

EDH0310En1040 - 02/25

Controller GUI Manual V2.0.x

SMC100CC & SMC100PP

Single-Axis Motion Controller/Driver for DC or Stepper Motor



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Original instructions.

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Warranty

MKS Instruments, Inc. warrants that this product will be free from defects in material and workmanship and will comply with MKS published specifications at the time of sale for a period of one year from date of shipment. If found to be defective during the warranty period, the product will either be repaired or replaced at MKS option.

To exercise this warranty, write or call your local MKS office or representative. You will be given prompt assistance and return instructions. Send the product, freight prepaid, to the indicated service facility. Repairs will be made, and the instrument returned freight prepaid. Repaired products are warranted for the remainder of the original warranty period or 90 days, whichever occurs last.

Limitation of Warranty

The above warranties do not apply to products which have been repaired or modified without MKS written approval, or products subjected to unusual physical, thermal or electrical stress, improper installation, misuse, abuse, accident or negligence in use, storage, transportation or handling.

THIS WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR USE. MKS INSTRUMENTS, Inc. SHALL NOT BE LIABLE FOR ANY INDIRECT, SPECIAL, OR CONSEQUENTIAL DAMAGES RESULTING FROM THE PURCHASE OR USE OF ITS PRODUCTS.



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EU Declaration of Conformity



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EU27 Declaration of Conformity

Application of Council Directive(s):

- Electromagnetic Compatibility Directive (EMCD) 2014/30/EU
- Restriction of Hazardous Substances Directive (RoHS3) (EU) 2015/863(7)
- ☑ Waste Electrical and Electronic Equipment Directive 2012/19/EU

Standard(s) to which conformity is declared:

⊠ EN 61326-1:2013 – (EMC)

Emissions:

⊠ CISPR 11:2015 Industrial, Scientific and Medical Equipment Radio-Frequency Disturbance Characteristics - Limits and Methods of Measurement

Immunity:

☑ IEC 61000-4-2:2008 EMC/Electrostatic Discharge Immunity Test

⊠ IEC 61000-4-3:2006 2006+AMD1:2007+AMD2:2010 EMC/Radiated Radio - Frequency Electromagnetic Field Immunity Test

☑ IEC 61000-4-4:2012 EMC/Electrical Fast Transient/Burst Immunity Test
 ☑ IEC 61000-4-6:2013 EMC/Conducted Disturbances induced by Radio Frequency Fields Immunity Test
 ☑ IEC 61000-4-11:2004 + AMD 1:2017 EMC/Voltage Dips, Short Interruptions and Variations Immunity Test ⁽⁵⁾

Manufacturers Name: MKS Instruments, Inc. Andover, MA, USA

Importer's Name & Location: /

Equipment Type/Description: Motion Controller, single axis.

Model Number(s) (6): SMC100CC/PP; SMC-232/-USB/-PS80/-CB1/-CB3

The object of the declaration described above is in conformity with the relevant Community harmonization legislation. MKS product conforms to the above Directive(s) and Standard(s) only when installed in accordance with manufacturer's specifications. This declaration has been issued under the sole responsibility of the manufacturer.

Date: 12/20/2021

Le Cointe Hervé Quality Director

5) Applicable to AC powered product only.

6) Compliance of the above model numbers requires the use of a braided shielded cable properly terminated at both ends – if so noted in the MKS Instruction Manual.

7) RoHS Directive has to be checked for in scope products; cannot CE mark without compliance to RoHS. RoHS Directive can be unchecked only for systems which MKS sells which qualify for "Large Scale Industrial Tool" exclusion.

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Document Number: MKS-GPC-TM-20062

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UK Declaration of Conformity



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UK Declaration of Conformity

Application of Council Directive(s):

Electromagnetic Compatibility Directive (EMCD) – 2014/30/EU

- Restriction of Hazardous Substances Directive (RoHS3) (EU) 2015/863(7)
- ☑ Waste Electrical and Electronic Equipment Directive 2012/19/EU

Standard(s) to which conformity is declared:

⊠ BS EN 61326-1:2013 – (EMC)

Emissions:

CISPR 11:2015 Industrial, Scientific and Medical Equipment Radio-Frequency Disturbance Characteristics - Limits and Methods of Measurement

Immunity:

⊠ IEC 61000-4-2:2008 EMC/Electrostatic Discharge Immunity Test

⊠ IEC 61000-4-3:2006 2006+AMD1:2007+AMD2:2010 EMC/Radiated Radio - Frequency Electromagnetic Field Immunity Test

➢ IEC 61000-4-4:2012 EMC/Electrical Fast Transient/Burst Immunity Test
 ➢ IEC 61000-4-6:2013 EMC/Conducted Disturbances induced by Radio Frequency Fields Immunity Test
 ➢ IEC 61000-4-11:2004 + AMD 1:2017 EMC/Voltage Dips, Short Interruptions and Variations Immunity Test ⁽⁵⁾

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Equipment Type/Description: Motion Controller, single axis.

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Preface

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Reservation of Title

The MKS Instruments, Inc. Programs and all materials furnished or produced in connection with them ("Related Materials") contain trade secrets of MKS and are for use only in the manner expressly permitted. MKS claims and reserves all rights and benefits afforded under law in the Programs provided by MKS.

MKS shall retain full ownership of Intellectual Property Rights in and to all development, process, align or assembly technologies developed and other derivative work that may be developed by MKS. Customer shall not challenge, or cause any third party to challenge, the rights of MKS.

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Customer shall protect the MKS Instruments, Inc. Programs and Related Materials as trade secrets of MKS, and shall devote its best efforts to ensure that all its personnel protect the MKS Programs as trade secrets of MKS. Customer shall not at any time disclose MKS trade secrets to any other person, firm, organization, or employee that does not need (consistent with Customer's right of use hereunder) to obtain access to the MKS Programs and Related Materials. These restrictions shall not apply to information (1) generally known to the public or obtainable from public sources; (2) readily apparent from the keyboard operations, visual display, or output reports of the Programs; (3) previously in the possession of Customer or subsequently developed or acquired without reliance on the MKS Programs; or (4) approved by MKS for release without restriction.

SERVICE INFORMATION

The user should not attempt any maintenance or service of the present product and its accessories beyond the procedures outlined in this manual. Any problem that cannot be resolved should be referred to MKS I Newport. When calling MKS I Newport regarding a problem, please provide the Tech Support representative with the following information:

- Your contact information.
- System serial number or original order number.
- Description of problem.
- Environment in which the system is used.
- State of the system before the problem.
- Frequency and repeatability of problem.
- Can the product continue to operate with this problem?
- Can you identify anything that may have caused the problem?

MKS | NEWPORT RMA PROCEDURES

Any product being returned to MKS I Newport must have been assigned an RMA number by Newport. Assignment of the RMA requires the item serial number.

PACKAGING

Materials being returned under an RMA must be securely packaged for shipment. If possible, reuse the original factory packaging.



1 Safety Information

1.1 Definitions and Symbols

The following terms and symbols are used in this documentation and also appear on the SMC100 Controller/Driver where safety-related issues occur.

1.1.1 General Warning or Caution



The Exclamation Symbol may appear in Warning and Caution tables in this document. This symbol designates an area where personal injury or damage to the equipment is possible.

1.1.2 Electric Shock



The Electrical Shock Symbol may appear on labels affixed to the SMC100 Controller/Driver. This symbol indicates a hazard arising from dangerous voltage. Any mishandling could result in irreparable damage to the equipment, in personal injury, or death.

1.1.3 European Union CE Mark



The presence of the CE Mark on Newport Corporation equipment means that it has been designed, tested and certified as complying with all applicable European Union (CE) regulations and recommendations.

1.1.4 United Kingdom Conformity Assessed Mark

The presence of the UKCA Mark on Newport Corporation equipment means that it has been designed, tested and certified as complying with all applicable United Kingdom's regulations and recommendations.

1.2 Warnings and Cautions

Definitions of, NOTE, CAUTION, WARNING and DANGER messages used throughout the manual.

NOTE	The NOTE sign denotes important information. It calls attention to a procedure, practice, condition, or the like, which is essential to highlight.
CAUTION	The CAUTION sign denotes a hazard. It calls attention to an operating procedure, practice, or the like, which, if not correctly performed or adhered to, could result in damage to or destruction of all or part of the product.
WARNING	The WARNING sign denotes a hazard. It calls attention to a procedure, practice, condition, on the like, which, if not correctly performed or adhered to, could result in injury to personnel.
DANGER	The DANGER sign Indicates an imminently hazardous situation that, if not avoided, will result in death or serious injury.



1.3 General Warnings and Cautions

The following general safety precautions must be observed during all phases of operation of this equipment.

Failure to comply with these precautions or with specific warnings elsewhere in this manual violates safety standards of design, manufacture, and intended use of the equipment.

- Heed all warnings on the unit and in the operating instructions.
- To prevent damage to the equipment, read the instructions in this manual.
- Only plug the power supply to a grounded power outlet.
- Assure that the power supply is properly grounded to earth ground through the grounding lead of the AC power connector
- Route power cords and cables where they are not likely to be damaged.
- Disconnect or do not plug in the AC power cord in the following circumstances:
 - o If the AC power cord or any other attached cables are frayed or damaged.
 - o If the power plug or receptacle is damaged.
 - o If the unit is exposed to rain or excessive moisture, or liquids are spilled on it.
 - o If the unit has been dropped or the case is damaged.
 - o If the user suspects service or repair is required.
- Keep air vents free of dirt and dust.
- Keep liquids away from unit.
- Do not expose equipment to excessive moisture (>85% humidity).
- Do not operate this equipment in an explosive atmosphere.
- Disconnect power before cleaning the Controller/Driver unit. Do not use liquid or aerosol cleaners.
- Do not open the CONEX-SAG controller. There are no user-serviceable parts inside.
- Return equipment to Newport Corporation for service and repair.
- Dangerous voltages associated with the 100-240 VAC power supply are present inside the power supply. To
 avoid injury, do not touch exposed connections or components while power is on.
- Follow precautions for static-sensitive devices when handling electronic circuits.



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Single-Axis Motion Controller/Driver SMC100CC & SMC100PP

2 Introduction

2.1 Purpose

The purpose of this document is to provide instructions on how to use the SMC100 Controller Graphical User Interface (GUI).

2.2 Overview

The SMC100 Controller GUI is a graphical user interface, that allows the user to interact with the SMC100CC or SMC100PP controller connected to positioner.

The user can initiate moves, change the state of the controller, adjust parameters, etc.

Controller GUI Manual



2.4 State Diagram

The SMC100 controller is defined by the following state diagram. Also see SMC100 User's Manual for command/state information:



* No action, when jogging speed is different than zero, e.g. one of the keys "<", ">" or "<<>>" is pressed.

End of Runs encountered in the following state:

NOT REFERENCED:	No action.
CONFIGURATION:	No action.
HOMING:	Only check at end of HOMING and then change to NOT REFERENCED state.
MOVING:	Abort motion and then change to NOT REFERENCED state.
READY:	Change to NOT REFERENCED state.
DISABLE:	Change to NOT REFERENCED state.

LED display:

	RED	ORANGE	GREEN
SOLID	NOT REFERENCED: hardware faults or wrong parameters	NOT REFERENCED: everything is OK	READY
SLOW BLINK	CONFIGURATION	NOT REFERENCED: end of runs	DISABLE
FAST BLINK			HOMING MOVING JOGGING



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3 Installation

3.1 Install SMC100 Graphical User Interface

To install SMC100 Controller GUI follow the steps below:

• Download the "SMC100-Utility-Installer_2_0_0_5.zip" folder from the website.

Software

SMC100-Utility-Installer_2_0_0_5.zip (6.6 MB, ZIP)

- Extract in the folder of your choice.
- From this folder, select and launch:
 - o "SMC100 Utility Installer Win32.exe" for 32 bit system installation.
 - o "SMC100 Utility Installer Win32.exe" for 32 bit system installation.
- A window opens up showing Install welcome page.
- Click on "Next".
- A window opens up allowing destination folder selection. By default it is showing C:\.
- Click on "Next".
- Ready to install window opens up. Click "Install".
- Then installation starts, wait for completion. Click on "Finish" to finalize the installation.





3.2 Launch GUI

From Windows "START" menu , select "Newport\SMC100 Utility 32 bit" or "Newport\SMC100 Utility 64 bit" to open the SMC100 GUI Applet.

First select "Discover" button to display available COM port device.

Then select the COM port device that the SMC100 controller is connected to.

Finaly, select "Launch Applet" button,

	Newport ^	Se Map Applet	×
	SMC100 Utility 64-bit	Instruments Discovered :	Discover
	SMC100 Utility Manual		
	E man		
	Canadia Canadianadi		
	-		Laurach Analist
	Comparison and the second		Launch Applet
Ø		SS Map Applet	×
ß		Instruments Discovered : 3	Discover
	Comparison of the second		
24	Consection in the		
ŵ	- And and a state of the state		
Ф	California and a filmant		
۶ 🖿	D 🗄 🌢 😰 🗿 🖪 🥼		Launch Applet

The Newport SMC100 GUI opens in the "Configuration" tab.

nformation Interval Is entType		0 200 6 0 1000 0				,
nformation Interval ts entType		0 200 6 0 1000 0				,
interval ts entType		200 6 0 1000 0				
ent Type		6 0 1000 0				
entType		0 1000 0				
entType		1000 ()				
entType		0				
entType						
		SMC10	DCC. SM	C100PP		
struments		1				
inicationChanr	nel	RS232				
dress		0				
lerAddress		1				
ositions		0				
)epth		5				
Buffer1						
Buffer2						•
	dress erAddress lositions epth Buffer1 Buffer2 otion Contro	dress erAddress lositions epth Buffer1 Suffer2 otion Control\SMC10	dress 0 er/address 1 lostions 0 epth 5 8uffer1 suffer2 otion Control\SMC100\Bin\Config	dress 0 er/Adress 1 lositions 0 epth 5 Buffer1 Juffer2 otion Control\SMC100\Bin\Config\Newpoi	dress 0 er/address 1 lositions 0 epth 5 suffer1 suffer2 otion Control/SMC100/Bin/Config\Newport.SMC100.C0	dress 0 er/Address 1 lostions 0 epth 5 8uffer1 3uffer2 otion Control\SMC100\Bin\Config\Newport.SMC100.Configura



Controller GUI Manual

4 User Interface

4.1 Configuration

The Configuration tab allows the user to view and/or change information related to the logging configuration and the instrument settings.

	Ż↓∣⊑								
~	Instrumer	ntInforma	ation		0				^
	Pollir	nginterva	ai		200				
	NbD	igits			6				
~	Diagnost	ICS			0				
	Dela	у			1000				
~	Models	um ont Tu			CMC10	OCC SM	100PD		
	NoO	floetnum	pe		1	UCC, SMI	LIUUFF		
	Com	municati	onChann	el	R\$232				
~	Selected	Address	orronarin		()				
	Cont	rollerAdd	ress		1				
~	Memorize	dPositio	ns		0				
	Buffe	erDepth			5				
	Rollin	ngBuffer	1						
	Rollin	ngBuffer	2						~
C:\	Newport	\Motior	ver versi	I\SMC10	00\Bin\Confi 2	g\Newpoi	t.SMC100.C	Save	tio _{.:}

The polling interval defines the number of milliseconds between each time the Controller GUI polls the SMC100 for the latest information. The user may change the polling interval by entering a value.

Diagnostics Delay defines the time delay in milliseconds between each command sent from a text file.

InstrumentType and NoOfInstruments display the type of controller and number of the connected instrument. The **Save** button allows to save the current settings to the configuration file.

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Parameter	Description	Values / Type	Default
	InstrumentInformation		
PollingInterval	The polling interval defines the number of milliseconds (delay) between each time the Controller GUI polls the instrument for the latest information.	An Integer	200
NbDigits	Number of fractional digits after the decimal point.	An Integer	6
	Models\InstrumentInfo		
CommunicationChannel	The communication channel	RS232	RS232
	Diagnostics		
Delay	The delay defines the number of milliseconds between each sent command from a text file		1000
	MemorizedPosition		
BufferDepth	MaxItem defines the maximum number of memorized positions in each rolling buffer.	An Integer	5
RollingBuffer	The list of the memorized position in the rolling buffer for a selected controller address	A String	
ControllerAddress	List of the selected controller address.	A String	

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4.2 Main

The Main tab displays the main controls in the Controller GUI like a virtual front panel.

It is updated each time the polling interval timer expires.

1-1 TA-US PN- 110-8119767	
Configuration Main Ion GPIO Parameters Address Diagnostics About	Configuration Main Ion GPIO Parameters Address Disponstice About
Initialization and Configuration	Initialization and Configuration
Initialize Save Pos.	Disable Save Pos.
Current Position	Current Position
0.0000	
Incremental Motion / PR-Move Relative	Incremental Motion / PR-Move Relative
#1 4 #2 4	#1 4
Cycle Motion / PA-Move Absolute Cycle Current cycle #1 #2 Dwell 0 msec C) Go to Go to	Cyclic Motion / PA-Move Absolute Cycle Current cycle #1 #2 Dwell 0 msec C) Go to Go to
Motion Configuration Values Velocity : Minimum end of run : Maximum end of run :	Motion Configuration Values Velocity : Minimum end of run : Maximum end of run :
5.0000 0.0000 50.0000 Set	5.0000 0.0000 50.0000 Set
Rename V Go to	Rename V Go to
SMC_CC - Controller-driver version 3. 1. 2	SMC_CC - Controller-driver version 3. 1. 2

"Initialization and Configuration"

In the "Initialization and Configuration" area, the first button changes the controller status to "Initialize", "Enable" or "Disable".

When in Not REFERENCED status and correctly configured the first button proposes to Initialize the positioner by operating a homing.

After operating a homing the controller status becomes READY and the first button proposes to Enable / Disable the positioner.

To see the different controller states, refer to the controller state diagram.

The second button "Save Pos." memorizes the current positions in the combo box. As soon as a new position is memorized, this is displayed in the trace.

"Current Position"

In the "Current Position" area, the current position is displayed in a text box and visualized in a slider.

The slider limits are defined with the ends of run.

The LED icon shows the current controller state.

When the mouse hovers over the LED icon, the controller state is displayed in an information bubble.

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"Incremental Motion / PR-Move Relative"

In the "Incremental Motion / PR-Move Relative" area, two increment values can be defined. For each defined increment, a relative move is preformed in either the negative direction or positive direction.

"Cyclic Motion" and "Target position / PA-Move Absolute"

In the "Cyclic Motion" area, a motion cycle is configured with a number of cycles (Cycle) and a dwell time in milliseconds. The motion cycle gets the defined target positions from the "Target position / PA-Move Absolute" area to perform the cycle.



In the "Target position / PA-Move Absolute" area, two target positions can be defined. The "Go to" button executes the absolute move to the specified target position.

"Motion Configuration Values"

In the "Motion Configuration Values", the current ends of run and the velocity are displayed in a disabled text box: "Minimum end of run", "Maximum end of run" and "Velocity".

These ends of run and the velocity can be modified and saved with the "Set" button.

Memorized positions

The combo box allows memorizing the positions by the "Save Pos." button.

Each of these positions can be renamed or deleted.

To execute an absolute move to one of these memorized positions, select one item of the combo box and click on the "Go to" button.

When the mouse hovers over the combo box, the selected memorized position is shown in an information balloon.

Rename a memorized position: Select an item from the combo box, edit the position name and click on the "Rename" button to save the new position name.

Delete a memorized position: Select an item from the combo box, right-click on the mouse and select "Delete" to delete the selected memorized position.



4.3 Jog

Under this tab, the controller allows the jog mode with use of two arrow buttons.



"Initialization and Configuration"

In the "Initialization and Configuration" area, the first button changes the controller status to "Initialize", "Enable" or "Disable".

When in Not REFERENCED status and correctly configured the first button proposes to Initialize the positioner by operating a homing.

After operating a homing the controller status becomes READY and the first button proposes to Enable / Disable the positioner.

To see the different controller states, refer to the controller state diagram.

The second button "Save Pos." memorizes the current positions in the combo box. As soon as a new position is memorized, this is displayed in the trace.

"Current Position"

In the "Current Position" area, the current position is displayed in a text box and visualized in a slider.

The slider limits are defined with the ends of run.

The LED icon shows the current controller state.

When the mouse hovers over the LED icon, the controller state is displayed in an information balloon.

"Jog"

In the "Jog" area, the current velocity is displayed in a text box and visualized in a slider, it can be modified in the "New velocity" field and saved with the "Set" button.

The slider limits are defined with the ends of run.

Right and left arrows buttons allows positive or negative jog moves.



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Memorized positions

The combo box allows memorizing the positions by the "Save Pos." button.

Each of these positions can be renamed or deleted.

To execute an absolute move to one of these memorized positions, select one item of the combo box and click on the "Go to" button.

When the mouse hovers over the combo box, the selected memorized position is shown in an information balloon.

Rename a memorized position: Select an item from the combo box, edit the position name and click on the "Rename" button to save the new position name.

Delete a memorized position: Select an item from the combo box, right-click on the mouse and select "Delete" to delete the selected memorized position.



4.4 GPIO

The GPIO tab allows the user to modify digital outputs and to view digital and analog inputs.

: LTA-HS_PN	:_UD:B	11876	7			_					
Configuration	Main	Jog		GPIO	Parameters	Ad	dress	Diagn	ostics	About	t
TTL Outpu	ts		~		TTL Inpu	ts	~	Ar	alog Ir	nputs	
Output #1	0	ON	•	OFF	Input #	1	\bigcirc	A	nalog i NaN	input #	1
Output #2 Output #3	0	ON	•	OFF	Input #	3	$\tilde{\mathbf{O}}$				
Output #4	0	ON	0	OFF	Input #	4	ŏ				
MC_CC - Cont	roller-dri	iver ve	rsior	n 3. 1. j	2						

Digital IO

TTL outputs

The four TTL outputs can be modified with a radio button (ON/OFF) and are updated each time the polling interval expires.

TTL inputs

The four TTL inputs are updated each time the polling interval expires.

Analog Inputs

Analog input #1

The analog input is updated each time the polling interval expires.



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4.5 Parameters

The *Parameters* tab allows the user to view or modify positioner parameters for the selected controller.

A warning message is displayed as below.

Maning		
You are entering a page whe parameters that will impact p Once the values are changed these parameters and the cu	ere you can change critical moto performance. d, a controller reset is necessan irrent working values will be lo	or and stage y to save st.
Click Yes to continue, No to	cancel.	

Parameters page for a CC positioner

Configuration Main	Jog	GPIO	Parameters	Address	Diagnostic	s About	t
Acceleration (AC)	20.00	000	Home	Mode (HT)	4.00000		1
Velocity (VA)	5.000	000	Home V	elocity (OH)	2.50000		
Jerk time (JR)	0.040	000	Home Ti	meout (OT)	44.0000		
Software Limit - (SL)	0.000	000	Contro		Opened	Opened	-
Software Limit + (SR)	50.00	000	Ko	Eactor (KP)	6209 16	opened	<u> </u>
Backlash (BA)	0.000	000	- K4	Factor (KD)	6 20816		
Hysteresis (BH)	0.000	000	Ki	Factor (KI)	206939		
Encoder Increment (SU)	0.000	003	Following	Error (FE)	1 00000		
Check stage name (ZX3) 🔽	Ve	elocity Feed Fo	orward (KV)	3.10408		
			Motor Driver V	oltage (DV)	24.0000		8
		Moto	r Peak Current	Limit (QIL)	0.21300		8
		Moto	r RMS Current	Limit (QIR)	0.10650		
	F	RMS Cum	ent Averaging	Time (QIT)	3.00000		
Download parameters	from S	martStag	e SMC1	oocc [Set para	meters	



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Parameters page for a PP positioner

Configuration	Main	loa	GPIO	Parameters	Address	Diagnostics	About	
configuration	IVIGII I	Jug	uno	- arametere	Address	Diagnostics	About	
Ac	celeratio	n (AC)	1.60000					
	Veloci	ty (VA)	0.16000					
	Jerk tim	ne (JR)	0.04000					
Softv	vare Limi	t - (SL)	0.00000					
Softwa	are Limit	+ (SR)	25.0000					
	Backlas	h (BA)	0.00000	1				
	Hysteres	is (BH)	0.00000	(
Distance per	full step	(FRS)						
Micro ste	p factor	(FRM)	10.0000					
Bas	se veloci	ty (VB)	0.00000					
Motor Peak	Curr. Limi	t (QIL)	0.30000					
Ho	me Mod	e (HT)	4.00000					
Hom	e Velocit	y (OH)	0.16000					
Hom	e Timeou	tt (OT)	343.750		Check sta	ge name (ZX3		
Download	paramet	ers fron	n SmartSta	ge SMC	100PP	Set parame	eters	

"Download parameters from SmartStage" button

The "Download parameters from SmartStage" button downloads parameters from the SmartStage and saves them in its flash memory (configuration parameters).

After the parameters have been downloaded the configuration parameters are read and updated.





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"Set parameters" button

The "Set parameters" button modifies the configuration parameters.



Edit parameters

Parameters depends on the positioner's characteristics, refer to positioner's datasheet to set correct parameters.

For further information about the meaning of the different parameters, refer to the explanations at the corresponding two letter commands (see command names in brackets) in section Command Set – SMC100 User's Manual.

For example, the "Acceleration (AC)" parameter is associated to the AC command.



4.6 Address

The Address tab allows the user to set up controllers for daisy-chain operations.

nfiguration	Main	Jog	GPIO	Parameters	Address	Diagnostic	s About	
Controller po Selected o	ool setting	1						
1: LTA-HS	PN:_UD	:B1187	67		~	Delete		
Detected of	controllen	S						
1: LTA-HS	PN:_UD	:B1187	67		~	Add	Discove	r
1. Connect	t only the	SINCIU	U Control	er that you wa	int to initial	ze, to vour c	omputer	
2. Select th 3. Press 'S 4. Downloa 5. Disconn 6. To assig For details, Please refe	e COM po he desire et'buttor ad the St nect this (gn a differ , see "Co er to the s	ort. Ensu d Contro a to assig age para Controlle rent add mmunica SMC100	ure DIP so offer addree gn this ad ameters if r and pow ress to ar ation Sett) User's m	witches on the ss from the list dress to the co required. ver off. nother Controlle ings" section of anual for daisy	Controller box below onnected C er, follow th of the Prod	are in 'FIRS' Controller. e above ste uct Manual. or any param	T' position. ps. eter's	
using the 2. Select tl 3. Press 'S 4. Downlos 5. Disconn 6. To assig For details Please refe modificatio Note: After	e COM po he desire et'buttor ad the St hect this (gn a differ , see "Co er to the s n. r an addre	ort. Ensu d Contro age para Controller rent add mmunica SMC100 ess conf	ure DIP su oller addre gn this ad ameters if r and pow ress to ar ation Sett) User's m	witches on the ss from the list dress to the co required. ver off. nother Controlle ings'' section of anual for daisy it's recommen	Controller box below onnected C er, follow th of the Prod chaining o ded to perf	are in 'FIRS' Controller. e above ste uct Manual. or any param	T' position. ps. eter's over''.	
using the 2. Select tl 3. Press 'S 4. Downloa 5. Disconn 6. To assig For details. Please refe modificatio Note: After	e COM po he desire iet' buttor ad the St hect this (gn a differ , see "Co er to the S n. r an addr	ort. Ensu d Contro n to assig age para Controlle rent add mmunic: SMC100 ess conf	ure DIP so ller addre gn this ad ameters if r and pow ress to ar ation Sett) User's m	witches on the ss from the list dress to the co required. wer off. to ther Controlled anual for daisy it's recommen Controller	Controller box below onnected C er, follow th of the Prod chaining c ded to perf address	are in 'FIRS' Controller. e above step uct Manual. or any param com a "Disco	T' position. ps. eter's over''. Set	

"Controller address setting"

The "Controller address setting" area reminds the steps to configure controllers' RS485 address when operating with several SMC100 controllers (daisy-chained configuration).

The "Controller address" field allows to define RS485 address of the current controller (connected to RS232C) and saved it with the "Set" button.

"Controller pool setting"

The "Controller pool setting" area allows to discover the chained controllers when RS485 addresses are set and the chain is completed, using "Discover" button.

After discovering connected controllers in the chain, the "Detected controllers" list allows to select desired controllers to be add in the chain and add it using the "Add" button.

Finaly, the "Selected controllers" list allows to manage the list of the chained controllers using "Delete" button.

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4.7 Diagnostics

The *Diagnostics* tab allows the user to enter instrument commands and to view the history of commands that were sent and the responses that were received.

This list of commands and the syntax of each command can be found in the Command Set – SMC100 User's Manual. A file of commands can be sent line by line to the controller with the "Send Command file" button.

COM/								~
Configuration	Main	Jog	GPIO	Parameters	Address	Diagnostics	s About	
Command :								
	Send					Send Com	mand file	
Command H	istory :							
Response H	istory :							
>>1VE <<1VE SMC	C_CC - Cc	ontroller-c	driver vers	sion 3.1.2				CLEAR
>>1VE <<1VE SMC	C_CC - Cc	ontroller-c	driver vers	sion 3. 1. 2	n or interru	ipt your mani	p.	CLEAR
>>1VE <<1VE SMC	c_CC - Cc	ontroller-o	driver vers	sion 3.1.2	n or interu	ipt your mani	p.	C L E A R



4.8 About

The About tab displays the information about the Controller GUI and the connected instrument.

It displays the Controller GUI name, version, and copyright information.

It also displays the instrument model, the instrument key (serial number or COM port), the firmware version for the selected axis and the list of the selected axes.

GMOTOU						
Property	V	alue				
Assembly Vertice	2	MC100 Utility				
File version	2	0.0.5				
Copyright	C	opyright © Ne	wport Corp	oration 2019		
Selected controller version	S	MC_CC - Con	troller-driver	version 3.1.	2	
Instrument Key	C	OM7				
Axis #1	L	TA-HS_PN:_U	JD:B11876	7		
IC_CC - Controller-driver version	3. 1. 2	2				



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5 Communication to a Single SMC100CC/PP

Set the dip switches on the SMC100CC/PP to FIRST:



Connect the SMC100CC/PP to the RS232 or to the USB port (via RS232C to USB converter) of the PC. Connect the positioner to the SMC100CC/PP (MOTOR connector).

Connect the power supply.

The LED on the SMC100CC/PP turns RED.



Launch the SMC100 Utility to open the SMC100 GUI Applet.

Controller's status is displayed using LED display.

Set parameters and initialize positioners using **Download parameters from SmartStage** button in the "Parameters" tab and the **Initialize** button in the "Main" or "Jog" tab.

•• COM7	- 🗆 X	•• COM7 - X
Configuration Main Jog GPI0 Parameters Address Acceleration (AC) 20.0000 Home Mode (H1 Velocity (VA) 5.00000 Home Velocity (OF Jerk time (JR) 0.04000 Home Timeout (OT Software Limit - (SL) 0.00000 Control Loop (SC Software Limit + (SR) 50.0000 Kp Factor (KF Backlash (BA) 0.00000 Ki Factor (KC Hysteresis (BH) 0.00000 Following Error (FE Check stage name (ZX3) Velocity Feed Forward (KV	Diagnostics About 0 4.00000 10 2.50000 10 2.50000 10 2.50000 10 2.50000 10 2.50000 10 0.0000 10 0.0000 10 0.0000 10 1.00000 10 24.0000	Configuration Main Jog GPIO Parameters Address Diagnostics About Initialization initialize Save Pos. Save Pos. Current Position 0.000000 0.000000 0.000000 Incremental Motion / PR-Move Relative #1 #2 Image: Cyclic Motion Cyclic Motion Current cycle Target Motion / PA-Move Absolute
Motor Peak Current Limit (QIL Motor RMS Current Limit (QIF RMS Current Averaging Time (QIT Download parameters from SmartStage SMC100CC	0.21300	Motion Configuration Values Velocity : Minimum end of run : 5.0000 0.0000 Set Rename SMC_CC - Controller-driver version 3. 1. 2
	E A R	



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6 Communication to Several SMC100CC/PP

The SMC100 controller is equipped with a RS485 internal link for chaining up to 31 controllers from the same RS232C COM port.

Setting up a chain of several SMC100 controllers requires to:

- Configure RS485 address of all controllers,
- Configure the dip switches of all controllers according to the chaining process,
- Link the controllers to RS485 internal link,
- Configure the chain with the SMC100 applet,
- Configure and set parameters of each controller according to the connected positioner with the SMC100 applet.

NOTE Command read is accepted in all states.

SMC100CC and SMC100PP can be mixed in a daisy-chain.

6.1.1 Controller RS485 Address Setting

The first thing to do is applying an individual RS485 address to each SMC100CC/PP controller.

By default SMS100CC/PP are delivered in FIRST RS232 configuration with RS485 address number 2.

The SMC100 controller in the chain connected to the PC via the RS232 link is automatically identified as the first element in the chain and its RS485 address is 1, so there is no need to configure its RS485 address.

All other SMC100CC/PP controllers connected through the internal RS485 communication link have to be configured with a unique RS485 address from 2 to 31.

Each controller of the chain must be configured separately using RS232 link and must be configure in FIRST RS232:

1. Set the dip switches of the SMC100CC/PP controller to FIRST RS232 (see graphic below).



 Connect the SMC100CC/PP to the RS232C or to the USB port of the PC by using a RS232 to USB converter (SMC-USB).

It is not needed to connect any positioner to the controller. Connect the power supply. The LED turns RED.



- 3. Launch the SMC100 Utility to open the SMC100 GUI Applet.
- 4. In the Newport SMC100 GUI, click on the "Address" tab, enter the desired controller address (in the SMC100 daisy-chain order) in the **Controller address** field and click on the **Set** button to save the controller's address.

configuration Main Jog GPIO Parameters Address	Diagnostics	About
Controller pool setting		
Selected controllers		
1: LTA-HL_PN:B238273_UD:01/10/2021 ~	Delete	
Detected controllers		
1: LTA-HL_PN:B238273_UD:01/10/2021 ~	Add	Discover
Steps: 1. Connect only the SMC100 Controller that you want to initialize	ze, to your co	mputer
 Using the COM port. Ensure DIP switches on the Controller a Select the desired Controller address from the listbox below. Press 'Set' button to assign this address to the connected C Download the Stage parameters if required. Disconnect this Controller and power off. To assign a different address to another Controller, follow the For details, see "Communication Settings" section of the Produ Please refer to the SMC100 User's manual for daisy chaining o modification 	ontroller. e above step ict Manual. r any parame	s. ster's
 Using the COM port. Ensure DIP switches on the Controller a Select the desired Controller address from the listbox below. Press 'Set' button to assign this address to the connected C Download the Stage parameters if required. Disconnect this Controller and power off. To assign a different address to another Controller, follow the For details, see "Communication Settings" section of the Produ Please refer to the SMC100 User's manual for daisy chaining o modification. Note: After an address configuration, it's recommended to perform the set of the set of the production of the production of the production of the production. 	ontroller. e above step ict Manual. r any parame orm a "Disco	s. ter's ver".
 Select the desired Controller address from the listbox below. Press 'Set' button to assign this address to the connected C Download the Stage parameters if required. Disconnect this Controller and power off. To assign a different address to another Controller, follow the For details, see "Communication Settings" section of the Produ Please refer to the SMC100 User's manual for daisy chaining o modification. Note: After an address configuration, it's recommended to perform Controller address 	ontroller. e above step uct Manual. r any parame orm a "Disco	s. ter's ver''. Set
 using the COM port. Ensure DIP switches on the Controller a Select the desired Controller address from the listbox below. Press 'Set' button to assign this address to the connected C Download the Stage parameters if required. Disconnect this Controller and power off. To assign a different address to another Controller, follow the For details, see "Communication Settings" section of the Produ Please refer to the SMC100 User's manual for daisy chaining o modification. Note: After an address configuration, it's recommended to perform Controller address 	ontroller. e above step uct Manual. r any parame orm a "Disco	s. ter's ver". Set

NOTE Setting an address can also be performed by sending a SA command through GUI Diagnostics tab.

This method requires to set the controller in CONFIGURATION state using PW command.

NOTE

It is recommended to note down the RS485 address of the controller, stickers are supplied with the SMC100CC/PP for this purpose.

- 5. Disconnect the controller from the PC.
- 6. Repeat the procedure for all SMC100 controller of the chain.



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6.1.2 Building the System

Once all controller addresses have been defined, the system can be built.

Pull out all cables from all controllers.

Set the dip switches of the controller with the address number 1 as FIRST RS232, this controller will be connected to the PC via RS232 link.

Set the dip switches of the other controllers, except one, as OTHERS RS485, and set the dip switches of one controller as LAST RS485. See below graphic for illustration.



NOTE When only two controllers are involved, one has to be set as FIRST RS232 (the one connected to the PC via RS232), and the other one as LAST RS485.

Connect the SMC100CC/PP configured as FIRST RS232 to the RS232C or to the USB port of the PC by using a RS232 to USB converter (SMC-USB).

Connect a RS485 network cable from the RS485 OUT of the FIRST RS232 controller to the RS485 IN of the next controller (OTHERS 485).

Connect all controllers together from RS485 OUT of one to RS485 IN of the following controller.

The last controller in the chain is simply connected via its RS485 IN connector to the previous controller and is configured as LAST RS485.

Connect the positioners to the SMC100CC/PP's (MOTOR connector).

Connect the SMC100CC/PP's to power.

NOTE

The SMC100CC/PP allows chaining power from one SMC100CC/PP to another one using the SMC-PSC0.2 cable supplied with the controller. But the total power consumption of all positioners connected to the same power supply should not exceed 80 W. The maximum power consumption of each Newport positioner is listed in the Newport catalog and on the Newport web site. In case of questions, contact Newport.

Example:

The maximum power consumption of a VP-25XA is 48 W. The maximum power consumption of an LTA-HS is 6 W. So it is possible to connect one VP-25XA and up to 5 LTA-HS to the same power supply. But it is not possible to connect two VP-25XA to the same power supply.





When done, the configuration should look as follow:





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6.1.3 Configuring the Controller

Launch the SMC100 Utility to open the SMC100 GUI Applet.

When using the SMC100CC/PP with Newport ESP compatible positioners (see label on the positioner), select "Address" tab and press **Discover** button.

nfiguration Main Jog GPIO Parameters Controller pool setting	Address	Diagnostics	s About
Controller pool setting			
Selected controllers			
1: LTA-HS_PN:_UD:B118767	~	Delete	
Detected controllers			
1: LTA-HS_PN:_UD:B118767	~	Add	Discover
5. Disconnect this Controller and power off. 6. To assign a different address to another Control For details, see "Communication Settings" section Please refer to the SMC100 User's manual for dais modification. Note: After an address configuration, it's recomme Controller	ller, follow th of the Produ ty chaining o nded to performed address	e above step uct Manual. r any param omn a "Disco	ps. eter's over". Set
C_CC - Controller-driver version 3.1.2			

The SMC100 applet checks all the connected SMC100 and identifies the connected positioners.

Once the discovering process is completed, select the positioners to add in the SMC100 daisy-chain in the **Detected Controllers** list and add them pressing **Add** button.

COM7								\times
Configuration	Main	Jog	GPIO	Parameters	Address	Diagnosti	cs About	
Controller po	ol settin	a						
Selected o	ontroller	8						
	DNI- 11	5 0.01107	67			Delete		
I. LIAHS	_FIX01	0.0110/	07		~	Delete		
Detected of	controlle	rs						
1: LTA-HS	PN:_U	D:B1187	67		~	Add	Discov	er
1: LTA-HS	PN:_U	D:B1187	67		^			
2: LTA-HL	PN:B23	8273_U	D:01/10/	2021				
5: Not assig 6: Not assig 7: Not assig 9: Not assig 10: Not assig 10: Not assig 11: Not assig 12: Not assig 12: Not assig 13: Not assig 14: Not assig 15: Not assig 16: Not assig 17: Not assig 17: Not assig 19: Not assig 19: Not assig 20: Not assig 20: Not assig 21: Not assig 22: Not assig 23: Not assig 24: Not assig 25: Not assig 25: Not assig 26: Not assig 27: Not as	ned ned gned gned i					ize, to your are in 'FIRS Controller. ne above ste uct Manual or any parar form a ''Disc	computer T position eps. 	
24: Not ass 25: Not ass	igned							
nit 26: Not ass	igned							
_ 27: Not ass	igned					_		
29: Not ass	igned							
00 11 1	igned				V			



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The list of the daisy-chained controllers is updated in the **Selected Controllers** list and can be managed using the **Delete** button.



The daisy-chain is created, controller's status are displayed using LED display.

Once the daisy-chain is created, a selection list is displayed above the function tabs and allows to select the controller to drive.

S COM7	2007		×
1: LTA-HS_PN:_UD:B118767			~
1: LTA-HS_PN:_UD:B118767 2: 2: LTA-HL_PN:B238273_UD:01/10/2021 3: 3: TRA25PPD_PN:B114367_UD:111406 4: 4: TRB12PP_PN:B183305_UD:18/04/2018	00101	03.	
Current Position	0.00000)	0

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Set parameters and initialize positioners using **Download parameters from SmartStage** button in the "Parameters" tab and the **Initialize** button in the "Main" or "Jog" tab.

onfiguration	Main	Jog	GPI	D Pa	arameters	Address	Diagnostic	s About	t
Acceler	ation (AC	20.00	000		Home	Mode (HT)	4.00000		1
Ve	locity (VA	5.000	000		Home V	elocity (OH)	2.50000		1
Jerk	time (JF	0.040	000		Home T	meout (OT)	44.0000		1
Software I	Limit - (SL	.) 0.00	000		Contro	Lago (SC)	Onened	Opened	-
Software Li	imit + (SF	50.00	000		Ko	Easter (KD)	C200 1C	opened	~
Bac	klash (BA	0.00	000		- Kd	Factor (KD)	6 20816		
Hyste	eresis (BH	0.00	000		K	Factor (KI)	206939		
ncoder Incre	ment (SU	0.00	003		Followin	Error (FE)	1 00000		
heck stage n	ame (ZX	3) 🔽		Veloc	ity Feed Fo	orward (KV)	3.10408		
		_		Mat	Driver	-H (D) 0	24.0000		
				MOto	or Driver v	ortage (DV)	24.0000		
			IVI.	otor Pe	ak Curren		0.21300		
				otor HI	15 Current	Limit (QIR)	0.10650		
		,	RMS C	urrent	Averaging	Time (QTT)	3.00000	_	
Download p	arameter	s from S	martSt	age	SMCT	oocc [Set parar	meters	

e Pos.
e Pos.
e Pos.
000
•
Marrie Alexabete
#2
Go to
run : Set
✓ Go to
r

6.1.4 Using the SMC100CC/PP with non Newport ESP compatible positioners or changing the default values

When using the SMC100CC/PP with non Newport ESP compatible positioners, enter the positioner parameters manually in the "Parameters" tab.

In the "Parameters" tab edit the configuration parameters stored in the controller.

NOTE This method is not recommended unless for an experienced user.

For further information about the meaning of the different parameters, refer to the explanations at the corresponding two letter commands (see command names in brackets) in section Command Set – SMC100 User's Manual.

Controller GUI Manual



Service Form

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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 s	pecific problems):

Controller GUI Manual

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