

# Online Data Sheet

## Encoder WDG 58E

[www.wachendorff-automation.com/wdg58e](http://www.wachendorff-automation.com/wdg58e)

### **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 58 E



- Rugged industrial standard end hollow shaft encoder
- Up to 25000 PPR by use of high grad electronics
- Maximum mechanical and electrical safety
- High protection accordingt IP67, shaft sealed to IP65, high noise immunity
- Hollow bore (blind)
- 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/wdg58e](http://www.wachendorff-automation.com/wdg58e)

## Resolution

Max. pulses per revolution PPR	up to 25000 PPR
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## Mechanical Data

<b>Housing</b>	
Flange	hollow shaft (blind-bored)
Flange material	aluminium
Housing cap	aluminium, powder coated
Torque supports	incl. 1 torque support WDGDS10001
- 1. Spring plate compensation	axial: ±0.8 mm, radial: ±0.2 mm
- Max. operating speed	6000 rpm up to max. protection rating +60 °C
- 2. Cylinder pin 4 mm	needs accessories WDGDS10005
- Compensation	axial: ±0.5 mm, radial: ±1.5 mm, Max. operating speed: 3000 rpm
Housing	Ø 58 mm

## Shaft(s)

Shaft material	stainless steel
Starting torque	approx. 1.6 Ncm at ambient temperature
Fixing	permanently attached clamping ring

Shaft	Ø 8 mm
Shaft length	L: 35 mm
Insertion depth min.	17 mm
Insertion depth max.	39 mm
Max. Permissible shaft loading radial	80 N
Max. Permissible shaft loading axial	60 N

Shaft	Ø 10 mm
Shaft length	L: 35 mm
Insertion depth min.	17 mm
Insertion depth max.	39 mm
Max. Permissible shaft loading radial	80 N
Max. Permissible shaft loading axial	60 N

Shaft	Ø 12 mm
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Shaft length	L: 35 mm
Insertion depth min.	17 mm
Insertion depth max.	39 mm
Max. Permissible shaft loading radial	80 N
Max. Permissible shaft loading axial	60 N

Shaft	Ø 15 mm
Shaft length	L: 35 mm
Insertion depth min.	17 mm
Insertion depth max.	39 mm
Max. Permissible shaft loading radial	80 N
Max. Permissible shaft loading axial	60 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	6000 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 6000 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 Vpp sin/cos

Pulse frequency	TTL 5000 ppr: max. 200 kHz HTL 5000 ppr: max. 200 kHz TTL 5000 ppr: max. 2 MHz HTL 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. 220 g
Connections	cable or connector, radial
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

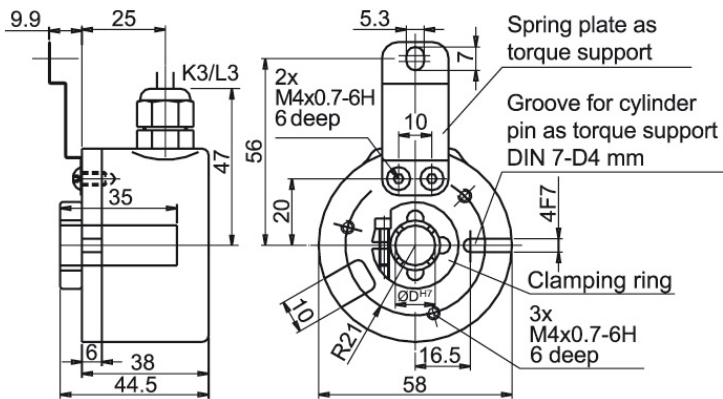
#### More Information

General technical data

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

Options

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

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

**Description**
**ABN inv. poss.**
**K3** radial, shield not connected

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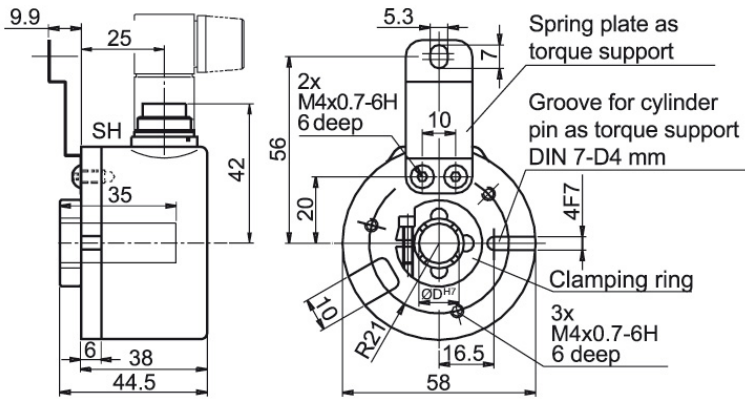
**L3** radial, shield connected to encoder housing

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**Assignments**

	K3, L3	K3, L3	K3, L3	K3, L3	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) SH, 5-, 6-, 8-, 12-pin**



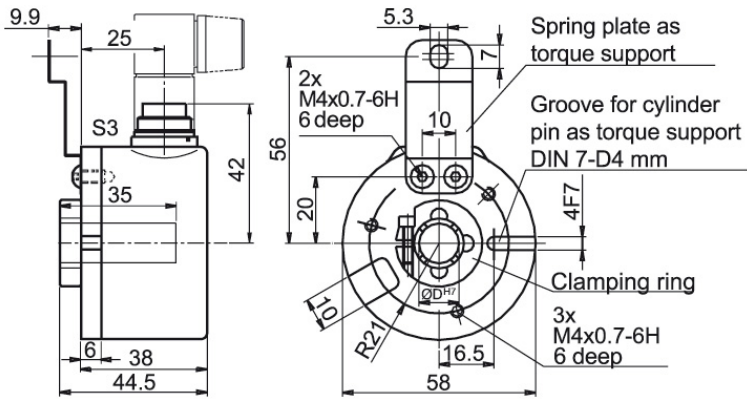
**Description**

**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**



	<b>SH5</b>	<b>SH6</b>	<b>SH6</b>	<b>SH8</b>	<b>SH8</b>	<b>SH12</b>	<b>SH12</b>	<b>SH12</b>	<b>SH12</b>	<b>SH12</b>
	<b>5-pin</b>	<b>6-pin</b>	<b>6-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>12-pin</b>
<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	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	K, L	K, L	K, L	K, L	K, L
<b>+UB</b>	2	1	1	2	2	M, B	M, B	M, B	M, B	M, B
<b>A</b>	3	2	2	3	3	E	E	E	E	E
<b>B</b>	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	-	-	F	F	F
<b>B inv.</b>	-	-	-	-	7	-	-	A	A	A
<b>N inv.</b>	-	-	-	-	8	-	-	D	D	-
<b>n. c.</b>	-	-	5	6, 7, 8	-	A, D, F, J	A, D, F, G, J	J	G, J	D, G, J
<b>Shield</b>	-	-	-	-	-	-	-	-	-	-

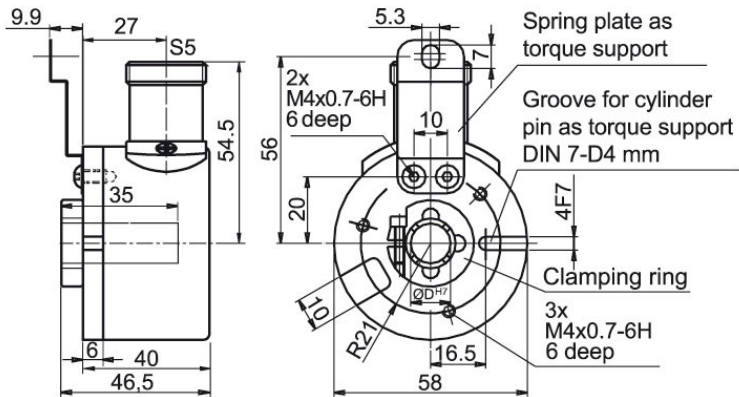
**Connector (M16x0.75) S3, 7-pin**

**Description**

ABN inv. poss.

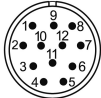



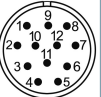
**S3** radial, 7-pin, Connector connected to encoder housing

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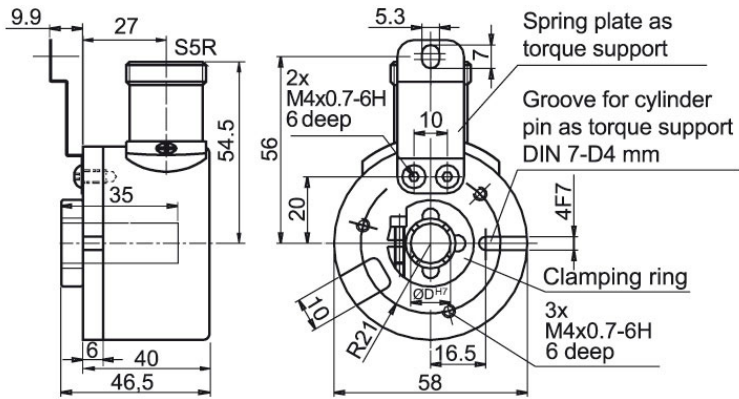
Assignments		
	S3	S3
	7-pin	7-pin
		
<b>Circuit</b>	G05, G24	F05, H05, F24, H24, H30
<b>GND</b>	1	1
<b>+UB</b>	2	2
<b>A</b>	3	3
<b>B</b>	4	4
<b>N</b>	5	5
<b>Light reserve warning</b>	6	-
<b>A inv.</b>	-	-
<b>B inv.</b>	-	-
<b>N inv.</b>	-	-
<b>n. c.</b>	7	6, 7
<b>Shield</b>	-	-

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

**Description**
**ABN inv. poss.**
**S5** radial, 12-pin, Connector connected to encoder housing

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Assignments					
	S5	S5	S5	S5	S5
	12-pin	12-pin	12-pin	12-pin	12-pin
					
<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) S5R, 12-pin (clockwise)**

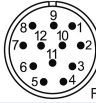
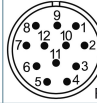
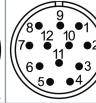
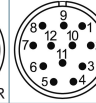
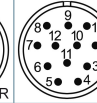


**Description**

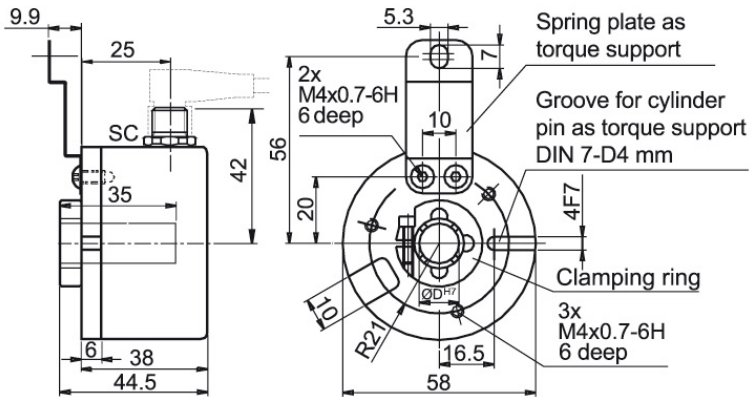
ABN inv. poss.

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

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








Assignments					
	S5R	S5R	S5R	S5R	S5R
	12-pin	12-pin	12-pin	12-pin	12-pin
					
<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>	-	-	-	-	-



**Sensor-connector (M12x1) SC, 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>SC8</b>	<b>SC12</b>	<b>SC12</b>	<b>SC12</b>	<b>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 58E with the output circuit types F24, G24, H24, I24, P24, R24, F05, G05, I05, P05, 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**

### Cable length

The encoder WDG 58E 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 58E	WDG 58E				WDG 58E
<b>Bore size</b>					
10	08; 10; 12; 15				
<b>Pulses per revolution PPR I/U (PPR):</b>					
1024	4, 6, 10, 32, 36, 50, 60, 64, 100, 120, 125, 127, 150, 180, 200, 216, 240, 250, 254, 256, 300, 314, 360, 400, 500, 512, 600, 625, 720, 750, 768, 800, 810, 900, 1000, 1024, 1200, 1250, 1270, 1440, 1500, 1800, 2000, 2048, 2500, 3000, 3600, 4000, 4096, 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	<b>Resolution PPR</b>	<b>Power supply VDC</b>	<b>Output circuit</b>	<b>Light reserve warning</b>	<b>Order key</b>
	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
	1024, 2048	4.75 - 5.5	TTL, RS422 comp., inverted	-	645
			1 Vpp sin/cos	-	SIN
	<b>Electrical connections</b>				
K3	<b>Description</b>			<b>ABN inv. poss.</b>	<b>Order key</b>
	<b>Cable: length (2 m standard)</b>				
	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, radial			-	SH5
	connector, M16x0.75, 6-pin, radial			-	SH6
	connector, M16x0.75, 8-pin, radial			•	SH8
	connector, M16x0.75, 12-pin, radial			•	SH12
	connector, M16x0.75, 7-pin, radial			-	S3
	connector, M23, 12-pin, radial			•	S5
	connector, clockwise pin count, M23, 12-pin, radial			•	S5R
	sensor-connector, M12x1, 4-pin, radial			-	SC4
	sensor-connector, M12x1, 5-pin, radial			-	SC5
	sensor-connector, M12x1, 8-pin, radial			•	SC8
	sensor-connector, M12x1, 12-pin, radial			•	SC12

Options		
Description	Order key	
Without option	Empty	
Low temperature	ACA	
Cable length	XXX = Decimeter	

<b>Example Order No.=</b>	WDG 58E	10	1024	ABN	G24	K3			WDG 58E								<b>Your encoder</b>
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