



Online Data Sheet

Encoder WDGA 58E SSI

www.wachendorff-automation.com/wdga58essi

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 WDGA 58E absolute SSI magnetic, with EnDra®-Technology



EnDra®
Technologie

SSI
Synchronous Serial Interface

- EnDra® multiturn technology: maintenance-free and environmentally friendly
- SSI, gray or binary
- Single-turn/Multi-turn (max. 16 bit/43 bit)
- Forward-looking technology with 32 bit processor

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Mechanical Data

Housing

| | |
|--------------------------------|---|
| Flange | hollow shaft (blind-bored) |
| Flange material | aluminum |
| Housing cap | Aluminum die cast, powder coated; Integrated magnetic shielding |
| 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 6 mm |
| Advice | with adapter sleeve |
| Shaft length | L: 12 mm |
| Insertion depth min. | 11 mm |
| Insertion depth max. | 15 mm |
| Max. Permissible shaft loading radial | 80 N |
| Max. Permissible shaft loading axial | 50 N |

| | |
|---------------------------------------|---------------------|
| Shaft | Ø 6.35 mm |
| Advice | with adapter sleeve |
| Shaft length | L: 12 mm |
| Insertion depth min. | 11 mm |
| Insertion depth max. | 15 mm |
| Max. Permissible shaft loading radial | 80 N |
| Max. Permissible shaft loading axial | 50 N |

| | |
|---------------------------------------|---------------------|
| Shaft | Ø 7 mm |
| Advice | with adapter sleeve |
| Shaft length | L: 12 mm |
| Insertion depth min. | 11 mm |
| Insertion depth max. | 15 mm |
| Max. Permissible shaft loading radial | 80 N |

| | |
|--------------------------------------|------|
| Max. Permissible shaft loading axial | 50 N |
|--------------------------------------|------|

| | |
|-------|--------|
| Shaft | Ø 8 mm |
|-------|--------|

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|--------|---------------------|
| Advice | with adapter sleeve |
|--------|---------------------|

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|--------------|----------|
| Shaft length | L: 12 mm |
|--------------|----------|

| | |
|----------------------|-------|
| Insertion depth min. | 11 mm |
|----------------------|-------|

| | |
|----------------------|-------|
| Insertion depth max. | 15 mm |
|----------------------|-------|

| | |
|---------------------------------------|------|
| Max. Permissible shaft loading radial | 80 N |
|---------------------------------------|------|

| | |
|--------------------------------------|------|
| Max. Permissible shaft loading axial | 50 N |
|--------------------------------------|------|

| | |
|-------|------------|
| Shaft | Ø 9.525 mm |
|-------|------------|

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|--------|---------------------|
| Advice | with adapter sleeve |
|--------|---------------------|

| | |
|--------------|----------|
| Shaft length | L: 12 mm |
|--------------|----------|

| | |
|----------------------|-------|
| Insertion depth min. | 11 mm |
|----------------------|-------|

| | |
|----------------------|-------|
| Insertion depth max. | 15 mm |
|----------------------|-------|

| | |
|---------------------------------------|------|
| Max. Permissible shaft loading radial | 80 N |
|---------------------------------------|------|

| | |
|--------------------------------------|------|
| Max. Permissible shaft loading axial | 50 N |
|--------------------------------------|------|

| | |
|-------|---------|
| Shaft | Ø 10 mm |
|-------|---------|

| | |
|--------|---------------------|
| Advice | with adapter sleeve |
|--------|---------------------|

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|--------------|----------|
| Shaft length | L: 12 mm |
|--------------|----------|

| | |
|----------------------|-------|
| Insertion depth min. | 11 mm |
|----------------------|-------|

| | |
|----------------------|-------|
| Insertion depth max. | 15 mm |
|----------------------|-------|

| | |
|---------------------------------------|------|
| Max. Permissible shaft loading radial | 80 N |
|---------------------------------------|------|

| | |
|--------------------------------------|------|
| Max. Permissible shaft loading axial | 50 N |
|--------------------------------------|------|

| | |
|-------|---------|
| Shaft | Ø 12 mm |
|-------|---------|

| | |
|--------------|----------|
| Shaft length | L: 12 mm |
|--------------|----------|

| | |
|----------------------|-------|
| Insertion depth min. | 11 mm |
|----------------------|-------|

| | |
|----------------------|-------|
| Insertion depth max. | 15 mm |
|----------------------|-------|

| | |
|---------------------------------------|------|
| Max. Permissible shaft loading radial | 80 N |
|---------------------------------------|------|

| | |
|--------------------------------------|------|
| Max. Permissible shaft loading axial | 50 N |
|--------------------------------------|------|

| | |
|-------|---------|
| Shaft | Ø 14 mm |
|-------|---------|

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|--------------|----------|
| Shaft length | L: 12 mm |
|--------------|----------|

| | |
|----------------------|-------|
| Insertion depth min. | 11 mm |
|----------------------|-------|

| | |
|----------------------|-------|
| Insertion depth max. | 15 mm |
|----------------------|-------|

| | |
|---------------------------------------|------|
| Max. Permissible shaft loading radial | 80 N |
|---------------------------------------|------|

| | |
|---------------------------------------|----------|
| Max. Permissible shaft loading axial | 50 N |
| Shaft | Ø 15 mm |
| Shaft length | L: 12 mm |
| Insertion depth min. | 11 mm |
| Insertion depth max. | 15 mm |
| Max. Permissible shaft loading radial | 80 N |
| Max. Permissible shaft loading axial | 50 N |

Bearings

| | |
|----------------------|---|
| Bearings type | 2 precision ball bearings |
| Nomiale service life | 1 x 10 ⁹ revs. at 100 % rated shaft load 1 x 10 ¹⁰ revs. at 40 % rated shaft load 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 |
| Nomiale 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 |
| Power supply/Current consumption | 4,75 VDC up to 5,5 VDC: typ. 80 mA |
| Power consumption | max. 0.44 W |

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

Environmental data:

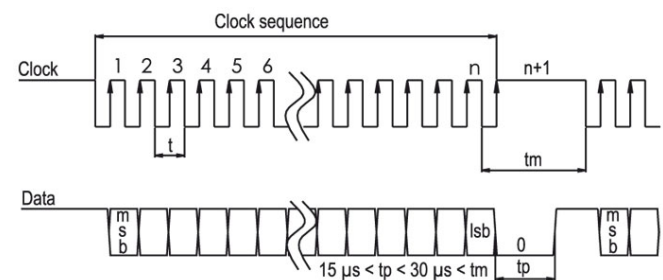
| | |
|----------------------------------|--|
| ESD (DIN EN 61000-4-2): | 8 kV |
| Burst (DIN EN 61000-4-4): | 2 kV |
| includes EMC: | DIN EN 61000-6-2 DIN EN 61000-6-3 DIN EN 61326-1 |
| Vibration: (DIN EN 60068-2-6) | 300 m/s ² (10 Hz up to 2000 Hz) |
| Shock: (DIN EN 60068-2-27) | 5000 m/s ² (6 ms) |
| Design: | according DIN VDE 0160 |
| Turn on time: | <1,5 s |

Interface

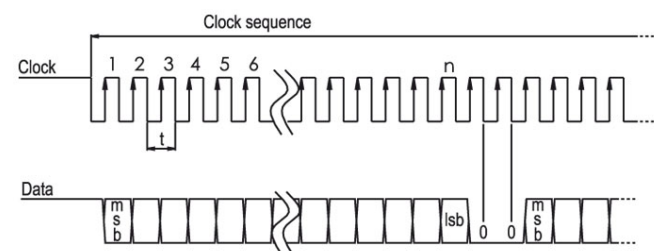
| | |
|--------------|------------------|
| Interface: | SSI |
| Clock input: | via opto-coupler |

| | |
|-----------------------------|---|
| 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: DIR = +UB -> ccw (View on shaft) |
| Set to zero: | Set: Preset = +UB for 2 s Deactivate: Preset = GND |

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

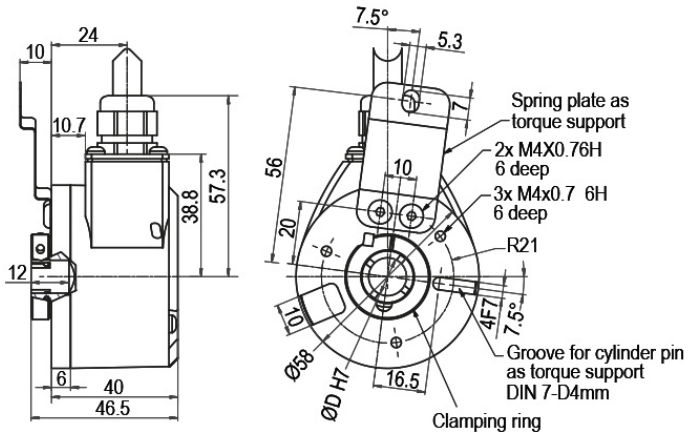
| | |
|-------------|----------------------------|
| Weight | approx. 220 g |
| Connections | cable or connector, radial |

| | |
|------------------------------|--|
| Protection rating (EN 60529) | Housing: IP65, IP67; shaft sealed: IP65; cable outlet K1: IP40, K6: IP20 |
| Operating temperature | -40 °C up to +85 °C |
| Storage temperature | -40 °C up to +100 °C |

More Information

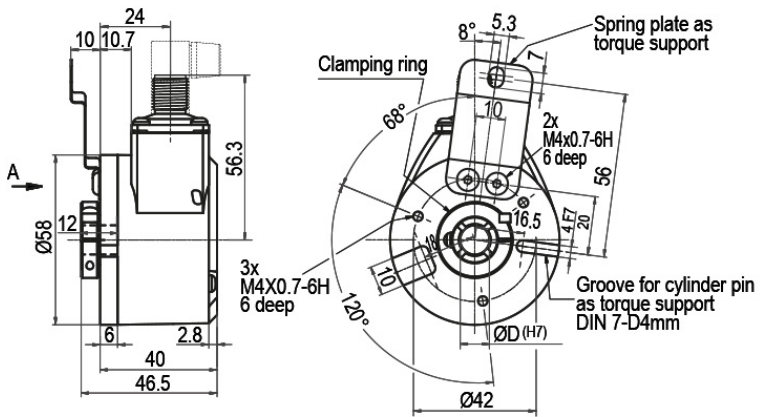
General technical data and safety instructions
<http://www.wachendorff-automation.com/gtd>

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

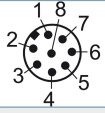
Cable connection, L3 radial, with 2 m cable

Description

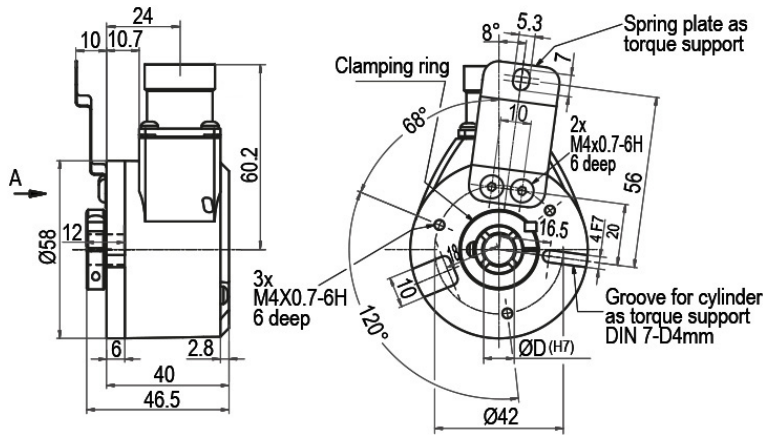
L3 radial, shield connected to encoder housing

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

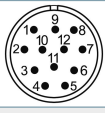
Connector, M12x1, CC8, radial, 8-pin

Description

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

| Assignments | |
|------------------|--|
| | CC8  |
| GND | 1 |
| (+) Vcc | 2 |
| SSI CLK+ | 3 |
| SSI CLK- | 4 |
| SSI DATA+ | 5 |
| SSI DATA- | 6 |
| PRESET | 7 |
| DIR | 8 |
| Shield | housing |

Connector, M23, C5 radial, 12-pin

Description

C5 radial, 12-pin, shield connected to encoder housing

| Assignments | |
|------------------|--|
| | C5 |
| |  |
| GND | 12 |
| (+) Vcc | 11 |
| SSI CLK+ | 2 |
| SSI CLK- | 1 |
| SSI DATA+ | 3 |
| SSI DATA- | 4 |
| PRESET | 9 |
| DIR | 8 |
| Shield | housing |

| Example Order No. | Type | Your encoder | |
|-------------------|--|------------------|--|
| WDGA 58E | WDGA 58E | WDGA 58E | |
| | Shaft | Order key | |
| 06 | Ø 6 mm with adapter sleeve | 06 | |
| | Ø 6.35 mm with adapter sleeve | 2Z | |
| | Ø 7 mm with adapter sleeve | 07 | |
| | Ø 8 mm with adapter sleeve | 08 | |
| | Ø 9.525 mm with adapter sleeve | 4Z | |
| | Ø 10 mm with adapter sleeve | 10 | |
| | Ø 12 mm | 12 | |
| | Ø 14 mm | 14 | |
| | Ø 15 mm | 15 | |
| | Single-turn Resolution | Order key | |
| 12 | Single-turn resolution 1 bit up to 16 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 | |
| CC8 | Cable: radial, shield connected to encoder housing, with 2 m cable, IP67 | L3 | |
| | Connector: sensor-connector, M12x1, 8-pin, radial, IP67, shield connected to encoder housing | CC8 | |
| | connector, M23, 12-pin, radial, IP67, shield connected to encoder housing | C5 | |
| | | | |

| | | | | | | | | | | |
|-------------------|----------|----|----|----|----|---|---|---|---|-----|
| Example Order No. | WDGA 58E | 06 | 12 | 12 | SI | A | B | 0 | 1 | CC8 |
|-------------------|----------|----|----|----|----|---|---|---|---|-----|

| | | | | | | | | | | |
|----------|--|--|--|--|--|--|--|--|--|-------------------|
| WDGA 58E | | | | | | | | | | Example Order No. |
|----------|--|--|--|--|--|--|--|--|--|-------------------|



For further information please contact our local distributor.
Here you find a list of our distributors worldwide.
<https://www.wachendorff-automation.com/>



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