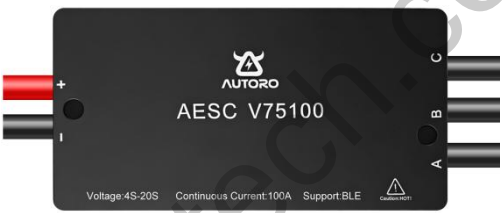


For reference only. Actual product may vary.

AESC V75100
Motor Controller User Manual

FOR SAFETY, PLEASE READ THIS MANUAL PRIOR TO USE.
Follow this user manual precisely to prevent potential hazards or property damage.

IMPORTANT SAFETY INSTRUCTIONS

READ AND FOLLOW ALL INSTRUCTIONS BEFORE USE. FAILURE TO COMPLY MAY RESULT IN FIRE,ELECTRIC SHOCK, SERIOUS INJURY, OR DEATH.

DANGER

Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.

1. VOLTAGE LIMIT

- Maximum Safe Input Voltage: 20S Li-ion configuration (84V).
- NEVER use with 21S or higher battery configurations.
- Verify motor voltage compatibility before connection.

2. REVERSE POLARITY

- Incorrect battery (+) to (–) wiring will cause permanent damage, fire, or explosion.
- Double-check all connections before powering on.

3. REGENERATIVE BRAKING RESTRICTIONS

- Regenerative braking MUST NOT be used with switching power supplies.

Battery systems SHALL have pre-configured regen current limits.

WARNING

Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

1. HIGH SURFACE TEMPERATURE

- Controller surface should not exceed 85°C (185°F) during operation.
- Severe burn hazard: Always wear heat-resistant gloves (>93°C(200°F) rated) when handling.
- Do not touch during operation or within 10 minutes after shutdown.

2.ELECTRICAL HAZARDS

- Incorrect wiring may cause fire, electric shock, or explosion.
- Always disconnect batteries before installation/maintenance.

3.CHOKING HAZARD

• Contains small parts. Keep out of reach of children under 3 years.

4.OPERATIONAL WARNINGS

• Immediately power off if product emits unusual noise, odor, or smoke. Contact support.

• Disconnect batteries during extended non-use.

• Never modify this controller. Unauthorized alterations void warranty.

5.AGE RECOMMENDATION

Not for children under 16 years. This is not a toy.

CAUTION

Indicates a potentially hazardous situation which, if not avoided, may result in minor/moderate injury or product damage.

1.ENVIRONMENTAL REQUIREMENTS

• Dry environments ONLY. Not waterproof.

• Install in flat, stable locations away from heat sources/direct sunlight.

2.MAINTENANCE

• Clean only with dry cloth. Ensure no dust/debris accumulates on product.

• Prevent foreign substances from entering ports/vents.

3.PHYSICAL HANDLING

• Avoid drops, impacts, or bending cables.

• Keep body/clothing and all other objects clear of rotating motor shafts.

OVERVIEW

- The Autoro AESC V75100 motor controller delivers robust performance and high power density in a compact, full-metal housing. It is designed for DIY low-voltage EV applications such as skateboards, bikes, scooters, robots, and other electric vehicles.
- Operating on the open-source VESC software, it offers extensive customizability and adaptability. The V75100 supports a wide voltage range of 14 to 84V and a maximum continuous current of 100 Amps. It features three operating modes for flexible control:

  ON mode: Functions similarly to basic AESC controllers, providing straightforward operation.

  LOCK EN mode: A self-locking metal button switch or a throttle grip with an integrated key lock switch can control the power on/off function, enhancing security.

  SHUTDOWN mode: Features a slide-to-start function – for example, on an electric skateboard, simply spinning the wheels activates the system and starts the motor.

  For detailed operation instructions for all three modes, refer to pages 20–22.
- This model also features an integrated Bluetooth module for wireless connectivity.

LED INDICATOR STATUS

- **Blue:** Device is powered up.
- **Green Dim:** SW Running >> Software(Firmware) installed and running.
- **Green Bright:** Device is driving the motor.
- **Red:** Fault code,something is wrong! Read out the fault code in VESC Tool.
- **Yellow:** Bluetooth connected.

Bluetooth Connection Procedure

Software Preparation

- For **iOS** devices: Download the VESC Tool app from the App Store.
- For **Android** devices: Download the app from the official website: https://www.vesc-project.com/vesc_tool

Connection Procedure

1.Power on the controller – Make sure the VESC V75100 is powered up correctly.

2.Enable Bluetooth on your mobile device.

3.Launch the **VESC Tool** application.

4.Search and connect to the device named ***VESC 52832 BUILTIN*** .

Note: When the Bluetooth connection is successfully established, the yellow LED on the V75100 will light up.

FEATURES

- Controlled by the STM32F4 microcontroller, frequency up to 168MHz.
- Sensored and sensorless FOC with auto-detection of all motor parameters.
- Brushless, brushed DC motors and IPM motors are supported.
- Robust starting torque performance in both sensorless and sensored modes.
- Support four control modes:Duty-cycle Control,Speed Control,Current Control and Position Control.
- Real-time data logging and monitoring.
- Adjustable protection against:
  - Low input voltage limit. - High input voltage limit.
  - High motor current limit. - High input current limit.
  - High regenerative braking current limit (separate limits for motor and input).
  - High ERPM limit (separate limits for each direction).
- Overtemperature protection.
- Supports motor temperature detection and is compatible with motor temperature sensors including: NTC 10K at 25ºC, NTC 100K at 25ºC, PTC 1K at 100ºC, KTY83/122.
- The compact controller design fits in any confined space. AESC V75100 have the same size: 107mm * 56mm * 27mm (4.21in *2.2in * 1.06inch).

AESC V75100 N.W. : **283g**

TECHNICAL SPECIFICATIONS

SPEC \ Model	AESC V75100
Voltage	Safe for 4S~20S(14-84 V)
Current	100 A Continuous,150 A Peak
ERPM	150,000
Motor Control Modes	BLDC square wave and FOC sine wave
Supported Sensors	Sensorless,HALL, ABI, AS5047,AS5048A
Control Interface Ports	USB,CAN,UART
Input Set Support	PPM,ADC,UART
Battery Wire	10AWG
Phase Wire	10AWG
Regenerative Capacity	Yes
Programmable	Yes
Built-in Bluetooth	Yes

WHAT'S IN THE BOX?

Product Name	Qty	V75100	V75100A	V75100B
AESC V75100 Controller Unit	1	√	√	√
USB Type-C	1	√	√	√
PH2.0 2-Pin Single-Ended Cable, L=150mm	1	√	√	√
PH2.0 3-Pin to 2.54mm Pitch Dupont Header Adapter Cable, L=200mm	1	√	√	√
PH2.0 3-Pin Single-Ended Cable, L=150mm	1	√	√	√
PH2.0 6-Pin Single-Ended Cable, L=150mm	1	√	√	√
PH2.0 8-Pin Single-Ended Cable, L=150mm	1	√	√	√
Screw, Phillips Pan Head Self-Tapping, PA 2.6×10	2	√	√	√
User Manual	1	√	√	√
S16A Power Switch	1	-	√	-
Throttle Grip	1	-	-	√

HARDWARE INSPECTION

Required Equipment for hardware check: Multimeter, Adjustable Switching Power Supply.

1. Pre-Energization Short Circuit Check

- **Procedure:**

a. Set multimeter to continuity test mode (buzzer).

b. Test between:

- VIN+ and VIN- terminals
- 5V output and GND
- 3.3V output and GND

c. Pass Criteria:

- No continuity observed between any tested terminals.

2. Current-limited Power Supply Verification

- **Configure adjustable power supply parameters:**

a. Output voltage: 16 V DC

b. Current limit: 100mA (constant current mode)

- **Apply independent power to the controller module, observe LED status:**

a. Blue LED illuminates within 0.5s (power good)

b. Green LED activates within 10s (system ready)

3. Output Voltage Validation

- **Maintain power supply, measure with multimeter in DC voltage mode:**

a. 5V output to GND: Tolerance ±5% (4.75~5.25V)

b. 3.3V output to GND: Tolerance ±5% (3.14~3.47V)

4. Hardware Inspection Completion

- **Safely disconnect power supply.**
- **Remove all test leads.**

Notes:

- Damage Inspection: Visually examine PCB for：burnt components，broken traces，swollen capacitors, report anomalies to Autoro.service@hotmail.com (attach high-res photos of damaged PCB).
- Please read all the terms & conditions before purchasing the product from Autoro for claiming warranties or making returns.

General Connection Instructions

1. **Motor Phase Wiring:** The initial connection order of the motor phase wires (A/B/C) to controller phase outputs (A/B/C) may be arbitrary. *If the motor rotates in the wrong direction*, swap any two phase wire connections **or** adjust motor direction setting in VESC Tool.

2. **Position Sensor Connection (If Applicable)**: Connect the sensor to the controller's sensor interface for motors equipped with position sensors.

3. **USB Communication Setup:** Use a USB Type-C cable to connect the computer to the controller.

4. **Power Supply Selection:** Select a power supply whose voltage is within both controller operating range and motor rated voltage range.

5. **Power Connection:** Connect the power supply to the controller's power interface. *Critical: Verify correct polarity(+/-) before energizing.*

6. **LED Status Indication:**
   - Power-on: Blue LED illuminates immediately.
   - System ready: Green LED activates within 10 seconds (initialization complete)

7. **Technical Support:**
   - For installation , email detailed information to: Autoro.service@hotmail.com
   - Preliminary response within 3 business days.

SOFTWARE SETUP

In this tutorial we will configure AESC motor controller in combination with a BLDC (Brushless Direct Current) motor.

We will run the motor in FOC (Field-Oriented Control) mode.

1. Download and Install VESC Tool

•Download the latest stable version of VESC-Tool compatible with your operating system (Windows / macOS / Linux) from the official website: https://vesc-project.com/vesc_tool.

Run the installer and follow the on-screen instructions to complete the installation.

2. Run VESC Tool and Connect to the controller

•Launch VESC Tool on your computer.

•Click the "***Auto Connect***" button on the main interface.

•Upon successful connection, the bottom-right comer of the main interface will display: "***Connected (serial) to COM3***" .

3. Initial Motor Parameter Detection

• Pre-Detection Verification

a. Ensure the motor is securely mounted and its rotor rotates freely.

b. Keep all objects clear of the motor shaft rotation path.

c. Verify motor phase wires (A/B/C) are correctly & securely connected to controller terminals.

d. For sensor-equipped motors (e.g., Hall/Encoder), confirm proper connection to the sensor interface.

• Motor Configuration

a. Access FOC Setup: In the VESC Tool's main interface, click "***Setup Motor FOC***".

b. Carefully read all warnings and instructions in the setup wizard.

c. Configure parameters according to your motor specifications: Motor type (Inrunner / Outrunner), Battery Type, Battery Cells Series, Battery Capacity, Number of motor pole pairs,etc.

d. Pre-Detection Checks:Verify all settings and confirm safety conditions.

e. Initiate Detection: Click "***RUN DETECTION***" to initiate the process.

f. Progress and status will display in real-time.

g. The motor will emit audible beeps and begin slow rotation.

h. Completion: Detection typically completes within 30--60 seconds.

• **Complete Detection**

a. Successful Detection Output: Upon successful detection, the following parameters will be displayed:

• Resistance (R) • Inductance (L) • Flux linkage (λ) • Sensor Status

b. Rotation Direction Test:

• Motor Direction OK: Click "***FWD***" and "***REV***" to check motor direction → Click "***FINISH***" to complete setting if the direction is OK.

• Motor Rotation Reversed: Click the "***Inverted***" on to change motor direction →click "***FWD***" and "***REV***" to confirm motor direction→Click "***FINISH***" to complete setting.

Congratulations! The motor parameters have been successfully detected and configured.

For comprehensive controller configuration, refer to the official VESC project step-by-step guide.

Official VESC configuration guide link: https://vesc-project.com/node/178

Autoro AESC github link: https://github.com/Autoro-ESC/AESC

SAFE SETTINGS AND OPERATION FOR MOTOR AND BATTERY SETTINGS

(Motor Settings Panel, General):

WARNING: This device is intended to be used with the original Open Source Software VESC Tool. Usage of other software than stated voids warranty and statement of conformance! This is a guide to set up your device within the measures of safe operation. Stay safe! To prevent injuries,operate your motor without attached propellers, wheels and / or moving mechanical parts when doing/changing your setup.Stay clear of any moving parts! The motor may spin during setup.!If you are not an expert, please use the Wizards for Setup! Additionally apply safe settings for the temperature cutoffs to prevent over heating.

- **BLDC Mode:** Block Commutation(Trapezoidal),more noise,less efficient, sometimes lesser likelihood to experience problems.
- **FOC Mode:** Sinusoidal Commutation (Sine Wave),free of noise / vibrations,more efficient,more complex.
- **Sensors:** Does your motor/setup incorporates motor sensors? Do you want to use them? (Hall, ABI, AS5047P Sensors)

Did you check and adjust the sensor voltage (3.3V / 5V)?

- **Battery Cutoff Start:** System decreases power usage when voltage drops below defined value,e.g.3.4V per cell for LiPo (battery protection/health).
- **Battery Cutoff End:** System stops motor when voltage drops below defined value, e.g. 3.1V per cell for LiPo (battery protection / health).
- **Motor Current Max:** Defines maximum allowed Amp draw for the Motor. Can your motor cope with your setting? Does anything get hot during operation?
- **Motor Current Max Brake:** Defines maximum allowed current being generated by the motor (regenerative braking).
  Warning: Wrong settings may overstress your motor/generator and/or battery! Read the warnings below!
- **Absolute Maximum Current:** Max Amp flow allowed in your electrical system (peak).
- **Battery Current Max:** Max.allowed continuous current drain according to batteries technical data sheet.Read warning below!
- **Battery Current Max Regen:** Max.current fed back into your battery pack.Check batteries data sheet to prevent dangers or battery damage.Read warnings below!
- **MOSFET Temp Cutoff Start:** System decreases power usage when temperature reaches this value, default 85℃((185°F)

- **MOSFET Temp Cutoff End:** System stops motor operation when temperature reaches this value, default 100℃(212°F)
- **Motor Temp Cutoff Start:** System decreases power usage when temperature reaches this value, default 85℃((185°F). Motor Temp sensors needed for this feature.
- **Motor Temp Cutoff End:** System stops motor operation when temperature reaches this value, default 100℃(212°F). Motor Temp sensors needed for this feature.

Please visit https://www.vesc-project.com/documentation for more Information.If you are unsure about any setting inform yourself or send us an email to prevent any danger. Start using values on the safe side and check if any part of your electrical system starts to heat up beyond safe limits of operation.

Warning: When using the motor as a generator(e.g.as a regenerative motor brake), your battery will be charged with the setting found in ***Motor Settings >> General >> Current Tab*** of VESC Tool. The Battery Current Max Regen value will define the maximum Amp flow pushed towards your battery when the motor is operated as a generator (e.g.during regenerative braking).Make sure your battery can handle the amp flow,as defined in the settings mentioned above.The maximum battery charge currents can be found in the batteries documentation and data sheets. Never use your motor as a generator when your battery is fully charged, especially if your battery is vulnerable to catch fire or explode when overcharged. **LITHIUM BATTERIES** and other types of **Batteries ARE potentially DANGEROUS**!

Depending on your application you may need to include a Battery Management System(BMS) to safely operate your battery and to give you feedback,when the battery is fully charged.Stop using the motor as a generator until your battery is discharged enough to cope with regenerative braking again. **Never drain more Amps** than your battery and/or motor can cope with (Max rating for continuous Amp flow).Use safe settings for all parameters found in the ***Motor Settings >> General >> Current Tab***!

For additional setup assistance, contact our technical support.

INTEGRATION & WIRING DIAGRAM

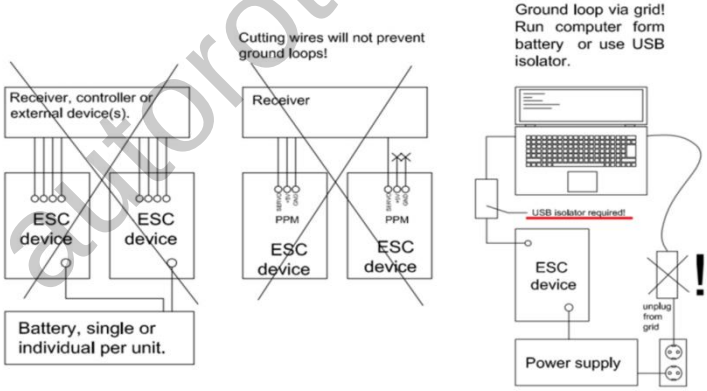
Integrating your controller into an electrical system:

Your motor controller is designed to be integrated into a battery powered electrical system only! The sketch below shows how to integrate your Controller into such a system.

Minimum requirements for safe operation:

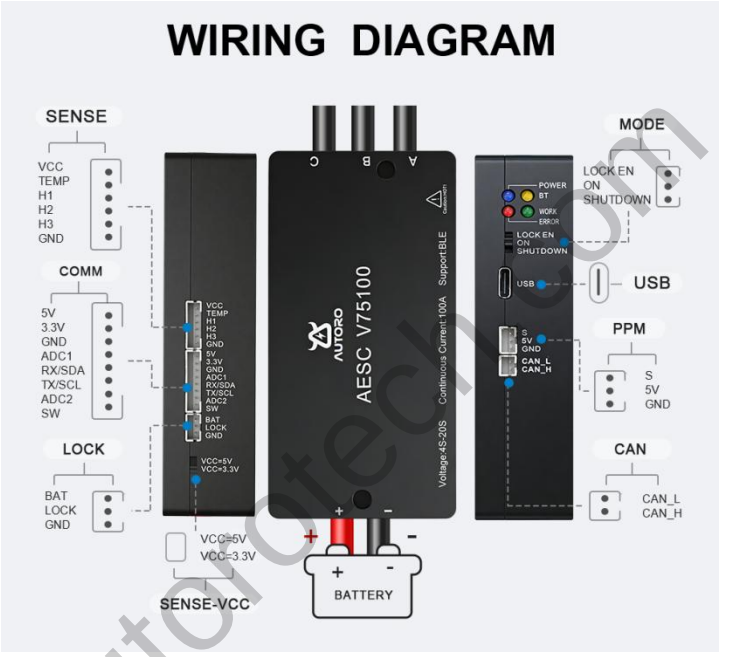
1. Integration of a safety **power cut-off.**
2. The integration of a **FUSE**, rated in accordance of your electrical system (weakest part of the system).
3. Use of a **compatible input device** (legal to operate,free of interference, reliable). Shown: **PPM** (Pulse Position Modulated) 2.4GHz receiver
4. Using safe setting for the operation in accordance with your electrical system and components involved.
5. Use a Battery Management System (BMS) if the motor is used for regenerative braking or as a generator.
6. Follow general safety measures for your device/system, as legally required. Do not operate above a voltage you can safely handle or being allowed to safely handle.

Never share any connections (except **CAN_H** and **CAN_L**) with other controller devices. This will typically create a ground loop. Ground loops will damage your controllers. Only the battery ground may be shared. Use optocouplers instead.

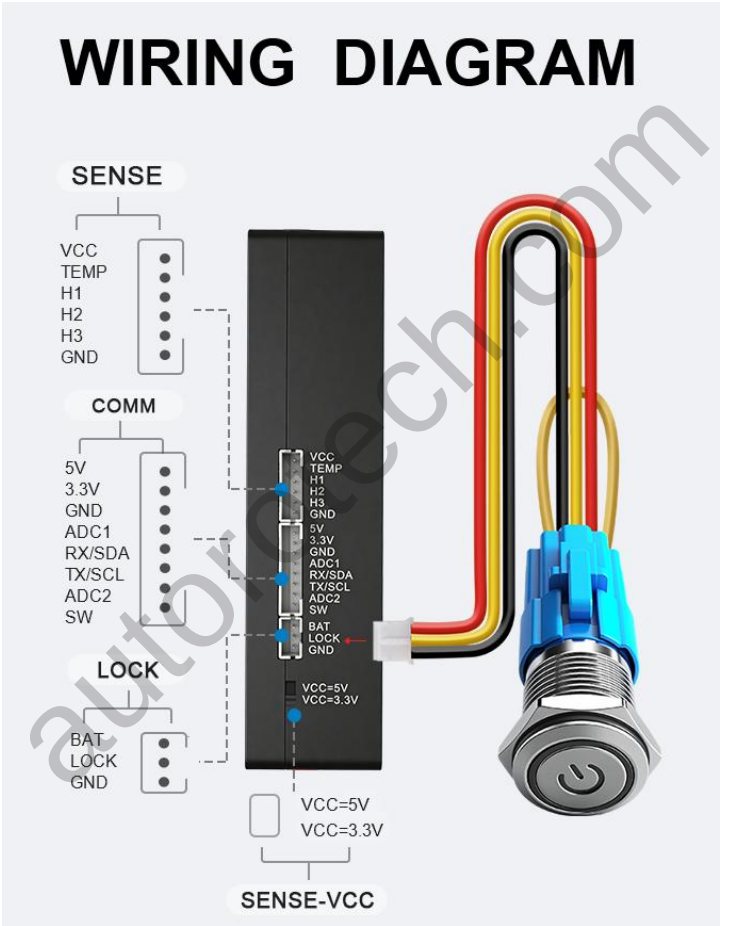


Cutting wires will not prevent ground loops!
Ground loop via grid! Run computer form battery or use USB isolator.

AESC V75100 Wiring Diagram



AESC V75100 & S16A Wiring Diagram



AESC V75100 & Throttle Grip Wiring Diagram

CONNECTORS AND SWITCHES

Your controller is equipped with **USB**,**CAN-Bus,PPM,COMM,LOCK** and a **SENSOR** ports. The following List will give you an idea how to interconnect the device to other devices.

Sensors: Sensor Port for **ABI,HALL** or **AS5047P** motor position sensors. Motor sensors allow precise and powerful rotation of the motors rotor from a random (standstill) Check and adjust the sensor voltage (3.3/5V)!

Did you check the wiring scheme of your sensor cable?

NRF: UART port for connection of NRF transceivers or other UART devices.

LOCK: In **LOCK EN** mode, a self-locking metal button switch or a throttle grip with an integrated key lock switch controls power on/off, providing enhanced security.

COMM: I2C,UART and ADC Interface to allow communication with other devices, such as microcontrollers (e.g.Arduino,Raspberry Pi) or using analogue input devices (e.g.analogue throttle)

PPM: Connect input devices using Pulse-Position Modulation e.g.a 2.4GHz transceiver for controlling the motors output power and speed (Radio control).

Never connect one receiver to two or more ESC controllers in an array! Permanent damage may result from Y-PPM wiring!

CAN: CAN BUS for interconnection of the controller in an array. E.g.when implementing traction control in a multi drive setup or when powering up multiple motors, using multiple Controllers(master+slave 1,2,3,..).CAN-bus is also a universal bus to link the Controller to other devices also featuring CAN-Bus.ONLY connect CAN_L to CAN_L and CAN_H to CAN_H.

Do not interconnect 5V and GND in a controller array! Permanent damage may result!

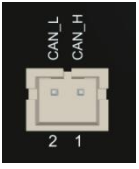
Motor A,B,C: Connectors for three phase wired BLDC Motors(Coil A,B,C). In most cases the motor wires can be plugged in randomly.If you know your motor phases plug in the phases accordingly (Yellow=A, Blue=B, Red=C) to be displayed correctly in the VESC Tool real time data analysis. DC-Motors use only connections A & C, B will be remained unplugged!

USB: USB-Port to connect to a computer for the purpose of configuration,firmware updates and real time data analysis.

INTERFACE DEFINITIONS

Interface Connection Diagram:

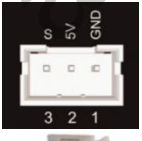
AESC V75100 CAN



PIN No.	Wire Color	Silkscreen	Description
1	Yellow	CAN_H	CAN_H
2	White	CAN_L	CAN_L

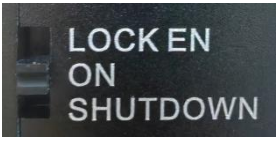
Warning: Never share any connections (except CAN_H and CAN_L) with other controller devices. This will typically create a ground loop. Ground loops will damage your controllers. Only the battery ground may be shared. Use optocouplers instead.

AESC V75100 PPM



PIN No.	Wire Color	Silkscreen	Description
1	Black	GND	Ground(-)
2	Red	5V	5 Volt
3	Yellow	S	Servo Input

AESC V75100 MODE Selection (3-Position DIP Switch)



The operating mode of the AESC V75100 is set via a 3-position DIP switch, offering three distinct modes: **ON**, **LOCK EN**, and **SHUTDOWN**. Each mode determines how the controller is powered on/off and interacts with external switches or signals.

• ON Mode

In **ON mode**, the ESC is always ready to operate as soon as a valid power supply is connected. No additional switch or signal is required to enable the controller; it remains active and responsive to throttle input at all times.

• LOCK EN Mode

LOCK EN mode provides enhanced security by using a normally open self-locking switch or a throttle grip with an integrated key lock switch to control the MCU power. The chosen device must be connected between the **LOCK** pin and the **BAT** pin (power supply voltage).

- When the switch is closed (**LOCK** connected to **BAT**), the controller is turned **ON**.
- When the switch is open (**LOCK** disconnected from **BAT**), the controller is turned **OFF**.

This mode is ideal for applications where a physical lock or key switch is desired to prevent unauthorized or accidental use.

Warning: The **BAT** pin carries the full power supply voltage (**14–84V**). Ensure that the normally open self-locking switch used is rated for a voltage higher than the maximum supply voltage to prevent damage or safety hazards.

• SHUTDOWN Mode

SHUTDOWN mode offers flexible power management with multiple sub-modes configurable via VESC Tool.
Navigate to ***"App Settings"*** → ***"General"*** → ***"General"*** → ***"Shutdown Mode"*** to select the desired behavior.
All SHUTDOWN sub-modes utilize the **SW** pin on the **COMM** interface, together with an external button connected between **SW** and **GND**. The type of button and its operation depend on the selected sub-mode:

Shutdown Mode	Button Type	Operation Description
ALWAYS_OFF	Normally open self-locking	Press and lock the button → circuit closes → ESC turns **ON**. Press again to release → circuit opens → ESC turns **OFF**.
ALWAYS_ON	Normally open self-locking	Two ways to turn **ON**: 1. Press and lock the button – ESC starts and remains **ON**; the button becomes inactive afterwards. 2. **Slide-to-start** – spinning the motor (e.g., pushing a skateboard) generates enough back-EMF to wake the ESC. Once **ON**, the ESC stays on regardless of the button state.
TOGGLE_BUTTON_ONLY	Normally closed momentary	**ON**: Press the button for ~0.5 seconds, or spin the motor (slide-to-start). **OFF**: Press the button again. No automatic shutdown.
OFF_AFTER_10S	Normally closed momentary	Same as TOGGLE_BUTTON_ONLY for turning **ON** (button press or slide-to-start). **OFF**: Either press the button again, or the ESC will automatically shutdown after 10 seconds of inactivity.
OFF_AFTER_1M	Normally closed momentary	Same as above, but automatic shutdown occurs after **1 minute** of inactivity.
OFF_AFTER_5M	Normally closed momentary	Same as above, but automatic shutdown occurs after **5 minutes** of inactivity.
OFF_AFTER_10M	Normally closed momentary	Same as above, but automatic shutdown occurs after **10 minutes** of inactivity.
OFF_AFTER_30M	Normally closed momentary	Same as above, but automatic shutdown occurs after **30 minutes** of inactivity.
OFF_AFTER_1H	Normally closed momentary	Same as above, but automatic shutdown occurs after **1 hour** of inactivity.
OFF_AFTER_5H	Normally closed momentary	Same as above, but automatic shutdown occurs after **5 hours** of inactivity.

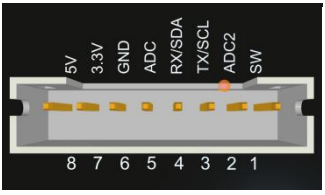
Important Notes on Slide-to-Start:
This feature relies on the back-EMF generated by the motor when it is spun externally. For small motors that produce very low back-EMF, the generated voltage may be insufficient to wake the ESC. In such cases, slide-to-start may not function reliably. Always verify compatibility with your specific motor.

The **COMM interface SW pin** is used for all SHUTDOWN sub-modes. Ensure correct button wiring (SW to GND) and proper button type selection according to the table above.

AESC V75100 LOCK

PIN No.	Silkscreen	Description
1	GND	Ground(-)
2	LOCK	Control Signal
3	BAT	Power supply voltage

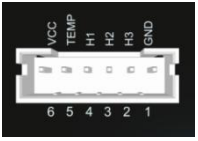
AESC V75100 COMM

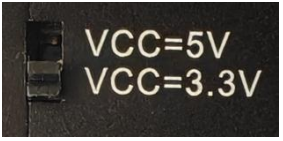


Typical Function Mapping for UART/I2C/Throttle/Brake Applications.

PIN No.	Wire Color	Silkscreen	Description	Throttle	Brake
1	Purple	SW	Shutdown	NC	NC
2	White	ADC2	ADC2_Regen Input	NC	ADC2_Regen Input
3	Green	TX/SCL	UART_TX / I2C_SCL	NC	NC
4	Blue	RX/SDA	UART_RX / I2C_SDA	NC	NC
5	Yellow	ADC	ADC1 Throttle Input	ADC1 Throttle Input	NC
6	Black	GND	Ground(-)	Ground(-)	Ground(-)
7	Orange	3.3V	3.3Volt	3.3Volt	3.3Volt
8	Red	5V	5Volt	NC	NC

AESC V75100 SENSE





Sensor supply voltage (VCC) is configured using the SENSE-VCC slide switch. When connecting different position sensors, such as Hall Sensors, ABI Encoders, or AS5047P Encoders, ensure the voltage setting corresponds to the sensor type.

PIN No.	Wire Color	Silkscreen	Description	Hall Sensor	ABI Encoder	AS5047 Encoder
1	Black	GND	Ground(-)	Ground(-)	Ground(-)	Ground(-)
2	Yellow	H3	Hall_3	Hall_3	I	CS
3	White	H2	Hall_2	Hall_2	B	MISO
4	Blue	H1	Hall_1	Hall_1	A	SCK
5	Green	TEMP	Motor Temperature	Motor Temperature	NC	MOSI
6	Red	VCC	VCC	5Volt	5Volt	3.3V (**Note**)

Note: The AS5047P encoder requires a 3.3V power supply. Connect it to any controller 3.3V pin or external 3.3V supply. Never use 5V. Incorrect voltage setting may result in communication issues or damage to the equipment.

TROUBLESHOOTING

Symptom	Possible Causes	Solution
Blue LED not lit	1.Damaged / short-circuited PCB. 2.Input voltage too low(<3S) 3.Adjustable power supply current limit set too low	1.Cut power immediately. 2.Increase input voltage within limits(≥4S). 3.Increase the current limit setting on the adjustable power supply.
Blue LED lit, Green LED off	1.Firmware corrupted. 2.Poor contact or damaged MCU pins.	1.Program firmware via J-Link SWD interface. 2.Replace ESC.
Red LED flashing Motor stops	1.Over-voltage. 2.Brake / regenerative current setting too high. 3.Motor overheating or ESC overheating. 4.FAULT_CODE_ABS_OVER_CURRENT fault	1.Reduce input voltage. 2.Disable braking/regenerative functions or reduce current limits. 3.a.Ensure adequate cooling (heatsink and / or airflow). b.Add heatsink and / or fan Allow motor / ESC to cool down before restarting. c. Verify that the motor load does not exceed the controller's rated power. d.Increase Current. VESC Tool:"Motor Settings"→"General"→"Current"→"Absolute Maximum Current"
Motor spins wrong direction	Incorrect Three-Phase Wiring.	a.Invert Motor Direction in VESC Tool. b.With power de-energized and safety verified,swap any two motor phase conductors to reverse rotation.
Smoke / Burn marks on power-up	Reverse polarity input or PCB short circuit.	Cut power immediately.
VESC Tool Connection Failure	1.USB cable not connected or poor USB connection. 2.Another program is using the serial port. 3.Controller system malfunction.	1.a.Verify USB cable integrity and connection. b.Reconnect: Unplug the cable, clean the metal contacts, then firmly reinsert. c.Replace cable / port: Try a different USB cable or switch to another USB port. 2.Restart all VESC Tool instances and reboot controller. 3.Check controller indicator light status.

If issues persist, contact Autoro Technical Support:

Email: Autoro.service@hotmail.com

WARRANTY INFORMATION

1.WARRANTY COVERAGE

The Company warrants that if within a period of 30 days from date of purchase of the product,the same is found defective on account of any of its parts proving to be defective in material or workmanship,the same shall be repaired or replaced free of charge. ***Unauthorized alterations or repairs void warranty and may cause safety hazards.***

2.WARRANTY EXCLUSIONS

The warranty does not cover:

· Damage from accidents,misuse,negligence,tampering,fire,natural disasters,or missing components / accessories.

· Physical damage including drops,impacts,liquid exposure,or burns.

· Non-compliance with inspection procedures or installation procedures per this user manual.

· Use of non-original parts or unapproved accessories.

· Unauthorized modifications or repairs.

3.WARRANTY CLAIM PROCEDURE

Step 1: Prepare Documents:

· Valid proof of purchase(order confirmation showing product name and date)

· Legible photo of model label (located on product back / bottom / package)

· 15-second video demonstrating:

- The malfunction - Visible model label - Undamaged full product & condition

· Email detailed description including:

- Failure frequency - Error codes(if any) - Usage environment

Step 2: Submit Claim

Email: Autoro.service@hotmail.com

Attachments: All required documents + Compressed Video(≤20MB)

Email Subject Format:Warranty Claim - [Order#] - [Model#]

Processing Time:3~7 business days

Note:Incomplete submissions may delay processing.

Step 3:Claim Resolution Process

· Valid Claim:

Request received → Claim verification → Seller provides solution:

Option 1: Prepaid return label;

Option 2: Partial refund;

Option 3: New units shipped.

→ Buyer action required:

Option 1: Return item;

Option 2: Confirm refund.

· Invalid Claim:

Request received → Invalid claim / Non-manufacturing defect → Reject with reason.

4.CRITICAL NOTES

· Non-Qualifying Scenarios:

- Products without verifiable purchase history.
- Products obtained through unauthorized channels.
- Warranty void if model label unreadable or purchase proof mismatch.

5.RETURN SHIPPING RULES

Scenario	Cost Responsibility
Verified manufacturing defect	Seller pays
No fault found	Customer pays

6.TIME LIMITS:

· Warranty claims must be submitted during the valid warranty period.

· Returned items must be received within 15 days of the claim verification date.

MANUFACTURER & SUPPORT

Manufacturer: Zhuhai Baoge Technology Co., Ltd.

Address: 509,5th Floor, Zone D. Shucai Wuliu Area, No. 77 Huawei Road, Xiangzhou District, Zhuhai, China.

Email: For technical support,contact : Autoro.service@hotmail.com
For cooperation details, contact : Autoro.sales@hotmail.com

Website : https://www.autorotech.com

MADE IN CHINA

Safety First:

- Always disconnect power before connection.
- Always ensure connections are secure before operation.
- Do not use if wires or plugs are damaged.
- Keep small parts away from children and store safely when not in use.

DISCLAIMER & IMPORTANT NOTICE