

eMOBILITY CONTROLLERS

BAC355 | BAC555 | BAC855



YOUR RIDE, YOUR WAY.

The ASI family of motor controllers provide OEMs with the most compact and adaptable eMobility controllers in the marketplace today. Our belief, that it is “your customer, your ride, your way” led us to develop the most configurable controller, without compromising on features or quality.

We believe one size does not fit all.

ASI, one supplier for all your eMobility products.

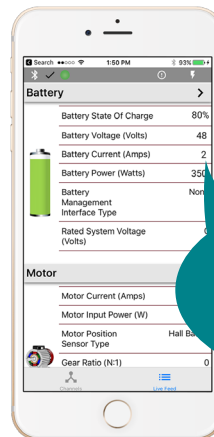
Our versatile eMobility controller ecosystem gives you the flexibility to diversify your product offering.

Benchmark Features

Regenerative & Engine Braking

Zero Speed Full Torque Sensorless Start

Reverse, OnRoad/OffRoad Settings



iOS & Android

Includes BACDoor™ software to fine tune performance.

Available for OEM customers only.



Engineered in Canada

519.342.2507 | www.acceleratedsystems.com

01.2021 © Accelerated Systems Inc. V.1.0

YOUR RIDE, YOUR WAY.



BESPOKE

Set the personality of your bike with second-to-none customization. Each eBike model can reflect the ride feel that will most resonate with your diverse customer base.



COMPACT

Our eMobility Controllers are the smallest in the industry without sacrificing capability. Similar powered controllers are 4x the size.



RELIABLE

We hand-pick our supply partners according to their quality focused performance. 100% of ASI eMobility controllers go through stringent multi-phase testing.



AUTONOMY

Our controllers support unsurpassed freedom in frame design, motor, peripheral and applications choices.

Open Architecture Software with Read/Write Capabilities	We empower customers with the autonomy to customize and manipulate the parameters of the controller to achieve your unique ride feeling over UART or CAN.	Unparalleled Sales Support	Our application engineering team will work with you, in real time, to create a unique ride for your target customer base.
Halls and Sensorless Motors	Ultimate freedom in motor choice. Hall based motors provide smooth engagement. Sensorless motors provide better efficiency. Hall start and sensorless run for the best of both worlds in either geared or direct drive motors.	BACDoor™ Engineering Software	Complimenting ASI's series of peerless eMobility controllers is BACDoor™. Proprietary software enabling eBike OEMs the ultimate experience in ride customization and diagnostics.
Sine Wave FOC Controller	Our proprietary algorithms take this industry standard to even greater levels of smoothness and quietness. Unfluctuating, buttery smooth ride-feel while also being whisper quiet.	Connectivity to Display Units	Our controllers harmonise best with equally high-quality display units from APT, KING-METER, Topology and EggRider.
Portable Technology	Our software is fully portable. It can drive multiple eMobility products, so you can benefit from standardizing on a single supplier without needing to re-learn software.	Limitless Expandability with Partnerships	Using IOT devices from Comodule or GPS Tuner, torque sensors from THUN or AUTORQ, the partnerships we have cultivated in the industry are yours to explore.
		Certifications	EN 15194 and ISO 13849 certified.

SPECIFICATIONS

OUTPUT PHASE CURRENT CONTROLLER

CONTROLLER	PEAK
BAC355	55 A-DC
BAC555	75 A-DC
BAC855	90 A-DC

INPUT POWER

CONTROLLER	VOLTAGE RANGE (DC)
BAC355	24V to 48V (Max 60V)
BAC555	24V to 48V (Max 60V)
BAC855	36V to 72V (Max 84V)

COMMUNICATION PROTOCOL

TTL-232-CANOpen	Standard
CANOpen with BLE	Optional
TTL-232 with RS-485	Optional
TTL-232 with TTL-232	Optional
TTL-232 with BLE	Optional

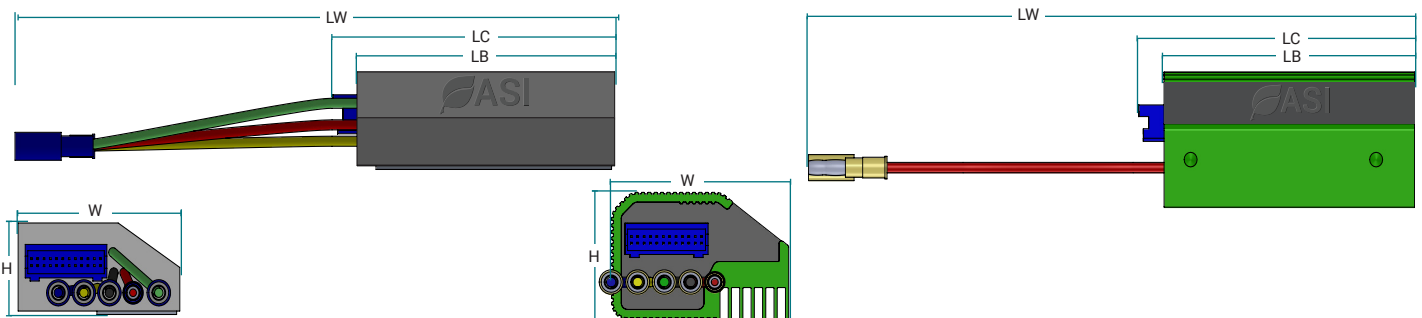
CONTROLLER POWER AND PERFORMANCE

PWM frequency	13.5 kHz default / up to 16.5 kHz when operating in remote mode
Maximum Controller output frequency	500 Hz
Electrical isolation to heat-sink	500 VAC
Storage ambient temperature	-40°C to 75°C
Operating ambient temperature	-20°C to 50°C
Thermal cutback	Controller linearly reduces maximum current limit with an internal heat-sink temperature from 85°C to 95°C, complete cutoff occurs above 95°C
Package environmental rating	IP67 (excluding electrical connections)
Speed regulation (range)	+/- 5% at top speed
Minimum motor phase to phase inductance	20 µH
Motor control scheme	Sinusoidal field oriented (FOC)
Motors supported	PMAC and BLDC

*Also Available in TTL-232 with LIN and LIN BLE

INPUT SPECIFICATIONS

TYPE	QTY	VOLTAGE	VMIN	VMAX
Hall sensor inputs	3	Logic High	0 VDC	0.5 VDC
		Logic Low	3.5 VDC	5 VDC
Digital inputs	2	Logic High	-0.3 VDC	1.5 VDC
		Logic Low	4 VDC	5.3 VDC
5V analog inputs	3	Analog	0 VDC	5 VDC
10V analog inputs	1	Analog	0 VDC	10 VDC



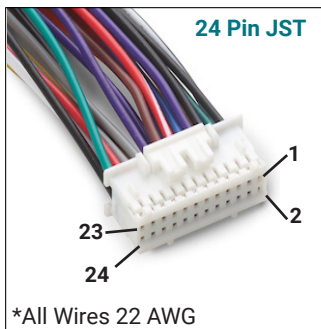
DIMENSIONS* & WEIGHT

MODEL	LW(W/WIRES)		LC (TO CONNECTOR)		LB (BODY)		W		H		WEIGHT	
	mm	in	mm	in	mm	in	mm	in	mm	in	g	lb
BAC355	190	7.48	90	3.54	82	3.23	51.5	2.03	26.5	1.04	215	.47
BAC555	190	7.48	90	3.54	82	3.23	51.5	2.03	26.5	1.04	215	.47
BAC855	210	8.27	90	3.54	82	3.23	55	2.17	39	1.54	330	.73
Tolerance	+/-10	+/-0.39	+/-1	+/-0.04	+/-1	+/-0.04	+/-1	+/-0.04	+/-1	+/-0.04	+/-1	+/-0.002

Pin Out Table

24 PIN JST PAD CONNECTOR

PIN #	COLOR	FUNCTION	FUNCTION (CLASSIC)	SPECIFICATIONS & RATINGS
1	Black	Hall GND	Hall GND	20mA max
2	White/Black	Hall 5V output	Hall 5V output	20mA max
3	Green	Hall-A	Hall-A	0V ON, 5V OFF
4	Blue	Hall-C	Hall-C	0V ON, 5V OFF
5	Black	GND	GND	400mA max (shared between all grounds)
6	Yellow	Hall-B	Hall-B	0V OFF, 5V ON
7	Purple/White	Analog input 4	ABMS	0-10V (pulled down)
8	Orange/White	Analog input 3	Brake 2	0-5V (pulled up)
9	Blue/Black	Digital input 2	PFS	Pulled up, active low
10	Orange	Analog input 2	Brake 1	0-5V (pulled up)
11	Red/White	5V output	5V output	50mA max
12	Blue/White	Digital input 1	Cruise	Pulled up, active low
13	Brown	12V output	12V output	90mA max
14	Purple	Analog input 1	Throttle	0-5V (pulled down)
15	Purple/Black	Low side switch	HDQ	100mA max
16	Black	GND	GND	400mA max (shared between all grounds)
17	Grey/White	TTL-RX	TTL-RX	5V TTL
18	Yellow/White	TTL-TX	TTL-TX	5V TTL
19	Grey/Black	CAN-L (optional 485-A, TTL2-Rx)	CAN-L (optional 485-A, TTL2-Rx)	120 Ohm termination resistor (when configured for CAN)
20	Yellow/Black	CAN-H (optional 485-B, TTL2-Tx)	CAN-H (optional 485-B, TTL2-Tx)	120 Ohm termination resistor (when configured for CAN)
21	Red	B+ output	Key-out	Always live connected to Controller B+
22	White	Controller enable input	Key-in	Requires B+, may draw up to 100mA
23	Green/White	6V switchable output	6V Light	500 mA max
24	Black	Power GND	Light GND	500 mA max (only for light)



8 Pin JST	8 PIN JST	24 PIN JST	COLOR
1	1	21	Red
2	2	24	Black
3	3	19	Grey/Black
4	4	20	Yellow/Black
5	5	22	White

3 PIN JST	24 PIN JST	COLOR
1	17	Grey/White
2	18	Yellow/White
3	16	Black

3 Pin JST

MATING CONNECTOR;
 JST PADP-24V-1-S-24 Pin Crimped Female Connector
 Part # JST SPH-001T-PO.5L4
 KST Bullet Male Blue -MPD2-156 / Female Blue -FRD2-156
 KST Bullet Male Yellow- MPD5.5-195 / Female Yellow-FRD2-5.5-195

COLOR	FUNCTION
Blue	Motor Phase C
Yellow	Motor Phase B
Green	Motor Phase A
Black	Battery GND
Red	B+

