

Абсолютные энкодеры ВС 58

Технические характеристики

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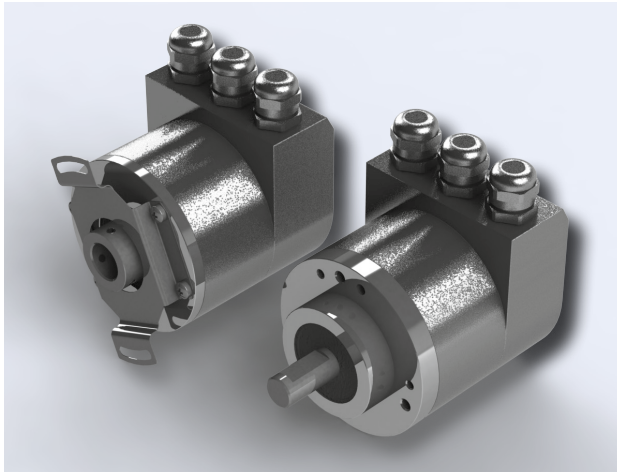
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Series BC 58

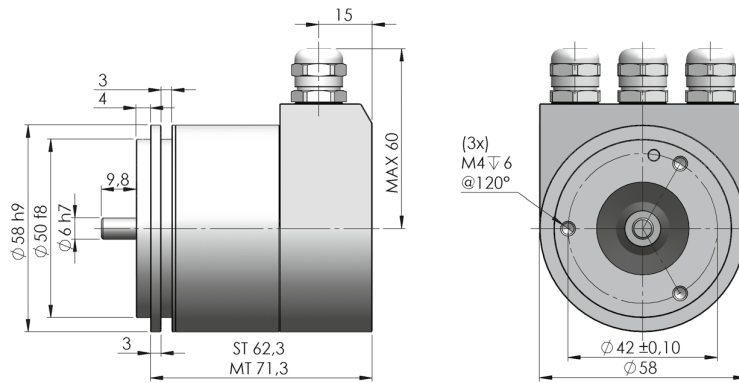
- ▶ Absolute single- and multi-turn rotary-encoder with solid shaft or blind hollow shaft
- ▶ Housing diameter 58 mm, compact design and high degree of protection up to IP67
- ▶ Maximum resolution singleturn 17 Bit
- ▶ Maximum resolution multi-turn 25 Bit
- ▶ For highest industrial requirements
- ▶ Available interfaces: Parallel, SSI, ProfibusDP, Interbus K2 and K3, DeviceNet, CAN, CANopen
- ▶ Accessories from page 78

Mechanical specifications

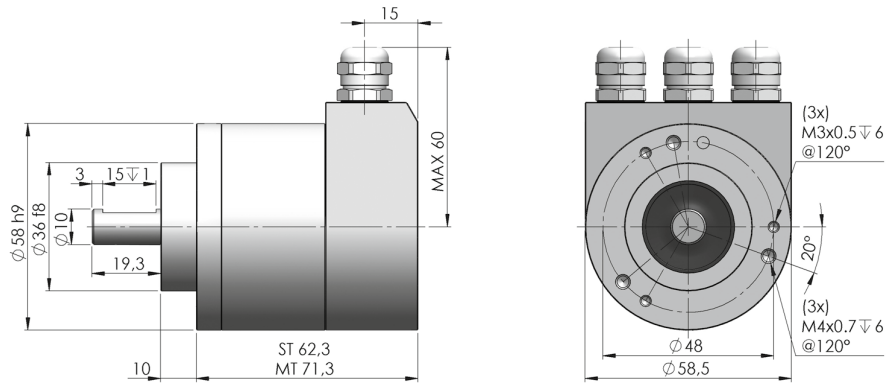
Shaft diameter	6 mm (synchro flange) 10 mm (clamping flange) 10/12 mm (blind hollow shaft)
Shaft load	axial 40 N, radial 60 N (10, 12 mm shaft)
Speed	Continuous operation 10.000 min ⁻¹
Torque	< 0.5 Ncm
Moment of inertia	ca. 3,8 x 10 ⁻⁶ kgm ²
Protection class	Shaft input IP 64 or IP 67, housing IP 67
General design	according to DIN EN 61010, protection class III, degree of contamination 2, overvoltage category II
Operating temperature	- 40 ... 100 °C
Storage temperature	- 40 ... 85 °C
Vibration resistance	DIN EN 60068-2-6, 100 m/s ² (10 ... 2.000 Hz)
Shock resistance	DIN EN 60068-2-27, 1.000 m/s ² (6 ms)
Connection	axial or radial
Flange	S = Synchro flange K = Clamping flange F = Blind hollow shaft
Starting torque	< 0,01 Nm
Mass	Singleturn approx 350 g, Multiturn approx 400 g

Mechanical dimensions

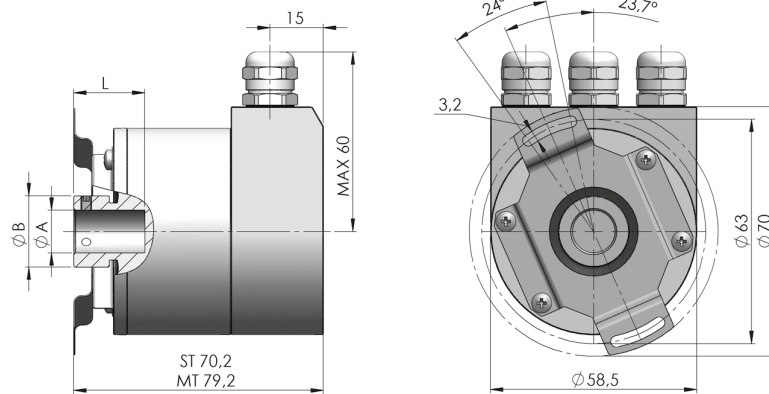
Synchro flange („S")



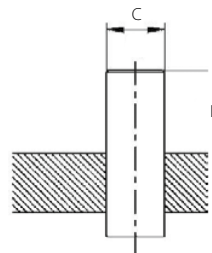
Clamping flange („K")



Blind hollow shaft („F")



Hollow shafts ϕA	10 ^{+0,012} mm	12 ^{+0,012} mm
Connecting shafts ϕC	10 _{g7} mm	12 _{g7} mm
Clamping ring ϕB	18 mm	20 mm
L min.	15 mm	18 mm
L max.	20 mm	20 mm
Shaft code	„2"	„7"



BC 58 with parallel interface - Singleturn with cable

Colour (PVC)	10 Bit	12 Bit	13 Bit	14 Bit
gray/pink	N.C.	N.C.	N.C.	S0 (LSB)
brown/yellow	N.C.	N.C.	S0 (LSB)	S1
brown/gray	N.C.	S0 (LSB)	S1	S2
red/blue	N.C.	S1	S2	S3
purple	S0 (LSB)	S2	S3	S4
white/brown	S1	S3	S4	S5
white/green	S2	S4	S5	S6
white/yellow	S3	S5	S6	S7
white/gray	S4	S6	S7	S8
white/pink	S5	S7	S8	S9
white/blue	S6	S8	S9	S10
white/red	S7	S9	S10	S11
white/black	S8	S10	S11	S12
brown/green	S9 (MSB)	S11 (MSB) Tristate	S12 (MSB)	S13 (MSB)
yellow	Tristate S0...S9	S0... S11 Latch	Tristate S0...S1	Tristate S0...S13
pink	Latch (only binary)	Latch (only binary)	Latch (only binary)	Latch (only binary)
green	Direction	Direction	Direction	Direction
black	0 V	0 V	0 V	0 V
red	5 V/10...30 V DC	5 V/10...30 V DC	5 V/10...30 V DC	5 V/10...30 V DC
brown	Alarm	Alarm	Alarm	Alarm

BC 58 with parallel interface - Singleturn with flange receptacle, 17-pol.

Pin	10 Bit	12 Bit	13 Bit	14 Bit
1	S0 (LSB)	S0	S12 (MSB)	S13 (MSB)
2	S1	S1	S11	S12
3	S2	S2	S10	S11
4	S3	S3	S9	S10
5	S4	S4	S8	S9
6	S5	S5	S7	S8
7	S6	S6	S6	S7
8	S7	S7	S5	S6
9	S8	S8	S4	S5
10	S9 (MSB)	S9	S3	S4
11	N.C.	S10	S2	S3
12	Tristate S0..S9	S11 (MSB) Latch	S1	S2
13	Latch (only binary)	Latch (only binary)	S0 (LSB)	S1
14	Direction	Direction	Direction	S0 (LSB)
15	0 V	0 V	0 V	0 V
16	5 V/10...30 V DC	5 V/10...30 V DC	5 V/10...30 V DC	5 V/10...30 V DC
17	Alarm	Alarm	Alarm	Alarm

BC 58 with parallel interface - Multiturn (PVC cable)

Colour	Configuration	Colour	Configuration	Colour	Configuration
brown	S 0	yellow/brown	S 11	gray/green	M 10 2)
green	S 1	white/gray	M 0	yellow/gray	M 11 2)
yellow	S 2	gray/brown	M 1	pink/green	Alarm
gray	S 3	white/pink	M 2	yellow/pink	Direction
pink	S 4	pink/brown	M 3	green/blue	Latch
purple	S 5	white/blue	M 4 1)	yellow/blue	Tristate
gray/pink	S 6	brown/blue	M 5 1)	red (0.5 mm ²)	10 ... 30 V DC
red/blue	S 7	white/red	M 6 1)	white (0.5 mm ²)	10 ... 30 V DC
white/green	S 8	brown/red	M 7 1)	blue (0.5 mm ²)	0 V
brown/green	S 9	white/black	M 8 2)	black (0.5 mm ²)	0 V
white/yellow	S 10	brown/black	M 9 2)		

1) N.C. with resolution 16-bit

2) N.C. with resolution 16- or 20-bit

Electrical specifications

Supply voltage	10-30 V
Intrinsic current consumption	ST 200 mA/MT 300 mA
Interface	Parallel
Output code	Binary, Gray, Gray excess
Resolution singleturn	10-14-bit, depending on variant, 12-bit in MT design Gray excess: 360, 720 steps
Resolution multiturn	12-bit
Linearity	+/- ½ LSB
Output current	30 mA per bit Short-circuit-proof
Control inputs	Latch, Direction, Tristate by ST; Tristate by MT
Connection	Cable or flange receptacle, Conin 17-pol. Axial or radial, Sub D 37-pol.

Order reference

Resolution	Supply	Flange	Protection class	Shaft	Interface	Connection
0010 = 10 bit ST	E = DC 10-30 V	S.41 = Synchro	IP 64	6 mm	PB = Parallel	A = Cable axial
0012 = 12 bit ST		S.71 = Synchro	IP 67	6 mm	Binary	B = Cable radial
0013 = 13 bit ST		K.42 = Clamp	IP 64	10 mm	PG = Parallel	U = M23-Connector (Conin), 17 pol. axial, ccw
0014 = 14 bit ST		K.72 = Clamp	IP 67	10 mm	gray	V = M23-Connector (Conin), 17 pol. radial, ccw
0360 = 360 steps ST		F.42 = Spring sheet*	IP 64	10 mm*		W = M23-Connector (Conin), 17 pol. axial, cw
0720 = 720 steps ST		F.47 = Spring sheet*	IP 67	12 mm*		Y = M23-Connector (Conin), 17 pol. radial, cw
0412 = 4 bit MT + 12 bit ST		* blind hollow shaft				A-A1-F = 0,1 m Cable, Sub-D-Connector, 37 pol. axial
0812 = 8 bit MT + 12 bit ST		with spring sheet				B-A1-F = 0,1 m Cable, Sub-D-Connector, 37 pol. radial
1212 = 12 bit MT + 12 bit ST						

BC 58 with SSI interface

Synchronous serial transmission (SSI) for absolute rotary encoders

The SSI interface can be used for multiturn encoders with gray code or binary code. Furthermore, special bits (alarm signal, parity) can be attached to the data bits of the 24-bit encoder.

The SSI interface supports single and multiple transfers. For multiple transfer (the stored value is read out several times in succession), a fixed number of cycles per revolution must be observed (25 to 26 cycles for multiturn).

For multiple transfer, the distance between the clock brush must be below 10 μ s and for single transfer, it must be greater than 30 μ s. After the output of the last bit (alarm or parity), the data output for approx. 20 μ s is set to logic „0“, then to logic „1“. Then current encoder data can be read out again.

Recommended data transfer rate for SSI

The maximum data transfer rate depends on the cable length.

Cable length	Baud rate
< 50 m	< 400 KHz
< 100 m	< 300 KHz
< 200 m	< 200 KHz
< 400 m	< 100 KHz

Pin configuration SSI interface

Cable	Flange receptacle	Signal
brown (0.5 mm ²)	1	0 V (supply voltage)
pink	2	Data
yellow	3	Cycle
	4	N.C.
blue	5	$\overline{\text{Direction}}$
	6	N.C.
	7	N.C.
white (0.5 mm ²)	8	10 ... 30 V DC
	9	N.C.
gray	10	$\overline{\text{Data}}$
green	11	$\overline{\text{Cycle}}$
black	12	0 V- Signal output

BC 58 with SSI interface

Electrical	
Supply voltage	5 V or 10-30 V
Intrinsic current consumption	Singleturn 50 mA/Multiturn 100 mA
Interface	Standard SSI
Output code	Binary or gray
Resolution singleturn	10-17-bit, depending on variant, max. 13-bit in MT Gray excess: 360, 720 steps
Absolute accuracy	+/- 35 ''
Repeat accuracy	+/- 7 ''
Status LED	Green = ok; Red = Alarm
Control inputs	Direction
Parametrisable	Resolution, code type, direction of rotation, warning, alarm
Reset button	Lockable per parametrisation
Connection	Cable or flange receptacle Conin axial or radial

Order reference

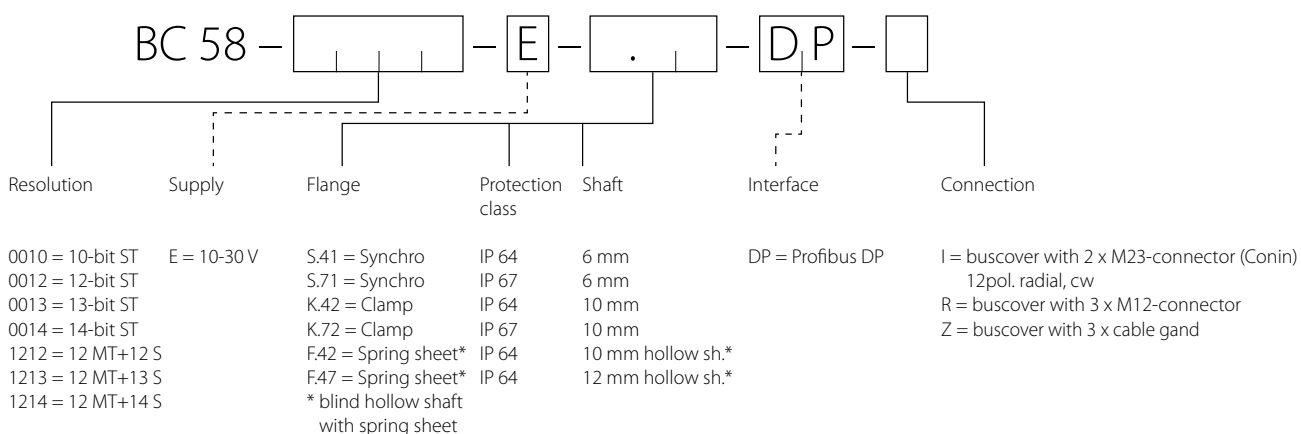
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Resolution	Supply	Flange	Protection class	Shaft	Interface	Connection
0010 = 10-bit ST	A = 5 V	S.41 = Synchro	IP 64	6 mm	SB = SSI Binary	A = Cable axial
0012 = 12-bit ST	E = 10-30 V	S.71 = Synchro	IP 67	6 mm	SG = SSI Gray	B = Cable radial
0013 = 13-bit ST		K.42 = Clamp	IP 64	10 mm		C = Connector 12 pol. axial, cw
0014 = 14-bit ST		K.72 = Clamp	IP 67	10 mm		D = Connector 12 pol. radial, cw
0017 = 17-bit ST		F.42 = Spring sheet*	IP 64	10 mm hollow sh.*		G = M23-Connector (Conin), 12 pol. axial, ccw
1212 = 12 MT+12 S		F.47 = Spring sheet*	IP 64	12 mm hollow sh.*		H = M23-Connector (Conin), 12 pol. radial, ccw
1213 = 12 MT+13 S		* blind hollow shaft with spring sheet				

BC 58 with Profibus DP interface

Electrical	
Supply voltage	11-30 V DC
Intrinsic current consumption	Singleturn 220 mA/Multiturn 250 mA
Interface	Profibus-DP, Encoder Profile
Certified	PNO
Programmable	According to class 2: Resolution, Preset*, Direction
Output code	Binary
Baud rate	9.6 K Baud - 12 M Baud
Resolution singleturn	10 - 14-bit, depending on variant
Resolution multiturn	12-bit
Integrated special function	Speed, acceleration, operating time
Connection	Bus cover with 2 connectors, bus cover with 3-fold PG gland
Mechanical	
operating temperature	- 40° C to + 85° C
Mass, approx.	Singleturn 350 g/Multiturn 400 g

* Preset only via bus, no button

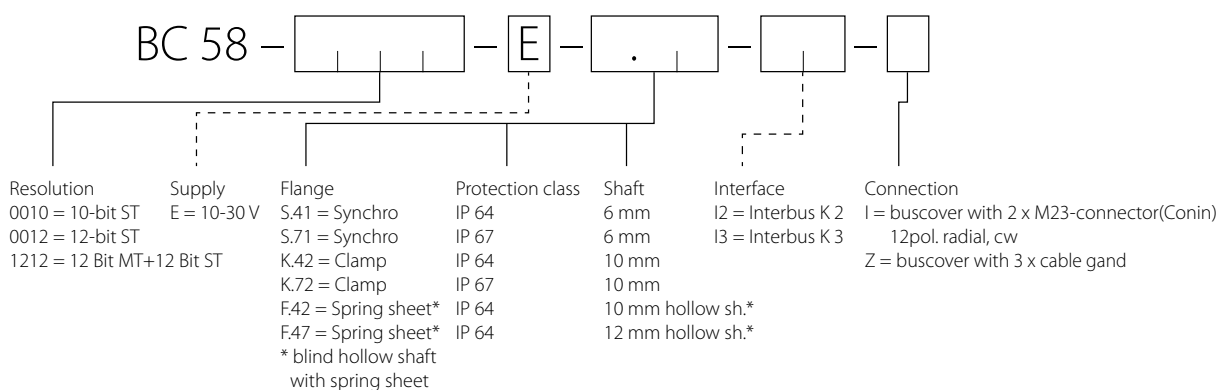
Order reference



BC 58 with Interbus interface

Electrical	
Supply voltage	11-30 V DC
Intrinsic current consumption	Singleturn 220 mA/Multiturn 250 mA
Interface	Interbus, ENCOM Profile K 3 (parametrisable), K 2
DÜ Format	Supi address 0123, Byte no. 3210
Programmable	Direction, scaling factor, preset, offset
Output code	32-bit binary
Baud rate	500 KBaud according to ENCOM
Resolution singleturn	Singleturn 10 - 17-bit, depending on variant, 12-bit in MT design
Resolution multiturn	12-bit
ID code k 3	37H (055 decimal)
Connection	Bus cover with 2 connectors, bus cover with 3-fold PG gland
Mechanical	
Operating temperature	- 40° C to + 85° C
Mass, approx.	Singleturn 350 g/Multiturn 400 g

Order reference

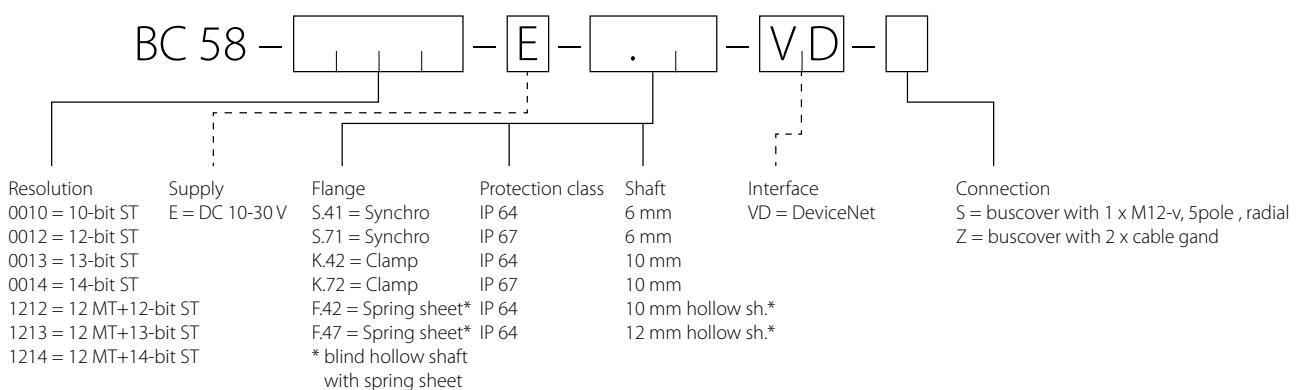


BC 58 with DeviceNet interface

Electrical	
Supply voltage	11-30 V DC
Intrinsic current consumption	Singleturn 220 mA/Multiturn 250 mA
Interface	CAN-Highspeed according to ISO/DIS 11898, CAN specifications 2.0 B
Certified	PNO
Programmable	According to class 2: Resolution, Preset*, Direction
Output code	Binary
Baud rate	Adjustable 125, 250, 500 Kbaud
Resolution singleturn	10 - 14-bit, depending on variant, 12-bit in MT design
Resolution multiturn	12-bit
Transfer mode	Polling mode (only upon request), Change of State (automatic with value change), Cyclical with adjustable cycle timer
Connection	Bus cover with 2 connectors, bus cover with 3-fold PG gland
Mechanical	
Operating temperature	- 40° C to + 85° C
Mass, approx.	Singleturn 350 g/Multiturn 400 g

* Preset only via bus, no button

Order reference



BC 58 with CANopen/CAN Layer 2 interface

Electrical	
Supply voltage	11-30 V DC
Intrinsic current consumption	Singleturn 220 mA/Multiturn 250 mA
Interface	CAN-Highspeed according to ISO/DIS 11898, Basic and Full CAN CAN specifications 2.0 B (11 and 29-bit identifier)
Profile	Profile CANopen according to Profile DSP 406, with additional functions
Programmable	CANopen: Direction, resolution, preset, offset, Limit values: CAN L2: Direction, limit values, binary
Output code	32-bit binary
Baud rate	Adjustable 10 to 1.000 Kbaud
Base identifier	Adjustable via DIP switch
Integrated special function	Speed, acceleration/rotary axle, limit values only CANopen
Resolution singleturn	Singleturn 10 - 14-bit, depending on variant, 12-bit in MT design
Resolution multiturn	12-bit
Transfer mode	Polling mode (only upon request), Change of State (automatically with value change), cyclical with adjustable cycle timer
Connection	Bus cover with 2 connectors, bus cover with 3-fold PG gland
Mechanical	
Operating temperature	- 40° C to + 85° C
Mass, approx.	Singleturn 350 g/Multiturn 400 g

Order reference

BC 58 — [] — [E] — [] — [] — [] — []						
Resolution	Supply	Flange	Protection class	Shaft	Interface	Connection
0010 = 10-bit ST	E = 10-30 V	S.41 = Synchro	IP 64	6 mm	OL = CANopen	A = cable axial
0012 = 12-bit ST		S.71 = Synchro	IP 67	6 mm	CL = CAN L2	B = cable radial
0013 = 13-bit ST		K.42 = Clamp	IP 64	10 mm		C = M23-connector, 12 pole axial, cw
0014 = 14-bit ST		K.72 = Clamp	IP 67	10 mm		D = M23-connector, 12 pole radial, cw
0017 = 17-bit ST		F.42 = Spring sheet* IP 64		10 mm hollow sh.*		G = M23-connector, 12 pole axial, ccw
1212 = 12 MT+12-bit ST		F.47 = Spring sheet* IP 64		12 mm hollow sh.*		H = M23-connector, 12 pole radial, ccw
1213 = 12 MT+13-bit ST		* blind hollow shaft				I = buscover with 2 x M23-connector, 9 pole radial, cw
1214 = 12 MT+14-bit ST		with spring sheet				Z = buscover with 3 x cable gland

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