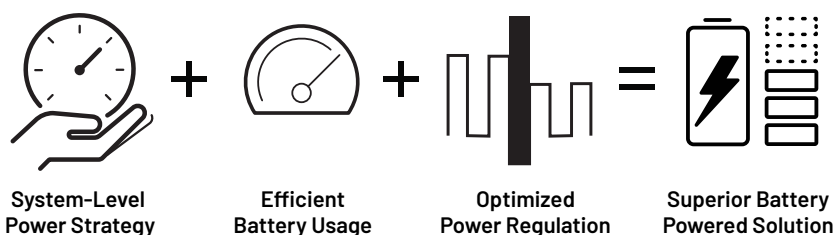


Industrial Battery-Powered Solutions

Power You Can Trust

Mobile robots, condition-based monitors, field instruments, industrial sensors, backup power supplies, and digital healthcare devices are just a few of the fast growing applications that require industrial battery-powered solutions that ensure both safe and efficient performance. Design requirements such as improved uptime, high power density, and advanced sensing and connectivity demand increasingly reliable battery power.



Optimizing your design for battery chemistry (Li-Ion, lead-acid, NiCad, etc.), performance, battery life, heat, and size requires a system-level power management strategy. Analog Devices offers a wide portfolio of technology and tools to support industrial battery-powered implementation and design.

Design Challenges and ADI Solutions

Challenges

- ▶ Limited budget for size, weight, and power
- ▶ Optimizing performance to battery type
 - ▶ Maintaining high precision requirements
 - ▶ Appropriate trade-offs with component choices
- ▶ Reliable battery backup power
 - ▶ Proper monitoring and reporting of battery health
 - ▶ Redundancy and last gasp functionality

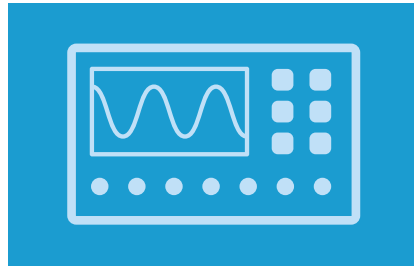
Solutions

- ▶ Devices with
 - ▶ High efficiency
 - ▶ Low heat
 - ▶ Small size
- ▶ Designs for any battery chemistry
 - ▶ Full portfolio supports battery ecosystem
 - ▶ Supercap to nanoPower Technology™ design options
- ▶ Successful battery power management
- ▶ Sequencing, supervisors, and input protection



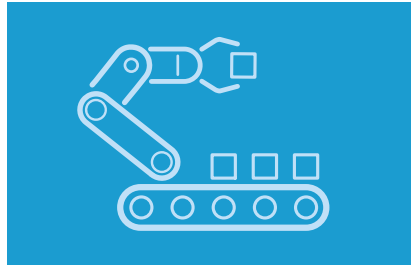
VISIT [ANALOG.COM/BATTERYPOWERED](https://www.analog.com/batterypowered)

Example Applications



Instrumentation and Measurement

- ▶ Electromagnetic flow meters
- ▶ Chemical analysis and analytical instruments (spectroscopy)
- ▶ Impedance measurement instruments (digital multimeter, handheld inductor, capacitive, resistance meter)



Industrial

- ▶ Battery charging, backup and authentication
- ▶ Compact calibrator
- ▶ Mining equipment
- ▶ Heavy machinery (airport vehicles, electric drills, forklifts)
- ▶ Collaborative robots



Digital Healthcare

- ▶ Diabetes monitoring technology
- ▶ Point-of-care diagnostics
- ▶ Therapy devices
- ▶ Vital signs monitoring (VSM)
- ▶ Noninvasive blood pressure measurement

Featured Products Lines for Battery-Powered Applications

Starting with the input, Analog Devices' solutions protect the battery from transients, while managing charging and system power from both battery- and line-powered sources. ADI power converters combine high efficiency, low heat, long run time, and low EMI, regardless of the power rails required in your system. Sequencing and supervisory products ensure system power comes up at the right level and time, providing analog insurance in the digital factory of tomorrow. Meanwhile, high performance LDO regulators and voltage references maintain precision at the Intelligent Edge.

Single-Cell Battery

- ▶ [Boost Controllers](#)
- ▶ [Boost DC-to-DC](#)
- ▶ [µModule® Boost](#)
- ▶ [Buck-Boost Controllers](#)
- ▶ [Buck-Boost DC-to-DC](#)
- ▶ [µModule Buck-Boost](#)

Multi-Cell Battery

- ▶ [Boost Controllers](#)
- ▶ [Boost DC-to-DC](#)
- ▶ [µModule Boost](#)
- ▶ [Buck Controllers](#)
- ▶ [Buck DC-to-DC](#)
- ▶ [µModule Buck](#)
- ▶ [Buck-Boost Controllers](#)
- ▶ [Buck-Boost DC-to-DC](#)
- ▶ [µModule Buck-Boost](#)

System Input 24 V Battery

- ▶ [High V/Med V Controllers](#)
- ▶ [High V/Med V DC-to-DC](#)
- ▶ [µModule High V/Med V](#)
- ▶ [Buck-Boost Controllers](#)
- ▶ [Buck-Boost DC-to-DC](#)
- ▶ [µModule Buck-Boost](#)

Charging

- ▶ [Buck-Boost Chargers](#)
- ▶ [µModule Buck-Boost Chargers](#)
- ▶ [Linear Chargers](#)
- ▶ [Switching Chargers](#)
- ▶ [Supercapacitor Chargers](#)
- ▶ [Fuel Gauge](#)

Low Noise, Control, and Input Protection

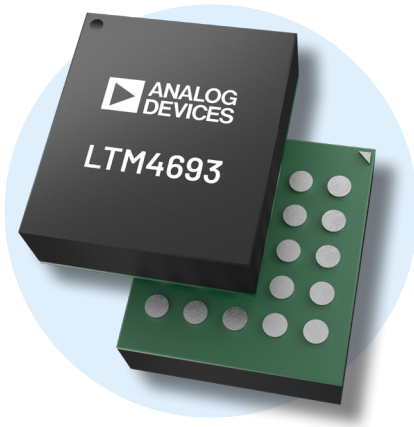
- ▶ [Ideal Diode Controllers](#)
- ▶ [Low V DC-to-DC](#)
- ▶ [Low Noise DC-to-DC](#)
- ▶ [Supervisor](#)
- ▶ [Low V LDO Regulators](#)

Intermediate Voltage

- ▶ [High V/Med V Controllers](#)
- ▶ [High V/Med V DC-to-DC](#)
- ▶ [µModule High V/Med V](#)
- ▶ [Multi-Output Buck Regulators](#)
- ▶ [Sequencers, Trackers, and Margining](#)
- ▶ [Supervisors](#)

Key Products

Analog Devices' battery power management ICs and μ Module devices create high performance solutions that meet stringent power requirements with leading-edge design and packaging technologies, including unmatched power densities, ultralow noise technology, and superior reliability. These battery power management solutions are also supported by the industry's most comprehensive start-to-finish power design tool suite to accelerate time to market while delivering best-in-class performance.



LTM4693

Ultrathin low V_{IN} , 2 A buck-boost μ Module regulator



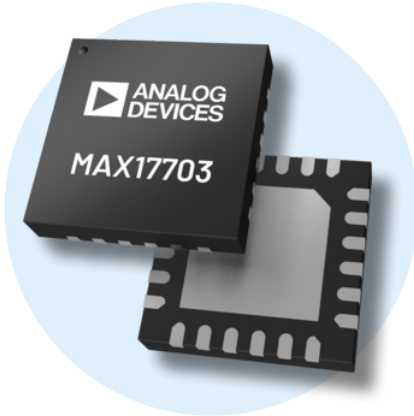
MAX16162

Nanopower supply supervisors, glitch-free power-up



LT8228

Bidirectional synchronous 100 V buck controller, reverse supply, reverse current, and fault protection



MAX17703

4.5 V to 60 V, synchronous step-down Li-Ion battery charger controller



ADP7118

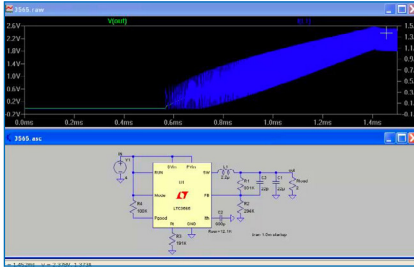
20 V, 200 mA, low noise, CMOS LDO linear regulator



LT8350

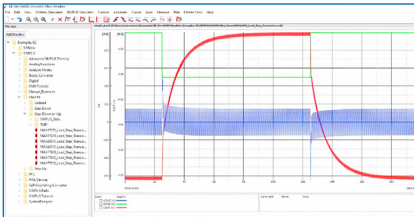
40 V_{IN}, 18 V_{OUT}, 6 A synchronous buck-boost Silent Switcher® regulator

Design Tools for Industrial Battery-Powered Solutions



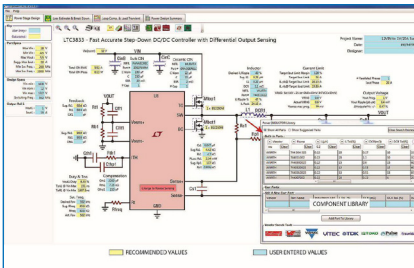
LTspice®

LTspice is a high performance SPICE simulation software, schematic capture, and waveform viewer with enhancements and models for easing the simulation of analog circuits. Included in the download of LTspice are macromodels for a majority of Analog Devices switching regulators, amplifiers, as well as a library of devices for general circuit simulation.



EE-Sim®

The EE-Sim DC-to-DC converter tool uses your requirements to quickly create a complete power design including a schematic, BOM with commercially available parts, and time and frequency domain simulations.



LTpowerCAD®

The LTpowerCAD program is a complete power supply design tool that can significantly ease power supply design. It provides recommendations for component values and performance estimates specific to the user's application with Analog Devices power products. Also included within the LTpowerCAD platform is LTpowerPlanner®, a system-level power architecture design tool.

Circuits from the Lab® reference designs are built and tested by ADI engineers with comprehensive documentation and factory-tested evaluation hardware.

Visit analog.com/cftl

**Circuits
from the Lab®**
Reference Designs

Engage with the ADI technology experts in our online support community. Ask your tough design questions, browse FAQs, or join a conversation.

Visit ez.analog.com

ADI EngineerZone™



Start your battery power management solution with Analog Devices' comprehensive portfolio:

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**ANALOG
DEVICES**
AHEAD OF WHAT'S POSSIBLE™

VISIT ANALOG.COM

For regional headquarters, sales, and distributors or to contact customer service and technical support, visit analog.com/contact.

Ask ADI technology experts tough questions, browse FAQs, or join a conversation at the EngineerZone Online Support Community. Visit ez.analog.com.

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