



# More Precision.

FSC // CFRP coating thickness gauge for the aviation industry





**Non-destructive measurement of CFRP, CFRP with lightning protection and metals**

**Certified detection of the total thickness according to aviation standards**

**No minimum layer thickness required**

**Precise, fast and easy measurement via push button**

**Residue-free measurement without coupling medium, no spade-/rework**

**Qualified layer thickness measurement for aviation**

The FSC performs non-destructive measurements of coating thickness and other electrically insulating layers on substrates such as carbon fiber-reinforced plastics (CFRP), CFRP with metallic lightning protection and metals. The substrates can be isotropic or anisotropic and must have a medium or high electrical conductivity. When multi-layer coating is measured, the system directly measures the total thickness.

This high precision instrument measures, among other things, the thickness of aircraft paint. Certified and authorized by renowned aircraft manufacturers, the FSC is used in the aviation industry, e.g., in paint shops and airlines.

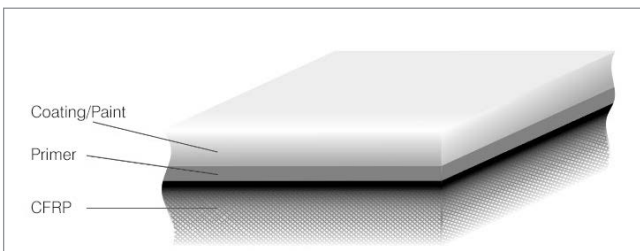
The special models of the FSC series impress with

- high quality,
- cost efficiency,
- safety and
- long service life.

**Multi-featured robust controller**

The FSC includes a sensor and a controller for operating and display purposes. It operates with microwaves in the ISM band (frequency range 24 to 24.25 GHz). No coupling medium (transducer gel) is required and the measuring point remains unchanged. One measurement takes approx. 1 second.

The plastic films included with known thickness allow for the system to be adjusted to the substrate material on site. The generated data can be applied to the respective substrate type and stored for later use. Export of measurement data for further external processing is possible via a USB port.



Typical structure of an aircraft coating/paint layer



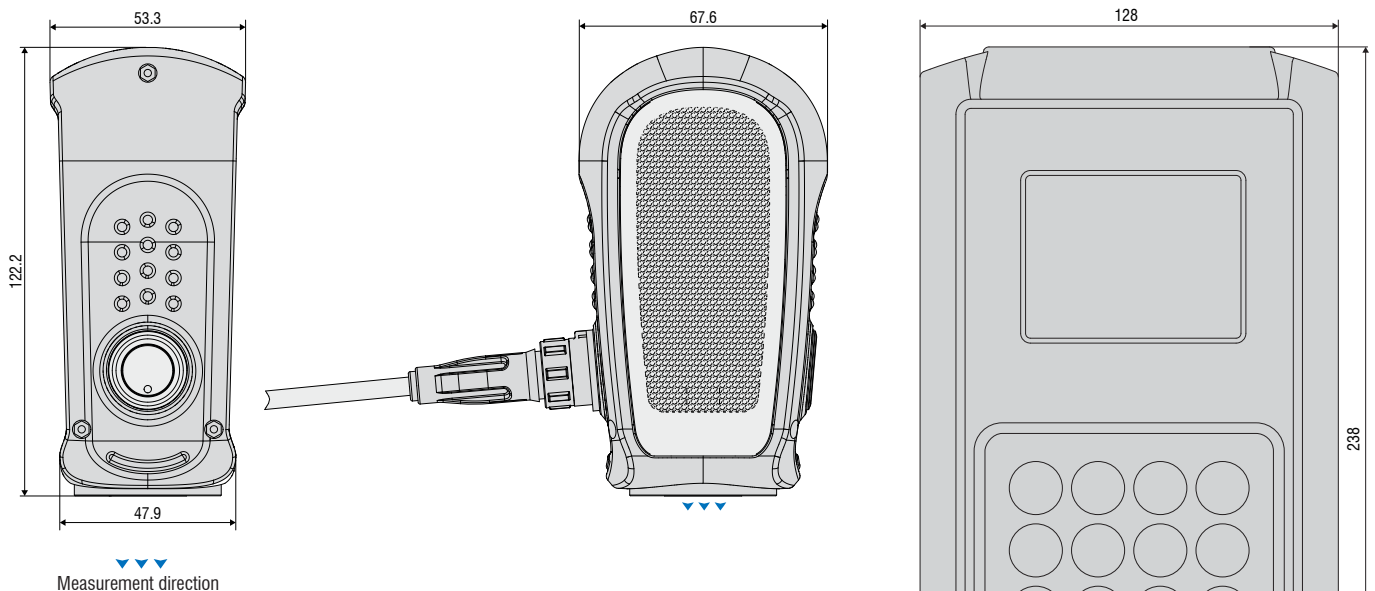
| Model                            | FSC1/7  | FSC1000  |
|----------------------------------|---|--|
| Measuring range                  | 500 $\mu\text{m}$   | 1000 $\mu\text{m}$   |
| Resolution                       | Static  | 1 $\mu\text{m}$  |
|                                  | Display   | 1 $\mu\text{m}$ or 0.01 mils   |
| Repeatability                    | < 2 $\mu\text{m}$   | < 4 $\mu\text{m}$  |
| Linearity <sup>1)</sup>          | < $\pm 3 \mu\text{m}$   | < $\pm 5 \mu\text{m}$ <sup>2)</sup>  |
| Duration of a single measurement | < 1 s   |  |
| Frequency range                  | 24 ... 24.25 GHz (ISM band)   |  |
| Supply voltage                   | NiMH battery 6 V, 4500 mAh  |  |
| Battery life                     | approx. 8 hours <sup>3)</sup>   |  |
| Min. target thickness            | Coating   | none   |
|                                  | Substrate   | depending on material and its conductivity <sup>4)</sup> , > 1 $\mu\text{m}$ |
| Min. target size                 | $\varnothing$ 20 mm   |  |
| Target material (substrate)      | electrically conductive and poorly conductive materials such as CFRP <sup>4)</sup> , CFRP with lightning protection, metals   |  |
| Coupling medium (transducer gel) | not required  |  |
| Active measuring area            | approx. $\varnothing$ 15 mm   |  |
| Interfaces                       | USB   |  |
| Temperature range                | Storage   | 0 ... +45 °C   |
|                                  | Operation   | +10 ... +40 °C   |
| Humidity                         | 20 ... 80 % r.H. (non-condensing)   |  |
| Protection class (DIN EN 60529)  | IP40 (sensor and controller)  |  |
| Control and display elements     | 3.2" resistive LCD touch display, membrane keypad<br>statistical functions with recording and data export: Min., Max., counter, mean value and standard deviation<br>dynamic tilt prevention (can be activated, configurable) |  |

<sup>1)</sup> Adjustment based on calibration points, distance max. 150  $\mu\text{m}$ ; not taking into account the film tolerance

<sup>2)</sup> From 500  $\mu\text{m}$  it also depends on the dielectric constant. Optimal distance of the calibration points 100  $\mu\text{m}$  (max. 150  $\mu\text{m}$ ) with the set of foils. Not taking into account the film tolerance.

<sup>3)</sup> With approx. 1,000 measurements, new and charged battery

<sup>4)</sup> With CFRP woven materials at least one layer; with CFRP laid materials at least two layers with different angles



### Scope of supply

- Sensor, sensor cable
- Controller (control & display module)
- 1 Set of calibration foils
- 2 Battery packs
- Charger (AC 100 - 240 V, 50 - 60 Hz)
- Shoulder strap for controller
- Operating instructions
- Transport case
- Option: calibration foils with certificate



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## Sensors and Systems from Micro-Epsilon



Sensors and systems for displacement, distance and position



Sensors and measurement devices for non-contact temperature measurement



Measuring and inspection systems for metal strips, plastics and rubber



Optical micrometers and fiber optics, measuring and test amplifiers



Color recognition sensors, LED analyzers and inline color spectrometers



3D measurement technology for dimensional testing and surface inspection