

# UPort® 1600-16 Series

## 16-port RS-232 and RS-232/422/485 USB-to-serial converters



- > Hi-Speed USB 2.0 for up to 480 Mbps USB transmission
- > 921.6 kbps maximum baudrate for super fast data transmission
- > 15N high retention USB type B connector
- > 128-byte FIFO and on-chip H/W, S/W flow control
- > Standard 19-inch rack-mountable
- > COM port assignments maintained across different PCs
- > Mini DB9 female to terminal block adapter for easy wiring
- > Drivers provided for Windows, WinCE, and Linux



### : Overview

The UPort® 1600-16 USB-to-serial converters allow you to connect 16 RS-232 or RS-232/422/485 devices to your laptop or workstation through the USB (Universal Serial Bus) port. The UPort® 1600-16

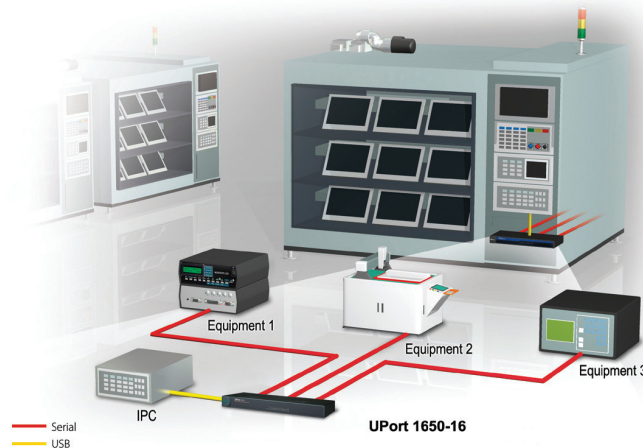
converters are compatible with new and legacy serial devices, and are perfect for instrumentation, and manufacturing applications.

### : Typical Application—TFT-LCD Manufacturing

Manufacturing TFT-LCD (thin film transistor liquid crystal display) panels is a complicated and highly technical process. The three major stages in TFT-LCD panel production are the array, LC cell, and module assembly processes. In addition, each finished panel must also pass a series of quality inspection tests, which include defect inspection and lighting tests. The most challenging part of the TFT-LCD manufacturing process is achieving zero fault tolerance for high quality and productivity. One of our customers needed a USB-to-serial solution to transmit data between a host and quality inspection equipment in the TFT-LCD manufacturing process. In such a demanding manufacturing environment, adopting multiple ports and Moxa's ruggedly designed UPort® 1650-16 USB-to-serial converter proved to be the best option.

The UPort® 1650-16 has the following features:

- Standard 19-inch rackmount size and metal housing for industrial-grade requirements
- Up to 16 ports for easy USB-to-serial expansion
- 3-in-1 serial ports for a cost-effective solution
- True USB 2.0 Hi-Speed transmission for greater productivity
- 128-byte FIFO and on-chip hardware and software flow control to ensure stable data transmission during inspection
- Each serial port has its own LED indicator for easy troubleshooting



## Specifications

### USB Interface

**Compliance:** USB 1.1/2.0 compliant  
**Connector:** USB type B  
**Speed:** 480 Mbps (Hi-Speed USB) and 12 Mbps (Full-Speed USB)

### Serial Interface

**Number of Ports:** 16  
**Serial Standards:**  
 UPort 1610-16: RS-232  
 UPort 1650-16: RS-232/422/485  
**Connector:** DB9 male

### Performance

**Baudrate:** 50 bps to 921.6 kbps (including 500 kbps)

### Serial Communication Parameters

**Data Bits:** 5, 6, 7, 8  
**Stop Bits:** 1, 1.5, 2  
**Parity:** None, Even, Odd, Space, Mark  
**Flow Control:** RTS/CTS, XON/XOFF  
**FIFO:** 128 bytes

### Serial Signals

**RS-232:** TxD, RxD, RTS, CTS, DTR, DSR, DCD, GND  
**RS-422:** TxD+(B), TxD-(A), RxD+(B), RxD-(A), GND  
**RS-485-4w:** TxD+(B), TxD-(A), RxD+(B), RxD-(A), GND  
**RS-485-2w:** Data+(B), Data-(A), GND  
**RS-485 Data Direction:** ADDC® (Automatic Data Direction Control)

### Operating Systems

**Windows Real COM Drivers:** Windows 2000, Windows XP/2003/Vista/2008/7/8/8.1 (x86/x64), Windows 2012 (x64), Windows Embedded CE 5.0/6.0

**Linux Real TTY Drivers:** Linux 2.6.x, 3.x

*Note: Please refer to Moxa's website for the latest driver support information.*

### Physical Characteristics

**Housing:** SECC sheet metal (1 mm)  
**Weight:**

Product only: 2475 g (5.45 lb)

Packaged: 3485 g (7.68 lb)

**Dimensions:** 440 x 45.5 x 198.1 mm (17.32 x 1.79 x 7.80 in)

### Environmental Limits

**Operating Temperature:** 0 to 55°C (32 to 131°F)

**Storage Temperature:** -20 to 75°C (-4 to 167°F)

**Ambient Relative Humidity:** 5 to 95% (non-condensing)

**Altitude:** Up to 2000 m

*Note: Please contact Moxa if you require products guaranteed to function properly at higher altitudes.*

### Standards and Certifications

**Safety:** UL 60950-1  
**EMC:** CE, FCC  
**EMI:** EN 55022 Class A, EN 61000-3-2, EN 61000-3-3, FCC Part 15 Subpart B Class A  
**EMS:** EN 55024, EN 61000-4-2, EN 61000-4-3, EN 61000-4-4, EN 61000-4-5, EN 61000-4-6, EN 61000-4-8, EN 61000-4-11  
**Green Product:** RoHS, CRoHS, WEEE

### Power Requirements

**Power Consumption:**  
 UPort 1610-16: 130 mA @ 100 VAC  
 UPort 1650-16: 150 mA @ 100 VAC  
**Input Voltage:** 100 to 240 VAC external power

**MTBF** (mean time between failures)

**Time:**  
 UPort 1610-16: 138,704 hrs  
 UPort 1650-16: 120,001 hrs

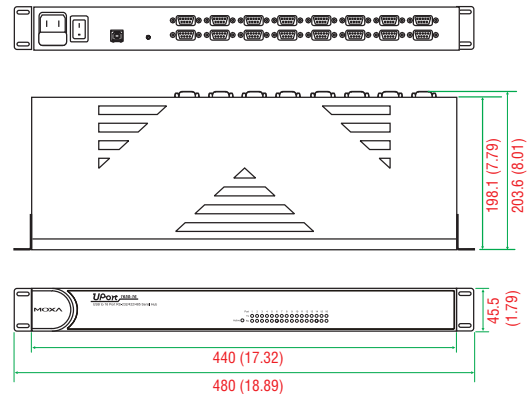
**Database:** MIL-HDBK-217F

### Warranty

**Warranty Period:** 5 years  
**Details:** See [www.moxa.com/warranty](http://www.moxa.com/warranty)

### Dimensions

Unit: mm (inch)



## Ordering Information

### Available Models

**UPort 1610-16:** 16-port RS-232 USB-to-serial converter

**UPort 1650-16:** 16-port RS-232/422/485 USB-to-serial converter

**Optional Accessories** (can be purchased separately)

**Mini DB9F-to-TB Adapter:** DB9 female to terminal block adapter for RS-422/485 applications

**Rackmount Kit:** Metal plates and screws

### Package Checklist

- 1 UPort 1600-16 USB-to-serial converter
- USB-IF certified cable
- Power cord
- 1 mini DB9 female to terminal block adapter (UPort 1650-16 only)
- Documentation and software CD
- Quick installation guide (printed)
- Warranty card