

Multi-axial Force and Torque Sensing



OPTOFORCE
SENSING FLEXIBILITY

3-axis Force Sensors

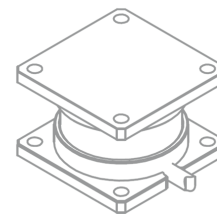
OptoForce 3-axis sensors measure the magnitude and the direction of the force acting on the sensor's surface. The device reports the X/Y/Z components of the force vector with high speed and accuracy, therefore besides compression/tension the shear forces can also be detected. This enables significant improvements in the control of the robotic system based on the tactile information.

Applications

Tactile sensing, Grasping and gripping, Material handling, Contact sensing, Slip detection and measurement, Rehabilitation, Robotic walking

Available models

	Model	Type	Rated Fz (compression)	Rated Fz (tension)	Rated Fx/Fy	Resolution [counts @ max. rated loads]	Size (L x W x H)	Weight (with 1 m cable / without)
	OMD-10-SE-10N	Small-size hemispherical	10 N		5 N	4000 / 2000	30.5 x 11 x 7 mm	23 / 11 g
	OMD-20-SE-40N	Small-size hemispherical	40 N		20 N	16000 / 10000	22 x 22 x 16 mm	23 / 11 g
	OMD-30-SE-100N	Semispherical	100 N		50 N	16000 / 7000	32 x 32 x 22.5 mm	23 / 11 g
	OMD-30-SC-600N	Semispherical	600 N		300 N	16000 / 6500	32 x 32 x 22.5 mm	23 / 11 g
	OMD-20-FG-100N	Small-size flat-top	100 N	50 N	10 N	16000 / 8000 / 8000	25 x 25 x 16 mm	23 / 14 g
	OMD-20-FE-200N	Small-size flat-top	200 N	100 N	20 N	16000 / 8000 / 9500	25 x 25 x 16 mm	23 / 14 g
	OMD-30-FE-450N	Flat-top	450 N	150 N	60 N	16000 / 5300 / 9000	32 x 32 x 25 mm	44 / 32 g
	OMD-45-FE-1000N	Flat-top	1000 N	150 N	150 N	6000 / 900 / 10000	45 x 45 x 17 mm	60 / 52 g
	OMD-45-FH-2000N	Flat-top	2000 N	300 N	300 N	6000 / 900 / 10000	45 x 45 x 17 mm	60 / 52 g
	OMD-25-FE-400N	Flat-top	400 N	100 N	150 N	10000 / 2500 / 5000	25 x 25 x 16.5 mm	26 / 16 g



- Available interfaces: USB, UART, CAN, CANOpen, Ethernet TCP/IP & UDP, EtherCAT, Analog
- All models consist of the sensing device and the external data acquisition unit.
- All models are water- and dustproof.
- Sampling frequencies: from 33 Hz up to 1000 Hz
- Supported systems: Windows, Linux, ROS






Force/Torque Sensors

OptoForce 6-axis F/T sensors measure all six components of the forces and torques. By incorporating these measurements into a robot arm's control policy, one can build a compliant, collaborative and sensitive robot. Robots equipped with force/torque sensing capabilities can be legitimate partners, or replacements of human workers in many applications

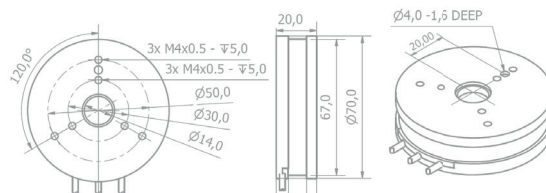
Applications

Assembly, Advanced manufacturing, Part insertion, Polishing, Grinding, Teaching, Quality control & Testing

Available models

	Model	Type	Rated Fz (compression)	Rated Fz (tension)	Rated Fx / Fy	Rated Tz	Rated Tx / Ty	Resolution <small>[counts @ max. rated loads]</small>	Size	Weight <small>(with 1 m cable / without)</small>
	HEX-70-XE	Integrated F/T	1000 N	450 N	200 N	6.5 Nm	10 Nm	F: 8000 / 3600 / 9000; T: 10000 / 10000	70 x 35 mm (diameter x H)	200 g (without cable)
	HEX-70-CG-1000N	Cylindrical F/T	1000 N	450 N	150 N	4.5 Nm	7.5 Nm	F: 8000 / 3600 / 11000; T: 8500 / 8500	70 x 20 mm (diameter x H)	165 / 130 g
	HEX-70-CE-2000N	Cylindrical F/T	2000 N	800 N	300 N	10 Nm	15 Nm	F: 8000 / 3200 / 10500; T: 9000 / 8500	70 x 20 mm (diameter x H)	165 / 130 g
	HEX-70-CH-4000N	Cylindrical F/T	4000 N	1000 N	800 N	30 Nm	35 Nm	F: 8000 / 2000 / 13500; T: 13000 / 10000	70 x 20 mm (diameter x H)	165 / 130 g
	HEX-58-RE-400N	Rectangular F/T	400 N	120 N	120 N	2.5 Nm	3 Nm	F: 8000 / 2400 / 11000; T: 20000 / 16000	58 x 58 x 22 mm (L x W x H)	150 / 105 g

- Available interfaces: USB, UART, CAN, CANOpen, Ethernet TCP/IP & UDP, EtherCAT, Analog
- Some models come with an external data acquisition unit.
- All models are water- and dustproof.
- Sampling frequencies: from 33 Hz up to 1000 Hz



The OptoForce Way

OptoForce sensors provide robots with the ability to feel how they interact with their environment. Knowing the direction and the magnitude of the acting forces make industrial robots able to perform tasks such as polishing or assembly much better, while advanced robots get better in gripping objects and walking on uneven or slippery surfaces. By measuring the deformation of a silicone structure using optical principles, a great measurement quality is achieved while having a robust sensor design. While our sensors are compact and easy-to-integrate, they provide a wide measurement range with exceptional resolution and sensitivity. To top it all off, they come with an affordable price!



Contacts


 [optoforce.com](https://www.optoforce.com)

 info@optoforce.com

 [optoforce.com/contact](https://www.optoforce.com/contact)

 [OptoForceLtd](https://www.youtube.com/OptoForceLtd)

 [@OptoForceLtd](https://twitter.com/OptoForceLtd)

 OptoForce Ltd.,
Aradi út 16.,
Budapest, H-1043,
Hungary

