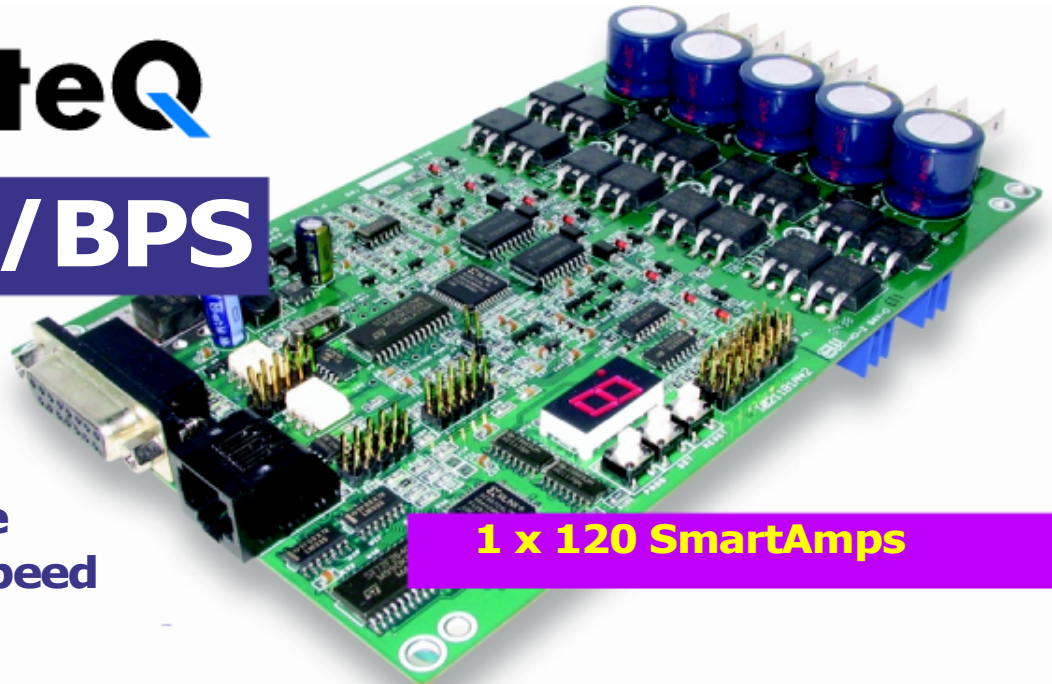




AX3100S/BPS



Single channel Forward/Reverse brushed motor speed controller

1 x 120 SmartAmps

NOTE: The AX3100 is a derivative of the AX3500. Please see the AX3500 user manual and data-sheet for all features. The AX3500 is a single channel product, so refer to the section relative to Single Channel operation. Omit all references to optical encoder input (option not available)

Roboteq's AX3100S/BPS controller is a product designed to convert commands received from a R/C radio, Analog Joystick, wireless modem, or microcomputer into high voltage and high current output for driving one DC motor. Designed for maximal ease-of-use in OEM applications, it is delivered with all necessary cables and hardware and is ready to use in minutes.

The motor may be operated in open or closed loop speed mode. Using low-cost position sensors, it may also be set to operate as heavy-duty position servo.

The AX3100S/BPS may be ordered in two versions:

AX3100S with finned heat sink

AX3100BPS with integral back plate.

The AX3100S/BPS can be reprogrammed in the field with the latest features by downloading new operating software from Roboteq's web site. Numerous safety features are incorporated into the controller to ensure reliable and safe operation in the most demanding mobile robotic vehicle applications.

Applications

- Terrestrial and Underwater Robotic Vehicles
- Automatic Guided Vehicles
- Police and Military Robots
- Hazardous Material Handling Robots
- Telepresence Systems
- Animatronics
- Industrial Controls

Key Features	Benefits
MCU digital design	Accurate, reliable, and fully programmable operation. Advanced algorithms
R/C mode support	Connects directly to simple, low cost R/C radios
RS232 Serial mode support	Connects directly to computers for autonomous operation or to wireless modem for two-way remote control
Analog mode support	Connects directly to analog joystick
Built-in power driver	Supports all common robot drive methods
Peak current	AX3100S 120 Amp AX3100BPS 120 Amp
Operating current	AX3100BPS 100 Amp AX3100S 120 Amp
Programmable current limitation	Protects controller, motors, wiring and battery.
Open loop or closed loop speed control	Low cost or higher accuracy speed control
Closed loop position control	Create low cost, ultra-high torque jumbo servos
Data Logging Output	Capture operating parameters in PC or PDA for analysis
Built-in DC/DC converter	Operates from a single 12V-40V battery
Field upgradeable software	Never obsolete. Add features via the internet

Technical Features

Microcomputer-based Digital Design

- Multiple operating modes
- Fully programmable using either built-in switches and 7 segment LED display or through connection to a PC
- Non-volatile storage of user configurable settings. No jumpers needed
- Simple operation
- Software upgradeable with new features

Multiple Command Modes

- Serial port (RS-232) input
- Radio-Control Pulse-Width input
- 0-5V Analog Voltage input

Multiple Motor Control modes

- Open Loop or Closed Loop Speed mode
- Position control mode for building high power position servos

Automatic Command Corrections

- Joystick min, max and center calibration
- Selectable dead band width
- Selectable exponentiation factors for each joystick
- 3rd R/C channel input for accessory output activation

Special Function Inputs/Outputs

- 2 Analog inputs. Used as
- Tachometer input for closed loop speed control
- Potentiometer input for position (servo mode)

- External temperature sensor inputs
- User defined purpose (RS232 mode only)
- One Switch input configurable as Emergency stop command
- Reversing commands when running vehicle inverted
- Up to 2 general purpose outputs for accessories or weapon
- One 24V, 2A output
- One low-level digital output
- Up to 2 digital input signals
- 8 RC pulses outputs for connection to additional Roboteq slave controllers or RC servos

Built-in Sensors

- Voltage sensor for monitoring the main 12 to 40V battery
- Voltage monitoring of internal 12V
- Temperature sensors near each Power Transistor bridge

Advanced Data Logging Capabilities

- 12 internal parameters, including battery voltage, captured R/C command, temperature and Amps accessible via RS232 port
 - Data may be logged in a PC or microcomputer
 - Data Logging Software supplied for PC
- ### Low Power Consumption
- On board DC/DC converter for single 12 to 40V battery system operation
 - Optional 12V backup power input for powering safely the controller if the main motor batteries are discharged
 - 200mA at 12V or 100mA at 24V idle current consumption
 - Power Control wire for turning On or Off the controller from external microcomputer or switch
 - No consumption by output stage when motors stopped
 - Regulated 5V output for powering R/C radio. Eliminates the need for separate R/C battery.

High Efficiency Motor Power Output

- H bridge for full forward/reverse operation
- Ultra-efficient 2.5 mOhm ON resistance MOSFETs
- Four quadrant operation. Supports regeneration
- 12 to 40 V operation
- User programmable current limit up to 120 A depending on heat sink arrangement
- Standard Fast-on connectors for power supply and motor
- 16 kHz Pulse Width Modulation (PWM) output
- Aluminum heat sink. Optional conduction cooling plate

Advanced Safety Features

- Safe power on mode
- Automatic Power stage off in case of electrically or software induced program failure
- Over voltage and Under voltage protection
- Watchdog for automatic motor shutdown in case of command loss (R/C and RS232 modes)
- Large and bright run/failure diagnostics on 7 segment LED display
- Programmable motor acceleration
- Built-in controller overheat sensors
- Dead-man" switch input
- Emergency Stop input signal and button

Compact Design

- All-in-one, single board design
- Efficient heat sinking. Operates without a fan in most applications.
- 6.75" (171.5mm) L, 4.2" W (107mm), 1.25" (32mm) H
- -40o to +85 o C operating environment
- 7.5oz (220g)

Ordering Information

Model	Description
AX3100S	Single Channel with aluminum 4 X 1 inch fin heat-sink
AX3100BPS	Single Channel with 5 1/2 X 8 7/16 ¼ inch thick integral conduction plate



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