

# RESP1 IMPEDANCE PNEUMOGRAPH



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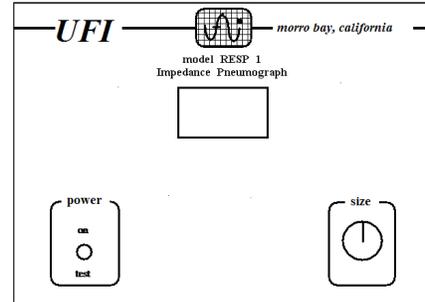
## Introduction

Use the RESP1 to monitor the larger trans-thoracic and trans-abdominal impedance changes that result from respiration. Merely placing two electrodes across the area of interest allows the RESP1 to monitor respiration not only in humans, but also in a wide variety of animals.

The RESP1 induces a small and safe high-frequency (30KHz) current to flow between the electrodes, and then senses the resulting voltage across the same electrodes. No balancing is required; the RESP1 output signal always returns to the zero baseline.

The Model 1130 Pneumotrace Respiration Transducer may be used instead of electrodes with the RESP1.

## Controls and connectors



### **Power switch**

- In center OFF position, RESP1 is powered down.
- Set to ON position for normal operation.
- Set to TEST to check battery: Battery is OK if meter needle is above "B/OK" line. Otherwise, replace battery.

### **Meter**

- In normal operation, meter needle moves with each inspiration and expiration.

### **Size control**

- Adjusts amplitude of signal to meter and to downstream recorder or plotting software.

### **Input connectors**

- The standard RESP1 features two 0.060" safety jacks, black and red, that accept standard EEG and EKG electrode leads.
- The RESP1/EF and RESP1/EKG variants have an additional, green jack for an EKG reference lead.

### **Output connectors**

- The standard RESP1 has one back-panel BNC receptacle that supplies the respiration output signal to downstream equipment.
- The RESP1/EF and RESP1/EKG variants have an additional BNC receptacle to supply the EKG output to downstream equipment.

### **Electrode considerations**

To improve recording quality,

- place electrodes at level of maximum change in chest diameter, usually along the mid-axillary lines (left and right) at about the V5 or V6 level;
- if signal is still weak, connect several electrodes together in parallel to increase effective size.
- If RESP1 signal is too strong for recording device, you will need to attenuate RESP1 output. Contact UFI for a simple resistive circuit that you can use to decrease signal.

### **Using the standard RESP1**

**To measure respiration with EEG or EKG electrodes:**

- Lightly abrade skin at the selected locations, then attach electrodes.
- Connect electrodes to front-panel safety jacks.
- Move power switch to TEST position. Battery is OK if meter needle is above "B/OK" line (7 volts). Otherwise, replace battery.
- Move power switch to ON position. Meter will swing off scale, then return to center (zero) position in about 30 seconds.
- Meter now indicates respiration; needle deflection magnitude reflects respiration depth.
- Attach recorder or other downstream device to respiration output connector.
- Output signal level ranges from 100 mV to 5 volts; adjust with size control.

### **To measure respiration with Model 1132 transducer:**

- Plug Model 1132 PneumoTrace® into front-panel safety jacks (instead of electrodes as above);
- Wrap Pneumotrace® around subject at level of maximum respiratory motion.
- Ask subject to take a deep breath and hold it.
- Fasten one side of Pneumotrace® to end of VELCRO strap, pull taut around subject, then fasten other strap end to other side of Pneumotrace®.
- Subject may now resume normal breathing; RESP1 operates as described for EEG or EKG electrodes.

### **Using the RESP1/EF or RESP1/EKG**

Two variants of the RESP1 can output both respiration and non-clinical ECG signals:

- The RESP1/EF separates the ECG signal from the respiration signal with a filter but does not amplify the ECG output.
- The RESP1/EKG adds an ECG amplifier after the filter to yield an ECG of 1V output per 1 mV input; this variant has a serial number labeled "ECG."
- With either variant, if the ECG signal is upside down, correct by moving the electrode lead from the red jack to the black jack and vice versa.
- The RESP1/EF need not be powered ON to output EKG; however, the RESP1/EKG *must* be ON to output EKG.

- Electrode contact resistance must be under 10,000 ohms for good ECG results; higher resistance causes 50/60 Hz noise.
- To reduce noise, place a third, reference electrode on subject; plug lead into green safety jack on front panel.
- You can also reduce electrode noise problems by gently abrading sites before attaching electrodes.

## RESP I specifications

- Impedance range 1 to 2000 ohms
- Respiration output level 1 to 5 volts
- Excitation 30 kHz sine wave, constant current
- Power supply Standard 9V alkaline battery, Duracell MN1604 or equivalent
- Size 6.8"W x 2.5"H x 4.8"D (17.1 x 6.4 x 12.1 cm)
- Weight 16 ounces (450g)

### Additional RESP1/EF specification

- EKG output level 1 mV

### Additional RESP1/EKG specification

- EKG output level 1 V out per mV ECG in

## Warranty and repair

All UFI instruments are warranted against defects in materials and workmanship to the original purchaser for a period of one year from the date of original purchase. This warranty is void if our inspection shows the equipment has been tampered with; or installed at variance with factory-designated procedures; or has been subjected to negligence, misuse, or accident beyond normal usage; or has had the serial number altered, defaced, or removed.

All questions regarding the warranty should be directed to:

Customer Service Department  
UFI  
545 Main Street, Suite C-2  
Morro Bay, CA 93442  
Email: mail@ufiservingscience.com

No third party, including any dealer or agent, is authorized to assume any liability for UFI.

When corresponding or communicating with UFI concerning your equipment, please include the model and serial numbers.