



# 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 27 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	
Pulses per revolution PPR	up to 3840 PPR
Mechanical Data	
Housing	
Flange	hollow shaft (through-bored)
Flange material	aluminum
Housing cap	aluminum, 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 14 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 16 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
Shaft	Ø 27 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: typ. 100 mA
Power supply/Current consumption	5 VDC up to 30 VDC: typ. 70 mA
Power supply/Current consumption	10 VDC up to 30 VDC: typ. 70 mA
Output circuit	TTL TTL, RS422 compatible, inv. HTL HTL, inv. 1 Vpp sin/cos
Pulse frequency	TTL 3840 ppr: max. 200 kHz HTL 3840 ppr: max. 200 kHz 1 Vpp sin/cos: max. 100 kHz
Channels	AB ABN and inverted signals
Load	max. 40 mA / channel @ 1 Vpp sin/cos: min. 120 Ohm
Circuit protection	circuit type G24, H24, I24, R24 only

#### Accuracy

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

#### General Data

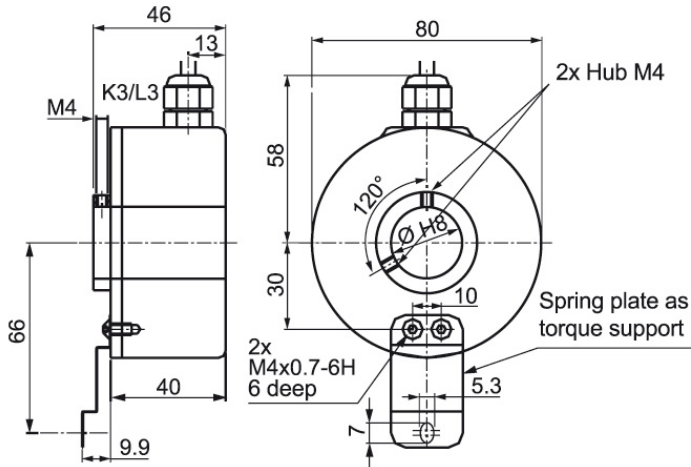
Weight	approx. 600 g
Connections	cable or connector, radial
Protection rating (EN 60529)	IP65 all around
Operating temperature	-20 °C up to +80 °C 1 Vpp: -10 °C up to +70 °C
Storage temperature	-30 °C up to +80 °C

#### More Information

General technical data and safety instructions  
<http://www.wachendorff-automation.com/gtd>

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

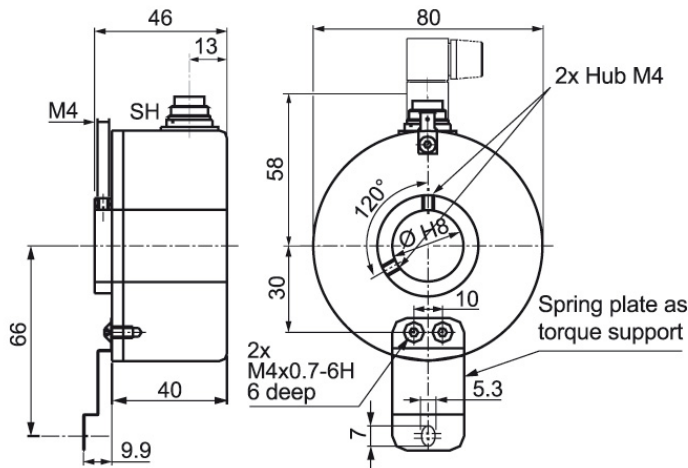
**Cable connection K3, L3 with 2 m cable**













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	L3	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

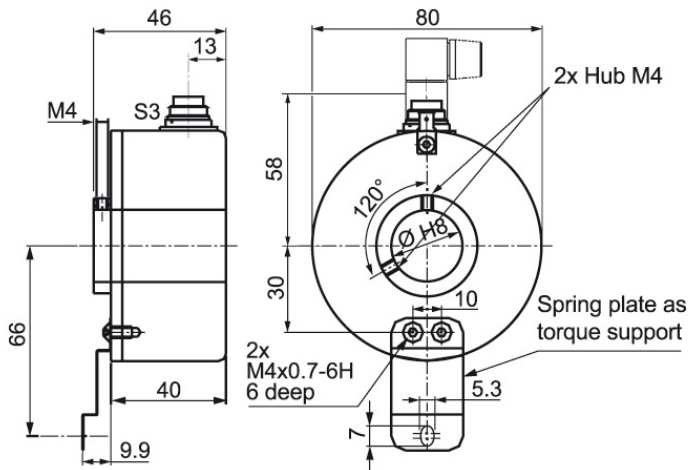
**Connector (M16x0.75) SH, 5-, 6-, 8-, 12-pin**



Description	ABN inv. poss.
SH5 radial, 5-pin, Connector connected to encoder housing	-
SH6 radial, 6-pin, Connector connected to encoder housing	-
SH8 radial, 8-pin, Connector connected to encoder housing	•
SH12 radial, 12-pin, Connector connected to encoder housing	•

Assignments	SH5	SH6	SH6	SH8	SH8	SH8	SH12	SH12	SH12	SH12
	5-pin	6-pin	6-pin	8-pin	8-pin	8-pin	12-pin	12-pin	12-pin	12-pin
										
Circuit	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
GND	1	6	6	1	1	1	K, L	K, L	K, L	K, L
(+) Vcc	2	1	1	2	2	2	M, B	M, B	M, B	M, B
A	3	2	2	3	3	3	E	E	E	E
B	4	4	4	4	4	4	H	H	H	H
N	5	3	3	5	5	5	C	C	C	C
Light reserve warning	-	5	-	-	-	-	G	-	-	-
A inv.	-	-	-	-	6	6	-	-	F	F
B inv.	-	-	-	-	7	7	-	-	A	A
N inv.	-	-	-	-	8	8	-	-	D	D
n. c.	-	-	5	6, 7, 8	-	-	A, D, F, J	A, D, F, G, J	G, J	G, J
Shield	-	-	-	-	-	-	-	-	-	-

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

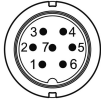



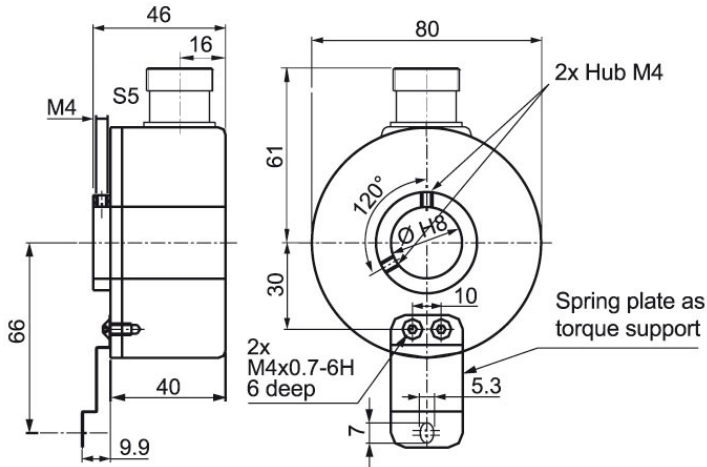
**Description**

ABN inv. poss.

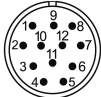



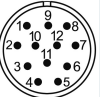
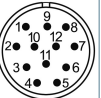
S3 radial, 7-pin, Connector connected to encoder housing

-

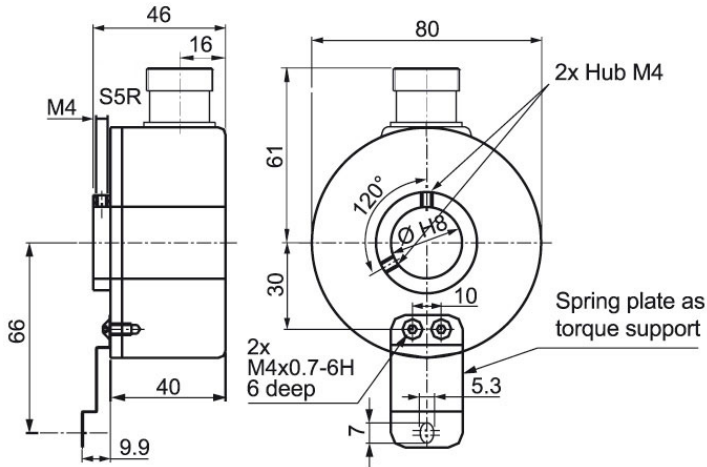
Assignments		
	S3	S3
	7-pin	7-pin
		
<b>Circuit</b>	G05, G24	H05, H24, H30
<b>GND</b>	1	1
<b>(+) Vcc</b>	2	2
<b>A</b>	3	3
<b>B</b>	4	4
<b>N</b>	5	5
<b>Light reserve warning</b>	6	-
<b>A inv.</b>	-	-
<b>B inv.</b>	-	-
<b>N inv.</b>	-	-
<b>n. c.</b>	7	6, 7
<b>Shield</b>	-	-

**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)**

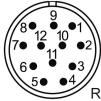
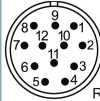
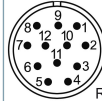
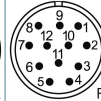
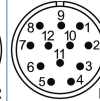
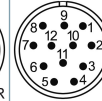


**Description**

ABN inv. poss.

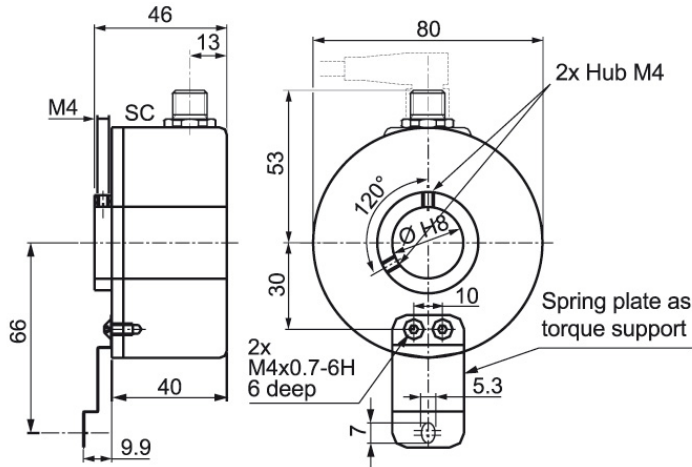
**S5R** radial, 12-pin, Connector connected to encoder housing

•

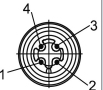
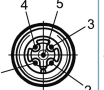

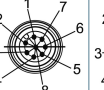
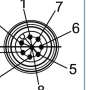
Assignments						
	S5R	S5R	S5R	S5R	S5R	S5R
	12-pin	12-pin	12-pin	12-pin	12-pin	12-pin
						
<b>Circuit</b>	G05, G24	H05, H24, H30	I05, I24, 524	R05, R24, 245, R30	SIN	SIF
<b>GND</b>	10	10	10	10	10	10
<b>(+) Vcc</b>	12	12	12	12	12	12
<b>A</b>	5	5	5	5	5	5
<b>B</b>	8	8	8	8	8	8
<b>N</b>	3	3	3	3	3	3
<b>Light 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; 14; 15; 16; 18; 20; 25; 27				
	<b>Pulses per revolution PPR:</b>				
1024	50, 100, 250, 500, 720, 1000, 1024, 1920, 2048, 2500, 3840 1 Vpp 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>	
	Low temperature			ACA	
	Without option			Empty	
	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.  
<https://www.wachendorff-automation.com/>



Wachendorff Automation GmbH & Co. KG  
Industriestrasse 7 • 65366 Geisenheim  
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E-Mail: [wdg@wachendorff.de](mailto:wdg@wachendorff.de)  
[www.wachendorff-automation.de](http://www.wachendorff-automation.de)

