

**Vert-X 31E - 5V / SPI / Single****31E5b736281999****Technical datas**

|                        |                                               |
|------------------------|-----------------------------------------------|
| Mechanical version     | Magnetic actuator type 5                      |
| Mounting hole          | Through-hole ø4.4 mm with counterbore ø7.4 mm |
| Sensor principle       | MH-C                                          |
| Electrical angle       | Electrical angle 360°                         |
| Power supply voltage   | 5 VDC                                         |
| Output signal          | SPI                                           |
| Output characteristics | Single, positive gradient CW                  |
| Electrical connection  | Special cable                                 |
| Length of cable        | Special length                                |

**Electrical Datas**

|                                                                |                      |                     |
|----------------------------------------------------------------|----------------------|---------------------|
| Measuring range                                                | °                    | 0...360             |
| Indep. linearity (typ.)                                        | % of measuring range | ±0.3                |
| Max. hysteresis                                                | °                    | 0.1                 |
| Resolution                                                     | bit                  | 14                  |
| Max. repeatability                                             | °                    | 0.1                 |
| Sample rate fast mode                                          | kHz                  | 2.2                 |
| Sample rate slow mode                                          | kHz                  | (0.55)              |
| System propagation delay fast mode                             | µs                   | 400                 |
| System propagation delay slow mode                             | µs                   | (600)               |
| Max. temperature coefficient of output signal                  | ppm/K                | 25                  |
| MTTFd / MTBF                                                   |                      | upon request        |
| Power supply voltage                                           | VDC                  | 5 (±10%)            |
| Current consumption without load (typ.) fast mode, per channel | mA                   | 14                  |
| Current consumption without load (typ.) slow mode, per channel | mA                   | (9)                 |
| Min. ohmic load at output                                      | kOhm                 | -                   |
| Max. capacitive load at output                                 | nF                   | -                   |
| Reverse polarity protection of power supply                    |                      | yes                 |
| Electrical connection                                          |                      | Round cable, 6-pole |
| Cross section of single wires                                  | mm <sup>2</sup>      | 0.25 (AWG24)        |

**Mechanical Datas**

|                                                          |           |                  |
|----------------------------------------------------------|-----------|------------------|
| Mechanical range                                         | °         | 360 (continuous) |
| Protection rating                                        |           | IP68             |
| Min. life                                                | movements | no limitation    |
| Operating & storage temperature                          | °C        | -40...+85        |
| EN 60068-2-6, vibration (Amax = 0.75 mm, f = 5–2,000 Hz) | g         | 50               |
| EN 60068-2-27, shock                                     | g         | 200              |

**Standards**

|                                                              |      |         |
|--------------------------------------------------------------|------|---------|
| EN 55011, Emission (Cl. B)                                   |      |         |
| EN 61000-4-2, ESD (contact discharge / air discharge)        | kV   | ±4 / ±8 |
| EN 61000-4-3, Immision HF radiated (80–1000 MHz/1.4–2.7 GHz) | V/m  | 30      |
| EN 61000-4-4, Burst (on all lines)                           | kV   | ±1      |
| EN 61000-4-5, Surge (lines to ground)                        | kV   | ±1      |
| EN 61000-4-6, Immision HF conducted (0.15–80 MHz)            | Vemf | 10      |

**Features**

- High protection rating IP68
- Compact dimensions
- Non-contacting measuring method
- Very long life
- High measurement accuracy
- Can be used in harsh environments (humidity, dampness, dust, vibrations, etc.)
- Full resolution and accuracy at programmed electrical angle
- Magnetic loss detection (with safety flag)

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|                                                |      |     |
|------------------------------------------------|------|-----|
| EN 61000-4-8, Immision magnetic field (50 Hz)  | A/m  | 300 |
| Insulation resistance (500 VDC, 1 bar, 2s)     | GOhm | 20  |
| Dielectric strength (VAC, 50 Hz, 1 min, 1 bar) | kV   | 1   |

## Options

### Custom modification of housing

Custom cable

Custom magnetic actuator

Sample rate in slow mode

Switch functions TTL (max. 2)

Special characteristic curve

Special electrical angle between 30 and 360° (ex factory)

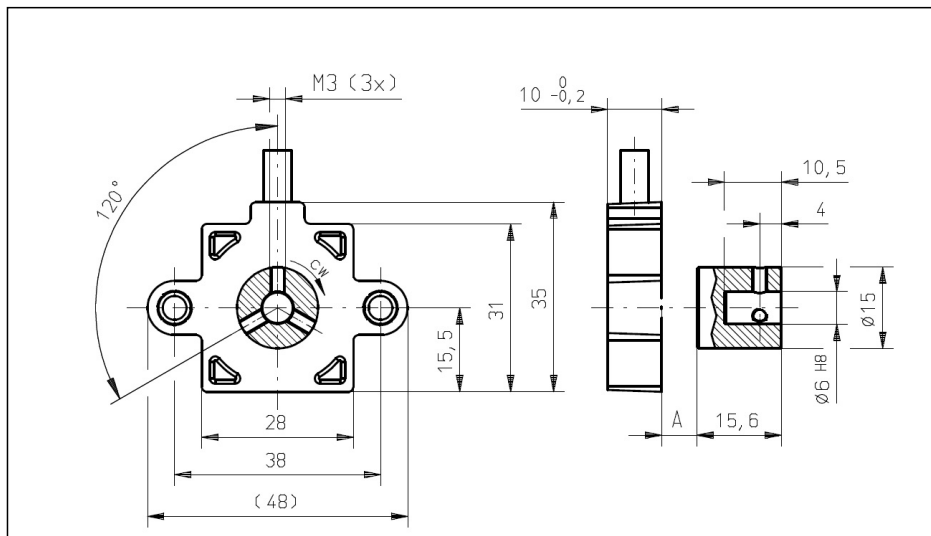
Electrical angle programmable (software)

Start and end point settable (additional wires)

Direction of rotation CW/CCW settable/programmable (additional wires or software)

Index point settable/programmable (additional wires or software)

Extended operating range, axial (without safety flag)



**Operating range/Air gap (A)**  
**Standard with Safety Flag**

- 0.8 ... 6.2mm

### Extended without Safety Flag (Optional)

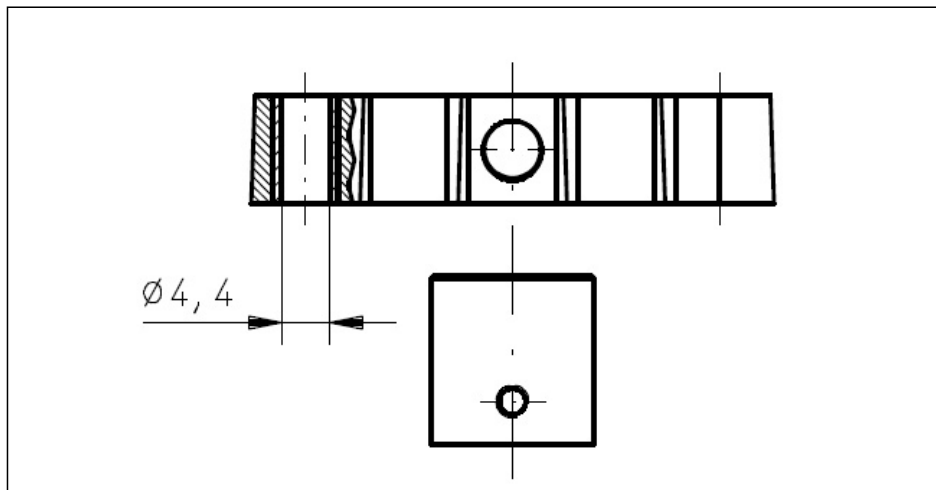
- 0 ... 10.0mm

### Features Safety Flag

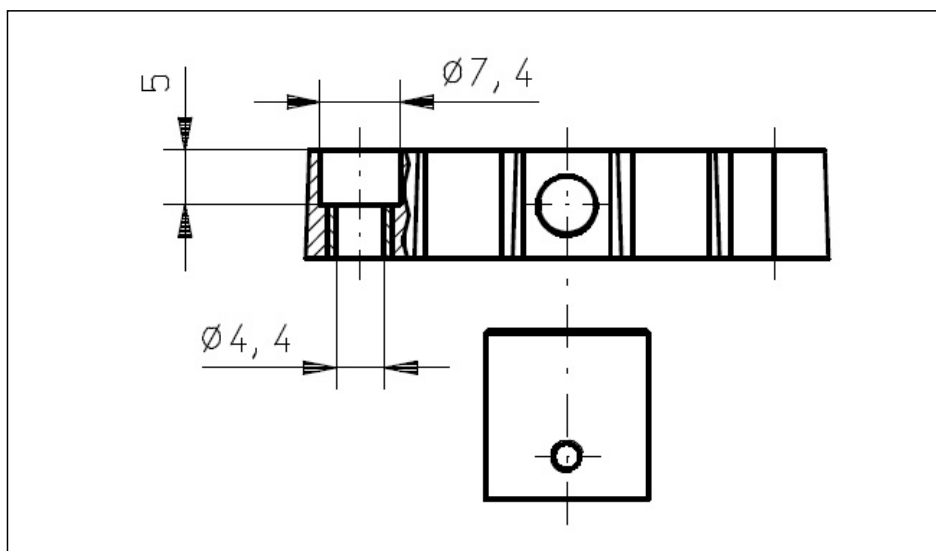
- Detection of magnetic loss
- System shut-down in case of magnetic actuator out of valid operating range
- Recommended for safety relevant applications

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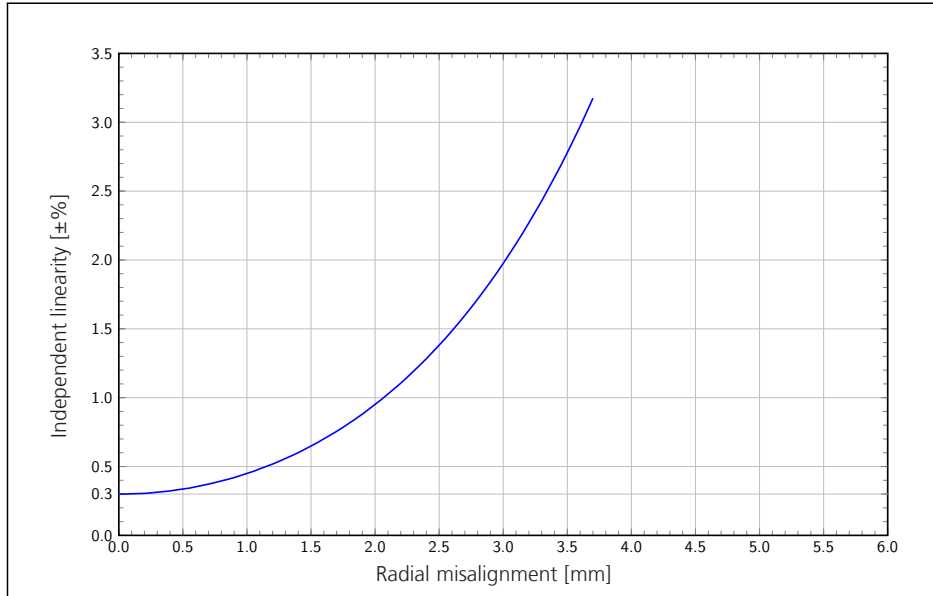
Vert-X 31E5a



Vert-X 31E5b

## Vert-X 31E - 5V / SPI / Single

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Indep. linearity with radial misalignment (@360°)