

### MAIN FEATURES

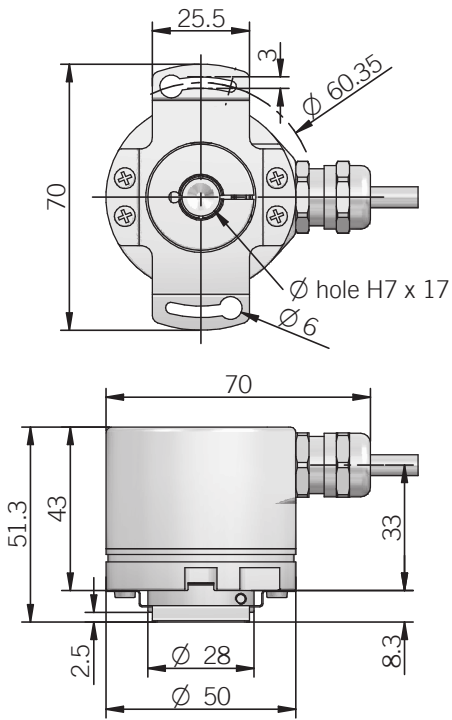
Singleturn absolute magnetic encoder size 50 mm with blind hollow shaft

- Resolution up to 13 bit (8192 ppr)
- Power supply up to +30 V DC with SSI or Bit Parallel as electrical interface
- Code reset for easy setup
- Cable or M12 output, other connectors available on cable end
- Sturdy construction (separated chambers)
- Blind hollow shaft diameter up to 15 mm
- IP 67 enclosure rating
- Mounting by stator coupling or torque pin

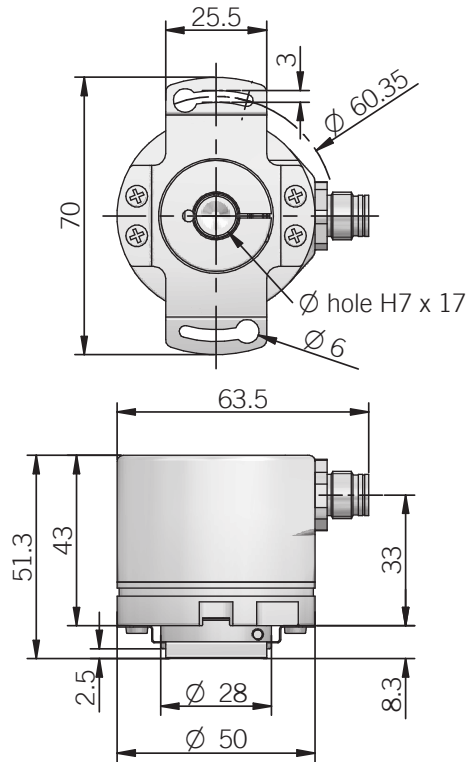


ORDERING CODE	EMA	50F	1024	G	8/30	N	N	X	15	X	3	M12	R	.162	+XXX
<b>SERIES</b> magnetic singleturn absolute encoder	EMA														
<b>MODEL</b> blind hollow shaft with stator coupling blind hollow shaft with torque pin		50F 50G													
<b>RESOLUTION</b> (N / C / R / U / P interface) ppr from (S interface) ppr from			2 to 4096 2 to 8192												
<b>CODE TYPE</b> binary gray (no powers of 2) binary offset code (0-XXX) (no powers of 2) gray offset code (0-XXX)				B G BC GC											
<b>POWER SUPPLY</b> 5 V DC 8 ... 30 V DC				5 8/30											
<b>ELECTRICAL INTERFACE</b> NPN NPN open collector PNP PNP open collector push pull Serial Synchronous Interface - SSI				N C R U P S											
<b>LOGIC</b> negative positive				N P											
<b>OPTIONS</b> to be reported if not used reset with external input (with binary code) strobe (with binary code) strobe and reset with external input				X ZE S SZE											
<b>BORE DIAMETER</b> mm mm diameters 5 / 6 / 8 / 10 / 12 mm with optional shaft adapter, see Accessories				14 15											
<b>ENCLOSURE RATING</b> IP 65 IP 67				X S											
<b>MAX ROTATION SPEED</b> 3000 rpm				3											
<b>OUTPUT TYPE</b> cable (standard length 0,5 m) preferred cable lengths 1,5 / 2 / 3 / 5 / 10 m, to be added after DIRECTION TYPE (eg. PR5) (S interface) M12 male connector				P M12											
<b>DIRECTION TYPE</b> axial radial				A R											
<b>MATING CONNECTOR</b> mating connector not included to be reported only with connector output (eg. M12R.162), for mating connector see Accessories				.162											
<b>VARIANT</b> custom version				XXX											

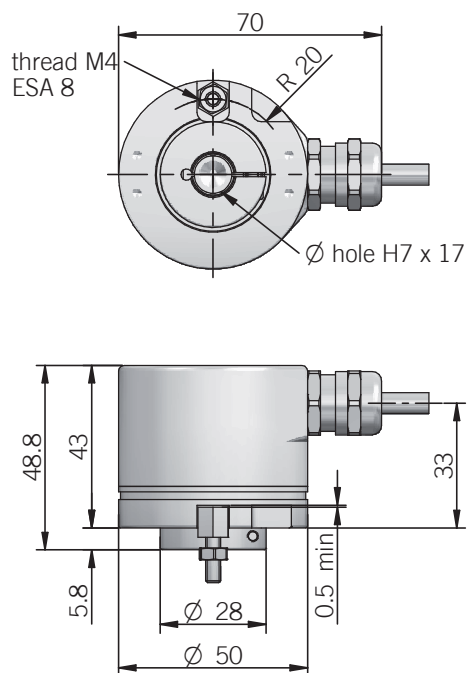
**50 F**  
radial cable output



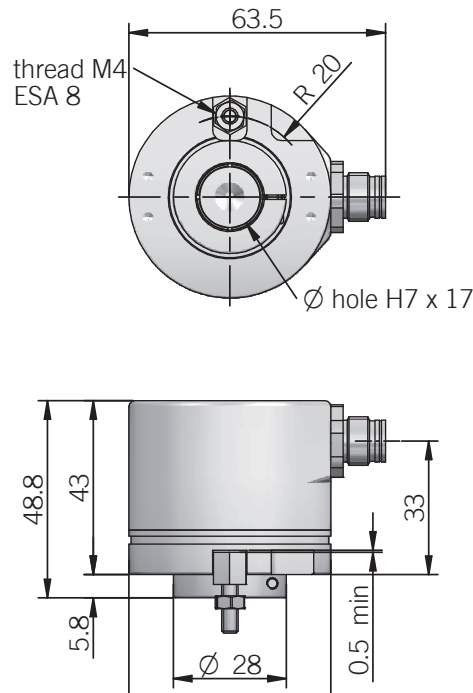
**50 F**  
radial M12 output



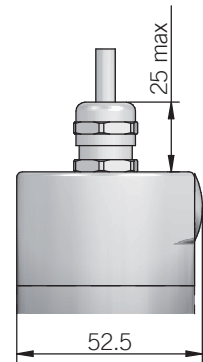
**50 G**  
radial cable output



**50 G**  
radial M12 output



**Axial output**



torque pin is included in model G, for mounting instruction please refer to product installation notes

recommended mating shaft tolerance g6  
dimensions in mm

## ELECTRICAL SPECIFICATIONS

<b>Resolution</b>	from 2 to 4096 ppr (N / C / P / R / U interface) from 2 to 8192 ppr (S interface)
<b>Power supply<sup>1</sup></b>	5 = 4,5 ... 5,5 V DC 8/30 = 7,6 ... 31,5 V DC (reverse polarity protection)
<b>Current consumption without load</b>	< 100 mA
<b>Max load current</b>	P = 20 mA / channel N / C / R / U = 40 mA / channel
<b>Electrical interface<sup>2</sup></b>	NPN / PNP open collector (ULN2003A) PNP / PNP open collector (TD62783) push pull (iC-DL) RS-422 (LTC1690 or similar)
<b>Auxiliary inputs (U/D - RESET)</b>	active high (+V DC) connect to 0 V if not used / RESET t <sub>min</sub> 150 ms
<b>Max frequency</b>	output: 25 kHz LSB (Bit parallel) clock input: 100 kHz ... 1 MHz (SSI)
<b>Code type</b>	binary or gray
<b>SSI monostable time (T<sub>m</sub>)</b>	20 μs
<b>SSI pause time (T<sub>p</sub>)</b>	> 35 μs
<b>Strobe time</b>	20 μs
<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>Accuracy</b>	± 0,35° typical
<b>Electromagnetic compatibility</b>	according to 2014/30/EU directive
<b>RoHS</b>	according to 2011/65/EU directive
<b>UL / CSA</b>	certificate n. E212495

<sup>1</sup> as measured at the transducer without cable influences

<sup>2</sup> for further details refer to OUTPUT LEVELS on TECHNICAL BASICS section

<sup>3</sup> maximum load for static usage

<sup>4</sup> measured on the transducer flange

<sup>5</sup> condensation not allowed

## BIT PARALLEL CONNECTIONS

Function	Gray / Binary	Cable
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 V	/	black
+ V DC	/	red
U / D	/	red / blue
RESET	/	yellow / brown
STROBE	/	white / grey
⊥	/	shield

## MECHANICAL SPECIFICATIONS

<b>Bore diameter</b>	∅ 14 / 15 mm ∅ 5 / 6* / 8* / 10* / 12* mm * with optional shaft adapter, please refer to Accessories
<b>Enclosure rating</b>	X = IP 65 (IEC 60529) S = IP 67 (IEC 60529)
<b>Max rotation speed</b>	3000 rpm continuous
<b>Max shaft load<sup>3</sup></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>	4 x 10 <sup>-6</sup> kgm <sup>2</sup> (95 x 10 <sup>-6</sup> lbf <sup>2</sup> )
<b>Starting torque (at +20°C / +68°F)</b>	< 0,03 Nm (4,25 Ozin)
<b>Bearing stage material</b>	EN-AW 2011 aluminum
<b>Shaft material</b>	1.4305 / AISI 303 stainless steel
<b>Shaft material</b>	1.4305 / AISI 303 stainless steel
<b>Housing material</b>	EN-AW 2011 aluminum
<b>Bearings</b>	n.2 ball bearings
<b>Bearings life</b>	10 <sup>9</sup> revolutions
<b>Operating temperature<sup>4,5</sup></b>	-25° ... +85°C (-13° ... +185°F)
<b>Storage temperature<sup>5</sup></b>	-25° ... +85°C (-13° ... +185°F)
<b>Fixing torque for collar clamping</b>	1 Nm (142 Ozin) recommended
<b>Weight</b>	200 g (7,05 oz)

## SSI CONNECTIONS

Function	Cable	8 pin M12
+ V DC	red	8
0 V	black	5
DATA +	green	3
DATA -	brown or grey	2
CLOCK +	yellow	4
CLOCK -	orange or pink	6
U / D	red / blue	7
RESET	white	1
⊥	shield	housing

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



## STROBE TIMING

