ENGINEERING DOCUMENTATION

24-60 V Compact Servo Drive

Dimensional & Integration Guide

DOCUMENT	REVISION / ISSUE	STATUS
DIG-ES-SD-C01-S007-V011	DRAFT-08 / 29 Aug 2026	Engineering Integration Reference

Integration Overview

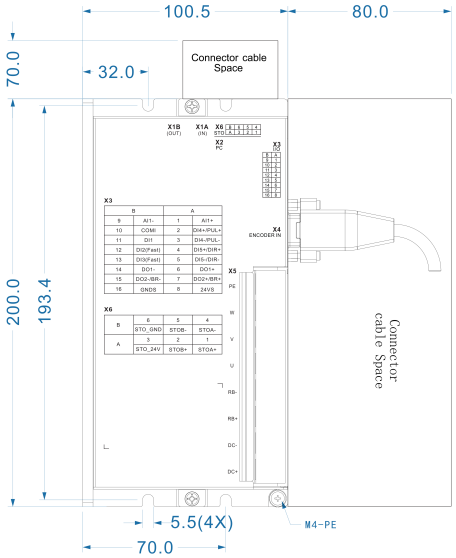
Compact low-voltage servo drive for cabinet-integrated motion control. This guide supports panel mounting, thermal planning, power and braking integration, signal routing, communication commissioning and enclosure boundary definition for ES-SD-C01-S007-V011.

Key Integration Facts

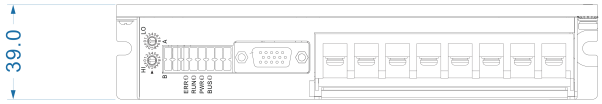
INTEGRATION ITEM	VALUE
Continuous Output Current Without Auxiliary Heatsink	35 Arms
Peak Output Current	160 A peak
Servo Drive AC Supply Voltage	24 to 60 VDC
Logic Supply Voltage	24 VDC
Communication Protocol	EtherCAT; CoE CiA 402; Pulse
Weight	0.867 kg
Protection Class	IP20; X5 power terminal is IP00
Operating Temperature	-20 to 40 °C

Product Structure & Views

These views present product structure, mounting interfaces and relevant integration geometry for this SKU.

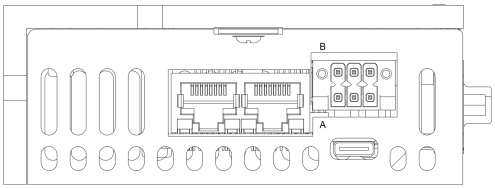


Mechanical View 1



Mechanical View 2

Mechanical View 3



Mechanical View 4

VIEW	FIELD	VALUE
Mechanical View 1	Overall length	100.5 mm
	Right section length	80.0 mm
	Overall height	200.0 mm
	Main body height	193.4 mm
	Top section height	70.0 mm
	Left section width	32.0 mm
	Bottom width	70.0 mm
	Mounting hole diameter	Φ5.5 mm, 4 places
	Grounding screw hole	M4 thread, PE grounding
	X4 terminal (Encoder input)	X4 encoder input terminal
	X5 terminal (Motor/Power)	X5 motor power terminal (U/V/W/PE)
	Connector cable clearance space	Reserved space for connector cables and terminal wiring
	Connector cable routing space	Reserved space for connector cable routing
	Bottom mounting hole position	70.0 mm
Mechanical View 2	Overall width/depth dimension	39.0 mm
	LO switch marking	LO position label
	HI switch marking	HI position label
	Connector group B label	Connector group B
	Power indicator label	PWR indicator label
	Bus indicator label	BUS indicator label
	Error indicator label	ERR indicator label
	Run indicator label	RUN indicator label
Mechanical View 3	Horizontal fixing hole position	39.0 mm
	Horizontal fixing hole offset	18.0 mm
	Vertical fixing hole position	193.0 mm
	Fixing slot width quantity	5.5 mm, 2 places
	View description	Hole position for fixation
Mechanical View 4	Connector interface label B	Connector label B
	Connector interface label A	Connector label A

Overall Dimensions and Panel Mounting

PARAMETER	VALUE	UNIT
Weight	0.867	kg
Installation Orientation	Vertical or horizontal	

- Mount the drive to a rigid, flat panel so the housing is not twisted and the thermal path remains repeatable.
- Use only a installation orientation and confirm connector access, conductor bend radius and service removal space before releasing the panel layout.
- Keep terminal and connector approach zones accessible without forcing cables against adjacent devices or the enclosure.

Thermal Management and Clearance

PARAMETER	VALUE	UNIT
Continuous Output Current Without Auxiliary Heatsink	35	Arms
Supported Motor Power Range	200 to 2000	W
Logic Power Loss	2500	mW
Operating Temperature	-20 to 40	°C

- Preserve natural or forced airflow around the drive and do not obstruct heat-transfer surfaces with cable bundles, covers or adjacent heat sources.
- Validate continuous current, auxiliary heat sinking, enclosure temperature, altitude and duty cycle together; use applicable derating data when any boundary is approached.
- Separate the drive from braking resistors, power supplies and other concentrated heat sources unless the complete thermal design has been verified.

Power, Braking and Protective Integration

PARAMETER	VALUE	UNIT
Servo Drive AC Supply Voltage	24 to 60	VDC
Logic Supply Voltage	24	
Logic Supply Voltage Range	18 to 30	
Logic Supply Current	500 mA plus brake-coil current	A
Peak Output Current	160	A peak
Power-to-Logic Isolation Voltage	500	VDC
Braking Absorption Voltage	63 ±2 V	
Overvoltage Alarm Voltage	70 ±2 V	
Undervoltage Alarm Voltage	16 ±2 V	
Protection Functions	Overvoltage; Undervoltage; Motor overtemperature (PT); Short circuit; Drive overtemperature	

- Before energization, verify power and logic supply ranges, polarity, protective devices, conductor ratings and discharge state against applicable terminal documentation.
- Size and locate any external braking element for the actual regenerative energy, duty cycle and enclosure thermal conditions; keep hot components clear of wiring and heat-sensitive devices.

Electrical Boundaries

BOUNDARY	VALUE	INTEGRATION REQUIREMENT
Power input	24 to 60 VDC	Coordinate the host supply, wiring and protective strategy with this exact-SKU boundary.
Logic input range	18 to 30 VDC	
Peak output current	160 A peak	
Braking absorption threshold	63 ±2 V VDC	
Overvoltage alarm threshold	70 ±2 V VDC	
Undervoltage alarm threshold	16 ±2 V VDC	

I/O, Feedback and Communication Interfaces

PARAMETER	VALUE	UNIT
Communication Protocol	EtherCAT; CoE CiA 402; Pulse	
Control Method	EtherCAT and pulse	
Digital I/O	3 digital inputs; 1 digital output	
Digital Input Count	3	
High-Speed Digital Input Count	2	
Digital Output Count	1	
Analog Input Count		
Analog Input Range	-10 to +10	V
Analog Input Resolution	12	bit
Pulse Input Count	2	
Pulse Input Voltage	12 to 24	VDC
Pulse Input Maximum Frequency	500	kHz
Feedback Signal Support	Tamagawa serial protocol; Incremental encoder	
Brake Output Count	1	
Brake Output Current	1	A
Node Address Rotary Switch Count	2	
Node Address Switch Resolution	16	bit

- Do not infer terminal or connector pin assignments from this guide. Use the applicable wiring and communication documentation for the exact SKU.
- Confirm voltage levels, input type, output loading, pulse frequency, feedback protocol and communication termination against the connected controller and motor.
- Commission one command and feedback path at a time, then verify direction, scaling, status handling and fault response before enabling coordinated motion.

Grounding, EMC and Cable Routing

- Bond the drive, mounting panel and enclosure through a low-impedance protective and functional grounding architecture sized for the installation.
- Route power and motor conductors separately from encoder, analog, pulse and communication wiring; cross dissimilar cable groups only where necessary.
- Terminate shields and cable clamps using the qualified EMC architecture, with short low-impedance connections and defined cabinet entry.

Operating and Enclosure Conditions

PARAMETER	VALUE	UNIT
Protection Class	IP20; X5 power terminal is IP00	
Installation Environment	Install inside an IP54-rated electrical cabinet	
Atmospheric Pressure	70 to 106	kPa
Operating Temperature	-20 to 40	°C
Installation Orientation	Vertical or horizontal	

- Treat the component and terminal ratings as local boundaries. The host enclosure must provide the required access control, ingress protection, contamination control and thermal environment.

Ingress and Enclosure Boundaries

BOUNDARY	CONDITION	INTEGRATION REQUIREMENT
Drive housing	IP20; X5 power terminal is IP00	Do not treat the component rating as the protection rating of the completed control assembly.
Power terminal zone	IP00 at the identified power terminal zone	Contain access within the host enclosure and maintain required electrical clearances and service controls.
Host electrical enclosure	Install inside an IP54-rated electrical cabinet	Validate enclosure ingress protection, contamination control, thermal management and cable entry for the installed environment.

Commissioning and Safety Functions

- Before power-up, inspect mounting, protective bonding, terminal torque, conductor routing, polarity, motor and feedback compatibility, and enclosure clearances.
- Commission with the mechanism unloaded or restrained as appropriate, conservative current and motion limits, and a verified stop path before normal operation.
- Any safety input or safe-torque function used by the selected configuration must be integrated and validated as part of the machine safety design; this guide does not define safety performance or terminal assignments.

Integration Checklist

01	Confirm that the 2D drawing, parameter set and applicable wiring data all identify ES-SD-C01-S007-V011.
02	Verify housing dimensions, mounting points, orientation, connector approach and service removal space.
03	Confirm enclosure protection, contamination control, ambient temperature, altitude and thermal derating requirements.
04	Verify power and logic supply ranges, polarity, protective devices, conductor ratings and discharge controls.
05	Validate continuous and peak current requirements together with auxiliary heat sinking and the machine duty cycle.
06	Confirm braking-energy handling, resistor rating, placement, guarding and thermal separation where applicable.
07	Verify motor, brake and feedback compatibility before connecting the load.
08	Confirm digital, analog, pulse and communication interface levels, loading, addressing and termination.
09	Complete protective bonding, shield termination and power-versus-signal cable segregation.
10	Validate safe-state behavior, stop path and any safety function within the complete machine safety design.
11	Commission under defined motion limits and verify direction, scaling, feedback, status and fault response.
12	Request current 2D, STEP, terminal, wiring and communication data before integration planning.

View SKU Product Datasheet Request controlled 2D drawing Request controlled STEP review Request a Quote

Engineering Use and Verification Notice

01. This Dimensional & Integration Guide applies only to EmbodyStack SKU ES-SD-C01-S007-V011 and is intended for dimensional evaluation and preliminary integration. It is not a specified installation manual, wiring diagram, terminal assignment, safety manual or manufacturing drawing and must not be used as the sole basis for panel fabrication, conductor sizing, protective-device selection, braking-resistor design, safety validation or integration planning. Before design freeze or energization, verify dimensions, mounting orientation, ventilation and derating requirements, power and logic supply limits, terminal assignments, conductor and protective bonding requirements, motor and feedback compatibility, braking-energy management, communication settings, safe-state behavior, enclosure protection and environmental limits against the applicable EmbodyStack engineering data for this exact SKU. Where this guide and applicable product documentation differ, the applicable product documentation governs. Validate the complete machine under its intended supply conditions, load cycle, fault cases, environment and applicable regulatory requirements.