VEML7700 Ambient Light Sensor Quick Start

Solder the header, connect four wires, install one library and read the light level in lux.

VEML7700 | I2C ADDRESS 0x10, FIXED | VIN 3 V TO 5 V | LEAVE 3Vo UNCONNECTED

1 WIRE IT UP



Front, text upright. Pins left to right: VIN, 3Vo, GND, SCL, SDA. The clear part in the middle is the sensor; point it at the light.

YOUR BOARD	VIN	GND	SCL	SDA
Uno, Nano	5V	GND	A5	A4
Mega 2560	5V	GND	21	20
ESP32	3V3	GND	GPIO22	GPIO21
Raspberry Pi	3V3 (pin 1)	pin 6	GPIO3 (pin 5)	GPIO2 (pin 3)

VIN takes 3 V to 5 V. The board has its own 3.3 V regulator and I2C level shifter, so it works with 5 V and 3.3 V boards.

Leave 3Vo unconnected. It is a small 3.3 V output from the board, not a power input. Never power your microcontroller from it.

Power VIN from the same voltage as your board's I/O pins. VIN also sets the I2C signal level on your side: 5V on an Uno, Nano or Mega, 3V3 on an ESP32 or Raspberry Pi. Feeding VIN from 5V on a 3.3 V board puts 5 V on its I2C pins.

2 FIRST START

1. **You need** a soldering iron, four jumper wires, a USB cable and the Arduino IDE.
2. **Solder the header** with the long pins under the board, so the sensor faces up in a breadboard. Solder all five pins.
3. **Wire the four pins** from the table above, with your board unplugged.
4. **Install the library.** Open **Tools > Manage Libraries**, search **VEML7700** and install **Adafruit VEML7700 Library**. Choose **Install all** so the libraries it needs come with it.
5. **Upload the test sketch** on the right and open the Serial Monitor at **115200** baud.
6. **Check the result.** The scan lists **0x10**, then **VEML7700 found**, then a lux reading every second or two.

3 TEST SKETCH

```
// VEML7700 first test (Click IT Electronics)
// Library: Adafruit VEML7700 (Library Manager)
// Wiring: VIN-5V or 3.3V (match your board),
// GND-GND, SCL-SCL, SDA-SDA. Leave 3Vo unused.
#include <Wire.h>
#include <Adafruit_VEML7700.h>

Adafruit_VEML7700 veml;

void setup() {
  Serial.begin(115200);
  Wire.begin();
  delay(500);
  Serial.print("I2C devices found:");
  for (byte a = 1; a < 127; a++) {
    Wire.beginTransmission(a);
    if (Wire.endTransmission() == 0) {
      Serial.print(" 0x");
      Serial.print(a, HEX);
    }
  }
  Serial.println();
  if (!veml.begin()) {      // address 0x10
    Serial.println("No VEML7700 at 0x10");
    while (1) delay(10);
  }
  Serial.println("VEML7700 found");
}

void loop() {
  // auto gain and timing, corrected for
  // bright light
  float lux = veml.readLux(VEML_LUX_AUTO);
  Serial.print("Lux: ");
  Serial.println(lux, 1);
  delay(1000);
}
```

Expected result: I2C devices found: 0x10, then **VEML7700 found**, then **Lux:** readings. They drop towards 0 when you cover the sensor and rise sharply under a phone torch. In the dark a reading can take a few seconds.

4 NOT WORKING?

WHAT YOU SEE	TRY THIS
Scan finds nothing, or "No VEML7700 at 0x10"	Check VIN and GND, swap SCL and SDA, and reheat any dull header joints. VIN, not 3Vo, must be powered.
Scan shows other addresses but not 0x10	SCL and SDA reach the other devices but not this board. Check its two signal wires and its header joints.
Two devices at 0x10, or readings that make no sense	The address is fixed, so two VEML7700 boards or another 0x10 device will clash. Unplug the others and test again, then use a second I2C bus or an I2C multiplexer.
Reads 0 or close to 0	The sensor is covered or in the dark. Normal room light reads in the tens to hundreds of lux. Check nothing sits over the clear window.
Reading stops rising in sunlight	The sensor has been set to a high gain or long timing. Use auto mode as in the sketch, or set gain 1/8 and 25 ms.
Nothing on the Serial Monitor	Set the Serial Monitor to 115200 baud and press the board's reset button.

5 BRIGHT LIGHT AND OUTDOORS

- **Use auto mode.** readLux(VEML_LUX_AUTO) picks the gain and timing and applies the correction the sensor needs above about 1000 lux. Plain readLux() leaves bright readings uncorrected.
- **The board is not weatherproof.** Outdoors, mount it behind a clear, weatherproof cover and keep water and condensation off it.
- **Fixed settings for full sun:** gain 1/8 and 25 ms, read with VEML_LUX_CORRECTED. That reads up to about 140 000 lux.
- **A cover lowers the reading.** For exact lux, compare with a light meter and scale to suit. The datasheet has the settings table and register map.

This guide and the datasheet online

Scan for this guide as a PDF. The product page has the full datasheet with every setting. Stuck? Email **support@nznelectronics.co.nz**

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