Temperonic Controls
TS32MZ Ventilation Control

Operators Manual

28-Sep-2019 Version C

Table Of Contents

Controller Features:

- 8 Actuators
  - Integrated current sensors for end limit detection, over current, under current.
  - 8 x 120/240Vac, 10 Amp
  - 8 potentiometer inputs, also tracks position based on run time
  - Auto calibration using internal current sensors
  - 8 rotary switches for manual open, close, off, auto of each actuator. Control reads state of manual switches and maintains position when under manual operation.
  - LED indicators for open and close
  - Can use weather information to limit curtain openings (wind speed and direction, winter maximum limits)

- 8 Variable 0-10V Outputs
  - for VFD, Light Dimming, Variable speed fan (using external module), other 0-10V devices
  - Toggle switch plus potentiometer for on/off/auto. When on, potentiometer can be used to set output level. Internal trimmer to set minimum allowable on voltage.
  - LED indicator that increases in brightness with output level.
  - Wind Speed and direction can be used to shut down a variable speed device (like a large fan)
  - Variable speed outputs can be interlocked with a relay for a go/stop signal such as a VFD enable/disable.

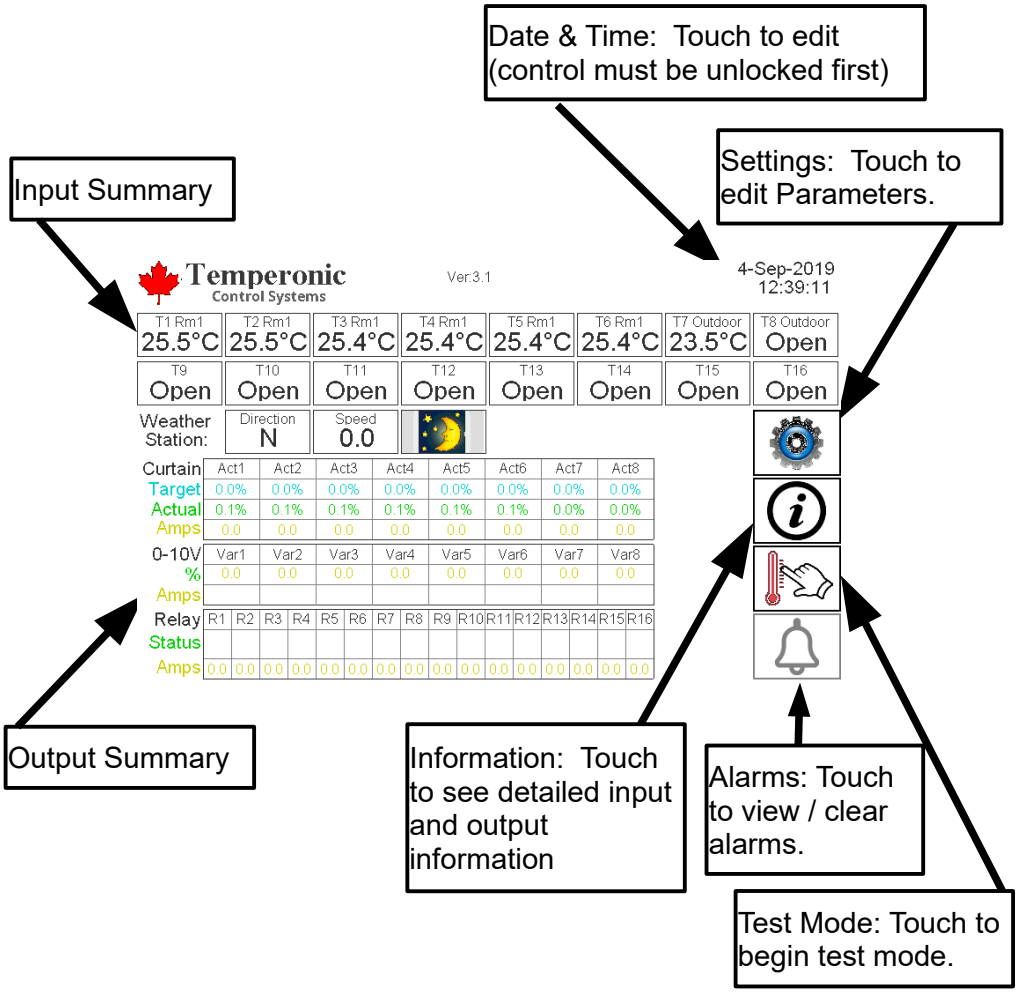
- 16 On/Off Relays
  - 16 inputs for connection of external current transformers (CT20)
  - 16 x 120/240Vac, 15Amp
  - Toggle switch for on/off/auto. Control can detect switch position for on-screen status of output relays
  - 16 LEDs to indicate if relay is on or off.

- 25+ Analog Inputs
  - Accepts pulse input to detect wind speed
  - 5V input signal for wind direction
  - 12V Digital Input for rain indication
  - 5V analog input for detecting sun/cloud/night using photocell
  - 16 Temperature Sensors
  - 4 Humidity Sensors
  - 2500V isolation from main control with connection for earth ground.

- Other Features
  - 7” TFT 800x480 colour touch screen
  - Internal USB port for memory stick – data download, firmware upgrades, parameter load/save.
  - Internal wifi module for internet connectivity
  - Internal 128MB flash storage for data logging, firmware backup
  - RS485 interface for connection to modbus devices (may require custom programming)
  - Simple duplication of settings for actuators, relays and variable speed outputs.
  - Expandable CANBUS design will support up to 10 actuator and relay boards (80 actuators and 160 relays total). Requires expansion interface boxes.
  - Up to 8 input boards to support additional temperature, humidity, CO2, Static Pressure and digital inputs.
  - Soon to support a fully programmable light dimming control system.
  - Soon to support activation and monitoring of feed augers, laser bin level monitoring.
  - Support for weigh scale systems (hog sorting, bird weighing)
  - Outputs are programmed to turn on in sequence, not all a once. This reduces peak amperage problems for generators.
  - Multiple rooms and growth curves and lighting programs
  - Internal battery-backed-up clock

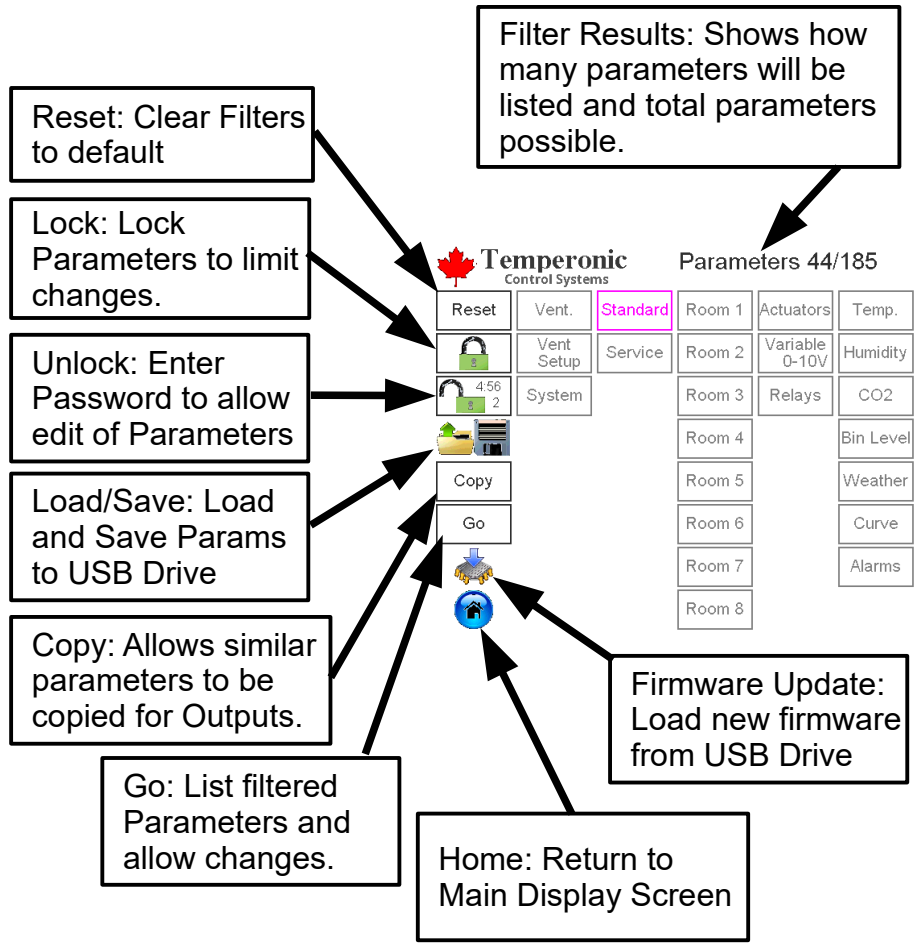
Main Display Screen

This control utilizes a coloured touch screen. All data entry is managed through the touch screen interface.



Settings:

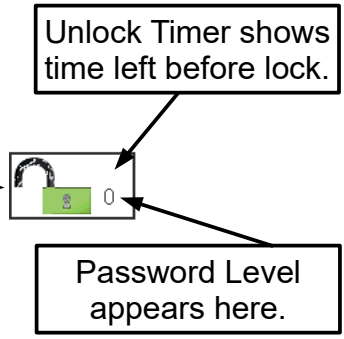
This control has many parameters that can be adjusted. In order to quickly locate the relevant parameters, a filter system has been implemented.



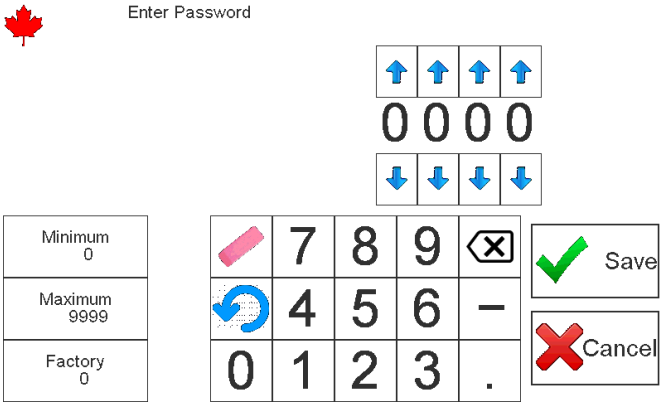
Select filter options using the buttons. Once the filter is correct, touch the Go button. The filter is based on an “and” algorithm. Only parameters that match all of the filter conditions will appear for editing.

Unlocking the Parameters

To unlock the parameters, click on the Unlock Button.



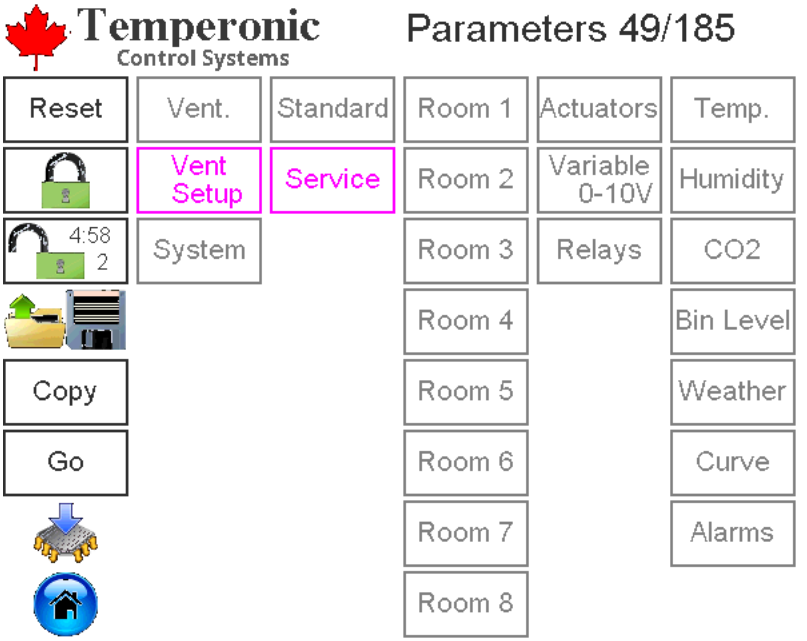
The following entry screen will appear:



The default password for the TS32MZ control is 1111. This can be entered in a couple of different ways. The up and down arrows can be used to change each digit. Alternatively, the numeric keypad can be used to enter a value. The Minimum, Maximum and Factory values are also buttons and touching one of those will change the value to match.

Initial Setup

There are a number of parameters that should be setup first.
To simplify this process, use the Vent Setup Filter.



This will pull up all of the parameters needed to do a quick setup of the control for a single room. If the control must be set up for multiple rooms, the Vent Service filter must be used instead of the Vent Setup Service filter. It is still recommended to start with the Vent Setup Service filter and then go through the Vent Service parameters following the Vent Setup.

Actuator Calibration

Actuator position is determined using the run time of the actuators. Using the current sensors, this control is able to automatically determine the time measurement. This process only needs to be completed once upon installation or if the rotary switch board in the control is replaced. Installation of a new or replacement actuator or changes made to the end limits would also require a re-calibration of the actuator.

Step 1: Begin with the actuator selection switch in the Auto position.
Step 2: Repeat the following 5 times. Rotate the knob from Auto Off and back to Auto.
Step 3: Leave the switch in Auto and the actuator will then calibrate by running open a short distance, then fully closed, then fully open.

Parameters to Configure Curtains.

201.1 Room 1 Ventilation On/Off	On	221.1 Variable Output 1 Configure	Off
202 Deg F or C	° C	221.2 Variable Output 2 Configure	Off
204 Time Zone	-5	221.3 Variable Output 3 Configure	Off
211 Rooms	1	221.4 Variable Output 4 Configure	Off
212 Variable Outputs	8	221.5 Variable Output 5 Configure	Off
213 Relay Outputs	16	221.6 Variable Output 6 Configure	Off
214 Actuators	8	221.7 Variable Output 7 Configure	Off
220.1 Room 1 Leakage	0 CFM	221.8 Variable Output 8 Configure	Off

Begin by setting the temperature units. This Vent Setup process is a simplified setup process. If multiple rooms are to be set up, use the full Vent Service Filter.

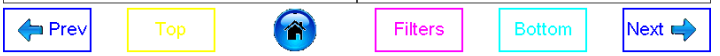
The number of Variable Outputs, Relay Outputs and Actuators can be adjusted. This is optional and can help to hide some parameters. If only Actuators 1 and 3 are used, it will be necessary to specify Actuators = 3, (not 2).

Touch any of the parameter descriptions to edit the parameter.

Variable Outputs can be configured using Parameters 221.1 – 221.8. Firmware Version 3.2 only supports the Large Circ Fan. Other configurations will be available through a firmware update in the near future.

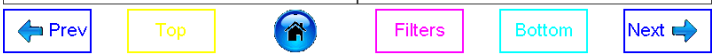
Relay Outputs

223.1 Relay Output 1 Configure	Off	223.9 Relay Output 9 Configure	Off
223.2 Relay Output 2 Configure	Off	223.10 Relay Output 10 Configure	Off
223.3 Relay Output 3 Configure	Off	223.11 Relay Output 11 Configure	Off
223.4 Relay Output 4 Configure	Off	223.12 Relay Output 12 Configure	Off
223.5 Relay Output 5 Configure	Off	223.13 Relay Output 13 Configure	Off
223.6 Relay Output 6 Configure	Off	223.14 Relay Output 14 Configure	Off
223.7 Relay Output 7 Configure	Off	223.15 Relay Output 15 Configure	Off
223.8 Relay Output 8 Configure	Off	223.16 Relay Output 16 Configure	Off



At this time, the following Relay Output types are functional: Fan, Heater, Circ Fan Go/Stop. The other functions will be activated by subsequent firmware updates.

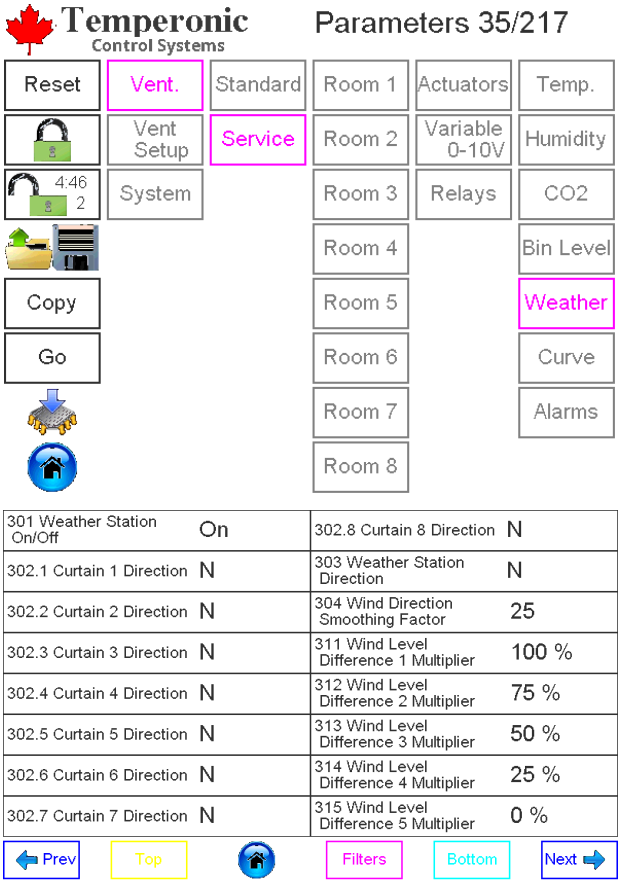
226.1 Actuator Output 1 Configure	Side Curtain Timed	244.1 Actuator 1 Probes to use	1,2,3,4,5,6,
226.2 Actuator Output 2 Configure	Side Curtain Timed	244.2 Actuator 2 Probes to use	1,2,3,4,5,6,
226.3 Actuator Output 3 Configure	Side Curtain Timed	244.3 Actuator 3 Probes to use	1,2,3,4,5,6,
226.4 Actuator Output 4 Configure	Side Curtain Timed	244.4 Actuator 4 Probes to use	1,2,3,4,5,6,
226.5 Actuator Output 5 Configure	Side Curtain Timed	244.5 Actuator 5 Probes to use	1,2,3,4,5,6,
226.6 Actuator Output 6 Configure	Side Curtain Timed	244.6 Actuator 6 Probes to use	1,2,3,4,5,6,
226.7 Actuator Output 7 Configure	Side Curtain Timed	244.7 Actuator 7 Probes to use	1,2,3,4,5,6,
226.8 Actuator Output 8 Configure	Side Curtain Timed	244.8 Actuator 8 Probes to use	1,2,3,4,5,6,



Actuators may be configured using Parameters 226.1-226.8. For firmware version 3.2, use only Side Curtain Timed and Chimney Baffle Timed. The other functions will be available in future firmware updates.

Each output can be assigned to use specific probes in calculating temperatures. Be sure to set temperature probes to use for each Actuator, Variable and Relay Output.

Weather Station:



Use the Vent, Service, Weather filter to pull up the Parameters relevant to the Weather Station.

Set the direction that the curtains are facing. Also be sure to configure Parameter 303 so that direction readings from the weather station will be correctly adjusted to account for how the wind direction sensor has been mounted.

Parameters 311 to 315 specify how much effect the wind has when approaching from an angle. When the wind direction is an exact match to the curtain direction, 100% of the wind speed will be used. If the direction is off by 1, 2, 3, 4 or 5 levels (where there are 16 levels on the compass), then the wind speed will be reduced by the percentage specified in these Parameters. For example, if the wind is coming from the North East and a curtain faces East the North East wind speed would be reduced by 0.75 when performing

calculations on the East-facing curtain. The wind is from the NE and to get to E, we have NE, ENE then E. This would be considered 2 levels.

318 Wind Speed Smoothing Factor	25	327 Wind Speed Differential	4.0 km/h
319 Wind High Temperature Override	30.0 °C	328 Wind Level Change Time Delay	600 Secs
321 Wind Speed Reduction 1	10 km/h	330 Wind+Rain High Temperature Override	30.0 °C
322 Wind Speed 1 Max % Open	50 %	331 Wind+Rain Speed Reduction 1	8 km/h
323 Wind Speed Reduction 2	15 km/h	332 Wind+Rain Speed 1 Max % Open	25 %
324 Wind Speed 2 Max % Open	30 %	333 Wind+Rain Speed Reduction 2	12 km/h
325 Wind Speed Reduction 3	20 km/h	334 Wind+Rain Speed 2 Max % Open	15 %
326 Wind Speed 3 Max % Open	15 %	335 Wind+Rain Speed Reduction 3	15 km/h

Prev Top Filters Bottom Next

Parameter 319 provides a high temperature over-ride. When above this temperature inside the room, curtains are no longer restricted by the wind speed. When rain is detected, Parameter 330 would specify the high temperature over-ride.

There are 3 levels of wind speed that can be set (319 - 328). There is a second set of 3 levels that can be set for when it is raining (330 – 338).
When the Effective Wind Speed on a curtain exceeds the value in 321, the curtain opening will be limited to the value in 322. The other 2 wind speed levels can be found in parameters 323 – 326.
Parameter 327 specifies how much the wind speed must drop before the maximum opening will be allowed to increase.
Parameter 328 specifies how long the wind speed must remain below this threshold in order for the maximum curtain opening to be increased again.