i4M

Seeder V2

Programming Instructions

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Opening Controller Enclosure

Open the Seeder V2 enclosure as shown below.



Position tool so that the screws capture both header bushings



- Alternately tighten each screw evenly until tool releases the header from the enclosure,
- Both side latches must be unlocked (audible snaps) to release the header,
- Pull tool straight out to remove the header/PCB from the enclosure.

Programming ESP32

Connections

1. On ESP32 programmer, install and remove jumpers as necessary according to the diagram below.



2. Connect ESP32 programmer to the Seeder V2 controller using the edge connector in accordance with the wiring diagram below. Connect the programmer to a computer via USB.



3. Connect Seeder V2 controller to power supply. Turn on power supply.

Software

1. Install ESP Download Tool. Available for download at <u>https://www.espressif.com/en/support/download/other-tools</u> under "Flash Download Tools".

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	Q Search keywords	Found 3 results								
	Product ESP32-S3	Flash Download Tools		Expand	all +	Jownload	selected			
	ESP32-S2	Title		Platform	Version	Release Date 👻	Download			
	ESP32-C3	+ Flash Download Too	ls	Windows PC	V3.9.2	2021.11.10	₹			
ESP8266	Certification and Test									
	Evaluation Kit	Title		Platform	Version	Release Date 🔻	Download			
		+ ESP RF Test Tool and	id Test Guide	ZIP	V2.8	2021.11.10	⇒			1
		+ ESP8266 & ESP32 \	WFA Certification and Test Gui	de Windows PC	V1.1	2020.08.05	⊥			
						لع Download	selected			

2. Run ESP Download Tool. Select ChipType ESP32 and click OK.

	TOOL M	—		\times
ChipType		WorkMe	ode	
ESP32	\sim	develo	р	~
	ОК			

3. Browse and select "target.bin".



- 4. Set flash location to "0x0".
- 5. Tick box on the left hand side.
- 6. Set SPI SPEED to 40MHz.
- 7. Set SPI MODE to DIO.
- 8. Set FLASH SIZE to 128Mbit.
- 9. Set correct com port. Select it in the dropdown, don't type it in. Programmer has two com ports. Select the larger com port number for programming. Set BAUD to 460800.

- 10. Click START. When finished click STOP.
- 11. On programmer hold RST button for 2 seconds. Release and Wi-Fi module will start.



Programming PIC32

Connections

1. Connect MPLAB SNAP programmer to Seeder V2 controller using the edge connector in accordance with the wiring diagram below. Connect the programmer to a computer via USB.



2. Connect Seeder V2 controller to power supply. Turn on power supply.

Software

1. Download MPLAB X IDE installer. Available for download at <u>https://www.microchip.com/en-us/tools-resources/develop/mplab-x-ide#tabs</u>.

MPLAB® X IDE Microch	nip Techri × +				~ - a ×
\leftrightarrow \rightarrow C \triangleq micro	ochip.com/en-us/tools-resources/develop/	mplab-x-ide#tabs		ස්	🖈 🚱 🖬 🖨 🔲 💿 🗄
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	Tools and Resources / Develop /	MPLAB® X IDE			
	Downloads and Documentation	Ecosystem			
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	MPLAB X IDE v6.00				
	MPLAB X IDE only supports comput	ers with processors designed with the Intel $^{\textcircled{\sc e}}$ 6	54 architecture.		
	Title		Date	Download	
	MPLAB X IDE Windows	📩 🏥 e27cd8ed 3cc6	03 Jan 2022	Download	
	MPLAB X IDE Linux	📩 🎒 ec791eaf e76a	03 Jan 2022	Download	
	MPLAB X IDE OSX	📩 🏥 aaebb401 edd3	03 Jan 2022	Download	
	MPLAB X IDE Release Notes		09 Feb 2022	Download	
	Go to Downloads Archive				
	Develop Prototypes O	uickly With Our Powerful, Eas	v-to-Use Ecosystem		

2. Run MPLAB X IDE installer.



3. Accept license agreement.

U Setup					×
License Agreement				1	
Please read the following License Agree installation.	ment. You must accept the to	erms of this agreement befo	ere continuing wit	th the	
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NON-EXCLUSIVE SOFTWARE LICENSE	AGREEMENT FOR MPLAB®	IDE SOFTWARE			
This Nonexclusive Software Lice heirs, successors and assigns corporation, with a principal p 85224-6199, and its subsidiary, "Microchip") for the accompany: software, and any updates there documentation, including images ("Documentation").	nse Agreement ("Agreement ("Agreement") "Licensee") and Micro- blace of business at 2: Microchip Technology ng Microchip software to (collectively, the and any other graphic	ment") is a contract ship Technology Incor 355 W. Chandler Blvd. (Barbados) II Incorp including, but not 1 "Software"), and acc c resources provided	between you, porated, a De , Chandler, A orated (colle imited to, MF ompanying by Microchip	your elaware AZ ectivel PLAB ID	Y, E
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Do you accept this license? O I do n	ot the agreement ot accept the agreement				
InstallBuilder					
		< Back	Next >	Ca	ncel

4. Select installation options.

U Setup									_		×
Installation Options											
Installation Directory:	C:\Program	n Files\Microc	hip\MPLA	BX\v6.00			٣٩				
Proxy Settings:											
O No Proxy											
Use System Proxy Setti	ings										
The MPLAB team appreciat filenames, project names, o l consent to allow the understanding our use	tes your help or fragments collection of ers requireme	to improve th of user's sourc anonymous in ents and the pr	e MPLAB X ce code. nformation rioritization	(products about m	. Microch y usage of improver	ip will no MPLAB nents.	t collec	t user c ts to ass	redenti sist in b	ials, pai oetter	ths,
I would like to enable tools I use to MyMicro use in MPLAB X and u	Product Chai ochip profile. Inderstand th	nges Notices t l agree to rec at l can chang	hrough MP eiving addi Je my prefe	PLAB X. Th tional em rences at	ails will ena ails on pro any time t	ble MPL oduct cha hrough r	AB X to nges th nyMicr	share d hat relat ochip a	lata on e to the ccount	produ e produ	ct and ucts l
InstallBuilder											
						< Ba	ck	Nex	t>	Ca	ancel

5. Select applications MPLAB IPE and 32 bit MCUs.

U Setup		_	
Select Applications			MPLAB X IDE
Choose which applications you want to install:			
MPLAB X IDE (Integrated Development Environment)			
MPLAB IPE (Integrated Programming Environment)			
Choose Microchip device support you want installed: 8 bit MCUs (2.2GB)			
16 bit MCUs (1.7GB)			
32 bit MCUs (3.06B) Other MCUs (SERIALEE, HCSxxxx) (4.9MB)			
InstallBuilder			
	< Back	Next >	Cancel

6. Install

U Setup		_		×
Ready to Install				MPLAB X IDE
Setup is now ready to begin installing MPLAB X IPE v6.00 on your computer.				
InstallBuilder				
	< Back	Next	>	Cancel

7. Once installation is complete, open MPLAB IPE.



8. Under Family dropdown menu, select "32-bit MCUs (PIC32)".

9. Under Device dropdown menu, select appropriate device model. This will be of the form PIC32MZ1024*xxx*064, where *xxx* are three uppercase letters. These letters can be found on the MCU1 section of the Seeder V2 controller PCB, as shown in the pictures below. These images depict a controller with device model PIC32MZ1024**EFE**064. Not all controllers use the same device model, so each one will need to be inspected. Once selected, click Apply.





- 10. Under Tool dropdown menu, select MPLAB SNAP programmer and click Connect.
- 11. Next to Hex File, click Browse and locate the appropriate hex file. There are different hex files for each device model. For example, when programming a PIC32MZ1024**EFE**064, ensure that the EFE hex file is selected.

- 12. Click Program.
- 13. If successful, the Output IPE terminal should display "Programming complete".
- 14. Remove the edge connector from the controller. The controller should boot up. The status LED on the controller will change from off to solid red to solid green.

Performing OTA Updates

- 1. Download, install and open i4M Machine Update app.
- 2. Tap Updates.



3. Tap Download.

ሰ Home	Updates stored on this tablet
🗘 Download	
🕗 Checks	•
(i) Help	
i4M	

4. Tap Seeder V2.

Sack	Updates in the cloud
(i) Help	Spreader V2
	Depth Command
	Seeder V2
	Tracer GPS
	Serial RS232
	Tacho V2
i4M	

5. Tap update package according to CPU model *e.g.* SEEDERV2-6M-EFE.zip for model EFE CPU.

Sack	Updates in the cloud
(i) Help	SEEDERV2-6M-EFE.zip
	SEEDERV2-6M-EFG.zip
i4M	

6. Tap Download.

Sack	Updates in the cloud
(j) Help	SEEDERV2-6M-EFE.zip
	SEEDERV2-6M-EFG.zip
i4M	

7. When download is complete, tap Back.

🕁 Back	Updates in the cloud	
Help	SEEDERV2-6M-EFE.zip	
	SEEDERV2-6M-EFG.zip	
i4M		

8. Tap update package according to CPU model *e.g.* SEEDERV2-6M-EFE.zip for model EFE CPU.

命	Home	Updates stored on this tablet		
¢	Download	SEEDERV2-6M-EFE.zip		
\oslash	Checks			
(i)	Help			
	i4M			

9. Tap Options.

命	Home	Updates stored on this tablet		
¢	Download	SEEDERV2-6M-EFE.zip		
\oslash	Checks	E Options		
(j	Help			
	i4M			

10. Tap Update the machine.

ሰ Home	ablet
🗘 Download 🧃	Update the machine
🖉 Checks	Delete this update
(i) Help	
i4M	

11. Tap Check Wifi is connected.

☆ Home	blet
← Download	Check Wifi is connected
🖉 Checks	⊖ Start the update
(i) Help	
i4M	

12. Connect to MACHINE WIFI and tap Done.



13. Tap Start the update.

₩ Home	olet
← Download	Check Wifi is connected
⊘ Checks	Θ Start the update
(i) Help	
i4M	

14. Wait for controller to reboot.



15. Tap Check Wifi is connected.

û Home	date
	Checking software Rebooting in update mode
i4M	

16. Connect to MACHINE CPU UPDATE and tap Done.



17. Tap Send the CPU update.

ሰ Home	date
	Check Wifi is connected
	⊖ Send the CPU update
	Checking software
	Rebooting in update mode
i4M	

18. Wait for controller to reboot.



19. Tap Check Wifi is connected.

ሰ Home	ntrol functions)	
	Check Wifi is connected	
	Send the WIFI update	
	Updating CPU software	
	Rebooting machine controller	
i4M		

20. Connect to MACHINE WIFI UPDATE and tap Done.



21. Tap Send the WIFI update.

☆ Home	ntrol functions)
	Check Wifi is connected
	⊖ Send the WIFI update
	Updating CPU software
	Rebooting machine controller
i4M	

22. Wait for controller to reboot.

ሰ Home	Updating the WIFI software (Networking functions)
	Updating file system
	Updating firmware
	Rebooting machine controller
i4M	

23. Tap Done.

企 Home	Update successful		unctions)
			Done
		Updating firmware	
		Rebooting machine	e controller
i4M		0	

24. If an update package changes factory settings (*e.g.* changing default machine width from 12m to 6m) the controller will need to perform a factory reset for the new factory settings to take effect. To do this, open the OmniaE-Seed app, navigate to Machine > Settings > Device and tap Reset All. When the controller restarts, it will be populated with the updated factory default values.

3:11 pm Thu 16 Jun	🕇 11% 🔲
Home	Machine
Controller Configuration	Device
Controller	Device Settings
Controller	Reset All Reset all settings, products and calibrations
	WiFi Network
Product	
Calibration >	Each machine must use a different network If GPS installed, check it is connected before changing networks
Settings	Current WiFi network name: MACHINE WIFI 1
	Select new WiFi network name
Hopper	
Hectares	
Machine	
Device	
Checks	
System >	
Machine	