



TM



# nPod Sensor

netBin's Rugged Variable Angle  
Dual Ultrasonic Fill Level Sensor



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## nPod Features

### Dual Ultrasonic sensing

nPod determines container fill levels using its superior dual ultrasonic sensors. This provides improved accuracy and refined granularity for a huge range of materials and surface topographies. Also dual ultrasonic sensing allows the nPod to measure accurately right up to the sensors.



### Variable angle sensors

Maximising flexibility the nPod can be mounted on the side wall of many containers ensuring the device avoids rubbish flow and is fixed to the most durable parts of the bin.

Not only does the variable dual ultrasonic design (patent applied) increase the performance of the device but removes the necessity to fit obstructing mounting plates.

The installation of nPod is straightforward, two 6mm high security button head bolts secure the unit to the container. The sensor barrel rotates through 135°, once in the optimum position two hidden grub screws lock off the barrel in position.

### Ultrasonic Sensor Options

The nPod can measure a huge range of bins, choose from 3 ultrasonic sensing options to ensure accurate measurement:

**Narrow beam:** ideal for litterbins/bagged bins

**Wide beam:** ideal for textiles/medium bins/skips

**Long range:** ideal for extra deep containers

### Intelligent Processing Techniques

Variable power ultrasonic sensors and multiple echo return analysis enables the nPod to perform accurately in both small bins and large bins.

The nPod and HUB work together using sophisticated algorithms to determine the most representative fill level to report, considering type and size of bin. An orientation sensor detects when bins are emptied.



### Rugged ABS Polycarbonate

Bin environment are invariably hostile to electronic devices so we have custom designed the nPod to be very tough, durable and waterproof.

A specially selected blend of ABS polycarbonate gives the nPod impressive resistance against impacts, UV damage, fire and operates through a wide temperature range (-30°C to +80°C).

Using 6mm tamper proof security bolts ensures a strong fixing that can only be removed with the correct installation tools.

### Reliable & Secure Communications

Data security is important, our very experienced communication engineers have developed a very power efficient, reliable and secure method of sending the encrypted netBin data to the HUB in the cloud.

The nPod utilises GPRS/3G communications but also has the ability to support many new up and coming IoT networks, the nPod will support NB-IoT from 2017.

### Temperature and GPS Position Sensing

A sensor allows the bin temperature to be reported with wake up alerts in the event of extreme temperatures such as a fire. The GPS positioning option allow the bin's location to be reported, useful for relocating bins, missing bins and to detect theft.

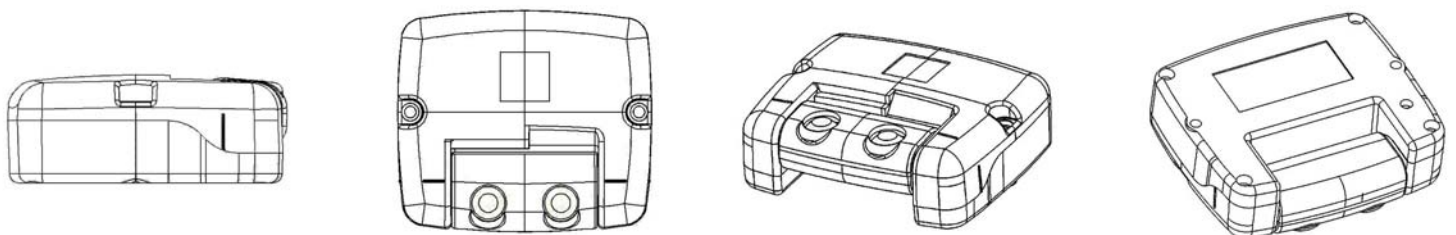
### Power Saving

The nPod is designed to conserve power every step of the way. It's at the heart of every feature of the design, components are only powered up when required. Configurable intelligent modes of operation such as only send on change reduce power use still further.



## netBin nPod Technical Specifications

<b>General</b>	netBin nPod, a wireless, battery-powered, ultrasonic container-level monitoring sensor providing data over a wireless network to the Bin Management System
<b>Measurement Sensor</b>	Dual high sensitivity 40KHz ultrasonic sensor (patent applied)
<b>Variable Angle Sensor</b>	135° range lockable by 2 discrete grub screws (patent applied)
<b>Depth Range</b>	3cm - 4.0m (up to 6m with long range sensor)
<b>Resolution</b>	2cm
<b>Temperature Sensor</b>	Reports container temperature, can be used to indicate temperature extremes, eg a fire
<b>Tilt Sensor</b>	Detects container empty event, when mechanically lifted.
<b>Enclosure</b>	Ingress Protection Rating IP66
<b>Material</b>	ABS Polycarbonate
<b>Fixing</b>	2 x M6 security bolts
<b>Dimensions</b>	140 x 122 x 46 mm excluding fixing mounts
<b>Weight</b>	Approx 440g
<b>Operating Temperature Range</b>	-30°C to +80°C
<b>Battery Type</b>	Lithium Thionyl Chloride
<b>Battery Lifetime</b>	10+ years
<b>Battery Level Monitor</b>	Battery charge state is monitored and reported to HUB
<b>Communications Options</b>	GPRS/3G, NB-IoT (from 2017) others network types can be supported
<b>Antenna</b>	Internal for GPRS/3G and GPS
<b>Approvals and Compliance</b>	CE, FCC, RoHS2, REACH, WEEE
<b>Data Logging</b>	To the netBin HUB Cloud based server
<b>Security</b>	Encrypted data is used between the nPod and the netBin Management System application. Only a registered nPod can access the system.
<b>Options</b>	<ul style="list-style-type: none"> <li><input checked="" type="checkbox"/> GPS for automatic location</li> <li><input checked="" type="checkbox"/> External GPRS/3G/GPS antenna</li> <li><input checked="" type="checkbox"/> Protective cage for extra harsh environments</li> </ul>





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