



Synchro flange



Hub shaft

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

### TECHNICAL DATA mechanical

Housing diameter	58 mm
Protection class shaft input	IP 64 or IP 67
Protection class housing	IP 67 with ST, IP 64 with MT (IP 67 optional)
Flange	Synchro flange, clamping flange, hubshaft with tether, square flange
Shaft diameter	Solid shaft 6 mm, 10 mm; hub shaft 10 mm, 12 mm
Max. speed	Continuous 10 000 min <sup>-1</sup> , short term 12 000 min <sup>-1</sup>
Starting torque	≤ 0.01 Nm
Moment of inertia	3.8 x 10 <sup>-6</sup> kgm <sup>2</sup>
Spring tether (hollow shaft)	
Tolerance axial	±1.5 mm
Tolerance radial	±0.2 mm
Max. shaft load	axial 40 N / radial 60 N
Shock resistance DIN EN 60068-2-27	1 000 m/s <sup>2</sup> (6 ms)
Vibration resistance DIN EN 60068-2-6	100 m/s <sup>2</sup> (10 ... 2 000 Hz)
Operating temperature	-40 ... 100 °C
Storage temperature	-40 ... 85 °C
Weight approx. ST/MT	350 g / 400 g

### TECHNICAL DATA electrical

Supply voltage	DC 10–30 V
Max. current w/o load ST/MT	200 mA / 300 mA
Interface	Parallel
Output code	Binary, Gray, Gray Excess
Resolution singleturn	10 – 14 Bit, Gray Excess: 360, 720 increments
Resolution multiturn	12 Bit
Linearity	±1/2 LSB
Output current	30 mA per Bit, short-circuit-proof
Alarm output	NPN o.c. Max 5 mA
Control inputs	Latch, Direction, Tristate with ST, Tristate with MT
Connection	Cable, axial or radial Conin 17 pole, axial or radial Sub-D 37 pole

Note: preset key only with MT

### DIMENSIONAL DRAWINGS

see chapter "Dimensional drawings ACURO industry", starting page 142

**DATA OUTPUT LEVEL**

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

Control inputs <sup>1</sup>:

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

<sup>1</sup> Typical actuating delay time 10  $\mu$ s with push-pull selection; when selected via O.C., an external pull-down resistor (1 K $\Omega$ ) is required

### PIN ASSIGNMENT SINGLETURN, CABLE

Parallel interface with 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	$\overline{\text{Tristate S0...S8}}$	$\overline{\text{Tristate S0...S9}}$	$\overline{\text{Tristate S0...S11}}$	$\overline{\text{Tristate S0...S12}}$	$\overline{\text{Tristate S0...S13}}$
pink	$\overline{\text{Latch}}$	$\overline{\text{Latch}}$	$\overline{\text{Latch}}$	$\overline{\text{Latch}}$	$\overline{\text{Latch}}$
green	$\overline{\text{Direction}}$	$\overline{\text{Direction}}$	$\overline{\text{Direction}}$	$\overline{\text{Direction}}$	$\overline{\text{Direction}}$
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	$\overline{\text{Alarm}}$	$\overline{\text{Alarm}}$	$\overline{\text{Alarm}}$	$\overline{\text{Alarm}}$	$\overline{\text{Alarm}}$

### PIN ASSIGNMENT SINGLETURN, FLANGE CONNECTOR

Parallel interface with flange connector 17 pole (Conin):					
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	$\overline{\text{Tristate S0...S8}}$	$\overline{\text{Tristate S0...S9}}$	S11 (MSB)	S1	S2
13	$\overline{\text{Latch}}$	$\overline{\text{Latch}}$	$\overline{\text{Latch}}$	S0 (LSB)	S1
14	$\overline{\text{Direction}}$	$\overline{\text{Direction}}$	$\overline{\text{Direction}}$	$\overline{\text{Direction}}$	S0 (LSB)
15	0 V	0 V	0 V	0V	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	$\overline{\text{Alarm}}$	$\overline{\text{Alarm}}$	$\overline{\text{Alarm}}$	$\overline{\text{Latch / Alarm}}$	$\overline{\text{Latch / Alarm}}$

### PIN ASSIGNMENT MULTITURN, CABLE

Parallel interface			Cable (TPE)		
Cable (TPE)	10 cm cable with 37 pole Sub-D-plug		Cable (TPE)	10 cm cable with 37 pole Sub-D-plug	
Farbe	Pin	Connection	Colour	Pin	Connection
brown	2	S0	white/blue	14	M4 <sup>1</sup>
green	21	S1	brown/blue	33	M5 <sup>1</sup>
yellow	3	S2	white/red	15	M6 <sup>1</sup>
grey	22	S3	brown/red	34	M7 <sup>1</sup>
pink	4	S4	white/black	16	M8 <sup>2</sup>
violet	23	S5	brown/black	35	M9 <sup>2</sup>
grey/pink	5	S6	grey/green	17	M10 <sup>2</sup>
red/blue	24	S7	yellow/grey	36	M11 <sup>2</sup>
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 (0.5 mm <sup>2</sup> )	13	DC 10...30 V
grey/brown	27	M1	white (0.5 mm <sup>2</sup> )	31	DC 10...30 V
white/pink	9	M2	blue (0.5 mm <sup>2</sup> )	1	0 V
pink/brown	28	M3	black (0.5 mm <sup>2</sup> )	20	0 V

<sup>1</sup> N. C. with resolution 16 Bit (4 Bit MT)

<sup>2</sup> N. C. with resolution 16 Bit or 20 Bit (4 or 8 Bit MT)

### ACCESSORIES

	Ordering code
Mounting eccentric for synchronous flange	0 070 655
Diaphragm coupling (hub 6/6 mm)	3 520 081
Diaphragm coupling (hub 10/10 mm)	3 520 088

### ORDERING INFORMATION

Type	Resolution	Supply voltage	Flange, Protection, Shaft	Interface	Connection
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>AC58</b>	<b>0010</b> 10 Bit ST <b>0012</b> 12 Bit ST <b>0013</b> 13 Bit ST <b>0014</b> 14 Bit ST <b>0360</b> 360 increments ST <sup>1</sup> <b>0720</b> 720 increments ST <sup>2</sup> <b>0412</b> 4 Bit MT+12 Bit ST <b>0812</b> 8 Bit MT+12 Bit ST <b>1212</b> 12 Bit MT+12 Bit ST	E DC 10 - 30 V	<b>S.41</b> Synchro, IP64, 6x10mm <b>S.71</b> Synchro, IP67 <sup>3</sup> , 6x10mm <b>K.42</b> Clamping, IP64, 10x19.5mm <b>K.72</b> Clamping, IP67 <sup>3</sup> , 10x19.5mm <b>K.46</b> Clamping, IP64, 9.52x19.5mm <b>K.76</b> Clamping, IP67 <sup>3</sup> , 9.52x19.5mm <b>F.42</b> Hubshaft with tether, IP64, 10x19.5mm hollow shaft <b>F.47</b> Hubshaft with tether, IP64, 12x19.5mm hollow shaft <b>F.46</b> Hubshaft with tether, IP64, 9.52x19.5mm hollow shaft <b>Q.42</b> Square, IP64, 10x19.5mm <b>Q.72</b> Square, IP67 <sup>3</sup> , 10x19.5mm <b>Q.46</b> Square, IP64, 9.52x19.5mm <b>Q.76</b> Square, IP67 <sup>3</sup> , 9.52x19.5mm	<b>PB</b> Parallel Binary <b>PG</b> Parallel Gray	<b>A</b> Cable axial 1.5 m (ST/MT) <b>B</b> Cable radial 1.5 m (ST/MT) <b>U</b> Conin 17 pole axial ccw (ST) <b>V</b> Conin 17 pole radial ccw (ST) <b>W</b> Conin 17 pole axial cw (ST) <b>Y</b> Conin 17 pole radial cw (ST) <b>A-A1-F</b> 0.1m Cable axial + 37 pole Sub-D (MT) <b>B-B1-F</b> 0.1m cable radial + 37 pole Sub-D (MT)
<sup>1</sup> with Offset 76 (value range 76...435) <sup>2</sup> with Offset 152 (value range 152...871) <sup>3</sup> Protection class IP67 not available in combination with preset key and LED display <b>Preferably available versions are printed in bold type.</b>					