



# Online Data sheet

## Encoder WDGA 36E RS485

[www.wachendorff-automation.com/wdga36e-rs485](http://www.wachendorff-automation.com/wdga36e-rs485)

### 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 36E absolut 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
- CRC checksum

[www.wachendorff-automation.com/wdga36e-rs485](http://www.wachendorff-automation.com/wdga36e-rs485)

## Mechanical Data

Housing	
Flange	hollow shaft (blind-bored)
Flange material	aluminum
Housing cap	stainless steel
- 1. Spring plate compensation	axial: ±1.2 mm, radial: ±0.4 mm
Housing	Ø 36 mm

Shaft(s)	
Starting torque	approx. 1.6 Ncm at ambient temperature

Shaft	Ø 8 mm
Advice	with adapter sleeve
Insertion depth min.	10 mm
Insertion depth max.	14.5 mm
Max. Permissible shaft loading radial	80 N
Max. Permissible shaft loading axial	50 N

Shaft	Ø 10 mm
Advice	with adapter sleeve
Insertion depth min.	10 mm
Insertion depth max.	14.5 mm
Max. Permissible shaft loading radial	80 N
Max. Permissible shaft loading axial	50 N

Shaft	Ø 12 mm
Insertion depth min.	10 mm
Insertion depth max.	14.5 mm
Max. Permissible shaft loading radial	80 N
Max. Permissible shaft loading axial	50 N

Shaft	Ø 14 mm
Insertion depth min.	10 mm
Insertion depth max.	14.5 mm
Max. Permissible shaft loading radial	80 N
Max. Permissible shaft loading axial	50 N

Shaft	Ø 15 mm
Insertion depth min.	10 mm

Insertion depth max.	14.5 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 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	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 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 DIN EN 61000-6-3 DIN EN 61326-1
Vibration: (DIN EN 60068-2-6)	300 m/s <sup>2</sup> (10 Hz up to 2000 Hz)

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

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

### Duty information

Customs tariff number:	90318020
Country of origin:	Germany

### More Information

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

### Interface

**Interface:** RS485

#### Configuration inputs:

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

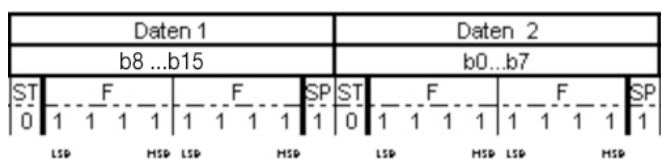
Bytecomposition: Startbit (0) and Stopbit (1), Bytes are Big-Endian and LSB first, no Paritybit

CRC-Definition: Code:  

- CRC-CCITT 16 bit ( $X^{16}+X^{12}+X^5+1$ )
- Startvalue 0x1021,
- Start/Stopbits aren't included
- Präambel (0xABCD) is included,
- Byte-wise 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



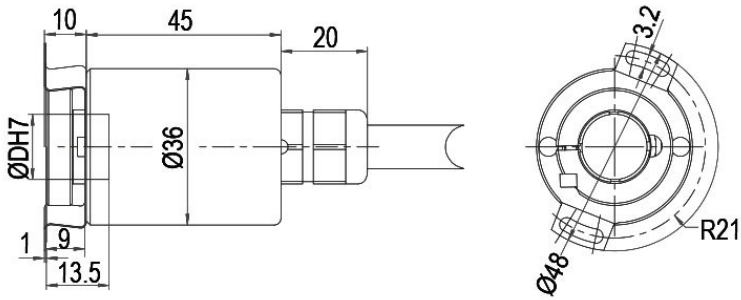
### LED-behaviour:

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. 110 g
Connections	cable or connector outlet

**Cable connection L2 axial with 2 m cable**



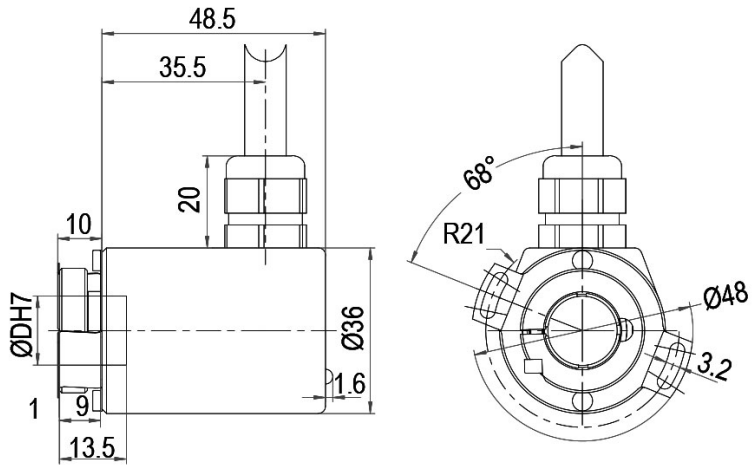
D = Ø 8, 10, 12, 14, 15 mm  
(Ø 8, 10, mm with adapter sleeve)

**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, L3 radial with 2 m cable**



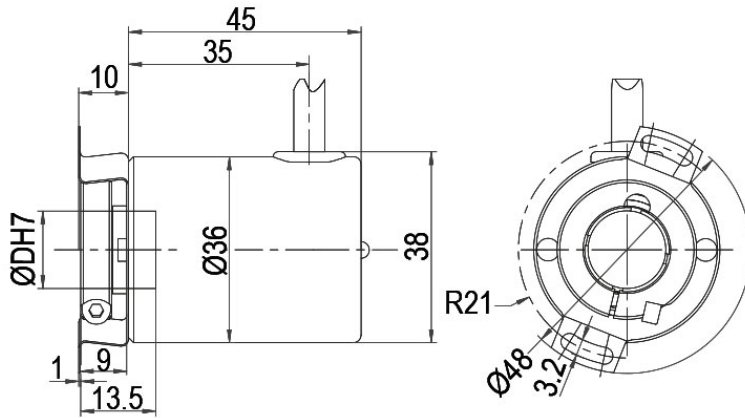
D = Ø 8, 10, 12, 14, 15 mm  
 (Ø 8, 10, mm mit Reduzierhülse)  
 (Ø 8, 10, mm with adapter sleeve)

**Description**

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

Assignments	
	<b>L3</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 radial with 2 m cable, IP40**



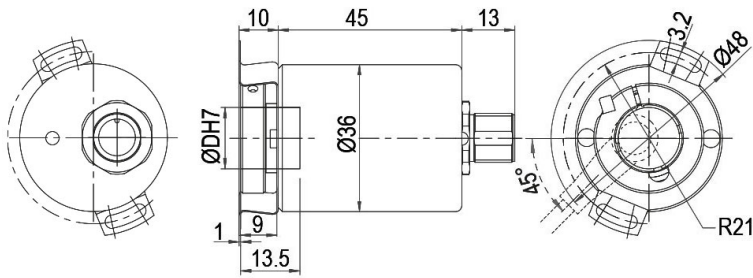
D = Ø 8, 10, 12, 14, 15 mm  
 (Ø 8, 10, mm mit Reduzierhülse)  
 (Ø 8, 10, mm with adapter sleeve)

**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.

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



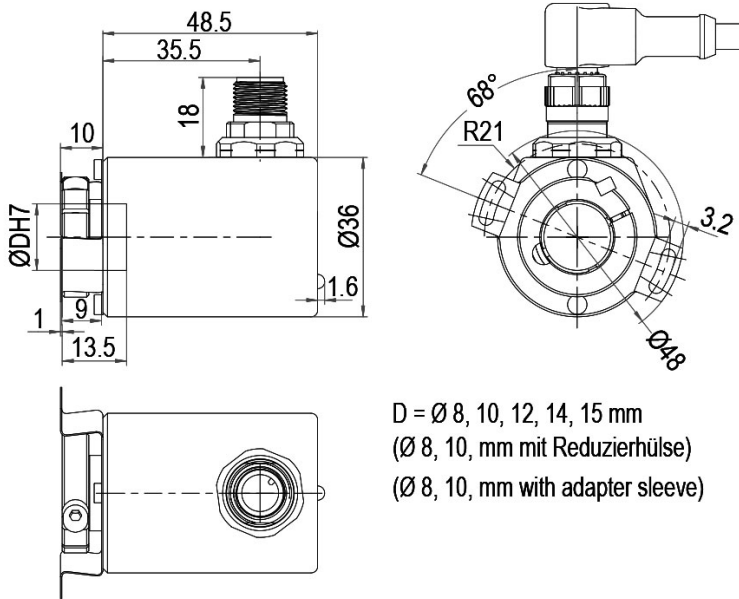
D = Ø 8, 10, 12, 14, 15 mm  
 (Ø 8, 10, mm mit Reduzierhülse)  
 (Ø 8, 10, mm with adapter sleeve)

**Description**

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

Assignments	
	<b>CB8</b> 
<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, M12x1, CC8 radial, 8-pin**



**Description**

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

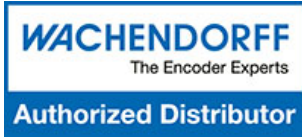
Assignments	
	<b>CC8</b> 
<b>S- (GND)</b>	1
<b>S+ (DCin)</b>	2
<b>A (DATA+)</b>	5
<b>B (DATA-)</b>	6
<b>PRESET</b>	7
<b>DIR</b>	8
<b>Shield</b>	housing



Example Order No.	Type	Your encoder
WDGA 36E	WDGA 36E	WDGA 36E
	<b>Shaft</b>	<b>Order key</b>
08	Ø 8 mm with adapter sleeve	08
	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>
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	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>
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	L2
	radial, shield connected to encoder housing, with 2 m cable	L3
	radial, shield not connected, with 2 m cable, IP40	K1
	<b>Connector:</b>	
	sensor-connector, M12x1, 8-pin, axial, shield connected to encoder housing	CB8
	sensor-connector, M12x1, 8-pin, radial, shield connected to encoder housing	CC8

<b>Example Order No.</b>	WDGA 36E	08	14	18	EI	A	B	0	0	CB8
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WDGA 36E										<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/contact-sales-en/>

# WACHENDORFF

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