User Guide

Eclipse® Upgrade Guide

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Clear-Com® AN HME COMPANY

Document Reference

Clear-Com Eclipse HX Upgrade Guide

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Contents

1 Important Safety Instructions 1

Safety symbols 2

Mains power cord 2

2 Introduction 1

2.1 Planning the upgrade to Eclipse HX 1

2.1.1 Client / Server installations 2

2.1.2 Roll back strategy 3

2.1.3 Supplied DVDs 3

2.1.4 Fitting the Eclipse HX door panel 4

2.1.5 Help with upgrading 9

3 Quick reference: Upgrading to Eclipse HX v8.5 10

3.1 Upgrading from 5.2.4 10

3.2 Upgrading from 7.0 13

3.3 Upgrading from 7.1 16

3.4 Upgrading from 7.5 19

3.5 Upgrading from 7.6 22

3.6 Upgrading from 8.0 25

4 Upgrading to Eclipse HX v8.5 28

4.1 Backing up your ECS v5.2.4 configurations 28

4.2 Backing up your EHX 7.0/7.1/7.5/7.6/8.0 configurations 28

4.3 Installing EHX 28

4.4 Importing your configurations into EHX 29

4.5 Updating Production Maestro Pro 30

5 Upgrading the CPU cards 31

5.1 Changing the CPU card PROM 31

5.2 Changing the CPU card RAM 32

5.3 Changing the CPU card DIP switches 33

5.4 Upgrading the CPU card application code 33

5.4.1 Upgrading the CPU card application code using EHX with Ethernet connection 33

5.4.2 Upgrading the CPU card application code with EHX using a serial link 36

5.4.3 Upgrading the CPU Card application code using Tera Term 38
5.5 Setting the matrix type 44
5.6 Checking the CPU card application code version 45
5.7 Upgrading CPU Card U53 CPLD 45
5.8 Upgrading CPU Card U1 CPLD 47
5.9 Upgrading the CPU card U53 CPLD code with Xilinx tools 48
5.10 Upgrading the CPU card U1 CPLD code with Xilinx tools 50
5.11 Downloading a test configuration to the CPU card using EHX 53
5.12 Forcing the CPU card to the factory default IP address 53
6 Upgrading the Eclipse HX-PiCo 55
6.1 Changing the Eclipse HX-PiCo PROM 55
6.2 Changing the Eclipse HX-PiCo RAM 56
6.3 Changing the Eclipse HX-PiCo DIP switches 58
6.3.1 Upgrading the Eclipse HX-PiCo application code using EHX with Ethernet 58
6.3.2 Upgrading the Eclipse HX-PiCo application code using EHX with serial link 61
6.3.3 Upgrading the Eclipse HX-PiCo application code using Tera Term 63
6.4 Upgrading the Eclipse HX-PiCo MVX code 68
6.4.1 Upgrading the Eclipse HX-PiCo MVX application code with EHX 68
6.4.2 Upgrading the Eclipse HX-PiCo MVX boot and/or application code using the Renesas FDT 70
6.5 Checking the Eclipse HX-PiCo application code and MVX code versions 75
6.6 Upgrading the Eclipse HX-PiCo CPLD and FPGA code with Xilinx tools 76
6.7 Download a test configuration into the Eclipse HX-PiCo using EHX 79
6.8 Forcing the Eclipse HX-PiCo to the factory default IP address 79
7 Upgrading the MVX-A16 card 81
7.1 Identifying MK I and MK II MVX-A16 cards 81
7.2 Upgrading the MVX-A16 MK I or MK II boot and/or application code 81
7.2.1 Upgrading the MVX-A16 card application code using EHX 82
7.2.2 Upgrading the MVX-A16 boot and application code using the Renesas FDT 83
7.3 Checking the MVX-A16 MK I or MK II boot and application code version .. 87
7.4 Upgrading the MVX-A16 MK I or MK II card FPGA with Xilinx tools 88

7.4.1 Upgrading the MVX-A16 MK1 88
7.4.2 Upgrading the MVX-A16 MK2 91
8 Upgrading E-FIB cards 97
8.1 Upgrading E-FIB card FPGA with Xilinx tools 97
9 Upgrading E-QUE cards 100
9.1 Identifying MK1 and MK2 E-QUE cards.....100
9.2 Upgrading the E-QUE card (MK1).....101
9.3 Upgrading the E-QUE card (MK2).....106
9.4 Upgrading the E-QUE card (MK1 and MK2) FPGA with Xilinx tools 113
9.5 Upgrading the E-QUE card (MK1) boot ROM 115
9.6 Upgrading the E-QUE card (MK2) boot ROM 116
10 Upgrading IVC-32 and LMC-64 cards.....122
10.1 Identifying MK1 and MK2 IVC-32 / LMC-64 cards 122
11 Upgrading E-MADI64 cards 124
11.1 Upgrading the E-MADI64 boot code 124
11.2 Upgrading the E-MADI64 application, DSP and FPGA code using EHX .127
11.3 Upgrading the E-MADI64 FPGA using the Xilinx tool set 130
12 Upgrading CellCom®/FreeSpeak® wireless systems.....134
13 Upgrading panels 135
13.1 Upgrading panels using EHX 135
13.1.1 Locating Panel *.fwp files on the software DVD.....137
13.1.2 V-Series upgrades 138
13.2 Upgrading panel application code manually 138
13.2.1 Manually upgrading i-Station & E-Station panel application code .140
13.2.2 Upgrading the i-Station panel firmware 145
13.2.3 Manually upgrading E-Station application code 146
13.3 Manually upgrading V-Series panels.....150
13.3.1 Upgrading the V-Series Display Module.....156
14 Upgrading the TEL-14 module 157
14.1 Upgrading the TEL-14 hardware 157
14.2 Upgrading the TEL-14 firmware 159
15 Upgrading the AES-6 module.....163

15.1 Upgrading AES-6 FPGA.....164

16 Upgrading FreeSpeak II™ wireless systems.....170

16.1 Upgrading FreeSpeak II Beltpacks and Antennas centrally using EHX.170

16.2 Upgrading FreeSpeak II Beltpacks and Antennas via USB.....172

Appendix A: CPU card layout.....175

Appendix B: CPU card DIP switches.....176

Appendix C: PiCo card layout.....178

Appendix D: Eclipse HX-PiCo CPU DIP switches.....180

Appendix E: Hitachi Renesas Flash Development Tool.....182

Appendix F: TFTPUtil.....189

Appendix G: Tera Term.....192

Appendix H: Flash Magic.....194

Appendix I: i-Station converter cable wiring and rear panel layouts 198

Appendix J: Xilinx tools.....200

Appendix K: Clear-Com®End User Software License.....201

1 Important Safety Instructions

1) Read these instructions.

2) Keep these instructions.

3) Heed all warnings.

4) Follow all instructions.

5) Do **not** use this apparatus near water.

6) Clean only with dry cloth.

7) Do **not** block any ventilation openings. Install in accordance with the manufacturer's instructions.

8) Do **not** install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.

9) Do **not** defeat the safety purpose of the polarized or grounding-type plug. A polarized plug has two blades and a third grounding prong. The wide blade or the third prong are provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.

10) Protect the power cord from being walked on or pinched particularly at plugs, convenience receptacles, and the point where they exit from the apparatus.

11) Only use attachments/accessories specified by the manufacturer.

12) Use only with the cart, stand, tripod, bracket, or table specified by the manufacturer, or sold with the apparatus. When a cart is used, use caution when moving the cart/apparatus combination to avoid injury from tip-over.

13) Unplug this apparatus during lightning storms or when unused for long periods of time.

14) Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as power-cord supply or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.

15) **Warning:** To reduce the risk of fire or electric shock, do not expose this product to rain or moisture.

Safety symbols

Familiarize yourself with the safety symbols in ***Figure 1*** below. These symbols are displayed on the apparatus and warn you of the potential danger of electric shock if the system is used improperly. They also refer you to important operating and maintenance instructions in the product user manual.

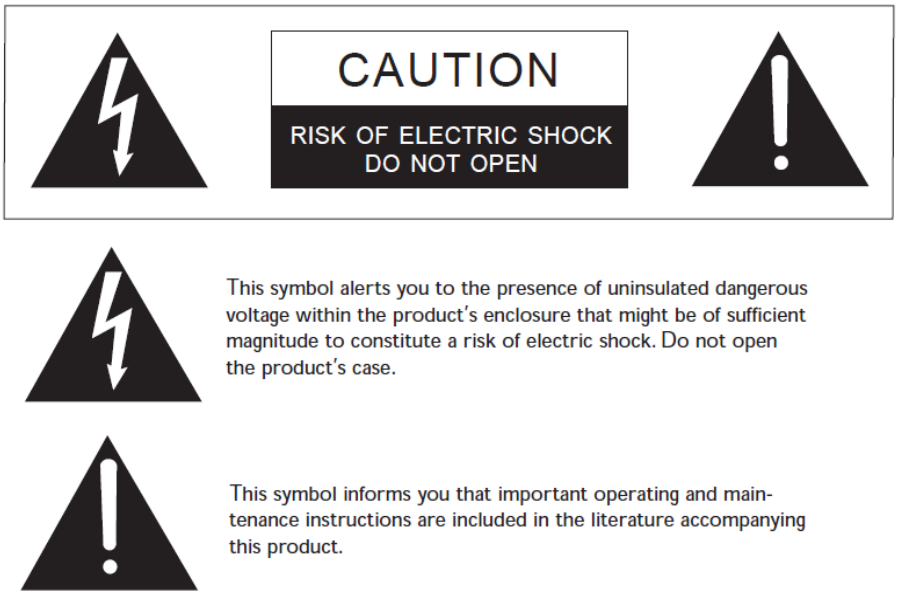


Figure 1-1: Safety symbols

Mains power cord

Eclipse HX matrices are powered by an internal power supply. The cord to connect the internal power supply to the mains supply must conform to the following:

- The mains power cord shall have an **IEC C13 connector** at one end and a mains power plug at the other end.
- An **IEC C13 plug** has three pins, the centre pin carrying the earth / ground. The other two pins carry neutral and live circuits.
- The conductors of the mains cords shall have adequate cross-sectional area for rated current consumption of the equipment.
- The mains plug that connects to the mains supply must be approved for use in the country where the equipment is to be used.
- The mains power cord must be an **IEC mains power cord** complying with standard **IEC60320; IEC320/C13**.
- Mains power cords used in the U.S. must also comply with standard **UL817**.

2 Introduction

This guide describes how to upgrade from **ECS v5.2.4** to **Eclipse HX v8.5**, a software release for the **Clear-Com Eclipse HX™** digital matrix system (standalone or networked). This guide additionally identifies the simpler upgrade from V7.0/7.1/V7.5/V7.6/V8.0 to V8.5

The system components covered by the guide include (but are not limited to):

- Matrices (Eclipse HX-PiCo, Eclipse HX-Median, Eclipse HX-Delta and Eclipse HX-Omega)
- Interface cards (E-FIB, E-QUE, MVX-A16, E-MADI64, LMC-64, and others)
- Interface modules (AES-6, TEL-14 and others)
- User panels (V-series and i-Station panels)

Important note:
*Eclipse HX upgrades **must** be performed by a technically qualified engineer.*

2.1 Planning the upgrade to Eclipse HX

Before you start upgrading your Eclipse (ECS v5.2.4 or EHX v7x/v8.0) system components to Eclipse HX v8.5, ensure that you have:

- Sufficient spare (replacement) cards, interfaces or panels for the upgrade.
- Scheduled enough time to complete the upgrade, or if required, roll back the upgrade to the version that was running before the upgrade.
- A suitable backup system is in place to maintain service, if your intercom system is part of a mission critical or sensitive application.

You should also be aware that:

- The **order** in which you carry out the upgrade is important. The chapters of this guide are laid out in the order that your system components should be upgraded.

  Tip: *For a quick reference to the upgrade procedures you require, and the order in which they should be carried out, see chapter **3Quick reference: Upgrading to Eclipse HX.***

- If you are upgrading **V-Series panels**, you *may* have to upgrade each V-Series panel individually by connecting it directly to a PC.
- Upgrading the matrices in a networked (linked) system should take place at the same time, because the data sent between networked matrices can change.

When upgrading networked (linked) matrices, Clear-Com recommends that you:

- Upgrade only **one** CPU card in each matrix **first** and then perform the rest of the system upgrade (interface cards, user panels, and so on) afterwards.

- Upgrade the remaining CPU cards in the matrices *only* when the upgrade has been completed and tested across the full system. Leaving the remaining CPU cards until last gives you the capability of quickly rolling back to the previously running version, if any mission critical issues are encountered. NOTE – When the second card is upgraded retrospectively as described it needs to be placed in the frame without the other CPU card in place. This is because CPU cards only exchange data as a master/slave pair when both cards are already running the same firmware. Once both cards are upgraded insert both cards and re-download the frame configuration.

- Great care must be taken when opening the lid of the **Eclipse HX-PiCo** matrix to upgrade components. This may invalidate UL status.

***Remove power** from the device first, to avoid working with the system while it is **live**. Observe all electrical shock hazard warning and precautions for handling electrostatic sensitive devices*

2.1.1 Client / Server installations

When upgrading Client / Server installations from ECS v5.2.4 or EHX 7.0/7.1/7.5/V7.6/V8.0 to Eclipse HX v8.5, you must:

- Use the EHX 8.5 Server Installer only on the PC that is to be the EHX Server. The Eclipse HX v8.5 server installer will automatically update your IIS and configure it to work with Eclipse HX v8.5.
- Use the standard EHX 8.5 Client Installer on all the Client PCs. The Server PC can also act as a client.

You should check that you have the appropriate IIS and .Net Windows components installed prior to installing the EHX Server. Please refer to the Initial Setup section of the Client/Server chapter in the EHX User Guide for a complete list of the components required for each version of Windows.

Note: Installing an EHX Server is an advanced workflow - please contact Clear-Com Support for advice before attempting to install an EHX Server.

Before upgrading your EHX Server installation, Clear-Com strongly recommends that you export any existing projects (using File->Export from an EHX Client) and backup your users list (using the Export command in the User Management screen). It is recommended that you uninstall your existing EHX Server before installing the newer version.

2.1.2 Roll back strategy

You should not encounter any mission critical issues when upgrading to Eclipse HX v8.5. However, if you decide to roll back the system to the previously running version, then you must:

- Allow adequate time for the roll back operation.
- Roll back all system components to the same baseline version.

Temporary roll back strategy

If you want to roll back to the previously running version for a temporary period only, before making another attempt to upgrade to Eclipse HX v8.5, then you may implement the following temporary roll back strategy:

1) Leave all cards and panels at Eclipse HX v8.5.

2) Roll back the matrix CPU card to run at the previously running version.

3) Re-install the previous running version of ECS/EHX and import your old configurations.

Caution:
*The above strategy is a temporary solution only. Eclipse HX v8.5 configurations will **not** import or work with a CPU card at ECS v5.2.4 or EHX v7.0/7.1/7.5/7.6/8.0. If you want to run the previously running system software for an extended period, Clear-Com recommends rolling back all system components to the same baseline version.*

2.1.3 Supplied DVDs

Different DVD sets are supplied to the customer, according to the type of Eclipse HX product that has been purchased:

Product	Software/Documentation DVD	System Drivers DVD	Documentation DVD
Matrix	-	-	✓
ECS / EHX	✓	✓	-
Upgrade kit	✓	✓	-

Table 2-1: Supplied DVDs

System Drivers DVD

The System Drivers DVD contains the latest firmware for your Eclipse HX devices, including Boot PROM and FPGA / CPLD code files for Eclipse HX matrices, interface cards, interface modules and supported panels (i-Station and V-Series panels). You must upgrade to the latest firmware when upgrading to Eclipse HX v8.5.

The System Drivers DVD also includes the third party software that may be used during upgrades.

Software DVD

The Software DVD contains:

- The EHX configuration software, which is used to manage and configure your Eclipse HX devices.
- Production Maestro Pro, which provides fast, intuitive audio routing control for your Eclipse HX system.
- A full set of Eclipse HX documentation, including release notes and user guides.
- The application code files for your Eclipse HX matrices.

The Software DVD also includes the third party software that may be used during upgrades.

You must upgrade to the latest application code files when upgrading to Eclipse HX v8.5. You require **both** DVDs to complete a full upgrade to Eclipse HX v8.5.

Tip: *You can find user documentation, brochures and summary information for all Clear-Com's products (including the Eclipse and Eclipse HX systems), on the Clear-Com website at:* http://www.clearcom.com/support/user-manuals.

2.1.4 Fitting the Eclipse HX door panel

To enable you to change the branding of Eclipse Median and Eclipse Omega matrices that have been upgraded to Eclipse HX, Clear-Com provides an Eclipse HX door panel kit.

The figures that illustrate the procedure below feature an Eclipse Median matrix. However, the procedure is also applicable to Eclipse Omega matrices.

Tip: *For more information about fitting the Eclipse HX door panel to your upgraded Eclipse Median and Eclipse Omega matrices, see the* ***Eclipse Matrix Door Replacement Instructions****, included with your kit.*

To replace the Eclipse branded door with the Eclipse HX door:

1) Remove the two screws securing the Eclipse door (and hinge) unit to the Eclipse matrix. Retain the screws.

Figure 2-1: Screws securing the Eclipse door (and hinge) unit

2) Remove the four screws securing the hinge to the existing door unit. Retain the screws.

Figure 2-2: Removing the screws securing the hinge to the Eclipse door

3) Use the four screws retained in Step 2 to secure the hinge to the new Eclipse HX door unit.

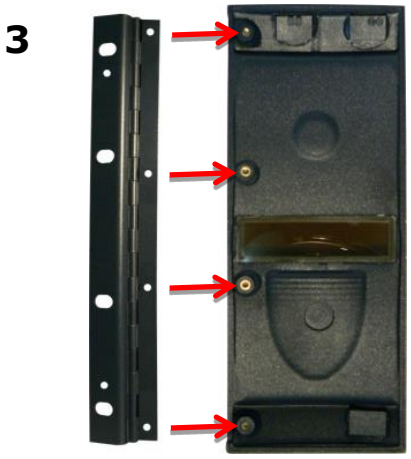


Figure 2-3: Securing the hinge to the Eclipse HX door

4) Use alcohol to clean the latch-mount surface (located to the bottom right on the inside of the Eclipse HX door).

Figure 2-4: Latch-mount surface, inside the Eclipse HX door

5) To attach the Eclipse HX door to the matrix, secure the hinge to the matrix using the two screws retained from Step 1.

5

Figure 2-5: Attaching the Eclipse HX door to the matrix

6) Open the door. Insert the latch (a separate item from the door unit) into the latch receptacle on the chassis.
The latch receptacle is located to the bottom left of the area enclosed by the door.

Note:
Leave the white plastic protector on the latch when you insert the latch into the receptacle.

6

Figure 2-6: Inserting the latch into the latch receptacle

7) To expose the adhesive surface of the latch, remove the **green** film from the back of the latch.

8) Close the door. Press down firmly on the bottom left of the door, so that the latch adheres firmly to the latch-mount surface inside the door.

9) Open the door again and remove the white plastic protector from the latch.

The Eclipse HX door has now been fitted to the matrix.

Figure 2-7: Removing the white plastic protector from the latch

2.1.5 Help with upgrading

If you require more help with either a particular upgrade procedure or the implementation of a whole system upgrade, contact either:

- Clear-Com Technical Support (http://www.clearcom.com/contact/support-contacts).
- Your Clear-Com sales representative, to arrange for an engineer to visit your site and assist you with the upgrade.

  See page 2 of this guide for contact email addresses, or go to http://www.clearcom.com/contact/sales-contacts.

3 Quick reference: Upgrading to Eclipse HX v8.5

The upgrade kit includes a **Drivers DVD**, containing the latest firmware files (including Boot and FPGA / CPLD code files) for your Eclipse HX devices. It also includes a **software DVD**, containing the application code files for your Eclipse HX feature applications. It includes the EHX configuration software, Production Maestro Pro audio routing software, and Eclipse HX v8.5 documentation. You require **both** DVDs to complete a full system upgrade. For more information, see ***2.1.3 Supplied DVDs***.

3.1 Upgrading from 5.2.4

The following table lists the procedures that you will require to upgrade from ECS v5.2.4 to Eclipse HX v8.5.

Important note:
*The table lists the procedures in the order in which they **must** be carried out. To go to a procedure, click the cross-reference / link.*

Order	System component	Upgrade procedure(s)	Notes
1	**E-QUE card** **IVC-32 card** **LMC-64 card**	***9.1 Identifying MK1 and MK2 E-QUE cards*** ***9.2 Upgrading the E-QUE card (MK1)*** ***9.3 Upgrading the E-QUE card (MK2)***	The procedures used to upgrade E-QUE cards to Eclipse HX v8.5 can also be used to upgrade IVC-32 and LMC-64 cards. **No PROM upgrade is required**
2	**E-MADI64 card**	***11.2 Upgrading the E-MADI64 application, DSP and FPGA code using EHX*** ***11.3 Upgrading the E-MADI64 FPGA using the Xilinx tool set***	**No DSP upgrade required.** **(Note – if the E-MADI64 card is upgraded before the CPU Card then there is no E-MADI card LED activity during the**

Order	System component		Upgrade procedure(s)	Notes
				upgrade. See E-MADI64 section for important upgrade information).
3	**E-FIB card**		**No upgrade required**.	
4	**V-Series panels**	**Uboot**	***13.3 Manually upgrading V-Series Panels***	
		Kernel		
		Root file system		
		App code	***13.3 Manually upgrading V-Series Panels***	
		Display module	***13.1 Upgrading panels using EHX***	
5	**i-Station**		***13.1 Upgrading panels using EHX***	**Upgrade should only be performed when a Clear-Com engineer is on site. A direct cable based upgrade may be required on some fielded units. Please consult with Clear-Com support before attempting any panel upgrades. Check the software of panels before upgrade.**

Order	System component	Upgrade procedure(s)	Notes
6	**CellCom® / FreeSpeak® Beltpack / Antenna / Splitter**	***12***	Beltpack application upgrade required
7	**MVX-A16 card**	***7.2.2 Upgrading the MVX-A16 boot and application code using the Renesas FDT*** ***7.4 Upgrading the MVX-A16 MK I or MK II*** card FPGA with Xilinx tools	Clear-Com recommends upgrading the MVX boot and application code using the combined MVX boot and application code file. See the Drivers DVD.
8	**Eclipse HX-PiCo**	***6.1 Changing the Eclipse HX-PiCo PROM*** ***6.2 Changing the Eclipse HX-PiCo RAM*** ***6.3 Changing the Eclipse HX-PiCo DIP switches*** ☐ ***Upgrading the Eclipse HX-PiCo application code*** ***6.4.2 Upgrading the Eclipse HX-PiCo MVX boot and/or application code using the Renesas FDT*** ***6.6 Upgrading the Eclipse HX-PiCo CPLD and FPGA code with Xilinx tools***	If you are upgrading the PiCo to an HX-PiCo please contact your Clear-Com representative to establish if your hardware is HX ready. If your PiCo hardware is not HX ready then this is a factory only upgrade.
9	**AES-6**	**No upgrade required.**	
10	**EHX configuration software**	***4.1 Backing up your ECS v5.2.4 configurations*** ***4.3 Installing EHX***	

Order	System component	Upgrade procedure(s)	Notes
		4.4 Importing your configurations into EHX	
11	**CPU card**	***5.1 Changing the CPU card PROM*** ***5.2 Changing the CPU card RAM*** ***5.3 Changing the CPU card DIP switches*** ***5.4 Upgrading the CPU card application code*** ***5.7 Upgrading CPU Card U53 CPLD*** ***5.5 Setting the matrix type*** ***5.8 Upgrading CPU Card U1 CPLD*** ***5.11 Downloading a test configuration to the CPU card using EHX*** ***5.9 Upgrading the CPU card U53 CPLD code with Xilinx tools*** ***5.10 Upgrading the CPU card U1 CPLD code with Xilinx tools***	
12	**Production Maestro**	***4.5 Updating Production Maestro Pro***	

Table 3-1: Procedures for upgrading from ECS v5.2.4 to Eclipse HX v8.5

3.2 Upgrading from 7.0

The following table lists the procedures that you will require to upgrade from Eclipse HX v7.0 to Eclipse HX v8.5.

Important note:

*The table lists the procedures in the order in which they **must** be carried out. To go to a procedure, click the cross-reference / link.*

Order	System component		Upgrade procedure(s)	Notes
1	**E-QUE card** **IVC-32 card** **LMC-64 card**		***9.1 Identifying MK1 and MK2 E-QUE cards*** ***9.2 Upgrading the E-QUE card (MK1)*** ***9.3 Upgrading the E-QUE card (MK2)***	The procedures used to upgrade E-QUE cards to Eclipse HX v8.5 can also be used to upgrade IVC-32 and LMC-64 cards. **No PROM upgrade is required**
2	**E-MADI64 card**		***11.2 Upgrading the E-MADI64 application, DSP and FPGA code using EHX*** ***11.3 Upgrading the E-MADI64 FPGA using the Xilinx tool set***	**No DSP upgrade required.** **(Note – if the E-MADI64 card is upgraded before the CPU Card then there is no E-MADI card LED activity during the upgrade. See E-MADI64 section for important upgrade information).**
3	**E-FIB card**		**No upgrade required**.	
4	**V-Series panels**	**Uboot**	***13.3 Manually upgrading V-Series Panels***	
		Kernel		
		Root file system		
		App code	***13.3 Manually upgrading V-Series Panels***	

Order	System component		Upgrade procedure(s)	Notes
		Display module	***13.1 Upgrading panels using EHX***	
5	**i-Station**		***13.1 Upgrading panels using EHX***	**Upgrade should only be performed when a Clear-Com engineer is on site. A direct cable based upgrade may be required on some fielded units. Please consult with Clear-Com support before attempting any panel upgrades. Check software of panels before upgrade.**
6	**CellCom / FreeSpeak Beltpack / Antenna / Splitter**		***12***Upgrading CellCom®/FreeSpeak® wireless systems	Beltpack application upgrade required
7	**MVX-A16 card**		***7.2.2 Upgrading the MVX-A16 boot and application code using the Renesas FDT*** ***7.4 Upgrading the MVX-A16 MK I or MK II*** card FPGA with Xilinx tools	Clear-Com recommends upgrading the MVX boot and application code using the combined MVX boot and application code file. See the Drivers DVD.

Order	System component	Upgrade procedure(s)	Notes
8	Eclipse HX-PiCo	☐ *Upgrading the Eclipse HX-PiCo application code*	
9	AES-6	**No upgrade required.**	
10	EHX configuration software	*4.2 Backing up your EHX 7.0/7.1/7.5/7.6/8.0 configurations* *4.3 Installing EHX* *4.4 Importing your configurations into EHX*	
11	CPU card	*5.4 Upgrading the CPU card application code*	
12	Production Maestro	*4.5 Updating Production Maestro Pro*	

Table 3-2: Procedures for upgrading from Eclipse HX v7.0 to Eclipse HX v8.5

3.3 Upgrading from 7.1

The following table lists the procedures that you will require to upgrade from Eclipse HX v7.1 to Eclipse HX v8.5.

Important note:

*The table lists the procedures in the order in which they **must** be carried out. To go to a procedure, click the cross-reference / link.*

Order	System component		Upgrade procedure(s)	Notes
1	**E-QUE card** **IVC-32 card** **LMC-64 card**		***9.1 Identifying MK1 and MK2 E-QUE cards*** ***9.2 Upgrading the E-QUE card (MK1)*** ***9.3 Upgrading the E-QUE card (MK2)***	The procedures used to upgrade E-QUE cards to Eclipse HX v8.5 can also be used to upgrade IVC-32 and LMC-64 cards. **No PROM upgrade is required**
2	**E-MADI64 card**		***11.2 Upgrading the E-MADI64 application, DSP and FPGA code using EHX*** ***11.3 Upgrading the E-MADI64 FPGA using the Xilinx tool set***	**No DSP upgrade required.** **(Note – if the E-MADI64 card is upgraded before the CPU Card then there is no E-MADI card LED activity during the upgrade. See E-MADI64 section for important upgrade information).**
3	**E-FIB card**		**No upgrade required**.	
4	**V-Series panels**	**Uboot**	***13.3 Manually upgrading V-Series Panels***	
		Kernel		
		Root file system		
		App code	***13.3 Manually upgrading V-Series Panels***	
		Display module	**No upgrade required**.	

Order	System component	Upgrade procedure(s)	Notes
5	**i-Station**	***13.1 Upgrading panels using EHX***	**Upgrade should only be performed when a Clear-Com engineer is on site. New firmware version only delivers central upgradability to a subset of shipped panels with a particular flash memory device.**
6	**CellCom / FreeSpeak Beltpack / Antenna / Splitter**	***12***Upgrading CellCom®/FreeSpeak® wireless systems	Beltpack application upgrade required
7	**MVX-A16 card**	***7.2.2 Upgrading the MVX-A16 boot and application code using the Renesas FDT*** ***7.4 Upgrading the MVX-A16 MK I or MK II*** card FPGA with Xilinx tools	Clear-Com recommends upgrading the MVX boot and application code using the combined MVX boot and application code file. See the Drivers DVD.
8	**Eclipse HX-PiCo**	☐ ***Upgrading the Eclipse HX-PiCo application code***	
9	**AES-6**	**No upgrade required.**	

Order	System component	Upgrade procedure(s)	Notes
10	EHX configuration software	***4.2 Backing up your EHX 7.0/7.1/7.5/7.6/8.0 configurations*** ***4.3 Installing EHX*** ***4.4 Importing your configurations into EHX***	
11	CPU card	***5.4 Upgrading the CPU card application code***	
12	Production Maestro	***4.5 Updating Production Maestro Pro***	

Table 3-3: Procedures for upgrading from Eclipse HX v7.1 to Eclipse HX v8.5

3.4 Upgrading from 7.5

The following table lists the procedures that you will require to upgrade from Eclipse HX v7.5 to Eclipse HX v8.5.

Important note:

*The table lists the procedures in the order in which they **must** be carried out. To go to a procedure, click the cross-reference / link.*

Order	System component		Upgrade procedure(s)	Notes
1	**E-QUE card** **IVC-32 card** **LMC-64 card**		***9.1 Identifying MK1 and MK2 E-QUE cards*** ***9.2 Upgrading the E-QUE card (MK1)*** ***9.3 Upgrading the E-QUE card (MK2)***	The procedures used to upgrade E-QUE cards to Eclipse HX v8.5 can also be used to upgrade IVC-32 and LMC-64 cards. **No PROM upgrade is required**
2	**E-MADI64 card**		***11.2 Upgrading the E-MADI64 application, DSP and FPGA code using EHX*** ***11.3 Upgrading the E-MADI64 FPGA using the Xilinx tool set***	**No DSP upgrade required.** **(Note – if the E-MADI64 card is upgraded before the CPU Card then there is no E-MADI card LED activity during the upgrade. See E-MADI64 section for important upgrade information).**
3	**E-FIB card**		**No upgrade required**.	
4	**V-Series panels**	**Uboot**	***13.3 Manually upgrading V-Series Panels***	
		Kernel		
		Root file system		
		App code	***13.3 Manually upgrading V-Series Panels***	
		Display module	**No upgrade required**.	

Order	System component	Upgrade procedure(s)	Notes
5	**i-Station**	***13.1 Upgrading panels using EHX***	**Upgrade should only be performed when a Clear-Com engineer is on site. New firmware version only delivers central upgradability to a subset of shipped panels with a particular flash memory device. Check software of panels before upgrade.**
6	**CellCom / FreeSpeak Beltpack / Antenna / Splitter**	***12Upgrading CellCom®/FreeSpeak® wireless*** systems	Antenna application only.
7	**MVX-A16 card**	***7.2.2 Upgrading the MVX-A16 boot and application code using the Renesas FDT*** ***7.4 Upgrading the MVX-A16 MK I or MK II*** card FPGA with Xilinx tools	Clear-Com recommends upgrading the MVX boot and application code using the combined MVX boot and application code file. See the Drivers DVD.
8	**Eclipse HX-PiCo**	☐ ***Upgrading the Eclipse HX-PiCo application code***	

Order	System component	Upgrade procedure(s)	Notes
9	AES-6	No upgrade required.	
10	EHX configuration software	*4.2 Backing up your EHX 7.0/7.1/7.5/7.6/8.0 configurations* *4.3 Installing EHX* *4.4 Importing your configurations into EHX*	
11	CPU card	*5.4 Upgrading the CPU card application code*	
12	Production Maestro	*4.5 Updating Production Maestro Pro*	

Table 3-4: Procedures for upgrading from Eclipse HX v7.5 to Eclipse HX v8.5

3.5 Upgrading from 7.6

The following table lists the procedures that you will require to upgrade from Eclipse HX v7.6 to Eclipse HX v8.5.

Important note:
*The table lists the procedures in the order in which they **must** be carried out. To go to a procedure, click the cross-reference / link.*

Order	System component	Upgrade procedure(s)	Notes
1	E-QUE card IVC-32 card LMC-64 card	*9.1 Identifying MK1 and MK2 E-QUE cards* *9.2 Upgrading the E-QUE card (MK1)* *9.3 Upgrading the E-QUE card (MK2)*	The procedures used to upgrade E-QUE cards to Eclipse HX v8.5 can also be used to upgrade IVC-32 and LMC-64 cards. **No PROM upgrade is required**

Order	System component		Upgrade procedure(s)	Notes
2	E-MADI64 card		***11.2 Upgrading the E-MADI64 application, DSP and FPGA code using EHX*** ***11.3 Upgrading the E-MADI64 FPGA using the Xilinx tool set***	**No DSP upgrade required.** **(Note – if the E-MADI64 card is upgraded before the CPU Card then there is no E-MADI card LED activity during the upgrade. See E-MADI64 section for important upgrade information).**
3	E-FIB card		**No upgrade required**.	
4	V-Series panels	Uboot	***13.3 Manually upgrading V-Series Panels***	
		Kernel		
		Root file system		
		App code	***13.3 Manually upgrading V-Series Panels***	
		Display module	**No upgrade required**.	
5	i-Station		***13.1 Upgrading panels using EHX***	**Upgrade should only be performed when a Clear-Com engineer is on site. New firmware version only delivers central upgradability to a subset of shipped panels**

Order	System component	Upgrade procedure(s)	Notes
			with a particular flash memory device. Check software of panels before upgrade.
6	**CellCom / FreeSpeak Beltpack / Antenna / Splitter**	**No upgrade required.**	
7	**MVX-A16 card**	***7.2.2 Upgrading the MVX-A16 boot and application code using the Renesas FDT*** ***7.4 Upgrading the MVX-A16 MK I or MK II*** card FPGA with Xilinx tools	Clear-Com recommends upgrading the MVX boot and application code using the combined MVX boot and application code file. See the Drivers DVD.
8	**Eclipse HX-PiCo**	☐ ***Upgrading the Eclipse HX-PiCo application code***	
9	**AES-6**	**No upgrade required.**	
10	**EHX configuration software**	***4.2 Backing up your EHX 7.0/7.1/7.5/7.6/8.0*** configurations ***4.3 Installing EHX***	

Order	System component	Upgrade procedure(s)	Notes
		4.4 Importing your configurations into EHX	
11	**CPU card**	***5.4 Upgrading the CPU card application code***	
12	**Production Maestro**	***4.5 Updating Production Maestro Pro***	
13	**FreeSpeak II Beltpack, Antenna Transceiver**	***16Upgrading FreeSpeak II™ wireless systems***	Beltpack application only.

Table 3-5: Procedures for upgrading from Eclipse HX v7.6 to Eclipse HX v8.5

3.6 Upgrading from 8.0

The following table lists the procedures that you will require to upgrade from Eclipse HX v8.0 to Eclipse HX v8.5.

Important note:
*The table lists the procedures in the order in which they **must** be carried out. To go to a procedure, click the cross-reference / link.*

Order	System component	Upgrade procedure(s)	Notes
1	**E-QUE card** **IVC-32 card** **LMC-64 card**	***9.1 Identifying MK1 and MK2 E-QUE cards*** ***9.2 Upgrading the E-QUE card (MK1)*** ***9.3 Upgrading the E-QUE card (MK2)***	The procedures used to upgrade E-QUE cards to Eclipse HX v8.5 can also be used to upgrade IVC-32 and LMC-64 cards. **No PROM or FPGA upgrade is required.**

Order	System component		Upgrade procedure(s)	Notes
2	E-MADI64 card		*11.2 Upgrading the E-MADI64 application, DSP and FPGA code using EHX* *11.3 Upgrading the E-MADI64 FPGA using the Xilinx tool set*	No DSP upgrade required. (Note – if the E-MADI64 card is upgraded before the CPU Card then there is no E-MADI card LED activity during the upgrade. See E-MADI64 section for important upgrade information).
3	E-FIB card		No upgrade required.	
4	V-Series panels	Uboot	*13.3 Manually upgrading V-Series Panels*	Uboot upgrade only.
		Kernel		
		Root file system		
		App code	*13.3 Manually upgrading V-Series Panels*	
		Display module	No upgrade required.	
5	i-Station		No upgrade required.	

Order	System component	Upgrade procedure(s)	Notes
6	CellCom / FreeSpeak Beltpack / Antenna / Splitter	No upgrade required.	
7	MVX-A16 card	No upgrade required.	
8	Eclipse HX-PiCo	☐ *Upgrading the Eclipse HX-PiCo application code*	
9	AES-6	No upgrade required.	
10	EHX configuration software	*4.2 Backing up your EHX 7.0/7.1/7.5/7.6/8.0* configurations *4.3 Installing EHX* *4.4 Importing your configurations into EHX*	
11	CPU card	*5.4 Upgrading the CPU card application code*	
12	Production Maestro	*4.5 Updating Production Maestro Pro*	
13	FreeSpeak II Beltpack, Antenna Transceiver	No upgrade required.	

Table 3-6: Procedures for upgrading from Eclipse HX v8.0 to Eclipse HX v8.5

4 Upgrading to Eclipse HX v8.5

This chapter describes the files you require to install Eclipse HX v8.5. It also describes how to back up your ECS 5.2.4 configurations and import them into Eclipse HX v8.5.

Important notes:

This guide is laid out in the order in which you must upgrade your Eclipse software and hardware devices to Eclipse . For a quick reference to upgrading your system, see ***3Quick reference: Upgrading to Eclipse HX****.*

4.1 Backing up your ECS v5.2.4 configurations

Back up your ECS v5.2.4 configurations by exporting them from ECS v5.2.4 to a hard disk location. In ECS:

1) Open the configuration you wish to save.

2) Select **File > Export Project**.

3) Save the configuration to a location on your hard drive. The configuration will be saved as a ***.ccn** file, which you can import later into EHX (the configuration software for Eclipse HX v8.5).

Note: EHX can open *.ccn format files as well as its own *.hxn format configuration files.

Repeat the above procedure for all the configurations you want to save.

4.2 Backing up your EHX 7.0/7.1/7.5/7.6/8.0 configurations

Back up your EHX 7.0/7.1/7.5/8.0 configurations by saving them to a secure location on your hard drive.

1) Open the configuration you wish to save.

2) Select **File > Save Project**.

4.3 Installing EHX

EHX is the configuration software for Eclipse HX v8.5. The Eclipse HX v8.5 software DVD contains a number of executable (***.exe)** files for installing EHX:

Installation (*.exe) file	Description and comments
EHXSetup.exe	The installer for the client version of EHX (both 32 and 64 bit machines). You can use the EHX Client version to connect:

Installation (*.exe) file	Description and comments
	• Directly to a matrix in **Client-only mode**. • To an EHX Server in **Client-Server mode**.
EHXServerSetup.exe	The installer for the server version of EHX (both 32 and 64 bit machines). The EHX Server enables multiple EHX clients to work together when configuring an Eclipse HX system.

Table 4-1: Installing EHX

Note: If you are required to uninstall and re-install EHX for any reason, ensure to save your configurations for re-importing into EHX (see section below). You can uninstall EHX from your Windows **All Programs** menu.

EHX uninstall will stop and restart IIS during the uninstall process to remove any files that are currently in use.

4.4 Importing your configurations into EHX

The procedure below is only applicable if you are running EHX in **Client-Server mode**.

Tip: *Remember to import any control macros which may be associated with a configuration.*

To import a saved configuration from ECS v5.2.4 into EHX:

1) Open EHX. From the top menu bar, select **File > Import Project**.

2) Navigate to the ECS v5.2.4 configuration (***.ccn**) file saved to your hard drive. To import the file, click **Open**.

Note: EHX can open `*.ccn` format files as well as its own `*.hxn` format configuration files.

To import a saved project from an earlier version of EHX or ECS into EHX in Client-only mode:

3) Open EHX. Select **File > Open**.

4) Navigate to the project file (`*.hxn` or `*.ccn` format) saved to your hard drive. Click **Open**.

Note: If you import a `.ccn` file, remember to save your imported project as an `*.hxn` format file.

Repeat the above procedure for all the configurations you want to import.

4.5 Updating Production Maestro Pro

If you are installing Production Maestro Pro as an update to an existing Production Maestro Pro installation, you must first uninstall your existing version of Production Maestro Pro. Ensure that you save your Production Maestro Pro layouts project files (`*.ccr` files) and all relevant EHX system configurations (`*.hxn` files)

To update Production Maestro Pro to your PC:

1) Insert the DVD into the PC. Navigate to the DVD and click the relevant *****`.exe` file for your machine. Click:
   - **PMSetup**.

2) When the **Setup** wizard has loaded, the **License Agreement** dialog is displayed. Use the internal scroll bar to review the agreement. To continue with the installation, click **I Agree**.

3) The **Choose Install Location** dialog is displayed. The default location is **Program Files > ClearCom** on the C Drive. To select a different location, click **Browse**. To continue, click **Next**.

4) The **Choose Start Menu Folder** dialog is displayed. The default Start Menu folder is **Clear-Com\Production Maestro**. To select an alternative folder **either**:
   - Select from the list of existing Start Menu folders. Use the dialog scroll bar to navigate the list.
   - Enter a name into the selection field to create a new folder.

   To prevent the creation of shortcuts, select **Do not create shortcuts**. Click **Install**.

5) Production Maestro Pro starts to install. During installation, an installation progress bar is displayed [ ]. For more detailed information about the progress of the installation, click **Show Details**.

   When the installation is complete, click **Close**.

Note: On installing Production Maestro Pro, a firewall dialog may be displayed asking if Windows should **Block** or **Unblock** Production Maestro Pro. Select **Unblock Production Maestro Pro**.

5 Upgrading the CPU cards

This chapter describes how to upgrade the Boot PROM, CPLD and application code for the CPU cards, two of which are fitted to the Eclipse HX-Median, Eclipse HX-Omega and Eclipse HX-Delta matrices.

Note: This guide is laid out in the order in which you must upgrade your Eclipse HX software and hardware devices. For a quick reference to upgrading your system, see **3Quick reference: Upgrading to Eclipse HX**.

*Eclipse HX devices are powered by **mains voltage**. Unless specifically advised to the contrary, **disconnect** mains supply before carrying out any maintenance or repair tasks. Observe precautions for handling electrostatic sensitive devices.*

Changing the CPU card PROM, RAM and DIP switch settings

The CPU card PROM and RAM should be changed at the same time. The CPU card DIP switch settings must also be upgraded.

5.1 Changing the CPU card PROM

Note: When you change the CPU card PROM, you must also change the CPU card RAM (from 128Mb RAM to 256Mb RAM). See **5.2 Changing the CPU card RAM** below.

To change the CPU card PROM:

1) Ensure that you have the following equipment:

- 2MBit PROM device (**ST M27W201** or equivalent).
- PROM Programming Unit (with the appropriate programming software for that unit).
- The *.**s** record file for the CPU card boot PROM. To find the file, go to:

  Drivers DVD > Omega-Median-Delta > xxxxxx – Config Boot PROM

  Where **xxxxxx** represents the product number.
  .
  The folder contains the ***.s** record file and a *Read Me* file (***.txt**), with version information.

2) Program the PROM device with the ***.s** record file. Follow the instructions for the PROM Programming Unit you are using.

Note: Ensure that the PROM device is empty before you begin programming.

3) Ensure that the checksum of the programmed device matches the checksum in the ***Eclipse HX Release Notes***.

4) Remove the existing PROM device from the CPU card.

5) Insert the newly programmed PROM device, taking care to ensure the correct polarity of the device.

5.2 Changing the CPU card RAM

Note: When you change the CPU card RAM (from 128Mb RAM to 256Mb RAM), you must also change the CPU card PROM. See **5.1 Changing the CPU card PROM** above.

To change the CPU card RAM (from 128Mb to 256Mb):

1) Ensure that you have the replacement 256Mb CPU card RAM to hand.

2) Remove the CPU card from the Eclipse HX-Median, Eclipse HX-Omega or Eclipse HX-Delta matrix.

3) The cassette that holds the CPU card RAM daughter board is located towards the center of the main board:

Figure 5-1: CPU card 128Mb RAM daughter board

To release the 128Mb RAM daughter board, push back the levers to either side of the cassette. Remove the board.

4) Fit the replacement 256Mb CPU card RAM daughter board to the cassette. The daughter board is fitted chip-side up. Ensure that the daughter board is securely fitted (only the top edge of the connectors along the lower edge of the board should be visible).

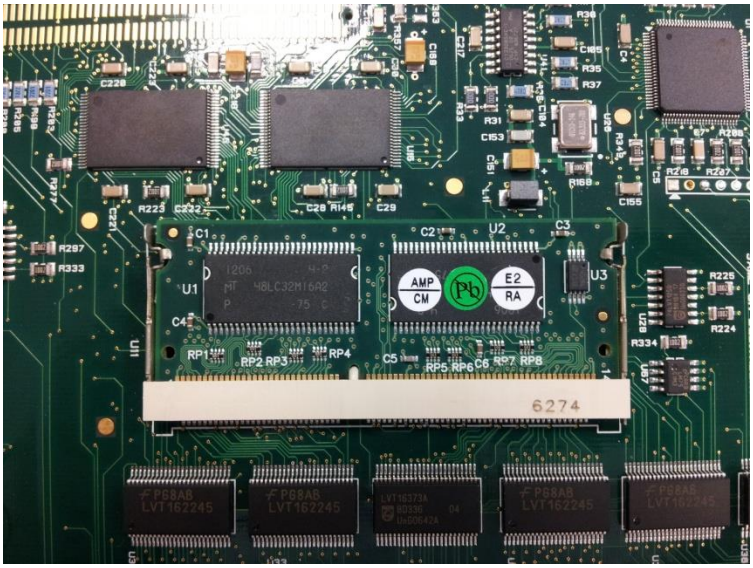


Figure 5-2: CPU card 256Mb RAM daughter board

5) Secure the RAM daughter board by closing the levers to either side of the cassette.

6) Return the CPU card to the Eclipse HX-Median, Eclipse HX-Omega or Eclipse HX-Delta matrix.

5.3 Changing the CPU card DIP switches

To change the CPU card DIP switches to the appropriate Eclipse HX v8.5 settings, see either:

- ***Appendix B: CPU card DIP switches***
- ***5.4.3 Upgrading the CPU Card application code using Tera Term***

5.4 Upgrading the CPU card application code

5.4.1 Upgrading the CPU card application code using EHX with Ethernet connection

Before you upgrade the CPU card application code, check that:

- The PC can successfully connect to the matrix with an Ethernet connection by viewing the Event Log (**Diagnostics > Event Log)** in EHX.
- There is a valid configuration in the matrix. A valid configuration enables the matrix to identify its IP address and run its TCP / IP stack.

Note: Both CPU cards may remain in place (inserted) for this procedure.

To upgrade the CPU card application code, using EHX with an Ethernet connection:

1) Ensure that you have the following equipment:

Required equipment	Description / comments
PC with an Ethernet connector	-
LAN cable for the PC-to-matrix connection	For direct connections, use Ethernet crossover cable. If the connection passes through an Ethernet switch on its way to the PC / matrix, use straight CAT5 cable.
EHX installation	EHX must be configured and operational.
An EHX configuration file (*.hxn or *.ccn format)	The configuration file must have an appropriate IP address set.
The appropriate *.fwr data file for the CPU card application	You can find the ***.fwr** data file on the software DVD: **Software DVD > Eclipse HX-Omega-Median-Delta > xxxxxx – Config Card Application** (where **xxxxxx** represents the product number).

Table 5-1: Required equipment

2) Start EHX. Select File > Matrix connection.

3) In the Matrix connection dialog, select the Ethernet communications option.

4) Connect the PC to the Eclipse HX-Median / Eclipse HX-Omega / Eclipse HX-Delta matrix, using the LAN#1 port on the rear of the matrix.

5) In EHX, select File > Import project. Navigate to the configuration file (*.ccn or *.hxn format) and click Open to import the file.

6) Select System > Layout. In the work area, right click the Eclipse HX-Median / Eclipse HX-Omega / Eclipse HX-Delta matrix.

7) From the menu, select Firmware > Update Firmware.

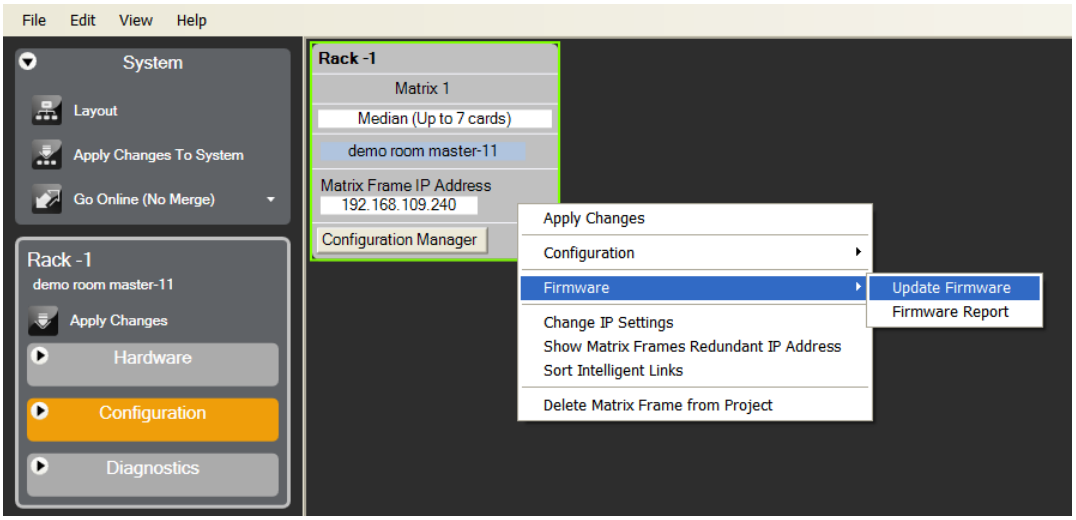


Figure 5-3: Upgrading app code: Matrix firmware update

1) In the Firmware update wizard, click **Next**. Ensure that **Matrix** is selected in the following dialog, then click **Next** again.

2) In the next dialog, click **Browse** and navigate to the required ***.fwr** file for the Eclipse HX-Omega / Eclipse HX-Median / Eclipse HX-Delta CPU card application:

   a. Go to **Software DVD > Eclipse HX-Omega-Median-Delta > xxxxxx – Config Card Application** (where **xxxxxx** represents the product number).

      The folder contains the ***.fwr** file and a *Read Me* file (***.txt)** with version information.

   b. Select the***.fwr** file and click **Open.** Ensure that the correct file name is displayed in the dialog.

3) Click **Next.** Confirm that the correct file has been selected, and click **Next** again to start the firmware update. The update will take approximately 2 minutes.

   Tip: *While the update is in progress, check that the SI LED on the front of the CPU card(s) is flashing rapidly. Rapid flashes indicate communication with the PC.*

4) When the update is completed, click **Finish** in the Firmware Update wizard.

The Eclipse HX-Median / Eclipse HX-Omega / Eclipse HX-Delta (matrix) matrix reboots. The CPU card(s) is reset.

Download a configuration file (apply changes), using EHX.

Note: The CPU card uses a default configuration that is embedded in the download application (even though the CPU DOT matrix display shows zero (0)). The default configuration helps with the initial hardware configuration and testing of the Eclipse HX-Median / Eclipse HX-Omega / Eclipse HX-Delta matrix by providing usable functionality to each of the MVX-A16 cards fitted to the matrix.

5.4.2 Upgrading the CPU card application code with EHX using a serial link

You can upgrade the CPU card with EHX using a serial link, whether or not there is a valid configuration (map) on the Eclipse HX-Median / Eclipse HX-Omega matrix / Eclipse HX-Delta. **Both** CPU cards may remain inserted during the upgrade. You may choose to perform the initial upgrade with EHX using a serial connection, then move to an Ethernet connection for future configuration downloads and upgrades, once an IP address has been configured.

Note: Before you use this procedure, check that the matrix event log can connect serially to a CPU card with a configuration. Both CPU cards may remain inserted during the upgrade.

To upgrade the application code with EHX, using a serial link:

1) Ensure that you have the following equipment:

Required equipment	Description / comments
PC with either a serial port connection or USB-to-serial port adaptor	If using a USB-to-serial port adaptor cable, you must connect the cable before starting EHX to enable EHX to detect the USB port as a COM port.
Standard RS232 serial cable (9-pin D-Type to 9-pin D-Type)	-
EHX installation	EHX must be configured and operational.
An EHX configuration file (*.hxn or *.ccn format)	The configuration file must have the appropriate IP addresses set.
The appropriate *.fwr data file for the CPU card application	You can find the ***.fwr** data file on the software DVD: **Software DVD > Eclipse HX-Omega-Median-Delta > xxxxxx – Config Card Application** (where **xxxxxx** represents the product number).

Table 5-2: Required equipment

2) Start EHX. Select File > Matrix connection.

3) In the Matrix connection dialog, select the serial communications option.

4) Select the correct COM port then click OK.

5) Use the RS232 cable to connect the PC with the serial port on the rear of the Eclipse HX-Median / Eclipse HX-Omega / Eclipse HX-Delta matrix.

6) Do one of the following:

- If you are running EHX in **Client-Server mode**, select **File > Import project**. Navigate to the configuration (***.ccn**) file and click **Open** to import the file.
- If you are running EHX in **Client-Only mode**, select **File > Open**. Navigate to the configuration (***.ccn**) and open the file.

Note: EHX can open ***.ccn** format files as well as its own ***.hxn** format configuration files.

7) Select **System > Layout**. In the work area, right click the Eclipse HX-Median / Eclipse HX-Omega / Eclipse HX-Delta matrix.

8) From the menu, select **Firmware > Update Firmware**.

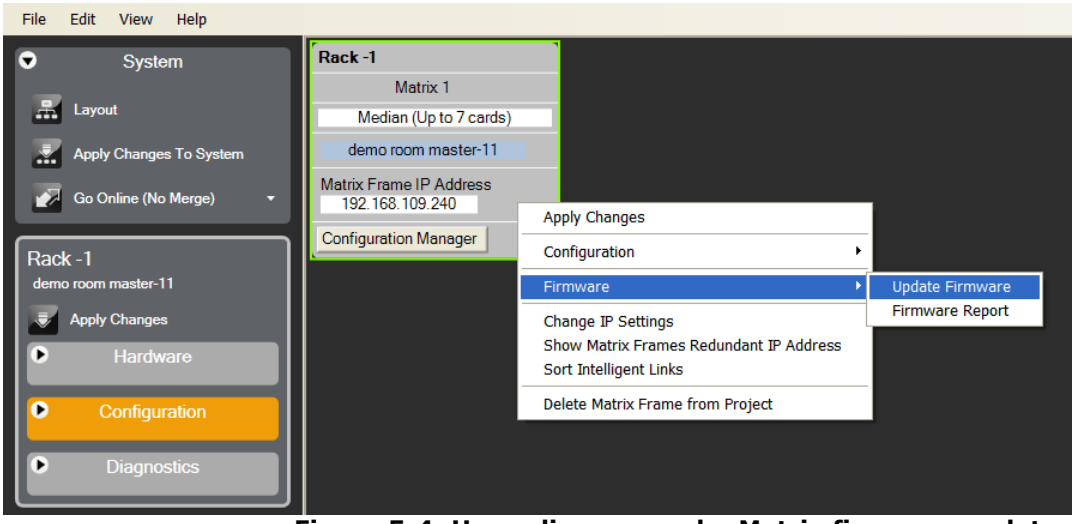


Figure 5-4: Upgrading app code: Matrix firmware update

9) In the Firmware update wizard, click **Next**. Ensure that **Matrix** is selected in the following dialog, then click **Next** again.

10) In the next dialog, click **Browse** and navigate to the required ***.fwr** file for the Eclipse HX-Omega / Eclipse HX-Median / Eclipse HX-Delta CPU card application:

a. Go to **Software DVD > Eclipse HX-Omega-Median-Delta > xxxxxx – Config Card Application** (where **xxxxxx** represents the product number).

The folder contains the ***.fwr** file and a *Read Me* file (***.txt)** with version information.

b. Select the***.fwr** file and click **Open.** Ensure that the correct file name is displayed in the dialog.

Click **Open.** Ensure that the correct file name is displayed in the dialog.

11) Click **Next.** Confirm that the correct file has been selected and then click **Next** again to start the firmware update. The update will take approximately 2 minutes.

Tip: *While the update is in progress, check that the SI LED on the front of the CPU card(s) is flashing rapidly. Rapid flashes indicate communication with the PC.*

Note: If you are upgrading from v5.2.4 to Eclipse HX v8.5, the download dialog does **not** automatically finish. This is due to a messaging change between the two system architectures. Instead, close the dialog (which will continue to indicate **Verifying**) when the matrix reboots (see Step 11).

12) When the update is completed, click **Finish** in the **Firmware Update** wizard.

The Eclipse HX-Median / Eclipse HX-Omega / Eclipse HX-Delta (matrix) matrix reboots. The CPU card(s) is reset.

Download a configuration file (apply changes), using EHX.

Note: The CPU card uses a default configuration that is embedded in the download application (even though the CPU DOT matrix display shows zero (0)). The default configuration helps with the initial hardware configuration and testing of the Eclipse HX-Median / Eclipse HX-Omega / Eclipse HX-Delta matrix by providing usable functionality to each of the MVX-A16 cards fitted to the matrix.

If the upgrade fails

If the upgrade of both CPU cards fails, repeat the procedure (with only one CPU card in the matrix) for each card. When the procedure is complete, insert both the CPU cards into the Eclipse HX-Median / Eclipse HX-Omega / Eclipse HX-Delta matrix.

If there was no previous configuration loaded in the matrix, download a basic configuration file (apply changes) to the CPU cards using EHX. Make any further configuration changes over the Ethernet LAN.

Tip: *For more information about setting up a configuration, see the **EHX User Guide**.*

5.4.3 Upgrading the CPU Card application code using Tera Term

To upgrade the CPU card application code using Tera Term:

1) Ensure that you have the following equipment:

Required equipment	Description / comments
PC with either a serial port connection or USB-to-serial port adaptor	If using a USB-to-serial port adaptor cable, you must connect the cable before starting EHX to enable EHX to detect the USB port as a COM port.

Required equipment	Description / comments
Standard RS232 serial cable (9-pin D-Type to 9-pin D-Type)	-
Tera Term installation	Tera Term must be configured and operational. You can find the Tera Term application on both of the Eclipse HX 8.5 DVDs: **Software DVD > 3rd_Party_Software > Teraterm** **Drivers DVD > 3rd_Party_Software > Teraterm**
An EHX configuration file (*.hxn or *.ccn format)	The configuration file must have the appropriate IP addresses set.
The appropriate *.fwr data file for the CPU card application	You can find the ***.fwr** data file on the software DVD: **Software DVD > Eclipse HX-Omega-Median-Delta > xxxxxx – Config Card Application** (where **xxxxxx** represents the part number).

Table 5-3: Required equipment

2) Install the Tera Term application**.** Accept all default settings.

Tip: *To find out how to install Tera Term, see **Appendix G:Tera Term**.*

3) Start Tera Term. In the **New Connection** dialog, select **Serial** (connection) and the COM port to use. Click **OK**.

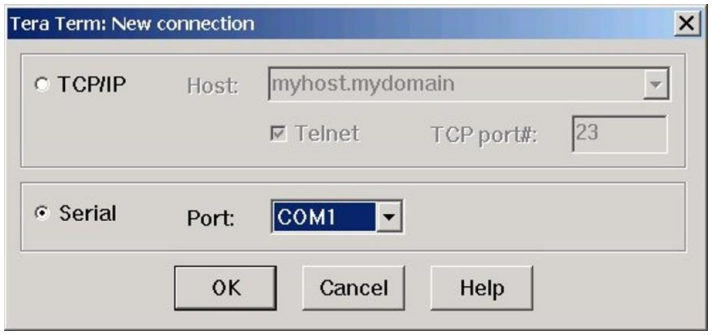


Figure 5-5: Tera Term: selecting serial connection

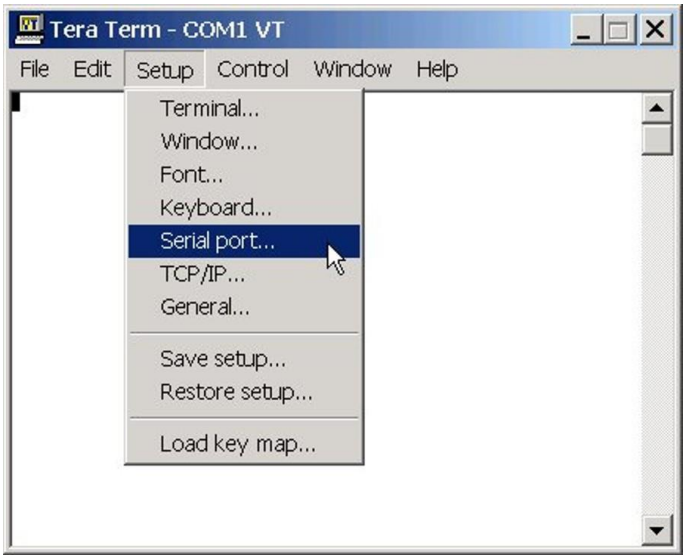


Figure 5-6: Tera Term: selecting Serial port

4) From the **Setup** menu, select the **Serial port...** entry.

5) The **Serial port** configuration dialog is displayed. Configure the serial port as follows:

Field	Data (to enter / select)
Port	Com1 **Note:** *Change as required to match a COM port on the PC.*
Baud Rate	115200
Parity	Even
Stop	One (bits)
Data	8 (bits)

Table 5-4: Tera Term: Serial port configuration

Tip: *You can use the Tera Term application for many of the Eclipse HX system upgrade processes. To save and recall the relevant com port settings in Tera Term, select the* ***Setup / Save*** *or* ***Restore settings*** *options.*

6) Connect the PC serial port to the RS232 port on the rear of the Eclipse HX-Median / Eclipse HX-Omega / Eclipse HX-Delta matrix, using the RS232 cable.

7) Remove **both** CPU cards from the matrix. Power on the Eclipse HX-Median / Eclipse HX-Omega / Eclipse HX-Delta matrix.

8) Erase the old application code from the CPU cards.

a. Place the CPU card in **Test mode**.

b. Set the DIP switches on the CPU card as follows:

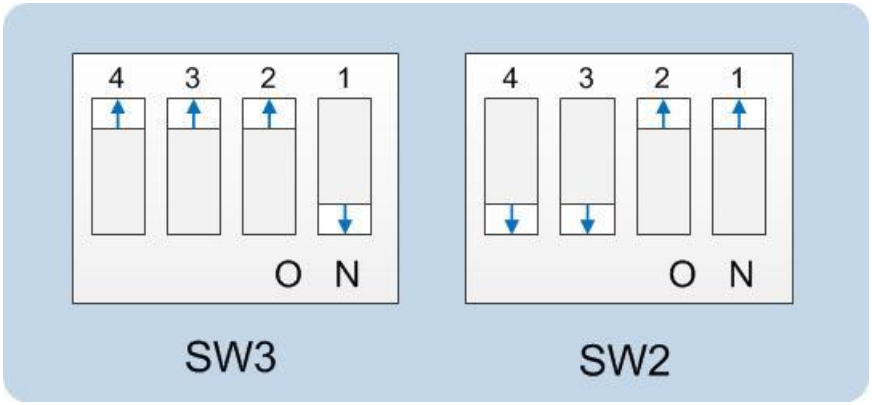


Figure 5-7: DIP switch settings, Test mode

c. Insert the CPU card into the Eclipse HX-Median / Eclipse HX-Omega / Eclipse HX-Delta matrix. You can place the card in either the **P1** or **P2** slot.

d. Confirm that the CPU card has entered test mode. If the card is in test mode, data similar to the following is displayed on the PC:

Figure 5-8: Tera Term: CPU card test mode.

Note: If you do not see the data above, press Enter on the PC.

Tip: *To see all the available options in test mode, press **?** on your keyboard. To see all the current applications loaded onto the CPU, press **i**.*

e. On your PC keyboard, press **number 1**. To start the erasure of Flash memory, press **Enter** (or **Return**). Select **y** and **Enter** to confirm.

Note:
It takes approximately 1 minute to erase Flash.

f. When the Flash has been erased, press **number 2** on your keyboard. To start the erasure of NVRAM, press **Enter** (or **Return**). When the NVRAM erase is complete, remove the CPU card.

9) Download the new application code (firmware) to the CPU card(s), using Tera Term.

a. Place the erased CPU card in serial download mode. Set the DIP switches on the CPU card as follows:

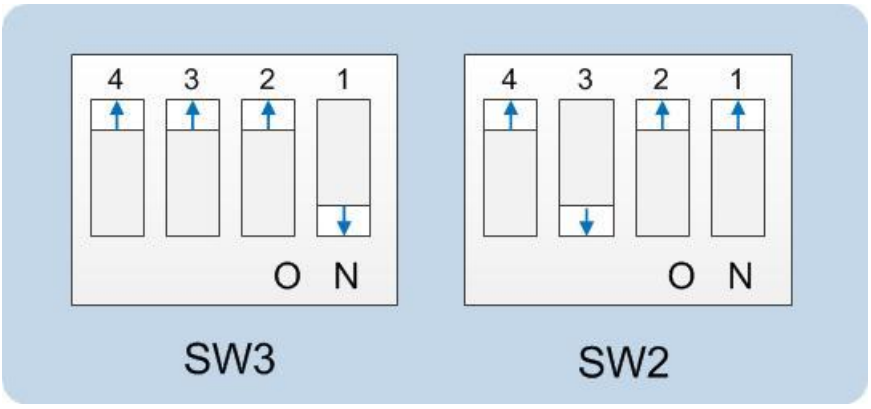


Figure 5-9: Tera Term: DIP switches, serial download mode

b. Insert the CPU card into the Eclipse HX-Median / Eclipse HX-Omega / Eclipse HX-Delta matrix. The LED on the front of the matrix should flash **LD AP**.

c. In Tera Term, open **File** and select **Send file...** Ensure that the **BINARY option box** is selected.

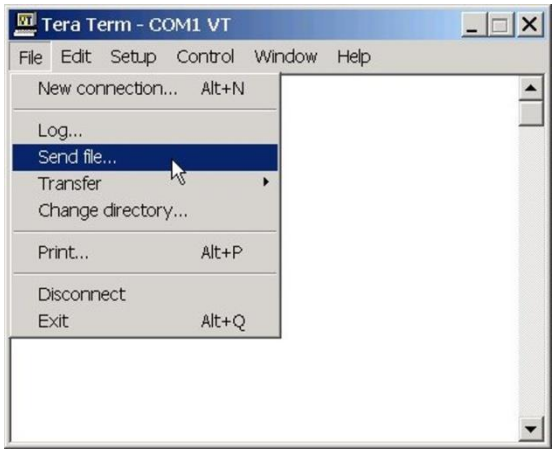


Figure 5-10: Tera Term: Send file...

d. In the **Send file dialog > Select the file to download**, navigate to the CPU card application code (firmware) ***.fwr file**:

   i. Go to **Software DVD > Eclipse HX-Omega-Median-Delta > xxxxxx – Config Card Application** (where **xxxxxx** represents the product number).

      The folder contains the ***.fwr** file and a *Read Me* file (***.txt)** with version information.

   ii. Select the***.fwr** file and click **OK / Open.** Ensure that the correct file name is displayed in the dialog.

e. The file starts to download. Confirm that the CPU card LED matrix display shows numbers counting up.

Important note:
The count-up display indicates that packets are being received by the CPU card. The numbers do not represent a percentage complete figure.

*If the download fails, the CPU card display shows **LD Err**. This type of failure is usually caused by the user continuing to use the PC for other tasks while the download is occurring. The Tera Term screen will **not** indicate a failure and will continue to show a download. If this occurs:*

i. *Abort the Tera Term download (press **Cancel** in the Tera Term screen).*

ii. ***Reset** the CPU card (by removing the card from the matrix and reinserting it again).*

iii. *Check the cable connections, then restart the Send file download process again.*

f. When the download is complete, the CPU card reboots. The CPU card(s) is reset and the OK LED produces a double flash.

Note:
The zero (0) displayed indicates that although valid application code is present, the CPU cards do not contain a configuration.

g. Remove the upgraded CPU card and set the DIP switches to normal running (watchdog) mode:

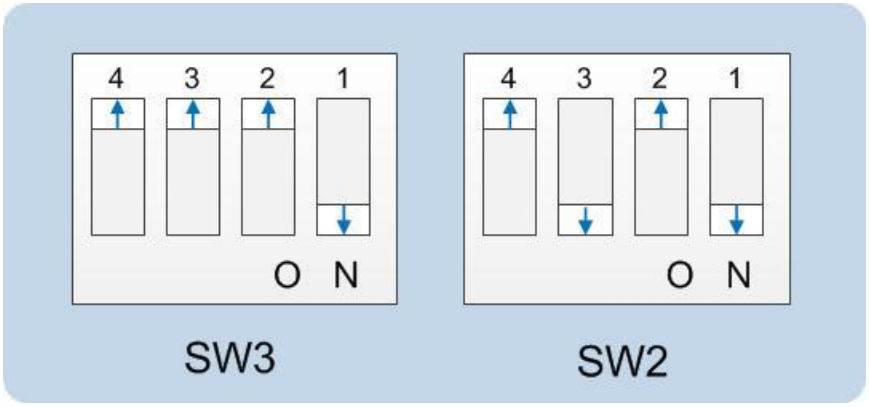


Figure 5-11: Tera Term: DIP switches in normal running (watchdog) mode

h. Repeat the above procedure for the second CPU card, if present. Reinsert both of the upgraded CPU cards into the matrix.

i. The OK LED shows a double flash, which indicates that valid application code is present, but that there is no configuration in the cards. Download a configuration file (apply changes), using EHX.

5.5 Setting the matrix type

The Eclipse HX-Median, Eclipse HX-Omega and Eclipse HX-Delta matrices run common software, which means that when you upgrade the application code for the CPU card, the CPU card cannot automatically distinguish between the two matrix types. You must therefore set the matrix type in EHX.

Note: The Eclipse HX-PiCo runs its own matrix-specific software, and will always identify itself as an Eclipse HX-PiCo on hardware discovery. There is therefore no requirement to set the matrix type for the Eclipse HX-PiCo.

To set the matrix type:

1) In EHX, select Diagnostics > Event Log.

2) In the Matrix Event Log tab, Click the Play icon [ ].

3) Click Request info. In the dialog (see *Figure 5-12: Setting the matrix type*), enter the following custom command:

```
Custom 145.1.12096. <2 == Eclipse HX-Median, 3 == Eclipse HX-Omega,
4 == Eclipse HX-Delta>
```

Click **Send.**

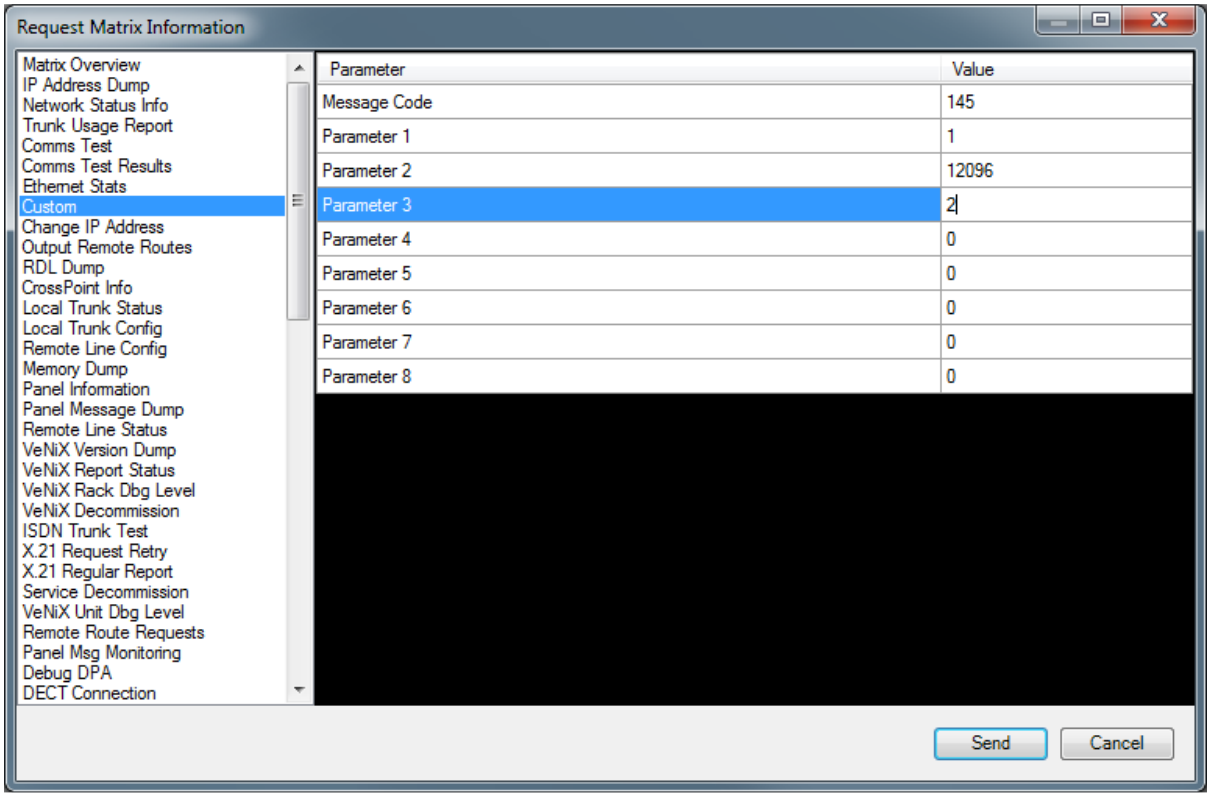


Figure 5-12: Setting the matrix type

Note: If the Event Log does not display, stop and restart the EHX software.

5.6 Checking the CPU card application code version

To check the CPU card application code version:

1) In EHX, select Diagnostics > Event Log.

2) In the Matrix Event Log tab, Click the Play icon [.

3) Click Request info. In the dialog, select Matrix Overview and click Send.

4) Look for the line that displays the application code (firmware) version. In the following example, the application code (version) number is 4.28.2.0:

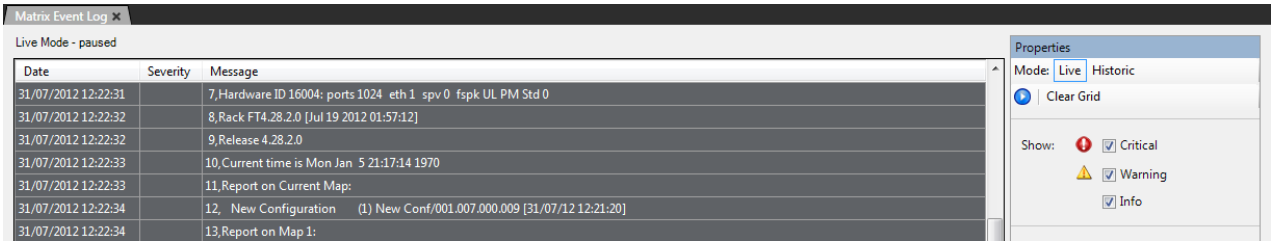


Figure 5-13: Application code (firmware) version

5.7 Upgrading CPU Card U53 CPLD

The CPU card U53 upgrade can be performed any time after the V8.5 CPU card firmware has been loaded into the card.

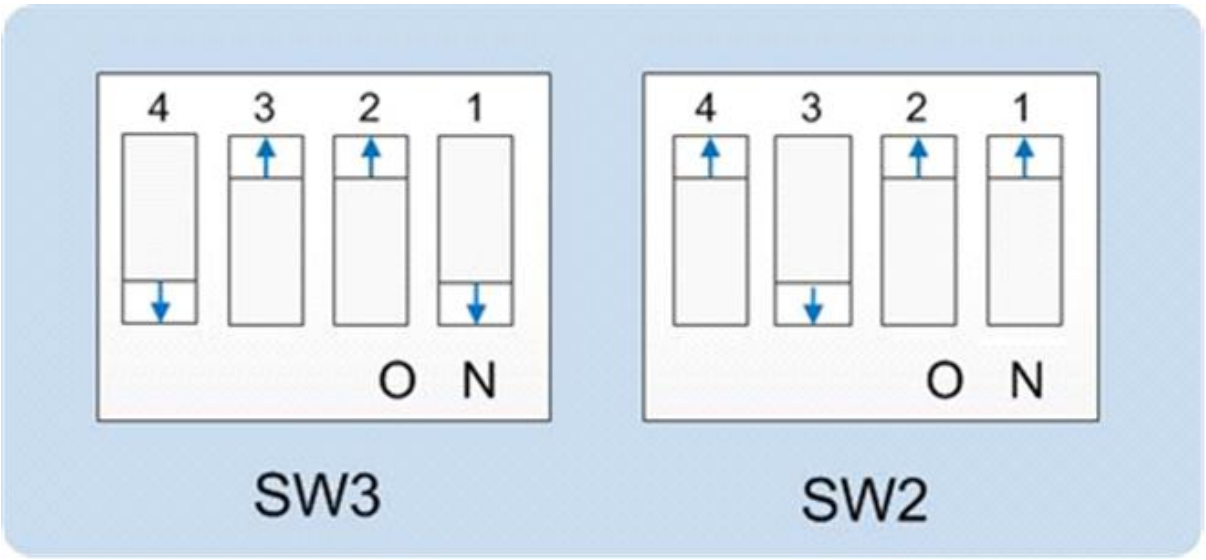
The U53 firmware image is embedded in the CPU card firmware image and therefore no additional download from EHX is required.

Note: Upgrade one CPU card at a time and verify correct functionality of the card after the upgrade before upgrading the second card.

Note – Older revisions of CPU card do not support this following centralized upgrade. In order to establish if a CPU card supports the following upgrade method request a firmware report from EHX. If the U53 and U1 versions for a CPU card are reported as UNKNOWN then this method of CPLD upgrade is not supported and the Xilinx tools method of upgrade detailed in this section will need to be used.

To upgrade a CPU card U53 CPLD device firmware image:

1) Set the CPU card DIP switches as follows. This enables CPLD firmware upgrades.

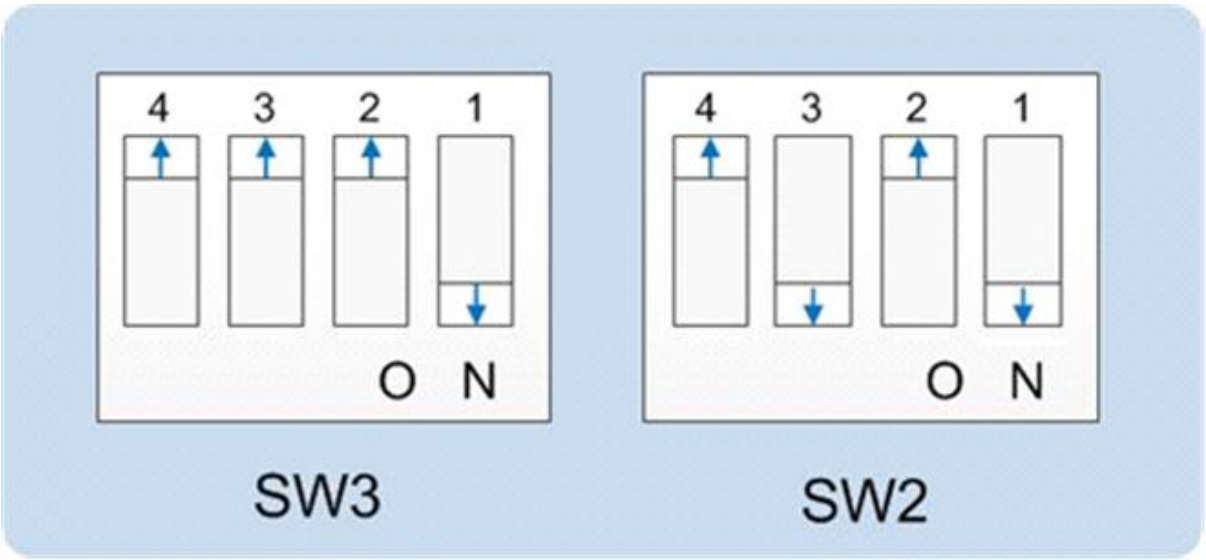


2) Re-insert the CPU card into the matrix. If the CPLD image requires upgrading this will be performed and the CPU card will reset on completion to action the image in the CPLD device.

3) When the CPU card initializes (or re-initializes as a result of step 2.) and determines that the CPLD image is up to date it will output the following message via the LED front panel "CPLD Upgrades Enabled".

4) Use the EHX firmware report to verify that the correct version of the U53 CPLD is now loaded.

5) If the upgrade has been completed disable the CPLD upgrade functionality by setting the DIP switches to the following settings.



5.8 Upgrading CPU Card U1 CPLD

The CPU card U1 upgrade can be performed any time after the V8.5 CPU card firmware has been loaded into the card.

The U1 firmware image is embedded in the CPU card firmware image and therefore no additional download from EHX is required.

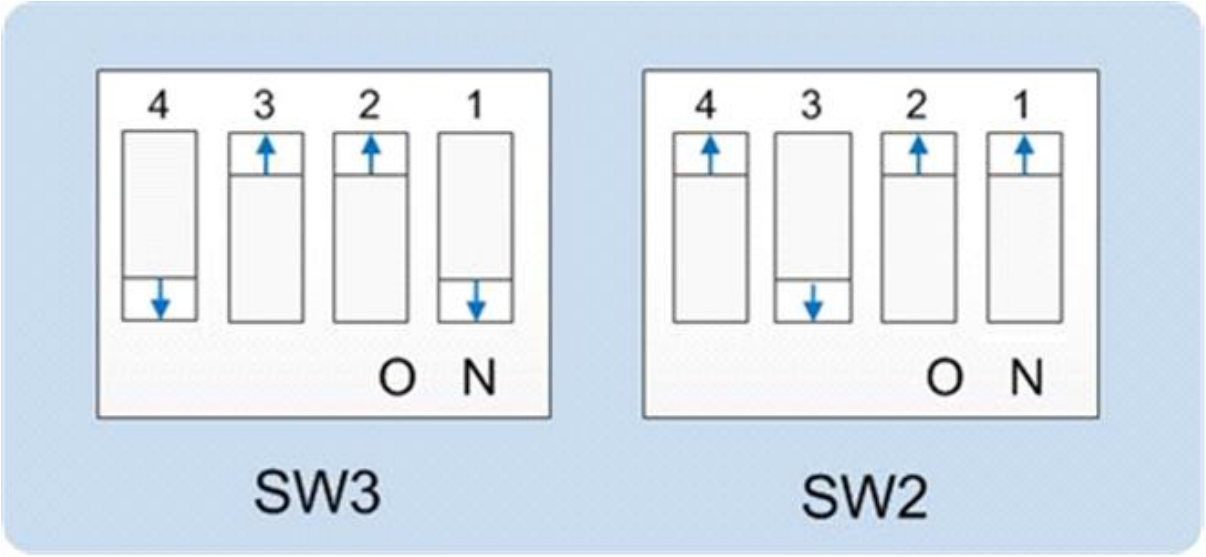
Upgrade one CPU card at a time and verify correct functionality of the card after the upgrade before upgrading the second card.

Note: Power must not be lost to the CPU card during the upgrade of the U1 CPLD. The duration of the device load is approximately 5 seconds, but this will only commence a number of seconds after the card has been booted. If power is lost during the U1 CPLD upgrade the Xilinx tools method of upgrade will be required to recover the card. Until this is done the card will not be usable. It is therefore also especially important to upgrade the U1 CPLD on one CPU card at a time.

Note: Older revisions of CPU card do not support this following centralized upgrade. In order to establish if a CPU card supports the following upgrade method request a firmware report from EHX. If the U53 and U1 versions for a CPU card are reported as UNKNOWN then this method of CPLD upgrade is not supported and the Xilinx tools method of upgrade detailed in this section will need to be used.

To upgrade a CPU card U1 CPLD device firmware image

1) Set the CPU card DIP switches as follows. This enables CPLD firmware upgrades.



2) Re-insert the CPU card into the matrix.

3) Press and hold the ‘Config’ button on the front of the CPU card.

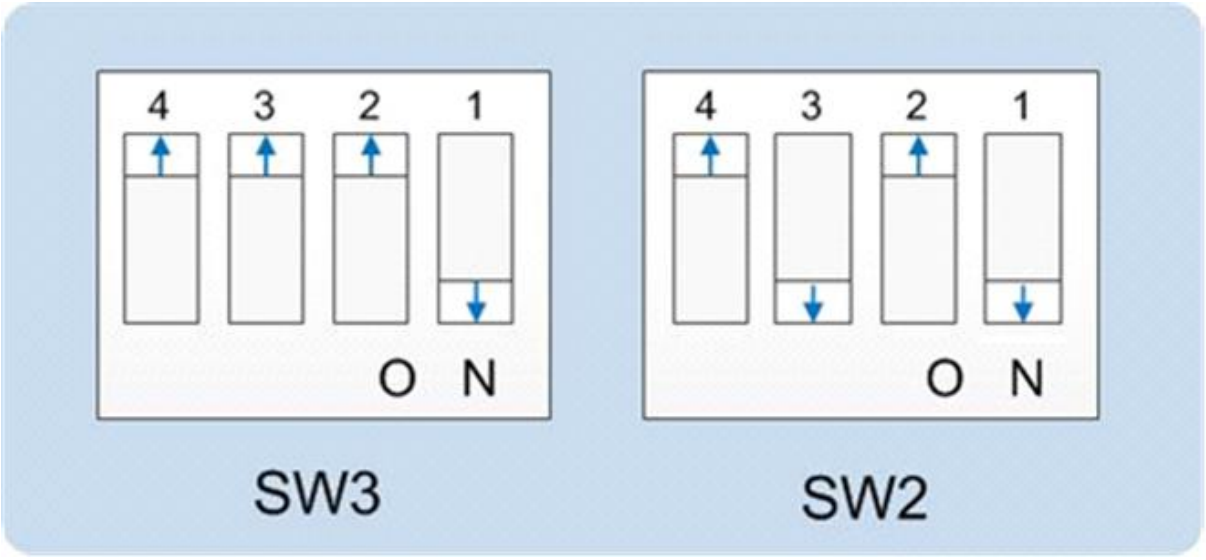
4) Pin reset the CPU card and wait for 5 seconds.

5) Release the 'Config' button. . If the CPLD image requires upgrading this will be performed and the CPU card will reset on completion to action the image in the CPLD device.

6) When the CPU card initializes (or re-initializes as a result of step 2.) and determines that the CPLD image is up to date it will output the following message via the LED front panel "CPLD Upgrades Enabled".

7) Use the EHX firmware report to verify that the correct version of the U1 CPLD is now loaded.

8) If the upgrade has been completed disable the CPLD upgrade functionality by setting the DIP switches to the following settings.



5.9 Upgrading the CPU card U53 CPLD code with Xilinx tools

Use the following procedure to upgrade the U53 CPLD code for the CPU card.

To upgrade the CPU U53 CPLD code with Xilinx tools:

1) Check that you have the latest version of Xilinx tools installed.
Tip: Upgrading the CPU card(s) CPLD code using Xilinx tools requires specialized equipment. For more information about installing Xilinx programming tools, see **Appendix J:Xilinx tools.**

2) Connect the USB connector of the download cable (Platform cable USB DLC9G) to the USB port of the PC.

3) Connect the 14way IDC header to CON11.

4) Power up the CPU card and start the iMPACT programming tool.

5) In **Load Project**, select **Cancel**.

6) Hold the CPU card in reset by inserting a suitable tool into the **Reset** pin at the top of the card. You must press and hold the reset pin during the whole upgrade process.

7) In **Flows**, double click **Boundary Scan**. Right click the main window and select **Initialise Chain / Ctrl+ I**:

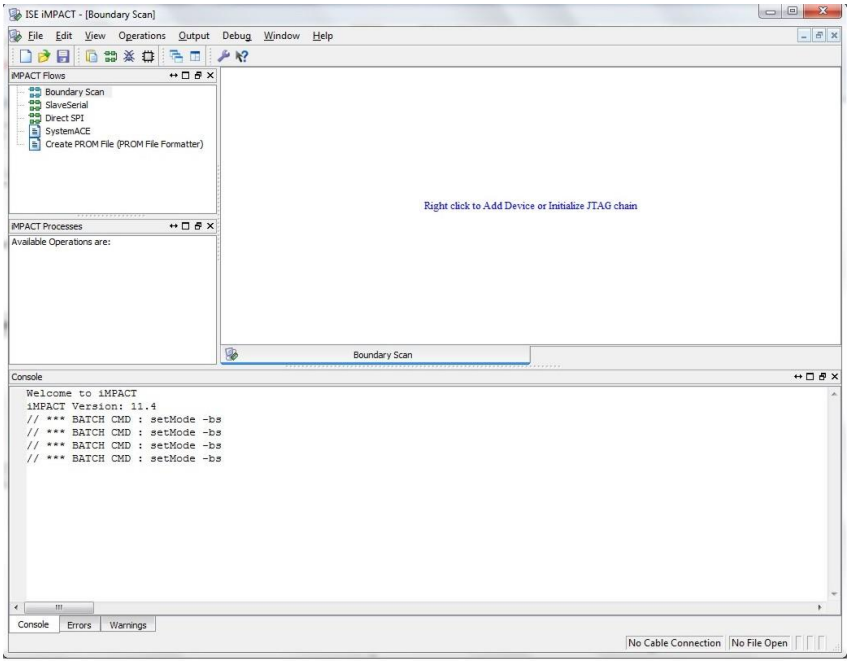


Figure 5-14: Example iMPACT Boundary Scan

8) If the cable is connected correctly, the application will connect and a Xilinx chip chain will be shown. If the cable is not connected correctly, a cable connection warning is given.

The full chain shows **two devices**, as shown below.

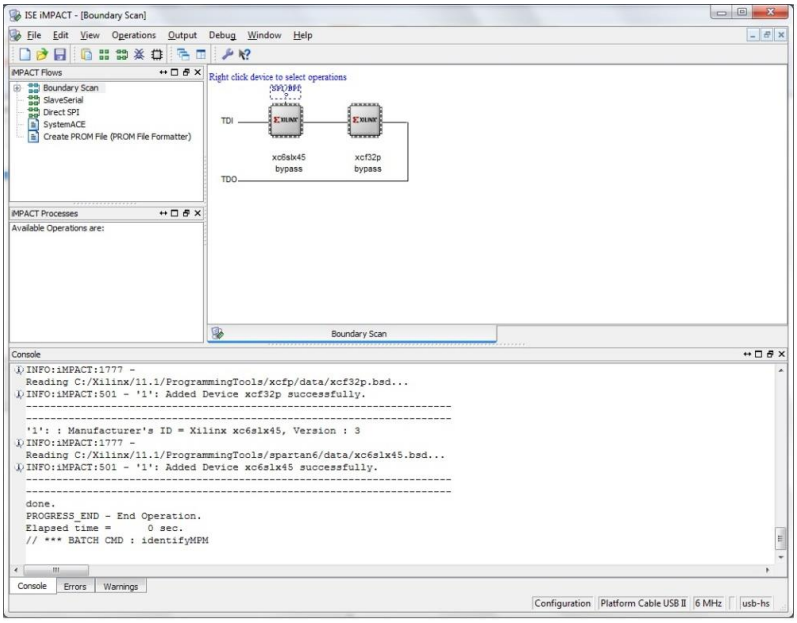


Figure 5-15: Example Xilinx chip chain

9) The **Assign New Configuration File** dialog asks you to select the CPLD code for the first device in the chain or to bypass that device.

Select the first device in the chain.

For this (first) device, select the U53 CPLD code. The U53 CPLD code for the CPU card is available from the Drivers DVD:

- **Drivers DVD > Omega-Median-Delta > xxxxxx - Config Card U53 CPLD code**.

Note: xxxxxx represents the part number.

The folder contains a CPLD code file (***.jed**) and a *Read Me* file (***.txt**), which contains version information.

10) Right click the first device (U53) and select **Programming**.
The upgrade starts, and takes approximately 2 minutes to complete. When the upgrade is complete, the **Program Succeeded** message is displayed in the main window.

11) Power down the CPU card.

5.10 Upgrading the CPU card U1 CPLD code with Xilinx tools

Use the following procedure to upgrade the U1 CPLD code for the CPU card.

To upgrade the CPU U1 CPLD code with Xilinx tools:

1) Check that you have the latest version of Xilinx tools installed.

   Tip: Upgrading the CPU card(s) CPLD code using Xilinx tools requires specialized equipment. For more information about installing Xilinx programming tools, see **Appendix J:Xilinx tools.**

2) Connect the USB connector of the download cable (Platform cable USB DLC9G) to the USB port of the PC.

3) Connect the **14way IDC header** to **CON11**.

4) Power up the CPU card and start the iMPACT programming tool.

5) In **Load Project**, select **Cancel**.

6) Hold the CPU card in reset by inserting a suitable tool into the **Reset** pin at the top of the card. You must press and hold the reset pin during the whole upgrade process.

7) In **Flows**, double click **Boundary Scan**. Right click the main window and select **Initialise Chain / Ctrl+ I**:

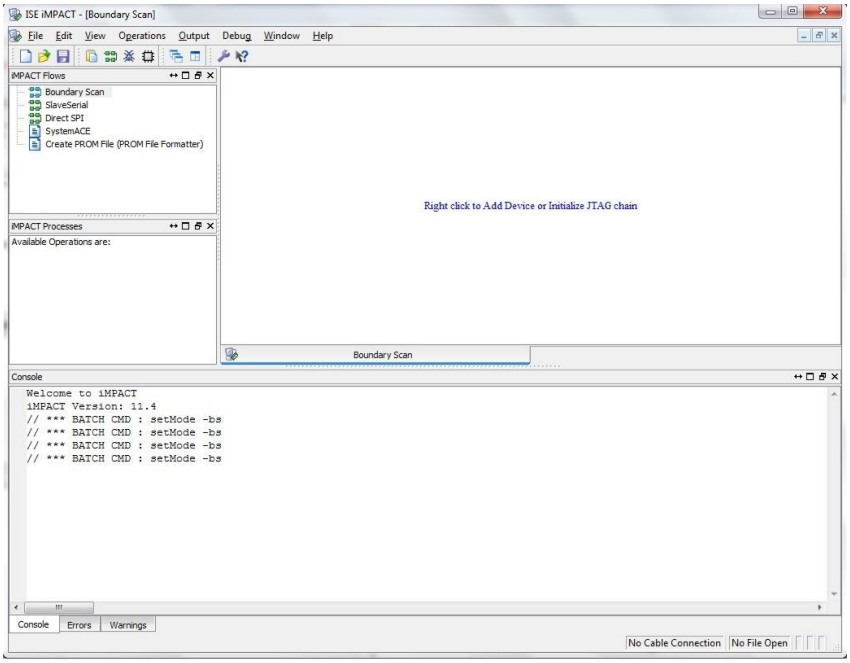


Figure 5-16: Example iMPACT Boundary Scan

8) If the cable is connected correctly, the application will connect and a Xilinx chip chain will be shown. If the cable is not connected correctly, a cable connection warning is given.

   The full chain shows **two devices**, as shown below.

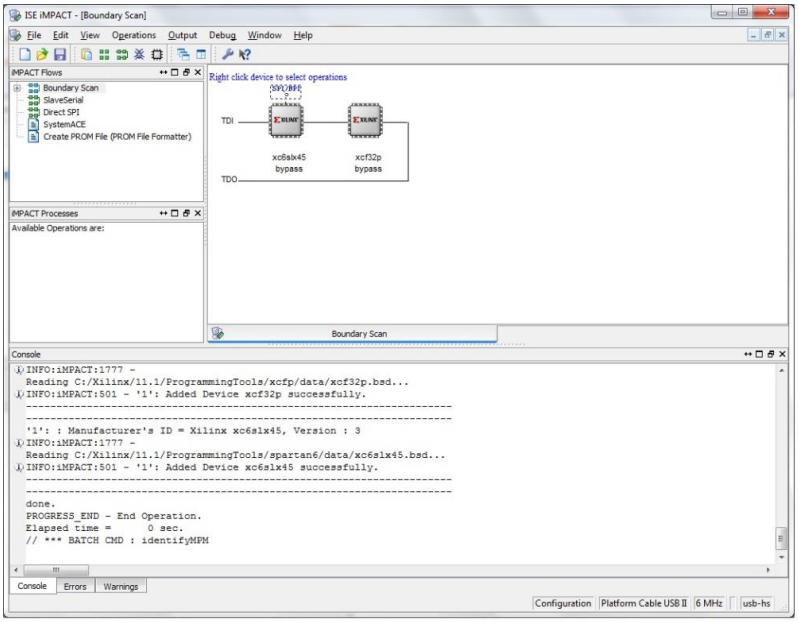


Figure 5-17: Example Xilinx chip chain

9) The **Assign New Configuration File** dialog asks you to select the CPLD code for the first device in the chain or to bypass that device.

Bypass the first device.

For the second device, select the U1 CPLD code. The U1 CPLD code for the CPU card is available from the Drivers DVD:

- **Drivers DVD > Omega-Median-Delta > xxxxxx - Config Card U1 CPLD code**.

Note: xxxxxx represents the part number.

The folder contains a CPLD code file (***.jed**) and a *Read Me* file (***.txt**), which contains version information.

10) A summary dialog is presented. For **all** devices, ensure that the **Erase Before Programming** and **Verify** flags are set. Click **OK**.

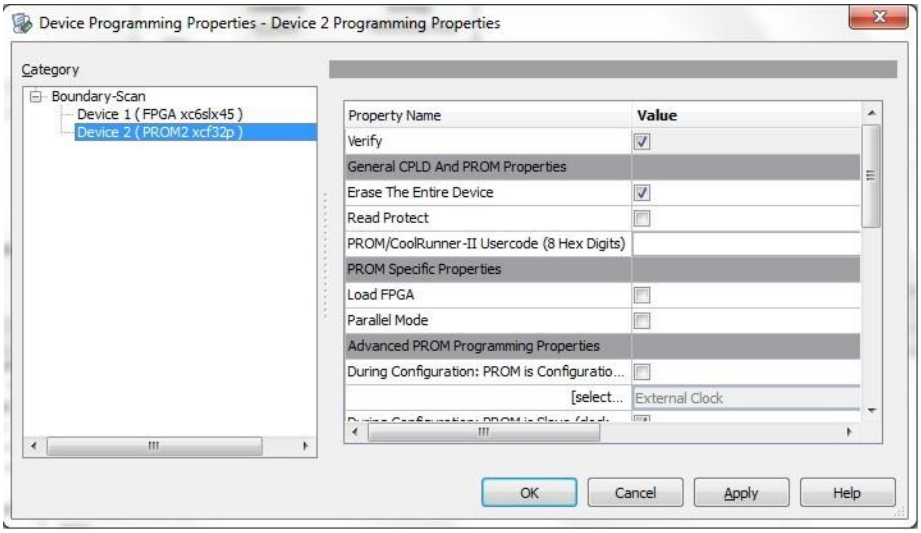


Figure 5-18: Example Xilinx device programming properties

11) Right click the second device and select **Programming**.
The upgrade starts, and takes approximately 2 minutes to complete. When the upgrade is complete, the **Program Succeeded** message is displayed in the main window.

12) Power down the CPU card.

5.11 Downloading a test configuration to the CPU card using EHX

After you have upgraded your Eclipse HX-Median / Eclipse HX-Omega / Eclipse HX-Delta matrix CPU cards, Clear-Com recommends downloading a test configuration from EHX to the CPU cards.

Downloading a configuration will enable you to make any further configuration changes to the cards using either a serial or Ethernet connection.

For more information, see your ***EHX User Manual***.

5.12 Forcing the CPU card to the factory default IP address

In rare situations, the CPU card may not be able to find a valid IP address for the Ethernet port. To address this issue, you can force the matrix to the factory default IP address (`169.254.0.100`):

13) Set your PC Ethernet IP address to DCHP mode.

14) Directly connect the PC to the matrix, using an Ethernet crossover cable.

15) Force the system to use the default IP address, by performing the 3-finger reset. Press and hold both the **ENG** and **FULL RESET** front panel buttons simultaneously, then press the top **RESET** button.

1. When the CPU card OK LED starts to flash, release both the **ENG** and **FULL RESET** buttons.

Tip: *For help with selecting the other procedures you require for upgrading to EHX, see the quick reference procedures tables in* ***3Quick reference: Upgrading to Eclipse HX v.***.

6 Upgrading the Eclipse HX-PiCo

This chapter describes how to upgrade the Eclipse HX-PiCo matrix, including the PROM, FPGA and application code.

The Eclipse HX-PiCo PROM is different from the PROM used with the CPU cards, which are fitted to the Eclipse HX-Median, Eclipse HX-Omega and Eclipse HX-Delta matrices. Care should be taken to ensure that the correct PROM is fitted.

Note: If you are upgrading your PiCo to an HX-PiCo please contact your Clear-Com representative to establish if your hardware is HX ready. If your PiCo hardware is not HX ready then this is a factory only upgrade.

Note: This guide is laid out in the order in which you must upgrade your Eclipse HX software and hardware devices. For a quick reference to upgrading your system, see **3Quick reference: Upgrading to Eclipse HX**.

Note: The HX-PiCo mainboard needs a factory hardware modification.

*Eclipse HX devices are powered by **mains voltage**. Unless specifically advised to the contrary, **disconnect** mains supply before carrying out any maintenance or repair tasks. Observe precautions for handling electrostatic sensitive devices.*

6.1 Changing the Eclipse HX-PiCo PROM

Note: When you change the Eclipse HX-PiCo PROM, you must also change the Eclipse HX-PiCo RAM (from 128Mb RAM to 256Mb RAM). See **6.2 Changing the Eclipse HX-PiCo RAM** below.

To upgrade the Eclipse HX-PiCo PROM:

1) Ensure that you have the following equipment:

Required equipment	Description / comments
2MBit PROM device (ST M27W201 or equivalent).	-
PROM Programming Unit	You will also require the appropriate programming software for the unit.
The appropriate S record file for the Eclipse HX-PiCo boot PROM.	You can find the **S** record file on the Drivers DVD: **Drivers DVD > PiCo-HX_PiCo_E-32 > xxxxxx – Boot PROM** (where **xxxxxx** represents the part number).

Table 6-1: Required equipment

2) Ensure that the Eclipse HX-PiCo is powered off. Remove the lid of the device.

***Remove power** from the device first, to avoid working with the system while it is **live**. Observe all electrical shock hazard warning and precautions for handling electrostatic sensitive devices*

3) Ensure that the PROM device to be programmed / upgraded is empty.

4) Program the PROM device with the appropriate file, in accordance with the instructions for the PROM device.

5) Confirm that the checksum of the programmed device matches that given in the ***Eclipse HX Release Notes*** (for this documentation, see the Eclipse HX v8.5 software DVD).

6) Remove the existing PROM device from the main board.

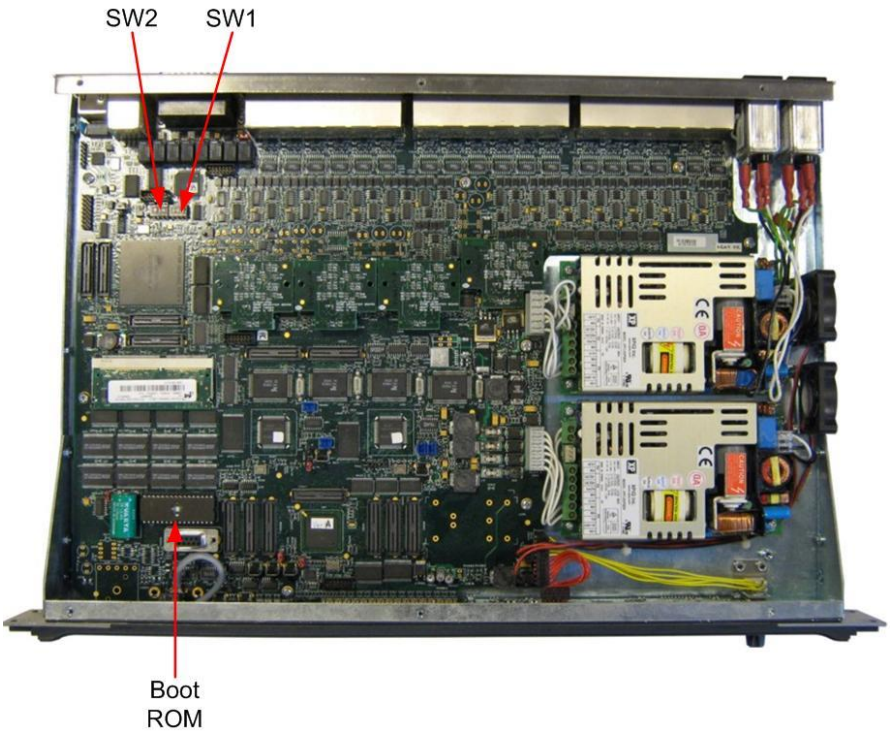


Figure 6-1: Eclipse HX-PiCo main board

7) Insert the newly programmed PROM device, taking care to ensure the correct polarity of the device.

8) Replace the lid of the Eclipse HX-PiCo device.

6.2 Changing the Eclipse HX-PiCo RAM

Note: When you change the Eclipse HX-PiCo RAM (from 128Mb RAM to 256Mb RAM), you must also change the Eclipse HX-PiCo PROM. See **6.1 Changing the Eclipse HX-PiCo PROM** above.

To change the Eclipse HX-PiCo RAM (from 128Mb to 256Mb):

1) Ensure that:

2) The Eclipse HX-PiCo is powered off.

3) You have the replacement 256Mb CPU card RAM daughter board to hand.

4) Remove the lid of the Eclipse HX-PiCo.

5) The cassette that holds the Eclipse HX-PiCo RAM daughter board is left of center on the main board:

Figure 6-2: Eclipse HX-PiCo 128Mb RAM daughter board

To release the 128Mb RAM daughter board, push back the levers to either side of the cassette. Remove the board.

6) Fit the replacement 256Mb CPU card RAM daughter board to the cassette. The daughter board is fitted chip-side up. Ensure that the daughter board is securely fitted (only the top edge of the connectors along the lower edge of the board

should be visible).

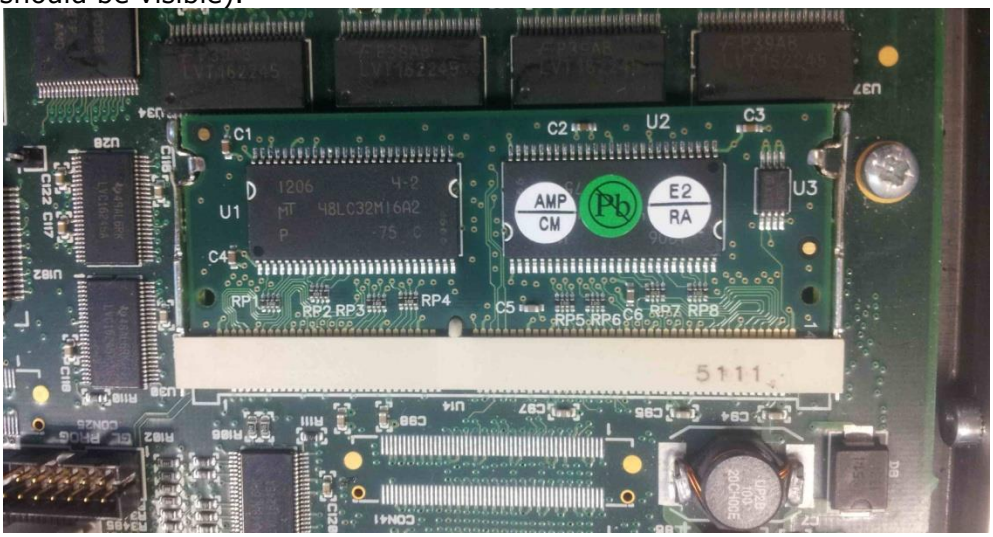


Figure 6-3: Eclipse HX-PiCo 256Mb RAM daughter board

7) Secure the RAM daughter board by closing the levers to either side of the cassette.

8) Return the CPU card to the Eclipse HX-Median, Eclipse HX-Omega or Eclipse HX-Delta matrix.

6.3 Changing the Eclipse HX-PiCo DIP switches

To change the Eclipse HX-PiCo DIP switches to the appropriate Eclipse HX v8.5 settings, see either:

- Appendix D:Eclipse HX-PiCo CPU DIP switches
- 6.3.3 Upgrading the Eclipse HX-PiCo application code using Tera Term
  Upgrading the Eclipse HX-PiCo application code

6.3.1 Upgrading the Eclipse HX-PiCo application code using EHX with Ethernet

Before you upgrade the Eclipse HX-PiCo card application code, check that:

- The PC can successfully connect to the matrix with an Ethernet connection by viewing the Event Log (**Diagnostics > Event Log)** in EHX.
- There is a valid configuration in the matrix. A valid configuration enables the matrix to identify its IP address and run its TCP / IP stack.

To upgrade Eclipse HX-PiCo application code using EHX with an Ethernet connection:

1) Ensure that you have the following equipment:

Required equipment	Description / comments
PC with an Ethernet connector	-
LAN cable for the PC-to-Eclipse HX PiCo connection	For direct connections, use Ethernet crossover cable. If the connection passes through an Ethernet switch on its way to the PC / matrix, use straight CAT5 cable.
EHX installation	EHX must be configured and operational.
An EHX configuration file (*.ccn or *.hxn file format)	The configuration file must have an appropriate IP address set.
The appropriate *.fwr data file for the Eclipse HX-PiCo	You can find the ***.fwr** data file on the software DVD at: **Software DVD > Eclipse HX-PiCo > xxxxxx – Application Code** (where **xxxxxx** represents the product number).

Table 6-2: Required equipment

2) Start EHX. Select File > Matrix Connection.

3) In the Matrix Connection dialog, select the Ethernet communications option.

4) Connect the PC with the Eclipse HX-PiCo, using the LAN port on the rear of the matrix.

5) Do one of the following:

- If you are running EHX in Client-Server mode, select File > Import project. Navigate to the configuration (*.ccn) file and click Open to import the file.
- If you are running EHX in Client-Only mode, select File > Open. Navigate to the configuration (*.ccn) and open the file.

  Note: EHX can open *.ccn format files as well as its own *.hxn format configuration files.

6) In EHX, select System > Layout. In the work area, right click the Eclipse HX-PiCo.

7) From the menu, select Firmware > Update Firmware.

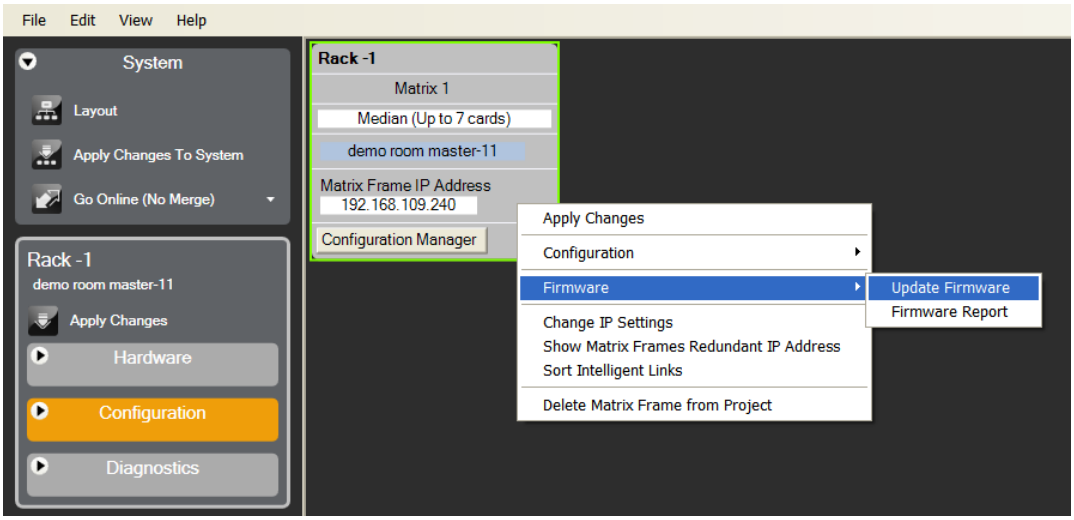


Figure 6-4: Upgrading app code: Matrix firmware update

8) In the Firmware update wizard, click **Next**. Ensure that **Matrix** is selected in the following dialog, then click **Next** again.

9) In the next dialog, click **Browse** and navigate to the required ***.fwr** file for the Eclipse HX-PiCo application:

   a. Go to **Software DVD > Eclipse HX-PiCo > xxxxxx – Application Code** (where **xxxxxx** represents the part number).

      The folder contains the ***.fwr** file and a *Read Me* file (***.txt)** with version information.

   b. Select the***.fwr** file and click **OK / Open.** Ensure that the correct file name is displayed in the dialog.

10) Click **Next.** Confirm that the correct file has been selected, and click **Next** again to start the firmware update. The update will take approximately 2 minutes.

Tip: *While the update is in progress, check that the LED on the front of the Eclipse HX-PiCo is flashing rapidly. Rapid flashes indicate communication with the PC.*

Note: If you are upgrading from v5.2.4 to Eclipse HX v8.5, the download dialog does not automatically finish. This is due to a messaging change between the two system architectures. Instead, close the dialog (which will continue to indicate Verifying) when the Eclipse HX-PiCo reboots (see Step 10).

11) When the update is completed, click **Finish** in the Firmware Update wizard. The Eclipse HX-PiCo reboots. The CPU is reset.

Note: The OK LED double flashes to indicate that valid application code is present, but that there is no configuration in the cards. Download a configuration file (*.hxn or *.ccn format), using EHX.

6.3.2 Upgrading the Eclipse HX-PiCo application code using EHX with serial link

You can upgrade the Eclipse HX-PiCo application code using EHX with a serial link, whether or not there is a valid configuration (map) on the matrix. With EHX, it is possible to perform the initial upgrade using a serial connection, then move to an Ethernet connection for future configuration downloads and upgrades, once an IP address has been configured.

Note: Before you use this procedure, check that the matrix event log can connect serially to an Eclipse HX-PiCo with a configuration.

To upgrade the application code with EHX, using a serial link:

1) Ensure that you have the following equipment:

Required equipment	Description / comments
PC with either a serial port connection or USB-to-serial port adaptor	If using a USB-to-serial port adaptor cable, you must connect the cable before starting EHX to enable EHX to detect the USB port as a COM port.
RS232 serial cable	Use an RS232 cable with DB9 to 3.5mm jack connectors (a CellCom / FreeSpeak / FreeSpeak II (FSBP) registration cable (PD4007Z)).
EHX installation	EHX must be configured and operational.
An EHX configuration file (*.hxn or *.ccn)	The configuration file must have the appropriate IP address set.
The appropriate *.fwr data file for the Eclipse HX-PiCo	You can find the ***.fwr** data file on the software DVD at: **Software DVD > Eclipse HX-PiCo > xxxxxx – Application Code** (where **xxxxxx** represents the part number).

Table 6-3: Required equipment

2) Start EHX. Select File > Matrix connection.

3) In the Matrix connection dialog, select the serial communications option.

4) Select the correct COM port then click OK.

5) Connect the PC to the serial port on the front of the device, using an RS232 cable with DB9 to 3.5mm jack connectors (CellCom / FreeSpeak / FreeSpeak II (FSBP) registration cable (PD4007Z)).

5. Do one of the following:

- If you are running EHX in **Client-Server mode**, select **File > Import project**. Navigate to the configuration (***.ccn**) file and click **Open** to import the file.
- If you are running EHX in **Client-Only mode**, select **File > Open**. Navigate to the configuration (***.ccn**) and open the file.

Note: EHX can open *.ccn format files as well as its own *.hxn format configuration files.

6) In EHX, select **System > Layout**. In the work area, right click the matrix.

7) From the menu, select **Firmware > Update Firmware**.

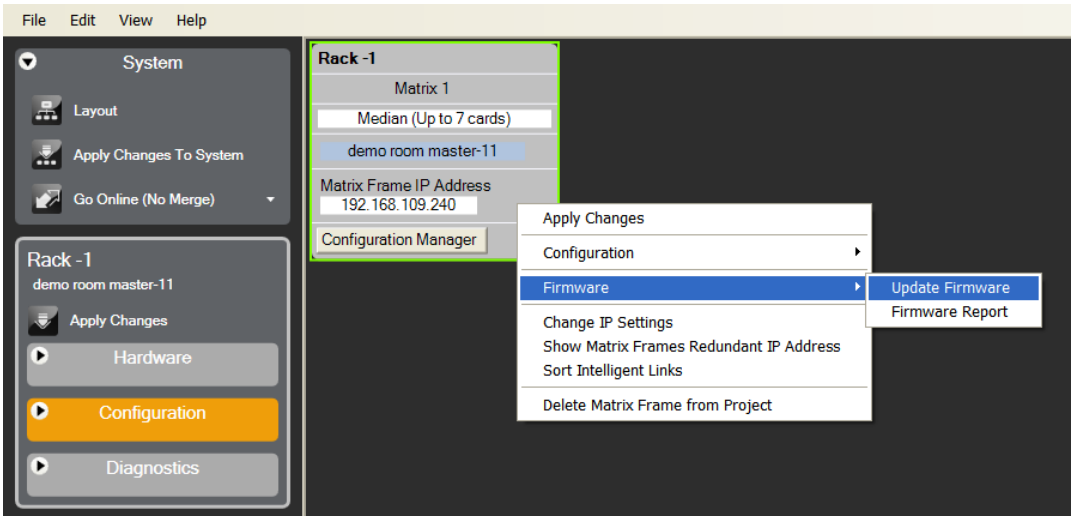


Figure 6-5: Upgrading app code: Matrix firmware update

8) In the Firmware update wizard, click **Next**. Ensure that **Matrix** is selected in the following dialog, then click **Next** again.

9) In the next dialog, click **Browse** and navigate to the required ***.fwr** file for the Eclipse HX-PiCo application:

   a. Go to **Software DVD > Eclipse HX-PiCo > xxxxxx – Application Code** (where **xxxxxx** represents the part number).

      The folder contains the ***.fwr** file and a *Read Me* file (***.txt)** with version information.

   b. Select the***.fwr** file and click **OK / Open.** Ensure that the correct file name is displayed in the dialog.

10) Click **Next.** Confirm that the correct file has been selected, and click **Next** again to start the firmware update. The upgrade will take approximately 2 minutes.

Tip: *While the update is in progress, the LED on the front of the CPU card will flash rapidly. Rapid flashes indicate communication with the PC.*

Note: If you are upgrading from v5.2.4 to Eclipse HX v8.5, the download dialog does not automatically finish. This is due to a messaging change between the two system architectures.

Instead, close the dialog (which will continue to indicate Verifying) when the Eclipse HX-PiCo reboots (see Step 11).

11) When the update is completed, click **Finish** in the Firmware Update wizard. The Eclipse HX-PiCo reboots. The CPU card(s) is reset.

Note: The OK LED double flashes to indicate that valid application code is present, but that there is no configuration in the cards. Download a configuration (*.cnn or *.hxn format) file, using EHX.

If the upgrade fails

If the upgrade fails, check the cabling and repeat the procedure. If the procedure still fails, use Tera Term to upgrade the Eclipse HX-PiCo firmware (see below).

If there was no previous configuration loaded in the matrix, download a basic configuration file to the Eclipse HX-PiCo matrix using EHX. Make any further configuration changes over the Ethernet LAN.

6.3.3 Upgrading the Eclipse HX-PiCo application code using Tera Term

To upgrade the Eclipse HX-PiCo application code using Tera Term:

1) Ensure that you have the following equipment:

Required equipment	Description / comments
PC with either a serial port connection or USB-to-serial port adaptor	If using a USB-to-serial port adaptor cable, you must connect the cable before starting EHX to enable EHX to detect the USB port as a COM port.
RS232 serial cable	Use a RS232 cable with DB-9 to 3.5mm jack connectors (a CellCom / FreeSpeak / FreeSpeak II (FSBP) registration cable (PD4007Z)).
Tera Term installation	Tera Term must be configured and operational. You can find the Tera Term application on both of the Eclipse HX 8.5 DVDs: **Software DVD > 3rd_Party_Software > Teraterm** **Drivers DVD > 3rd_Party_Software > Teraterm**

Required equipment	Description / comments
The appropriate *.fwr data file for the Eclipse HX-PiCo application	You can find the ***.fwr** data file on the software DVD at: **Software DVD > Eclipse HX-PiCo > xxxxxx – Application Code** (where **xxxxxx** represents the part number).

Table 6-4: Required equipment

2) Install the Tera Term application**.** Accept all default settings.

3) Start Tera Term. In the **New Connection** dialog, select **Serial** (connection) and the COM port to use. Click **OK**.

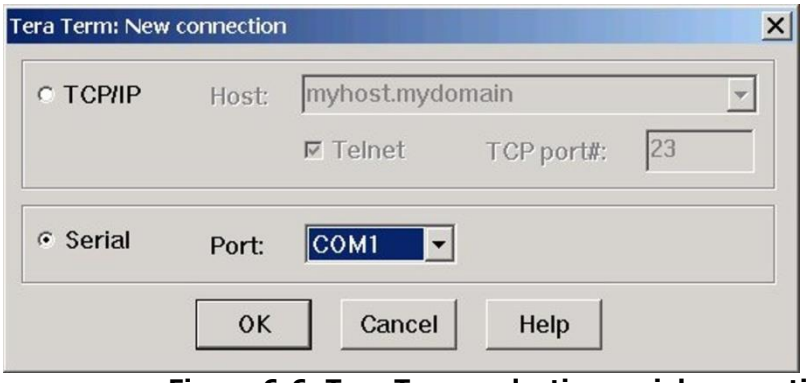


Figure 6-6: Tera Term: selecting serial connection

4) From the **Setup** menu, select the **Serial port...** entry.

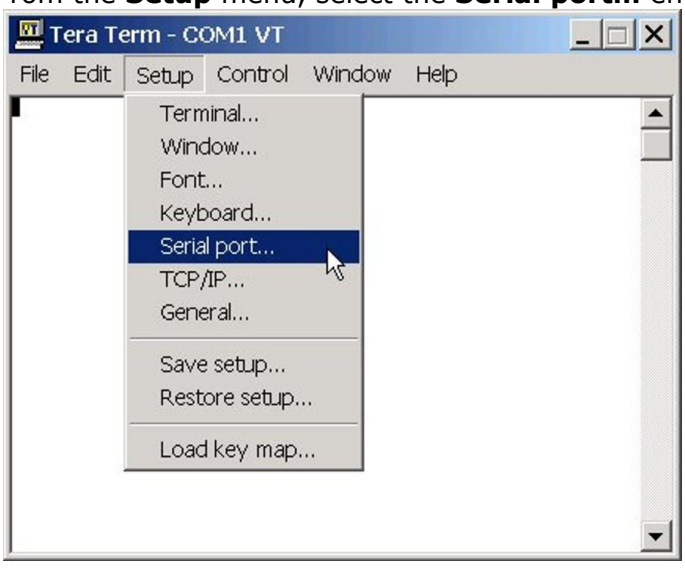


Figure 6-7: Tera Term: selecting Serial port...

5) The **Serial port** configuration dialog is displayed. Configure the serial port as follows:

Field	Data (to enter / select)
Port	Com1 **Note:** *Change as required to match a COM port on the PC.*
Baud Rate	115200
Parity	Even
Stop	One (bits)
Data	8 (bits)

Table 6-5: Tera Term: Serial port configuration

Tip: *The Tera Term application can be used for many of the Eclipse system upgrade processes. You can save and recall the relevant com port settings in Tera Term by selecting the **Setup / Save** or **Restore settings** options.*

6) Connect the PC serial port to the RS232 port to the front of the Eclipse HX-PiCo matrix.

7) Power off the matrix. To access the CPU, remove the lid from the matrix.

***Remove power** from the device first, to avoid working with the system while it is **live**. Observe all electrical shock hazard warning and precautions for handling electrostatic sensitive devices.*

8) Erase the old application code (firmware) from the CPU:

   a. Place the CPU in TEST mode.

   b. Set the DIP switches on the CPU as follows:

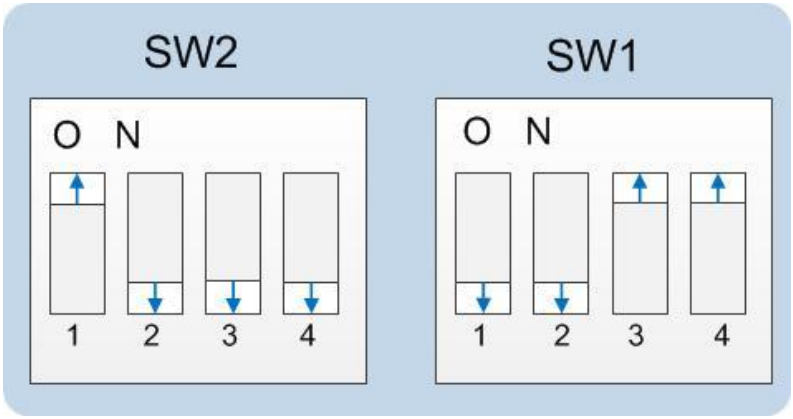


Figure 6-8: Eclipse HX-PiCo dip switches in Test mode

c. To bring the DIP switch changes into effect, power cycle or reset the matrix.

d. To confirm that the matrix has entered Test mode, check the display screen. Information similar to the following should be displayed:

Figure 6-9: Tera Term CPU test mode

Note: **If you do not see the data above, press the enter button on the PC.**

Tip: *To see all the available options in test mode, press **?** on your keyboard. To see all the current applications loaded onto the CPU, press **i**.*

e. On your PC keyboard, press **number 1**. To start the erasure of Flash memory, press **Enter** (or **Return**). Select **y** and **Enter** to confirm.

Note: It takes approximately 1 minute to erase Flash.

f. When the Flash has been erased, press **number 2** on your keyboard. To start the erasure of NVRAM, press **Enter** (or **Return**). When the NVRAM erase is complete, remove the CPU card.

9) Download the new application code to the CPU, using Tera Term:

a. Place the erased CPU in serial download mode. Set the DIP switches on the CPU as follows:

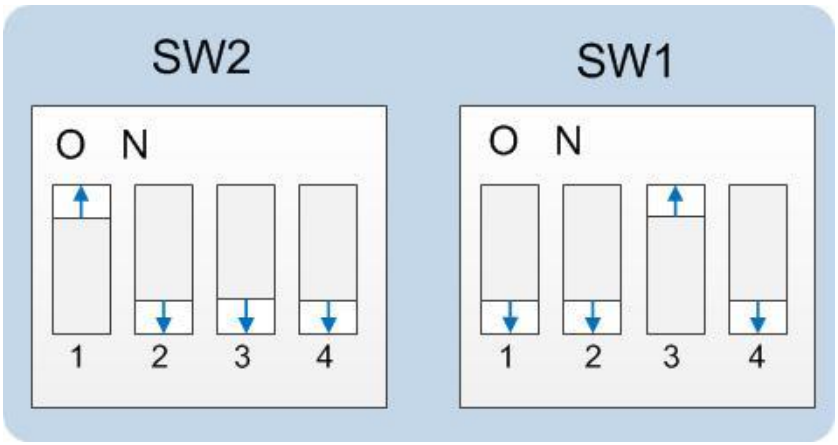


Figure 6-10: Tera Term: DIP switches, serial download mode

b. Power cycle or reset the Eclipse HX-PiCo to bring the DIP switch changes into effect.

c. In Tera Term, open **File** and select **Send file...** Ensure that the **BINARY option box** is selected.

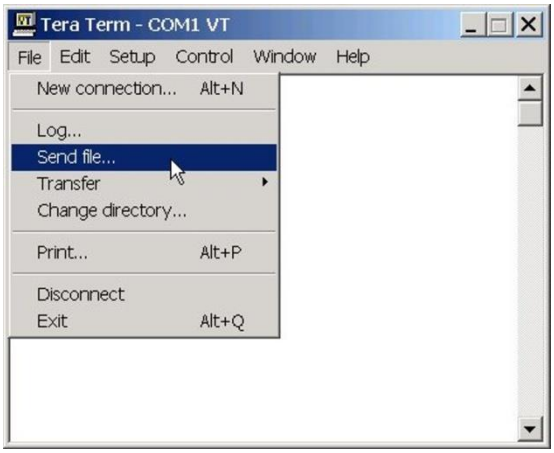


Figure 6-11: Tera Term: Send file...

d. In the **Select file** dialog, select the file to download, navigate to the CPU application code (firmware) ***.fwr** file:

   i. Go to **Software DVD > Eclipse HX-PiCo > xxxxxx – Application Code** (where **xxxxxx** represents the part number).

   The folder contains the ***.fwr** file and a *Read Me* file (***.txt)** with version information.

   ii. Select the***.fwr** file and click **OK / Open.** Ensure that the correct file name is displayed in the dialog.

Note: **Confirm that the matrix resets and restarts correctly.**

Note: **It may take up to 1 minute for the matrix to write the new application code in Flash before it reboots and the OK LED starts to double flash**

e. Set the DIP switches to normal running mode (watchdogs enabled):

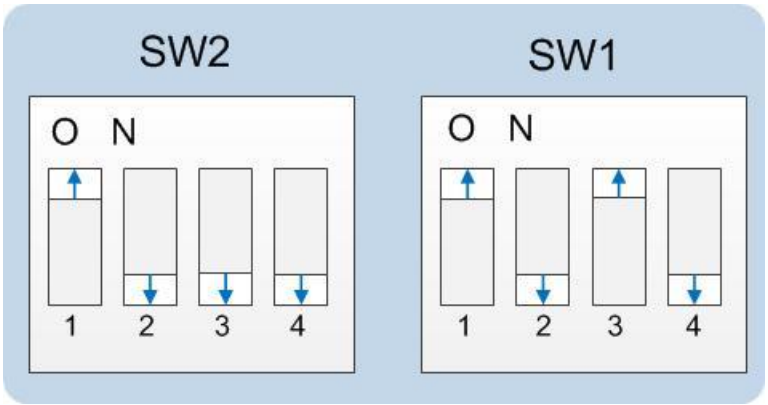


Figure 6-12: DIP switches set to normal running mode (watchdogs enabled)

f. Power cycle the Eclipse HX-PiCo so the DIP switch changes come into effect.

Note: If the download fails the matrix OK LED displays a long flash/ off rate. Tera Term does not indicate a failure onscreen and continues to download.

In this case, re-erase the matrix by placing the SW1 and SW2 into Test mode and repeating the steps that follow. Check your cabling.

6.4 Upgrading the Eclipse HX-PiCo MVX code

The Eclipse HX-PiCo has two MVX cards (or sections) on the same PCB, both of which require upgrading.

If you are upgrading from ECS v5.2.4, Clear-Com recommends upgrading the Eclipse HX-PiCo with the *combined* MVX boot and application code file (***.mot**), using the Renesas Flash Development Tool (FDT).

If you are upgrading an **existing** Eclipse HX installation, you can upgrade:

- The MVX application code separately (***.fwc**), using EHX.
- The MVX boot code separately (***.mot**), using the Renesas FDT method.
- The MVX boot and application code simultaneously, using the Renesas FDT method and the combined MVX boot and application code file (***.mot**).

MVX code	Renesas FDT method	EHX method
MVX boot code (*.mot)	✓	-
MVX application code (.fwc)	-	✓
Combined MVX boot and application code (*mot)	✓	-

Table 6-6: Upgrading the Eclipse HX-PiCo MVX code

Note: Because of small differences in PCB layout, it may not be possible to complete the upgrade of the MVX application code on a small number of Eclipse HX-PiCo units, using EHX. If the upgrade fails, you can still upgrade the MVX application code using Renesas FDT (which is suitable for all Eclipse HX-PiCo units).

6.4.1 Upgrading the Eclipse HX-PiCo MVX application code with EHX

Note: To upgrade the Eclipse HX-PiCo MVX application code with EHX, your system must already be running a version of Eclipse HX.

Recommendation

Clear-Com recommends that you monitor the MVX application code upgrade using the Event Log in EHX. The upgrade process is complete when the MVXs on the Eclipse HX-PiCo briefly disappear and then reappear in the log. To check that the upgrade has been successful, run a firmware report.

If the upgrade is unsuccessful, use the Renesas FDT to upgrade the MVX code (see **6.4.2 Upgrading the Eclipse HX-PiCo MVX boot and/or application code using the Renesas FDT***).*

To upgrade the Eclipse HX-PiCo MVX application code using EHX:

1) Ensure that you have the following equipment:

Required equipment	Description / comments
PC with an Ethernet connector	-
Serial cable or Ethernet cable for the PC to matrix connection	-
EHX installation	EHX must be configured and operational.
An EHX configuration file (*.hxn or *.ccn format)	The configuration file must have an appropriate IP address set.
The appropriate *.fwc format file for the Eclipse HX-PiCo MVX cards / sections	You can find the Eclipse HX-PiCo MVX application code (***.fwc**) file on the software DVD: **Drivers DVD > PiCo-HX_PiCo_E-32 > xxxxxx-MVX Application**

Table 6-7: Required equipment

2) Start EHX on the PC.

3) Connect the PC to the matrix using **either** Ethernet or a serial communications port.

4) Open the EHX configuration map within EHX. Select **System > Layout.**

5) Right click the matrix and then select **Firmware> Update Firmware**.

6) The **Update Firmware** wizard dialog is displayed. Click **Next**.
In the **Select Hardware Type** screen, ensure that the **Card** radio button is selected.

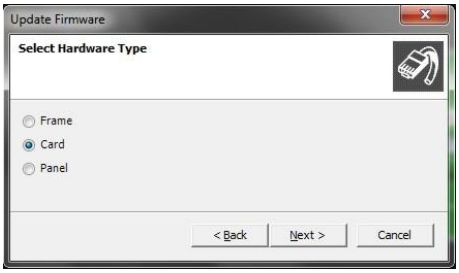


Figure 6-13: Select Hardware Type

7) In the next dialog, click **Browse** and navigate to the required ***.fwc** file for the Eclipse HX-PiCo application:

8) Go to **Drivers DVD > PiCo-HX_PiCo_E-32 > xxxxxx – MVX Application** (where **xxxxxx** represents the part number).

9) The folder contains the ***.fwc** file and a *Read Me* file (***.txt)** with version information.

10) Select the***.fwc** file and click **OK / Open.** Ensure that the correct file name is displayed in the dialog.

11) Click **Next** and confirm that the details displayed are correct.

12) Click **Next** and confirm that the download commences.

13) When the download has completed, click **Finish** to close the update firmware wizard.

Note: Because of small differences in PCB layout, it may not be possible to complete the upgrade of the MVX application code on a small number of Eclipse HX-PiCo units, using EHX. If the upgrade fails, you can still upgrade the MVX application code using Renesas FDT (which is suitable for **all** Eclipse HX-PiCo units).

6.4.2 Upgrading the Eclipse HX-PiCo MVX boot and/or application code using the Renesas FDT

To upgrade certain components within the Eclipse HX-PiCo matrix, the lid must be removed.

Remove power from the devices first, to avoid working with the system while it is live. Observe all electrical shock hazard warning and precautions for handling electrostatic sensitive devices

You can use the Renesas FDT to upgrade:

- The MVX boot code file separately (***.mot**).

- The MVX boot code and MVX application code simultaneously, using the combined MVX boot and application code file (***.mot**).

Tip: *For more information about installing and configuring the Renesas FDT, see* ***Appendix E: Hitachi Renesas Flash Development Tool***.

To upgrade the Eclipse HX-PiCo MVX code (MVX boot code or combined MVX boot and application code):

1) Ensure that you have the following equipment:

Required equipment	Description / comments
PC with a serial port connection or USB-to-serial port adaptor	If you are using a USB-to-serial port adaptor, download the latest drivers.
Renesas Flash Development Toolkit 3.4 Basic (FDT)	The Renesas FDT must be installed and configured. You can find the Renesas FDT application on both of the Eclipse HX v8.5 DVDs: **Software DVD > 3rd_Party_Software > RenesasFDT** **Drivers DVD > 3rd_Party_Software > RenesasFDT**
MVX-A16 serial upgrade cable (Clear-Com part CAB-MVX-48Z)	For an image of this cable, see ***Figure 28: MVX-A16 Serial upgrade cable.***
The appropriate MVX code file **(*.fwc format for the separate MVX boot file, *.mot format for the combined MVX boot and application code file)**	You can find the Eclipse HX-PiCo MVX code files on the Eclipse HX v8.5 software DVD: **Drivers DVD > PiCo-HX_PiCo_E-32 > xxxxxx-MVX Boot** **Drivers DVD > PiCo-HX_PiCo_E-32 > xxxxxx-MVX Combined Boot & App** Where **xxxxxx** represents the product number.

Table 6-8: Required equipment

2) Install the Renesas Flash Development Toolkit 3.4 Basic (FDT). Accept the default install settings.

3) Start the Renesas Flash Development Toolkit 3.4 (FDT) from **Programs**, selecting the basic **Startup option**.

4) Access the configuration (settings) dialogs, by selecting **Options > New Settings...** Configure the FDT, as shown in the table below:

Settings dialog / option	Setting to enter
Select Device	H8S/2318F
Select Port	COM1 (Change to match a COM port present on the PC)
CPU Frequency	20.0000 Mhz
Connection	Boot mode
Recommended Speed	38400 (Deselect the Use-Default option)
Protection	Automatic
Messaging	Advanced
User Area	Selected (Checked)

Table 6-9: FDT settings

Note:
The first time the FDT is run, the settings dialogs are displayed by default. After the FDT has been configured, the settings dialogs are no longer shown by default.

Tip: *For more information about installing and configuring the Renesas FDT, see* ***Appendix E: Hitachi Renesas Flash Development Tool***.

5) In the **Download** window, click **Options** and ensure that:

- **Auto-Disconnect** is selected (checked).
- **Download File Area** has **User Area** selected (checked).
- The **Download File** radio button is selected.

6) Select **'...'** for the **User area** and select the appropriate MVX code file from the Eclipse HX v8.5 software DVD. According to your requirements, select **one** of the following:

- **Drivers DVD > PiCo-HX_PiCo_E-32 > xxxxxx-MVX Boot**

  Where **xxxxxx** represents the product number. The folder contains the ***.mot** file and a *Read Me* file (***.txt)** with version information.
- **Drivers DVD > PiCo-HX_PiCo_E-32 > xxxxxx-MVX Combined Boot & App**

Where **xxxxxx** represents the product number. The folder contains the ***.mot** file and a *Read Me* file (***.txt)** with version information.

7) Upgrade / program the **first** of the two H8 devices:

   a. Connect the MVX serial cable (CAB-MVX-48Z) between the COM port on the PC and **J9 (H8FP1)** on the MVX card.

      Note:
      The MVX connection is polarized to ensure correct connection.

   b. On the MVX card, ensure that jumper **H8 Boot1 (JP8)** is made.

   c. Select Program Flash from the Flash Development Toolkit (FDT) program.

   d. Confirm that FDT reports the image has been written successfully.

   e. Remove the serial cable.

   f. Remove jumper **JP8**.

   For the location of connectors, jumpers and reset switch positions on the Eclipse HX-PiCo, see **Figure 6-14: Eclipse HX-PiCo main board.**

Note: If the MVX card fails to upgrade, press the **Reset** button, located near the **J9 (H8FP1)** connector and select Program Flash from the FDT again.

If you are using a USB-to-serial adaptor, the adaptor may have to be unplugged and re-plugged to enable the upgrade to start on some computers. If you are running the EHX application, ensure that EHX is configured for Ethernet and not serial connection.

8) Upgrade / program the **second** of the two H8 devices:

   a. Connect the MVX serial cable (CAB-MVX-48Z) between the COM port on the PC and **J11 (H8FP2)** on the MVX card.

   Note: The MVX connection is polarized to ensure correct connection.

   b. On the MVX card, ensure that jumper **H8 Boot2 (JP10)** is made.

   c. Select Program Flash from the Flash Development Toolkit (FDT) program.

   d. Confirm that FDT reports the image has been written successfully.

   e. Remove the serial cable.

   f. Remove jumper **JP10**.

   For the location of connectors, jumpers and reset switch positions on the Eclipse HX-PiCo, see **Figure 6-14: Eclipse HX-PiCo main board.**

   Note: If the MVX card fails to upgrade, press the Reset button, located near the H8FP1 (JP11) connector and select Program Flash from the FDT again.

If you are using a USB-to-serial adaptor, the adaptor may have to be unplugged and re-plugged to enable the upgrade to start on some computers. If you are running the EHX

application, ensure that EHX is configured for Ethernet and not serial connection.

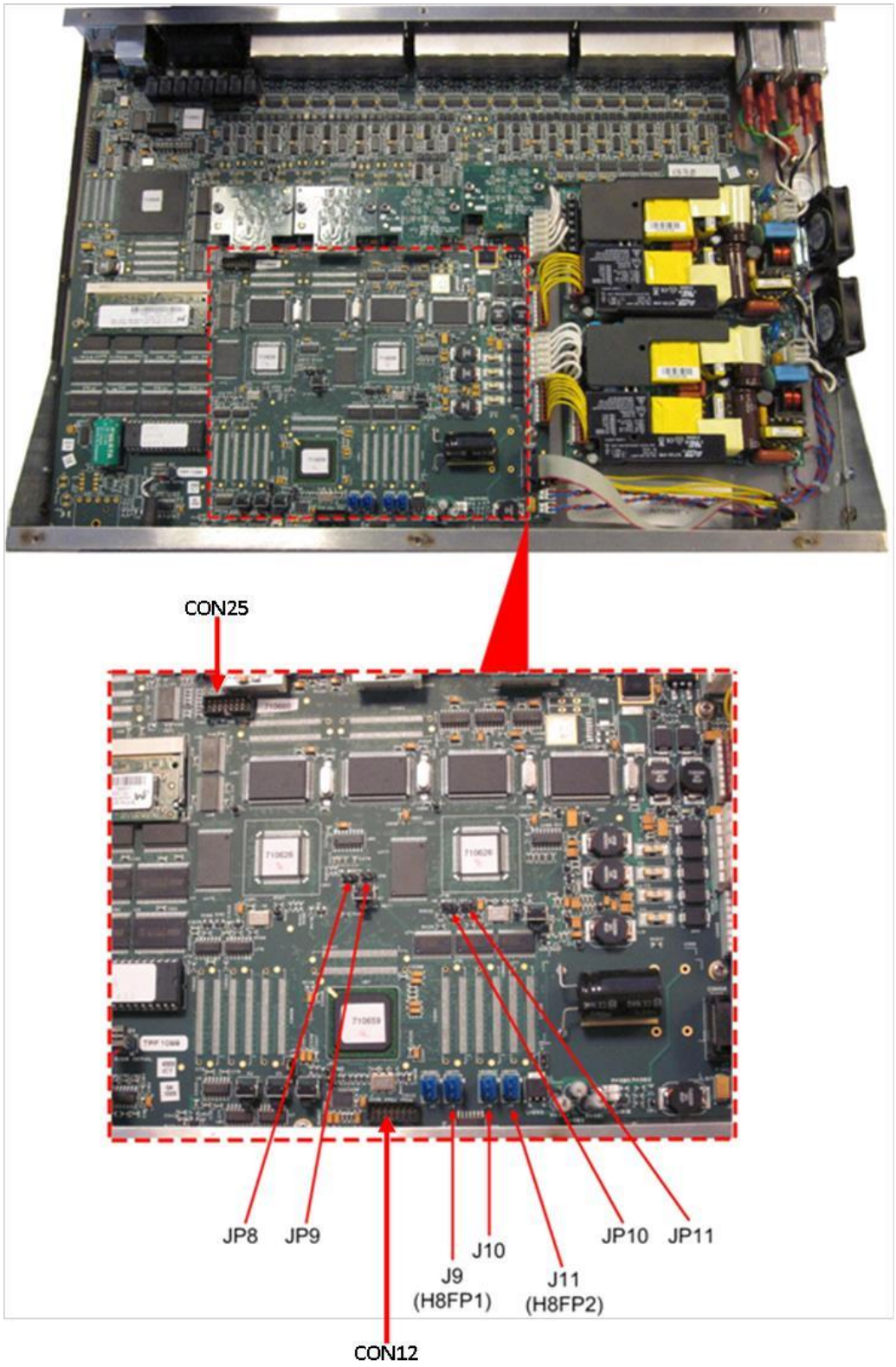


Figure 6-14: Eclipse HX-PiCo main board

6.5 Checking the Eclipse HX-PiCo application code and MVX code versions

You can check **both** the Eclipse HX-PiCo application code and MVX code versions by going to **EHX> Matrix Event Log > Matrix Overview**.

You can also use the Firmware report tool in EHX to confirm code versions. To use the Firmware report tool:

1) Go to EHX> System> Layout.

2) Right click the matrix icon.

3) Select Firmware > Firmware report.

To check the Eclipse PiCo MVX code version **only** using Tera Term:

4) Install Tera Term. Tera Term is available to install from both of the Eclipse HX 8.5 DVDs:
   - Software DVD > 3rd_Party_Software > Teraterm
   - Drivers DVD > 3rd_Party_Software > Teraterm

5) Open Tera Term and select the following port settings:

Port setting	Setting to enter
Port	COM1 (Change to match a COM port present on the PC)
Baud rate	115200
Data	8 bit
Parity	None
Stop	1 bit
Flow control	none

Table 6-10: Tera Term port settings

6) Open the Eclipse HX-PiCo lid.

Remove power from the devices first, to avoid working with the system while it is live. Observe all electrical shock hazard warning and precautions for handling electrostatic sensitive devices

7) There are two three-pin connectors (H8DBG1 and H8DBG2), one for each of the two MVX cards / sections. Connect the MVX serial cable (CAB-MVX-48Z) to one of the connectors.

Note: Take care not to confuse these two three-pin connectors with the identical (but differently labeled) three-pin connectors which are used to upload new application code.

8) Run Tera Term. If necessary, press **Enter** on your keyboard or the MVX reset switch a few times. The version information is displayed in the Tera Term window.

   Note: Reports the MVX application code version only.

9) Repeat the procedure with the second MVX card / section.

6.6 Upgrading the Eclipse HX-PiCo CPLD and FPGA code with Xilinx tools

To upgrade either the Eclipse HX-PiCo U1 CPLD code or FPGA code with Xilinx tools:

1) Ensure that the latest version of the Xilinx programming tools has been installed.
   Tip: *For more information about installing Xilinx programming tools, see* ***Appendix J:Xilinx tools.***
   Connect the USB connector of the download cable (Platform cable USB DLC9G) to the USB port of the PC.

2) If you are upgrading the **FPGA code**, connect the **14way IDC header** to **CON12**.

3) If you are upgrading the **U1 CPLD cod**e, connect the **14way IDC header** to **CON25**.

   Tip: *For the location of CON12 and CON25, see* ***Figure 6-14: Eclipse HX-PiCo main board.***

4) Power up the Eclipse HX-PiCo and start the iMPACT programming tool.

5) In **Load Project**, select **Cancel**.

6) In **Flows**, double click **Boundary Scan**. Right click the main window and select **Initialise Chain / Ctrl+ I**:

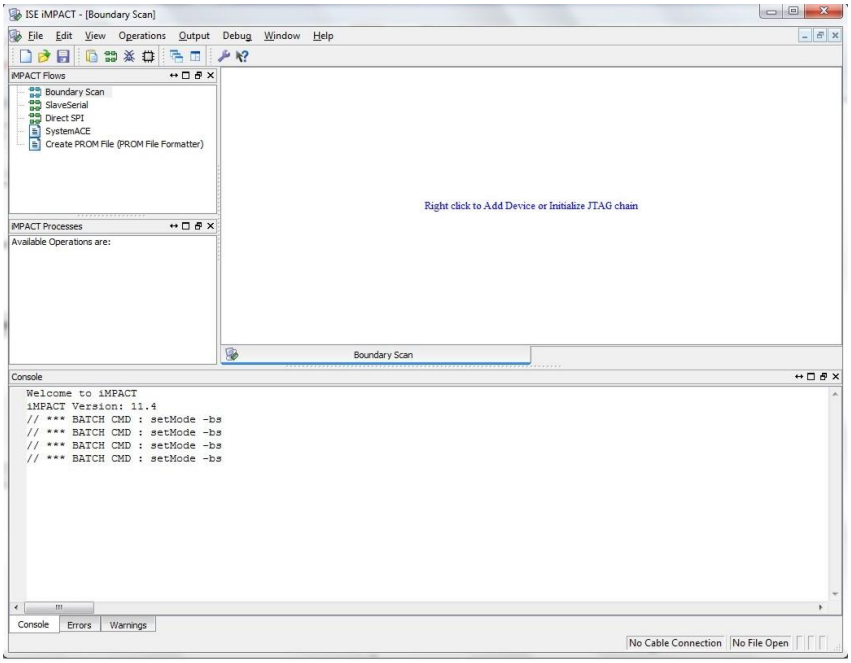


Figure 6-15: Example iMPACT Boundary Scan

1. If the cable is connected correctly, the application will connect and a Xilinx chip chain will be shown. If the cable is not connected correctly, a cable connection warning is given.

   The full chain should show two devices, as shown in the **example** figure below.

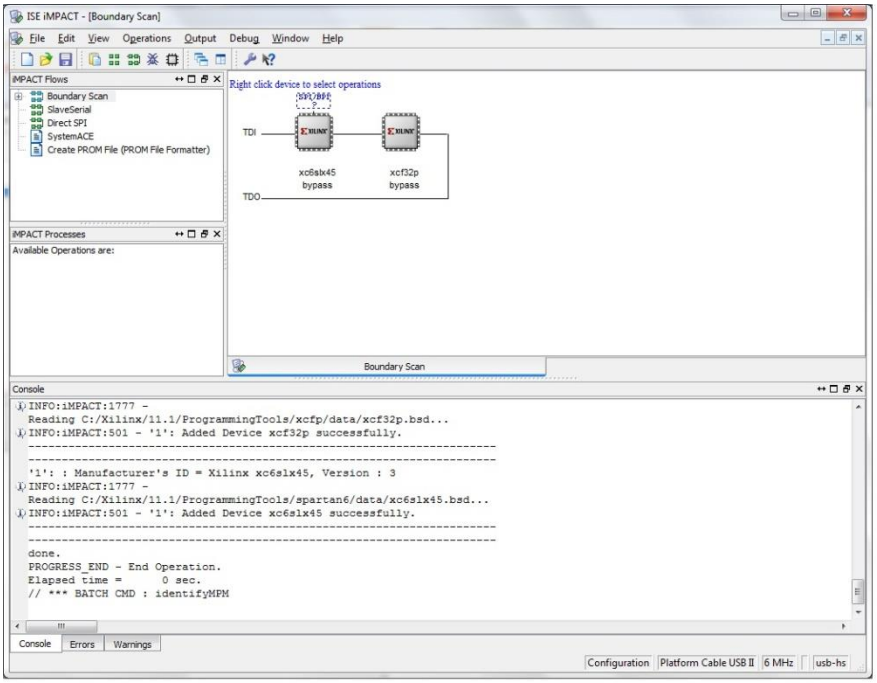


Figure 6-16: Example Xilinx chip chain

2. The **Assign New Configuration File** dialog asks you to select the code for the first device in the chain or to bypass that device.

   In this **example** procedure, the first device will be bypassed and either the U1 CPLD or FPGA code will be assigned to the second device.

   - For the first device, press **Bypass**.
   - For the second device, select the appropriate code file (either the U1 CPLD code or FPGA code file). The U1 CPLD and FPGA code files are available from the Drivers DVD:
     - **Drivers DVD > PiCo-HX_PiCo_E-32 > xxxxxx – E32 Glue Logic CPLD (U1).**
     - **Drivers DVD > PiCo-HX_PiCo_E-32 > xxxxxx – Eclipse 32 FPGA Code.**

   Reminder:
   *If you are upgrading the **FPGA code**, the **14way IDC header** must be connected to **CON12**. If you are upgrading the **U1 CPLD code**, the **14way IDC header** must be connected to **CON25**. See **Step 3**.*

3. A summary dialog is presented. For **all** devices, ensure that the **Erase Before Programming** and **Verify** flags are set. Click **OK**.

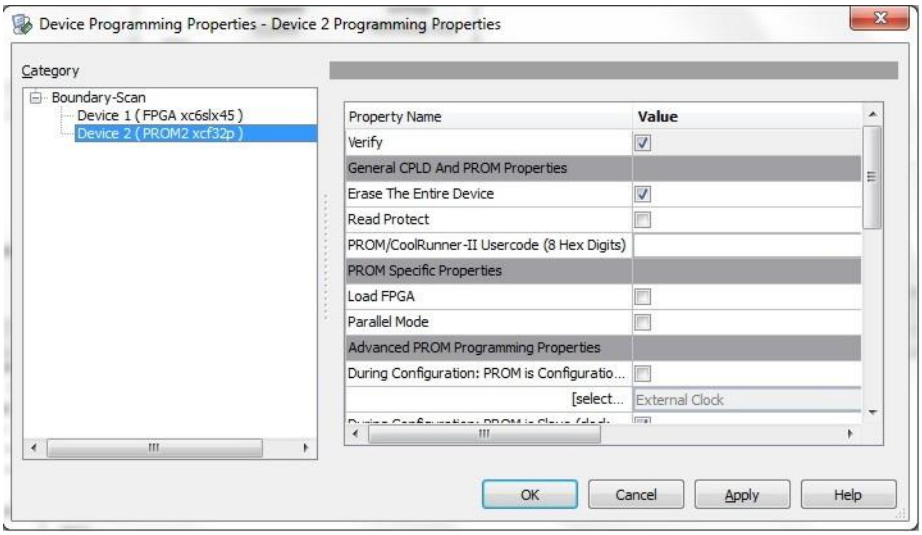


Figure 6-17: Example Xilinx device programming properties

4. Right click the second device and select **Programming**.

   The upgrade starts, and takes approximately 2 minutes to complete. When the upgrade is complete, the **Program Succeeded** message is displayed in the main window.

5. Power down the matrix.

6.7 Download a test configuration into the Eclipse HX-PiCo using EHX

After you have upgraded your Eclipse HX-PiCo, Clear-Com recommends downloading a test configuration to the matrix. Downloading a configuration will enable you to make any further configuration changes you require using EHX over an Ethernet or serial connection.

For more information, see your ***EHX User Guide***.

6.8 Forcing the Eclipse HX-PiCo to the factory default IP address

In rare situations, the CPU card may not be able to find a valid IP address for the Ethernet port. To address this issue, force the matrix to the factory default IP address (`169.254.0.100`) by using the Eclipse HX-PiCo menu system to enable DHCP.

For more information about using the Eclipse HX-PiCo menu system, see the ***Eclipse HX-PiCo User Guide***.

Alternatively, you can reset the Eclipse HX-PiCo to the factory default IP address with the internal reset switches.

To force the Eclipse HX-PiCo to the factory default IP address using the internal switches:

1. Set your PC Ethernet IP address to DCHP mode. Directly connect the PC to the matrix using an Ethernet crossover cable.

2. To gain access to the internal reset switches, remove the lid of the Eclipse HX-PiCo.

*The device is **live (powered)**. Observe all electrical shock hazard warning and precautions for handling electrostatic sensitive devices.*

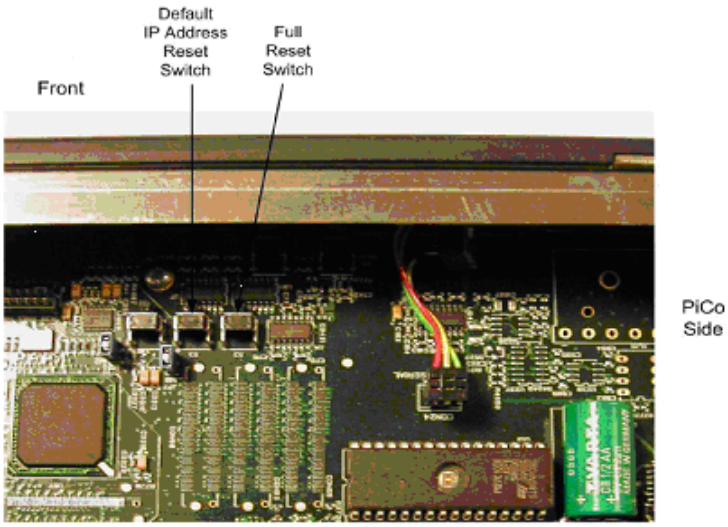


Figure 6-18: Eclipse HX-PiCo: resetting to the factory default IP address

3. To reset the IP address, press and hold the two rightmost switches simultaneously (the **IP Reset** switch and the **Full Reset** switch), then press and release **RESET** on the front of the matrix.
4. Once the **OK LED** starts to flash, release **both** internal buttons.
5. Replace the Eclipse HX-PiCo lid.

7 Upgrading the MVX-A16 card

This chapter describes how to upgrade the MVX-A16 analog port card, which is fitted to the Eclipse HX-Median, Eclipse HX-Omega and Eclipse HX-Delta matrices.

Note:
This guide is laid out in the order in which you must upgrade your Eclipse HX software and hardware devices. For a quick reference to upgrading your system, see ***3Quick reference: Upgrading to Eclipse HX****.*

7.1 Identifying MK I and MK II MVX-A16 cards

You can identify MK I and MK II cards visually.

The MK 1 MVX-A16 card is **green**. – see **Figure 7-2: MVX-A16 MK I card: J1, CON8 and CON12**

The MK2 E-QUE card is blue. – see Figure 7-3: MVX-A16 MK II card: J1, CON8 and CON12

Both cards are upgraded with the same code except for the FPGA – see **7.4 Upgrading the MVX-A16 MK I or MK II card FPGA with Xilinx tools**

7.2 Upgrading the MVX-A16 MK I or MK II boot and/or application code

If you are upgrading from ECS v5.2.4, Clear-Com recommends upgrading the MVX-A16 card with the *combined* MVX boot and application code file (***.mot**), using the Renesas Flash Development Tool (FDT).

If you are upgrading an existing Eclipse HX installation, you can upgrade:

- The MVX application code separately (***.fwc**), using EHX.
- The MVX boot code separately (***.mot**), using the Renesas FDT method.
- The MVX boot and application code simultaneously, using the Renesas FDT method and the combined MVX boot and application code file (***.mot**).

MVX code	Renesas FDT method	EHX method
MVX boot code (*.mot)	✓	-
MVX application code (.fwc)	-	✓

MVX code	Renesas FDT method	EHX method
Combined MVX boot and application code (*mot)	✓	-

Table 7-1: Upgrading the Eclipse HX-PiCo MVX code

7.2.1 Upgrading the MVX-A16 card application code using EHX

You can upgrade the MVX-A16 application code (***.fwc**) using EHX and an Eclipse HX matrix. For Ethernet connections, an EHX configuration is required with the correct IP address configured. The application code is available from the Eclipse HX v8.5 software DVD.

Place the H8 application code in a location that EHX can access. When these files are downloaded to the matrix, **all** the MVX-A16 cards that have been fitted to the matrix will be upgraded.

To upgrade MVX-A16 H8 application code using EHX:

1. Ensure that you have the following equipment:

Required equipment	Description / comments
PC with an Ethernet connector	-
Serial cable or Ethernet cable for the PC to matrix connection.	-
EHX installation	EHX must be configured and operational.
An EHX configuration file (*.hxn)	The configuration file must have an appropriate IP address set.
The appropriate *.fwc format file for the MVX-A16 card	You can find the ***.fwc** file on the software DVD: **Drivers DVD > Omega-Median-Delta > xxxxxx-MVX Application** (where xxxxxx represents the product number).

Table 7-2: Required equipment

2. Start EHX on the PC.
3. Connect the PC to the matrix using **either** Ethernet or a serial communications port.
4. Open the EHX configuration map within EHX. Select **System > Layout.**
5. Right click the matrix and then select **Firmware> Update Firmware**.
6. The **Update Firmware** wizard dialog is displayed. Click **Next**.
   In the **Select Hardware Type** screen, ensure that the **Card** radio button is selected.

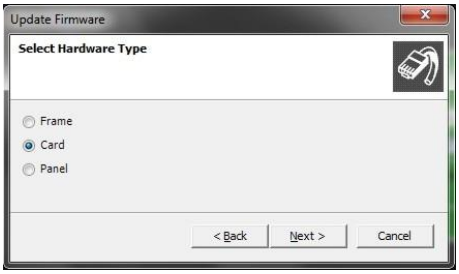


Figure 7-1: Select Hardware Type

7. In the next dialog, click **Browse** and navigate to the required ***.fwc** file for the MVX-A16 card application:
    a. Go to **Drivers DVD > Omega-Median-Delta > xxxxxx – MVX Application** (where **xxxxxx** represents the part number).

       The folder contains the ***.fwc** file and a *Read Me* file (***.txt)** with version information.

    b. Select the***.fwc** file and click **OK / Open.**
8. Click **Next** and confirm that the details displayed are correct.
9. Click **Next** and confirm that the download commences.
10. When the download has completed, click **Finish** to close the update firmware wizard.

Note: The MVX-A16 card status light **flashes green** while the upgrade is in process (LED on to off ratio: 1:4 at 0.5Hz). When the upgrade is complete, the status light is lit **green** at a steady heartbeat (LED on to off ratio: 1:1 at 1Hz).

11. Ensure that the MVX-A16 cards reset once the download is complete. Reset should take approximately 1 minute.

7.2.2 Upgrading the MVX-A16 boot and application code using the Renesas FDT

Remove power from the devices first, to avoid working with the system while it is live. Observe all electrical shock hazard warning and precautions for handling electrostatic sensitive devices

You can use the Renesas FDT to upgrade:

- The MVX boot code file separately (***.mot**).
- The MVX boot code and MVX application code simultaneously, using the combined MVX boot and application code file (***.mot**).

Tip: *For more information about installing and configuring the Renesas FDT, see **Appendix E: Hitachi Renesas Flash Development Tool**.*

To upgrade the MVX code (MVX boot code or combined MVX boot and application code) for the MVX-A16 card:

1. Ensure that you have the following equipment:

Required equipment	Description / comments
PC with a serial port connection or USB-to-serial port adaptor	If you are using a USB-to-serial port adaptor, download the latest drivers.
Renesas Flash Development Toolkit 3.4 Basic (FDT)	The Renesas FDT must be installed and configured. You can find the Renesas FDT application on both of the Eclipse HX v8.5 DVDs: **Software DVD > 3rd_Party_Software > RenesasFDT** **Drivers DVD > 3rd_Party_Software > RenesasFDT**
MVX-A16 serial upgrade cable (Clear-Com part CAB-MVX-48Z)	For an image of this cable, see ***Figure 28: MVX-A16 Serial upgrade cable.***
The appropriate MVX code file (*.fwc format for the separate MVX boot file, *.mot format for the combined MVX boot and application code file)	You can find the Eclipse HX-PiCo MVX code files on the Eclipse HX v8.5 software DVD: **Drivers DVD > Omega-Median-Delta > xxxxxx-MVX Boot** **Drivers DVD > Omega-Median-Delta > xxxxxx-MVX Combined Boot & Application** Where **xxxxxx** represents the product number.

Table 7-3: Required equipment

2. Install the Renesas Flash Development Toolkit 3.4 Basic (FDT). Accept the default install settings.
3. Start the Renesas Flash Development Toolkit 3.4 (FDT) from **Programs**, selecting the basic **Startup option**.
4. Access the configuration (settings) dialogs, by selecting **Options > New Settings...** Configure the FDT, as shown in the table below:

Settings dialog / option	Setting to enter
Select Device	H8S/2318F
Select Port	COM1 (Change to match a COM port present on the PC)
CPU Frequency	20.0000 Mhz

Settings dialog / option	Setting to enter
Connection	Boot mode
Recommended Speed	38400 (Deselect the Use-Default option)
Protection	Automatic
Messaging	Advanced
User Area	Selected (Checked)

Table 7-4: FDT settings

Note: The first time the FDT is run, the settings dialogs are displayed by default. After the FDT has been configured, the settings dialogs are no longer shown by default.

Tip: *For more information about installing and configuring the Renesas FDT, see* ***Appendix E: Hitachi Renesas Flash Development Tool***.

5. In the **Download** window, click **Options** and ensure that:
   - **Auto-Disconnect** is selected (checked).
   - **Download File Area** has **User Area** selected (checked).
   - The **Download File** radio button is selected.
6. Select **'...'** for the **User area** and select the appropriate MVX code file from the Eclipse HX v8.5 software DVD. According to your requirements, select **either**:
   - **Drivers DVD > Omega-Median-Delta > xxxxxx-MVX Boot**
     Where **xxxxxx** represents the product number. The folder contains the ***.mot** file and a *Read Me* file (***.txt)** with version information.
   - **Drivers DVD > Omega-Median-Delta > xxxxxx-MVX Combined Boot & Application**

     Where **xxxxxx** represents the product number. The folder contains the ***.mot** file and a *Read Me* file (***.txt)** with version information.
7. Upgrade / program the device:
   a. Connect the MVX serial cable (CAB-MVX-48Z) between the COM port on the PC and **CON8** on the MVX-A16 card.

   Note: The MVX connection is polarized to ensure correct connection.

   b. On the MVX card, ensure that jumper **JP1** is made.
   c. Select **Program Flash** from the Flash Development Toolkit (FDT) program.
   d. Confirm that FDT reports the image has been written successfully.
   e. Remove the serial cable.
   f. Remove jumper **JP1**.

Tip: *For the location of connectors and jumpers on the MVX-A16 MK I card, see* **Figure 7-2: MVX-A16 MK I card: J1, CON8 and CON12**

Tip: *For the location of connectors and jumpers on the MVX-A16 MK II card, see* **Figure 7-3: MVX-A16 MK II card: J1, CON8 and CON12**

8. Repeat for Step 7 for all other MVX-A16 cards in the system.

Important note:

*If the MVX card fails to upgrade, press the **Reset** button on the front of the card, and select Program Flash from the FDT again.*

If you are using a USB-to-serial adaptor, the adaptor may have to be unplugged and re-plugged to enable the upgrade to start on some computers. If you are running the EHX application, ensure that EHX is configured for Ethernet and not serial connection.

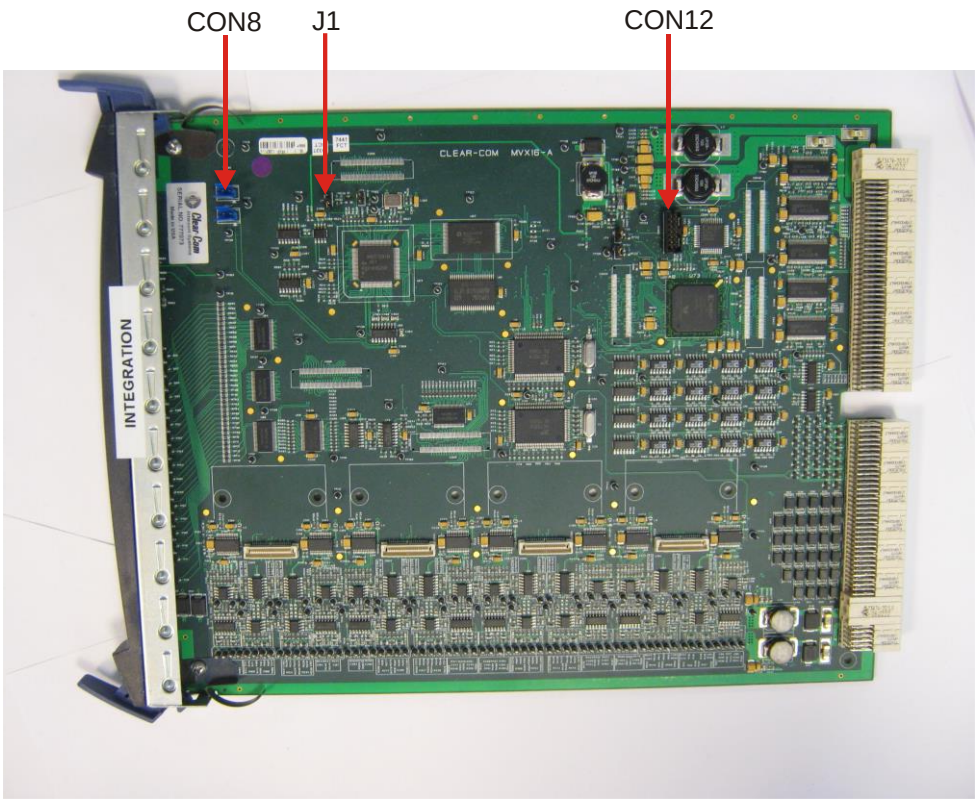


Figure 7-2: MVX-A16 MK I card: J1, CON8 and CON12

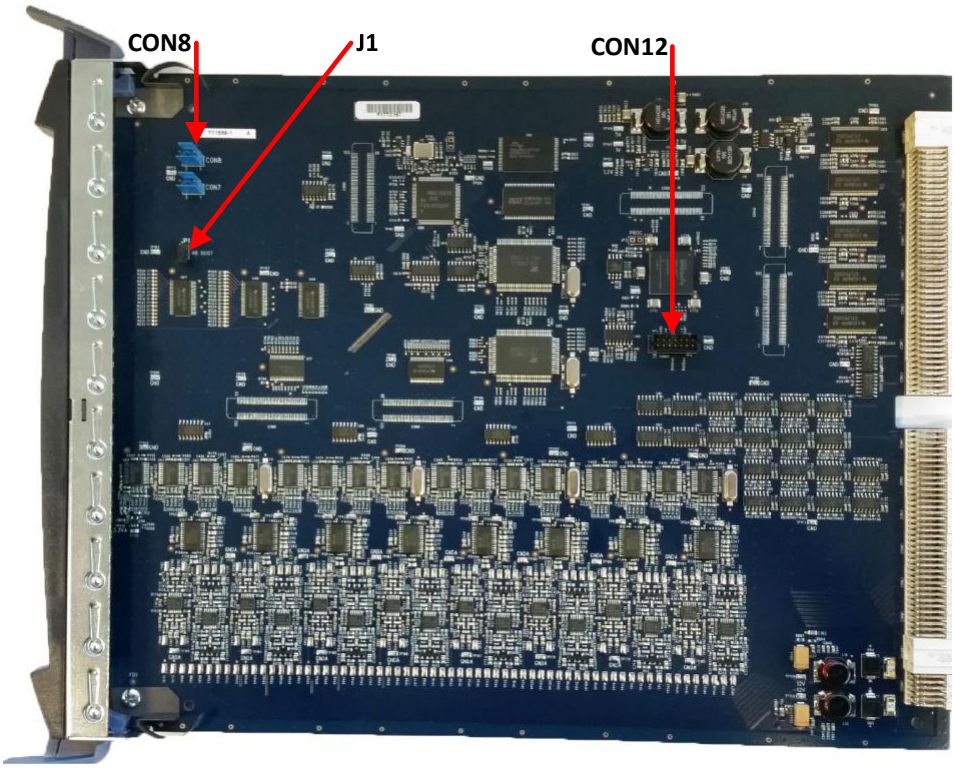


Figure 7-3: MVX-A16 MK II card: J1, CON8 and CON12

7.3 Checking the MVX-A16 MK I or MK II boot and application code version

You can check the MVX-A16 boot and application code versions by going to **EHX> Matrix Event Log > Matrix Overview**.

You can also use the Firmware report tool in EHX to confirm the application code version. To use the Firmware report tool:

1. Go to **EHX> System> Layout**.
2. Right click the matrix icon.
3. Select **Firmware > Firmware report**.

To check the firmware version using Tera Term:

1. Install Tera Term. Tera Term is available to install from both of the Eclipse HX 8.5 DVDs:
   - **Software DVD > 3rd_Party_Software > Teraterm**
   - **Drivers DVD > 3rd_Party_Software > Teraterm**
2. Open Tera Term and select the following port settings:

Port setting	Setting to enter
Port	COM1 (Change to match a COM port present on the PC)
Baud rate	115200
Data	8 bit
Parity	None
Stop	1 bit
Flow control	none

Table 7-5: Tera Term port settings

3. Remove the MVX-A16 card to be checked from the Eclipse HX-Median / Eclipse HX-Omega / Eclipse HX-Delta matrix.
4. Connect the MVX serial cable (CAB-MVX-48Z) to the **CON8** connector on the MVX-A16 card and to the PC (see **Figure 7-2: MVX-A16 MK I card: J1, CON8** and CON12).
5. Reset (re-seat) the MVX-A16 card back in the Eclipse HX-Median / Eclipse HX-Omega / Eclipse HX-Delta matrix.

   The MVX-A16 firmware version is the first line of the information received on Tera Term.

7.4 Upgrading the MVX-A16 MK I or MK II card FPGA with Xilinx tools

7.4.1 Upgrading the MVX-A16 MK1

Note: Some very early MVX (MKI) cards may exhibit the following errors when upgrading the FPGA device:
Programming failed or
The idcode read from the device does not match the idcode in the bsdl File.
There are two possible solutions

a) USB cable speed : Adjust the USB cable speed, **Output > Cable Setup** and setting the TCK Speed/Baud to 1.5Mhz

Always try this solution first for either failure mode

b) Modify the Device ID bsdl file

In the Xilinx installation directory, change the expected IDCODE from .bsd file.

To do this:

1) Search for xc18v04.bsd in Xilinx installation directory.

2) Change Part Number from 0101000000110110 to 0101000000100110 in the file.

3) Save the file, then close and open impact. After doing this the prom is accessible from impact.

Example File location: C:\Xilinx\14.5\LabTools\LabTools\xc18v00\data

You can use the Firmware report tool in EHX to confirm the firmware version of H8 application and FPGA code. The Firmware report tool does **not** provide firmware version information for DSP code.

To use the Firmware report tool:

4) Open EHX and go to **System > Layout**.

5) Right click the matrix icon.

6) Select **Firmware > Firmware report.**

To upgrade the MVX FPGA with Xilinx tools:

1. Ensure that version 11.1 of the Xilinx programming tools has been installed.
   Tip: *For more information about installing the Xilinx programming tools, see* ***Appendix J:Xilinx tools.***
2. Connect the USB connector of the download cable (Platform cable USB DLC9G) to the USB port of the PC.
3. Connect the **14way IDC header** to **CON12** (see ***Figure 7-2: MVX-A16 MK I card:*** J1, CON**)**.
4. Power up the MVX-A16 card and start the iMPACT programming tool.
5. In **Load Project**, select **Cancel**.
6. In **Flows**, double click **Boundary Scan**. Right click the main window and select **Initialise Chain / Ctrl+ I**:

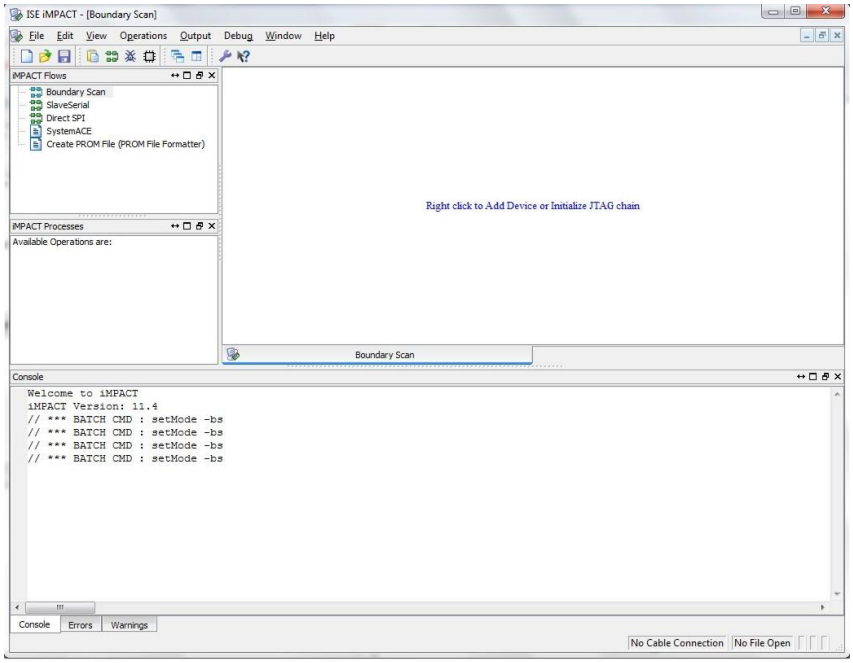


Figure 7-4: Example iMPACT Boundary Scan

7. If the cable is connected correctly, the application will connect and a Xilinx chip chain will be shown. If the cable is not connected correctly, a cable connection warning is given. The full chain should show two devices, as shown in the **example** figure below.

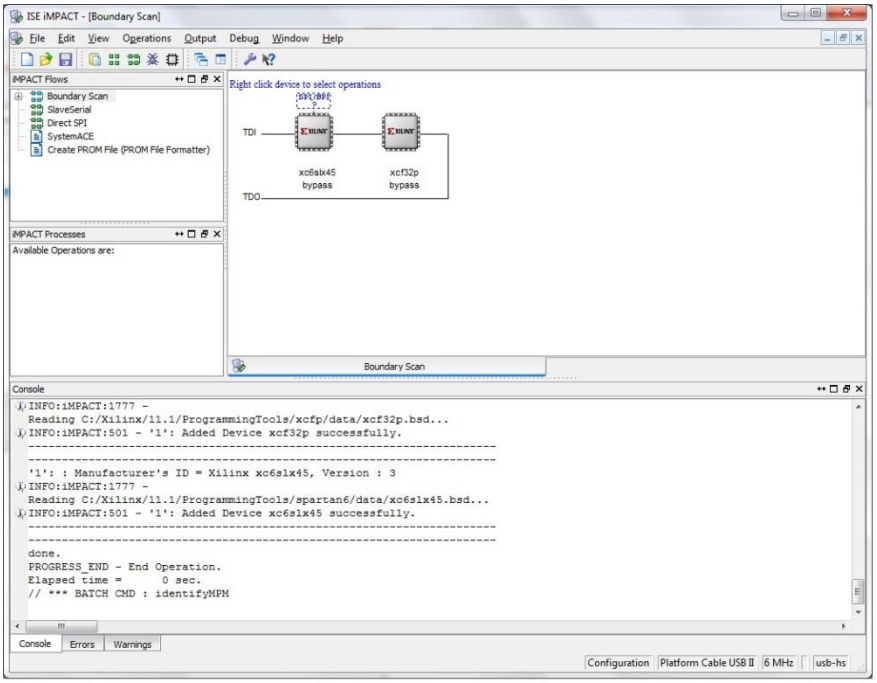


Figure 7-5: Example Xilinx chip chain

8. The **Assign New Configuration File** dialog asks you to select an FPGA image for the first device in the chain or to bypass that device.

In this **example** procedure, the first device will be bypassed and an FPGA image will be assigned to the second device.

- For the first device, press **Bypass**.
- For the second device, select the FPGA image (***.mcs** format). The FPGA file is available from the Drivers DVD and is dependent on whether the MVX Card is a Mark I or a Mark II :
  - MVX MK I (Green PCB)
    Drivers DVD > Omega-Median-Delta > xxxxxx – MVX MK I (Green PCB) FPGA

    (Where **xxxxxx** represents the product number)**.**
  - MVX MK II (Blue PCB)
    Drivers DVD > Omega-Median-Delta > xxxxxx – MVX MK II (Blue PCB) FPGA

    (Where **xxxxxx** represents the product number)**.**

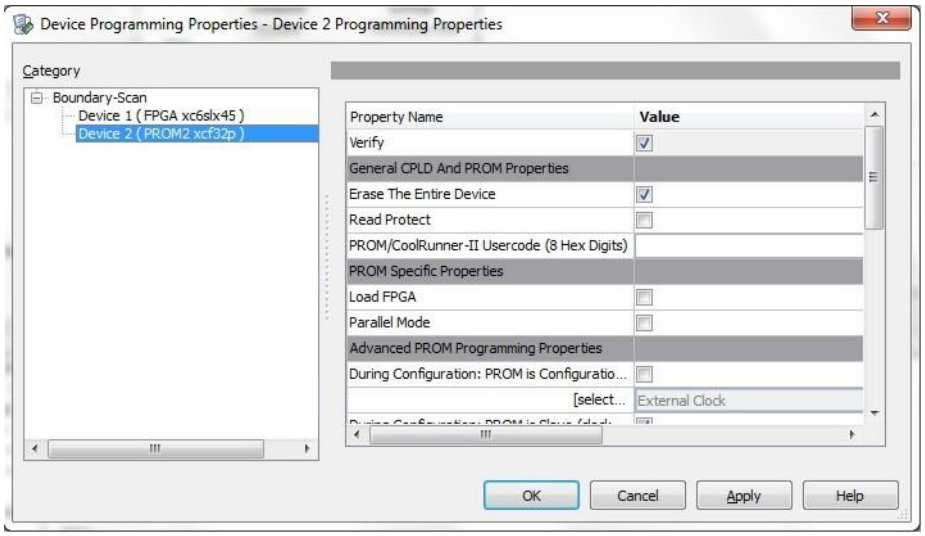


Figure 7-6: Example Xilinx device programming properties

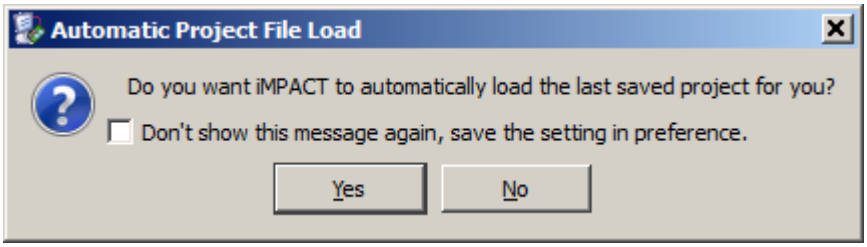
9. Right click the second device and select **Programming**.
   The upgrade starts, and takes approximately 2 minutes to complete. When the upgrade is complete, the **Program Succeeded** message is displayed in the main window.
   A summary dialog is presented. For **all** devices, ensure that the **Erase Before Programming** and **Verify** flags are set. Click **OK**.
10. Power down the MVX-A16 card.

7.4.2 Upgrading the MVX-A16 MK2

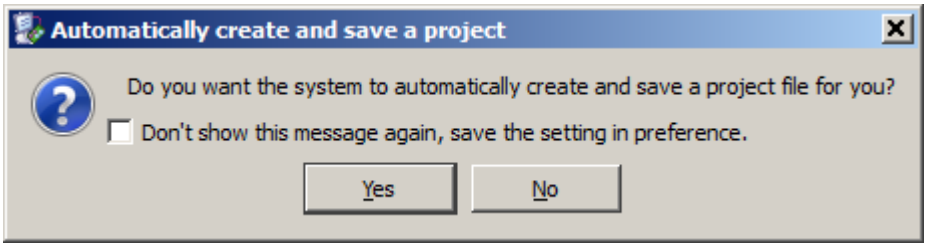
1. Ensure that version 13.1 of the Xilinx programming tools has been installed.

   Tip: *For more information about installing the Xilinx programming tools, see* ***Appendix J:Xilinx tools.***

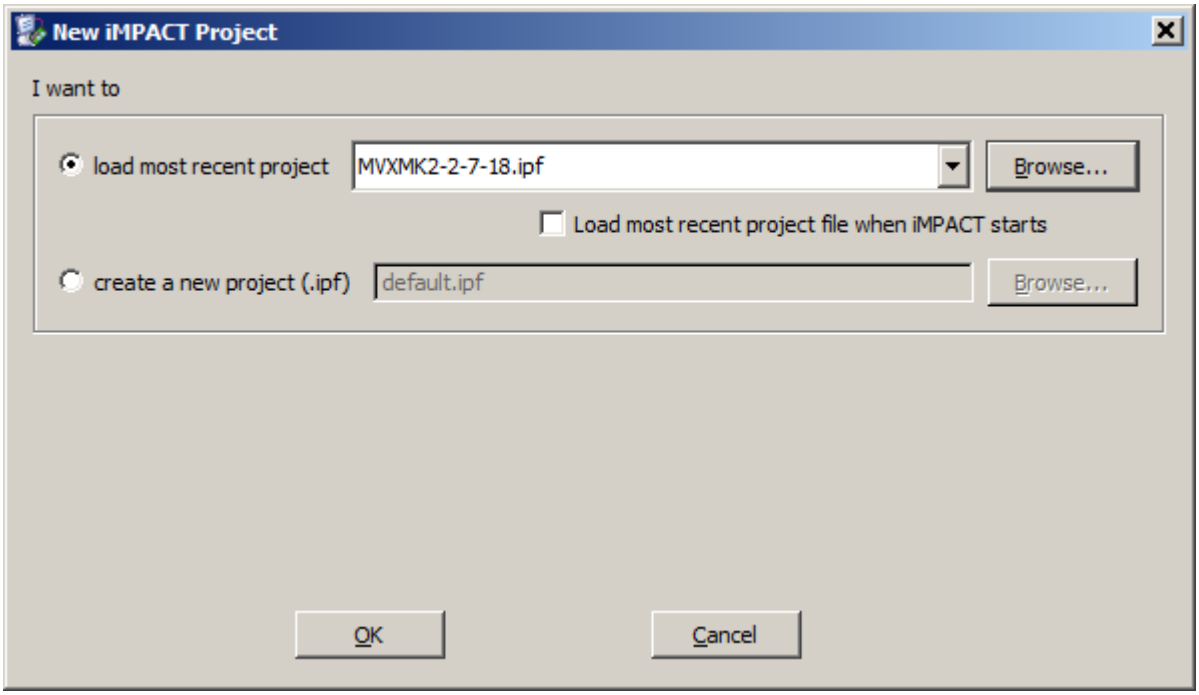
2. Connect the USB connector of the download cable (Platform cable USB DLC9G) to the USB port of the PC.
3. Connect the **14way IDC header** to **CON12** (see ***Figure 7-2: MVX-A16 MK I card:*** J1, CON**)**.
4. Power up the MVX-A16 card and start the iMPACT programming tool (Ver 13.1) on the PC.
5. Ensure that Xilink box shows GREEN led. (Orange Led means no connection)



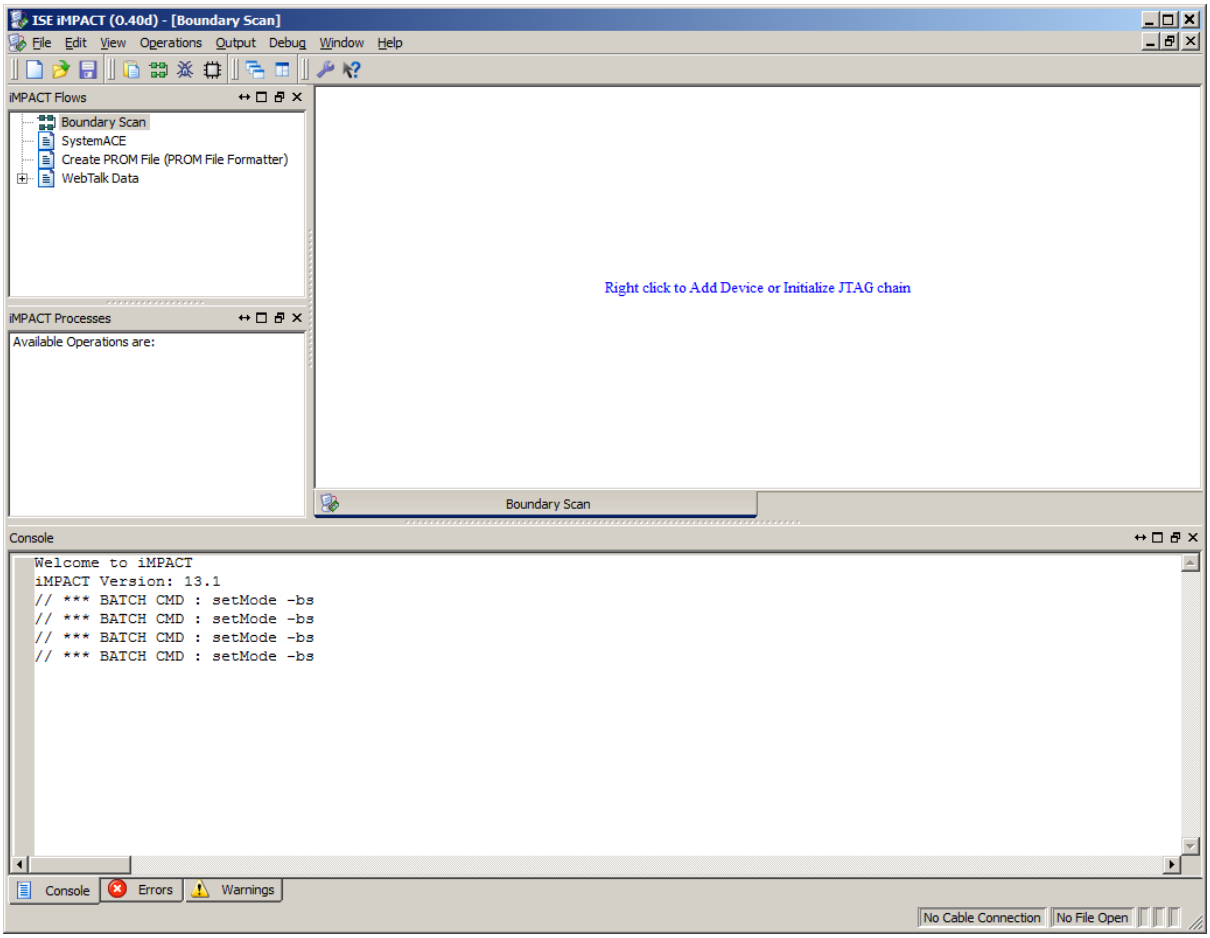
6. Select "No"



7. Select
    a. "Yes" if more upgrade is to be performed later on.
    b. "No" if this is a one off upgrade
8. Cancel the following pop up when seen

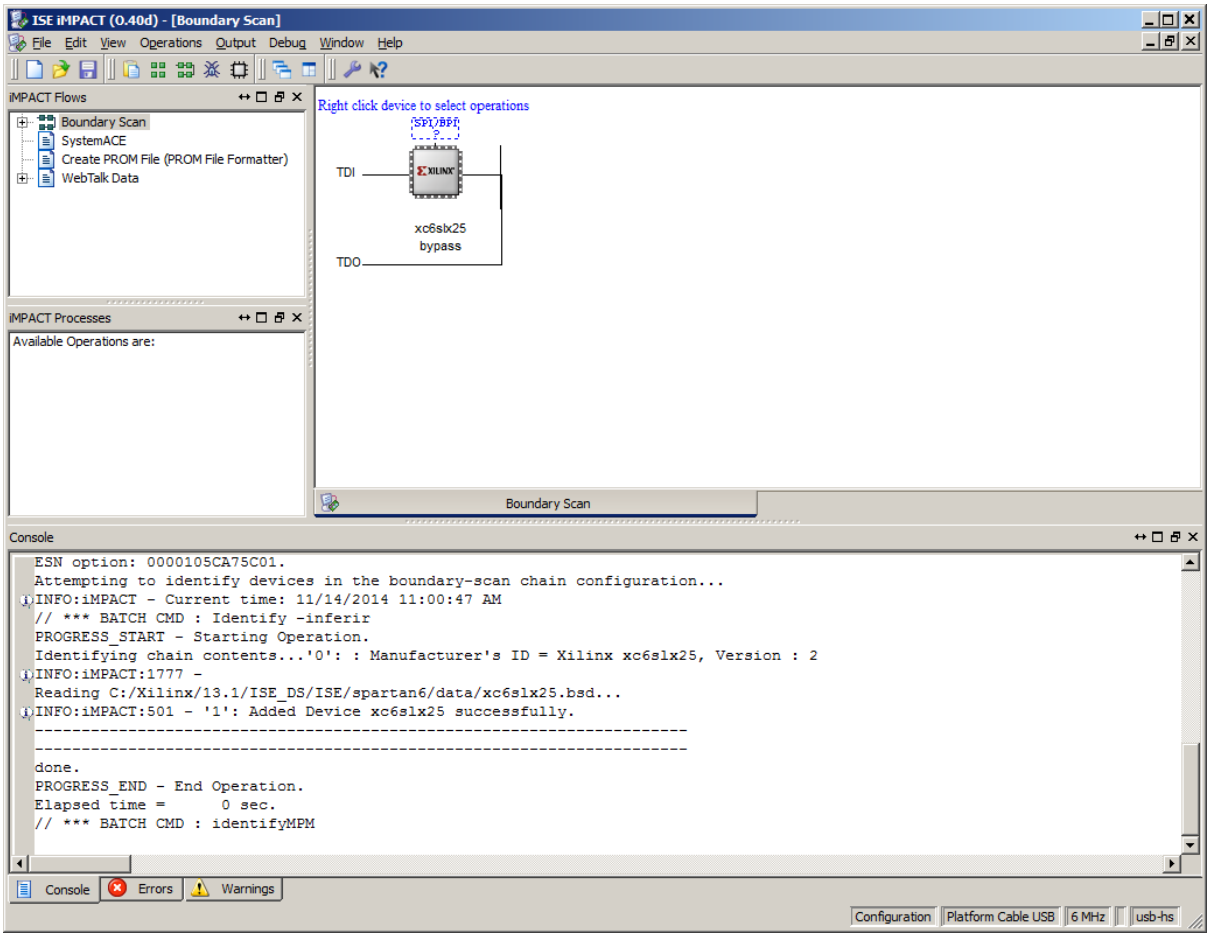


9. Double click on "Boundary Scan" on the right of the window.

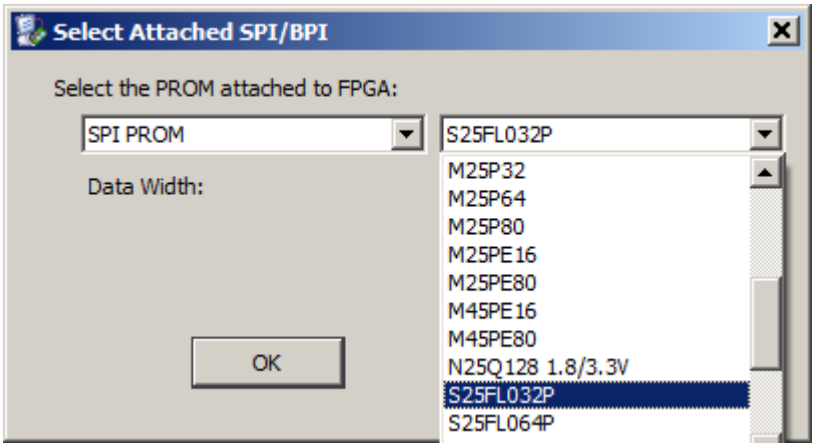


10. In the Boundary Scan window, right click in the display and select "Initilise Chain"

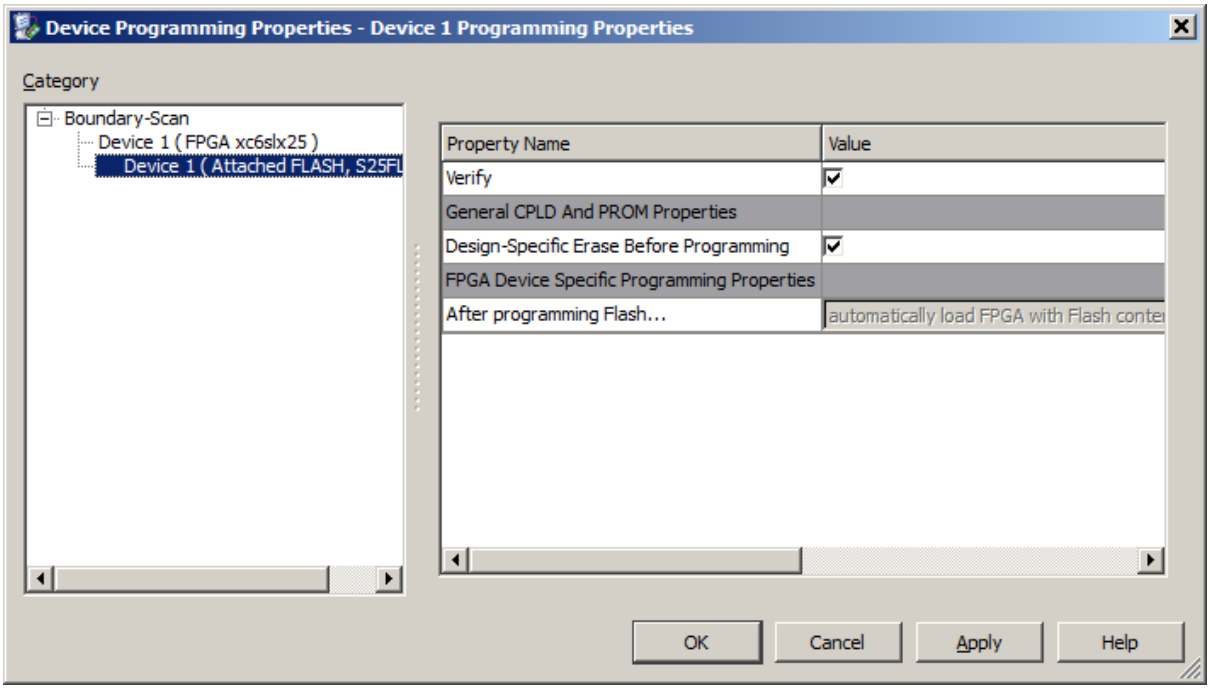
11. When asked whether to "Continue and assign configuration file(s)?"
    a. Select "No"
12. "Cancel" the next pop up window.
13. On the device shown on the diagram, right click on the "SPI/BPI" on top of the device.
14. Select "Add SPI/BPI....."



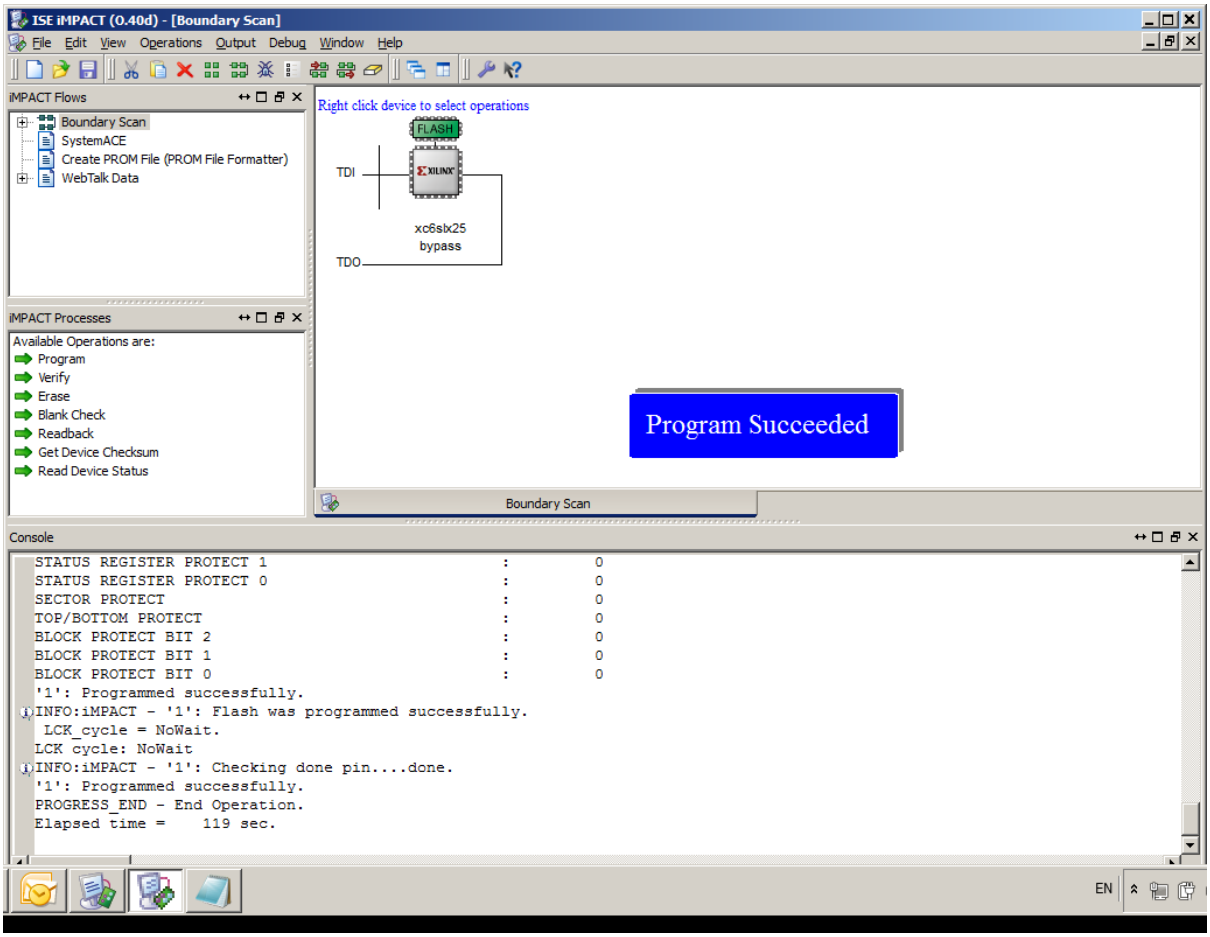
15. Pop up "Add PROM File" appears, select where the .mcs file needed, and click "Open"
16. Pop up "Select Attached SPI/BPI, on the first drop down list on the right, select "S25FL032P" from the list, click "OK".



17. Right click on the "SPI/BPI" device, it should show GREEN with the word "FLASH". Select "Program"
18. Pop up "Device Programming Properties" window, select "Device1(Attached Flash, S25FL032P), then click "OK".



19. Pop up "Executing command....." to show the progress.
20. On success, pop up "Program Suceeded" is shown.



21. Power down the MVX-A16 card and remove the Xilinx programming tool.

8 Upgrading E-FIB cards

This chapter describes how to upgrade the E-FIB fiber cards, which are fitted to the Eclipse HX-Median, Eclipse HX-Omega and Eclipse HX-Delta matrices.

Note: This guide is laid out in the order in which you must upgrade your Eclipse HX software and hardware devices. For a quick reference to upgrading your system, see **3Quick reference: Upgrading to Eclipse HX**.

8.1 Upgrading E-FIB card FPGA with Xilinx tools

If the E-FIB card FPGAs are going to be upgraded in an Eclipse HX-Median / Eclipse HX-Omega / Eclipse HX-Delta matrix, take one of the following measures:

- Fit the E-FIB cards to a slot which is **not** configured for it.
- **Manually reset** the E-FIB card for the duration of the upgrade operation.
- Remove **both** CPU cards from the Eclipse HX-Median / Eclipse HX-Omega / Eclipse HX-Delta matrix for the duration of the upgrade.

If you do not take one of the above measures then the upgrade may fail.

To upgrade the Xilinx FPGAs (front card and rear card) on an E-FIB card:

1. Ensure that the latest versions of the Xilinx programming tools have been installed.

   Tip: *For more information about installing Xilinx programming tools, see* ***Appendix J:Xilinx tools.***

2. Connect the USB connector of the download cable (Platform cable USB DLC9G) to the USB port of the PC.
3. Connect the **14way IDC header** to:

   - **CON8** on the **front card**, if you are programming both cards simultaneously or just the front card.
   - **CON5** of the **rear card** if you are only programming the rear card.

Note: The front and rear cards can be upgraded (programmed) either individually or together. If only the front card is being programmed, fit **LK9** to the front card.

4. Power up the UUT and start the iMPACT programming tool.
5. In **Load Project**, select **Cancel**.
6. In **Flows**, double click **Boundary Scan**. Right click the main window and select **Initialise Chain / Ctrl+ I**:

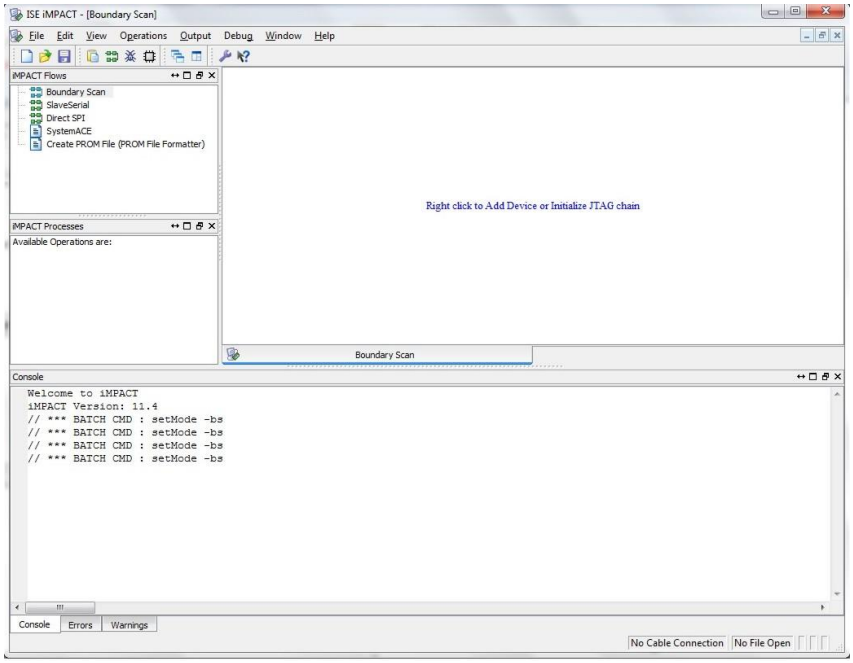


Figure 8-1: Example iMPACT Boundary Scan

7. If the cable is connected correctly, the application will connect and a Xilinx chip chain will be shown. If the cable is not connected correctly, a cable connection warning is given.

   If only one of the cards (the front or the rear) is being upgraded, only the first two or last two devices in the above chain are displayed.

Note: The **Assign New Configuration File** dialog is also displayed. However, ignore this dialog until you have checked the chain.

Tip: *If the programming tool fails initially to recognize the adaptor or the FPGA chain, you can sometimes solve this issue by:*

- *Pressing the reset switches by the FPGA.*
- *Setting a slower cable speed.*

8. The **Assign New Configuration File** dialog asks you to select an FPGA image for the first device in the chain or to bypass that device.

   In this **example** procedure:

   a. Bypass the first and third devices. In the **Assign New Configuration File** dialog, press **Bypass** for each device.

   b. Provide the second and fourth devices (the FPGA Flashes) with images. In the **Assign New Configuration File** dialog, select the FPGA image for the second device, the router FPGA Flash.

      Go to **Drivers DVD > Omega-Median-Delta > xxxxxx-Fibre Router (front) FPGA** (where **xxxxxx** represents the product number).

      The folder contains the FPGA file (***.mcs** format) and a *Read Me* file (***.txt**), which contains version information.

c. Select the FPGA image for the fourth device, the networking FPGA Flash.

   Go to **Drivers DVD > Omega-Median-Delta > xxxxxx-Fibre Networking (rear) FPGA**
   (where **xxxxxx** represents the product number).

   The folder contains the FPGA file (***.mcs** format) and a *Read Me* file (***.txt**), which contains version information.

9. A summary dialog is presented. For the FPGA Flash device(s), ensure that the **Erase Before Programming** and **Verify** flags are set. Click **OK**.

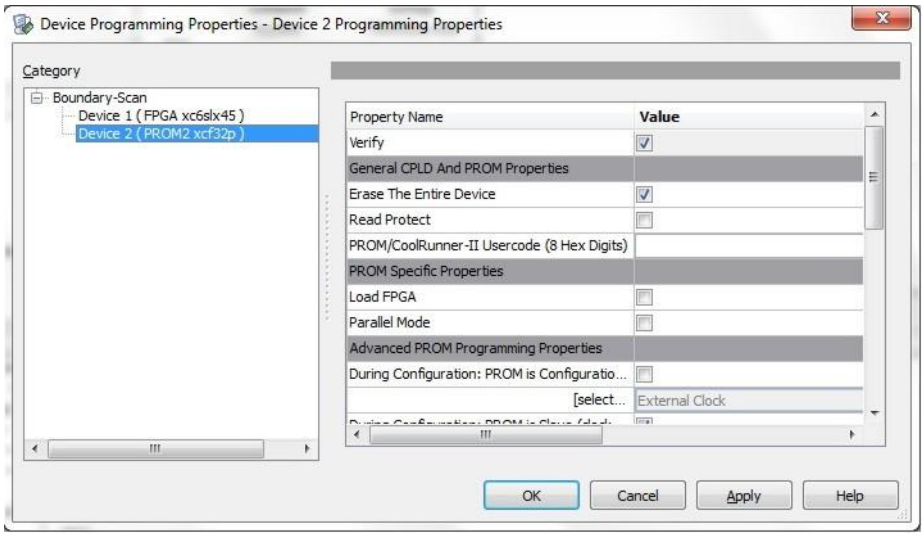


Figure 8-2: Example Xilinx device programming properties

10. The upgrade (programming) starts, and takes approximately 2 minutes to complete. When the upgrade is complete, the **Program Succeeded** message is displayed in the main window.
11. Power down the UUT.

9 Upgrading E-QUE cards

The following chapter describes how to upgrade E-QUE cards (both MK1 and MK2).

Note: This guide is laid out in the order in which you must upgrade your Eclipse HX software and hardware devices. For a quick reference to upgrading your system, see **3Quick reference: Upgrading to Eclipse HX**.

9.1 Identifying MK1 and MK2 E-QUE cards

To identify the E-QUE card is a MK1 or a MK2 card, run a firmware report in EHX. To use the Firmware report tool:

a. Go to **EHX> System> Layout** .
b. Right click the matrix icon.
c. Select **Firmware > Firmware report.**

You can also identify MK 1 and MK 2 cards visually.

The MK 1 E-QUE card is **green**. It also features a large chip in the upper right hand corner of the PCB (as it is installed in the matrix):

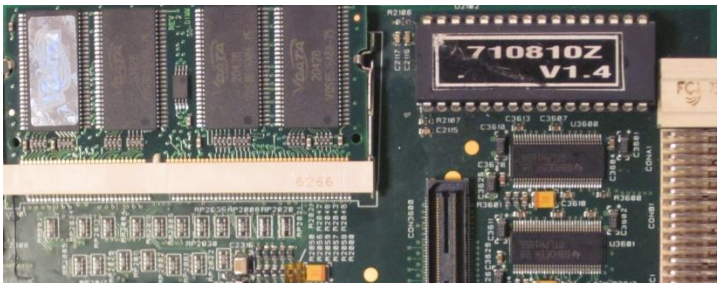


Figure 9-1: MK 1 E-QUE card detail

The MK2 E-QUE card is **blue**. The large chip **no longer** forms part of the PCB:

Figure 9-2: MK 2 E-QUE card detail

9.2 Upgrading the E-QUE card (MK1)

You must upgrade the E-QUE card (MK1) in the following order:

1. E-QUE card application code (using the procedure described in this section).

   Note: An MVX upgrade cable is required. The procedure also requires an Ethernet connection between the E-QUE card and the PC. If the card and the PC are not connected to the network, they can be connected directly using a crossover Ethernet cable.

2. E-QUE card FPGA code (see ***9.4 Upgrading the E-QUE card (MK1 and MK2) FPGA with Xilinx tools***).

   Note: Requires specialized equipment. For more information about installing and using Xilinx programming tools, see Appendix J:Xilinx tools.

3. E-QUE card (MK1) Boot PROM (if required) (see ***9.5 Upgrading the E-QUE card (MK1) boot ROM***).

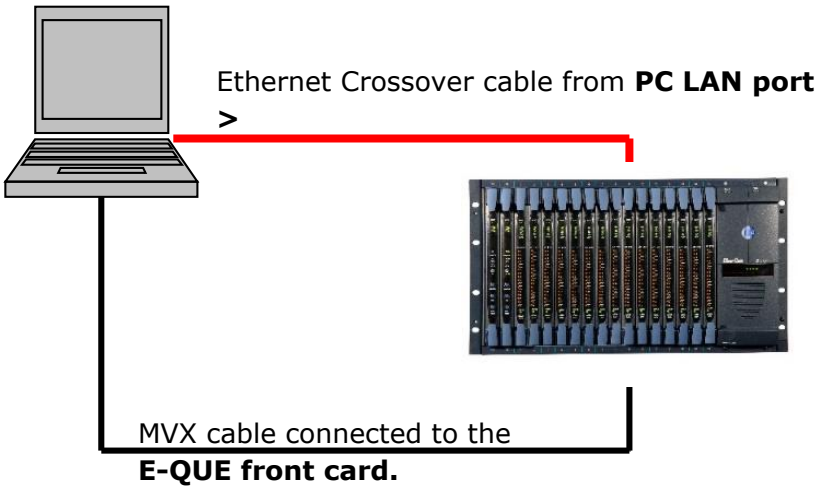


Figure 9-3: E-QUE upgrade

To upgrade the application code of the E-QUE card (MK1):

1. Ensure that you have the following equipment:

Required equipment	Description / comments
Tera Term software	Tera Term must be configured and operational. You can find the Tera Term application on both of the Eclipse HX 8.5 DVDs: **Software DVD > 3rd_Party_Software > Teraterm** **Drivers DVD > 3rd_Party_Software > Teraterm**

Required equipment	Description / comments
TFTP Server software	-
MVX Serial cable (CAB-MVX-48Z)	See ***Figure 9-4: MVX-A16 serial cable (CAB-MVX-48Z)***
Ethernet crossover cable	-
Small reset tool	For example, a bent paper clip

Table 9-1: Required equipment

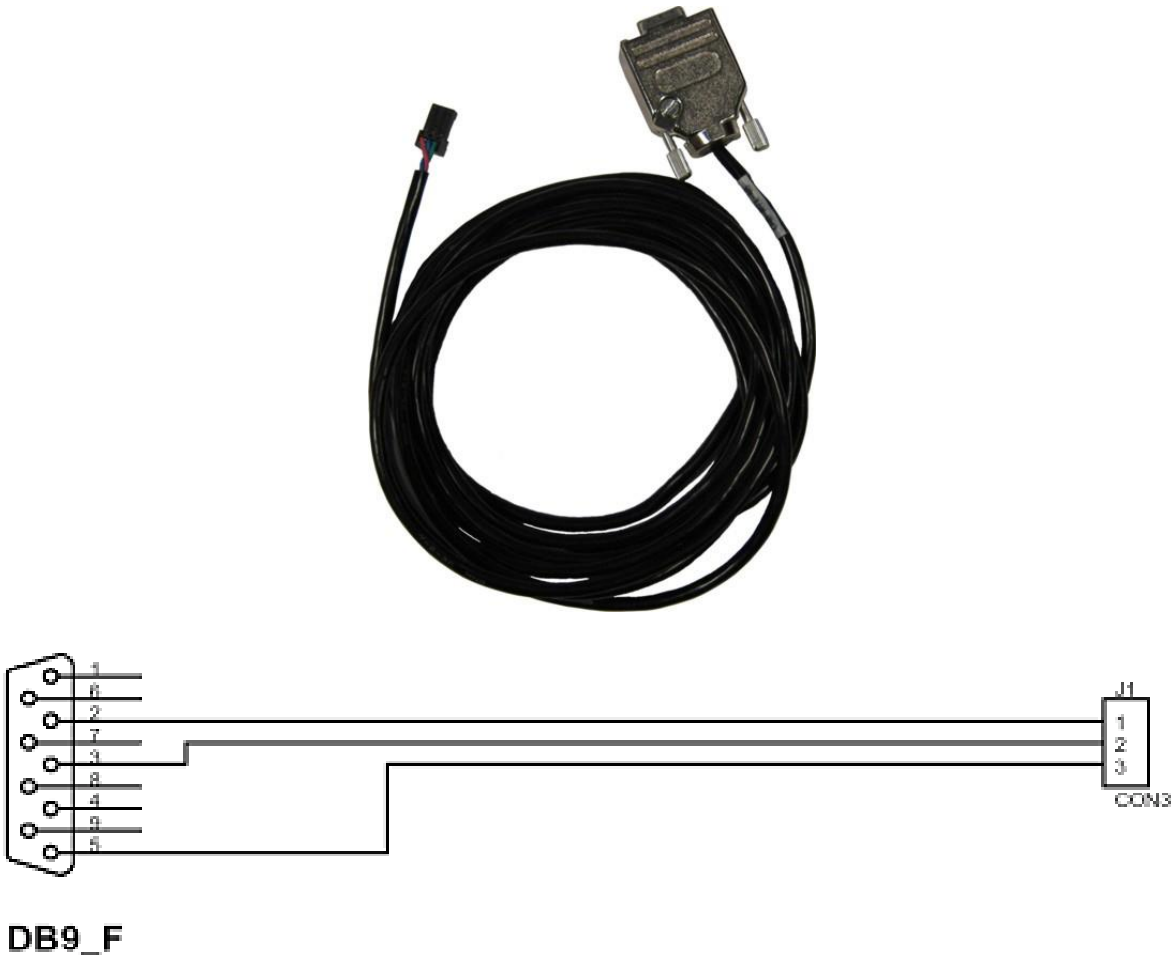


Figure 9-4: MVX-A16 serial cable (CAB-MVX-48Z)

2. Install Tera-Term. Third party software is available from either of the Eclipse HX 8.5 DVDs:
   - **Software DVD > 3rd_Party_Software > Teraterm**
   - **Drivers DVD > 3rd_Party_Software > Teraterm**

   Tip: *For more information about installing Tera Term, see* ***Appendix G: Tera Term***

3. Create a directory on your PC called **c:\tftp**.

4. Navigate to either of the following folders:
   - **Software DVD > 3rd_Party_Software > EQue TFTP Server App**
   - **Drivers DVD > 3rd_Party_Software > EQue TFTP Server App**

   Open the folder. Copy **tftpserv.exe** into the **c:\tftp** directory.

   Note:
   Any TFTP server can be used as long as it points to the C:\TFTP folder.
5. Navigate to the following folder on the software DVD:
   - **Drivers DVD > Omega-Median-Delta > xxxxxx- E-Que application MK-I & MK-II** (where **xxxxxx** represents the product number)

   Open the folder. Copy the E-QUE software file (***.image** format file) into the **c:\tftp** directory.
6. From the same folder, copy the Tera Term macro file **EQ1_eque_upgrade.ttl** to the **c:\tftp** directory.

   Note:
   *The folder also contains the E-QUE MK2 Tera Term macro file (**EQ2_upgrade.ttl**). Check that you have copied and pasted the correct file before proceeding.*

7. Start Tera Term. Open the **Setup** menu and select **Serial Port….**

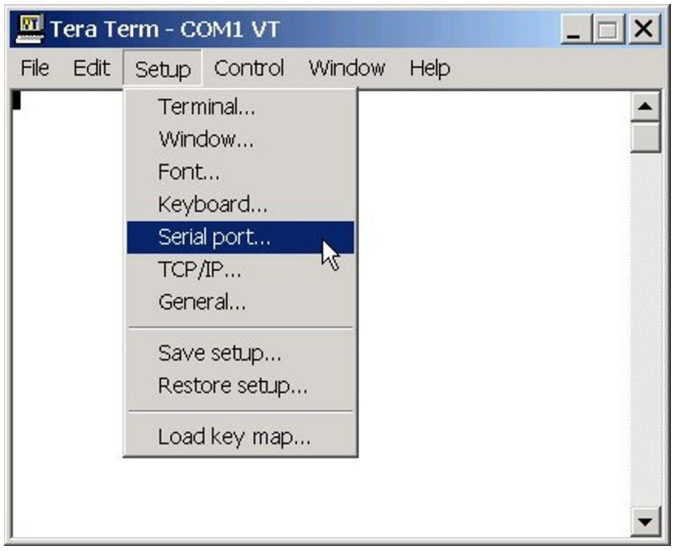


Figure 9-5: Tera Term: selecting Serial Port

8. In the Serial port configuration dialog, enter the following settings:

Port setting	Setting to enter
Port	COM1 (Change to match a COM port present on the PC)
Baud rate	115200
Data	8 bit
Parity	None

Stop	1 bit
Flow control	none
Transmit delay	0 msec/char. If the E-QUE card fails to load correctly, change this value to 50ms.

Table 9-2: Tera Term port settings

9. Set the IP address of your PC to a fixed / static address (any IP address of your choice is suitable).
10. Navigate to the **c:\tftp** directory. To open the TFTP Server command window, double click the application **tftpsrv.exe**.

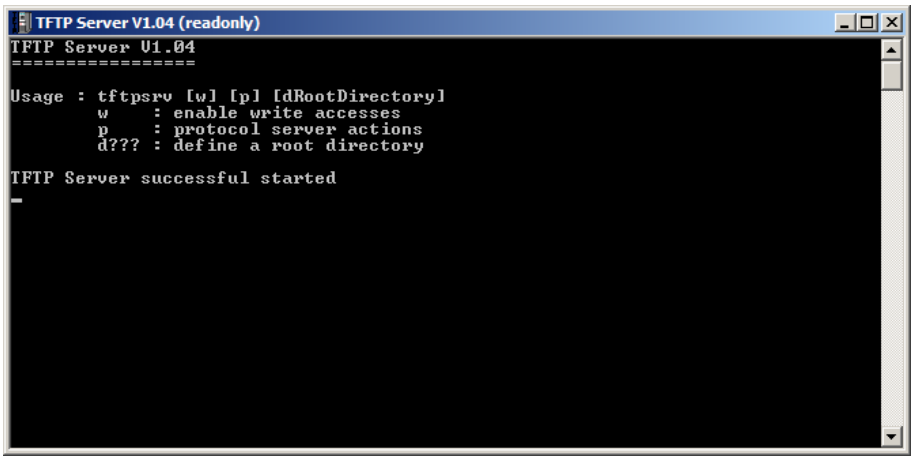


Figure 9-6: TFTP Server Window

Note:
*The TFTP application can only access files in the same folder as the TFTP application. The E-QUE firmware file must be in the same directory as the **tftpsrv.exe** program.*

11. Connect the MVX serial cable (CAB-MVX-48Z) between the PC serial port and the E-QUE card **CON-200**.

    Reinsert the E-QUE card into the rack.

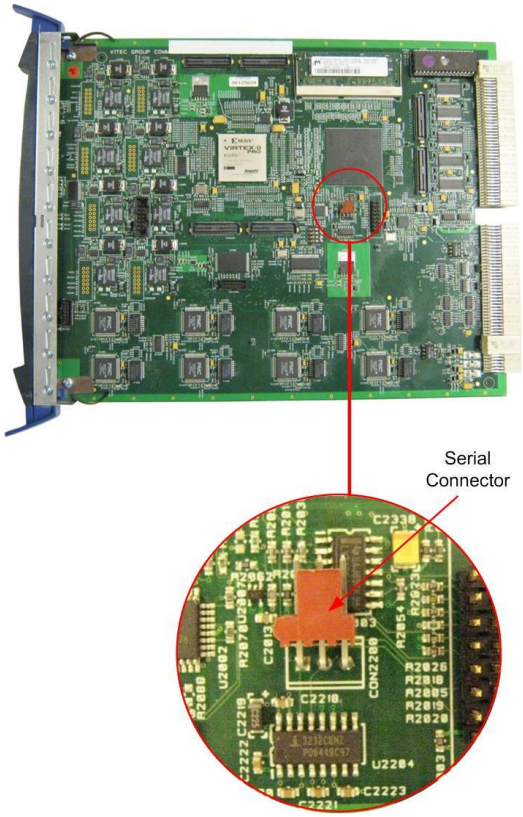


Figure 9-7: E-QUE MK1 card serial connector

12. If it is not already powered up, power up the Eclipse HX-Median / Eclipse HX-Omega / Eclipse HX-Delta matrix.

13. Ensure that the E-QUE card and the PC are both connected to the Ethernet network in some way, or are connected using a crossover Ethernet cable.

    The LAN connector on the E-QUE card is the highest RJ-45 socket on the back panel. When the E-QUE card is connected to the PC or to the network, check that the LAN LEDs (the yellow and green lights at the bottom of the card) are flashing occasionally, indicating a network connection.

14. In Tera Term, select **Control > Macro** and then navigate to the **c:\tftp** directory**.** Open **EQ1_eque_upgrade.ttl** and follow the macro instructions.

    Note:
    The macro should reset and re-boot the E-QUE card automatically. However, if it does not, you may have to reset the E-QUE card using the reset button on the front. The reboot should be seen on the serial console. This reset is essential, as it permits Term Term to interrupt the boot process.

15. The boot countdown is displayed again on the serial console. Tera Term recognizes that the card has rebooted and you are asked to enter the following information to enable the download:

    a. Enter an IP address for the E-QUE card. This address must be in the same range as your PC IP address (for example, `192.168.42.5`).

b. Enter your PC IP address (for example,`192.168.42.1`)

c. Enter the name of the E-QUE card firmware file.

16. The application code downloads to the E-QUE card. When the download is complete, the E-QUE card reboots.

Note:
*If when downloading file, **T T T T** is displayed on the Tera Term serial screen, this indicates a problem downloading the file. Check the network connection and the IP addresses that were entered. Also check that the filename has no file extension.*

Tip: *On the Tera Term screen towards the end of the boot sequence messages there will be a status message that shows a date stamp and version string. Check this string to verify the firmware version.*

9.3 Upgrading the E-QUE card (MK2)

You must upgrade the E-QUE card (MK 2) in the following order:

1. E-QUE card application code (using the procedure described in this section).

Note:
An MVX upgrade cable is required. The procedure also requires an Ethernet connection between the E-QUE card and the PC. If the card and the PC are not connected to the network, they can be connected directly using a crossover Ethernet cable.

2. E-QUE card FPGA code (see ***9.4 Upgrading the E-QUE card (MK1 and MK2) FPGA with Xilinx tools***).

Note:
*Requires specialized equipment. For more information about installing and using Xilinx programming tools, see **Appendix J:Xilinx tools**.*

3. E-QUE card (MK2) Boot PROM (if required) (see **9.6 Upgrading the E-QUE card (MK2) boot ROM**).

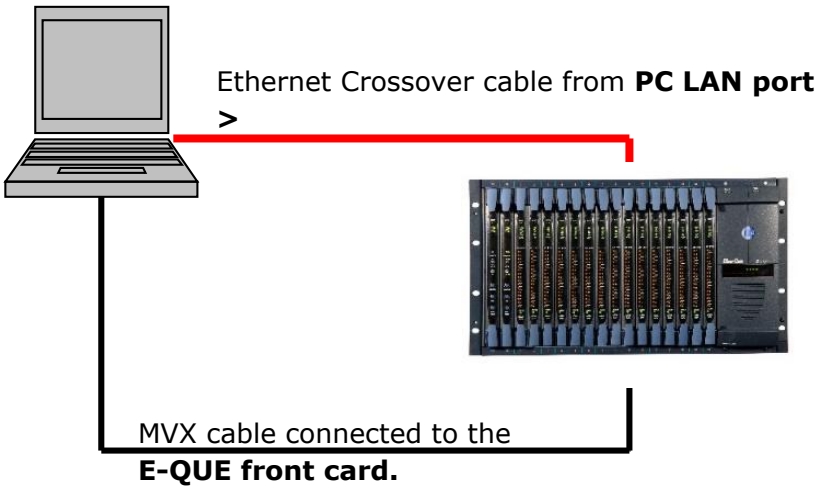


Figure 9-8: E-QUE upgrade

To upgrade the firmware file / application code of the E-QUE card (MK2):

1. Ensure that you have the following equipment:

Required equipment	Description / comments
Tera Term software	Tera Term (version 4.3 or later) must be configured and operational. You can find the Tera Term application on both of the Eclipse HX 8.5 DVDs: **Software DVD > 3rd_Party_Software > Teraterm** **Drivers DVD > 3rd_Party_Software > Teraterm**
TFTP Server software	-
MVX Serial cable (CAB-MVX-48Z)	See ***Figure 9-4: MVX-A16 serial cable (CAB-MVX-48Z)***
Ethernet crossover cable	-
Small reset tool	For example, a bent paper clip

Table 9-3: Required equipment

Figure 9-9: MVX-A16 serial cable (CAB-MVX-48Z)

2. Install Tera-Term. Third party software is available from either of the Eclipse HX 8.5 DVDs:

   - **Software DVD > 3rd_Party_Software > Teraterm**
   - **Drivers DVD > 3rd_Party_Software > Teraterm**

   Tip: *For more information about installing Tera Term, see* ***Appendix G: Tera Term***

3. Create a directory on your PC called **c:\tftp**.

4. Navigate to either of the following folders:

   - **Software DVD > 3rd_Party_Software > EQue TFTP Server App**
   - **Drivers DVD > 3rd_Party_Software > EQue TFTP Server App**

5. Open the folder. Copy **tftpserv.exe** into the **c:\tftp** directory.
   Note:
   Any TFTP server can be used as long as it points to the C:\TFTP folder.

5. Navigate to the following folder on the software DVD:

   - **Drivers DVD > Omega-Median-Delta > xxxxxx - E-Que application MK-I & MK-II** (where **xxxxxx** represents the product number)

   Open the folder. Copy the E-QUE firmware file (***.image** format file**)** into the **c:\tftp** directory.

   Tip: *The folder also contains a Read Me file (****.txt****), which includes the procedure for upgrading the E-QUE firmware file.*

6. From the same folder, copy the Tera Term macro file **EQ2_upgrade.ttl** to the **c:\tftp** directory.

   Note:
   *The folder also contains the E-QUE MK1 Tera Term macro file (****EQ1_upgrade.ttl****). Check that you have copied and pasted the correct file before proceeding.*

7. Start Tera Term. Open the **Setup** menu and select **Serial Port….**

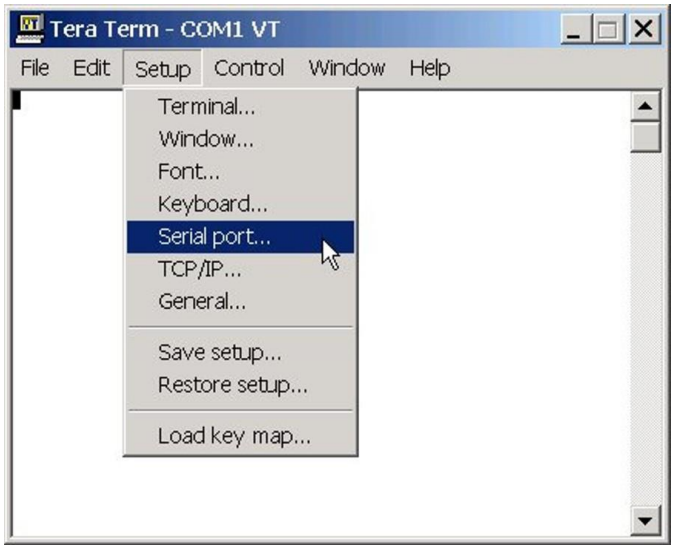


Figure 9-10: Tera Term: selecting Serial Port

8. In the Serial port configuration dialog, enter the following settings:

Port setting	Setting to enter
Port	COM1 (Change to match a COM port present on the PC)
Baud rate	115200
Data	8 bit
Parity	None
Stop	1 bit
Flow control	none
Transmit delay	0 msec/char. If the E-QUE card fails to load correctly, change this value to 50ms.

Table 9-4: Tera Term port settings

9. Set the IP address of your PC to a fixed / static address (any IP address of your choice is suitable).

10. Navigate to the **c:\tftp** directory. To open the TFTP Server command window, double click the application **tftpsrv.exe**.

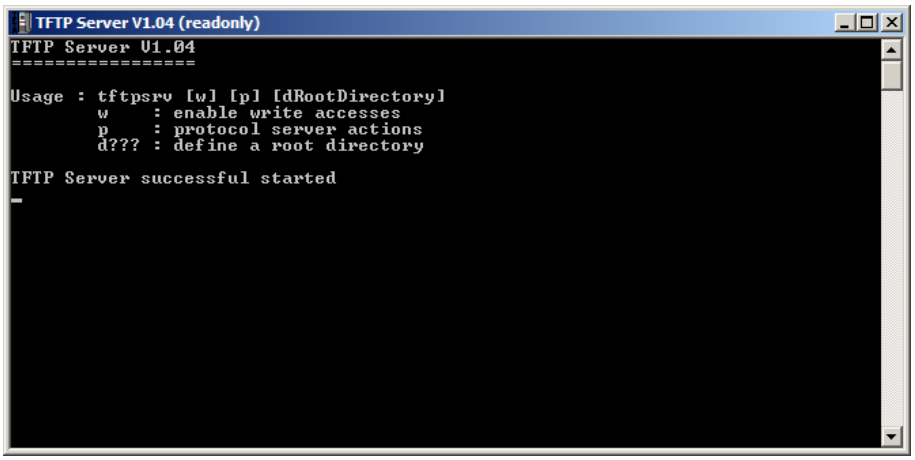


Figure 9-11: TFTP Server Window

Note:
The TFTP application can only access files in the same folder as the TFTP application. The E-QUE firmware file must be in the same directory as the ***tftpsrv.exe*** *program.*

11. Connect the MVX serial cable (CAB-MVX-48Z) between the PC serial port and the E-QUE card (MK2) **CON-2200**.

    Reinsert the E-QUE card (MK2) into the rack:

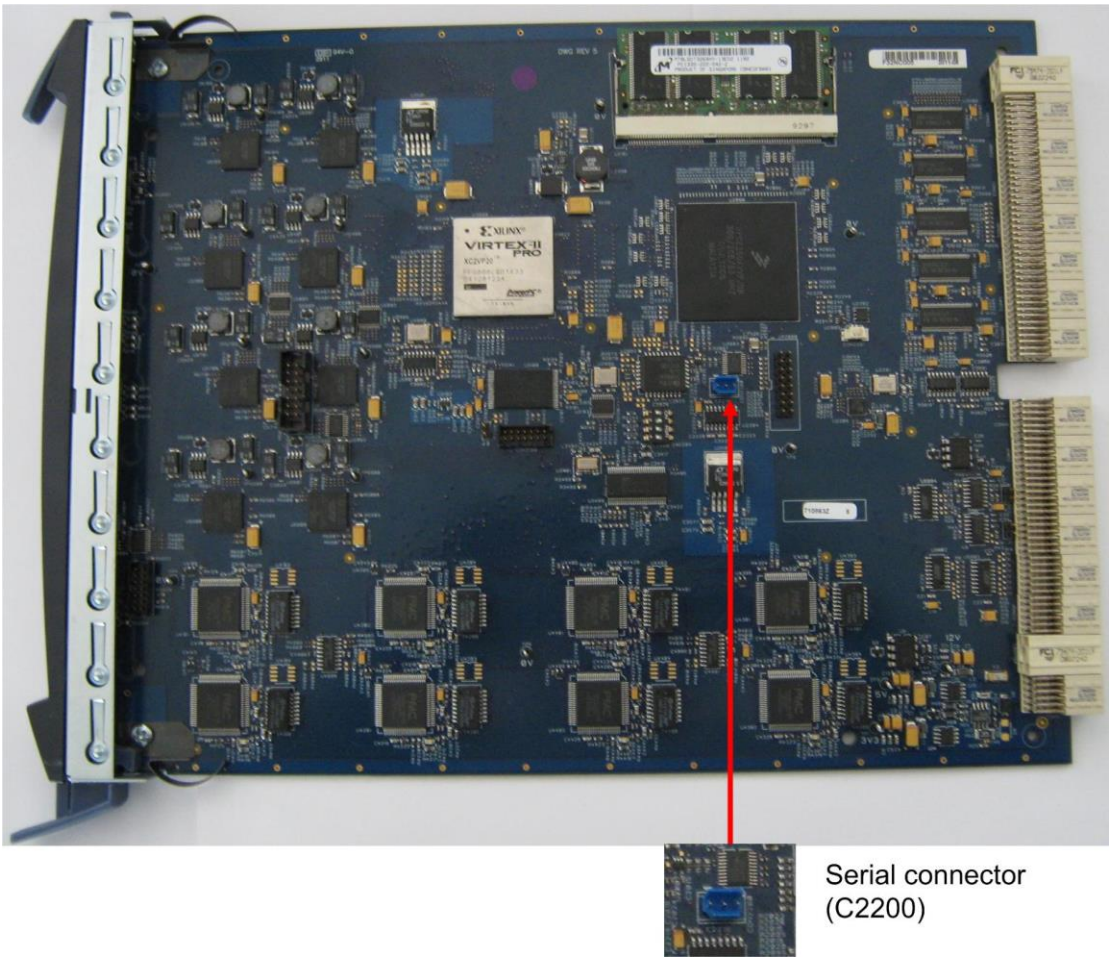


Figure 9-12: E-QUE card (MK2) serial connector

12. Power up the Eclipse HX-Median / Eclipse HX-Omega / Eclipse HX-Delta matrix (if not already powered up).

13. Ensure that the E-QUE card (MK2) and the PC are **either:**

    - Connected to your Ethernet network.
    - Directly connected using a crossover Ethernet cable.

    The LAN connector on the E-QUE card is the highest RJ-45 socket on the back panel. When the E-QUE card is connected to the PC or to the network, check that the LAN LEDs (the yellow and green lights at the bottom of the card) are flashing occasionally, indicating a network connection.

14. In Tera Term, select **Control > Macro** and then navigate to the **c:\tftp** directory**.** Open **EQ2_eque_upgrade.ttl** and follow the macro instructions.

    Note:
    The macro should reset and re-boot the E-QUE card automatically. However, if it does not, you may have to reset the E-QUE card using the reset button on the front. The reboot should

be seen on the serial console. This reset is essential, as it permits Term Term to interrupt the boot process.

15. If the reset is successful, the following dialog is displayed:

Figure 9-13: E-QUE (MK2) successful reset dialog

To continue, click **OK**.

Note:
*If the reset and reboot is **not** successful, the following error message is displayed:*

Figure 9-14: E-QUE (MK2) reset error message

If you receive this message, you are advised to repeat the procedure from Step 6.

16. The boot countdown appears again on the serial console. Tera Term recognizes that the card has rebooted and you are asked to enter the following information to enable the download:

    a. Enter an IP address for the E-QUE card. This address must be in the same range as your PC IP address (for example, **192.168.42.5**).

    b. Enter your PC IP address (for example,**192.168.42.1**).

    c. Enter the file name of the E-QUE card application code (firmware) (for example, **eque_release_image-3.16.5.0**).

    d. Enter the Gateway IP address or accept the default (**10.50.16.1**).

    e. Enter the Subnet Mask or accept the default (**255.255.255.0**).

The application code downloads to the E-QUE card (MK2). When the download is complete, the E-QUE card (MK2) reboots.

Note:
*If when downloading file, **T T T T** is displayed on the Tera Term serial screen, this indicates a problem downloading the file. Check the network connection and the IP addresses that were*

entered.

17. If the download is successful, the following dialog is displayed by Tera Term:

Figure 9-15: Successful download dialog

To exit the macro, click **OK**.

Note:
If the download was not successful, the following error dialog is displayed by Tera Term:

Figure 9-16: Failed download dialog

If you receive this message, you are advised to repeat the procedure from Step 6.

9.4 Upgrading the E-QUE card (MK1 and MK2) FPGA with Xilinx tools

Note: Upgrading the E-QUE card FPGA using Xilinx tools requires specialized equipment. For more information about the Xilinx programming tools, see **Appendix J:Xilinx tools.**

To upgrade the E-QUE card FPGA code with Xilinx tools:

1. Ensure that the latest versions of the Xilinx programming tools have been installed.
2. Connect the USB connector of the download cable (Platform cable USB DLC9G) to the USB port of the PC.
3. Connect the **14way IDC header** to **CON3100**.
4. Power up the UUT and start the iMPACT programming tool.
5. In **Load Project**, select **Cancel**.
6. In **Flows**, double click **Boundary Scan**. Right click the main window and select **Initialize Chain / Ctrl+ I**:

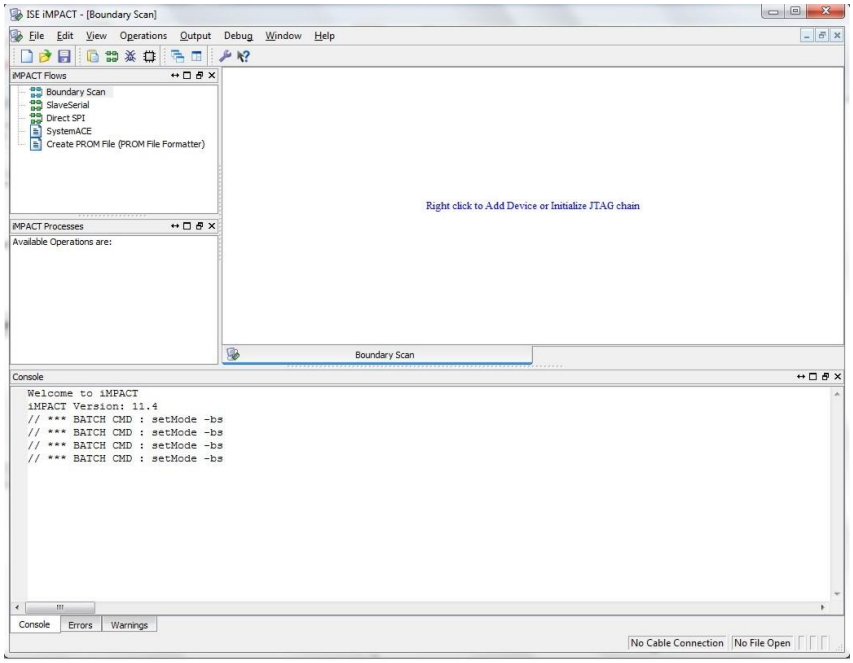


Figure 9-17: iMPACT Boundary Scan

7. If the cable is connected correctly, the application will connect and a Xilinx chip chain will be shown. If the cable is not connected correctly, a cable connection warning is given.

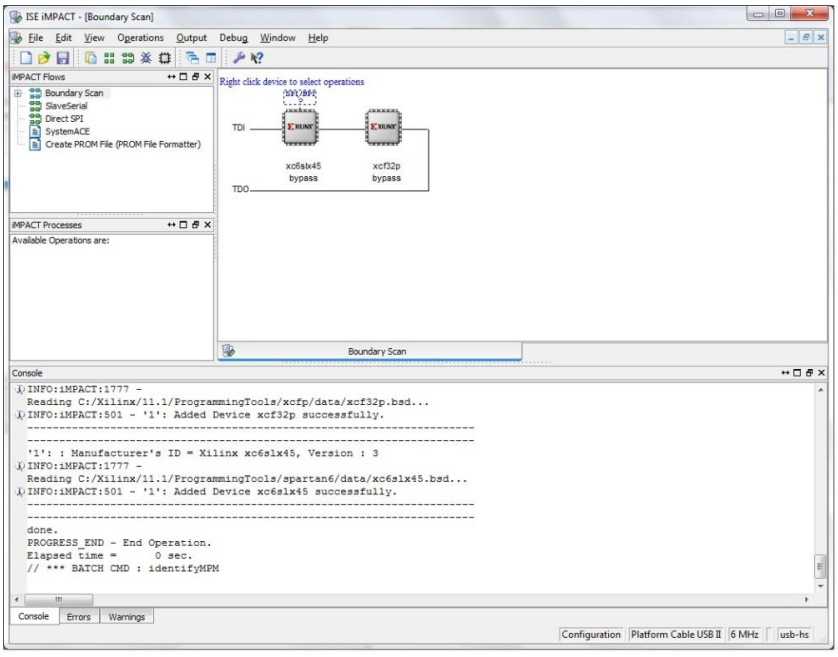


Figure 9-18: Example Xilinx chip chain

8. The **Assign New Configuration File** dialog asks you to select an FPGA image for the first device in the chain or to bypass that device.

In this **example** procedure, the first device will be bypassed and an FPGA image will be assigned to the second device.

- For the first device, press **Bypass**.
- For the second device, select the FPGA image (***.mcs**) from the Drivers DVD:

  Drivers DVD > Omega-Median-Delta > xxxxxx – EQUE FPGA
  (where **xxxxxx** represents the product number)**.**

A summary dialog is presented. Ensure that the **Erase Before Programming** and **Verify** flags are set. Click **OK**.

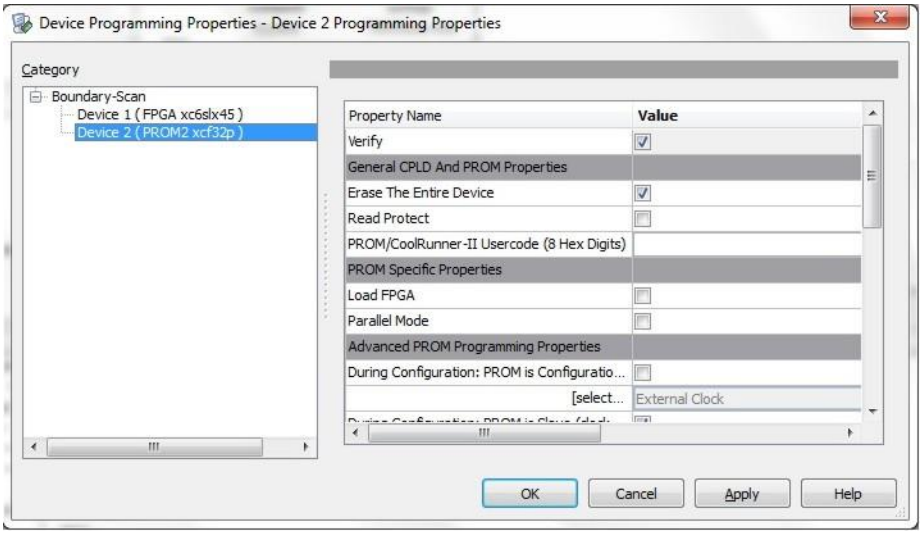


Figure 9-19: Example Xilinx device programming properties

9. Right click the second device and select **Programming**.

   The upgrade starts, and takes approximately 2 minutes to complete. When the upgrade is complete, the **Program Succeeded** message is displayed in the main window.

10. Power down the UUT.

9.5 Upgrading the E-QUE card (MK1) boot ROM

Only upgrade the E-QUE (MK1) boot ROM after the main E-QUE application code has been upgraded.

Note:
The procedure below is for E-QUE (MK1) cards only. To upgrade the PROM of an E-QUE card (MK2), see ***9.6 Upgrading the E-QUE card (MK2) boot*** ROM.

To upgrade the E-QUE card (MK1) boot PROM:

1. Ensure that you have the required equipment:

- 2 MBit PROM device (**ST M27W201** or equivalent).
- PROM programming unit and PROM programming software appropriate for that unit.
- Appropriate '**S**' record file. To find the file, go to:
  Drivers DVD > Omega-Median-Delta > xxxxxx – E-Que MKI (Green PCB) Boot ROM (where **xxxxxx** represents the part number).
  .
  The folder contains the ***.s** record file and a *Read Me* file (***.txt**), with version information.

2. Ensure that the PROM device to be programmed is empty.
3. Program the PROM device with the appropriate file, according to the instructions for the PROM programmer being used.
   Note:
   *The load address for the **S** record is **0xFFF00000**.*
   Confirm that the checksum of the programmed device matches that detailed in the Eclipse HX Release Notes.
4. Remove the existing PROM device from the configuration card.
   Insert the newly programmed PROM device taking care to ensure the correct polarity of the device.

Observe all electrical shock hazard warning and precautions for handling electrostatic sensitive devices

9.6 Upgrading the E-QUE card (MK2) boot ROM

Only upgrade the E-QUE (MK2) boot ROM after the main E-QUE application code has been upgraded.

Note: The procedure below is for E-QUE (MK2) cards only. To upgrade the PROM of an E-QUE card (MK2), see **9.5 Upgrading the E-QUE card (MK1) boot** ROM.

To upgrade the E-QUE (MK2) boot PROM:

1. Ensure that you have the following equipment:

Required equipment	Description / comments
Tera Term software	Tera Term must be configured and operational. You can find the Tera Term application on both of the Eclipse HX 8.5 DVDs: **Software DVD > 3rd_Party_Software > Teraterm** **Drivers DVD > 3rd_Party_Software > Teraterm**
TFTP Server software	-

Required equipment	Description / comments
MVX Serial cable (CAB-MVX-48Z)	See ***Figure 9-4: MVX-A16 serial cable (CAB-MVX-48Z)***
Ethernet crossover cable	-
Small reset tool	For example, a bent paper clip

Table 9-5: Required equipment

2. Install Tera Term.
   Tip: *For more information about installing Tera Term, see* ***Appendix G: Tera Term***

3. Create a directory on your PC called **c:\tftp**.
4. Navigate to either of the following folders:
   - **Software DVD > 3rd_Party_Software > EQue TFTP Server App**
   - **Drivers DVD > 3rd_Party_Software > EQue TFTP Server App**

   Open the folder. Copy **tftpserv.exe** into the **c:\tftp** directory.

   Note: Any TFTP server can be used as long as it points to the C:\TFTP folder.

5. Navigate to **Drivers DVD > Omega-Median-Delta > xxxxxx – E-Que MKII (Blue PCB) Boot ROM**
   (where **xxxxxx** represents the product number).

   Open the folder. Copy the E-QUE (MK2) boot ROM file into the **c:\tftp** directory.

6. From the same folder, copy the Tera Term macro file **EQ2_uboot_upgrade.ttl** to the **c:\tftp** directory.
7. Start Tera Term. Open the **Setup** menu and select **Serial Port….**

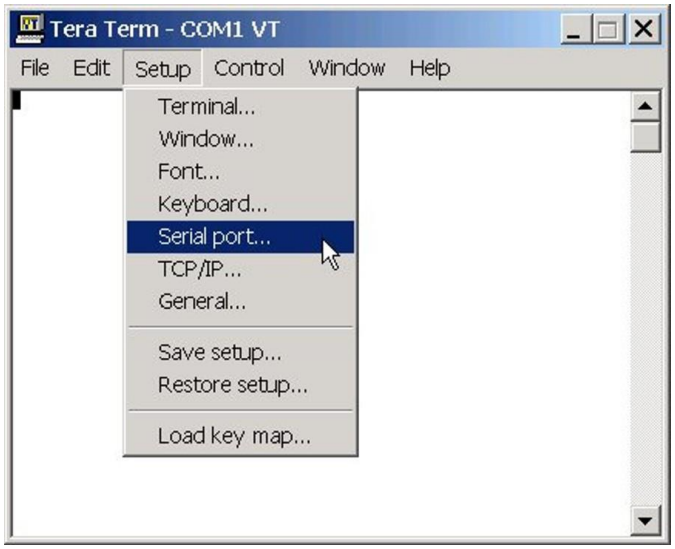


Figure 9-20: Tera Term: selecting Serial Port

8. In the Serial port configuration dialog, enter the following settings:

Port setting	Setting to enter
Port	COM1 (Change to match a COM port present on the PC)
Baud rate	115200
Data	8 bit
Parity	None
Stop	1 bit
Flow control	none
Transmit delay	0 msec/char. If the E-QUE card fails to load correctly, change this value to 50ms.

Table 9-6: Tera Term port settings

9. Set the IP address of your PC to a fixed / static address (any IP address of your choice is suitable).
10. Navigate to the **c:\tftp** directory. To open the TFTP Server command window, double click the application **tftpsrv.exe**.

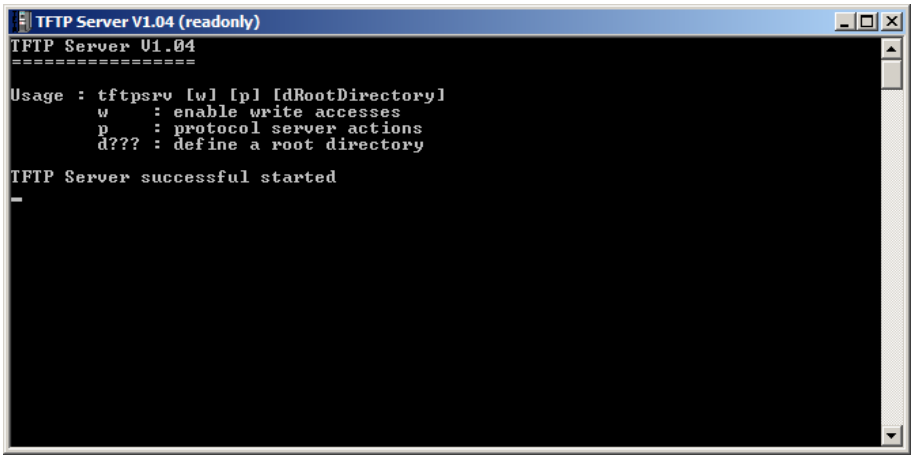


Figure 9-21: TFTP Server Window

Note:
*The TFTP application can only access files in the same folder as the TFTP application. The E-QUE MK2 boot ROM file must be in the same directory as the **tftpsrv.exe** program.*

11. Connect the MVX serial cable (CAB-MVX-48Z) between the PC serial port and the E-QUE card (MK2) serial connector (**CON-2200)**:

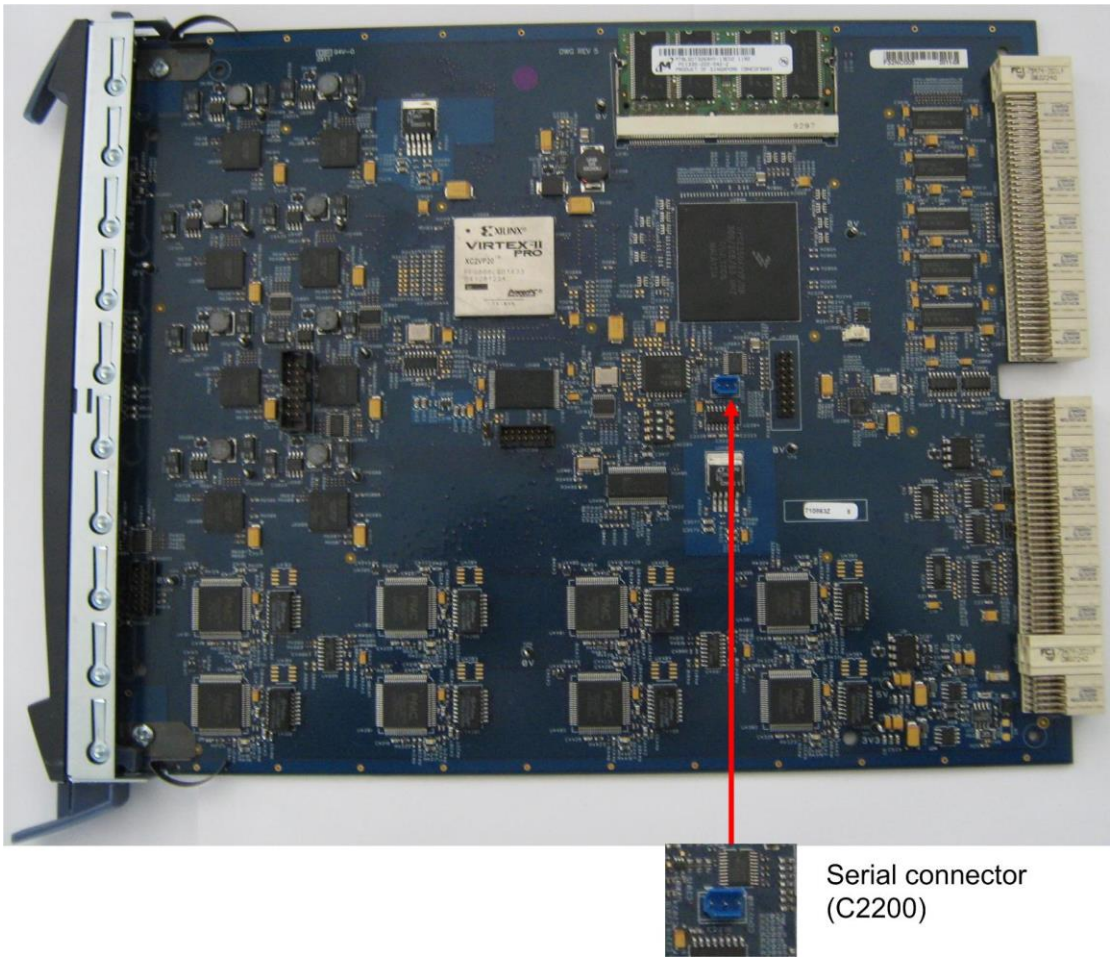


Figure 9-22: E-QUE card (MK2) serial connector

12. Reinsert the E-QUE card (MK2) into the rack.

13. Power up the Eclipse HX-Median / Eclipse HX-Omega matrix / Eclipse HX-Delta matrix (if it is not already powered up).

14. Ensure that the E-QUE card (MK2) and the PC are **either:**

    - Connected to your Ethernet network.
    - Directly connected using a crossover Ethernet cable.

    The LAN connector on the E-QUE card is the highest RJ-45 socket on the back panel. When the E-QUE (MK2) card is connected to the PC or to the network, check that the LAN LEDs (the **yellow** and **green** lights at the bottom of the card) are flashing occasionally, indicating a network connection.

15. In Tera Term, select **Control > Macro** and then navigate to the **c:\tftp** directory**.** Open **EQ2_uboot_upgrade.ttl** and follow the macro instructions.

    Note:
    The macro should reset and re-boot the E-QUE card (MK2) automatically. However, if it does not, you may have to reset the E-QUE card (MK2) using the reset button on the front. The

reboot should be seen on the serial console. This reset is essential, as it permits Term Term to interrupt the boot process.

16. If the reset is successful, the following dialog is displayed:

Figure 9-23: E-QUE (MK2) successful reset dialog

To continue, click **OK**.

Note:
*If the reset and reboot is **not** successful, the following error message is displayed:*

Figure 9-24: E-QUE (MK2) reset error message

If you receive this message, you are advised to repeat the procedure from Step 6.

17. The boot countdown appears again on the serial console. Tera Term recognizes that the card has rebooted and you are asked to enter the following information to enable the download:

    a. Enter an IP address for the E-QUE card. This address must be in the same range as your PC IP address (for example, **192.168.42.5**).

    b. Enter your PC IP address (for example,**192.168.42.1**).

    c. Enter the file name of the E-QUE card application code (firmware) (for example, **eque_release_image-3.16.5.0**).

    d. Enter the Gateway IP address or accept the default (**10.50.16.1**).

    e. Enter the Subnet Mask or accept the default (**255.255.255.0**).

The application code downloads to the E-QUE card (MK2). When the download is complete, the E-QUE card (MK2) reboots.

Note:
*If when downloading file, **T T T T** is displayed on the Tera Term serial screen, this indicates a problem downloading the file. Check the network connection and the IP addresses that were entered.*

17. If the download is successful, the following dialog is displayed by Tera Term:

Figure 9-25: Successful download dialog

To exit the macro, click **OK**.

Note:
If the download was not successful, the following error dialog is displayed by Tera Term:

Figure 9-26: Failed download dialog

If you receive this message, you are advised to repeat the procedure from Step 6.

10 Upgrading IVC-32 and LMC-64 cards

To upgrade IVC-32 and LMC-64 cards, follow the **same** upgrade procedures for E-QUE cards (MK1), as described in ***9 Upgrading E-QUE cards***.

At EHX v8.5, the application code for all 3 cards (E-QUE, IVC-32 and LMC-64 cards) is the **same**.

Note:
*This guide is laid out in the order in which you must upgrade your Eclipse HX software and hardware devices. For a quick reference to upgrading your system, see **3Quick reference: Upgrading to Eclipse HX**.*

10.1 Identifying MK1 and MK2 IVC-32 / LMC-64 cards

To find out if the IVC-32 / LMC-64 card is either a MK 1 or a MK 2 card, run a firmware report in EHX. The firmware report identifies the card as either a MK 1 or a MK 2 card.

To use the Firmware report tool:

a. Go to **EHX> System> Layout** .

b. Right click the matrix icon.

c. Select **Firmware > Firmware report.**

You can also identify MK1 and MK2 cards **visually**.

The MK1 IVC-32/LMC-64 card is **green**. It features a large chip in the upper right hand corner of the PCB (as it is installed in the matrix):

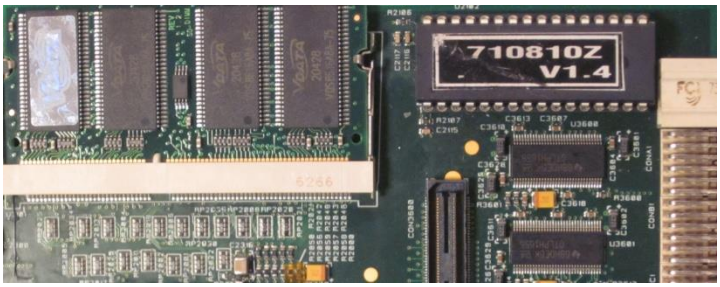


Figure 10-1: IVC-32/LMC-64 MK1 card detail

The MK2 IVC-32/LMC-64 card is **blue**. If you look at the upper right hand corner of the card, the large chip **no longer** forms part of the PCB:

Figure 10-2: IVC-32/LMC-64 MK2 card detail

11 Upgrading E-MADI64 cards

This chapter describes how to upgrade E-MADI64 cards. The following E-MADI64 code can be upgraded:

- The **boot code** file (***.mot**), which is upgraded using the Renesas Flash Development Toolkit 3.4 Basic (FDT).
- The **application code** and **DSP code files** (***.fwc**), which are upgraded using EHX.
- The **FPGA code**, which is upgraded using **either** EHX or Xilinx iMPACT programming software.

Note:
This guide is laid out in the order in which you must upgrade your Eclipse HX software and hardware devices. For a quick reference to upgrading your system, see ***3Quick reference: Upgrading to Eclipse HX****.*

11.1 Upgrading the E-MADI64 boot code

To upgrade the E-MADI64 card H8 boot code:

1. Ensure that you have the following equipment:

Required equipment	Description / comments
PC with a serial port connection or USB-to-serial port adaptor	If you are using a USB-to-serial port adaptor, download the latest drivers.
Renesas Flash Development Toolkit 3.4 Basic (FDT)	The Renesas FDT must be installed and configured. The Renesas FDT application is available from both Eclipse HX v8.5 DVDs: **Software DVD > 3rd_Party_Software > RenesasFDT** **Drivers DVD > 3rd_Party_Software > RenesasFDT**
MVX-A16 serial upgrade cable (Clear-Com part CAB-MVX-48Z)	For an image of this cable, see ***Figure 28: MVX-A16 Serial upgrade cable.***
The E-MADI64 card H8 boot code file (*.mot):	The E-MADI64 card boot code file (***.mot**) is available from the following folder:

Required equipment	Description / comments
	Drivers DVD > Omega-Median-Delta > xxxxxx – E-MADI Boot (Where **xxxxxx** represents the product number).

Table 11-1: Required equipment

2. Install the Renesas Flash Development Toolkit (FDT), which is available from either of the Eclipse HX v8.5 DVDs:
   - **Software DVD > 3rd_Party_Software > RenesasFDT**
   - **Drivers DVD > 3rd_Party_Software > RenesasFDT**

   Accept the default install settings.
3. Start the Renesas Flash Development Toolkit (FDT) from **Programs**, selecting the **basic Startup option**.
4. Access the configuration (settings) dialogs, by selecting **Options > New Settings...** Configure the FDT, as shown in the table below:

Settings dialog / option	Setting to enter
Select Device	H8S/2318F
Select Port	COM1 (Change to match a COM port present on the PC)
CPU Frequency	25.0 Mhz
Connection	Boot mode
Recommended Speed	38400 (Deselect the Use-Default option)
Protection	Automatic
Messaging	Advanced
User Area	Selected (Checked)
Readback verification	Yes

Table 11-2: FDT settings

Note:
The first time the FDT is run, the settings dialogs are displayed by default. After the FDT has been configured, the settings dialogs are no longer shown by default.

5. In the **Download** window, click **Options** and ensure that:

   - **Auto-Disconnect** is selected (checked).
   - The **Download File** radio button is selected.

6. Select **'...'** for the **User area** and select the appropriate ***.mot** format file for the E-MADI64 H8 boot code.

   The EMADI64 boot code file is available from the Drivers DVD:

   Drivers DVD > Omega-Median-Delta > xxxxxx-E-MADI Boot

   (where **xxxxxx** represents the product number).

7. On the E-MADI64 card to be updated, ensure that jumper **J1000** is made.

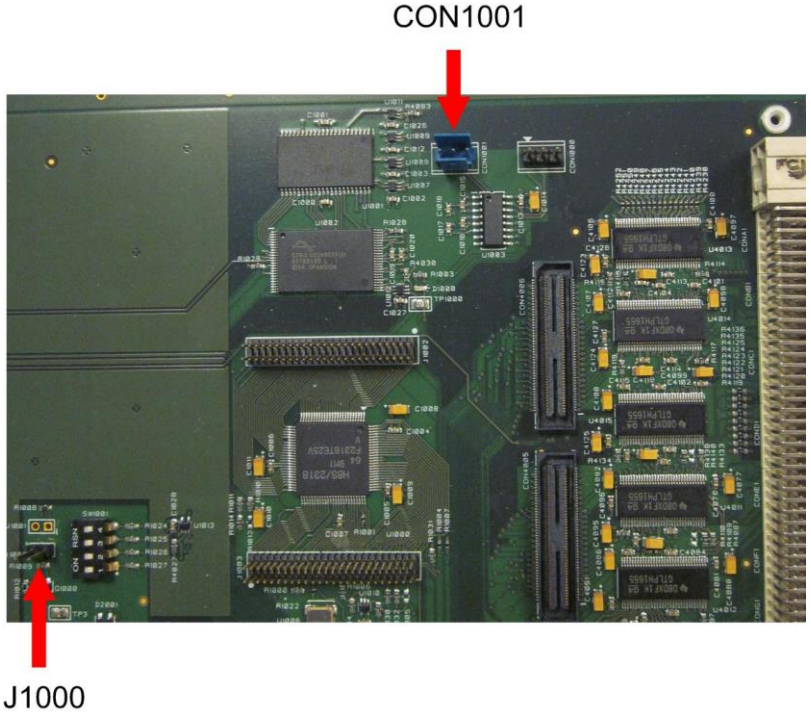


Figure 11-1: E-MADI64 PCB (upper right hand corner)

8. Connect the MVX serial cable (CAB-MVX-48Z) between the COM port on the PC and the **CON1001** on the E-MADI64 card to be updated.

   See ***Figure 11-1: E-MADI64 PCB (upper right hand corner)*** above.

Note:
The E-MADI64 connection is polarized to ensure a correct connection.

9. Insert the E-MADI64 card into the Eclipse HX-Median / Eclipse HX-Omega / Eclipse HX-Delta matrix (having ensured that the matrix is powered on).

10. Select **Program Flash** from the FDT. Confirm that FDT reports the image has been written successfully.

    Important note:
    If the E-MADI64 card fails to upgrade, reset (re-seat) the E-MADI64 card and select Program Flash from the FDT again.

    If you are using a USB-to-serial adaptor, the adaptor may have to be unplugged and re-plugged to enable the upgrade to start on some computers. If you are running the EHX application, ensure that EHX is configured for Ethernet and not serial connection. When the upgrade is complete, you can also do the following:

    1. *Remove the E-MADI64 card from the matrix.*
    2. *Remove the MVX serial cable (CAB-MVX-48Z).*
    3. *Remove jumper J1000.*
    4. *Repeat steps 7 through 11 for each remaining E-MADI64 card.*

11.2 Upgrading the E-MADI64 application, DSP and FPGA code using EHX

You can upgrade the E-MADI64 application, DSP and FPGA code using EHX and an Eclipse matrix. If you are using an Ethernet connection, an EHX configuration map is required with the correct IP address configured.

Note:
With E-MADI64, you can upgrade the FPGA code in exactly the same way as the application and DSP code.

***.fwc** format files are used in the download of the E-MADI64 application code, the DSP code, and the FPGA code. The Drivers DVD contains the E-MADI64 application and DSP code:

- **Drivers DVD > Omega-Median-Delta > E-MADI Application**
- **Drivers DVD > Omega-Median-Delta > E-MADI DSP**

The Drivers DVD contains the E-MADI64 FPGA code:

- **Drivers DVD > Omega-Median-Delta > E-MADI FPGA**

Place the application, DSP and FPGA code files in a location that EHX can access. When these files are downloaded to the matrix, **all** the E-MADI64 cards that have been fitted to the matrix will be upgraded.

Note – Once the firmware is downloaded from EHX to the CPU card it can take between 45 – 60 minutes to transmit this image to the MADI cards (depending on the number of cards that are inserted and therefore receiving the image in parallel). Please use the matrix event log of the matrix frame to monitor the percentage complete state of the image transmission. Allow the card to automatically reboot at the end of upgrade as the image has to be copied to permanent storage on the card after it has been received.

Tip: *For help with selecting the other procedures you require for upgrading to Eclipse HX v8.5, see the quick reference procedures tables in* ***2 Selecting Upgrade Procedures***.

To upgrade E-MADI64 H8, DSP or FPGA code using EHX:

1. Ensure that you have the following equipment:

Required equipment	Description / comments
PC with an Ethernet or serial communications port	-
EHX software	EHX must be installed and configured.
Ethernet or serial cable for the PC-to-matrix connection	-
H8 application code, DSP and FPGA code files	The appropriate application code, DSP code and FPGA code files (***.fwc** format) are available from the Eclipse HX v8.5 DVDs: • **Drivers DVD > Omega-Median-Delta > E-MADI Application** • **Drivers DVD > Omega-Median-Delta > E-MADI DSP** • **Drivers DVD > Omega-Median-Delta > E-MADI FPGA.**

Table 11-3: Required equipment

2. Start EHX on the PC.

3. Connect the PC to the matrix using either Ethernet or a serial communications port.

4. Open the EHX configuration map within EHX.

5. Select **System > Layout.**

6. Right click the matrix and then select **Firmware> Update Firmware**.
   The **Update Firmware** wizard dialog is displayed. Click **Next**.

   In the **Select Hardware Type** screen, ensure that the **Card** radio button is selected.

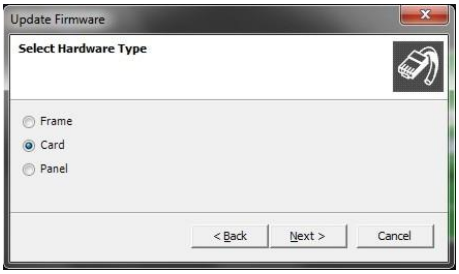


Figure 11-2: Select Hardware Type

7. Click **Next** and then browse to the E-MADI64 code file (application, DSP or FPGA code files (***.fwc**)).

   Tip: *See **Step 1** for the location of the .fwc files on the Eclipse HX v8.5 DVD.*

8. Click **Next** and confirm that the details displayed are correct.

9. Click **Next** and confirm that the download commences.

   Note:
   *The E-MADI64 card status light **flashes green** while the upgrade is in process (LED on to off ratio: 1:4 at 0.5Hz). When the upgrade is complete, the status light is lit **green** at a steady heartbeat (LED on to off ratio: 1:1 at 1 Hz).*

10. When the download has completed, click **Finish** to close the update firmware wizard.

11. Ensure that the E-MADI64 cards reset once the download is complete.All the cards are upgraded at the same time.

Code	Approx. reset time
Application	1 minute
DSP	3 minutes
FPGA	18 minutes

Table 11-4: Approximate reset times per system

12. Confirm the updated firmware version by opening EHX and going to **Matrix event log > Matrix overview**.

    Note:
    *You can also use the Firmware report tool in EHX to confirm the firmware version for the H8 boot code (see the previous procedure), H8 application code and FPGA. However, the Firmware report tool does **not** provide firmware version information for DSP code.*

    To use the Firmware report tool:

    a. *Open EHX and go to* **System > Layout** .

    b. *Right click the matrix icon.*

    c. *Select* **Firmware > Firmware report.**

11.3 Upgrading the E-MADI64 FPGA using the Xilinx tool set

Note:
*Upgrading the E-QUE card FPGA using Xilinx tools requires specialized equipment. For more information about the Xilinx programming tools, see **Appendix J:Xilinx tools.***

Note:
Ensure that the Xilinx tool set is Version 11 or later.

To upgrade the Xilinx FPGAs on an E-MADI64 card:

1. Ensure that the latest versions of the Xilinx programming tools have been installed.

   Tip: *For more information about installing Xilinx programming tools, see **Appendix J:Xilinx tools.***

2. Obtain the latest version of the Xilinx device firmware from the Drivers DVD:

   Drivers DVD > Omega-Median-Delta > xxxxxx - E-MADI FPGA > xxxxxx.mcs and **xxxxxx.cfi**

   Where **xxxxxxx** represents the product / file number**.**

   Note:
   *When upgrading the E-MADI64 FPGA, both the ***.mcs** and ***.cfi** file are required. The ***.cfi** and ***.mcs** file are available from the same location. The user does not have to do anything else, as the tools find the files.*

3. Connect the USB connector of the download cable (Platform cable USB DLC9G / DLC10) to the USB port of the PC.

4. Connect the **14way IDC header** to **CON4000**.

5. Power up the UUT and start the iMPACT programming tool.

6. In **Automatically create and save a project**, select **No**.

7. In **Load Project**, select **Cancel**.

8. In **Flows**, double click **Boundary Scan**. Right click the main window and select **Initialise Chain / Ctrl+ I**:

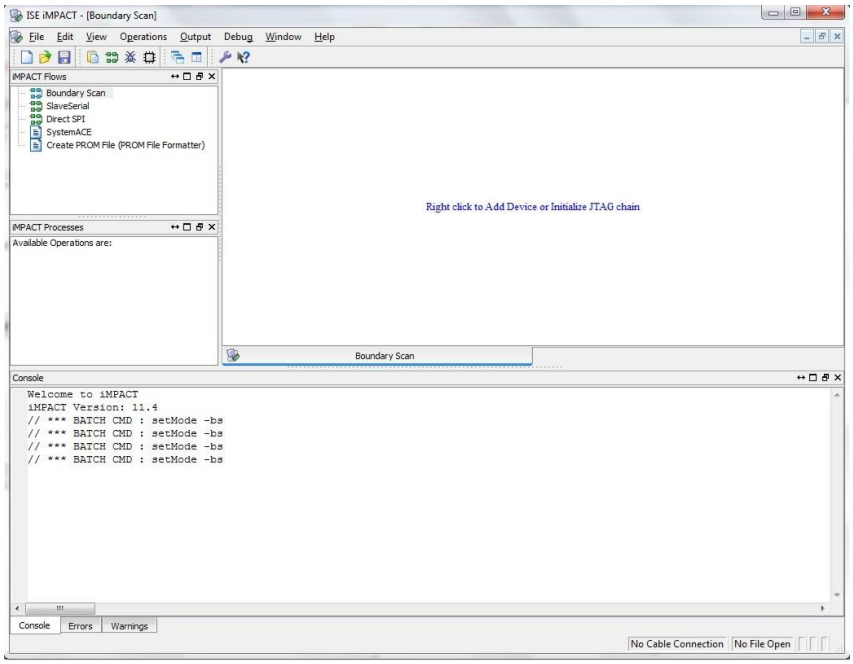


Figure 11-3: Example iMPACT Boundary Scan

9. If the cable is connected correctly, the application will connect and a Xilinx chip chain will be shown. If the cable is not connected correctly, a cable connection warning is given.

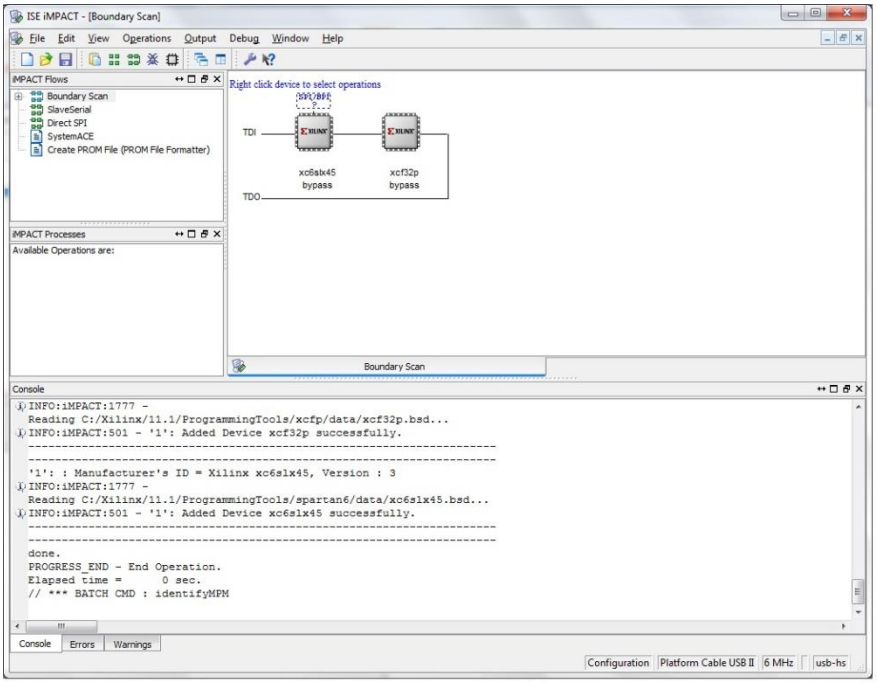


Figure 11-4: Example Xilinx chip chain

10. In the **Auto Assign Configuration Files Query** dialog, select **Yes**.
11. The **Assign New Configuration File** dialog asks you to select an FPGA image for the first device in the chain or to bypass that device.

    In this **example** procedure, the first device will be bypassed and an FPGA image will be assigned to the second device .

    - For the first device, press **Bypass**.
    - For the second device, select the FPGA image:

      Drivers DVD > Omega-Median-Delta > xxxxxx - E-MADI FPGA > xxxxxx.mcs and **xxxxxx.cfi**

      Where **xxxxxx** represents the product / file number.

    Note:
    *When upgrading the E-MADI64 FPGA, both the ***.mcs** and ***.cfi** file are required. The *.cfi and *.mcs file are available from the same location. The user does **not have to do anything else**, as the tools find the files.*

12. A summary dialog is presented. For the selected device, ensure that the **Erase the Entire Device** and **Verify** flags are set. Click **OK**.

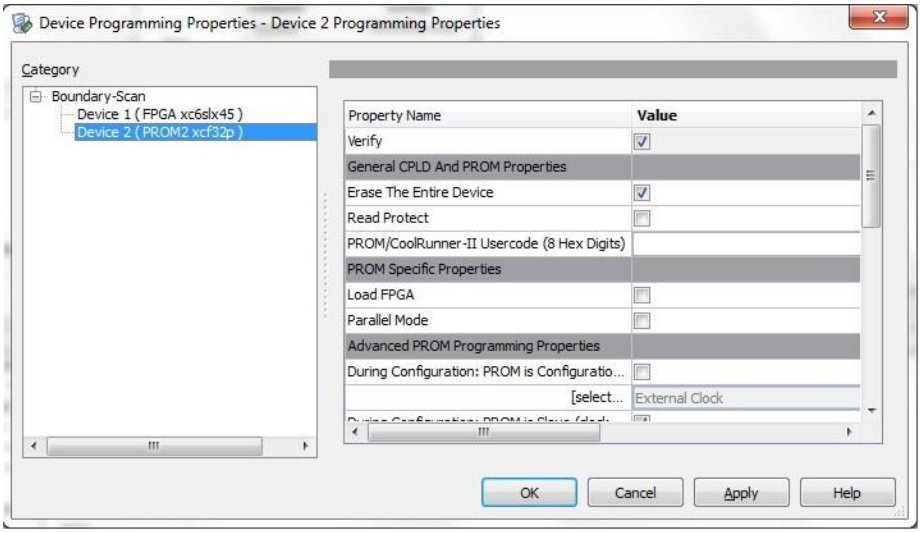


Figure 11-5: Example Xilinx device programming properties

13. In **Impact Processes**, double click **program**.

    The upgrade (programming) starts, and takes approximately 2 minutes to complete. When the upgrade is complete, the **Program Succeeded** message is displayed in the main window.

14. Power down the UUT.

12 Upgrading CellCom®/FreeSpeak® wireless systems

For detailed guidance on CellCom / FreeSpeak firmware upgrades, including MKII beltpacks, antennas and splitters, see the ***CellCom and FreeSpeak Firmware Upgrade Manual***.

For FreeSpeak II firmware upgrades see **16Upgrading FreeSpeak II™ wireless systems**

Note:

This guide is laid out in the order in which you must upgrade your Eclipse HX software and hardware devices. For a quick reference to upgrading your system, see ***3Quick reference: Upgrading to Eclipse HX***.

13 Upgrading panels

This chapter describes how to upgrade the i-Station and V-Series user panels supported by Eclipse HX.
Supported panels may be upgraded using an installed and configured copy of EHX and an active Eclipse HX matrix.

Note:
This guide is laid out in the order in which you must upgrade your Eclipse HX software and hardware devices. For a quick reference to upgrading your system, see ***3Quick reference: Upgrading to Eclipse HX****.*

13.1 Upgrading panels using EHX

In all cases, panels should initially be upgraded using EHX. Manual programming of panels should only be attempted if the EHX download repeatedly fails.

The download of a panel application requires an ***.fwp** format file, which is located on the software DVD. This must be placed in a location that is accessible by the installed EHX application.

Note:
The Eclipse HX v8.5 contains all the firmware files required for upgrading a panel.

The download of a panel application requires:

- An operational Eclipse HX matrix with the panels connected and powered.
- A suitable EHX configuration (with the correct IP address configured, if an Ethernet connection is used).

Once the ***.fwp** format file is downloaded to the Eclipse HX matrix, **all** panels of the same type will be upgraded at the same time through an automatic download from the matrix to the panel.

Each panel type requires a different ***.fwp** format file, but the Eclipse HX matrix determines the panel type before attempting any download. It is therefore **not** necessary to disconnect panels of a different type to prevent an accidental download.

To upgrade panel application code using EHX:

1. Ensure that you have the following equipment:

Required equipment	Description / comments
PC with an Ethernet or serial communications port	-
EHX software	EHX must be installed and configured.

Required equipment	Description / comments
EHX configuration file / map	-
Ethernet or serial cable for the PC-to-matrix connection	-
Appropriate *.fwp format panel application	The appropriate ***.fwp** format panel code is available from the Drivers DVD: **Drivers DVD > Panel Software > <Panel type>**

Table 13-1: Required equipment

2. Start EHX on the PC.
3. Connect the PC to the matrix using either Ethernet or serial communications port.
4. Open the EHX configuration map within EHX.
5. Select **System > Layout.**
6. Right click the matrix and then select **Firmware> Update Firmware**.
7. The update firmware wizard dialogue is displayed. Click **Next** and ensure that the **Panel** radio button is selected.

   In **Options**:
   - Selecting **Automatic mode** forces panels to upgrade automatically.
   - Selecting **Panel Prompt mode** means that each panel user will be asked to accept / decline the panel upgrade.
8. Click **Next** and then browse to the appropriate ***.fwp** file:

   Drivers DVD > Panel Software > <Panel type>
9. Click **Next** and confirm that the details displayed are correct.
10. Click **Next** and confirm that the download commences.
11. When the download has completed, click **Finish** to close the update firmware wizard.
12. Ensure that the matrix commences downloading to connected panels of the required type.If automatic download does not commence, power cycle the panel(s) being upgraded.

13. Ensure that the panels reset once the download is complete.

14. Confirm the updated firmware version using either:

    - The EHX firmware report tool:
        - Go to **EHX > System > layout** .
        - Right click the matrix icon.
        - Select **Firmware > Firmware report.**
    - The local menu on the panel (display panels only).

13.1.1 Locating Panel *.fwp files on the software DVD

Panel type	*.fwp file
i-Station (i-Series)	**Drivers DVD > Panel_Software > i-Station > xxxxxx-i-Station App** (where **xxxxxx** represents the product number) **Note:** *Clear-Com recommends that you upgrade **Expansion** panels first before upgrading the main i-Station.*
E-Station	**Drivers DVD > Panel Software > E-Station > xxxxxx-E-Station App** (where **xxxxxx** represents the product number)**.** **Note:** *Clear-Com recommends that you upgrade **Expansion** panels first before upgrading the main E-station.*
V-Series	**Drivers DVD > Panel Software > V-Series > Main Board > xxxxxx-Panel Application** (where **xxxxxx** represents the product number)**.**
V-Series Display Module	The Display Module upgrade files (***.fwp** format) are available from the Drivers DVD: • **Drivers DVD > Panel_Software > V-Series > Display_Module > xxxxxx-Display PIC Boot Loader** • **Drivers DVD > Panel_Software > V-Series > Display_Module > xxxxxx-Display PIC Application Code** Where **xxxxxx** represents a product number.

Table 13-2: Locating Panel *.fwp files

Tip: *For help with selecting the other procedures you require for upgrading to Eclipse HX v8.5, see the quick reference procedures tables in* ***2 Selecting Upgrade Procedures***.

13.1.2 V-Series upgrades

You cannot upgrade any other panels during a V-Series panel upgrade.

The size of the V-Series firmware means that it cannot be stored in the flash memory of the matrix during the upload, and has to be retained in the upload buffer. If an attempt is made to upgrade another panel while the V-Series panel is being upgraded, the V-Series firmware upload will be overwritten.

Clear-Com also recommends that you do not download any configurations during the V-Series panel upgrade. An **Apply Changes** download from EHX will *break* a V-Series panel upgrade (the download partially resets the configuration for each panel and this makes the rack "forget" that it is upgrading the panel).

13.2 Upgrading panel application code manually

The application code for most panels can be upgraded manually either by re-programming the PROM or by directly connecting the panel to a PC. Before attempting any upgrade, ensure that anti-static precautions are taken, as Eclipse HX devices are sensitive to static discharges.

Observe all electrical shock hazard warning and precautions for handling electrostatic sensitive devices

Tip: *For help with selecting the other procedures you require for upgrading to Eclipse HX v8.5 see the quick reference procedures tables in* ***2 Selecting Upgrade Procedures***.
Cabling for i-Station upgrades

The **convertor cable** connects from a serial port on the PC, routes through an RS-232 to RS-422 adapter and connects to the expansion out RJ-45 port and the i-Station or the expansion in RJ-45 port of the E-Station using separate CAT5 cables.

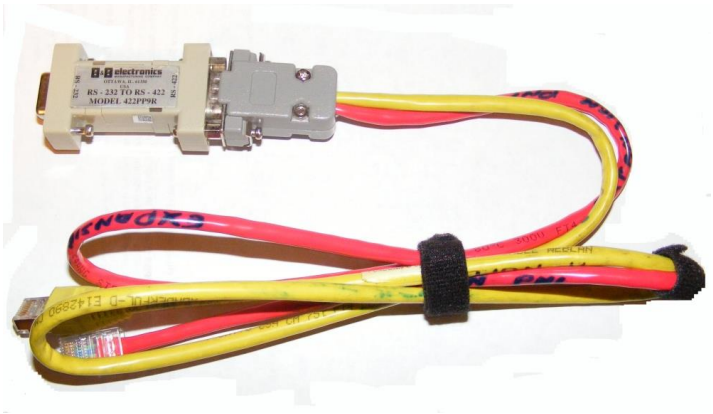


Figure 13-1: Example converter cable

Figure 13-2 shows an example wiring scheme for serial programming an i-Station panel:

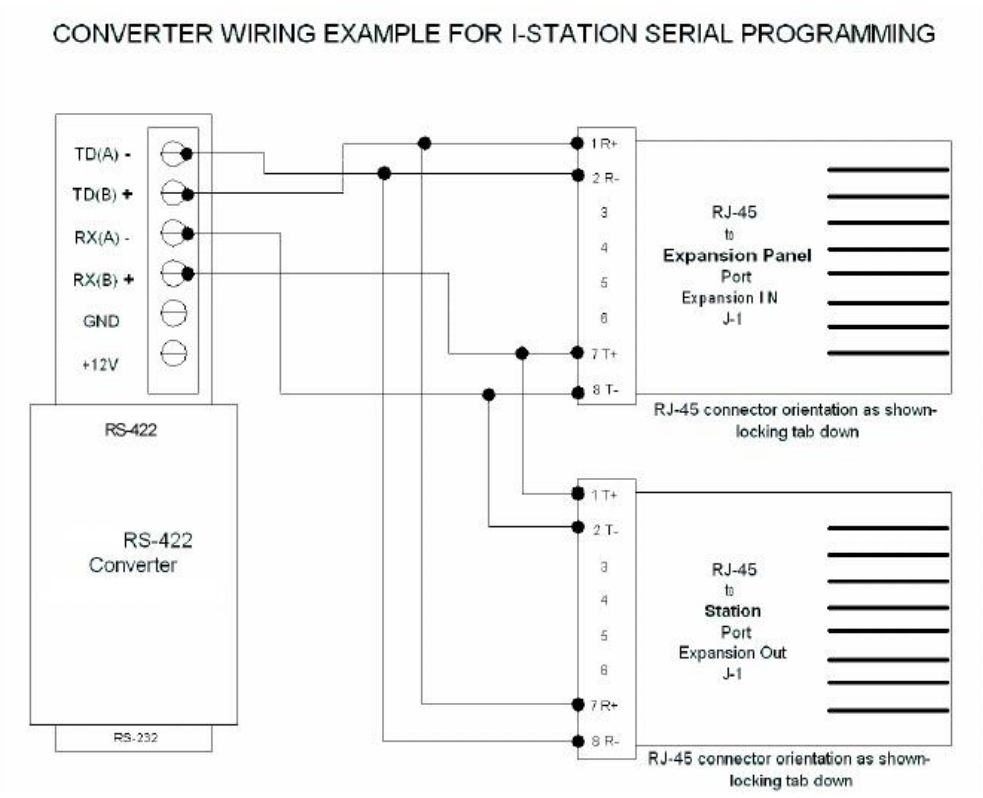


Figure 13-2: Example wiring scheme for i-Station serial programming

Figure 13-3 shows an alternative cabling scheme that does not require the use of the RS-422 converter module:

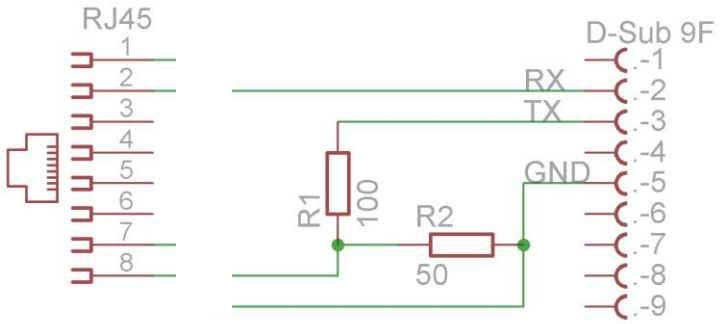


Figure 13-3: Alternate example wiring scheme for i-Station serial programming

Note:

The cabling scheme shown supports i-Station panels. To use with an E-station simply reverse the TX and RX connections at the Sub-D 9-pin F connector.

13.2.1 Manually upgrading i-Station & E-Station panel application code

Before you manually upgrade the application code for i-Station & E-Station panels, ensure that you have the following equipment:

- An i-Station serial interconnect lead.
- RS232/RS422 adaptor (see ***Figure 13-1: Example converter cable***).
- An installed Tera Term application.
- A paperclip or small flat blade screwdriver to access maintenance button on the rear of the i-Station panel.

Tera Term uses a special file with the updated i-Station or E-station application code, instead of an ***.fwp** file. The file has an ***.s19** file extension and the specific files can be found on the software DVD:

- **Software DVD > Panel Software > i-Station > xxxxxx-i-Station App**
- **Software DVD > Panel Software > E-Station > xxxxxx-E-Station App**

  Where **xxxxxx** represents the product number.

Tip: *An i-Station or E-station with either no firmware installed or corrupted firmware may be repaired through an upgrade (the station will display **Display Module Test, Press All Buttons 3X**).*

To manually upgrade the i-Station panel application code:

1. Install Tera Term. Third party software is available from **either** of the Eclipse HX 8.5 DVDs:
   - **Software DVD > 3rd_Party_Software > Teraterm**
   - **Drivers DVD > 3rd_Party_Software > Teraterm**

   Tip: *For more information about installing Tera Term, see **Appendix G: Tera Term***

2. Connect the converter cable to the expansion out RJ-45 port (**J1**) on the i-Station undergoing the upgrade.
   If the cable has separate i-Station and E-station CAT5 cables, the i-Station CAT5 cable is used for the connection to **J1** on the i-Station. Connect the other end of the cable to the serial port of the PC running the Tera Term software.

   Note:
   *The i-Station panel must **not** be powered while the cable is connected.*

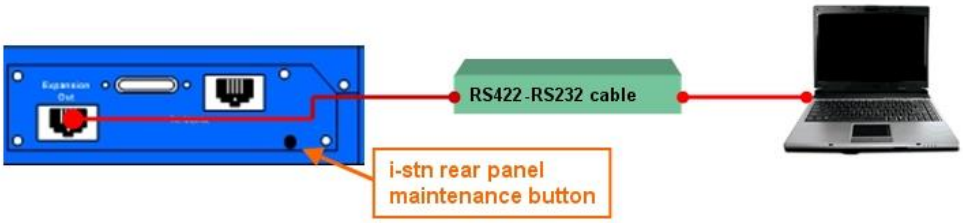


Figure 13-4: i-Station manual upgrade

3. Start Tera Term.

   Configure Tera Term for the appropriate COM port on the PC, as shown in the following figure.

   Select the **Serial** radio button and then the correct COM port setting for the PC from the **Port** drop-down menu. Click **OK**.

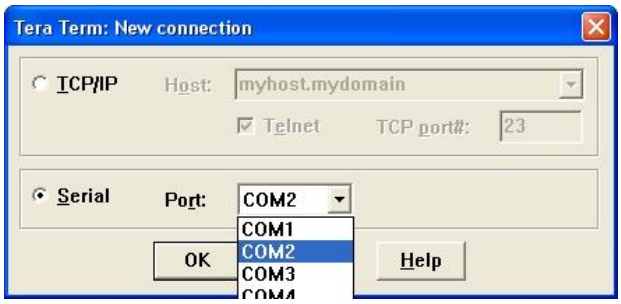


Figure 13-5: Tera Term: COM port setting

4. From the Tera Term main screen select **Setup > Serial port...**.

   The serial port setup screen should now be visible. Configure Tera Term with the following settings:

Field	Setting
Baud	19200
Data	8 bit
Parity	None
Stop	1 bit
Flow Control	None

Table 13-3: Serial port setup screen settings

Note:
Do not configure (ignore) the Transmit delay settings.

Click **OK**.

5. Power up the i-Station panel into maintenance mode by first holding in the recessed button found on the rear panel during a simultaneous AC power up.

   The reset button must be held in until all front panel keys turn **bright red** and the front panel display modules show the message **Display Module Test', Press All Buttons 3x**.

   Tip: *If the recessed button cannot easily be accessed, use a bent paper clip or small flat blade screwdriver to press the button in.*

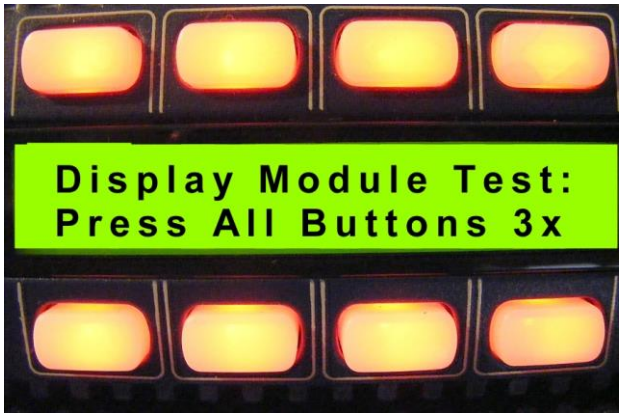


Figure 13-6: Module display message

6. The following Tera-Term boot up message is displayed.

   Note:
   Do not proceed until you see the boot up message. If you do not see the boot up message, check your wiring connections and software settings. Repeat steps 1 – 6

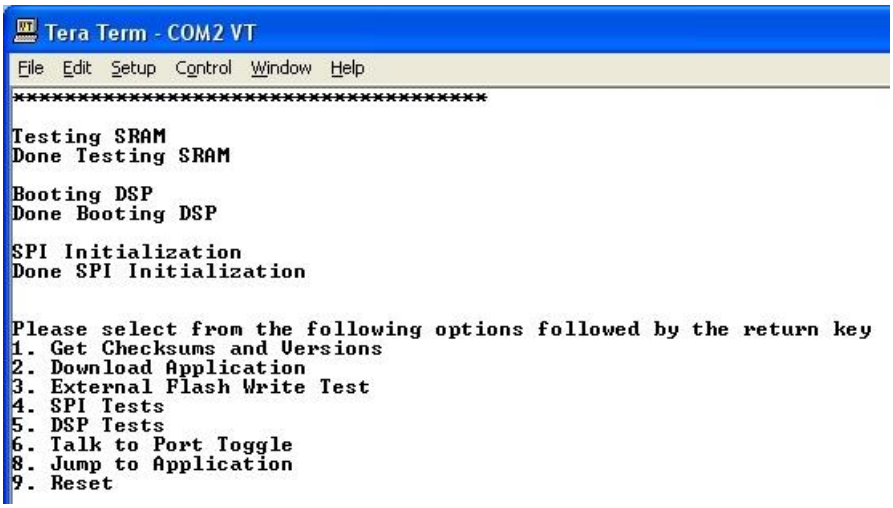


Figure 13-7: Boot up message

7. Press the **1** key on the PC keyboard. Press **Enter** to access the **Checksums** and **Versions** information on the i-Station panel.

   The boot code version and application code versions are displayed on the Tera-Term screen.

   Note:
   *Do **not** proceed until the version information is displayed, as shown below.*

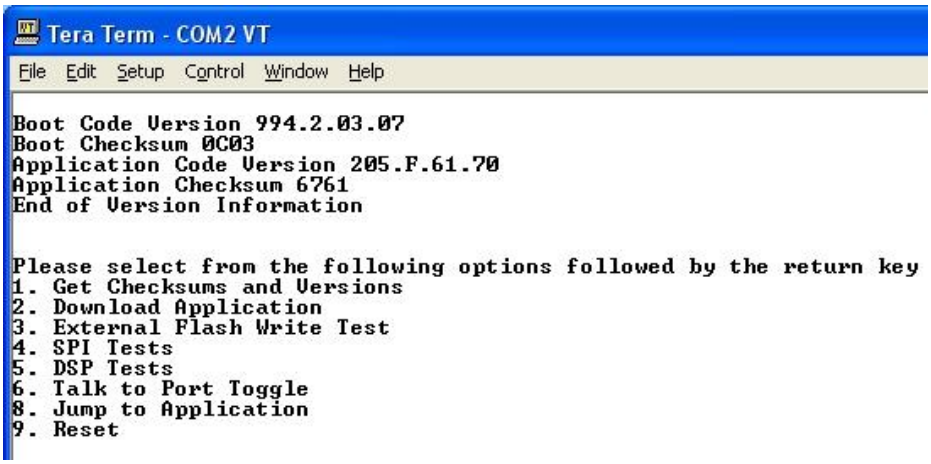


Figure 13-8: Version and application code (firmware) versions

8. Before loading the new application code (***.s19** format file), you must erase the Flash ROM on the i-Station panel.

   Press in the **2** key on the PC keyboard and press **Enter**.

A message is displayed indicating **Flash Erasing – Please wait. .** After the Flash ROM is erased, a message is displayed asking you to **Download S-record file now**.

Figure 13-9: Erasing Flash ROM

9. In **File**, select the **Send File**. You are prompted to browse for the i-Station ***.s19** file:

Drivers DVD > Panel Software > i-Station > xxxxxx-i-Station App

10. Select the i-Station ***.s19** file. Select **Open** to start the ***.s19** file download process to the Flash ROM of the i-Station panel.

Note:
The download process takes several minutes to complete.

11. When the download process is complete, Tera-Term will display the message on the PC **Download Success!**

Exit Tera Term and reboot the i-Station panel to leave maintenance / update mode. Press **9** on the PC keyboard and then **Enter**.

The i-Station panel begins its reset process.

Note:
When the reset process is underway, the display modules briefly display the updated firmware version. If the i-Station is re-connected to an Eclipse HX matrix with a valid configuration press keypad button 9 to access the updated firmware/rack code version.

Figure 13-10: Example version display

Note:
If the manual upgrade fails repeat the above procedure. It can be necessary to attempt the manual process up to 3-5 times before the application is installed.

13.2.2 Upgrading the i-Station panel firmware

Caution: When a firmware upgrade to an i-Station has started, wait for it to complete on all panels before doing any other changes to the matrix.

To upgrade the i-Station panel firmware:

7) Download the i-Station firmware upgrade to the Eclipse / Eclipse HX matrix from ECS / EHX.

8) Provided that the **Panel Prompt** option is set, the i-Station panel displays the following message:

```
UPGRD TO VER nnnnn YES NO
```

Each word corresponds to a key on the panel, and `nnnnn` represents the firmware upgrade number.

Note: The i-Station panel keys flash**, indicating that an upgrade is available.**

Note: The prompt is displayed provided that the i-Station panel is online.

9) To decline the upgrade, the i-Station user presses the **NO** key (right-hand flashing). The i-Station panel returns to its normal display. If the upgrade is declined it will not be offered again until a black reset is performed on the matrix.

To accept the upgrade, the i-Station user:

a. Presses the **YES** key (left-hand flashing). The i-Station panel displays the following:

```
ARE YOU SURE nnnnn YES NO.
```

Each word corresponds to a key on the panel, and `nnnnn` represents the firmware upgrade number.

b. If the user selects the **NO** key, the upgrade is cancelled and will not be offered again until a black reset is performed on the matrix.

   If the user selects the **YES** key, the firmware upgrade is applied to the i-Station panel.

13.2.3 Manually upgrading E-Station application code

The procedure for upgrading the E-station application code is very similar to the procedure for upgrading the i-Station panel application code (see ***13.2.1 Manually upgrading i-Station & E-Station panel*** application code).

To manually upgrade the E-Station:

1. Connect the converter cable to the expansion in RJ-45 port (J1) on the E-station undergoing the upgrade.

   If the cable has separate i-Station and E-station CAT5 cables, the E-station CAT5 cable lead is used for the connection to J1 on the E-station. Connect the other end of the cable to the serial port of the PC running the Tera-Term software.

   Note:
   The E-Station must not be powered while the cable is connected.

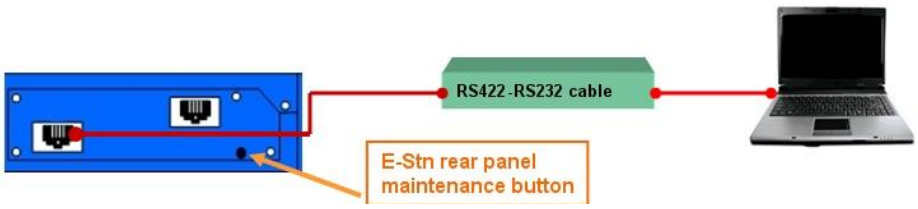


Figure 13-11: E-Station manual upgrade

2. Start Tera Term.

   Configure Tera Term for the appropriate COM port on the PC, as shown in the following figure. Select the **Serial** radio button and then the correct COM port setting for the PC from the **Port** drop-down menu. Click **OK**.

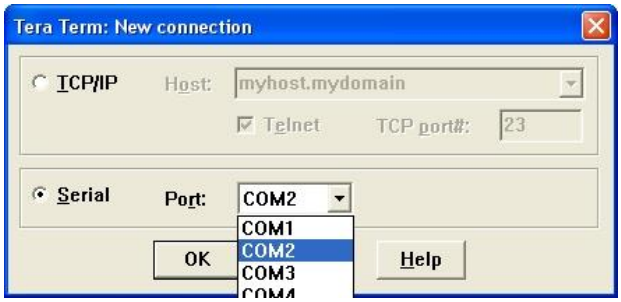


Figure 13-12: Tera Term: COM port setting

3. From the Tera Term main screen select **Setup > Serial port...**.

   The serial port setup screen should now be visible. Select the following settings to configure Tera Term for updating the E-station:

Field	Setting
Baud	19200
Data	8 bit
Parity	None
Stop	1 bit
Flow Control	None

Table 13-4: Serial port setup screen settings

Note:
Do not configure (ignore) the Transmit delay settings.

Click **OK**.

4. Power up the E-station into maintenance mode by first holding in the recessed button found on the rear panel during a simultaneous AC power up.

   The reset button must be held in until all front panel keys turn **bright red** and the front panel display modules show the message **Display Module Test, Press All Buttons 3x**.

   If the recessed button cannot easily be accessed, use a bent paper clip or small flat blade screwdriver to press the button in.

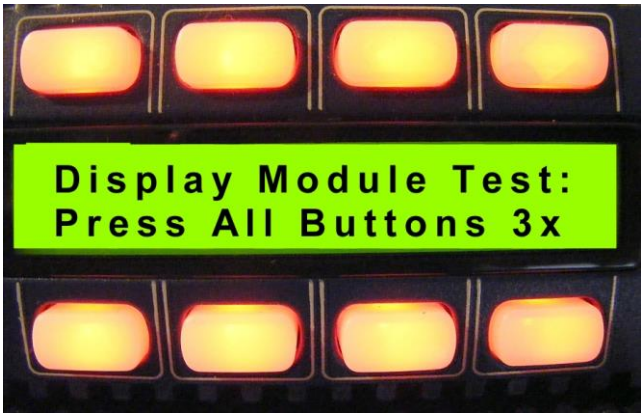


Figure 13-13: Module display message

5. The following Tera Term boot up message is displayed.

   Note:
   Do not proceed until you see the boot up message. If you do not see the boot up message, check your wiring connections and software settings. Repeat steps 1 – 6.

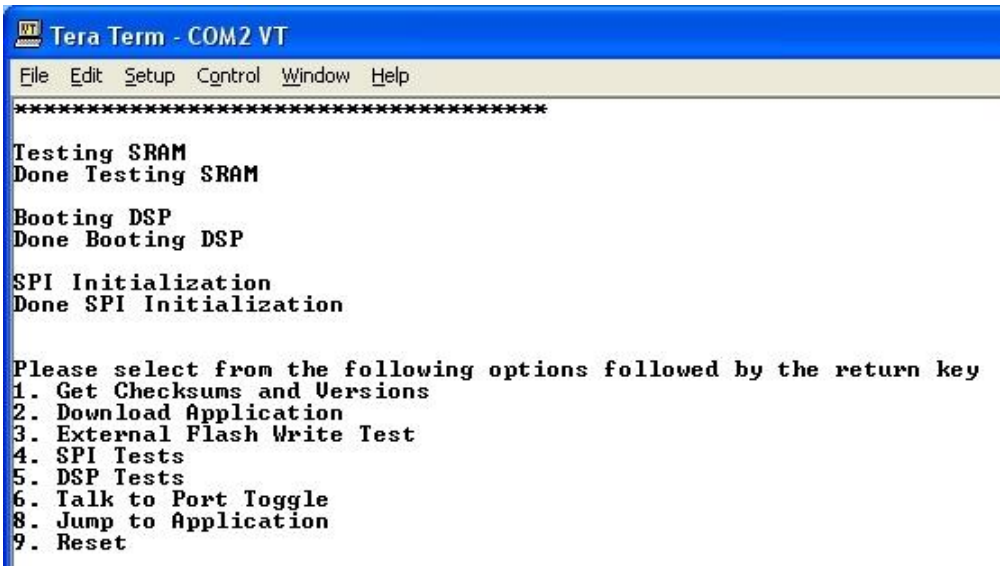


Figure 13-14: Tera Term boot up message

6. Before loading the new application code (***.s19** format file), you must erase the Flash ROM on the E-station.

   Press in the **2** key on the PC keyboard and press **Enter**, a message is displayed indicating **Flash Erasing – Please wait.**

   After the Flash ROM is erased, a message is displayed asking you to **Download S-record file now**.

Figure 13-15: Erasing Flash ROM

7. In **File**, select the **Send File**. This prompts the user to browse for the correct E-Station ***.s19** file for download to the unit undergoing the firmware upgrade:

   Drivers DVD > Panel Software > E-Station > xxxxxx-E-Station App

   Where **xxxxxx** represents the product number.

8. When you have selected the E-Station ***.s19** file, select **Open** to start the s19 file download process to the E-station Flash ROM.

   Note:
   The download process take several minutes to complete.

9. When the download process is complete Tera-Term will display the message on the PC **Download Success!**

   Exit Tera Term and reboot the E-station out of maintenance / update mode.

   Press **9** on the PC keyboard and then **Enter**. The E-station begins its reset process.

   Note:
   When the reset process is underway, the display modules briefly display the updated firmware version. If the E-station is re-connected to an Eclipse matrix with a valid configuration press keypad button 9 to access the updated firmware/rack code version.

Figure 13-16: Example version display

Tip: *For help with selecting the other procedures you require for upgrading to EHX V5.2.4, see the quick reference procedures tables in* ***2 Selecting Upgrade Procedures***.

13.3 Manually upgrading V-Series panels

Before attempting to upgrade V-Series panels, ensure that anti-static precautions are taken, as the Eclipse HX items are sensitive to static discharges.

Observe all electrical shock hazard warning and precautions for handling electrostatic sensitive devices

V-Series panels can be manually upgraded using a PC directly connected to the panel. Before manually upgrading a V-Series Panel, ensure you have the following equipment:

- An Ethernet crossover cable.
- A PC with an installed and running TFTP server (there is a TFTP server application on the EHX DVD), or any TFTP server as long as it points to the **C:\TFTP** folder.

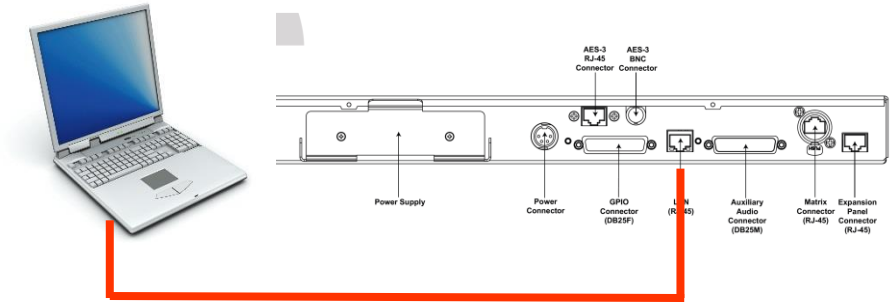


Figure 13-17: PC LAN port connected directly to V-Series Panel Ethernet port

The following components of the V-Series panel can be upgraded either by EHX or directly

Component	Description	Upgrade path
U-Boot	This is the very first software which runs when the panel starts. It initializes hardware and then starts the kernel running.	**Direct only**
Kernel	The micro-Linux kernel binary.	**Direct only**
Kernel Root File system	The file system containing all the files used and required by the kernel (servers, utilities, etc).	**Direct only**
Application Files	The Clear-com software which actually runs in the panel and is used by the system to operate the panel.	**Direct or EHX**
Display module Boot loader	Each bank of six displays forms a single module. This module is a discrete hardware component and like the panel itself, has its software, which runs when the module is started, which in turn initialises the module and starts the display module application.	**EHX only**
Display Module Application	The software which actually operates the module, which the panel communicates with to get the displays to perform.	**EHX only**

Table 13-5: Upgradeable V-Series components

Direct manual upgrades are described in this section.

Note:
*EHX upgrades operate in the same way as **all** EHX based panel upgrades See **13.1 Upgrading panels using EHX**.*
To manually upgrade a V-Series panel:

1. Unpack and install the TFTPUtil application.

   Tip: *For more information about installing the TFTPUtil application on either 32 bit or 64 bit computers, see **Appendix F:TFTPUtil.***

2. When the TFTPUtil GUI program has been installed, you can find the program at **Start > Programs> TFTPUtil > TFTPUtil GUI**.

   Run TFTPUtil.

3. Open My Computer and navigate to your C: drive. Create a new directory called **C:\TFTP**.
4. In the **C:\TFTP** directory:

    a. Create another directory called **Release**.

    b. Copy the following file from the Drivers DVD to the **C:\TFTP\Release directory**:

    - **Drivers DVD > Panel_Software > V-Series > Main_Board > xxxxxx- Panel UBOOT TFTP Image > u-boot.ldr**

    Where **xxxxxx** represents a product number.

    c. Copy the following files from the software DVD to the **C:\TFTP\Release directory**:

    - **Drivers DVD > Panel_Software > V-Series > Main_Board > xxxxxx- Root File System > rootfs.cramfs**
    - **Drivers DVD > Panel_Software > V-Series > Main_Board > xxxxxx- Panel Kernel > vmImage**
    - **Drivers DVD > Panel_Software > V-Series > Main_Board > xxxxxx - Panel Application > sbin.jffs2**

    Where **xxxxxx** represents a product number.

The **C:\TFTP > Release** directory appears similar to the following:

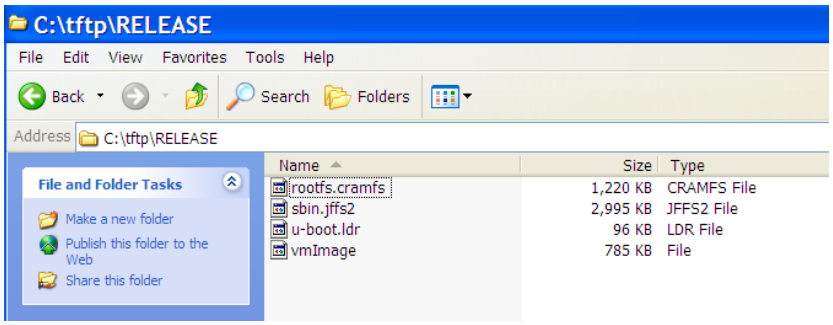


Figure 13-18: C:\TFTP > Release directory

5. From the **Start** menu of your PC:

    a. Select **Settings > Network and Dial-up Connections**.

b. Double click **Local Area Connection** and click **Properties**.

c. In the **This connection uses the following items** box, select **Internet Protocol (TCP/IP)** and select **Properties**.

Tip: *Make a note of all information in this window in case of later problems with networking*.

d. Select the **Use the following IP address** radio button and enter **172.16.5.50** into the IP address line. Set the Subnet mask to **255.255.0.0**.

Note:
It is advisable to switch off any wireless Wi-Fi connections that maybe running on your PC when doing this upgrade.

6. Start the TFTP server application.

7. Click the options icon (spanner) to display the options window. Check that the **C:\TFTP** folder is set as the path.

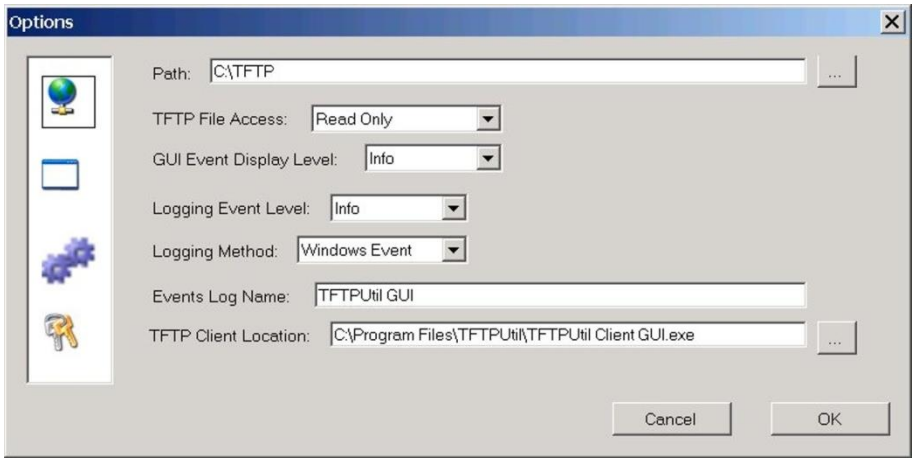


Figure 13-19: TFTPUtil Options

8. Select the icon with two blue cogs on the left hand side of the window. Check the settings as below.

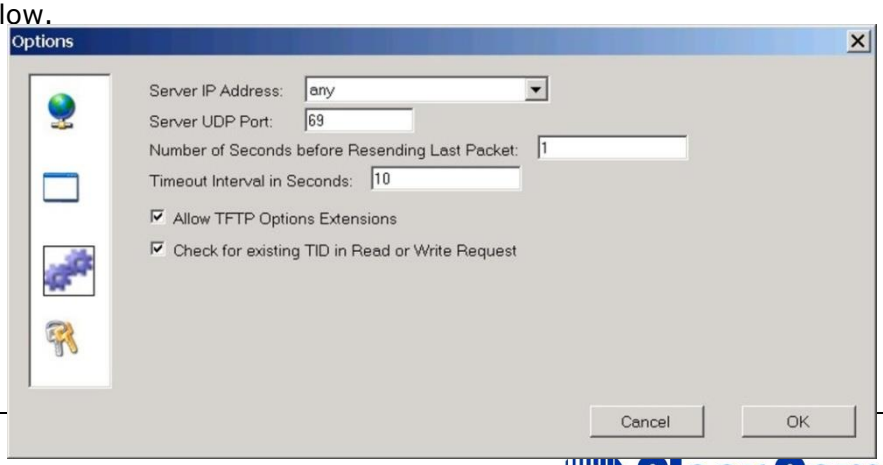


Figure 13-20: TFTPUtil settings

9. If a firewall is running it may request permission for the program to have access when the TFTP server is run for the first time. Click **Yes**. Click **OK** and **OK** again.

10. Check that your PC IP address is correctly displayed on the main header of the TFTP application:

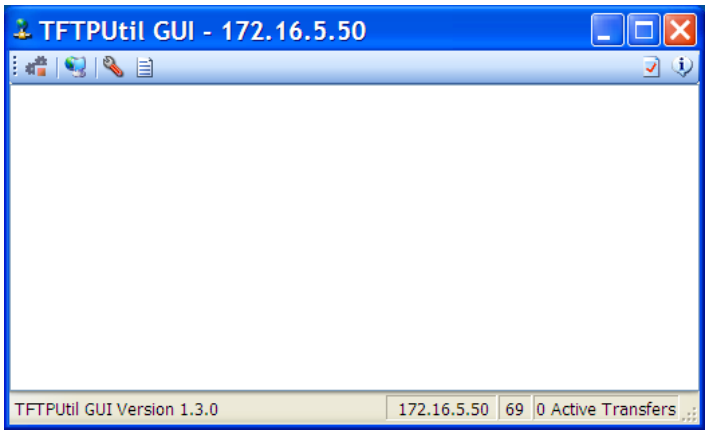


Figure 13-21: Checking the PC IP address

11. Connect an Ethernet cross-over cable from the PC to the Ethernet port at the back of the V-series panel and disconnect the cable that connects to the matrix.

    Your PC is now ready to act as a file server to a V-series panel and the panel is now ready to be told which files to upload.

12. To upgrade the **V-Series U-Boot Loader**:

    a. Press and hold down both the **MAIN** and **AUX** knobs on the V-Series Panel while applying a reset.

       The reset may be applied by either power cycling the panel or poking a paper clip into the reset hole between the **H/S** and **MENU** buttons.

    b. The 4 function button LEDs (**Mic On, H/S, Shift** and **Menu**) will flash. Press and release the **H/S** button then press and release the **Shift** button to trigger the **U-Boot code upload**.

       Note:
       *As the upload proceeds, the **AUX** and **MAIN** lights on the panel will gradually change from **green** to **amber** and then **red**. This process may take a few minutes.*

    c. When the upload is complete, the panel will reset itself, completing the procedure. After the panel has reset the display will either go blank or

display the versions.

13. To upgrade the V-Series **Kernel**, **Root File System** and **Application** files:

    a. Press and hold down both the **AUX** and **MAIN** knobs whilst applying a reset.

       The reset may be applied by either power cycling the panel or poking a paper clip into the reset hole between the **H/S** and **MENU** buttons.

    b. The 4 function button LEDs (**Mic On, H/S, Shift** and **Menu**) will flash. Press and release the **Shift** button to trigger the **Kernel, Root File System** and **Application** files upload.

       Note:
       *As the upload proceeds, the **AUX** and **MAIN** lights on the panel will gradually change from green to amber and then red. This process may take a few minutes.*

    c. When the upload is complete, the panel will reset itself, completing the procedure.

       Wait until the panel completely resets itself and displays the offline status screen before powering down the panel (example shown below).

Figure 13-22: Panel after update reset

Notes:
*After the V-Series panel has been upgraded using the TFTP server some of the level settings may be disabled. IP settings will also be lost. To restore the level and IP settings, download a map from EHX using the **Clear Matrix Data** option.*

13.3.1 Upgrading the V-Series Display Module

The only upgradeable component in a V-Series expansion panel is the **Display Module**. When the parent V-series panel has its Display Module updated, the updates are automatically propagated to the expansion panels.

However, this only occurs if the expansion panel is plugged in at the time the parent panel is upgraded. Expansion panels connected afterwards are not upgraded.

The Display Module upgrade is **only** performed using EHX. The required files (***.fwp** format) are available from the Drivers DVD:

- **Drivers DVD > Panel_Software > V-Series > Display_Module > xxxxxx-Display PIC Boot Loader**
- **Drivers DVD > Panel_Software > V-Series > Display_Module > xxxxxx-Display PIC Application Code**

Where **xxxxxx** represents a product number.

For more information, see **13.1.1 Locating Panel *.fwp files on the software DVD**.

14 Upgrading the TEL-14 module

This chapter describes how to upgrade the TEL-14 module, including how to:

- Replace the TEL-14 processor.
- Re-fit TEL-14 modules.
- Update TEL-14 firmware.

Note:
This guide is laid out in the order in which you must upgrade your Eclipse HX software and hardware devices. For a quick reference to upgrading your system, see ***3Quick reference: Upgrading to Eclipse HX****.*

14.1 Upgrading the TEL-14 hardware

To upgrade the TEL-14 **hardware,** you require the following equipment:

- The old Tel-14 card
- The replacement TEL-14 processor module.
- Flash Magic Software. Third party software is available from **either** of the Eclipse HX 8.5 DVDs:

  Software DVD > 3rd_Party_Software > FlashMagic

  Drivers DVD > 3rd_Party_Software > FlashMagic

  Tip: *For* more *information about installing Flash Magic, see* ***Appendix H: Flash Magic.***

- TEL-14 application software. The TEL-14 application software (***.HEX** format file) is available from the software DVD:

  Drivers DVD > Other_Software >xxxxxx-TEL-14 Application

  Where **xxxxxx** represents the product number.

To upgrade the TEL-14 hardware:

1. Remove the four screws securing the front panel and remove the front panel.
2. Remove the three screws securing the PCB **without** the backplane connector and open the two cards up. It is not necessary to disconnect the two cards.

3. Remove the original processor (IC20) from its socket.

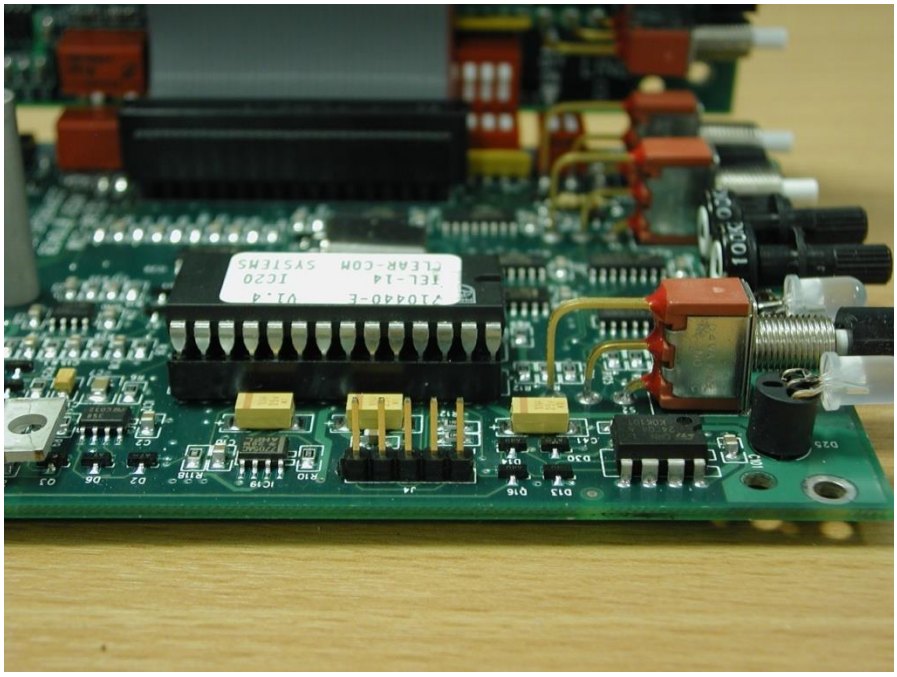


Figure 14-1: original IC20 in position

4. Replace the old processor with the new processor module, ensuring that it is correctly positioned.

   Tip: *The blue serial connector should be farthest away from the front panel.*

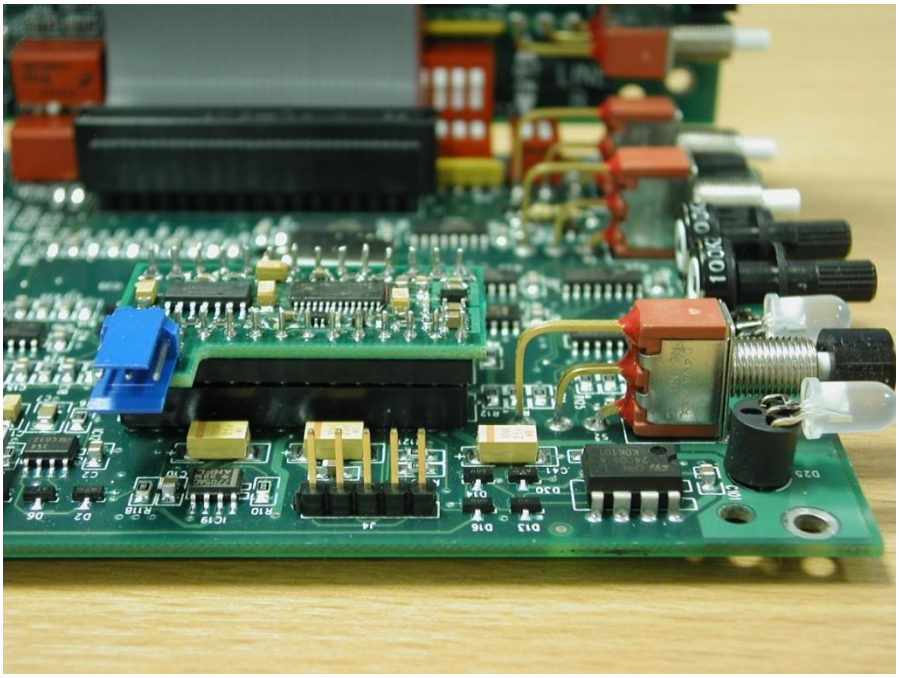


Figure 14-2: replacement processor module in position

14.2 Upgrading the TEL-14 firmware

To upgrade the TEL-14 **firmware:**

1. Ensure that you have the following equipment:

Required equipment	Description / comments
MVX-A16 serial upgrade cable (Clear-Com part CAB-MVX-48Z)	See: ***Figure 28: MVX-A16 Serial upgrade cable.***
Flash Magic	Third party software is available from **either** of the Eclipse HX 8.5 DVDs: • **Software DVD > 3rd_Party_Software > FlashMagic** • **Drivers DVD > 3rd_Party_Software > FlashMagic** **Tip:** *For more information about installing Flash Magic, see* ***Appendix H: Flash Magic.***
***.HEX file to upload**	TEL-14 application software. The TEL-14 application software (***.HEX** format file) is available from the software DVD: • **Drivers DVD > Other_Software >xxxxxx-TEL-14 Application** Where **xxxxxx** represents the product number.

Table 14-1: Required equipment

2. Connect the PC to the Serial Programming port of the TEL-14 processor card, as shown in the following figure.

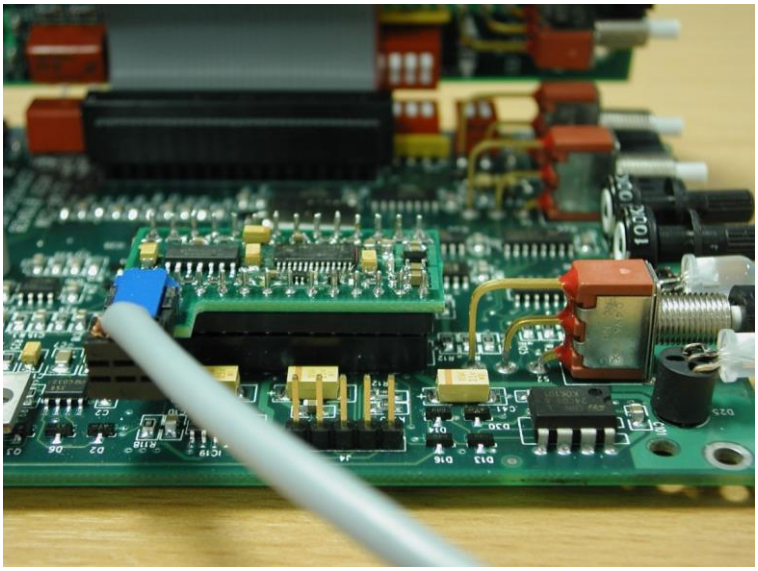


Figure 14-3: Processor module with serial cable attached

Note:
For correct connector orientation, the wires must exit the plug on the top side as shown.

3. Power up the TEL-14.

4. Start Flash Magic. Configure the following settings for the **5 purple numbered boxes** in the Flash Magic dialog:

Box	Setting(s) to enter
1	The COM port to which you are connected. Baud Rate: **2400** Device: **89LPC935** Oscillator Frequency: **3.5795 MHz**
2	Select **Erase blocks used by Hex File**
3	Enter the name of the file (**710756Z .hex)** to be loaded, or use Browse to locate the file.
4	Ensure all boxes are clear
5	Do **not** press **Start**.

Table 14-2: FlashMagic settings

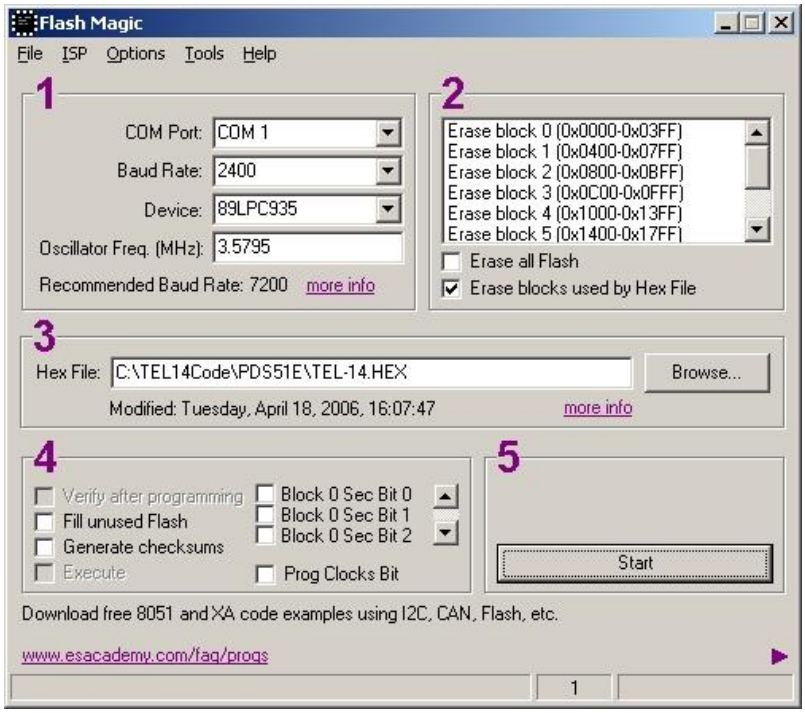


Figure 14-4: FlashMagic configuration dialog

5. In the menu options along the top of the Flash Magic dialog, select **ISP** (second option from the left).

   From the drop-down menu, select **Start Bootloader**.

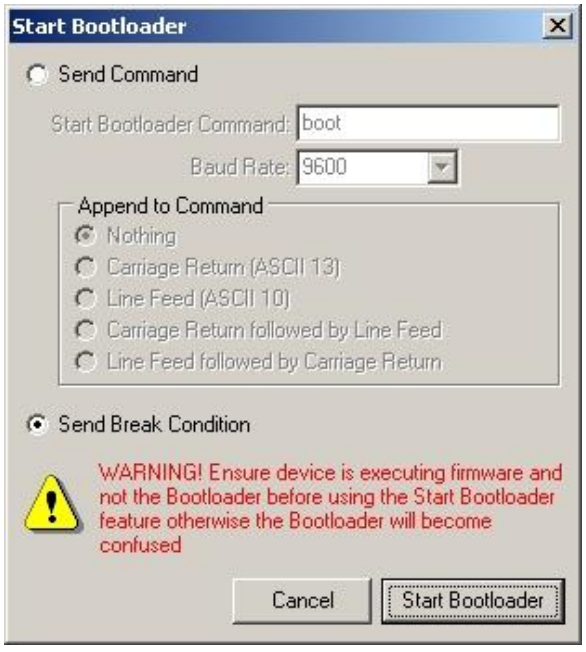


Figure 14-5: Start Bootloader dialog

6. Ensure that **Send Break Condition** is checked, then press **Start Bootloader**.

7. The configuration dialog is re-displayed after a few seconds. In box 5, press **Start**.

   Note:
   *The status bar along the bottom displays **Programming device**, and the progress bar displays the state of the operation.*

   After about 20 seconds, **Finished** is displayed in the status bar. The device has now been reprogrammed. Power cycle the TEL-14 to activate the new firmware.

15 Upgrading the AES-6 module

This chapter describes how to upgrade the application code of the AES-6 interface module.

Before attempting any upgrade of the AES-6 card, ensure that anti static precautions are taken, as the Eclipse HX devices are sensitive to static discharges.

Observe all electrical shock hazard warning and precautions for handling electrostatic sensitive devices

Note:

*This guide is laid out in the order in which you must upgrade your Eclipse HX software and hardware devices. For a quick reference to upgrading your system, see **3Quick reference: Upgrading to Eclipse HX**.*

To upgrade the AES-6 application code:

1. Ensure you have the following equipment:

Required equipment	Description / comments
PC with a serial port	A USB-to-serial adapter is usually acceptable.
CellCom / FreeSpeak / FreeSpeak II (FSBP) registration cable	PD4007Z, DB-9 to 3.5mm jack.
The appropriate AES-6 application code file (*.mot file)	The AES-6 application code (***.mot** format file) is available from the software DVD: **Drivers DVD > Other_Software > xxxxxx - AES-6 Application** (where **xxxxxx** represents the product number)
Hitachi Renesas Flash Development Toolkit (FDT)	Third party software is available from **either** of the Eclipse HX 8.5 DVDs: • **Software DVD > 3rd_Party_Software > Hitachi_FDT** • **Drivers DVD > 3rd_Party_Software > Hitachi_FDT** **Tip:** *For* more *information about installing the Hitachi Renesas FDT, see **Appendix E:Hitachi Renesas Flash Development Tool**.*

Table 15-1: Required equipment

2. Fit the AES-6 card to either the IMF-3 interface frame or Eclipse HX-Median Matrix. If there is a jumper on J6, move the jumper to J3.Reset or power-cycle the card so the jumper change takes effect.

3. Connect the serial cable to the front of the AES-6.

4. Run Flash Development Toolkit BASIC (FDT). Configure the FDT (**Options > New Settings**) as follows:

FDT field	Setting
Select Device	H8S/2318F
Select Port	COM1 (change to match COM port present on the PC)
CPU Frequency	25.0000 MHz
Connection	BOOT mode
Recommended Speed	Deselect **Use Default** and set to 9600
Protection	Automatic
Messaging	Advanced
User data	Selected (Checked)

Table 15-2: FDT settings

5. Navigate to the AES-6 application code (***.mot** format file) on the software DVD:

   Drivers DVD > Other_Software > xxxxxx - AES-6 Application

   Where **xxxxxx** represents the product number).

6. Select **Program Flash** and download the AES-6 application code (***.mot** format file).

7. When the download is complete, move the jumper on J3 back to J6. Reset or power-cycle the card.

   Note:
   *If an FPGA image is present, the card will now run normally. If an FPGA image is **not** present, you will be prompted for an FPGA image. See **3.33.1 Upgrading AES-6 FPGA.***

15.1 Upgrading AES-6 FPGA

Before attempting any upgrade of the AES-6 card, ensure that anti static precautions are taken, as the Eclipse items are sensitive to static discharges.

Observe all electrical shock hazard warning and precautions for handling electrostatic sensitive devices

Tip: *For help with selecting the other procedures you require for upgrading to EHX V5.2.4, see the quick reference procedures tables in* ***2 Selecting Upgrade Procedures***.

To upgrade the AES-6 FPGA:

1. Ensure you have the following equipment:

Required equipment	Description / comments
PC with a serial port	A USB-to-serial adapter is usually acceptable.
CellCom / FreeSpeak / FreeSpeak II (FSBP) registration cable	PD4007Z, DB-9 to 3.5mm jack.
The appropriate AES-6 FPGA code file	The AES-6 FPGA code is available from the Drivers DVD: **Drivers DVD > Other_Software > xxxxxx - AES-6 FPGA** (where **xxxxxx** represents the product number)
Tera Term terminal software	Third party software is available from **either** of the Eclipse HX 8.5 DVDs: **Software DVD > 3rd_Party_Software > Teraterm** **Drivers DVD > 3rd_Party_Software > Teraterm** **Tip:** *For more information about installing Tera Term, see* ***Appendix G: Tera Term***

Table 15-3: Required equipment

2. Fit the AES-6 card to a parent unit.

3. Run TeraTerm. Configure the serial settings to the following:

Serial setting	Setting
Baud rate	57600
Parity	None
Data Bits	8
Stop Bits	1
Flow Control	None

Table 15-4: Tera Term serial settings

4. Reset or power-cycle the module.

5. At this point, the procedure varies depending on whether or not an FPGA image is already present.

   If there is an FPGA image present:

   a. After the reset, the following output will be shown in the TeraTerm window:

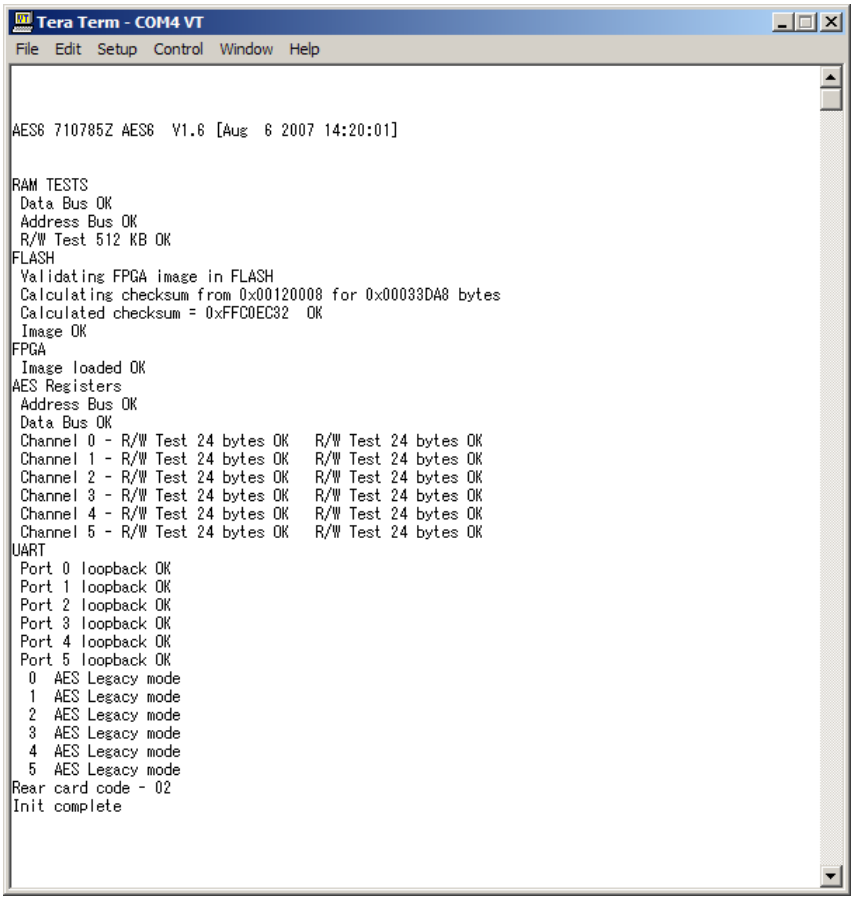


Figure 15-1: AES-6 FPGA upgrade using Tera Term

Type **testmode** into the Tera Term window and press Enter (return). The card enters test mode and displays the following menu:

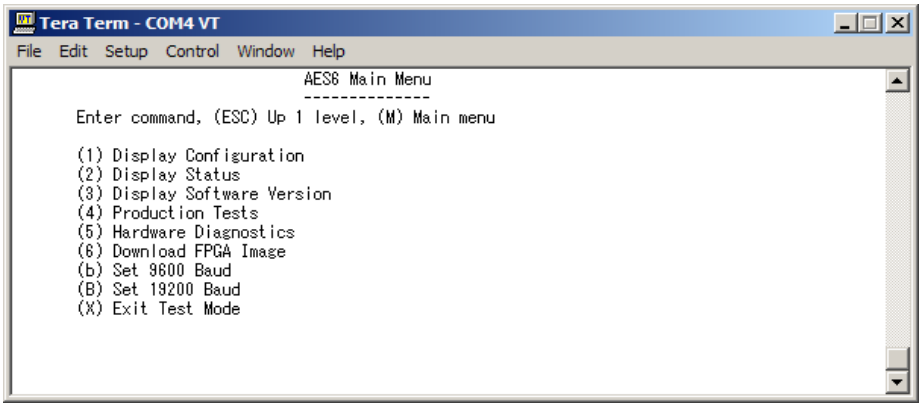


Figure 15-2: AES-6 main menu

b. Select option 6, **Download FPGA Image**.

c. You are prompted to delete the old FPGA image. Press **Y.**
Note:
Key entry is case sensitive, so Y must be a capital.
The card deletes the old image and then prompts you for a new FPGA image:

d. In Tera Term, select **Send File** and select the FPGA image, which is located on the Drivers DVD:

- **Drivers DVD > Other_Software > xxxxxx - AES-6 FPGA**

(where **xxxxxx** represents the product number).

Note:
During the download the six yellow LEDs illuminate in a circulating anti-clockwise direction.

e. When the download is complete, the six yellow LEDs should be off and the following text should be displayed in TeraTerm:

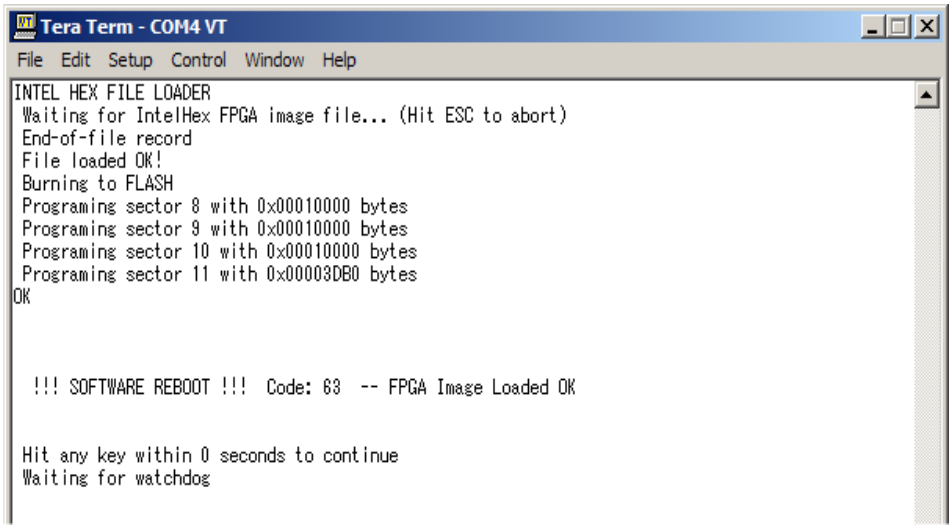


Figure 15-3: FPGA HEX file load

f. Reset the card to complete the upgrade.

If the FPGA image is **not** present:

a. After the reset, the following output will be shown in the TeraTerm window:

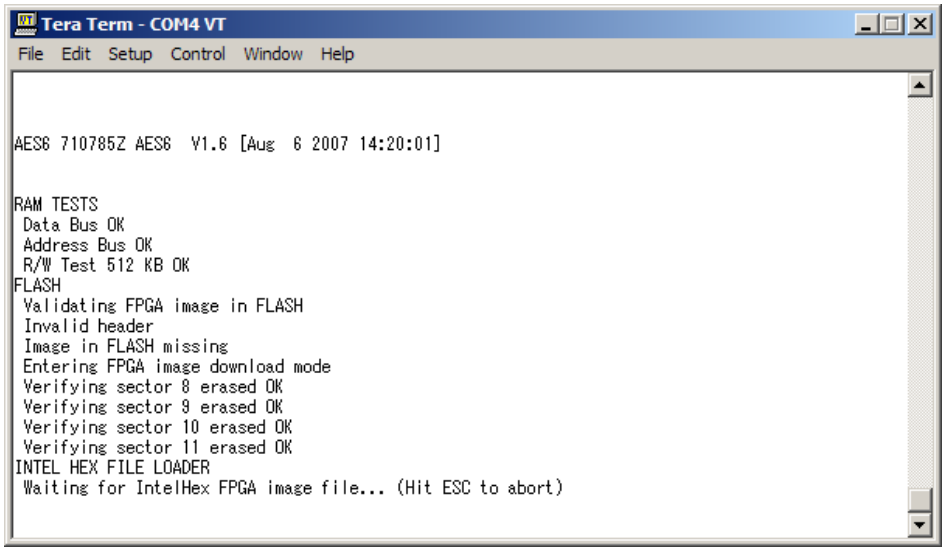


Figure 15-4: AES-6 FPGA HEX file load

The card is ready to load the FPGA image. In Tera Term, select **Send File** and select the FPGA image, which is located on the Drivers DVD:

- **Drivers DVD > Other_Software > xxxxxx - AES-6 FPGA**

(where **xxxxxx** represents the product number).

b. During the download the six yellow LEDs illuminate in a circulating anti-clockwise direction. When the download is complete, the following text should be displayed in TeraTerm:

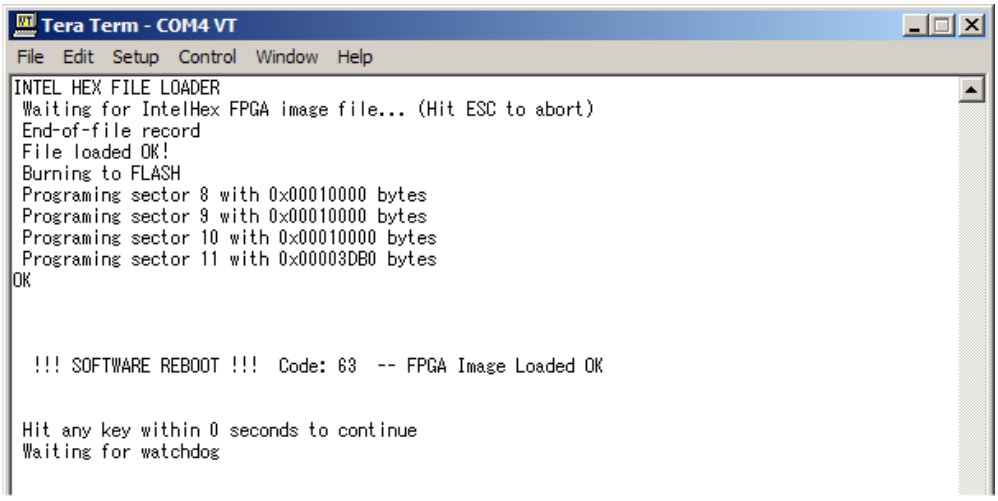


Figure 15-5: FPGA upgrade completed

c. Reset the card to complete the upgrade.

16 Upgrading FreeSpeak II™ wireless systems

This chapter describes how to upgrade FreeSpeak II beltpacks and antennas supported by Eclipse HX.

Supported FreeSpeak II beltpacks and antennas may be upgraded using an installed and configured copy of EHX and an active Eclipse HX matrix, or via a USB connection from within EHX.

Note:
This guide is laid out in the order in which you must upgrade your Eclipse HX software and hardware devices. For a quick reference to upgrading your system, see ***3Quick reference: Upgrading to Eclipse HX****.*

16.1 Upgrading FreeSpeak II Beltpacks and Antennas centrally using EHX

FreeSpeak II beltpacks and antennas can be upgraded centrally via EHX in a similar fashion to upgrading panel software. This allows multiple beltpacks or antennas to be upgraded simultaneously.

The download of a FreeSpeak II application requires an ***.fww** format file, which is located on the software DVD. This must be placed in a location that is accessible by the installed EHX application.

Note:
The Eclipse HX v8.5 contains all the firmware files required for upgrading a FreeSpeak II beltpack or antenna.

The download of a beltpack application requires:

- An operational Eclipse HX matrix with the beltpacks registered, connected and powered.
- A suitable EHX configuration (with the correct IP address configured, if an Ethernet connection is used).

Once the beltpack ***.fww** format file is downloaded to the Eclipse HX matrix, **all** beltpacks of the same type will be upgraded at the same time through an automatic download from the matrix to the beltpack. The beltpack ***.fww** file will be stored so that if any beltpack subsequently connects to the matrix, an upgrade can still be performed.

The download of an antenna application requires:

- An operational Eclipse HX matrix with the antennas configured, connected and powered.
- A suitable EHX configuration (with the correct IP address configured, if an Ethernet connection is used).

Once the antenna ***.fww** format file is downloaded to the Eclipse HX matrix, **all** antennas of the same type will be upgraded at the same time through an automatic download from the matrix to the antenna.

To upgrade FreeSpeak II beltpack or antenna application code using EHX:

1. Ensure that you have the following equipment:

Required equipment	Description / comments
PC with an Ethernet or serial communications port	-
EHX software	EHX must be installed and configured.
EHX configuration file / map	-
Ethernet or serial cable for the PC-to-matrix connection	-
Appropriate *.fww format application	The appropriate ***.fww** format beltpack and antenna code is available from the software DVD

Table 45: Required equipment

2. Start EHX on the PC.

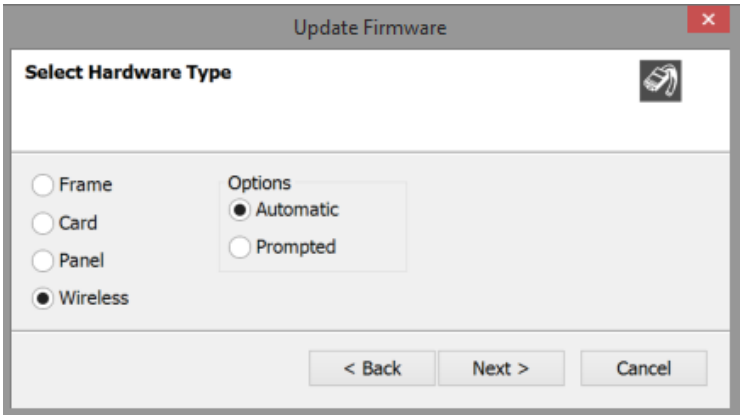
3. Connect the PC to the matrix using either Ethernet or serial communications port.

4. Open the EHX configuration map within EHX.

5. Select **System > Layout.**

6. Right click the matrix and then select **Firmware> Update Firmware**.

7. The update firmware wizard dialogue is displayed. Click **Next** and ensure that the **Wireless** radio button is selected. The Wireless radio button will only be available if you have an E-Que FSII-TA Antenna or E-Que FSII-TA Splitter card configured in your matrix configuration.



In **Options**:

- Selecting **Automatic mode** forces beltpacks or antennas to upgrade automatically.

- Selecting **Prompted mode** means that each beltpack user will be asked to accept / decline the beltpack upgrade. If you select this option when upgrading an antenna, the matrix will function as in Automatic mode.

8. Click **Next** and then browse to the appropriate ***.fww** file.

9. Click **Next** and confirm that the details displayed are correct.

10. Click **Next** and confirm that the download commences.

11. When the download has completed, click **Finish** to close the update firmware wizard.

12. The matrix will transmit the ***.fww** file to the antennas – this process takes approximately 9-10 minutes. The progress of transmitting the ***.fww** file to the antennas can be tracked using the Event Log from EHX.

13. Once the file has been transmitted, if the ***.fww** file contains antenna code, the antennas will update themselves and restart.

14. If the ***.fww** file contains beltpack code, the file will be transmitted to the beltpacks, which will indicate their progress. Upon completion of the upgrade, the beltpacks will restart.

15. Confirm the updated firmware version using either:

    - The EHX firmware report tool:

        - Go to **EHX > System > layout** .

        - Right click the matrix icon.

        - Select **Firmware > Firmware report.**

    - The local menu on the beltpack.

16.2 Upgrading FreeSpeak II Beltpacks and Antennas via USB

FreeSpeak II beltpacks and antennas can be upgraded via a micro USB cable connected directly to the device. This allows direct upgrading of a single device without the need to be connected to an active matrix.

The download of a FreeSpeak II application requires an ***.fww** format file, which is located on the software DVD. This must be placed in a location that is accessible by the installed EHX application.

Note:
The Eclipse HX v8.5 contains all the firmware files required for upgrading a FreeSpeak II beltpack or antenna.

The download of a beltpack application requires:

- A powered beltpack connected to a PC via a USB connection
- A copy of EHX installed with the appropriate USB drivers (part of a standard EHX installation)

To upgrade FreeSpeak II beltpack or antenna application code via USB using EHX:

1. Ensure that you have the following equipment:

Required equipment	Description / comments
PC with an USB port	-
EHX software	EHX must be installed and configured.
USB to Micro USB cable	-
Appropriate *.fww format application	The appropriate ***.fww** format beltpack and antenna code is available from the software DVD

Table 46: Required equipment

2. Start EHX on the PC.
3. Connect the FreeSpeak II beltpack or antenna to the PC using either a micro USB cable.
4. Select **Tools->Apply Wireless Firmware Via USB** from the EHX menu.
5. The Update Wireless Firmware Via USB Dialog will now appear.
6. Click **Browse** and then browse to the appropriate ***.fww** file.
7. Click **Update Firmware** to begin the update process.
8. A bar will indicate the progress of the upgrade process. It may take 10-20 seconds to initially connect to the device and begin the upgrade.
9. When the upgrade has completed, EHX will display a message box indicating whether the upgrade has been successful. The beltpack or antenna device should restart itself.
10. Confirm the updated firmware version using either:
    - The local menu on the beltpack.

- The EHX firmware report tool:
    - Connect the device to the matrix and allow it to connect.
    - Go to **EHX > System > layout** .
    - Right click the matrix icon.
    - Select **Firmware > Firmware report.**

Appendix A: *CPU card layout*

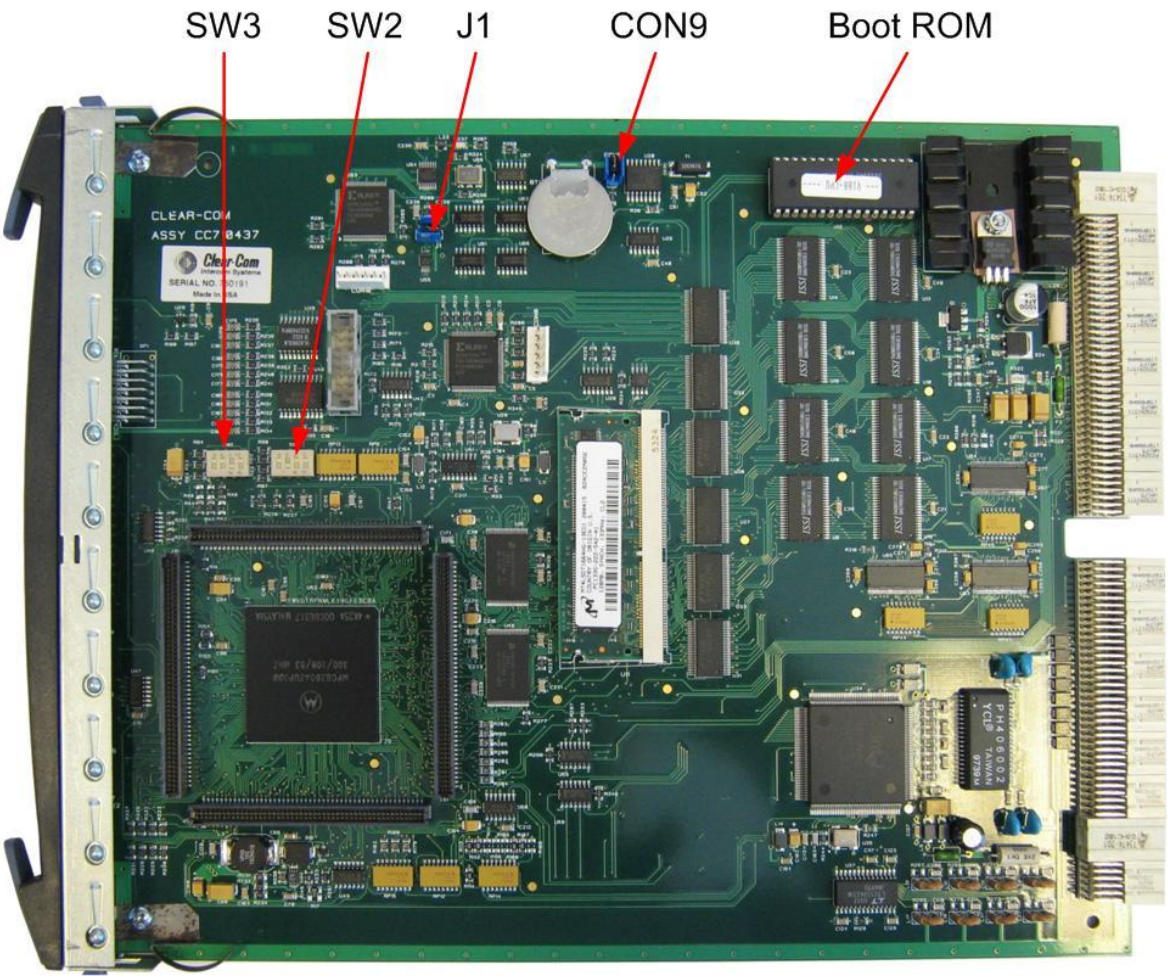
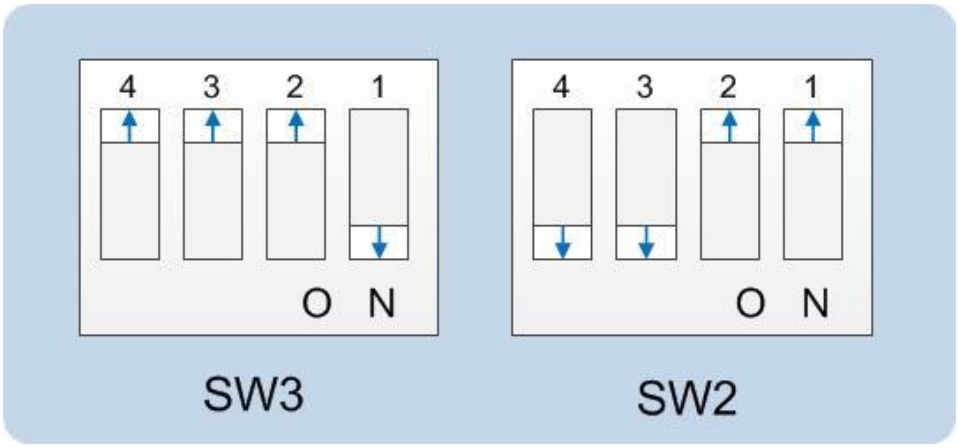
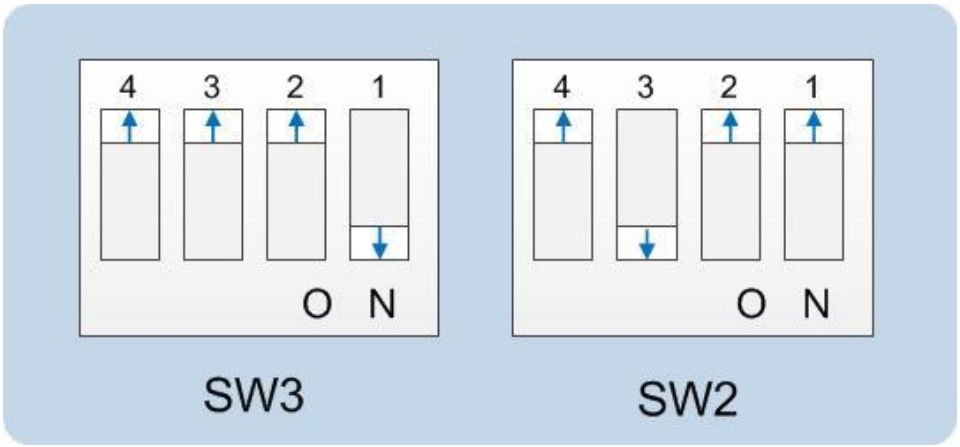


Figure 16-1: Eclipse HX-Median / Eclipse HX-Omega / Eclipse HX-Delta CPU card layout

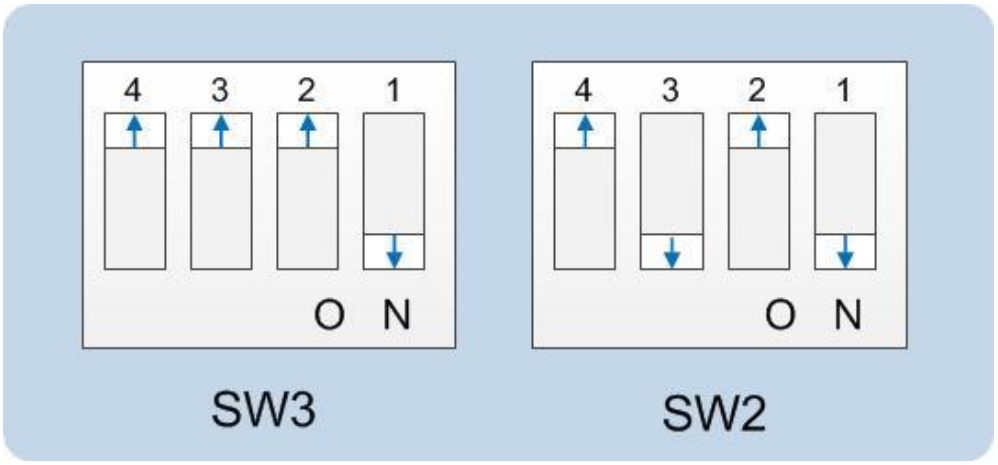
Appendix B: *CPU card DIP switches*



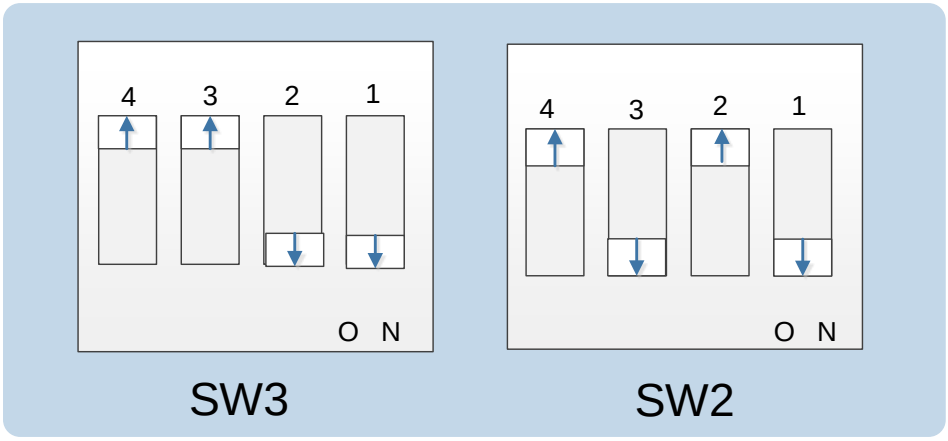
Test mode settings for CPU card DIP switches



Serial download settings for CPU card DIP switches

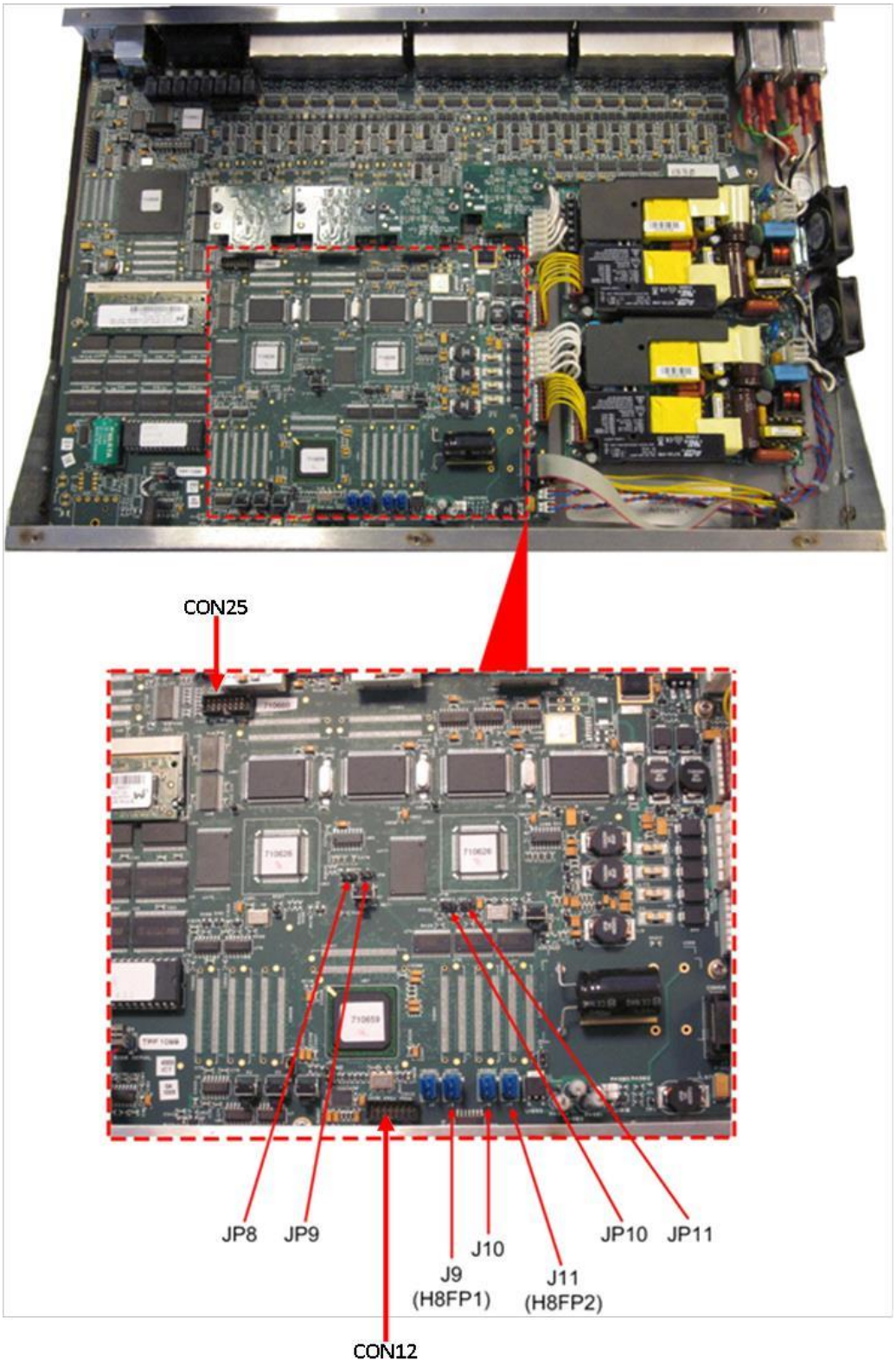


Normal running (watchdog enabled) settings for CPU card DIP switches



Simulation mode settings for CPU card DIP switches

Appendix C: *PiCo card layout*



Appendix D: *Eclipse HX-PiCo CPU DIP switches*

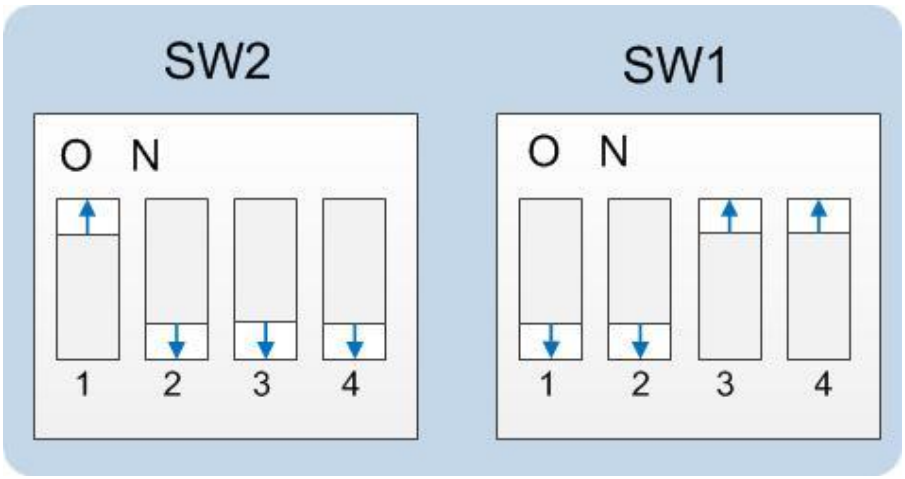


Figure 16-3: Test mode settings for Eclipse HX-PiCo DIP switches

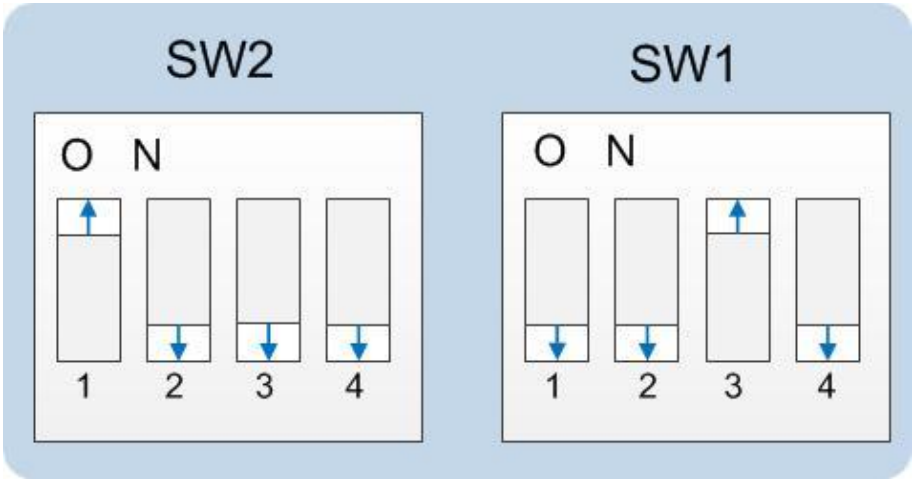


Figure 16-4: Serial download settings for Eclipse HX-PiCo DIP switches

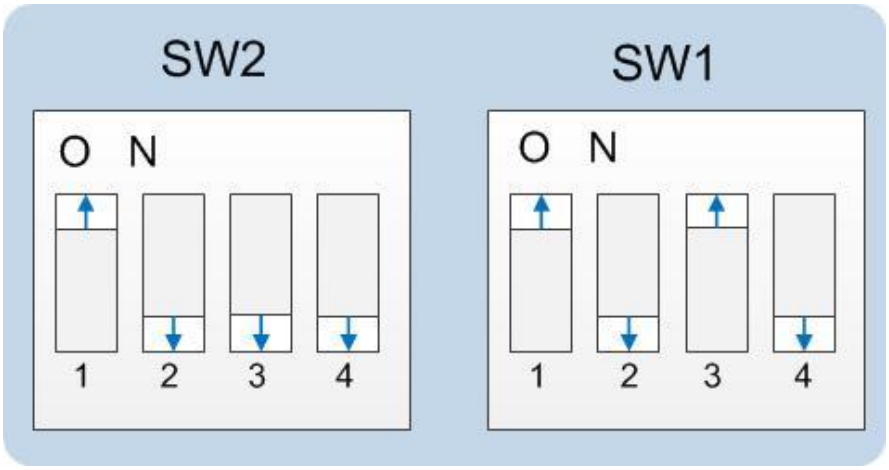


Figure 16-5: Normal running (watchdog enabled) settings for Eclipse HX-PiCo DIP switches

Appendix E: *Hitachi Renesas Flash Development Tool*

To install and configure the Hitachi Renesas Flash Development Tool (FDT):

1. Navigate to the installation file on the Eclipse installation DVD:

   DVD\3rd_Party_Software\Hitachi_FDT\fdt3_04.exe

   Double click to install.

   Note:
   Later versions can be downloaded from
   http://www.renesas.com/products/tools/flash_prom_programming/fdt/download_search_results.jsp#

2. When the installation file is run, the installer displays a series of setup screens to configure the installation.

Figure 16-6: Initial install screen

   Click **Next.**

3. Select the required language (**International English, Asia (Japanese), Asia (English)**).

Figure 16-7: Language selection

Click **Next**.

4. Click **Yes** to accept the license conditions. The installer then displays the **Select Components** screen:

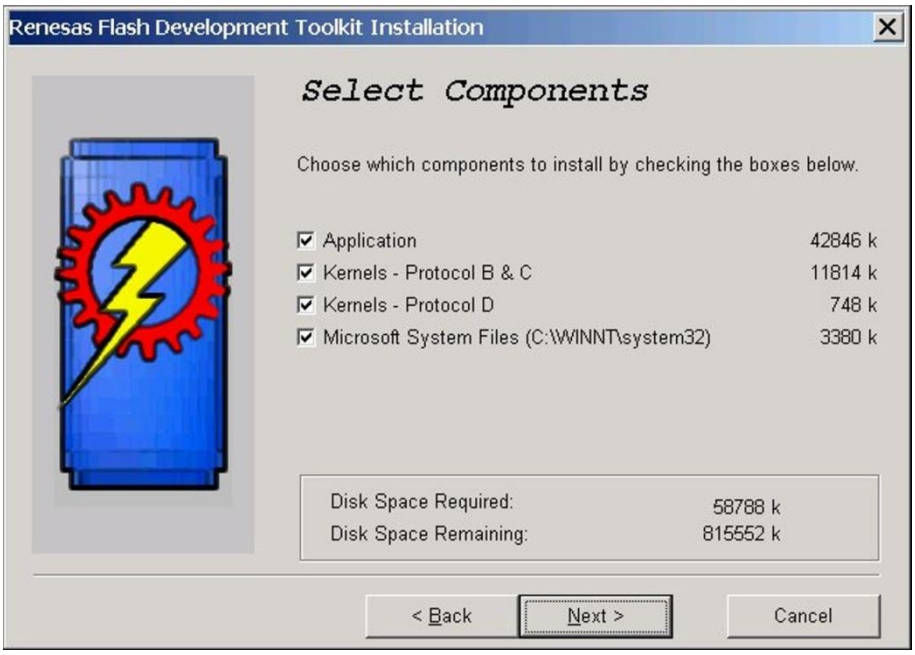


Figure 16-8: Select Components

Note:
It may be advisable to uncheck the Microsoft System Files checkbox as the versions of system files in the installation may be older than those currently on the system. If these files are required then the software can be uninstalled and then reinstalled with the system files.

Click **Next.**

5. The Additional Information (Application) screen is displayed. Leave the default options selected unless this causes an issue for other installed software.

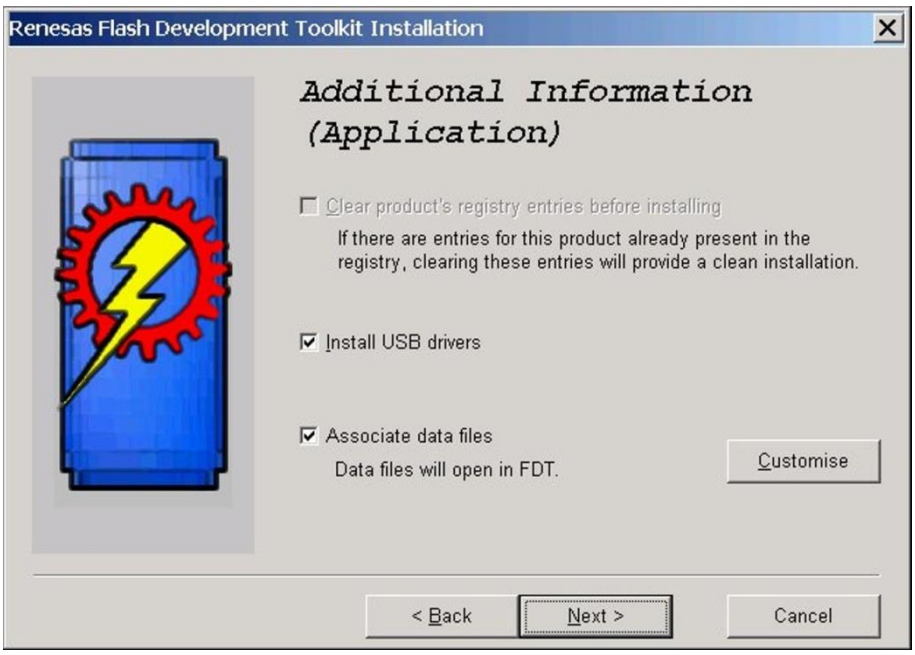


Figure 16-9: Additional Information (Application)

Click **Next.**

6. The **Kernels** screen (Part 1) is displayed. Leave as is, unless you want to reduce the amount of disk space used by reducing the number of kernels installed.

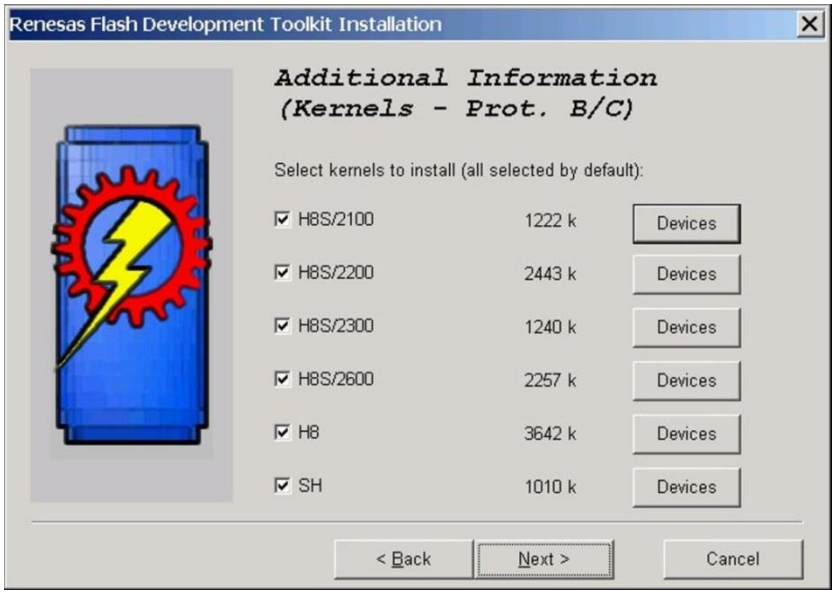


Figure 16-10: Kernels 1

Click **Next.**

7. The **Kernels** screen (Part 2) is displayed. Leave as is, unless you want to reduce the amount of disk space used by reducing the number of kernels installed.

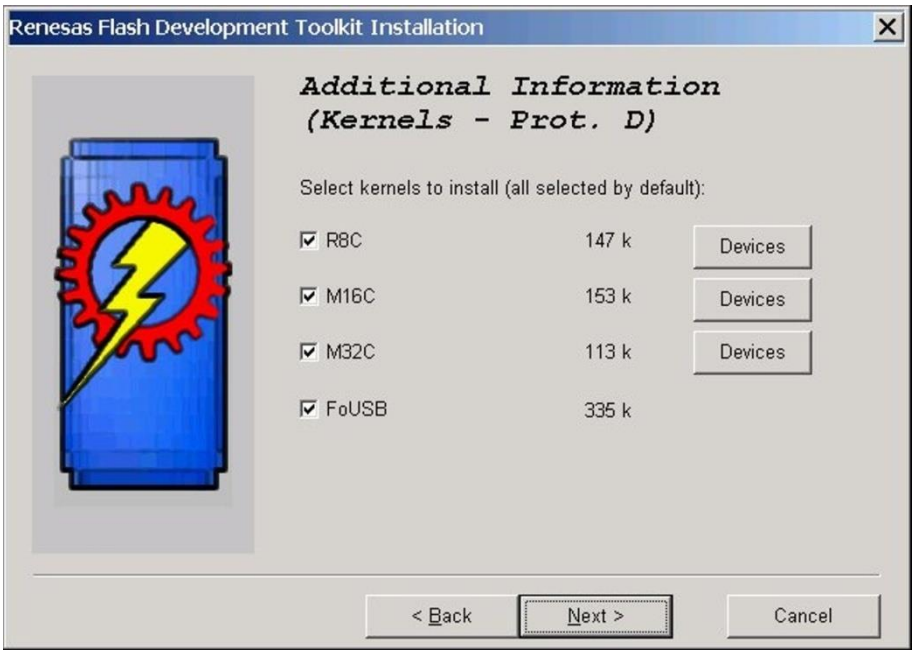


Figure 16-11: Kernels 2

Click **Next.**

8. The **Select Destination Directory** screen is displayed. The default installation directory is usually recommended.

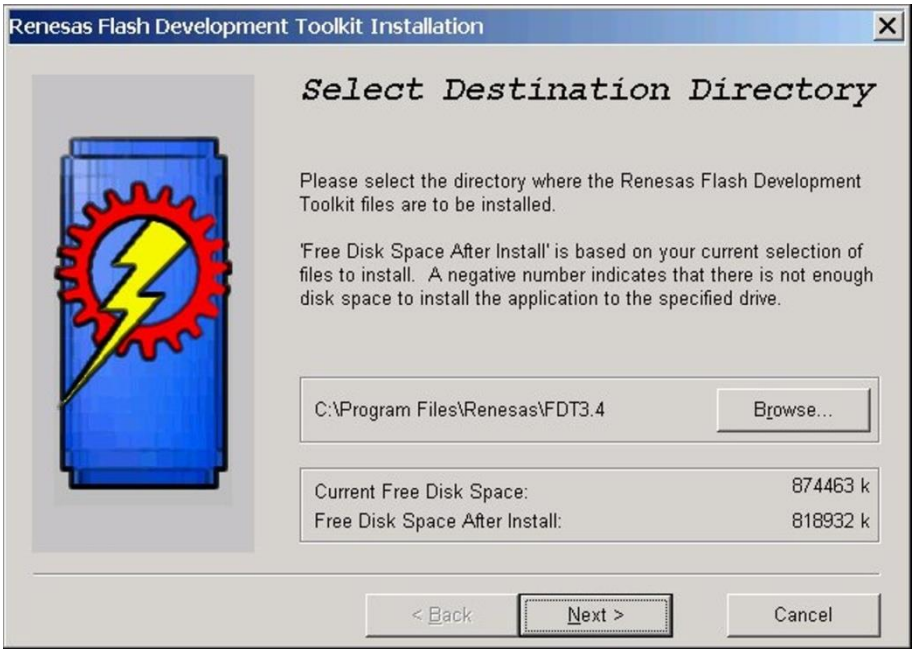


Figure 16-12: Select Destination

Click **Next.**

9. The Select Start Menu Group screen is displayed. The default menu can be used or the programmer can be added to the Clear-Com menu.

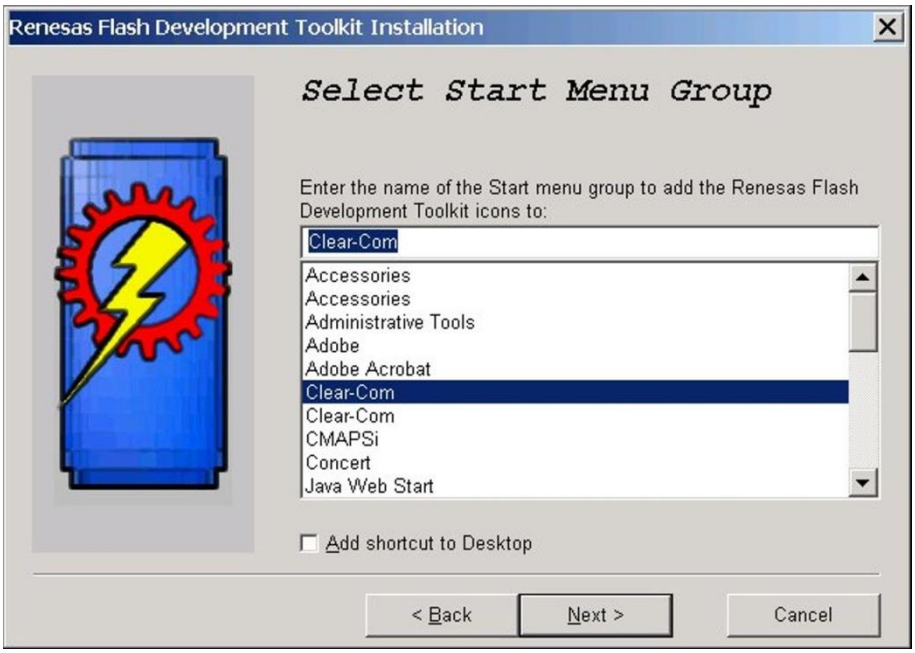


Figure 16-13: Select Start Menu Group

Click **Next.**

10. The **Ready to Install** screen is displayed. Click **Install**. The files will be installed in the selected directory.

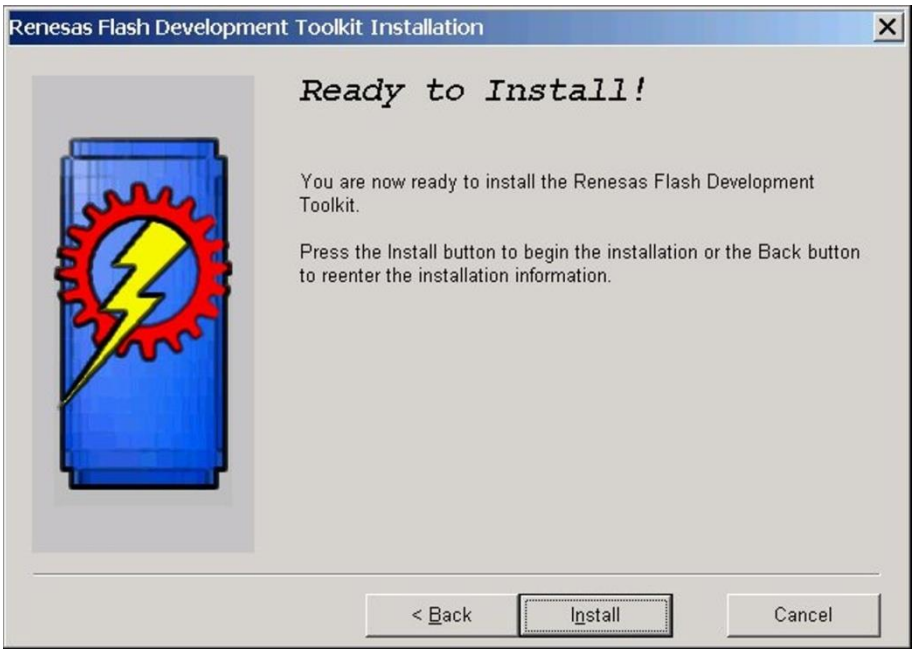


Figure 16-14: Ready to install

11. When the installation is complete a completion screen is displayed:

Figure 16-15: Installation completed

To exit the installer, click **Finish**.

Appendix F: *TFTPUtil*

To install the TFTPUtil tool:

1. Navigate to the installation file on the Eclipse installation DVD.

   DVD\3rd_Party_Software\V-Panel TFTO Server App\TFTPUtil_GUI_Version_1.3.0_Installer.exe

2. When the installation file is run, the installer will display a series of setup screens to configure the installation. The first screen is the **License Agreement**. Click **I Agree**.

Figure 16-16: License Agreement

3. The **TFTPUtil Components** screen is displayed. Accept the defaults and click **Next**.

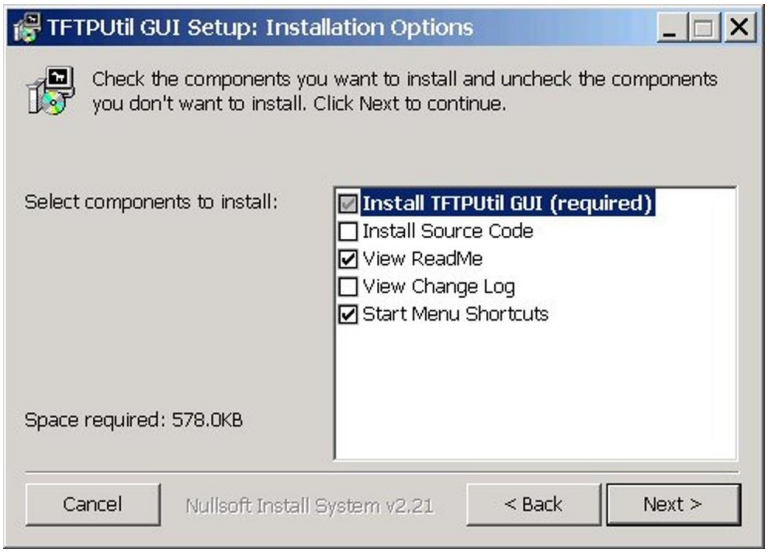


Figure 16-17: Components

4. The **Installation Folder** destination screen is displayed. Accept the default destination folder unless it clashes with other system setups. Click **Install**.

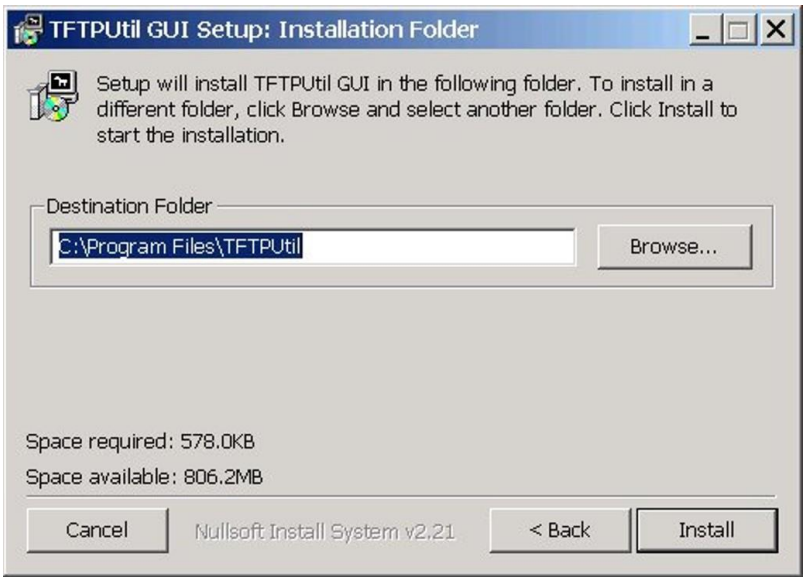


Figure 16-18: Installation Folder destination screen

5. When the installation is completed, click **Close** to exit the installer. If the defaults were accepted the TFTPUtil server can be run from Programs under **TFTPUtil**.

TFTPUtil on Vista and Windows 7 PCs

The TFTP Util TFTP server has been known to fail on Vista or Windows 7 PCs. In this case, you use any TFTP server that is known to work on your PC.

The TFTP servers below are known to operate on Vista or Windows 7 PCs. Install the server and point the server to the C:\TFTP folder as described above.

Win Agents TFTP server

The server is available from either of the Eclipse HX v8.5 DVDs:

Software DVD \3rd_Party_Software > V-Panel TFTP Server App > tftpserver-setup.exe

Drivers DVD \3rd_Party_Software > V-Panel TFTP Server App > tftpserver-setup.exe

Alternatively, it can be downloaded from http://tftp-server.com.

SolarWinds TFTP server

http://www.solarwinds.com/products/freetools/free_tftp_server.aspx

tftp32 server

http://tftpd32.jounin.net/tftpd32_download.html

Note:
Select the 32 or 64 bit installer.

Appendix G: *Tera Term*

To install Tera Term:

1. Navigate to the installation file on the Eclipse installation DVD:

   DVD\3rd_Party_Software\Teraterm\tterm23.zip

2. Open the file with WinZip and execute **Setup.exe** to start the Tera Term installation. The language options screen will be displayed.

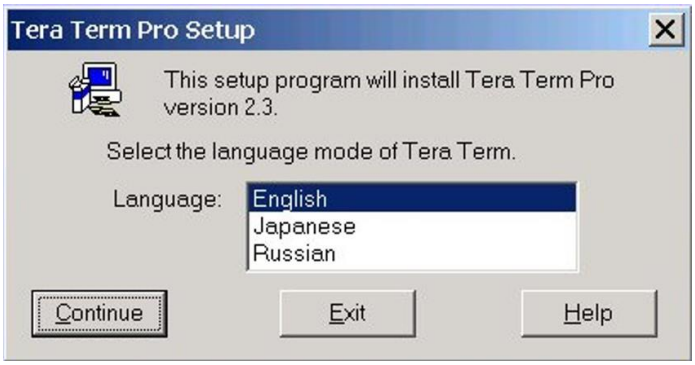


Figure 16-19: Language selection

Select the required language mode and click **Continue**.

3. You are asked to close any old versions of Tera Term that are running. Close any old versions and click **Continue.**

4. The **Destination Path** screen is displayed. Enter the required installation directory name if it is different to the default. It is recommended that the default is used. Click **Continue**.

Figure 16-20: Destination Path

The Installation complete screen is displayed. To exit the installer, click **OK**.

Figure 16-21: Installation complete

TIP: *The Tera Term application is used for many of the Eclipse system upgrade processes . You can save and recall the relevant com port settings by selecting the Setup / Save or restore settings options.*

Appendix H: *Flash Magic*

To install Flash Magic:

1. Navigate to the installation file on the Eclipse installation DVD.

   DVD\3rd_Party_Software\FlashMagic\FlashMagic.exe

2. Execute the file to start the installation. The **Flash Magic Setup Wizard** welcome screen is displayed. Click **Next**.

Figure 16-22: Welcome screen (installer)

3. The **License Agreement** screen is displayed. Accept the agreement and click **Next.**

4. The **Select Destination Location** screen is displayed. Select the destination folder for FlashMagic (normally the default is accepted). Click **Next**.

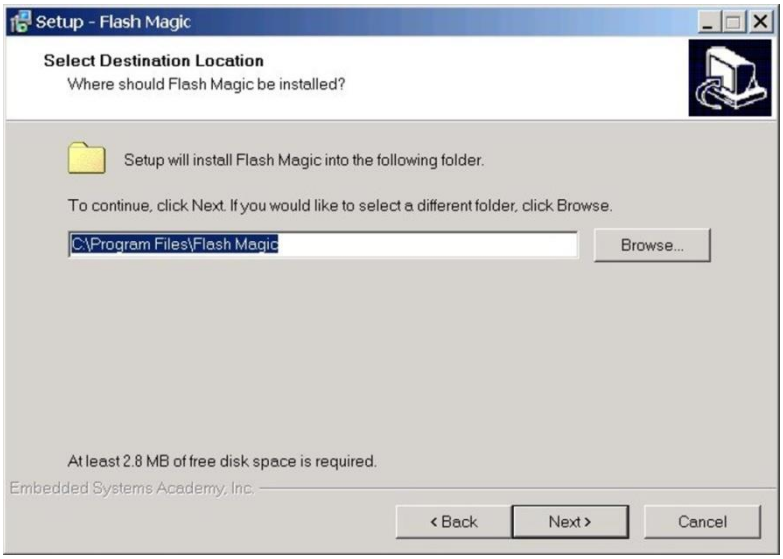


Figure 16-23: Select Destination Location

5. The **Select Start Menu Folder** is displayed. Select the Start menu folder for Flash Magic; (normally the default is accepted). Click **Next**.

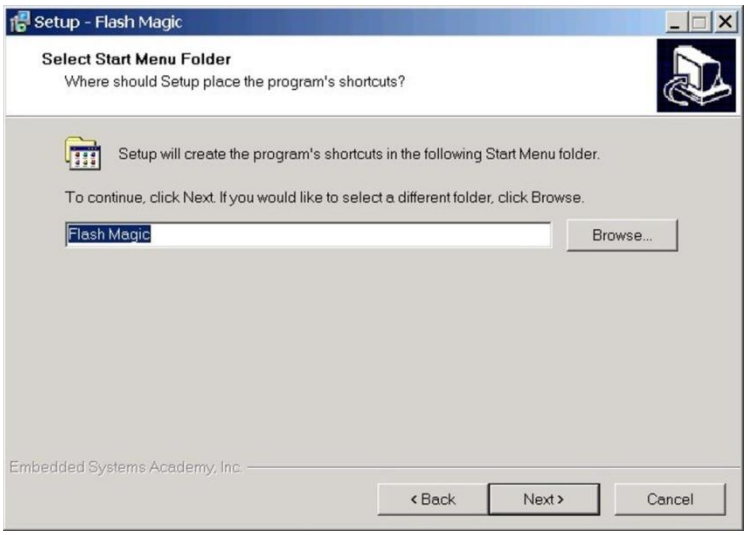


Figure 16-24: Select Start Menu Folder

6. The **Select Additional Tasks** screen is displayed. Select **Create a Desktop icon** and / or **Quick Launch** icon, if desired. Click **Next**.

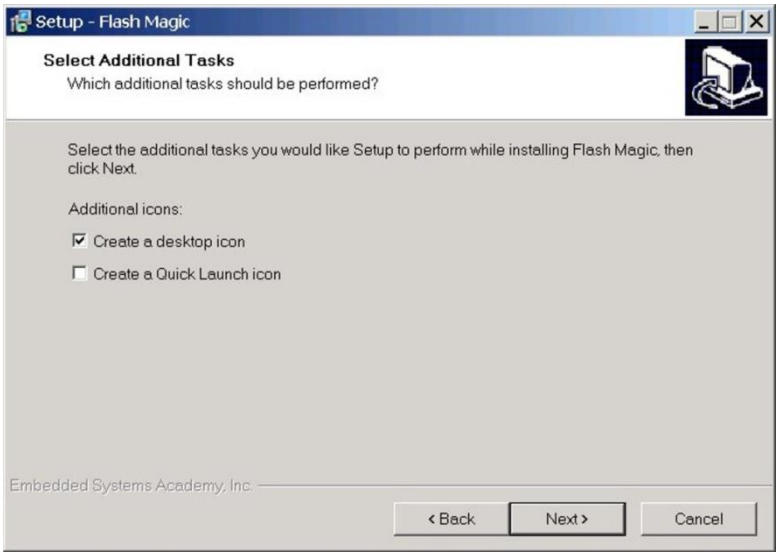


Figure 16-25: Select Additional Tasks

7. The **Ready to Install** screen is displayed. Click **Install**.

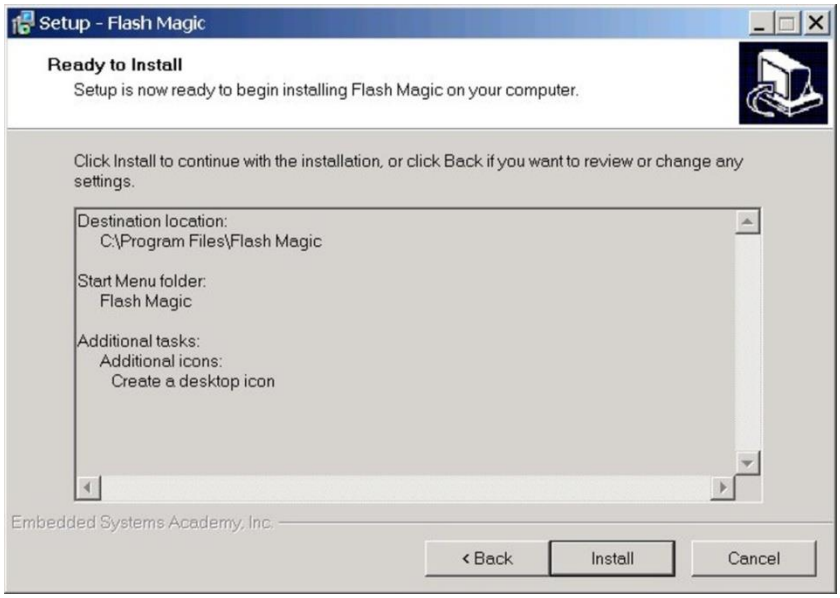


Figure 16-26: Ready to Install

8. When the installation is complete, the completion screen is displayed.

Figure 16-27:Completion screen

Click **Finish** to exit the installer.

Appendix I: *i-Station converter cable wiring and rear panel layouts*

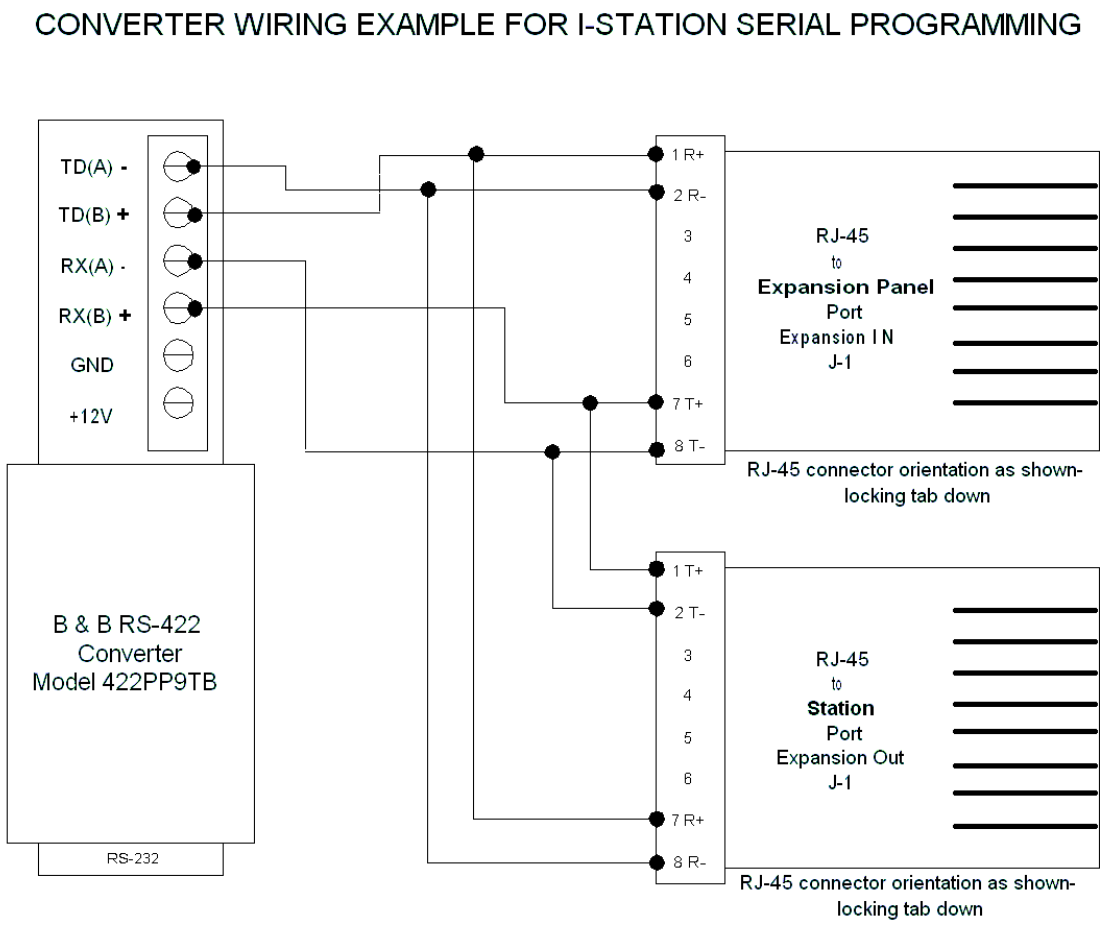


Figure 16-28: Converter cable wiring example for i-Station serial programming

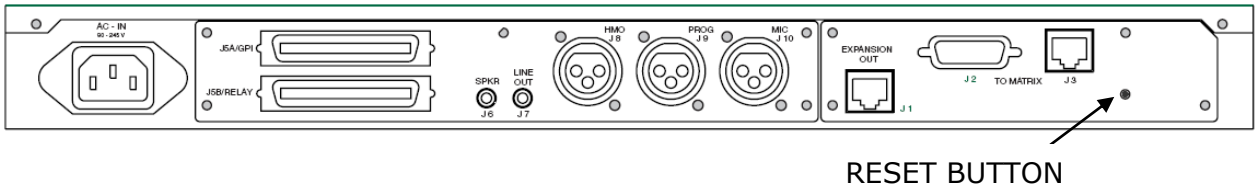


Figure 16-29: i-Station rear panel layout

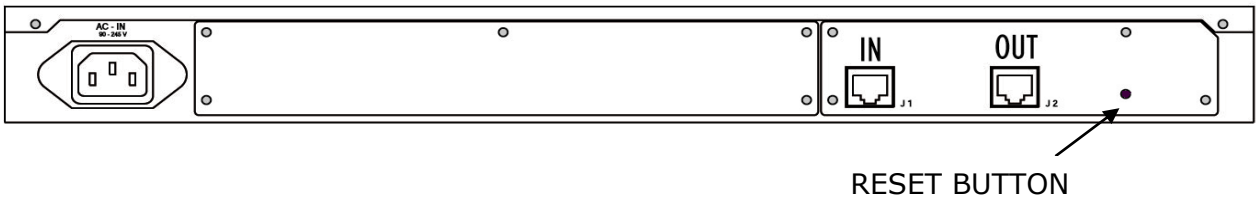


Figure 16-30: E-Station rear panel layout

Appendix J: *Xilinx tools*

Xilinx programming tools are used to upgrade FPGA and CLPD code. For more information about using this specialized equipment, contact your Clear-Com technical support representative.

The following cards and matrices can be upgraded using Xilinx tools:

- CPU card (CPLD).
- MVX-A16 (FPGA).
- E-QUE / IVC-32 / LMC-64 (FPGA).
- E-FIB (FPGA).
- E-MADI64 (FPGA).

  Note:
  The E-MADI64 FPGA can also be upgraded using EHX. For more information, see ***11.2 Upgrading the E-MADI64 application, DSP and FPGA code using*** **EHX.**

- Eclipse HX-PiCo matrix (FPGA).

To program the Flash PROM, you require a PC or laptop with the **Xilinx iMPACT programming software** and a **Xilinx Download Cable** (such as platform cable USB model DLC9G)) is required.

The Xilinx programming tool, **Xilinx iMPACT**, may be obtained by downloading **ISE WebPACK™** from: http://www.xilinx.com/xlnx/xil_sw_updates_home.jsp

If you are using:

- The **red** DLC10 programming box, download **ISE ver 11 or later**
- The **black** DLC9G programming box, download **ISE ver 11 or later.**

Note:
You must create an account at the Xilinx website, and accept a license agreement, before you can download ISE WebPACK™.

Tip: *A number of* ***Found new hardware*** *dialogs will display when the programming device is plugged into the USB port of the PC or laptop. Clear-Com recommends installing the software (which also installs the necessary drivers) before you plug in the device, to reduce the number of dialogs.*

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