

Simple Step® Product Brochure

Version: 4.2.0



Simple Step®

Motion Control Made Simple!®

Simple Step LLC

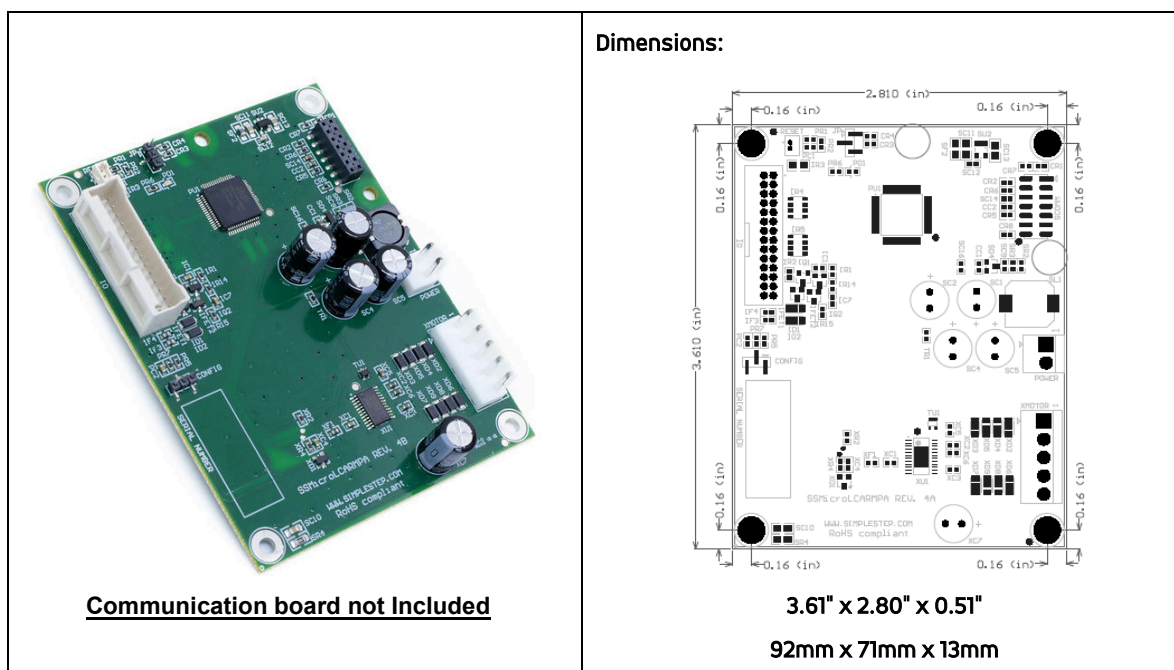
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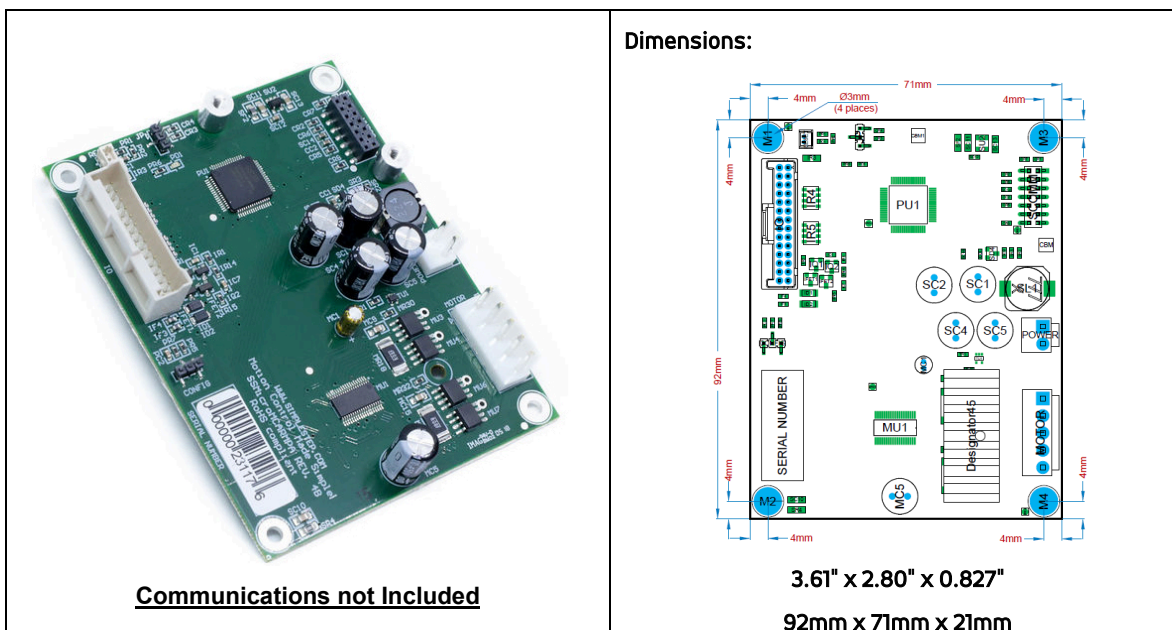
Single Axis Microstepping Controller (SSMicroLC-4x) (Low Current)



Specifications

	Minimum	Maximum
RoHS Compliant	Yes	
Total Motor Axis/Board:	1	
Motor Driver Type (per axis):	Bipolar Stepper Driver	
Motor Driver Stepping Range (per axis):	Full, 1/2, 1/4, 1/8, 1/16, 1/32	
Motor Stepping Speeds (per axis):	1 sps	30,000 sps
Motor Stepping Prescaler (per axis):	Yes (1 (default) to 255) (prescaler=255=0.003922 sps)	
Motor Idle Power Modes (per axis):	OFF to Maximum Setting	
Maximum Current Control Setting (per axis):	Software Controlled Single 8 bit DAC	
Driver Current Decay Control (per axis)	Yes	
Driver Phase Short Circuit Protection:	Yes	
Driver Thermal Shutdown Protection:	Yes	
Driver Junction Temperature (Thermal Shutdown):	-	+165 degrees C (+329 degrees F)
Motor Current Limits (per axis)		
Running:	0.100 amps/phase	1.50 amps/phase
Idle:	0.00 amps/phase	To maximum setting
Operating Voltages:	15.0VDC	50.0VDC
Ambient Temperature Range		
Operating:	0 degrees C (32 degrees F)	+70 degrees C (158 degrees F)
Storage:	-40 degrees C (-40 degrees F)	+125 degrees C (257 degrees F)
Maximum Controller Boards on One (1) Serial Line	16 (up to 255 if 2-digit address is used)	
Communications:	Communications boards sold separately	
Communication Baudrates:	9600, 19200, 38400, 57600 (default), 115200, 230400, 460800	
Home Sensor Input (per axis):	Infrared (Current Limited to 25ma) Sensor Input or direct drive 5VDC	
Limit Sensor Input (per axis):	Microswitch type Input (Normally Open)	
Dedicated User Input Lines (per axis):	3-Inputs with on board 10K pull-ups, 0-5.0VDC Input, 0-3.3VDC Output 3-Inputs with no pull-ups, 0-3.3VDC Input/Output	
Dedicated User Output Lines (per axis):	2 - MOSFET 0.5 amp - 0VDC to Board operating voltage with diode clamp	
Outputs (each):		
Quadrature Encoder Interface (per axis):	Yes (Single ended only)	
Quadrature Encoder Maximum Frequency (per axis):	1.5MHz	
Quadrature Encoder Modes (per axis):	x1, x2 and x4	
Quadrature Encoder scaling (per axis):	Double Precision Floating Point	
PCB Flammability Rating:	UL 94V-0	

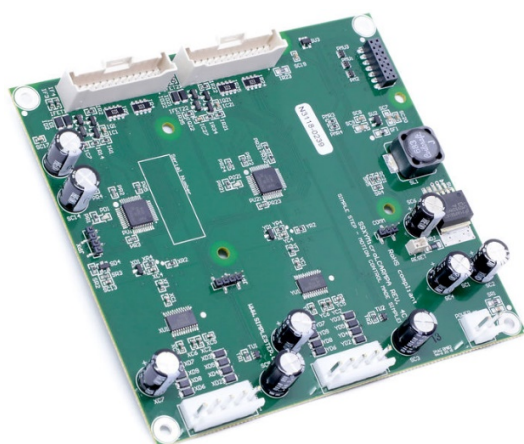
Single Axis Microstepping Controller (SSMicroMC-4x) (Medium Current)



Specifications

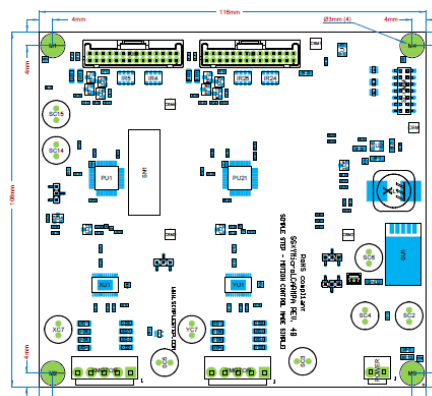
	Minimum	Maximum
RoHS Compliant	Yes	
Total Motor Axis/Board:	1	
Motor Driver Type (per axis):	Bipolar Stepper Driver	
Motor Driver Stepping Range (per axis):	Full, 1/2, 1/4, 1/8, 1/16, 1/32	
Motor Stepping Speeds (per axis):	1 sps	30,000 sps
Motor Stepping Prescaler (per axis):	Yes (1 (default) to 255) (prescaler=255=0.003922 sps)	
Motor Idle Power Modes (per axis):	OFF to Maximum Setting	
Maximum Current Control Setting (per axis):	Software Controlled Single 8 bit DAC	
Driver Current Decay Control (per axis)	Yes	
Driver Phase Short Circuit Protection:	Yes	
Driver Thermal Shutdown Protection:	Yes	
Driver Junction Temperature (Thermal Shutdown):	-	+165 degrees C (+329 degrees F)
Motor Current Limits (per axis)		
Running:	0.100 amps/phase	3.125 amps/phase
Idle:	0.00 amps/phase	To maximum setting
Operating Voltages:	15.0VDC	50.0VDC
Ambient Temperature Range		
Operating:	0 degrees C (32 degrees F)	+70 degrees C (158 degrees F)
Storage:	-40 degrees C (-40 degrees F)	+125 degrees C (257 degrees F)
Maximum Controller Boards on One (1) Serial Line	16 (up to 255 if 2-digit address is used)	
Communications:	Communications boards sold separately	
Communication Baudrates:	9600, 19200, 38400, 57600 (default), 115200, 230400, 460800	
Home Sensor Input (per axis):	Infrared (Current Limited to 25ma) Sensor Input or direct drive 5VDC	
Limit Sensor Input (per axis):	Microswitch type Input (Normally Open)	
Dedicated User Input Lines (per axis):	3-Inputs with on board 10K pull-ups, 0-5.0VDC Input, 0-3.3VDC Output 3-Inputs with no pull-ups, 0-3.3VDC Input/Output	
Dedicated User Output Lines (per axis):	2 - MOSFET 0.5 amp - 0VDC to Board operating voltage with diode clamp	
Outputs (each):		
Quadrature Encoder Interface (per axis):	Yes (Single ended only)	
Quadrature Encoder Maximum Frequency (per axis):	1.5MHz	
Quadrature Encoder Modes (per axis):	x1, x2 and x4	
Quadrature Encoder scaling (per axis):	Double Precision Floating Point	
PCB Flammability Rating:	UL 94V-0	

Dual Axis Microstepping Controller (SSXYMicroLC-4x) (Low Current)



Communication board not Included

Dimensions:



4.57" x 4.17" x 0.51"

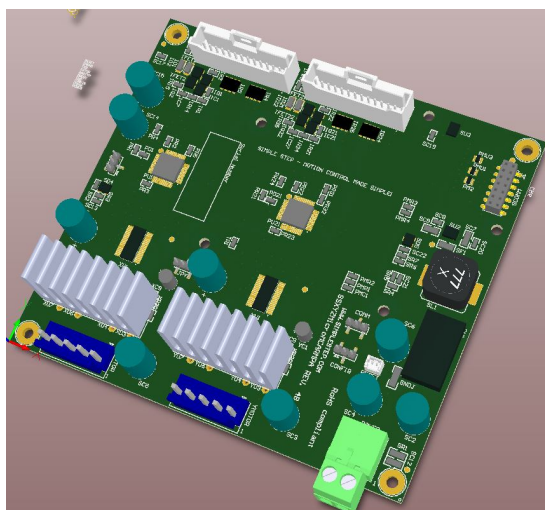
116mm x 106mm x 13mm

Specifications

	Minimum	Maximum
RoHS Compliant	Yes	
Total Motor Axis/Board:	2	
Motor Driver Type (per axis):	Bipolar Stepper Driver	
Motor Driver Stepping Range (per axis):	Full, 1/2, 1/4, 1/8, 1/16, 1/32	
Motor Stepping Speeds (per axis):	1 sps	30,000 sps
Motor Stepping Prescaler (per axis):	Yes (1 (default) to 255) (prescaler=255=0.003922 sps)	
Motor Idle Power Modes (per axis):	OFF to Maximum Setting	
Maximum Current Control Setting (per axis):	Software Controlled Single 8 bit DAC	
Driver Current Decay Control (per axis)	Yes	
Driver Phase Short Circuit Protection:	Yes	
Driver Thermal Shutdown Protection:	Yes	
Driver Junction Temperature (Thermal Shutdown):	-	+165 degrees C (+329 degrees F)
Motor Current Limits (per axis)		
Running:	0.100 amps/phase	1.50 amps/phase
Idle:	0.00 amps/phase	To maximum setting
Operating Voltages:	15.0VDC	50.0VDC
Ambient Temperature Range		
Operating:	0 degrees C (32 degrees F)	+70 degrees C (158 degrees F)
Storage:	-40 degrees C (-40 degrees F)	+125 degrees C (257 degrees F)
Maximum Controller Boards on One (1) Serial Line	16 (up to 255 if 2-digit address is used)	
Communications:	Communications boards sold separately	
Communication Baudrates:	9600, 19200, 38400, 57600 (default), 115200, 230400, 460800	
Home Sensor Input (per axis):	Infrared (Current Limited to 25ma) Sensor Input or direct drive 5VDC	
Limit Sensor Input (per axis):	Microswitch type Input (Normally Open)	
Dedicated User Input Lines (per axis):	3-Inputs with on board 10K pull-ups, 0-5.0VDC Input, 0-3.3VDC Output 3-Inputs with no pull-ups, 0-3.3VDC Input/Output	
Dedicated User Output Lines (per axis):	2 - MOSFET 0.5 amp - 0VDC to Board operating voltage with diode clamp	
Outputs (each):		
Quadrature Encoder Interface (per axis):	Yes (Single ended only)	
Quadrature Encoder Maximum Frequency (per axis):	1.5MHz	
Quadrature Encoder Modes (per axis):	x1, x2 and x4	
Quadrature Encoder scaling (per axis):	Double Precision Floating Point	
PCB Flammability Rating:	UL 94V-0	

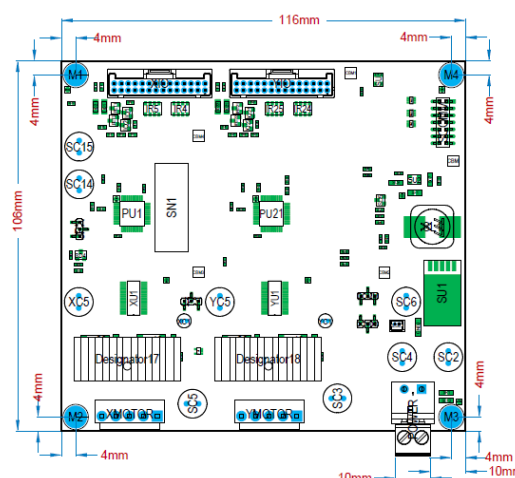
Dual Axis Microstepping Controller (SSXYMicroMC-4x)

(Medium Current)



Shown with optional Heat Sinks installed

Dimensions:



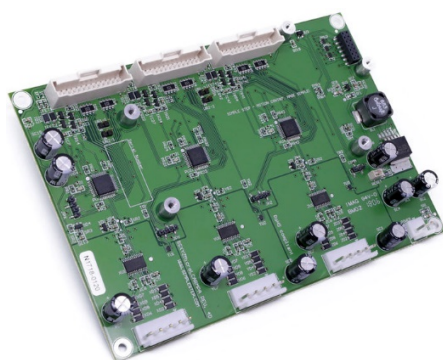
4.57" x 4.18" x 0.8"

116mm x 106mm x 20.00mm

Specifications

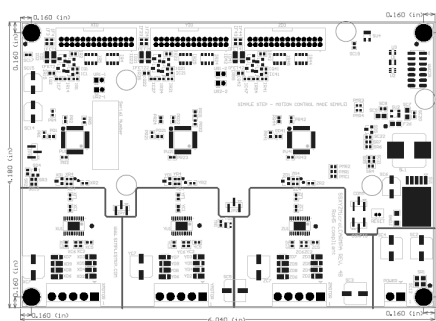
	Minimum	Maximum
RoHS Compliant	Yes	
Total Motor Axis/Board:	2	
Motor Driver Type (per axis):	Bipolar Stepper Driver	
Motor Driver Stepping Range (per axis):	Full, 1/2, 1/4, 1/8, 1/16, 1/32	
Motor Stepping Speeds (per axis):	1 sps	30,000 sps
Motor Stepping Prescaler (per axis):	Yes (1 (default) to 255) (prescaler=255=0.003922 sps)	
Motor Idle Power Modes (per axis):	OFF to Maximum Setting	
Maximum Current Control Setting (per axis):	Software Controlled Single 8 bit DAC	
Driver Current Decay Control (per axis)	Yes	
Driver Phase Short Circuit Protection:	Yes	
Driver Thermal Shutdown Protection:	Yes	
Driver Junction Temperature (Thermal Shutdown):	-	+165 degrees C (+329 degrees F)
Motor Current Limits (per axis)		
Running:	0.100 amps/phase	3.125 amps/phase
Idle:	0.00 amps/phase	To maximum setting
Operating Voltages:	12.0VDC	50.0VDC
Ambient Temperature Range		
Operating:	0 degrees C (32 degrees F)	+70 degrees C (158 degrees F)
Storage:	-40 degrees C (-40 degrees F)	+125 degrees C (257 degrees F)
Maximum Controller Boards on One (1) Serial Line	16 (up to 255 if 2-digit address is used)	
Communications:	Communications boards sold separately	
Communication Baudrates:	9600, 19200, 38400, 57600 (default), 115200, 230400, 460800	
Home Sensor Input (per axis):	Infrared (Current Limited to 25ma) Sensor Input or direct drive 5VDC	
Limit Sensor Input (per axis):	Microswitch type Input (Normally Open)	
Dedicated User Input Lines (per axis):	3-Inputs with on board 10K pull-ups, 0-5.0VDC Input, 0-3.3VDC Output 3-Inputs with no pull-ups, 0-3.3VDC Input/Output	
Dedicated User Output Lines (per axis):	2 - MOSFET 0.5 amp - 0VDC to Board operating voltage with diode clamp	
Outputs (each):		
Quadrature Encoder Interface (per axis):	Yes (Single ended only)	
Quadrature Encoder Maximum Frequency (per axis):	1.5MHz	
Quadrature Encoder Modes (per axis):	x1, x2 and x4	
Quadrature Encoder scaling (per axis):	Double Precision Floating Point	
PCB Flammability Rating:	UL 94V-0	

Triple Axis Microstepping Controller (SSXYZMicroLC-4x) (Low Current)



Communication board not Included

Dimensions:



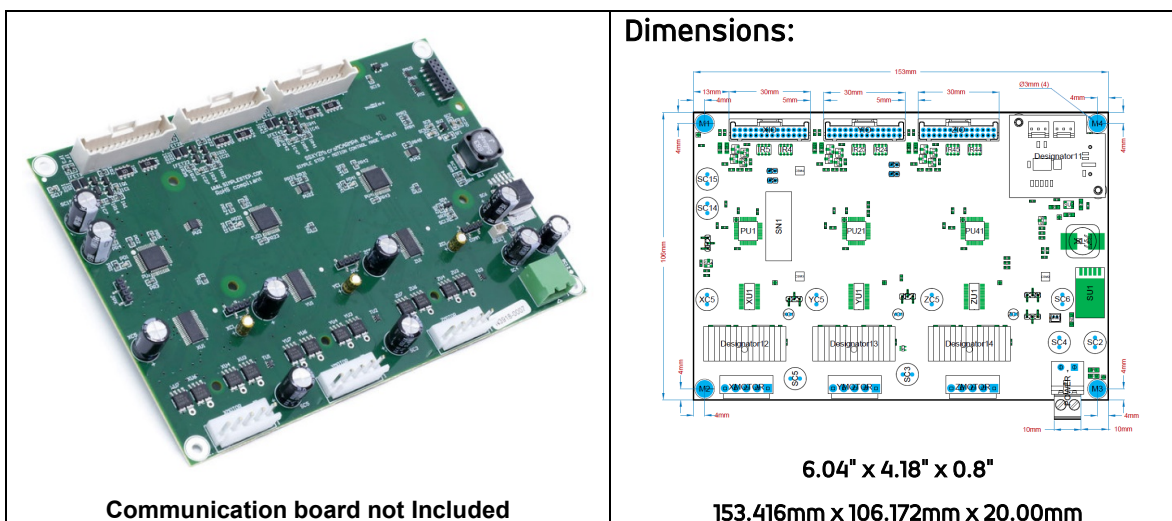
6.04" x 4.18" x 0.6"

153.416mm x 106.172mm x 11.24mm

Specifications

	Minimum	Maximum
RoHS Compliant	Yes	
Total Motor Axis/Board:	3	
Motor Driver Type (per axis):	Bipolar Stepper Driver	
Motor Driver Stepping Range (per axis):	Full, 1/2, 1/4, 1/8, 1/16, 1/32	
Motor Stepping Speeds (per axis):	1 sps	30,000 sps
Motor Stepping Prescaler (per axis):	Yes (1 (default) to 255) (prescaler=255=0.003922 sps)	
Motor Idle Power Modes (per axis):	OFF to Maximum Setting	
Maximum Current Control Setting (per axis):	Software Controlled Single 8 bit DAC	
Driver Current Decay Control (per axis)	Yes	
Driver Phase Short Circuit Protection:	Yes	
Driver Thermal Shutdown Protection:	Yes	
Driver Junction Temperature (Thermal Shutdown):	-	+165 degrees C (+329 degrees F)
Motor Current Limits (per axis)		
Running:	0.100 amps/phase	1.50 amps/phase
Idle:	0.00 amps/phase	To maximum setting
Operating Voltages:	15.0VDC	50.0VDC
Ambient Temperature Range		
Operating:	0 degrees C (32 degrees F)	+70 degrees C (158 degrees F)
Storage:	-40 degrees C (-40 degrees F)	+125 degrees C (257 degrees F)
Maximum Controller Boards on One (1) Serial Line	16 (up to 255 if 2-digit address is used)	
Communications:	Communications boards sold separately	
Communication Baudrates:	9600, 19200, 38400, 57600 (default), 115200, 230400, 460800	
Home Sensor Input (per axis):	Infrared (Current Limited to 25ma) Sensor Input or direct drive 5VDC	
Limit Sensor Input (per axis):	Microswitch type Input (Normally Open)	
Dedicated User Input Lines (per axis):	3-Inputs with on board 10K pull-ups, 0-5.0VDC Input, 0-3.3VDC Output 3-Inputs with no pull-ups, 0-3.3VDC Input/Output	
Dedicated User Output Lines (per axis):	2 - MOSFET 0.5 amp - 0VDC to Board operating voltage with diode clamp	
Outputs (each):		
Quadrature Encoder Interface (per axis):	Yes (Single ended only)	
Quadrature Encoder Maximum Frequency (per axis):	1.5MHz	
Quadrature Encoder Modes (per axis):	x1, x2 and x4	
Quadrature Encoder scaling (per axis):	Double Precision Floating Point	
PCB Flammability Rating:	UL 94V-0	

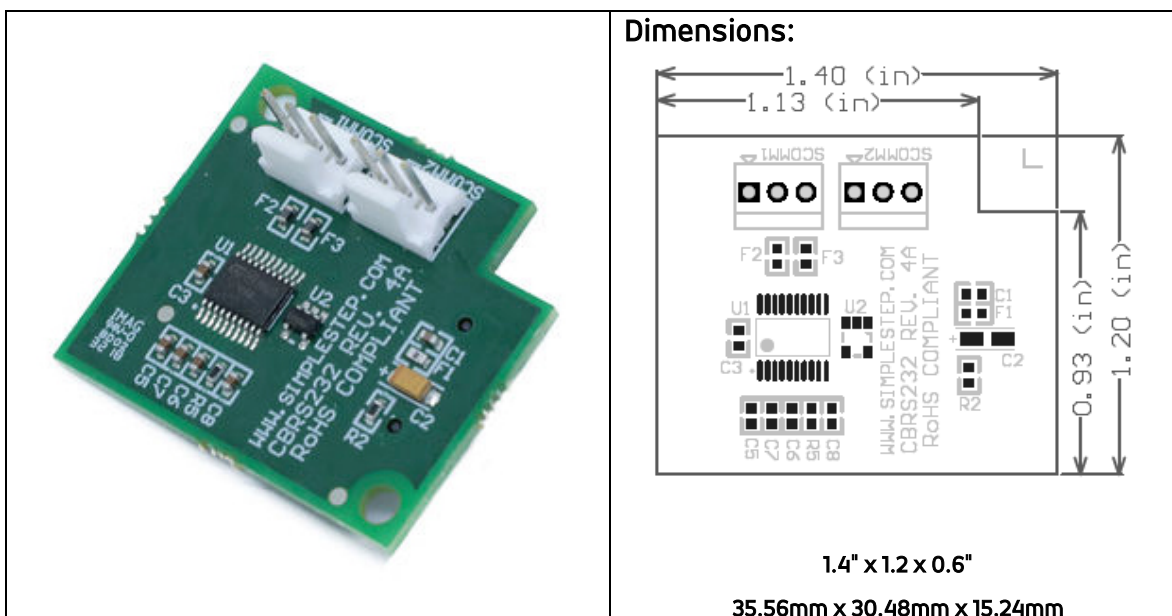
Triple Axis Microstepping Controller (SSXYZMicroMC-4x) (Medium Current)



Specifications

	Minimum	Maximum
RoHS Compliant	Yes	
Total Motor Axis/Board:	3	
Motor Driver Type (per axis):	Bipolar Stepper Driver	
Motor Driver Stepping Range (per axis):	Full, 1/2, 1/4, 1/8, 1/16, 1/32	
Motor Stepping Speeds (per axis):	1 sps	30,000 sps
Motor Stepping Prescaler (per axis):	Yes (1 (default) to 255) (prescaler=255=0.003922 sps)	
Motor Idle Power Modes (per axis):	OFF to Maximum Setting	
Maximum Current Control Setting (per axis):	Software Controlled Single 8 bit DAC	
Driver Current Decay Control (per axis)	Yes	
Driver Phase Short Circuit Protection:	Yes	
Driver Thermal Shutdown Protection:	Yes	
Driver Junction Temperature (Thermal Shutdown):	-	+165 degrees C (+329 degrees F)
Motor Current Limits (per axis)		
Running:	0.100 amps/phase	3.125 amps/phase
Idle:	0.00 amps/phase	To maximum setting
Operating Voltages:	12.0VDC	50.0VDC
Ambient Temperature Range		
Operating:	0 degrees C (32 degrees F)	+70 degrees C (158 degrees F)
Storage:	-40 degrees C (-40 degrees F)	+125 degrees C (257 degrees F)
Maximum Controller Boards on One (1) Serial Line	16 (up to 255 if 2-digit address is used)	
Communications:	Communications boards sold separately	
Communication Baudrates:	9600, 19200, 38400, 57600 (default), 115200, 230400, 460800	
Home Sensor Input (per axis):	Infrared (Current Limited to 25ma) Sensor Input or direct drive 5VDC	
Limit Sensor Input (per axis):	Microswitch type Input (Normally Open)	
Dedicated User Input Lines (per axis):	3-Inputs with on board 10K pull-ups, 0-5.0VDC Input, 0-3.3VDC Output 3-Inputs with no pull-ups, 0-3.3VDC Input/Output	
Dedicated User Output Lines (per axis):	2 - MOSFET 0.5 amp - 0VDC to Board operating voltage with diode clamp	
Outputs (each):		
Quadrature Encoder Interface (per axis):	Yes (Single ended only)	
Quadrature Encoder Maximum Frequency (per axis):	1.5MHz	
Quadrature Encoder Modes (per axis):	x1, x2 and x4	
Quadrature Encoder scaling (per axis):	Double Precision Floating Point	
PCB Flammability Rating:	UL 94V-0	

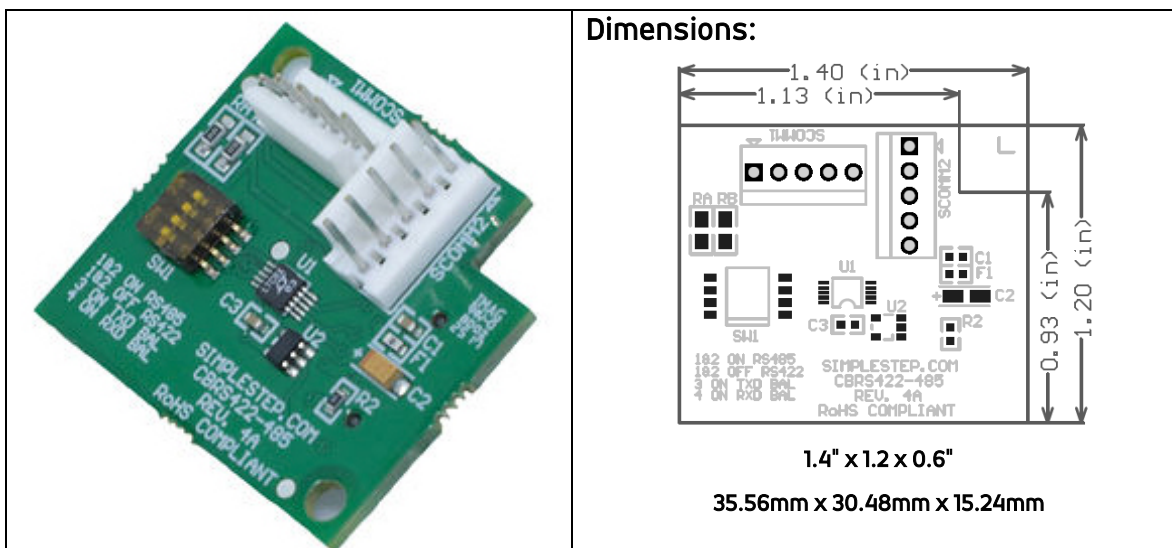
RS232 Communications Module (CBRS232-4x)



Specifications

	Minimum	Maximum
RoHS Compliant	Yes	
Compatible Simple Step Boards	All Simple Step -4x boards	
Ambient Temperature Range		
Operating:	0 degrees C (32 degrees F)	+70 degrees C (158 degrees F)
Storage:	-40 degrees C (-40 degrees F)	+125 degrees C (257 degrees F)
Maximum Controller Boards on One (1) Serial Line	16	
Communications:	Simple Step Multi-drop RS232	
Communication Baudrates:	9600, 19200, 38400, 57600, 115200	
PCB Flammability Rating:	UL 94V-0	

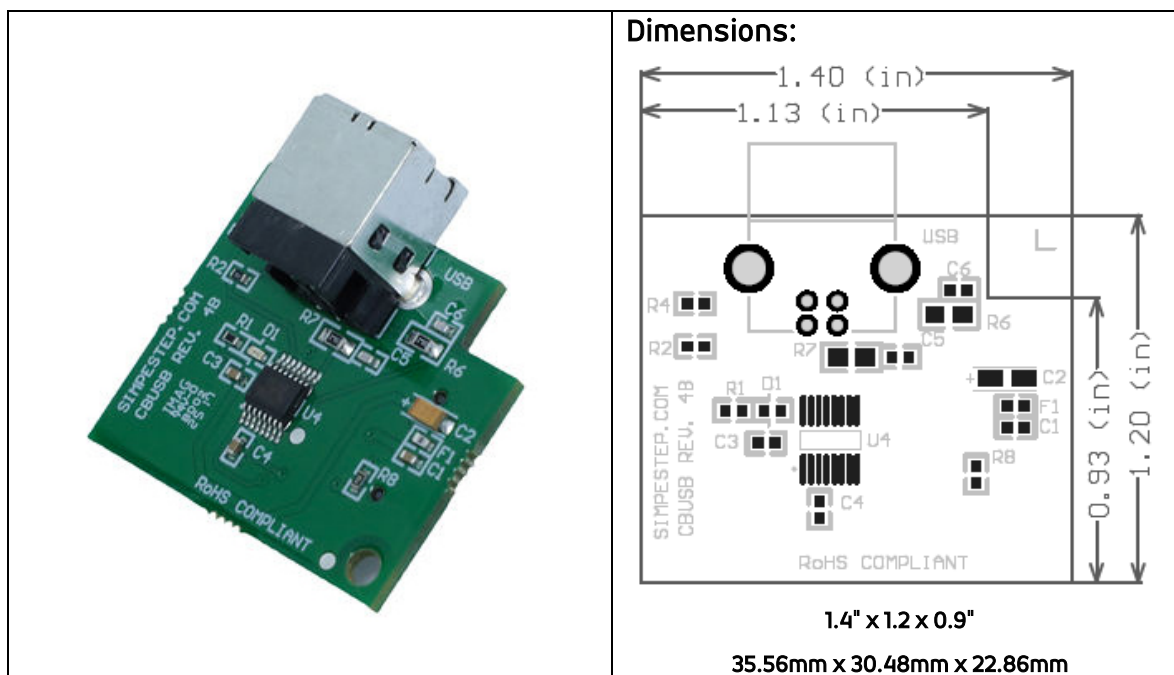
RS422/485 Communications Module (CBRS422-485-4x)



Specifications

	Minimum	Maximum
RoHS Compliant	Yes	
Compatible Simple Step Boards	All Simple Step -4x boards	
Ambient Temperature Range		
Operating:	0 degrees C (32 degrees F)	+70 degrees C (158 degrees F)
Storage:	-40 degrees C (-40 degrees F)	+125 degrees C (257 degrees F)
Maximum Controller Boards on One (1) Serial Line	255	
Communications:	RS422 and RS485	
Communication Baudrates:	9600, 19200, 38400, 57600, 115200, 230400, 460800	
PCB Flammability Rating:	UL 94V-0	

USB 2.0 Virtual Serial Communications Module (CBUSB-4x)



Specifications

	Minimum	Maximum
RoHS Compliant	Yes	
Compatible Simple Step Boards	All Simple Step -4x boards	
Ambient Temperature Range		
Operating:	0 degrees C (32 degrees F)	+70 degrees C (158 degrees F)
Storage:	-40 degrees C (-40 degrees F)	+125 degrees C (257 degrees F)
Maximum Controller Boards on One (1) Serial Line	1	
Communications:	Standard USB 2.0	
Communication Baudrates:	9600, 19200, 38400, 57600, 115200, 230400, 460800	
PCB Flammability Rating:	UL 94V-0	