



Vert-X 22 - 24V / 0.1 - 10V

Applications

- Wind vanes
- Valve control
- Steering angle sensor for F1-racing cars

Features general

- Robust design, sealed stainless steel housing
- Contactless measuring method
- 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

Features MH-C

- Linearity of $\pm 0.3\%$
- Resolution of 12bit
- Lower price than MH-C2

Features MH-C2

- Linearity of $\pm 0.1\%$
- 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: 28.02.19

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Sensor principle		MH-C	MH-C2
Electrical data			
Measuring range	°	0 ... 360	0 ... 360
Indep. linearity	% of meas. range	± 0.3	± 0.1
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	μ s	(800)	(800)
System propagation delay slow mode	μ s	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	0.25 (AWG24)	0.25 (AWG24)
Redundancy feasible		no	no
Electrical connection redundant (s = shielded)		-	-
Cross section of single wires redundant	mm ²	-	-
Mechanical data			
Mechanical range	°	360 (continuous)	360 (continuous)
Protection class		IP54 / IP67	IP54 / IP67
Max. starting torque at specified protection class	Ncm	0.5 / 3	0.5 / 3
Max. rotating speed	rpm	6000	6000
Min. life	movements	360 Mio.	360 Mio.
Max. permitted axial shaft load	N	100	100
Max. permitted radial shaft load	N	50	50
Operating & storage temperature	°C	-40 ... +85	-40 ... +85
EN 60068-2-6 Vibration (Amax = 0.75mm, f = 5...2000 Hz)	g	20	20
EN 60068-2-27 Shock	g	50	50
Standards			
EN 55022 class B, Emission radiated (30...230 MHz)	dB(μ V/m)	max. 30	max. 30
EN 55022 class B, Emission radiated (230...1000MHz)	dB(μ V/m)	max. 37	max. 37
EN 61000-4-2, ESD (contact discharge / air discharge)	kV	$\pm 4 / \pm 8$	$\pm 4 / \pm 8$
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	10	10
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										
		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 cable										
		Output signal											
	0,1VDC ... 10VDC	Standard	1										
		Power supply voltage											
	24VDC	Standard	1										
Vert-X	2	2	0	1	7	3	6	1	1	1	4	0	2
		Electrical connection											
	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											
	2201	Standard	Bushing M10x0,75 ; 6 mm shaft D-shape ; IP54										
	2202	Standard	Bushing M10x0,75 ; 3,175 mm shaft slotted ; IP54										
	2211	Standard	Servo mount size 9 ; 6 mm shaft D-shape ; IP54										
	2212	Standard	Servo mount size 9 ; 3,175 mm shaft slotted ; IP54										
	2231	Standard	Bushing M10x0,75 ; 6 mm shaft D-shape ; IP67										
	2232	Standard	Bushing M10x0,75 ; 3,175 mm shaft slotted ; IP67										
	2241	Standard	Servo mount size 9 ; 6 mm shaft D-shape ; IP67										
	2242	Standard	Servo mount size 9 ; 3,175 mm shaft slotted ; IP67										
	2299	Optional	Special housing ; Special shaft										

	MH-C	MH-C2
Custom shaft design	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

Options (on request)

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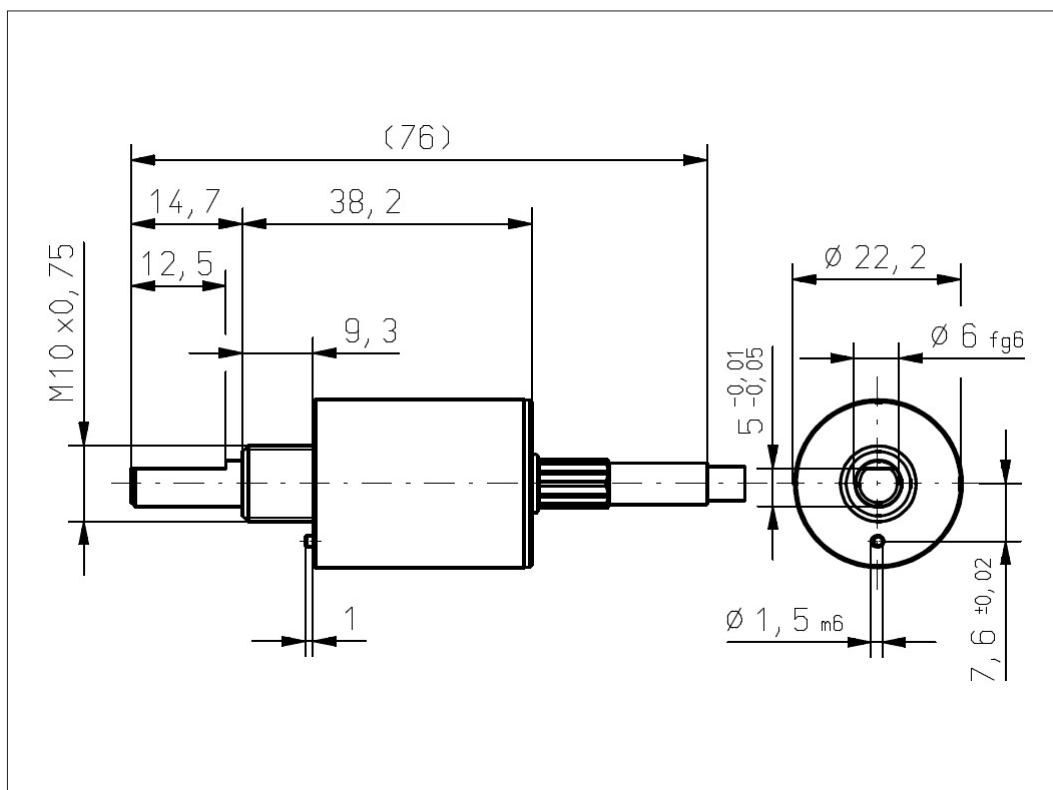
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Vert-X 2201 / Vert-X 2231

Accessories (incl.)

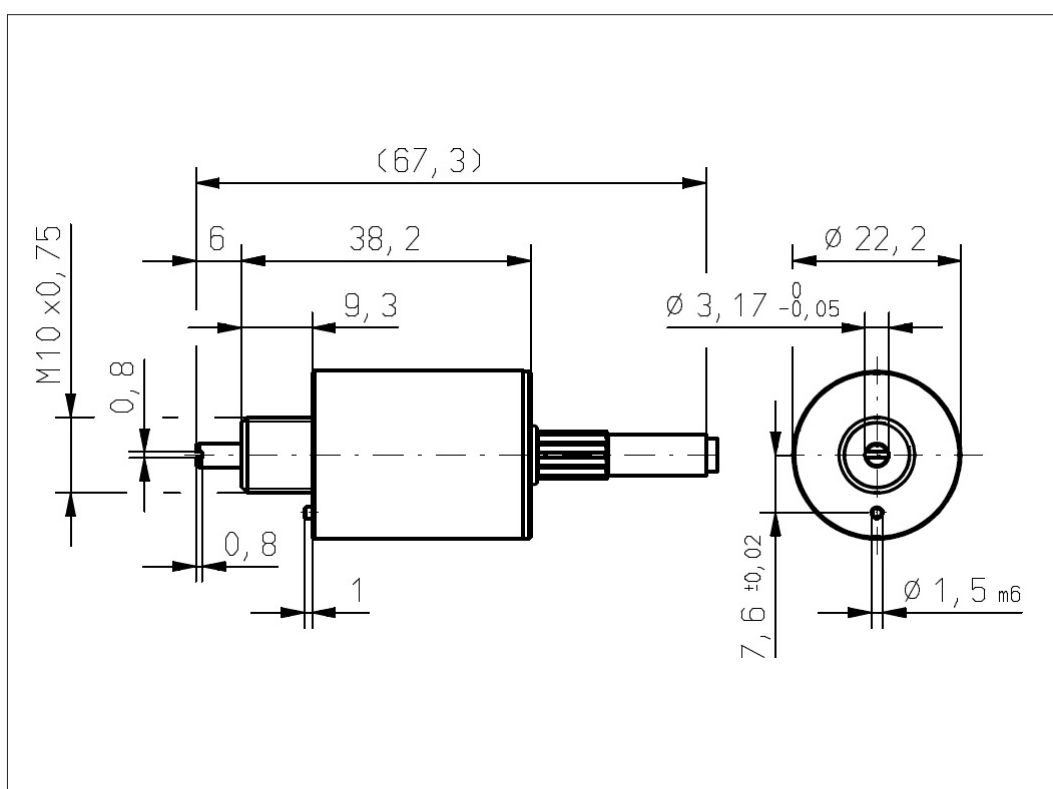
- 1x Nut M10x0.75 / SW13
- 1x Serrated lock washer



Vert-X 2202 / Vert-X 2232

Accessories (incl.)

- 1x Nut M10x0.75 / SW13
- 1x Serrated lock washer



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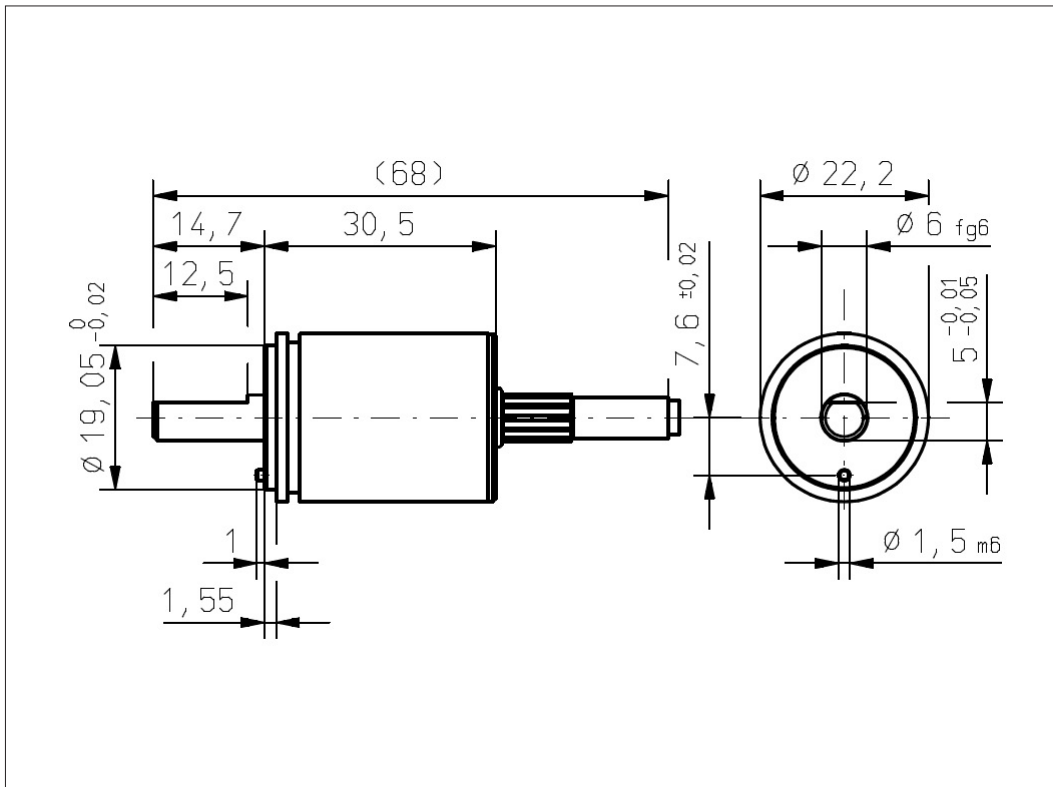
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Vert-X 2211 / Vert-X 2241

Accessories (incl.)

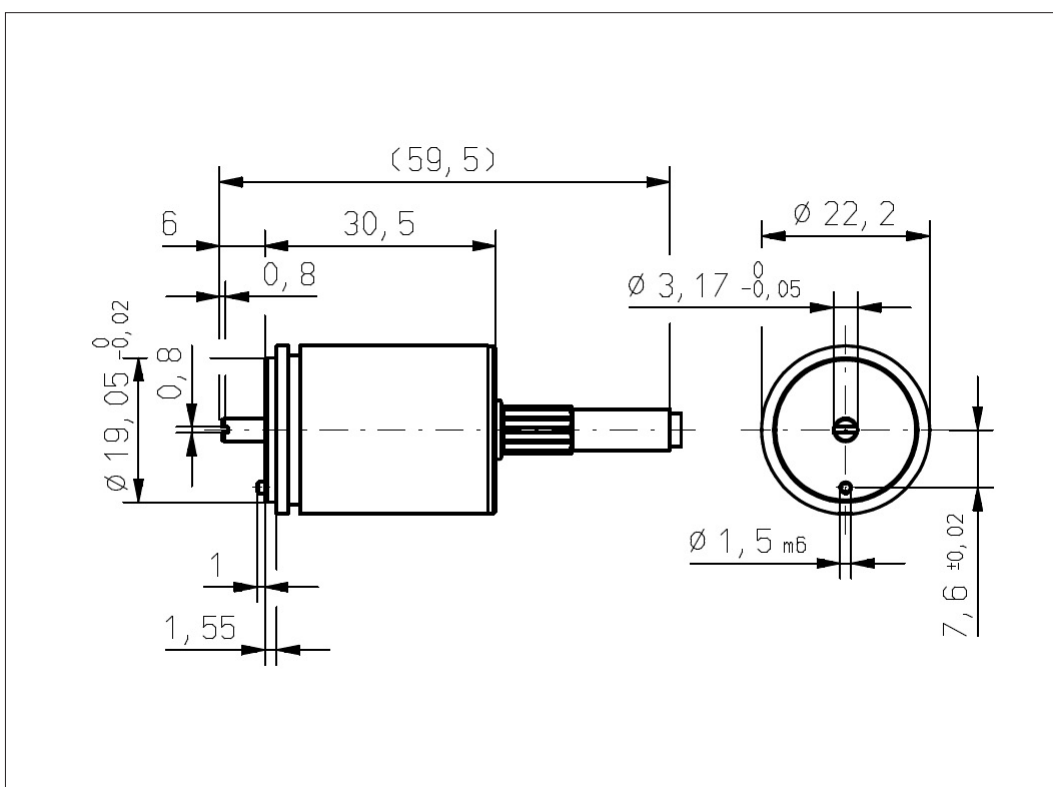
- 1x Fixation clip
- 2x Slotted cylinder head screw M3x8



Vert-X 2212 / Vert-X 2242

Accessories (incl.)

- 1x Fixation clip
- 2x Slotted cylinder head screw M3x8



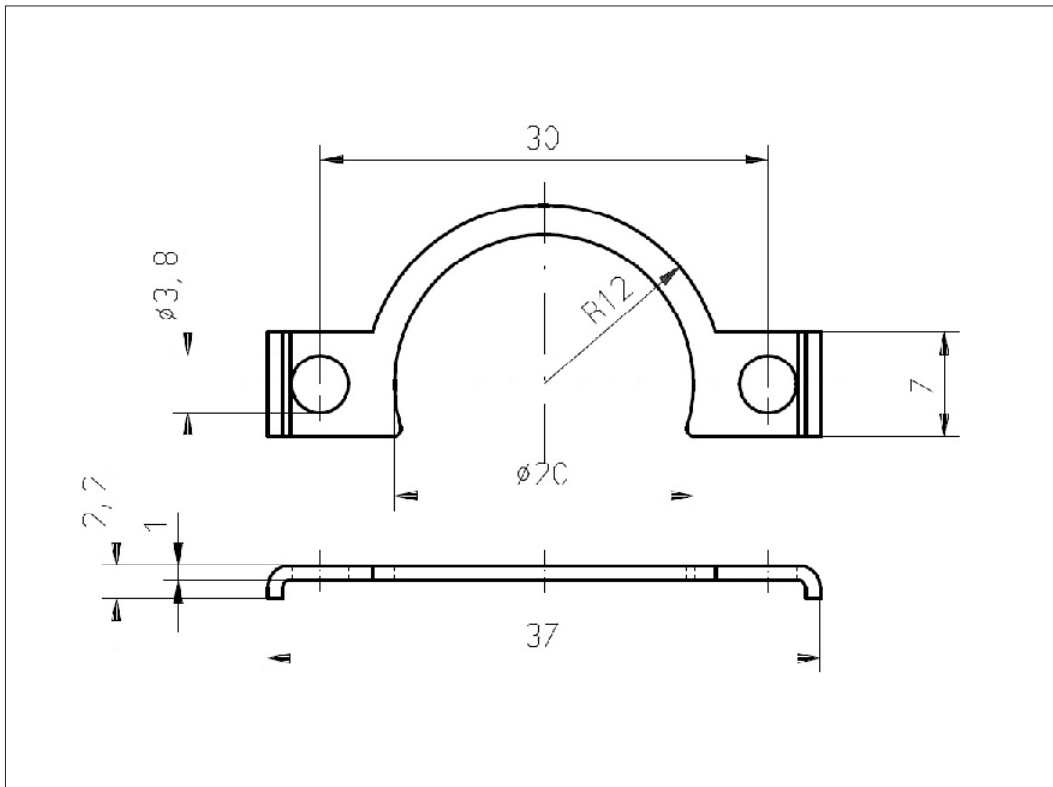
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Vert-X 2211 / Vert-X 2212
Vert-X 2241 / Vert-X 2242
Accessories
Fixation clip



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