**Sequence of Operation — Heat/cool changeover OR cooling only**

**Pressure Independent**

On power up the damper will calibrate closed for 2 minutes.

**Cool supply air:** On an increase in space temperature the controller regulates the actuator to open the VAV damper and increase the flow of cool air. On an increase of space temperature greater than the cooling proportional band, the airflow is maintained at its pre-selected maximum setting.

On a decrease in space temperature the controller regulates the actuator to close the VAV damper and reduce the flow of cool air. If the space temperature decreases to less than the cooling proportional band, the airflow is maintained at the pre-selected minimum setting.

**Warm supply air:** On a decrease in space temperature the controller regulates the actuator to open the VAV damper and increase the flow of warm air. On a decrease of space temperature greater than the heating proportional band, the airflow is maintained at its pre-selected maximum setting.

On an increase in space temperature the controller regulates the actuator to close the VAV damper and reduce the flow of warm air. If the space temperature increases above the heating proportional band, the airflow is maintained at the pre-selected minimum setting.
Sequence of Operation -- Heat/cool changeover OR cooling
With up to 3 stage binary reheat - Pressure Independent

On power up the damper will calibrate closed for 2 minutes.
**If no SAT sensor is present, the controller assumes Cool supply air at all times**

Cool supply air: On an increase in space temperature the controller regulates the actuator to open the VAV damper and increase the flow of cool air. On an increase of space temperature greater than the cooling proportional band, the airflow is maintained at its pre-selected maximum setting.

On a decrease in space temperature the controller regulates the actuator to close the VAV damper and reduce the flow of cool air. If the space temperature decreases to less than the cooling proportional band, the airflow is maintained at the pre-selected minimum setting.

Warm supply air: On a decrease in space temperature the controller regulates the actuator to open the VAV damper and increase the flow of warm air. On a decrease of space temperature greater than the heating proportional band, the airflow is maintained at its pre-selected maximum setting.

On an increase in space temperature the controller regulates the actuator to close the VAV damper and reduce the flow of warm air. If the space temperature increases above the heating proportional band, the airflow is maintained at the pre-selected minimum setting.

Reheat Operation: On a decrease in space temperature into the heating proportional band, the 1st stage binary 24VAC reheat output will energize. Upon further decreases, the 2nd then 3rd stages of reheat (if used) will energize.

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**Calibration note:** Suitable min and max heating flows must be selected in order to maintain flow through energized electric coils of at least 200 fpm and at least 70 cfm/kW throughout the entire operating range.

---

**Legend:**
- **Factory Flow Sensor Tubing**
- **Factory Electrical Wiring**
- **Field Electrical Wiring**

**Control Graph**

- **Heat On**
- **Cool Air**
- **Max Heating**
- **Max Cooling**
- **Min Heating**
- **Min Cooling**
- **Air Vol**
- **Room Set point**
- **Room Condition**
- **Warm Air**

- **3rd Stg**
- **2nd Stg**
- **1st Stg**
**Sequence of Operation** -- Heat/cool changeover OR cooling
With up to 3 stage binary reheat - Pressure Independent
On power up the damper will be closed for 2 minutes.
**If no SAT sensor is present, the controller assumes Cool supply air at all times**

**Cool supply air:** On an increase in space temperature the controller regulates the actuator to open the VAV damper and increase the flow of cool air. On an increase of space temperature greater than the cooling proportional band, the airflow is maintained at its pre-selected maximum setting.
A decrease in space temperature the controller regulates the actuator to close the VAV damper and reduce the flow of cool air. If the space temperature decreases to less than the cooling proportional band, the airflow is maintained at the pre-selected minimum setting.

**Warm supply air:** On a decrease in space temperature the controller regulates the actuator to open the VAV damper and increase the flow of warm air. On a decrease of space temperature greater than the heating proportional band, the airflow is maintained at its pre-selected maximum setting.
An increase in space temperature the controller regulates the actuator to close the VAV damper and reduce the flow of warm air. If the space temperature increases above the heating proportional band, the airflow is maintained at the pre-selected minimum setting.

**Reheat Operation:** On a decrease in space temperature into the heating proportional band, the 1st stage binary 24VAC reheat output will energize.
Upon further decreases, the 2nd then 3rd stages of reheat (if used) will energize.
**SINGLE DUCT DIGITAL CONTROLS**

**Control Sequence Number 2803**

**Sequence of Operation** – Heat/cool changeover OR cooling With Tri-State modulating HW reheat - Pressure Independent

On power up the damper will calibrate closed for 2 minutes.
**If no SAT sensor is present, the controller assumes Cool supply air at all times**

**Cool supply air:** On an increase in space temperature the controller regulates the actuator to open the VAV damper and increase the flow of cool air. On an increase of space temperature greater than the cooling proportional band, the airflow is maintained at its pre-selected maximum setting.

On a decrease in space temperature the controller regulates the actuator to close the VAV damper and reduce the flow of cool air. If the space temperature decreases to less than the cooling proportional band, the airflow is maintained at the pre-selected minimum setting.

**Warm supply air:** On a decrease in space temperature the controller regulates the actuator to open the VAV damper and increase the flow of warm air. On a decrease of space temperature greater than the heating proportional band, the airflow is maintained at its pre-selected maximum setting.

On an increase in space temperature the controller regulates the actuator to close the VAV damper and reduce the flow of warm air. If the space temperature increases above the heating proportional band, the airflow is maintained at the pre-selected minimum setting.

**Reheat Operation:** On a decrease in space temperature, the heating valve is modulated to increase heat proportionally to the room demand.

---

**LEGEND**

- **FACTORY FLOW SENSOR TUBING**
- **FACTORY ELECTRICAL WIRING**
- **FIELD ELECTRICAL WIRING**

**CONTROL GRAPH**

- **Max Heating**
- **Max Cooling**
- **Min Heating**
- **Min Cooling**

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**PROJECT:**

**ENGINEER:**

**CUSTOMER:**

**SUBMITTAL DATE:**

**SPEC. SYMBOL:**

**PRICE INDUSTRIES 2017**

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**SINGLE DUCT PIC DDC**

**PRESSURE INDEPENDENT HEAT/COOL C/O OR COOLING WITH TRI-STATE MODULATING HOT WATER REHEAT, FIELD WIRED**

**REV G**

**249533**

**2017/06/23**
Calibration note: Suitable min and max heating flows must be selected in order to maintain flow through energized electric coils of at least 200 fpm and at least 70 cfm/kW throughout the entire operating range.

Sequence of Operation -- Heat/cool changeover OR cooling With Analog modulating reheat - Pressure Independent

On power up the damper will calibrate closed for 2 minutes. **If no SAT sensor is present, the controller assumes Cool supply air at all times**

Cool supply air: On an increase in space temperature the controller regulates the actuator to open the VAV damper and increase the flow of cool air. On an increase of space temperature greater than the cooling proportional band, the airflow is maintained at its pre-selected maximum setting.

On a decrease in space temperature the controller regulates the actuator to close the VAV damper and reduce the flow of cool air. If the space temperature decreases to less than the cooling proportional band, the airflow is maintained at the pre-selected minimum setting.

Warm supply air: On a decrease in space temperature the controller regulates the actuator to open the VAV damper and increase the flow of warm air. On a decrease of space temperature greater than the heating proportional band, the airflow is maintained at its pre-selected maximum setting.

On an increase in space temperature the controller regulates the actuator to close the VAV damper and reduce the flow of warm air. If the space temperature increases above the heating proportional band, the airflow is maintained at the pre-selected minimum setting.

Reheat Operation: On a decrease in space temperature, the controller modulates the 0-10VDC output to increase heat proportionally to the room demand.
**Sequence of Operation – Heat/cool changeover OR cooling**

With Analog modulating reheat - Pressure Independent

On power up the damper will calibrate closed for 2 minutes.

**If no SAT sensor is present, the controller assumes Cool supply air at all times.**

**Cool supply air:** On an increase in space temperature the controller regulates the actuator to open the VAV damper and increase the flow of cool air. On an increase of space temperature greater than the cooling proportional band, the airflow is maintained at its pre-selected maximum setting. On a decrease in space temperature the controller regulates the actuator to close the VAV damper and reduce the flow of cool air. If the space temperature decreases to less than the cooling proportional band, the airflow is maintained at the pre-selected minimum setting.

**Warm supply air:** On a decrease in space temperature the controller regulates the actuator to open the VAV damper and increase the flow of warm air. On a decrease of space temperature greater than the heating proportional band, the airflow is maintained at its pre-selected maximum setting. On an increase in space temperature the controller regulates the actuator to close the VAV damper and reduce the flow of warm air. If the space temperature increases above the heating proportional band, the airflow is maintained at the pre-selected minimum setting.

**Reheat Operation:** On a decrease in space temperature, the controller modulates the 0-10VDC output to increase heat proportionally to the room demand.

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**Calibration note:** Suitable min and max heating flows must be selected in order to maintain flow through energized electric coils of at least 200 fpm and at least 70 cfm/kW throughout the entire operating range.

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**Legend:****

- **Factory Flow Sensor Tubing**
- **Factory Electrical Wiring**
- **Field Electrical Wiring**

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**Project:**

**Engineer:**

**Customer:**

**Submittal Date:**

**Spec. Symbol:**

2017/06/23

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**Revision:**

G

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**Price:**

**Single Duct PIC DDC**

Pressure Independent Heat/cool c/o or Cooling with Analog Heat Field Wired

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**Parts List:**

- **1** DDC CONTROLLER ACTUATOR 250000-115
- **1** Transformer
- **1** Control Switch
- **1** Supply Air Temperature (SAT) Sensor
- **1** Power Source

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**Note:**

- The SAT sensor is wired with CAT-5 cable with modular RJ-45 connectors.
- The transformer is wired with T-STAT.
- Several T-STAT options available: blank face, dial adjust, LCD, wireless base, etc.
- The 24 VAC power source must be field wired if optional transformer is not provided.
- The secondary com must be earth grounded.
- Do not use gauge taps.
- The VAV module 250000-162 requires PIC DCC controller 200000-115.
- The secondary com is standing by, ready to be used on all PIC DCC controllers.
- Some night setback sequence (5000) for details.

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**Voltage:**

- **24V**
- **Min. Heating**
- **Min. Cooling**
- **Max. Heating**
- **Max. Cooling**

---

**Control Graph:**

- **Warm Air**
- **Cool Air**
- **Room Condition**
- **Cool**
- **Warm**
- **Setpoint**

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**Diagram Description:**

The diagram shows the single duct digital controls system with various components including the DDC controller/actuator, supply air temperature (SAT) sensor, transformer, control switches, and power source. The system includes connections and specifications for the 24 VAC power source, control wiring, and other electrical components. The diagram also includes notes for installation and operation details.
Sequence of Operation -- Heat/cool changeover OR cooling only
Pressure Dependent

On power up the damper will calibrate closed for 2 minutes.
**If no SAT sensor is present, the controller assumes Cool supply air at all times**

Cool supply air: On an increase in space temperature the controller regulates the actuator to open the air damper and increase the flow of cool air. On an increase of space temperature greater than the cooling proportional band, the damper position (%) is maintained at its pre-selected maximum setting.

On a decrease in space temperature the controller regulates the actuator to close the air damper and reduce the flow of cool air. If the space temperature decreases to less than the cooling proportional band, the damper position (%) is maintained at its pre-selected minimum setting.

Warm supply air: On a decrease in space temperature the controller regulates the actuator to open the air damper and increase the flow of warm air. On a decrease of space temperature greater than the heating proportional band, the damper position (%) is maintained at its pre-selected maximum setting.

On an increase in space temperature the controller regulates the actuator to close the air damper and reduce the flow of warm air. If the space temperature increases above the heating proportional band, the damper position (%) is maintained at its pre-selected minimum setting.
**SINGLE DUCT DIGITAL CONTROLS**

**Control Sequence Number 2851**

**PRICE T-STAT**

**NOTE 1:**
- T-STAT IS WIRED WITH CAT 5 CABLE WITH MODULAR RJ-45 CONNECTORS.
- CABLE SUPPLIED WITH T-STAT

**NOTE 2:**
- SEVERAL T-STAT OPTIONS AVAILABLE:
  - BLANK FACE PLATE
  - ADJUST, LCD
  - WIRELESS BASE, ETC.

**NOTE 3:**
- TRANSFORMER SECONDARY COM MUST BE EARTH GROUNDED

**NOTES:**
- 1-WIRE 1.5 ARE RATED FOR 24VAC POWER AND CONTROL CIRCUITS.
- MAX 10VA PER CONTACTOR.
- STAGES 2 AND 3 ARE OPTIONAL.

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**Calibration note:** Suitable min and max heating flows must be selected in order to maintain flow through energized electric coils of at least 200 fpm and at least 70 cfm/kW throughout the entire operating range.

**LEGEND**
- FACTORY ELECTRICAL WIRING
- FIELD ELECTRICAL WIRING

**CONTROL GRAPH**

- **Heat On**
- **Warm Air**
- **Cool Air**
- **Set Point**
- **Room Condition**

**Sequence of Operation -- Heat/cool changeover OR cooling with up to 3 stage binary reheat - Pressure Dependent**

On power up the damper will calibrate closed for 2 minutes.

**If no SAT sensor is present, the controller assumes Cool supply air at all times.**

**Cool supply air:** On an increase in space temperature the controller regulates the actuator to open the air damper and increase the flow of cool air. On an increase of space temperature greater than the cooling proportional band, the damper position (%) is maintained at its pre-selected maximum setting.

On a decrease in space temperature the controller regulates the actuator to close the air damper and reduce the flow of cool air. If the space temperature decreases to less than the cooling proportional band, the damper position (%) is maintained at the pre-selected minimum setting.

**Warm supply air:** On a decrease in space temperature the controller regulates the actuator to open the air damper and increase the flow of warm air. On a decrease of space temperature greater than the heating proportional band, the damper position (%) is maintained at its pre-selected maximum setting.

On an increase in space temperature the controller regulates the actuator to close the air damper and reduce the flow of warm air. If the space temperature increases above the heating proportional band, the damper position (%) is maintained at the pre-selected minimum setting.

**Reheat Operation:** On a decrease in space temperature into the heating proportional band, the 1st stage binary 24VAC reheat output will energize. Upon further decreases, the 2nd and 3rd stages of reheat (if used) will energize.

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**PROJECT:**

**ENGINEER:**

**CUSTOMER:**

**SUBMITTAL DATE:**

**SPEC. SYMBOL:**

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SINGLE DUCT DIGITAL CONTROLS

Control Sequence Number 2852

Calibration note: Suitable min and max heating flows must be selected in order to maintain flow through energized electric coils of at least 200 fpm and at least 70 cfm/kW throughout the entire operating range.

Sequence of Operation -- Heat/cool changeover OR cooling With up to 3 stage binary reheat - Pressure Dependent

On power up the damper will calibrate closed for 2 minutes.

"If no SAT sensor is present, the controller assumes Cool supply air at all times"

Cool supply air: On an increase in space temperature the controller regulates the actuator to open the air damper and increase the flow of cool air. On an increase of space temperature greater than the cooling proportional band, the damper position (\%) is maintained at its pre-selected maximum setting.

On a decrease in space temperature the controller regulates the actuator to close the air damper and reduce the flow of cool air. If the space temperature decreases to less than the cooling proportional band, the damper position (\%) is maintained at the pre-selected minimum setting.

Warm supply air: On a decrease in space temperature the controller regulates the actuator to open the air damper and increase the flow of warm air. On a decrease of space temperature greater than the heating proportional band, the damper position (\%) is maintained at its pre-selected maximum setting.

On an increase in space temperature the controller regulates the actuator to close the air damper and reduce the flow of warm air. If the space temperature increases above the heating proportional band, the damper position (\%) is maintained at the pre-selected minimum setting.

Reheat Operation: On a decrease in space temperature into the heating proportional band, the 1st stage binary 24VAC reheat output will energize. Upon further decreases, the 2nd then 3rd stages of reheat (if used) will energize.

PROJECT:

ENGINEER:

CUSTOMER:

SUBMITTAL DATE: 2017/06/23

SPEC. SYMBOL: 249538

REV. F

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Sequence of Operation -- Heat/cool changeover OR cooling With Tri-State modulating HW reheat - Pressure Dependent

Power up the damper will calibrate closed for 2 minutes.

**If no SAT sensor is present, the controller assumes Cool supply air at all times**

**Cool supply air:** On an increase in space temperature the controller regulates the actuator to open the air damper and increase the flow of cool air. On an increase of space temperature greater than the cooling proportional band, the damper position (%) is maintained at its pre-selected maximum setting.

On a decrease in space temperature the controller regulates the actuator to close the air damper and reduce the flow of cool air. If the space temperature decreases to less than the cooling proportional band, the damper position (%) is maintained at the pre-selected minimum setting.

**Warm supply air:** On a decrease in space temperature the controller regulates the actuator to open the air damper and increase the flow of warm air. On a decrease of space temperature greater than the heating proportional band, the damper position (%) is maintained at its pre-selected maximum setting.

On an increase in space temperature the controller regulates the actuator to close the air damper and reduce the flow of warm air. If the space temperature increases above the heating proportional band, the damper position (%) is maintained at the pre-selected minimum setting.

**Reheat Operation:** On a decrease in space temperature, the heating valve is modulated to increase heat proportionally to the room demand.
**Control Sequence Number 2854**

**PRICE T-STAT**

**NOTE 1:** T-STAT is wired with CAT-6 cable with modular RJ-45 connections. Cable supplied with T-STAT.

**NOTE 2:** Several T-STAT options available: BLANK FACE, DIAL, ADJUST LCD, WIRELESS BASE, ETC.

**NOTE 3:** A CAT-5 cable is milked with each controller ordered with the T-STAT option.

**NOTE 4:** 24VDC is milked in the plenum with 24VDC POWER and control circuits. ANALOG OUT MAX LOAD: 1mA MIN INPUT IMPEDANCE: 1K ohm

**NOTE 5:** NIGHT SETBACK IS STANDING BY. READY TO BE USED ON ALL PIC DDC CONTROLLERS. SEE NIGHT SETBACK SEQUENCE (8999) FOR DETAILS.

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**Calibration note:** Suitable minimum and maximum heating flows must be selected in order to maintain flow through energized electric coils of at least 200 fpm and at least 70 cfm/kW throughout the entire operating range.

**Legend:**
- **FACTORY ELECTRICAL WIRING**
- **FIELD ELECTRICAL WIRING**

**Control Graph**

- **Max Heating**
- **Max. Cooling**
- **Warm Air**
- **Cool Air**
- **Damper Position**
- **Min. Heating**
- **Min. Cooling**
- **Room**
- **Set point**

**Sequence of Operation** — Heat/cool changeover OR cooling with analog modulating reheat - Pressure Dependent

On power up the damper will calibrate closed for 2 minutes.

*If no SAT sensor is present, the controller assumes Cool supply air at all times*

**Cool supply air:** On an increase in space temperature, the controller regulates the actuator to control the air damper and increase the flow of cool air. On an increase of space temperature greater than the cooling proportional band, the damper position (%) is maintained at its pre-selected maximum setting.

On a decrease in space temperature, the controller regulates the actuator to control the air damper and reduce the flow of cool air. If the space temperature decreases to less than the cooling proportional band, the damper position (%) is maintained at the pre-selected minimum setting.

**Warm supply air:** On a decrease in space temperature, the controller regulates the actuator to control the air damper and increase the flow of warm air. On a decrease in space temperature greater than the heating proportional band, the damper position (%) is maintained at its pre-selected maximum setting.

On an increase in space temperature, the controller regulates the actuator to control the air damper and reduce the flow of warm air. If the space temperature increases above the heating proportional band, the damper position (%) is maintained at the pre-selected minimum setting.

**Reheat Operation:** On a decrease in space temperature, the controller modulates the 0-10VDC output to increase heat proportionally to the room demand.

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**PROJECT:**

**ENGINEER:**

**CUSTOMER:**

**SUBMITTAL DATE:**

**SPEC. SYMBOL:**

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**REV G**
**Calibration note:** Suitable min and max heating flows must be selected in order to maintain flow through energized electric coils of at least 200 fpm and at least 70 cfm/kW throughout the entire operating range.

**Sequence of Operation -- Heat/cool changeover OR cooling With Analog modulating reheat - Pressure Dependent**

On power up the damper will calibrate closed for 2 minutes. **If no SAT sensor is present, the controller assumes Cool supply air at all times.**

- **Cool supply air:** On an increase in space temperature the controller regulates the actuator to open the air damper and increase the flow of cool air.
  - On an increase of space temperature greater than the cooling proportional band, the damper position (%) is maintained at its pre-selected maximum setting.
  - On a decrease in space temperature the controller regulates the actuator to close the air damper and reduce the flow of cool air. If the space temperature decreases to less than the cooling proportional band, the damper position (%) is maintained at the pre-selected minimum setting.

- **Warm supply air:** On a decrease in space temperature the controller regulates the actuator to open the air damper and increase the flow of warm air. On a decrease of space temperature greater than the heating proportional band, the damper position (%) is maintained at its pre-selected maximum setting.
  - On an increase in space temperature the controller regulates the actuator to close the air damper and reduce the flow of warm air. If the space temperature increases above the heating proportional band, the damper position (%) is maintained at the pre-selected minimum setting.

**Reheat Operation:** On a decrease in space temperature, the controller modulates the 0-10VDC output to increase heat proportionally to the room demand.
Sequence of Operation -- Constant Volume, Pressure Independent.
On power up the damper will calibrate closed for 2 minutes.

The PIC Controller shall maintain a constant airflow.

On an increase in static pressure, the controller regulates the actuator to close the VAV damper and reduce the airflow.

On a decrease in static pressure, the controller regulates the actuator to open the VAV damper and increase the airflow.
Sequence of Operation — Constant Volume from remote 2-10V setpoint, Pressure independent.

On power up the damper will calibrate closed for 2 minutes.

The **PIC Controller** shall maintain a constant airflow. The airflow setpoint is determined from a scalable 2-10V input.

On an increase in static pressure, the controller regulates the actuator to close the VAV damper and reduce the airflow.

On a decrease in static pressure, the controller regulates the actuator to open the VAV damper and increase the airflow.

**Calibration note**: Suitable min and max heating flows must be selected in order to maintain flow through energized electric coils of at least 200 fpm and at least 70 cfm/kW throughout the entire operating range.
Sequence of Operation (PIC-SD) – Heat/cool changeover OR Cooling only, Pressure Independent

On power up the damper will calibrate closed for 2 minutes.
**If no SAT sensor is present, the controller assumes Cool supply air at all times**

Cool supply air: On an increase in space temperature the controller regulates the actuator to open the VAV damper and increase the flow of cool air. On an increase of space temperature greater than the cooling proportional band, the airflow is maintained at its pre-selected maximum setting.

On a decrease in space temperature the controller regulates the actuator to close the VAV damper and reduce the flow of cool air. If the space temperature decreases to less than the cooling proportional band, the airflow is maintained at the pre-selected minimum setting.

Warm supply air: On a decrease in space temperature the controller regulates the actuator to open the VAV damper and increase the flow of warm air. On a decrease of space temperature greater than the heating proportional band, the airflow is maintained at its pre-selected maximum setting.

On an increase in space temperature the controller regulates the actuator to close the VAV damper and reduce the flow of warm air. If the space temperature increases above the heating proportional band, the airflow is maintained at the pre-selected minimum setting.
**Sequence of Operation (PIC-SD)** – Heat/cool changeover OR Cooling with up to 2 Stages of Binary Reheat - Pressure Independent

On power up the damper will calibrate closed for 2 minutes.

**Cool supply air:** On an increase in space temperature the controller regulates the actuator to open the VAV damper and increase the flow of cool air. On an increase of space temperature greater than the cooling proportional band, the airflow is maintained at its pre-selected maximum setting.

On a decrease in space temperature the controller regulates the actuator to close the VAV damper and reduce the flow of cool air. If the space temperature decreases to less than the cooling proportional band, the airflow is maintained at the pre-selected minimum setting.

**Warm supply air:** On a decrease in space temperature the controller regulates the actuator to open the VAV damper and increase the flow of warm air. On a decrease of space temperature greater than the heating proportional band, the airflow is maintained at its pre-selected maximum setting.

On an increase in space temperature the controller regulates the actuator to close the VAV damper and reduce the flow of warm air. If the space temperature increases above the heating proportional band, the airflow is maintained at the pre-selected minimum setting.

**Reheat Operation:** On a decrease in space temperature into the heating proportional band, the '1st stage binary 24VAC reheat output' will energize. Upon further decreases, the 2nd stage of reheat will energize.
Sequence of Operation (PIC-SD) -- Heat/cool changeover OR Cooling with Tri-State Modulating HW Reheat - Pressure Independent

On power up the damper will calibrate closed for 2 minutes.

**If no SAT sensor is present, the controller assumes Cool supply air at all times**

Cool supply air: On an increase in space temperature the controller regulates the actuator to open the VAV damper and increase the flow of cool air. On an increase of space temperature greater than the cooling proportional band, the airflow is maintained at its pre-selected maximum setting.

On a decrease in space temperature the controller regulates the actuator to close the VAV damper and reduce the flow of cool air. If the space temperature decreases to less than the cooling proportional band, the airflow is maintained at the pre-selected minimum setting.

Warm supply air: On a decrease in space temperature the controller regulates the actuator to open the VAV damper and increase the flow of warm air. On a decrease of space temperature greater than the heating proportional band, the airflow is maintained at its pre-selected maximum setting.

On an increase in space temperature the controller regulates the actuator to close the VAV damper and reduce the flow of warm air. If the space temperature increases above the heating proportional band, the airflow is maintained at the pre-selected minimum setting.

Reheat Operation: On a decrease in space temperature, the heating valve is modulated to increase heat proportionally to the room demand.

**Calibration note:** Suitable min and max heating flows must be selected in order to maintain flow through energized electric coils of at least 200 fpm and at least 70 cfm/kW throughout the entire operating range.

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**PROJECT:**

**ENGINEER:**

**CUSTOMER:**

**SUBMITTAL DATE:** 2019/03/19

**SPEC. SYMBOL:** 264668

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**LEGEND**

- FACTORY FLOW SENSOR TUBING
- FACTORY ELECTRICAL WIRING
- FIELD ELECTRICAL WIRING

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**Note:** Suitable min and max heating flows must be selected in order to maintain flow through energized electric coils of at least 200 fpm and at least 70 cfm/kW throughout the entire operating range.
Sequence of Operation (PIC-SD) – Heat/cool changeover OR Cooling with Analog Modulating Reheat - Pressure Independent

On power up the damper will calibrate closed for 2 minutes.

**If no SAT sensor is present, the controller assumes Cool supply air at all times**

**Cool supply air:** On an increase in space temperature the controller regulates the actuator to open the VAV damper and increase the flow of cool air. On an increase of space temperature greater than the cooling proportional band, the airflow is maintained at its pre-selected maximum setting.

On a decrease in space temperature the controller regulates the actuator to close the VAV damper and reduce the flow of cool air. If the space temperature decreases to less than the cooling proportional band, the airflow is maintained at the pre-selected minimum setting.

**Warm supply air:** On a decrease in space temperature the controller regulates the actuator to open the VAV damper and increase the flow of warm air. On a decrease of space temperature greater than the heating proportional band, the airflow is maintained at its pre-selected maximum setting.

On an increase in space temperature the controller regulates the actuator to close the VAV damper and reduce the flow of warm air. If the space temperature increases above the heating proportional band, the airflow is maintained at the pre-selected minimum setting.

**Reheat Operation:** On a decrease in space temperature, the controller modulates the 0-10VDC output to increase the heat proportionally to the room demand.
Control Sequence Number 1814

Sequence of Operation (PIC-SD) -- Heat/cool changeover OR Cooling with up to 2 Stages of Binary Reheat - Pressure Independent
On power up the damper will calibrate closed for 2 minutes.
**If no SAT sensor is present, the controller assumes cool supply air at all times**

Cool supply air: On an increase in space temperature the controller regulates the actuator to open the VAV damper and increase the flow of cool air. On an increase of space temperature greater than the cooling proportional band, the airflow is maintained at its pre-selected maximum setting.

On a decrease in space temperature the controller regulates the actuator to close the VAV damper and reduce the flow of cool air. If the space temperature decreases to less than the cooling proportional band, the airflow is maintained at the pre-selected minimum setting.

Warm supply air: On a decrease in space temperature the controller regulates the actuator to open the VAV damper and increase the flow of warm air. On a decrease of space temperature greater than the heating proportional band, the airflow is maintained at its pre-selected maximum setting.

Reheat Operation: On a decrease in space temperature into the heating proportional band, the 1st stage binary 24VAC reheat output will energize. Upon further decreases, the 2nd stage of reheat will energize.

LEGEND
- FACTORY FLOW SENSOR TUBING
- FACTORY ELECTRICAL WIRING
- FIELD ELECTRICAL WIRING

Calibration note: Suitable min and max heating flows must be selected in order to maintain flow through energized electric coils of at least 200 fpm and at least 70 cfm/kW throughout the entire operating range.

PROJECT:

ENGINEER:
CUSTOMER:

SUBMITTAL DATE: SPEC. SYMBOL: 2019/03/19

264670

SINGLE DUCT PIC-SD DDC
PRESSURE INDEPENDENT
HEAT/COOL C/O OR COOLING WITH
UP TO 2 STAGES OF REHEAT
FIELD WIRED

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REV D
Sequence of Operation (PIC-SD) -- Heat/cool changeover OR Cooling with Tri-State Modulating HW Reheat - Pressure Independent
On power up the damper will calibrate closed for 2 minutes.
"**If no SAT sensor is present, the controller assumes Cool supply air at all times**"

Cool supply air: On an increase in space temperature the controller regulates the actuator to open the VAV damper and increase the flow of cool air. On an increase of space temperature greater than the cooling proportional band, the airflow is maintained at its pre-selected maximum setting.

On a decrease in space temperature the controller regulates the actuator to close the VAV damper and reduce the flow of cool air. If the space temperature decreases to less than the cooling proportional band, the airflow is maintained at the pre-selected minimum setting.

Warm supply air: On a decrease in space temperature the controller regulates the actuator to open the VAV damper and increase the flow of warm air. On a decrease of space temperature greater than the heating proportional band, the airflow is maintained at its pre-selected maximum setting.

On an increase in space temperature the controller regulates the actuator to close the VAV damper and reduce the flow of warm air. If the space temperature increases above the heating proportional band, the airflow is maintained at the pre-selected minimum setting.

Reheat Operation: On a decrease in space temperature, the heating valve is modulated to increase heat proportionally to the room demand.

---

LEGEND
- FACTORY FLOW SENSOR TUBING
- FACTORY ELECTRICAL WIRING
- FIELD ELECTRICAL WIRING

Calibration note: Suitable min and max heating flows must be selected in order to maintain flow through energized electric coils of at least 200 fpm and at least 70 cfm/kW throughout the entire operating range.

CONTROL GRAPH

Max Heating
Max, Cooling
Min. Heating
Min. Cooling

Room Setpoint

Cool
Room Condition
Warm

Price Industries Limited 2019

SINGLE DUCT DIGITAL CONTROLS
Number 1815

Price PIC-SD

Project:

Engineer:

Customer:

Submittal Date:

Spec. Symbol:

Price SD DDC
Pressure Independent
Heat/Cool C/O or Cooling with Tri-State Modulating Reheat Field Wired

264671
2019/03/19

Rev. D
Sequence of Operation (PIC-SD) – Heat/cool changeover OR Cooling with Analog Modulating Reheat - Pressure Independent

On power up the damper will calibrate closed for 2 minutes. **If no SAT sensor is present, the controller assumes Cool supply air at all times**

*Cool supply air:* On an increase in space temperature the controller regulates the actuator to open the VAV damper and increase the flow of cool air. On an increase of space temperature greater than the cooling proportional band, the airflow is maintained at its pre-selected maximum setting.

On a decrease in space temperature the controller regulates the actuator to close the VAV damper and reduce the flow of cool air. If the space temperature decreases to less than the cooling proportional band, the airflow is maintained at the pre-selected minimum setting.

*Warm supply air:* On a decrease in space temperature the controller regulates the actuator to close the VAV damper and reduce the flow of warm air. On a decrease of space temperature greater than the heating proportional band, the airflow is maintained at its pre-selected maximum setting.

On an increase in space temperature the controller regulates the actuator to open the VAV damper and increase the flow of warm air. If the space temperature increases above the heating proportional band, the airflow is maintained at the pre-selected minimum setting.

*Reheat Operation:* On a decrease in space temperature, the controller modulates the 0-10VDC output to increase the heat proportionally to the room demand.
**SINGLE DUCT TERMINAL UNIT NIGHT SETBACK SEQUENCE**

**Legend:**
- Factory Flow Sensor Tubing
- Factory Electrical Wiring
- Field Electrical Wiring

**Note:**
- Outputs connected as per Day Occupied Sequence

---

**Entering and Exiting Night Setback:** There are several methods for the PIC to enter and exit night setback (unoccupied mode). All of the following methods can be enabled or disabled in software or from the T-Stat menu.

1. **Airflow Failure:** (Disabled by default) If using a Pressure Independent day sequence (with the PIC-VAV module), the controller will enter night setback when minimal airflow is sensed in the duct. The controller does this based on Day Flow Trip and Night Flow Trip (adjustable).
   - *Day Flow Trip* is enabled when the controller sees more than 1/2 of its minimum airflow - i.e. min airflow = 132 cfm, Day Flow Trip = 66 cfm. *Night Flow Trip* is enabled when the controller sees less than 1/2 of its day flow trip value - i.e. 33 cfm.

2. **Motion Sensor:** (Disabled by default) If a motion sensor T-Stat is used, the controller can enter night setback if no motion has been detected in the space for a specified period of time (default: 4 hours).

3. **Contact Closure:** (Disabled by default) Connecting the two contact closure inputs together using a dry contact will cause the controller to enter night setback. The controller will exit night setback once the contacts are released.

4. **T-Stat Button:** The T-Stat button allows the user to exit night setback. Pressing any button on the T-Stat will cause the controller to exit night setback for the override time period. (default: 4 hours). Occupancy override by T-Stat button is always enabled and cannot be disabled.

---

**Sequence of Operation -- SINGLE DUCT TERMINAL UNIT - PIC CONTROLLER - NIGHT SETBACK**

During night setback, the controller will respond to its night heat setpoint and its night cool setpoint.

While the room temperature is between the two night setpoints, by default the controller will maintain the damper position at 40% open. All outputs (Fan, Heat, etc.) will go to their OFF or IDLE states.

**Room temperature below Night Heat Setpoint:**

**Reheat Operation:** On a decrease in space temperature into the heating proportional band, the reheat outputs (if used) are energized proportionally.

**Cool supply air:** On a decrease in space temperature the controller regulates the actuator to close the VAV damper and reduces the flow of cool air. The airflow is maintained at the pre-selected minimum setting.

**Warm supply air:** On a decrease in space temperature the controller regulates the actuator to open the VAV damper and increase the flow of warm air. On a decrease of space temperature greater than the heating proportional band, the airflow is maintained at its pre-selected maximum setting.

**Room temperature above Night Cool Setpoint:**

**Cooling Output Operation:** On an increase in space temperature into the cooling proportional band, the cooling outputs (if used) are energized proportionally.

**Cool supply air:** On an increase in space temperature the controller regulates the actuator to open the VAV damper and increase the flow of cool air. On an increase of space temperature greater than the cooling proportional band, the airflow is maintained at its pre-selected maximum setting.

**Warm supply air:** On an increase in space temperature the controller regulates the actuator to close the VAV damper and reduces the flow of warm air. The airflow is maintained at the pre-selected minimum setting.

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**PROJECT:**

**ENGINEER:**

**CUSTOMER:**

**SUBMITTAL DATE:**

**SPEC. SYMBOL:**

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SHEET 1 OF 1 REV C
**Control Sequence Number 1550**

**NOTE 1:**
24 VAC POWER SOURCE MUST BE FIELD WIRED IF OPTIONAL TRANSFORMER IS NOT PROVIDED.

**NOTE 2:**
SECONDARY COM MUST BE EARTH GROUNDED

**NOTE 3:**
STATIC PRESSURE SETPOINT IS FACTORY CALIBRATED TO 0.3" W.C. IT CAN BE CHANGED IN THE FIELD USING EITHER:
1. BACnet FRONT END
2. PRICE USB LINKER INTERFACE
3. LCD-SETUP TOOL (OR ANY PIC/PRODIGY LCD T-STAT)

**NOTE 4:**
MEASURE STATIC PRESSURE APPROXIMATELY 2/3 OF THE WAY DOWN THE MAIN DUCT. LOW PORT (L) ON THE PRESSURE SENSOR MUST NOT BE OBSTRUCTED

**NOTE 5:**
A CAT-5 BACNET NETWORK CABLE IS PROVIDED BY PRICE WITH EACH CONTROLLER ORDERED WITH THE BACNET OPTION

**NOTE 6:**
USE 6/45 JACKS FOR BACNET CONNECTION, OR 3 POSITION TERMINAL BLOCK FOR 3-WIRE CONNECTION (+, -, NETCOM) NETCOM MUST BE WIRED.

---

**Sequence of Operation -- Constant Pressure, Bypass.**

On startup, the controller will calibrate to the fully-open position for 2 minutes.

On an increase in duct static pressure the controller/actuator will open the VAV damper to increase the amount of air bypassed.

On a decrease in duct static pressure the controller/actuator will close the VAV damper to reduce the amount of air by-passed. Duct static pressure is held constant.

Upon detection of air handler shutdown (Zero duct pressure with bypass damper fully closed), the controller/actuator will place the damper at the pre-selected setback position (default: 50% open)

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**PROJECT:**

**ENGINEER:**

**CUSTOMER:**

**SUBMITTAL DATE:**

**SPEC. SYMBOL:**

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**REV C**
Control Sequence Number 1551

Sequence of Operation -- Constant Pressure, Downstream.
On startup, the controller will calibrate to the fully-closed position for 2 minutes.

On an increase in duct static pressure the controller/actuator will close the VAV damper to decrease the amount of air delivered downstream of the box.
On a decrease in duct static pressure the controller/actuator will open the VAV damper to increase the amount of air delivered downstream of the box.
Duct static pressure is held constant.

Upon detection of air handler shutdown (Zero duct pressure with VAV damper fully open), the controller/actuator will place the damper at the pre-selected setback position (default: 50% open)

LEGEND

- FIELD INSTALLED SENSOR TUBING
- FACTORY ELECTRICAL WIRING
- FIELD ELECTRICAL WIRING

CONTROL GRAPH

OPEN

CLOSE

CONSTANT PRESSURE

SET POINT

0 % FLOW

100
**Sequence of Operation -- CO₂ Tracking, Variable Volume, Pressure Independent**

On power up the damper will calibrate closed for 2 minutes.

**The PIC Controller** shall maintain an airflow through the VAV terminal that is directly proportional to the CO₂ level in the occupied space. CO₂ is measured at the Price CO₂ thermostat.

As the CO₂ reading increases from the minimum level to the maximum level (adjustable), the airflow is increased proportionally between the adjustable minimum and maximum airflow setpoints.

As the CO₂ reading decreases from the maximum level to the minimum level (adjustable), the airflow is decreased proportionally between the adjustable minimum and maximum airflow setpoints.
Sequence of Operation -- CO₂ Purge, Pressure Independent

Secondary control sequence. Adds functionality to standard terminal unit control sequences (280x, 680x, 880x) with the CO₂ humidity T-stat Part #250052-200.

NORMAL OPERATION

While the CO₂ reading in the occupied space is below the adjustable maximum level, the terminal unit is controlled as per the selected standard control sequence (280x, 680x, 880x).

CO₂ PURGE

If the CO₂ reading in the occupied space rises above the adjustable maximum level, the controller will regulate the VAV damper to increase the airflow into the space to the adjustable "CO₂ Purge" airflow setting.

Once the CO₂ reading drops to the normal CO₂ level, the controller will resume normal operation.

REHEAT OPERATION

The controller will energize reheat (as directed by the standard control sequence) in both Normal and CO₂ Purge operating modes.
Sequence of Operation – Heat/cool changeover OR cooling only Pressure Independent

On power up the damper will calibrate closed for 2 minutes.

**If no SAT sensor is present, the controller assumes Cool supply air at all times**

**Cool supply air:** On an increase in space temperature the controller regulates the actuator to open the VAV damper and increase the flow of cool air. On an increase of space temperature greater than the cooling proportional band, the airflow is maintained at its pre-selected maximum setting.

On a decrease in space temperature the controller regulates the actuator to close the VAV damper and reduce the flow of cool air. If the space temperature decreases to less than the cooling proportional band, the airflow is maintained at the pre-selected minimum setting.

**Warm supply air:** On a decrease in space temperature the controller regulates the actuator to open the VAV damper and increase the flow of warm air. On a decrease of space temperature greater than the heating proportional band, the airflow is maintained at its pre-selected maximum setting.

On an increase in space temperature the controller regulates the actuator to close the VAV damper and reduce the flow of warm air. If the space temperature increases above the heating proportional band, the airflow is maintained at the pre-selected minimum setting.
Control Sequence Number 1801

Calibration note: Suitable min and max heating flows must be selected in order to maintain flow through energized electric coils of at least 200 fpm and at least 70 cfm/kW throughout the entire operating range.

Sequence of Operation -- Heat/cool changeover OR cooling
With up to 3 stage binary reheat - Pressure Independent
On power up the damper will calibrate closed for 2 minutes.

**If no SAT sensor is present, the controller assumes Cool supply air at all times**

Cool supply air: On an increase in space temperature the controller regulates the actuator to open the VAV damper and increase the flow of cool air. On an increase of space temperature greater than the cooling proportional band, the airflow is maintained at its pre-selected maximum setting.

On a decrease in space temperature the controller regulates the actuator to close the VAV damper and reduce the flow of cool air. If the space temperature decreases to less than the cooling proportional band, the airflow is maintained at the pre-selected minimum setting.

Warm supply air: On a decrease in space temperature the controller regulates the actuator to open the VAV damper and increase the flow of warm air. On a decrease of space temperature greater than the heating proportional band, the airflow is maintained at its pre-selected maximum setting.

On an increase in space temperature the controller regulates the actuator to close the VAV damper and reduce the flow of warm air. If the space temperature increases above the heating proportional band, the airflow is maintained at the pre-selected minimum setting.

Reheat Operation: On a decrease in space temperature into the heating proportional band, the 1st stage binary 24VAC reheat output will energize. Upon further decreases, the 2nd then 3rd stages of reheat (if used) will energize.
**Control Sequence Number 1802**

**Calibration note:** Suitable min and max heating flows must be selected in order to maintain flow through energized electric coils of at least 200 fpm and at least 70 cfm/kW throughout the entire operating range.

**Sequence of Operation** — Heat/cool changeover OR cooling

With Analog modulating reheat - Pressure Independent

On power up the damper will calibrate closed for 2 minutes.

**Cool supply air:** On an increase in space temperature the controller regulates the actuator to open the VAV damper and increase the flow of cool air. On an increase of space temperature greater than the cooling proportional band, the airflow is maintained at its pre-selected maximum setting.

On a decrease in space temperature the controller regulates the actuator to close the VAV damper and reduce the flow of cool air. If the space temperature decreases to less than the cooling proportional band, the airflow is maintained at the pre-selected minimum setting.

**Warm supply air:** On a decrease in space temperature the controller regulates the actuator to open the VAV damper and increase the flow of warm air. On a decrease of space temperature greater than the heating proportional band, the airflow is maintained at its pre-selected maximum setting.

On an increase in space temperature the controller regulates the actuator to close the VAV damper and reduce the flow of warm air. If the space temperature increases above the heating proportional band, the airflow is maintained at the pre-selected minimum setting.

**Reheat Operation:** On a decrease in space temperature, the controller modulates the 0-10VDC output to increase heat proportionally to the room demand.

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**PROJECT:**

**ENGINEER:**

**CUSTOMER:**

**SUBMITTAL DATE:**

**SPEC. SYMBOL:**

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**Calibration note:** Suitable min and max heating flows must be selected in order to maintain flow through energized electric coils of at least 200 fpm and at least 70 cfm/kW throughout the entire operating range.

**Sequence of Operation -- Heat/cool changeover OR cooling With up to 3 stage binary reheat - Pressure Independent**

On power up the damper will calibrate closed for 2 minutes. **If no SAT sensor is present, the controller assumes Cool supply air at all times**

**Cool supply air:** On an increase in space temperature the controller regulates the actuator to open the VAV damper and increase the flow of cool air. On an increase in space temperature greater than the cooling proportional band, the airflow is maintained at its pre-selected maximum setting. On a decrease in space temperature the controller regulates the actuator to close the VAV damper and reduce the flow of cool air. If the space temperature decreases to less than the cooling proportional band, the airflow is maintained at the pre-selected minimum setting.

**Warm supply air:** On a decrease in space temperature the controller regulates the actuator to close the VAV damper and increase the flow of warm air. On a decrease of space temperature greater than the heating proportional band, the airflow is maintained at its pre-selected maximum setting. On an increase in space temperature the controller regulates the actuator to close the VAV damper and reduce the flow of warm air. If the space temperature increases above the heating proportional band, the airflow is maintained at the pre-selected minimum setting.

**Reheat Operation:** On a decrease in space temperature into the heating proportional band, the HW valve is modulated to increase heat proportionally to room demand.
**Calibration note:** Suitable min and max heating flows must be selected in order to maintain flow through energized electric coils of at least 200 fpm and at least 70 cfm/kW throughout the entire operating range.

**Sequence of Operation -- Heat/cool changeover OR cooling With Analog modulating reheat - Pressure independent**

On power up the damper will calibrate closed for 2 minutes.

**Cool supply air:** On an increase in space temperature the controller regulates the actuator to open the VAV damper and increase the flow of cool air. On an increase in space temperature greater than the cooling proportional band, the airflow is maintained at its pre-selected maximum setting.

On a decrease in space temperature the controller regulates the actuator to close the VAV damper and reduce the flow of cool air. If the space temperature decreases to less than the cooling proportional band, the airflow is maintained at the pre-selected minimum setting.

**Warm supply air:** On a decrease in space temperature the controller regulates the actuator to open the VAV damper and increase the flow of warm air. On a decrease of space temperature greater than the heating proportional band, the airflow is maintained at its pre-selected maximum setting.

On an increase in space temperature the controller regulates the actuator to close the VAV damper and reduce the flow of warm air. If the space temperature increases above the heating proportional band, the airflow is maintained at the pre-selected minimum setting.

**Reheat Operation:** On a decrease in space temperature, the controller modulates the 0-10VDC output to increase heat proportionally to the room demand.
Sequence of Operation -- Pressure dependent, variable volume, normally closed, direct acting cooling application.

An increase in space temperature increases the thermostat output pressure. As the thermostat output increases from 5-10 psi or more, the VAV box damper is driven to the open position.

A decrease in space temperature decreases the thermostat output pressure. As the thermostat output decreases from to 10-5 psi or less, the VAV box damper is driven to the closed position.

**Normally Closed Damper:**
On failure of the main air supply the damper will fail to the closed position.

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**NOTE:**
If motor spring range is to be other than 5-10 PSI, please specify.
Optional spring ranges may be required to accommodate the thermostat range and to sequence with any other controlled devices in the system.

---

**LEGEND**
- FACTORY PNEUMATIC TUBING
- FIELD PNEUMATIC TUBING

**CONTROL GRAPH**

- OPEN
- CLOSE
- Cool
- Set Point
- Room Condition
- Warm
- Primary Air
- Air Vol.
**Sequence of Operation** -- Pressure dependent, variable volume, normally open, reverse acting cooling application.

An increase in space temperature decreases the thermostat output pressure. As the thermostat output decreases from 10-5 psi or less, the VAV box damper is driven to the open position.

A decrease in space temperature increases the thermostat output pressure. As the thermostat output increases from to 5-10 psi or more, the VAV box damper is driven to the closed position.

**Normally Open Damper:**

On failure of the main air supply the damper will fail to the open position.
Sequence of Operation -- Pressure independent, constant volume, normally open, direct acting cooling with optional reheat.

The controller will maintain the preselected flow setting. It will modulate the damper based on changes in the duct pressure to maintain a constant air flow. The thermostat may control optional reheat coils.

**Normally Open Damper:**
On failure of the main air supply the damper will fail to the open position.

---

**NOTE:**
1) TOTAL AIR CONSUMPTION 0.017 SCFM.

**LEGEND**
- FACTORY PNEUMATIC TUBING
- FIELD PNEUMATIC TUBING

**CONTROL GRAPH**

---

**PROJECT:**

**ENGINEER:**

**CUSTOMER:**

**SUBMITTAL DATE:**

**SPEC. SYMBOL:**

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Sequence of Operation -- Pressure independent, constant volume, normally closed, direct acting cooling with optional reheat.

The controller will maintain the preselected flow setting. It will modulate the damper based on changes in the duct pressure to maintain a constant air flow. The thermostat may control optional reheat coils.

Normally Closed Damper:
On failure of the main air supply the damper will fail to the closed position.

NOTE:
1) TOTAL AIR CONSUMPTION 0.017 SCFM.

LEGEND
FACTORY PNEUMATIC TUBING
FIELD PNEUMATIC TUBING
CONTROL GRAPH
Sequence of Operation — Pressure independent, variable volume, normally open, direct acting cooling application, with optional reheat.

An increase in space temperature increases the thermostat output pressure. When the thermostat output increases to 13 psi or more, the VAV box damper is maintained at the preselected maximum flow setting. A decrease in space temperature decreases the thermostat output pressure. When the thermostat output decreases to 8 psi or less, the VAV box damper is maintained at the preselected minimum flow setting.

At thermostat output pressures between 8 & 13 psi the VAV damper modulates between minimum & maximum flow.

At thermostat output pressures below 8 psi the minimum flow setting is maintained, and the thermostat may control optional reheat coils.

Airflow is held constant at any given thermostat output pressure regardless of changes in inlet duct static pressure.

**Normally Open Damper:**
On failure of the main air supply the damper will fail to the open position.
**NOTE:**
1) TOTAL AIR CONSUMPTION 0.017 SCFM.

**LEGEND**
- FACTORY PNEUMATIC TUBING
- FIELD PNEUMATIC TUBING

**CONTROL GRAPH**

**Sequence of Operation** — Pressure independent, variable volume, normally closed, direct acting cooling application, with optional reheat.

An increase in space temperature increases the thermostat output pressure. When the thermostat output increases to 13 psi or more, the VAV box damper is maintained at the preselected maximum flow setting.

A decrease in space temperature decreases the thermostat output pressure. When the thermostat output decreases to 8 psi or less, the VAV box damper is maintained at the preselected minimum flow setting.

At thermostat output pressures between 8 & 13 psi the VAV damper modulates between minimum & maximum flow.

At thermostat output pressures below 8 psi the minimum flow setting is maintained, and the thermostat may control optional reheat coils.

Airflow is held constant at any given thermostat output pressure regardless of changes in inlet duct static pressure.

**Normally Closed Damper:**
On failure of the main air supply the damper will fail to the closed position.
NOTE:
1) TOTAL AIR CONSUMPTION 0.027 SCFM.

LEGEND

FACTORY PNEUMATIC TUBING
FIELD PNEUMATIC TUBING

CONTROL GRAPH

OPEN
Max. Cooling
Aux. Flow Htg.

3rd Sig Htg
Opt. Htg

3rd Sig Htg
2nd Sig Htg
1st Sig Htg

CLOSE
Min. Cooling

Cool
Set Point
Room Condition
Warm

Sequence of Operation -- Pressure independent, variable volume, normally open, direct acting cooling with auxiliary flow on heating.
An increase in space temperature increases the thermostat output pressure. When the thermostat output increases to 13 psi or more, the VAV box damper is maintained at the pre-selected maximum flow setting.
A decrease in space temperature decreases the thermostat output pressure. When the thermostat output decreases to 8 psi, the VAV box damper is maintained at the pre-selected minimum flow setting.
As thermostat output pressure continues to decrease between 8 & 3 psi the VAV damper modulates to the auxiliary flow setting.
At thermostat output pressures below 8 psi the thermostat may also control optional reheat coils.
Airflow is held constant at any given thermostat output pressure regardless of changes in inlet duct static pressure.

Normally Open Damper:
On failure of the main air supply the damper will fail to the open position.

PROJECT:

ENGINEER:

CUSTOMER:

SUBMITTAL DATE: 231693

SPEC. SYMBOL: 2011/11/07
Sequence of Operation -- Pressure independent, variable volume, normally closed, direct acting cooling with auxiliary flow on heating.
An increase in space temperature increases the thermostat output pressure. When the thermostat output increases to 13 psi or more, the VAV box damper is maintained at the pre-selected maximum flow setting.
A decrease in space temperature decreases the thermostat output pressure. When the thermostat output decreases to 8 psi, the VAV box damper is maintained at the pre-selected minimum flow setting.
As thermostat output pressure continues to decrease between 8 & 3 psi the VAV damper modulates to the auxiliary heating flow setting.
At thermostat output pressures below 8 psi the thermostat may also control optional reheat coils.
Airflow is held constant at any given thermostat output pressure regardless of changes in inlet duct static pressure.

Normally Closed Damper:
On failure of the main air supply the damper will fail to the closed position.
**Sequence of Operation** -- Pressure independent, variable volume, normally closed, direct acting dual max cooling and heating application.

An increase in space temperature increases the thermostat output pressure. When the thermostat output increases to 13 psi or more, the VAV box damper is maintained at the preselected maximum flow setting. A decrease in space temperature decreases the thermostat output pressure. When the thermostat output decreases to 8 psi, the VAV box damper is maintained at the preselected minimum flow setting. As thermostat output pressure continues to decrease between 8 & 3 psi the VAV damper modulates back to the maximum heating flow setting. At thermostat output pressures below 8 psi the thermostat may also control optional reheat coils.

Airflow is held constant at any given thermostat output pressure regardless of changes in inlet duct static pressure.

**Normally Closed Damper:**
On failure of the main air supply the damper will fail to the closed position.

**NOTE:**
1) TOTAL AIR CONSUMPTION 0.037 SCFM.

**LEGEND**
- FACTORY PNEUMATIC TUBING
- FIELD PNEUMATIC TUBING

**CONTROL GRAPH**
- OPEN
- Max. Cooling
- Max. Heating
- Min. Cooling
- CLOSE

**PROJECT:**

**ENGINEER:**

**CUSTOMER:**

**SUBMITTAL DATE:**

**SPEC. SYMBOL:**

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**Sequence of Operation** -- Pressure independent, variable volume on cooling, normally open, direct acting, adjustable constant volume on warm-up application, and optional reheat.

**Normal operation with main air pressure at 18 psi:** An increase in space temperature increases the thermostat output pressure. When the thermostat output increases to 13 psi or more, the VAV box damper is maintained at the preselected maximum flow setting.

A decrease in space temperature decreases the thermostat output pressure. When the thermostat output decreases to 8 psi, the VAV box damper is maintained at the preselected minimum flow setting.

As thermostat output pressure continues to decrease between 8 & 3 psi, the VAV damper is maintained at the preselected minimum setting.

At thermostat output pressures below 8 p.s.i. the thermostat may also control optional reheat coils.

**Warm-up with main air pressure at 23 psi:** The VAV damper is opened to the preselected warm-up flow setting. Optional reheat coils operate in the normal manner.

Airflow is held constant at any given thermostat output pressure and in the warm-up mode, regardless of changes in inlet duct static pressure.

**Normally Open Damper:**

On failure of the main air supply the damper will fail to the open position.
Sequence of Operation -- Pressure independent, variable volume, normally open, reverse acting cooling application, with optional reheat.

An increase in space temperature decreases the thermostat output pressure. When the thermostat output decreases to 3 psi or less, the VAV box damper is maintained at the pre-selected maximum flow setting.

A decrease in space temperature increases the thermostat output pressure. When the thermostat output increases to 8 psi or more, the VAV box damper is maintained at the pre-selected minimum flow setting.

At thermostat output pressures between 3 & 8 psi the VAV damper modulates between minimum & maximum flow.

At thermostat output pressures above 8 psi the minimum flow setting is maintained, and the thermostat may control optional reheat coils. Airflow is held constant at any given thermostat output pressure regardless of changes in inlet duct static pressure.

**Normally Open Damper:**
On failure of the main air supply the damper will fail to the open position.
**SEQUENCE OF OPERATION**

- Pressure independent, variable volume, normally closed, reverse acting cooling application with optional reheat.

An increase in space temperature decreases the thermostat output pressure. When the thermostat output decreases to 3 psi or less, the VAV box damper is maintained at the preselected maximum flow setting.

A decrease in space temperature increases the thermostat output pressure. When the thermostat output increases to 8 psi or more, the VAV box damper is maintained at the preselected minimum flow setting.

At thermostat output pressures between 3 & 8 psi, the VAV damper modulates between minimum & maximum flow settings.

At thermostat output pressures above 8 psi, the minimum flow setting is maintained, and the thermostat may control optional reheat coils.

Airflow is held constant at any given thermostat output pressure regardless of changes in inlet duct static pressure.

**NORMALLY CLOSED DAMPER:**

On failure of the main air supply the damper will fall to the closed position.
Sequence of Operation  -- Pressure dependent, variable volume, normally closed, exhaust application.
As the pressure signal increases from 5-10 psi or more, the VAV box damper is driven to the open position.
As the pressure signal decreases from 10-5 psi or less, the VAV box damper is driven to the closed position.

Normally Closed Damper:
On failure of the main air supply the damper will fail to the closed position.
Sequence of Operation  -- Pressure dependent, variable volume, normally open, exhaust application.

As the pressure signal decreases from 10-5 psi or less, the VAV box damper is driven to the open position.

As the pressure signal increases from 5-10 psi or more, the VAV box damper is driven to the closed position.

**Normally Open Damper:**

On failure of the main air supply the damper will fail to the open position.
Sequence of Operation -- Pressure independent, constant volume, normally open, direct acting exhaust.
The controller will maintain the preselected flow setting. It will modulate the damper based on changes in the duct pressure to maintain a constant air flow.

**Normally Open Damper:**
On failure of the main air supply the damper will fail to the open position.
Sequence of Operation  -- Pressure independent, constant volume, normally closed, direct acting exhaust.
The controller will maintain the preselected flow setting. It will modulate the damper based on changes in the duct pressure to maintain a constant air flow.

Normally Closed Damper:
On failure of the main air supply the damper will fail to the closed position.

LEGEND

FACTORY PNEUMATIC TUBING
FIELD PNEUMATIC TUBING

CONTROL GRAPH

OPEN
Air Val
Exhaust Air
CLOSE
Sequence of Operation — Pressure independent, variable volume, normally open, direct acting exhaust application.

When the pressure signal increases to 13 psi or more, the VAV box damper is maintained at the preselected maximum flow setting.

When the pressure signal decreases to 8 psi or less, the VAV box damper is maintained at the preselected minimum flow setting. At pressure signals between 8 & 13 psi the VAV damper modulates between minimum & maximum flow.

At pressure signals below 8 psi the minimum flow setting is maintained.

Airflow is held constant at any given pressure signal regardless of changes in inlet duct static pressure.

**Normally Open Damper:**
On failure of the main air supply the damper will fail to the open position.
Sequence of Operation -- Pressure independent, variable volume, normally closed, direct acting exhaust application.
When the pressure signal increases to 13 psi or more, the VAV box damper is maintained at the preselected maximum flow setting.
When the pressure signal decreases to 8 psi or less, the VAV box damper is maintained at the preselected minimum flow setting.
At pressure signals between 8 & 13 psi the VAV damper modulates between minimum & maximum flow.
At pressure signals below 8 psi the minimum flow setting is maintained.
Airflow is held constant at any given pressure signal regardless of the change in duct static pressure.

Normally Closed Damper:
On failure of the main air supply the damper will fail to the closed position.