

Technical Report

***ESD system 50 Flex-arm, measurement of the conductivity
in accordance with IEC61340-5-1:1998***

Client: Alsident system A/S

Project no.: E401290

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Title ESD system 50 Flex-arm, measurement of the conductivity in accordance with IEC61340-5-1.

System description Conductive extractor system with flex-arm to be used in an Electro static protected area.

Project no. E401290

Date of investigation 2004-11-03

Client Alsident System A/S
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DK-8450 Hammel

Test ordered by Lars Vester Rasmussen

Investigation carried out at ESD system 50 Flex-arm

Date 2004-11-03

Test engineer and project leader



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1. Conclusion

The tested ESD systems 50 Flex-arm comply with the requirements for “Surface resistance” and “Resistance to ground able point” as specified in IEC 61340-5-1 Protection of electronic devices from electrostatic phenomena – General requirements.

The ESD System 50 Flex-arm hereby complies with the requirements specified for items used in an ESD protected area.

2. *Introduction*

The ESD System 50 Flex-arm is an extractor system with a diameter of the tubes at 50mm.

Measurements are performed at two samples of the ESD system 50 Flex-arm.

3. **Requirements**

The relevant requirements for the conductivity properties for the extractor system are specified in the technical report:

IEC61340-5-1. Protection of electronic devices from electrostatic phenomena – General requirements.

Table 1 “ESD protective item requirements“ describe the requirements for different items.

DELTA categorizes the extractor system as “Tools”.

For “Tools” there are specified two sets of requirements of interest for the extractor system:

Surface resistance

Resistance to EPA ground or ground able point.

Requirements for surface resistance:

For tools note 4 is relevant.

Note 4 give a reference to IEC61340-5-2

IEC61340-5-2:

5.2.10 Tools, machinery, dispensers and test equipment

All tools and machinery, for example electrical, mechanical or pneumatic, shall be so constructed that any non-insulating part of the tool or machine which may touch an ESDS shall be at EPA ground potential.

The resistance to ground is specified to less than 1×10^{12} .

No requirements are specified for surface resistance, therefore DELTA use the specification for “Working surfaces, storage racks, trolleys and carts”, when measuring the separate items.

Specifications for working surfaces, storage racks, trolleys:

Surface resistance $< 1 \times 10^{10}$

Resistance to EPA ground or ground able point.

Resistance to ground $< 1 \times 10^{12}$ ohm. (There is no minimum value of resistance for protection of electro static sensitive devices).

4. *Measurement of conductivity*

The measurements were performed in accordance with IEC61340-5-1:1998

The measurements of surface resistance were performed at each part of the ESD System 50 Flex-arm. During the measurement each part were connected to each other as in normal operation.

The measurements were performed with a test voltage at 100V.

4.1 Table of result

Resistance to ground able point		
Requirement < 1x 10E12 Ohm		
	Unit 1	Unit 2
Tip to end of wire	1.0 x 10E6 Ohm	1.1 x 10E6 Ohm
Tip to the point were the wire is connected to the ESD System 50 Flex-arm	7.08 x 10E3 Ohm	12.19 x 10E3 Ohm
Surface resistance		
Requirement < 1x 10E10 Ohm		
	Unit 1	Unit 2
Tip	0 Ohm	0 Ohm
Flex-arm	6.4 x 10E3 Ohm	6.6 x 10E3 Ohm
Connection unit	1.8 x 10E3 Ohm	1.3 x 10E3 Ohm
Base unit	41.7 x 10E3 Ohm	Tested at one sample only

4.2 Conclusion

The ESD System 50 Flex-arm complies with the requirement in IEC61340-5-1:1998.

5. Test equipment

Power supply

Type: 3655

Manufacture: SF

Measurement of voltage

Multimeter

Type 79

Manufacture: Fluke

Measurement of current

Multimeter

Type 8060A

Manufacture: Fluke

Annex 1

Photo

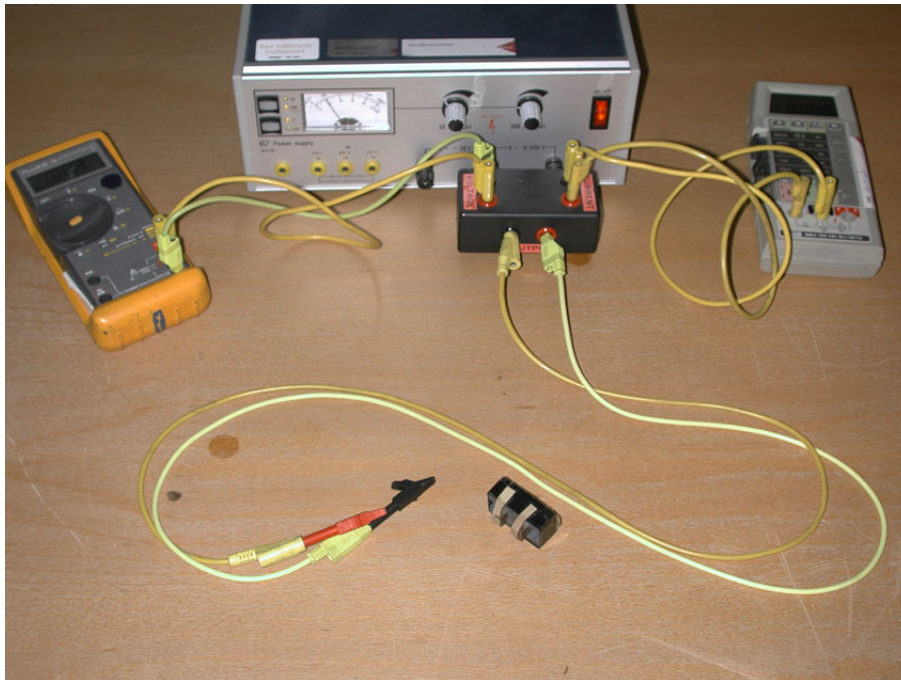


Photo no. 1: Measurements equipment



Photo no. 2: Measurements setup for ESD System 50 Flex-arm



Photo no. 3: Measurements setup for ESD System 50 Flex-arm, test of base unit.