



Vert-X 28 - 5V / 10...90% Ub

Applications

- Harvester
- Fork-lift
- Operating table
- Hydraulic pump

Features general

- Compact dimensions
- Contactless measuring method
- Long life
- High accuracy of measurement
- Simple adjustment with elongated holes
- Full resolution and accuracy at programmed electrical angle

Features MH-C

- Linearity of $\pm 0.3\%$
- Resolution of 12bit
- Full redundancy possible
- 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: 27.09.10

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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	μs	(800)	(800)
System propagation delay slow mode	μs	4600	2500
Max. temperature coefficient of the output signal	ppm/°K	50	50
MTTFd / MTBF	years	668/668	308/308
Power supply voltage	VDC	5 ($\pm 10\%$)	5 ($\pm 10\%$)
Current consumption without load (typ.) fast mode	mA	(14)	(15)
Current consumption without load (typ.) slow mode	mA	9	10
Min. ohmic load at output	kOhm	10	10
Max. capacitive load at output	nF	100	100
Reverse polarity protection of power supply		yes	no
Electrical connection		Cable 3pole	Cable 3pole
Cross section of single wires	mm ²	0.56 (AWG20)	0.56 (AWG20)
Redundancy feasible		yes	no
Electrical connection redundant		Wires (6x)	-
Cross section of single wires redundant	mm ²	0.56 (AWG20)	-
Mechanical data			
Mechanical range	°	360 (continuous)	360 (continuous)
Protection class		IP54 / IP65	IP54 / IP65
Max. starting torque at specified protection class	Ncm	0.5 / 3	0.5 / 3
Max. rotating speed	rpm	120	120
Min. life	movements	50 Mio.	50 Mio.
Max. permitted axial shaft load	N	20	20
Max. permitted radial shaft load	N	20	20
Operating & storage temperature (with cable)	°C	-40 ... +85	-40 ... +85
Operating & storage temperature (with wires)	°C	-40 ... +125	-40 ... +125
IEC 68-2-6 Vibration (Amax = 0.75mm, f = 5 ... 2000 Hz)	g	20	20
IEC 68-2-27 Shock	g	50	50
Standards			
EN 55022 class B, Emission radiated (30... 230 MHz)	dB($\mu\text{V}/\text{m}$)	max. 30	max. 30
EN 55022 class B, Emission radiated (230...1000MHz)	dB($\mu\text{V}/\text{m}$)	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... 1000 MHz)	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	30	30
IEC 60393-1 Insulation resistance (500VDC, 1bar, 2s)	GOhm	20	20
IEC 60393-1 Dielectric strength (VAC, 50Hz, 1min, 1bar)	kV	1	1



Vert-X 28 - 5V / 10...90% Ub Ordering code

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

Output characteristics		Electrical connection	
Positive gradient CW	Standard 1	1 Standard	Round cable 3pole
Positive gradient CCW	Optional 2	2 Optional	Wires 4pole
Redundant, positive gradient CW	Optional 3	3 Optional	Wires 5pole
Redundant, positive gradient CCW	Optional 4	4 Optional	Wires 6pole
Redundant, crossed signal curves	Optional 5	9 Optional	Special cable / wires
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		Length of wires	
10% ... 90% Ub	Standard 2	01 Optional	10cm
x% ... y% Ub (within 5 ... 95%)	Optional 4	03 Optional	30cm
		05 Standard	50cm
		99 Optional	Special length
Power supply voltage		Length of cable	
5VDC	Standard 2	02 Standard	1.0m
		06 Optional	3.0m
		10 Optional	5.0m
		99 Optional	Special length

Vert-X	2	8	0	1	7	3	6	2	2	1	1	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													
2801	Standard	6mm shaft D-shape; IP54											
2821	Optional	Push on coupling; IP54											
2831	Standard	6mm shaft D-shape; IP65											
2841	Optional	Push on coupling; IP65											
2899	Optional	Special shaft											

Options (on request)

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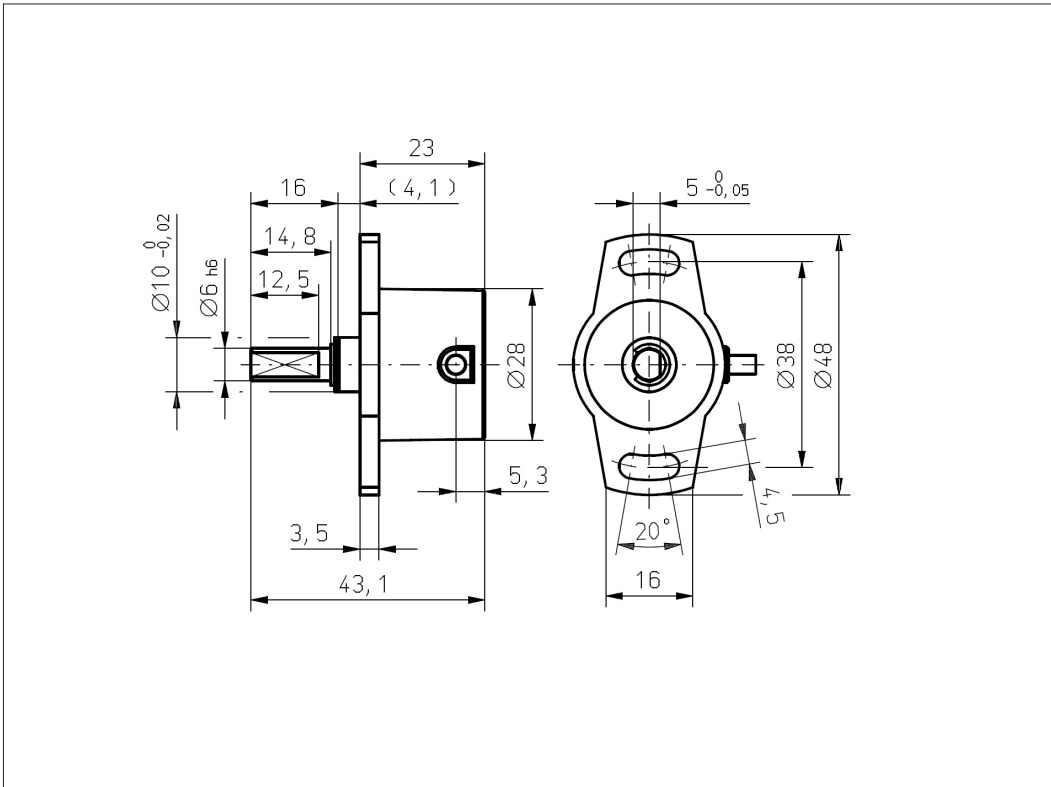
	MH-C	MH-C2
Custom shaft design	X	X
Custom cable / wires	X	X
Interface x% ... y% Ub (within 5% ... 95% Ub)	X	X
Sample rate in fast mode	X	X
Switch functions TTL (max. 2)	X	X
Special characteristic curve	-	X
Special electrical angle within 30° to 360° (ex factory)	X	X
Electrical angle programmable (Software)	-	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



Vert-X 2801
Vert-X 2831

Accessories (incl.)

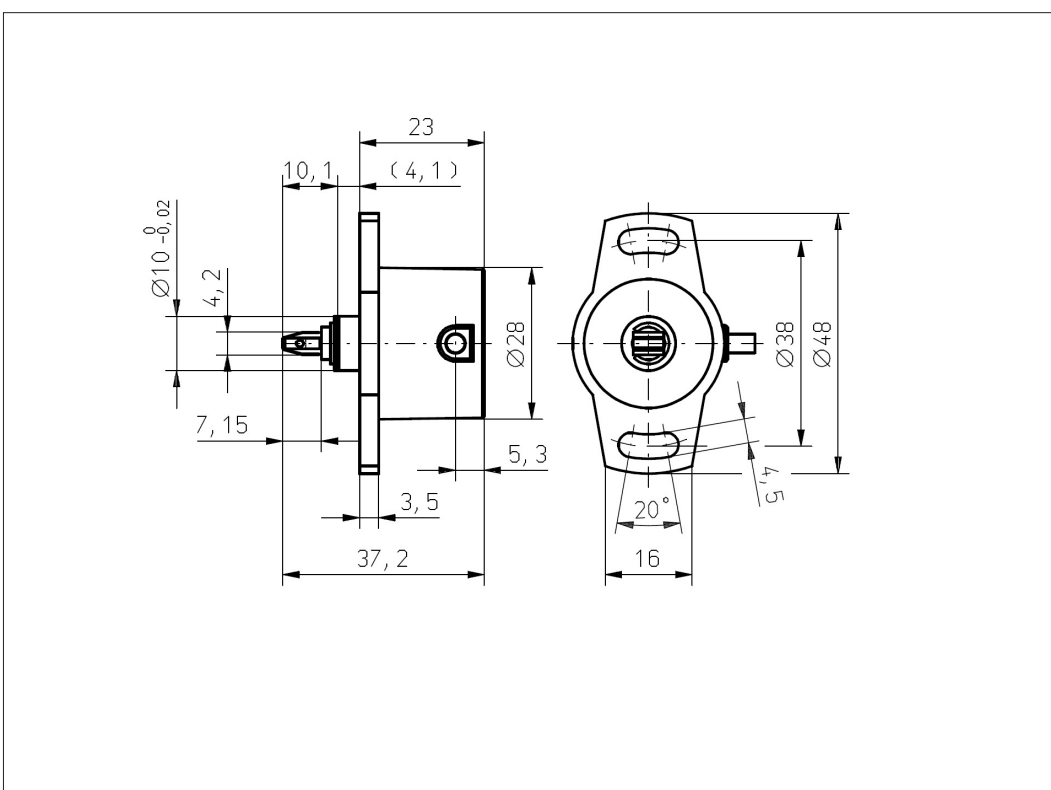
- None



Vert-X 2821
Vert-X 2841

Accessories (incl.)

- None



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