

ESP302

Friendly Motion Controller/Driver





User Interface Manual

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Original instructions.

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Friendly Motion Controller/Driver ESP 302 Controller

1.0 Introduction

1.1 Scope of the Manual

The ESP302 is an advanced stand-alone, easy to use, motion controller with up to 3 integrated motor drivers, outstanding powerful programming functionality.

It offers different operating modes through its user-friendly touchscreen front panel, command remote port, and web interface offering high-speed communication through 10/100/1000 Base-T Ethernet.

The ESP302 provides advanced trajectory and synchronization features to precisely control from the most basic to the most complex motion sequences. Multiple digital triggers provide users with additional data acquisition, synchronization and control features that can improve the most demanding motion applications.

The Enhanced System Performance (ESP) architecture consists of ESP-compatible controllers and stages. When used with ESP-compatible stages, the ESP302 plug-and-play concept significantly increases user friendliness and improves overall motion performance.

To maximize the value of the ESP302 Controller/Driver system, it is important that users become thoroughly familiar with available documentation.

The present manual describes:

- The controller **Front panel interface** (used in LOCAL mode)
- The controller **Website interface** (used in WEB INTERFACE mode).

1.2 Prerequisite

It is mandatory that **ESP302 Start-Up Manual** be thoroughly read and understood before going through these interfaces.

Particularly, for Web interface mode, a connection must be established between the computer and the controller either directly or through a network.

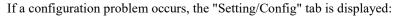
2.0 Front panel interface

This section provides a detailed explanation of the controller front panel menus and fonctions.

2.1 Start-up

Upon start-up, the controller begins booting and analyses the connected hardware. If new ESP compatible stages have been connected, configuration is automatically modified and the "Home" page is displayed. Example with 2 stages connected on axis 1 and axis 2:

	Mon May 20 2019 16:23 IP: none
Home	Axis 1 Power ON
Move	-9.555
Gpio	Axis 2 Power ON
Status	
Setting	Axis 3
Program	m NO STAGE
About	[NC]
	Kill all motors



Status	Motion	Display Eth	ernet Confi	ig		
Setting		Axis 1	Axis 2	Axis 3		
About	Stage Current config	UTS50CC UTS50CC	TRB6CC TRB6CC boot failed	NO STAGE UTS50CC		
	New config	UTS50CC	UTS50CC TRB6CC			
		apply new config	apply new config	apply new config		
	Reboot					

The "boot failed" mention appears on the faulty axis (Axis 2 in the example above).

• Note the faulty axis and connect another stage on it.

2.2 Home Menu

This page appears by default after power-up but it can be displayed from another page by pressing the "Home" button on the screen top left. Pressing the other buttons located below ("Move", "GPIO" ...) will change the display to the other available pages described further.

Home page displays for each axis its present status ([OFF] or [NC] if no stage).

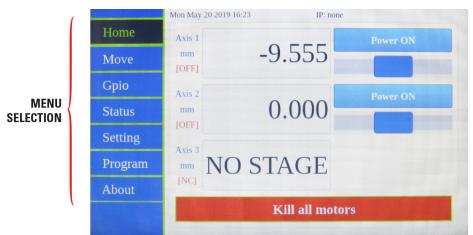
- First press "Power ON". The status changes to [ON] and the button to "Home".
- Press "Home". The stage starts moving to find its reference position. When done, the status changes to **[REF]** and the button to "Power OFF".
- If the homing sequence fails, the status turns back to **[OFF]** and the button to "Power ON".
- Do this for each present axis.

Jog slider buttons can then be pressed, maintained and shifted right or left like a joystick to manually move the stage. If slightly moved, the speed will be low and if moved totally, it will be high.

Each axis can be turned off by pressing "Power OFF" and turned on again by pressing "Power ON" without losing position information.

Pressing "Kill all motors" kills all axes. Position information is lost and axes must be homed again to be operated.

The axes current positions are normally displayed. It is possible to have a bigger display by swiping the display to the right with the finger (swipe to the left to return).



It is also possible to lock the screen to have a bigger display by using the LC command in remote mode. See ESP302 Programmer's Manual for details.

Screen locked with LC1:



Screen locked with LC2:

Mon May 20 2019 16:29 IP: none	Locked
Axis 1 mm [OFF]	0.000
Axis 2 mm [OFF]	0.000
Axis 3 mm [NC] NO S	STAGE

Note that current Date and HOST IP address are displayed on the top of all screens.

2.3 Move Menu

2.3.1 Absolute Tab

Absolute tab allows making absolute moves.

- Positions are displayed under the axis name.
- If not already done, press "Power ON" and then "Home" to initialize each axis.

	Mon May 2	0 2019 16:	31		IP: none	
Home	Abso	olute Relativ		ve	Cycle	
Move		Axi	s 1 [REF]		Axis 2 [REF]	Axis 3 [NC]
Gpio	Position	4.7560	ver OFF	-1.1	780 Power OFF	Power ON
Status	Velocity	40		20		Tomeron
Setting	Move #1					
Program		Go			Go	Go
About	Move #2				Go	Go

- Modify the axis velocity if necessary.
- Set "Move #1" and/or "Move #2" expected position.
- To set a value, press on the value area, a virtual keyboard appears.
- Type the desired number (erase with " \leftarrow ") and valid by pressing " \uparrow ".

	Mon May 2	0 2019 1	6:31		IP: no	ne		
Home		Ax	is 1 [REF]		Axis 2 [RE		Axi	s 3 [NC]
Move	Position	4.7560)	-1.1	780			
		Ρον		er OFF Power OFF		FF	Power ON	
Gpio	Velocity	40		20				
Status	Move #1	12.5						
Setting	+		7		8		9	+
Program	Tal)	4		5		6	-
About	exp		1		2		3	û

• Launch displacement by pressing the appropriate "Go" button.

2.3.2 Relative Tab

Relative tab allows making relative moves.

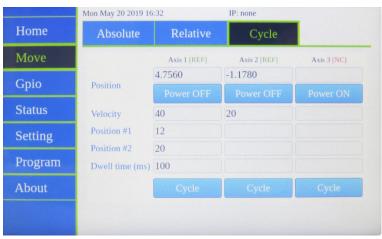
- Positions are displayed under the axis name.
- Set the desired velocity and displacement value.
- Press forward ">" or backward "<" button to execute the displacement step in the expected direction.

	Mon May 2	0 2019 16:	32		IP: none		
Home	Abso	solute Re		elative Cycle			
Move		Axis	1 (REF)	A	xis 2 [REF]	Axis 3	[NC]
Gpio	Position	4.7560		-1.1780			
Status	Velocity		er OFF	20	ower OFF	Powe	r ON
Setting	Move	3					
Program		<	>	<		<	>
About							

2.3.3 Cycle Tab

Cycle tab allows making continuous cycle moves between two positions.

- Positions are displayed under the axis name.
- Set the desired velocity, limit positions #1 and #2 and Dwell time (duration at each limit position).
- Press "Cycle" button to launch cycling. The button turns to "Stop".
- Press "Stop" to stop cycling.



2.4 GPIO Menu

This page allows controlling and monitoring the 16 digital I/Os (2 groups of 8).

- Tick GPIO1 or GPIO2 "OE" button if you want to set the group in output mode (green) instead of input (white).
- When set as output, each bit can be set to "1" (green) or reset to "0" (white).
- When set as input, each bit state is displayed ("1": green, "0": white).

Note that open inputs are reporting level "1" by default.



2.5 Status Menu

2.5.1 Errors Tab

This tab shows pending errors. Its content is erased after it is displayed.

Note that if they are unread errors, the "Status" menu button is blinking red/green until visiting this menu.

	Mon May 20 2019 16	:32	IP: none	
Home	Errors	Status	Log	
Move	Error list:			
Gpio	No error			
Status				
Setting				
Program				
About				

2.5.2 Status Tab

This tab displays axes hardware flag status (ZM, EOR- and EOR+), and if they are in motion, have a motor fault or a following error.

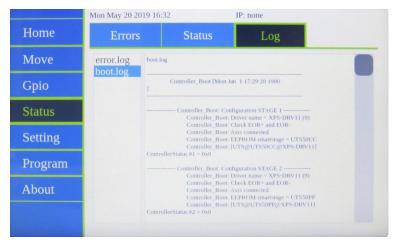
It also reports if at least one motor is ON, one program or one trajectory is executing.

	Mon May 20 2019	Mon May 20 2019 16:32 IP: none			
Home	Errors	Status	Log		
Move	Axe ZM	EOR- EOR+	In Motion Motor F	ault Following Error	
Gpio	1 2 3				
Status	Motor ON for at lea	ist one axis:			
Setting	At least one program At least one trajecto				
Program					
About					

2.5.3 Log Tab

This page displays the content of the firmware log files. The front panel is locked in this page in case of boot failure.

• Press error.log or boot.log to display the content of the file.



2.6 Setting Menu

2.6.1 Motion Tab

This tab allows setting motion parameters:

- OH (home search high speed)
- JW (jog low speed)
- JH (jog high speed)
- VA (velocity)
- AC (acceleration)

Modifying a value changes its color from green to red.

"Apply parameters" applies modified parameters to the stages (modified values in red turn to green).

"Read parameters" button displays the currently applied parameters (values in green) and erases red pending modifications.

	Mon May 20 2019	9 16:32	IP: none		
Home	Motion	Display	Ethernet	Config	
Move	Velocity:	Axis 1	Axis	2	Axis 3
Gpio	OH	20	10		
Status	WL JH	4 40	20		
Setting	VA	40 Axis 1	20 Axis		Axis 3
Program	Acceleration: AC	160	80		AXIS 5
About	Rea	d parameters		Apply parar	neters

2.6.2 Display Tab

Display page can be used to configure the number of digits for axes position display. "Apply parameters" applies modified parameters (modified values in red turn to green). "Read parameters" button displays the current parameters (values in green).

Moreover, date and time can be adjusted in the bottom of the screen. (Do not forget to press "Set" to apply your changes).

	Mon May 20 2019	9 16:33	IP: none					
Home	Motion	Display	Ethernet	Config				
Move	Position displa	-						
Gpio	Decimal digits	Axis 1	Ax 3	is 2	Axis 3			
Status	Read	l parameters		Save param	eters			
Setting	Touch Screen Brightness							
Program		Calibrate TouchScreen						
About	Date 2019	5	20	Set				
	Time 16	32		Set				

This tab also allows to set the brightness, or to calibrate the touchscreen as follows:

• After pressing the "Calibrate Touchscreen" button and the "yes" button to confirm, the controller reboots and the user must touch the 3 crosses poping up on the screen.

+	

Opun completion the touchscreen is calibrated.

2.6.3 Ethernet Tab

This page allows configuring the IP setting of the "Host" Ethernet port.

Static IP:

- Tick "static IP" if you want to set your own IP address parameters.
- Type your settings and press "Set". The new address is displayed on the top.

	Mon May 20 201	9 16:33	IP: none		
Home	Motion	Display	Ethernet	Config	
Move	Host				
Gpio	Туре	static IPdynamic IP			
Status	IP address				
Setting	Netmask Gateway				
Program	Remote				
About		: 192.168.254.25 255.255.255.0	4		
			Set		

Dynamic IP:

- Tick "dynamic IP" to let the network choose an address automatically.
- Press "Set". The button turns to "Cancel (Searching.)" while the network tries to negociate an IP address. Press again to stop searching.

Once an address is allocated, it is displayed on the top of the screen.

	Mon May 20 2019	0 16:33	IP: none	
Home	Motion	Display	Ethernet	Config
Move	Host			
Gpio	Туре	static IPdynamic IP		
Status	IP address			
Setting	Netmask Gateway			
Program	Remote			
About		: 192.168.254.25 255.255.255.0	i4	
			Set	

2.6.4 Config Tab

This page allows reviewing axes configuration.

It is automatically dispayed when the power-up automatic configuration fails (non ESP compatible stage or stage not recognized).

This tab can also be used to configure a Dummy stage for simulation on axes with no physical stage connected. In the example below, axis 3 reports "NO STAGE", Current config is "UTS50CC" (stage previously connected) and proposed New config is "DUMMY STAGE".

• Press "apply new config" and then "Reboot" if you want to simulate a stage on this axis.

	Mon May 20 2019	0 16:33	IP: nor	IP: none				
Home	Motion	Display	Ethernet	Config	3			
Move		Axis		Axis 2	Axis 3			
Gpio	Stage Current config	UTS50 UTS50	DCC U	JTS50PP JTS50PP	NO STAGE UTS50CC			
Status	New config	UTS50		apply	DUMMY_STAGE			
Setting		new co	onfig nev	w config	new config			
Program			Reboot					
About								

2.7 Program Menu

The page allows running programs stored in the controller. Writing a new program is not possible from front panel, it shall be done with a remote connection (with commands or sftp files upload).

- Select the program you want to execute and press "Run Program". Several programs can be launched simultaneously.
- Press "Stop All programs (X running)" to stop all programs execution. "X" reports the number of programs currently running.

	Mon May 20 2019 16:33		IP: none
Home	New history 2019	1MO	
Move		WT2000 1OR 1WS	
Gpio			
Status			
Setting			
Program			
About			
	Run Program		Stop All programs (1 running)

2.8 About Menu

This page gives information about software versions and connected stages.

	Mon May 20 2019 16:33 IP: none
Home	Controller version: ESP302 Snapshot version 20190517
Move	ESP302 FrontPanel version 0.2.6 ESP302 Host version 0.1.23 ESP302 MotionKernel version 0.02f 05/15/2019
Gpio	ESP302 Web version 2.1.0 Stage 1: UTS50CC
Status	SNB182709 UTS@UTS50CC@XPS-DRV11
Setting	Stage 2: UTS50PP SNB186222 UTS@UTS50PP@XPS-DRV11
Program	Stage 3: NO STAGE SN
About	UTS@UTS50CC@XPS-DRV11

3.0 Website interface

3.1 Interface Overview

ESP302 web interface is compatible with Windows 7 and above.

The ESP302 software tools provide users a convenient access to the most common features and functions of the ESP302 controller. All software tools are implemented as a web interface. The advantage of a web interface is that it is independent from the user's operating system and doesn't require any specific software on the host PC.

When connected to the controller, a log-in menu pops up. There are two options to login to the ESP302 controller: as "User" or as "Administrator". Users can log-in only with User rights. Administrators can log-in with User or with Administrator rights by selecting the respective Role in the login page. When logged-in with Administrator rights, you have an extended set of tools available.

The predefined user has the log-in name **Anonymous**, Password **Anonymous**. The predefined Administrator has the log-in name **Administrator**, Password **Administrator**. Both the log-in name and the password are case sensitive. Select **"Remember me"** to save the login credentials.

		בי <mark>א א פי ב</mark> ריים א א פי בי
🚾 ESP302 - Login 🛛 🗙 💟		
	< Newport [®]	
	ESP302 Motion Controller / Driver	
	Device: ESP-3004-1234	
	Administrator Password:	
	Role: O User Administrator	
		10
	SIGN IN	
0	Remember me	
	AVGS 3 AVGS 2 AV	
c	Danatore of Control Hood ESP302	2333 ·
		1932 -
		0
	ARE A REAL AREA AND AND AND AND AND AND AND AND AND AN	
	antimeter and a constraint of the second sec	

Once logged, the main tab is displayed across the top of the ESP302 Motion Controller/Driver main program window, and lists each primary interface option. Each interface option has its own pull-down menu that allows the user to select various options by clicking the mouse's left button.

Main menus (with User or Administrator Rights)

_	_		_		▼ C Rechercher	- □ <mark>×</mark> • ★ ☆ 0
System	Controller	Files	Front panel	Terminal	Documentation	[Administrator logout]

Sub-menus for CONTROLLER (with Administrator Rights)

← → m http://192.168.33.71/ ∞ ESP302 × _						▼ Ĉ	- ■ ×
<>>Newport [®]	System	Controller	Files	Front panel	Terminal	Documentation	[Administrator logout]
	IP management Users management			General information	Firmware upo	date	

Restricted set of sub-menus for CONTROLLER (with User Rights)

 Image: Sp302 - Terminal X Y						▼ Ø Rechercher	<mark>×</mark> □ - □ × 9 \$\ ★ ft - Q
<>>Newport [®]	System	Controller	Files	Front panel	Terminal	Documentation	[Anonymous logout]
	General infor	mation					

On the following pages, a brief description of each available tool is provided.

3.2 Controller – IP Management

To access this Web Tool, users must be logged in with Administrator rights. This screen allows HOST Ethernet plug IP address management and setting. Host name termination can also be modified.

<u>ATTENTION:</u> the IP address visible on the following screenshots probably does not correspond to the one of your device! See Start-Up Manual for further details.

	_	_	_	_	_	- C Rechercher	_ □ × - ○ ☆ ☆ ♡
	System	Controller	Files	Front panel	Terminal	Documentation	[Administrator logout]
	IP managemer	nt Users mana	agement	General information	Firmware upd	date	
• Static IP configuration)						
Static IP addr		. 168 . 33	. 71				
Netmask va		. 255 . 254	. 0				
Gateway IP addr	ess						
O Dynamic IP configurat	tion						
MAC addr	ess D4:36:3	9:2B:30:04					
Current IP addr	ess 192.168.	33.71					
Netmask va	lue 255.255.	254.0					
Current gateway	/ IP						
Remote IP addre	ess 192.168.	254.254					
Subnet ma	ask 255.255.	255.0					
Hostna	me ESP-300	4- 1234	(*)				
(*) Changes marked with an aste	erisk require a n	eboot to take effect					
	SAVE CONF	IGURATION	REBOOT				
ESP302 Motion Contro	oller / Driv	er - ESP-300	04-1234				© 2018 Newport Corporation. All rights reserved.

3.3 Controller – Users Management

This tool allows managing User accounts. There are two types of users: Administrators and Users. Administrators have configurations rights. Users have restricted rights to use the system.

The following steps are needed to create a new user:

• Click on "New Account" and the following window appears:

← → mttp://192.168.33.71/						- ¢	Rechercher		• م		■ × ★ ☆ [©]
 ESP302 - Users management × Newport* 	System Co	ntroller Files F	ront pane	el Ter	minal	Docur	nentatior	ı	[Ad	Iministra	ator logout]
User accounts mana	IP management	Users management Gen	eral informa	tion Firr	nware up	date					
Login	Role										
Administrator	Administrator (all r	Cr	eate a ne	ew accou	int						
Anonymous	Regular user						- 1				
Warning: it is highly advised to	o change user passwor	New password	max):	Technician1	O Admir	* nistrator CANCEL					
ESP302 Motion Contr	oller / Driver -	ESP-3004-1234						© 2011	3 Newport Corporation. A	l rights r	eserved.

- Type in a Login name (without blank), password, and role (User or Administrator).
- Click "OK" to add the new access account.

(c) (c) (c) (t) (t) (t) (t) (t) (t) (t) (t) (t) (t					* Ø Rechercher	- ■ ×
ESP302 - Users management ×	System Control	er Files Fi	ront panel	Terminal	Documentation	[Administrator logout]
	IP management Users	management Gen	eral information	Firmware upd	ate	
User accounts man	agement					
Login	Role					
Administrator	Administrator (all rights)	EDIT				
Anonymous	Regular user	EDIT DELETE				
Technician1	Regular user	EDIT DELETE				
NEW ACCOUNT						
Warning: it is highly advised i	to change user passwords from	factory settings.				
ESP302 Motion Cont	roller / Driver - ESP	-3004-1234				© 2018 Newport Corporation. All rights reserved.

3.4 Controller – General Information

This screen provides valuable information about the firmware and the hardware of the controller. It is an important screen for troubleshooting the controller. This screen also displays information about the IP configuration.

-> (->) (▼ Ĉ	- □ × - □ × - □ ×
ESP302 - General information ×			[Administrator logout
Newport®	System Controller Files Front p	oanel Terminal Documentation	
	▼ P management Users management General info	ormation Firmware update	
	Components version display		
Snapshot version	ESP302-N200002		
Operating system version	Linux 4.9.28-geed43d1050 #11 SMP PREEMPT Tue Feb 6 09	:13:25 CET 2018	
Web server version	ESP302 2.3.1 (20191113)		
Snapshot details	Refer to ESP302-InstallerHistory.pdf		
Stage database revision	StageDataBase V4.3.5 - ESP302 Controller		
Control boards			
Available driver slots	3		
	IP configuration		
Host name	ESP-3004-1234		
Host IP address	192.168.32.97 (DHCP)		
Host netmask	255.255.254.0		
Gateway IP address	192.168.33.253		
ESP302 Motion Contr	ller / Driver - ESP-3004-1234		© 2019 Newport Corporation. All rights reserved.

3.5 Controller – Firmware Update

Users can regularly update the controller with new firmware releases. Updating the firmware does overwrite the stageX.ini files if changes are required. Since configuration will be reset when upgrading the firmware, these files should be backed up prior to the firmware upgrade.

NOTE

Controller configuration files including stage1.ini, stage2.ini and stage3.ini files can be downloaded and saved from the "Config" folder of the controller using SFTP connection. See Start-Up Manual for more information.

Updating the ESP302 Firmware

- Download the firmware installer pack from the ESP302 webpage at www.newport.com.
- Connect to the ESP302 controller. For more information see Start-Up Manual.
- Login on to the ESP302 with Administrator rights.
- Go to Controller \rightarrow Firmware update.

A (a) (a) http://192.168.254.254/						- d	Rechercher		م	_	■ ×
🧉 ESP302 - Firmware update 🛛 🗙 🎦											
Newport®	System	Controller	Files Fro	ont panel	Terminal	Docu	mentation		L,	Administi	ator logout]
	IP managemer	t Users manage	ement Genera	al information	Firmware up	date					
⊟ Firmware install	log										
		update.log file	contents								
[2001-01-21.23:12:44] IE [2001-01-21.23:12:44] IE [2001-01-21.23:12:48] EF [2001-01-21.23:12:48] FF	cated snapsho cror: invalid	t: snapshot-ESP3 signature (file		tbz		< >					
Available firmwares											
258.5 Mb free / 399.2 Mb total											
Firmware name	Size	Uploaded		Action							
snapshot-ESP302-N10001	.tbz 140.1 Mb	2001-01-22 00:08:3	DOWNLOAD	INSTALL	DELETE						
UPLOAD FIRMWARE				RESTART CON	ITROLLER						
				_	_	_	_	_	_	_	_
ESP302 Motion Cont	oller / Driv	er - ESP-EBD	4					© 2018	Newport Corporation.	All rights	reserved.

• Click on UPLOAD FIRMWARE and select the installer pack file saved on the PC. The snapshot installer is uploaded, verified, and then appears in the firmware list:

Firmware name	Size	Uploaded	Action
snapshot-ESP302-N10001.tbz	140.1 Mb	2001-01-22 00:08:30	DOWNLOAD INSTALL DELETE
snapshot-20190517.tbz	140.1 Mb	2001-01-22 00:20:59	DOWNLOAD INSTALL DELETE
UPLOAD FIRMWARE			RESTART CONTROLLER
SP302 Motion Controlle	r / Drive	er - ESP-EBD4	

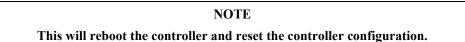
Click INSTALL in the snapshot line and the following Confirmation window appears:



- Select "Yes, I confirm that I want to install this upgrade". Resetting the controller IP address or user accounts is optional.
- Click INSTALL NOW. The controller reboots and the following window appears:

	A firmware update occured
	It appears that there are new entries in the firmware install logs.
You will be	taken to the firmware update page in order to review the update logs and ensure that everything went fin
	ок

• Click OK.



Updating the stages Database

• Scroll down the Firmware Update page.

The present StageDataBase version is displayed. It can be saved on your computer by clicking DOWNLOAD.

Stages database			
Database version	Size	Uploaded	Action
StageDataBase V4.3.5 - ESP302 Controller	442.5 Kb	2019-11-13 18:21:20	DOWNLOAD
UPLOAD DATABASE		RESTA	RT CONTROLLER
SP302 Motion Controller / Drive	- ESP-	-3004-1234	

- Click UPLOAD DATABASE and browse to select the new "database.txt" on your computer.
- Once uploaded, click RESTART CONTROLLER to apply changes.

3.6 System – Error file Display

The Error File Display is an important screen for troubleshooting the ESP302 controller. When the ESP302 encounters any error during booting, for instance due to an error in the configuration files or because the configuration is not compatible with the connected hardware, there are entries in the error log file that guides you to correct the error. If several consecutive boot sequences contain errors, they are all reported.

When no error is detected during the last system boot, this file becomes blank.

									-	•	x
		_	_	_		- ¢	Rechercher	_	+ م	† *	\$ "
Newport*	System	Controller	Files	Front panel	Terminal	Docum	nentation		[Admi	histrator	logout]
	▼ Error file disp	lay									
Error log file conter	nts										
		erro	r.log								
error.log						~ ~					
ESP302 Motion Cont	roller / Driv	/er - ESP-300	4-1234					© 2018 Newport Corp	pration. All rig	jhts reser	ved.

3.7 Front Panel – Move

The Move page provides access to basic group functions like POWER ON, HOME, or POWER OFF, and executes relative and absolute moves.

The Move page also provides a convenient review of all important axes information like axes names, status and positions. All axes are listed in the Move page.

ି Newp	ort°	System	Controller F	iles Front pa	anel Terminal	Documentation	[Administrator
Move to pos	ition	▼ Move Jog	Cycle I/O cor	trol Device statu	S		
Position	Status	Action	Positioner	Parameters	Absolute move 1	Absolute move 2	Relative move
-51.15	5140h	POWER ON	Axis 1	• VIEW/SET	×	×	<
0	5140h	POWER ON	Axis 2	🖄 VIEW/SET	»		<
0	5140h	POWER ON	Axis 3	♦ VIEW/SET	02	×	× ×
		KILL ALL			* All together GO	All together	All together
efresh delay (in n	nilliseconds):	200 SET	l				

• Click "POWER ON". The Status changes and the Action button changes from "POWER ON" to "HOME". The homing parameters button becomes active. See example with axis 3 below:

Status	Action	Positioner	Pa	rameters
5040h	POWER ON	Axis 1		VIEW/SET
5140h	POWER ON	Axis 2	•	VIEW/SET
5340h	HOME	Axis 3		VIEW/SET

• When clicking on this button, homing parameters can be modified.

AAIS	1 homing paramet	.010
	Low	High
Home search speed:	0.25	0.5
Homing method:	Negative limit signal	V
		SET CANCEL

• Modify if necessary and click "SET" or "CANCEL" to abort.

• Click "HOME" button. The stage starts moving to find its reference position. When done, the Action button changes to "POWER OFF" and the grey controls become active. If the homing sequence fails, the Action button turns back to "POWER ON".

Status	Action	Positioner	Parameters	Absolute move 1	Absolute move 2	Relative move
5140h	POWER ON	Axis 1	VIEW/SET	× 60	»	
5140h	POWER ON	Axis 2	view/set	* GO	»	<
4340h	POWER OFF	Axis 3	VIEW/SET	» G0	» G0	
	KILL ALL			All together	All together	All together

• When clicking "VIEW/SET", move parameters can be modified.

	Values in stages.ini	Active values
Velocity:	10	20
Acceleration:	40	80
Jerk value:	0	0.125

- Modify if necessary and click "SET" or "CANCEL" to abort.
- Enter an allowed absolute position value in the "Absolute move 1" or "Absolute move 2" field and click "Go", or enter a relative move value in the "Relative move" field and click forward or backward arrow. The stage moves to the new position.
- You can also click on ">>" button to fill an absolute move area with the current axis position (see example "in Absolute move 2").

Position	Status	Action	Positioner	Parameters	Absolute move 1	Absolute move 2	Relative move
0	5140h	POWER ON	Axis 1	• VIEW/SET	×	× 00	
0	5140h	POWER ON	Axis 2	VIEW/SET	» 60	» 60	< >>
-41.25	4340h	POWER OFF	Axis 3	▲ VIEW/SET	» 10 GO	» -41.25 GO	
		KILL ALL			* All together GO	× All together	All together

• If more than one axis is enabled, a move value can be entered for each, and simultaneous motions can be executed by pressing the "GO" button next to the "All together" label.

Position	Status	Action	Positioner	Parameters	А	bsolute move	e 1	А	bsolute move	2	Re	lative move	,
0	5140h	POWER ON	Axis 1	t VIEW/SET	*		60	»		60			
0	4340h	POWER OFF	Axis 2	VIEW/SET	*	5	GO	»		GO			•
5.006	4340h	POWER OFF	Axis 3	VIEW/SET	*	10	GO	»	5	GO			
		KILL ALL			*	All together	GO	»	All together	GO		All together	×

- Anytime, you can click on "POWER OFF" to disable a stage. The Action button changes to "POWER ON".
- Click on "POWER ON" to enable the stage again without loosing encoder position.
- When clicking "KILL ALL", all axes are killed and the encoder positions are lost. They have to be powered on and homed again.

3.8 Front Panel – Jog

The Jog page allows executing a jog motion. A jog motion is a continuous motion, where only the speed and acceleration are defined, but no target position. Speed and acceleration can be changed during the motion (but not during the acceleration period).

- Click on the "Action" button to Power ON and Home the axis.
- Then start Jog by pressing forward or backward arrow (simple for Jog low speed or double for Jog high speed).
- Click on "STOP" to stop Jog.
- Move parameters can be modified, even during Jog, with the "VIEW/SET" button.

ESP300	http://192.168.32.9 2 - Jog ×	17/					Ţ	C Rechercher		- □ × ♪ ☆☆☺♡
9) Newpo	ort®	System C	ontroller F	iles Front p	anel Termina	al Docu	mentation		
			Move Jog	Cycle I/O cor	trol Device statu	s				
Ι.	log to veloci	4n e								
J	log to veloci	ity								
	Position	Status	Action	Positioner	Parameters	Jog				
	-139.895	4340h	POWER OFF	Axis 1	VIEW/SET	A4 4 STOP	F F			
	-44,944	4340h	POWER OFF	Axis 2	VIEW/SET	STOP	>			
	0	5140h	POWER ON	Axis 3		KA K STOP	>>>			
L			KILL ALL			AA A STOP	► ►►			
R	efresh delay (in mi	illiseconds):	200 SET							
БО				FOD 2004 4	004	_	_	_		
ES	P302 Motio	n Contr	oller / Driver -	ESP-3004-1	234				© 2019 Newport Corporation	in. All rights reserved.

3.9 Front Panel – Cycle

The cycle page allows cycling of a stage. A cycle motion moves back and forth between two defined positions where speed, acceleration and jerk time can be modified during motion (but not during the acceleration period).

Newp	ort°	System C	Controller F	iles Front pa	anel	Termina	I	Documentat	ion				-
		Move Jog	Cycle I/O con	trol Device statu	S								
Cycle betwe	en two p	oositions											
Position	Status	Action	Positioner	Parameters	Р	osition 1	F	Position 2	Dwell ti	ne		Cycle	
0	5140h	POWER ON	Axis 1	• VIEW/SET	*		»			ms			
0	5140h	POWER ON	Axis 2		*		»			ms	<		
9.883	4740h	ABORT	Axis 3	VIEW/SET	*	10	»	5	100	ms		STOP	
		KILL ALL			*	All together	»	All together					
efresh delay (in n	nilliseconds):	200 SET											
efresh delay (in n	nilliseconds):	200 SET											

- Enter Position 1, Position 2 and Dwell time (time the stage remains in each position).
- Click on one of the arrows to start cycling.
- Click on "STOP" to stop motion.
- Move parameters can be modified, even during cycling, with the "VIEW/SET" button.

3.10 Front Panel – I/O Control

This page allows controlling and monitoring the 16 digital I/Os (2 groups of 8).

- Tick GPIO1 or GPIO2 "O" button if you want to set the group in output mode instead of input ("I").
- When set as output, each bit can be set to "1" (green) or reset to "0" (white).
- When set as input, each bit state is displayed ("1": green, "0": white).

Note that open inputs are reporting level "1" by default.

 (a) (b) http://192.168.254.254/ (b) ESP302 - I/O control (c) X 	_	_	_	_	▼ C Rechercher	– □ × ,0- ↑★☆©
<>>Newport [®]	System	Controller	Files Fro	nt panel Terminal	Documentation	[Administrator logout]
	Move Jog	g Cycle I/O c	ontrol Device	status		
I/O control		Digital I/	0			
Connector	I/0 1	2 3 4	5678			
GPI01	0 • C)		
GPIO2	• • •					
Refresh delay (in milliseconds)		-				
ESP302 Motion Cont	roller / Driv	er - ESP-EBD	4			© 2018 Newport Corporation. All rights reserved.

3.11 Front Panel – Device Status

3.11.1 Device Status – Error FIFO

The Error FIFO section is an important page for trouble-shooting. When encountering any problem during the use of the system, information about the errors related to the commands are found in this page.

Nev No	vport®	Syste	m Controller	Files	Front panel	Terminal	Documentation	
Error	FIFO	Move	Jog Cycle I/() control	Device status			
	Timestamp	Code	Des	cription				
Slot #0	3890027	0	NO ERROR DETECTED					
Slot #1	3890033	0	NO ERROR DETECTED					
Slot #2	3890040	0	NO ERROR DETECTED					
Slot #3	3890047	0	NO ERROR DETECTED					
Slot #4	3890053	0	NO ERROR DETECTED					
Slot #5	3890063	0	NO ERROR DETECTED					
Slot #6	3890072	0	NO ERROR DETECTED					
Slot #7	3890083	0	NO ERROR DETECTED					
Slot #8	3890090	0	NO ERROR DETECTED					
Slot #9	3890097	0	NO ERROR DETECTED					
	oller status			_				
Bit lo	cation		Description					

3.11.2 Device Status – Controller Status

The Controller Status section reports different information about axes or controller.

Newport	System Controller	Files	Front panel	Terminal	Documentation	[Administrat
∃ Controller statu		/O control	Device status			
Bit location	Description					
TS register 1 bit 0	Axis #1 in motion					
TS register 1 bit 1	Axis #2 in motion					
TS register 1 bit 2	Axis #3 in motion					
TS register 1 bit 4	Motor power of at least one axis	×				
TX register 1 bit 0	At least one program is executing					
TX register 1 bit 4	At least one trajectory is executing					
TX1 register 1 bit 0	Controller boot failed					
TX1 register 1 bit 1	Axis #1 boot configuration failed					
TX1 register 1 bit 2	Axis #2 boot configuration failed					
TX1 register 1 bit 3	Axis #3 boot configuration failed					
TX1 register 2 bit 0	Hardware inhibit not detected					
TX1 register 2 bit 1	Drivers 48V not detected					
TX1 register 2 bit 2	Axis #1 motor ON	×				
TX1 register 2 bit 3	Axis #2 motor ON	×				

3.11.3 Device Status – Hardware Status

The Hardware Status section is another important page for trouble-shooting, but not all information is related to an error.

Newport®	System Control	ler	Files	Front pane	Terminal	Documentation	
⊟ Hardware statu	Move Jog Cycle	I/O c	ontrol:	▼ Device status			
Bit location	Description	Axis 1	Axis 2	Axis 3			
xTS register 1 bit 0	Stage not connected			×			
xTS register 1 bit 1	Motor ON	×	×				
xTS register 1 bit 2	Axis moving						
xTS register 1 bit 3	Axis synchronized						
xTS register 1 bit 4	Origin not done			×			
xTS register 2 bit 0	Following error						
xTS register 2 bit 1	Motor fault			×			
xTS register 2 bit 2	Negative hardware travel limit			×			
xTS register 2 bit 3	Positive hardware travel limit			×			
xTS register 2 bit 4	Home signal			×			
Driver status							

3.11.4 Device Status – Driver Status

The Driver Status section reports some potential driver defaults.

Newport®	System Controller	File	s F	ront panel	Terminal	Documentation	
	Move Jog Cycle I	/O contro	l Devi	ce status			
				-			
xTS register 1 bit 2	Axis moving						
xTS register 1 bit 3	Axis synchronized						
xTS register 1 bit 4	Origin not done		×				
xTS register 2 bit 0	Following error						
xTS register 2 bit 1	Motor fault		×				
xTS register 2 bit 2	Negative hardware travel limit		×				
xTS register 2 bit 3	Positive hardware travel limit		×				
xTS register 2 bit 4	Home signal		×				
Driver status Bit location	Description	Axis 1	Axis 2	Axis 3			
xTS1 register 1 bit 0	Fuse broken or Low supply voltage						
	Parameters error						
xTS1 register 1 bit 2							

3.12 Terminal

•

The Terminal screen allows the execution of all ESP302 controller commands. Refer to ESP302 Programmer's manual for command descriptions.

To execute a command from the Terminal, do the following:

- Click to select a function, which then appears in the "Command" area.
 - Define the arguments for the function.

											x
(<) (<) (<) (<) (<) (<) (<) (<) (<) (<)	2.168.254.254/						⊤ C Recher	cher	Q	· 🕆 🖈	# <u> </u>
ESP302 - Terminal	× 📑										
									[A	dministrato	r logout]
SNew	/port°	System	Controller	Files	Front panel	Terminal	Documenta	tion			
						A					
Comm	nand list		Search								
OH	sets the home se gets the home se				~	Command: PR	,				
OH? OL	gets the nome se sets the home se					Command. PK					
OL?	gets the home se					moves an axis to a	a relative position				
OM	sets the home se										
	gets the home se					Arguments:					
OR	-		axis with current mo	de		int axisNumber					
OR			axis with a specific n			1					
PA	moves an axis to					float relativePositi	on				
PA?	gets the absolute	e position for an	axis			10					
PH	gets the hardwar	re status for all a	ixes								
PR	moves an axis to	a relative positi	on			CANCEL	HIELD				
QI?	gets the maximu	m motor curren	for an axis			CANCEL	U.L.				
QM?	gets the motor ty				~						
QP	quit programming	g mode									
Comm	and history								GENERATE PR	OCRAM	
Comm	iana mistory							CLEAR HIGTORY	OLIVERATE PR	oololla	
Comm	and		Status	Reply							
The co	mmand history is	empty									
ESP302 M	otion Contro	oller / Driv	er - ESP-EB	D4				© 201	8 Newport Corporation.	All rights res	erved.

• When all arguments are defined, click "OK". Now review the final syntax of the function and make final text changes, as needed. When done, click "Execute".

ESP302 - Terminal ×	Front panel Terminal Documentation
Newport [®] System Controller Files F	A
Command list Search OH sets the home search high speed value for an axis OH sets the home search high speed value for an axis OL sets the home search low speed value for an axis OL sets the home search low speed value for an axis OM sets the home search mode for an axis OM sets the home search mode for an axis OM sets the home search mode for an axis OM sets the home search for an axis with current mode OR initiates the home search for an axis with a specific mode PA moves an axis to an absolute position PA gets the home search for an axis PH gets the hardware status for all axes PH moves an axis to a relative position Q1 gets the maximum motor current for an axis	Command API to execute IPRIO Received message
QM? gets the motor type for an axis QP quit programming mode	~
Command history Command Status Reply The command history is empty ESP302 Motion Controller / Driver - ESP-EBD4	CLEAR HUSTORY GENERATE PROGRAM

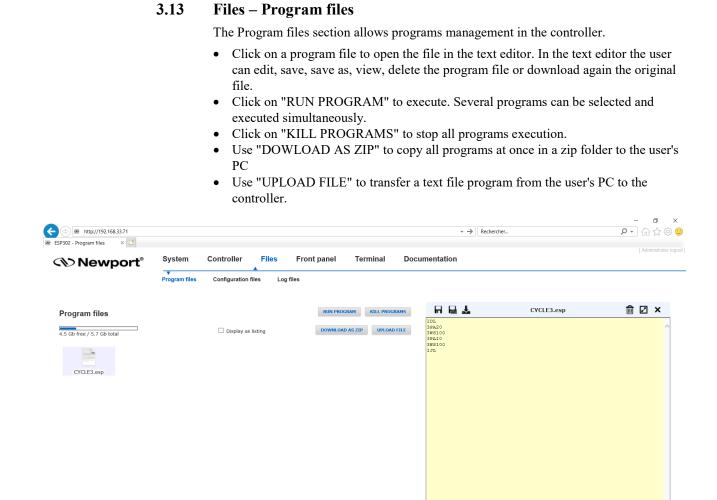
• When the function is executed, the controller's response code will appear in the "Received message" window and a description will appear beneath. If the command was carried out successfully, 0 is returned. In all other cases, there will be an error code. The error code description is also provided.

Newport®	System	Controller	Files	Front panel	Terminal	Documentation	[Administrator I
 OH? gets the home s OL sets the home s OL2 gets the home s OM7 gets the home s OM8 gets the home s OR initiates the hom PA moves an axis PA7 gets the absolu PH gets the hassolu 	search high speed v search high speed v search how speed va search mode for an search mode for an esearch for an ax search for an ax te position for an ax are status for all ax	alue for an axis lue for an axis lue for an axis axis axis is with current mod is with a specific m ion cis			Command API to execute 1PR10 Received messag 0,	je	EXECUTE
QI? gets the maxim QM? gets the motor QP quit programmi		or an axis		~	The command wa	as carried out successfully.	
Command history Command 1PR10		Status Reply	/			CLEAR HIS	TORY GENERATE PROGRAM

The functions are listed in alphabetical order and can be searched for using the search bar at the top of the Function list.

All the executed commands are listed in the "Command history" list.

- Click "DELETE" on the line you wish to remove.
- Click on "GENERATE PROGRAM" to save a program containing the commands of the history list in the controller.
- Click "CLEAR HISTORY" to reset the list.



ESP302 Motion Controller / Driver - ESP-EBD4

3.14 Files – Configuration files

In this webpage Configuration files stored on the controller can be downloaded, uploaded, viewed, edited or deleted. Note: Users must be logged in with Administrator rights in order to access this webpage. **Only experimented users (or Newport support personnel) should be allowed to make changes in these files.**

Download/Edit/View/Delete

Click on the configuration name to open the file in the text editor. In the text editor the user can view, edit, save, save as or delete the configuration file (in the controller) and download it to the user's PC.

UPLOAD FILE

Click UPLOAD FILE to upload a configuration file from the user's PC to the controller. When uploading a file, take note of the file extension.

LOAD CONFIG

Click LOAD CONFIG to upload all configuration files as a zip file from the user's PC to the controller.

SAVE CONFIG

Click SAVE CONFIG to download all configuration files as a zip file from the controller to the user's PC.

UPDATE STAGE DB

Click UPDATE STAGE DB to upload a new StageDataBase.txt file from the user's PC to the controller.

RELOAD

Click RELOAD to reboot or restart controller to apply configuration changes.

>Newport [®]	 troller Files Fro	nt panel Terminal	Documentation		[Administra
nfiguration files Gb free / 5.7 Gb total	UPLOAD FILE UPDATE STACE E Display as listing Show "useless" files StageDataBase.txt		<pre>[DUMENY@DUMENY_STA ; Glabal st ; Glabal st ConfigurationCom ConfigurationCom ConfigurationCom ConfigurationCom Durit = sm dmartStageName = ; Driver Nob DriverName = NO_ ; Driver Nob ; Driver con ; Driver con ; Driver con ; Driver nob ; Station s ; Station s EncoderType = N servitudespype = WiniumTargetDeo</pre>	age parameters icinformation> ment = ibility = XF0-ESP302 ver parameters iver> RUVER mmand interface parameters face = NO_MOTOR_INTERFACE encoder interface parameters nooder> Encoder: Encoder: Nodervitudes type parameters Nodervitudes Node	<u>m</u>
				andard>	

FACTORY SETTINGS

This button allows retrieving all the original configuration files.

After pressing this button, the following window appears. Tick the files you want to restore and click "RESET FILES".

Confirmation					
You can choose here which configuration file(s) you want to reset to factory settings.					
□ StageDataBase.txt □ system.ini					
Please select which one(s) to restore and confirm your choice.					
Your current settings will be erased, so back them up first if necessary!					
RESET FILES CANCEL					
IZ AND É ROCKATIONA -					

A message pops up to inform restore success. Click OK to restart the controller and reload the new configuration.

Restore succ	ess		
The operation completed successfully. Press OK to make the	he controller reloa	d the nev	v configuration.
		ок	CANCEL
		_	_

3.15 Files – Log Files

In this webpage log files stored on the ESP302 controller can be downloaded, uploaded, viewed, edited or deleted.

- Click on the log file name to open the file in the text editor. In the text editor the user can edit, save, save as, view, delete the log file or download again the original file.
- Click "UPLOAD FILE" to upload a log file from the user's PC to the ESP302 controller. When uploading a file, take note of the file extension.
- Click "DOWNLOAD AS ZIP" to download all log files at once in a zip folder to the user's PC.

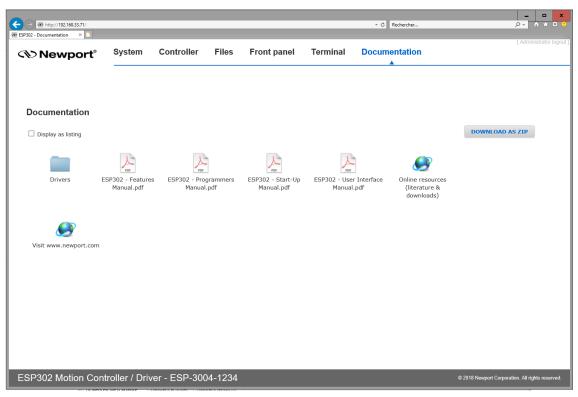
Newport [®]	System	Controller	Files	Front panel	Terminal	Docum	nentation		[Admir	histra
	Program files	Configuration	files Log fil	les						
og files							- 🖬 🕹	boot.log	m 🗹	×
Gb free / 5.7 Gb total		Display as	listing	DOWNLOA	AD AS ZIP UPLO	AD FILE	boot.log	er Boot [Mon Jan 1 00:15:58 20		_
error.lo	0	serial.log	trace.log				Controller_Boo Controller_Boo	er_Boot: Configuration STAGE 1 t: Driver name = XFB-DNV111 (10 t: Deck KOAF and EOR- t: EOR* and EOR- are activated t m_Conf_EspSytem: 1 er_Boot: Configuration STAGE 2 t: Driver name = XFB-DNV111 (10 t: Check KOAF and EOR- t: EOR* and EOR- are activated t m_Conf_EspSytem: 3 t: Driver name = XFB-DNV111 (10 t: Check KOAF and EOR- t: EOR* and EOR- are activated t: Check KOAF and EOR- t: EOR* and EOR- are activated t m_Conf_EspSytem: 7 E_Boot: Create aces ::CreatoAxes ::Soon AxEsp ten activated t m_Conf_EspSytem: 7 ::CreatoAxes ::Soon AxEsp ten activated t m_Conf_EspSytem: 7 ::CreatoAxes ::Creat) for axis #1 => Axis for axis #2 => Axis for axis #3 => Axis @_Base = 0.000100	

ESP302 Motion Controller / Driver - ESP-EBD4

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3.16 Documentation

Under the webpage Documentation users can open and download ESP302 manuals, drivers and example code.



Service Form

Your Local Representative

Tel.: _____

	Fax:
Name:	Return authorization #:
Company:	(Please obtain prior to return of item)
Address:	Date:
Country:	Phone Number:
P.O. Number:	Fax Number:
Item(s) Being Returned:	
Model#:	Serial #:
Description:	
Reasons of return of goods (please list any specific problems):	
reasons of return of goods (prease nst any specific problems).	

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