

# EMA 50 A / B / BY BIT PARALLEL - SSI

SOLID SHAFT MAGNETIC SINGLETURN ABSOLUTE ENCODER



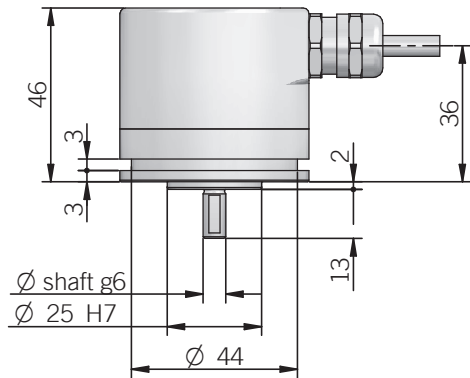
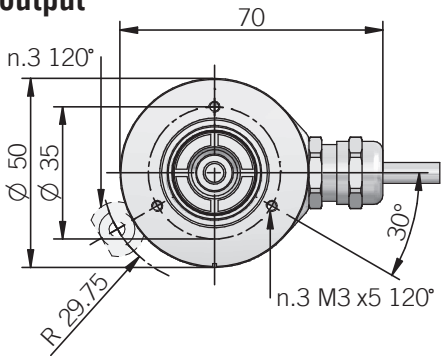
## Specifications

Singleturn absolute magnetic encoder size 50 mm with solid shaft

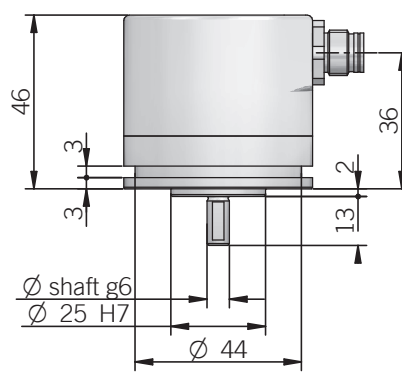
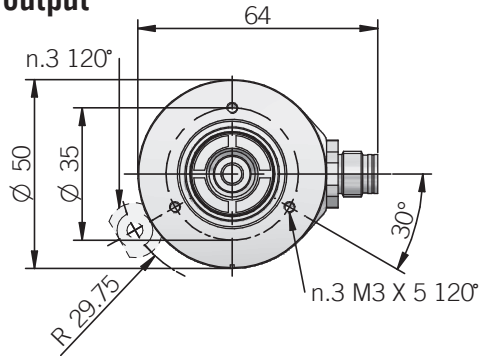
- Resolution up to 13 bit (8192 ppr)
- Power supply up to +30 VDC with SSI or Bit Parallel as electronic interface
- Code reset for easy setup
- Cable or M12 output, other connectors available on cable end
- Sturdy construction (separated chambers)
- Solid shaft diameter up to 10 mm
- IP 67 enclosure rating
- Mounting by synchronous flange

ORDERING CODE	EMA	50B	1024	G	8/30	N	N	X	6	X	3	P	R	.XXX
<p><b>SERIES</b> magnetic singleturn absolute encoder <b>EMA</b></p> <p><b>MODEL</b> synchronous flange ø 25 mm <b>50A</b> synchronous flange ø 30 mm <b>50B</b> synchronous flange ø 25 mm anodized <b>50BY</b></p> <p><b>RESOLUTION</b> (N / C / R / U / P interface) ppr from <b>2</b> to <b>4096</b> (S interface) ppr from <b>2</b> to <b>8192</b></p> <p><b>CODE TYPE</b> binary <b>B</b> gray <b>G</b> (no powers of 2) binary offset code (0-XXX) <b>BC</b> (no powers of 2) gray offset code (0-XXX) <b>GC</b></p> <p><b>POWER SUPPLY</b> 5 V DC <b>5</b> 8 ... 30 V DC <b>8/30</b></p> <p><b>ELECTRONIC INTERFACE</b> NPN <b>N</b> NPN open collector <b>C</b> PNP <b>R</b> PNP open collector <b>U</b> push pull <b>P</b> Serial Synchronous Interface - SSI <b>S</b></p> <p><b>LOGIC</b> negative <b>N</b> positive <b>P</b></p> <p><b>OPTIONS</b> to be reported if not used <b>X</b> reset <b>ZE</b> (with binary or offset binary code) strobe <b>S</b> (with binary or offset binary code) strobe and code reset <b>SIZE</b></p> <p><b>SHAFT DIAMETER</b> mm <b>6</b> mm <b>8</b> 9,52 (3/8") mm <b>9</b> mm <b>10</b></p> <p><b>ENCLOSURE RATING</b> IP 65 <b>X</b> IP 67 <b>S</b></p> <p><b>MAX ROTATION SPEED</b> 3000 rpm <b>3</b></p> <p><b>OUTPUT TYPE</b> cable (standard length 0,5 m) <b>P</b> (S interface) M12 connector <b>M12</b> <i>female connector included, without female please add 162 as variant code</i></p> <p><b>DIRECTION TYPE</b> axial <b>A</b> radial <b>R</b></p> <p><b>VARIANT</b> custom version <b>XXX</b></p>														

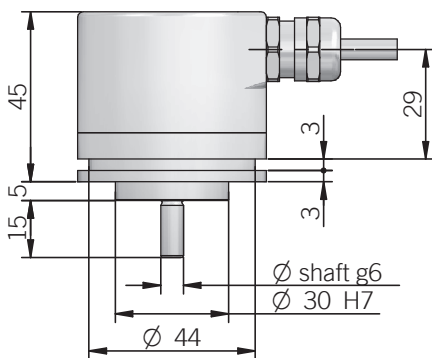
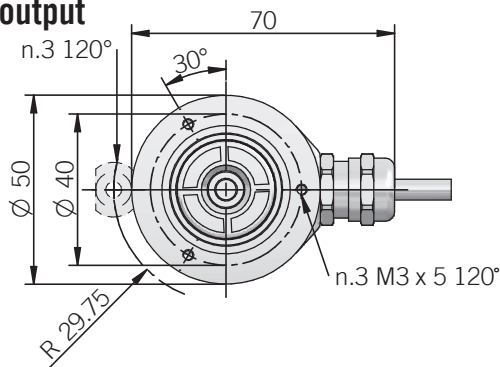
**EMA 50 A  
radial cable  
output**



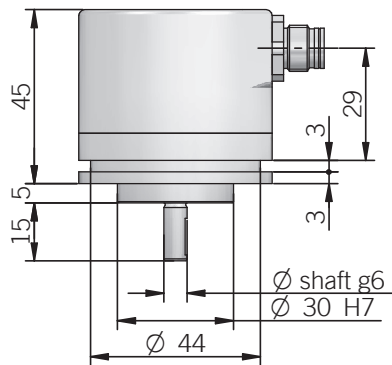
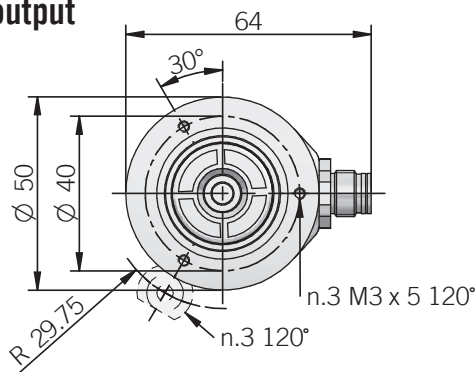
**EMA 50 A  
radial M12  
output**



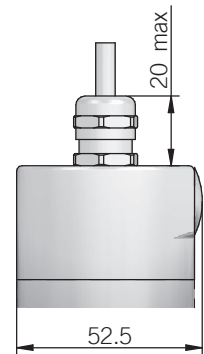
**EMA 50 B / BY  
radial cable  
output**



**EMA 50 B / BY  
radial M12  
output**



**Axial output**



### ELECTRICAL SPECIFICATIONS

<b>Resolution</b>	from 2 to 4096 ppr with N / C / P / R / U interface from 2 to 8192 ppr with S interface
<b>Power supply</b>	5 = 4,5 ... 5,5 V DC 8/30 = 7,6 ... 31,5 V DC
<b>Current consumption without load</b>	< 100 mA
<b>Max load current</b>	20 mA / channel (push pull) 40 mA / channel (NPN / PNP)
<b>Output type*</b>	NPN / NPN open collector / PNP / PNP open collector / push pull / RS-422
<b>Auxiliary inputs (U/D - Reset)</b>	active high (+Vdc) <i>connect to 0V if not used / Reset tmin 150 ms</i>
<b>Max frequency</b>	output: 25 kHz LSB (Bit parallel) clock input: 100 kHz ... 1 MHz (SSI)
<b>SSI monostable time (Tm)</b>	20 µs
<b>SSI pause time (Tp)</b>	> 35 µs
<b>Strobe time</b>	20 µs
<b>Accuracy</b>	± 0.35° typical
<b>SSI frame</b>	(MSB ... LSB) 13 bit data length
<b>Counting direction</b>	decreasing clockwise (shaft view)
<b>Start-up time</b>	150 ms
<b>Electromagnetic compatibility</b>	IEC 61000-6-2 IEC 61000-6-4

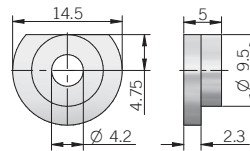
\*output levels according to power supply, for further details please see under Technical basics section

### MECHANICAL SPECIFICATIONS

<b>Shaft diameter</b>	∅ 6 / 8 / 9,52 (3/8") / 10 mm
<b>Enclosure rating</b>	X = IP 65 (IEC 60529) S = IP 67 (IEC 60529)
<b>Max rotation speed</b>	3000 rpm continuous / 5000 rpm instantaneous
<b>Max shaft load</b>	30 N axial / 50 N radial
<b>Shock</b>	50 G, 11 ms (IEC 60068-2-27)
<b>Vibration</b>	20 G, 10 ... 2000 Hz (IEC 60068-2-6)
<b>Moment of inertia</b>	0,5 x 10 <sup>-6</sup> kgm <sup>2</sup>
<b>Starting torque (at +20°C / +68°F)</b>	< 0,03 Nm
<b>Body material</b>	EN-AW 2011 aluminum
<b>Shaft material</b>	1.4305 / AISI 303 stainless steel
<b>Housing material</b>	EN-AW 2011 aluminum
<b>Bearings</b>	2 ball bearings
<b>Bearings life</b>	10 <sup>9</sup> revolutions
<b>Operating temperature</b>	-25° ... +85°C (-13° ... +185°F)
<b>Storage temperature</b>	-25° ... +85°C (-13° ... +185°F)
<b>Weight</b>	200 g (7,05 oz)

### ACCESSORIES

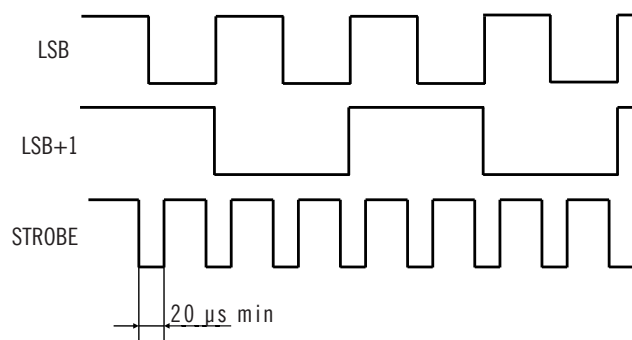
set n.3 fixing clamps  
P/N 94080001



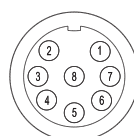
### BIT PARALLEL CONNECTIONS

Function	Gray / Binary	Cable output
bit 1 (LSB)	G <sup>0</sup> / B <sup>0</sup>	green
bit 2	G <sup>1</sup> / B <sup>1</sup>	yellow
bit 3	G <sup>2</sup> / B <sup>2</sup>	blue
bit 4	G <sup>3</sup> / B <sup>3</sup>	brown
bit 5	G <sup>4</sup> / B <sup>4</sup>	orange or pink
bit 6	G <sup>5</sup> / B <sup>5</sup>	white
bit 7	G <sup>6</sup> / B <sup>6</sup>	grey
bit 8	G <sup>7</sup> / B <sup>7</sup>	violet
bit 9	G <sup>8</sup> / B <sup>8</sup>	grey / pink
bit 10	G <sup>9</sup> / B <sup>9</sup>	white / green
bit 11	G <sup>10</sup> / B <sup>10</sup>	brown / green
bit 12	G <sup>11</sup> / B <sup>11</sup>	white / yellow
0 Volt	/	black
+ Vdc	/	red
U / D	/	red / blue
RESET	/	yellow / brown
STROBE	/	white / grey
⊥	/	shield

### STROBE TIMING



M12 connector (8 pin)  
M12 A coded  
solder side view FV



### SSI CONNECTIONS

Function	Cable output	8 pin M12 connector
+ Vdc	red	8
0 Volt	black	5
data +	green	3
data -	brown	2
clock +	yellow	4
clock -	orange or pink	6
U / D	red / blue	7
RESET	white	1
⊥	shield	housing