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Important Note

The information shown in these documents is for guidance only. No liability is accepted for any errors or omissions. The designer or user is solely responsible for the safe and proper application of the parts, assemblies or equipment described.

Absolute Shaft Encoders ACURO industry

Overview Functions and Versions AC 58

	SSI	BiSS	Parallel ST	Parallel MT	SSI para.	Profibus	DeviceNet	Interbus	CAN	CANopen	SUCOnet
Electrical											
Supply DC 5 V	•	•	(Option)	(Option)							
Supply DC 10-30 V	•	•	•	•	•	•	•	•	•	•	•
Preset key with LED (not IP67)	•	•	only LED	•	•						
Diagnostics											
- LED indication	•	•		•	•	•	•	•	•	•	
- Warning		•				•					
- Alarm bit	(Option)	•				•	•	•	•	•	
- Alarm output	(Option)	(Option)	•	•							
- Temperature measurement	(Option)	•									
Connection for "tico"						•	•		•	•	
Parameterization (PC, with Acuro Soft)	•	•									
Parameterization (Bus)						•	•	•		•	•
Inputs											
- Latch			•	•							
- Direction	•	•	•	•	•						
- 2 lines for present input					•						
- Tristate			•	•							
Special Functions											
- Speed						•			•	•	
- Acceleration						•			•	•	
- On time						•				•	
- Round axis										•	
- Limit values					•					•	
Optional 1 Vpp	•	•									
Connections											
Bus cover, 3 cable screw						•		•	•	•	
Bus cover, 2 cable screw+M12 for "tico"						•	•		•	•	
Bus cover, 2 cable screw							•				
Bus cover, 2 Conin 9-pole								•	•	•	
Bus cover, 2 Conin 12-pole						•					
Bus cover, 3 M12 4-pole						•					
Bus cover, 1 M12 5-pole							•				
Cable axial / radial	•	•	•	•	•			•	•	•	•
Cable ax /rad 0.1 m+37-pole Sub-D				•							
Conin 12-pole ax/rad CW/CCW	•	•			•	•			•	•	
Conin 17-pole ax/rad CW/CCW			•								
M12 8-pole ax/rad	•	•									
Mechanical											
Synchro fl., shaft 6x10 mm, IP64 or IP67	•	•	•	•	•	•	•	•	•	•	•
Clamping fl., shaft 10x19.5 mm, IP64 or IP67	•	•	•	•	•	•	•	•	•	•	•
Clamping fl., shaft 9.52x19.5 mm, IP64 or IP67	•	•	•	•	•	•	•	•	•	•	•
Hubshaft with tether 10 mm, IP64	•	•	•	•	•	•	•	•	•	•	•
Hubshaft with tether 12 mm, IP64	•	•	•	•	•	•	•	•	•	•	•
Hubshaft with tether 12,7 mm, IP64	•	•	•	•	•	•	•	•	•	•	•
Square flange, 63.5 mm, shaft 9.52x19.5 mm, IP64 or IP67	•	•	•	•	•	•	•	•	•	•	•
Square flange, 63.5 mm, shaft 10 x 19.5 mm, IP64 or IP67	•	•	•	•	•	•	•	•	•	•	•

Absolute

BiSS / SSI



Clamping flange

- Compact design: 50 mm length for single or multiturn
- Aids for start up and operation: diagnostic LED, preset key with optical response, status information
- Use of sine/ cosine signals for fast control task possible
- Control input: Direction
- Resolution up to 29 Bit


TECHNICAL DATA
mechanical

Housing diameter	58 mm
Shaft diameter	6 mm / 10 mm (Solid shaft) 10 mm / 12 mm (Hub shaft)
Flange (Mounting of housing)	Synchro flange, Clamping flange, Tether, Square flange
Protection class shaft input (EN 60529)	IP64 or IP67
Protection class housing (EN 60529)	IP64 or IP67
Shaft load axial / radial	40 N / 60 N
Axial endplay of mounting shaft (hubshaft)	± 1.5 mm
Radial runout of mating shaft (hubshaft)	± 0.2 mm
Max. speed	max. 10 000 rpm (continuous), max. 12 000 rpm (short term)
Torque	0.01 Ncm
Moment of inertia	ca. 3.8×10^{-6} kgm ²
Vibration resistance (DIN EN 60068-2-6)	100 m/s ² (10 ... 2000 Hz)
Shock resistance (DIN EN 60068-2-27)	1000 m/s ² (6 ms)
Operating temperature	-40 °C ... +100 °C
Storage temperature ¹	-25 °C ... +85 °C
Weight	approx. 260 g (ST) / 310 g (MT)
Connection	Cable, axial or radial M23 connector (Conin), 12 pole, axial or radial M12-connector, 8 pole, axial or radial

¹ due to packaging

TECHNICAL DATA
electrical

Supply voltage	± 10% DC 5 V or DC 10 - 30 V
Max. current w/o load	50 mA (ST), 100 mA (MT)
Resolution singleturn	10 - 17 Bit Gray Excess: 360, 720 increments
Resolution multiturn	12 Bit
Output code	Binary, Gray
Drives	Clock and Data / RS422
Linearity	± ½ LSB (± 1 LSB for resolution > 13 Bit)

Absolute

BiSS / SSI

TECHNICAL DATA electrical (continued)

Incremental signals optional	Sinus-Cosinus 1 Vpp
Number of pulses	2048
3dB limiting frequency	500 kHz
Absolute accuracy	±35"
Repeatability	±7"
Parametrization	Code type, Direction, Warning, Alarm
Control inputs	$\overline{\text{Direction}}$
Reset key	Disable via parameterization
Alarm output	Alarm bit (SSI Option), warning and alarm bit (BiSS)
Status LED	Green = ok, red = alarm

RECOMMENDED DATA TRANSFER RATE bei SSI

The max. data transfer rate depends on the cable length. For Clock / $\overline{\text{Clock}}$ and Data / $\overline{\text{Data}}$ please use twisted pairs. Use shielded cable.

Cable length	Frequency
< 50 m	< 400 kHz
< 100 m	< 300 kHz
< 200 m	< 200 kHz
< 400 m	< 100 kHz

DATA FORMAT Singleturn

Resolution	Data Bits											
	T1 ... T9	T10	T11	T12	T13	T14	T15	T16	T17	T18	T19	
9 Bit ¹	S8 ... S0	0	0	0	0	0	W ²					
10 Bit ¹	S9 ... S1	S0	0	0	0	0	W ²					
11 Bit ¹	S10 ... S2	S1	S0	0	0	0	W ²					
12 Bit ¹	S11 ... S3	S2	S1	S0	0	0	W ²					
13 Bit ¹	S12 ... S4	S3	S2	S1	S0	0	W ²					
14 Bit ¹	S13 ... S5	S4	S3	S2	S1	S0	0	W ²				
15 Bit ¹	S14 ... S6	S5	S4	S3	S2	S1	S0	0	W ²			
16 Bit ¹	S15 ... S7	S6	S5	S4	S3	S2	S1	S0	0	W ²		
17 Bit ¹	S16 ... S8	S7	S6	S5	S4	S3	S2	S1	S0	0	W ²	

Examples for data format 9 Bit and 13 Bit with the optional bits alarm und parity

Resolution	Data Bits											
	T1 ... T9	T10	T11	T12	T13	T14	T15	T16	T17	T18	T19	
9 Bit + P ³	S8 ... S0	0	0	0	P	0	W ²					
9 Bit + A ⁴	S8 ... S0	0	0	0	A	0	W ²					
9 Bit + P ³ + A ⁴	S8 ... S0	0	0	0	A	P	0	W ²				
9 Bit + P ³	S12 ... S4	S3	S2	S1	S0	P	0	W ²				
9 Bit + A ⁴	S12 ... S4	S3	S2	S1	S0	A	0	W ²				
9 Bit + P ³ + A ⁴	S12 ... S4	S3	S2	S1	S0	A	P	0	W ²			

Absolute

BiSS / SSI

DATA FORMAT Multiturn

Resolution	Data bits									
	T1 ... T12	T13 ... T21	T22	T23	T24	T25				
24 Bit ¹	M11 ... M0	S11 ... S2	S1	S0	0	W ²				
25 Bit ¹	M11 ... M0	S12 ... S3	S2	S1	S0	0	W ²			
26 Bit ¹	M11 ... M0	S13 ... S4	S3	S2	S1	S0	0	W ²		
Example for data format 24 Bit with the optional bits alarm und parity										
24 Bit + P ³	M11 ... M0	S11 ... S2	S1	S0	P	0	W ²			
24 Bit + A ⁴	M11 ... M0	S11 ... S2	S1	S0	A	0	W ²			
24 Bit + P ³ + A ⁴	M11 ... M0	S11 ... S2	S1	S0	A	P	0	W ²		

S0 ... S16 Data bits for resolution per revolution

M0 ... M11 Data bits for number of revolutions (only for multiturn)

¹ Options (Parity bit, alarm and parity bit, zero bit) on request

²W: from this data bit on the data iteration for multiplex starts

³Parity bit: Even Parity (The parity bit expands the data bits to an even number of 1-bits).
(Option)

⁴Alarm bit: is set to "1" when over temperature, under temperature, disc breakage and defect LED

SYNCHRONOUS-SERIAL TRANSFER (SSI)

Synchronous readout of the encoder data is according to the clock rate given by the SSI-counterpart.

The number of clock rates is determined by the type of encoder (singleturn resp. multiturn) and the configuration of the special Bits as defined.

For multiple transactions (the stored value is readout several times successively) a fixed clock rate per transaction must be kept (for singleturn 13 resp. 14 clocks, for multiturn 25 resp. 26 clocks).

- In the rest position, when the last clock brush has passed by more than 30µs, the data output is logically at "1".
- With the first descending clock edge the encoder data and the special bits are

loaded in the shift register of the encoder interface.

- With each ascending clock edge the data bits are serially readout, beginning with the MSB.
- At the end of the data transfer the data output is set to logically "0" for approx. 20µs. If within these 20µs a further clock brush reaches the encoder interface, the already transferred data is readout once again. This multiple transfer of the same data makes it possible to recognize transfer errors.
- After the 20µs the data output goes to its rest position, logically "1". Subsequently new encoder data can be readout.

Absolute

BiSS / SSI

ELECTRICAL CONNECTIONS

M23 connector (Conin), 12 pole / cable
Interface BI, SB, SG

Cable	M23 (Conin)	Signal
brown ³	1	0 V (supply voltage)
pink	2	Data
yellow	3	Clock
	4	N.C.
blue	5	$\overline{\text{Direction}}$ ¹
red	6	N.C.
violet	7	N.C.
white ³	8	DC 5/ 10 - 30 V
	9	N.C.
grey	10	$\overline{\text{Data}}$
green	11	$\overline{\text{Clock}}$
black	12	0 V-signal output ²

¹ $\overline{\text{Direction}}$: +U_B or unconnected = ascending code values with rotation cw
0 V = descending code values with rotation cw

² Connected with 0 V in the encoder.
Use this output to lay Direction on logical "0" if required.

³ use only thin wires ($\varnothing = 0.14$ mm)

ELECTRICAL CONNECTIONS

M23 connector (Conin), 12 pole / cable
Interface SC, BC

Cable	M23 (Conin)	Signal
brown ²	1	0 V (supply voltage)
pink	2	Data
yellow	3	Clock
white/green	4	A+
blue	5	$\overline{\text{Direction}}$ ¹
red/blue	6	B+
brown/green	7	A-
white ²	8	DC 5/10 - 30 V
grey/pink	9	B-
grey	10	$\overline{\text{Data}}$
green	11	$\overline{\text{Clock}}$
black	12	Sense

¹ $\overline{\text{Direction}}$: +U_B or unconnected = ascending code values with rotation cw
0 V = descending code values with rotation cw

² use only thin wires ($\varnothing = 0.14$ mm)

Absolute

BiSS / SSI

ELECTRICAL CONNECTIONS
M12 connector, 8 pole

Colour	Pin	Signal
white	1	DC 10 - 30 V
brown	2	0 V
	3	N.C.
green	4	Clock
pink	5	Data
yellow	6	Clock
blue	7	Direction ¹
grey	8	Data



View on connector

¹ Direction: + U_B or unconnected = ascending code values with rotation cw
0 V = descending code values with rotation cw

CONNECTION



M12, View on connector

DIMENSIONED DRAWINGS

see chapter "Dimensioned drawings AC 58", starting page 185

ORDERING INFORMATION

Type	Resolution ^{1,2}	Supply voltage ³	Flange, Protection, Shaft ^{4,8}	Interface ^{5,6}	Connection ⁷
<input type="checkbox"/>	<input type="text"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
AC58	0010 10 Bit ST 0012 12 Bit ST 0013 13 Bit ST 0014 14 Bit ST 0017 17 Bit ST 0360 360 increments ST 0720 720 increments ST 1212 12 Bit MT + 12 Bit ST 1213 12 Bit MT + 13 Bit ST 1214 12 Bit MT + 14 Bit ST (BiSS) 1217 12 Bit MT + 17 Bit ST (BiSS) higher resolution on request	A DC 5 V E DC 10 - 30 V	S.41 Synchro, IP64, 6 mm S.71 Synchro, IP67, 6 mm K.42 Clamping, IP64, 10 mm K.46 Clamping, IP64, 9.52 mm K.72 Clamping, IP67, 10 mm K.76 Clamping, IP67, 9.52 mm F.46 Spring tether, IP64, hubshaft 9.52 mm, mounting with clamping ring front F.42 Spring tether, IP64, hubshaft 10 mm, mounting with clamping ring front F.47 Spring tether, IP64, hubshaft 12 mm, mounting with clamping ring front Q.46 Square, IP64, 9.52 mm Q.42 Square, IP64, 10 mm Q.76 Square, IP67, 9.52 mm Q.72 Square, IP67, 10 mm	BI BiSS BC BiSS (+SinCos 1Vpp) SB SSI binary SG SSI Gray SC SSI Gray (+SinCos 1Vpp)	A Cable, axial B Cable, radial C M23 connector (Conin), 12 pole, axial, cw D M23 connector (Conin), 12 pole, radial, cw G M23 connector (Conin), 12 pole, axial, ccw H M23 connector (Conin), 12 pole, radial, ccw 7 M12 connector, 8 pole, axial 8 M12 connector, 8 pole, radial

¹ Resolution 360 increments ST with Offset 76 (value range 76...435)

² Resolution 720 increments ST with Offset 152 (value range 152...871)

³ Max. cable length for DC 5 V: 10 m

⁴ Protection class IP67 not available in combination with preset key and LED display

⁵ Interface BiSS (+SinCos 1Vpp): not with connection "7" and "8" (M12)

⁶ Interface SSI Gray (+SinCos 1Vpp): not with connection "7" and "8" (M12)

⁷ Connection code "7" and "8" (M12) with square flange only for IP64 and 10x19,5 mm shaft

⁸ IP67 on cover with connector only if IP67 mating connector mounted properly.

Preferably available versions are printed in bold type.

ORDERING INFORMATION

Selection of cable length

Versions with cable outlet (connection A, B, E or F) are available with various lengths of cable. To order your desired cable length, please add the respective code to the end of your ordering code. Further cable lengths on request.

Code	Cable length
without code	1.5 m
-D0	3 m
-F0	5 m
-K0	10 m
-P0	15 m
-U0	20 m
-V0	25 m

ACCESSORIES

see chapter "Accessories", starting page 322

Absolute

Parallel



Synchro flange

- Compact design
- Aids for start up and operation: diagnostic LED, preset key with optical response (only with MT), status information
- Output Tristate short circuit-proof
- Gray or Binary code
- Encoder monitoring



TECHNICAL DATA mechanical

Housing diameter	58 mm
Shaft diameter	6 mm / 10 mm (Solid shaft) 10 mm / 12 mm (Hub shaft)
Flange (Mounting of housing)	Synchro flange, Clamping flange, Tether, Square flange
Protection class shaft input (EN 60529)	IP64 or IP67
Protection class housing (EN 60529)	IP64 or IP67
Shaft load axial / radial	40 N / 60 N
Axial endplay of mounting shaft (hubshaft)	± 1.5 mm
Radial runout of mating shaft (hubshaft)	± 0.2 mm
Max. speed	max. 10 000 rpm (continuous), max. 12 000 rpm (short term)
Torque	0.01 Ncm
Moment of inertia	ca. 3.8×10^{-6} kgm ²
Vibration resistance (DIN EN 60068-2-6)	100 m/s ² (10 ... 2000 Hz)
Shock resistance (DIN EN 60068-2-27)	1000 m/s ² (6 ms)
Operating temperature	-40 °C ... +100 °C
Storage temperature	-40 °C ... +85 °C
Weight	approx. 350 g (ST) / 400 g (MT)
Connection ²	Cable, axial or radial M23 connector (Conin), 17 pole, axial or radial Sub-D connector, 37 pole

TECHNICAL DATA electrical

Supply voltage	DC 10-30 V On request: DC 5 V
Max. current w/o load	200 mA (ST), 300 mA (MT)
Resolution singleturn	10 - 14 Bit Gray Excess: 360, 720 increments
Resolution multiturn	12 Bit
Output code	Binary, Gray, Gray Excess
Linearity	± ½ LSB
Output current	30 mA per Bit, short-circuit-proof
Control inputs	<u>L</u> atch, <u>D</u> irection, <u>T</u> ristate with ST, Tristate with MT

Absolute

Parallel

TECHNICAL DATA electrical (continued)

Alarm output	NPN-O.C., max. 5 mA
Status LED	Green = ok, red = alarm

Data output level

Supply voltage U_B	DC 5 V - 5 % +10 % ¹	DC 10 - 30 V
Output level High	≥ 3.5 V (30 mA) ≥ 3.9 V (10 mA)	$\geq U_B - 2.2$ V (30 mA) $\geq U_B - 1.8$ V (10 mA)
Output level Low	≤ 1.6 V (30 mA) ≤ 1.2 V (10 mA)	≤ 1.6 V (30 mA) ≤ 1.2 V (10 mA)
Rise time (1.5 m Cable)	≤ 0.1 μ s	≤ 0.2 μ s
Drop time (1.5 m Cable)	≤ 0.05 μ s	≤ 0.1 μ s

¹ on request

Control inputs

Input	Level logical (physical)	Function
$\overline{\text{Direction}}$	1 (+ U_B or open) 0 (0 V)	ascending code values when turning clockwise (cw) descending code values when turning clockwise (cw)
$\overline{\text{Latch}}$	1 (+ U_B or open) 0 (0 V)	encoder data continuously changing at output encoder data stored and constant at output
$\overline{\text{Tristate}}$ (with singleturn)	1 (+ U_B or open) 0 (0 V)	outputs active outputs at high impedance (Tristate mode)
Tristate (with multiturn)	1 (+ U_B) 0 (0 V or open)	outputs at high impedance (Tristate mode) outputs active

Typical actuating delay time 10 μ s with push-pull selection; when selected via O.C., an external pull-down resistor (1 K Ω) is required

Absolute

Parallel

ELECTRICAL CONNECTIONS

Singleturn, cable

Colour (PVC)	9 Bit / 360 incr.	10 Bit / 720 incr.	12 Bit	13 Bit	14 Bit
grey/pink	N.C.	N.C.	N.C.	N.C.	S0 (LSB)
brown/yellow	N.C.	N.C.	N.C.	S0 (LSB)	S1
brown/grey	N.C.	N.C.	S0 (LSB)	S1	S2
red/blue	N.C.	N.C.	S1	S2	S3
violet	N.C.	S0 (LSB)	S2	S3	S4
white/brown	S0 (LSB)	S1	S3	S4	S5
white/green	S1	S2	S4	S5	S6
white/yellow	S2	S3	S5	S6	S7
white/grey	S3	S4	S6	S7	S8
white/pink	S4	S5	S7	S8	S9
white/blue	S5	S6	S8	S9	S10
white/red	S6	S7	S9	S10	S11
white/black	S7	S8	S10	S11	S12
brown/green	S8 (MSB)	S9 (MSB)	S11 (MSB)	S12 (MSB)	S13 (MSB)
yellow	Tristate S0...S8	Tristate S0...S9	Tristate S0...S11	Tristate S0...S12	Tristate S0...S13
pink	Latch	Latch	Latch	Latch	Latch
green	Direction	Direction	Direction	Direction	Direction
black	0 V	0 V	0 V	0 V	0 V
red	DC 5 V/ 10-30 V	DC 5 V/ 10-30 V	DC 5 V/ 10-30 V	DC 5 V/ 10-30 V	DC 5 V/ 10-30 V
brown	Alarm	Alarm	Alarm	Alarm	Alarm

ELECTRICAL CONNECTIONS

Singleturn, M23 connector (Conin), 17 pole

Pin	9 Bit / 360 incr.	10 Bit / 720 incr.	12 Bit	13 Bit	14 Bit
1	S0 (LSB)	S0 (LSB)	S0 (LSB)	S12 (MSB)	S13 (MSB)
2	S1	S1	S1	S11	S12
3	S2	S2	S2	S10	S11
4	S3	S3	S3	S9	S10
5	S4	S4	S4	S8	S9
6	S5	S5	S5	S7	S8
7	S6	S6	S6	S6	S7
8	S7	S7	S7	S5	S6
9	S8 (MSB)	S8	S8	S4	S5
10	N.C.	S9 (MSB)	S9	S3	S4
11	N.C.	N.C.	S10	S2	S3
12	Tristate S0...S8	Tristate S0...S9	S11 (MSB)	S1	S2
13	Latch	Latch	Latch	S0 (LSB)	S1
14	Direction	Direction	Direction	Direction	S0 (LSB)
15	0 V	0 V	0 V	0 V	0 V
16	DC 5 V/ 10-30 V	DC 5 V/ 10-30 V	DC 5 V/ 10-30 V	DC 5 V/ 10-30 V	DC 5 V/ 10-30 V
17	Alarm	Alarm	Alarm	Latch/Alarm	Latch/Alarm

Absolute

Parallel

ELECTRICAL CONNECTIONS

Multiturn, cable

10 cm cable with Sub-D connector, 37 pole			10 cm cable with Sub-D connector, 37 pole		
Cable (TPE)	Pin	Connection	Cable (TPE)	Pin	Connection
brown	2	S0	white/blue	14	M4 ¹
green	21	S1	brown/blue	33	M5 ¹
yellow	3	S2	white/red	15	M6 ¹
grey	22	S3	brown/red	34	M7 ¹
pink	4	S4	white/black	16	M8 ²
violet	23	S5	brown/black	35	M9 ²
grey/pink	5	S6	grey/green	17	M10 ²
red/blue	24	S7	yellow/grey	36	M11 ²
white/green	6	S8	pink/green	18	Alarm
brown/green	25	S9	yellow/pink	10	Direction
white/yellow	7	S10	green/blue	30	Latch
yellow/brown	26	S11	yellow/blue	12	Tristate
white/grey	8	M0	red (0.5mm ²)	13	DC 10-30 V
grey/brown	27	M1	white (0.5mm ²)	31	DC 10-30 V
white/pink	9	M2	blue (0.5mm ²)	1	0 V
pink/brown	28	M3	black (0.5mm ²)	20	0 V

¹ N. C. with resolution 16 Bit (4 Bit MT)

² N. C. with resolution 16 Bit or 20 Bit (4 or 8 Bit MT)

DIMENSIONED DRAWINGS

see chapter "Dimensioned drawings AC 58", starting page 185

ORDERING INFORMATION

Type	Resolution ^{1,2}	Supply voltage	Flange, Protection, Shaft ^{3,7}	Interface	Connection ^{4,5,6}
<input type="checkbox"/>	<input type="text"/>	<input type="checkbox"/>	<input type="text"/>	<input type="checkbox"/>	<input type="text"/>
AC58	0010 10 Bit ST 0012 12 Bit ST 0013 13 Bit ST 0014 14 Bit ST 0360 360 increments ST 0720 720 increments ST 0412 4 Bit MT + 12 Bit ST 0812 8 Bit MT + 12 Bit ST 1212 12 Bit MT + 12 Bit ST	E DC 10 - 30 V	S.41 Synchro, IP64, 6 mm S.71 Synchro, IP67, 6 mm K.42 Clamping, IP64, 10 mm K.46 Clamping, IP64, 9.52 mm K.72 Clamping, IP67, 10 mm K.76 Clamping, IP67, 9.52 mm F.46 Spring tether, IP64, hubs-haft 9.52 mm, mounting with clamping ring front F.42 Spring tether, IP64, hubs-haft 10 mm, mounting with clamping ring front F.47 Spring tether, IP64, hubs-haft 12 mm, mounting with clamping ring front Q.46 Square, IP64, 9.52 mm Q.42 Square, IP64, 10 mm Q.76 Square, IP67, 9.52 mm Q.72 Square, IP67, 10 mm	PB Parallel binary PG Parallel Gray	A Cable, axial B Cable, radial U M23 connector (Conin), 17 pole, axial, ccw V M23 connector (Conin), 17 pole, radial, ccw W M23 connector (Conin), 17 pole, axial, cw Y M23 connector (Conin), 17 pole, radial, cw A-A1-F 0,1 m cable with Sub-D connector, 37 pole, axial B-B1-F 0,1 m cable with Sub-D connector, 37 pole, radial

¹ Resolution 360 increments ST with Offset 76 (value range 76...435)

² Resolution 720 increments ST with Offset 152 (value range 152...871)

³ Protection class IP67 not available in combination with preset key and LED display

⁴ Connection code "A", "B" (cable): ST and MT

⁵ Connection code "U", "V", "W", "Y" (M23 connector): only ST

⁶ Connection code "A-A1-F" and "B-B1-F" (Sub-D connector): only MT

⁷ IP67 on cover with connector only if IP67 mating connector mounted properly.

Preferably available versions are printed in bold type.

ORDERING INFORMATION

Selection of cable length

Versions with cable outlet (connection A, B, E or F) are available with various lengths of cable. To order your desired cable length, please add the respective code to the end of your ordering code. Further cable lengths on request.

Code	Cable length
without code	1.5 m
-D0	3 m
-F0	5 m
-K0	10 m
-P0	15 m
-U0	20 m
-V0	25 m

ACCESSORIES

see chapter "Accessories", starting page 322