



**ON Semiconductor®**

# **STR-LV8548MC-GEVB**

## **User Guide**



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## Installation

Go to [www.onsemi.com/strata](http://www.onsemi.com/strata) to download the most recent version of Strata and follow the installation prompts.

## Included with Evaluation Kit

1. PCB with mounted DC and stepper motors
2. AC wall adapter – 12V/1A
3. USB Mini-B cable
4. Small flathead screwdriver (for changing motors)

## Startup Procedure

1. Connect included barrel jack
2. Connect your computer to the board using a USB Mini-B cable
3. Login with your credentials
4. Your board will be detected, UI will appear, and relevant collateral will be downloaded to your computer

## Auxiliary Stepper Motor Connection

1. Disconnect included stepper motor
2. Connect new stepper to four pin screw terminal as seen below
3. Winding resistance should be high enough to ensure total holding current of less than 1A

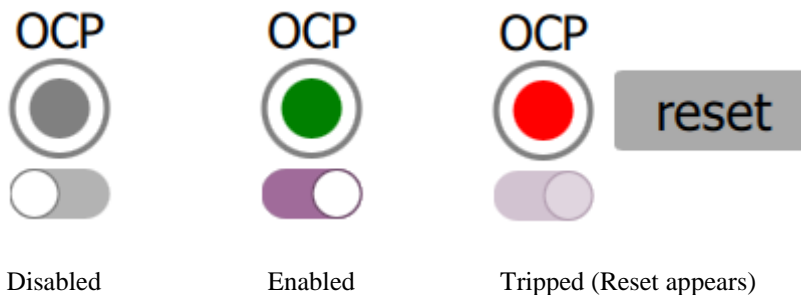


A => OUT1  
 B => OUT2  
 C => OUT3  
 D => OUT4



## OCP Indicators

Below are the three states that the OCP indicator can be in. Please know that once OCP is tripped, the reset button appears and must be clicked to resume operation of that motor.



## DC Brushed Motors

Note: Only one DC motor is included in EVK

### 1. Overview

- a. **PWM Frequency** – Frequency for PWM signal at motor input
  - i. This parameter may not be changed while either motor is running
- b. **Input Voltage** – Input voltage to LV8548 that controls brushed motors
- c. **Input Current** – Input current to LV8548 that controls brushed motors
- d. **OCP** – Over current protection turns red when fault detected and reset button appears to right of indicator must be pressed to continue operation. OCP set at 1A.
  - i. Toggle switch below indicator disables OCP feature
- e. **Direction** – Clockwise or counter clockwise rotation
  - i. Changing the direction of running motor will cause a 10 ms brake between states
- f. **PWM mode** – Changes PWM control for driving DC motor
- g. **Duty Ratio** – Duty ratio for PWM signal at motor input
- h. **Start** – Starts the motor
- i. **Stop** – Brakes the motor (pulls both pins to GND)
- j. **Standby** – Stops the motor and leaves output pins floating

The screenshot displays the Strata Developer Studio interface for controlling two DC brushed motors. The interface is divided into two main sections for Motor 1 and Motor 2. At the top, there are tabs for 'Brush' and 'Stepper', with 'Brush' selected. A 'PWM frequency' slider is set to 1000 Hz. Below this, 'INPUT VOLTAGE' is 12.1 V and 'INPUT CURRENT' is 0 mA. An 'OCP' indicator is shown as a green circle with a toggle switch below it. Each motor panel has a 'Direction' selector (clockwise/counter-clockwise), a 'PWM mode' selector (on ↔ off, on ↔ brake), and a 'Duty ratio' slider set to 75%. At the bottom of each panel are 'start', 'stop', and 'standby' buttons.

## Stepper Motor

The advanced view is broken up into 3 main sections:

1. Overview
  - a. **Input Voltage** – Input voltage to LV8548 that controls stepper motor
  - b. **Holding Current** – Holding current to LV8548 that controls stepper motor
  - c. **OCP** – Over current protection turns red when tripped and the reset button to right of indicator must be pressed to continue operation. OCP set at 1A
    - i. Toggle switch below indicator disables OCP feature for entire board
  - d. **Excitation** – Full or half step excitation method
  - e. **Direction** – Clockwise or counter clockwise rotation
  - f. **Step Angle** – Step angle of attached motor. Included motor (default) is 7.5°
  - g. **Motor Speed** – Motor speed in either steps per second or rotations per minute (rpm)
  - h. **Transfer Time** – Motor run duration in either seconds, steps, or degrees. 0 corresponds to  $\infty$
  - i. **Start** – Starts the motor for the selected transfer time and motor speed
    - i. Note: All input telemetry stops while stepper motor is running
  - j. **Hold** – Stops the motor. Defaults to hold when transfer time is up. Provides holding torque to the stepper motor
    - i. **Warning:** Since current continues to flow when the motor stops, it is important to pay attention to heat generation. Press *Free* to stop holding current in motor
  - k. **Free** – Leaves stepper output pins floating. No holding torque is present

The screenshot shows the ON Semiconductor Strata Developer Studio interface for the Stepper Motor control. The interface is divided into several sections:

- Motor Selection:** Two tabs, 'Brush' and 'Stepper', are visible at the top. The 'Stepper' tab is currently selected.
- INPUT VOLTAGE:** A large digital display shows '12.2' with a lightning bolt icon and a 'V' unit.
- HOLDING CURRENT:** A large digital display shows '0' with a lightning bolt icon and a 'mA' unit.
- OCP (Over Current Protection):** A green indicator light is shown next to a toggle switch that is currently turned off.
- Excitation:** A control for step selection, with '1/2 step' and 'full step' options. The '1/2 step' option is currently selected.
- Direction:** A control for rotation direction, with 'clockwise' and 'counter clockwise' options. The 'counter clockwise' option is currently selected.
- Step angle:** A dropdown menu showing '7.5' degrees.
- Motor speed:** A slider control ranging from 0 to 500. The current value is 30. The unit is set to 'steps/second'.
- Transfer time:** A control for run duration, with a value of '1000' and units of 'seconds', 'steps', and 'degrees'. The 'seconds' unit is currently selected.
- Control Buttons:** Three buttons labeled 'start', 'hold', and 'free' are located at the bottom of the interface.

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