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EU DECLARATION OF CONFORMITY

Product: LoadConnect Base Station LCBS-N/LCBS-W

Product Description: The LoadConnect Base Station Network [LCBS-N] version is a telemetry unit which accumulates load cell data from up to 16 load cells and sends the data to the cloud or/and via SMS text to a mobile phone. A series of events can be configured, and the resultant alerts sent as SMS text.

The LoadConnect Base Station Wi-Fi [LCBS-W] is a telemetry unit which accumulates load cell data from up to 16 load cells and sends the data to the cloud. The data is then available via the LoadConnect online application from a web browser.



Marking:

Manufacturer: Straightpoint (UK) Limited,
123 Proxima Park
Houghton Avenue
Waterloooville
Hampshire
PO7 3DU

This conformity is based upon compliance with the application of harmonized or applicable technical standards and, where applicable or required, a European Union Notified Body certification.

Directives: The described product above, is in conformity with:
EU Machinery Directive 2006/42/EC;
EU Radio Equipment Directive 2014/53/EU (RED Directive);
EU RoHS 2015/863/EU

Applicable Harmonised Standards: **EU Machinery Directive 2006/42/EC**
EN ISO 12100:2010 Safety of machinery - General principles for design – Risk assessment and risk reduction.

RED Directive
EN301 489-1 v2.2.3 (2019-11) ElectroMagnetic Compatibility (EMC) standard for radio equipment and services,
Part 1: Common technical requirements;

EN301 489-3 v2.1.2 (2021-03) ElectroMagnetic Compatibility (EMC) standard for radio equipment and services,
Part 3: Specific conditions for Short Range Devices (SRD) operating on frequencies between 9 kHz and 246 GHz,
EN301 489-17 v3.2.4 (2020-09) ElectroMagnetic Compatibility (EMC) standard for radio equipment and services,
Part 17: Specific conditions for Broadband Data Transmission Systems;

BS EN 62368-1:2020+A11:2020 Audio/video, information and communication technology equipment. Safety requirements.

RoHS
EN IEC 63000:2018 Technical documentation for the assessment of electrical and electronic products with respect to the restriction of hazardous substances.

Notified Body: Self-declared.

Quality Management: ISO 9001:2015 Quality Management Systems Requirements: BSI Certificate No. FM 584438

Straightpoint (UK) Limited declare that under our sole responsibility for the manufacture and supply of the product detailed above, that it conforms to the essential health and safety requirements of the listed applicable Directives and applicable harmonised technical Standards.

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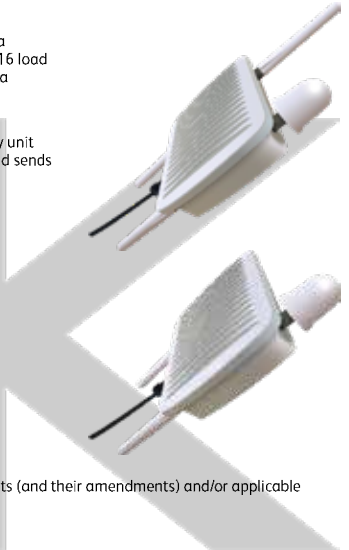
Name: Thomas Dietvorst
Position: General Manager
Date: February 24th 2023

DECLARATION OF CONFORMITY

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This conformity is based upon compliance with the application of UK Statutory Instruments (and their amendments) and/or applicable technical standards; and, where applicable, or required, UK Notified Body certification.

UK Regulations: The described product above, is in conformity with:
The Supply of Machinery (Safety) Regulations 2008;
The Radio Equipment Regulations 2017;
The RoHS Regulations 2012.

Applicable Designated Standards: **The Supply of Machinery (Safety) Regulations 2008**
EN ISO 12100:2010 Safety of machinery - General principles for design – Risk assessment and risk reduction.
The Radio Equipment Regulations 2017
EN301 489-1 v2.2.3 (2019-11) ElectroMagnetic Compatibility (EMC) standard for radio equipment and services,
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RoHS
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UK Notified Body: Self-declared.

Quality Management: ISO 9001:2015 Quality Management Systems Requirements: BSI Certificate No. FM 584438

Straightpoint (UK) Limited declare that under our sole responsibility for the manufacture and supply of the product detailed above, that it conforms to the essential health and safety requirements of the listed applicable UK Regulations and applicable designated technical Standards.

Technical Information Available From: Straightpoint (UK) Limited,
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Signed, on behalf of Straightpoint (UK) Limited:

Name: Thomas Dietvorst
Position: General Manager
Date: February 24th 2023

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Introduction

LoadConnect Base Station WiFi [LCBS-W] is a telemetry unit which accumulates load cell data from up to 16 load cells and sends the data to the cloud. The data is then available via the LoadConnect online application from a web browser.

The unit transmits the data via WiFi to the cloud, so access to a suitable WiFi router in range is required.

The unit has GPS which means the position of the unit can be accurately located on a map.
A SIM card is not required in the modem for this functionality.
It also has a built in temperature sensor.

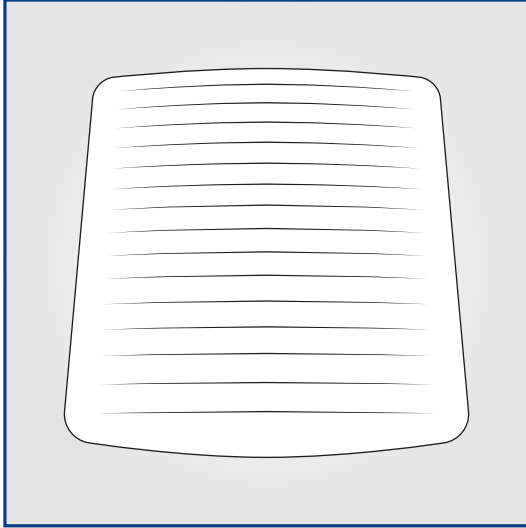
The LCBS-W unit has a battery backup which allows 8 hours of use while disconnected from mains electric.

Unpacking

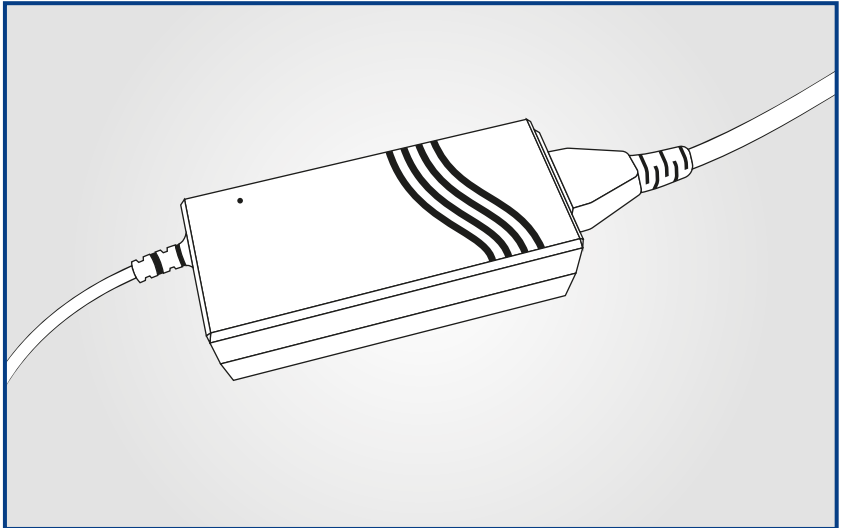
Along with your LCBS-W unit there is a variety of cables, connectors and antenna as follows.

Note: The content may differ from that shown.

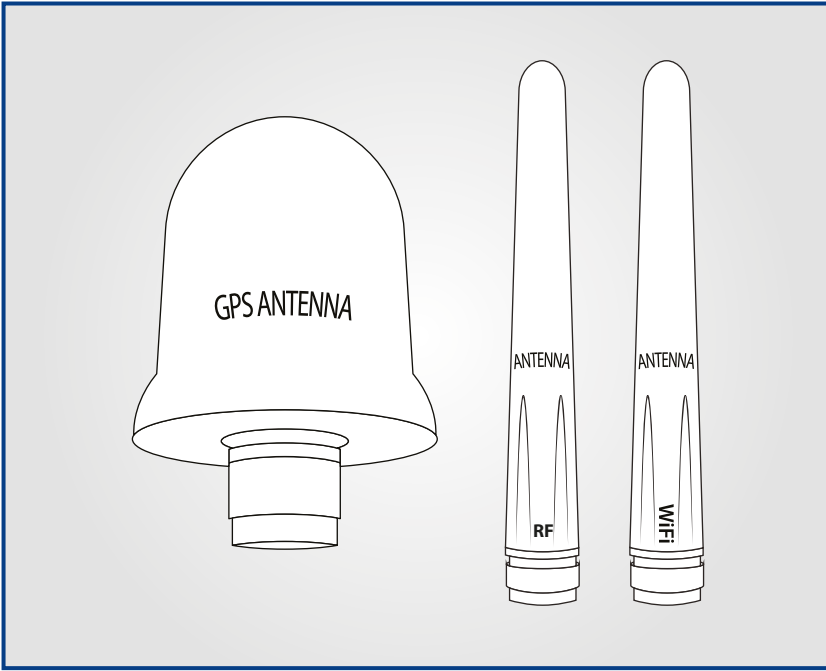
Some units may be fitted with a USB diagnostic cable (not shown).



LCBS-W unit as shipped.



LCBS-W power supply



The unit is supplied with one GPS antenna, one RF antenna and one WiFi antenna.



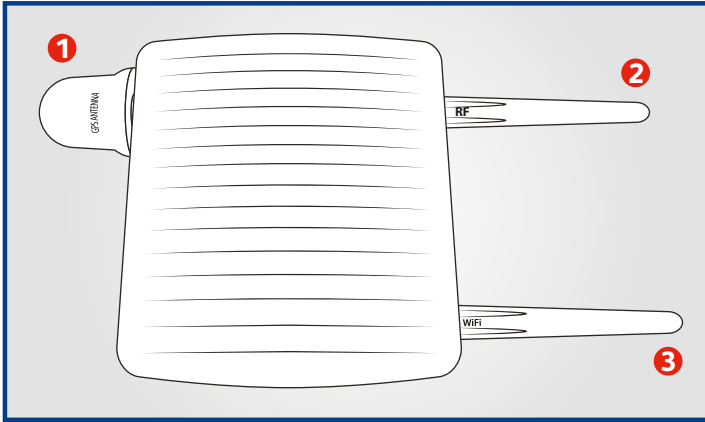
USB dongle required for PC Config and the LoadConnect Toolkit to communicate with a LCBS-W.

Unit Set Up

Antenna

Connect the three antenna as shown below:

- 1) GPS antenna
- 2) RF antenna (2.4GHz load cell)
- 3) WiFi antenna (2.4GHz WiFi)



Carefully attach the antenna in the above arrangement making sure not to mis-thread them, also making sure the antenna sockets do not slip around.

The GPS antenna should ideally be placed in line of sight of the sky/satellite.

PC Config Software

Some essential items need to be configured using PC config. This is a version of the regular load cell/handheld configuration program which has been updated to handle the LCBS-W unit.

In most cases this configuration will have already been completed before you receive the unit.

The program configures the basic parameters of the LCBS-W unit such as serial number, model number, attached load cells and calibration of the cable load cell (if required).

To connect, turn off the LCBS-W unit for at least 30 seconds, then run the PC config software on the computer (with the USB dongle plugged in) and press the 'Connect' button. Then turn on the LCBS-W unit and the PC software will connect and read the parameters from the unit.

If your unit has a battery fitted you will need to remove the lid of the unit and press the reset button to achieve a connection to PC Config and the Toolkit.

The unit can then be configured as required.

Connection of the LCBS-W unit to your WiFi Router

In order to send the LCBS-W data to the cloud, the unit needs to be connected to a WiFi network. This needs to be a 2.4GHz network which supports wireless 802.11 b/g/n standard. As detailed later, there are three methods to set the SSID (name) and password parameters required to connect the unit to your WiFi router.

LoadConnect Toolkit Software

The toolkit can be used to configure the mode of operation of the unit as follows :-

- Send regular data to the cloud.
- Setup the Window and frequency of the polled data.
- Setup which load cells the unit is to receive data from.
- Setup System parameters.
- Setup the connection to your WiFi router.

The unit connects to the toolkit in the same way as PC Config does.

To connect, power off the LCBS-W unit for at least 30s, run the Toolkit software on the computer with the USB dongle plugged in and press the 'Connect' button. If your LCBS-W contains a battery then remove the enclosure lid and press the reset button on the base board after pressing the 'Connect' button.



LoadConnect Toolkit Software (contd.)

System Settings

Click on the Systems Settings Tab to edit.

Site Name

Enter the Site Name of this LCBS-W unit (up to 20 characters long). This name will appear in the web app screens and reports.

WiFi Connection Type

This field sets up the method used to connect to the WiFi router which is required to send the data to the cloud. The possible options are

- Manual Entry - Directly entering the Wifi Router SSID and password.
- WPS PBC (Button) - WiFi Protected Setup via pushing a button on the router.
- WiFi Provisioning - Use a mobile phone app to set the router up.

See 'Setting the WiFi SSID and Password'.

SSID and SSID Password

These are used in the manual entry for the WiFi router connection method, to set the router name (SSID) and password required to connect to the WiFi router.

PIN Code

Leave this field blank.

HTTP Uri

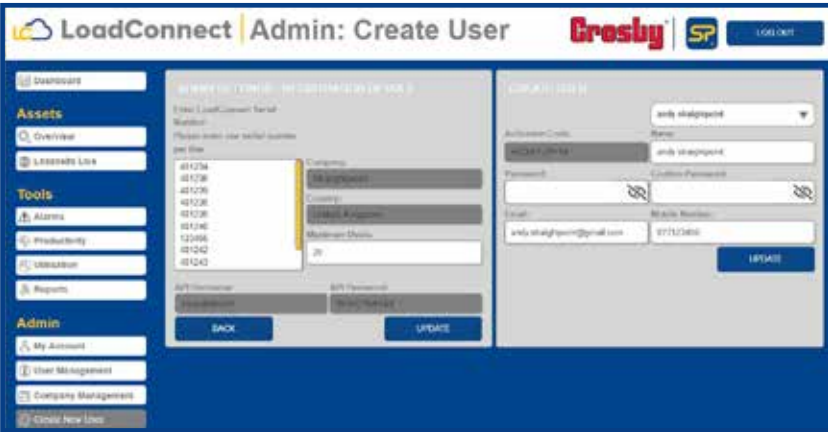
This is the url to connect to the cloud server and should be left as is.

LoadConnect Toolkit Software (contd.)

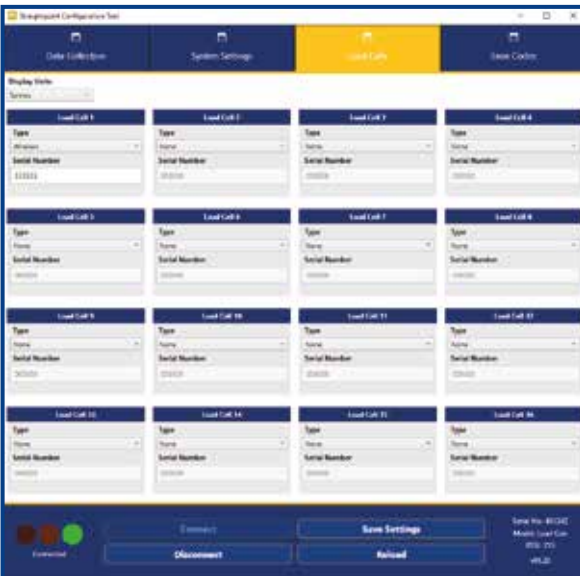
API Username and Password

Enter the API username and the password that is in the Admin settings screen in the LoadConnect online application as shown below.

If this is not correctly set, the data will be rejected by the cloud server.



Setting up the connected Load cells



Up to 16 load cells can be connected to a LCBS-W unit. The serial numbers of each load cell you wish to connect can be added in the load cells screen shown above.

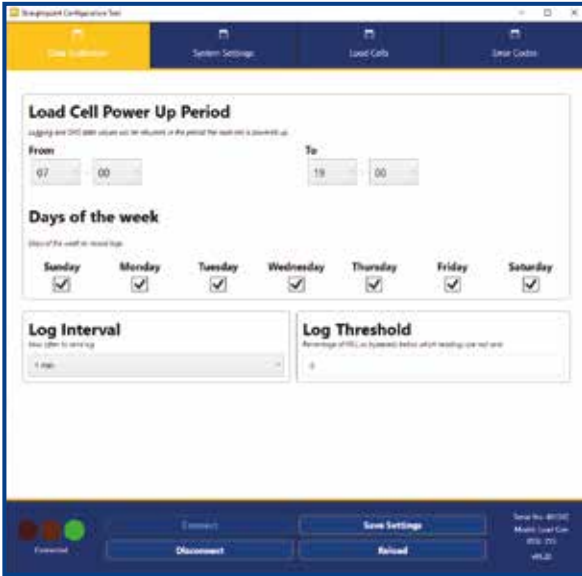
The unit can have the first load cell as an internal cabled load cell, a 4-20mA sensor or a wireless load cell. The remaining 15 load cells can only be standard SP wireless load cells.

Enter the serial numbers of all the load cells you wish to connect.

You can also select the display units in which the weight values will be sent to the cloud. If the weight units are set to pounds the temperature values will be displayed in Fahrenheit otherwise they will be displayed in Celsius

LoadConnect Toolkit Software (contd.)

Data Collection



Load Cell Power Up Period specifies the period in which the LCBS-W unit keeps the connected load cells awake. This is a power saving aid for the connected load cells, so they are not permanently powered up and using battery life when they do not need to be.

These times affect data logging and events via the cloud and SMS text as they also form the bounds when data is available from the load cell, thus these are the cloud and sms logging period.

Log Interval is the measurement interval at which data from the load cells is gathered and send to the cloud. Options of 1min, 5min, 15min and 30 mins are selectable. A value of zero disables cloud data logging.

Log Threshold is the threshold of a data value above which data is sent to the cloud.

It is used to curtail the amount of data send for cloud storage.

This threshold is a percentage of the Working Load Limit (WLL) value of the attached load cell. Hence if the WLL of a load cell is 250te and the Log Threshold is 0.1 %, then the current data value must be $250te \times 0.1\%$ greater or less than the last value sent to the cloud.

If a value of zero is specified, then every data value is sent to the cloud.

So if

The threshold is 0.1 % and the WLL is 250te then the data change will be $250 \times 0.1 / 100 \rightarrow 0.25te$

data value item at interval 1 is 60.0te it is sent to the cloud for logging.

data value item at interval 2 is 60.1te it is not sent to the cloud.

data value item at interval 3 is 60.3te then the value is sent to the cloud for storage.

Startup of the LCBS-W unit

The LCBS-W WiFi unit startup sequence is as follows.

Check to see if you are connected to the LoadConnect toolkit program or the LoadConnect PC config. If you are not connected, or disconnect is selected, the LCBS-W unit will proceed as follows.

The first power up sequence of flashing green LED at 0.5 Hz will last for one minute. If the SSID and password are manually entered then this is the end of the startup sequence.

For WiFi provisioning and WPS modes, after the flashing green LED at 0.5 Hz for one minute is complete, it will then flash the green LED faster (at 10Hz) for a further two minutes. Once this is done the LCBS-W unit will then connect to the router which will be indicated by a very slow flash (1 Hz) for about 10 seconds.

The unit should then send data to the cloud. This can be verified using the LoadConnect online application.

Setting the WIFI SSID and Password

The LCBS-W unit sends its load cell data to the cloud. In order to do this the unit must be connected to a WiFi router. To connect to the WiFi router the unit needs the name of the router (SSID) and password. There are three methods of setting the SSID and password in the unit.

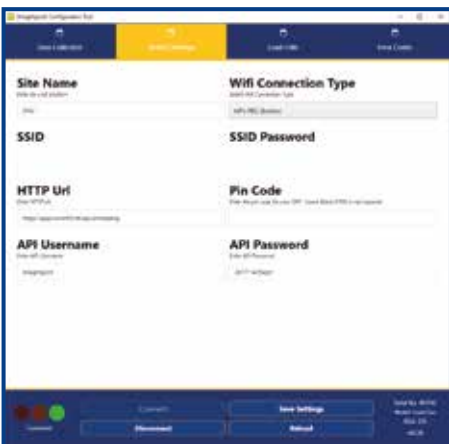
- WPS PBC (Button) - WiFi Protected Setup via pushing a button on the router.
- WiFi Provisioning - Use a mobile phone app to set the router up.
- Manual Entry - Directly entering the WiFi Router SSID and password.

WPS PBC (Button)

WiFi Protected Setup via pushing a button on the router.

This is perhaps the easiest method to set the LCBS-W unit WiFi name and password. No user knowledge of the router name and password is required. It does rely on physical access being available to the WiFi router and router supporting WPS mode.

Under System Settings select the WPS mode from the drop down Wifi Connection Type box leave the SSID and SSID Password fields blank.



After this is completed, select "Save Setting" and then "Disconnect"

The LCBS-W unit will then go into its power up sequence of the flashing green LED at 0.5 Hz for one minute.

It will then flash the green LED faster (10Hz) for two minutes.

During this fast flashing period the user must press the "WPS" button for about a second on the WiFi Router.

Once complete, the LCBS-W unit should connect to the router which will be indicated by a very slow flash (1 Hz) for about 10 seconds.

The unit should then send data to the cloud. This can be verified using the LoadConnect online application.

WiFi Provisioning

Use a mobile phone app to set up the router SSID and password.

This method entails knowing the SSID name and password of the WiFi router that the LCBS-W is going to be connected to.

Download the "Espressif ESP Touch" app from the Play Store on your mobile phone.

Connect your mobile phone to the WiFi network you intend to connect the LCBS-W unit to.

Connect the LCBS-W unit to the PC based LoadConnect Toolkit program.

Under 'System Settings > WiFi Connection Type' select the 'WiFi provisioning'; leave the SSID name and SSID Password fields blank.

Then select "Save Setting" followed by "Disconnect".

At this point it is advisable to open the "ESP Touch" application on your mobile.

Check the SSID (in this case "WLAN") select the WiFi network, same as your phone, and connect your LCBS-W unit, enter the password of the WiFi router. This will be the same password as you used to connect your mobile phone to the WiFi.



The LoadConnect application will go into its power up sequence of the flashing green LED at 0.5 Hz for one minute.

It will then flash the green LED faster (10Hz) for two minutes.

During this fast flashing period the user must select the confirm button on the ESP touch application, the WiFi router SSID and password will then be transferred to the LCBS-W unit.

Once complete, the LCBS-W should connect to the router which will be indicated by a very slow flash (1 Hz) for about 10 seconds.

The LCBS-W unit will then send data to the cloud. This can be verified using the LoadConnect online application.

Manual Entry

Directly entering the WiFi Router SSID and password in the edit fields.

If the SSID and password of the WiFi are known before the LCBS-W unit is taken to site, they can be directly entered using the Windows LoadConnect toolkit program.

Connect the LCBS-W unit to the PC based LoadConnect toolkit program.

Under 'System Settings > WiFi Connection Type' select the 'Manual Entry' method.

The SSID and SSID Password fields then need to be populated with the SSID and password from the router.

Then select "Save Setting" followed by "Disconnect".

When the LCBS-W is powered up on site it will go into its power up sequence of the flashing green LED at 0.5 Hz for one minute.

After this the LCBS-W unit will connect to the WiFi router and begin sending data to the cloud.

This can be verified using the LoadConnect online application.

LoadConnect Online Application

To access the cloud data, connect via a web browser at: <http://loadconnect.corefid.net/>

USB Diagnostic Cable

If requested, a USB diagnostic cable may need to be connected from the LCBS-W unit to a PC/Laptop, along with a terminal emulation program such as TeraTerm (an open source of this program is available from <https://osdn.net/projects/ttssh2/releases/>). Logs can then be sent to Crosby Straightpoint. The USB cable is unlikely to require a driver for Windows 10 but is available on request or from FTDI.

Distributor Stamp



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