



Online Data sheet

Encoder WDGA 58A RS485

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

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Mechanical Data

Housing	
Flange	synchro flange
Flange material	aluminum
Housing cap	stainless steel (except connector: CH8 and C5 = chrome-plated steel housing, 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 AAO = full IP67 version
Shaft length	L: 12 mm
Max. Permissible shaft loading radial	125 N
Max. Permissible shaft loading axial	120 N

Shaft	Ø 8 mm
Shaft length	L: 19 mm
Max. Permissible shaft loading radial	125 N
Max. Permissible shaft loading axial	120 N

Shaft	Ø 9.525 mm, Ø 3/8"
Advice	Attention: No option AAO = full IP67 version
Shaft length	L: 20 mm, L: 0.787 in
Max. Permissible shaft loading radial	220 N, 22.434 kp
Max. Permissible shaft loading axial	120 N, 12.237 kp

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

Nominale service life	1 x 10 ⁹ revs. at 100 % rated shaft load 1 x 10 ¹⁰ revs. at 40 % rated shaft load 1 x 10 ¹¹ revs. at 20 % rated shaft load
Max. operating speed	8000 rpm

Machinery Directive: basic data safety integrity level

MTTF _d	1000 a
Mission time (TM)	20 a
Nominale service life (L10h)	1 x 10 ¹¹ 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

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 ² (10 Hz up to 2000 Hz)
Shock: (DIN EN 60068-2-27)	5000 m/s ² (6 ms)
Design:	according DIN VDE 0160
Turn on time:	<1,5 s

Duty information

Customs tariff number:	90318020
Country of origin:	Germany

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

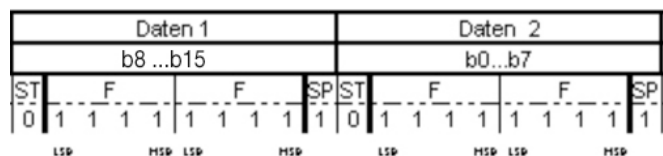
Bytecomposition: Startbit (0) and Stopbit (1), Bytes are Big-Endian and LSB first, no Paritybit

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

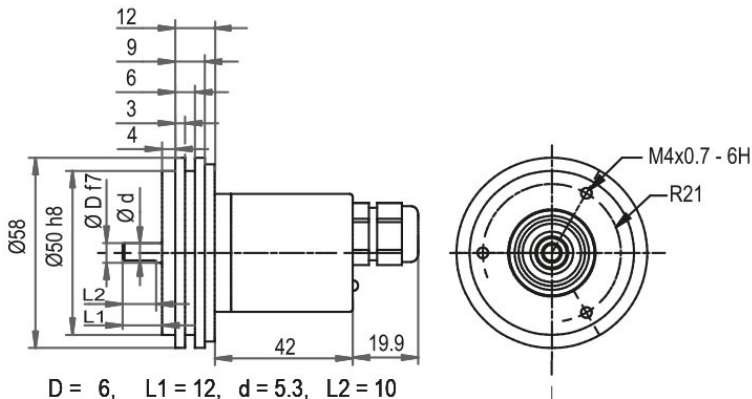
Weight	approx. 224 g
Connections	cable or connector outlet
Protection rating (EN 60529)	Housing: IP65, IP67; shaft sealed: IP65; cable outlet K1: IP40
Operating temperature	-40 °C up to +85 °C
Storage temperature	-40 °C up to +100 °C

More Information

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

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

Cable connection L2 axial with 2 m cable



- D = 6, L1 = 12, d = 5.3, L2 = 10
- D = 8, L1 = 19, d = 7.5, L2 = 15
- D = 10, L1 = 20, d = 9, L2 = 15
- D = 3/8", L1 = 20, d = 8.3, L2 = 10

Option AIX:

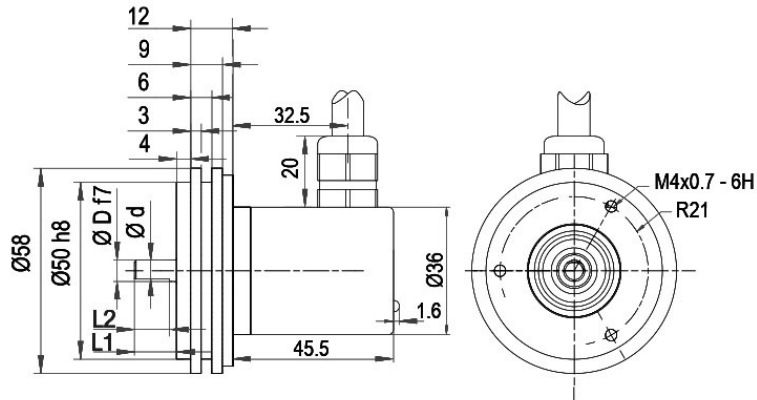
- D = 6, L1 = 10, d = 5.3, L2 = 8

Description

L2 axial, shield connected to encoder housing

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

Cable connection L3 radial with 2 m cable



D = 6, L1 = 12, d = 5.3, L2 = 10
 D = 8, L1 = 19, d = 7.5, L2 = 15
 D = 10, L1 = 20, d = 9, L2 = 15
 D = 3/8", L1 = 20, d = 8.3, L2 = 10

Option AIX:

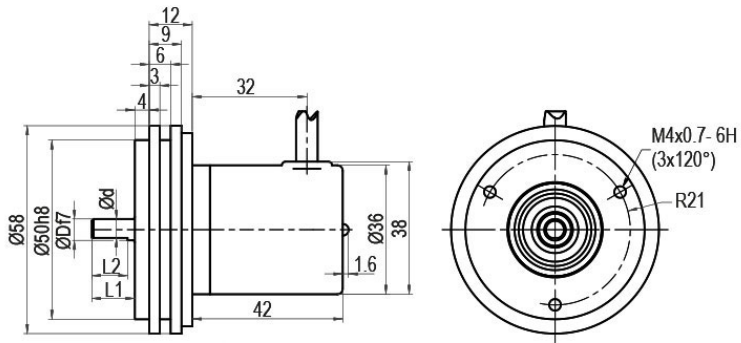
D = 6, L1 = 10, d = 5.3, L2 = 8

Description

L3 radial, shield connected to encoder housing

Assignments	
	L3
S- (GND)	WH
S+ (DCin)	BN
A (DATA+)	GY
B (DATA-)	PK
PRESET	BU
DIR	RD
Shield	housing

Cable connection, K1 radial with 2 m cable, IP40



D = 6, L1 = 12, d = 5.3, L2 = 10
 D = 8, L1 = 19, d = 7.5, L2 = 15
 D = 10, L1 = 20, d = 9, L2 = 15
 D = 3/8", L1 = 20, d = 8.3, L2 = 10

Option AIX:

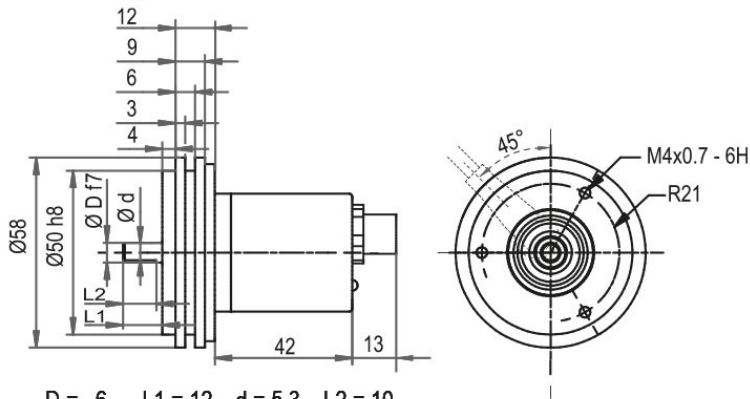
D = 6, L1 = 10, d = 5.3, L2 = 8

Description

K1 radial, shield not connected

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

Connector, M12x1, CB8, axial, 8-pin



- D = 6, L1 = 12, d = 5.3, L2 = 10
- D = 8, L1 = 19, d = 7.5, L2 = 15
- D = 10, L1 = 20, d = 9, L2 = 15
- D = 3/8", L1 = 20, d = 8.3, L2 = 10

Option AIX:

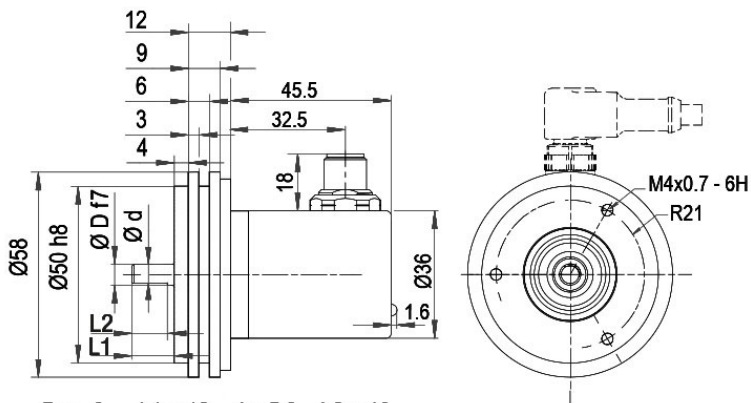
- D = 6, L1 = 10, d = 5.3, L2 = 8

Description

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

Assignments	
	CB8
S- (GND)	1
S+ (DCin)	2
A (DATA+)	5
B (DATA-)	6
PRESET	7
DIR	8
Shield	housing

Connector, M12x1, CC8 radial, 8-pin



- D = 6, L1 = 12, d = 5.3, L2 = 10
- D = 8, L1 = 19, d = 7.5, L2 = 15
- D = 10, L1 = 20, d = 9, L2 = 15
- D = 3/8", L1 = 20, d = 8.3, L2 = 10

Option AIX:

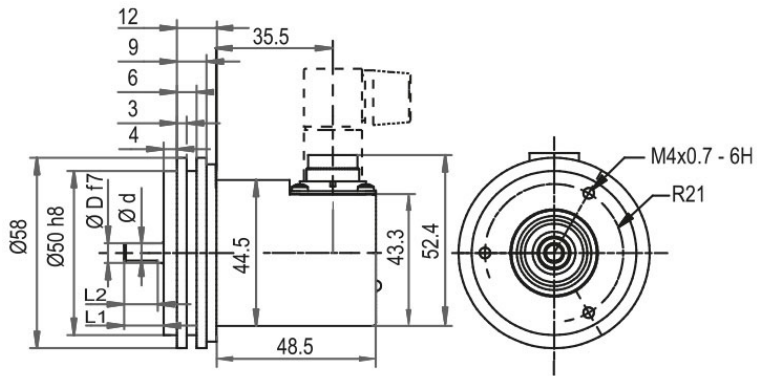
- D = 6, L1 = 10, d = 5.3, L2 = 8

Description

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

Assignments	
	<p style="text-align: center;">CC8</p>
S- (GND)	1
S+ (DCin)	2
A (DATA+)	5
B (DATA-)	6
PRESET	7
DIR	8
Shield	housing

Connector, M16, CH8, radial, 8-pin




D = 6, L1 = 12, d = 5.3, L2 = 10
 D = 8, L1 = 19, d = 7.5, L2 = 15
 D = 10, L1 = 20, d = 9, L2 = 15
 D = 3/8", L1 = 20, d = 8.3, L2 = 10

Option AIX:

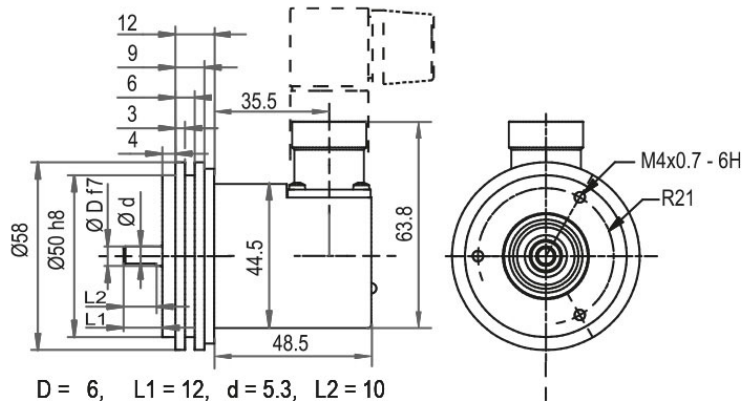
D = 6, L1 = 10, d = 5.3, L2 = 8

Description

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

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

Connector, M23, C5, radial, 12-pin



- D = 6, L1 = 12, d = 5.3, L2 = 10
- D = 8, L1 = 19, d = 7.5, L2 = 15
- D = 10, L1 = 20, d = 9, L2 = 15
- D = 3/8", L1 = 20, d = 8.3, L2 = 10

Option AIX:

- D = 6, L1 = 10, d = 5.3, L2 = 8

Description

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

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

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

The encoder WDG 58A RS485 can be supplied in a IP67 version.

AAO

(full IP67 only connection CB8, CC8, CH8, C5, L2 or L3 version; not cable connection K1 = IP40).

Max. RPM: 3500 min⁻¹

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

Starting-torque: approx. 4 Ncm at ambient temperature

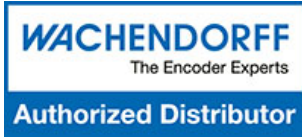
Shaft length 10 mm (Ø 6 mm)**Order key**

The encoder WDGA 58A RS485 shaft: Ø 6 mm is also available with a shortened shaft L = 10 mm. **AiX**

Example Order No.	Type	Your encoder
WDGA 58A	WDGA 58A	WDGA 58A
	Shaft	Order key
10	Ø 6 mm Attention: No option AAO = full IP67 version	06
	Ø 8 mm	08
	Ø 9.525 mm Ø 3/8" Attention: No option AAO = full IP67 version	4Z
	Ø 10 mm	10
	Single-turn Resolution	Order key
14	Single-turn resolution 1 bit up to 16 bit: (e. G. 14 bit)	14
	Multi-turn Resolution	Order key
18	Multi-turn up to 32 bit (e. G. 18 bit) (Single-turn + Multi-turn max. 32 bit) No Multi-turn: 00	18
	Data protocol	Order key
EI	RS485	EI
	Software	Order key
A	up to date release	A
	Code	Order key
B	binary	B
	Power supply	Order key
0	4.75 V up to 32 V (standard)	0
	4.75 V up to 5.5 V	1
	Galvanic isolation	Order key
0	no	0
	Electrical connections	Order key
CB8	Cable:	
	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
	Connector:	
	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
	Options	Order key
	Without option	Empty
	Shafts sealed to IP67, only with shaft Ø 10 mm	AAO
	Shaft length 10 mm (Ø 6 mm)	AiX

Example Order No.	WDGA 58A	10	14	18	EI	A	B	0	0	CB8	
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WDGA 58A											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/contact-sales-en/>

WACHENDORFF

Wachendorff Automation GmbH & Co. KG
Industriestrasse 7 • 65366 Geisenheim
Germany

Phone: +49 67 22 / 99 65 25
E-Mail: wdg@wachendorff.de
www.wachendorff-automation.de

