

# Online Data Sheet

## Encoder WDG 58B

[www.wachendorff-automation.com/wdg58b](http://www.wachendorff-automation.com/wdg58b)

### 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 58B



- Rugged industrial standard encoder
- 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
- With light reserve warning
- Optional: -40 °C up to +80 °C  
Protection to IP67 all around

[www.wachendorff-automation.com/wdg58b](http://www.wachendorff-automation.com/wdg58b)

## Resolution

Max. pulses per revolution up to 25000 PPR  
PPR

## Mechanical Data

### Housing

Flange	clamping 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. 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

### Bearings

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

## Machinery Directive: basic data safety integrity level

MTTF <sub>d</sub>	200 a
Mission time (TM)	25 a
Nominale service life (L10h)	1 x 10 <sup>11</sup> 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: max. 100 mA 5 VDC up to 30 VDC: max. 70 mA 10 VDC up to 30 VDC: max. 100 mA
----------------------------------	---

Output circuit	TTL TTL, RS422 compatible, inv. HTL HTL, inv. 1 V <sub>ss</sub> sin/cos
Pulse frequency	TTL 5000 ppr: max. 200 kHz HTL 5000 I/U: max. 200 kHz TTL 5000 ppr: max. 2 MHz HTL 5000 ppr: max. 600 kHz 1 V <sub>ss</sub> sin/cos: max. 100 kHz
Channels	AB ABN and inverted signals
Load	max. 40 mA / channel @ 1 V <sub>ss</sub> 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	50 % ± max. 7 %

## General Data

Weight	approx. 250 g
Connections	cable or connector outlet
Protection rating (EN 60529)	IP67, shaft sealed to IP65
Operating temperature	-20 °C up to +80 °C 1 V <sub>ss</sub> : -10 °C up to +70 °C
Storage temperature	-30 °C up to +80 °C

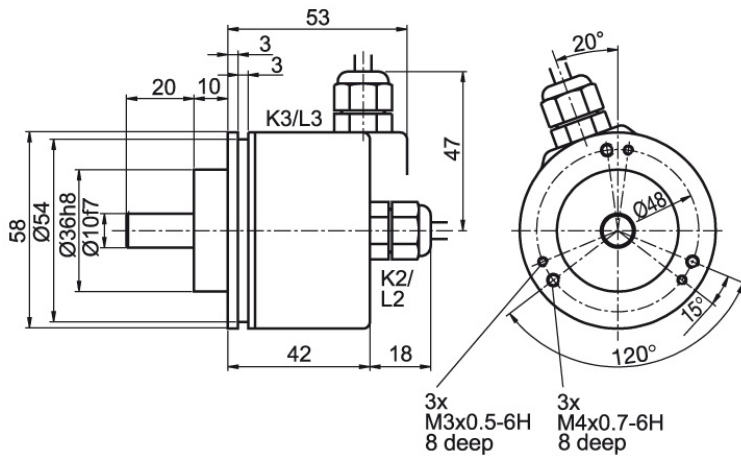
## More Information

General technical data

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

Options

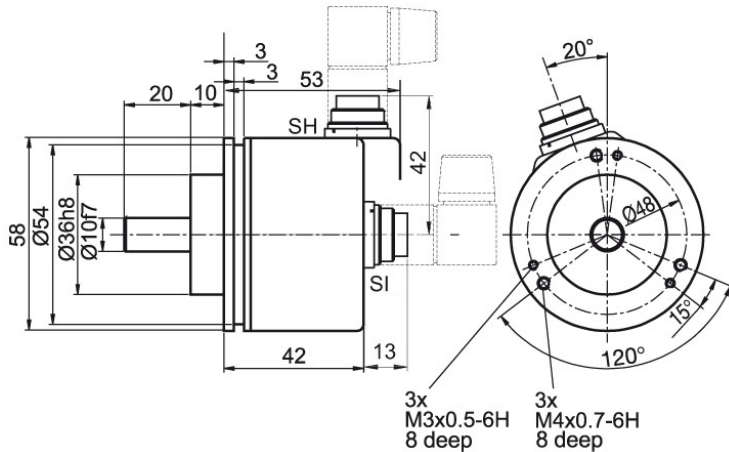
<http://www.wachendorff-automation.com/acc>

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

**Description**

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

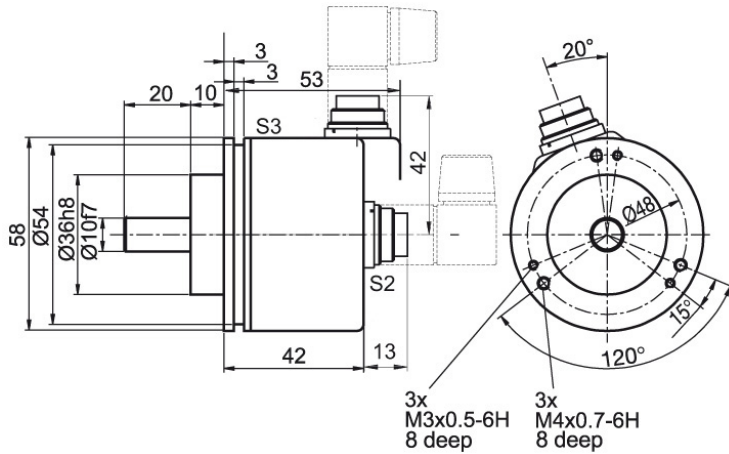
**Assignments**

	K2, K3, L2, L3	K2, L2, K3, L3	K2, L2, K3, L3	K2, L2, K3, L3	K2, L2, K3, L3
<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, shield connected to encoder housing	-
<b>SH5</b> radial, 5-pin, shield connected to encoder housing	-
<b>SI6</b> axial, 6-pin, shield connected to encoder housing	-
<b>SH6</b> radial, 6-pin, shield connected to encoder housing	-
<b>SI8</b> axial, 8-pin, shield connected to encoder housing	•
<b>SH8</b> radial, 8-pin, shield connected to encoder housing	•
<b>SI12</b> axial, 12, shield connected to encoder housing	•
<b>SH12</b> radial, 12, shield 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	12	12	12	12
<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>	-	-	-	-	-	-	-	-	-	-	-

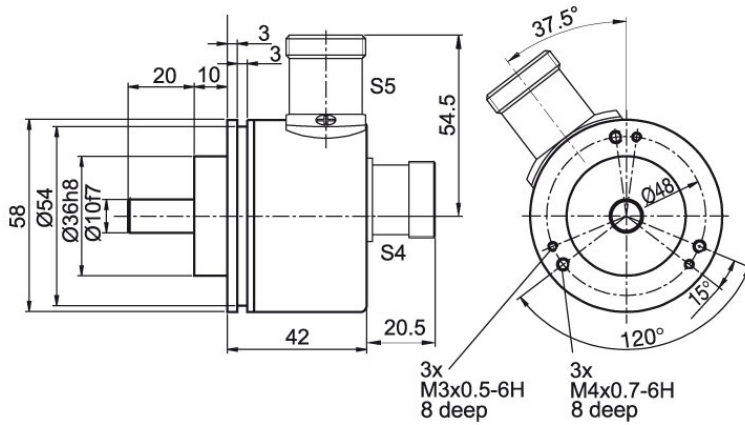
**Connector (M16x0.75) S2, S3, 7-pin**

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

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

**Assignments**

	S2, S3 7-pin	S2, S3 7-pin
		
<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>	-	-




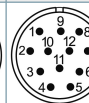
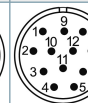
**Connector (M23) S4, S5, 12-pin**

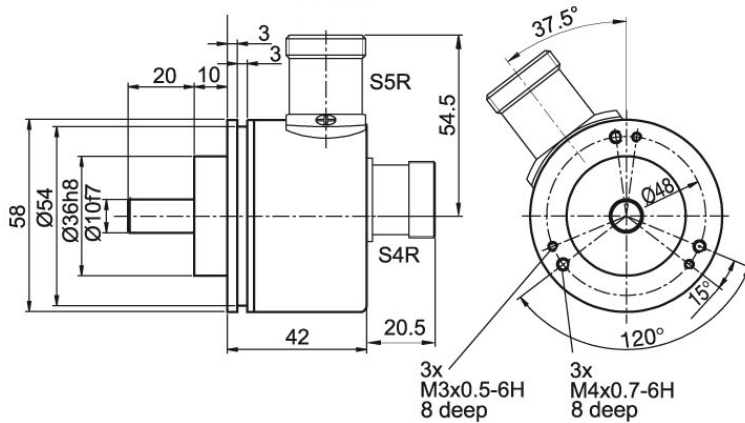


**Description**

ABN inv. poss.

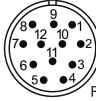
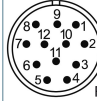
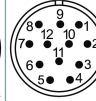
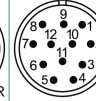
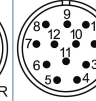
<b>S4</b>	axial, 12, shield connected to encoder housing	•
<b>S5</b>	radial, 12, shield connected to encoder housing	•

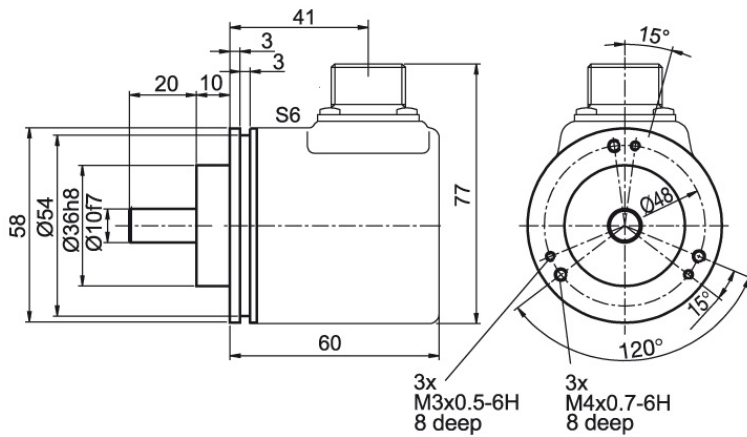
Assignments					
	S4, S5	S4, S5	S4, S5	S4, S5	S4, S5
	12	12	12	12	12
					
<b>Circuit</b>	G05, G24	F05, H05, F24, H24, H30	I05, I24, 524	P05, R05, P24, R24, 245, 645, R30	SIN
<b>GND</b>	10	10	10	10	10
<b>+UB</b>	12	12	12	12	12
<b>A</b>	5	5	5	5	5
<b>B</b>	8	8	8	8	8
<b>N</b>	3	3	3	3	-
<b>Light reserve 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	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.**


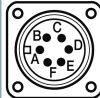
- S4R** axial, 12, shield connected to encoder housing
- S5R** radial, 12, shield connected to encoder housing

- 
- 

Assignments					
	S4R, S5R	S4R, S5R	S4R, S5R	S4R, S5R	S4R, S5R
	12	12	12	12	12
					
<b>Circuit</b>	G05, G24	F05, H05, F24, H24, H30	I05, I24, 524	P05, R05, P24, R24, 245, 645, R30	SIN
<b>GND</b>	10	10	10	10	10
<b>+UB</b>	12	12	12	12	12
<b>A</b>	5	5	5	5	5
<b>B</b>	8	8	8	8	8
<b>N</b>	3	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	1, 2, 4, 6, 7, 9, 11	2, 7, 9	2, 7, 9, 11	2, 3, 4, 7, 9, 11
<b>Shield</b>	-	-	-	-	-

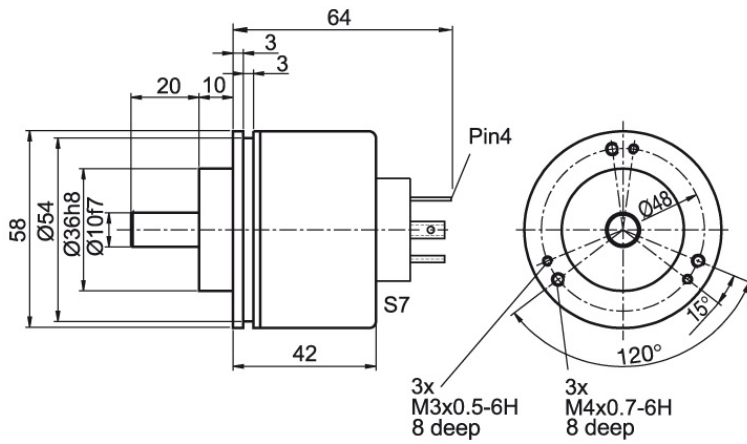
**MIL-connector S6, 6-pin**

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

-

Assignments		
	S6 6-pin	S6 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**




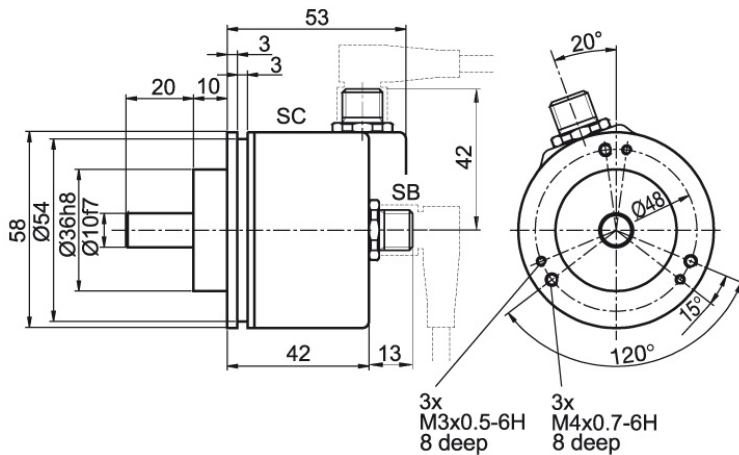
**Description**

**ABN inv. poss.**




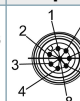



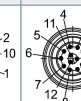
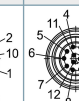
**S7** axial, 4-pin, shield connected to encoder housing

-

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

Assignments	SB4, SC4	SB5, SC5	SB8, SC8	SB8, SC8	SB8, SC8	SB12, SC12	SB12, SC12	SB12, SC12	SB12, SC12
	4-pin	5-pin	8-pin	8-pin	8-pin	12	12	12	12
									
<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 58B 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

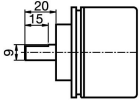
**ACA**

### Shaft with flat

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

### Order key

**AAF**



### Low-friction bearings

The encoder WDG 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**

### Cable length

The encoder WDG 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](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**

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

The encoder WDG 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

Example Order No.	Type				Your encoder
WDG 58B	WDG 58B				WDG 58B
<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, 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 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 VSS sin/cos	-	SIN

Electrical connections		ABN inv. poss.	Order key
K2	<b>Description</b>		
	<b>Cable: length (2 m standard)</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, axial	•	SI12
	connector, M16x0.75, 12, radial	•	SH12
	connector, M16x0.75, 7-pin, axial	-	S2
	connector, M16x0.75, 7-pin, radial	-	S3
	connector, M23, 12, axial	•	S4
	connector, clockwise pin count, M23, 12, axial	•	S4R
	connector, M23, 12, radial	•	S5
	connector, clockwise pin count, M23, 12, 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, axial	•	SB12
	sensor-connector, M12x1, 12, radial	•	SC12
	<b>Options</b>		
	<b>Description</b>	<b>Order key</b>	
	Without option	Empty	
	Low temperature	ACA	
	Shaft with flat	AAF	
	Low-friction bearings	AAC	
	IP67	AAO	
	Cable length	XXX = Decimeter	

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