This document is provided with the DRV8872 customer evaluation module (EVM) as a supplement to the DRV8872 (SLVSCZ0) data sheet. It details the hardware implementation of the EVM.

Figure 1. PCB (Top View, Some Components are not Fitted)

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Introduction

The DRV8872EVM is a complete solution for evaluating the DRV8872 brushed motor driver. It includes a voltage regulator to create 5 V, and a TLC555 timer configured to supply a PWM input to the DRV8872. The EVM also includes a potentiometer to adjust the speed of the motor by varying the duty cycle of the PWM. Jumpers are provided to configure each input to a logic low, logic high, PWM, or to allow user control of the inputs. Test points are provided for ease of monitoring the input and output signals.

The DRV8872EVM only requires connections to the motor and power supply to operate.

1.1 Power Connectors

The DRV8872EVM uses a combination of headers for the application/monitoring of power. For the EVM, a single power-supply rail is necessary. Minimum recommended VM for the EVM is 8 V and maximum is 40 V. Refer to the DRV8872 data sheet (SLVSCZ0) for the complete voltage range information of the driver itself.

VM for the DRV8872 is available through the J1 connector.

![Figure 2. Top View (J1 Power Supply Connector)](image-url)
1.2 Test Points

Test points are provided and labeled according to the inputs/outputs of the DRV8872 motor driver.

Test point "PWM_R" is generated by a TLC555 located on the EVM. If an externally generated PWM signal is desired, either:
1. Remove the shunt on IN1 or IN2 and connect the external PWM signal to the IN1 or IN2 test point (this is recommended), or
2. Remove the 0.0-Ω resistor R5 and connect the external PWM signal to the "PWM_R" test point. The "PWM" signal generated by the onboard circuitry EVM is approximately 25 kHz and can be adjusted from 5% to 95% duty cycle by the potentiometer (R6) located on the EVM.

1.3 Jumpers

The following images illustrate the possible connections to the INx jumpers

Figure 3. IN1 Connected to GND (Logic Low)

Figure 4. IN1 Connected to V5P0 (Logic High)

Figure 5. IN1 Connected to PWM Output

Figure 6. IN1 Floating, can be Controlled Externally

Figure 7. IN2 Connected to GND (Logic Low)

Figure 8. IN2 Connected to V5P0 (Logic High)
1.4 Duty Cycle Potentiometer (R4)

The duty cycle potentiometer "PWM DUTY CYCLE" is found in Figure 11. The potentiometer adjusts the duty cycle of the PWM signal which will adjust the speed of the motor. To lower the duty cycle, turn the potentiometer counter-clockwise. To increase the duty cycle, turn the potentiometer clockwise.

The onboard PWM signal for the DRV8872 is generated by a circuit based upon the Texas Instruments' TLC555 low power timer. It is capable of an approximately 25-kHz output that can be adjusted from 5% to 95% duty cycle. This square output signal will switch from 0 V to V5P0.
1.5 Motor Outputs

Two motor connectors are provided. Connector J2 and header J5 are available as shown in Figure 12. Connector J2 is intended to be used for all motor types. Header J5 is available for use with motors rated for less than 1 A current and containing a 2-pin, 0.100-inch spaced connector.

1.6 Operation of the EVM

1. Connect a brushed DC motor to pins OUT2 and OUT1 of J2 or J5.
2. Adjust the “PWM DUTY CYCLE” potentiometer R4 to minimum voltage by turning it all the way counter-clockwise.
3. Apply VM and GND to the J1 connector.
4. Configure the IN1 and IN2 jumpers as desired. If using the PWM_R signal, adjust the “PWM DUTY CYCLE” potentiometer clockwise to increase speed and the motor will start to turn. Continue adjusting as desired.
5. To change direction, re-configure the IN1/IN2 connection per the data sheet.

2 EVM Documentation

All EVM documentation (schematic, BOM, and manufacturing files are available online at (SLVC632).
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**CAUTION**

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

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FCC Interference Statement for Class B EVM devices

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- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

3.2 Canada
3.2.1 For EVMs issued with an Industry Canada Certificate of Conformance to RSS-210

Concerning EVMs Including Radio Transmitters:

This device complies with Industry Canada license-exempt RSS standard(s). Operation is subject to the following two conditions:

(1) this device may not cause interference, and
(2) this device must accept any interference, including interference that may cause undesired operation of the device.

Concernant les EVMs avec appareils radio:

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes: (1) l'appareil ne doit pas produire de brouillage, et (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

Concerning EVMs Including Detachable Antennas:

Under Industry Canada regulations, this radio transmitter may only operate using an antenna of a type and maximum (or lesser) gain approved for the transmitter by Industry Canada. To reduce potential radio interference to other users, the antenna type and its gain should be so chosen that the equivalent isotropically radiated power (e.i.r.p.) is not more than that necessary for successful communication. This radio transmitter has been approved by Industry Canada to operate with the antenna types listed in the user guide with the maximum permissible gain and required antenna impedance for each antenna type indicated.

Antenna types not included in this list, having a gain greater than the maximum gain indicated for that type, are strictly prohibited for use with this device.

Concernant les EVMs avec antennes détachables

Conformément à la réglementation d'Industrie Canada, le présent émetteur radio peut fonctionner avec une antenne d'un type et d'un gain maximal (ou inférieur) approuvé pour l'émetteur par Industrie Canada. Dans le but de réduire les risques de brouillage radioélectrique à l'intention des autres utilisateurs, il faut choisir le type d'antenne et son gain de sorte que la puissance isotrope rayonnée équivalente (p.i.r.e.) ne dépasse pas l'intensité nécessaire à l'établissement d'une communication satisfaisante. Le présent émetteur radio a été approuvé par Industrie Canada pour fonctionner avec les types d'antenne énumérés dans le manuel d'usage et ayant un gain admissible maximal et l'impédance requise pour chaque type d'antenne. Les types d'antenne non inclus dans cette liste, ou dont le gain est supérieur au gain maximal indiqué, sont strictement interdits pour l'exploitation de l'émetteur.

3.3 Japan
3.3.1 Notice for EVMs delivered in Japan: Please see http://www.tij.co.jp/lsds/tiJa/general/eStore/notice_01.page 日本国内に輸入される評価用キット、ボードについては、次のところをご覧ください。
http://www.tij.co.jp/lsds/tiJa/general/eStore/notice_01.page

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2. Use EVMs only after User obtains the license of Test Radio Station as provided in Radio Law of Japan with respect to EVMs, or

3. Use of EVMs only after User obtains the Technical Regulations Conformity Certification as provided in Radio Law of Japan with respect to EVMs. Also, do not transfer EVMs, unless User gives the same notice above to the transferee. Please note that if User does not follow the instructions above, User will be subject to penalties of Radio Law of Japan.
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