EMC Minis

... EMC Shielding with Temperature

VT 4002 EMC
Electromagnetic compatibility (EMC) is defined as the ability of an electric device to function satisfactorily within its electromagnetic environment (interference resistance). This must function without unduly affecting this environment which itself contains other devices (emitted interference).

Electromagnetic influences can result in malfunctions of electrical devices and systems (e.g. aircraft, car, railway, ship, etc.). The technical measurement of the electromagnetic compatibility of a system and appropriate protection measures for reduction or suppression of the electromagnetic interference are the subject of numerous research projects.

The correct layout and the design are crucial for the EMC behaviour. Proof and confirmation of interference immunity and sufficiently low interference emission are regulated by EMC Directives and EMC standards (IEC 61000-5-7-2001).

Protection requirements specify that interference emissions of the test specimen must be so low that, e.g. radio receivers etc. in the environment are not unduly affected.

**Test Equipment**

Limited laboratory area and the need to test directly at the workplace requires compact and quiet devices. Temperature devices in the Mini series satisfy these requirements.

Vötsch has developed standard devices which are equipped with optimal shielding attenuation. The shielding attenuation was measured and certified by the Institute for Electric Energy Systems and High-Voltage Engineering (EH) of the University of Karlsruhe (TH).

The test space is designed so that the interior container takes over a shield function. The shield attenuation (SA) specifies the ability of an electromagnetic shield to reduce or attenuate electromagnetic fields and surface currents. The electromagnetic protection (EM protection) is provided by the complete topology (structure). This consists not only of the metallic shell but includes electric leadthroughs (current, communication, antenna, signal cables) and mechanical leadthroughs (door, tubes, connector panel etc.).

Aim of a temperature test in a shielded system is the proof of the resistance of a test specimen to an electromagnetically shielded environment at various reproducible temperatures.

The investigation is aimed at checking the suitability for operation and storage at low and high temperatures.

The functional capability and serviceability of a product are already ensured at a very early stage in the research and development laboratory.

With this series, we are providing the developer and quality assurance an excellent effective electromagnetic shield in combination with the established controlled temperature test chambers.
**Technical Data**

<table>
<thead>
<tr>
<th>Feature</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type</td>
<td>VT 4002 EMC</td>
</tr>
<tr>
<td>Test space volume</td>
<td>l 16</td>
</tr>
<tr>
<td>Temperature range</td>
<td>°C -30 to +100 °C</td>
</tr>
<tr>
<td>Temperature deviation in time</td>
<td>K ±1</td>
</tr>
<tr>
<td>Temperature homogeneity</td>
<td>K ±2</td>
</tr>
<tr>
<td>Temperature rate of change 1)</td>
<td>K/min 5.0</td>
</tr>
<tr>
<td>Heating</td>
<td>K/min 2.5</td>
</tr>
<tr>
<td>Heat compensation max.</td>
<td>W 350</td>
</tr>
<tr>
<td>Shielding attenuation “SE”</td>
<td>(30 MHz to 1 GHz ) &gt;dB 50-70</td>
</tr>
<tr>
<td>Medium frequency</td>
<td>(1 to 3 GHz ) &gt;dB 50 average</td>
</tr>
<tr>
<td>High frequency</td>
<td></td>
</tr>
<tr>
<td>Work space dimensions (WxDxH)</td>
<td>mm 310 x 230 x 205</td>
</tr>
<tr>
<td>External dimensions (WxDxH)</td>
<td>mm 465 x 505 x 625</td>
</tr>
<tr>
<td>Sound pressure level 2)</td>
<td>dB(A) &lt;52</td>
</tr>
<tr>
<td>Electrical connection</td>
<td>1/N/PE AC 230 V ±10%, 50Hz</td>
</tr>
<tr>
<td>Rated power</td>
<td>kW 0.7</td>
</tr>
</tbody>
</table>

Performance values (without options) refer to +25 °C ambient temperature. 1) in accordance with IEC 60068-3-5. 2) free field, 1 m distance from the front, as per DIN 45635, part 1, accuracy class 2. We reserve the right of changes in construction resulting for technical progress.

**Features**

- EM-Code xxx55*x
  1) up to 3 GHz
- For monitoring and controlling the test chamber is equipped with a powerful 32-bit control system SIMPAC*
- The touchpanel offers input and display of values and states
- Extremely quiet

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**Measurement of shielding attenuation**

![Image of measurement graph]

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*Deutsche Akkreditierungsstelle Technik (DAITech) e.V.*

**Akkreditierung**

Institute für Elektromagnetische Verträglichkeit (IFM) der Universität Kaiserslautern

Deutsche Akkreditierungsstelle Technik (DAITech) e.V. (Kölner Straße 1, 53117 Bonn) ist akkreditiert durch das Bundesministerium für Wirtschaft und Technologie (BMWi) in Anlehnung an das Gesetz über die Akkreditierung von Prüfstellen für die Verbrauchermärkte (PrüfG). Die Akkreditierung ist gültig bis 30.06.2022.

### Standard equipment
- 32-bit control system **SIMPAC** with 3.5” touchpanel
- Potential-free contact for switching off of test specimens
- Independent, adjustable temperature limiter
- Adjustable software temperature limiter min./max.
- Ethernet interface
- Air-cooled refrigeration unit
- Calibration of 2 temperature values

### Options
- Software **SIMPATI**
- Digital I/O
- Interface RS 232
- Interface IEEE 488
- Networking (RS 485 interface)
- Laboratory table, mobile
  WxDxH 1000x750x720 mm
- Special voltage
- Customized connector field, easily exchangeable

### Special designs
We plan and manufacture tailor-made solutions to meet all requirements.

Subject to technical alterations. Some of the illustrated systems contain optional extras.