18 Build an Adaptable Controller
Last month, we saw how Project SMART students put together a flight controller that can be used in near space ballooning projects. This month, we’ll introduce the software and highlight some of its key features.
By Richard Levergood and Maria Panacopoulos

23 tDCS — Brain Hacking?
I’ve been following recent exciting research in neurostimulation using transcranial direct current stimulation (tDCS), so I thought I’d design a simple circuit to try it out myself.
By Walt Noon

30 Build an ESP8266 World Clock
Build on previous ESP8266 projects to add a customizable world clock to your arsenal of time keepers.
By Craig A. Lindley

36 Working with I²C Sensor Devices
Here’s a quick beginner-friendly tutorial that shows you how to interface and read data with this popular serial protocol.
By Derek Hildreth

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08 Q&A
Reader Questions Answered Here
Topics discussed this month:
• A Simple Current Source
• A Block Heater Power Indicator
• Arduino and LEDs — Redux

12 The Spin Zone
Adventures in Propeller Programming
A Block On the Old Chip
 BlocklyProp is a fun and easy way to build a Propeller program — piece by piece — using blocks. You should give BlocklyProp a try. If you’re new to the Propeller, it’s a way to get started without the worry of syntax rules. If you’re a crotchety old dude like me, it’s another tool to help others and, perhaps, to look at code from a different point of view.

Cover Model: Shasten Johnson
Layout and Art by Matthew Roddy

42 Building Your Own Microcontroller
Ever wanna make your own MCU? Then, follow along with this discussion that can be useful for anyone wanting to learn about computing basics, microcontrollers, embedded programming, and/or VHDL.
By Fábio Pereira

50 The Ham’s Wireless Workbench
Practical Technology from the Ham World
The Solar Eclipse and Ham Radio
Tune in to a very unusual on-the-air experience when there will be a rarely-seen total solar eclipse happening this August.

55 The Design Cycle
Advanced Techniques for Design Engineers
Put on a PiFace
Trying to bake up a Raspberry Pi with Python? Shake the snake and bake your Pi with B4J! This month, we will mount a PiFace on our Raspberry Pi and mix up some application code using a free Rapid Application Development tool called B4J.