WACHENDORFF
The Encoder Experts

Online Data sheet

# Encoder WDGA 58B RS485

**www.wachendorff-automation.com/wdga58brs485**

**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 58B absolute RS485, with EnDra® Technologie

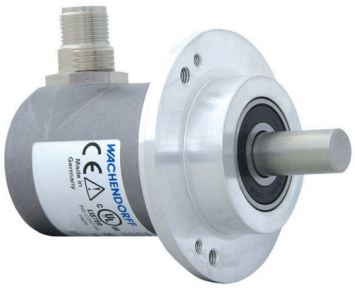


*Illustration similar*

EnDra® Technologie

RS485

- EnDra® multiturn technology: maintenance-free and environmentally friendly
- RS485
- Single-turn/Multi-turn (max. 16 bit /32 bit)
- Forward-looking technology with 32 bit processor
- 2-colour-LED as indicator for operating condition
- High shaft load up to 220 N radial, 120 N axial
- CRC checksum

**www.wachendorff-automation.com/wdga58brs485**

| Mechanical Data | |
|---|---|
| Flange | clamping flange |
| Flange material | aluminum |
| Housing material | stainless steel (except connector: CH8 and C5 = chrome-plated steel housing, magnetic shielding) |
| Flange diameter | Ø 58 mm [Ø 2.283"] |
| Cam mounting | pitch 69 mm [2.717 inches] (Accessory SP-3-00) |

| Shaft(s) | |
|---|---|
| Shaft material | stainless steel |
| Starting torque | approx. 1 Ncm [1.416 in-ozf] at ambient temperature |
| | |
| Shaft | Ø 6 mm [Ø 0.236"] |
| Advice | Attention: No option AAO = full IP67 version |
| Shaft length | L: 12 mm [0.472"] |
| Max. Permissible shaft loading radial | 125 N [12.746 kp] |
| Max. Permissible shaft loading axial | 120 N [12.236 kp] |
| | |
| Shaft | Ø 8 mm [Ø 0.315"] |
| Advice | Attention: No option AAO = full IP67 version |
| Shaft length | L: 19 mm [0.748"] |
| Max. Permissible shaft loading radial | 125 N [12.746 kp] |
| Max. Permissible shaft loading axial | 120 N [12.236 kp] |
| | |
| Shaft | Ø 9.525 mm [Ø 3/8"] Order No: 4Z |
| Advice | Attention: No option AAO = full IP67 version |
| Shaft length | L: 20 mm [0.787"] |
| Max. Permissible shaft loading radial | 220 N [22.433 kp] |
| Max. Permissible shaft loading axial | 120 N [12.236 kp] |
| | |
| Shaft | Ø 10 mm [Ø 0.394"] |
| Shaft length | L: 20 mm [0.787"] |
| Max. Permissible shaft loading radial | 220 N [22.433 kp] |
| Max. Permissible shaft loading axial | 120 N [12.236 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 | 8000 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 8000 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 32 bit. |

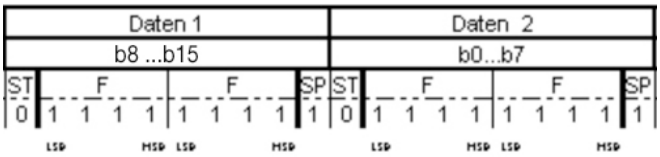
| Environmental data | |
|---|---|
| ESD (DIN EN 61000-4-2): | 8 kV |
| Burst (DIN EN 61000-4-4): | 2 kV |
| includes EMC: | DIN EN 61000-6-2<br>DIN EN 61000-6-3<br>DIN EN 61326-1 |
| Vibration: (DIN EN 60068-2-6) | 300 $m/s^2$ (10 Hz up to 2000 Hz) |
| Shock: (DIN EN 60068-2-27) | 5000 $m/s^2$ (6 ms) |
| Electrial Safety: | according DIN VDE 0160 |

| | |
|---|---|
| Turn on time: | <1,5 s |

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

| **Interface** | |
|---|---|
| **Interface:** | **RS485** |
| **Configuration inputs:** | |
| Positive direction of counting:<br>(View on shaft) | DIR = GND -> cw<br>DIR = +Ub -> ccw |
| Set to zero: | Preset = apply +Ub for 2 s |
| Baud rate: | Standard: 9600 bit/s<br>Other baud rates on request |
| Polling cycle: | Standard: 20 ms (Tolerances: +/- 2 ms)<br>Other polling cycles on request |
| Telegram lenght: | 6 byte singleturn, 8 byte multiturn |
| Telegram composition: | 2 Byte Präambel, 2 /4 Byte user data, 2 Byte CRC |
| Bytecomposition: | Startbit (0) and Stopbit (1), Bytes are Big-Endian and LSB first, no Paritybit |
| CRC-Definition: | Code:<br>• CRC-CCITT 16 bit (X^16+X^12+ X^5+1)<br>• Startvalue 0x1021,<br>• Start/Stopbits aren´t included<br>• Präambel (0xABCD) is included,<br>• Bytewise orientation: per CRC-Refresh there is used 1 Byte |
| Protocol malfunction behaviour: | If encoder recognizes that it´s impossible to send a right positionvalue (e.G.: Magnet-loss), there will be send out a telegram with maximum value user Data at normalcycletime and normal Baudrate. |

**Protocol RS485**

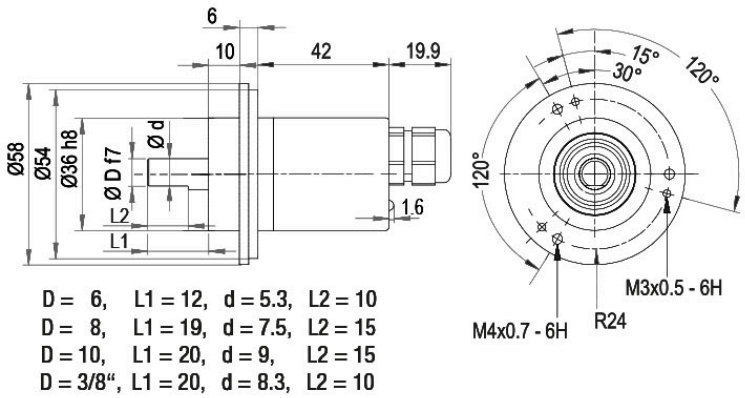



| **LED-behaviour:** | |
|---|---|
| At Start / while booting: | - red gleam (< 2,3 s) |
| Malfunction: | - constant red gleam (> 2,3 s) |
| Normal function: | - constant green gleam |
| No supply: | - no gleam |

| **General Data** | |
|---|---|
| Weight | approx. 202 g [7.125 oz] |
| Connections | cable or connector outlet |
| Protection rating (EN 60529) | Housing: IP65, IP67;<br>shaft sealed: IP65;<br>cable outlet K1: IP40 |
| 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** |

## Cable connection L2 axial with 2 m cable



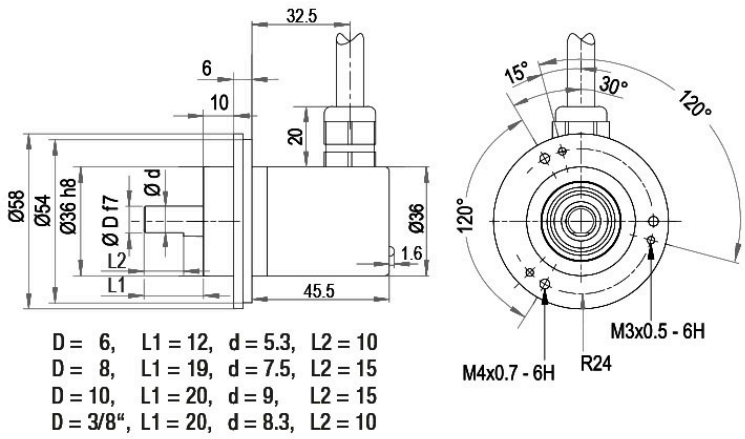

D = 6, L1 = 12, d = 5.3, L2 = 10
D = 8, L1 = 19, d = 7.5, L2 = 15
D = 10, L1 = 20, d = 9, L2 = 15
D = 3/8“, L1 = 20, d = 8.3, L2 = 10

### Description

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

| Assignments | |
|---|---|
| | **L2** |
| **S- (GND)** | WH |
| **S+ (DCin)** | BN |
| **A (DATA+)** | GY |
| **B (DATA-)** | PK |
| **PRESET** | BU |
| **DIR** | RD |
| **Shield** | housing |

## Cable connection L3 radial with 2 m cable



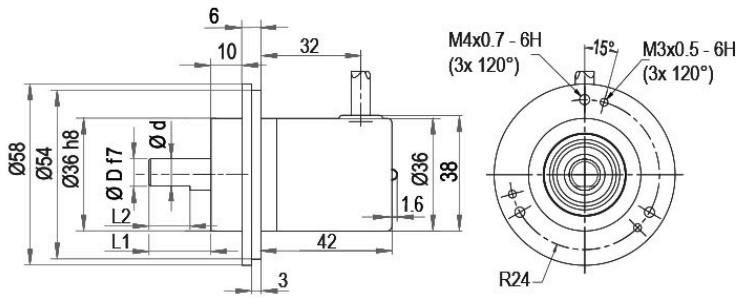

D = 6, L1 = 12, d = 5.3, L2 = 10
D = 8, L1 = 19, d = 7.5, L2 = 15
D = 10, L1 = 20, d = 9, L2 = 15
D = 3/8", L1 = 20, d = 8.3, L2 = 10

### Description

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

| Assignments | |
|---|---|
| | **L3** |
| **S- (GND)** | WH |
| **S+ (DCin)** | BN |
| **A (DATA+)** | GY |
| **B (DATA-)** | PK |
| **PRESET** | BU |
| **DIR** | RD |
| **Shield** | housing |

## Cable connection, K1 radial with 2 m cable, IP40



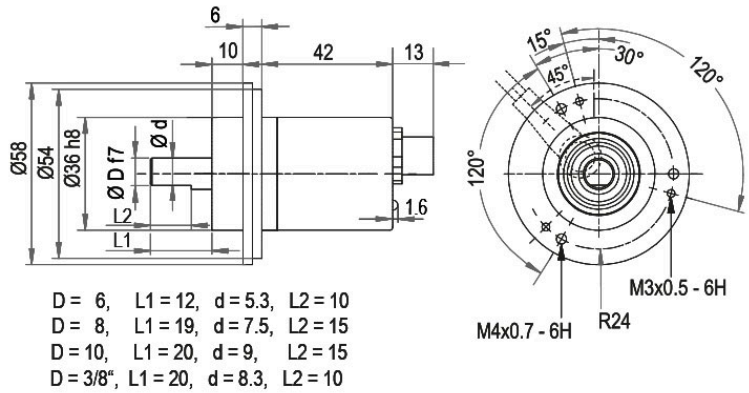

D = 6, L1 = 12, d = 5.3, L2 = 10
D = 8, L1 = 19, d = 7.5, L2 = 15
D = 10, L1 = 20, d = 9, L2 = 15
D = 3/8", L1 = 20, d = 8.3, L2 = 10

### Description

**K1** radial, shield not connected

| Assignments | |
|---|---|
| | **K1** |
| **S- (GND)** | WH |
| **S+ (DCin)** | BN |
| **A (DATA+)** | GY |
| **B (DATA-)** | PK |
| **PRESET** | BU |
| **DIR** | RD |
| **Shield** | housing n. c. |

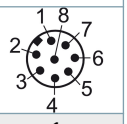
## Connector, M12x1, CB8, axial, 8-pin



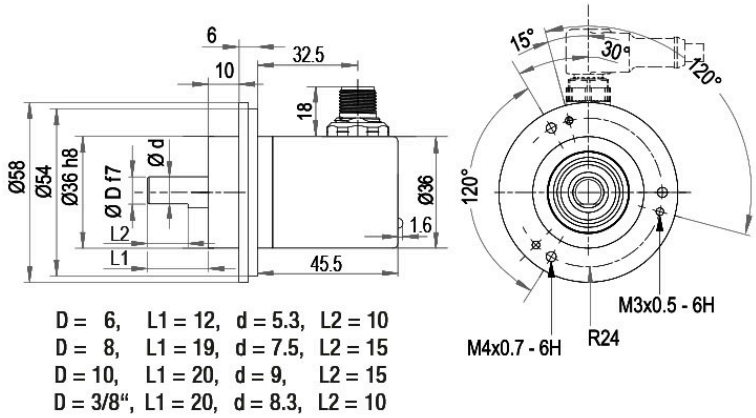

D = 6, L1 = 12, d = 5.3, L2 = 10
D = 8, L1 = 19, d = 7.5, L2 = 15
D = 10, L1 = 20, d = 9, L2 = 15
D = 3/8", L1 = 20, d = 8.3, L2 = 10

### Description

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

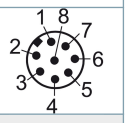
| Assignments | |
|---|---|
| | **CB8** |
| |  |
| **S- (GND)** | 1 |
| **S+ (DCin)** | 2 |
| **A (DATA+)** | 5 |
| **B (DATA-)** | 6 |
| **PRESET** | 7 |
| **DIR** | 8 |
| **Shield** | housing |

## Connector, M12x1, CC8, radial, 8-pin

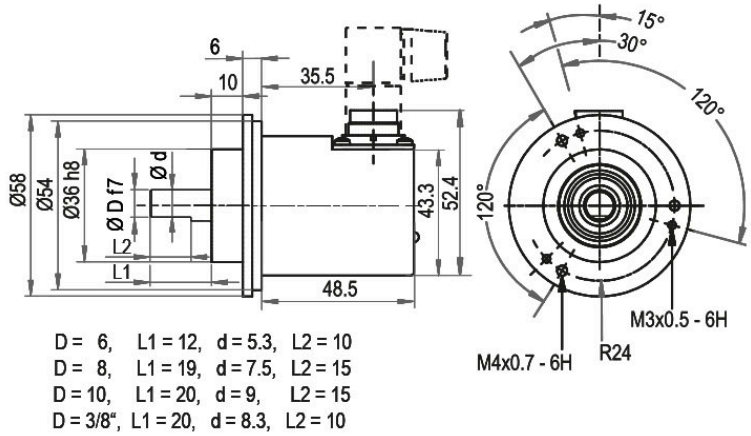



### Description

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

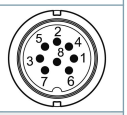
| Assignments | |
|---|---|
| | **CC8** |
| |   |
| **S- (GND)** | 1 |
| **S+ (DCin)** | 2 |
| **A (DATA+)** | 5 |
| **B (DATA-)** | 6 |
| **PRESET** | 7 |
| **DIR** | 8 |
| **Shield** | housing |

## Connector, M16, CH8, radial, 8-pin

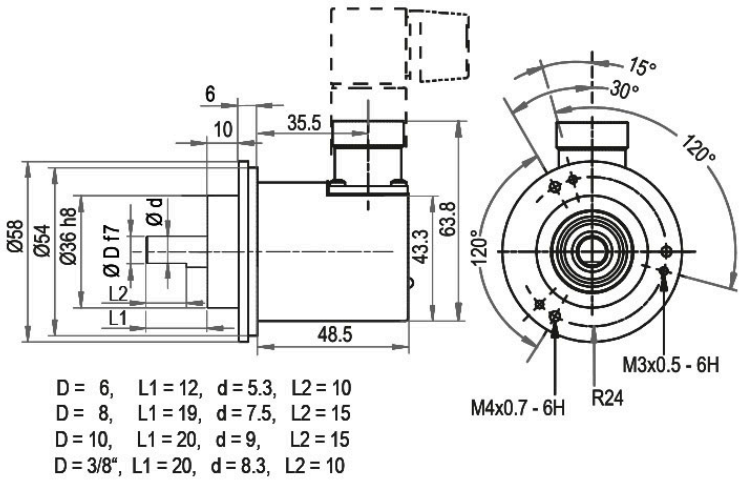



### Description

**CH8** radial, 8-pin, shield connected to encoder housing

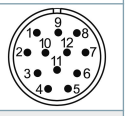
| Assignments | |
|---|---|
| | **CH8** |
| |  |
| **S- (GND)** | 2 |
| **S+ (DCin)** | 1 |
| **A (DATA+)** | 4 |
| **B (DATA-)** | 3 |
| **PRESET** | 8 |
| **DIR** | 7 |
| **Shield** | housing |

## Connector, M23, C5, radial, 12-pin




### Description

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

| Assignments | |
|---|---|
| | **C5** |
| |  |
| **S- (GND)** | 12 |
| **S+ (DCin)** | 11 |
| **A (DATA+)** | 3 |
| **B (DATA-)** | 4 |
| **PRESET** | 9 |
| **DIR** | 8 |
| **Shield** | housing |

## Options

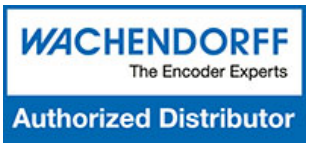
| Low-friction bearings | Order key |
|---|---|
| The encoder WDGA 58B RS485 is also available as a particularly smooth-running low-friction encoder. The starting torque is thereby changed to ≤ 0.5 Ncm [0.708 in-ozf] and the protection class at the shaft input to IP50. | **AAC** |

| Shafts sealed to IP67, only with shaft Ø 10 mm | Order key |
|---|---|
| The encoder WDG 58B RS485 can be supplied in a IP67 version.<br>(full IP67 only connection CB8, CC8, CH8, C5, L2 or L3 version; not cable connection K1 = IP40).<br>Max. RPM: 3500 min'-1<br>Permitted Shaft-Loading: axial 100 N; radial 110 N<br>Starting-torque: approx. 4 Ncm at ambient temperature | **AAO** |

| Example Order No. | Type | | Your encoder |
|---|---|---|---|
| WDGA 58B | WDGA 58B | | WDGA 58B |
| | | | |
| | **Shaft** | **Order key** | |
| 10 | Ø 6 mm [Ø 0.236"] Attention: No option AAO = full IP67 version | 06 | |
| | Ø 8 mm [Ø 0.315"] Attention: No option AAO = full IP67 version | 08 | |
| | Ø 9.525 mm [Ø 3/8"] Order No: 4Z Attention: No option AAO = full IP67 version | 4Z | |
| | Ø 10 mm [Ø 0.394"] | 10 | |
| | | | |
| | **Single-turn Resolution** | **Order key** | |
| 14 | Single-turn resolution 1 bit up to 16 bit, recommended min. 6 bit (e. G. 14 bit) | 14 | |
| | | | |
| | **Multi-turn Resolution** | **Order key** | |
| 18 | Multi-turn up to 32 bit (e. G. 18 bit)<br>(Single-turn + Multi-turn max. 32 bit)<br>No Multi-turn: 00 | 18 | |
| | | | |
| | **Data protocol** | **Order key** | |
| EI | RS485 | EI | |
| | | | |
| | **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 | |
| | 4.75 V up to 5.5 V | 1 | |
| | | | |
| | **Galvanic isolation** | **Order key** | |
| 0 | no | 0 | |
| | | | |
| | **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 | |
| | | | |
| | **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 | |
| | sensor-connector, M16x0.75, 8-pin, radial, shield connected to encoder housing | CH8 | |
| | connector, M23, 12-pin, radial, shield connected to encoder housing | C5 | |
| | | | |
| | **Options** | **Order key** | |
| | Without option | Empty | |
| | Low-friction bearings | AAC | |
| | Shafts sealed to IP67, only with shaft Ø 10 mm | AAO | |

| Example Order No. | WDGA 58B | 10 | 14 | 18 | EI | A | B | 0 | 0 | CB8 | |
|---|---|---|---|---|---|---|---|---|---|---|---|

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | WDGA 58B | | | | | | | | | | | 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-en/wachendorff-world-wide/

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