WACHENDORFF
The Encoder Experts

Online Data sheet

HM 2602

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, with EnDra® Technology

Illustration similar

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

www.wachendorff-automation.com/wdga58ars485

Mechanical Data	
Flange	synchro 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 65 mm [2.4016 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"]
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
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]

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
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
Operating principle	magnetic

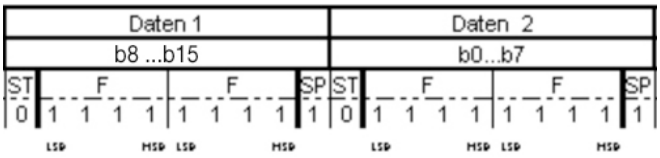
Sensor data	
Single-turn technology	innovative hall sensor technology
Single-turn resolution	up to 65,536 steps/360° (16 bit)
Single-turn accuracy	± 0.0878° (≤ 12 bit)
Single-turn repeat accuracy	± 0.0878° (≤ 12 bit)
Internal cycle time	≤ 600 µs
Multi-turn technology	patented EnDra® technology no battery no gear.
Multi-turn resolution	up to 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)
Electrial Safety:	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 lenght:	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, • Bytewise 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

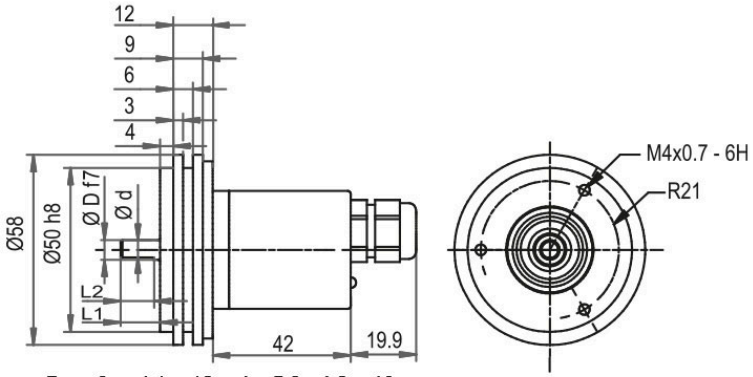


LED-behaviour:	
At Start / while booting:	- red gleam (< 2,3 s)
Malfunction:	- constant red gleam (> 2,3 s)
Normal function:	- constant green gleam
No supply:	- no gleam

General Data	
Weight	approx. 224 g [7.901 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



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

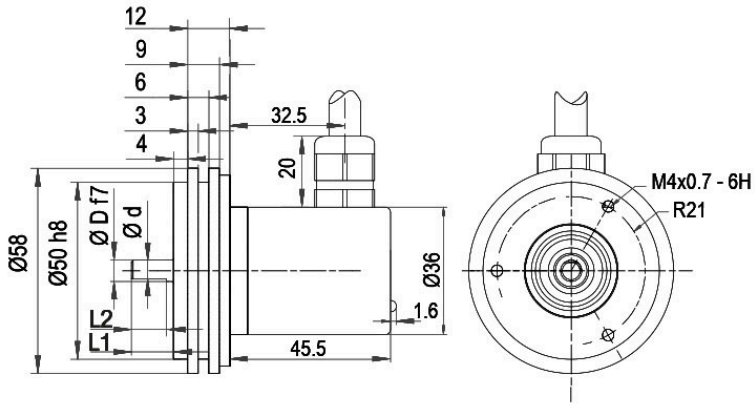
Option AIX:
D = 6, L1 = 10, d = 5.3, L2 = 8

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

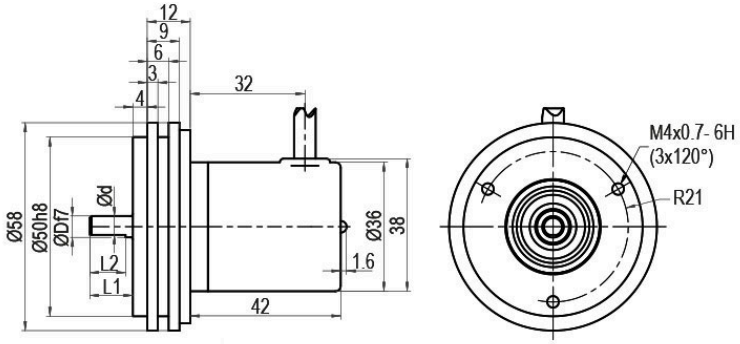
Option AIX:
D = 6, L1 = 10, d = 5.3, L2 = 8

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

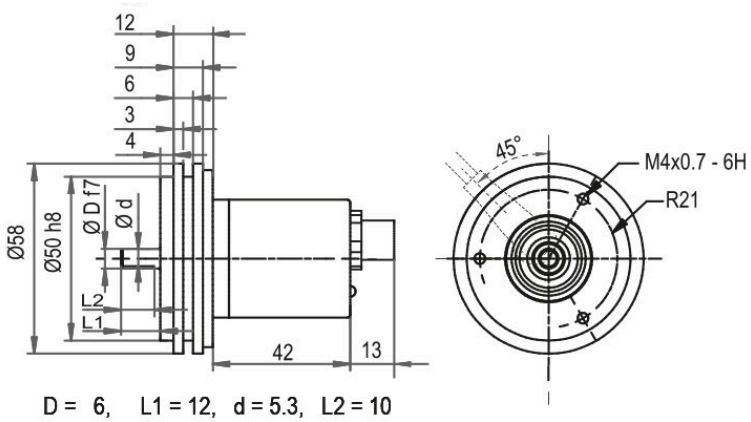
Option AIX:
D = 6, L1 = 10, d = 5.3, L2 = 8

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

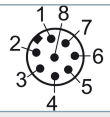


D = 6, L1 = 12, d = 5.3, L2 = 10
D = 8, L1 = 19, d = 7.5, L2 = 15
D = 10, L1 = 20, d = 9, L2 = 15
D = 3/8“, L1 = 20, d = 8.3, L2 = 10

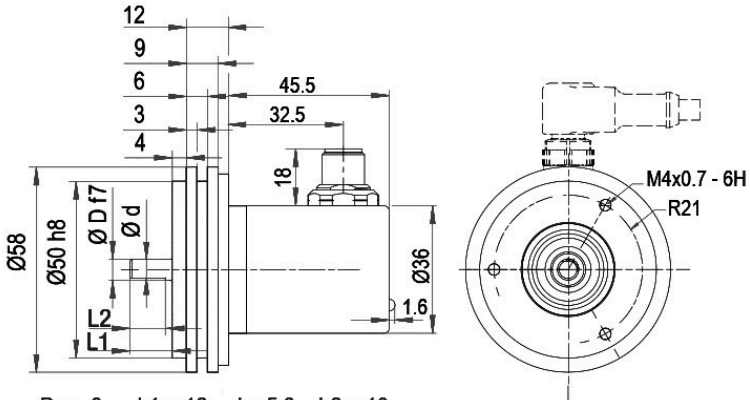
Option AIX:
D = 6, L1 = 10, d = 5.3, L2 = 8

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

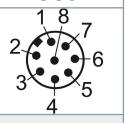


D = 6, L1 = 12, d = 5.3, L2 = 10
D = 8, L1 = 19, d = 7.5, L2 = 15
D = 10, L1 = 20, d = 9, L2 = 15
D = 3/8“, L1 = 20, d = 8.3, L2 = 10

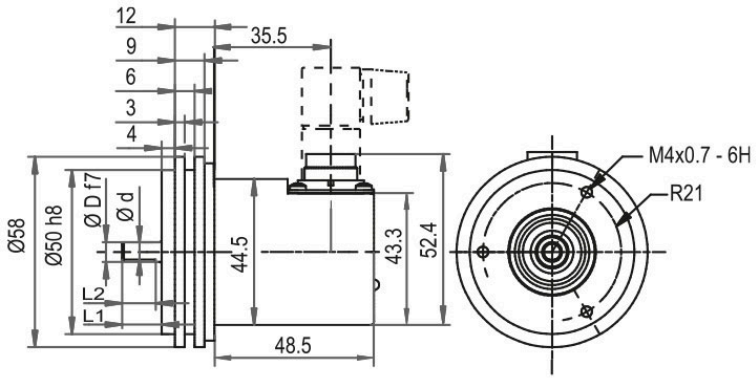
Option AIX:
D = 6, L1 = 10, d = 5.3, L2 = 8

Description

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

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

Connector, M16, CH8, radial, 8-pin

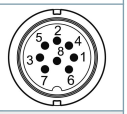


D = 6, L1 = 12, d = 5.3, L2 = 10
D = 8, L1 = 19, d = 7.5, L2 = 15
D = 10, L1 = 20, d = 9, L2 = 15
D = 3/8“, L1 = 20, d = 8.3, L2 = 10

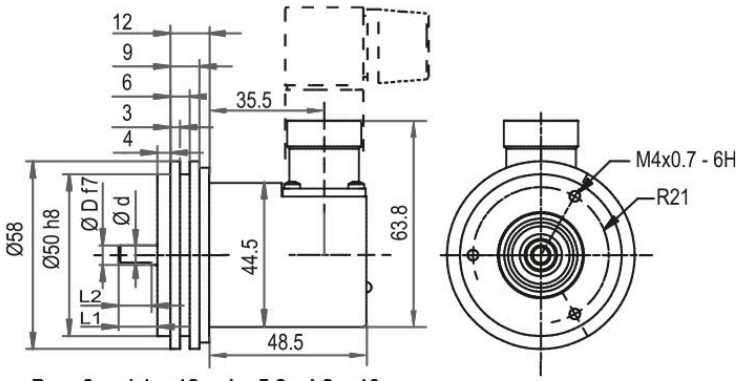
Option AIX:
D = 6, L1 = 10, d = 5.3, L2 = 8

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

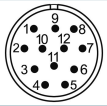


D = 6, L1 = 12, d = 5.3, L2 = 10
D = 8, L1 = 19, d = 7.5, L2 = 15
D = 10, L1 = 20, d = 9, L2 = 15
D = 3/8“, L1 = 20, d = 8.3, L2 = 10

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

Low-friction bearings	Order key
The encoder WDGA 58A RS485 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.	**AAC**

Shafts sealed to IP67, only with shaft Ø 10 mm	Order key
The encoder WDG 58A RS485 can be supplied in a IP67 version. (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	**AAO**

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 [Ø 0.236"] Attention: No option AAO = full IP67 version	06	
	Ø 8 mm [Ø 0.315"]	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	
	Single-turn Resolution	**Order key**	
14	Single-turn resolution 1 bit up to 16 bit, recommended min. 6 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	
	Low-friction bearings	AAC	
	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	

	WDGA 58A											Example Order No.