

The SEA series programmable intelligent servo drive is a universal, high-performance, DC-powered, compact fully digital servo drive. It is mainly used for position, speed, and torque control of linear (DDL), torque (DDR), voice coil, brushed, and brushless servo motors. It can operate in three modes: stand-alone, external control, or distributed network control, and supports absolute encoders, incremental encoders, Hall, analog sine/cosine encoders (1.0Vp-p), and resolvers.

- Control mode: position, speed, torque;
- Sampling frequency (time) current loop: 10KHz; speed/position loop: 10KHz;
- Bandwidth: current loop is generally 10kHz, which varies with parameter adjustment and load inductance;
- Movement mode: electronic gear, electronic cam, proportional linkage, point to point;
- Programmable protection: position error, overcurrent, overvoltage or undervoltage, I²t, output short circuit overload and other multi-directional protection functions;
- Drive motor type: three-phase stepper motor, brushless motor, brushed motor, linear motor, voice coil motor, etc.;
- Position feedback: absolute encoder, incremental encoder, Hall, analog sine/cosine encoder (1.0Vp-p), resolver, etc.;
- Pulse response frequency up to 2MHz, with digital filtering function;
- RS232 serial interface, baud rate up to 115KB;
- CAN2.0 local bus, compatible with CANopen DS-402, baud rate up to 1MHz;
- Power supply voltage: 11-95 VDC; 20-195VDC
- Compliant with CE: EN IEC 55014-1:2021 EN IEC 55014-2:2021 standards

Position Control	Command Control Method			Servo enable, external reset, forward/reverse limit, motor stop, high-speed analog acquisition control, PWM synchronous signal input, high-speed pulse input
	Input Signal	Pulse Command	Input Pulse Pattern	Contains three command forms: "direction + pulse", "A, B phase orthogonal pulse", and "CW/CCW pulse"
			Signal Format	Differential input, open collector
			Maximum Pulse Frequency	Differential input (maximum 2Mpps), open collector (maximum 500Kpps)
		Analog Command	Voltage Range	Input voltage range $\pm 10V$
	Input Impedance		Differential input impedance 5K Ω	
Speed Control	Command Control Method			PMW, $\pm 10V$ analog, function generator, software programming
	Input Signal	PWM	Polarity	PWM=0-100%, Polarity=1/0
			No polarity	PMW=50%+/-50%
			Frequency Range	Min1kHz, Max100kHz
			Minimum Pulse Width	220ns
	Analog Command	Voltage Range	Input voltage range $\pm 10V$	
		Input Impedance	Differential input impedance 5K Ω	
Current Control	Command Control Method			PMW, $\pm 10V$ analog, function generator, software programming
	Input Signal	PWM	Polarity	PWM=0-100%, Polarity=1/0
			No polarity	PMW=50%+/-50%
			Frequency Range	Min1kHz, Max100kHz
			Minimum Pulse Width	220ns
	Analog Command	Voltage Range	Input voltage range $\pm 10V$	
		Input Impedance	Differential input impedance 5K Ω	
I/O Signals	Digital Input IN	Number Of Ports		6
		Signal Format		PNP (Active low)
		Configurable Functions		Servo enable, external reset, forward/reverse limit, motor stop, high-speed analog acquisition control, PWM synchronous signal input, high-speed pulse input etc.
	Digital Output OUT	Number Of Ports		2
		Signal Format		NPN (Active low), maximum current of 800mADC, maximum voltage 30VDC
		Configurable Functions		Fault signal, brake control, program control

APPLICATION



Humanoid robot
Robot dog
Dexterous hands



Exoskeleton Surgical robot



Collaborative arm
AGV
Autonomous driving



IC & Semiconductor devices
Wafer handling Sorting machine Diebonding machine Dicing machine Probe station SMT machine etc.



Military & Defence Radar turntable Microwave communication Guided weapons Optoelectronic
Automatic submersible Lidar Six-degree-of-freedom platform etc.

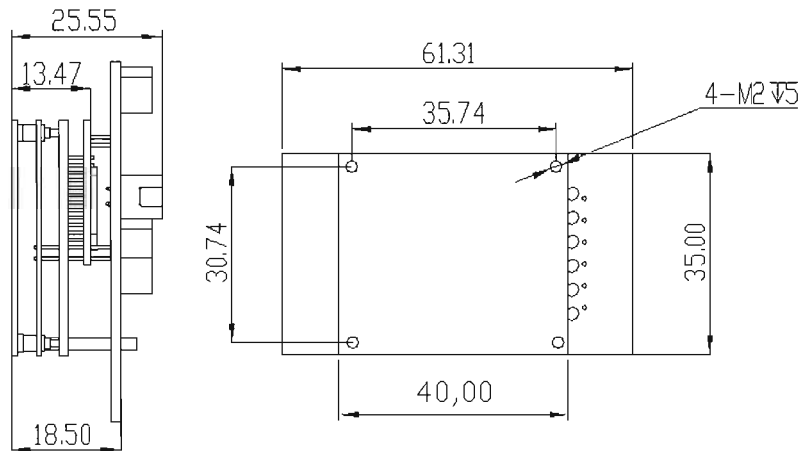


Aerospace & Special equipment
Satellite UAV Shaftless propulsion High-energy directed weapons Centrifuge

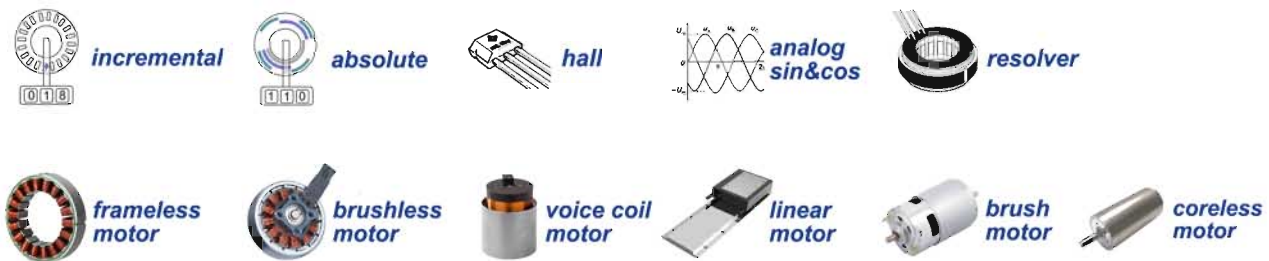
SEA DC SERVO DRIVER



SEA 1-80A

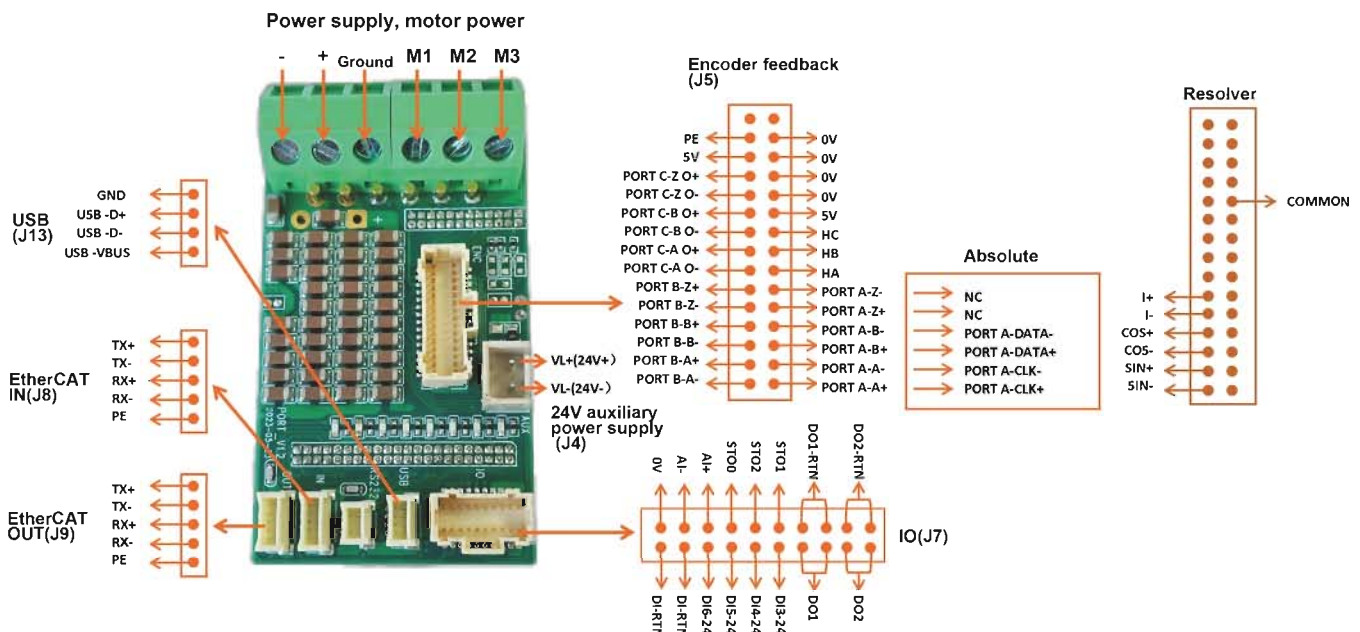


EtherCAT **CANopen**
SSI, BISS-C, RS485, TAMAGAWA

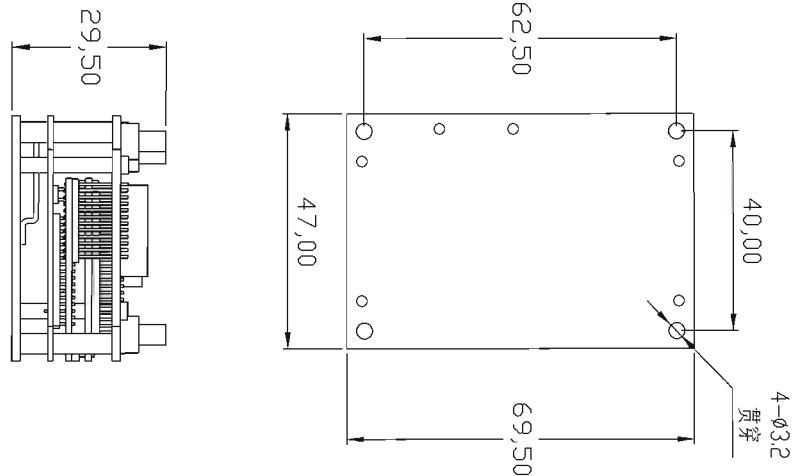


		1/100	3/100	6/100	10/100	15/100	25/100	50/100	70/100	80/80
Minimum supply voltage	VDC	11								
Rated supply voltage	VDC	85								
Maximum supply voltage	VDC	95								
Maximum continuous power output	W	80	235	470	800	1125	2000	4000	5600	5000
Efficiency (rated power)	%	95								
Maximum output voltage	V	Up to 96% of DC link voltage								
Rated DC current	A	1	3	6	10	15	25	50	70	80
Effective continuous current(Ic)	A	0.7	2.1	4.2	7.1	10	17.7	35.3	49.5	56.5
Current peak(2*Ic)	A	1.4	4.2	8.4	14.2	20	35.4	—		

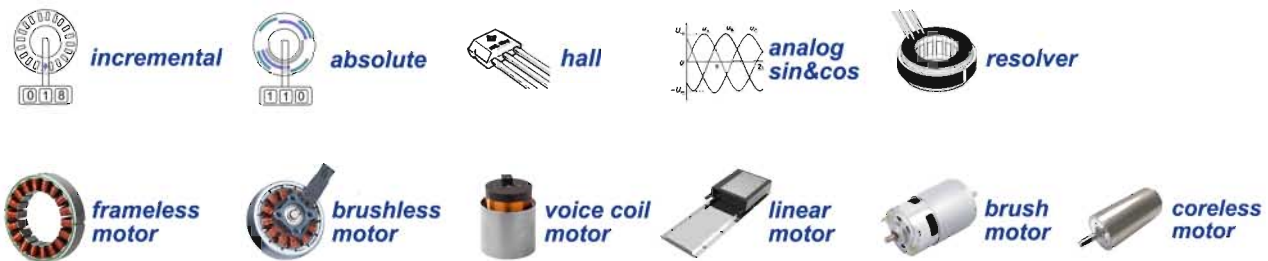
SEA 1-80A EtherCAT interface definition



SEA 140A

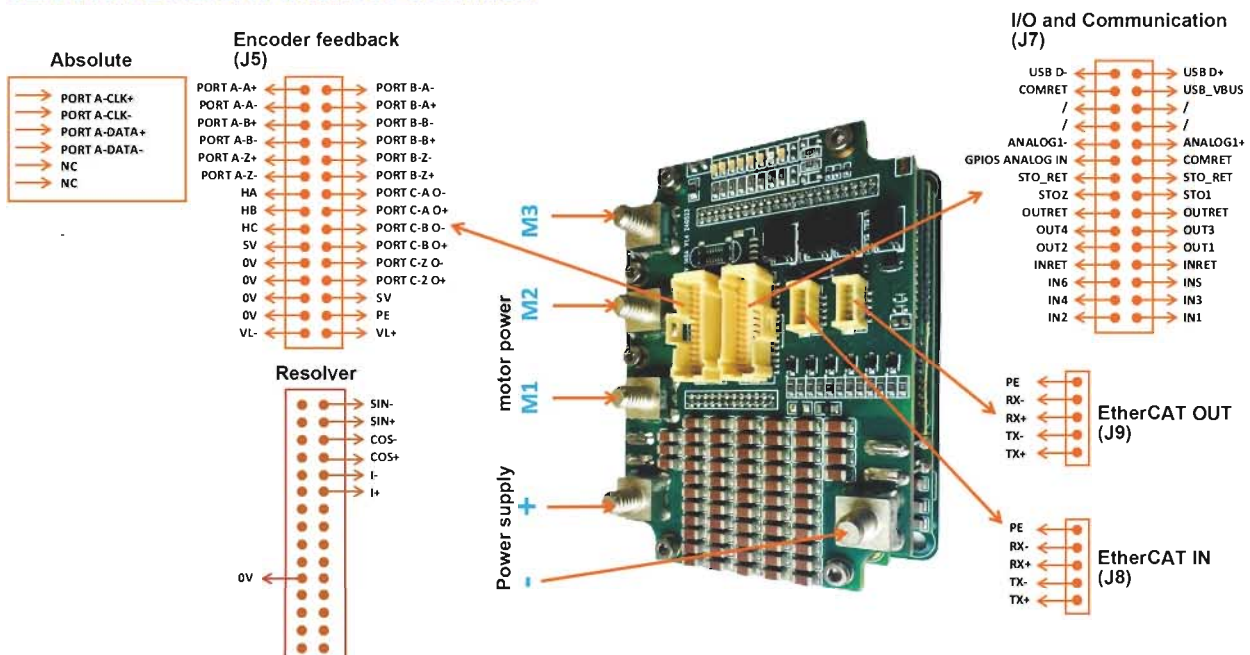


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		140/100	160/80	40/200
Minimum supply voltage	VDC	11	11	21
Rated supply voltage	VDC	85	65	170
Maximum supply voltage	VDC	95	75	195
Maximum continuous power output	KW	11	10	6.4
Efficiency (rated power)	%	95	95	95
Maximum output voltage	V	Up to 96% of DC link voltage		
Rated DC current	A	140	160	40
Effective continuous current(ic)	A	99	113	28
Current peak(2*ic)	A	—		

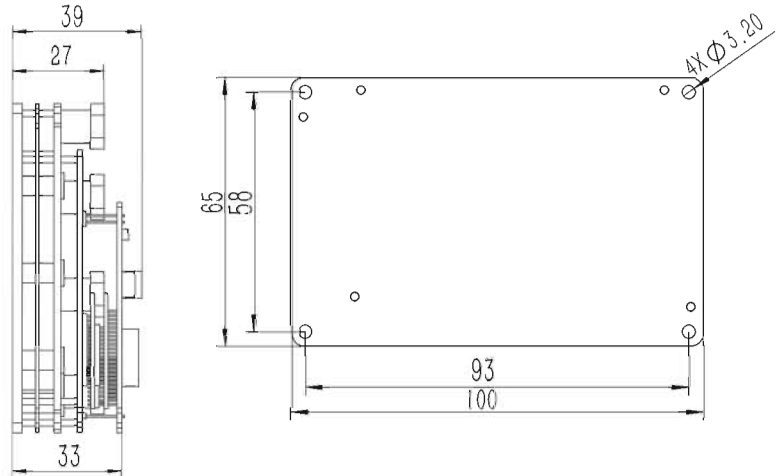
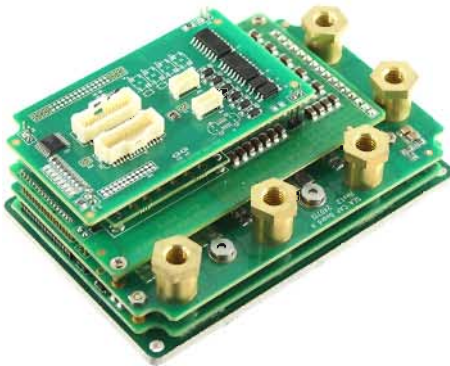
SEA 140A EtherCAT interface definition



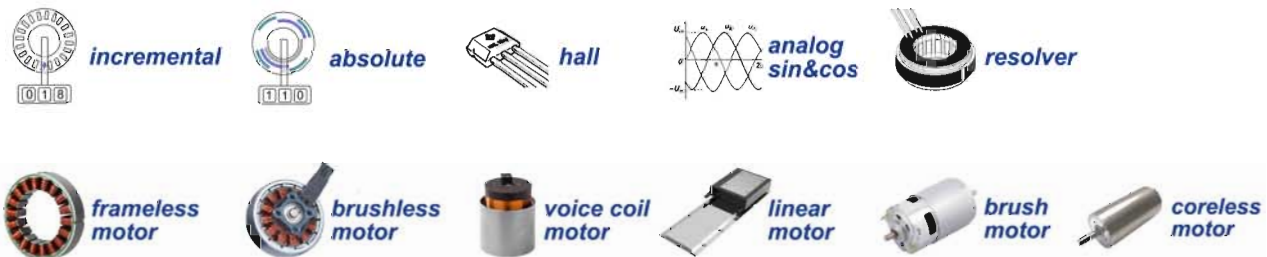
SEA DC SERVO DRIVER



SEA 210A

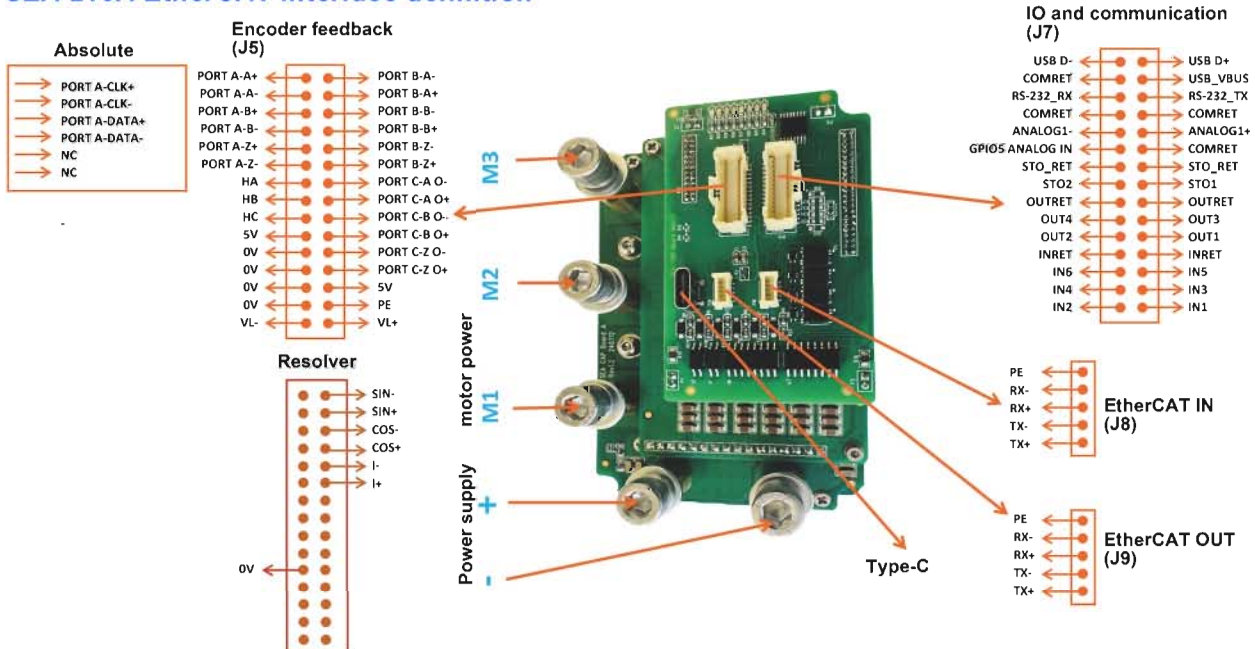


EtherCAT **CANopen**
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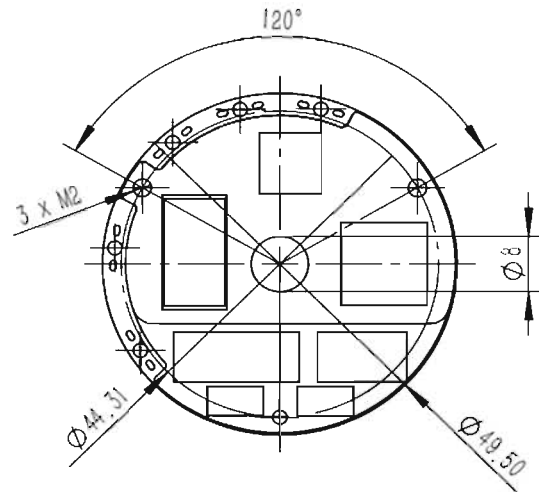
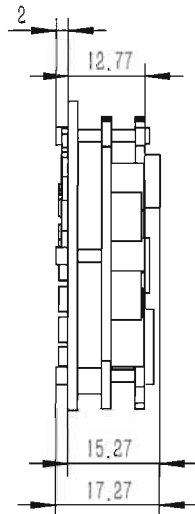


		210/100	100/200
Minimum supply voltage	VDC	11	20
Rated supply voltage	VDC	85	170
Maximum supply voltage	VDC	95	195
Maximum continuous power output	KW	17	16.5
Efficiency (rated power)	%	95	95
Maximum output voltage	V	Up to 96% of DC link voltage	
Rated DC current	A	210	100
Effective continuous current(Ic)	A	150	70
Current peak(2*Ic)	A	—	—

SEA 210A EtherCAT interface definition



SEA C49



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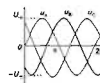
incremental



absolute



hall



analog
sin&cos



resolver



frameless
motor



brushless
motor



voice coil
motor



linear
motor



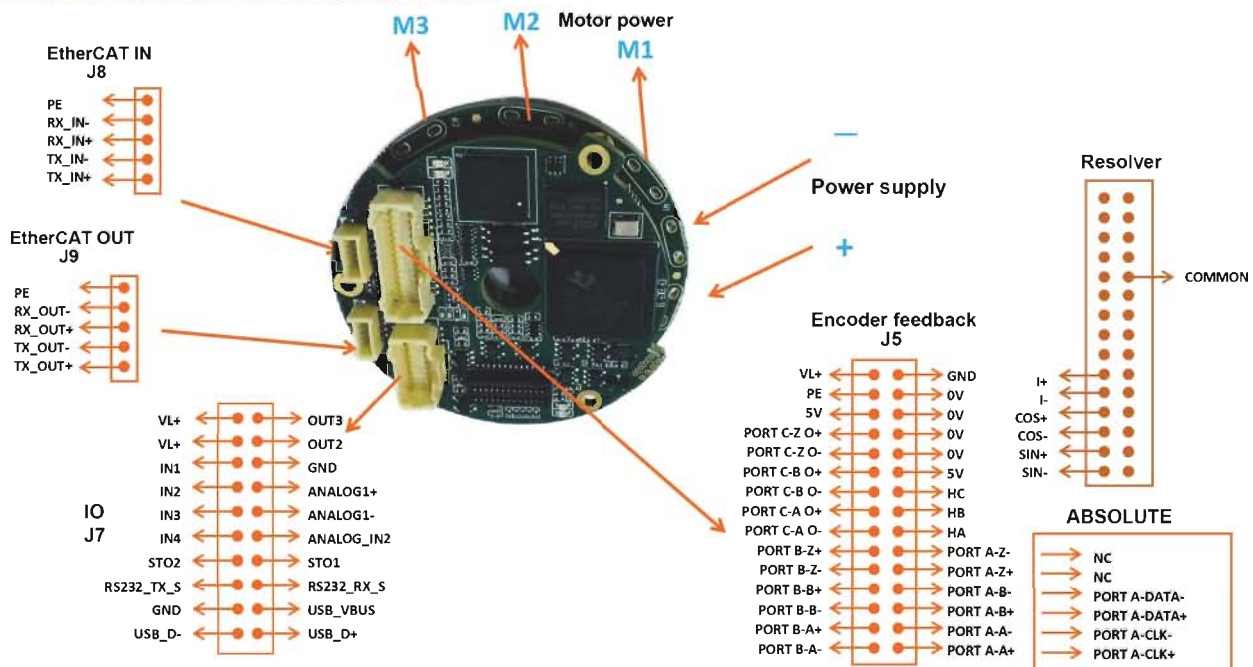
brush
motor



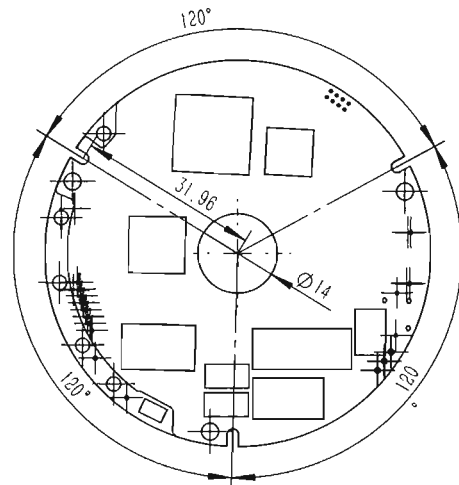
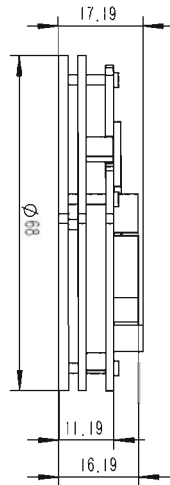
coreless
motor

		1/100	3/100	6/100	10/100	15/100	25/100
Minimum supply voltage	VDC				11		
Rated supply voltage	VDC				85		
Maximum supply voltage	VDC				95		
Maximum continuous power output	W	80	235	470	800	1125	2000
Efficiency (rated power)	%				95		
Maximum output voltage	V	Up to 96% of DC link voltage					
Rated DC current	A	1	3	6	10	15	25
Effective continuous current(ic)	A	0.7	2.1	4.2	7.1	10	17.7
Current peak(2*ic)	A	1.4	4.2	8.4	14.2	20	35.4

SEA C49 EtherCAT interface definition



SEA C68



EtherCAT **CANopen**
SSI, BISS-C, RS485, TAMAGAWA



incremental



absolute



hall



analog sin&cos



resolver



frameless motor



brushless motor



voice coil motor



linear motor



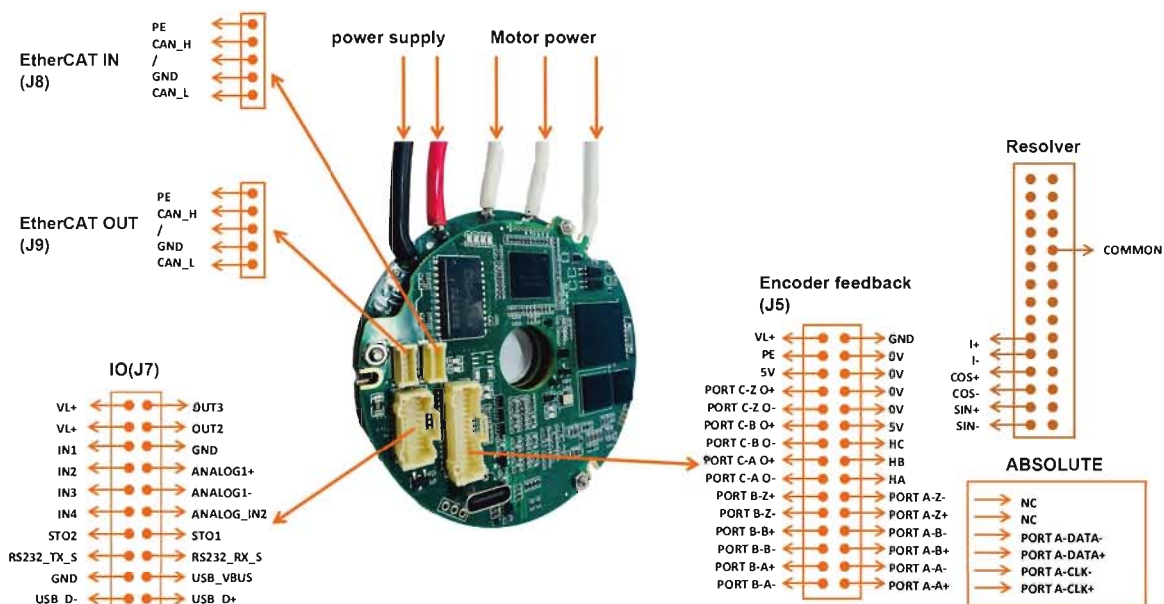
brush motor



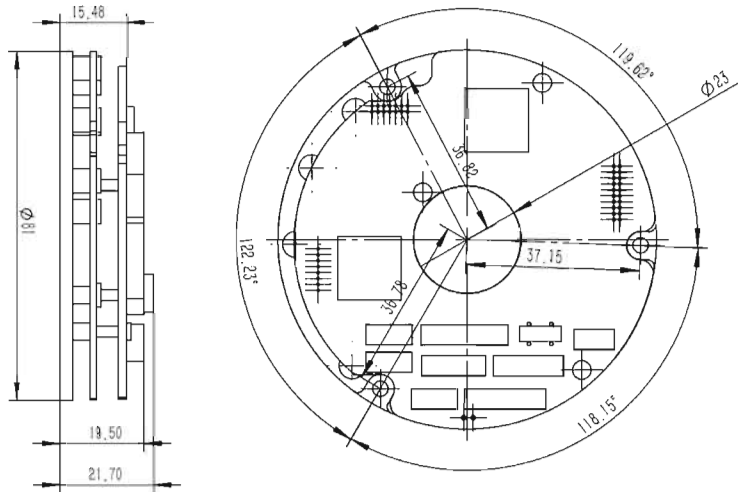
coreless motor

		1/100	3/100	6/100	10/100	15/100	25/100	50/100	70/100	80/80
Minimum supply voltage	VDC	11								
Rated supply voltage	VDC	85								
Maximum supply voltage	VDC	95								
Maximum continuous power output	W	80	235	470	800	1125	2000	4000	5600	5000
Efficiency (rated power)	%	95								
Maximum output voltage	V	Up to 96% of DC link voltage								
Rated DC current	A	1	3	6	10	15	25	50	70	80
Effective continuous current(ic)	A	0.7	2.1	4.2	7.1	10	17.7	35.3	49.5	56.5
Current peak(2*ic)	A	1.4	4.2	8.4	14.2	20	35.4	—		

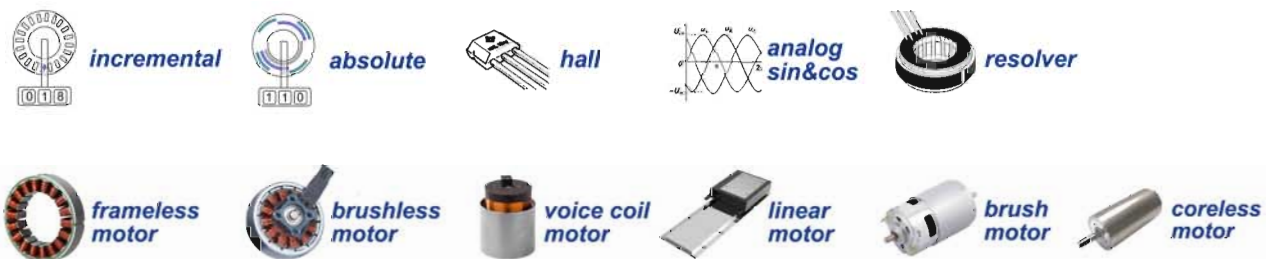
SEA C68 EtherCAT interface definition



SEA C81



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		70/100	80/80	140/100
Minimum supply voltage	VDC		12	
Rated supply voltage	VDC	85	65	85
Maximum supply voltage	VDC	95	75	95
Maximum continuous power output	W	5600	5000	11000
Efficiency (rated power)	%		95	
Maximum output voltage	V	Up to 96% of DC link voltage		
Rated DC current	A	70	80	140
Effective continuous current(ic)	A	49.5	56.5	99
Current peak(2*ic)	A	—	—	—

SEA C81 EtherCAT interface definition

