



Online Data sheet

HM 2602

Encoder WDGA 58A SSI

www.wachendorff-automation.com/wdga58assi

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 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

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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"]
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
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
Nominal 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
Nominal 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 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 ² (10 Hz up to 2000 Hz)
Shock: (DIN EN 60068-2-27)	5000 m/s ² (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

Interface: SSI
Clock input: via opto-coupler;
 $I > 1.6 \text{ mA}$; $U > 2.2 \text{ V}$
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

Configuration inputs DIR = GND -> cw
Positive direction of counting: DIR = +UB -> ccw
(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

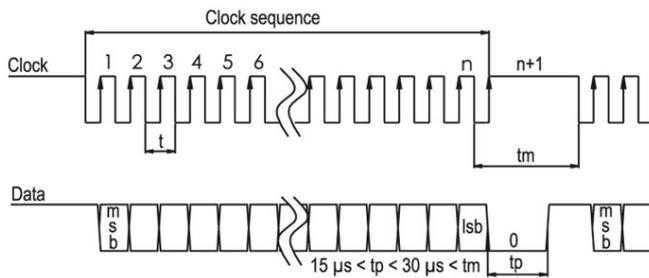
General Data

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, K6: IP20
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]

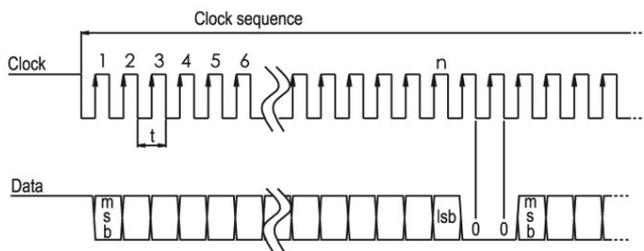
More Information

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

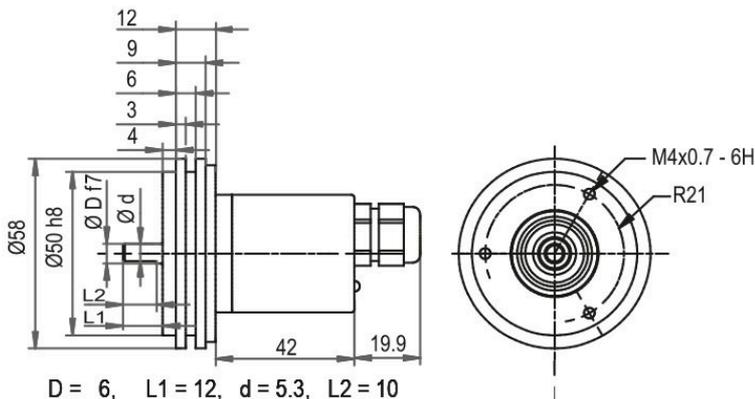
Transmission protocol SSI Single transmission:



Transmission protocol SSI Multipath transmission:



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:

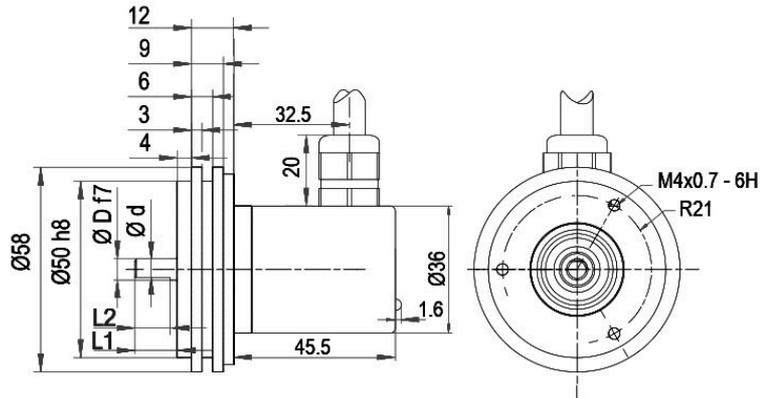
- D = 6, L1 = 10, d = 5.3, L2 = 8

Description

L2 axial, shield connected to encoder housing

Assignments	
	L2
GND	WH
(+) Vcc	BN
SSI CLK+	GN
SSI CLK-	YE
SSI DATA+	GY
SSI 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:

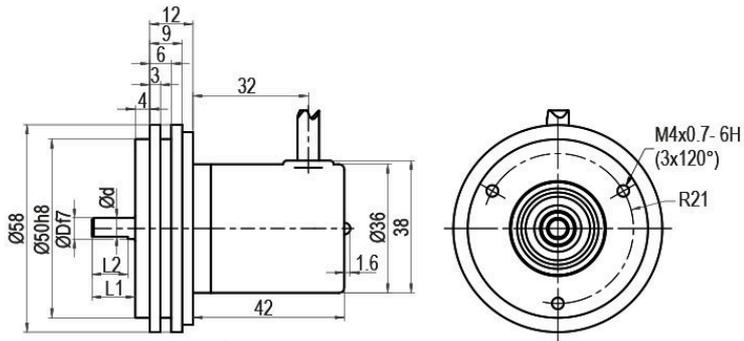
D = 6, L1 = 10, d = 5.3, L2 = 8

Description

L3 radial, shield connected to encoder housing

Assignments	
	L3
GND	WH
(+) Vcc	BN
SSI CLK+	GN
SSI CLK-	YE
SSI DATA+	GY
SSI 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:

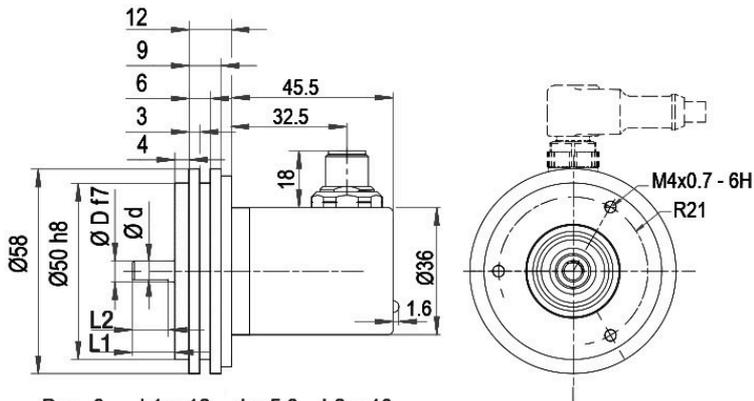
D = 6, L1 = 10, d = 5.3, L2 = 8

Description

K1 radial, shield not connected

Assignments	
	K1
GND	WH
(+) Vcc	BN
SSI CLK+	GN
SSI CLK-	YE
SSI DATA+	GY
SSI DATA-	PK
PRESET	BU
DIR	RD
Shield	housing n. c.

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:

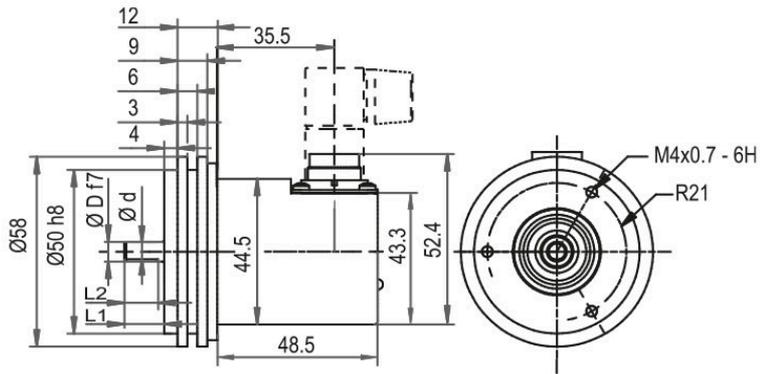
- D = 6, L1 = 10, d = 5.3, L2 = 8

Description

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

Assignments	
GND	1
(+) Vcc	2
SSI CLK+	3
SSI CLK-	4
SSI DATA+	5
SSI 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:

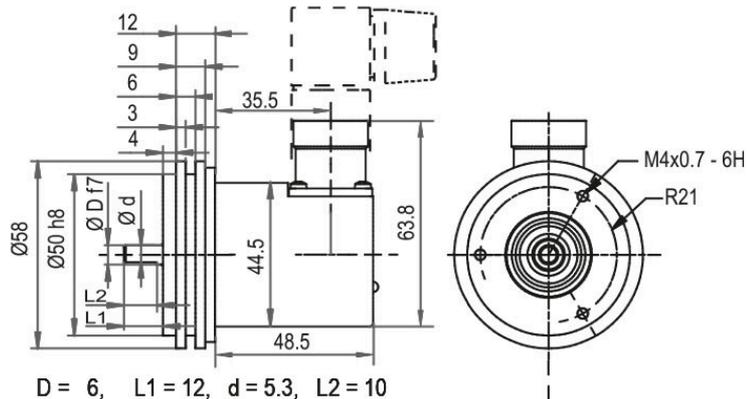
D = 6, L1 = 10, d = 5.3, L2 = 8

Description

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

Assignments	
	CH8
	
GND	2
(+) Vcc	1
SSI CLK+	6
SSI CLK-	5
SSI DATA+	4
SSI 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
GND	12
(+) Vcc	11
SSI CLK+	2
SSI CLK-	1
SSI DATA+	3
SSI DATA-	4
PRESET	9
DIR	8
Shield	housing

Options**Low-friction bearings**

The encoder WDGA 58A 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 58A 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).

Max. RPM: 3500 min⁻¹

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

Starting-torque: approx. 4 Ncm at ambient temperature

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

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

Order key**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"] 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
	Single-turn Resolution	Order key
12	Single-turn resolution 1 bit up to 16 bit, recommended min. 6 bit (e. G. 12 bit)	12
	Multi-turn Resolution	Order key
12	Multi-turn up to 43 bit (e. G. 12 bit) No Multi-turn = 00	12
	Data protocol	Order key
SI	SSI	SI
	Software	Order key
A	up to date release	A
	Code	Order key
B	binary	B
	gray	G
	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
1	yes	1
	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	12	12	SI	A	B	0	1	CB8	
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WDGA 58A											Example Order No.
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