1 Features

- Large 3.5" 480x320 TFT display supports up to 800 nits of brightness enabling the screen to be visible in any environment
- 4 tactile IP65 waterproof buttons enables changing between power modes, display brightness and menus.
- Open-Source firmware/scripting supports coding of custom applications that can run on the onboard ESP32-C3 microcontroller
- Integrated ESP32-C3 supports both station and access-point Wi-Fi connections alongside BLE 5 while allowing large custom scripts to run
- Easy setup with VESC TOOL Desktop and Phone applications for fast integration alongside the possibility for deep customization
- Fully sealed IP67 display protects against moisture and dust

Figure 1: VESC Dash 35B

2 Description

The VESC Dash 35B is a 3.5" display with four tactile buttons that integrates directly with VESC motor controllers and BMS systems.

It features a 480×320 resolution display with up to 800 nits brightness and an IP67 rating, ensuring clear visibility and durability in any environment. Brightness can be easily adjusted using one of the four IP65-rated buttons. These buttons also let you switch power modes, control lights, enable cruise control, and navigate between display pages.

The display includes multiple customizable pages that show real-time data, trip information, and vehicle functions such as lights, indicators, and BMS data from your VESC setup.

An integrated ESP32-C3 provides Wi-Fi connectivity in both station and access-point modes, as well as BLE 5 support. It also enables the use of large custom scripts, allowing for advanced functionality and full control over the display's behaviour.

A ready-made UI package is available for download from the VESC Tool package store, and both the UI and button functions can be fully customized via VESC Tool Scripting.

The buttons feature a clamp mount for 22 mm handlebars, while the display includes a clamp mount for 32 mm handlebars for easy and secure installation.

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3 Specifications

3.1 Electrical Characteristics

Parameter	Min	Typ	Max	Unit
Input Voltage	3	5	15	V
Input Current (5V Input)			300[1]	mA
Input Current (12V Input)			125[1]	mA
Display Brightness	50		800	Nits

3.2 Recommended Operating Conditions

Parameter	Min	Max	Unit
Operating Temperature	-40	85	°C
Humidity		Non-condensing	-

3.3 Physical Properties

Display		
Parameter	Value	Unit
Height	62.7	mm
Width	100.2	mm
Thickness	21.3	mm
Display Size	3.5	inch
Handlebar Mount	∅32.0	mm
Mass	108	g
IP Rating	IP67	
Buttons		
Length	38.7	mm
Width	19.7	mm
Height	43.6	mm
Handlebar Mount	∅22.2	mm
Mass	20	g
IP Rating	IP65	

[1]With display on full brightness and Wi-Fi enabled.

4 Pinout and Wiring

4.1 Pin Descriptions

The VESC Dash 35B has an orange 3-pin female and a green 5-pin male Julet connector.

The orange 3-pin female connector is used connect to the buttons which have the male connector attached.
The display can also be connected over USB using this connector.

Included with the display is a 1m cable with the green 5-pin male connector on one end and no connector on the other end. This cable is used to connect the display to the motor controller.

Please note: The pin numbers in this table refer to the connectors coming from the display as you look at them.
See the wiring diagram below for more details.

Communication				
Pin	Cable Colour	Name	Function	Limits
1	Red	VBUS	Input Voltage	15V
2	Black	GND	Ground	
3	Yellow	CANL	CAN Low	±60V
4	Green	NC	Not Connected	-
5	Blue	CANH	CAN High	±60V
Buttons				
1	Red	On/Off & USB D+	Power Button & USB Data +	
2	Black	GND	Ground	
3	White	Button Signal & USB D-	Button Signal & USB Data -	

Table 2: Pin-functions of VESC Dash 35B

4.2 Wiring Diagram

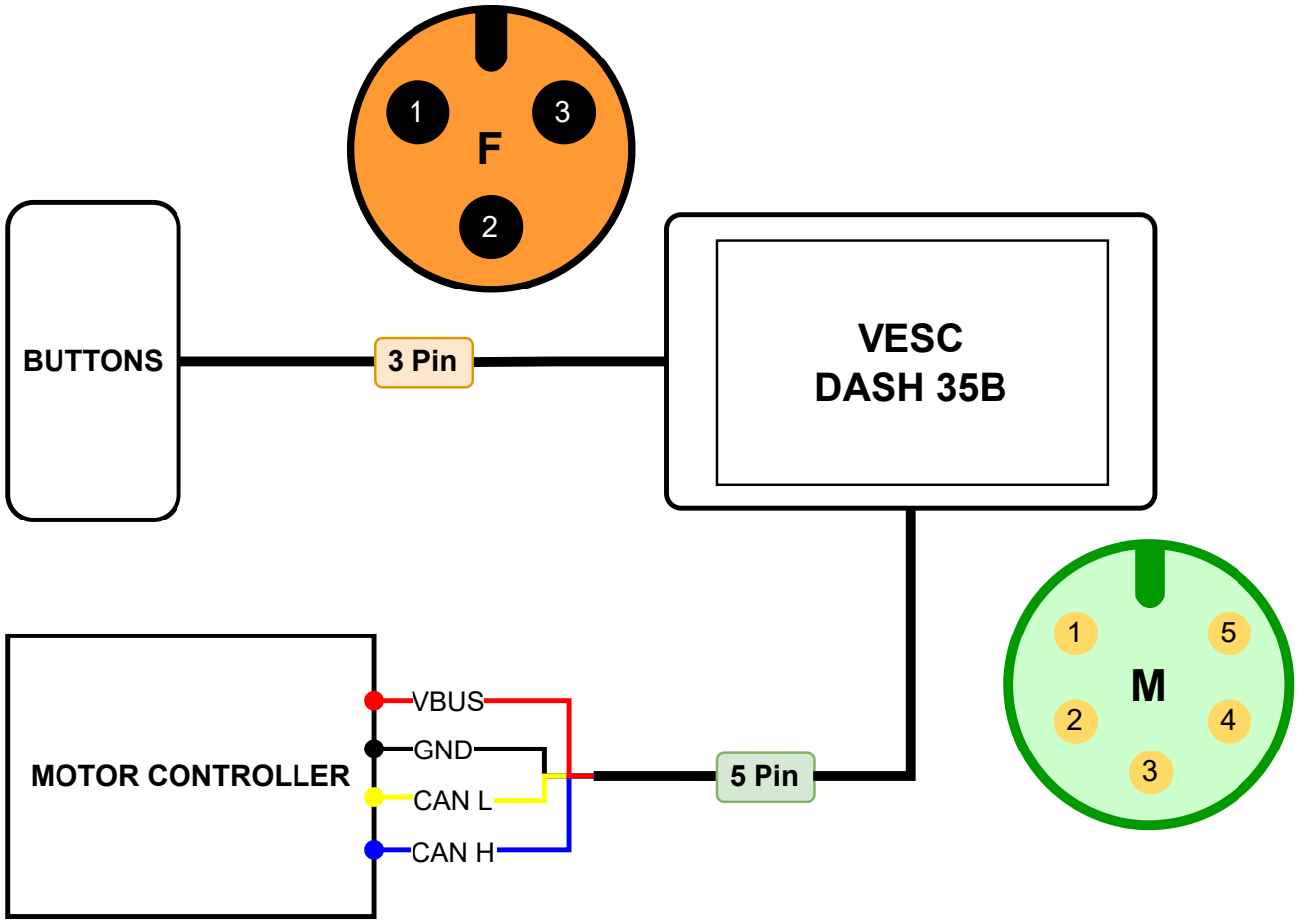

Figure 2: Composite image of VESC Dash 35B with motor controller

5 Device Installation

5.1 Installation Warnings

- **Installation must be performed by qualified personnel** with experience in high-voltage battery systems and VESC-based motor controllers.
- **Read and fully understand all instructions, datasheets, and safety warnings** before beginning installation.
- **Gather all necessary tools and materials** including the device, wiring harnesses, connectors, insulation materials, and personal protective equipment.
- **Ensure the battery pack and motor system are prepared and properly arranged** with correct wiring paths and secure mounting.
- **Securely mount the device using threadlock** in a location protected from vibration, moisture, dust, and direct heat sources.
- **Do not install the device in locations exposed to water, condensation, or flammable materials.**
- **Install motor temperature sensors as required,** in order for the motor protection to ramp down the current smoothly when the motor is about to overheat.
- **Only use manufacturer-specified connectors and cables** to ensure safe and reliable connections.
- **Verify correct polarity for all connections.** Incorrect wiring can cause irreversible damage to the device, battery pack, or connected equipment. **Double-check the wiring diagram before proceeding.**
- **Insulate all exposed terminals and wiring** to prevent accidental short circuits or electric shock.
- **Keep metal objects and tools away from the device and power terminals during installation** to avoid accidental bridging of electrical contacts.
- **Tidy up and secure all cables** with cable ties or routing guides to prevent movement and wear.
- **Do not drill, cut, or modify the device enclosure or circuit board.** Unauthorized modifications may void the warranty and compromise safety or functionality.
- **Double-check all connections and wiring against the provided diagrams** before applying power to the system.
- **When powering up the system for the first time, do so in a controlled environment with appropriate protective equipment.** Be prepared to disconnect power immediately if any abnormal behaviour is observed.

5.2 Mechanical Dimensions

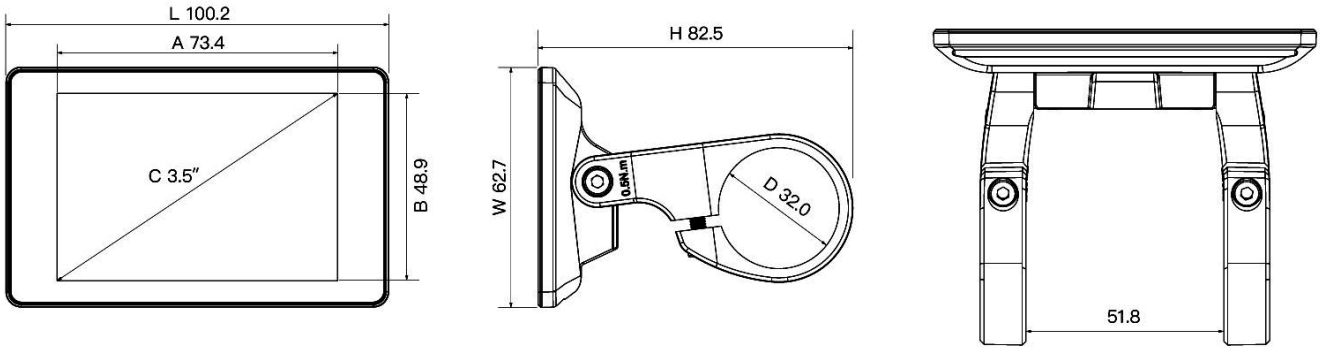

Figure 3: VESC Dash 35B Dimensions shown in mm

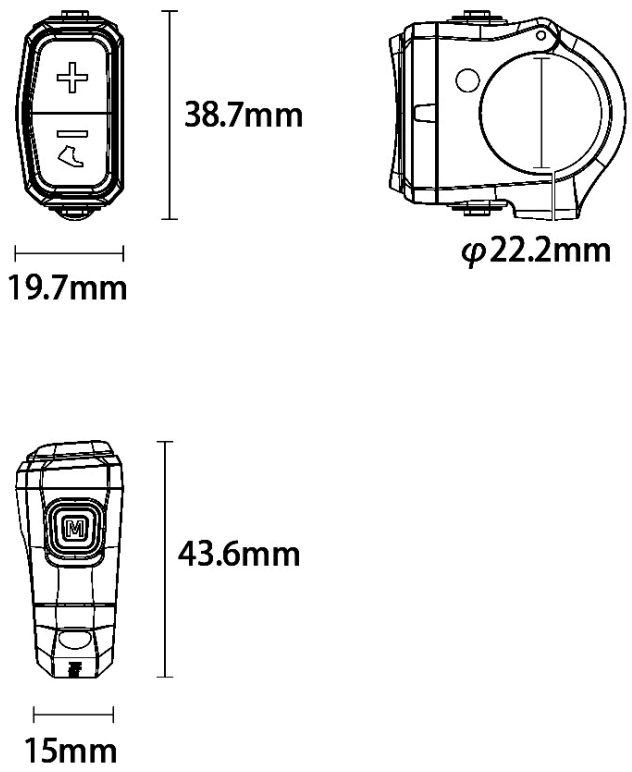

Figure 4: VESC Dash 35B Button Dimensions shown in mm

6 Configuring the Device

6.1 Configuration Warnings

- **Double-check all wiring connections** before powering on the device. Incorrect wiring can cause damage to the device, battery cells, or pose a fire risk.
- **Always install the latest version of VESC Tool from the official website** to ensure compatibility with your hardware and access to the newest features, bug fixes, and safety updates. Download the installer from *vesc-project.com/vesc_tool* and follow the on-screen instructions. After installation, update your device firmware if prompted to ensure optimal performance.
- **Do not exceed the recommended voltage limits** for this device, your specific battery or motor system. Setting incorrect voltage thresholds can result in overvoltage errors or undervoltage cutoffs, potentially damaging the system.
- **Do not exceed the recommended current limits** for this device, your specific battery or motor system. Setting incorrect current thresholds can result in overheating or excessive stress on components, which may lead to failure or dangerous conditions.
- **Ensure the motor and any moving parts connected to it are free from obstruction and lifted off the ground before powering on the device.** This prevents unexpected movement that could cause injury, damage, or interference with calibration and configuration procedures
- **Avoid configuring the device in wet or humid environments.** Moisture can cause short circuits and damage sensitive electronic components.
- **If you are unsure about any configuration step, consult the datasheet or seek professional assistance.** Improper configuration can void warranties and lead to hazardous conditions.
- **Wear appropriate personal protective equipment (PPE),** such as safety glasses and gloves, when working with high-voltage systems.

6.2 Connecting the VESC Dash 35B to VESC Tool

Once the VESC Dash 35B has been wired to buttons and the motor controller, it can be connected to VESC Tool via USB, Wi-Fi, Bluetooth, or CAN. For instructions on how to connect with and navigate VESC Tool please visit: `https://www.vesclabs.com/category/getting-started/`

1. Connect the **"VESC Dash 35B"** to VESC Tool using one of the mentioned methods.

6.3 Installing the VDisp Package on your Controller

1. Ensure the **controller** which you want to install the display package on has been selected from the list of CAN devices.
2. Navigate to the **"VESC Packages"** section from the menu on the left of the screen on desktop, or by swiping across the screen on a mobile device.
3. Press the **"Update Archive"** button see an updated list of applications.
4. Select the **"VESCDash35B"** package from the list of applications.
5. Press the **"Install"** button to install the package onto the display.
6. Once installed you should see a pop up window confirming the package has been installed. The user interface should also appear on the screen and it should react to button presses.

6.4 Configuring Wi-Fi

The Wi-Fi on the VESC Display has 2 modes, **"Station Mode"** and **"Access Point"**.

1. Navigate to the **"VESC Express"** section from the menu on the left of the screen on desktop, or by swiping across the screen on a mobile device.
2. Select the **"WiFi"** tab at the top screen.

Station Mode will connect to your router at home so you access through any device with the VESC-Tool connected to the same WLAN/LAN.

1. Change the **"WiFi Mode"** to **"Station Mode"**
2. Enter your **"Router SSID"** and **"Wi-Fi password"**, these are usually found on a sticker on the router.
3. Press the **"Write"** button to save the settings.

Access Point will generate a Wi-Fi Hotspot you can connect to.

1. Change the **"WiFi Mode"** to **"Access Point"**
2. Enter a **"SSID"** and a **"Password"** of your choice.
3. Press the **"Write"** button to save the settings.

7 Navigating the Menus

7.1 Button Functions

The VESC Dash 35B comes with 4 buttons which are used to operate the device and navigate through the various menus. The button functions are explained below:

Name	Short Press Function (<1.5s)	Long Press Function (>1.5s)
Power	Lights on / off	Change display brightness
Plus	Up a power mode	
Minus	Down a power mode	Enable cruise control
Mode	Next page	

Table 4: Button functions of VESC Dash 35B

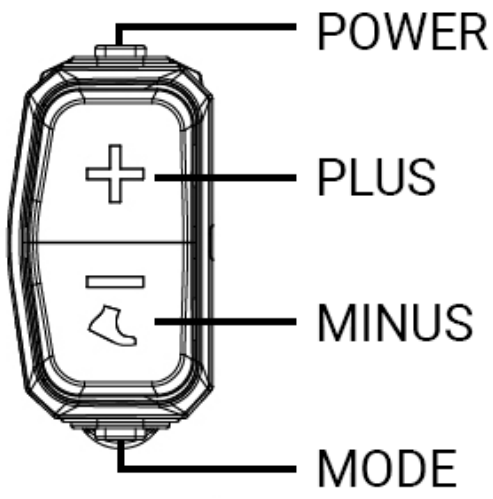

Figure 5: Button layout of VESC Dash 35B

8 Product Warranty

8.1 Warranty Coverage

Please find the warranty information regarding VESC Labs products using the following link:
`https://www.vesclabs.com/warranty-and-returns-policy/`

9 Compliance & Regulatory Information

9.1 CE Marking

This product meets the requirements of all applicable EU directives and regulations and complies with the essential health, safety, and environmental protection requirements as set out in relevant legislation. It is CE marked in accordance with:

- **Directive 2014/30/EU** – Electromagnetic Compatibility (EMC)
- **Directive 2014/35/EU** – Low Voltage Directive (LVD)
- **Directive 2011/65/EU** – Restriction of Hazardous Substances (RoHS)

9.2 UKCA Marking

This product is compliant with UK regulations and bears the UKCA marking, confirming its conformity with the applicable statutory requirements in Great Britain. It meets the relevant provisions of:

- Electrical Equipment (Safety) Regulations 2016
- Electromagnetic Compatibility Regulations 2016
- The Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment Regulations 2012

9.3 WEEE Directive (2012/19/EU)

This product is compliant with the Waste Electrical and Electronic Equipment (WEEE) Directive. It should not be disposed of with unsorted municipal waste and must be collected separately for proper treatment and recycling. Please contact your local distributor or relevant waste authority for information on recycling options and collection facilities.