

EAMR 58 F - 63 F / G BIT PARALLEL - SSI

BLIND HOLLOW SHAFT MULTITURN ABSOLUTE ENCODER

MAIN FEATURES

Industry standard multiturn absolute encoder for factory automation applications.

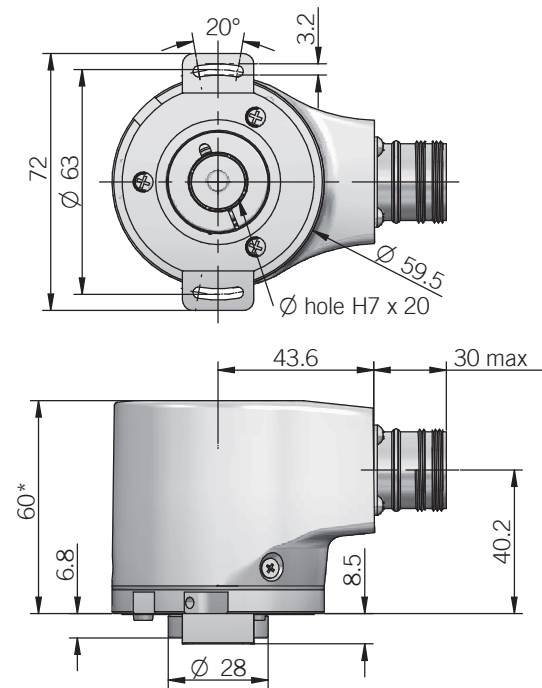
- Optical sensor technology (proprietary OptoASIC + Energy Harvesting)
- Resolution up to 65 bit (25 bit single turn + 40 bit multiturn)
- Power supply up to +30 VDC with Bit Parallel or SSI as electrical interface
- Cable or connector output
- Blind hollow shaft up to 15 mm
- Mounting by stator coupling, torque stop slot or torque pin



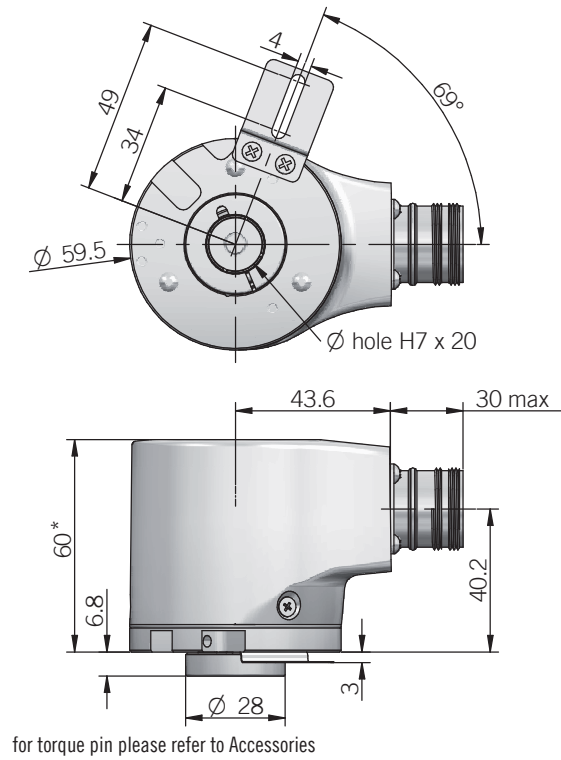
ORDERING CODE	EAMR	58F	12 / 12	G	8/30	P	P	X	15	X	MA	R	.162	+XXX
SERIES multiturn absolute encoder	EAMR													
MODEL blind hollow shaft with stator coupling blind hollow shaft with torque stop slot blind hollow shaft with torque pin	58F 63F 63G													
MULTITURN RESOLUTION bit from	1 to 12													
SINGLETURN RESOLUTION bit from	1 to 13													
CODE TYPE binary gray	B G													
POWER SUPPLY 8 ... 30 V DC	8/30													
ELECTRICAL INTERFACE push-pull	P													
LOGIC negative positive	N P													
OPTIONS to be reported if not used latch with external input reset with external input latch / reset with external inputs	X L ZE LZE													
BORE DIAMETER mm mm	14 15													
diameters (6 / 8 / 9,52 (3/8") / 10 / 11 / 12 mm) with optional shaft adapter, see Accessories														
ENCLOSURE RATING IP 65 shaft side / IP67 cover side IP 67	X S													
OUTPUT TYPE (up to 13 bit as total resolution, without reset option) 16 cores cable (standard length 1,5 m) (from 14 to 25 bit as total resolution or options) 32 cores cable (standard length 1,5 m) preferred cable lengths 2 / 3 / 5 / 10 m, to be added after DIRECTION TYPE (eg. PDR5) (up to 13 bit as total resolution, without reset option) 19 pin MIL male connector (from 14 to 25 bit as total resolution) 32 pin MIL male connector	PD PE MA ME													
DIRECTION TYPE radial	R													
MATING CONNECTOR mating connector not included to be reported only with connector output (eg. MAR.162), for mating connector see Accessories	.162													
VARIANT custom version	+XXX													

ORDERING CODE SSI	EAMR	58F	12 / 12	G	8/30	S	X	2048	RS	15	X	HA	R	.162	+XXX
<p>SERIES multiturn absolute encoder EAMR</p> <p>MODEL blind hollow shaft with stator coupling 58F blind hollow shaft with torque stop slot 63F blind hollow shaft with torque pin 63G</p> <p>MULTITURN RESOLUTION bit 12 / 14 / 15 see table for preferred combinations</p> <p>SINGLETURN RESOLUTION bit 13 / 18 / 25 see table for preferred combinations</p> <p>CODE TYPE binary B gray G</p> <p>POWER SUPPLY 8 ... 30 V DC 8/30</p> <p>ELECTRICAL INTERFACE Serial Synchronous Interface - SSI S</p> <p>OPTION to be reported if not used X reset with external input ZE reset on cover or with external input ZP</p> <p>INCREMENTAL RESOLUTION (powers of 2) ppr from 128 to 8192</p> <p>INCREMENTAL ELECTRICAL INTERFACE available with PC or HA output type line driver HTL L push pull P line driver RS-422 RS</p> <p>BORE DIAMETER mm 14 mm 15 diameters 6 / 8 / 9,52 (3/8") / 10 / 11 / 12 mm with optional shaft adapter, see Accessories</p> <p>ENCLOSURE RATING IP 65 shaft side / IP67 cover side X IP 67 S</p> <p>OUTPUT TYPE cable (standard length 1.5 m) PC preferred cable lengths 2 / 3 / 5 / 10 m, to be added after DIRECTION TYPE (eg. PCR5) (without reset option) 7 pin MIL male connector MC (with reset option) 10 pin MIL male connector MD 12 pin M23 male connector HA 8 pin M12 male connector M12</p> <p>DIRECTION TYPE radial R</p> <p>MATING CONNECTOR mating connector not included .162 to be reported only with connector output (eg. HAR.162), for mating connector see Accessories</p> <p>VARIANT custom version XXX</p>															
<p>to be added with incremental output</p>															

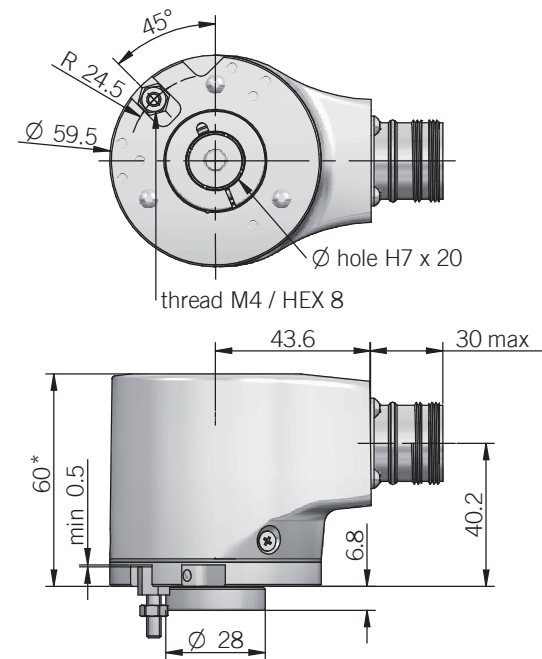
58 F



63 F



63 G



torque pin is included

* with option ZP +1,5 mm
recommended mating shaft tolerance g6
dimensions in mm

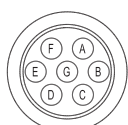
BIT PARALLEL CONNECTIONS

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

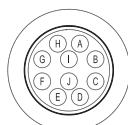
SSI CONNECTIONS

Function	Cable PC	7 pin MC	10 pin MD	12 pin HA	12 pin HA	8 pin M12
+ V DC	red	G	G	8	8	8
0 V	black	F	F	1	1	5
DATA +	green	C	C	2	2	3
DATA -	brown	D	D	10	10	2
CLOCK +	yellow	A	A	3	3	4
CLOCK -	orange or pink	B	B	11	11	6
A+	grey	/	/	/	6	/
A-	blue	/	/	/	7	/
B+	purple	/	/	/	9	/
B-	white / green	/	/	/	12	/
U / D	red / blue	E	E	5	5	7
RESET	white	/	H	4	4	1
⏏	shield	housing	housing	9	housing	housing

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



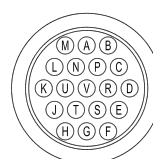
MD connector (10 pin)
Amphenol MS3102-E-18-1P
solder side view FV



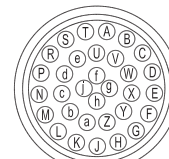
HA connector (12 pin)
M23 CCW Hummel
7.410.000000 - 7.002.912.603
solder side view FV



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



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



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



ELECTRICAL SPECIFICATIONS	
Multiturn resolution	12 / 14 / 15 bit please directly contact our offices for other pulses
Singleturn resolution	P = from 1 to 13 bit S = preferred combinations 12 multiturn / 13 singleturn 14 multiturn / 18 singleturn 15 multiturn / 25 singleturn please directly contact our offices for other pulses
Power supply¹	7,6 ... 30 V DC (reverse polarity protection)
Power draw without load	< 1 W
Max load current	20 mA / channel
Absolute electrical interface²	P = push pull (iC-DL) S = RS-422 (THVD1451 or similar)
Incremental electrical interface²	L = HTL diff. (AEIC-7272, active short circuit protection) P = Push-Pull (AEIC-7272, active short circuit protection) RS = RS-422 (AELT-5000 or similar)
Max incremental output frequency	128 kHz
Auxiliary inputs (U/D - RESET - LATCH)	active high (+V DC) connect to 0 V if not used / RESET - LATCH t_{min} 150 ms
Max frequency	50 kHz LSB (Bit Parallel) clock input: 100 kHz ... 1 MHz (SSI)
Code type	binary or gray
Logic	SSI = positive Bit parallel = positive or negative
SSI monostable time (T_m)	20 μs
SSI pause time (T_p)	> 35 μs
SSI frame	tree format (MSB ... LSB) up to 12 bit multiturn = length 25 bit (12MT + 13ST) 14 bit multiturn = length 32 bit (14MT + 18ST) 15 bit multiturn = length 40 bit (15MT + 25ST)
SSI status and parity bit	on request
Counting direction	decreasing clockwise (shaft view)
Start-up time	700 ms
Accuracy	± 250 arc-sec
Electromagnetic compatibility	according to 2014/30/EC directive
RoHS	according to 2011/65/EU directive
UL / CSA	certificate n. E212495

MECHANICAL SPECIFICATIONS	
Bore diameter	∅ 14 / 15 mm ∅ 6 / 8* / 9,52 (3/8")* / 10* / 11* / 12* mm * with optional shaft adapter, please refer to Accessories
Enclosure rating IEC 60529	X = IP 65 shaft side / IP67 cover side S = IP 67
Max rotation speed	see table
Max shaft load³	200 N axial / 60 N radial
Shock	50 G, 11 ms (IEC 60068-2-27)
Vibration	10 G, 10 ... 2000 Hz (IEC 60068-2-6)
Moment of inertia	5 x 10 ⁻⁶ kgm ² (119 x 10 ⁻⁶ lbf ²)
Starting torque (at +20°C / +68°F)	< 0,03 Nm (4,25 Ozin)
Bearing stage material	EN-AW 2011 aluminum
Shaft material	1.4305 / AISI 303 stainless steel
Housing material	painted aluminium
Bearings	n.2 ball bearings
Bearings life	10 ⁹ revolutions
Operating temperature Bit parallel^{4, 5}	-20° ... +85°C (-4° ... +185°F)
Operating temperature SSI^{4, 5}	-40° ... +85°C (-40° ... +185°F) -20° ... +85°C (-4° ... +185°F) with cable output -25° ... +85°C (-13° ... +185°F) with M12 connector
Storage temperature⁵	-20° ... +85°C (-4° ... +185°F)
Weight	approx 350 g (12,35 oz)

¹ as measured at the transducer without cable influences
² for further details refer to OUTPUT LEVELS on TECHNICAL BASICS section
³ maximum load for static usage
⁴ measured on the transducer flange
⁵ condensation not allowed

ROTATION SPEED DERATING TABLE			
	Temperature °C (°F)	Max speed (rpm)	Max continuous speed (rpm)
IP65	up to +70 (+158)	9000	6000
	+70 ... 85 (+158 ... 185)	6000	3000
IP67	up to +70 (+158)	8000	6000
	+70 ... +85 (+158 ... 185)	4000	2000

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. See below examples:

EXAMPLE 1 Singleturn = 8 bit = 8 connections Multiturn = 5 bit = 5 connections Total connections 13	EXAMPLE 2 Singleturn = 12 bit = 12 connections Multiturn = 12 bit = 12 connections Total connections 24
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From 1 to 13 connections a 16 cores cable (PD) or a 19 pin connector (MA) is required.

From 14 to 25 connections a 32 cores cable (PE) or a 32 pin connector (ME) is required.

With LATCH option a 32 cores cable (PE) or a 19 pin connector (MA) or a 32 pin connector (ME) is required.

With RESET option a 32 cores cable (PE) or a 32 pin connector (ME) is required.

