



Vert-X 21 - 5V / 10...90% Ub

Applications

- Joysticks / Master switches
- Valve controls
- Inclinometer

Features

- Compatible to the potentiometers of the PL300-family
- Compact dimensions
- Contactless measuring method
- Long life
- High accuracy of measurement
- Use in cramped installation conditions
- Full resolution and accuracy at programmed electrical angle
- Full redundancy feasible

| Sensor principle | | MH-C | MH-C2 |
|---|------------------|------------------|-------|
| Electrical data | | | |
| Measuring range | ° | 0 ... 360 | - |
| Indep. linearity | % of meas. range | ±0.3 | - |
| Max. hysteresis | ° | 0.1 | - |
| Resolution | bit | 12 | - |
| Max. repeatability | ° | 0.1 | - |
| System propagation delay fast mode | kHz | (5) | - |
| System propagation delay slow mode | kHz | 1.66 | - |
| System propagation delay fast mode | µs | (800) | - |
| System propagation delay slow mode | µs | 4600 | - |
| Max. temperature coefficient of the output signal | ppm/°K | 50 | - |
| MTTFd / MTBF | years | 668 / 668 | - |
| Power supply voltage | VDC | 5 (±10%) | - |
| Current consumption without load (typ.) fast mode | mA | (14) | - |
| Current consumption without load (typ.) slow mode | mA | 9 | - |
| Min. ohmic load at output | kOhm | 10 | - |
| Max. capacitive load at output | nF | 10 | - |
| Reverse polarity protection of power supply | | yes | - |
| Electrical connection | | Wires | - |
| Cross section of single wires | mm ² | 0.25 (AWG24) | - |
| Redundancy feasible | | yes | - |
| Mechanical data | | | |
| Mechanical range | ° | 360 (continuous) | - |
| Protection class | | IP54 / IP65 | - |
| Max. starting torque at specified protection class | Ncm | 0.5 / 3 | - |
| Max. rotating speed | 1/min. | 6000 | - |
| Min. life | movements | 360 Mio. | - |
| Max. permitted axial shaft load | N | 5 | - |
| Max. permitted radial shaft load | N | 5 | - |
| Operating & storage temperature | °C | -40 ... +125 | - |
| IEC 68-2-6 Vibration (Amax = 0.75mm, f = 5 ... 2000 Hz) | g | 20 | - |
| IEC 68-2-27 Shock | g | 50 | - |
| Standards | | | |
| EN 55022 classe B, Emission radiated (30... 230 MHz) | dB(µV/m) | max. 30 | - |
| EN 55022 classe B, Emission radiated (230...1000MHz) | dB(µV/m) | max. 37 | - |
| EN 61000-4-2, ESD (contact discharge / air discharge) | kV | ±4 / ±8 | - |
| EN 61000-4-3, Immision HF radiated (80... 1000 MHz) | V/m | 30 | - |
| EN 61000-4-4, Burst (on all lines) | kV | ±1 | - |
| EN 61000-4-5, Surge (lines to ground) | kV | ±1 | - |
| EN 61000-4-6, Immision HF conducted (0.15...80MHz) | Vemk | 10 | - |
| EN 61000-4-8, Immision magnetic field (50Hz) | A/m | 300 | - |
| IEC 60393-1 Insulation resistance (500VDC, 1bar, 2s) | GOhm | 20 | - |
| IEC 60393-1 Dielectric strength (VAC, 50Hz, 1min, 1bar) | kV | 1 | - |

Errors and omissions excepted. Subject to change without notice. State: 30.03.15

Contelec AG
 Portstrasse 38
 CH-2503 Biel/Bienne
 Phone +41 (0)32 3665600
 Telefax +41 (0)32 3665604
 sales@contelec.ch

CONTELEC
 A company of the Siedle-Group



Vert-X 21 - 5V / 10...90% Ub
Ordering code

| Output characteristics | | Electrical connection | |
|----------------------------------|------------|-----------------------|------------------------------|
| Positive gradient CW | Standard 1 | 2 | Standard Wires 3pole |
| Positive gradient CCW | Optional 2 | 3 | Standard Wires 5pole / 6pole |
| Redundant, positive gradient CW | Optional 3 | 9 | Optional Special wires |
| Redundant, positive gradient CCW | Optional 4 | | |
| Redundant, crossed signal curves | Optional 5 | | |
| Output signal | | Length of wires | |
| 10% ... 90% Ub | Standard 2 | 01 | Optional 10cm |
| x% ... y% Ub (within 5 ... 95%) | Optional 3 | 02 | Standard 20cm |
| | | 03 | Optional 30cm |
| | | 04 | Optional 40cm |
| | | 05 | Optional 50cm |
| | | 99 | Optional Special length |
| Power supply voltage | | | |
| 5VDC | Standard 2 | | |

Vert-X **2 1 1 2 a 7 3 6 2 2 1 2 0 2**

| Electrical angle | |
|------------------|---|
| 36 | Standard Electrical angle 360° |
| xx | Optional 10 to 35; Declaration in 10° steps |
| 99 | Optional Special angle |
| Sensor principle | |
| 7 | MH-C |
| Protection class | |
| a | Standard IP54 |
| b | Optional IP65 |
| Shaft | |
| 0 | Standard 6mm shaft slotted / nominal length 14.1mm |
| 1 | Standard 6mm shaft D-shape / nominal length 14.1mm |
| 2 | Standard 3.175mm shaft slotted / nominal length 11.15mm |
| 9 | Optional Special shaft |
| Housing | |
| 211 | Standard: Servo mount size 9 |
| 212 | Standard: Bushing M9 x 0.75 with pilot diameter |
| 219 | Optional: Special housing |

| | MH-C | MH-C2 |
|---|------|-------|
| Custom shaft design | X | - |
| Custom modification of the housing | X | - |
| Custom wires | X | - |
| Interface x% ... y% Ub (within 5% ... 95% Ub) | X | - |
| Sample rate in fast mode | X | - |
| Switch functions TTL (max. 2) | - | - |
| Special characteristic curve | - | - |
| Special electrical angle within 30° to 360° (ex factory) | X | - |
| Electrical angle programmable (Software) | - | - |
| Start & end point settable (Additional wires) | - | - |
| Sense of rotation CW/CCW settable / programmable (Additional wires or Software) | - | - |
| Index point settable / programmable (Additional wires or Software) | - | - |

Options (on request)

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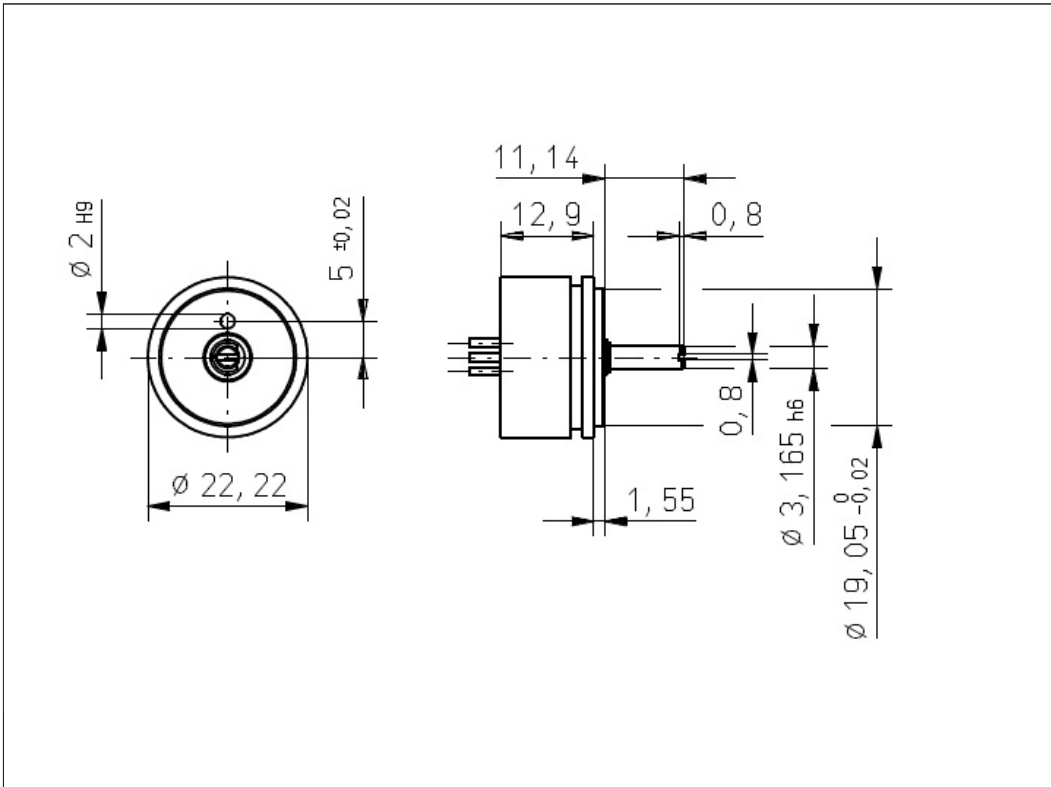
Contelec AG
 Portstrasse 38
 CH-2503 Biel/Bienne
 Phone +41 (0)32 3665600
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 sales@contelec.ch



Vert-X 2112

Accessories (incl.)

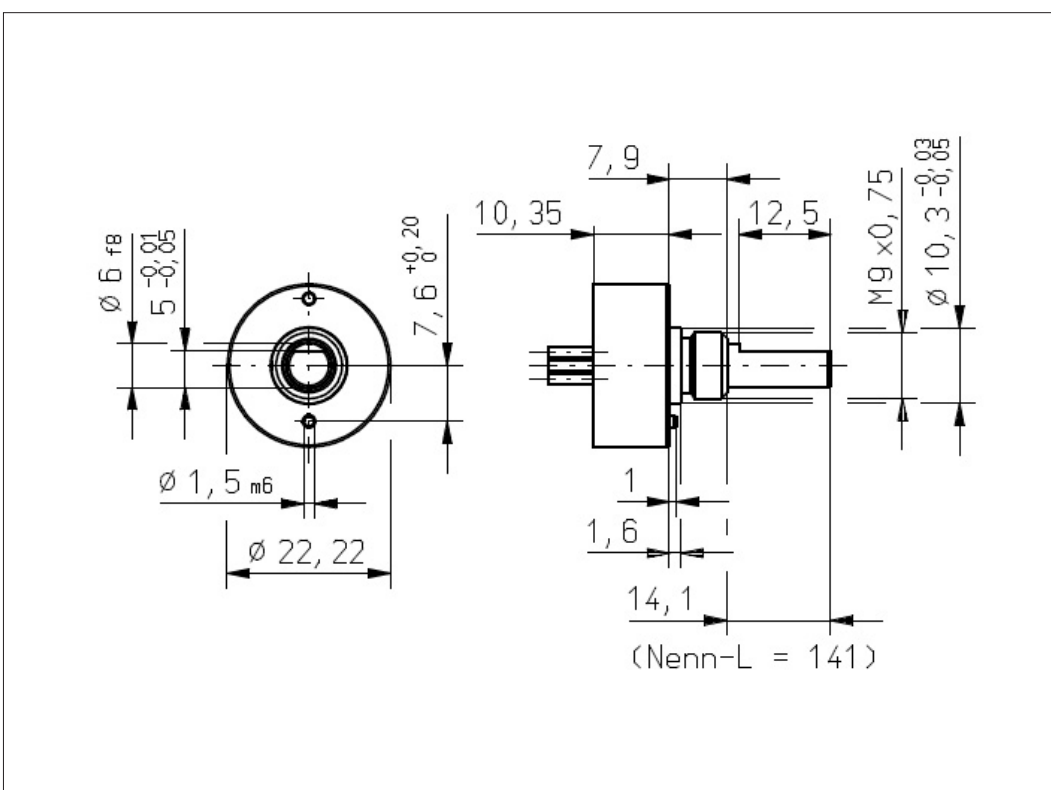
- 1x Fixation clip
- 2x Slotted cylinder head screw M3x8



Vert-X 2121

Accessories (incl.)

- 1x Nut M9x0.75 / SW13
- 1x Serrated lock washer



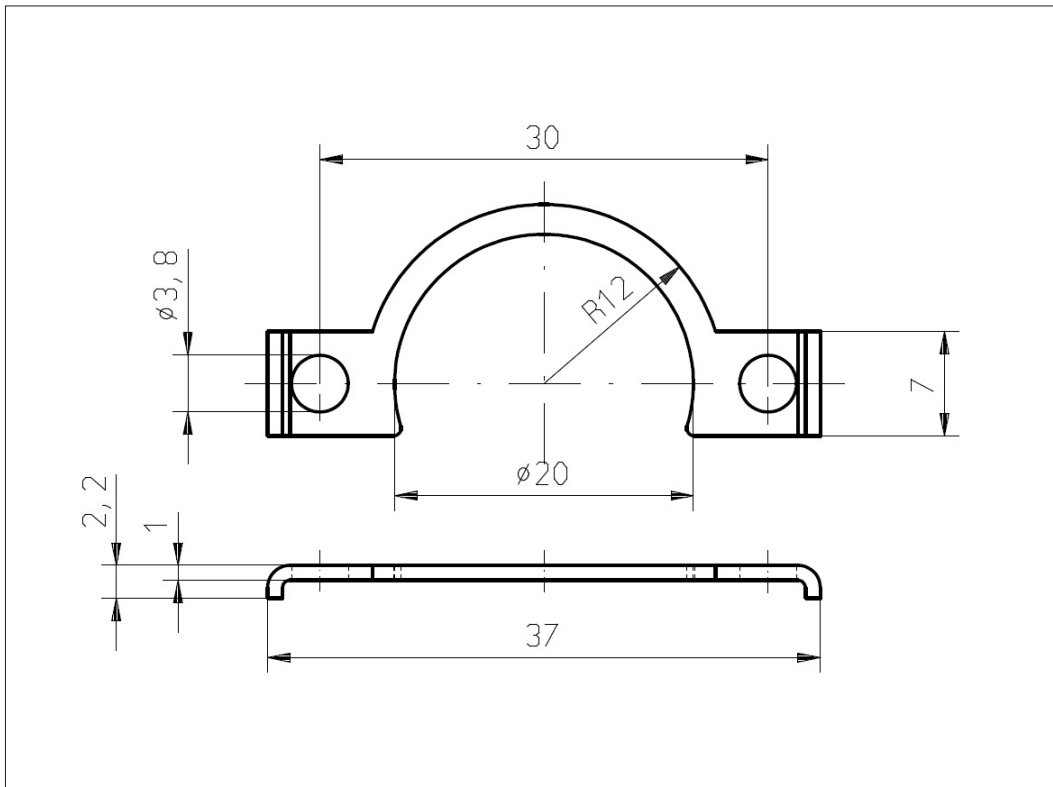
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Vert-X 2112
Accessories
Fixation clip



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