

The IAQ50 Air Damper/Monitor Installation and Maintenance Manual

RUSKIN®

RUSKIN MANUFACTURING
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The IAQ50 Air Damper/Monitor Installation and Maintenance Manual

! WARNING

DO NOT TAMPER WITH (REMOVE, REPLACE, RELOCATE OR ADJUST) THE ACTUATOR ON ANY IAQ50 DAMPER PRODUCT WITHOUT FIRST CONTACTING RUSKIN AIR AND SOUND CONTROL. THE ACTUATOR IS CALIBRATED WITH THE CONTROLS TO MATCH JOB SPECIFIC SET POINTS. MANIPULATING THE ACTUATOR IN ANY WAY WILL VOID THE WARRANTY OF THE DAMPER AND RESULT IN IMPROPER CFM READINGS.

! WARNING

THIS ACCESSORY IS TO BE INSTALLED BY A QUALIFIED SERVICE PERSON. TO AVOID UNSATISFACTORY OPERATION OR DAMAGE TO THE PRODUCT AND POSSIBLE UNSAFE CONDITIONS. THE INSTALLATION INSTRUCTIONS PROVIDED WITH THIS ACCESSORY MUST BE STRICTLY FOLLOWED AND THE PARTS SUPPLIED USED WITHOUT SUBSTITUTION. DAMAGE TO THE PRODUCT RESULTING FROM NOT FOLLOWING THE INSTRUCTIONS OR USING UNAUTHORIZED PARTS MAY BE EXCLUDED FROM THE MANUFACTURER'S WARRANTY COVERAGE.

! WARNING

DISCONNECT ELECTRICAL POWER TO THE UNIT. FAILURE TO DO SO CAN CAUSE ELECTRICAL SHOCK RESULTING IN PERSONAL INJURY OR DEATH.

The IAQ50 Air Damper/Monitor unit and digital controller panel may ship in separate containers. Please verify the receipt of both prior to installation. On projects with multiple units, it is necessary to match the specific controller with the specific IAQ50 damper. Match the control numbers to insure the controller is the correct match for the damper/monitor.

5.1 IAQ50 Air Damper/Monitor Installation Instructions

1. Remove the IAQ50 Air Damper/Monitor from its shipping container and inspect for damage, rust or corrosion. Care must be taken in handling the unit. Always handle the IAQ50 Air Damper/Monitor by its frame. Do not lift it by the blade, linkage, axle, motor or jackshaft. Do not drop, drag, step on, or apply excessive bending, twisting or racking loads to the IAQ50. Improper handling of the unit will have adverse affects on the calibration and could result in cancellation of the warranty.
2. Inspect the ductwork and/or opening where the IAQ50 Air Damper/Monitor assembly will be installed for any obstruction or irregularities that might interfere with blade or linkage rotation, or actuator mounting. If it is to be installed in ductwork, the ductwork should be supported in the area of the IAQ50 to prevent sagging due to the unit's weight.
3. The IAQ50 Air Damper/Monitor must be installed with the frames square and without twisting or bending. Unless specifically designed for a vertical blade application, the unit must be mounted with its blade axis horizontal. The damper blades, axles, and linkage must be able to operate without binding.
4. The best location for the extended shaft or jackshaft must be determined before installing the damper. The damper may be rotated to get the extended shaft on the correct side of the ductwork. After the damper is installed the shaft location cannot be changed without removing the damper. The jackshaft, if installed, will always be in the leaving air stream. Unlike other control dampers, which have no airflow orientation, the IAQ50 has a specified inlet and outlet. The outside air (or other controlled air stream) enters the unit through the air straightener section and exits the unit from the damper frame side.
5. Use appropriate shims between damper frame and duct opening to prevent distortion of the frame by fasteners holding it in place. If creating a multi-section assembly, be sure that all of the sections are fastened together on both sides.
6. The IAQ50 Air Damper/Monitor is factory calibrated and tested in order to perform correctly in its application immediately following installation. The electric actuator should not be moved, adjusted, or altered in any way to facilitate installation. Such modifications affect the factory calibration of the unit. If the actuator, linkage, or shafting present a problem for installation, please consult your local Ruskin representative or the Ruskin factory. The IAQ50 should be cycled after installation to assure proper operation.

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5.2 Digital Controller Panel Installation

1. The controller enclosure should be mounted securely on an adjacent wall, attached to the air handling unit, or placed within some other suitable control panel. The panel should be mounted within 120 feet of the IAQ50 Air Damper/Monitor to prevent pressure signal variations from the IAQ50 to the control panel. If the enclosure must be mounted more than 120 feet from the IAQ50 damper frame, please consult your local Ruskin representative or the Ruskin factory.
2. Loosen the enclosure's cover screws and remove the cover.
3. Remove the appropriate knockouts for connection of the field wires to the enclosure's terminal blocks.
4. Fasten the enclosure to the wall or flat surface using the (4) 1/4" dia. holes at the four corners.

5.3 IAQ50 Wiring & Piping Connections (refer to control panel wiring diagram)

IAQ50 Wiring Connections

1. Connect the 115VAC power supply to IAQ50 control panel terminals L1 and L2.
2. Connect 24VAC power wires from the Ruskin or Honeywell actuator terminal block to the control panel terminal block. Do not wire actuator terminals 1 & 2 directly into the IAQ50 plant controller. Wire from actuator terminal 1 "T" to terminal block 47. Wire from actuator terminal 2 "C" to terminal block 46. Wire from actuator terminal 3 "+" directly to the IAQ50 plant controller terminal 50 "A01." Wire from actuator terminal 5 "F" directly to the IAQ50 plant controller terminal 19 "A12." Actuator terminal 4 "-" is not wired.
3. Connect the motor actuator (0-10V control signal) wire 3 to panel terminal 50.
4. Connect the motor actuator (2-10V position feedback signal) wire 5 to panel terminal 19.
5. (Optional) Connect the 0-10VDC remote setpoint adjustment signal (by others) to control panel terminals 26 and 27 (terminal 26 is the positive terminal). If used, remove the 2K resistor.
6. (Optional) Connect the wires to receive 0-20mA actual CFM signal from the IAQ50 panel to terminals 51 and 52 (terminal 52 is the positive terminal).
7. (Optional) If BMS contacts are wired to the IAQ50 plant controller terminals 1, 2 & 3, contact sequence is as shown in the table below.

SEQUENCE	CONTROL FUNCTION
1 & 2 Closed 2 & 3 Open	Close Damper
1 & 2 Closed 2 & 3 Closed	Open Damper
1 & 2 Open 2 & 3 Closed	Open Damper
1 & 2 Open 2 & 3 Open	IAQ Control Mode

8. (Optional) Connect the 0-10VDC remote outside air cooling demand signal (by others) to control panel terminals 28 and 29 (terminal 28 is the positive terminal). If this signal calls for more outside air than the minimum ventilation setpoint, the IAQ50 will modulate open beyond minimum position in response to this signal (0-20mA scaled to 0-100% damper open). At no time will the IAQ50 digital controller allow an airflow below the minimum CFM setpoint. If used, remove the 2K resistor.

IAQ50 Piping Connections

1. Connect the total pressure signal tubing (from upstream side of damper) labeled "H" to barbed fitting on the side of the IAQ50 control panel labeled "H".
2. Connect the static pressure signal tubing (from downstream side of damper) labeled "L" to barbed fitting on the side of the IAQ50 control panel labeled "L".

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5.4 IAQ50 Inspection and Troubleshooting Instructions

IAQ50 Symptom	Possible Cause	Inspection	Action
IAQ50 remains closed and does not modulate.	Power failure (fail closed setup).	1. Check terminals LI and L2 for 120VAC power supply. 2. Check terminals 46 and 47 for 24VAC power.	1. Restore power. 2. Replace transformer.
	Close mode in effect.	1. Check wiring connections to terminals 1 and 2 (S1 switch) for a closed circuit.	1. Remove jumper wire or open external controls.
IAQ50 remains open and does not modulate.	Power failure (fail open setup).	1. Check terminals LI and L2 for 120VAC power supply. 2. Check terminals 46 and 47 for 24VAC power.	1. Restore power. 2. Replace transformer.
	Economizer mode in effect.	1. Check wiring connections to terminals 2 and 3 (S2 switch) for a closed circuit.	1. Remove jumper wire or open external controls.
	Insufficient airflow.	1. IAQ50 is responding properly to system conditions. Check for obstructions and fan problems.	1. Insure proper system operation. 2. Check CFM on terminals 51-52.
	Pressure signal loss.	1. Check tubing/piping connection from IAQ50 frame to panel. Ports could be swapped. Tubes may be leaking. 2. Check terminals - and O on pressure transducer for 0-10VDC signal (10V at 1"w.c.)	1. Repair piping connections. 2. Call Ruskin.
	Actuator feedback failure.	1. Check DC voltage at terminals 46 and 19 for 0-10VDC range.	1. Call Ruskin.
CFM Indication remains below setpoint with open damper.	Insufficient airflow.	1. Check supply fan and HVAC system operation.	1. Return HVAC system to normal operation.
	Poor air sensing.	1. Check the straightener section and sensing blades for excessive dirt and dust.	1. Follow maintenance procedures recommended by Ruskin.

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5.5 IAQ50 Maintenance Instructions

1. Semi-annually the tiebar linkage and the jackshaft or extended shaft bearings should be lubricated with a silicone lubricant.
2. Blade axle bearings do not normally require lubrication.
3. When dampers are installed where they will be exposed to heavy dust-laden air, discretionary flushing of the axle bearings with water is recommended for extended bearing life.
4. The air straightener section and the damper blades should be annually inspected for particulate build-up. Use a damp cloth to wipe clean the damper blades. One can use water to clean and flush the air straightener section and the damper blades if deemed necessary. The air straightener section can be unbolted from the damper for ease of cleaning. Ruskin recommends using pressurized air to clear the sensing ports of water. See step 5.
5. Disconnect the piping connections between the IAQ50 Air Damper/Monitor frame and the control panel. Apply a clean, pressurized air source (35psi max.) to the air piping connections on the IAQ50 damper frame in order to flush out the sensing ports on the fixed monitoring blade(s) of the IAQ50. **DO NOT connect this air source to the control panel as this will damage the IAQ instrumentation.**

RECOMMENDED SPARE PARTS LIST IAQ50 Air Damper/Monitor

<u>DESCRIPTION</u>	<u>PART NO.</u>
Roto Clip	E-25
Blade Edge Seal - Opposed	80-020045-00B
Digital Controller	W7760C2025**
Differential Pressure Sensor	RU-274-R2-VDC**
120V/24V Transformer 85VA	T-202
Wire Terminal	(2) 324-HDS/3
Electric Actuator	MS7106K2004**

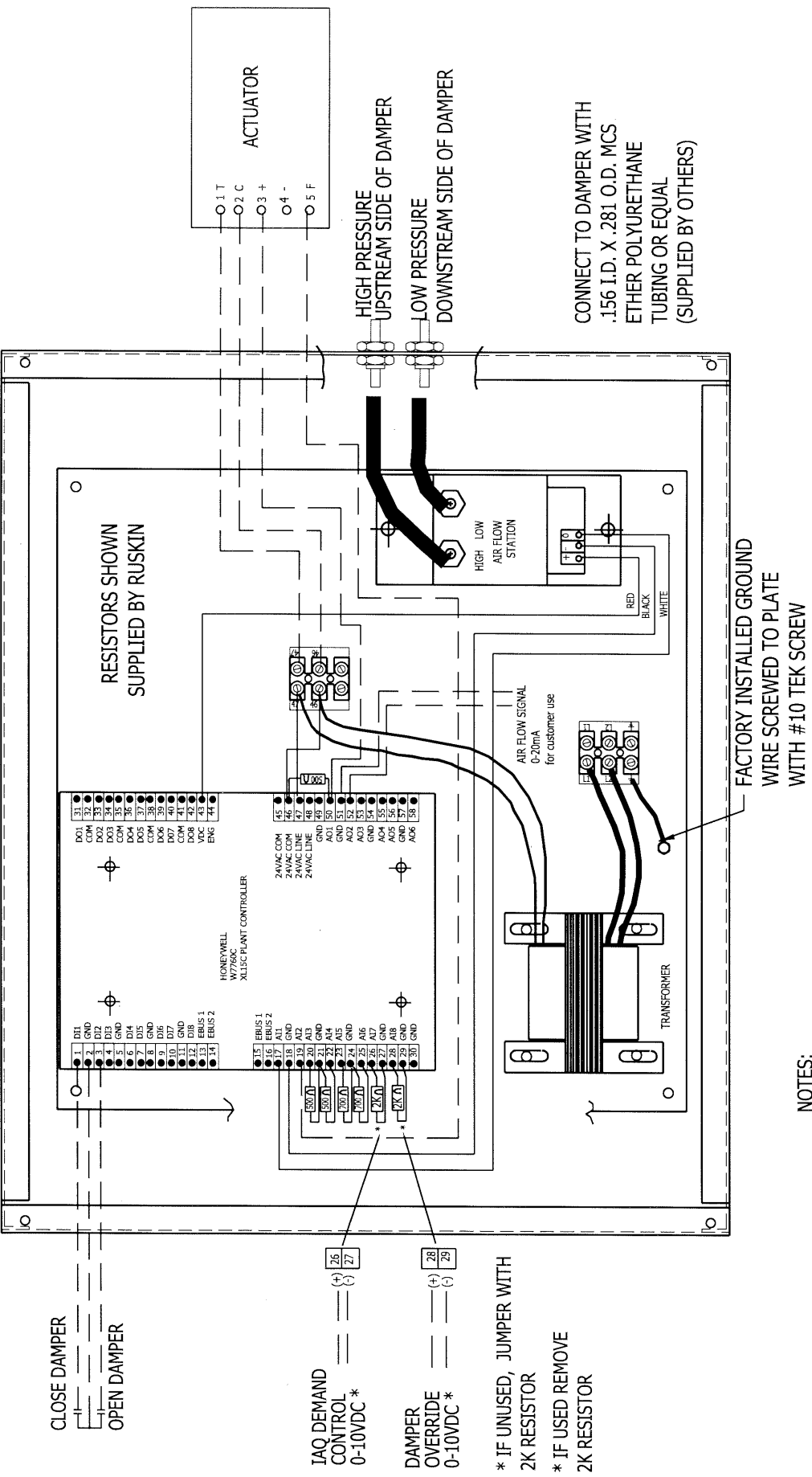
**Requires factory calibration. Consult Ruskin.

Contact Ruskin Manufacturing, Commercial Damper Sales, 3900 Dr. Greaves Road, Grandview, MO 64030 for information.
Telephone: 816-761-7476

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NOTES:

1. FIELD WIRING BETWEEN ACTUATOR AND
CONTROLLER PER LOCAL CODE.
2. REFER TO 85-021043-00B FOR PART DESCRIPTION.
3. _____ WIRED BY RUSKIN
_____ FIELD WIRING



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