



# Online Data Sheet

## Encoder WDGA 58E SSI

[www.wachendorff-automation.com/wdga58essi](http://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

[www.wachendorff-automation.com/wdga58essi](http://www.wachendorff-automation.com/wdga58essi)

| 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              |
| 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 9.525 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 10 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 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             |
| 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                                                                                                                                         |
| Nominal service life | 1 x 10 <sup>9</sup> revs. at 100 % rated shaft load<br>1 x 10 <sup>10</sup> revs. at 40 % rated shaft load<br>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>           | 1000 a                                                           |
| Mission time (TM)           | 20 a                                                             |
| Nominal service life (L10h) | 1 x 10 <sup>11</sup> 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

|                                  |                                                        |
|----------------------------------|--------------------------------------------------------|
| 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/s <sup>2</sup> (10 Hz up to 2000 Hz)             |
| Shock:<br>(DIN EN 60068-2-27)    | 5000 m/s <sup>2</sup> (6 ms)                           |
| Design:                          | according DIN VDE 0160                                 |
| Turn on time:                    | <1,5 s                                                 |

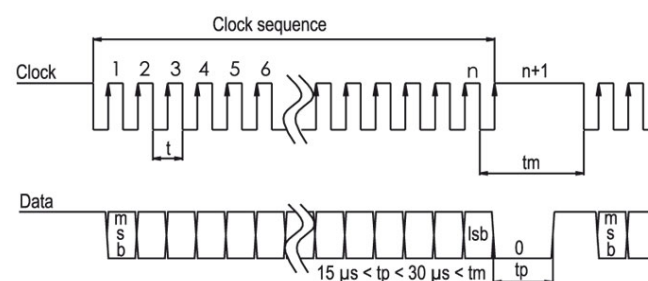
#### Duty information

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

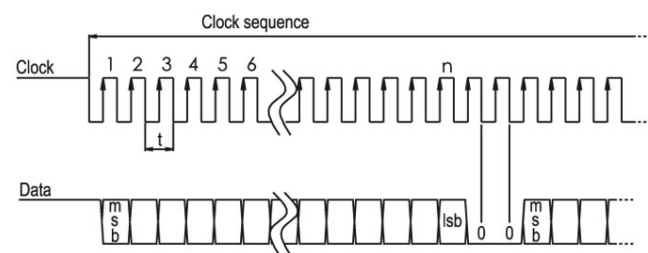
#### Interface

| Interface:                                         | SSI                                                   |
|----------------------------------------------------|-------------------------------------------------------|
| Clock input:                                       | via opto-coupler;<br>I > 1.6 mA; U > 2.2 V            |
| Clock frequency:                                   | 100 kHz up to 500 kHz,<br>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                                                |
| <b>Configuration inputs</b>                        | DIR = GND -> cw<br>DIR = +UB -> ccw                   |
| Positive direction of counting:<br>(View on shaft) |                                                       |
| Set to zero:                                       | Set: Preset = +UB for 2 s<br>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**

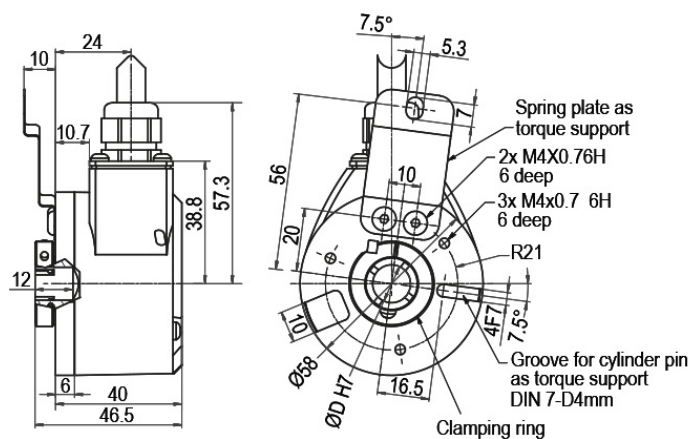
|                              |                                                                                |
|------------------------------|--------------------------------------------------------------------------------|
| Weight                       | approx. 220 g                                                                  |
| Connections                  | cable or connector, radial                                                     |
| Protection rating (EN 60529) | Housing: IP65, IP67;<br>shaft sealed: IP65;<br>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

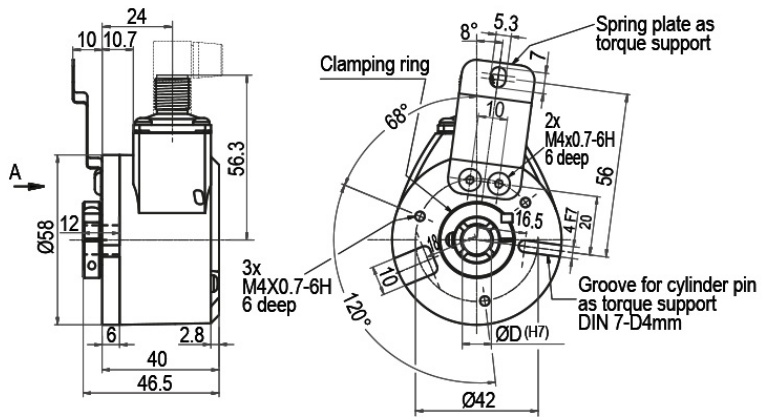


## Description

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

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

Connector, M12x1, CC8, radial, 8-pin

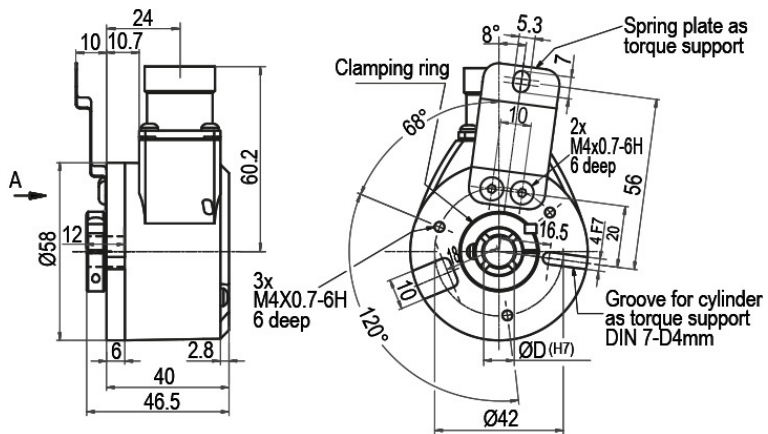


**Description**

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

| Assignments      |                   |
|------------------|-------------------|
|                  | <p><b>CC8</b></p> |
| <b>GND</b>       | 1                 |
| <b>(+) Vcc</b>   | 2                 |
| <b>SSI CLK+</b>  | 3                 |
| <b>SSI CLK-</b>  | 4                 |
| <b>SSI DATA+</b> | 5                 |
| <b>SSI DATA-</b> | 6                 |
| <b>PRESET</b>    | 7                 |
| <b>DIR</b>       | 8                 |
| <b>Shield</b>    | 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         |  |
|                   | <b>Shaft</b>                                                                | <b>Order key</b> |  |
| 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               |  |
|                   | <b>Single-turn Resolution</b>                                               | <b>Order key</b> |  |
| 12                | Single-turn resolution 1 bit up to 16 bit: (e. G. 12 bit)                   | 12               |  |
|                   | <b>Multi-turn Resolution</b>                                                | <b>Order key</b> |  |
| 12                | Multi-turn up to 43 bit (e. G. 12 bit)<br>No Multi-turn = 00                | 12               |  |
|                   | <b>Data protocol</b>                                                        | <b>Order key</b> |  |
| SI                | SSI                                                                         | SI               |  |
|                   | <b>Software</b>                                                             | <b>Order key</b> |  |
| A                 | up to date release                                                          | A                |  |
|                   | <b>Code</b>                                                                 | <b>Order key</b> |  |
| B                 | binary                                                                      | B                |  |
|                   | gray                                                                        | G                |  |
|                   | <b>Power supply</b>                                                         | <b>Order key</b> |  |
| 0                 | 4.75 V up to 32 V (standard)                                                | 0                |  |
|                   | 4.75 V up to 5.5 V                                                          | 1                |  |
|                   | <b>Galvanic isolation</b>                                                   | <b>Order key</b> |  |
| 1                 | yes                                                                         | 1                |  |
|                   | <b>Electrical connections</b>                                               | <b>Order key</b> |  |
| CC8               | <b>Cable:</b>                                                               |                  |  |
|                   | radial, shield connected to encoder housing, with 2 m cable                 | L3               |  |
|                   |                                                                             |                  |  |
|                   | <b>Connector:</b>                                                           |                  |  |
|                   | sensor-connector, M12x1, 8-pin, radial, shield connected to encoder housing | CC8              |  |
|                   | connector, M23, 12-pin, radial, 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/contact-sales-en/>



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