



# Online Data sheet

## Encoder WDGP 36E

[www.wachendorff-automation.com/wdgp36e-k](http://www.wachendorff-automation.com/wdgp36e-k)

### **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 WDGP 36E



Illustration similar



- Due to high quality electronics any number of pulses up to 16384
- Protection class IP67, at shaft input IP65
- High output frequency up to 1 MHz
- Reverse polarity protection and short-circuit protection at 4.75 VDC to 32 VDC

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Resolution	
Pulses per revolution PPR	1 PPR up to 16384 PPR

Mechanical Data	
Flange	hollow shaft (blind-bored)
Flange material	aluminum
Housing material	stainless steel
- 1. Spring plate compensation	axial: ±1.2 mm [0.0472"], radial: ±0.4 mm [0.0157"]
Flange diameter	Ø 36 mm [Ø 1.417"]

Shaft(s)	
Shaft material	stainless steel
Starting torque	approx. 0.3 Ncm [0.425 in-ozf] at ambient temperature

Shaft	Ø 7 mm [Ø 0.276"]
Advice	with adapter sleeve
Insertion depth min.	10 mm [0.394"]
Insertion depth max.	14.5 mm [0.571"]
Max. Permissible shaft loading radial	80 N [8.157 kp]
Max. Permissible shaft loading axial	50 N [5.098 kp]

Shaft	Ø 8 mm [Ø 0.315"]
Advice	with adapter sleeve
Insertion depth min.	10 mm [0.394"]
Insertion depth max.	14.5 mm [0.571"]
Max. Permissible shaft loading radial	80 N [8.157 kp]
Max. Permissible shaft loading axial	50 N [5.098 kp]

Shaft	Ø 9.525 mm [Ø 3/8"] Order No: 4Z
Advice	with adapter sleeve
Insertion depth min.	10 mm [0.394"]
Insertion depth max.	14.5 mm [0.571"]
Max. Permissible shaft loading radial	80 N [8.157 kp]
Max. Permissible shaft loading axial	50 N [5.098 kp]

Shaft	Ø 10 mm [Ø 0.394"]
Advice	with adapter sleeve
Insertion depth min.	10 mm [0.394"]
Insertion depth max.	14.5 mm [0.571"]
Max. Permissible shaft loading radial	80 N [8.157 kp]

Max. Permissible shaft loading axial	50 N [5.098 kp]
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Shaft	Ø 12 mm [Ø 0.472"]
Insertion depth min.	10 mm [0.394"]
Insertion depth max.	14.5 mm [0.571"]
Max. Permissible shaft loading radial	80 N [8.157 kp]
Max. Permissible shaft loading axial	50 N [5.098 kp]

Shaft	Ø 12.7 mm [Ø 1/2"] Order No. 3Z
Advice	with adapter sleeve
Insertion depth min.	10 mm [0.394"]
Insertion depth max.	14.5 mm [0.571"]
Max. Permissible shaft loading radial	80 N [8.157 kp]
Max. Permissible shaft loading axial	50 N [5.098 kp]

Shaft	Ø 14 mm [Ø 0.551"]
Insertion depth min.	10 mm [0.394"]
Insertion depth max.	14.5 mm [0.571"]
Max. Permissible shaft loading radial	80 N [8.157 kp]
Max. Permissible shaft loading axial	50 N [5.098 kp]

Shaft	Ø 15 mm [Ø 0.591"]
Insertion depth min.	10 mm [0.394"]
Insertion depth max.	14.5 mm [0.571"]
Max. Permissible shaft loading radial	80 N [8.157 kp]
Max. Permissible shaft loading axial	50 N [5.098 kp]

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>	1200 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 %
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#### Electrical Data

Power supply/Current consumption	4,75 VDC up to 32 VDC: typ. 80 mA
Operating principle	magnetic
Output circuit	HTL HTL, inv. TTL TTL, RS422 compatible, inv.
Pulse frequency	HTL up to 16384 ppr: max. 600 kHz TTL up to 16384 ppr: max. 1 MHz
Channels	ABN and inverted signals
Load	max. 40 mA / channel
Circuit protection	inverse-polarity and short-circuit protection
Set zero pulse:	Set: SET = +UB for 2 s Deactivate: SET = GND

#### Accuracy

Phase offset	90° ± max. 8.5 % of the period duration
pulse-/pause-ratio	50 % ± max. 7 %

#### Environmental data

ESD (DIN EN 61000-4-2):	8 kV
Burst (DIN EN 61000-4-4):	2 kV
includes EMC:	DIN EN 61000-6-2 DIN EN 61000-6-3
Vibration: (DIN EN 60068-2-6)	50 m/s <sup>2</sup> (10 Hz up to 2000 Hz)
Shock: (DIN EN 60068-2-27)	1000 m/s <sup>2</sup> (6 ms)
Electrical Safety:	DIN EN 61010-1 (VDE 0411-1) / IEC 61010-1 / UL 61010-1 / CSA C22.0 No 61010-1-12

#### Duty information

Customs tariff number:	90318020
Country of origin:	Germany

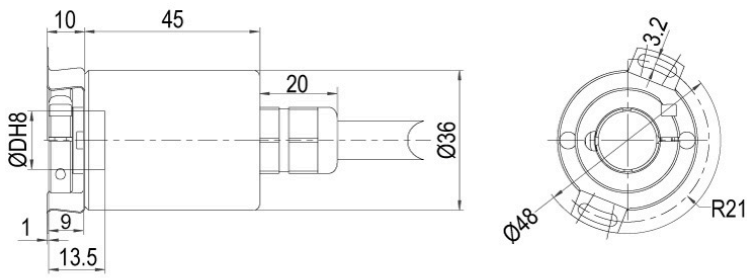
#### General Data

Weight	approx. 165 g [5.82 oz]
Connections	cable or connector outlet
Protection rating (EN 60529)	Housing: IP65, IP67; shaft sealed: IP65; cable outlet K1: IP40
Operating temperature	Connector: -40 °C up to +85 °C, Cable: -20 °C up to +80 °C. Connector: -40 °F up to +185 °F, Cable: -4 °F up to +176 °F.
Storage temperature	Connector: -40 °C up to +100 °C, Cable: -30 °C up to +80 °C Connector: -40 °F up to +212 °F, Cable: -22 °F up to +176 °F

#### More Information

General technical data and safety instructions	<a href="http://www.wachendorff-automation.com/gtd">http://www.wachendorff-automation.com/gtd</a>
Options	<a href="http://www.wachendorff-automation.com/acc">http://www.wachendorff-automation.com/acc</a>

**Cable connection L2 axial with 2 m cable**



D = Ø 12, 14, 15 mm

D = Ø 7, 8, 9.525 (3/8"), 10 mm, 12.7 mm (1/2")  
mit Reduzierhülse / with adapter sleeve

**Description**

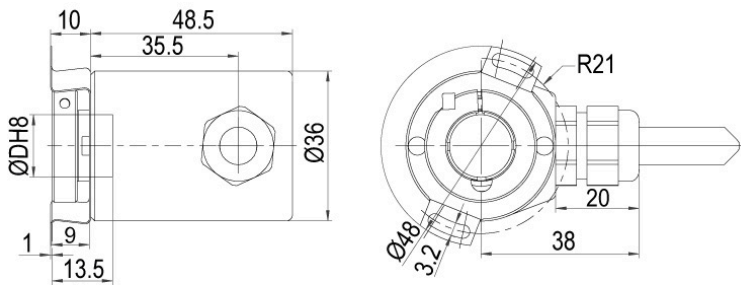
**ABN inv. poss.**

**L2** axial, shield connected to encoder housing

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Assignments		
	L2	L2
<b>Circuit</b>	M13, M14	N13, N14
<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>SET</b>	PK	PK
<b>A inv.</b>	RD	-
<b>B inv.</b>	BK	-
<b>N inv.</b>	VT	-
<b>Shield</b>	flex	flex

**Cable connection L3 radial with 2 m cable**



D = Ø 12, 14, 15 mm

D = Ø 7, 8, 9.525 (3/8"), 10 mm, 12.7 mm (1/2")  
mit Reduzierhülse / with adapter sleeve

**Description**

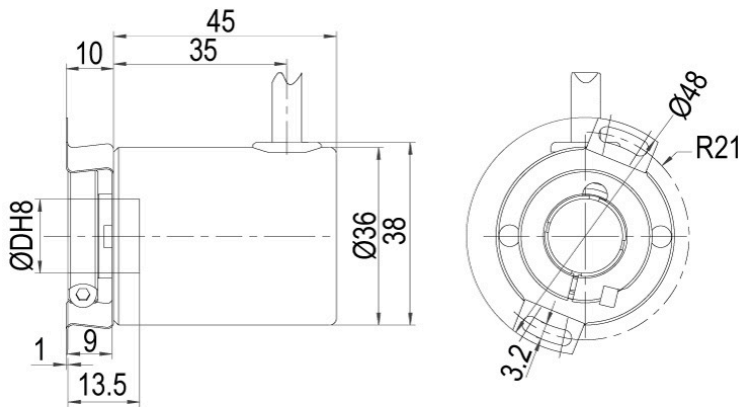
**ABN inv. poss.**

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

•

Assignments		
	<b>L3</b>	<b>L3</b>
<b>Circuit</b>	M13, M14	N13, N14
<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>SET</b>	PK	PK
<b>A inv.</b>	RD	-
<b>B inv.</b>	BK	-
<b>N inv.</b>	VT	-
<b>Shield</b>	flex	flex

**Cable K1 (IP40) radial with 2 m cable**



D = Ø 12, 14, 15 mm

D = Ø 7, 8, 9.525 (3/8"), 10 mm, 12.7 mm (1/2")

mit Reduzierhülse / with adapter sleeve

**Description**

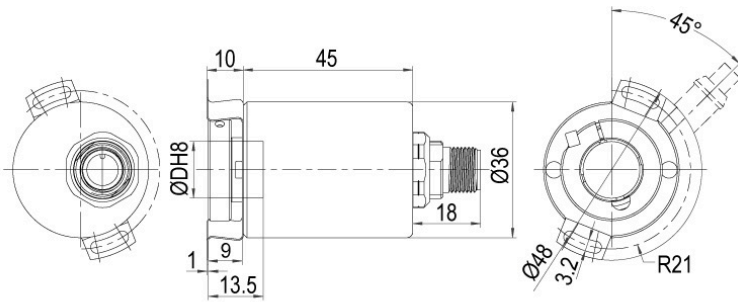
**ABN inv. poss.**

**K1** radial, shield not connected (IP40)

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Assignments		
	<b>K1</b>	<b>K1</b>
<b>Circuit</b>	M13, M14	N13, N14
<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>SET</b>	PK	PK
<b>A inv.</b>	RD	-
<b>B inv.</b>	BK	-
<b>N inv.</b>	VT	-
<b>Shield</b>	flex	flex

**Sensor-connector (M12x1) SB axial, 12-pin**



D = Ø 12, 14, 15 mm  
 D = Ø 7, 8, 9.525 (3/8"), 10 mm, 12.7 mm (1/2")  
 mit Reduzierhülse / with adapter sleeve

**Description**

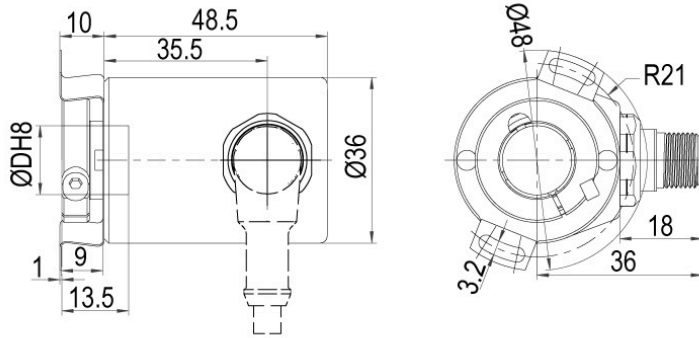
**ABN inv. poss.**

**SB12** axial, 12-pin, Connector connected to encoder housing

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Assignments	
	<b>SB12</b>
	<b>12-pin</b>
<b>Circuit</b>	M13, M14
<b>GND</b>	3
<b>(+) Vcc</b>	1
<b>A</b>	4
<b>B</b>	6
<b>N</b>	8
<b>SET</b>	5
<b>A inv.</b>	9
<b>B inv.</b>	7
<b>N inv.</b>	10
<b>n. c.</b>	2, 11, 12
<b>Shield</b>	-

**Sensor connector (M12x1) SC radial, 12-pin**



D = Ø 12, 14, 15 mm

D = Ø 7, 8, 9.525 (3/8"), 10 mm, 12.7 mm (1/2")  
mit Reduzierhülse / with adapter sleeve

**Description**

**ABN inv. poss.**

**SC12** radial, 12-pin, Connector connected to encoder housing

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Assignments	
	SC12
	12-pin
<b>Circuit</b>	M13, M14
<b>GND</b>	3
<b>(+) Vcc</b>	1
<b>A</b>	4
<b>B</b>	6
<b>N</b>	8
<b>SET</b>	5
<b>A inv.</b>	9
<b>B inv.</b>	7
<b>N inv.</b>	10
<b>n. c.</b>	2, 11, 12
<b>Shield</b>	-

**Options****Low-friction bearings**

The encoder WDGP 36E is also available as a particularly smooth-running low-friction encoder. The starting torque is thereby changed to 0.25 Ncm [0.354 in-ozf] and the protection class at the shaft input to IP50.

**Order key****AAC****Pressure equalising membrane**

The WDGP 36E 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 WDGP 36E can be supplied with more than 2 m cable. The maximum cable length depends on the supply voltage and the frequency; see <https://www.wachendorff-automation.com/download-gtd-incremental-encoders/>

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
WDGP 36E	WDGP 36E				WDGP 36E
<b>Bore size</b>					
12	07; 08; 4Z; 10; 12; 3Z; 14; 15				
<b>Pulses per revolution PPR:</b>					
16384	1-16384 Other PPRs on request				
<b>Channels:</b>					
ABN	ABN				
<b>Output circuit</b>					
M13	<b>Resolution PPR</b>	<b>Power supply VDC</b>	<b>Output circuit</b>	-	<b>Order key</b>
	1-16384	4.75 - 32	HTL, inv. set zero pulse	-	M13
		4.75 - 32	TTL, RS422 compatible, inv. set zero pulse	-	M14
		4.75 - 32	HTL set zero pulse	-	N13
4.75 - 32		TTL set zero pulse	-	N14	
<b>Electrical connections</b>					
L2	<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 (IP40)			•	K1
	axial, shield connected to encoder housing			•	L2
	radial, shield connected to encoder housing			•	L3
	<b>Connector: (shield connected to encoder housing)</b>				
	sensor-connector, M12x1, 12-pin, axial			•	SB12
sensor-connector, M12x1, 12-pin, radial			•	SC12	
<b>Options</b>					
<b>Description</b>			<b>Order key</b>		
Low-friction bearings			AAC		
Pressure equalising membrane			ACR		
Without option			Empty		
Cable length			XXX = Decimeter		

<b>Example Order No.=</b>	WDGP 36E	12	16384	ABN	M13	L2		WDGP 36E						<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/contact-en/wachendorff-world-wide/>

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