

AMBIENT OZONE SIMULATOR AOS 1

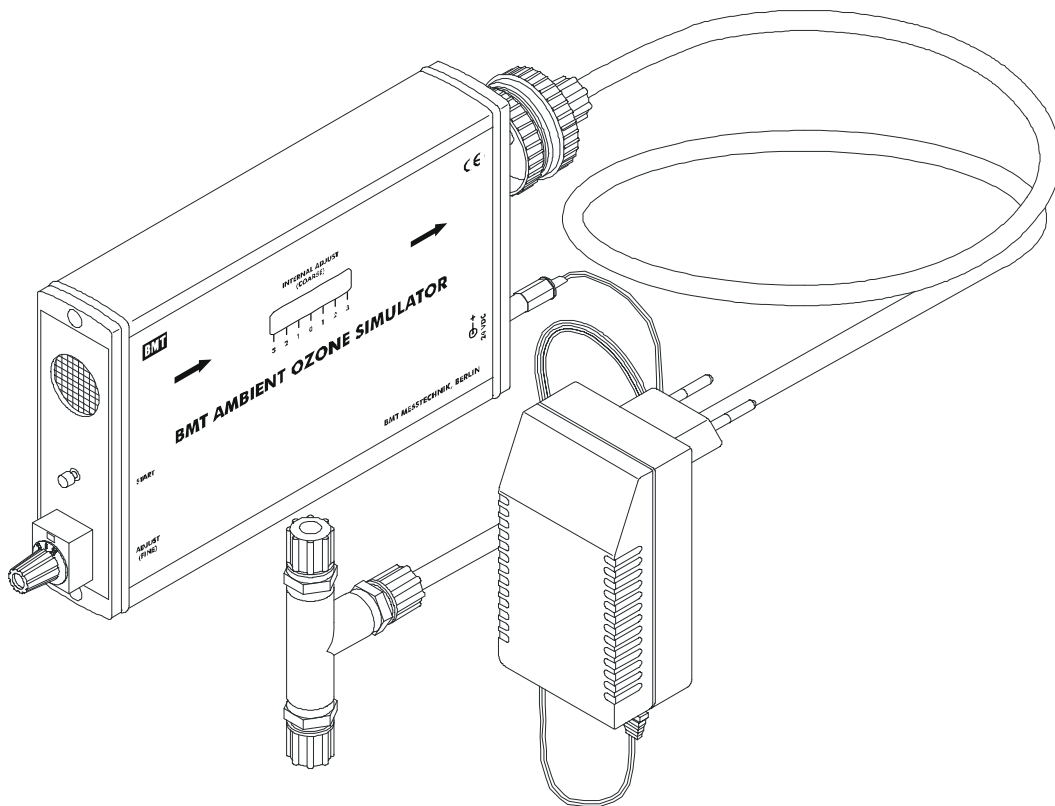
Usage

Rev. 11/2014

The AOS 1 is a small ozone source that has been designed for comparison of two BMT OZONE MONITORS. It allows for a simple functional check of an ambient ozone monitor in the field. This description applies to the comparison of BMT 930 as well as BMT 932, or a mix of both. It also applies to their Cabinet versions.

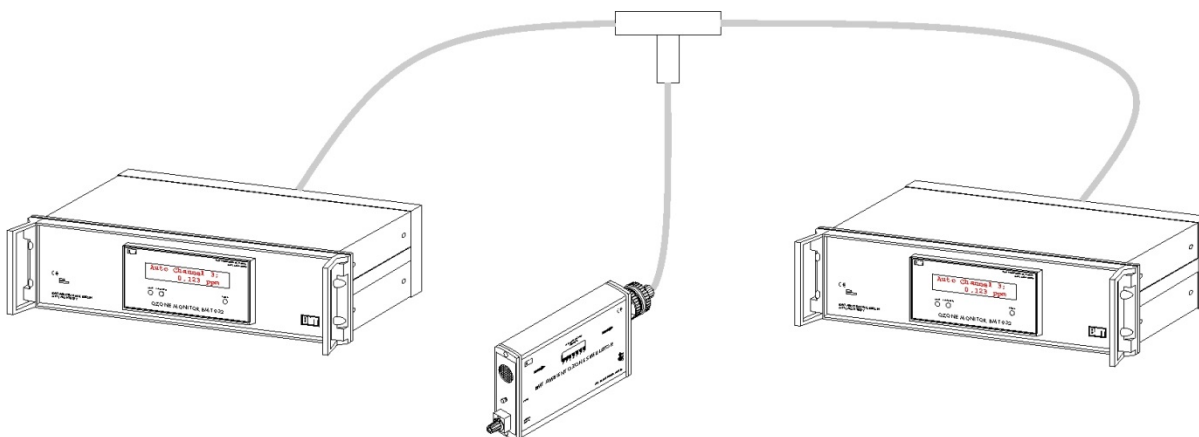
1 Requirements

The AOS 1 comes with a wall mount power supply, a filter holder for the outlet of the AOS 1, a box with replaceable filter inserts, a set of three pieces of FEP tubing, and a TEE for connecting the ozone source to both monitors. You will need two BMT OZONE MONITORS.



2 Setup and Measurement

For the test, power up both monitors and allow for a warm-up of 10 to 30 minutes. **Do not forget the sample gas filters on each channel in use before switching on!**



Set both monitors to a single channel in MANUAL mode. Connect two pieces of equal length to that channel of both monitors, and connect these to the TEE as shown. Use the third piece of FEP tubing to connect the TEE to the outlet of the AOS 1 through the supplied particle filter.

After warm-up of the monitors note the average readings, it should read a low value depending on the amount of ozone in your room. A value of 0.000ppm is very unlikely.

Then use the 10-turns potentiometer to set the AOS 1 to about 70% of its range¹, and start the ozone source by using the wall mount power supply. If the lamp inside does not show a dim light through small window of the AOS 1, press the push button "START" once. After a few measurement cycles of the monitors, you might want to adjust the potentiometer for a reading of around 0.6ppm, the exact value is not of importance. Watch both readings for a while and note the average difference. Maximum difference should stay within specification of the monitor (0.8 % of measurement plus 0.2 % of scale for the BMT 932).

You may repeat the procedure for different levels of ozone concentration, but due to the highly linear measurement by principle, this actually is not necessary.

3 Zero Check

If you are in doubt about the zero reading with no ozone in the sample gas, you might want to perform a zero test. For this you need a TEST SCRUBBER. It removes any ozone present in the sample gas. Connect the TEST SCRUBBER instead of the AOS 1 directly to one of the monitors. The displayed value should show ± 5 ppb around zero after a few measurement cycles.

If this is not the case, the scrubber inside the monitor should be replaced in order to find out if this cures the problem. If a new scrubber is not handy, exchanging the utility scrubber with the reserve scrubber is an option.

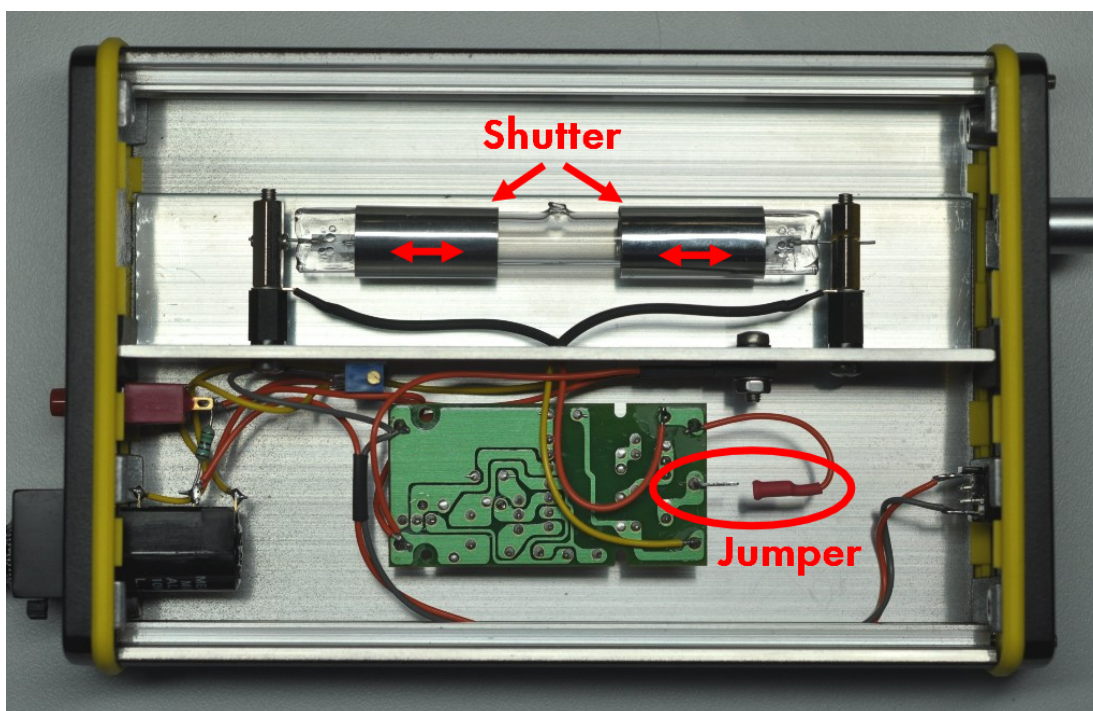
¹ depending on the setting of jumper and shutters inside, see *Setting of internal jumper and shutters*

4 Setting of internal jumper and shutters^[KT2]

The AOS 1 as delivered will provide a concentration of approx. 0.75 ppm at a flow rate of 2 l/min and normal ambient conditions by setting the potentiometer on the front panel to 100%. If the required ozone concentration is beyond the range of the potentiometer, it will be necessary to adjust the two shutters and/or the internal jumper. For these changes, the AOS 1 has to be opened using the two knurled nuts at the rear.

Warning (high voltage, UV radiation): Remove power before opening the AOS-1.

After removing the rear panel (**Attention: cable attached!**), tightly pull on the cover and slide it off of the base. Care must be taken to not damage the sealing between the base and the cover.



The jumper (opened in the photo) changes the electrical power passed to the UV lamp. By closing the jumper the power is doubled, compared to leaving it open.

The second option to change the ozone generation is to carefully move the two shutters mounted on the UV lamp. They are used to vary the radiation surface of the UV source. In order to increase the level of ozone, slide the shutters towards the end of the UV lamp. In order to reduce the ozone production, slide the shutters towards the middle of the UV lamp. A simple scale below the window in the cover helps to document the shutter setting.

Before closing the unit, make sure that all sealings are still intact. **Attention: Do not slide the cover back on!** This will damage the sealing integrated into the cover. Place the top cover over the base and squeeze both parts together until it snaps in. Mount the rear panel back on.

Please note that the ozone concentration at the output at a given flow rate is barely reproducible just by using the same potentiometer, shutter and jumper settings. It is constant enough to precisely compare two ozone monitors with constant flow rates after a few minutes of warm-up, though.