axldrone

your world from above

axldrone – Carrier Board Datasheet

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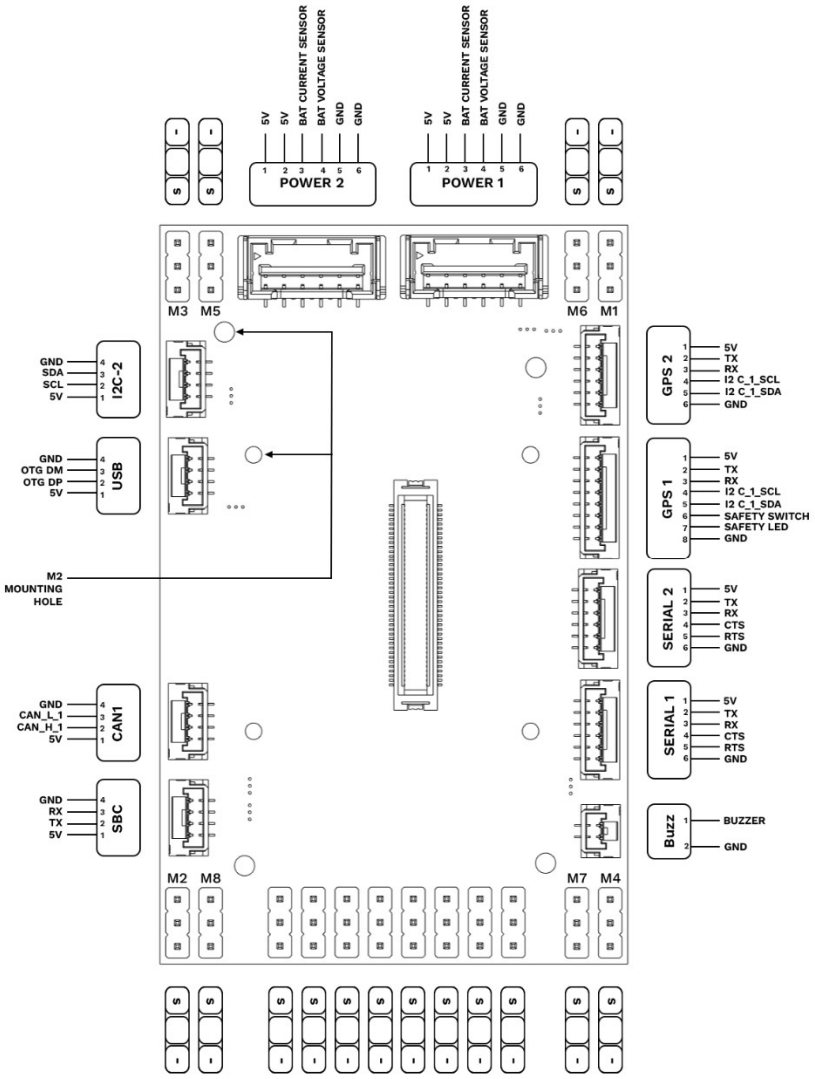
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1 Introduction

The axl Carrier Board is designed to integrate seamlessly with the Cube ecosystem, providing a reliable interface for power, communication, and peripheral management in UAVs. It offers dual redundant power inputs, motor PWM distribution, servo outputs, and multiple connectivity options to support advanced drone builds.
With dedicated ports for GPS, CAN, I2C, serial devices, and companion computers, the axl Carrier Board ensures flexibility and expandability for professional flight applications. Built compact and lightweight, it is well-suited for multirotor, fixed-wing, VTOL, rovers etc.



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1.1. Technical specifications

Parameter	Specification
Model	axl Carrier Board
Dimensions (L × W × H)	80 mm × 50 mm × 12 mm
Weight	21 g
Power Input	5 V
Power Ports	2 × Power inputs
PWM Outputs	8 × Motor outputs (M1–M8)
AUX / Servo Outputs	6 × Servo outputs (shared AUX rail, external power capable)
RC Input	SBus In / Out (2.54 mm standard RC input/output)
UART / Serial Ports	2 × UART (SERIAL1, SERIAL2)
I2C Ports	1 × I2C
CAN Bus	1 × CAN1
GPS Ports	2 × GPS (GPS1, GPS2)
Companion Computer Interface	1 × SBC Port
USB	1 (For firmware flashing & configuration)
Buzzer Port	1
Cube Interface	Dedicated slot for Cube Orange autopilot
Operating Temperature	–10 °C to +80 °C
Firmware Support	PX4 / ArduPilot (Cube ecosystem)

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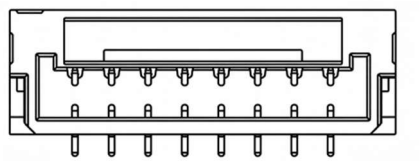
1.2. Interfaces

Port	Connector on the Board	Mating Connector
GPS1	JST-GH 1.25 mm (8-pin) — BM08B-GHS-TBT	GHR-08V-S
GPS2	JST-GH 1.25 mm (6-pin) — BM06B-GHS-TBT	GHR-06V-S
SERIAL1	JST-GH 1.25 mm (6-pin) — BM06B-GHS-TBT	GHR-06V-S
SERIAL2	JST-GH 1.25 mm (6-pin) — BM06B-GHS-TBT	GHR-06V-S
I2C	JST-GH 1.25 mm (4-pin) — BM04B-GHS-TBT	GHR-04V-S
CAN1	JST-GH 1.25 mm (4-pin) — BM04B-GHS-TBT	GHR-04V-S
CAN2	JST-GH 1.25 mm (4-pin) — BM04B-GHS-TBT	GHR-04V-S
USB	JST-GH 1.25 mm (6-pin) — BM06B-GHS-TBT	GHR-06V-S
POWER1	Molex CLIK-Mate 2.00 mm (6-pin) — 502443-0670	Molex mating: 502439-0600
POWER2	Molex CLIK-Mate 2.00 mm (6-pin) — 502443-0670	Molex mating: 502439-0600
BUZZER	JST-GH 1.25 mm (2-pin) — BM02B-GHS-TBT	GHR-02V-S
SBC port	JST-GH 1.25 mm (4-pin) — BM04B-GHS-TBT	GHR-04V-S
M1–M8 motor headers	2.54 mm header pins	2.54 mm header pin sockets
AUX rail	2.54 mm header pins	2.54 mm header pin sockets

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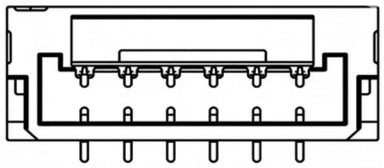
1.3. Connector Pinouts

GPS 1



Pin	Name	Direction	Voltage	Caption
1	VCC_5V	IN	5 V	VCC
3	SERIAL_3_TX	OUT	3.3 V – 5.0 V TTL	UART 3 TX (Transmit Data)
2	SERIAL_3_RX	IN	3.3 V – 5.0 V TTL	UART 3 RX (Receive Data)
4	I2C_1_SCL	IN	3.3 V	I2C 1 Clock Signal
5	I2C_1_SDA	IN/OUT	3.3 V	I2C 1 Serial Data
6	SAFETY SWITCH	GND	—	Safety Switch
7	SAFETY LED	GND	—	Safety LED
8	GND	GND	—	GND Connection

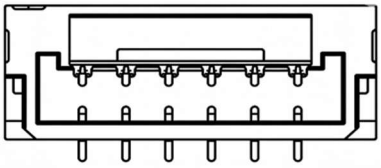
GPS 2



Pin	Name	Direction	Voltage	Caption
1	VCC_5V	IN	5 V	VCC
3	SERIAL_3_TX	OUT	3.3 V – 5.0 V TTL	UART 3 TX (Transmit Data)
2	SERIAL_3_RX	IN	3.3 V – 5.0 V TTL	UART 3 RX (Receive Data)
4	I2C_1_SCL	IN	3.3 V	I2C 1 Clock Signal
5	I2C_1_SDA	IN/OUT	3.3 V	I2C 1 Serial Data
6	GND	GND	—	GND Connection

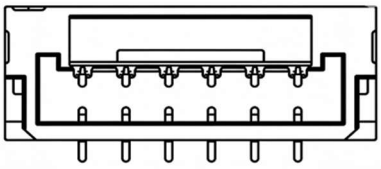
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SERIAL 1



Pin	Name	Direction	Voltage	Caption
1	VCC_5V	OUT	5 V	VCC
2	SERIAL_1_TX	OUT	3.3 V – 5.0 V TTL	UART 1 TX
3	SERIAL_1_RX	IN	3.3 V – 5.0 V TTL	UART 1 RX (Receive Data)
4	SERIAL_1_CTS (TX)	OUT	3.3 V – 5.0 V TTL	UART 1 CTS (Clear To Send)
5	SERIAL_1_RTS (RX)	IN	3.3 V – 5.0 V TTL	UART 1 RTS (Request To Send)
6	GND	GND	—	GND

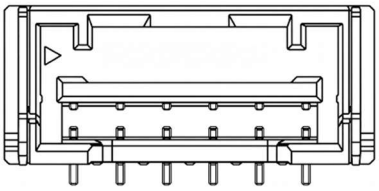
SERIAL 2



Pin	Name	Direction	Voltage	Caption
1	VCC_5V	OUT	5 V	VCC
2	SERIAL_2_TX	OUT	3.3 V – 5.0 V TTL	UART 2 TX (Transmit Data)
3	SERIAL_2_RX	IN	3.3 V – 5.0 V TTL	UART 2 RX (Receive Data)
4	SERIAL_2_CTS (TX)	OUT	3.3 V – 5.0 V TTL	UART 2 CTS (Clear To Send)
5	SERIAL_2_RTS (RX)	IN	3.3 V – 5.0 V TTL	UART 2 RTS (Request To Send)
6	GND	GND	—	GND

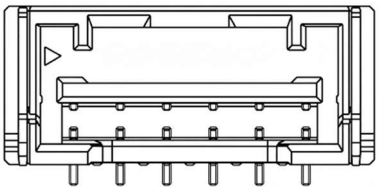
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POWER 1



Pin	Name	Direction	Voltage	Caption
1	VDD_5V_BRICK	IN	5 V	VCC
2	VDD_5V_BRICK	IN	5 V	VCC
3	BATT_CURRENT_SENS_PROT	IN	3.3 V	Battery Current Sensor Port
4	BATT_VOLTAGE_SENS_PROT	IN	3.3 V	Battery Voltage Sensor Port
5	GND	GND	—	GND
6	GND	GND	—	GND

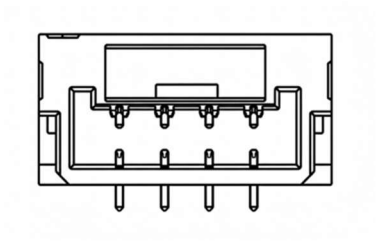
POWER 2



Pin	Name	Direction	Voltage	Caption
1	VDD_5V_BRICK	IN	5 V	VCC
2	VDD_5V_BRICK	IN	5 V	VCC
3	AUX_BATT_CURRENT_SENS	IN	3.3 V	Battery Current Sensor Port
4	AUX_BATT_VOLTAGE_SENS	IN	3.3 V	Battery Voltage Sensor Port
5	GND	GND	—	GND
6	GND	GND	—	GND

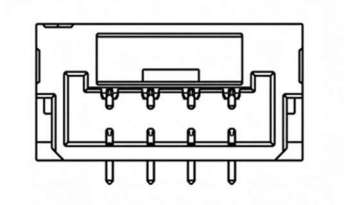
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CAN 1



Pin	Name	Direction	Voltage	Caption
1	VCC_5V	OUT	5 V	VCC
2	CAN_H_1	IN/OUT	12 V	CAN High
3	CAN_L_1	IN/OUT	12 V	CAN Low
4	GND	GND	—	GND

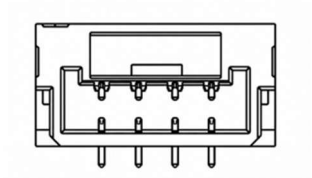
I2C_2



Pin	Name	Direction	Voltage	Caption
1	VCC_5V	OUT	+5 V	VCC
2	SCL	IN/OUT	+3.3 V	SCL
3	SDA	IN/OUT	+3.3 V	SDA
4	GND	GND	—	GND Connection

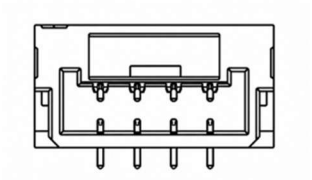
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USB



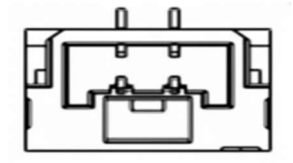
Pin	Name	Direction	Voltage	Caption
1	VBUS	Power Out / In	+5 V	5V
2	D- (OTG DM)	Data (–)	Differential Data	USB differential negative data line
3	D+ (OTG DP)	Data (+)	Differential Data	USB differential positive data line
4	GND	GND	-	Ground / reference

SBC



Pin	Name	Direction	Voltage	Caption
1	VCC (5V)	OUT	+5V	Power supply to the SBC
2	RX	IN	3.3V	UART Receive Data
3	TX	OUT	3.3V	UART Transmit Data
4	GND	GND	-	GND connection

BUZZER



Pin	Name	Direction	Voltage	Caption
1	BUZZER	OUT	Battery voltage	BUZZER +
2	GND	GND	—	GND Connection

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