

# LamaPLC: APDS - Avago ALS and proximity detection sensors with I<sup>2</sup>C communication

The Avago APDS-9900, APDS-9930, and APDS-9960 are a series of integrated optical sensor modules that primarily offer ambient light sensing (ALS) and proximity detection, with the APDS-9960 adding advanced gesture recognition and RGB color sensing.



## Feature Comparison

Feature	Avago APDS-9900	Avago APDS-9930	Avago APDS-9960
Type	Approximates Human Eye Response	Approximates Human Eye Response	Ambient Light and RGB Color Sensing, Proximity Sensing, and Gesture Detection in an Optical Module
Ambient Light Sensing (ALS)	Yes (Clear & IR channels)	Yes (Clear & IR channels)	Yes (RGBC - Red, Green, Blue, Clear)
Proximity Detection	Yes	Yes (calibrated to 100mm)	Yes (calibrated to 100mm)
Gesture Detection	No	No	Yes (Up, Down, Left, Right, etc.)
RGB Color Sensing	No	No	Yes
Interface	I <sup>2</sup> C	I <sup>2</sup> C	I <sup>2</sup> C
Operating Voltage	2.5V - 3.6V	2.2V - 3.6V	2.4V - 3.6V
Key Application	Simple light/proximity in phones	Power-saving display management	HMI, robotics, complex touchless control

Communication: I<sup>2</sup>C communication, default address: 0x39



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## Arduino wiring

Pin	Name	Function
VL	LED Power	Optional power for the IR LED (if not jumpered to VCC). Usually 3.0V - 4.5V
VCC	Power	2.4V to 3.6V. (Note: Use 3.3V for Arduino; 5V will damage the chip without a regulator)
GND	Ground	0V Reference

Pin	Name	Function
SCL	I <sup>2</sup> C Clock	Serial clock line for I <sup>2</sup> C communication
SDA	I <sup>2</sup> C Data	Serial data line for I <sup>2</sup> C communication
INT	Interrupt	Active Low. Goes LOW when a gesture or proximity event is triggered. For gesture sensing, it is highly recommended to connect the INT pin to a hardware interrupt pin (e.g., Digital Pin 2 on Arduino) to ensure the sensor's FIFO buffer is read immediately when data is ready.

## Arduino code

For APDS-9960 running on an Arduino, the SparkFun APDS-9960 Library "SparkFun APDS9960" is the industry standard.

```
#include <Wire.h>
#include <SparkFun_APDS9960.h>

#define APDS9960_INT 2 // Must be an interrupt pin
SparkFun_APDS9960 apds = SparkFun_APDS9960();
volatile bool isr_flag = false;

void setup() {
  Serial.begin(9600);
  pinMode(APDS9960_INT, INPUT);

  // Initialize interrupt service routine
  attachInterrupt(digitalPinToInterrupt(APDS9960_INT), interruptRoutine,
  FALLING);

  if (apds.init()) {
    Serial.println(F("APDS-9960 initialization complete"));
  } else {
    Serial.println(F("Something went wrong during APDS-9960 init!"));
  }

  // Start sensor gesture engine
  if (apds.enableGestureSensor(true)) {
    Serial.println(F("Gesture sensor is now running"));
  } else {
    Serial.println(F("Something went wrong during gesture sensor init!"));
  }
}

void loop() {
  if (isr_flag) {
    detachInterrupt(digitalPinToInterrupt(APDS9960_INT));
    handleGesture();
    isr_flag = false;
    attachInterrupt(digitalPinToInterrupt(APDS9960_INT), interruptRoutine,
  FALLING);
  }
}
```

```

}

void interruptRoutine() {
  isr_flag = true;
}

void handleGesture() {
  if (apds.isGestureAvailable()) {
    switch (apds.readGesture()) {
      case DIR_UP:      Serial.println("UP");      break;
      case DIR_DOWN:    Serial.println("DOWN");    break;
      case DIR_LEFT:    Serial.println("LEFT");    break;
      case DIR_RIGHT:   Serial.println("RIGHT");   break;
      case DIR_NEAR:    Serial.println("NEAR");    break;
      case DIR_FAR:     Serial.println("FAR");     break;
      default:          Serial.println("NONE");
    }
  }
}
}
}

```

## I<sup>2</sup>C topics on lamaPLC

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• lamaPLC: HT16K33 display controller	2026/04/23 21:51	i2c, 7-segment display, display, ht16k33, arduino
• LamaPLC: HTU TE Connectivity temperature/humidity sensors with I <sup>2</sup> C communication	2026/04/23 21:52	htu, htu31d, htu21d, htu20d, sht20, htu20, sht21, htu21, si7021, gy-21, gy-213v, hdc1080, si702, gy-20, sht31, htu31, si7031, gy-31, te connectivity, temperature, humidity, i2c, communication, sensor, arduino, code
• lamaPLC: INA modules with Arduino libraries	2026/04/11 19:54	i2c, i c, communication, arduino, energy, power, current, monitor, sensor, ina219, gy-219, ina226, gy-216, ina228, gy-228, ina237, ina238, ina260, ina3221, ina
• lamaPLC: INA226 - current/voltage/power monitor with I <sup>2</sup> C communication	2026/04/23 21:52	i2c, i c, communication, arduino, energy, power, current, monitor, sensor, ina226, ina219, ina
• lamaPLC: LCD 1602/2004 with I <sup>2</sup> C communication	2026/02/14 18:27	communication, i2c, display, lcd, 1602, 2004, hd44780, pcf8574, pcf8574t, pcf8574at, arduino
• LamaPLC: MAX30100/MAX30102 Heart Rate Click Sensor Module	2026/04/23 21:52	max30102, max30100, heart rate click, sensor, communication, i2c, arduino, code
• lamaPLC: MCP23017 / MCP23S17 16-Bit I/O Expander with Serial Interface I <sup>2</sup> C / SPI	2026/04/23 21:52	communication, i2c, mcp23017, mcp23s17, spi, i o expander, serial, cjmcu-2317, cjmcu
• lamaPLC: MLX90614 (GY-906) infrared non-contact thermometer	2026/05/08 00:03	communication, i2c, temperature, mlx90614, gy-906, modul, infrared, non-contact thermometer, dsp, pwm, smbus, hailege
• lamaPLC: PCF857x I/O Expander chip/modul with I <sup>2</sup> C communication	2026/05/14 15:21	communication, i2c, pcf857x, pcf8574, pcf8574a, pcf8575, i o expander, i o extension, nxp, texas instruments
• LamaPLC: Pixart PAJ7620U2 Gesture recognition sensors/module with I <sup>2</sup> C communication	2026/04/23 21:52	paj7620u2, gy-paj7620, pixart, gesture recognition, i2c, communication, sensor, arduino, code
• lamaPLC: RP2040_ETH_Modul: I <sup>2</sup> C scanner	2026/05/12 16:20	code, micropython, 2026, rp2040 eth, i2c, comunication
• lamaPLC: RP2040_ETH_Modul: MLX90614 simple	2026/05/12 17:06	code, micropython, 2026, rp2040 eth, i2c, communication, mlx90614
• lamaPLC: RP2040_ETH_Modul: Read BME 680/688 sensor data	2026/05/12 21:06	code, micropython, 2026, rp2040 eth, bme680, i2c, sensor, communication
• lamaPLC: RP2040_ETH_Modul: Read BME 680/688 sensor data and store in Modbus input registers	2026/05/12 18:58	code, micropython, 2026, rp2040 eth, bme680, i2c, sensor, communication
• LamaPLC: SC16IS750 / SC16IS752: One or two serial (UART) ports from microcontroller via I <sup>2</sup> C or SPI communication	2026/04/23 21:52	cjmcu-750, cjmcu-752, cjmcu, nxp, sc16is750, sc16is752, uart, serial, i2c, spi, modul, converter, arduino, code

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- [lamaPLC: TCA9548A \(HW617\); Low-Voltage 8-Channel I<sup>2</sup>C Switch Module](#) 2026/02/14 23:51 [tca9548a, hw617, i2c, switch, communication, expansion board, arduino](#)
- [lamaPLC: TM1637 7-segment display](#) 2026/02/14 18:26 [i2c, 7-segment display, display, tm1637, arduino](#)
- [LamaPLC: TOFnnnC STMicroelectronics Time-of-Flight \(ToF\) sensors with I<sup>2</sup>C communication](#) 2026/04/23 21:52 [tof050c, vl6180, tof200c, vl53l0x, tof400c, vl53l1x, stmicroelectronics, time-of-flight, tof, i2c, communication, sensor, arduino, code](#)
- [LamaPLC: VL53Lnn STMicroelectronics time-of-flight \(ToF\) laser-ranging sensors with I<sup>2</sup>C communication](#) 2026/04/23 21:52 [vl53l0x, vl53l1x, vl53l0 1xv2, gy-530, time-of-flight, tof, laser-ranging, i2c, communication, sensor, arduino, code](#)
- [LamaPLC: VL6180X STMicroelectronics Time-of-Flight \(ToF\) sensor with I<sup>2</sup>C communication](#) 2026/04/23 21:52 [vl6180x, stmicroelectronics, time-of-flight, tof, i2c, communication, sensor, arduino, code](#)
- [lamaPLC: XGZP68xx: Silicon Pressure Sensors/Module](#) 2026/05/15 15:17 [communication, i2c, sensor, modul, pressure, cfsensor, xgzp68xx, xgzp6810d, xgzp6857d, xgzp6859d, xgzp6887d, xgzp6897d, xgzp6899a, piezoresistive, capacitive](#)
- [Magnetic angle sensors](#) 2026/03/05 21:19 [magnetic angle sensor, magnetic flux, sensor, spi, i2c, pwm, communication, modul, as5047p, as5600, mt6701, mt6816, mt6835, tle5012b, amr, gmr, tmr, anisotropic magnetoresistive](#)
- [SSH1106/SSD1306 OLED Display with I<sup>2</sup>C communication](#) 2026/02/14 18:27 [i2c, oled, display, ssd1306, sh1106, ssh1106, arduino, cmos](#)

[Avago, APDS-9900, APDS-9930, APDS-9960, ALS, proximity, detection, gesture recognition, gesture, i2c, communication, sensor, arduino, code](#)

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