

# Online Data Sheet

## Encoder WDGA 58B I/O CANopen

[www.wachendorff-automation.com/wdga58biocan](http://www.wachendorff-automation.com/wdga58biocan)

### 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 58B I/O absolute CANopen galv. isolation, magnetic, with EnDra®- Technology


**EnDra®**  
Technologie

**CANopen®**

- EnDra®: maintenance-free and environmentally friendly
- CANopen, Single- and Multiturn + 3 multifunction inputs
- Galvanic isolation
- Communication Profile according to CiA 301
- Device Profile CiA 406 + CiA 404
- Single-/Multiturn (14 bit/39 bit)
- Forward-looking technology with 32 Bit processor
- 2-colour-LED as indicator for operating condition and error message appropriate CiA 303-3
- High shaft load up to 220 N radial, 120 N axial

[www.wachendorff-automation.com/wdga58biocan](http://www.wachendorff-automation.com/wdga58biocan)

## Preliminary

| Mechanical Data                       |                                                                                   |
|---------------------------------------|-----------------------------------------------------------------------------------|
| <b>Housing</b>                        |                                                                                   |
| Flange                                | clamping flange                                                                   |
| Flange material                       | aluminum                                                                          |
| Housing cap                           | steel case chrome-plated, magnetic shielding                                      |
| Connection cover                      | zinc-plated                                                                       |
| Housing                               | Ø 58 mm                                                                           |
| <b>Shaft(s)</b>                       |                                                                                   |
| Shaft material                        | stainless steel                                                                   |
| Starting torque                       | approx. 1 Ncm at ambient temperature, approx. 1.416 in-ozf at ambient temperature |
| <b>Shaft Ø 6 mm</b>                   |                                                                                   |
| Shaft                                 | Ø 6 mm                                                                            |
| Advice                                | Attention: No option AAS = full IP67 version                                      |
| Shaft length                          | L: 12 mm                                                                          |
| Max. Permissible shaft loading radial | 125 N                                                                             |
| Max. Permissible shaft loading axial  | 120 N                                                                             |
| <b>Shaft Ø 8 mm</b>                   |                                                                                   |
| Shaft                                 | Ø 8 mm                                                                            |
| Advice                                | Attention: No option AAS = full IP67 version                                      |
| Shaft length                          | L: 20 mm                                                                          |
| Max. Permissible shaft loading radial | 125 N                                                                             |
| Max. Permissible shaft loading axial  | 120 N                                                                             |
| <b>Shaft Ø 10 mm</b>                  |                                                                                   |
| Shaft                                 | Ø 10 mm                                                                           |
| Shaft length                          | L: 20 mm                                                                          |
| Max. Permissible shaft loading radial | 220 N                                                                             |
| Max. Permissible shaft loading axial  | 120 N                                                                             |
| <b>Shaft Ø 9.525 mm, Ø 3/8"</b>       |                                                                                   |
| Shaft                                 | Ø 9.525 mm, Ø 3/8"                                                                |
| Advice                                | Attention: No option AAS = full IP67 version                                      |
| Shaft length                          | L: 20 mm, L: 0.787 in                                                             |
| Max. Permissible shaft loading radial | 220 N, 22.434 kp                                                                  |
| Max. Permissible shaft loading axial  | 120 N, 12.237 kp                                                                  |

| Bearings              |                                                                                                                                                                   |
|-----------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Bearings type         | 2 precision ball bearings                                                                                                                                         |
| Nominale 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  | 8000 rpm                                                                                                                                                          |

| Electrical Data                  |                                  |
|----------------------------------|----------------------------------|
| Power supply/Current consumption | 10 VDC up to 32 VDC: typ. 300 mA |
| Power consumption                | approx. 3 W                      |

| Sensor data                 |                                                                            |
|-----------------------------|----------------------------------------------------------------------------|
| Single-turn technology      | innovative hall sensor technology                                          |
| Single-turn resolution      | 16,384 steps/360° (14 bit)                                                 |
| Single-turn accuracy        | < ±0.35°                                                                   |
| Single-turn repeat accuracy | < ±0.20°                                                                   |
| Internal cycle time         | ≤ 600 µs                                                                   |
| Multi-turn technology       | patented EnDra® technology, no battery and no gear.                        |
| Multi-turn resolution       | up to 262,144 revolutions (18 bit) with high precision value up to 39 bit. |

**Multifunction inputs at 20 Hz sampling rate and 20 °C**

| Sensor type   | Voltage ±10 V                |
|---------------|------------------------------|
| Input         | 1, 2, 3                      |
| Signal (max.) | ±10 V                        |
| Step size     | 0,001 V                      |
| Accuracy      | ±0,001 V + max. ±0,01 % EW   |
| Sensor type   | Current 4...20 mA            |
| Input         | 1, 2, 3                      |
| Signal (max.) | 4...20 mA                    |
| Step size     | 0,001 mA                     |
| Accuracy      | ±0,001 mA + max. ±0,005 % EW |
| Sensor type   | Current 0...20 mA            |
| Input         | 1, 2, 3                      |
| Signal (max.) | 0...20 mA                    |
| Step size     | 0,001 mA                     |
| Accuracy      | ±0,001 mA + max. ±0,005 % EW |
| Sensor type   | Type J, K thermocouple       |

|                    |                                    |
|--------------------|------------------------------------|
| Input              | 1, 2, 3                            |
| Signal (max.)      | ±70 mV (-180 °C up to +750 °C)     |
| Step size          | 0,1 K                              |
| Accuracy           | ±0,1 K + max. ±0,1 % EW            |
| <b>Sensor type</b> | <b>Pt100</b>                       |
| Input              | 1                                  |
| Signal (max.)      | 0...250 mV (-200 °C up to +850 °C) |
| Step size          | 0,1 K                              |
| Accuracy           | ±0,3 K + max. ±0,5 % EW            |
| <b>Sensor type</b> | <b>Pressure</b>                    |
| Input              | 1, 2*, 3*                          |
|                    | * ext. bridge supply requis        |
| Signal (max.)      | ±50 mV                             |
| Step size          | 0,001 mV                           |
| Accuracy           | ±0,010 mV + max. ±0,2 EW           |

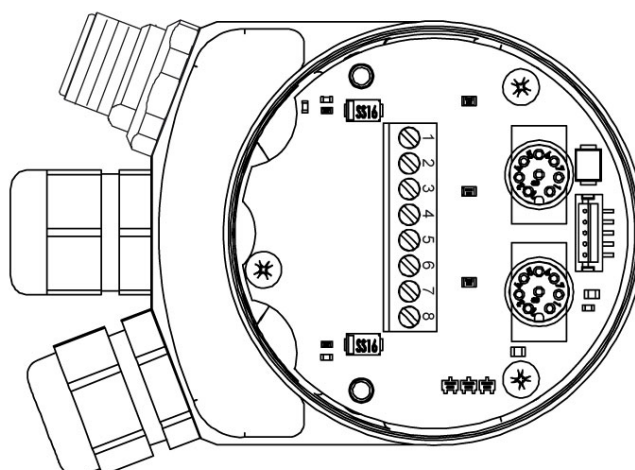
#### Environmental data

|                                  |                                           |
|----------------------------------|-------------------------------------------|
| 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/s <sup>2</sup> (10 Hz up to 2000 Hz) |
| Shock:<br>(DIN EN 60068-2-27)    | 1000 m/s <sup>2</sup> (6 ms)              |
| Design:                          | according DIN VDE 0160                    |
| Turn on time:                    | <1,5 s                                    |

#### Interface

|                                     |                                                                                                                                                                                                                                                                                   |
|-------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Interface:</b>                   | <b>CAN</b>                                                                                                                                                                                                                                                                        |
| Protocol:                           | CANopen <ul style="list-style-type: none"> <li>• Communication profil CiA 301</li> <li>• Device Profile for encoder CiA 406 V3.2 class C2</li> <li>• Device Profile for sensors and controllers CiA 404</li> </ul>                                                                |
| Node number encoder:                | 1 up to 127 (default 127)                                                                                                                                                                                                                                                         |
| Node number I/O:                    | 1 up to 127 (default 1)                                                                                                                                                                                                                                                           |
| Baud rate:                          | 50 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.                                                                                                |
| Status indicator:                   | 2x 2-color status LED                                                                                                                                                                                                                                                             |
| Programmable CANtransmission modes: | <b>Synchronous mode:</b><br>when a synchronisation telegram (SYNC) is received from another bus node, PDOs are transmitted independently.<br><b>Asynchronous mode:</b><br>a PDO message is triggered by an internal event. (e.g. change of measured valued, internal timer, etc.) |

#### View in connection cover:



Range of cable clamping: Ø 4 mm up to 9,5 mm

#### General Data

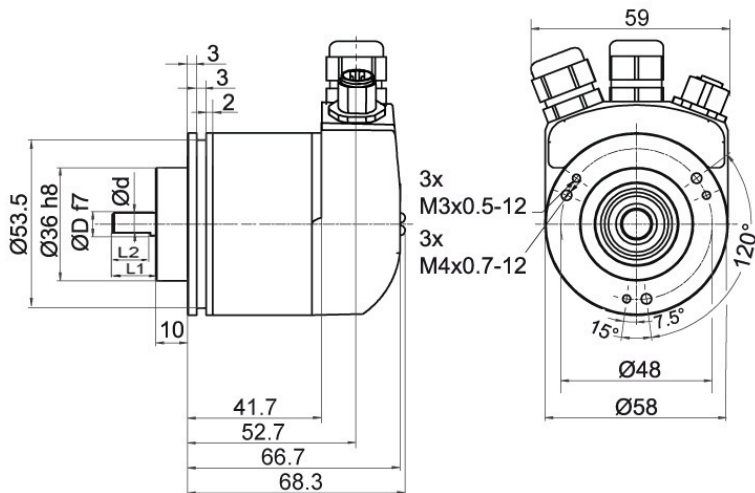
|                              |                                            |
|------------------------------|--------------------------------------------|
| Connections                  | Connection cover                           |
| Protection rating (EN 60529) | Housing: IP65, IP67;<br>shaft sealed: IP65 |
| Operating temperature        | -40 °C up to +85 °C, -40 °F up to +176 °F  |
| Storage temperature          | -40 °C up to +100 °C, -40 °F up to +212 °F |

#### More Information

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

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

**WDGA 58B CANopen I/O, connection cover with 2x PG9 and 1x M12x1**



D = 6, L1 = 12, d = 5.3, L2 = 10 shaft with flat  
D = 8, L1 = 19, d = 7.5, L2 = 15 shaft with flat  
D = 10, L1 = 20 shaft with out flat\*  
D = 3/8", L1 = 20, d = 8.3, L2 = 10 shaft with flat

\* Option full IP67 version: (only D = Ø 10 mm)  
D = 10, L1 = 20, d = 9, L2 = 15 shaft with flat

**Description**

**IO1** 2x PG (PG cable glands) with 3 terminal inputs for I/O, 1x M12x1 for CAN

| Assignments   |              |
|---------------|--------------|
|               |              |
| Connector     | M12x1, 5-pin |
| (+) Vcc       | 2            |
| GND           | 3            |
| CANHigh       | 4            |
| CANLow        | 5            |
| CANGND shield | 1            |

| Assignments |       |
|-------------|-------|
|             |       |
| Clamp       | 2x PG |
| P1          | 1     |
| +1          | 2     |
| -1          | 3     |
| G1          | 4     |
| +2          | 5     |
| -2          | 6     |
| +3          | 7     |
| -3          | 8     |

## Options

### Shafts sealed to IP67, only with 10 mm shaft with flat

### Order key

The encoder WDG 58B I/O CANopen can be supplied in a full IP67 version.

**AAS**

Max. RPM: 3500 min<sup>-1</sup>

Permitted Shaft-Loading: axial 100 N; radial 110 N

Starting-torque: approx. 4 Ncm at ambient temperature

### 120 Ohm terminating resistor

### Order key

The encoder WDGA 58B I/O CANopen is also available with fixed 120 Ohm terminating resistor.

**AEO**

| Example Order No. | Type                                                                                             | Your encoder     |  |
|-------------------|--------------------------------------------------------------------------------------------------|------------------|--|
| WDGA 58B          | WDGA 58B                                                                                         | WDGA 58B         |  |
|                   | <b>Shaft</b>                                                                                     | <b>Order key</b> |  |
| 06                | Ø 6 mm Attention: No option AAS = full IP67 version                                              | 06               |  |
|                   | Ø 8 mm Attention: No option AAS = full IP67 version                                              | 08               |  |
|                   | Ø 10 mm                                                                                          | 10               |  |
|                   | Ø 9.525 mm Ø 3/8" Attention: No option AAS = full IP67 version                                   | 4Z               |  |
|                   | <b>Single-turn Resolution</b>                                                                    | <b>Order key</b> |  |
| 12                | Single-turn resolution 1 bit up to 14 bit: (e. G. 12 bit)                                        | 12               |  |
|                   | <b>Multi-turn Resolution</b>                                                                     | <b>Order key</b> |  |
| 13                | Multi-turn resolution:<br>(examples)<br>13 bit = 18<br>01 up to 39 bit pos.<br>no Multiturn = 00 | 13               |  |
|                   | <b>Data protocol</b>                                                                             | <b>Order key</b> |  |
| CO                | CANopen                                                                                          | CO               |  |
|                   | <b>Software</b>                                                                                  | <b>Order key</b> |  |
| A                 | up to date release                                                                               | A                |  |
|                   | <b>Code</b>                                                                                      | <b>Order key</b> |  |
| B                 | binary                                                                                           | B                |  |
|                   | <b>Power supply</b>                                                                              | <b>Order key</b> |  |
| 0                 | 10 V up to 32 V (standard)                                                                       | 0                |  |
|                   | <b>Galvanic isolation</b>                                                                        | <b>Order key</b> |  |
| 1                 | yes                                                                                              | 1                |  |
|                   | <b>Electrical connections</b>                                                                    | <b>Order key</b> |  |
| IO1               | <b>Connection cover:</b>                                                                         |                  |  |
|                   | 2x PG (PG cable glands) with 3 terminal inputs for I/O, 1x M12x1 for CAN                         | IO1              |  |
|                   | <b>Options</b>                                                                                   | <b>Order key</b> |  |
|                   | Without option                                                                                   | Empty            |  |
|                   | Shafts sealed to IP67, only with 10 mm shaft with flat                                           | AAS              |  |
|                   | 120 Ohm terminating resistor                                                                     | AEO              |  |

|                          |          |    |    |    |    |   |   |   |   |     |  |
|--------------------------|----------|----|----|----|----|---|---|---|---|-----|--|
| <b>Example Order No.</b> | WDGA 58B | 06 | 12 | 13 | CO | A | B | 0 | 1 | IO1 |  |
|--------------------------|----------|----|----|----|----|---|---|---|---|-----|--|

|          |  |  |  |  |  |  |  |  |  |  |                          |
|----------|--|--|--|--|--|--|--|--|--|--|--------------------------|
| WDGA 58B |  |  |  |  |  |  |  |  |  |  | <b>Example Order No.</b> |
|----------|--|--|--|--|--|--|--|--|--|--|--------------------------|



For further information please contact our local distributor.  
Here you find a list of our distributors worldwide.  
[http://www.wachendorff-automation.com/distributors\\_worldwide.html](http://www.wachendorff-automation.com/distributors_worldwide.html)



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

Phone: +49 67 22 / 99 65 25  
Fax: +49 67 22 / 99 65 70  
E-Mail: [wdg@wachendorff.de](mailto:wdg@wachendorff.de)  
[www.wachendorff-automation.de](http://www.wachendorff-automation.de)

