

# Online Data Sheet

## Encoder WDG 40E

[www.wachendorff-automation.com/wdg40e](http://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



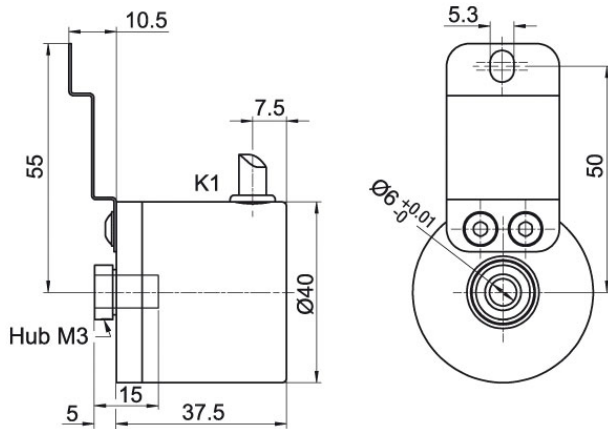
- Robust hollow bore (blind) encoder with small dimensions
- Full connection protection with 10 VDC up to 30 VDC
- With light reserve warning
- Optional: -40 °C up to +80 °C

[www.wachendorff-automation.com/wdg40e](http://www.wachendorff-automation.com/wdg40e)

Resolution	
Max. pulses per revolution PPR	up to 2500 PPR
Mechanical Data	
Housing	
Flange	hollow shaft (blind-bored)
Flange material	aluminum
Housing cap	aluminum, powder coated
- 1. Spring plate compensation	axial: ±0.8 mm, radial: ±0.2 mm
- Max. operating speed	12000 rpm up to max. protection rating +60 °C
Housing	Ø 40 mm
Shaft(s)	
Shaft material	stainless steel
Starting torque	approx. 0.2 Ncm at ambient temperature
Shaft	Ø 6 mm
Shaft length	L: 15 mm
Insertion depth min.	17 mm
Insertion depth max.	20 mm
Max. Permissible shaft loading radial	100 N
Max. Permissible shaft loading axial	50 N
Bearings	
Bearings type	2 precision ball bearings
Nominale service life	1.4 x 10 <sup>8</sup> revs. at 100 % rated shaft load 2 x 10 <sup>9</sup> revs. at 40 % rated shaft load 1.7 x 10 <sup>10</sup> revs. at 20 % rated shaft load
Max. operating speed	12000 rpm
Machinery Directive: basic data safety integrity level	
MTTF <sub>d</sub>	200 a
Mission time (TM)	25 a
Nominale service life (L10h)	1.7 x 10 <sup>10</sup> revs. at 20 % rated shaft load and 12000 rpm
Diagnostic coverage (DC)	0 %

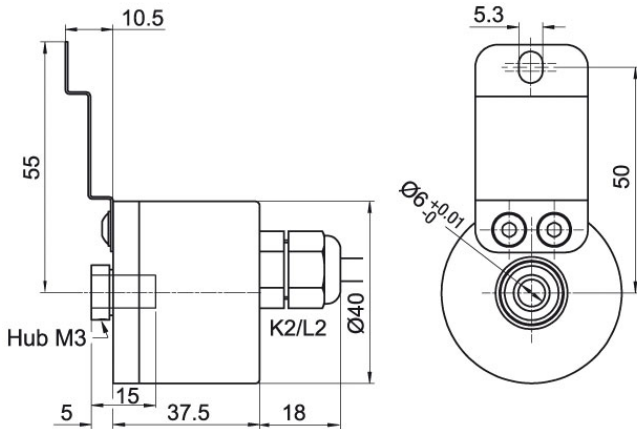
  

Electrical Data	
Power supply/Current consumption	4,75 VDC up to 5,5 VDC: max. 70 mA
Power supply/Current consumption	10 VDC up to 30 VDC: max. 70 mA
Output circuit	TTL, RS422 compatible, inv. HTL
Pulse frequency	TTL 2500 ppr: max. 200 kHz HTL 2500 ppr: max. 200 kHz
Channels	AB ABN and inverted signals
Load	max. 40 mA / channel
Circuit protection	circuit type H24 and R24 only
Accuracy	
Phase offset	90° ± max. 7.5 % of the pulse length
pulse-/pause-ratio	50 % ± max. 7 %
General Data	
Weight	approx. 100 g
Connections	cable or connector outlet
Protection rating (EN 60529)	IP67, shaft sealed to IP65 (IP40 for K1)
Operating temperature	-20 °C up to +80 °C
Storage temperature	-30 °C up to +80 °C
More Information	
General technical data and safety instructions <a href="http://www.wachendorff-automation.com/gtd">http://www.wachendorff-automation.com/gtd</a>	
Options <a href="http://www.wachendorff-automation.com/acc">http://www.wachendorff-automation.com/acc</a>	

**Cable connection K1 (IP40) with 2 m cable**

**Description**
**ABN inv. poss.**
**K1** radial, shield not connected (IP40)

•

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

**Cable connection K2, L2 with 2 m cable**

**Description**
**ABN inv. poss.**
**K2** axial, shield not connected

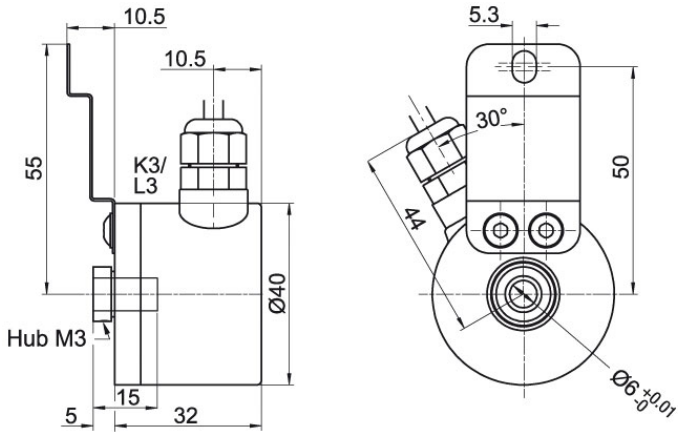
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**L2** axial, shield connected to encoder housing

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**Assignments**

	<b>K2, L2</b>	<b>K2, L2</b>
<b>Circuit</b>	H05, H24	R05, R24
<b>GND</b>	WH	WH
<b>(+) Vcc</b>	BN	BN
<b>A</b>	GN	GN
<b>B</b>	YE	YE
<b>N</b>	GY	GY
<b>Light reserve warning</b>	-	-
<b>A inv.</b>	-	RD
<b>B inv.</b>	-	BK
<b>N inv.</b>	-	VT
<b>Shield</b>	flex	flex

**Cable connection K3, L3 with 2 m cable**

**Description**

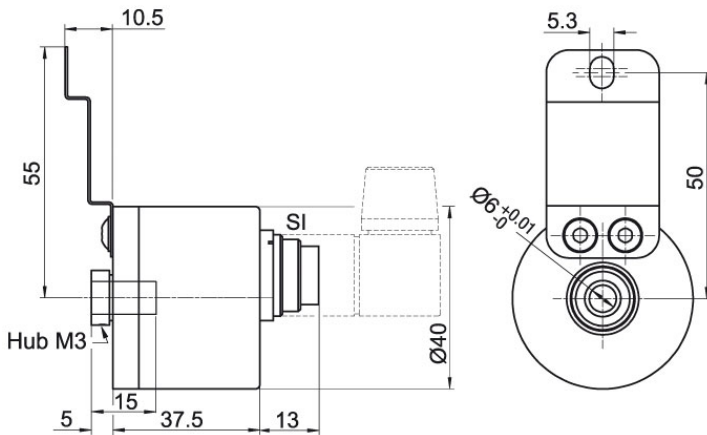
<b>K3</b>	radial, shield not connected
<b>L3</b>	radial, shield connected to encoder housing

**ABN inv. poss.**


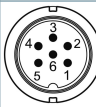

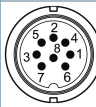
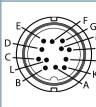
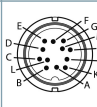
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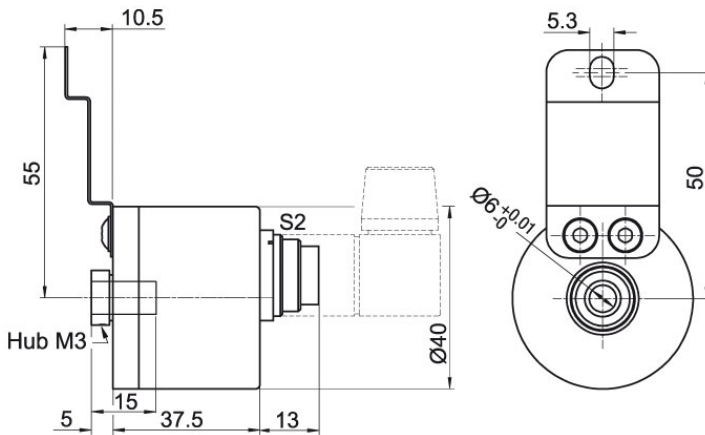
**Assignments**

	<b>K3, L3</b>	<b>K3, L3</b>
<b>Circuit</b>	H05, H24	R05, R24
<b>GND</b>	WH	WH
<b>(+) Vcc</b>	BN	BN
<b>A</b>	GN	GN
<b>B</b>	YE	YE
<b>N</b>	GY	GY
<b>Light reserve warning</b>	-	-
<b>A inv.</b>	-	RD
<b>B inv.</b>	-	BK
<b>N inv.</b>	-	VT
<b>Shield</b>	flex	flex

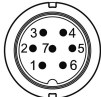
**Connector (M16x0.75) SI, 5-, 6-, 8-, 12-pin**


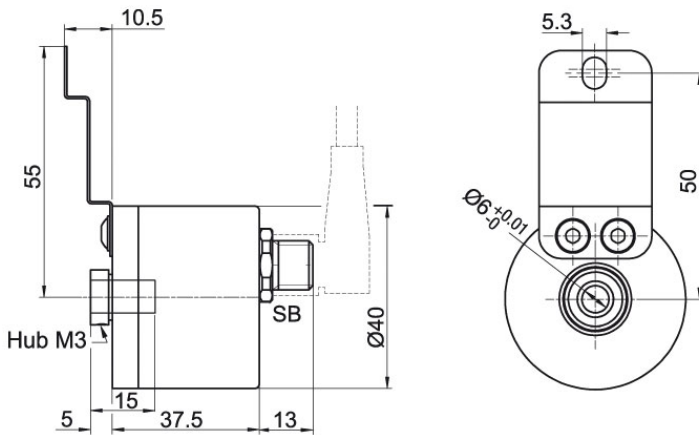
Description	ABN inv. poss.
<b>SI5</b> axial, 5-pin, Connector connected to encoder housing	-
<b>SI6</b> axial, 6-pin, Connector connected to encoder housing	-
<b>SI8</b> axial, 8-pin, Connector connected to encoder housing	•
<b>SI12</b> axial, 12-pin, Connector connected to encoder housing	•

Assignments						
	SI5	SI6	SI8	SI8	SI12	SI12
	5-pin	6-pin	8-pin	8-pin	12-pin	12-pin
						
<b>Circuit</b>	H05, H24	H05, H24	H05, H24	R05, R24	H05, H24	R05, R24
<b>GND</b>	1	6	1	1	K, L	K, L
<b>(+) Vcc</b>	2	1	2	2	M, B	M, B
<b>A</b>	3	2	3	3	E	E
<b>B</b>	4	4	4	4	H	H
<b>N</b>	5	3	5	5	C	C
<b>Light reserve warning</b>	-	-	-	-	-	-
<b>A inv.</b>	-	-	-	6	-	F
<b>B inv.</b>	-	-	-	7	-	A
<b>N inv.</b>	-	-	-	8	-	D
<b>n. c.</b>	-	5	6, 7, 8	-	A, D, F, G, J	G, J
<b>Shield</b>	-	-	-	-	-	-

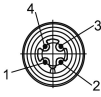
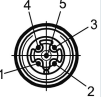
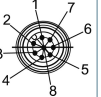
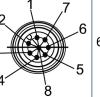
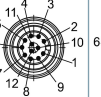
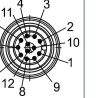
**Connector (M16x0.75) S2, 7-pin**

**Description**
**ABN inv. poss.**
**S2** axial, 7-pin, Connector connected to encoder housing

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Assignments	
	<b>S2</b>
	<b>7-pin</b>
	
<b>Circuit</b>	H05, H24
<b>GND</b>	1
<b>(+) Vcc</b>	2
<b>A</b>	3
<b>B</b>	4
<b>N</b>	5
<b>Light reserve warning</b>	-
<b>A inv.</b>	-
<b>B inv.</b>	-
<b>N inv.</b>	-
<b>n. c.</b>	6, 7
<b>Shield</b>	-

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


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

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



## Options

### Low temperature

The encoder WDG 40E with the output circuit types H24, R24 is also available with the extended temperature range -40 °C up to +80 °C (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 [www.wachendorff-automation.com/atd](http://www.wachendorff-automation.com/atd)

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
<b>Bore size</b>					
06	06				
<b>Pulses per revolution PPR:</b>					
1024	4, 9, 10, 15, 20, 25, 28, 30, 36, 40, 50, 60, 90, 100, 120, 125, 128, 150, 160, 180, 200, 235, 250, 300, 314, 318, 360, 400, 500, 600, 625, 635, 720, 900, 1000, 1024, 1080, 1200, 1250, 1500, 1800, 2000, 2048, 2500 Other PPRs on request				
<b>Channels:</b>					
ABN	AB, ABN bis 2048 I/U				
<b>Output circuit</b>					
H24	<b>Resolution PPR</b>	<b>Power supply VDC</b>	<b>Output circuit</b>	<b>Light reserve warning</b>	<b>Order key</b>
	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	
<b>Electrical connections</b>					
K1	<b>Description</b>			<b>ABN inv. poss.</b>	<b>Order key</b>
	<b>Cable: length (2 m standard, WDG 58T: 1 m)</b>				
	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
	<b>Connector: (shield connected to encoder housing)</b>				
	connector, M16x0.75, 5-pin, axial			-	SI5
	connector, M16x0.75, 6-pin, axial			-	SI6
	connector, M16x0.75, 8-pin, axial			•	SI8
	connector, M16x0.75, 12-pin, axial			•	SI12
	connector, M16x0.75, 7-pin, axial			-	S2
	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	
<b>Options</b>					
<b>Description</b>			<b>Order key</b>		
Without option			Empty		
Low temperature			ACA		
Cable length			XXX = Decimeter		

<b>Example Order No.=</b>	WDG 40E	06	1024	ABN	H24	K1		WDG 40E						<b>Your encoder</b>
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For further information please contact our local distributor.  
Here you find a list of our distributors worldwide.  
[http://www.wachendorff-automation.com/distributors\\_worldwide.html](http://www.wachendorff-automation.com/distributors_worldwide.html)



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