

## KHOI VI DIEU KHIEN

The diagram illustrates the pin configuration for the ATMEGA16 microcontroller (U1). The components and connections are as follows:

- Power and Ground:**
  - AVCC (Pin 30):** Connected to a 104V regulator.
  - AREF (Pin 32):** Connected to a 32V regulator.
  - Ground:** Multiple pins (1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 31, 33, 34, 35, 36, 37, 38, 39) are connected to ground.
- Reset:**
  - RST (Pin 9):** Connected to a reset button.
  - RESET (Pin 1):** Connected to a reset button.
- Crystal and Timing:**
  - CRYSTAL (C2):** Connected to XTAL1 (Pin 13) and XTAL2 (Pin 12).
  - XTAL1 (Pin 13):** Connected to XTAL2 (Pin 12).
  - XTAL2 (Pin 12):** Connected to XTAL1 (Pin 13).
  - SS (Pin 40):** Connected to a slave select line.
- I/O Connections:**
  - UP (Pin 1), DW (Pin 2), FAN (Pin 3), LIGHT4 (Pin 4):** Connected to a 5V supply.
  - PA0/ADC0 (Pin 39) to PA7/ADC7 (Pin 33):** Connected to a 5V supply.
  - PD0/RXD (Pin 14), PD1/TXD (Pin 15), PD2/INT0 (Pin 16), PD3/INT1 (Pin 17), PD4/OC1B (Pin 18), PD5/OC1A (Pin 19), PD6/ICP1 (Pin 20), PD7/OC2 (Pin 21):** Connected to a 5V supply.
  - PC0/SCL (Pin 22), PC1/SDA (Pin 23), PC2/TCK (Pin 24), PC3/TMS (Pin 25), PC4/TDO (Pin 26), PC5/TDI (Pin 27), PC6/TOSC1 (Pin 28), PC7/TOSC2 (Pin 29):** Connected to a 5V supply.
  - RS (Pin 14), RW (Pin 15), E (Pin 16), D4 (Pin 18), D5 (Pin 19), D6 (Pin 20), D7 (Pin 21):** Connected to a 5V supply.

ATMEGA16

# KHOI HIEN THI

LCD1  
RT1602C

RV1

VEE

10k

5V

1602

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16

GND VCC VEE RS RW E D0 D1 D2 D3 D4 D5 D6 D7 VCC GND

# KHOI NUT NHAN

**KHỎI NGUỒN**

## KHOI RELAY

The diagram illustrates the KHOI RELAY circuit, which consists of two identical relay modules, RL1 and RL2, each controlled by a 5VDC relay (G5CLE-14-DC5) and a 1N4007 diode (D1, D2). The relays are connected to a common terminal block (J2, J3) labeled "TERMINAL2".

**Relay Module RL1 (Left):**

- Controlled by a 1N4007 diode (D1) and a 220 ohm resistor (R1).
- Control circuit includes a 1k ohm resistor (R3) and a transistor (Q1, C1815) driven by a "LIGHT" input.
- Relay coil is connected to a common ground.

**Relay Module RL2 (Right):**

- Controlled by a 1N4007 diode (D2) and a 220 ohm resistor (R2).
- Control circuit includes a 1k ohm resistor (R4) and a transistor (Q2, C1815) driven by a "FAN" input.
- Relay coil is connected to a common ground.

[illegible]