



**INTEGRATED CIRCUITS**  
ELECTROINC INDUSTRIES

# Change of state of gases

## IC-CH-SG-101

2025

### 1. Overview

The IC-CH-SG-101 experimental unit enables the practical study of two state changes: isothermal change of state, described by Boyle-Mariotte's law, and isochoric change of state, governed by Gay-Lussac's second law.

The unit features transparent tanks that allow direct observation of state changes, with air used as the test gas. In the first tank (positioned on the left), the hermetically sealed air volume is increased or decreased using a compressor and hydraulic oil, resulting in an isothermal change of state. The compressor can also function as a vacuum pump. If the changes occur slowly, the process takes place at an almost constant temperature.

In the second tank (positioned on the right), the temperature of the enclosed gas is increased using a controlled electric heater, and the corresponding rise in pressure is measured while maintaining a constant volume. This allows the study of the isochoric change of state.



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### 2. Specification

- Compressor / vacuum pump.
- power output: 90W.
- pressure at inlet: 300 mbar.
- pressure at outlet: 4 bar.
- Temperature controller: 1500W, limited to 70°C.

### 3. Experiments will be done

1. Demonstrating the laws of state changes in gases experimentally.
2. Isothermal change of state, Boyle-Mariotte law.
3. Isochoric change of state, Gay-Lussac's 2<sup>nd</sup> law.