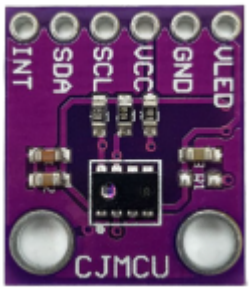
LamaPLC: CJMCU-3216 / AP-3216 integrated digital ambient light and proximity sensor module/IC with I²C communication

The **AP-3216** (commonly found on the **CJMCU-3216** module) is an integrated digital ambient light sensor and proximity sensor with a built-in infrared (IR) LED, communicating via an I²C interface. It is designed for applications such as mobile devices and smart home systems to manage screen brightness and detect nearby objects.



Key Features and Specifications

- **Chip:** AP3216C
- **Interface:** I²C (Fast Mode, up to 400kHz), default I²C address: **0x1E**
- **Operating Voltage: 2.8V to 3.8V DC** (Note: the module typically has no internal voltage regulator, so do not use 5V directly).
- **Operating Temperature:** -30°C to +80°C.

Ambient Light Sensor (ALS)

- **Output:** 16-bit effective linear output (0 to 65535).
- **Dynamic Range:** Four user-selectable ranges are available: 365, 1460, 5840, and 23360 lux.
- **Features:** Includes anti-flicker rejection (for 50/60Hz sources) and high sensitivity for use behind darkened glass.

Proximity Sensor (PS)

- **Output:** 10-bit effective linear output (0 to 1023).
- **Features:** Incorporates high ambient light suppression, cross-talk compensation, and programmable IR LED current control to handle low-reflective objects like black hair.

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Module Pinout

The CJMCU-3216 module is typically a 6-pin board:

Pin	Description
VCC	Power supply input (2.8V-3.8V)
GND	Ground connection
SCL	I²C Clock line
SDA	I²C Data line
VL	Used to turn on the integrated IR LED on the module
INT	Interrupt pin to improve system efficiency

Arduino wiring

CJMCU-3216 Pin	Arduino Pin (Uno/Nano)	Notes
VCC	3.3V	Do not use 5V; the chip may be damaged
GND	GND	Common ground
SCL	A5	I²C Clock
SDA	A4	I²C Data
VLED	3.3V (via resistor)	Powers the IR LED; use a ~330Ω resistor for protection

Arduino code

Install the **AP3216_WE library** via the Arduino Library Manager (*Tools* > *Manage Libraries*).

```
#include <Wire.h>
#include <AP3216_WE.h>

AP3216_WE myAP3216 = AP3216_WE();

void setup() {
  Serial.begin(9600);
  Wire.begin();

  if (!myAP3216.init()) {
    Serial.println("AP3216 not found!");
    while (1);
  }

  // Set mode to Ambient Light and Proximity Sensor continuous
  myAP3216.setMode(AP3216_ALS_PS);
  delay(200);
}
```

```
void loop() {
  float als = myAP3216.getAmbientLight(); // Light in Lux
  unsigned int prox = myAP3216.getProximity(); // Proximity value (0-1023)

  Serial.print("Lux: ");
  Serial.print(als);
  Serial.print(" | Proximity: ");
  Serial.println(prox);

  delay(500);
}
```

CJMCU-3216, CJMCU, AP-3216, AP3216, ambient light, proximity, sensor, arduino, code, I2C, communication

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