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Product Description - (L0001) Wireless Ambient Temperature Sensor

Index

1. Product overview:

This small wireless sensor is the first of a long line of devices that use the Language of Things open messaging standard, this means it's lower cost, more power friendly and easier to understand than 6lowpan, Zigbee, Zwave etc. The device sends periodic encrypted temperature readings to other WirelessThings devices. It is accurate to +/- 1 degree between -10 and +40 degrees centigrade. The internal coin cell battery is capable of running for well in excess of 10 years (based on 1 reading per hour).

By using another WirelessThings device such as the XRF, Slice of Radio or SRF stick, the over the air encrypted data is transformed into easily understood plain text you can read. This text output can then be processed by additional software. At present we do not supply a home automation package or similar, it is hoped that support will be added to OpenRemote, OpenHab, and others. You could use software like LabView, or try writing something yourself, there are some sample Python apps to help you get started. The WirelessThings message bridge will automatically log the last 7 days message for you if you simply want to import the data into Excel (other spreadsheets are available)

The **WirelessThings Launchpad** (download here) is a number of small applications that deal with sharing the wireless transceiver (WirelessThings message bridge), the setup of devices (WirelessThings device configuration wizard) and some example snippets which you may find useful in writing your own code. The devices are easy to setup by pressing a single button and following the onscreen prompts in the configuration wizard. Once setup the device will automatically send readings, the period between readings is configurable at setup or later by using the

same wizard.

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2. How it works:

This low power, Language of Things sensor spends most of the time in a deep sleep, waking up periodiaclly to report the current temperature at adjustable intervals defined by the user. The sensor uses a thermistor (NTC)* device to read the ambient temperature.

A thermistor (NTC) device is a resistor whose resistance decreases as the temperature increases. This effect is much greater than the usual increase of resistance seen in a resistor and allows for accurate temperature measurement. NTC stands for Negative Temperature Coefficient.

Alongside the adjustable intervals between temperature messages, this device will also update the user with its battery level. If the battery level falls below 2.0 V then the sensor will automatically send a battery low message once per hour.

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3. Technical information:

Power Options		
Maximum voltage	3.6	V
Minimum voltage	2.0	V
Battery supplied	CR2032	-
Power Consumption		
Sleeping	0.5	µA
Each transmission	0.0000256	mAH
Battery reporting (every 10 transmission by default)	0.000411	mAH
Accuracy		
+/- 1 degree Celsius between 0 and 40 degress		
Dimensions of Enclosure		
Width	70	mm
Length	55	mm
Depth	22	mm

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Product Description - (L0014) Wireless Flood Sensor

Index

1. Product overview:

This small wireless sensor is one in a growing range of devices that use the Language of Things open messaging standard. This means it's lower cost, more power friendly and easier to communicate with than 6lowpan, Zigbee or Zwave devices. The device sends periodic encrypted light level readings to other WirelessThings devices. The internal battery is capable of running for well in excess of 10 years (based on 1 reading per hour).

By using another WirelessThings device such as the XRF, Slice of Radio or SRF stick, the over the air encrypted data is transformed into easily understood plain text you can read. This text output can then be processed by additional software. At present we do not supply a home automation package or similar, it is hoped that support will be added to OpenRemote, OpenHab, and others. You could use software like LabView, or try writing something yourself, there are some sample Python apps to help you get started. The WirelessThings message bridge will automatically log the last 7 days message for you if you simply want to import the data into Excel (other spreadsheets are available)

The **WirelessThings Launchpad** (download here) is a number of small applications that deal with sharing the wireless transceiver (WirelessThings message bridge), the setup of devices (WirelessThings device configuration wizard) and some example snippets which you may find useful in writing your own code. The devices are easy to setup by pressing a single button and following the onscreen prompts in the configuration wizard. Once setup the device will automatically send readings, the period between readings is configurable at setup or later by using the

same wizard.

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2. How it works:

This low power, Language of Things sensor spends most of the time in a deep sleep, waking up only to report when the float switch has been raised/lowered beyond x mm.

The sensor uses a magnetic reed switch, which is used to open/close the circuit within the device, which in turn triggers a notification in the form of a Language of Things message which warns the user of an increase/decrease in liquid level within its environment.

Alongside the flood notifications, this device will periodically update the user with its battery level.
If the battery level falls below 2.0 V then the sensor will automatically send a battery low message once per hour.

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3. Technical information:

Power Options		
Maximum voltage	3.6	V
Minimum voltage	2.0	V
Battery supplied	1200 mA Half AA Soldered	-
Power Consumption		
Sleeping	0.6	µA
First transmission (from contact closed)	0.0000818	mAH
Retry transmission	0.0000433	mAH
Battery reporting (every 10 transmissions by default)	0.000411	mAH
Accuracy		
Operates to an 'ON' state, either by rising/falling 6 mm (User defined)		
Pressure range equal to 0.2 MPa		
Dimensions of Enclosure		
Width	70	mm
Length	55	mm
Depth	22	mm
Dimensions of Float Switch		
Length/Width	Ø18	mm
Depth	26	mm

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Product Description - (L0003) Wireless Ambient Light Level Sensor

Index

1. Product overview:

This small wireless sensor is one in a growing range of devices that use the Language of Things open messaging standard. This means it's lower cost, more power friendly and easier to communicate with than 6lowpan, Zigbee or Zwave devices. The device sends periodic encrypted light level readings to other WirelessThings devices. The internal coin cell battery is capable of running for well in excess of 10 years (based on 1 reading per hour).

By using another WirelessThings device such as the XRF, Slice of Radio or SRF stick, the over the air encrypted data is transformed into easily understood plain text you can read. This text output can then be processed by additional software. At present we do not supply a home automation package or similar, it is hoped that support will be added to OpenRemote, OpenHab, and others. You could use software like LabView, or try writing something yourself, there are some sample Python apps to help you get started. The WirelessThings message bridge will automatically log the last 7 days message for you if you simply want to import the data into Excel (other spreadsheets are available)

The **WirelessThings Launchpad** (download here) is a number of small applications that deal with sharing the wireless transceiver (WirelessThings message bridge), the setup of devices (WirelessThings device configuration wizard) and some example snippets which you may find useful in writing your own code. The devices are easy to setup by pressing a single button and following the onscreen prompts in the configuration wizard. Once setup the device will automatically send readings, the period between readings is configurable at setup or later by using the

same wizard.

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2. How it works:

This low power, Language of Things sensor spends most of the time in a deep sleep, waking up periodiaclly to report the current light level at adjustable intervals defined by the user.

The sensor uses a light dependent resistor (LDR). An LDR is a resistor, whose resistance changes with the amount of light hitting the sensor, this can be used to give a relatiive indication of the light level.

Alongside the adjustable intervals between light level messages, this device will periodically update the user with its battery level.
If the battery level falls below 2.0 V then the sensor will automatically send a battery low message once per hour.

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3. Technical information:

Power Options		
Maximum voltage	3.6	V
Minimum voltage	2.0	V
Battery supplied	CR2032	-
Power Consumption		
Sleeping	0.5	µA
Each transmission	0.0000418	mAH
Battery reporting (every 10 transmission by default)	0.000411	mAH
Accuracy		
Reports a relative light level between 0 and 100%.		
Dimensions of Enclosure		
Width	70	mm
Length	55	mm
Depth	22	mm

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Product Description - (L0022) Wireless Humidity and Temperature Sensor

Index

1. Product overview:

This small wireless sensor combines two of a long line of devices that use the Language of Things open messaging standard, a temperature and humidity sensor all in one match box size case. It's lower cost, more power friendly and easier to understand than 6lowpan, Zigbee, Zwave etc. The device sends periodic encrypted humidity temperature readings to other WirelessThings devices. It is accurate to +/- 1 degree between -10 and +40 degrees centigrade and +/- 2% accurate for humidity.

By using another WirelessThings device such as the XRF, Slice of Radio or SRF stick, the over the air encrypted data is transformed into easily understood plain text you can read. This text output can then be processed by additional software. At present we do not supply a home automation package or similar, it is hoped that support will be added to OpenRemote, OpenHab, and others. You could use software like LabView, or try writing something yourself, there are some sample Python apps to help you get started. The WirelessThings message bridge will automatically log the last 7 days message for you if you simply want to import the data into Excel (other spreadsheets are available)

The **WirelessThings Launchpad** (download here) is a number of small applications that deal with sharing the wireless transceiver (WirelessThings message bridge), the set-up of devices (WirelessThings device configuration wizard) and some example snippets which you may find useful in writing your own code. The devices are easy to set-up by pressing a single button and following the on-screen prompts in the configuration wizard. Once set-up the device will automatically send readings, the period between readings is configurable at set-up or later by using the same wizard.

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2. How it works:

This low power, Language of Things sensor spends most of the time in a deep sleep, waking up periodically to report the current humidity and temperature at adjustable intervals defined by the user. The sensor uses a Sensirion SHT21 sensor to provide the readings.

Alongside the adjustable intervals between humidity and temperature messages, this device will also update the user with its battery level. If the battery level falls below 2.0 V then the sensor will automatically send a battery low message once per hour.

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3. Technical information:

Power Options		
Maximum voltage	3.6	V
Minimum voltage	2.1	V
Battery supplied	1200 mAH half-AA	-
Power Consumption		
Sleeping	0.6	µA
Each transmission	0.0001065	mAH
Battery reporting (every 10 transmission by default)	0.000411	mAH
Accuracy		
Relative humidity typical accuracy	+/- 2.0	%
Maximum humidity accuracy	+/- 3.0	%
Temperature typical	+/- 0.3	°C
Dimensions of Enclosure		
Width	70	mm
Length	55	mm
Depth	22	mm

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Product Description - (L0034) Wireless 4 Button Key Fob

Index

1. Product overview:

This wireless push button key fob uses the Language of Things, like all of our IoT devices. Sleeping most of the time, waking up when the key fob is pressed, this low powered device can send one or more configurable messages to other WirelessThings IoT sensors and devices.

By using another WirelessThings device such as the XRF, Slice of Radio or SRF stick, the over the air encrypted data is transformed into easily understood plain text you can read. This text output can then be processed by additional software. At present we do not supply a home automation package or similar, it is hoped that support will be added to OpenRemote, OpenHab, and others. You could use software like LabView, or try writing something yourself, there are some sample Python apps to help you get started. The WirelessThings message bridge will automatically log the last 7 days message for you if you simply want to import the data into Excel (other spreadsheets are available)

The **WirelessThings Launchpad** (download here) is a number of small applications that deal with sharing the wireless transceiver (WirelessThings message bridge), the setup of devices (WirelessThings device configuration wizard) and some example snippets which you may find useful in writing your own code. The devices are easy to setup by pressing a single button and following the onscreen prompts in the configuration wizard. Once setup the device will automatically send readings, the period between readings is configurable at setup or later by using the

same wizard.

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2. How it works:

This low power, Language of Things device spends most of the time in a deep sleep, waking up periodiaclly to perform a selection of commands which have been determined by the user.

This device will also update the user with its battery level. If the battery level falls below 2.0 V then the sensor will automatically send a battery low message once per hour.

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3. Technical information:

Power Options		
Maximum voltage	3.6	V
Minimum voltage	2.0	V
Power Consumption		
Sleeping	0.24	µA
First transmit (button pressed)	0.000110	mAH
Retry transmit (button pressed)	0.000290	mAH
Battery reporting (every 10 button presses by default)	0.000411	mAH
Dimensions		
Width	34.67	mm
Length	56.77	mm
Depth	10	mm

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Product Description - (L0024) Wireless Barometric Pressure and Temperature Sensor

Index

1. Product overview:

This small wireless sensor combines two of a long line of devices that use the Language of Things open messaging standard, a temperature and barometric pressure sensor all in one match box size case. It's lower cost, more power friendly and easier to understand than 6lowpan, Zigbee, Zwave etc. The device sends periodic encrypted barometric pressure & temperature readings to other WirelessThings devices. For barometric pressure, absolute pressure sensors measure an external pressure relative to a zero-pressure reference (vacuum) sealed inside the reference chamber of the die during manufacturing. This standard allows comparison to a standard value set such that 14.7 psi = 101325 Pa = 1 atm at sea level as a measurement target.

The device measures absolute pressure and not the equivalent sea level pressure used by meteorological readings. If the height of the sensor is known then the equivalent pressure at sea level can be calculated, alternatively if the pressure at sea level is known then the height can be calculated (altimeter). Relative accuracy during pressure change between 70 to 110 kPa at any constant temperature between -10 °C to 50 °C is +-0.05kPa (or +-0.5 millibar). Relative accuracy during changing temperature between -10 °C to 50 °C at any constant pressure between 50 kPa to 110 kPa is +- 0.1kPa (or +-1millibar). The internal coin cell battery is capable of running for well in excess of 10 years (based on 1 reading per hour).

By using another WirelessThings device such as the XRF, Slice of Radio or SRF stick, the over the air encrypted data is transformed into easily understood plain text you can read. This text output can then be processed by additional software. At present we do not supply a home automation package or similar, it is hoped that support will be added to OpenRemote, OpenHab, and others. You could use software like LabView, or try writing something yourself, there are some sample Python apps to help you get started. The WirelessThings message bridge will automatically log the last 7 days message for you if you simply want to import the data into Excel (other spreadsheets are available)

The **WirelessThings Launchpad** (download here) is a number of small applications that deal with sharing the wireless transceiver (WirelessThings message bridge), the set-up of devices (WirelessThings device configuration wizard) and some example snippets which you may find useful in writing your own code. The devices are easy to set-up by pressing a single button and following the on-screen prompts in the configuration wizard. Once set-up the device will automatically send readings, the period between readings is configurable at set-up or later by using the same wizard.

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2. How it works:

This low power, Language of Things sensor spends most of the time in a deep sleep, waking up periodically to report the current humidity and temperature at adjustable intervals defined by the user. The sensor uses a MPL3115A2 device to read the pressure and the temperature. Readings are expressed in millibars (also known as hPa) where 1 millibar = 1 hPa = 100Pa, this unit is typically used for measuring barometric pressure.

Alongside the adjustable intervals between barometric pressure & temperature messages, this device will also update the user with its battery level. If the battery level falls below 2.0 V then the sensor will automatically send a battery low message once per hour.

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3. Technical information:

Power Options		
Maximum voltage	3.6	V
Minimum voltage	2.0	V
Battery supplied	1200 mA Half AA Soldered	-
Power Consumption		
Sleeping	2.4	µA
Each transmission	0.000139	mAH
Battery reporting (every 10 transmission by default)	0.000411	mAH
Accuracy		
Relative accuracy during pressure change between 70 to 110 kPa at any constant temperature between -10 °C to 50 °C is +-0.05kPa (or +-0.5 millibar)		
Relative accuracy during changing temperature between -10 °C to 50 °C at any constant pressure between 50 kPa to 110 kPa is +- 0.1kPa (or +-1millibar).		
Resolution accuracy is typically 1.5Pa		
Temperature accuracy is,+-1 degree C at 25 degrees, and +-3 degrees over the temperature range.		
Dimensions of Enclosure		
Width	70	mm
Length	55	mm
Depth	22	mm

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Product Description - (L0005) Wireless Dual State Switch Sensor

Index

1. Product overview:

Would you like to be alerted when a; Doorbell, Pressure mat, Contact sensor, PIR sensor, Water presence sensor are activated?

The dual state switch sensor is wired onto any of the above, and will alert you in real time as to the state of the switch it is attached to. Please note that this device only takes the reading of the switch you attach it to – and therefore cannot control it. For example – You can be made aware of a contact sensor on a window, or a doorbell being activated. You cannot however remotely close the window or activate the doorbell.

By using another WirelessThings device such as the XRF, Slice of Radio or SRF stick, the over the air encrypted data is transformed into easily understood plain text you can read. This text output can then be processed by additional software. At present we do not supply a home automation package or similar, it is hoped that support will be added to OpenRemote, OpenHab, and others. You could use software like LabView, or try writing something yourself, there are some sample Python apps to help you get started. The WirelessThings message bridge will automatically log the last 7 days message for you if you simply want to import the data into Excel (other spreadsheets are available)

The **WirelessThings Launchpad** (download here) is a number of small applications that deal with sharing the wireless transceiver (WirelessThings message bridge), the setup of devices (WirelessThings device configuration wizard) and some example snippets which you may find useful in writing your own code. The devices are easy to setup by pressing a single button and following the onscreen prompts in the configuration wizard. Once setup the device will automatically send readings, the period between readings is configurable at setup or later by using the

same wizard.

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2. How it works:

This low power, Language of Things sensor spends most of the time in a deep sleep, waking up when the contacts are closed and sending one or more configurable messages to indicate this. The switch sensor has a 30mS debounce on the contacts. Contact closure periods of less than this will not be seen.

This device will also update the user with its battery level. If the battery level falls below 2.0 V then the sensor will automatically send a battery low message once per hour.

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3. Technical information:

Power Options		
Battery supplied	160 mAH CR2032	-
Power Consumption		
Sleeping	0.6	µA
First transmits from contact close	0.0000818	mAH
Retry Transmits from contact close	0.0000433	mAH
Battery reporting (every six hours by default)	0.000411	mAH
Accuracy		
Switch sensor has a 30 ms debounce on the contacts. Contact closures periods of less will not be seen.		
Dimensions of Enclosure		
Width	70	mm
Length	55	mm
Depth	22	mm

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Product Description - (R011) ARF - High Power Radio Transceiver

Index

1. Product overview:

The ARF has a new style foot print where the device can be used with or without pins. The module is a combination of the SRF (with serial firmware) and a high power amplifier to give ultimate range. The ARF like the whole family can talk to ERF, URF, SRF, XRF etc.

The ARF can be SMT/SMD surface mounted or you can solder on 2 x 2 mm single in line 10 way male headers (a pair are supplied with the ARF) this gives you a module that can be pluged into an XRF/XBee style interface. It works really well in our USB interface which has a knock out in the back panel for an SMA pigtail which comes with the ARF.

It will work between 868-915 Mhz (default config is 868.3 Mhz), there is no 315/433 option for the power amp from the manufacturer.

Includes:

- ARF
- 2 mm 10 way Headers x2
- U.FL pigtail
- 868Mhz Duck antenna

When used with an XRF the gain overall is around 10db, using an ARF at both ends will give the greatest range (expected to be 10's Km's).

At this power you need to be very aware of your local legislation on power output and duty cycle. Adding large gain parabolic antennas might get you beyond 100 Km but to our knowledge this will exceed the limits set out in all countries, so don't do it.

Features:

- Improved range on the XRF
- Supplied with headers that can be mounted so it fits on XRF/XBee style interface
- Made in the UK

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2. Technical information:

Power Consumption

Transmitting 330 mA

Receiving	< 40	mA
Dimensions		
Length	33.5	mm
Width	24.5	mm
Depth	3.5	mm

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Product Description SRF - Surface Mount Wireless RF Radio:

Update: The SRF is now without a chip antenna, this has led to lower bulk prices being offered, if you wish to include a chip antenna in your own PCB see here: http://openmicros.org/index.php/entry/chip-antenna-reference-designs

The SRF is the module that powers a huge number of our products at Ciseco. It's the heart of the

- XRF - Drop in alternative for the XBee module
- ARF - Amplified radio module
- XinoRF - An Arduino compatible board with built in RF module
- Since of Radio - RF perfected for the Raspberry Pi
- SRF Shield - A plug and play shield for the Arduino
- RFµ - Small Arduino Compatible with SRF

To use the SRF in these products a great deal of effort and expertise was applied and we offer it here to customers who would like to put a similar level of effort and expertise into their own products using this fantastic module. If you're still at the prototyping phase or are new working with Wireless Things products we emplore you to use the finished, more user friendly products listed above rather than this tiny surface mount board.

If you are happy to put in some extra effort and want an extremely affordable, RF serial data module with great range in an RFM12B surface mount layout the SRF provides an out-of-the-box wireless RF serial connection without the need for programming or end-user configuration.

It operates in the ISM bands (868 to 915 MHz) and that means it has a greater range than WiFi (2.4 GHz) units that sport the same footprint. That means it goes through more walls and reaches further. We have had reports of customers sending data over more than 1KM using whip antennas. Comes pre-loaded with Wireless Things firmware which enables the SRF to interwork with all other Ciseco RF modules, without any programming or configuration. You provide data one end and it appears on the other. All data packetisation, data checking, etc. is all done for you.

Makes use of Texas Instruments' CC1110, a low-power System-on-Chip, which sports a micro-controller unit (MCU), memory, a sub-1GHz transceiver, an encryption engine.

Key Features:

- Just 4 connections needed for transparent serial data mode (PWR, GND, RX, TX)
- Supports network identifier PANID for communications into separate networks if desired
- Baud rate selectable upto 115.2 kbaud
- Full speed USB controller (12Mbps)
- 868 to 915 MHz ISM/SRD bands (can support 315 and 433Mhz at less range)
- 250kbps transfer rate
- 10dBm (10 mW) power
- Low current consumption (RX: 24mA; TX: 36mA @ -10dBm output power)
- 123 µA in sleep mode; 0.2 µA in deep sleep mode
- Facilitates remote Arduino/Xino over-the-air programming
- RFM12B footprint
- RoHS
- CE
- WEEE
- Made in the UK

Applications:

- Industrial monitoring and control
- Wireless sensor networks
- Wireless alarm and security systems

Product Description - (R001) XRF - Wireless Data Module

Index

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1. Product overview:

With an equivalent of over 40 million hours of run time in the field, the XRF is an extremely popular, easy to use, RF serial data module. Alongside it popularity, It's great range and XBee styled pin layout makes it a must have for any hobbyist or inventor.

The XRF provides an "out of the box" wireless RF serial connection without any need for programming or end-user configuration. When we say plug them in and go, we mean it, they transfer serial data transparently without any initial configuration.

Operating in the ISM bands (868 to 915 MHz), the XRF has greater range than Bluetooth, WiFi or Zigbee style 2.4 GHz units that sport the same footprint. We have had reports from customers sending data over more than 3 Km using the standard supplied whip antennas!

We have a range of sensors, actuators, support boards, Arduino shields and Raspberry Pi add-on boards that when fitted with an XRF become wireless nodes in a 'Wireless Things' powered internet of things.

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2. How it works:

The XRF is designed for transmitting and receiving of serial data in a very to easy to use module. Data is sent in "packets", these short bursts are essential to the XRF running as the error checking, encryption etc has to be done at periodic intervals. This packet method does mean that the actual "streamed" rate is always lower than the baud rate actually set, this is very important to remember. Employing encryption adds extra overhead and reduces the stream rate also. We have emulated "a wire connection" as closely as is possible.

The XRF comes pre-loaded with firmware which enables it to interwork with all other Wireless Things RF modules, without any programming or configuration. You provide data one end, and it appears on the other. All data packets, data checking etc. is all done for you.

It is fitted with a CC1110, low power, System-on-chip, which acts as a micro-controller unit (MCU). As well as this, it has a sub - 1 GHz transceiver and an encryption engine.

Features:

- 2mm pin spacing the same as the XBee
- Just 4 connections needed for transparent serial data mode (PWR, GND, RX, TX)

- Supports network identifier PANID for communications into separate networks if desired
- Facilitates remote Arduino/Xino over-the-air programming
- Can be programmed in its own right (requires a TI cc debugger and a lot of experience in C)
- Supports serial bootloading (firmware updates without a hardware programmer and using just RX/TX lines)
- 5v tolerant data lines (can be used with a 5v micro without level conversion)
- Acts in most serial applications as a drop in replacement for series 1 XBees

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3. Technical information:

	Size	
Length	18.9	mm
Width	25	mm
Depth	9	mm

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4. Limitations of product:

The XRF is not recommended or authorized for use in life support, surgical implantation, nuclear or aircraft applications or for any use or application in which the failure of a single component could cause substantial harm to persons or property.

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Product Description - (K013) XBBO - Break out Board for XBee Shaped Modules (Active)

Index

1. Product overview:

The main features are:

- Supports many different XBee shaped modules
- Unique support for over the air micro programming (OTAMP) straight from the Arduino IDE (requires XRFs)
- 0.1" header rows moved to the outside, fits on your breadboard
- 5 pin right angled header so you can plug straight into our Xino ultra low cost Arduino shaped boards or stand upright on a bread board, saving space vs. using them lying down.
- 3 extra pads along the right angled connector that can be jumpered to any pin on your XBee shaped device
- battery / external power wire strain relief
- made in the UK

For the active XBBO there is even more:

- LEDs to help you monitor activity
- 6V maximum (5V nominal) power supply
- 5V logic conversion (RX/TX)
- MCP1700 voltage regulator with just 0.05v dropout at 60ma (22 times better at least than the 1117 regulator that drops 1.1V!) allowing you to use LiPo, LiMH etc.
- Regulator can supply up to 200mA to power a micro controller

The XBBOs are shipped as a kit of parts for you to solder.

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2. Technical information:

PCB Dimensions

Width	46	mm
Length	32	mm
Depth	2	mm

When Built

Width	48	mm
Length	32	mm
Depth	15	mm

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Product Description - (K028) CCB - XRF Coin Cell Board - Development Sensors

Index

1. Product overview:

Kit contents:

1 x CCB PCB
1 x SMT coin cell holder
1 x D012 100uf microminature capacitor
2 x D015 10 way 2mm socket header

What everyone has been waiting for. A development base kit for many different types of sensors. The kit when utilised with an XRF radio module and appropriate firmware (cost free) turns the two into an immediate wireless sensor. When used with our USB dongle, PC connected XRF or our standalone WiFi gateway you can publish data to and from other networks including the Internet. There are more an more "cloud" based providers of control, logging, data analysis (see bottom of page).

- Each pin of the XRF is broken out onto the outer edge for easy access and development.
- The board fits into our small ABS box giving an instantly deployable development device.
- For permanently powered "poll-able" devices there are 2 pads to supply GND & 2-3.6v to, you'll need around 35ma max.
- For cyclic sleeping devices that wake every so often then sleep again, use a coin cell (CR2032) coin cell product. We predict you will get well over a million transmissions (LLAP)

By adding just a component or two it can be:

- Temperature sensor - Add 10K resistor and 10K thermistor
- Temperature sensor - Add 4K7 resistor and Dallas DS18B20 sensor
- Light sensor - Add 10K resistor and 10K Light Dependant resistor
- Generic ADC - Add nothing
- 2 Button switch "key fob" - Add 2 switches
- Dry contact - Add nothing (use switch contacts)
- Magnet detect - Add sensor hall effect sensor
- Counter - Add EEPROM/FRAM

Kit contents: Printed Circuit Board, 100uf microminature 10v capacitor, 2x10 way 2mm female headers, SMD coin cell holder.

Schematic: Schmeatic for the V1.9 (blue) PCB ciseco.co.uk/downloads/documents/K028%20-%20CCB%20v1.9a.pdf

Uses - Just a few ideas

- Security (PIR, switches, reed switches, dry contacts, tilt switches, vibration)

- Alert and alarm (Opto sensing, tilt, vibration, microswitch, halt buttons)
- Residential (Keyfobs, garage openers, window, temperature, humidity, light)
- Automotive (RPM, analog and digital reading)
- Healthcare (temperature, fall detection, positive confirmation of life, panic buttons, remote control)
- Weather (counting of wind speed, rainfall, temperature, humidity, dew point, wind direction)
- Children (toys, monitoring, locating)
- Pets (Cat/dog flap entry, locating)

Cloud providers

These providers may need some code to change the simple LLAP messages into a format that they accept. Contact them to find out how our equipment can be used on thier service.

Amee, ThingSpeak, Patchube, SensorLogic, Arkessa, iDigi, Nimbits, Axeda, iobridge, AirVantage, paraimpu, Bugswarm, Evrythng, SEN.SE, Isidorey, HP Cense, Sensinode, One Platform, ProxPlatform, SensorCloud, Thingworx, Yaler

If we have missed you, email us and we'll add your company

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Product Description - (K000) Slice of Pi - add on for the Raspberry Pi

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1. Product overview:

The Slice of Pi is a convenient 3 in 1 product.

In addition to being a small break out board for the Raspberry Pi pins, it has also a socket for a wireless module and a small prototyping area.

- XBee style connector for XRF / XBee / RN-XV etc (the easiest way to add wireless to you Pi)
- SPI and I2C pins to a standard 2.54mm pitch 8 way header (fast and easy access)
- GPIO pins to a standard 2.54mm pitch 8 way header (fast and easy access)
- Construction is very easy (suitable even for children with basic soldering skills)
- Featured in popular publications (good base of knowledge around the board)
- Easy to connect to 3v3, 5v0, GND, RX & TX (solder pads give fast access)
- Available worldwide (many people now stock the board)

Here are just a few things people have said about the Slice of Pi:

"The first thing about the Slice of Pi is its cost. If you just have a little bit of electronics that you want to attach to your Pi, then there is enough space on the board to put in a DIL IC and a few extra components, which will probably do just fine for most projects." (Dr Monk's DIY Electronics Blog - Full review here)

"Having recently acquired a Raspberry Pi on loan for a few days I decided to try some interfacing. The simple solution would have been to put together a cable and header plug to connect to the I/O pins on the Raspberry Pi. This would need a custom circuit each time I wanted to try something. Another solution is to buy a board that connects to the I/O pins and provides a prototyping area in a similar manner to the Arduino proto-shields. The board chosen is the Slice of Pi from Ciseco plc. This has a number of features that make it a good board to use." (Andy's Life - My cool stuff blog - Full review here)

Features:

Firstly, it has a gold plated finish which protects against oxidisation and means you device will outlast normal solder finished boards. Alongside this, it comes as a 'self-solder' kit of parts, meaning you can assemble exactly as your project demands.

Other features include:

- Comes as a complete "self solder" kit of parts
- Upto 50ma at 3.3v can be drawn by the project or radio (do not exceed 50ma)
- Has a pad to connect the XBee shaped device's SLEEP pin (pin 9)
- Can support OTAMP (over the air micro programming) to another XRF family device that supports it (requires modification to AVR dude files)

- Can be used to upload firmware to the XRF
- Made in the UK

Kit contains:

1. Slice of Pi PCB
2. 2 x 13 male header (2.54 mm pitch)
3. Two 1 x 8 male headers (2.5 mm pitch)
4. Two 1 x 10 male headers (2.00 mm pitch)

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2. Possible uses:

The Slice of Pi is an add on for the Raspberry Pi miniature computer, it is a “3 in 1” board. The suggested uses are:

- To connect and power an XRF or Xbee style radio module in to the Raspberry Pi serial port (UART).
- Convenient breakout of the GPIO pins into an easier layout for strip board or bread boarding projects.
- Small prototyping area for compact or simple electronic projects.

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3. Technical information:

Size

Length 51.5 mm

Width 35.5 mm

Depth 18.6 mm

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Product Description - (DB04) PIR Sensor

Index

1. Product overview:

With the simple addition of an LDR (Such as this one) it is easily modifiable for operation in daylight only.

Features:

- Infrared sensor with control circuit board.
- The sensitivity and holding time can be adjusted.
- Detecting Range: Approx. 7m / 23 feet.
- Detecting Angle: Less than 100 degrees.
- Working Voltage Range: DC 4.5V- 20V.
- Quiescent Current: Less than 50uA.
- Level Output Voltage: High 3V / Low 0V.
- Working Temperature: -15 to +70 degrees C.
- Trigger Method: L unrepeatable trigger / H repeatable trigger.

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2. Technical information:

Size

Width 3.3 mm

Length 2.5 mm

Depth 2.38 mm

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Product Description - (P036) Battery Clip PP3 - End Entry 200 mm

Index

1. Product overview:

This battery clip is made of a hard moulded ABS cover that makes the clip more durable and robust than the similar flexible types.

The 200 mm long wires are both colour code for polarity with the ends being stripped and tinned.

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2. Possible uses:

Taken out of the package without any modifications the stripped ends can be used directly on prototype breadboards. The stripped and tinned ends makes it easy to solder into your prototype and finished projects.

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3. Technical information:

	Leads	
Length	200	mm
Number	2	-
Colour coded for polarity	Red & Black	-
Connector		
Type	PP3	-

Material	ABS	-

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Product Description - (P007) 4 AA Battery Box

Index

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1. Product overview:

Ideal for powering 6.0 V devices away from a power socket.

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2. Possible uses:

It can be connected to your project using one of our PP3 battery clips, linking two or three of these together in series can deliver 6 or 9 V to your project.

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3. Technical information:

	Size	
Length	111.8	mm
Width	25.5	mm
Thickness	17.0	mm

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Product Description - (P006) 3 AA Battery Box

Index

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1. Product overview:

Ideal for powering 4.5 V devices away from a power socket.

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2. Possible uses:

It can be connected to your project using one of our PP3 battery clips, linking two or three of these together in series can deliver 9 V to your project.

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3. Technical information:

	Size
Length (Inc terminal)	60.3 mm
Width	47.7 mm
Thickness	16.8 mm

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Product Description - (K065) Things Box - Medium White ABS

Index

1. Product overview:

Lightweight, stylish and perfect for any idea that needs that 'finished product' look.

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2. Technical infomation:

Dimensions

Width 105 mm

Height 82.5 mm

Depth 22 mm

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Product Description - (K065) Things Box - Medium White ABS

Index

1. Product overview:

Lightweight, stylish and perfect for any idea that needs that 'finished product' look.

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2. Technical infomation:

Dimensions

Width 105 mm

Height 82.5 mm

Depth 22 mm

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Product Description - (B011) PowerPOD 1117 3 V 3

Index

1. Product overview:

At Wireless Things we like to make things simple and as such we have created a great range of power supplies. Branded as the PowerPOD, these modular power supplies all have the same basic pin outs and a small footprint. Using this design in your project means you can drop in a different PowerPOD as you power needs change. The simple inline pin out make them great for use in breadboard project making it really easy to swap, test, develop and build your projects.

This particular PowerPOD enables you to supply an input voltage of between 4.4 and 16 V to produce a regulated 3.3 V output voltage.

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2. Possible uses:

This can be used to conveniently power many projects that require a 3.3 V power supply.

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3. How it works:

The AP1117 DC linear voltage regulator drops the applied input voltage to the required output voltage by dissipating the excess as heat energy.

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4. Advanced uses:

These can be wired in series or parallel to provide either a greater voltage or greater current supply.

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5. Technical infomation:

Voltages - Output		
Regulated	3.3	V DC
Voltage - Input		
Range	4.4 to 16	V DC
Max Current Load		
Maximum (derate at higher voltages)	800	mA
Size		
Length	17	mm
Width	15	mm
Thickness	3.3	mm

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6. Other documents:

AP1117 – datasheet

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Product Description - (B012) PowerPOD 1117 5 V

Index

1. Product overview:

At Wireless Things we like to make things simple and as such we have created a great range of power supplies. Branded as the PowerPOD, these modular power supplies all have the same basic pin outs and a small footprint. Using this design in your project means you can drop in a different PowerPOD as you power needs change. The simple inline pin out make them great for use in breadboard project making it really easy to swap, test, develop and build your projects.

This particular PowerPOD enables you to supply an input voltage of between 7 and 16 V to produce a regulated 5 V output voltage.

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2. Possible uses:

This can be used to conveniently power many projects that require a 5 V power supply.

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3. How it works:

The AP1117 DC linear voltage regulator drops the applied input voltage to the required output voltage by dissipating the excess as heat energy.

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4. Advanced uses:

These can be wired in series or parallel to provide either a greater voltage or greater current supply.

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5. Technical infomation:

Voltages - Output		
Regulated	5.0	V DC
Voltage - Input		
Range	7.0 to 16	V DC
Max Current Load		
Maximum (de-rate at higher voltages)	800	mA
Size		
Length	17	mm
Width	15	mm
Thickness	3.3	mm

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6. Other documents:

AP1117 – datasheet

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Product Description - (B016) PowerPOD NCP1402 3 V 3

Index

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1. Product overview:

Using the NCP1402 the B016 PowerPOD takes in an input voltage of between 1.0 and 3.0 V and steps this up to 3.3 V. It is often used to power 3.3 V devices from 1 or 2 AA batteries and can supply up to 120 mA with VIN of 1.5 V.

The NCP1402 regulator is designed to be efficient and have low noise. We have also used a further pin to enable extra current saving.

Our prebuilt PowerPOD range make it really easy to swap, test, develop and build your projects. More than simply being a break out board, all our PowerPODs follow the same 4 pin layout so they are easily interchangeable.

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2. Possible uses:

This can be used to conveniently power many low power projects that require a 3.3 V and up to 120 mA (at 1.5 V input voltage) power supply.

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3. How it works:

The NCP1402 is a power switching regulator that outputs the voltage as a pulse frequency modulation (PFM). This means that the voltage is either at 0 V or at the required output level at a frequency that is determined by the NCP1402.

When the output voltage is at the required level the current is ramped up in the inductor with the energy being stored in the magnetic field. As the output voltage is brought back down to 0 V the energy stored in the inductor's magnetic field transferred to the output capacitor where the energy is stored as a charge ready for use in the attached application.

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4. Advanced uses:

These can be wired in series or parallel to provide either a greater voltage or greater current supply.

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5. Technical infomation:

Voltages - Output		
Regulated	3.3	V DC
Voltage - Input		
Range	1.0 to 3.0	V DC
Max Current Load		
At VIN = 1.5 V	120	mA
Size		
Length	17	mm
Width	15	mm
Thickness	6.1	mm

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6. Other documents:

NCP1402 - Datasheet

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Product Description - (B017) PowerPOD NCP1402 5 V

Index

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1. Product overview:

Using the NCP1402 the B017 PowerPOD takes in an input voltage of between 1.0 and 3.0 V and steps this up to 5 V. It is often used to power 5 V devices from 1 or 2 AA batteries and can supply up to 140 mA with VIN of 3 V.

The NCP1402 regulator is designed to be efficient and have low noise. We have also used a further pin to enable extra current saving.

Our prebuilt PowerPOD range make it really easy to swap, test, develop and build your projects. More than simply being a break out board, all our PowerPODs follow the same 4 pin layout so they are easily interchangeable.

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2. Possible uses:

This can be used to conveniently power many low power projects that require a 5 V and up to 140 mA power supply (at a VIN of 3.0 V).

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3. How it works:

The NCP1402 is a power switching regulator that outputs the voltage as a pulse frequency modulation (PFM). This means that the voltage is either at 0 V or at the required output level at a frequency that is determined by the NCP1402.

When the output voltage is at the required level the current is ramped up in the inductor with the energy being stored in the magnetic field. As the output voltage is brought back down to 0 V the energy stored in the inductor's magnetic field transferred to the output capacitor where the energy is stored as a charge ready for use in the attached application.

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4. Advanced uses:

Reduce current consumption: The enable pin (EN) on the B017 PowerPOD is pulled high by a 10 kOhm resistor to ensure that the regulator's output is enabled by default. The regulator's output can be disabled to reduce current consumption when the device being powered is not being used. This disabling is achieved by switching the EN pin down to 0 V to disable and then back to VOUT to enable.

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5. Technical infomation:

Voltages - Output		
Regulated	5	V DC
Voltage - Input		
Range	1.0 to 4.0	V DC
Max Current Load		
At VIN = 3.0 V	120	mA
Size		
Length	17	mm
Width	15	mm
Thickness	6.1	mm

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6. Other documents:

NCP1402 - Datasheet

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