



Fraunhofer

TESTED[®] DEVICE

Yaskawa Europe GmbH
MOTOMAN robot MPP3s
Report No. YA 1312-680

DUPLICATE

Statement of
Qualification

Particle Emission

Statement of Qualification

Customer: Yaskawa Europe GmbH
Yaskawastr. 1
85391 Allershausen
Germany

Component tested

Category: Automation Components
Subcategory: Robotics
Type: MOTOMAN robot MPP3s

Test results / Classification:
(in accordance with ISO 14644-1)

The MOTOMAN robot MPP3s is suitable for use in cleanrooms fulfilling the following Air Cleanliness Classes:

Speed	Air Cleanliness Class
50%	4
100%	5
Overall Result	5

Random check measurements of particle emission (airborne) at representative points

Standards/Guidelines: VDI 2083-9.1; ISO 14644-1
Each standard stated refers to the version valid at the time of testing.

Measuring equipment: Optical particle counters:
Lasair II 110 with measuring ranges $\geq 0.1 \mu\text{m}$, $\geq 0.2 \mu\text{m}$, $\geq 0.3 \mu\text{m}$,
 $\geq 0.5 \mu\text{m}$, $\geq 1.0 \mu\text{m}$ and $\geq 5.0 \mu\text{m}$

Test parameters of test environment:

- Cleanroom fulfilling Air Cleanliness Class (i.a.w. ISO 14644-1): ISO 1
- Air flow velocity: 0.45 m/s
- Flow guidance: vertical unidirectional air flow
- Temperature: $22^\circ\text{C} \pm 0.5^\circ\text{C}$
- Relative humidity: $45\% \pm 5\%$

Test parameters of test execution:

Full movement (synchronously):

- Tool load: none
- Tool distance: 100 mm
- Pick and place height: 50 mm
- Horizontal movement distance: 500 mm
- T-axis (flange axis) movement angle: 180°
- Linear operation speed (50%): 2000 mm/s
- Linear operation speed (100%): 4000 mm/s

Axis 4 (T-axis):

- Movement angle: $\pm 360^\circ$
- Tool load: none
- Tool distance: 100 mm
- Operation speed (50 %): $600^\circ/\text{s}$
- Operation speed (100 %): $1200^\circ/\text{s}$

The measuring equipment used for the qualification is regularly calibrated and is based on national and international standards. In the case where no national standards exist, the measuring procedure used corresponds with technical regulations and norms valid at the time of the measurement. The documents drawn up for this procedure are available for viewing.

Please find detailed information about test environment and parameters in the report of Fraunhofer IPA.

Fraunhofer Institute for
Manufacturing Engineering and Automation IPA
Department for Ultraclean Technology
and Micromanufacturing

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i. A. 
Frank Bürger, Project manager Fraunhofer IPA

The validity of this statement is limited to the named product in original form from the date of first issuance for a duration of 5 years and can be checked on www.tested-device.com.