

Online Data Sheet

Encoder WDG 100I

www.wachendorff-automation.com/wdg100i

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 100I



- Rugged and extremely thin thru-bore encoder for extension on power motors
- Thru-Bore, bore size max. 42 mm
- Balanced stainless steel clamping ring for smooth running
- Insulating sleeve to protect the bearings from currents
- 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

www.wachendorff-automation.com/wdg100i

Resolution	
Max. pulses per revolution PPR	up to 20480 PPR
Mechanical Data	
Housing	
Flange	hollow shaft (through-bored)
Flange material	aluminium
Housing cap	aluminium, powder coated
Torque supports	incl. 1 torque support WDGDS10012
- 1. Spring plate compensation	axial: ±0.8 mm, radial: ±0.2 mm
Housing	Ø 100 mm
Shaft(s)	
Shaft material	stainless steel, (insulation sleeve: POM-C)
Starting torque	approx. 1.5 Ncm at ambient temperature
Fixing	clamping screw M4 with hexagon socket
Shaft	Ø 30 mm
Advice	with insulating sleeve
Shaft length	L: 48.8 mm
Max. Permissible shaft loading radial	200 N
Max. Permissible shaft loading axial	100 N
Shaft	Ø 38 mm
Advice	with insulating sleeve
Shaft length	L: 48.8 mm
Max. Permissible shaft loading radial	200 N
Max. Permissible shaft loading axial	100 N
Shaft	Ø 42 mm
Advice	with insulating sleeve
Shaft length	L: 48.8 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: 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. 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
Electric strength (DIN EN 60243-2)	Insulating sleeve: 500 V
Accuracy	
Phase offset	90° ± max. 7.5 % of the pulse length
pulse-/pause-ratio	5000 ppr: 50 % ± max. 7 % >5000 ppr: 50 % ± max. 10 %

General Data

Weight	approx. 900 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

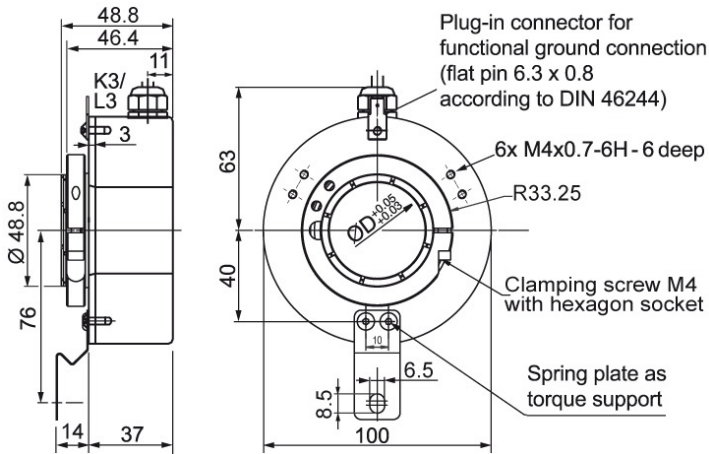
General technical data

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

Options

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

Cable connection K3, L3 with 2 m cable

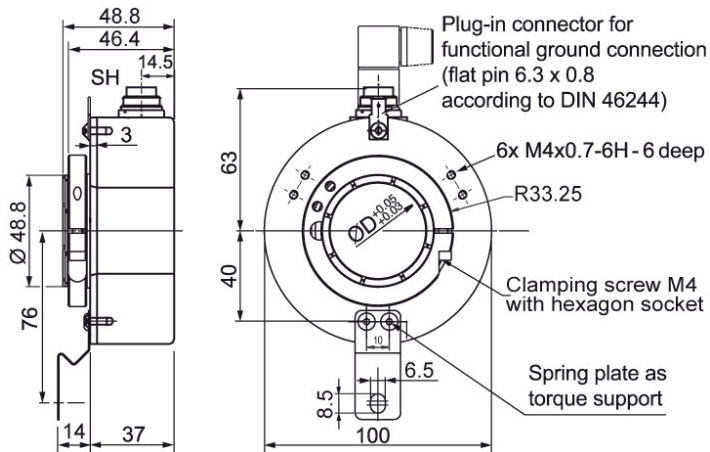


Description

ABN inv. poss.

K3	radial, shield not connected	•
L3	radial, shield connected to encoder housing	•

Assignments				
	K3, L3	K3, L3	K3, L3	K3, 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

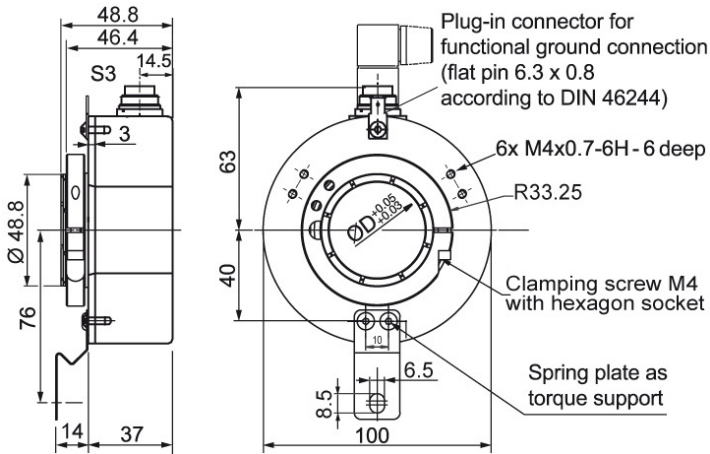
Connector (M16x0.75) SH, 5-, 6-, 8-, 12-pin

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 5-pin	SH6 6-pin	SH8 8-pin	SH8 8-pin	SH8 8-pin	SH12 12-pin	SH12 12-pin	SH12 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

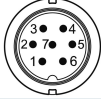


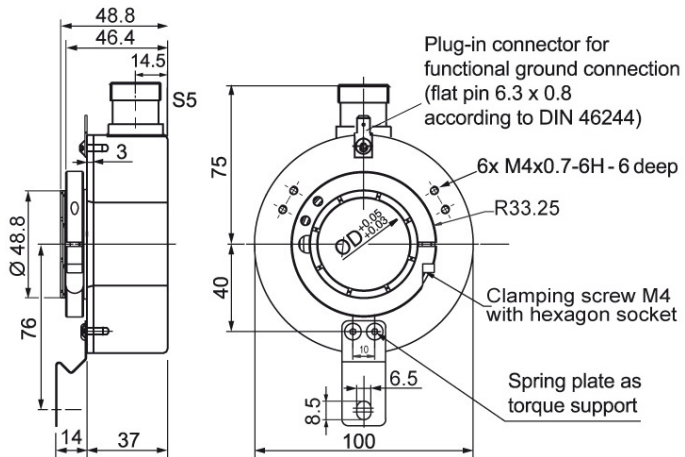
Description

ABN inv. poss.





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

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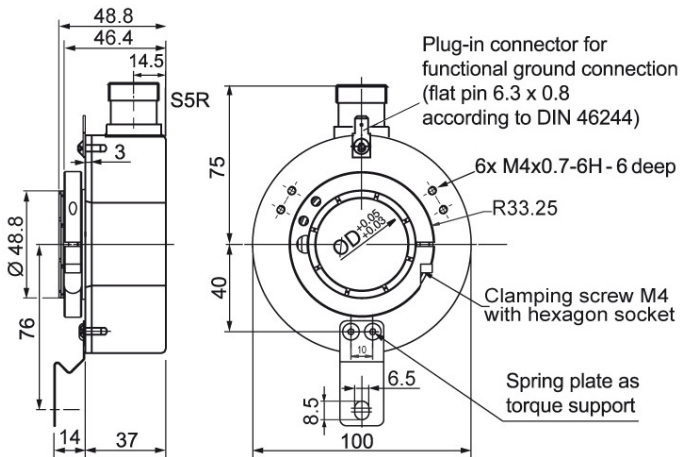
Assignments	
	S3
	7-pin
	
Circuit	F05, H05, F24, H24, H30
GND	1
(+) Vcc	2
A	3
B	4
N	5
Light reserve warning	-
A inv.	-
B inv.	-
N inv.	-
n. c.	6, 7
Shield	-

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)

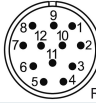
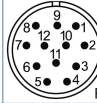
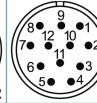
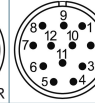


Description

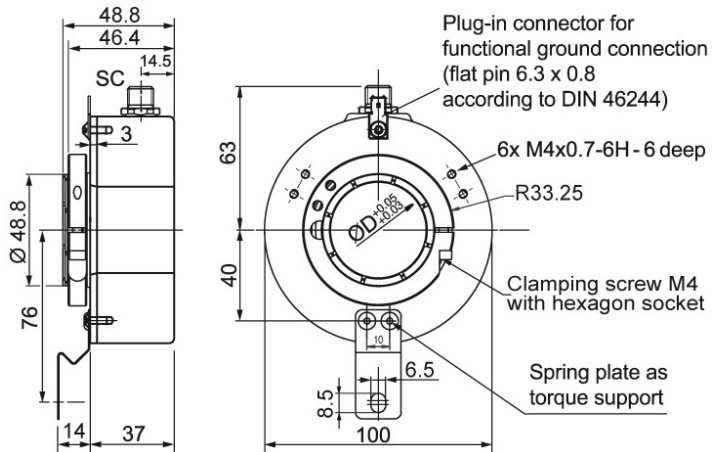
ABN inv. poss.

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

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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	-	-	-	-

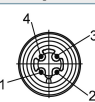




Sensor-connector (M12x1) SC, 4-, 5-, 8-pin



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

The encoder WDG 100I 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).

Order key

ACA

Cable length

The encoder WDG 100I 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

Order key

XXX = Decimeter

IP55 all around (not 1 Vss Sin/Cos)

The encoder WDG 100I can be supplied in a full IP55 version.

Order key

ACP

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

Example Order No.	Type					Your encoder
WDG 100I	WDG 100I					WDG 100I
	Bore size					
38	30; 38; 42					
	Pulses per revolution PPR:					
1024	512, 1000, 1024, 2048, 2500, 3600, 4096, 4500, 5000, 8192, 10240, 16384, 20480 1 Vss Sin/Cos only 1024, 2048 Other PPRs on request					
	Channels:					
ABN	AB, ABN					
	Output circuit					
H24	Resolution PPR	Power supply VDC	Output circuit	Light reserve warning	Order key	
	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	
	8192 up to 20480	10 - 30	TTL, RS422 comp., inverted	-	245	
		4.75 - 5.5	TTL	-	F05	
		4.75 - 5.5	TTL, RS422 comp., inverted	-	P05	
		10 - 30	HTL	-	F24	
	1024, 2048	10 - 30	HTL inverted	-	P24	
		10 - 30	TTL, RS422 comp., inverted	-	645	
		4.75 - 5.5	1 Vpp sin/cos	•	SIF	
	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		
	Options					
	Description			Order key		
	Without option			Empty		
	Low temperature			ACA		
	IP55			ACP		
	Cable length			XXX = Decimeter		

Example Order No.=	WDG 100I	38	1024	ABN	H24	K3		WDG 100I						Your encoder
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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



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