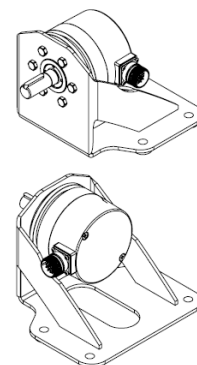
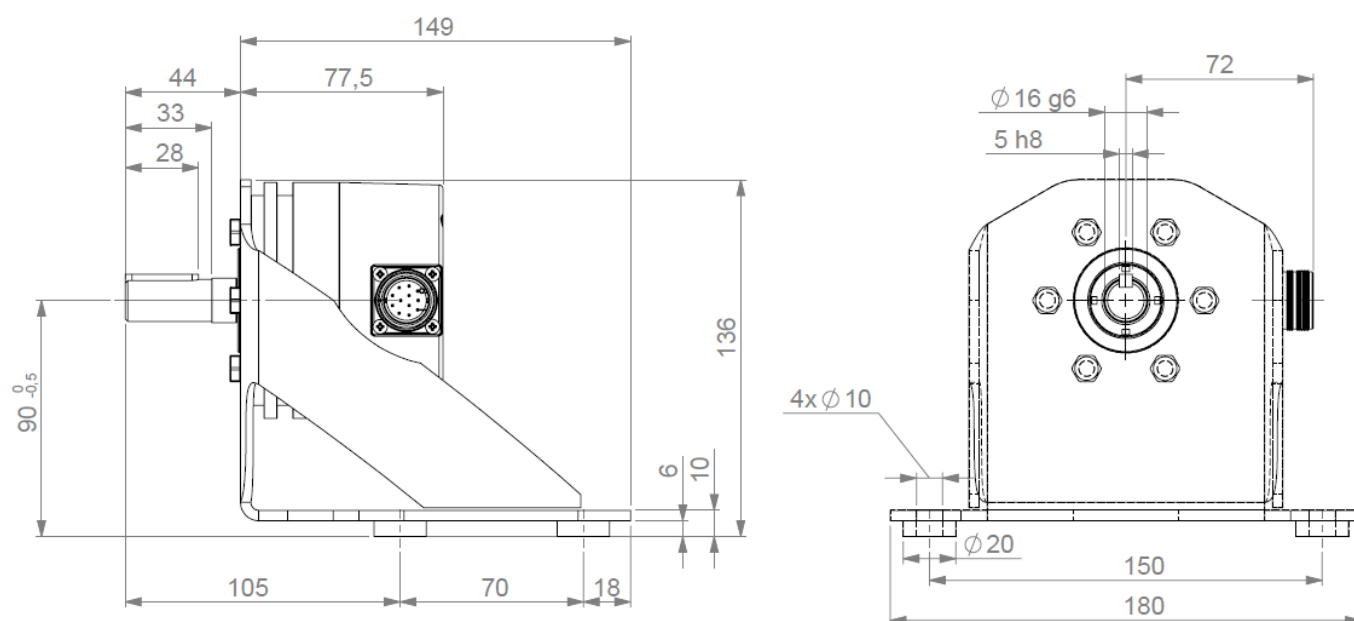


## INCREMENTAL ENCODERS, GHM9S16 RANGE

- Especially designed for heavy duty applications: steel and paper mills, lumber, cranes, etc...
- Solid shaft 16 mm.
- Excellent resistance to shocks/vibrations and to extreme axial/radial loads.
- High protection level: IP65.
- Connection with cable or connectors output.
- Electronic compatible with industrial standards.
- Digital incremental output, optional analog output (tachoencoders, optotacho).
- Resolution up to 5000.



### GHM9S16//5GT9//00600//G6R//C300D4 DIMENSIONS

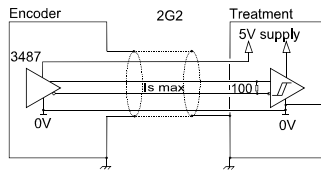


### MECHANICAL CHARACTERISTICS

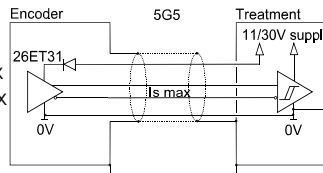
|                        |                                         |                                                                             |                                           |
|------------------------|-----------------------------------------|-----------------------------------------------------------------------------|-------------------------------------------|
| Material               | Cover : zinc alloy                      | Shock (EN60068-2-27)                                                        | ≤ 2 000 m.s <sup>-2</sup> (during 6ms)    |
|                        | Body: aluminium                         | Vibration (EN60068-2-6)                                                     | ≤ 200 m.s <sup>-2</sup> (10 ... 1 000 Hz) |
| Shaft an bracket       | Stainless steel                         | EMC                                                                         | EN 50081-1, EN 61000-6-2                  |
| Bearings               | Ball bearings                           | Isolation                                                                   | 1 000 Veff                                |
| Maximal loads          | Axial : 100 N                           | Weight                                                                      | 2,5 kg                                    |
|                        | Radial : 200 N                          | Operating temperature                                                       | - 20 ... + 80 °C (Encoder T°)             |
| Shaft inertia moment   | ≤ 15.10 <sup>-6</sup> kg.m <sup>2</sup> | Storage temperature                                                         | - 40 ... + 80 °C                          |
| Torque                 | ≤ 10.10 <sup>-3</sup> N.m               | Protection(EN 60529)                                                        | IP 65                                     |
| Permissible max. speed | 9 000 min <sup>-1</sup>                 | Theoretical mechanical lifetime (F <sub>axial</sub> / F <sub>radial</sub> ) |                                           |
| Continuous max. speed  | 6 000 min <sup>-1</sup>                 | 50 N / 100 N                                                                | 30 . 10 <sup>9</sup> turns                |
| Shaft seal             | Viton double lips                       | 100 N / 200 N                                                               | 2,5 . 10 <sup>9</sup> turns               |

## INCREMENTAL ENCODERS, GHM9S16 RANGE

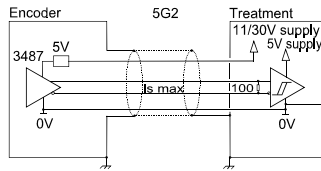
### OUTPUT ELECTRONIC / SUPPLY



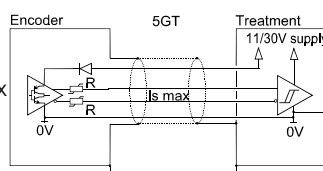
**2G2 electronic (100kHz)**  
Supply : 5Vdc  $\pm 10\%$   
Cons. without load : 100mA max  
Current per channel : 40mA max  
0 max ( $I_s=20mA$ ) :  $V_{ol} = 0,5Vdc$   
1 min ( $I_s=20mA$ ) :  $V_{oh} = 2,5Vdc$



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



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



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

5GT electronic permits to drive long cable (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 except 2G2.

### STANDARD CONNECTION

|    |                             | -                              | +                             | A        | B         | 0       | A/      | B/       | 0/       | Ground            |
|----|-----------------------------|--------------------------------|-------------------------------|----------|-----------|---------|---------|----------|----------|-------------------|
| 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** (ex: GHM9S16//5GT9//00600//G6R//C300D4)

|           | Shaft Ø      | Available electronic                   |                                                                          | Output signal                                  | Resolution       | Connection                 | Connection orientation                 | Special                                                          |
|-----------|--------------|----------------------------------------|--------------------------------------------------------------------------|------------------------------------------------|------------------|----------------------------|----------------------------------------|------------------------------------------------------------------|
| GHM9S     | 16 :<br>16mm | 2G2, 5G2, 5G5, 5GT, 5GH, 3G3           |                                                                          | 9 :<br><br>AA/<br>BB/<br>00/<br>(0, A&B gated) | 5 000<br><br>max | G6: M23<br>12 pins CW      | R : radial                             | C300D4:<br><br>Key<br><br>Square flange<br><br>Special mechanics |
|           |              | Supply                                 | Output stage                                                             |                                                |                  | G8 : M23<br>12 pins CCW    |                                        |                                                                  |
|           |              | 2 : 5Vdc                               | G2 : driver 5Vdc RS422<br>G3 : driver 12Vdc                              |                                                |                  | GP : PUR cable<br>12 wires | Example :<br>R020 : radial<br>cable 2m |                                                                  |
|           |              | 5 : 11 to 30Vdc<br><br>3 : 15 to 30Vdc | G5 : push-pull<br>GT : push-pull transistorized<br>GH : push-pull 150 mA |                                                |                  | G3 : PVC cable<br>8 wires  |                                        |                                                                  |
| Ex: GHM9S | 16 //        | 5                                      | GT                                                                       | 9 //                                           | 00600 //         | G6                         | R //                                   | C300D4                                                           |

### 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

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