

Electrostatic Sensor ES-NFA

The Electrostatic sensor ES-NFA is made for the measurement of static DC magnetic fields with the analyzers NFA1000 und NFA 400 up to a reading of $\pm 9999V^1$. In building biology it is used for the choosing and evaluating materials like carpets, curtains or textiles, which influence the interior climate to a high degree. Additionally it is used for measuring electrostatic charges during production processes of electronics-, paper-, textiles- or plastic industries.

Place holders at the front of the sensor ensure a consistent distance is kept, which allows for a simple and precise measurement. These place holders are made of ceramics and are subject to break easily, so treat them with care. They should be kept clean and if necessary can be cleaned with a cloth moistened with alcohol.

Connection of the Sensor and Settings of the NFA

The electrostatic sensor ES-NFA has two connecting cables. One of it has a white marking saying „I/O“. Connect this cable to the NFA's respective jack and the other one to the „AC/DC“-jack.

Settings of the NFA1000 and the NFA400:

- "Power": "On"
- "Field Selection": "M3D"
- "Mode": "Auto"
- "Signal": "tRM and S"

In order to put the sensor into operation, switch on the NFA, connect the sensor and push the button "rec." for an instant. The display will show the electrostatic surface potential in Volt (mV "x1000"-LED = Volt).

Performing the Measurement

The electrostatic sensor ES-NFA must always be grounded with the provided grounding cable during zero balancing and measurement.

The sensor must almost be held in a way that the conductive foam on the bottom side of the sensor is being touched. This ensures that the measuring person is well-grounded and faulty measurements can be avoided. This is especially important if the measuring person touches chargeable materials like plastic carpets.

Zero-Balancing of the Sensor

Prior to each measurement the sensor must be zero-balanced. While zero-balancing the sensor, it should be pointing away from any chargeable materials. Press the button "0.00" for at least 5 seconds. Longer or multiple pressing increases the accuracy. If the reading does not quite drop down to zero that is not a problem due to the relatively high recommended limiting values.

¹ In order to make use of all digits of the LCD, that is not to lose the first digit for showing the minus sign, for big numbers the minus sign will not be shown in front of reading but behind it. It will be displayed intermittently with the smallest (and thus least important) position of the decimal point.

Measurement of Electrostatic Surface Potentials

For the measurement of the zero-balanced sensor is placed on the surface of the material to be measured with the two place holders. The electrostatic surface potential can be read on the display of the NFA. Make sure the sensor is placed orthogonally on the surface to be measured .

Please zero-balance the sensor prior to each single measurement.

Has air humidity has strong influence on the generation of electrostatic surface potentials it should be measured and noted throughout the measurement. The instrument is calibrated at an air humidity of 50%. For higher air humidities the electrostatic surface potential decreases, for lower air humidities it increases.

If the object to be measured protrudes the area of the sensor by less than about an inch, field inhomogeneities will cause smaller display values than the actual potential really is. If measurements with smaller objects have to be performed, the influence of the object size should be found out experimentally in advance.

Using the Data Logging Functionality

The data logging functionality of the NFA can be used with the electrostatic sensor as normal. Activate the logging functionality by switching to "Log" for a moment and then return to "On" for the – then documented – measurement. Relevant points can be commented with the "audio note" functionality, which that will be displayed with NFAsoft in the graphics window. By this means "discharge time", as specified in the building biology evaluation guidelines, can easily be documented (in this case of course the "0.00" – button must not be pressed!).

Building Biology Evaluation Guidelines for Sleeping Areas (SBM – 2008)

	Extreme Concern	Severe Concern	Slight Concern	No Concern
Surface potential (Volt)	>2000	500-2000	100-500	<100
Discharge time (Seconds)	>60	30-60	10-30	<10