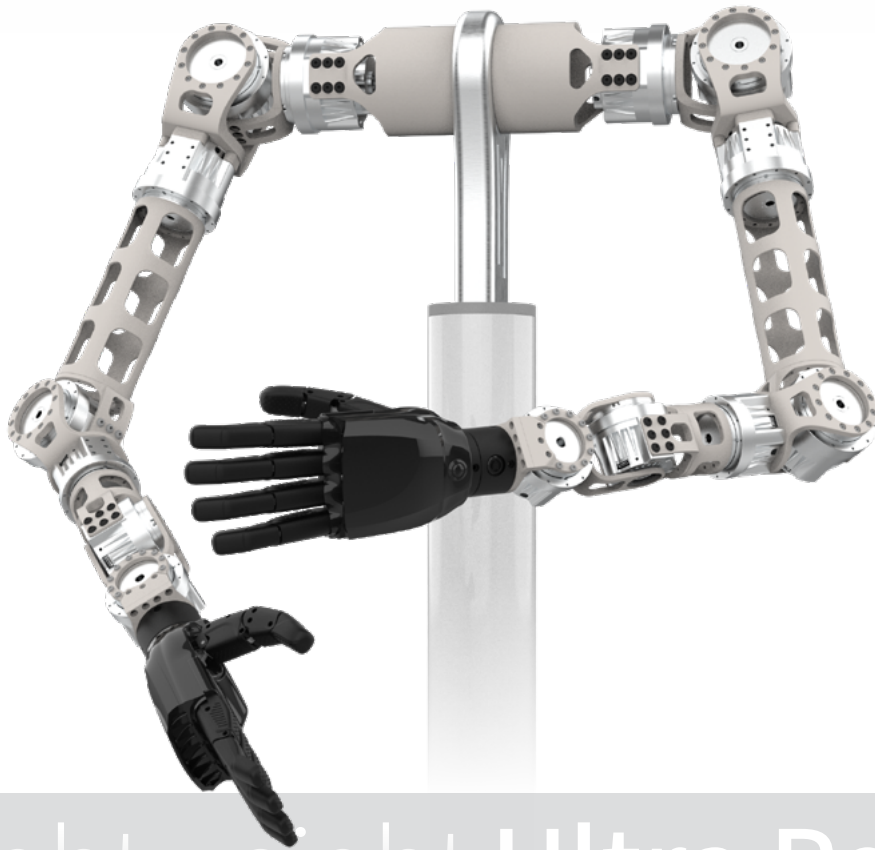


# HarmoCore™

Lightweight Harmonic Actuator



UltraLightweight Ultra Powerful

# HarmoCore™

## Lightweight Harmonic Actuator

Designed specifically for embodied-AI applications, the joint minimizes size and weight while providing comprehensive mounting interfaces, enabling users to systematically reduce the weight and machining complexity of connecting hardware. It also integrates an output torque sensor without increasing the joint's mass or envelope, giving robots higher dynamic response, superior data acquisition quality, and greater payload-handling capability.

Harmonic reducer with Torque sensor

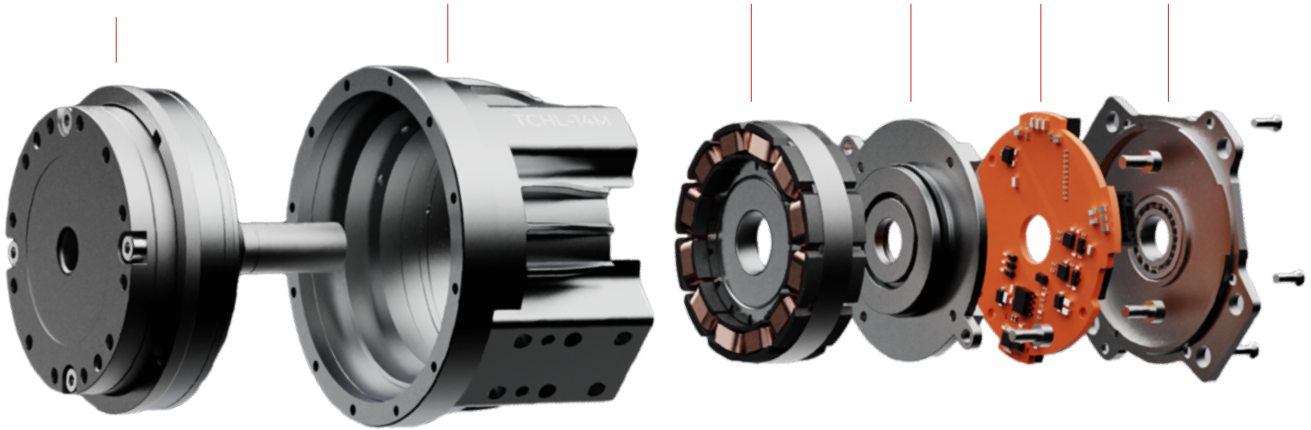
Shell

Frameless Motor

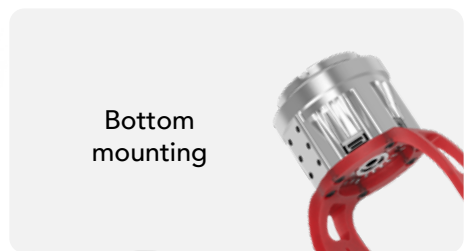
Encoder

Drive board

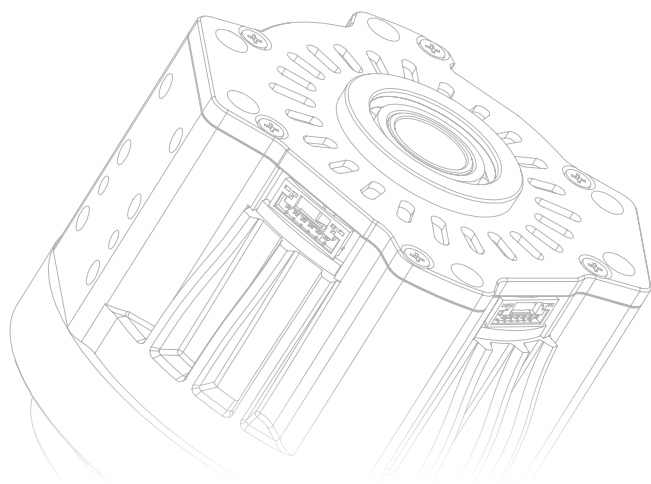
Cover



### Flexible and diverse installation options



No.	Parameters		11M	14M	17H	20H	25H	32H	11M	20H	25H	32H
			(Φ52)	(Φ65)	(Φ77)	(Φ87)	(Φ99)	(Φ131)	(Φ52)	(Φ87)	(Φ99)	(Φ131)
			Standard					with Brake				
1	Ratio	/	100	101	101	101	101	101	100	101	101	101
2	Rated Output Torque	N.m	7.7	9.5	48	61	133	267	7.7	61	133	267
3	Peak Torque for Start/Stop	N.m	19	24	67	102	194	411	19	102	194	411
4	Peak Output Torque	N.m	25	44.2	136	181	351	799	25	181	351	799
5	Rated Output Speed	rpm	30	29.7	29.7	29.7	29.7	29.7	30	29.7	29.7	29.7
6	Peak Output Speed	rpm	40	39.6	39.6	39.6	39.6	39.6	40	39.6	39.6	39.6
7	Rated Voltage	V	48					48				
8	Output Moment of Inertia	Kg.m <sup>2</sup>	0.048	0.1	0.45	0.7	1.9	6	0.069	0.75	2	6.19
9	Allowable Overturning Moment	N.m	25	30	93	120	150	210	25	120	150	210
10	Transmission Error	arcsec	≤60	≤60	≤60	≤60	≤60	≤60	≤60	≤60	≤60	≤60
11	Torque Sensor		Optional					Optional				
12	Encoder		I/O Dual Encoder, Single-turn Absolute Encoder, 23 bit					I/O Dual Encoder, Single-turn Absolute Encoder, 23 bit				
13	Driver Board Protocol		EtherCAT canFD Available after Oct. 2025					EtherCAT canFD Available after Oct. 2025				
14	Dimension (ΦxH)	mm	52*57	65*55	77*76	87*77.5	99*87	131*99	52*73	87*84	99*96	131*110
15	Hollow Diameter	mm	8	10	12	12	15	22	8	12	15	22
16	Weight	Kg	0.35	0.55	1.1	1.4	1.85	3.3	0.43	1.55	2	3.75



Shenzhen Tongchuan Technology Co., Ltd., (TC Drive) founded in 2012, Shenzhen, focuses on the R&D and manufacturing of core components for robots and intelligent equipment. It is a Chinese National High-Tech Enterprise and a state-level “Specialized, Refined, Distinctive and Innovative (‘Little Giant’)” enterprise. Its main products include harmonic reducers, robot joints, and mechatronic actuators, widely used in industrial, collaborative, and humanoid robots, machine tools, intelligent equipment, aerospace, new energy, and other high-end equipment and manufacturing fields.

Since its inception, the company has consistently invested in foundational technologies for intelligent manufacturing and robotics, establishing R&D teams for materials, reducer gear transmission, motor and motor control, sensors, and manufacturing processes and equipment. It has built a production capacity exceeding 300,000 sets of reducers and actuators, supported by in-house heat treatment, constant-temperature precision machining, precision dimensional metrology, and clean-room assembly. Leveraging deep industry experience, a fully in-house R&D system and sustained investment, together with scaled manufacturing and assured delivery, the company provides safe, reliable, responsive, and trustworthy precision transmission solutions.

Looking ahead, TC drive will remain driven by technological innovation, continually enhancing the reliability, lightweight design, modularity, and multi-sensor fusion of precision core transmission components. It will keep strengthening its core competitiveness in precision transmission, aspire to become a global leader in robot core components, and promote the development of robotics and high-end equipment—making work smarter and humanity more intelligent.

A pioneer in China in adopting advanced Japanese gear manufacturing equipment



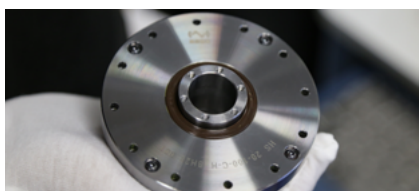
By 2025, annual capacity will reach 300,000 units



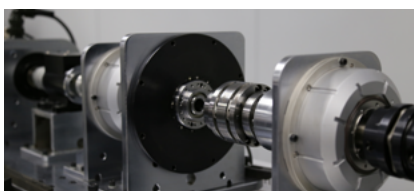
In-house heat-treatment shop & lab, reliability controllable and verifiable



In 2017, our first precision harmonic reducer with a patented 3D conjugate double-arc tooth profile was launched



All R&D test equipment is developed and built in-house



From design to mass production, continuous testing ensures compliance with design



**Shenzhen Tongchuan Technology Co., Ltd.**

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