HX2VL™ Development Kit Guide

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1. Getting Started

The CY4607, CY4607M, CY4608, and CY4608M HX2VL™ Development Kits (DVK) display the functionality of Cypress's latest USB 2.0 high-speed hubs. This document describes how to use the CY4607, CY4607M, CY4608, and CY4608M Cypress HX2VL development kits and discusses the configuration options that HX2VL provides. CY4607/CY4608 are CY7C65632-based 4-port single transaction translator (TT) hub DVKs; the CY4607M/CY4608M are CY7C65642-based 4-port multi TT hub DVKs.

1.1 Kit Contents

1.1.1 CY4607

The CY4607 HX2VL Development Kit includes:

- CY7C65632 48-TQFP package based USB 2.0 4-port hub board
- 5 VDC, 2.5 A wall power supply
- USB cable (A-B)
- Quick start guide

1.1.2 CY4607M

The CY4607M HX2VL Development Kit includes:

- CY7C65642 48-TQFP package based USB 2.0 4-port multi-TT hub board
- 5 VDC, 2.5 A wall power supply
- USB cable (A-B)
- Quick start guide

1.1.3 CY4608

The CY4608 HX2VL Development Kit includes:

- CY7C65632 28-QFN package based USB 2.0 4-port hub board
- 5 VDC, 2.5 A wall power supply
- USB cable (A-B)
- Quick start guide

1.1.4 CY4608M

The CY4608M HX2VL Development Kit includes:

- CY7C65642 28-QFN package based USB 2.0 4-port multi-TT hub board
- 5 VDC, 2.5 A wall power supply
- USB cable (A-B)
- Quick start guide

1.2 HX2VL (CY7C65642/32/34)

HX2VL is Cypress's next generation family of high-performance, ultra low-power USB2.0 hub controllers. Cypress HX2VL has integrated external components such as a 5 V to 3.3 V regulator and pull-up/pull-down resistors. It provides the option of configuring through SPI/I2C EEPROM or GPIO settings reducing the overall bill of materials.

HX2VL portfolio has two and four port, single and multiple TT options, and is capable of supporting both self-powered and bus-powered hub designs. It is also available in space saving 48-pin (7×7 mm) TQFP and 28-pin (5×5 mm) QFN packages.

1.3 Host Controller Hardware and Software

Latest PCs are pre-configured with high-speed USB support. All major operating systems come with in-built hub (driver) support. Therefore, you can start working with the HX2VL right away.

Some host controllers obtained from third-party vendors, may have drivers with the add-in card. Contact your supplier for more information.

1.4 Set Up the HX2VL CY4608/CY4608M Hardware

Due to the hot-plug nature of USB, hardware setup is easy.

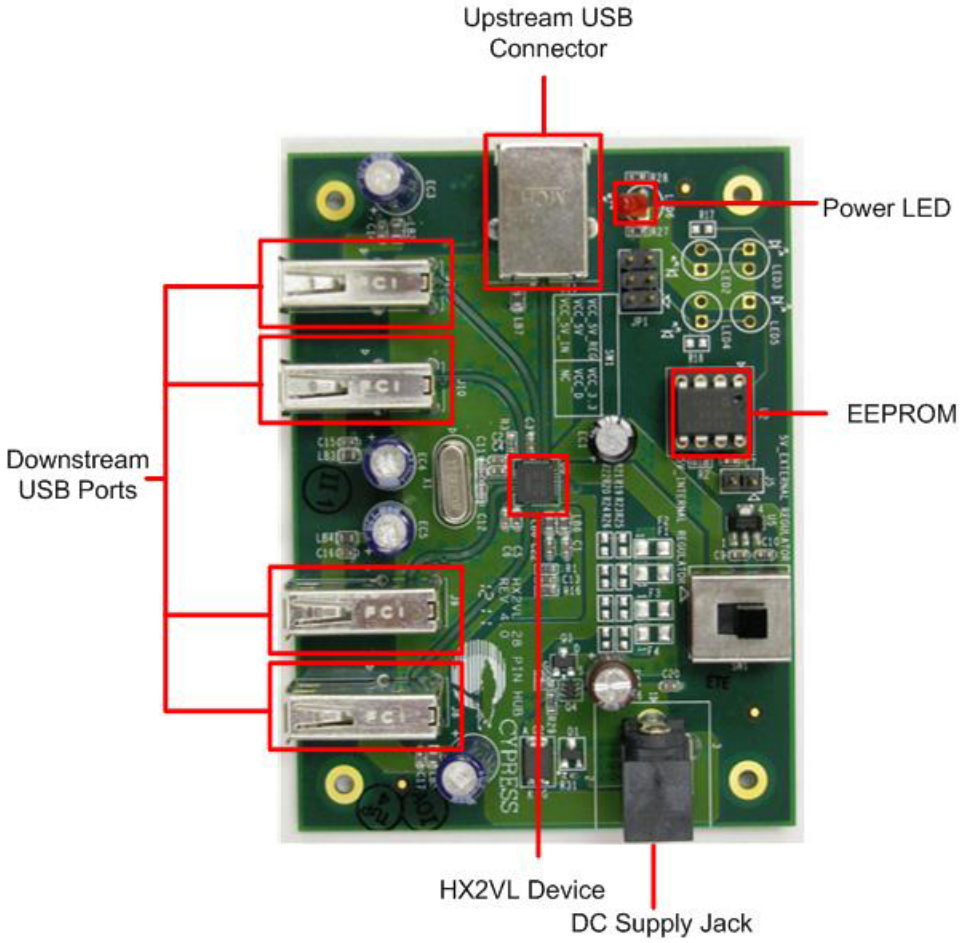
1. Figure 1-1 shows the CY4608M, based on the 28-QFN of CY7C65642; CY4608 is based on 28-QFN of CY7C65632. Determine if the hub design is a bus-powered or self-powered hub. A bus-powered hub does not require any change.
2. For a self-powered hub, plug the wall mounted power supply (provided) into an AC power receptacle providing power in the range, 100 V–240 V, 50 or 60 Hz. Connect the power supply's plug (5 V) to the hub's 'DC SUPPLY' jack.
3. Determine if the hub design will operate with internal regulator or external regulator and set the switch SW1 accordingly.
4. To enable I^2C EEPROM, set J5 (place jumper).
5. The Blaster utility is used for in-system programming of I^2C EEPROM (using USB requests). It is available as part of the DVK after installation, at the following location:

   CY4608: `C:\Cypress\USB\CY4608-HX2VL\1.0\Software`

   CY4608M: `C:\Cypress\USB\CY4608M-HX2VL\1.0\Software`

   Note The path may vary based on installation.
6. To connect to the PC, plug a USB A-B cable (provided) into the hub's 'UP STREAM' connector. Plug the other end of the cable into one of the PC's host controller ports. If the hub is plugged into a Full-Speed port on the host controller, the hub will operate at full speed.
7. The hub is a 4-port hub. It is now ready for any Low-Speed, Full-Speed, or High-Speed devices to be plugged into any and all of the ports.

Figure 1-1. CY4608M



1.5 Set Up the HX2VL CY4607/CY4607M Hardware

Due to the hot-plug nature of USB, hardware setup is easy.

1. Figure 1-2 shows the CY4607M, based on the 48-TQFP of CY7C65642; CY4607 is based on 48-TQFP of CY7C65632. Determine if the hub design is a bus-powered or self-powered hub. A bus-powered hub does not require any change.
2. For self-powered hub, plug the wall mounted power supply (provided) into an AC power receptacle providing power in the range, 100 V-240 V, 50 or 60 Hz. Connect the power supply's plug (5 V) to the hub's 'DC SUPPLY' jack.
3. Determine if the hub design will operate with internal regulator or external regulator and set the switch SW1 accordingly.
4. Determine if the hub will operate with I^2C EEPROM or SPI EEPROM and set J5 or J6 (place jumper to enable the corresponding EEPROM) accordingly.
5. When SPI EEPROM is used, J7 and J8 should be in position 2-3.
6. The Blaster utility is used for in-system programming of I^2C EEPROM (using USB requests). It is available as part of the DVK after installation, at the following location:

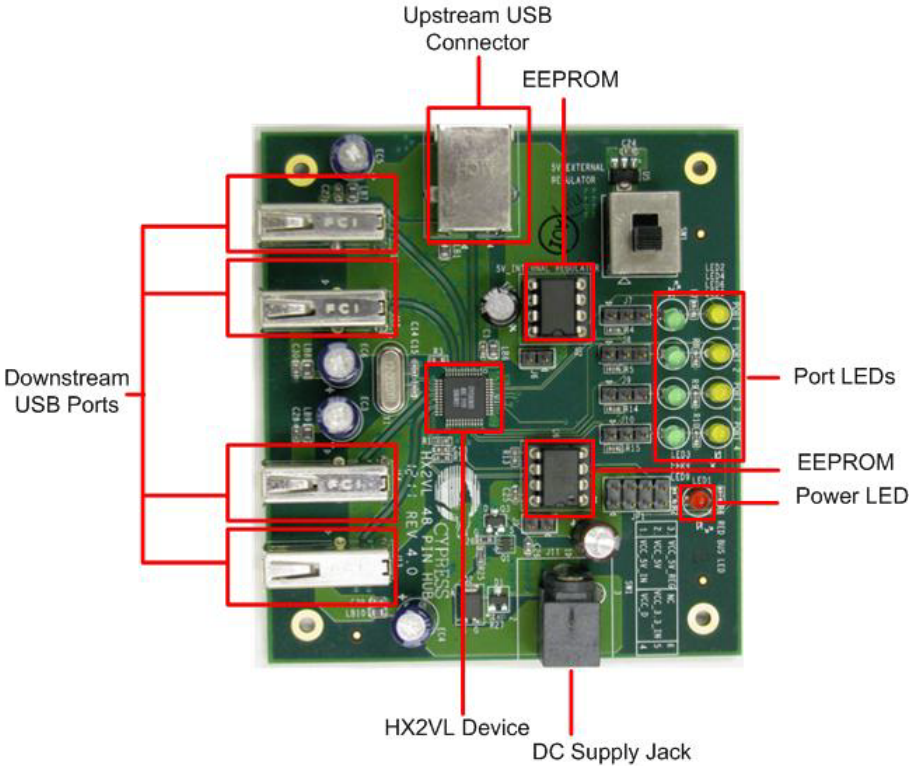
   CY4607: `C:\Cypress\USB\CY4607-HX2VL\1.0\Software`

   CY4607M: `C:\Cypress\USB\CY4607M-HX2VL\1.0\Software`

   Note The path may vary based on installation.

7. Determine the removable ports in the design and set J7, J8, J9, and J10 (place jumper in position 1-2 to configure the port as a fixed port, position 2-3 to use the green LED).
8. The hub is a 4-port hub. Each port in the hub has two associated LEDs. The green LED indicates that the port is enabled. The amber LED indicates that the port has an exception condition.
9. To connect to the PC, plug a USB A-B cable (provided) into the hub's 'UP STREAM' connector. Plug the other end of the cable into one of the PC's host controller ports. If the hub is plugged into a Full-Speed port on the host controller, the hub will operate at full speed.
10. The hub is now ready for any Low-Speed, Full-Speed, or High-Speed devices to be plugged into any and all of the ports.

Figure 1-2. CY4607M



1.6 Additional Resources

- HX2VL CY7C65632 Datasheet
- HX2VL CY7C65642 Datasheet
- AN69025: Schematic Review Checklist for HX2VL
- AN72332: HX2VL PCB Design Recommendation
- http://www.cypress.com/go/CY4607
- http://www.cypress.com/go/CY4608
- http://www.cypress.com/go/CY4607M
- http://www.cypress.com/go/CY4608M

1.7 Document Revision History

Table 1-1. Revision History

Revision	PDF Creation Date	Origin of Change	Description of Change
**	02/27/2012	AASI/PDAV	New user guide for CY4607/CY4608
*A	04/18/2012	AASI	Added information for CY4607M and CY4608M