



## Vert-X 88 - 5V / 10...90% Ub

### Applications

- Agricultural machines
- Construction machines
- Forest machines
- Special purpose vehicles

### Features general

- Very robust design
- Contactless measuring method
- Long life
- High accuracy of measurement
- Applications under adverse ambient conditions possible (humidity, dampness, dust, vibrations etc.)
- Developed according to the principles of functional safety

### 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: 28.02.19

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**CONTELEC**  
 A company of the Siedle-Group

Sensor principle		MH-C	MH-C2
<b>Electrical data</b>			
Measuring range	°	0 ... 360	0 ... 360
Indep. linearity	% of meas. range	$\pm 0.3$	$\pm 0.1$
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	$\mu\text{s}$	(800)	(800)
System propagation delay slow mode	$\mu\text{s}$	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	yes
Electrical connection (s = shielded)		Cable 3pole, s	Cable 3pole, s
Cross section of single wires	mm <sup>2</sup>	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 <sup>2</sup>	0.56 (AWG20)	-
<b>Mechanical data</b>			
Mechanical range	°	360 (continuous)	360 (continuous)
Protection class		IP68 & IP69K	IP68 & IP69K
Max. starting torque at specified protection class	Ncm	0.5 / 6	0.5 / 6
Max. rotating speed	rpm	3000	3000
Min. life	movements	360 Mio.	360 Mio.
Max. permitted axial shaft load	N	300	300
Max. permitted radial shaft load	N	400	400
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
<b>Standards</b>			
EN 55022 classe B, Emission radiated (30...230 MHz)	dB( $\mu\text{V}/\text{m}$ )	max. 30	max. 30
EN 55022 classe 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...1000MHz/1.4...2.7GHz)	V/m	30	30
EN 61000-4-3, Immision HF radiated (1.4...2 GHz)	V/m	3	3
EN 61000-4-3, Immision HF radiated (2...2.7 GHz)	V/m	1	1
EN 61000-4-4, Burst (on all lines)	kV	$\pm 1$	$\pm 1$
EN 61000-4-5, Surge (lines to ground)	kV	$\pm 1$	$\pm 1$
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



**Vert-X 88 - 5V / 10...90% Ub**  
**Ordering code**

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

Output characteristics		Output signal		Power supply voltage		Electrical connection		Length of cable	
Positive gradient CW	Standard	10% ... 90% Ub	Standard	5VDC	Standard	4	Standard	02	Standard
Positive gradient CCW	Optional	x% ... y% Ub (within 5 ... 95%)	Optional			6	Optional	06	Optional
Redundant, positive gradient CW	Optional					9	Optional	10	Optional
Redundant, positive gradient CCW	Optional							99	Optional
Redundant, crossed signal curves	Optional								Special length
Positive gradient CW with 1 switch output*	Optional								
Positive gradient CCW with 1 switch output*	Optional								
Positive gradient CW with 2 switch outputs*	Optional								
Positive gradient CCW with 2 switch outputs*	Optional								
Sense of rotation settable	Optional								
Zero point & sense of rotation settable	Optional								
Middle point & sense of rotation settable	Optional								
Start + end point & sense of rotation settable	Optional								
Programmable with Vert-X EasyAdapt	Optional								

Vert-X	8	8	7	2	7	3	6	2	2	1	4	0	2
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Electrical angle		Sensor principle	
36	Standard	7	MH-C
xx	Optional	8	MH-C2
99	Optional		

Mechanical version		
8872	Standard	Housing ø88mm with flange ; 10mm shaft with hexagon socket ; IP68 & IP69K
8873	Standard	Housing ø88mm with flange ; 12mm shaft D-shape & cross-hole ; IP68 & IP69K
8899	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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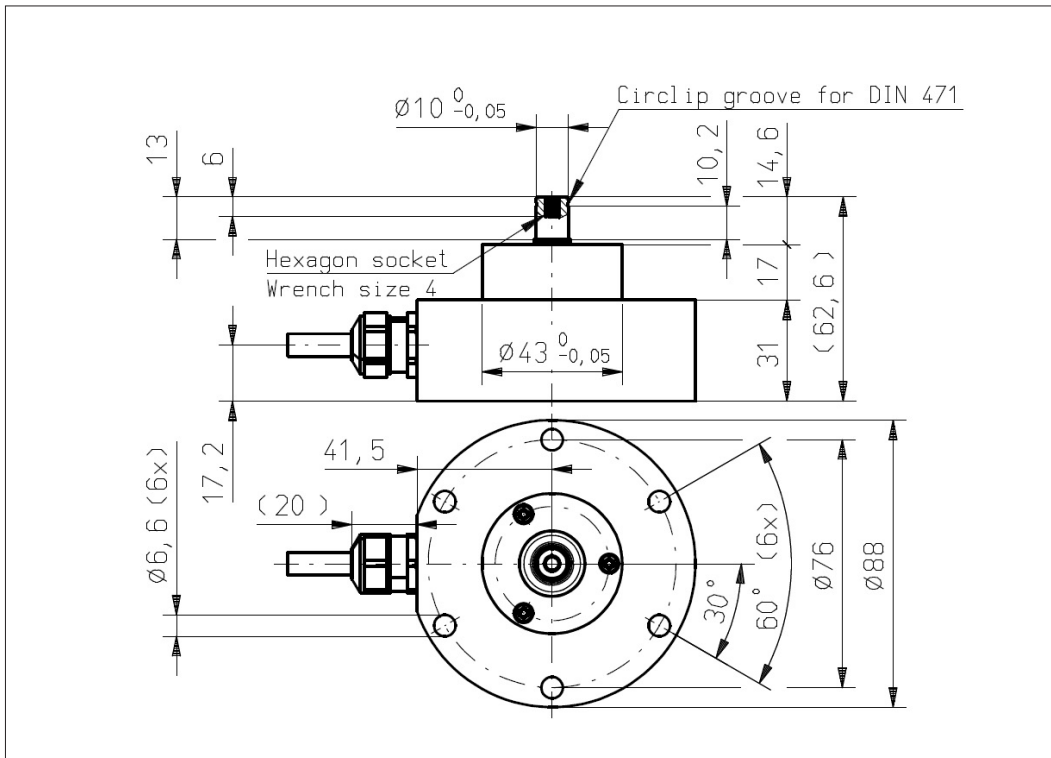
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### Vert-X 8872

#### Accessories (incl.)

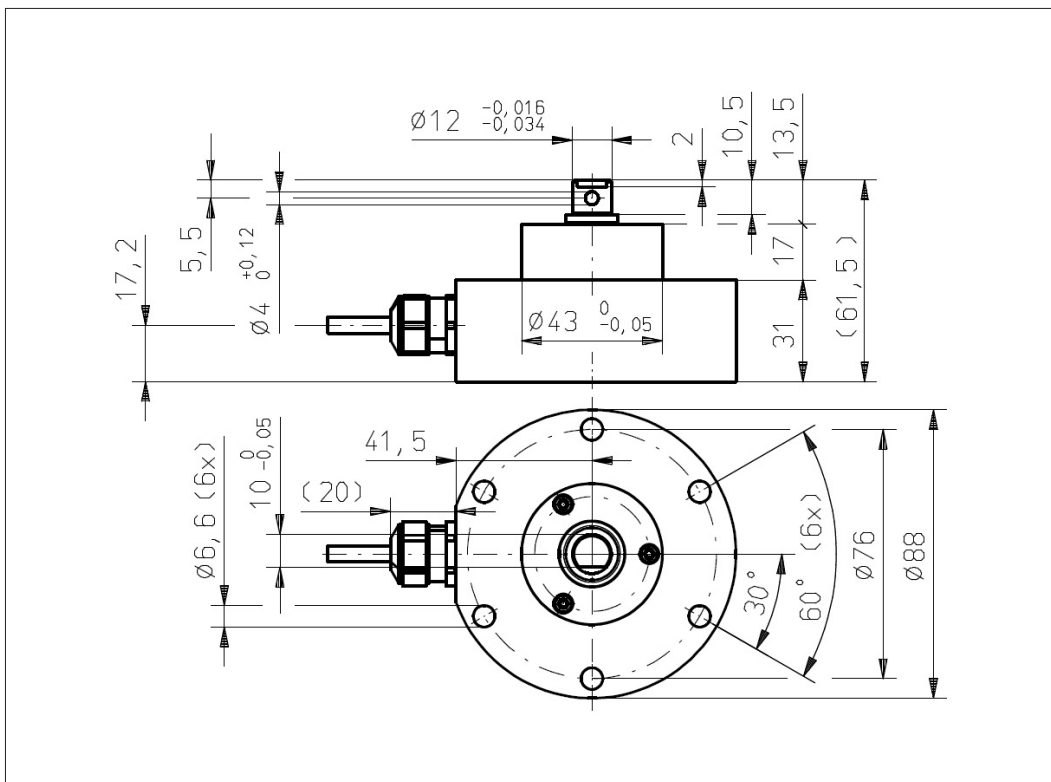
- 3x Hexagon screw M6x45
- 3x Washer
- 1x Circlip



### Vert-X 8873

#### Accessories (incl.)

- 3x Hexagon screw M6x45
- 3x Washer



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