

Part L Control Pack Catalogue



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Danfoss Randall Limited, Ampthill Road, Bedford MK42 9ER



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

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Introduction to Part L What's changed? And how to comply...

From the 1st October 2010 a new version of the Part L Building Regulations came into force.

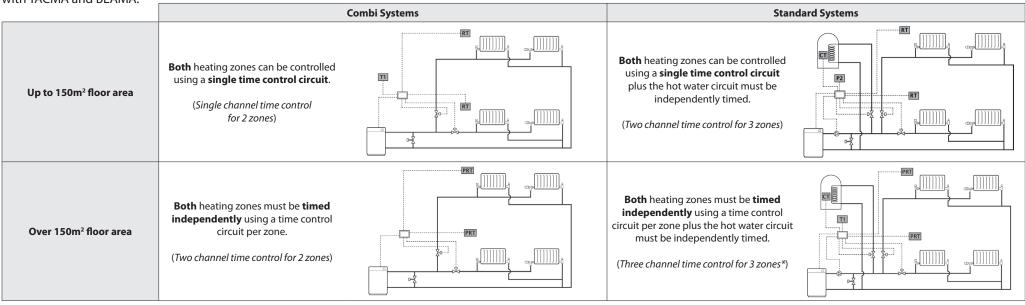
There are two main changes to the previous Part L documents that affect you, the domestic heating installer:

- 1. **All new heating systems** installed after October 2010 **must have at least two heating zones and one hot water zone** (unless they are open plan and more than 70% of the floor area is designated to living space in this instance a single heating zone can be used).
- Each of these heating zones must have at least one room thermostat to provide boiler interlock and individual radiator control such as TRVs (Thermostatic Radiator Valves).
- 2. When replacing a boiler in an existing system it is considered **good practice** to install TRVs in **all** rooms with radiators **except** those in which there is a reference room thermostat. TRVs are not required in bathrooms, but can, if fitted, assist greatly in enhancing comfort levels and providing additional energy savings over uncontrolled radiators..

Below is a brief summary of the minimum time control requirements that have to be met for each installation type:

All of the control packs listed in this booklet will ensure you fully meet the requirements of the 2010 Part L legislation.

For more information and guidance please visit http://www.beama.org.uk/en/news/index.cfm/tacma%20publication to download the part L compliance guide compiled in association with TACMA and BEAMA.



KEY TO SYMBOLS



^{*} This can be achieved using a single channel timeswitch such as the TS715Si for domestic hot water time control and two programmable thermostats such as the TP5000Si for heating time/temperature control - see diagram on page 8.

Part L Control Packs Product Overview



RET230P

The RET230P electronic room thermostat has a discreet design with first class control accuracy and energy efficiency.



RETB-RF

A wireless dial set room thermostat with an LCD temperature display.



CETB-RF

A wireless hot water cylinder thermostat. A strap on sensor connects to the control unit to wirelessly send signals to the RX receiver unit.



FP715Si

Two channel programmer with independent HW and CH times plus a factory pre-set clock with automatic BST/GMT time change.



TP5000Si

5-2 day programmable thermostat offering 2, 4, or 6 events per day. With energy saving chronoproportional control to reduce operating costs.



TP5000Si-RF

Building on the ease of use of the hard wired TP5000Si, the TP5000Si-RF is a wireless version enabling positioning anywhere in the house.



RX Receiver

Receiving the signals from other wireless devices the RX receiver activates the motorised valves whenever there is a call for heat.



TS715Si

Single channel timeswitch with backlit display plus factory preset clock with automatic BST/GMT time change.



* RAS-C² Combi Pack

Combines the RAS-C² sensor with the RA-FS 'revolver' valve. The patented 'revolver' feature allows installation in either the flow or return.



ATC

An electro-mechanical surface mounted cylinder thermostat with cable strain relief and a simple fitting to attach to the cylinder.



HP22

A high capacity 2 port valve, long lasting and reliable.

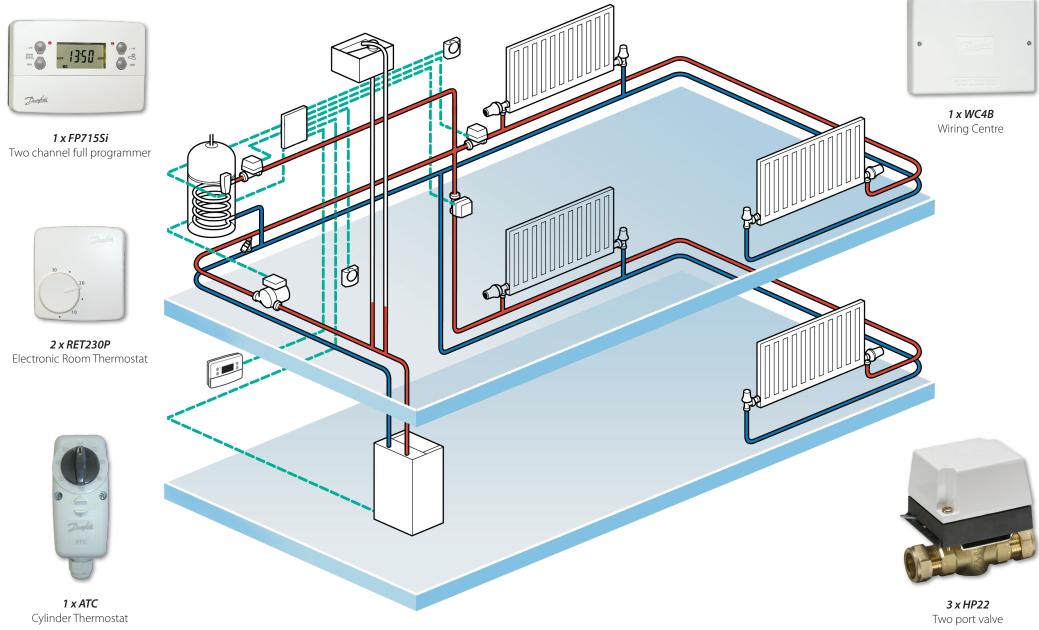


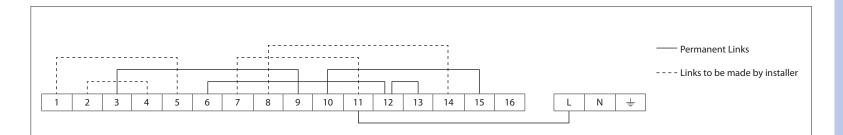
WC4B

The WC4B wiring centre provides a systemised and tidy approach to wiring.

^{*} TRVs are not supplied within the packs but can be purchased separately from your local merchant.

3 Zone Pack - Common Heating Times (Dwellings up to 150m²) Code Number 087N6500X1





Room Thermostat Heating Zone 1

3	2	N	
\wedge	\wedge	\wedge	
L*	1	N	RET230P*
COM	CALL	N	

HP22 2 Port Valve Heating Zone 1

4	N	6	7	
\wedge	\wedge	\wedge		
Brown	Blue	Orange		
Motor	N	Out	In	
L	l IN	Aux	Sw.	

Pro	gr	ar	nn	nei

3							
	\wedge	\wedge	\wedge	\wedge	\wedge	\wedge	
		NI.		OFF	ON	ON	Links
	÷	N		Wa	iter	Htg	LINKS
FP715 Si	-	N	L	1	3	4	-

Room Thermostat Heating Zone 2



HP22 2 Port Valve Heating Zone 2

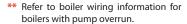
1	N	6	7		
\wedge	\wedge	\uparrow	\uparrow		
Brown	Blue	Orange	Grey		
Motor	N	Out	In		
L	L N		Aux. Sw.		

ATC Cylinder Thermostat



10

* Link terminals L and COM in the RET230P for correct operation (See thermostat instructions for further information).



HP22 2 Port Valve Hot Water Zone 3

8	N	6	7	
\wedge	1	\wedge	\wedge	
Brown	Blue	Orange	Grey	
Motor	tor	Out In		
L	N	Aux.	Sw.	

Pump**

	<u> </u>	
L	N	<u></u>

Roiler**

20				
L	N	_	12	
1	1	1	\uparrow	
Perm L	N	+	Sw. L	



Providing common times for both heating zones and a separate timed hot water zone this pack fulfils the minimum control requirements for dwellings under 150m² using a vented hot water cylinder.

An **FP715Si** two channel timer is used to provide time control for the heating and hot water zones.

Dial setting **RET230P** thermostats provide the customer with a high level of space heating comfort and control accuracy.

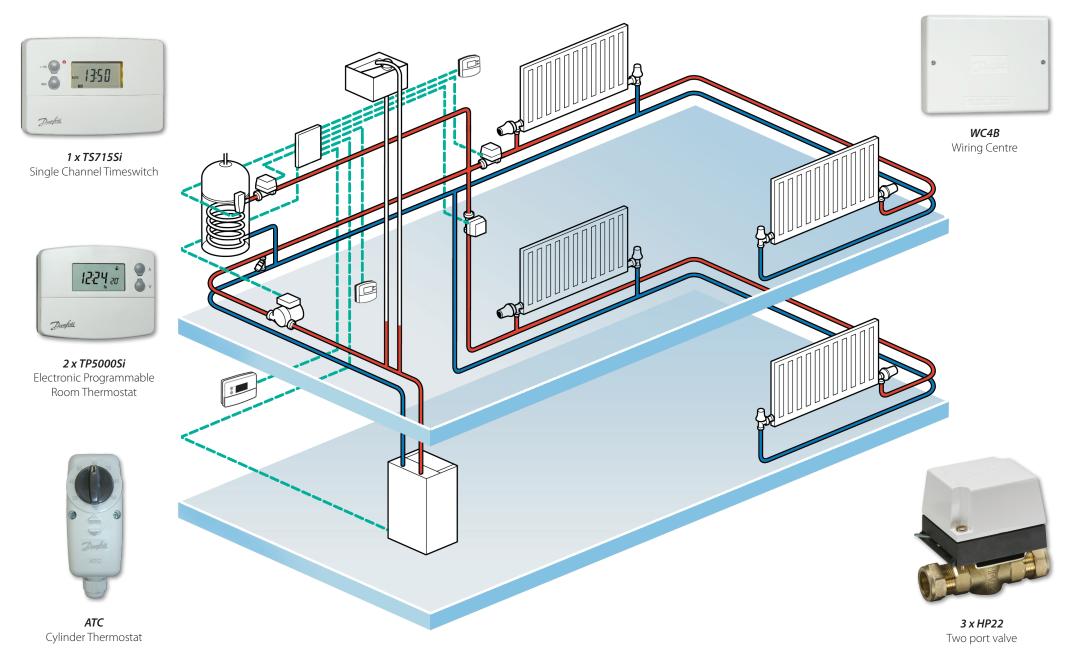
Hot water control is achieved using an **ATC** cylinder thermostat which is easy to install and set.

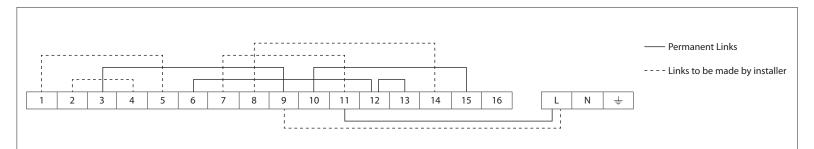
This pack is ideal for installations using a standard hot water cylinder.

Please Note:

To save energy and increase comfort, TRVs should also be fitted on all radiators in rooms without room thermostats.

3 Zone Pack - Independent Heating Times Code Number 087N6517DL





Room Thermostat Heating Zone 1

	3	2	
	\wedge	\wedge	
1/A	2/B	3/C	TP5000 Si
OFF	СОМ	ON	

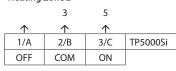
HP22 2 Port Valve Heating Zone 1

4	N	6	7	
\wedge	\wedge	\wedge	\wedge	
Brown	Blue	Orange	Grey	
Motor	N	Out	In	
L	l IN	Aux Sw		

Titileswitch	=	14	1.1	10	
	\wedge	\wedge	\wedge	\wedge	
When using unit below		N		ON	Links
link 11-9 in wiring centre	+	l IN	-	Water	LINKS

Ν

Room Thermostat Heating Zone 2



* Refer to boiler wiring information for boilers with pump overrun.

HP22 2 Port Valve Heating Zone 2

_			
1	N	6	7
\uparrow	\uparrow	\uparrow	\wedge
Brown	Blue	Orange	Grey
Motor	N	Out	In
L	IN	Aux. Sw.	

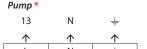
ATC Cylinder Thermostat

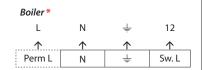
TS715 Si

15	14	÷
\wedge	\wedge	\uparrow
1	2	‡
COM	CALL	

HP22 2 Port Valve

HOL Water Zone 3					
8	N	6	7		
\wedge	\uparrow	\uparrow	\wedge		
Brown	Blue	Orange	Grey		
Motor	N	Out	In		
L	IN	Aux.	Sw.		





L-1



Providing independent times for both heating zones and a separate timed hot water zone this pack fulfils the minimum control requirements for dwellings over 150m² using a vented hot water cylinder.

Using a **TS715Si** single channel timeswitch to control the hot water times, and two **TP5000Si** programmable thermostats to provide independent heating zone timings, this pack provides the ultimate in control and potential energy savings to the end user.

The advanced chrono-proportional control offered by the *TP5000Si* can provide up to 10% CO² and energy savings when compared to a standard mechanical thermostat.

This pack is ideal for installations using a standard hot water cylinder where control accuracy, programming flexibility and energy savings are a priority.

Potential savings with chrono-proportional control:

Control	Energy Saving (%)	Carbon Saving (%)
Mechanical On/Off	-	-
Electronic On/Off	2.10	2.31
Chrono-Proportional	10.35	10.71

Results based on a high efficiency condensing boiler over a 12 hour period.

Please Note:

To save energy and increase comfort, TRVs should also be fitted on all radiators in rooms without room thermostats.

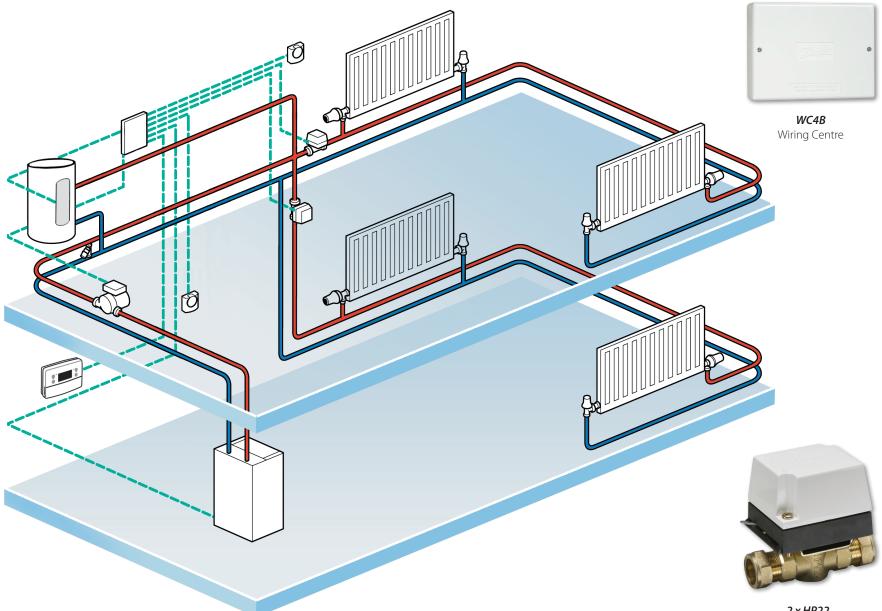
3 Zone Pack - Common Heating Times - Unvented System (Dwellings up to 150m²) **Code Number 087N6500S7**



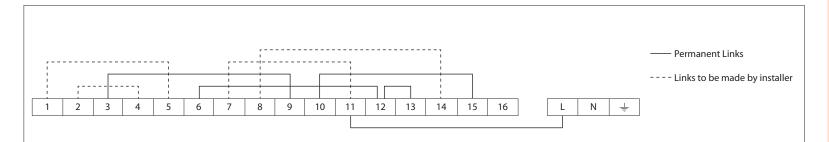
Two channel full programmer



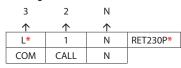
2 x RET230P Electronic Room Thermostat



2 x HP22 Two port valve



Room Thermostat Heating Zone 1

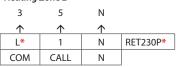


HP22 2 Port Valve Heating Zone 1

4	N	6	7	
\wedge	\uparrow	\wedge	\wedge	
Brown	Blue	Orange	Grey	
Motor	N	Out	In	
L	N	Aux.	Sw.	

riogianniei	-	IN	1.1		10	2	
	\wedge	\wedge	\wedge	\wedge	\wedge	\wedge	
	1	N.		OFF	ON	ON	Links
	<u> </u>	N	L	Wa	iter	Htg	Links
FP715 Si	-	N	L	1	3	4	-

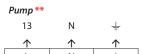
Room Thermostat Heating Zone 2



HP22 2 Port Valve Heating Zone 2

1	N	6	7
\wedge	\wedge	\wedge	\uparrow
Brown	Blue	Orange	Grey
Motor	N	Out	ln
L	IN	Aux.	Sw.

- * Link terminals L and COM in the RET230P for correct operation (See thermostat instructions for further information).
- ** Refer to boiler wiring information for boilers with pump overrun.
- *** Connect to unvented cylinder controls. (HW zone valve and required controls are supplied with unvented cylinder).



Boiler **			
L	N	÷	12
↑	1	\wedge	\uparrow
Perm L	N	÷	Sw. L



Providing common times for both heating zones and a separate timed hot water zone this pack fulfils the minimum control requirements for dwellings under 150m2 using an unvented hot water cylinder.

An **FP715Si** two channel timer is used to provide time control for the heating and hot water zones.

Dial setting **RET230P** thermostats provide the customer with a high level of space heating comfort and control accuracy.

Hot water control is achieved using the controls pre-fitted to the unvented hot water cylinder – for wiring and installation details of these please contact the cylinder manufacturer.

This pack is ideal for installations using a standard unvented hot water cylinder.

Please Note:

To save energy and increase comfort, TRVs should also be fitted on all radiators in rooms without room thermostats.

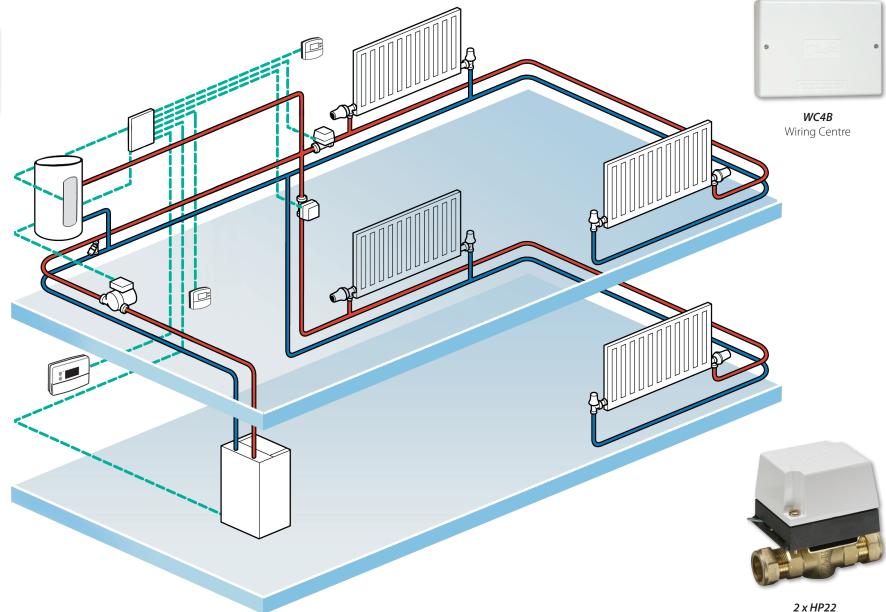
3 Zone Pack - Independent Heating Times - Unvented System Code Number 087N6517H4



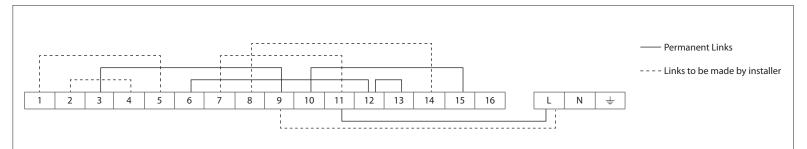
*1 x TS715Si*Single Channel Timeswitch



2 x TP5000Si Electronic Programmable Room Thermostat



2 x HP22 Two port valve



Room Thermostat Heating Zone 1

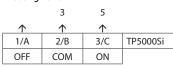
	3	2	
\uparrow	\uparrow	\wedge	
1/A	2/B	3/C	TP5000 Si
OFF	COM	ON	

HP22 2 Port Valve Heating Zone 1

	4	N	6	7	
	\wedge	\wedge	\wedge	\wedge	
	Brown	Blue	Orange	Grey	
	Motor	N	Out	In	
ı	L	l N	Διιν	Sw	

	\uparrow	\wedge	\wedge	1		
When using unit below	1	N.		ON	ON	Unite
link 11-9 in wiring centre	÷	N	L	Water	Heating	Links
TS715 Si	-	N	L	4	-	L-1

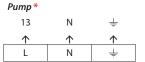
Room Thermostat Heating Zone 2

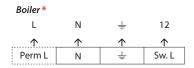


HP22 2 Port Valve Heating Zone 2



- * Refer to boiler wiring information for boilers with pump overrun.
- ** Connect to unvented cylinder controls. (HW zone valve and required controls are supplied with unvented cylinder).







Providing independent times for both heating zones and a separate timed hot water zone this pack fulfils the minimum control requirements for dwellings over 150m² using an unvented hot water cylinder.

Using a TS715Si single channel times witch to control the hot water times and two TP5000Si programmable thermostats to provide independent heating zone timings this pack provides the ultimate in control and potential energy savings to the end user.

The advanced Chrono-proportional control offered by the *TP5000Si* can provide up to 10% CO² and cost savings when compared to a standard mechanical thermostat.

This pack is ideal for installations using a standard unvented hot water cylinder where control accuracy, programming flexibility and energy savings are a priority.

Potential savings with chrono-proportional control:

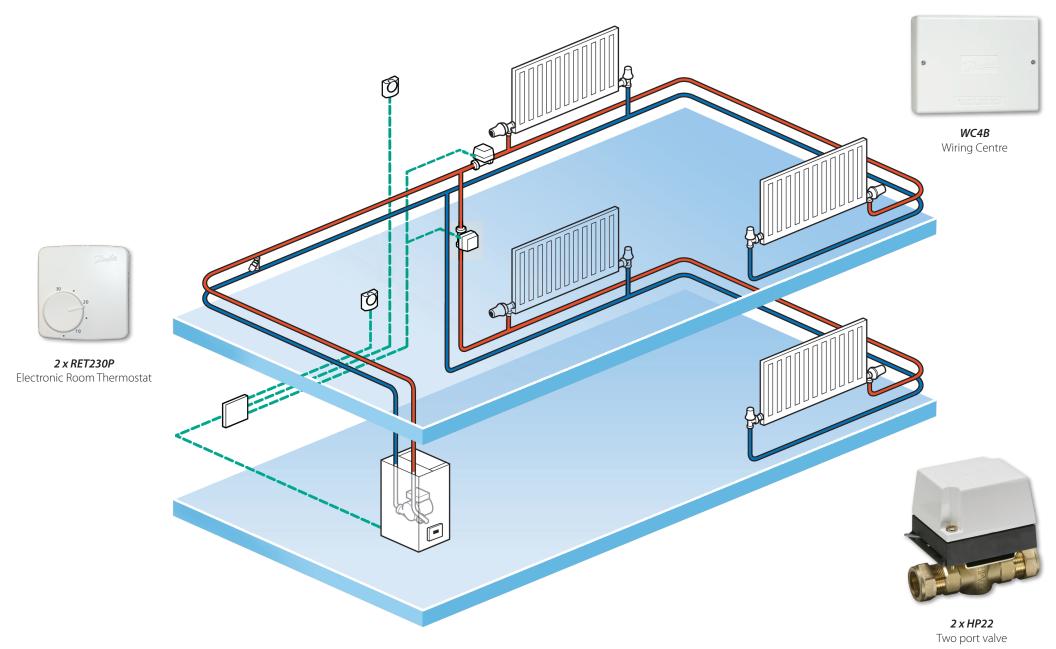
Control	Energy Saving (%)	Carbon Saving (%)
Mechanical On/Off	-	-
Electronic On/Off	2.10	2.31
Chrono-Proportional	10.35	10.71

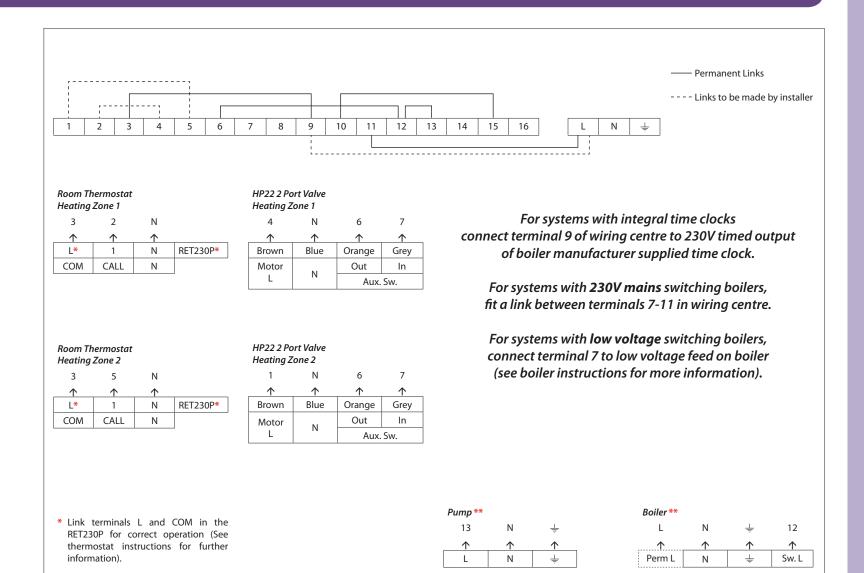
Results based on a high efficiency condensing boiler over a 12 hour period.

Please Note:

To save energy and increase comfort, TRVs should also be fitted on all radiators in rooms without room thermostats.

2 Zone Pack - Integral Boiler Timer - Combi System (Dwellings up to 150m²) Code Number 087N6520S7





** Refer to boiler wiring information for boilers with pump overrun.



For systems using combination boilers with an integral timeclock; this pack provides heating control over two zones with a common timebase.

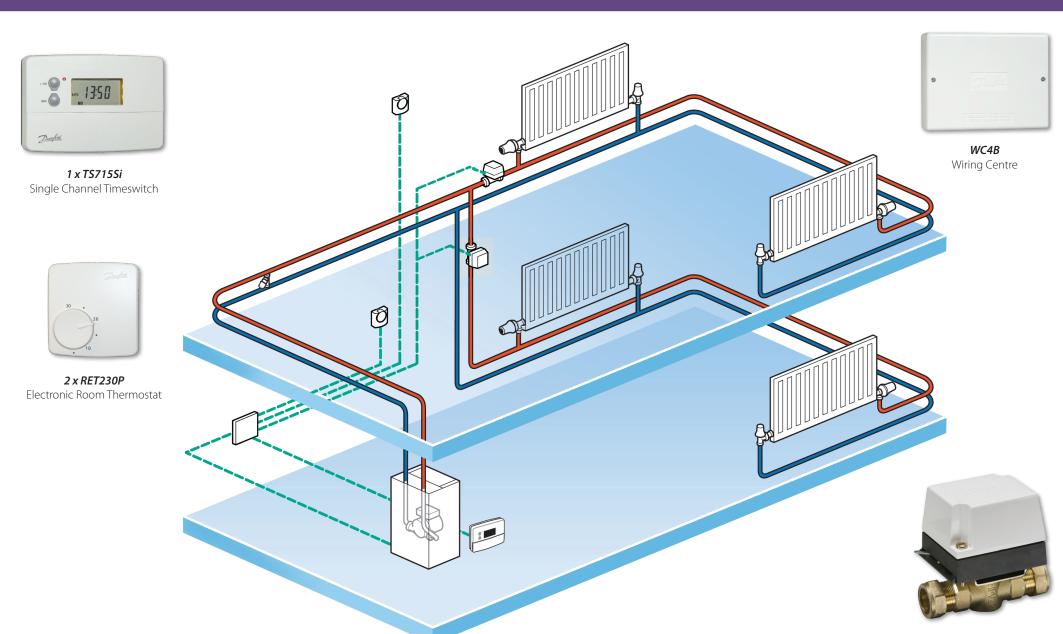
The addition of two **RET230P** electronic room thermostats and two **HP22** motorised valves to the combi boiler system provides zone control to both the living and the sleeping areas of the house enabling different comfort levels to be set, saving energy and increasing comfort for the occupier.

This pack is ideal for installations using a combination boiler that is provided with its own integral timeclock.

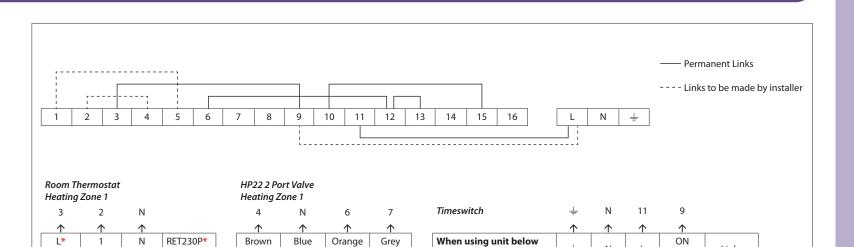
Please Note:

To save energy and increase comfort, TRVs should also be fitted on all radiators in rooms without room thermostats.

2 Zone Pack - Common Heating Times - Combi System (Dwellings up to 150m²) Code Number 087N6517S7



2 x HP22 Two port valve

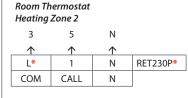




For systems using combination boilers where an external timeclock is required. This pack provides heating control over two zones with a common timebase.

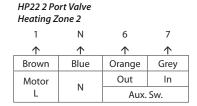
The addition of two **RET230P** electronic room thermostats and two **HP22** motorised valves to the combi boiler system provides zone control to both the living and the sleeping areas of the house enabling different comfort levels to be set, saving energy and increasing comfort for the occupier.

This pack is ideal for installations using a combination boiler that is not provided with its own integral timeclock, or for installations where a timeclock is required externally to the combi boiler.



COM

CALL



Aux. Sw.

Motor

For systems with **230V mains** switching boilers, fit a link between terminals 7-11 in wiring centre.

Ν

Ν

For systems with **low voltage** switching boilers, connect terminal 7 to low voltage feed on boiler (see boiler instructions for more information).

Pump **		
13	N	-
	\uparrow	^
L	N	÷

link 11-9 in wiring centre

TS715 Si

Boiler **			
L	N	_	12
1	1	\wedge	
Perm L	N	÷	Sw. L

Links

L-1

Heating

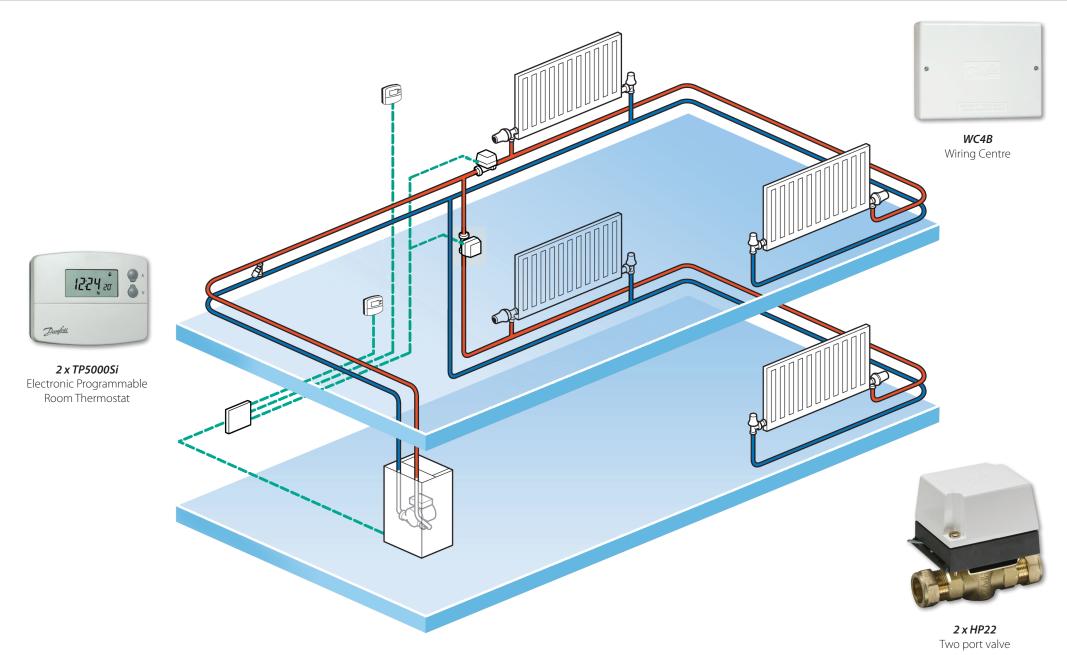
	information).
**	Refer to boiler wiring information for
	boilers with pump overrun.

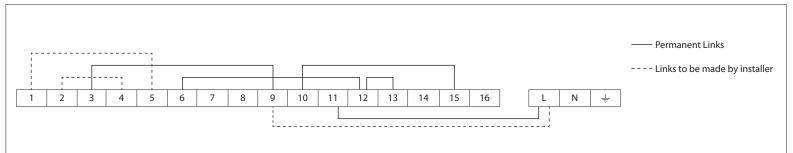
* Link terminals L and COM in the RET230P for correct operation (See thermostat instructions for further

Please Note:

To save energy and increase comfort, TRVs should also be fitted on all radiators in rooms without room thermostats.

2 Zone Pack - Independent Heating Times - Combi System Code Number 087N6520H4





Room Thermostat Heating Zone 1

	3	2	
\wedge	\wedge	\wedge	
1/A	2/B	3/C	TP5000 Si
OFF	COM	ON	

HP22 2 Port Valve Heating Zone 1

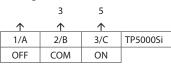
HP22 2 Port Valve

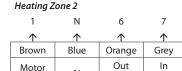
4	N	6	7
^	\wedge	1	\wedge
Brown	Blue	Orange	Grey
Motor	N	Out	In
L	IN	Aux.	Sw.

For systems with **230V mains** switching boilers, fit a link between terminals 7-11 in wiring centre.

For systems with **low voltage** switching boilers, connect terminal 7 to low voltage feed on boiler (see boiler instructions for more information).

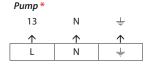
Room Thermostat Heating Zone 2

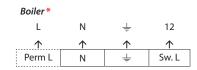




Aux. Sw.

 Refer to boiler wiring information for boilers with pump overrun.







For systems using combination boilers where full programmable control of the heating zones is required. This pack provides heating control over two zones with a separate timebase for each zone.

The fitting of the **TP5000Si** programmable thermostat to both the living and sleeping zones in the system allows full time and temperature independent control of each zone.

Having separate time/temperature profiling of each zone means the ultimate in comfort and energy savings for the occupier, this, combined with the advanced Chronoproportional control offered by the TP5000Si can provide up to 10% CO² and cost savings when compared to a standard mechanical thermostat.

This pack is ideal for installations using a combination boiler where total flexibility and accurate control are demanded for each zone.

Potential savings with chronoproportional control:

Control	Energy Saving (%)	Carbon Saving (%)	
Mechanical On/Off	-	-	
Electronic On/Off	2.10	2.31	
Chrono-Proportional	10.35	10.71	

Results based on a high efficiency condensing boiler over a 12 hour period.

Please Note:

To save energy and increase comfort, TRVs should also be fitted on all radiators in rooms without room thermostats.

3 Zone Pack - Common Heating Times - Wireless System (Dwellings up to 150m²) Code Number 087N6500CB



*1 x FP715Si*Two channel full programmer



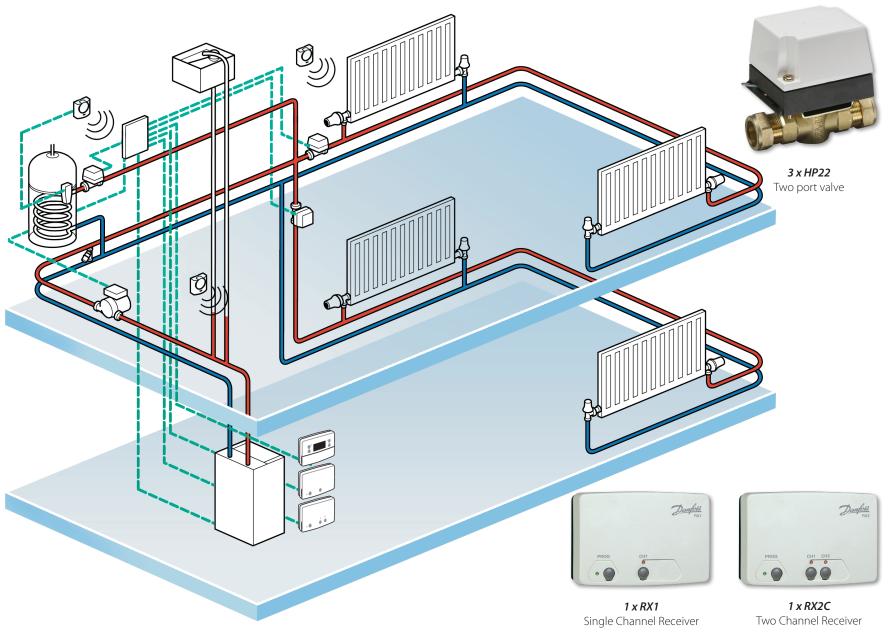
2 x RETB-RF Wireless Electronic Room Thermostat

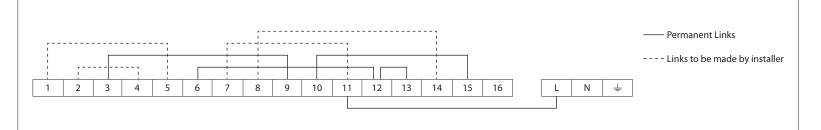


1 x CETB-RF Wireless Cylinder Thermostat



WC4B Wiring Centre





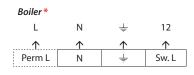
Pump * 13

HP22 2 Port Valve Heating Zone 1

4	N	6	/
\wedge	\wedge	\wedge	\wedge
Brown	Blue	Orange	Grey
Motor	N.	Out	In
L	N	Aux.	Sw.

Programmer	

rrogrammer	-					_	
	\wedge	\wedge	\wedge	\wedge	\wedge	\wedge	
	1	N		OFF	ON	ON	Links
	=	IN	L	Wa	ter	Htg	LINKS
FP715 Si	-	N	L	1	3	4	-



* Refer to boiler wiring information for boilers with pump overrun.

HP22 2 Port Valve Heating Zone 2



RX1

N	L		15	8			
 \uparrow	\uparrow	\wedge	\uparrow	\wedge	\uparrow	\wedge	1
N	L	1	2	3	4	5	6

HP22 2 Port Valve Hot Water Zone 3

8	N	6	7	
	\wedge	\uparrow	\wedge	
Brown	Blue	Orange	Grey	
Motor	N	Out	ln	
L	IN	Aux. Sw.		

RX2C

Ensure link is made between 1 and 2 on the RX2 backplate

N	L	3		2		5	
1	\wedge	\wedge	\wedge	\wedge	\wedge	\wedge	1
N	L	1	2	3	4	5	6
		i					



A wireless solution for systems with a vented hot water cylinder providing a common timebase for both heating zones and a separate timed channel for hot water control.

Ideal for situations where running wires is difficult or impossible, the wireless packs provide ease of installation as well as a simple setup with reliable operation.

The **FP715Si** programmer and the two **RETB-RF** wireless room thermostats provide a common timebase for both heating zones. The **CETB-RF** provide wireless hot water thermostat capability.

All Danfoss wireless products use a secure digital radio communication system to ensure reliability and eliminate the possibility of interference with other wireless devices in the home.

This pack is ideal for installations using a vented hot water cylinder where fixed wiring is impractical or undesirable.

Potential savings with chronoproportional control:

Control	Energy Saving (%)	Carbon Saving (%)
Mechanical On/Off	-	-
Electronic On/Off	2.10	2.31
Chrono-Proportional	10.35	10.71

Results based on a high efficiency condensing boiler over a 12 hour period.

Please Note:

To save energy and increase comfort, TRVs should also be fitted on all radiators in rooms without room thermostats.

3 Zone Pack - Independent Heating Times - Wireless System Code Number 087N6518CG



*1 x TS715Si*Single Channel Timeswitch



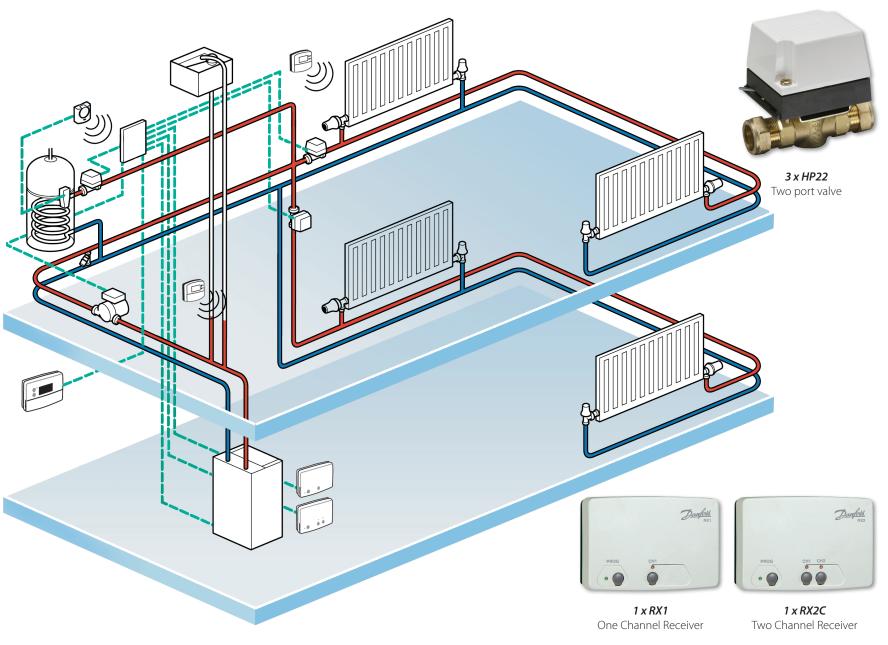
2 x TP5000RF SiElectronic Programmable
Room Thermostat

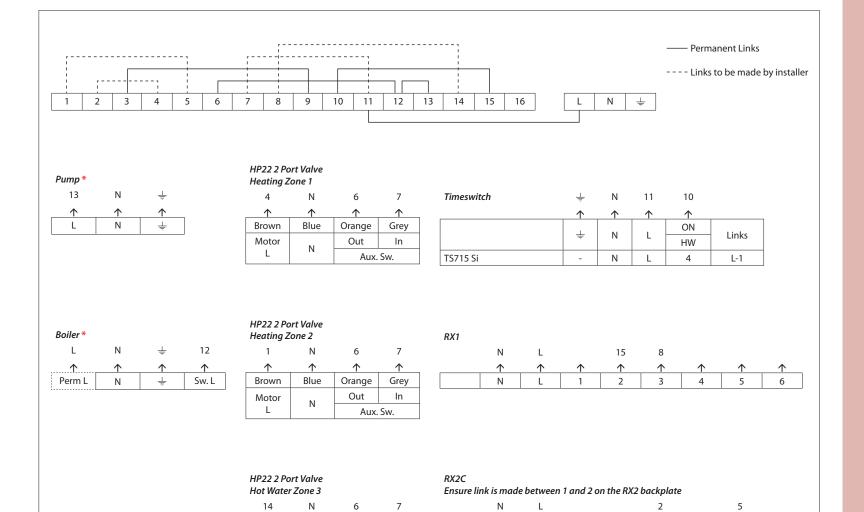


1 x CET B-RF Wireless Cylinder Thermostat



WC4B Wiring Centre





 Λ

Brown

Motor

* Refer to boiler wiring information for

boilers with pump overrun.

Blue

 \wedge

Orange

Out

Aux. Sw.

Grey

In



A wireless solution for systems with a vented hot water cylinder providing an independent timebase for both heating zones and a separate timed channel for hot water control.

Ideal for situations where running wires is difficult or impossible, the wireless packs provide ease of installation as well as a simple setup with reliable operation.

This system uses a single channel timeswitch *TS715Si* for hot water timing, combined with a *CETB-RF* wireless cylinder thermostat and wireless *TP5000RF-Si* programmable room thermostats for separate time and temperature control of your heating zones.

All Danfoss wireless products use a secure digital radio communication system to ensure reliability and eliminate the possibility of interference with other wireless devices in the home.

This pack is ideal for installations using a vented hot water cylinder where fixed wiring is impractical and full independent timed control of all zones is required.

Potential savings with chronoproportional control:

Control	Energy Saving (%)	Carbon Saving (%)
Mechanical On/Off	-	-
Electronic On/Off	2.10	2.31
Chrono-Proportional	10.35	10.71

Results based on a high efficiency condensing boiler over a 12 hour period.

Please Note: To save energy and increase comfort, TRVs should also be fitted on all radiators in rooms without room thermostats.

3 Zone Pack - Independent Heating Times - Wireless Unvented System Code Number 087N6517DG



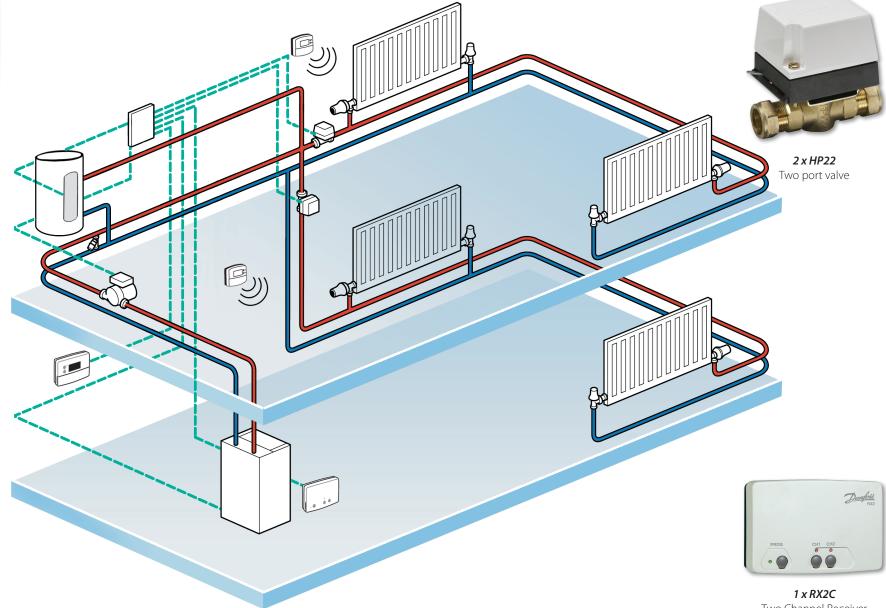
*1 x TS715Si*Single Channel Timeswitch

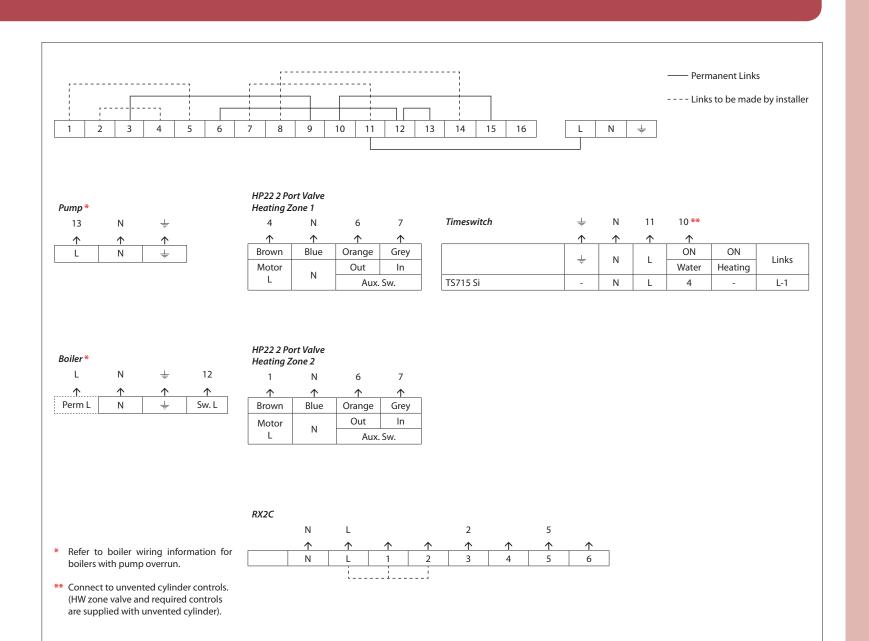


2 x TP5000RF-Si Electronic Programmable Room Thermostat



WC4B Wiring Centre







A wireless solution for systems with an unvented hot water cylinder providing an independent timebase for both heating zones.

Ideal for situations where running wires is difficult or impossible, the wireless packs provide ease of installation as well as a simple setup with reliable operation.

Using two wireless **TP5000RF-Si** programmable thermostats enables the user full time and temperature control of each heating zone independently. The hot water zone time is controlled by the **TS715Si** timeswitch and the other controls (provided by unvented cylinder manufacturer) can be easily integrated into the system.

All Danfoss wireless products use a secure digital radio communication system to ensure reliability and eliminate the possibility of interference with other wireless devices in the home.

This pack is ideal for installations using an unvented hot water cylinder where fixed wiring is impractical and full independent timed control of all zones is required.

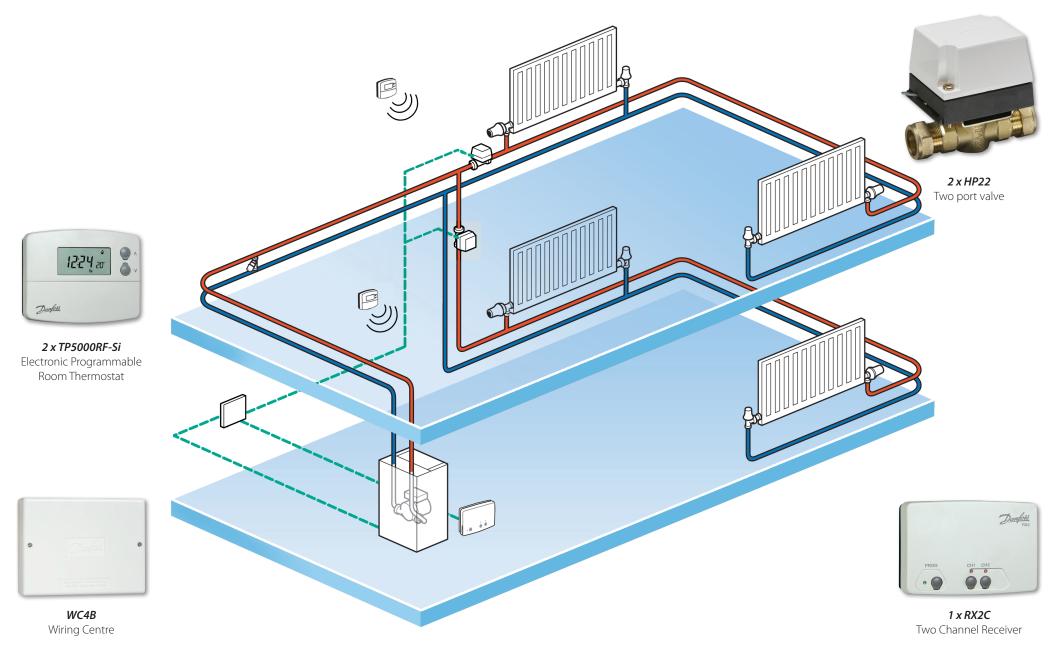
Potential savings with chrono-proportional control:

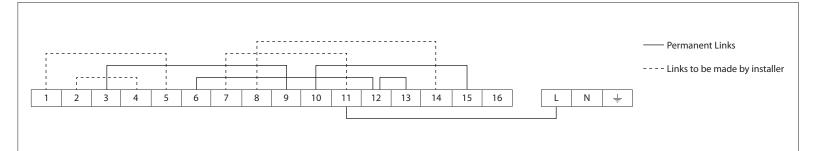
Control	Energy Saving (%)	Carbon Saving (%)
Mechanical On/Off	-	-
Electronic On/Off	2.10	2.31
Chrono-Proportional	10.35	10.71

Results based on a high efficiency condensing boiler over a 12 hour period.

Please Note: To save energy and increase comfort, TRVs should also be fitted on all radiators in rooms without room thermostats.

2 Zone Pack - Independent Heating Times - Wireless Combi System Code Number 087N6520DG

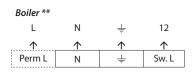


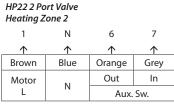


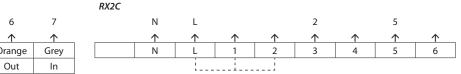
Pump ** 13 N ↓ ↑ ↑ ↑ L N ↓

Heating Zone 1 4 N 6 7 ↑ ↑ ↑ ↑ Brown Blue Orange Grey Motor N Out In L N Aux. Sw.

HP22 2 Port Valve







** Refer to boiler wiring information for boilers with pump overrun.



A wireless solution for systems with an combination boiler providing an independent timebase for both heating zones.

Ideal for situations where running wires is difficult or impossible, the wireless packs provide ease of installation as well as a simple setup with reliable operation.

For full independent heating zone control in a system where a combi boiler is used the *TP5000Si-RF* provides the solution.

Offering programmable times and temperatures, the **TP5000Si-RF**, when using the chrono proportional control system can save the occupier up to 10% on their heating bills per year.

The added flexibility of the wireless system means the siting of the thermostats is no longer limited to where wires can be easily run.

This pack is ideal for installations using an combi boiler where fixed wiring is impractical and full independent timed control of both heating zones is required.

Potential savings with chrono-proportional control:

Control	Energy Saving (%)	Carbon Saving (%)
Mechanical On/Off	-	-
Electronic On/Off	2.10	2.31
Chrono-Proportional	10.35	10.71

Results based on a high efficiency condensing boiler over a 12 hour period.

Please Note: To save energy and increase comfort, TRVs should also be fitted on all radiators in rooms without room thermostats.



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