

## **MLTF050/ST Teaching Force Transducer**

*Smart transducer series*

---

### **Description**

A low-cost amplified bridge-type force transducer with measuring range 50g. The transducer provides a fixed +3V excitation source for the internal sensor. A range of digital low-pass filters are built-in to reduce signal noise and a software-controlled DC offset adjustment is provided. A detachable mounting bar is incorporated with the unit.



### **System Compatibility**

The MLTF050/ST Teaching Force Transducer connects to PowerLab hardware units with Pod ports (8-pin DIN inputs). PowerLab and MacLab (except 4s, 8s and 16s) units without Pod ports require the FE305 Pod Expander.

The MLTF050/ST Teaching Force Transducer is supported by the following versions of software:

#### **WINDOWS**

- LabChart v7.1.2 or later
- LabTutor 3.0.4 or later

#### **MACINTOSH**

- LabChart v7.1.2 or later

**Note:** Earlier software versions do not support Pods.

Visit our website for information on operating system requirements.

### **Applications**

Typical measurements using strain-gauge transducers include force, smooth muscle contractions, displacement, animal arterial and venous pressure.

## Theory of Operation

The MLTF050/ST Teaching Force Transducer provides excitation and signal amplification for its internal strain-gauge transducer in a single device. An excitation voltage of 3 V is applied to the transducer with the transducer output signal being differentially amplified and then low pass filtered to remove high frequency signals. Offset adjustment is provided by software-controlled digital-analog converter allowing transducer offsets or pretension load signals to be removed before recording.

## Operating Instructions

Connect the 8-pin DIN cable from the MLTF050/ST Teaching Force Transducer to a PowerLab Pod port (or a Pod Expander connected to the PowerLab). Do not connect other devices such as Front-ends or Instruments to the corresponding BNC connector on the channel used by the MLTF050/ST Teaching Force Transducer. Smart transducers can be connected to the PowerLab unit while LabChart, Chart or Scope software is running, but not when recording data. Once detected, the functions of the MLTF050/ST Teaching Force Transducers are combined with those of the PowerLab and software, replacing the Input Amplifier dialog with the MLTF050/ST Teaching Force Transducer dialog (shown below)

50g Force

Input 1: 50g Force (PowerLab 26T)

4.218 mV

Range: 10 mV

Low pass: 50 Hz

Zero

Invert

Anti-alias

Units... Display Offset... Pod Scan OK Cancel

20 mV  
10 mV  
5 mV  
2 mV  
1 mV  
500  $\mu$ V  
200  $\mu$ V

300 Hz  
200 Hz  
100 Hz  
50 Hz  
20 Hz  
10 Hz  
5 Hz

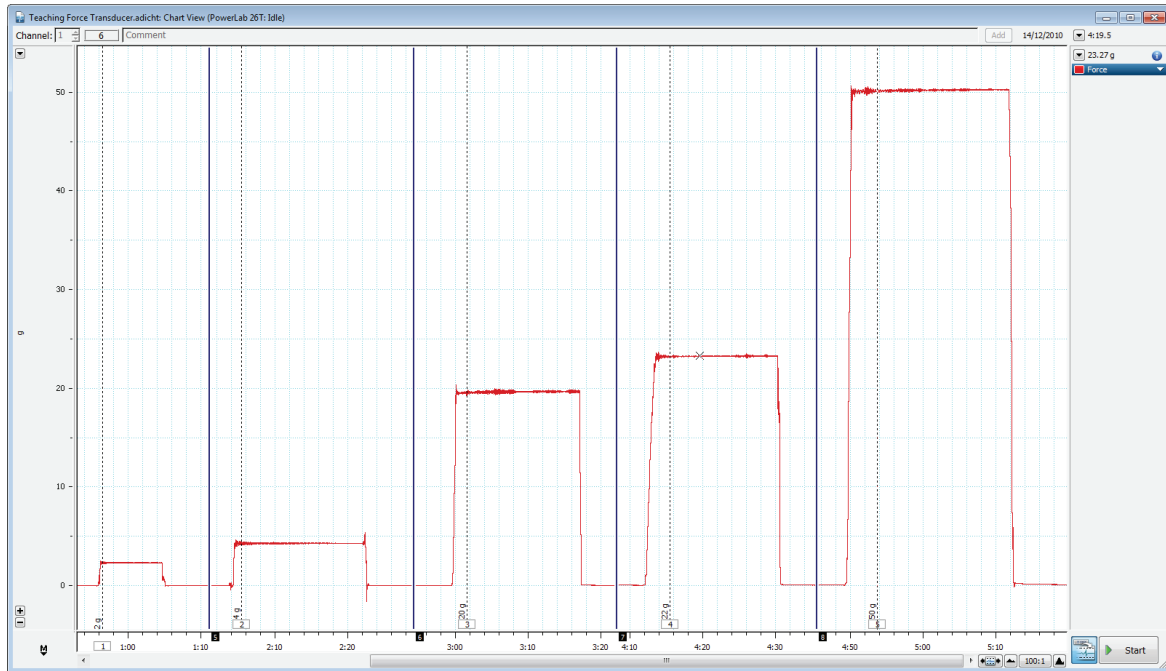
Click the Zero button to automatically adjust the offset to zero.

When the "Invert" box is checked, the incoming signal is inverted.

Click this button to open the "Units Conversion" dialog.

## Typical Data

The LabChart for Windows screen capture below shows several force contraction data recorded using the MLTF050 Teaching Force Transducer (0-50 g) and PowerLab.



## Caution

Read “Statement of Intended Use” on our website or in “Getting Started with PowerLab” before use.

## Specifications

Linear operating range:	50g
Input ranges:	200 $\mu$ V to 20 mV in 1:2:5 steps
DC drift:	<0.1% full-scale per deg C
Combined signal-noise ratio:	>80dB (200Hz bandwidth)
Full Scale Output:	2.1 mV @ 50g
Load Cell Sensitivity:	42 $\mu$ V/g
Minimum Reliable Force:	0.05g
Low-pass filters:	300 Hz, 200, 100, 50, 20, 10, 5 Hz
DC offset adjustment:	16-bit, software controlled
Operating conditions:	0 – 35 °C, 0 – 90% humidity — non-condensing
Input connector:	8-pin DIN style
Enclosure size (l×w×h):	57x30x19mm (excluding mounting bar)
Cable length:	2.8 m
Weight:	140 g

All specifications were tested at the time of printing and are subject to change.

## Ordering Information:

MLTF050/ST Teaching Force Transducer