

Vert-X 31E - 5V / PWM

Applications

- Concrete pump
- Access control system
- Fork lift

Features

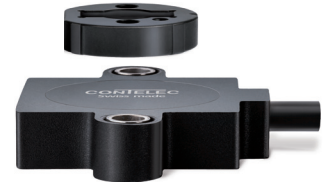
- High protection class IP68
- Compact dimensions
- Non-contacting measuring method
- Very long life
- High accuracy of measurement
- Applications under adverse ambient conditions possible (humidity, dampness, dust, vibrations etc.)
- Full resolution and accuracy at programmed electrical angle
- Detection of magnetic loss (with safety flag)

| Sensor principle | | MH-C | MH-C2 |
|--|------------------|------------------|-------|
| Electrical data | | | |
| Measuring range | ° | 0 ... 360 | - |
| Indep. linearity (typ.) | % of meas. range | ±0.3 | - |
| Max. hysteresis | ° | 0.1 | - |
| Resolution | bit | 12 | - |
| Max. repeatability | ° | 0.1 | - |
| Sample rate fast mode | kHz | (5) | - |
| Sample rate slow mode | kHz | 1.66 | - |
| System propagation delay fast mode | µs | (800) | - |
| System propagation delay slow mode | µs | 4600 | - |
| Max. temperature coefficient of the output signal | ppm/K | 25 | - |
| MTTFd / MTBF | years | 668 / 668 | - |
| Power supply voltage | VDC | 5 (±10%) | - |
| Current consumption without load (typ.) fast mode | mA | (14) | - |
| Current consumption without load (typ.) slow mode | mA | 9 | - |
| Min. ohmic load at output | kOhm | 10 | - |
| Max. capacitive load at output | nF | 1 | - |
| PWM frequency | Hz | 855 (±20%) | - |
| Reverse polarity protection of power supply | | yes | - |
| Electrical connection | | Cable 3pole | - |
| Cross section of single wires | mm ² | 0.56 (AWG20) | - |
| Redundancy feasible | | yes | - |
| Electrical connection redundant | | Cable 6pole | - |
| Cross section of single wires redundant | mm ² | 0.25 (AWG24) | - |
| Mechanical data | | | |
| Mechanical range | ° | 360 (continuous) | - |
| Protection class | | IP68 | - |
| Min. life | movements | no limitation | - |
| Operating & storage temperature | °C | -40 ... +85 | - |
| EN 60068-2-6 Vibration (Amax = 0.75mm, f = 5...2000Hz) | g | 50 | - |
| EN 60068-2-27 Shock | g | 200 | - |
| Standards | | | |
| EN 55022 class B, Emission radiated (30...230MHz) | dB(µV/m) | max. 30 | - |
| EN 55022 class B, Emission radiated (230...1000MHz) | dB(µV/m) | max. 37 | - |
| EN 55022 class B, Emission conducted (0.15...0.5MHz) | dB(µV) | max. 56 ... 46 | - |
| EN 55022 class B, Emission conducted (0.5...5MHz) | dB(µV) | max. 46 | - |
| EN 55022 class B, Emission conducted (5...30MHz) | dB(µV) | max. 50 | - |
| EN 61000-4-2, ESD (contact discharge / air discharge) | kV | ±4 / ±8 | - |
| EN 61000-4-3, Immision HF radiated (80...1000MHz/1.4...2.7GHz) 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...80MHz) | Vemk | 10 | - |
| EN 61000-4-8, Immision magnetic field (50Hz) | A/m | 300 | - |
| EN 60393-1 Insulation resistance (500VDC, 1bar, 2s) | GOhm | 20 | - |
| EN 60393-1 Dielectric strength (VAC, 50Hz, 1min, 1bar) | kV | 1 | - |

Errors and omissions excepted. Subject to change without notice. / State: 04.10.16

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Vert-X 31E - 5V / PWM
Ordering code

| | | | | | | | | | | | | | | |
|--|----------|----------|----------|----------|----------|----------|----------|----------|----------|--|----------|----------|----------|----------|
| | | | | | | | | | | Output characteristics Positive gradient CW Standard 1 Positive gradient CCW Optional 2 Redundant, positive gradient CW Optional 3 Redundant, positive gradient CCW Optional 4 Redundant, crossed signal curves Optional 5 | | | | |
| | | | | | | | | | | Electrical connection 4 Standard Cable 3pole 6 Optional Cable 6pole 9 Optional Special cable | | | | |
| | | | | | | | | | | Length of cable 02 Standard 1.0m 06 Optional 3.0m 10 Optional 5.0m 99 Optional Special length | | | | |
| | | | | | | | | | | Output signal PWM Standard 4 | | | | |
| | | | | | | | | | | Power supply voltage 5VDC Standard 2 | | | | |
| Vert-X | 3 | 1 | E | 6 | a | 7 | 3 | 6 | 2 | 4 | 1 | 4 | 0 | 2 |
| | | | | | | | | | | Electrical angle 36 Standard Electrical angle 360° xx Optional 03 to 35 ; Declaration in 10° steps 99 Optional Special angle | | | | |
| | | | | | | | | | | Sensor principle 7 MH-C | | | | |
| | | | | | | | | | | Mounting hole a Standard Through-hole ø 4.4mm b Optional Through-hole ø 4.4mm with counterbore ø 7.4mm | | | | |
| Mechanical version 31E5 Optional Magnetic actuator type 5 31E6 Standard Magnetic actuator type 6 31E7 Optional Magnetic actuator type 7 31E8 Optional Magnetic actuator type 8 31E9 Optional Special magnetic actuator | | | | | | | | | | | | | | |

| | MH-C | MH-C2 |
|---|------|-------|
| Custom magnetic actuator | X | - |
| Custom modification of the housing | X | - |
| Custom cable | X | - |
| Sample rate in fast mode | X | - |
| Switch functions TTL (max. 2) | - | - |
| Special characteristic curve | - | - |
| Special electrical angle within 30° to 360° (ex factory) | X | - |
| Electrical angle programmable (Software) | - | - |
| Start & end point settable (Additional wires) | - | - |
| Sense 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) | X | - |

Options (on request)

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Vert-X 31E5

Accessories (incl.)

- None

Operating range/Air gap (A) Standard with safety flag

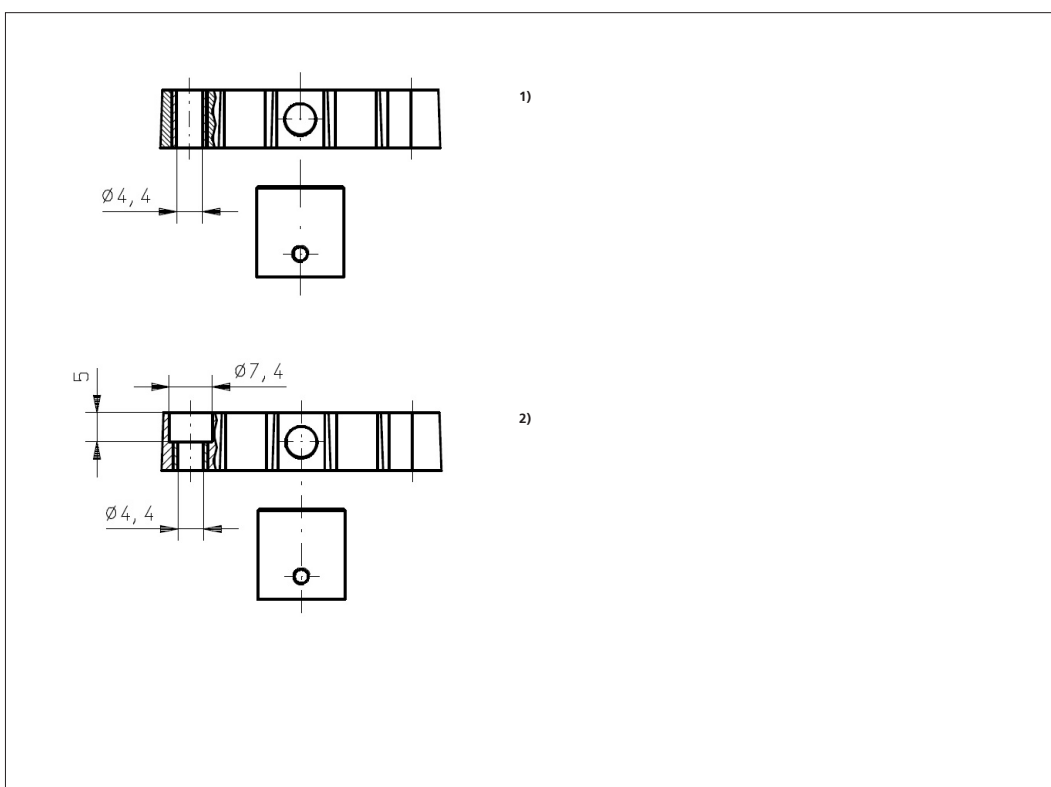
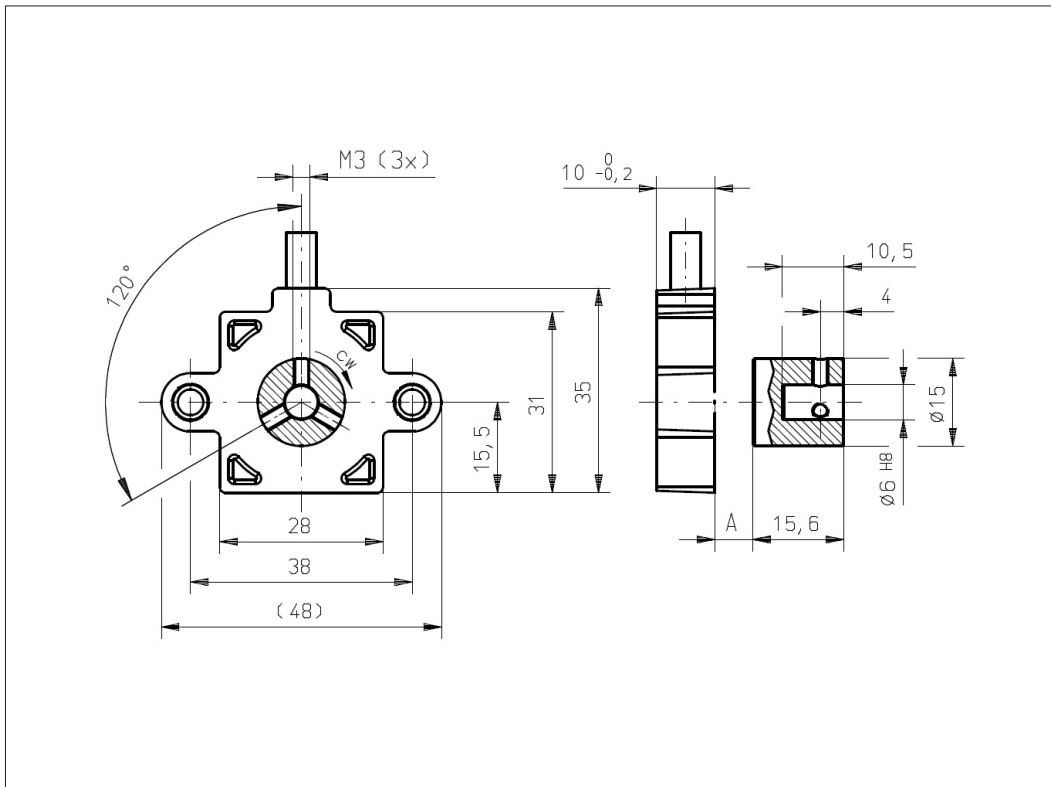
| | |
|-----------|-------------|
| Single | 0 ... 6.2mm |
| Redundant | 0 ... 5.7mm |

Extended without safety flag (Optional)

| | |
|-----------|--------------|
| Single | 0 ... 10.0mm |
| Redundant | 0 ... 9.5mm |

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



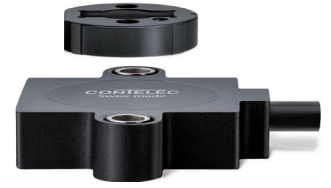
Vert-X 31E5axxx 24x xxx ¹⁾

Vert-X 31E5bxxx 24x xxx ²⁾

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Vert-X 31E6

Accessories (incl.)

- None

Operating range/Air gap (A) Standard with safety flag

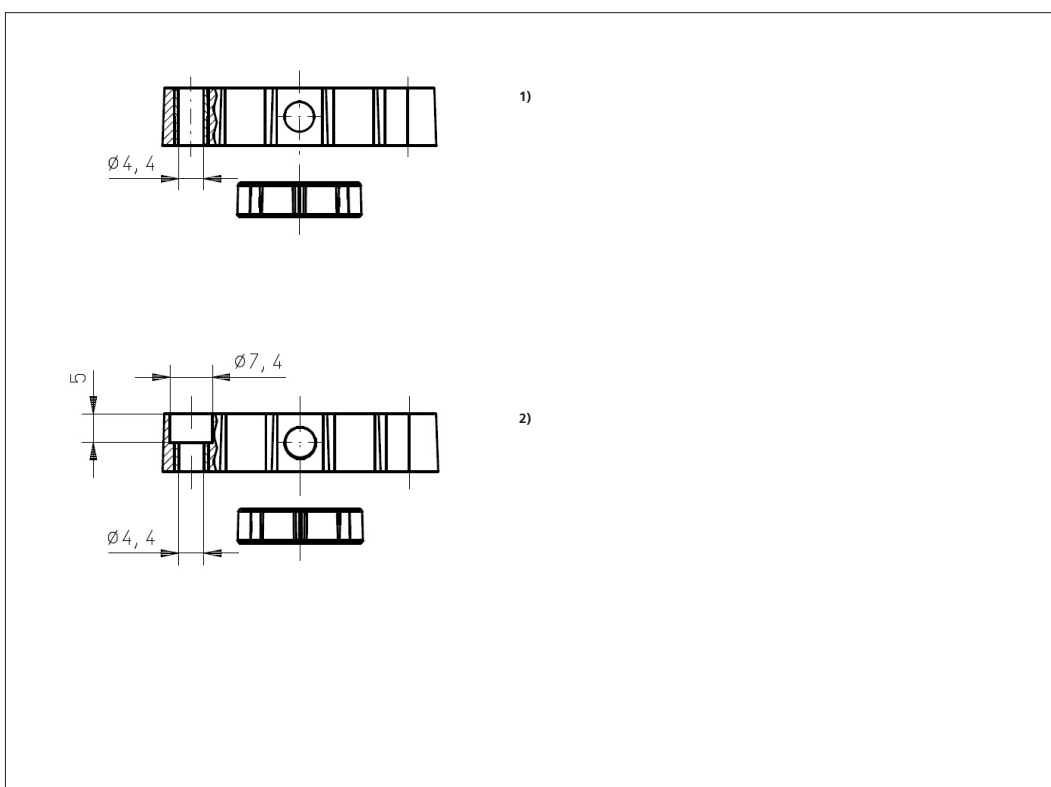
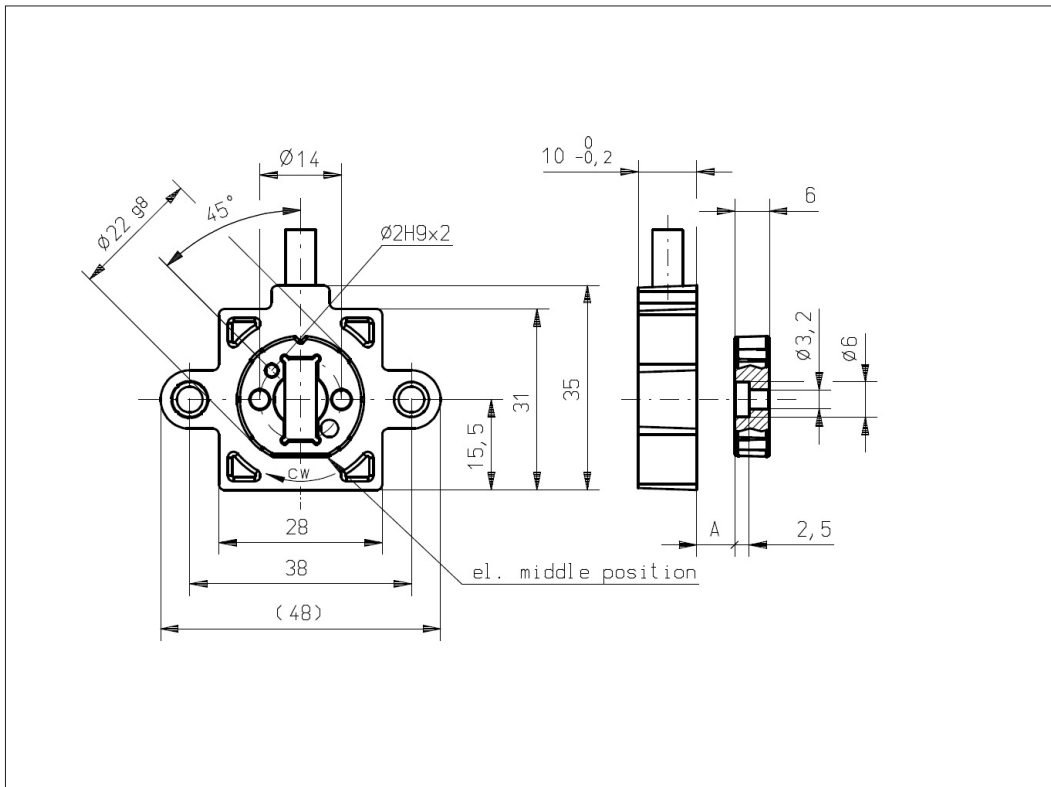
| | |
|-----------|-------------|
| Single | 0 ... 5.0mm |
| Redundant | 0 ... 4.5mm |

Extended without safety flag (Optional)

| | |
|-----------|-------------|
| Single | 0 ... 8.4mm |
| Redundant | 0 ... 7.9mm |

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



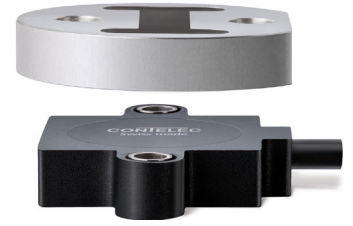
Vert-X 31E6axxx 24x xxx ¹⁾

Vert-X 31E6bxxx 24x xxx ²⁾

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Vert-X 31E7

Accessories (incl.)

- None

Operating range/Air gap (A) Standard with safety flag

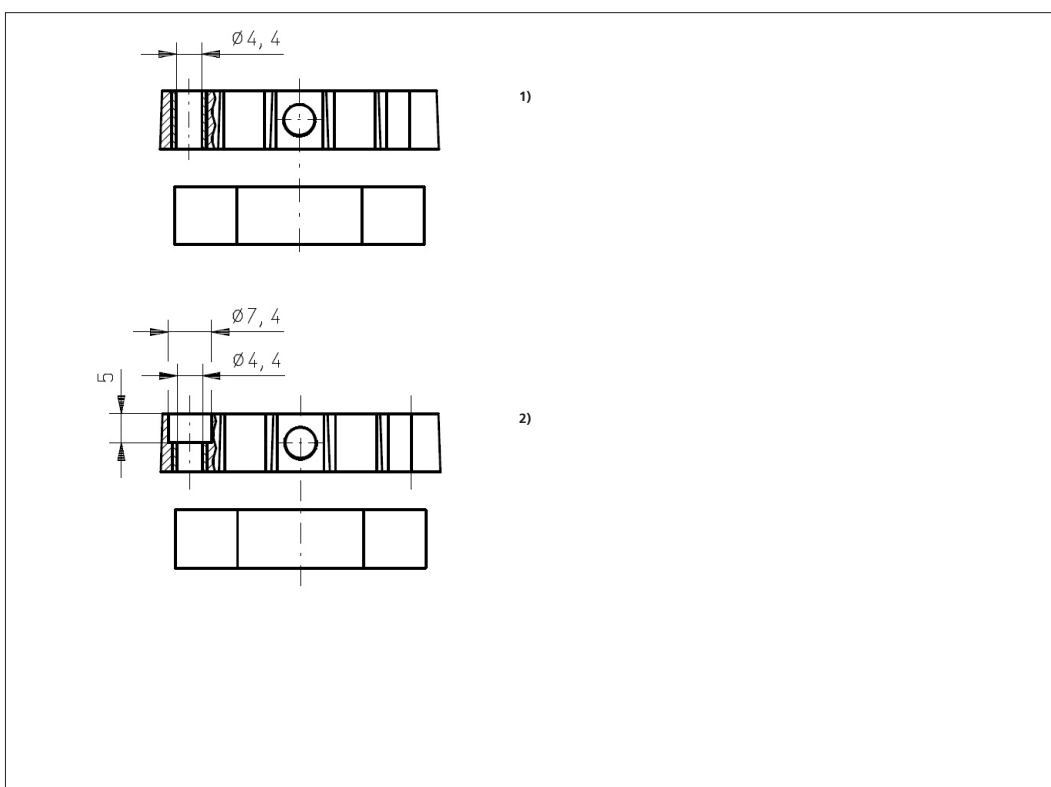
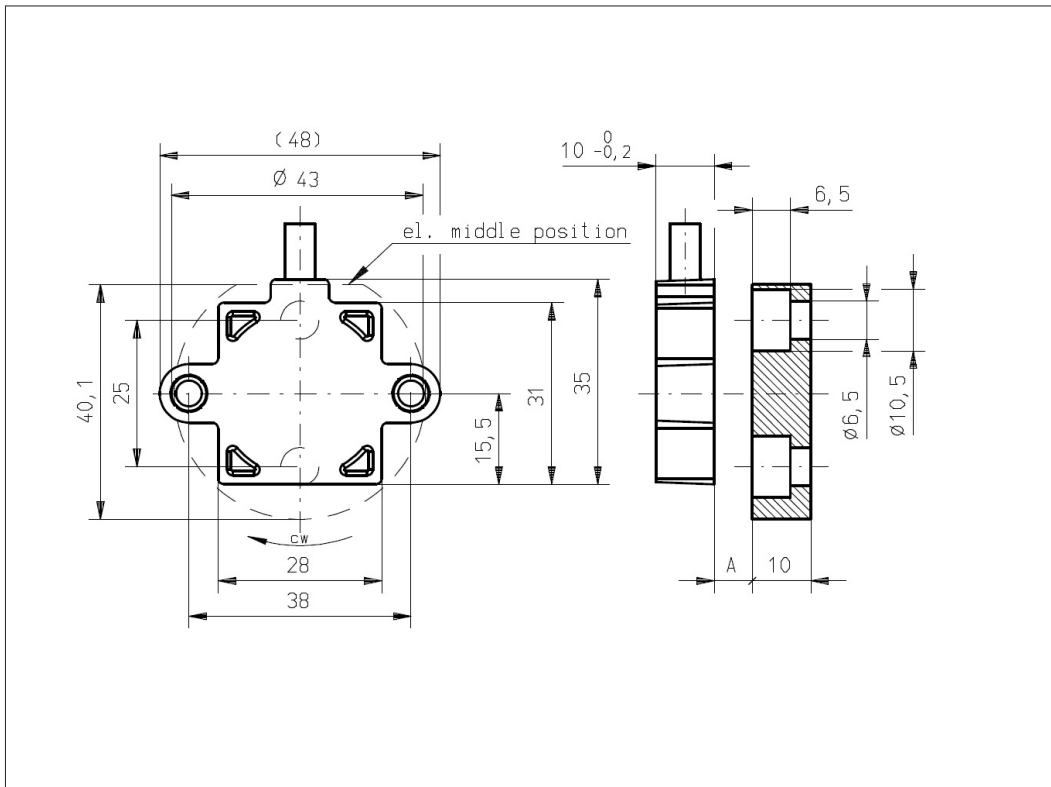
| | |
|-----------|--------------|
| Single | 0 ... 13.3mm |
| Redundant | 0 ... 12.8mm |

Extended without safety flag (Optional)

| | |
|-----------|--------------|
| Single | 0 ... 19.7mm |
| Redundant | 0 ... 19.2mm |

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

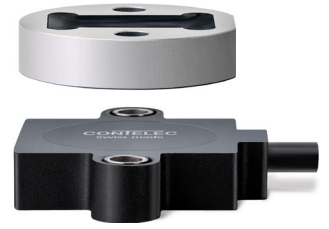


Vert-X 31E7axxx 24x xxx ¹⁾

Vert-X 31E7bxxx 24x xxx ²⁾

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Vert-X 31E8

Accessories (incl.)

- None

Operating range/Air gap (A) Standard with safety flag

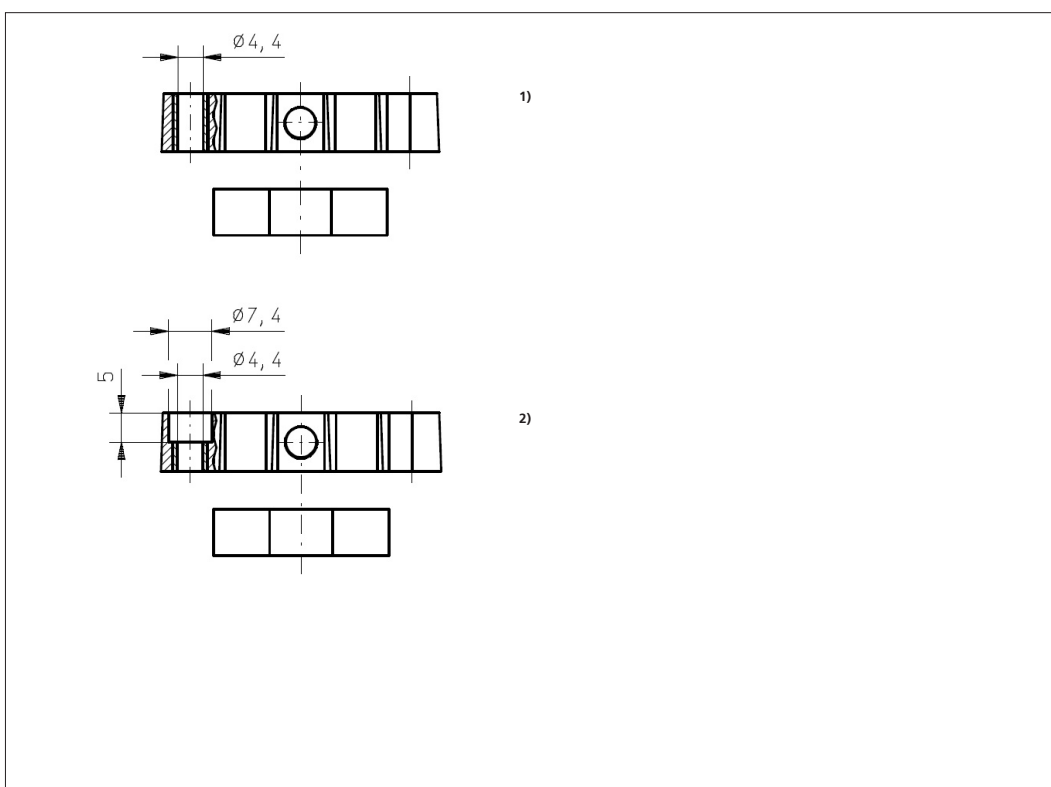
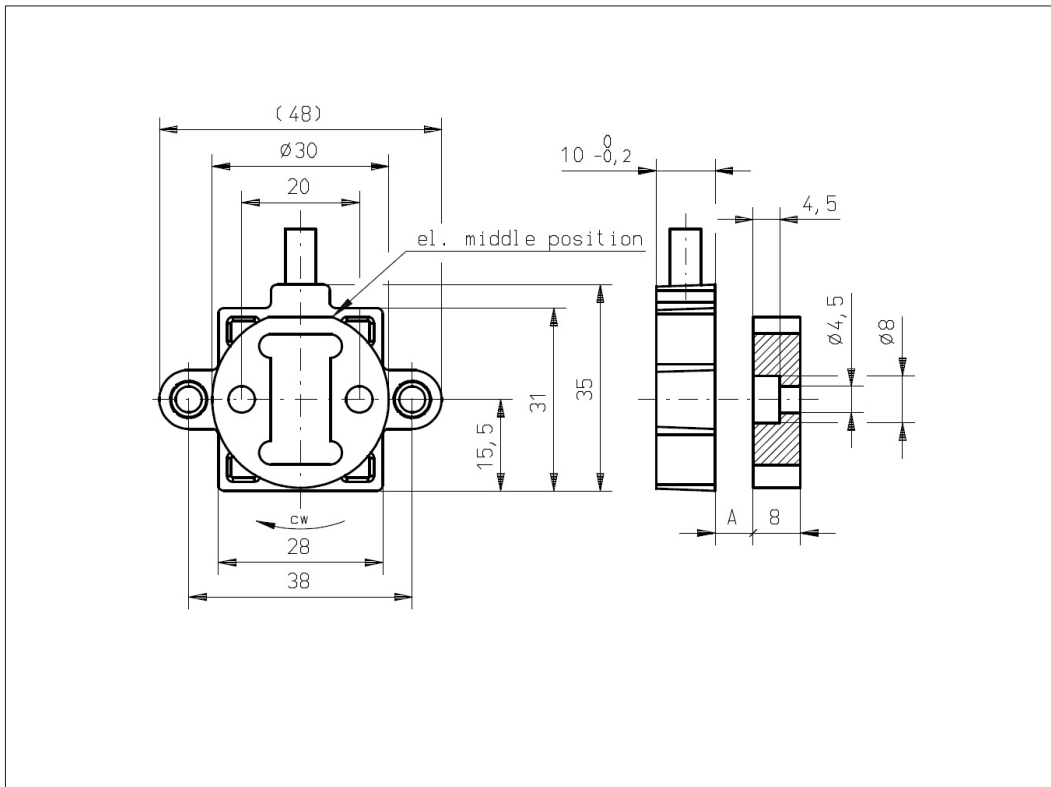
| | |
|-----------|--------------|
| Single | 0 ... 12.8mm |
| Redundant | 0 ... 12.3mm |

Extended without safety flag (Optional)

| | |
|-----------|--------------|
| Single | 0 ... 18.7mm |
| Redundant | 0 ... 18.2mm |

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



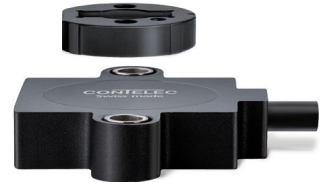
Vert-X 31E8axxx 24x xxx ¹⁾

Vert-X 31E8bxxx 24x xxx ²⁾

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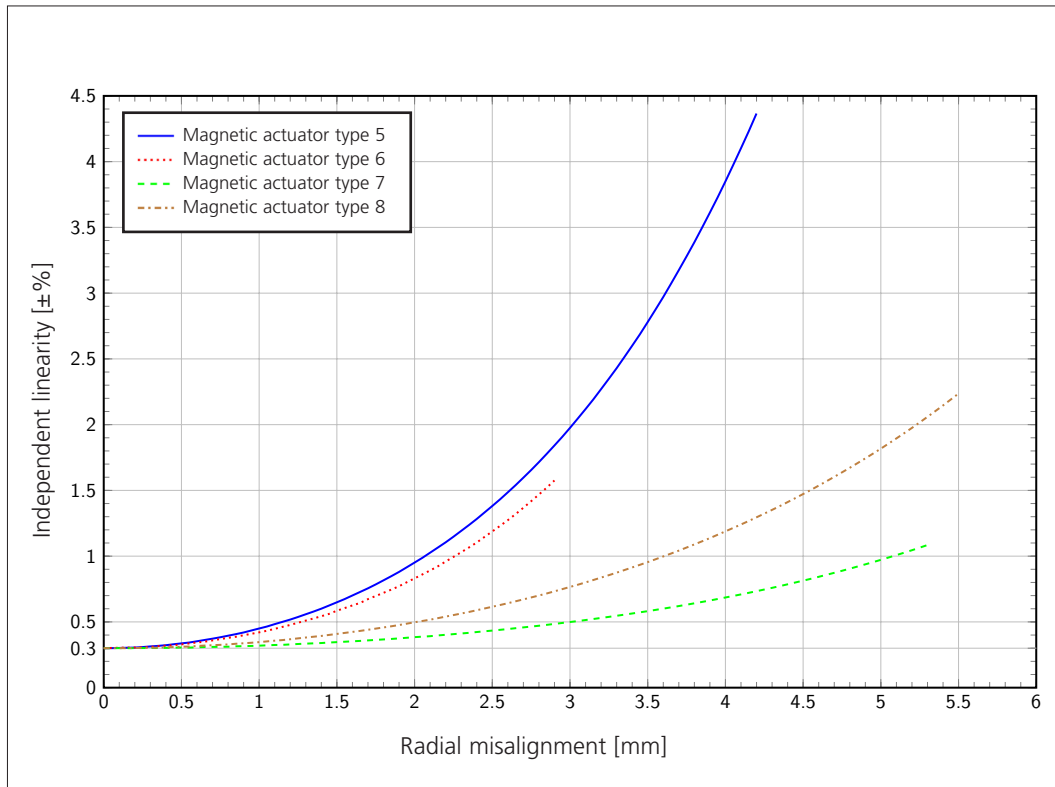
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Vert-X 31E

Indep. linearity with radial misalignment (@360°)



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