

# Stryker VAV Controller

## FOR VAV TERMINAL UNITS

### GUIDE SPECIFICATION

## GENERAL

### Overview

The contractor shall furnish, install, and place in operating condition a VAV control system described herein. All units shall be located in accordance with the plans.

### Type of System

System Requirements:

1. Provide the following configurable I/O for use on a VAV Terminal Unit Controller:
  - a. Four universal inputs for use with temperature, occupancy, humidity, or CO2. Provide capability for up to 2 of the universal inputs to be custom configured via a 10 point input vs. output table.
  - b. Two analog outputs for use with reheat, periph heat, ECM fan or damper actuator
  - c. Four digital outputs for use with a floating actuator, staged reheat, staged periph heat, or fan control
2. Permit on board 365-day programming for use as a backup schedule in every VAV Controller.
3. Provide 365-day clock with automatic daylight savings changeover and up to 10 holidays.
4. Provide 24-hour clock backup.
5. Provide two occupied and two unoccupied periods per day.
6. Allow two unused points of physical I/O to be used in additional control loops
7. Provide override capability for a configurable period.
8. Provide configurable damper position for the following sequences: Window, Reheat, Minimum, Maximum, Standby, Pressurize, Depressurize, Emergency Purge, Night Purge, Morning Warmup and Unoccupied Minimum Flow
9. Provide separate configurable Proportional plus Integral plus Derivative (P + I + D) temperature control for both heating and cooling.
10. Display room temperature in °F or °C when using a digital wall module.
11. Provide air balancing via digital wall module
12. Provide password-protected access to main configuration parameters via a digital wall module
13. Provide capability to configure the "Home" screen of a digital wall module to display the following data:
  - a. Room temp only
  - b. Room setpoint only
  - c. Room temp and setpoint
  - d. Room temp, setpoint and outdoor air

14. Provide Temporary Not Occupied Override, 1-255 days.
15. Provide heat lockout based on a window/door switch and freeze protection so the zone will not drop below a configurable temperature if lockout is active
16. Provide wiring diagrams for every controller
17. Provide separate configurable recovery ramps for heating and cooling.
18. Provide sequential start after power failure.
19. Provide ability to calibrate temperature sensors.
20. System Components:
  - a. Digital wall module (optional)
  - b. Discharge air sensor (optional).
  - c. Wall mount temperature and integral or wall mount humidity sensors (optional).
  - d. Outdoor air sensor (optional).
  - e. Occupancy sensor (optional).
21. Provide the following control fault tolerance:
  - a. Pressure dependent fallback control strategy if pressure sensor fails (invalid value)
  - b. Airflow reverts to minimum flow if space temperature sensor fails (invalid value).
  - c. Reverts to local space sensor if Wall Module sharing network communications fail.
22. Alarms for the following value shall be viewable in a password protected mode of the digital wall module: Low Flow, Airflow Override, Emergency Override, Heating Override, Fan Override, Frost Protect Override, IAQ Alarm, Invalid Setpoint, Space Temperature Alarm

### Codes and Standards

The system shall comply with applicable provisions of ASHRAE 90-75.

These specifications are based on equipment from Honeywell to set a standard for design and quality.

### Wiring

All wiring shall meet National Electrical Codes and local electrical codes.

### Testing Guarantee Service

Prior to installation, the contractor shall provide copies of submittals.

The contractor is responsible for assuring that conduit and wire quantity, size, and type are suitable for the equipment supplied.

Upon completion, the contractor shall conduct a total system test for the owner and engineer.



All components, parts, and assemblies supplied by the manufacturer shall be guaranteed against defects in materials and workmanship for 12 months.

Warranty service shall be performed by the contractor.

## SEQUENCE OF OPERATIONS

The heating and cooling setpoints shall be individually adjustable for both the occupied, unoccupied and standby periods. The thermostat shall have a minimum deadband of 2°F (1°C) (no mechanical heating or cooling shall operate within this deadband). Space temperature deviation above the cooling setpoint or below the heating setpoint shall generate a demand signal to control the system as follows:

### Flow Control

Normal - The flow is controlled to satisfy the temperature control algorithm.

Flow Tracking - The temperature control is turned off and the air flow set point equals the sum of flow tracking input and offset. This feature is used to balance the flow between several input VAV boxes and one exhaust VAV box in a room. If a non zero value is assigned to the offset, then the room is pressurized or de pressurized.

**NOTE: Flow Tracking shall ignore morning warmup and window open/emergency command flow.**

Shared Wall Module - The temperature control loop is turned off and the flow is controlled by the wall module at another master box. In this case information received in on box is used to control the air flow of another. The master box has the temperature sensor connected to it and controls the space temperature by its own damper and the other dampers of all nodes bound to it. This feature is used when:

1. Only one temperature sensor is used in a large area to control several nodes.

2. There is a need to reprogram multiple satellite controllers based on flexible floor plans.

### Reheat and Heating Sequence

Reheat shall be configurable to allow either the airflow or damper to be at a fixed position or to allow the airflow and damper position to vary between a minimum and fixed reheat position according to the temperature control loop. The heating sequence shall allow for the following options:

1. Reheat only
2. Peripheral then reheat
3. Reheat then peripheral
4. Reheat & peripheral then reheat airflow. At the end of the sequence, reheat airflow is modulated with heating demand or constant based on the reheat control value.
  - a. Fixed airflow at a configured maximum
  - b. Modulated airflow up to a configured maximum

**NOTE: Note: Sequence 4 above shall not be used for electric reheat coils.**

5. Peripheral only.

### Setpoint Recovery from Not Occupied to Occupied

The controller shall incorporate a ramping feature that gradually changes the space setpoints. During recovery operation, the setpoint changes at a rate in degrees per hour depending on the outdoor air temperature. If there is no outdoor air temperature sensor available, the minimum ramp rate is used.

### Power Interruption

1. On loss of power, the controller shall maintain programmed times and temperatures for 10 years.
2. Clock and day information shall be retained for a minimum of 24 hours.

By using this Honeywell literature, you agree that Honeywell will have no liability for any damages arising out of your use or modification to, the literature. You will defend and indemnify Honeywell, its affiliates and subsidiaries, from and against any liability, cost, or damages, including attorneys' fees, arising out of, or resulting from, any modification to the literature by you.

### Automation and Control Solutions

Honeywell International Inc.  
1985 Douglas Drive North  
Golden Valley, MN 55422  
customer.honeywell.com