

# Tac-7C®

## Tactical Bio-Aerosol Detector



*The Tac-7C® UV-based biodetector*

aging. The rugged UV-C LED source has a maximum use temperature of 85 °C and half-life of 10,000-20,000 hours. An RS-232 serial data connection is provided and the Tac-7C will trigger sample collection by Research International air samplers. Signals may also be transmitted wirelessly between the Tac-7C and a monitoring PC or other equipment using BioLink™ Bluetooth transmitters and receivers.

Electric power consumption is less than 6 watts, allowing operation from either a small solar panel or for more than 40 hours on a swappable, rechargeable UBI 2590 battery. Multiple units may be monitored remotely using RI's proprietary software for Windows® operating systems provided at no charge. The software can also be used to modify operating characteristics or alarm levels as needed or desired. All data is also automatically stored onboard on a removable solid state memory chip with a five-year capacity.

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The TAC-7C® biological aerosol detector measures the biofluorescence and diffractive scattering produced by aerosol particles as they pass through an intense UV-C ultraviolet beam. It monitors environmental particulates and classifies them as being of either biological or non-biological origin, and alarms if there is an abnormal change in bio-aerosol level. Applications range from homeland security to public health and military.

Operation with a UV-C light source minimizes false alarms that may come from aerosols such as burning vegetation that may contain aromatic hydrocarbons that fluoresce strongly under long wavelength UV light. Very stable operation is assured. Sampled air is first subjected to a two-stage filtering process that rejects aerosols such as pollen and insects. Photon counting methods minimize the effects of temperature and electro-optic component

### FEATURES

- True UV-C based "biological trigger"
- Photon counting: no analog drift
- Automated trigger/sampler protocols
- 40+ hours operation on swappable battery
- Wide operating temperature range
- Light weight/small size
- Long operating life
- RS-232 or wireless communications capable

### APPLICATION AREAS

- Indoor or outdoor use
- Sports stadiums and arenas
- Subways
- Military bases
- Airports

## Tac-7C® Specifications

<b>Operating principle</b>	Monitoring of 280nm UV-stimulated particle scattering and biofluorescence using photon counting electro-optics. Alarm decisions are based on algorithms that consider bioaerosol statistical behavior, bio-fluorescence intensity and particle size.
<b>Particle size and type</b>	1 to 15 microns in four size ranges. Respirable aerosolized bacteria, spores, viruses, and toxins. Biofluorescence intensity in each size range is monitored and reported.
<b>Interferents</b>	Interferent resistant to burning vegetation, diesel smoke, pollen, silica dust.
<b>Detection limit</b>	100 ACPLA in most natural environments, 20-30 ACPLA under laboratory test conditions.
<b>Sampling rate</b>	1.2 liter per min of ambient air nominal.
<b>Consumables</b>	None.
<b>Time to alarm</b>	15 second average, 30 seconds maximum. 15-minute trailing history is used in alarm protocols.
<b>Alarms</b>	Red LED and >100dB piezoacoustic alarm, plus serial link digital alarm output.
<b>Communication</b>	RS-232 or wireless BioLink; pre-programmed for use with sampler.
<b>Serial data output</b>	Alarm, particles per liter of air in each size bin; percentage of particles that are biological; relative biofluorescence compared to scattering intensity for each size bin.
<b>Operating life</b>	Air pump: 30,000 - 40,000 hours. UV light source: greater than 10,000 hours.
<b>Operating temperature range</b>	-40° C to 50° C. Operation to 60° C is permitted up to a total time of 1,000 hours.
<b>Humidity</b>	0 to 95% non-condensing.
<b>Power source</b>	Uses BA-5590/U primary battery or UBI 2590 rechargeable battery. AC mains or vehicle power can be used with proper converter.
<b>Power consumption</b>	Less than 6 watts at 18 VDC to 36 VDC.
<b>Operating time on battery</b>	BA-5590/U primary battery: ~35 hours UBI 2590 rechargeable battery: ~42 hours
<b>Start-up time</b>	1 minute.
<b>Data storage</b>	Onboard removable SD-type data card. Stores more than 5 years of aerosol data.
<b>Size</b>	16 x 18 x 28 cm with no inlet air stack. 16 x 18 x 39 cm with inlet stack attached. 16 x 15 x 39 cm without side handle.
<b>Weight</b>	3.5 kg without battery / 4.5 kg with battery.
<b>Package</b>	EMI-resistant aluminum shell construction.

*Research International reserves the right to change specifications without prior notice.*

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