

GAMX

ATEX INCREMENTAL ENCODERS, GAMX RANGE



ATEX certified Explosion-proof encoders

Explosion-proof rotary encoders for hazardous environments gas & dust. Robust design for heavy-duty applications. Application fields: explosive atmospheres except for firedamp mines.

LCIE ATEX & IECEX approved

II 2 GD

Ex d IIC T6, T5, T4 Gb

Ex tb IIIC T(*)°C Db IP 6x

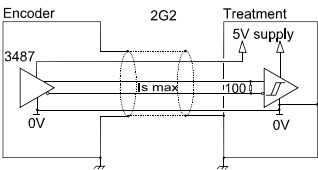
* See below table

SPECIFICATIONS

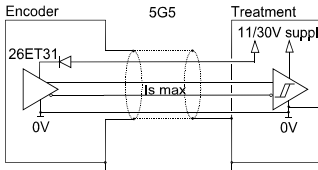
Material	Cover : aluminum
Stainless steel option	Body: aluminum
Shaft	Stainless steel
Bearings	Ball bearings
Maximal loads	Axial: 50 N, Radial: 100 N
Shaft inertia	$\leq 16 \cdot 10^{-6} \text{ kg} \cdot \text{m}^2$
Torque	$\leq 15 \cdot 10^{-3} \text{ N} \cdot \text{m}$
Permissible max. speed	6 000 min ⁻¹
Continuous max. speed	4 000 min ⁻¹
Shaft seal	Nitril
Shocks (EN60068-2-27)	$\leq 500 \text{ m} \cdot \text{s}^{-2}$ (during 6 ms)
Vibrations (EN60068-2-6)	$\leq 200 \text{ m} \cdot \text{s}^{-2}$ (10 ... 1 000 Hz)
EMC	EN 50081-1, EN 61000-6-2
Isolation	1 000 V eff
Weight	3,5kg aluminium body and cover 7,2kg stainless steel body and cover
Operating temperature	- 40... + 80°C (encoder T°)
Storage temperature	- 40... + 80°C
Protection(EN 60529)	IP 65
Theoretical mechanical lifetime 10⁹ turns (Faxial / Fradial)	
20 N / 30 N	360
50 N / 100 N	18
100 N / 200 N	2,2

T_{amb}	Temperature class for gas atmosphere	Temperature class for dust atmosphere
$-20^{\circ}\text{C} \leq T_a \leq +40^{\circ}\text{C}$	T6	T80°C
$-20^{\circ}\text{C} \leq T_a \leq +55^{\circ}\text{C}$	T5	T95°C
$-20^{\circ}\text{C} \leq T_a \leq +60^{\circ}\text{C}$	T4	T100°C

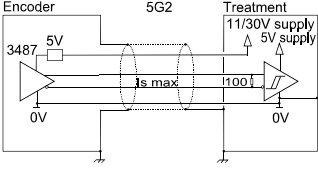
OUTPUT ELECTRONIC / SUPPLY



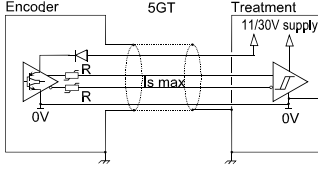
2G2 electronic (100kHz)
 Supply : 5Vdc \pm 10%
 Cons. without load : 100mA max
 Intensity per channel: 40mA max 0 max ($I_s=20\text{mA}$) : $V_{ol} = 0,5\text{Vdc}$
 1 min ($I_s=20\text{mA}$) : $V_{oh} = 2,5\text{Vdc}$



5G5 electronic (100kHz)
 Supply: 11 to 30Vdc
 Cons. without load : 75mA max
 Intensity per channel: 40mA max 0 max ($I_s=20\text{mA}$) : $V_{ol} = 0,5\text{Vdc}$
 1 min ($I_s=20\text{mA}$) : $V_{oh} = V_{cc}-3\text{Vdc}$



5G2 electronic (100kHz)
 Supply: 11 to 30Vdc
 Cons. without load : 75mA max
 Intensity per channel: 40mA max 0 max ($I_s=20\text{mA}$) : $V_{ol} = 0,5\text{Vdc}$
 1 min ($I_s=20\text{mA}$) : $V_{oh} = 2,5\text{Vdc}$



5GT electronic, option (100kHz)
 Supply: 11 to 30Vdc
 Cons. without load : 75mA max
 Intensity per channel: 40mA max 0 max ($I_s=20\text{mA}$) : $V_{ol} = 0,5\text{Vdc}$
 1 min ($I_s=20\text{mA}$) : $V_{oh} = V_{cc}-2,5\text{Vdc}$

5GT electronic helps to drive very long cables (contact our factory)
 Available : 3G3 electronic, supply between 15 and 30Vdc, push-pull output regulated 12Vdc

Protection against short circuits of the electronics: 5G5, 5GT, 3G3
 Protection against inversion of polarity for all the electronics except 2G2

STANDARD CONNECTION

		-	+	A	B	0	A/	B/	0/	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

Available Resolutions : 1 2 3 4 5 6 7 8 9 10 12 13 14 15 16 19 20 21 24 25 26 28 29 30 32 35 36 39 40 43 45 46 48 50 54 56 58 60 62 63 64 66 67 70 72 74 75 76 80 84 86 88 89 90 91 94 96 100 107 110 120 122 123 125 127 128 130 132 135 138 140 147 150 157 159 160 168 169 170 172 175 180 188 191 196 200 201 205 220 222 225 234 240 241 242 245 246 248 250 254 255 256 258 259 267 268 275 283 285 295 300 305 314 315 318 320 330 340 350 360 367 375 378 380 381 388 390 397 400 405 410 424 425 438 443 450 471 480 489 495 500 505 512 515 534 540 550 565 580 600 623 625 628 630 632 635 650 660 700 720 746 750 752 754 800 810 840 860 880 891 900 942 990 1000 1024 1080 1100 1131 1200 1225 1250 1260 1280 1290 1400 1414 1440 1500 1536 1570 1600 1620 1630 1750 1800 1885 2000 2048 2250 2400 2500 2640 3000 3456 3600 3680 3750 4000 4096 4500 4900 5000 7200 9000 10000

Special Conditions For Safe Use

The gaps of the different flamepath are less than the values specified in the tables of the IEC 60079-1 standard.
 The width of the different flameproof joints are superior to these specified in tables of IEC 60079-1 standard.

ASSEMBLY CAUTION

Never Open The Encoder

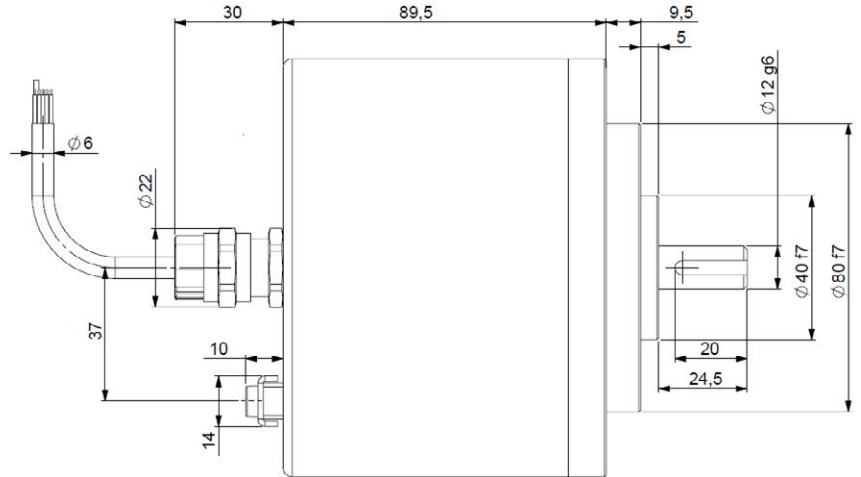
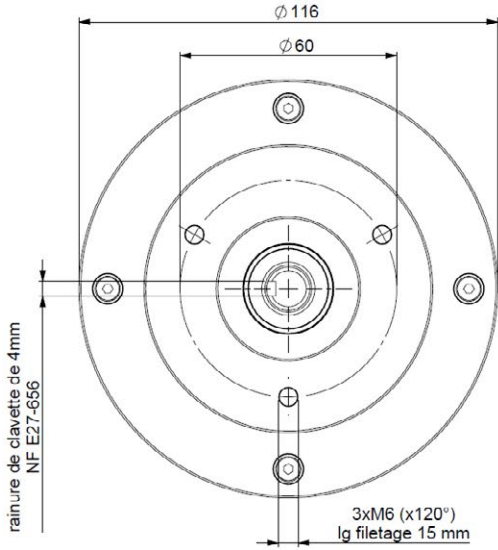
Never Connect/Disconnect Under Power Supply/In Presence Of Dusts Atmosphere

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

The customer obliges to take up and to use our products, according to our specifications and to the manners of the profession. Our company would not be responsible for any defect resulting from a defective or erroneous assembly, from a use superior to the standard, or in abnormal conditions. The breakdowns resultant of shocks, bad electric supply, put in low capacity or overcapacity of the product, the environment of bad conditions (humidity, projection, dust, etc) cannot be imputed to us. The converter doesn't require any maintenance. Any encoder presenting a dysfunction will have to be the object of immediate return for control in our facilities. The encoder mustn't be open in any case (cable gland and/or cover). An earth situated on the cover must be linked with the ground of the installation.



GAMX – GEMX DIMENSIONS



ORDERING OPTIONS

Example : GAMX_12-5G59-5000-GPA030

	GAMX_	12	5	G5	9	5 000	GP	A030
Family								
GMAX = Aluminium cover & body GMAX = Stainless steel cover & body								
Shaft Ø								
12 = 12mm								
Supply								
[Available electronic] - [2G2, 5G2, 5G5, 5GT, 3G3] 2 = 5Vdc 3 = 15 to 30Vdc 5 = 11 to 30Vdc								
Output Stage								
[Available electronic] - [2G2, 5G2, 5G5, 5GT, 3G3] G2 = driver 5Vdc RS422 G3 = driver 12Vdc G5 = push- pull 11-30Vdc GT = push- pull 11-30Vdc transistorized								
Output Signals								
9 = A,A/, B,B/, 0,0/ (0, gated A&B)								
Resolution								
10 000 max								
Connection								
G3 = PVC cable 8 wires GP = PUR cable 12 wires								
Connection Orientation								
Example: A030 = axial cable 3m								



AGENCY APPROVALS & CERTIFICATIONS



1) EU Declaration of conformity

2) Sensata BEI sensors, certifies that the Explosion Proof Encoder Models **CAMX, CEMX, GAMX, GEMX, NAMX, NEMX, PAMX, PEMX**

3) With the following inscriptions : **Ex II 2 GD, Ex d IIC T6, T5, T4 Gb**
Ex tb IIIC T(*)°C Db IP 6x

Designed and manufactured to comply with these directives: **ATEX: 2014/34/EU and EMC: 2014/30/EU**

4) Complies with these standards:

ATEX: EN IEC 60079-0:2018, EN60079-1:2014, EN60079-31:2014

IECEx: IEC 60079-0:2017, IEC60079-1:2014, IEC60079-31:2013

A comparative study of the standards EN 60079-0 (2009, 2012+A11 2013 and 2018), EN 60079-1(2007 and 2014) and EN 60079-31(2009 and 2014) shows that the product is not concerned by the substantial modifications.

5) As detailed in EC type examination certificates: **LCIE 03 ATEX 6235 and IECEx LCIE 13.0029X**

Product Quality Assurance Notification: **LCIE 03 ATEX Q8060**

Product Quality Assurance Report: **FR/LC/QAR08.0002**

6) The following standards were also investigated for this 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

7) The notified organization responsible for the follow-up of the ATEX directive is (assessed by): LCIE, B.P.8, F92260 Fontenay-aux-Roses Identification No. 0081

8) The company in charge of EMC certification is: LCIE BUREAU VERITAS, Aire de la Thur 68840 Pulversheim

ATEX Certified Product Approved Person Jean-Marc HUBSCH :

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