

WMC-2A motion controller



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Introduction

The WMC-2A is a motion controller for laboratory and light industrial usage. It is comprised of:

- motion controller (specific to either a stepper or brushless-DC motor)
- USB-RS485 converter
- DC power supply
- Cable for connection to motor (500mm long and terminated with a DSUB9 connector)
- Cable for connection to signals (500mm long and terminated with a DSUB9 connector)
- USB cable to computer



Fig.1: Illustration showing the connections

To facilitate implementation, Windows compatible demonstration software is provided.



Fig.2: Screen capture of demonstration software

Operations

Please follow the instructions in the section "installation of driver USB-RS485" to install the USB-RS485 driver.

Please refer to section "Installation of the demonstration software" to install the demonstration software.

Once the driver and demonstration software have been installed, perform the following:

- 1. Connect the motor and signals cables
- 2. Connect the USB cable to the computer
- 3. Connect the power cable, then turn on power. The controller's green LED lights up and then blinks slowly.
- 4. Launch the demonstration program WMzStageDemo.

*<u>CAUTION</u>: Never switch on the power when motor and signals cables are disconnected. *<u>CAUTION</u>: Never disconnect the motor and signals cables when the controller is powered.

Specifications

Motor type: stepper or brushless-DC (BLDC) Number of axes : 1 Current : 2A peak (1,4A RMS) Communication to the computer : serial interface

Drawing

The following drawing shows the outer dimensions of the product.



Fig.3: Views and principal dimensions in mm

Electrical connections

Two (2) cables, each equipped with a DSUB9 connector, allow the electrical connection to the mechanical assembly. For the motor cable and the signal cable, figures 4 and 5 illustrate the DSUB connections.



Fig.4: Motor cable connector

If using a stepper motor:

Pin 1: Phase A Pin 2: Phase <u>A</u> Pin 3: NC* Pin 4: Phase B If using a brushless motor: Pin 1: Hall sensor Vcc Pin 2: Input Hall sensor A Pin 3: Input Hall sensor B Pin 4: Input Hall sensor C

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Pin 5: Phase <u>B</u> Pin 6: NC Pin 7: NC Pin 8: NC Pin 9: NC Pin 5: Hall sensor GROUND Pin 6: NC* Pin 7: Phase A Pin 8: Phase B Pin 9: Phase C

*NC : not connected

Hall effect sensor:

- Power supply = 5V
- Current = 20mA
- Hall sensors inputs are TTL compatible



Fig.5: Signals cable connector (limit switches + encoder)

Limit switches and encoder:

- Pin 1: Encoder Vcc
- Pin 2: Input encoder phase A
- Pin 3: Input encoder phase B
- Pin 4: Input encoder index
- Pin 5: Encoder 0V
- Pin 6: Limit switch Vcc
- Pin 7: Input limit switch upper position
- Pin 8: Input limit switch lower position
- Pin 9: Limit switch 0V

Limit switches:

- Power supply from 5 to 24V.
- Maximum DC current = 50mA
- Limit switches inputs are TTL compatible

Encoders:

- Power supply = 5V
- Encoder inputs are TTL compatible

Ordering instructions

To place an order, please specify the type of motor:

- WMC-2A-STEP
- WMC-2A-BLDC

Note: Cables to the motor and signals are 500mm long.

<u>Warranty</u>

Products are guaranteed for one year. See warranty terms and conditions.

Installation of driver USB-RS485

Before using the product, install the driver for the USB-RS485 converter (CP210x from Silicon Labs).

Typically, the installation for Windows 7 and Windows 10 computers is automatic. Just connect the USB cable to the computer, Windows will then detect the new device and install the correct driver automatically. Once the installation is complete, it is recommended to open the device manager and confirm that a new serial port has been added.



Fig.6: Serial port COM3 associated to the USB-RS485 converter

The driver is also downloadable from the Wedge Motion website for a manual installation. The following screenshots, obtained on a Windows 10 (64-bit version) computer, show the procedure for a manual installation.

Name		Date modified	Туре
x64		1/3/2020 9:14 AM	File folder
x86		1/3/2020 9:14 AM	File folder
CP210x_Windows_Drivers.zip		1/1/2020 11:51 AM	Compressed (zipp
💐 CP210xVCPInstaller_x64.exe		0/10/2016 12.52 DM	Anneliantina
🕿 CP210xVCPInstaller_x86.exe		Open	
🔮 dpinst.xml	•	Run as administrator	
SLAB_License_Agreement_VCI		Troubleshoot compatibility	
slabvcp.cat		Pin to Start	
slabvcp.inf	+	Scan with Windows Defender	
	È	Share	





Fig.8: Click next



Fig.9: Accept agreement and click next

CP210x USB to UART Bridge Driver Installer		
	Completing the Installation of the CP210x USB to UART Bridge Driver	
	The drivers were successfully ir	nstalled on this computer.
	You can now connect your dev came with instructions, please r	rice to this computer. If your device ead them first.
	Driver Name	Status
	✓ Silicon Laboratories Inc	. Ready to use
	< <u>B</u> ack	Finish Cancel

Fig.10: Click finish. The USB-RS485 driver is now installed.

Once the driver is installed, connect the USB cable to the computer. The USB-RS485 converter is then recognized by Windows. A virtual serial port is then automatically established and listed in the device manager. This computer selected COM3. However, another serial port may be assigned by your computer.



Fig.11: Serial port COM3 associated to the USB-RS485 converter

Installation of demonstration software

The demonstration software can be downloaded from the Wedge Motion website. It can be installed locally or for "all users".

- Local install uses a ZIP archive for a local and portable installation.
- All-user install uses a Windows installer for a global installation in administrator mode.

Once the software is installed, the type of controller must be selected along with the serial port. By default, the software starts in simulation mode.

Stage	Demo	×
<u>F</u> ile Edit Al	bout	
Enabled		Enable
Homed		Home
Moving	False	Up
Position [µm]	NA	+ 1000 µm
Encoder	NA	+ 100 µm
High limit		+ 10 µm
Low limit		
	_	Down
		- 10 µm
STO	OP	- 100 µm
		- 1000 µm
	4 4000	
Custom [µm]	14000	Move to
Zero	0	Move to
Simulation		

Fig.12: Demonstration software in simulation mode

It is then necessary to choose the type of controller.

	WMzStage	Demo		×
File	Edit A	bout		
	Choose	the controlle	r	ple
	Choose	the encoder		
	Exit			ne
Movi	ng	False	ſ	Jp
Positi	ion [µm]	NA		+ 1000 µm
Enco	der	NA		+ 100 µm
High	limit			+ 10 µm
Low I	limit			
	_	_	ר	Down
				- 10 µm
	STO	OP		- 100 µm
		_		- 1000 µm
<u> </u>		7000		
Custo	om [µm]	7000	Mo	ove to
Zero		0	Mo	ove to
Simul	ation			

Fig.13: Controller choice

For example, below, the controller WMC-2A-STEP is chosen, which corresponds to a motorization with stepper motor.

Choose the controller	×
Please choose here	
WMC-2A-STEP	v
	<u>O</u> K <u>C</u> ancel

Fig.14: Controller choice

The Edit menu allows configuration of the serial port. Please, fill in the serial port so that it corresponds to the one assigned by the driver. For example, in the following figure, the software is configured to use the "COM3" serial port.

\blacksquare Serial port configuration X				
Port name	СОМЗ			
Baud rate [bits/sec] 9600				
<u>O</u> K	<u>C</u> ancel			

Fig.15: Serial port configuration

The following figure shows the software configured for the WMC-2A-STEP controller and serial port "COM3". The status bar (circled below) is displayed with green text when the software is initialized correctly and communication with the controller is established.

Stag	eDemo	×
<u>F</u> ile Edit A	bout	
Enabled		Enable
Homed		Home
Moving	False	Up
Position [µm]	0	+ 1000 µm
Encoder	0	+ 100 µm
High limit		+ 10 µm
Low limit		Down
		- 10 µm
ST	OP	- 100 µm
		- 1000 µm
High [µm]	14000	Move to
Zero	0	Move to
WMC-2A-STEP	(COM3, 96	00)

Fig.16: Status bar after successful initialization