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ТЕРМОСТАТЫ И КРИОСТАТЫ

Технические характеристики на

термостаты DT92



DT92

WIRELESS DIGITAL ROOM THERMOSTAT

PRODUCT SPECIFICATION SHEET



The new **DT92** family of wireless digital room thermostats is a range of market leading products designed to provide comfort with economy in modern heating systems.

Comprising a battery-powered room thermostat and a mains switching relay box, **DT92** features robust 2-way RF communications between the units. This allows signal strength testing to help the installation process. The RF link between both units is already set (pre-bound) at the factory, so the product is ready for immediate installation.

Energy efficiency is addressed by state-of-the-art TPI control performance and an **ECO** button energy saving feature. Applications include control of gas or oil-fired boiler systems, underfloor heating, electric heating and zoning systems.

With a modern fresh look that complements any style of décor, and a range of valued features for users and installers alike, **DT92** sets the standard for simple environmentally-friendly wireless room thermostats.

FEATURES

- Energy saving TPI control performance
- Advanced self-learning control adapts to the environment and ensures close temperature control with minimum energy usage
- Slim modern styling
- Simple user interface with large high contrast display and easy-to-read characters
- Display shows room temperature, with option to inquire about setpoint
- 5°C to 35°C setpoint range with 0.5°C increments, using ▲ and ▼ buttons
- Off/standby button, allowing manual switch off, with frost protection active
- Adjustable off/standby setpoint 5°C to 16°C or DT92 can be set to off completely
- Room thermostat is battery powered by 2 x AA (LR6) alkaline cells giving up to 4 years battery life (minimum 2 years), with battery low warning
- Simple battery change by unclipping front cover
- Relay switching box is 230Vac mains powered with 24...230Vac SPDT potential-free contacts
- 5 A resistive, 3 A inductive switch rating
- 2-way RF communications at 868MHz radio frequency band, giving typical reliable range of 30m in houses
- Transmission and signal strength test features to guarantee good room thermostat placement
- RF link between units is pre-set at the factory
- Installer Mode allows operation to be customised for the application and the needs of the user
- NVRAM storage of setup parameters, ensuring these are never lost
- Setpoint limits can be programmed in
- Special 'fail-safe' mode, should RF communications be temporarily lost
- Manual override possible at relay box
- Optional table stand supplied for thermostat

FEATURES UNIQUE TO DT92E ECO MODEL

- Energy saving ECO button allows user to change to a lower, energy saving setpoint for a timed period of their choosing (1...24 hours)
- Display shows countdown of time remaining in ECO energy saving mode

SPECIFICATIONS

ELECTRICAL	
Room thermostat	
Power supply	: 2 x 1.5V IEC LR6 (AA) Alkaline cells
Battery life	: Minimum 2 years (with correctly specified alkaline cells)
Battery low warning	: Display indicates when battery power reserve is low. Unit will continue to function for a minimum of 4 weeks after the first indication is given
Battery replacement	: Configuration settings stored in NVRAM, so are retained during battery replacement
Relay Box	
Power supply	: 230 V, 50...60Hz 1VA max. Note – requires permanent mains power supply
Switch type	: SPDT (single pole double throw) potential free
Electrical rating	: 24...230 V, 50...60 Hz, 5 A resistive, 3 A inductive (0.6pf)
Relay life	: 100,000 operations minimum
Wiring	: Terminal block for mains and relay wiring, for wires up to 2.5mm ²
Wiring access	: Rear and left side
RF SPECIFICATION	
Operation band	: ISM (868.0-868.6) MHz, 1% duty cycle
Communication range	: 30 m in a residential building environment
Communication technology	: 2-way RF, using short, high rate transmissions to minimise air time and avoid collisions
Blocking immunity	: Receiver class 2 (ETSI EN300 220-1 version 2.1.1)
RF binding method	: Units are pre-bound at the Factory. Field re-binding can be done, if required
RF test features	: Transmission and signal strength tests to assist location of components
ENVIRONMENTAL & STANDARDS	
Operating temperature	: 0°C to 40°C
Shipping & storage temperature	: -20°C to 55°C
Humidity	: Humidity range 10% to 90% rh, non-condensing
IP class	: IP30
Approvals	: CE mark, complying with standards EN60730-1 (2001), EN60730-2-9 (2002), EN55014-1 (2006), EN55014-2 (1997), ETSI EN300 220-3, ETSI EN301 489-3 : WEEE & RoHS compliant

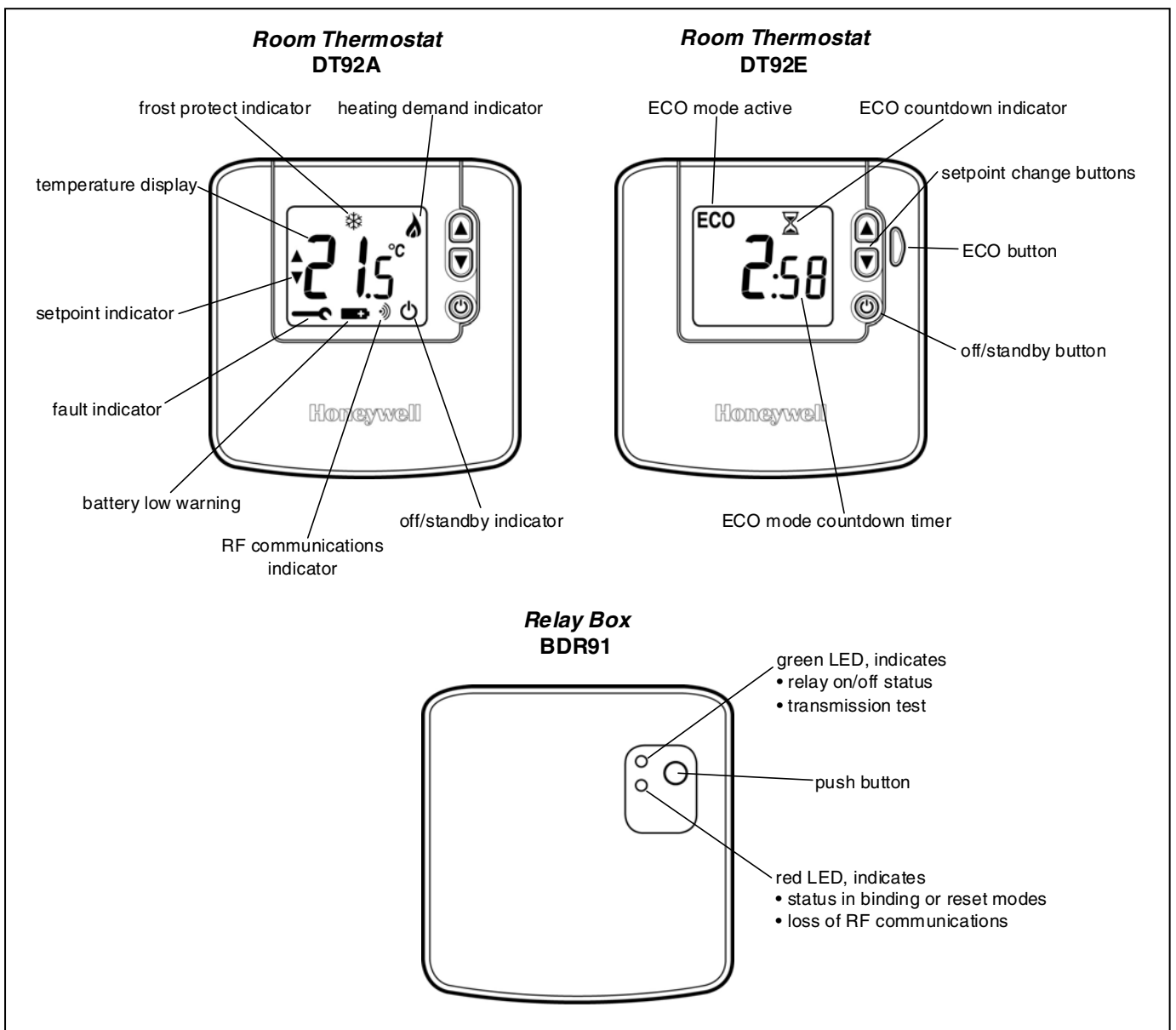
TEMPERATURE CONTROL	
Sensing element	: 10K (@25°C) NTC thermistor
Temperature setting range	: 5°C to 35°C setpoint range in 0.5°C increments
Control form	: Self-learning TPI Fuzzy Logic algorithm
Proportional band	: 1.5°C adjustable up to 3°C in 0.1°C increments
Minimum on/off time	: 1 minute, adjustable up to 5 min in 1 min increments
Cycle rate	: Adjustable to suit the application 3, 6, 9, 12 cycles per hour
Temperature control accuracy	: ± 0.5°C (or better) at 20°C, 50% load and 3°C /hour temperature ramp
Frost protection	: 5°C when thermostat switched to off/standby, adjustable 5°C to 16°C : Frost protection not available in cooling mode
Positive off	: Positive off possible (no frost protection) by setting in Installer Mode
ECO energy saving	: Setpoint default 18°C, adjustable 5°C to 35°C
Fail-safe operation	: If temperature measurement system fails, unit will continue to operate on the assumption of a 10% load : If RF communication fails, relay box can be set to switch off or operate at 20% on
Relay box manual override	: Pressing the button on the relay box will temporarily override the current relay position. The relay status may change with the next communication from the room thermostat
USER INDICATIONS	
Information	: Current room temperature, setpoint, off/standby mode, relay box relay status (flame), RF communication, ECO mode active, ECO mode countdown.
Warnings	: Frost protection, internal fault, battery low, loss of RF communications. : Lockout (operation not permitted) and boiler fault are possible, depending on application and configuration of other RF products.
METRICS	
Dimensions	: 90 x 92 x 27mm (thermostat) : 90 x 92 x 30.5 mm (relay box) : 157 x 115 x 105 mm (pack)
Weights	: 154g (thermostat with batteries) : 96g (relay box) : 380g (pack)

ORDERING SPECIFICATION

Model	Description	Literature
DT92A1004	Wireless digital room thermostat (System pack, comprising DT92A room thermostat + BDR91 Relay Box)	Multi-lingual
DT92E1000	Wireless digital room thermostat with ECO energy saving feature (System pack, comprising DT92E room thermostat + BDR91 Relay Box)	Multi-lingual

Note: the room thermostat and relay box in each system pack are pre-bound (linked together) at the factory. This means they will recognize and communicate with each other as soon as they are powered up. The complete device is therefore ready for immediate installation.

CONTROLS / DISPLAY LAYOUT



MAIN FEATURES

Extra-Large Display

The DT92 has a large display, ensuring it is easy to read and allowing essential information to be displayed, when required. The large characters and high contrast screen are especially important for those with impaired vision.

Simple Interface

The user interface has been made as simple as possible to make DT92 very easy to use. Buttons have been labeled ▲ and ▼ to identify them as the means of increasing and decreasing (respectively) the setpoint temperature. The display normally shows the actual room temperature. When one of the buttons is first pressed, the setpoint temperature is shown flashing, accompanied by the ▲ and ▼ symbols. Further buttons presses will increase or decrease the setpoint in increments of 0.5°C.

Off/Standby Button, with Frost Protection

The off/standby button allows DT92 to switch off the heating (or cooling) system at the touch of a button. To prevent accidental switch-off, the button must be held for 2 seconds to activate the change. When off, DT92 will maintain control at a frost protection setpoint, factory set to 5°C but adjustable between 5 and 16°C. If required, frost protection can be switched off, to provide a positive off function. These adjustments are made by entering the DT92 *Installer Mode*.

Installer Mode

The Installer Mode is where DT92 can be configured for different applications, and customized to meet the needs of the user. The operating properties that can be adjusted are called parameters, and these are described in detail on page 6.

Parameters are as follows:

- Minimum on/off time
- Cycle rate
- Proportional band width
- Temperature measurement offset
- Upper setpoint limit
- Lower setpoint limit
- Energy saving ECO temperature (on DT92E only)
- Selection of heat/cool changeover operation
- Off/Standby setpoint
- Room temperature sensor use (when used with HR80 intelligent radiator valves)
- Failsafe operation mode (if RF comms are lost)
- HR80 window open function enabling
- HR80 local override function enabling
- Reset all parameters to factory settings

Installer Mode is entered via a sequence of button presses. The buttons are also used to scroll between parameters and to make changes to their values.

2-Way RF Communications

RF communications between the room thermostat and the relay box is 2-way, making it more efficient and reliable, and allowing the room thermostat to display information from the relay box, such as actual relay status or communications loss.

Signal Strength Test Mode

Another benefit of 2-way RF is to allow the room thermostat to display the strength of the signal that the relay box is receiving. This ensures the thermostat can be positioned in the best possible location for system performance.

Reliable RF Communications in 868MHz band

868MHz is a well regulated band where continuously transmitting devices are not permitted. Together with a 1% transmission duty cycle, this means the possibility of interference or clashing messages is minimized, and increases the reliability of communications.

NVRAM Storage of Settings

All parameter settings are stored in a special kind of memory called NVRAM so they will be retained indefinitely even if the batteries are removed.

Advanced Self-learning TPI Control

DT92 uses a self-learning 'fuzzy logic' time-proportional control algorithm. This form of control is better than conventional PI control as it has a faster response and better performance in steady state conditions. It performs equally well in a wide range of different installations, and ensures energy savings by controlling closer to setpoint and minimising temperature overshoots.

Additional Energy saving ECO feature

In a heating system, one of the best ways to save energy is to reduce the setpoint temperature. The DT92 green ECO button provides a simple and convenient way of doing this for a period of time of the user's choice. The ECO energy saving setpoint is pre-defined in the Installer Mode. The factory setting is 18°C, but it can be adjusted (between 5°C and 35°C) to give a timed boost, if required. When the ECO button is pressed, the user is given the chance to set the time required at this new temperature, from 1 hour to 24 hours in 1 hour increments. The display indicates that ECO mode has been set, and will count down the time remaining in energy saving mode. Should they wish to readjust the temperature setting, they can do that too, using the ▲ and ▼ buttons.

ECO mode is cancelled simply by pressing the ECO button again.

INSTALLATION

Installation Process

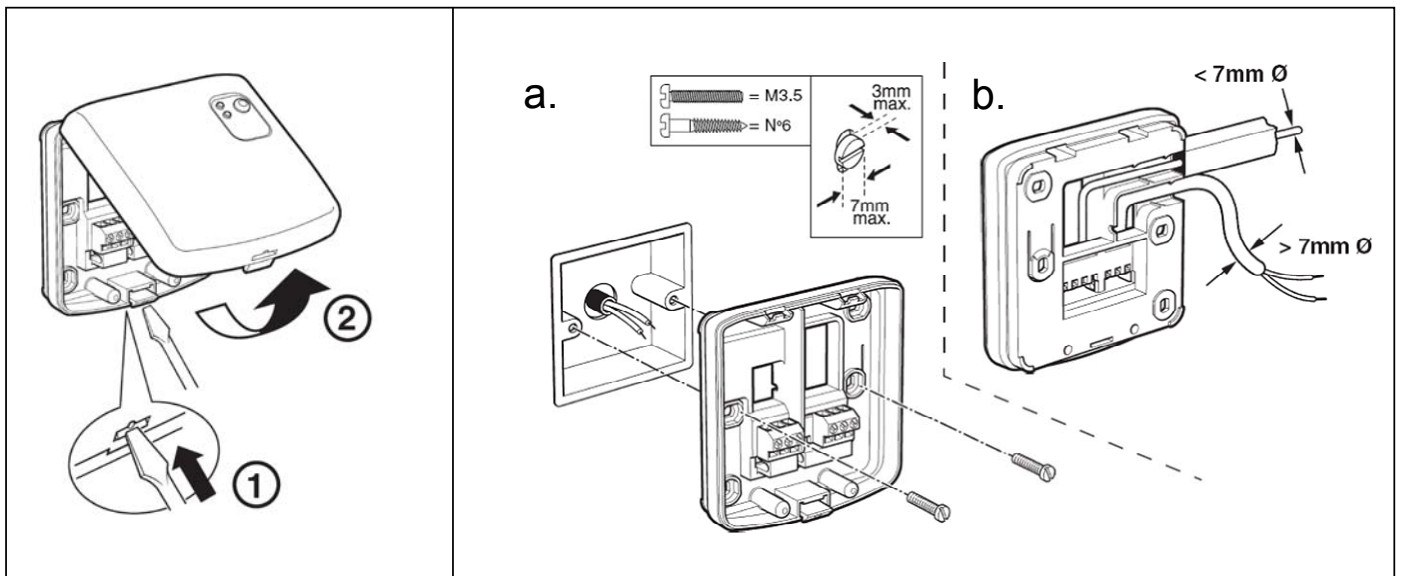
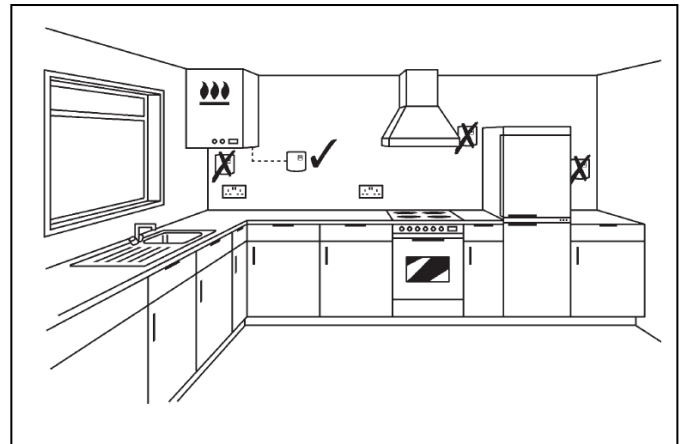
To ensure best system performance, there is an optimum sequence of installation operations and test steps. These are as follows:

1. Install BDR91 relay box, connect to mains, and power up.
2. Before mounting DT92 thermostat onto backplate, power it up (activate batteries).
3. Bring DT92 thermostat to a distance 2-3 m from relay box and initiate **RF Communication Test**. This confirms that relay box is wired correctly and that both devices are bound (linked) to each other. If this test does not work, the 2 units must be reset and bound to each other by following the procedure for **Binding / Re-binding**.
4. Take the DT92 thermostat to the proposed mounting location, and initiate the **Signal Strength Test**. This will indicate if the thermostat is suitably positioned to provide a reliable signal for the relay box. If the signal strength is too low, the thermostat must be repositioned.
5. When a suitable position is established, the backplate can be mounted on the wall and the thermostat can be attached to it.

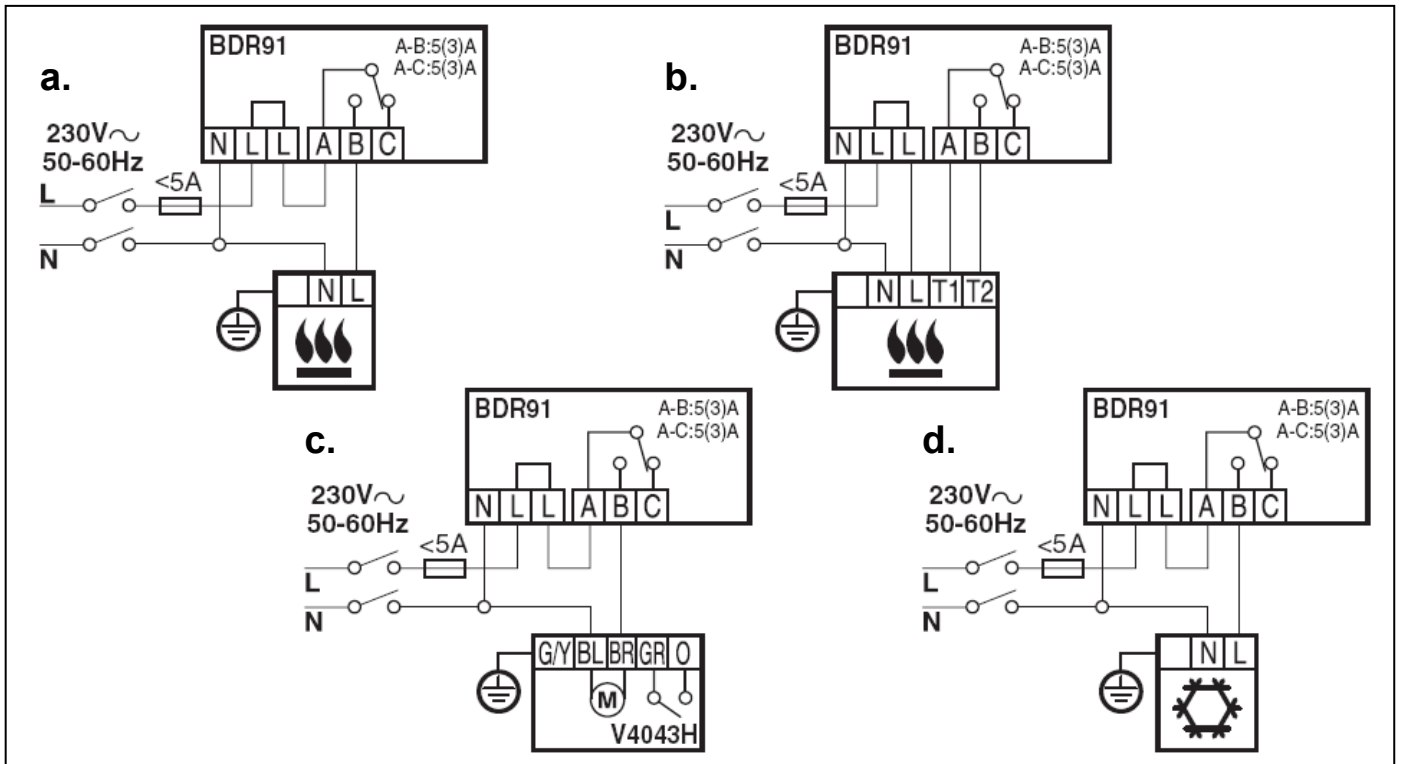
Installing the BDR91 Relay Box

For best performance, the BDR91 Relay Box should be installed in an open space, at least 30cm distance from any metal objects including wall boxes and boiler housing. It should **not** be mounted on a metal wall box.

Location



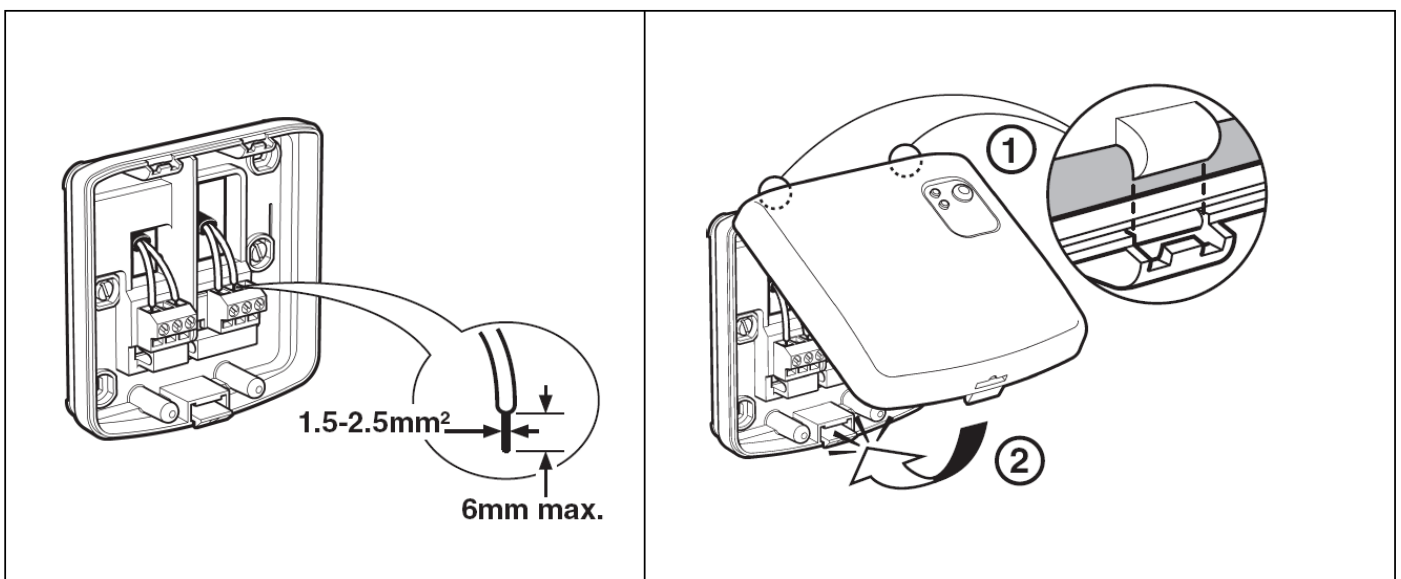
WIRING CONNECTIONS



- a. Boil
- b. Boiler (potential free connectio
- c. Zone alve
- d. Air condition

Note: BDR91 Relay Box requires a permanent mains power supply.

Completing the BDR91 Relay Box Installation



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