

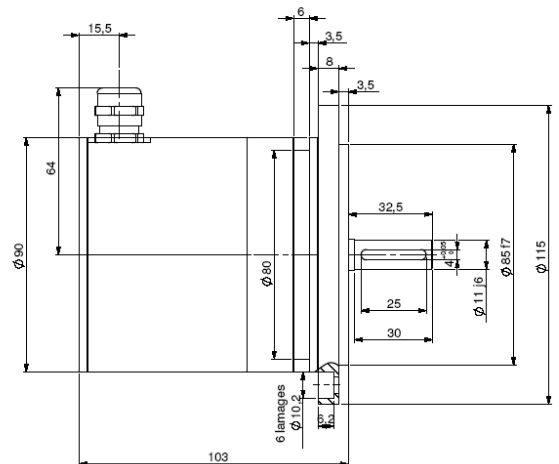
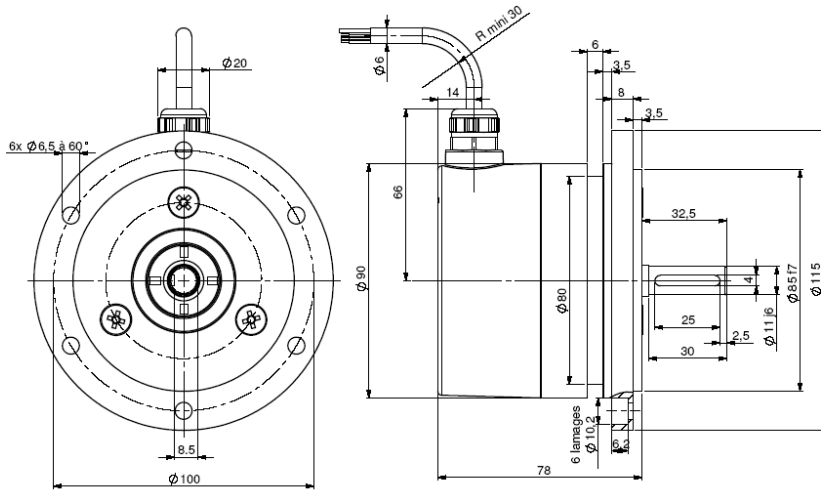
INCREMENTAL ENCODERS, GHM9 RANGE

- Especially designed for heavy duty: steel and paper mills, lumber, cranes, etc.
- Excellent resistance to shocks/vibrations and to extreme axial/radial loads
- Connection with terminal box with LED option, cable or connectors output
- Digital incremental output, optional analog output (tachocoders, optotacho)
- Mechanical over-speed switch: optional
- Max control option : detection of shocks, vibrations, temperatures...
- Solid shaft of 12 mm or 11 mm with REO 115 mm flange (Euroflange B10) for tachogenerator type mounting



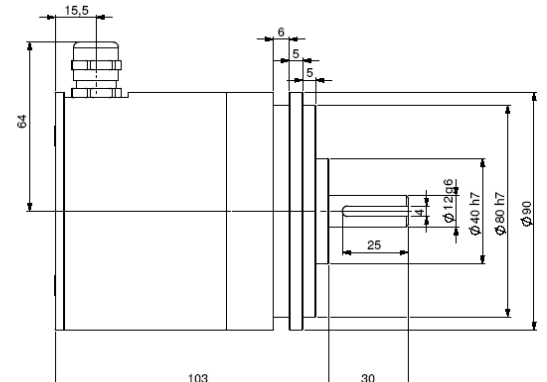
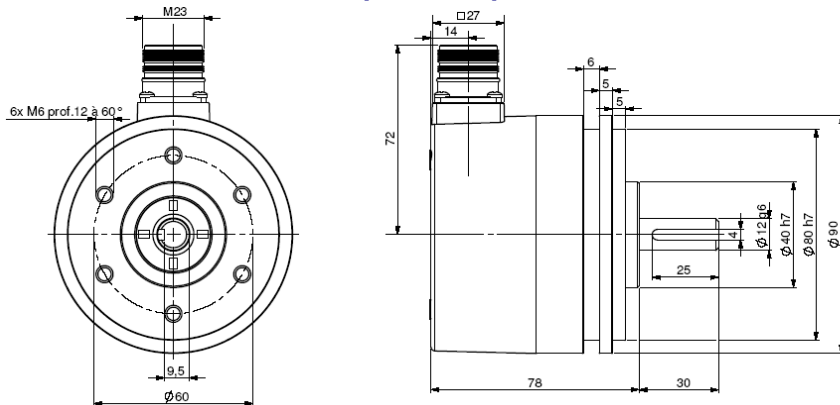
GHM9_11 connection G3R (radial cable gland)

GHM9_11 connection GBR (terminal box)



GHM9_12 connection G6R (radial M23)

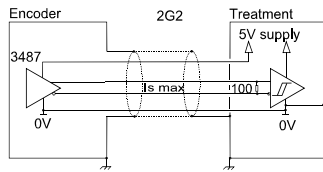
GHM9_12 connection GBR (terminal box)



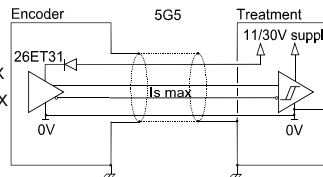
| | | | |
|--|--|---|---|
| Material (connector or cable output version) Stainless steel option | Cover : zinc alloy | Vibration (EN60068-2-6) | $\leq 200 \text{ m.s}^{-2}$ (10 ... 1 000 Hz) |
| | Body: aluminium | EMC | EN 50081-1, EN 61000-6-2 |
| Material (terminal box version) Stainless steel option | Cover: aluminium | Isolation | 1 000 Veff |
| | Body: aluminium | Weight (connector or cable version) | 1,1kg zinc alloy cover, alu body |
| Shaft | Stainless steel | | 2,4kg zinc alloy cover, stainless steel body |
| Bearings | 6001 serie | Weight (terminal box version) | 2,6kg stainless steel cover and body |
| Maximal loads | Axial : 100 N | | 1,3kg alu cover, alu body |
| | Radial : 200 N | Operating temperature | 2,6kg alu cover, stainless steel body |
| Shaft inertia moment | $\leq 15.10^{-6} \text{ kg.m}^2$ | | 2,8kg stainless steel cover and body |
| Torque | $\leq 10.10^{-3} \text{ N.m}$ | Storage temperature | - 20 ... + 80 °C (Encoder T°) |
| Permissible max. speed | 9 000 min ⁻¹ | Protection(EN 60529) | IP 65 |
| Continuous max. speed | 6 000 min ⁻¹ | Theoretical mechanical lifetime 10 ⁹ turns (F _{axial} / F _{radial}) | |
| Shaft seal | Viton double lips | 20 N / 30 N : 360 | 50 N / 100 N : 30 |
| Shock (EN60068-2-27) | $\leq 2 000 \text{ m.s}^{-2}$ (during 6ms) | 100 N / 200 N : 2,5 | |

INCREMENTAL ENCODERS, GHM9 RANGE

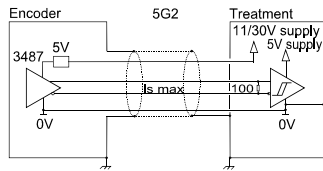
OUTPUT ELECTRONIC / SUPPLY



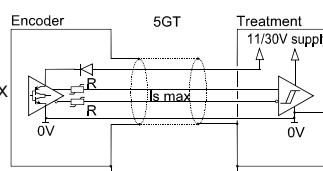
2G2 electronic (100kHz)
 Supply : 5Vdc ± 10%
 Cons. without load : 100mA max
 Current per channel : 40mA max
 0 max (Is=20mA) : V_{oi} = 0,5Vdc
 1 min (Is=20mA) : V_{oh} = 2,5Vdc



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



5G2 electronic (100kHz)
 Supply : 11 to 30Vdc
 Cons. without load : 75mA max
 Current per channel : 40mA max
 0 max (Is=20mA) : V_{oi} = 0,5Vdc
 1 min (Is=20mA) : V_{oh} = 2,5Vdc



5GT electronic, optional (100kHz)
 Supply : 11 to 30Vdc
 Cons. without load : 75mA max
 Current per channel : 40mA max
 0 max (Is=20mA) : V_{oi} = 0,5Vdc
 1 min (Is=20mA) : V_{oh} = V_{cc}-2,5Vdc

5GT electronic permits to drive very long (contact our factory)

Available in option :

- 3G3 electronic, supply between 15 and 30Vdc, push-pull output regulated 12Vdc
- 5GH electronic permits to drive different inputs (PLC + display for example)

Protection against short circuits for electronics: 5G5, 5GT, 3G3

Protection against polarity inversion for all electronics 2G2

"Option "Max control" : the encoder gives on real time its physical environment parameters: shocks and vibrations, too high or too low temperature, too low or too high supply, quality of the output signals : upon request..



STANDARD CONNECTION

| | | - | + | A | B | 0 | A/ | B/ | 0/ | Ground |
|----|-----------------------------|-------------------------------|-----------------------------|----------|-----------|---------|---------|----------|----------|-------------------|
| GB | Terminal box | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | On cable gland |
| G6 | 12 pins CW | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | Connector body |
| G8 | 12 pins CCW | 10 + 11 | 2 + 12 | 8 | 5 | 3 | 1 | 6 | 4 | Connector body |
| 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 CODE (Special versions upon request, for ex. over-speed switches, special flanges/electronics/connections...)

| | Shaft Ø | Available electronic | | Output signal | Resolution | Connection | Connection orientation |
|---|--------------------------|--|---|--|-------------------|--|---------------------------------------|
| GHM9 | 11 : 11mm | 2G2, 5G2, 5G5, 5GT, 5GH, 3G3 | | 9 : A,A/,B,B/,0,0/ (0, A&B gated) A : A,A/,B,B/,0,0/ (0, A gated) N : A,A/,B,B/,0,0/ (0 ungated) K : max control option | 10 000 max | G6 : M23 12pins CW G5 : M23 12pins CW G8 : M23 12 broches CCW GB : terminal box G1 : solenoid 4pins | R : radial A : axial |
| GBM9 Stainless steel body | 12 : 12mm | Supply | Output stage | | | | |
| GXM9 Stainless steel cover and body | C1 : 11mm Length 20mm | 2 : 5Vdc | G2 : driver 5Vdc RS422 G3 : driver 12Vdc | | | | |
| | C2 : 12mm Length 25mm | 5 : 11 to 30Vdc 3 : 15 to 30Vdc | G5 : push-pull GT : push-pull 11-30Vdc transistorized GH : push-pull 11-30Vdc 150 mA | | | | |
| Ex: GHM9 | 11 // | 5 | G5 | 9 // | 5 000 // | GP | R050 |

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

Changes possible without further notice - Version 2.0

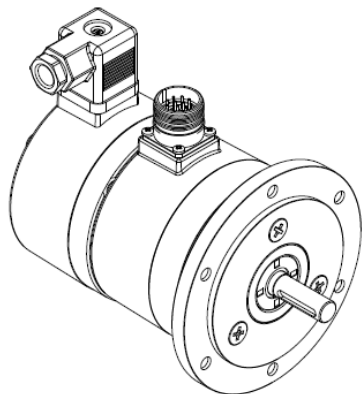
OVERSPEED SPEED SWITCH, GHM9 SERIES

The overspeed switch function on the **ROBUSTECH™** range – a sturdy mechanical security module without external power supply:

- radial commutation centrifugal switch without permanent contact
- high quality mechanics reliability
- excellent repeatability
- securised system, works without power supply
- modular mounting possibility
- commutation speed : standard calibration range between 800 and 4 000 rpm (rotation per minute)

Especially designed for heavy duty industry (steel and paper mills, lumber, cranes, engine etc...). Sturdy compact conception. Excellent resistance to shocks/vibrations and to extreme axial/radial loads

12mm or 11mm solid shaft with 115mm REO (Euroflange B10) for tachogenerator type mounting



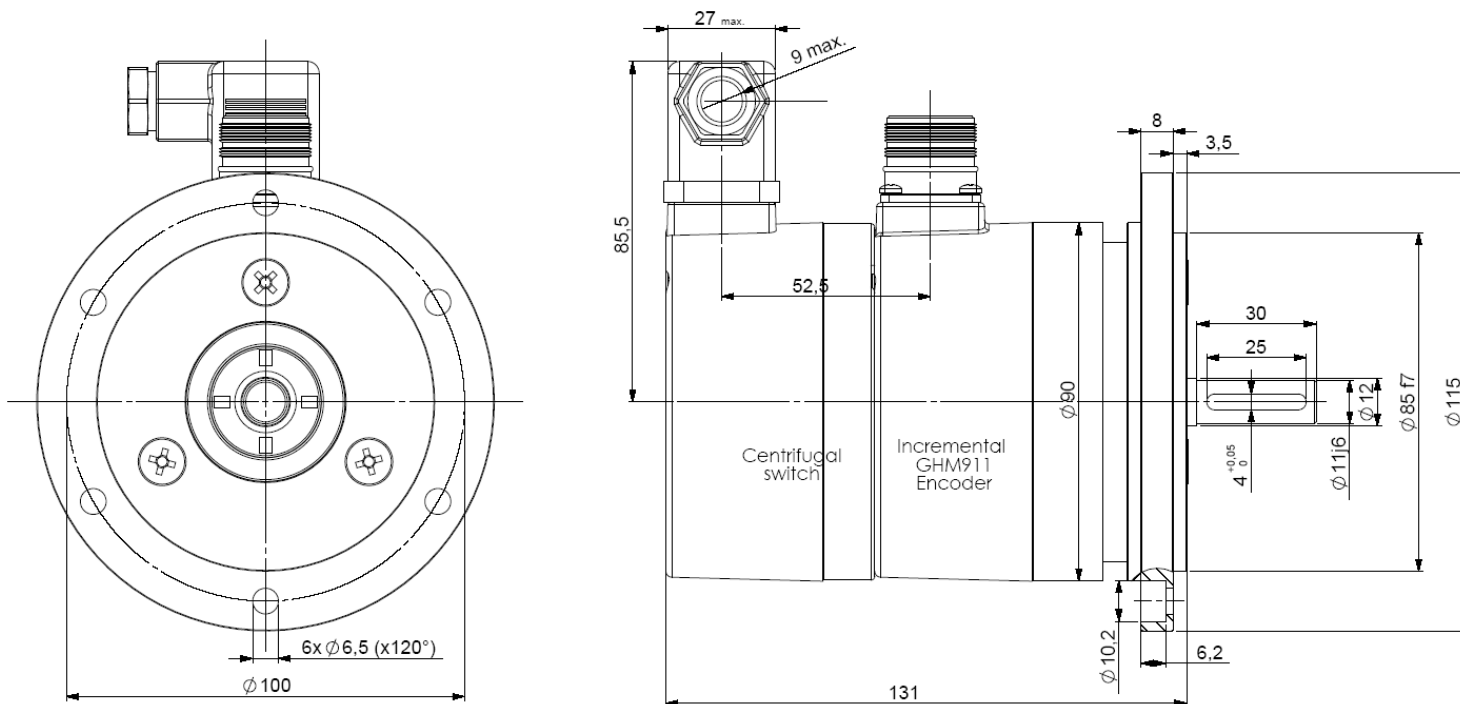
Solid shaft GHM9_11 with overspeed switch



Solid shaft GHM9_12 with overspeed switch

The compactness of the assembly, which can be proposed by BEI IDEACOD, allows the combination of overspeed switch and encoder presenting a particularly interesting cost / performances relation

EXAMPLE : INCREMENTAL ENCODER GHM9_11 WITH OVERSPEED SWITCH



CENTRIFUGAL SWITCH CHARACTERISTICS

| | | | |
|------------|----------------------|-----------------------|-----------------|
| Material | Cover : zinc alloy | Weight | 1,10kg |
| | Body: aluminium | Operating temperature | -30 ... +130°C |
| Max. speed | 1,5 . n _s | IP(EN 60529) | IP 67 (mounted) |

Changes possible without further notice - Version 2.2

OVERSPEED SPEED SWITCH, GHM9 SERIES

CHARACTERISTICS

| | |
|----------------------|-------------------|
| Switching speed | 800 ... 4 000 rpm |
| Principle | centrifugal |
| Mechanical life-time | 500 000 cycles |
| Contact type | opened or closed |

| | |
|---------------------------|--------------------------------|
| Max current | 6 A / 240 Vac |
| Contact material | silver-cadmium |
| Maximum breaking sequence | 4/min |
| Breaking accuracy | min ⁻¹ - 5% ... +8% |

The commutation speed n_s is definitely calibrated in our factory

In the case of a higher acceleration than 100 s^{-2} , the switching speed will be higher (n' 's, cf here-under drawing)

Right or left rotation direction

The switching speed n_s is defined for an acceleration = 100 s^{-2} (other, consult us)

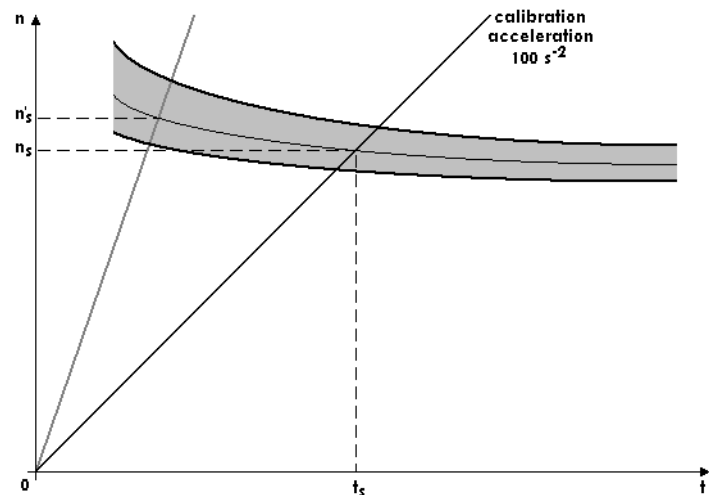
Nota: $1 \text{ rad.s}^{-2} \leftrightarrow 9,55 \text{ rpm.s}^{-1}$

The hysteresis is about -3% in counter clockwise direction compared with clockwise direction

It is advised to choose the switching speed n_s in order that $n_s > 1,15.n_n$ (n_n : working speed, nominal speed)

The centrifugal relay must be used only in the case of an increasing speed

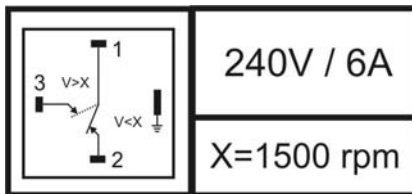
In decreasing speed, the centrifugal switch will open automatically at a slower speed of approximately 40% of the calibrated switching speed n_s



STANDARD CONNECTION

With 4 pinout solenoid valve connector

Contact 1 to 3 can be connected according to the desired configuration (rest, work or opposite)



The earth pin of the connector must be connected to the ground of the installation

AVAILABLE COMBINATION (Consult us for special version: ex: flange / connection / specific speed...)

- Available combination
- incremental encoder + overspeed switch
- tacho-encoder + overspeed switch
- absolute encoder + overspeed switch
- incremental encoder + opto-tacho + overspeed switch
- overspeed switch + overspeed switch ...

Standard speeds (rpm) : 1 000, 1 200, 1 500, 1 800, 3 000 (consult us for other speed)

Reference: consult us

Note : The switch commutation speed is calibrated in our factory, no correction and no later modification is possible

Made in France

Changes possible without further notice - Version 2.2