



valid until: December 14, 2028

Fraunhofer

TESTED[®] DEVICE

KUKA Deutschland GmbH
KMRiisy CR

Report No. KU 2302-1396

DUPLICATE

Statement of
Qualification

Single product
Electrical
Resistance

Statement of Qualification · Single product

Customer
 KUKA Deutschland GmbH
 Zugspitzstrasse 140
 86165 Augsburg
 Germany

Component tested

Category: Automation Components
 Subcategory: Robotics
 Product name: KMRiisy CR
 (manufacturing date: 4/12/2023; article number: 16010348; serial number: 1041360)

Electrical resistance measurements at representative points (resistance to groundable point (R_{gp}) and point-to-Point resistance (R_{p-p}))

Standards/Guidelines: DIN EN 61340-2-3, -5-1
 The norms stated generally refer to the version valid at the time of the tests.

Test devices:

- Data capture:
 - Type: Metriso 3000
 - Company: Wolfgang Warmbier GmbH & Co. KG

Test environment parameters:

- Cleanroom Air Cleanliness Class (according to ISO 14644-1): ISO 1
- Airflow velocity: 0.45 m/s
- Airflow pattern: vertical laminar flow
- Temperature: 22 °C ± 0.5 °C
- Relative humidity: 45 % ± 5 %

Test procedure parameters:

Measuring probes:

- Type: Model 850, ME 2.5 kg, Ø 63.5 mm, IEC 61340-2-3, -4-1
- Company: Wolfgang Warmbier GmbH & Co. KG

Counter electrode:

- Material: 2 stainless steel plates
- Size: 500 mm x 500 mm (± 2 mm)
- Thickness: 1.2 mm (± 0.1 mm)

Insulating base:

- Material: flat PTFE-Plate with $R > 1014 \Omega$
- Size: 1.210 mm x 1.200 mm (± 5 mm)
- Thickness: 5 mm (± 1 mm)

Test result / Classification

The robot KMRiisy CR was examined for its electrical resistance at representative points in accordance with DIN EN 61340-2-3. The resistance to groundable point (R_{gp}) values obtained from the test piece must lie within the limits of the limiting value of $1 \times 10^9 \Omega$ required by DIN EN 61340-5-1 for ESD control elements. The point-to-point resistance (R_{p-p}) values obtained from the test piece lies within the limits of the limiting value of $1 \times 10^9 \Omega$ required by DIN EN 61340-5-1 for ESD control elements.

Measuring point	Max. \varnothing -values	Limit value
R_{gp} - potential to contact ESDS	2.2×10^6	fulfilled
R_{p-p} - potential to contact ESDS - potential to contact ESDS	7.3×10^5	fulfilled

Note: The instructions given in the user documentation from KUKA Deutschland GmbH must be observed. Only dissipative may be used in the handling area. It is best to do without a sticker on the product in the handling area

The measuring devices used for the qualification tests are calibrated at regular intervals; their results can be traced back to national and international standards. In cases where no national standards exist, the test procedure implemented complies with the technical regulations and norms applicable at the time of the test. The relevant documentation can be viewed on request at any time.

Detailed information and parameters of the test environment can be found in the Fraunhofer IPA test report.

Fraunhofer Institute for Manufacturing Engineering and Automation IPA

KU 2302-1396
 Report No. first document

Stuttgart, December 14, 2023
 Place, date of first document issued

Department of Ultraclean Technology and Micromanufacturing

--
 Report No. current document

--
 Place, current date

Nobelstrasse 12
 70569 Stuttgart
 Germany

on behalf of 
 Dr.-Ing. Frank Bürger, Project Manager Fraunhofer IPA