

This document is intended to aid users working with Opus-Two ARM controllers who need to install, troubleshoot, or perform program updates. <u>Familiarity with our Original Series JAL controllers will be quite helpful moving forward, but is not necessary.</u>

Windows and Mac terminal operations are very similar, but configuration still must be completed in a Windows environment. The biggest difference between the two operating systems is the initial setup process, which is defined separately in this document. Config file upload procedures are also be defined separately. The terminal itself operates the same regardless of the user's platform. iOS, android, windows, and mac all will work the same. Please note that current serial speeds exceed the speeds supported by most iOS and android devices. Telnet will be supported in the near future for those devices.



This document is now intended for all users. We still (always) welcome bug reports at <a href="https://www.opustwoics.com/oberon-bug-report">https://www.opustwoics.com/oberon-bug-report</a>



The file upload procedure can be performed on either Windows or Macintosh computers. Please note that there are two separate sections in this document, one for each operating system.



# TABLE OF CONTENTS

Preparing Mac OSX for Connection
Preamble
Downloads
Plug Mac Into CVA/CVE
Configuring Serial App
Uploading a Configuration File
Preparing Windows for Connection
Downloads
Plug Computer Into CVA/CVE
Configuring Serial App
Uploading a Configuration File
Configuration
BEGIN
Folders And Levels
Setup Items
Basic Mapping (GIO) 22
Basic C/A Controls 24
Buttons and Debounces
Bit Ops 28
Hall Effect KeyStrips   29
Moving Data To Output Cards
Processing Combination Action
Port Speed Control
TurboMIDI
Pipe Processing
Directory Of VARIABLES (CA)
Directory Of VARIABLES (GIO)
Revision history



# PREPARING MAC OSX FOR CONNECTION

### PREAMBLE

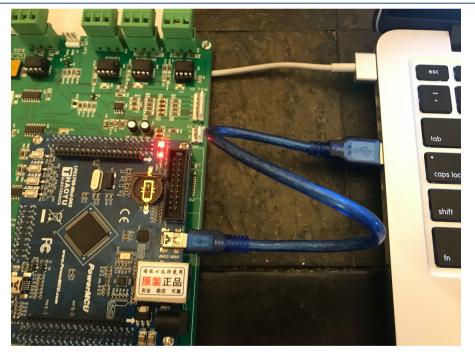
The Opus-Two terminal interface is a serial terminal – it is compatible with all modern operating systems. These instructions are the current Mac OS instructions, instructions for Windows are also in this document. If you are using a windows computer, skip this section.

#### DOWNLOADS

Install the terminal program and the CP driver prior to connecting the CVA to your computer. It is not necessary to install CP210x drivers as modern MacOS (10.13+) have the foundational USB support and the Serial app has the individual drivers needed for the CP interfaces built in.

#### Purchase, download, register and launch Serial

https://www.decisivetactics.com/products/serial/



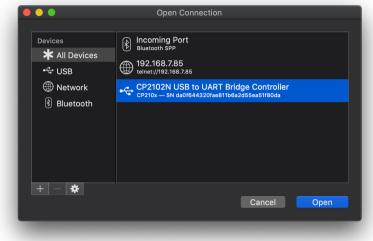
### PLUG MAC INTO CVA/CVE

Some controllers have multiple USB ports on them. If the controller doesn't look like the one above (and hopefully, it shouldn't), look for the port marked "Term."

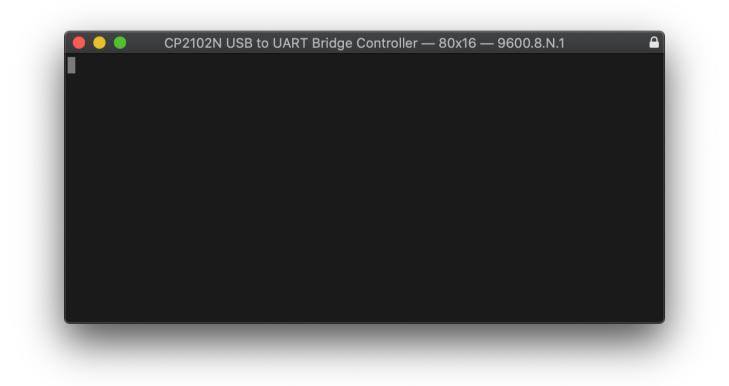


## CONFIGURING SERIAL APP

Open application, it will ask which port you wish to open. If the controller is plugged into the mac, CP2102 will be an option in the list. Make sure it's highlighted and click "Open"



The screen will probably look like this:





## Go to the menu to access settings:

📫 Se	r <b>ial</b> File	Edit	View	Terminal	Window	Help		
			C	Settings Profile			೫; ►	r — 80x16 — 9600.8.N.1
		•			mulation indow Size		жк ►	
				Reset Ti	mestamps		ЖR	
				Clear D Clear R				
					eak (Emula ng Break pecial		<b>ЖВ</b> ЖВ	
				Send St	ring		жт	
				Start Lo	a		ЖL	

Three of the sub panes inside settings may require adjustment:

In the line coding screen, change the baud rate to 921600 (match your screen to the image below).

General		
Name	Baud Rate:	921600
Driver	Data Bits:	8
Device Info		Strip Incoming High Bit
Line Settings		
Line Coding	Parity:	None 🗘
Terminal	Stop Bits:	1
Pacing		
Window	Flow Control:	XON/XOFF
Emulation		RTS/CTS
		DTR/DSR



Adjust the window size send type and window size values to match this screen:

General				
Name	Send Window Size:	stty	_	\$
Driver				
Device Info	Window Size:	80 cols 16	rows	🗸 Locked
Line Settings				
Line Coding				
Terminal	Timestamp:	Off	$\diamond$	
Pacing				
Window				
Emulation				
Profile 🔻		Cance	1	ОК

And finally, make sure your settings in "Emulation" match these:

General				
Name	Emulation:	Xterm	<b></b>	
Driver	Send Mode:	Interactive	<b></b>	
Device Info	Return Key:	CR	$\diamond$	
Line Settings				
Line Coding	Delete Key:	BS	$\diamond$	
Terminal	Bel Sound:	Default (Bleep	)	\$
Pacing	Text Encoding:	Unicode (UTF	-8)	\$
Window				
Emulation	Echo	Typed Characte	ers	
	🔲 Uppe	rcase Typed Ch	aracters	
	🔲 Interp	oret Standalone	LF as CRLF	
	🔲 Interp	oret Standalone	CR as CRLF	
	🗸 Allow	SO to Activate	G1 Character S	et

You may choose to save these settings into a default profile, ensuring you will never have to enter them again. We have found the Serial application to be pretty good about remembering settings, but we have profiles saved on our computers in case the settings are somehow lost (whether it be human or technical error).



CP2102N U	SB to UART Bridge Co	ntroller — 80x16 — 9600.8.N.	1 🔒
General			
Name	Emulation	: Xterm 🗘	
Driver	Send Mode	: Interactive ᅌ	
Device Info	Return Key	: CR 🗘	
Line Settings	Delete Key	: BS 🗘	
Line Coding			~
Terminal	Bel Sound		
Pacing	Text Encoding	: Unicode (UTF-8)	
Window Emulation	- Ech	o Typed Characters	
		bercase Typed Characters	
		rpret Standalone LF as CRLF	
	Inte	rpret Standalone CR as CRLF	
	🗸 🔽 Allo	w SO to Activate G1 Character	Set
? Profile 02	CVA	Cancel	ОК
	ve Profile		a said
Ma	anage Profiles		

To save the profile, select "Save Profile..." from the profile window. Then name the profile, make it default, and save it:

		SB to UART Bi Settings to a F		roller — 80x16 ·	— 9600.8.N.	
Nam Driv∉	<ul> <li>New</li> </ul>	Profile:	Opus-Tv	vo Profile		
Devi Line Set	Exis	ting Profile:				
Line ?	Set 🤇	As Default		Cancel	OK	⇒
Pacing Window		Text E	ncoding:	Unicode (UTF	-8)	\$
Emulation			Upper	Typed Characte case Typed Characte ret Standalone ret Standalone SO to Activate (	aracters LF as CRLF CR as CRLF	r Set
? Pro	file 🔻			Ca	incel	ОК



Click Ok (and then Ok if you saved a profile). The terminal window should now be active:

e CP2102N USB to UART Bridge Controller — 80x16 — 921600.8.N.1	
Welcome to the Opus-Two CVA Terminal Interface	
This terminal allows users to see various data buffers and perform setup and maintenance tasks. Navigate the menus using the number row of your keyboard. The escape key will 'go back'.	
1 - DC Sleuth5 - Backup Utility9 - Configurator2 - LCD Screen Viewer6 - Data Injector0 - NVR/FLASH Test3 - Folder Naming7 - Analog Calibrationa - About This CVA4 - uSD Duplicator8 - User Variablesc - Local Configuration	
Currently set to Folder 1 (Folder 01 ), Level 1 (system level 1). Press U/D to adjust folder, +/- for level, or C to reset Folder and Level.	
Press Ctrl-Shift-Q to restart/upload. This CVA has been running for   0 hours, 11 minutes, 31 seconds.	

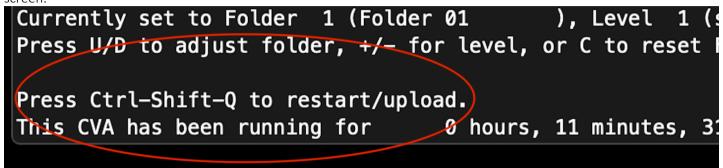
If the screen is "jittering", simply press the "z" key to stabilize the screen.

The options within the menus are rather self-explanatory, but if any prove to be confusing, put in a bug report and explain the confusion and the menu will either be revised or a documentation set created for it.

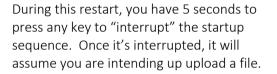


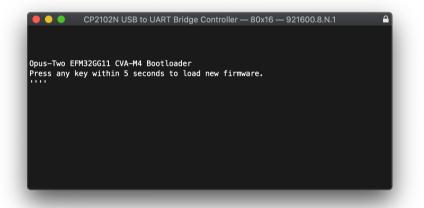
### UPLOADING A CONFIGURATION FILE

If you are at the home screen as shown above, hold down Control and Shift while typing the letter "Q" and the controller will immediately reset. If you are the type of person to forget the key combination, don't worry. It's printed on the screen:



Once you enter the key combination, the controller will restart:





Opus-Two EFM32GG11 CVA-M4 Bootloader Press any key within 5 seconds to load new firmware. ''Begin X-Modem bin file transfer now. Press any key to abort transfer and start controller.

CP2102N USB to UART Bridge Controller — 80x16 — 921600.8.N.1

Once you enter the file upload mode, the rush is over. The controller will instruct you on screen (as shown) to begin the file transfer now. Pressing a keyboard key will abort the file transfer process and revert to the previous configuration file. The controller will occasionally paint the letter "C" to indicate that it is still alive and waiting for a file.



On the mac, select "Send File" from the File menu as shown below:

🗯 Serial	File Edit View Termina	al Wind	low Help		
	Open Port New Remote Connection New Bluetooth Connection				
	Send File	<mark><mark>ት</mark> жs</mark>			
	Receive File	<mark>ዮ</mark> ଅጽ	er — 80x16 –	– 921600.8.N.1	<b>A</b>
	Save Text As	жs			
	Save Selected Text As	₹₩S			
	Close	жw			
Press any l 'Begin X-Me	FM32GG11 CVA–M4 Bootloader key within 5 seconds to loa odem bin file transfer now. key to abort transfer and s				
CCCCCCCCCCCC					

Ensure that the XMODEM transfer method is selected, browse to the file (ends in .bin), and click "Send File":

	CP2102N USB to UART Brid	lge Controller — 80x16	— 921600.8.N.1		
	EFM32	GG11_M3_150420 🗘	Q Sea		
Favorites	Previous 30 Days	Date M	lodified	<ul> <li>✓ Size</li> </ul>	Kind
Jottacloud	ipad_cva_demo.hex	Jun 11,	, 2020 at 9:52 AM	524 KB	Docume
	🜓 ipad_cva_demo.bin	Jun 11,	, 2020 at 9:52 AM	297 KB	MacBin
😻 Dropbox	ipad_cva_demo.map	Jun 11,	, 2020 at 9:52 AM	7 KB	Docume
🕢 Downloads	ipad_cva_demo.ref	Jun 11,	, 2020 at 9:52 AM	780 bytes	Docume
<u> </u>	ipad_cva_demo.lst	Jun 11,	, 2020 at 9:52 AM	52 KB	Docume
🛄 Desktop	ipad_cva_demo.arm	Jun 11,	, 2020 at 9:52 AM	6 KB	Docume
	🔎 ipad_cva_demo.mod	Jun 11,	, 2020 at 9:52 AM	12 KB	MOD Au
	ipad_cva_demo.smb	Jun 11,	, 2020 at 9:49 AM	24 bytes	Docume
		Jun 11,	, 2020 at 9:48 AM	524 KB	Docume
		Jun 11,	, 2020 at 9:48 AM	296 KB	MacBin
		Jun 11,	, 2020 at 9:48 AM	7 KB	Docume
		Jun 11,	, 2020 at 9:48 AM	780 bytes	Docume
		Jun 11,	, 2020 at 9:48 AM	39 KB	Docume
		Jun 11,	, 2020 at 9:48 AM	5 KB	Documer
		Jun 11,	, 2020 at 9:48 AM	10 KB	MOD Aud
		Jun 11,	, 2020 at 9:38 AM	43 KB	Docume
Tags		Jun 11,	, 2020 at 9:38 AM	5 KB	Docume
Important		Jun 11,	, 2020 at 9:38 AM	448 KB	Docume
				Cancel	nd File



	Send "ipad_cva_demo.bin"	
	Transfer Protocol: XMODEM ᅌ ?	
	IK Block Size	
pus-Two	Reduce Padding	
ress an Begin X		
ress an	Send Files Automatically Cancel Send	
cccccc		cccccc

Make sure your settings match the ones above (XMODEM and Send Files Automatically). Click Send and the file will begin uploading. When the file has successfully uploaded (should only take a few seconds), the controller will reboot and be running the new config file.

	Sending "ipad_cva_demo.bin"
	(Sent 57 KB of 290 KB)
	Cancel
0pus-Two	EFM32GG11 CVA-M4 Bootloader
Press any 'Begin X-I	key within 5 seconds to load new firmware. Modem bin file transfer now. key to abort transfer and start controller.



# PREPARING WINDOWS FOR CONNECTION

# DOWNLOADS

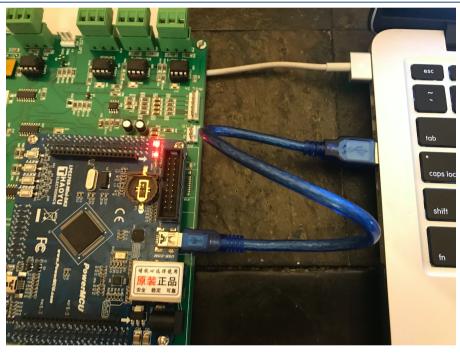
Install the terminal program and the CP driver prior to connecting the controller to your computer.

### Terra Term Program

https://osdn.net/projects/ttssh2/releases/

## CP210x Driver

https://www.silabs.com/products/development-tools/software/usb-to-uart-bridge-vcp-drivers



### PLUG COMPUTER INTO CVA/CVE



### CONFIGURING SERIAL APP

Open application, it will ask which port you wish to open. If the drivers have been installed and the CVA is plugged into the PC, CP2102 will be an option in the Serial list. It may offer a port A and port B or a Port 1 or Port 2. You want the A or 1. Make sure it's selected and click "OK"

	[disconnected] VT		
File Edit Setu	Tera Term: New co	nnection X	
	o tcp/ip	Host: myhost.example.com	
	Serial	Port: COM3: Silicon Labs CP210x USB to U	
		OK OK COM2: Communications Port (COM2) <sup>1/3</sup> COM3: Silicon Labs CP210x USB to UART B COM5: Communications Port (COM5)	ridge (COM3)

### The screen will probably look like this:

🔟 COM3 - Tera Term VT	
File Edit Setup Control Window Help	
$ \begin{array}{l} to = 0  \mbox{constraints} the theorem is the set of the theorem is the $	, L L L L L L L L L L L L L L L L L L L



Go to the Setup menu and choose "Serial port" to access settings:

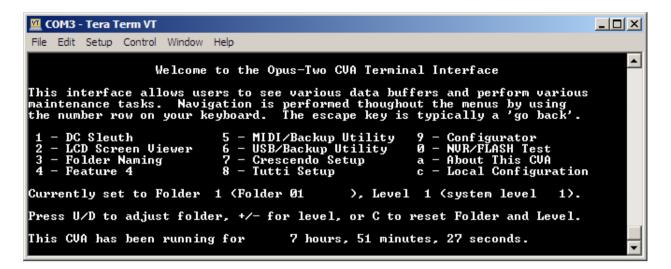
-	1	
💆 СОМЗ -	Tera Term VT	
File Edit	Setup Control Windo	N Help
· t± · J · ∎ r t± ∎ r²±	Terminal	ער איז די
r∞∎± ±•	Window	╡╺╧╺╫╽╢╕╝╝╡┑┚┨┇┙╢╧╦╡╧╖┨╧╹╛╧┦╺╧┦╘┽╴┑╧╢╶╢┑┑┑┓┇╸╓╸╡╢╽╢╗
in tu tu tu	Font	: Γ <sup>2</sup> <sup>2</sup> · ± ± fδ ffffffffft <del>_</del> ± ± ± J · ÷ • · Ξ f <sup>m</sup> ffffffff ± z J π ± σ · · •
±r≑r≘±≈	Keyboard	²- ² ± •±±± • • • 1 1 1 1 1 1 1 2 0 0 0 0 0 0 0 0 0 0 0 0
1111 <sup>±</sup> 1≣	Serial port	<sup>I</sup> (1) · · · · · · · · · · · · · · · · · · ·
1111 <b>∑</b> °″	Proxy	ייסי= ראש אין
<del></del>	SSH	i c r c r c r c r c -÷ ± c² c ± c +² c ± c ± c ± c = c + m = = t + m = t + c + m = t + c + c + c + c + c + c + c + c + c +
<u>1111–"±</u>	SSH Authentication	±∎≡•••∎าΨl٦•÷o±«L•± ᢃヿ┑┑┑┑┑┑┑┓┓┺, ÷• L±±«±–┑┑┑┑┑┑┑
1111−11	SSH Forwarding	ייי ± 1 ± 2 ± 1 ± + ± + ± + ± + ± 2 ± ± 20 מ0 מ0 ± 1 ± 2 ± + ± 1 ± ± 1 ± ± ± ± ± ± 0 ± 1 ± 20 ± ± 0 ± 1 ± 0 ± 0 רורוחחחח ± ± + ± + ± + ± + ± ± ± ± ± ± 1 ± ± ± ±
Γr± -J	SSH KeyGenerator	- rrijijij 2000 ÷ ± · ± · ± · t · t · i · i · t · t · t · t · t · t
[[[]]]; []]; []]; []]; []]; []]; []]; [	TCP/IP	יבי - לבייבי בי של
±• +±•±•	General	ליי ÷י ישליי ביין אין דיי ישר אין בבויי ישר אין דיי דיי דיי דיי דיי דיי דיי דיי דיי ד
<u>ΓſΣ</u> ±∎ſ²	Additional settings	יידי קיזיזיזיזין איני בייבי עלידי עלידי עלידי עלידי איני די די
== հյ∓ե ≣≡լո∓ե	Course and us	עליי בּין בּין בּין בּין בּין בּין בּין בין פּבין בין פּבין בין בין בין בין בין בין בין בין בין
յ լիս լ.	Save setup	ο∎± '±•±±2••όn ό± 'ù÷•Jù±•E±•±•∎J÷÷οn ό <u>δ</u> ήή ή ή ή ή +÷ + 2 η 2 η 2 η πο
2 = [뉴[]= =	Restore setup	ער אישי אישי אישי אישי אישי אישי אישי איש
111 <u>X</u> o «o	Setup directory	

Then change the baud rate to 921600 like this:

COM3 - Tera Term VT File Edit Setup Cor	
Port: COM3  This interface al Speed: 921600  the number row on	OK rm various y using go back'. tor Test s CUA figuration vel 1>. nd Level. s.

- 14 -





The options within the menus are rather self-explanatory, but if any prove to be confusing, put in a bug report and explain the confusion and the menu will either be revised or a documentation set created for it.

Please be aware that the menu system is undergoing regular updates, so your menus may not look the same as the ones above.

TIP: If the screen is "jittering", simply press the "z" key to stabilize the screen. TIP: Setting the Font to "Courier" and size to 12 point makes the terminal easily read.

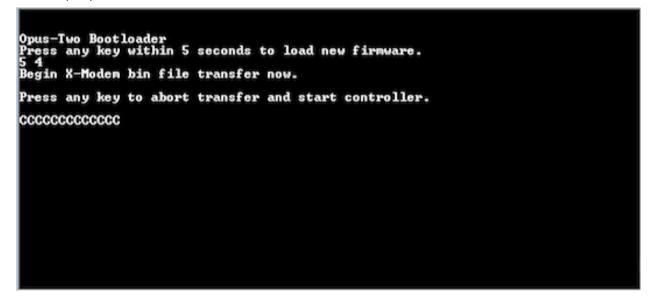


# UPLOADING A CONFIGURATION FILE

If you are at the home screen as shown above, hold down Control and Shift while typing the letter "Q" and the controller will immediately reset. You will see a message appear announcing the startup delay:

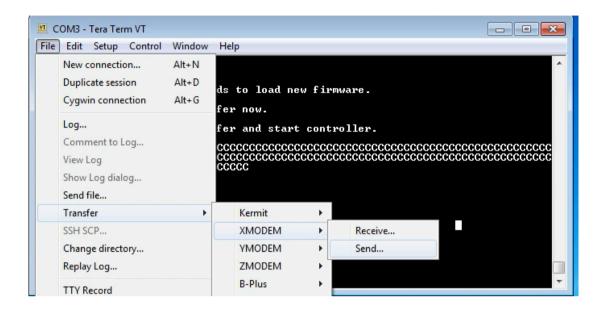
😐 C(	омз -	Tera Ter	m VT									×	
File	Edit	Setup	Control	Window	Help								
												-	•
Opus	-Two	Boot]	loader	5 secor	de to	load	Dell	firm	1320				
5 4	a an	y Key		3 30001	143 00	Tour	now		ALL G S				-

Press any key to enter file transfer mode:





While in the transfer screen, navigate in Tera Term to send an XMODEM file as shown:



The file will upload and the new configuration will automatically run.

	OM3 - Tera Term VT				• X
File	Edit Setup Cont	rol Window	Help		
					<u>í</u>
	Tera Term: XMOD	EM Send	-×		
Opus Pres Begi Pres CC	Bytes trans	×N ferred:	Console_2.t 40DEM (CRC) 338 43264 09 (4.50KB/s) 22.5%	# firmware. controller.	