



# Online Data Sheet

## Encoder WDGA 36A SSI

[www.wachendorff-automation.com/wdga36assi](http://www.wachendorff-automation.com/wdga36assi)

### 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 36A 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 (16 bit / 43 bit)
- Forward-looking technology with 32 bit processor
- 2-colour-LED as indicator for operating condition

[www.wachendorff-automation.com/wdga36assi](http://www.wachendorff-automation.com/wdga36assi)

## Mechanical Data

### Housing

Flange	synchro flange
Flange material	aluminum
Housing cap	steel case chrome-plated, magnetic shielding
Housing	Ø 36 mm

### Shaft(s)

Shaft material	stainless steel
Starting torque	approx. 0.3 Ncm at ambient temperature

Shaft	Ø 6 mm
Shaft length	L: 11.5 mm
Max. Permissible shaft loading radial	80 N
Max. Permissible shaft loading axial	50 N

Shaft	Ø 8 mm
Shaft length	L: 18 mm
Max. Permissible shaft loading radial	50 N
Max. Permissible shaft loading axial	50 N

### Bearings

Bearings type	2 precision ball bearings
Nominal service life	1.4 x 10 <sup>8</sup> revs. at 100 % rated shaft load 2 x 10 <sup>9</sup> revs. at 40 % rated shaft load 1.7 x 10 <sup>10</sup> revs. at 20 % rated shaft load
Max. operating speed	12000 rpm

### Machinery Directive: basic data safety integrity level

MTTF <sub>d</sub>	1000 a
Mission time (TM)	20 a
Nominal service life (L10h)	1.7 x 10 <sup>10</sup> revs. at 20 % rated shaft load and 12000 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 43 bit.

## Environmental data

<b>Environmental data:</b>	
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>SSI</b>
Clock input:	via opto-coupler
Clock frequency:	100 kHz up to 500 kHz, 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 DIR = +UB -> ccw
Positive direction of counting: (View on shaft)	
Set to zero:	Set: Preset = +UB for 2 s Deactivate: Preset = GND

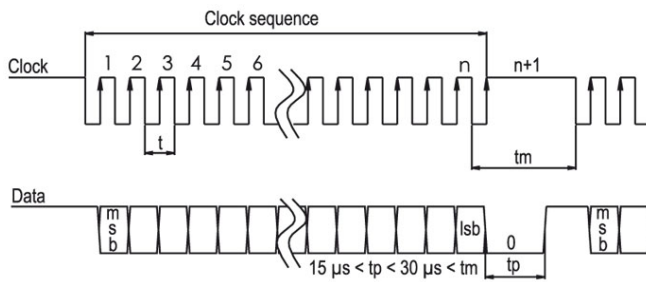
## LED-behaviour:

At Start / while booting:	- red gleam (< 2.3 s)
Malfunction:	- constant red gleam (> 2.3 s)

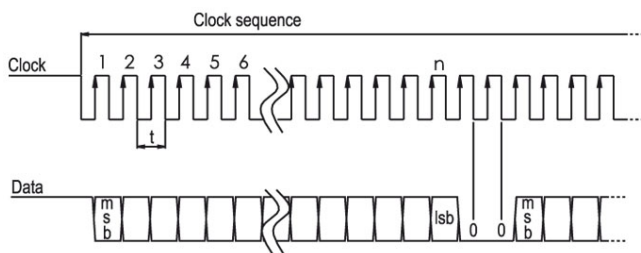
Normal function: - constant green gleam

No supply: - no gleam

**Transmission protocol SSI Single transmission:**



**Transmission protocol SSI Multipath transmission:**



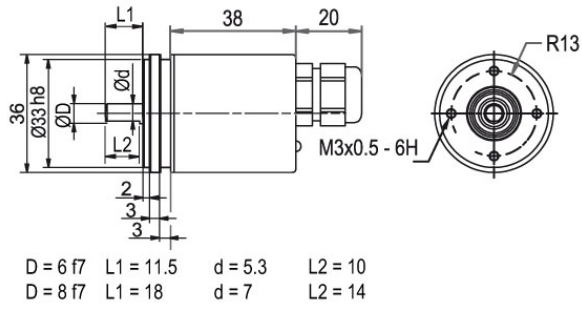
**General Data**

Weight	approx. 112 g
Connections	cable or connector outlet
Protection rating (EN 60529)	Housing: IP65, IP67; shaft sealed: IP65; cable outlet K1: IP40, K6: IP20
Operating temperature	-40 °C up to +85 °C
Storage temperature	-40 °C up to +100 °C

**More Information**

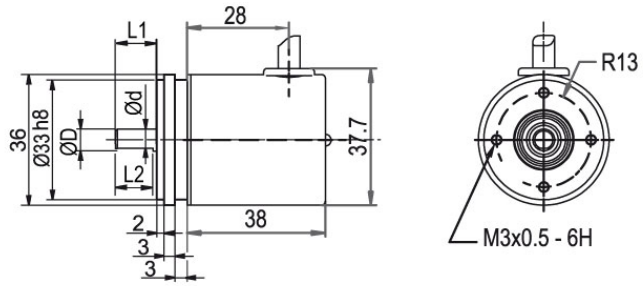
General technical data and safety instructions  
<http://www.wachendorff-automation.com/gtd>

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

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

**Description**

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

Assignments	
	<b>L2</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

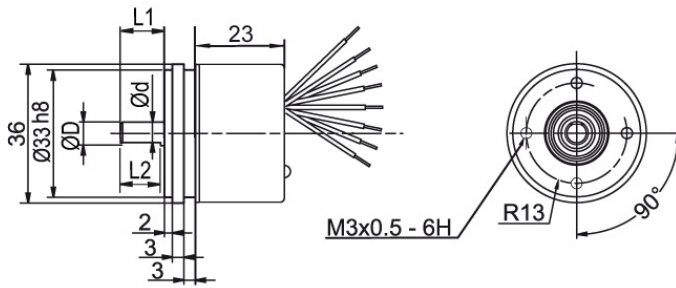
**Cable connection, K1 with 2 m cable (IP40)**


D = 6 f7	L1 = 11.5	d = 5.3	L2 = 10
D = 8 f7	L1 = 18	d = 7	L2 = 14

**Description**

**K1** radial, shield not connected

Assignments	
	<b>K1</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 n. c.

**Cable connection, K6 with 8 cm loose wires, IP20**


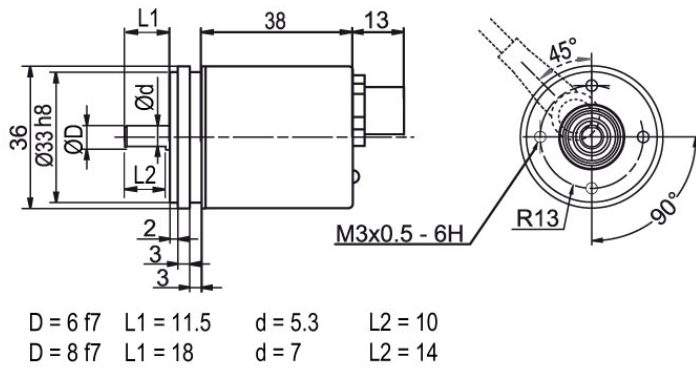
D = 6 f7   L1 = 11.5   d = 5.3   L2 = 10  
 D = 8 f7   L1 = 18   d = 7   L2 = 14

**Description**

**K6** axial, shield not connected

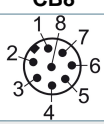
Assignments	
	<b>K6</b>
<b>GND</b>	WH
<b>(+) Vcc</b>	BN
<b>SSI CLK+</b>	GN
<b>SSI CLK-</b>	YE
<b>SSI DATA+</b>	GY
<b>SSI DATA-</b>	PK
<b>PRESET</b>	BU
<b>DIR</b>	RD
<b>Shield</b>	housing n. c.

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



**Description**

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

Assignments	
	<b>CB8</b> 
<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

Example Order No.	Type	Your encoder
WDGA 36A	WDGA 36A	WDGA 36A
	<b>Shaft</b>	<b>Order key</b>
06	∅ 6 mm	06
	∅ 8 mm	08
	<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) 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	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>
1	yes	1
	<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
	axial, shield not connected, IP20, with 8 cm loose wires	K6
	<b>Connector:</b>	
	sensor-connector, M12x1, 8-pin, axial, IP67, shield connected to encoder housing	CB8

Example Order No.	WDGA 36A	06	12	12	SI	A	B	0	1	CB8
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WDGA 36A											Example Order No.
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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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