

## GLOBAL CONTROLS, INC.



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### APPLICATION

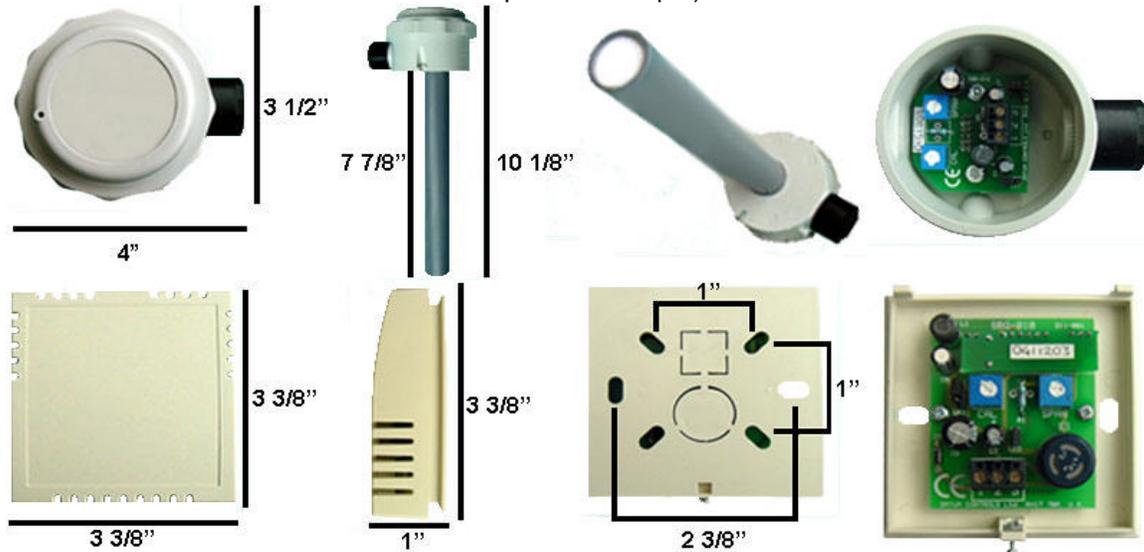
The purpose of the sensor is to control the amount of fresh air introduced by a ventilation plant and therefore, reduce energy consumption. This is achieved by measuring the level of contaminant gases found in the controlled space and providing a signal to the ventilation plant to control the damper's position. Thereby, saving on the energy consumed by heating or cooling fresh air during periods of little or no occupancy. The principal feature of the "AQ" sensor is that the mixed gas level is monitored and it is not limited to just one specific gas. The sensor, therefore, does not distinguish between contamination from say tobacco smoke or cooking smells and people, thus providing the air correction necessary for comfort as well as health.

### CONSTRUCTION

The transmitter circuitry, which utilizes surface mount technology, is supported by a rigid circuit board. In the room sensor it is fixed to a surface pattern base plate, suitable for wall mounting. A ventilated cover provides physical protection to the components while allowing sufficient air flow for detection purposes. The circuit board in the duct sensor is protected by a polycarbonate housing with a removable cover. The sensing element is positioned at the tip of the duct tube and is protected by a sintered filter. This filter serves to control the effects of high air velocity and to prevent the build up of dust on the element.

### FUNCTION

The sensing element is a specially developed sintered semiconductor which, when heated to a predetermined temperature, causes the gases to oxidize on the surface coating of the tin dioxide (SNO<sub>2</sub>). This causes a change in conductivity the resulting resistance is then fed into the amplifier and the output to the terminals as a 0-10 volt signal proportional to contamination. The amplifier incorporates a rate or rise circuit to filter out short term disturbances and provide a stable output (the damped or PI output).



- \* POWER SUPPLY : 24V AC/DC
- \* CURRENT : 135 mA MAX
- \* OPERATING TEMPERATURE : 32° - 140° F
- \* SIGNAL : 0 - 10 VDC REPRESENTING 0 - 100% AIR POLLUTION
- \* OPERATING HUMIDITY : 45 - 65% RH (NON-CONDENSING)
- \* STORAGE HUMIDITY : 10 - 95% RH (NON-CONDENSING)
- \* HOUSING MATERIAL : BODY-LEXAN & PROBE - A.B.S.
- \* POWER CONSUMPTION : 1 VA OR LESS
- \* MIN. LOAD RESISTANCE : 4 K OHMS
- \* STORAGE TEMPERATURE : 32° - 140° F

# AIR QUALITY SENSOR

AQS/R ROOM MOUNT

AQS/D DUCT MOUNT

DISTRIBUTED BY:

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## MOUNTING

The room sensor should be mounted at a height of 5 feet from the floor of the area to be controlled, away from doors, opening windows, supply grilles and diffusers or other known disturbances of that nature.

The duct sensor should be mounted in the return air duct of the area or areas to be controlled, in a convenient location for maintenance and commissioning. Although the sensor incorporates a washable filter, locations such as kitchen hoods should be avoided where oil and grease will foul the filter and prevent correct operation.

The filter can only be rinsed with hot water to remove dust build up. Do not use any harsh soaps, detergents, or solvents.

## ADJUSTMENT

The sensor is calibrated at the manufacturer to be suitable for use under average room conditions. In the event that recalibration ( on site ) is required, an initial burn in time of 7 days should be allowed before making the final adjustments. Pre-commissioning is possible after approximately 30 minutes. The sensor should not be used for control unless it has been burned in for at least 24 hours.

By using the calibration and span potentiometers, the sensor may be set to the required stat as follows:

### CALIBRATION

The adjustment controls the start point of the operating band and allows the sensor to be trimmed for background contamination. Ex: Restaurant use or Urban areas. This adjustment should be carried out at the beginning of the occupied period, when conditions are likely to be at the correct level for minimum fresh air. It is recommended that the system should be set such that voltages below are disregarded and 2 Volts are the minimum point at which fresh air will be introduced into the plant. 2 to 5 Volts is a suitable range to introduce fresh air. It is recommended that over a 5 Volts signal should indicate the need for further ventilation.

### SPAN

This adjustment controls the maximum output voltage and allows the sensor to be used with various input requirements. Ex. ( 0-5 Volts etc. ). Or, to limit the influence of the sensor when directly connected to 0-10 Volt equipment. Ex. damper motors. This adjustment should be carried out during periods of maximum load.

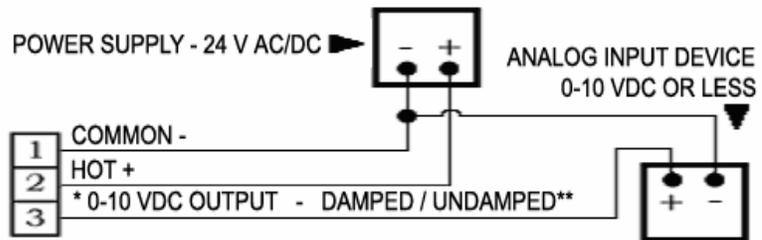
## IMPORTANT !!

**THESE SENSORS ARE NOT DESIGNED OR INTENDED FOR USE IN SAFETY SYSTEMS WHERE PERSONAL INJURY MY RESULT! IT IS STRICLY DESIGNED FOR ENERGY-SAVING PURPOSES.**

**MAKE CERTAIN THE SENSOR IS WELL PROTECTED FROM POLLUTANTS IF POWER IN NOT APPLIED AT THE TIME OF INSTALLATION.**

**KEEPING THE SENSOR'S DUCT-TUBE TIP COVERED IS RECOMMENDED UNTIL POWER IS APPLIED.**

IT IS RECOMMENDED TO USE A TWISTED PAIR OF AT LEAST 22AWG WIRE AND CRIMP TYPE CONNECTORS FOR ALL WIRE CONNECTIONS. ALSO, WIRING MUST **NOT** BE RUN IN THE SAME CONDUIT AS LINE VOLTAGE WIRING OR WITH WIRING USED TO SUPPLY HIGHLY INDUCTIVE LOADS SUCH AS MOTORS, GENERATORS, AND COILS.



\* Output is adjustable from 0 – 1.5 VDC to 0 – 10 VDC

\*\* Sensor is shipped, set with the output in the damped mode. To reset it in the un-damped mode, simply remove the link on link 2.

To adjust output span from 0-10 VDC to any span down to 0-1.5 VDC, first remove link from link 2 (LK2). Then move the link on link 1 (LK1) from pins 1&2 and place it on pins 2&3. This will short out the signal to high-signal, enabling the span to be set to any desired level by turning potentiometer (POT) marked SPAN or VR3. When finished rescaling, reinstall link on LK2 and place LK1 connector back on pins 1&2.

**DO NOT TOUCH OR ATTEMPT TO ADJUST (POT) MARKED (CAL) OR (VR2).**