



BDG abbcc-ddee-fghhi-jjkk-llmm-nnoo

BDG
Encoders

a Principle

E = Incremental

bb Version

B6 = Cast aluminum powder coated radial (58)
B7 = Cast aluminum powder coated axial (58)
B8 = Cast aluminum powder coated radial, pressure compensated (58)
B9 = Cast aluminum powder coated axial, pressure compensated (58)

cc Flange size

58 = 58 mm

dd Shaft form, flange

PA = Shaft with flat, trim ring (IP67)
SA = Shaft with flat, trim ring
SD = Spline shaft, trim ring (Heavy Duty)

ee Shaft diameter

06 = 6 mm
07 = 7 mm
08 = 8 mm
10 = 10 mm
12 = 12 mm

f Interface category

A = Incremental analog standard
Q = Incremental digital standard
R = Incremental digital basic

g Interface

A = Sin/Cos (1 Vss)
C = HTL, /HTL
F = TTL, /TTL
Q = TTL
R = HTL

hh Interface details

AJ = AB 100 kHz
AK = AB 200 kHz
AM = AB 600 kHz
AP = AB 2 MHz
NK = ABN 200 kHz
NM = ABN 600 kHz
NP = ABN 2 MHz

i Supply voltage

U = 5..30 VDC
1 = 10..30 VDC
5 = 5 VDC

jjkk Resolution [pulses per revolution]

0010 = 10 pulses per revolution
(max. 25000 - depending on interface)

ll Shielded cable

00 = no cable
AA = PVC gray, 2x0.34 + 4x0.14 mm²
AB = PVC gray, 2x0.34 + 7x0.14 mm²

mm Cable length

00 = no cable
20 = 2 m
50 = 5 m
A0 = 10 m

nn connector

00 = no connector
S4 = M12 connector 4-pin A coded
S5 = M12 connector 5-pin A coded
S8 = M12 connector 8-pin A coded
SC = M12 connector 12-pin A coded

oo Wire assignments (connector / cable)

C1 = Sin/Cos (1 Vss) for M12 connector and shielded cable
H3 = HTL/TTL inv. M12 connector 8-pin + shielded cable
H5 = HTL/TTL inv. M12 connector 12-pin + shielded cable
T1 = HTL/TTL shielded cable
T2 = HTL/TTL, M12 8-pin
TA = HTL/TTL M12 connector 4-pin
TB = HTL/TTL M12 connector 12-pin
TD = HTL/TTL M12 connector 5-pin

Basic features

Approval/Conformity	CE cULus WEEE UKCA
Measuring principle	incremental measuring system

Electrical connection

Connection	Cable or connector
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Electrical data

Current consumption max. at 24 V DC	f = Q: i = 1: typ. 100 mA i = U: typ. 70 mA f = R: i = U: typ. 40 mA
Current consumption max. at 5 V DC	i = 5: typ. 100 mA
Mean life expectancy	ee = 10: 1x 10 ⁹ revs. at 100 % rated shaft load 1x 10 ¹⁰ revs. at 40 % rated shaft load 1x 10 ¹¹ revs. at 20 % rated shaft load ee = 12: 2x 10 ⁸ revs. at 100 % rated shaft load 3,5x 10 ⁹ revs. at 40 % rated shaft load 2,5x 10 ¹⁰ revs. at 20 % rated shaft load
Phase shift	f = Q: 90° ± 7.5 % of a period f = R: 90° ± 25 % of a period
Pulse frequency	f = Q + g = F/Q: ≤ 2 MHz f = Q + g = C/R: ≤ 600 kHz f = Q + g = A: ≤ 100 kHz f = R: ≤ 200 kHz
Pulse/pause ratio	f = Q: ≤ 5000 PPR: 50 % ± 7 % ≤ 25000 PPR: 50 % ± 10 % f = R: ≤ 128 PPR: 50 % ± 7 % ≤ 256 PPR: 50 % ± 9 % ≤ 512 PPR: 50 % ± 13 % ≤ 1024 PPR: 50 % ± 18 %
Pulses per revolution	f = Q: ≤ 25000 f = R: ≤ 1024 dd = PA: ≤ 1500
Speed max.	dd = SA/SD: 8000 U/min dd = PA: 3500 U/min

Environmental conditions

Ambient temperature	g = A: -10...70 °C Connector version: -40...85 °C Cable version: -20...80 °C
IP rating	dd = SA/SD: Housing: IP65, IP67 Shaft entrance: IP65 dd = PA: IP67
Storage temperature	dd = SD: -30...80 °C Connector version: -30...85 °C Cable version: -30...80 °C

Functional safety

Diagnostic coverage	0 %
MTTF (40 °C)	200 a
Mission Time	25 a

Interface

Channels	AB, ABN
Interface	Digital pulse

Material

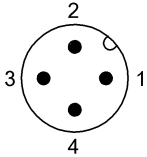
Housing material	bb = B6/B7: Die cast aluminum bb = B8/B9: Die cast aluminum with pressure compensation membrane
Housing material, surface protection	Powder coated
Material flange	Aluminium

Mechanical data

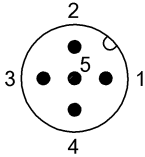
Bearings type	2x precision ball bearings
Flange type	Clamping flange
Housing diameter	58 mm
Shaft length	ee = 10: 20 mm ee = 12: 25 mm
Shaft load axial max.	dd = SA: 120 N dd = SD: 500 N dd = PA: 100 N
Shaft load radial max.	dd = SA: 220 N dd = SD: 500 N dd = PA: 110 N
Starting torque typ.	dd = SA/SD: ca. 1 Ncm bei Raumtemperatur dd = PA: ca. 4 Ncm bei Raumtemperatur

Connector Diagramm

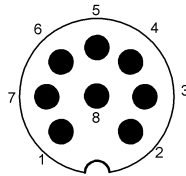
M12x1-male, 4-pin, A-coded



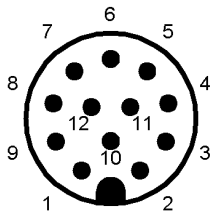
M12x1-male, 5-pin, A-coded



M12x1-male, 8-pin, A-coded



M12x1-male, 12-pin, A-coded



Wiring diagramm

C1 (Sin/Cos 1 Vpp)

Sin/Cos (1 Vpp)	C1	
Signal	Pin	Color
GND	1	WH
UB	2	BN
A	3	GN
B	5	GY
Ainv	4	YE
Binv	6	PK
n.c.	7,8	
Shield	housing	housing

H3 (HTL/TTL inv. connector 8 pin)

HTL/TTL inv.	H3	
Schaltung	Pin	Color
GND	1	WH
UB	2	BN
A	3	GN
B	4	YE
N	5	GY
Ainv	6	RD
Binv	7	PK
Ninv	8	BU
Shield	housing	housing

H5 (HTL/TTL inv. connector 12 pin)

HTL/TTL inv.	H5	
Schaltung	Pin	Color
GND	3	WH
UB	1	BN
A	4	GN
B	6	YE
N	8	GY
Ainv	9	RD
Binv	7	BK
Ninv	10	VT
n.c.	2,5,11,12	
Shield	housing	housing

T1 (HTL/TTL cable)

HTL/TTL	T1	
Schaltung	Pin	Color
GND	3	WH
UB	1	BN
A	2	GN
B	4	YE
N	5	GY
n.c.	6,7,8	
Shield	housing	housing

T2 (HTL/TTL connector 8 pin)

HTL/TTL	T2
Schaltung	Pin
GND	1
UB	2
A	3
B	4
N	5
n.c.	6,7,8
Shield	housing

TA (HTL/TTL connector 4 pin)

HTL/TTL	TA
Schaltung	Pin
GND	3
UB	1
A	2
B	4
Shield	housing

TB (HTL/TTL connector 12 pin)

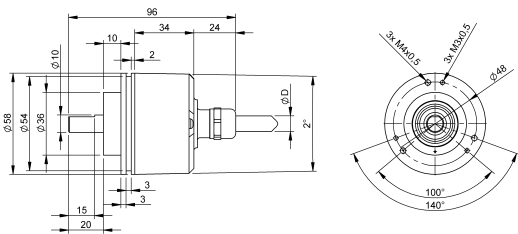
HTL/TTL	TB
Schaltung	Pin
GND	3
UB	1
A	4
B	6
N	8
n.c.	2,5,7,9,10,11,12
Shield	housing

TD (HTL/TTL connector 5 pin)

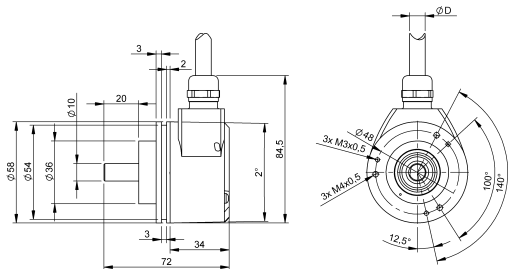
HTL/TTL	TD
Schaltung	Pin
GND	3
UB	1
A	4
B	2
N	5
Shield	housing

Product View

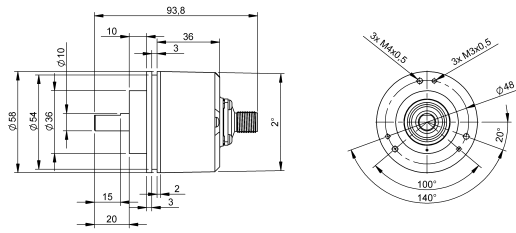
Cable outlet axial (flange PA/SA)



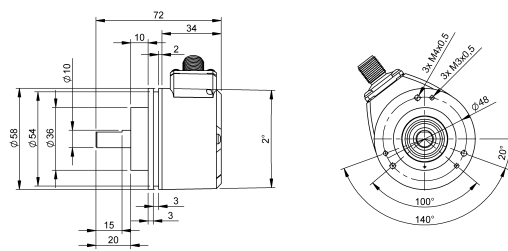
Cable outlet radial (flange PA/SA)



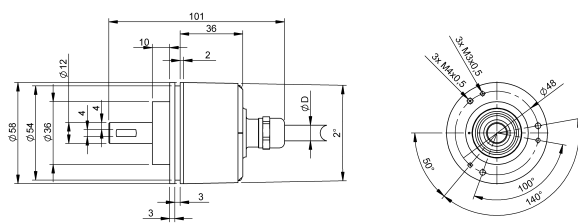
Connector outlet axial (flange PA/SA)



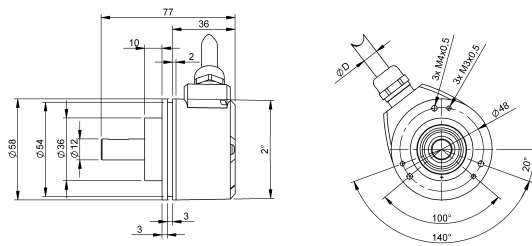
Connector outlet radial (flange PA/SA)



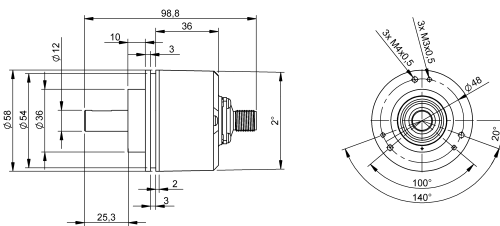
Cable outlet axial (flange SD)



Cable outlet radial (flange SD)



Connector outlet axial (flange SD)



Connector outlet radial (flange SD)

