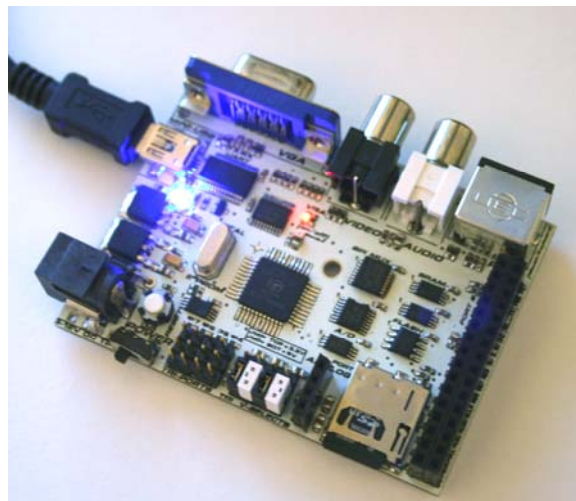


## Propeller C3™ (#32209)

Designed in cooperation with Nurve Networks LLC and André LaMothe, the Propeller C3 is the newest Propeller-based application platform from Parallax. The C3 is a true "Credit-Card-sized Computer" that augments the Propeller chip with a number of onboard peripherals to facilitate large scale and complex applications. These include industrial control, monitoring systems, high-level languages, robotics, gaming, and more. The C3 was designed to be compatible with other Propeller-based development boards such as the Propeller Demo Board and the HYDRA, so porting applications is a snap. Additionally, the C3 uses a novel SPI bus design that allows all the onboard peripherals to be accessed with a single SPI bus (3 signals) along with chip-select logic (2 signals) that supports up to 8 devices in total. Thus, the IO impact of all the onboard peripherals is minimal.



### Features

- Multicore Propeller P8X32A-Q44 with 5.00 MHz socketed crystal to upgrade for over-clocking experiments
- 64 KB Propeller boot EEPROM holds boot image plus 32 KB extra for data
- Supports USB or external wall adapter power sources
- Dual high-current 1.5 A, 3.3/5 V voltage regulators with heavy filtering
- VGA port with multiplexing logic to reuse IO's
- RCA Video/Audio ports for NTSC/PAL composite video
- PS/2 port for keyboard or mouse
- 1 MB SPI FLASH memory
- 2-channel Microchip MCP3202 SPI A/D converter with 12-bit resolution
- (2) Microchip 32K x 8 bit SPI SRAMs
- MicroSD card w/SPI interface
- 2 x 16 headers exporting generous IO and system signals

- (4) 3-wire servo port headers to directly drive servos from the Propeller
- Ultra-compact credit-card-sized PCB footprint: 3 x 2.175 in (75.9 x 55.2 mm)
- (4) Break-away mounting tabs, removable if not needed
- Open source hardware & software design
- Slick black and white industrial design sure to be the envy of all your friends

### Key Specifications

- Power requirements: 7.5–12 VDC, 300+ mA 2.1mm center-positive supply; OR power via high-power USB, hub port preferred
- Communication/Interface: USB, GPIO, microSD card
- Dimensions (without tabs): 3.0 x 2.175" (75.9 x 55.2 mm)
- Operating temperature: -40 to +85 °C

## Required Items

- Windows PC running the Propeller Tool programming software, available from the Downloads link at [www.parallax.com/Propeller](http://www.parallax.com/Propeller)
- USB A to Mini-B cable for connection and programming from PC to the Propeller C3

## Optional Items

- NTSC TV/monitor
- PS/2 Keyboard
- MicroSD or microSDHC card formatted FAT16 or FAT32
- Parallax NES Gamepad Controller Adapter board (Part #32368) and NES compatible gamepad
- 9 VDC power supply, 2.1 mm ID, 5.5 mm OD, center-positive, 300 mA or more
- High-power USB hub to plug the C3 into for high-current demands

## Precautions

- When powering the Propeller C3 from USB power, be careful not to draw too much current. High-power USB ports can supply up to **500 mA** of current. You can't damage the USB by drawing too much current, but you can cause a hardware lockout which requires a reboot of the machine or a power on/off cycle. Thus, if you want to draw a more than 100 mA of current from a USB connection make sure to do it through a high-power USB port.
- The Propeller C3, like any Propeller-based product, can be over-clocked if you're careful. Tests have been done with the 6.25 MHz crystal at 16x PLL multiplier (100 MHz) and the Propeller should run fine. Additionally, the C3's Propeller chip footprint has special heat-sinking SMT pads that are larger than required, designed to dissipate heat away from the chip faster than usual. Additionally, the voltage regulators each have a heat sink on them to dissipate heat as well and keep voltages very stable under high load.



**LOAD WARNING!** The Propeller C3 is designed such that you can power it from an external power supply OR a USB cable. **Do not insert the USB cable into the C3 while it's powered by the external power port**, or damage to the C3 and your computer or USB hub may occur!

## Resources and Downloads

A Quick Start Guide and complete product documentation is contained in the *Unleashing the Propeller C3* ebook (approx. 95 pages). The PDF is a free download; go to [www.parallax.com](http://www.parallax.com) and search for 32209.

**About the Example Code:** The software and demos for the Propeller C3, and the aforementioned ebook, are located on this Parallax FTP site: <ftp://ftp.propeller-chip.com/PropC3>

The FTP server is anonymous login, so just point your browser there to access it. You should drag the entire contents of the **PropC3\** directory to your HD, so you have a local copy and don't have constantly go back to the FTP site for source code and data files.



**Be sure to check out the Games and Apps directories.** They contain all of the software written by other authors, ports, etc. The Sources directory is primary the source from this manual and the tutorials, but Games and Apps have all the good stuff!