

Online Data Sheet

Encoder WDGI 58B

www.wachendorff-automation.com/wdgi58b

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 WDGI 58B



- Rugged industrial standard encoder
- Housing cap die cast aluminum, with particularly eco-friendly powder coating
- Up to 25000 PPR by use of high grad electronics
- Protection to IP67, shaft sealed to IP65
- Maximum mechanical and electrical safety
- Full connection protection with 10 VDC up to 30 VDC
- High output frequency 600 kHz/2 MHz
- Optional:
 - 40 °C up to +85 °C,
 - Protection to IP67 all around,
 - Pressure equalising membrane

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Resolution

Max. pulses per revolution up to 25000 PPR
PPR

Mechanical Data

Housing

Flange	clamping flange
Flange material	aluminum
Housing cap	die cast aluminum, powder coated
Housing	Ø 58 mm
Cam mounting	pitch 69 mm

Shaft(s)

Shaft material	stainless steel
Starting torque	approx. 1 Ncm at ambient temperature

Shaft	Ø 10 mm
Shaft length	L: 20 mm
Max. Permissible shaft loading radial	220 N
Max. Permissible shaft loading axial	120 N

Advice	Ø 7 mm / Ø 8 mm / Ø 12 mm on request
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Bearings

Bearings type	2 precision ball bearings
Nominal service life	1 x 10 ⁹ revs. at 100 % rated shaft load 1 x 10 ¹⁰ revs. at 40 % rated shaft load 1 x 10 ¹¹ revs. at 20 % rated shaft load
Max. operating speed	8000 rpm

Machinery Directive: basic data safety integrity level

MTTF _d	200 a
Mission time (TM)	25 a
Nominal service life (L10h)	1 x 10 ¹¹ revs. at 20 % rated shaft load and 8000 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	10 VDC up to 30 VDC, HTL only

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

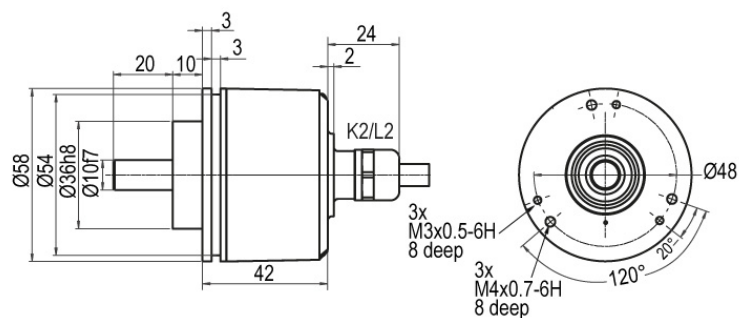
Weight	approx. 250 g
Connections	cable or connector outlet
Protection rating (EN 60529)	IP67, shaft sealed to IP65
Operating temperature	Connector: -20 °C up to +85 °C, cable: -20 °C up to +80 °C, (Option ACA: -40 °C up to +85 °C) 1 Vpp: -10 °C up to +70 °C
Storage temperature	Connector: -30 °C up to +85 °C, cable: -30 °C up to +80 °C, option ACA: -40 °C up to +85 °C

More Information

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

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

WDGI 58B: Cable connection K2, L2, axial, with 2 m cable



Description

ABN inv. poss.

K2 axial, shield not connected

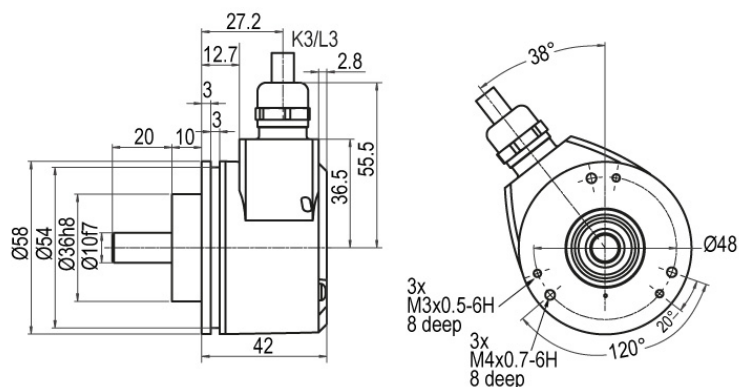
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L2 axial, shield connected to encoder housing

•

Assignments					
	K2, L2	K2, L2	K2, L2	K2, L2	L2
Circuit	G05, G24	F05, H05, F24, H24, H30	I05, I24, 524	P05, R05, P24, R24, 245, 645, R30	SIN
GND	WH	WH	WH	WH	WH
(+) Vcc	BN	BN	BN	BN	BN
A	GN	GN	GN	GN	GN
B	YE	YE	YE	YE	GY
N	GY	GY	GY	GY	-
Light reserve warning	PK	-	PK	-	-
A inv.	-	-	RD	RD	YE
B inv.	-	-	BK, (BU at ACA)	BK, (BU at ACA)	PK
N inv.	-	-	VT	VT	-
Shield	flex	flex	flex	flex	flex

WDGI 58B: Cable connection K3, L3, radial, with 2 m cable

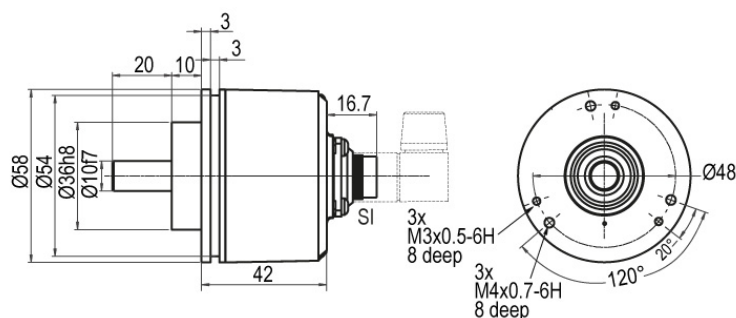


Description

ABN inv. poss.

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

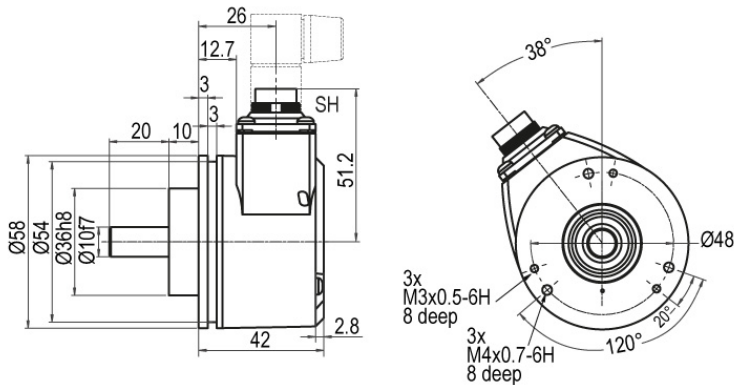
Assignments					
	K3, L3	K3, L3	K3, L3	K3, L3	L3
Circuit	G05, G24	F05, H05, F24, H24, H30	I05, I24, 524	P05, R05, P24, R24, 245, 645, R30	SIN
GND	WH	WH	WH	WH	WH
(+) Vcc	BN	BN	BN	BN	BN
A	GN	GN	GN	GN	GN
B	YE	YE	YE	YE	GY
N	GY	GY	GY	GY	-
Light reserve warning	PK	-	PK	-	-
A inv.	-	-	RD	RD	YE
B inv.	-	-	BK, (BU at ACA)	BK, (BU at ACA)	PK
N inv.	-	-	VT	VT	-
Shield	flex	flex	flex	flex	flex

WDGI 58B: Connector (M16x0.75) SI, axial, 5-, 6-, 8-, 12-pin

Description
ABN inv. poss.

SI5	axial, 5-pin, Connector connected to encoder housing	-
SI6	axial, 6-pin, Connector connected to encoder housing	-
SI8	axial, 8-pin, Connector connected to encoder housing	•
SI12	axial, 12-pin, Connector connected to encoder housing	•

Assignments

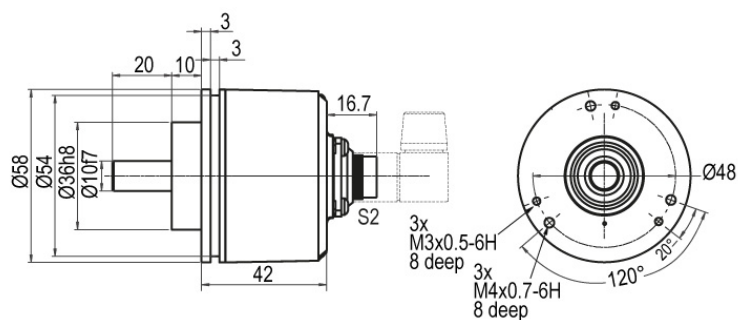
	SI5	SI6	SI6	SI8	SI8	SI8	SI12	SI12	SI12	SI12	SI12
	5-pin	6-pin	6-pin	8-pin	8-pin	8-pin	12-pin	12-pin	12-pin	12-pin	12-pin
Circuit	 F05, H05, F24, H24, H30	 G05, G24	 F05, H05, F24, H24, H30	 F05, H05, F24, H24, H30	 P05, R05, P24, R24, R30, 245, 645	 SIN	 G05, G24	 F05, H05, F24, H24, H30	 I05, I24, 524	 P05, R05, P24, R24, 245, 645, R30	 SIN
GND	1	6	6	1	1	1	K, L	K, L	K, L	K, L	K, L
(+) Vcc	2	1	1	2	2	2	M, B	M, B	M, B	M, B	M, B
A	3	2	2	3	3	3	E	E	E	E	E
B	4	4	4	4	4	4	H	H	H	H	H
N	5	3	3	5	5	-	C	C	C	C	-
Light reserve warning	-	5	-	-	-	-	G	-	G	-	-
A inv.	-	-	-	-	6	6	-	-	F	F	F
B inv.	-	-	-	-	7	7	-	-	A	A	A
N inv.	-	-	-	-	8	-	-	-	D	D	-
n. c.	-	-	5	6, 7, 8	-	5, 8	A, D, F, J	A, D, F, G, J	J	G, J	D, G, J
Shield	-	-	-	-	-	-	-	-	-	-	-

WDGI 58B: Connector (M16x0.75) SH, radial, 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	SH12
	5-pin	6-pin	6-pin	8-pin	8-pin	8-pin	12-pin	12-pin	12-pin	12-pin	12-pin
											
Circuit	F05, H05, F24, H24, H30	G05, G24	F05, H05, F24, H24, H30	F05, H05, F24, H24, H30	P05, R05, P24, R24, R30, 245, 645	SIN	G05, G24	F05, H05, F24, H24, H30	I05, I24, 524	P05, R05, P24, R24, 245, 645, R30	SIN
GND	1	6	6	1	1	1	K, L	K, L	K, L	K, L	K, L
(+) Vcc	2	1	1	2	2	2	M, B	M, B	M, B	M, B	M, B
A	3	2	2	3	3	3	E	E	E	E	E
B	4	4	4	4	4	4	H	H	H	H	H
N	5	3	3	5	5	-	C	C	C	C	-
Light reserve warning	-	5	-	-	-	-	G	-	G	-	-
A inv.	-	-	-	-	6	6	-	-	F	F	F
B inv.	-	-	-	-	7	7	-	-	A	A	A
N inv.	-	-	-	-	8	-	-	-	D	D	-
n. c.	-	-	5	6, 7, 8	-	5, 8	A, D, F, J	A, D, F, G, J	J	G, J	D, G, J
Shield	-	-	-	-	-	-	-	-	-	-	-

WDGI 58B: Connector (M16x0.75) S2, axial, 7-pin



Description

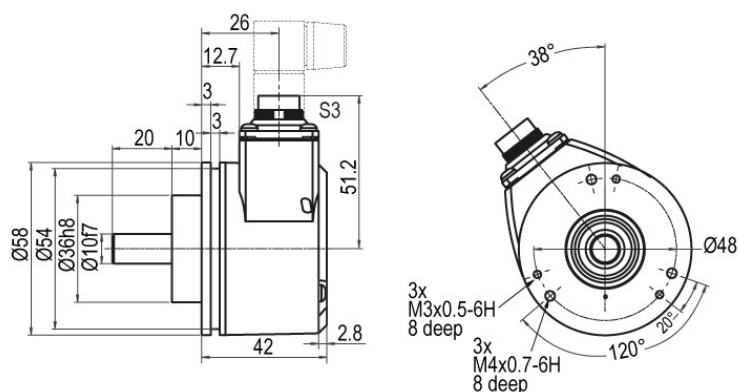
ABN inv. poss.

S2 axial, 7-pin, Connector connected to encoder housing

-

Assignments		
	S2	S2
	7-pin	7-pin
Circuit	G05, G24	F05, H05, F24, H24, H30
GND	1	1
(+) Vcc	2	2
A	3	3
B	4	4
N	5	5
Light reserve warning	6	-
A inv.	-	-
B inv.	-	-
N inv.	-	-
n. c.	7	6, 7
Shield	-	-

WDGI 58B: Connector (M16x0.75) S3, radial, 7-pin



Description

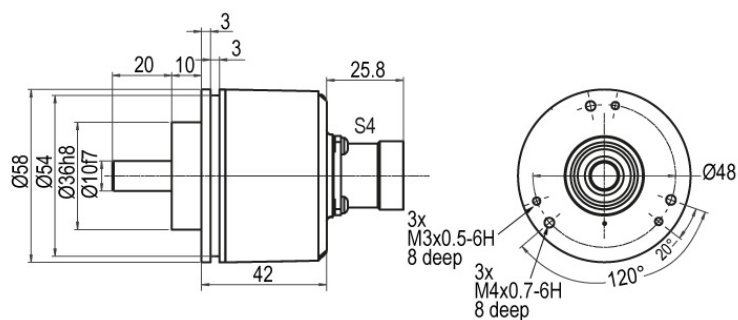
ABN inv. poss.

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

-

Assignments		
	S3 7-pin	S3 7-pin
		
Circuit	G05, G24	F05, H05, F24, H24, H30
GND	1	1
(+) Vcc	2	2
A	3	3
B	4	4
N	5	5
Light reserve warning	6	-
A inv.	-	-
B inv.	-	-
N inv.	-	-
n. c.	7	6, 7
Shield	-	-

WDGI 58B: Connector (M23) S4, axial, 12-pin



Description

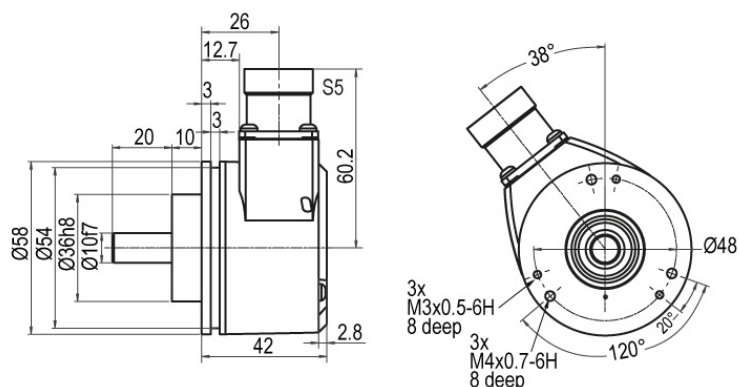
ABN inv. poss.

S4 axial, 12-pin, Connector connected to encoder housing

•

Assignments					
	S4	S4	S4	S4	S4
	12-pin	12-pin	12-pin	12-pin	12-pin
Circuit	G05, G24	F05, H05, F24, H24, H30	I05, I24, 524	P05, R05, P24, R24, 245, 645, R30	SIN
GND	10	10	10	10	10
(+) Vcc	12	12	12	12	12
A	5	5	5	5	5
B	8	8	8	8	8
N	3	3	3	3	-
Light reserve warning	11	-	11	-	-
A inv.	-	-	6	6	6
B inv.	-	-	1	1	1
N inv.	-	-	4	4	-
n. c.	1, 2, 4, 6, 7, 9	1, 2, 4, 6, 7, 9, 11	2, 7, 9	2, 7, 9, 11	2, 3, 4, 7, 9, 11
Shield	-	-	-	-	-

WDGI 58B: Connector (M23) S5, radial, 12-pin



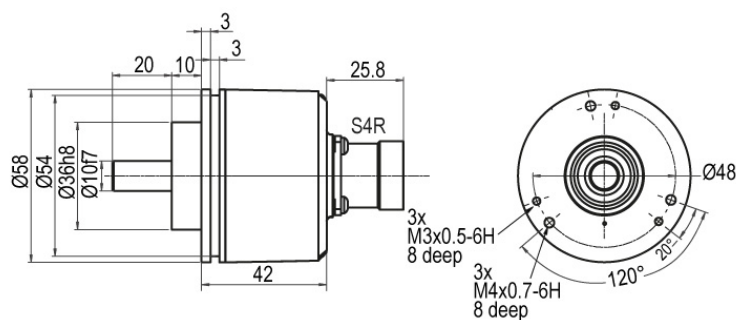
Description

ABN inv. poss.

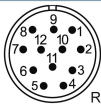
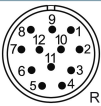
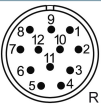
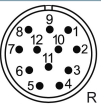
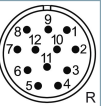
S5 radial, 12-pin, Connector connected to encoder housing

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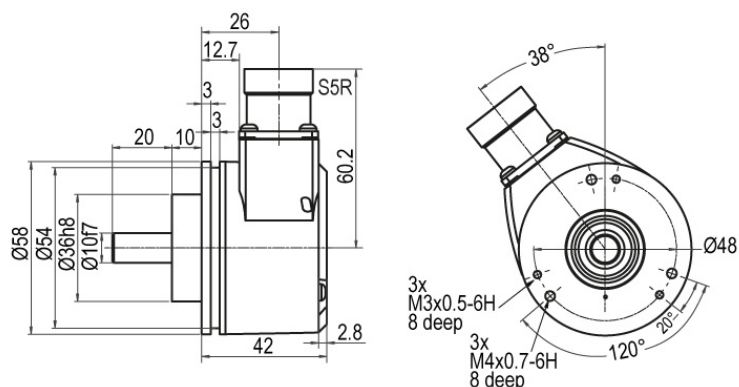
Assignments					
	S5 12-pin	S5 12-pin	S5 12-pin	S5 12-pin	S5 12-pin
Circuit	G05, G24	F05, H05, F24, H24, H30	I05, I24, 524	P05, R05, P24, R24, 245, 645, R30	SIN
GND	10	10	10	10	10
(+) Vcc	12	12	12	12	12
A	5	5	5	5	5
B	8	8	8	8	8
N	3	3	3	3	-
Light reserve warning	11	-	11	-	-
A inv.	-	-	6	6	6
B inv.	-	-	1	1	1
N inv.	-	-	4	4	-
n. c.	1, 2, 4, 6, 7, 9	1, 2, 4, 6, 7, 9, 11	2, 7, 9	2, 7, 9, 11	2, 3, 4, 7, 9, 11
Shield	-	-	-	-	-

WDGI 58B: Connector (M23) S4R, axial, 12-pin (clockwise)

Description
ABN inv. poss.
S4R axial, 12-pin, Connector connected to encoder housing

•

Assignments					
	S4R 12-pin	S4R 12-pin	S4R 12-pin	S4R 12-pin	S4R 12-pin
					
Circuit	G05, G24	F05, H05, F24, H24, H30	I05, I24, 524	P05, R05, P24, R24, 245, 645, R30	SIN
GND	10	10	10	10	10
(+) Vcc	12	12	12	12	12
A	5	5	5	5	5
B	8	8	8	8	8
N	3	3	3	3	-
Light reserve warning	11	-	11	-	-
A inv.	-	-	6	6	6
B inv.	-	-	1	1	1
N inv.	-	-	4	4	-
n. c.	1, 2, 4, 6, 7, 9	1, 2, 4, 6, 7, 9, 11	2, 7, 9	2, 7, 9, 11	2, 3, 4, 7, 9, 11
Shield	-	-	-	-	-

WDGI 58B: Connector (M23) S5R, radial, 12-pin (clockwise)



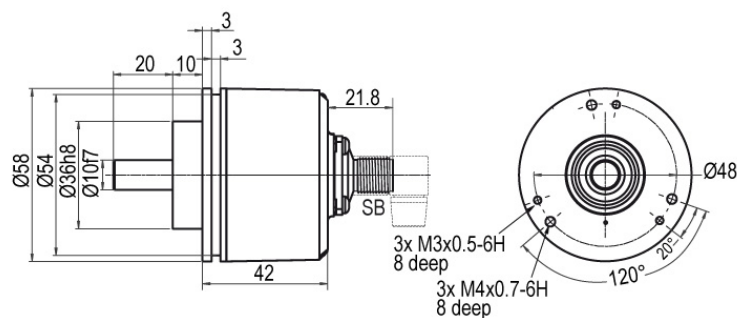
Description

ABN inv. poss.

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

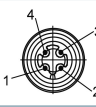
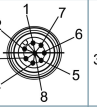
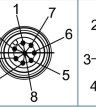
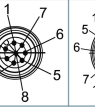
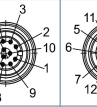
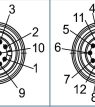
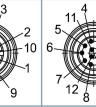
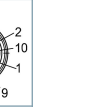
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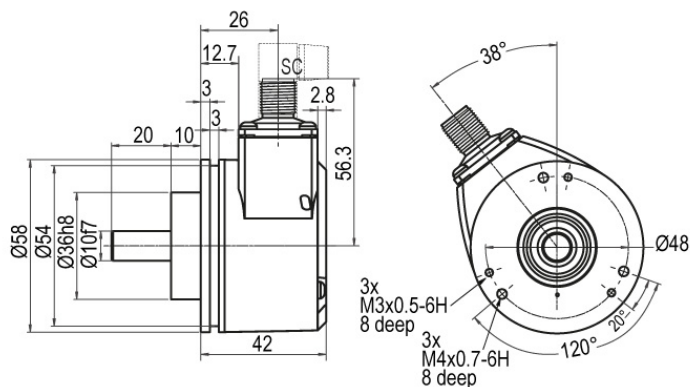
Assignments					
	S5R 12-pin	S5R 12-pin	S5R 12-pin	S5R 12-pin	S5R 12-pin
Circuit	G05, G24	F05, H05, F24, H24, H30	I05, I24, 524	P05, R05, P24, R24, 245, 645, R30	SIN
GND	10	10	10	10	10
(+) Vcc	12	12	12	12	12
A	5	5	5	5	5
B	8	8	8	8	8
N	3	3	3	3	-
Light reserve warning	11	-	11	-	-
A inv.	-	-	6	6	6
B inv.	-	-	1	1	1
N inv.	-	-	4	4	-
n. c.	1, 2, 4, 6, 7, 9	1, 2, 4, 6, 7, 9, 11	2, 7, 9	2, 7, 9, 11	2, 3, 4, 7, 9, 11
Shield	-	-	-	-	-

WDGI 58B: Sensor-connector (M12x1) SB, axial, 4-, 5-, 8-, 12-pin

Description
ABN inv. poss.

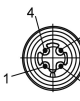
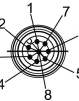
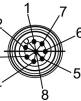
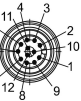
SB4	axial, 4-pin, Connector connected to encoder housing	-
SB5	axial, 5-pin, Connector connected to encoder housing	-
SB8	axial, 8-pin, Connector connected to encoder housing	•
SB12	axial, 12-pin, Connector connected to encoder housing	•

Assignments

	SB4	SB5	SB8	SB8	SB8	SB12	SB12	SB12	SB12
	4-pin	5-pin	8-pin	8-pin	8-pin	12-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	G05, G24	F05, H05, F24, H24, H30	I05, I24, 524	P05, R05, P24, R24, 245, 645, R30
GND	3	3	1	1	1	3	3	3	3
(+) Vcc	1	1	2	2	2	1	1	1	1
A	2	4	3	3	3	4	4	4	4
B	4	2	4	4	5	6	6	6	6
N	-	5	5	5	-	8	8	8	8
Light reserve warning	-	-	-	-	-	5	-	5	-
A inv.	-	-	-	6	4	-	-	9	9
B inv.	-	-	-	7	6	-	-	7	7
N inv.	-	-	-	8	-	-	-	10	10
n. c.	-	-	6, 7, 8	-	7, 8	2, 7, 9, 10, 11, 12	2, 5, 7, 9, 10, 11, 12	2, 11, 12	2, 5, 11, 12
Shield	-	-	-	-	-	-	-	-	-

WDGI 58B: Sensor-connector (M12x1) SC, radial, 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	SC8	SC12	SC12	SC12	SC12
	4-pin	5-pin	8-pin	8-pin	8-pin	12-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	G05, G24	F05, H05, F24, H24, H30	I05, I24, 524	P05, R05, P24, R24, 245, 645, R30
GND	3	3	1	1	1	3	3	3	3
(+) Vcc	1	1	2	2	2	1	1	1	1
A	2	4	3	3	3	4	4	4	4
B	4	2	4	4	5	6	6	6	6
N	-	5	5	5	-	8	8	8	8
Light reserve warning	-	-	-	-	-	5	-	5	-
A inv.	-	-	-	6	4	-	-	9	9
B inv.	-	-	-	7	6	-	-	7	7
N inv.	-	-	-	8	-	-	-	10	10
n. c.	-	-	6, 7, 8	-	7, 8	2, 7, 9, 10, 11, 12	2, 5, 7, 9, 10, 11, 12	2, 11, 12	2, 5, 11, 12
Shield	-	-	-	-	-	-	-	-	-

Options

Low-friction bearings

The encoder WDG1 58B is also available as a particularly smooth-running low-friction encoder. The starting torque is thereby changed to ≤ 0.5 Ncm and the protection class at the shaft input to IP50.

Order key

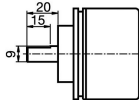
AAC

Shaft with flat

The encoder WDG1 58B can be supplied with a shaft with flat.

Order key

AAF



IP67 Shafts sealed to IP67 (not for 1 Vpp Sin/Cos)

The encoder WDG1 58B can be supplied in a full IP67 version.

Order key

AAO

Max. RPM: 3500 rpm

Permitted Shaft-Loading, axial: 100 N

Permitted Shaft-Loading, radial: 110 N

Max. PPR: 2500 ppr

Starting-torque: approx. 4 Ncm at ambient temperature

Low temperature

The encoder WDG1 58B with the output circuit types F24, G24, H24, I24, P24, R24, F05, G05, H05, I05, P05, R05, 245, 524, 645 is also available with the extended temperature range -40 °C up to +85 °C [-40 °F up to +185 °F] (measured at the flange).

Order key

ACA

Pressure equalising membrane

The WDG1 58B shaft encoder is also optionally available with a pressure equalising membrane. This prevents water from penetrating into the encoder housing in the case of high air humidity.

The IP67 protection level, temperature range and salt spray resistance are maintained.

Resistant to chemicals and solvents in accordance with DIN EN ISO 2812-1.

Order key

ACR

Cable length

The encoder WDG1 58B 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

Example Order No.	Type				Your encoder
WDGI 58B	WDGI 58B				WDGI 58B
	Shaft				
10	10				
	Pulses per revolution PPR:				
5000	2, 5, 10, 15, 20, 24, 25, 30, 36, 40, 48, 50, 60, 64, 72, 87, 90, 100, 120, 125, 127, 128, 150, 160, 180, 200, 216, 236, 240, 250, 254, 256, 300, 314, 320, 360, 400, 500, 512, 571, 600, 625, 720, 750, 768, 800, 810, 900, 1000, 1024, 1200, 1250, 1270, 1440, 1500, 1800, 2000, 2048, 2400, 2500, 3000, 3600, 4000, 4096, 4685, 5000, 10000, 12500, 20000, 25000 1 Vpp Sin/Cos only 1024, 2048 Other PPRs on request				
	Channels:				
ABN	AB, ABN (SIN: AB)				
	Output circuit				
G24	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	•	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
	(higher frequency) 1200 up to 25000	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	-	SIN

Electrical connections			
K2	Description	ABN inv. poss.	Order key
	Cable: length (2 m standard, WDG 58T: 1 m)		
	axial, shield not connected	•	K2
	axial, shield connected to encoder housing	•	L2
	radial, shield not connected	•	K3
	radial, shield connected to encoder housing	•	L3
	Connector: (shield connected to encoder housing)		
	connector, M16x0.75, 5-pin, axial	-	SI5
	connector, M16x0.75, 5-pin, radial	-	SH5
	connector, M16x0.75, 6-pin, axial	-	SI6
	connector, M16x0.75, 6-pin, radial	-	SH6
	connector, M16x0.75, 8-pin, axial	•	SI8
	connector, M16x0.75, 8-pin, radial	•	SH8
	connector, M16x0.75, 12-pin, axial	•	SI12
	connector, M16x0.75, 12-pin, radial	•	SH12
	connector, M16x0.75, 7-pin, axial	-	S2
	connector, M16x0.75, 7-pin, radial	-	S3
	connector, M23, 12-pin, axial	•	S4
	connector, clockwise pin count, M23, 12-pin, axial	•	S4R
	connector, M23, 12-pin, radial	•	S5
	connector, clockwise pin count, M23, 12-pin, radial	•	S5R
	sensor-connector, M12x1, 4-pin, axial	-	SB4
	sensor-connector, M12x1, 4-pin, radial	-	SC4
	sensor-connector, M12x1, 5-pin, axial	-	SB5
	sensor-connector, M12x1, 5-pin, radial	-	SC5
	sensor-connector, M12x1, 8-pin, axial	•	SB8
	sensor-connector, M12x1, 8-pin, radial	•	SC8
	sensor-connector, M12x1, 12-pin, axial	•	SB12
	sensor-connector, M12x1, 12-pin, radial	•	SC12
Options			
	Description	Order key	
	Low-friction bearings	AAC	
	Shaft with flat	AAF	
	IP67	AAO	
	Low temperature	ACA	
	Pressure equalising membrane	ACR	
	Without option	Empty	
	Cable length	XXX = Decimeter	

Example Order No. =	WDGI 58B	10	5000	ABN	G24	K2		WDGI 58B									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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