



Online Data sheet

HM 2602

Encoder WDGI 58A

www.wachendorff-automation.com/wdgi58am

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IndustrieROBUST

Encoder WDGI 58A



Illustration similar



- Robust construction for industrial use
- Protection to IP67, shaft sealed to IP65 (optional IP67 all round)
- High electrical immunity
- Further options

www.wachendorff-automation.com/wdgi58am

Resolution	
Pulses per revolution PPR	1 PPR up to 16384 PPR
Mechanical Data	
Flange	synchro flange
Flange material	aluminum
Housing material	Stainless steel or die cast aluminum, powder coated (only M16 and M23 plugs)
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. 0.5 Ncm [0.708 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	3 x 10 ⁸ revs. at 100 % rated shaft load 5 x 10 ⁹ revs. at 40 % rated shaft load 4 x 10 ¹⁰ revs. at 20 % rated shaft load
Max. operating speed	10000 rpm
Machinery Directive: basic data safety integrity level	
MTTF _d	2200 a
Mission time (TM)	25 a
Nominal service life (L10h)	4 x 10 ¹⁰ revs. at 20 % rated shaft load and 10000 rpm
Diagnostic coverage (DC)	0 %
Electrical Data	
Power supply/Current consumption	4.75 VDC up to 30 VDC: typ. 40 mA
Operating principle	magnetic
Output circuit	HTL (TTL at 5 VDC) HTL, inv. (TTL/RS422 comp. at 5 VDC)
Pulse frequency	HTL up to 16384 ppr: max. 600 kHz TTL up to 16384 ppr: max. 1 MHz
Channels	ABN and inverted signals
Load	max. 40 mA / channel
Circuit protection	inverse-polarity and short-circuit protection
Accuracy	
Phase offset	90° ± max. 7.5 % of the period duration
pulse-/pause-ratio	50 % ± max. 7 %
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
Vibration: (DIN EN 60068-2-6)	50 m/s ² (10 Hz up to 2000 Hz)
Shock: (DIN EN 60068-2-27)	1000 m/s ² (6 ms)
Electrical Safety:	according DIN VDE 0160
Duty information	
Customs tariff number:	90318020

Country of origin: Germany

General Data

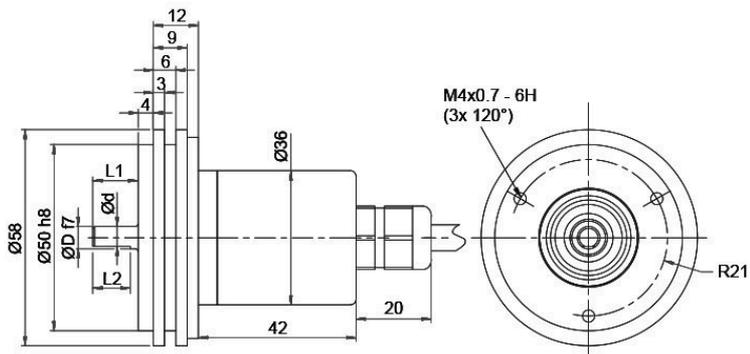
Weight	approx. 230 g [8.113 oz]
Connections	cable or connector outlet
Protection rating (EN 60529)	Housing: IP65, IP67; shaft sealed: IP65; cable outlet K1: IP40
Operating temperature	Connector: -40 °C up to +85 °C, Cable: -20 °C up to +80 °C (Option ACA: -40 °C up to +85 °C). Connector: -40 °F up to +185 °F, Cable: -4 °F up to +176 °F, Option ACA: -40 °F up to +185 °F
Storage temperature	Connector: -40 °C up to +85 °C, Cable: -30 °C up to +80 °C (Option ACA: -40 °C up to +85 °C) Connector: -40 °F up to +185 °F, cable: -22 °F up to +176 °F, (Option ACA: -40 °F up to +185 °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

Alle Abmessungen in mm / All dimensions in mm

Description

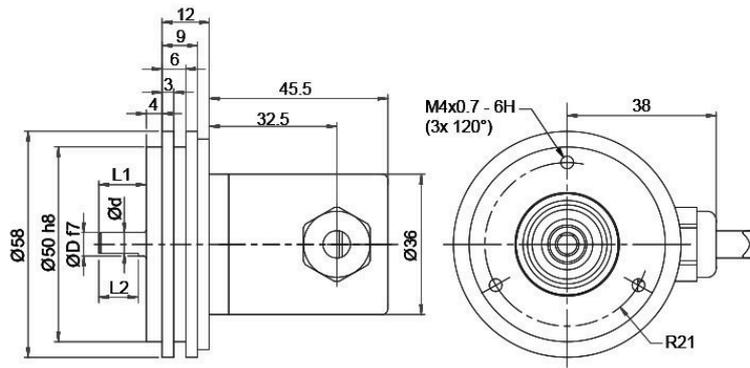
ABN inv. poss.

L2 axial, shield connected to encoder housing

•

Assignments		
	L2	L2
Circuit	N35	M35
GND	WH	WH
(+) Vcc	BN	BN
A	GN	GN
B	YE	YE
N	GY	GY
-	-	-
A inv.	-	RD
B inv.	-	BK, (BU at ACA)
N inv.	-	VT
Shield	flex	flex

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

Alle Abmessungen in mm / All dimensions in mm

Description

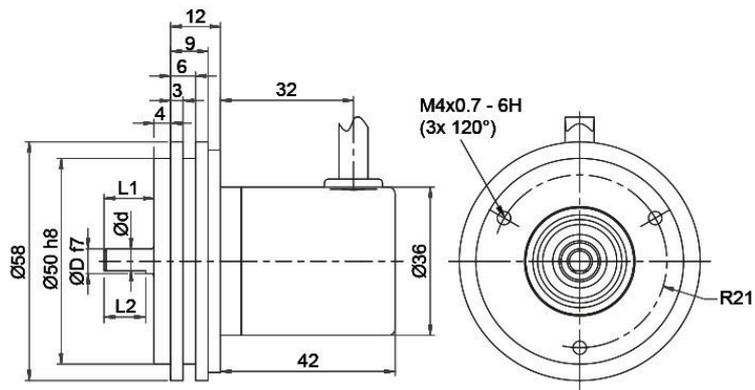
ABN inv. poss.

L3 radial, shield connected to encoder housing

•

Assignments		
	L3	L3
Circuit	N35	M35
GND	WH	WH
(+) Vcc	BN	BN
A	GN	GN
B	YE	YE
N	GY	GY
-	-	-
A inv.	-	RD
B inv.	-	BK, (BU at ACA)
N inv.	-	VT
Shield	flex	flex

Cable K1 (IP40) 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

Alle Abmessungen in mm / All dimensions in mm

Description

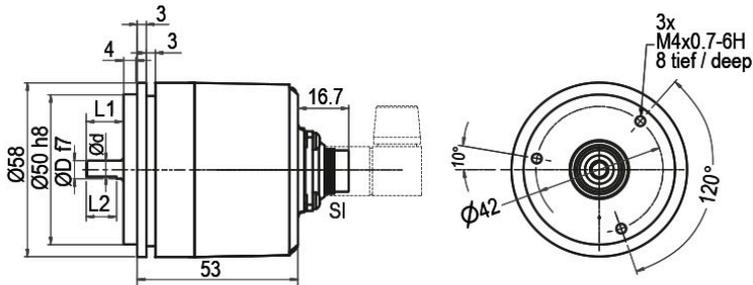
ABN inv. poss.

K1 radial, shield not connected (IP40)

•

Assignments		
	K1	K1
Circuit	N35	M35
GND	WH	WH
(+) Vcc	BN	BN
A	GN	GN
B	YE	YE
N	GY	GY
-	-	-
A inv.	-	RD
B inv.	-	BK
N inv.	-	VT
Shield	flex	flex

Connector (M16x0.75) SI, axial, 5-, 6-, 8-, 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

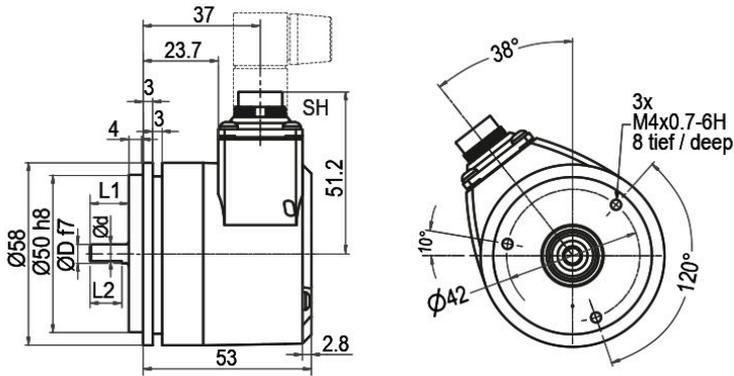
Option AIX:

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

Description	ABN inv. poss.
SI5 axial, 5-pin, Connector connected to encoder housing	-
SI6 axial, 6-pin, Connector connected to encoder housing	-
SI8 axial, 8-pin, Connector connected to encoder housing	•
SI12 axial, 12-pin, Connector connected to encoder housing	•

Assignments						
	SI5	SI6	SI8	SI8	SI12	SI12
	5-pin	6-pin	8-pin	8-pin	12-pin	12-pin
Circuit	N35	N35	N35	M35	N35	M35
GND	1	6	1	1	K, L	K, L
(+) Vcc	2	1	2	2	M, B	M, B
A	3	2	3	3	E	E
B	4	4	4	4	H	H
N	5	3	5	5	C	C
-	-	-	-	-	-	-
A inv.	-	-	-	6	-	F
B inv.	-	-	-	7	-	A
N inv.	-	-	-	8	-	D
n. c.	-	5	6, 7, 8	-	A, D, F, G, J	G, J
Shield	-	-	-	-	-	-

Connector (M16x0.75) SH, radial, 5-, 6-, 8-, 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

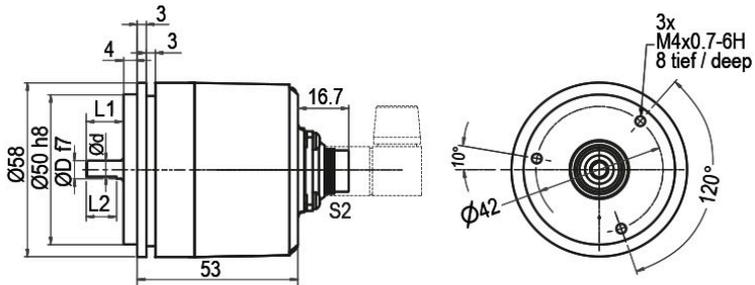
Option AIX:

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

Description	ABN inv. poss.
SH5 radial, 5-pin, Connector connected to encoder housing	-
SH6 radial, 6-pin, Connector connected to encoder housing	-
SH8 radial, 8-pin, Connector connected to encoder housing	•
SH12 radial, 12-pin, Connector connected to encoder housing	•

Assignments						
	SH5	SH6	SH8	SH8	SH12	SH12
	5-pin	6-pin	8-pin	8-pin	12-pin	12-pin
Circuit	N35	N35	N35	M35	N35	M35
GND	1	6	1	1	K, L	K, L
(+) Vcc	2	1	2	2	M, B	M, B
A	3	2	3	3	E	E
B	4	4	4	4	H	H
N	5	3	5	5	C	C
-	-	-	-	-	-	-
A inv.	-	-	-	6	-	F
B inv.	-	-	-	7	-	A
N inv.	-	-	-	8	-	D
n. c.	-	5	6, 7, 8	-	A, D, F, G, J	G, J
Shield	-	-	-	-	-	-

Connector (M16x0.75) S2, axial, 7-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

ABN inv. poss.

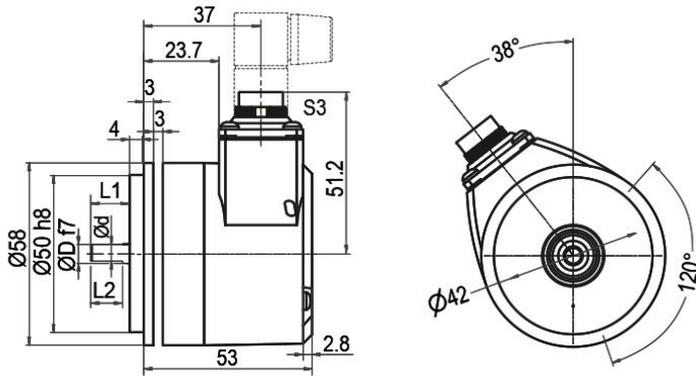
S2 axial, 7-pin, Connector connected to encoder housing

-

Assignments

	S2
	7-pin
Circuit	N35
GND	1
(+) Vcc	2
A	3
B	4
N	5
-	-
A inv.	-
B inv.	-
N inv.	-
n. c.	6, 7
Shield	-

Connector (M16x0.75) S3, radial, 7-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

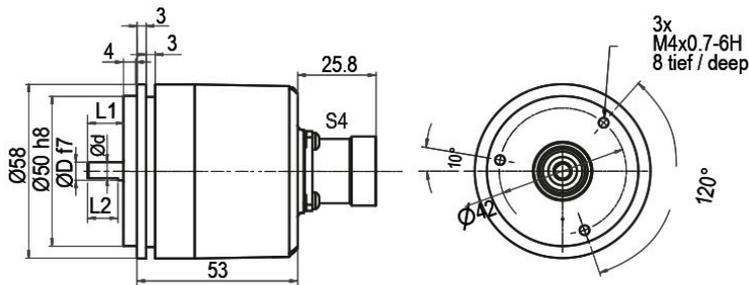
ABN inv. poss.

S3 radial, 7-pin, Connector connected to encoder housing

-

Assignments	
	S3
	7-pin
Circuit	N35
GND	1
(+) Vcc	2
A	3
B	4
N	5
-	-
A inv.	-
B inv.	-
N inv.	-
n. c.	6, 7
Shield	-

Connector (M23) S4, axial, 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

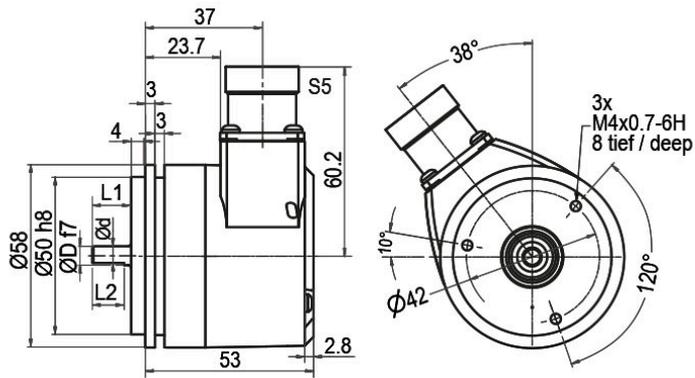
ABN inv. poss.

S4 axial, 12-pin, Connector connected to encoder housing

•

Assignments		
	S4	S4
	12-pin	12-pin
Circuit	N35	M35
GND	10	10
(+) Vcc	12	12
A	5	5
B	8	8
N	3	3
-	-	-
A inv.	-	6
B inv.	-	1
N inv.	-	4
n. c.	1, 2, 4, 6, 7, 9, 11	2, 7, 9, 11
Shield	-	-

Connector (M23) S5, 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

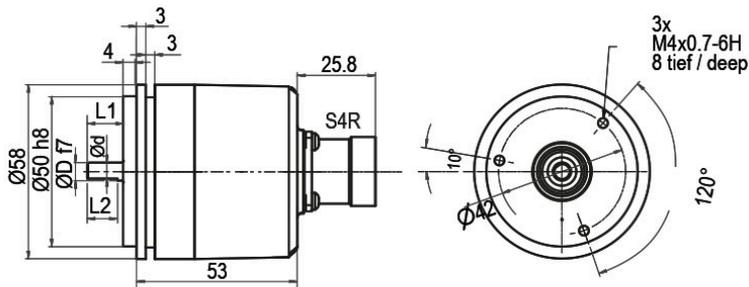
ABN inv. poss.

S5 radial, 12-pin, Connector connected to encoder housing

•

Assignments		
	S5	S5
	12-pin	12-pin
Circuit	N35	M35
GND	10	10
(+) Vcc	12	12
A	5	5
B	8	8
N	3	3
-	-	-
A inv.	-	6
B inv.	-	1
N inv.	-	4
n. c.	1, 2, 4, 6, 7, 9, 11	2, 7, 9, 11
Shield	-	-

Connector (M23) S4R, axial, 12-pin (clockwise)



- 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

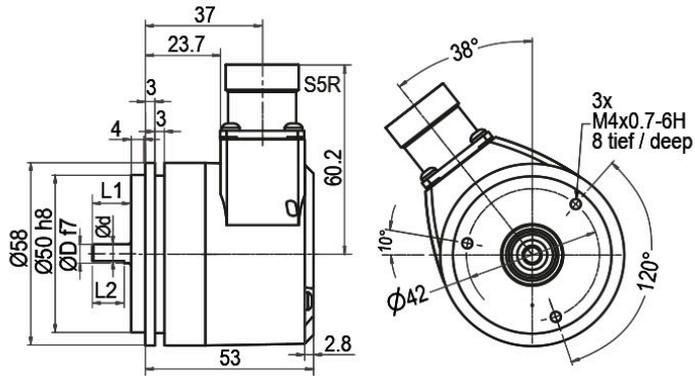
ABN inv. poss.

S4R axial, 12-pin, Connector connected to encoder housing

•

Assignments		
	S4R	S4R
	12-pin	12-pin
Circuit	N35	M35
GND	10	10
(+) Vcc	12	12
A	5	5
B	8	8
N	3	3
-	-	-
A inv.	-	6
B inv.	-	1
N inv.	-	4
n. c.	1, 2, 4, 6, 7, 9, 11	2, 7, 9, 11
Shield	-	-

Connector (M23) S5R, radial, 12-pin (clockwise)



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

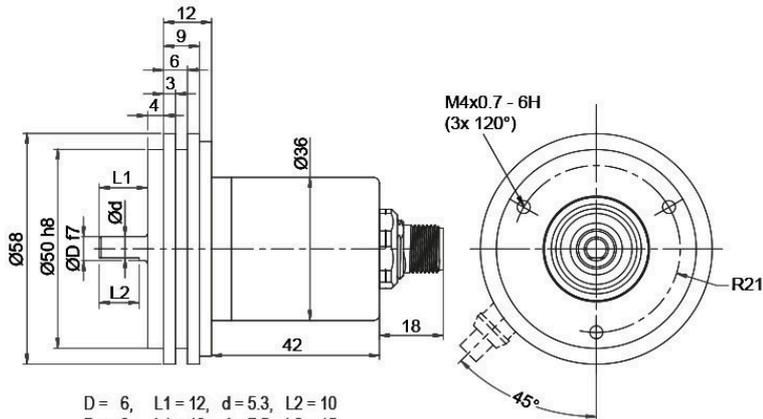
ABN inv. poss.

S5R radial, 12-pin, Connector connected to encoder housing

•

Assignments		
	S5R	S5R
	12-pin	12-pin
Circuit	N35	M35
GND	10	10
(+) Vcc	12	12
A	5	5
B	8	8
N	3	3
-	-	-
A inv.	-	6
B inv.	-	1
N inv.	-	4
n. c.	1, 2, 4, 6, 7, 9, 11	2, 7, 9, 11
Shield	-	-

Sensor-connector (M12x1) SB, axial, 5-, 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

Alle Abmessungen in mm / All dimensions in mm

Description

ABN inv. poss.

SB5 axial, 5-pin, Connector connected to encoder housing

-

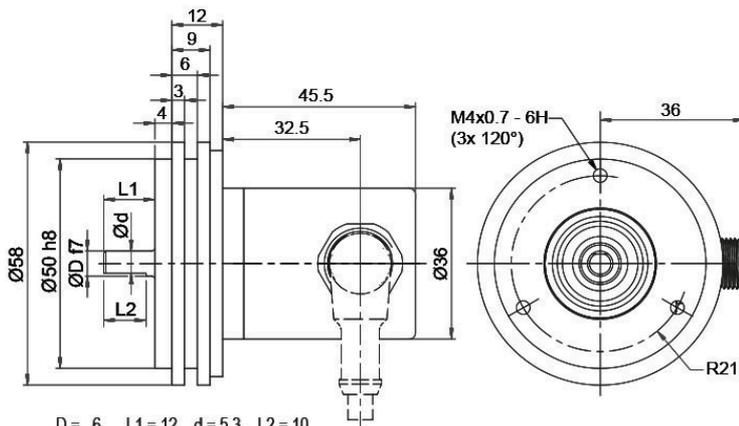
SB8 axial, 8-pin, Connector connected to encoder housing

•

Assignments

	SB5	SB8
	5-pin	8-pin
Circuit	N35	M35
GND	3	1
(+) Vcc	1	2
A	4	3
B	2	4
N	5	5
-	-	-
A inv.	-	6
B inv.	-	7
N inv.	-	8
n. c.	-	-
Shield	-	-

Sensor-connector (M12x1) SC, radial, 5-, 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

Alle Abmessungen in mm / All dimensions in mm

Description

ABN inv. poss.

SC5 radial, 5-pin, Connector connected to encoder housing

-

SC8 radial, 8-pin, Connector connected to encoder housing

•

Assignments		
	SC5	SC8
	5-pin	8-pin
Circuit	N35	M35
GND	3	1
(+) Vcc	1	2
A	4	3
B	2	4
N	5	5
-	-	-
A inv.	-	6
B inv.	-	7
N inv.	-	8
n. c.	-	-
Shield	-	-

Options

Low-friction bearings

The encoder WDGI 58A is also available as a particularly smooth-running low-friction encoder. The starting torque is thereby changed to 0.25 Ncm [0.354 in-ozf] and the protection class at the shaft input to IP50.

Order key

AAC

Shafts sealed to IP67, only with 10 mm [0.394"] shaft

The encoder WDGI 58A can be supplied in a IP67 version.
(full IP67 only connection SB, SC, L2 or L3 version; not cable connection K1 = IP40).
Max. RPM: 3500 min⁻¹
Permitted Shaft-Loading: axial 100 N [10.197 kp]; radial 110 N [11.216 kp]
Starting-torque: approx. 4 Ncm [5.664 in-ozf] at ambient temperature

Order key

AAO

Low temperature

The encoder WDGI 58A with the output circuit types M35, N35 is also available with the extended temperature range -40 °C up to +85 °C [-40 °F up to +185 °F] (measured at the flange).

Order key

ACA

Pressure equalising membrane

The WDGI 58A shaft encoder is also optionally available with a pressure equalising membrane. This prevents water from penetrating into the encoder housing in the case of high air humidity.
The IP67 protection level, temperature range and salt spray resistance are maintained.
Resistant to chemicals and solvents in accordance with DIN EN ISO 2812-1.

Order key

ACR

Shaft length 10 mm [0.394"] (Ø 6 mm [0.236"])

The encoder WDGI 58A shaft: Ø 6 mm [0.236"] is also available with a shortened shaft L = 10 mm [0.394"].

Order key

AIX

Cable length

The encoder WDGI 58A can be supplied with more than 2 m cable. The maximum cable length depends on the supply voltage and the frequency; see <https://www.wachendorff-automation.com/download-gtd-incremental-encoders/>
Please extend the standard order code with a three figure number, specifying the cable length in decimetres.
Example: 5 m cable = 050

Order key

XXX = Decimeter

Example Order No.	Type					Your encoder
WDGI 58A	WDGI 58A					WDGI 58A
	Shaft					
06	06; 08; 4Z; 10					
	Pulses per revolution PPR:					
16384	1-16384 Other PPRs on request					
	Channels:					
ABN	ABN					
	Output circuit					
M35	Resolution PPR	Power supply VDC	Output circuit	-	Order key	
	1-16384	4.75 - 30	HTL (TTL at 5 VDC)	-	N35	
		4.75 - 30	HTL, inv. (TTL/RS422 comp. at 5 VDC)	-	M35	
	Electrical connections					
L2	Description			ABN inv. poss.	Order key	
	Cable: length (2 m standard, WDG 58T: 1 m)					
	radial, shield not connected (IP40)			•	K1	
	axial, shield connected to encoder housing			•	L2	
	radial, shield connected to encoder housing			•	L3	
	Connector: (shield connected to encoder housing)					
	connector, M16x0.75, 5-pin, axial			-	SI5	
	connector, M16x0.75, 5-pin, radial			-	SH5	
	connector, M16x0.75, 6-pin, axial			-	SI6	
	connector, M16x0.75, 6-pin, radial			-	SH6	
	connector, M16x0.75, 8-pin, axial			•	SI8	
	connector, M16x0.75, 8-pin, radial			•	SH8	
	connector, M16x0.75, 12-pin, axial			•	SI12	
	connector, M16x0.75, 12-pin, radial			•	SH12	
	connector, M16x0.75, 7-pin, axial			-	S2	
	connector, M16x0.75, 7-pin, radial			-	S3	
	connector, M23, 12-pin, axial			•	S4	
	connector, M23, 12-pin, radial			•	S5	
	connector, clockwise pin count, M23, 12-pin, axial			•	S4R	
	connector, clockwise pin count, M23, 12-pin, radial			•	S5R	
	sensor-connector, M12x1, 5-pin, axial			-	SB5	
	sensor-connector, M12x1, 5-pin, radial			-	SC5	
	sensor-connector, M12x1, 8-pin, axial			•	SB8	
sensor-connector, M12x1, 8-pin, radial			•	SC8		
	Options					
	Description			Order key		
	Low-friction bearings			AAC		
	Shafts sealed to IP67, only with 10 mm [0.394"] shaft			AAO		
	Low temperature			ACA		
	Pressure equalising membrane			ACR		
	Shaft length 10 mm [0.394"] (Ø 6 mm [0.236"])			AIX		
	Without option			Empty		
	Cable length			XXX = Decimeter		

Example Order No.=	WDGI 58A	06	16384	ABN	M35	L2			WDGI 58A						Your encoder
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