Lumiknob module Product Brief

Lumiknob efficiently drives 32 LEDs via a single potentiometer by leveraging SPI communication and the MAX7219 driver. This innovative design enables dynamic, precise lighting in a compact system.

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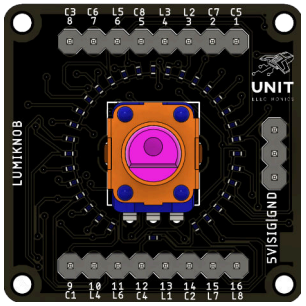
Introduction

Lumiknob is a compact module that bridges analog input with digital output. By turning a single potentiometer, users can control a chain of up to 32 LEDs via the MAX7219 LED driver. This provides an intuitive and responsive interface ideal for control panels, feedback systems, and visual indicators in embedded projects.



Functional Description

- Lumiknob integrates a potentiometer with a MAX7219 LED driver to provide real-time LED control.
- The analog signal is read by a microcontroller and mapped to a digital output pattern for the LEDs.
- Communication with the MAX7219 is handled over SPI, requiring minimal wiring and resources.
- The module is optimized for simplicity and quick integration with Arduino, Raspberry Pi, and other microcontrollers.

Electrical Characteristics

- Power Supply: 5 V or 3.3 V (compatible with common MCU voltages)
- LED Driver: MAX7219
- Communication: SPI (MOSI, CLK, CS)
- Potentiometer: 10 k ohm linear taper
- LEDs: Supports up to 32 individually addressable LEDs in a chain

Features

- Controls up to 32 LEDs from a single analog source
- Compatible with SPI-enabled microcontrollers
- Adjustable brightness and patterns via firmware
- Minimal component footprint for compact enclosures

Applications

- LED-based user interfaces
- Interactive displays and dashboards
- DIY electronics and maker projects
- Educational tools for analog-to-digital signal demonstration
- Control systems with rotary feedback

Settings

Interface Overview

Interface	Signals / Pins	Typical Use
SPI	CLK, MOSI, CS	MAX7219 control interface
Potentiometer	SIG (analog input)	Reads position for LED visualization

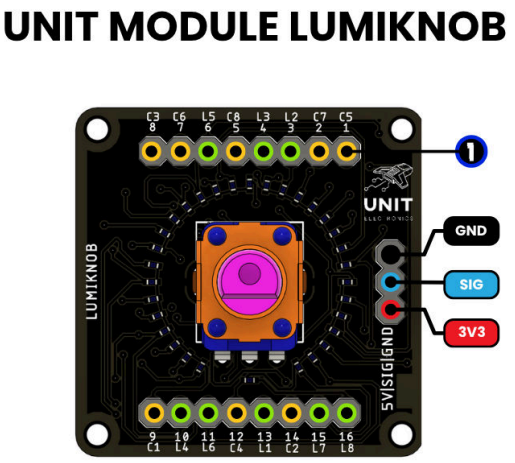
Supported Pins

Feature	Description
LED Control	Up to 32 LEDs driven by analog input
Potentiometer Input	Converts analog value to visual LED output
SPI Communication	Uses SPI protocol for LED driver control
Power Supply	3.3 V or 5 V input compatibility
Microcontroller	Works with Arduino, STM32, Raspberry Pi, and others

Pin & Connector Layout

Pin	MCU	Description
VCC	5V/3.3V	Power supply input
GND	GND	Ground reference
SIG	Analog	Analog input from potentiometer
CLK	SPI Clock	Clock line for MAX7219
MOSI	SPI Data	Data line for MAX7219
CS	SPI CS	Chip select for MAX7219 communication

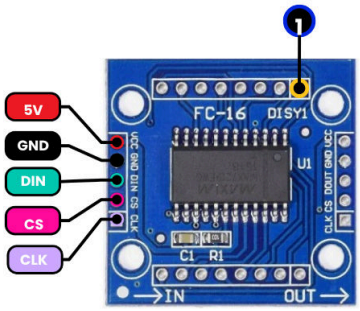
Block Diagram



Conections:

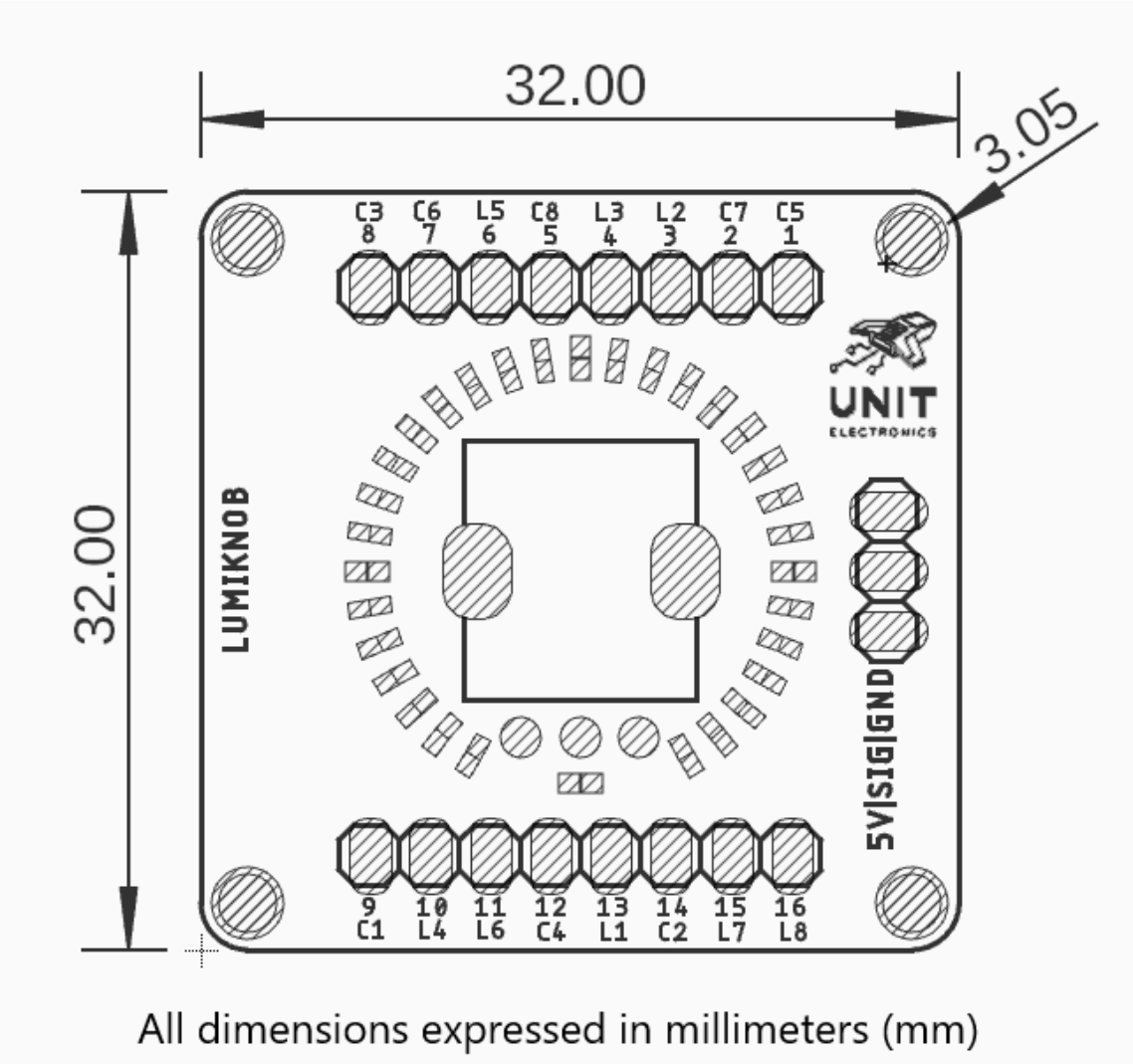
Module	Pin	MCU	Description
Lumiknob	SIG	Analog pin	Analog signal from potentiometer
	GND	Ground	Ground reference
	VCC	3V3 / 5V	Supply voltage
MAX7219	VCC	5V	Supply voltage
	GND	GND	Ground reference
	DIN	MOSI	Serial data input to MAX7219
	CLK	SCK	Serial clock input to MAX7219
	CS	GPIO	SPI control for MAX7219

Description:



- SIG — Signal
- VCC — Supply voltage
- GND — Ground
- DIN — Data Input
- CS — Chip select
- CLK — Serial Clock
- Cathode
- Anode
- Pin 1 conection

Dimensions



Usage

- Arduino interfaces (Uno, Mega, Nano)
- Raspberry Pi via SPI
- STM32, ESP32, and other microcontrollers with analog input and SPI support

Downloads

- Schematic PDF

Purchase

- Buy from UNIT Electronics