LamaPLC: Allegro ACS758 Hall-effect linear current sensors

The provided part numbers refer to specific models within the **Allegro ACS758 series** of Hall-effect linear current sensor integrated circuits (ICs), which primarily differ in their current-sensing range, sensitivity, and operating temperature range.

Part Number	Current Range	Sensitivity (Typ.)	Operating Temp. Range
ACS758LCB-050B (CJMCU-758)	±50 Amps	40 mV/A	–40 to 150 °C
ACS758LCB-100B	±100 Amps	20 mV/A	–40 to 150 °C
ACS758KCB-150B	±150 Amps	13.3 mV/A	–40 to 125 °C
ACS758ECB-200B	±200 Amps	10 mV/A	–40 to 85 °C

- **Supply Voltage:** 3.0 to 5.5 V.
- **Internal Conductor Resistance:** Ultra-low 100 µΩ, providing minimal power loss.
- **Bandwidth:** Typically 120 kHz.
- **Zero Current Output:** For these bidirectional (“B”) models with a 5V VCC, the output voltage is typically VCC/2 (2.5V) when no current is flowing.

CJMCU-758 Pinout

Low power

- **VCC:** Power supply input (3.0V to 5.5V).
- **GND:** Ground connection.
- **OU1:** Direct analog signal from the sensor.
- **OU2:** Buffered signal through an onboard op-amp (often a Texas Instruments LM358 or similar) to reduce noise and drive longer cables.

Power path

- **IP+:** Current input.
- **IP-:** Current output.

Directionality: For bidirectional (“B”) models, current can flow in either direction. For unidirectional

(“U”) models, current must flow from IP+ to IP- for a positive voltage increase.

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Arduino code

This code reads a bidirectional sensor (such as the models you listed) and computes the DC current. It assumes a 5V Arduino and that the sensor is powered by 5V.

Select the *mVperAmp* value based on your specific ACS758 model:

- 050B: 40 mV/A
- 100B: 20 mV/A
- 150B: 13.3 mV/A
- 200B: 10 mV/A

```
const int sensorPin = A0;      // Pin connected to CJMCU-758 OUT
int mVperAmp = 40;             // Change to 20, 13.3, or 10 based on model
int ACSoffset = 2500;          // 2.5V (VCC/2) is the 0A midpoint for
bidirectional sensors

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

void loop() {
  // 1. Read raw ADC value (0-1023)
  int rawValue = analogRead(sensorPin);

  // 2. Convert raw value to voltage in mV
  // 5000mV / 1024 ADC steps = 4.88mV per step
  double voltage = (rawValue / 1023.0) * 5000;

  // 3. Subtract offset and divide by sensitivity to get Amps
  double current = (voltage - ACSoffset) / mVperAmp;

  Serial.print("Raw: "); Serial.print(rawValue);
  Serial.print(" | Voltage(mV): "); Serial.print(voltage);
  Serial.print(" | Current(A): "); Serial.println(current, 2);

  delay(500);
```

```
}
```

Key Considerations

- **Calibration:** The quiescent offset (voltage at 0 Amps) is theoretically 2500 mV but often varies slightly due to power supply noise or stray magnetic fields. Measure the voltage at 0 A, and update the ACSoffset in your code for improved accuracy.
- **3.3V Microcontrollers:** If using an ESP32 or Arduino Due, you must use a voltage divider on the output to drop it below 3.3V, or use a 3.3V reference in your calculations (the sensitivity will also be lower).
- **Averaging:** To reduce jitter, take 10–100 samples in your loop and compute the mean.

CJMCU topics on lamaPLC

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• LamaPLC: BMP/BME Bosch Temperature/Humidity/Pressure sensors with I²C communication	2026/02/15 20:40	bme280, bme680, bmp180, bmp280, hw-611, hw611, bosch, temperature, humidity, pressure, sensor, arduino, i2c, communication, cjmcu
• lamaPLC: CJMCU-164; SN74HC164D 8-bit Shift Register Module	2026/02/14 22:48	cjmcu-164, sn74hc164d, 8-bit shift register, communication, 7-segment, cjmcu, arduino
• LamaPLC: CJMCU-219/INA-219 breakout board/IC with I²C communication	2026/02/14 23:37	cjmcu-219, ina-219, ina219, breakout board, i2c, communication, sensor, voltage, current, arduino, code, cjmcu
• LamaPLC: CJMCU-3216 / AP-3216 integrated digital ambient light and proximity sensor module/IC with I²C communication	2026/02/14 22:40	cjmcu-3216, cjmcu, ap-3216, ap3216, ambient light, proximity, sensor, arduino, code, i2c, communication
• LamaPLC: CJMCU-3901/PMW-3901 compact optical flow sensor module/IC by PixArt with SPI communication	2026/02/14 22:39	cjmcu-3901, cjmcu, pmw3901, pmw-3901, optical flow, sensor, pixart, spi, communication, arduino, code, pmw3901mb-txqt
• LamaPLC: CJMCU-6701: Biosensor for measuring Galvanic Skin Response (GSR) with SPI communication	2026/02/14 23:39	cjmcu, cjmcu-6701, acs758, acs-758, galvanic skin response, gsr, electrodermal activity, eda, spi, communication, arduino, code, sensor, healthcare
• LamaPLC: CJMCU-6814 combined gas sensor module for CO, NO_2, NH_3	2026/02/14 22:16	analog, cjmcu, cjmcu-6814, mics6814, mics-6814, sensor, arduino, code, carbon monoxide, co, ammonia, nh_3, nitrogen dioxide, no_2
• LamaPLC: CJMCU-8221 Analog Devices Precision instrumentation amplifier module	2026/02/14 22:55	cjmcu-8221, ad8221ar, analog devices, amplifier, sensor, cjmcu

• LamaPLC: HDC Texas Instruments Temperature/humidity sensors with I²C communication	2026/02/14 22:09	sht21, htu21, si7021, gy-21, gy-213v, hdc1080, gy-213v-hdc1080, cjmcu, cjmcu-1080, texas instruments, temperature, humidity, sensor, i2c, communication, arduino, code
• lamaPLC: MCP23017 / MCP23S17 16-Bit I/O Expander with Serial Interface I²C / SPI	2026/02/14 22:52	communication, i2c, mcp23017, mcp23s17, spi, i o expander, serial, cjmcu-2317, cjmcu
• LamaPLC: SC16IS750 / SC16IS752: One or two serial (UART) ports from microcontroller via I²C or SPI communication	2026/02/14 22:53	cjmcu-750, cjmcu-752, cjmcu, nxp, sc16is750, sc16is752, uart, serial, i2c, spi, modul, converter, arduino, code

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