



# Smart Box Catalogue

**British Research  
2014**

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**Friendly Wireless  
Monitoring**

<b>1</b>	<b>INTRODUCING THE SMART BOXES .....</b>	<b>5</b>
1.1	EASY.....	5
1.2	CHOICE .....	6
1.3	VERSATILE.....	6
1.4	SUMMARY .....	6
1.5	MODULAR COMMUNICATION BEHAVIOUR .....	6
1.6	USP .....	7
<b>2</b>	<b>SMART BOX WIRELESS MONITORING &amp; CONTROL .....</b>	<b>8</b>
2.1	CUSTOM APPLICATIONS & KITS.....	9
2.2	APPLICATIONS AND KITS .....	9
2.3	DEMO KIT.....	9
<b>3</b>	<b>SMART BOX SYSTEM HARDWARE.....</b>	<b>10</b>
3.1	SMART BOX WIRELESS SENSOR & CONTROL.....	10
3.2	WIRELESS CO-ORDINATOR .....	11
3.3	WIRELESS SMART BOX LOGGERS .....	11
<b>4</b>	<b>SMART BOX LOGGERS .....</b>	<b>12</b>
4.1	SMART TABLET/PHONE .....	13
4.2	SMART LOGGER .....	14
4.3	SMART STATION (COMING SOON) .....	15
<b>5</b>	<b>PLUG &amp; PLAY INSTALLATION (QUICK INSTALL &amp; SETUP).....</b>	<b>16</b>
<b>6</b>	<b>GETTING STARTED.....</b>	<b>18</b>
6.1	PICK .....	18
6.2	PURCHASE .....	18
6.3	PLUG.....	18
6.4	PLAY.....	19
<b>7</b>	<b>THE SMART BOX PRODUCT RANGE .....</b>	<b>19</b>
7.1	HUGE PRODUCT RANGE .....	19
7.2	MULTI SMART BOX .....	19
7.3	PROBE LENGTHS .....	20
7.4	ANTENNA (AERIAL) OPTIONS .....	20
<b>8</b>	<b>SMART BOX SENSORS LIST .....</b>	<b>21</b>
<b>9</b>	<b>SENSOR LIST .....</b>	<b>22</b>
	A.....	22
	B.....	23
	C.....	24
	D.....	25
	E.....	25
	F.....	26
	G.....	26
	H.....	27
	I.....	27
	L.....	27
	M.....	28
	N.....	28

O.....	28
P.....	29
R.....	30
S.....	30
T.....	31
U.....	31
V.....	31
W.....	31
<b>10 APPLICATION &amp; KITS .....</b>	<b>32</b>
10.1 APPLICATION.....	32
10.2 KITS.....	32
10.3 CUSTOM APPLICATIONS AND KITS.....	32
10.4 UPGRADING AND ADD-ONS.....	32
<b>11 APPLICATIONS &amp; KIT LIST .....</b>	<b>33</b>
11.1 AIR POLLUTION MONITORING KIT .....	33
11.2 INDOOR AGRICULTURE MONITORING KIT (GREENHOUSES & NURSERIES).....	34
11.3 INDOOR AIR QUALITY MONITORING KIT (TIREDNESS).....	34
11.4 THE MUSEUMS, ART & ANTIQUE STORAGE MONITORING KIT .....	35
11.5 POWER & ENVIRONMENT, AIR CON, DATA CENTRE MONITORING KIT .....	36
11.6 PRESENCE, MOTION & ACCESS MONITORING KIT.....	36
11.7 STORE ROOM MONITORING KIT (ENVIRONMENT) .....	37
11.8 STRUCTURAL BUILDINGS MONITORING KIT.....	38
11.9 SWIMMING POOL MONITORING KIT .....	38
11.10 OUTDOOR AGRICULTURE MONITORING KIT (VINEYARD/PLANTATIONS) .....	39
11.11 WATER FLOW, TEMPERATURE & LEVEL MONITORING KIT .....	40
<b>12 ACCESSORIES.....</b>	<b>41</b>
12.1 ANTENNA .....	41
12.2 POWER SUPPLY.....	42
<b>13 MONITORING FOR EVERYONE .....</b>	<b>43</b>
13.1 MONITORING ANYTHING (SENSOR APPLICATION).....	44
13.2 MONITORING THE UNKNOWN AND FUTURE APPLICATIONS. ....	45
13.3 AN UNKNOWN NEW APPLICATION EXAMPLE (AIR-CON).....	46
13.4 UNKNOWN NEW APPLICATION EXAMPLE (CHILLERS) .....	47
<b>14 ANYWHERE MONITORING.....</b>	<b>47</b>
<b>15 SMART BOX COMMUNICATIONS.....</b>	<b>48</b>
15.1 LOGGER COMMUNICATIONS.....	48
15.2 NETWORK EXAMPLE .....	49
15.3 ZIGBEE WIRELESS MESH NETWORK .....	49
15.4 DISTANCE .....	50
15.5 WI-FI/ETHERNET/MOBILE SIM (3G/GPRS/GSM).....	50
15.6 WHY ZIGBEE.....	50
15.7 DATA.....	50
15.8 SECURITY.....	50
15.9 COST .....	51
<b>16 SMART BOX COST.....</b>	<b>51</b>

16.1	WHAT YOU ARE PAYING FOR: .....	52
16.2	WHERE YOU MAKE THE BIGGEST SAVINGS .....	52
16.2.1	<i>The Biggest Saving is Time</i> .....	52
16.3	SPAGHETTI WIRING DISASTER .....	52
16.4	AGRICULTURE EXAMPLE .....	53
16.4.1	<i>Your Requirement</i> .....	53
16.4.2	<i>Smart Box Solution</i> .....	53
16.4.3	<i>Existing Solution</i> .....	54
<b>17</b>	<b>STANDARDS .....</b>	<b>55</b>
17.1	MONITORING STANDARDS & MEASUREMENT OF UNCERTAINTY .....	56
17.2	WHY IS CALIBRATION IMPORTANT? .....	56
17.3	CALIBRATION OF BASIC PRINCIPLES .....	56
17.3.1	<i>Basic example</i> .....	56
<b>18</b>	<b>ORDERING .....</b>	<b>57</b>
18.1	ORDER PROCESS .....	57
<b>19</b>	<b>CONTACT US .....</b>	<b>58</b>

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# Smart Box Catalogue

## Friendly Wireless Monitoring

### 1 Introducing the Smart Boxes

Smart Box has been designed to make monitoring and control easy. The Smart Box is easy to setup, easy to use, has a huge product range, ideal for any application and easy upgrade and maintain. The Smart Box is very versatile allowing you to mix and match Smart Boxes of any type to meet any requirement.

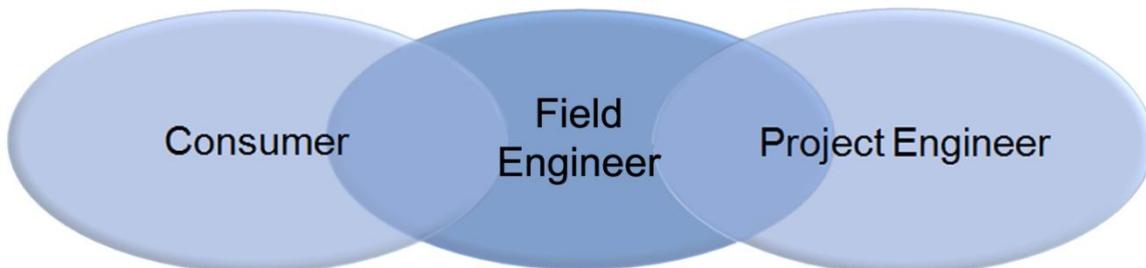
Our Engineers were tired of the current system in monitoring and control and knew they could make monitoring and control a lot easier (Quicker) for engineers and make monitoring and control accessible to non-technical users. BR Engineers set out to design such a system. To achieve this they focused on 3 main improvements, Easy, Choice and Versatility.



#### 1.1 Easy

The Smart Box focus has been to make the whole system Plug and Play, this makes installation and setting up, quick and easy. Engineers can setup up systems in minutes and non-technical users can quickly create their own monitoring solution. The control aspects are plug and play, but require an understanding of the equipment you want to control. Other than that the Smart Box system is amazingly easy. The Smart Box and the logger are plug and play, the sensors have been pre-calibrated to work straight out of the box. Just power on and the system can automatically send/receive data back to and from the Server/Cloud.

**The Smart Box is specifically aimed at both engineers and non technical users that want sophisticated monitoring and collect data without the hassle of building, configuration and setting up technical equipment.**



## 1.2 Choice

The Second focus was choice. A Smart Box for every Sensor. Don't get our engineers wrong there is a huge range of monitoring systems available, as every sensor manufacture has their own logger. Choice is great, but when you have to learn a new system for each monitoring and control application it becomes a headache for both the engineers and management. With the biggest complaints being how slow and time consuming managing multiple systems are. Especially in learning new systems and in remembering how to use old systems during maintenance, repair or upgrading and adding new monitor/control requirements.

**The Smart Box is easy to use, quick to setup, huge sensor product range and versatility to mix and match any application.**

The BR Engineer designed the Smart Box System to give you a huge Choice of Sensors in one plug and play system. We currently have over a hundred Smart Box Sensors available to choose from and are adding new Smart Box Sensors weekly, just find the Smart Box Sensors that meets you requirement and purchase it. Plug and Play out of the Box. Our Engineers want a Smart Box for every Sensors and Transducer available, so anybody can define and build a monitoring and control system based on their requirements. For your control requirements it is best you contact us and we can point you to the right Smart Box.

## 1.3 Versatile

Our Engineers have designed the Smart Box System to allow any variation of Smart Box Sensors or Controls to be connected, at any time. You can mix and match any Smart Box enabling you build very unique monitoring and control systems very quickly. Each Smart box is plug and play, so even adding new Smart Box is an easy matter. In just one system you can monitor Soil Temperature, Soil Wetness, Leaf wetness, Ambient Temperature, Sun Light, and then at any time add a water level Sensors, Vibration, Co2, Dissolved Oxygen, add a Motion Sensor. If the sensors exist our engineers want to have a Plug and Play Smart Box for it. If you want a versatile Monitoring and Control System you can easily build and setup, easily upgrade and maintain then the Smart Box System is for you.



## 1.4 Summary

Our Engineers in building the Smart Box have created a monitoring and control solution designed to be simple to use and simple to set up for home, scientific and industrial application, with a huge product range, allowing anybody to have their own wireless monitoring and control system. Smart Boxes allows sophisticated and diverse systems to be created without the need of technical knowledge. Their low cost, size and power usage makes installing scalable distributed systems into difficult or sensitive areas a simple matter. Simply choose your Smart Boxes, place them in the required location, power them up and start accessing your results and control functionality. The user can build a unique solution by mixing and matching Smart Boxes, enabling wireless monitoring of a wide variety of parameters consisting of numerous Smart Boxes.



## 1.5 Modular Communication Behaviour

Smart Box Wireless Monitoring is an independently powered, self contained monitoring and control product with intelligent wireless communications. Designed to talk to other Wireless Smart Boxes and intelligently carry their data back to a logger and then onto the internet. They are not modular, but behave in a modular nature through a self healing wireless communication mesh network. So you can have hundreds of wireless smart boxes in one wireless mesh network, the size depends on the logger. The Smart

**Smart Box Wireless Monitoring Saves you TIME.**

**If TIME is Money for you, then you will want to buy Smart Box Wireless Monitoring.**

Box comes in a huge range of available Sensors, bringing a new revolution of smart wireless, low powered, low cost monitoring.

## 1.6 USP

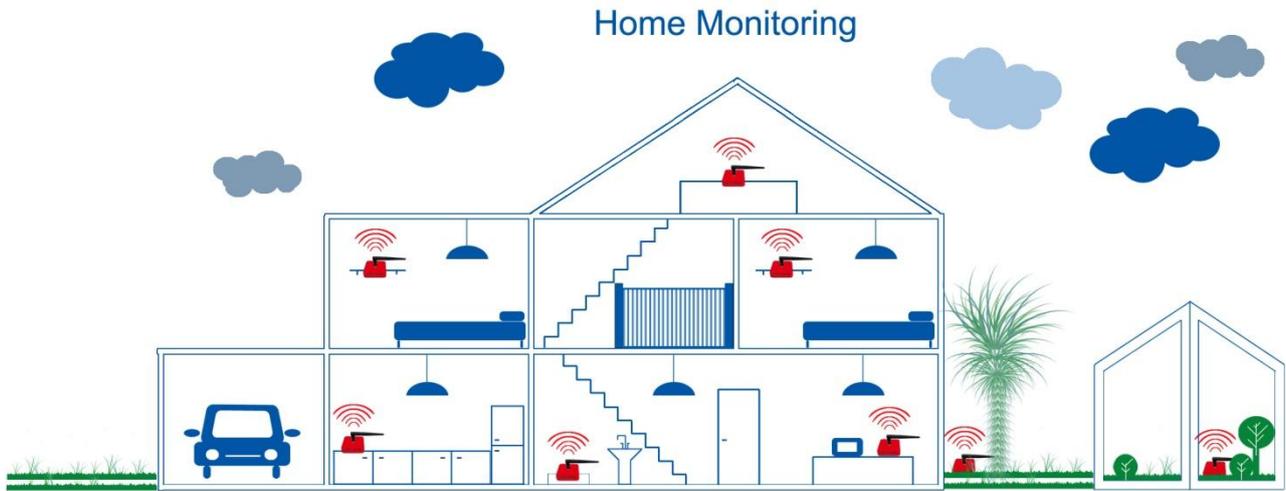
Smart Box is a unique wireless plug and play devices that can enable remote monitoring and control operations by creating their own, self organising wireless network.

The Smart Box is complete working devices with no engineering knowledge required to setup or operate. British Research Engineers have designed the Smart Box Platform with simplicity in mind, ensuring the Smart Box Sensors product can be used by ages 10+.

We understand that time is precious, thus we created this system for easy installation, collection management of data and sophisticated control.

- **Smart Box is a plug and play wireless monitoring and control for any application.**
- **Smart Boxes Saves you Time and Money.**
- **Smart Box Is designed to be child's play.**
- **The Smart Box Wireless Monitoring is aimed at rapid deployment using our instant installation and setup features, just simply place and provide power.**
- **Removes the technical barriers associated with existing monitoring products and allows the user access to monitoring of what they want.**
- **Smart Boxes uniqueness is its huge product range and wireless plug and play instant setup allowing the user a choice.**
- **Modular communication behaviour, BUILD your own custom monitoring and control solution.**
- **Simply Choose the Smart Box that fits your monitoring requirement.**
- **Smart Boxes can be added to the wireless network at any time.**
- **Smart Box brings anywhere, anytime and any application monitoring for everyone.**

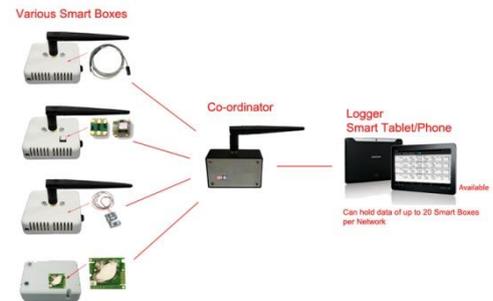
## 2 Smart Box Wireless Monitoring & Control



The Smart Box is a new generation of wireless monitoring and control is designed to be easy to use and quick to set up. Smart Boxes allow diverse wireless systems to be created without the need for technical knowledge. Their low cost, size and power usage makes installing scalable distributed systems into difficult or sensitive areas a straightforward matter.

**Smart Box Wireless Monitoring & Control is quick and easy to setup, saving your time and your**

The Smart Box System communicates wirelessly using industrial and consumer approved wireless standards. British Research has gone far beyond local access and offers the latest in complete remote “anytime anywhere” monitoring. The wireless system is made up of various devices including Sensor Smart Boxes, optional Control Boxes, Coordinators, Wireless Smart Box Loggers and access to an online Server.



All you need to do is select the wireless Smart Box Sensors you require and provide the power. Each Smart Box Sensor is pre-configured and will contain the components necessary to take measurements and automatically transmit to wireless Smart Box Loggers. We have a few Smart Box Loggers to choose from aimed at consumers and engineers; the most popular loggers are the Smart Tablets ideal for secure environments and the Smart Logger which is aimed at unsecure environments.



## 2.1 Custom Applications & Kits

The Smart Box Wireless Monitoring Custom Kit comes with a pre-installed and configured Smart Box Logger of your choice and is ready to work out of the box. All you are required to do is decide what you want to monitor and pick matching Smart Boxes Sensors that meet your needs. You will receive immediate and historical results with access to our online server providing your data anywhere at any time.



## 2.2 Applications and Kits

The Smart Box Wireless Monitoring Kits are aimed at specific sector monitoring requirements; we have a range of Complete Kits and Starter Kits from air pollution, air quality, water, agriculture, power, environment and structural. All Applications and Kits include the appropriate Wireless Smart Box Sensors, along with a pre-configured Wireless Smart Box Logger of your choice, a Coordinator if using a tablet, necessary antennas, power supplies and user manual with all required information to get you started.



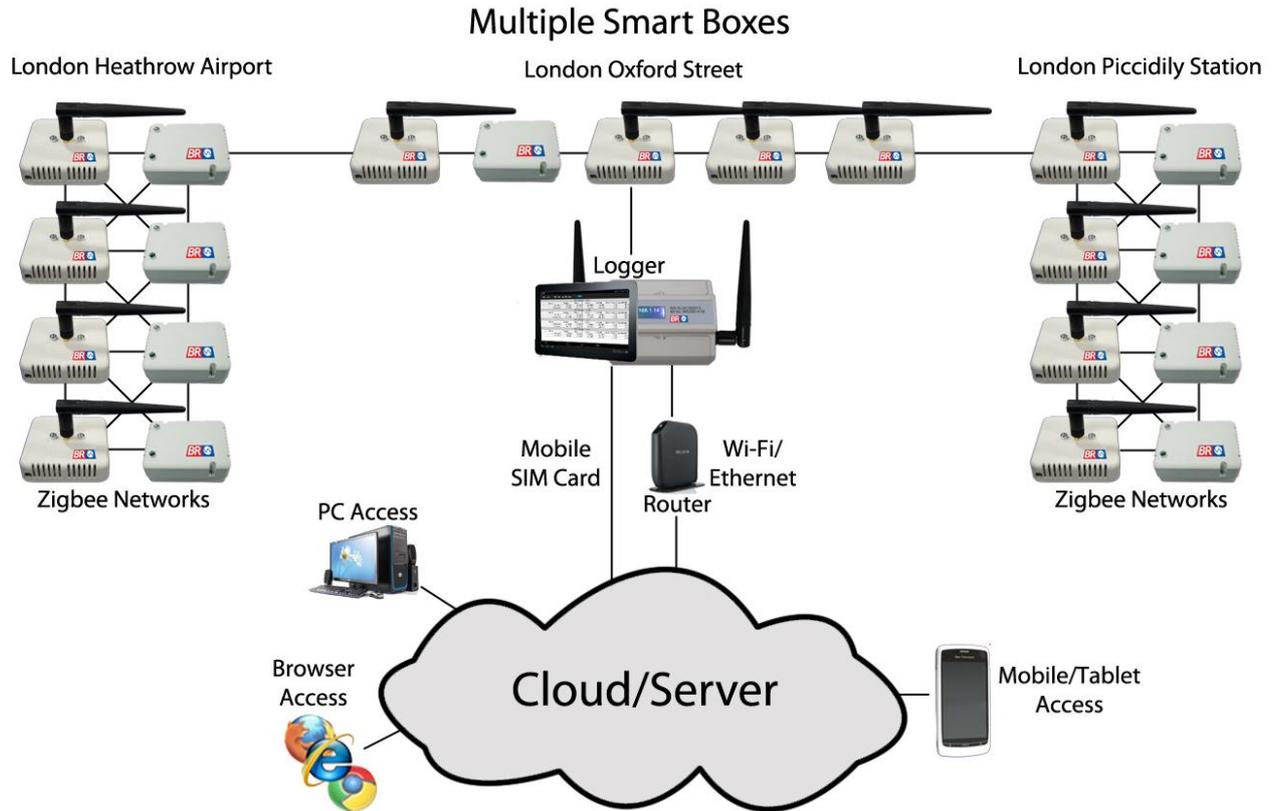
## 2.3 Demo Kit

This Smart Box Wireless Monitoring Demo Kit is designed to be a cost effective solution for companies and individuals who want to evaluate the Wireless Smart Box products and test the reliability and simplicity of using and setting up our Wireless Smart Box Monitoring System. The Smart Box Wireless Monitoring Demo Kit is a quick way for users to experience the plug & play features, enabling an understanding of its capability and rapid deployment.



### 3 Smart Box System Hardware

The Smart Box Wireless System consist of Wireless Smart Box Sensor & Control and a Wireless Smart Box Logger with a Wireless Co-ordinator (External or Built-in)

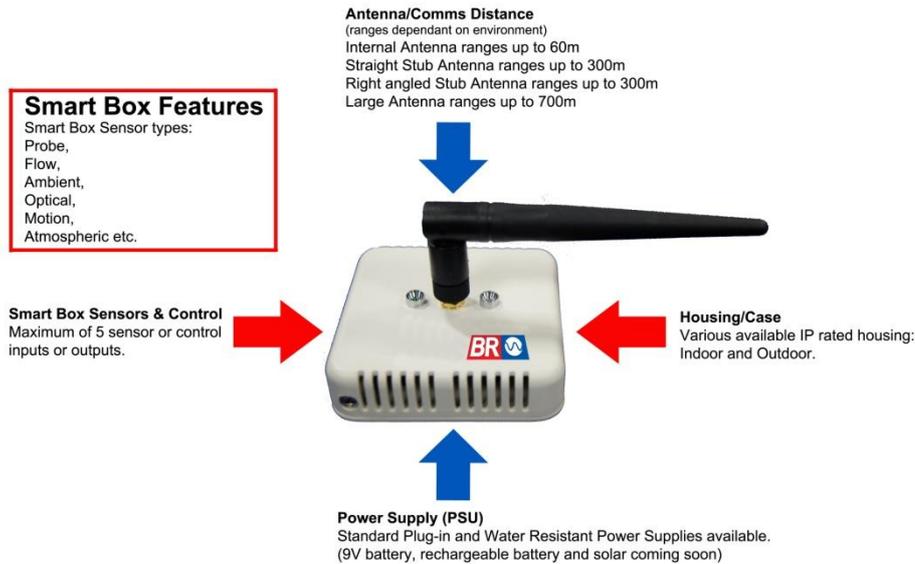


#### 3.1 Smart Box Wireless Sensor & Control

Smart Box Wireless Sensors & Control are standalone devices with their own sensor, control, power supply and wireless industrial communications. The main part that defines the Smart Box is the Sensor or Control. It is our aim to have a Smart Box for every known Sensor, Transducer and control functionality; making it a simple matter of matching your monitoring & control requirements with our Wireless Smart Box.

The Wireless Smart Box will have additional features you can choose from; such as selecting power source, Sensor case/housing type, aerial size/range, number of sensors/transducers (up to 5 per box), control functionality and if using probes, the length of the probe cable.

**The Wireless Smart Box System is designed for portable and fixed Monitoring & Control.**



Smart Box making monitoring easy, sounds obvious, but the majority of Sophisticated Monitoring Systems are very complicated. They require you to have a logger with separate sensors that you must personally setup and calibrate. This requires training and is time consuming. We save you time.

### 3.2 Wireless Co-ordinator (Tablet only)

You require a Wireless Co-ordinator with every Smart Box Wireless Tablet System. One Co-ordinator has the potential to connect to multiple Wireless Smart Boxes on a single self-healing, wireless mesh network. Within this mesh network each Wireless Smart Box not only captures and disseminates its own data, but it also serves as a relay for other Wireless Smart Boxes. The Wireless Smart Logger and Smart Station come with their own built in Co-ordinators and do not require a separate co-ordinator.



### 3.3 Wireless Smart Box Loggers

The Wireless Smart Box Logger communicates with the Smart Boxes; this is then stored locally and transmitted by Wi-Fi, Mobile SIM or Ethernet (LAN) to the internet to the cloud servers. Type of communications will depend on the logger used.



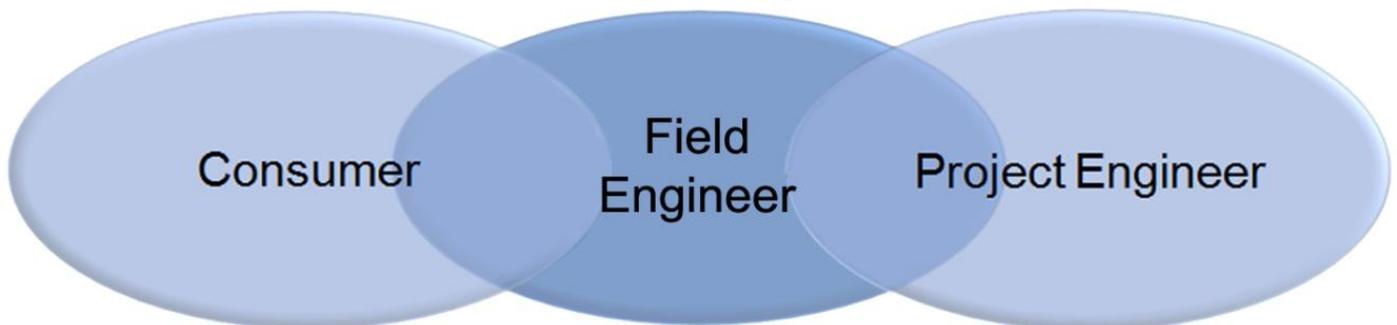
## 4 Smart Box Loggers

The Smart Box Logger is where all the Smart Box Sensor information is stored locally and the main communications to the Cloud Servers. The types of communications will vary depending on the logger used. Our Engineers are focused on making monitoring and control easier for engineers and give access to sophisticated monitoring and control systems to the individual consumer, hobbyist, inventor and the technology minded, whether you are a start-up, small, medium or large company. Size does not matter. Our Engineers have come up with an ingenious, reliable and cost effective solution for all.



The Wireless Smart Box Logger communicates with the external or built in co-ordinator and collects the Smart Box Wireless Sensor information; this is then stored locally and transmitted by Wi-Fi, Mobile SIM or Ethernet (LAN) to the internet to the cloud servers. Type of communications will depend on the Logger used.

**Smart Box Logger for everyone: Consumer, Industry and Scientific monitoring.**



### 4.1 Smart Tablet/Phone

This is a very cost effective and easy to use Logger. Tablets are common and it is the next logical step to use a Smart Tablet as a Logger for Wireless Monitoring & Control. Using a Tablet as a logger is very controversial but our engineers have tested & demonstrated that Tablets are extremely reliable and have all the communications needed to collect data and relay it onto the internet through Wi-Fi or built in Mobile SIM 4G/3G/GPRS/GSM. Additionally the screen, ease and familiarity of the software and interface, its own battery supply if mains power fails, makes it an ideal Logger and child's play for anybody to build their own monitoring system. This is aimed at the general public, enthusiasts, researchers, entrepreneurs, small and medium size businesses, and engineers who want rapid deployment of a mobile and fixed monitoring solution.



**Friendly  
Wireless  
Monitoring for  
Android™**



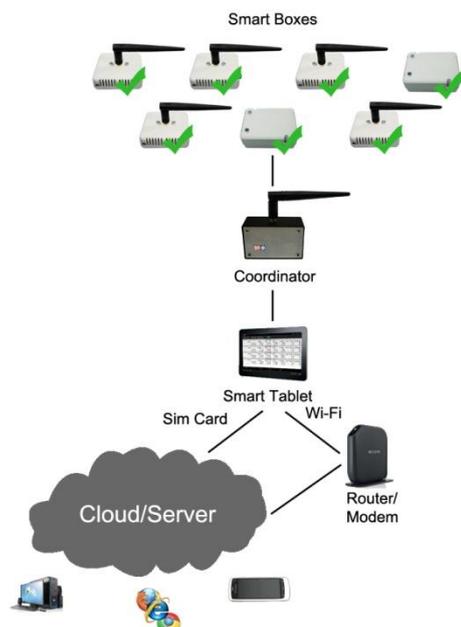
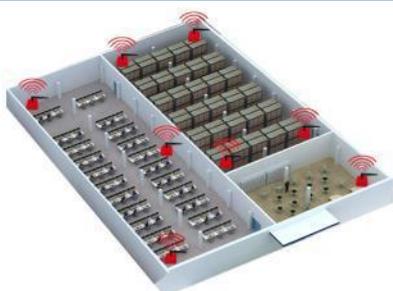
Imagine having your Tablet next to you in your home, office or lab showing instantaneous sensor reading of multiple Smart Box Sensors outside, across fields, or scattered inside buildings, across a plant or workshops kilometres away. Imagine being able to setup up a mobile or fixed monitoring solution extremely quickly through plug and play, and having access to historical data, backed up to an online server for later analysis. All is quick and easy and using the tablet as a logger will save you time and money.



You can mount the Tablet on a wall in a work shop, lab, inside a secure cabinet or secure store room. It just makes logical sense to use a Tablet as a Logger in the right environment and circumstance. For a more traditional engineering solution see the Smart Logger.

#### Smart Tablet

**Ideal for Home, Site monitoring, portable monitoring and Small Scale Systems.**

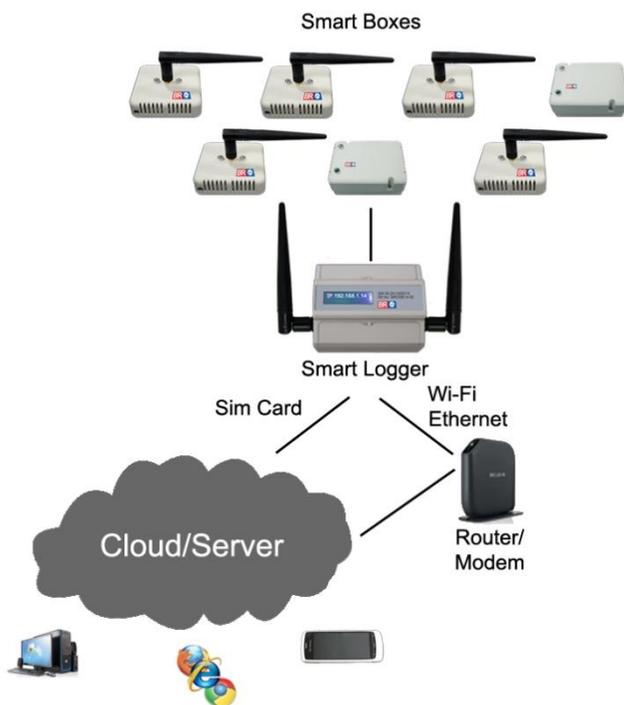


## 4.2 Smart Logger

The Smart Logger is an ideal solution for fixed or unsecure environments unsuitable for tablets. The Smart logger provides nearly all the functionality that the tablet does without the Touch Screen interface. The Smart Logger comes with a built in Co-ordinator; unlike the tablet you do not require to purchase a separate Co-ordinator. In addition to the Wi-Fi and Mobile SIM 3G/GPRS/GSM the Smart Logger has an Ethernet Port (LAN) for direct connection. Again, setup and installation is plug and play, just simply power on the Smart Box Sensors and they Auto connect with the Smart Logger. When using Wi-Fi and Ethernet (LAN) with secure networks we have provided an LCD display for your network administrator to configure the Smart Logger.



The Smart Logger uses an industrial housing and mountable using bracket DIN rail Standard. We provide a DIN for users to easily mount it on a wall. Simply fix the small DIN rail to a wall using screws and clip the Smart Logger onto it. Removing is simple; just pull the latch to unclip. The Smart Logger is suitable for Industrial, Commercial, Home and Scientific environments.



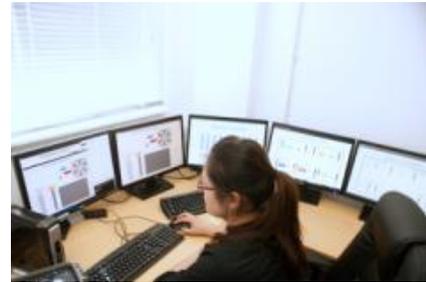
### Smart Logger

Ideal for SME's, Industrial and Small/Medium Scale Systems

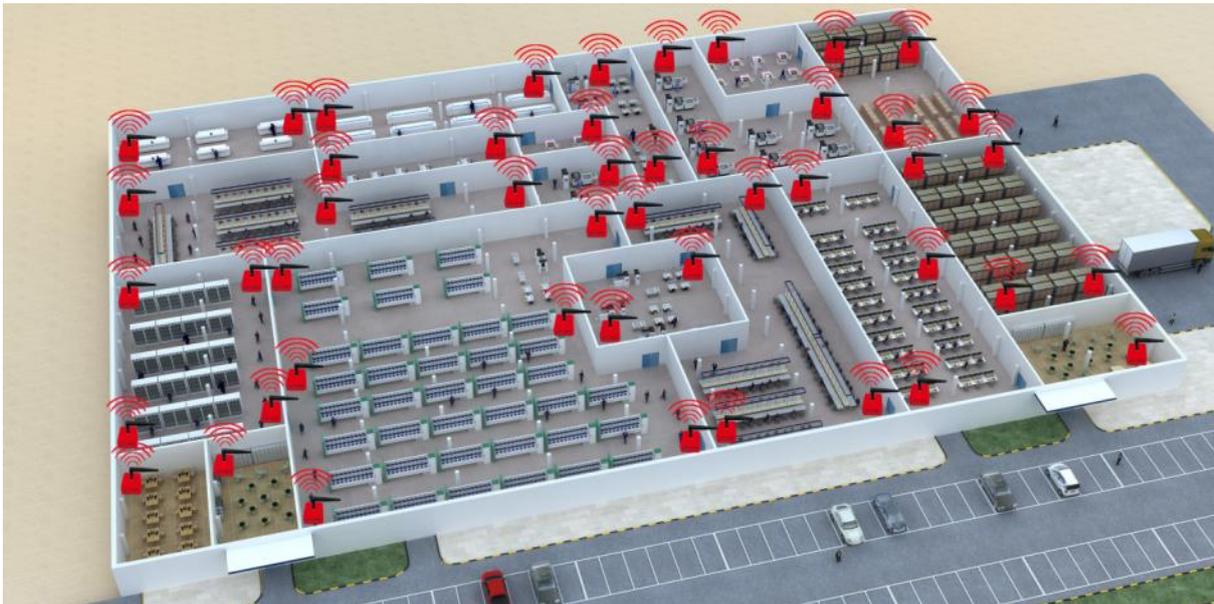
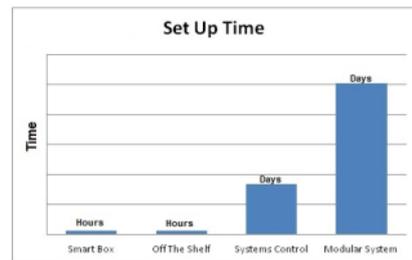


### 4.3 Smart Station (Coming Soon)

The Smart Station is for large wireless systems for up to 64,000 Smart Box Sensors and Control. We use the Same Smart Box Sensors just the capacity of the communications is designed to handle thousands of Smart Box Sensors and Control Boxes across a City wide mesh network. We use the same industrial communications technology used in Smart Metering called ZigBee.



**Smart Station (Coming Soon)**  
**Ideal for City Wide large Scale Systems of up to 64000 Smart Boxes**



## 5 Plug & Play Installation (Quick install & Setup)

Smart Box is easy just provide power.

Our British Research Engineers want to make wireless monitoring easier and what they have set out to do is logical.

Our engineers have developed Smart Box, which combines all the sensors and hardware to allow for the simple matter of switching on the Smart Box to collect data. Whether it's through a tablet or Smart Logger, data from Smart Box Sensors will automatically communicate and get stored online for your use.

Monitoring, especially with sensors used to be very complex; requiring a Data Logger, cables and sensors. You would individually purchase your data logger and sensors. The logger would be sent with its sensor inputs, manual and software configurations; you would then need to read the manual and learn how the software works. Once familiar with the logger software, you would then need to purchase the sensors. Once you have the sensors required for your monitoring needs, you would then decide where to place the sensors and how far away the sensors are from the logger.

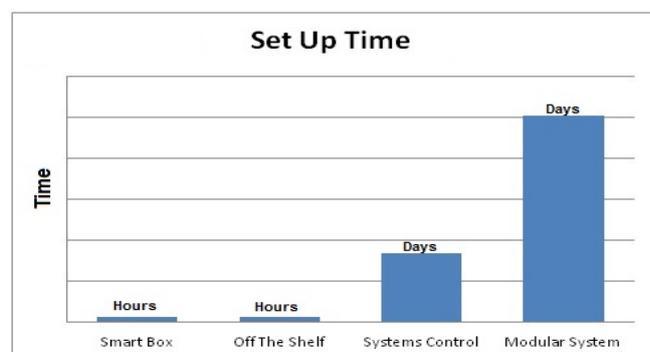
Distance is important as the cable is expensive and affects the calibration process of each sensor. This all sounds complicated and time consuming, because it is.

It becomes an even bigger headache once there are masses of sensors with wires everywhere. Spaghetti Junction style mess and it's not easily portable like the Smart Box.

If you had to relocate a sensor and changed the cable length, your calibrations would be off and your readings incorrect. You would have to spend hours re-calibrating. It's not Childs Play and that's why monitoring is relegated to engineers and the technical minded. The Smart Box changes that; the Smart Box is for everybody.



**Quick  
Easy  
Setup  
Plug & Play**



With the Smart Box, you simply have to place it in the right locations and provide power. We are using industrial wireless communications, which reduces the need for cables and unlike Wi-Fi it has a good range. With the large aerial the Smart Box mesh communications can go distances up to 700 meters line of site distance depends on aerial size and obstacles. With a decent aerial, our engineers have had Smart Boxes communicating across a kilometre long lake.



**We expect to make the set up even more convenient through battery and solar powered Smart Box versions in the Future.**

We have done our best make to make the Smart Boxes as user friendly as possible. Ambient Smart Box Sensors have no cables, but we have not eliminated the cables with probes. If you want a probe sensor this is not a problem, we are reducing the length of the cable and allowing you to place sensors more conveniently with shorter probe cables.

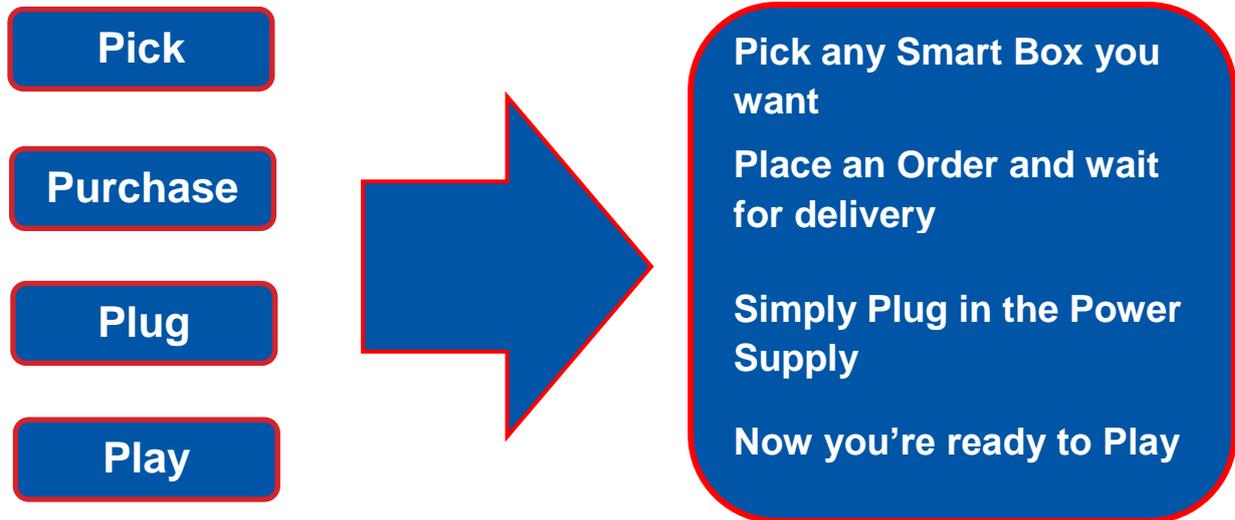


We have a range of Smart Box Sensors with various length probes; if the length you require is not visible; just ask as other customers will also be doing so. We aim to have a huge range of Smart Boxes to meet your requirements. We can't give you a Smart Box with a variable cable length, as probe cable length effects calibration and sensor accuracy. This would defeat the Plug and Play, Childs Play aspect of the system our engineers created for quick and easy monitoring.

If the probe length is not on our list, don't hesitate to ask us for it.

## 6 Getting Started

Our engineers designed the Smart Boxes with simplicity in mind, focusing on what you want to measure and control. To get started, simply follow our four 'P' process.



### 6.1 PICK

The first step is deciding what you want to monitor. **Pick** the appropriate Smart Boxes Sensor from list in our catalogue or visit website: [www.britishresearch.com](http://www.britishresearch.com).

A list will be available for you to choose your required Sensor Boxes along with the quantity. For every Smart Box network you need logger and a Coordinator, the Tablet requires an external Co-ordinator and the Smart Logger comes with a built in Co-ordinator. When you order a logger from us the software comes pre-installed and ready to be used.

### 6.2 PURCHASE

Once you have selected your Smart Boxes you are ready to **Purchase**. Go to [www.britishresearch.com](http://www.britishresearch.com) to place your order, email or give us a call. From the website you can easily select the type of Smart Box Sensors and quantity you require. See <http://shop.britishresearch.com/> The Coordinator will automatically be added to each network if required and you can easily choose your logger type. Once an order is placed we will send them through the post.

### 6.3 PLUG

Carefully unpack and simply **Plug** in the power supply and your ready to **Play**.

## 6.4 PLAY

All the loggers are plug & play and are ready to use. Please see below chart for plug and play features,

	Android Tablet	Smart Logger
Wi-Fi (requires access key)	✓	✓
Mobile SIM Card Port (Plug & Play)	✓ (Model Dependant)	✓
Ethernet Port (Plug & Play)	✗	✓
Touch Screen & Instantaneous values viewable locally	✓	✗
Cloud & Historical data accessible on the website, Includes saving and export functionality.	✓	✓

## 7 The Smart Box Product Range

The Smart Boxes Sensor & Control can include any from the list provided in this catalogue (See Sensor List on page 21) along with customised sensors and control smart boxes that aren't included, on request. If you are looking for an easy wireless monitoring and control solution, with a huge choice of Sensors and the versatility to mix and match, building unique monitoring and control solutions, plug and play access through the internet via your web browser, from anywhere in the world at any time, then our Smart Box would be ideal.

**Huge range of Smart Box Sensors**

**Single and Multi Sensor Smart Boxes Available**

**For further information regarding prices etc, please contact us:**

- Email [info@britishresearch.com](mailto:info@britishresearch.com)
- Tel: **0044 (0) 1446 734012**

### 7.1 Huge product range

We have over 150 Smart Box Wireless Sensors and are adding new ones on a weekly basis. There are thousands of sensors and transducers out there. Our aim is to have a Smart Box for every Sensor, Transducer and Control requirement, making it easy to match up your requirement with a Smart Box. If the sensor type or specific range you want to monitor or control is not on our list, please ask for it. Our engineers are adding sensors continuously, but prefer to add and prioritise the sensors and control requirements clients have an immediate requirement for.

### 7.2 Multi Smart Box

Each Smart Box has 5 inputs available, so if you want a Smart Box with Multiple Sensors of your choice please let us know your requirement.

### 7.3 Probe Lengths

Can't find the right probe length Smart Box on our list, No problem just ask.

#### Example of a multi temperature Smart Box with various probe lengths

Temperature Sensor (Probe) Smart Box -30°C to 80°C x 5 (Probe) (2x2m, 2x5m and 1x10m)

Temperature Sensor (Probe) Smart Box -30°C to 80°C x 5 (Probe) (5x3m)

Temperature Sensor (Probe) Smart Box -30°C to 80°C x 5 (Probe) (5x10m)

### 7.4 Antenna (Aerial) options

\*Please note all Smart Boxes come as standard with an internal antenna (aerial) unless otherwise stated.. If you require one of our other aerials please replace the 'i' with its significant letter.

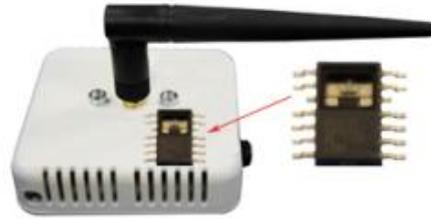
L = Large Antenna    S = Small Stub Antenna    R = Small Stub Right Angle

Optional	Code
Internal Antenna (Standard option)	i
Large Antenna	L
Right Angle Antenna	R
Small Antenna	S

## 8 Smart Box Sensors List



CO2 Sensor Smart Box



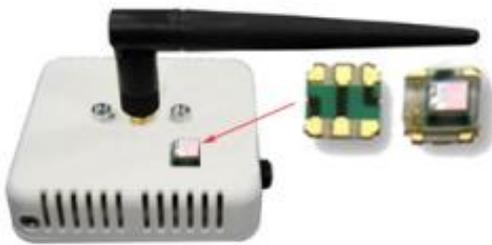
Temperature Sensor Smart Box



Motion Sensor Smart Box



Leaf Sensor Smart Box



Light Sensor Smart Box



Load Cell Sensor Smart Box

\*For illustration purposes, actual boxes may differ from these.

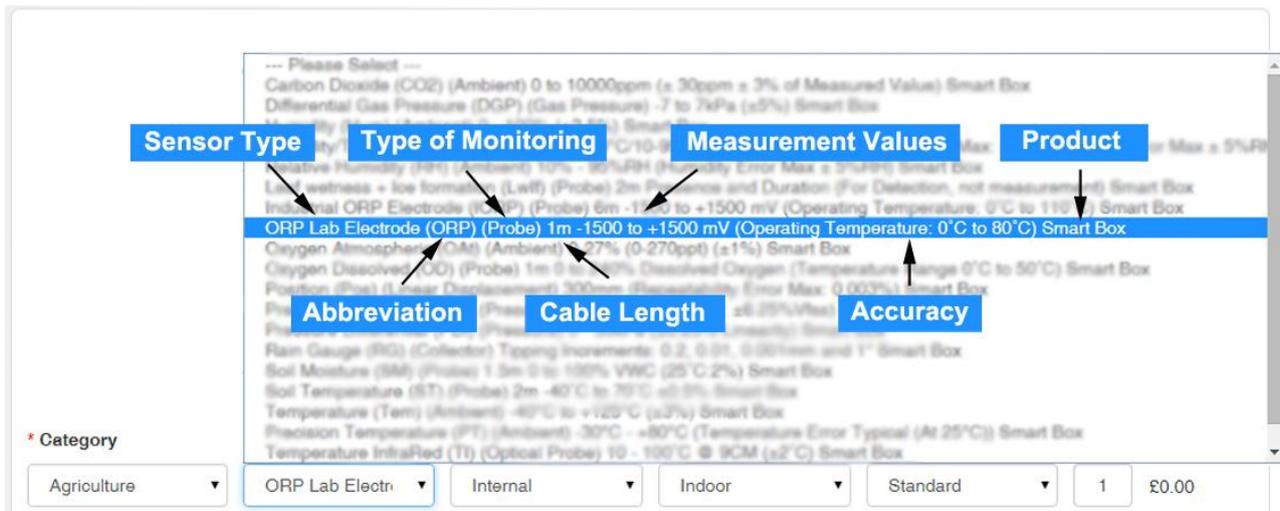
## 9 Sensor List

For more detailed Specs see our website. <http://shop.britishresearch.com/>

Our Engineers have created a format to which each sensor name has been created in a logical manner to make identifying the correct Smart Box an easy process.

Please see our website or email us for a more detailed Smart Box Sensor specification.

We begin with the Sensor Type, followed by various attributes including the Type of Monitoring, Measurement Values and the Accuracy of the sensor. We've ensured all necessary factors are included for each sensor; this will allow individual users to identify and pick the exact sensors they require for their monitoring needs without any complications. For complete Smart Box, Sensor and control specification please visit <http://www.britishresearch.com/>



A

Sensor Name	Product Code
<b>Active Power ( W )</b> (External CT) 1m 0-250V / 0-30A (60Hz) AC (Measurement Error Max 0.5%) Smart Box	WExSB1140i
<b>Active Power ( W )</b> (External CT) 1m 0-250V/0-5A (50Hz) AC (Measurement Error Max 0.5%) Smart Box	WExSB1140i
<b>Active Power ( W )</b> (External CT) 1m 0-250V/0-5A (60Hz) AC (Measurement Error Max 0.5%) Smart Box	WExSB1140i
<b>Active Power ( W )</b> (External CT) 1m 0-110V/0-5A (60Hz) AC (Measurement Error Max 0.5%) Smart Box	WExSB1140i
<b>Active Power ( W )</b> (External CT) 1m 0-110V/0-15A (60Hz) AC (Measurement Error Max 0.5%) Smart Box	WExSB1144i
<b>Air Pollutants ( W )</b> (Ambient) NH3, H2S, CH3-CH2-OH, C6H5CH3 (For Detection, not measurement) Smart Box	WAmSB1029i
<b>Alcohol Sensor (AS)</b> (Breath Analyzer) 0.05mg/L - 10mg/L (For Detection, not measurement) Smart Box	ASBrSB1033i
<b>Anemometer Wind Speed (AWS)</b> (Ambient) 0m/s - 32.4m/s (1 m/s) Smart Box	AWAmSB1229i
<b>Appliance Control Switch</b> (Switch) Used to control parameters of devices Smart Box	SwSB1071i
<b>X Axis Accelerometer (AA)</b> (Motion) ±40g (±1%) Smart Box	AAMoSB1210i
<b>X Axis Accelerometer (AA)</b> (Motion) ±50g (±1%) Smart Box	AAMoSB1211i
<b>X Axis Accelerometer (AA)</b> (Motion) ±200g (±1%) Smart Box	AAMoSB1217i

<b>X Axis Accelerometer (AA)</b> (Motion) $\pm 250g$ ( $\pm 1\%$ ) Smart Box	AAMoSB1218i
<b>XY Axis Accelerometer (AA)</b> (Motion) $\pm 40g$ ( $\pm 1\%$ ) Smart Box	AAMoSB1209i
<b>XY Axis Accelerometer (AA)</b> (Motion) $\pm 100g$ X axis, $\pm 30g$ Y axis ( $\pm 1\%$ ) Smart Box	AAMoSB1212i
<b>XY Axis Accelerometer (AA)</b> (Motion) $\pm 100g$ X axis, $\pm 50g$ Y axis ( $\pm 1\%$ ) Smart Box	AAMoSB1213i
<b>XY Axis Accelerometer (AA)</b> (Motion) $\pm 20g$ X axis, $\pm 50g$ Y axis ( $\pm 1\%$ ) Smart Box	AAMoSB1214i
<b>XY Axis Accelerometer (AA)</b> (Motion) $\pm 20g$ X axis, $\pm 20g$ Y axis ( $\pm 1\%$ ) Smart Box	AAMoSB1215i
<b>Z Axis Accelerometer (AA)</b> (Motion) $\pm 2.5g$ ( $\pm 1\%$ ) Smart Box	AAMoSB1202i
<b>Z Axis Accelerometer (AA)</b> (Motion) $\pm 5g$ ( $\pm 1\%$ ) Smart Box	AAMoSB1203i
<b>Z Axis Accelerometer (AA)</b> (Motion) $\pm 8g$ ( $\pm 3\%$ ) Smart Box	AAMoSB1204i
<b>Z Axis Accelerometer (AA)</b> (Motion) $\pm 7g$ ( $\pm 1\%$ ) Smart Box	AAMoSB1207i
<b>Z Axis Accelerometer (AA)</b> (Motion) $\pm 20g$ ( $\pm 1\%$ ) Smart Box	AAMoSB1208i
<b>Z Axis Accelerometer (AA)</b> (Motion) $\pm 150g$ ( $\pm 2\%$ ) Smart Box	AAMoSB1216i
<b>Z Axis Accelerometer (AA)</b> (Motion) $\pm 250g$ ( $\pm 2\%$ ) Smart Box	AAMoSB1219i

## B

Sensor Name	Product Code
<b>Barometric Pressure (PB)</b> (Ambient) 500 - 1100hPa ( $\pm 0.05\%$ ) Smart Box	PBAmSB1230i
<b>Barometric Pressure (PB)</b> (Ambient) 60 - 165kPa ( $\pm 2\%$ ) Smart Box	PBAmSB1231i
<b>Butane (C<sub>4</sub>H<sub>10</sub>) (Ambient)</b> 0-2% Volume ( $\pm 10\%$ ) Smart Box	C4AmSB1174i

# C

Sensor Name	Product Code
<b>Carbon Dioxide (CO<sub>2</sub>)</b> (Ambient) 0 to 10000ppm ( $\pm 30\text{ppm} \pm 3\%$ of Measured Value) Smart Box	COAmSB1002i
<b>Carbon Dioxide (CO<sub>2</sub>)</b> (Ambient) 0-500ppm ( $\pm 10\%$ ) Smart Box	COAmSB1156i
<b>Carbon Dioxide (CO<sub>2</sub>)</b> (Ambient) 0-1000ppm ( $\pm 10\%$ ) Smart Box	COAmSB1157i
<b>Carbon Dioxide (CO<sub>2</sub>)</b> (Ambient) 0-2000ppm ( $\pm 10\%$ ) Smart Box	COAmSB1158i
<b>Carbon Dioxide (CO<sub>2</sub>)</b> (Ambient) (Sprint IR) 0-2000ppm ( $\pm 50$ ppm) Smart Box	COAmSB1195i
<b>Carbon Dioxide (CO<sub>2</sub>IR)</b> (Ambient) 0-2000ppm ( $\pm 50$ ppm) Smart Box	COAmSB1191i
<b>Carbon Dioxide (CO<sub>2</sub>)</b> (Ambient) 0-5000ppm ( $\pm 10\%$ ) Smart Box	COAmSB1159i
<b>Carbon Dioxide (CO<sub>2</sub>IR)</b> (Ambient) 0-5000ppm ( $\pm 50$ ppm) Smart Box	COAmSB1192i
<b>Carbon Dioxide (CO<sub>2</sub>)</b> (Ambient) (Sprint IR) 0-5000ppm ( $\pm 50$ ppm) Smart Box	COAmSB1196i
<b>Carbon Dioxide (CO<sub>2</sub>)</b> (Ambient) (MISIR) 0-5000ppm ( $\pm 50$ ppm) Smart Box	COAmSB1198i
<b>Carbon Dioxide (CO<sub>2</sub>)</b> (Ambient) (Fast Response) 0-10,000ppm (1% Vol) ( $\pm 30\text{ppm}$ ) Smart Box	COAmSB1194i
<b>Carbon Dioxide (CO<sub>2</sub>)</b> (Ambient) 0-10,000ppm ( $\pm 10\%$ ) Smart Box	COAmSB1160i
<b>Carbon Dioxide (CO<sub>2</sub>IR)</b> (Ambient) 0-10,000ppm ( $\pm 50$ ppm) Smart Box	COAmSB1193i
<b>Carbon Dioxide (CO<sub>2</sub>)</b> (Ambient) (Sprint IR) 0-10,000ppm ( $\pm 50$ ppm) Smart Box	COAmSB1197i
<b>Carbon Dioxide (CO<sub>2</sub>)</b> (Ambient) 0 – 100% Vol ( 1,000,000 ppm) ( $\pm 70\text{ppm}$ ( $\pm 5\%$ )) Smart Box	COAmSB1244i
<b>Carbon Dioxide (CO<sub>2</sub>)</b> (Ambient) 0-2% Volume ( $\pm 10\%$ ) Smart Box	COAmSB1161i
<b>Carbon Dioxide (CO<sub>2</sub>)</b> (Ambient) 0-5% Volume ( $\pm 10\%$ ) Smart Box	COAmSB1162i
<b>Carbon Dioxide (CO<sub>2</sub>IR)</b> (Ambient) 0 - 5% Volume $\pm 70$ ppm ( $\pm 5\%$ of reading) Smart Box	COAmSB1188i
<b>Carbon Dioxide (CO<sub>2</sub>)</b> (Ambient) 0-10% Volume ( $\pm 10\%$ ) Smart Box	COAmSB1163i
<b>Carbon Dioxide (CO<sub>2</sub>)</b> (Ambient) 10% Vol (100,000ppm) ( $\pm 30\text{ppm}$ ) Smart Box	COAmSB1190i
<b>Carbon Dioxide (CO<sub>2</sub>)</b> (Ambient) 0-20% Volume ( $\pm 2\%$ ) Smart Box	COAmSB1164i
<b>Carbon Dioxide (CO<sub>2</sub>IR)</b> (Ambient) 0 - 20% Volume $\pm 70$ ppm ( $\pm 5\%$ of reading) Smart Box	COAmSB1187i
<b>Carbon Dioxide (CO<sub>2</sub>)</b> (Ambient) 0-30% Volume ( $\pm 2\%$ ) Smart Box	COAmSB1165i
<b>Carbon Dioxide (CO<sub>2</sub>)</b> (Ambient) 0-60% Volume ( $\pm 2\%$ ) Smart Box	COAmSB1166i
<b>Carbon Dioxide (CO<sub>2</sub>IR)</b> (Ambient) 0 - 60% Volume $\pm 70$ ppm ( $\pm 5\%$ of reading) Smart Box	COAmSB1186i
<b>Carbon Dioxide (CO<sub>2</sub>)</b> (Ambient) 0-100% Volume ( $\pm 2\%$ ) Smart Box	COAmSB1167i
<b>Carbon Dioxide (CO<sub>2</sub>IR)</b> (Ambient) 0 - 100% Volume $\pm 70$ ppm ( $\pm 5\%$ of reading) Smart Box	COAmSB1185i
<b>Chlorine Concentration (Cl)</b> (Probe) 3m (0 to 2, 0 to 5, 0 to 10 ppm free chlorine) (pH Range 5.5 to 9) ( $\pm 2\%$ ) Smart Box	CIPrSB1239i
<b>Current ( I ) (External CT)</b> 10 Amp AC (Measurement Error Max 0.5%) Smart Box	IExSB1131i
<b>Current ( I ) (External CT)</b> 25 Amp AC (Measurement Error Max 0.5%) Smart Box	IExSB1132i
<b>Current ( I ) (External CT)</b> 50 Amp AC (Measurement Error Max 0.5%) Smart Box	IExSB1133i
<b>DC Current ( I )</b> (Direct Connect CT) 0 - 10mA (Measurement Error	IDiSB1137i

Max 0.5%) Smart Box	
<b>DC Current ( I )</b> (Direct Connect CT) 0 - 100mA (Measurement Error Max 0.5%) Smart Box	IDiSB1138i
<b>DC Current ( I )</b> (Direct Connect CT) 0 - 1A (Measurement Error Max 0.5%) Smart Box	IDiSB1139i
<b>Current ( I )</b> (CT Direct) 0 - 1000 mA $\pm 0.2\%$ Smart Box	ICTSB1011i
<b>Current ( I )</b> (CT Direct) 0 - 5A $\pm 0.2\%$ Smart Box	ICTSB1012i
<b>Current ( I )</b> (CT Direct) 0 - 10A $\pm 0.2\%$ Smart Box	ICTSB1013i

## D

Sensor Name	Product Code
<b>DC Current Transducer ( I )</b> (External CT) 1m 0 to 50A DC (1%) Smart Box	IExSB1145i
<b>DC Current Transducer ( I )</b> (External CT) 1m 0 to 100A DC (1%) Smart Box	IExSB1146i
<b>DC Current Transducer ( I )</b> (External CT) 1m 0 to 250A DC (1%) Smart Box	IExSB1147i
<b>DC Current Transducer ( I )</b> (External CT) 1m (BiDirectional) -50 to +50A DC (1%) Smart Box	IExSB1148i
<b>DC Current Transducer ( I )</b> (External CT) 1m (BiDirectional) -100 to +100A DC (1%) Smart Box	IExSB1149i
<b>DC Current Transducer ( I )</b> (External CT) 1m (BiDirectional) -250 to +250A DC (1%) Smart Box	IExSB1150i
<b>Digital Field Ready Temperature with Data logger (DFT)</b> (Probe) 1m -20° to 133°C ( $\pm 1^\circ\text{C}$ ) Smart Box	DFPrSB1038i
<b>IR Distance (IRD)</b> (Proximity) 4 - 30CM (Response Time Max: 50ms) Smart Box	IRPrSB1052i
<b>IR Distance (IRD)</b> (Proximity) 10 - 80CM (Response Time Max: 50ms) Smart Box	IRPrSB1054i
<b>IR Distance (IRD)</b> (Proximity) 20 - 150CM (Response Time Max: 50ms) Smart Box	IRPrSB1055i
<b>Sonar Distance (SD)</b> (Proximity) 6 - 254 Inches (For Detection, not measurement) Smart Box	SDPrSB1057i
<b>Door Sensor (DS)</b> (Probe) 0.5m Open / Close Smart Box	DSPrSB1061i

## E

Sensor Name	Product Code
<b>Ethane (C<sub>2</sub>H<sub>6</sub>)</b> (Ambient) 0-3% Volume ( $\pm 10\%$ ) Smart Box	C2AmSB1178i
<b>Ethanol (C<sub>2</sub>H<sub>6</sub>O)</b> (Ambient) 0-5% Volume ( $\pm 10\%$ ) Smart Box	C2AmSB1180i
<b>Ethylene (C<sub>2</sub>H<sub>4</sub>)</b> (Ambient) 0-3% Volume ( $\pm 10\%$ ) Smart Box	C2AmSB1177i
<b>Ethylene Oxide (C<sub>2</sub>H<sub>4</sub>O)</b> (Ambient) 0-3% Volume ( $\pm 10\%$ ) Smart Box	C2AmSB1179i

# F

Sensor Name	Product Code
<b>Flame Sensor (FS)</b> (Optical) 20cm - 100cm (For Detection, not measurement) Smart Box	FSoSB1036i
<b>Gas - Air (GAi)</b> (Flow) 0 ... 100 m/s (<3% current measuring value) Smart Box	GAFISB1005i
<b>Liquid (Liq)</b> (Flow) 0.1 ... 10 m/s (<3% current measuring value) Smart Box	LiFISB1006i
<b>Small Flow Meter (SFM)</b> (Flow) 35" 800ml/min to 7.6LPM ( $\pm 1$ mL) Smart Box	SFFISB1040i
<b>Medium Flow Meter (MFM)</b> (Flow) 35" 15.14LPM to 75.70LPM ( $\pm 5$ mL) Smart Box	MFFISB1041i
<b>Large Flow Meter (LFM)</b> (Flow) 35" 11.35 to 113.56LPM ( $\pm 15$ mL) Smart Box	LFFISB1042i
<b>Force (Fo)</b> (Load Cell Force) 0 - 39.2N (For Detection, not measurement) Smart Box	FoLoSB1092i
<b>Resistive Force (RF)</b> (Load Cell Force) 0 - 1lb (Repeatability Error Max: $\pm 2.5\%$ ) Smart Box	RFLoSB1059i
<b>Resistive Force (RF)</b> (Load Cell Force) 0 - 25lb (0N - 111.1N) ( $\pm 2.5\%$ ) Smart Box	RFLoSB1085i
<b>Resistive Force (RF)</b> (Load Cell Force) 0 - 100lb (0N - 444.8N) ( $\pm 2.5\%$ ) Smart Box	RFLoSB1086i
<b>Force Sensing Resistor (FSR)</b> (Load Cell Force) 1 - 20N (10.3kPa - 1 Mpa)(Sensing area: 0.2") ( $\pm 2\%$ ) Smart Box	FSLoSB1087i
<b>Force Sensing Resistor (FSR)</b> (Load Cell Force) 1 - 20N (10.3kPa - 1 Mpa)(Sensing area: 0.5") ( $\pm 2\%$ ) Smart Box	FSLoSB1088i
<b>Force Sensing Resistor (FSR)</b> (Load Cell Force) 1 - 20N (10.3kPa - 1 Mpa)(Sensing area: 1.5") ( $\pm 2\%$ ) Smart Box	FSLoSB1089i
<b>Thin Force (TF)</b> (Load Cell Force) 1 - 20 N (Max. Error 10%) Smart Box	TFLoSB1091i

# G

Sensor Name	Product Code
<b>Absolute Gas Pressure (AGP)</b> (Gas Pressure) 15 - 115 kPa ( $\pm 1.5\%$ ) Smart Box	AGGaSB1100i
<b>Absolute Gas Pressure (AGP)</b> (Gas Pressure) 20 - 400kPa ( $\pm 1.5\%$ ) Smart Box	AGGaSB1099i
<b>Differential Gas Pressure (DGP)</b> (Gas Pressure) -25 to 25 kPa ( $\pm 5\%$ ) Smart Box	DGGaSB1094i
<b>Differential Gas Pressure (DGP)</b> (Gas Pressure) -2 to 2 kPa ( $\pm 6.5\%$ ) Smart Box	DGGaSB1095i
<b>Differential Gas Pressure (DGP)</b> (Gas Pressure) -7 to 7kPa ( $\pm 5\%$ ) Smart Box	DGGaSB1096i
<b>Differential Gas Pressure (DGP)</b> (Gas Pressure) 0 - 50kPa ( $\pm 2.5\%$ ) Smart Box	DGGaSB1097i
<b>Differential Gas Pressure (DGP)</b> (Gas Pressure) 0 - 100kPa ( $\pm 2.5\%$ ) Smart Box	DGGaSB1098i
<b>Gauge Pressure (GP)</b> (Pressure) 0 - 100kPa ( $\pm 2.5\%$ ) Smart Box	GPPrSB1220i

<b>Glycol (C2H6O2)</b> (Probe) 1m Liquid Density Range 0.6 to 1.3 grams/cc ( $\pm 0.0005$ g/cc) Smart Box	C2PrSB1238i
<b>Greyscale (Gr)</b> (Optical) Detects lines/marks on surfaces (For Detection, not measurement) Smart Box	GrOpSB1037i

## H

Sensor Name	Product Code
<b>Hexane (C6H14)</b> (Ambient) 0-1% Volume ( $\pm 10\%$ ) Smart Box	C6AmSB1176i
Hot & Cold Water Flow (HCW) (Flow) 3/4" pipe (2.0 to 40.0 L/min) ( $\pm 10\%$ ) Smart Box	HCFISB1200i
<b>Humidity (Hum)</b> (Ambient) 0 - 100% ( $\pm 3.5\%$ ) Smart Box	HuAmSB1050i
<b>Humidity/Temperature (HT)</b> (Ambient) 10-95%RH/-30°C - +80°C (Ambient Temperature Error Max: $\pm 2^\circ\text{C}$ /Humidity Error Max $\pm 5\%$ RH) Smart Box	HTAmSB1126i
<b>Relative Humidity (RH)</b> (Ambient) 10% - 95%RH (Humidity Error Max $\pm 5\%$ RH) Smart Box	RHAmSB1127i
<b>Hydrofluorocarbons (HFC)</b> (Ambient) 0.2% Vol (2000ppm) (<2% of range) Smart Box	HFAmSB1247i
<b>HFC (HFC)</b> (Ambient) 0-2000ppm (<2%) Smart Box	HFAmSB1182i

## I

Sensor Name	Product Code
<b>Indoor Air Quality (IAQ)</b> (Ambient) 450 - 2000ppm Smart Box	IAAmSB1199i

## L

Sensor Name	Product Code
<b>Leaf wetness + Ice formation (Lwlf)</b> (Probe) 2m Presence and Duration (For Detection, not measurement) Smart Box	LwPrSB1031i
<b>Light (LUX)</b> (Optical) 1 - 1000 lux (Operating Temperature: -40°C to 85°C) Smart Box	LUOpSB1102i
<b>Light (LUX)</b> (Optical) 3 - 70,000 lux (Operating Temperature: -40°C to 85°C) Smart Box	LUOpSB1103i
<b>Liquid Flow Switch (LFS)</b> (Flow) 254mm 1" pipe (Vertical Mount) 6 to 30 L/min Smart Box	LFFISB1201i
<b>Compression Load Cell (CLC)</b> (Load Cell Force) 0 - 10 lbs (Cell Repeatability Error Max: $\pm 45.4$ g) Smart Box	CLLoSB1104i
<b>Compression Load Cell (CLC)</b> (Load Cell Force) 0 - 25 lbs (Cell Repeatability Error Max: $\pm 113.4$ g) Smart Box	CLLoSB1105i
<b>Compression Load Cell (CLC)</b> (Load Cell Force) 0 - 50 lbs (Cell Repeatability Error Max: $\pm 226.8$ g) Smart Box	CLLoSB1106i
<b>Compression Load Cell (CLC)</b> (Load Cell Force) 0 - 100 lbs (Cell Repeatability Error Max: $\pm 453.4$ g) Smart Box	CLLoSB1107i

# M

Sensor Name	Product Code
<b>Magnetic (Mg)</b> (Probe) 0G - 1KG MAG.Flux ( $\pm 0.5\%$ ) Smart Box	MgPrSB1056i
<b>Methane/Carbon Dioxide (CH<sub>4</sub>/CO<sub>2</sub>)</b> (Ambient) (Dual Gas) 100% CH <sub>4</sub> /50% CO <sub>2</sub> ( $\pm 3\%$ full scale within 50% of full range, $\pm 5\%$ full scale when above 50% of full range) Smart Box	CHAmSB1189i
<b>Methane Sensor (CH<sub>4</sub>)</b> (Ambient) 200 - 10000ppm (For Detection, not measurement) Smart Box	CHAmSB1034i
<b>Methane (CH<sub>4</sub>)</b> (Ambient) 0 – 100% Vol ( 1,000,000 ppm) ( $\pm 2\%$ of range) Smart Box	CHAmSB1245i
<b>Methane (CH<sub>4</sub>)</b> (Ambient) 0-5% Volume ( $\pm 2\%$ ) Smart Box	CHAmSB1168i
<b>Methane (CH<sub>4</sub>)</b> (Ambient) 0-100% Volume ( $\pm 2\%$ ) Smart Box	CHAmSB1169i
<b>Methyl Bromide (CH<sub>3</sub>Br)</b> (Ambient) 0-25,000ppm ( $\pm 10\%$ ) Smart Box	CHAmSB1181i
<b>Motion (Mot)</b> (Motion) (Horizontal Detection Range 38°) (vertical Detection Range 22°) (Motion Detection Distance 5m) Smart Box	MoMoSB1109i

# N

Sensor Name	Product Code
<b>Network Extender (NE)</b> Smart Box	NESB1232i
<b>Nitrogen Dioxide (NO<sub>2</sub>)</b> (Ambient) 0 to 10ppm, res0.01ppm Ambient Operating Temperature -30 to 85°C Smart Box	NOAmSB1016i
<b>Nitrous Oxide (N<sub>2</sub>O)</b> (Ambient) 0-1000ppm (1%) Smart Box	N2AmSB1184i
<b>Nitrous Oxide (N<sub>2</sub>O)</b> (Ambient) 0.2% Vol (2000ppm) ( $\pm 1\%$ of Range) Smart Box	N2AmSB1246i

# O

Sensor Name	Product Code
<b>Industrial ORP Electrode (IORP)</b> (Probe) 6m -1500 to +1500 mV (Operating Temperature: 0°C to 110°C) Smart Box	IOPrSB1113i
<b>ORP Lab Electrode (ORP)</b> (Probe) 1m -1500 to +1500 mV (Operating Temperature: 0°C to 80°C) Smart Box	ORPrSB1112i
<b>Oxygen Atmospheric (OAt)</b> (Ambient) 0-27% (0-270ppt) ( $\pm 1\%$ ) Smart Box	OAAmSB1017i
<b>Oxygen Dissolved (OD)</b> (Probe) 1m 0 to 240% Dissolved Oxygen (Temperature Range 0°C to 50°C) Smart Box	ODPrSB1039i
<b>Dissolved Oxygen (DO)</b> (Probe) 5m 40ppb to 40ppm (<1% per week) Smart Box	DOAmSB1243i
<b>Ozone (O<sub>3</sub>)</b> (Ambient) 10 - 1000ppm (For Detection, not measurement) Smart Box	O3AmSB1028i

# P

Sensor Name	Product Code
<b>Pentane (C5H12)</b> (Ambient) 0-2% Volume ( $\pm 10\%$ ) Smart Box	C5AmSB1175i
<b>Industrial pH Electrode (pH)</b> (Probe) 5m 0 - 14 (Operating Temperature: 0°C to 110°C) Smart Box	pHPrSB1111i
<b>pH Electrode (pH)</b> (Probe) 1m 0 - 14 (Operating Temperature: 0°C to 80°C) Smart Box	pHPrSB1110i
<b>Position (Pos)</b> (Linear Displacement) 75mm (Repeatability Error Max: 0.02%) Smart Box	PoLiSB1118i
<b>Position (Pos)</b> (Linear Displacement) 100mm (Repeatability Error Max: 0.01%) Smart Box	PoLiSB1119i
<b>Position (Pos)</b> (Linear Displacement) 200mm (Repeatability Error Max: 0.005%) Smart Box	PoLiSB1120i
<b>Position (Pos)</b> (Linear Displacement) 300mm (Repeatability Error Max: 0.003%) Smart Box	PoLiSB1121i
<b>Presence (PIR)</b> (Ambient) Sensing Angle:100° Cone (Range: 5 - 7m) Smart Box	PIAmSB1025i
<b>Absolute Pressure (AP)</b> (Pressure) 15 - 105kPa ( $\pm 1.72\%$ ) Smart Box	APPrSB1222i
<b>Absolute Pressure (AP)</b> (Pressure) 20 - 200kPa ( $\pm 1.5\%$ ) Smart Box	APPrSB1223i
<b>Pressure Differential (PDi)</b> (Pressure) $\pm 2$ KPa (10 to 60°C: $\pm 6.25\%$ Vfss) Smart Box	PDPPrSB1020i
<b>Pressure Differential (PDi)</b> (Pressure) 0 - 50kPa ( $\pm 0.25\%$ Linearity) Smart Box	PDPPrSB1021i
<b>Differential Pressure (DP)</b> (Pressure) 0 - 80kPa ( $\pm 3\%$ ) Smart Box	DPPPrSB1221i
<b>Differential Pressure (DP)</b> (Pressure) 0 - 500kPa ( $\pm 2.5\%$ ) Smart Box	DPPPrSB1226i
<b>Differential Pressure (DP)</b> (Pressure) 0 - 1000kPa ( $\pm 2.5\%$ ) Smart Box	DPPPrSB1228i
<b>Differential, Gauge &amp; Absolute Pressure (DGAP)</b> (Pressure) 0 - 250kPa ( $\pm 1.5\%$ ) Smart Box	DGPrSB1224i
<b>Differential, Gauge &amp; Absolute Pressure (DGAP)</b> (Pressure) 0 - 100kPa ( $\pm 2.5\%$ ) Smart Box	DGPrSB1225i
<b>Differential, Gauge &amp; Absolute Pressure (DGAP)</b> (Pressure) 0 - 700kPa ( $\pm 2.5\%$ ) Smart Box	DGPrSB1227i
<b>Propane (C3H8)</b> (Ambient) 0-2% Volume ( $\pm 10\%$ ) Smart Box	C3AmSB1171i
<b>Propane (C3H8)</b> (Ambient) 0-100% Volume ( $\pm 10\%$ ) Smart Box	C3AmSB1172i
<b>Propylene (C3H6)</b> (Ambient) 0-2% Volume ( $\pm 10\%$ ) Smart Box	C3AmSB1173i

# R

Sensor Name	Product Code
<b>Rain Gauge (RG)</b> (Collector) Tipping Increments: 0.2, 0.01, 0.001mm and 1" Smart Box	RGCoSB1032i
<b>IR Reflective (IRR)</b> (Optical) 1 - 4mm (Operating Temperature: -40°C to 80°C) Smart Box	IROpSB1058i
<b>IR Reflective (IRR)</b> (Optical) 2.5mm - 5mm (Operating Temperature: -40°C to 85°C) Smart Box	IROpSB1123i
<b>IR Reflective (IRR)</b> (Optical) 0mm - 100mm (Operating Temperature: -10°C to 60°C) Smart Box	IROpSB1124i
<b>Rotary (Rot)</b> (Motion) mechanical Travel 360° (Effective Electrical Travel 345°) Smart Box	RoMoSB1122i
<b>Rotation (Rot)</b> (Motion) 300° (Operating Temperature: -10°C to 80°C) Smart Box	RoMoSB1115i
<b>Multi Turn Rotation (MTR)</b> (Motion) 360° (Operating Temperature: -40°C to 105°C) Smart Box	MTMoSB1117i

# S

Sensor Name	Product Code
<b>Seismic Knowles (SKn)</b> (Vibration) Sensitivity -45V/g ±2% Smart Box	SKViSB1008i
<b>Seismic Panasonic (SPa)</b> (Vibration) 147m/s <sup>2</sup> (15 g) MAX. ±1% Smart Box	SPViSB1007i
<b>Slider (Sli)</b> (Motion) 0 to 1000 over the 60mm travel of the slider (Operating Temperature: -25°C to 70°C) Smart Box	SIMoSB1116i
<b>Smoke Detector (SD)</b> (Ambient) 200ppm-5000ppm LPG and C3H8, 300ppm-5000ppm C4H10, 5000ppm-20000ppm CH4, 300ppm-5000ppm H2, 100ppm-2000ppm Alcohol Smart Box	SDAmSB1065i
<b>Soil Moisture (SM)</b> (Probe) 1.5m 0 to 100% VWC (25°C:2%) Smart Box	SMPrSB1046i
<b>Soil Temperature (ST)</b> (Probe) 2m -40°C to 70°C ±0.5% Smart Box	STPrSB1030i
<b>Sound (dB)</b> (Sound Measurement) 50 - 100 dB (Sound Error (at 1000 Hz) ± 3dB) Smart Box	dBSoSB1101i
<b>Sulphur Hexafluoride (SF6)</b> (Ambient) 0-1000ppm (<2%) Smart Box	SFAmSB1183i
<b>Sulphur Hexafluoride (SF6)</b> (Ambient) 0.1% Vol (1000ppm) (<2% of range) Smart Box	SFAmSB1248i

# T

Sensor Name	Product Code
<b>Temperature (Tem)</b> (Ambient) -40°C to +125°C (±3%) Smart Box	TeAmSB1049i
<b>Precision Temperature (PT)</b> (Ambient) -30°C - +80°C (Temperature Error Typical (At 25°C)) Smart Box	PTAmSB1125i
<b>Temperature InfraRed (TI)</b> (Optical Probe) 10-100°C @ 9CM (±2°C) Smart Box	TIOpSB1035i
<b>Thermostat (Temperature Switch)</b> Used to control parameters of devices Smart Box	TeSB1074i
<b>Touch (Tou)</b> (Touch) Detection Distance 12.7mm (Operating Temperature: -40°C to 85°C) Smart Box	ToToSB1128i

# U

Sensor Name	Product Code
<b>Ultra-Violet (UV)</b> (Ambient) 200 - 370nm (±1 UV Index) Smart Box	UVAmSB1234i

# V

Sensor Name	Product Code
<b>Vibration (Vib)</b> (Vibration) acceleration impulse and vibration (Operating Temperature: -20°C to 70°C) Smart Box	ViViSB1108i
<b>Voltage ( V )</b> (Direct Connect) ±1 V (±0.5%) Smart Box	VDiSB1022i
<b>Voltage ( V )</b> (Direct Connect) ±20 V (±1.5%) Smart Box	VDiSB1023i
<b>Voltage ( V )</b> (Direct Connect) ±5 V (±1%) Smart Box	VDiSB1024i
<b>DC Voltage ( V )</b> (External Voltage Measurement) 0 - 200V (Measurement Error Max 0.5%) Smart Box	VExSB1136i
<b>Precision Voltage ( V )</b> (External Voltage Measurement) ±30V DC (Measurement Error Max 2%) Smart Box	VExSB1130i
<b>AC MilliVolt ( V )</b> (Internal Voltage Measurement) 0 to 5V ±5% Smart Box	VInSB1009i
<b>DC MilliVolt ( V )</b> (Internal Voltage Measurement) 0 to 5V ±3% Smart Box	VInSB1010i

# W

Sensor Name	Product Code
<b>Water Temperature (WT)</b> (Probe) 1.5m -40°C - 85°C ±0.3K Smart Box	WTPrSB1047i
<b>Water Flood (WF)</b> (Probe) 1m For detection, not measurement (Operating Range -10 to 40°C) Smart Box	WFPPrSB1076i
<b>Window Sensor (WS)</b> (Switch) 0.5m Open / Close Smart Box	WSSwSB1062i

## 10 Application & Kits

### 10.1 Application

We have broken down Monitoring & Control into application with prebuilt kits. Each kit comes with a preconfigured logger/Coordinator, necessary antennas, power supplies and user manual. Depending on the application you wish to wirelessly monitor; various sensor boxes will be included.

### 10.2 Kits

Kits have been created to meet your specific monitoring & control application. An ideal example would be the Green House Gas Monitoring Kit (Smart Box System). This System has been designed specifically for the monitoring of Green House Gases. Ideal for scientific, inspection and enforcement teams used for both fixed and portable monitoring. Each sensor is housed in the own independent Smart Box so interference between sensors is not a problem. In addition failure of one Smart Box Sensor will not make the whole system useless and replacing is as easy as ordering/replacing a Smart Box Sensor. You could expand these kits with additional Smart Box Sensors to expand you monitoring area.

If you cannot find the right kit for your application then the best option is to custom build using our Custom online Shop.

### 10.3 Custom Applications and Kits

To build a unique customised monitoring and control solution to meet your specific needs, please visit our custom build section of our website at: <http://shop.britishresearch.com/smart-box-custom-kit> Smart Box Custom Applications & Kits give you independence when building your own monitoring and control system. This Smart Box Custom Applications & Kits are ideal for both technical and non-technical users that want sophisticated monitoring, control and data collection without the hassle of equipment set up and configuration.

The Custom Applications & Kits comes with a pre-installed and configured logger and is ready to work out of the box. All you are required to do is pick which Smart Box Sensors/Controls you want in your customised kit, purchase , receive in the post, place and power up the devices. You will receive immediate and historical results with access to our online server providing your data anywhere at any time.

We have over 150+ Smart Box, If you cannot find the right Sensor and Control Smart Box you want, please contact us and our engineers will be happy to help. Our engineers are adding sensors continuously, but prefer to add and prioritise the sensors clients have an immediate requirement for.

### 10.4 Upgrading and Add-ons

At any time you can add any Smart Box Sensor or Control Box to your system, simply contact us and let us know your additional requirements to expand your monitoring & control. We understand that companies and individuals will have different monitoring and control requirements and a kit may not meet all your requirements.

A Good upgrading example kit would be the Indoor Agriculture Monitoring Kit (Greenhouses & Nurseries), Ideal to monitor your first 1 green house and then easily expanded to monitor additional green houses simply with the purchase of additional Smart Sensors Boxes. You are not limited to the Agriculture Smart Box Sensor range, you can expand and mix and match sensors to monitor anything you like, from water flow, to access control, anything you can use a sensor to monitor or a smart box to control.

These kits are a quick way to experience the reliability and simplicity of using and setting up our Monitoring and Control solution, without the need to purchase a huge expensive system. These kits can grow and expand as and when you do.

If you cannot find the right kit for your application then the best option is to custom build using our Custom online Shop.

## 11 Applications & Kit List

### 11.1 Air Pollution Monitoring Kit

The Air Pollution Monitoring Kit has been created specifically for the monitoring requirements of air pollution.

The Air Pollution Monitoring Kit is ideal for the basics of outdoor wireless monitoring of pollution, with the key parameters of CO (Carbon Monoxide), Ozone, NH<sub>3</sub> (Ammonia), H<sub>2</sub>S (Hydrogen Sulfide), CH<sub>3</sub> (Methyl/Methane), CH<sub>2</sub> (Methylene), OH (Hydroxide) and C<sub>6</sub>H<sub>5</sub>CH<sub>3</sub> (Toluene), we have also included Temperature & Humidity sensors as they are key factors in air pollutions. The Air Pollution Monitoring Kit is Plug and Play so no technical knowledge or engineering is required and the Kit includes a user manual with all required information. Upgrading or adding Smart Boxes is easy, simply purchase, place and switch on.



For more information, please see our Air Pollution Kit data sheet.

Smart Boxes	Product Reference
<b>Air Pollutants (AP)</b> (Ambient) NH <sub>3</sub> , H <sub>2</sub> S, CH <sub>3</sub> -CH <sub>2</sub> -OH, C <sub>6</sub> H <sub>5</sub> CH <sub>3</sub> (For Detection, not measurement) Smart Box	APAmSB1029i
<b>Humidity/Temperature (HT)</b> (Ambient) 10-95%RH/-30°C - +80°C (Ambient Temperature Error Max: ± 2°C/Humidity Error Max ± 5%RH) Smart Box	HTAmSB1126i
<b>Ozone (O3)</b> (Ambient) 10 - 1000ppm (For Detection, not measurement) Smart Box	O2AmSB1029i
Water resistant PSU x 4	SB PSUWR

## 11.2 Indoor Agriculture Monitoring Kit (Greenhouses & Nurseries)

The Indoor Agriculture Monitoring Kit for Greenhouses & Nurseries has been created specifically as a Kit for the monitoring of growing environments.

The Indoor Agriculture Monitoring Kit (Greenhouses & Nurseries) has been tailored for growers looking to wirelessly monitor environmental parameters, allowing the grower to create ideal conditions for plant growth and increase crop yields. With The Indoor Agriculture Monitoring Kit for Greenhouses & Nurseries you will be able to monitor the basic factors of any greenhouse/nursery such as temperature, humidity, light and soil moisture. The Indoor Agriculture Monitoring Kit (Greenhouses & Nurseries) is Plug and Play so no technical knowledge or engineering required and includes a user manual with all required information. Upgrading or adding Smart Boxes is easy, simply purchase, place and switch on.



Smart Boxes	Product Reference
<b>Humidity/Temperature (HT)</b> (Ambient) 10-95%RH/-30°C - +80°C (Ambient Temperature Error Max: $\pm 2^\circ\text{C}$ /Humidity Error Max $\pm 5\%$ RH) Smart Box	HTAmSB1126i
<b>Soil Moisture (SM)</b> (Probe) 1.5m 0 to 100% VWC (25°C:2%) Smart Box	SMPrSB1046i
<b>Light (LUX)</b> (Optical) 3 - 70,000 lux (Operating Temperature: -40°C to 85°C) Smart Box	LUOpSB1103i
Water resistant PSU x 4	SB PSUWR

## 11.3 Indoor Air Quality Monitoring Kit (Tiredness)

The Indoor Air Quality Monitoring Kit (Tiredness) is an ideal Starter Kit for those who are interested in monitoring air quality for both physical and mental performance related tasks in facilities such as exam rooms, schools, sports halls and any indoor facility requiring good air quality.

The Indoor Air Quality Monitoring Kit is ideal for monitoring air quality conditions within a room with a focus on CO<sub>2</sub> build up in enclosed and badly ventilated rooms. The build up of CO<sub>2</sub> from groups of people causes tiredness and combined with temperature effects performance. This system would be ideal for offices, schools, classrooms, exam rooms, sports and lecture halls.

The Indoor Air Quality Monitoring Kit will give you the essential tools for monitoring and enabling a better environment for a better performance of employees and students, especially for exams and testing environments. Both parents and schools want to create ideal conditions for students to do their best. The Indoor Air Quality Monitoring Kit is Plug and Play so no technical knowledge or



engineering is required and it includes a user manual with all required information. Upgrading or adding Smart Boxes is easy, simply purchase, place and switch on.

Smart Boxes	Product Reference
<b>Carbon Dioxide (CO2)</b> (Ambient) 0 to 10000ppm ( $\pm 30\text{ppm} \pm 3\%$ of Measured Value) Smart Box	COAmSB1002i
<b>Humidity/Temperature (HT)</b> (Ambient) 10-95%RH/-30°C - +80°C (Ambient Temperature Error Max: $\pm 2^\circ\text{C}$ /Humidity Error Max $\pm 5\%$ RH) Smart Box	HTAmSB1126i

### 11.4 The Museums, Art & Antique Storage Monitoring Kit

The Museums, Art & Antique Storage Monitoring Kit is an ideal Kit for wireless monitoring of critical temperature controlled rooms or buildings of antique or art storage. The Museums, Art & Antique Storage Monitoring Kit is quick and easy to install whilst allowing you to monitor conditions, enabling you to prevent degradation of art and antiques in galleries and storage, as well as continually recording data for future analysis. Proof, evidence and records of the monitored storage environment can easily be accessed and printed. With the Museums, Art & Antique Storage Monitoring Kit, you will receive a light (lux) and temperature and humidity Smart Box, along with pre-configured Android device and a user manual with complete specifications and all information you'll need to set up this easy system. The Museums, Art & Antique Storage Monitoring Kit is Plug and Play so no technical knowledge or engineering is required and upgrading or adding Smart Boxes is easy; simply purchase, place and switch on.



Smart Boxes	Product Reference
<b>Light (LUX)</b> (Optical) 3 - 70,000 lux (Operating Temperature: -40°C to 85°C) Smart Box	LUOpSB1103i
<b>Humidity/Temperature (HT)</b> (Ambient) 10-95%RH/-30°C - +80°C (Ambient Temperature Error Max: $\pm 2^\circ\text{C}$ /Humidity Error Max $\pm 5\%$ RH) Smart Box	HTAmSB1126i

## 11.5 Power & Environment, Air Con, Data Centre Monitoring Kit

Power, Environment, Air Con & Data Centre Monitoring Kit is ideal for wirelessly monitoring critical conditions for environmentally controlled rooms eg. offices or data centres. Voltage and current are fundamental factors when looking at measuring energy consumption of equipment, that's why the Power, Environment, Air Con & Data Centre Monitoring Kit provides you with your own current and voltage Smart Box along with a temperature and humidity Smart Box. These are the basic tools required to start lowering power consumption and saving you money. Power, Environment, Air Con & Data Centre Monitoring Kit is Plug and Play so no technical knowledge or engineering is required and included is a user manual with all required information. Upgrading or adding Smart Boxes is easy; simply purchase, place and switch on. Typical upgrades include, impact Smart Box to record potential damage to equipment during 3rd part external maintenance.



Smart Boxes	Product Reference
<b>Voltage ( V )</b> (Direct Connect) $\pm 20$ V ( $\pm 1.5\%$ ) Smart Box	VDiSB1023i
<b>Current ( I )</b> (External CT) 50 Amp AC (Measurement Error Max 0.5%) Smart Box	IExSB1133i
<b>Humidity/Temperature (HT)</b> (Ambient) 10-95%RH/-30°C - +80°C (Ambient Temperature Error Max: $\pm 2^\circ\text{C}$ /Humidity Error Max $\pm 5\%$ RH) Smart Box	HTAmSB1126i

## 11.6 Presence, Motion & Access Monitoring Kit

The Presence, Motion & Access Monitoring Kit is ideal for those wishing to monitor presence in buildings or restricted areas, giving the user instant data of absences and whereabouts of those included in the surroundings. The Presence, Motion and Access Kit is pre-configured and includes a Motion Smart Box for movement detection, CO2 Smart Box to detect people in rooms through their breathing and exhaling of CO2 and a Temperature Sensor (Probe) Smart Box will give an indication of a rise or temperatures caused by body warmth. The Kit is ideal for discreet detection or in conjunctions with a security camera. A user manual will also be included to ensure you have all the information you require for setting up this simple system. The Presence, Motion & Access Monitoring Kit is Plug and Play so no technical knowledge or engineering is required and upgrading or adding Smart Boxes is easy; simply purchase, place and switch on.



Smart Boxes	Product Reference
<b>Motion (Mot)</b> (Motion) (Horizontal Detection Range 38°) (vertical Detection Range 22°) (Motion Detection Distance 5m) Smart Box	MoMoSB1109i
<b>Carbon Dioxide (CO2)</b> (Ambient) 0 to 10000ppm ( $\pm 30\text{ppm} \pm 3\%$ of Measured Value) Smart Box	COAmSB1002i
<b>Humidity/Temperature (HT)</b> (Ambient) 10-95%RH/-30°C - +80°C (Ambient Temperature Error Max: $\pm 2^\circ\text{C}$ /Humidity Error Max $\pm 5\%$ RH) Smart Box	HTAmSB1126i

### 11.7 Store Room Monitoring Kit (Environment)

The Store Room Monitoring Kit (Environment) will provide you with the standard monitoring tools to efficiently monitor Store Rooms. The Store Room Monitoring Kit is ideal for those wishing to wirelessly monitor perishable foods and liquids, pharmaceutical products like drugs with the temperature, humidity and light levels sensors. The Store Room Monitoring Kit will allow you to discover ideal conditions to extend the life of products and perishables, whilst using the motion sensor will make you aware when critical equipment and items of value are accessed. The Store Room Monitoring Kit is Plug and Play so no technical knowledge or engineering is required and included a user manual with all required information. Upgrading or adding Smart Boxes is easy; simply purchase, place and switch on. Typical upgrades purchased are load cells for measuring weight of items, giving you an inventory count and impact sensors for expensive and critical equipment to detect damage.



Smart Boxes	Product Reference
<b>Humidity/Temperature (HT)</b> (Ambient) 10-95%RH/-30°C - +80°C (Ambient Temperature Error Max: $\pm 2^\circ\text{C}$ /Humidity Error Max $\pm 5\%$ RH) Smart Box	HTAmSB1126i
<b>Light (LUX)</b> (Optical) 3 - 70,000 lux (Operating Temperature: -40°C to 85°C) Smart Box	LUOpSB1103i
<b>Motion (Mot)</b> (Motion) (Horizontal Detection Range 38°) (vertical Detection Range 22°) (Motion Detection Distance 5m) Smart Box	MoMoSB1109i

## 11.8 Structural Buildings Monitoring Kit

The Structural Buildings Monitoring Kit is ideal for wirelessly monitoring any unwanted structural movement, vibrations and elevation associated with site activity or dilapidation of buildings, making the user aware of building conditions and providing informative information for engineers to take appropriate measures. Included is a Vibration Sensor for Local strain analysis, Position Sensor 300mm for Joint openings & existing crack opening, Sound Sensor 50 - 100 dB XY for noise levels and effects of traffic and an Axis Accelerometer  $\pm 100g$  X axis,  $\pm 50g$  Y axis for Global or local tilt. The Structural Buildings Monitoring Kit is Plug and Play so no technical knowledge or engineering is required and included is a user manual with all required information. Upgrading or adding Smart Boxes is easy; simply purchase, place and switch on. The selection of additional sensors is quite large and based on user preference, please see complete sensor list.



Smart Boxes	Product Reference
<b>Vibration (Vib)</b> (Vibration) acceleration impulse and vibration (Operating Temperature: $-20^{\circ}\text{C}$ to $70^{\circ}\text{C}$ ) Smart Box	ViViSB1108i
<b>Position (Pos)</b> (Linear Displacement) 300mm (Repeatability Error Max: 0.003%) Smart Box	PoLiSB1121i
<b>Sound (dB)</b> (Sound Measurement) 50 - 100 dB (Sound Error (at 1000 Hz) $\pm 3\text{dB}$ ) Smart Box	dBSoSB1101i

## 11.9 Swimming Pool Monitoring Kit

The Swimming Pool Kit is ideal for wirelessly monitoring pool conditions. You will be able to monitor the parameters for a clean and healthy pool environment to prevent illnesses and ensure the well being of adults and children, in both public and personal facilities. The Kit has added security providing historical data of pool conditions for managers and peace of mind for parents. You will be able to monitor the pH and the Oxygen (ORP) of the pool both used for measuring water quality, along with pool chlorine levels for hygiene and also the temperature of the water. This will create an efficient way to create risk assessments and keep on top of health and safety as you will be able to receive and keep immediate and historical data from your kit. This kit is Plug and Play so no technical knowledge or engineering is required and included is a user manual with all required information. Upgrading or adding Smart Boxes is easy; simply purchase, place and switch on. Typical upgrades are flow sensors for measuring water flow and quantity, pool side ambient temperature.



This will create an efficient way to create risk assessments and keep on top of health and safety as you will be able to receive and keep immediate and historical data from your kit. This kit is Plug and Play so no technical knowledge or engineering is required and included is a user manual with all required information. Upgrading or adding Smart Boxes is easy; simply purchase, place and switch on. Typical upgrades are flow sensors for measuring water flow and quantity, pool side ambient temperature.

For more information, please see our Swimming Pool monitoring Kit data sheet.

Smart Boxes	Product Reference
<b>pH Electrode (pH)</b> (Probe) 1m 0 - 14 (Operating Temperature: 0°C to 80°C) Smart Box	pHPrSB1110i
<b>ORP Lab Electrode (ORP)</b> (Probe) 1m -1500 to +1500 mV (Operating Temperature: 0°C to 80°C) Smart Box	ORPrSB1112i
<b>Water Temperature (WT)</b> (Probe) 1.5m -40°C - 85°C ±0.3K Smart Box	WTPrSB1047i
<b>Chlorine Concentration Sensor (Cl)</b> (Probe) 3m (0 to 2, 0 to 5, 0 to 10 ppm free chlorine) (pH Range 5.5 to 9) Smart Box	ClPrSB1239i
Waterproof PSU x 4	SB PSUWR

### 11.10 Outdoor Agriculture Monitoring Kit (Vineyard/Plantations)

This Vineyard/Plantations Kit is tailored for outdoor wireless monitoring of environmental parameters that affects the vineyard/plantation conditions. Allowing the grower to create ideal conditions for plant growth and increase crop yields. This Kit is very easy to add Smart Boxes allowing you to reach your monitoring requirements. As there are many factors that can affect growth in Vineyards/Plantations, this kit provides a variety of Smart Boxes to cover all. Soil Moisture (Probe), Temperature and Humidity Sensor (Ambient), Wind Speed & Direction Sensor (Ultrasonic), Leaf wetness + Ice formation (Probe), UV Sensor, Rain gauge (Probe), Atmospheric Pressure (Ambient) and Solar Radiation. These are all measurements needed to create ideal conditions for plant growth, the schedule of irrigation, pest control and disease measures. This kit is Plug and Play so no technical knowledge or engineering is required and includes a user manual with all required information. Upgrading or adding Smart Boxes is easy; simply purchase, place and switch on.



Mario Goebbels <https://www.flickr.com/photos/cerealbawx/>

For more information, please see our Vineyard/Plantations Kit data sheet.

Smart Boxes	Product Reference
<b>Humidity/Temperature (HT)</b> (Ambient) 10-95%RH/-30°C - +80°C (Ambient Temperature Error Max: ± 2°C/Humidity Error Max ± 5%RH) Smart Box	HuAmSB1050i
<b>Soil Moisture (SM)</b> (Probe) 1.5m 0 to 100% VWC (25°C:2%) Smart Box	SMPPrSB1046i

<b>Anemometer Wind Speed (AWS)</b> (Ambient) 0m/s - 32.4m/s (1 m/s) Smart Box	AWAmSB1229i
<b>Leaf wetness + Ice formation (Lwlf)</b> (Probe) 2m Presence and Duration (For Detection, not measurement) Smart Box	LwPrSB1031i
<b>Rain Gauge (RG)</b> (Collector) Tipping Increments: 0.2, 0.01, 0.001mm and 1" Smart Box	RGCoSB1032i
Waterproof PSU x 9 (£17.36)	SB PSUWR

### 11.11 Water Flow, Temperature & Level Monitoring Kit

The Water Flow, Temperature & Level Monitoring Kit is an ideal starter kit for wireless outdoor monitoring of flow rates, water temperature and using the distance sensor to calculate the level and quantity in tanks etc. Additional Smart Boxes can be added to the Water Flow, Temperature & Level Monitoring Kit allowing you to create the perfect monitoring system that you require for a specific application (see complete Smart Box list). You will also receive a pre-configured Android Device of your choice and a user manual with all the information that you require. The Water Flow, Temperature & Level Monitoring Kit is Plug and Play so no technical knowledge or engineering is required. Upgrading or adding Smart Boxes is easy; simply purchase place, and switch on.



Smart Boxes	Product Reference
<b>Liquid (Liq)</b> (Flow) 0.1 ... 10 m/s (<3% current measuring value) Smart Box	LiFISB1006i
<b>Water Temperature (WT)</b> (Probe) 1.5m -40°C - 85°C ±0.3K Smart Box	WTPrSB1047i
<b>IR Distance (IRD)</b> (Proximity) 10 - 80CM (Response Time Max: 50ms) Smart Box	IRPrSB1054i
Water resistant PSU x 4	SB PSUWR

## 12 Accessories

The Smart Box System will have different accessories depending on your requirements.

### 12.1 Antenna

Depending on the area you wish to monitor, we have a few options available regarding which antenna to use.

For open areas, we advise you use our 13.8cm antenna as this will be able to perform at a further range. If you aren't looking to monitor such a large space we do have a smaller option of 3.45cm which is suitable for placing the Sensor Boxes in smaller areas. These antennas work at 2.4 GHz and will vary between being straight or right angled.

We also have the option of a discreet internal antenna. We have provided this option to enable our clients the freedom of placing these Boxes in confined areas.

Antenna (Aerial)	Range	Order Reference Code
Internal	60 Meter	i
External - Small Right Angle Stub	300 Meter	S
External - Small Straight Stub	300 Meters	R
External - large	700 Meters	L

**Note:** The letter at the end of each Smart Box Order code defines the Antenna (Aerial) type.

Smart Boxes comes standard with an internal Antenna (Aerial), unless otherwise indicated with a different letter at the end of the product code.



Straight 3.45cm external antenna working at 2.4GHz



Right angled 13.8cm external antenna working at 2.4GH

## 12.2 Power Supply

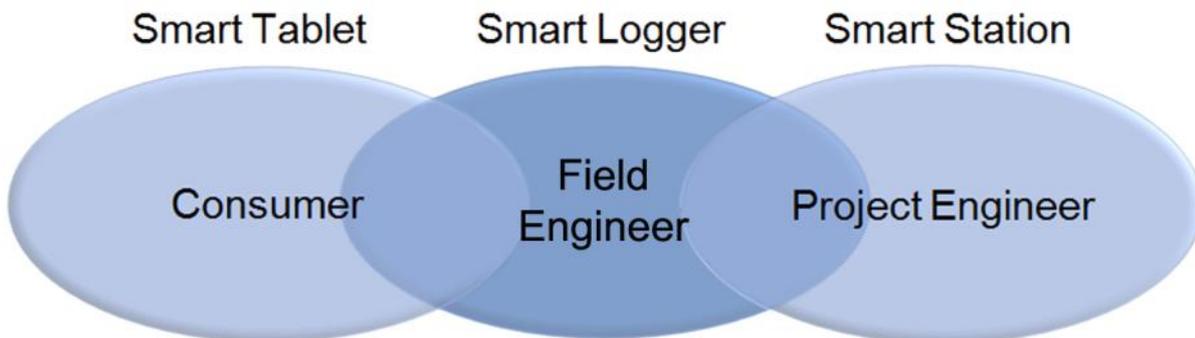
Depending on your environment, we can offer you two different power supplies. The first is a standard power supply for fixed Sensor & Control Smart Boxes that may be located in a dry environment, indoors for instance, the second being a water resistant power supply for the Sensors that may require protection from the wet. The water resistant PSU has the option of an extended lead if required.



## 13 Monitoring for Everyone

To build a monitoring system for everyone we need to keep the product and software simple and easy to use. The focus of our engineers is to make the Smart Boxes accessible to consumers and engineers. They needed to make the Sensors self reliant and user friendly, a logger aimed at consumers and a logger aimed at engineers. Our engineers came up with using Tablets for consumers, Smart Stations for engineers and a Smart Logger for both Consumers and Engineers.

**Sophisticated Wireless Monitoring and Control made Easy for Industrial, Commercial, Scientific & Home Application.**



The Tablets are an ideal choice, they are easy to use and have all the communications and built in screen, extremely reliable and mass produced, making them very cost effective.

The next problem was making the Sensors easy to use. We did this by using very Smart industrial communications; sadly this was not compatible with Consumer Smart Tablets. Our Engineers solved this by using the co-ordinator. The co-ordinator links the two industrial and consumer technologies together. This allows us to provide all the industrial benefits of sophistication, reliability, low power, mesh networks and enhanced communications distances not available to consumer devices and accessibility with consumer orientated user friendliness expected by the general public. Simply the Tablet acts as a logger with Display. Controversial but ingenious, our engineers have even used Smart phones and Battery (Solar) Prototype Smart Boxes to create Small, discreet, rapid deployment, mobile and monitoring solutions.

Our Engineers then developed the Smart Logger, again this is designed to be easy to use and is plug and play; the Smart Logger just doesn't have a screen like a Tablet, so there are no user interface and instantaneous values to view on the Smart Logger, all data has to be viewed online. The Smart Logger is aimed firmly between the consumer and engineers useable by both, as the Smart Logger Box can be discreetly placed in unsecure environments. Our Engineers have made the Smart Logger as user friendly as possible, with a focus on an online accessible user interface for data viewing.

Then you have the Engineers Smart Station, aimed at large monitoring networks of up to 64,000 Smart Box Sensors (Coming Soon)

Consumers are not restricted to using a Tablet and Engineers are not restricted to using the Smart Logger; they are merely tools to get the job done. Engineering wanting a mobile monitoring

solution with flexibility and a huge range of Sensors to choose from, then a Tablet would be suitable, as the tablet is ideal for rapid deployment and collecting measurements with the intention of moving the system at a later date. Same with consumers if you want a fixed system and do not require the viewing of instantaneous data provided by the tablet screen, then a Smart Logger would be your ideal choice.

The Online interface will depend on the level of sophistication required by the person doing the monitoring. Typical interfaces would be aimed at keeping home and consumer monitoring easy and informative and the industrial and engineer interface sophisticated, with lots of tools, thresholds, alarms and control functionality.



Research Technology  
Engineering Technical



Technical Industry



Non-Technical  
Business



General Public

# Smart Box for Everyone

## 13.1 Monitoring Anything (Sensor Application)

The genius is not the technology it is the idea. Make monitoring accessible to everybody to monitor anything.

Can Joe public monitor what they like with the existing equipment available? Build an all purpose monitoring solution that they can define. Monitor how much their pets drink and eat, monitor a gate or door being opened, monitor their swimming pool chlorine, PH and water temperature, monitor tomatoes in the greenhouse, the humidity and soil wetness, the cat flap, create thresholds, set alarms and monitor anything that has a known sensor.

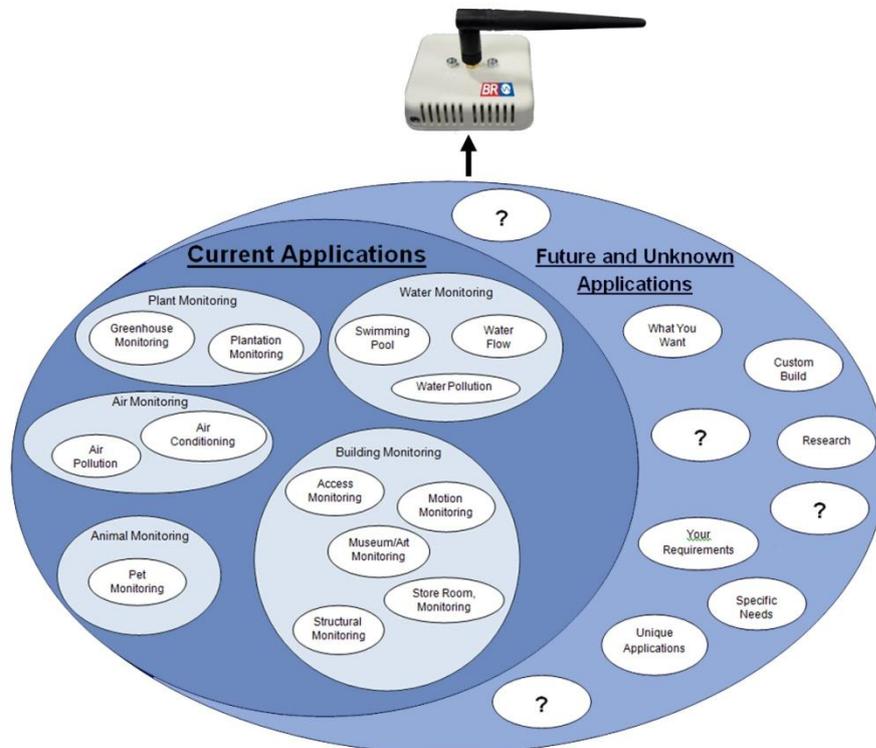
We want to make Smart Boxes accessible to everyone to monitor anything and to achieve this, monitoring has to be made easy.

That is only one part of what we want to achieve; the real focus is to allow consumers and engineers to monitor the unknown. Those future applications!

### 13.2 Monitoring the Unknown and future applications.

Monitoring has been around for a very long time and has really taken off in the last hundred years. As we have more sensors, the requirements for monitoring have expanded, but how we monitor is still very complicated. There are lots of people out there that have problems which monitoring could solve. They want to monitor but the barriers are numerous. The barriers are firmly fixed around the technology; complicated technology requires learning, skills, time and money. Qualified engineers require lots of money, do it yourself requires the skills, a lot of time and less money. Even the engineers want to make it easier as it opens the market up for more business. The drive for easier monitoring stems from engineers wanting to make it easier for engineers to get the job done and open the market up for more monitoring and more business opportunities. Engineers are tired of the monotonous and complicated wiring and repetitive calibration. Engineers want to build effective monitoring system to get results, monitor and improve.

Our engineers are designing the Smart Box system as building blocks, initially engineers would use our systems to solve existing monitoring problems, but that is just the start, the fun and hard part we make easy is monitoring the unknown or future application; the applications we haven't thought about. You have a great idea to solve a problem, it requires you to monitor something and maybe control it. How do you do it? The non technical try to find someone to design and build it, the technically minded may try to build a system from scratch. Building from scratch is getting easier with electronics like the Raspberry Pi and modular based monitoring product kits, but a lot of people just simply give up. They have the idea and the market; they just need the hardware and software solution. There are so many missed opportunities. Through using Smart Boxes our engineers want to change that, make monitoring easier for both the technically minded and non technical/consumer that has these great ideas. Simply; know what you want to monitor and then build your system.



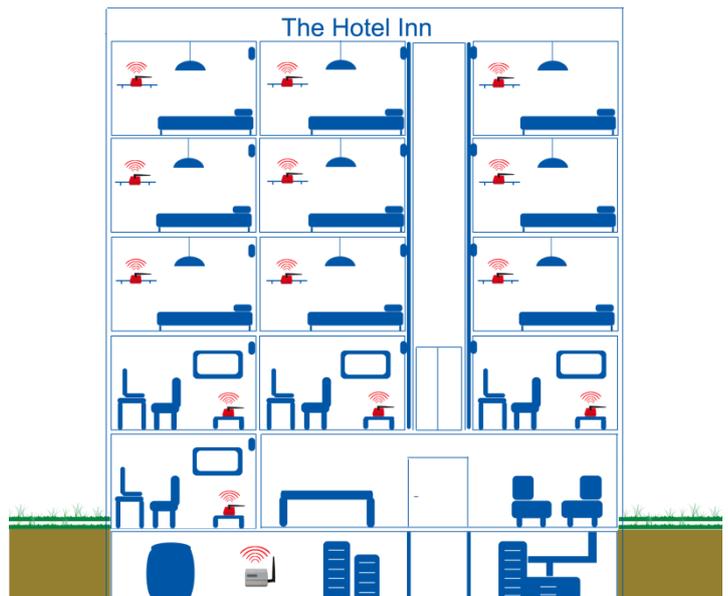
**Smart Box for all Applications, Current and Future**

The fun begins when you the user starts creating unique systems for unique application, create a system for monitoring Turtles, motions sensors at the beach, tidal sensors, light sensors for the moon. You decide.

### 13.3 An Unknown new application example (Air-Con)

An Air Conditioning Engineer came up with an idea, to save his time in Commissioning and Servicing of Air Conditioners. He got the idea of building a maintenance tool, this was a monitoring tool. His first goal was to build a wireless monitoring system to send feedback of sensors to a visual display unit. He wanted to place wireless sensors such as temperature in various rooms and have them feedback data to the room with the control unit in; this way he could calibrate the control unit and make changes in the system across all the rooms, saving him a lot of time. He then wanted to automate this process for self calibration by placing wireless sensors which would report back to another device for calibration next to the control unit, adding calibration parameters and press automate. While the device calibrates, he can get on with finishing all the other maintenance and commissioning tasks. Having a kit of sensors in his van and at each job, enables him to simply walk in, place sensors in each room, place the calibrator in the Air Conditioning control room, input parameters and press start, or load existing calibration points from previous save and press go. Another benefit of this system would be online maintenance and calibration records, for future reference.

He began with buying Raspberry Pi and with online information built one wireless sensor and got it communicating with the Pi. He then used an infrared module for the Pi and collected all available codes for all air conditioners out there so he could control the air conditioners through infrared or direct communications. This took him months of trial and error in his free time, he then asked a friend to design software for the Pi and even worked on a mobile App for calibration and an automation function. It took a long time and did he complete it? No. He gave up. The idea is sound and it would have saved a lot of his time and in-effect money for the company he worked for, in the maintenance and commissioning of certain air conditioners.



This Air Conditioning System is interlinked to each room. Therefore it is important all rooms have similar temperatures as this can affect other rooms. Should the temperature rise in one room, this will cause the temperature to drop in another. The Smart Box Wireless System would notify the user to their mobile or control room that the temperature had changed. We also offer control features that would automate the temperature to restore itself if changed.

### 13.4 Unknown new application Example (Chillers)

We had another enquiry in Africa. Enormous chillers were failing because of the lack of Anti Freeze (Glycol). In hot countries water evaporates and a lot of the time the tanks are topped up with water and the Glycol is forgotten about, eventually diluting it to the point the chillers would freeze and stop working. This obviously damaged the Chillers. They told us they liked our Smart Box and that they have pressing problems with Glycol. We state any sensors, but at the time didn't have Glycol. They asked if we could do this and our engineers simply said if there exists a Glycol Sensor then we can do it. Our engineers checked and they exist and now we have a Glycol Sensor Smart Box. Simply install the Glycol Smart Box in the Chillers Unit, set thresholds and alarms for emails and mobile. One less headache.

If the Sensor exists then we can most likely provide you a Smart Box with that Sensor included. We want to do all sensors as we want you to monitor what you want. We want you to experiment and monitor those unknown and future applications.

**Tell us your requirement.**

**Tell us what sensor you want.**

If the Smart Box Wireless Sensors are not on our list; ask for it and we will do our best to provide.

## 14 Anywhere Monitoring

It's a large claim to announce that the Smart Box will monitor anywhere. We're talking about Home monitoring, Small & Medium Companies, Large Industry, Commercial, Scientific & Agriculture. How? The first factor is using very smart reliable industrial communications meeting strict industrial standards, ideal for businesses. The Second important factor about Smart Box is that we are bringing this technology to consumer accessible Smart Devices (Smart Tablets being the first.) The third and most important factor is making monitoring Easy (Childs Play), that way it's accessible to anyone, from home, industry and scientific.

**Home Monitoring**

**Industrial Monitoring**

**Scientific Monitoring**

There is also an added benefit to bringing this technology to Smart Devices and that is Mobility. Smart Devices, like Tablets, are powerful and have their own communications and power supply (battery). Once our Battery and Solar versions of the Smart Box Sensors are available, you can build a monitoring system anywhere that has Mobile communications. That means difficult to access environments such as up a mountain, lakes, remote buildings, resorts, mines or even ships and most importantly its plug and play, you can build it.

#### Application Examples & kits

**Air Pollution Monitoring Starter Kit**

**Indoor Agriculture Monitoring Starter Kit (Greenhouses & Nurseries)**

**Indoor Air Quality Monitoring Starter Kit (Tiredness)**

**Museums, Art & Antique Storage Monitoring Starter Kit**

**Power, Environment, Air Con & Data Centre Monitoring Starter Kit**

**Presence, Motion & Access Monitoring Starter Kit**

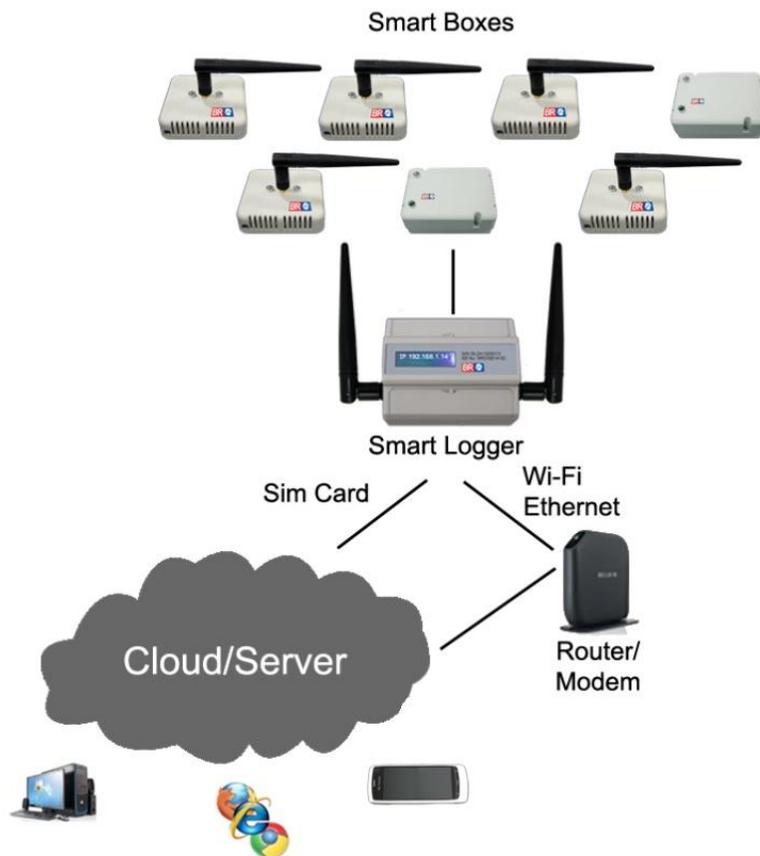
**Store Room Monitoring Starter Kit (Environment)**

**Structural Buildings Monitoring Starter Kit**

**Water Flow, Temperature & Level Monitoring Starter Kit**

## 15 Smart Box Communications

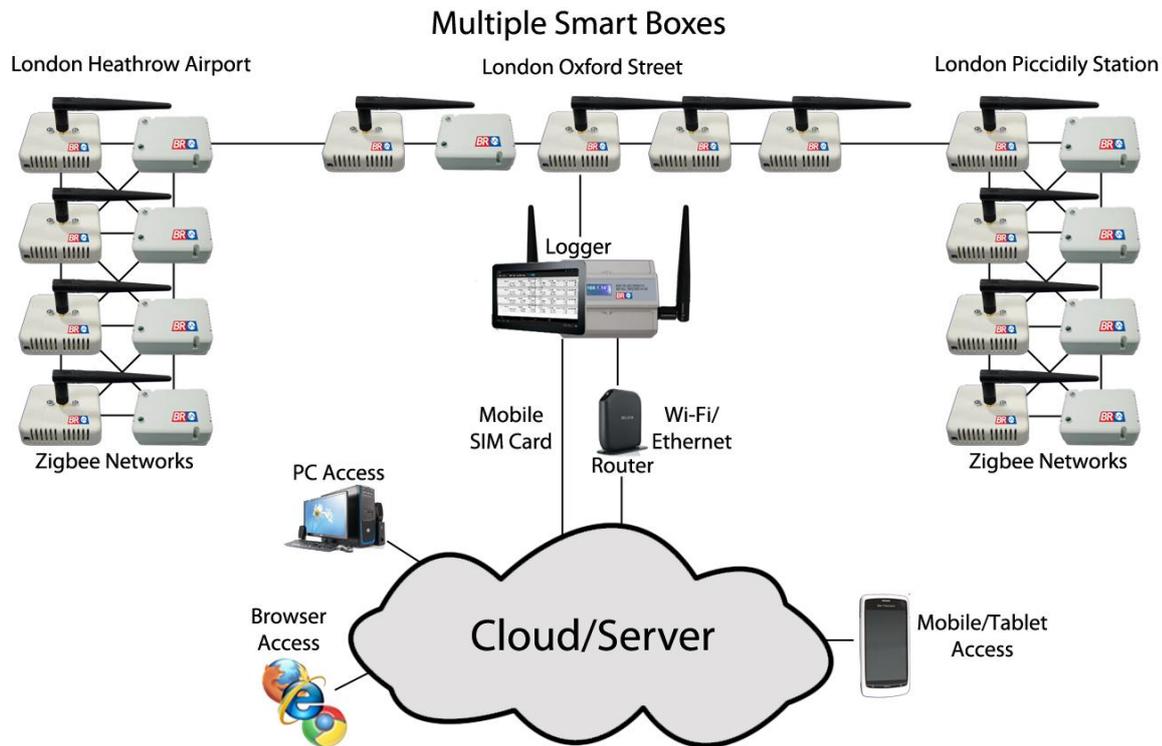
The Smart Box uses a wireless industry communication standard called ZigBee (IEEE 802.15). ZigBee is a high-level communication protocol used to create personal area networks and is designed for low-power communication, making it ideal for use in the Smart Box as we require low power consumption. (This is very important when creating wireless battery Smart Boxes).



### 15.1 Logger Communications

	Smart Tablet	Smart Logger
Display with Instantaneous values viewable locally	✓	✗
Historical data accessible on the website, Includes saving and export functionality.	✓	✓
Wi-Fi (requires access key)	✓	✓
Mobile SIM Card Port (Plug & Play)	(Model Dependant)	✓
Ethernet Port (Plug & Play)	✗	✓

## 15.2 Network Example



## 15.3 ZigBee Wireless Mesh network

ZigBee uses a mesh network protocol that allows ZigBee devices to communicate with each other relaying information across a wireless network of ZigBee devices. This allows the Smart Box to communicate across long distances by passing data through a wireless mesh network of intermediate Smart Boxes to reach further distant Smart Boxes.

ZigBee is a market leading industrial wireless communication standard, please see link for further details and applications.

<http://www.zigbee.org/Standards/Overview.aspx>

&

ZigBee Building Automation (Efficient commercial spaces)

ZigBee Remote Control (Advanced remote controls)

ZigBee Smart Energy (Home energy savings)

Smart Energy Profile 2 (IP-based home energy management)

ZigBee Health Care (Health and fitness monitoring)

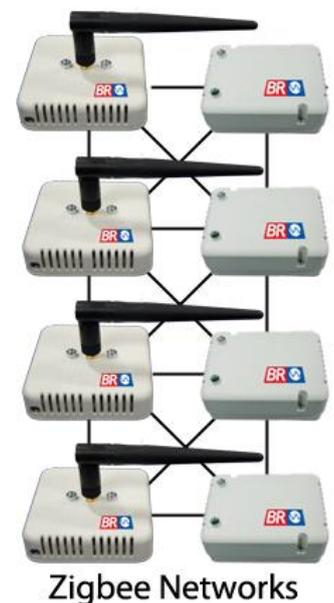
ZigBee Home Automation (Smart homes)

ZigBee Input Device (Easy-to-use touchpads, mice, keyboards, wands)

ZigBee Light Link (LED lighting control)

ZigBee Retail Services (Smarter shopping)

ZigBee Telecom Services (Value-added services)



**Smart Box uses**

**ZigBee (Wireless)**

## 15.4 Distance

The communications distance between Smart Boxes with an internal aerial is from 60 meters depending on line of site and obstacles. Our engineers have extended the range of the Smart Boxes of up to 700 meters; this is indicated by the larger external aerials available. Our engineers argue that they have achieved greater distances thus 700 meters is a conservative estimate.

### Smart Tablet uses

Wi-Fi

Mobile SIM 3G/GPRS  
(Model Dependant)

Antenna	Range
Internal	60 Meter
External - Small Right Angle Stub	300 Meter
External - Small Straight Stub	300 Meters
External - large	700 Meters

Using the Mesh network you can build system to communicate across huge distances like cities, industrial zones, lakes, farms, forests and remote locations.

## 15.5 Wi-Fi/Ethernet/Mobile SIM (3G/GPRS/GSM)

The Smart Boxes uses ZigBee to communicate back to a coordinator/logger and then you have 3 options available to communicate to the cloud through the internet, these are Wi-Fi, Ethernet and Mobile Data SIM Card. This allows you to choose the most cost effective means of communication. Wi-Fi or Ethernet is the most reliable and cost effective means of communications, but may not be available everywhere especially in remote locations, that is when the 3rd option using a Mobile Data SIM Card is very useful. In a lot of countries you can simple enter the address/post code (location) on mobile carriers web sites or 3rd party sites to discover the available coverage and then purchase the appropriate DATA SIM (3G/GPRS/GSM/GSM) card, simply monitor and control anything from anywhere you get a mobile signal.

### Smart Logger uses

Wi-Fi

Mobile SIM (3G/GPRS)

Ethernet LAN

## 15.6 Why ZigBee

ZigBee communication mesh network saves you a fortune compared to having a Mobile DATA SIM Card (3G/GPRS/GSM) in each Smart Box. ZigBee is a very cost effective means to communicate with multiple devices and then sending all communication through logger with via Wi-Fi/ Ethernet/ Mobile SIM (3G/GPRS/GSM).

## 15.7 Data

ZigBee is aimed at low data rate applications that require long battery life and secure networking ideal for Smart Box Sensors and controlling, but it is not suitable for Video or Voice communication. If we were to create a Video or Voice Smart Box we would need to use a higher data rate communication.

## 15.8 Security

The Smart Box is setup as a secure closed network and can be improved using Trust-Centre link keys. As the Smart Box system uses the industrial ZigBee standard, we can enhance your security

further using 128 bit symmetric encryption keys on request. If you require further information on our security options please contact us.

### 15.9 Cost

This is where the Smart Boxes can save you a lot of money. The Wireless communications standard (ZigBee) defines accessibility and the cost of the Smart Box. The ZigBee specification is intended to be simpler, less expensive and allow you to connect more devices on one network to than other wireless personal area networks (WPANs), such as Bluetooth/Wi-Fi/Mobile .

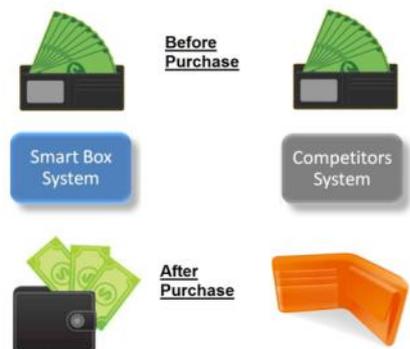
Currently ZigBee is the leading industrial standard. This may one day change, as wireless communications is advancing at a very fast rate, new technologies are immersing and existing ones changing rapidly.

See Smart Box Cost for further information.

## 16 Smart Box Cost

Smart Box Wireless Monitoring solution is an extremely cost effective way to build a custom plug and play monitoring solution.

**If you are paying for the monitoring solution, you will not just think about the cost of the product but also the cost of installing and setting it up.**



To grasp potential cost savings, is to understand the ZigBee Self-healing Mesh Network Wireless Communication Standard. As many wireless Smart Box Sensors as you like, communicate with a Wireless Co-ordinator; this is a one off hardware purchase. The Wireless Co-ordinator then communicates to a Wireless Logger. In most cases it will be a Smart Tablet or Smart Logger, again just hardware costs, you do not pay for the Software. The Loggers can then use existing communications (Wi-Fi/Ethernet) at no additional costs to send sensor data onto the internet. Each network comes with 6 Months free Data Storage; thereafter you have a minimal monthly charge of hosting your data. Long term the Smart Box Wireless Monitoring and Control is extremely cost effective. Think about it, you can build a Plug and Play sensor network of your choice have everything going to a logger onto the internet; the only costs are the one off Smart Box hardware and data management/storage (minimal charge). If you don't have Wi-Fi or Ethernet, like at a lake, stream, up a hill, or work site, just add a SIM card (3G/GPRS/GSM) with a monthly DATA plan and you get a custom built monitoring solution anywhere you can get a mobile signal.



## 16.1 What you are paying for:

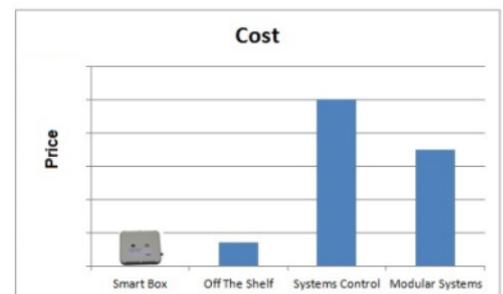
Smart Box Hardware, Plug and Play.	One off Purchase
Logger /Co-ordinator, Plug and Play	One off Purchase
Internet, accessing your existing Wi-Fi, Ethernet	No additional costs
Data Storage	6 Months Free
Mobile SIM, Used in Tablet or Smart Logger (Optional)	SIM 3G/GPRS/GSM Data Charge (Mobile Carrier/Company)

## 16.2 Where you make the Biggest Savings

### 16.2.1 The Biggest Saving is Time

Just add up all the hours it will cost you to build a custom monitoring and control system, buying all the cables and wiring lengths for probes. Cable length effects sensor accuracy which means finding the time for calibration; calibration takes time. Simply choose the right Smart Box with the correct number of sensor probes and cable length, then plug and play, no calibration, save time save money.

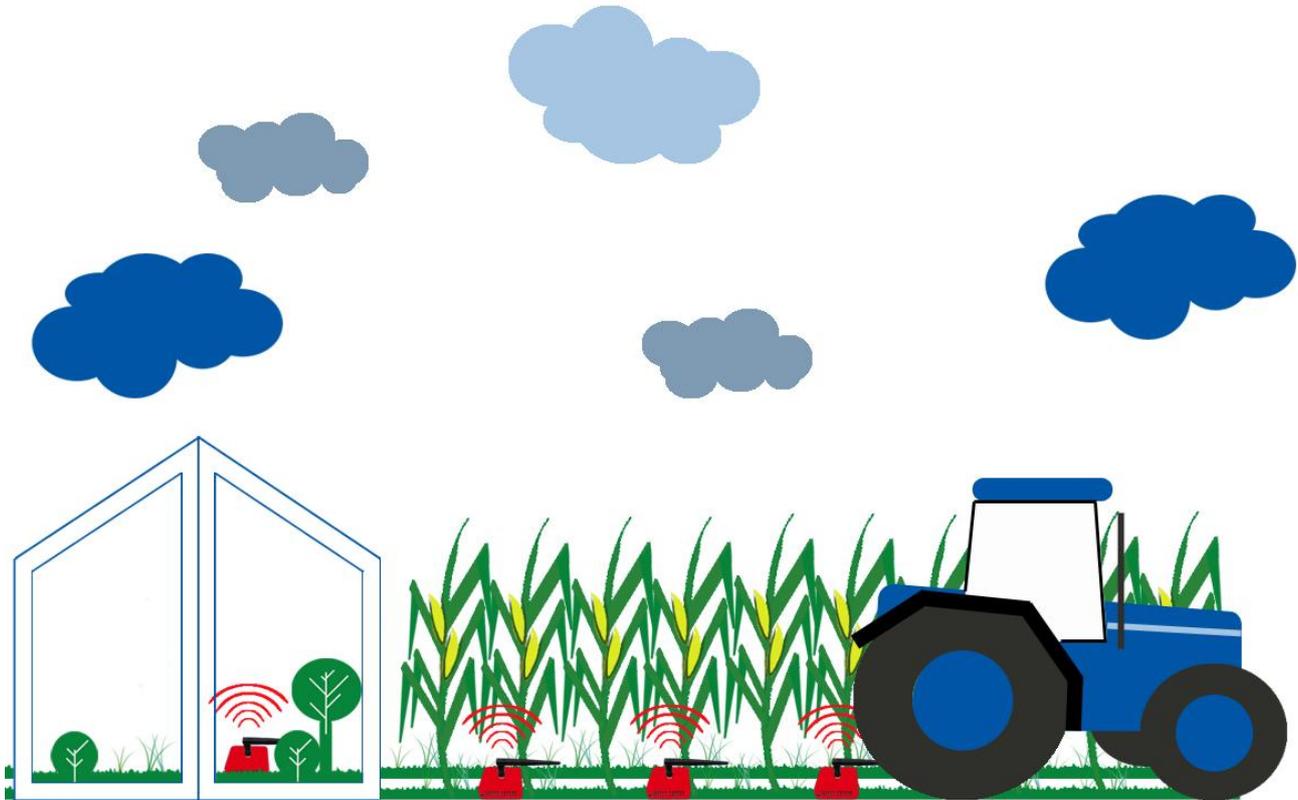
Mix and match sensors; both ambient sensors and probe sensors.



### 16.3 Spaghetti Wiring Disaster

Have you ever been in the position where you need to repair/replace a wired sensor? One is easy but lots of sensors connected to a Logger can be a headache, especially if the Logger has additional undocumented sensors added over time. The Wireless Smart Box can have up to 5 Sensors or Controls; this reduces both costs of having multiple wireless sensors and reduces wiring requirements saving a lot of headaches, time and money.

## 16.4 Agriculture Example



To give you an example of agriculture monitoring, nurseries or your personal green house. Let's say 5 plots or 5 growing trays, within 3 meters.

### 16.4.1 Your Requirement

What you want to monitor:

Soil Temperature, Soil Moisture, Sun light, Ambient Temperature, Ambient Humidity

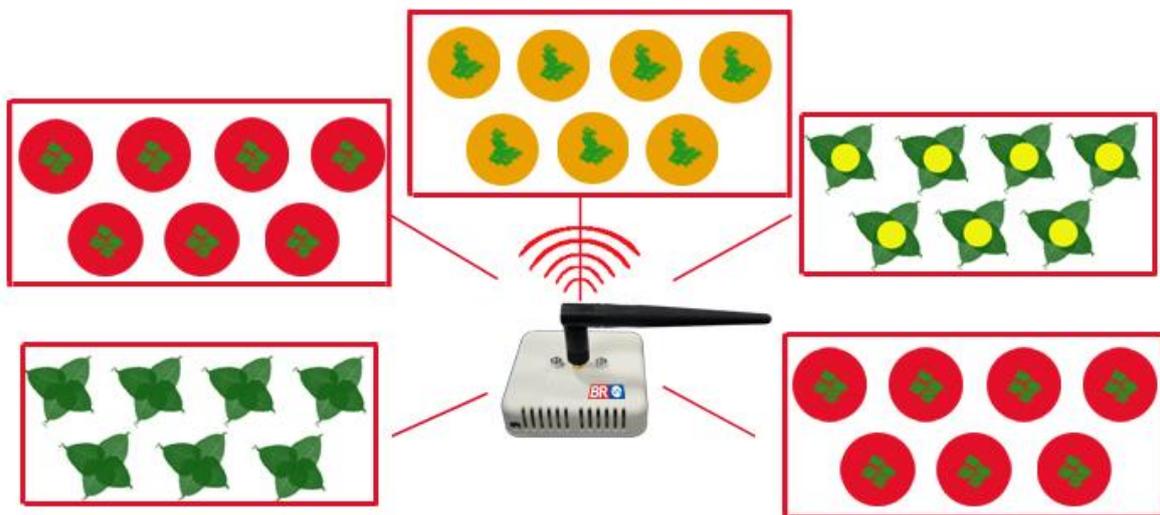
#### Requirement

Soil Temperature:	5 x Soil Temperature probes with cable length of 3 meters each.
Soil Moisture:	5 x Soil Moisture probes with cable length of 3 meters each.
Sun Light:	1 x LUX Sensor Box, rated for sun light
Ambient Temperature	1 x Ambient Temperature Sensor
Ambient Humidity	1 x Ambient Humidity Sensor

### 16.4.2 Smart Box Solution

Select Logger, Co-ordinator and Correct Wireless Smart Boxes, place Smart Box, insert probes into Plots and place ambient next to the Plots or in a green house.

- Requires**
- 1 Soil temperature Wireless Smart Box with 5 x 3 Meter probes
  - 1 Soil Moisture Wireless Smart Box with 5 x 3 Meter probes
  - 1 x Wireless Smart Box LUX Wireless Sensor rated for sun light
  - 1 x Wireless Smart Box Ambient Temperature & Humidity Sensor
- Or**
- 1 Soil temperature Wireless Smart Box with 5 x 3 Meter probes
  - 1 Soil Moisture Smart Box with 5 x 3 Meter probes
  - 1 x LUX Sensor rated for sun light & Ambient Temperature & Humidity Sensor (Multi Sensor) Smart Box)
- Setup Time** All Plug and Play, maximum an hour
- Solution** 4 Plug & Play Wireless Smart Boxes or 3 Smart Boxes depending on preference



### 16.4.3 Existing Solution

Logger, Lots of Cables/Wires, Wired Sensor Probes, Wireless Ambient Sensors

- Requires**
- 5 x Soil Temperature probes, cable length to logger great than 3 meters
  - 5 x Soil Moisture probes, cable length to logger great than 3 meters
  - 1 x Wireless LUX Sensor Box, rated for sun light
  - 1 x Wireless Ambient Temperature & Humidity Sensor

**Setup Time**

- First read logger manual and understand software, installation calibration process.
- Logger requires setup installing
- Wireless Sensors are Plug and Pay, maximum an hour; easy

- Expensive Wired probes requires calibration and using cheaper cables and separate probes, requires soldering probes and a lengthy calibration process.
- First time skilled engineers a day or two; experienced engineers will need a day. Home owner just wouldn't bother as it's too hard and time consuming

Solution 1 Logger, 50 meters of Cable, 10 Soil Temperature & Moisture Sensor probes, Soldering iron, 1 wireless LUX Sensor, 1 Wireless 1 x Ambient Temperature & Humidity Sensor and a lot of free time.

Please note: There are other Wireless Monitoring Products available that are Plug & Play, there is just not a product that has the Plug and Play Sensor product Range like the Smart Box.

## 17 Standards

A key factor to the Smart Box easy setup feature is its pre-calibration. Pre-calibration allows the Smart Box to be plug & play straight out of the box; this saves a lot of time & money.

Pre-calibration creates a lot of questions for researchers or engineers using the Smart Boxes for scientific applications. This is not a problem, it is more a confidence and certification issue, it is vital that for scientific application you make sure the product is suitable for your applications. We have two certification options for the Smart Boxes. The Smart Box Sensor comes as Standard non-certified, ideal for general use monitoring (Indicative Monitoring) and certified Smart Box Sensor for Scientific application.

The Difference between Indicative and Certified monitoring is cost. Certification costs money and this price increase is very obvious when comparing two Smart Box Sensors with exactly the same specifications; the more expensive one being the certified Smart Box Sensor, with the additional cost being down to the certification process. To understand this process you need understand the Monitoring Standards & the Measurement of Uncertainty.

**The Smart Box is designed & manufactured following CE standards and conform to European FCC and international wireless communications standards. For further details please contact us.**

**If you want to use the Smart Boxes for scientific application, look for the certification or even better contact us directly, we can then make sure you get the right Smart Boxes.**

## 17.1 Monitoring Standards & Measurement of Uncertainty

Certification means they have been calibrated and tested against a standard. This Standard is used as a reference, also called a reference standard. This provides traceability and confidence in the data collected.

## 17.2 Why is calibration important?

Most loggers in use today require you to buy cables and sensors separately, they're very customisable allowing you to get your job done, but requires a lot of time to setup, calibrate sensors and has lots of cables. Cable length is important as it affects sensor accuracy. Lots of sensors and lots of cables means lots of calibration, calibrating loggers takes time, as you first need to read the manual and learn how to calibrate and you may have a number of different loggers for different applications adding to your work load. The principles of calibration stay the same, but the software and process will vary between loggers and can become tedious. The Smart Box removes the tedium of calibration as it comes pre-calibrated; you just have to choose the right Smart Box. Do you really want to spend hours calibrating?

## 17.3 Calibration of Basic Principles

Calibration is a comparison between measurements, one of known magnitude/correctness made with one device (The Standard) and another measurement made as similar as possible with a second device (Unit under test). The device with the magnitude/correctness is called the standard. The second device is the Unit Under Test and is the device being calibrated. The Standard is more accurate than the Unit Under Test.

### 17.3.1 Basic example.

We use a 0.01 Three phase Energy Standard worth £35,000 for calibration of Energy. We have more than one standard, we use the 0.01 to calibrate our 0.05 Reference Standard and then use that to calibrate other standards ranging from 0.1, 0.2, 0.5 and then energy meters of 1% and 2% or Class 1.0 and Class 2.0 All our energy standards are traceable back to the 0.01 Energy Standard. The 0.01 is externally calibrated using a better standard. Last time we requested the National Physical Laboratory of London to calibrate our 0.01 Three Phase Energy standard, we were told they did not have a better standard, so we had to use another external approved body for calibration. This does not mean we have a better standard, it could be we have equal or simply a more accurate standard is not available at the time.

In a nut shell all our measuring equipment has an unbroken chain of traceability back to national standards. If we cannot provide certifications our selves we will use an external approved laboratory.

**Remember certification increases the cost, only get it certified if it is required.**

## 18 Ordering

To place an order, you must visit [www.britishresearch.com](http://www.britishresearch.com) to complete our online order process. If you have any problems, feel free to contact us:

- Email [info@britishresearch.com](mailto:info@britishresearch.com)
- Tel: **0044 (0) 1446 734012**

### 18.1 Order Process

British Research would like to provide our customers with a choice; with this in mind we have 3 options; the Custom Kit with Tablet which allows complete independence in choice of Smart Boxes, application Kits which provides set Smart Boxes for various application options and a Demo Kit for evaluation.

#### Custom Kits include:



The Custom Kit comes with a pre-installed and configured logger and is ready to work out of the box. All that is required is to power up the devices to get instant results and for server access and historical data configure your Wi-Fi connection with internet connection.

The Demo Kit is aimed at companies and individuals who want to evaluate the system. This is a very quick way to experience the reliability and simplicity using and setting up our Smart Boxes.

The Demo Kit comes with a preconfigured android tablet, a coordinator, antennas, power supply and user manual and 3 Smart Boxes consisting of 1 x Temperature Smart Box and 1 x CO2 Smart Box.

#### Starter Kits include:



Dependant on the surroundings the user wishes to wirelessly monitor, we have various Kits available. Each Kit comes with a preconfigured logger, typical example is 7inch Android tablet, a Coordinator, necessary antennas, power supplies and user manual. Also included are various set Smart Boxes relevant to your requirements.

#### Demo Kit includes:



## 19 Contact Us

For further information, please don't hesitate to contact us via:

**Tel: 0044 (0) 1446 734012**

**Fax: 0044 (0) 5601 258134**

**Email: [info@britishresearch.com](mailto:info@britishresearch.com)**

**OR visit our website:**

**[www.britishresearch.com](http://www.britishresearch.com)**

