

Application Guide

Contents

Introduction	1
Procedure.....	1
Wiring Connections	2
Rotation Direction	2
Air Pressure Connection	3
Bypass Pressure Setpoint.....	3
Troubleshooting	4
More Information.....	4
We Value Your Feedback!	4
Important Notices	4

Introduction

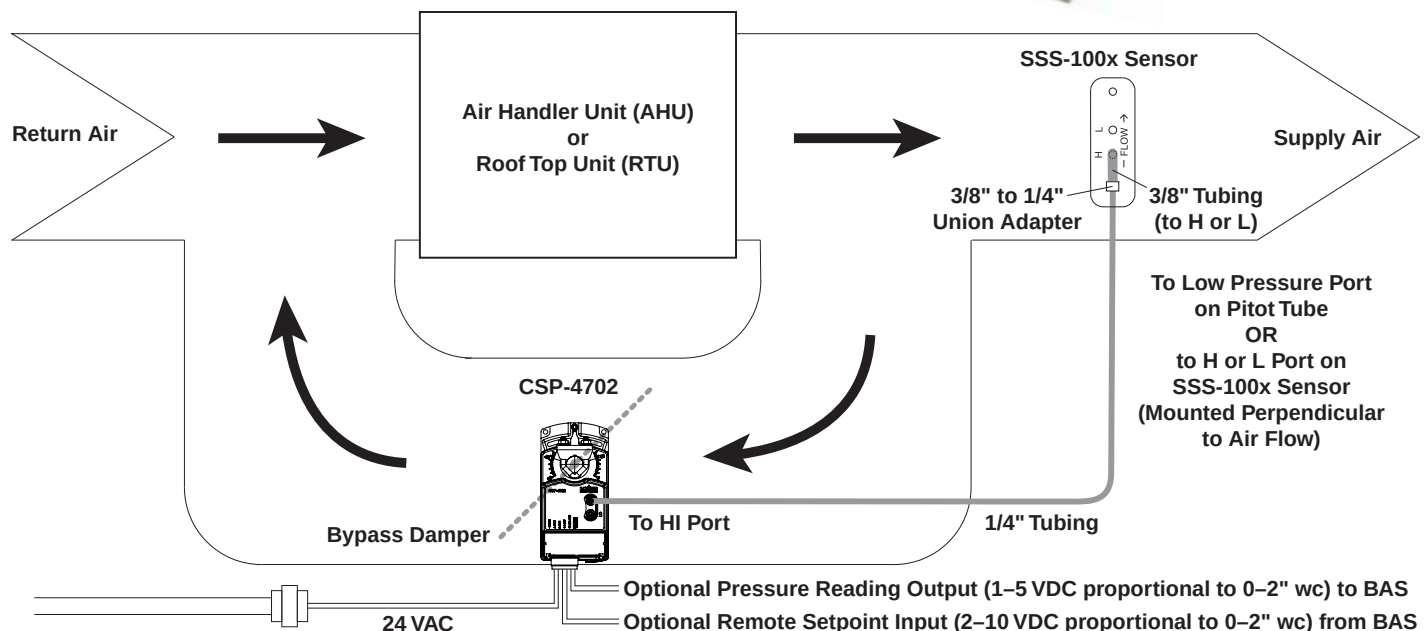
Besides VAV applications, the CSP-4702 can also act as a static pressure controller in such applications as RTU/AHU bypass control. It is not connected to a thermostat for this application.

In bypass applications, the damper should open (decreasing the pressure) if the pressure input signal is higher than the setpoint. This is opposite of VAV applications, in which the damper closes (decreasing the flow) if the pressure input signal is higher than the setpoint.

Procedure

For static pressure applications:

1. Connect the "HI" port of the CSP-4702 to the pitot tube or SSS-1000 series sensor (see [Air Pressure Connection on page 3](#)).
2. Connect the 24 VAC power (see [Wiring Connections on page 2](#)). Optionally connect remote setpoint and pressure reading devices to a BAS (Building Automation System) controller.
3. Set the MIN flow limit to the desired bypass pressure setpoint (see [Bypass Pressure Setpoint on page 3](#)).
4. Set the rotation direction to CW or CCW for the "open" direction (instead of "close" direction—see [Rotation Direction on page 2](#)).

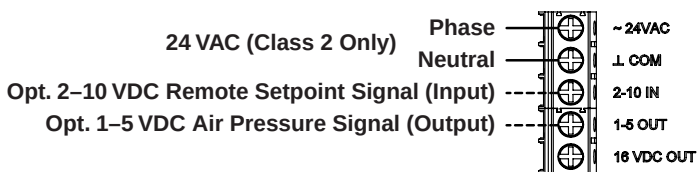


Wiring Connections

1. Loosen the screw on the conduit fitting and lift up to remove the fitting.
2. Using a utility knife or drill, cut the red plug to accept wiring or replace the plug with an application-specific fitting.

NOTE: The red plug (or similar fitting) protects internal components from debris, helping to ensure long actuator life.

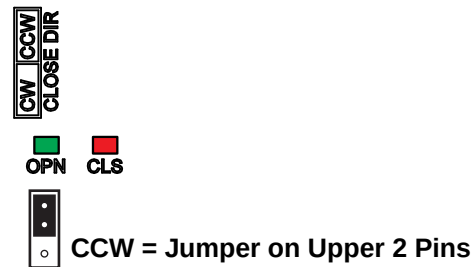
3. Thread wires through the plugged opening and connect to the terminal block as shown:
 - Connect **24 VAC** to the Phase and Common terminals.
 - **Duct pressure** can optionally be read across the 1–5 VDC Output and Common terminals. Then 1 VDC = 0" wc and 5 VDC = 2" wc, with max. 10K ohm load. For example, connection to an unused input of the nearest BACnet VAV controller (e.g., KMC BAC-70xx) would allow monitoring of the duct pressure by the Building Automation System.
 - To use an optional **remote setpoint**, MIN limit should be set at 0 VDC and MAX limit at 2 VDC (see [Bypass Pressure Setpoint on page 3](#)). Then 2 VDC across that terminal and Common = 0" wc and 10 VDC = 2" wc. (This is typically not used, but connection to an unused output of the nearest BACnet VAV controller, for example, would allow resetting of the duct pressure by the Building Automation System.)
 - 16 VDC Output is not used. (This output is designed to power a CTE-5202 thermostat in VAV applications.)
4. As needed, change the rotation direction (see [Rotation Direction on page 2](#)) and set the MIN flow settings after making the air pressure connections (see [Bypass Pressure Setpoint on page 3](#)).
5. Reinstall the conduit fitting and tighten the screw.



Rotation Direction

Set the rotation direction to CW or CCW for the “open” direction (instead of the “close” direction). The CSP-4702 is factory-set for counterclockwise to close. To reverse the direction (with the conduit cover removed), move the jumper to the CW position.

NOTE: For about 15 seconds after power is applied, no rotation occurs and one or both of the LEDs will flash. The Close LED illuminates (solid red) when the actuator is closing. The Open LED illuminates (solid green) when opening. When the actuator reaches the end of rotation or the mechanical stop, the LED may stay illuminated a brief time if the called for condition remains unsatisfied.



Air Pressure Connection

Connect the CSP-4702 to a differential pressure sensor (mounted in the supply air duct) with 1/4-inch OD x 0.040-inch wall FR instrument and control tubing:

1. Connect the **“HI” port of the CSP-4702** to:
 - **Low pressure port of a pitot tube.**
 - **Or either port of an SSS-1000 series sensor mounted perpendicular to the air flow.** (The flow direction arrow on the sensor can point up or down—see the diagram on [page 1](#).)
2. The **“LO” port of the CSP-4702** and the other port of the pitot tube or SSS-100x sensor are left unconnected and open to the air.

NOTE: To connect to 1/4-inch tubing from the CSP-4702, an SSS-100x sensor requires a 3/8" to 1/4" barb union adapter and 1" of 3/8" OD x 0.062 "FR" tubing for connections. An SSS-101x sensor does not require the 3/8" tubing or adapter.

NOTE: Tubing should be free of kinks and restrictions.

NOTE: If mounting an SSS-100x sensor perpendicular to a relatively small diameter round duct, be careful not break the sensor by overtightening the screws and overflexing the plastic sensor mount.



Bypass Pressure Setpoint

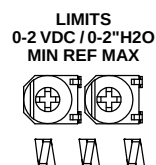
To set the bypass pressure setpoint (minimum flow limit on the CSP-4702):

1. With the conduit cover removed, connect a voltmeter to the meter taps. The middle pin (REF) is the common for the outer (MIN and MAX) pins.
2. Adjust the MIN potentiometer for the desired minimum voltage. The factory default is 0 VDC = 0" wc. Leave the MAX setting at the default 2" wc.

NOTE: **1 VDC = 1" wc.** If, for example, the desired setpoint is 0.5" wc, set the MIN voltage to 0.5 VDC.

NOTE: If a **remote** setpoint device is being used, set the CSP-4702 MIN limit to 0 VDC and MAX limit to 2 VDC (defaults).

NOTE: In bypass applications, the damper should open (decreasing the pressure) if the pressure input signal is higher than the setpoint. This is opposite of VAV applications, in which the damper closes (decreasing the flow) if the pressure input signal is higher than the setpoint.



Troubleshooting

No Rotation

NOTE: For about 15 seconds after power is applied, no rotation occurs and one or both of the LEDs will flash.

- Check that the shaft moves freely. (Press and hold the gear disengagement lever and manually rotate the shaft.)
- Check wiring. (See Wiring Issues section below.)
- Check for a tripped circuit breaker to the transformer, for proper supply voltage from the transformer (or power supply), and for enough capacity (VA) for all connected devices. See their respective data sheets and [Tips for Connecting 24-Volt Power Application Note \(AN0604D\)](#) available on the KMC Controls web site.
- Check that the direction jumper is in the proper position. See [Rotation Direction on page 2](#).

Wrong Rotation Direction or Stroke Range

- Check the position of the direction jumper. See [Rotation Direction on page 2](#).
- Check the MIN flow limit. See [Bypass Pressure Setpoint on page 3](#).
- Check the adjustable stop position.

Wiring Issues

- Check for correct wiring at each device and connected devices.
- Use a voltmeter and ohmmeter to check the terminals for expected values.
- See [Tips for Connecting 24-Volt Power Application Note \(AN0604D\)](#).

NOTE: Wiring must be adequate to avoid excessive voltage drop on long runs! Allow plenty of “cushion” in measurements A meter may be too slow to register transient dips or peaks during startup.

More Information

For specifications, accessories, and other information, see the [CSP-4702 Data Sheet](#) on the KMC web site.

For VAV applications with the CTE-5202 thermostat and other information, see the [CTE-5202 Applications Guide](#).

For SSS-100x information, see the [SSS-1000 Series Data Sheet](#).

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