



## Vert-X 28HD - 24V / 0.5 - 4.5V

### Applications

- Harvester
- Public transport
- Construction machines

### Features

- Very high protection class IP68 & IP69K
- Very robust design
- Compact dimensions
- Contactless measuring method
- Long life
- High accuracy of measurement
- Simple adjustment with elongated holes
- Applications under harsh ambient conditions possible (humidity, dampness, dust, dirt, vibrations, etc.)
- Full resolution and accuracy at programmed electrical angle

| Sensor principle  |                  | MH-C             | MH-C2 |
|---|------------------|------------------|-------|
| <b>Electrical data</b>                                  |                  |                  |       |
| Measuring range   | °                | 0...360          | -     |
| Indep. linearity  | % of meas. range | ±0.3             | -     |
| Max. hysteresis   | °                | 0.1              | -     |
| Resolution  | bit              | 12               | -     |
| Max. repeatability                                      | °                | 0.1              | -     |
| Sample rate fast mode                                   | kHz              | (5)              | -     |
| Sample rate 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           | 100              | -     |
| MTTFd / MTBF  | years            | 240/240          | -     |
| Power supply voltage                                    | VDC              | 8...35           | -     |
| Current consumption without load (typ.) fast mode       | mA               | (19)             | -     |
| Current consumption without load (typ.) slow mode       | mA               | 14               | -     |
| Min. ohmic load at output                               | kOhm             | 10               | -     |
| Max. capacitive load at output                          | nF               | 100              | -     |
| Reverse polarity protection of power supply             |                  | yes              | -     |
| Electrical connection                                   |                  | Cable 3pole      | -     |
| Cross section of single wires                           | mm <sup>2</sup>  | 0.56 (AWG20)     | -     |
| Redundancy feasible                                     |                  | no               | -     |
| Electrical connection redundant                         |                  | -                | -     |
| Cross section of single wires redundant                 | mm <sup>2</sup>  | -                | -     |
| <b>Mechanical data</b>                                  |                  |                  |       |
| Mechanical range  | °                | 360 (continuous) | -     |
| Protection class  |                  | IP68 & IP69K     | -     |
| Max. starting torque at specified protection class      | Ncm              | 6                | -     |
| Max. rotating speed                                     | rpm              | 3000             | -     |
| Min. life   | movements        | 360 Mio.         | -     |
| Max. permitted axial shaft load                         | N                | 100              | -     |
| Max. permitted radial shaft load                        | N                | 100              | -     |
| Operating & storage temperature                         | °C               | -40 ... +85      | -     |
| IEC 68-2-6 Vibration (Amax = 0.75mm, f = 5...2000 Hz)   | g                | 20               | -     |
| IEC 68-2-27 Shock                                       | g                | 50               | -     |
| <b>Standards</b>  |                  |                  |       |
| EN 55022 class B, Emission radiated (30...230 MHz)      | dB(µV/m)         | max. 30          | -     |
| EN 55022 class 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              | 100              | -     |
| EN 61000-4-3, Immision HF radiated (1.4...2GHz)         | V/m              | 3                | -     |
| EN 61000-4-3, Immision HF radiated (2...2.7GHz)         | V/m              | 1                | -     |
| 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: 02.11.12



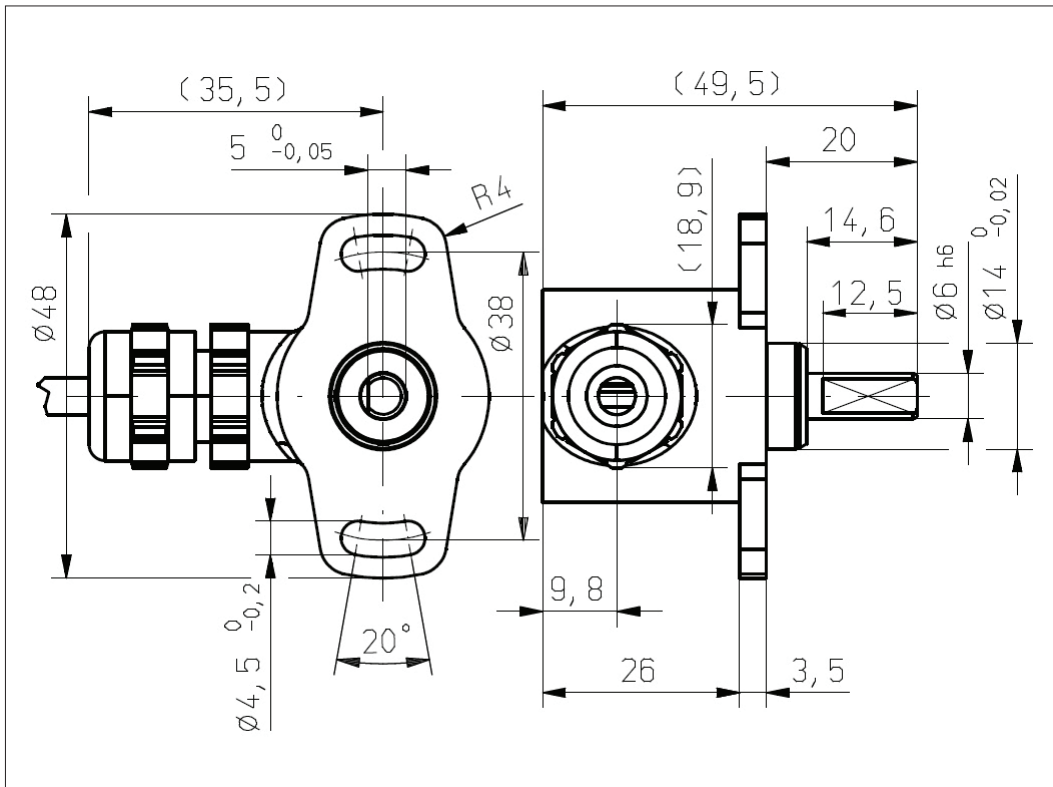
**Vert-X 28HD - 24V / 0.5 - 4.5V**  
**Ordering code**

|               |                               |          |          |          |  |          |          |          |                                    |          |          |                              |          |                   |          |                |
|---------------|-------------------------------|----------|----------|----------|--|----------|----------|----------|------------------------------------|----------|----------|------------------------------|----------|-------------------|----------|----------------|
|               | <b>Output characteristics</b> |          |          |          |  |          |          |          |                                    |          |          | <b>Electrical connection</b> |          |                   |          |                |
|               | Positive gradient CW          |          |          |          |  |          | Standard |          | 1                                  |          |          | 1                            | Standard | Round cable 3pole |          |                |
|               | Positive gradient CCW         |          |          |          |  |          | Optional |          | 2                                  |          |          | 9                            | Optional | Special cable     |          |                |
|               | <b>Output signal</b>          |          |          |          |  |          |          |          |                                    |          |          | <b>Length of cable</b>       |          |                   |          |                |
|               | 0,5VDC...4,5VDC               |          |          |          |  |          |          |          |                                    |          |          | Standard                     | 4        | 02                | Standard | 1.0m           |
|               | <b>Power supply voltage</b>   |          |          |          |  |          |          |          |                                    |          |          | Standard                     | 6        | 06                | Optional | 3.0m           |
|               | 24VDC                         |          |          |          |  |          |          |          |                                    |          |          | Standard                     | 6        | 10                | Optional | 5.0m           |
|               |                               |          |          |          |  |          |          |          |                                    |          |          | Standard                     | 6        | 99                | Optional | Special length |
| <b>Vert-X</b> | <b>2</b>                      | <b>8</b> | <b>H</b> | <b>D</b> | <b>7</b>                                     | <b>3</b> | <b>6</b> | <b>6</b> | <b>4</b>                           | <b>1</b> | <b>1</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                         |          |                   |          |                |
|               | <b>Mechanical version</b>     |          |          |          |  |          |          |          |                                    |          |          |                              |          |                   |          |                |
|               | 28HD                          |          | Standard |          | 6mm shaft D-shape; IP68 & IP69K - Heavy-duty |          |          |          |                                    |          |          |                              |          |                   |          |                |
|               | 28H9                          |          | Optional |          | Special shaft                                |          |          |          |                                    |          |          |                              |          |                   |          |                |

|  | MH-C | MH-C2 |
|--|------|-------|
| Custom shaft design                                      | X    | -     |
| Custom cable   | X    | -     |
| Sample rate in fast mode                                 | X    | -     |
| Special characteristic curve                             | -    | -     |
| Special electrical angle within 30° to 360° (ex factory) | X    | -     |
|  |      |       |
|  |      |       |
|  |      |       |
|  |      |       |
|  |      |       |

**Options** (on request)

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### Vert-X 28HD

#### Accessories (incl.)

- None

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