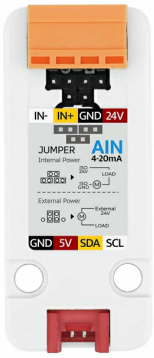
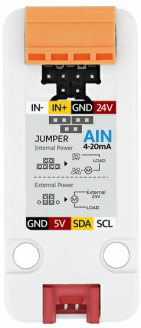
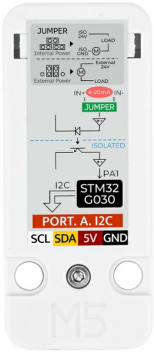
Unit AIN4-20mA

SKU:U162







Description

Unit AIN4-20mA is a **single-channel** 4~20mA current analog measurement unit. It uses the **STM32G030F6** main control chip and communicates with the M5 host via **I2C**. It supports switching between internal or external power supply wiring modes through jumper caps. The onboard power isolation chip and built-in op-amp circuit can accurately measure external current sensors, ensuring signal accuracy and system safety. It is suitable for fields such as power system equipment monitoring, motor control, energy management, and automation and industrial process control.

Features

- STM32
- I2C communication
- Supports 2 or 4-wire sensors, switchable via jumper caps
- Built-in electrical isolation chip
- Supports Arduino, UIFlow, and other programming platforms

Includes

- 1 x Unit AIN4-20mA
- 1 x HT3.96-4P Terminal
- 1 x HY2.0-4P Grove Cable (20 cm)
- 3 x Jumper Cap

Applications

- Power system equipment monitoring
- Motor control
- Energy management
- Automation and industrial process control

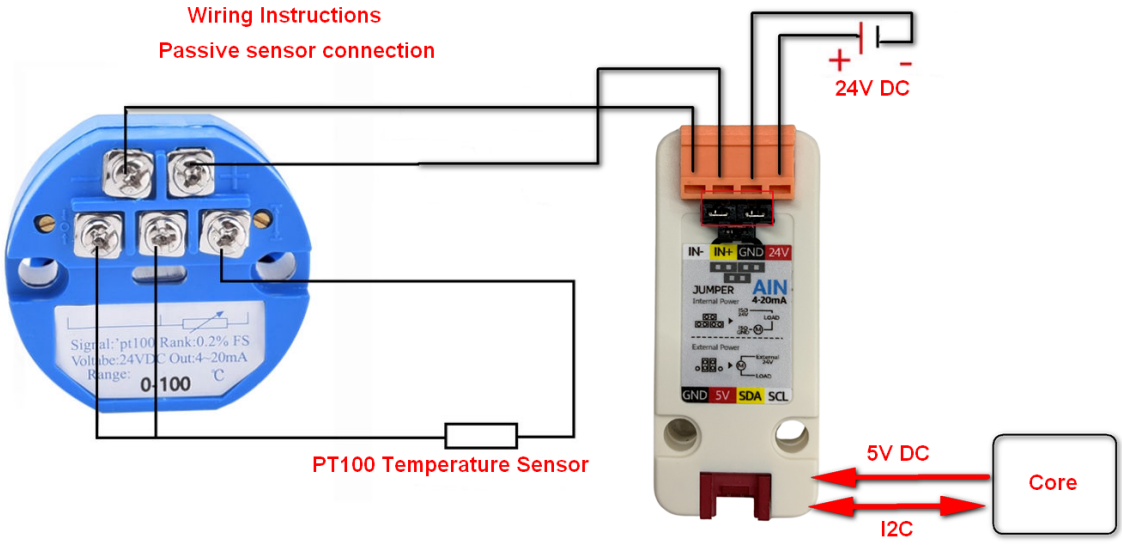
Specifications

Specification	Parameter
MCU	STM32G030F6P6
Signal Isolation Chip	HCNR200
Op-Amp Chip	SGM321YC5/TR
Communication Interface	I2C @0x55
IN+ and IN- Input Impedance Typical Value	200Ω
Operating Temperature	0 ~ 40°C
Product Size	56.0 x 24.0 x 11.3mm
Product Weight	8.8g
Package Size	138.0 x 93.0 x 12.3mm
Gross Weight	17.1g

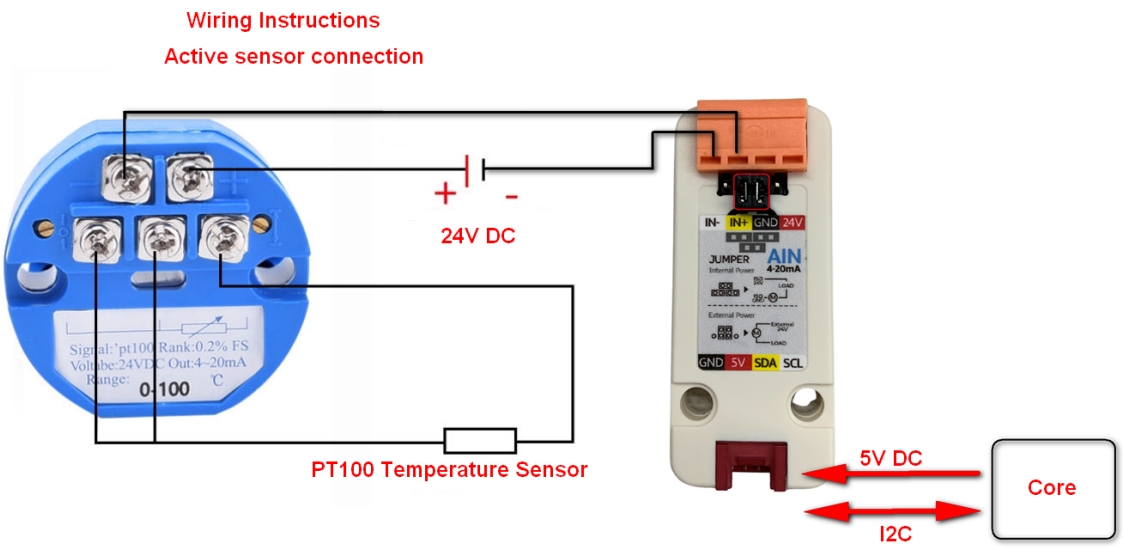
Learn

Jumper Cap Connection and Instructions

- When using a **passive current-type sensor**, please connect the DC 24V power supply input, connect the sensor signal to **IN+ and IN-**, and adjust the jumper cap as shown below:

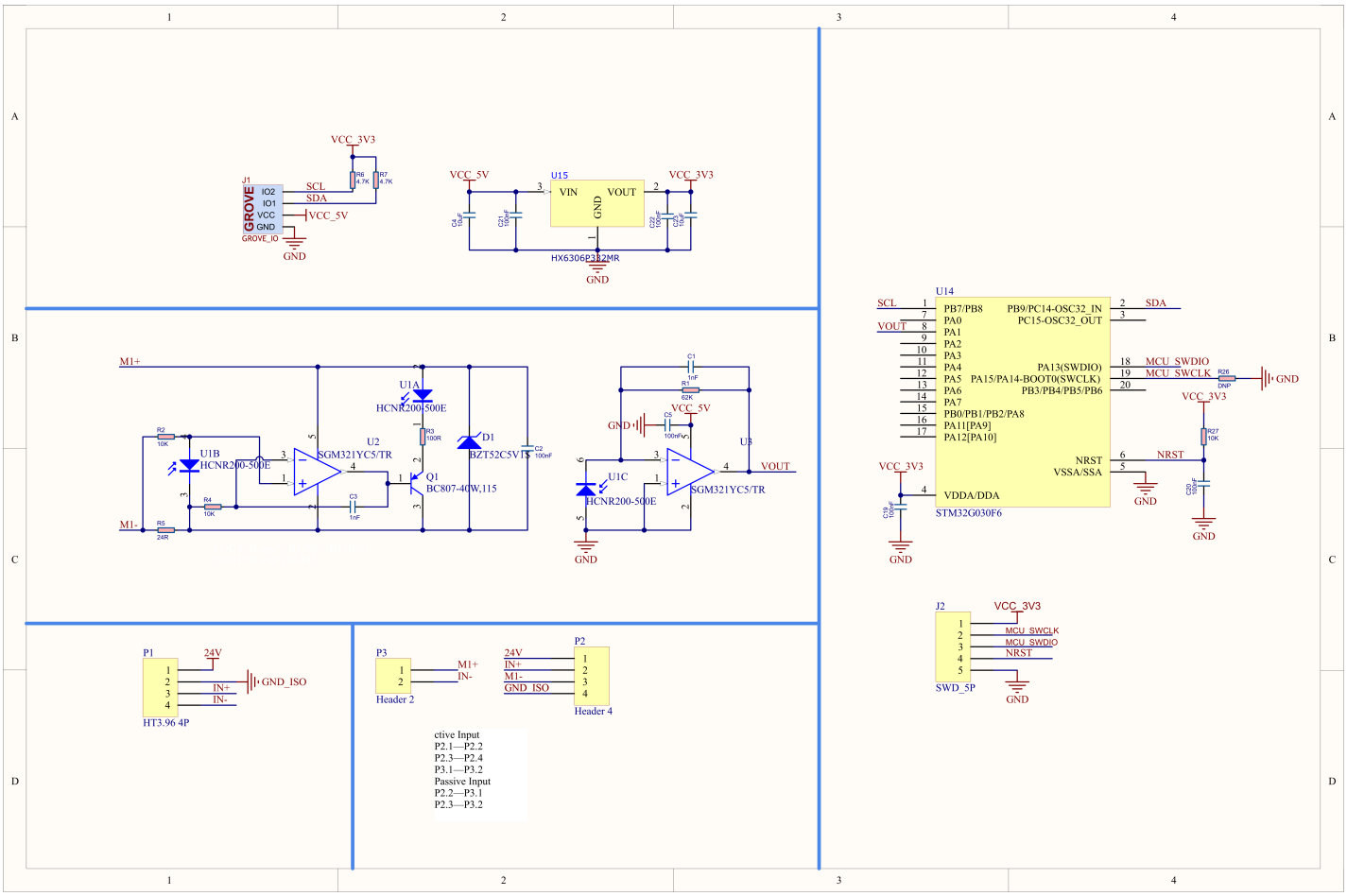


- When using an **active current-type sensor**, connect the sensor signal to **IN+ and IN-**, and adjust the jumper cap as shown below:



Schematics

- Unit AIN4-20mA Schematics PDF

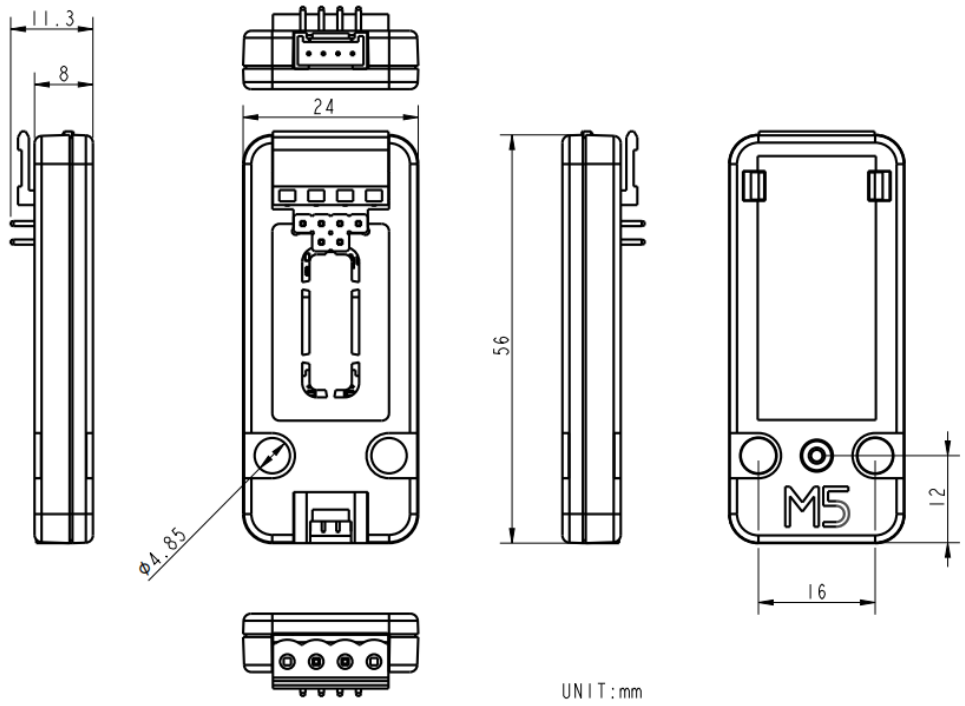


PinMap

Unit AIN4-20mA

HY2.0-4P	Black	Red	Yellow	White
PORT.A	GND	5V	SDA	SCL

Model Size



Datasheets

- STM32G030F6 Datasheet
- HCNR200 Datasheet
- SGM321YC5 Datasheet

Softwares

Arduino

- Unit AIN4-20mA Arduino Library

UiFlow1

- Unit AIN4-20mA UiFlow1 Docs
- Unit AIN4-20mA UiFlow1 Example

UiFlow2

- Unit AIN4-20mA UiFlow2 Docs

Internal Firmware

- Unit AIN4-20mA Internal Firmware

Protocol

M5Stack Unit 4-20mA I2C Protocol																	V1 (FW Version) 2023/1/30
REG MAP (Addr:0x55)		0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F	note
Raw ADC (12Bits)	0x00 R	ADC1-L	ADC1-H															
Current	0x20 R	Current 1-L	Current 1-H															
CAL[1]	0x30 R/W	Ref Current -L	Ref Current -H															
Firmware Version	0xF0 R															Version		**Version:** firmware version number
I2C Address	0xF0 R																Address	**Address:** I2C Address

[1] Calibration method:
(1) Generate a standard current using a 4-20mA signal source, such as 10.00mA.
(2) Write the current value into the register, but note that this value needs to be multiplied by 100. For example, for 10.00mA, the calibration value should be 1000. Therefore, Ref Current-L should be