

# TomTech

## Micro Range

Ventilation, Heating and Screen Controllers



*MicroVent and Micro Screen Installation*

The **Tomtech Micro** range of controllers provide high performance, low cost control for heating, ventilation and screens. Easy to use, with a built in LCD display in plain English, simple 3 key keypad and 'set' knob for changing settings.

The controllers are built to the same very high standard as all other Tomtech products. They are housed in tough polycarbonate cases with hinged clear polycarbonate lid and stainless steel hinges for long life.

All heating and ventilation controllers are supplied with a high quality aspirated screen containing an electronic temperature sensor and air circulation fan with 25 metres of cable to connect the screen to the controller. The Micro Screen is supplied with a light sensor instead. Other sensors can be added measuring humidity, heating pipe temperature, wind speed etc. where greater versatility is required.

**2 Year Guarantee** All equipment in the range is protected to IP54. As a result we are able to give a full 2 year guarantee (providing the equipment has been installed and used in accordance with the instruction manual).

**Easy and Flexible Programming** Programming is in plain English and is very easy. Just follow the on-screen prompts and answer 'Yes' or 'No' with a 'Set' knob to edit all numeric values by turning to increase or decrease the setting. All set points are stored in non volatile memory and are not lost if there is a power failure. All controllers have a built in battery supported clock providing independent day and night settings. Day and night start times may be 'Fixed' so they always remain the same or set to track with sunrise or sunset.

**Keeping You Informed** As well as programming the settings the display will show monitoring information of all measured values and, where appropriate, information about the heating, ventilation and screens being controlled. Lights on the front of the controller show when a vent, screen or heating valve is opening or closing and when on/off heaters are on.

**Easy Installation** Installation is easy. The controllers are supplied with an aspirated screen or light sensor and sensor cable. The polycarbonate case is pre-drilled and supplied with cable glands. Two screwdrivers and a pair of wire cutters are the only tools required.

## **Micro Vent - Ventilation Controller**

Provides full proportional control for glasshouse vents such that the vents open and close in small steps. The hotter it gets the more they will open. If the temperature remains constant the vents will sit still providing the best possible control with the minimum of vent wear.

Set points for day and night periods define the venting temperature above which the vents will open to cool the greenhouse, and a lower minimum temperature below which the vents will be fully closed. Between these values the vents may be programmed to minimum vent allowing gentle air change with minimum heat loss.

### **Humidity Control Option**

An electronic humidity sensor may be installed in the aspirated screen. When connected additional day and night humidity thresholds and humidity vent opening sizes may be programmed allowing the controller to help with humidity reduction between the minimum and venting temperatures.

### Light Influence Option

Connect a light sensor and all temperature settings can be influenced by the light intensity. This will typically allow higher temperatures to be maintained on brighter days matching the greenhouse temperature to the plants ability to grow.

### Wind Speed Option

When the wind speed anemometer is connected the display will show the current wind speed and a high wind threshold together with high and low wind opening limits may be programmed. As the wind speed approaches this threshold the vents will progressively close so that they closed right down to the high wind threshold when this is exceeded.

### Rain Sensor Option

To prevent rain entering the vents an electronic rain sensor may be installed. A programmable rain limit defines the maximum the vents may open when it is raining.

## **Micro Vent Plus - Windward/Leeward Ventilation Controller**

This controller has similar features to the Micro Vent but adds independent control for the vents on each side of the greenhouse ridge. It is ideal where the greenhouse is in an exposed position or venting and low temperatures. It is supplied with a weather station measuring both wind speed and wind direction which allow it to always use the most sheltered vents whenever possible.

The day and night temperature and humidity settings are the same as for the Micro Vent. It has the same light influence and rain limits. Additional settings provide four wind limits, low wind, high wind (wind along the ridge), windward high wind and leeward high wind giving maximum flexibility and control.

## **Micro Heat 1 - On/Off Heating and Cooling Controller**

The controller for on/off heating and/or cooling systems. The Micro Heat 1 will simultaneously control on/off heating and cooling with a programmable band between the two. It is supplied with an aspirated temperature sensor and has independent day and night set points.

### Humidity Option

By connecting a humidity sensor the heating may be used to reduce the humidity by 'cycling' it on and off to add a little extra heat between the heating target temperature and higher maximum air temperature. This will help to dry out the greenhouse with the minimum of fuel use.

### Light Influence Option

Add a light sensor to allow the heating and maximum temperatures to be adjusted according to the available light. This provides both crop growth and fuel saving benefits by using reduced temperatures on dull days and higher temperatures when it is brighter.

## **Micro Heat 2 - Mixing Valve Heating Controller**



*Micro Heat Installation showing controller, aspirated screen, mixing valve and pump*

The Micro Heat 2 provides day/night fully proportional control for hot water heating systems by directly controlling the mixing valve modulating the flow of hot water to the greenhouse pipes.

### Pipe Control Option

Install a pipe temperature sensor into the hot water flow pipe after the mixing valve and connect it to the Micro Heat 2. This will allow the control to display the water flow temperature and adds maximum and minimum day and night pipe temperature set points. The minimum pipe temperature is maintained whenever the air temperature is below the maximum air temperature providing gentle background heat when the air temperature is just above the heating target temperature.

### Humidity Option

Humidity control is achieved by raising the pipe temperature if the humidity is too high and therefore requires both the pipe temperature and humidity sensors to be installed.

### Light Influence Option

Varies the target temperatures in a similar way to the Micro Heat 1. By always maintaining the optimum temperature for the light available this will give improved growth and reduced fuel use.

## **Micro Climate 1 - Proportional Vent + On/Off Heating Controller**

Combines all the features of the Micro Vent with the Micro Heat in a single controller. This controller has independent day and night settings for both heating and ventilation with all the options for humidity control, light influence, rain and wind sensors described above.

## **Micro Climate 2 – Proportional Vent + Mixing Valve Heating Controller**

All the features of the Micro Vent combined with the Micro Heat 2 in a single controller. The Micro Heat 2 provides full proportional control for greenhouse ventilation and hot water heating system with all the options for humidity control, wind and rain limits described above.

## **Micro Screen – Thermal, Shading and Blackout Screen Controller**

The controller for thermal, shading, blackout internal and external screens. The Micro Screen has two separate control programmes either of which can be selected to suit the screening application. A light sensor is supplied with the controller, other sensors can be added as options.

For thermal/shade screens the controller primarily controls the screen according to the light level. It opens and closes the screen at either end of the day as the light level increases and decreases. This maximises the light available to the plants while closing the screen for thermal protection when light levels are very low.

For blackout screens the open and close times may be programmed allowing full control of day length.

Both programmes open the screen in the morning in two stages. Initially to provide a 'gap' allowing air above and below the screen to gradually mix before opening fully eliminating the thermal shock to the plants.

Both programmes can use the screen for shading by partially closing the screen to the shade position when it is too bright. The shading position is programmable allowing air movement while shading.

### Temperature Control Option

Connect an aspirated temperature sensor to the screen and additional settings allow the night time closing to be qualified by air temperature so that the screen can remain open when it is warm. It also allows the screen to shade when it is too hot.

### Humidity Control Option

An electronic humidity sensor can be installed in the aspirated screen with the temperature sensor. When this is fitted it will allow the screen to gap back at night to help with reduction of night time high humidity. For propagation applications it will also provide a humidity shading setting that will close the screen to the shade position during the day if the humidity falls too low.

### External Screen Options

External screens can have all of the options described above. In addition a wind speed sensor can be fitted which can be programmed to open the screen if it is too windy. A rain sensor can be set to close the screen when it is raining.

## **Micro Controller Specifications**

**Enclosure:** Grey polycarbonate with clear hinged polycarbonate lid. Stainless steel hinges.

**Dimensions:** 210mm wide, 190mm high, 130mm deep. Allow at least 80mm. to the left of housing for lid to open.

**Power Requirements:** 230v AC (or 110v to order) 50 or 60Hz, 6VA

**Controller Outputs:** Volt free relay, single pole contacts, rated 230v 5A max. May be used to switch low power and control circuits directly or used with contactors for 3 phase motors etc.

**Signal Outputs:** Low voltage (24v max) to suit Tomtech sensors.

**Sensors:** All sensors are electronic and have the following measurement ranges:-

Air temperature	-5 to +45C
Pipe temperature	0 to 100C
Humidity	0 to 100% RH
Light	0 to 100 Klux
Wind speed	0 to 100 MPH

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