Ever increasing innovation

Wireless Control Packs

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Danfoss Randall's UK based sales and manufacturing site

Efficient lean production facility

State of the art, temperature controlled auto assembly cell

On-site product testing laboratory used internally and externally for product validation and research

Contents


TP5000Si RF


RX1


CET B- RF

Product Navigation Map

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1 HP11 2 Port Valve			•
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1 RET B-RF	•	•	•
1 TP5000Si-RF			
1 TP7000-RF			
1 CET B-RF	•	•	
1 WP75-RF			
1 RX2C Receiver	•	•	
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Order No	087N6500V4	087N6500V3	087N6500V5
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Wireless Room Thermostats including Set Solution with RX1 Recievers			
	Battery Powered		
	Dial-setting	**Set-back**	
	With LCD	**Manual Return to Day**	**Automatic Return to Day**
	RET B-RF	RT51-RF	RT52-RF
Order No	087N727600	087N729900	087N736600
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Wireless Hot Water Thermostats including Set Solutions with RX1 Receivers	
	Battery Powered
	Dial Setting
	With LCD
	CET B-RF
Order No	087N727800
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Wireless Receivers for use with Wireless Room and Cylinder Thermostats			
	Mains Powered		
	Single Channel	Two Channel	
Contact Details	1 x SPDT	1 x SPDT 1 x SPST	2 x SPDT
	RX1	RX2	RX2C
Order No	084N747600	087N747700	087N747900

RX1

RX2C

RX3B

torised Valves

Programmable			
5/2 Day		7 Day	
2 Port Pack	3 Port Pack	2 Port Pack	3 Port Pack
•		•	
	•		•
•	•		
		•	•
•	•	•	•
•	•	•	•
•	•	•	•
087N742500	087N742400	087N742300	087N742200
20	16	20	16

Programmable		
24 Hour	5/2 Day	7 Day
TP4000-RF	TP5000Si-RF	TP7000-RF
087N792100	087N791400	087N741800
8	9	9

Programmable	
5/2 Day	7 Day
WP75-RF	WP75-RF
n/a	n/a
10	10

Three Channel	
2 x SPST Heat 1 x SPDT	1 x SPDT 2 x SPST
RX3B	RX3
087N748400	087N747800

RET B-RF

TP5000Si-RF

CET B-RF

RET B-RF Room Thermostat With Setting Dial

Summary

- Easy to use
- Advanced microprocessor design
- Utilises secure digital wireless communication
- Ideal solution for system upgrades & combi boilers
- Set solutions include thermostat and receiver
- Can be combined with other Danfoss wireless thermostats

The RET B-RF is a sophisticated micro-processor powered room thermostat with many advanced features. The significant difference between it and many other similar thermostats is that it retains the simple-to-understand setting dial that so many consumers are fully accustomed to and which, generally speaking, can be set and adjusted by most people intuitively without the need for written instructions.

The RET B-RF also incorporates an LCD display which in normal operation displays actual room temperature. However, when the setting dial is moved, the display momentarily changes to show set temperature. The clear easy to read display also incorporates icons to indicate output status and low battery indication.

The RET B-RF utilises secure digital wireless signals to communicate with a receiver unit mounted adjacent to the boiler or in the airing cupboard. This removes the need for any fixed wiring between the thermostat and other controls, reducing installation time and eliminating the risk of damaging decoration and furnishing, particularly important when upgrading existing systems, or at time of boiler change.

Thermostats and receivers sold as sets are matched in the factory using a simple commissioning process, details of which can be found at the rear of this publication.

The RET B-RF is factory set for On/Off control normally used when controlling motorised valves. In systems where the thermostat directly controls the operation of the boiler, it can be set by the installer to chrono-proportional output. In this mode, the micro-processor imposes a defined number of operating cycles per hour on the systems, and within each cycle, determines the on and off time of the boiler dependant upon load. This type of control, which utilises an advanced PI control algorithm, significantly improves comfort and economy compared to regular On/Off control.

The RET B-RF is ideally suited for use in combi boiler systems and in systems where an additional time and temperature control zone is added to an existing heating system. All products are available in convenient boxed sets that include a single channel receiver. If the system is zoned and requires more than one thermostat, purchase thermostats as loose items and select a receiver unit with the appropriate number of channels from the table below.

Thermostat Features			**RET B-RF**	**RET B-LS-RF**
Code No - Without Receiver			087N727000	087N727200
Code No - Set with RX1 Receiver			087N727600	-
Auto/Off Selector Switch				•
Temperature Range			Off, 5 - 30°C	
Setting Dial & LCD Display			•	
Chrono-proportional or On/Off Control			•	
Selectable Fahrenheit or Centigrade Scaling			•	
Transmitter Frequency			433.92 MHz	
Transmitter Range			Typically 30 metres (1)	
Power Supply			2 x AA/LR6/MN 1500 Alkaline Batteries	
Dimensions (mm)			85 Wide x 86 High x 42 Deep	
(1) Please ensure there are no large metal objects between thermostat & receiver, as these will interfere with radio signal				
Receiver Options	**RX1**	**RX2**	**RX2C**	**RX3**
Order Codes	087N747600	087N747700	087N747900	087N747800
Single Zone Receiver	•			
Two Zone Receiver		•	•	
Three Zone Receiver				•
Common Heat Demand Output				
Power Supply (receivers)	230 Vac ±15%, 50/60 Hz			
Contact Details, Commons Linked Internally	1 x SPDT	1 x SPDT 1 x SPST		2 x SPST 1 x SPDT
Contact Details, Independent Commons, Volt Free			2 x SPDT	
Contact Rating	10-230 Vac, 3 (1) A			
Dimensions (mm)	138 Wide x 88 High x 32 Deep			

RET B-RF

RX1

RX3

Additional Information:
Wiring Info p. 24, Application Examples p. 12 - 23, Commisioning Instructions p. 25 - 27

RT51-RF and RT52-RF
Set Back Room Thermostats

The RT51-RF is a simple to use digital set-back thermostat with LCD display. During normal "Day" operation, the thermostat controls at the set temperature which is displayed on the LCD. At times when a reduced temperature is required, the user simply presses both ▲ and ▼ buttons on the thermostat to switch to a previously selected "Night" temperature. When "Day" temperature is required both ▲ and ▼ buttons are pressed again to return to the unit to "Day" operation.

The RT52-RF provides all of the functionality of the RT51-RF but incorporates a time control which automatically returns the thermostat to "Day" operation at a user defined time of day.

All models incorporate an LCD display and push buttons used to select "Day" and "Night" set-points and to change between "Day" and "Night" operation. Units utilise secure digital wireless signals to communicate with a receiver unit mounted adjacent to the boiler or in the airing cupboard. This removes the need for any fixed wiring between the thermostat and other controls, reducing installation time and eliminating the risk of damaging decoration and furnishing, particularly important when upgrading existing systems, or at time of boiler change.

Thermostats and receivers sold as sets are matched in the factory using a simple commissioning process, details of which can be found at the rear of this publication.

Both RT51-RF and RT52-RF are factory set for On/Off control normally used when controlling motorised valves, but in systems where the thermostat directly controls the operation of the boiler, they can be set by the installer to chrono-proportional output.

In this mode, the micro-processor imposes a defined number of operating cycles per hour on the systems, and within each cycle, determines the on time and off time of the boiler dependant upon load.

This type of control, which utilises a PI control algorithm, significantly improves comfort and economy compared to regular On/Off control.

All products are available in convenient boxed sets that include a single channel receiver. If the system is zoned and requires more than one thermostat, purchase thermostats as loose items and select a receiver unit with the appropriate number of channels from the table below.

Summary

- Easy to use
- Large easy to read LCD display
- Utilises secure digital wireless communication
- Ideal solution for system upgrades
- Set solutions include thermostat and receiver
- Can be combined with other Danfoss wireless thermostats

Thermostat Features			**RT51-RF**	**RT52-RF**
Code No - Without Receiver			087N699900	087N700100
Code No - Set with RX1 Receiver			087N729900	087N736600
Set-back with manual return to Day Selection			•	
Set-back with timed return to Day Selection				•
Temperature Range			Off, 5 - 30°C	
Setting Dial and LCD Display			•	
Chrono-proportional or On/Off Control			•	
Selectable Fahrenheit or Centigrade Scaling			•	
Transmitter Frequency			433.92 MHz	
Transmitter Range			Typically 30 metres (1)	
Power Supply			2 x AA/LR6/MN 1500 Alkaline Batteries	
Dimensions (mm)			85 Wide x 86 High x 42 Deep	
(1) Please ensure there are no large metal objects between thermostat & receiver, as these will interfere with radio signal				
Receiver Options	**RX1**	**RX2**	**RX2C**	**RX3**
Order Codes	087N747600	087N747700	087N747900	087N747800
Single Zone Receiver	•			
Two Zone Receiver		•	•	
Three Zone Receiver				•
Common Heat Demand Output				
Power Supply (receivers)	230 Vac ±15%, 50/60 Hz			
Contact Details, Commons Linked Internally	1 x SPDT	1 x SPDT 1 x SPST		2 x SPST 1 x SPDT
Contact Details, Independent Commons, Volt Free			2 x SPDT	
Contact Rating	10-230 Vac, 3 (1) A			
Dimensions (mm)	138 Wide x 88 High x 32 Deep			

RT51-RF

RX1

RX3

Additional Information:
Wiring Info p. 24, Application Examples p. 12 - 23, Commisioning Instructions p. 25 - 27

TP4000-RF 24 Hour Programmable Room Thermostat

Summary

- Large, easy to read display
- 24 hour programming
- Easy to programme and operate
- Battery powered
- Compact design
- Factory pre-set programmes
- Built-in frost protection

The TP4000-RF programmable room thermostat combines the functions of a timeswitch and room thermostat into an easy to use unit, which provides up to six time and temperature events per day. This flexibility allows the operation of the heating system to be matched to the lifestyle of the user, providing different temperatures at different times of the day.

The TP4000-RF is a 24 hour room thermostat, where the demand is for the same programme each day. Temporary adjustments can be made to control temperature but the override is cancelled at the beginning of the next event. It also has an easy to use 'frost protection' setting feature.

The TP4000-RF is designed with modern times in mind and has the same functionality as the well known predecessor TP4.

Thermostat Features			**TP4000-RF**		
Code No - Without Receiver			087N792000		
Code No - Set with RX1 Receiver			087N792100		
24 Programming			•		
Temperature Range			Off, 5 - 30°C		
LCD Display			•		
On/Off Control			•		
Selectable Fahrenheit or Centigrade Scaling			•		
Transmitter Frequency			433.92 MHz		
Transmitter Range			Typically 30 metres (1)		
Power Supply			2 x AA/LR6/MN 1500 Alkaline Batteries		
Dimensions (mm)			85 Wide x 86 High x 42 Deep		
(1) Please ensure there are no large metal objects between thermostat & receiver, as these will interfere with radio signal					
Receiver Options	**RX1**	**RX2**	**RX2C**	**RX3**	**RX3B**
Order Codes	087N747600	087N747700	087N747900	087N747800	087N48400
Single Zone Receiver	•				
Two Zone Receiver		•	•		
Three Zone Receiver				•	•
Common Heat Demand Output					•
Power Supply (receivers)	230 Vac ±15%, 50/60 Hz				
Contact Details, Commons Linked Internally	1 x SPDT	1 x SPDT 1 x SPST		2 x SPST 1 x SPDT	2 x SPST 1 x SPDT
Contact Details, Independent Commons, Volt Free			2 x SPDT		
Contact Rating	10-230 Vac, 3 (1) A				
Dimensions (mm)	138 Wide x 88 High x 32 Deep				

TP4000-RF

Additional Information:
Wiring Info p. 24, Application Examples p. 12 - 23, Commisioning Instructions p. 25 - 27

TP5000 Si-RF & TP7000-RF

Programmable Room Thermostats

The TP5000Si-RF is without doubt one of the easiest to use 5/2 day programmable thermostat on the market today. Providing up to 6 time and temperature events for each week-day, with a separate set of events for weekends, the TP5000Si-RF meets the lifestyle requirements of most households. Programming and operation are intuitive, an important feature to most users. The thermostat incorporates many useful features including Service Interval function, frost setting, temporary temperature overrides and customisable LCD display settings.

The TP7000-RF provides full 7-day programming with up to six different time and temperatures each day, ideal for households with more complex lifestyles. The thermostat also incorporates many advanced features including optimum start control and holiday programming options. This is in addition to many user features including frost setting, timed temporary temperature overrides and customisable LCD display settings.

All models share the same aesthetically attractive, ultra-slim design and utilise secure digital wireless signals to communicate with a receiver unit mounted adjacent to the boiler or in the airing cupboard. This removes the need for any fixed wiring between the thermostat and other controls, reducing installation time and eliminating the risk of damaging decoration and furnishing, particularly important when upgrading existing systems, or at time of boiler change. Thermostats and receivers sold as sets are matched in the factory using a simple commissioning process, details of which can be found at the rear of this publication.

Both TP5000Si-RF and TP7000-RF are factory set for On/Off control normally used when controlling motorised valves, but in systems where the thermostat directly controls the operation of the boiler, they can be set by the installer to chrono-proportional output. In this mode, the micro-processor imposes a defined number of operating cycles per hour on the systems, and within each cycle, determines the on and off time of the boiler dependant upon load. This type of control, which utilises a PI control algorithm, significantly improves comfort and economy compared to regular On/Off control. All products are available in convenient boxed sets that include a single channel receiver. If the system is zoned and requires more than one thermostat, purchase thermostats as loose items and select a receiver unit with the appropriate number of channels from the table below.

Thermostat Features			**TP5000Si-RF**		**TP7000-RF**
Code No - Without Receiver			087N791200		087N741000
Code No - Set with RX1 Receiver			087N791400		087N741800
5/2 Day Programming Option			•		
7 Day Programming Option					•
Temperature Range			Off, 5 - 30°C		
Setting Dial and LCD Display			•		
Chrono-proportional or On/Off Control			•		
Selectable Fahrenheit or Centigrade Scaling			•		
Transmitter Frequency			433.92 MHz		
Transmitter Range			Typically 30 metres [1]		
Power Supply			2 x AA/LR6/MN 1500 Alkaline Batteries		
Dimensions (mm)			85 Wide x 86 High x 42 Deep		
(1) Please ensure there are no large metal objects between thermostat & receiver, as these will interfere with radio signal					
Receiver Options	**RX1**	**RX2**	**RX2C**	**RX3**	**RX3B**
Order Codes	087N747600	087N747700	087N747900	087N747800	087N48400
Single Zone Receiver	•				
Two Zone Receiver		•	•		
Three Zone Receiver				•	•
Common Heat Demand Output					•
Power Supply (receivers)	230 Vac ±15%, 50/60 Hz				
Contact Details, Commons Linked Internally	1 x SPDT	1 x SPDT 1 x SPST		2 x SPST 1 x SPDT	2 x SPST 1 x SPDT
Contact Details, Independent Commons, Volt Free			2 x SPDT		
Contact Rating	10-230 Vac, 3 (1) A				
Dimensions (mm)	138 Wide x 88 High x 32 Deep				

Summary

- Service Interval function
- Available in 5/2 day or 7 day versions
- Large easy to read LCD display
- Up to 6 events per day
- Utilises secure digital wireless communication
- Ideal solution for system upgrades
- Set solutions include thermostat and receiver
- Can be combined with other Danfoss wireless thermostats

TP5000Si-RF

TP7000-RF

RX1

Additional Information:
Wiring Info p. 24, Application Examples p. 12 - 23, Commisioning Instructions p. 25 - 27

CET B-RF & WP75-RF
Hot Water Thermostats

Summary

- Dial setting and programmable versions
- Utilises secure digital wireless communication
- Ideal solution for system upgrades
- Set solutions include thermostat and receiver
- Can be combined with other Danfoss wireless thermostats

The CET B-RF is a dial setting electronic cylinder thermostat which utilises a clamp-on sensor that is hard-wired to the thermostat control module which is normally mounted on an adjacent wall. The CET B-RF incorporates an LCD which during normal operation displays actual cylinder temperature and thermostat output status. This changes momentarily to display set temperature whenever the setting dial is moved. Time control is provided by conventional time controls normally mounted adjacent to the wireless receiver unit and the boiler.

The WP75-RF is a 7-day programmable hot water thermostat that allows up to three different cylinder temperatures to be programmed throughout the day. Different programmes can be set for each day of the week. The WP75-RF utilises a clamp-on sensor that is hard-wired to the thermostat control module which is normally mounted on an adjacent wall. The thermostat incorporates many useful features including a one shot 'boost' feature that re-heats the cylinder, and then turns off. The unit also incorporates a useful hot water status indicator which gives an indication of how much hot water there is in the cylinder.

Wireless hot water thermostats are a new concept and are particularly suited to system boilers which no longer require the heating and hot water zone valves to be located in the airing cupboard. Instead they can be located adjacent to the boiler to reduce the amount of field wiring and associated disruption. Both CET B-RF and WP75-RF utilise secure digital wireless signals to communicate with receiver units that can be mounted up to 30 metres from the thermostat, doing away with the need for hard-wiring between the thermostats and other system components. Thermostats and receivers sold as sets are matched in the factory using a simple commissioning process, details of which can be found at the rear of this publication.

Combined with a wireless room thermostat, this type of control can significantly reduce the time of installation and reduce the risk of damage to furnishing and decoration associated with more traditional hard-wired solutions.

CET B-RF is available in a convenient boxed set that includes a single channel receiver. If the system is zoned and requires more than one thermostat, purchase thermostats as loose items and select a receiver unit with the appropriate number of channels from the table above.

Thermostat Features	**CET B-RF**	**WP75-RF**
Code No - Without Receiver	087N727700	087N685000
Code No - Set with RX1 Receiver	087N727800	
Dial-setting Thermostat with LCD	•	
Programmable Thermostat with LCD		•
5/2 Day or 7 Day Programming Options		•
Up to 3 Time and Temperature changes per Day		•
Temperature Range	Off, 40-65°C	Off, 35-65°C
Tank Mounting Temperature Sensor (1)	•	
1 Shot "Boost" Feature		•
Selectable Fahrenheit or Centigrade Scaling	•	
Transmitter Frequency	433.92 MHz	
Transmitter Range	Typically 30 metres (1)	
Power Supply	2 x AA/LR6/MN 1500 Alkaline Batteries	
Dimensions (mm)		

(1) Please ensure there are no large metal objects between thermostat & receiver, as these will interfere with radio signal

Receiver Options	**RX1**	**RX2**	**RX2C**	**RX3**	**RX3B**
Order Codes	087N747600	087N747700	087N747900	087N747800	087N48400
Single Zone Receiver	•				
Two Zone Receiver		•	•		
Three Zone Receiver				•	•
Common Heat Demand Output					•
Power Supply (receivers)	230 Vac ±15%, 50/60 Hz				
Contact Details, Commons Linked Internally	1 x SPDT	1 x SPDT 1 x SPST		2 x SPST 1 x SPDT	2 x SPST 1 x SPDT
Contact Details, Independent Commons, Volt Free			2 x SPDT		
Contact Rating	10-230 Vac, 3 (1) A				
Dimensions (mm)	138 Wide x 88 High x 32 Deep				

CET B-RF and CS1 Sensor

WP75-RF

RX1

Additional Information:
Wiring Info p. 24, Application Examples p. 12 - 23, Commisioning Instructions p. 25 - 27

Notes

Combination Boiler Systems

Application

In line with the Building Regulations, a boiler interlock must be provided even in systems fitted with combination boilers. The normal way of achieving compliance is to fit a room thermostat in a reference room, normally the hall or living room. Combination boiler systems are ideally suited to wireless room thermostat control, allowing the installation to be completed without the need for time consuming field wiring to the room thermostat location. In addition to saving time, such solutions also reduce the disruption caused to home-owners normally associated with installing hard-wired solutions. There is also the added benefit of eliminating the risk of damage to furnishing, carpets and decoration that may occur during the installation of conventional wired solutions.

Combination Boilers with Built-in Time Controls

For such systems choose either a simple dial-setting thermostat, type RET B-RF, or a digital display, type RT51-RF, with integrated set-back option. The thermostat is located in the reference room and the thermostat receiver unit is mounted adjacent to the boiler. Wiring is limited to providing the RX receiver unit with power (normally looped out of the boiler mains terminals) plus two wires from the thermostat connections of the boiler to the output connections of the RX receiver. Contacts within the RX receiver are voltage free making the units compatible with all boiler types.

Combination Boilers without Built-in Time Controls

For Combination boilers without time control, or in situations where greater programming flexibility is demanded, a programmable room thermostat can be used. For simple 5/2 day operation select a TP5000Si-RF. If additional features including 7-day operation are required select a TP7000-RF model. The thermostat is located in the reference room and the thermostat receiver unit is mounted adjacent to the boiler. Wiring is limited to providing the RX receiver unit with power (normally looped out of the boiler mains terminals) plus two wires from the thermostat connections of the boiler to the output connections of the RX receiver. Contacts within the RX receiver are voltage free making the units compatible with all boiler types.

Pack Contents

Each set of controls for applications referred to above contain a wireless thermostat, (RET B-RF, RT51-RF, RT52-RF, TP5000Si-RF or TP7000-RF), and a single channel RX1 receiver.

Installation Advice

Care must be taken to ensure that there are no large metal objects, such as domestic appliances or indeed the boiler case, sitting in the line between the thermostat and the receiver as these may block the wireless transmission from the thermostat. It is a sensible precaution to install the receiver, pair it to the thermostat (if bought as loose components) and test that the thermostat can communicate with the receiver from the intended installation location before fixing the thermostat to the wall. If communication is not possible, adjust the thermostat location until communication is established.

A detailed write-up of the 'pairing' process is given on page 25 , 26 and 27 of this catalogue.

TP7000-RF Programmable Room Thermostat

TP5000Si-RF Programmable Room Thermostat

OR

RT51-RF Digital Set-back Room Thermostat

RT52-RF Digital Set-back Room Thermostat

OR

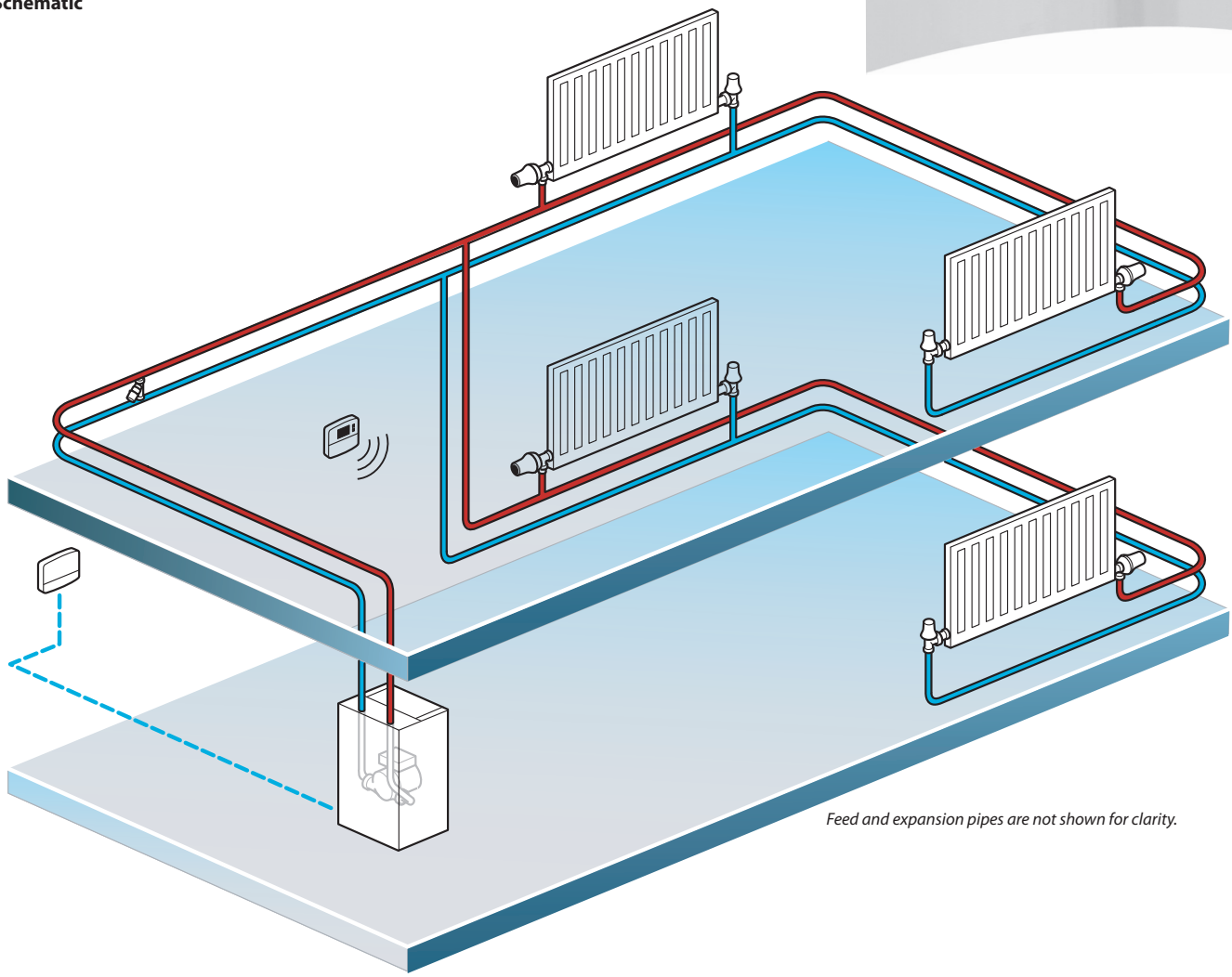
RET B-RF Dial Setting Room Thermostat

RX1

Combi Boiler Thermostat Sets: Wireless Programmable Room and Receiver			
Description (1) (2)	**Order No**	**Room Thermostat**	**Wireless Receiver Unit**
Set with Setting Dial Thermostat	087N727600	RET B-RF	RX1
Set with Set-back Thermostat, manual return to Day	087N729900	RT51-RF	RX1
Set with Set-back Thermostat, automatic return to Day	087N736600	RT52-RF	RX1
Set with 5/2 Day Programming Options	087N791400	TP5000Si-RF	RX1
Set with 7 Day Programming Option	087N741800	TP7000-RF	RX1
(1) Sets Comprise of Thermostat and Receiver Unit Only *(2) For Description of Individual Products refer to pages 6 - 10*			

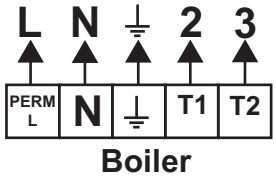
Combination Boiler Systems

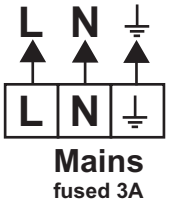
Schematic



Feed and expansion pipes are not shown for clarity.

Wiring Diagram





RX Channel Assignment	
Channel 1	Heating

Mid Position Valve Systems

With 2 channel programmer and wireless dial-setting room and hot water thermostats

CS1 Sensor

CET B-RF Dial-setting Hot Water Thermostat

RET B-RF Dial Setting Room Thermostat

FP715Si Programmer

RX2C Receiver

WC4B Wiring Centre

Application
In line with the Building Regulations, a control system must provide time and temperature control of both heating and hot-water services. In addition a boiler interlock must be provided to turn off the boiler when no heat demand is present. Traditionally this has been achieved using a conventional programmer, room thermostat and cylinder thermostat, hard-wired to motorised zone valves or a mid-position valve.

In boiler replacement situations, where system boilers are increasingly used, it is often convenient to locate mid-position valves adjacent to the boiler. Using wireless technology, both cylinder and room thermostat are able to communicate with a wireless receiver unit mounted adjacent to the mid-position valve and boiler. This totally eliminates the need for any hard-wiring between the thermostats and other system components. Not only does this reduce installation time, it also reduces the disruption and possible damage associated with normal hard-wired solutions.

Space Heating Controls
Where the customer wishes to retain a conventional programmer and dial-setting thermostats, as opposed to a programmable thermostat, temperature control of heating is achieved using a wireless dial setting thermostat, type RET B-RF. The room thermostat communicates with the heating channel of an RX2C wireless receiver. Time control of the heating is provided by the heating channel of a conventional hard-wired FP715Si programmer mounted adjacent to the receiver unit. Together the RX2C and the FP715Si controls the heating operation of the mid-position valve that in turn provides the boiler interlock.

Hot Water Controls
Temperature control is achieved using a wireless dial-setting hot water thermostat, type CET B-RF. This thermostat communicates with the hot water channel of the RX2C. Time control of the hot water is provided by the hot water channel of a conventional hard-wired FP715Si programmer mounted adjacent to the receiver unit. Together the RX2C and the FP715Si controls the hot water operation of the mid-position valve that in turn provides the boiler interlock. The thermostat is battery driven and requires no external power supply. Wiring to the thermostat is restricted to a short two-core cable between the wall mounted programming unit and the thermostat sensor which is clamped to the cylinder wall.

Pack Contents
The pack for this application includes an RET B-RF wireless dial setting room thermostat, a CET B-RF wireless hot water thermostat, an RX2C wireless receiver, an FP715Si hard-wired programmer, one 22mm mid-position valve and a WC4B wiring centre.

Installation Advice
Care must be taken to ensure that there are no large metal objects, such as domestic appliances or indeed the boiler case, sitting in the line between the thermostats and the receiver as these may block the wireless transmission from the thermostats. It is a sensible precaution to install the receiver, pair it to the thermostat, (if bought as loose components) and test that the thermostat can communicate to the receiver from the intended installation location before fixing the thermostat to the wall. If communication is not possible, adjust the thermostat location until communication is established.

Important Note: Thermostats and recievers listed on this page are not factory paired.

A detailed write-up of the 'pairing' process is given on page 25 , 26 and 27 of this catalogue.

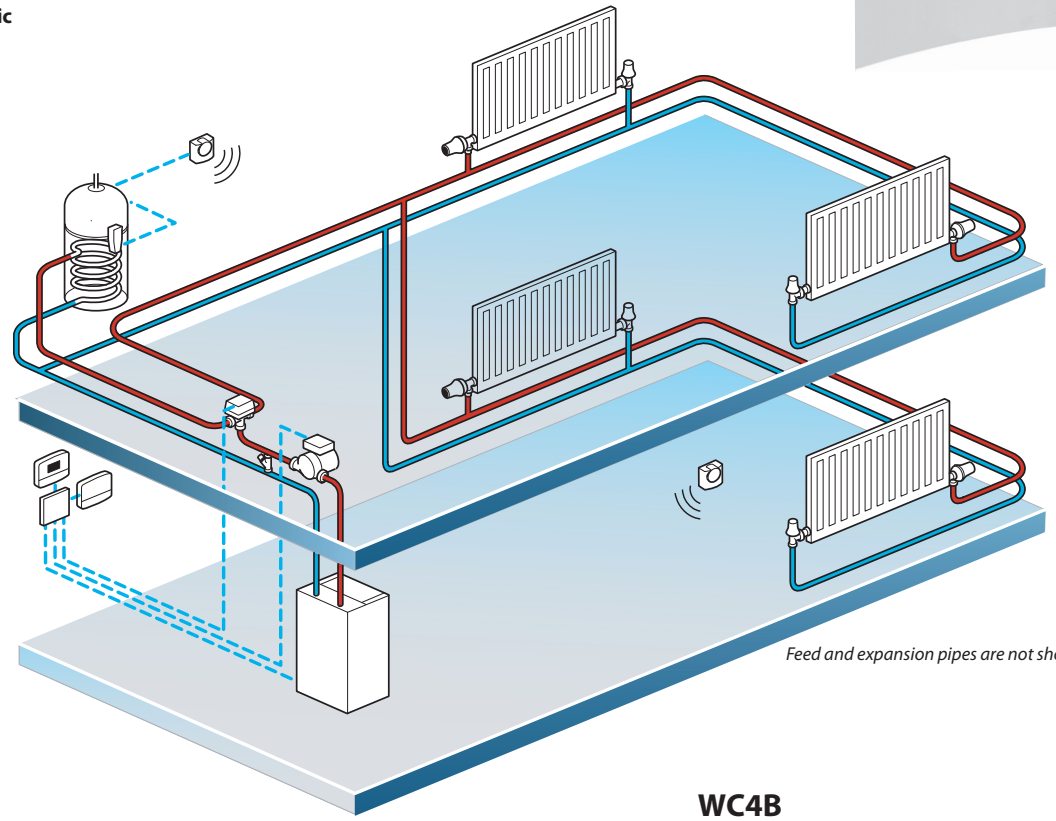
Mid Position Motorised Valve

3 Port Valve Pack: Wireless Dial-setting Room and Hot Water Thermostats with Hard-wired Programmer							
Decription[1]	Order No	Room Thermostat	Hot Water Thermostat	Receiver	Wiring Centre	3 Port Mid Position [2]	Programmer
Pack with 24 hour, 5/2 day or 7 day programming options	087N6500V3	RET B-RF	CET B-RF	RX2C	WC4B	1 x HS3	FP715Si
(1) For a description of the individual products please refer to page 6 *(2) All valves are 22mm size*							

Mid Position Valve Systems

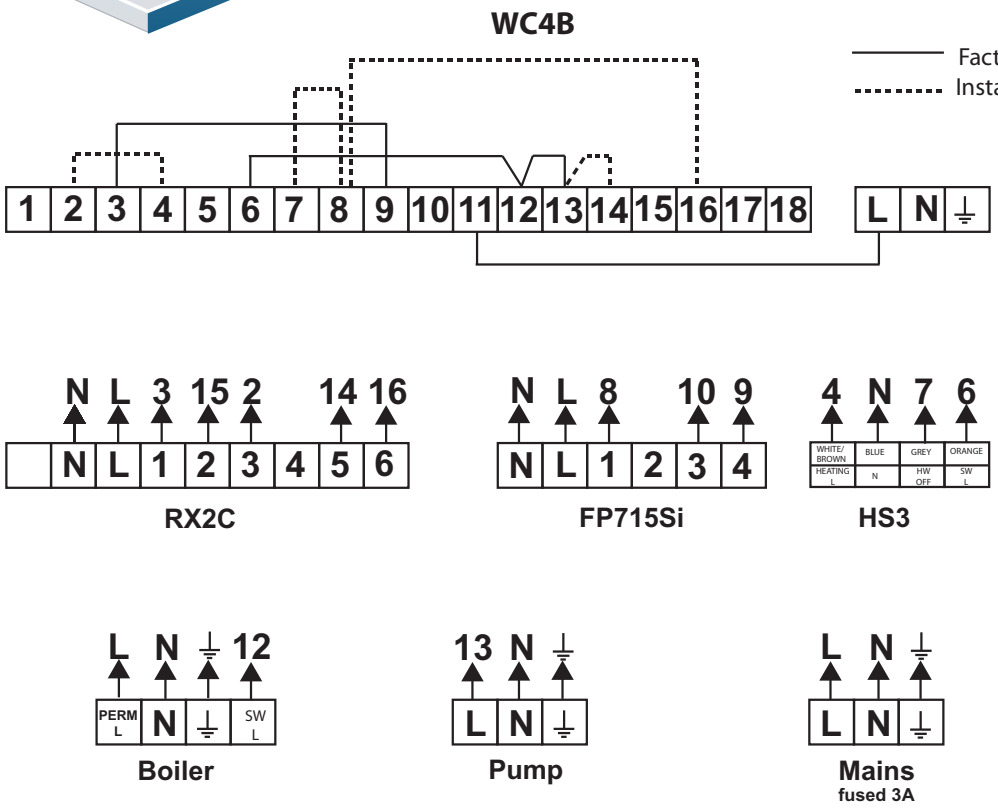
With 2 channel programmer and wireless dial-setting room and hot water thermostats

Schematic



Feed and expansion pipes are not shown for clarity.

Wiring Diagram

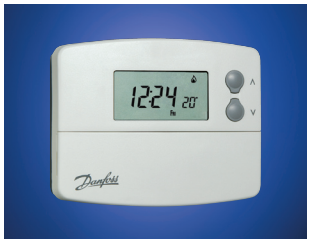


RX Channel Assignment			
Channel 1	Heating	**Channel 2**	Hot Water

Additional Information:
www.danfoss-randall.co.uk

Mid Position Valve Systems

With Programmable Heating and Hot Water Thermostats



TP5000Si-RF Programmable Room Thermostat

OR

TP7000-RF Programmable Room Thermostat

CS1 Sensor

WP75-RF Hot water programmable thermostat

RX2C Receiver

WC4B Wiring Centre

Application
In line with the Building Regulations, a control system must provide time and temperature control of both heating and hot water services. In addition a boiler interlock must be provided to turn off the boiler when no heat demand is present. Traditionally this has been achieved using a conventional programmer, room thermostat and cylinder thermostat, hard-wired to a mid-position valve.

In boiler replacement situations, where system boilers are increasingly used, it is often convenient to locate the motorised valve adjacent to the boiler. Using wireless technology, both cylinder and room thermostat are able to communicate with a wireless receiver unit mounted adjacent to the motorised valve and boiler. This totally eliminates the need for any hard-wiring between the thermostats and other system components. Not only does this reduce installation time, it also reduces the disruption and possible damage associated with normal hard-wired solutions.

Space Heating Controls
Time and temperature control of heating is achieved by using a wireless programmable room thermostat. The programmable room thermostat communicates with the heating channel of an RX2C wireless receiver which in turns controls the heating demand operation of the mid-position valve and the boiler interlock. For normal 5/2 day operating requirements select a pack which contains TP5000Si-RF. If 7-day operation is required select a pack which containsTP7000-RF.

Hot Water Controls
Time and temperature control is achieved using a wireless programmable hot-water thermostat, type WP75-RF. This thermostat communicates with the hot water channel of the RX2C which in turn controls the hot water demand operation of the mid-position valve and the boiler interlock. The thermostat is battery driven and requires no external power supply.

Wiring to the thermostat is restricted to a short two-core cable between the wall mounted programming unit and the thermostat sensor which is clamped to the cylinder wall.

Pack Contents
All packs for the application listed on this page include a wireless room thermostat (TP5000Si-RF or TP7000-RF), a WP75-RF wireless hot water thermostat, an RX2C wireless receiver and a 22mm mid-position valve and a wiring centre.

Installation Advice
Care must be taken to ensure that there are no large metal objects, such as domestic appliances or indeed the boiler case, sitting in the line between the thermostats and the receiver as these may block the wireless transmission from the thermostats. It is a sensible precaution to install the receiver, pair it to the thermostat and test that the thermostat can communicate to the receiver from the intended installation location before fixing the thermostat to the wall. If communication is not possible, adjust the thermostat location until communication is established.

Important Note: Thermostats and recievers listed on this page are not factory paired.

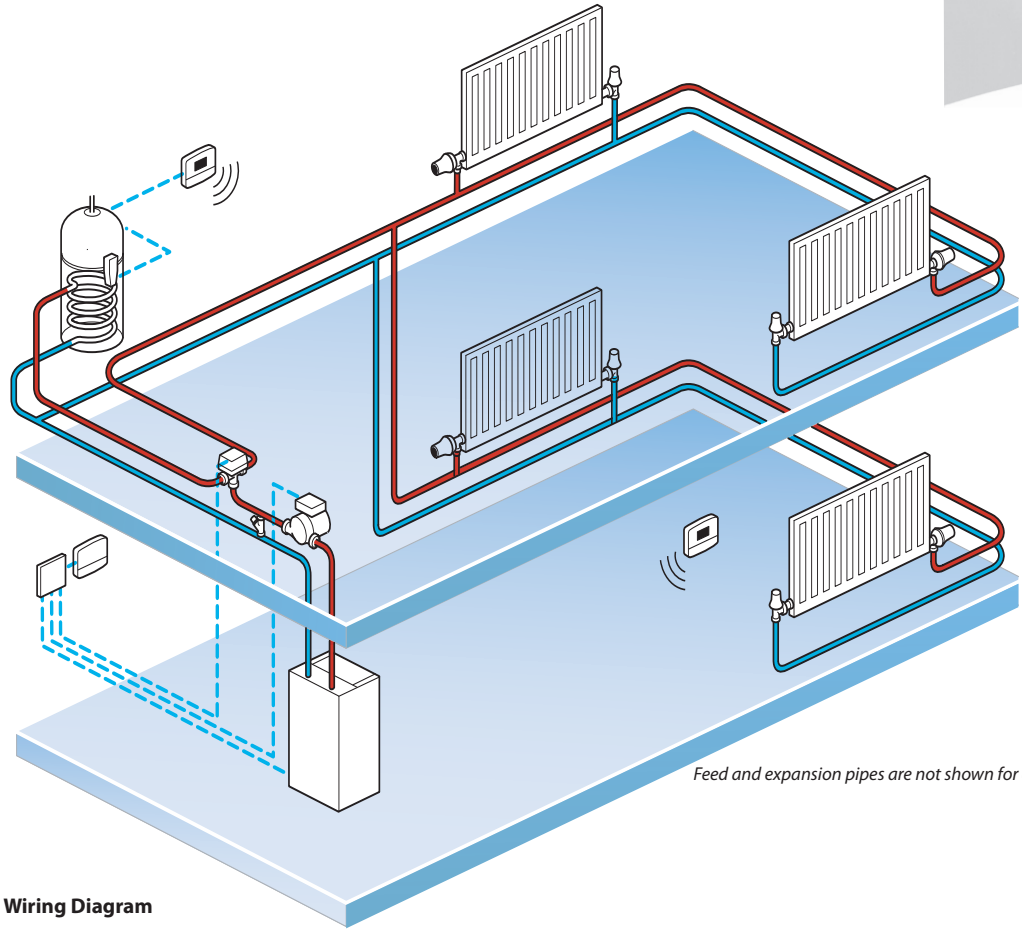
A detailed write-up of the 'pairing' process is given on page 25, 26 and 27 of this catalogue.

Mid Position Motorised Valve

3 Port Valve Pack: Wireless Programmable Heating and Hot Water Thermostats						
Description[1]	Order No	Room Thermostat	Hot Water Thermostat	Receiver	Wiring Centre	3 Port Mid Position [2]
Pack with 7 day programming options	087N742100	TP7000-RF	WP75-RF	RX2C	WC4B	No Valves
Pack with 7 day programming options	087N742200	TP7000-RF	WP75-RF	RX2C	WC4B	1 x HS3
Pack with 5/2 day programming options	087N742400	TP5000Si-RF	WP75-RF	RX2C	WC4B	1 x HS3
(1) For a description of the individual products please refer to pages 9-10 *(2) All valves are 22mm size*						

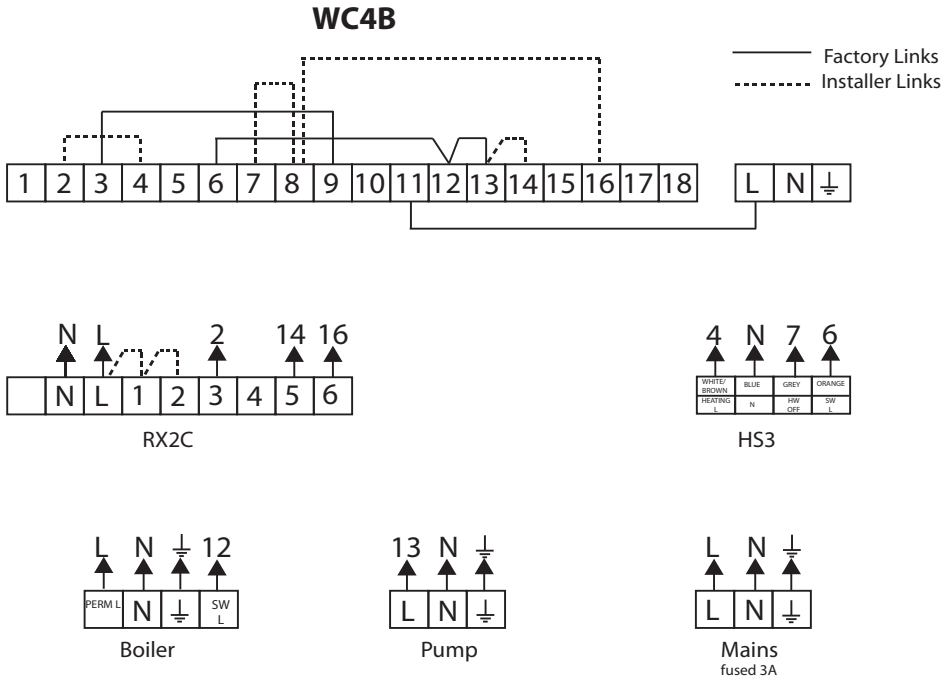
Mid Position Valve Systems

With Programmable Heating and Hot Water Thermostats



Feed and expansion pipes are not shown for clarity.

Wiring Diagram



RX Channel Assignment			
Channel 1	Heating	**Channel 2**	Hot Water

2 Port Valve Systems

With 2 channel programmer and wireless dial-setting room and hot water thermostats

CS1 Sensor

CET B-RF Dial-setting Hot Water Thermostat

RET B-RF Dial Setting Room Thermostat

FP715Si Programmer

RX2C Receiver

WC4B Wiring Centre

Application
In line with the Building Regulations, a control system must provide time and temperature control of both heating and hot water services. In addition a boiler interlock must be provided to turn off the boiler when no heat demand is present. Traditionally this has been achieved using a conventional programmer, room thermostat and cylinder thermostat, hard-wired to motorised zone valves.

In boiler replacement situations, where system boilers are increasingly used, it is often convenient to locate motorised valves adjacent to the boiler. Using wireless technology, both cylinder and room thermostat are able to communicate with a wireless receiver unit mounted adjacent to the motorised valves and boiler. This totally eliminates the need for any hard-wiring between the thermostats and other system components. Not only does this reduce installation time, it also reduces the disruption and possible damage associated with normal hard-wired solutions

Space Heating Controls
Where the customer wishes to retain a conventional programmer and dial-setting thermostats temperature, as opposed to a programmable thermostat, temperature control of heating is achieved using a wireless dial setting thermostat, type RET B-RF. The room thermostat communicates with the heating channel of an RX2C wireless receiver. Time control of the heating is provided by the heating channel of a conventional hard-wired FP715Si programmer mounted adjacent to the receiver unit. Together the RX2C and the FP715Si control the heating zone valve that in turn provides the boiler interlock.

Hot Water Controls
Temperature control is achieved using a wireless dial-setting hot water thermostat, type CET B-RF. This thermostat communicates with the hot water channel of the RX2C. Time control of the hot water is provided by the hot water channel of a conventional hard-wired FP715Si programmer mounted adjacent to the receiver unit. Together the RX2C and the FP715Si control the hot water zone valve that in turn provides the boiler interlock.

The thermostat is battery driven and requires no external power supply. Wiring to the thermostat is restricted to a short two-core cable between the wall mounted programming unit and the thermostat sensor which is clamped to the cylinder wall.

Pack Contents
The pack for this application includes an RET B-RF wireless dial setting room thermostat, a CET B-RF wireless hot-water thermostat, an RX2C wireless receiver, an FP715Si hard-wired programmer, two 22mm two-port zone valves and a WC4B wiring centre.

Installation Advice
Care must be taken to ensure that there are no large metal objects, such as domestic appliances or indeed the boiler case, sitting in the line between the thermostats and the receiver as these may block the wireless transmission from the thermostats. It is a sensible precaution to install the receiver, pair it to the thermostat and test that the thermostat can communicate to the receiver from the intended installation location before fixing the thermostat to the wall. If communication is not possible, adjust the thermostat location until communication is established.

Important Note: Thermostats and recievers listed on this page are not factory paired.

A detailed write-up of the 'pairing' process is given on page 25, 26 and 27 of this catalogue.

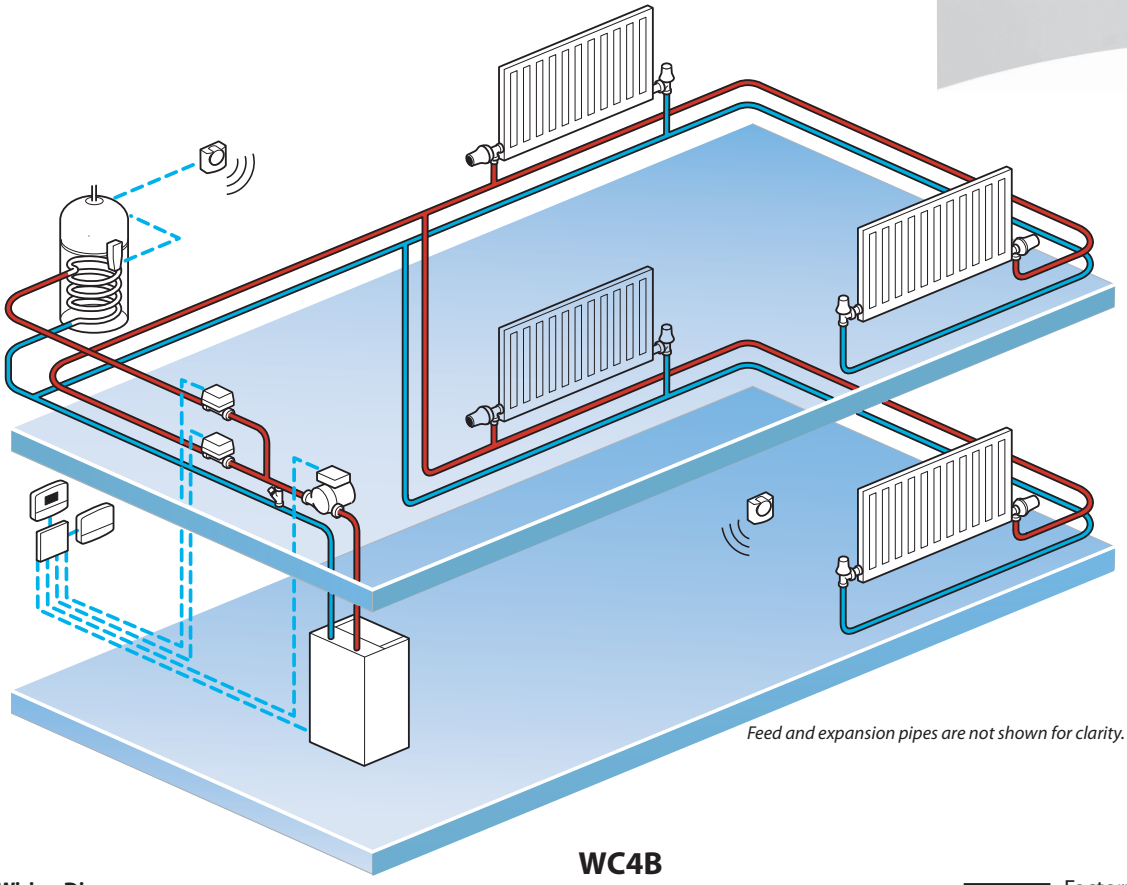
2 Port Motorised Valves

2 Port Valve Pack: Wireless Dial-setting Room and Hot Water Thermostats with Hard-wired Programmer							
Description(1)	Order No	Room Thermostat	Hot Water Thermostat	Receiver	Wiring Centre	2 Port Zone Valve (2)	Programmer
Pack with 24 hour, 5/2 day or 7 day programming options	087N6500V4	RET B-RF	CET B-RF	RX2C	WC4B	2 x HP22	FP715Si

(1) For a description of the individual products please refer to page 6 and 10
(2) All valves are 22mm size

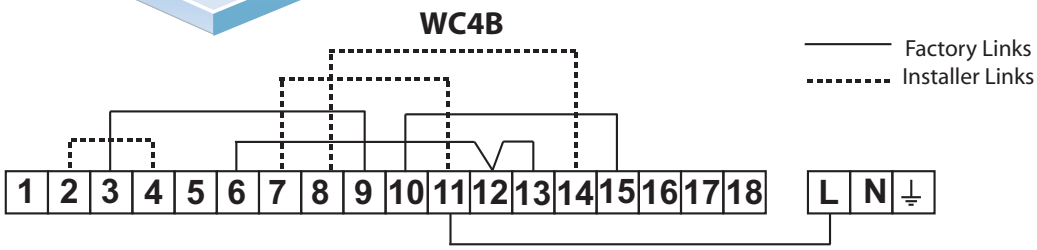
2 Port Valve Systems

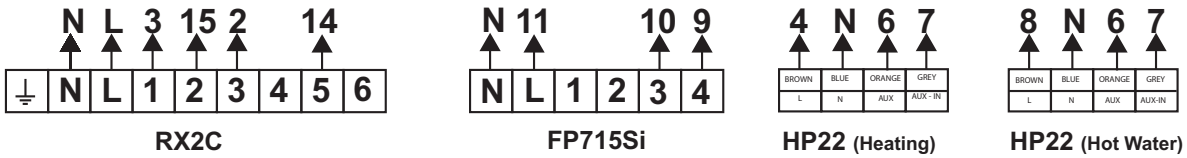
With 2 channel programmer and wireless dial-setting room and hot water thermostats

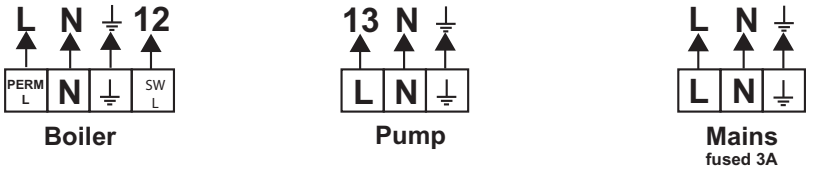


Feed and expansion pipes are not shown for clarity.

Wiring Diagram







RX Channel Assignment			
Channel 1	Heating	**Channel 2**	Hot Water

2 Port Valve Systems

With Programmable Heating and Hot Water Thermostats

TP5000Si-RF Programmable Room Thermostat

OR

TP7000-RF Programmable Room Thermostat

CS1 Sensor

WP75-RF Hot water programmable thermostat

RX2C Receiver

WC4B Wiring Centre

Application
In line with the Building Regulations, a control system must provide time and temperature control of both heating and hot-water services. In addition a boiler interlock must be provided to turn off the boiler when no heat demand is present. Traditionally this has been achieved using a conventional programmer, room thermostat and cylinder thermostat, hard-wired to motorised zone valves.

In boiler replacement situations, where system boilers are increasingly used, it is often convenient to locate motorised valves adjacent to the boiler. Using wireless technology, both cylinder and room thermostat are able to communicate with a wireless receiver unit mounted adjacent to the motorised valves and boiler. This totally eliminates the need for any hard-wiring between the thermostats and other system components. Not only does this reduce installation time, it also reduces the disruption and possible damage associated with normal hard-wired solutions.

Space Heating Controls
Time and temperature control of heating is achieved by using a wireless programmable room thermostat. The programmable room thermostat communicates with the heating channel of an RX2C wireless receiver which in turns controls the operation of the heating zone valve and the boiler interlock. For normal 5/2 day operating requirements select a pack which contains TP5000Si-RF. If 7-day operation is required select a pack which contains TP7000-RF.

Hot Water Controls
Time and temperature control is achieved using a wireless programmable hot-water thermostat, type WP75-RF. This thermostat communicates with the hot water channel of the RX2C which in turn controls the operation of the motorised valve and the boiler interlock. The thermostat is battery driven and requires no external power supply. Wiring to the thermostat is restricted to a short two-core cable between the wall mounted programming unit and the thermostat sensor which is clamped to the cylinder wall.

Pack Contents
All packs for the application listed on this page include a wireless room thermostat (TP5000Si-RF or TP7000-RF), a WP75-RF wireless hot water thermostat, an RX2C wireless receiver, two 22mm two-port zone valves and a WC4B wiring centre.

Installation Advice
Care must be taken to ensure that there are no large metal objects, such as domestic appliances or indeed the boiler case, sitting in the line between the thermostats and the receiver as these may block the wireless transmission from the thermostats. It is a sensible precaution to install the receiver, pair it to the thermostat and test that the thermostat can communicate with the receiver from the intended installation location before fixing the thermostat to the wall. If communication is not possible, adjust the thermostat location until communication is established.

Important Note: Thermostats and recievers listed on this page are not factory paired.

A detailed write-up of the 'pairing' process is given on page 25, 26 and 27 of this catalogue.

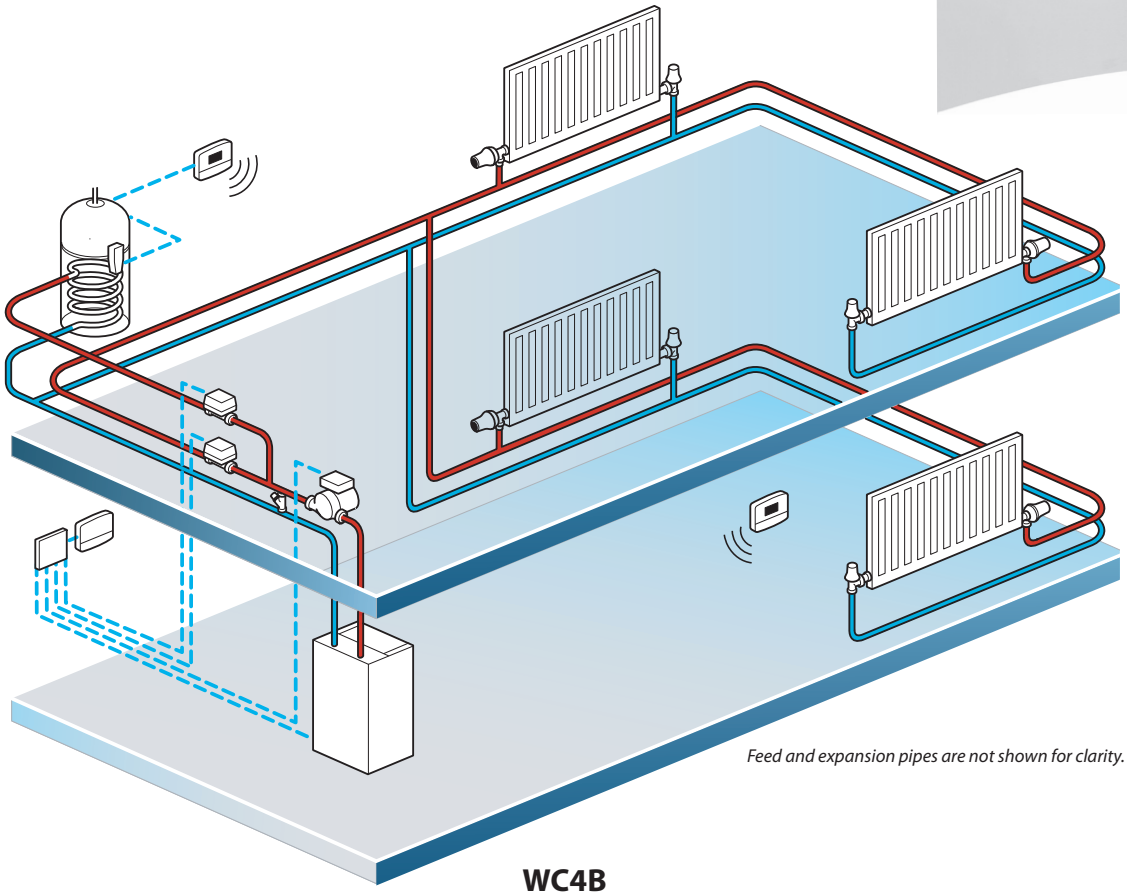
2 Port Motorised Valves

2 Port Valve Pack: Wireless Programmable Heating and Hot Water Thermostats						
Description[1]	Order No	Room Thermostat	Hot Water Thermostat	Receiver	Wiring Centre	2 Port Zone Valves [2]
Pack with 7 day programming options	087N742100	TP7000-RF	WP75-RF	RX2C	WC4B	No Valves
Pack with 7 day programming options	087N742300	TP7000-RF	WP75-RF	RX2C	WC4B	2 x HP22
Pack with 5/2 day programming options	087N742500	TP5000Si-RF	WP75-RF	RX2C	WC4B	2 x HP22

(1) For a description of the individual products please refer to pages 9 & 10
(2) All valves are 22mm size

2 Port Valve Systems

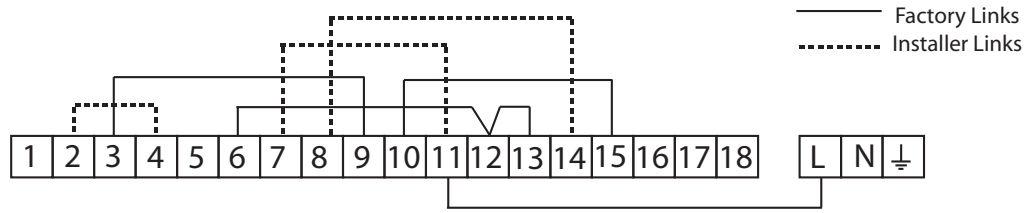
With Programmable Heating and Hot Water Thermostats

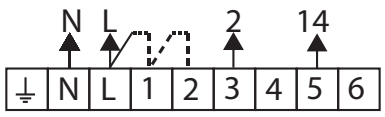


Feed and expansion pipes are not shown for clarity.

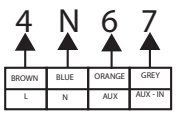
WC4B

Wiring Diagram

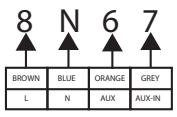




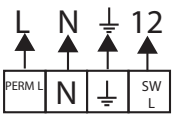
RX2C



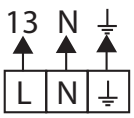
HP22 (Heating)



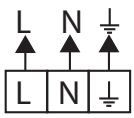
HP22 (Hot Water)



Boiler



Pump



Mains
fused 3A

RX Channel Assignment			
Channel 1	Heating	**Channel 2**	Hot Water

2 Port Valve Systems

With 2 Channel Programmer and Wireless Dial-setting Room and Hot Water Thermostats for use with Unvented Hot Water Systems

Application

In line with the Building Regulations, a control system must provide time and temperature control of both heating and hot-water services. In addition a boiler interlock must be provided to turn off the boiler when no heat demand is present. Traditionally this has been achieved using a conventional programmer, room thermostat and cylinder thermostat, hard-wired to motorised zone valves. If an un-vented hot water storage vessel is installed, the motorised valve controlling the flow of water to the primary of the unit is supplied as part of the un-vented unit package and must be mounted in accordance with the manufacturers recommendations. The hot water thermostat is also integrated into the unit.

Space Heating Controls

Where the customer wishes to retain a conventional programmer and dial-setting thermostats temperature, as opposed to a programmable thermostat, temperature control of heating is achieved using a wireless dial setting thermostat, type RET B-RF. The room thermostat communicates with the heating channel of an RX1 wireless receiver. Time control of the heating is provided by the heating channel of a conventional hard-wired FP715Si programmer mounted adjacent to the receiver unit. Together the RX1 and the FP715Si control the heating zone valve that in turn provides the boiler interlock.

Hot Water Controls

Temperature control is provided by the un-vented hot water vessel's built-in thermostat. Time control of the hot water is provided by the hot water channel of the conventional hard-wired FP715Si 2-channel programmer.

Together the built-in thermostat and the FP715Si control the hot water zone valve that is supplied as part of the unit. This in turn provides the boiler interlock. Wiring is required between the un-vented hot water unit and the programmer.

Pack Contents

The pack for this application includes an RET B-RF wireless dial setting room thermostat, an RX1 wireless receiver, an FP715Si hard-wired programmer, one 22mm two-port zone valve and a WC4B wiring centre.

Installation Advice

Care must be taken to ensure that there are no large metal objects, such as domestic appliances or indeed the boiler case, sitting in the line between the thermostats and the receiver as these may block the wireless transmission from the thermostats.
It is a sensible precaution to install the receiver, pair it to the thermostat and test that the thermostat can communicate to the receiver from the intended installation location before fixing the thermostat to the wall.
If communication is not possible, adjust the thermostat location until communication is established.

Important Note: Thermostats and recievers listed on this page are not factory paired.

A detailed write-up of the 'pairing' process is given on page 25, 26 and 27 of this catalogue.

RET B-RF Dial Setting Room Thermostat

FP715Si Programmer

RX1 Receiver

WC4B Wiring Centre

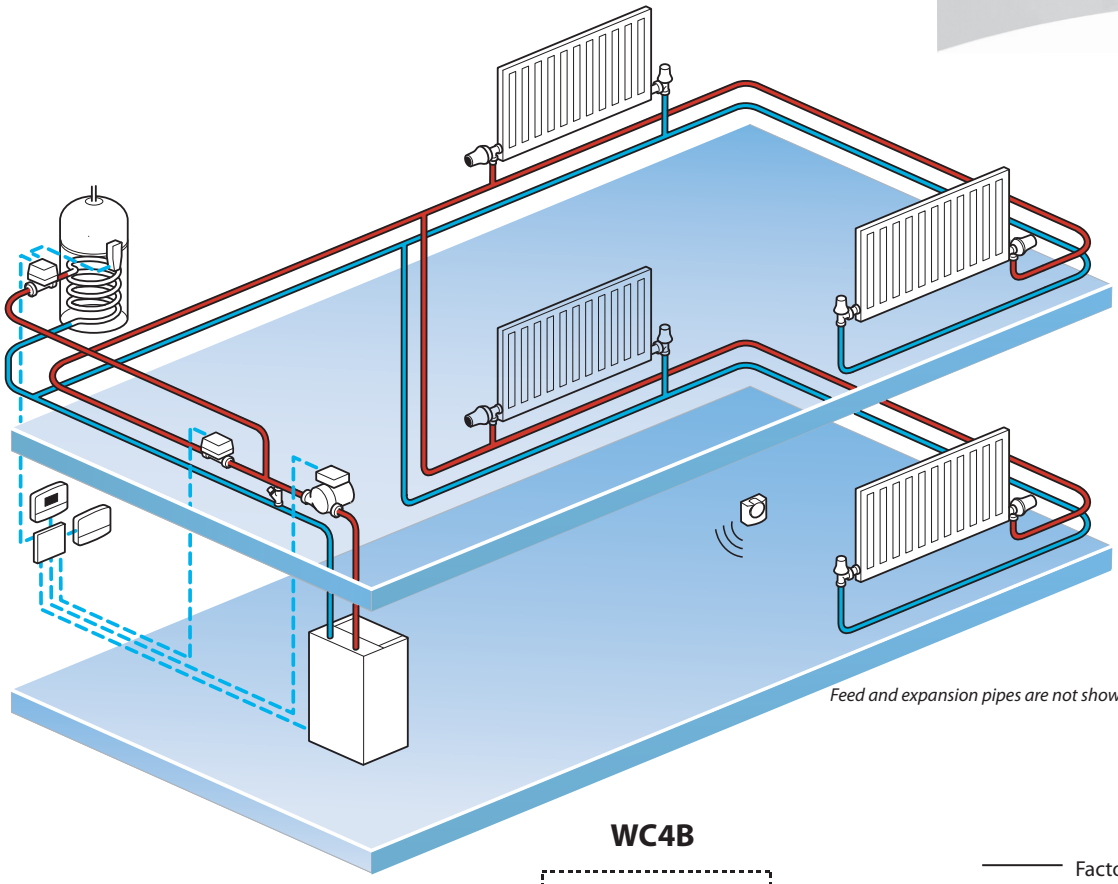
2 Port Motorised Valve

2 Port Valve Pack: Wireless Dial-setting Room and Hot Water Thermostats with Hard-wired Programmer							
Description[1]	Order No	Room Thermostat	Hot Water Thermostat	Receiver	Wiring Centre	2 Port Zone Valve [2][3]	Programmer
Pack with 24 hour, 5/2 day or 7 day programming options	087N6500V5	RET B-RF	(3)	RX1	WC4B	1 x HP22	FP715Si

(1) For a description of the individual products please refer to page 6
(2) Heating valve is 22mm
(3) 2 Port valve and cylinder thermostat on unvented HW cylinder are part of unvented package and not included in the Controls Pack

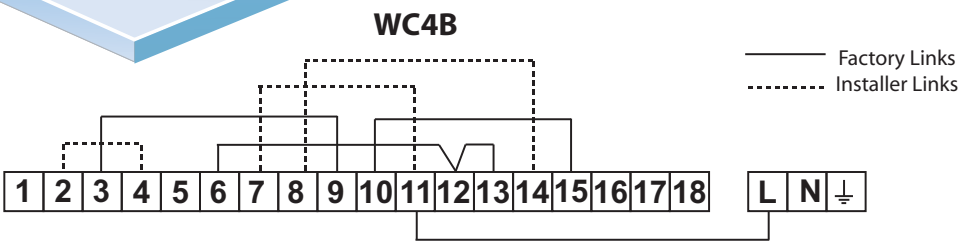
2 Port Valve Systems

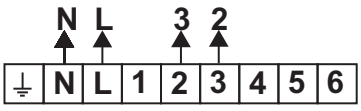
With 2 Channel Programmer and Wireless Dial-setting Room and Hot Water Thermostats for use with Unvented Hot Water Systems



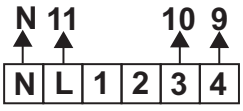
Feed and expansion pipes are not shown for clarity.

Wiring Diagram

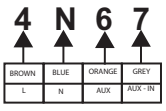




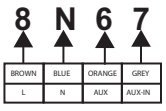
RX1



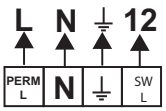
FP715Si



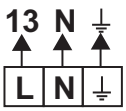
HP22 (Heating)



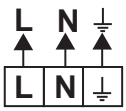
Unvented HW Cylinder Primary Valve
(Refer to Manufacturer's Instructions)



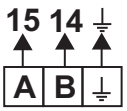
Boiler



Pump



Mains
fused 3A

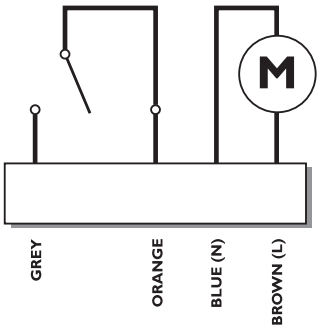


Unvented HW Cylinder Thermostat
(Refer to Manufacturer's Instructions)

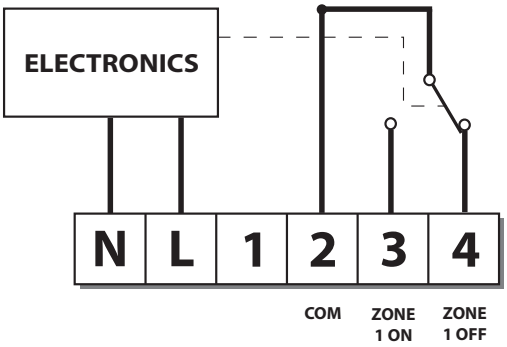
RX Channel Assignment	
Channel 1	Heating

Wiring Information

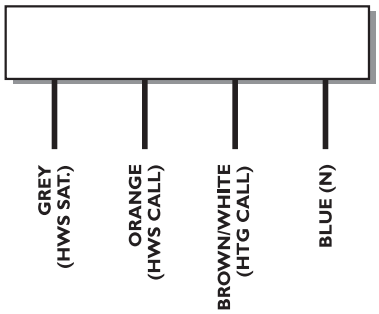
HP22



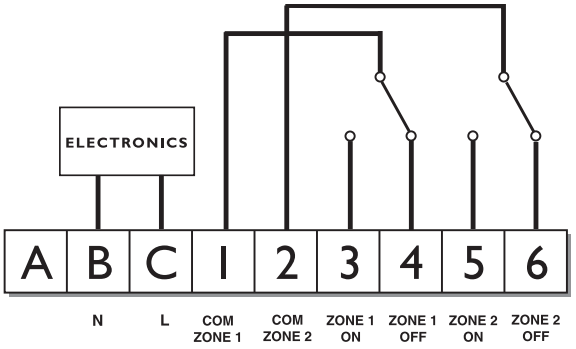
RX1



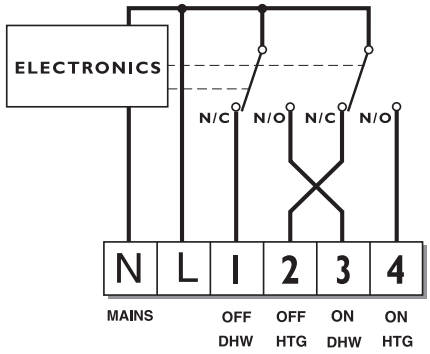
HS3



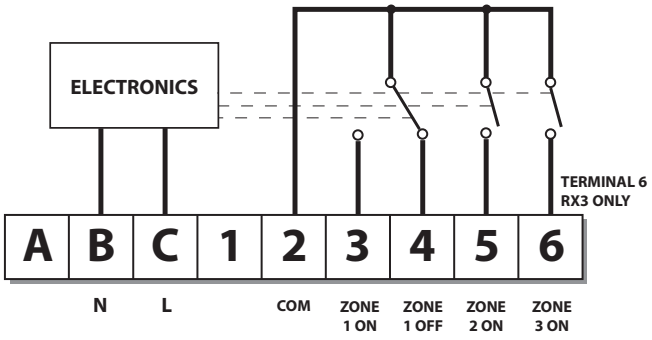
RX2C



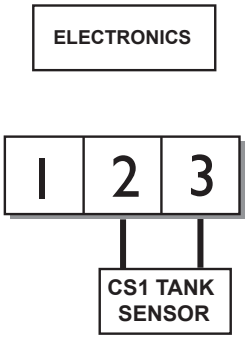
WP75-RF



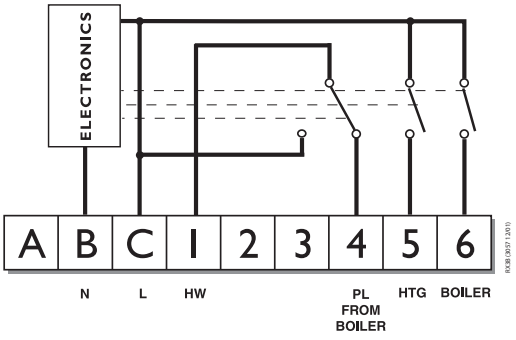
RX2 and RX3



CET B-RF



RX3B

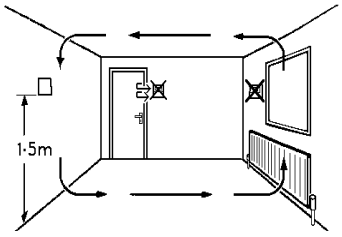


General Advice

Room Thermostats
Room thermostats should be mounted in a typical room, often referred to as the reference room. It should be remembered that in a normal single zone heating system that the room thermostat will shut-off the whole of the heating system when it is satisfied. Locations with secondary heat sources such as gas fires should be avoided if reasonable whole house comfort levels are to be maintained

Having chosen the room for the thermostat, ensure that the thermostat is not located on a cold outside wall or in a position where it might be unduly affected by draughts or by heat gain from electrical appliances or any other heat source including the sun.

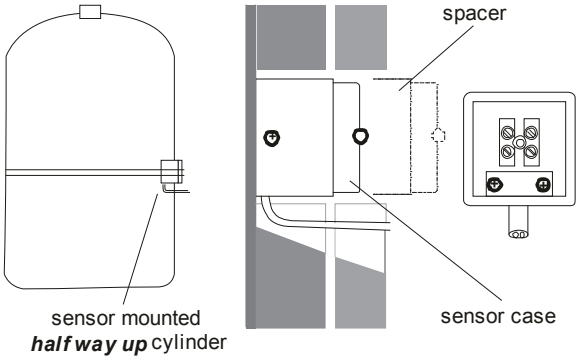
Thermostats should normally be mounted at a height of about 1.5 metres above the floor. However, if the building occupants are for example wheelchair bound, then the thermostats height should be adjusted to sitting height.



Location of Wireless Room Thermostats
Generally the same rules highlighted above apply, however, additional care needs to be taken to ensure that the wireless room thermostat is able to communicate with it's receiver module.
The line of sight range of Danfoss wireless thermostats is in excess of 30m, however, this range is reduced by the number of walls, floors and ceilings that the low power transmissions have to pass through before arriving at the receiver unit. It is not possible to put a figure on the range reduction per wall etc, as this will depend entirely on the construction of the wall. For example a partition wall will offer significantly less resistance to radio energy than would a reinforced concrete structure with steel reinforcement. Other large metal objects such as a fridge and boiler cases can also impede the reception if they sit between the thermostat and the receiver unit.

Hot Water Thermostats
All Danfoss wireless hot water thermostats comprise a wall mounting setting unit that includes the wireless transmitter and battery power supply, plus a remote surface mounting sensor that is supplied with a clamping band to attach it to the cylinder wall.

Sensor Unit
The location of this remote sensor should follow the same rules as for a standard electric thermostat, in other words about ***half way up*** the cylinder wall. Insulation material should be carefully removed and the cylinder wall cleaned. The heat conducting paste supplied with the thermostat should be applied to the cylinder wall. A two-core flexible cable should be wired into the remote sensor and the sensor fixed to the cylinder wall using the clamping spring provided. Wiring from the sensor must be terminated in the wall plate of the setting unit.



For insulation thicker than 25mm (and up to 55mm) use the extra cover supplied as a spacer to ensure that the sensor is held in firm contact with the cylinder wall.

Setting Unit
The setting unit should be fixed to the wall adjacent to the cylinder, care should be taken to ensure that the cylinder does not sit in the line between the setting unit location and the RX receiver unit as it will most likely block the wireless transmissions.

Please note that the hot water thermostat is battery powered and does not require an external electrical supply.

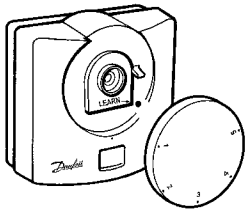
Receiver Options
All boxed sets come complete with the appropriate receiver. If additional zones are required purchase thermostats as loose items and select a receiver unit with the appropriate number of channels from the data table shown on pages 4. All Controls Packs include a receiver unit appropriate to the pack application. Please note that the RX3B receiver is a special 2-channel receiver with a common heat demand relay.

Installation Tips

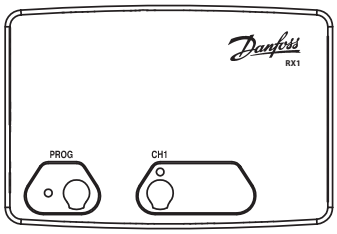
Good Practice Advice
To avoid the potential for communication problems as a result of range, obstructions or large metal objects the following steps should be followed:

- Before mounting the RX receiver unit ensure that the boiler case or other large domestic appliances do not sit in line between it and the proposed thermostat positions.
- The receiver should be mounted and wired to the valve(s) or boiler that it is intended to control.
- The thermostats should be paired to the receiver channel sold as loose components and in control packs that they are intended to communicate to (please refer to the section below on 'thermostat pairing'). This process should be carried out with the thermostats being held in the hand adjacent to the RX receiver unit.
- Once paired the thermostat's ability to communicate with the receiver should be tested whilst standing adjacent to the receiver. This can be done by increasing the thermostat set point to simulate a heat demand and by reducing the set point to simulate a satisfied demand. On a heat demand the appropriate channel of the receiver should switch on. A satisfied demand should switch the channel off.
- Having established that the 'thermostat pairing' has been correctly carried out, the thermostat should be taken to it's intended installation position and the above test repeated. If communication is successful, the thermostat/setting unit can now be mounted to the wall.

Thermostat Pairing
(Loose thermostats and control packs only)
All Danfoss wireless thermostats are assigned a unique number during manufacturing. This number is used in the packet of information transmitted by the thermostat and identifies the thermostat that is transmitting. Receivers and thermostats have to be paired on site as part of the commissioning process; this process writes the thermostat unique ID number into the receiver memory which is retained even if power is removed. Until a receiver is paired to a thermostat it will not react to any incoming signal. Once paired it will only react to the signal transmitted by the thermostat having the same unique ID number held in the receiver memory. This prevents neighbouring thermostats or other wireless devices on the same frequency from activating the receiver.



Pairing RET B-RF and CET B-RF
The following procedure should be followed to pair these products to RX receivers:
Turn the dial clockwise to the maximum setting and remove the setting dial.



Do not refit the dial until after the pairing process has been completed.
This is important as any movement of the thermostat setting spindle cancels the "Learn" transmission.

Press the "Learn" button. This will force the thermostat to transmit it's ID code for five minutes.

Move to the RX receiver and press the channel button of the channel to which you wish to assign the thermostat. Then press the PROGRAMME button on the RX receiver.

Important: *the convention is to use channel 1 for heating and channel 2 for hot water. All wiring diagrams are based on this convention.*

The green LED adjacent to the PROG button will flash to confirm that the channel has been assigned as requested.

The pairing process for this thermostat is now complete and the setting dial can be refitted in the maximum position and adjusted to the required set-point.

If the installation has more than one wireless thermostat it is important to ensure that the "Learn" transmission of the thermostat that has just been paired to it's receiver is cancelled before moving on to "Pair" the next thermostat and receiver or receiver channel. To cancel a "Learn" transmission simply move the thermostat setting dial until the LCD display changes.

Installation Tips

Pairing the RT51-RF, RT52-RF, TP5000Si-RF, TP7000-RF and WP75-RF

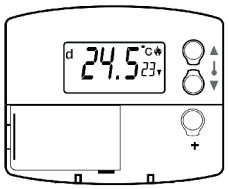
The following procedure should be followed to pair these products to RX receivers:

Drop the setting cover to reveal the programming buttons.

Press the following buttons to force the thermostat into 'learn' mode.

RT51-RF

+ button and ▼

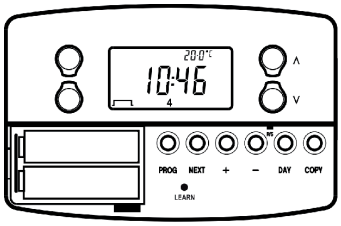


RT52-RF & TP5000Si-RF

+ button and ▼

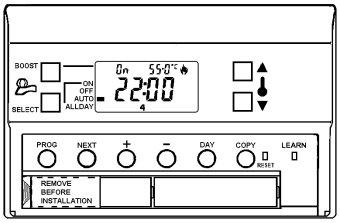
TP7000-RF

'Learn' button

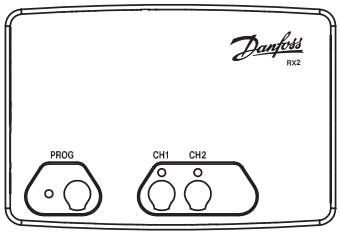


WP75-RF

'Learn' button



Do not touch any other buttons on the thermostat until advised to do so as this will cancel the 'Learn' transmission from the thermostat.



Move to the RX receiver and press the channel button of the channel to which you wish to assign the thermostat. Then press the PROGRAMME button on the RX receiver.

Important: the convention is to use channel 1 for heating and channel 2 for hot water. All wiring diagrams are based on this convention.

The green LED adjacent to the PROGRAMME button will flash to confirm that the channel has been assigned as requested.

Press either the ▲ or ▼ button on the thermostat, this returns the thermostat to normal operation.

The 'pairing' process is now complete for this thermostat.

If the installation has more than one wireless thermostat it is important to ensure that the "Learn" transmission of the thermostat that has just been paired to it's receiver is cancelled before moving on to "Pair" the next thermostat and receiver or receiver channel. To cancel a "Learn" transmission simply press either ▲ or ▼ buttons on the thermostat.

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