WACHENDORFF
The Encoder Experts

Online Data sheet

# Encoder WDGP 36E

**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

IndustrieROBUST

# 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

**www.wachendorff-automation.com/wdgp36e-k**

| **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] |
| | |
| 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 10'9 revs. at 100 % rated shaft load<br>1 x 10'10 revs. at 40 % rated shaft load<br>1 x 10'11 revs. at 20 % rated shaft load |
| Max. operating speed | 6000 rpm |

| **Machinery Directive: basic data safety integrity level** | |
|---|---|
| $MTTF_d$ | 1200 a |
| Mission time (TM) | 25 a |
| Nominale service life (L10h) | 1 x 10'11 revs. at 20 % rated shaft load and 6000 rpm |

| | |
|---|---|
| Diagnostic coverage (DC) | 0 % |

| **Electrical Data** | |
|---|---|
| Power supply/Current consumption | 4,75 VDC up to 32 VDC: typ. 80 mA |
| Operating principle | magnetic |
| Output circuit | HTL<br>HTL, inv.<br>TTL<br>TTL, RS422 compatible, inv. |
| Pulse frequency | HTL up to 16384 ppr: max. 600 kHz<br>TTL up to 16384 ppr: max. 1 MHz |
| Channels | ABN<br>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<br>Deaktivate: SET = GND |

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

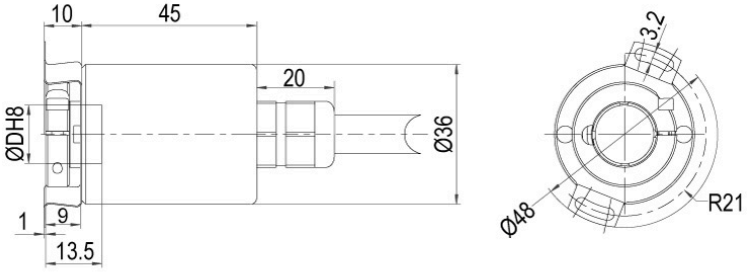
| **Environmental data** | |
|---|---|
| ESD (DIN EN 61000-4-2): | 8 kV |
| Burst (DIN EN 61000-4-4): | 2 kV |
| includes EMC: | DIN EN 61000-6-2<br>DIN EN 61000-6-3 |
| Vibration:<br>(DIN EN 60068-2-6) | 50 m/s² (10 Hz up to 2000 Hz) |
| Shock:<br>(DIN EN 60068-2-27) | 1000 m/s² (6 ms) |
| Electrial 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;<br>shaft sealed: IP65;<br>cable outlet K1: IP40 |
| Operating temperature | Connector: -40 °C up to +85 °C,<br>Cable: -20 °C up to +80 °C.<br>Connector: -40 °F up to +185 °F,<br>Cable: -4 °F up to +176 °F. |
| Storage temperature | Connector: -40 °C up to +100 °C,<br>Cable: -30 °C up to +80 °C<br>Connector: -40 °F up to +212 °F,<br>Cable: -22 °F up to +176 °F |

| **More Information** |
|---|
| General technical data and safety instructions<br>**http://www.wachendorff-automation.com/gtd** |
| Options<br>**http://www.wachendorff-automation.com/acc** |

## Cable connection L2 axial with 2 m cable

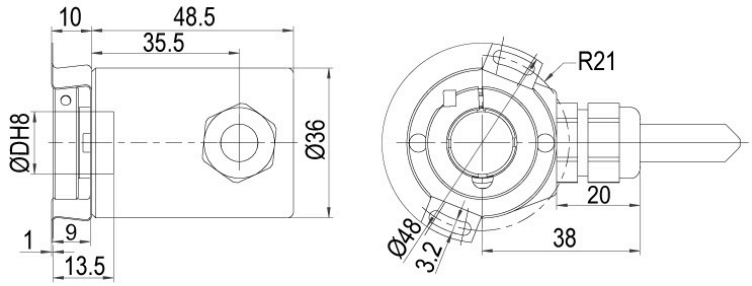



D = Ø 12, 14, 15 mm
D = Ø 7, 8, 9.525 (3/8"), 10 mm, 12.7 mm (1/2")
mit Reduzierhülse / with adapter sleeve

| Description | | ABN inv. poss. |
|---|---|---|
| **L2** | axial, shield connected to encoder housing | • |

| Assignments | | |
|---|---|---|
| | **L2** | **L2** |
| **Circuit** | M13, M14 | N13, N14 |
| **GND** | WH | WH |
| **(+) Vcc** | BN | BN |
| **A** | GN | GN |
| **B** | YE | YE |
| **N** | GY | GY |
| **SET** | PK | PK |
| **A inv.** | RD | - |
| **B inv.** | BK | - |
| **N inv.** | VT | - |
| **Shield** | flex | flex |

## Cable connection L3 radial with 2 m cabel



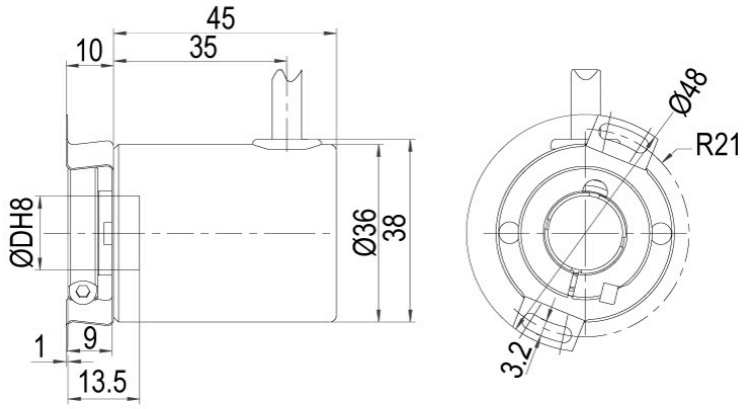

D = Ø 12, 14, 15 mm

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 | | |
|---|---|---|
| | **L3** | **L3** |
| **Circuit** | M13, M14 | N13, N14 |
| **GND** | WH | WH |
| **(+) Vcc** | BN | BN |
| **A** | GN | GN |
| **B** | YE | YE |
| **N** | GY | GY |
| **SET** | PK | PK |
| **A inv.** | RD | - |
| **B inv.** | BK | - |
| **N inv.** | VT | - |
| **Shield** | flex | flex |

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

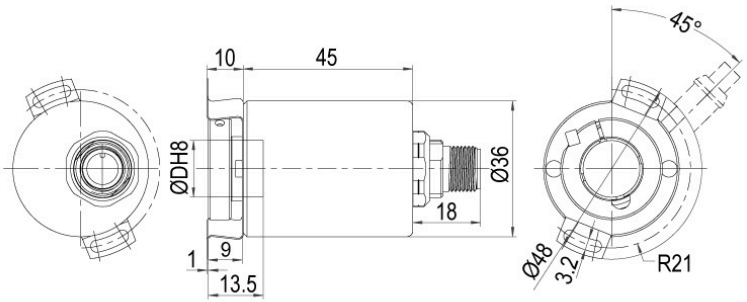



D = Ø 12, 14, 15 mm
D = Ø 7, 8, 9.525 (3/8"), 10 mm, 12.7 mm (1/2")
mit Reduzierhülse / with adapter sleeve

| Description | | ABN inv. poss. |
|---|---|---|
| **K1** | radial, shield not connected (IP40) | • |

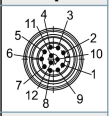
| Assignments | | |
|---|---|---|
| | **K1** | **K1** |
| **Circuit** | M13, M14 | N13, N14 |
| **GND** | WH | WH |
| **(+) Vcc** | BN | BN |
| **A** | GN | GN |
| **B** | YE | YE |
| **N** | GY | GY |
| **SET** | PK | PK |
| **A inv.** | RD | - |
| **B inv.** | BK | - |
| **N inv.** | VT | - |
| **Shield** | flex | flex |

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

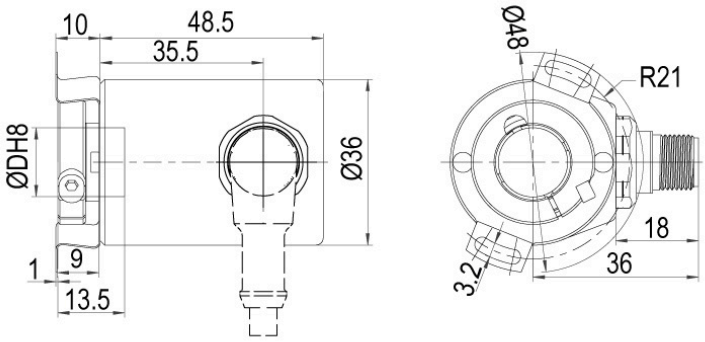



D = Ø 12, 14, 15 mm
D = Ø 7, 8, 9.525 (3/8"), 10 mm, 12.7 mm (1/2")
mit Reduzierhülse / with adapter sleeve

| Description | ABN inv. poss. |
|---|---|
| **SB12** axial, 12-pin, Connector connected to encoder housing | • |

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

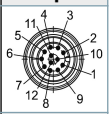
## Sensor connector (M12x1) SC radial, 12-pin




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 | • |

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

## Options

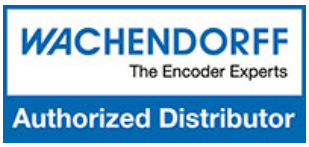
| Low-friction bearings | Order key |
|---|---|
| The encoder WDGP 36E is also available as a particularly smooth-running low-friction encoder. The starting torque is thereby changed to ≤ 0.25 Ncm [0.354 in-ozf] and the protection class at the shaft input to IP50. | **AAC** |

| Pressure equalising membrane | Order key |
|---|---|
| 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.<br>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. | **ACR** |

| Cable length | Order key |
|---|---|
| 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/<br>Please extend the standard order code with a three figure number, specifying the cable length in decimetres.<br>Example: 5 m cable = 050 | **XXX = Decimeter** |

| Example Order No. | Type | | | | | Your encoder |
|---|---|---|---|---|---|---|
| WDGP 36E | WDGP 36E | | | | | WDGP 36E |
| | | | | | | |
| | **Bore size** | | | | | |
| 12 | 07; 08; 4Z; 10; 12; 3Z; 14; 15 | | | | | |
| | | | | | | |
| | **Pulses per revolution PPR:** | | | | | |
| 16384 | 1-16384<br>Other PPRs on request | | | | | |
| | | | | | | |
| | **Channels:** | | | | | |
| ABN | ABN | | | | | |
| | | | | | | |
| | **Output circuit** | | | | | |
| M13 | **Resolution PPR** | **Power supply VDC** | **Output circuit** | **-** | **Order key** | |
| | 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 | |
| | | | | | | |
| | **Electrical connections** | | | | | |
| L2 | **Description** | | | **ABN inv. poss.** | **Order key** | |
| | **Cable: length (2 m standard, WDG 58T: 1 m)** | | | | | |
| | radial, shield not connected (IP40) | | | • | K1 | |
| | axial, shield connected to encoder housing | | | • | L2 | |
| | radial, shield connected to encoder housing | | | • | L3 | |
| | **Connector: (shield connected to encoder housing)** | | | | | |
| | sensor-connector, M12x1, 12-pin, axial | | | • | SB12 | |
| | sensor-connector, M12x1, 12-pin, radial | | | • | SC12 | |
| | | | | | | |
| | **Options** | | | | | |
| | **Description** | | | **Order key** | | |
| | Low-friction bearings | | | AAC | | |
| | Pressure equalising membrane | | | ACR | | |
| | Without option | | | Empty | | |
| | Cable length | | | XXX = Decimeter | | |

| Example Order No.= | WDGP 36E | 12 | 16384 | ABN | M13 | L2 | | WDGP 36E | | | | | | | Your encoder |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|




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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