



## CHARACTERISTICS

|                          |   |
|--------------------------|---|
| ENCODER CATEGORY         | Heavy Duty. Hollow shaft encoder. Blind End. Front Mounting           |
| SMD - TECHNOLOGY         | Strong compact electronics  |
| HIGH IP-RATING           | Std. IP65 (option IP66 or IP67)                                       |
| LOW CURRENT CONSUMPTION  | To be connected directly to PLC'S and counters                        |
| SHORT CIRCUIT PROTECTION | Thermal shut down at 155°C  |
| WIDE SUPPLY RANGE        | Min. 4,5V to max. 30V   |
| STRONG MEC. CONSTRUCTION | Based on 2 precision ball bearings, for harsh industrial environments |

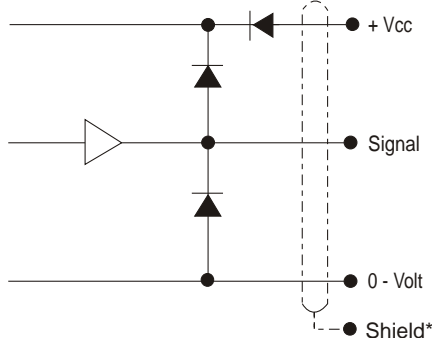
## ELECTRICAL SPECIFICATIONS

| At +25°C   |   |
|--|---|
| Output waveform  | Incremental (A, B, Z and inverted)  |
| Zero or index pulse  | (Z) one pr./rev.  |
| Output   | Totempole (TP)  |
| Supply-voltage (Vin)   | Min. 4,5V to Max. 30V *<br>Reverse polarity protection                    |
| Current (no load)  | Max. 45 mA  |
| Max. load pr. output   | 30 mA - (Shortcircuit protected) *  |
| V out low  | Max. 500 mV @ I = 10 mA   |
| Operating temp.  | - 40°C to + 85°C  |
| Storage temp.  | - 40°C to + 85°C  |
| Max. pulse frequency   | 300 kHz *   |
| V out high   | Min. (Vin -0,6) @ I = -10mA<br>Min. (Vin -1,3) @ I = -25mA                |
| Cable data   | 8-leads (0,14 mm <sup>2</sup> )pairtwisted/shielded                       |
| Output signals   | Normal (Standard),<br>Inverted,<br>Differential (RS-422A compatible @ 5V) |
| Certified acc. to  | EN 50081-1 and EN 50082-2   |
| * = It is not recommended to combine max. value for all 3 parameters |   |

## MECHANICAL SPECIFICATIONS

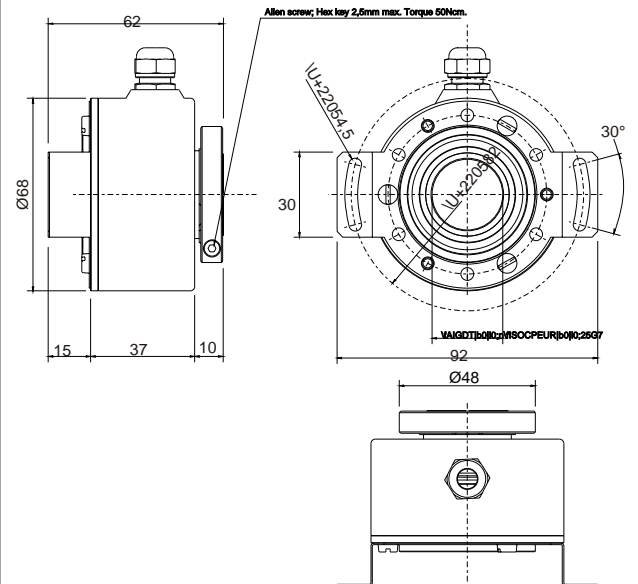
|                        |   |
|------------------------|---|
| Weight                 | 400 g (excludes cable)                                |
| Materials : Housing    | Aluminum  |
| Shaft                  | CuZn39Pb3 (Brass)                                     |
| Bearings               | Gcr15   |
| H.-Shaft dimensions    | ø16 to 25,4 (1 inch) View H-shaft options, next page. |
| H.-Shaft loads         | Axial max. 100 N<br>Radial max. 100 N                 |
| Max. rev.              | IP65 ~3000 rpm / IP67~1500 rpm                        |
| IP-rating              | Standard IP 65. Optino IP66 or IP67                   |
| Start torque           | < 0,05 Nm IP65 / < 0,1 Nm IP67                        |
| Mass moment of inertia | 50 gcm <sup>2</sup>                                   |
| Max. shock             | 100 G/11 ms   |
| Bump                   | 10 G - 16 ms (1000 x 3 axis)                          |
| Vibration              | (10 - 2000 Hz)/10 G                                   |

## OUTPUT CIRCUIT



\* Shield connected to housing

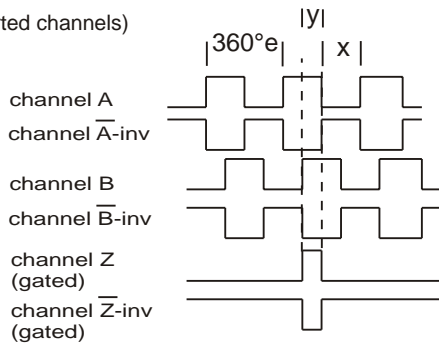
## MECHANICAL DIMENSIONS



## OUTPUT WAVEFORM

 Rotation: Clockwise (cw) from shaftside

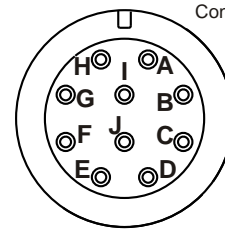
(inv = inverted channels)



$X = 180^\circ e \pm 36^\circ e$  and  $Y = 90^\circ e \pm 18^\circ e$   
Z puls: Gated with A and B (standard)

Options: TTL or HTL compatible. Open Collector NPN or PNP  
Gated Z-puls or none-gated Z-puls.  
View more Output options in section 16 - page 1 to 2

## CONNECTOR CONNECTIONS



Connector on encoder house  
MS3102A-18-1P

Pin Assignment Option 1

Pin Assignment Option 2

| Pin | Function                            |
|-----|-------------------------------------|
| A   | A                                   |
| B   | B                                   |
| C   | Z                                   |
| D   | VDC (5-30 VDC Standard)             |
| E   | Shield                              |
| F   | Circuit Ground                      |
| G   | Case Ground                         |
| H   | A Compliment ( $\bar{A}$ -inverted) |
| J   | B Compliment ( $\bar{B}$ -inverted) |
| K   | Z Compliment ( $\bar{Z}$ -inverted) |

| Pin | Function                            |
|-----|-------------------------------------|
| A   | A                                   |
| B   | B                                   |
| C   | Z                                   |
| D   | VDC (5-30 VDC Standard)             |
| E   | Not connected                       |
| F   | Circuit Ground                      |
| G   | Case Ground                         |
| H   | A Compliment ( $\bar{A}$ -inverted) |
| I   | B Compliment ( $\bar{B}$ -inverted) |
| J   | Z Compliment ( $\bar{Z}$ -inverted) |

## ORDERING CODES

|  | Options   | Ordering codes   |
|--|---|------------------|
| Pulses pr. rev.:   | No. of pulses   | XXXXX            |
| Output signal:   | Normal, TP-Standard, A, B, Z (3 channel)  | N                |
|  | TP-Differential: A, B, Z and A-inv, B-inv, Z-inv (6 channel)                                    | D                |
|  | Line driver OL 7272 for extra long cable, up to 100 meters (Differential)                       | M                |
|  | Line driver chip 26C31 (V out low < 0,4 V) (RS-422A compatible @ 5V) Only 5 Volt (Differential) | L                |
| Hollow shaft dimensions:                                       | 1 inch ( $\varnothing 25,4$ mm)   | 1X               |
|  | $\varnothing 20$  | 20               |
|  | Tolerance G7. Blind end. Other dimensions are under construction                                | $\varnothing 25$ |
| IP-rating:   | IP 65   | 65               |
|  |   | 66               |
|  |   | 67               |
| Length of cable: (Round cable standard black cover)            | Standard 1 meter  | 01               |
|  | No. of meters   | XX               |
| Cable take out:  | Side (Radial)   | S                |
| Anti rotation Spring coupling:                                 | View Section xx page x to x   |                  |
| Connector: (Coninvers on standard black cover)                 | Coninvers Connector View Section 15 page 6 to 8   |                  |
| Connector: (MIL-connector)                                     | MIL- Connector View CONNECTOR CONNECTIONS   |                  |
| More accessories   |   |                  |
| Anti rotation spring and adaptors: View section 12 page 1 to 8 |   |                  |

## CABLE CONNECTIONS

| Color code | Standard  |
|------------|-----------|
| Pink       | Ch. A     |
| Grey*      | Ch. A Gnd |
| Green      | Ch. B     |
| Yellow*    | Ch. B Gnd |
| White      | Ch. Z     |
| Brown*     | Ch. Z Gnd |
| Red        | Vcc       |
| Blue*      | Gnd       |

\*Blue, grey, yellow and brown are internal connected

| Color code | Differential |
|------------|--------------|
| Pink       | Ch. A        |
| Grey       | Ch. A inv.   |
| Green      | Ch. B        |
| Yellow     | Ch. B inv.   |
| White      | Ch. Z        |
| Brown      | Ch. Z inv.   |
| Red        | Vcc          |
| Blue       | Gnd          |

## PULSES/REV.

400, 1024, 2048, 3600

Other pulses are under construction

## Advanced Output Options:

| Options                         | Ordering codes |
|---------------------------------|----------------|
| Normal Open Collector NPN       | NON            |
| Differential Open Collector NPN | DON            |
| Normal Open Collector PNP       | NOP            |
| Differential Open collector PNP | DOP            |

To order, replace  with  

SCH68F



Pulses



Output signal



H.-Shaft



IP-rating



Length of cable



Cable take out



Pin Assignment



Anti Rotation Spring Coupling and/or accessories Order Number