



# Online Data sheet

## Encoder WDGI 58A

[www.wachendorff-automation.com/wdgi58a](http://www.wachendorff-automation.com/wdgi58a)

### **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 58A



Illustration similar



- Robust construction for industrial use
- 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
- High electrical immunity
- Full connection protection with 10 VDC up to 30 VDC
- High output frequency 600 kHz/2 MHz
- Optional: -40 °C up to +85 °C, Pressure equalising membrane

[www.wachendorff-automation.com/wdgi58a](http://www.wachendorff-automation.com/wdgi58a)

Resolution	
Pulses per revolution PPR	up to 25000 PPR

Mechanical Data	
Housing	
Flange	synchro 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. 0.5 Ncm at ambient temperature
Shaft	Ø 6 mm
Shaft length	L: 12 mm
Max. Permissible shaft loading radial	125 N
Max. Permissible shaft loading axial	70 N

Bearings	
Bearings type	2 precision ball bearings
Nominal service life	3 x 10 <sup>8</sup> revs. at 100 % rated shaft load 5 x 10 <sup>9</sup> revs. at 40 % rated shaft load 4 x 10 <sup>10</sup> revs. at 20 % rated shaft load
Max. operating speed	10000 rpm

Machinery Directive: basic data safety integrity level	
MTTF <sub>d</sub>	200 a
Mission time (TM)	25 a
Nominal service life (L10h)	4 x 10 <sup>10</sup> revs. at 20 % rated shaft load and 10000 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
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 <sup>2</sup> (10 Hz up to 2000 Hz)
Shock: (DIN EN 60068-2-27)	1000 m/s <sup>2</sup> (6 ms)
Electrical Safety:	according DIN VDE 0160

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

General Data	
Weight	approx. 230 g
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) 1 Vpp: -10 °C up to +70 °C
Storage temperature	Connector: -40 °C up to +85 °C, cable: -30 °C up to +80 °C (option ACA: -40 °C up to +85 °C)

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**More Information**

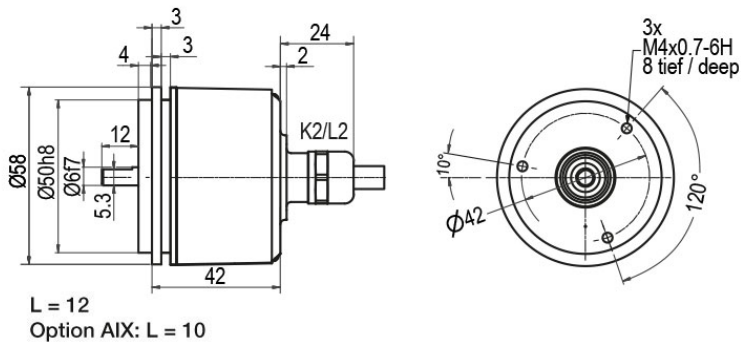
General technical data and safety instructions  
<http://www.wachendorff-automation.com/gtd>

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

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



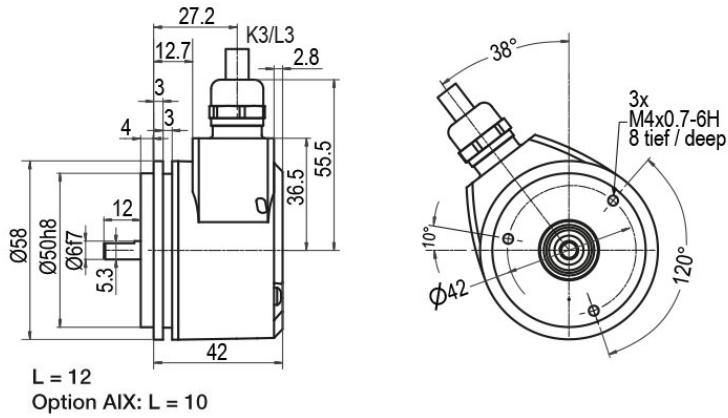
**Description**

**ABN inv. poss.**

<b>L2</b>	axial, shield connected to encoder housing	•
<b>K2</b>	axial, shield not connected	•

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

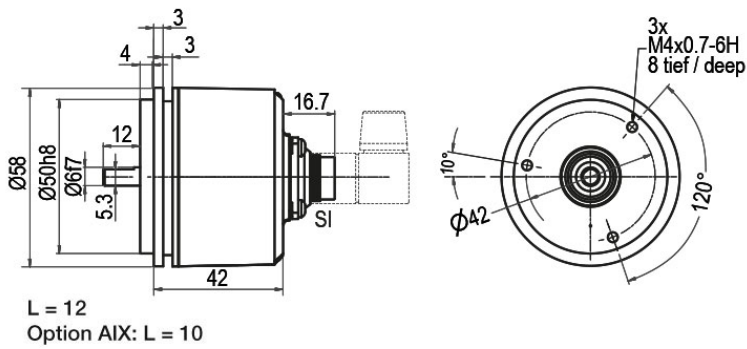
**WDGI 58A: Cable connection K3, L3, radial, with 2 m cable**



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

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

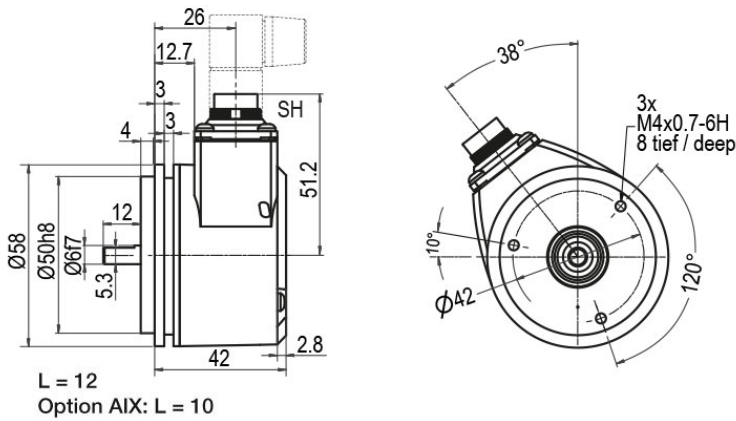
**WDGI 58A: Connector (M16x0.75) SI, axial, 5-, 6-, 8-, 12-pin**



Description	ABN inv. poss.
<b>SI5</b> axial, 5-pin, Connector connected to encoder housing	-
<b>SI6</b> axial, 6-pin, Connector connected to encoder housing	-
<b>SI8</b> axial, 8-pin, Connector connected to encoder housing	•
<b>SI12</b> 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
<b>Circuit</b>	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
<b>GND</b>	1	6	1	1	K, L	K, L
<b>(+) Vcc</b>	2	1	2	2	M, B	M, B
<b>A</b>	3	2	3	3	E	E
<b>B</b>	4	4	4	4	H	H
<b>N</b>	5	3	5	-	C	-
<b>-</b>	-	-	-	-	-	-
<b>A inv.</b>	-	-	6	6	F	F
<b>B inv.</b>	-	-	7	7	A	A
<b>N inv.</b>	-	-	8	-	D	-
<b>n. c.</b>	-	5	-	5, 8	G, J	D, G, J
<b>Shield</b>	-	-	-	-	-	-

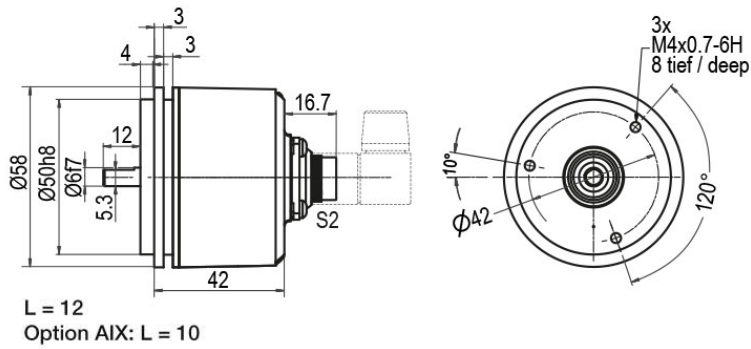
**WDGI 58A: Connector (M16x0.75) SH, radial, 5-, 6-, 8-, 12-pin**



Description	ABN inv. poss.
<b>SH5</b> radial, 5-pin, Connector connected to encoder housing	-
<b>SH6</b> radial, 6-pin, Connector connected to encoder housing	-
<b>SH8</b> radial, 8-pin, Connector connected to encoder housing	•
<b>SH12</b> 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
<b>Circuit</b>	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
<b>GND</b>	1	6	1	1	K, L	K, L
<b>(+) Vcc</b>	2	1	2	2	M, B	M, B
<b>A</b>	3	2	3	3	E	E
<b>B</b>	4	4	4	4	H	H
<b>N</b>	5	3	5	-	C	-
<b>-</b>	-	-	-	-	-	-
<b>A inv.</b>	-	-	6	6	F	F
<b>B inv.</b>	-	-	7	7	A	A
<b>N inv.</b>	-	-	8	-	D	-
<b>n. c.</b>	-	5	-	5, 8	G, J	D, G, J
<b>Shield</b>	-	-	-	-	-	-

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




**Description**

**ABN inv. poss.**

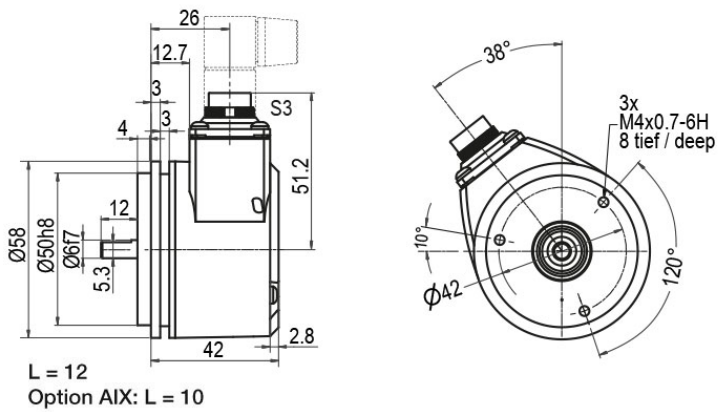
**S2** axial, 7-pin, Connector connected to encoder housing

-

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



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

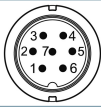


**Description**

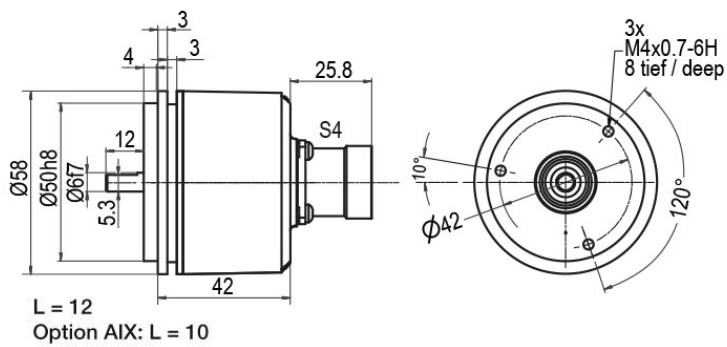
**ABN inv. poss.**

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

-

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

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



**Description**

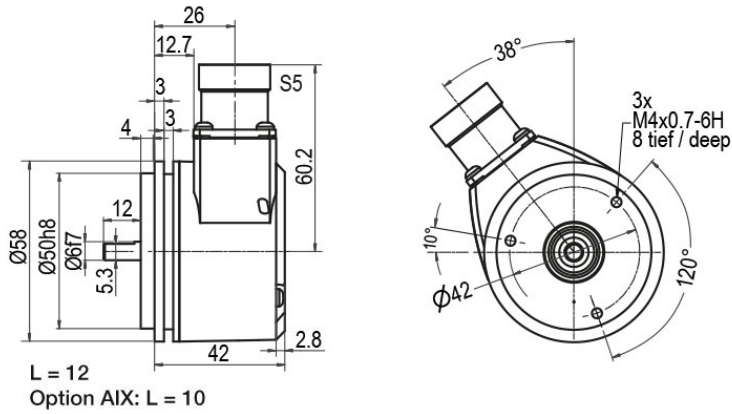
ABN inv. poss.

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

•

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

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



**Description**

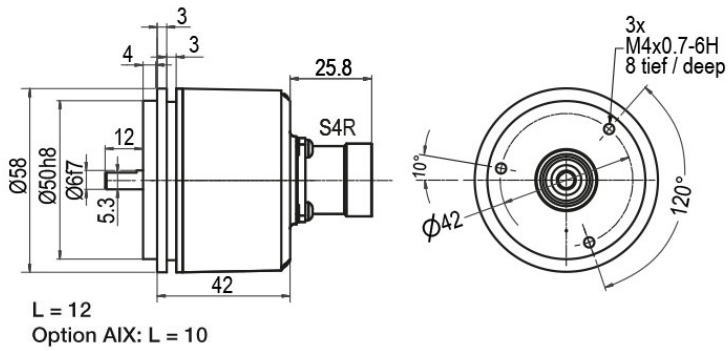
ABN inv. poss.

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

•

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

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



**Description**

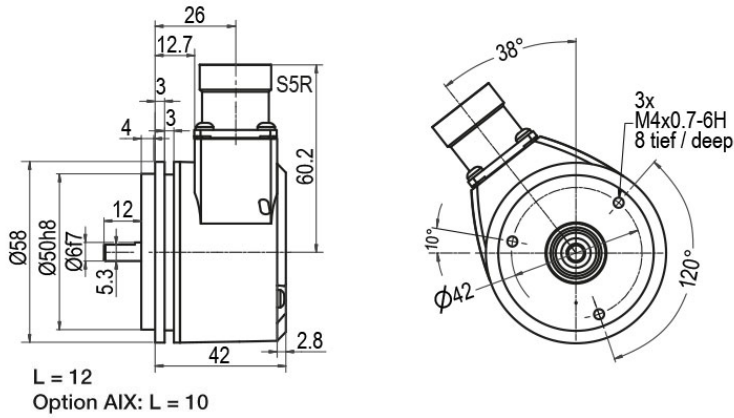
ABN inv. poss.

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

•

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

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



**Description**

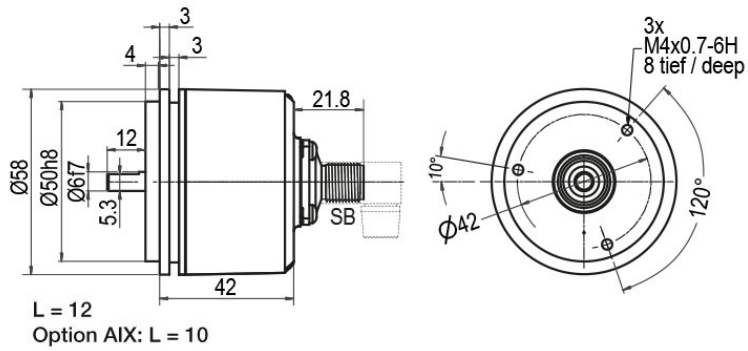
ABN inv. poss.

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

•

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

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



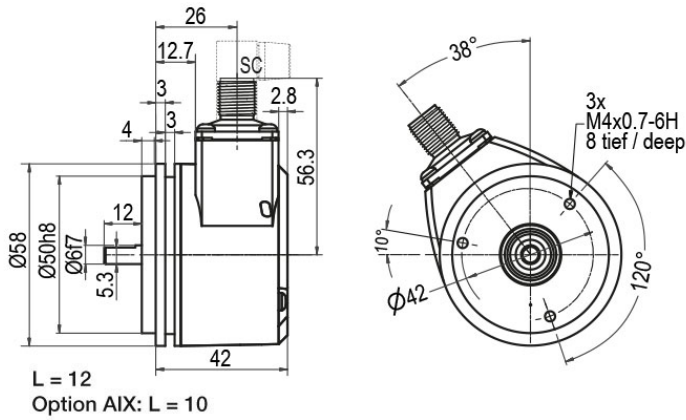
### Description

Description	ABN inv. poss.
<b>SB4</b> axial, 4-pin, Connector connected to encoder housing	-
<b>SB5</b> axial, 5-pin, Connector connected to encoder housing	-
<b>SB8</b> axial, 8-pin, Connector connected to encoder housing	•
<b>SB12</b> axial, 12-pin, Connector connected to encoder housing	•

### Assignments

	<b>SB4</b> 4-pin	<b>SB5</b> 5-pin	<b>SB8</b> 8-pin	<b>SB8</b> 8-pin	<b>SB12</b> 12-pin
<b>Circuit</b>	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
<b>GND</b>	3	3	1	1	3
<b>(+) Vcc</b>	1	1	2	2	1
<b>A</b>	2	4	3	3	4
<b>B</b>	4	2	4	5	6
<b>N</b>	-	5	5	-	8
<b>-</b>	-	-	-	-	-
<b>A inv.</b>	-	-	6	4	9
<b>B inv.</b>	-	-	7	6	7
<b>N inv.</b>	-	-	8	-	10
<b>n. c.</b>	-	-	-	7, 8	2, 5, 11, 12
<b>Shield</b>	-	-	-	-	-

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



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

Assignments					
	SC4	SC5	SC8	SC8	SC12
	4-pin	5-pin	8-pin	8-pin	12-pin
<b>Circuit</b>	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
<b>GND</b>	3	3	1	1	3
<b>(+) Vcc</b>	1	1	2	2	1
<b>A</b>	2	4	3	3	4
<b>B</b>	4	2	4	5	6
<b>N</b>	-	5	5	-	8
<b>-</b>	-	-	-	-	-
<b>A inv.</b>	-	-	6	4	9
<b>B inv.</b>	-	-	7	6	7
<b>N inv.</b>	-	-	8	-	10
<b>n. c.</b>	-	-	-	7, 8	2, 5, 11, 12
<b>Shield</b>	-	-	-	-	-

## Options

### Low-friction bearings

The encoder WDGI 58A is also available as a particularly smooth-running low-friction encoder. The starting torque is thereby changed to 0.25 Ncm and the protection class at the shaft input to IP50.

### Order key

**AAC**

### Low temperature

The encoder WDGI 58A 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).

### Order key

**ACA**

### Pressure equalising membrane

The WDGI 58A 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**

### Shaft length 10 mm (Ø 6 mm)

The encoder WDGI 58A shaft: Ø 6 mm is also available with a shortened shaft L = 10 mm.

### Order key

**AIX**

### Cable length

The encoder WDGI 58A 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](http://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 58A	WDGI 58A				WDGI 58A
<b>Shaft</b>					
06	06				
<b>Pulses per revolution PPR:</b>					
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				
<b>Channels:</b>					
ABN	AB, ABN (SIN: AB)				
<b>Output circuit</b>					
H24	<b>Resolution PPR</b>	<b>Power supply VDC</b>	<b>Output circuit</b>	<b>-</b>	<b>Order key</b>
	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
	(higher frequency) 1200 up to 25000	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
		10 - 30	HTL inverted	-	P24
	1024, 2048	4.75 - 5.5	TTL, RS422 comp., inverted	-	645
			1 Vpp sin/cos	-	SIN

Electrical connections			
Description	ABN inv. poss.	Order key	
<b>Cable: length (2 m standard, WDG 58T: 1 m)</b>			
axial, shield not connected	•	K2	
axial, shield connected to encoder housing	•	L2	
radial, shield not connected	•	K3	
radial, shield connected to encoder housing	•	L3	
<b>Connector: (shield connected to encoder housing)</b>			
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	
<b>Options</b>			
Description		Order key	
Low-friction bearings		AAC	
Low temperature		ACA	
Pressure equalising membrane		ACR	
Shaft length 10 mm (Ø 6 mm)		AIX	
Without option		Empty	
Cable length		XXX = Decimeter	

<b>Example Order No.=</b>	WDGI 58A	06	5000	ABN	H24	K2			WDGI 58A							<b>Your encoder</b>
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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/>

# WACHENDORFF

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