

# SAMURAI SERIES

## SERVOS AND DRIVES



# AC4

AC SERVO SYSTEM



The performance of a servo system only has meaning when the system is accessible, usable and reliable. The AC4 servo system redefines high performance servo for universal applications. It's easy to use, extremely robust and will easily hit any budget. The AC4 system was built to run on your machine.





### SAMURAI SERIES AC2 Servo Systems

- + Low Voltage +60VDC Operation [ Min. +24VDC Max. +75VDC ]
- + Position, Velocity, Torque servo modes
- + 4-wire high speed serial encoder bus, with 8-bit security code for most reliable position feedback
- + 16-bit (65,536ppr) resolution absolute encoder
- + General Purpose Pulse/Analog Command
- + Opto-isolated 25kHz PWM sinusoidal amplifier
- + Industry leading package size - 20A peak current capacity
- + Serial RS232 [UART,SPI] Point to Point, S-Curve, Linear & Circular Coordinated Motion. Absolute encoder position feedback. Absolute/Incremental modes.
- + Modbus RS485, CAN Communication Options.



### SAMURAI SERIES AC5 Servo Systems

- + New and improved servo control for faster, more accurate positioning.
- + Standard 16-bit encoder, optional 20-bit encoder.
- + Single/Three-Phase 110~240VAC  $\pm$  10% 50/60Hz input
- + Position, Velocity, Torque servo modes
- + 50W to 3.0kW motor size
- + Industrial Ethernet Protocols including Modbus TCP/IP, EtherCAT, EtherNET/IP, Profibus
- + Optional Safe Torque Off (STO) option (per IEC/EN 61800-5-2)
- + Global Certification: UL 61800-5-1, CSA CSA C22.2 No. 274, European CE



### BLADE Series BLC-4TC- 4 Axis Modular Digital Servo Controller

- + The BLC-4TC is a 4 Axis Pulse/Dir or Quadrature Controller capable of controlling digital servo drives or external stepper drives.
- + The BLC family of controllers designed to be a Cost-Effective OEM solution for Motion & Machine Control.
- + Each Module has 4-axes are internally coordinated; but with the dual RS232 serial ports, multiple units can be daisy chained together for higher axis count applications.
- + All axes are detected, and their resources are available during programming without needing to connect to each unit individually.



## ■ 16-bit Absolute Encoder Feedback

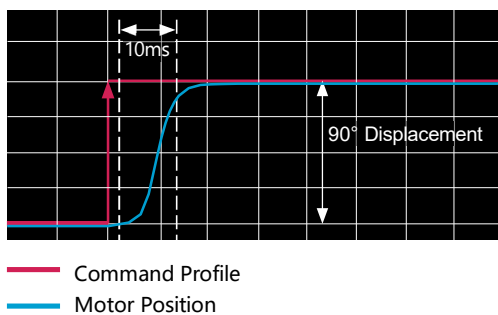
A new 16-bit absolute encoder with 65,536 pulses per revolution is standard on all servo motors. High resolution with absolute position feedback means a very smooth motion profile and better dynamic performance under all speed/load characteristics. High speed 4-wire serial bus transmission with data redundancy check allows fast accurate and reliable position feedback.

16bit resolution  
8bit CRC

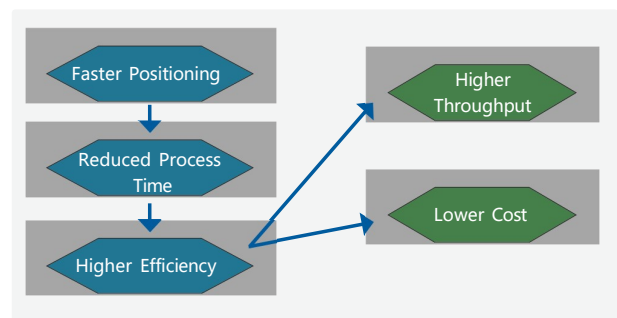
1.875Mbps  
Update Speed

## ■ Fast Positioning Response

High frequency response is key to achieving accurate and fast positioning. The new AC4 servo drive was tested under instantaneous acceleration/deceleration profiles with 90-degree motor amplitude displacement. The servo drive achieved outstanding 10ms position response even at peak inertia loads. This fast and dynamic point-to-point servo positioning allows the AC4 servo drive to perform even in the most demanding applications.



Typical response of 750W servo motor given 90° (16,384p) instantaneous displacement command.



## ■ Built-In holding brake control

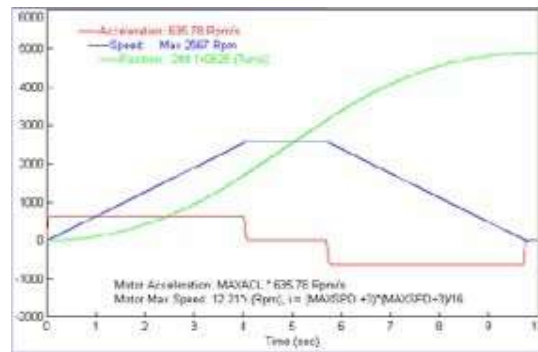
A dedicated brake control output from the servo drive to improve timing control over holding brake operation and overall system reliability under all situations.

## ■ DIPM Power module integrated

Each AC4 ac servo drive incorporates a DIPM power module to maintain reliable high-power switching and safety. The Servo drive and power module pair is designed with high power capacity overhead. Over-current and short circuit detection speed is significantly improved.

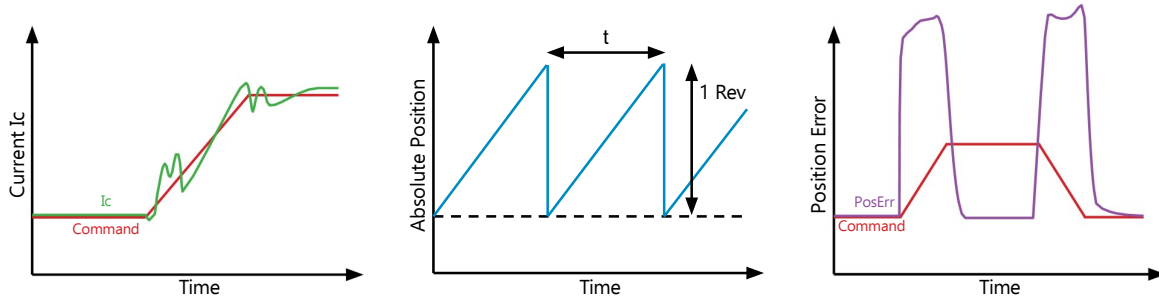
## ■ PWM Smoothing

The patented AC4 servo control principle achieve perfectly smooth torque delivery. Acceleration, deceleration and position-follow calculations maintain highest motor position accuracy and low vibration and noise.



## ■ 3-Channel Real-Time Monitor Outputs

3 all new real-time analog monitor outputs are standard on all servo drive models. Monitor includes servo drive current, absolute position, servo motor speed and absolute position error. Users can use the monitor function to adjust machine performance, or provide feedback to host controller for processing. This allows AC4 servo drive to be much more integrated with the machine.



## ■ Industry standard pulse/analog inputs with encoder output

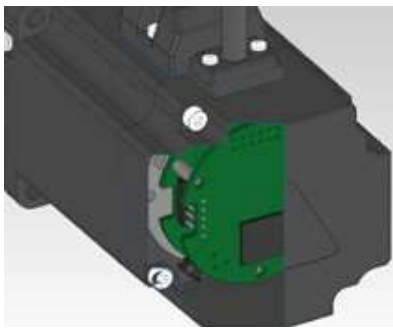
The AC4 servo drive accepts industry standard pulse/analog commands. Pulse formats include PULSE+DIR, CW+CCW, A+B Phase Quadrature. Servo control modes including Position, Speed and Torque. Standard line drive encoder output provides position feedback to host controller.

## ■ Single Phase / Three Phase Input

The AC4 servo drive accepts both single and three phase inputs for all drive models. This simplifies application and installation requirements. Input voltage is also universal 110~230VAC 50/60Hz. Compatible with any system with specific power, space or cost requirements.

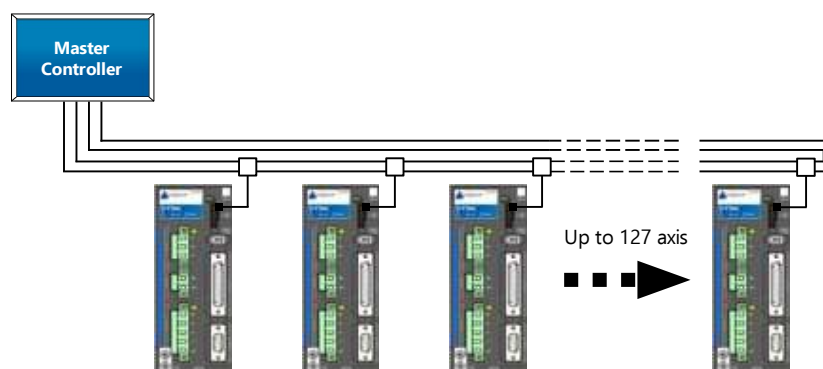
## ■ Robust Magnetic Encoder

Each servo motor is custom tuned with a new ABS-16-00 absolute encoder. AC4 patented magnetic sensor technology provides contactless rotor-sensor coupling virtually eliminating problems caused by mounting, vibration or shock. Each ABS-16-00 encoder is tuned and calibrated after mounting to accommodate perfect harmony with host servo motor. This ensures consistent resolution and accuracy.



## ■ RS232/485 Command with Built-In Motion Profiles and Networking Option

The AC4 servo drive can also realize motion using RS232 input using built in functions including Absolute Positioning, S-Curve, Sine/Square/Speed profiles, Linear Interpolated and Circular Interpolated. Absolute encoder position and status can also be read. Up to 127 drives can be networked via RS485/232 net with individual drive ID settings for independent axis control using just 1 master controller.



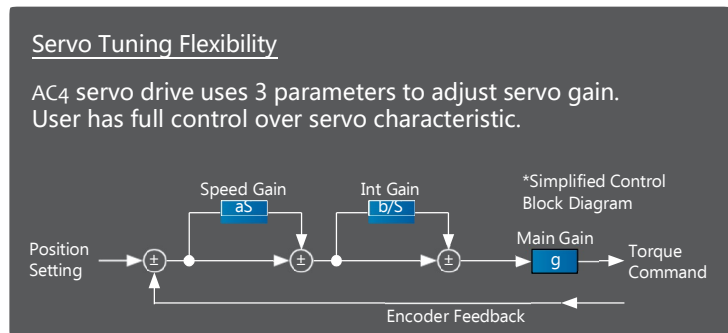
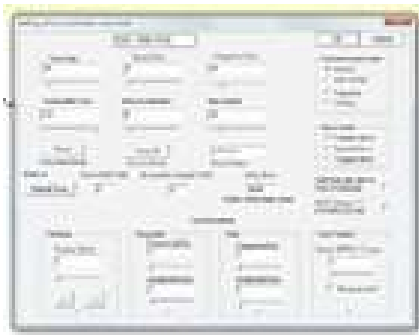
- Low Budget Entry Cost

The AC4 system offers the advantage of high performance at a low budget entry cost. Compared to any other system with similar performance specifications, the AC4 servo system entry cost results in new applications...places where AC servo has yet to be considered.

- Simple PC setup, tuning and adjustments

The DRV4 program simplifies servo drive communication, provides parameter setting and tools for test movements. Servo tuning is simplified into 3 parameters giving the user full control over system behavior while maintaining ease of use.

PC Interface




- Standard motor capacity and frame sizes

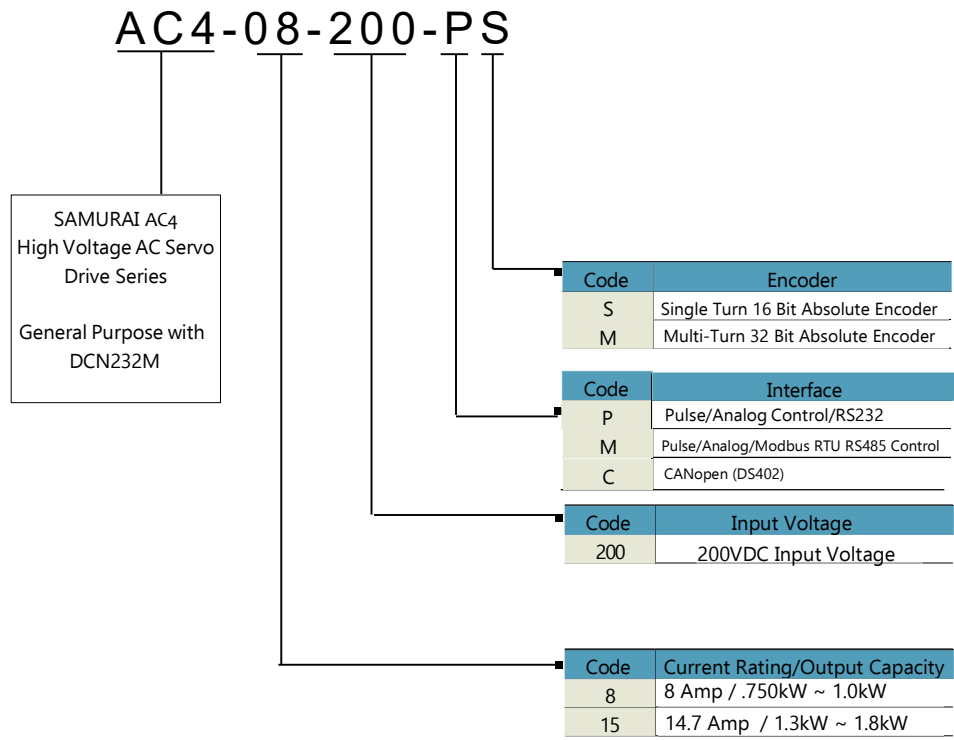
Frame Size	Servo Motor Capacity	Rated / Peak Torque	Rated / Peak Speed
40mm	50W	40mm	3,000 / 5,000rpm
	100W	40mm	
60mm	200W	40mm	
	400W	40mm	
80mm 86mm	750W	2.4 / 7.2Nm	1,500 / 3,000rpm 3,000 / 5,000rpm
130mm	1.0kW	40mm	1,500 / 3,000rpm
	1.3kW	40mm	
	1.8kW	40mm	



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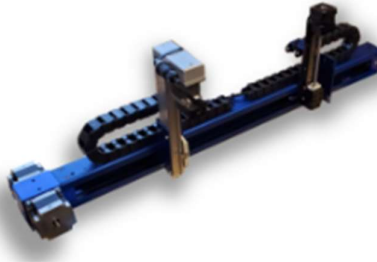
 Servo Drive Designation



# ModuSystems Motion Family



STAGES-BELT DRIVE



DUAL BELT DRIVE



STAGES-BALL SCREW



STAGES-LEAD SCREW



STAGES-LINEAR MOTOR



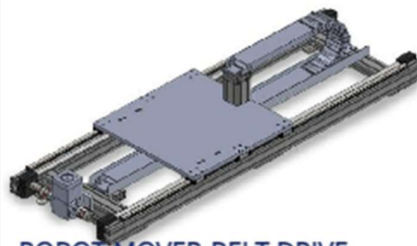
LEAD SCREW STEPPER MOTORS



ROD STYLE ACTUATORS



ROBOT MOVER-BELT DRIVE



PROFILE RAIL LINEAR GUIDES

