

## ATEX INCREMENTAL ENCODER FOR ATEX ZONE 2 AND 22, DHM5S RANGE

**DIGISINE™** encoder specially designed for explosive DUST and GAS atmosphere

**Ex II 3GD**

**ZONE 2 : Ex nA IIC T6...T4(\*) Gc**

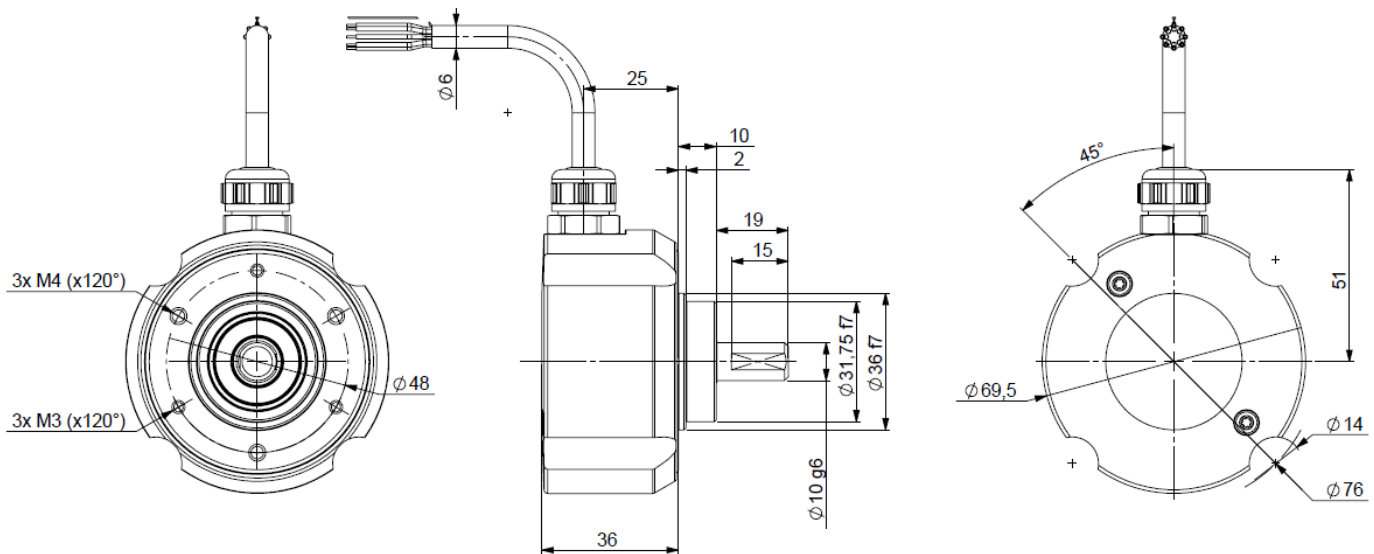
**ZONE 22 : Ex tc IIIC T120°C...T80°C (\*) Dc**

**Tamb: (\*) see table above**

- Robustness and excellent resistance to shocks / vibrations,
- High protection level IP65,
- High resolutions available : up to 80 000 cpt,
- Universal electronic circuits from 5 to 30 Vdc,
- High performances in temperature -30°C to 75°C,
- High performances in frequency of output signals: 300 kHz.



### DHM5S10/E2/ WITH RADIAL CABLE



### MECHANICAL CHARACTERISTICS

Material	Cove : aluminum	Insulation	1 000 Veff
	Body : aluminum	Weight (approx.)	0,300 kg
	Shaft : stainless steel	Protection(EN 60529)	IP 65
Bearings	6 000 serie – sealed	Permissible max. speed	9 000 min <sup>-1</sup>
Maximal loads	Axial : 40 N	Continuous max. speed	6 000 min <sup>-1</sup>
	Radial : 80 N	Storage temperature	-30°C ... +75°C
Shaft inertia	≤ 2800 g.mm <sup>2</sup>	Operating temperature	Cf table below (*)
Static/ Dynamic torque	5 / 35 mN.m	Theoretical mechanical lifetime L <sub>10h</sub> **	29,7.10 <sup>9</sup> turns 82 365 hours
Shock (EN60068-2-27)	≤ 500m.s <sup>-2</sup> (during 6 ms)		
Vibration (EN60068-2-6)	≤ 200m.s <sup>-2</sup> (10 ... 2 000 Hz)	** continuous max. speed – ½ max. load – according to ISO281: 1990, L <sub>10</sub>	
EMC	EN 61000-6-2, EN 61000-6-4		

### (\*) TEMPERATURE CLASS VERSUS AMBIENT TEMPERATURE AND ENCODER SPEED

Ta, Ambient temperature	Gas temperature class	Dust temperature class
-30°C < Ta < +45°C : speed up to 6000rpm	T6	T 80°C
-30°C < Ta < +60°C : speed up to 6000rpm	T5	T 80°C
-30°C < Ta < +70°C : speed up to 3000rpm	T4	T 80°C
-30°C < Ta < +75°C : speed up to 1500 rpm	T4	T 81°C

Cf special conditions for safe use for ambient temperature between 70°C and 75°C.

## ATEX INCREMENTAL ENCODER FOR ATEX ZONE 2 AND 22, DHM5S RANGE

### ELECTRICAL CHARACTERISTICS

Electronic Version	Output signals	Operating Voltage Vcl	Supply current	Current per channel pair	Short circuits proof	Reverse polarity protected	Output Low max (Is=20mA)	Output High min (Is=20mA)	Frequency max	Temperature range
<b>2G2</b>	Digital	5V +/-5%	75mA with no loads	40mA	Yes	No	0.5V	4V	300kHz	-30°C +75°C
<b>RG2</b>	TTL RS422	4.75-30V			Not to Vcl	Yes				
<b>PG5</b>	Digital	5-30V			Yes					
<b>5GT</b>	HTL	10-30V		1.5V	Vcl - 2.5V	120kHz	-30°C +75°C			
<b>2WT</b>	Sine Cosine	5V +/-5%		10mA	Yes	No	1Vpp +/-10% (Is=10mA)	300kHz		
<b>5WT</b>	1Vpp	10-30V	Not to Vcl		Yes					

### STANDARD CONNECTIONS

		-	+	A or S	B or C	0 or Z	A/ or S/	B/ or C/	0/ or Z/	Ground
G3	PVC cable 8 wires 8230/020	WH white	BN brown	GN green	YE yellow	GY grey	PK pink	BU blue	RD red	General shielding
GP	PUR cable 12 wires 8230/050	WH white + WH/GN white /green	BU blue + BN/GN brown / green	GY grey	BN brown	RD red	PK pink	GN green	BK black	General shielding

### ORDERING REFERENCE (Contact the factory for special versions: special flanges, connections)

	Shaft Ø	Digital signals (Square wave)				Connection	Connection orientation	Key	Flange	
DHM5S	06/E2/ : 6mm	Electronics : 2G2, PG5, RG2, 5GT		Output signals	resolution	GP: PUR cable 12wires G3: PVC cable 8wires	Example : R020: radial cable 2m	** : No key	**: No flange  03: Servo flange  05: Square flange	
		Supply	Output stage	9 : A,A/,B,B/,0,0/ (0 gated A & B)	80 000 max					
	2 : 5Vdc	G2: driver 5Vdc RS422								
	5 : 11 to 30Vdc	G5: push-pull								
	08/E2/ : 8mm (option)	5 : 11 to 30Vdc	GT: transistorized push-pull 11-30Vdc							
09/E2/ : 9,52mm (option)	R : 4.75 to 30Vdc	Sine-wave signals								
10/E2/ : 10mm	2 : 5Vdc	WT: sine 1Vpp	N: S,S/,C,C/,Z,Z/	2 500 max						
Ex: DHM5S	10/E2/	P	G5	9	//	5 000 //	GP	R020 //	**	05

**AVAILABLE RESOLUTIONS DIGITAL SIGNALS:** 50 60 100 120 125 127 150 180 200 240 250 256 300 314 360 375 400 500 512 600 720 750 768 800 927 1000 1024 1200 1250 1280 1440 1500 1800 2000 2048 2400 2500 3000 3600 4000 4096 5000

**INTERPOLATED AVAILABLE RESOLUTIONS DIGITAL SIGNALS:** 1080 1536 2560 2880 3072 4320 4500 5120 5400 5760 6000 6144 7200 7500 8000 8192 9000 10000 10240 10800 12000 12500 12288 14400 15000 16000 16384 18000 20000 20480 21600 24000 24576 25000 28800 30000 32000 32768 36000 40000 40960 43200 48000 49152 50000 57600 60000 64000 65536 80000

**AVAILABLE RESOLUTIONS SINE-WAVE SIGNALS:** 250 256 360 500 512 1000 1024 1500 1800 2000 2048 2500

Nota : The maximal resolution with the 5GT electronic is 5 000 pulses per turn (non available electronic with interpolation).

Made in FRANCE

## ATEX INCREMENTAL ENCODER FOR ATEX ZONE 2 AND 22, DHM5S RANGE

### SPECIAL CONDITIONS FOR SAFE USE

To prevent excessive heating caused by friction of shaft seals and bearings the encoder shaft must be connected to the drive system by a flexible connection (rotary or statoric coupling) in order to compensate driving shaft alignment and limiting so the axial and radial loads on the encoder as described in this data sheet.

The electrical installation to which the apparatus is connected must provide a protection against transients > 119V.

When the encoder is used in an ambient temperature of 75°C, the supply cable shall be suitable for a temperature of 85°C.

### ASSEMBLY CAUTION

#### DO NOT OPEN WHEN ENERGIZED

For electrical installation use the standard EN/IEC 60079-14.

For maintenance, use the standard EN 60079-17.

The customer obliges to take up and to use our products, according to our specifications and to the manners of the profession.

#### 1) Déclaration UE de conformité

2) Nous, société BEI Sensors, certifions que ce matériel : capteurs ATEX, type

**DHM5S, DHK5S, DHO5S, KHM5S, KHK5S, KHO5S**

3) Avec les inscriptions suivantes :

**CE** II 3GD, Ex nA IIC T6...T4 Gc  
Ex tc IIIC T120°C...T80°C Dc

A été conçu et fabriqué conformément aux directives applicables suivantes :

**ATEX : 2014/34/UE**

**CEM : 2014/30/UE**

4) La certification a été obtenu grâce à l'application des normes suivantes :

(\* ) ATEX: EN 60079-0 :2012+A11:2013, EN 60079-15 :2010, EN60079-31 :2014

IECEX: IEC60079-0: 2012, IEC60079-15:2010, IEC60079-31:2013

(\* ) Une étude comparative des normes EN 60079-0 (2012 et A11 2013), et EN 60079-31 (2009 et 2014) montre que le matériel n'est pas concerné par les modifications substantielles.

5) Une attestation d'examen CE de type a été obtenu :

**LCIE 14 ATEX 1024X**

et une notification :

**LCIE 03 ATEX Q8060**

6) Un certificat de conformité IECEX a été obtenu :

**IECEX LCIE 14.0047X**

et une notification :

**FR/LCI/QAR08.0002**

7) L'application des normes suivantes a participé à l'obtention de la certification :

EN 60-529, NFC 23-520, NFC 23-539, EN 50081-1, EN 55022 classe B, EN 55014, EN 61000-6-2, CEI 61000-4-2, CEI 61000-4-3, CEI61000-4-4, CEI 61000-4-5, CEI 61000-4-6, CEI 61000-4-8, CEI 61000-4-11

8) La société chargée de la certification **CEM** est nommée ci-après :

GRME, Cellule CEM, B.P.8, 68840 Pulversheim

9) Nous certifions que nos produits désignés ci-dessus sont conformes à la directive et aux normes spécifiées

#### 1) EU declaration of conformity

2) We, BEI Sensors, certify that this material : ATEX sensor, type

**DHM5S, DHK5S, DHO5S, KHM5S, KHK5S, KHO5S**

3) With the following inscriptions :

**CE** II 3GD, Ex nA IIC T6...T4 Gc  
Ex tc IIIC T120°C...T80°C Dc

Conceived and manufactured has the directive applicable following :

**ATEX : 2014/34/EU**

**EMC : 2014/30/EU**

4) Certification to summer obtained thanks to the application of the standards :

(\* ) ATEX: EN 60079-0 :2012+A11:2013, EN 60079-15 :2010, EN60079-31 :2014

IECEX: IEC60079-0:2012, IEC60079-15:2010, IEC60079-31:2013

(\* ) A comparative study of the standards EN 60079-0 (2012 and A112013) and EN 60079-31 (2009 and 2014) shows that the product is not concerned by the substantial modifications.

5) EC type examination certificate was obtained :

**LCIE 14 ATEX 1024X**

and a notification :

**LCIE 03 ATEX Q8060**

6) IECEX certificate of conformity was obtained :

**IECEX LCIE 14.0047X**

and a notification :

**FR/LCI/QAR08.0002**

7) The application of the following standards took part in obtaining certification :

EN 60-529, NFC 23-520, NFC 23-539, EN 50081-1, EN 55022 classe B, EN 55014, EN 61000-6-2, CEI 61000-4-2, CEI 61000-4-3, CEI61000-4-4, CEI 61000-4-5, CEI 61000-4-6, CEI 61000-4-8, CEI 61000-4-11

8) The company in charge of certification **CEM** is named :

GRME, Cellule CEM, B.P.8, 68840 Pulversheim

9) We certify that our indicated products so above are in conformity with the directive and the specified standards

Date :

ATEX Certified Product Approved Person  
Jean-Marc HUBSCH