APPLICATION NOTE 6150

# USING THE MAX14871EVKIT WITH SOFTWARE

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*Abstract: The MAX14871EVKIT is a fully tested and assembled full-bridge DC motor driver evaluation board designed to work either in a stand-alone configuration or with a software interface. This application note discusses the software for the EV kit.*

## Detailed GUI Description

The most recent version of the Windows$^{®}$ GUI for the MAX14871EVKIT is available for download. While the Windows GUI application is simple to use, it can demonstrate all of the important features of the MAX14871.

**Setup**
1. Download the latest version of the EV kit software, 14871EVRxx.ZIP and save it a temporary folder.
2. Open the .ZIP file and extract the .EXE file to your preferred location. Note that the .EXE file is actually the EV kit GUI and not an install program. You can store the .EXE file where you like and then uninstall by simply deleting it.
3. Connect a USB cable from the PC to the MAX14871EVKIT board. LED2 will glow red when the microprocessor is properly powered. LED4 blinks green when the microprocessor begins running the firmware.
4. Double click the MAX14871EVRxx.EXE file to run the application.
5. The MAX14871 EV kit software defaults to shutdown mode, with both driver outputs (M1 and M2) disabled. Select the duty cycle and direction to start moving the motor.

## Some Notes about Startup

The MAX14871 software automatically detects the presence of the EV kit. If the application is started before the EV kit is attached, all of the fields are greyed out except for the Connection indicator, which is red.

Once the EV kit is connected, the application indicator turns green and the fields become accessible.

## Current Regulation

The MAX14871 is capable of operating in any one of three current regulation modes: fast decay, slow decay, or 25% ripple current mode. To select a mode of operation, use the Current Regulation Logic table in the MAX14871 GUI, and set the mode and $V_{REF}$ voltage for the desired operation.

The $V_{REF}$ drop-down menu is used to set the voltage on $V_{REF}$. Set the $V_{REF}$ voltage to limit the motor current using the following equation:

$$V_{REF} = I_{MOTOR} \times A_V \times R_{SENSE}$$

## Motor Operation

The on-board microcontroller on the MAX14871 generates a 25kHz switching signal on PWM or DIR. Use the radio buttons and text boxes along the left side of the GUI to operate the motor. Default duty cycles are set to 10%, 30%, 50%, or 90%. Max Fwd is a 100% duty cycle in the FWD direction. Max Rev is a 100% duty cycle in the reverse direction.

Shutdown mode pulls the EN input on the MAX14871 high, disabling the MAX14871 and making the M1 and M2 driver outputs high impedance. The motor is discharged through the diodes of the internal FETs and slows to a stop.

Brake mode enables the low-side drivers of M1 and M2, immediately shorting the motor current.

## Fault Indicator

FAULT asserts low on the MAX14871 during an overcurrent condition and/or when the device is in thermal shutdown. On the MAX14871EVKIT, the Fault LED turns on when a fault occurs during normal operation. Similarly, the fault indicator on the GUI turns red when a fault occurs. FAULT deasserts, the on-board LED turns off, and the GUI indicator turns green again when the fault is removed.

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| Related Parts | |
| --- | --- |
| MAX14871 | 4.5V to 36V Full-Bridge DC Motor Driver |
| MAX14871EVKIT | Evaluation Kit for MAX14871 |

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