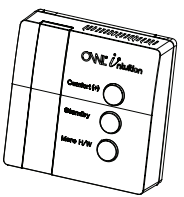
OWL® intuition

Hot Water Control Tank Sensor [TBTE3H or TBHE3H]

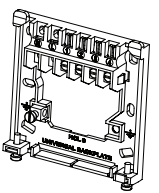
Installation Instructions

Tank Sensor to replace existing wired tank thermostat. Alternatively can be paired to optional Relay Unit to allow wireless connection to the boiler / wiring centre location. Support for up to 4 separate hot water zones. Provides programmer / time clock functionality. Requires Network OWL to operate.

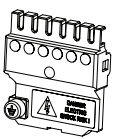
IN THE BOX:



Tank Sensor



Backplate



Safety Cover

Temperature Sensor

2 x AAA alkaline battery

Introduction

This Tank Sensor is a part of the OWL Intuition range of cloud connected monitoring and control products. Its operation is dependant upon being paired to the broadband Internet connected Network OWL (supplied separately). The Tank Sensor provides hot water tank thermostat and programmer / time clock functionality.

This version of the Tank Sensor is designed for use with central heating systems with a hot water tank / cylinder which is fitted with an existing switching thermostat.

Device code TBTE3H is fitted with a digital temperature sensor.

Device code TBHE3H is fitted with a digital temperature and humidity sensor.

Basic day-to-day user operation changes can be made using the three buttons. Additionally there is comprehensive yet intuitive and easy to use control via the OWL Intuition web dashboard. Accessible from any Internet connected computer anywhere in the World. iPhone and Android smartphone apps are also available for free download.

It is recommended that this product is installed by a suitably qualified heating engineer, plumber or electrician.

Please read the Safety Information section of this document before proceeding.

Installation Instructions

Single or multiple hot water tanks

If this is a single tank system then simply follow these instructions. The OWL Intuition system will support up to 4 tanks. For additional Tank Sensors simply repeat these instructions for each one required. The web dashboard will automatically update the Hot Water widget with the additional device when you next log in.

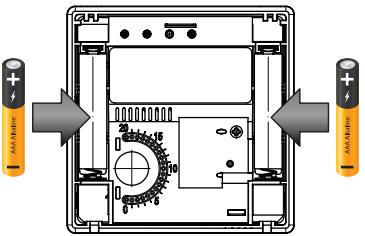
Network OWL installed and online

The Network OWL and heating Room Sensor should already be installed. Refer to the Network OWL Getting Started Guide for guidance if required. Check that the Network OWL is powered-up and connected to the OWL servers (the top green LED should be flashing in a "triple blip pattern"). **IMPORTANT: Please upgrade the Network OWL firmware**

1. It is essential that the Network OWL is running the latest released version of firmware available (at least Version 2.2). Please log in to the OWL Intuition web dashboard at **https://www.owlintuition.com** (this is a secure connection).
2. Click on the Devices menu. The Network OWL will appear in the list of devices. Click on Network OWL image to open a new window. If an upgrade is required, an Update Device button will be visible. Click on this button then wait for approximately 5 minutes for the upgrade to complete. You should check that the upgrade was successful before proceeding by repeating this instruction.

Other Steps Before Installing

1. Pair Tank Sensor with Network OWL



a. Put the batteries into the Tank Sensor. The 3 LEDs will start flashing together indicating that the Tank Sensor is ready to be paired.

b. Power down the Network OWL by removing the power connector. Then after 10 seconds re-insert the power connector into the Network OWL and wait. The 3 LEDs on the Tank Sensor will stop flashing indicating that it is now paired to the Network OWL.

c. Now wait until the Network OWL is connected to the OWL servers (the top green LED should be flashing in a "triple blip pattern").

d. Log in to the OWL Intuition account at **https://www.owlintuition.com** (this is a secure connection). You will then see the OWL Intuition web dashboard.

e. A message box will pop-up indicating that a new device has been detected and requesting you to log out and log back in.

f. When you log back in you will now have a Hot Water widget within your web dashboard.

2. Configure Hot Water Settings

You can make any necessary changes to the various Hot Water settings by clicking on the "gear wheels" icon on the grey Hot Water widget title bar.

3. Configure Time Clock

The Hot Water Time Clock defines the periods during which the hot water is automatically heated and to what temperature. OWL Intuition will intelligently calculate what time to switch the boiler on to heat the hot water to the specified Temperature, by the Start Time. Each day of the week can be programmed with up to 5 different hot water periods.

The preset Hot Water Time Clock settings are shown in the table below. These can be modified using the OWL Intuition web dashboard.

a. On the Hot Water widget click on the "Clock" icon. This opens the Hot Water Time Clock widget.

b. Select the day you wish to amend, then click an option on the line you wish to amend.

   i. Pencil icon to edit the line.

Preset Hot Water Time Clock Settings

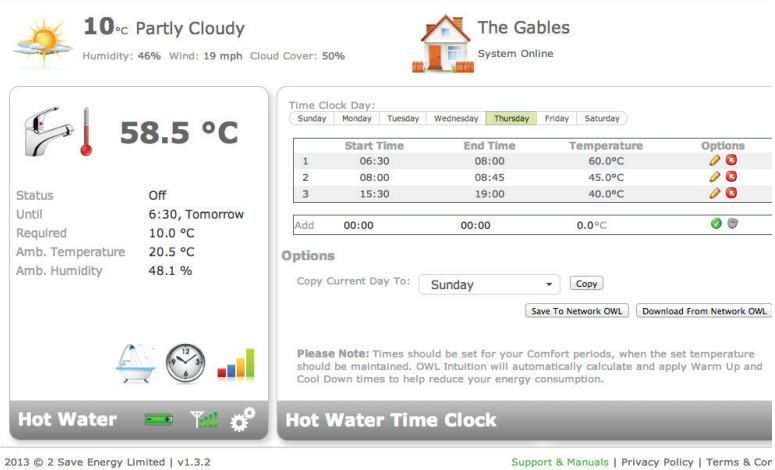
Monday to Friday		
Start Time	**End Time**	**Temperature**
06:30	08:00	55°C
16:00	22:00	45°C
Saturday & Sunday		
Start Time	**End Time**	**Temperature**
07:00	09:30	55°C
16:00	22:00	45°C

Note: Outside of these preset hot water heating periods, the Tank Sensor will maintain the hot water Standby temperature (10°C - configurable).

ii. Cross icon to delete the line.

c. Amend details within the Edit box as required then click on the Tick icon to update the table.

d. To add a new line simply fill in the Add box with the required details and click on



OWL Intuition Web Dashboard - Hot Water and Time Clock widgets

the Tick icon.

e. When you are happy with your changes you can use the Copy Current Day feature to quickly duplicate to other days.

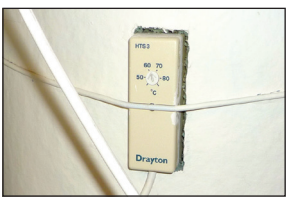
f. IMPORTANT: When you have finished making changes you must save them to your Network OWL by clicking on the "Save To Network OWL" button.

Installing the Tank Sensor

The Tank Sensor should be located adjacent to the hot water tank / cylinder. It must be close enough for the supplied hot water temperature sensor cable (3 metres) to be safely routed to the location of the existing hot water thermostat. Mount the Tank Sensor on an internal wall approximately 1500mm above floor level, you must use the backplate provided. It should be positioned away from draughts, direct heat and sunlight. The backplate is suitable for direct wall mounting using two wood screws No. 6 x 1" or M3.5 x 25mm into correctly sized wall plugs if required. Alternatively mount on to a single gang flush wiring box complying with BS4662, using two M3.5 screws.

1. **Check Signal Strength -** With the Tank Sensor at the chosen installation location you should now check the signal strength icon shown on the web dashboard Hot Water widget. The signal should be at least 2 bars and preferably more. Try moving the Network OWL closer to the Tank Sensor if you have a signal strength problem.
2. **Ensure** there will be enough space to allow easy screwdriver access to the two captive screws located at the base of the backplate.

3. **Electrical Connections: -** ***If in any doubt whatsoever, do not continue, but consult a qualified electrician or heating engineer.***
   WARNING: ISOLATE THE MAINS SUPPLY BEFORE COMMENCING INSTALLATION
   Ensure that the Live feed to the Tank Sensor is correctly fused (3A or 5A maximum) - This protection is normally provided by way of a fused spur powering the heating system.
4. **Ensure** that you refer to the appropriate wiring diagram applicable to this system. Common configuration wiring diagrams are supplied on a separate sheet. Latest versions of all wiring diagrams are also available for download by clicking on Support & Manuals on the OWL Intuition web dashboard (lower right).



5. **Tank / Cylinder Thermostat -** *For existing installations*, locate the thermostat and identify the wiring back to and within the Wiring Centre. Take the thermostat off of the side of the tank / cylinder. *For new installations*, it is recommended for safety that a conventional thermostat is fitted in series with the Intuition Tank Sensor wiring.

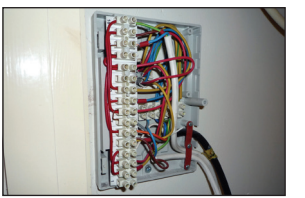
6. **Make pocket for hot water Temperature Sensor -** Using a 6mm diameter screwdriver carefully make a pocket down the side of the hot water tank / cylinder. Ensure that there will be a good tight thermal contact between the tank and the Temperature Sensor.

7. **Insert hot water Temperature Sensor -** Carefully push the Temperature Sensor down into the pocket until the stainless steel tube is just out of sight. It is very important that the Temperature Sensor makes good thermal contact with the side of the tank / cylinder.

8. **Refit original thermostat -** Taking care not to damage the Temperature Sensor cable, refit the original thermostat and the spring retaining cable. *(Photo shows optional daisy-chain expansion connector)*

9. **Alternative Temperature Sensor Arrangements -**
   a) If necessary attach the Temperature Sensor directly to the metal hot water tank / cylinder with suitable high temperature thermally conductive adhesive such as 3M™ Thermally Conductive Epoxy Adhesive TC-2707.
   b) Some modern cylinders have a hard cladding. In these circumstances you must install the Intuition hot water Temperature Sensor into a suitable factory fitted sensor pocket provided for this purpose.

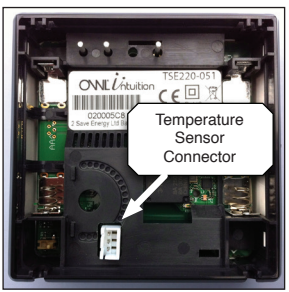
10. **Fix the Tank Sensor backplate** - Offer the backplate supplied to the wall in the position where the Tank Sensor is to be mounted. Mark the fixing positions through the slots in the backplate. Drill and plug the wall, then secure the plate into position. The slots in the backplate will compensate for minor misalignment of the fixings.
11. **Drill cable access hole -** Drill a hole through the central aperture, large enough (approximate 12mm) for both the Temperature Sensor white multipole connector to pass through and for a new 3 core mains cable (recommended cable size 1mm²).
12. **Wiring** - All necessary electrical connections should now be made.



- The Tank Sensor is double insulated and does not require an earth connection.
- An earth connection block is provided on the backplate for terminating any cable earth conductors.
- Earth continuity must be maintained and all bare earth conductors must be sleeved.
- Run the new 3 core mains cable from the Tank Sensor backplate to the Wiring Centre, fixing as required.
- Run the Temperature Sensor cable from the hot water tank back to the Tank Sensor backplate, fixing as required.
- For an overview see the 'before' & 'after' schematics below. These diagrams are schematic and should be used for guidance only.

- Refer to the separate wiring diagram and table below for the wiring arrangement appropriate for your heating system. Make the connections as appropriate.
- Ensure that no conductors are left protruding outside the central space enclosed by the backplate.
- Please ensure that all installations comply with the current IEE regulations.
- If anything is unclear then please consult the boiler manufacturers installation instructions before making these connections.

13. **Fit Temperature Sensor cable & Safety Cover** - Check all of the wiring is safely attached to the appropriate backplate terminals and the screws are tight. Fit the white multipole Temperature Sensor cable connector to the back of the Tank Sensor (it will only fit one way around). Then fit the Safety Cover by clipping it into place over the wiring terminals with the Temperature Sensor cable exiting at the appropriate point.



14. **Complete** the installation by mounting the Tank Sensor to the backplate. To do this engage the Tank Sensor on the lugs at the top of the backplate, then carefully swing the Tank Sensor down and push it carefully back into its plug-in terminal connectors. Locate over the captive screws at the base of the backplate and tighten them so that the Tank Sensor is locked into position.

15. **Existing Programmer / Time Clock** - any existing hot water programmer or time clock is now redundant. You should either program it to be permanently on (24/7) or preferably remove it, ensuring that the two wires it was switching are safely electrically linked together, preferably by installing a link wire within the boiler. Please check boiler manufacturers wiring instructions for further details.
16. **Finally** check that the Tank Sensor is functioning correctly and switching the boiler on and off correctly. A simple test for this is to press the More H/W button for 5 seconds. This will activate the More Hot Water mode and turn the boiler on. Check that the web dashboard Hot Water widget is now showing that More Hot Water is activated and the boiler is running (Red-glow around tap icon at top of Hot Water widget).
17. **Handover** - Please ensure you handover this document to the householder and direct them to the Heating & Hot Water Control User Manual available for download by clicking on Support & Manuals on the web dashboard (lower right).

Additional Installation Information

Tank Sensor Factory Reset (Delete Network OWL Pairing)

You can factory reset the Tank Sensor by pressing both the Standby and More H/W buttons together for a minimum of 10 seconds. The 3 LEDs will start flashing indicating that it is in pairing mode. Refer to Getting Started with OWL Intuition Network Gateway guide if you need to factory reset the Network OWL.

Tank Sensor - Relay Unit Pairing Mode

You can place the Tank Sensor into Relay Unit pairing mode by pressing all 3 buttons together for a minimum of 4 seconds. The 3 LEDs will start flashing indicating that it is in pairing mode. If the Tank Sensor is already paired to a Relay Unit pressing the 3 buttons will delete that pairing. Refer to Relay Unit Installation Instructions for further information.

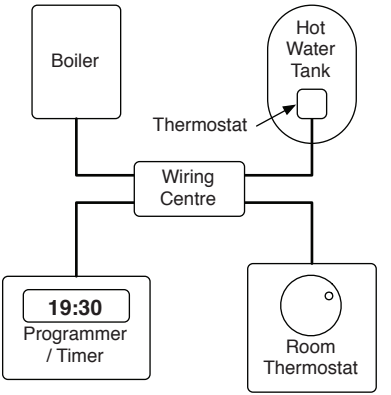
Safety Switch

The Tank Sensor is fitted with a safety switch that is automatically activated when the device is removed from the backplate. The Tank Sensor MUST be installed onto the special backplate supplied otherwise the Tank Sensor will not work.

OWL Intuition-h Hot Water Control Tank Sensor Backplate Wiring

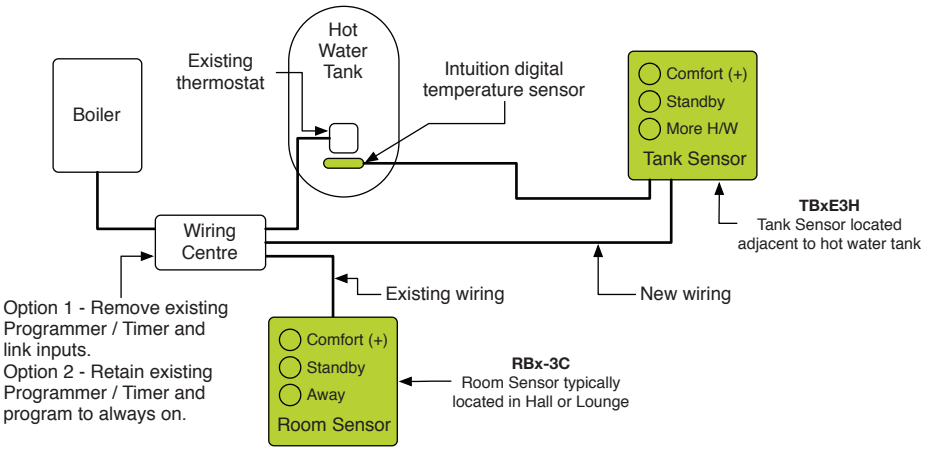
Terminal	Description
N	Neutral - Not used, may be used to 'park' unused neutral wire.
L	Live - Not used, may be used to 'park' unused live wire.
1	Common terminal of Tank Sensor latching relay
2	Not used
3	'Heat Satisfied' - Normally closed terminal of Tank Sensor latching relay
4	'Call for Hot Water' - Normally open terminal of Tank Sensor latching relay
⏚	Earth continuity connection

BEFORE: Typical Regular / System / Conventional (Wired) Boiler



Existing Arrangement

AFTER: Typical OWL Intuition-h Regular / System / Conventional (Wired) Boiler



OWL Intuition-h Arrangement

SAFETY INFORMATION

To ensure that you use your product safely and correctly please read the warnings & safety precautions below before installing your OWL Intuition Tank Sensor.

- Isolate the mains power supply to the heating system and Wiring Centre that the Tank Sensor will be connected BEFORE commencing any wiring work.
- If you are in any doubt about the Tank Sensor installation whatsoever, DO NOT attempt to install, but consult a qualified electrician or heating engineer.
- Before attempting to fix the backplate to the wall you must ensure that there are no electrical cables or pipes that will be damaged drilling the fixing holes.
- Do not immerse the unit in water or other liquids. If you spill liquid over it, dry it immediately with a soft cloth.
- Do not use or store the product in conditions that could adversely affect the product such as rain, snow, desert and magnetic fields.
- Do not subject the product to excessive force, shock, dust, temperature or humidity.
- Keep the product away from heat sources - radiators, stoves, heaters etc.
- Do not use the product in or near water or in high moisture areas such as bathrooms.
- Do not tamper with the product's internal components. This invalidates the warranty.
- Do not attempt to repair the product yourself.
- Contact the retailer or Customer Services if your product requires servicing.
- If the equipment is used in a manner not specified in this manual, the protection provided by the equipment may be impaired.
- Take care when handling all battery types. Batteries can cause injuries, burns or

damage to property if they come into contact with conducting materials, heat, corrosive materials or explosives.
- Remove the batteries before storing the product for extended periods.
- Only use fresh batteries. Do not mix new and old batteries.
- Do not dispose of old batteries as unsorted municipal waste, only do so in accordance with your local waste disposal regulations.
- When disposing of this product do so in accordance with your local waste disposal regulations.

CARING FOR YOUR PRODUCT

- Before cleaning, remove the Tank Sensor from the backplate, disconnect the Temperature Sensor and remove the batteries.
- Use a lightly dampened cloth. Do not use liquid or aerosol cleaning agents, benzene, thinners, abrasive or corrosive materials.
- Do not scratch hard objects against the product.
- Do not leave discharged batteries in the product.

COMPLIANCE

The CE marking certifies that this product meets the main requirements of the European Parliament and Council Directive 1999/5/EC. A copy of the signed and dated Declaration of Conformity is available on request. OWL Intuition products are manufactured to ISO-9001 Quality Assurance Standards.

WARRANTY INFORMATION

2 Save Energy Limited guarantees that OWL Intuition products will work for a minimum period of 24 months from date of purchase and that it will be free from defects in materials, workmanship or design. If during this limited 2 year period of guarantee, from date of purchase, you find that the equipment is not working properly, you may return it to us and we will replace, or, (at our discretion) repair it, free of charge.

2 Save Energy Limited will not accept any liability for defects arising from fair wear and tear, accidental or wilful damage, misuse or failure to follow product or safety instructions If you return any equipment as faulty, 2 Save Energy Limited reserves the right to test the equipment and if found to be in perfect working order, to return it to you. In this event, 2 Save Energy Limited reserves the right to charge for any testing or postage costs incurred. This does not affect your legal rights relating to equipment, which is faulty. Warranty conditions only apply where Proof of Purchase is provided.

To return OWL Intuition product contact customer.services@theowl.com to report the issue and reason for returning your product. 2 Save Energy Limited will issue you a form and reference number. Once we have received the completed form and proof of purchase we will commence the returns process.

SPECIFICATIONS - Tank Sensor [TBTE3H and TBHE3H]

Case dimensions	86mm x 86mm x 37mm
Case material	Thermoplastic, flame retardant
Case ingress protection	IP30
Case electrical protection	Double Insulated
Radio frequency band	868MHz unlicenced ISM band
Operating range	Up to 50m (in free space)
Power source	2 x 1.5V Alkaline AAA batteries
Temperature accuracy - typical [TBTE3H]	±0.5°C
Temperature accuracy - typical [TBHE3H]	±0.2°C
Humidity accuracy - typical [TBHE3H]	±1.8%RH
Latching relay voltage rating	230V a.c. ±10% 50/60Hz
Maximum Switching Current	8A
Latching relay contacts rating - Resistive Load	8A @250V a.c. power factor Ø1
Latching relay contacts rating - Inductive Load	3.5A @250V a.c. power factor Ø0.4
Operating temperature range	0°C to +40°C
Storage temperature range	-25°C to +65°C
Relative humidity	25% to 95% non-condensing

For details on using your new OWL Intuition heating controls, please download the Heating & Hot Water Controls User Manual document by clicking on Support & Manuals (web dashboard - lower right).

Customer Support
If you have any further questions please check our frequently asked questions at:
http://www.theowl.com/faqs.html
You can also email us at: **customer.services@theowl.com**
(please ensure you state your Network OWL MAC ID)

2 Save Energy Limited operate a policy of continuous development and improvement, therefore the content of this document is subject to change without notice.