

# 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 58E



- Rugged industrial standard end hollow shaft encoder
- Up to 25000 PPR by use of high grad electronics
- Maximum mechanical and electrical safety
- High protection rating 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
Power supply/Current consumption	5 VDC up to 30 VDC: max. 70 mA
Power supply/Current consumption	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 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	5000 ppr: 50 % ± max. 7 % >5000 ppr: 50 % ± max. 10 %

#### 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

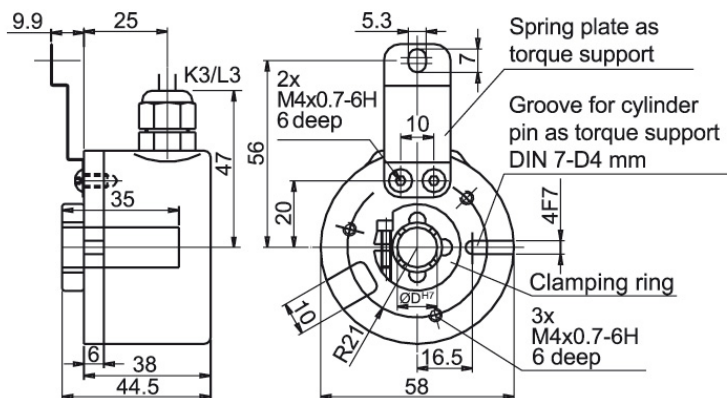
General technical data

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

Options

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

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

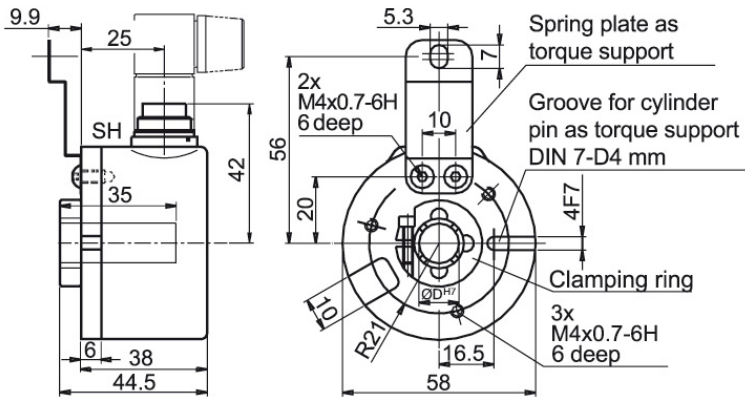


**Description**

**ABN inv. poss.**

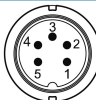
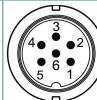
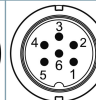
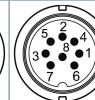
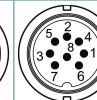
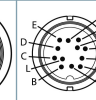
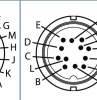
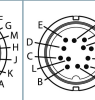
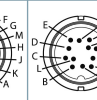
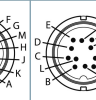
<b>K3</b>	radial, shield not connected	•
<b>L3</b>	radial, shield connected to encoder housing	•

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>(+) Vcc</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

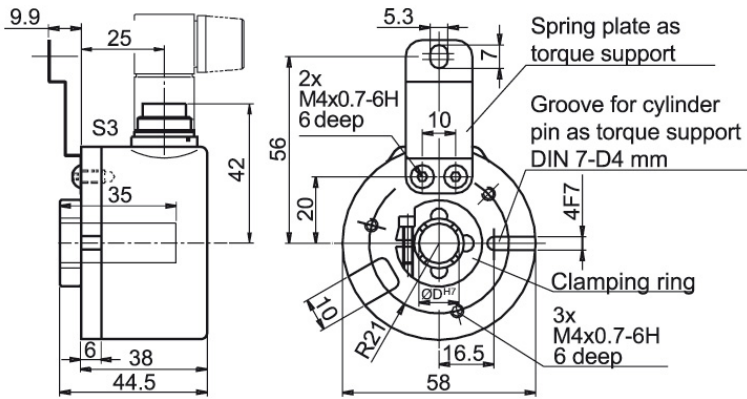
**Connector (M16x0.75) SH, 5-, 6-, 8-, 12-pin**

**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**

	SH5	SH6	SH6	SH8	SH8	SH12	SH12	SH12	SH12	SH12
	5-pin	6-pin	6-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	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>(+) Vcc</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


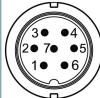


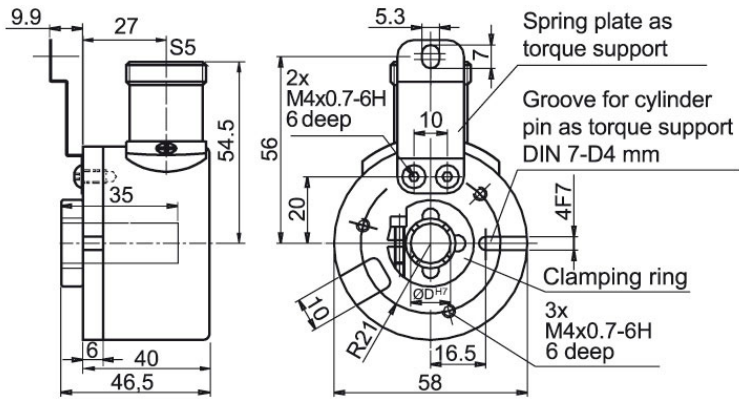
### Description

ABN inv. poss.

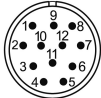



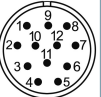
**S3** radial, 7-pin, Connector connected to encoder housing

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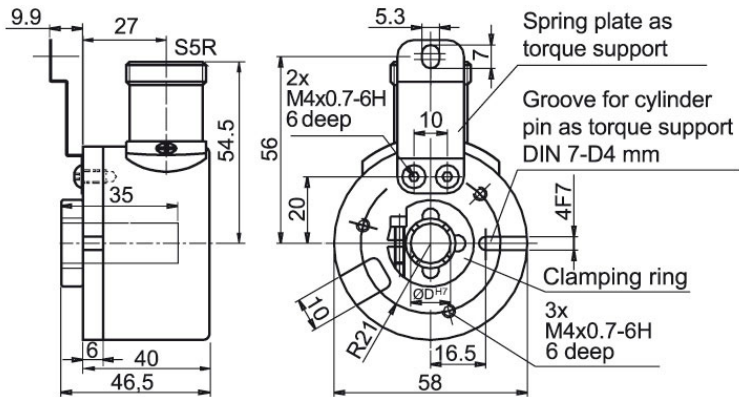
Assignments		
	S3	S3
	7-pin	7-pin
		
<b>Circuit</b>	G05, G24	F05, H05, F24, H24, H30
<b>GND</b>	1	1
<b>(+) Vcc</b>	2	2
<b>A</b>	3	3
<b>B</b>	4	4
<b>N</b>	5	5
<b>Light reserve warning</b>	6	-
<b>A inv.</b>	-	-
<b>B inv.</b>	-	-
<b>N inv.</b>	-	-
<b>n. c.</b>	7	6, 7
<b>Shield</b>	-	-

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

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

•

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>(+) Vcc</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)**

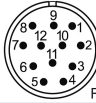
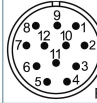
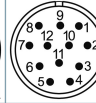
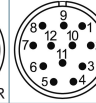
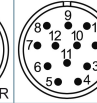


**Description**

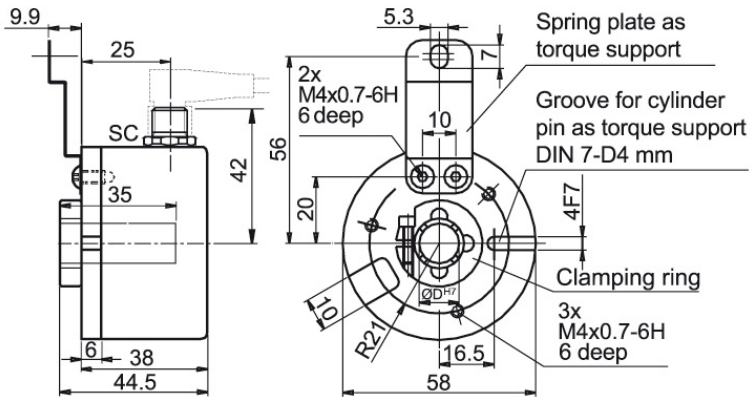
ABN inv. poss.

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

•

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>(+) Vcc</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> 4-pin	<b>SC5</b> 5-pin	<b>SC8</b> 8-pin	<b>SC8</b> 8-pin	<b>SC8</b> 8-pin	<b>SC12</b> 12-pin	<b>SC12</b> 12-pin	<b>SC12</b> 12-pin	<b>SC12</b> 12-pin
<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>(+) Vcc</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, H05, I05, P05, R05, 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**

### 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: 5 m cable = 050

### 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	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, WDG 58T: 1 m)</b>						
radial, shield not connected			•	K3		
radial, shield connected to encoder housing			•	L3		
<b>Connector: (shield connected to encoder housing, not S7)</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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For further information please contact our local distributor.  
Here you find a list of our distributors worldwide.  
[http://www.wachendorff-automation.com/distributors\\_worldwide.html](http://www.wachendorff-automation.com/distributors_worldwide.html)



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