unival® group
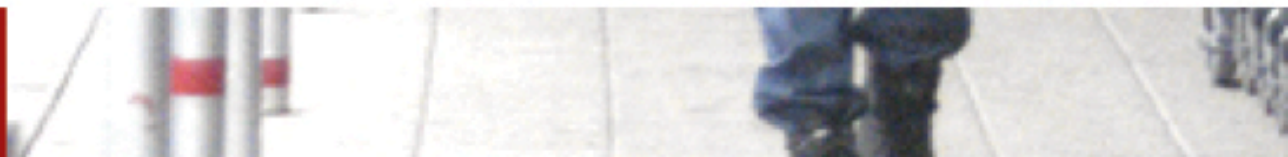
SECURITY

made in Germany

About unival® group

unival® group is a German based company with a strong focus on blast protection technologies.

With our headquarters in Bonn, we have several production facilities across Germany but also in Bulgaria and the United Arab Emirates.

Our business philosophy is to deliver the best price / value level without compromising renowned German quality standards.

Multi - Level - Security

German Security Technologies

explosive detection

security consulting

nightvision imaging

automotive security

digital jamming

construction security

HEDD®1 as part of unival® group's multi-level blast protection concept

We have divided our blast protection technologies in three main product segments:

Intelligence

Detection of Explosives (HEDD®1), Night Vision Equipment/Thermal Imaging, Counter Monitoring, Tracking, Integrated Data Collection/Secure Communication.

Counter Measures

Digital Wideband Jamming Systems (DWJ1®/ PWJ1®/ SWJ1®/ MWJ1®).

Physical Protection

Automotive-, Construction-, Personal- and Perimeter Security.

Presentation
Handheld **E**xplosive **D**etection **D**evice
HEDD®1

HEDD®1

- HEDD®1 is setting new standards for handheld explosives and weapon detection devices.

- Unique patented *Magneto-Electrostatic Detection (MED)* method.

- HEDD®1 forms a *Modulated Magnetic Field (MMF).*

- Detection of most types of commercial and military explosives (including but not limited to TNT, Dynamite, Ammonite & Diesel, PETN, RDX, Gunpowder, Semtex, C4 etc.) including liquid explosives (Hydrogen Peroxide based) and weapons and ammunitions.

- Detection range 2-100 meters behind and through all types of barriers.

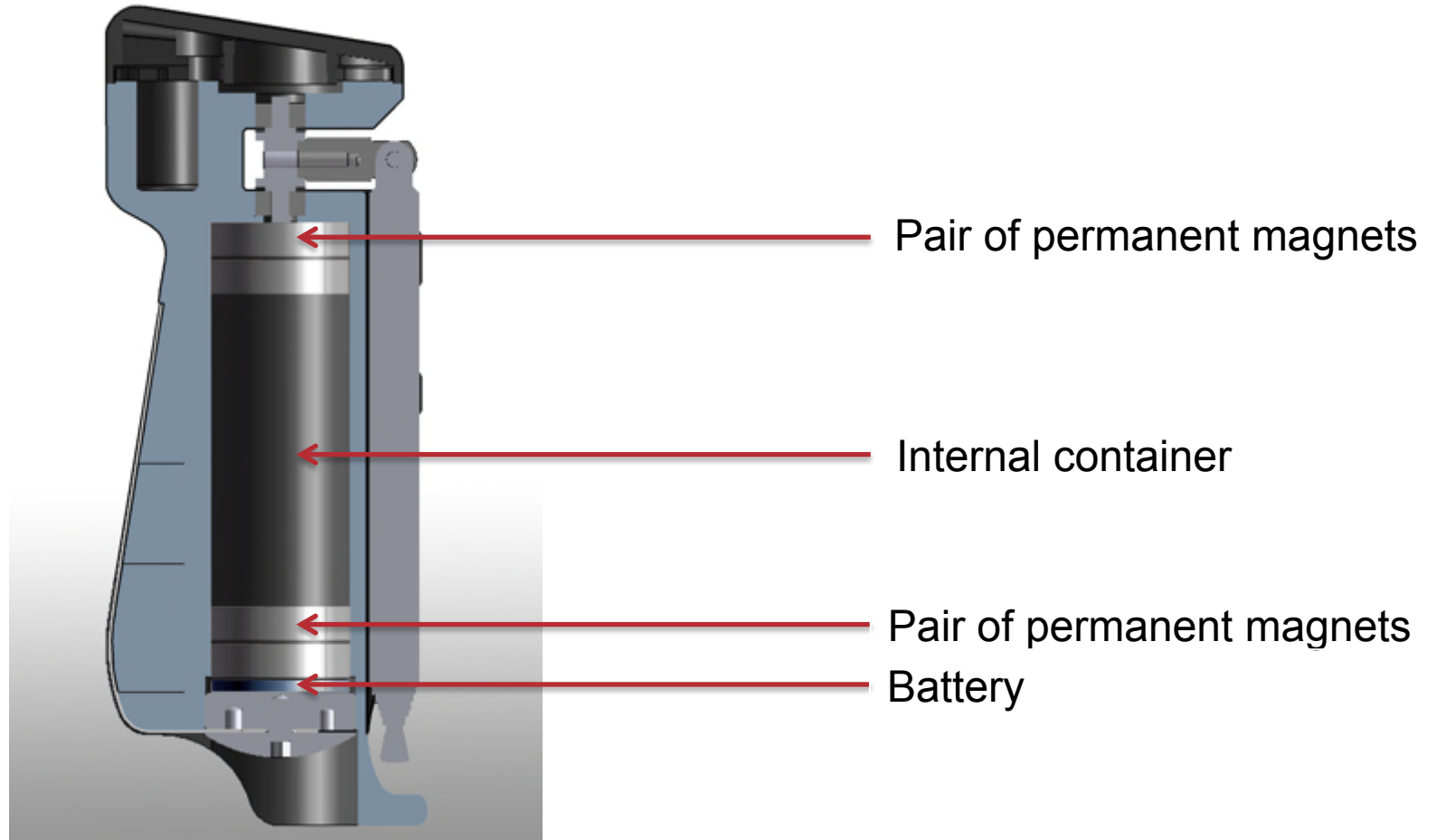- Ready for use without any warm-up time, maintenance-free.

HEDD®1 Internal Parts

Pair of permanent magnets

Internal container

Pair of permanent magnets

Battery

HEDD®1 Fact Sheet

- HEDD®1 is an active device. It creates a *Modulated Magnetic Field* (MMF)

- Specially tuned for the bond energy in Nitro compounds.

- Magnetic fields are not affected from any given barrier.

- The power source of HEDD®1 is a 1,55V / 29mAh battery type SR626SW. It provides DC power with maximum consumption less than 1 μW (microwatt).

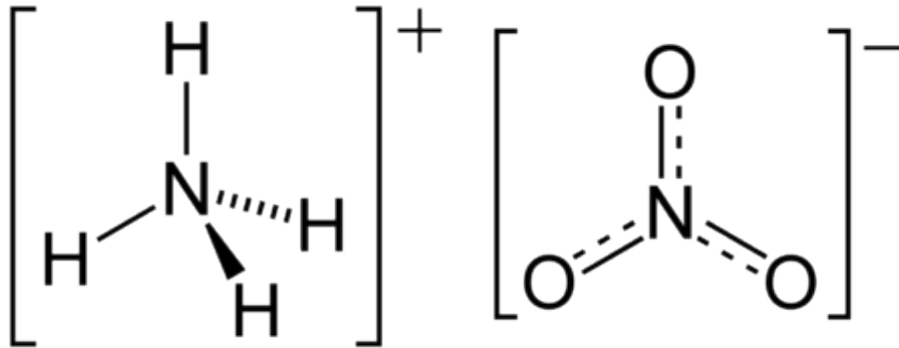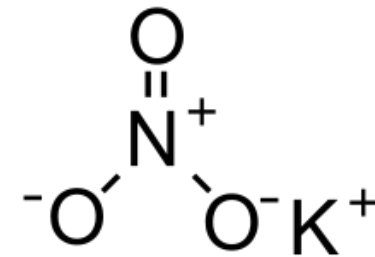- The device emits no RF signals, but creates MMF (modulated magnetic field).

How does HEDD®1 work?

Ammonium Nitrate

Potassium Nitrate (Gunpowder)

HEDD®1 Certificates

According to CE conformity:

Directive for electromagnetic conformability (89/336/EEC) and BSS EN 55014 – 2:1997/A1: 2002 Electromagnetic conformability.

Requirements for electro devices, electro tools and similar devices.

Part 2. Stability. Standard for a group of products /CISPR 14-2 AMD 1:2001)

ISO certification:

HEDD®1 is manufactured in EUROPE under a quality management system according to EN ISO 9001:2000 standard and certified by Moody International registration number Q080514 valid until 21.06.2014.
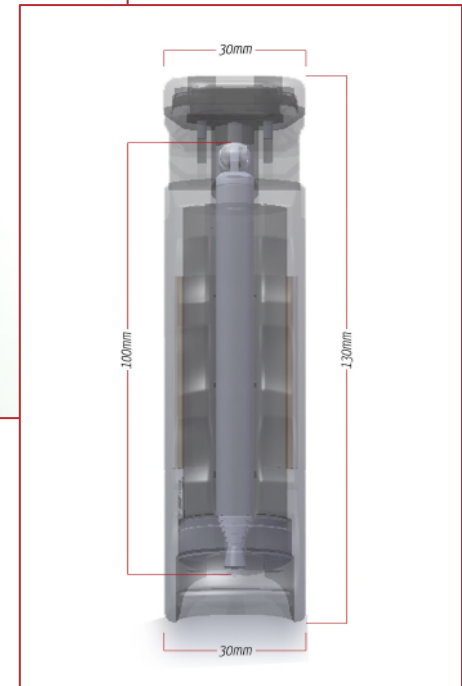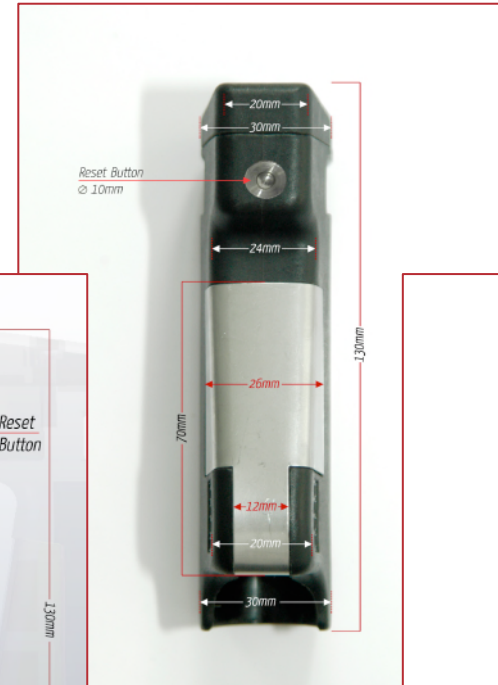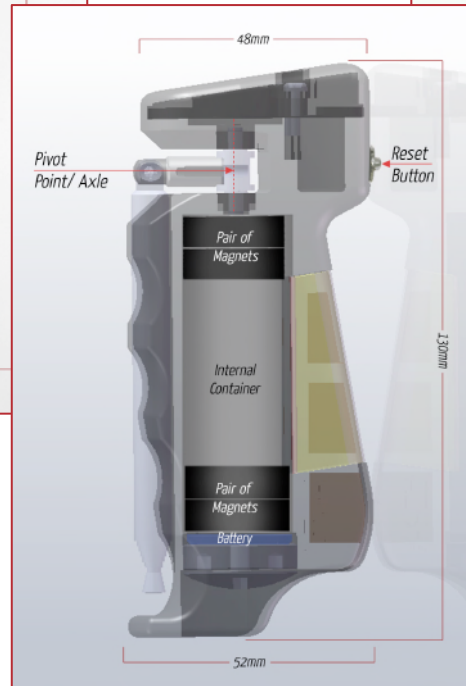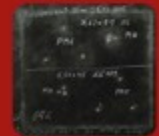
HEDD®1 Certificates

Length: 130 mm | Height: 48 mm | Width: 30 mm | Weight: 276 g
Operational temperature: -20°C – +65°C, Wind: up to 1m/s

How does HEDD®1 work?

The MMF around HEDD®1, interacting with the vertical component of the earth magnetic field creates the conditions for detection of chemical compounds, containing $-NO_2$ / $-NO_3$ and O^-.

- The magnetic field that is modulated from HEDD®1 is tuned for this "bond-/ vibrational energy" and no other substances will be detected from the device.

- The conductivity/ bi-polarity of the human body is needed to operate the device.

- The detection of explosives is achieved with the cross bearing method/ triangulation.

- Fast classification and narrowing of areas to suspicious points or objects.
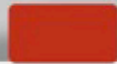
How does HEDD®1 work?

MMF created around
HEDD®1 and Operator

MMF with affected
$-NO_2$ / $-NO_3$ and/ or O^-
Ions

Explosive/Weapon

Earth magnetic field

How does HEDD®1 work?

Triangulation

location of the object
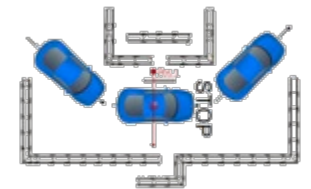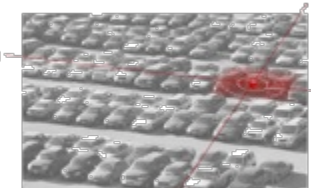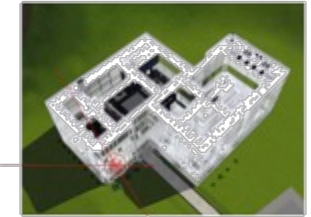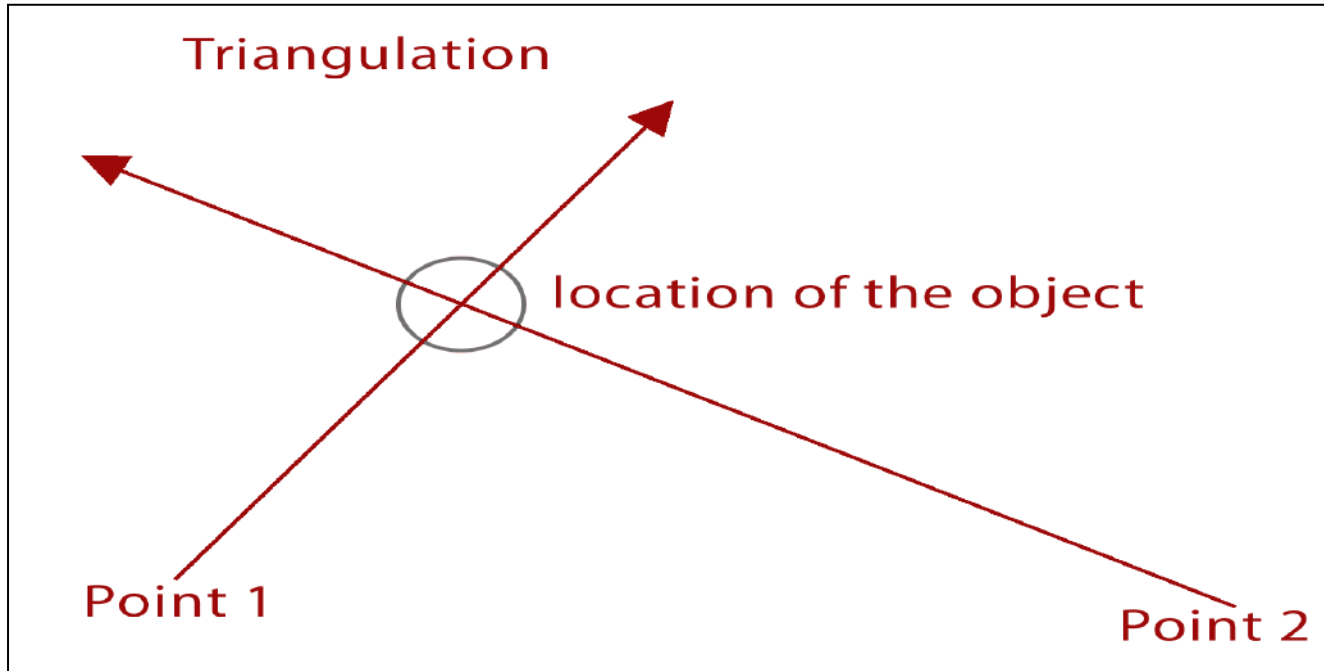
Point 1

Point 2

The detection of explosives is achieved with the cross bearing method (Antenna used as a pointer), showing the line of interference. Checking with HEDD1 from at least 2 different points (angle to the target and distance might vary) using triangulation will provide the location of the target.

How does HEDD®1 work?

Walking a straight line. HEDD1 in the right hand, detection focus to the left side.

Detection method No 1.

Holding HEDD1 with the right hand of the operator, walking a straight line (white arrow) will detect everything on the left side. Detection will be rectangular to the walking direction only when the operator passes by explosives.

How does HEDD®1 work?

Walking a slight curve. HEDD1 in the right hand, detection focus to the left side, covering up to 180 degrees.

Holding HEDD1 with the right hand of the operator, walking a slight curve (white arrow) will detect everything on the left side. Detection will be rectangular to the walking direction only when the operator passes by explosives.

The curve covers a wider detection angle up to 180 degrees while the operator only has to walk a 5 - 10 meters curve.

unival® group

Multi Level Security

www.unival-group.com

made in germany

How does HEDD®1 work?

Pos.2

Pos.1

Realistic scenario No 1.

Checking a building with HEDD1 from 2 different points (Pos. 1 and Pos. 2, angle to the target and distance might vary) using triangulation will provide the location of the target.
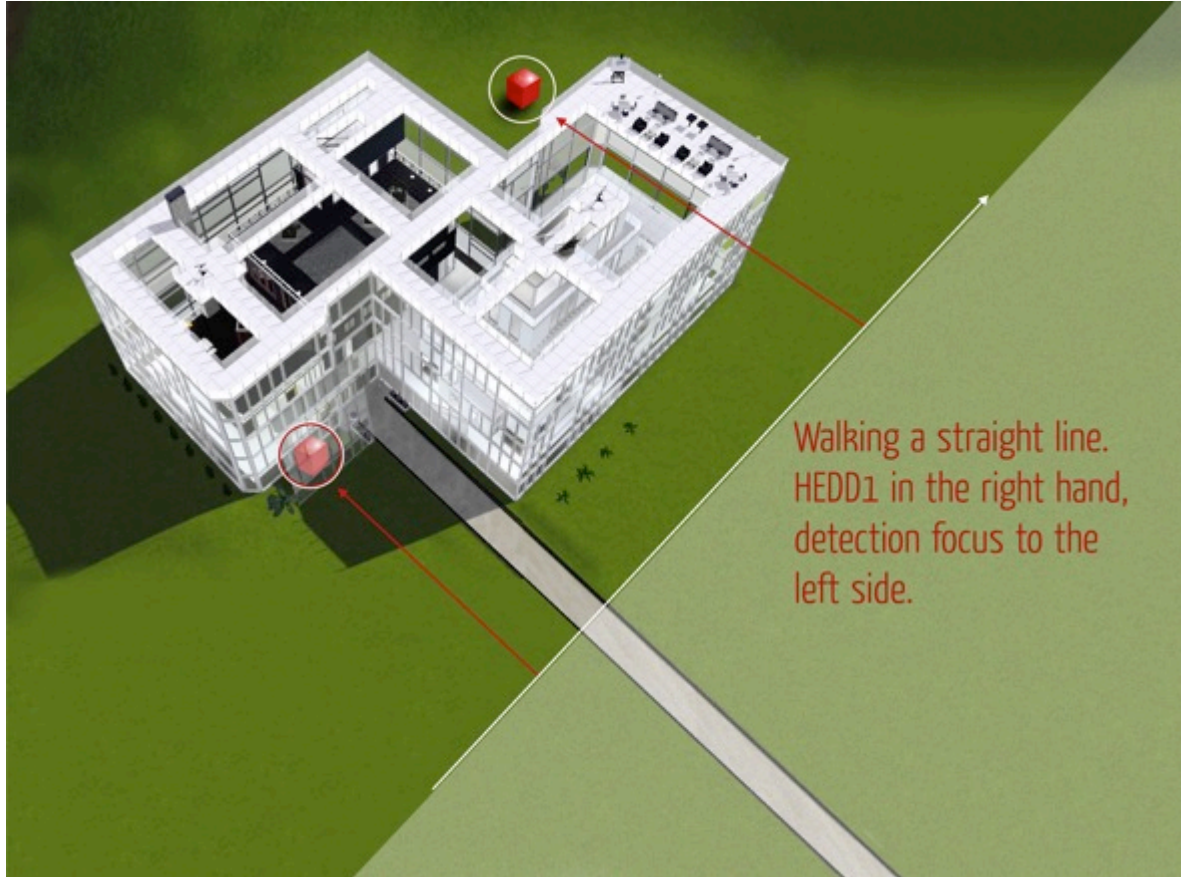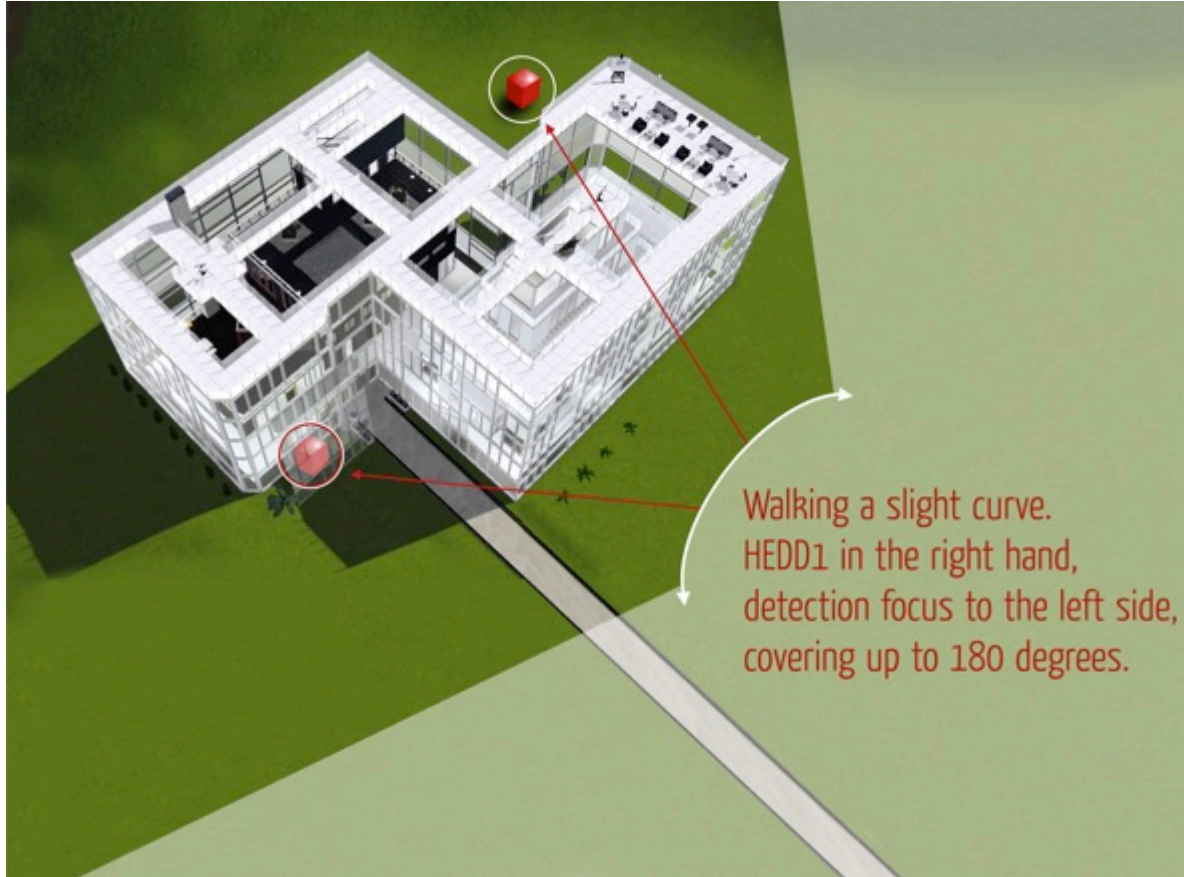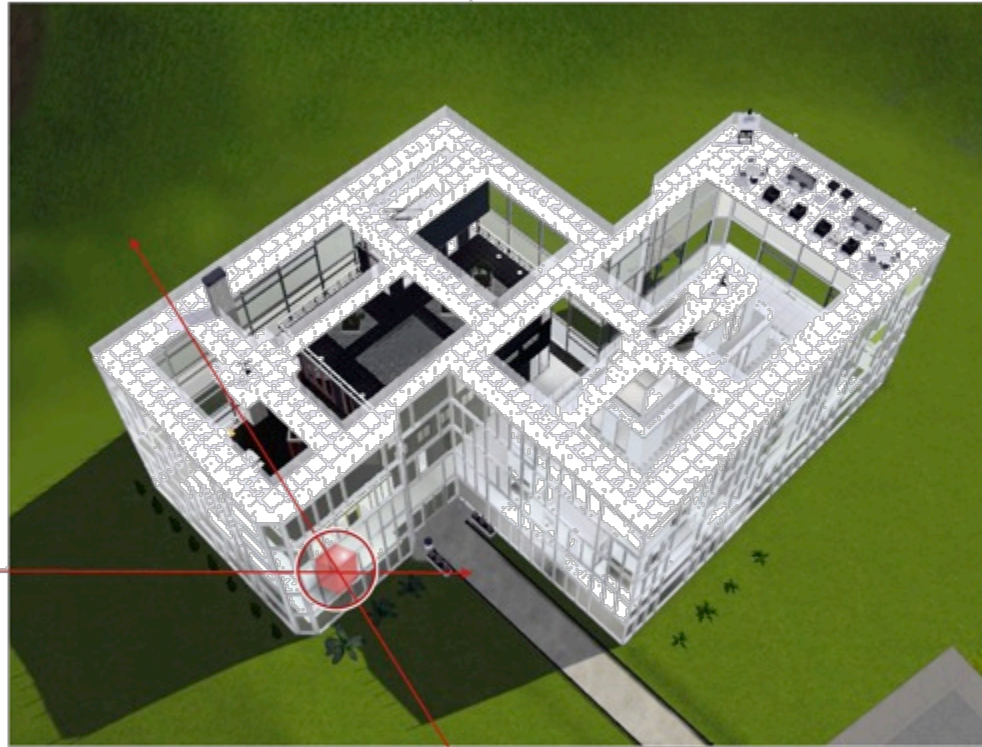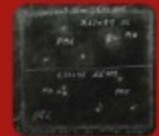
As HEDD®1 penetrates barriers like concrete and steel, also explosives hidden inside a building will be located.

How does HEDD®1 work?

Pos.2

Pos.1

Realistic scenario No 2.

Checking a building with HEDD1 from 2 different points (Pos. 1 and Pos. 2) using triangulation might also indicate the presence of more than one target.

As HEDD®1 penetrates barriers like concrete and steel, also explosives hidden inside a building or behind will be located.
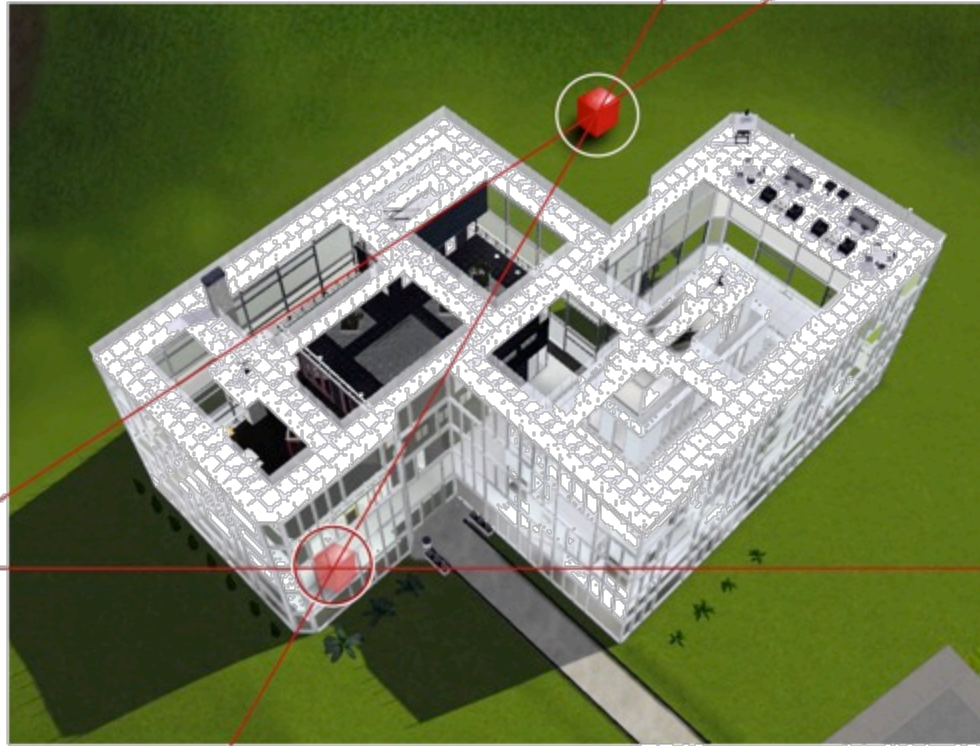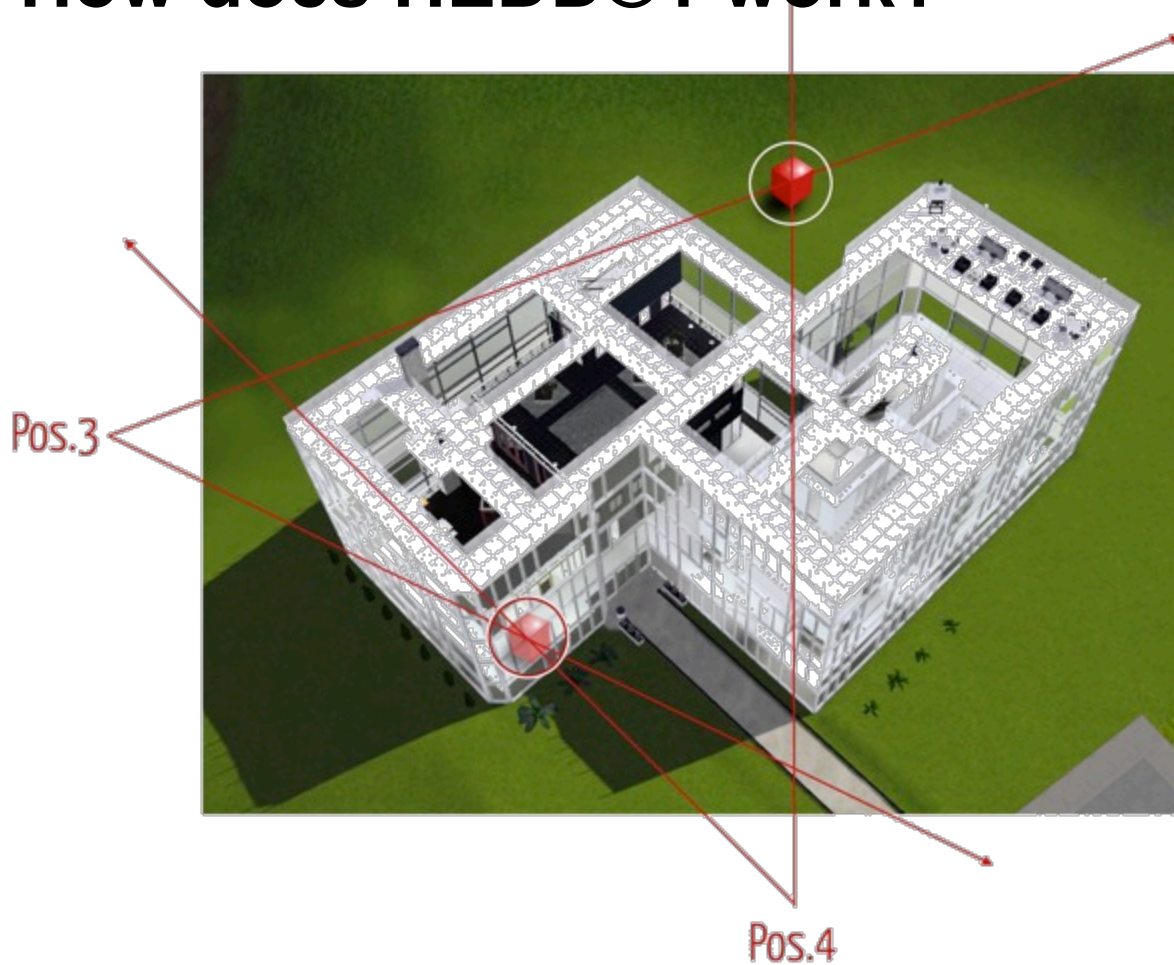
How does HEDD®1 work?

Realistic scenario No 2.

Confirmation of the results from
Pos. 1 and Pos. 2 by using other angles (Pos. 3 and Pos. 4).
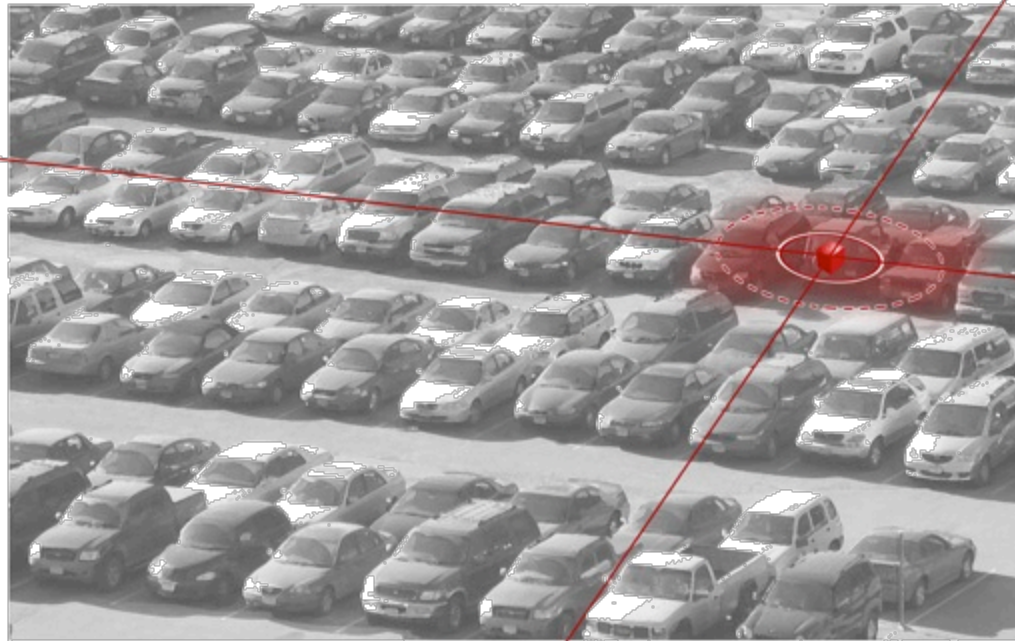
How does HEDD®1 work?

Realistic scenario No 3.

Checking a parking lot with HEDD1 from 2 different points (Pos.1 and Pos. 2, angle to the target and distance might vary) using triangulation will provide the location of the target.

Depending on the distance to the target a small area around 2 - 3 vehicles might be indicated.

How does HEDD®1 work?

Checking vehicles at entry points with HEDD1 doesn't require triangulation. While checking from Pos. 1, the operator only has to make sure that no weapon (carried by other officers) will cross his detection line. Vehicles might be checked while the car stops or bypasses the HEDD®1 operator slowly. The HEDD®1 operator might check vehicles from a covert position behind a division wall.

How does HEDD®1 work?

Realistic scenario No 5.

Checking persons/ visitors at entry points with HEDD1 doesn't require triangulation. While checking from Pos. 1, the operator only has to make sure that no weapon (carried by other officers) will cross his detection line. Persons might be checked while they stop for passport control etc. The HEDD®1 operator might check persons from a covert position behind a division wall.

Advantages of HEDD®1

- Classify large areas quickly,

- Long-range explosive detection,

- Detection of all explosives in one search-round,

- Handheld device, easy to operate, 24/7,

- Saving resources due to fast and efficient usage,

- Detection also of liquid explosives,

- Works behind and penetrates barriers,

- Covert detection possible.
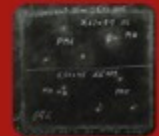
Training scenarios with HEDD®1

Different scenarios are specially applicable:

- Police and military uses
- K9 units
- Bomb squads & EOD teams
- Private security companies

Special HEDD®1 training courses are mandatory in order to ensure professional use in the specified scenarios.

Integration of HEDD®1
in existing security measures

- HEDD®1 works most efficient, if used as first responder tool.
- HEDD®1 is complementary to general security measures.
- Focus is on long-range detection and classification of large areas that would usually require extensive resources.
- Detection with HEDD®1 can be part of covert detection prior to visual controls.
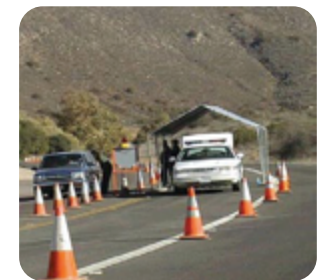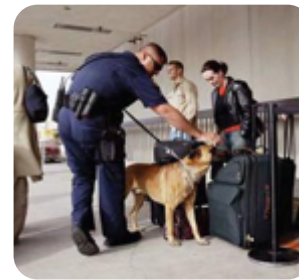
Integration of HEDD®1 with unival® ike1000GPS

Magnesium alloy and aluminium internal chassis

Compact form factor < 1 kg

11 x 4.3 x 2.4" (280 x 110 x 60 mm)

IP 67, MiL-StD-810f

-10 to +50°C (14 to 122°f)

Picture with target position

- Photo **confirms** the exact point of measurement

- **Dangerous** targets measured from a distance

- Integrated system - **easy** to use

- No other system does this with the ease of ike1000GPS

UXO
Target Position
Tgt Lat: 38.2781°
Tgt Long: 76.4112°
Distance: 124 Meters
Bearing: 183°

DCA - Capture   2:20 ok

True Bearing: 181° Decl: 22.1
PDOP:5.6 Lk:0/7
20m   Back   Capture
11.0m
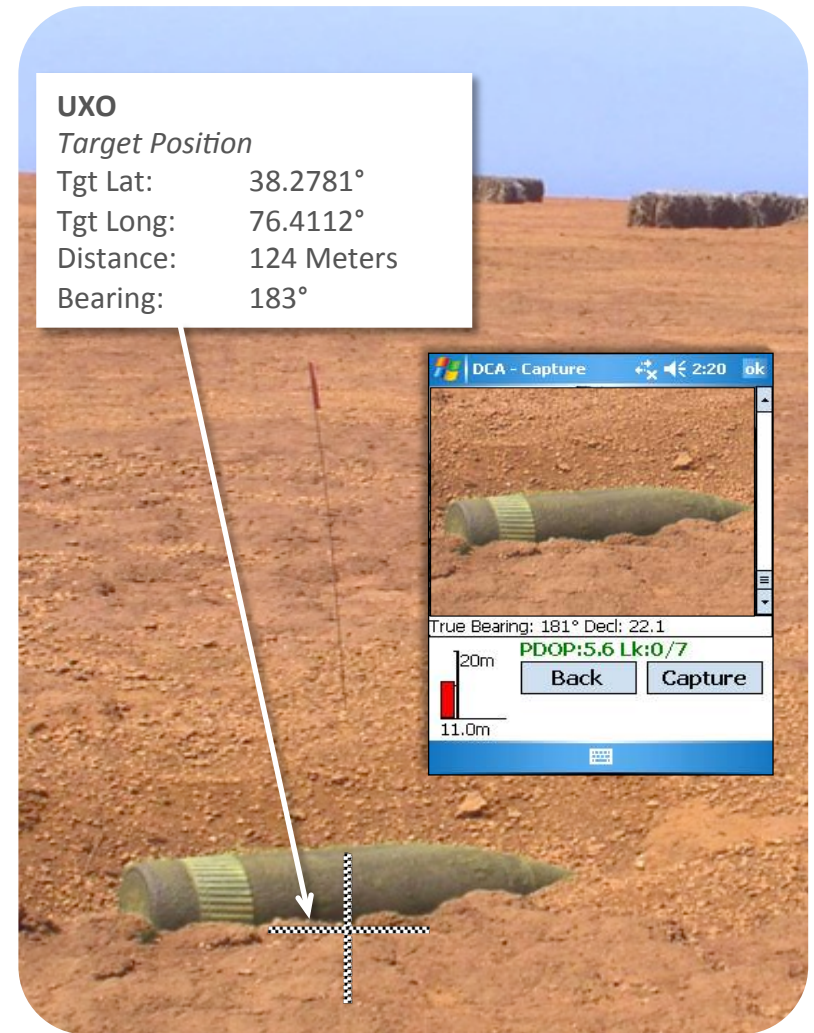
Integration with HEDD®1 for explosive detection

Easy integration with HEDD®1

- Photo **confirms** the exact point of measurement

- **Dangerous** targets measured from a distance

- Integrated system - **easy** to use

- No other system does this with the ease of unival® ike1000GPS.

Comparison with "Reference-Card" devices

HEDD1® and all previous generations of our handheld explosive detection devices are completely different from reference-card based devices.

Other handheld devices are **passive** devices. HEDD1® is an **active** device. It creates a **Modulated Magnetic Field (MMF)**.

Reference card **limits sensibility to one type of explosives**. HEDD1® implements Magneto-Electrostatic Detection (MED) and **simultaneously detects all types of commercial and military explosives**, including liquid explosives.

The only similarity between HEDD1® and reference card based devices is the antenna, which is needed to apply triangulation during the search for explosives.

Comparison with Vapor/ Trace detectors

Explosives trace detectors are security equipment able to detect explosives of small magnitude.

The detection can be done by sniffing vapors as in an explosive vapor detector or by sampling traces of particulates or by utilizing both methods depending on the scenario.

Regardless if the technology of such trace detectors is based on ***Ion mobility spectrometry, Thermo redox, Chemiluminescence and/or Amplifying fluorescent polymer***, the presence of explosives traces/ vapors is mandatory.

The operator needs to expose himself to the potential danger as traces can only picked up on the spot or from a very close distance to the explosive.

Comparison with Vapor/ Trace detectors

HEDD®1 uses another approach technology-wise. Regardless if traces/ vapors are present, the magneto-electrostatic detection method (MED) is attracting $-NO_2$ / $-NO_3$ groups inside explosives.

Providing a modulated magnetic field in its effective range of up-to 100 meters, the presence and location of explosives can be triangulated. Most military and commercial grade explosives have an abundance of $-NO_2$ / $-NO_3$.

In general, **HEDD®1 and Vapor/ Trace detectors** cannot be compared. <u>They are complementary technologies even to K9 dogs.</u>

With HEDD1, big areas can be searched for explosives from a "safe" distance of up-to 100 meters. If type of explosive needs to be analyzed this needs to be done with a vapor tracer (if traces are present and there is a direct access to the explosive, which might be hidden inside a car or behind a building wall).

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