



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



Illustration similar



- 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 [-40 °F up to +185 °F],
Protection to IP67 all around,
Pressure equalising membrane

www.wachendorff-automation.com/wdgi58b

Resolution	
Pulses per revolution PPR	up to 25000 PPR
Mechanical Data	
Housing	
Flange	clamping flange
Flange material	aluminum
Housing cap	die cast aluminum, powder coated
Housing	Ø 58 mm [Ø 2.283"]
Cam mounting	pitch 69 mm [2.717 inches]
Shaft(s)	
Shaft material	stainless steel
Starting torque	approx. 1 Ncm [1.416 in-ozf] at ambient temperature
Shaft	Ø 10 mm [Ø 0.394"]
Shaft length	L: 20 mm [0.787"]
Max. Permissible shaft loading radial	220 N [22.433 kp]
Max. Permissible shaft loading axial	120 N [12.236 kp]
Advice	Ø 7 mm [0.2761"] / Ø 8 mm [0.315"] / Ø 12 mm [0.472"] on request
Bearings	
Bearings type	2 precision ball bearings
Nomiale 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
Nomiale 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. 70 mA (100 mA only F05, P05)
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 (100 mA only F24, P24, 645)

Operating principle	optical
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 F24, H24, P24, 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 %

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)
Electrical Safety:	according DIN VDE 0160

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

General Data	
Weight	approx. 250 g [8.818 oz]
Connections	cable or connector outlet
Protection rating (EN 60529)	Housing: IP65, IP67; shaft sealed: IP65

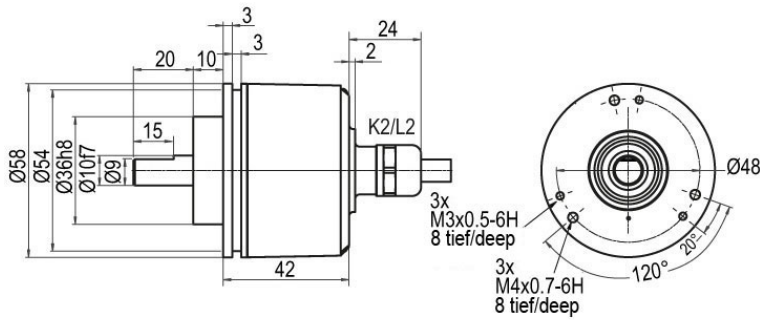
Operating temperature	Connector: -40 °C up to +85 °C, Cable: -20 °C up to +80 °C (Option ACA: -40 °C up to +85 °C). Connector: -40 °F up to +185 °F, Cable: -4 °F up to +176 °F, Option ACA: -40 °F up to +185 °F 1 Vpp: -10 °C up to +70 °C [+14 °F up to +158 °F]
Storage temperature	Connector: -40 °C up to +85 °C, Cable: -30 °C up to +80 °C (Option ACA: -40 °C up to +85 °C) Connector: -40 °F up to +185 °F, cable: -22 °F up to +176 °F, (Option ACA: -40 °F up to +185 °F)

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

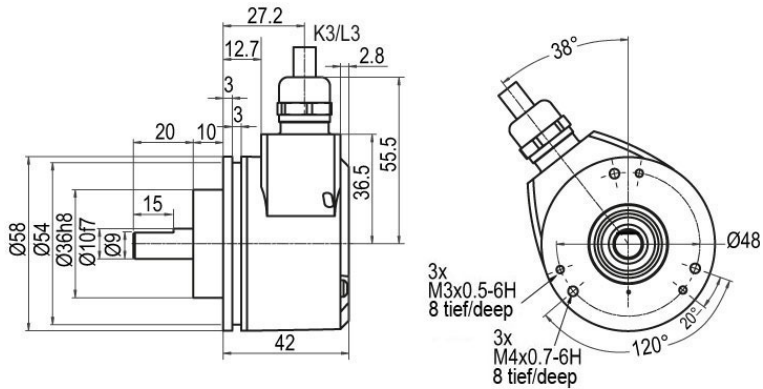


Alle Abmessungen in mm / All dimensions in mm

Description	ABN inv. poss.
K2 axial, shield not connected	•
L2 axial, shield connected to encoder housing	•

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

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

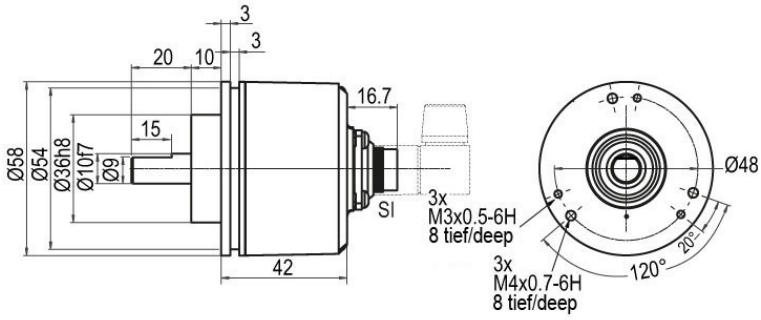


Alle Abmessungen in mm / All dimensions in mm

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

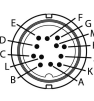
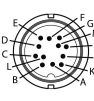
Assignments			
	K3, L3	K3, L3	L3
Circuit	F05, H05, F24, H24, H30	P05, R05, P24, R24, 245, 645, R30	SIN
GND	WH	WH	WH
(+) Vcc	BN	BN	BN
A	GN	GN	GN
B	YE	YE	GY
N	GY	GY	-
-	-	-	-
A inv.	-	RD	YE
B inv.	-	BK, (BU at ACA)	PK
N inv.	-	VT	-
Shield	flex	flex	flex

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

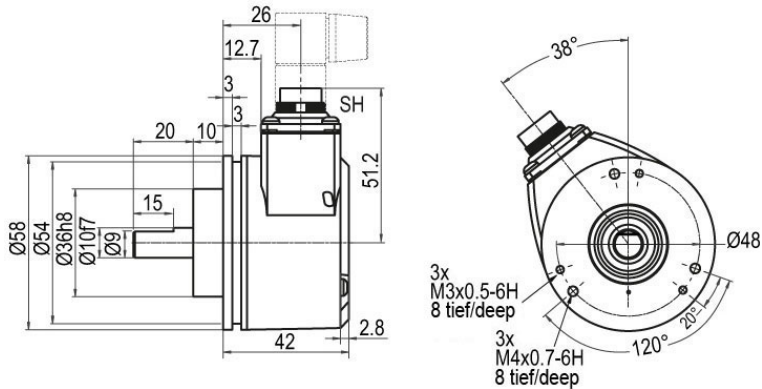


Alle Abmessungen in mm / All dimensions in mm

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	SI8	SI8	SI12	SI12
	5-pin	6-pin	8-pin	8-pin	12-pin	12-pin
						
Circuit	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	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	-	C	-
-	-	-	-	-	-	-
A inv.	-	-	6	6	F	F
B inv.	-	-	7	7	A	A
N inv.	-	-	8	-	D	-
n. c.	-	5	-	5, 8	G, J	D, G, J
Shield	-	-	-	-	-	-

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

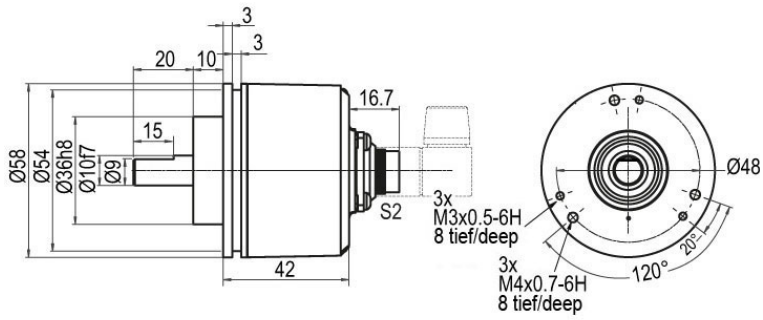


Alle Abmessungen in mm / All dimensions in mm

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	SH12 12-pin	SH12 12-pin
Circuit	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	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	-	C	-
-	-	-	-	-	-	-
A inv.	-	-	6	6	F	F
B inv.	-	-	7	7	A	A
N inv.	-	-	8	-	D	-
n. c.	-	5	-	5, 8	G, J	D, G, J
Shield	-	-	-	-	-	-

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

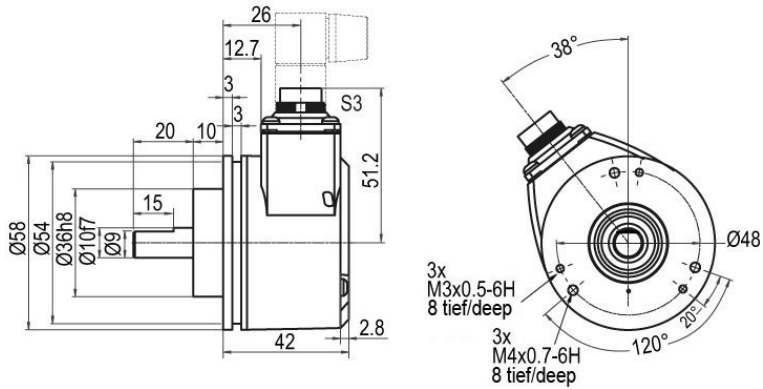


Alle Abmessungen in mm / All dimensions in mm

Description	ABN inv. poss.
S2 axial, 7-pin, Connector connected to encoder housing	-

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

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



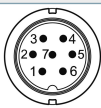
Alle Abmessungen in mm / All dimensions in mm

Description

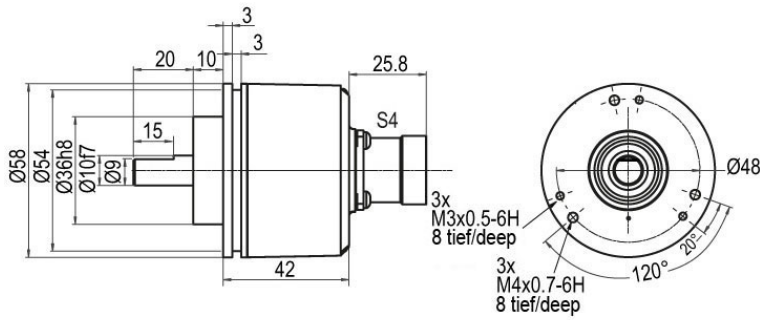
ABN inv. poss.

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
-	-
A inv.	-
B inv.	-
N inv.	-
n. c.	6, 7
Shield	-

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



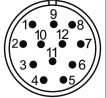
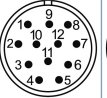
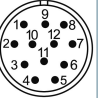
Alle Abmessungen in mm / All dimensions in mm

Description

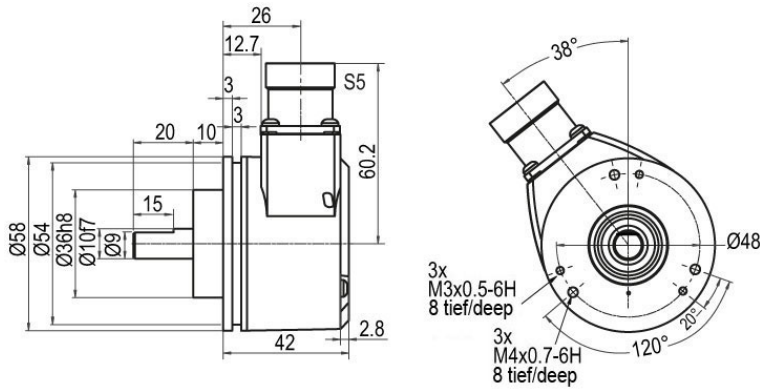
ABN inv. poss.

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

•

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

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



Alle Abmessungen in mm / All dimensions in mm

Description

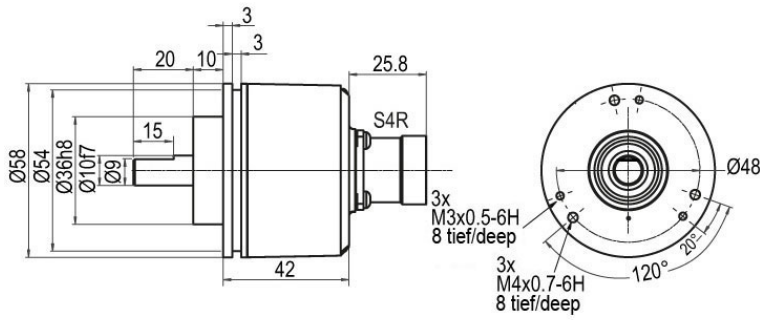
ABN inv. poss.

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

•

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

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



Alle Abmessungen in mm / All dimensions in mm

Description

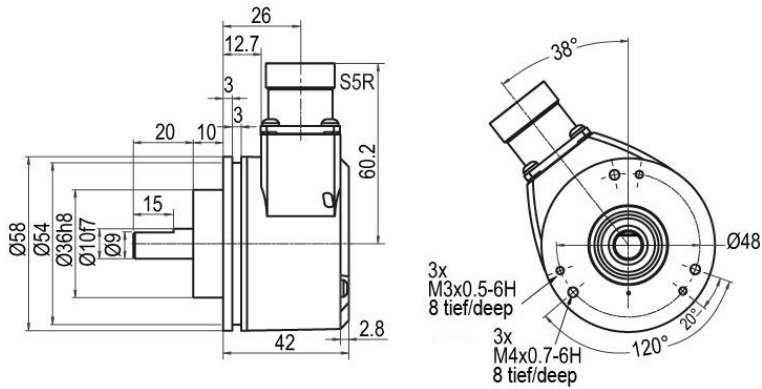
ABN inv. poss.

S4R axial, 12-pin, Connector connected to encoder housing

•

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

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



Alle Abmessungen in mm / All dimensions in mm

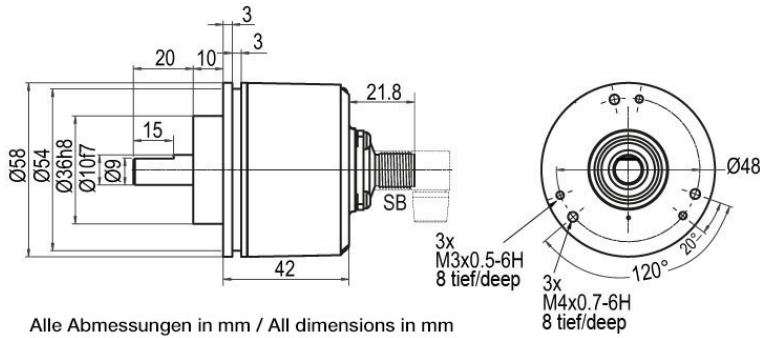
Description

ABN inv. poss.

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

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

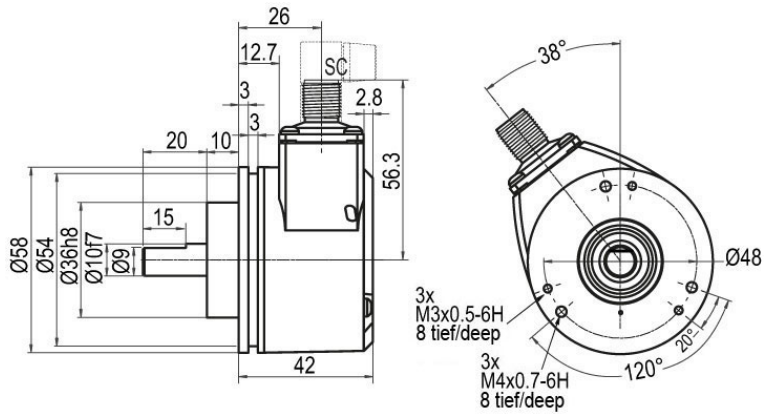
WDGI 58B: Sensor-connector (M12x1) SB, axial, 4-, 5-, 8-, 12-pin



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 4-pin	SB5 5-pin	SB8 8-pin	SB8 8-pin	SB12 12-pin
Circuit	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
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	-	8
-	-	-	-	-	-
A inv.	-	-	6	4	9
B inv.	-	-	7	6	7
N inv.	-	-	8	-	10
n. c.	-	-	-	7, 8	2, 5, 11, 12
Shield	-	-	-	-	-

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



Alle Abmessungen in mm / All dimensions in mm

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 4-pin	SC5 5-pin	SC8 8-pin	SC8 8-pin	SC12 12-pin
Circuit	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
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	-	8
-	-	-	-	-	-
A inv.	-	-	6	4	9
B inv.	-	-	7	6	7
N inv.	-	-	8	-	10
n. c.	-	-	-	7, 8	2, 5, 11, 12
Shield	-	-	-	-	-

Options

IP67 Shafts sealed to IP67 (not for 1 Vpp Sin/Cos, only Ø 10 mm [0.394"] shaft without flat) Order key

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

AAO

Max. RPM: 3500 rpm

Permitted Shaft-Loading, axial: 100 N [10.197 kp]

Permitted Shaft-Loading, radial: 110 N [11.216 kp]

Max. PPR: 25000 ppr

Starting-torque: approx. 4 Ncm [5.664 in-ozf] at ambient temperature

Low temperature

Order key

The encoder WDGI 58B 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 +85 °C [-40 °F up to +185 °F] (measured at the flange).

ACA

Pressure equalising membrane

Order key

The WDGI 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.

ACR

Cable length

Order key

The encoder WDGI 58B 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.

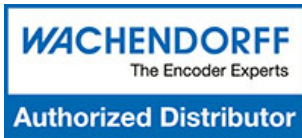
Example: 5 m cable = 050

XXX = Decimeter

Example Order No.	Type					Your encoder
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, 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, 900, 1000, 1024, 1200, 1250, 1270, 1440, 1500, 1800, 2000, 2048, 2400, 2500, 2880, 3000, 3600, 4000, 4096, 4685, 5000, 5760, 6000, 7200, 7500, 8000, 8192, 10000, 10240, 12000, 12500, 15000, 16384, 20000, 20480, 25000 1 Vpp Sin/Cos only 1024, 2048 Other PPRs on request					
	Channels:					
ABN	AB, ABN (SIN: AB)					
	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 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	
	(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	
	IP67	AAO	
	Low temperature	ACA	
	Pressure equalising membrane	ACR	
	Without option	Empty	
	Cable length	XXX = Decimeter	

Example Order No. =	WDGI 58B	10	5000	ABN	H24	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.
<https://www.wachendorff-automation.com/contact-sales-en/>

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