

Vert-X 31E - 5V / SPI

Applications

- Concrete pump
- Access control system
- Fork lift

Features

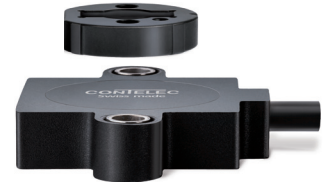
- High protection class IP68
- Compact dimensions
- Non-contacting measuring method
- Very long life
- High accuracy of measurement
- Applications under adverse ambient conditions possible (humidity, dampness, dust, vibrations etc.)
- Full resolution and accuracy at programmed electrical angle
- Detection 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	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 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	-	-
Max. capacitive load at output	nF	-	-
Reverse polarity protection of power supply		yes	-
Electrical connection		Cable 6pole	-
Cross section of single wires	mm ²	0.25 (AWG24)	-
Redundancy feasible		yes	-
Electrical connection redundant		Cable 10pole	-
Cross section of single wires redundant	mm ²	0.09 (AWG28)	-
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 / SPI
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 1 Optional Cable 10pole 6 Standard 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 SPI Standard 8		
												Power supply voltage 5VDC Standard 2		
Vert-X	3	1	E	6	a	7	3	6	2	8	1	6	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 slow 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

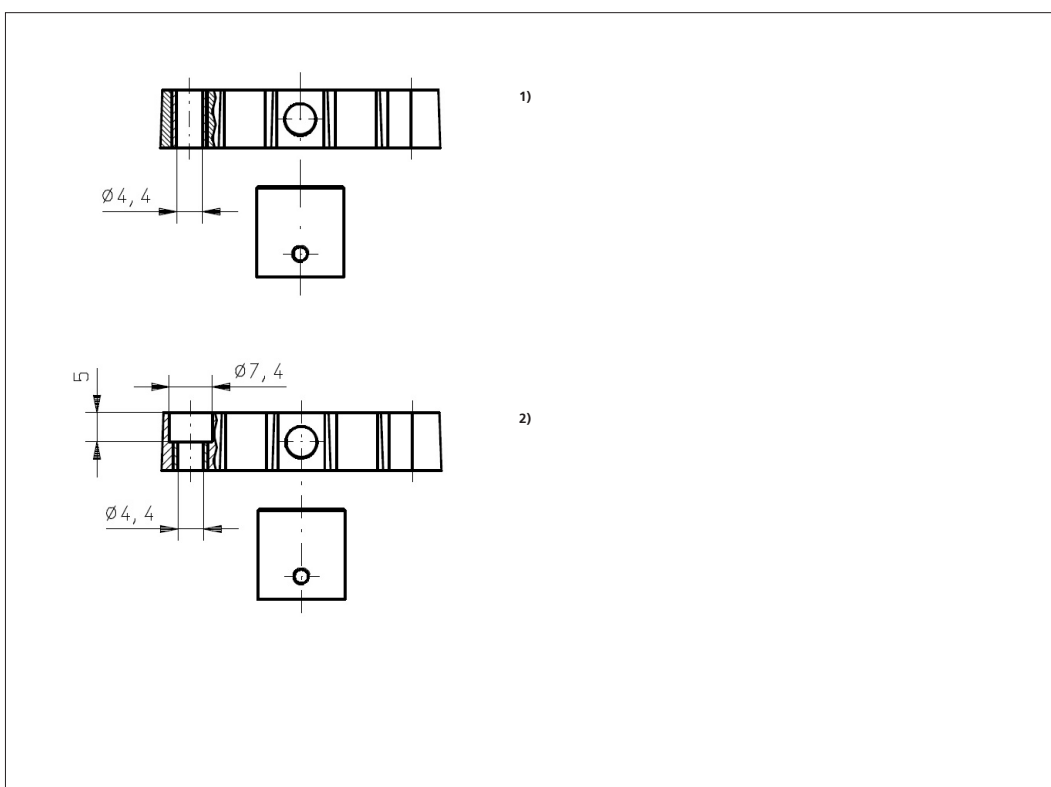
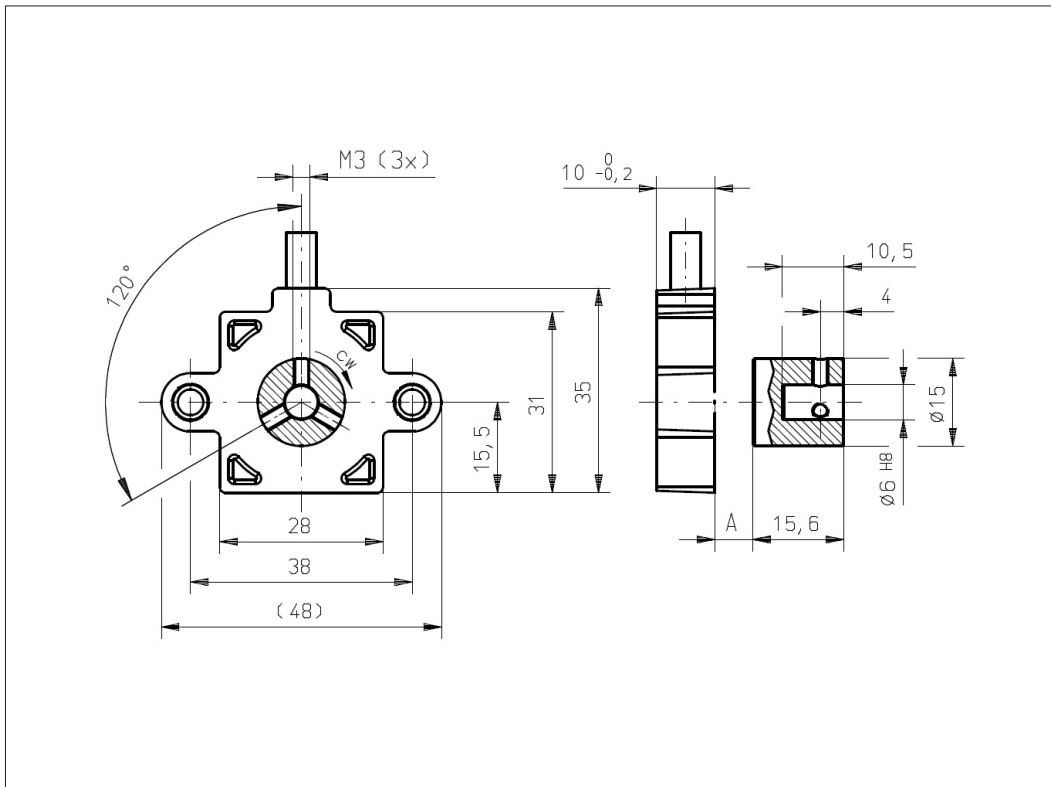
Single	0 ... 6.2mm
Redundant	0 ... 5.7mm

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

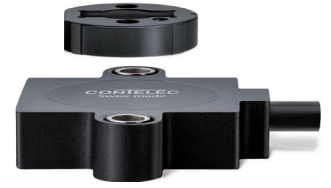


Vert-X 31E5axxx 28x xxx ¹⁾

Vert-X 31E5bxxx 28x xxx ²⁾

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Vert-X 31E6

Accessories (incl.)

- None

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

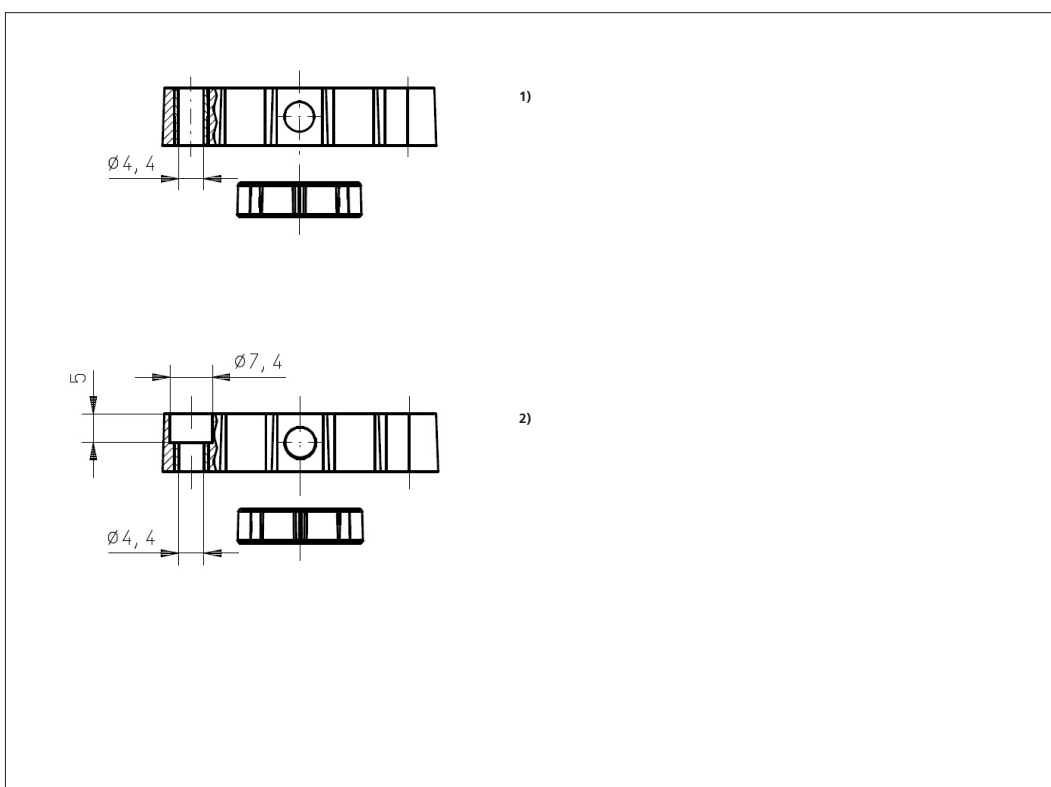
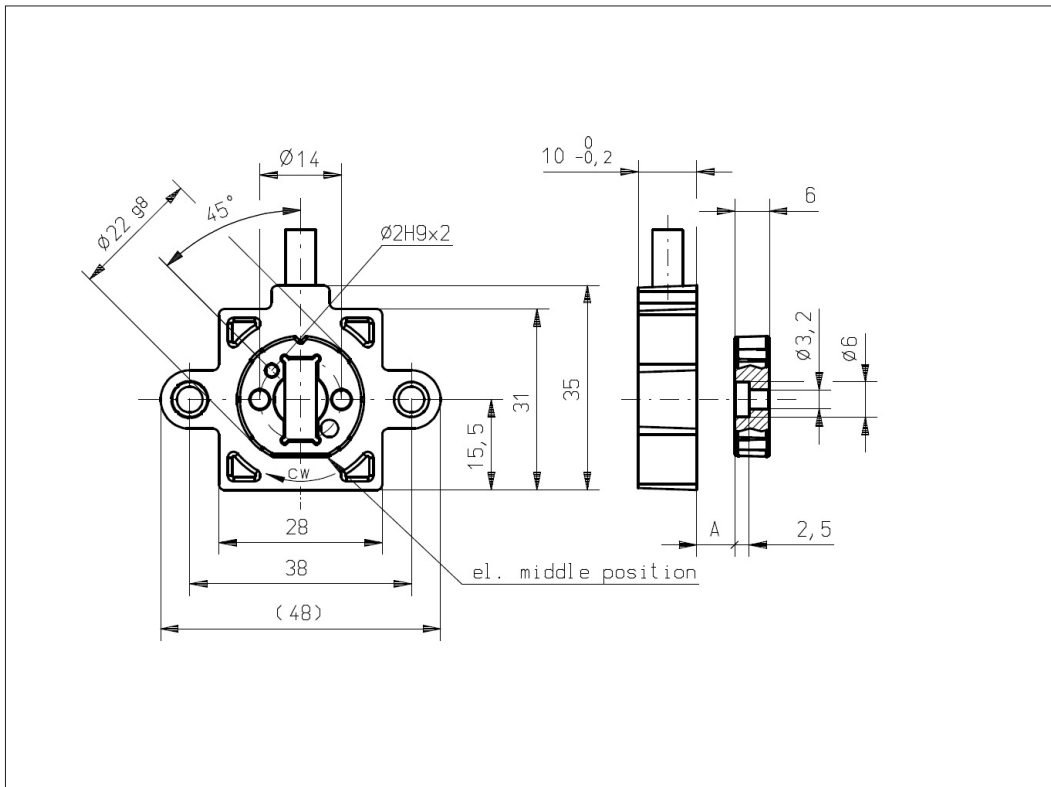
Single	0 ... 5.0mm
Redundant	0 ... 4.5mm

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



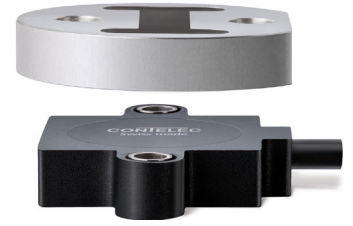
Vert-X 31E6axxx 28x xxx ¹⁾

Vert-X 31E6bxxx 28x xxx ²⁾

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Vert-X 31E7

Accessories (incl.)

- None

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

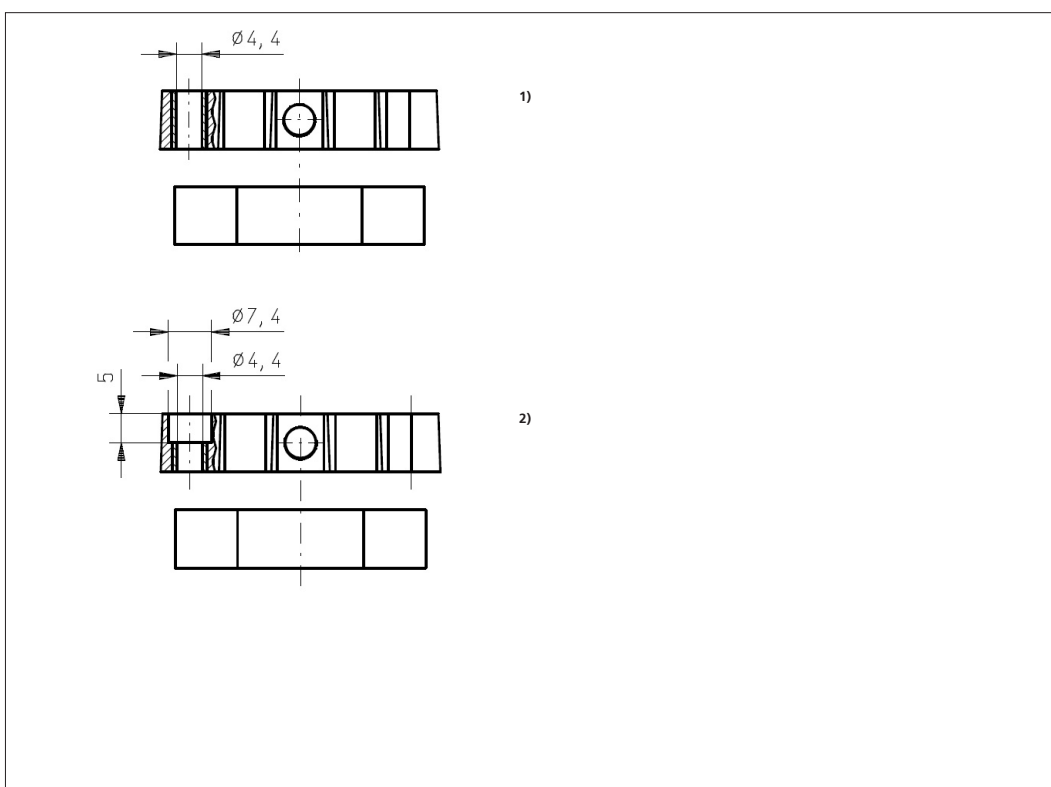
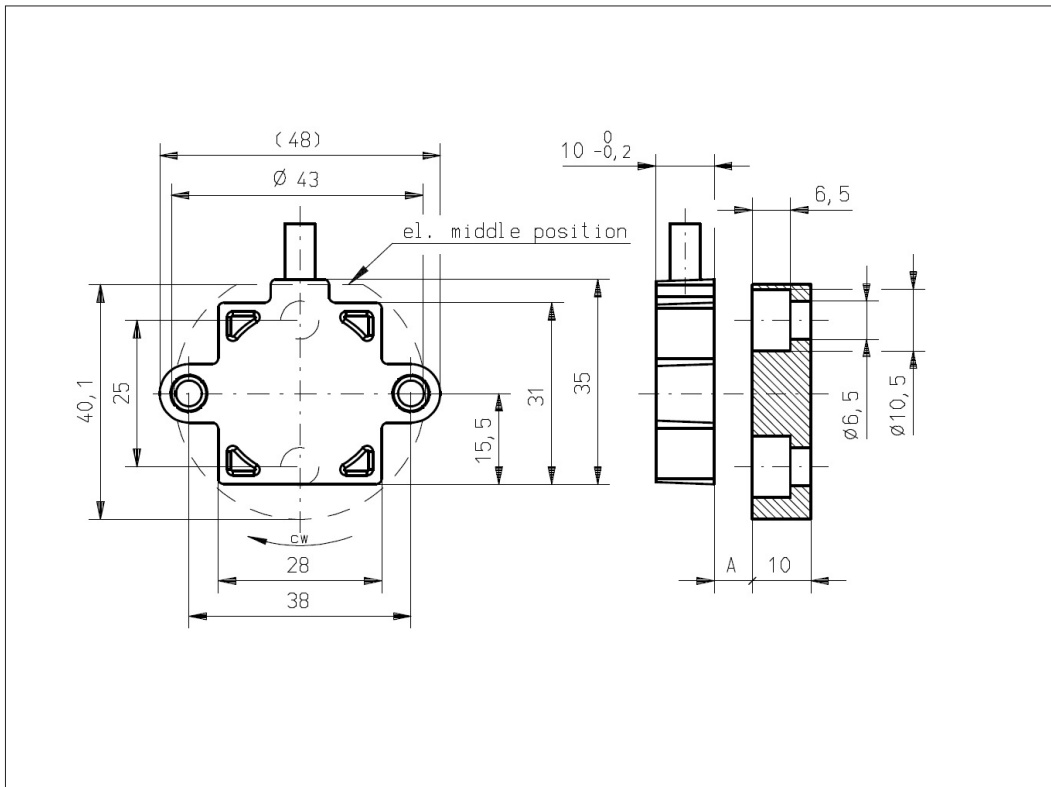
Single	0 ... 13.3mm
Redundant	0 ... 12.8mm

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

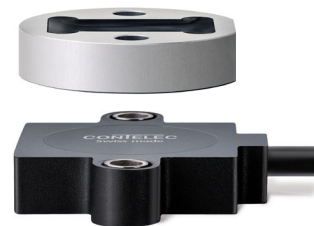


Vert-X 31E7axxx 28x xxx ¹⁾

Vert-X 31E7bxxx 28x xxx ²⁾

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Vert-X 31E8

Accessories (incl.)

- None

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

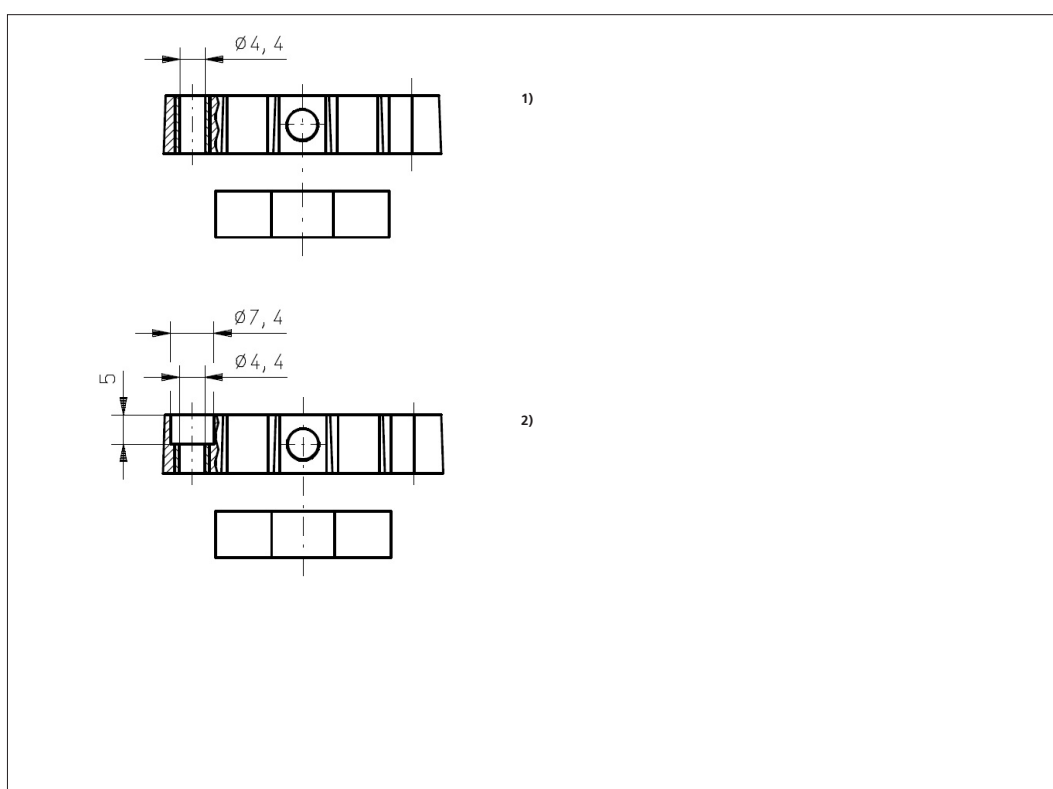
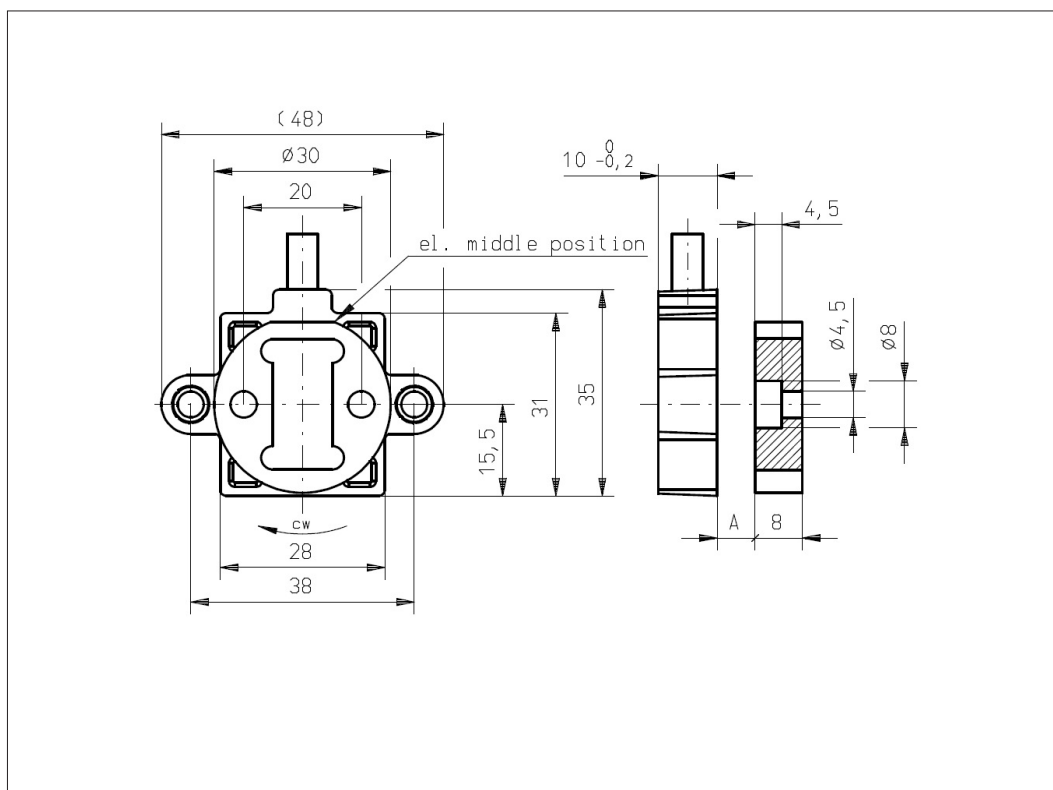
Single	0 ... 12.8mm
Redundant	0 ... 12.3mm

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



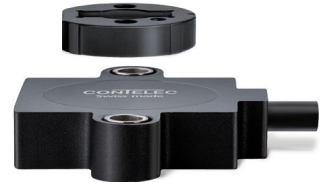
Vert-X 31E8axxx 28x xxx ¹⁾

Vert-X 31E8bxxx 28x xxx ²⁾

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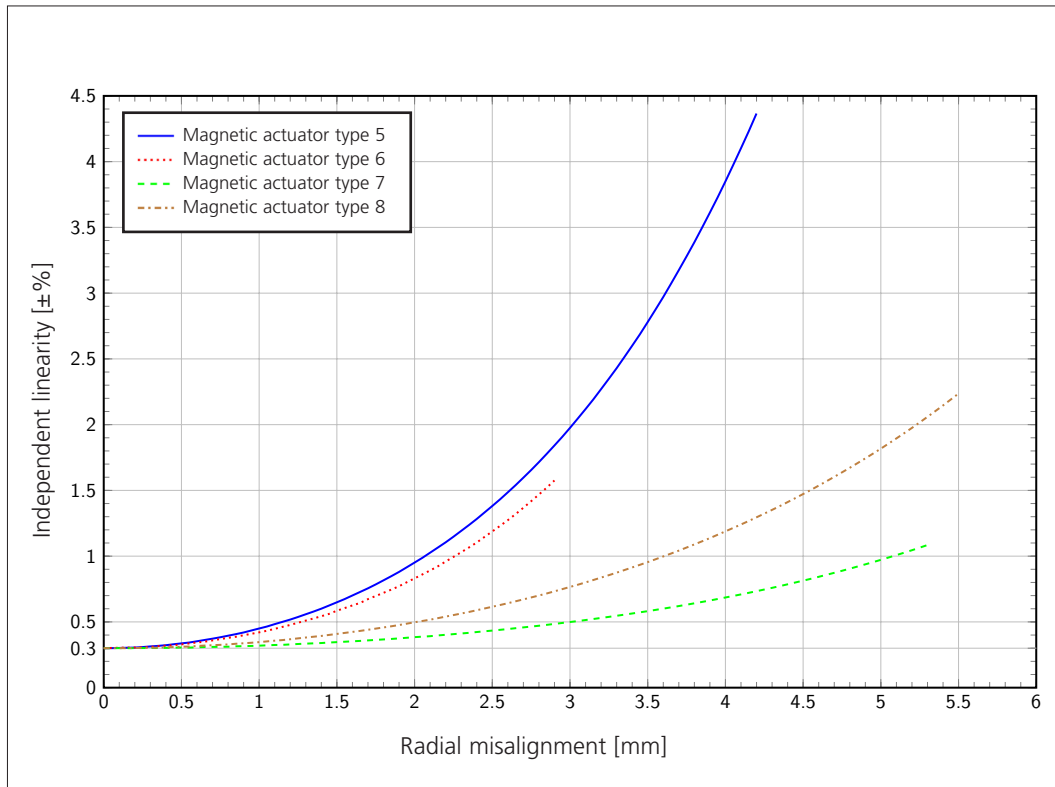
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Vert-X 31E

Indep. linearity with radial misalignment (@360°)



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