

Absolute Encoders WDGA SSI



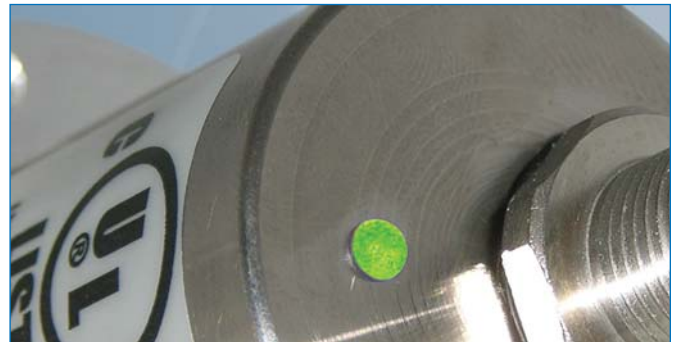
- SSI in a 36 mm / 58 mm housing
- Single-/Multiturn (14/40 bit)
- Ground-breaking technology with 32 Bit processor
- Very high shaft loading, IP67
- EnDra[®]-Technology: no gears, no battery



SSI
Synchronous Serial Interface

EnDra[®]
Technology

Absolute encoders WDGA, solid and hollow shaft ... magnetic, autonomous - thanks to EnDra®



The singleturn and multiturn absolute encoders, series WDGA, possess new, outstanding qualities thanks to their patented EnDra® technology:

- Free of wear – no gears
- Environmentally friendly – no battery
- High energy efficiency – low power consumption
- Very compact construction

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With their high resolution of 14 bit singleturn and 14 bit + 40 bit multiturn, they are ideal for those applications, where high measuring accuracy as well as mechanical ruggedness is important. The interface provides the evaluation electronics with the complete position value, consisting of the combination of the singleturn position with the corresponding multiturn position based on the number of revolutions. The resolution of the singleturn position is 14 bit (16384 steps per revolution). The multiturn can handle up to 40 bits, depending on requirements.

Despite its extremely high resolution, the maintenance-free encoder has need of neither gears nor back-up battery. This guarantees a long service-life for the mechanics and helps to protect the environment.

With its exceptionally high shaft loads of up to 220 N radial and 120 N axial, it will work reliably and accurately for years to come.

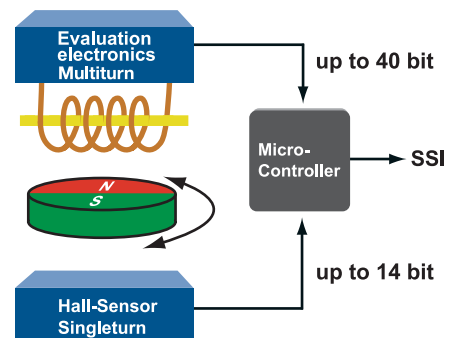


Quick in operation:

The WDGA absolute encoders are equipped with a two-colour LED (red/green). Thanks to the differentiated change in colour and the varying blinking frequencies of the LED, important status signalling can be read off directly. The WDGA absolute encoders can thus be integrated quickly and easily into the existing application.

Operating principle of the EnDra® technology for the multiturn:

The Wachendorff WDGA encoders do not require mechanical gears to detect the number of revolutions and the direction of rotation. The revolutions are determined by means of an energy wire (EnDra®) instead: in the wire a permanent magnet accumulates enough energy, that the information "Revolution" and "Direction of Rotation" for a defined position is transmitted to the evaluation electronics. An external energy feed, for example using a battery, is not required. The result is that this patented system is able to work fully autonomously.



The following examples conduce to make the enormous capabilities of the WDGA absolute encoders even clearer:

- Using a measuring wheel with a circumference of 500 mm it is possible to make an absolute measurement of the total circumference of the earth, approx. 40,076 km, with a resolution of around 120 µm.
- If you run our WDGA absolute encoder 24 hours a day, 7 days a week, at its max. speed of 12,000 rpm, it will not reach its final value until around 11 years.

And all of this absolutely autonomously.

Encoders WDGA absolute SSI magnetic with EnDra®



Specifications:

Mechanical data

Housing:	steel case chrome-plated, magnetic shielding		
Shaft/hollow bore (blind):	stainless steel		
Flange:	Aluminium		
Bearing type:	2 precision ball bearings		
Shaft encoders:	WDGA 36A	WDGA 58A	WDGA 58B
Flange:	synchro	synchro	clamping
Shaft Ø:	6 mm	6/10 mm	6/10 mm
Length of shaft:	11.5 mm	12/20 mm	12/20 mm
Operating speed max.:	12,000 rpm	8000 rpm	8000 rpm
Permissible shaft loading: max. F_r	80 N	125/220 N	125/220 N
max. F_a	50 N	120 N	120 N
Starting torque: (at ambient temperature)	< 0,3 Ncm	< 1 Ncm	< 1 Ncm
Service life:			
at 100 % rated shaft load	1.4×10^8 revs.	1×10^9 revs.	1×10^9 revs.
at 40 % rated shaft load	2.0×10^9 revs.	1×10^{10} revs.	1×10^{10} revs.
at 20 % rated shaft load	1.7×10^{11} revs.	1×10^{11} revs.	1×10^{11} revs.

Hollow shaft encoder:	WDGA 36E
Flange:	hollow bore
Shaft Ø:	6 mm
Insertion depth min./max.:	8 mm/17 mm
Operating speed max.:	12,000 rpm
Permissible shaft loading: max. F_r	80 N
max. F_a	50 N
Starting torque: (at ambient temperature)	< 0,3 Ncm
Service life:	
at 100 % rated shaft load	1.4×10^8 revs.
at 40 % rated shaft load	2.0×10^9 revs.
at 20 % rated shaft load	1.7×10^{10} revs.

Sensor data

Singleturn technology:	innovative hall sensor technology
Singleturn resolution:	up to 16,384 steps/360° (14 bit)
Singleturn accuracy:	< ± 0,35°
Singleturn-repeat accuracy:	< ± 0,20°
Intern cycle time:	≤ 600 µs
Multiturn technology:	patented based EnDra® technology
	no battery and no gear
	up to 40 bit
Multiturn resolution:	

Ambient data

Operating temperature:	- 40 °C up to + 80 °C
Storage temperature:	- 40 °C up to + 100 °C
Protection class (EN 60529):	IP67, shaft sealed IP65
	cable outlet K1: IP40

Environmental data

ESD (DIN EN 61000-4-2):	8 kV
Burst (DIN EN 61000-4-4):	2 kV
includes EMC:	DIN EN 61000-6-2 DIN EN 61000-6-3

- EnDra® multiturn technology: maintenance-free and environmentally friendly
- SSI, Gray or binary code
- Single-/Multiturn (14 bit/40 bit)
- Forward-looking technology with 32 bit processor
- 2-colour-LED as indicator for operating condition and error message
- High shaft load up to 220 N radial, 120 N axial

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Vibration: 50 m/s² (10 Hz up to 2000 Hz)
(DIN EN 60068-2-6)

Shock: 1000 m/s² (6 ms)
(DIN EN 60068-2-27)

Design: appropriate DIN VDE 0160

Interface

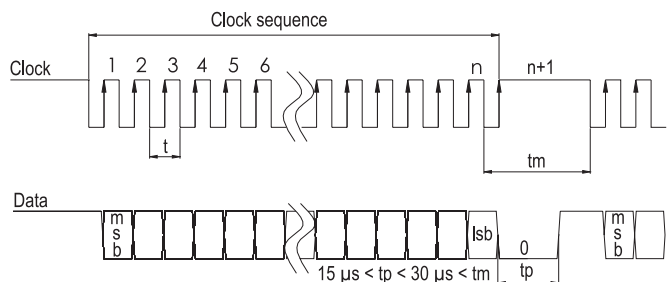
Clock input:	via opto-coupler
Clock frequency:	100 kHz up to 500 kHz up to 2 MHz on request
Data output:	RS485/RS422 compatible
Output code:	Gray or binary code
SSI output:	Angular-/position value
Parity bit:	optional (even/odd)
Error bit:	optional
Turn on time:	<1.5 s
Pos. direction of counting: (View)	DIR = GND ⇔ cw DIR = +Ub ⇔ ccw
Set to zero:	Preset = apply +Ub for 2 s

SSI

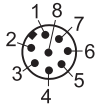
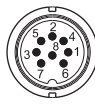
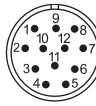
Electrical data

Supply voltage:	10 VDC up to 30 VDC; 4.75 VDC up to 5.5 VDC max. 80 mA
Power consumption:	max. 0.8 W

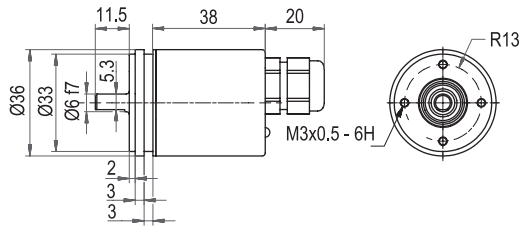
Protocol SSI



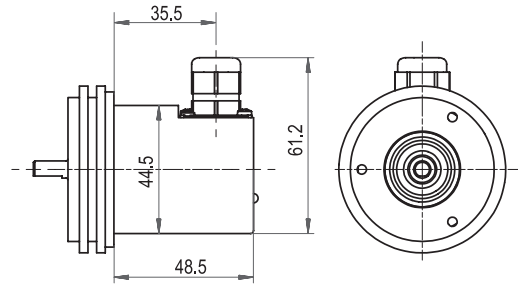
Connection configuration for encoder WDGA SSI:

				
Connector/cable	M12 x1	M16	M23	cable outlet
Description	CB8 axial, CC8 radial, 8-pin	CH8 radial 8-pin	C5 radial, 12-pin	K1, radial L2, axial L3, radial
GND	1	2	12	wh
Plus U+	2	1	11	bn
SSI CLK+	3	6	2	gn
SSI CLK-	4	5	1	ye
SSI DATA+	5	4	3	gy
SSI DATA-	6	3	4	pk
PRESET	7	8	9	bu
DIR	8	7	8	rd
Shield	housing	housing	housing	housing K1: n. c.

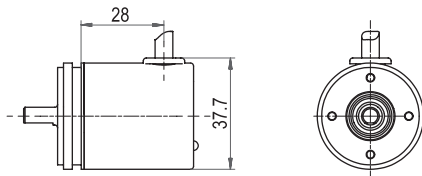
WDGA 36A: Cable outlet, L2:



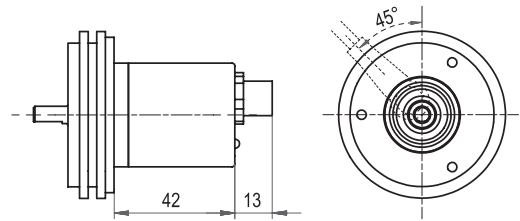
Cable outlet, L3:



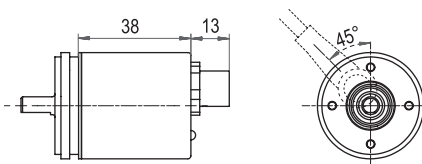
Cable outlet, K1:



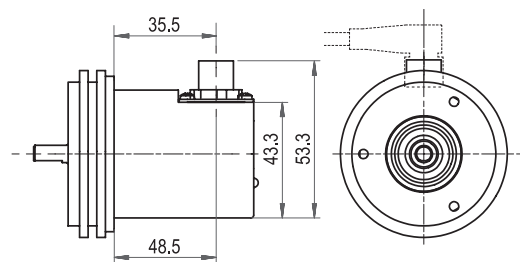
Connector, M12 x 1, 8-pin, CB8:



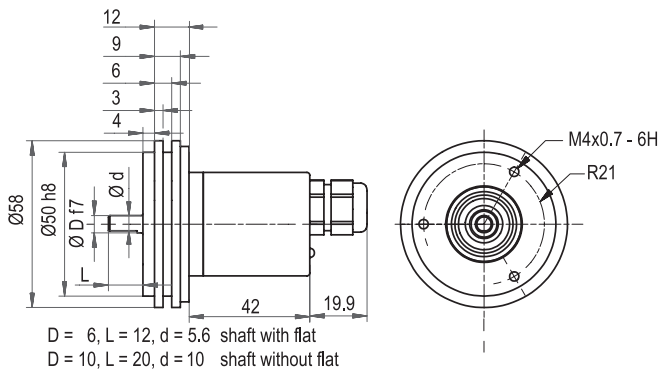
Connector, M12 x 1, 8-pin, CB8:



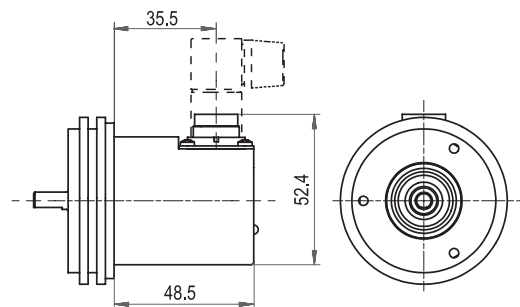
Connector, M12 x 1, 8-pin, CC8:



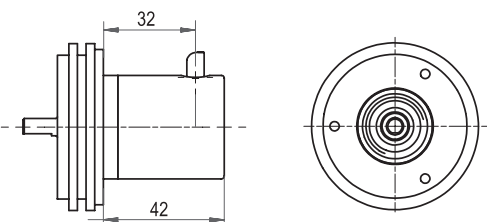
WDGA 58A: Cable outlet, L2:



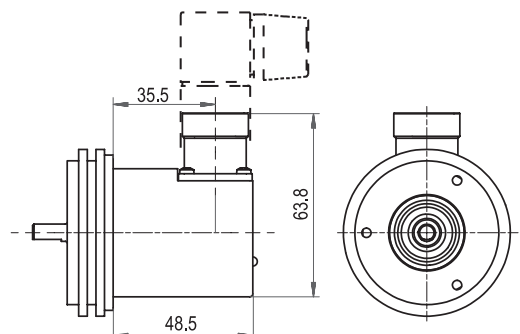
Connector, M16, 8-pin, CH8:



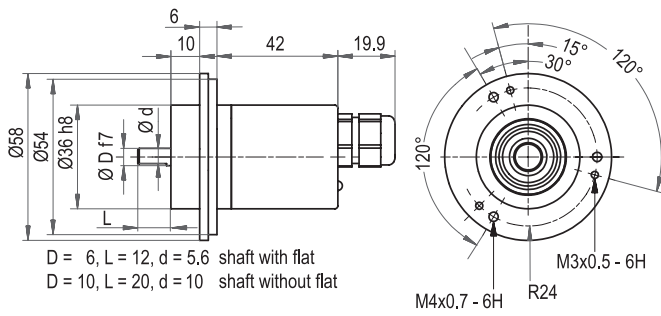
Cable outlet, K1:



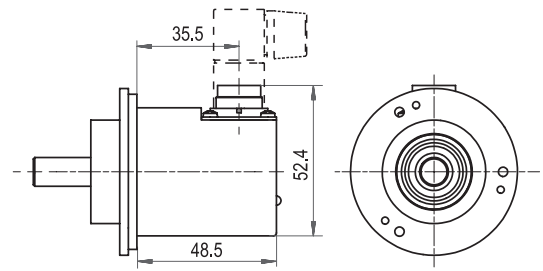
Connector, M23, 12-pin, C5:



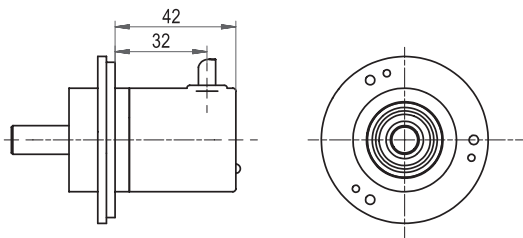
WDGA 58B: Cable outlet, L2:



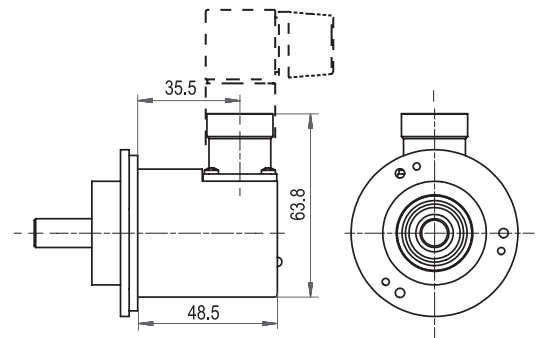
Connector, M16, 8-pin, CH8:



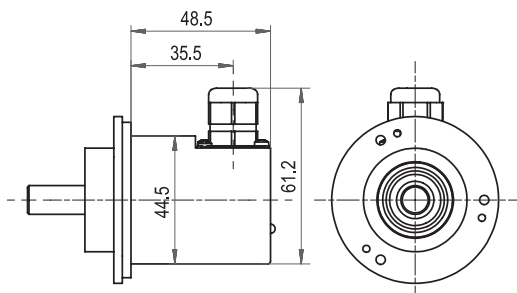
Cable outlet, K1:



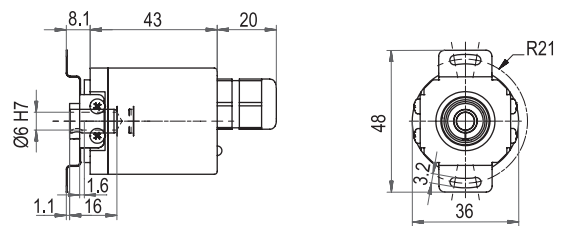
Connector, M23, 12-pin, C5:



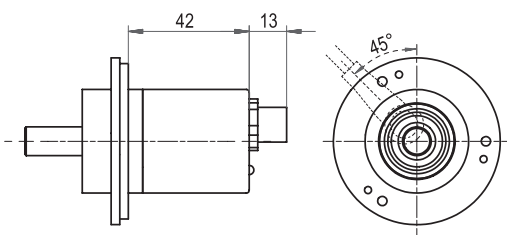
Cable outlet, L3:



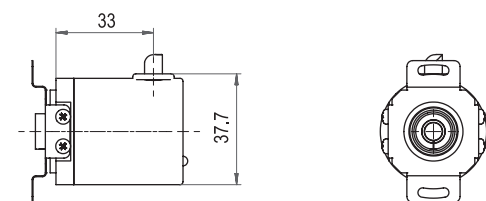
WDGA 36E: Cable outlet, L2:



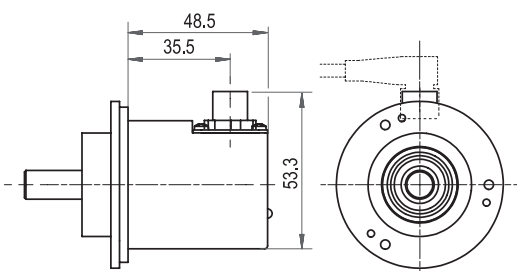
Connector, M12 x 1, 8-pin, CB8:



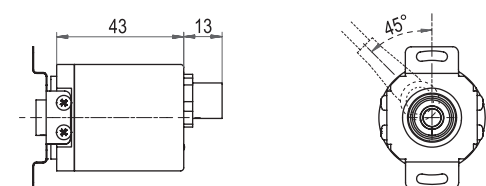
Cable outlet, L1:



Connector, M12 x 1, 8-pin, CC8:



Connector, M12 x 1, 8-pin, CB8:



Suitable accessories for encoders WDGA absolute SSI can be found on our website: www.wachendorff-automation.com/acc

Ordering information:

Code: binary = B gray = G		
Software: up to date release = A		
Data protocol: SSI = SI		
Multiturn 1 Bit up to 40 Bit (e. g. 12 bit) = 12 No Multiturn: = 00		
Singleturn resolution = 12 8 Bit up to 14 Bit: (e. g. 12 bit)		
Shaft/hollow shaft diameter: clamping/synchro flange/hollow bore (blind) = 06 clamping/synchro flange (only 58 mm) = 10		
Flange design: 36 mm, synchro flange = 36A 58 mm, synchro flange = 58A 58 mm, clamping flange = 58B 36 mm, hollow bore (blind) = 36E		
Power supply: standard 10 V up to 30 V = 0 4.75 V up to 5.5 V = 1		
Galvanic isolation: yes = 1		
Connection: Cable outlet: (K1= shield not connected, L2, L3 = shield connected to encoder housing) radial, with 2 m cable, IP40 = K1 axial, with 2 m cable, IP65 = L2 radial, with 2 m cable, IP65 = L3 Connector: M12 x 1, 8-pin, axial connector = CB8 M12 x 1, 8-pin, radial connector = CC8 M16, 8-pin, radial connector = CH8 M23, 12-pin, radial connector = C5		

Order-No.:

Example

Your encoder

Specifications without engagement, subject to errors and modifications.

Any Questions? Just call Mr. Patrick Steiner +49 (0) 67 22 / 99 65-523, send him an e-mail to pst@wachendorff.de or visit our homepage: www.wachendorff-automation.com/wdgassi



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