

Broadweigh® Bluetooth® Original Instructions

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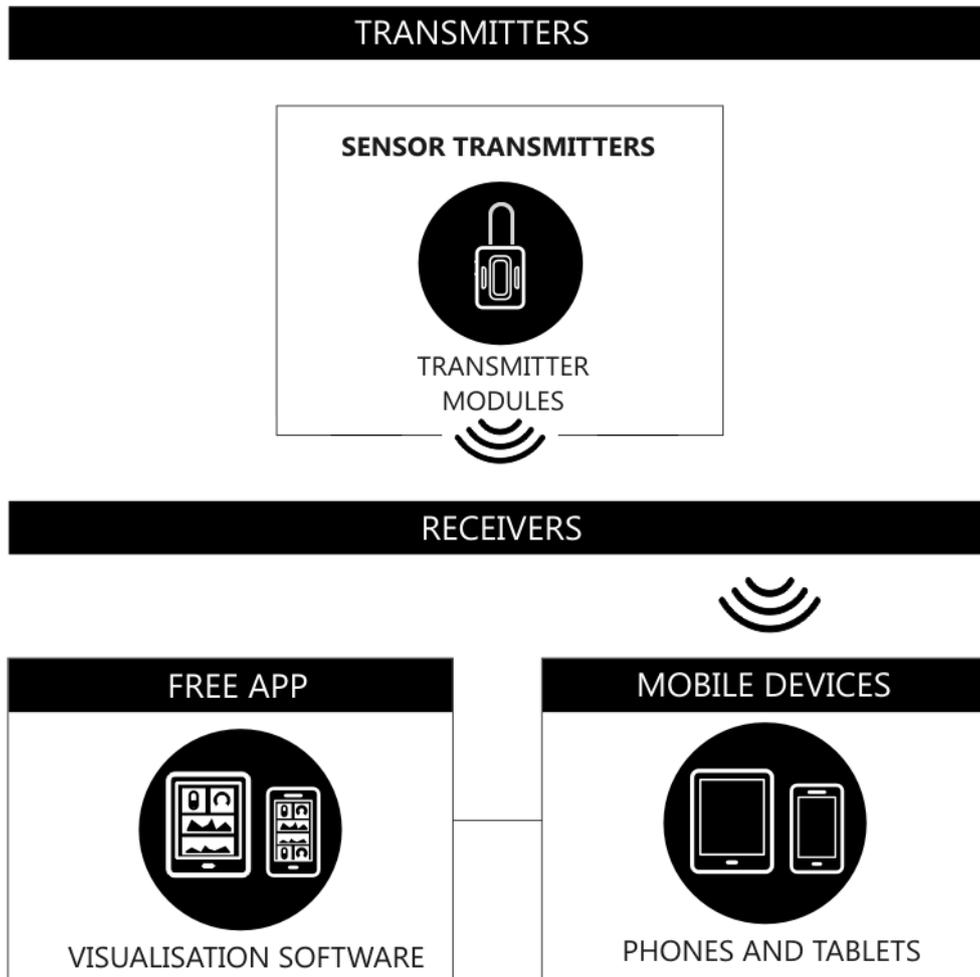
BROAD WEIGH

Load monitoring for live events
Solved by Mantracourt®

Introduction / Overview	2
Navigating This Manual	3
Safe Use	3
Inspection and Maintenance	7
Pre Use Checks	8
Getting Started with the App	9
Troubleshooting	13
Some or all of the tiles in the Dashboard are greyed out and are not receiving data and/or 'Timeout' is shown at the bottom of the screen.	13
Is the View PIN set correctly?	13
Is someone else configuring one of your shackles?.....	13
The tiles are not refreshing as often as expected.....	13
Are there obstructions/ is the distance too great?.....	13
Is there a lot of other radio traffic in the area?	13
Unexpected values displayed.....	13
Has the tile or inputs been tared?	13
Has an unnecessary or incorrect function been used?	13
Are the units are as expected?	13
Declaration of Conformity	14
Warranty	14

Introduction / Overview

Broadweigh Bluetooth range provides access to quality measurements on a mobile platform such as a phone or tablet. The delivery mechanism is Bluetooth Smart which utilises the flexibility and availability of Bluetooth receivers while maintaining the low power requirements of embedded systems. Broadweigh Bluetooth is built upon two complimentary principles of Bluetooth Smart, broadcast advertising data which enables users to deliver the same data to multiple receivers and low power paired connections which can be used in a point to point connection for configuration.



Navigating This Manual

When viewing this PDF manual the following tips will help you navigate.

Viewing bookmarks ( or ) to the left of the page, in the PDF viewer, will allow easy navigation to the relevant chapters of this manual. Alt-left arrow is a useful shortcut back to the last page viewed after a hyperlink is clicked. Hyperlinks are coloured green and are underlined.

Safe Use

Designed to aid rigging professionals on a daily basis, the Broadweigh wireless load cell shackles offer simple, real-time, effective and accurate load monitoring. It allows users to know the **precise loads on any given rigging point, guy wire or hoist in a rigging system. This valuable data** enables the rigger to safely distribute weight for indeterminate loads, roof structures and mother-grids as well as indicate alarms to avoid overload situations.

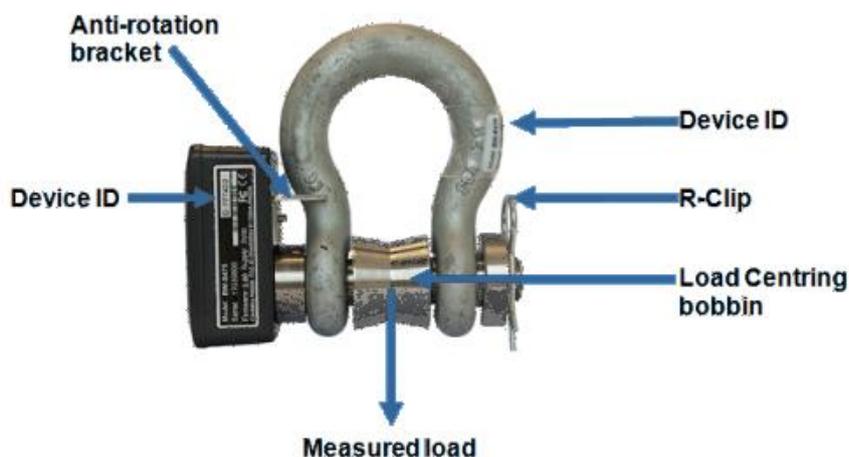
The Broadweigh Shackle is a safety bow shackle with load pin and integrated electronics which features the following:

- Available in 3.25 tonne WLL
- Up to 90 m line of sight wireless transmission range
- IP67
- 5:1 safety factor
- Low rigging profile of 130 mm
- 10 month battery life at transmission 1 per second
- Accuracy of $\pm 1\%$ of current load or 25 kg, whichever is the greater value (When using original bobbin. There may be a reduction in accuracy if these are swapped.)

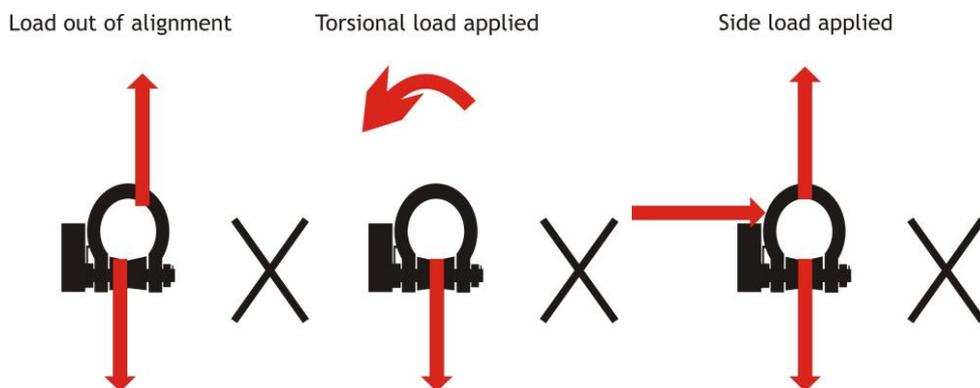
Shackles must be correctly selected for the specific application required. As well as safe working load, physical size and fitment with other components needs to be considered.

The shackle pin and bow are calibrated and load tested together. It is therefore essential for the accuracy of the system that the following information is adhered to:

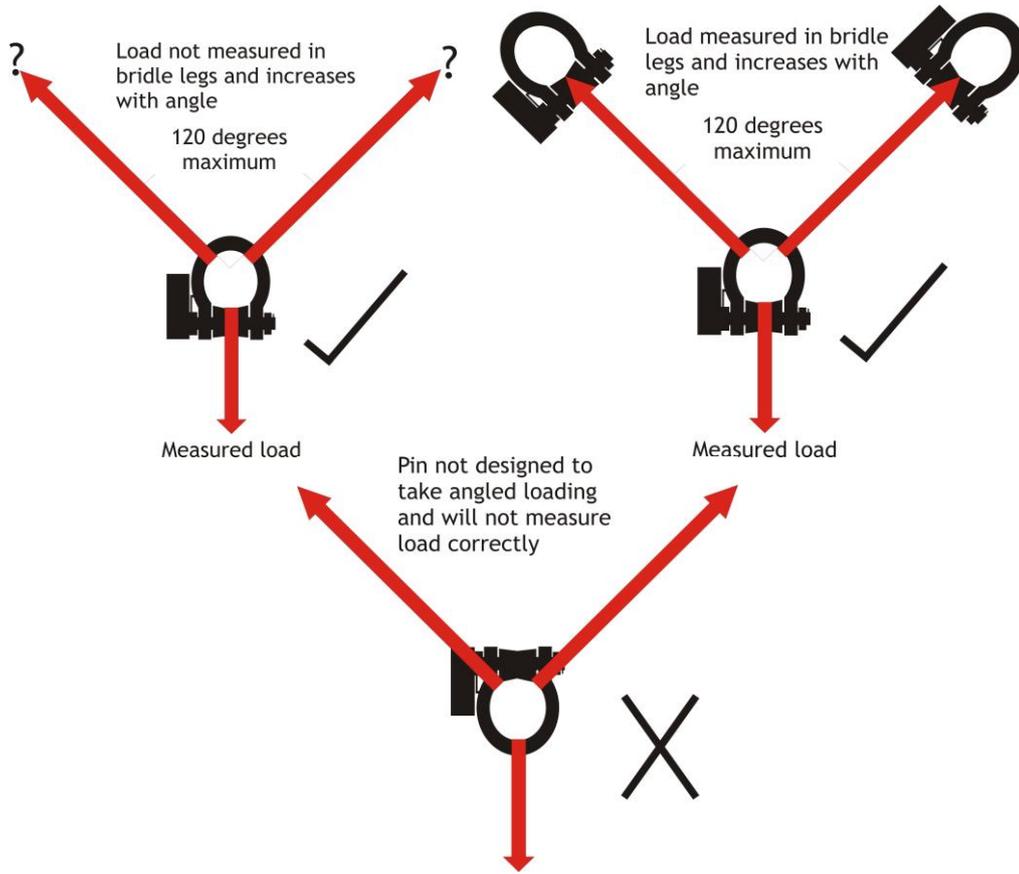
- Each pin and bow must be kept as a pair and not interchanged. The bow is marked with the ID of the pin it is associated with as shown.
- The pin must be aligned in the same orientation with the bow as it was when calibrated.
- The Broadweigh shackle is designed to only fit together in one orientation, the anti-rotational bracket will only fit around the bow shackle on the side with CE marking. This is the opposite side to the ID marking.
- The shackle must be used in conjunction with a bobbin, nut and retaining clip as shown:



Any out of alignment, side or twist loading will affect the readings given as well as load the shackle in a way that it was not designed for.



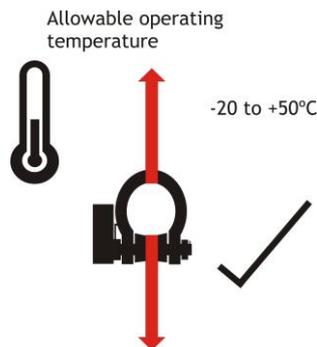
If using the shackle as part of a bridle, remember that the load in legs of the bridle will increase with the angle. If the Broadweigh shackle pin is not connected to that part of the leg then it will not register this increase.



No part of the shackle, pin, bobbin should be modified by welding, grinding or similar.

Always ensure that the load is stable.

The allowable operating temperature range is -20°C to +50°C.



The working load limit (WLL) of Broadweigh shackles assumes the absence of exceptionally hazardous conditions. These include offshore activities, lifting of persons and lifting of potentially dangerous loads such as molten metals. In such cases the degree of hazard should be assessed by a competent person and the safe working load (SWL) reduced accordingly from the working load limit.

Please remember that Broadweigh does not give advice as to how the data from Broadweigh shackles is used. All lifting operations are different and must be supervised by suitably qualified and experienced riggers. It is the user's responsibility to ensure conformity with local regulations.

Broadweigh is not designed to be used as part of a safety critical control system. If it is required for one then the integrator would need to fully assess its suitability.

Broadweigh shackle assemblies are subjected to a 150 % proof load (static test coefficient of 1.5) before being calibrated.

Inspection and Maintenance

As with all rigging equipment, Broadweigh Bluetooth shackles should be inspected before and after every use, ensuring that all the components are present and correct (bow, pin, bobbin, nut and r clip) and the serial numbers match. All load bearing components must be free from cuts, nicks, cracks, gouges or excessive wear and distortion. Any damaged Broadweigh shackles or components must be taken out of service and returned to your dealer to arrange refurbishment or scrapping. If you attempt to replace or swap any load bearing parts yourself the unit's calibration will be void.

It is also important before every use to check that all the settings are as expected. The most safety critical settings to check are that the system zero and the units are correctly set (see the relevant sections in the manual). If these have been unknowingly changed you could end up with unexpected and misleading readings.

Before moving system zero or checking any readings please ensure that the shackle's temperature has stabilised. When moved from different temperatures it can take up to an hour to reach the local ambient temperature. Once it has done so, the readings can accurately be checked.

Always remember that damage to the shackle or its calibration can happen at any time. If you need to move the system zero significantly then further investigation is required. This could take the form of a thorough examination and calibration check with a known load. Records should be kept of any calibration check so that you can see any movement over time. If the readings are out by more than 1% or 25 kg or you have to zero out more than 50 kg, please return to your dealer to arrange recalibration.

These measures should be used in conjunction with your own thorough examination routine at the same intervals you have set for normal shackles. This will vary due to local regulations but should not be less than every 6 months. Records of all thorough examinations should be kept.

In line with the Lifting Equipment Engineers Association (LEEA) guidance we would recommend returning your shackle to the factory every twelve months for re-calibration. You may also choose to check your shackle's output with a known load more often than that.

There are very few maintenance requirements. The Broadweigh shackles, TwistLinks and battery enclosures need to be kept clean, threads clear of debris and protected from corrosion.

Do not overtighten screws when replacing batteries. Damage caused by overtightening is not covered under manufacturer warranty.

Remove the batteries if being stored for an extended period. Leaking batteries can damage the circuitry and pin.

Pre Use Checks

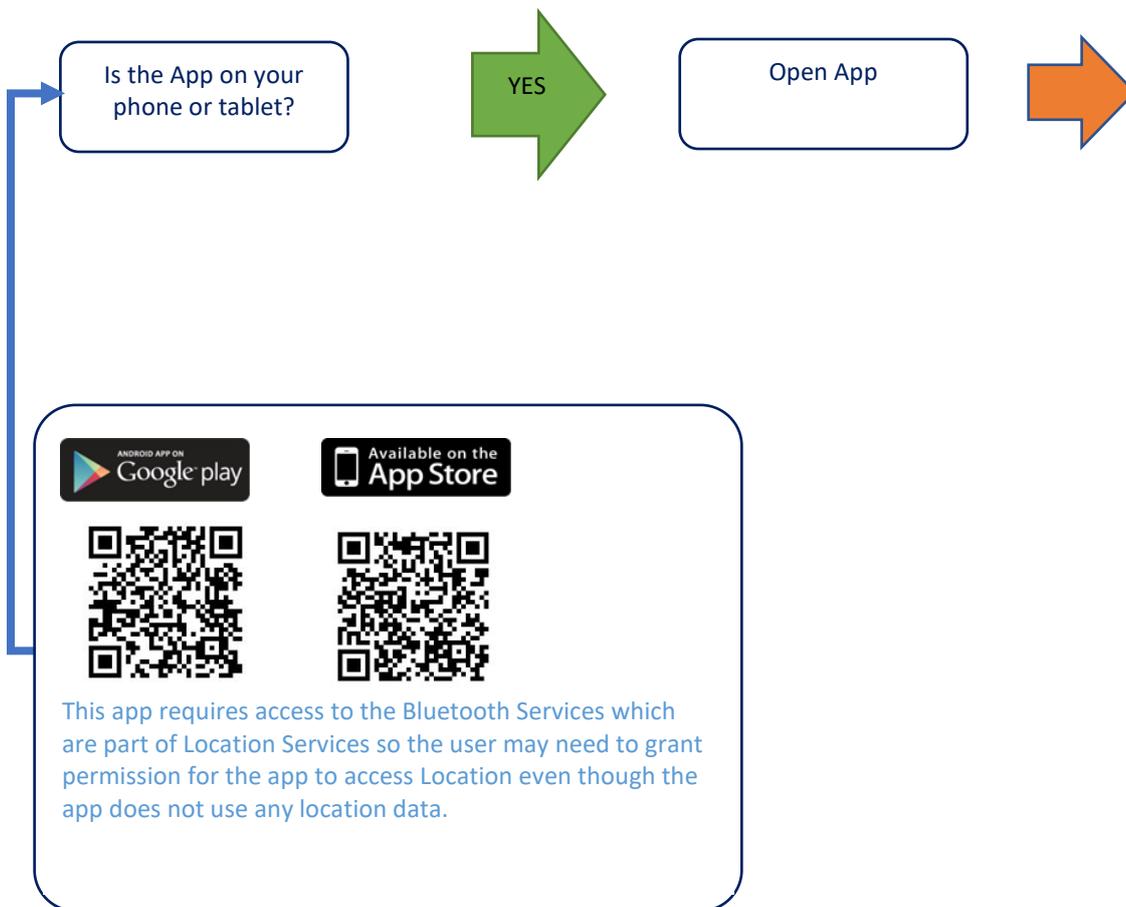
Before rigging, check the shackles all work. Remove cover and insert 2 x AA batteries, observing polarity and ensuring that there are no foreign objects the compartment. The LED will immediately start flashing to show that it is transmitting (the factory default speed is once per second). Make sure that the shackles all appear on the project dashboard on your phone or tablet. (See below for setting up a project)

Pre use check list

- Shackles power up
- Shackles talk to phone or tablet
- Data tags match as expected
- Pins and bows match
- Anti-rotation brackets are correctly positioned
- Bobbins are in place
- R-clips are in place
- Shackles' data tags and rig location are noted
- All load bearing components must be free from cuts, nicks, cracks, gouges or excessive wear and distortion

It is a good idea to note down all the shackles' data tags and where they are located within the rig plot. This is crucial for identifying which loads are being measured and where.

Getting Started with the App

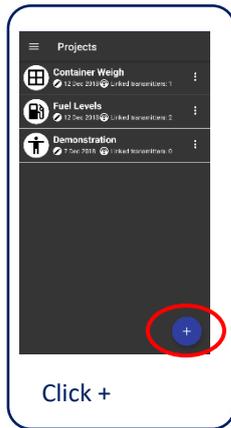


Have you created the project you need?

YES

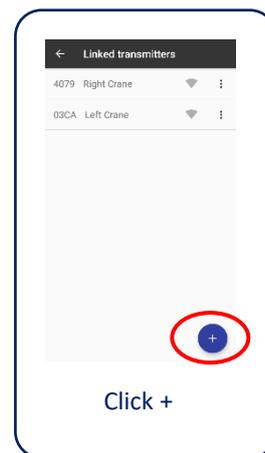
Click the project

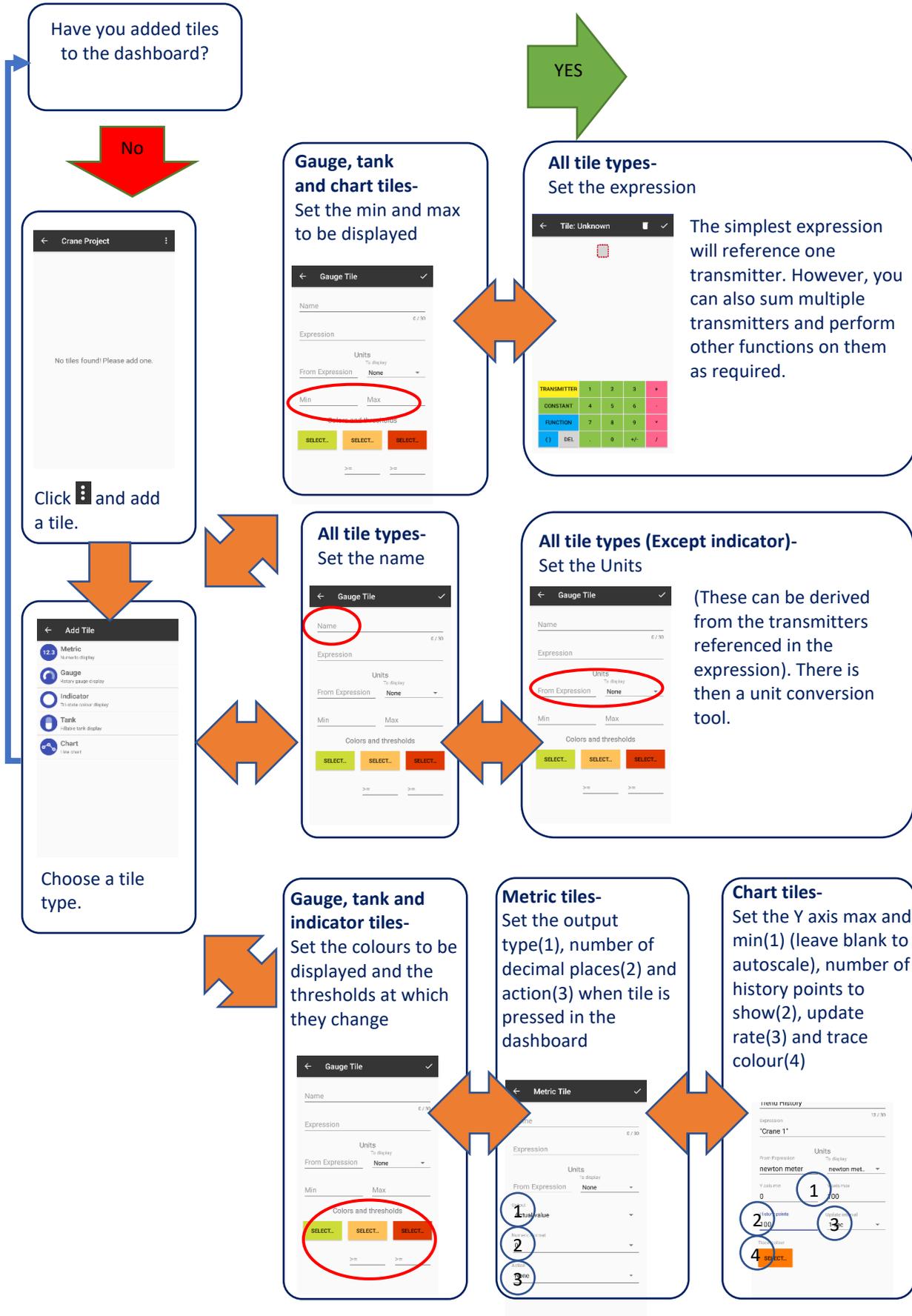
No



Fill in a project name (1), select an icon(2), enter the transmission PIN the transmitters are using(3), set timeout(4) and assign transmitters to the project(5) (you can only see transmitters that have been linked)

Either assign manually by entering known data tags or use the magnifying glass to pick from a list.





Does the dashboard look and function as required?

YES

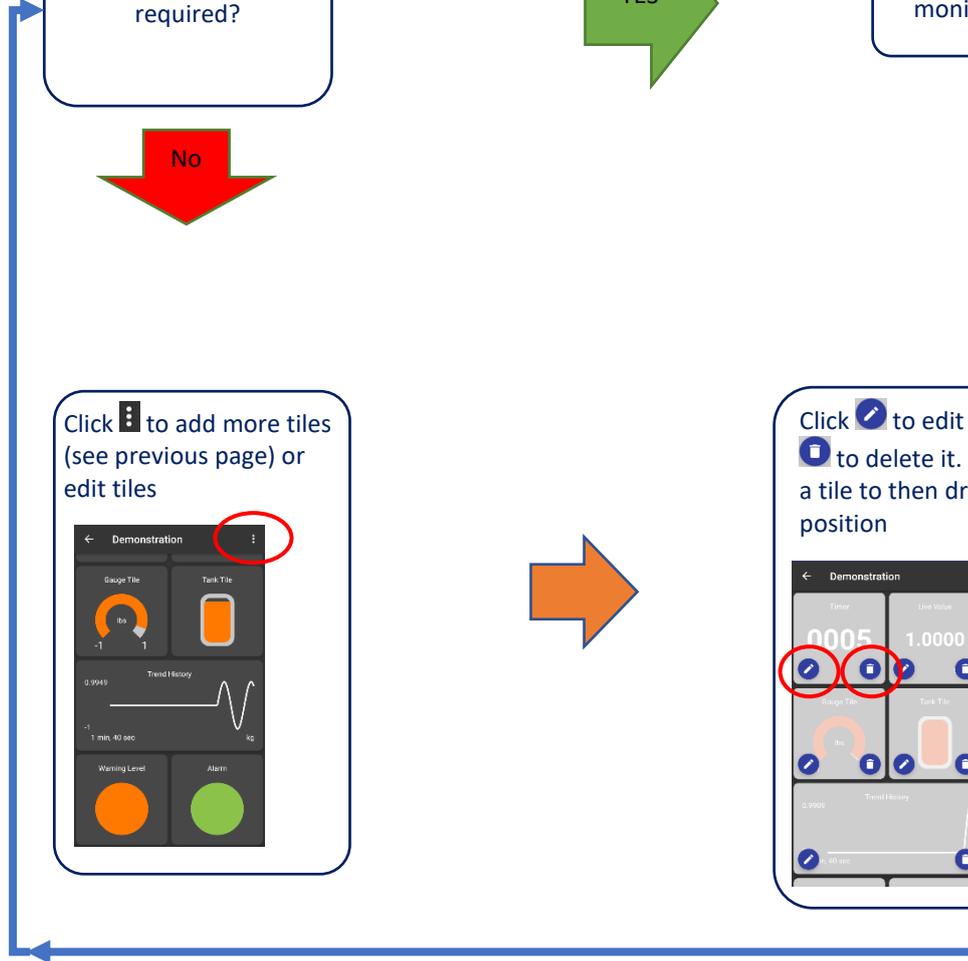
You are ready to monitor your load!

No

Click  to add more tiles (see previous page) or edit tiles



Click  to edit the tile. Click  to delete it. Press and hold a tile to then drag it to another position



Troubleshooting

Some or all of the tiles in the Dashboard are greyed out and are not receiving data and/or 'Timeout' is shown at the bottom of the screen.

Is the View PIN set correctly?

For the receiving device to see any data from any shackles it must have the view PIN set the same as the shackles. This is set when configuring the project, see above.

Is someone else configuring one of your shackles?

When in configuration mode, the shackle changes its transmission mode. This means that it cannot be detected by any other device. Once configuration has been completed the shackle should appear again.

The tiles are not refreshing as often as expected.

Are there obstructions/ is the distance too great?

As the radio is less powerful than the Broadweigh original it is more susceptible to obstructions. Try moving closer or just to another position.

Is there a lot of other radio traffic in the area?

One of the bonuses of Bluetooth is the availability of the technology. However, it can also mean that, when there are a lot of people in a confined area the 2.4 GHz can get saturated. If you expect to be in a high traffic area, do not rely on getting regular updates. It is likely (dependant on your receiving device) that some data will still get through intermittently.

Unexpected values displayed.

Has the tile or inputs been tared?

Come out of the project and then back into it, this will clear any zero that has been applied.

Has an unnecessary or incorrect function been used?

Check the expression field of the tile. Remember that any multiplication will be applied before a unit conversion.

Are the units as expected?

The settings in the tiles allow unit conversion. Make sure that they are set as required.

Declaration of Conformity

EU DECLARATION OF CONFORMITY

We, the undersigned:



Name of Manufacturer:

Mantracourt Electronics Ltd

Address:

**The Drive, Farrington, Exeter, Devon, EX5
2JB**

Country:

United Kingdom

Declare under our sole responsibility that the **Broadweigh Bluetooth Product Range** is in conformity with the following relevant Union harmonisation legislation:

**Radio Equipment Directive 2014/53/EU
EMC Directive 2014/30/EU
Machinery Directive 2006/42/EC**

**RoHS Directive 2011/65/EU
Radio Equipment Directive 2014/53/EU**

Based on the following harmonised standards:

**EN 61326-1:2013
EN 61326-2-3:2013**

EN 300328 V1.9.1

The SPBTLE-RF Bluetooth module has been certified according to the following standards:

**EN62479:2010
ETSI EN 301 489-1 V1.9.2:2011
ETSI EN 301 489-17 V2.2.1**

**ETSI EN 300 328 V1.8.1:2012
ETSI EN 300 328 V1.9.1 (2015)
EN 60950-1:2006 + A11:2009 + A12:2011 +
A1:2010 + A2:2013 + AC:2011**

CE Expert opinion: **0561-ARSP00053**

The module is CE certified: **C0051**

Name and position of person binding the manufacturer or authorised representative:

Signed

Name: **Robert Willmington-Badcock**
Function: **Managing Director**
Location: **Mantracourt Electronics Ltd**
Date of issue: **16th January 2019**

Contains: FCC ID: S9NSPBTLERF IC: 8976C-SPBTLERF



Warranty

All Telemetry products from Mantracourt Electronics Ltd., ('Mantracourt') are warranted against defective material and workmanship for a period of one (1) year from the date of dispatch.

If the 'Mantracourt' product you purchase appears to have a defect in material or workmanship or fails during normal use within the period, please contact your Distributor, who will assist you in resolving the problem. If it is necessary to return the product to 'Mantracourt' please include a note stating name, company, address, phone number and a detailed description of the problem. Also, please indicate if it is a warranty repair.

The sender is responsible for shipping charges, freight insurance and proper packaging to prevent breakage in transit.

'Mantracourt' warranty does not apply to defects resulting from action of the buyer such as mishandling, improper interfacing, operation outside of design limits, improper repair or unauthorised modification.

No other warranties are expressed or implied. 'Mantracourt' specifically disclaims any implied warranties of merchantability or fitness for a specific purpose.

The remedies outlined above are the buyer's only remedies. 'Mantracourt' will not be liable for direct, indirect, special, incidental or consequential damages whether based on the contract, tort or other legal theory.

Any corrective maintenance required after the warranty period should be performed by 'Mantracourt' approved personnel only.



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Applies To: **BroadWeigh Bluetooth Product Range**
Part Number: **517-948**
Issue Number: **01.02**
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In the interests of continued product development, Mantracourt Electronics Limited reserves the right to alter product specifications without prior notice.



www.mantracourt.com

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