

# EAM 58 F - 63 F / G BIT PARALLEL - SSI

## BLIND HOLLOW SHAFT MULTITURN ABSOLUTE ENCODER



### Specifications

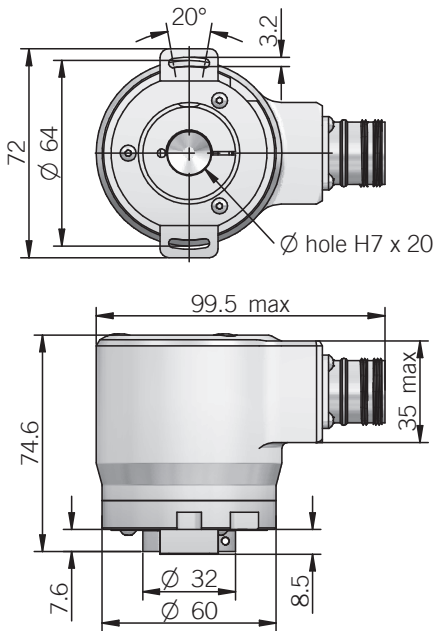
Industry standard multiturn absolute encoder for factory automation applications.

- Optical sensor technology (OptoASIC + gears)
- Blind hollow shaft diameter up to 15 mm
- Resolution up to 27 bit (13 bit single turn (8192 ppr) + 14 bit multiturn (16384 turns))
- Power supply up to +28 VDC with Bit Parallel or SSI as electronic interface
- Mounting by stator coupling, spring or anti-rotation pin
- Cable or connector output

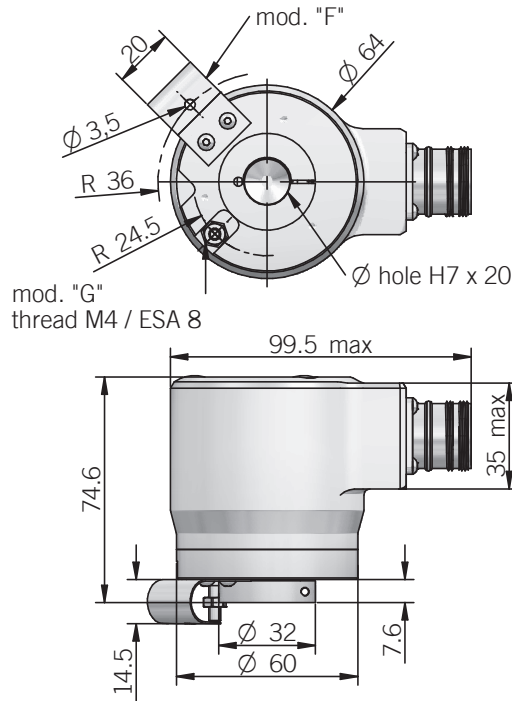
ORDERING CODE	EAM	63G	R	512 / 512	G	8/28	P	P	X	8	X	3	PD	R	.XXX
<b>BIT PARALLEL</b>															
<b>SERIES</b> multiturn absolute encoder <b>EAM</b>															
<b>MODEL</b> blind hollow shaft with stator coupling <b>58F</b> blind hollow shaft with spring <b>63F</b> blind hollow shaft with anti-rotation pin <b>63G</b>															
rev. 2.0 <b>R</b>															
<b>MULTITURN RESOLUTION</b> (powers of 2) turns from 2 to 16384															
<b>SINGLETURN RESOLUTION</b> (powers of 2) ppr from 2 to 8192															
<b>CODE TYPE</b> binary <b>B</b> gray <b>G</b>															
<b>POWER SUPPLY</b> 8 ... 28 V DC <b>8/28</b>															
<b>ELECTRONIC INTERFACE</b> push-pull <b>P</b>															
<b>LOGIC</b> negative <b>N</b> positive <b>P</b>															
<b>OPTIONS</b> latch <b>L</b> to be reported if not used <b>X</b>															
<b>BORE DIAMETER</b> mm <b>8</b> (9,52mm 3/8") mm <b>9</b> mm <b>10</b> mm <b>12</b> mm <b>14</b> mm <b>15</b>															
<b>ENCLOSURE RATING</b> IP 54 <b>X</b>															
<b>MAX ROTATION SPEED</b> 3000 rpm <b>3</b>															
<b>OUTPUT TYPE</b> (up to 13 bit as total resolution) 16 cores cable (standard length 1,5 m) <b>PD</b> (from 14 to 27 bit as total resolution or with latch option) 32 cores cable (standard length 1,5 m) <b>PE</b> (up to 13 bit as total resolution) 19 pin MIL connector <b>MA</b> (from 14 to 27 bit as total resolution) 32 pin MIL connector <b>ME</b> female connector included, without female please add 162 as variant code															
<b>DIRECTION TYPE</b> axial <b>A</b> radial <b>R</b>															
<b>VARIANT</b> custom version <b>XXX</b>															

ORDERING CODE	EAM	63G	R	512 / 512	G	8/28	S	X	X	8	X	3	PC	R	.XXX
<b>SERIES</b> multiturn absolute encoder	EAM														
<b>MODEL</b> blind hollow shaft with stator coupling blind hollow shaft with spring blind hollow shaft with anti-rotation pin		58F 63F 63G													
			rev. 2.0												
<b>MULTITURN RESOLUTION</b> (powers of 2) turns from				2	16384										
<b>SINGLETURN RESOLUTION</b> (powers of 2) ppr from				2	8192										
<b>CODE TYPE</b> binary gray					B G										
<b>POWER SUPPLY</b> 8 ... 28 V DC						8/28									
<b>ELECTRONIC INTERFACE</b> Serial Synchronous Interface - SSI							S								
<b>LOGIC</b> to be reported								X							
<b>OPTIONS</b> to be reported									X						
<b>BORE DIAMETER</b> mm (9,52mm 3/8")										8 9 10 12 14 15					
<b>ENCLOSURE RATING</b> IP 54										X					
<b>MAX ROTATION SPEED</b> 3000 rpm												3			
<b>OUTPUT TYPE</b> cable (standard length 1,5 m) 7 pin MIL connector 12 pin M23 connector 8 pin M12 connector													PC MC HA M12		
<i>female connector included, without female please add 162 as variant code</i>															
<b>DIRECTION TYPE</b> axial radial														A R	
<b>VARIANT</b> custom version															XXX

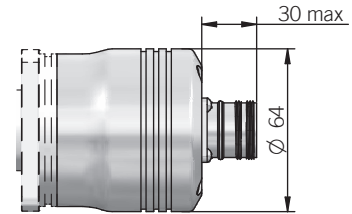
## EAM 58 F



## EAM 63 F - G



## Dimensions with axial output



dimensions in mm

ELECTRICAL SPECIFICATIONS	
<b>Multiturn resolution</b>	from 2 to 16384 turns
<b>Singleturn resolution</b>	from 2 to 8192 ppr
<b>Power supply</b>	8/28 = 7,6 ... 29,4 V DC
<b>Current consumption without load</b>	100 mA
<b>Max load current</b>	20 mA / channel
<b>Output type</b>	P = push pull (active short circuit protection)* S = RS-422
<b>Auxiliary inputs (U/D - Latch)</b>	active high (+Vdc) connect to 0V if not used
<b>Max frequency</b>	output: 25 kHz LSB (Bit Parallel ) clock input: 100 kHz ... 1 MHz (SSI)
<b>SSI monostable time (Tm)</b>	18 $\mu$ s
<b>SSI pause time (Tp)</b>	> 35 $\mu$ s
<b>SSI frame</b>	Tree format (MSB ... LSB) up to 12 bit multiturn = lenght 25 bit (12MT + 13ST) 13 to 14 bit multiturn = lenght 27 bit (14MT + 13ST)
<b>Accuracy</b>	$\pm 1/2$ LSB
<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

MECHANICAL SPECIFICATIONS	
<b>Bore diameter</b>	$\varnothing 8^* / 9^* (3/8") / 10^* / 12^* / 14 / 15$ mm
<b>Enclosure rating</b>	IP 54 (IEC 60529)
<b>Max rotation speed</b>	3000 rpm
<b>Shock</b>	50 G, 11 ms (IEC 60068-2-27)
<b>Vibration</b>	10 G, 10 ... 2000 Hz (IEC 60068-2-6)
<b>Moment of inertia</b>	$5 \times 10^{-6}$ kgm <sup>2</sup>
<b>Starting torque (at +20°C / +68°F)</b>	< 0,02 Nm
<b>Body material</b>	EN-AW 2011 aluminum
<b>Shaft material</b>	1.4305 / AISI 303 stainless steel
<b>Housing material</b>	painted aluminium
<b>Bearings</b>	2 ball bearings
<b>Bearings life</b>	10 <sup>9</sup> revolutions
<b>Operating temperature</b>	0° ... +60°C (+32° ... +140°F)
<b>Storage temperature</b>	-15° ... +70°C (+5° ... +158°F)
<b>Fixing torque for collar clamping</b>	1,5 Nm recommended
<b>Weight</b>	450 g (15,87 oz)

\* with supplied adapter shaft

## BIT PARALLEL CONNECTIONS

Function	Binary / Gray	Cable output PD	Cable output PE	19 pin MA connector	32 pin ME connector
bit 1 (LSB)	B <sup>0</sup> / G <sup>0</sup>	green	green	A	A
bit 2	B <sup>1</sup> / G <sup>1</sup>	yellow	yellow	B	B
bit 3	B <sup>2</sup> / G <sup>2</sup>	blue	blue	C	C
bit 4	B <sup>3</sup> / G <sup>3</sup>	brown	brown	D	D
bit 5	B <sup>4</sup> / G <sup>4</sup>	orange or pink	orange or pink	E	E
bit 6	B <sup>5</sup> / G <sup>5</sup>	white	white	F	F
bit 7	B <sup>6</sup> / G <sup>6</sup>	grey	grey	G	G
bit 8	B <sup>7</sup> / G <sup>7</sup>	purple	purple	H	H
bit 9	B <sup>8</sup> / G <sup>8</sup>	grey / pink	grey / pink	J	J
bit 10	B <sup>9</sup> / G <sup>9</sup>	white / green	white / green	K	K
bit 11	B <sup>10</sup> / G <sup>10</sup>	brown / green	brown / green	L	L
bit 12	B <sup>11</sup> / G <sup>11</sup>	white / yellow	white / yellow	M	M
bit 13	B <sup>12</sup> / G <sup>12</sup>	yellow / brown	yellow / brown	N	N
bit 14	B <sup>13</sup> / G <sup>13</sup>	/	white / grey	/	P
bit 15	B <sup>14</sup> / G <sup>14</sup>	/	grey / brown	/	R
bit 16	B <sup>15</sup> / G <sup>15</sup>	/	white / pink	/	S
bit 17	B <sup>16</sup> / G <sup>16</sup>	/	pink / brown	/	T
bit 18	B <sup>17</sup> / G <sup>17</sup>	/	white / blue	/	U
bit 19	B <sup>18</sup> / G <sup>18</sup>	/	brown / blue	/	V
bit 20	B <sup>19</sup> / G <sup>19</sup>	/	white / red	/	W
bit 21	B <sup>20</sup> / G <sup>20</sup>	/	brown / red	/	X
bit 22	B <sup>21</sup> / G <sup>21</sup>	/	white / black	/	Y
bit 23	B <sup>22</sup> / G <sup>22</sup>	/	brown / black	/	Z
bit 24	B <sup>23</sup> / G <sup>23</sup>	/	grey / green	/	a
bit 25	B <sup>24</sup> / G <sup>24</sup>	/	yellow / pink	/	b
bit 26	B <sup>25</sup> / G <sup>25</sup>	/	yellow / blue	/	c
bit 27	B <sup>26</sup> / G <sup>26</sup>	/	green / blue	/	d
LATCH	/	yellow / grey	yellow / grey	R	e
0 Volt	/	black	black	T	j
U / D	/	red / blue	red / blue	U	g
+ Vdc	/	red	red	V	h
⊥	/	shield	shield	S	housing

## BIT PARALLEL CONNECTOR OR CABLE CHOICE

According to the resolution and the chosen number of turns is possible to calculate the connections required by the connector or the cable. From the below table is possible to know the connection number.

### EXAMPLE 1:

256 PPR = 8 connections  
N° turns 32 = 5 connections  
Total connections 13.

### EXAMPLE 2:

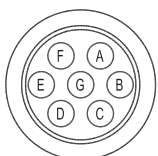
4096 PPR = 12 connections  
N° turns 4096 = 12 connections  
Total connections 24.

From 1 to 13 connections a 16 cores cable (PD) or a 19 cores connector (MA) have to be considered.

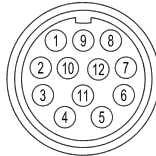
From 14 to 27 connections a 32 cores cable (PE) or a 32 cores connector (ME) have to be considered.

If LATCH is used a cable or a 32 poles connector is required.

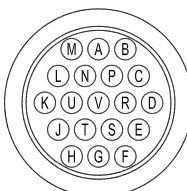
MC connector (7 pin)  
Amphenol MS3102-E-16-S  
solder side view FV



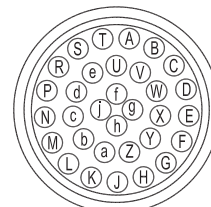
HA connector (12 pin) - M23 CCW  
Hummel 7.410.000000 -  
7.002.912.603  
solder side view FV



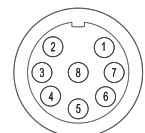
MA connector (19 pin)  
Amphenol 62IN 12E 14-19 P  
solder side view FV



ME connector (32 pin)  
Glennair IPT 02 A 18-32 P F6  
solder side view FV



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



## SSI CONNECTIONS

Function	Cable output PC	7 pin MC	12 pin HA	8 pin M12
+ Vdc	red	G	8	8
0 Volt	black	F	1	5
data +	green	C	2	3
data -	brown	D	10	2
clock +	yellow	A	3	4
clock -	orange or pink	B	11	6
U / D	red / blue	E	5	7
⊥	shield	housing	9	housing