



## Online Data sheet

HM 2602

### Encoder WDGA 58B SSI

[www.wachendorff-automation.com/wdga58bssi](http://www.wachendorff-automation.com/wdga58bssi)

#### 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



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**IndustrieROBUST**

# Encoder WDGA 58B absolute SSI, with EnDra®-Technology



Illustration similar

**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
- High shaft load up to 220 N [22.433 kp] radial, 120 N [12.236 kp] axial

[www.wachendorff-automation.com/wdga58bssi](http://www.wachendorff-automation.com/wdga58bssi)

## 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]

## 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
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
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Nominale 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
Nominale 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	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 43 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)
Electrical Safety:	according DIN VDE 0160
Turn on time:	<1,5 s

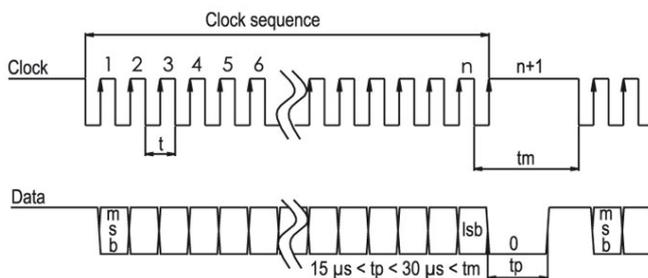
## Duty information

Customs tariff number:	90318020
Country of origin:	Germany

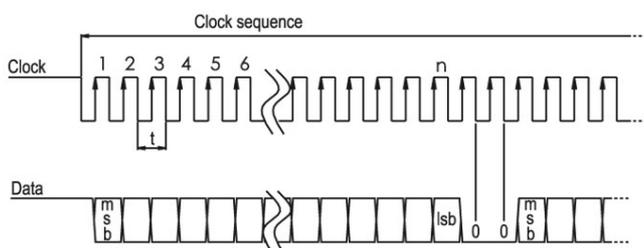
## Interface

<b>Interface:</b>	<b>SSI</b>
Clock input:	via opto-coupler; I > 1.6 mA; U > 2.2 V
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
Positive direction of counting: (View on shaft)	DIR = +UB -> ccw
Set to zero:	Set: Preset = +UB for 2 s Deactivate: Preset = GND

### Transmission protocol SSI Single transmission:



### Transmission protocol SSI Multipath transmission:



## LED-behaviour:

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

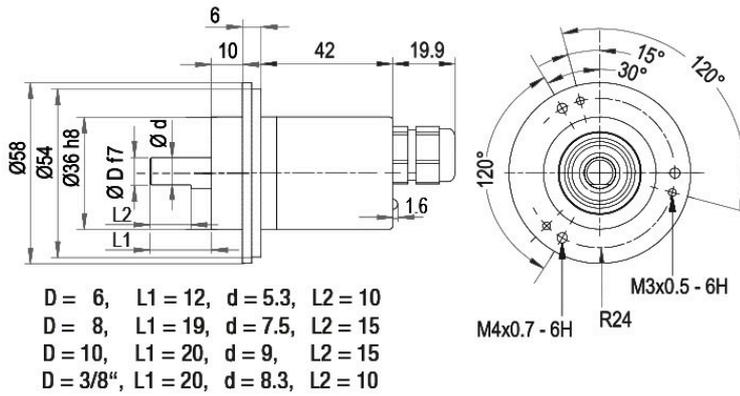
## General Data

Weight	approx. 202 g [7.125 oz]
Connections	cable or connector outlet
Protection rating (EN 60529)	Housing: IP65, IP67; shaft sealed: IP65; cable outlet K1: IP40
Operating temperature	-40 °C up to +85 °C [-40 °F up to 185 °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>

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

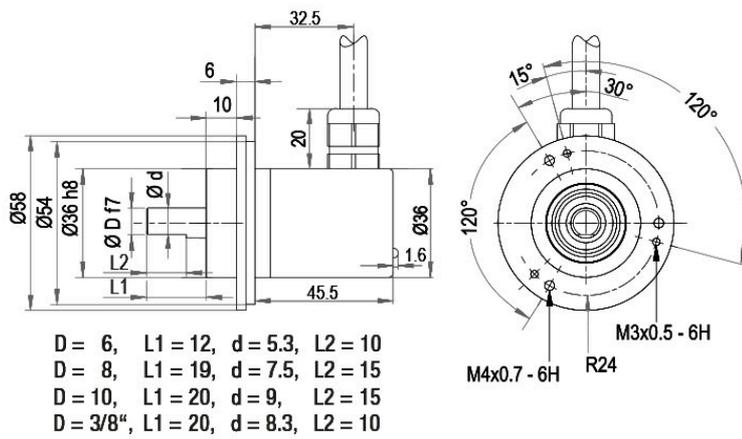


**Description**

**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, L3 radial with 2 m cable**

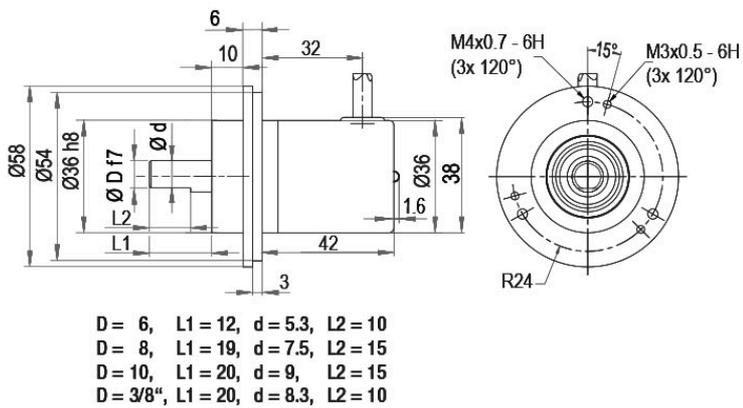


**Description**

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

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



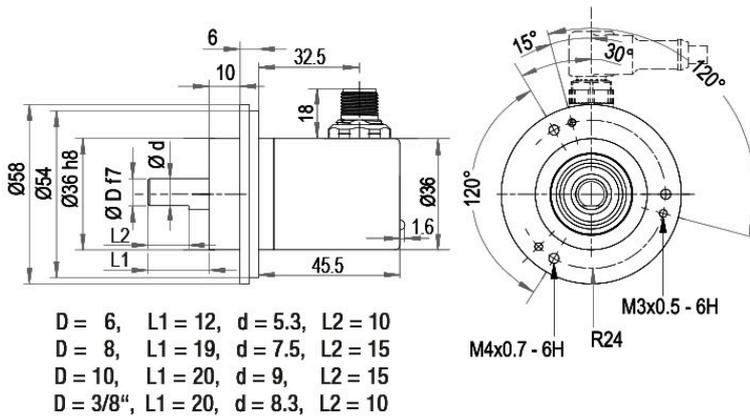
**Description**

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.



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

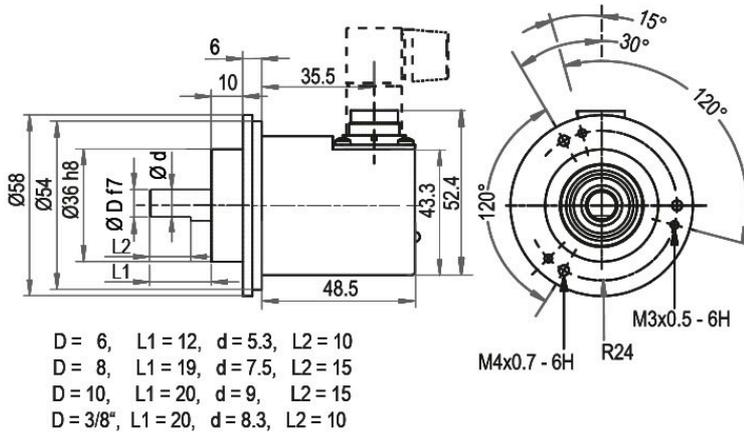


**Description**

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

Assignments	
<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

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

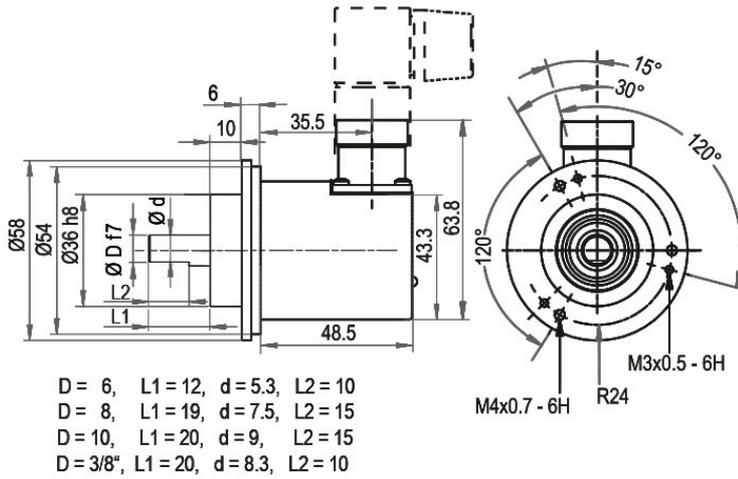


**Description**

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

Assignments	
	CH8
<b>GND</b>	2
<b>(+) Vcc</b>	1
<b>SSI CLK+</b>	6
<b>SSI CLK-</b>	5
<b>SSI DATA+</b>	4
<b>SSI DATA-</b>	3
<b>PRESET</b>	8
<b>DIR</b>	7
<b>Shield</b>	housing

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



**Description**

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

Assignments	
	<b>C5</b>
<b>GND</b>	12
<b>(+) Vcc</b>	11
<b>SSI CLK+</b>	2
<b>SSI CLK-</b>	1
<b>SSI DATA+</b>	3
<b>SSI DATA-</b>	4
<b>PRESET</b>	9
<b>DIR</b>	8
<b>Shield</b>	housing

**Options****Low-friction bearings**

The encoder WDGA 58B SSI 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.

**Order key****AAC****Shafts sealed to IP67, only with shaft Ø 10 mm**

The encoder WDG 58B SSI can be supplied in a IP67 version.  
(full IP67 only connection CB8, CC8, CH8, C5, L2 or L3 version; not cable connection K1 = IP40).

**Order key****AAO**

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

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

Starting-torque: approx. 4 Ncm at ambient temperature

Example Order No.	Type	Your encoder
WDGA 58B	WDGA 58B	WDGA 58B
	<b>Shaft</b>	<b>Order key</b>
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
	<b>Single-turn Resolution</b>	<b>Order key</b>
12	Single-turn resolution 1 bit up to 16 bit, recommended min. 6 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	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>
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	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
	sensor-connector, M16x0.75, 8-pin, radial, shield connected to encoder housing	CH8
	connector, M23, 12-pin, radial, shield connected to encoder housing	C5
	<b>Options</b>	<b>Order key</b>
	Without option	Empty
	Low-friction bearings	AAC
	Shafts sealed to IP67, only with shaft Ø 10 mm	AAO

Example Order No.	WDGA 58B	10	12	12	SI	A	B	0	1	CB8	
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WDGA 58B											Example Order No.
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