

## TSD114-MRI RESPONSE/HAND FORCE TRANSDUCER FOR MRI



The TSD114-MRI consists of a pump bulb (RXPUMPBULB-MRI), pressure transducer (TSD104A equivalent, terminated in DSUB9), and tubing (AFT30-XL). Subjects can squeeze the bulb by hand or apply pressure via foot, thigh, etc. to indicate a response while in the MRI.

The output of the TSD114-MRI device is ultimately voltage. The device provides a output voltage which moves in a linear fashion with respect to applied pressure in the squeeze bulb. To obtain usable voltage output, the device requires amplification via BIOPAC's DA100C.

The device has high accuracy for pressure measurements, on the order of  $\pm 1\%$ . It's based on pneumatic principles of operation. It comes equipped with a 10 meter polyethylene tube; additional polyethylene tube extensions are available from BIOPAC.

To use the TSD114-MRI with a third-party A/D converter, use DA100C and IPS100C.

**DA100C** amplifies and conditions the mV level signal coming from TSD114-MRI

**IPS100C** will supply isolated power to DA100C

High level output voltage (anywhere in the range of  $\pm 10$  V, such as 0-5 V) can be obtained via the front panel of IPS100C, via 3.5 mm phono plug. This signal can be directed straight to the third-party A/D converter.

**MRI Use:** MR Safe

**TSD114-MRI Components:** Bulb: Polyvinyl Chloride, Tubing: Polyethylene (polymerized urethane), Connection barb: Nylon

### TSD114-MRI Specifications

Pump Bulb: Rubber bulb with endcap for connection to the pressure transducer

Transducer: Equivalent to TSD104A

Maximum Diameter: 5.8 cm

Length: 11.1 cm

Sensitivity: 5  $\mu$ V per mmHg (for 2 V excitation)

- Used with the DA100C with factory CAL 2 V excitation, sensitivity is 10  $\mu$ V per mmHg
- Set for DA100C at  $A_v = 1000$ , sensitivity at MP160/150 is 10 mV per mmHg
- The MP160/150 can resolve to 300  $\mu$ V, so the system can resolve  $(.3 \text{ mV}) / (10 \text{ mV/mmHg})$  or 0.03 mmHg
- To increase sensitivity, increase the excitation voltage up to 10 V (contact BIOPAC)

Tubing: See AFT30-XL