B.BOWDEN & CO. LTD
HEATING PLUMBING AND ELECTRICAL ENGINEERS

CENTRAL HEATING

USERS INSTRUCTIONS

FOR

CENTRAL HEATING AND HOT WATER SYSTEMS

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CONTENTS

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INTRODUCTION

The heating system installed in your home is in all rooms together with hot water for your bathroom and kitchen.

The gas fired boiler heats up water for the radiators and for your hot water supply. You can control the level of heating using the wall thermostat and the radiator thermostat valves. You can control the temperature of the hot water by using the hot water temperature control knob on the fascia panel on the front of the boiler.The timeswitch allows you to set the time you want the heating to turn ON and OFF or you can control the system manually.

This manual tells you how to get the best out of your central heating and hot water system. By making proper use of the controls you can stay warm and comfortable in your home, have hot water when you need it and keep costs down.

If you need any help in setting the controls, or if you are concerned that the system is not functioning properly, please contact our office.

The system installed is called a pressurised sealed system. You should NOT try to disconnect radiators if you need to decorate, let air out of the radiators without topping up the system or drain down the system. Please contact our office if you have any problems with the central heating system.

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SECTION 1

THE BASICS

The heating system is generally controlled by a wall thermostat, which is in either the hall or living room. Each Radiator (except the radiator which is fitted in the same room as the wall thermostat) has its own radiator valve thermostat, which will allow you to lower the temperature of a room independently.

The wall thermostat works by automatically turning the system ON when the temperature of the air around it falls below a certain level. You can set this level yourself.

The radiator thermostat valve will allow you to lower the temperature of a room when the system is ON by turning the head to a lower number setting.

2. The system must be ON for the thermostat to operate. The times your system comes ON and turns OFF are controlled by the times that have been set in the time clock. You can set the system to turn on and off automatically using the time clock or you can operate it manually by sliding the switch on the front of the time clock to 24hr.

Remember :

- **The time clock switches the system on and off.**
- **Thermostats control the temperature when the system is on.**

3. You should not need to make any changes to the boiler setting. But make sure the boiler thermostat is set at a high setting.

If your boiler is off after a loss of electrical power, you should refer to section 5 of this leaflet which explains how to operate the boiler. If you are unaware about how to proceed, please contact our local office. The Staff will be pleased to help.

SIEMENS

3002

RAA20

RAA200

Room thermostats RAA20..

Adjustable for heating only or cooling only

- **2-position control**
- **Switching voltage AC 24…250 V**

Use

The RAA20.. room thermostat is used in heating only or cooling only systems to maintain the selected room temperature.
Typical use:
- Residential buildings
- Light industrial buildings

In conjunction with
- zone valves or thermal valves
- gas or oil burners
- fans
- pumps

Functions

The RAA20.. room thermostat has separate outputs for heating only and cooling only.
If the room temperature falls below the selected setpoint, the heating contact will close.
If the room temperature exceeds the selected setpoint, the cooling contact will close.

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SECTION 2

SETTING THE TIME CLOCK

The time clock controls the times when the heating turns ON and OFF. The Thermostats around your home only operate when the system is ON.

How the time clock works

The sliding switch on the front of the time clock gives you three options. You can have the heating ON and OFF once or twice a day at whatever times you choose, or 24 hours a day, by sliding the switch to your choson setting. The large round dial on the front of the time clock unit is the timing dial, and the four markers – 2 Green 2 Blue, allow you to set 2 different periods when the heating will turn ON and OFF. The advance button will move the current period forward to the next period setting.

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Drayton

SM1 and SM2 Programmers

HEATING

The new Invensys SM1 single channel timeswitch and SM2 twin channel programmer gives style and ease of uses to suit most domestic pumped and gravity heating systems

invensys
Controls Europe

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Drayton

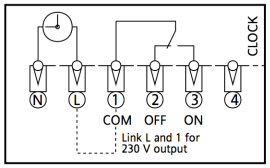
Drayton SM1 and SM2

Features

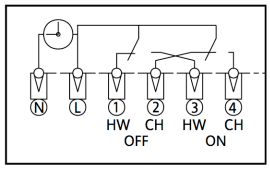
- Single and dual channel
- Advance feature
- Modern styling
- LED indication
- 4 position slide (ease of setting)
- Intuitive time setting for ON/OFF
- Suitable for gravity and pumped systems
- Positive switching of time
- Two ON/OFF time functions per day
- All day option
- Universal industrial standard back plate

Wiring

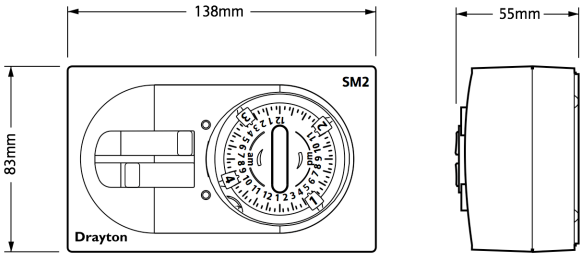
Single Channel: SM1



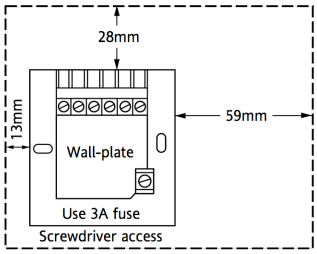
Dual Channel: SM2



Dimensions



Wall Plate Clearance



Technical data

Type	SM1 24 hour timeswitch SM2 24 hour programmer
Voltage	230V a.c.
Rating	2(1)A 230V a.c.
Ambient temperature	Operating: 0°C to 45°C Storage: 0°C to 50°C
Wiring	Designed for fixed wiring only to comply with the current I.E.E. regulations
Maintenance	No user maintenance should be attempted
Relevant EC Directives	2006/95/EC Low Voltage Directive 2004/108/EC Electromagnetic Compatibility Directive
Applied Standards:	EN60730-1; EN60730-2-9

Available from:

Invensys Controls Europe
Customer Service Tel: 0845 130 5522
Customer Service Fax: 0845 130 0622
Technical Helpline Tel: 0845 130 7722
Email: customer.care@invensyscontrols.com
Website: www.draytoncontrols.co.uk

energy saving recommended

ISO 9001 FM00607

D50-2

Setting the times

The round dial is marked with a 1-12 hour am period and a 1-12 hour pm period.

1. Decide 2 time periods when you want the heating to turn ON and OFF. The times will depend on your lifestyle but most people like the heating to turn on about half an hour before getting up in the morning and to turn off at bedtime.
2. First, set the times you want the heating to turn ON by sliding the Green marker No 1 on the dial, so it points to the time you want the heating to turn ON. To slide the marker, press it in slightly and then move it around the clock – you can move it either clockwise or anti-clockwise. If another marker is in the way you will need to move them together until your Green marker is at the time you want. Now do the same with the other Green marker No 3 to set the second time you want the heating to turn ON.
3. Next move the two Blue markers on the dial, to set the times you want the heating to turn off.

4. You have now set two time periods you want the heating to turn ON and OFF. Check each pair of Green and Blue markers to make sure you are happy with the time the heating will operate.
5. Now you must move the dial to set it to the right time. Turn the dial clockwise so that the current time is shown against the 'time' mark on the bottom of the time clock.

If your mains electricity supply is ever turned off or if you have a supply failure, you will need to reset the time (but not the ON and OFF settings) when the supply is restored.

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SECTION 3

CONTROLLING ROOM HEATING

When the system is ON, your main control for room temperatures is the wall thermostat. You should set it to a level which makes rooms feel comfortable, usually about 20 degree C. If this is too warm, turn the thermostat down a couple of degrees by turning it anti-clockwise, if this is too cold, turn the thermostat clockwise to turn it up.

It is best not to change the thermostat setting frequently. If you feel cold when the radiators are cooling down, turn the thermostat up slightly and leave it.

Wall Thermostat

SIEMENS

3002

RAA20

RAA200

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Remember

The thermostat will only control your heating when the system is turned ON at the time clock.

If you are out for a long period during the day you can turn the thermostat to a lower setting to save on fuel bills. When you return you will need to turn the thermostat up to its normal setting – the rooms will then take a while to get warm again.

Controlling the radiators

All the radiators in your home, except in the room where the wall thermostat is located, are fitted with thermostatic radiator valves. These control the temperature at which each radiator heats up and cools down. By using these valves you can control the temperature of each room in your home.

Sitting rooms usually need to be kept warmer than bedrooms, bathrooms and kitchens. If you keep these rooms cooler than your living room, you will save on your fuel bills.

Setting radiator thermostat valves

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Radiators take time to cool down and heat up, so it will take a few hours for you to judge the right temperature for each room.

1. Before you set the valves make sure the system is ON at the time clock.

2. Turn the hall thermostat up to the highest setting.

3. Set the radiator thermostat valves to maximum. To do this turn them as far as they will go in anti-clockwise direction.

4. Wait for about an hour. If the room temperature is too warm, turn one of the valves down by turning it clockwise. If you have only one radiator in the room, turn the valve on that one down. First, try turning it down about halfway. If, after another hour you are still too warm, turn it down further until the room is the temperature you want.

5. When you have set the valves in all your rooms turn the hall thermostat back to its usual setting.

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SECTION 4

WHAT TO DO IF YOUR HEATING OR HOT WATER DOES NOT WORK

Checking the system if you have no heating.

Check the control light on the control fascia and if this is flashing red this indicates a fault, and the boiler has gone to lockout.

Re-set the boiler by turning the mains re-set switch on the fascia panel anti-clockwise to **'O'** wait 5 seconds. Turn mains re-set switch clockwise to **'I'**. If the boiler goes to lockout again, read the fault code in the display window and report this to our local office.

If the control light is not flashing and is not illuminated green this indicates the boiler is not running.

Switch the time selector to on, turn the wall thermostat and the radiator thermostats to maximum. Wait for half an hour and if the radiators have not started to get warm contact our local office.

Checking the system if you have no hot water.

Check that the main electrical supply is switched on to your timeclock.

Check that the control light is not flashing red, if it is, carry out the re-set procedure mentioned above.

Run a hot water tap for 2 minutes. If the water from the tap is not hot contact our local office.

Please Note: If your mains electrical supply is ever turned off or if you have a supply failure, or if you run out of gas, you may have to re-set the boiler with the mains re-set switch on the display fascia panel on the front of the boiler.

SECTION 5

TURNING THE BOILER ON

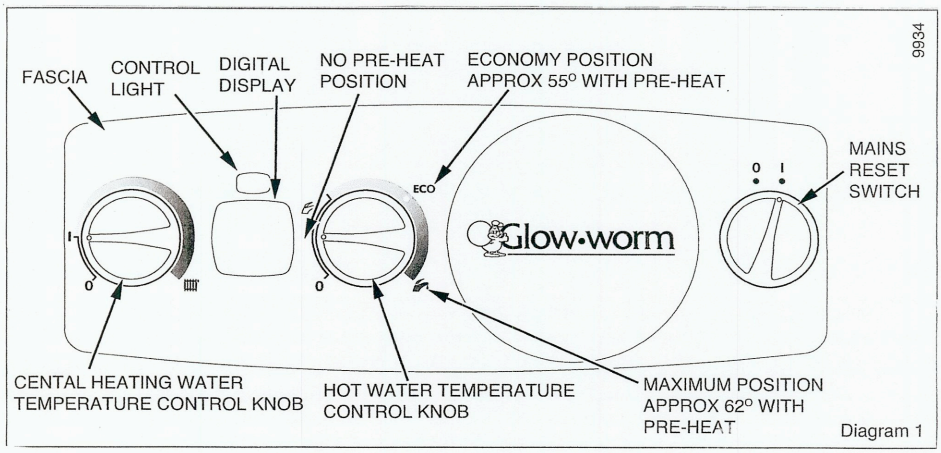

Diagram 1

To Operate the Boiler

1) A sealed pressurised system must be filled and pressurised by a competant person.

   Only operate the boiler when you are sure that the system has been filled and pressurised. Check this by looking at the pressure reading on the digital display, which should read 1.0bar, see diagram above. The digital display gives a pressure reading when there is no demand or when the appliance is in the domestic hot water mode.

2) Open a hot water tap, check that water flows, then close it.

3) If you are in any doubt about the boiler being filled with water contact our office on the number listed in Section 6. Reporting a Fault.

4) Check that the electrical supply to the boiler is **ON** at the external isolator.

5) Set any remote controls as required.

6) Turn the mains reset on/off switch to the **ON** position **(I)**, see diagram above. The control light will illuminate (green) indicating the boiler is lit.

User Controls

The temperature of the domestic hot water and the central heating water can be set on the control knobs on the controls fascia, see above.

Mains Reset Switch

O: Off.

I: On.

A fault is indicated by a **RED** flashing light on the control light and flash fault code on the digital display.

To reset:

Turn mains reset switch anti-clockwise to **O.**

Wait five seconds.

Turn mains reset switch to **I** clockwise.

Central Heating Temperature Control:

O: Temperature control is **Off.**

I: Temperature control is **On.** To adjust the temperature turn the control to the desired setting between **I 'Min'** and **IIII 'Max'.**

'Min' I is approximately 40 deg C (104 deg F).

'Max' IIII is approximately 82 deg C (180 deg F).

Hot Water Temperature Control:

O: Hot water is off.

Turn selector between **O** and light tap symbol for maximum water temperature, 62 deg C with no pre-heat.

Turn selector between light tap symbol and dark tap symbol to adjust water temperature, 40 deg C - 62 deg C with preheat.

The **ECO** setting, water temperature 55 deg C, is the recommended optimum position for constant use.

To Turn the Boiler Off

There is a mains/reset switch on the right hand side of the controls fascia, which will isolate the boiler. However, it is preferable to leave the electrical supply **ON** whenever possible to permit operation of the built-in frost protection and daily pump and valve exercise.

To turn off the central heating use the room thermostat or clock/timer.

To turn off the domestic hot water turn the domestic hot water knob to the minimum setting.

To turn off the boiler for servicing, isolate it from the electrical supply.

To turn it on again follow the instructions given in **'To Operate the Boiler'**.

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REPORTING A FAULT

If after carrying out the check mentioned in this leaflet, your system does not operate properly you should contact our local office. The staff will arrange for a repair to be carried out if necessary. The warranty period with ourselves expires

on ……..

Our staff will also be pleased to help you have any queries about the contents of this leaflet or if you are unsure about how to make the system operate.

Telephone Office & Yard - 01753 630101

Emergency Out of Hours - 01895 434919

IMPORTANT

If you suspect a gas leak, phone 'TRANSCO" immediately. Their number is on your gas bill or under 'GAS' in the telephone directory.

SECTION 7

TOPPING UP THE SYSTEM (Repressurising)

The central heating system installed in your home is a wet sealed system. Once the system has been filled from the mains water supply, the same water is circulated around the system and does not change. This avoids corrosion.

Occasionally the system will need topping up with water, due to air (gas) being expelled through automatic air vents, bleeding radiators etc. The topping up will need to be done by yourself.

You will know when this has to be done after checking the reading on the digital display when there is no demand or when the appliance is in the domestic hot water mode. This should read 1.0bar.

If the digital display shows pressure less than 0.7bar, repressurise the system to 1.0bar by gently opening the built in filling tap underneath the boiler, see diagram below. A tap extention tool is provided to facilitate this. Close the tap, topping up is now complete.

If you find that you have to top the system up regularly i.e. once a week, you must report this, as there may be a problem with the system.

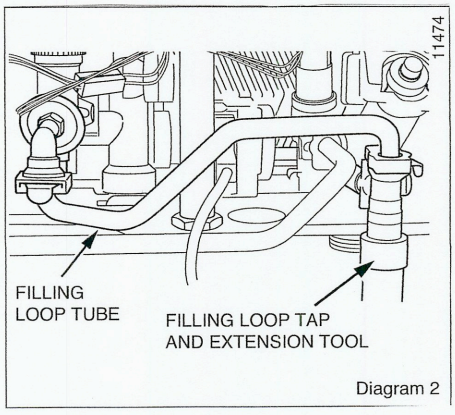

Diagram 2

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List of Fault Codes

13 Fault Finding

CODE	DESCRIPTION	POSSIBLE CAUSE
F1	Ignition fault (lockout) Boiler failed to light	No gas Insufficient gas Incorrect gas valve adjustment Electrode Ignition lead defect Electronic igniter defective Check air inlet duct Check connections to igniter unit
F4	Ignition fault (lockout) Went out when lit	As F1 possible cause
F5	Overheat fault	Overheat stat operated Maximum temperature exceeded Check thermistor connections Air in system with thermistor at maximum setting Faulty overheat stat connection Check that pump is wired into appliance and not from programmer. This would cause no pump overrun
F6	Central heating flow thermistor fault	Thermistor cable defective/broken, thermistor faulty Check that thermistor attached correctly to pipe
F7	Domestic Hot Water thermistor fault	Thermistor cable defective/broken, thermistor faulty Check that thermistor attached correctly to pipe
F9	Water pressure sensor fault	Faulty sensor connection Check wiring
F10	Central heating return thermistor fault	Thermistor cable defective/broken, thermistor faulty Check that thermistor attached correctly to pipe
F11	Main board connection fault	Check wiring between mainboard and user interface
F12	User interface connection fault	Check wiring between mainboard and user interface
F13	Main PCB connection fault	Check connections and wires
F14	Central heating flow temperature is greater than 95°C	System fault Possible pump failure Check Thermistor on flow
F16	Flame detection fault (flame presence for more than 5 seconds after burner stop)	Gas valve defective
F17	Power supply is less than 170V	Check electrical supply / polarity
F18	User interface fault	Faulty User Interface
F19	Central heating thermistor unplugged	Check Thermistor connection
F20	Software incompatibility	Incorrect user interface or Main PCB
F24	Central heating return temperature is greater than 90°C	System fault Possible pump failure Check Thermistor on return
F25	Maximum temperature rise slope	Possible pump failure Air in system
F26	Maximum delta temperature	Check Thermistor on return System - too restrictive

Diagram 13.3