



# Online Data sheet

## Encoder WDG 50B

[www.wachendorff-automation.com/wdg50bm](http://www.wachendorff-automation.com/wdg50bm)

### **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 50B



Illustration similar



- Economic encoder with mechanical carrying of loading
- Protection to IP67, shaft sealed to IP65
- Optional: -40 °C up to +85 °C [-40 °F up to +176 °F]

[www.wachendorff-automation.com/wdg50bm](http://www.wachendorff-automation.com/wdg50bm)

Resolution	
Pulses per revolution PPR	up to 1024 PPR
Mechanical Data	
Flange	clamping flange
Flange material	aluminum
Housing material	aluminum, powder coated
Flange diameter	Ø 50 mm [Ø 1.969"]
Cam mounting	pitch 61 mm [2.401 inches] (Accessory SP-3-00)
Shaft(s)	
Shaft material	stainless steel
Starting torque	approx. 0.3 Ncm [0.425 in-ozf] at ambient temperature
Shaft	Ø 8 mm [Ø 0.315"]
Shaft length	L: 15 mm [0.591"]
Max. Permissible shaft loading radial	120 N [12.236 kp]
Max. Permissible shaft loading axial	70 N [7.138 kp]
Bearings	
Bearings type	2 precision ball bearings
Nominal service life	2 x 10 <sup>8</sup> revs. at 100 % rated shaft load 3 x 10 <sup>9</sup> revs. at 40 % rated shaft load 2 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
Nominal service life (L10h)	2 x 10 <sup>10</sup> revs. at 20 % rated shaft load and 12000 rpm
Diagnostic coverage (DC)	0 %
Electrical Data	
Power supply/Current consumption	5 VDC up to 30 VDC: typ. 40 mA
Operating principle	magnetic
Output circuit	HTL (TTL at 5 VDC) HTL, inv. (TTL/RS422 comp. at 5 VDC)
Pulse frequency	1024 ppr: max. 200 kHz
Channels	AB ABN and inverted signals

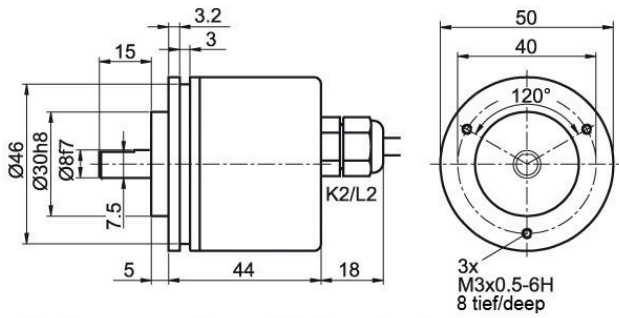
Load	max. 40 mA / channel
Circuit protection	no
Accuracy	
Phase offset	90° ± max. 25% of the period duration
pulse-/pause-ratio	at 1 ppr up to 128 ppr: 50 % ± max. 7 % 129 ppr - 256 ppr: 50 % ± max. 9 % 257 ppr - 512 ppr: 50 % ± max. 13 % 513 ppr - 1024 ppr: 50 % ± max. 18 %

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 <sup>2</sup> (10 Hz up to 2000 Hz)
Shock: (DIN EN 60068-2-27)	1000 m/s <sup>2</sup> (6 ms)
Electrical Safety:	according DIN VDE 0160

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

General Data	
Weight	approx. 160 g [5.644 oz]
Connections	cable or connector outlet
Protection rating (EN 60529)	Housing: IP65, IP67; shaft sealed: IP65
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 <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 K2, L2 with 2 m cable**


Alle Abmessungen in mm / All dimensions in mm

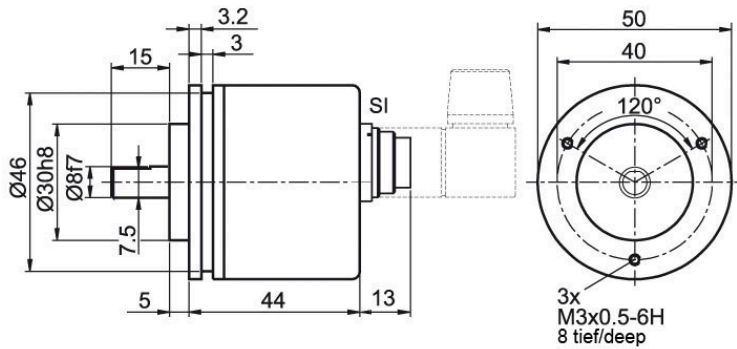
**Description**
**ABN inv. poss.**

<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>	N35	M35
<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>-</b>	-	-
<b>A inv.</b>	-	RD
<b>B inv.</b>	-	BK, (BU at ACA)
<b>N inv.</b>	-	VT
<b>Shield</b>	flex	flex

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

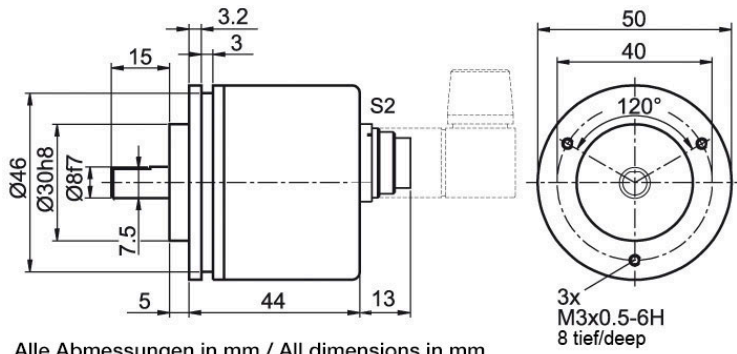


Alle Abmessungen in mm / All dimensions in mm

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	SI12
	5-pin	6-pin	8-pin	12-pin
<b>Circuit</b>	N35	N35	M35	M35
<b>GND</b>	1	6	1	K, L
<b>(+) Vcc</b>	2	1	2	M, B
<b>A</b>	3	2	3	E
<b>B</b>	4	4	4	H
<b>N</b>	5	3	5	C
<b>-</b>	-	-	-	-
<b>A inv.</b>	-	-	6	F
<b>B inv.</b>	-	-	7	A
<b>N inv.</b>	-	-	8	D
<b>n. c.</b>	-	5	-	G, J
<b>Shield</b>	-	-	-	-

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



Alle Abmessungen in mm / All dimensions in mm

**Description**

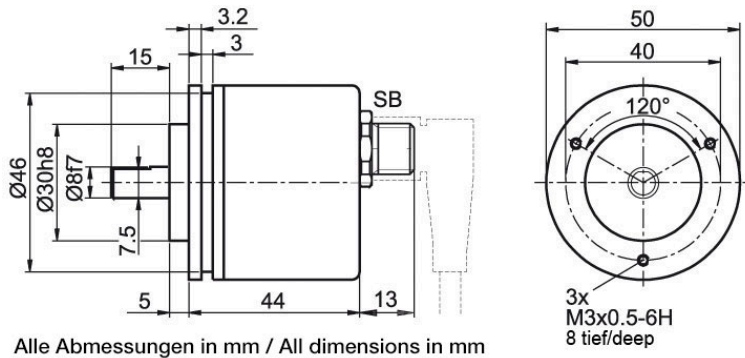
**ABN inv. poss.**

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

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Assignments	
	<b>S2</b>
	<b>7-pin</b>
<b>Circuit</b>	N35
<b>GND</b>	1
<b>(+) Vcc</b>	2
<b>A</b>	3
<b>B</b>	4
<b>N</b>	5
<b>-</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**



Alle Abmessungen in mm / All dimensions in mm

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>SB12</b>
	<b>4-pin</b>	<b>5-pin</b>	<b>8-pin</b>	<b>12-pin</b>
<b>Circuit</b>	N35	N35	M35	M35
<b>GND</b>	3	3	1	3
<b>(+) Vcc</b>	1	1	2	1
<b>A</b>	2	4	3	4
<b>B</b>	4	2	4	6
<b>N</b>	-	5	5	8
<b>-</b>	-	-	-	-
<b>A inv.</b>	-	-	6	9
<b>B inv.</b>	-	-	7	7
<b>N inv.</b>	-	-	8	10
<b>n. c.</b>	-	-	-	2, 5, 11, 12
<b>Shield</b>	-	-	-	-

**Options****Low-friction bearings**

The encoder WDG 50B is also available as a particularly smooth-running low-friction encoder. The starting torque is thereby changed to 0.25 Ncm [0.354 in-ozf] and the protection class at the shaft input to IP50.

**Order key****AAC****Low temperature**

The encoder WDG 50B with the output circuit types M35, N35 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****Cable length**

The encoder WDG 50B 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/>

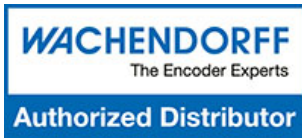
Please extend the standard order code with a three figure number, specifying the cable length in decimetres.

Example: 5 m cable = 050

**Order key****XXX = Decimeter**

Example Order No.	Type				Your encoder
WDG 50B	WDG 50B				WDG 50B
<b>Pulses per revolution PPR:</b>					
1024	1-1024 Other PPRs on request				
<b>Channels:</b>					
ABN	AB, ABN bis 1024 I/U				
<b>Output circuit</b>					
M35	<b>Resolution PPR</b>	<b>Power supply VDC</b>	<b>Output circuit</b>	-	<b>Order key</b>
	up to 1024	5 - 30	HTL, inv. (TTL/RS422 comp. at 5 VDC)	-	M35
		5 - 30	HTL (TTL at 5 VDC)	-	N35
<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>				
	axial, shield not connected			•	K2
	axial, shield connected to encoder housing			•	L2
	<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>	
	Low-friction bearings			AAC	
	Low temperature			ACA	
	Without option			Empty	
	Cable length			XXX = Decimeter	

<b>Example Order No.=</b>	WDG 50B	1024	ABN	M35	K2		WDG 50B					<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.  
<https://www.wachendorff-automation.com/contact-en/wachendorff-world-wide/>

# WACHENDORFF

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