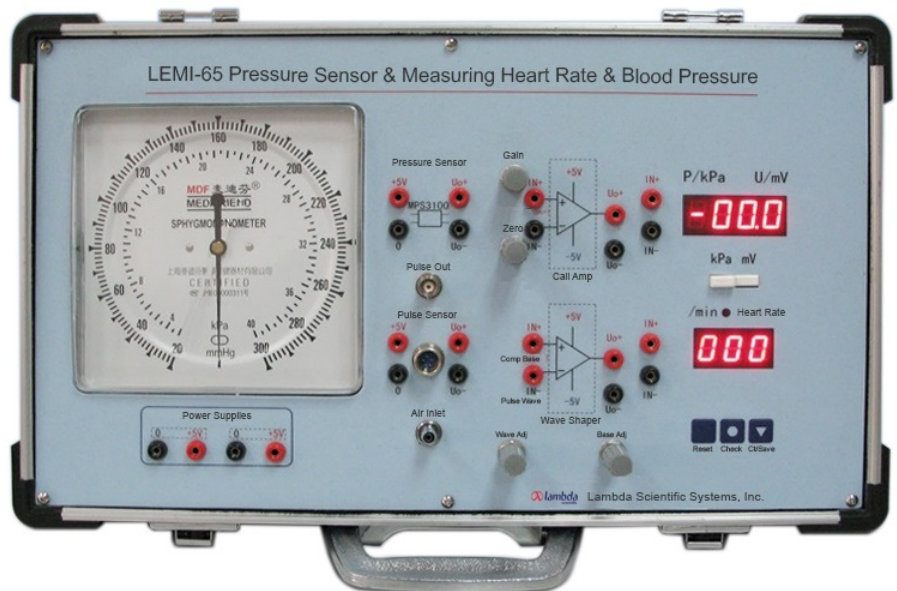


## LEMI-65 Pressure Sensor & Measurement of Heart Rate & Blood Pressure



LEMI-65, Pressure Sensor Characteristics and Measurement of Human Heart Rate and Blood Pressure, is a specially designed teaching apparatus for medical undergraduates or graduates to learn and master the characteristics of gas pressure sensors and their applications.

This apparatus uses a MPS3100 pressure sensor to convert the gas pressure into voltage and uses an amplifier and a digital voltmeter to construct a digital pressure gauge, then uses a standard pressure gauge to calibrate its readings. Considering that the apparatus mainly measures human blood pressure, its measurement range is set at 0 - 32 kPa (240 mmHg). Due to the excellent linearity of the MPS3100 pressure sensor (0.3% FS), the constructed digital pressure gauge has good accuracy.

This apparatus uses a quantitative gas pump-in device, which enables to prove Boyle's gas law experimentally. Combined with pulse sensor, blood pressure cuff, squeeze ball and medical stethoscope, the body's pulse wave, heart rate and blood pressure can be measured. By conducting experiments using this apparatus, students can achieve following objectives:

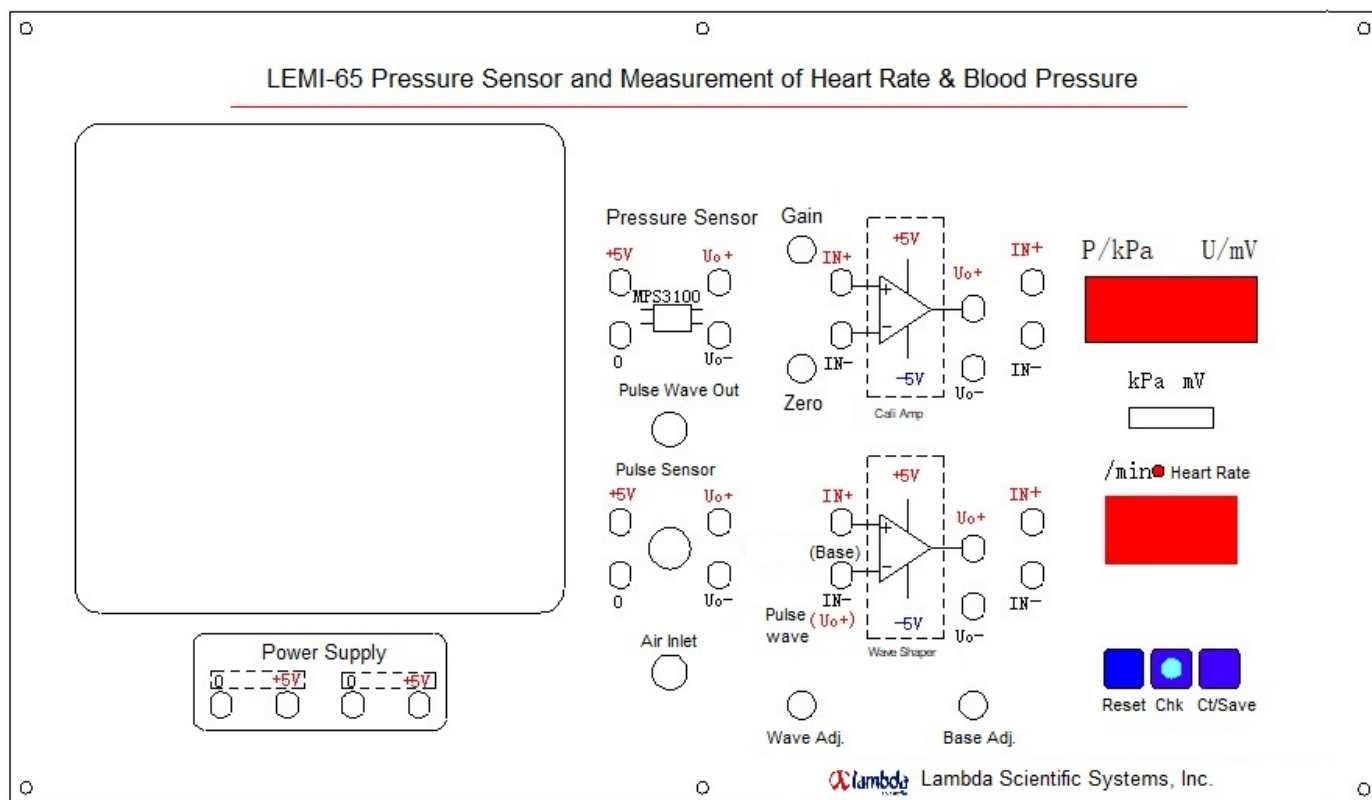
1. Understand the working principle of the gas pressure sensor and test its characteristics.
2. Use gas pressure sensor, amplifier and digital voltmeter to construct a digital pressure gauge and calibrate it with a standard pointer pressure gauge.
3. Understand the principle of measuring human heart rate and blood pressure, use pulse sensor to measure pulse waveform and heartbeat frequency, and use the constructed digital pressure gauge to measure human blood pressure.
4. Verify Boyle's law of the ideal gas. (Optional)
5. Use slow scanning long afterglow oscilloscope (need to be purchased separately) to observe the body pulse waveform and analyze the heart beat, estimate heart rate, blood pressure and other parameters. (Optional)

## Specification

## Parts

Description	Specifications
DC regulated power supply	5 V 0.5 A (×2)
Digital voltmeter	Range: 0 ~ 199.9 mV, resolution 0.1 mV Range: 0 ~ 1.999 V, resolution 1 mV
Pointer pressure gauge	0 ~ 40 kPa (300 mmHg)
Smart pulse counter	0 ~ 120 ct/min (data hold 10 tests)
Gas pressure sensor	Range 0 ~ 40 kPa, linearity $\pm 0.3\%$
Pulse sensor	HK2000B, analog output
Medical stethoscope	MDF 727

Description	Qty
Main unit	1
Pulse sensor	1
Medical stethoscope	1
Blood pressure cuff	1
100 mL syringe	2
Rubber tubes & tee	1 set
Connection wires	12
Power cord	1
Instruction manual	1



Schematic of panel drawing