

# Online Data Sheet

## Encoder WDG 58A

[www.wachendorff-automation.com/wdg58a](http://www.wachendorff-automation.com/wdg58a)

### **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 58A



- Robust construction for industrial use
- 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
- With light reserve warning
- Optional: -40 °C up to +80 °C

[www.wachendorff-automation.com/wdg58a](http://www.wachendorff-automation.com/wdg58a)

## Resolution

Max. pulses per revolution up to 25000 PPR  
PPR

## Mechanical Data

### Housing

Flange	synchro flange
Flange material	aluminium
Housing cap	aluminium, 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
Nominale 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
Nominale 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: max. 100 mA 5 VDC up to 30 VDC: max. 70 mA 10 VDC up to 30 VDC: max. 100 mA
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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 5000 ppr: max. 2 MHz HTL more than 5000 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, G24, H24, I24, P24, R24 only

## Accuracy

Phase offset	90° ± max. 7.5 % of the pulse length
pulse-/pause-ratio	50 % ± max. 7 %

## General Data

Weight	approx. 230 g
Connections	cable or connector outlet
Protection rating (EN 60529)	IP67, shaft sealed to IP65
Operating temperature	-20 °C up to +80 °C 1 Vpp: -10 °C up to +70 °C
Storage temperature	-30 °C up to +80 °C

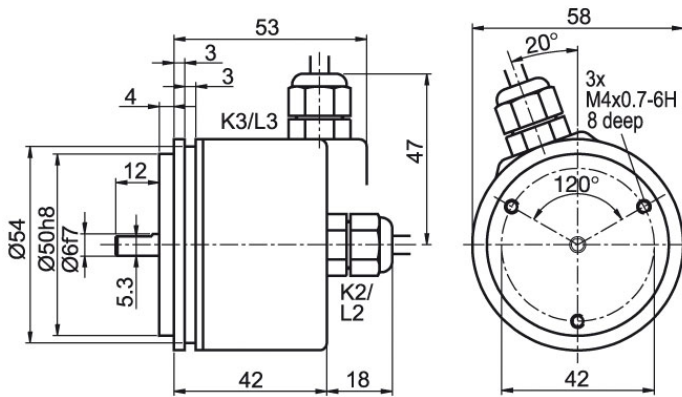
## More Information

General technical data

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

Options

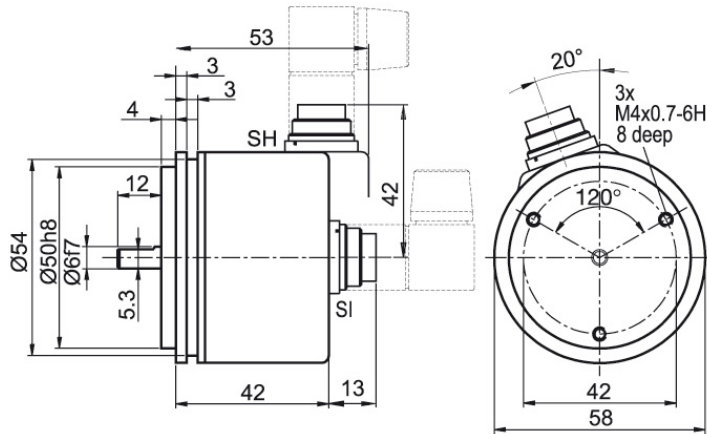
<http://www.wachendorff-automation.com/acc>

**Cable connection K2, K3, L2, L3 with 2 m cable**

**Description**












		ABN inv. poss.
<b>K2</b>	axial, shield not connected	•
<b>L2</b>	axial, shield connected to encoder housing	•
<b>K3</b>	radial, shield not connected	•
<b>L3</b>	radial, shield connected to encoder housing	•

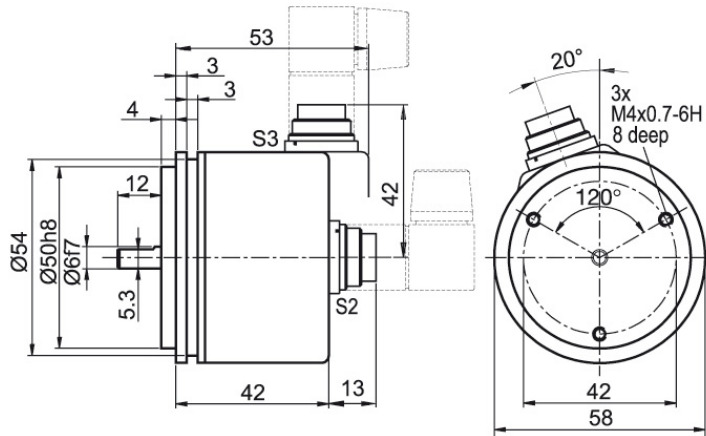
**Assignments**

	<b>K2, K3, L2, L3</b>	<b>K2, L2, K3, L3</b>	<b>K2, L2, K3, L3</b>	<b>K2, L2, K3, L3</b>	<b>K2, L2, K3, L3</b>
<b>Circuit</b>	G05, G24	F05, H05, F24, H24, H30	I05, I24, 524	P05, R05, P24, R24, 245, 645, R30	SIN
<b>GND</b>	WH	WH	WH	WH	WH
<b>+UB</b>	BN	BN	BN	BN	BN
<b>A</b>	GN	GN	GN	GN	GN
<b>B</b>	YE	YE	YE	YE	GY
<b>N</b>	GY	GY	GY	GY	-
<b>Light reserve warning</b>	PK	-	PK	-	-
<b>A inv.</b>	-	-	RD	RD	YE
<b>B inv.</b>	-	-	BK	BK	PK
<b>N inv.</b>	-	-	VT	VT	-
<b>Shield</b>	flex	flex	flex	flex	flex

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




Description	ABN inv. poss.
<b>SI5</b> axial, 5-pin, Connector connected to encoder housing	-
<b>SH5</b> radial, 5-pin, Connector connected to encoder housing	-
<b>SI6</b> axial, 6-pin, Connector connected to encoder housing	-
<b>SH6</b> radial, 6-pin, Connector connected to encoder housing	-
<b>SI8</b> axial, 8-pin, Connector connected to encoder housing	•
<b>SH8</b> radial, 8-pin, Connector connected to encoder housing	•
<b>SI12</b> axial, 12-pin, Connector connected to encoder housing	•
<b>SH12</b> radial, 12-pin, Connector connected to encoder housing	•

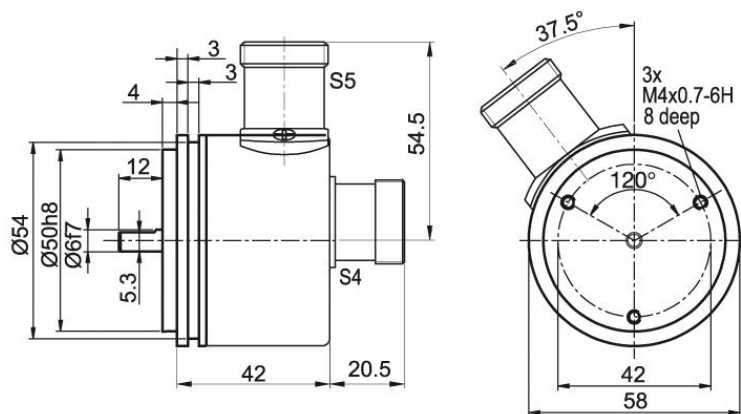
Assignments	SI5, SH5	SI6, SH6	SI6, SH6	SI8, SH8	SI8, SH8	SI8, SH8	SI12, SH12	SI12, SH12	SI12, SH12	SI12, SH12	SI12, SH12
	5-pin	6-pin	6-pin	8-pin	8-pin	8-pin	12-pin	12-pin	12-pin	12-pin	12-pin
											
<b>Circuit</b>	F05, H05, F24, H24, H30	G05, G24	F05, H05, F24, H24, H30	F05, H05, F24, H24, H30	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
<b>GND</b>	1	6	6	1	1	1	K, L	K, L	K, L	K, L	K, L
<b>+UB</b>	2	1	1	2	2	2	M, B	M, B	M, B	M, B	M, B
<b>A</b>	3	2	2	3	3	3	E	E	E	E	E
<b>B</b>	4	4	4	4	4	4	H	H	H	H	H
<b>N</b>	5	3	3	5	5	-	C	C	C	C	-
<b>Light reserve warning</b>	-	5	-	-	-	-	G	-	G	-	-
<b>A inv.</b>	-	-	-	-	6	6	-	-	F	F	F
<b>B inv.</b>	-	-	-	-	7	7	-	-	A	A	A
<b>N inv.</b>	-	-	-	-	8	-	-	-	D	D	-
<b>n. c.</b>	-	-	5	6, 7, 8	-	5, 8	A, D, F, J	A, D, F, G, J	J	G, J	D, G, J
<b>Shield</b>	-	-	-	-	-	-	-	-	-	-	-

**Connector (M16x0.75) S2, S3, 7-pin**

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

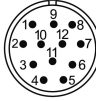
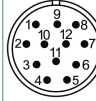
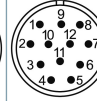
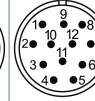
<b>S2</b>	axial, 7-pin, Connector connected to encoder housing	-
<b>S3</b>	radial, 7-pin, Connector connected to encoder housing	-

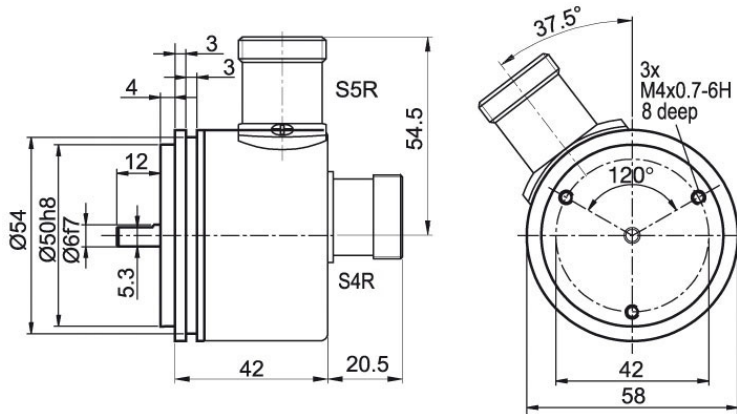
**Assignments**

	<b>S2, S3</b>	<b>S2, S3</b>
	<b>7-pin</b>	<b>7-pin</b>
		
<b>Circuit</b>	G05, G24	F05, H05, F24, H24, H30
<b>GND</b>	1	1
<b>+UB</b>	2	2
<b>A</b>	3	3
<b>B</b>	4	4
<b>N</b>	5	5
<b>Light reserve warning</b>	6	-
<b>A inv.</b>	-	-
<b>B inv.</b>	-	-
<b>N inv.</b>	-	-
<b>n. c.</b>	7	6, 7
<b>Shield</b>	-	-

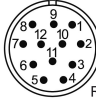
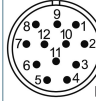
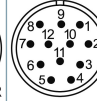
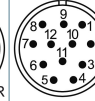
**Connector (M23) S4, S5, 12-pin**

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

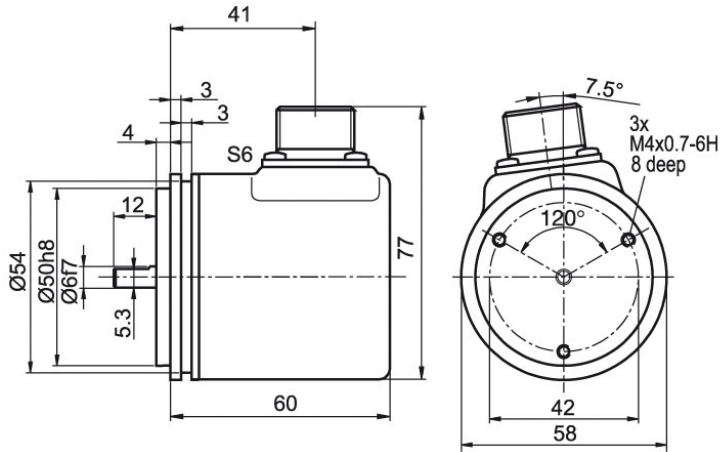
- S4** axial, 12-pin, Connector connected to encoder housing •
- S5** radial, 12-pin, Connector connected to encoder housing •

Assignments				
	S4, S5	S4, S5	S4, S5	S4, S5
	12-pin	12-pin	12-pin	12-pin
				
<b>Circuit</b>	F05, H05, F24, H24, H30	I05, I24, 524	P05, R05, P24, R24, 245, 645, R30	SIN
<b>GND</b>	10	10	10	10
<b>+UB</b>	12	12	12	12
<b>A</b>	5	5	5	5
<b>B</b>	8	8	8	8
<b>N</b>	3	3	3	-
<b>Light reserve warning</b>	-	11	-	-
<b>A inv.</b>	-	6	6	6
<b>B inv.</b>	-	1	1	1
<b>N inv.</b>	-	4	4	-
<b>n. c.</b>	1, 2, 4, 6, 7, 9, 11	2, 7, 9	2, 7, 9, 11	2, 3, 4, 7, 9, 11
<b>Shield</b>	-	-	-	-


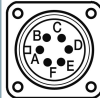
**Connector (M23) S4R, S5R, 12-pin (clockwise)**

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

- S4R** axial, 12-pin, Connector connected to encoder housing •
- S5R** radial, 12-pin, Connector connected to encoder housing •

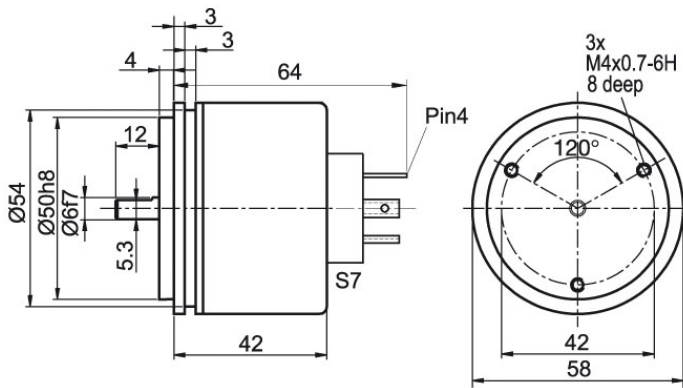
Assignments				
	S4R, S5R	S4R, S5R	S4R, S5R	S4R, S5R
	12-pin	12-pin	12-pin	12-pin
				
<b>Circuit</b>	G05, G24	I05, I24, 524	P05, R05, P24, R24, 245, 645, R30	SIN
<b>GND</b>	10	10	10	10
<b>+UB</b>	12	12	12	12
<b>A</b>	5	5	5	5
<b>B</b>	8	8	8	8
<b>N</b>	3	3	3	-
<b>Light reserve warning</b>	11	11	-	-
<b>A inv.</b>	-	6	6	6
<b>B inv.</b>	-	1	1	1
<b>N inv.</b>	-	4	4	-
<b>n. c.</b>	1, 2, 4, 6, 7, 9	2, 7, 9	2, 7, 9, 11	2, 3, 4, 7, 9, 11
<b>Shield</b>	-	-	-	-

**MIL-connector S6, 6-pin**

**Description**
**ABN inv. poss.**
**S6** radial, 6-pin,


-

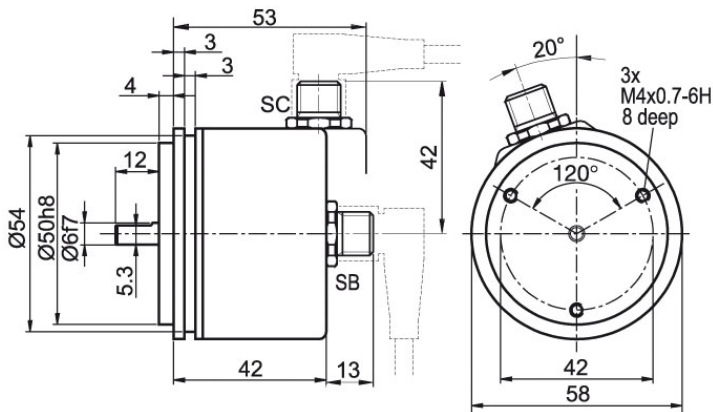
Assignments		
	S6	S6
	6-pin	6-pin
		
<b>Circuit</b>	G05, G24	F05, H05, F24, H24, H30
<b>GND</b>	A	A
<b>+UB</b>	F	F
<b>A</b>	C	C
<b>B</b>	B	B
<b>N</b>	D	D
<b>Light reserve warning</b>	E	-
<b>A inv.</b>	-	-
<b>B inv.</b>	-	-
<b>N inv.</b>	-	-
<b>n. c.</b>	-	E
<b>Shield</b>	-	-



**Valve-connector S7, 4-pin**

**Description**
**ABN inv. poss.**
**S7** axial, 4-pin, Connector connected to encoder housing










-

Assignments	
	<b>S7</b>
	<b>4-pin</b>
	
<b>Circuit</b>	F05, H05, F24, H24, H30
<b>GND</b>	1
<b>+UB</b>	2
<b>A</b>	3
<b>B</b>	4
<b>N</b>	-
<b>Light reserve warning</b>	-
<b>A inv.</b>	-
<b>B inv.</b>	-
<b>N inv.</b>	-
<b>n. c.</b>	-
<b>Shield</b>	-

**Sensor-connector (M12x1) SB, SC, 4-, 5-, 8-, 12-pin**

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

<b>SB4</b>	axial, 4-pin, Connector connected to encoder housing	-
<b>SC4</b>	radial, 4-pin, Connector connected to encoder housing	-
<b>SB5</b>	axial, 5-pin, Connector connected to encoder housing	-
<b>SC5</b>	radial, 5-pin, Connector connected to encoder housing	-
<b>SB8</b>	axial, 8-pin, Connector connected to encoder housing	•
<b>SC8</b>	radial, 8-pin, Connector connected to encoder housing	•
<b>SB12</b>	axial, 12-pin, Connector connected to encoder housing	•
<b>SC12</b>	radial, 12-pin, Connector connected to encoder housing	•

**Assignments**

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

## Options

### Low temperature

The encoder WDG 58A with the output circuit types F24, G24, H24, I24, P24, R24, F05, G05, I05, P05, 245, 524, 645 is also available with the extended temperature range -40 °C up to +80 °C [-40 °F up to +176 °F] (measured at the flange).

### Order key

**ACA**

### Low-friction bearings

The encoder WDG 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**

### Cable length

The encoder WDG 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: 3 m cable = 030

### Order key

**XXX = Decimeter**

Example Order No.	Type				Your encoder
WDG 58A	WDG 58A				WDG 58A
<b>Pulses per revolution PPR I/U (PPR):</b>					
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, 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 Vss Sin/Cos only 1024, 2048 Other PPRs on request				
<b>Channels:</b>					
ABN	AB, ABN (SIN: AB)				
<b>Output circuit</b>					
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
	10000 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				
Description	ABN inv. poss.	Order key		
<b>Cable: length (2 m standard, WDG 58T: 1 m)</b>				
axial, shield not connected	•	K2	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		
connector, MIL, 6-pin, radial	-	S6		
connector, Valve, 4-pin, axial	-	S7		
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			
Without option	Empty			
Low temperature	ACA			
Low-friction bearings	AAC			
Cable length	XXX = Decimeter			

<b>Example Order No.=</b>	WDG 58A	5000	ABN	G24	K2							<b>Your encoder</b>
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