

Modular Torque Force sensor

Product specification

Perform force sensitive tasks.

The Modular Torque Force sensor is a ROS 2 native multi-axis force and torque sensor that precisely detects and measures robot contacts in order to improve the robot control as well as simplifying its programming. It can be easily placed on the robot thanks to the quick tool changer system. Qualified to achieve time synchronization and enabled with TSN standards.



Available manufacturers: 

Electrical characteristics

Power input	48 Vdc, 50-60Hz.
Nominal power consumption	<200W
Communications interface	IEEE 802.3 Gigabit Ethernet
Electrical connector	H-ROS connector A (docs)

Software characteristics

Operating System	System Embedded real-time Linux
Robotics framework	ROS 2 Dashing Diademata
Communication middleware	Data Distribution Service (DDS)
Information model	Hardware Robot Information Model (HRIM), version 0.3.0, Coliza (docs)
Communication interface	1 Gbps Ethernet Compliant with TSN standards: 802.1 ASrev/AS, IEEE 1588, 802.1Qbv, 802.1Qci, 802.1CB, 802.1-Qcc.
Security (module-level)	<ul style="list-style-type: none"> - Dedicated crypto chip (tamper resistance, cryptographic key storage, SHA-256 Hash Algorithm with HMAC, ECDSA sign-verify authentication). - Secure communications (SROS2, IPSec, TLS). - File System encryption IEEE-1735-2014 Version 2 - Secure unique ID storage in cryptochip. - Audited security through continuous penetration tests.
Simulation	Gazebo
Automatic updates	Over-the-Air (OTA)

Robotiq modular torque force sensor



FT300

Original sensor	FT-300	
	Fx, Fy, Fz	Mx, My, Mz
Measuring range	±300 N	±30 Nm
Overload capacity [%]	500	500
Signal noise	0.1 N	0.005 Nm (Mx, My)/ 0.003 Nm (Mz)
Recommended threshold for contact detection	1 N	0.02 Nm (Mx, My)/ 0.01 Nm (Mz)
Tool deflection at maximum measurable load	0.01 mm	0.17 deg (Mx, My)/ 0.09 deg (Mx)
External noise sensitivity	Immune	
Data output rate (Hz) (data stream mode)	100	
Mass	300	

Product Identification

Parts are numbered as **ModularFTsensor-F-T-S**, where **F** corresponds with the original manufacturer, **T** is the rated force and **S** is serial number of that particular part.

	Characteristic	Value	Description	Identifier
ModularFTsensor-F-T-S ↳ general identifier	Manufacturer (F)	Robotiq	Torque Force sensor	<i>R</i>
	Force rating (T)	300 Nm	FT-300	<i>FT300</i>
	Serial number (S)	-	Unique identifier	-

Exemplary part numbers:

- **ModularFTsensor-R-FT300-1232X3**: Module originally from Robotiq¹ with force measuring range of 300 Nm and with serial number 1232X3.

To obtain more information, please contact Acutronic Robotics' sales representatives at contact@acutronicrobotics.com