ASI ACCELERATED SYSTEMS INC.

NEON SERIES

BAC 800-72-70

PRODUCT DESCRIPTION

The ASI BAC Ne 800 is a high power density electric bike controller that utilizes the latest in sinusoidal field oriented control to ensure smooth and quiet brushless DC motor operation and efficient vehicle operation.

The BAC Ne 800 can operate over a nominal voltage range of 36 Volts DC to 72 Volts DC. A robust MOSFET-based three phase bridge provides peak efficiencies in excess of 95%, no audible noise and can switch motor currents up to 90A peak. In addition to Hall sensor based motor commutation, sensorless commutation is also supported.

0 to 10 Volt analogue state of charge protocol is supported. Alternatively, a software based voltage model of the battery can be used to derive battery state of charge. Communication to the drive is via a proprietary ASI object dictionary using the ModBus RTU protocol.

Standard product at the physical layer includes TTL 232 and RS 485 protocols, which can be, substituted with optional LIN & CAN OPEN configurations.

Programmable performance mapping allows throttle, torque, pedal and wheel speed sensor inputs to be adjusted via the ASI BACDoor™ PC configuration software to meet specific performance requirements.

Numerous programmable protection features including motor/controller temperature, battery over/under voltage, and motor/battery current limits increase controller and motor longevity.

FEATURES

- Peak motor currents up to 90A
- Can be attached to additional heat sinking to significantly increase performance
- Standard JST signal connector on the board
- Dual communications ports TTL232 or RS485
- PWM drive for low ripple current and silent drive
- Field oriented control for increased efficiency and smooth motor operation
- Multiple analogue and digital inputs
- Support multiple sensor configurations
- Configurable throttle, pedal torque, pedal speed and assist level select input functions
- Single pulse and quadrature pedal or wheel speed inputs
- Analog and voltage model based battery management system interfaces
- Meets EN 15194 bike safety requirements on compliant bikes
- IP67 when used with a sealed connector
- 6V 0.5A light as standard
- Sensorless or hall commutation
- Regenerative braking
- Supports a range of torque sensors, pedal sensors and displays
- Fault protection including:
  - Bus over and under voltage
  - Motor over current
  - Motor and controller over temperature
  - Battery SOC fold back

APPLICATIONS

- Electric bikes
- Small electric scooters
- Small electric vehicles
- Small recreational vehicles

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Controller Performance	
Description	**Range**
Speed regulation	+/- 5% at top speed
Minimum motor phase to phase inductance	60 uH
Motor control scheme	Sinusoidal field oriented (FOC)
Motors supported[1]	PMAC and Brushless DC

Communications	
Feature	**Description**
Network	Proprietary ASI object dictionary over a variable baud rate ModBus network
Hardware Protocols	TTL Level 232 and RS-485. Optional CAN OPEN | Optional LIN

Input Specifications					
Type	**Quantity**	**Description**	**Voltage**	**VMin**	**VMax**
Hall inputs	3	Non isolated, diode protected to 100V max Used for motor commutation Max frequency: 1000 Hz Min pulse width: 40 µsec	**Logic Low**	0 VDC	0.5 VDC
			Logic High	3.5 VDC	5 VDC
Digital inputs	2	Non isolated, diode protected to 100V max Used for pedal first sensor and cruise control related features 1 kHz sampling rate Max frequency: 500 Hz Min pulse width: 40 µsec	**Logic Low**	1.5 VDC	2.5 VDC
			Logic High	4.3 VDC	5 VDC
Analogue inputs	4	Non isolated, resistance protected to 30V max, Single ended Min 10 bit resolution Used for throttle, BMS, and brakes		0 VDC	5 VDC

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Input Power		
Feature	**Rating**	**Units**
Nominal Input Voltage	36 - 72	Volts DC
Input Power	Software configurable	Watts

Output Phase Current low air-flow, no additional heat sinking, 25°C ambientlow		
Feature	**Rating**	**Units**
Absolute Peak	90	Amps DC
1 minute rating	70	Amps RMS
Continuous	30	Amps RMS

This product has various patents and patents pending.
All specifications are subject to change without notice.

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