360° TRACKING ANTENNA ARRAY

ISOLOG 3D

(20 MHz TO 20 GHz)

Ultra-wideband direction finding antenna for real-time spectrum monitoring

Highlights:

- High tracking accuracy
- Extremely fast tracking speed (up to 1 μs)
- Including control software

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MADE IN GERMANY
World’s first 20 MHz to 20 GHz 3D direction finding antenna array
Extremely high tracking accuracy (up to 2° if used with Aaronia spectrum analyzers)
Provides 360° coverage without mechanical rotation
Superfast tracking speed (up to 1 μs)
Very high third-order intercept point (IP3) of 40 dBm (with pre-amp in bypass mode)
Digital RF switches – high-end, glitch-free, no mechanical parts
Ideal 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 and cascadable system (16 to 64 independent antennas)
Suitable for harsh environments (-30° C 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: Cable included with all parts
Made in Germany
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.

The Industry Standard in Accuracy and Speed

Both the antenna and its electronics are protected by a radome (included), available in any RAL color and with optional prints (standard shipping color is black). The radome is waterproof, shock- and heat-proof – in other words, it is extremely durable and reliable even in the most adverse conditions.

The IsoLOG 3D is thus the perfect solution for countersurveillance measurements as well as the detection of drones or UAVs (unmanned aerial vehicles). The wide frequency range makes multiple antenna setups obsolete, therefore saving space and system costs at the same time. Having just one antenna also makes the IsoLOG 3D ideal for vehicle mounting (e.g. automotive prototypes etc.) and for hidden operations. In addition, as the antenna resembles a satellite dish for camping vans, it is hardly recognizable as special equipment, let alone a tracking device.

The IsoLOG 3D is sensitive to the majority of incoming signal polarizations, including all linear polarizations. This allows for highly reliable signal detection – even those invisible to most DF systems that consist of vertically polarized antennas only.

Power and Software

For easy integration in and control over any existing Ethernet network, the antenna only needs a Power-over-Ethernet (PoE) connection. A powerful control software for operation on Windows systems is included for free. The software offers various tracking and selection setups, e.g. sweep all antennas horizontal and/or vertical, switch all in one sector, and a powerful high-speed „chopper mode“. All of this makes it the perfect tool for instantaneous signal tracking.

Modular and Flexible Deployment

Each IsoLOG 3D ships complete with a robust radome designed for the most hostile conditions. Close coupling of the IsoLOG and antenna modules reduces both cable run and cable loss, and significantly improves performance at higher frequencies. Various directional antenna options are available from 20 MHz to 20 GHz.

Over large distances, arrays can form a network as part of a wider monitoring network with other IsoLOG antennas. It can be set up anywhere, be it on paved roads or dirt tracks.
## 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

<table>
<thead>
<tr>
<th></th>
<th>Standard</th>
<th>VLF Extender to 20 MHz</th>
<th>SHF Extender to 20 GHz</th>
</tr>
</thead>
<tbody>
<tr>
<td>IsoLOG 3D 80</td>
<td>400 MHz to 8 GHz</td>
<td>optional</td>
<td>optional</td>
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<tr>
<td>IsoLOG 3D 160</td>
<td>400 MHz to 8 GHz</td>
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### Additional Options

<table>
<thead>
<tr>
<th></th>
<th>IsoLOG 3D 80</th>
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</thead>
<tbody>
<tr>
<td>Internal GPS Receiver</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Internal Low-Noise Pre-Amplifiers</td>
<td>Yes (included)</td>
<td>Yes (included)</td>
</tr>
<tr>
<td>Customized Color (RAL Table)</td>
<td>Yes (standard - white)</td>
<td>Yes (standard - white)</td>
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### Measurements & Operating Specifications

<table>
<thead>
<tr>
<th></th>
<th>IsoLOG 3D 80</th>
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<tbody>
<tr>
<td>Operating Temperature</td>
<td>-30° to +60° C (-22° to 140° F)</td>
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<tr>
<td>Storage Temperature</td>
<td>-40° to 70° C (-40° to 158° F)</td>
<td>-40° to 70° C (-40° to 158° F)</td>
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<tr>
<td>Dimensions [W x H x D]</td>
<td>960 x 960 x 380 mm</td>
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</tr>
<tr>
<td>Weight</td>
<td>approx. 22 kg</td>
<td>approx. 25 kg</td>
</tr>
<tr>
<td>RF Output</td>
<td>N (50 Ohm)</td>
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</tr>
</tbody>
</table>
### IsoLOG 3D 80-UWB

- **8 sectors with 24 antennas**
- Frequency range: 20 MHz to 8 GHz
- Tracking accuracy (line of sight): 4 to 6°

### Frequency Range

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### 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

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Typical Antenna Pattern

IsoLOG 3D 80 & 80-UWB

 IsoLOG 3D 160 & 160-UWB

Connectors and Gain

Mounting Plate & Connectors

The picture above shows the standard positions of the RF output, the Ethernet connector and mounting holes. The design of the antenna’s mounting plate can be changed according to customers’ needs. Please contact us at mail@aaronia.de for further details.

Typical Gain

The above diagram shows the typical gain of the IsoLOG 3D 80, with and without activated internal pre-amplifiers.
The Remote Control Software included in the shipment is easy to use, and lets you control the tracking array via any Windows PC with Ethernet connector.

**Free Software Included**

The powerful software allows you to manually switch between each antenna and/or sector (i.e. manual RF tracking). The software also includes a programmable sector/antenna auto-rotate, and an ultra-fast „chopper mode“ for real-time and simultaneous isotropic measurements across all antennas/sectors. Thanks to the freely adjustable switching speed, even slower receivers can be used with the IsoLOG 3D.

Nevertheless, because of the high switching speed possible, we recommend the use of a real-time spectrum analyzer such as Aaronia’s SPECTRAN® series.

- Auto-rotate with adjustable speed and ultra-fast “chopper mode” (i.e. “omnidirectional” measuring)
- Fast and easy antenna/sector selection for manual RF tracking
- Virtually real-time switching between all sectors (vertical, horizontal, all)
- Pre-saved and adjustable profiles for specific measurement modes
Selected List of Aaronia Clients

**Government, Military, Aero- and Astronautic**
- NATO, Belgium
- Department of Defense (DoD), USA
- Department of Defence, Australia
- Airbus, Germany
- Boeing, USA
- German Armed Forces, Germany
- NASA, USA
- Lockheed Martin, USA
- Lufthansa, Germany
- German Aerospace Center (DLR), Germany
- Eurocontrol, Belgium
- EADS, Germany
- Drug Enforcement Administration (DEA), USA
- Federal Bureau of Investigation (FBI), USA
- Federal Criminal Police Office (BKA), Germany
- Federal Police, Germany
- Ministry of Defence, Netherlands

**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
- Siemens AG, Germany
- Rohde & Schwarz, Germany
- Infineon, Austria
- Philips, Germany
- ThyssenKrupp, Germany
- EnBW (Energie Baden-Württemberg), Germany
- CNN, USA
- Duracell, USA
- German Telekom, Germany
- Bank of Canada, Canada
- NBC News, USA
- Sony, Germany
- Anritsu, Germany
- Hewlett-Packard, Germany
- Bosch, Germany
- Mercedes-Benz, Austria
- Osram, Germany
- DEKRA, Germany
- AMD, Germany
- Keysight, China
- Infineon Technologies, Germany
- Philips Semiconductors, Germany
- Hyundai Europe, Germany
- VIAVI, Korea
- Wilkinson Sword, Germany
- IBM Deutschland, Germany
- Nokia-Siemens Networks, Germany

**Research/Development, Science and Universities**
- MIT - Physics Department, USA
- California State University, USA
- Indonesian Institute of Sience (LIPI), Indonesia
- Los Alamos National Laboratory (LANL), 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

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