



# Online Data Sheet

## Encoder WdGI 58A

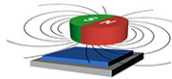
[www.wachendorff-automation.com/wdgi58am](http://www.wachendorff-automation.com/wdgi58am)

### 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 (magnetic)



- Robust construction for industrial use
- Housing cap die cast aluminum, with particularly eco-friendly powder coating
- Protection to IP67, shaft sealed to IP65
- High electrical immunity
- Optional: -40 °C up to +85 °C, Pressure equalising membrane

[www.wachendorff-automation.com/wdgi58am](http://www.wachendorff-automation.com/wdgi58am)

## Resolution

Max. pulses per revolution PPR	1 PPR up to 128 PPR, 256 PPR, 512 PPR, 1024 PPR
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## 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	5 VDC up to 30 VDC: typ. 40 mA
Output circuit	HTL HTL, inv.
Pulse frequency	1024 ppr: max. 200 kHz
Channels	AB ABN and inverted signals
Load	max. 40 mA / channel

Circuit protection	no
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## Accuracy

Phase offset	90° ± max. 25% of the period duration
pulse-/pause-ratio	at 1 ppr up to 128 ppr: 50 % ± max. 7 % at 256 ppr: 50 % ± max. 9 % at 512 ppr: 50 % ± max. 13 % at 1024 ppr: 50 % ± max. 18 %

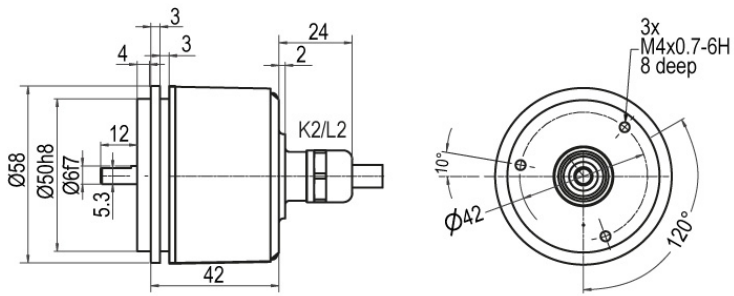
## General Data

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)
Storage temperature	Connector: -40 °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 58A: Cable connection K2, L2, axial, with 2 m cable**

**Description**

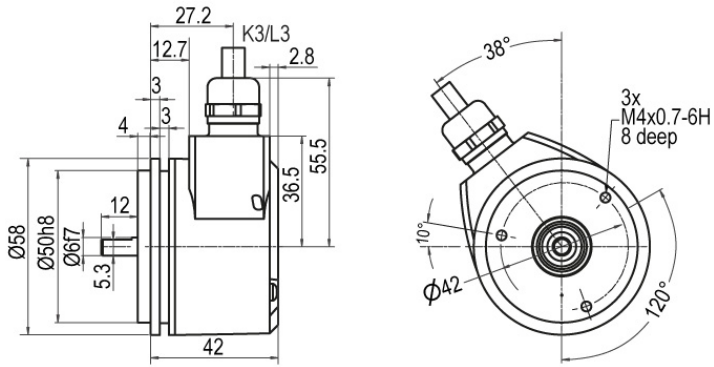
<b>L2</b>	axial, shield connected to encoder housing
<b>K2</b>	axial, shield not connected

**ABN inv. poss.**

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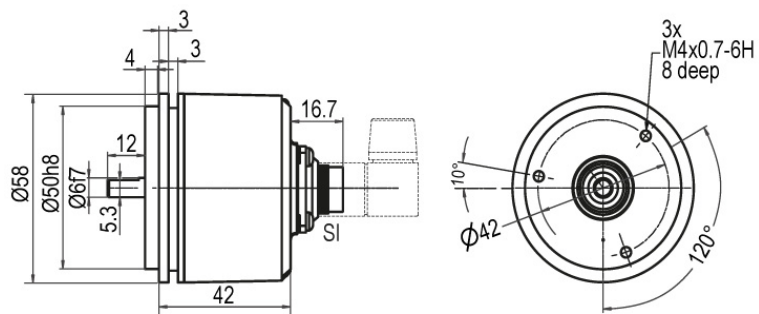
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Assignments		
	K2, L2	K2, L2
<b>Circuit</b>	N35	M35
<b>GND</b>	WH	WH
<b>(+) Vcc</b>	BN	BN
<b>A</b>	GN	GN
<b>B</b>	YE	YE
<b>N</b>	GY	GY
<b>Light reserve warning</b>	-	-
<b>A inv.</b>	-	RD
<b>B inv.</b>	-	BK, (BU at ACA)
<b>N inv.</b>	-	VT
<b>Shield</b>	flex	flex





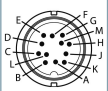

**WDGI 58A: Cable connection K3, L3, radial, with 2 m cable**


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

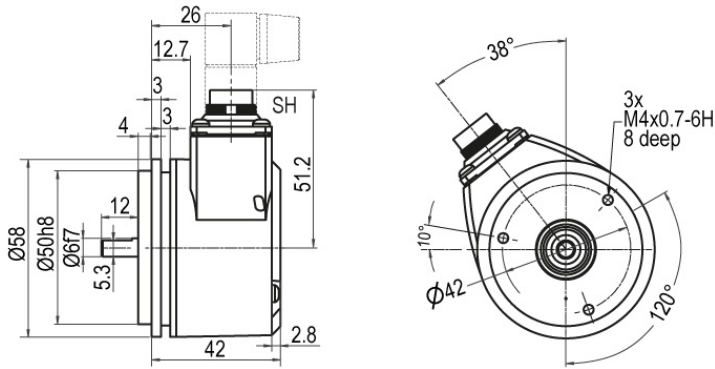
Assignments		
	K3, L3	K3, L3
<b>Circuit</b>	N35	M35
<b>GND</b>	WH	WH
<b>(+) Vcc</b>	BN	BN
<b>A</b>	GN	GN
<b>B</b>	YE	YE
<b>N</b>	GY	GY
<b>Light reserve warning</b>	-	-
<b>A inv.</b>	-	RD
<b>B inv.</b>	-	BK, (BU at ACA)
<b>N inv.</b>	-	VT
<b>Shield</b>	flex	flex

**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>	N35	N35	N35	M35	N35	M35
<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	5	C	C
<b>Light reserve warning</b>	-	-	-	-	-	-
<b>A inv.</b>	-	-	-	6	-	F
<b>B inv.</b>	-	-	-	7	-	A
<b>N inv.</b>	-	-	-	8	-	D
<b>n. c.</b>	-	5	6, 7, 8	-	A, D, F, G, J	G, J
<b>Shield</b>	-	-	-	-	-	-

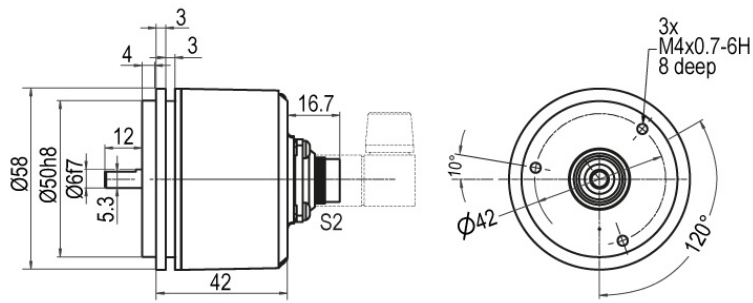
**WDGI 58A: Connector (M16x0.75) SH, radial, 5-, 6-, 8-, 12-pin**



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 5-pin	SH6 6-pin	SH8 8-pin	SH8 8-pin	SH12 12-pin	SH12 12-pin
<b>Circuit</b>	N35	N35	N35	M35	N35	M35
<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	5	C	C
<b>Light reserve warning</b>	-	-	-	-	-	-
<b>A inv.</b>	-	-	-	6	-	F
<b>B inv.</b>	-	-	-	7	-	A
<b>N inv.</b>	-	-	-	8	-	D
<b>n. c.</b>	-	5	6, 7, 8	-	A, D, F, G, J	G, J
<b>Shield</b>	-	-	-	-	-	-

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

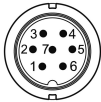


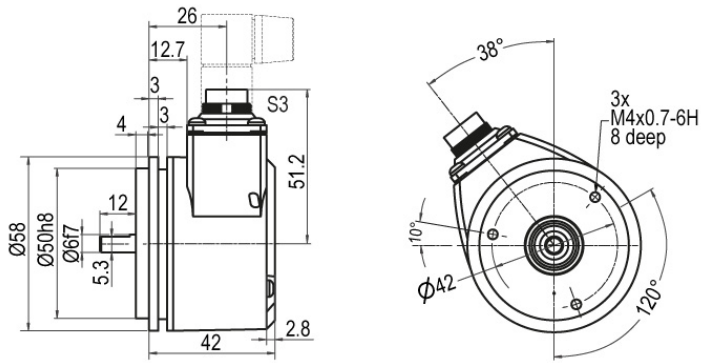
**Description**

**ABN inv. poss.**


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

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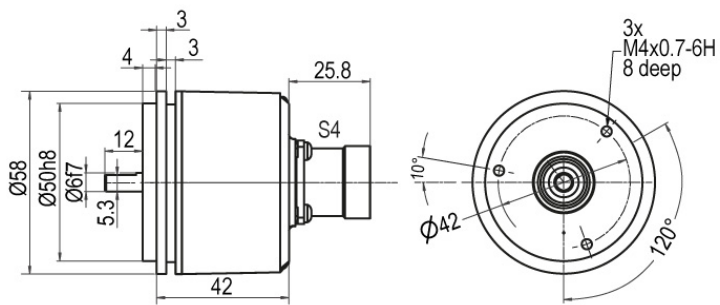
Assignments	
	<b>S2</b>
	<b>7-pin</b>
	
<b>Circuit</b>	N35
<b>GND</b>	1
<b>(+) Vcc</b>	2
<b>A</b>	3
<b>B</b>	4
<b>N</b>	5
<b>Light reserve warning</b>	-
<b>A inv.</b>	-
<b>B inv.</b>	-
<b>N inv.</b>	-
<b>n. c.</b>	6, 7
<b>Shield</b>	-

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

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

-

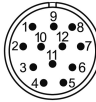
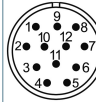
Assignments	
	S3
	7-pin
	
<b>Circuit</b>	N35
<b>GND</b>	1
<b>(+) Vcc</b>	2
<b>A</b>	3
<b>B</b>	4
<b>N</b>	5
<b>Light reserve warning</b>	-
<b>A inv.</b>	-
<b>B inv.</b>	-
<b>N inv.</b>	-
<b>n. c.</b>	6, 7
<b>Shield</b>	-



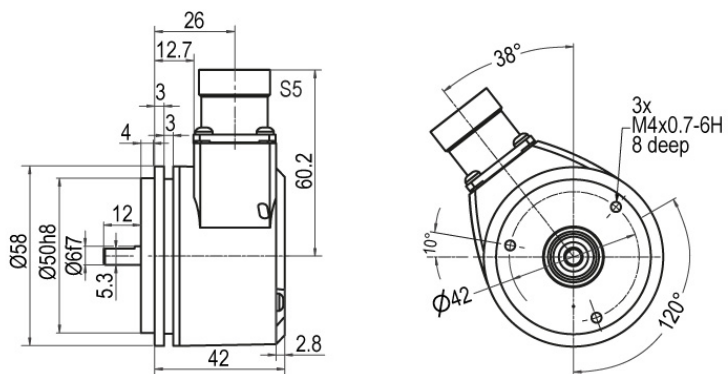
**WDGI 58A: Connector (M23) S4, axial, 12-pin**

**Description**
**ABN inv. poss.**
**S4** axial, 12-pin, Connector connected to encoder housing

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**Assignments**

	S4 12-pin	S4 12-pin
		
<b>Circuit</b>	N35	M35
<b>GND</b>	10	10
<b>(+) Vcc</b>	12	12
<b>A</b>	5	5
<b>B</b>	8	8
<b>N</b>	3	3
<b>Light reserve warning</b>	-	-
<b>A inv.</b>	-	6
<b>B inv.</b>	-	1
<b>N inv.</b>	-	4
<b>n. c.</b>	1, 2, 4, 6, 7, 9, 11	2, 7, 9, 11
<b>Shield</b>	-	-

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

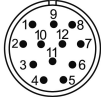
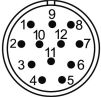


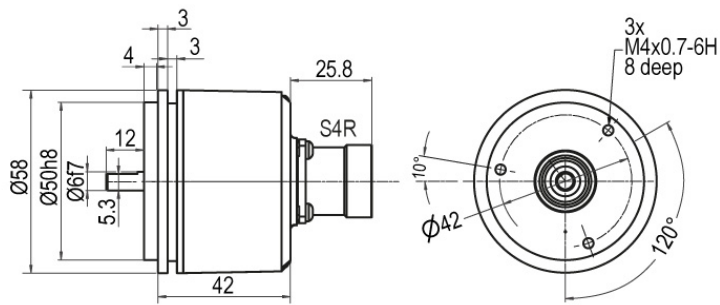
**Description**

ABN inv. poss.

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

•

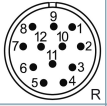
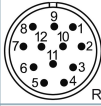
Assignments		
	S5	S5
	12-pin	12-pin
		
<b>Circuit</b>	N35	M35
<b>GND</b>	10	10
<b>(+) Vcc</b>	12	12
<b>A</b>	5	5
<b>B</b>	8	8
<b>N</b>	3	3
<b>Light reserve warning</b>	-	-
<b>A inv.</b>	-	6
<b>B inv.</b>	-	1
<b>N inv.</b>	-	4
<b>n. c.</b>	1, 2, 4, 6, 7, 9, 11	2, 7, 9, 11
<b>Shield</b>	-	-

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

**Description**

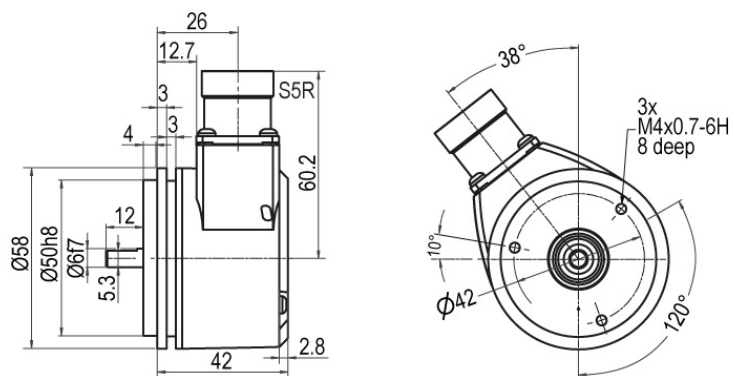
ABN inv. poss.

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

•

Assignments		
	S4R 12-pin	S4R 12-pin
		
<b>Circuit</b>	N35	M35
<b>GND</b>	10	10
<b>(+) Vcc</b>	12	12
<b>A</b>	5	5
<b>B</b>	8	8
<b>N</b>	3	3
<b>Light reserve warning</b>	-	-
<b>A inv.</b>	-	6
<b>B inv.</b>	-	1
<b>N inv.</b>	-	4
<b>n. c.</b>	1, 2, 4, 6, 7, 9, 11	2, 7, 9, 11
<b>Shield</b>	-	-

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

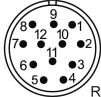



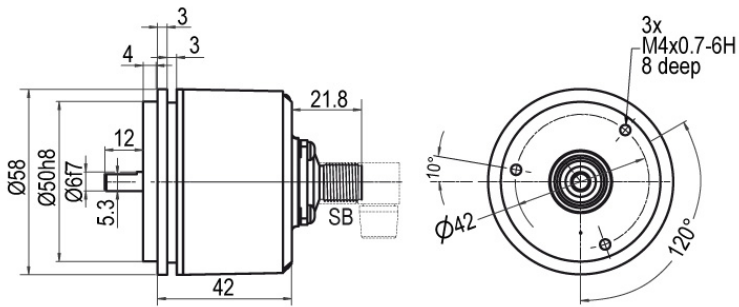
**Description**

**ABN inv. poss.**

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







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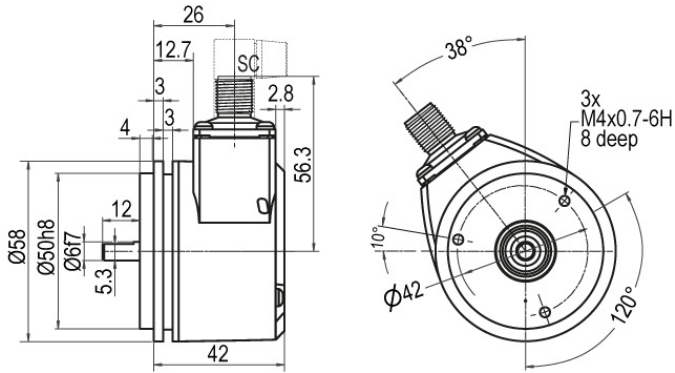
Assignments		
	S5R	S5R
	12-pin	12-pin
		
<b>Circuit</b>	N35	M35
<b>GND</b>	10	10
<b>(+) Vcc</b>	12	12
<b>A</b>	5	5
<b>B</b>	8	8
<b>N</b>	3	3
<b>Light reserve warning</b>	-	-
<b>A inv.</b>	-	6
<b>B inv.</b>	-	1
<b>N inv.</b>	-	4
<b>n. c.</b>	1, 2, 4, 6, 7, 9, 11	2, 7, 9, 11
<b>Shield</b>	-	-

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

**Description**
**ABN inv. poss.**

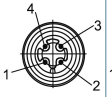
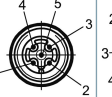
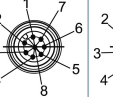
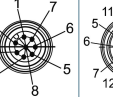
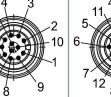
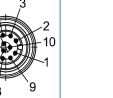
<b>SB4</b>	axial, 4-pin, Connector connected to encoder housing	-
<b>SB5</b>	axial, 5-pin, Connector connected to encoder housing	-
<b>SB8</b>	axial, 8-pin, Connector connected to encoder housing	•
<b>SB12</b>	axial, 12-pin, Connector connected to encoder housing	•

**Assignments**

	<b>SB4</b>	<b>SB5</b>	<b>SB8</b>	<b>SB8</b>	<b>SB12</b>	<b>SB12</b>
	<b>4-pin</b>	<b>5-pin</b>	<b>8-pin</b>	<b>8-pin</b>	<b>12-pin</b>	<b>12-pin</b>
						
<b>Circuit</b>	N35	N35	N35	M35	N35	M35
<b>GND</b>	3	3	1	1	3	3
<b>(+) Vcc</b>	1	1	2	2	1	1
<b>A</b>	2	4	3	3	4	4
<b>B</b>	4	2	4	4	6	6
<b>N</b>	-	5	5	5	8	8
<b>Light reserve warning</b>	-	-	-	-	-	-
<b>A inv.</b>	-	-	-	6	-	9
<b>B inv.</b>	-	-	-	7	-	7
<b>N inv.</b>	-	-	-	8	-	10
<b>n. c.</b>	-	-	6, 7, 8	-	2, 5, 7, 9, 10, 11, 12	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						
	<b>SC4</b>	<b>SC5</b>	<b>SC8</b>	<b>SC8</b>	<b>SC12</b>	<b>SC12</b>
	<b>4-pin</b>	<b>5-pin</b>	<b>8-pin</b>	<b>8-pin</b>	<b>12-pin</b>	<b>12-pin</b>
						
<b>Circuit</b>	N35	N35	N35	M35	N35	M35
<b>GND</b>	3	3	1	1	3	3
<b>(+) Vcc</b>	1	1	2	2	1	1
<b>A</b>	2	4	3	3	4	4
<b>B</b>	4	2	4	4	6	6
<b>N</b>	-	5	5	5	8	8
<b>Light reserve warning</b>	-	-	-	-	-	-
<b>A inv.</b>	-	-	-	6	-	9
<b>B inv.</b>	-	-	-	7	-	7
<b>N inv.</b>	-	-	-	8	-	10
<b>n. c.</b>	-	-	6, 7, 8	-	2, 5, 7, 9, 10, 11, 12	2, 5, 11, 12
<b>Shield</b>	-	-	-	-	-	-

## Options

### Low-friction bearings

The encoder WDG1 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 WDG1 58A with the output circuit types M35, N35 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 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**

### Cable length

The encoder WDG1 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>						
1024	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 256, 512, 1024 Other PPRs on request					
<b>Channels:</b>						
ABN	AB, ABN					
<b>Output circuit</b>						
M35	<b>Resolution PPR</b>	<b>Power supply VDC</b>	<b>Output circuit</b>	<b>Light reserve warning</b>	<b>Order key</b>	
	up to 1024	5 - 30	HTL inverted	-	M35	
		5 - 30	HTL	-	N35	
<b>Electrical connections</b>						
K2	<b>Description</b>			<b>ABN inv. poss.</b>	<b>Order key</b>	
	<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	



Options		
Description	Order key	
Low-friction bearings	AAC	
Low temperature	ACA	
Pressure equalising membrane	ACR	
Without option	Empty	
Cable length	XXX = Decimeter	

<b>Example Order No.=</b>	WDGI 58A	06	1024	ABN	M35	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/>



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