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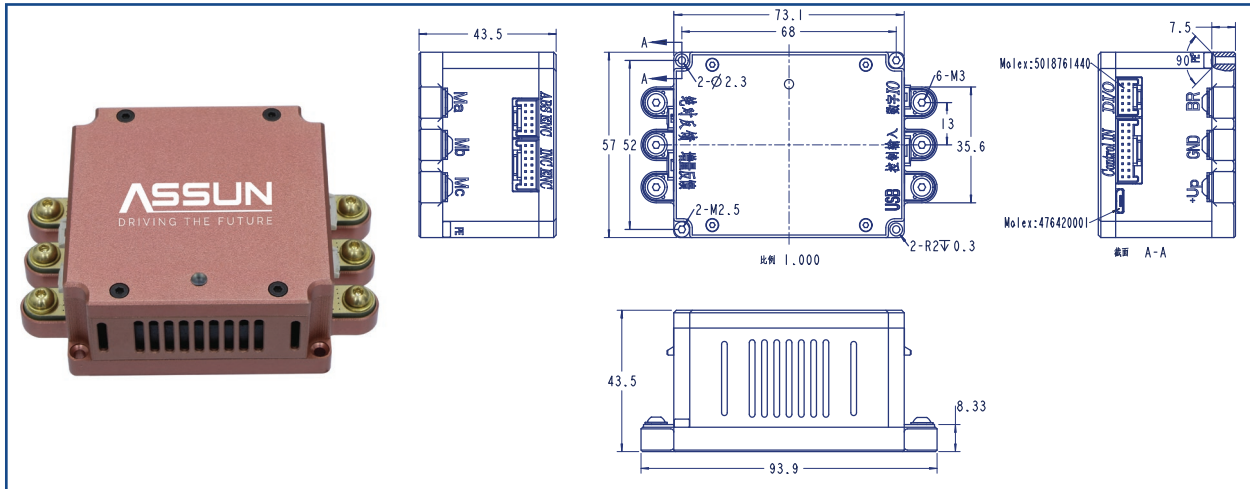
TOTAL SOLUTION for Precision
DC Drive System 2020

SERVO CONTROLLER _____
SERVO CONTROLLER

Assun Servo Controllers are produced for close-loop speed, torque and position control of DC brushed and brushless motors. High precision character of the controller is favored by many applications with DC drive control. Models of Traditional Control (without communication) and Bus Control (with communication) have been provided for customer to choose the suitable type. Can Open, Ether Cat and RS485/422 communication protocols are provided for bus control systems.



Traditional Controller



Model		Servo Controller (Traditional Control)				
		AM-SOE-0103-MAAS	AM-SOE-0206-MAAS	AM-SOE-0510-MAAS	AM-SOE-1020-MAAS	AM-SOE-1530-MAAS
Dimension (mm)		73.1*57*43.5				
Weight (g)		225				
Fundamental Specs	Output Rated Current (Continuous, RMS)	1 A	2 A	5 A	10	15 A
	Output Max. Current (Intermittent, RMS)	3 A	6 A	10 A	20	30 A
	Input Power Supply Voltage Range	12 VDC~48 VDC (Usually according to Motor Rated Voltage)				
	Overload Recognition Time	3 s				
	Overload Trip Reset Delay	30 s				
	Temperature Raise	(Under Rated Current) 30min≤40K				
	Working Frequency	6khz ~ 34khz				
Rated Electric Insulation		Under DC voltage 1000V from input/output to housing, current leakage smaller than 3mA				
Total Electric Resistance		≥1MΩ (Temp. 40°C, RH 95%, no condensing water)				
Mean Time Before Failure (MTBF)		≥8000 Hrs				
Power Control		For BLDC & Servo Motor: SVPWM, Square Wave For Brushed Motor: Bipolar PWM				
IP Level		IP20				
Cooling Type		Natural Air Cool				
Connection Portal Info	Analog Voltage Input Portal	2 Channel (±10V)				
	Digital IO Input Portal	4 Channel (5VDC~24VDC), hardware default in high voltage level when not connected. Detail control functions can be set and adjusted by changing parameters.				
	Digital IO Output Portal	4 Channel (All four channels are open collector output, highest voltage at 30V; First three channels have max. continuous current of 0.25A, and last channel has max. continuous current of 2A)				
	Direction + Pulse	1 set of Direction + Pulse (Differential & Non-differential)				
	Feedback Type	Electromagnetic/Optical Incremental Encoder; SSI Absolute Encoder; RS 485 Absolute Encoder				

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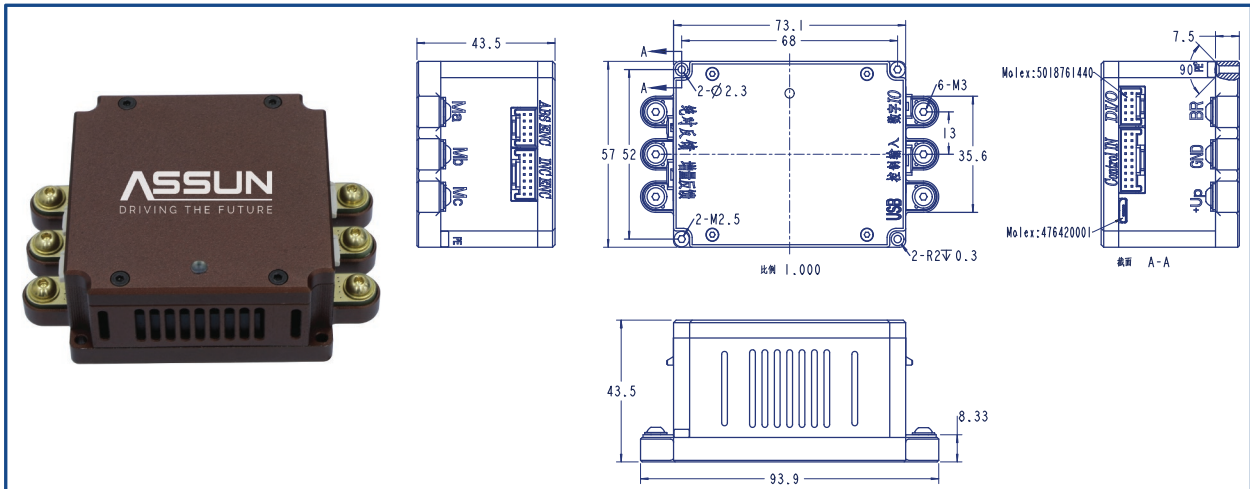
Traditional Controller

Model		Servo Controller (Traditional Control)		
Basic Function	Application Mode	Position Closed-loop Control / Speed Closed-loop Control / Torque Closed-loop Control		
	Preparation Time	Power on and no malfunction, controller ready in 3 seconds		
	Hardware Protection Threshold	Under Voltage	9.5 V	
		Over Voltage	75 V	
		Over Current	Over Current Protection	
		Overheat	85°C Automate Alarm and Shut Down	
		Power Switch	Equipped power switch to turn on or off the motor.	
	Software Protection	Malfunction Lock	Automate slow down and stop when detect malfunction, and lock the malfunction for inspection.	
		Over Load	When current is continuously over Max. continuous current for 10 seconds, default to alarm for malfunction.	
		Over Current	Monitor real time current value, immediate cut off motor output when current over the pre-set value.	
		Differential Protection	Current or speed setting and feedback differential protection	
	Digital IO	Input	Multiplex the following functions by adjusting parameters: Servo start, zero-speed position clamp, emergency shut down, origin point signal, positive position limit, negative position limit.	
		Output	Multiplex the following functions by adjusting parameters: Power supply under voltage, position abnormal, hall feedback abnormal, over current, over load, driver overheat, current differentiate, speed differentiate, power supply over voltage, servo ready, servo operation, zero speed arrival, targeted speed arrival, targeted position arrival, brake output, origin point recover finish, error alarm, negative stall, positive stall, negative indicate.	
	Communication Portal	USB	Usually for Commissioning (also support host computer control)	
		CAN	N/A	
		RS422/485	N/A	
Transmission Distance		Based on the hardware connection		
Torque Control	Stop Response	Rise times \leq 1.5ms ; Over tune \leq 5% ; Shock \leq 2 times		
	Current Closed Loop Control	\geq 1KHz		
	Speed Limitation	Parameter Limits		
Speed Control	Speed Feedback	Based on Encoder		
	Encoder Power Supply	+5V \pm 2%/500mA		
	Speed Ratio	\geq 3000 : 1		
	Step Response	Rise times \leq 40ms ; Overtunes \leq 15% ; Shock \leq 2.5 times		
	Sinusoidal Band Response	\geq 500Hz		
	Static Error Rate	\leq 0.4% (In speed 1000RPM, rated torque load)		
	Speed Fluctuation Rate	\leq 0.6%		
	Linearity	\leq 0.45%		
	Position Close-Loop Control	Highest input pulse frequency	Digital Insulation 500K (1 meter cable)	
Pulse commande mode		AB Pulse; Direction + Pulse		
Command control mode		Outer Pulse control, analogue input		
Electronic gear ratio		Electronic Gear N/M, N: 1~65535, M: 1~65535 (parameter setting)		
Torque Limit		(Parameter Setting)		
Environmental Requirements	Operation Temp.	-30°C+60°C		
	Storage Temp.	-30°C+65°C		
	Relative Humidity	0%~90%RH (No condensing)		
	Vibration Requirements	Frequency 5Hz to 25Hz, amplitude with 1.6mm; Frequency 25Hz to 200Hz, Acceleration within 1.2g, time 30min.		

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CAN BUS CONTROLLER



Model		Servo Controller (CAN Bus Control)				
		AM-SOD-0103-MAAS	AM-SOD-0206-MAAS	AM-SOD-0510-MAAS	AM-SOD-1020-MAAS	AM-SOD-1530-MAAS
Dimension (mm)		73.1*57*43.5				
Weight (g)		225				
Fundamental Specs	Output Rated Current (Continuous, RMS)	1 A	2 A	5 A	10	15 A
	Output Max. Current (Intermittent, RMS)	3 A	6 A	10 A	20	30 A
	Input Power Supply Voltage Range	12 VDC~48 VDC (Usually according to Motor Rated Voltage)				
	Overload Recognition Time	3 s				
	Overload Trip Reset Delay	30 s				
	Temperature Raise	(Under Rated Current) 30min≤40K				
	Working Frequency	6khz ~ 34khz				
Rated Electric Insulation		Under DC voltage 1000V from input/output to housing, current leakage smaller than 3mA				
Total Electric Resistance		≥1MΩ (Temp. 40°C, RH 95%, no condensing water)				
Mean Time Before Failure (MTBF)		≥8000 Hrs				
Power Control		For BLDC & Servo Motor: SVPWM, Square Wave For Brushed Motor: Bipolar PWM				
IP Level		IP20				
Cooling Type		Natural Air Cool				
Connection Portal Info	Analog Voltage Input Portal	N/A				
	Digital IO Input Portal	4 Channel (5VDC~24VDC), hardware default in high voltage level when not connected. Detail control functions can be set and adjusted by changing parameters.				
	Digital IO Output Portal	4 Channel (All four channels are open collector output, highest voltage at 30V; First three channels have max. continuous current of 0.25A, and last channel has max. continuous current of 2A)				
	Direction + Pulse	N/A				
	Feedback Type	Electromagnetic/Optical Incremental Encoder; SSI Absolute Encoder; RS 485 Absolute Encoder				

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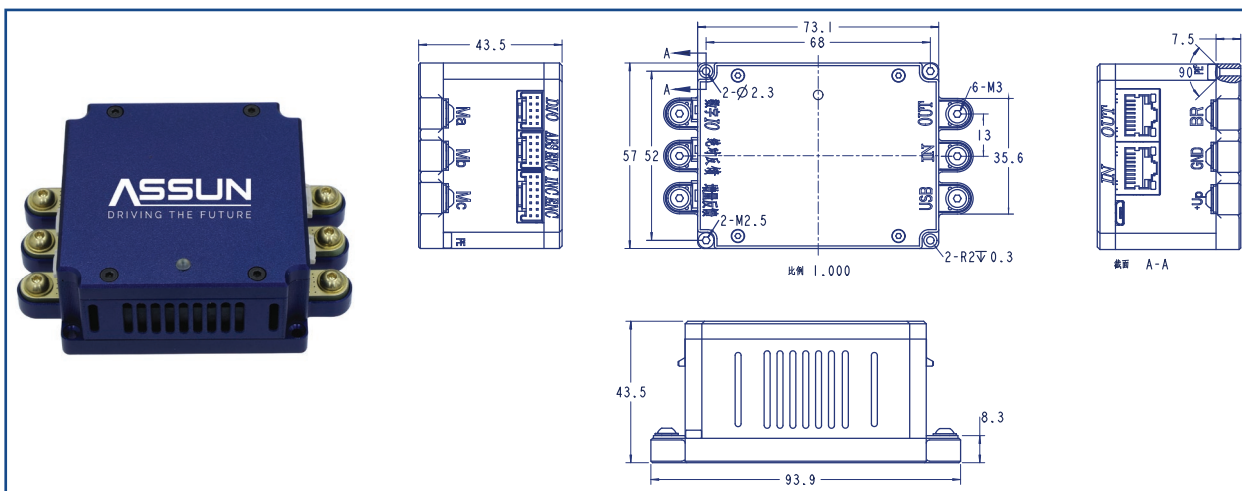
CAN BUS CONTROLLER

Model		Servo Controller (Bus Control)		
Basic Function	Application Mode	Position Closed-loop Control / Speed Closed-loop Control / Torque Closed-loop Control		
	Preparation Time	Power on and no malfunction, controller ready in 3 seconds.		
	Hardware Protection Threshold	Under Voltage	9.5 V	
		Over Voltage	75 V	
		Over Current	Over Current Protection	
		Overheat	85 Automate Alarm and Shut Down	
		Power Switch	Equipped power switch to turn on or off the motor.	
	Software Protection	Malfunction Lock	Automate slow down and stop when detect malfunction, and lock the malfunction for inspection.	
		Over Load	When current is continuously over Max. continuous current for 10 seconds, default to alarm for malfunction.	
		Over Current	Monitor real time current value, immediate cut off motor output when current over the pre-set value.	
		Differential Protection	Current or speed setting and feedback differential protection	
	Digital IO	Input	Multiplex the following functions by adjusting parameters: Servo start, zero-speed position clamp, emergency shut down, origin point signal, positive position limit, negative position limit.	
		Output	Multiplex the following functions by adjusting parameters: Power supply under voltage, position abnormal, hall feedback abnormal, over current, over load, driver overheat, current differentiate, speed differentiate, power supply over voltage, servo ready, servo operation, zero speed arrival, targeted speed arrival, targeted position arrival, brake output, origin point recover finish, error alarm, negative stall, positive stall, negative indicate.	
	Communication Portal	USB	Usually for Commissioning (also support host computer control)	
		CAN	CANOPEN 301 + DS402(Default node id: 0x08,500kbps)	
RS422/485		MODBUS RS422/485(ASCII/RTU) (Default node id: 0x08,57600bps,8,1,N,N,)		
Transmission Distance		≥100 Meters		
Torque Control	Stop Response	Rise time≤1.5ms ; Over tune≤5% ; Shock ≤2 times		
	Current Closed Loop Control	≥1KHz		
	Speed Limitation	Parameter Limits		
Speed Control	Speed Feedback	Based on Encoder		
	Encoder Power Supply	+5V±2%/500mA		
	Speed Ratio	≥3000 : 1		
	Step Response	Rise time≤40ms ; Overtune≤15% ; Shock≤2.5 times		
	Sinusoidal Band Response	≥500Hz		
	Static Error Rate	≤0.4% (In speed 1000RPM, rated torque load)		
	Speed Fluctuation Rate	≤0.6%		
	Linearity	≤0.45%		
Position Close-Loop Control	Highest input pulse frequency	N/A		
	Pulse commande mode	N/A		
	Command control mode	RS422/485 Modbus Communication; CAN Bus Control		
	Electronic gear ratio	Electronic Gear N/M, N: 1~65535, M: 1~65535 (parameter setting)		
	Torque Limit	(Parameter Setting)		
Environmental Requirements	Operation Temp.	-30°C+60°C		
	Storage Temp.	-30°C+65°C		
	Relative Humidity	0%~90%RH (No condensing)		
	Vibration Requirements	Frequency 5Hz to 25Hz, amplitude with 1.6mm; Frequency 25Hz to 200Hz, Acceleration within 1.2g, time 30min.		

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ETHERCAT BUS CONTROLLER



Model		Servo Controller (EtherCAT Bus Control)				
		AM-SOC0103-MAAS	AM-SOC0206-MAAS	AM-SOC0510-MAAS	AM-SOC1020-MAAS	AM-SOC1530-MAAS
Dimension (mm)		93.9*57*43.5				
Weight (g)		225				
Fundamental Specs	Output Rated Current (Continuous, RMS)	1 A	2 A	5 A	10 A	15 A
	Output Max. Current (Intermittent, RMS)	3 A	6 A	10 A	20 A	30 A
	Input Power Supply Voltage Range	12 VDC~48 VDC (Usually according to Motor Rated Voltage)				
	Overload Recognition Time	3 s				
	Overload Trip Reset Delay	30 s				
	Temperature Raise	(Under Rated Current) 30min≤40K				
	Working Frequency	6khz ~ 34khz				
Rated Electric Insulation		Under DC voltage 1000V from input/output to housing, current leakage smaller than 3mA				
Total Electric Resistance		≥1MΩ (Temp. 40℃, RH 95%, no condensing water)				
Mean Time Before Failure (MTBF)		≥8000 Hrs				
Power Control		For BLDC & Servo Motor: SVPWM, Square Wave For Brushed Motor: Bipolar PWM				
IP Level		IP20				
Cooling Type		Natural Air Cool				
Connection Portal Info	Digital IO Input Portal	4 Channel (5VDC~24VDC), hardware default in high voltage level when not connected. Detail control functions can be set and adjusted by changing parameters.				
	Digital IO Output Portal	4 Channel (All four channels are open collector output, highest voltage at 30V; First three channels have max. continuous current of 0.25A, and last channel has max. continuous current of 2A)				
	Feedback Type	Electromagnetic/Optical Incremental Encoder; SSI Absolute Encoder; RS 485 Absolute Encoder				

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ETHERCAT BUS CONTROLLER

Model		Servo Controller (Traditional Control)		
Basic Function	Application Mode	Position Closed-loop Control / Speed Closed-loop Control / Torque Closed-loop Control		
	Preparation Time	Power on and no malfunction, controller ready in 3 seconds		
	Hardware Protection Threshold	Under Voltage	9.5v	
		Over Voltage	75v	
		Over Current	Over Current Protection	
		Overheat	85°C Automate Alarm and Shut Down	
		Power Switch	Equipped power switch to turn on or off the motor.	
	Software Protection	Malfunction Lock	Automate slow down and stop when detect malfunction, and lock the malfunction for inspection.	
		Over Load	When current is continuously over Max. continuous current for 10 seconds, default to alarm for malfunction.	
		Over Current	Monitor real time current value, immediate cut off motor output when current over the pre-set value.	
		Differential Protection	Current or speed setting and feedback differential protection	
	Digital IO	Input	Multiplex the following functions by adjusting parameters: Servo start, zero-speed position clamp, emergency shut down, origin point signal, positive position limit, negative position limit.	
		Output	Multiplex the following functions by adjusting parameters: Power supply under voltage, position abnormal, hall feedback abnormal, over current, over load, driver overheat, current differentiate, speed differentiate, power supply over voltage, servo ready, servo operation, zero speed arrival, targeted speed arrival, targeted position arrival, brake output, origin point recover finish, error alarm, negative stall, positive stall, negative indicate.	
	Communication Portal	USB	Usually for Commissioning (also support host computer control)	
EtherCAT		1 set of in and out ports		
Torque Control	Step Response	Rise time \leq 1.5ms ; Over tune \leq 5% ; Shock \leq 2 times		
	Current Closed Loop Control	\geq 1KHz		
	Speed Limitation	Parameter Limits		
Speed Control	Speed Feedback	Based on Encoder		
	Encoder Power Supply	+5V \pm 2%/500mA		
	Speed Ratio	\geq 3000 : 1		
	Step Response	Rise time \leq 40ms ; Overtune \leq 15% ; Shock \leq 2.5 times		
	Sinusoidal Band Response	\geq 500Hz		
	Static Error Rate	\leq 0.4% (In speed 1000RPM, rated torque load)		
	Speed Fluctuation Rate	\leq 0.6%		
	Linearity	\leq 0.45%		
Position Close-Loop Control	Command control mode	EtherCAT Bus Control		
	Electronic gear ratio	Electronic Gear N/M, N: 1~65535, M: 1~65535 (parameter setting)		
	Torque Limit	(Parameter Setting)		
Environmental Requirements	Operation Temp.	-30°C+60°C		
	Storage Temp.	-30°C+65°C		
	Relative Humidity	0%~90%RH (No condensing)		
	Vibration Requirements	Frequency 5Hz to 25Hz, amplitude with 1.6mm; Frequency 25Hz to 200Hz, Acceleration within 1.2g, time 30min.		

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