

# Absolute Encoder - Multi turn

Wiegand Absolute CANopen

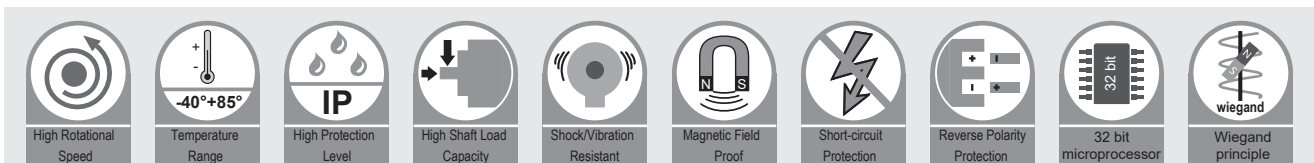
W6F-36SX / 36HN



- A new generation of high precision custom sensor chips with an accuracy of  $\pm 0.0878^\circ$
- The latest Wiegand multi-turn technology, no gear, no battery
- 32-bit microprocessor, high speed signal processing
- Resolution up to 16 bits, revolution 20 bits
- Protection level up to IP 69K
- 720 hour test by salt spray resistance



CANopen®



## Highlight:

- Shape 36 mm Compact, suitable for many industrial sites
- Wide operating temperature range up to  $-40^\circ\text{C}$  ...  $+85^\circ\text{C}$
- High-precision processor, fast data refresh
- Wiegand effect principle, the latest multi-turn counting method
- Bus communication CANopen interface

### Mechanical characteristics

Max. Speed	Industrial type: 12000 rpm; Heavy duty and stainless steel: 6000 rpm			
Starting torque	$\leq 3 \text{ Ncm}$ (at $20^\circ\text{C}$ )			
Moment of inertia	$\leq 30 \text{ gcm}^2$			
Shaft load capacity	Industrial type	Axial 40 N; Radial 110 N		
	Heavy duty type	Axial 180 N; Radial 180 N		
	Stainless steel	Axial 300 N; Radial 300 N		
Weight	approx. 0.150 kg			
Protection acc. to EN 60 529	IP 65, optional IP 69K (Heavy duty and stainless steel)			
Working temperature range	$-30^\circ\text{C}$ ... $70^\circ\text{C}$ (Cable) ; $-40^\circ\text{C}$ ... $85^\circ\text{C}$ (Connector)			
Materials	Shaft: Stainless steel(V2A);			
	Flange: Aluminium or Stainless steel;			
	Housing: Steel or Stainless steel			
Shock resistance acc. to EN 60068-2-27	Industrial type: $\leq 100 \text{ g}$ (6 ms); Heavy duty and stainless steel: $\leq 300 \text{ g}$ (6 ms)			
Vibration resistance acc. to EN 60068-2-6	Industrial type: $\leq 10 \text{ g}$ (10 Hz ... 1000Hz);			
	Heavy duty and stainless steel: $\leq 300 \text{ m/s}^2$ (10 Hz ... 1000Hz)			
Mechanical lifetime (Fa/Fr)	20/40	40/60	40/80	40/110
	550	195	135	85

### CANopen interface parameters

Interface Type	CANopen
Output circuit	Bus data interface with optocoupler electrical isolation
Baud rate	Minimum 20k Baud, up to 1 M Baud Factory default 125 kBaud
Interface cycle	$> 1 \text{ ms}$
Code	Binary
Resolution	Max. 65536 (16 bits)
Revolution	Max. 2147483648 (31 bits)
Profile	CANopen complies with DS 406
Node address	1 ... 127, default address 32 (modified by software settings)
Terminating resistor	The default is off (modified by software settings)
Electrical life	$> 10^5 \text{ h}$

### General electrical parameters

Supply voltage	9 ... 30 VDC
Current consumption	100 mA
Drive circuit	RS 485
Start Time	$< 250 \text{ ms}$
Output short circuit protection	yes
Reverse polarity connection protection	yes
UL certification	E468583
CE compliant acc. to	EN 61000-6-4; EN61000-6-2

CANopen interface protocol conforms to DS406

The following parameters can be modified:

- Counting direction
- Resolution
- Prefabricated value
- Two limit points and 8 cams
- Baud rate and node address
- Terminating resistor
- Transmit mode: polling mode, periodic transmission mode, synchronous mode

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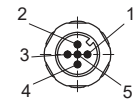
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## Terminal assignment

Signal	Ub	GND	CAN_high	CAN_low	CAN_GND
Cable(Colour)	RD	YE	WH	BN	GN
M12 connector 5-pin header	2	3	4	5	1

## Top view of mating side



5-pin M12 plug

Order Code Shaft version	W6F-36SX-X X X X-B XX XX X									
	Type	i	a	b	c	d	e	f	g	h
<b>a</b> Flange		<b>c</b> Output circuit / supply voltage		<b>e</b> Code		<b>g</b> Revolution		<b>h</b> Function		
3 = 36 mm, Synchro flange		4 = CANopen / 10 ... 30 VDC		B = Binary		12 = 12 bit		1 = No additional function		
5 = 58 mm, Synchro flange						13 = 13 bit		2 = LED indicator*		
7 = 58 mm, Clamping flange						14 = 14 bit				
						15 = 15 bit				
						31 = 31 bit				
<b>b</b> Shaft		<b>d</b> Type of connection		<b>f</b> Resolution				<b>i</b> Type		
2 = $\varnothing$ 6 x 11.5 mm		1 = Axial cable, 1m		12 = 12 bit				N = Industrial type		
(Not available when the type is H or S)		2 = Radial cable, 1m		13 = 13 bit				H = Heavy duty type**		
5 = $\varnothing$ 10 x 20 mm		3 = M12 connector,axial		16 = 16 bit				S = Stainless steel***		
		5 = M12 connector,radial								

\* LED indicator on cable or connector

\*\* Optional only for flanges of 3

\*\*\* When the type is S, the flange mode can only be A and 7, the shaft diameter mode is 5, and the protection class is IP69K

Order Code hollow version	W6F-36HN-X X X X-B XX XX X								
	Type	a	b	c	d	e	f	g	h
<b>a</b> Flange		<b>c</b> Output circuit / supply voltage		<b>e</b> Code		<b>g</b> Revolution			
3 = With short single arm spring		4 = CANopen / 10 ... 30 VDC		B = Binary		12 = 12 bit			
4 = With long single arm spring						13 = 13 bit			
8 = With D-wing spring coupling						14 = 14 bit			
						15 = 15 bit			
						31 = 31 bit			
<b>b</b> Hollow shaft (blind hollow shaft)		<b>d</b> Type of connection		<b>f</b> Resolution				<b>h</b> Function	
2 = $\varnothing$ 6 mm		1 = Axial cable, 1m		12 = 12 bit				1 = No additional function	
4 = $\varnothing$ 8 mm		2 = Radial cable, 1m		13 = 13 bit				2 = LED indicator*	
5 = $\varnothing$ 10 mm		3 = M12 connector,axial		16 = 16 bit					
6 = $\varnothing$ 12 mm		5 = M12 connector,radial							

\* LED indicator on cable or connector

## Technology Introduction

### Absolute magnetoelectric single coil technology

After years of technological development, the performance of magneto-electric encoders has reached the same level as optical encoders. This technology leap is based on a new generation of sensor systems. Products use custom Hall sensors and a powerful 32-bit microprocessor that can perform complex signal processing in a matter of microseconds. The application of these two technologies greatly improves the resolution, accuracy and data response time of the product.

- Product resolution up to 16 bit
- Accuracy up to  $\pm 0.0878^\circ$
- Internal data refresh time < 50  $\mu$ s



Hall-IC



CPU

### Wiegand Multi-Circle Technology

The multi-turn part uses a multi-turn system based on the Wiegand effect, eliminating the need for a battery and mechanical transfer system, completely solving the problem of limited battery life, heavy weight, containing harmful substances and using the battery, which will have many adverse effects on the product; The shortcomings of the mechanical transmission system, such as large volume, complex structure, high cost, and resistance to shock and vibration. The multi-turn system is unaffected by the speed, and even under zero speed conditions, it produces short, powerful voltage pulses that provide sufficient power for the counting electronics in the absolute encoder.

- strong and sturdy
- Simple mechanical construction - no gears
- No battery required - long working life, independent of ambient temperature
- Compact design for installation in tight spaces
- Non-contact detection system with protection class up to IP69K



Wiegand



Memory

# Absolute Encoders — Singleturn

Magnetic Absolute CANopen

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## Accessories

Cable connector:

Matching connector	M12 self-assembling plug	E1-1205-0001
Matching connector	M12 cable connector with 1 meter cable	E2-CSF05-2/C

Shaft type encoder mounting accessories:

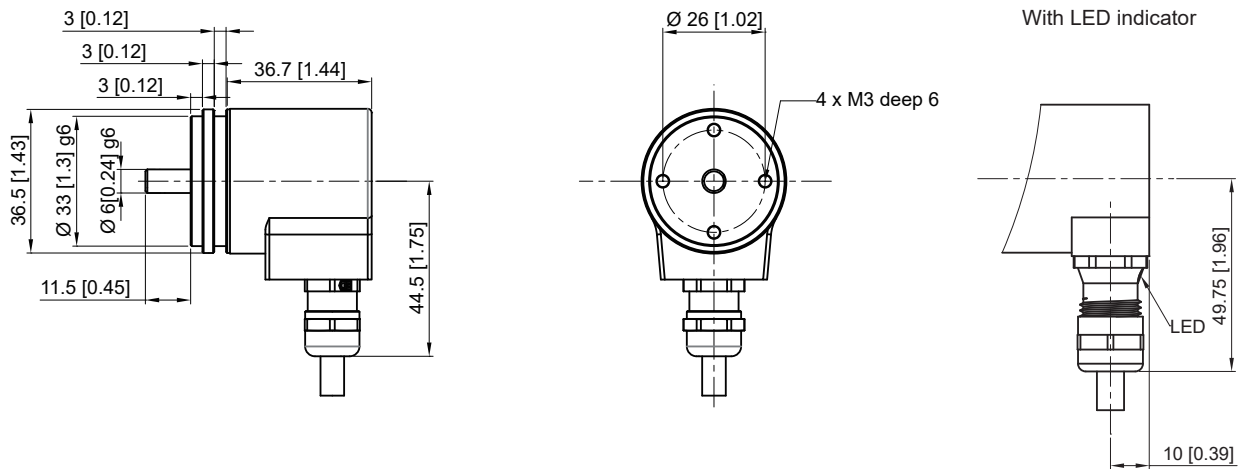
Coupling	Stainless steel bellows coupling $\varnothing$ 25mm, Shaft diameter is $\varnothing$ 6mm	T1-1000-2520-0606
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Hollow shaft type encoder mounting accessories:

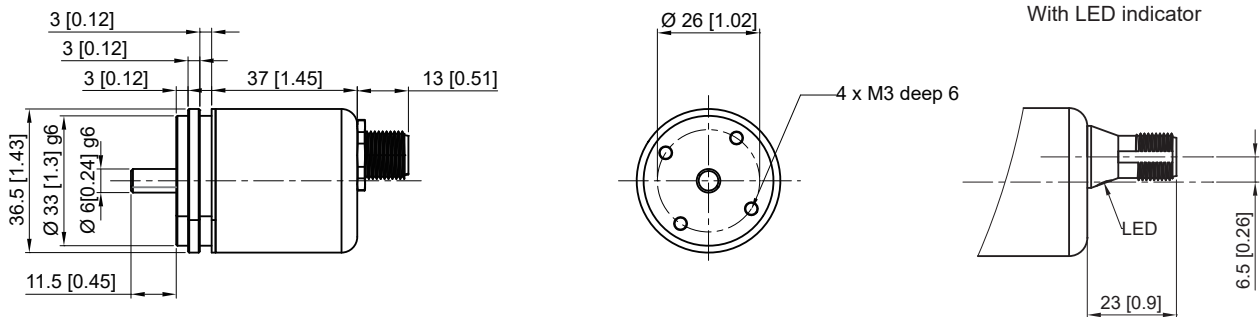
Spring	Further accessories and exact order code, please refer to the accessories section.
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## Dimensions

Shaft encoder:  
type of flange3 , type of shaft 2, type of connection 2



type of flange3 , type of shaft 2, type of connection 3



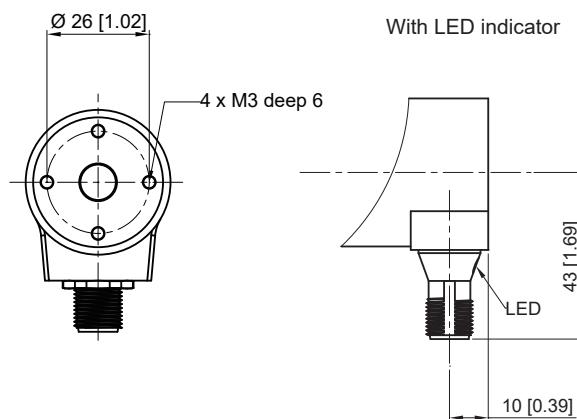
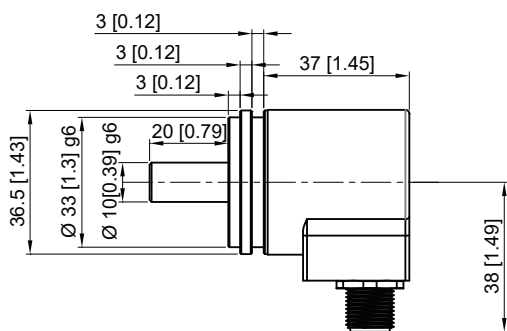
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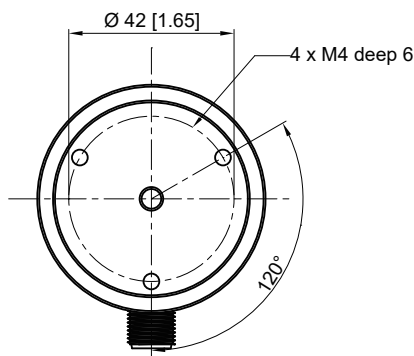
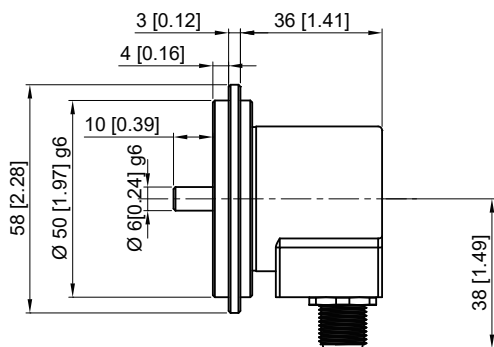
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## Dimensions

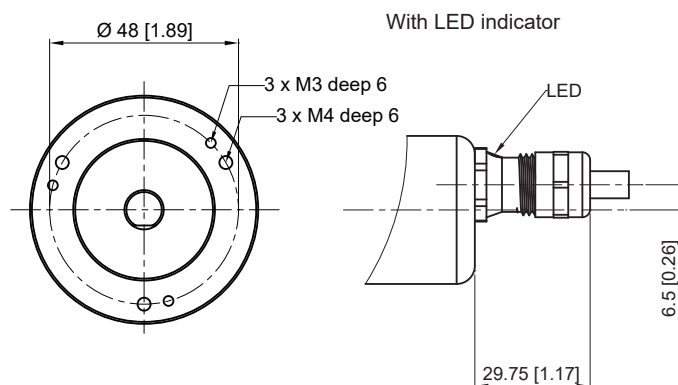
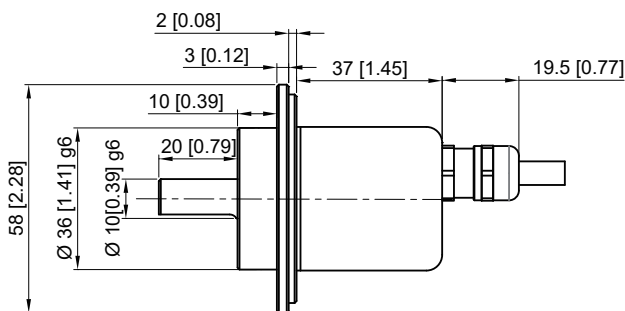
type of flange3 , type of shaft 5, type of connection 5



type of flange5 , type of shaft 2, type of connection 5



type of flange7 , type of shaft 5, type of connection 1



Other mounting types and accessories on your request, please send us an email: [info@heinlanz.com](mailto:info@heinlanz.com)

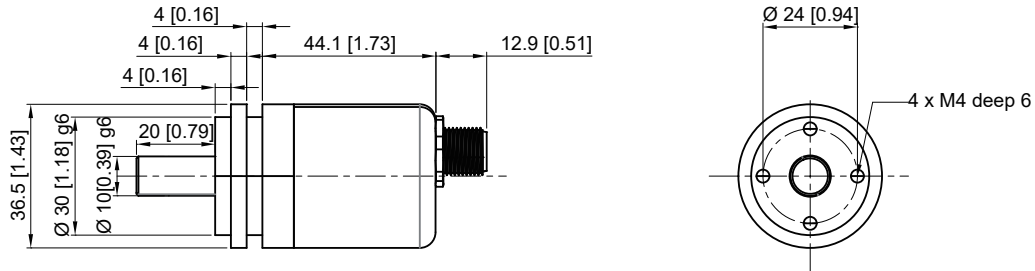
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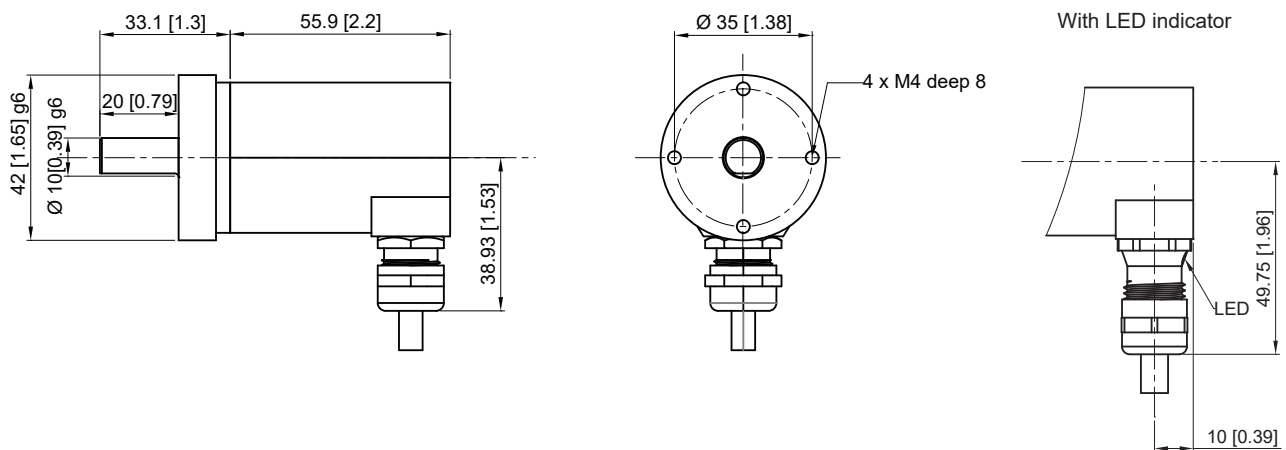
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## Dimensions

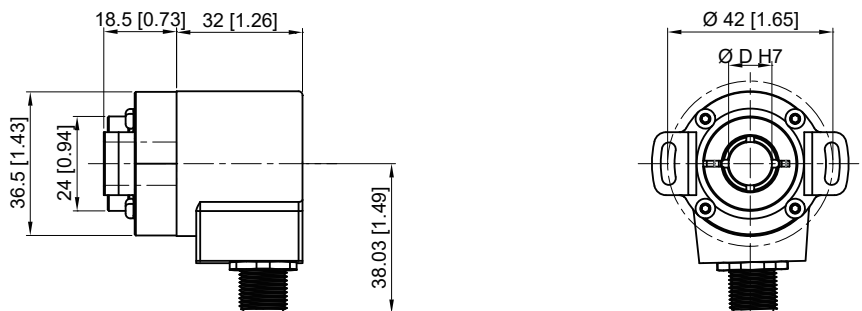
Heavy duty shaft encoder:  
type of flange3 , type of shaft 5, type of connection 3



Stainless steel encoder:  
type of flangeA , type of shaft 5, type of connection 2



Hollow shaft encoder:  
type of flange 8 , type of connection 5



Blind hole depth: 15~18 mm

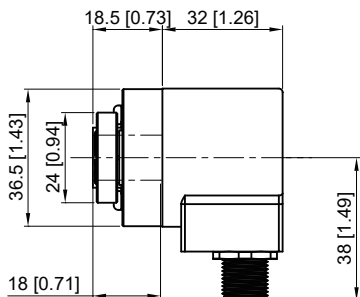
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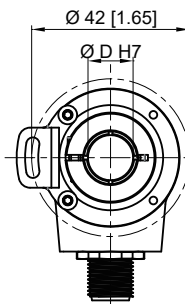
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## Dimensions

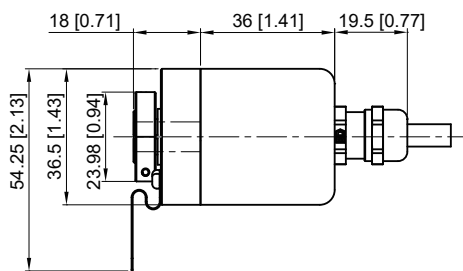
type of flange3 , type of connection 5



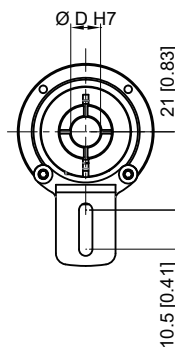
Blind hole depth: 15~18 mm



type of flange4 , type of connection1



Blind hole depth: 15~18 mm



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