## PRODUCT OVERVIEW

With the growing popularity of USB as the method of choice for connecting peripheral devices to the personal computer, manufacturers are moving towards phasing out the legacy ports on PCs. Companies producing devices that use the RS-232 interface for exchange of data will soon have to find a new solution.   Instead of altering the hardware design, application software and host drivers for a current design, consider the option of a drop-in replacement for the existing RS-232 interface.  Cypress offers a complete solution for replacing a legacy serial interface with USB on an existing or new product – with an easy migration path to a true USB device.
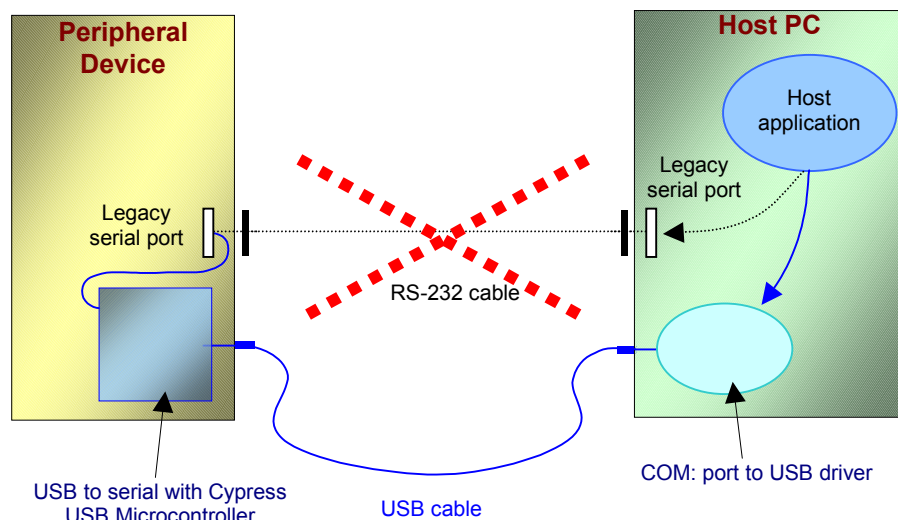
The USB to Serial Reference Design is a single chip solution for seamlessly upgrading a serial interface to USB. On the host side we provide a custom Windows driver that provides serial port emulation.  The driver can simultaneously emulate multiple RS-232 ports and allows complete control over the full range of baud rates, data byte lengths, stop bits and parity bits.

On the peripheral side, firmware is provided for different USB microcontrollers to support a range of application throughput needs.  The *enCoRe* parts support lower data rate applications while CY7C64013 handles higher data rate applications.

We provide source code for all of the firmware and a Design Notes document describing the system architecture. Additionally the design includes Windows based applications for driver installation, serial data transmission testing with the driver, and peripheral testing without the custom driver.  Cypress provides faster time-to-market and the lowest overall system cost with our USB to Serial Reference Design.

| FEATURES | BENEFITS |
|---|---|
| • COM port emulation driver | • No change to host application interface |
| • Compatible with HID class driver | • Easy migration to completely legacy free device |
| • Single chip solutions | • Reduces board space<br>• Minimizes total cost |
| • Multiple chips supported<br>   ▪ enCoRe:  600-56K baud (800 bytes/sec)<br>   ▪ CY7C64013:  600-56K baud (4K bytes/sec) | • Match solution to cost and throughput needs |
| • Supports RI, CD, RTS, CTS, DTR, and DSR control and monitoring<br>• Full control of baud rate, data bytes, stop bits and parity bits | • Compatible with legacy interface |
| • USB 2.0 Specification Compliant | • All software is compatible with industry standards for low and full speed devices |
| • Passes USBCheck 3.2 Chapter 9, Chapter 11, and Hidview tests | • Compatible with industry certification standards |
| • Windows based test applications provided | • Allows flexibility in testing of complete system or peripheral only |
| • Driver support on Windows 98, 2000, Me, XP | • Robust operating system support |
| • Driver Installer application | • Streamlines installation and reduces errors<br>• Minimizes support requirements |

For ordering information contact your local sales representative.
Call toll-free in the US (800)-858-1810, or visit our web site at www.cypress.com

**Peripheral Device**

**Host PC**

Host application

Legacy serial port

Legacy serial port

RS-232 cable

USB to serial with Cypress USB Microcontroller

USB cable

COM: port to USB driver

### Migration path from RS-232 to USB

Phase 1: Transition quickly to USB with the Cypress USB to Serial design. Can be used as a long term solution if desired.

Phase 2: The design allows straightforward migration to the HID class driver supplied with the operating system, thus removing the need for custom driver support. Requires modification of existing software to communicate with a USB device instead of RS-232

Phase 3: Alter hardware architecture to communicate directly with USB chip in most efficient manner possible. Removes potential limitations of a serial interface.

## REFERENCE DESIGN KIT (CY4601)

The USB to Serial Reference Design kit is a complete resource for developers to utilize and customize in the development of their own product. Each kit includes:

- Complete documentation
  - Design Notes for *enCoRe* and CY7C64013
  - Quick Start Guide
- CD-ROM containing:
  - Firmware source code
  - Documentation
  - Serial port emulation driver
  - Driver installation application
  - Test applications
  - Visual Basic example
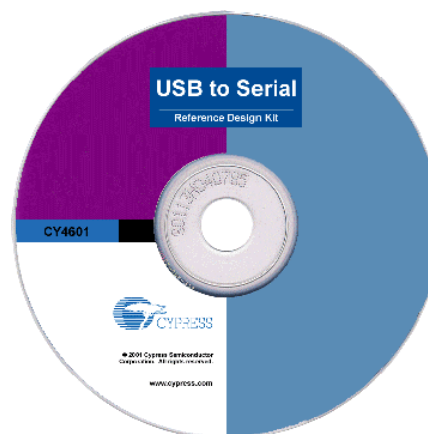
## ORDER INFORMATION

Note: Modifications to the firmware will require the appropriate development kit and the necessary programming hardware. Please refer to the Cypress web site for a cross reference table of the appropriate hardware.

| REFERENCE DESIGN KIT PART NUMBER | BASE PART | DEVELOPMENT KIT |
|---|---|---|
| CY4601 | *enCoRe* | CY3654 – Platform Board<br>CY3654-PO5 – Personality Board |
| | CY7C64013 | CY3654 – Platform Board<br>CY3654-PO3 – Personality Board |

Note: Untested sample firmware for the EZ-USB family is also included on the reference design kit CD-ROM. This firmware is compatible with the USB to Serial driver. It is provided as-is and can be used as a starting point to develop a serial device based on these parts.

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