POSITIONING DEVICES AND ACCESSORIES FOR ANECHOIC CHAMBERS, OATS AND SHIELDED ROOMS

Antenna masts, Turntables, Controllers, Shielded video systems, Shielded audio systems and Optic converters
**FAM – FULLY AUTOMATIC ANTENNA MAST**

**FAM – Fully automatic antenna mast**

FRANKONIA’s innovative range of positioning devices is entirely compatible with the EMC chamber environment.

Using a new optical communication bus, the system provides the possibility to control up to 15 devices along a single duplex fiber optic.

### Available Sizes

<table>
<thead>
<tr>
<th>Size</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>FAM 4</td>
<td>Frankonia Antenna Mast for 4.0m height scan</td>
</tr>
<tr>
<td>FAM 6</td>
<td>Frankonia Antenna Mast for 6.0m height scan</td>
</tr>
</tbody>
</table>

### Main characteristics:

- Vertical accuracy 5 mm
- Resolution 1 mm
- Polarization accuracy 0.2°
- 30 step adjustable vertical speed from 0.01 m/s to 0.50 m/s
- Fully automatic calculation of acceleration and deceleration ramps according to the weight of the antenna
- Manual tilting ± 5°
- Mast positioning from 1.00 m to 4.00 m / 6.00 m
- Low noise, completely shielded hardware
- FRANKONIA optic communication bus
- Remote-controlled by controller type FC-02

### FAM – Technical specifications

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Antenna height</td>
<td>1.0 m to 4.00 m (6.0 m)</td>
</tr>
<tr>
<td>Max. antenna weight</td>
<td>12 kg at cross beam section of the mast</td>
</tr>
<tr>
<td>Dimensions</td>
<td>760 mm x 800 mm x 4,200 mm (L x W x H)</td>
</tr>
<tr>
<td>Weight</td>
<td>95 kg</td>
</tr>
<tr>
<td>Power supply</td>
<td>230V, 50/60 Hz, 4A</td>
</tr>
</tbody>
</table>

**FSP – ANTEendon SUPPORT**

**FRANKTONIA developed a complete range of positioning devices and controllers that are fully compatible with the Anechoic chamber environment.**

The FRANKONIA single axe positioner – FSP – is specifically designed for measuring at a fixed height. The polarization is made by the pneumatic motor.

The FSP is made of non-metallic parts (PVC and glass fiber) except for the 4 wheels. It is weatherproof and manually adjustable in height.

The control of the polarization is made by using our FC03 Controller.

Antenna adapters are available as an option.

### FSP – Technical specifications

<table>
<thead>
<tr>
<th>Parameter</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Antenna height</td>
<td>adjustable from 0.6 m to 2.40 m</td>
</tr>
<tr>
<td>Max. antenna weight</td>
<td>8 kg</td>
</tr>
<tr>
<td>Polarization time</td>
<td>approx. 2 s</td>
</tr>
<tr>
<td>Pneumatic drive</td>
<td>adjustable from 0° to 180°</td>
</tr>
<tr>
<td>Dimensions</td>
<td>910 mm x 560 mm x 2,500 mm (L x W x H)</td>
</tr>
<tr>
<td>Weight</td>
<td>25 kg</td>
</tr>
<tr>
<td>Air supply</td>
<td>4–8 bar, controlled by a solenoid valve</td>
</tr>
</tbody>
</table>
FSM - MANUAL ANTENNA SUPPORT

The manual antenna support FSM is available for free space use and measurements in anechoic chambers. This support is made from non-metallic and low reflective material (except for the 4 wheels).

Main characteristics:
- Manual adjustment of height
- Manual adjustment of the polarization 0° to 90° (vert./hor.)
- Fully transparent, weatherproof (plastic and fiberglass material)
- Position min: 0.70 m
- Position max: 2.00 m
- Mast cross section 60mm x 60mm
- Movable with 4 wheels
- Coaxial cable guide included
- Low storage requirement
- For antennas up to 6 kg depending on the antenna’s centre of gravity
- Temperature range -10°C up to +35°C

FSM - Technical specifications

Dimensions 900 mm x 600 mm x 2200 mm (L x W x H)
Weight 20 kg

FSM support accessories
Replacement wheels
Replacement set of plastic screws
Opposite weight for stability

FSM support option
Antenna support adaptors

FTM – FTD TURNTABLES

Frankonia offers a wide range of turntables which are fully compliant with the EMC chamber environment. The turntables are available in different sizes and with different options.

Details:
- Fully automated speed variation
- Automatic reference research
- Offset possibility
- Adjustable software limits
- FRANKONIA high conductivity grounding-ring
- FRANKONIA optical communication bus

Communication interfaces
The FTM/FTD series can be controlled by several FRANKONIA controllers.
- FTS Optical touch screen
- FC02 / FC03 Automatic controller with GPIB IEEE 488.2 interface
- FSOFT Software for computer control using RS-232 interface

Options available like rotating connection panels or rotating exhaust system, fully integrated on request.
**FC02 - CONTROLLER FOR ANTENNA MAST FAM AND TURNTABLE FTM OR FTD**

FRANKONIA developed a complete range of controllers offering very simple control of our positioning devices. Our controller FC02 is able in its basic version to control a turntable (FTM or FTD) and 2 antenna masts (FAM4 or FAM6). The communication with the devices is made along a duplex optic fiber (optical bus).

Main characteristics:

- Able to control up to 15 devices
- Resolution 0.1°
- FRANKONIA optic bus system FSMA 660 nm
- Standard programming language SCPI
- Remote interface GPIB (IEEE 488.2) and serial port RS-232
- Flash memory
- (posibility to upgrade the firmware via the RS-232 port)

**FC02 controller - Technical specifications**

<table>
<thead>
<tr>
<th>Rack</th>
<th>19” 1U</th>
</tr>
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<tbody>
<tr>
<td>Weight</td>
<td>2.5 kg</td>
</tr>
<tr>
<td>Dimensions</td>
<td>482.6 mm x 172 mm x 44.3 mm (W x L x H)</td>
</tr>
<tr>
<td>Power supply</td>
<td>115 / 230 V - 50Hz / 60Hz</td>
</tr>
<tr>
<td>Frequency</td>
<td>50 / 60 Hz</td>
</tr>
</tbody>
</table>

Application Software:

The application software of the FC02 is running on Windows® 95 OS up to Windows® Vista OS platform. The software has 2 main functions:

1. Real time display of each device
2. Ability to control all devices via the optical bus

The software uses either the RS-232 serial port or the GPIB interface for positioning information and can be connected to the FC02 controller for real time display or control of 2 antenna masts and 1 turntable.

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**FC03 - CONTROLLER FOR ANTENNA SUPPORT FSP AND TURNTABLE FTM OR FTD**

The controller FC03 is able to control an antenna support type FSP and a turntable (FTM or FTD). The communication with the devices is made along a duplex optic fiber (optical bus) and air pressure tubes directly connected to the controller. The FC03 controller integrates all pneumatic connections – no additional parts are required. Air tubes are connected using fast push 6 mm connectors.

Main characteristics:

- Resolution 0.1°
- FRANKONIA optic bus system FSMA 660 nm
- Standard programming language SCPI
- Remote interface GPIB (IEEE 488.2) and serial port RS-232
- Flash memory
- (posibility to upgrade the firmware via the RS-232 port)

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Application Software:

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1. Real time display of each device
2. Ability to control all devices via the optical bus

The software uses either the RS-232 serial port or the GPIB interface for positioning information and can be connected to the FC03 controller for real time display or the control of 1 pneumatic antenna support and 1 turntable.
FTS - TOUCH SCREEN CONTROLLER

For customers who don’t use the automatic control or requesting only a simple and movable way for controlling positioning devices manually (e.g.: OATS), we have developed a touch-screen with direct optical connection to our positioning devices. This controller has been designed to be used with the wide range of FRANKONIA turntables (FTM or FTD) and antenna supports (FAM4 or FAM6).

FTS - Technical specifications

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<th>Details</th>
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<tbody>
<tr>
<td>Dimensions</td>
<td>260 mm x 160 mm x 140 mm (W x D x H not including connection cables)</td>
</tr>
<tr>
<td>Weight</td>
<td>3.6 kg</td>
</tr>
<tr>
<td>Power supply</td>
<td>230V, 50 I 60 Hz, 25 W</td>
</tr>
<tr>
<td>Optic input &amp; output</td>
<td>ST 660 nm</td>
</tr>
</tbody>
</table>

FTS offers the following control:

- Definite positioning
- Initialization
- Manual mode
- Step moving

Main characteristics:

- The FTS is delivered plug and play. It is controlled via a touch screen.
- The FTS display shows real time cursor movement.
- The FTS does not generate any additional noise within the chamber.
- The optic fibers can be up to a maximal length of 100m maximum.
- The FTS is extremely versatile and can be installed inside the FRANKONIA floor connection panels.
- The FTS cannot be used in parallel with any other controller in the FRANKONIA range.

FTS 3.0 – SHIELDED AUDIO SYSTEM:

The FRANKONIA audio system FAS 3.0 is able to work and guarantee high quality communications in any strong environment during EMI or EMS tests. The FAS 3.0 system is made of passive components inside the chamber, so they are not affected by high field strengths and don’t generate any emission according to CISPR22. Developed in collaboration with automotive EMC labs, this system passes successfully all the requirements. Based on high quality components the FAS 3.0 is a full duplex system and guarantees a frequency response closed to HiFi requirements. (Very sensible with a signal/noise > 89 dB and a distortion rate of 0.007 %).

High power speakers are installed into the chamber.

Main characteristics:

- Avoids any interference problems
- Equipped with ultra low noise preamplifier, compressor, expander, feedback destroyer and several adjustable filters
- No batteries are necessary to operate the microphone
- Designed for continuous operation

For signals crossing the shielding where filters are not available:

- IEEE 488.2
- USB 1 or 2
- Ethernet 10-100-1000BT
- Fire Wire
- Keyboard, video, mouse of a computer
- HDMI
- Etc ….

FOC S – FRANKONIA SHIELDED OPTICAL CONVERTERS:

Frankonia integrates any type of optical converters according to your request.

In order to avoid the generation of any additional noise when installing such equipments into a chamber, Frankonia delivers the part of optical converter into a shielded and filtered universal box located under the ground plane of the chamber.

Main characteristics:

- Avoids any interference problems
- Equipped with ultra low noise preamplifier, compressor, expander, feedback destroyer and several adjustable filters
- No batteries are necessary to operate the microphone
- Designed for continuous operation
FCS – SHIELDED CAMERA SYSTEM

Shielded high quality CCTV dome, including pan, tilt and zoom FCS is ideal for any kind of shielded rooms and anechoic chambers. Using a single phase power supply, 2 multimode fiber optics with ST connectors, this CCTV equipment can be installed anywhere within your facility.

CCTV Main features:

- CCD color system (PAL)
- 460 lines
- Focal lens 1.4 – 64 mm, optic zoom 32x
- Digital zoom 56x automatic continuation with optic zoom
- Automatic and manual iris and focus
- Sensitivity 0.05 lux
- Internal synchronization
- Automatic white balance
- SIN ratio > 46 dB
- Pan tilt speed and adjustable from 0.1° to 200° / second
- Tilt area 360°
- Pan area 90°
- Effective pixels 724 (H) x 582 (V)

FCS - EMC SHIELDED CAMERA SYSTEM

SOPHISTICATED CONTROL:
The FCS is delivered complete with a stainless steel case (200 x 200 x 300 mm). The FCS is delivered with a 17” high quality and multi-input LCD monitor.

This professional versatile equipment guarantees the user 200 V/m immunity from 20 MHz up to 1 GHz according to ISO 11452-2 and from 1 GHz up to 18 GHz according to MIL STD 461E. Fully shielded, the FCS is compatible with CISPR22 emission requirements.

The FCS can be installed onto a shielded wall, integrated in the wall or ceiling absorbers or it can be fixed on the FRANKONIA designed internal wooden stand.

This compact system can be totally covered with either absorbers or tiles if required.

FMC – FRANKONIA MOBILE CAMERA

SHIELDED MOBILE COLOUR CAMERA AND AUDIO SYSTEM

The FMC is the best compromise offering a full monitoring of your EUT in every compact module. The FMC includes a video camera and an integrated audio system. It is powered by rechargeable 12V batteries.

The FMC was designed in order to be able to operate without any performance degradation and to guarantee high quality display of any EMC chamber environment. The transmission is made by a duplex optic fiber FSMA/FSMA.

Characteristics of the FMC module:

- Dimensions: 140 x 70 x 70 mm
- Weight: 800g
- Power supply: 6V
- Optic connectors: FSMA

Elements included:

- Camera module
- 2 batteries pack and charger
- Set of cables and fibers
- Controller and power supply
- Mini LCD monitor
- LED monitor 17” and video audio cables

Main characteristics:

Video: PAL color Sony super HAD CCD with a resolution of 470 TV Lines. Min. Illumination: 0,95 lux and an optical zoom of 22 X and 10 X additional digital. Automatic white balance. Zoom and focus are remotely controlled

Audio: mono internal - Frequency range 60 to 15 kHz. High sensitivity. Line stereo mode

SOPHISTICATED CONTROL:

The FMC features full remote control possibility available on the front panel of the controller. In order to facilitate the camera setup all the camera commands are also available on the rear side of the camera module and the display adjustment can be controlled on a removable mini LED screen powered by the camera itself.