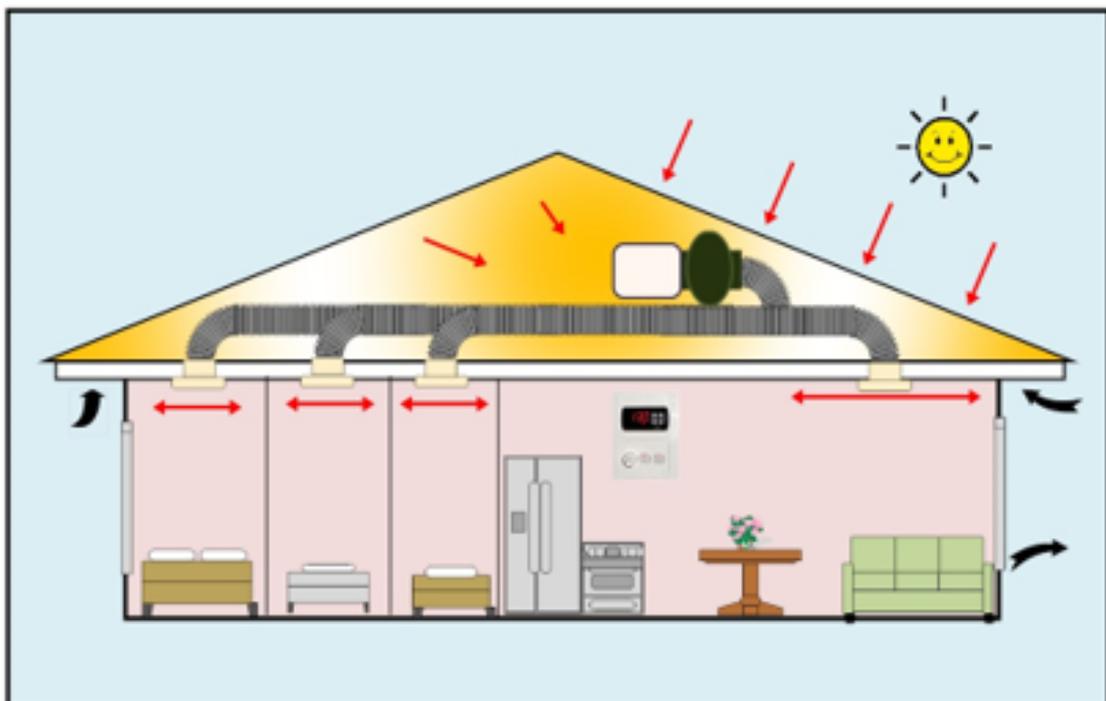


--- How To --- improve air quality in your home and **STOP** crying windows



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PRODUCT OVERVIEW

Introduction

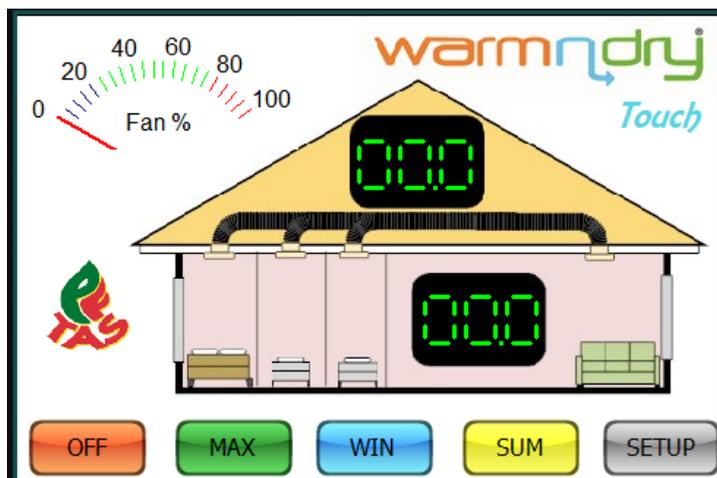
Thank you for choosing our “WarmNDry” Home Ventilation System. We are proud of our product and confident that it will improve your home comfort as a result of a drier, fresher, warmer and a healthier environment.

The Touch Screen Multifunction Smart Home Ventilation Controller can easily adjust the air flow to suit changing family circumstances, seasons and weather. While the factory default settings meet the needs of most customers, we encourage you to experiment with the settings to optimize the system and obtain the maximum benefit from your investment.

Your satisfaction is important to us. If you have any questions or suggestions please contact Customer Support on 03) 6272 0465 or service@pftas.com.au.

Multifunction Smart Home Ventilation Controller

- Fresh air ventilation
- Condensation control
- Heat recovery
- Summer cooling
- Air transfer



The WarmNDry Touch Controller is a programmable smart controller that manages filtered fresh air ventilation, solar heat recovery and around home air distribution automatically. The amount of ventilation and air transfer is determined by the temperatures measured in the roof space and the main living room. The owner can define setpoints that the controller will use to calculate air flow algorithms and automatically control the amount of air movement required to maintain air quality and comfort level.

Fresh Air Ventilation

All houses need a small amount of air introduced from outside to keep us humans healthy. Many homes are built airtight and when we draft proof our home too adequately, we suffer insufficient airflow and ventilation. Indications of poor air quality due to insufficient ventilation are:

- Condensation on windows
- Musty smells
- Damp and mildew
- Water stains on ceilings and walls
- Rotting timber work
- Cold in winter and hot in summer
- High energy bills
- Health issues especially asthma

The WarmNdry system is a mechanical ventilation system using a special EC fan which is economical and quiet with full speed control from 0 to 100%.

Opening a window allows fresh air in however it is not controllable or secure. WarmNdry works 24/7 all year and is basically set and forget.

Condensation Control

Condensation can be eliminated with a small amount of fresh filtered air ventilation into the home. Air needs to be introduced even when the outside temperature is low. The amount of fresh air is determined by the size of the home, number of occupants and how bad the problem is. Too little fresh air and the problem does not get managed and too much will make the home unnecessarily cold during winter or too hot in summer.

The WarmNdry Smart Controller is designed specifically to manage the problem when the outside temperature is cold by reducing air flow to an absolute minimum and then automatically increasing fresh air as the temperature increases.

What Is Condensation?

Condensation inside the home is a result of too much moisture in the air. Inside air is made up of outside air plus whatever we add to it. The occupants of an average home will add up to 15 litres of water to the air per day from breathing, showering, cooking, drying clothes etc.

When moist air cools down below its 'dew point', such as when it contacts a cold surface, the moisture falls out of suspension. Water pools on surfaces and runs down walls etc. Glass windows are usually the first places to show evidence of condensation because they are the coldest surfaces. Condensation is a symptom, **poor air quality** is the cause.

What Problems Can Condensation Cause?

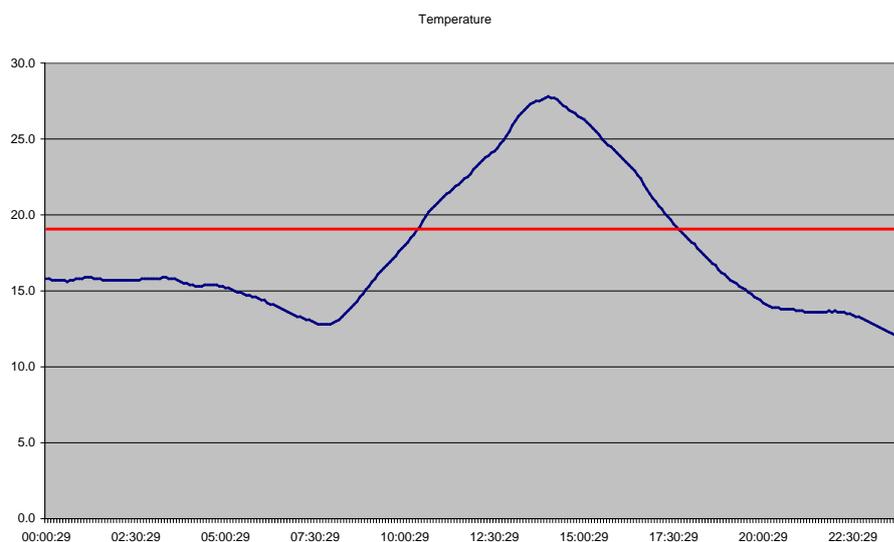
Condensation left untreated can promote mould, mildew growth and damage wood work, furnishings and clothing. Mould spores are known asthma and allergy triggers. Unpleasant odours are caused by damp conditions. Damp houses take more energy to heat, feel unhealthy and are unpleasant to live in. Dust mites thrive in moist conditions.

Heat Recovery

Heat Recovery via the roof space is a cost-effective way to provide FREE heat in autumn, spring and winter during the day. Sun on the roof warms the roof space much more than the outside air, the WarmNdry takes advantage of this and increases air flow which **over** ventilates the home thereby benefiting from the free heat and lots of fresh warm air.

The graph below shows temperature changes in the roof space during a typical day. The sample shows a minimum temp of 12 and a maximum of 28 degrees. The actual outside minimum was just 10.8 and a maximum of just 17 on that day. The difference between the roof and outside temperature is considerable and available as free heat by automatically transferring warmer roof air into the house as required. During summer the heating facility is turned off when the roof is too hot.

The period above the red line is the Heat Recovery period and totalled 8 hours on this particular day. That is, 8 hours with the fan operating at maximum capacity. During this period, warm air (19 to 28 degrees) is transferred into the home reducing the need for other more expensive heating while flooding the house with fresh air as well.



Summer Cooling

During summer the system can increase ventilation when the roof is cooler than the house helping to reduce inside summer temperatures. Most of the benefit will be later on in the night as the outside and roof cool faster than inside the home making it more comfortable for sleeping.

Optional Air Transfer

Warm or cool air generated in the living room can be distributed around the home, typically to the bedrooms. The WarmNdry controller can manage a separate air transfer fan to automatically operate at pre-set temperatures. Air transfer is completely independent to the fresh air ventilation fan and can therefore be operated independently or in combination depending on the air ducting design and the mode set on the Touch Controller.

Ducting

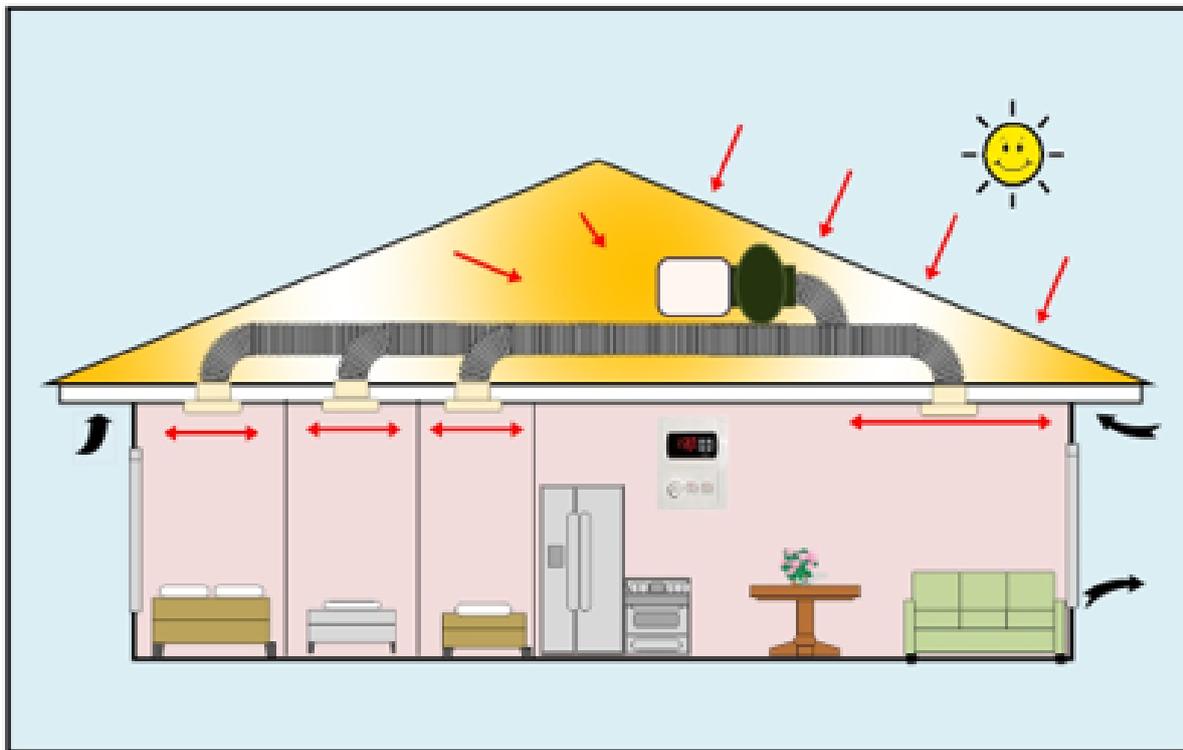
Flexible ducting installed in the roof space is used to distribute air around the home. The duct design is determined by the location of inlets and outlets and what aspects of the control system is being used. If air transfer is required in addition to fresh air ventilation, a second fan with its own ducting is used. Customer service can assist with the duct design to meet individual requirements.

The number of ceiling outlets required will depend on house size, layout and barriers to air flow throughout the home. Normally two to four outlets is sufficient however if internal doors get closed, extra outlets may be required.

Operating Principles

The purpose of the WarmNdry is to ventilate your home with introduced air which is fresher and drier than the air inside your home in a controlled manner. Air from the roof space replaces stale humid air which causes condensation, which can lead to mould and damp problems, or at least to reduce them to an acceptable level.

The diagram (below) shows how the system works. Air is transferred from the roof space because it is always warmer than the outside air. During the colder nights, the roof space cools down (but usually not as cold as outside) and air flow into the home is reduced, but **NOT** stopped completely, to control condensation by providing adequate ventilation.



A small continuous supply of fresh air into the home is required to banish condensation during winter. The ventilation air supply positively pressurises the home causing stale air to be gently forced out through cracks under doors, floor boards etc. This method of positive pressure ventilation (PPV) is the most cost effective way to reduce moisture built up in the home.

Outside doors and windows could be left open, which will allow in the necessary fresh air, however there are a number of draw backs with this approach such as security, inability to control the flow rate (too much or not enough) and the increased heating cost that would be required to overcome these cold draughts in winter.

Heat Pumps (reverse cycle air-conditioners) **do not de-humidify in heating mode** and are only effective in summer cooling mode. Room de-humidifier units are very expensive to run and like

moisture crystals have little effect on moisture. None of them provide the necessary fresh air ventilation that your home requires.

OPERATING GUIDELINES

General

The WarmNdry Touch Controller is a programmable smart controller that manages filtered fresh air ventilation, solar heat recovery and around home air distribution automatically. The amount of ventilation and air transfer is determined by the temperatures measured in the roof space and the living room. The owner can define set points that the controller will use to calculate air flow algorithms and automatically control the amount of air movement required to maintain air quality and comfort level.

Your Home Ventilation System is easy to operate and is basically set and forget. The smart controller will need to be initially adjusted to suit your personal requirements however the default settings will suit most installations.

Experience will determine the best setting. When you have found the correct setting for your home, **leave it there**. During autumn, spring and winter select WIN mode and in summer select SUM mode or the house will become too hot.

The fresh air from your Home Ventilation System is filtered for your protection. The filter should to be replaced every 12 to 24 months. A replacement filter is available from your retailer and is easy to change. The standard filter is a G4 grade is adequate for dust control.

Ceiling vent outlets can simply be cleaned with mild detergent in warm water. Apart from changing the air filter every year, there is no other maintenance required.

Typically a Home Ventilation System can achieve a significant and noticeable reduction in condensation within the first few days, certainly within 1 month. The time required will depend on a number of factors. To maximize the effectiveness of the your system please observe the following points:

- Maintain adequate home heating as required.
- Fine tune the air flow rate by finding the optimum minimum settings.
- Keep all external doors and windows shut during cold winter weather (even during the day).
- Keep internal doors open to allow the fresh air to circulate throughout the home.
- Slightly open curtains to allow air flow to the glass surfaces at night.
- Slightly open wardrobes and drawers to allow air flow around clothing.
- Avoid exhausting moisture into the roof space (eg kitchen, laundry and bathroom exhaust fans should be ducted outside the home as per building regulations and not into the roof).
- Change the filter every year or two.

Touch Screen Control Panel



Modes	Description
OFF	All fans at 0% - not recommended
MAX	All fans at 100% - use to flush house for a short period of time.
WIN	Winter or cool months mode
SUM	Summer or hot months mode
SETUP	Enter the setup parameters, step through 1 to 3 setup screens.
Logo	Touch the Logo to display current configuration and enter demo mode.

Summer Months

During summer the day time roof temperature can become too hot, set mode to SUM. This will stop the house becoming over heated during the day but still provide ventilation when the roof space cools down during the night and morning times.

Colder Months

During the colder months the day time roof temperature can become hot, set mode to WIN to take advantage of the Solar Heat gained in the roof to help heat the home.

Factory Default Settings

Pressing the reset button in Setup Screen 3 will place all the settings back to default so that you can fine tune again from scratch.

Tip: If you have your home sprayed with insecticides by a Pest Control company, switch the "WarmNDry" OFF for 24 hours to allow the sprays to do their job. Don't forget to turn it back on.

Setup Screen 1

HELP SCREEN - 1

Set SP1 from OFF to MAX. The best setting is the lowest setting possible which reduces condensation to an acceptable level.

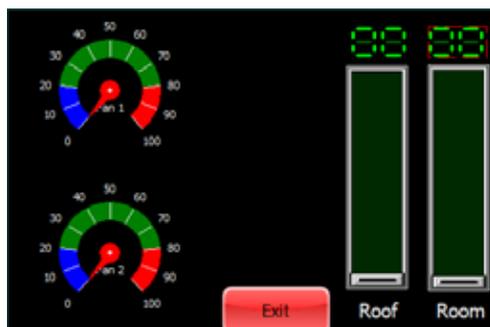
Set SP2 to the temperature that the roof needs to be to switch from condensation control to heat recovery mode (Fan at 100%). Set to between 15 and 25 for free solar gain from your roof space. Default is 18 degrees.

Set SP3 to the lowest roof temperature that you are prepared to accept during winter ventilation mode. To manage condensation SP3 needs to be between 0 and 5 degrees to ensure enough ventilation. The higher the setting the less ventilation control.

Buttons: Next, Demo, Help, Back

Buttons	
SP1	Sets how aggressive the algorithm is to operate the fresh air fan during periods of cool to cold roof temperatures. The larger the house or worse the condensation problem the higher the setting will need to be. If the house does not have a condensation problem at all, SP1 can be set to off but see SP3 below. If condensation is not managed at the MAX setting then a second optional fan will be required to increase fresh air volume above MAX.
SP2	This is the temperature that the roof needs to reach for heat recovery in WIN Mode and night time cooling in SUM Mode to run the fan at its maximum volume which is determined by SP6.
SP3	When the roof temperature is below the SP3 setting, the fresh air fan will turn off. If the house does not have a condensation problem, SP3 could be set at a higher temperature say 10 degrees. This is a better approach than turning SP1 to off because you will still get a small amount of fresh air determined by SP1 and deliver a small amount of ventilation between the SP2 and SP3 roof temperatures.
Next	move to the next setup screen
Demo	open the demo screen
Help	displays the help screen instructions above
Back	return to the Main Screen

Demo Screen



The Demo Screen allows you to manually set the roof and house temperatures to simulate conditions instead of taking actual readings. The F1 and F2 fan speeds will be displayed and are determined by the Mode of operation and all of the setpoints entered. This is a handy tool only, do not leave in this mode. Exit to return.

Setup Screen 2

HELP SCREEN - 2

SP4 adjusts the Screen Saver contrast from OFF (blank) to 10 (full). Default is 5. The screen goes into saver mode after about 3 minutes.

SP5 adjusts the temperature at which the Heat Transfer fan, if fitted, switches on. Room temperature from 18 to 28 degrees, default 23. Above this setting the fan is on moving heat around the house.

SP6 adjusts the speed of the Heat Transfer fan from Off to 100%. Default is 50%.

Buttons: Next, Lock, Help, Back

Buttons	
SP4	Set the screen saver to avoid screen burn after long periods on a high brightness. Touching the screen will wake the screen from the saving mode.
SP5	If a second fan is fitted and the ducting is designed to take advantage of air transfer, SP5 determines when the second fan operates. In WIN mode the fan operates when the room is above SP5 moving warm air from the heated living room into the bedrooms. In SUM mode the second fan operates when the living room is below SP5 moving cool air from an air-conditioned to the bedrooms. SP5 also sets the maximum <u>room</u> temperature and will turn the ventilation fan off.
SP6	Sets the high speed of all fans. MAX mode on the main screen overrides SP6 and runs all fans at 100%. The larger the house and the more outlets installed, the higher this setting needs to be.
Next	move to the next setup screen 3
Lock	Optional setting to restrict access to the Setup Screens.
Help	displays the help screen instructions above
Back	return to the Main Screen

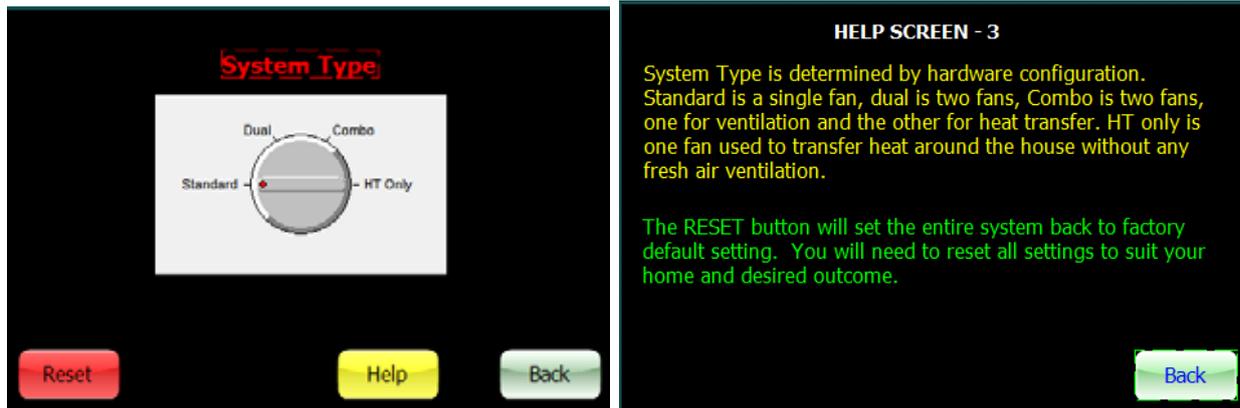
Lock Screen

Enter your 2 digit PIN Code

Next: **Code Check OK** Enter

If set will restrict access to the setup screens and the OFF Mode. This is called the Landlord lock out to stop unwanted setup changes. To set the lock enter a number into each of the two dials and press enter. To unlock enter the same numbers which clears the lock. Repeat to relock.

Setup Screen 3



Buttons	
Type	Standard – single fan for fresh air ventilation but no air transfer Dual – two fans for fresh air ventilation but no air transfer Combo – two fans, one for fresh air ventilation and one for air transfer HT Only – one or two fans but no fresh air ventilation.
Reset	Factory reset to defaults and start the setup again.
Help	displays the help screen instructions above
Back	return to the Main Screen

Logo Screen



The Logo screen displays the customer service contact details, software revision and diagnostic information. The Demo Screen can also be accessed from here.

Operating Modes and Types

ÿ **WIN Mode – Type = Standard**

- Spin FAN1 to ventilate using an algorithm when the roof temperature is between SP3(5) and SP2(18). ** The number in brackets is the default value.*
- Spin FAN1 to SP6*10 if the roof is warmer than the house when the house is below SP2(18)
- Spin FAN1 to SP6*10 when the roof is > SP2(18)
- Turn FAN1 OFF when the house is above SP5(23)
- FAN2 = OFF

ÿ **WIN Mode -Type = Dual**

- As above for Standard except FAN2 speed = FAN1

ÿ **WIN Mode – Type = Combo**

- Spin FAN1 to ventilate using an algorithm when the roof is between SP3(5) and SP2(18).
- Spin FAN1 to SP6*10 if the roof is warmer than the house when the house is below SP2(18)
- Spin FAN1 to SP6*10 when the roof is > SP2
- Turn FAN1 OFF when the house is above SP5(23)
- Spin FAN2 to SP6*10 when FAN1 is running else FAN2 = OFF
- Spin FAN1 to SP6*10 when the room is above SP5(23)

ÿ **WIN Mode – Type = HT**

- Spin FAN1 and FAN2 to SP6*10 when the room temperature is greater than SP5(23) else both OFF

ÿ **SUM Mode – Type = Standard**

- Spin FAN1 to ventilate using the algorithm when the roof temperature is between SP3(5) and SP2(18).
- Spin FAN1 to SP6*10 if the roof is cooler than house when the house is above SP2(18)
- FAN2 = OFF

ÿ **SUM Mode – Type = Dual**

- As above for Standard except FAN2 = FAN1

ÿ **SUM Mode – Type = Combo**

- Spin FAN1 to ventilate using an algorithm when the roof is between SP3(5) and SP2(18)
- Spin FAN1 to SP6*10 if the roof is cooler than the house when the house is above SP2(18)
- Spin FAN1 to SP6*10 when house is below SP2(18)
- Spin FAN2 to SP6*10 when the house is between SP3 (5) and SP5(23) else FAN2 = 0

ÿ **SUM Mode – Type = HT**

- Spin FAN1 and FAN2 to SP6*10 when the house is below SP5(23) else both OFF

CUSTOMER SERVICE

Warranty

For your peace of mind all “WarmNdry” product come with a full 3 year on site parts and labour warranty service for systems that were installed by an approved installer. A travel charge may apply for installations that are greater than 30km from your local retailer.

If your system was installed by anyone other than an approved installer, faulty products should be returned for warranty repair and or replacement during the 3 year warranty period commencing from the date of purchase.

Performance Expectations

Home Ventilation Solutions guarantees the performance of the system in controlling condensation problems in the customer's home. The customer should expect condensation free windows and other dampness problems to be reduced and controlled, as long as the customer follows the Operating Guidelines. In some instances, misting on glass may still occur to a small degree. It is also possible that some condensation may still occur during climatic extremes.

Typically a “WarmNdry” system can achieve a noticeable reduction in condensation within 1 or 2 weeks, and often immediately. Moisture levels will continue to decrease but it could take up to 12 months to reach the maximum benefit.

Heat Recovery and cooling Expectations

WarmNdry is not a home heater or cooler. The benefits that can be expected from the system in heat recovery mode will depend on the sun and the roof structure. Whenever there is heat gain in the roof space, it is available to transfer as long as the control panel is set correctly.

Troubleshooting

- 1. Thermostat display is on and Fan is showing air flow but there is no air coming out of the outlets.**
 - a. Duct work in the roof space has come apart.
 - b. The ceiling outlets are wound up and closed.
 - c. The filter is blocked.
 - d. System failure (contact HVS).

- 2. Thermostat display is off.**
 - a. Power failure.
 - b. Unit has been unplugged in the roof.
 - c. System failure (contact HVS)

- 3. Still getting some condensation problems.**
 - a. Slowly increase SP1 to increase air flow over 2 or 3 days to find the optimum setting for your home.
 - b. Check that air is not escaping through open vents, windows or doors. Air flow will take the path of least resistance which will deprive other areas of adequate air flow.
 - c. Ensure that the air can reach the effected rooms. Open internal doors or add outlets if required.
 - d. Check and adjust the settings of SP1 and SP2 if necessary (check with HVS).
 - e. Check the filter.
 - f. Do not use un-flued gas heaters in the home.
 - g. Ensure exhaust extraction fans are not dumping moisture into the roof space.
 - h. Check for other sources of moisture that could effect the roof space such as ground water or rising damp or uncovered gravity feed water tanks or water leaks or no vapour barrier (sisalation) under an iron roof.
 - i. Curtains should be left open slightly to allow air flow to reach the glass during the night and fully open during the day. Drilling holes in the top of enclosed pelmets can also help ventilate behind closed curtains.

- 4. I no longer get condensation but the house is colder at night .**
 - a. Adjust SP1 control down to the point just above where condensation returns. This will be the correct and minimum setting required to achieve control without over ventilating when it is cold outside.
 - b. Increase the house heating slightly to compensate for the necessary ventilation during very cold periods.

- 5. The house is too hot**
 - a. In warmer weather switch to SUM Mode.
 - b. Reduce SP5.

- 6. I can smell an odour**
 - a. You may notice some odour from the roof space for the first few days after the system is installed or if the roof space has been disturbed. This is normal and will

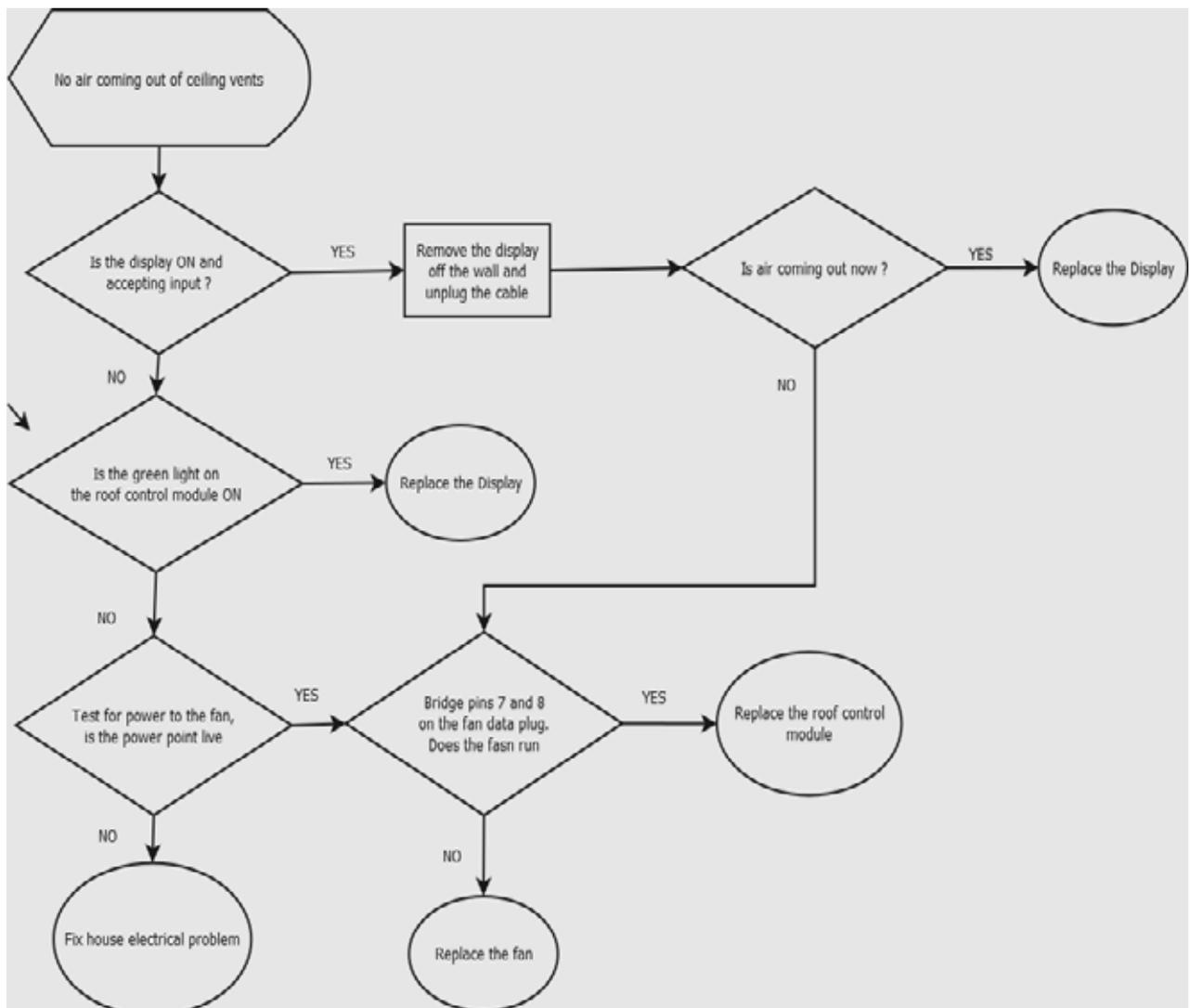
disappear once it settles down and the roof space becomes ventilated by outside fresh air.

- b. Ensure exhaust extraction fans are not introducing smells into the roof space. If so then add an extension and vent exhaust fans to outside.

7. I can hear a noise

- a. It is possible that you may hear a very faint hum from the “WarmNdry” fan in the still of night, this is normal.
- b. You will hear the flow of air from the outlets and possibly the fan during heat recovery mode because the fan is operating at maximum speed, this is normal.
- c. SP6 sets the maximum fan speed when ventilating and is adjustable from 50% to 100%. The higher the setting the more air is transferred and increased noise.

Hardware fault finding



Appendix A - Sample data

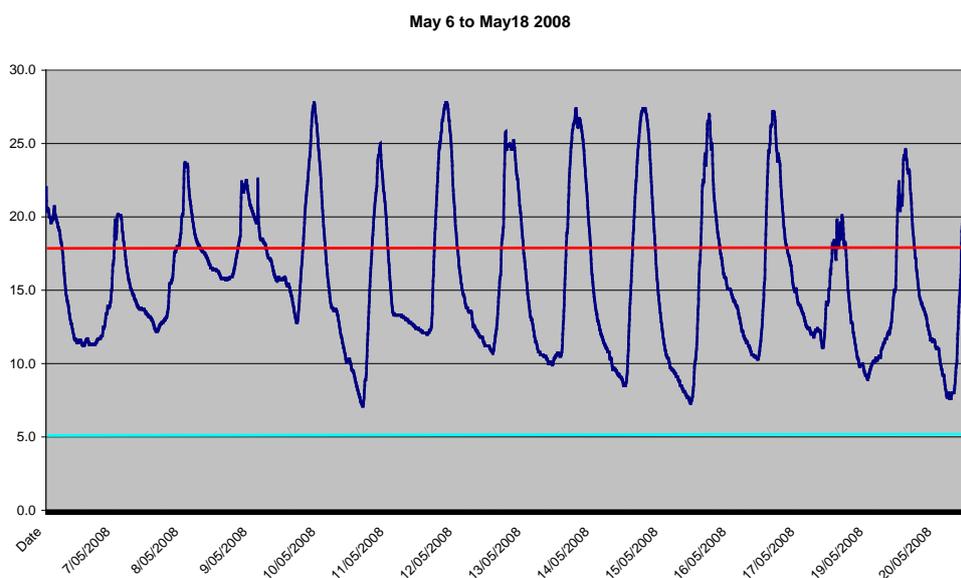
Hobart, Tasmania

May 2008 Daily Weather Observations

Source Bureau of Meteorology

Date May	Day	Temps	
		Min	Max
		°C	°C
6	Tu	9.2	15.6
7	We	8.8	15.6
8	Th	9.0	19.2
9	Fr	13.6	19.5
10	Sa	10.8	17.0
11	Su	5.0	13.8
12	Mo	7.6	16.0
13	Tu	8.2	18.1
14	We	8.9	18.9
15	Th	7.2	18.9
16	Fr	8.0	18.9
17	Sa	10.1	19.9
18	Su	9.7	14.5
19	Mo	8.8	18.4
20	Tu	6.2	16.8

The following graph shows the roof space temperature at 108 Gormanston Road Moonah for the period 6 May 08 to 20 May 08. The blue line = SP3 (5 degrees) and the red line is SP2 (18 degrees). The period between the two lines is the ventilation mode and the period above the red line is the heat recovery mode.



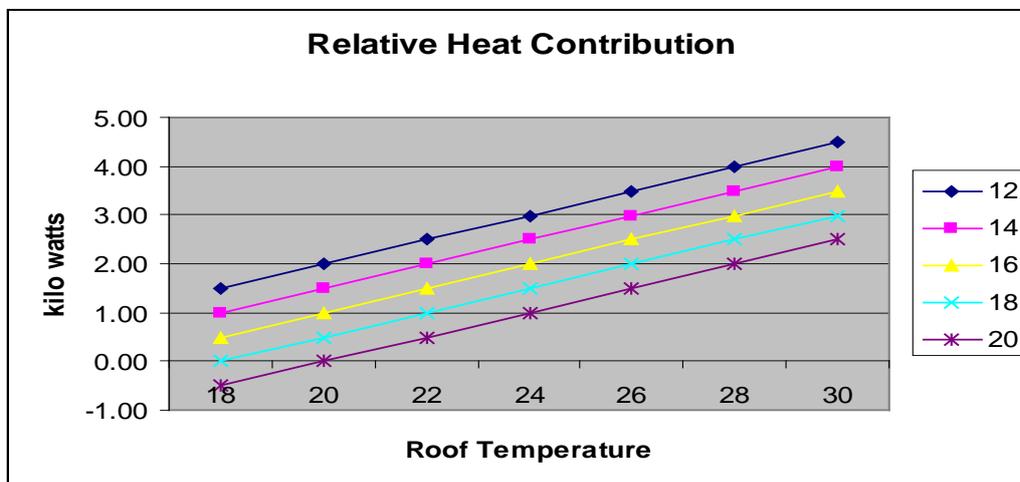
Appendix B - Heat Recovery Calculations

The amount of heat or loss that can be contributed to the home is dependant upon the following factors:

- Outside temperature and atmospheric pressure which effects the “Air Density”
- Roof temperature (sun and roof structure etc)
- House temperature (thermal mass, insulation and other heat sources/losses)
- Air flow (fan speed and capacity)

$$\text{Power (kw)} = (\text{Air Flow}) \times (\text{Air Density}) \times (\text{Roof Temperature} - \text{House Temperature})$$

The following graph shows the expected heat gain in kilowatts based on assumptions that the atmospheric pressure is normal at sea level (1013 mbar), air density is constant @ 1.24 kg/m³ and that flow rate is 200 l/s.



Each coloured line on the graph represents various house temperatures which determines the relative heating/cooling effect from the incoming air. If the air temperature in the roof is the same as inside the house, then obviously there is zero heat gain. If the roof temp is greater than the inside air then there is a gain. Conversely if the roof air is colder than inside the home then there is a heat loss.

Graph examples:

- If the house temperature is 16 degrees (yellow line) and the Roof Temp is 26 degrees, the heat gain is 2.5kw (2,500 watts).
- If the house temperature is 20 degrees (purple line) and the Roof Temp is 26 degrees, the heat gain is 1.5kw (1,500 watts)
- If the house temperature is 20 degrees (purple line) and the Roof Temp is 18 degrees, the heat loss is 0.5kw (500 watts)

During condensation control mode (roof temp between SP2 and SP3), the fan speed is reduced which reduces the amount of heat loss to as little as 170 watts in the worst case scenario (outside temp of 3 degrees, inside temp of 12 degrees and roof temp of 5 degrees). Typical night

time condensation control mode of say 8 degrees outside, 12 degrees in the roof and 16 degrees inside would account for only 100 watts of heat loss (that of a light bulb).

The above does not take into account the significant energy savings resulting from the drying effect (displacement of moist humid air with dryer fresh air).

DUCTING DESIGN AND LAYOUT

150mm (6 inch) flexible ducting is typically used to direct the fan output to required locations throughout the home. Usually the ducting is located in the roof space which provides easy access to all of the rooms on that level.

Ceiling Outlets

The two main types of ceiling outlets are:

- Cone – used to direct air across the top of the ceiling suitable for all ventilation conditions. Also used as the **inlet** vent for heat transfer.
- Down Jet – used to direct air flow from the ceiling outlet to the floor suitable for heat or warm air transfer.

Flexible Ducting

The two types of ducting are :

- Nude ducting is used for ventilation designs, the air from the roof space is being distributed to rooms via ceiling outlets so there is no need for the more expensive insulated type.
- Insulated ducting is required for air transfer where warm or cool air is extracted from one room (main lounge where a heater or cooler is located) to other room via the roof space.

Duct splitters and branches

The two types of duct splitters that can be used to split the ducting into two or more ducts which allows branching to multiple outlets are :

- Y splitters which have a single inlet and two outlets which divide the air 50:50.
- Branch Take Off's (BTO) which have a single inlet and one 45 degree outlet and a straight through outlet which are more suited to a drop off branch from a main trunk.

G4 Air Filter

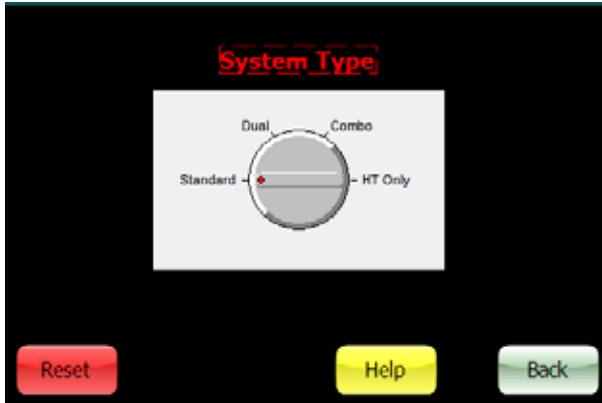
Fresh air ventilation which is taking air from the roof space needs to be filtered to stop any disturbed dust in the roof from entering the system. The filter supplied for WarmNdry is a 10 micron or G4 rated filter which stops pollen and dust particles >10um. The filter will not stop smoke and is not designed to. Heat Transfer does not require any filter as it is simply moving house air from room to room.

EC Electric Fans

EC fans connect to the Smart Controller to vary speed and air flow. EC (Electronically Commutate) fans are brushless, permanent magnet DC motors with onboard electronics available for controlling a fan rotor. EC fans achieve high efficiency levels reducing energy and heat loss providing longer service life. EC fans speeds are controllable between 0 and 100% without the humming noise associated to older AC fan types.

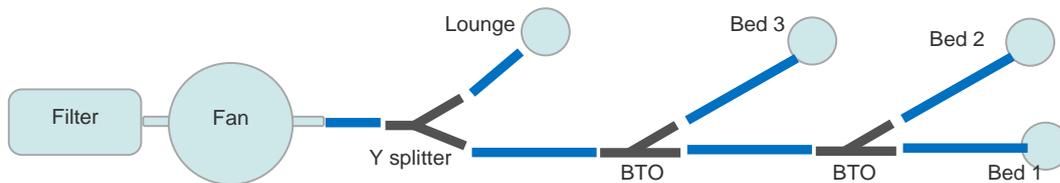
INSTALLATION

The type of system to be installed is set in Setup Screen 3. The ducting is designed to facilitate the **type** and is dependent on home design, see below.



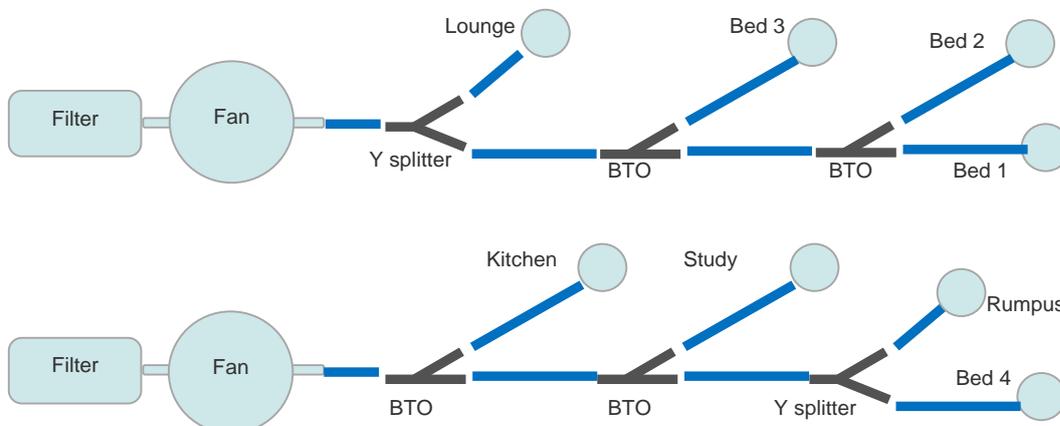
Standard Type

Uses a single fan for fresh air ventilation only but no air transfer. Split 50% of the air flow to the main living room where the controller is located and the other 50% split between bedrooms. Nude ducting is suitable as are cone vents in the ceiling.



Dual Type

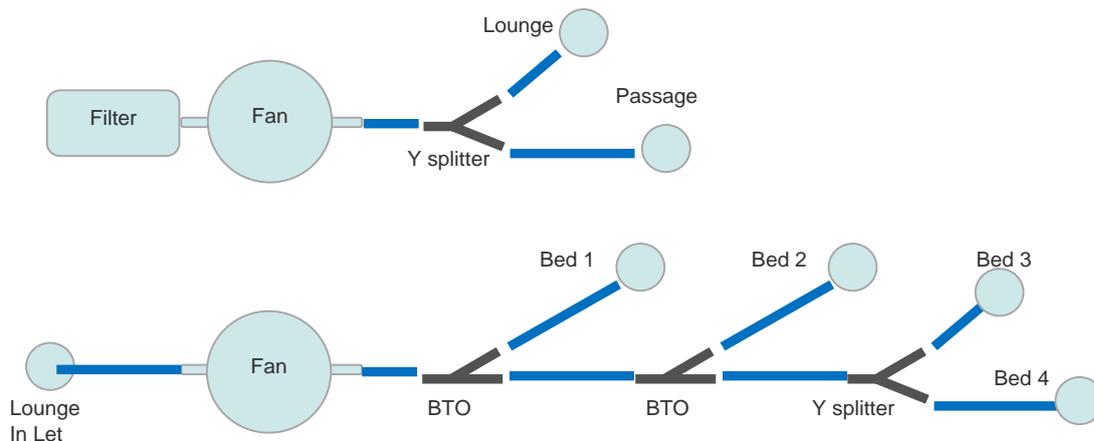
Uses two fans for fresh air ventilation only and no air transfer. Split 50% of the air flow to the main living space and the rest to other rooms. Nude ducting is suitable as are cone vents in the ceiling.



Combo Type

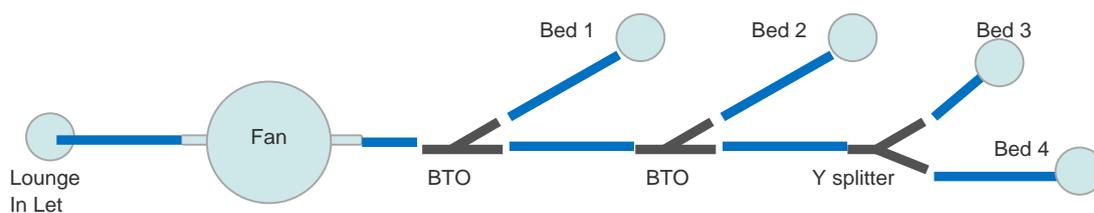
Uses two fans, one for fresh air ventilation and one for air transfer. Split fresh air from the roof space to the main living room where the controller is located and the other 50% to the passage.

The second fan extracts air from the main living room where the heater and or cooler is located and sends it to the bedrooms. The fresh air from the ventilation fan is dispersed by the second heat transfer fan. Nude ducting is suitable as are cone vents in the ceiling for the first fresh air part however insulated ducting and down jets are required for the second Heat Transfer part. Use a cone for the inlet.



HT Only Type

Uses one or two fans for Heat Transfer but no fresh air ventilation. Warm or cool air is extracted from the main living room and is sent to the bedrooms. Insulated ducting and down jets are required for Heat Transfer. Use a cone for the inlet.



Cable connections

The Touch Screen display should be mounted at chest height in a suitable location in the **main living room**. A 10m CAT5 data cable connects the display to the roof controller via a wall cavity. A computer DB9 cable located on the fan is also connected to the roof controller. The roof controller can accommodate two fans, F1 and F2. F1 is the top connector and F2 the bottom.

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