Meridian “Solo” ISC, Model S2xx/3xx-xLx

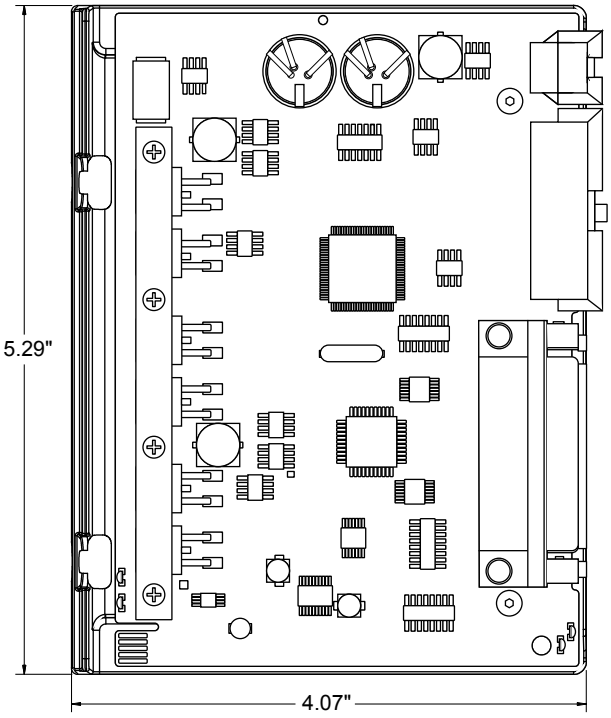
L-Bracket, DSP-Based Integrated Servo Controllers

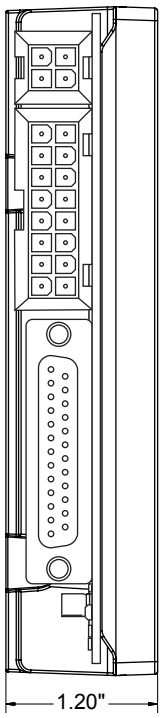
FEATURES

- Advanced trajectory generation includes multi-speed moves with head and tail ramps, asymmetric accel/decel, etc. with smooth jerk and higher order derivative energy limiting.
- Exceptional servo control, includes: advanced estimators, electronic inertia matching and smooth operating multi-state feed-forward terms.
- Integrated I/O control for high-speed response to input events and high speed output control based on internal events.
- Built-in user-programmable logic structure allows easy deterministic coordination of internal and external events, I/O and encoder capture/compare.
- g-Stop™ command tuning cures resonant vibration problems with negligible effects on throughput.
- System-wide E-stop function smoothes safety integration.
- Integrated cast “pin” heat-sink does not require additional heat sinking elements.
- Universal motor interface drives brush, 3-phase brushless, 2-phase brushless, stepper motors, voice-coils, etc.
- Closed loop vector drive of stepper motors enables reduced cost—yet high-torque—direct-drive applications.
- Full galvanic isolation between control signals and servo power/phases minimizes noise problems and speeds electrical and safety integration.

MODEL LIST

Model	Peak Current [A]	RMS Current [A_{RMS}]	Bus Voltage [V_{DC}]
ISC-S251-KLx	16	4	24-90
ISC-S291-KLx	20	6	24-90
ISC-S351-RLx	25	8	24-90
ISC-S371-RLx	30	10	24-90





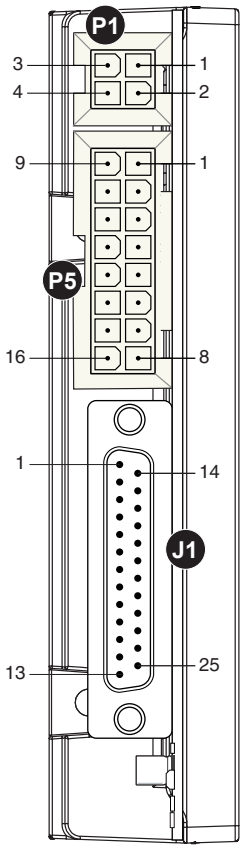
SPECIFICATIONS

GENERAL	Dimensions, in (mm):	5.29 (134.4) x 4.07 (103.4) x 1.20 (30.5)
	Weight, oz (g):	11.4 (323)
ENVIRONMENTAL	Operating Temperature:	0-40°C
	Humidity:	0-90%, non-condensing
COMPLIANCE	Electrical safety:	EN61010, UL508C
	EMI:	EN 61326
	Machine safety:	EN 954-1, with proper power control
EXTERNAL FAN	Optional	See documentation for cooling requirements
OUTPUT POWER	PWM ripple frequency:	28kHz, center balance vector type
	Conversion efficiency:	>99%
COMPENSATOR	TSPD:	35µS
	Position/velocity control:	Enhanced PIV with proprietary velocity, acceleration and jerk estimators, Inertia Matching Technology (IMT), and Anti-Hunt. Provides velocity, acceleration, jerk and friction feed-forward gains.
	Torque control:	Synchronous vector with DQ decoupling, SmartSaturation, and auto calibration
ENCODER	Primary (Motor) Interface:	Single-ended or differential
	Secondary (Load) Interface:	Differential
	Max count rate:	24 MHz, quadrature, count rate
	Features:	Bad sequence detection, digital filtering adjustable from 100kHz to 40MHz
MOTOR COMPATIBILITY	Requirements:	Rotary brush, 3-phase brushless, 2-phase brushless, stepper motors, voice-coils, etc.
LIMIT INPUTS	Interface:	Two (2) Schmitt-triggered inputs with 2kΩ pull-up to +5VDC. Can be alternately configured as general purpose inputs (GPI-2 and GPI-3)
HALL SENSOR INPUTS	Specifications:	5kΩ pull-up to +5VDC
	Features:	Digitally filtered, used to set torque/force vector on initialization (drive may also operate in sensorless mode)
GENERAL PURPOSE INPUTS	Interface:	Two (2) Schmitt-triggered inputs with 2kΩ pull-up to +5VDC. GPI-0 can initiate capture of the motor or load encoder position to the count.
GENERAL PURPOSE OUTPUTS	Interface:	Two (2) open-collector transistor outputs. Outputs can be triggered under host program control, from encoder counter compare or via user-definable logic functions.
	Output Ratings:	20mA maximum, non-inductive loads
PROTECTION AND SAFETY FUNCTIONS	Drive protection:	Short circuit (phase-to-phase, phase-to-ground), over-temperature, over voltage, over current, protected for open windings, fused
	Motor protection:	True RMS torque/force limiting, automatic speed-limit, motor jam detection, over temperature
	Mechanical safeguards:	Hardstop detection, limit switch servoing, adjustable tracking error limit and shutdown thresholds, adjustable torque/force limits, adjustable speed limits
	Electrical isolation:	1.0mm (0.0394”)
INPUT SUPPLY	Main DC (bus) power supply:	24-90 VDC @ Up to 6.75A RMS, 15A peak (application dependant)
	5VDC (logic) power supply:	4.5-5.5VDC @ 650mA per drive
COUNTRY OF ORIGIN	Manufactured in:	USA
WARRANTY	Duration:	3-year standard, 5-year optional

CONNECTOR DETAIL

P1-Power Connector	
PIN#	DESCRIPTION
1	24-90VDC IN +
2	24-90VDC RETURN
3	24-90VDC IN +
4	24-90VDC RETURN

P5-Motor Connector	
PIN#	DESCRIPTION
1	MOTOR PHASE SHIELD
2	NO CONNECT
3	COMM. S-T
4	COMM. R-S
5	COMM. T-R
6	ENCODER/HALL SHIELD
7	ENCODER/HALL GND
8	ENCODER A~
9	MOTOR PHASE R
10	MOTOR PHASE S
11	MOTOR PHASE T
12	+5VDC OUT
13	ENCODER I
14	ENCODER B
15	ENCODER A
16	ENCODER B~



Meridian ISC-S2xx/ 3xx-xLx

J1-Controller Connector	
PIN#	DESCRIPTION
1	CHASSIS
2	APPLICATION CHANNEL IN
3	APPLICATION CHANNEL OUT
4	GPI-1
5	GP0-0
6	NO CONNECT
7	GND
8	NO CONNECT
9	NO CONNECT
10	NO CONNECT
11	ENCODER I IN
12	ENCODER B IN
13	ENCODER A IN
14	DIAGNOSTIC CHANNEL IN
15	GPO-1
16	GPI-0
17	+LIMIT~ (GPI-2)
18	-LIMIT~ (GPI-3)
19	+5VDC OUT
20	+5VDC IN
21	GND
22	DIAGNOSTIC CHANNEL OUT
23	ENCODER I~ IN
24	ENCODER B~ IN
25	ENCODER A~ IN