OXFORD SEMICONDUCTOR

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OXUSB954 Development Board Hardware User Guide

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Contents

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This manual documents the OXUSB954 development board hardware in the OXUSB954 Development Suite. The OXUSB954 device is the Oxford Semiconductor USB to quad serial port bridge.

Ensure that this is the correct document for your board.

Revision Information

Table I documents the revisions of this manual

Table I Revision Information

Revision	Modification
Dec 2004	First publication

Typographic conventions

In this manual, the conventions listed in Table II apply.

Table II Typographic Conventions

Convention	Meaning
Italic Letters With Initial Capital Letters	A cross-reference to another publication
`Courier Font`	Software code, or text typed in via a keyboard
1, 2, 3	A numbered list where the order of list items is significant
■	A list where the order of items is not significant
"Title"	Cross-refers to another section within the document
	Significant additional information

Ordering Information

The order code for the OXUSB954 Development Suite is EV-OXUSB954.
Contacting Oxford Semiconductor

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Chapter 1

Development Board

Introduction

The Oxford Semiconductor OXUSB954 bridge device transfers data between USB and up to four serial peripheral devices. It provides full-speed data transfers and plug-and-play capabilities to peripherals with a serial port interface, and is ideal for use in high-speed modems or ISDN terminal adapters. The interface is transparent and requires no firmware changes, allowing peripherals to interface with USB with minimum modification.

- OXUSB954 development board
- USB a to b connector cable
- Serial cable DB9 connector cable (straight-through)
- Installation CD containing the OXUSB95*x* drivers and supplied bridge application firmware

For details of the installation CD contents, see the accompanying bill-of-materials document.

Follow the instructions in "OXUSB954 Development Board First-Time Use" on page 6 before plugging in the OXUSB954 development board.

Figure 1 on page 2 shows the OXUSB954 evaluation board.

Figure 1 OXUSB954 Development Board Showing Connectors

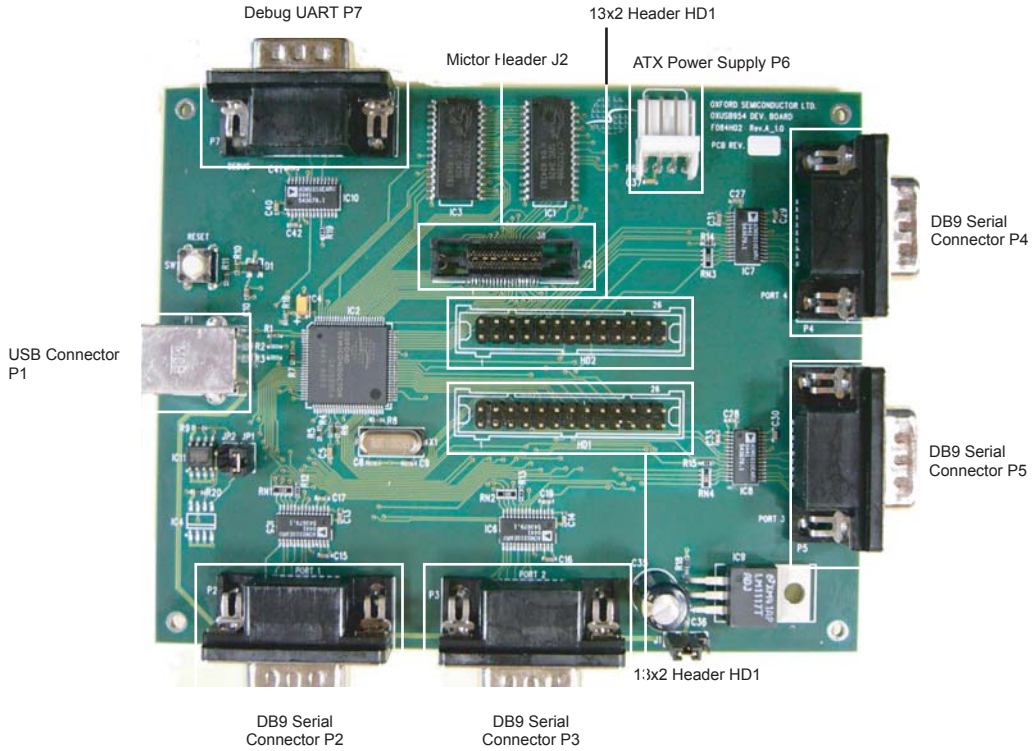
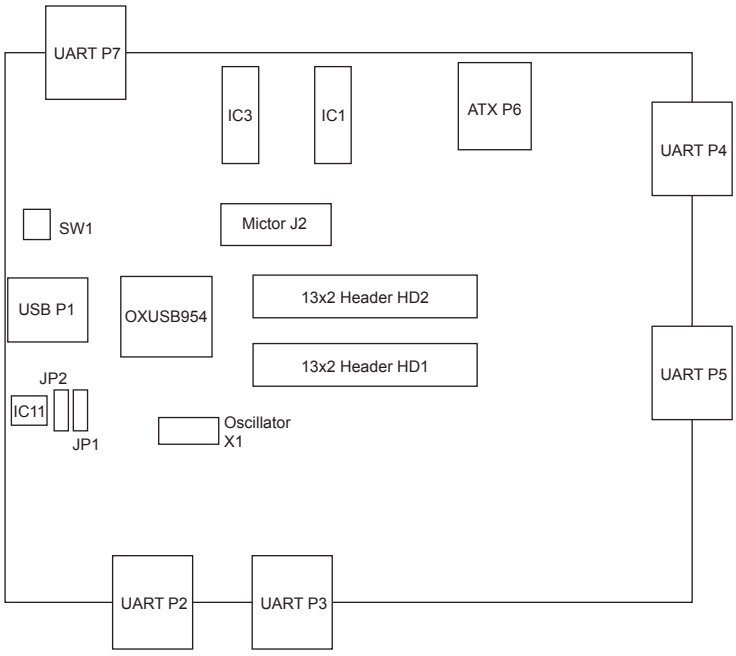


Figure 2 on page 2 identifies the principle features on the development board assembly.

Figure 2 Development Board Features



Development Board Features

This section documents the features on the OXUSB954 development board. For further details, see the OXUSB954 schematics supplied on the development suite installation CD.

The OXUSB954 development board provides all development hardware necessary to evaluate its capabilities.

Power Supply

The OXUSB954 evaluation board usually obtains power using the USB cable supply (P1); however, there is an additional ATX connector (P6) which can be used with a bench supply if required.

The jumper J1 is used to select the power source. The board as supplied is configured to use USB cable power.

External Memory

The OXUSB954 development board contains two banks of 8-bit RAM (IC1, IC3) accessed via the external 16-bit memory interface on the OXUSB954. The RAM can be configured as 1×8-bit, 2×8-bit or 1×16-bit memory under software control. See the OXUSB954 data sheet for further details.

Jumpers

JP1 on the OXUSB954 development board is used to control device reprogramming as follows:

- If JP1 is fitted & JP2 is not fitted

  The device reads and executes the EEPROM application when the device is powered up or reset (removing and reconnecting the USB cable resets the device)

- If JP1 is not fitted & JP2 is fitted

  The EEPROM can be reprogrammed over the USB interface using a PC running the Oxford Semiconductor USB uploader utility. See "Uploading Code" on page 6 for details

The OXUSB954 development board is supplied pre-programmed with the bridge application and with JP1 fitted.

Interfaces

The OXUSB954 development board contains the following interfaces:

- USB connector—for data transfer & reprogramming the EEPROM; also supplies power to the device
- 4 UART connectors—for data transfer
- UART debug header—for serial debugging
- Two 13×2 connectors—for debugging & testing; see Table 3 on page 4 for pin allocations
- Mictor header—for debugging & testing;

Connectors

There are two 13×2 connectors on the OXUSB954 development board, HD1 and HD2. providing debugging assistance and test points. All pins are chip outputs which can be tested and used to debug applications. In addition, a Mictor header provides debug access to the SRAM interface, as shown in Table 5 on page 5.

Table 3 details the HD1 connector pins on the OXUSB954 development board.

Table 3 HD1 Connections *(1)*

Pin Number	Function	I/O	Pin Number	Function	I/O
1	U_SOUT1	O	2	U_DSR2	O
3	U_SIN1	O	4	U_DCD2	O
5	U_RTS1	O	6	U_RI2	O
7	U_DTR1	O	8	U_SOUT3	O
9	U_CTS1	O	10	U_SIN3	O
11	U_DSR1	O	12	U_RTS3	O
13	U_DCD1	O	14	U_DTR3	
15	U_RI1	O	16	U_CTS3	O
17	U_SOUT2	O	18	U_DSR3	O
19	U_SIN2	O	20	U_DCD3	
21	U_RTS2	O	22	U_RI3	O
23	U_DTR2	O	24	GND	O
25	U_CTS2	O	26	GND	

Notes:
1 These test pins can be used to monitor the signals on UARTS 1 TO 3.

Table 4 lists the HD2 connector pins.

Table 4 HD2 Connections

Pin Number	Function	I/O	Pin Number	Function	I/O
1	U_SOUT4	O	2	SDA	O
3	U_SIN4	O	4	SCL	O
5	U_RTS4	O	6	RXD_DEBUG	O
7	U_DTR4	O	8	TXD_DEBUG	
9	U_CTS4	O	10	nXRD	O
11	U_DSR4	O	12	nXWR	O
13	U_DCD4	O	14	nXRAMSEL	
15	U_RI4	O	16	nXROMSEL	O
17	NC	O	18	nXBHE	O
19	NC	O	20	NC	
21	NC	O	22	NC	O
23	GND	O	24	GND	O
25	GND	O	26	GND	

Notes:
1 These test pins can be used to monitor the signals on UART 4, the debug UART and external memory.

Table 5 lists the Mictor header pins.

Table 5 Mictor Header Connections (Sheet 1 of 2)

Pin Number	Function	I/O	Pin Number	Function	I/O
1	NC	O	2	NC	O
3	NC	O	4	NC	O
5	NC	O	6	NC	O
7	A15	O	8	D15	
9	A14	O	10	D14	O
11	A13	O	12	D13	O
13	A12	O	14	D12	O
15	A11	O	16	D11	O
17	A10	O	18	D10	O
19	A9	O	20	D9	O
21	A8	O	22	D8	O
23	A7	O	24	D7	O
25	A6	O	26	D6	O
27	A5	O	28	D5	O
29	A4	O	30	D4	O
31	A3	O	32	D3	O
33	A2	O	34	D2	O
35	A1	O	36	D1	O

Table 5 Mictor Header Connections (Sheet 2 of 2)

Pin Number	Function	I/O	Pin Number	Function	I/O
37	A0	O	38	D0	O
39	GND	O	40	GND	O
41	GND	O	42	GND	O
43	GND	O			

OXUSB954 Development Board First-Time Use

Before plugging in the OXUSB950 development board, run the file **install.exe** located on the installation CD in the directory **/Drivers**.

The install process requires acceptance of the license conditions before it creates the directory **OXUSB_Drivers** on the local hard drive and unpacks the driver files to it. It also copies **setup.exe** to OXUSB_Drivers. Run **setup.exe** when the install is complete.

The board can be plugged in after **setup.exe** has run, allowing the PC to recognize it and configure the serial ports.

When the OXUSB954 is connected to a host PC, the COM ports are configured in the sequence given in Table 6.

Table 6 PC COM Port Configuration Sequence

OXUSB953 Serial Connector	PC COM Port
P4	First COM port allocated
P5	Second COM port allocated
P3	Third COM port allocated
P2	Fourth COM port allocated

Use the Windows Device Manager to see the COM port assigned by the PC.

Uploading Code

The Oxford Semiconductor USB EEPROM uploader utility is used to upload code to the EEPROM on the OXUSB954 development board. The utility is provided on the OXUSB950 development kit installation CD.

For details of how to upload code over the USB interface, refer to the application note *Using the USB EEPROM Uploader*.

To initiate the upload sequence, jumper JP1 on the OXUSB954 development board must not be fitted and JP2 must be fitted when the USB cable is plugged in. After the device has initialized, fit JP1 and remove JP2 to read and execute the EEPROM code.

The bridge application pre-programmed into the OXUSB954 development board is also supplied on the installation CD in the directory **/OXUSB954_firm**.