

## Linear Position Sensor in Hall Effect Technology (0 mm to 10 mm max.)



### FEATURES

- Accurate linearity down to:  $\pm 1 \%$
- Electrical strokes from 0 mm to 10 mm
- Long life: Greater than 10M cycles
- Non contacting technology: Hall effect
- Model dedicated to all applications in harsh environments
- Material categorization: for definitions of compliance please see [www.vishay.com/doc?99912](http://www.vishay.com/doc?99912)


**RoHS**  
COMPLIANT

### QUICK REFERENCE DATA

|                  |                                    |
|------------------|------------------------------------|
| Sensor type      | LINEAR, non contacting hall effect |
| Output type      | Wires                              |
| Market appliance | Industrial                         |
| Dimensions       | 46 mm x 20.8 mm x 37 mm            |

### ELECTRICAL SPECIFICATIONS

| PARAMETER                   | STANDARD                                                                       |
|-----------------------------|--------------------------------------------------------------------------------|
| Electrical stroke           | Up to 10 mm                                                                    |
| Linearity                   | $\pm 2 \%$ or $\pm 1 \%$                                                       |
| Supply voltage              | $5 V_{DC} \pm 10 \%$                                                           |
| Supply current              | $< 16 \text{ mA}$ typical                                                      |
| Output signal               | Analog ratiometric 10 % to 90 % of $V_{supply}$ or PWM 10 % to 90 % duty cycle |
| Over voltage protection     | $+20 V_{DC}$                                                                   |
| Reverse voltage protection  | $-10 V_{DC}$                                                                   |
| Load resistance recommended | Min. $1 \text{ k}\Omega$ for analog output and PWM output                      |
| Hysteresis                  | Static: 0.1 % of $V_{supply}$ /Dynamic: 0.25 % of $V_{supply}$                 |
| Resolution                  | 12 bits                                                                        |

### MECHANICAL SPECIFICATIONS

| PARAMETER         |                                                                 |
|-------------------|-----------------------------------------------------------------|
| Mechanical travel | 12 mm max.                                                      |
| Bearing type      | Sleeve bearing                                                  |
| Standard          | For spring loaded model: IP 51/without spring: Other on request |
| Weight            | $26 \text{ g} \pm 4 \text{ g}$                                  |

### ORDERING INFORMATION/DESCRIPTION

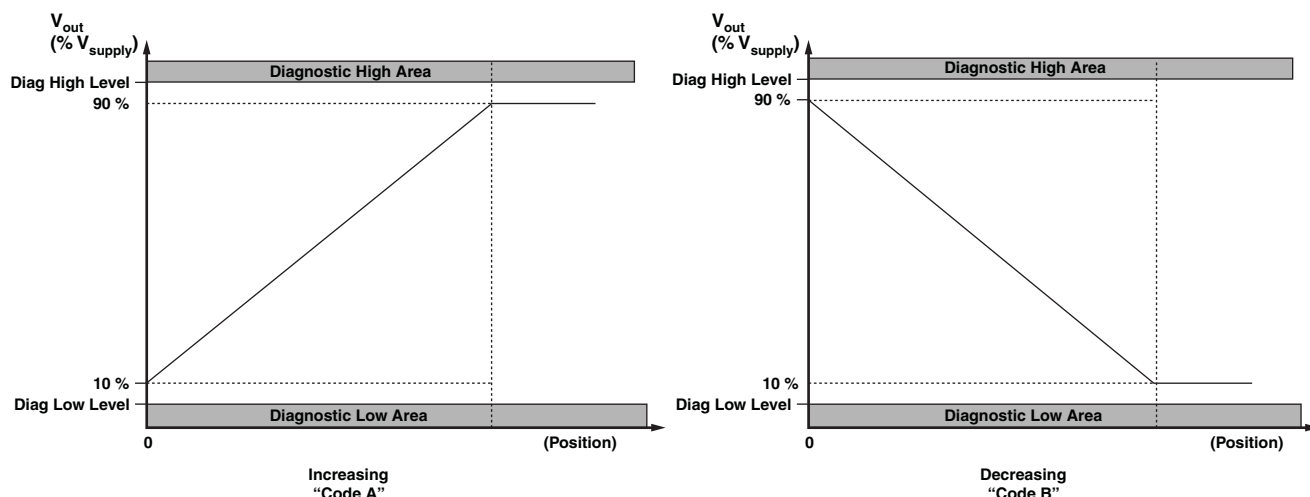
| 20 LHE                                                   | 1                                     | A                              | W                     | A                                                                                      | 1P30                                                                         | xxxx            | e1          |
|----------------------------------------------------------|---------------------------------------|--------------------------------|-----------------------|----------------------------------------------------------------------------------------|------------------------------------------------------------------------------|-----------------|-------------|
| MODEL                                                    | FEATURES                              | LINEARITY                      | OUTPUT TYPE           | OUTPUT SIGNAL                                                                          | SHAFT TYPE                                                                   | SPECIAL REQUEST | LEAD FINISH |
|                                                          | 1: Spring return<br>2: Without spring | X: $\pm 2 \%$<br>A: $\pm 1 \%$ | W: Wires<br>Z: Custom | A: Analog increasing<br>B: Analog decreasing<br>C: PWM increasing<br>D: PWM decreasing | 1: 3.175 mm<br>9: Special<br>P: Plain<br>T: Threaded M3 x 6<br>Z: Other type |                 |             |
| Shaft length from mounting face 30 mm when full extended |                                       |                                |                       |                                                                                        |                                                                              |                 |             |

### SAP PART NUMBERING GUIDELINES

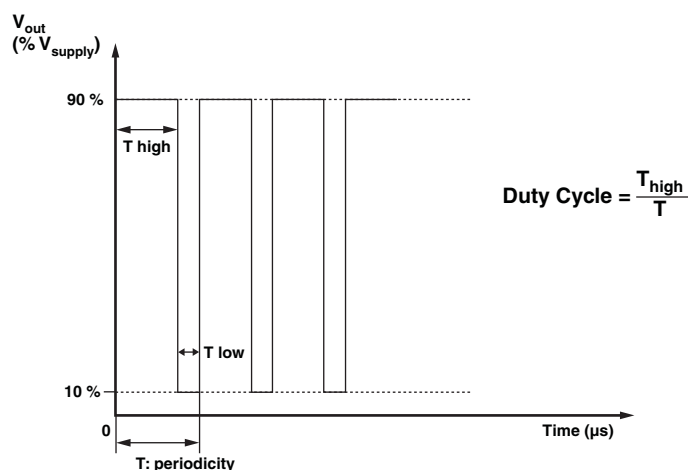
| 20 LHE | 2                            | X          | Z           | C              | 1T35       | xxxx            |
|--------|------------------------------|------------|-------------|----------------|------------|-----------------|
| MODEL  | FEATURES                     | LINEARITY  | OUTPUT TYPE | OUTPUT SIGNAL  | SHAFT TYPE | SPECIAL REQUEST |
|        | Without spring return system | $\pm 2 \%$ | "Custom"    | PWM increasing |            |                 |



## V<sub>OUT</sub> ANALOG



## V<sub>OUT</sub> PWM



## ENVIRONMENTAL SPECIFICATIONS

|                                                   |                                                                              |
|---------------------------------------------------|------------------------------------------------------------------------------|
| Vibrations                                        | 20 g from 10 Hz to 2000 Hz                                                   |
| Shocks                                            | 3 shocks/axis; 50 g half a sine 11 ms                                        |
| Operating temperature range                       | -40 °C; +85 °C                                                               |
| Life                                              | > 10M of cycles                                                              |
| Speed (max.)                                      | 60 mm/s                                                                      |
| Immunity to radiated electromagnetic disturbances | 200 V/m 150 kHz/1 GHz<br>IEC 62132-2 part 2 (level A)                        |
| Immunity to power frequency magnetic field        | 200 A/m 50 Hz/60 Hz<br>EN 61000-4-8                                          |
| Radiated electromagnetic emissions                | 30 MHz/1 GHz < 30 dB $\mu$ V/m<br>EN 61000-6-4                               |
| Electrostatic discharges                          | Contact discharges: $\pm$ 4 kV<br>Air discharges: $\pm$ 8 kV<br>EN 61000-4-2 |
| Immunity to radiated RF field                     | 10 V/m<br>80 MHz to 1 GHz<br>EN6100-4-3                                      |

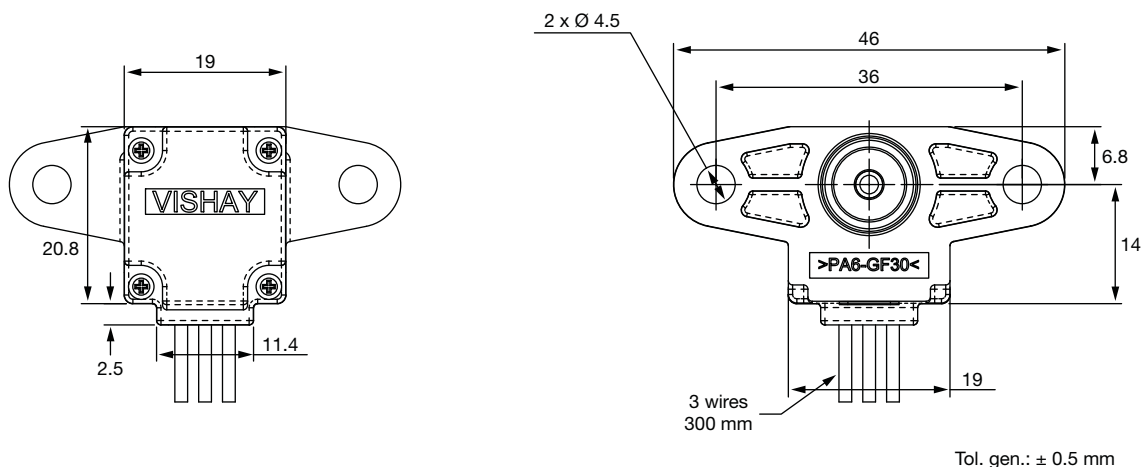
## ENVIRONMENTAL SPECIFICATIONS

| Materials          |                                          |
|--------------------|------------------------------------------|
| Housing            | Thermoplastic housing                    |
| Mounting type      | Flange with 2 holes Ø 4.5 mm             |
| Shaft              | Ø 3.175 mm (stainless steel)             |
| Output             | 3 lead wires (AWG 20)<br>Length: 300 mm  |
| Centering diameter | Ø 12 mm                                  |
| Spring force       | From 1.5 N to 7 N along stroke (typical) |

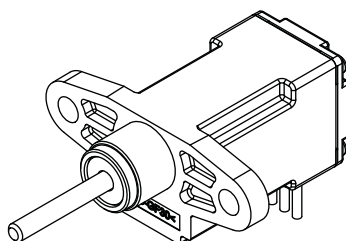
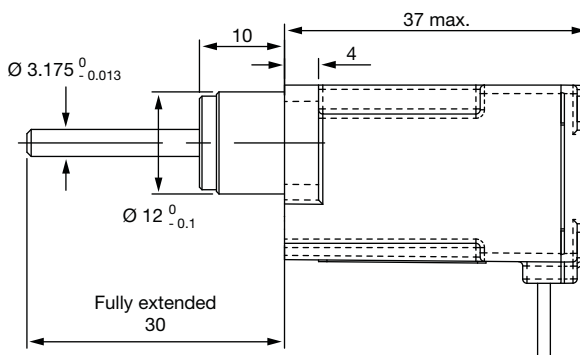
### Note

- Nothing stated herein shall be construed as a guarantee of quality or durability.

## DIMENSIONS in millimeters



Tol. gen.: ± 0.5 mm



| Wire   |                     |
|--------|---------------------|
| YELLOW | GND (-)             |
| RED    | SIGNAL              |
| GREEN  | V <sub>cc</sub> (+) |



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