**Configuration Procedure** 

## ESP302-J

### ESP Motion Controller Configuration Procedure for Joystick Accessory



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**Configuration Procedure** 

#### **Revision history**

Revision	Revision date	Description of change	Prepared by	Approved by
Rev0	June. 2024	Initial document	G. WIERNASZ	P. QUENON

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Original instructions.

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## **1** System Requirements for Uploading Configuration Files

ESP302 web interface is compatible with Windows 7 and above.

### 2 Newport Corp. World Wide Web Server

You can access a variety of Newport Corporation information sources via the Newport Web Server, http://www.newport.com.

## **3 Technical Support**

Please review the User's Manual first if you are experiencing difficulties with the product. The following Technical Support information is listed below if you still need help.

North America & Asia Newport Corporation 1791 Deere Ave. Irvine, CA 92606, USA

Sales Tel.: +1 (949)-863-3144 e-mail: sales@newport.com

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Service & Returns

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## 4 How To Configure ESP Controllers For Joystick Accessory Operation

#### 4.1 OVERVIEW

Individual configuration files have to be uploaded to the controller using the ESP302 web interface.

The objective is to upload the joystick configuration files (.esp) which contain commands that will assign designated motion axes to joystick Digital Input/Output (DIO) bits in the motion controller.

The joystick configuration files are available in the Newport website (https://www.newport.com) searching by product's model number.

Newport's ESP controller accepts ASCII character commands to facilitate individual axis configuration. Please refer to the ESP controller User's Manuals for specific usage of each command.

## **Note** ONCE THE JOYSTICK IS ENABLED, ASSIGNED AXES AND DIGITAL I/O WILL NOT BE AVAILABLE FOR GENERAL USE (e.g., INDEPENDENT MOVES)

#### 4.2 Connection

Connect the joystick's Sub-D connector to the GPIO port of the ESP302.



#### 4.3 Login

Once connected to the ESP302 controller, power up the controller and wait for complete initialization.

- 1. Open an Internet browser and connect to http://192.168.254.254 (or the appropriate IP).
- 2. Enter:
  - Username
  - Password
  - Role: select Administrator

#### Note

Administrator access is required to configure the joystick.

3. Click on **SIGN IN** button to login.

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	CESP302 Motion Controller / Driver   Device: ESP-9380   Username: Administrator   Dassword: Image:	10	Har		- Aller

### 4.4 UPLOADING THE CONFIGURATION FILES

• In the Files / Program files section click on UPLOAD FILE button.

ESP302 - Program files × +		$\sim$	- 0	$\times$
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System Controller Files Front panel Terminal Documentation			[ Administrate	r logout
Program files Configuration files Log files				
Program files	Text editor	Û	Z X	
1.8 Gb free / 1.9 Gb total Display as listing DOWNLOAD AS ZIP				
CYCLE1.esp CYCLE2.esp My.esp				
New history New history 2021-09-24.esp 2021-01-19.esp 2024-03-06.esp				
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ESP302 Motion Controller / Driver - ESP-9380		© 2021 N	swport Corporation. All rig	phis reserved.

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• Select the previously downloaded configuration files from https://www.newport.com and click on **Open** button (must be repeated for each file).

C Open				$\times$
$\leftarrow ~~ \rightarrow ~~ \uparrow$ 📜 $\rightarrow$ This PC $\rightarrow$ Local Disk (C:) $\rightarrow$ ESP302-J_Configuration_Files	~ Ŭ	Search ESP302-J_Co	nfiguratio	<i>م</i>
Organize  New folder			•	?
JoystickON.esp				
File name: JoystickON.esp	~	All files (*.*)		$\sim$
	Upload from mobile	Open	Cancel	

• Wait for complete Upload of the file.

ration mes Log mes				Text editor
	RUN PROGRAM	KILL PROGRAMS		
Display as listing	DOWNLOAD AS ZIP	UPLOAD FILE		
	Upload Please wait while «	<b>d in progress</b> JoystickON.esp » is u	iploaded.	
CYCLE2.esp				
		_	_	
New history New his 2021-10-19.esp 2024-03-	story 06.esp			

The controller now contains the programs that will enable / disable joystick operation and assign motion axes to joystick Digital Input/Output (DIO) bits channels.

The programs are stored in non-volatile flash memory inside the controller, therefore, it is no longer necessary to repeat this process.

Once stored, the programs can only be erased.



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#### 4.5 HOW TO ENABLE AND DISABLE THE JOYSTICK

#### 4.5.1 Overview

To activate or deactivate the joystick, simply run the activation (JoystickON.esp) or deactivation (JoystickOFF.esp) programs.

Three activation / deactivation methods are available:

- Using the Files/Program files menu of the web interface.
- Using the **Terminal** mode of the web interface.
- Using the LCD front panel of the ESP302 controller.

#### 4.5.2 Program Files menu

In the Files / Program files window:

- 1. Select the program to run.
- 2. Click the RUN PROGRAM button.







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#### 4.5.3 Terminal mode

#### In the **Terminal** window:

- Select the EX command in the Command list.
- Click the SELECT PROGRAM FILE button.

System Con	troller Fil	es	Front panel	Terminal	Documentation				[ Admini	strato
Command lis	st		ex	~	Command: EX					
AP abort a µ BG assigns t EO sets the EO? gets the	rogram execution he execution of a s power-on autorun p power-on autorun p	tored prog program r program f	gram to a digital I/O number and execution file and execution cou	bit n cou nt	executes a program a given numbe Arguments: int numberOfTimes	er of times	5			
EX executes EX? get list o MZ moves a	a program a given f current running pi n axis to its nearest	rogram ta index, po	or times osks ositive or negative		1 char progFileName[250] Enter parameter value char taskName[20] Enter parameter value		SELECT PROGRAM	4 FILE		
				~	CANCEL HELP OK					

• Select the program to be executed in the drop-down list and click the **OK** button.

-	SP302 - Terminal	× +							$\sim$	_		×
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Syster	m Controller	Files	Front panel	Terminal	Documenta	tion				[ Admini	strator l	
	AP abort all program exe abort a program exe abort a program exe assigns the execution os ests the power-on au CO gets the power-on au X executes a program X executes a program X get list of current rur MZ moves an axis to its	ecution sution o fa stored p torun program o given numb ning program nearest index	ex program to a d m number and m file and exe er of times n tasks t, positive or no	Select Please choose an i CYCLE1.esp CYCLE2.esp JaystickOFE es JaystickOFE es Jay	item in list tem from the list bel p 021-09-24.esp 021-10-19.esp 024-03-06.esp 024 03-06.esp	ow.	number of times	SELECT PRO	IGRAM FILE	l		
ESP302 M	otion Controller / Driver - I	ESP-9380							⊜ 2021 №	lewport Corporatio	n. All rights	reserved.



• Once the program selected click the **OK** button in the Terminal window.

	$\checkmark$	152.100.25	7.234		(Administra
tem	Controller	Files	Front panel	Terminal	Documentation
Comr	nand list		ex		Command: EX
AP AP BG	abort all program exe abort a program exe assigns the execution	ecution cution n of a stored p	program to a digital I/O	bit	executes a program a given number of times
EO EO? EX	sets the power-on au gets the power-on au executes a program	itorun prograi itorun prograi a given numb	m number and executio m file and execution cou er of times	n cou unt	Arguments: int numberOfTimes
EX? MZ	get list of current rur moves an axis to its	nning program nearest index	n tasks , positive or negative		char progFileName[250] "JoystickON.esp" SELECT PROGRAM FILE
					char taskName[20] Enter parameter value
				~	CANCEL

• Click the **EXECUTE** button to execute the selected program.

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System Cor	troller Files	Front panel	Terminal	Documentation			[ Administ	rator lo	gout ]
Command li AP abort al AP abort a BG assigns EO sets the EO? gets the EX? execute EX? get list MZ moves a	st program execution program execution the execution of a stored p power-on autorun program power-on autorun program power-on autorun program of current running program n axis to its nearest index,	ex rogram to a digital I/O n number and execution n file and execution cou er of times tasks positive or negative	bit n cou int	Command API to execute EX1,"JoystickON.esp", Received message		EXECUTE		Ð	^
ESP302 Motion Control	er / Driver - ESP-9380	_	×			© 2021 Newpo	et Corporation.	All rights r	v f



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• The **Received message** box displays "0" which means "no error" and a comment "*The command was carried out successfully*".

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Syste	m Controller	Files	Front panel	Terminal	Documentation			[ Admini	strator I	ogout ]
c	Command list AP abort all program exec AP abort a program exec BG assigns the execution EO sets the power-on au EO? gets the power-on au EX? get list of current run MZ moves an axis to its i	cution ution of a stored p torun program given numben ning program ning program eaerest index,	ex program to a digital I/O in number and execution in file and execution cou er of times tasks positive or negative	bit n cou unt	Command API to execute EX1,"JoystickON.esp", Received message 0, 10,	fully.	EXECUTE		<u>P</u>	~
ESP302 N	lotion Controller / Driver - E	SP-9380					6 2021 Nev	port Corporatio	n. All rights	reserved.

#### 4.5.4 LCD Front panel

In the ESP302 LCD menu:

- 1. Select the **Program** menu.
- 2. Select the Joystick program to run.
- **3.** Execute the Joystick program clicking the Run Program button.

	Thu June 13 2024 14:46		IP: 10.23.48.105
Home	CYCLE1.esp	BO0	
Move	CYCLE2.esp JoystickOFF.esp	1BP11,10, 2BP9,8,12 3BP14,13,	12
Gpio	JoystickON.esp	2 1BQ1;2B0 1MO;2M0	21;3BQ1 );3MO
Status	My.esp New history 2		
Setting	New history 2		
Program	New history 2 P0.txt		
About	P1.txt		
	3 Run Progr	am	Stop All programs (0 running)



#### 4.6 HOW TO AUTOMATICALLY ENABLE JOYSTICK ON START-UP

The controller has the ability to automatically run on power-up any stored program in memory after a system reset or power-up condition using the **BootProgramFile** parameter in the **System.ini** configuration file.

In the Files / Configuration files window,

• Select the system.ini file.

ESP302 - Configu	uration files $\times$ +						$\sim$		- 0	×
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System Contro	ller Files	Front panel	Terminal	Document	ation			[/	Administra	ator logout
Program files Configu	ration files Log f	iles								
Configuration		UPLOAD FILE UP	DATE STAGE DB	LOAD CONFIG	⊣ 🖬 🖌	system.ini	1	<u>ش</u> و	2 ×	
files		hisplay as listing	FACTORY SETTIN	SAVE CONFIG	[GENERAL] BootProgramFile = BootProgramExecution StageAutoConfig = D: LockConfig = Disable	nNumber = 1 isabled ; Enabled ed ; Enabled ;				
				^						
Config	STAGE1.ini	STAGE2.ini								
STAGE3.ini	StageDataBase.txt	system.ini								
_				~						
ESP302 Motion Controller / D	river - ESP-9380							1 Newport	Corporation A	I rights reserved

By default the BootProgramFile of the system.ini file is empty :

		syst	em.ini	Ŵ	2	×
	[GENERAL]					
ſ	BootProgramFile	=				
1	BootProgramExecu	cionivaniber	= 1			
	StageAutoConfig	= Disabled	; Enabled			
	LockConfig = Dis	abled ; Ena	abled ;			

To activate automatically the joystick when powering up the controller:

- 1. Set the BootProgramFile parameter to JoystickON.esp.
- 2. Save the modified system.ini.



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• Click the **RELOAD** button to take changes into account.

ESP302 - Configu	ration files $\times$ +						$\sim$	-		$\times$
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System Control	ller Files	Front panel Ter	minal	Document	ation			[ Admin	istrator I	ogout
Program files Configu	▼ ration files Log fil	es								
Configuration files	u	PLOAD FILE UPDATE ST	AGE DB	LOAD CONFIG	GENERAL]	system.ini	Ŵ		×	
1.8 Gb free / 1.9 Gb total	Di:	splay as listing ow "useless" files	DRY SETTIN	GSRELOAD	BootProgramFile = BootProgramExecuti StageAutoConfig = LockConfig = Disab	JoystickON.esp onNumber = 1 Disabled ; Enabled bled ; Enabled ;				
Config	STAGE1.ini	STAGE2.ini	STAGE	3.ini						
StageDataBase.txt	system.ini	UserStageDataBase.txt								
ESP302 Motion Controller / D	river - ESP-9380						© 2021 N	ewport Corporati	on. All rights	reserved.

• Click on the **RESTART** button to apply changes.

ESP302 - Configuration files × +				~ -	
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System Controller Files Fi	ront panel Terminal	Documentation		[ Admini:	strator logout
Program files Configuration files Log files					
Configuration UPL	OAD FILE UPDATE STAGE DB		system.ini	Ê 2	×
files  I.8 Gb free / 1.9 Gb total  Dist Sho	Reloa	save config [GENERAL]	<pre>'stickON.esp 'umber = 1 'abled ; Enabled '; Enabled ;</pre>		
Config STAGE1.ini	or restart the application to re Please m	alcoal the latest configuration changes. lake your choice.			
STAGE3.ini StageDataBase.txt	system.ini				
		~			
ESP302 Motion Controller / Driver - ESP-9380					



• Wait for complete reinitialization of the controller.

ESP302 - Configuration fil	es × +					~ -	• ×
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System Controller	Files	Front panel	Terminal	Documentat	ion	[ Administra	ator logout ]
Program files Configuration	on files Log f	iles					
Configuration	UPLOAD F	ILE UPDATE ST	AGE DB LOAD	CONFIG	Text editor	1 Z ×	î
files 1.8 Gb free / 1.9 Gb total	Dis     Sh	Ple	Restart in p The software will ase wait while the c	now restart.			
Config	STAGE1.ini	STAGE2.ii	ni		_		
ESP302 Motion Controller / Driver - ES	SP-9380	, .				© 2021 Newport Corporation	. All rights reserved.

Therefore, the controller runs the JOYSTICK ON program on power-up or system reset conditions then the joystick will effectively be turned-ON on those conditions.

However, it will still be necessary to run the **JoystickOFF.esp** program to **disable** the joystick feature.

## **Note** ONCE THE JOYSTICK IS ENABLED, ASSIGNED AXES AND DIGITAL I/O WILL NOT BE AVAILABLE FOR GENERAL USE (e.g., INDEPENDENT MOVES)

Note

PLEASE REFER THE ESP CONTROLLER USER'S MANUAL FOR DETAILED EXPLANATION OF COMMANDS AND PROPER USAGE.

#### 4.7 HOW TO CHANGE JOYSTICK MOTION DIRECTION

In some instances it may be desirable to reverse the positioner displacement with respect to the joystick movement.

This can be accomplished by changing the Digital Input/Output (DIO) bit assignment using BP command in the JoystickON.esp program text file.

To reverse axis displacement with respect to the pushbuttons, simply re-assign the DIO accordingly.

	Axis	Command	Direction
	X ⇔ Y ⇔ Z ⇔	BO0         JoystickON.esp           1BP11,10,12         2BF9,8,12           3BP14,13,12         1BQ1;2BQ1;3BQ1           1MO;2MO;3MO	Y + i $Y - i$ $Y - i$ $X - X + i$ $Z - i$ $Z + Hi$ $Lo$
	X ⇔ Y ⇔ Z ⇔	BO0         JoystickON.esp           1BP10,11,12         2BF8,9,12           3BF13,14,12         1BQ1;2BQ1;3BQ1           1MO;2MO;3MO	$\begin{array}{c} Y - \downarrow \\ \downarrow \\ Y + \downarrow \\ \hline \\ X + \\ Z + \\ \hline \\ Z + \\ \hline \\ Z - \\ Z - \\ H \\ \hline \\ L \\ L$
No	ote	In the example above, all axes are inverted, but it is poor of each axis separately.	ossible to configure the direction



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#### 4.8 HOW TO SET JOYSTICK HIGH/LOW SPEEDS

The ESP302-J joystick features a programmable **Hi**gh and **Lo**w travel speed selector.



High and low travel speeds can be set for each axis, using **JH** command for High speed and **JW** command for Low speed (refer to ESP302 Programmer's Manual for detailed description of the commands).

By default, the high speed is set to 10 units/second and the low speed to 1 unit/second. JH and JW parameters values can be displayed and edited using the LCD Front Panel of the ESP302 controller.

	Thu June 20 2024	4 14:38	IP: none		
Home	Motion	Display	Ethernet	Config	
Move	Velocity:	Axis 1	Axis	2	Axis 3
Gpio	ОН	10	10	10	
Status	JW	10	10	10	
Setting	VA	10 Avis 1	10 Axis	.2	Axis 3
Program	Acceleration	40	40	40	
About	Rea	id parameters		Apply parame	eters

Three configuration methods to set speeds values are available:

- Using the Files/Program files menu of the web interface.
- Using the Terminal mode of the web interface.
- Using the LCD front panel of the ESP302 controller.



#### 4.8.1 Program files menu

#### In the Files / Program files window:

Select the JoystickON.esp program. 1.



Modify the JoystickON.esp program by adding JH and JW commands for each axis to set travel speeds to desired 2. values.

In the following example high speed is set to 10 units/second and low speed to 0.01 unit/second, for all axis.



**Configuration Procedure** 

#### 4.8.2 Terminal mode

Speed values of the high and low travel speeds can be modified during operation axis by axis using the Terminal mode,

**Note** Changes to speed values made with this method are temporary, they are not saved and will be replaced by the values defined in the JoystickON.esp program the next time the ESP302 controller is restarted.

To change high speed value:

- Select Terminal mode in the web interface.
- Select JH command.
- Enter axis number and new high speed value in the Arguments section.

stem Controller	Files Fro	nt panel Terr	ninal Documentation			1.000	
Command list	jh						
JH sets the jog high s	peed value for an axis	<b>^</b>	Command: JH				
JH? gets the jog high s	peed value for an axis		sets the iog high speed value for an axis				
			(Annune and an				
			Arguments:				
			1				
			float highSpeedValue				
			10	J			
			CANCEL				

- Click **OK** button to validate new values.
- Click **EXECUTE** button to set new high speed value.

C A Non sécurisé   192.168	5254.254	Terminal	Desumentation	Q	A <sup>N</sup>	Φ	<b>£</b> ≡ [Adm	inistrator	8 logou
ystem Controller	Files Front panel	Ierminal ▲	Documentation						
Command list jh Comm		Command							
JH sets the jog high s	peed value for an axis	<b>~</b>	1JH10		Ð	ECUTE			
JH? gets the jog high s	speed value for an axis								
			Received message						ï
			Received message Ø,						]
			Received message						
			Received message Ø,						
			Received message						
			Received message						
			Received message						
			Received message						

- The **Received message** box displays "0" which means "no error" and a comment "*The command was carried out successfully*".
- Repeat this operation for all axis as needed.

Proceed in the same way to modify the low value of the travel speed using the **JW** command instead of the **JH** command.

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#### 4.8.3 LCD Front Panel

Speed values of the high and low travel speeds can be modified during operation axis by axis using the **Setting** menu of the ESP302 controller.

**Note** Changes to speed values made with this method are temporary, they are not saved and will be replaced by the values defined in the JoystickON.esp program the next time the ESP302 controller is restarted.

To change high and low speed values using LCD Front Panel:

- Select the **Setting** menu and **Motion** tab of the sensitive LCD display of the ESP302.
- Select the value to be modified.



Enter new value using displayed keyboard.
 New travel speed values are displayed in red until applied.
 In the present example JW values are defined to 0.5 unit/second instead of 1 unit/second.



• When modifications done, select 1 to return to setting display.



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• Select Apply parameters to set new parameters. New travel speed values are applied and displayed in green.

	Fri June 21 2024 1	14:47	IP: none		
Home	Motion	Display	Ethernet	Config	
Move	Velocity:	Axis 1	Axis	2	Axis 3
Gpio	ОН	10	10	10	
Statuc	JW	0.5	0.5	0.5	
Jialus	JH	10	10	10	
Setting	VA	10	10	10	
	Acceleration:	Axis 1	Axis	2	Axis 3
Program	AC	40	40	40	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
About	Rea	d parameters		Apply param	leters



## **Service Form**

Configuration Procedure

#### Your Local Representative

Т	el.	:
F	ах	:

Name:	Return authorization #:
Componit	(Please obtain prior to return of item)
Address	Data:
	Date:
Country:	
P.O. Number:	
Medel#	Contial #:
	Senal #:
Description	
Description:	fin muchanna).
Reasons of return of goods (please list any speci	nc problems):

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