



# EV2274KAH Datasheet

## Contact Us:

Web: <http://www.ecotron.ai>

Email: [info@ecotron.ai](mailto:info@ecotron.ai)  
[support@ecotron.ai](mailto:support@ecotron.ai)

Address: 13115 Barton Rd, Ste H  
Whittier, CA 90605  
United States

Tel: +1 562-758-3039  
+1 562-713-1105

## Table of Contents

<b>CHAPTER 1 SYSTEM INTRODUCTION .....</b>	<b>4</b>
1.1 VCU INTRODUCTION.....	4
1.1.1 <i>Functions</i> .....	4
1.1.2 <i>Mechanical Properties</i> .....	5
1.1.3 <i>Processor Specs</i> .....	6
1.1.4 <i>Power Supply</i> .....	6
1.1.5 <i>Description of Bootloader</i> .....	7
<b>CHAPTER 2 TECHNICAL PERFORMANCE .....</b>	<b>8</b>
2.1 ELECTRICAL CHARACTERISTIC PARAMETERS.....	8
2.2 ELECTRICAL PERFORMANCE TEST STANDARDS .....	9
2.3 ENVIRONMENTAL TEST STANDARDS .....	10
2.4 EMC TEST STANDARDS .....	11
<b>CHAPTER 3 INSTALLATION REQUIREMENTS .....</b>	<b>12</b>

## Chapter 1 System Introduction

### 1.1 VCU Introduction

VCU (Vehicle Control Unit) is the master controller for electric vehicles.

The VCU receives the driver's input signals, such as pedal signals, vehicle speed signals, gear signals, and other input signals. The VCU coordinates the motor, battery pack, and other accessory systems to meet the driving torque requirements. The VCU realizes fault diagnosis and resolution, vehicle status monitoring, vehicle mode conversion and other functions. The VCU is the vehicle network control or main control unit based on CAN bus network.

#### 1.1.1 Functions

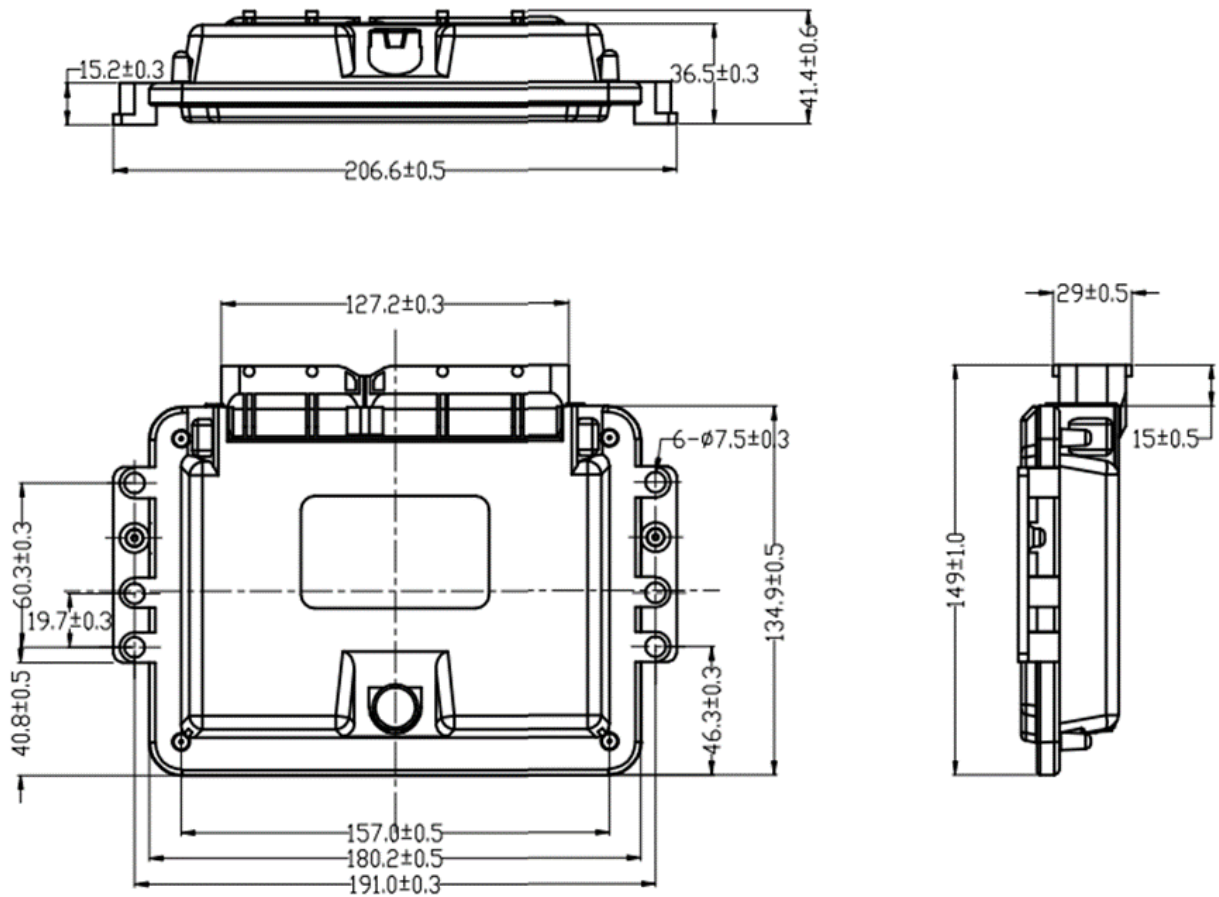
EV2274KAH has the following functions:

Feature
1 – key signal (KEYON)
2 – hard-wired wake-up signal (DI_WAKEUP1, DI_WAKEUP2)
4 – supply voltage (BATT)
3 – 5V output
3 – CAN communication interface: supports CAN flashing and CANA arbitrary frame wake-up
16 – digital signal input: 10 Active-high, 6 Active-low
23 – analog signal input:
17 – channels 0~5V resistive input
6 – channels 0~32V input
6 – frequency signal input: active low
6 – high-side driver control output: 4 can be configured as PWM output
18 – low-side driver control output: 4 can be configured as PWM output

### 1.1.2 Mechanical Properties

The housing of the VCU is die-cast aluminum and assembled with a silicone seal. There is no special treatment or plating on the outside of the housing, no sharp burrs, and sharp edges.

The nominal dimensions of the housing shape of the VCU are as follows (excluding the female end of the VCU connector, in mm):



The appearance of the housing is as follows:



Please use Torx T15 screwdriver to disassemble and assemble the housing. The SCU housing is affixed with a product identification label containing the product identification code, including customer information, production date, batch number, serial number, etc. Ecotron VCU, uses automotive grade connectors, which meet the automotive safety requirements and have 121 pins.

### 1.1.3 Processor Specs

Feature	Detail
Micro Control Core	32-bit ST SPC574K72E7
Maximum Frequency	160MHz
Flash	2624K
RAM	208K
Float Point Capability	Yes

### 1.1.4 Power Supply

The EV2274KAH requires four continuous power supplies (PIN1, PIN3, PIN116, PIN119). VCU

power-on is controller via a KEYON switch (PIN59).

A 5A fuse in series with PIN1 and PIN3, and a 5A fuse in series with PIN116 and PIN119 are recommended for EV2274KAH power supply.

### **1.1.5 Description of Bootloader**

The EV2274KAH bootloader supports the CCP protocol by factory default.

## Chapter 2 Technical Performance

### 2.1 Electrical Characteristic Parameters

Characteristic	Design Specification
Operating Voltage	DC 12/24V (9~32V)
Operating Temperature	-40~85 °C
Operating Humidity	0~95%, no condensation
Storage Temperature	-40~85 °C
Quiescent Current	<1mA
Rated Power Consumption	3W (not including load power)
Protection Level	IP67
Weight	≤600g
Dimensions	207×150×42mm
Housing Material	Die-cast Aluminum
Housing Characteristics	Equipped with waterproof ventilation valve, good heat dissipation



## 2.2 Electrical Performance Test Standards

Item	Test Standard
DC Supply Voltage	ISO 16750-2
Overtoltage (12V, high temperature)	ISO 16750-2
Supply Voltage Ramp Down and Ramp Up	ISO 16750-2
AC Voltage Superposition Test	ISO 16750-2
Reverse Voltage	ISO 16750-2
Low Voltage Reset Feature	ISO 16750-2
Low Voltage Startup Feature	ISO 16750-2
Open Circuit Experiment - Single-Line Interruption	ISO 16750-2
Open Circuit Experiment - Multi-Line Interruption	ISO 16750-2
Short Circuit Protection	ISO 16750-2
Withstand Voltage	ISO 16750-2
Insulation Resistance	ISO 16750-2

## 2.3 Environmental Test Standards

Item	Test Standard
Waterproof (IP67)	IEC/EN 60529
Dustproof (IP67)	ISO 20653
Salt Spray Leak Function and Corrosion Test	ISO 16750-4
Mechanical Vibration Shock Test	ISO 16750-3
Vibration Test	ISO 16750-3
Drop Test	ISO 16750-3
Temperature Shock	ISO 16750-4
Electrical Operation at Cycling Ambient Temperatures	ISO 16750-4
High and Low Temperature Operation Experiment	ISO 16750-4
High and Low Temperature Experiment	ISO 16750-4
Temperature and Humidity Cycle	IEC 60068-2-30
Constant Temperature and Humidity	ISO 16750-4

## 2.4 EMC Test Standards

Item	Test Standard
Transient Conducted Emission	ISO 7637-2
Conducted Emission Experiment CE-V	CISPR25
Conducted Emission Experiment CE-C	CISPR25
Radiation Emission Experiment RE-ALSE Method	CISPR25
Radiation Immunity Test (I/O)-ICC Method	ISO 7637-3
Radiated Immunity Test BCI-substitution Method	ISO 11452-4
Radiation Immunity Experiment RI	ISO 11452-2
Low Frequency Magnetic Field Immunity	ISO 11452-8
Electrostatic Discharge (ESD)	GMW3097

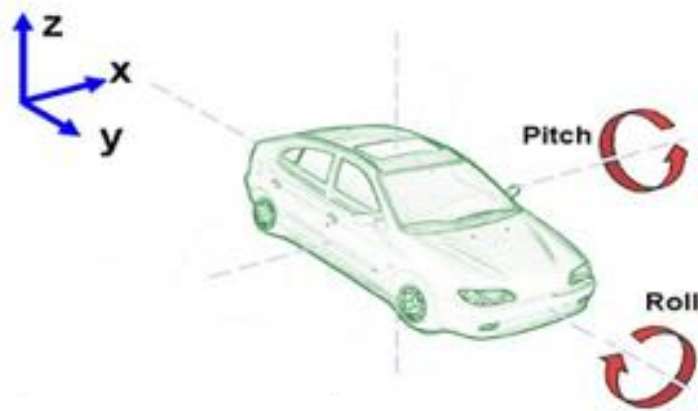
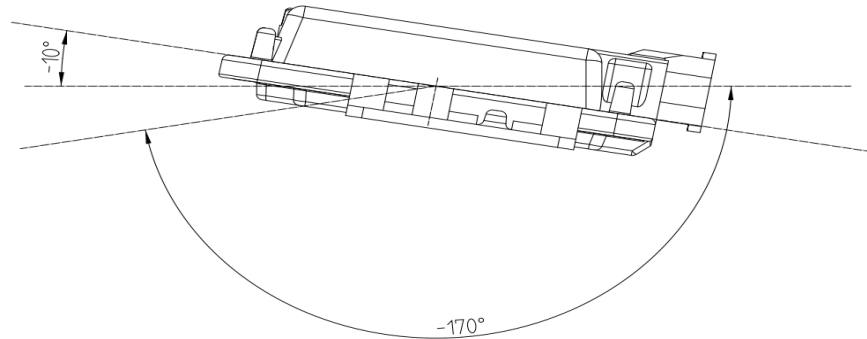
## Chapter 3 Installation Requirements

It is recommended to install the VCU in the cabin. If the vehicle manufacturer wants to install the VCU at another location, the alternative installation location should be evaluated by Ecotron's engineers and the vehicle manufacturer's engineers.

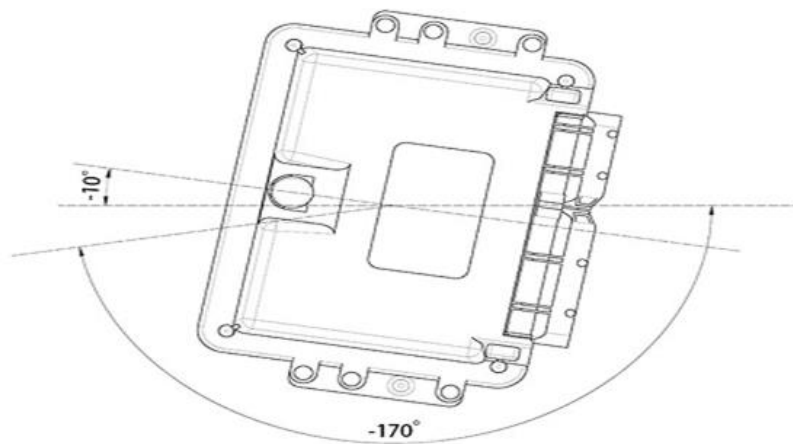
Precautions for VCU installation are as follows:

- 1) The installation of VCU and harness shall be firm and reliable without looseness, and please avoid supporting the harness through VCU. At the same time, the layout of VCU harness shall prevent and protect all wires in the harness from damage due to wear and overheating.
- 2) Try to avoid installing in the place where dust is easy to gather. A large amount of dust accumulation will affect the reliability of VCU work.
- 3) It shall be kept away from the position where the temperature of its shell may exceed 85 ° C as far as possible, and the heat released by surrounding parts shall be prevented from radiating to VCU.
- 4) Avoid installing VCU in places where oil, moisture and water droplets are easy to splash.
- 5) Avoid the possibility of additional mechanical vibration and external force impact due to the installation position and fixing method of VCU and avoid installing VCU at the resonance point of vehicle body.
- 6) Avoid installing the VCU near the parts that may contact the battery or other acid-base solutions that are easy to seep out, and the places where the VCU is easy to be corroded.
- 7) Avoid installing the VCU near the positive terminal of the battery and the terminal of the ignition power supply.
  
- 8) The VCU shall be installed at a certain angle to avoid the inflow of water from the connector.

In the horizontal direction, the recommended installation angle is  $-170^\circ$  to  $-10^\circ$ . In the vertical direction, the recommended installation angle is  $-170^\circ \sim -10^\circ$ . As shown in the figure below.



Z Axis : Vertical Direction  
X Y Axes : Horizontal Direction



ECOTRON recommends using the six mounting holes on the VCU for installation. It is recommended to manufacture the mounting bracket out of metal materials such as aluminum alloy, and the housing should have a reliable electrical connection with the vehicle GND through the bracket. If other materials are used, the customer must ensure that they can meet the requirements of VCU for vibration, heat dissipation, temperature, EMC, etc. If there is any deviation, it needs to be confirmed with ECOTRON.

The VCU system is grounded through the vehicle's body. The specific requirement is to directly connect the ground wire in the wiring harness to the vehicle's body and ensure reliable electrical connections.