



Fire Alarm Control Unit

Maximizing Available Operational Time Under Battery



Wide Input Voltage



High Temp Operation



High Efficiency

The Customer's Challenge

Fire alarm control units are responsible for a myriad of functions while monitoring for fire and initiating the response to the fire. This includes everything from the obvious alarms and sprinklers, to the communication to the emergency services, recalling elevators and closing doors. New fire alarm controls can also be responsible for notifying when a component in the system approaches failure or has failed and needs replacement. At the same time systems must reduce the risk of errors and false alarms, which can cause unnecessary evacuations.

Being fundamental to building safety, these complex systems need to be robust and reliable under all operating conditions. In most countries they are subject to stringent regulatory requirements.

One customer needed to upgrade their system to ensure they met new legislation detailing the necessary performance under battery-only operation. This needed compatibility with the existing nominal 24V / 36V AC-DC supply, as well as the backup battery (21 – 29V). At the same time they wanted to significantly increase their system's functionality, thus increasing the demands on the power supply, without increasing the space available. Experts in fire control systems the design team lacked the levels of power expertise necessary to develop a complex discrete design.



The Solution

A ZVS buck-boost regulator's wide input range (21 – 60V) was able to deliver a 24V output from either input requirement, including fully discharged back-up battery. At just 1.40cm² this standard power component was able to be easily integrated into the solution, requiring few external components to be specified.

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The Results

Typically, fire alarm control units have a trade-off between the number of sensors accommodated and the battery-only operational time. By increasing the efficiency of the power supply over the previous solution (2%) the number of sensors could be increased without changing the battery specification.

In addition the higher derating point of the regulators compared to other solutions allowed the system to operate at increased ambient temperatures without unreliable fans or bulky mechanical cooling options.

The high frequency switching of the regulators meant that electrolytic capacitors could be replaced by film capacitors, improving system reliability still further.

Product Family Key Specifications

Cool-Power® ZVS Buck-Boost Switching Regulators

Input Voltages	16 – 34V, 21 – 60V
Output Voltages	12 – 34V, 21 – 36V, 36 – 54V
Output Power	Up to 240W continuous
Efficiency	Over 98% efficiency at >800kHz FSW
Dimensions	LGA SiP: 10 x 14 x 2.5mm