



# Online Datasheet

## Encoder WDGE 58B redundant incremental / absolute

[www.wachendorff-automation.com/wdge58b](http://www.wachendorff-automation.com/wdge58b)

### 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 WDGE 58B incremental / absolute redundant, with bus cover



- Redundant: two independent encoders in one
- Diversity: two measuring principles (optical / magnetic)
- Compact design with bus cover
- optical up to 5000 ppr - 16 bit ST / 43 bit MT
- Highest bearing loads up to 220 N radial, 120 N axial

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## Mechanical Data

Housing	
Flange	clamping flange
Flange material	aluminum
Housing cap	steel case chrome-plated, magnetic shielding
Connection cover	zinc-plated
Housing	Ø 58 mm

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

Shaft	Ø 10 mm shaft with flat
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
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>	133 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 %

## Environmental data

ESD (DIN EN 61000-4-2)	8 kV
Burst (DIN EN 61000-4-4)	2 kV
Vibration (IEC 68-2-6)	tbd.
Schock (IEC 68-2-27)	tbd.
Design:	according DIN VDE 0160

## General Data

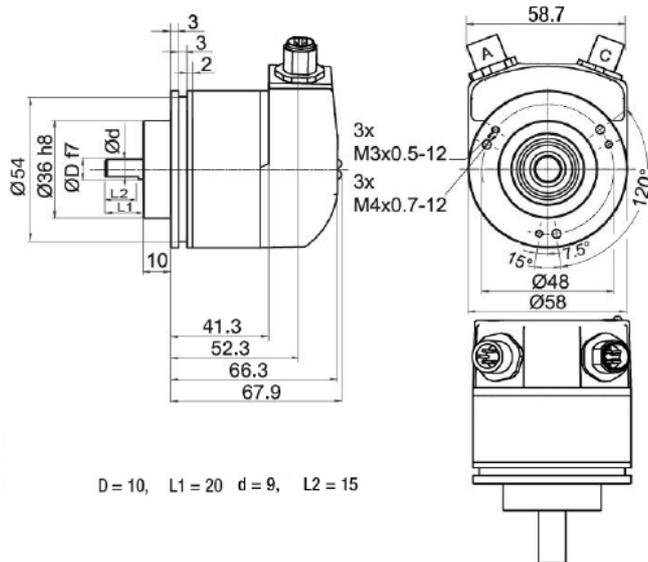
Weight	approx. 440.5 g
Connections	connector outlet
Protection rating (EN 60529)	Housing: IP65, IP67; shaft sealed: IP65
Operating temperature	Connector: -40 °C up to +85 °C, 1 Vpp: -10 °C up to +70 °C
Storage temperature	Connector: -30 °C up to +85 °C

## More Information

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

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

**WDGE58B, redundant, bus cover with 2x M12x1**



**Data incremental sensor technology**

**Optical sensor technology**

**Resolution**

Max. pulses per revolution up to 5000 PPR  
PPR

**Electrical Data**

Power supply/ Current consumption 4,75 VDC up to 5,5 VDC: typ. 100 mA

5 VDC up to 30 VDC: typ. 70 mA

10 VDC up to 30 VDC: typ. 100 mA

Output circuit TTL  
TTL, RS422 compatible, inv.  
HTL  
HTL, inv.  
1 Vpp sin/cos

Pulse frequency  $\leq 5000$  ppr: max. 200 kHz

1 Vpp sin/cos: max. 100 kHz

Channels ABN  
and inverted signals

Load max. 40 mA / channel  
@ 1 Vpp sin/cos: min. 120 Ohm

Circuit protection 10 VDC up to 30 VDC, HTL only

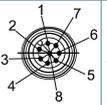
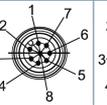
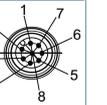
**Accuracy**

Phase offset  $90^\circ \pm$  max. 25% of the period duration

pulse-/pause-ratio  $\leq 5000$  ppr: 50 %  $\pm$  max. 7 %

**WDGR 58B: Sensor-connector incremental (M12x1) SC, radial, 5-, 8-pin (PORT A)**

Description	ABN inv. poss.
<b>SC5</b> radial, 5-pin, connector connected to encoder housing	-
<b>SC8</b> radial, 8-pin, connector connected to encoder housing	•

Assignments				
	SC5 5-pin	SC8 8-pin	SC8 8-pin	SC8 8-pin
				
<b>Circuit</b>	15,16,1F	15,16,1F	1C, 1D 1E, 1B,	1A
<b>GND</b>	3	1	1	1
<b>+UB</b>	1	2	2	2
<b>A</b>	4	3	3	3
<b>B</b>	2	4	4	5
<b>N</b>	5	5	5	-
<b>Light reserve warning</b>	-	-	-	-
<b>A inv.</b>	-	-	6	4
<b>B inv.</b>	-	-	7	6
<b>N inv.</b>	-	-	8	-
<b>n.</b>	-	6, 7, 8	-	7, 8
<b>Shield</b>	-	-	-	-

**Data absolute SSI**

**Electrical Data**

Power supply/Current consumption	10 VDC up to 32 VDC: typ. 50 mA
Power consumption	max. 0.5 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.

**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 Positive direction of counting: (View on shaft) DIR = +UB -> ccw
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

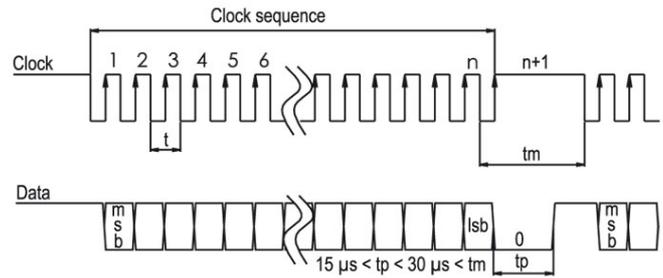
**Connector, M12x1, CC8, radial, 8-pin (PORT C)**

**Description**

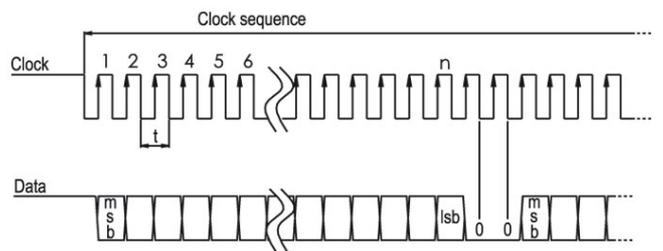
CC8 radial, 8-pin, shield connected to encoder housing

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

**Transmission protocol SSI Single transmission:**



**Transmission protocol SSI Multipath transmission:**



## Data absolute CANopen

### Electrical Data

Power supply/Current consumption	10 VDC up to 32 VDC: typ. 50 mA
Power consumption	max. 0.5 W

### Sensor data

Single-turn technology	innovative hall sensor technology
Single-turn resolution	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 and no gear.
Multi-turn resolution	up to 32 bit with high precision value up to 43 bit.

### Interface

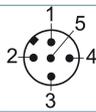
<b>Interface:</b>	<b>CAN</b>
Protocol:	CANopen <ul style="list-style-type: none"> <li>• Communication profil CiA 301</li> <li>• Device Profile for encoder CiA 406 V3.2 class C2</li> </ul>
Node number:	1 up to 127 (default 127)
Baud rate:	10 kBaud up to 1 MBaud with automatic bit rate detection.
Advice:	The standard settings as well as any customization in the software can be changed via LSS (CiA 305) and the SDO protocol, e. g. PDOs, Scaling, Heartbeat, Node-ID, Baud rate, etc.
Turn on time:	<1,5 s
Programmable CAN transmission modes:	<p><b>Synchronous mode:</b> when a synchronisation telegram (SYNC) is received from another bus node, PDOs are transmitted independently.</p> <p><b>Asynchronous mode:</b> a PDO message is triggered by an internal event. (e.g. change of measured valued, internal timer, etc.)</p>

### Connector, M12x1 CC5, 5-pin (PORT C)

#### Description

CC5 radial, 5-pin, shield connected to encoder housing

#### Assignments

	CC5
	
<b>(+) Vcc</b>	2
<b>GND</b>	3
<b>CANHigh</b>	4
<b>CANLow</b>	5
<b>CANGND shield</b>	1

## Options

### 120 Ohm terminating resistor

The encoder WDGE 58 CANopen is also available with fixed 120 Ohm terminating resistor.

### Order key

**AEO**

Example Order No. Type					Your encoder	
WDGE 58B	WDGE 58B				WDGE 58B	
<b>Shaft</b>				<b>Order key</b>		
10	Ø 10 mm shaft with flat			10	10	
<b>Single-turn Resolution absolute</b>				<b>Order key</b>		
12	Single-turn resolution 1 bit up to 16 bit: (e. G. 12 bit)			12		
<b>Multi-turn Resolution absolute</b>				<b>Order key</b>		
12	Multi-turn up to 43 bit (e. G. 12 bit) No Multi-turn = 00			12		
<b>Pulses per revolution PPR incremental</b>						
05000	100, 120, 127, 180, 200, 250, 254, 300, 360, 512, 600, 628, 720, 750, 800, 810, 900, 1000, 1024, 1200, 1250, 1270, 1440, 1500, 1800, 2000, 2048, 2400, 2500, 3000, 3600, 4000, 4096, 4685, 5000 1 Vpp Sin/Cos only 1024, 2048					
<b>Channels optical and magnetic</b>						
3	ABN				3	
<b>Data protocol</b>				<b>Order key</b>		
SI	SSI binary			SI		
	SSI gray			SG		
	CANopen			CO		
<b>Electrical connections absolute</b>				<b>Order key</b>		
CC8	<b>Connector:</b>					
	sensor-connector, M12x1, 8-pin, radial, IP67, shield connected to encoder housing (only SSI)			CC8		
	sensor-connector, M12x1, 5-pin, radial, IP67, shield connected to encoder housing(only CANopen)			CC5		
<b>Output circuit incremental optical</b>						
16	<b>Resolution PPR</b>	<b>Power supply VDC</b>	<b>Output circuit</b>	<b>Light reserve warning</b>	<b>Order key</b>	
	up to 2500	5 - 30	HTL	-	1F	
		5 - 30	HTL inverted	-	1E	
	up to 5000	4,75 - 5,5	TTL	-	15	
		4,75 - 5,5	TTL, RS422 comp., inverted	-	1C	
		10 - 30	HTL	-	16	
		10 - 30	HTL invertiert	-	1D	
	1024, 2048	4,75 - 5,5	TTL, RS422 comp., inverted	-	1B	
1024, 2048	4,75 - 5,5	1 Vpp sin/cos	-	1A		
<b>Electrical connections incremental optical</b>						
SC8	<b>Description</b>			<b>ABN inv. poss.</b>	<b>Order key</b>	
	<b>Connector: (connector connected to encoder housing)</b>					
	Sensor-connector, M12x1, 5-pin, radial			-	SC5	
	Sensor-connector, M12x1, 8-pin, radial			•	SC8	
<b>Optionen</b>						
<b>Description</b>			<b>Order key</b>			
Without option			Leer			
120 Ohm terminating resistor (only CANopen)			AEO			

<b>Ex. Order No</b>	WDGE 58B	10	12	12	05000	3	SI	CC8	16	SC8		WDGE 58B	10				3				<b>Your encoder</b>
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**WACHENDORFF**  
The Encoder Experts

**Authorized Distributor**

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/>

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