Atomic Motion Base v1.2

SKU:A090-V12

ATOMIC
MOTION
BASE V1.2

M5STACK

MAGNET INSIDE

18350 900mAh

PORT.C

Overcharge and overdischarge protection

PORT.B

x2
DC.MOTOR
2.54mm

x4
SERVO DRIVER
2.54mm

POWER SWITCH

I2C INTERFACE

STM32
DW01A
INA226
RZ7899
ETA9740
DC.MOTOR x 2
SERVO DRIVER x 4

COMPATIBLE & NOT INCLUDE
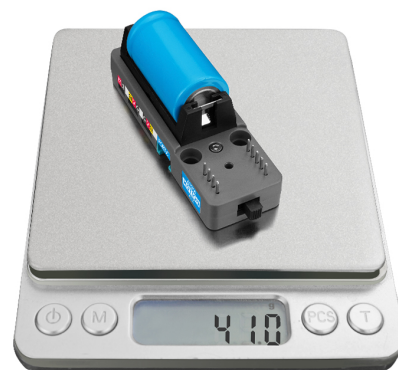
Description

Atomic Motion Base v1.2 is a high-performance servo and DC motor drive base specifically designed for the Atom main control series. It deeply integrates power control, intelligent expansion, and safety protection functions to provide a one-stop solution for multi-domain development. The product is equipped with 4-channel servo interfaces and 2-channel DC motor interfaces, which can precisely drive various actuators; two HY2.0-4P interfaces support the rapid connection of various sensors such as temperature, humidity, and light, easily realizing device function expansion. In terms of communication, it uses a stable I2C communication protocol, combined with STM32+RZ7899 control chips, ensuring stable driving, efficient data transmission, and low latency.

In terms of the power supply system, it has a built-in rechargeable 900mAh 18350-specification lithium battery, equipped with a DW01-A high-precision single-cell lithium battery protection chip and an INA226 current/voltage detection chip to form a dual safety protection system. The DW01-A chip has overcharge, overdischarge, and short-circuit protection functions to comprehensively protect the battery safety; the INA226 chip monitors the battery voltage, current, and power in real-time to provide data support for the stable operation of the system. In addition, the product integrates overload protection and convenient charging functions, combined with an independent power switch and a removable battery design, making it flexible and safe to use.

Atomic Motion Base v1.2 features a highly integrated and dual-protection design, making it particularly suitable for application fields that require a balance of safety, scalability, and portability.

Features

- Suitable for Atom series master control
- STM32+RZ7899 control chip
- DW01-A high-precision single-cell lithium battery protection chip
- INA226 current/voltage detection chip
- Integrated overload protection function
- 4-channel servo control
- 2-channel DC motor control
- 2-way HY2.0-4P interface
- Rechargeable lithium battery
- Independent power switch
- Back magnetic suction design
- Independent power switch
- Development platforms
  - UiFlow1
  - UiFlow2

- Arduino IDE

Includes

- 1 x Atomic Motion Base v1.2
- 1 x 18350 specification 900mAh battery

Applications

- DC motor car control
- Servo robotic arm control

Specifications

| Specification	Parameter
MCU	STM32F030F4P6
DC Motor Driver	RZ7899
Power Detection Chip	INA226
Charging/Discharging Chip	ETA9740
Battery Protection Chip	DW01-A
Charging/Discharging Cut-off Voltage	Charge Cut-off Voltage 4.14V / Discharge Cut-off Voltage 2.5V
Overload Protection	5V@5A
Removable Lithium Battery	18350@900mAh
Motor Interface PIN Spacing	2.54mm
Full Load Steering Current	3A
Single Channel Motor Peak Operating Current	1A
Single Channel Servo Peak Operating Current	0.4A
Standby Current (Switch On)	DC4.04V@40.97uA
Charging Current	DC 5V@1.18A
Operating Temperature	0 ~ 40°C
Product Size	75.4 x 24.0 x 20.7mm
Product Weight	41.0g (Including Battery)
Package Size	79.0 x 31.0 x 26.0mm
Gross Weight	45.3g

Learn

Battery Charging

Before charging the Atomic Motion Base v1.2, ensure the switch is in the ON position, then charge by connecting a data cable to the ATOM series host or by inputting 5V voltage through the Grove interface.

Schematics

[Atomic Motion Base v1.2 Schematics PDF](#)
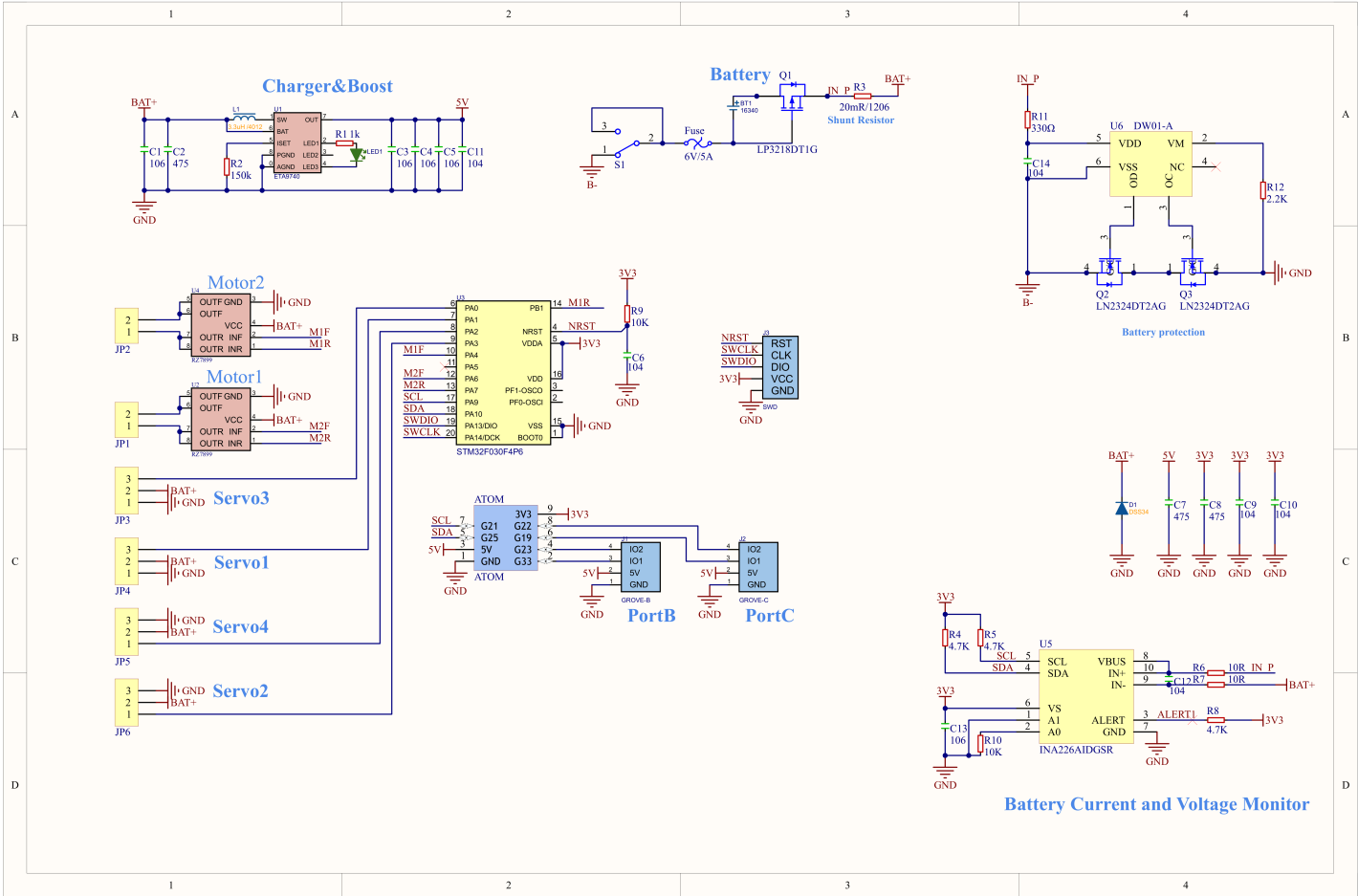
PinMap

I2C Interface

Atomic Motion Base v1.2	SDA	SCL
Atom-Lite / Atom-Matrix	G25	G21
AtomS3 / AtomS3-Lite	G38	G39
AtomS3R / AtomS3R-CAM / AtomS3R-M12	G38	G39

HY2.0-4P

Atomic Motion Base v1.2	PORT.B (Black)	PORT.C (Blue)
Atom-Lite / Atom-Matrix	G33/G23	G19/G22
AtomS3 / AtomS3-Lite	G8/G7	G6/G5
AtomS3R / AtomS3R-CAM / AtomS3R-M12	G8/G7	G6/G5

STM32

STM32F030F4P6	PA10	PA9	PA4	PB1	PA6	PA7	PA0	PA1	PA2
I2C	SDA	SCL							
DC Motor			M1F	M1R	M2F	M2R			
Servo							Servo3	Servo1	Servo4

Model Size

UNIT:mm
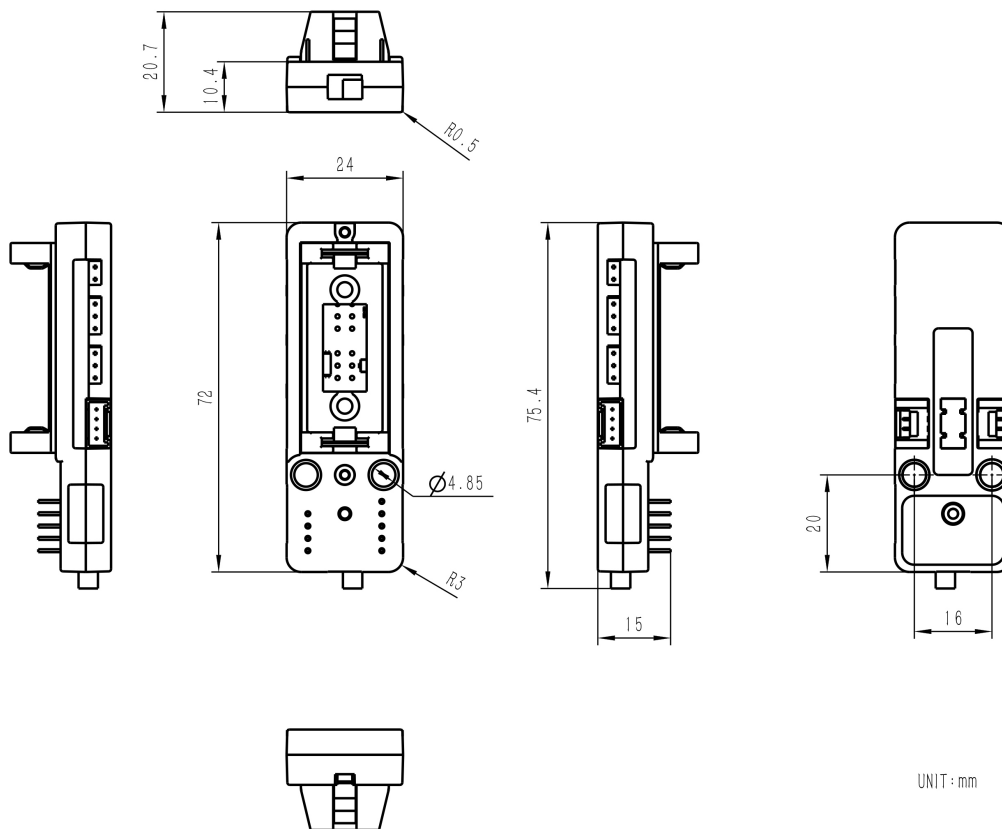
Datasheets

- RZ7899
- INA226
- ETA9740
- DW01-A

Softwares

Quick Start

- Atomic Motion Base v1.2 Arduino Guide

Arduino

- Atomic Motion Base v1.2 Arduino Library
- Atomic Motion Base v1.2 Example

UiFlow1

- Atomic Motion Base v1.2 UiFlow1 Docs
- Atomic Motion Base v1.2 UiFlow1 Example

UiFlow2

- [Atomic Motion Base v1.2 UiFlow2 Docs](#)

Protocol

- Protocol Type: I2C
- I2C Address: **0x38**

Function Description	Register Address	Data Format	Data Range	R/W
Servo Angle Control Channels (ch:1 ~ 4)	0x00 ~ 0x03	1Byte MSB	angle: 0 ~ 180	R/W
Servo PWM Pulse Width Control (ch:1 ~ 4)	0x10, 0x12, 0x14, 0x16	2Byte MSB	pulse: 500 ~ 2500	R/W
Motor Speed Control (ch:1 ~ 2)	0x20 ~ 0x21	1Byte MSB	speed: -127 ~ 127	R/W

Video

Atomic Motion Base v1.2 Product Introduction and Example Demonstration

[A090-V12_Atomic_Motion_Base_v1.2_video.mp4](#)

Product Comparison

Product Comparison Table	Atomic Motion Base v1.2	Atomic Motion Base v1.1	Atomic Motion Base
Battery Protection IC	DW01-A	Not Available	Not Available
DC motor drive	RZ7899	RZ7899	RZ7899
Driven motor type	4 servos + 2 DC motors	4 servos + 2 DC motors	4 servos + 2 DC motors
Overload Protection	Yes	Yes	Yes
Power monitoring	INA226 (battery current/voltage detection)	INA226 (battery current/voltage detection)	Not Included
Battery	18350@900mAh	18350@900mAh	18350@900mAh
Charging/Discharging Chip	ETA9740	ETA9740	ETA9740