



## Vert-X 88 - 24V / 0.5 - 4.5V

### 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: 04.09.14

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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	100	100
MTTFd / MTBF	years	240 / 240	209 / 209
Power supply voltage	VDC	8 ... 35	8 ... 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 <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
IEC 68-2-6 Vibration (Amax = 0.75mm, f = 5 ... 2000 Hz)	g	20	20
IEC 68-2-27 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, Immission HF radiated (80... 1000 MHz)	V/m	30	30
EN 61000-4-3, Immission HF radiated (1.4...2 GHz)	V/m	3	3
EN 61000-4-3, Immission 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, Immission HF conducted (0.15...80MHz)	Vemk	10	10
EN 61000-4-8, Immission magnetic field (50Hz)	A/m	300	300
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 88 - 24V / 0.5 - 4.5V**  
**Ordering code**

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

Output characteristics		Output signal		Electrical connection		Length of cable							
Positive gradient CW	Standard	1	2	4	Standard	Round cable 3pole	02	Standard	1.0m				
Positive gradient CCW	Optional	2	2	6	Optional	Round cable 6pole	06	Optional	3.0m				
Redundant, positive gradient CW	Optional	3	2	9	Optional	Special cable	10	Optional	5.0m				
Redundant, positive gradient CCW	Optional	4	2				99	Optional	Special length				
Redundant, crossed signal curves	Optional	5	2										
Positive gradient CW with 1 switch output*	Optional	A	2										
Positive gradient CCW with 1 switch output*	Optional	B	2										
Positive gradient CW with 2 switch outputs*	Optional	C	2										
Positive gradient CCW with 2 switch outputs*	Optional	D	2										
Sense of rotation settable	Optional	E	2										
Zero point & sense of rotation settable	Optional	F	2										
Middle point & sense of rotation settable	Optional	G	2										
Start + end point & sense of rotation settable	Optional	H	2										
Programmable with Vert-X EasyAdapt	Optional	P	2										
0.5VDC ... 4.5VDC		Standard											
Power supply voltage		Standard											
24VDC		1											
<b>Vert-X</b>	<b>8</b>	<b>8</b>	<b>7</b>	<b>2</b>	<b>7</b>	<b>3</b>	<b>6</b>	<b>1</b>	<b>2</b>	<b>1</b>	<b>4</b>	<b>0</b>	<b>2</b>
		<b>Electrical angle</b>											
		36 Standard		Electrical angle 360°									
		xx Optional		03 to 35; Declaration in 10° steps									
		99 Optional		Special angle									
		<b>Sensor principle</b>											
		7 MH-C											
		8 MH-C2											
		<b>Mechanical version</b>											
		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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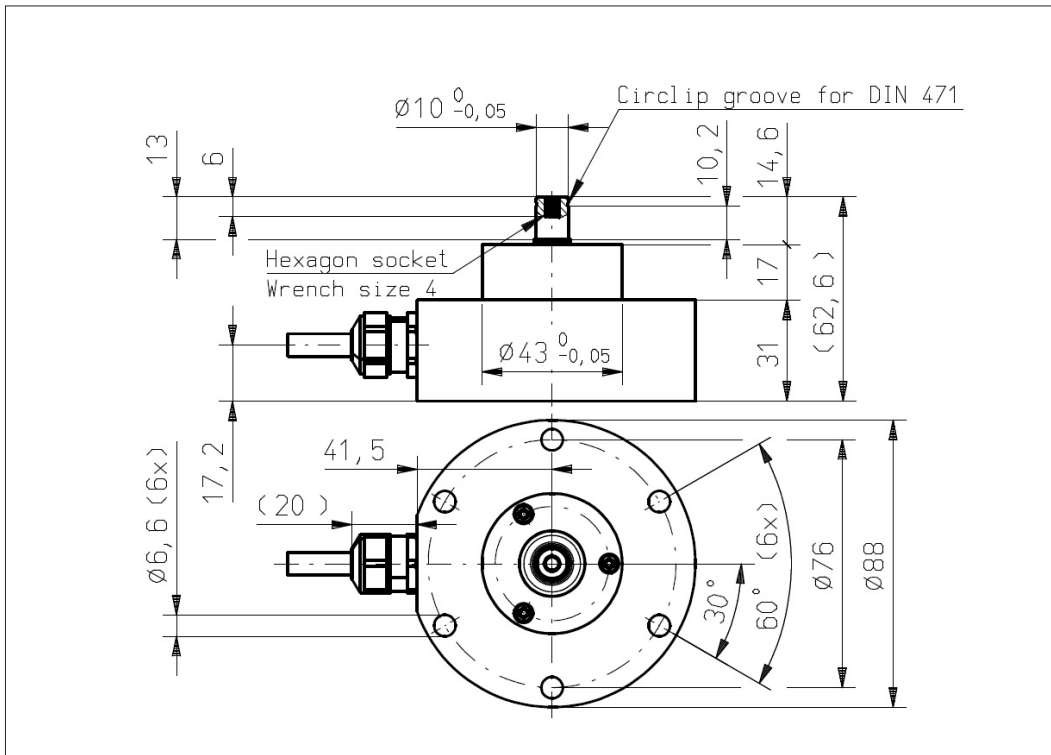
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### Vert-X 8872

#### Accessoires (incl.)

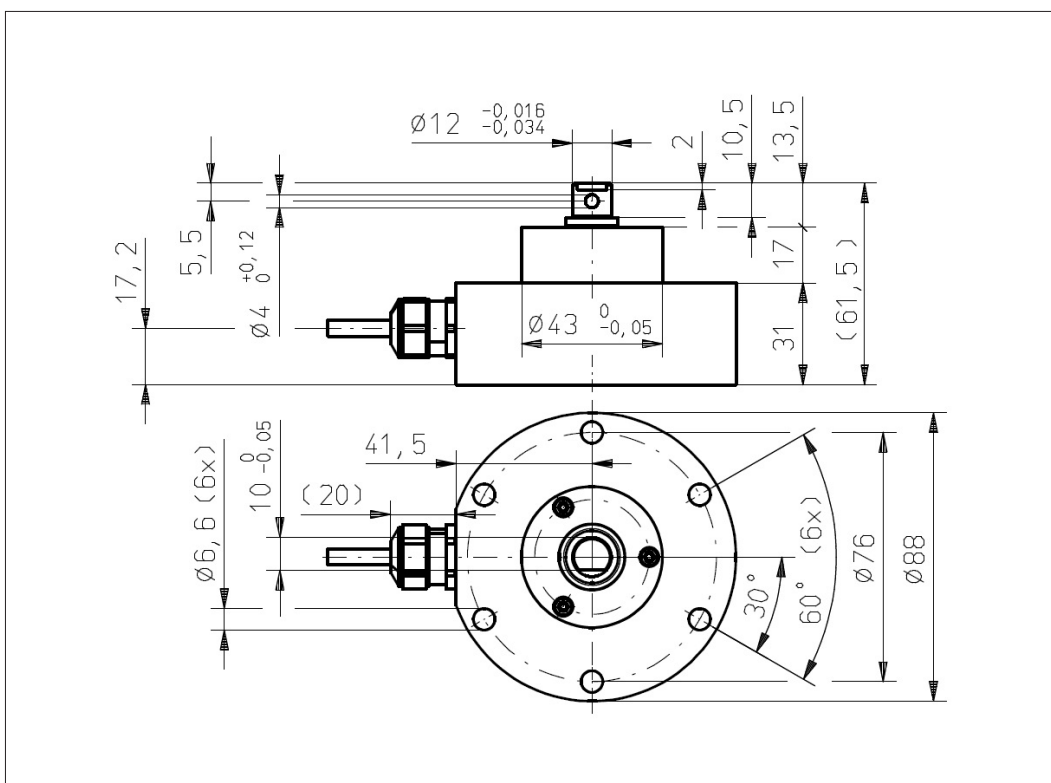
- 3x Hexagon screw M6x45
- 3x Washer
- 1x Circlip



### Vert-X 8873

#### Accessoires (incl.)

- 3x Hexagon screw M6x45
- 3x Washer



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