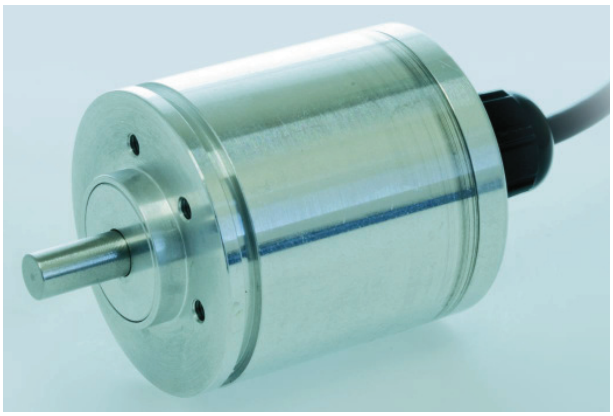
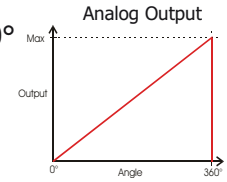
SENSORS & JOYSTICKS & ENGINEERING

Datasheet

Infiniturn® Encoder
mab40AP



- Configurable angular rangeand rotational direction
  Type mab36APS (Singleturn): up to 360°
  Type mab36APM (Multiturn): up to 200x360°
- 12 Bit resolution
- Analog Output: 0-10V, 4-20mA
- Supply voltage: 24V
- 2 Precision ball bearing



The starting and end angle as well as rotary sense can be programmed in your application by Programm lines. On the Type mab40APM the counter reading of up to 200 turns is filed in a non-volatile memory chip.

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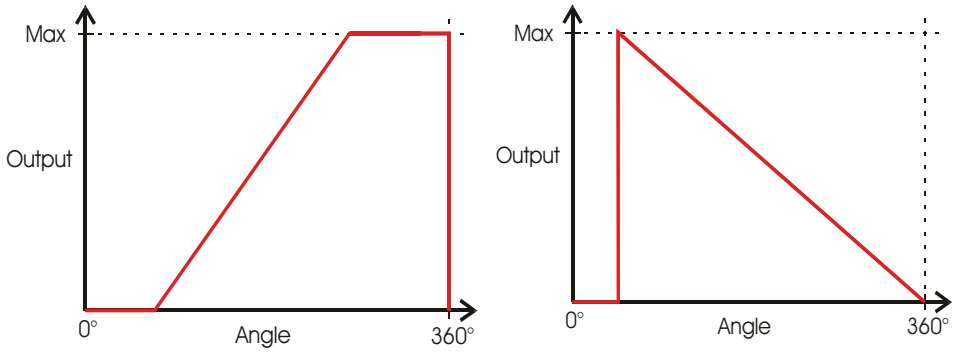
Infiniturn® Encoder
mab40AP

Possible combinations

Type	Resolution	Supply voltage	output
MAB40AP	12	5V	0-5V, ratiometric
	12	12V (9-30V)	0-5V
	12	24V (15-30V)	0-5V, 0-10V
	12	12V, 24V (8-30V)	4-20mA
	12	12V, 24V (8-30V)	0-20mA

Please note:
Not every combination is possible. Please refer to above table.

All sensor can be programmed by your self: Angles, output signal, signal direction and so on.



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October 2008

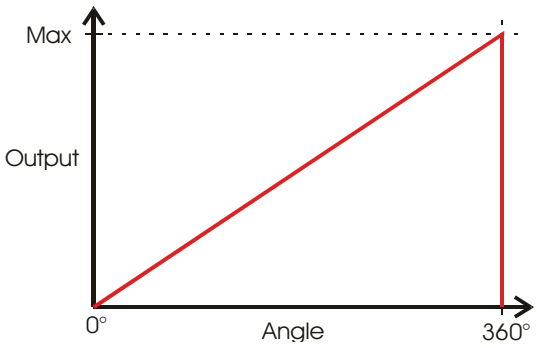
Infiniturn® Encoder
mab40AP

Standard Options and Order Description

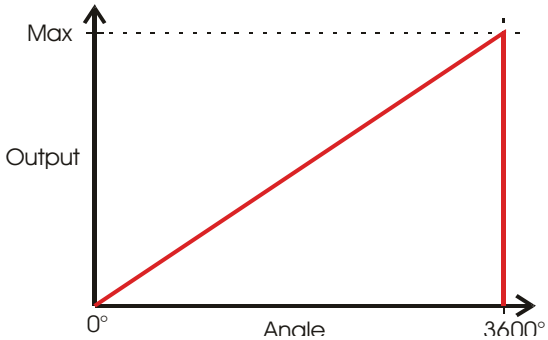
Type	Singleturn Multiturn	Resolution Speed	Supply Voltage	Output Signal	Order description
MAB40AP	S = Singleturn	12 Bit	24V	0 - 10V	MAB40APS 12 2410
				4 - 20mA	MAB40APS 12 2442
	M = Multiturn			0 - 10V	MAB40APM 12 2410
				4 - 20mA	MAB40APM 12 2442

All Standard Versions have an 360° angle and the signal direction is CW (clockwise) with 6 Pole Cable.
For programming the Sensor, please see our application note.

mab40aps standard analog output 360° cw



mab40apm standard analog output 3600° cw



Our speciality are customs solutions, economically priced on small series.
Mechanical: Special shaft, mounting of gear wheels and other mechanical parts.

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Please note
The specifications and informations in this datasheet cannot consider all special demands that are caused by the application. Because of this, they are no general description of the properties of the product. Please also consider our detailed specifications.

SENSORS & JOYSTICKS & ENGINEERING

MEGA MOTIVE

Infiniturn® Encoder
mab40AP

Electrical Specifications

mab40AP S	
Electrical angle	45° - 360°
Independent linearity tolerance	± 0,3%
Resolution	4096 Steps (360°) = 12 Bit e.g. 45° = 9 Bit
Updaterate position	1,1 ms
mab40AP M	
Electrical angle	45° -X x 360° (e.g. 200x 360°)
Independent linearity tolerance	± 0,3%
Resolution	4096 Steps (360°) = 12 Bit e.g. 360° = 9 Bit
Updaterate position	3,7 ms
Voltage Output	
OutputSignal	0-10V
Supply voltage	15 - 30 VDC
Power consumtion	<20mA (no load)
Output resistance	>5 KΩ
Current Output	
OutputSignal	4-20mA
Supply voltage	8 - 30 VDC
Power consumtion	<20mA (no load)
Output resistance	>500 Ω

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SENSORS & JOYSTICKS & ENGINEERING

MEGA MOTIVE

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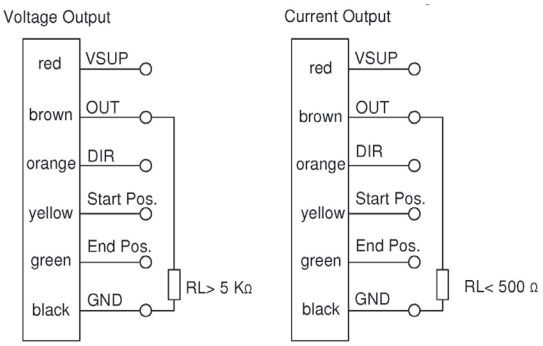
Mechanical Specifications

Housing	chormed aluminium	
Material Shaft	stainless steel	
Bearing	2 precision ball bearing	
Protection Class	IP67	
Operating temperature	-30 ... +80° C	
Storage temperature	-30 ... +80° C	
Dimensions	pls. find drawing at page 6	
Ø Shaft	Ø 6mm	(*1)
Max. rotational speed	6.000 turn/min	
Life expectancy	>50 Mio. turns	
weight	approx. 70 g	

Cable

6xAWG26 shielded Ø 5,2mm 1,00m long (*1)



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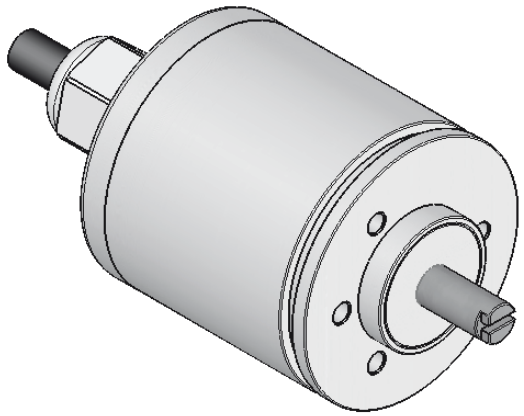
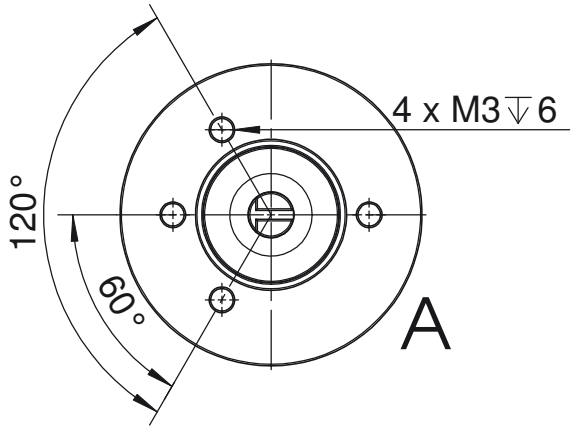
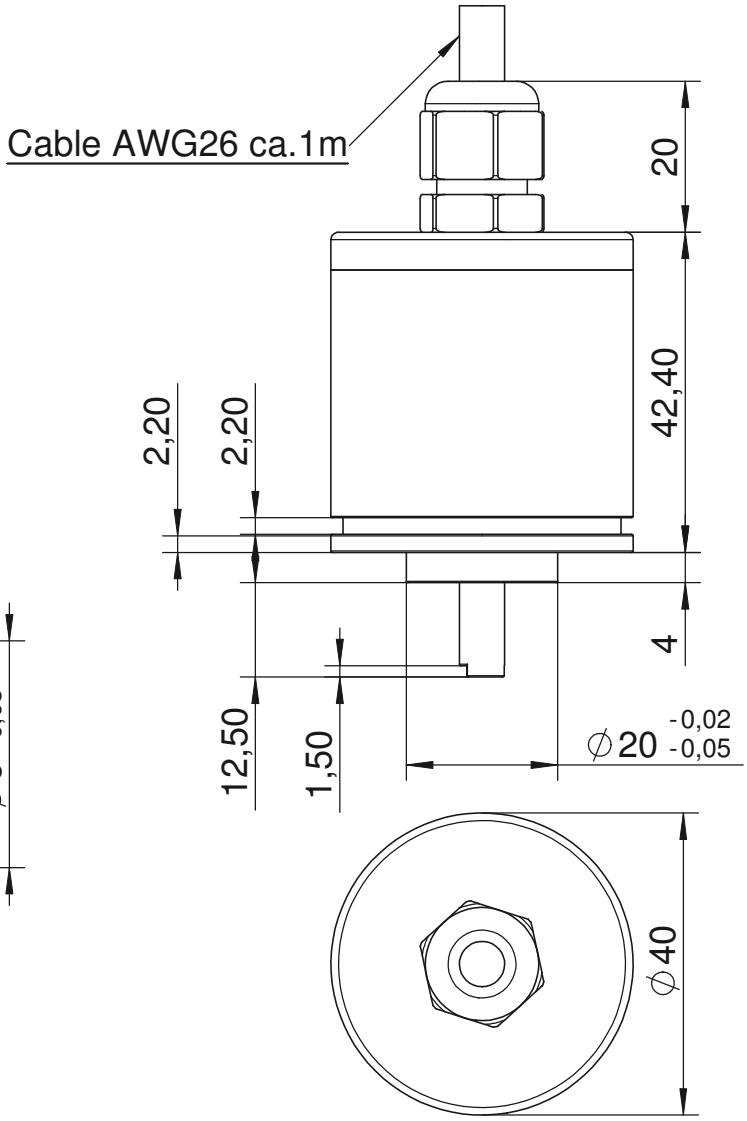
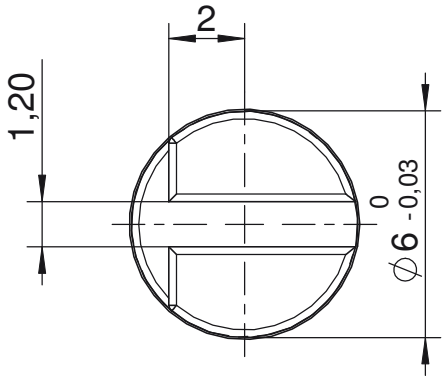
(*1) Other specifications on request









VIEW A
SCALE 5 : 1

General Tolerances DIN 7168mH	Form and Coat Tolerances DIN/ISO 1101	Edges Dimension DIN 6784	Surface DIN/ISO 1302
	◎ 0,1	+0 -0,1 / - 0 +0,1	w
	▱ 0,05		

Index	Modification	Date	Name

	Date	Name
Drw.	23.10.2008	Bahr
Chkd..	23.10.2008	Bahr
Norm		

Weight [g]	
Material	
Surface	

Title

DB R40

00057_R40_komplett_4_00_00

Project Number	Sheet 1
00057	of 1
Format DINA4	Scale: 1:1

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MEGA MOTIVE

Application Note

mab40APS, mab40APM

How to program the mab40APS and mab40APM

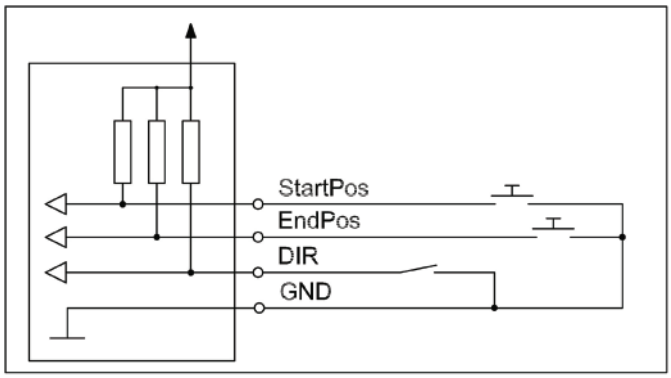

Figure 1: Programming

1. Factory Setting

Singleturn version mab40APS:
The analog output signal (0-10V / 4-20mA) rise at clockwise rotation (CW) over a full turn of 360°

Multiturn version mab40APM:
The analog output signal (0-10V / 4-20mA) rise at clockwise rotation (CW) over 10 revolutions. Internal pull-up resistors keep the control lines at a defined high level. Further movement after reaching the full scale value will cause the encoder to toggle down to the minimum value and continue the output signal periodically.

2. Reset and zero point setting

Please note: The sequentional order of the follwoing programm steps is essential!
Incorrect order or incomplete programming may cause undefined sensor states. In this case the sensor must be rested.

To reset the Sensor push the buttoms StartPos and EndPos for more than 2 seconds (pls. see figure 2).
This settles the zero value (0V / 4mA) at the current sensor position.

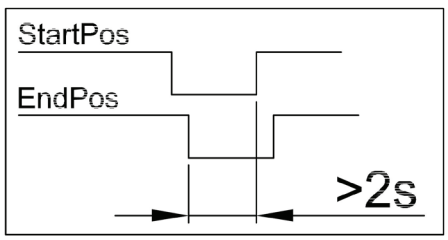

Figure 2: Timing reset

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Application Note

mab40APS, mab40APM

3. Setting the rational direction

A low level at the DIR line will change the output signal to increase in CCW-direction.
Please note: Modifications of the DIR line are updated on reset only.

4. Setting the Start Position and the End Position

4.1. Reset the sensor
4.2. Move the sensor to the Start Position
4.3. Press the Start buttom for more than 2 seconds
Now the output value is set to minimum
4.4. Move the sensor to End Position
4.5. Press the End buttom for more than 2 seconds
Now the output value is set to maximum.

Please note: The above sequence has to be completed from 4.1. to 4.5.

The sensor ist now programmed according to the angle between Start and End Position. When the sensor is moved beyond end Position, the output signal will continue periodically after reaching the next full revolution.
Between End Position and next full revolution the remaining angle is parted in two sections.
During the first section the max. value is output.
During the second section the min. value is output (pls. see figure 3).

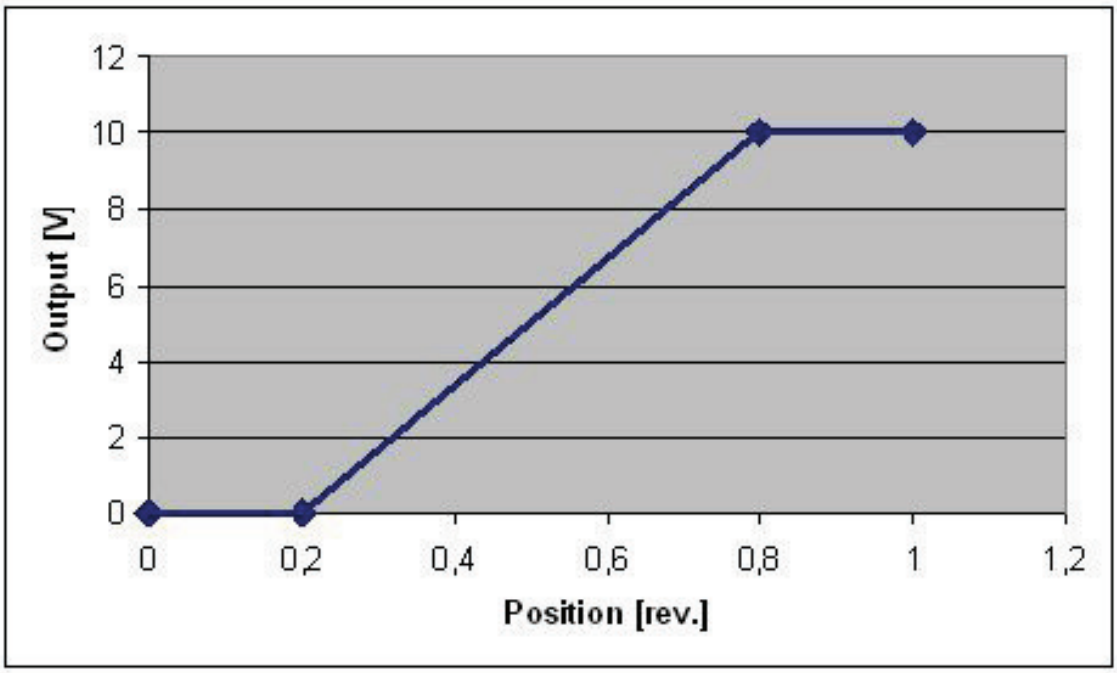

Figure 3:
Example for the output voltage for a Start Position of 72° and an End Position of 288°

Security advice:
The programming of the sensor has to be done by authorized personnel only!

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