WACHENDORFF
The Encoder Experts

Online Data sheet

Encoder WDG 80H

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

IndustrieROBUST

Encoder WDG 80H

Illustration similar

- 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

Resolution	
Pulses per revolution PPR	up to 3840 PPR

Mechanical Data	
Flange	hollow shaft (through-bored)
Flange material	aluminum
Housing material	aluminum, powder coated
Torque supports	incl. 1 torque support WDGDS10001
- 1. Spring plate compensation	axial: ±0.8 mm [0.0315"], radial: ±0.2 mm [0.0079"]
Flange diameter	Ø 80 mm [Ø 3.15"]

Shaft(s)	
Shaft material	stainless steel
Starting torque	approx. 6 Ncm [8.497 in-ozf] at ambient temperature
Fixing	2 x M4, DIN 913; Starting torque: 2,5 Nm

Shaft	Ø 10 mm [Ø 0.394"]
Shaft length	L: 46 mm [1.811"]
Insertion depth min.	14 mm [0.551"]
Max. Permissible shaft loading radial	200 N [20.394 kp]
Max. Permissible shaft loading axial	100 N [10.197 kp]

Shaft	Ø 12 mm [Ø 0.472"]
Shaft length	L: 46 mm [1.811"]
Insertion depth min.	14 mm [0.551"]
Max. Permissible shaft loading radial	200 N [20.394 kp]
Max. Permissible shaft loading axial	100 N [10.197 kp]

Shaft	Ø 14 mm [Ø 0.551"]
Shaft length	L: 46 mm [1.811"]
Insertion depth min.	14 mm [0.551"]
Max. Permissible shaft loading radial	200 N [20.394 kp]
Max. Permissible shaft loading axial	100 N [10.197 kp]

Shaft	Ø 15 mm [Ø 0.591"]
Shaft length	L: 46 mm [1.811"]
Insertion depth min.	14 mm [0.551"]
Max. Permissible shaft loading radial	200 N [20.394 kp]
Max. Permissible shaft loading axial	100 N [10.197 kp]

Shaft	Ø 16 mm [Ø 0.63"]
Shaft length	L: 46 mm [1.811"]
Insertion depth min.	14 mm [0.551"]
Max. Permissible shaft loading radial	200 N [20.394 kp]
Max. Permissible shaft loading axial	100 N [10.197 kp]

Shaft	Ø 18 mm [Ø 0.709"]
Shaft length	L: 46 mm [1.811"]
Insertion depth min.	14 mm [0.551"]
Max. Permissible shaft loading radial	200 N [20.394 kp]
Max. Permissible shaft loading axial	100 N [10.197 kp]

Shaft	Ø 20 mm [Ø 0.787"]
Shaft length	L: 46 mm [1.811"]
Insertion depth min.	14 mm [0.551"]
Max. Permissible shaft loading radial	200 N [20.394 kp]
Max. Permissible shaft loading axial	100 N [10.197 kp]

Shaft	Ø 25 mm [Ø 0.984"]
Shaft length	L: 46 mm [1.811"]
Insertion depth min.	14 mm [0.551"]
Max. Permissible shaft loading radial	200 N [20.394 kp]
Max. Permissible shaft loading axial	100 N [10.197 kp]

Shaft	Ø 27 mm [Ø 1.063"]
Shaft length	L: 46 mm [1.811"]
Insertion depth min.	14 mm [0.551"]
Max. Permissible shaft loading radial	200 N [20.394 kp]
Max. Permissible shaft loading axial	100 N [10.197 kp]

Bearings	
Bearings type	2 precision ball bearings
Nominale service life	3 x 10'10 revs. at 100 % rated shaft load 1 x 10'11 revs. at 40 % rated shaft load 1 x 10'12 revs. at 20 % rated shaft load
Max. operating speed	3500 rpm

Machinery Directive: basic data safety integrity level	
$MTTF_d$	200 a
Mission time (TM)	25 a
Nominale service life (L10h)	1 x 10'12 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. 70 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
Operating principle	optical
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 H24 and R24 only

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

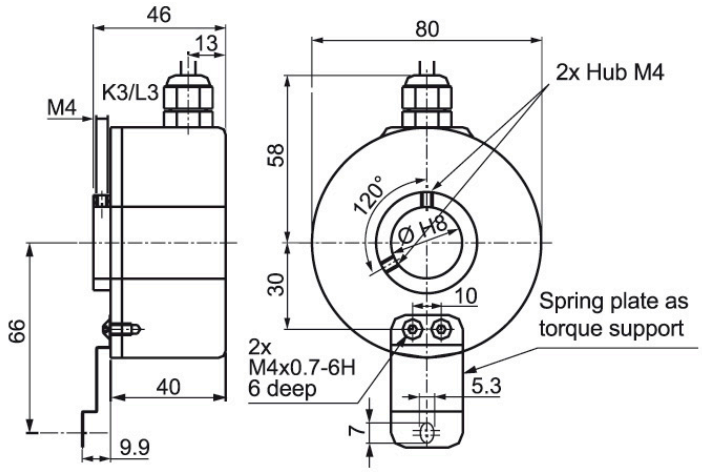
Environmental data	
ESD (DIN EN 61000-4-2):	8 kV
Burst (DIN EN 61000-4-4):	2 kV
includes EMC:	DIN EN 61000-6-2 DIN EN 61000-6-3
Vibration: (DIN EN 60068-2-6)	50 m/s^2 (10 Hz up to 2000 Hz)
Shock: (DIN EN 60068-2-27)	1000 m/s^2 (6 ms)
Electrial Safety:	according DIN VDE 0160

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

General Data	
Weight	approx. 600 g [21.164 oz]
Connections	cable or connector, radial
Protection rating (EN 60529)	IP65 all around
Operating temperature	-20 °C up to +80 °C [-4 °F up to +176 °F] 1 Vpp: -10 °C up to +70 °C [+14 °F up to +158 °F]
Storage temperature	-30 °C up to +80 °C [-22 °F up to 176 °F]

More Information
General technical data and safety instructions **http://www.wachendorff-automation.com/gtd**
Options **http://www.wachendorff-automation.com/acc**

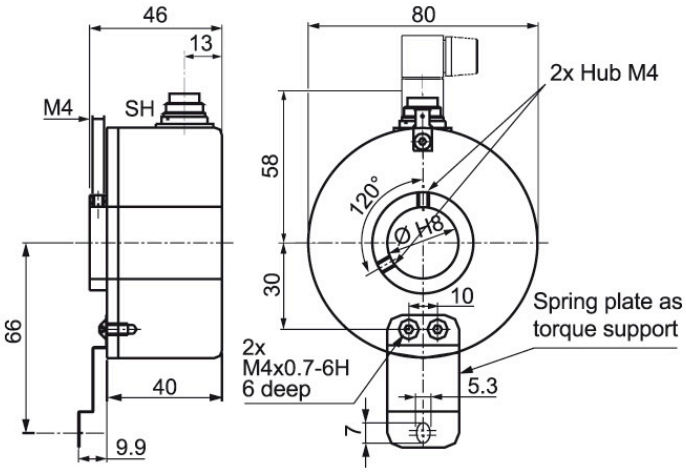
Cable connection K3, L3 with 2 m cable



Description		ABN inv. poss.
K3	radial, shield not connected	•
L3	radial, shield connected to encoder housing	•

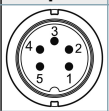
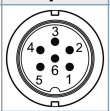
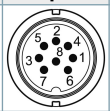
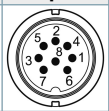
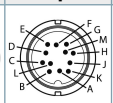
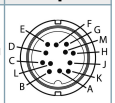
Assignments			
	K3, L3	**K3, L3**	**L3**
Circuit	H05, H24, H30	R05, R24, 245, R30	SIN
GND	WH	WH	WH
(+) Vcc	BN	BN	BN
A	GN	GN	GN
B	YE	YE	GY
N	GY	GY	BK
-	-	-	-
A inv.	-	RD	YE
B inv.	-	BK, (BU at ACA)	PK
N inv.	-	VT	VT
Shield	flex	flex	flex

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

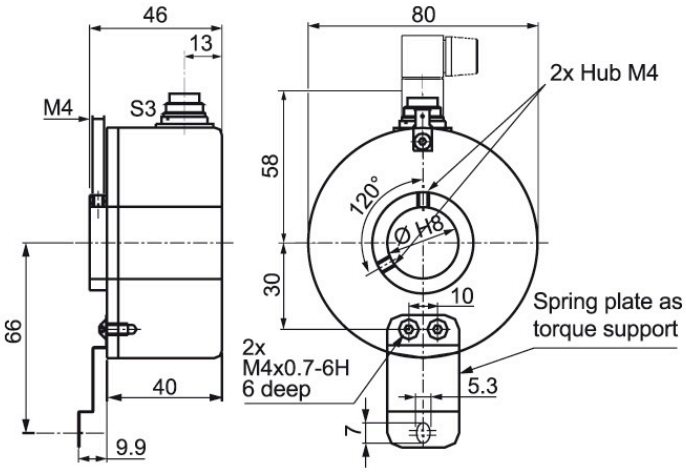


Description		ABN inv. poss.
SH5	radial, 5-pin, Connector connected to encoder housing	-
SH6	radial, 6-pin, Connector connected to encoder housing	-
SH8	radial, 8-pin, Connector connected to encoder housing	•
SH12	radial, 12-pin, Connector connected to encoder housing	•

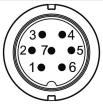
Assignments

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

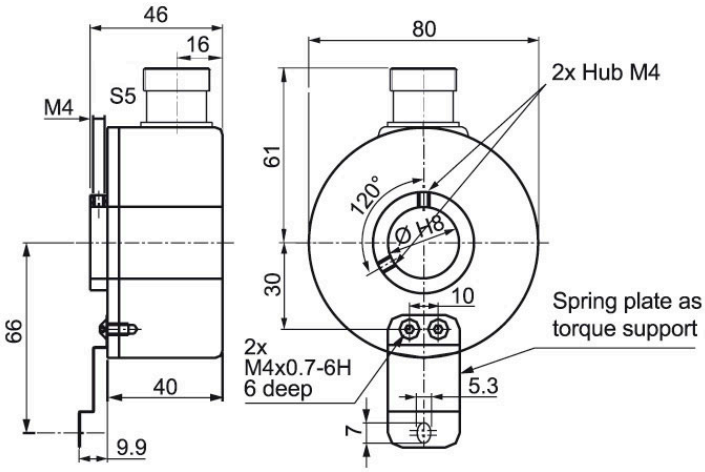
Connector (M16x0.75) S3, 7-pin



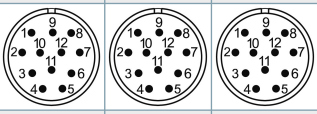
Description		ABN inv. poss.
S3	radial, 7-pin, Connector connected to encoder housing	-

Assignments	
	S3
	7-pin
	
Circuit	H05, H24, H30
GND	1
(+) Vcc	2
A	3
B	4
N	5
-	-
A inv.	-
B inv.	-
N inv.	-
n. c.	6, 7
Shield	-

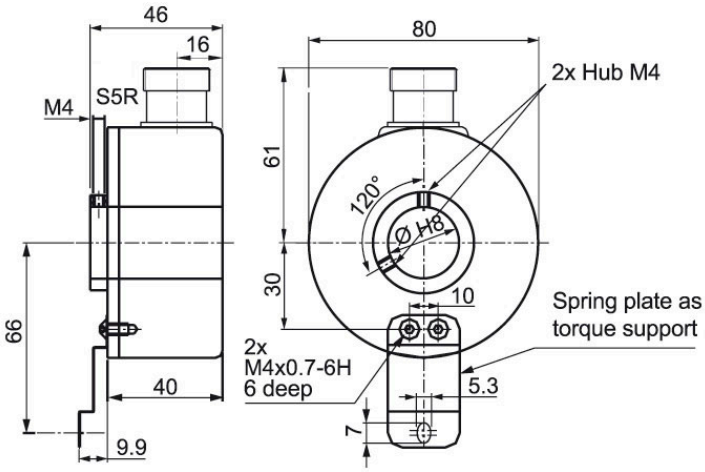
Connector (M23) S5, 12-pin



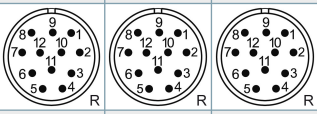
Description		ABN inv. poss.
S5	radial, 12-pin, Connector connected to encoder housing	•

Assignments			
	S5	**S5**	**S5**
	12-pin	**12-pin**	**12-pin**
			
Circuit	H05, H24, H30	R05, R24, 245, R30	SIN
GND	10	10	10
(+) Vcc	12	12	12
A	5	5	5
B	8	8	8
N	3	3	3
-	-	-	-
A inv.	-	6	6
B inv.	-	1	1
N inv.	-	4	4
n. c.	1, 2, 4, 6, 7, 9, 11	2, 7, 9, 11	2, 7, 9, 11
Shield	-	-	-

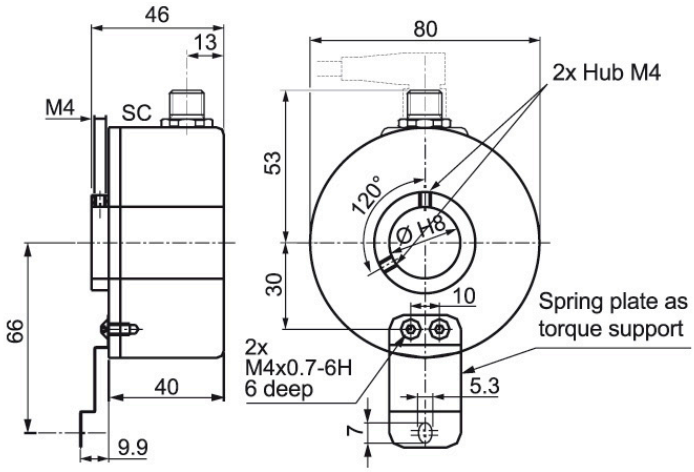
Connector (M23) S5R, 12-pin (clockwise)



Description		ABN inv. poss.
S5R	radial, 12-pin, Connector connected to encoder housing	•

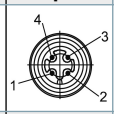
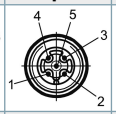
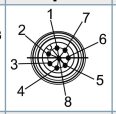
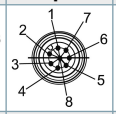
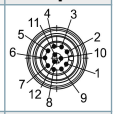
Assignments			
	S5R	**S5R**	**S5R**
	12-pin	**12-pin**	**12-pin**
			
Circuit	H05, H24, H30	R05, R24, 245, R30	SIN
GND	10	10	10
(+) Vcc	12	12	12
A	5	5	5
B	8	8	8
N	3	3	3
-	-	-	-
A inv.	-	6	6
B inv.	-	1	1
N inv.	-	4	4
n. c.	1, 2, 4, 6, 7, 9, 11	2, 7, 9, 11	2, 7, 9, 11
Shield	-	-	-

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



Description		ABN inv. poss.
SC4	radial, 4-pin, Connector connected to encoder housing	-
SC5	radial, 5-pin, Connector connected to encoder housing	-
SC8	radial, 8-pin, Connector connected to encoder housing	•
SC12	radial, 12-pin, Connector connected to encoder housing	•

Assignments

	SC4	SC5	SC8	SC8	SC12
	4-pin	5-pin	8-pin	8-pin	12-pin
					
Circuit	H05, H24, H30	H05, H24, H30	R05, R24, R30, 245	SIN	R05, R24, 245, R30
GND	3	3	1	1	3
(+) Vcc	1	1	2	2	1
A	2	4	3	3	4
B	4	2	4	5	6
N	-	5	5	7	8
-	-	-	-	-	-
A inv.	-	-	6	4	9
B inv.	-	-	7	6	7
N inv.	-	-	8	8	10
n. c.	-	-	-	-	2, 5, 11, 12
Shield	-	-	-	-	-

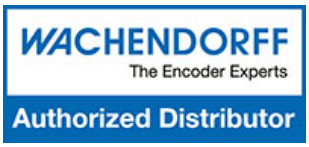
Options

Low temperature	Order key
The encoder WDG 80H with the output circuit types 245, H05, H24, R05, 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).	**ACA**

Cable length	Order key
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 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	**XXX = Decimeter**

Example Order No.	Type						Your encoder
WDG 80H	WDG 80H						WDG 80H
	Bore size						
25	10; 12; 14; 15; 16; 18; 20; 25; 27						
	Pulses per revolution PPR:						
1024	50, 100, 250, 500, 720, 1000, 1024, 2048, 2500, 3840 1 Vpp Sin/Cos only 1024 Other PPRs on request						
	Channels:						
ABN	AB, ABN						
	Output circuit						
H24	**Resolution PPR**	**Power supply VDC**	**Output circuit**		**-**	**Order key**	
	up to 2500	5 - 30	HTL (TTL at 5 VDC)		-	H30	
		5 - 30	HTL, inv. (TTL/RS422 comp. at 5 VDC)		-	R30	
	up to 3840	4.75 - 5.5	TTL		-	H05	
		4.75 - 5.5	TTL, RS422 comp., inverted		-	R05	
		10 - 30	HTL		-	H24	
		10 - 30	HTL inverted		-	R24	
		10 - 30	TTL, RS422 comp., inverted		-	245	
	1024	4.75 - 5.5	1 Vpp sin/cos		-	SIN	
	Electrical connections						
K3	**Description**				**ABN inv. poss.**	**Order key**	
	Cable: length (2 m standard, WDG 58T: 1 m)						
	radial, shield not connected				•	K3	
	radial, shield connected to encoder housing				•	L3	
	Connector: (shield connected to encoder housing)						
	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	
	sensor-connector, M12x1, 12-pin, radial				•	SC12	
	Options						
	Description				**Order key**		
	Low temperature				ACA		
	Without option				Empty		
	Cable length				XXX = Decimeter		

Example Order No.=	WDG 80H	25	1024	ABN	H24	K3		WDG 80H							Your encoder



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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