CATEGORY SELECTION GUIDE

Multidimensional Tactile Sensor Category Selection Guide

Multidimensional tactile sensors convert contact-surface forces and tactile changes in multiple directions into measurable signals for contact detection, force feedback and manipulation-state sensing in robot end effectors, dexterous hands and interactive equipment. Product Platform and SKU selection depends primarily on installation dimensions, normal-force range, minimum detectable force, sampling and output, accuracy, repeatability and environmental conditions.

CATEGORY SELECTION GUIDE

CATEGORY	CURRENT CATALOG	REVISION / ISSUE
Multidimensional Tactile Sensors	3 Product Platforms / 12 SKUs	R01	2026-09-04

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01 Category Scope and Objective

Item	Current category
Product catalog	3 Product Platforms / 12 SKUs
Suitable use	Multidimensional contact-force sensing and feedback where installation dimensions, force range, sensitivity, sampling/output, accuracy, repeatability and environment must be considered together.

02 Product Principle and Typical Applications

Three-finger centering principle

The three fingers move in a centering pattern around the grasp axis, supporting repeatable location and stable handling of cylindrical or round workpieces. Product Platform selection is driven first by workpiece geometry and size, then by gripping capacity, payload basis, motion and integration limits.

Typical applications

Automotive components Centering, gripping and transferring cylindrical or round components in automated handling processes.	**Automation equipment** Locating and handling round workpieces where a centered grasp supports repeatable transfer or positioning.
Precision machining Loading, unloading and positioning cylindrical workpieces around machining operations.	**Assembly workflows** Centered handling of round parts during automated assembly and part presentation.

03 Selection Inputs

Application record checklist

01	**Workpiece**	Record the shape, outside diameter or required finger travel, and intended gripping location.
02	**Load**	Record workpiece mass, center-of-gravity location, grasp orientation and dynamic conditions. Use the stated Maximum Recommended Payload only as an initial shortlist input; assess the application load with these recorded conditions.
03	**Gripping**	Record contact material, fingertip geometry, estimated friction coefficient, required gripping force per side and safety margin.
04	**Motion and external load**	Record acceleration, deceleration, motion-cycle requirement, external vertical load and moment components.
05	**Robot and EOAT**	Record complete EOAT mass, inertia and robot payload margin, including fingertips, brackets, cabling and workpiece.
06	**Integration**	Record mounting, power, control interface, connector access, cabling and controlled-document requirements.

04 Product Platform Catalog

Multidimensional Tactile Sensor Product Platform 01

This Product Platform contains 5 SKUs for multidimensional contact-force sensing and feedback. Start with dimensions, detectable-force range and sampling/output requirements, then confirm accuracy, repeatability, ingress protection and temperature conditions.

5 SKUs

Multidimensional Tactile Sensor Product Platform 02

This Product Platform contains 4 SKUs for multidimensional contact-force sensing and feedback. Start with dimensions, detectable-force range and sampling/output requirements, then confirm accuracy, repeatability, ingress protection and temperature conditions.

4 SKUs

Multidimensional Tactile Sensor Product Platform 03

This Product Platform contains 3 SKUs for multidimensional contact-force sensing and feedback. Start with dimensions, detectable-force range and sampling/output requirements, then confirm accuracy, repeatability, ingress protection and temperature conditions.

3 SKUs

05 Product Platform Selection Path

01 **Define application requirements**
Confirm the centering workpiece geometry, then record diameter or finger-travel envelope, gripping location, workpiece mass, center of gravity, grasp orientation and motion profile. Treat the stated Maximum Recommended Payload as a shortlist basis, not as a replacement for the application load assessment.

02 **Build the compact light-duty shortlist**
Retain Product Platform 07 as an initial candidate when the required gripping force fits 3~10 N per side and the application-verified payload fits the stated 0.1 kg basis; then cross-check its 0.43 kg body weight and other constraints.

03 **Build the higher-force shortlist**
Retain Product Platform 06 for 20~80 N per side and Product Platform 08 for 30~100 N per side. Both use a stated 1.5 kg maximum-recommended-payload basis; when the required force is 30~80 N, keep both as candidates rather than selecting by force or payload alone.

04 **Cross-check overlapping candidates**
Compare the stated inward workpiece diameter, Full-Stroke Open / Close Time, body weight, Fz and moment evidence, protection rating, power and robot-side integration inputs for every retained Product Platform.

05 **Confirm the SKU**
Confirm the exact SKU only after the application envelope, initial filter and cross-check constraints remain compatible, then carry that SKU into the controlled-document and RFQ workflow.

Selection outcome

Product Platform shortlisting produces one or more candidate Product Platforms based on the workpiece envelope, gripping-force range and payload basis. Continue with parameter comparison, then confirm the single available SKU within each retained Product Platform.

Platform comparison and trade-offs

Product Platform 07
The lowest body weight, gripping-force and maximum-recommended-payload values in the category, with a stated Full-Stroke Open / Close Time of 0.3 s/0.3 s.

Product Platform 06
Shares the 1.5 kg maximum-recommended-payload and body-weight values of Product Platform 08, with a stated Full-Stroke Open / Close Time of 0.5 s/0.5 s, stated Fz and Mx/My/Mz limits, and IP 67 protection rating.

Product Platform 08
Provides the highest gripping-force range and the only stated inward workpiece-diameter range, with a stated Full-Stroke Open / Close Time of 1.35 s and IP 40 protection rating.

External-load evidence
Static vertical-load and moment values are available for Product Platforms 06 and 07; the corresponding values are not stated for Product Platform 08 in the current standard-parameter set.

06 Selection Parameter Comparison

Primary shortlist parameters

Product Platform	SKUs	Dimensions	Normal Force Range	Minimum Detectable Force	Measurement Accuracy	Measurement Repeatability	Sampling Frequency	Tactile Signal Channels	Output Signals	Ingress Protection
Multidimensional Tactile Sensor Product Platform 01	5	30 × 25 × 8 mm / 18 × 13 × 10 mm / 27 × 16 × 13 mm / 30 × 13 × 10 mm / 23 × 24 × 8 mm	0–25 N	0.01 N	1%FS / 1	<0.5%FS	1000000 / 1,000,000 Hz / 1,000,000 Hz / 1000000	717 / Up to 717 channels / Up to 717 channels / 717	Triaxial force array, triaxial resultant force, and triaxial torque	IP68
Multidimensional Tactile Sensor Product Platform 02	4	18 × 13 × 10 mm / 20 × 15 × 10 mm / 16 × 10 × 8 mm / 20 × 20 × 8 mm	0–25 N	0.01 N	1%FS / 1	<0.5%FS	1000000 / 1,000,000 Hz / 1,000,000 Hz / 1000000	717 / Up to 717 channels / Up to 717 channels / 717	Triaxial force array, triaxial resultant force, and triaxial torque	IP68
Multidimensional Tactile Sensor Product Platform 03	3	53 × 25 × 8 mm / 35 × 30 × 15 mm / 28 × 26 × 14 mm	0–25 N	0.01 N	1%FS / 1	<0.5%FS	1,000,000 Hz / 1000000 / 1000000 / 1,000,000 Hz	Up to 717 channels / 717 / 717 / Up to 717 channels	Triaxial force array, triaxial resultant force, and triaxial torque	IP68

Integration, motion and load verification

Standard parameter	Product Platform 06	Product Platform 07	Product Platform 08
Weight	1.5 kg	0.43 kg	1.5 kg
Full-Stroke Open / Close Time	0.5 s/0.5 s	0.3 s/0.3 s	1.35 s
Position Repeatability	□ 0.03 mm	□ 0.03 mm	□ 0.03 mm
Operating Voltage	24 V DC □ 10%	24 V DC □ 10%	24 V DC □ 10%
Continuous Rated Output Power	12 W	7.2 W	9.6 W
Allowable static vertical load Fz	200 N	150 N	Not stated
Allowable Load Moment (Mx)	2.5 N·m	0.62 N·m	Not stated
Allowable Load Moment (My)	2 N·m	0.62 N·m	Not stated
Allowable Load Moment (Mz)	3 N·m	0.62 N·m	Not stated
Operating Noise	< 50 dB	< 50 dB	< 50 dB
Ingress Protection Rating	IP 67	Not stated	IP 40

07 | SKU Confirmation and Integration Checklist

Product Platform	SKU	Initial filter	Key selection characteristics	Final checks
Product Platform 06	ES-EG-C00-S006-V001	20~80 N; 1.5 kg; 10 mm	0.5 s/0.5 s; 1.5 kg body; IP 67	200 N Fz; Mx 2.5 N·m; My 2 N·m; Mz 3 N·m; 24 V DC □ 10%; 12 W
Product Platform 07	ES-EG-C00-S007-V001	3~10 N; 0.1 kg; 10 mm	0.3 s/0.3 s; 0.43 kg body; protection rating not stated	150 N Fz; Mx/My/Mz 0.62 N·m; 24 V DC □ 10%; 7.2 W
Product Platform 08	ES-EG-C00-S008-V001	30~100 N; 1.5 kg; Φ40~Φ170 mm	1.35 s; 1.5 kg body; IP 40	Fz and moments not stated; 24 V DC □ 10%; 9.6 W

Integration checklist

01	Confirm the selected SKU against the required gripping geometry, workpiece mass, grasp orientation and motion profile.
02	Check robot payload and inertia using the complete EOAT assembly, including fingertips, brackets, cabling and workpiece.
03	Check external vertical load and moments independently from gripping-force calculations.
04	Confirm power supply, control interface, connector access and cable routing for the selected SKU.
05	Request the SKU-specific Datasheet, Dimensional & Integration Guide, 2D drawing and controlled 3D resources required by the project.

08 | Engineering Use and Verification Notice

Controlled engineering documents

01	Use the current SKU Product Datasheet for SKU-specific parameter and configuration verification.
02	Use the applicable Dimensional & Integration Guide and 2D drawing for mechanical interfaces, dimensions, connectors and installation details.
03	Request STEP or native CAD through the controlled engineering-file process for the exact SKU and revision.

Final verification statement

This guide supports preliminary Product Platform and SKU selection. Before design freeze, procurement or use, verify the exact SKU, mechanical and electrical interfaces, feedback and control configuration, application loads, environmental conditions and current controlled engineering documents. Do not derive missing parameters, compatibility or performance from the SKU code, Product Platform name, adjacent SKUs or a single rated value. When information differs, the current controlled SKU documentation governs the engineering decision.