



Online Data sheet

Encoder WDG 40E

www.wachendorff-automation.com/wdg40e

Wachendorff Automation

... systems and encoders

- Complete systems
- Industrial rugged encoders to suit your application
- Standard range and customer versions
- Maximum permissible loads
- 48-hour express production
- Made in Germany
- Worldwide distributor network

Encoder WDG 40E



Illustration similar



- Robust hollow bore (blind) encoder with small dimensions
- Full connection protection with 10 VDC up to 30 VDC
- With light reserve warning
- Optional: -40 °C up to +80 °C [-40 °F up to +176 °F]

www.wachendorff-automation.com/wdg40e

Resolution	
Pulses per revolution PPR	up to 2500 PPR

Mechanical Data	
Flange	hollow shaft (blind-bored)
Flange material	aluminum
Housing material	aluminum, powder coated
- 1. Spring plate compensation	axial: ± 0.8 mm [0.0315"], radial: ± 0.2 mm [0.0079"]
- Max. operating speed	12000 rpm up to max. protection rating +60 °C
Flange diameter	$\varnothing$ 40 mm [$\varnothing$ 1.575"]

Shaft(s)	
Shaft material	stainless steel
Starting torque	approx. 0.2 Ncm [0.283 in-ozf] at ambient temperature
Shaft	$\varnothing$ 6 mm [$\varnothing$ 0.236"]
Shaft length	L: 15 mm [0.591"]
Insertion depth min.	17 mm [0.669"]
Insertion depth max.	20 mm [0.787"]
Max. Permissible shaft loading radial	100 N [10.197 kp]
Max. Permissible shaft loading axial	50 N [5.098 kp]

Bearings	
Bearings type	2 precision ball bearings
Nominale service life	1.4 x 10 ⁸ revs. at 100 % rated shaft load 2 x 10 ⁹ revs. at 40 % rated shaft load 1.7 x 10 ¹⁰ revs. at 20 % rated shaft load
Max. operating speed	12000 rpm

Machinery Directive: basic data safety integrity level	
MTTF _d	200 a
Mission time (TM)	25 a
Nominale service life (L10h)	1.7 x 10 ¹⁰ revs. at 20 % rated shaft load and 12000 rpm
Diagnostic coverage (DC)	0 %

Electrical Data	
Power supply/Current consumption	4,75 VDC up to 5,5 VDC: typ. 70 mA
Power supply/Current consumption	10 VDC up to 30 VDC: typ. 70 mA
Operating principle	optical

Output circuit	TTL, RS422 compatible, inv. HTL
Pulse frequency	TTL $\leq$ 2500 ppr: max. 200 kHz HTL $\leq$ 2500 ppr: max. 200 kHz
Channels	AB ABN and inverted signals
Load	max. 40 mA / channel
Circuit protection	circuit type H24 and R24 only

Accuracy	
Phase offset	90° $\pm$ max. 7.5 % of the period duration
pulse-/pause-ratio	50 % $\pm$ max. 7 %

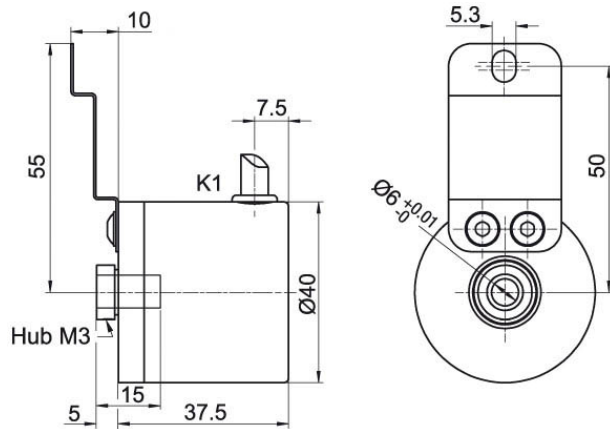
Environmental data	
ESD (DIN EN 61000-4-2):	8 kV
Burst (DIN EN 61000-4-4):	2 kV
includes EMC:	DIN EN 61000-6-2 DIN EN 61000-6-3
Vibration: (DIN EN 60068-2-6)	50 m/s ² (10 Hz up to 2000 Hz)
Shock: (DIN EN 60068-2-27)	1000 m/s ² (6 ms)
Electrical Safety:	according DIN VDE 0160

Duty information	
Customs tariff number:	90318020
Country of origin:	Germany

General Data	
Weight	approx. 100 g [3.527 oz]
Connections	cable or connector outlet
Protection rating (EN 60529)	Housing: IP65, IP67; shaft sealed: IP65; cable outlet K1: IP40
Operating temperature	-20 °C up to +80 °C [-4 °F up to +176 °F]
Storage temperature	-30 °C up to +80 °C [-22 °F up to 176 °F]

More Information	
General technical data and safety instructions http://www.wachendorff-automation.com/gtd	
Options http://www.wachendorff-automation.com/acc	

Cable connection K1 (IP40) with 2 m cable



Description

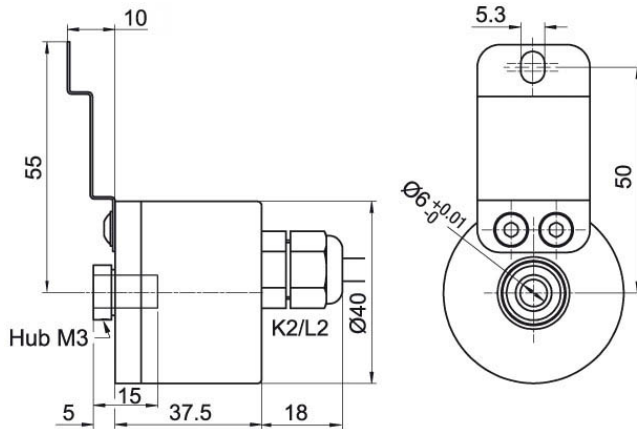
ABN inv. poss.

K1 radial, shield not connected (IP40)

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Assignments		
	K1	K1
Circuit	H05, H24	R05, R24
GND	WH	WH
(+) Vcc	BN	BN
A	GN	GN
B	YE	YE
N	GY	GY
-	-	-
A inv.	-	RD
B inv.	-	BK
N inv.	-	VT
Shield	flex	flex

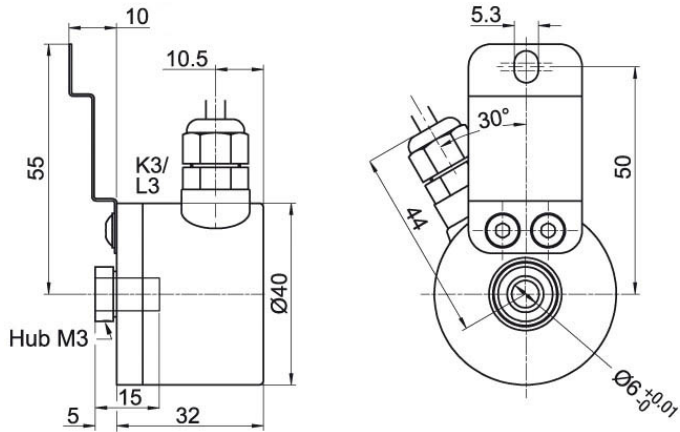
Cable connection K2, L2 with 2 m cable



Description	ABN inv. poss.
K2 axial, shield not connected	•
L2 axial, shield connected to encoder housing	•

Assignments		
	K2, L2	K2, L2
Circuit	H05, H24	R05, R24
GND	WH	WH
(+) Vcc	BN	BN
A	GN	GN
B	YE	YE
N	GY	GY
-	-	-
A inv.	-	RD
B inv.	-	BK
N inv.	-	VT
Shield	flex	flex

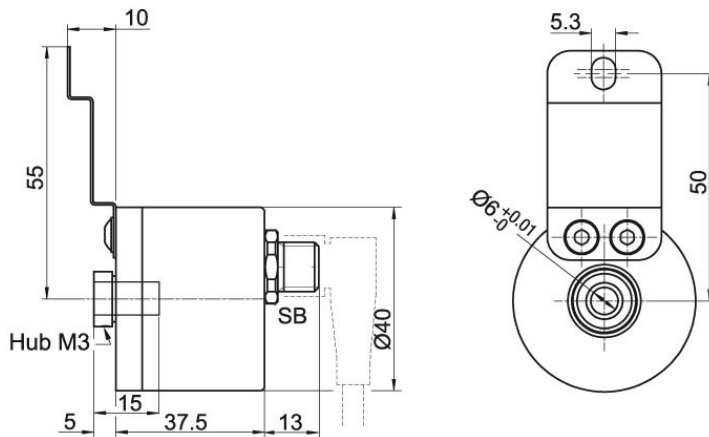
Cable connection K3, L3 with 2 m cable



Description	ABN inv. poss.
K3 radial, shield not connected	•
L3 radial, shield connected to encoder housing	•

Assignments		
	K3, L3	K3, L3
Circuit	H05, H24	R05, R24
GND	WH	WH
(+) Vcc	BN	BN
A	GN	GN
B	YE	YE
N	GY	GY
-	-	-
A inv.	-	RD
B inv.	-	BK
N inv.	-	VT
Shield	flex	flex

Sensor-connector (M12x1) SB, 4-, 5-, 8-, 12-pin



Description	ABN inv. poss.
SB4 axial, 4-pin, Connector connected to encoder housing	-
SB5 axial, 5-pin, Connector connected to encoder housing	-
SB8 axial, 8-pin, Connector connected to encoder housing	•
SB12 axial, 12-pin, Connector connected to encoder housing	•

Assignments				
	SB4	SB5	SB8	SB12
	4-pin	5-pin	8-pin	12-pin
Circuit	H05, H24	H05, H24	R05, R24	R05, R24
GND	3	3	1	3
(+) Vcc	1	1	2	1
A	2	4	3	4
B	4	2	4	6
N	-	5	5	8
-	-	-	-	-
A inv.	-	-	6	9
B inv.	-	-	7	7
N inv.	-	-	8	10
n. c.	-	-	-	2, 5, 11, 12
Shield	-	-	-	-

Options

Low-friction bearings

The encoder WDG 40E is also available as a particularly smooth-running low-friction encoder. The starting torque is thereby changed to $\leq 0.1 \text{ Ncm}$ [0.141 in-ozf] and the protection class at the shaft input to IP50.

Order key

AAC

Low temperature

The encoder WDG 40E with the output circuit types H24, R24 is also available with the extended temperature range $-40 \text{ }^{\circ}\text{C}$ up to $+80 \text{ }^{\circ}\text{C}$ [$-40 \text{ }^{\circ}\text{F}$ up to $+176 \text{ }^{\circ}\text{F}$] (measured at the flange).

Order key

ACA

Cable length

The encoder WDG 40E can be supplied with more than 2 m cable. The maximum cable length depends on the supply voltage and the frequency; see <https://www.wachendorff-automation.com/download-gtd-incremental-encoders/>

Please extend the standard order code with a three figure number, specifying the cable length in decimetres.

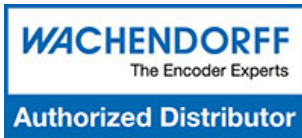
Example: 5 m cable = 050

Order key

XXX = Decimeter

Example Order No.	Type					Your encoder		
WDG 40E	WDG 40E					WDG 40E		
		Bore size						
06	06							
		Pulses per revolution PPR:						
10	10, 20, 25, 30, 36, 40, 50, 60, 4, 28, 90, 100, 128, 150, 200, 250, 314, 360, 400, 500, 600, 720, 1000, 1024, 1250, 1080, 1500, 1800, 2000, 2048, 2500							
		Channels:						
AB	AB, ABN							
		Output circuit						
H05	Resolution PPR	Power supply VDC	Output circuit	-	Order key			
	up to 2500	4.75 - 5.5	TTL	-	H05			
		4.75 - 5.5	TTL, RS422 comp., inverted	-	R05			
		10 - 30	HTL	-	H24			
		10 - 30	HTL inverted	-	R24			
		Electrical connections						
K1	Description		ABN inv. poss.	Order key				
	Cable: length (2 m standard, WDG 58T: 1 m)							
	radial, shield not connected (IP40)	•	K1					
	axial, shield not connected	•	K2					
	axial, shield connected to encoder housing	•	L2					
	radial, shield not connected	•	K3					
	radial, shield connected to encoder housing	•	L3					
	Connector: (shield connected to encoder housing)							
	sensor-connector, M12x1, 4-pin, axial	-	SB4					
	sensor-connector, M12x1, 5-pin, axial	-	SB5					
	sensor-connector, M12x1, 8-pin, axial	•	SB8					
	sensor-connector, M12x1, 12-pin, axial	•	SB12					
			Options					
	Description		Order key					
	Low-friction bearings		AAC					
	Low temperature		ACA					
	Cable length		Cable lenght					
	Without option		Empty					

Example Order No. =	WDG 40E	06	10	AB	H05	K1		WDG 40E								Your encoder
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For further information please contact our local distributor.
Here you find a list of our distributors worldwide.
<https://www.wachendorff-automation.com/>

WACHENDORFF

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