



## Vert-X 13

### Applications

- Servodrives
- Insetting machines
- Sewer inspection robots
- Medical applications

### Features

- Compact dimensions
- Contactless measuring method
- Long life
- High accuracy of measurement
- Use in cramped installation conditions

### Options

- Protection class IP67
- Custom electrical angles
- Output signal  
X ... Y% UB
- Custom shaft design
- Custom cable / wires

Version		B	C
<b>Electrical Data</b>			
Measuring range	°	0 ... 360	360
Independent linearity		see table B	see table C
Max. hysteresis		see table B	see table C
Resolution		see table B	see table C
Max. repeatability		see table B	see table C
Sample rate		see table B	see table C
System propagation delay		see table B	see table C
Max. temperature coefficient of the output signal ppm/°K		50	50
Min. life (electrical)	years	10	10
Power supply voltage	VDC	5 (±10 %)	5 (±10 %)
Current consumption without load (typical)		see table B	see table C
Min. ohmic load at output		see table B	see table C
Max. capacitive load at output		see table B	see table C
PWM frequency		see table B	-
Reverse polarity protection of power supply		see table B	see table C
Electrical connection		see table B	see table C
<b>Mechanical Data</b>			
Mechanical range	°	360 (continuous)	360 (continuous)
Max. starting torque at IP54 / IP65	Ncm	0.5 / 3	0.5 / 3
Max. rotating speed	rpm	6000	6000
Min. life (mechanical)	movements	360 Mio.	360 Mio.
Max. permitted axial shaft load	N	5	5
Max. permitted radial shaft load	N	5	5
Operating temperature	°C	see table B	-40 ... +105
Storage temperature	°C	see table B	-40 ... +105
Protection class		IP54 / IP65	IP54 / IP65
<b>Standards</b>			
EN 55022 class B, emission radiated (30... 230 MHz)		max. 30 dB(µV/m)	max. 30 dB(µV/m)
EN 55022 class B, emission radiated (230...1000MHz)		max. 37 dB(µV/m)	max. 37 dB(µV/m)
EN 61000-4-2, ESD on housing and connections (contact / air)		4 / 8 kV	4 / 8 kV
EN 61000-4-3, immission HF radiated (80... 1000 MHz)		100 V/m	100 V/m
EN 61000-4-4, burst (on supply lines / signal lines)		1 / 0.5 kV	1 / 0.5 kV
EN 61000-4-5, surge (on supply lines / signal lines)		-	-
EN 61000-4-6, immission HF conducted (0.15...80MHz)		10 Vemk	10 Vemk
EN 61000-4-8, immission magnetic field (50Hz)		30 A/m	30 A/m
IEC 60393-1 Insulation resistance (500VDC, 1bar, 2s)		20 GOhm	20 GOhm
IEC 60393-1 Dielectric strength (VAC, 50Hz, 1min, 1bar)		1 kV	1 kV
IEC 68-2-6 Vibration (Amax = 0.75mm, f = 5 ... 2000 Hz)		20 g	20 g
IEC 68-2-27 Shock		50 g	50 g



**Vert-X 13  
Table  
Version B**

**Additional features**

- Full resolution and accuracy at programmed electrical angle

**Additional options**

- Electrical angle within 0 ... 360° programmable
- Redundancy
- Operating temperature -40 ... + 125°C

Interface	10 ... 90% UB		PWM	SPI
		5 ... 95% UB		
Independent linearity	% meas. range	±0.3	±0.3	±0.3
Max. hysteresis	°	0.1	0.1	0.1
Resolution	bit	12	12	14
Max. repeatability	°	0.1	0.1	0.1
Sample rate fast mode	kHz	5	5	2.2
Sample rate slow mode	kHz	1.66	1.66	0.55
System propagation delay fast mode	µs	800	800	400
System propagation delay slow mode	µs	4600	4600	600
Current consump. without load (typ.) fast mode	mA	16	16	16
Current consump. without load (typ.) slow mode	mA	10	10	10
Min. ohmic load at output	kOhm	10	10	-
Max. capacitive load at output	nF	10	1	-
PWM frequency	kHz	-	0.1 (... 1)	-
Reverse polarity protection of power supply		yes	yes	yes
Electrical connection		wires	wires	ribbon cable
Cross section of single wires	mm <sup>2</sup>	0.25 (AWG24)	0.25 (AWG24)	0.09 (AWG28)
Redundancy feasible		yes	yes	no
Operating temperature	°C	-40 ... +125	-40 ... +125	-40 ... +105
Storage temperature	°C	-40 ... +125	-40 ... +125	-40 ... +105







Interface		SSI	Incremental (A,B,Z)
Independent linearity	°	1.8	1.8
Max. hysteresis	°	0.1	0.7
Resolution	bit	10	10 (quadrature)
Resolution per channel	ppr	-	256 / 128 / 64 / 32
Max. repeatability	°	0.12	0.12
Sample rate	kHz	10	10
System propagation delay	µs	65	200
Current consumption without load (typical)	mA	16	16
Min. ohmic load at output	kOhm	5	5
Max. capacitive load at output	nF	1	1
Reverse polarity protection of power supply		no	no
Electrical connection		ribbon cable	ribbon cable
Cross section of single wires	mm <sup>2</sup>	0.09 (AWG28)	0.09 (AWG28)
Redundancy feasible		no	no

**Vert-X 13  
Table  
Version C**

- Additional features**
- High operating speed

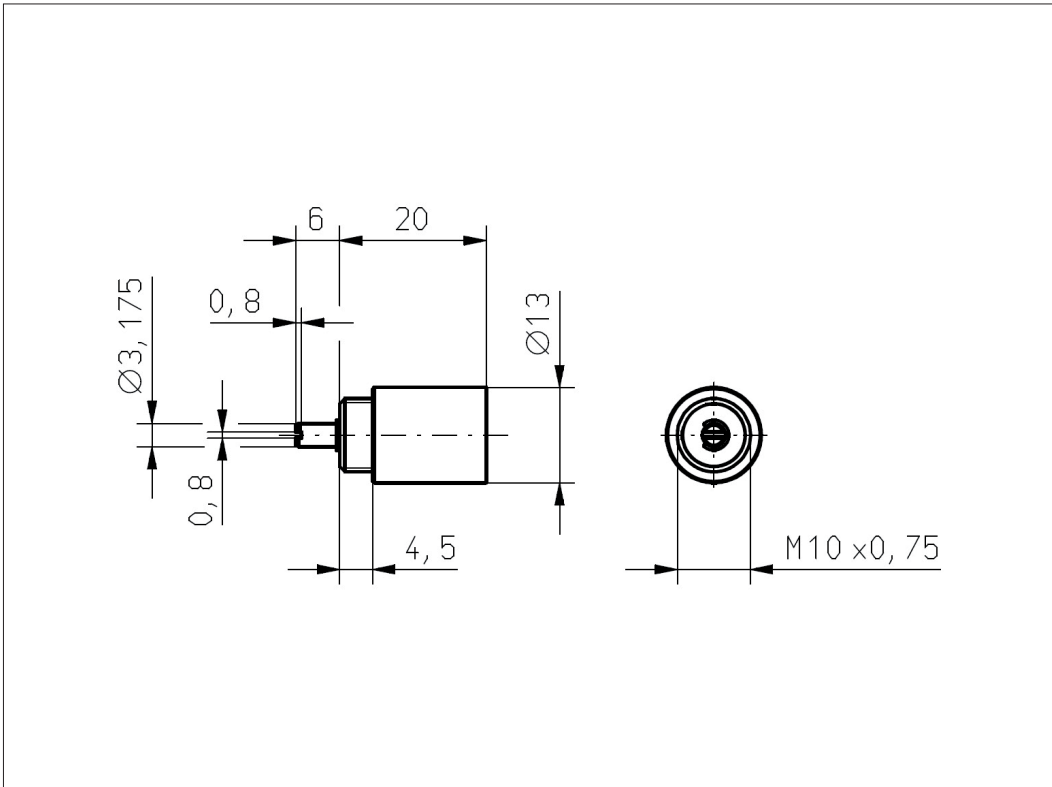
- Additional options**
- Operating temperature -40 ... + 125°C







Vert-X 1302  
Vert-X 1332  
Vert-X 1303  
Vert-X 1333



Vert-X 1312  
Vert-X 1342  
Vert-X 1313  
Vert-X 1343

