

force dimension

omega.3 - micromanipulation

Micromanipulators are small robots built to perform displacement and assembly tasks on objects often thinner than a human hair. Yet, while robots can accurately perform small movements, they often need to be directed by a human operator to carry out complex and dynamic tasks. Haptics offers a highly intuitive and interactive way of handling the very small. With such a setup, manipulating a micro-bead "feels" just like handling a golf ball.



developed by EPFL, Switzerland

omega.6 - teleoperation

Sonographers derive a significant amount of tactile feedback from holding the ultrasound unit. For example, the feel of the ultrasound head against the patient's body helps position the head between the patient's ribs. Philips Applied Technologies' system incorporates accurate haptic feedback from the ultrasound head so that the sonographer can feel the reactive forces imposed on the head as it moves over the patient's body.



developed by Philips, The Netherlands

omega.7 - surgical robotics

In collaboration with surgeons from the University of Cincinnati, a team of researchers from SRI International and Force Dimension evaluated the benefits of robotic surgery on air and space flights by performing incision and suturing tasks aboard a NASA C-9 aircraft, using two omega.7 force feedback interfaces. These experiments demonstrated the extraordinary capabilities of the omega.7 in extreme environment conditions.



developed by SRI International, USA

force dimension

omega.x

workspace	translation	Ø 160 x 110 mm	
	rotation	240 x 140 x 320 180 deg	(omega.6 7)
forces	grasping	25 mm	(omega.7)
	translation	12.0 N	
resolution	grasping	± 8.0 N	(omega.7)
	translation	< 0.01 mm	
	rotation	0.09 deg	(omega.6 7)
	grasping	0.006 mm	(omega.7)

electronics

interface	standard	USB 2.0
	refresh rate	up to 4 KHz
power	universal	110V - 240V

software

platforms	Microsoft	Windows XP / Vista / 7 / 8 Windows CE 7
	Linux	kernel 2.6 / 3.x
	Apple	OS X
	QNX	6.5 / 6.6
	WindRiver	VxWorks 6.3 / 6.8 / 6.9
software	haptic SDK	
	robotic SDK	

features

structure	delta-based parallel kinematics	
	hand-centered rotations	(omega.6 7)
	rotations decoupled from translations	(omega.6 7)
	active gravity compensation	
calibration	automatic	
	driftless	
user input	1 programmable button	
safety	velocity monitoring	
	electromagnetic damping	
option	right- or left-handed	(omega.6 7)

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