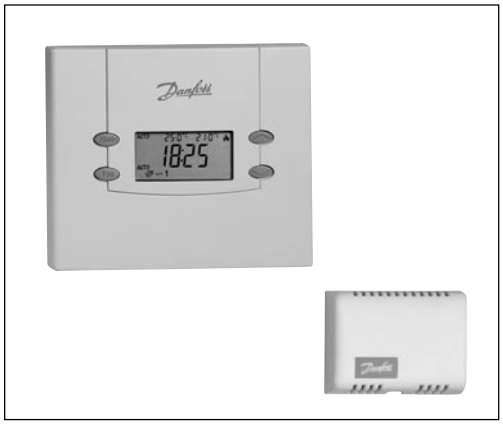
Data Sheet

8000 Series Programmable & Non-Programmable Thermostats for Heat/Cool Applications



The 8000 Series is available in heat/cool versions for conventional heat cool systems with up to 2 stages of heat and 2 stages of cool. Versions are also available for heat pump systems incorporating auxilliary heating systems. The heat pump models which can provide up to 3 stages of heat and 2 stages of cool, also incorporate optional balance point control which improves efficiency.

All models can be used either with the built-in sensor, which is standard or with low cost remote sensors which can be added at time of installation.

For temperature averaging, up to four sensors can be used in a series/parallel arrangement.

Full details of ordering codes, wiring and thermostat specification and settings can be found in the following pages.

Features

The 8000 Series of advanced heat/cool thermostats provides sophisticated sequence control of multi-stage heat/cool systems including air to air heat pump systems with auxilliary/emergency heat. All models are available in programmable and non-programmable versions.

The products, which offer 7 day, 5/2 day or 24 hour programming incorporate advanced programming features which are set up by the installer at the time of installation. These features allow a relatively small number of products to fulfill a wide range of application demands. This significantly reduces the number of thermostats that either a wholesaler or installer need to stock, it also significantly reduces installation and programming difficulties by offering a common architecture across the whole range of models.

In addition to the advanced programming, the product range also incorporates a service mode which allows the installer to step through the heat/cool sequence manually during commissioning.

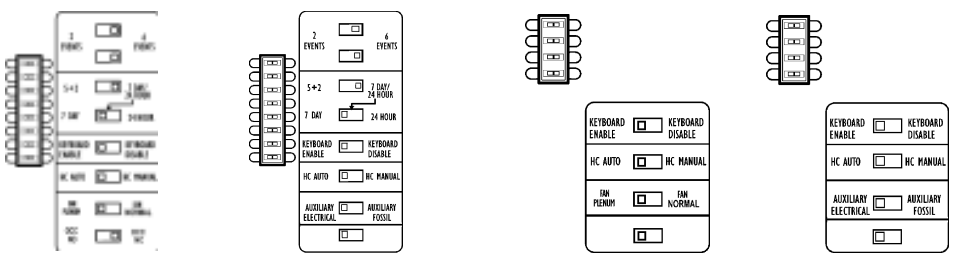
- Available in battery, 24 & 230 volt versions
- Conventional heat /cool versions give up to 2 stages of cool and 2 stages of heat
- Heat pump versions give up to 2 stages of cool and 3 of heat, including emergency heat
- Heat pump version provide both O & B reversing valve outputs
- Advanced programming allows configuration to match application demand
- Service mode simplifies commissioning
- Up to six time and temperature changes each day
- Large easy to read display

Installer Settings

Hardware Settings

A number of DIL switches on the rear of the unit allow the installer to make some basic hardware settings. The diagram below details the selection options:

Programmable **Non-Programmable**



HC models* HP models* HCT models* HPT models*

* unit must be programmed before this switch is set to disable

Software Settings

The 8000 Series incorporates a wide range of installer configurable options which are selected from within an advanced programming mode. A brief description of the options is listed below:

Option	Description	Factory setting	Other options
1	Temperature override timer	Next event	1,2,3 or 4 hours or disabled
2	Fan run-on after cooling timer	Off	30, 60 or 90 Seconds
3	Fan operating mode setting	All	Smart fan (LOC)
4	Heat / Cool dead-band setting	2°C	1,3 or 4°C
5	Limit maximum heating set-point adjustment	30°C	Can be reduced to 6°C in 0.5°C steps
6	Limit minimum cooling set-point adjustment	16°C	Can be increased to 40°C in 0.5°C steps
7	Limit minimum heating set-point adjustment	6°C	Can be increased to 30°C in 0.5°C steps
8	Limit maximum cooling set-point adjustment	40°C	Can be reduced to 16°C in 0.5°C steps
9	Thermostat calibration	0°C	±1.5°C
HP8000 Heat-Pump Models Only			
A	Compressor delay timer	2 min Off, 6 cycles per hour	2 min On/Off, 6 cycles 4 min On/Off, 1 cycle per hour selection or 4 min On/ Off, 3 cycles per hour
b	This option not used		
C	Heat-pump low cut-off adjustment (Active only if outdoor sensor is detected)	-9°C	-30°C to +15°C in 1°C steps
d	Heat-pump balance point adjustment. (Active only if outdoor sensor is detected)	10°C	0°C to 21°C in 1°C steps
HC8000 Heat/Cool Models Only			
A	Cooling source type selection	Compressor, CP YES	Chilled water source CP NO
b	Thermostat cooling stage cycle rate per hour setting. (Only available if ”CP No” is selected in A above)	6 cycles per hour	3 cycles per hour
C	Thermostat heating stage cycle rate per hour setting.	6 cycles per hour	3 cycles per hour
d	Heating stage integral action time selection	5%	2.5% or 10%
All Models with Remote Room Sensor/Duct Sensor			
E	Disable remote sensor option. (Only active if a remote room or duct sensor is detected)	Remote sensor enabled	Remote sensor disabled
	Software version number - please interrogate unit in “Advanced Programming mode”		

Service Mode

In addition to advanced programming settings, the thermostat also incorporates a service mode which allows the installer to manually sequence the heat/cool and fan stages during system commissioning.

Specification

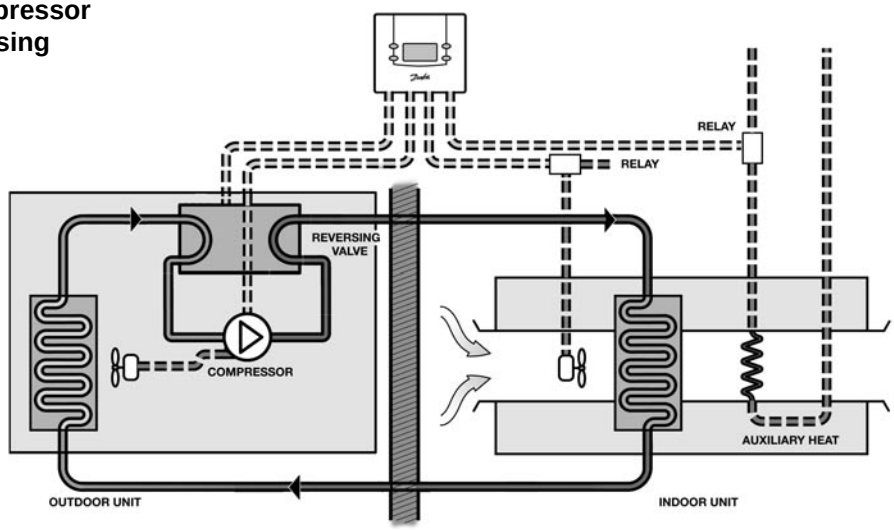
Temperature range	Heating, off 6-30ºC, (43-86°F), Cooling, 26-40ºC (61-104°F), off
Thermal differential	< 1ºC (2°F)
Dead zone options	1-4ºC (2-10°F), selectable by installer
Programming options*	All models can be set for 24hr, 5/2 or 7 day operation by installer
Programmed events per day*	2 or 6 selectable by installer, inc off events for both heat & cool
Vacation programming option	Up to 99 days, heat & cool set points can be set independently
Factory pre-set programmes	Yes, refer to user manual details
Control ouput	PI algorythm with Chrono-proportional output with adjustable cycle rate
Power supply	**Battery powered** 2 x AA batteries **24V power supply** 20-30 Vac, 50/60 Hz **230V power supply** 220/250 Vac, 50/60 Hz
Memory retention	Rechargeable battery for real time (48 hours whenfully charged), non-volatile memory device for all other settings
Fan mode options	Auto, On or Smart-Fan (fan on during day & Auto during night)
User mode selection **Heat/cool models** **Heat pump models**	 Heat/Cool/Auto/Off and holiday and thermostat mode Heat/Cool/Auto/Off plus emergency heat, holiday and thermostat mode
Output relay voltage rating	10-240 Vac
Output relay current rating	2 (1) Amp per relay, min. 10mA
Output relay number & contact type	Varies according to model, refer to installation guide
Installer DIL switch settings	Yes, refer to commissioning guide
Installer advanced programming settings	Yes, refer to commissioning guide
Installer service mode option	Yes, refer to commissioning guide
Compressor delay timer	Yes , all compressor stages, adjustable
Reversing valve control, HP models	Yes, selectable “O” or “B” function with SPDT output controls
Heat pump balance point control	Yes, programmable high and low balance points (outdoor sensor required)
Lockable keypad	Electronic keypad lock, plus mechanical locking catch on cover flap
Limitation of high and low set points	Both heat and cool ranges can be limited or locked
Limitations of temperature override	Can be limited to +/- 2ºC (3°F) or disabled
Temperature Override	Can be limited to “next event”, 1, 2, 3, or 4 hrs disables
Max ambient temperature	45ºC (113°F)
Dimensions (mm)	137 wide x 117 high x 25 deep
* Programmable models only	

Ordering Details

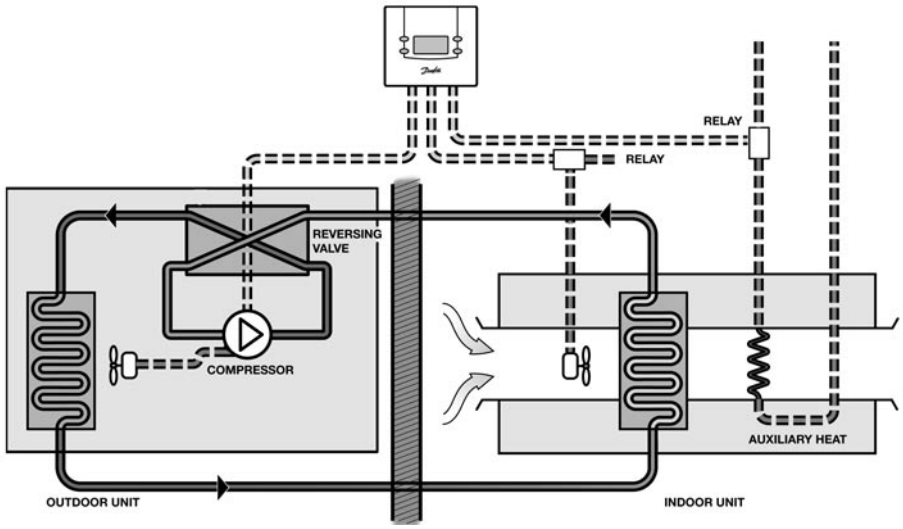
Function	**Programmable**					
	230volt		***24 volt***		***Battery***	
1 Heat, 1 Cool	HC8113-1	087N681800	HC8111-1	087N680700	HC8110-1	087N680300
	HC8113-3	087N690700	HC8111-3	087N690600	HC8110-3	087N690500
2 Heat, 2 Cool	HC8223-1	087N681900	HC8221-1	087N680800	HC8220-1	087N680400
	HC8223-3	087N691000	HC8221-3	087N690900	HC8220-3	087N690800
2 Heat, 1 Cool (Heat Pumps)	HP8213-1	087N682000	HP8211-1	087N680900	HP8210-1	087N680500
3 Heat, 2 Cool (Heat Pumps)	HP8323-1	087N682100	HP8321-1	087N681000	HP8320-1	087N680600
	Non-Programmable					
	230volt		***24 volt***		***Battery***	
1 Heat, 1 Cool	HCT8113-1	087N691900	HCT8111-1	087N681400	HCT8110-1	087N691100
	HCT8113-3	087N694500	HCT8111-3	087N694700	HCT8110-3	087N694800
2 Heat, 2 Cool	HCT8223-1	087N692100	HCT8221-1	087N681500	HCT8220-1	087N691200
	HCT8223-3	087N695300	HCT8221-3	087N695500	HCT8220-3	087N695600
2 Heat, 1 Cool (Heat Pumps)	HP8213-1	087N692300	HPT8211-1	087N681600	HPT8210-1	087N691300
3 Heat, 2 Cool (Heat Pumps)	HP8323-1	087N692500	HPT8321-1	087N681700	HPT8320-1	087N691400
Accessories	(1) All models can use 4 sensor units for temperature averaging (2) Maximum sensor cable length 50m					
Remote room sensor unit (1), (2)	TS2 087N681100					
Duct mounting sensor (2)	TS5 087N681200					
Outdoor sensor (2)	TS6 087N681300					

Application Examples

Heat Pump Applications with 1 heat and 1 cool stage from compressor plus auxilliary heat stage using HP8000 & HPT8000 models

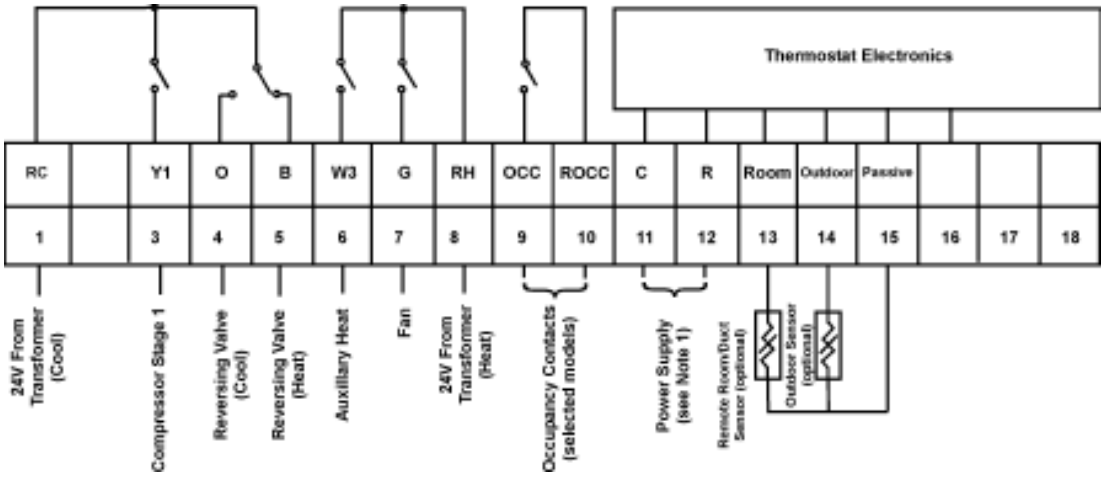


System in heating mode



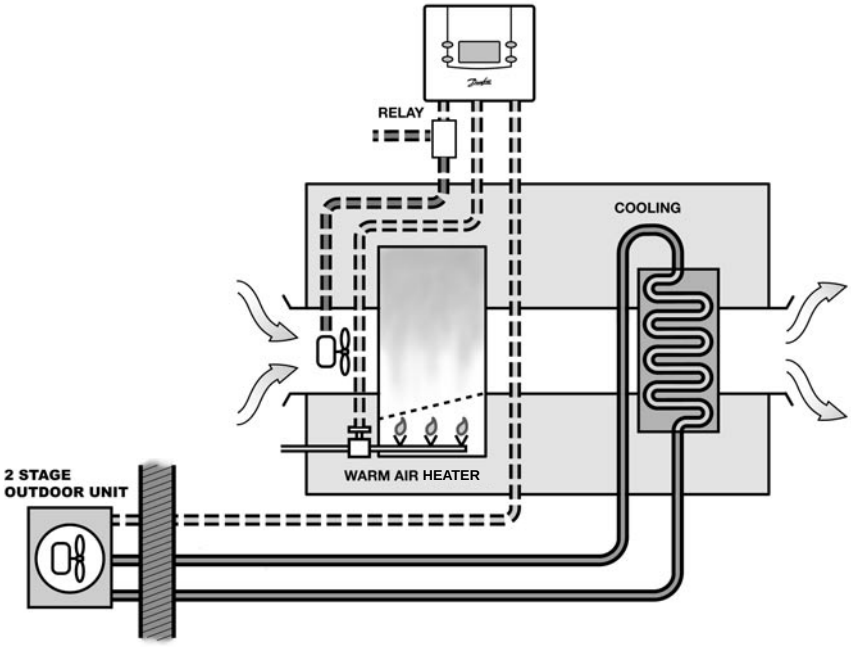
System in cooling mode

HP8210-1, HP8211-1, HP8213-1

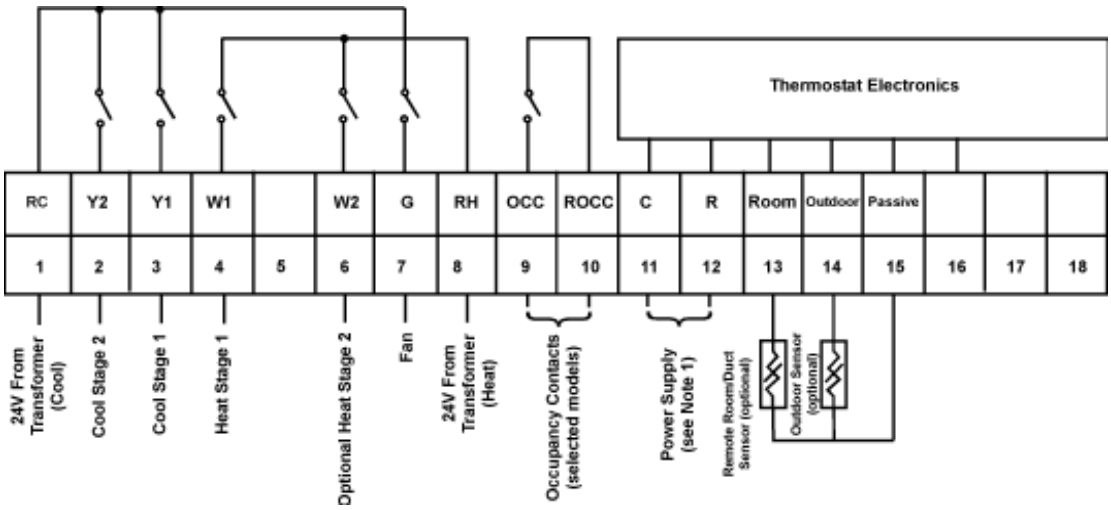


Notes:
1) 24 volt and 230 volt versions only.
   On 24 volt models, power supply is 24 volts AC.
   On 230 volt models, power supply is 230 volts AC.
2) Y2 and W2 only on 2 heat/2 cool models.

Heat/Cool Systems with 1 stage outdoor unit and 1 stage heat from warm air system, using HC8000 & HCT8000 models set for auto change-over.

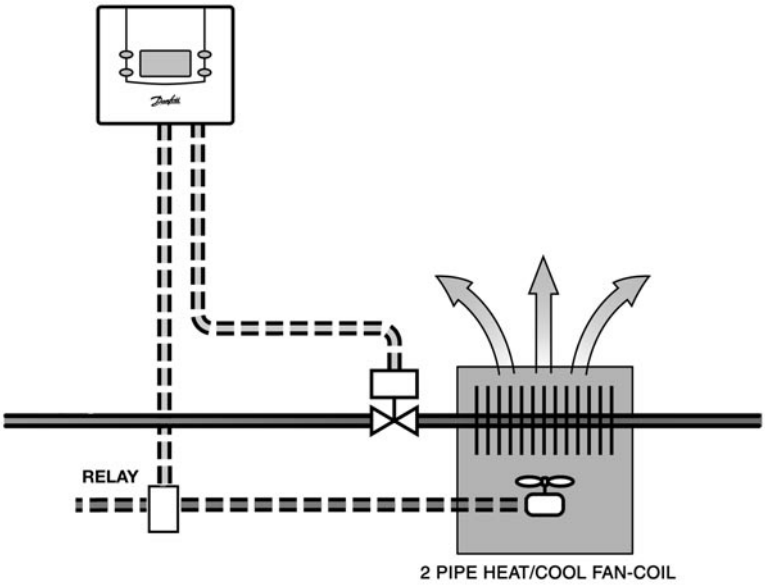


HC8110-1, HC8111-1, HC8113-1



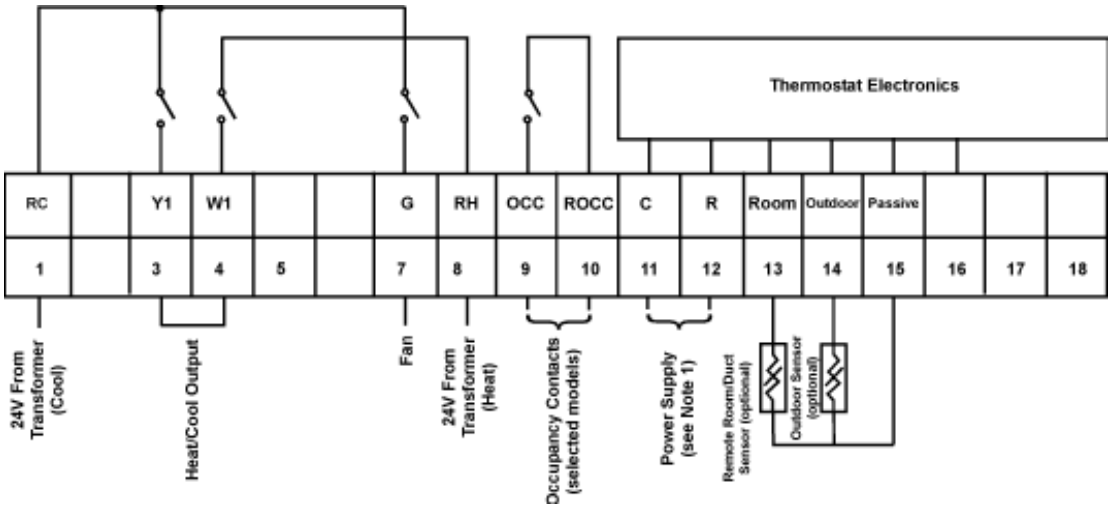
Notes:
1) 24 volt and 230 volt versions only.
   On 24 volt models, power supply is 24 volts AC.
   On 230 volt models, power supply is 230 volts AC.
2) Y2 and W2 only on 2 heat/2 cool models.

2 Pipe Heat/Cool System using HC8000 & HCT8000 models set to manual change-over



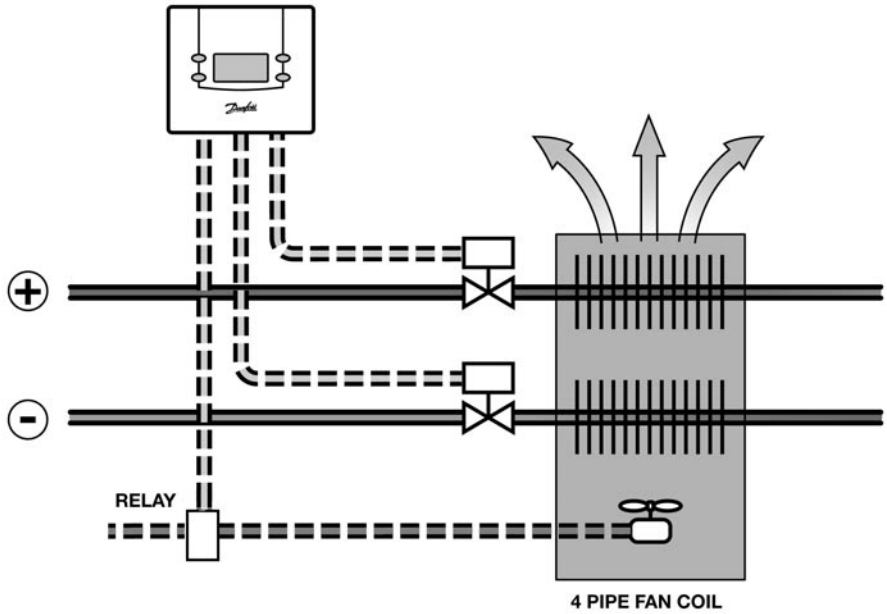
Note: Central system delivers hot water during winter and chilled water in summer.

HC8110-1, HC8111-1, HC8113-1



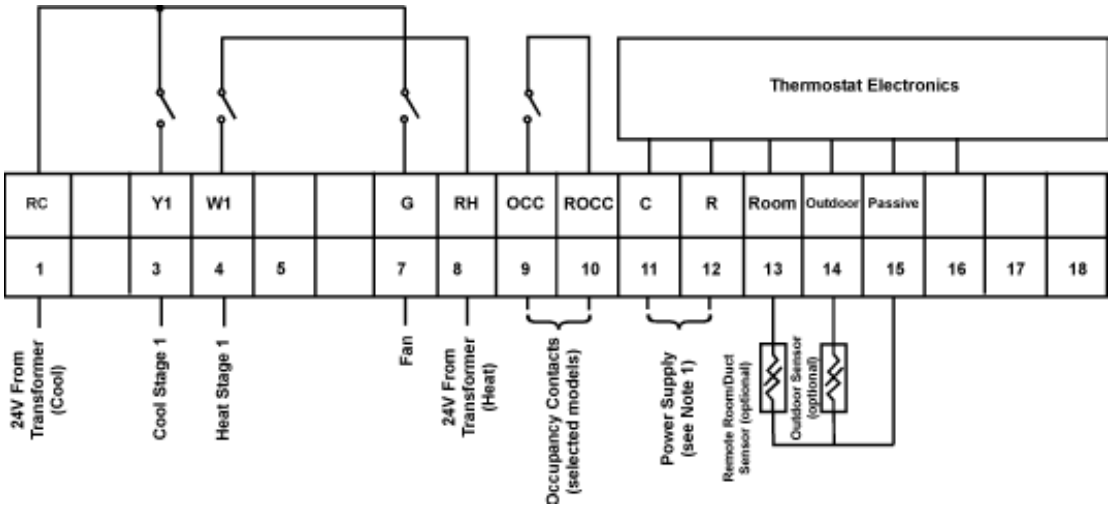
Notes:
1) 24 volt and 230 volt versions only.
   On 24 volt models, power supply is 24 volts AC.
   On 230 volt models, power supply is 230 volts AC.
2) Y2 and W2 only on 2 heat/2 cool models.

4 Pipe Heat/Cool System using HC8000 & HCT8000 models set to auto change-over



Note: Central system delivers both hot and cold water all year round.

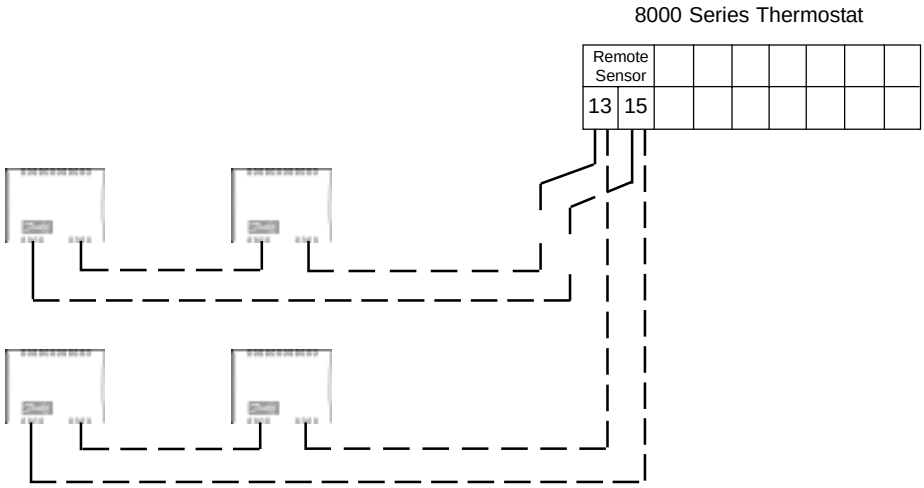
HC8110-1, HC8111-1, HC8113-1



Notes:
1) 24 volt and 230 volt versions only.
   On 24 volt models, power supply is 24 volts AC.
   On 230 volt models, power supply is 230 volts AC.
2) Y2 and W2 only on 2 heat/2 cool models.

Sensor Averaging

Using 4 sensors, wired as shown, temperature averaging can be achieved.



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