

# Online Data Sheet

## Encoder WDG 40A

[www.wachendorff-automation.com/wdg40a](http://www.wachendorff-automation.com/wdg40a)

### **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 40A



- Robust and economical encoder with small dimensions
- Protection to IP67, shaft sealed to IP65
- Optional:  
Protection to IP67 all around  
-40 °C up to +80 °C

[www.wachendorff-automation.com/wdg40a](http://www.wachendorff-automation.com/wdg40a)

## Resolution

Max. pulses per revolution up to 2500 PPR  
PPR

## Mechanical Data

### Housing

Flange	Servo flange
Flange material	aluminium
Housing cap	aluminium, powder coated
Housing	Ø 40 mm
Cam mounting	pitch 51 mm

### Shaft(s)

Shaft material	stainless steel
Starting torque	approx. 0.2 Ncm at ambient temperature

Shaft	Ø 6 mm
Shaft length	L: 11.5 mm
Max. Permissible shaft loading radial	80 N
Max. Permissible shaft loading axial	50 N

### Bearings

Bearings type	2 precision ball bearings
Nominale service life	1 x 10 <sup>9</sup> revs. at 100 % rated shaft load 1 x 10 <sup>10</sup> revs. at 40 % rated shaft load 1 x 10 <sup>11</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 x 10 <sup>11</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 10 VDC up to 30 VDC: max. 70 mA
Output circuit	TTL TTL, RS422 compatible, inv. HTL HTL, inv.

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

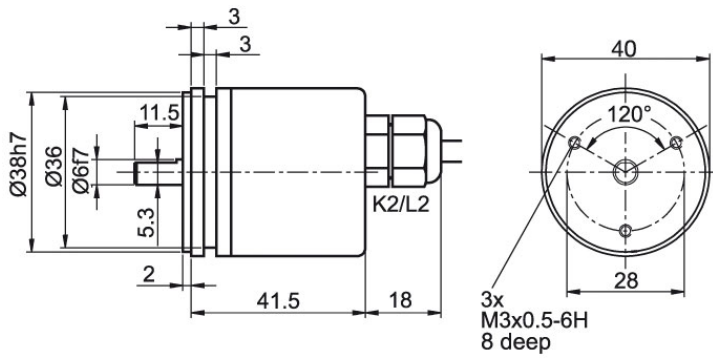
Phase offset	90° ± max. 7.5 % of the pulse length
pulse-/pause-ratio	50 % ± max. 7 %

## General Data

Weight	approx. 100 g
Connections	cable or connector outlet
Protection rating (EN 60529)	IP67, shaft sealed to IP65 (IP50 for K1)
Operating temperature	-20 °C up to +80 °C
Storage temperature	-30 °C up to +80 °C

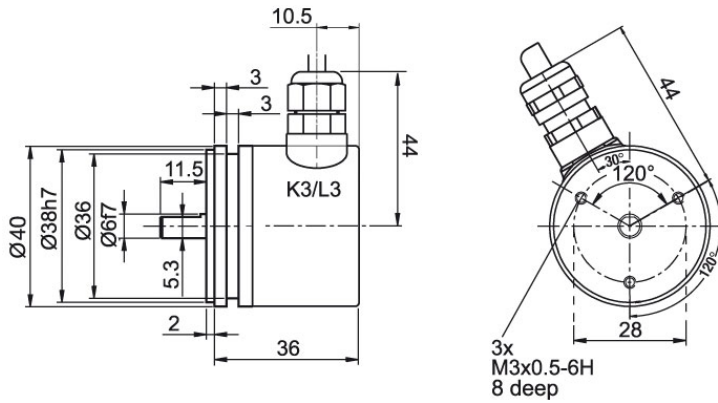
## More Information

General technical data  
<http://www.wachendorff-automation.com/gtd>  
Options  
<http://www.wachendorff-automation.com/acc>

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

**Description**
**ABN inv. poss.**

<b>K2</b>	axial, shield not connected	•
<b>L2</b>	axial, shield connected to encoder housing	•

Assignments		
	<b>K2, L2</b>	<b>K2, L2</b>
<b>Circuit</b>	H05, H24	R05, R24
<b>GND</b>	WH	WH
<b>+UB</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 cabel**

**Description**

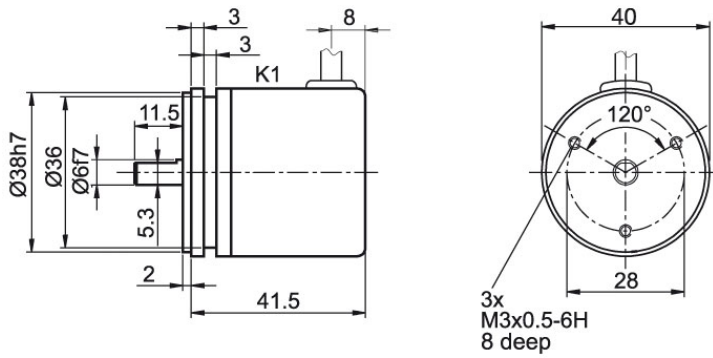
<b>K3</b>	radial, shield not connected
<b>L3</b>	radial, shield connected to encoder housing

**ABN inv. poss.**

- 
- 

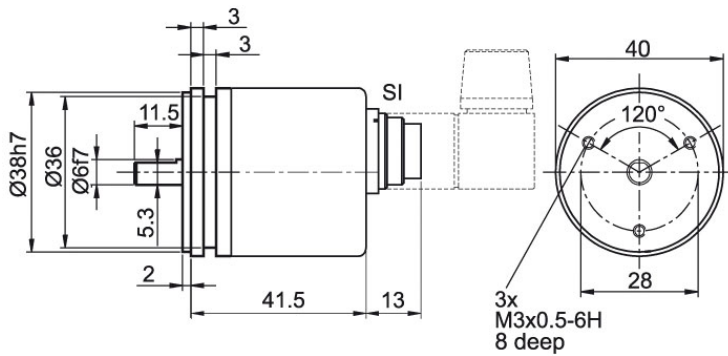
**Assignments**

	<b>K3, L3</b>	<b>K3, L3</b>
<b>Circuit</b>	H05, H24	R05, R24
<b>GND</b>	WH	WH
<b>+UB</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

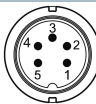

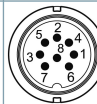
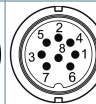
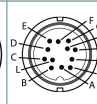
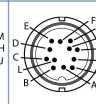
**Cable K1 (IP50) with 2m cable**

**Description**
**ABN inv. poss.**
**K1** radial, shield not connected (IP50)

•

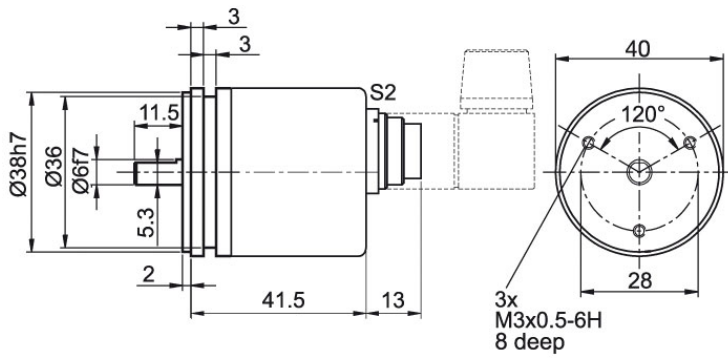
Assignments		
	K1	K1
<b>Circuit</b>	H05, H24	R05, R24
<b>GND</b>	WH	WH
<b>+UB</b>	BN	BN
<b>A</b>	GN	GN
<b>B</b>	YE	YE
<b>N</b>	GY	GY
<b>Light reserve warning</b>	-	-
<b>A inv.</b>	-	RD
<b>N inv.</b>	-	VT
<b>B inv.</b>	-	BK
<b>Shield</b>	flex	flex

**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>+UB</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**




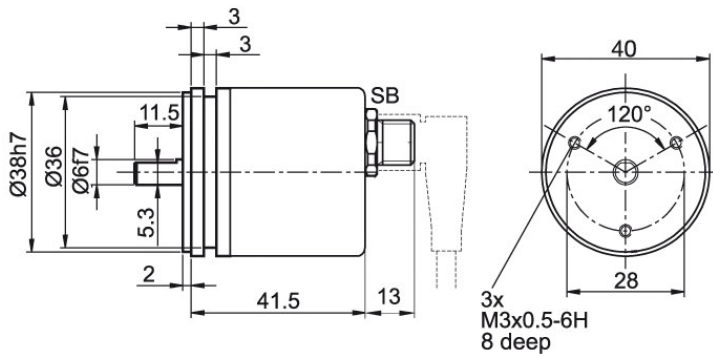
**Description**

**ABN inv. poss.**

**S2** axial, 7-pin, Connector connected to encoder housing

-

Assignments	
	<b>S2</b>
	<b>7-pin</b>
	
<b>Circuit</b>	H05, H24
<b>GND</b>	1
<b>+UB</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> 4-pin	<b>SB5</b> 5-pin	<b>SB8</b> 8-pin	<b>SB8</b> 8-pin	<b>SB12</b> 12-pin	<b>SB12</b> 12-pin
<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>+UB</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 40A with the output circuit types H24, R24 is also available with the extended temperature range -40 °C up to +80 °C [-40 °F up to +176 °F] (measured at the flange).

### Order key

**ACA**

### Low-friction bearings

The encoder WDG 40A is also available as a particularly smooth-running low-friction encoder. The starting torque is thereby changed to 0.1 Ncm and the protection class at the shaft input to IP50.

### Order key

**AAC**

### Cable length

The encoder WDG 40A 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: 3 m cable = 030

### Order key

**XXX = Decimeter**

### IP67 all around

The encoder WDG 40A can be supplied in a full IP67 version.

### Order key

**AAO**

Max. RPM: 3500 rpm

Permitted Shaft-Loading, axial: 30 N

Permitted Shaft-Loading, radial: 45 N

Max. PPR: 1500 ppr

Starting-torque: approx. 1.2 Ncm at ambient temperature

Example Order No.	Type				Your encoder
WDG 40A	WDG 40A				WDG 40A
<b>Pulses per revolution PPR I/U (PPR):</b>					
2048	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>					
K2	<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 (IP50)			•	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	
	Low-friction bearings			AAC	
	IP67			AAO	
	Cable length			XXX = Decimeter	

<b>Example Order No.=</b>	WDG 40A	2048	ABN	H24	K2		WDG 40A					<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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