

LCD (Liquid Crystal Display)

A **16x2 LCD (Liquid Crystal Display)** is a widely used alphanumeric display module capable of displaying **16 characters per line** across **2 lines**. It is based on the **Hitachi HD44780** controller or a compatible version, which allows easy interfacing with various microcontrollers like **Arduino**, **ATtiny**, **PIC**, or **AVR** using either **parallel** or **I2C communication**.

Each character on the display is built from a **5x8 dot matrix**, and the display can show both letters and numbers, as well as custom-defined characters. The module usually features **16 pins** (or 4 if using an I2C backpack), including power, ground, contrast adjustment, control signals (RS, RW, EN), and data lines (D0–D7).

Key features include:

- **Simple interface**
- **Low power consumption**
- **Built-in character font**
- **Custom character generation (up to 8 user-defined characters)**

A 16x2 LCD is ideal for displaying data like temperature, sensor values, time, and messages in embedded systems, DIY electronics, and hobby projects.