### Sensor principle

**MH-C2**

### Electrical data

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Measuring range</td>
<td>° 0 ... 360</td>
</tr>
<tr>
<td>Independ. linearity (typ.)</td>
<td>% of meas. range ±0.3</td>
</tr>
<tr>
<td>Max. hysteresis</td>
<td>° 0.1</td>
</tr>
<tr>
<td>Resolution</td>
<td>bit 16</td>
</tr>
<tr>
<td>Max. repeatability</td>
<td>° 0.1</td>
</tr>
<tr>
<td>Sample rate</td>
<td>kHz 0.5</td>
</tr>
<tr>
<td>Max. temperature coefficient of the output signal</td>
<td>ppm/K 25</td>
</tr>
<tr>
<td>MTTFd / MTBF</td>
<td>years 135 / 135</td>
</tr>
<tr>
<td>Power supply voltage</td>
<td>VDC 8 ... 35</td>
</tr>
<tr>
<td>Current consumption without bus load (typ.), per channel</td>
<td>mA 30</td>
</tr>
<tr>
<td>Reverse polarity protection of power supply</td>
<td>yes</td>
</tr>
<tr>
<td>Electrical connection</td>
<td>Round cable</td>
</tr>
<tr>
<td>Cross section of single wires</td>
<td>mm² 0.34 (AWG 22)</td>
</tr>
<tr>
<td>Bus interface</td>
<td>ISO/DIS 11898-2</td>
</tr>
<tr>
<td>CANopen communication according to CiA</td>
<td>Standard DS-301 Rev. 4.02</td>
</tr>
<tr>
<td>Default Node-ID's</td>
<td>16 &amp; 17 (programmable 1 ... 127)</td>
</tr>
<tr>
<td>Default bitrate</td>
<td>kBit/s 125</td>
</tr>
</tbody>
</table>

### Mechanical data

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mechanical range</td>
<td>° 360 (continuous)</td>
</tr>
<tr>
<td>Protection class</td>
<td>IP68</td>
</tr>
<tr>
<td>Min. life movements</td>
<td>no limitation</td>
</tr>
<tr>
<td>Operating &amp; storage temperature</td>
<td>°C -40 ... +85</td>
</tr>
<tr>
<td>EN 60068-2-6 Vibration (Amax = 0.75mm, f = 5...2000Hz)</td>
<td>g 20</td>
</tr>
<tr>
<td>EN 60068-2-27 Shock</td>
<td>g 50</td>
</tr>
</tbody>
</table>

### Standards

- **EN 55022 class B, Emission radiated (30...230MHz)**
  - dB(μV/m) max. 30
- **EN 55022 class B, Emission radiated (230...1000MHz)**
  - dB(μV/m) max. 37
- **EN 55022 class B, Emission conducted (0.15...0.5MHz)**
  - dB(μV) max. 56 ... 46
- **EN 55022 class B, Emission conducted (0.5...5MHz)**
  - dB(μV) max. 46
- **EN 55022 class B, Emission conducted (5...30MHz)**
  - dB(μV) max. 50
- **EN 61000-4-2, ESD (contact discharge / air discharge)**
  - kV ±4 / ±8
- **EN 61000-4-3, Immision HF radiated (80...2700MHz/1.4...2.7GHz)**
  - V/m 100
- **EN 61000-4-4, Burst (on all lines)**
  - kV ±3
- **EN 61000-4-5, Surge (lines to ground)**
  - kV ±1
- **EN 61000-4-6, Immision HF conducted (0.15...80MHz)**
  - Vemk 12
- **EN 61000-4-8, Immision magnetic field (50Hz)**
  - A/m 300
- **EN 62393-1 Insulation resistance (500VDC, 1bar, 2s)**
  - GOhm 20
- **EN 62393-1 Dielectric strength (VAC, 50Hz, 1min, 1bar)**
  - kV 1

CANopen conformance certified by CiA

Certificate#: CIA201003-301V402/20-0116

### Applications

- Forklifter
- Platformer
- Agricultural machine

### Features

- CiA approved
- Non-contacting measuring method
- Very long life
- High accuracy of measurement
- Applications under adverse ambient conditions possible (humidity, dampness, oil dust, vibrations etc.)
- Detection of magnetic loss (with safety flag)
Vert-X 32E - 24V / CANopen, redundant

### Ordering code

<table>
<thead>
<tr>
<th>Options</th>
<th>(on request)</th>
</tr>
</thead>
<tbody>
<tr>
<td>MH-C2</td>
<td>X</td>
</tr>
<tr>
<td>Custom magnetic actuator</td>
<td>X</td>
</tr>
<tr>
<td>Custom modification of the housing</td>
<td>X</td>
</tr>
<tr>
<td>Custom cable</td>
<td>X</td>
</tr>
<tr>
<td>CAN integrated bus termination resistor (120Ω) / R\text{CAN}</td>
<td>X</td>
</tr>
<tr>
<td>Custom bitrate (10 ; 20 ; 50 ; 100 ; 250 ; 500 ; 800 ; 1000 kBit/s)</td>
<td>X</td>
</tr>
<tr>
<td>Extended operating range, axial (without safety flag)</td>
<td>X</td>
</tr>
</tbody>
</table>

### CAN characteristics

| Redundant 2-Bus / CAN-High ; CAN-Low ; R\text{CAN} | Optional |
| Redundant 2-Bus / CAN-High ; CAN-Low | Standard |
| Redundant 1-Bus / CAN-High-In ; CAN-High-Out ; CAN-Low-In ; CAN-Low-Out | Optional |
| Redundant 1-Bus / CAN-High ; CAN-Low | Standard |
| Redundant 1-Bus / CAN-High ; CAN-Low ; R\text{CAN} | Optional |
| Special version | Optional |

### Electrical connection

| 6 | Optional | Round cable 6pole |
| 8 | Standard | Round cable 4pole |
| C | Standard | 2x Round cable 4pole |
| 9 | Optional | Special cable |

### Output signal

| CANopen Encoder Profile 406 (C2) | Standard |
| 24VDC | Standard |

### Power supply voltage

| 24VDC | Standard |

### Electrical angle

| 36 | Standard | Electrical angle 360° |

### Sensor principle

| 8 | MH-C2 |

### Mounting hole

| b | Standard | Through-hole ø 4.4mm with counterbore ø 8mm / label side |
| d | Optional | Through-hole ø 4.4mm with counterbore ø 8mm / magnetic actuator side |

### Mechanical version

| 32E5 | Optional | Magnetic actuator type 5 |
| 32E6 | Standard | Magnetic actuator type 6 |
| 32E7 | Optional | Magnetic actuator type 7 |
| 32E8 | Optional | Magnetic actuator type 8 |
| 32E9 | Optional | Special magnetic actuator |
Vert-X 32E5

Accessories (incl.)
None

Operating range/Air gap (A)
Standard with safety flag
Redundant 0 ... 6.2mm

Extended without safety flag (Optional)
Redundant 0 ... 9.9mm

Features Safety Flag
- Detection of magnetic loss
- System shut-down in case of magnetic actuator out of valid operating range
- Recommended for safety relevant applications

Vert-X 32E5b836 13x xxx ¹)
Vert-X 32E5d836 13x xxx ²)

Errors and omissions excepted. Subject to change without notice. / State: 04.10.16

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Telefax +41 (0)32 3665604
sales@contelec.ch

A company of the Siedle-Group
Vert-X 32E6

Accessories (incl.)
None

Operating range/Air gap (A)
Standard with safety flag
Redundant 0 ... 5.0mm

Extended without safety flag
(Optional)
Redundant 0 ... 8.4mm

Features Safety Flag
- Detection of magnetic loss
- System shut-down in case of magnetic actuator out of valid operating range
- Recommended for safety relevant applications

Vert-X 32E6b836 13x xxx 1)
Vert-X 32E6d836 13x xxx 2)
Vert-X 32E7

Accessories (incl.)
None

Operating range/Air gap (A)
Standard with safety flag
Redundant 0 ... 13.2mm

Extended without safety flag (Optional)
Redundant 0 ... 19.6mm

Features Safety Flag
• Detection of magnetic loss
• System shut-down in case of magnetic actuator out of valid operating range
• Recommended for safety relevant applications

Vert-X 32E7b836 13x xxx 1)
Vert-X 32E7d836 13x xxx 2)
Vert-X 32E8

Accessories (incl.)
None

Operating range/Air gap (A)
Standard with safety flag
Redundant 0 ... 12.7mm

Extended without safety flag (Optional)
Redundant 0 ... 18.6mm

Features Safety Flag
- Detection of magnetic loss
- System shut-down in case of magnetic actuator out of valid operating range
- Recommended for safety relevant applications
Vert-X 32E

Indep. linearity with radial misalignment (@360°)

Radial misalignment [mm]

Independent linearity [%]

- Magnetic actuator type 5
- Magnetic actuator type 6
- Magnetic actuator type 7
- Magnetic actuator type 8

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Certificate # CiA201003-301V402/20-0116
Vendor ID 00 00 00 80
Manufacturer Contelec AG

Device Vert-X MH-C2 CAN

- Product code: 0001 8774h
  - Object 1018h02h
- Hardware version: HV30781B
  - Object 1009h
- Revision number: 0000 00A1h
  - Object 1018h03h
- Software version: SV_1.2.3
  - Object 100Ah

EDS MH-C2_CAN.ed

- File version: 1
- EDS version: 4.02
- File revision: 0

Nuremberg, 26.03.2010

CANopen certified by

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