

system. The mechanical or thermal engineer who is tasked with the actual system evaluation should also be involved at the beginning of the process.

AUTOMATIC FAN CONTROL OVERVIEW

Figure 1 gives a top-level overview of the automatic fan control circuitry on the ADT7460/ADT7463. From a systems level perspective, up to three system temperatures can be monitored and used to control three PWM outputs. The three PWM outputs can be used to control up to four fans. The ADT7460/ADT7463 allow the speed of four fans to be monitored. Each temperature channel has a thermal calibration block. This allows the designer to individually configure the thermal characteristics of each temperature channel. For example, one may decide to run the CPU fan when CPU temperature increases above 60°C, and a chassis fan when the local temperature increases above 45°C. Note that at this stage, you have not assigned these thermal calibration settings to a particular fan drive (PWM) channel. The right side of the Block Diagram (Figure 1) shows controls that are fan-specific. The designer has individual control over parameters such as minimum PWM duty cycle, fan speed failure thresholds, and even ramp control of the PWM outputs. This ultimately allows graceful fan speed changes that are less perceptible to the system user.

STEP 1: DETERMINING THE HARDWARE CONFIGURATION

During system design, the motherboard sensing and control capabilities should not be an afterthought, but

addressed early in the design stages. Decisions about how these capabilities are used should involve the system thermal/mechanical engineer. Ask the following questions:

1. What ADT7460/ADT7463 functionality will be used?

- PWM2 or SMBALERT?
- 2.5 V voltage monitoring or SMBALERT?
- 2.5 V voltage monitoring or processor power monitoring?
- TACH4 fan speed measurement or over-temperature THERM function?
- 5 V voltage monitoring or overtemperature THERM function?
- 12 V voltage monitoring or VID5 input?

The ADT7460/ADT7463 offers multifunctional pins that can be reconfigured to suit different system requirements and physical layouts. These multifunction pins are software programmable. Various pinout options are discussed in a separate application note.

2. How many fans will be supported in system, three or four? This will influence the choice of whether to use the TACH4 pin or to reconfigure it for the THERM function.

3. Is the CPU fan to be controlled using the ADT7460/ADT7463 or will it run at full speed 100% of the time?

If run at 100%, it will free up a PWM output, but the system will be louder.

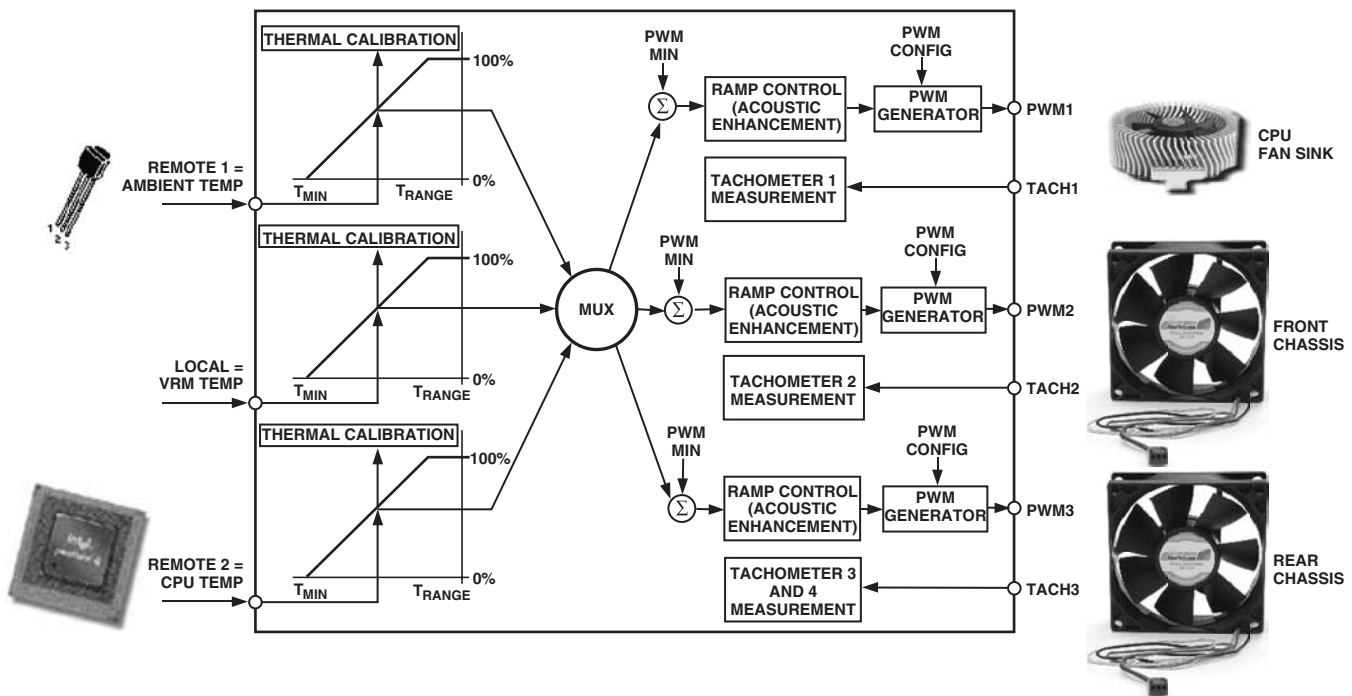


Figure 2. Hardware Configuration Example

