Silent dMEV Set-Up & Commissioning Instructions

IMPORTANT: READ THESE INSTRUCTIONS BEFORE COMMENCING THE INSTALLATION

All wiring to be in accordance with the current I.E.E. Regulations, or the appropriate standards of your country and **MUST** be installed by a suitably qualified person.

This guide is for information only and **NOT** intended as an installation or wiring guide for the end user unless they are a qualified electrician.

Please note that the installation of any Tornado extraction unit not undertaken by a qualified electrician will void the 5-year warranty.

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DESCRIPTION

The ST100DMEVS and ST100DMEVHT are continuously running extract fans for kitchens, utility rooms, bathrooms, and toilets. They incorporate an airflow detection system that detects the installation duct resistance and maintains the correct fan speed to achieve the preset extract flow rate.

The incorporated LED display allows the installer to configure the fan to suit its installation.

The fans can be wall, window or panel/ceiling mounted.

This companion document to the Installation and Wiring Instructions is an additional setup and commissioning guide for both ST100DMEVS and ST100DMEVHT models.

As a continuously running unit with multiple functions, commissioning the units can be a little daunting. This document will guide you through the process, explaining what each function is, what it does, and the different ways each can be set up to allow you to make informed decisions about how you want your Tornado Silent dMEV to behave.

We suggest you keep the original Installation and Wiring Instructions document to hand, as you will occasionally be referred to it for further information.

Fan extraction speeds will be given in litres per second (l/s) in this guide. If you are more used to metres cubed per hour (m3/h), you can convert using this easy equation:

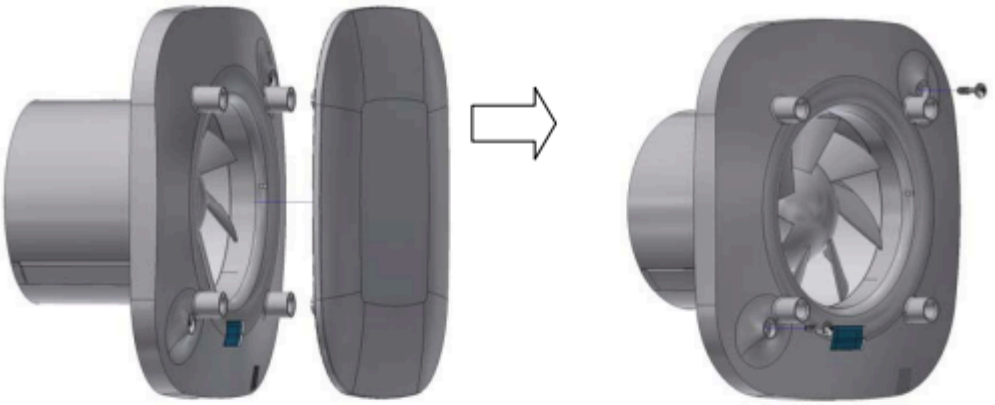
l/s x 3.6 = m3/h

As an example:

25l/s x 3.6 = 90m3/h

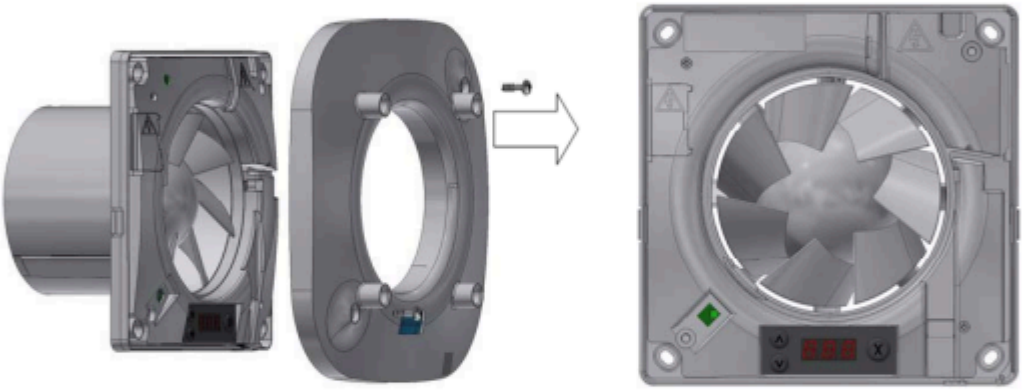
Accessing the Control Panel

To configure the fan, first remove the grille. With the grille removed, the control buttons are visible. Do NOT isolate the fan from the power supply, as configuration requires power to the fan.

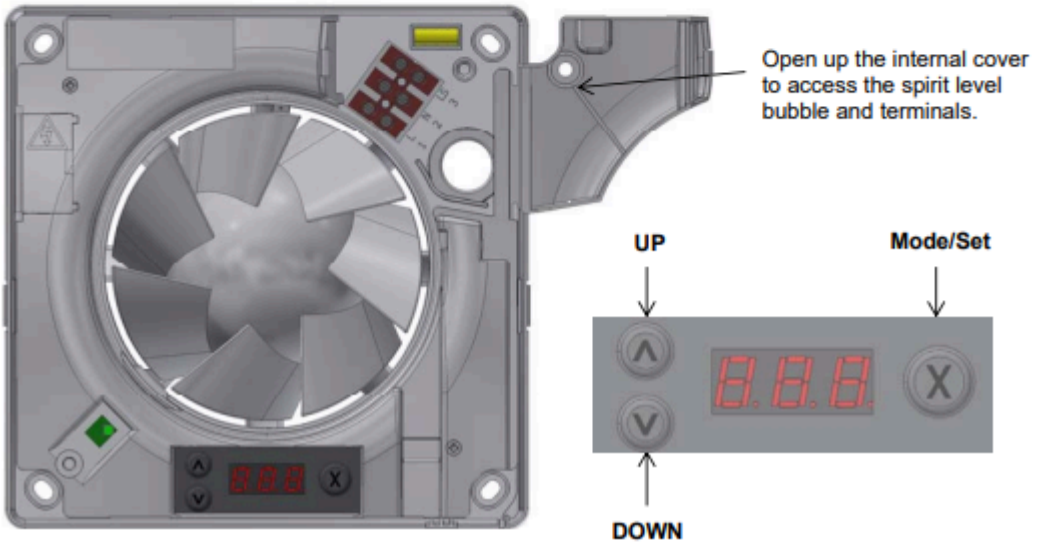


Pull front panel as shown.

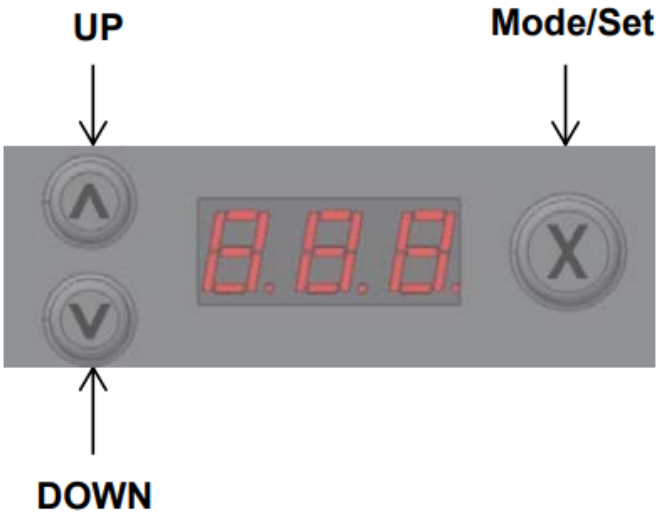
Loosen screws – DO NOT REMOVE FROM GRILLE
(the screws are self-retaining)



Pull inner grille away from housing as shown.



Display modes



When first powered on, the display will run through an initialisation sequence and then activate prism mode (readable through the prism when the cover is on).

When a button is pressed, the display will go into the menu system and display as viewed without the prism.

The display will return to prism mode after 30 seconds of inactivity (i.e. no button presses). When activating the menu, the initial button push will not change any settings.

Prism Mode

When the controller is in ‘prism mode,’ the display is mirrored so that the characters are shown correctly when viewed through the prism fitted in the fan cover.

When activated, prism mode will run for 15 minutes and cycle between displaying:

- Airflow rate - The speed the fan is currently running at.
- Estimated duct pressure (if CV / **F-2** mode enabled) - See Constant \ Volume/Fan Control Mode for more information
- Current percentage of Relative Humidity in the room (HT models only)

The calibration process will run after the first 15 minutes (if CV / **F-2** mode is enabled); see Advanced settings for further details.

F-2 Mode Calibration Reset

In some circumstances, it may be necessary to reset the calibration settings (if the fan was covered to prevent dust/damage/or poor weather outside).

1. Reset the calibration by configuring the fan for wall or duct mode (**F-0** or **F-1**).

2. Isolate the power to the unit and re-power, essentially turning the fan off and on again.

3. Reconfigure back to CV mode **(F-2**). The fan will calibrate after 15 minutes.

Menu

If the buttons are pressed, the display goes from prism mode to direct view mode, and the menu is activated. If the buttons are not pressed for 30 seconds, the display reverts to prism mode.

The (Up) button is used to increase the value of a setting

The (Down) button is used to reduce the value of a setting

The (Mode/Set) button is used to advance to the next menu item.

The fan has the following ‘menu’ modes:

- Standard (press any button from normal runtime),
- Advanced/Engineer (hold (Down) + (Mode/Set) for 5 seconds (***HT models only***)

Settings options

The Installation and Wiring Instructions include the tables below regarding the settings options.

Standard settings:

Display text	Configuration Option	Selections			Default
r-n	Rotate display	r-Y = display rotated	r-n = display normal		r-n
tr1	Trickle speed adjustment	100mm: 0*, 5 to 30 l/s (Max limited by Boost Selection)			6l/s
bSt	Boost speed adjustment	100mm: 6 to 35 l/s (Min limited by Trickle Selection)			13 l/s
b15	Boost Overrun time	b0 to b30 – 0 to 30 minutes (0 disables overrun)			15
h70	Humidity level trigger	h40 to h90 - 40% to 90% relative humidity			70% RH
F-0	Fan Control Mode	F-0 = CV disabled, wall / window installation	F-1 = CV disabled, ducted installation	F-2 = CV Constant Volume enabled	F-0
c-n	Comfort mode	c-n = normal LS overrun	c-Y = comfort mode		c-n

***If "0" is selected, the fan switches to Intermittent mode.**

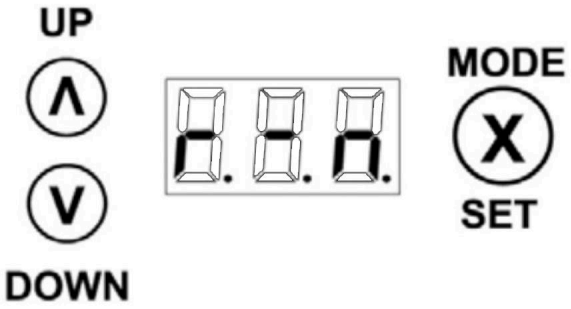
Advanced settings:

Display text	Configuration Option	Selections		Default
A-4	RH Ambient Response	A-Y Ambient Response enabled	A-n Ambient Response disabled	Enabled
P-4	RH Rapid Response enable	p-Y = Rapid Response enabled	p-n = Rapid Response disabled	Y

- **In the following pages, we will cover each of these settings in more detail.**

Standard Settings

Rotate Display Setting



What is this?:
This setting allows you to rotate the display, allowing the text to be legible through the prism mounted on the front grille.

As mentioned above in the prism mode section, when activated, prism mode will run for 15 minutes and cycle between displaying:

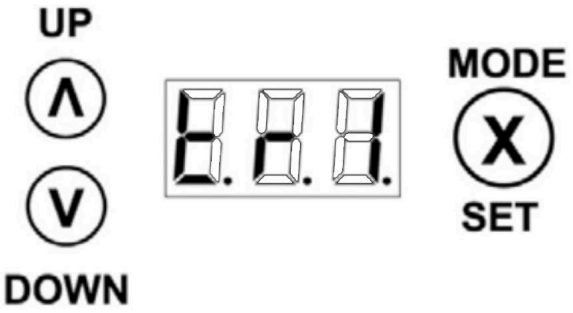
- Airflow rate - The speed the fan is currently running at.
- Estimated duct pressure (if CV / **F-2** mode enabled) - See Constant \ Volume/Fan Control Mode for more information
- Current percentage of Relative Humidity in the room (HT models only)

Viewing the display through the prism will both flip and mirror the display text, making it difficult to read.

When set to **r-n,** the display is not rotated and allows you to read the menu settings while making adjustments.

Changing the display to **r-y** displays the information so that it appears legible when viewed through the prism when the cover is replaced.

Trickle Speed Setting



What is this?:
This setting allows you to adjust the speed at which the fan will extract when in Trickle Mode.

The fan defaults to 6l/s, which is a good base trickle speed for most UK bathrooms. If the fan is being installed in a bathroom that is currently struggling with damp and/or mould, but maintaining a near-silent background running noise is important, the recommended setting for the trickle speed is 10l/s. This can be adjusted down to a more relaxed level once the fan has addressed the damp and mould issue to maintain a dryer environment.

The operating range of the trickle speed is dependent on the boost speed level - the trickle will not surpass the boost speed level. The maximum Trickle range is 5l/s - 30l/s.

The trickle speed can also be set to 0l/s, which bypasses the trickle function, making the fan run as an intermittent on/off fan. This can be used during summer months when outdoor temperatures allow for natural passive venting with open windows to minimise the running costs of the unit. We do not suggest switching the fan to intermittent mode during colder weather.

For installations in rooms that are already struggling from excessive condensation, damp and /or mould issues, we recommend setting the trickle speed to at least 10l/s. This will still be very quiet running, but will increase the performance of the fan to tackle these issues faster. You can set the trickle higher than 10l/s if required - the higher the speed, the quicker the room will improve, but higher speeds will make the fan's running noise more noticeable. In extreme cases, this may be a compromise worth making initially.

Boost Speed Setting

What is this?:
This setting allows you to adjust the speed at which the fan will extract when in Boost Mode.

The fan defaults to 13l/s, which is the minimum boost speed required for a continuous-running fan installed in a kitchen under UK building regulations (Part F(1) section 1.22). This ensures that, should the fan default to factory settings, the unit will still be compliant with the minimum extraction requirements, no matter what room the fan is installed in.

For bathrooms and wetrooms with showers, the recommended setting for the boost speed is 20 - 25l/s. If the room suffers from damp and/or mould, it is suggested to initially set the boost to the maximum of 35l/s. This can be adjusted down to a more relaxed level once the fan has addressed the damp and mould issue to maintain a consistently dryer environment.

The operating range of the boost speed is dependent on the trickle speed level - the boost will not drop below the trickle speed level. The maximum Boost range is 6l/s - 35l/s

Current UK Building Regulations require continuous running fans such as the Tornado dMEV to run at the minimum speeds shown in the table below on their boosted settings for the following rooms. We have also included our recommended settings for optimal performance per room for you:

Room	Minimum Requirement	Recommended Settings
Kitchen	13l/s	30l/s
Utility Room	8l/s	25l/s
Bathroom/Wetroom	8l/s	25l/s
Sanitary Accommodation	6l/s	15l/s

Boost Overrun Timer Setting (HT Model Only)

What is this?:
This setting allows you to adjust the amount of time the fan will continue to run at the boosted speed once the light is turned off.

If you have the HT model wired with both a constant live and switched live, the fan will operate manually when the switched live is activated. When the switched live is deactivated, the overrun timer will continue to allow the fan to run at the set boost speed for the period to which it has been programmed.

The Boost Overrun Timer defaults to 15 minutes, which is regarded as the optimum period for a fan to continue to run to help remove any residual moisture after showering or bathing.

The boost timer can be adjusted from 1 - 30 minutes and can also be disabled if required by setting the timer duration to 0.

If the humidity in the room is high enough to trigger the fan to boost, regardless of whether the initial trigger was manually via the switched live connection, the timer will not start to count down until the humidity has dropped below the set humidity % trigger value (see Humidity Level Trigger Setting section for more details).

Humidity Level Trigger Setting (HT Model Only)

What is this?:

This setting allows you to adjust the humidity threshold trigger level. This is the level at which the percentage of humidity in the room's atmosphere will need to reach to automatically trigger the fan to boost from the trickle speed. The range can be set between 40% and 90% humidity - the higher the percentage set, the higher the relative humidity needs to be in the room to trigger the fan to boost. Therefore, the lower the setting, the more sensitive the fan will be to humidity rises in the room, and the higher the setting, the less sensitive the fan will be to changes in humidity.

Humidity sensors help to control the base level of moisture in a space. Rooms such as bathrooms, which have a changeable humidity level due to bathing, washing and showering, can benefit from fan units that automatically react to the changing humidity levels. In dMEV fans, humidistats have a dual role.

Firstly, automatically triggering the fan to boost with rises in humidity helps to remove excess airborne moisture that manifests as steam in the air before it can cool and condense onto surfaces during showering or bathing.

Secondly, some condensation onto surfaces is inevitable. As the central heating during colder months and naturally higher air temperature in warmer months gradually re-evaporate this surface moisture after use of the bathroom, the humidity in the room can rise again. The humidistat will again boost the fan to remove this moisture at a higher rate to help recondition the room to a lower moisture level as swiftly as possible.

dMEV units will constantly trickle in the background, helping to remove this re-evaporated moisture, but in rooms where a larger build-up of condensation occurs, having the automatic response to boost if this moisture level climbs to higher levels helps to speed up the room's recovery.

When initially powered, the Humidistat defaults to trigger when the relative humidity in the room reaches 70%. As the prism display cycles, it shows the current percentage of Relative Humidity in the room. This can help you decide

at what level of humidity you want the fan to automatically boost. Bear in mind, if the relative humidity in your bathroom when the room is not in use is higher than the level you have set the humidistat to trigger, the fan is likely to run at its boost speed setting rather than drop to the trickle speed setting. We suggest initially leaving the humidistat setting at 70% when initially installed. If you find the fan is often triggered to boost at unwanted times - ie, in the middle of the night - it will be worth checking the relative humidity level on the prism and adjusting the humidistat to trigger at a higher percentage to reduce unwanted nuisance triggering.

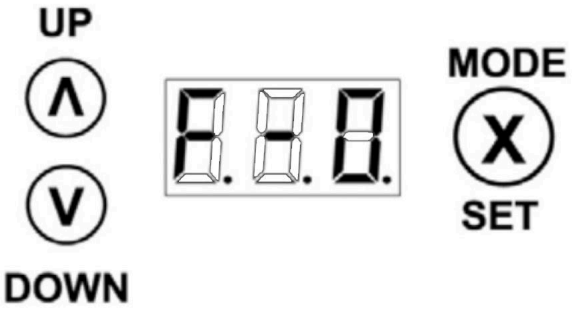
There are two different wiring options for the ST100DMEVHT,

Switched Live, Constant Live and Neutral*: This allows for manual triggering to boost from either a dedicated switch, as well as automatic triggering via the humidistat*

Constant Live and Neutral*: This omits any manual triggering of the fan to boost, leaving the humidistat to automatically boost when required. This wiring option is popular in en suites to minimise triggering the fan to boost during short visits to the bathroom during the night.*

See Advanced Settings for further Humidity settings and options.

Fan Control Mode Setting



What is this?:

This setting allows you to choose the correct running mode for the fan for optimal extraction. The fan can be installed directly through an external wall, through a window with the ACR60WK window kit, or on a ducted run up to 7m in a straight line. Longer ducting runs create more air resistance, which puts fan motors under additional strain and slows the extraction rate. The different running modes compensate for this to maintain the desired extraction speeds for both trickle and boost settings.

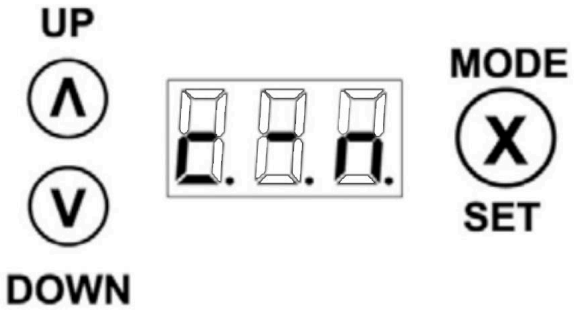
NB: Not many ducting runs will be perfectly straight, and there is often a need for a 90-degree bend in the run. It is worth noting that every 90-degree bend has the equivalent air resistance of 1m of straight duct. Therefore, a four-metre run with one 90-degree bend has the equivalent air resistance of a 5m straight run.

For installations directly through an external wall or via a window kit, **F-0** mode is required. These installations require no additional support to maintain the desired extraction rates.

For ducted installations, such as ceiling-mounted positions with a ducted distance before reaching the external venting point, **F-1** is required. This mode uses a pre-set speed boost to maintain the extraction level, both for trickle and boost modes, to cancel out the effect of the raised air resistance created by a ducted distance.

F-2 mode activates the Constant Volume setting. This mode, which can be used in either wall/window or ducted installations, uses the in-built UKAS-calibrated airflow sensor to calculate the additional air resistance exerted on the fan by the ducted distance and adjusts the fan speed to maintain the desired extraction rates accordingly. The sensor can also adjust the running speeds against changes in the air resistance caused by wind and draughts. This is a useful setting for installations where the exhaust grille is on an exposed wall, helping to maintain the extraction volume regardless of the external weather - recommended setting for Utility Rooms.

Comfort Mode Setting



What is this?:
This setting allows you to delay the boost function when manually triggering the switched live (**LS**) connection.

With comfort mode disabled (**c-n**), the fan will go into boost as soon as the The **LS** connection input is detected and then overruns for the set period after the **LS** is turned off.

With comfort mode enabled (**c-y**), the fan will remain off/in trickle mode for up to a maximum of 20 minutes. If the **LS** is still on after 20 minutes, the fan will automatically switch to boost mode. If the **LS** is deactivated within the 20 minutes, the fan will switch and run at boost mode for the length of time the **LS** was switched on, up to a maximum of 20 minutes plus the set overrun time.

If the **LS** was activated for less than 3 minutes in comfort mode, the boost mode will not be triggered to prevent nuisance activations - for instance, short trips to the bathroom in the middle of the night.

It is worth noting that humidity levels will override the comfort mode. If you shower with comfort mode on, as soon as the humidity in the room reaches the set trigger point, the humidistat will boost the fan regardless of the comfort mode setting to protect your room from the raised moisture content.

Advanced Settings - HT Model Only

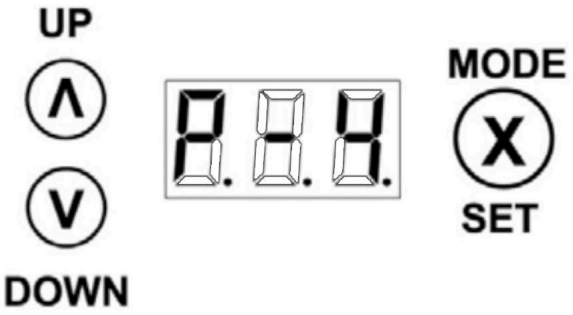
Relative Humidity Ambient Response Setting

What is this?:

This setting works in conjunction with the Humidistat to maximise energy efficiency by adjusting the fan speed proportionally from the trickle setting to the boost setting, in line with the relative humidity trigger % setting, up to an additional 10% of relative humidity.

As an example, let's take the following settings: Trickle speed set to 10l/s, boost speed set to 25l/s and humidity trigger point set at 70%. As soon as the humidity reaches 70%, the fan will start to ramp up the speed of the extraction from 10l/s in line with the humidity rise, reaching 25l/s should the humidity reach 80%. This helps to minimise energy usage. Should the humidity rise be dealt with before reaching 80% humidity, the fan will have used less power to deal with the moisture before returning to the trickle speed setting.

Relative Humidity Rapid Response Setting



What is this?:
This setting works in conjunction with the Humidistat to maximise the efficiency of the removal of humidity by intelligently detecting rapid rises in humidity, even when below the trigger humidity level.

If a rapid rise in the ambient humidity is detected in the room, the fan will increase in speed proportionally between the trickle and boost settings until the humidity lowers again in an attempt to control the humidity before it can take hold at a higher RH%.

As an example, let's take the following settings: Trickle speed set to 10l/s, boost speed set to 25l/s and humidity trigger point set at 70%. If the relative humidity in the room is 50% and you run a hot shower, the ambient humidity in the room is likely to rise at a rapid pace. The humidity sensor, recognising this swift rise in humidity, will start to increase the fan speed even if the humidity in the room hasn’t reached the set trigger level of 70%. In doing so, the fan has a head start on controlling the moisture level in the room, which will have the knock-on effect of minimising the amount of steam that can condense on surfaces before the trigger setting is reached and can also result in less energy being used by reducing the time running at full boost, as well as allowing the fan to run at a lower speed initially, resulting in less power consumption.

Initial Commissioning Advice

The tables below give each parameter, its default setting and our suggested troubleshooting settings for the ST100DMEVS and ST100DMEVHT. These settings will allow you to minimise variables initially to ensure the unit is operating as it should.

ST100DMEVS Troubleshooting Commissioning Settings

Parameter	Default Setting	Suggested Troubleshooting Setting
r-n	**r-n**	**r-n**
tr1	**6l/s**	**0l/s**
bst	**13l/s**	**35l/s**
F-0	**F-0**	**Set to either F-0 or F-1, depending on your installation.**
c-n	**c-n**	**c-n**

1. Set the fan as shown in the table above, the unit should be running at maximum boost when the switched live is operated and dormant when the switched live is turned off.

2. If this is correct, you can now adjust **tr1** to 5l/s. Now the unit should still boost to 35l/s when the switched live is activated, but now trickle at 5l/s when the switched live is deactivated.

3. If this is correct, the fan is working correctly, and you can now set your parameters as you wish, including activating the Comfort Mode if desired.

Initial Commissioning Advice Continued

ST100DMEVHT Troubleshooting Commissioning Settings

Switched Live, Constant Live & Neutral Wiring Configuration

Parameter	Default Setting	Suggested Troubleshooting Setting
Standard Settings		
r-n	**r-n**	**r-n**
tr1	**6l/s**	**0l/s**
bst	**13l/s**	**35l/s**
b15	**15 minutes**	**0 minutes**
h70	**70%**	**90%**
F-0	**F-0**	**Set to either F-0 or F-1, depending on your installation.**
c-n	**c-n**	**c-n**
Advanced Settings		
A-Y	**Enabled**	**Disabled**
P-Y	**Enabled**	**Disabled**

The advanced Relative Humidity Ambient Response & Rapid Response Settings on the ST100DMEVHT models work well together to intelligently control the Indoor Air Quality and moisture levels of a bathroom or wetroom. However, when initially installing your new ST100DMEVHT fan unit, we suggest setting both of these options to the off position so that their functionality doesn't confuse your understanding of the fan's standard settings.

1. As for the ST100DMEVS above, set the fan as shown in the table above, the unit should be running at maximum boost when the switched live is operated and dormant when the switched live is turned off. This will also effectively neutralise the humidistat for now, as well as the overrun timer

2. If this is correct, you can now adjust **tr1** to 5l/s. Now the unit should still boost to 35l/s when the switched live is activated, but now trickle at 5l/s when the switched live is deactivated.

3. If this is correct, you can now adjust the overrun timer if required. We recommend setting this to 15 minutes for a bathroom with a shower/bath.

4. To set the humidistat trigger percentage, we suggest looking at the current Relative Humidity, which will be displayed on the screen when the fan reverts from the menu screen. This will allow you to make an initial educated guess as to what percentage will be suitable for triggering the fan when the shower is in use, but minimise nuisance triggering from ambient humidity levels. As an example, if the ambient humidity is shown as 65%, we would suggest a humidity trigger % of around 75%. You may find that this level needs tweaking, especially if you are installing in summer months, as colder air in winter months can often cause ambient humidity to change, causing unwanted nuisance triggering.

5. If this is correct, the fan is working correctly, and you can now set your parameters as you wish, including activating the Comfort Mode and two advanced humidity settings if desired.

Initial Commissioning Advice Continued

ST100DMEVHT Troubleshooting Commissioning Settings

Constant Live & Neutral Only Wiring Configuration

Parameter	Default Setting	Suggested Troubleshooting Setting
Standard Settings		
r-n	**r-n**	**r-n**
tr1	**6l/s**	**0l/s**
bst	**13l/s**	**35l/s**
b15	**15 minutes**	**0 minutes**
h70	**70%**	**Set to 10% above the current RH% of the room as shown on the Prism Display on initial power-up.**
F-0	**F-0**	**Set to either F-0 or F-1, depending on your installation.**
c-n	**c-n**	**c-n**
Advanced Settings		
A-Y	**Enabled**	**Disabled**
P-Y	**Enabled**	**Disabled**

The advanced Relative Humidity Ambient Response & Rapid Response Settings on the ST100DMEVHT models work well together to intelligently control the Indoor Air Quality and moisture levels of a bathroom or wetroom. However, when initially installing your new ST100DMEVHT fan unit, we suggest setting both of these options to the off position so that their functionality doesn't confuse your understanding of the fan's standard settings.

1. As for the DMEVHT with switched live, constant live and neutral wiring above, set the fan as shown in the table above; the unit should not be running at all initially. If you have set the humidity trigger % to 10% above the current humidity level shown on the prism after initial power-up, run your shower on the hottest water setting. The fan should spring into life once the humidity rises by 10% in the room.

2. If this is correct, you can now turn off the shower and adjust **tr1** to 5l/s. The unit should still boost to 35l/s until the humidity level drops back to below the trigger %, at which point, the fan should slow to the low trickle speed.

3. If this is correct, you can now adjust the overrun timer if required. We recommend setting this to 15 minutes for a bathroom with a shower/bath.

4. As mentioned above, you may find that the humidity trigger level needs tweaking, especially if you are installing in summer months, as colder air in winter months can often cause ambient humidity to change, causing unwanted nuisance triggering.

5. If this is correct, the fan is working correctly, and you can now set your parameters for the two advanced humidity settings, if desired. Please note that without the switched live connection, the Comfort Mode is rendered inactive as the fan will only be activated via humidity, which overrides the comfort mode function.

Notes

Use the table below to make a note of your preferred/current settings. Should the fan need to be reset, or if the unit resets to the default factory settings after a power cut, you can use your notes below to reset the parameters quickly and easily:

Parameter	Default Setting	Your Current Settings		
Standard Settings				
r-n	r-n			
tr1	6l/s			
bst	13l/s			
b15	15 minutes			
h70	70%			
F-0	F-0			
c-n	c-n			
Advanced Settings				
A-Y	Enabled			
P-Y	Enabled			

Unit 34, Chess Business Park,
Moor Road,
Chesham,
Buckinghamshire,
HP5 1SD