

# 360° TRACKING ANTENNA ARRAY

# ISOLOG 3D

(20 MHz TO 20 GHz)

Ultra wideband, real-time spectrum monitoring and direction finding antenna



## Highlights:

- High tracking accuracy
- Extremely fast tracking-speed (up to 1  $\mu$ S)
- Including control software

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**MADE IN GERMANY**

# Highlights

- ✓ Worlds first 20 MHz to 20 GHz 3D DF antenna array
- ✓ High tracking-accuracy (up to 2° if used with Aaronia spectrum analyzers)
- ✓ Provide 360° coverage without mechanical rotation
- ✓ Super fast tracking-speed (up to 1  $\mu$ S)
- ✓ Very high IP3 of 40 dBm (pre-amp in bypass mode)
- ✓ Glitch free high-end digital RF-switches (no mechanical parts)
- ✓ Suitable for ultra-wideband, real-time spectrum monitoring
- ✓ Can be used as stand-alone or multi-device/grid system
- ✓ Real-time clock and optional GPS
- ✓ Fully customizable, cascable system (16 to 64 independent antennas)
- ✓ Suitable for harsh environments (-30° to 60° C)
- ✓ Perfect for vehicle mounting
- ✓ Easy to use PC control-software (via Ethernet) included
- ✓ PoE (Power over Ethernet) power feed (no extra power supply needed)
- ✓ Plug and Play: All parts incl. cable, PoE and software included
- ✓ Made in Germany



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# Aaronia IsoLOG 3D

## Wide area, multi-direction finding and RF-tracking antenna.

Aaronia's IsoLOG 3D provides cost-effective high performance real-time signals monitoring, direction finding and geolocation for spectrum-critical areas. The 3D RF Tracking Antenna includes a high density, customizable antenna array. A total of at least 16 and up to 48 tracking-antennas, for horizontal and for vertical polarization, can be integrated. Additionally 8 or 16 specialized low frequency antennas can be added to extend the frequency range down to 20 MHz.

## Class-leading accuracy and speed

The antennas and the electronic is protected by a included radom which can be ordered in any color and optional prints (standard color is black). The radom is watertight, shock- and heat-proofed to withstand even hardest conditions.



The perfect solution for counter-surveillance measurements or drone-detectionsystems (unmanned air vehicle). The wide frequency range eliminates the need of various antenna setups to save space and system cost. This makes it usable for mounting on vehicles (e.g. drive test cars etc.) and for hidden operations. Looking like a satellite dish for camping vans the antenna is not recognized as a tracking antenna.

The IsoLOG 3D is sensitive to the majority of incoming signal polarizations including all linear polarizations, allowing reliable detection of signals including those invisible to most DF systems that use only vertically polarized antennas.

## Power and Software

The antenna only needs a Power-over-Ethernet (PoE) connection for easy integration and control over any existing Ethernet-network. A powerful control software is included for free, for operation on Windows systems. The control software allows various tracking and selection setups, e.g. sweep all antennas horizontal or/and vertical, switch all in one sector and a powerful high speed „chopper mode“. This makes it the right tool to track signals in no time.

## Modular and flexible deployments

Each IsoLOG 3D is fully self-contained within a robust radome designed for hostile conditions. Close coupling of the IsoLOG and antenna modules reduces cable runs and cable losses and significantly improves performance at higher frequencies. Various directional antenna options are available from 20 MHz to 20 GHz.

Arrays can be networked over large distances as part of a wider monitoring network with other IsoLOG antennas. It can be set up at any place you need to control.





# Antenna Versions

## IsoLOG 3D 80



### 8 sectors with 16 antennas

Frequency range: 400 MHz to **8 GHz**

Tracking accuracy (line of sight): **4 to 6°**

## IsoLOG 3D 160



### 16 sectors with 32 antennas

Frequency range: 400 MHz to **8 GHz**

Tracking accuracy (line of sight): **1 to 3°**

#### Frequency range

|                        |                  |
|------------------------|------------------|
| Standard               | 400 MHz to 8 GHz |
| VLF Extender to 20 MHz | optional         |
| SHF Extender to 20 GHz | optional         |

#### Additional options

|                                   |                        |
|-----------------------------------|------------------------|
| Internal GPS receiver             | Yes                    |
| Internal low-noise pre-amplifiers | Yes (included)         |
| Customized color (RAL table)      | Yes (standard - white) |

#### Measurements & operating specifications

|                       |                                  |
|-----------------------|----------------------------------|
| Operating temperature | -30 to +60° C<br>(-22 to 140° F) |
| Storage temperature   | -40 to 70° C<br>(-40 to 158° F)  |
| Dimensions            | 960 x 960 x 380 mm               |
| Weight                | approx. 22 kg                    |
| RF Output             | N (50 Ohm)                       |

#### Frequency range

|                        |                  |
|------------------------|------------------|
| Standard               | 400 MHz to 8 GHz |
| VLF Extender to 20 MHz | optional         |
| SHF Extender to 20 GHz | optional         |

#### Additional options

|                                   |                        |
|-----------------------------------|------------------------|
| Internal GPS receiver             | Yes                    |
| Internal low-noise pre-amplifiers | Yes (included)         |
| Customized color (RAL table)      | Yes (standard - white) |

#### Measurements & operating specifications

|                       |                                  |
|-----------------------|----------------------------------|
| Operating temperature | -30 to +60° C<br>(-22 to 140° F) |
| Storage temperature   | -40 to 70° C<br>(-40 to 158° F)  |
| Dimensions            | 960 x 960 x 380 mm               |
| Weight                | approx. 25 kg                    |
| RF Output             | N (50 Ohm)                       |

## IsoLOG 3D 80-UWB



### 8 sectors with 24 antennas

Frequency range: 20 MHz to **8 GHz**

Tracking accuracy (line of sight): **4 to 6°**

## IsoLOG 3D 160-UWB



### 16 sectors with 48 antennas

Frequency range: 20 MHz to **8 GHz**

Tracking accuracy (line of sight): **1 to 3°**

#### Frequency range

|                        |                 |
|------------------------|-----------------|
| Standard               | 20 MHz to 8 GHz |
| VLF Extender to 20 MHz | optional        |
| SHF Extender to 20 GHz | optional        |

#### Additional options

|                                   |                        |
|-----------------------------------|------------------------|
| Internal GPS receiver             | Yes                    |
| Internal low-noise pre-amplifiers | Yes (included)         |
| Customized color (RAL table)      | Yes (standard - white) |

#### Measurements & operating specifications

|                       |                                  |
|-----------------------|----------------------------------|
| Operating temperature | -30 to +60° C<br>(-22 to 140° F) |
| Storage temperature   | -40 to 70° C<br>(-40 to 158° F)  |
| Dimensions            | 960 x 960 x 380 mm               |
| Weight                | approx. 22 kg                    |
| RF Output             | N (50 Ohm)                       |

#### Frequency range

|                        |                 |
|------------------------|-----------------|
| Standard               | 20 MHz to 8 GHz |
| VLF Extender to 20 MHz | optional        |
| SHF Extender to 20 GHz | optional        |

#### Additional options

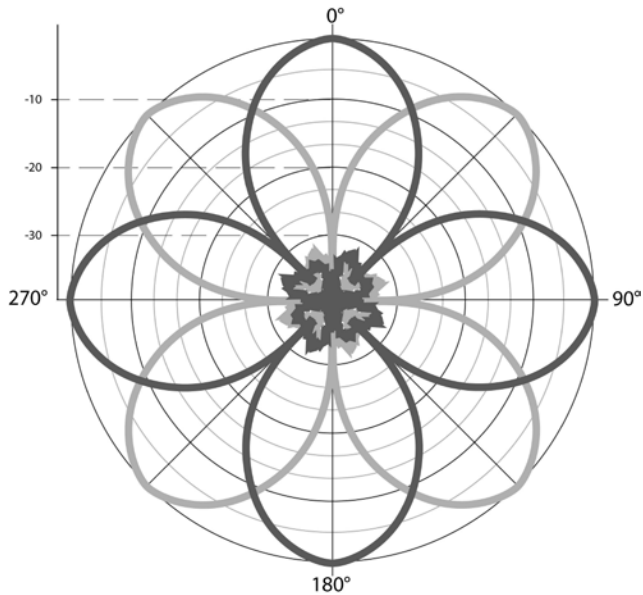
|                                   |                        |
|-----------------------------------|------------------------|
| Internal GPS receiver             | Yes                    |
| Internal low-noise pre-amplifiers | Yes (included)         |
| Customized color (RAL table)      | Yes (standard - white) |

#### Measurements & operating specifications

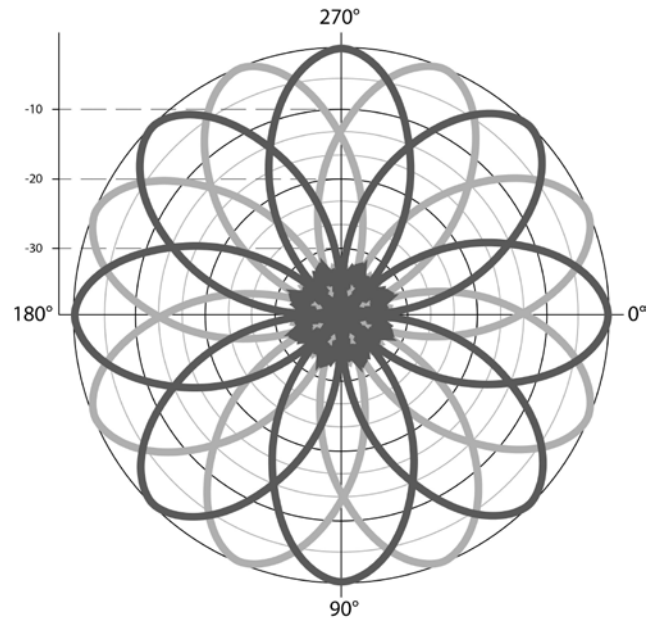
|                       |                                  |
|-----------------------|----------------------------------|
| Operating temperature | -30 to +60° C<br>(-22 to 140° F) |
| Storage temperature   | -40 to 70° C<br>(-40 to 158° F)  |
| Dimensions            | 960 x 960 x 380 mm               |
| Weight                | approx. 25 kg                    |
| RF Output             | N (50 Ohm)                       |

# Typical Antenna Pattern

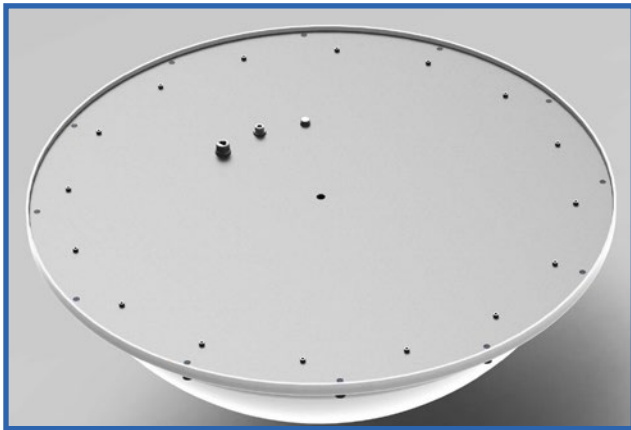
**IsoLOG 3D 80 & 80-UWB**



**IsoLOG 3D 160 & 160-UWB**



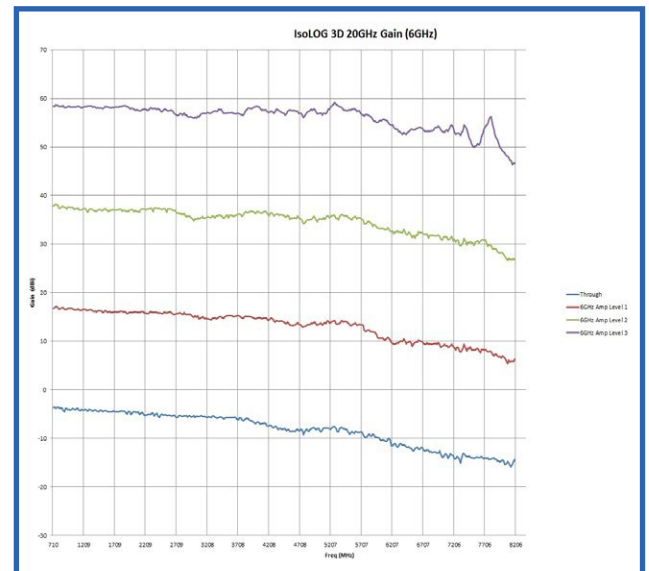
## Connectors and Gain



### Mounting Plate & Connectors

The picture shows the standard positions of the RF Output, Ethernet connector and mounting holes. The design of the antenna's mounting plate can be changed upon the requirements of the user.

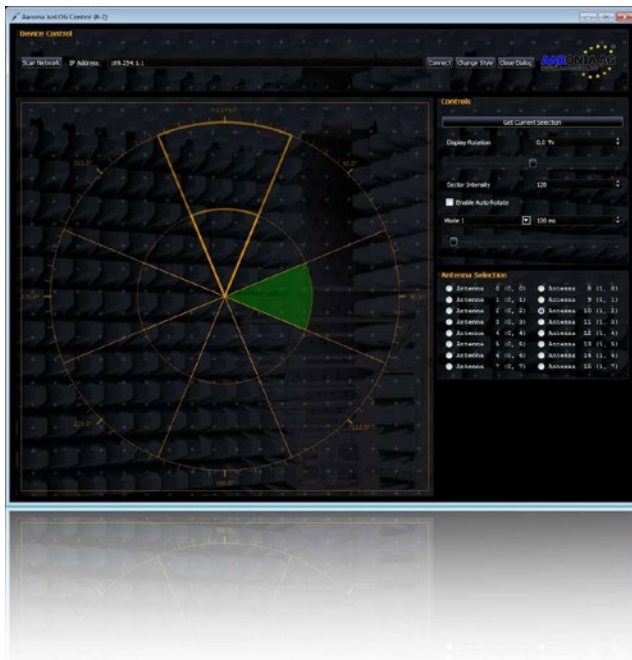
Please contact us for further details.



### Typical Gain

The above picture shows the typical gain of the IsoLOG 3D 80, with and without activated internal pre-amplifiers.

# Control Software

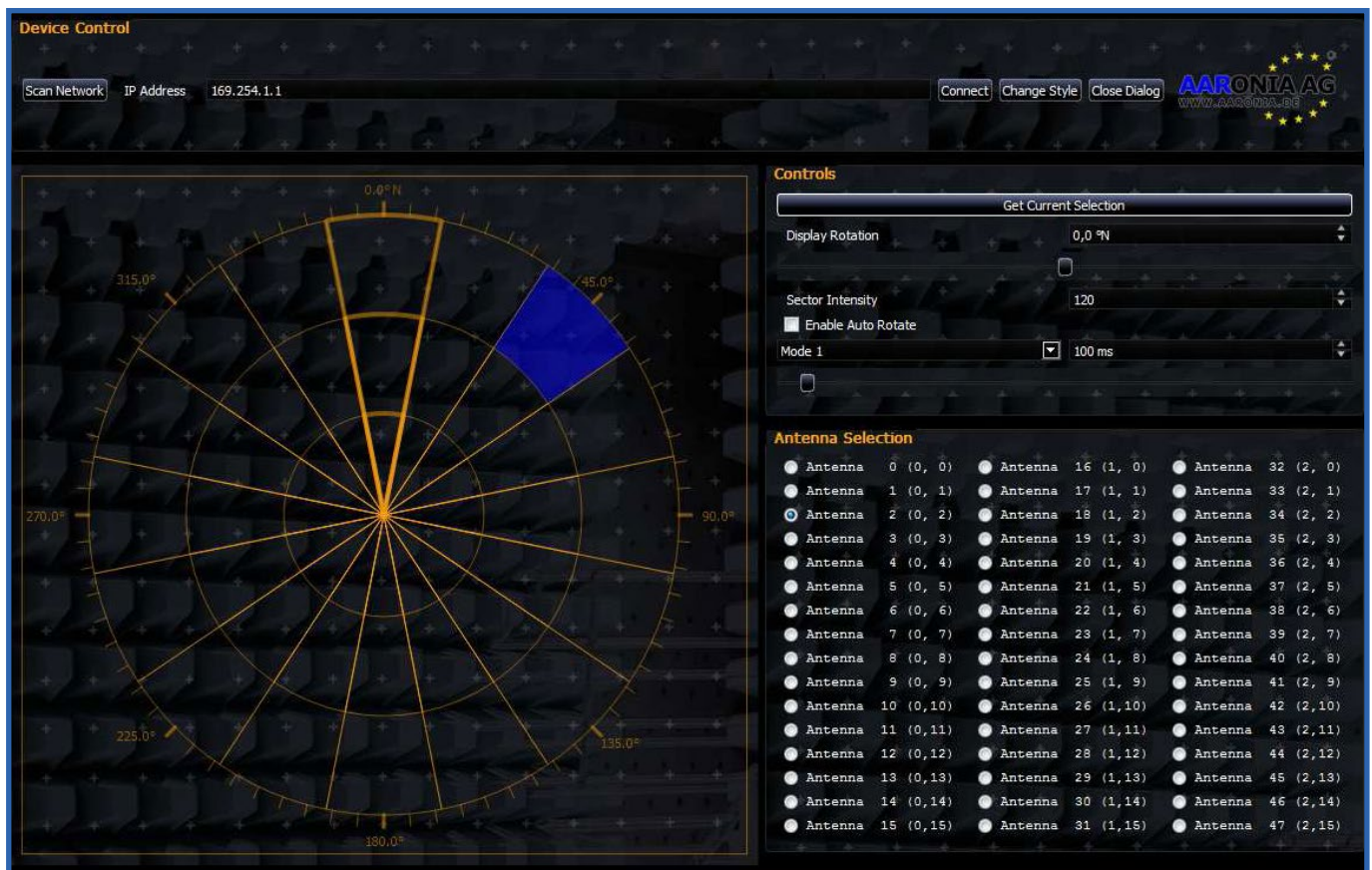


An easy to use Remote-Control-Software is included in the shipment and allows to control the Tracking-Array via any Windows PC with Ethernet-Connector.

## Free, included Software

The powerful software allows to manually switch between each antenna and/or sector (manually RF tracking). The software also includes a programmable sector/antenna auto-rotate and a ultra fast „chopper mode“ for real time isotropic measurements over all antennas/sectors at the same time. The free adjustable switching speed allows even quite slow receivers to be used together with the IsoLOG 3D, but because of the possible high switching speed we recommend the usage of a Real-Time Spectrum Analyzer.

- Auto rotate with adjustable speed and super fast „chopper mode“ („omni-directional“ measurement)
- Fast and easy antenna/sector selection for manually RF tracking
- Switch between all sectors in almost real-time (vertical, horizontal, all)
- Pre-saved and adjustable profiles for specific measurement modes





# REFERENCES



## Cross-Section of Aaronia Clients

### Government, Military, Aeronautic, Astronautic

- NATO, Belgium
- Department of Defense, USA
- Department of Defense, Australia
- Airbus, Germany
- Boeing, USA
- Bundeswehr, Germany
- NASA, USA
- Lockheed Martin, USA
- Lufthansa, Germany
- DLR, Germany
- Eurocontrol, Belgium
- EADS, Germany
- DEA, USA
- FBI, USA
- BKA, Germany
- Federal Police, Germany
- Ministry of Defense, Netherlands

### Research/Development, Science and Universities

- MIT - Physics Department, USA
- California State University, USA
- Indonesien Institute of Sience, Indonesia
- Los Alamos National Labratory, USA
- University of Bahrain, Bahrain
- University of Florida, USA
- University of Victoria, Canada
- University of Newcastle, United Kingdom
- University of Durham, United Kingdom
- University Strasbourg, France
- University of Sydney, Australia
- University of Athen, Greece
- University of Munich, Germany
- Technical University of Hamburg, Germany
- Max-Planck Inst. for Radio Astronomy, Germany
- Max-Planck-Inst. for Nuclear Physics, Germany
- Research Centre Karlsruhe, Germany

### Industry

- IBM, Switzerland
- Intel, Germany
- Shell Oil Company, USA
- ATI, USA
- Microsoft, USA
- Motorola, Brazil
- Audi, Germany
- BMW, Germany
- Daimler, Germany
- Volkswagen, Germany
- BASF, Germany
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