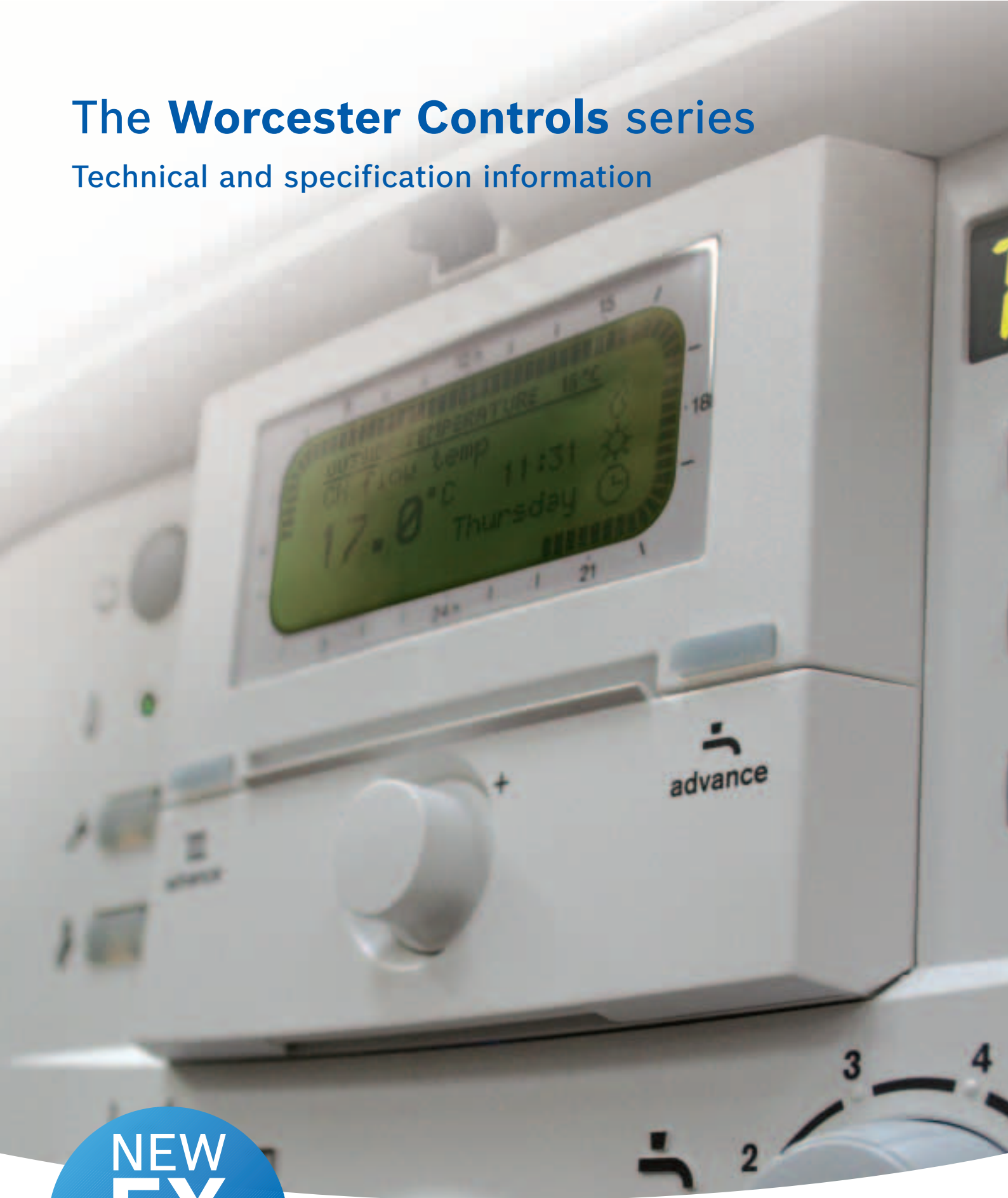


The Worcester Controls series

Technical and specification information



NEW
FX
CONTROLS
SERIES

 **WORCESTER**
Bosch Group



Worcester, Bosch Group headquarters

Worcester and you. Making a difference.

Working together for many years, heating professionals and Worcester have been making a real difference in hundreds of thousands of homes across the UK. We are recognised as a market leader in high efficiency, condensing boiler technology and are also committed to providing renewable energy solutions.

As part of the Bosch Group, our products are designed and manufactured to provide the high levels of quality and reliability which are synonymous with the Bosch name throughout the world.

We're a leading British company, employing approximately 2,000 people at our headquarters and manufacturing plants in Worcester and at Clay Cross in Derbyshire, including a nationwide network of over 300 Service Engineers and over 80 technically-trained Field Sales Managers.

As part of Europe's largest supplier of heating products, Worcester, Bosch Group has the UK-based resources and support capability to offer you the value-added solutions we feel you deserve.

"At Worcester we recognise the vital role you, our customer, has in the specification and installation of 'A' rated, energy efficient appliances in homes across the UK. We will continue to invest in our products, people, facilities and added value services such as training, to give you the support you require in providing a total solution for your customers' comfort."

Richard Soper,
Managing Director, Worcester, Bosch Group

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Why are controls so important?



Over the last few years boilers have become increasingly efficient and, with condensing boilers already offering typical efficiencies of around 91%, there is little scope for significant developments in boiler efficiency.

So it makes sense to take a closer look at the other parts of the system where we can improve performance – and the controls side is an obvious area to focus on. In fact, the operating efficiency of a condensing boiler can be increased by as much as 13% when used with the correct controls, depending on boiler size and heating load.

As every installation is different it's important to be able to choose the best control solution for each situation. This will depend not just on the choice of boiler and heating system but also the preferences of the end user and the budget they have available to invest in achieving maximum energy savings for a slightly higher initial investment.

At Worcester, we believe in delivering optimum choice to enable heating engineers to meet all of these diverse requirements in the most cost-effective way. This philosophy is reflected in the breadth of our controls offering.

Regulations and best practice

In addition to the end users' requirements, there are also current and future regulatory influences on the control of heating. The Building Regulations, for example, recommend:

'the provision of controls that meet the minimum control requirements as given in the Domestic Heating Compliance Guide for the particular type of appliance and heat distributions system'

However, these minimum control requirements will not meet the needs of forthcoming regulations; future editions of the Building Regulations are certain to demand higher levels of control to achieve greater efficiencies, bringing them in line with the Code for Sustainable Homes (see facing page).

Nor will minimum controls performance meet the demands of today's energy-conscious homeowner. With energy prices set to continue rising for the foreseeable future, homeowners want maximum efficiency to keep their bills down and to minimise their carbon footprint.

And, whereas saving 10% on a fuel bill wouldn't have been very significant 10 years ago, nowadays depending on your level of fuel consumption it could amount to as much as £150 a year, very quickly covering the cost of the chosen control.

Code for Sustainable Homes

The Code for Sustainable Homes, which has been in effect since April 2007, introduced minimum standards for energy and water efficiency. At the moment it only applies to social housing but is due to apply to other dwellings in the near future, enforced through the Building Regulations.

The Energy using Products Directive (EuPD)

Expected to come into force in 2010, the EuPD sets Europe-wide rules for the energy efficient design of heating equipment and other products that use energy. It will be accompanied by an 'energy labelling' scheme that, for heating, will take account of the whole system.

In the case of boilers, the SEDBUK scale of boiler classification is expected to change so that it takes account of the efficiency of the entire system, rather than just the boiler. As a result, controls will become even more important and we may even see the end of simple on/off boiler controls as they simply won't be efficient enough.

Looking forward to intelligent control

For all of these reasons, the next generation of controls will offer far more than simple on/off control and will move towards two-way communication between the boiler and room thermostat or weather compensation controller.

At the same time, no matter how 'clever' controls get they need to be easy for the homeowner to use, otherwise they won't be able to control their heating and hot water to full effect. So a simple user interface that the customer grasps very quickly is an important requirement of any control.

What heating and hot water control options does Worcester offer?

There are a number of comprehensive, easy-to-use controls for Greenstar gas- and oil-fired boilers. All fascia mounted controls offer simple plug-in connection to the boiler circuit board.

Simple-to-operate mechanical timers



MT10 mechanical timer

The simplest Worcester control device – an easy-to-use analogue clock for setting heating time periods. It plugs into the boiler fascia via a pre-prepared plug and socket.



MT10RF mechanical RF thermostat

Has an analogue display for setting night and day time periods and temperature. The receiver plugs into the boiler and is activated remotely by the RF (radio frequency) controller, which requires no wiring. So installation is clean and simple – no disturbance to floorboards or carpets. Nor is there any need for a separate room thermostat.

Sophisticated digital and wireless programmers and room thermostats



DT20RF digital RF thermostat with twin channel programmer

As with the DT20, this features convenient automatic set-up and is very simple to operate. The timer plugs into the boiler and offers up to 3 different time periods a day, with the room thermostat (no separate thermostat required) providing the temperature control. This device also has all the no-wiring benefits of the MT10RF. Twin-channel function: when used with a Greenstar condensing system boiler, the second channel gives you 3 time periods for hot water. If used with a Greenstar condensing combi boiler, it times the keep hot function.



DT20 twin channel digital programmer

Plugs into the boiler fascia panel and sets automatically to current time, date and day, and adjusts automatically as appropriate in line with British summer time. There are 3 separate time periods for both heating and hot water. Use either the built in pre-set programme, or choose your own settings.



DT10RF digistat

A 24-hour programmable room thermostat (which means your time settings remain the same for every day), with the ability to set different temperatures for up to 6 different time periods. No separate room thermostat is required and all the major benefits of no wiring apply. This also helps you to comply with Buildings Regulations Best Practice, as programmable room thermostats can make even further savings over more traditional room thermostats and timers.

Sophisticated digital and wireless programmers and room thermostats



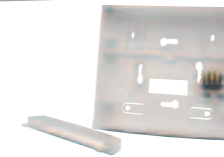
DT10RF optimiser

A sophisticated energy-saving device which automatically maintains a range of temperatures to avoid the wasteful hot-cold-hot-cold cycle. Also features an energy-saving optimum start, that calculates when it needs to fire the boiler to precisely achieve the required temperature at the required time each day. You can set different temperatures for up to 6 different time periods for each day of the week individually. As an RF (radio frequency) device it has the additional benefits of no wiring required. Nor is a separate thermostat necessary.



Twin channel 7 day digital programmer (for Greenstar oil boilers)

The optional plug-in programmer for the Greenstar Danesmoor 18/25, Greenstar Heatslave and Greenstar Camray kitchen ranges enables two heating and hot water on/off periods to be set each day of the week. The programmer also incorporates a 'holiday' setting. The digital unit fits simply into the fascia panel and the wiring for the timer is easily plugged into a pre-prepared socket.



TD200 text display

The TD200 is an advanced plug-in 7-day programmer which features automatic time and date set-up, automatic summer-time/winter-time changeover, and full easy-to-use text display (backlight for low light conditions) which provides more information than standard digital controls. You can set 3 on-off periods per day and the programmer's effectiveness is further enhanced by the RT10 room thermostat which gives optimum room temperature control. The digital display shows both the current and your desired (set) temperature. An advance button allows you to move on to the TD200's next heating switch point. An optional wall-mounting socket is available, enabling the TD200 to be positioned away from the boiler if required.



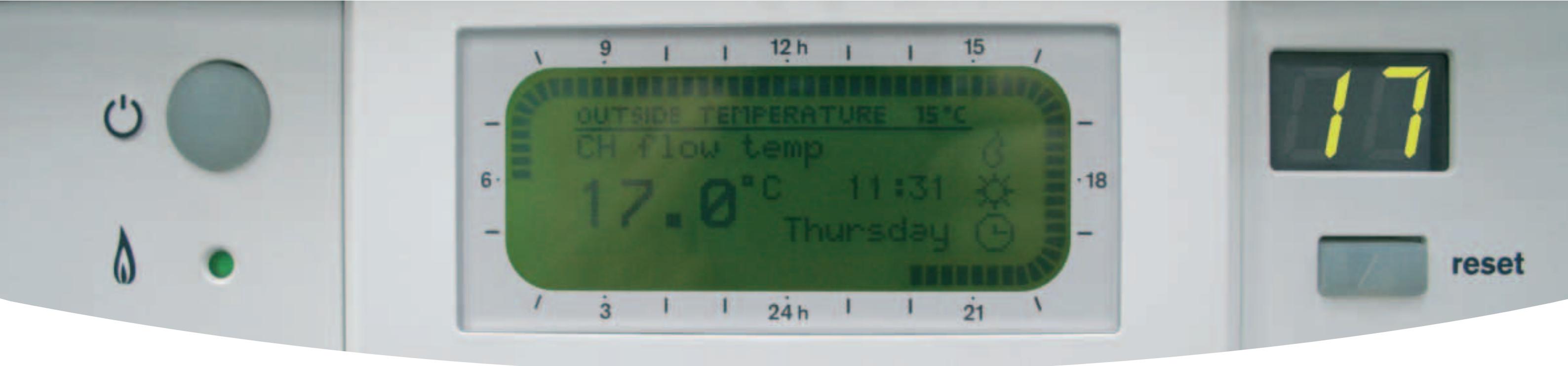
RT10 room thermostat

A hard wired optimising room temperature controller with digital display for use with the TD200 (above). The display shows current and desired temperature and an advance button allows the user to move to the next heating switch point on the TD200.



Intelligent system package (30CDi System only)

The ultimate but easy-to-use control solution, this optional intelligent system upgrade is a combination of the TD200 text display 7-day programmer and RT10 room thermostat with a built-in diverter valve.



The new generation of intelligent controls

As part of the Bosch Group, Worcester is committed to environmental protection and new product development is focused on the economical use of resources and their sustainability.

As part of this commitment Worcester is delighted to announce a new family of intelligent heating controls, designed to enhance the integral efficiency of our Greenstar CDi combi boilers, Greenstar CDi System boilers and Greenskies solar water heating systems.

Employing the latest digital technology, these new intelligent controls deliver a higher level of functionality to maximise energy savings without compromising on comfort.

By using low voltage power the controls also avoid the need for compliance with Part P of the Building Regulations.

There are four new models in the intelligent controls range:

- FR10 Intelligent Room Thermostat
- FR110 Programmable Room Thermostat
- FW100 Weather Compensation Controller
- ISM1 Intelligent Solar Module

FR10 Intelligent Room Thermostat



Features	Benefits
Compatible with fascia mounted programmers	Programmer and room thermostat separate, familiarity for end user
Large clear display, simple dial adjustment	Easy for installer to explain operation
Hidden intelligence	No additional knowledge required for end user operation
Load compensation	Increased efficiency of condensing boiler

FR110 Programmable Room Thermostat



Features	Benefits
Wall mounted, with clear back-lit display	Ease of use for end user
Programmable room thermostat	Varied temperatures throughout the day
Economy temperature	House never goes cold
Integrated solar control using ISM1	Removes need for separate Worcester TDS10 controller
Solar optimisation	Maximum benefit and efficiency from solar installation
Load compensation	Increased efficiency of condensing boiler

ISM1 Intelligent Solar Module



Features	Benefits
All solar control via FR110 or FW100 controller	Only one control to explain to end user
Displays solar performance on FR110 or FW100	End user can check solar input
Clear colour coded plug-in connections	Installation ease
Solar optimisation	Maximum benefit and efficiency from solar installation

FW100 Weather Compensation Controller



Features	Benefits
Wall or fascia mounted	Installation flexibility
Factory set parameters	Quick to install and commission
Economy temperature	House never goes cold
Integrated solar control using ISM1	Removes need for separate Worcester TDS10 controller
Solar optimisation	Maximum benefit and efficiency from solar installation
Weather compensation	Increased efficiency of condensing boiler

Technical data – intelligent controls



FR10 Intelligent Room Thermostat



FR110 Programmable Room Thermostat



FW100 Weather Compensation Controller and Outdoor Sensor



ISM1 Intelligent Solar Module

Controller model	FR10	FR110	FW100	ISM1
Height (mm)	85	119	119	110
Width (mm)	100	134	134	156
Depth (mm)	35	35	35	55
Rated voltage EMS-BUS (V DC)	10 – 24	10 – 24	10 – 24	10 – 24
Rated voltage (V AC)	–	–	–	230
Rated current	≤ 3.5 mA	6 mA (exc. illumination)	6 mA (exc. illumination)	4 A
Controller output	2-wire BUS	2-wire BUS	2-wire BUS	2-wire BUS
Max. output per connection (W)	–	–	–	120
Control range	5 – 30°C in steps of 0.5°C	5 – 30°C in steps of 0.5°C	5 – 30°C in steps of 0.5°C	–
Permissible ambient temperature (°C)	0 – +50	0 – +50	0 – +75	0 – +50
Protection level	IP20	IP20	IPX2D (fascia mounted) IP20 (wall mounted)	IP44
Controller position	Wall mounted	Wall mounted	Fascia mounted/ Wall mounted	Wall mounted

Compatibility

The new range of intelligent controls are designed to work with the following boilers:

	Greenstar CDi combi boilers	Greenstar CDi system boilers
FR10	•	•*
FR110	•	•*
FW100	•	•*
ISM1		•*

* Only suitable for use when optional diverter valve is fitted

FR10 Intelligent Room Thermostat



The FR10 is an intelligent room thermostat that enables load compensation and will offer around 11% energy savings compared to standard on/off controls.

The FR10's load compensation feature means that, rather than just switching the boiler on and off, it will adjust the flow temperature of the central heating water in line with set heating temperature requirements. The smaller the difference between the actual temperature and the set-point temperature, the lower the flow temperature from the boiler.

In this way the FR10 minimises boiler cycling so less energy is wasted in firing up the boiler after each 'off' cycle.

Typically, the FR10 is mounted on the wall in the same position in the property as a traditional thermostat. As with traditional thermostats, any radiators in the same space as the controller should NOT be fitted with a thermostatic radiator valve (TRV).

Operation by the user is very similar to traditional thermostats, with a large clear display and simple dial for adjusting set-point temperature. Consequently, it is very easy to explain to the end user.

FR10 controllers are fully compatible with Worcester's popular MT10 and DT20 plug-in timers. They can be used with the Greenstar CDi and Greenstar CDi System boilers which have been fitted with an optional plug-in diverter valve.

Installation

The accuracy of the FR10 is dependent upon the installation location.

Any radiator in the same room as the FR10 should NOT have a thermostatic radiator valve fitted.

The FR10 should be installed so that the overall temperature of the property is monitored, for example, hallways or landings and not be installed in a living room or room with supplementary heating.

Electrical connections

The FR10 does not require a 230V mains supply. Instead connection is made to the boiler via the BUS connections, on the Heatronic 3 circuit board within the appliance. All BUS connections are polarity free.

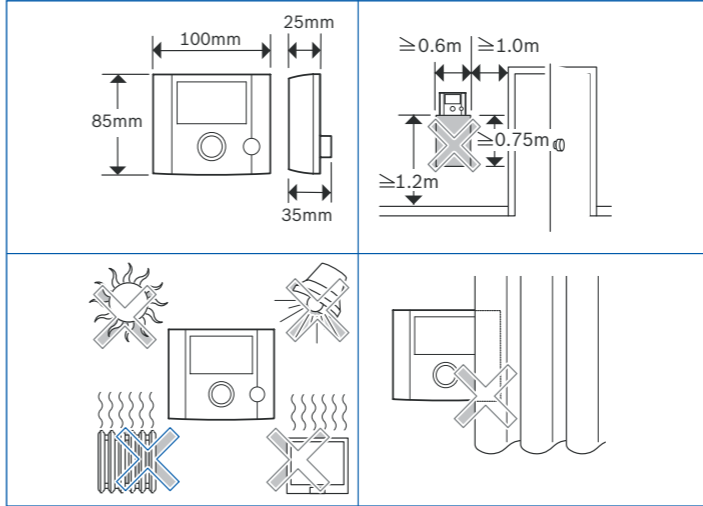
Permissible cable lengths and cross sections for use with the FR10 are shown in the table below:

Cable length	Cross-section
≤ 80m	0.40mm ²
≤ 100m	0.50mm ²
≤ 150m	0.75mm ²
≤ 200m	1.00mm ²
≤ 300m	1.50mm ²

To avoid inductive interference, lay all BUS cables separately to lines of 230V or 400V (minimum spacing 100mm).

In case of external inductive interference, screened cables should be used. This ensures that the cables are shielded from external interference (e.g. heavy current cables, overhead wires, transformer stations, radio and television sets, amateur radio stations, microwave ovens etc).

Siting



Selecting the installation location

Commissioning

Comprehensive installation and commissioning instructions can be found within the installation and user instructions supplied with the unit.

Disposal

The disposal of packaging and redundant spare parts should be carried out in an environmentally responsible manner.

FR110 Programmable Room Thermostat



The FR110 is an intelligent programmable room thermostat that enables load compensation for heating and time control of hot water systems. It works in much the same way as the FR10 but with the added benefit of built-in programming so there is no need for a separate programmer.

The controller provides the choice of six weekly heating programmes, with six switching points per day. When used with system boilers it also offers a weekly hot water programme with six switching points per day. On combi boilers the six switching points can be used to switch preheat on where the hot water will be delivered to the tap quickly, and energy saving economy mode where the preheat function is turned off.

As well as providing the user with the ability to programme the system themselves, the FR110 offers 3 pre-set temperature profiles for added convenience.

- Comfort setting (21°C), typically for use in the morning and evening
- Economy setting (15°C), typically used to keep the building warm through the day
- Frost protection (5°C), for when the property is unoccupied for long periods or the heating is off in cold weather.

As with the FR10, the FR110 should be fitted in the same place as a traditional thermostat, typically a hallway. It can also be retrofitted to replace an existing thermostat, in most cases using the same cabling. Mounting in a new location is also very straightforward.

Use of a low voltage supply from the mains, rather than relying on battery power, provides a clearer display for the user and ensures they don't have to worry about replacing batteries.

For extra peace of mind, the controller is supplied with a battery that will provide up to six hours back-up of the current time and date in the event of a power failure. Programmes and other settings are stored permanently.

Once installed the FR110's integral low voltage EMS Bus device communicates with the boiler's built-in Heatronic 3 controls to provide load-compensated control that finely tunes flow water temperatures to heating demand.

The resultant reduced boiler cycling and the fact that the boiler remains warm rather than frequently cooling down and heating up again provides energy savings of around 11% compared to older style controllers.

Reflecting Worcester's commitment to making life easier for its customers, the FR110 features a clear display with a simple interface for programming. Experience has shown that end users very quickly grasp the functioning of the controller and its programming.

Integrated solar heating control

The FR110 can also be used in conjunction with Worcester's new ISM1 Intelligent Solar Module (see Pg 21) to integrate Worcester's Greenskies solar water heating system with a Greenstar system boiler and optimise use of renewable solar energy for water heating. The combination of FR110 and ISM1 allows the system to anticipate the heat available from the solar panels at any time and control the boiler accordingly.

The FR110 is suitable for use with Greenstar CDi combi and system boilers.

Installation

The accuracy of the FR110 is dependent upon the installation location.

Any radiator in the same room as the FR110 should NOT have a thermostatic radiator valve fitted.

The FR110 should be installed so that the overall temperature of the property is monitored, for example, hallways or landings and not be installed in a living room or room with supplementary heating.

Fitting other accessories

Fit accessories, such as ISM1, according to the legal requirements and the installation instructions supplied with them.

Electrical connections

The FR110 does not require a 230V mains supply. Instead connection is made to the boiler via a BUS system, on the Heatronic 3 circuit board. All BUS connections are polarity free.

To avoid inductive interference, lay all BUS cables separately to lines of 230V or 400V (minimum spacing 100mm).

In case of external inductive interference, shield the cables. This ensures that the cables are shielded from external interference (e.g. heavy current cables, overhead wires, transformer stations, radio and television sets, amateur radio stations, microwave ovens etc).

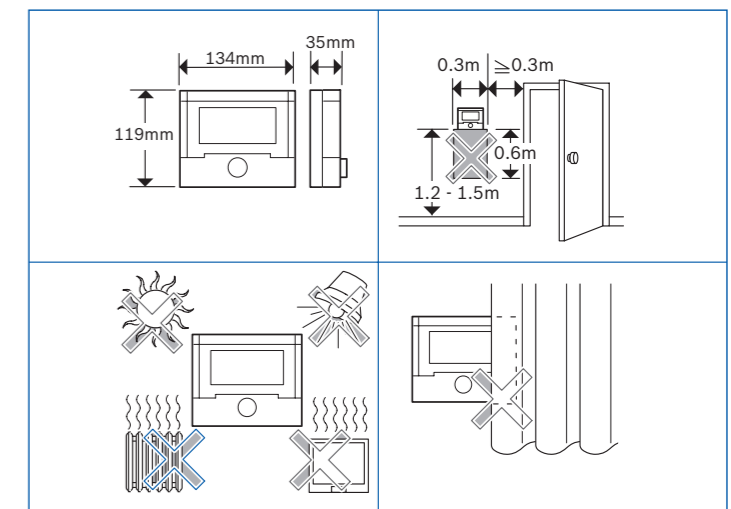
Connecting the BUS link

Permissible cable lengths and cross sections for use with the FR110 are shown in the table below:

Cable length	Cross-section
≤ 80m	0.40mm ²
≤ 100m	0.50mm ²
≤ 150m	0.75mm ²
≤ 200m	1.00mm ²
≤ 300m	1.50mm ²

Connect the controller to a boiler with BUS enabled Heatronic 3.

Siting



Selecting the installation location

Commissioning

Comprehensive installation and commissioning instructions are found within the installation and user instructions supplied with the unit.

Disposal

The disposal of packaging and redundant spare parts should be carried out in an environmentally responsible manner.

FW100 Weather Compensation Controller



When to use weather compensation controllers rather than room thermostats

There are a number of situations where weather compensation controllers will offer better control and higher comfort levels compared to room thermostats. In choosing the most appropriate solution for the end user it is important to understand how the system will be used and the nature of the building.

The list below shows the key criteria that should be applied when choosing the most appropriate controls and discussing the options with the end customer:

- Are there many rooms in the dwelling that are used frequently and in different ways?
- Does the dwelling contain windows that are facing in different directions?
- Does the home have an open fire, gas fire or other heat source that does not heat all rooms equally?
- Does the end user want a higher degree of comfort control in all rooms?
- Does the customer accept the pump will run more often if a higher degree of comfort and better energy utilisation are to be achieved?
- Are TRVs installed in all rooms?
- Are there factors that prevent the heating controller being installed in the living area?
- Can an outdoor sensor be installed on a north facing wall?
- Does the end user want to achieve optimum comfort with minimum energy consumption and are they prepared to pay a little extra for enhanced control?

If the answer to the majority of the questions above is 'yes', a weather compensation controller would be the most suitable option.

The FW100 offers energy savings of up to 11% when compared to traditional controls and will score highly in future legislation.

Installation

Installation in boiler

For detailed description of boiler components, see boiler installation instructions.

The FW100 is a weather compensation controller that enables the boiler to anticipate changes in heating demand in relation to external temperatures. It comprises a programmable indoor unit to control the boiler and an external sensor located on a north facing wall.

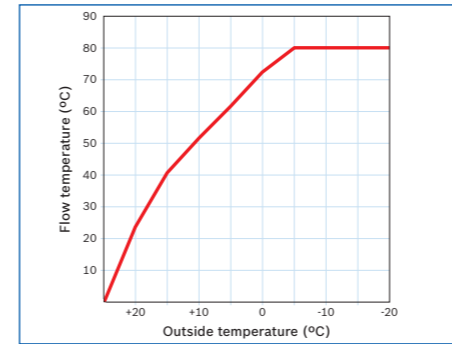
The indoor unit can be mounted on the fascia of the boiler using its simple plug-in connection, or wall-mounted remotely. When wall-mounted, permissible cable lengths and cross sections are shown opposite.

The FW100 combines the functions of room thermostat and programmer and incorporates factory-set heat curves for use with radiators, underfloor heating and fan convectors, making commissioning very straightforward. The units also include a manual override for the user to boost or reduce heating if and when required.

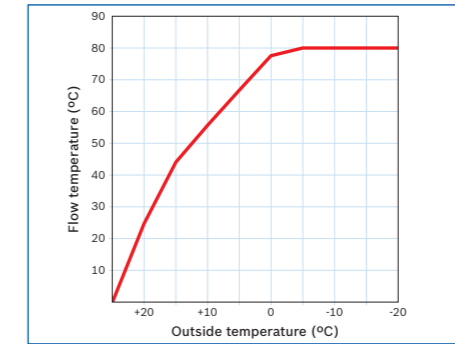
The FW100 offers the user three weekly heating programmes, with six switching points per day and a weekly hot water programme with six switching points per day. For extra convenience there are also pre-set temperature profiles, including an economy setting to ensure the home does not get cold when unoccupied and will warm quickly when switched to comfort setting.

The FW100 is suitable for use with Greenstar CDi combi and system boilers. It is also compatible with the ISM1 Intelligent Solar Module (see Pg 21).

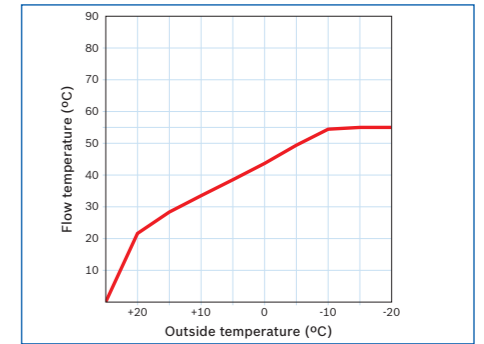
Factory set heat curves



Radiator heating



Convector heating



Underfloor heating

Wall mounting

The accuracy of the FW100 is dependent upon the installation location.

Any radiator in the same room as the FW100 should NOT have a thermostatic radiator valve fitted.

The FW100 should be installed so that the overall temperature of the property is monitored, for example, hallways or landings and not be installed in a living room or room with supplementary heating.

Installation of outside temperature sensor

Control quality depends on location of the outside temperature sensor. For installation of the outside temperature sensor please consult product installation instructions.

Fitting other accessories

Fit accessories, such as ISM1, according to the legal requirements and the installation instructions supplied with them.

Electrical connections

Electrical connection in boiler fascia

Installation of the controller automatically produces BUS connection via the three contacts.

Electrical connection to wall

The FW100 does not require a 230V mains supply, instead connection is made via a BUS system on the Heatronic 3 circuit board. All BUS connections are polarity free.

To avoid inductive interference, lay all BUS cables separately to lines of 230V or 400V (minimum spacing 100mm).

In case of external inductive interference, screened cables should be used. This ensures that the cables are shielded from external interference (e.g. heavy current cables, overhead wires, transformer stations, radio and television sets, amateur radio stations, microwave ovens etc).

Permissible cable lengths and cross sections for use with the FW100 are shown in the table below:

Cable length	Cross-section
≤ 80m	0.40mm ²
≤ 100m	0.50mm ²
≤ 150m	0.75mm ²
≤ 200m	1.00mm ²
≤ 300m	1.50mm ²

Permissible cable lengths to outside temperature sensor:

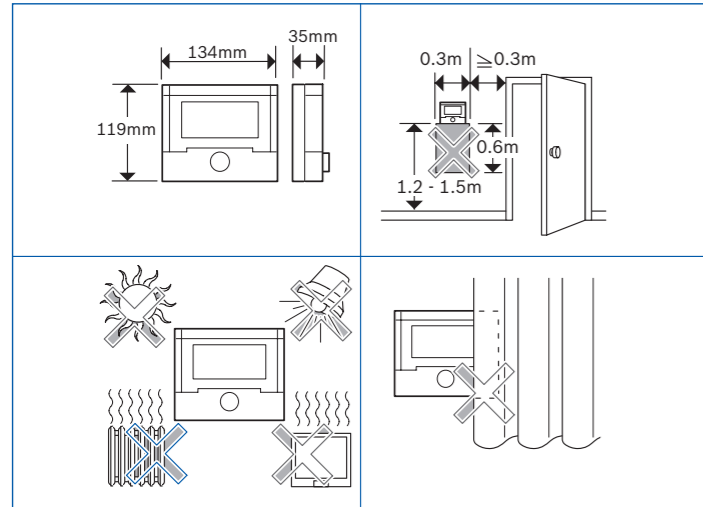
Cable length	Cross-section
≤ 20m	0.75mm ² – 1.50mm ²
≤ 30m	1.00mm ² – 1.50mm ²
≥ 30m	1.50mm ²

Disposal

The disposal of packaging and redundant spare parts should be carried out in an environmentally responsible manner.

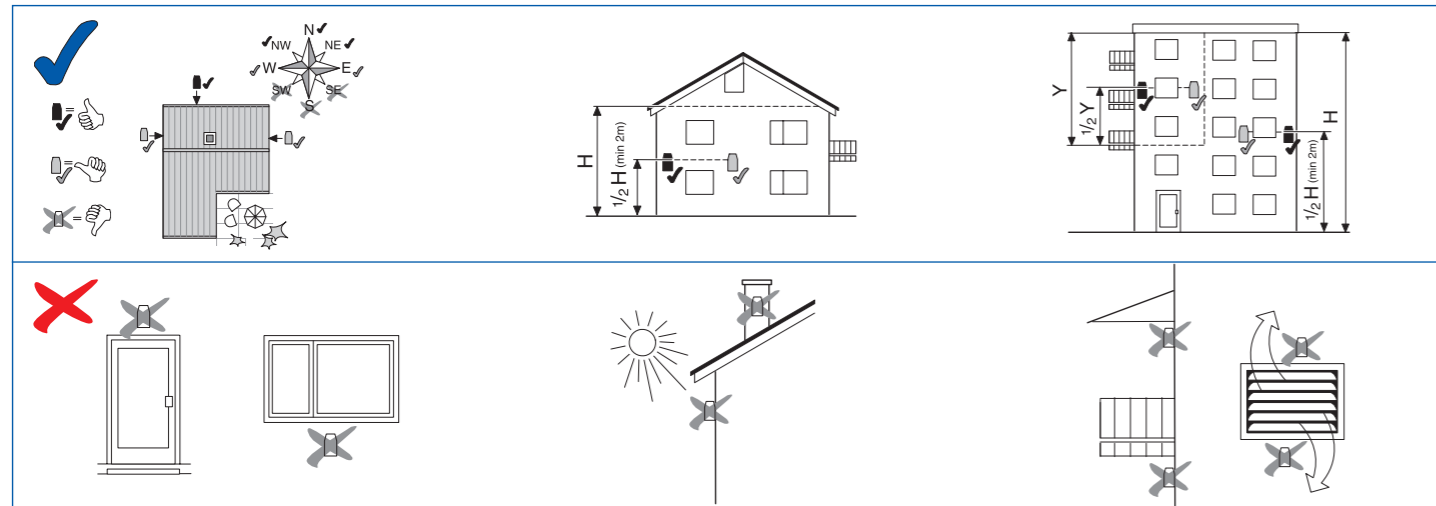
Installing and commissioning the FW100 Weather Compensation Controller

Installation on wall



Selecting the installation location

Installation of outside sensor



Positioning the outside temperature sensor in a suitable location

Commissioning minimum outside temperature setting

The successful operation of the FW100 Weather Compensation Controller relies upon the minimum outside temperature being adjusted to UK standards.

Refer to page 59 of the comprehensive installation and user instructions supplied with the unit.

Set the minimum outside temperature to UK standards (as for heat loss calculations), typically -1°C to -3°C.

This provides an optimised heat curve to UK conditions.

ISM1 Intelligent Solar Module



The ISM1 is a specially designed interface that integrates a solar heating system with a solar-compatible weather or load compensation unit such as the FW100 or FR110.

As such, it enables the hot water system to take heat from the solar panels when the sun is shining and then bring the boiler back on when there is not enough sunshine available. In this way, the user gets maximum benefit from solar heating while ensuring that hot water is always available.

Another major benefit of this arrangement is that the end user only needs one controller to control both the solar and boiler systems, making the system much easier to use. The in-built intelligence of the FR110 and FW100 ensure that solar-related information is only displayed when the ISM1 is connected, to avoid confusion.

All connections are plug-in for ease of installation and colour coded for greater clarity.

The ISM1 is compatible with Greenstar CDi System boilers providing the optional integral diverter valve is used and has the potential to reduce energy consumption by 15% compared to conventional systems.

Installation

For installation guidance please consult product installation instructions.

Electrical connections

Always route cables/leads through the pre-assembled grommets and apply the strain relief supplied to protect the system against the ingress of dripping water.

Connection – low voltage section with BUS connection

Permissible cable length between the Heatronic 3 with BUS capability and the ISM1:

Cable length	Cross-section
≤ 80m	0.40mm ²
≤ 100m	0.50mm ²
≤ 150m	0.75mm ²
≤ 200m	1.00mm ²
≤ 300m	1.50mm ²

To avoid inductive interference, lay all BUS cables separately to lines of 230V or 400V (minimum spacing 100mm).

In case of external inductive interference, shield the cables. This ensures that the cables are shielded from external interference (e.g. heavy current cables, overhead wires, transformer stations, radio and television sets, amateur radio stations, microwave ovens etc).

Solar panel and cylinder sensors

Dedicated sensors for both the solar panel and the hot water cylinder are supplied with ISM1.

When sensor leads are extended, apply the following lead cross-sections:

Cable length	Cross-section
≤ 20m	0.75mm ² – 1.50mm ²
≤ 30m	1.00mm ² – 1.50mm ²
≥ 30m	1.50mm ²

230V AC connection

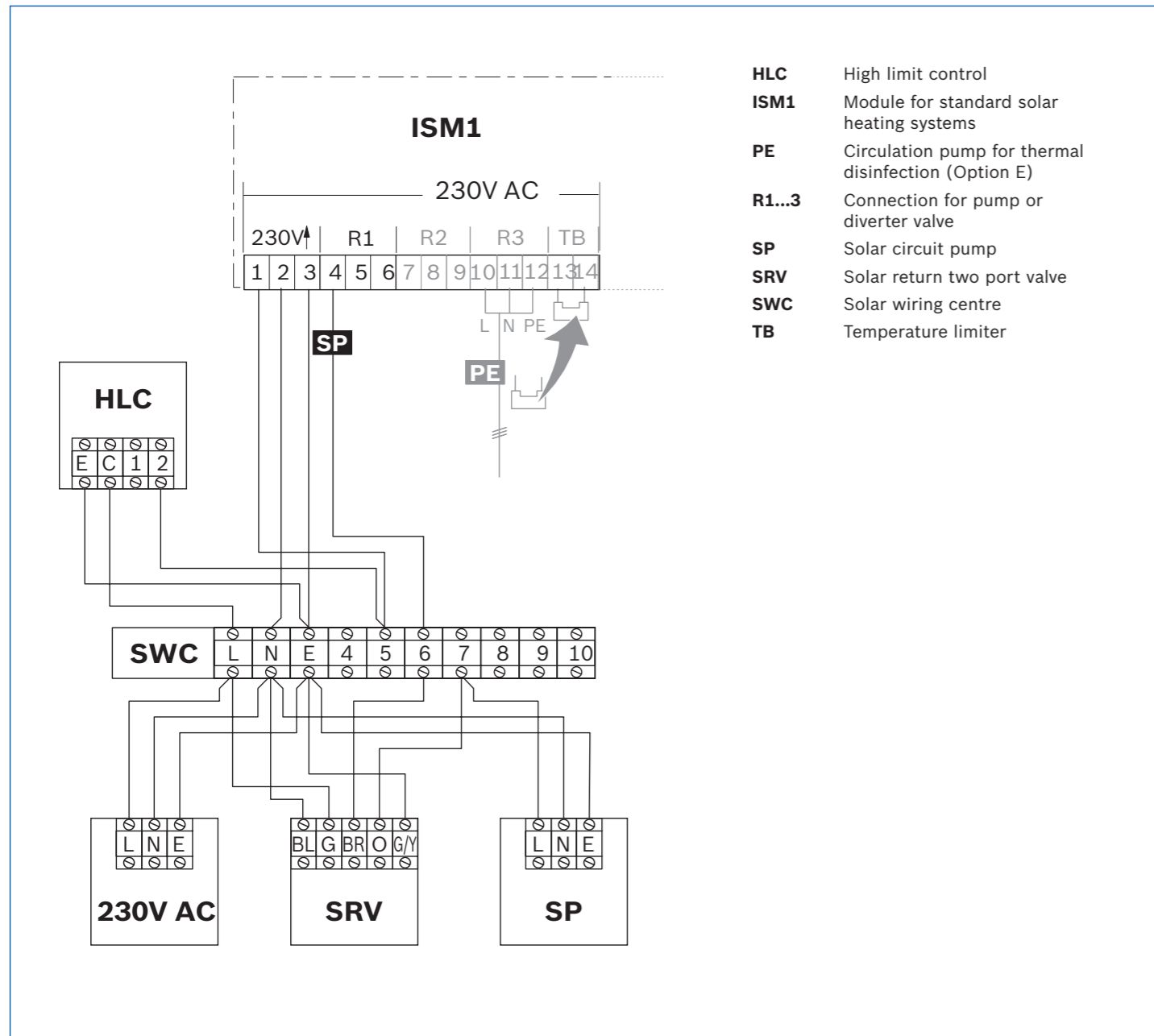
Mains voltage should only be installed to the terminals on the left of the ISM1 and under no circumstances be connected to the BUS or sensor terminals.

Installation of supplementary accessories to protect an unvented domestic hot water cylinder

Install supplementary accessories in accordance with legal requirements and the installation instructions supplied.

The following components may be supplied by the unvented domestic hot water cylinder manufacturers, please refer to the installation instructions. Alternatively they are available at plumber's merchants.

- HLC
- SRV
- SWC (see drawing)



- HLC** High limit control
- ISM1** Module for standard solar heating systems
- PE** Circulation pump for thermal disinfection (Option E)
- R1...3** Connection for pump or diverter valve
- SP** Solar circuit pump
- SRV** Solar return two port valve
- SWC** Solar wiring centre
- TB** Temperature limiter

Electrical connection of Solar Wiring Centre

Greenstar controls matrix

Control	Part no.	Gas-fired boilers						Oil-fired boilers			
		i-Junior	Si	CDi	Highflow CDi	i-System	CDi System	COMBI	REGULAR	COMBI	SYSTEM
Mechanical timers											
MT10 mechanical timer	7 716 192 036	•	•	•	•						
MT10RF mechanical thermostat	7 716 192 037	•	•	•	•						
Digital and wireless programmers and room thermostats											
DT20RF digital RF thermostat with twin channel programmer	7 716 192 054	•	•	•	•	•					
DT20 twin channel digital timer	7 716 192 038	•	•	•	•	•					
DT10RF digistat	7 716 192 052	•	•	•	•	•					
DT10RF optimiser	7 716 192 053		•	•	•	•					
7-day twin channel digital programmer	7 716 192 033						•	•	•	•	
TD200 text display	7 719 002 506			•	•						
RT10 room thermostat	7 716 002 505			•	•						
Intelligent System Package	7 719 002 824						•				
New intelligent programmers											
FR10 intelligent room thermostat	7 716 192 065			•			•				
FR110 programmable room thermostat	7 716 192 066			•			•				
FW100 weather compensation controller	7 716 192 067			•			•				
ISM1 intelligent solar module	7 716 192 068						•				

The very best training programmes from Worcester

Worcester has always placed great emphasis on technical support and training for installers and service engineers. Today this need is greater than ever. The differences between a combi, conventional and system boiler are substantial, and the technology of each continues to advance at a rapid pace.

To ensure the highest levels of competence and expertise in the installation of all Worcester products, the company runs intensive training courses for installers, commissioning engineers and engineers involved with servicing and fault finding.

Courses available

Our training facilities offer a number of courses suitable for the installer and commissioning engineers, and a more in-depth course for the servicing and fault finding engineers.



Training Centres throughout the UK

Worcester's network of regional training centres are strategically located across the country and include the 'A' Rated Training Academy at the company's headquarters. This facility has recently been extended to include an oil-fired appliance workshop and a renewable energies workshop in addition to the extensive gas-fired training facilities.

In addition to these outstanding facilities there are centres at Clay Cross in Derbyshire and Bangor in Northern Ireland. Further 'A' Rated Academies are open at West Thurrock in Essex and Bradford in West Yorkshire as well as additional training opportunities available throughout the UK. Please phone 01905 752526 for more information about a course near you. Each course is run by specialist trainers and is superbly equipped to deliver a combination of classroom theory and practical hands-on experience that's second to none.

College-linked Learning

A number of the UK's leading proactive technical colleges are equipped with Worcester products and offer excellent practical tuition on a more local level.

Distance Learning/Web Based Learning

Worcester has produced a selection of Distance Learning CD ROMs/DVDs which are packed with information. Call 01905 752556 for your copies, or visit www.worcester-bosch.co.uk for information on Web Based Learning.

Mobile training

Our 7.5 tonne mobile oil training vehicle with working boilers, is now available throughout the country for hands-on oil training and OFTEC courses.

Courses on Air to Water and Air to Air are now available please check with your local Technical Sales Manager and the Worcester website www.worcester-bosch.co.uk. Phone 01905 752526 to book your place.

Get on course for a more profitable future now.

Call now for more information
01905 752526



www.worcester-bosch.co.uk



Worcester training courses

Worcester training courses	
Greenstar CDi and Highflow CDi gas-fired condensing combi boilers	
Models covered	Greenstar 27/30/37/42CDi Greenstar Highflow 440/550CDi
Duration	1 day
Greenstar i Junior and Si gas-fired condensing combi boilers	
Models covered	Greenstar 24/28i Junior Greenstar 25/30Si
Duration	1 day
Greenstar system and regular gas-fired condensing boilers	
Models covered	Greenstar 12/15/18/24Ri Greenstar 30/40CDi Conventional Greenstar FS 30/42CDi Regular Greenstar 30CDi System Greenstar 12/24i System
Duration	1 day
Greenstar controls	
Models covered	All current standard and intelligent controls
Duration	1 day
Greenstar Camray high efficiency condensing oil-fired boilers	
Models covered	Greenstar Camray (kitchen) Greenstar Camray System (kitchen) Greenstar Camray Utility Greenstar Camray Utility System Greenstar Camray External
Duration	1 day
Greenstar Danesmoor & Heatslave high efficiency condensing oil-fired boilers	
Models covered	Greenstar Danesmoor Greenstar Utility Greenstar Heatslave Greenstar Heatslave External
Duration	1 day
OFTEC Training	
OFTEC 101	
Covering	Domestic/Light Commercial Pressure Jet Commissioning and Servicing
Duration	3 day course (2 days training plus 1 days assessment)
OFTEC 105e	
Covering	Domestic/Light Commercial Pressure Jet Boiler Installation
Duration	1 day assessment
OFTEC 101 & 105e	
Covering	Domestic/Light Commercial Pressure Jet Installation, Commissioning and Servicing
Duration	3 day course (2 days training plus 1 days assessment comprising 2 theory and 1 practical)
OFTEC 600a	
Covering	Oil Tank Installation and Associated Controls
Duration	1 day assessment course
OFTEC 101/105e/600e	
Covering	Domestic/Light Commercial Pressure Jet Boiler Installation, Commissioning, Servicing and Oil Tank Installation and Associated Controls
Duration	4 days (2 days training and 2 days assessment)
Mobile OFTEC	
All above covered throughout the country on the mobile training vehicle as well as in all our centres.	

Certificate in Energy Efficiency for Domestic Heating Course	
Covering	Key elements of energy-efficient heating and hot water systems and products, compliance with the latest Building Regulations, how condensing boilers work and how they differ to non condensing products.
Duration	1 day
Unvented Cylinder Course	
Covering	All G3 Regulations for the Installation, Servicing and Commissioning of Unvented Cylinders. The course includes recognised accreditation by Logic Certification.
Duration	1 day
Greenskies Solar System	
Covering	Installation, Commissioning and Servicing The course includes recognised accreditation by Logic Certification for eligibility of low carbon buildings programme funding.
Duration	2 days
Greenstore Ground Source Heat Pumps	
Covering	Installation, Commissioning and System Design
Duration	2 days
Greenstore Heat Pumps – Air to Water	
Covering	Installation, Commissioning and System Design
Duration	2 days
Greenstore Heat Pumps – Air to Air	
Covering	Installation, Commissioning and System Design
Duration	1 day



A complete after-sales service

Notes

As part of the worldwide Bosch Group, Worcester strives to maintain the highest possible standards of after-sales care.

In addition to the no-nonsense parts and labour warranty applicable to all Worcester boilers, you and your customers have the assurance that every Worcester boiler is manufactured to both the appropriate British and European standards.

Worcester Contact Centre

Should you require support, our fully trained Contact Centre staff, based at our head office in Worcester, are ready to take your calls. Whatever your query our contact centre operators along with our nationwide team of engineers are ready to help you.

Boiler Protection Options

Worcester offers boiler protection including service and maintenance contracts. Please call the Worcester Contact Centre for further details.

If you do not offer annual service and maintenance contracts please refer your customers to the Worcester Contact Centre:

Tel: 08457 256 206

Fax: 01905 757 536

Opening Times

Monday – Friday: 7.00am – 8.00pm

Saturday: 8.00am – 5.00pm

Sunday: 9.00am – 12 noon

All the technical advice you need

Spares

Genuine replacement parts for all Worcester boilers are readily available from stock, on a next day delivery basis. For more information please call your local stockist. You can find a spares stockist on our website.

Customer Technical Support

The Worcester Technical Helpline is a dedicated phone line – committed to providing a comprehensive service to complement the brand name and quality of our boiler products. Our experienced team of technical experts provides answers to queries of a technical nature across the entire Worcester range.

Worcester also has a pre-sales department, which provides assistance in selecting a boiler system to suit a particular application, along with full guidance on installation. As well as this we will also assist in finding a recommended installer. For more information please contact the Technical Helpline or alternatively visit our website where literature can be downloaded at www.worcester-bosch.co.uk

Technical

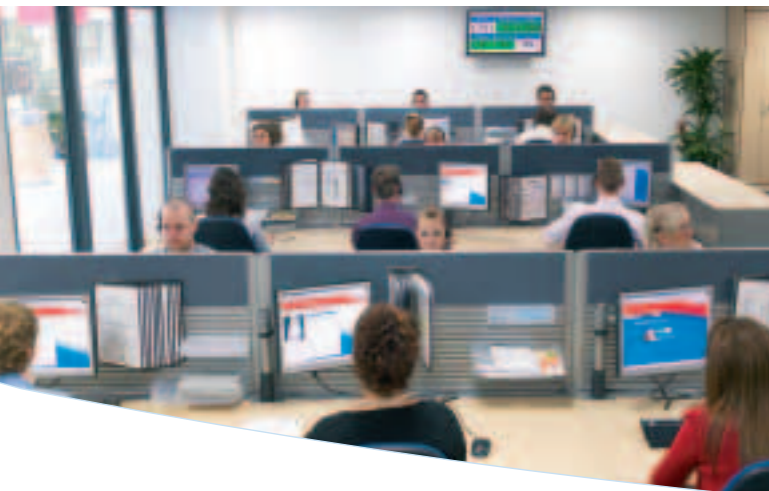
Tel: 08705 266 241

Fax: 01905 752 741

Opening Times

Monday – Friday: 7.00am – 8.00pm

Saturday: 8.30am – 4.00pm



Useful numbers

Sales

Tel: 01905 752640
Fax: 01905 456445

Contact Centre

Tel: 08457 256206
Fax: 01905 757536
Livingston (Scotland)
Fax: 01506 441687

Spare Parts

Tel: 01905 752576
Fax: 01905 754620

Training

Tel: 01905 752526
Fax: 01905 752535

Technical (Pre & Post Sales)

Tel: 08705 266241
Fax: 01905 752741

Literature Line

Tel: 01905 752556
or download instantly
from our website

www.worcester-bosch.co.uk



The Council for
Registered Gas
Installers



In partnership with



energy saving trust™



HEATING & HOT WATER INDUSTRY COUNCIL



The mark of quality for domestic heating

Worcester, Bosch Group is a brand name of Bosch Thermotechnology Ltd.

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