

## Procedure

## A Guide to Programming the PIC and FPGA on the CDC MC MADI



## Description

A guide to where to find and how to programme the PIC within the CDC MC MADI and the process on how to update the FPGA.

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## Contents

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Contents.....	2
Introduction .....	3
Cadac FTP details .....	3
Download the Hex Files .....	3
Download the FPGA Files.....	3
Tools Required.....	4
PIC J8 on the CDC MC MADI.....	5
Process for Programming the PIC on the CDC MC MADI.....	6
Process for Programming the FPGA on the CDC MC MADI.....	8
Process For When Both the PIC and FPGA Have Been Programmed.....	9



## Introduction

This document is a guide to programming the PIC found on the main board within the CDC MC MADI. 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 MADI.

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 MADI:

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

FTP login details:

Login: *customer*

Password: *cadac1968*

## Download the Hex Files

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

### MC MADI

FWM-19124 MADI PIC

MComms\_MADI\_PIC\_\*\*\*\*\*\_A\*\*

## Download the FPGA Files

To update the FPGA you will need to download the latest rbf files from the Cadac FTP site on your PC from:

### MC MADI

FWM-19124 MADI FPGA

MComms\_MADI\_FPGA\_\*\*\*\*\*\_A\*\*



## Tools Required

This document has been written using the PICKit3 as the programming tool for the PIC.

A separate document contains detailed information regarding the PICKit3, the Microchip Integrated Programming Environment software and the adaptor kits required to undertake the firmware upgrades on the PIC found in the CDC MC MADI.

PICKit3



Adaptor kit



A T-10 Torx driver will be needed to remove top panel screws



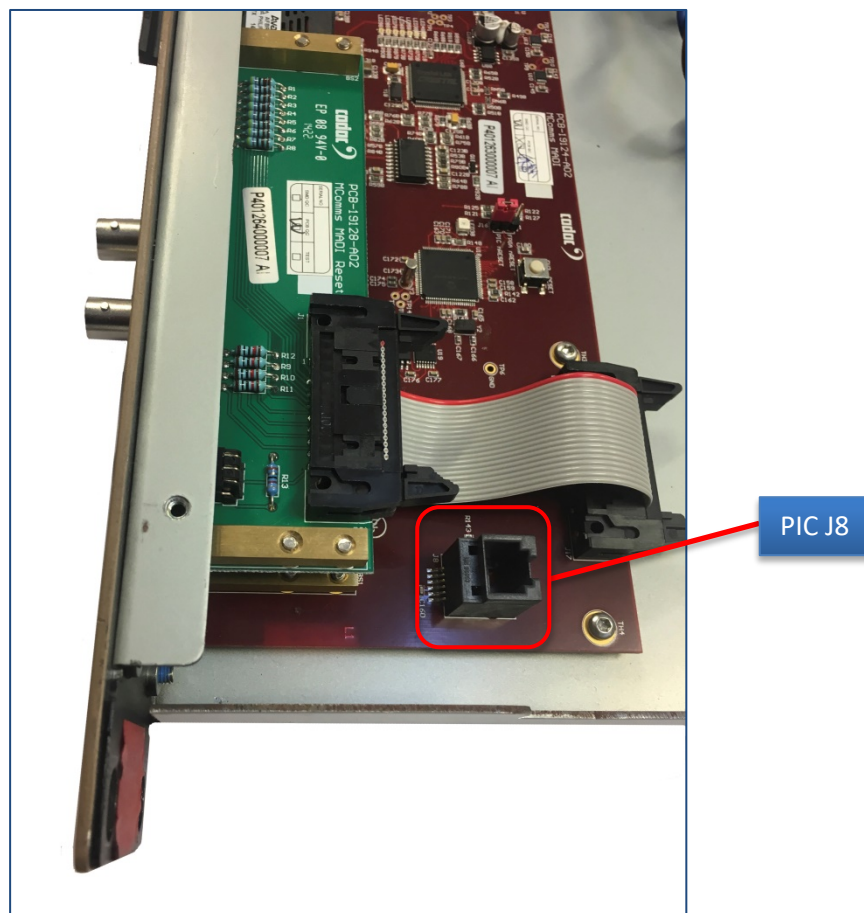
## PIC J8 on the CDC MC MADI

To access the **PIC J8** within the CDC MC MADI it will require the unscrewing of all the retaining screws (**T-10 Torx**) on the top panel and the removal of the panel.

The **J8 PIC** is locate to the right of the large circuit board mounted at the front of the unit

Below shows the position of **PIC J8** on the main board.

There is only one **PIC J8** on the MADI per board.



## Process for Programming the PIC on the CDC MC MADI

- If not already removed, remove the top panel from the CDC MC MADI
- Switch ON the CDC MC MADI
- Connect the PICKit3 to your PC via the USB cable provided with the PICKit3
- Attach PICKit3 to PIC J8 on the CDC MC MADI using the RJ11 cable
- Open MPLAB IPE on your PC

*Wait for the green circle to appear above the **Connect** button*

- On the PC select **Advanced 8-bit MCUs (PIC18)** from the **Family** drop down menu
- Within the **Device** drop down menu, select **PIC18F97J60**
- Within the **Tool** drop down menu, select the ICD connected to the PC
- Press **Connect**

*A green progress bar should move across the screen. The **Connect** button will grey out if successful*

- Select **File** in the top left of the screen and select **Import / Hex**
- Select: **MComms\_MADI\_PIC\_\*\*\*\*\*\_A\*\*.hex**
- The Output window should show **Hex file loaded successfully**
- Select **Erase**

*The Output window should show activity as the device connects then is erased, ending with **Erase device complete***

- Select **Blank Check**

*The Output window should show activity as the device connects and is checked, ending with **Device is blank***



- Select **Program**

*The Output window should show activity as the device connects and is programmed, ending with **Programming complete** and **Pass Count:***

- Select **Verify**

*The Output window should show activity as the device connects and verifies, ending with **Verification successful** and **Verify complete***

- Programming of the PIC is now complete



## Process for Programming the FPGA on the CDC MC MADI

To programme the FPGA on the CDC MC MADI 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

**IMPORTANT:** Ensure the PIC has been programmed before undertaking the FPGA programming.

- Set the network card on the PC to **IP address 169.254.1.2** and the **subnet mask to 255.255.0.0**.
- Power cycle the CDC MC MADI

*Power off - wait 5 seconds - power on*

- Connect the PC to the CDC MC MADI unit via the Ethernet cable using the Ethernet port located on the CDC MC MADI's front panel:



- Start the web browser on the PC and type **MCOMMS\_MADI/mpfsupload** into the address bar and press **Enter**

*To find the CDC MC MADI's current FPGA version type **MCOMMS\_MADI** into the address bar and press **Enter***





- When the page loads you should see **MPFS Image Upload** plus a **Choose File** and **Upload** button
- Select **Choose File** and a file browser window should appear
- Browse to and open the **MComms\_MADI\_FPGA\_\*\*\*\*\*\_A\*\*.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 MADI

*Power off - wait 5 seconds - power on*

- Wait 8-10 seconds and LEDs should illuminate on the front of the unit plus LED 39 (next to the FPGA - U1) should flash green
- The CDC MC MADI is now fully programmed

