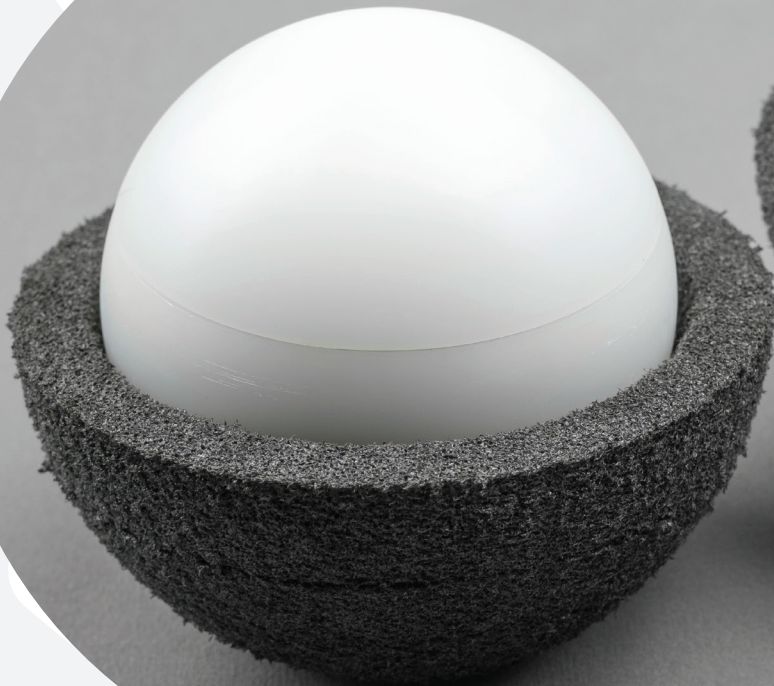


# NuGBALL

A NEW GENERATION OF SENSORS NETWORK FOR REMOTE DOSE RATE MEASUREMENT & GAMMA SPECTROMETRY



The NuGBall sensor is designed to cover a wide range of applications related to radiological investigations. Shock-proof and waterproof, this sensor can be dropped at a distance to preserve operator safety. Once deployed, NuGBalls act as a network of sensors, to determine an area's condition and its evolution. NuGBalls can be applied to dose rate measurement and gamma spectrometry acquisition.

## Benefits

- Sensor adaptable to your measuring needs
- Adjustable dropping height
- Real-time iterative measurement
- Autonomous and robust system
- Long battery life
- Easy and quick deployment
- Remote sensor deployment
- Parameters adjustable at a distance
- Measurement display on a PC through NuSYSOft
- Display on smartphones, tablets or connected glasses

## Key Figures

CZT-Si-CsI (TI)

➔ Modular Sensor

IP68

➔ Ingress protection

10 m

➔ Dropping height

## Measure: Modular Sensor

	Gamma spectrometry		Dose rate		
	S-60	S-500	DR-H	DR-M	DR-L
<b>Sensor</b>	CZT (60 mm <sup>3</sup> )	CZT (500 mm <sup>3</sup> )	Si	Si	CsI (TI)
<b>Emitter</b>	Gamma	Gamma	Gamma	Gamma	Gamma
<b>Unit</b>	Count / keV	Count / keV	Gy.h <sup>-1</sup>	Gy.h <sup>-1</sup>	Gy.h <sup>-1</sup>
<b>Measure range</b>	≤ 10 mGy.h <sup>-1</sup>	≤ 1 mGy.h <sup>-1</sup>	1 μGy.h <sup>-1</sup> to 10 Gy.h <sup>-1</sup>	1 μGy.h <sup>-1</sup> to 100 mGy.h <sup>-1</sup>	10 nGy.h <sup>-1</sup> to 1 mGy.h <sup>-1</sup>
<b>Energy range</b>	59 keV to 2 MeV	59 keV to 2 MeV	59 keV to 2 MeV	59 keV to 2 MeV	59 keV to 2 MeV
<b>Channels</b>	1024	1024	-	-	-
<b>Energy resolution</b>	<2.5% at 662 keV	<3% at 662 keV	-	-	-

## Applications

- Remote deployment of a network of sensors, on-site, in classic to hostile areas
- Post-incident investigation
- Radioactive source searching
- Loaded pipe investigation
- Limited-access area monitoring
- Temporary beacons in harsh environments

## Related Material

- Soft dropping shells
- Transport case
- NuISYSOft
- Dropping drone
- Connected vision (Optional)

## Electrical Data

Battery.....	<b>Lithium Polymer</b>
Voltage.....	<b>3.7 V</b>
Battery power.....	<b>2 Ah</b>
Autonomy.....	<b>300 measures over approx. 6 months</b>
Monthly discharge.....	<b>~2%</b>
Charging system.....	<b>Qi inductive charger, 85–264 VAC @ 50/60 Hz</b>

## Mechanical Data

Ingress protection.....	<b>IP68</b>
Hard cover dimension.....	<b>Ø 75 mm (PEHD)</b>
Soft cover dimension.....	<b>Ø 95 mm (Polyethylene)</b>
Weight.....	<b>200 g</b>
Dropping height.....	<b>10 m (soft cover Ø 95 mm), 100 m (soft cover Ø 180 mm) Adjustable dropping height; please contact us</b>

## Communication

Name.....	<b>iCOM</b>
Long-range communication.....	<b>LoRa (868 MHz)</b>
Short-range communication.....	<b>Bluetooth, Wifi (802.11 b/g/n 2.4 GHz)</b>
Outdoor localisation.....	<b>GPS (+/- 3 m)</b>
Indoor localisation.....	<b>Pseudolites</b>
Security.....	<b>AES-256 / RSA-1024</b>

## Environment

Operational temperature.....	<b>-20°C to +60°C</b>
Storage temperature.....	<b>-20°C to +60°C</b>
Charging temperature.....	<b>0°C to +45°C</b>

## Norms

Compliant with CE standards and RED Directive (2014 /UE)