



# Online Data Sheet

## Encoder WDGA 58A RS485

[www.wachendorff-automation.com/wdga58ars485](http://www.wachendorff-automation.com/wdga58ars485)

### 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 58A absolute RS485 magnetic, with EnDra® Technology



**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/wdga58ars485](http://www.wachendorff-automation.com/wdga58ars485)

## Mechanical Data

Housing	
Flange	synchro flange
Flange material	aluminum
Housing cap	steel case chrome-plated, magnetic shielding
Housing	Ø 58 mm
Cam mounting	pitch 65 mm

Shaft(s)	
Shaft material	stainless steel
Starting torque	approx. 1 Ncm at ambient temperature

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

Shaft	Ø 10 mm
Shaft length	L: 20 mm
Max. Permissible shaft loading radial	220 N
Max. Permissible shaft loading axial	120 N

Bearings	
Bearings type	2 precision ball bearings
Nominal service life	1 x 10 <sup>9</sup> revs. at 100 % rated shaft load 1 x 10 <sup>10</sup> revs. at 40 % rated shaft load 1 x 10 <sup>11</sup> revs. at 20 % rated shaft load
Max. operating speed	8000 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 8000 rpm
Diagnostic coverage (DC)	0 %

## Electrical Data

Power supply/Current consumption	10 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	< ±0.35°
Single-turn repeat accuracy	< ±0.20°
Internal cycle time	600 µs
Multi-turn technology	patented EnDra® technology no battery no gear.
Multi-turn resolution	up to 32 bit.

## Environmental data

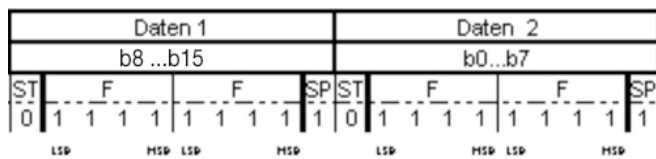
Environmental data:	
ESD (DIN EN 61000-4-2):	8 kV
Burst (DIN EN 61000-4-4):	2 kV
includes EMC:	DIN EN 61000-6-2 DIN EN 61000-6-3
Vibration: (DIN EN 60068-2-6)	50 m/s <sup>2</sup> (10 Hz up to 2000 Hz)
Shock: (DIN EN 60068-2-27)	1000 m/s <sup>2</sup> (6 ms)
Design:	according DIN VDE 0160
Turn on time:	<1,5 s

## Interface

<b>Interface:</b>	<b>RS485</b>
<b>Configuration inputs:</b>	
Positive direction of counting: (View on shaft)	DIR = GND -> cw DIR = +Ub -> ccw
Set to zero:	Preset = apply +Ub for 2 s
Baud rate:	Standard: 9600 bit/s Other baud rates on request
Polling cycle:	Standard: 20 ms (Tolerances: +/- 2 ms) Other polling cycles on request
Telegram length:	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: <ul style="list-style-type: none"> <li>• CRC-CCITT 16 bit (<math>X^{16}+X^{12}+X^5+1</math>)</li> <li>• Startvalue 0x1021,</li> <li>• Start/Stopbits aren't included</li> <li>• Präambel (0xABCD) is included,</li> <li>• Bitwise orientation: per CRC-Refresh there is used 1 Byte</li> </ul>
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

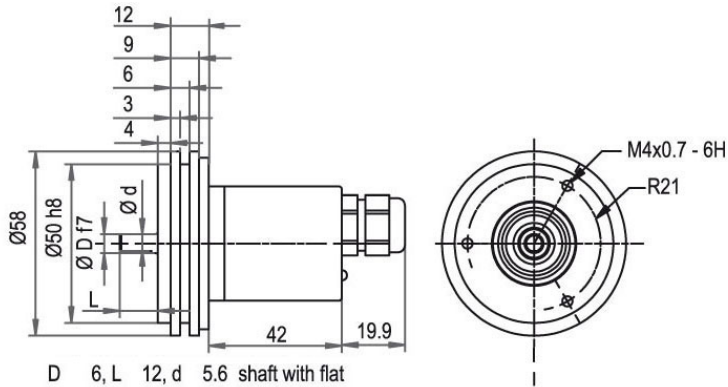
Weight	approx. 224 g
Connections	cable or connector outlet
Protection rating (EN 60529)	Housing: IP65, IP67; shaft sealed: IP65; (IP40 for K1)
Operating temperature	-40 °C up to +85 °C
Storage temperature	-40 °C up to +100 °C

### More Information

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

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

**Cable connection L2 with 2 m cable**



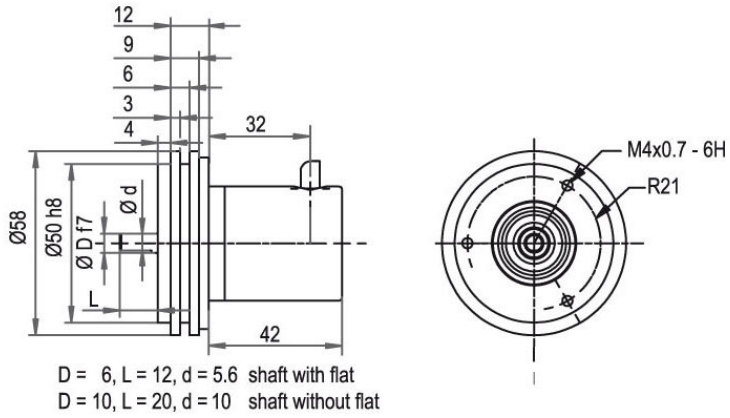
D 6, L 12, d 5.6 shaft with flat  
 D = 10, L = 20, d = 10 shaft without flat \*  
 \*option full IP67 version: D=Ø 10 mm)  
 D = 10, L = 20, d = 9 shaft with flat

**Description**

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

Assignments	
	<b>L2</b>
<b>S- (GND)</b>	WH
<b>S+ (DCin)</b>	BN
<b>A (DATA+)</b>	GY
<b>B (DATA-)</b>	PK
<b>PRESET</b>	BU
<b>DIR</b>	RD
<b>Shield</b>	housing

**Cable connection, K1 with 2 m cable, IP40**



**Description**

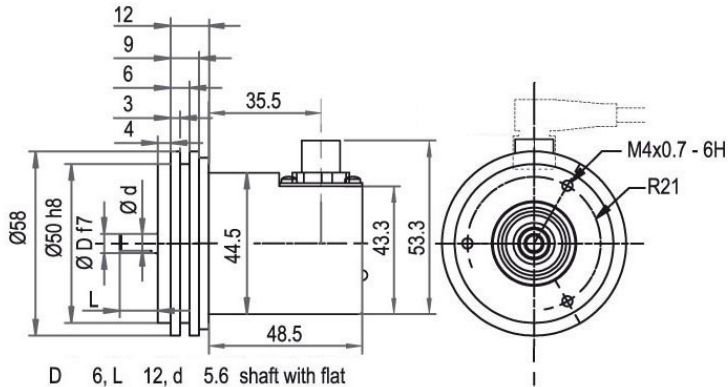
**K1** radial, shield not connected

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





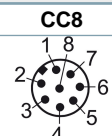
**Steckerabgang, M12x1, CC8, radial, 8-polig**



D 6, L 12, d 5.6 shaft with flat  
 D = 10, L = 20, d = 10 shaft without flat \*  
 \*option full IP67 version: D=Ø 10 mm)  
 D = 10, L = 20, d = 9 shaft with flat

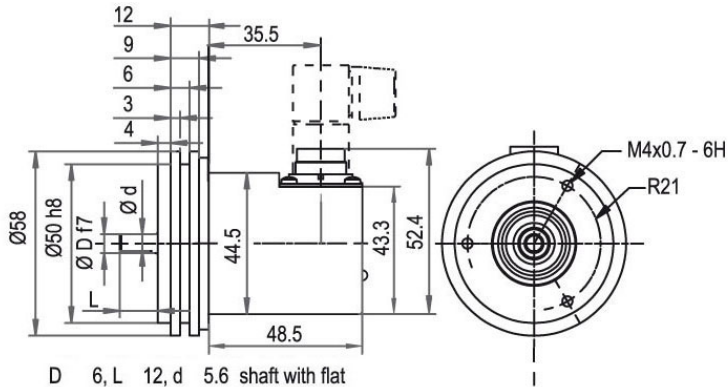
**Description**

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

Assignments	
	
<b>S- (GND)</b>	1
<b>S+ (DCin)</b>	2
<b>A (DATA+)</b>	5
<b>B (DATA-)</b>	6
<b>PRESET</b>	7
<b>DIR</b>	8
<b>Shield</b>	housing




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



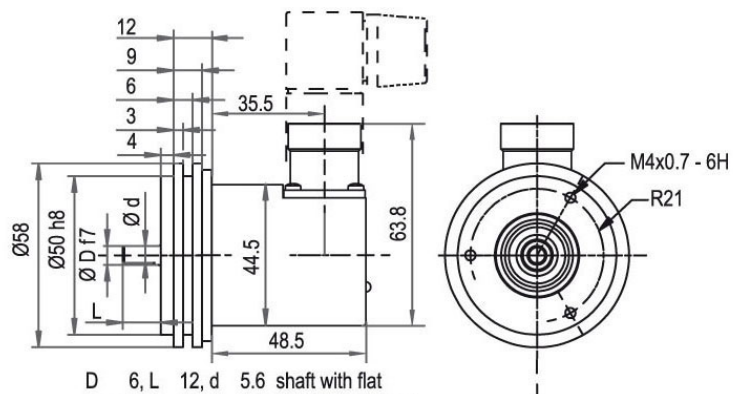
D = 6, L = 12, d = 5.6 shaft with flat  
 D = 10, L = 20, d = 10 shaft without flat \*  
 \*option full IP67 version: D=Ø 10 mm)  
 D = 10, L = 20, d = 9 shaft with flat

**Description**

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

Assignments	
	<b>CH8</b>
	
<b>S- (GND)</b>	2
<b>S+ (DCin)</b>	1
<b>A (DATA+)</b>	4
<b>B (DATA-)</b>	3
<b>PRESET</b>	8
<b>DIR</b>	7
<b>Shield</b>	housing

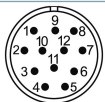
**Connector, M23, C5, radial, 12-pin**



D 6, L 12, d 5.6 shaft with flat  
 D = 10, L = 20, d = 10 shaft without flat \*  
 \*option full IP67 version: D= $\varnothing$  10 mm)  
 D = 10, L = 20, d = 9 shaft with flat

**Description**

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

Assignments	
	<b>C5</b>
	
<b>S- (GND)</b>	12
<b>S+ (DCin)</b>	11
<b>A (DATA+)</b>	3
<b>B (DATA-)</b>	4
<b>PRESET</b>	9
<b>DIR</b>	8
<b>Shield</b>	housing

## Options

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

### Order key

The encoder WDG 58A RS485 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

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Example Order No.	Type	Your encoder	
WDGA 58A	WDGA 58A	WDGA 58A	
	<b>Shaft</b>	<b>Order key</b>	
10	∅ 6 mm Attention: No option AAS = full IP67 version	06	
	∅ 10 mm	10	
	<b>Single-turn Resolution</b>	<b>Order key</b>	
14	Single-turn resolution 1 bit up to 16 bit: (e. G. 14 bit)	14	
	<b>Multi-turn Resolution</b>	<b>Order key</b>	
18	Multi-turn up to 32 bit (e. G. 18 bit) (Single-turn + Multi-turn max. 32 bit) No Multi-turn: 00	18	
	<b>Data protocol</b>	<b>Order key</b>	
EI	RS485	EI	
	<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	
	4.75 V up to 5.5 V	1	
	<b>Galvanic isolation</b>	<b>Order key</b>	
0	no	0	
	<b>Electrical connections</b>	<b>Order key</b>	
CB8	<b>Cable:</b>		
	axial, shield connected to encoder housing, with 2 m cable, IP67	L2	
	radial, shield not connected, with 2 m cable, IP40	K1	
	radial, shield connected to encoder housing, with 2 m cable, IP67	L3	
	<b>Connector:</b>		
	sensor-connector, M12x1, 8-pin, axial, IP67, shield connected to encoder housing	CB8	
	sensor-connector, M12x1, 8-pin, radial, IP67, shield connected to encoder housing	CC8	
	sensor-connector, M16x0.75, 8-pin, radial, IP67, shield connected to encoder housing	CH8	
connector, M23, 12-pin, radial, IP67, shield connected to encoder housing	C5		
	<b>Options</b>	<b>Order key</b>	
	Without option	Empty	
	Shafts sealed to IP67, only with 10 mm shaft with flat	AAS	

<b>Example Order No.</b>	WDGA 58A	10	14	18	EI	A	B	0	0	CB8	
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WDGA 58A											<b>Example Order No.</b>
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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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