Drayton

MiStat™ C
Cylinder Thermostat

Model: C110C

Invensys

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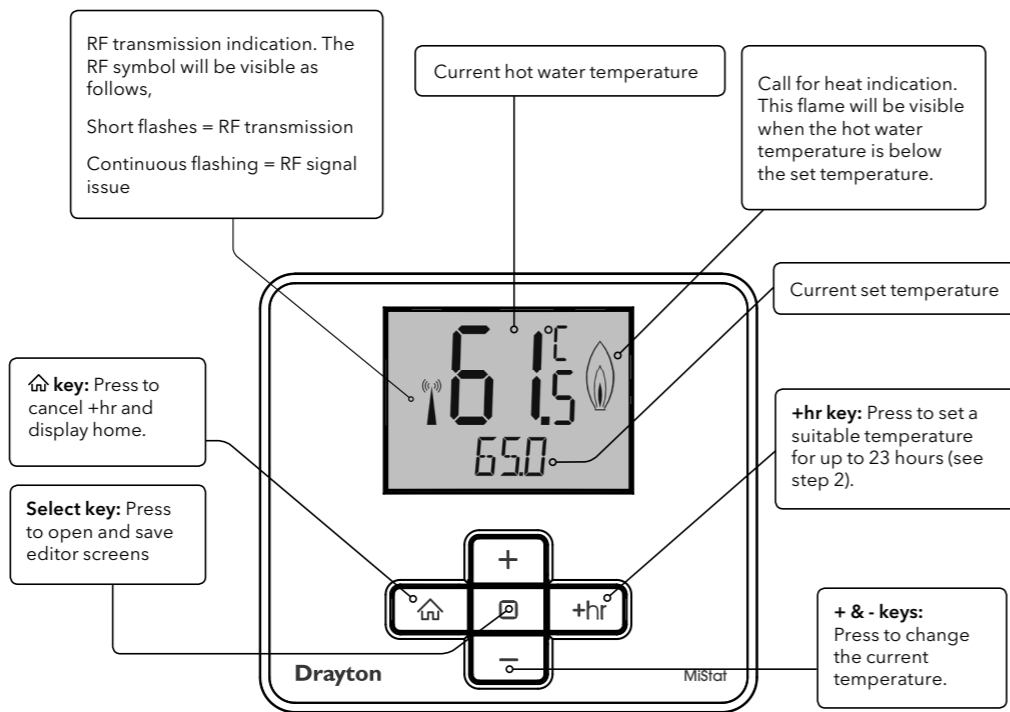E-mail: customer.care@invensys.com

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energy saving trust recommended

CE

🏠 HOMEOWNER Guide

Step 1: Keys and Display - MiStat ➜

RF Pack: MiStat C110C

RF transmission indication. The RF symbol will be visible as follows,

Short flashes = RF transmission

Continuous flashing = RF signal issue

Current hot water temperature

Call for heat indication. This flame will be visible when the hot water temperature is below the set temperature.

Current set temperature

🏠 **key:** Press to cancel +hr and display home.

Select key: Press to open and save editor screens

+hr key: Press to set a suitable temperature for up to 23 hours (see step 2).

+ & - keys: Press to change the current temperature.
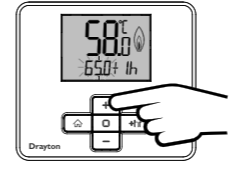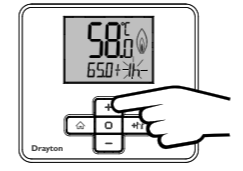

Step 2: +hr (Timer) ➜

To set a suitable temperature for up to 23 hours, e.g. for short term absence.
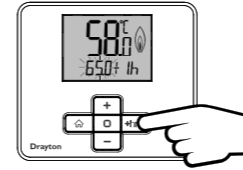
Press +hr to start the Timer. The prior used temperature and time will be displayed and the temperature will flash.

Press **+/-** to adjust +hr temperature, then press (□) to confirm.

Press **+/-** to adjust +hr period between 0 and 23 hours. Press (□) to confirm.

Now the timer is running. The time will be counted down each hour.

Once the time has elapsed, control returns to the prior temperature screen.

The Timer can be cancelled by pressing 🏠 key or by setting the +hr period to 0.

Step 3: Additional User Settings ↖

Customize the controller according to personal requirements.
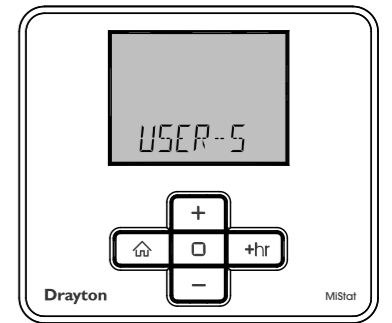
To enter User Settings

Press **+ & -** keys for approx. 5 Seconds to enter the settings menu as shown below.

Press Select (□) to enter the user settings.

To exit User Settings

Press **+ & -** keys for approx. 5 seconds to exit.

If there is no key pressed for 2 minutes the system will exit the menu, any changes will be saved.

USER - S

ID	Feature:	Description:		Factory Pre-Set:
1	MAX-TEMP	It will not be possible to set a higher temperature	If MAX-TEMP and MIN-TEMP are set to the same value, it will not be possible to change temperature with the +/- keys.	70°C
2	MIN-TEMP	It will not be possible to set a lower temperature		40°C
	DONE	Exit from the settings menu to USER-S		

🖉 Troubleshooting:

1	Setting temperature values is restricted	4	Is the battery symbol visible?
a	Are Minimum/Maximum temperatures activated? see Homeowner Guide Step 3.	a	Replace batteries, see Homeowner Guide Step 4.
2	NO SIGNAL is visible on the screen, no reaction on key presses anymore	5	STARTING is visible on the screen, no reaction on key presses anymore
a	Is the receiver powered? (Red signal lamp should be visible)	a	Is the receiver powered? (Red signal lamp should be visible)
3	LOCKED is displayed	6	WAIT is visible on the screen, no reaction on key presses anymore
a	see Installation Guide Step 5 - LOCK	a	Is the receiver powered? (Red signal lamp should be visible)

🏠 HOMEOWNER Guide

What is a cylinder thermostat?

... an explanation for householders

A cylinder thermostat switches on and off the heat supply from the boiler to the hot-water cylinder. It works by sensing the temperature of the water inside the cylinder, switching on the water heating when the temperature falls below the thermostat setting, and switching it off once this set temperature has been reached.

Turning a cylinder thermostat to a higher setting will not make the water heat up any faster. How quickly the water heats up depends on the design of the heating system, for example, the size of boiler and the heat exchanger inside the cylinder.

The water heating will not work if a time switch or programmer has switched it off. And the cylinder thermostat will not always switch the boiler off, because the boiler sometimes needs to heat the radiators.

Cylinder thermostats are usually fitted between one quarter and one third of the way up the cylinder. The cylinder thermostat will have a temperature scale marked on it, and it should be set at between 60C and 65C, then left to do its job. This temperature is high enough to kill off harmful bacteria in the water, but raising the temperature of the stored hot water any higher will result in wasted energy and increase the risk of scalding.

If you have a boiler control thermostat, it should always be set to a higher temperature than that of the cylinder thermostat. In most boilers, a single boiler thermostat controls the temperature of water sent to both the cylinder and radiators, although in some there are two separate boiler thermostats.

Crystal Mark
Clarity approved by Plain English Campaign
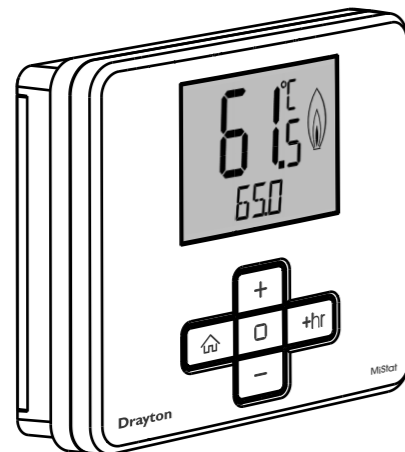

Step 4: Changing the Batteries ➜

How do I know when to change the batteries?

When the batteries start to run low a battery icon will flash in the display to indicate "low battery", during this time the MiStat will function normally. When the battery icon alone is shown in the display, the batteries are completely exhausted and the MiStat will cease to function (see below). Re-activate by replacing the batteries.
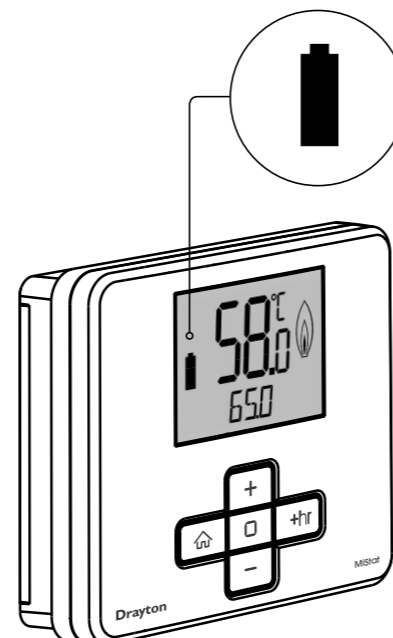
How to replace the batteries

Remove the battery covers as shown. Replace the batteries with 2 x 1.5V IEC LR6 (AA) Alkaline batteries ensuring correct orientation. Replace the battery covers pressing fully home.

MiStat Rear

**Battery Covers:** Slide outwards to remove
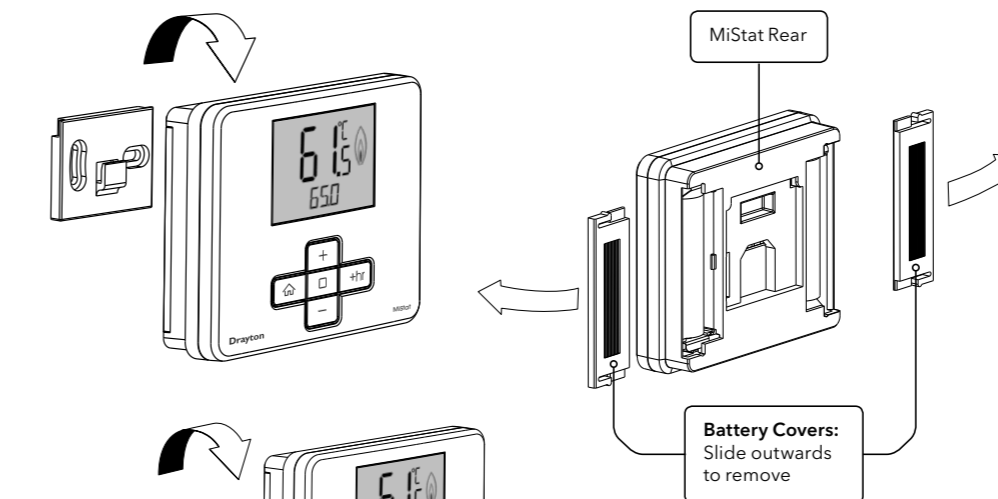
🚮 Battery Handling

Batteries, rechargeable or not, should not be disposed of into ordinary household waste. Instead, they must be recycled properly to protect the environment and cut down the waste of precious resources.

Your local waste management authority can supply details concerning the proper disposal of batteries.

In compliance with the EU Directive 2006/66/EC, the button cell battery located on the printed circuit board inside the product, can be removed at the end of the product life, by professional personnel only.

Step 5: Receiver - Key & LED

Drayton
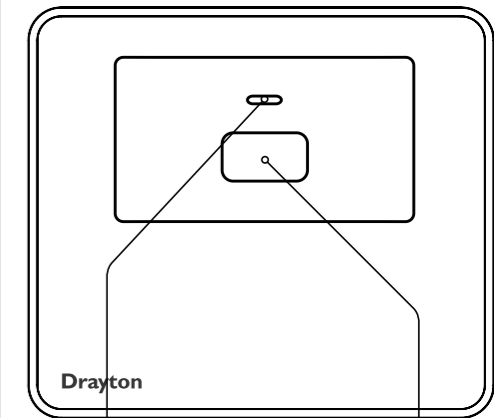
LED: See table below for details

Key: See table below for details

Lamp colour	Mode	Action	Key Function
Green	Normal	Call for heat (boiler is firing)	None
Green Flashing	Normal	RF communication	None
Off	Normal	No call for heat (boiler is not firing)	None
Red	RF loss or not bound	No call for heat	Switches the boiler On for 1hr
Amber	RF loss or not bound	Call for heat	Switches the boiler Off

⌁ INSTALLATION Guide

Step 1: Mounting the Wallplate ➜

⚠ IMPORTANT:

Installation must only be carried out by a qualified electrician or heating engineer.

Make sure mains input has a 3 amp fuse.

⚠ CAUTION! Before installation, make sure the mains supply is switched off!

⚠ DO NOT use a surface mounting box
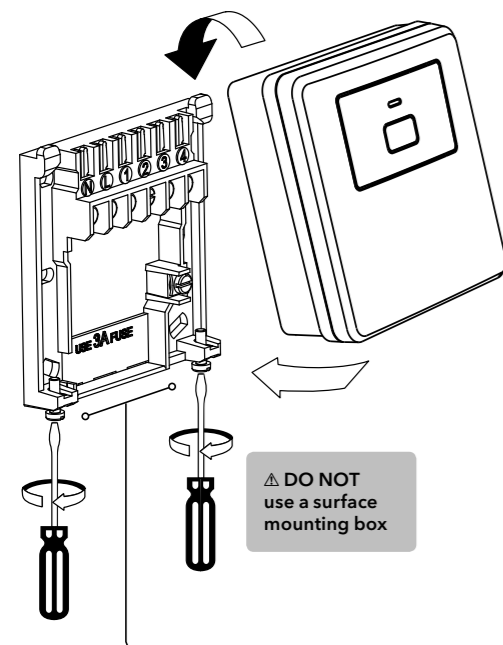
Option 1: Fitting a new wall-plate

The ideal location is close to the boiler or central heating system. For the best performance install in an open space, at least 30cm distance from any metal objects including wall boxes and the boiler housing. It is recommended that the MiStat R is mounted on the wall nearest the final location of the MiStat C room unit and not less than 30cm from the boiler side panel.

Loosen the securing screws, remove the wallplate and, if surface wiring is to be used, snap out the cable entry strip on the bottom edge of the wallplate with a pair of pliers. Fix the wallplate, terminals at the top, either direct onto the flat wall using wall plugs and no 6 x1" wood screws or on a plastic flush mounting single conduit box using M3.5 x 14 screws. Check that there's 20mm clearance to the right of the wall-plate and 25mm above it.   Complete the wiring to the MiStat R wallplate in accordance with the wiring diagram in step 2, to comply with current IEE regulations. Place the MiStat R onto the wallplate and tighten the securing screws.
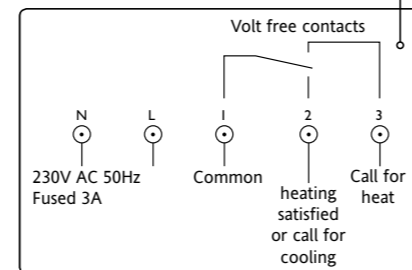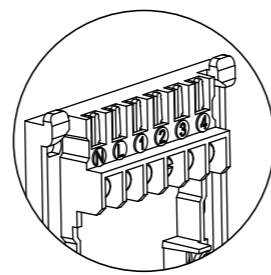
Check the 3A fuse, and switch on the mains.

Warning: Installing the MiStat R too close to the metal side panel or mains cables may interfere with the radio signal.

Option 2: Using an existing wall-plate

Loosen the securing screws on the old receiver and unplug it. Check that there's 20mm clearance to the right of the wall-plate and 25mm above it. Check the wiring diagram for your product model to compare terminals and, if necessary, change the wiring of the wall-plate to suit. Now plug the MiStat R unit into the wall-plate and tighten the securing screws.
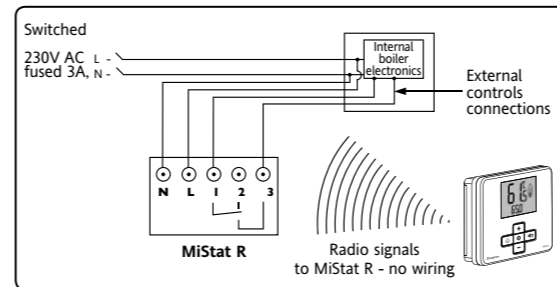
Check the 3A fuse, and switch on the mains.

Step 2: Wiring ➜

Volt free contacts

N | L | 1 | 2 | 3
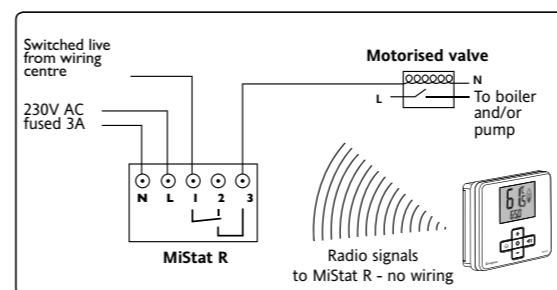230V AC 50Hz Fused 3A | | Common | heating satisfied or call for cooling | Call for heat

This product is double insulated and does not require an earth connection. The MiStat R should be wired to the boiler or central heating wiring using the correct type of cable or flex. The MiStat R should be wired to replace hard wired room or programmable thermostats, as shown on the system or boiler wiring diagrams.

Always check other manufacturers instructions for compatibility.

Combi boiler basic wiring layout

Switched
230V AC fused 3A, L, N
Internal boiler electronics
External controls connections
N L 1 2 3
MiStat R
Radio signals to MiStat R – no wiring

Zone control basic wiring layout

Switched live from wiring centre
230V AC fused 3A
Motorised valve
To boiler and/or pump
N L 1 2 3
MiStat R
Radio signals to MiStat R – no wiring

Step 3: Signal Strength ➜

The MiStat Cylinder thermostat is prebound to the MiStat receiver in the factory so they just need to be positioned in the best place for wireless communication. To help with this there is a built in Signal strength indicator, available in the Installer settings menu on the MiStat thermostat, as shown.

It is recommended that the signal strength is Good or Very Good to ensure ongoing communication is maintained.

To enter signal strength menu (see step 5 for more detail)

• Press + & - for approx. 5 secs, then scroll (+/-) to show INST-S,
• press (☐) to enter the installer menu,
• Press +/- until 11 WIRELESS is shown,
• press (☐) to enter,
• press +/- to show 13 SIG-LEVEL as shown,
• press (☐) to see the current signal strength.

eg. **11 WIRELESS** — **VERY GOOD**
eg. **13 SIG-LEVEL** — **NO SIGNAL**

If POOR is displayed, look for a better location. If NO SIGNAL is displayed, try connecting again with the room unit in a different position.

Note: If not bound, the bind screen will be visible.

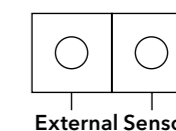For commissioning see Step 6

Step 4: Mounting Options ↰

The MiStat C should be located in a convenient position for the end user, close to the domestic hot water cylinder being controlled.

Once the best position has been identified, the MiStat C should be fixed to the wall using the wall bracket as shown.
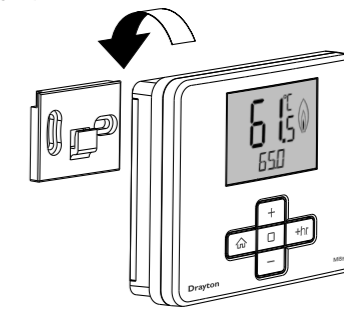
Wiring

Cylinder Thermostat

External Sensor

Cylinder Thermostat Sensor

Locate the external sensor terminal block on the lower edge of the MiStat C thermostat, connect a 2-core cable, cut to the required length to reach the sensor position. Connect to the sensor in the position shown and fold wires back through the cable grip & out through the cable entry, re-assemble the housing.


Step 4 (Continued) ➜

Cable entry

Connect here | NTC Sensor | Cable grip | Clip the spacer provided onto the sensor housing
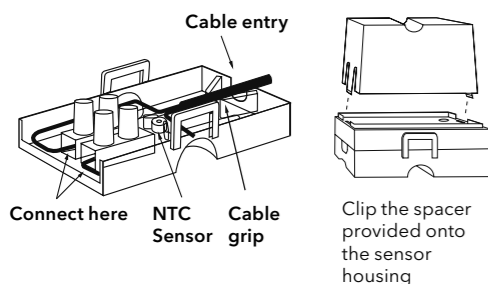
The sensor should be installed approximately one third of the way up the hot water cylinder. With pre-insulated cylinders, mark the position and size, and remove just enough insulation to allow the sensor to fit against the metal of the cylinder in the recess formed.


Cylinder
1/3 cylinder height
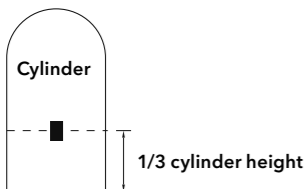
The plastic covered spring fixing cable should be cut to an un-stretched length of approximately 60-75mm (2½"-3") less than the circumference of the cylinder and the hook and eyelet should be screwed into the ends. Stretch the cable round the cylinder, over the insulation, and position it in the groove across the front of the sensor housing, Engage the hook and eyelet.

Insulation
Fixing cable
Cylinder | Sensor
Sensor

Step 5: Installer Settings ➜
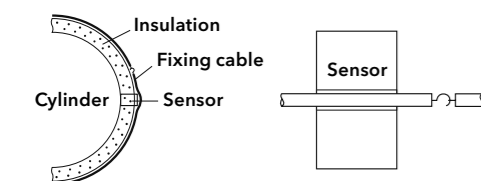
Customize the MiStat according to application needs.

To enter Installer Settings

Press **+ & -** keys for approx. 5 Seconds to enter the settings menu as shown.

USER-S → INST-S
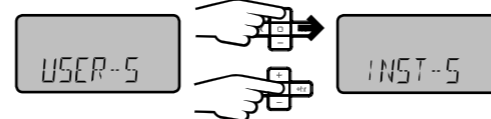
To exit Installer Settings

Press +/- until 'DONE' is shown, then press 'Select' or press + & – keys for approx. 5 seconds to exit. If there is no key pressed for 2 Minutes, the system will exit the menu, any changes will be saved.

Note: If not bound, the bind screen will be visible.

For commisioning see Step 6

ID	Feature:	Description:	Factory Pre-Set:
5	BACKLIGHT	Available options are: On with timeout (TIMED), Always Off (OFF)	TIMED
7	LOCK	Protect MiStat against unauthorised use. If active, any key press will show LOCKED for a few Secs. To lock: Enter your 3 digit code for protection. To unlock: Press +&- key for approx. 5 sec. Enter your 3 digit code — **User Code:**	000 Master code 401
10	VALV-PROT	The output will be activated for the specified time (in Minutes). This will happen weekly, related to the last actuation of the output. Select OFF, 1 to 10 Minutes.	OFF
11	WIRELESS	To create a radio link with the receiver or to view the RF signal quality	Pre-bound
12	BIND	Press (☐) key to start connecting to the receiver. NB. "binding" must also be activated on the receiver, see Step 6 Commissioning	
	BINDING	An RF connection to the receiver will be created. If successful, the SIGNAL level will be displayed. If unsuccessful, FAILED will be displayed.	
13	SIG-LEVEL	Indicates the quality of the RF transmission VERY GOOD, GOOD, POOR, NO SIGNAL	
	DONE	To exit WIRELESS sub menu	
15	PROD-INFO	View the product details, e.g. Part number, Firmware revision etc. Use (☐) key to show the details	
16	RESET	Will reset all settings to factory pre-sets	OFF
	DONE	Exit from the settings menu to INST-S	

Step 6: Commissioning

Note: Only needed if not already bound, ie if replacing either the MiStat thermostat or the MiStat receiver.

1. Turn on power for the receiver. The red lamp will come on. (if green lamp is visible, the device is already bound, no further action needed here) (If a separate programmer/Timer is fitted, ensure that it is switched on)
2. Push the button for >5 Seconds and the LED will flash red – yellow – green – green --- -red – yellow - green…
3. Enter binding mode on the corresponding MiStat room unit, see Step 5: Installer settings , item 11
   Important: It is essential, that the binding is carried out between the corresponding room unit and the receiver
4. If binding is successful, the signal strength will be indicated on both the MiStat room unit and the MiStat receiver as follows. If unsuccessful, FAILED will be displayed. If POOR SIGNAL is displayed, look for a better location. If NO SIGNAL is displayed, try connecting again with the room unit in a different position.

MiStat Room Unit

eg. **VERY GOOD** | eg. **NO SIGNAL**

MiStat Receiver

Immediately after binding, these signals will indicate the signal quality for 1 minute.

• three green flashes = Very good signal
• double amber flashes = Good signal
• single red flashes = Poor signal
• steady red = No signal

To check the wireless connection

A green lamp on the receiver will indicate a good RF connection.

Technical Data

MiStat C110C & MiStat R111M	
Supply voltage	MiStat C: 2 x AA 1,5V alkaline batteries MiStat R: 230V
Switch rating	MiStat R: 2(1)A 230V a.c.
Ambient temperature	Operating: MiStat C 0°C to 50°C; MiStat R 0° to 45°C Storage: -20°C to 55°C;
Battery life	MiStat C: 2 years (typically)
Temperature range	40°C to 70°C
Control accuracy	+/- 8°C
Wiring	MiStat R: Fixed wiring only, to comply with current IEE regulations (BS7671) MiStat C: No wiring required MiStat Sensor: Ø0.5mm2 2 core cable between Sensor & MiStat.
Mounting	MiStat R: Industry standard wallplate MiStat C: Wall bracket MiStat Sensor: Direct mounting onto cylinder
Radio frequency	868.3 (Bi-directional communication)
Radio signal range	30m typically. The range may be affected by the composition / density and number of walls between the MiStat C and MiStat R
Pollution degree	2
Software class	A
Rated impulse voltage	MiStat R: 2.5kV
Ball pressure test temperature	MiStat R: 75°C
Relevant EC Directives:	2006/95/EC Low Voltage Directive 2004/108/EC Electromagnetic Compatibility Directive 1995/5/EC R&TTE Directive 2006/66/EC Battery Directive 2011/65/EU RoHS Directive
Applied Standards:	EN60730-1; EN60730-2-9 ETSI EN 300 220-3; ETSI EN 301 489-3