

ENGINEERING DOCUMENTATION

Ball Screw Linear Module Engineering Configuration

Dimensional & Integration Guide

DOCUMENT	REVISION / ISSUE	STATUS
DIG-ES-LA-S02-P03	DRAFT-08 / 29 Aug 2026	Engineering Integration Reference

Integration Overview

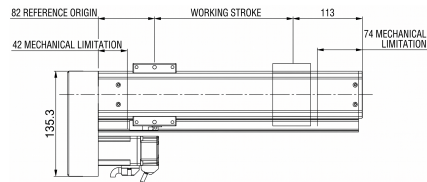
Exact ball-screw linear-module configuration for guided linear motion in automation equipment. This guide supports dimensional layout, mounting, load-path , motor and coupling integration, cable and sensor clearance, maintenance and commissioning for ES-LA-S02-P03.

Key Integration Facts

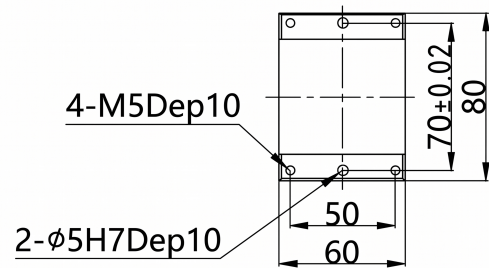
INTEGRATION ITEM	VALUE
Working Stroke	Configuration-dependent (52 records)
Module Mass	
Mounting Hole Count	
Motor Mounting Style	

Product Structure & Views

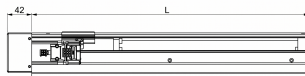
These views present the selected product structure, mounting interfaces and relevant integration geometry for this configuration.



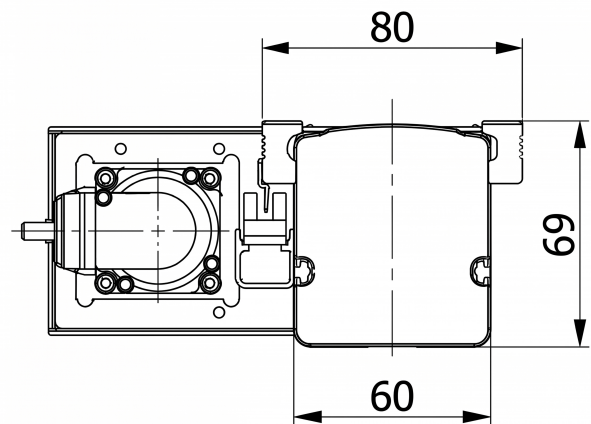
Mechanical View 1



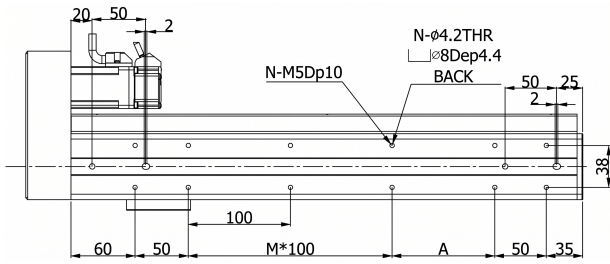
Standard Sliding rack



Mechanical View 3



Mechanical View 4



Mechanical View 5

VIEW	FIELD	VALUE
Mechanical View 1	Reference Origin Position	82 mm from reference origin
	Working Stroke	Working stroke range
	Working Stroke Length	113 mm
	Left Mechanical Limitation Position	42 mm mechanical limit
	Right Mechanical Limitation Position	74 mm mechanical limit
	Overall Height	135.3 mm
Mechanical View 2	Vertical height with tolerance	70±0.02
	Overall height	80
	M5 threaded hole specification	4-M5 Depth 10
	Mounting hole spacing	50
	Dowel pin hole specification	2-ØH7 Depth 10
	Overall width	60
Mechanical View 3	Mounting end width	42 mm
	Overall Length	L (variable, depends on model)
Mechanical View 4	Overall width	80
	Overall height	69
	Bottom width	60

VIEW	FIELD	VALUE
Mechanical View 5	Left protrusion width	20 mm
	Left connector zone length	50 mm
	Connector or shaft offset	2 mm
	Through hole specification	N holes, ϕ 2 mm through
	Counterbore hole specification	ϕ mm, depth 4.4 mm
	Threaded hole specification	N holes, M5 threaded, depth 10 mm
	Back side designation	Back side
	Right main body length	50 mm
	Right protrusion width	25 mm
	Right connector offset	2 mm
	Overall height	38 mm
	Bottom mounting hole spacing	100 mm
	Left edge distance	60 mm
	Bottom section segment length	50 mm
	Reference or variable dimension	M $\times$ 100 mm (variable)
	Datum A	Datum A
	Right section segment length	50 mm
	Right edge distance	35 mm

Configuration Dimensions

- Each row remains bound to one aggregate source configuration. Compare values by row; do not combine cells from different rows into an assumed module configuration.

Configuration Dimensions

CONFIGURATION	WORKING STROKE	MODULE MASS
Configuration 01 - Stroke: 450 mm; Motor mounting: Bottom Motor	450 mm	8.01 kg
Configuration 02 - Stroke: 1050 mm; Motor mounting: Right Side Motor	1050 mm	12.21 kg
Configuration 03 - Stroke: 100 mm; Motor mounting: Right Side Motor	100 mm	5.56 kg
Configuration 04 - Stroke: 100 mm; Motor mounting: Left Side Motor	100 mm	5.56 kg
Configuration 05 - Stroke: 350 mm; Motor mounting: Right Side Motor	350 mm	7.31 kg
Configuration 06 - Stroke: 350 mm; Motor mounting: External Direct Coupling	350 mm	7.15 kg
Configuration 07 - Stroke: 350 mm; Motor mounting: Bottom Motor	350 mm	7.31 kg
Configuration 08 - Stroke: 1000 mm; Motor mounting: External Direct Coupling	1000 mm	11.7 kg
Configuration 09 - Stroke: 1150 mm; Motor mounting: External Direct Coupling	1150 mm	12.75 kg
Configuration 10 - Stroke: 400 mm; Motor mounting: Left Side Motor	400 mm	7.66 kg
Configuration 11 - Stroke: 100 mm; Motor mounting: External Direct Coupling	100 mm	5.4 kg
Configuration 12 - Stroke: 200 mm; Motor mounting: Bottom Motor	200 mm	6.26 kg
Configuration 13 - Stroke: 1100 mm; Motor mounting: Left Side Motor	1100 mm	12.56 kg
Configuration 14 - Stroke: 300 mm; Motor mounting: Right Side Motor	300 mm	6.96 kg
Configuration 15 - Stroke: 150 mm; Motor mounting: Right Side Motor	150 mm	5.91 kg
Configuration 16 - Stroke: 150 mm; Motor mounting: Bottom Motor	150 mm	5.91 kg
Configuration 17 - Stroke: 1100 mm; Motor mounting: Bottom Motor	1100 mm	12.56 kg
Configuration 18 - Stroke: 150 mm; Motor mounting: External Direct Coupling	150 mm	5.75 kg
Configuration 19 - Stroke: 200 mm; Motor mounting: External Direct Coupling	200 mm	6.1 kg
Configuration 20 - Stroke: 1000 mm; Motor mounting: Left Side Motor	1000 mm	11.86 kg
Configuration 21 - Stroke: 150 mm; Motor mounting: Left Side Motor	150 mm	5.91 kg
Configuration 22 - Stroke: 400 mm; Motor mounting: Right Side Motor	400 mm	7.66 kg
Configuration 23 - Stroke: 1200 mm; Motor mounting: Bottom Motor	1200 mm	13.26 kg
Configuration 24 - Stroke: 1000 mm; Motor mounting: Bottom Motor	1000 mm	11.86 kg
Configuration 25 - Stroke: 450 mm; Motor mounting: Right Side Motor	450 mm	8.01 kg
Configuration 26 - Stroke: 250 mm; Motor mounting: Left Side Motor	250 mm	6.61 kg
Configuration 27 - Stroke: 350 mm; Motor mounting: Left Side Motor	350 mm	7.31 kg

CONFIGURATION	WORKING STROKE	MODULE MASS
Configuration 28 - Stroke: 1100 mm; Motor mounting: External Direct Coupling	1100 mm	12.4 kg
Configuration 29 - Stroke: 1200 mm; Motor mounting: External Direct Coupling	1200 mm	13.1 kg
Configuration 30 - Stroke: 250 mm; Motor mounting: Right Side Motor	250 mm	6.61 kg
Configuration 31 - Stroke: 1050 mm; Motor mounting: External Direct Coupling	1050 mm	12.05 kg
Configuration 32 - Stroke: 1050 mm; Motor mounting: Left Side Motor	1050 mm	12.21 kg
Configuration 33 - Stroke: 1000 mm; Motor mounting: Right Side Motor	1000 mm	11.86 kg
Configuration 34 - Stroke: 300 mm; Motor mounting: External Direct Coupling	300 mm	6.8 kg
Configuration 35 - Stroke: 1100 mm; Motor mounting: Right Side Motor	1100 mm	12.56 kg
Configuration 36 - Stroke: 450 mm; Motor mounting: Left Side Motor	450 mm	8.01 kg
Configuration 37 - Stroke: 400 mm; Motor mounting: Bottom Motor	400 mm	7.66 kg
Configuration 38 - Stroke: 200 mm; Motor mounting: Left Side Motor	200 mm	6.26 kg
Configuration 39 - Stroke: 100 mm; Motor mounting: Bottom Motor	100 mm	5.56 kg
Configuration 40 - Stroke: 250 mm; Motor mounting: Bottom Motor	250 mm	6.61 kg
Configuration 41 - Stroke: 300 mm; Motor mounting: Bottom Motor	300 mm	6.96 kg
Configuration 42 - Stroke: 1150 mm; Motor mounting: Left Side Motor	1150 mm	12.91 kg
Configuration 43 - Stroke: 1150 mm; Motor mounting: Right Side Motor	1150 mm	12.91 kg
Configuration 44 - Stroke: 450 mm; Motor mounting: External Direct Coupling	450 mm	7.85 kg
Configuration 45 - Stroke: 1050 mm; Motor mounting: Bottom Motor	1050 mm	12.21 kg
Configuration 46 - Stroke: 400 mm; Motor mounting: External Direct Coupling	400 mm	7.5 kg
Configuration 47 - Stroke: 250 mm; Motor mounting: External Direct Coupling	250 mm	6.45 kg
Configuration 48 - Stroke: 1150 mm; Motor mounting: Bottom Motor	1150 mm	12.91 kg
Configuration 49 - Stroke: 1200 mm; Motor mounting: Right Side Motor	1200 mm	13.26 kg
Configuration 50 - Stroke: 300 mm; Motor mounting: Left Side Motor	300 mm	6.96 kg
Configuration 51 - Stroke: 1200 mm; Motor mounting: Left Side Motor	1200 mm	13.26 kg
Configuration 52 - Stroke: 200 mm; Motor mounting: Right Side Motor	200 mm	6.26 kg

Mounting and Drive Configuration

Mounting and Drive Configuration

CONFIGURATION	MOUNTING HOLE COUNT
Configuration 01 - Stroke: 450 mm; Motor mounting: Bottom Motor	12
Configuration 02 - Stroke: 1050 mm; Motor mounting: Right Side Motor	24
Configuration 03 - Stroke: 100 mm; Motor mounting: Right Side Motor	6
Configuration 04 - Stroke: 100 mm; Motor mounting: Left Side Motor	6
Configuration 05 - Stroke: 350 mm; Motor mounting: Right Side Motor	10
Configuration 06 - Stroke: 350 mm; Motor mounting: External Direct Coupling	12
Configuration 07 - Stroke: 350 mm; Motor mounting: Bottom Motor	10
Configuration 08 - Stroke: 1000 mm; Motor mounting: External Direct Coupling	26
Configuration 09 - Stroke: 1150 mm; Motor mounting: External Direct Coupling	28
Configuration 10 - Stroke: 400 mm; Motor mounting: Left Side Motor	12
Configuration 11 - Stroke: 100 mm; Motor mounting: External Direct Coupling	8
Configuration 12 - Stroke: 200 mm; Motor mounting: Bottom Motor	8
Configuration 13 - Stroke: 1100 mm; Motor mounting: Left Side Motor	26
Configuration 14 - Stroke: 300 mm; Motor mounting: Right Side Motor	10
Configuration 15 - Stroke: 150 mm; Motor mounting: Right Side Motor	6
Configuration 16 - Stroke: 150 mm; Motor mounting: Bottom Motor	6
Configuration 17 - Stroke: 1100 mm; Motor mounting: Bottom Motor	26
Configuration 18 - Stroke: 150 mm; Motor mounting: External Direct Coupling	8
Configuration 19 - Stroke: 200 mm; Motor mounting: External Direct Coupling	10
Configuration 20 - Stroke: 1000 mm; Motor mounting: Left Side Motor	24
Configuration 21 - Stroke: 150 mm; Motor mounting: Left Side Motor	6
Configuration 22 - Stroke: 400 mm; Motor mounting: Right Side Motor	12
Configuration 23 - Stroke: 1200 mm; Motor mounting: Bottom Motor	28
Configuration 24 - Stroke: 1000 mm; Motor mounting: Bottom Motor	24
Configuration 25 - Stroke: 450 mm; Motor mounting: Right Side Motor	12
Configuration 26 - Stroke: 250 mm; Motor mounting: Left Side Motor	8
Configuration 27 - Stroke: 350 mm; Motor mounting: Left Side Motor	10
Configuration 28 - Stroke: 1100 mm; Motor mounting: External Direct Coupling	28
Configuration 29 - Stroke: 1200 mm; Motor mounting: External Direct Coupling	30
Configuration 30 - Stroke: 250 mm; Motor mounting: Right Side Motor	8
Configuration 31 - Stroke: 1050 mm; Motor mounting: External Direct Coupling	26
Configuration 32 - Stroke: 1050 mm; Motor mounting: Left Side Motor	24

CONFIGURATION	MOUNTING HOLE COUNT
Configuration 33 - Stroke: 1000 mm; Motor mounting: Right Side Motor	24
Configuration 34 - Stroke: 300 mm; Motor mounting: External Direct Coupling	12
Configuration 35 - Stroke: 1100 mm; Motor mounting: Right Side Motor	26
Configuration 36 - Stroke: 450 mm; Motor mounting: Left Side Motor	12
Configuration 37 - Stroke: 400 mm; Motor mounting: Bottom Motor	12
Configuration 38 - Stroke: 200 mm; Motor mounting: Left Side Motor	8
Configuration 39 - Stroke: 100 mm; Motor mounting: Bottom Motor	6
Configuration 40 - Stroke: 250 mm; Motor mounting: Bottom Motor	8
Configuration 41 - Stroke: 300 mm; Motor mounting: Bottom Motor	10
Configuration 42 - Stroke: 1150 mm; Motor mounting: Left Side Motor	26
Configuration 43 - Stroke: 1150 mm; Motor mounting: Right Side Motor	26
Configuration 44 - Stroke: 450 mm; Motor mounting: External Direct Coupling	14
Configuration 45 - Stroke: 1050 mm; Motor mounting: Bottom Motor	24
Configuration 46 - Stroke: 400 mm; Motor mounting: External Direct Coupling	14
Configuration 47 - Stroke: 250 mm; Motor mounting: External Direct Coupling	10
Configuration 48 - Stroke: 1150 mm; Motor mounting: Bottom Motor	26
Configuration 49 - Stroke: 1200 mm; Motor mounting: Right Side Motor	28
Configuration 50 - Stroke: 300 mm; Motor mounting: Left Side Motor	10
Configuration 51 - Stroke: 1200 mm; Motor mounting: Left Side Motor	28
Configuration 52 - Stroke: 200 mm; Motor mounting: Right Side Motor	8

Motor Interface Configuration

Motor Interface Configuration

CONFIGURATION	MOTOR MOUNTING STYLE
Configuration 01 - Stroke: 450 mm; Motor mounting: Bottom Motor	Bottom Motor
Configuration 02 - Stroke: 1050 mm; Motor mounting: Right Side Motor	Right Side Motor
Configuration 03 - Stroke: 100 mm; Motor mounting: Right Side Motor	Right Side Motor
Configuration 04 - Stroke: 100 mm; Motor mounting: Left Side Motor	Left Side Motor
Configuration 05 - Stroke: 350 mm; Motor mounting: Right Side Motor	Right Side Motor
Configuration 06 - Stroke: 350 mm; Motor mounting: External Direct Coupling	External Direct Coupling
Configuration 07 - Stroke: 350 mm; Motor mounting: Bottom Motor	Bottom Motor
Configuration 08 - Stroke: 1000 mm; Motor mounting: External Direct Coupling	External Direct Coupling
Configuration 09 - Stroke: 1150 mm; Motor mounting: External Direct Coupling	External Direct Coupling
Configuration 10 - Stroke: 400 mm; Motor mounting: Left Side Motor	Left Side Motor
Configuration 11 - Stroke: 100 mm; Motor mounting: External Direct Coupling	External Direct Coupling
Configuration 12 - Stroke: 200 mm; Motor mounting: Bottom Motor	Bottom Motor
Configuration 13 - Stroke: 1100 mm; Motor mounting: Left Side Motor	Left Side Motor
Configuration 14 - Stroke: 300 mm; Motor mounting: Right Side Motor	Right Side Motor
Configuration 15 - Stroke: 150 mm; Motor mounting: Right Side Motor	Right Side Motor
Configuration 16 - Stroke: 150 mm; Motor mounting: Bottom Motor	Bottom Motor
Configuration 17 - Stroke: 1100 mm; Motor mounting: Bottom Motor	Bottom Motor
Configuration 18 - Stroke: 150 mm; Motor mounting: External Direct Coupling	External Direct Coupling
Configuration 19 - Stroke: 200 mm; Motor mounting: External Direct Coupling	External Direct Coupling
Configuration 20 - Stroke: 1000 mm; Motor mounting: Left Side Motor	Left Side Motor
Configuration 21 - Stroke: 150 mm; Motor mounting: Left Side Motor	Left Side Motor
Configuration 22 - Stroke: 400 mm; Motor mounting: Right Side Motor	Right Side Motor
Configuration 23 - Stroke: 1200 mm; Motor mounting: Bottom Motor	Bottom Motor
Configuration 24 - Stroke: 1000 mm; Motor mounting: Bottom Motor	Bottom Motor
Configuration 25 - Stroke: 450 mm; Motor mounting: Right Side Motor	Right Side Motor
Configuration 26 - Stroke: 250 mm; Motor mounting: Left Side Motor	Left Side Motor
Configuration 27 - Stroke: 350 mm; Motor mounting: Left Side Motor	Left Side Motor
Configuration 28 - Stroke: 1100 mm; Motor mounting: External Direct Coupling	External Direct Coupling
Configuration 29 - Stroke: 1200 mm; Motor mounting: External Direct Coupling	External Direct Coupling
Configuration 30 - Stroke: 250 mm; Motor mounting: Right Side Motor	Right Side Motor
Configuration 31 - Stroke: 1050 mm; Motor mounting: External Direct Coupling	External Direct Coupling
Configuration 32 - Stroke: 1050 mm; Motor mounting: Left Side Motor	Left Side Motor

CONFIGURATION	MOTOR MOUNTING STYLE
Configuration 33 - Stroke: 1000 mm; Motor mounting: Right Side Motor	Right Side Motor
Configuration 34 - Stroke: 300 mm; Motor mounting: External Direct Coupling	External Direct Coupling
Configuration 35 - Stroke: 1100 mm; Motor mounting: Right Side Motor	Right Side Motor
Configuration 36 - Stroke: 450 mm; Motor mounting: Left Side Motor	Left Side Motor
Configuration 37 - Stroke: 400 mm; Motor mounting: Bottom Motor	Bottom Motor
Configuration 38 - Stroke: 200 mm; Motor mounting: Left Side Motor	Left Side Motor
Configuration 39 - Stroke: 100 mm; Motor mounting: Bottom Motor	Bottom Motor
Configuration 40 - Stroke: 250 mm; Motor mounting: Bottom Motor	Bottom Motor
Configuration 41 - Stroke: 300 mm; Motor mounting: Bottom Motor	Bottom Motor
Configuration 42 - Stroke: 1150 mm; Motor mounting: Left Side Motor	Left Side Motor
Configuration 43 - Stroke: 1150 mm; Motor mounting: Right Side Motor	Right Side Motor
Configuration 44 - Stroke: 450 mm; Motor mounting: External Direct Coupling	External Direct Coupling
Configuration 45 - Stroke: 1050 mm; Motor mounting: Bottom Motor	Bottom Motor
Configuration 46 - Stroke: 400 mm; Motor mounting: External Direct Coupling	External Direct Coupling
Configuration 47 - Stroke: 250 mm; Motor mounting: External Direct Coupling	External Direct Coupling
Configuration 48 - Stroke: 1150 mm; Motor mounting: Bottom Motor	Bottom Motor
Configuration 49 - Stroke: 1200 mm; Motor mounting: Right Side Motor	Right Side Motor
Configuration 50 - Stroke: 300 mm; Motor mounting: Left Side Motor	Left Side Motor
Configuration 51 - Stroke: 1200 mm; Motor mounting: Left Side Motor	Left Side Motor
Configuration 52 - Stroke: 200 mm; Motor mounting: Right Side Motor	Right Side Motor

Overall Dimensions and Mounting Interface

PARAMETER	VALUE	UNIT
Ball Screw Diameter	16	mm

- Confirm this exact SKU, the selected motor-mounting configuration and the applicable mechanical views before using dimensions or interface geometry.
- Keep mounting faces flat, clean and free of burrs, raised holes, debris and coating buildup.
- Reserve assembly, inspection, cable, lubrication and removal access around the module and motor interface.

Load Path and Installation Orientation

- Route axial force through the carriage, supported mounting structure and host guide; include offset, side load, acceleration, shock and emergency-stop cases.
- Validate horizontal, wall and vertical installation loads with the actual payload center, guide spacing, host stiffness and duty cycle.
- Control payload center of gravity and overhung moment; verify the complete installed load path rather than inferring capacity from module mass or size.

Motion and Duty-Cycle Validation

- Validate the complete acceleration, travel, dwell, reversal and stop cycle using the stroke and selected motor configuration.
- Establish speed, acceleration, payload and moment limits from the complete selected module, motor, guide and host calculation.
- Verify temperature and resonance behavior using the installed motor, stroke, load, mounting heat path and operating cycle.

Motor, Coupling and Sensor Integration

- Match the motor mounting style, adapter, configured motor power and interface dimensions before assembly.
- Verify coupling bore, engagement, concentricity, axial position and tightening controls, then check smooth travel at zero energy.
- Provide cable slack, bend radius, strain relief and sensor clearance across the complete motion envelope.

Maintenance, Contamination and Service Envelope

- Prevent chips, fibers, cleaning residue and moisture from entering the ball screw, guide, sensor and coupling interfaces.
- Provide access for lubrication, inspection, sensor adjustment, fastener verification and specified removal.
- Stop and inspect after binding, impact, abnormal noise, rising temperature, unexpected friction or protection damage.

Commissioning and Safety

- Commission in stages with the host guide, limits, guards and cable routing installed; verify each boundary before increasing speed or load.
- At low energy verify travel direction, home and limit behavior, command polarity, stroke and sensor state.
- Verify emergency stop, fault response, recovery behavior and safe holding requirements for the installed orientation.

Integration Checklist

- 01 Confirm the exact SKU, parameters and selected mechanical-view configuration.
- 02 Verify working stroke, overall length, module mass, mounting-hole count and service clearance.
- 03 Establish the complete axial, side-load and moment load path for the host structure.
- 04 Validate horizontal, wall and vertical installation cases using the actual payload center and duty cycle.
- 05 Match motor mounting style, configured motor power, adapter and coupling dimensions.
- 06 Verify coupling alignment, engagement, tightening and smooth travel before applying drive power.
- 07 Provide cable slack, bend radius, strain relief and sensor clearance across the full motion envelope.
- 08 Protect the ball screw, guide, sensors and coupling from contamination and moisture.
- 09 At low energy verify direction, home, limits, stroke, speed and fault-stop behavior.
- 10 Request current 2D, STEP, motor-interface, wiring, lubrication and maintenance data before final integration.

[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-LA-S02-P03 and is intended for dimensional evaluation and preliminary integration. It is not a applicable manufacturing drawing, module or motor selection approval, payload or safety approval, wiring final integration, machinery risk assessment or integration planning document and must not be used as the sole basis for machining, host-structure design, coupling manufacture, fastener selection, cable assembly or final integration. Before design freeze, assembly or commissioning, verify dimensions, interface geometry, mounting holes, travel and collision envelope, load path, orientation, payload center, speed, acceleration, motor, adapter, coupling, sensors, cable routing, limits, thermal behavior, contamination control and maintenance requirements against the applicable EmbodyStack engineering data for this exact SKU and selected configuration. Where this guide and applicable product documentation differ, the applicable product documentation governs. Validate the complete module, motor, guide, host structure, motion cycle, guarding, fault cases and applicable regulatory requirements under intended operating conditions.