



## Sensor de inclinação N7 dynamic CAN

O sensor de inclinação dinâmica N7 está disponível nas versões CANopen ou SAE J1939. Devido ao seu design robusto e à alta resistência a choques e vibrações, ele é frequentemente usado para medir a inclinação em máquinas de construção, máquinas agrícolas, caminhões industriais e ambientes industriais adversos. Equipado com uma combinação extremamente responsiva de acelerômetro e giroscópio, ele reduz significativamente os efeitos negativos dos movimentos bruscos e garante o fornecimento de dados de medição precisos.

N7 dynamic – desenvolvido para proporcionar ainda mais segurança, confiabilidade, funcionalidade e flexibilidade.

- Alta precisão, mesmo com movimentos rápidos, fortes vibrações e choques
- Unidade de Medição Inercial (IMU)
- Saída de aceleração, taxa de rotação e inclinação
- Sinais precisos para movimentos dinâmicos graças à fusão de sensores
- Padrões EMC de acordo com os padrões fora de estrada (EN ISO 14982; DIN EN ISO 13766-1; DIN EN 12895)
- Design robusto para uma longa vida útil: classe de proteção IP6K7 (ISO 20653) / IP6K9K (ISO 20653)
- Resistente a temperaturas de -20 °C a +85 °C (-40 °C a +85 °C mediante solicitação)
- Tipos de conectores: Deutsch DT04-08PA, 1x M12 de 5 pinos (macho) ou 2x M12 de 5 pinos (macho/fêmea)
- Daisy-Chain – looping através do sinal CAN sem distribuidores T adicionais
- Instalação rápida graças à eficiente montagem em 2 pontos
- Gerenciamento inteligente de variantes graças a um sistema modular inteligente
- Aprovação do tipo E1 para aprovação em estradas
- Conjuntos de parâmetros personalizados de acordo com a aplicação para aumentar o desempenho/precisão (mediante solicitação)
-

Desenho técnico

IMAGE 1/4

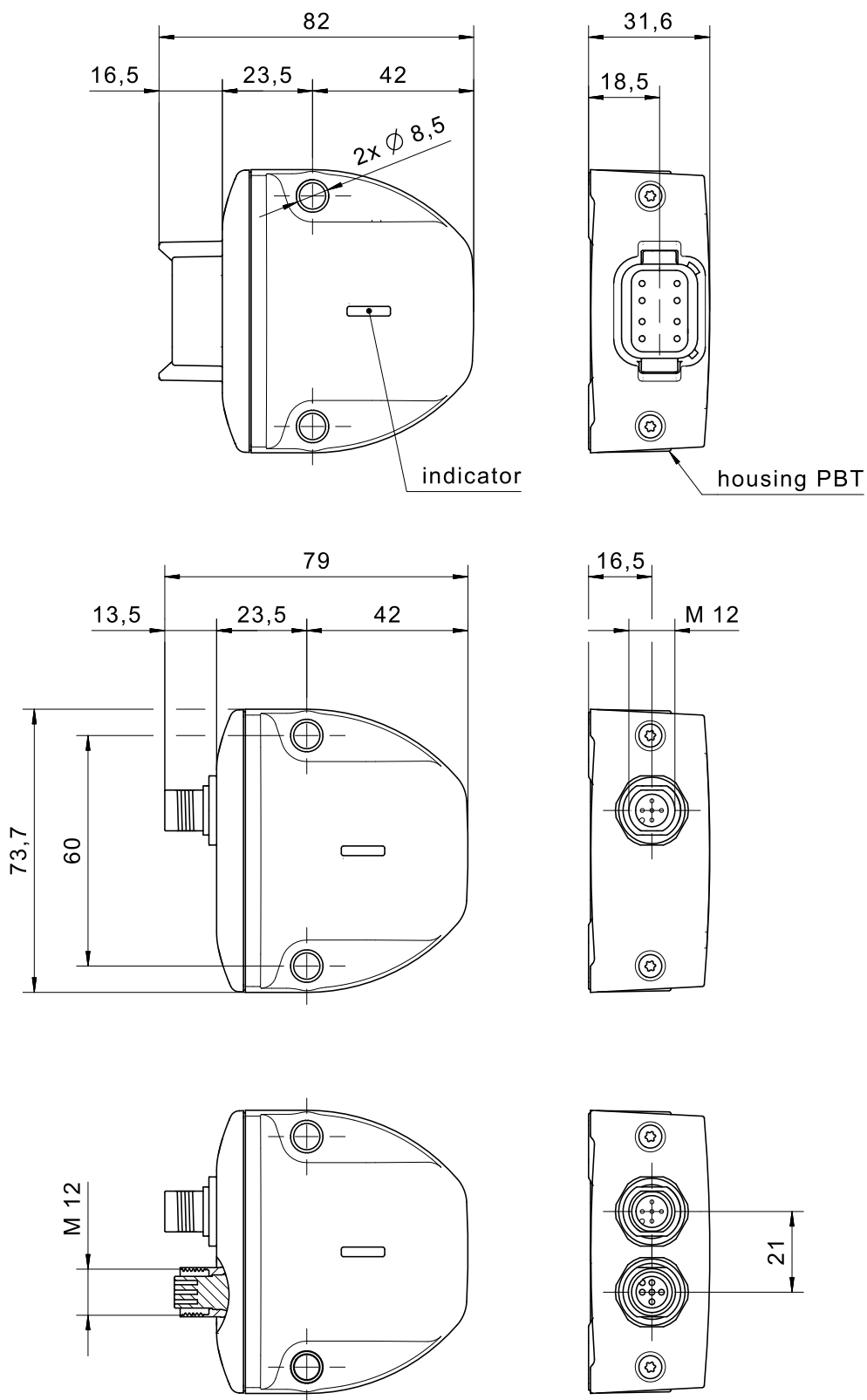


IMAGE 2/4

360° ( $\pm 180^\circ$ ) horizontally mounted

Y-axis



180° ( $\pm 90^\circ$ ) horizontally mounted

X-axis



360° ( $\pm 180^\circ$ ) vertically mounted

Z-axis



180° ( $\pm 90^\circ$ ) vertically mounted

X-axis

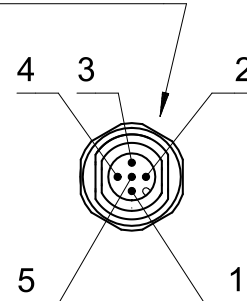


IMAGE 3/4

### M12 - analog

| pin | configuration  | specification     |
|-----|----------------|-------------------|
| 1   | U <sub>B</sub> | operating voltage |
| 2   | Out1           | output 1          |
| 3   | GND            | ground            |
| 4   | Out2           | output 2          |
| 5   | n. c.          | not connected     |

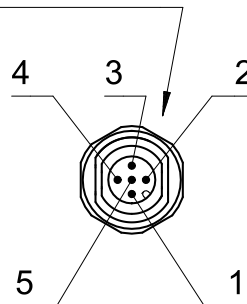
### male M12



### M12 - CAN

| pin | configuration  | specification     |
|-----|----------------|-------------------|
| 1   | n. c.          | not connected     |
| 2   | U <sub>B</sub> | operating voltage |
| 3   | GND            | ground            |
| 4   | CAN_H          | signal line CAN   |
| 5   | CAN_L          | signal line CAN   |

### male M12



### 2x M12 - CAN

| pin | configuration  | specification     |
|-----|----------------|-------------------|
| 1   | n. c.          | not connected     |
| 2   | U <sub>B</sub> | operating voltage |
| 3   | GND            | ground            |
| 4   | CAN_H          | signal line CAN   |
| 5   | CAN_L          | signal line CAN   |

### male M12

### female M12

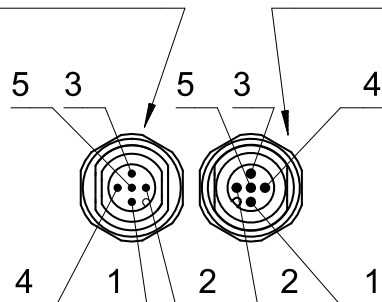


IMAGE 4/4

## Deutsch DT04-08PA - analog

| pin | configuration  | specification     |
|-----|----------------|-------------------|
| 1   | U <sub>B</sub> | operating voltage |
| 2   | GND            | ground            |
| 3   | Out1           | output 1          |
| 4   | Out2           | output 2          |
| 5   | Relay1         | switch output 1   |
| 6   | Relay1         | switch output 1   |
| 7   | Relay2         | switch output 2   |
| 8   | Relay2         | switch output 2   |

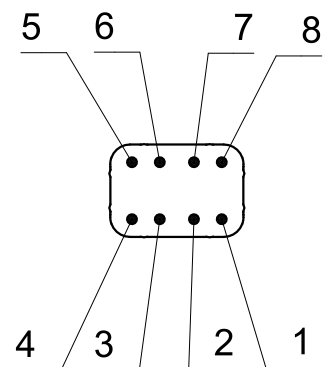
## Deutsch DT04-08PA - CAN

| pin | configuration  | specification     |
|-----|----------------|-------------------|
| 1   | U <sub>B</sub> | operating voltage |
| 2   | GND            | ground            |
| 3   | CAN_L          | signal line CAN   |
| 4   | CAN_H          |                   |
| 5   | Relay1         | switch output 1   |
| 6   | Relay1         | switch output 1   |
| 7   | Relay2         | switch output 2   |
| 8   | Relay2         | switch output 2   |

## Deutsch DT04-08PA



## Deutsch DT04-08PA



## Características do artigo

| Attribute                          | N7DCC000H2-001 | N7DCC0D2H2-001  | N7DCC0D2V2-001                                       | N7DCC000V2-001 | N7DCC001H2-001 | N7DCC001V2-001 |
|------------------------------------|----------------|---|--|----------------|----------------|----------------|
| Technology                         | MEMS           |   |  |                |                |                |
| Supply voltage                     | +8..+36 V DC   |   |  |                |                |                |
| Polarity reversal protection       | -36 V DC       |   |  |                |                |                |
| Short-circuit protection           | ISO 16750-2    |   |  |                |                |                |
| Current consumption                | 100 mA         |   |  |                |                |                |
| Output signal                      | CANopen        | CANopen + 2x relay (NC)                                       |  | CANopen        |                |                |
| Contact form                       | -              | NC  |  | -              |                |                |
| Protocol                           | CANopen        |   |  |                |                |                |
| UDS ISO 14229 capability           | yes            |   |  |                |                |                |
| Baud rate                          | 250 kBit/s     |   |  |                |                |                |
| Cycle time                         | 10 ms          |   |  |                |                |                |
| Node ID / Source Address           | 32             |   |  |                |                |                |
| Bus terminating resistor           | no             |   |  |                |                |                |
| Connection type (switching output) | -              | Relay 1 = X1/X3 Y1/Y3 (Z1/Z3) / Relay 2 = X2/X4 Y2/Y4 (Z2/Z4) |  | -              |                |                |
| Switching points                   | -              | X1/X3 = 5<br>X2/X4 = 10<br>Y1/Y3 = 5<br>Y2/Y4 = 10 °          | X1/X3 = 5<br>X2/X4 = 10<br>Z1/Z3 = 5<br>Z2/Z4 = 10 ° | -              |                |                |
| Turn-on delay                      | -              | 0s  |  | -              |                |                |
| Turn-off delay                     | -              | 0s  |  | -              |                |                |
| Hysteresis                         | -              | ±0,1°   |  | -              |                |                |
| Max. switching voltage             | -              | 36 V DC   |  | -              |                |                |
| Max. switching current             | -              | 1 A   |  | -              |                |                |
| Max. switching power               | -              | 30 W  |  | -              |                |                |
| Measuring range acceleration max.  | ±8 g           |   |  |                |                |                |
| Measuring range gyroscope max.     | ±250 °/s       |   |  |                |                |                |
| Resolution                         | 0,01 °         |   |  |                |                |                |
| Accuracy dynamically typ.          | ±0,5 °         |   |  |                |                |                |
| Repeating accuracy                 | typ. ±0,2 °    |   |  |                |                |                |
| Temperature coefficient            | max. ±0,015°/K |   |  |                |                |                |
| Sensing rate                       | 100 Hz         |   |  |                |                |                |

## Características do artigo

| Attribute   | N7DCC000H2-001  | N7DCC0D2H2-001    | N7DCC0D2V2-001                | N7DCC000V2-001       | N7DCC001H2-001                | N7DCC001V2-001                |
|---|---|-------------------|-------------------------------|----------------------|-------------------------------|-------------------------------|
| Initialisation time after power on/start-up time            | 500 ms  |                   |                               |                      |                               |                               |
| Installation  | horizontal  |                   | vertically                    |                      | horizontal                    | vertically                    |
| Zero justification  | ±60°  |                   |                               |                      |                               |                               |
| Number of measurement axes tilt                             | 2   |                   |                               |                      |                               |                               |
| Measuring principle   | dynamic /(fast) moving applications)  |                   |                               |                      |                               |                               |
| Measuring range   | ±90° X-Achse<br>±180° Y-Achse   |                   | ±90° X-Achse<br>±180° Z-Achse |                      | ±90° X-Achse<br>±180° Y-Achse | ±90° X-Achse<br>±180° Z-Achse |
| NMT autostart   | not active  |                   |                               |                      |                               |                               |
| MTTF  | 92 a  |                   |                               |                      |                               |                               |
| Connector type  | 1xM12 5-polig (male)  | Deutsch DT04-08PA |                               | 1xM12 5-polig (male) | 2xM12 5-polig (male/female)   |                               |
| Weight  | 113 g   | 108 g             |                               | 113 g                | 123 g                         |                               |
| Housing material  | PBT   |                   |                               |                      |                               |                               |
| Torque for fastening screws                                 | 10 Nm   |                   |                               |                      |                               |                               |
| Storage temperature   | -40..+85 °C   |                   |                               |                      |                               |                               |
| Protection class  | IP6K7 ISO 20653, IP6K9K ISO 20653   |                   |                               |                      |                               |                               |
| Vibration resistance (Norm)                                 | EN 60068-2-64 (random vibration 7,99g , 5-500Hz, 20,1mm displacement)               |                   |                               |                      |                               |                               |
| Shock resistance (Norm)                                     | EN 60068-2-27 (shock 51g, 11ms)   |                   |                               |                      |                               |                               |
| Operating temperature                                       | -20..+85 °C   |                   |                               |                      |                               |                               |
| Salt spray test   | DIN EN 60068-2-11 (salt spray mist for 96h at 35°C)                                 |                   |                               |                      |                               |                               |
| EMC Agricultural and forestry machines (Norm)               | EN ISO 14982, Load dump Pulse B with Us = 85V, Cranking ISO 16750-2 Level 1-4       |                   |                               |                      |                               |                               |
| EMC Earth-moving and building construction machinery (Norm) | DIN EN ISO 13766-1, Load dump Pulse B with Us = 85V, Cranking ISO 16750-2 Level 1-4 |                   |                               |                      |                               |                               |
| EMC Industrial trucks (Norm)                                | DIN EN 12895  |                   |                               |                      |                               |                               |
| CE  | yes   |                   |                               |                      |                               |                               |
| E1 type approval  | UN ECE Regulation No. 10 No. 10R06/01 9376 00                                       |                   |                               |                      |                               |                               |

## Características do artigo

| Attribute                          | N7DCC002H2-001 | N7DCC002V2-001 | N7DCJ0D2H2-001  | N7DCJ0D2V2-001                                       | N7DCJ000H2-001 | N7DCJ000V2-001 |
|------------------------------------|----------------|----------------|---|--|----------------|----------------|
| Technology                         | MEMS           |                |   |  |                |                |
| Supply voltage                     | +8..+36 V DC   |                |   |  |                |                |
| Polarity reversal protection       | -36 V DC       |                |   |  |                |                |
| Short-circuit protection           | ISO 16750-2    |                |   |  |                |                |
| Current consumption                | 100 mA         |                |   |  |                |                |
| Output signal                      | CANopen        |                | J1939 + 2x relay (NC)   |  | J1939          |                |
| Contact form                       | -              |                | NC  |  | -              |                |
| Protocol                           | CANopen        |                | J1939   |  |                |                |
| UDS ISO 14229 capability           | yes            |                |   |  |                |                |
| Baud rate                          | 250 kBit/s     |                |   |  |                |                |
| Cycle time                         | 10 ms          |                |   |  |                |                |
| Node ID / Source Address           | 32             |                | 226   |  |                |                |
| Bus terminating resistor           | no             |                |   |  |                |                |
| Connection type (switching output) | -              |                | Relay 1 = X1/X3 Y1/Y3 (Z1/Z3) / Relay 2 = X2/X4 Y2/Y4 (Z2/Z4) |  | -              |                |
| Switching points                   | -              |                | X1/X3 = 5<br>X2/X4 = 10<br>Y1/Y3 = 5<br>Y2/Y4 = 10 °          | X1/X3 = 5<br>X2/X4 = 10<br>Z1/Z3 = 5<br>Z2/Z4 = 10 ° | -              |                |
| Turn-on delay                      | -              |                | 0s  |  | -              |                |
| Turn-off delay                     | -              |                | 0s  |  | -              |                |
| Hysteresis                         | -              |                | ±0,1°   |  | -              |                |
| Max. switching voltage             | -              |                | 36 V DC   |  | -              |                |
| Max. switching current             | -              |                | 1 A   |  | -              |                |
| Max. switching power               | -              |                | 30 W  |  | -              |                |
| Measuring range acceleration max.  | ±8 g           |                |   |  |                |                |
| Measuring range gyroscope max.     | ±250 °/s       |                |   |  |                |                |
| Resolution                         | 0,01 °         |                |   |  |                |                |
| Accuracy dynamically typ.          | ±0,5 °         |                |   |  |                |                |
| Repeating accuracy                 | typ. ±0,2 °    |                |   |  |                |                |
| Temperature coefficient            | max. ±0,015°/K |                |   |  |                |                |
| Sensing rate                       | 100 Hz         |                |   |  |                |                |



## Características do artigo

| Attribute   | N7DCC002H2-001  | N7DCC002V2-001                | N7DCJ0D2H2-001                | N7DCJ0D2V2-001                | N7DCJ000H2-001                | N7DCJ000V2-001                |
|---|---|-------------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|
| Initialisation time after power on/start-up time            | 500 ms  |                               |                               |                               |                               |                               |
| Installation  | horizontal  | vertically                    | horizontal                    | vertically                    | horizontal                    | vertically                    |
| Zero justification  | ±60°  |                               |                               |                               |                               |                               |
| Number of measurement axes tilt                             | 2   |                               |                               |                               |                               |                               |
| Measuring principle   | dynamic /(fast) moving applications)  |                               |                               |                               |                               |                               |
| Measuring range   | ±90° X-Achse<br>±180° Y-Achse   | ±90° X-Achse<br>±180° Z-Achse | ±90° X-Achse<br>±180° Y-Achse | ±90° X-Achse<br>±180° Z-Achse | ±90° X-Achse<br>±180° Y-Achse | ±90° X-Achse<br>±180° Z-Achse |
| NMT autostart   | not active  |                               |                               |                               |                               |                               |
| MTTF  | 92 a  |                               |                               |                               |                               |                               |
| Connector type  | Deutsch DT04-08PA   |                               |                               |                               | 1xM12 5-polig (male)          |                               |
| Weight  | 108 g   |                               |                               |                               | 113 g                         |                               |
| Housing material  | PBT   |                               |                               |                               |                               |                               |
| Torque for fastening screws                                 | 10 Nm   |                               |                               |                               |                               |                               |
| Storage temperature   | -40..+85 °C   |                               |                               |                               |                               |                               |
| Protection class  | IP6K7 ISO 20653, IP6K9K ISO 20653   |                               |                               |                               |                               |                               |
| Vibration resistance (Norm)                                 | EN 60068-2-64 (random vibration 7,99g , 5-500Hz, 20,1mm displacement)               |                               |                               |                               |                               |                               |
| Shock resistance (Norm)                                     | EN 60068-2-27 (shock 51g, 11ms)   |                               |                               |                               |                               |                               |
| Operating temperature                                       | -20..+85 °C   |                               |                               |                               |                               |                               |
| Salt spray test   | DIN EN 60068-2-11 (salt spray mist for 96h at 35°C)                                 |                               |                               |                               |                               |                               |
| EMC Agricultural and forestry machines (Norm)               | EN ISO 14982, Load dump Pulse B with Us = 85V, Cranking ISO 16750-2 Level 1-4       |                               |                               |                               |                               |                               |
| EMC Earth-moving and building construction machinery (Norm) | DIN EN ISO 13766-1, Load dump Pulse B with Us = 85V, Cranking ISO 16750-2 Level 1-4 |                               |                               |                               |                               |                               |
| EMC Industrial trucks (Norm)                                | DIN EN 12895  |                               |                               |                               |                               |                               |
| CE  | yes   |                               |                               |                               |                               |                               |
| E1 type approval  | UN ECE Regulation No. 10 No. 10R06/01 9376 00                                       |                               |                               |                               |                               |                               |

## Características do artigo

| Attribute  | N7DCJ001H2-001 | N7DCJ001V2-001 | N7DCJ002H2-001 | N7DCJ002V2-001 |
|--|----------------|----------------|----------------|----------------|
| Technology                                       | MEMS           |                |                |                |
| Supply voltage                                   | +8..+36 V DC   |                |                |                |
| Polarity reversal protection                     | -36 V DC       |                |                |                |
| Short-circuit protection                         | ISO 16750-2    |                |                |                |
| Current consumption                              | 100 mA         |                |                |                |
| Output signal                                    | J1939          |                |                |                |
| Contact form                                     | -              |                |                |                |
| Protocol   | J1939          |                |                |                |
| UDS ISO 14229 capability                         | yes            |                |                |                |
| Baud rate  | 250 kBit/s     |                |                |                |
| Cycle time                                       | 10 ms          |                |                |                |
| Node ID / Source Address                         | 226            |                |                |                |
| Bus terminating resistor                         | no             |                |                |                |
| Connection type (switching output)               | -              |                |                |                |
| Switching points                                 | -              |                |                |                |
| Turn-on delay                                    | -              |                |                |                |
| Turn-off delay                                   | -              |                |                |                |
| Hysteresis                                       | -              |                |                |                |
| Max. switching voltage                           | -              |                |                |                |
| Max. switching current                           | -              |                |                |                |
| Max. switching power                             | -              |                |                |                |
| Measuring range acceleration max.                | ±8 g           |                |                |                |
| Measuring range gyroscope max.                   | ±250 °/s       |                |                |                |
| Resolution                                       | 0,01 °         |                |                |                |
| Accuracy dynamically typ.                        | ±0,5 °         |                |                |                |
| Repeating accuracy                               | typ. ±0,2 °    |                |                |                |
| Temperature coefficient                          | max. ±0,015°/K |                |                |                |
| Sensing rate                                     | 100 Hz         |                |                |                |
| Initialisation time after power on/start-up time | 500 ms         |                |                |                |
| Installation                                     | horizontal     | vertically     | horizontal     | vertically     |
| Zero justification                               | ±60°           |                |                |                |

## Características do artigo

| Attribute   | N7DCJ001H2-001  | N7DCJ001V2-001                | N7DCJ002H2-001                | N7DCJ002V2-001                |
|---|---|-------------------------------|-------------------------------|-------------------------------|
| Number of measurement axes tilt                             | 2   |                               |                               |                               |
| Measuring principle   | dynamic /(fast) moving applications)  |                               |                               |                               |
| Measuring range   | ±90° X-Achse<br>±180° Y-Achse   | ±90° X-Achse<br>±180° Z-Achse | ±90° X-Achse<br>±180° Y-Achse | ±90° X-Achse<br>±180° Z-Achse |
| NMT autostart   | not active  |                               |                               |                               |
| MTTF  | 92 a  |                               |                               |                               |
| Connector type  | 2xM12 5-polig (male/female)   |                               | Deutsch DT04-08PA             |                               |
| Weight  | 123 g   |                               | 108 g                         |                               |
| Housing material  | PBT   |                               |                               |                               |
| Torque for fastening screws                                 | 10 Nm   |                               |                               |                               |
| Storage temperature   | -40..+85 °C   |                               |                               |                               |
| Protection class  | IP6K7 ISO 20653, IP6K9K ISO 20653   |                               |                               |                               |
| Vibration resistance (Norm)                                 | EN 60068-2-64 (random vibration 7,99g , 5-500Hz, 20,1mm displacement)               |                               |                               |                               |
| Shock resistance (Norm)                                     | EN 60068-2-27 (shock 51g, 11ms)   |                               |                               |                               |
| Operating temperature                                       | -20..+85 °C   |                               |                               |                               |
| Salt spray test   | DIN EN 60068-2-11 (salt spray mist for 96h at 35°C)                                 |                               |                               |                               |
| EMC Agricultural and forestry machines (Norm)               | EN ISO 14982, Load dump Pulse B with Us = 85V, Cranking ISO 16750-2 Level 1-4       |                               |                               |                               |
| EMC Earth-moving and building construction machinery (Norm) | DIN EN ISO 13766-1, Load dump Pulse B with Us = 85V, Cranking ISO 16750-2 Level 1-4 |                               |                               |                               |
| EMC Industrial trucks (Norm)                                | DIN EN 12895  |                               |                               |                               |
| CE  | yes   |                               |                               |                               |
| E1 type approval  | UN ECE Regulation No. 10 No. 10R06/01 9376 00                                       |                               |                               |                               |