERMINATION:		HUB:	ANTI-ROTATION:
HHUB = hollow shaft	E5 = 5/8" E6 = 3/4" E8 = 1" 30 = 30mm		PG5 = 5-30V voltage and push-pull output	X = Programmable channels		XPROG = Programmable resolution		GXR = Terminal box		U3 = With insulated sleeve	B2** = Anti-rotation fork (always with HHUB and HHKB)
HHKB = blind shaft			RP2 = 4.75-30V voltage and RS422 output	Factory setting = AA/ BB/ ZZ/ B before A Z gated A&B		Factory setting = 1024PPR			U5 = Blind sleeve	**** = No anti-rotation for HHAB and HHMB	
HHAB = hollow shaft with integrated coupling	E6 = 3/4" 14 = 14mm 20 = 20mm								U6 = Through sleeve		
HHMB = solid shaft	E3 = 3/8" 12 = 12mm								** = no sleeve		

Stainless steel option available.

Anti-rotation accessory: M9230-04/xxx Ball end tether arm (xxx = length in cm) to be ordered separately.

#### BEI SENSORS Europe

9, rue de Copenhague  
Espace Européen de l'Entreprise-Schiltigheim  
BP 70044 - 67013 STRASBOURG Cedex France  
Tel: +33 (0)3-88-20-80-80 | Fax: +33 (0)3-88-20-87-87  
email: info@beisensors.com

#### BEI SENSORS North America

1461 Lawrence Dr | Thousand Oaks, CA 91320 USA  
Tel: 800-350-2727 or 805-968-0782  
Fax: 800-960-2726 or 805-968-3154  
email: beisales@beisensors.com  
www.beisensors.com