

Encoder WDG 100H

www.wachendorff-automation.com/wdg100h

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- Maximum permissible loads
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IndustrieROBUST

Encoder WDG 100H



- Rugged and extremely thin thru-bore encoder for extension on power motors
- Thru-Bore, bore size max. 45 mm
- Full connection protection with 10 VDC up to 30 VDC
- Easy mounting
- Meets protection class IP54
- Up to 20,480 PPR
- Optional: -40 °C up to +80 °C
  Protection to IP55 all around

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Resolution	
Pulses per revolution PPR	up to 20480 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 100 mm

Shaft(s)	
Shaft material	stainless steel
Starting torque	approx. 1.5 Ncm at ambient temperature
Fixing	2 x M4, DIN 913; Starting torque: 2,5 Nm

Shaft	Ø 25 mm
Shaft length	L: 42 mm
Max. Permissible shaft loading radial	200 N
Max. Permissible shaft loading axial	100 N

Shaft	Ø 25.4 mm, Ø 1"
Shaft length	L: 42 mm, L: 1.65 in
Max. Permissible shaft loading radial	200 N, 20.39 kp
Max. Permissible shaft loading axial	100 N, 10.197 kp

Shaft	Ø 28 mm
Shaft length	L: 42 mm
Max. Permissible shaft loading radial	200 N
Max. Permissible shaft loading axial	100 N

Shaft	Ø 30 mm
Shaft length	L: 42 mm
Max. Permissible shaft loading radial	200 N
Max. Permissible shaft loading axial	100 N

Shaft	Ø 32 mm
Shaft length	L: 42 mm
Max. Permissible shaft loading radial	200 N
Max. Permissible shaft loading axial	100 N

Shaft	Ø 35 mm
Shaft length	L: 42 mm
Max. Permissible shaft loading radial	200 N
Max. Permissible shaft loading axial	100 N

Shaft	Ø 36 mm
Shaft length	L: 42 mm
Max. Permissible shaft loading radial	200 N
Max. Permissible shaft loading axial	100 N

Shaft	Ø 38 mm
Shaft length	L: 42 mm
Max. Permissible shaft loading radial	200 N
Max. Permissible shaft loading axial	100 N

Shaft	Ø 40 mm
Shaft length	L: 42 mm
Max. Permissible shaft loading radial	200 N
Max. Permissible shaft loading axial	100 N

Shaft	Ø 42 mm
Shaft length	L: 42 mm
Max. Permissible shaft loading radial	200 N
Max. Permissible shaft loading axial	100 N

Shaft	Ø 45 mm
Shaft length	L: 42 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 10'10 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 %

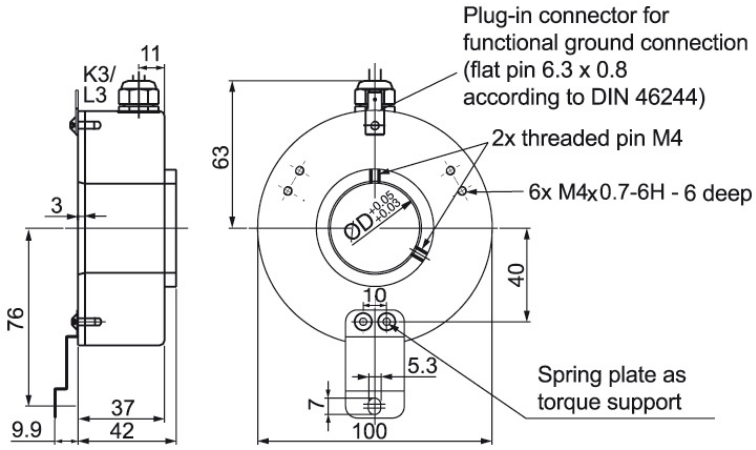
Electrical Data	
Power supply/Current consumption	4,75 VDC up to 5,5 VDC: typ. 100 mA
Power supply/Current consumption	5 VDC up to 30 VDC: typ. 70 mA
Power supply/Current consumption	10 VDC up to 30 VDC: typ. 100 mA
Output circuit	TTL TTL, RS422 compatible, inv. HTL HTL, inv. 1 Vpp sin/cos
Pulse frequency	TTL ≤ 5000 ppr: max. 200 kHz HTL ≤ 5000 ppr: max. 200 kHz TTL more than 1200 ppr: max. 2 MHz HTL more than 1200 ppr: max. 600 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	≤5000 ppr: 50 % ± max. 7 % Output circuits F24, P24, F05, P05, 645: 50 % ± max. 10 %

General Data	
Weight	approx. 720 g
Connections	cable or connector, radial
Protection rating (EN 60529)	IP54
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**

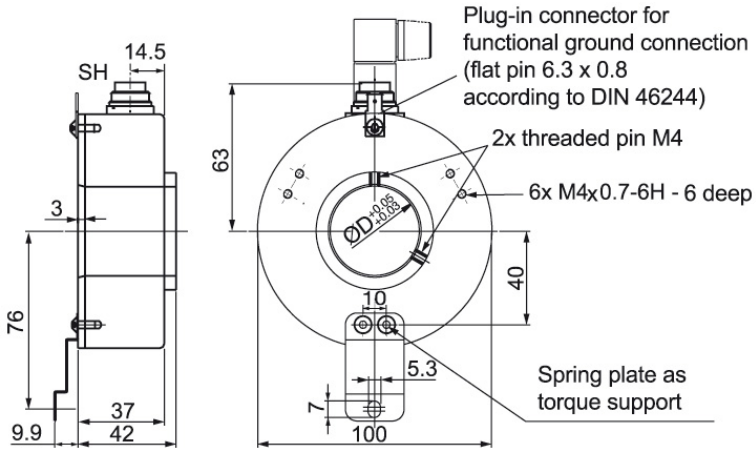
Cable connection K3, L3 with 2 m cable



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

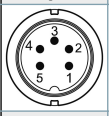
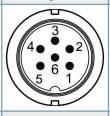
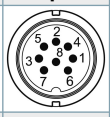
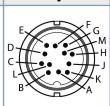
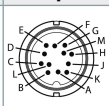
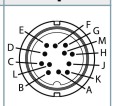
Assignments				
	K3, L3	**K3, L3**	**L3**	**L3**
Circuit	F05, H05, F24, H24, H30	P05, R05, P24, R24, 245, 645, R30	SIN	SIF
GND	WH	WH	WH	WH
(+) Vcc	BN	BN	BN	BN
A	GN	GN	GN	GN
B	YE	YE	GY	GY
N	GY	GY	BK	BK
Light reserve warning	-	-	-	RD
A inv.	-	RD	YE	YE
B inv.	-	BK, (BU at ACA)	PK	PK
N inv.	-	VT	VT	VT
Shield	flex	flex	flex	flex

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

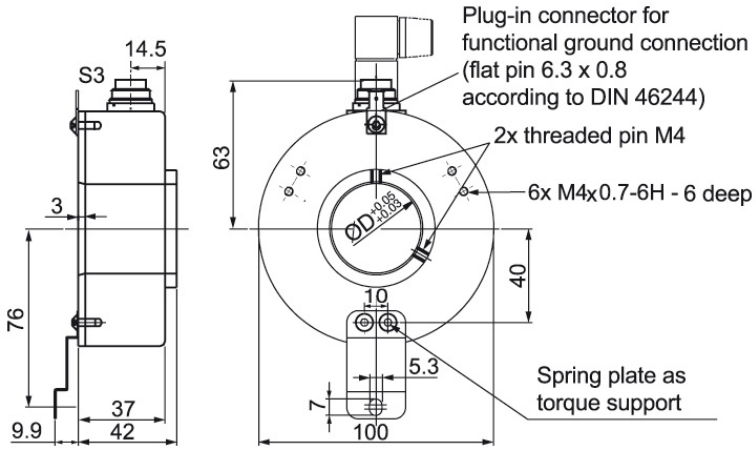


Description		ABN inv. poss.
SH5	radial, 5-pin, Connector connected to encoder housing	-
SH6	radial, 6-pin, Connector connected to encoder housing	-
SH8	radial, 8-pin, Connector connected to encoder housing	•
SH12	radial, 12-pin, Connector connected to encoder housing	•

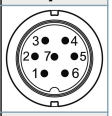
Assignments

	SH5	SH6	SH8	SH8	SH8	SH12	SH12	SH12
	5-pin	6-pin	8-pin	8-pin	8-pin	12-pin	12-pin	12-pin
								
Circuit	F05, H05, F24, H24, H30	F05, H05, F24, H24, H30	F05, H05, F24, H24, H30	P05, R05, P24, R24, R30, 245, 645	SIN	P05, R05, P24, R24, 245, 645, R30	F05, H05, F24, H24, H30	SIN
GND	1	6	1	1	1	K, L	K, L	K, L
(+) Vcc	2	1	2	2	2	M, B	M, B	M, B
A	3	2	3	3	3	E	E	E
B	4	4	4	4	4	H	H	H
N	5	3	5	5	5	C	C	C
Light reserve warning	-	-	-	-	-	-	-	-
A inv.	-	-	-	6	6	F	-	F
B inv.	-	-	-	7	7	A	-	A
N inv.	-	-	-	8	8	D	-	D
n. c.	-	5	6, 7, 8	-	-	G, J	A, D, F, G, J	G, J
Shield	-	-	-	-	-	-	-	-

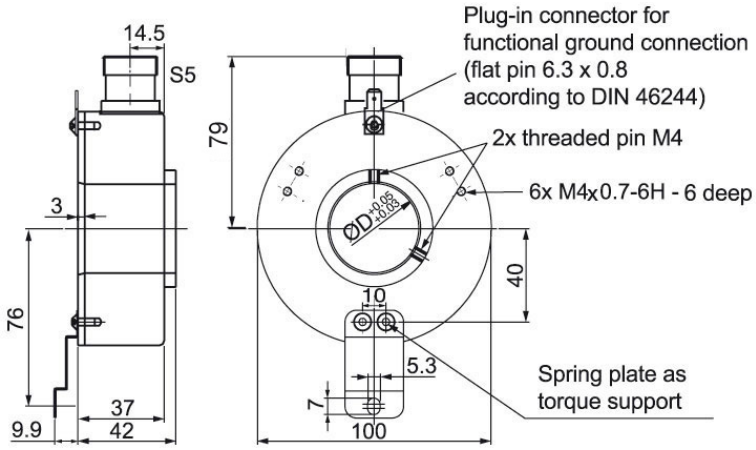
Connector (M16x0.75) S3, 7-pin



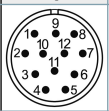
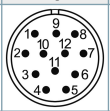
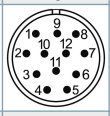
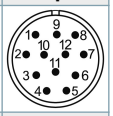
Description		ABN inv. poss.
S3	radial, 7-pin, Connector connected to encoder housing	-

Assignments	
	S3
	7-pin
	
Circuit	F05, H05, F24, H24, H30
GND	1
(+) Vcc	2
A	3
B	4
N	5
Light reserve warning	-
A inv.	-
B inv.	-
N inv.	-
n. c.	6, 7
Shield	-

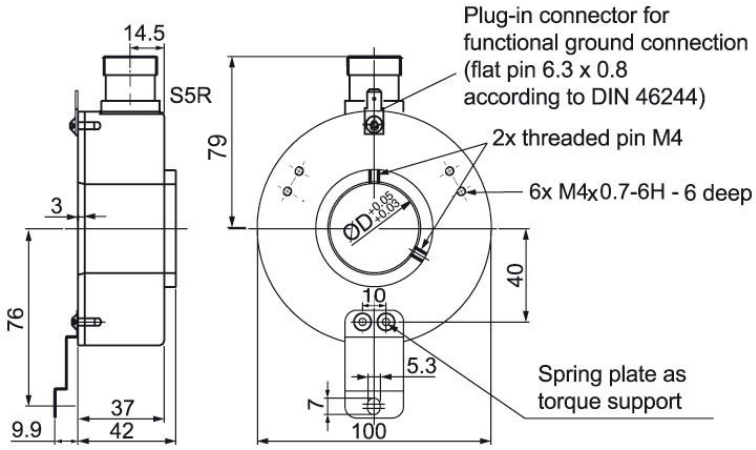
Connector (M23) S5, 12-pin



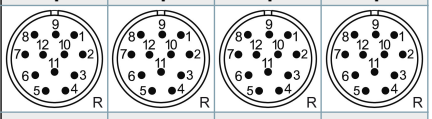
Description		ABN inv. poss.
S5	radial, 12-pin, Connector connected to encoder housing	•

Assignments				
	S5	**S5**	**S5**	**S5**
	12-pin	**12-pin**	**12-pin**	**12-pin**
				
Circuit	F05, H05, F24, H24, H30	P05, R05, P24, R24, 245, 645, R30	SIN	SIF
GND	10	10	10	10
(+) Vcc	12	12	12	12
A	5	5	5	5
B	8	8	8	8
N	3	3	3	3
Light reserve warning	-	-	-	7
A inv.	-	6	6	6
B inv.	-	1	1	1
N inv.	-	4	4	4
n. c.	1, 2, 4, 6, 7, 9, 11	2, 7, 9, 11	2, 7, 9, 11	2, 9, 11
Shield	-	-	-	-

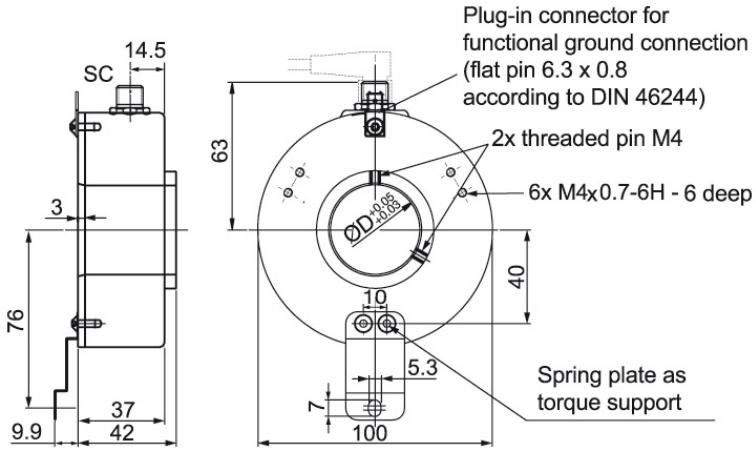
Connector (M23) S5R, 12-pin (clockwise)



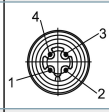
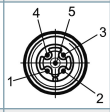
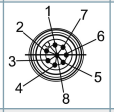
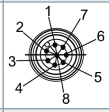
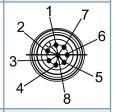
Description		ABN inv. poss.
S5R	radial, 12-pin, Connector connected to encoder housing	•

Assignments				
	S5R	**S5R**	**S5R**	**S5R**
	12-pin	**12-pin**	**12-pin**	**12-pin**
				
Circuit	F05, H05, F24, H24, H30	P05, R05, P24, R24, 245, 645, R30	SIN	SIF
GND	10	10	10	10
(+) Vcc	12	12	12	12
A	5	5	5	5
B	8	8	8	8
N	3	3	3	3
Light reserve warning	-	-	-	7
A inv.	-	6	6	6
B inv.	-	1	1	1
N inv.	-	4	4	4
n. c.	1, 2, 4, 6, 7, 9, 11	2, 7, 9, 11	2, 7, 9, 11	2, 9, 11
Shield	-	-	-	-

Sensor-connector (M12x1) SC, 4-, 5-, 8-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	•

Assignments					
	SC4	**SC5**	**SC8**	**SC8**	**SC8**
	4-pin	**5-pin**	**8-pin**	**8-pin**	**8-pin**
					
Circuit	F05, H05, F24, H24, H30	F05, H05, F24, H24, H30	F05, H05, F24, H24, H30	P05, R05, P24, R24, R30, 245, 645	SIN
GND	3	3	1	1	1
(+) Vcc	1	1	2	2	2
A	2	4	3	3	3
B	4	2	4	4	5
N	-	5	5	5	7
Light reserve warning	-	-	-	-	-
A inv.	-	-	-	6	4
B inv.	-	-	-	7	6
N inv.	-	-	-	8	8
n. c.	-	-	6, 7, 8	-	-
Shield	-	-	-	-	-

Options

Low temperature	Order key
The encoder WDG 100H with the output circuit types F24, H24, P24, R24, F05, H05, P05, R05, 245, 645 is also available with the extended temperature range -40 °C up to +80 °C (measured at the flange).	**ACA**

IP55 all around (not 1 Vpp Sin/Cos)	Order key
The encoder WDG 100H can be supplied in a full IP55 version. Max. RPM: 1500 rpm Permitted Shaft-Loading, axial: 100 N, 12.237 kp Permitted Shaft-Loading, radial: 120 N, 22.434 kp Max. PPR: 5000 ppr Starting-torque: approx. 5 Ncm at ambient temperature, approx. 1.416 in-ozf at ambient temperature	**ACP**

Cable length	Order key
The encoder WDG 100H 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 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 100H	WDG 100H	WDG 100H

	Bore size	
25	25; 1Z= Ø 25.4 mm,Ø 1"; 28; 30; 32; 35; 36; 38; 40; 42; 45	

	Pulses per revolution PPR:	
1024	512, 1024, 2048, 2500, 3600, 4096, 4500, 5000, 8192, 10240, 16384, 20480 1 Vpp Sin/Cos only 1024, 2048 Other PPRs on request	

	Channels:	
ABN	AB, ABN	

	Output circuit					
	Resolution PPR	**Power supply VDC**	**Output circuit**	**Light reserve warning**	**Order key**	
H24	up to 2500	5 - 30	HTL	-	H30	
		5 - 30	HTL inverted	-	R30	
	up to 5000	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	
	8192 up to 20480	4.75 - 5.5	TTL	-	F05	
		4.75 - 5.5	TTL, RS422 comp., inverted	-	P05	
		10 - 30	HTL	-	F24	
		10 - 30	HTL inverted	-	P24	
		10 - 30	TTL, RS422 comp., inverted	-	645	
	1024, 2048	4.75 - 5.5	1 Vpp sin/cos	•	SIF	
		4.75 - 5.5	1 Vpp sin/cos	-	SIN	

	Electrical connections			
	Description	**ABN inv. poss.**	**Order key**	
K3	**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	

	Options		
	Description	**Order key**	
	Low temperature	ACA	
	IP55	ACP	
	Without option	Empty	
	Cable length	XXX = Decimeter	

Example Order No.=	WDG 100H	25	1024	ABN	H24	K3		WDG 100H							Your encoder

For further information please contact our local distributor.
Here you find a list of our distributors worldwide.
https://www.wachendorff-automation.com/

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