

Appendix A Sensors for Real-World Math

You can purchase the sensors used in this book from Vernier Software & Technology at www.vernier.com or from a distributor for Texas Instruments and Vernier products. The TI CBR 2 is also available directly from Texas Instruments at education.ti.com or 1-800-TI-CARES.

Item	Activity	Vernier Order Code
Vernier Motion Detector or TI CBR™2 or Go! Motion	1, 6, 8-14, 19, 21-23, 25, 27, 28, 30	MD-BTD CBR2 GO-MOT
Microphone	26	MCA-BTA
Dual-Range Force Sensor	2, 4, 8, 9	DFS-BTA
Vernier Light Sensor or TI Light Sensor (packaged with the CBL 2)	16, 24	LS-BTA
Gas Pressure Sensor	3, 5, 15	GPS-BTA
pH Sensor	20, 31	PH-BTA
Voltage Probe (packaged with the CBL 2 and LabPro)	18	VP-BTA
Stainless Steel Temperature Probe or EasyTemp™	7, 17, 29	TMP-BTA EZ-TMP

Motion Detectors

The Motion Detector functions like an automatic range finder on a Polaroid camera. This sonar device emits ultrasonic pulses at a rate adjustable between 10 and 50 times per second. The time it takes for the reflected pulses to return is used to calculate distance, velocity, and acceleration.

The CBR 2 works precisely like the Motion Detector and has the added capability of connecting directly to a TI Graphing Calculator.

Microphone

The Vernier Microphone is housed in a wand, with an electret microphone positioned at the end. Use it to display and study the waveform of sounds from voices, musical instruments, or tuning forks.

Dual-Range Force Sensor

This affordable force sensor has two ranges: -10 to +10 N and -50 to +50 N. It can be easily mounted on a ring stand or dynamics cart, or used as a replacement for a spring scale. Use it to study friction, simple harmonic motion, impact in collisions, or centripetal force.

Light Sensors

The Vernier Light Sensor approximates the human eye in spectral response and can be used over three different illumination ranges, selected with a switch. It can be used for inverse square law experiments or for studying solar energy.

The TI light sensor measures irradiance. The sensor's spectral response is between 300 nm and 1100 nm.

Gas Pressure Sensor

The Vernier Gas Pressure Sensor has a range of 0 to 210 kPa, or about 2.1 atmospheres. It includes an accessory kit consisting of a syringe for Boyle's law experiments, tubing, connectors, and rubber stoppers.

pH Sensor

The pH Sensor is a Ag/AgCl combination electrode sensor with a range of 0 to 14 pH units.

Voltage Probe

The Voltage Probe is included with the LabPro and CBL 2 interfaces, and is used to measure electrical potential between -10 and 10 V.

Temperature Probes

The Stainless Steel Temperature Probe is an accurate, durable, and inexpensive thermistor based sensor for measuring temperature. Range: -25°C to +125°C

The EasyTemp is a sensitive and durable solid state temperature sensor designed to connect directly to the mini USB port found on the TI-84 Plus graphing calculators. Range: -10°C to +110°C.