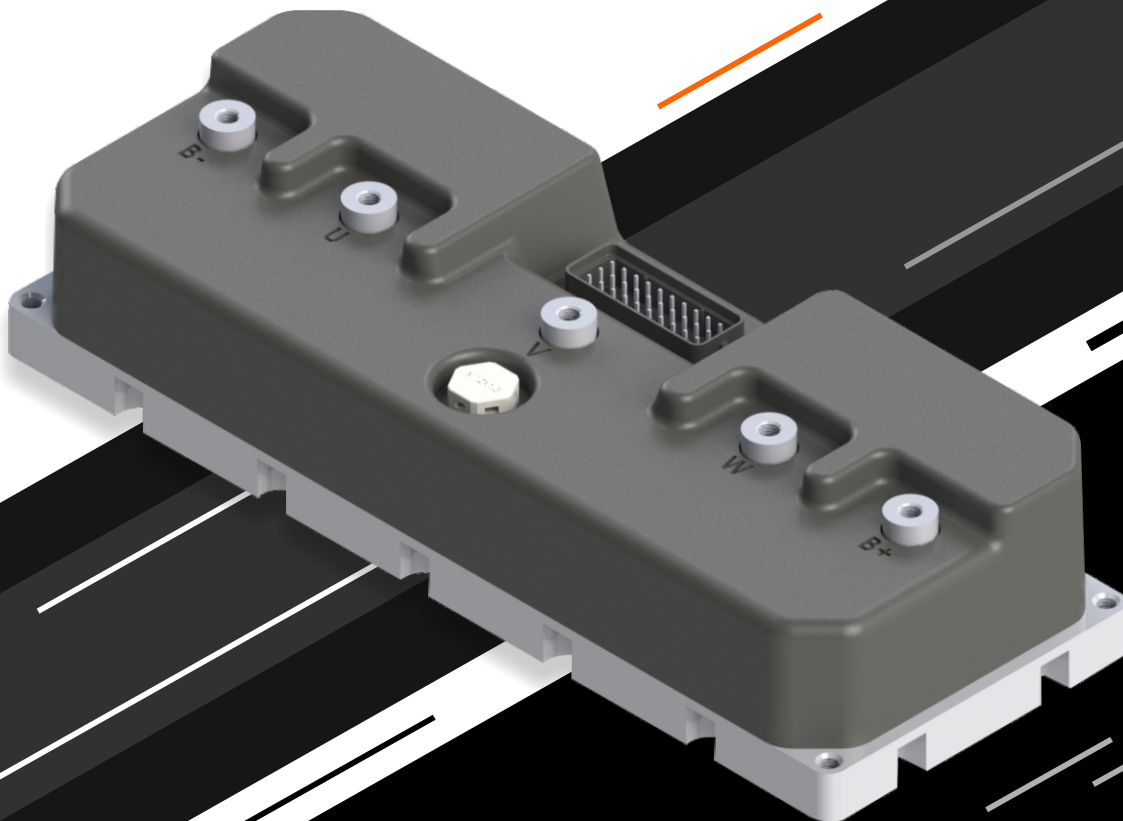




SM Series

High Performance Motor Controllers

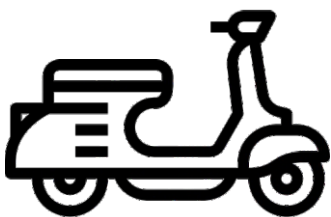




• **SM100/150** • **SM200/250** • **SM300/350**

SM Series controllers utilize cutting-edge control algorithms and electronic design to deliver exceptional power, efficiency, and reliability. It also offers extensive customization options, ensuring optimal performance tailored to specific applications.

These controllers are specifically designed for on-road/ off-road electric vehicles, boasting the industry's most compact size relative to their power capacity. Their power dense design enables seamless integration into tight spaces without compromising performance, which ensures exceptional reliability in demanding applications.



Extensive Features

SM series controllers combine advanced design and rich functionality, enabling OEMs to create optimal vehicle solutions tailored to their target markets. With a wide range of unique features and extensive customization options, these controllers enhance the driver experience while seamlessly integrating with vehicle systems.



Functionality



Four Quadrant Operation



Multiple Speed Modes



Variable Regenerative Braking



Cruise Control

Safety



Traction Control



Hill Assist



Overcurrent Protection



Electrical

Environmental

Functional

	SM100/150	SM200/250	SM300/350
Operating Voltage	36-84V	36-84V	36-84V
Battery Current	100/150A	200/250A	300/350A
S1 (Peak)	180/250A	300/350A	400/500A
S2 (Peak)	300/400A	500/600A	650/700A
Operating Temperature	-10°C -85°C	-10°C -85°C	-10°C -85°C
IP rating	IP65	IP67	IP67
Motor Support	Brushed DC, BLDC, PMSM	Brushed DC, BLDC, PMSM	Brushed DC, BLDC, PMSM
Temperature Sensor	NTC, PTC, KTY83, KTY84	NTC, PTC, KTY83, KTY84	NTC, PTC, KTY83, KTY84
Position Sensor	ABI Encoder with PWM, Hall sensor, SIN-COS encoder	ABI Encoder with PWM, Hall sensor, SIN-COS encoder	ABI Encoder with PWM, Hall sensor, SIN-COS encoder
Operation Modes	Sensored & Sensorless	Sensored & Sensorless	Sensored & Sensorless
Switching Frequency	8-12.5Khz	8-12.5Khz	8-12.5Khz

Functional

	SM100/150	SM200/250	SM300/350
Max Encoder Resolution (Counts Per Revolution)	8192	8192	8192
Efficiency	99%	99%	99%
Communication Protocol	UART/CAN	UART/CAN	UART/CAN

Physical

Dimensions (mm)	191*96*60	234*99*60	290*108*60
Weight (Kg) (without potting)	1.12	2.5	3.5
Cooling Method	Air/Forced Air/Liquid	Air/Forced Air/Liquid	Air/Forced Air/Liquid
Power Terminals	M6	M6	M6

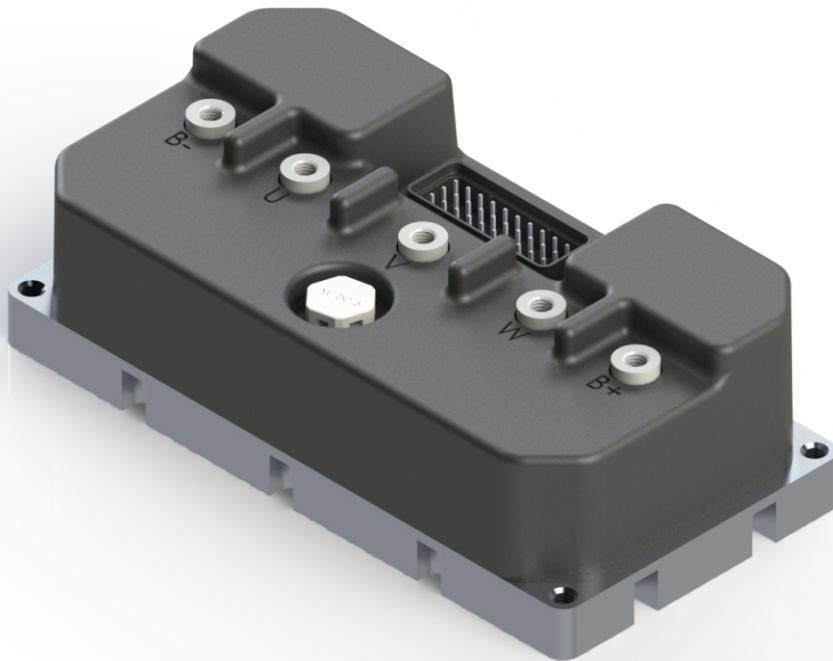
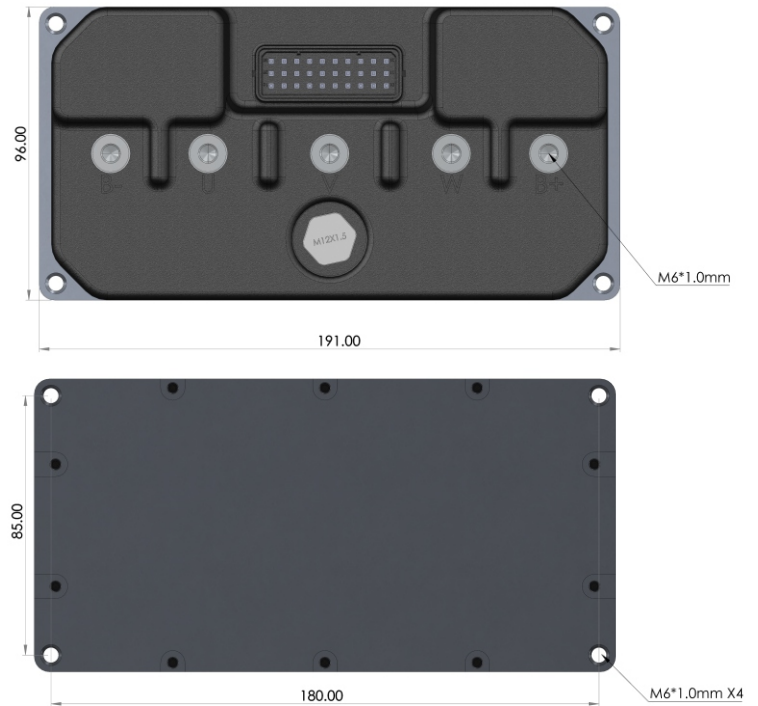
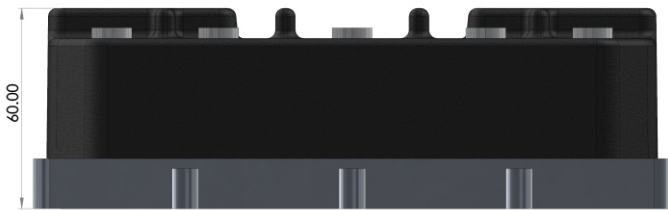
Interface

Analog Input	4	4	4
Digital Inputs	9	9	9
Digital Outputs	2	2	2
12V Power Supply	1 (300mA)	1 (300mA)	1 (300mA)

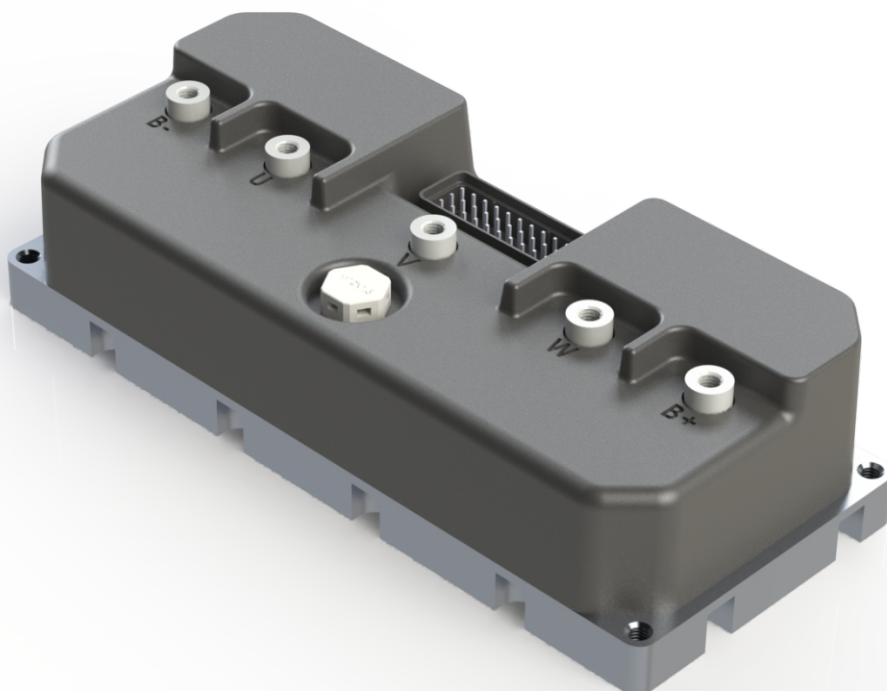
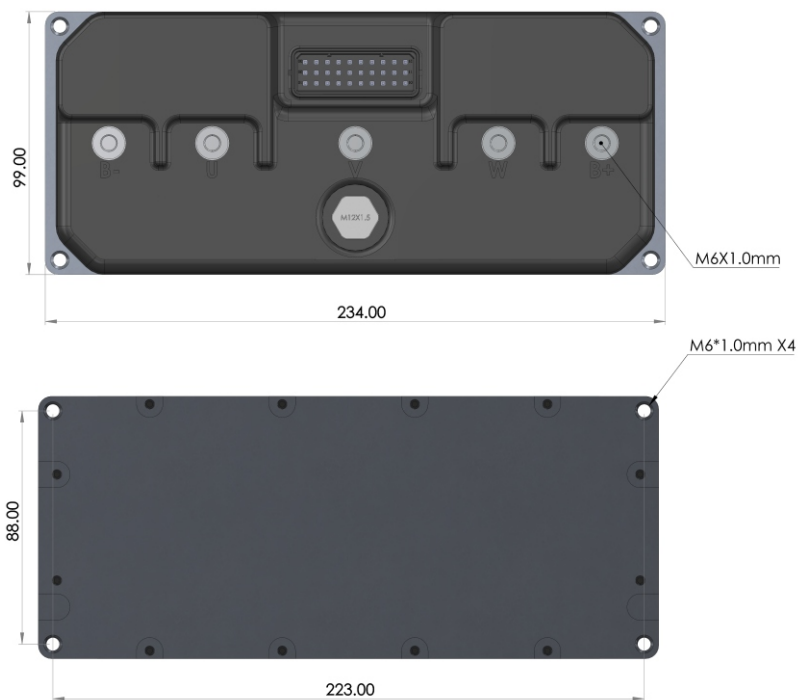
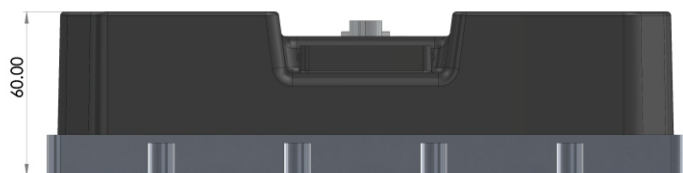
Certifications

AIS 004 Compatibility	Compatible	Compatible	Compatible
ISO26262	(Under Testing)	(Under Testing)	(Under Testing)

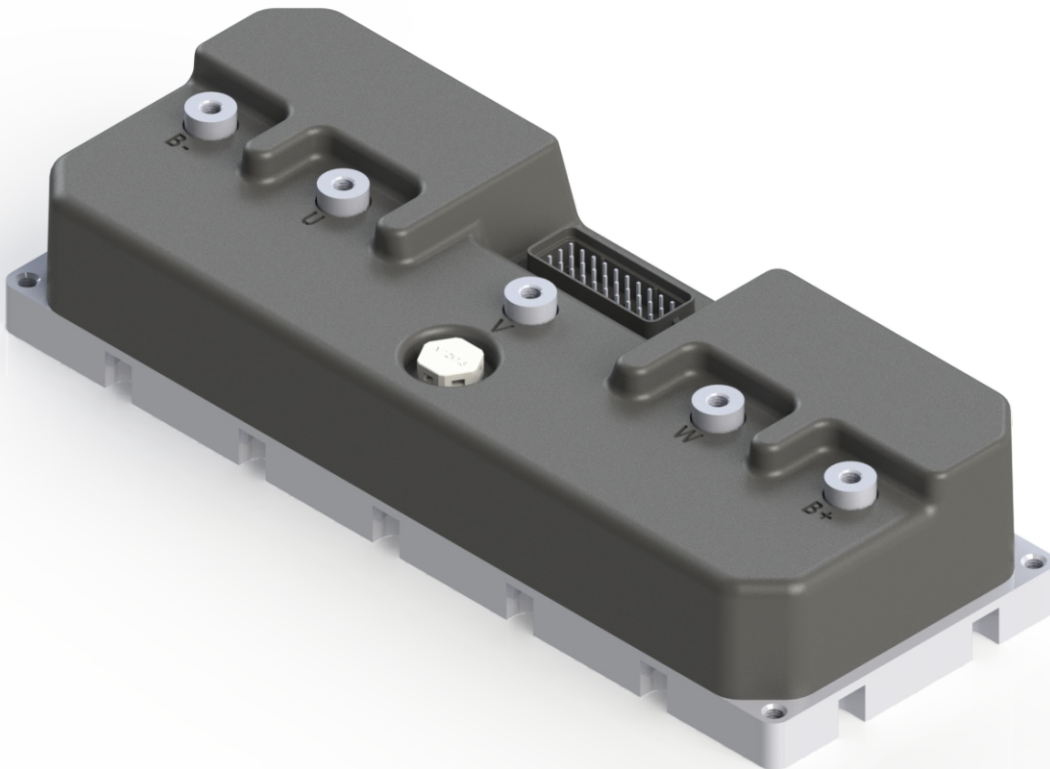
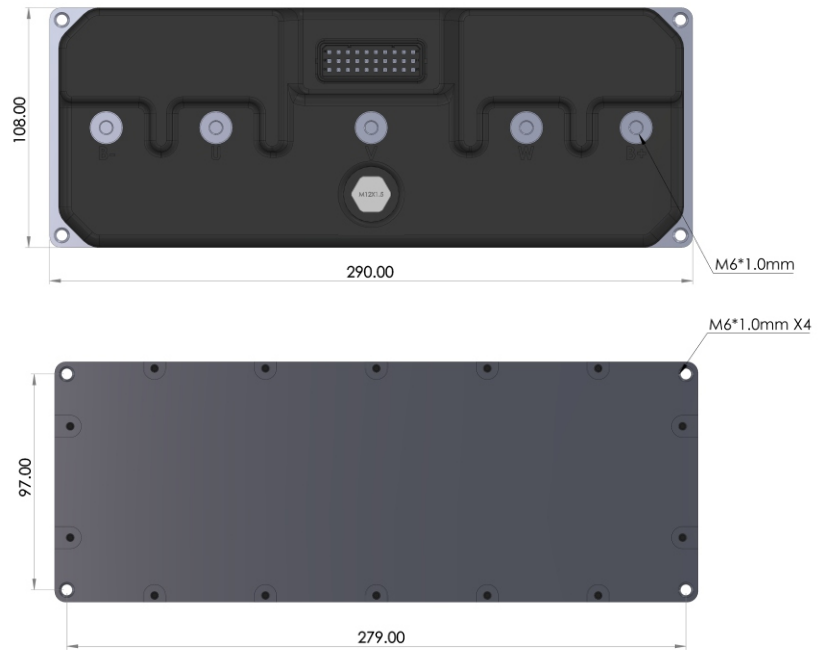
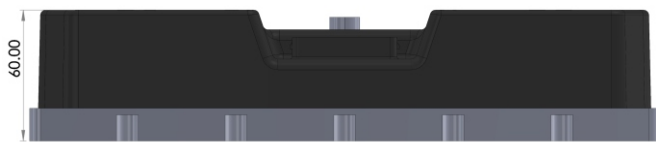
• **SM100/150**



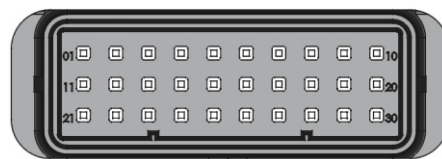
• **SM200/250**



• **SM300/350**



• *Harness Pinout*



	Pin	Definition	Description
Hall Connector	1	5V	
	3	Ground	
	2	Hall_U	
	12	Hall_V	
	22	Hall_W	
	23	Motor Temperature	
Encoder Connector	1	5V	
	3	Ground	
	2	Hall_U	A
	12	Hall_V	B
	22	Hall_W	I/Z
	23	Motor Temperature	
	13	PWM from encoder	
Vin	30	Ignition	Battery + (For protection use 500mA)
Kill Switch	28	Emergency Stop	Pull up to 5V
	16	5V	
Throttle	5	3.3V	Throttle input/ Throttle sensor Wire
	7	Adc1	
	8	Ground	
Cruise/ Reverse	9	Cruise	
	10	Reverse	Pull to Ground
	18	Ground	
Regenerative Braking	6	Adc2	Pull up to 5V
	16	5V	

	Pin	Definition	Description
Speed Modes	15	Mode 1	Pull to ground
		Mode 2	Open
		Mode 3	Pull up to 3.3V
	5	3.3V	
	18	Ground	
Auxiliary	29	12V	Only for relay/ fan (Max 500mA)
	26	12V Ground	
	27	12V Ground	
CAN/Bluetooth	20	CAN H	Non-isolated for SM100/150 Isolated for SM200/250, SM300/350
	19	CAN L	Non-isolated for SM100/150 Isolated for SM200/250, SM300/350
	17	5V	
	25	Ground	
USB Debugging	14	Usb_d-	
	24	Usb_d+	
	25	Ground	