nPod Sensor

netBin’s Rugged Variable Angle Dual Ultrasonic Fill Level Sensor
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.

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 (-20°C to +70°C).

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

Reliable & Secure GPRS 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 is capable of utilising the new upcoming M2M networks thanks to its high performance flexible communications module connector.

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 popular GPS positioning option allow the bin’s location to be reported, useful for relocating bins, missing bins and theft.

Power Saving
The nPod is designed to conserve power every step of the way. It is at the heart of every feature of the design with components are only being powered up when required. Configurable intelligent modes of operation such as only send on change reduce power use still further.
## netBin nPod Technical Specifications

### General
netBin nPod, a wireless, battery-powered, ultrasonic container-level monitoring system providing data over a wireless network to the Bin Management System.

### Measurement Sensor
Dual high sensitivity 40KHz ultrasonic sensor (patent applied)

### Variable Angle Sensor
135° range lockable by 2 discrete grub screws (patent applied)

### Depth Range
3cm - 2.5m

### Resolution
2cm

### Temperature Sensor
Reports container temperature, normally used for fire detection

### Tilt Sensor
Detects bin being emptied, lid opening (if lid mounted), a fallen bin etc.

### Enclosure
Ingress Protection Rating IP66

### Material
ABS Polycarbonate

### Fixing
2 x M6 security bolts

### Dimensions
140 x 122 x 46 mm excluding fixing mounts

### Weight
Approx 340g (without batteries)

### Operating Temperature Range
-20°C to +70°C

### Battery Type/Size
4 AA Lithium Iron Disulphide non rechargeable, replaceable

### Battery Lifetime
10 years (1 readings per day average)

### Battery Level Monitor
Battery charge state is monitored and reported to HUB

### Communications Options
GPRS (mobile networks), others network types can be supported

### Antenna
Internal for GPRS and GPS (external antenna is optional, see order info)

### Approvals and Compliance
CE, FCC, RoHS2, REACH, WEEE

### Data Logging
To the netBin HUB Cloud based server

### Security
Encrypted data is used between the nPod and the netBin Management System application. Only a registered nPod can access the system.

### Options
GPS for automatic location, external GPRS / GPS antenna
# Order Information

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
<th>Product Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>netBin nPod</td>
<td>nPod for fitting inside containers - ultrasonic level detection.</td>
<td>NP5001</td>
</tr>
<tr>
<td></td>
<td>ABS polycarbonate thick walled case</td>
<td></td>
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<tr>
<td><strong>Compatible options (append to the main product code)</strong></td>
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<tr>
<td>GPRS module</td>
<td>GPRS (Cellular network) communications module and antenna</td>
<td>-CG</td>
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<tr>
<td>GPS module</td>
<td>GPS position location sensor</td>
<td>-SB</td>
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<tr>
<td>External GPRS antenna</td>
<td>External GPRS antenna (for all metal containers)</td>
<td>-AE</td>
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<tr>
<td>External GPS antenna</td>
<td>External combined GPRS and GPS antenna (for all metal containers)</td>
<td>-AF</td>
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## Other netBin System Components

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
<th>Product Code</th>
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</thead>
<tbody>
<tr>
<td>netBin HUB</td>
<td>The netBin Management System application - monitors the bins, maintains</td>
<td>CA1002</td>
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<tr>
<td></td>
<td>history and statistics, raises alerts, generates routes for drivers.</td>
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<tr>
<td></td>
<td>Runs as a cloud application.</td>
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<tr>
<td>netBin COLLECT</td>
<td>netBin application for smart phones and tablets providing collection and</td>
<td>PA1002</td>
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<td></td>
<td>status information. One required per smartphone using the HUB</td>
<td></td>
</tr>
<tr>
<td>netBin ANALYSER</td>
<td>netBin use analysis software for use with Excel</td>
<td>SA1202</td>
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