Evaluates: MAX31875

General Description

The MAX31875 evaluation kit (EV kit) demonstrates the MAX31875 $\pm 2^{\circ}$ C-accurate local temperature sensor with I²C/SMBus interface. The EV kit includes a graphical user interface (GUI) that provides communication over I²C with an on-board master IC.

The MAX31875 EV kit comes with the MAX31875ROTZS+ installed.

Features

• Windows® 7, Windows 8/8.1, and Windows 10 Compatible Software

Ordering Information appears at end of data sheet.

Quick Start

Required Equipment

- MAX31875 EV kit (includes Micro-USB cable)
- USB2PMB2 USB to I²C interface board
- Windows PC

Note: In the following sections, software-related items are identified by bolding. Text in **bold** refers to items directly from the EV kit software. Text in **bold and underlined** refers to items from the Windows operating system.

Procedure

The EV kit is fully assembled and tested. Follow the steps below to verify board operation:

- Visit <u>http://www.maximintegrated.com/en/</u> <u>design/tools/applications/evkit-software/</u> to download the latest version of the EV kit software, MAX31875EVKitSetupV1.0.zip. Save the EV kit software to a temporary folder and uncompress the ZIP file.
- 2) Connect the MAX31875PMB1 board to the USB-2PMB2 board.
- Connect the USB cable from the PC to the USB-2PMB2 board. Windows may require some time to install its device driver.
- Open the EV kit GUI, MAX31875EVKit.exe and select Device→MAX31875PMB option (or MAX31875PMB).
- 5) Click the **Scan Adapters** button, then click the **Connect** button. See Figure 1.
- 6) Click the **Sample Continuously** button to begin plotting temperature data.

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General Description of Software

The main window of the MAX31875 EV kit software contains controls to evaluate the MAX31875 temperature sensor.

USB2PMB Adapter

The controls within the USB2PMB <u>https://datasheets.</u> <u>maximintegrated.com/en/ds/USB2PMB2.pdf</u> Adapter groupbox allow the user to select the appropriate USB2PMB devices. When **Scan Adapters** button is pressed, it updates the drop-down list with all USB2PMB devices. With the EV kit connected to the PC, either **PMOD031875** or a similar serial number appears within the drop-down list. Make the appropriate selection respective of the IC and press the **Connect** button. The **Attached Device Search** scans the I²C bus for supported devices. The software GUI supports all eight varieties of the MAX31875, which differ only in the I²C slave device address.

Along the right side of the window, there are drop-down boxes for each of the fields of the configuration register. Additionally, the raw register values can be read and written by the **Temperature**, **Configuration**, **THyst**, and **TOS** controls in the upper right corner of the window.

Sample rate is determined by the **0x006 Conversion Rate[1:0]** drop-down box. Click **Sample Continuously** to read temperature register and plot on graph at the configured sample rate.

The **One-Shot Read** button triggers a single temperature reading. The MAX31875 must be in Shutdown mode to enable One-Shot Read.



Figure 1. MAX31875 EV Kit Main Window

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General Description of Hardware

The MAX31875 EV kit demonstrates the MAX31875 $\pm 2^{\circ}$ C-accurate local temperature sensor with I²C/SMBus interface. The EV kit includes the USB2PMB2 master for all I²C and I/O communication.

Extension Cable

If using a 6-pin extension cable between the USB2PMB2 and MAX31875PMB1 board, only the top row (pins 1–6) need to be connected.

Ordering Information

TYPE
EV Kit

#Denotes RoHS compliant.

MAX31875 EV Kit Bill of Materials

ITEM	REF_DES	DNI/DNP	QTY	MFG PART #	MANUFACTURER	VALUE	DESCRIPTION	COMMENTS
1	C1		1	C1608X8R1E104K080AA	TDK	0.1UF	CAPACITOR; SMT (0603); CERAMIC CHIP; 0.1UF; 25V; TOI = 10%: TG=:55 DEGC TO +150 DEGC: TC=X8R	
2	J1		1	PEC06SAAN	SULLINS ELECTRONICS CORP.	PEC06SAAN	CONNECTOR; MALE; THROUGH HOLE; BREAKAWAY; STRAIGHT; 6PINS	
3	JU4		1	TSW-106-08-S-D-RA	SAMTEC	TSW-106-08-S-D-RA	CONNECTOR; THROUGH HOLE; DOUBLE ROW; RIGHT ANGLE; 12PINS;	
4	U1		1	MAX31875	MAXIM	MAX31875	EVKIT PART-IC; MAX31875; PACKAGE OUTLINE: 21-100151A; PACKAGE CODE: Z40A0+1; WLP4;	
5	J2	DNI	1	PEC06SABN	SULLINS ELECTRONICS CORP.	PEC06SABN	CONNECTOR; MALE; THROUGH HOLE; BREAKAWAY; STRAIGHT; 6PINS; HEAD=0.230IN; TAIL=0.230IN	
6	PCB	-	1	MAX31875PMB	MAXIM	PCB	PCB Board:MAX31875PMB1 EVALUATION KIT	
TOTAL			6					

MAX31875 EV Kit Schematic



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MAX31875 EV Kit—Top Silkscreen

MAX31875 EV Kit PCB Layout Diagrams



MAX31875 EV Kit—Top



MAX31875 EV Kit—Layer 2

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MAX31875 EV Kit PCB Layout Diagrams (continued)



MAX31875 EV Kit—Layer 3

MAX31875 EV Kit—Bottom

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Revision History

REVISION	REVISION	DESCRIPTION	PAGES
NUMBER	DATE		CHANGED
0	8/17	Initial release	—

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