

**RUSKIN AIR MEASUREMENT ACTUATOR (VAMB24-BAC RAMS)  
FACTORY INSTALLED ON AIRFLOW-IQ SERIES AIR MEASUREMENT STATIONS**



**Communicative actuator for adjusting air dampers in ventilation and air conditioning systems.**

- Torque 180 in-lb
- Ethernet 10/100 Mbit/s, TCP/IP, integrated Web server
- BACnet/IP, BACnet MS/TP
- Control up to three additional actuators via MP-Bus
- Two analog inputs for flow sensing and receiving a DDC setpoint

**MODE OF OPERATION**

The air measurement actuator is the BACnet interface and setup port for the air measurement station. The air measurement actuator accepts a CFM SETPOINT via analog input S2 or a network driven value that when present will override the analog input. The actuator will modulate the damper to maintain the set point value. Air flow measurement sensor is connected to Input S1 of the actuator and can represent velocity pressure or a velocity air flow measurement. Air measurement is calculated based on actuator's configuration and reported via the BACnet interface or an analog output from the sensor to the building automation system. Air Measurement actuator includes WEBSEVER and can be configured using any web browser such as Internet Explorer.

Direct Position Control via BACnet or Analog Input is also possible, using the flow input for reporting only.

**FEATURES**

- Setup via integrated Web Server and Ethernet IP connection, directly to actuator.
- BACnet/IP or BACnet MS/TP
- Fail Safe Signal Interlock, drives damper closed on loss of signal.
- Controls multiple MFT actuators – Use for Large multi-section air measurement stations or to control Return air damper or hot-deck cold-deck or face & bypass applications, equal or equal and opposite position.

**INPUTS**

Two inputs. S1 - Sensor. S2 - Setpoint & fail safe interlock contact Note: When using Network CFM setpoint or position control S2 must be jumpered to 24V (Pin2 RED) to enable operation. Loss of signal on S2 will drive the actuator to the closed position. Connect through dry contact if desired for low-temperature protection or occupied / unoccupied operation.

**SIMPLE DIRECT MOUNTING**

Simple direct mounting on the damper shaft with a universal clamp, supplied with an anti-rotation strap to prevent the actuator from rotating.

**MANUAL OVERRIDE**

Manual position override with hand crank and lock switch is possible while power is removed from the actuator.

**ADJUSTABLE ANGLE OF ROTATION**

Adjustable angle of rotation with mechanical end stops.

**HIGHER OPERATIONAL RELIABILITY**

The actuator is overload protected. No limit switches are required, automatically stops when the end stop is reached.

**COMMISSIONING**

Site specific network interface configuration by installing contractor.

Air Measurement Station configuration, size, sensor technology and settings by installing contractor to match attached air measurement station.

**BUILT IN TRENDING**

Short term 31 Days  
Long Term Compressed file 13 Months

Technical Data	VAMB24-BAC RAMS
Nominal voltage range	AC 19.2...28.8 V, (±20%) DC 21.6... 28.8 V, (-10%/+20%)
Power consumption, running	6 W
Power consumption, holding	3 W
Transformer sizing	8 VA (class 2 power source)
Electrical connections	for power and control: 18 GA plenum rated cable, 1/2" conduit connector for communication: RJ245 socket, w/boot
Overload protection	Electronic throughout 0° to 95° degree rotation
Nominal torque	min. 180 in-lb [20 NM]
Communicative control	BACnet/IP: (see "PICS" statement) Modbus TCP: (see "Modbus Register")
Position signal 'S1'	2-10 VDC (For local hybrid control use S1)
Universal sensor Input	two universal sensor inputs (S1 and S2) <ul style="list-style-type: none"> <li>• Contact closure</li> <li>• Passive, 0...50KΩ (select type and value)</li> <li>• Analog (Active), 0-10 or 2-10 VDC (select)</li> </ul>
Feedback output U	2-10 VDC, 0.5 mA max., VDC variable
Direction of rotation	reversible with switch; maintain last command
Manual override	external push button
Angle of rotation	max. 95°, adjustable with mechanical stop electronically variable
Running time (Motor)	150 sec (default), variable (70 to 220 sec)
Position indication	reflective visual indicator (snap-on)
Protection class IEC/EN	III safety extra-low voltage (selv)
Housing	NEMA 1
Housing material	UL94-V0A
Rated voltage supply / control	0.8 kV
Ambient temperature range	-22°F to 122°F [-30°C to 50°C]
Storage temperature range	-40°F to 176°F [-40°C to 80°C]
Humidity	5 to 95% RH non condensing (EN 60730-1)
Agency listings	cULus acc. to UL 60730-1A/-2-14, CAN/CSA E60730-1:02, CE acc. to 2004/108/EEC and 2006/95/EC
Servicing	maintenance free
Quality standard	ISO 9001
Weight	2.6 lbs [1.18 kg]

Accessories	
K-LM	3/4" Shaft Clamp
AV6-20	Shaft Extension
ZG-LMSA	Shaft Adaptor of 1/2" Diameter shafts
ZG-LMSA-1	Shaft Adaptor of 3/8" Diameter shafts
ZS-100	Weather Shield - Steel
ZS-150	Weather Shield - Polycarbonate
-MPX	Actuators and I/O Expansion Modules

### Safety Notes

- The actuator must not be used outside the specific field of applications, especially not in aircraft or in any other means of transport.
- It may only be installed by suitable trained personnel. Any legal regulations or regulations issued by authorities must be observed during assembly
- The actuator does not contain any parts that can be replaced or repaired by the user

### Electrical Installation

#### ✂ INSTALLATION NOTES

- 1 Switching current 10 mA @ 24V
- 2 Resistance range 200Ω to 55 kΩ
- 3 Suitable for Ni1000, Pt1000, NTC3k, NTC5k and NTC10k
- 4 Sensor signal DC 0-10V
- 5 Resolution 5mV

**⚠ WARNING**  
Connect via safety isolation transformer.

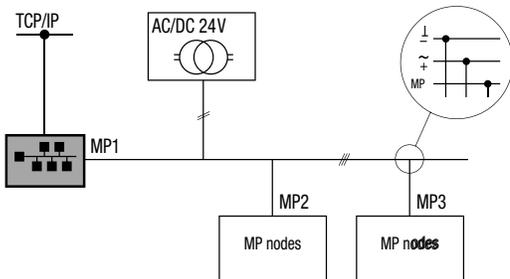
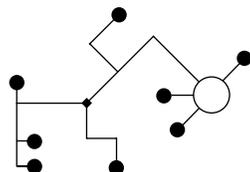
#### 📄 APPLICATION NOTES

**MP Bus supply and communication** in the same 3-wire cable

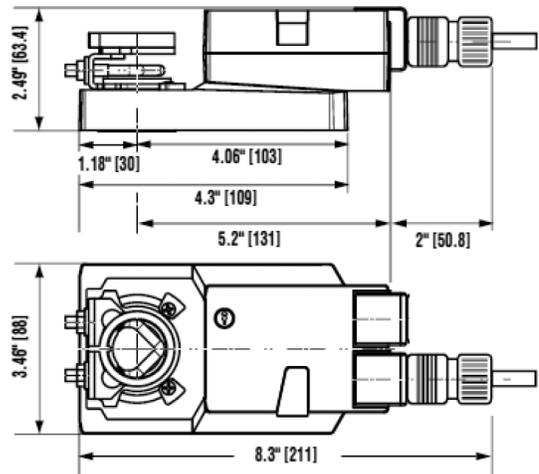
- no shielding or twisting necessary
- no terminating resistors required

#### MP-Bus power topology

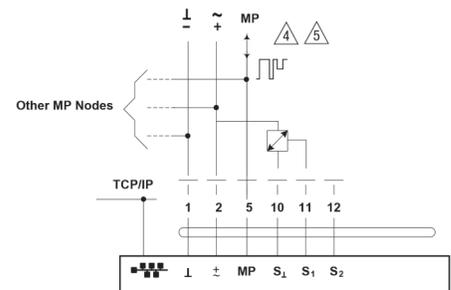
There are no restrictions for the power topology (star, ring, tree or hybrid forms are permitted).



### Dimensions (Inches [mm])



### Wiring Diagrams



Connection of active sensors

### Wiring

3-ft black plenum cable connector with the following pin assignments

- Wire 1 Ground - Black
- Wire 2 24V Hot - Red
- Wire 5 MPBus - Orange
- Wire 6 C1 BACnet MS/TP (-) Pink
- Wire 7 C2 BACnet MS/TP (+) Gray
- Wire 10 Sensor Com - Yellow/Black
- Wire 11 S1 - Yellow/Pink
- Wire 12 S2 - Yellow/Grey

### Notes

- S1 - 0-10V Air measurement sensor
- S2 - 0-10V CFM setpoint & Loss of signal Interlock. Jumper to 24V Hot if not used.



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