



Vert-X 48E - 24V / 0.1 - 10V

Applications

- Mining machine
- Agricultural machine
- Container side loader

Features general

- High protection class IP68 / IP69K
- Very robust design
- 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)

Features MH-C

- Resolution of 12bit
- Redundancy possible
- Lower price than MH-C2

Features MH-C2

- Resolution of 14bit
- Index point(s), sense of rotation and angle settable resp. programmable by customer (optional)

Errors and omissions excepted. Subject to change without notice. / State: 29.04.16

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Sensor principle		MH-C	MH-C2
Electrical data			
Measuring range	°	0 ... 360	0 ... 360
Indep. linearity (typ.)	% of meas. range	±0.3	±0.3
Max. hysteresis	°	0.1	0.1
Resolution	bit	12	14
Max. repeatability	°	0.1	0.1
Sample rate fast mode	kHz	(5)	(2)
Sample rate slow mode	kHz	1.66	0.5
System propagation delay fast mode	µs	(800)	(800)
System propagation delay slow mode	µs	4600	2500
Max. temperature coefficient of the output signal	ppm/K	100	100
MTTFd / MTBF	years	185 / 185	147 / 147
Power supply voltage	VDC	10.8 ... 35	11 ... 35
Current consumption without load (typ.) fast mode	mA	(19)	(20)
Current consumption without load (typ.) slow mode	mA	14	15
Min. ohmic load at output	kOhm	10	10
Max. capacitive load at output	nF	100	100
Reverse polarity protection of power supply		yes	yes
Electrical connection (s = shielded)		Cable 3pole, s	Cable 3pole, s
Cross section of single wires	mm ²	0.56 (AWG20)	0.56 (AWG20)
Redundancy feasible		yes	no
Electrical connection redundant (s = shielded)		Cable 6pole, s	-
Cross section of single wires redundant	mm ²	0.25 (AWG24)	-
Mechanical data			
Mechanical range	°	360 (continuous)	360 (continuous)
Protection class		IP68 / IP69K	IP68 / IP69K
Min. life	movements	no limitation	no limitation
Operating & storage temperature	°C	-40 ... +85	-40 ... +85
EN 60068-2-6 Vibration (Amax = 0.75mm, f = 5...2000Hz)	g	50	50
EN 60068-2-27 Shock	g	200	200
Standards			
EN 55022 class B, Emission radiated (30...230MHz)	dB(µV/m)	max. 30	max. 30
EN 55022 class B, Emission radiated (230...1000MHz)	dB(µV/m)	max. 37	max. 37
EN 55022 class B, Emission conducted (0.15...0.5MHz)	dB(µV)	max. 56 ... 46	max. 56 ... 46
EN 55022 class B, Emission conducted (0.5...5MHz)	dB(µV)	max. 46	max. 46
EN 55022 class B, Emission conducted (5...30MHz)	dB(µV)	max. 50	max. 50
EN 61000-4-2, ESD (contact discharge / air discharge)	kV	±4 / ±8	±4 / ±8
EN 61000-4-3, Immision HF radiated (80...1000MHz/1.4...2.7GHz)	V/m	30	30
EN 61000-4-4, Burst (on all lines)	kV	±1	±1
EN 61000-4-5, Surge (lines to ground)	kV	±1	±1
EN 61000-4-6, Immision HF conducted (0.15...80MHz)	Vemk	12	12
EN 61000-4-8, Immision magnetic field (50Hz)	A/m	300	300
EN 60393-1 Insulation resistance (500VDC, 1bar, 2s)	GOhm	20	20
EN 60393-1 Dielectric strength (VAC, 50Hz, 1min, 1bar)	kV	1	1



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Ordering code

*** Switch outputs**
 Please define number (max. 127), position and width of the pulses.

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
Positive gradient CW with 1 switch output*	Optional A
Positive gradient CCW with 1 switch output*	Optional B
Positive gradient CW with 2 switch outputs*	Optional C
Positive gradient CCW with 2 switch outputs*	Optional D
Sense of rotation settable	Optional E
Zero point & sense of rotation settable	Optional F
Middle point & sense of rotation settable	Optional G
Start + end point & sense of rotation settable	Optional H
Programmable with Vert-X EasyAdapt	Optional P

Output signal	
0,1VDC ... 10VDC	Standard 1

Power supply voltage	
24VDC	Standard 1

Electrical connection	
4	Standard Round cable 3pole
6	Optional Round 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

Vert-X **4 8 E 8** | **7 3 6** | **1 1 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
8	MH-C2

Mechanical version	
48E5	Optional Magnetic actuator type 5
48E6	Optional Magnetic actuator type 6
48E7	Optional Magnetic actuator type 7
48E8	Standard Magnetic actuator type 8
48E9	Optional Special housing ; special magnetic actuator

	MH-C	MH-C2
Custom magnetic actuator	X	X
Custom modification of the housing	X	X
Custom cable	X	X
Sample rate in fast mode	X	X
Switch functions TTL (max. 2)	X	X
Special characteristic curve	-	X
Special electrical angle within 30° to 360° (ex factory)	X	X
Electrical angle programmable (Software)	-	X
Start & end point settable (Additional wires)	-	X
Sense of rotation CW/CCW settable / programmable (Additional wires or Software)	-	X
Index point settable / programmable (Additional wires or Software)	-	X
Extended operating range, axial (without safety flag)	X	X

Options (on request)

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Vert-X 48E5

Accessories (incl.)

- None

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

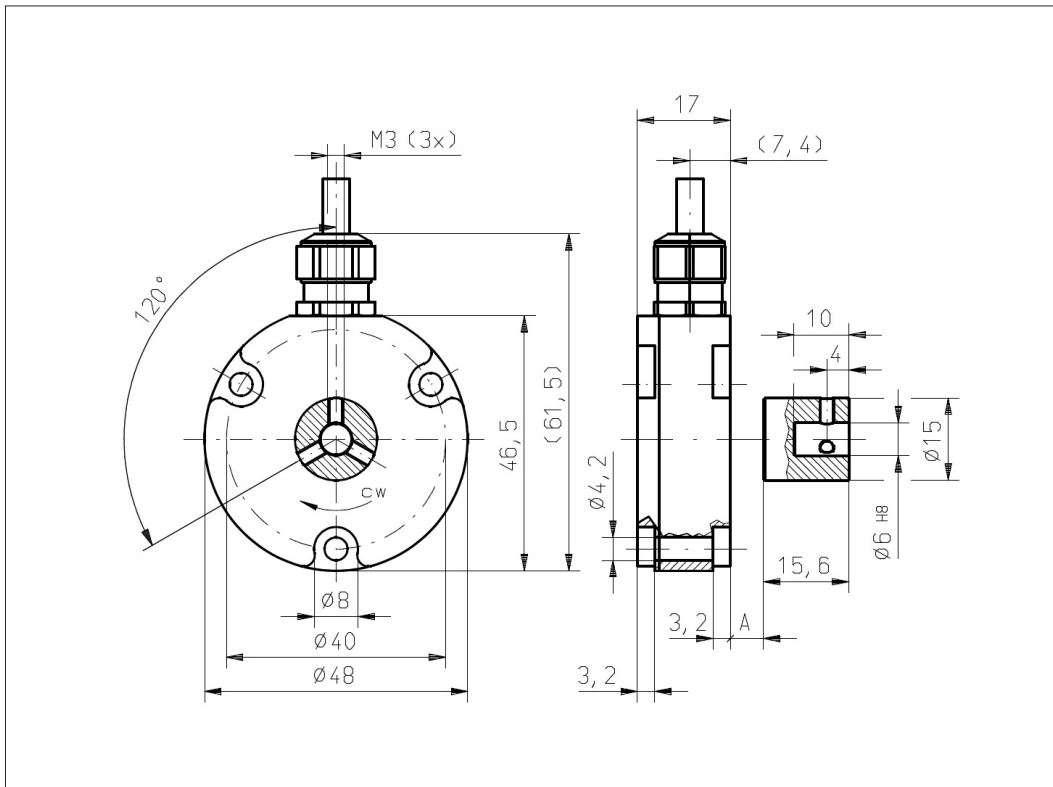
Single	0 ... 6.7mm
Redundant	0 ... 6.2mm

Extended without safety flag (Optional)

Single	0 ... 10.5mm
Redundant	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



Vert-X 48E6

Accessories (incl.)

- None

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

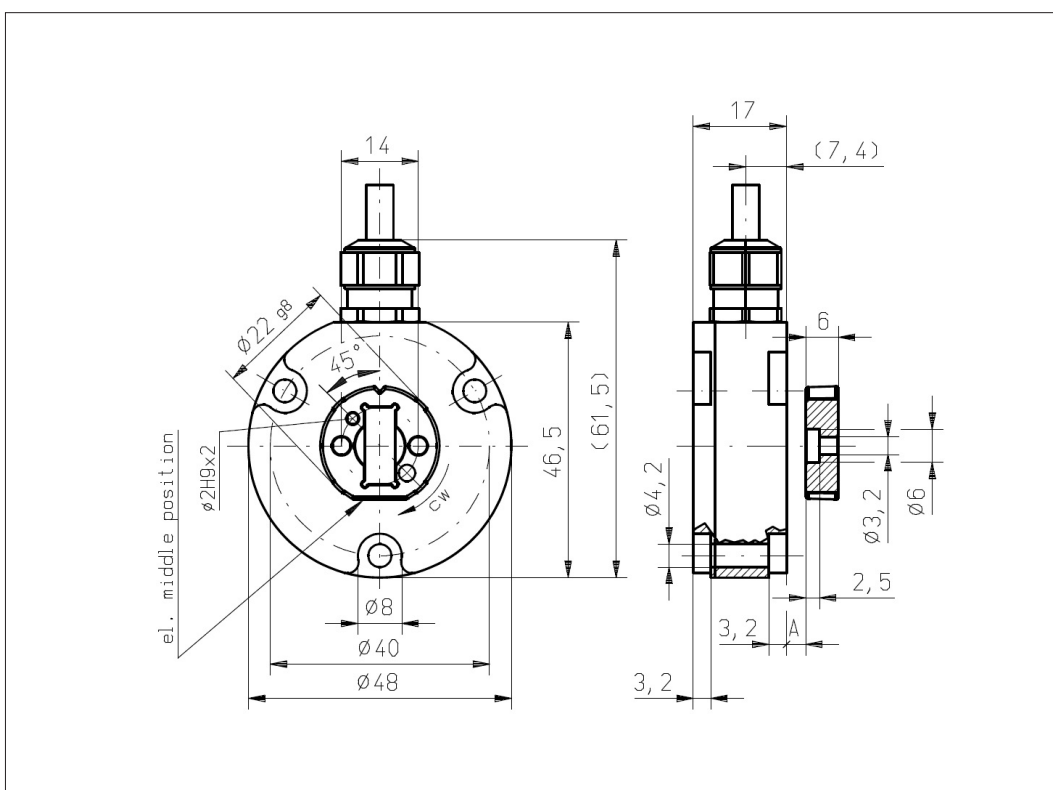
Single	0 ... 5.5mm
Redundant	0 ... 5.0mm

Extended without safety flag (Optional)

Single	0 ... 8.9mm
Redundant	0 ... 8.4mm

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Vert-X 48E7

Accessories (incl.)

- None

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

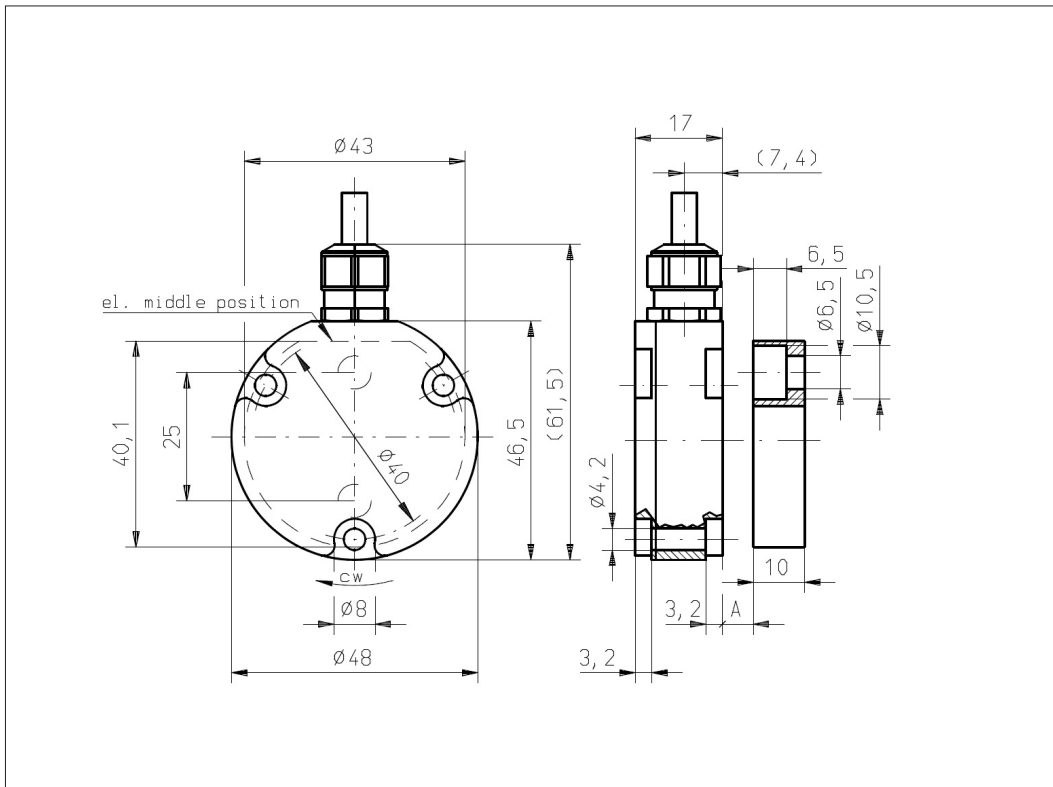
Single	0 ... 13.8mm
Redundant	0 ... 13.3mm

Extended without safety flag (Optional)

Single	0 ... 20.2mm
Redundant	0 ... 19.7mm

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 48E8

Accessories (incl.)

- None

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

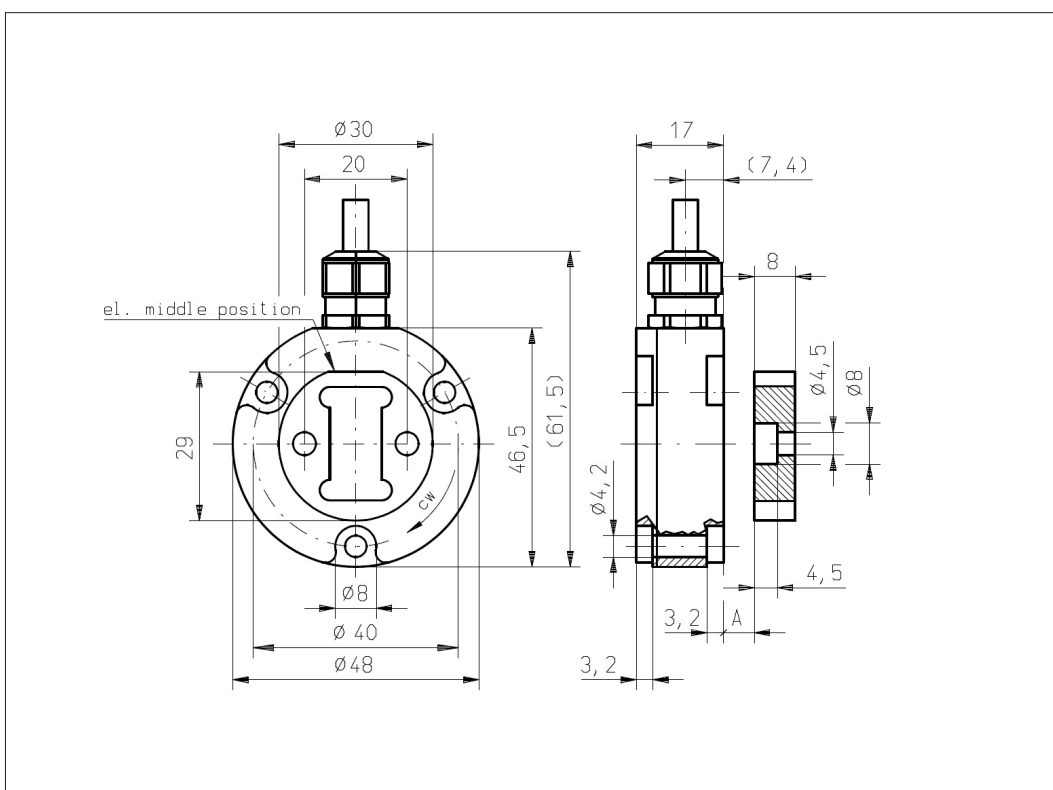
Single	0 ... 13.3mm
Redundant	0 ... 12.8mm

Extended without safety flag (Optional)

Single	0 ... 19.2mm
Redundant	0 ... 18.7mm

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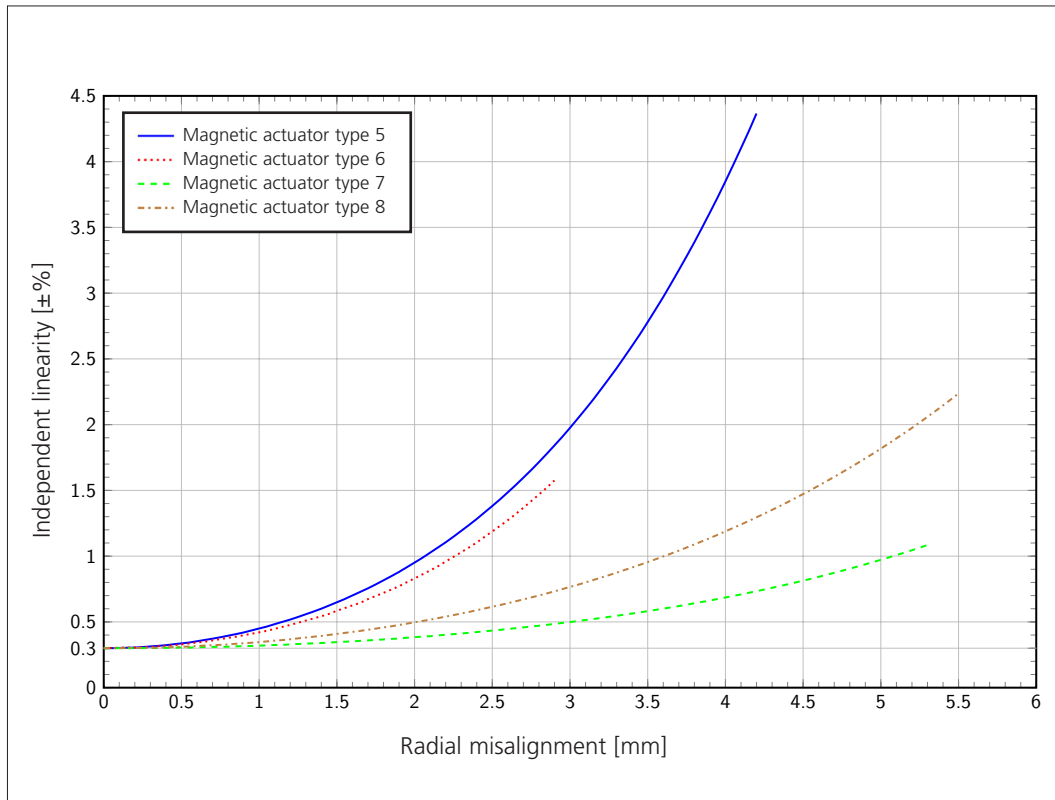
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Vert-X 48E

Indep. linearity with radial misalignment (@360°)



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