TactoLogic

TactoLogic Ltd.
fax: +36 1 886 4724 phone: +36 1 886 4785
H-1083 Budapest, Práter utca 50/a, Hungary

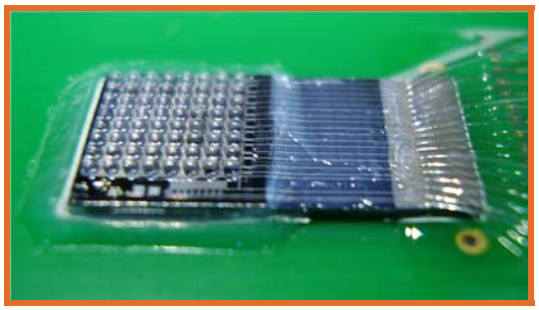
TactoPad 8×8 | Data Sheet

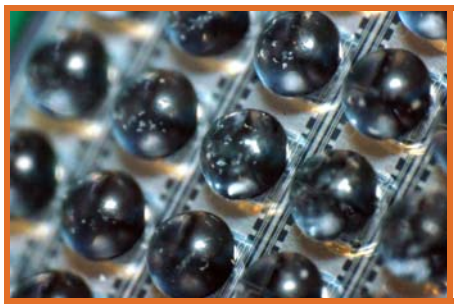
64 element three-axial force sensing array

Preliminary Version 1.1.

General Description

TactoPad 8×8, the "big brother" of TactoPad 2×2 is a general contact-force mapping system, consisting of 8x8 three-axial taxels in an array. The high spatial resolution and the large element number of the array results in uniquely fine, three-channel tactile images of objects and textures from a fingertip-sized area. TactoPad 8×8 is best suited for, but not restricted to tactile applications on robotic arms under industrial or scientific conditions.





Product Highlights

- three-axial force sensing in an array
- highly linear characteristics
- high sensitivity
- high spatial resolution
- high element number
- robust design
- easy connection to PC through read-out electronics
- easy-to-use software for acquiring, visualizing and storing data

Applications

- robotic grasping tasks
- texture classification
- three-axial tactile image processing

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– industrial automation
– medical applications

Technical Specifications

GENERAL	
technology	piezoresistive
measured quantity	three-axial force
number of taxels*	64 (8×8)
PCB type	rigid
DIMENSIONS	
bare taxel size	0.3×0.3 mm
taxel spacing	0.7 mm
size of total active area	6×6 mm
size of device	4x20x35 mm
SENSOR-ELEMENT CHARACTERISTICS**	
bare sensor load range	0–3 mN
bare sensor sensitivity	4–6 mV/mN/V
full load range with cover	*normal:* 0–2.5 N; *shear:* ±1 N (comparable to the range of light dexterous manipulation)
normal sensitivity	20 mN / bit
shear sensitivity	8 mN / bit
nonlinearity	±1%
accuracy	±5%
repeatability	±3%
long term instability under large load	approx. 1 bit lapse / min.
temperature dependence of offset	approx. 1 bit / °C
COVER	
cover type	elastic (Elastosil® RT–601)
Shore-A hardness	45
equivalent Young-modulus	2.4 MPa
cover thickness	0.5 mm (could be modified if needed)
cover surface	bumpy
receptive field size of taxels with elastic cover	0.8×0.8 mm
cross-sensitivity of neighboring taxels, resulting from the receptive field properties of the cover	*shear x:* x neighbor 20% *shear y:* y neighbor 20% *normal:* x and y neighbors 30%
viscoelasticity of the cover	*normal:* exp. decay in <2 min. *shear:* none

* *tactile pixel* or *tactile element*
** parameters are measured on 8 bit output and maximal sensitivity (maximal gain: 100) settings

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OUTPUT	
read-out electronics	TactoLogic MasterBoard
output type	3-channel tactile image of 8×8 taxels
output resolution	8 or 16 bit with adjustable gain (0–100)
output noise	2%
output scan rate	0–100 FPS
POWER	
voltage supply	5V DC
current consumption	50 ± 10 mA
maximum power consumption	300 mW
SYSTEM LEVEL FEATURES	
connector type	serial or USB
read-out software	TactoSoft 2.0.
operating system	Windows XP
Minimal PC requirements	800 MHz processor, 40 MB hard disk space, 256 MB memory
OTHER	
warm-up time	2 minutes
operating temperature range	5 ºC to 40 ºC

To Our Valued Costumers

It is our intention to provide our valued customers with the best documentation possible to ensure successful use of your **TactoLogic** tactile array. To this end, we will continue to improve our publications to better suit your needs. Our publications will be refined and enhanced as new volumes and updates are introduced.

If you have any questions or comments regarding this publication, please contact our company at info@tactologic.com. We welcome and appreciate your feedback!

To obtain the most up-to-date version of this data sheet, please visit our website at http://www.tactologic.com. You can determine the version of this document from the heading on the first page.

Thank you for choosing **TactoLogic** products!