



Online Data sheet

HM 2602

Encoder WDGA 36E SSI

www.wachendorff-automation.com/wdga36essi

Wachendorff Automation

... systems and encoders

- Complete systems
- Industrial rugged encoders to suit your application
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Nyckelvägen 7
142 50 SKOGÅS, Sweden

Tel: +46 (0)8 771 02 20
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IndustrieROBUST

Encoder WDGA 36E absolute SSI, with EnDra®-Technology



Illustration similar

EnDra®
Technologie

SSI
Synchronous Serial Interface

- EnDra® multiturn technology: maintenance-free and environmentally friendly
- SSI, gray or binary
- Single-turn/Multi-turn (16 bit / 43 bit)
- Forward-looking technology with 32 bit processor
- 2-colour-LED as indicator for operating condition

www.wachendorff-automation.com/wdga36essi

| Mechanical Data | |
|--|--|
| Flange | hollow shaft (blind-bored) |
| Flange material | aluminum |
| Housing material | stainless steel |
| - 1. Spring plate compensation | axial: ±0.2 mm [0.0079"], radial: ±0.1 mm [0.0039"] |
| Flange diameter | Ø 36 mm [Ø 1.417"] |
| Shaft(s) | |
| Starting torque | approx. 0.3 Ncm [0.425 in-ozf] at ambient temperature |
| Shaft | Ø 6 mm [Ø 0.236"] |
| Insertion depth min. | 8 mm [0.315"] |
| Insertion depth max. | 17 mm [0.669"] |
| Max. Permissible shaft loading radial | 80 N [8.157 kp] |
| Max. Permissible shaft loading axial | 50 N [5.098 kp] |
| Shaft | Ø 6.35 mm [Ø 1/4"] Order No: 2Z |
| Insertion depth min. | 8 mm [0.315"] |
| Insertion depth max. | 17 mm [0.669"] |
| 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 |
| Nominal service life | 1.4 x 10 ⁸ revs. at 100 % rated shaft load 2 x 10 ⁹ revs. at 40 % rated shaft load 1.7 x 10 ¹⁰ revs. at 20 % rated shaft load |
| Max. operating speed | 12000 rpm |
| Machinery Directive: basic data safety integrity level | |
| MTTF _d | 1000 a |
| Mission time (TM) | 20 a |
| Nominal service life (L10h) | 1.7 x 10 ¹⁰ revs. at 20 % rated shaft load and 12000 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 |

| | |
|----------------------------------|------------------------------------|
| Power supply/Current consumption | 4,75 VDC up to 5,5 VDC: typ. 80 mA |
| Power consumption | max. 0.44 W |
| Operating principle | magnetic |

| Sensor data | |
|-----------------------------|---|
| Single-turn technology | innovative hall sensor technology |
| Single-turn resolution | up to 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, no gear. |
| Multi-turn resolution | 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 DIN EN 61000-6-3 DIN EN 61326-1 |
| Vibration: (DIN EN 60068-2-6) | 300 m/s ² (10 Hz up to 2000 Hz) |
| Shock: (DIN EN 60068-2-27) | 5000 m/s ² (6 ms) |
| Electrical Safety: | according DIN VDE 0160 |
| Turn on time: | <1,5 s |

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

| Interface | |
|------------------|--|
| Interface: | SSI |
| Clock input: | via opto-coupler; I > 1.6 mA; U > 2.2 V |
| Clock frequency: | 100 kHz up to 500 kHz, up to 2 MHz on request |
| Data output: | RS485/RS422 compatible |
| Output code: | gray or binary |
| SSI output: | Angular-/position value |
| Parity bit: | optional (even/odd) |
| Error bit: | optional |

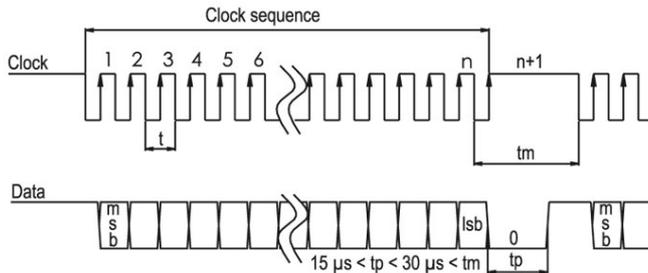
| | |
|--|---|
| Turn on time: | <1,5 s |
| Configuration inputs | DIR = GND -> cw |
| Positive direction of counting: (View on shaft) | DIR = +UB -> ccw |
| Set to zero: | Set: Preset = +UB for 2 s Deactivate: Preset = GND |

More Information

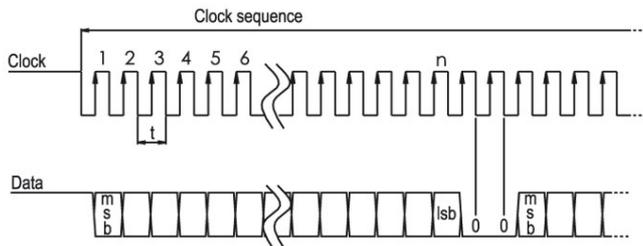
General technical data and safety instructions
<http://www.wachendorff-automation.com/gtd>

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

Transmission protocol SSI Single transmission:



Transmission protocol SSI Multipath transmission:



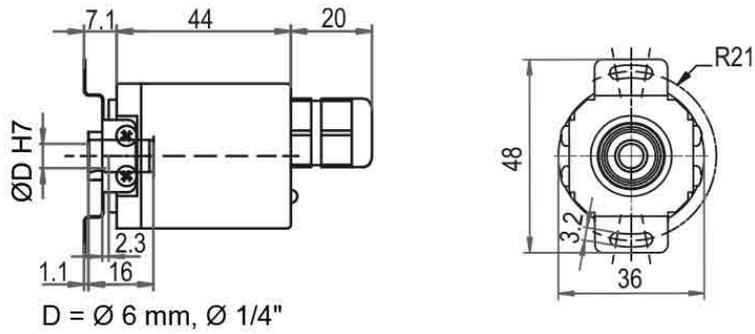
LED-behaviour:

| | |
|---------------------------|--------------------------------|
| At Start / while booting: | - red gleam (< 2,3 s) |
| Malfunction: | - constant red gleam (> 2,3 s) |
| Normal function: | - constant green gleam |
| No supply: | - no gleam |

General Data

| | |
|------------------------------|--|
| Weight | approx. 110 g [3.88 oz] |
| Connections | cable or connector outlet |
| Protection rating (EN 60529) | Housing: IP65, IP67; shaft sealed: IP65; cable outlet K1: IP40, K6: IP20 |
| Operating temperature | -40 °C up to +85 °C [-40 °F up to 185 °F] |
| Storage temperature | -40 °C up to +100 °C [-40 °F up to 212 °F] |

Cable connection, L2 axial with 2 m cable

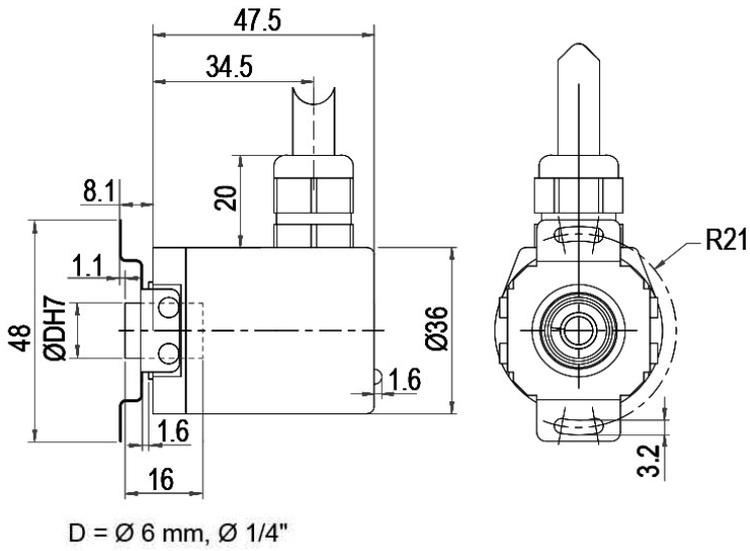


Description

L2 axial, shield connected to encoder housing

| Assignments | |
|------------------|-----------|
| | L2 |
| GND | WH |
| (+) Vcc | BN |
| SSI CLK+ | GN |
| SSI CLK- | YE |
| SSI DATA+ | GY |
| SSI DATA- | PK |
| PRESET | BU |
| DIR | RD |
| Shield | housing |

Cable connection, L3 radial with 2 m cable

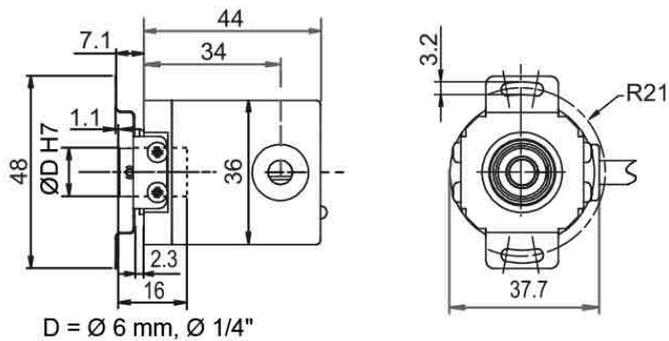


Description

L3 radial, shield connected to encoder housing

| Assignments | |
|------------------|-----------|
| | L3 |
| GND | WH |
| (+) Vcc | BN |
| SSI CLK+ | GN |
| SSI CLK- | YE |
| SSI DATA+ | GY |
| SSI DATA- | PK |
| PRESET | BU |
| DIR | RD |
| Shield | housing |

Cable connection, K1 radial with 2 m cable (IP40)

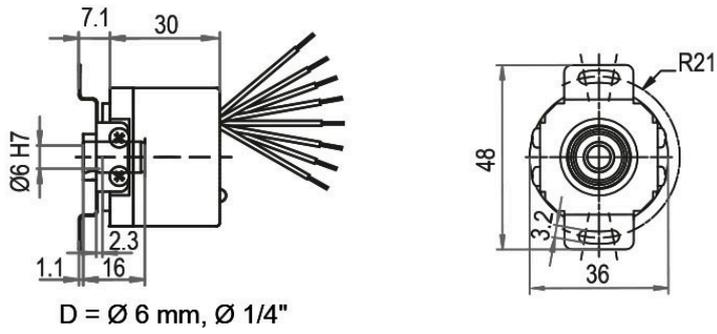


Description

K1 radial, shield not connected

| Assignments | |
|------------------|---------------|
| | K1 |
| GND | WH |
| (+) Vcc | BN |
| SSI CLK+ | GN |
| SSI CLK- | YE |
| SSI DATA+ | GY |
| SSI DATA- | PK |
| PRESET | BU |
| DIR | RD |
| Shield | housing n. c. |

Cable connection, K6 axial with 8 cm loose wires, IP20

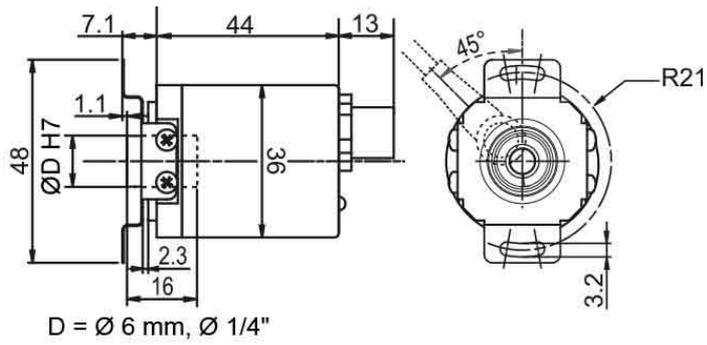


Description

K6 axial, shield not connected

| Assignments | |
|------------------|---------------|
| | K6 |
| GND | WH |
| (+) Vcc | BN |
| SSI CLK+ | GN |
| SSI CLK- | YE |
| SSI DATA+ | GY |
| SSI DATA- | PK |
| PRESET | BU |
| DIR | RD |
| Shield | housing n. c. |

Connector, M12x1, CB8, axial, 8-pin

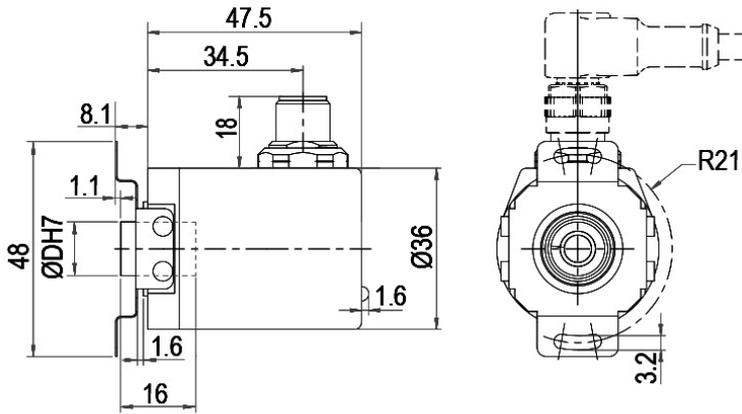


Description

CB8 axial, 8-pin, shield connected to encoder housing

| Assignments | |
|------------------|----------------|
| | CB8 |
| GND | 1 |
| (+) Vcc | 2 |
| SSI CLK+ | 3 |
| SSI CLK- | 4 |
| SSI DATA+ | 5 |
| SSI DATA- | 6 |
| PRESET | 7 |
| DIR | 8 |
| Shield | housing |

Connector, M12x1 CC8 radial, 8-pin



D = Ø 6 mm, Ø 1/4"

Description

CC8 radial, 8-pin, shield connected to encoder housing

| Assignments | |
|------------------|---------|
| | |
| GND | 1 |
| (+) Vcc | 2 |
| SSI CLK+ | 3 |
| SSI CLK- | 4 |
| SSI DATA+ | 5 |
| SSI DATA- | 6 |
| PRESET | 7 |
| DIR | 8 |
| Shield | housing |

Options**Low-friction bearings**

The encoder WDGA 36E SSI 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**

| Example Order No. | Type | Your encoder | |
|---|--|------------------|--|
| WDGA 36E | WDGA 36E | WDGA 36E | |
| | Shaft | Order key | |
| 06 | Ø 6 mm [Ø 0.236"] | 06 | |
| | Ø 6.35 mm [Ø 1/4"] Order No: 2Z | 2Z | |
| | 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 | |
| 12 | Multi-turn up to 43 bit (e. G. 12 bit) No Multi-turn = 00 | 12 | |
| | Data protocol | Order key | |
| SI | SSI | SI | |
| | Software | Order key | |
| A | up to date release | A | |
| | Code | Order key | |
| B | binary | B | |
| | gray | G | |
| | Power supply | Order key | |
| 0 | 4.75 V up to 32 V (standard) | 0 | |
| | 4.75 V up to 5.5 V | 1 | |
| | Galvanic isolation | Order key | |
| 1 | yes | 1 | |
| | Electrical connections | Order key | |
| CB8 | Cable: | | |
| | axial, shield connected to encoder housing, with 2 m cable | L2 | |
| | radial, shield connected to encoder housing, with 2 m cable | L3 | |
| | radial, shield not connected, with 2 m cable, IP40 | K1 | |
| | axial, shield not connected, IP20, with 8 cm loose wires | K6 | |
| | | | |
| | Connector: | | |
| | sensor-connector, M12x1, 8-pin, axial, shield connected to encoder housing | CB8 | |
| sensor-connector, M12x1, 8-pin, radial, shield connected to encoder housing | CC8 | | |
| | Options | Order key | |
| | Without option | Empty | |
| | Low-friction bearings | AAC | |

| | | | | | | | | | | | |
|-------------------|----------|----|----|----|----|---|---|---|---|-----|--|
| Example Order No. | WDGA 36E | 06 | 12 | 12 | SI | A | B | 0 | 1 | CB8 | |
|-------------------|----------|----|----|----|----|---|---|---|---|-----|--|

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