

## Declaration on environmental compatibility in the fields of EMC<sup>1)</sup>, climate and mechanical stress

RE 29564-U/12.07 1/4

### Typ 4WS(E)2EM 6 -2X

4/3 directional servo-valve  
with mechanical position feedback

#### Product types

- 4WS(E)2EM 6 -2X according to data sheet RE 29564

#### Description of the product family

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Electrically operated 2-stage 4/3 servo-valve, size 6, with mechanical feedback

Functionality:

- position control
- force control
- pressure control
- velocity control

<sup>1)</sup> in the sense of the EMC law dated 30th August 1995 and Directive 89/336/EEC)

**The above products comply with the following standards:****1. EMC** (electromagnetic compatibility)

Testing according to specialized basic standard prEN 50082-2:1996, VDE 0839 part 82-2

Type 4WSE2EM 6-20 (with on-board electronics)

|                                   |              |                                      |  |
|-----------------------------------|--------------|--------------------------------------|--|
| EN 61000-4-2:1995<br>IEC 1000-4-2 | VDE 0847-4-2 | ESD<br>(electrostatic discharge)     | Air discharge:<br>Severity 3 / assessment criterion A<br>Contact discharge:<br>Severity 4 / assessment criterion A |
| EN 61000-4-4:2004<br>IEC 1000-4-4 | VDE 0847-4-4 | BURST<br>(transient discharge)       | Supply voltage:<br>Severity 3 / assessment criterion B<br>Datenleitung:<br>Severity 4 / assessment criterion B     |
| EN 61000-4-6:1996<br>IEC 1000-4-6 | VDE 0847-4-6 | HF-Felder,<br>conducted interference | Schärfegrad 10 V/m<br>assessment criterion A (shield connected<br>on both sides)                                   |

**2. Climate**

Testing according to EN 60068-2 / IEC 68-2 (Environmental test)

Type 4WS2EM 6-20 (without on-board electronics)

|  |                  |                        |  |
|--|------------------|------------------------|--|
| EN 60068-2-1:1994                      |                  | Cold test              | 2 cycles -30 °C<br>Dwell time 2 hours  |
| EN 60068-2-2:1993                      |                  | Dry heat test          | 2 cycles +70 °C<br>Dwell time 2 hours  |
| EN 60068-2-1:1994<br>EN 60068-2-2:1993 |                  | Storage temperature    | -30 °C, Dwell time 16 hours<br>+80 °C, Dwell time 16 hours                                 |
|  | IEC 68-2-14:1986 | Temperature cycle      | 2 cycles<br>-30 °C to +70 °C<br>Dwell time 3 hours each at<br>min. / max. temperature      |
|  | IEC 68-2-30:1985 | Damp heat,<br>cyclical | variant 2<br>+25 °C to +55 °C<br>93 % to 97 % relative humidity<br>2 cycles, 24 hours each |

Type 4WSE2EM 6-20 (with on-board electronics)

|  |                  |                        |  |
|--|------------------|------------------------|--|
| EN 60068-2-1:1994                      |                  | Cold test              | 2 cycles -20 °C<br>Dwell time 2 hours  |
| EN 60068-2-2:1993                      |                  | Dry heat test          | 2 cycles +60 °C<br>Dwell time 2 hours  |
| EN 60068-2-1:1994<br>EN 60068-2-2:1993 |                  | Storage temperature    | -20 °C, Dwell time 16 hours<br>+80 °C, Dwell time 16 hours                                 |
|  | IEC 68-2-14:1986 | Temperature cycle      | 2 cycles<br>-20 °C to +60 °C<br>Dwell time 3 hours each at<br>min. / max. temperature      |
|  | IEC 68-2-30:1985 | Damp heat,<br>cyclical | variant 2<br>+25 °C to +55 °C<br>93 % to 97 % relative humidity<br>2 cycles, 24 hours each |

**The above products comply with the following standards (continued):****3. Mechanical stress**

Vibration and shock test according to EN 60068-2 / IEC 68-2 / DIN 40046 (Environmental test)

Tests were carried out in three axes.

|                     |                  |                   |                                |  |
|---------------------|------------------|-------------------|--------------------------------|--|
| prEN 60068-2-6:1994 |                  |                   | Sine test                      | 10 cycles, 5...2000 ...5 Hz at a logarithmic frequency change rate of 1 oct./min.<br>5 to 57 Hz, amplitude 1,5 mm (p-p)<br>57 to 2000 Hz, amplitude 10 g |
|                     | IEC 68-2-36:1973 | DIN 40046-24:1977 | Random test<br>Broadband-noise | 20 to 2000 Hz,<br>amplitude 0,05 g <sup>2</sup> / Hz (10 g RMS)<br>testing time 30 min each axis   |
| EN 60068-2-27:1993  |                  |                   | Shock test                     | Half sine 15 g / 11 ms, 3 x in positive / 3 x in negative direction per axis; in total, 18 individual shocks   |

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