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TSD121B-MRI HAND DYNAMOMETER FOR MRI

- Terminates in DSUB9 and **requires MECMRI-DA** for proper operation.

Use to measure clench force in the MRI. The lightweight, ergonomically designed transducer provides direct readings in kilograms-force or pounds-force. Use in isolation or combine with EMG recordings for in-depth studies of muscular activity. The isometric design improves experiment repeatability and accuracy. The TSD121B-MRI has an 8 meter cable terminated for connection to the MECMRI-DA. Trace conductive parts (metallic parts) of transducer do not make contact to the subject.

MRI Use: MR Conditional to 7T

Note: Conductive parts of transducer are electrically and thermally isolated from subject. The TSD121B-MRI has been employed repeatedly in 7T Siemens MAGNETOM, with SC72 gradient set, a maximum gradient amplitude of 70 mT/m, and a slew rate of 200 mT/m/ms. Tested sequences include EPI/DTI/MPRAGE. Studies include a 32-channel Nova Medical head coil. Proper operation was observed and no safety concerns were noted during these described circumstances.

Components: Transducer Body: Delrin®, Polyvinyl chloride (PVC) Plastic, Acrylonitrile Butadiene Styrene (ABS) Thermo-molded, Plastic, Polymer thick film device (rigid substrate, printed semi-conductor), Copper clad fiberglass lamination (PCB material), Stainless steel machine screws/nuts, Tinned copper wire, Silicone elastomer, PVDF (Kynar®) Heat Shrink Tubing

TSD121B-MRI SPECIFICATIONS

Isometric Range:	0-50 kgf
Nominal Output:	782 µV/kgf (assumes DA100C VREF1 is set to +1 volt, the factory default)
Latency:	No material latency; any latency encountered will be a function of the DA100C filters usedð the higher the lowpass selected, the smaller the delay
Weight:	323 g
Dimensions:	17.78 cm x 5.59 cm x 2.54 cm
Cable Length:	8 m
Interface:	MECMRI-DA to DA100C in control room

TSD121B-MRI CALIBRATION

Sample calibration values shown are for Gain 200 (per switch on the DA100C) and Range 20 kgf

1. Multiply Gain by Nominal Output: 200 * 782 µV/kgf = 0.1564 V/kgf.
2. Multiply the result by the Range: 0.1564 V * 20 kgf = 3.128 V per 20 kgf range.
3. Plug the TSD121B-MRI into the cabling system/amplifier.
4. For **CAL1**: remove all weight from the TSD121B-MRI, press CAL1 to get the Input Value, and then enter 0 for Map (Scale) Value.
5. For **CAL2**: add 3.128 V (the result from step 2) to the CAL1 Input Value and enter it in the CAL2 Input Value, and then enter 20 kgf for the Map (Scale) Value.
6. Click **OK**.

In Acq*Knowledge* 4.1 and higher, you may alternatively use **Set Up Data Acquisition** > **Channels** > **Add New Module**. Choose DA100C as the module type. Choose the correct physical channel switch position and select the TSD121B-MRI from the transducer list. Then follow the calibration prompts.

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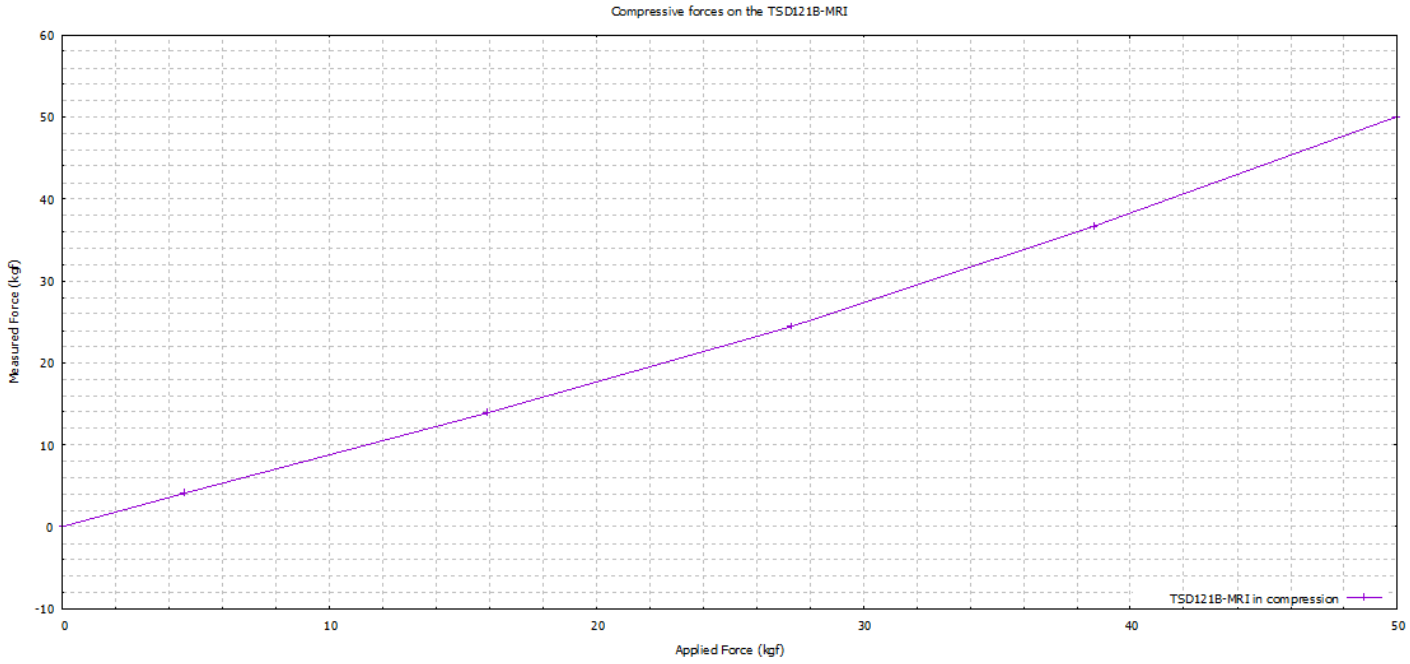
TSD121B-MRI COMPRESSIVE FORCE PROFILE

The following chart depicts the compressive force curve of the TSD121B-MRI; (how the dynamometer behaves at different forces). Force was applied to the center of the handle.



NOTE: See Hardware Guide Appendix for TSD121B-MRI hysteresis specification and response diagram.