



Version AX70 - Aluminum



Version AX71 - Stainless steel

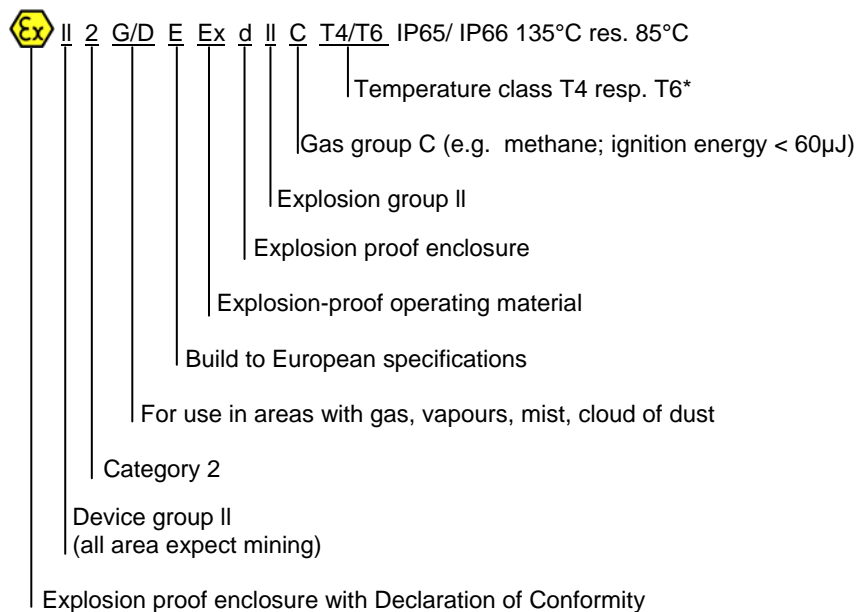
- ATEX certification for gas and dust explosion proof
- Same electrical performance as ACURO industry
- Protection class up to IP67
- Diameter only 70 mm
- Robust design
- Also available with stainless steel
- Resolution up to 29 Bit (17 Bit ST, 12 Bit MT)
- Applications:
  - enamelling production line
  - petro chemistry
  - bottling machines
  - mixers
  - silo works, mills
- Interfaces: SSI, SSI programmable, Profibus, CANopen



**ATEX**

The absolute shaft encoder line ACURO is available in explosion proof design with explosion proof enclosure "d" under AX70 and AX71 (stainless steel). The PTB has assured with the Declaration of Conformity that the AX70/71 meets the requirements of safety and health according to EN 50014 and EN 50018. Therefore it is approved in explosive areas, code „Ex II 2 G/D E Ex d II C T4/T6 IP65/ IP66 135°C resp. 85°C“. For applications under tough environmental conditions and food industry the stainless steel version AX71 is available.

**EX-CLASSIFICATION**



T6 = Highest permissible surface temperature +85°C (max. speed = 6000 U/min<sup>-1</sup>)  
 T4 = Highest permissible surface temperature +130°C(max. speed = 10000 U/min<sup>-1</sup>)

**TECHNICAL DATA  
MECHANICAL  
(for all interfaces)**

	Temperature class T4	Temperature class T6
Housing diameter	70 mm	
Shaft diameter	10 mm	
Protection class housing	IP67 or IP65	IP65
Protection class shaft	IP67 or IP64	IP64
Max. speed	10.000 min <sup>-1</sup>	6.000 min <sup>-1</sup>
Torque	≤ 1 Ncm	
Moment of inertia	ca. 20 gcm <sup>2</sup>	
Max. shaft load	axial 40 N/ radial 100 N	
Vibration resistance (IEC 68-2-6)	100 m/ s <sup>2</sup> (10 - 500 Hz)	
Shock resistance (IEC 68-2-27)	1000 m/ s <sup>2</sup> (6 ms)	
Operating temperature	-40 ...+60°C	-40 ...+40°C
Storage temperature	-25...+80°C	
Rel. Humidity	95% non-condensing	
Material shaft/ housing	Aluminium(AX70); Stainless steel(AX71)	
Masse ST/ MT	AX70 (ca. 1,4 kg); AX71 (ca. 4 kg)	

**TECHNICAL DATA  
ELECTRICAL  
Profibus; CANopen**

	Profibus	CANopen
Supply voltage	DC 10-30 V	DC 10-30 V
Current consumption ST/MT	220 mA/ 250 mA	max.250 mA
Profile/ Protocol	Profibus DP with encoder profile class C2 (programmable)	CANopen according DS 301 with encoder profile DSP 406
Output code	binary	binary
Resolution Singleturn	10 - 14 Bit	10 - 14 Bit
Resolution Multiturn	12 Bit	12 Bit
Baud rate	is automatically set within a range of 9.6 Kbit/s through 12Mbit/s	set via Bus
Bus terminating resistor	external mounting	external mounting
Device address	set via Bus	-
Node ID	-	set via Bus
Integrated special functions	Speed, acceleration, operating time	Speed, acceleration, round axis, limit values
Programmable	Resolution, Preset, Direction	Resolution, Preset, Limits value, Direction
Connection	Cable axial	Cable axial

**PIN ASSIGNMENT  
Profibus; CANopen**

Color	Profibus	CANopen
yellow	B in	CAN in+
green	A in	CAN in -
pink	B out	CAN out+
grey	A out	CAN out -
blue	GND1 (M5V <sup>1</sup> )	CAN GND in
brown	VCC1 (P5V <sup>1</sup> )	CAN GND out
white 0,5 mm	DC 10 ... 30 V	UB in
brown 0,5 mm	0 V	0 V in
Screen	Screen connected to encoder housing	

<sup>1</sup>used for power supply for an external bus termination resistor

#### TECHNISICAL DATA

#### ELECTRICAL SSI; SSI programmable

	SSI	SSI programmable
Supply voltage	DC 10-30 V	DC 10-30 V
Current consumption	220 mA/ 250 mA	max. 250 mA
Lines/ Drivers	clock and data RS422	clock and data RS422
Output code	binary or gray	binary or gray
Resolution Singleturn	10 - 17 Bit	9 - 22 Bit
Resolution Multiturn	12 Bit	12 Bit
Programmable (with WIN SSI)	-	code type, direction, output code, warning, alarm
Control input	$\overline{\text{Direction}}$	Direction, Preset 1, Preset 2
Alarm output	Alarm bit	Alarm bit
Connection	Cable axial	Cable axial

#### PIN ASSIGNEMENT

#### SSI; SSI programmable

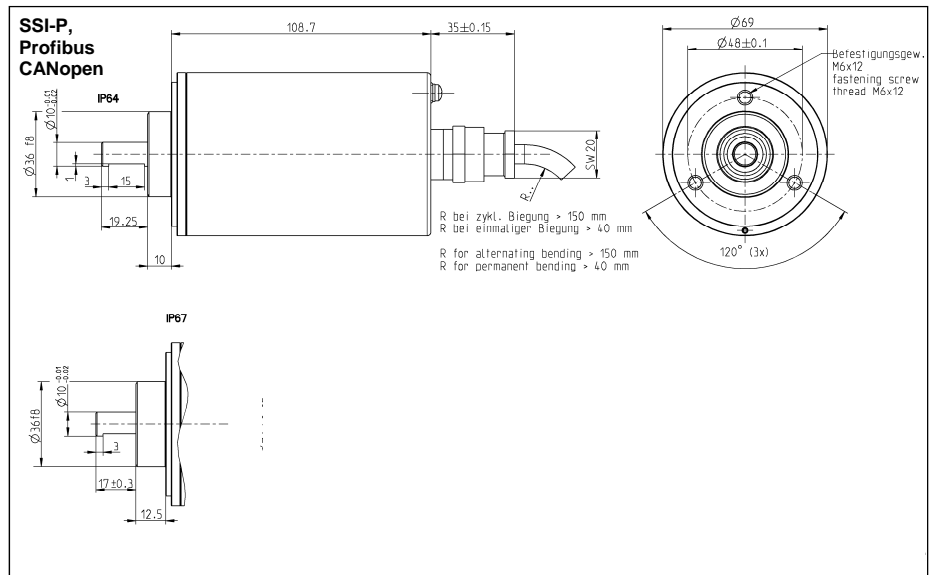
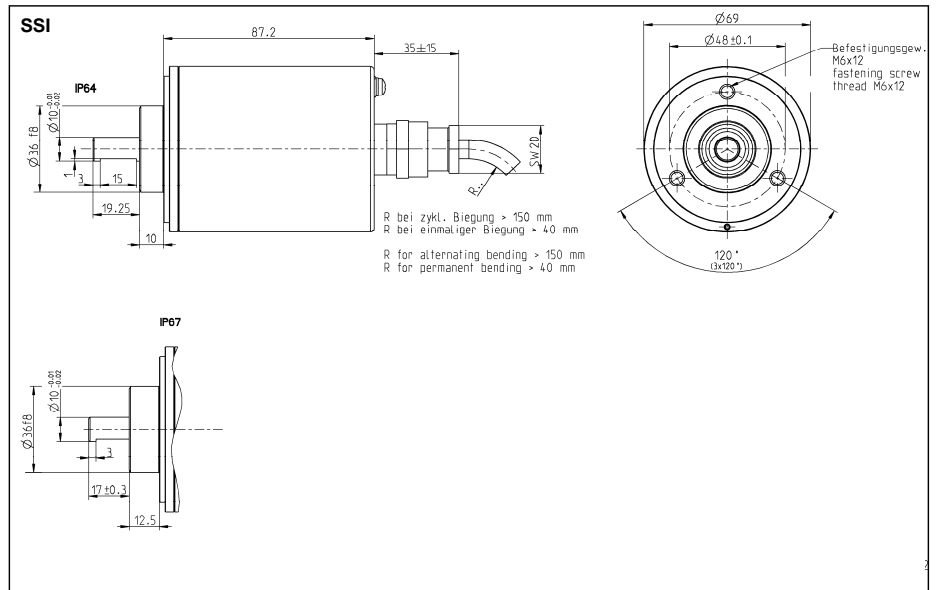
Color	No.	SSI	SSI programmable
white	6	-	RS232 RxD
brown	5	-	RS232 TxD
green	10	$\overline{\text{Clock}}$	$\overline{\text{Clock}}$
yellow	9	Clock	Clock
grey	8	$\overline{\text{Data}}$	$\overline{\text{Data}}$
pink	7	Data	Data
blue	3	$\overline{\text{Direction}}$	Direction
black	4	0 V signal output	0 V signal output
rot	1	-	Preset 1
violet	2	-	Preset 2
brown 0.5 mm	11	0 V supply voltage	0 V supply voltage
white 0.5 mm	12	10 ... 30 V	10 ... 30 V
Screen		Screen connected to the housing	

#### RECOMMENDED DATA TRANSFER RATE WITH SSI

Lead length	Clock rate
<50 m	<400kHz
<100 m	<300kHz
<200 m	<200kHz
<400 m	<100kHz

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.

**DIMENSIONED DRAWINGS**



**ACCESSORIES**

<b><u>SSI programmable</u></b>	
Technical Manual German	2 565 287 (or homepage)
Technical Manual English	2 565 289 (or homepage)
Software Win SSI	on request
<b><u>Profibus</u></b>	
GSD-file as download from our homepage	<a href="http://www.hengstler.de">www.hengstler.de</a>
Technical Manual German	2 565 090 (or homepage)
Technical Manual English	2 565 255 (or homepage)
<b><u>CANopen</u></b>	
EDS-file as download from our homepage	<a href="http://www.hengstler.de">www.hengstler.de</a>
Technical Manual German	2 565 250 (or homepage)

### ORDERING DATA AX70/ 71 with SSI

Type	Resolution	Supply voltage	Flange, Protection, Shaft	Output	Connection
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>AX70-</b> Aluminum <b>AX71-</b> Stainless steel	<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>0017</b> 17 Bit ST <b>0360</b> 360 Increments ST <sup>1</sup> <b>0720</b> 720 Increments ST <sup>2</sup> <b>1212</b> 12 Bit MT+12 Bit ST <b>1213</b> 12 Bit MT+13 Bit ST higher resolutions on request	E DC 10-30 V	<b>K.42</b> Clamping flange, IP64,10x19,5 mm <b>K.72*</b> Clamping flange, IP67, 10x19,5 mm	<b>SB</b> SSI Binary <b>SG</b> SSI Gray	<b>A-F0</b> Cable axial 5 m <b>A-K0</b> Cable axial 10 m

\* When resolution > 14 Bit → max. clock rate = 178 kHz  
 \*\* only with temperature class 4; IP67 is necessary for use in areas with cloud of dust  
<sup>1</sup> with Offset 76 (value range 76...435)  
<sup>2</sup> with Offset 152 (value range 152...871)

### ORDERING DATA AX70/ 71 with SSI programmable

Type	Resolution	Supply voltage	Flange, Protection, Shaft	Output	Connection
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>AX70-</b> Aluminum <b>AX71-</b> Stainless steel	<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>0017</b> 17 Bit ST <b>1212</b> 12 Bit MT+12 Bit ST <b>1213</b> 12 Bit MT+13 Bit ST <b>1214</b> 12 Bit MT+14 Bit ST <b>1217</b> 12 Bit MT+17 Bit ST higher resolutions on request	E DC 10-30 V	<b>K.42</b> Clamping flange, IP64,10x19,5 mm <b>K.72*</b> Clamping flange, IP67, 10x19,5 mm	<b>SP</b> SSI programmable	<b>A-F0</b> Cable axial 5 m <b>A-K0</b> Cable axial 10 m

\*only with temperature class 4; IP67 is necessary for use in areas with clouds of dust

### ORDERING DATA AX70/ 71 with Profibus

Type	Resolution	Supply voltage	Flange, Protection, Shaft	Output	Connection
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>AX70-</b> Aluminum <b>AX71-</b> Stainless steel	<b>0010</b> 10 Bit ST <b>0012</b> 12 Bit ST <b>0013</b> 13 Bit ST <b>0014</b> 17 Bit ST <b>1212</b> 12 Bit MT+12 Bit ST <b>1213</b> 12 Bit MT+13 Bit ST <b>1214</b> 12 Bit MT+14 Bit ST	E DC 10-30 V	<b>K.42</b> Clamping flange, IP64,10x19,5 mm <b>K.72*</b> Clamping flange, IP67, 10x19,5 mm	<b>DP</b> Profibus	<b>A-F0</b> Cable axial 5 m <b>A-K0</b> Cable axial 10 m

\*only with temperature class 4; IP67 is necessary for use in areas with clouds of dust

### ORDERING DATA AX70/ 71 with CANopen

Type	Resolution	Supply voltage	Flange, Protection, Shaft	Output	Connection
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>AX70-</b> Aluminum <b>AX71-</b> Stainless steel	<b>0010</b> 10 Bit ST <b>0012</b> 12 Bit ST <b>0013</b> 13 Bit ST <b>0014</b> 17 Bit ST <b>1212</b> 12 Bit MT+12 Bit ST <b>1213</b> 12 Bit MT+13 Bit ST <b>1214</b> 12 Bit MT+14 Bit ST	E DC 10-30 V	<b>K.42</b> Clamping flange, IP64,10x19,5 mm <b>K.72*</b> Clamping flange, IP67, 10x19,5 mm	<b>OL</b> CANopen	<b>A-F0</b> Cable axial 5 m <b>A-K0</b> Cable axial 10 m

\*only with temperature class 4; IP67 is necessary for use in areas with clouds of dust