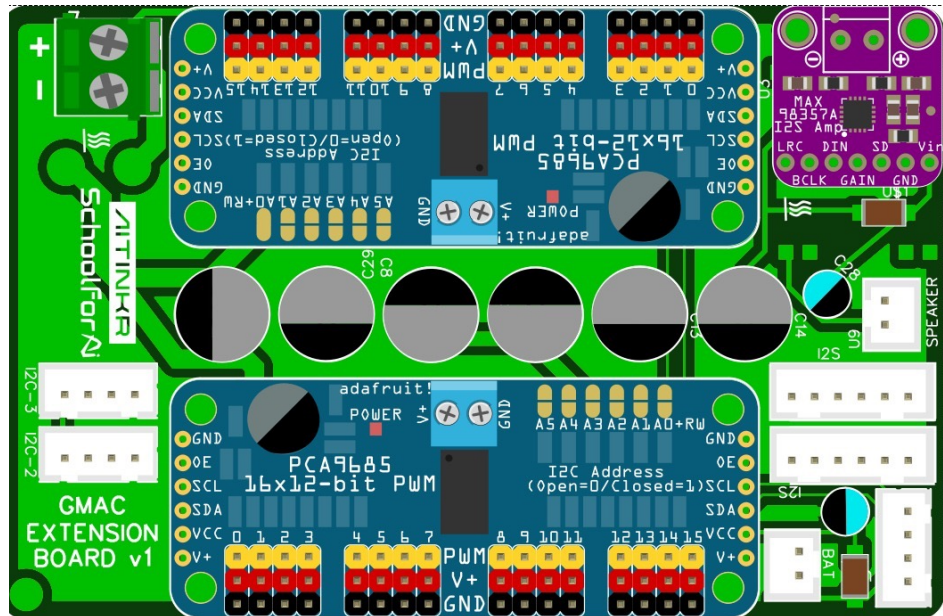


GMAC EXT

Extension Board for Servos, Audio & Sensors - Demanding Robot Application
Product Reference Manual



SKU: AT000017

Latest Release: 09 Mar 2024

Description:

The GMAC Extension Board for bots is a versatile expansion board designed to enhance the capabilities of GMAC systems used in robotics applications. The board features two servo drivers, each capable of handling 16 channels with 12-bit PWM resolution, providing precise control for up to 32 servos.

For I2C connectivity, the board includes three 4-pin JST connectors, each configured with pins for 3.3V, GND, SDA (Serial Data), and SCL (Serial Clock). This allows for easy integration of I2C devices into the system. Additionally, the board supports I2S connectivity with two 6-pin JST connectors, matching the GMAC specification. These connectors include pins for GND, Vcc, 46-LRCK (Left-Right Clock), 45-BLCK (Bit Clock), 47-Din (Data In), Microphone IN, and 0 – D out for speakers, providing comprehensive support for audio input and output.

The board features an audio output for connecting speakers and includes a pre-mounted Max 98357A Class-D amplifier, known for its efficiency and compact size. This amplifier enhances the audio capabilities of the board, making it suitable for various applications requiring sound output.

For power supply, the board offers a 2-pin high power screw terminal for connecting an external battery, supporting a voltage range of 7V to 9V and a current capacity of up to 10A. Additionally, a Vout connector provides power output for the GMAC system, ensuring that all connected components receive adequate power.

1. Features

The GMAC Extension Board for bots is designed to provide a comprehensive range of features and peripheral interfaces to enhance the capabilities of GMAC systems in robotics applications.

Dual 16-Channel Servo Drivers:

16-Channel Servo Connections: Two servo drivers, each capable of controlling up to 16 servos.

12-Bit PWM Resolution: Provides precise control over servo movements.

I2C Connectivity:

Three 4-Pin JST Connectors: Facilitates the connection of multiple I2C devices.

Pin Configuration: 3.3V, GND, SDA (Serial Data), and SCL (Serial Clock).

I2S Connectivity:

Two 6-Pin JST Connectors: Matches the GMAC 6-Pin JST specification.

Pin Configuration:

- GND
- Vcc
- 46 - LRCK (Left-Right Clock)
- 45 - BCLK (Bit Clock)
- 47 - Din (Data IN)
- Microphone IN
- 0 - Dout for Speakers

Audio Interfaces

Speaker Output: Dedicated connection for Audio output to Speakers

Amplifier: Integrated Max 98357A Class-D Amplifier for Audio Amplification

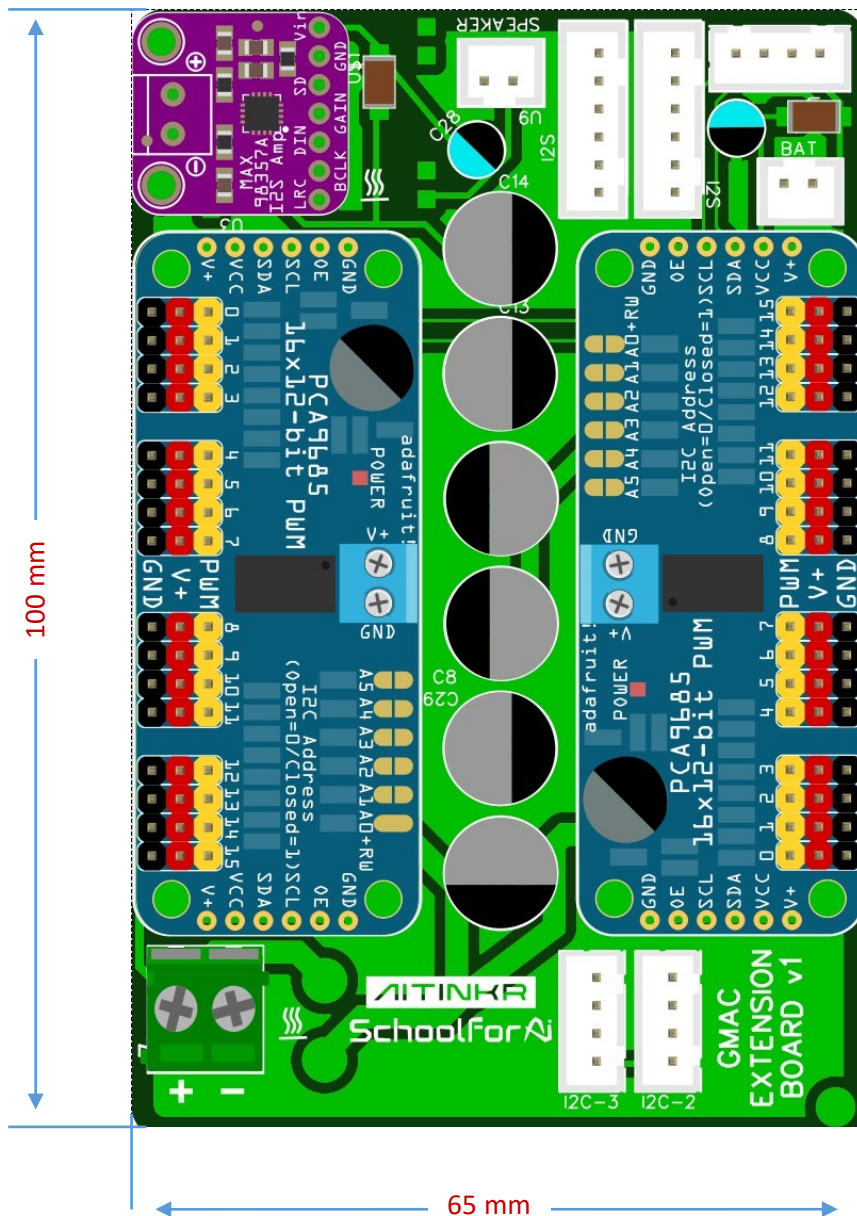
Power Interfaces

External Battery Connector: 2-pin high power screw terminal for connecting external batteries (7V to 9V, up to 10A)

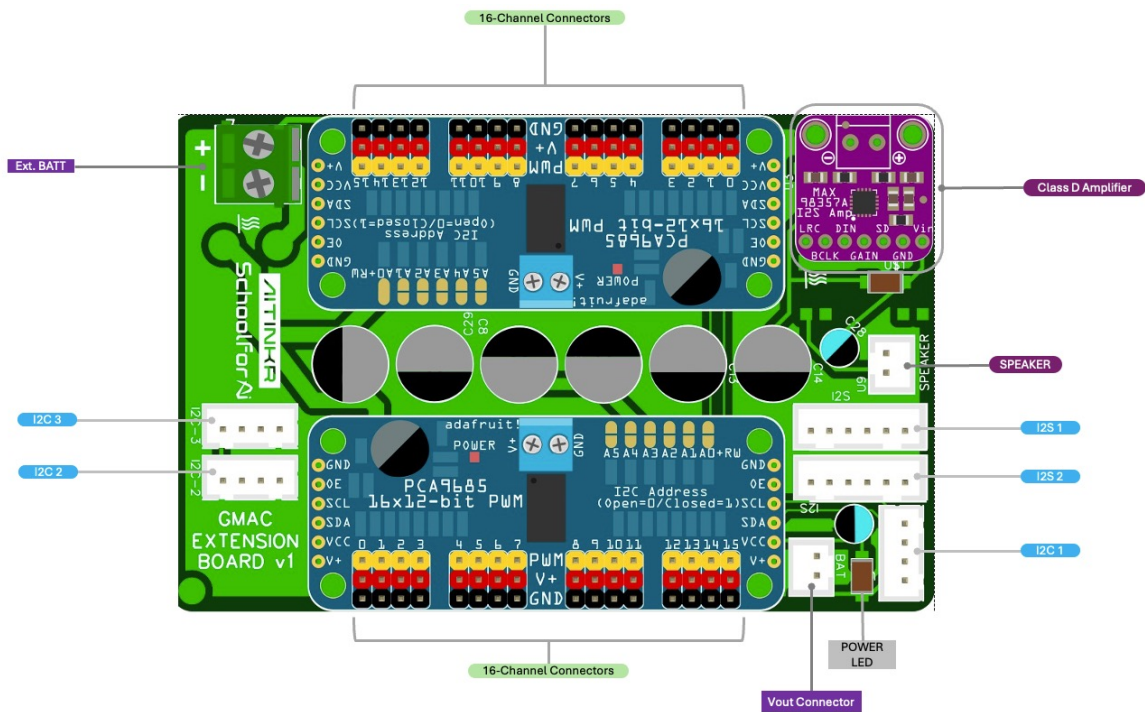
Vout Connector: Power supply output for GMAC systems.

1.1 Mechanical Layout

The GMAC Extension Board for bots features a compact, well-organized mechanical layout, designed for easy integration into robotics systems. Clearly labelled connectors and components facilitate quick and accurate connections, while the strategic placement of servo drivers, I2C, I2S connectors, and power interfaces minimises wiring complexity. The board's compact design and mounting holes ensure secure attachment to the robot chassis, providing stability and reliability during operation.

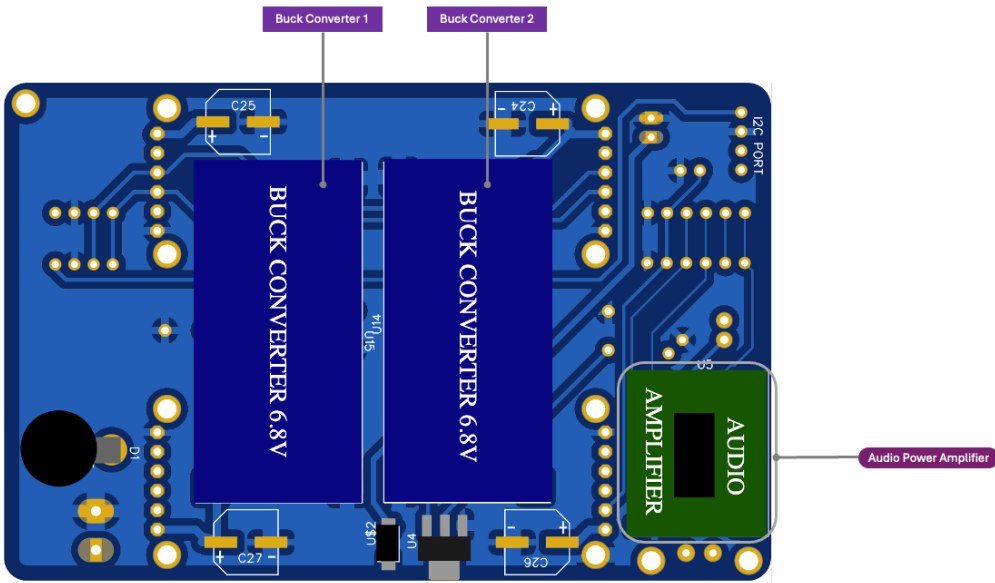


2. Overview - Pinout Diagram



Servo Driver (2 off): 16 Channel Servo Connections, 12-Bit PWM Servo Driver	I2C (3 off): 4-Pin JSTs, 3.3V, GND, SDS, SCL I2S (2 off): Match with GMAC 6-Pin JST Connector, Gnd, Vcc, 46-LRCK, 45-BLCK, 47-Din & Microphone IN, 0 - Dout for Speakers	Speaker: Audio Output Amplifier: Default Mounted, Max 98357A, Class-D Amplifier	Ext. BATT - 2 pin, High power Screw Terminal - 7V to 9V, 10A. Vout Connector: Power supply output for GMAC * Please use the battery supplied by AITINKR.	SchoolForAI AITINKR GMAC EXT Extension Board for Bots SKU Code: C00034 Update: 09 Mar 2024 Pinout Diagram (Top)
				Page: 1 of 2 Documentation: PDF Copyright CEDURA

2. Overview - Pinout Diagram



Servo Driver (2 off): 16 Channel Servo Connections, 12-Bit PWM Servo Driver	I2C (3 off): 4-Pin JSTs, 3.3V, GND, SDS, SCL	Speaker: Audio Output Amplifier: Default Mounted. Max 98357A, Class-D Amplifier	Ext. BATT: 2 pin, High power Screw Terminal - 7V to 9V, 10A. Vout Connector: Power supply output for GMAC	SchoolFor AITINKR GMAC EXT Extension Board for Bots SKU Code: C00034 Update: 09 Mar 2024 Page: 2 of 2 Pinout Diagram (Bottom) Documentation: PDF Copyright CEDURA
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- SERVO PIN 1 :

SERVO PIN 2 :
- 16-Channel Servo Connectors | (0 to 15)
- 16-Channel Servo Connectors | (0 to 15)
- IS2-1:

IS2-2:
- 6-Pin JST Connector
- 6-Pin JST Connector
- I2C-1 :

I2C-2 :
- 4-Pin JST | (3.3V, GND, SDS, SCL)
- 6-Pin JST | (3.3V, GND, SDS, SCL)
- Speaker :

Amplifier :
- 2-Pin JST for Audio Output
- MAX98357 I2S, Class-D Amplifier
- PWR :

Battery :

Ext. BATT:
- Power LED
- Vout Connector, Power Supply Output for GMAC
- 2-Pin, High Power Screw Terminal - 7V to 9V, 10A