

# T6R-HW

## SMART THERMOSTAT WITH HOT WATER CONTROL

### PRODUCT SPECIFICATION SHEET



The **T6R-HW** smart thermostat is designed to provide automatic time and temperature control of heating and stored Hot water systems in homes and apartments.

It's compatible with 24-230V on/off appliances such as gas boilers, OpenTherm® combi-boilers and heat pump. Also, works with zone valve applications and is suitable for Sundial S, Y and W plan stored hot water systems (on/off). Not with electric heating (240V).

The T6R-HW is for table stand installations (wireless), and consist of a thermostat and a Receiver box.

The solution is designed with the installer in mind and includes a 2-channel Receiver module with mounting options for directly on the wall or on a wall box. Wiring can be from below or from the back by lifting the terminal platform, which makes installation quick and easy.

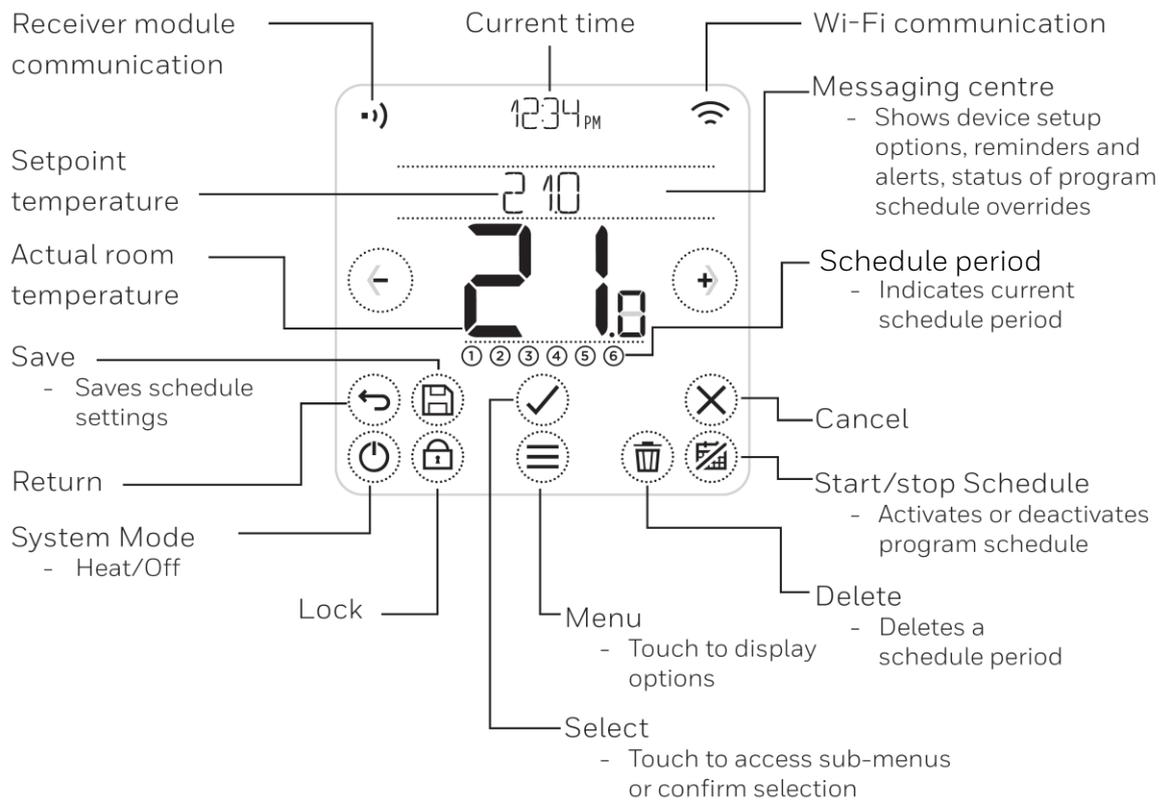
The thermostat has a high contrast PMVA display with dynamic text line and touch screen buttons. The thermostat has a simple programming philosophy to make it easier to install and very user friendly.

The T6 is ideal for consumers who want to control their comfort and hot water remotely and is based on a modern design, which is simple to program and easy to use.

## FEATURES

- Attractive, ultra-modern styling makes it ideal for any location in any type of home.
- Table stand thermostat to fit a new and replacement installations.
- For control of central heating and stored hot water systems
- Suitable for Sundial S, Y and W plan stored hot water systems (on/off)
- Wi-Fi communication to connect to the Internet
  - Smart Home and Apple HomeKit ready
- Honeywell Home mobile App for:
  - Remote view and change of settings of heating and hot water
  - Schedule changes
  - Smartphone Geolocation temperature control
- A dynamic text display on the LCD that gives enhanced feedback to the user / installer.
- High LCD Contrast and backlighting for easier viewing in all light conditions.
- Time out screen with selectable brightness
- Heating control:
  - Factory programmed daily or 5+2 default schedule
  - Schedule with up to 6 independent time and temperature pairs to suit the comfort needs.
  - "Hold until" temperature override of programmed schedule temperature till the next switch point.
  - Schedule off mode for manual operation.
  - Setpoint and room temperature always displayed.
  - OFF position has an integral frost protection setting at minimum 5°C so that pipes in the house will never freeze in winter.
- Hot water control:
  - Factory programmed daily or 5+2 default schedule.
  - Schedule with up to 3 ON periods per day to suit the comfort needs.
  - Hot water Boost function for temporary override
- Alert messages to assist in fault-finding.
- 2-channel Receiver box with clear LED indications and override buttons (heating and hot water)
  - A flip up wiring platform for easy wiring
  - On/Off compatible heating control.
- User menu allows extra functions to be set at the discretion of the user:
  - Language selection
  - Wi-Fi setup
  - Optimisation
  - Clock setting
  - Resetting the heating program to factory default
  - Brightness
  - Temperature offset
  - Lock function
- Advanced menu (Installer Set-Up) allows extra functions to be set at the discretion of the installer to match the consumers applications and needs:
  - Language selection
  - System type
  - 5+2 or daily schedule option
  - Upper / Lower Set point Limit Adjust
  - Minimum ON time
  - Cycle rate
  - Factory Reset
  - Binding (wireless version)
- Pre-configured and bound system pack

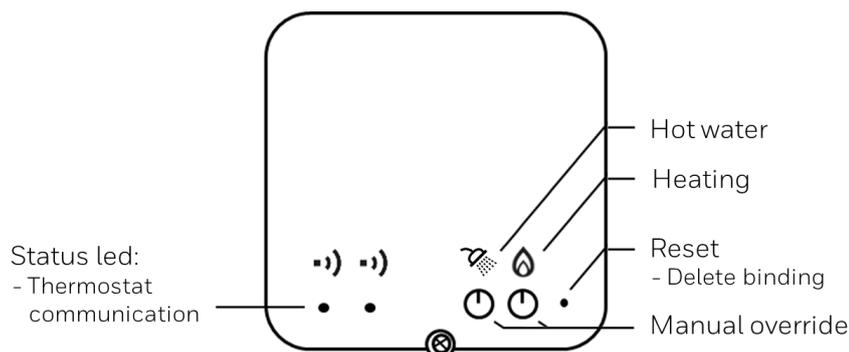
## THERMOSTAT DISPLAY/BUTTON LAYOUT



### Reference to the icons:

- |                         |                               |
|-------------------------|-------------------------------|
| Geofencing active       | Heating demand active         |
| Geofencing home active  | Hot Water Enabled             |
| Geofencing away active  | Heating Mode                  |
| Geofencing sleep active | Cooling Mode                  |
| Failure/Alarm           | Receiver module communication |
| Optimisation active     | Communication failure         |
| Schedule disabled       | Wi-Fi communication           |
| Schedule enabled        | Wi-Fi failure                 |
| Temporary Hold active   |                               |

## 2-CHANNEL RECEIVER BOX



## SPECIFICATIONS

### T6R-HW Thermostat

Control form	: Adaptive Fuzzy Logic
Room	: From 0°C to 50°C
Temperature display range	
Dimensions (w x h x d)	: T6R (wireless) 108 x 103 x 68 mm
Time display	: 24 hour or 12 hour AM/PM format
Time keeping accuracy	: Synchronized with Internet when connected or typically better than 10 minutes per year
Program Heating	: 5+2 or daily schedule with 6 daily time and temperature level changes
Program Hot water	: 5+2 or daily schedule with 3 ON periods per day
Time setting resolution	: Program - 10 minute steps
Sensing element	: 100K (@ 25 °C) NTC thermistor
Temperature setting range	: Program : 5 to 37°C in 0.5 °C steps OFF : 5°C
Power	: T6R (wireless) 5VDC power adapter

### RF communication

RF operation band	: ISM (868.0-868.6) MHz, 1% duty cycle
Max. power	: 25mW
Protocol	: Encrypted
Comm. Range	: 30 m in a residential building environment
Comm. technology	: short, high rate transmissions to minimise air time and avoid collisions
Receiver class R.E.D.	: RX Cat 2 (ETSI EN300 220-1 version 1.3.1)
RF binding method	: Factory pre-bound
Wi-Fi	: IEEE 802.11b/g/n – 2.4GHz
Max. power	: 100mW

### 2-channel Receiver box

Power	: 230VAC
Electrical rating	: 230 V~, 50..60 Hz, 0.5 A to 5 A resistive
2 relay contacts (SPDT)	: 0.5 A to 3 A inductive (0.6 pf) 24 V~, 50..60 Hz, 0.5 A to 5 A resistive 0.5 A to 3 A inductive (0.6 pf)
Cycle rate	: Selectable by application (see installer set up)
Wiring	: Terminal block capable of accepting wires up to 1.5 mm <sup>2</sup>
Wire access	: From back via large wall box opening. From bottom with cable clamps. Mains wiring – left. Low voltage wiring – right.
Dimensions	: 110 x 110 x 40 mm (w x h x d)
IP class	: 30

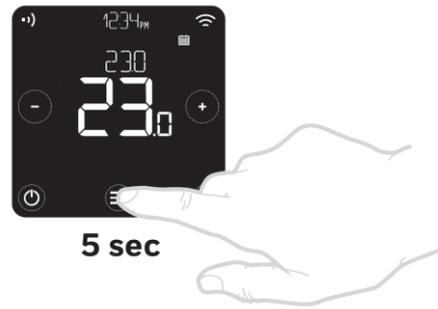
### Environmental and standards

Operating temperature range	: 0 to 40°C
Shipping and storage temperature	: -20 to 55°C
Humidity range	: 10 to 90% rh, non-condensing
EMC	: 2014/30/EU
LVD	: 2014/35/EU
R&TTE:	: 1995/5/EC
ErP	: Class V (+3%), (EU) 811/2013
Honeywell, declares that this thermostat is in compliance with the essential requirements and other relevant provisions of Directive 2014/53/EU	

## ADVANCED MENU

To enter the Advanced menu (installer set-up):

Press the  menu key for 5 seconds.



Menu item	Default	Options
Language	English	English, Francais, Espanol, Deutsch, Nederlands, Italiano
System type	Heat + H/W	Heat only, Heat + H/W
OpenTherm	-	OpenTherm boiler data when a available
Cycle rate	6	3,6,9 or 12
Min on time	1 minute	1, 2, 3, 4 or 5 minutes
Heat range	Min = 5.0 Max = 37.0	Min: 5.0°C to 21.0 °C, Max:21.0°C to 37.0 °C
Schedule options	Daily	1 = daily schedule, 2 = 5+2 days schedule
Optimisation	Opt.start on Opt.stop off	Opt start: 0 = off, 1 = on, 2 = Delayed start Opt stop: 0 = off, 1 = on
Clock	Format: 24h Time: --:-- Date: 01/09/2016	Clock format: 1 = 12h, 2 = 24h Setup time and date
Low Load Control	ON	0= Off, 1 = On
Temperature offset	0.0	-1.5°C to 1.5 °C
Bind	-	Bind, check RF and clear bind.
Adv Reset	-	Factory, schedule, Wi-Fi and Homekit reset
Failsafe	OFF	0= Off, 1 = On

Specific Applications		Setting		What do you need to change?
		Cycle/ Hour	Minimum ON time (in minutes)	<b>Note :</b> a. To change Cycle/Hour, b. To change Minimum ON Time,
Heating	Gas Boilers (<30KW)	6	1	No action required
	Oil Boiler	3	4	1. Set Minimum ON Time to 4 minutes. 2. Set Cycle/Hour to 3.
	Thermal Actuator	12	1	Set Cycle/Hour to 12.
	Zone valve	6	1	No action required.

Special Features	Description
System Type	When bound to a 2-channel receiver box the system type can be set: Heating only, Heating + Hot Water
OpenTherm	If the Receiver box is connected to an OpenTherm appliance various appliance specific data can be viewed. The data displayed is depending on what the appliance is providing.
Heat Range	The normal lower temperature limit of 5 °C can be increased up to 21 °C to protect the inhabitants from cold conditions. This is a useful feature aimed at supporting the elderly, children and disabled inhabitants. The normal upper temperature limit of 35 °C can be reduced down to 21 °C to save energy. This feature is useful for leased homes and apartments.
Schedule options	The thermostat has 2 default schedules: daily (every day) and 5+2 (week + weekend days)

Special Features	Description
Optimisation (optimal start, optimal stop and delayed start)	<p><u>Optimal Start</u>: learns how long it takes your system to reach the programmed temperature. It turns on the heating system earlier to make sure it's comfortable at the scheduled time.</p> <p><u>Optimal Stop</u>: Saves energy and money by switching off a little bit earlier than the normal programmed time. If the home is up to temperature, it will not notice the effect on the temperature, but will show a difference in the fuel bill.</p> <p><u>Delayed start</u>: Saves energy by slightly delaying the start of heating depending on the difference between the scheduled temperature and the actual room temperature</p>
Clock setting	Change display format (default 24hr) and adjust time and date. When connected to Internet time and date will be synchronized
Low Load Control	If the Receiver box is connected to an OpenTherm appliance this setting is used in the demand control. When an appliance is no longer able to modulate lower the control switches from modulating control to low/off control.
Temperature Offset	If the Thermostat is located in a hot/cold location and cannot be moved because of wiring then the measured/ displayed temperature can be adjusted by +/- 1,5 °C. This feature is useful if the homeowner wants the reading to match another appliance temperature display.
Binding	Menu to bind the Thermostat and the Receiver box, test the RF signal strength of the radio communication and to clear an existing binding.
Reset	Menu to reset the thermostat back to factory default settings, reset the schedule to default settings, reset the Wi-Fi and Homekit settings.
Failsafe	When the radio communication between the Thermostat and Receiver box is lost for longer than 1 hour the Receiver box will start to cycle the demand 20% on / 80% off.

## OPENTHERM® COMMUNICATION

OpenTherm® is a manufacturer independent communication protocol between modulating appliances (boilers, air heaters and heat recovery units) and room thermostats.

Via the OpenTherm® protocol, the Receiver box of the T6 / T6R thermostat constantly communicates with the connected appliance.

### Modulating

The T6/T6R thermostat controls, via the Receiver box, the OpenTherm® communicating appliance modulating. This means that, depending on the heat demand, the burner capacity is adjusted in the appliance. This creates a very accurate control of the room temperature.

On top of that, this method of temperature control is more energy-efficient and environmentally friendly.

### Low Load Control

When a boiler is no longer capable of modulating back it will stop the burner and then will be a cycling on it's own continuously during this low control setting (requested water temperature).

In order to have a proper performance and to switch the pump on/off as well we created low load control. This is cycling between off and min modulation level.

The cycle rate is related to the time the water temperature is cooling off below the control setpoint (demand) and the on time of the boiler to get heated to the control setpoint.

It's an algorithm which optimizes the cycle rate and tries to get the boiler on for the longest time.

### Hot water control

Most OpenTherm® Combi-boilers have a small internal storage for hot tap water or are connected to a large storage tank which is kept on temperature. With a longer period of none use or absence, for example away during the day, sleep or holiday, the hot water storage does not have to be kept at a high temperature.

The T6R-HW thermostat can provide additional savings here with a dedicated Hot water schedule. The schedule provides 3 on periods per day which can be programmed. Also during the Holiday the hot water status can be set to off.

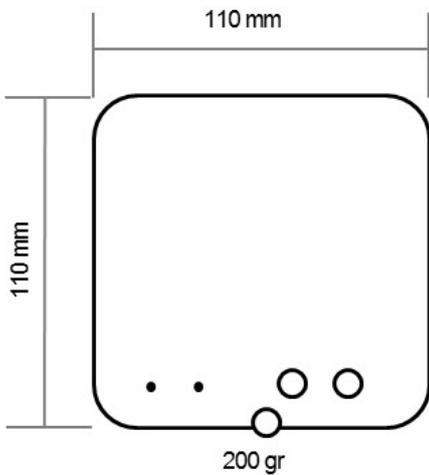
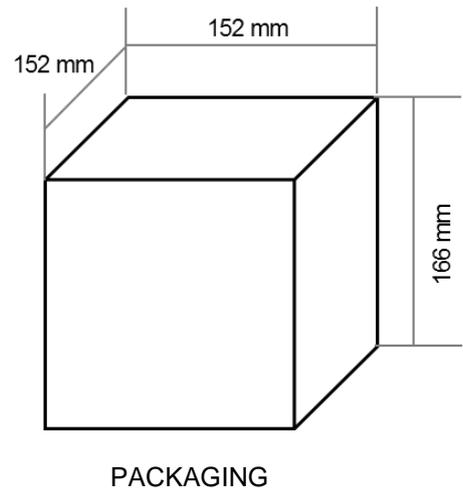
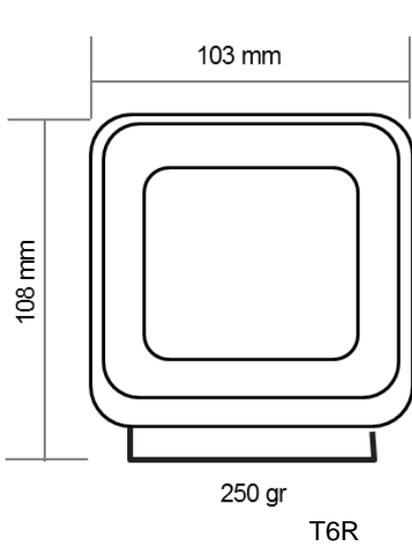
### OpenTherm® data

De T6/T6R thermostat offers the ability to view some appliance data via de OpenTherm® communicatie. See table on page 6 which data can be viewed.

Note: Depending on the connected appliance, more or less data is displayed on the T6/T6R thermostat and certain settings of the appliance may or may not be changed from the thermostat. Refer to the instruction manual of the appliance for specific information.

Advanced menu item	Default	Data / Options
OpenTherm	Submenu (read only)	<ul style="list-style-type: none"> <li>- Low Load Control</li> <li>- Control Setpoint → Requested supply temperature</li> <li>- Supply Water Temperature → Actual supply water temperature</li> <li>- Return Water Temperature → Actual return water temperature</li> <li>- Max Supply Water Temperature</li> <li>- Hot water Temperature → Actual hot water temperature</li> <li>- Hot Water Setpoint</li> <li>- Actual Power → Actual power of appliance</li> <li>- Water Pressure</li> </ul>
Hot Water Overnight	1	0= OFF, 1 = ON
Hot Water Setpoint	60	30 tot 75 °C (appliance depending)
Max Supply Water Setpoint	90	30 tot 90 °C (appliance depending) - future
Low Load Control	1	0= OFF, 1 = ON

DIMENSIONS

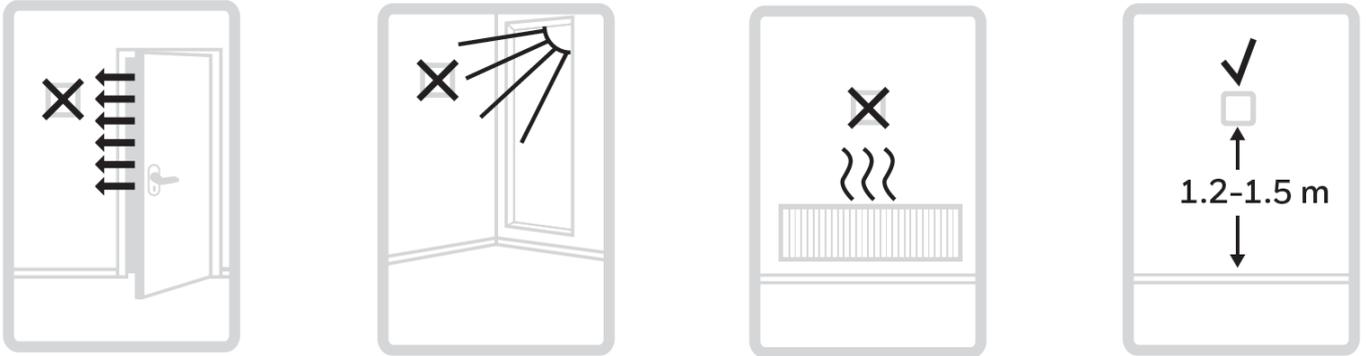


RECEIVER BOX

## INSTALLATION

To ensure your safety, **always make sure mains power is switched OFF** before accessing wiring.

**Before** removing the old thermostat take a picture of the old thermostat's wiring as a reference then proceed to installation.



The T6R thermostat should not be placed near draughts, in direct sunlight or near heat sources. It should be at least 1.2 - 1.5 meters from the floor.

**Maximum cable length between Receiver box and thermostat:** 15m for 0.5mm<sup>2</sup> cable or 20m for 1.0mm<sup>2</sup> cable.

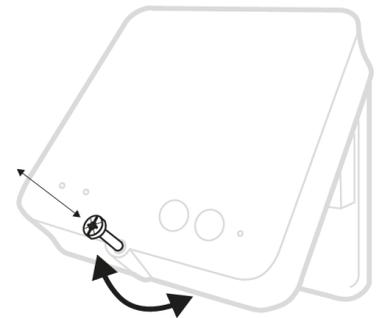
### Prepare 2-channel Receiver Box

Needed during installation:

- Cable with 2 wires from the heating valve to Receiver Box.
- Cable with 2 wires from the hot water valve to Receiver box.
- The 2-channel Receiver Box requires 230V power

Find a suitable location near the boiler. Leave at least 30cm distance from any metal objects including wall boxes and boiler housing.

Loosen the front screw to remove cover or tighten it when the cover is back in position.



### Install 2-channel Receiver Box

#### A. Wall box or Rear wiring

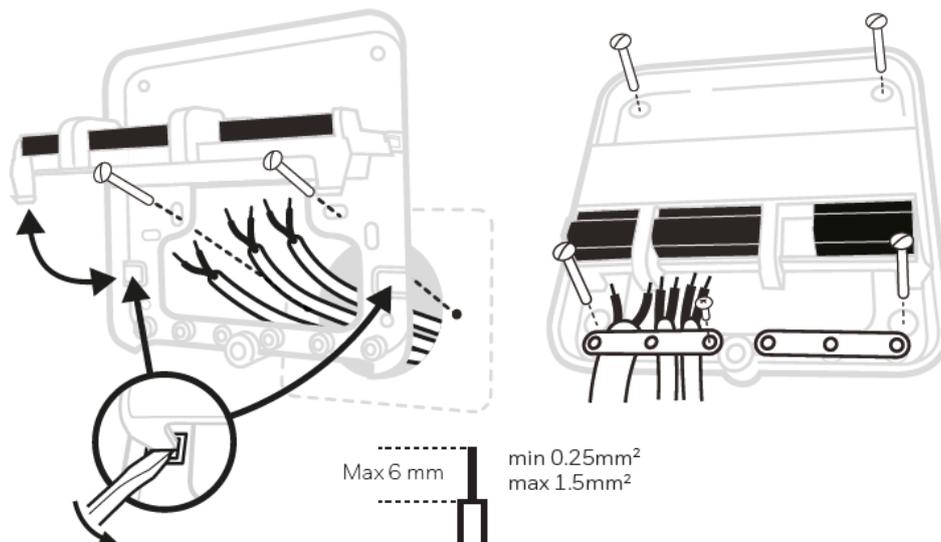
Hinge open the terminal block flap to access the cables and wall box screw holes.

#### B. Surface wiring

Use the cable clamps to secure the surface wiring.

#### Replace cover

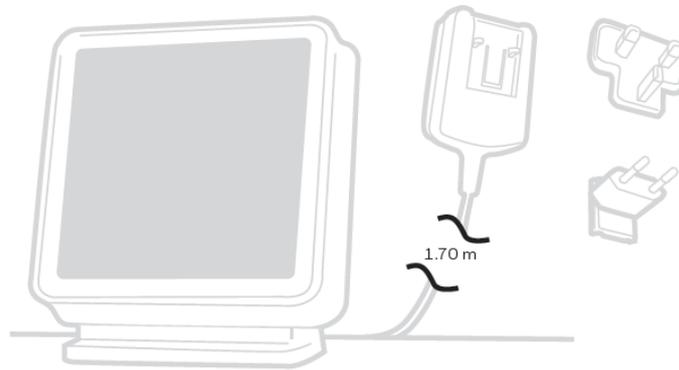
Locate the hinges at the top of the cover and wall plate, close the cover and secure with the screw.



Note: See the wiring diagrams on page 9 for the correct wiring connections.

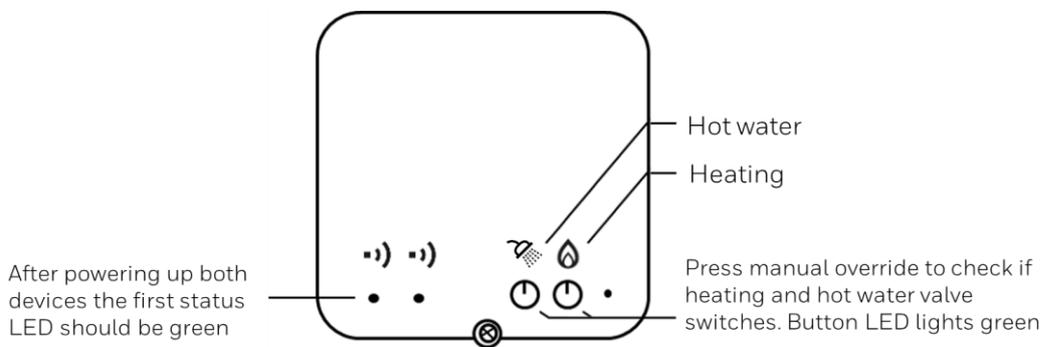
### Install the T6R wireless thermostat

Choose the appropriate plug.  
Place the thermostat on an even, horizontal surface and plug it in.



### Complete installation

Turn ON mains power to the Heating Appliance and 2-channel Receiver Box.



### Setup and configuration

After power up, SETUP is displayed on the thermostat's screen.



Touch to begin.



Select language.



Set clock format, time and date.



Touch to finalise setup.

( to setup using the Honeywell Home App is currently unsupported)

Once setup is completed go to the advanced menu to change application specific changes.

## BINDING

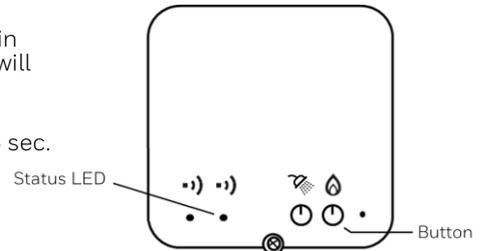
The T6R Smart Thermostat wireless kit comes pre-bound from the factory. The binding operation described below is only required if:

- The T6R thermostat or 2-channel Receiver box is replaced.
- The T6R thermostat or 2-channel Receiver box has incorrect or no binding data stored.
  - Thermostat will indicate the Alert message: NO RECEIVER BOX BINDING
  - Receiver box status LED remains green blinking (no communication from thermostat)
  - Receiver box status LED does not light up (not bound).

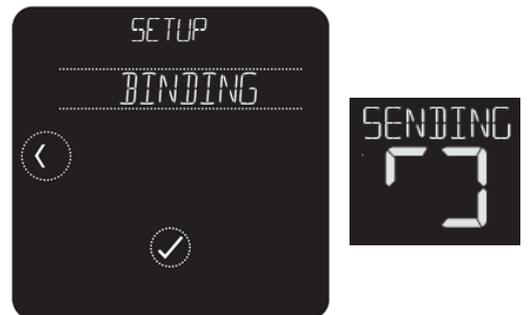
### To bind/rebind

Note: When the Receiver box has been bound before first press with a small pin the pinhole for approximately 3 seconds to reset the binding. All LED's will flash amber for a moment.

- Put the Receiver box into binding mode by pressing the Heat button for 3 sec.
  - The first LED will flash amber



- Enable binding on the thermostat:
  - Enter the advanced menu by pressing the  button for 5 sec.
  - Navigate to BINDING
  - Select BIND and the signal will be sent



- When binding is successful:
  - Thermostat will show SUCCESS
  - First Receiver box status LED will show green



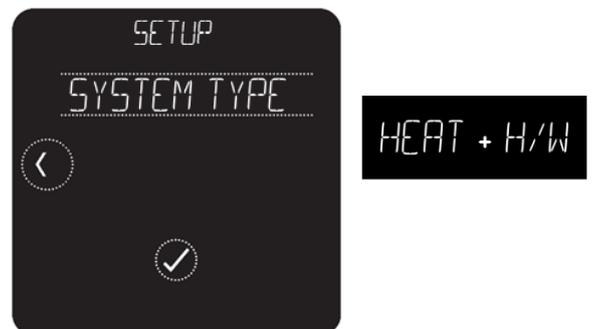
When binding is **NOT** successful:  
 - Thermostat will show FAILED  
 - Receiver box will exit binding after 3 min.  
 RF communication might be too far or is blocked due to wrong location of the Thermostat or Receiver box. Try to move closer or re-locate and re-bind again.



### System type setting

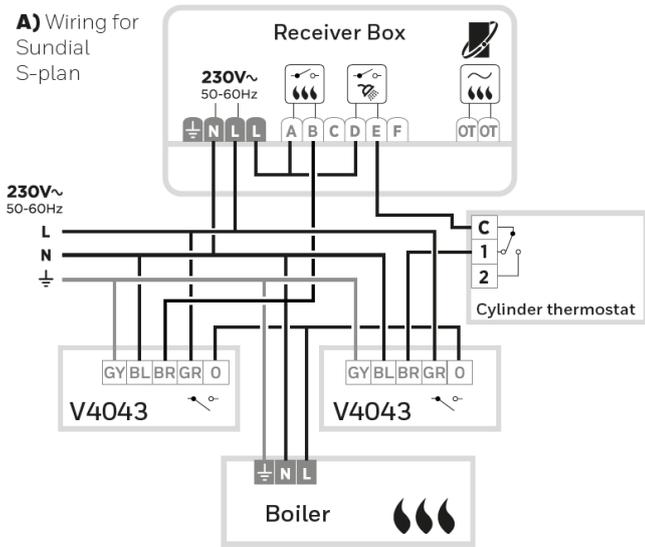
After binding also the System type of the thermostat needs to be set to enable heating and also hot water control.

- In the Advanced menu navigate to System Type.
  - Select Heat + H/W for heating and hot water control
- Exit the Advanced menu and the binding and setup is complete

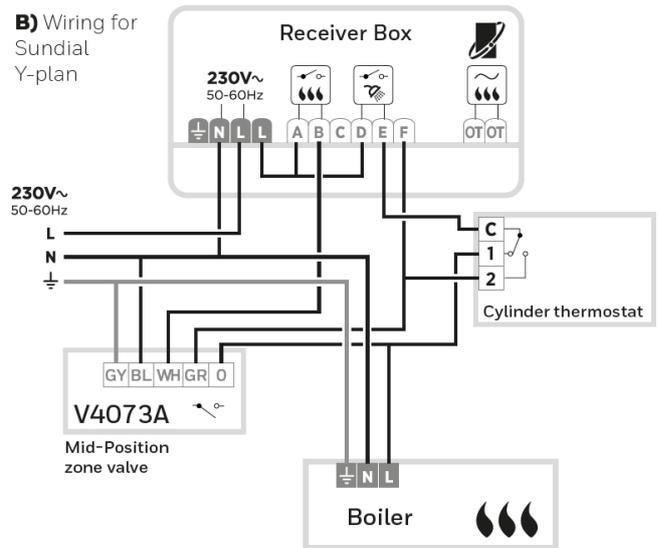


# WIRING

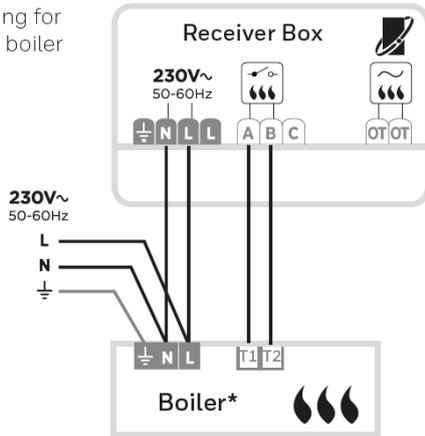
**A) Wiring for Sundial S-plan**



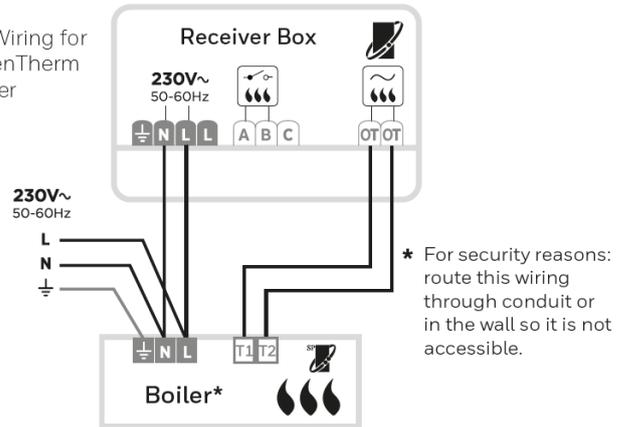
**B) Wiring for Sundial Y-plan**



**C) Wiring for Combi boiler**



**D) Wiring for OpenTherm boiler**



## TROUBLE SHOOTING

Symptom (Fault message)	Possible Cause	Remedy
The Receiver box button LED is green but the heat or hot water does not switch on.	Heat or hot water wiring might be incorrect or broken	Check the Receiver box wiring
The status LED on the Receiver box is red (Communication loss)	The Receiver box receives no communication from the thermostat: RF communication might be too far or is blocked due to Receiver box location. Thermostat is no longer powered.	Try to move thermostat or Receiver box closer or re-locate. Check the power to the thermostat
<b>Thermostat alert messages</b>		
WIFI RADIO ERROR	The Wi-Fi radio of thermostat is faulty.	Replace thermostat
INTERNAL MEMORY ERROR	The internal memory of thermostat is faulty.	Replace thermostat
INDOOR TEMPERATURE SENSOR ERROR	(wired only) The external temperature sensor is not connected or the wiring is faulty.	Check external sensor wiring and sensor
NO COMMUNICATION RECEIVER BOX	The thermostat receives no communication from the thermostat: RF signal is blocked due to the location of the thermostat. Receiver box is no longer powered.	RF communication might be too far or is blocked due to the location of the Thermostat or Receiver box. Check the power to the Receiver box
RF SIGNAL OF RECEIVER BOX LOW	There is a weak radio signal from the Receiver box	Try to move thermostat or Receiver box closer or re-locate.
NO RECEIVER BOX	The thermostat is not bound with the Receiver box	Bind or re-bind the Receiver box
NO INTERNET	Thermostat has no longer Internet connection.	End user needs to check their Internet connection via router.
NO WIFI SIGNAL	Thermostat has no longer a Wi-Fi connection.	End user needs to check their Wi-Fi network of router.
REGISTER ONLINE	Thermostat is connected to Internet but not yet registered to an account.	End user needs to download the App, create an account and register the thermostat.
WIFI NOT CONFIGURED	Thermostat is not connected to Wi-Fi network.	End user needs to download the App, create an account, connect and register the thermostat.
BOILER FAILURE FAULT XX	The OpenTherm boiler reported a failure number XX.	Check the boiler
BOILER LOW WATER PRESSURE	The boiler reported low water pressure.	Fill up the hydronic system with water.

## ORDERING SPECIFICATION

Description	Model	EAN code	Literature
Smart Thermostat with Heating and Hot water control wireless (UK)	Y6H920RW4026	5025121380805	

Honeywell Control Systems Limited  
Newhouse Industrial Estate  
Motherwell ML1 5SB  
United Kingdom

**Honeywell** | Home