WACHENDORFF
The Encoder Experts

Online Data sheet

# Encoder WDGA 36E CANopen

**www.wachendorff-automation.com/wdga36e-can**

**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 WDGA 36E absolute CANopen, with EnDra®-Technology

*Illustration similar*

EnDra® Technologie

CANopen®

- EnDra®: maintenance-free and environmentally friendly
- CANopen, Single-turn and Multi-turn
- Communication Profile according to CiA 301
- Device Profile for encoder CiA 406 V3.2 class C2
- Single-turn/Multi-turn (16 bit / 43 bit)
- Forward-looking technology with 32 Bit processor
- 2-colour-LED as indicator for operating condition and error message appropriate CiA 303-3

**www.wachendorff-automation.com/wdga36e-can**

| **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)** | |
|---|---|
| Starting torque | approx. 1.6 Ncm [2.266 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** | |
|---|---|
| $MTTF_d$ | 1000 a |
| Mission time (TM) | 20 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. 50 mA |
| Power consumption | max. 0.5 W |
| Operating principle | magnetic |

| Sensor data | |
|---|---|
| Single-turn technology | innovative hall sensor technology |
| Single-turn resolution | 65,536 steps/360° (16 bit) |
| Single-turn accuracy | ± 0.0878° (≤ 12 bit) |
| Single-turn repeat accuracy | ± 0.0878° (≤ 12 bit) |
| Internal cycle time | ≤ 600 µs |
| Multi-turn technology | patented EnDra® technology no battery and no gear. |
| Multi-turn resolution | up to 32 bit with high precision value up to 43 bit. |

| 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<br>DIN EN 61326-1 |
| Vibration:<br>(DIN EN 60068-2-6) | 300 m/s² (10 Hz up to 2000 Hz) |
| Shock:<br>(DIN EN 60068-2-27) | 5000 m/s² (6 ms) |
| Electrial Safety: | According DIN VDE 0160 |
| Turn on time: | <1,5 s |

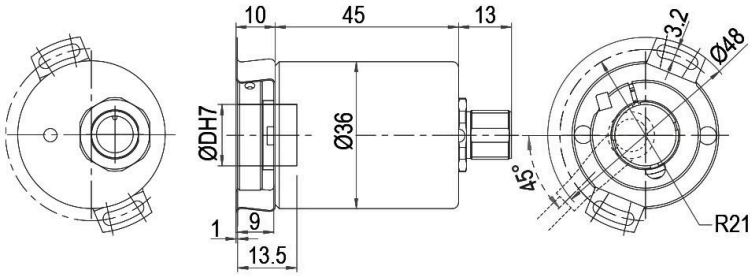
| Duty information | |
|---|---|
| Customs tariff number: | 90318020 |
| Country of origin: | Germany |

| Interface | |
|---|---|
| **Interface:** | **CAN** |
| Protocol: | CANopen<br>• Communication profil CiA 301<br>• Device Profile for encoder CiA 406 V3.2 class C2 |
| Node number: | 1 up to 127 (default 127) |
| Baud rate: | 10 kBaud up to 1 MBaud with automatic bit rate detection. |
| Advice: | The standard settings as well as any customization in the software can be changed via LSS (CiA 305) and the SDO protocol, e. g. PDOs, Scaling, Heartbeat, Node-ID, Baud rate, etc. |
| Programmable CAN transmission modes: | **Sychronous mode:**<br>when a synchronisation telegram (SYNC) is received from another bus node, PDOs are transmitted independently.<br>**Asynchronous mode:**<br>a PDO message is triggered by an internal event. (e.g. change of measured valued, internal timer, etc.) |

| General Data | |
|---|---|
| Weight | approx. 110 g [3.88 oz] |
| Connections | cable or connector outlet |
| Protection rating (EN 60529) | Housing: IP65, IP67;<br>shaft sealed: IP65;<br>cable outlet L1: IP40, K6: IP20 |
| Operating temperature | -40 °C up to +85 °C<br>[-40 °F up to 185 °F] |
| Storage temperature | -40 °C up to +100 °C<br>[-40 °F up to 212 °F] |

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

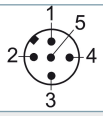
## Connector, M12x1 CB5 axial, 5-pin



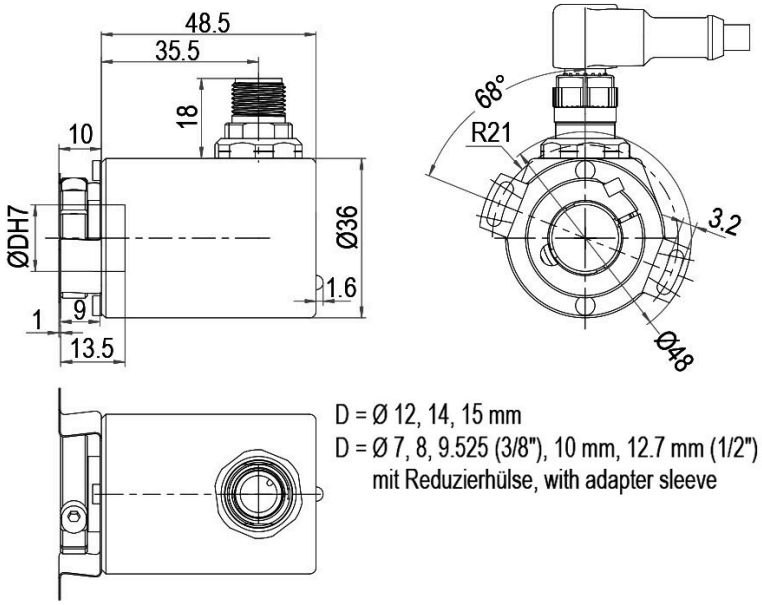

D = Ø 12, 14, 15 mm
D = Ø 7, 8, 9.525 (3/8"), 10 mm, 12.7 mm (1/2")
mit Reduzierhülse, with adapter sleeve

### Description

**CB5** axial, 5-pin, shield connected to encoder housing

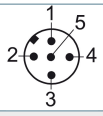
| Assignments | |
|---|---|
| | **CB5** |
| |  |
| **(+) Vcc** | 2 |
| **GND** | 3 |
| **CANHigh** | 4 |
| **CANLow** | 5 |
| **CANGND shield** | 1 |

## Connector, M12x1 CC5 radial, 5-pin

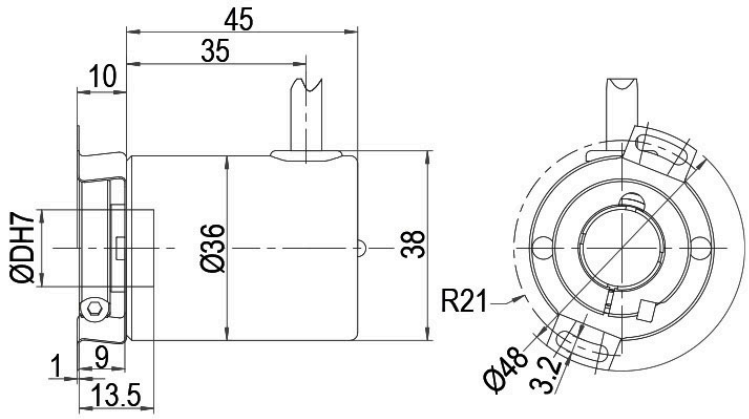



### Description

**CC5** radial, 5-pin, shield connected to encoder housing

| Assignments | |
|---|---|
| | **CC5** |
| |  |
| **(+) Vcc** | 2 |
| **GND** | 3 |
| **CANHigh** | 4 |
| **CANLow** | 5 |
| **CANGND shield** | 1 |

## Cable connection, L1 radial with 2 m cable (IP40)



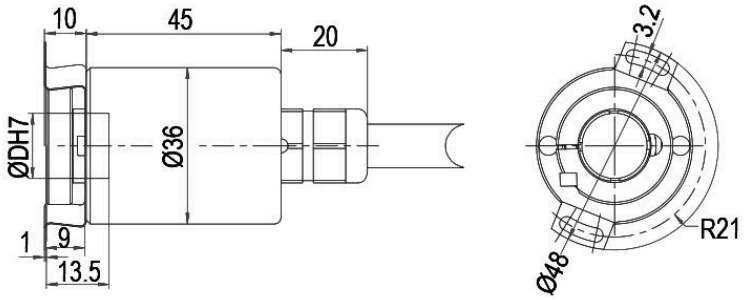

D = Ø 12, 14, 15 mm
D = Ø 7, 8, 9.525 (3/8"), 10 mm, 12.7 mm (1/2")
mit Reduzierhülse, with adapter sleeve

### Description

| | |
|---|---|
| **L1** | radial, shield connected to encoder housing (IP40) |

| Assignments | |
|---|---|
| | **L1** |
| **(+) Vcc** | BN |
| **GND** | WH |
| **CANHigh** | GN |
| **CANLow** | YE |
| **CANGND shield** | shield |

## Cable connection, L2 axial with 2 m cable



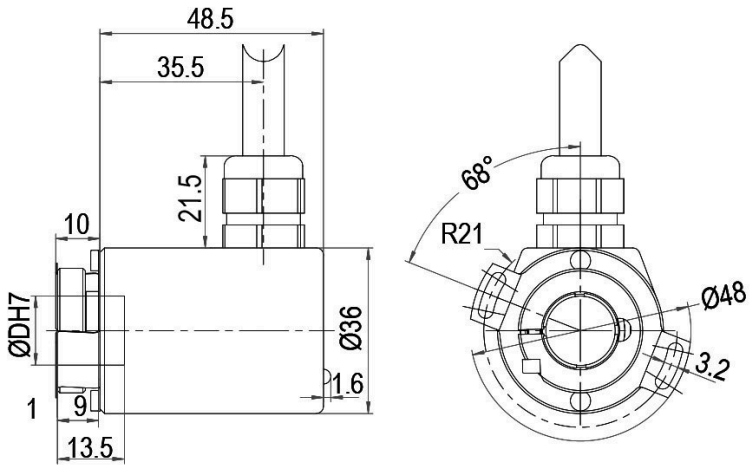

D = Ø 12, 14, 15 mm
D = Ø 7, 8, 9.525 (3/8"), 10 mm, 12.7 mm (1/2")
mit Reduzierhülse, with adapter sleeve

### Description

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

| **Assignments** | |
|---|---|
| | **L2** |
| **(+) Vcc** | BN |
| **GND** | WH |
| **CANHigh** | GN |
| **CANLow** | YE |
| **CANGND shield** | shield |

## Cable connection, L3 radial with 2 m cable



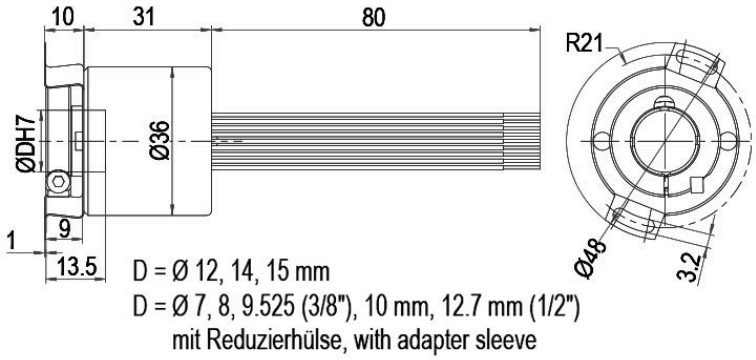

D = Ø 12, 14, 15 mm
D = Ø 7, 8, 9.525 (3/8"), 10 mm, 12.7 mm (1/2")
mit Reduzierhülse, with adapter sleeve

### Description

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

| Assignments | |
|---|---|
| | **L3** |
| **(+) Vcc** | BN |
| **GND** | WH |
| **CANHigh** | GN |
| **CANLow** | YE |
| **CANGND shield** | shield |

## Cable connection, K6 (IP20)




### Description

**K6** axial, shield not connected

| Assignments | |
|---|---|
| | **K6** |
| **(+) Vcc** | BN |
| **GND** | WH |
| **CANHigh** | GN |
| **CANLow** | YE |
| **CANGND shield** | GY |

## Options

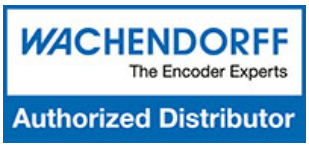
| Low-friction bearings | Order key |
|---|---|
| The encoder WDGA 36E CANopen is also available as a particularly smooth-running low-friction encoder. The starting torque is thereby changed to ≤ 0.25 Ncm [0.354 in-ozf] and the protection class at the shaft input to IP50. | **AAC** |

| 120 Ohm terminating resistor | Order key |
|---|---|
| The encoder WDGA 36E CANopen is also available with fixed 120 Ohm terminating resistor. | **AEO** |

| Example Order No. | Type | | Your encoder |
|---|---|---|---|
| WDGA 36E | WDGA 36E | | WDGA 36E |
| | | | |
| | **Shaft** | **Order key** | |
| 08 | Ø 7 mm [Ø 0.276"] with adapter sleeve | 07 | |
| | Ø 8 mm [Ø 0.315"] with adapter sleeve | 08 | |
| | Ø 9.525 mm [Ø 3/8"] Order No: 4Z with adapter sleeve | 4Z | |
| | Ø 10 mm [Ø 0.394"] with adapter sleeve | 10 | |
| | Ø 12 mm [Ø 0.472"] | 12 | |
| | Ø 12.7 mm [Ø 1/2"] Order No. 3Z with adapter sleeve | 3Z | |
| | Ø 14 mm [Ø 0.551"] | 14 | |
| | Ø 15 mm [Ø 0.591"] | 15 | |
| | | | |
| | **Single-turn Resolution** | **Order key** | |
| 12 | Single-turn resolution 1 bit up to 16 bit, recommended min. 6 bit (e. G. 12 bit) | 12 | |
| | | | |
| | **Multi-turn Resolution** | **Order key** | |
| 18 | Multi-turn resolution: (examples)<br>18 bit = 18<br>43 bit = 43<br>no Multiturn = 00 | 18 | |
| | | | |
| | **Data protocol** | **Order key** | |
| CO | CANopen | CO | |
| | | | |
| | **Software** | **Order key** | |
| A | up to date release | A | |
| | | | |
| | **Code** | **Order key** | |
| B | binary | B | |
| | | | |
| | **Power supply** | **Order key** | |
| 0 | 4.75 V up to 32 V (standard) | 0 | |
| | | | |
| | **Galvanic isolation** | **Order key** | |
| 0 | no | 0 | |
| | | | |
| | **Electrical connections** | **Order key** | |
| CB5 | **Cable:** | | |
| | radial, shield connected to encoder housing (IP40), with 2 m cable | L1 | |
| | axial, shield connected to encoder housing, with 2 m cable | L2 | |
| | radial, shield connected to encoder housing, with 2 m cable | L3 | |
| | axial, shield not connected, IP20, with 8 cm loose wires | K6 | |
| | | | |
| | **Connector:** | | |
| | sensor-connector, M12x1, 5-pin, axial, shield connected to encoder housing | CB5 | |
| | sensor-connector, M12x1, 5-pin, radial, shield connected to encoder housing | CC5 | |
| | | | |
| | | | |
| | **Options** | **Order key** | |
| | Without option | Empty | |
| | Low-friction bearings | AAC | |
| | 120 Ohm terminating resistor | AEO | |

| Example Order No. | WDGA 36E | 08 | 12 | 18 | CO | A | B | 0 | 0 | CB5 | |
|---|---|---|---|---|---|---|---|---|---|---|---|

| | WDGA 36E | | | | | | | | | | | Example Order No. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|

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WACHENDORFF

Wachendorff Automation GmbH & Co. KG
Industriestrasse 7 • 65366 Geisenheim
Germany

Phone: +49 67 22 / 99 65 25
E-Mail: wdg@wachendorff.de
www.wachendorff-automation.de