## Data Sheet for the Probes FTA3.3H and ETA3.3H

<table>
<thead>
<tr>
<th>Probe model</th>
<th>FTA3.3H</th>
<th>ETA3.3H</th>
</tr>
</thead>
<tbody>
<tr>
<td>Part no.</td>
<td>604-142</td>
<td>602-128</td>
</tr>
</tbody>
</table>

### Applications

Measures the thickness of electrically non-conducting coatings on non-ferrous metal base material (NC/NF). Very damp sensitive: Not suited for measurements on damp (acidic) surface soilings.

### Examples

**Non-ferrous metal base materials (NF)**

- Paint, varnish or plastic coatings on aluminium, copper or brass (NC/NF)

The probes feature a patented conductivity compensation. So that the different electrical conductivities particularly of various aluminium alloys have no effect of the coating thickness measurement.

### Probe design

- Axial single tip probes with spring-loaded measuring system
- Robust probe design with wear-resistant probe tip

### Applications

NC/NF

### Measurement range

**Non-ferrous metal base materials (NF)**

- Measurement range: 0 … 1200 μm / 0 … 47.24 mils

### Trueness

**Non-ferrous metal base materials (NF)**

- 0 … 50 μm: ≤ 0.5 μm
- 50 … 800 μm: ≤ 1 % of nominal value
- 800 … 1200 μm: ≤ 3 % of nominal value

- 0 … 1.97 mils: ≤ 0.02 mils
- 1.97 … 31.50 mils: ≤ 1 % of nominal value
- 31.5 … 47.24 mils: ≤ 3 % of nominal value

### Repeatability precision

**Non-ferrous metal base materials (NF)**

- 0 … 100 μm: ≤ 0.4 μm
- 100 … 1200 μm: ≤ 0.4 % of reading

- 0 … 3.94 mils: ≤ 0.016 mils
- 3.94 … 47.24 mils: ≤ 0.4 % of reading

### Influences

**Aluminium base material**

The following values are valid for a coating thickness with a nominal value of 75 μm / 2.95 mils. The quantity of the influences are stated with the expanded measurement uncertainty $U$ with the expanded factor of $k = 2$ (defines an interval with the confidence level of 95.45 %) - according to ISO/IEC Guide 98-3:2008-09 "Guide to the expression of uncertainty in measurement".

#### Curvature (R), measurement error from the nominal value with reference to master calibration on flat surface

**Measuring spot**

- No measurement error within the trueness as of $R = 299 \text{ mm} \pm 51 \text{ mm} / R = 11.77 " \pm 2.01 "$
- Measurement error of 10 % for $R = 29 \text{ mm} \pm 1.3 \text{ mm} / R = 1.14 " \pm 0.51 "$
- Probe needs a minimum of $R = 9 \text{ mm}$ (support stand necessary) / $R = 0.354 "$

#### Curvature (R), measurement error from the nominal value with reference to master calibration on flat surface

**Measuring spot**

- No measurement error within the trueness as of $R = 272 \text{ mm} \pm 46 \text{ mm} / R = 10.71 " \pm 1.81 "$
- Measurement error of 10 % for $R = 27 \text{ mm} \pm 2.3 \text{ mm} / R = 1.06 " \pm 0.09 "$
- Probe needs a minimum of $R = 1 \text{ mm}$ (support stand necessary) / $R = 39.37 \text{ mils}$

#### Edge distance (R), specification from probe tip centre, measurement error from the nominal value

**Measuring spot in the centre of the circular surface**

- No measurement error within the trueness as of $R = 1.93 \text{ mm} \pm 0.06 \text{ mm} / R = 75.98 \text{ mils} \pm 2.36 \text{ mils}$
- Measurement error of 10 % for $R = 1.43 \text{ mm} \pm 0.03 \text{ mm} / R \leq 56.30 \text{ mils} \pm 1.18 \text{ mils}$
- Probe needs a minimum of $R = 1 \text{ mm}$ (support stand necessary) / $R = 39.37 \text{ mils}$

#### Edge distance (X), specification from probe tip centre, measurement error from the nominal value

**Measuring spot**

- No measurement error within the trueness as of $X = 1.2 \text{ mm} \pm 0.1 \text{ mm} / X = 47.24 \text{ mils} \pm 3.94 \text{ mils}$
- Measurement error of 10 % for $X = 0.75 \text{ mm} \pm 0.03 \text{ mm} / X = 29.53 \text{ mils} \pm 1.18 \text{ mils}$
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## Influences

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<td>The following values are valid for a coating thickness with a nominal value of 75 μm / 2.95 mils. The quantity of the influences are stated with the expanded measurement uncertainty U with the expanded factor of ( k = 2 ) (defines an interval with the confidence level of 95.45 %) - according to ISO/IEC Guide 98-3:2008-09 &quot;Guide to the expression of uncertainty in measurement&quot;.</td>
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<table>
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<tr>
<th>Base material thickness (D), measurement error from the nominal value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Measuring spot</td>
</tr>
<tr>
<td>Measurement error of 10 % for ( D = 21 \mu m \pm 0.6 \mu m ) / ( D = 0.827 \text{ mils} \pm 0.023 \text{ mils} )</td>
</tr>
</tbody>
</table>

| Base material Influence of the el. conductivity of the base material (NF) in the range from 30 to 100 % IACS: Measurement error ≤ 2 %, valid for the total measurement range. |

<table>
<thead>
<tr>
<th>Admissible ambient temperature at operation</th>
<th>(-10 °C \ldots +40 °C) / (+14 °F \ldots +104 °F)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Admissible specimen temperature</td>
<td>max. +40 °C / max. +104 °F</td>
</tr>
</tbody>
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<table>
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<tr>
<th>Probe tip material</th>
<th>Hard metal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Probe tip replaceable</td>
<td>No</td>
</tr>
<tr>
<td>Probe tip radius</td>
<td>1.2 mm / 0.05 &quot;</td>
</tr>
<tr>
<td>Measuring method</td>
<td>Amplitude sensitive eddy current method according to ISO 2360, ASTM D7091</td>
</tr>
<tr>
<td>Scope of supply</td>
<td>Probe, metal plate ISO/NF for instrument check, calibration foil set 605-415</td>
</tr>
<tr>
<td>Option</td>
<td>Adapter for support stand: 600-796, is supplied by default with the support stand</td>
</tr>
</tbody>
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<tr>
<th>FTA3.3H works with</th>
<th>All DUALSCOPE® and ISOSCOPE® hand-held instruments of the series FMP and the bench top instruments FISCHERSCOPE® MMS® PC and FISCHERSCOPE® MMS® PC2 with module PERMASCOPE® F-Probes</th>
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<tbody>
<tr>
<td>ETA3.3H works with</td>
<td>All DUALSCOPE® and ISOSCOPE® hand-held instruments of the series MP and the bench top instruments FISCHERSCOPE® MMS®, FISCHERSCOPE® MMS® PC and FISCHERSCOPE® MMS® PC2 with module PERMASCOPE® E-Probes</td>
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</tbody>
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## Dimensions

![Diagram](image)

- Cable length: 1.5 m / 59.06 ", other cable lengths on request
- \( \varnothing 18 \text{ mm} / 0.71 \)"
- \( 60 \text{ mm} / 2.36 " \)

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1 FTA3.3H and ETA3.3H probes with special cable lengths have own part no. and probe model names. This data sheet is also valid for these probes.