ENGINEERING DOCUMENTATION

Rotary Servo Motor

Dimensional & Integration Guide

DOCUMENT	REVISION / ISSUE	STATUS
DIG-ES-SM-A02-180D-T28NM-4400W-001	DRAFT-08 / 27 Aug 2026	Engineering Integration Reference

Integration Overview

Closed-loop rotary servo motor for specified motion axes. This guide supports mechanical mounting, shaft and coupling integration, feedback and brake planning, cable routing, thermal validation and staged commissioning.

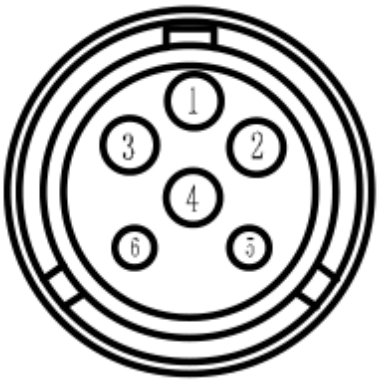
Key Integration Facts

INTEGRATION ITEM	PUBLISHED VALUE
Rated Torque	28 N·m
Rated Speed	1500 rpm
Flange Size	180 mm

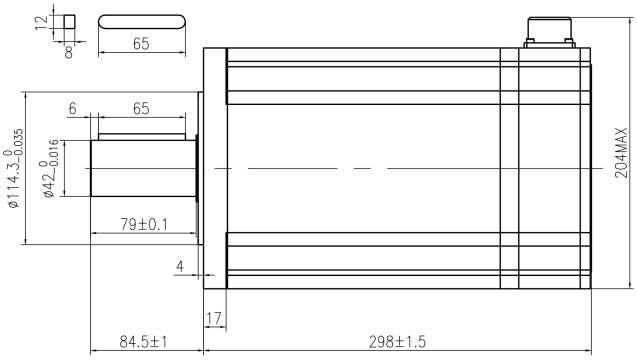
Product Structure & Views

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

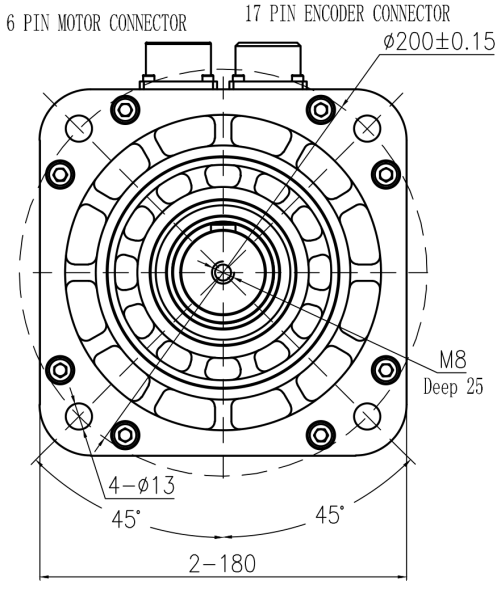
Mechanical View 3



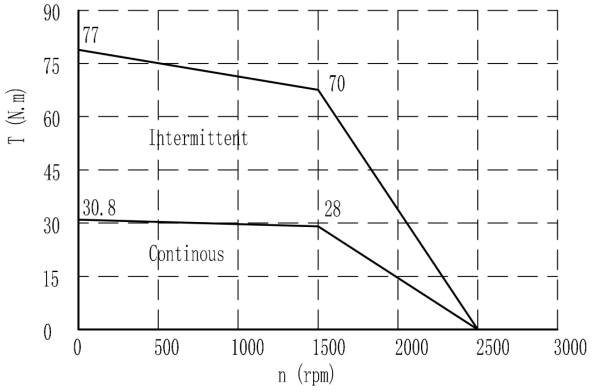
Mechanical View 4



Mechanical View 6



Mechanical View 7



Mechanical View 8

VIEW	FIELD	VALUE
Mechanical View 3	Connector pin label 1-17	Pin 1-17
Mechanical View 4	Connector pin identification numbers	Six visible connector contact positions are identified by pin numbers 1 through 6.
Mechanical View 6	Keyway or key cross-section height	12 mm
	Keyway or key feature length	65 mm
	Keyway or key cross-section width	8 mm
	Shaft shoulder step length	6 mm
	Shaft keyway length	65 mm
	Maximum outside diameter or body height	204 mm maximum
	Flange or shaft shoulder outside diameter	Diameter 114.3 mm, upper deviation 0, lower deviation -0.035 mm
	Output shaft diameter	Diameter 42 mm, upper deviation 0, lower deviation -0.016 mm
	Shaft end length	79 mm ±0.1 mm
	End face clearance or shoulder offset	4 mm
	Front transition length	17 mm
	Shaft end to body front overall length	84.5 mm ±1 mm
	Motor body length	298 mm ±1.5 mm
Mechanical View 7	Encoder connector label	17-pin encoder connector
	Motor connector label	6-pin motor connector
	Outer diameter with tolerance	Diameter 200 ±0.15
	Threaded mounting hole size and depth	M8 threaded hole, depth 25
	Mounting through-hole quantity and diameter	4 holes, diameter 13
	Right-side mounting hole angular position	45 degrees
	Left-side mounting hole angular position	45 degrees
	Mounting hole center spacing	2-180 as shown
Mechanical View 8	Y-axis label - Torque	T (N.m)
	X-axis label - Speed	n (rpm)
	Intermittent operation maximum torque	77 N.m
	Intermittent operation knee-point torque	70 N.m
	Continuous operation maximum torque	30.8 N.m
	Continuous operation knee-point torque	28 N.m
	X-axis scale values - Speed	0 to 3000 rpm
	Y-axis scale values - Torque	0 to 90 N.m
	Intermittent working zone	Intermittent operation zone
	Continuous working zone	Continuous operation zone

Overall Dimensions and Mounting Interface

PARAMETER	PUBLISHED VALUE	UNIT
Flange Size	180	mm

- Confirm the mounting face, locating feature, shaft geometry, fastener engagement and removal clearance against the applicable exact-SKU drawing.
- Mount the motor on a flat, rigid interface and avoid using fasteners to pull a misaligned assembly into position.

Shaft, Coupling and Load Path

PARAMETER	PUBLISHED VALUE	UNIT
Rotor Inertia	118	kg·cm²

- Align the driven shaft and coupling before tightening; validate radial, axial and moment loads against applicable bearing-load data.
- Do not hammer, uncontrolled press-fit or transmit installation force through the motor bearings.

Electrical, Feedback and Brake Integration

PARAMETER	PUBLISHED VALUE	UNIT
Position Feedback Device	2500 PPR incremental encoder	

- Use only the current winding, feedback, brake and connector definitions for this exact SKU.
- Verify drive compatibility, polarity, current limits, feedback direction and brake sequencing before enabling torque.

Thermal, Duty and Environmental Conditions

PARAMETER	PUBLISHED VALUE	UNIT
Rated Torque	28	N·m
Operating Temperature	20 40	°C

- Validate winding and housing temperature under the installed duty cycle, ambient condition, mounting heat path and enclosure airflow.
- Published peak values are transient boundaries and must not be treated as continuous operating ratings.

Cable Routing, Grounding and EMC

PARAMETER	PUBLISHED VALUE	UNIT
Position Feedback Device	2500 PPR incremental encoder	

- Provide strain relief and bend radius through the full machine motion envelope.
- Separate motor power, brake and feedback wiring and terminate shields according to the specified system grounding architecture.

Commissioning and Motion Validation

PARAMETER	PUBLISHED VALUE	UNIT
Rated Speed	1500	rpm
Rated Torque	28	N·m

- Commission at low energy with the transmission unloaded or safely restrained, then confirm direction, feedback polarity, brake final integration, current limit and fault response.
- Validate the complete axis through intended acceleration, speed, load, stop and fault cycles during integration planning.

Integration Checklist

01	Confirm the exact SKU, 2D drawing and applicable wiring data.
02	Verify mounting, shaft, coupling, alignment, fasteners and removal clearance.
03	Validate radial and axial loads, inertia, acceleration and credible shock cases.
04	Confirm drive, winding, feedback, brake and connector compatibility.
05	Set current, speed, acceleration and thermal limits from the installed duty cycle.
06	Verify cable routing, shielding, grounding, strain relief and bend radius.
07	Commission at low energy before validating the full machine cycle.

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-SM-A02-180D-T28NM-4400W-001 and is intended for dimensional evaluation and preliminary integration. It is not a applicable manufacturing drawing, wiring definition, application approval, machinery risk assessment, safety validation or integration planning document. Before design freeze, machining, wiring or energization, verify all dimensions, tolerances, mounting and locating features, load boundaries, electrical interfaces, thermal conditions, cabling, grounding, protection, commissioning and applicable regulatory requirements 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 installed system under intended duty cycles, loads, accelerations, environmental conditions and credible fault cases.