Procedure

A Guide to Programming the PIC and FPGA on the CDC MC Router

Description

A guide on how to programme the PIC and FPGA within the CDC MC Router via the Ethernet port on the front panel.

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Contents

Introduction

This document is a guide to programming the PIC found on the main board within the CDC MC Router via the Ethernet port on the front panel of the CDC MC Router. The PIC contains firmware that may need to be upgraded on occasion.

This document also contains the instructions on how, when required, to upgrade the FPGA on the CDC MC Router.

This process **must** be carried out by qualified Cadac representatives.

Cadac FTP details

You will need to access the Cadac FTP to download the relevant files to update the CDC MC router:

FTP site: ftp://www.cadac-sound.com/

FTP login details:

Login: ***customer***

Password: ***cadac1968***

Download the PIC Update.exe

To update the PIC you will need to download this .exe file from the Cadac FTP site:

Peripherals

MC Router

MComms_Router_PIC_Update.exe

Download the Hex Files

To update the PIC you will need to download the latest hex files from the Cadac FTP site:

Peripherals

MC Router

MComms Router Pic Main

PIC Main **** v*.***

MComms_ROUTER_PIC_MAIN_****.hex**

Download the FPGA Files

To update the FPGA you will need to download the latest bin files from the Cadac FTP site:

Peripherals

MC Router

MComms Router FPGA

Router FPGA **** v*.***

MComms_ROUTER_FPGA_****.bin**

Important Information

The procedure outlined in this document is for updating the CDC MC Router with PIC firmware V1.2 or later pre-installed. This allows any further firmware update to done via the Ethernet port on the front of the unit.

If the unit has an earlier version of the PIC firmware, then the CDC MC Router will need to have the PIC update done via a PICKit3 before it can be updated via the Ethernet port on the front of the unit.

Process for Programming the PIC MAIN on the CDC MC Router

To programme the PIC on the CDC MC Router you will require:

- A PC / laptop with a web browser (this procedure will not work with a Mac)
- Ethernet cable (Cat5 or Cat6)

Activate Boot Mode

You will need to activate **Boot Mode** on the CDC MC Router to programme the Router via the front panel Ethernet port.

- On the CDC MC Router front panel "**CONFIG**" switch: put dip switch **8 ON (Up)** and all **other switches OFF (down)** and then turn the Router ON

- This will activate **Boot Mode**

  If you are looking at the PCB the PIC LED should be flashing and FPGA LED should be off

Process for Reprogramming

- Remove the top panel from the CDC MC Router

  The top panel needs to be removed if you want to check the LED 35 near to the PIC – the LED indicates whether the Bootloader has loaded properly / or has been installed. (With the top panel on the LED is visible through the air vent on the right hand side of the unit).

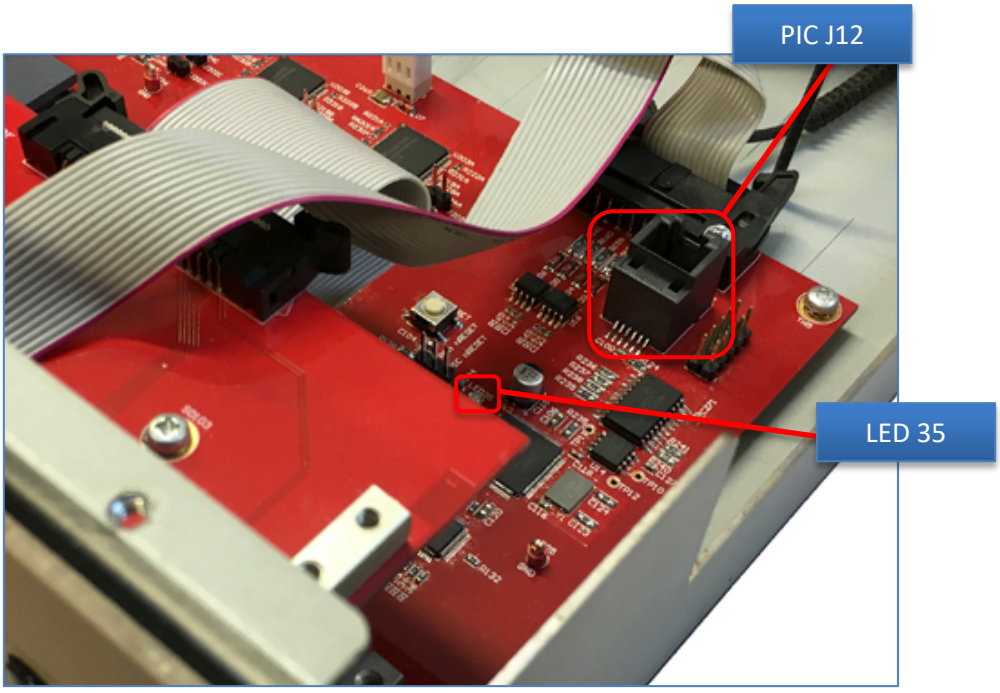
  You will require a Torx T-10 bit to remove the panel

- Power cycle the CDC MC Router

  Power off - wait 5 seconds - power on

- Check **LED 35** near to the **PIC J12** is flashing green around **TWICE** a second

  This indicates the Bootloader has loaded correctly. If it fails to do this then the PIC J12 will need to be updated using a PICKit3.



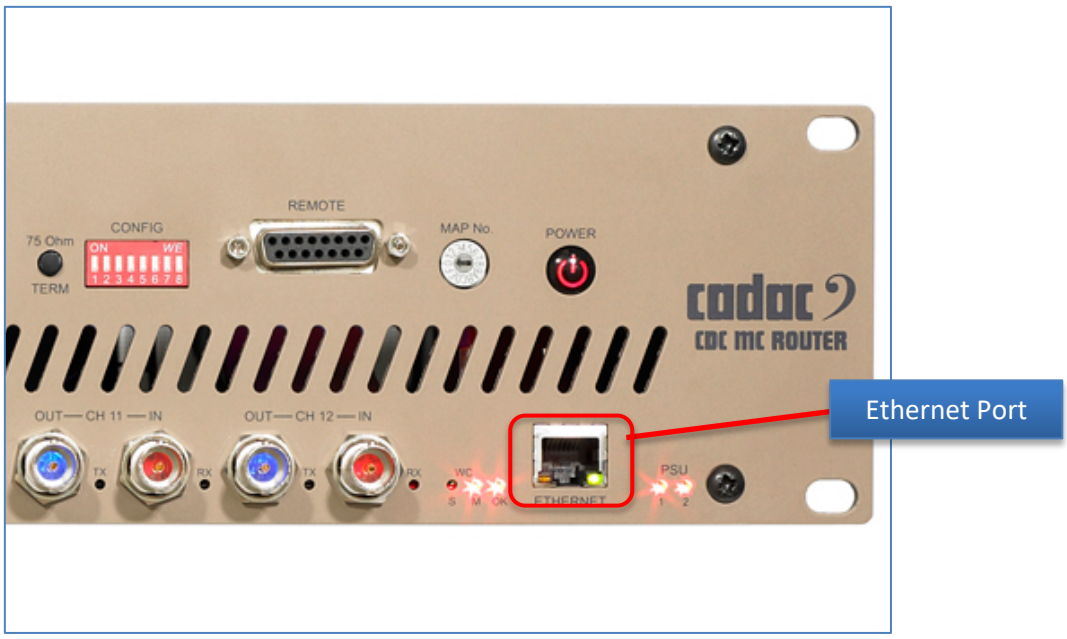
- Check your laptop Static IP address is 169.254.1.2

  This can be done by following the instructions below:

  - *Go to the Windows **Start** menu*

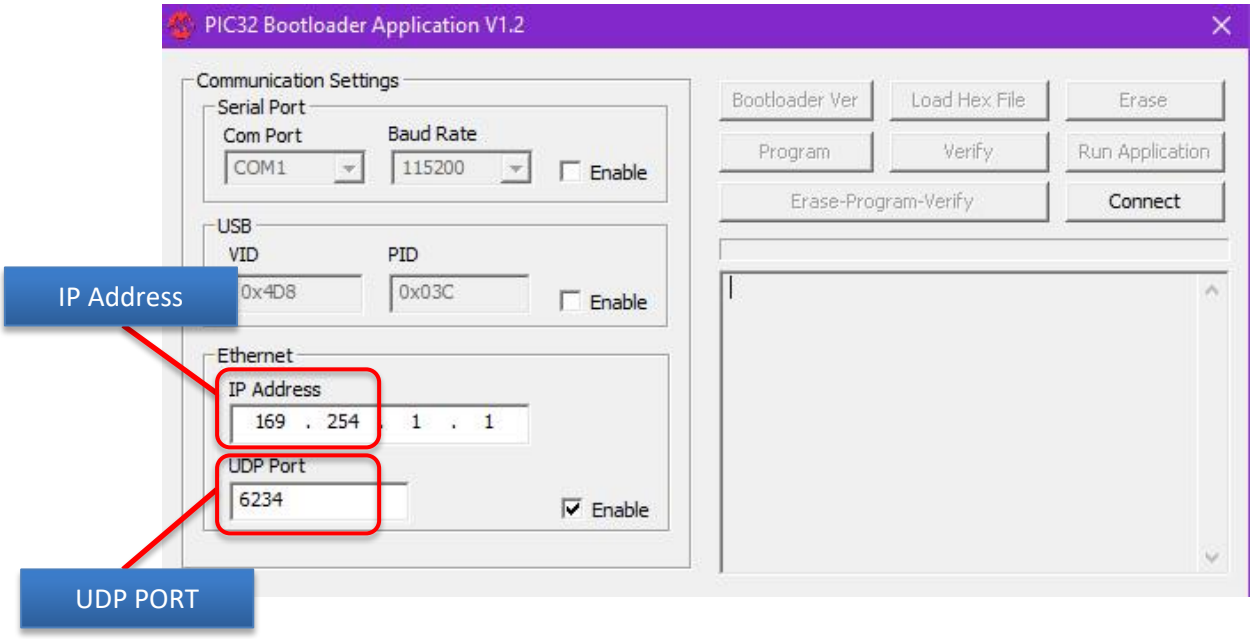
- *Select **Control Panel** on the right hand list of programs*
- *Select **Network & Internet***
- *Select **Network and Sharing Centre***
- *Select **Change Adapter Settings** window on the top left*
- *Double click on **Ethernet icon** on the controller that is connected to the Router*
- *Scroll down to **Internet Protocol version 4 (TCP/IPV4)** and double click*
- *Select the **Use the following IP address** option*
- *Enter IP ADD **169.254.1.2***
- *Enter Subnet Mask to **255.255.0.0***
- *Leave all other fields blank*
- *Click **OK***
- *Your network card is now programmed*

- Plug your laptop into **Ethernet port** on CDC MC Router



- Run the **MComms_Router_PIC_Update.exe** on you PC
- In the Ethernet check box select **Enable**

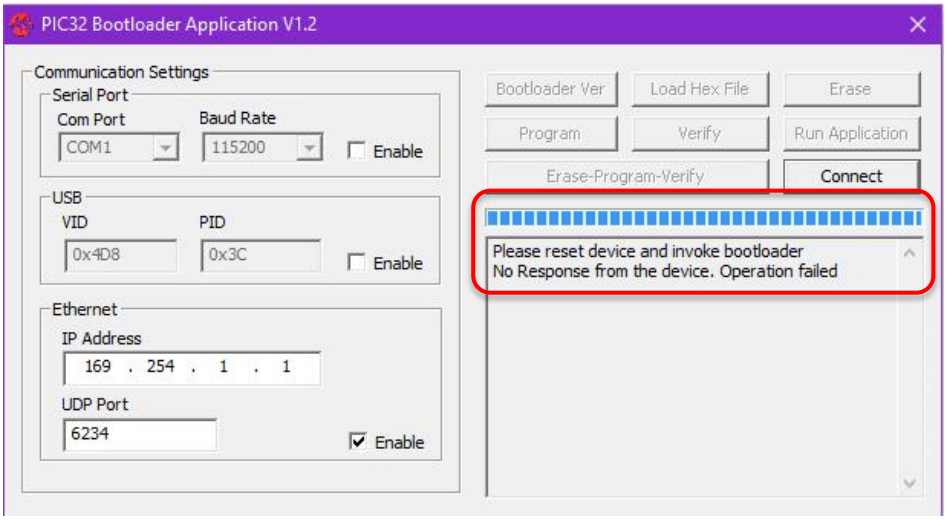
- Set IP Address in programme: **169.254.1.1**



- Make sure **UDP PORT 6234** is displayed
- Select "**Connect**" on the right

This initiates communication between the computer and router

If the Output window shows a message like the one below then the connection to the CDC MC Router has failed, you will need to double check your connection and settings a gain.



- Select **Load HEX File**
- Browse to the latest HEX File: **MCOMMS_ROUTER_PIC_MAIN_xxxxxx.hex**
- After selecting HEX FILE select **Erase program verify**

  The Output window will show the message: ***Successful***

- **Power OFF** the CDC MC Router
- Disconnect you PC from the CDC MC Router's Ethernet port
- Turn dip switch **8 OFF (down)**
- **Power ON** the CDC MC Router
- Check **LED 35** next to the **PIC J12** is flashing around **ONCE a second**
- Replace and screw down lid

Process for Programming the FPGA on the CDC MC Router

To programme the FPGA on the CDC MC Router you will require:

- A PC / laptop with a web browser (this procedure will not work with a Mac)
- Ethernet cable (Cat5 or Cat6)

Process for Reprogramming

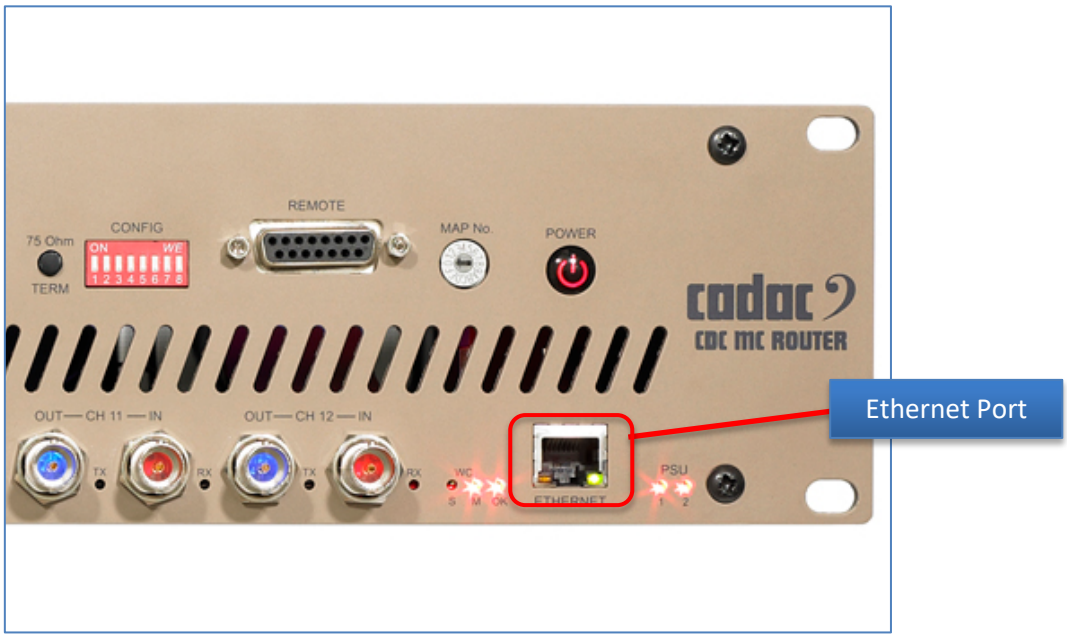
- Set the network card on the PC to IP address **169.254.1.2** and the subnet mask to **255.255.0.0**

  Skip this if you have done it already – if not follow the instructions laid out earlier in this document

- Power cycle the CDC MC Router - the PIC has been programmed previously

  Power off - wait 5 seconds - power on

- Connect the PC to the CDC MC Router unit via the Ethernet cable



- Start the web browser on the PC and type "**http://mchpboard/mpfsupload**" into the address bar and hit enter

  *To see what version of FPGA code is running currently on the CDC MC Router type in **http://mchpboard***

- If the browser fails to connect, switch between the following web addresses about once every 2 seconds to connect:

  http://mchpboard

  http://mchpboard/mpfsupload

- When the **http://mchpboard/mpfsupload** page loads you should see **MPFS Image Upload*** and a **Choose File** and **Upload button**.
- Select **Choose File** and a browser window should appear
- Browse to and open the **MComms_Router_FPGA_xxxxxx.bin** *.bin file
- Select **Upload** on the web page

  *Wait for up to 60-90 seconds and **Upload successful** will appear on the page*

- Programming the FPGA is complete

Process For When Both the PIC and FPGA Have Been Programmed

- Power cycle the CDC MC Router

  Power off - wait 5 seconds - power on

- The CDC MC Router is now fully programmed