

# Online Data Sheet

## Encoder WDG 80H

[www.wachendorff-automation.com/wdg80h](http://www.wachendorff-automation.com/wdg80h)

### **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 80 H



- Rugged and economical encoder
- High protection class IP65
- Bore size: 10 mm up to 25 mm
- Full connection protection with 10 VDC up to 30 VDC
- With light reserve warning
- Easy mounting
- Optional: -40 °C up to +80 °C

[www.wachendorff-automation.com/wdg80h](http://www.wachendorff-automation.com/wdg80h)

## Resolution

Max. pulses per revolution up to 3840 PPR  
PPR

## Mechanical Data

### Housing

Flange	hollow shaft (through-bored)
Flange material	aluminium
Housing cap	aluminium, powder coated
Torque supports	incl. 1 torque support WDGDS10001
- 1. Spring plate compensation	axial: ±0.8 mm, radial: ±0.2 mm
Housing	Ø 80 mm

### Shaft(s)

Shaft material	stainless steel
Starting torque	approx. 6 Ncm at ambient temperature
Fixing	2 x M4, DIN 913; Starting torque: 2,5 Nm

Shaft Ø 10 mm

Shaft length L: 46 mm

Max. Permissible shaft loading radial 200 N

Max. Permissible shaft loading axial 100 N

Shaft Ø 12 mm

Shaft length L: 46 mm

Max. Permissible shaft loading radial 200 N

Max. Permissible shaft loading axial 100 N

Shaft Ø 15 mm

Shaft length L: 46 mm

Max. Permissible shaft loading radial 200 N

Max. Permissible shaft loading axial 100 N

Shaft Ø 18 mm

Shaft length L: 46 mm

Max. Permissible shaft loading radial 200 N

Max. Permissible shaft loading axial 100 N

Shaft Ø 20 mm

Shaft length L: 46 mm

Max. Permissible shaft loading radial 200 N

Max. Permissible shaft loading axial 100 N

Shaft Ø 25 mm

Shaft length L: 46 mm

Max. Permissible shaft loading radial 200 N

Max. Permissible shaft loading axial 100 N

## Bearings

Bearings type 2 precision ball bearings

Nominale service life  
3 x 10<sup>10</sup> revs. at 100 % rated shaft load  
1 x 10<sup>11</sup> revs. at 40 % rated shaft load  
1 x 10<sup>12</sup> revs. at 20 % rated shaft load

Max. operating speed 3500 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>12</sup> revs. at 20 % rated shaft load and 3500 rpm

Diagnostic coverage (DC) 0 %

## Electrical Data

Power supply/Current consumption 4,75 VDC up to 5,5 VDC: max. 100 mA

Power supply/Current consumption 5 VDC up to 30 VDC: max. 70 mA

Power supply/Current consumption 10 VDC up to 30 VDC: max. 70 mA

Output circuit  
TTL  
TTL, RS422 compatible, inv.  
HTL  
HTL, inv.  
1 V<sub>pp</sub> sin/cos

Pulse frequency  
TTL 3840 ppr: max. 200 kHz  
HTL 3840 ppr: max. 200 kHz  
1 V<sub>pp</sub> sin/cos: max. 100 kHz

Channels  
AB  
ABN  
and inverted signals

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Load	max. 40 mA / channel @ 1 Vpp sin/cos: min. 120 Ohm
Circuit protection	circuit type G24, H24, I24, R24 only

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**Accuracy**

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

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**General Data**

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Weight	approx. 600 g
Connections	cable or connector, radial
Protection rating (EN 60529)	IP65 all around
Operating temperature	-20 °C up to +80 °C 1 Vpp: -10 °C up to +70 °C
Storage temperature	-30 °C up to +80 °C

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**More Information**

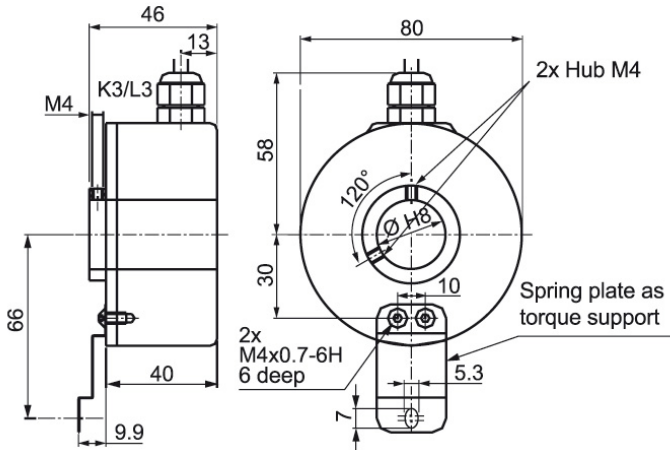
General technical data

<http://www.wachendorff-automation.com/gtd>

Options

<http://www.wachendorff-automation.com/acc>

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

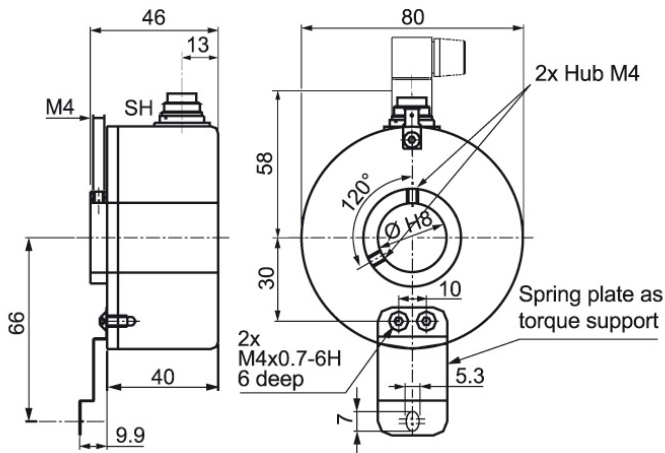


**Description**

**ABN inv. poss.**











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

Assignments						
	K3, L3	K3, L3	K3, L3	K3, L3	K3, L3	K3, L3
<b>Circuit</b>	G05, G24	H05, H24, H30	I05, I24, 524	R05, R24, 245, R30	SIN	SIF
<b>GND</b>	WH	WH	WH	WH	WH	WH
<b>(+) Vcc</b>	BN	BN	BN	BN	BN	BN
<b>A</b>	GN	GN	GN	GN	GN	GN
<b>B</b>	YE	YE	YE	YE	GY	GY
<b>N</b>	GY	GY	GY	GY	BK	BK
<b>Light reserve warning</b>	PK	-	PK	-	-	RD
<b>A inv.</b>	-	-	RD	RD	YE	YE
<b>B inv.</b>	-	-	BK, (BU at ACA)	BK, (BU at ACA)	PK	PK
<b>N inv.</b>	-	-	VT	VT	VT	VT
<b>Shield</b>	flex	flex	flex	flex	flex	flex

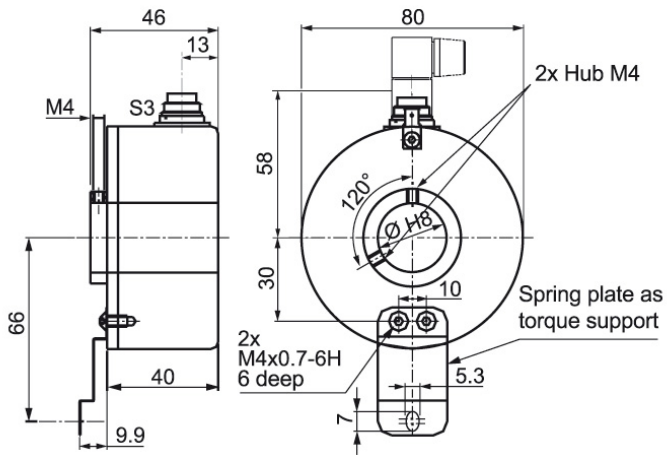
**Connector (M16x0.75) SH, 5-, 6-, 8-, 12-pin**

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

<b>SH5</b>	radial, 5-pin, Connector connected to encoder housing	-
<b>SH6</b>	radial, 6-pin, Connector connected to encoder housing	-
<b>SH8</b>	radial, 8-pin, Connector connected to encoder housing	•
<b>SH12</b>	radial, 12-pin, Connector connected to encoder housing	•

**Assignments**

	<b>SH5</b>	<b>SH6</b>	<b>SH6</b>	<b>SH8</b>	<b>SH8</b>	<b>SH8</b>	<b>SH12</b>	<b>SH12</b>	<b>SH12</b>	<b>SH12</b>
	<b>5-pin</b>	<b>6-pin</b>	<b>6-pin</b>	<b>8-pin</b>	<b>8-pin</b>	<b>8-pin</b>	<b>12-pin</b>	<b>12-pin</b>	<b>12-pin</b>	<b>12-pin</b>
										
<b>Circuit</b>	H05, H24, H30	G05, G24	H05, H24, H30	H05, H24, H30	R05, R24, R30, 245	SIN	G05, G24	H05, H24, H30	R05, R24, 245, R30	SIN
<b>GND</b>	1	6	6	1	1	1	K, L	K, L	K, L	K, L
<b>(+) Vcc</b>	2	1	1	2	2	2	M, B	M, B	M, B	M, B
<b>A</b>	3	2	2	3	3	3	E	E	E	E
<b>B</b>	4	4	4	4	4	4	H	H	H	H
<b>N</b>	5	3	3	5	5	5	C	C	C	C
<b>Light reserve warning</b>	-	5	-	-	-	-	G	-	-	-
<b>A inv.</b>	-	-	-	-	6	6	-	-	F	F
<b>B inv.</b>	-	-	-	-	7	7	-	-	A	A
<b>N inv.</b>	-	-	-	-	8	8	-	-	D	D
<b>n. c.</b>	-	-	5	6, 7, 8	-	-	A, D, F, J	A, D, F, G, J	G, J	G, J
<b>Shield</b>	-	-	-	-	-	-	-	-	-	-

**Connector (M16x0.75) S3, 7-pin**

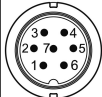
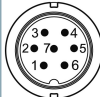


**Description**

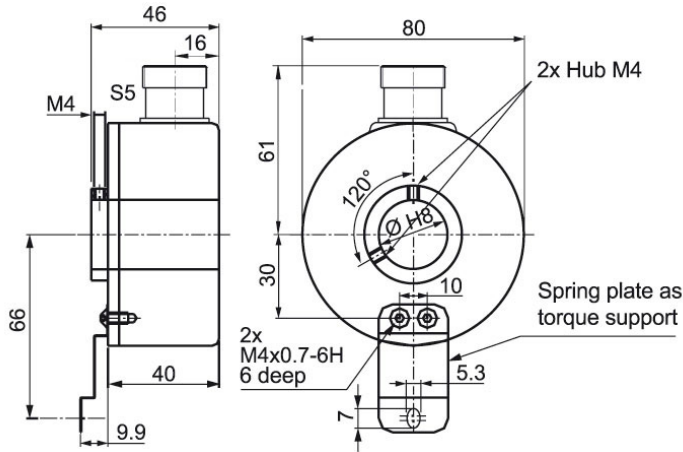
**ABN inv. poss.**

**S3** radial, 7-pin, Connector connected to encoder housing

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Assignments		
	S3 7-pin	S3 7-pin
		
<b>Circuit</b>	G05, G24	H05, H24, H30
<b>GND</b>	1	1
<b>(+) Vcc</b>	2	2
<b>A</b>	3	3
<b>B</b>	4	4
<b>N</b>	5	5
<b>Light reserve warning</b>	6	-
<b>A inv.</b>	-	-
<b>B inv.</b>	-	-
<b>N inv.</b>	-	-
<b>n. c.</b>	7	6, 7
<b>Shield</b>	-	-

**Connector (M23) S5, 12-pin**



**Description**

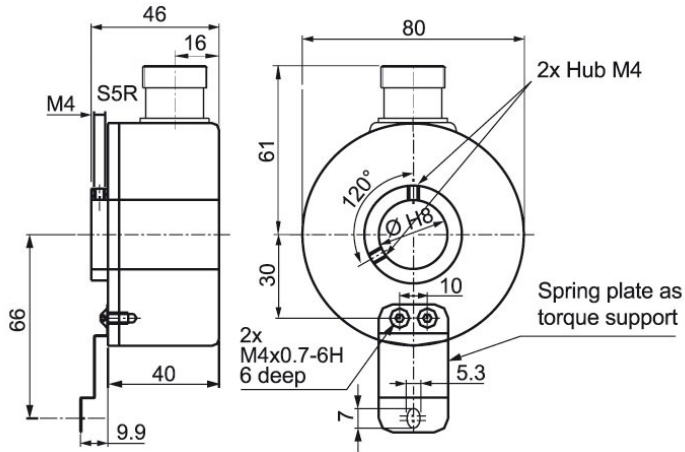
ABN inv. poss.

**S5** radial, 12-pin, Connector connected to encoder housing

•

Assignments						
	S5	S5	S5	S5	S5	S5
	12-pin	12-pin	12-pin	12-pin	12-pin	12-pin
<b>Circuit</b>	G05, G24	H05, H24, H30	I05, I24, 524	R05, R24, 245, R30	SIN	SIF
<b>GND</b>	10	10	10	10	10	10
<b>(+) Vcc</b>	12	12	12	12	12	12
<b>A</b>	5	5	5	5	5	5
<b>B</b>	8	8	8	8	8	8
<b>N</b>	3	3	3	3	3	3
<b>Light reserve warning</b>	11	-	11	-	-	7
<b>A inv.</b>	-	-	6	6	6	6
<b>B inv.</b>	-	-	1	1	1	1
<b>N inv.</b>	-	-	4	4	4	4
<b>n. c.</b>	1, 2, 4, 6, 7, 9	1, 2, 4, 6, 7, 9, 11	2, 7, 9	2, 7, 9, 11	2, 7, 9, 11	2, 9, 11
<b>Shield</b>	-	-	-	-	-	-

**Connector (M23) S5R, 12-pin (clockwise)**

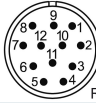
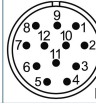
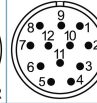
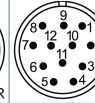
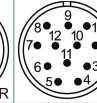
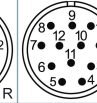


**Description**

ABN inv. poss.

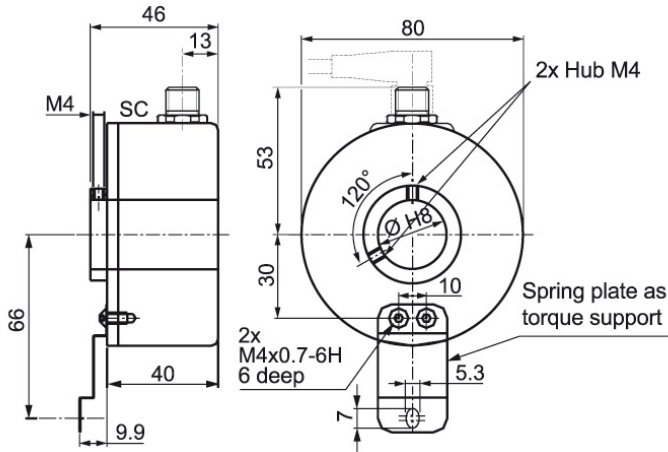
**S5R** radial, 12-pin, Connector connected to encoder housing

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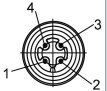
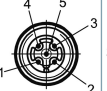

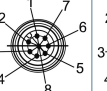

Assignments						
	S5R	S5R	S5R	S5R	S5R	S5R
	12-pin	12-pin	12-pin	12-pin	12-pin	12-pin
						
<b>Circuit</b>	G05, G24	H05, H24, H30	I05, I24, 524	R05, R24, 245, R30	SIN	SIF
<b>GND</b>	10	10	10	10	10	10
<b>(+) Vcc</b>	12	12	12	12	12	12
<b>A</b>	5	5	5	5	5	5
<b>B</b>	8	8	8	8	8	8
<b>N</b>	3	3	3	3	3	3
<b>Light reserve warning</b>	11	-	11	-	-	7
<b>A inv.</b>	-	-	6	6	6	6
<b>B inv.</b>	-	-	1	1	1	1
<b>N inv.</b>	-	-	4	4	4	4
<b>n. c.</b>	1, 2, 4, 6, 7, 9	1, 2, 4, 6, 7, 9, 11	2, 7, 9	2, 7, 9, 11	2, 7, 9, 11	2, 9, 11
<b>Shield</b>	-	-	-	-	-	-



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



Description	ABN inv. poss.
<b>SC4</b> radial, 4-pin, Connector connected to encoder housing	-
<b>SC5</b> radial, 5-pin, Connector connected to encoder housing	-
<b>SC8</b> radial, 8-pin, Connector connected to encoder housing	•

Assignments					
	SC4	SC5	SC8	SC8	SC8
	4-pin	5-pin	8-pin	8-pin	8-pin
					
<b>Circuit</b>	H05, H24, H30	H05, H24, H30	H05, H24, H30	R05, R24, R30, 245	SIN
<b>GND</b>	3	3	1	1	1
<b>(+) Vcc</b>	1	1	2	2	2
<b>A</b>	2	4	3	3	3
<b>B</b>	4	2	4	4	5
<b>N</b>	-	5	5	5	7
<b>Light reserve warning</b>	-	-	-	-	-
<b>A inv.</b>	-	-	-	6	4
<b>B inv.</b>	-	-	-	7	6
<b>N inv.</b>	-	-	-	8	8
<b>n. c.</b>	-	-	6, 7, 8	-	-
<b>Shield</b>	-	-	-	-	-

## Options

### Low temperature

The encoder WDG 80H with the output circuit types G24, I24, G05, I05 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 80H 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 80H	WDG 80H					WDG 80H
	<b>Bore size</b>					
25	10; 12; 15; 18; 20; 25					
	<b>Pulses per revolution PPR:</b>					
1024	50, 100, 250, 500, 720, 1000, 1024, 1920, 2048, 2500, 3840 1 Vss Sin/Cos only 1024 Other PPRs on request					
	<b>Channels:</b>					
ABN	AB, ABN					
	<b>Output circuit</b>					
G24	<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	5 - 30	HTL	-	H30	
		5 - 30	HTL inverted	-	R30	
	up to 3840	4.75 - 5.5	TTL	•	G05	
		4.75 - 5.5	TTL	-	H05	
		4.75 - 5.5	TTL, RS422 comp., inverted	•	I05	
		4.75 - 5.5	TTL, RS422 comp., inverted	-	R05	
		10 - 30	HTL	•	G24	
		10 - 30	HTL	-	H24	
		10 - 30	HTL inverted	•	I24	
		10 - 30	HTL inverted	-	R24	
		10 - 30	TTL, RS422 comp., inverted	•	524	
		10 - 30	TTL, RS422 comp., inverted	-	245	
	1024	4.75 - 5.5	1 Vpp sin/cos	•	SIF	
		4.75 - 5.5	1 Vpp sin/cos	-	SIN	
	<b>Electrical connections</b>					
K3	<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			•	K3	
	radial, shield connected to encoder housing			•	L3	
	<b>Connector: (shield connected to encoder housing)</b>					
	connector, M16x0.75, 5-pin, radial			-	SH5	
	connector, M16x0.75, 6-pin, radial			-	SH6	
	connector, M16x0.75, 8-pin, radial			•	SH8	
	connector, M16x0.75, 12-pin, radial			•	SH12	
	connector, M16x0.75, 7-pin, radial			-	S3	
	connector, M23, 12-pin, radial			•	S5	
	connector, clockwise pin count, M23, 12-pin, radial			•	S5R	
	sensor-connector, M12x1, 4-pin, radial			-	SC4	
	sensor-connector, M12x1, 5-pin, radial			-	SC5	
	sensor-connector, M12x1, 8-pin, radial			•	SC8	
	<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 80H	25	1024	ABN	G24	K3		WDG 80H						<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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[www.wachendorff-automation.de](http://www.wachendorff-automation.de)

