Haptic measurement system

HapLog

HapLog is a sensor designed to attach to fingers.
The sensor measures forces (load) acting on your fingers when you touch or grasp objects.


Calibration

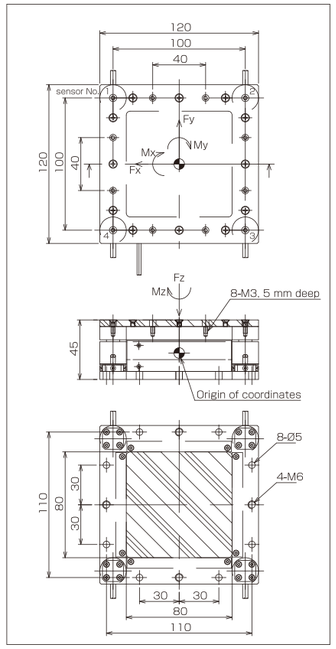

Measurement

The thickness of skin varies among different people. HapLog measures forces after quantifying the extent of finger pad expansion with the calibration unit.

TF-1212-G

TF-1212-G is a force plate designed to measure the 6 axes (Fx, Fy, Fz, My and Mz) of haptic force, and measure small load (full scale:10 N) with special software. The transparent acrylic plate enables you to photograph the contact surface with a camera.


Pedestals are available as an option.



We develop measurement system with specially-shaped force sensors and 3-axis force sensor to meet customers' needs. Please feel free to ask us if you need some help for your measurement business.

Tec Gihan Co.,Ltd. (Selling agency)

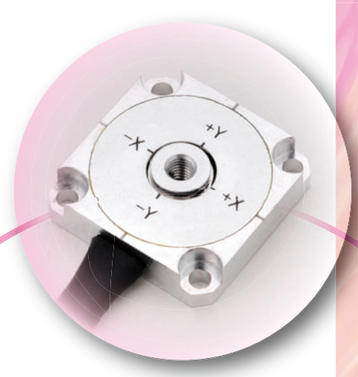
1-22, Nishinohata, Okubo-cho, Uji-shi, Kyoto 611-0033, Japan
Tel: +81-774-48-2334 Fax: +81-774-48-2242
E-mail : eigyo@tecgihan.co.jp
http://www.tecgihan.co.jp

12.11.3AFS(1)

Tec Gihan

3-Axis Force Sensor & Measurement Station

Meet to measurement system of a new generation.

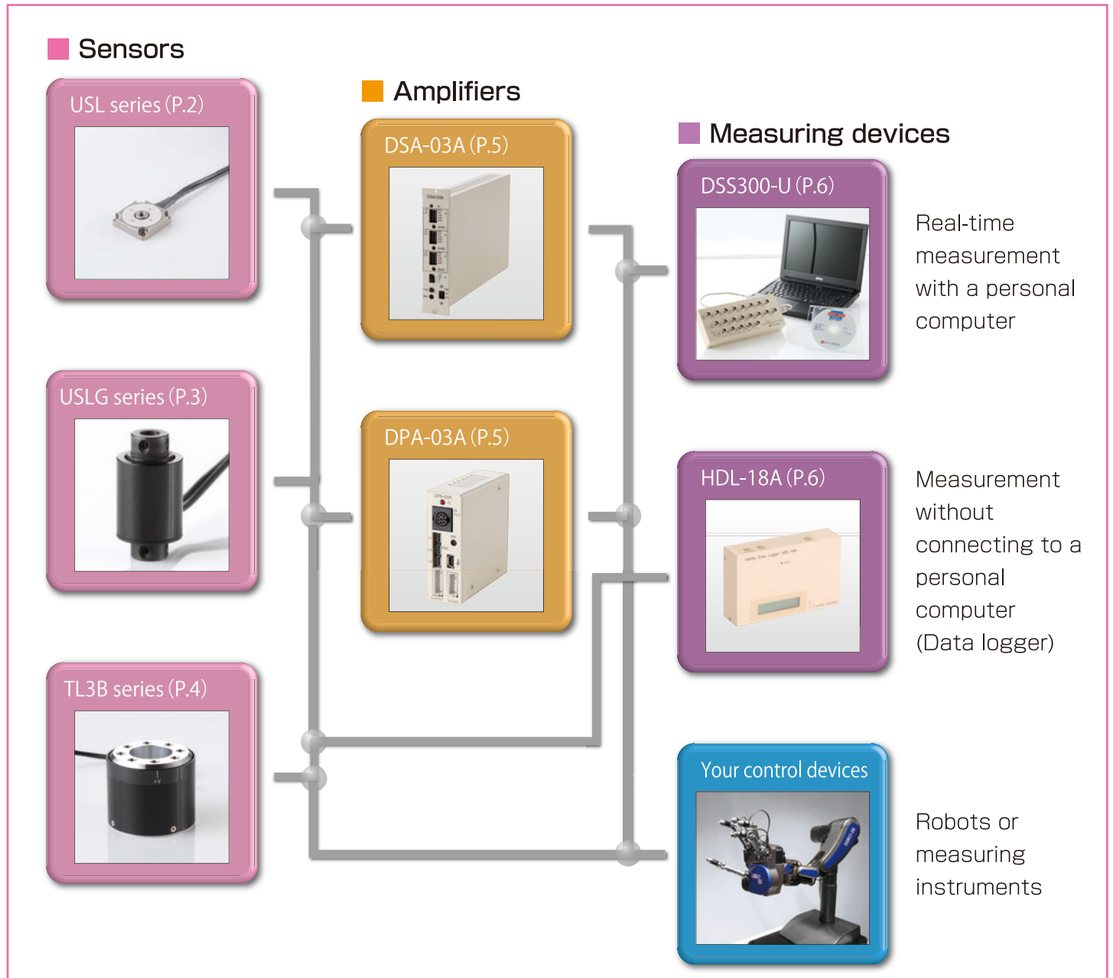


12L00187 テック技販様 三軸力覚計測ステーションパンフレット（英）
表紙

3-axis force sensor & measurement system

Compact sensor - Enables precise measurement of forces in 3 axial directions (X, Y and Z)

The sensors with excellent linearity and temperature characteristics are designed to suit for static and dynamic applications. They allow you to build a wide variety of measurement system for many purposes.

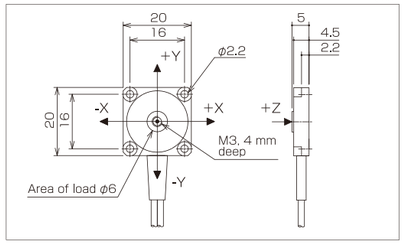


Small 3-axis force sensor

The sensor, 5 mm thick, is the smallest in its class and measures forces in three axial directions.
It is designed for many purposes such as sports, healthcare devices and robot development.

USL06-H5

■External dimensions (mm)

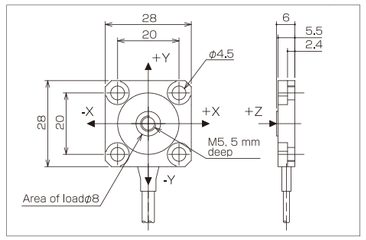


■Specifications

Model	USL06-H5-50N	USL06-H5-100N	USL06-H5-200N	USL06-H5-500N
Rated capacity Fx :	±25N	±50N	±100N	±250N
Fy :	±25N	±50N	±100N	±250N
Fz :	±50N	±100N	±200N	±500N
Maximum safe overload	120%			
Non linearity	Within ±1% RO			
Hysteresis	Within ±1% RO			
Compensated temperature range	10 to 60℃			
Recommended excitation voltage	1 to 3 VDC			
Bridge resistance Fx :	120Ω±5%			
Fy :	120Ω±5%			
Fz :	240Ω±5%			
Cable	A 8-conductor shield cable, 2 m long.			
	Terminated with connector plug.			
	For DSA-03A,	a 12-pin connector (-C)		
	For DPA-03A or HDL-18A,	a 8-pin MD connector (-A)		

USL08-H6

■External dimensions (mm)



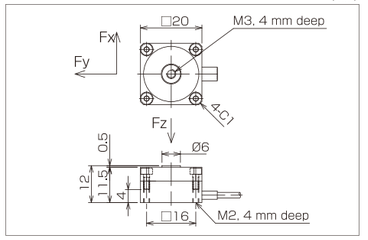
■Specifications

Model	USL08-H6-1KN	USL08-H6-2KN
Rated capacity Fx :	±500N	±1kN
Fy :	±500N	±1kN
Fz :	±1kN	±2kN

The following sensor is available.

● Sensor with a built-in simple amplifier

■External dimensions (USL06-H12-AP) (mm)



(**:Fz load)

Model	USL06-H12-**-AP
	USL08-H12-**-AP

■Specifications

Power-supply voltage	1 to 3 VDC
Non-load output voltage	Approx. 2.5 V (Initial adjustment with fixed resistance)
Output	±2 V (at non-load)
Zero balance adjustment	None
Low-pass filter	None
Operating temperature range	0 to 70℃
Cable	A 8-conductor shield cable, 2 mm long, bared at the tip.

● 1-axis force sensor (Fz) with the same shape.

(**:Fz load)

Model	USL06-H5-**-Fz
	USL08-H6-**-Fz

12L00187　テック技販様　三軸力覚計測ステーションパンフレット（英）
P1-2

3-axis force sensor for fingers

The high-sensitive sensor (to 10 N) , ϕ 14 mm, is designed to mount robot hands and other devices.

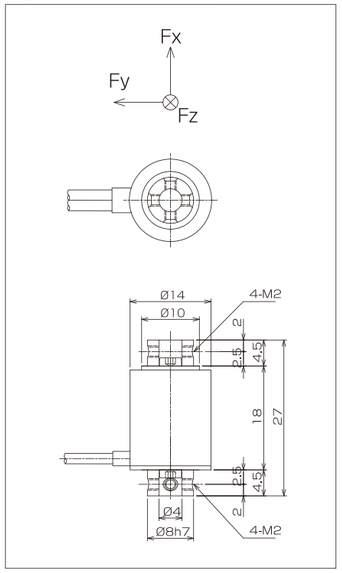
(Selling agency: Marutomi Seiko Co., Ltd.)

USLG10

■Specifications

Model		USLG10-5N	USLG10-10N
Rated capacity	Fx :	±5N	±10N
	Fy :	±5N	±10N
	Fz :	±5N	±10N
Maximum safe overload		200%	
Non linearity		Within ±1% RO	
Hysteresis		Within ±1% RO	
Compensated temperature range		10 to 60℃	
Recommended excitation voltage		1 to 3 VAC or VDC	
Bridge resistance	Fx :	120Ω±5%	
	Fy :	120Ω±5%	
	Fz :	240Ω±5%	
Cable		A vinyl cable, 30 mm long, bared at the tip.	

■External dimensions (mm)

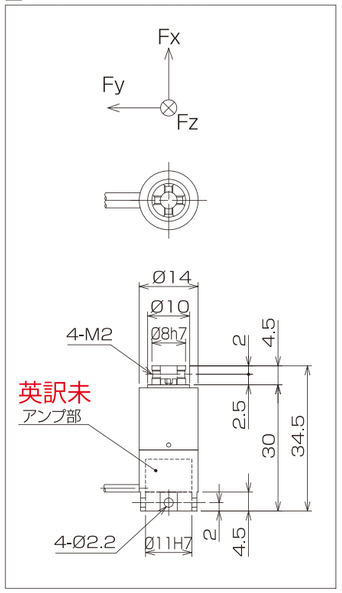


USLG10-AP with a built-in amplifier

■Specifications

Model		USLG10-AP-5N	USLG10-AP-10N
Rated capacity	Fx :	±5N	±10N
	Fy :	±5N	±10N
	Fz :	±5N	±10N
Maximum safe overload		200%	
Non linearity		Within ±1% RO	
Hysteresis		Within ±1% RO	
Power-supply voltage		3.3 VDC ±5%	
Non-load output voltage		(Power-supply voltage / 2) ±0.25 V (Initial adjustment with fixed resistance)	
Output		(Power-supply voltage / 2) ±1.5 V	
Zero balance adjustment		None	
Low-pass filter		None	
Operating temperature range		-0 to 70℃	
Cable		A 8-conductor shield cable, 2 mm long, bared at the tip.	

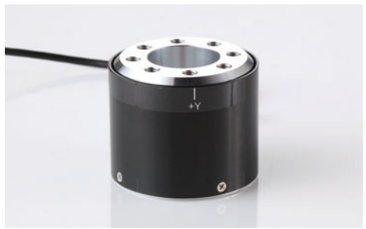
■External dimensions (mm)



3-component load cell

Load cell type designed to attach to handles and other devices.
Available in two types with different capacities.

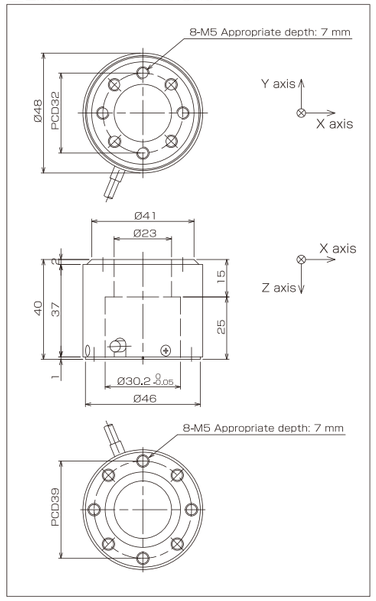
TL3B04



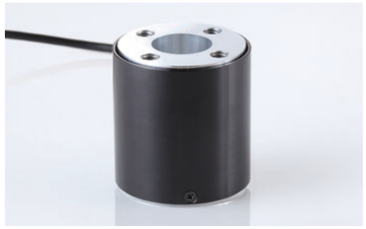
■Specifications

Model		TL3B04-5KN
Rated capacity	Fx :	±2.5kN
	Fy :	±2.5kN
	Fz :	±5kN
Maximum safe overload		150%
Non linearity		Within ±1% RO
Hysteresis		Within ±1% RO
Compensated temperature range		10 to 60℃
Recommended excitation voltage		1 to 5 VAC or VDC
Bridge resistance	Fx :	350Ω±3%
	Fy :	350Ω±3%
	Fz :	350Ω±3%
Cable		A 8-conductor shield cable, 3 m long
		Terminated with connector plug.
		For DSA-03A, a 12-pin connector (-C)
		For DPA-03A or HDL-18A, a 8-pin MD connector (-A)

■External dimensions (mm)



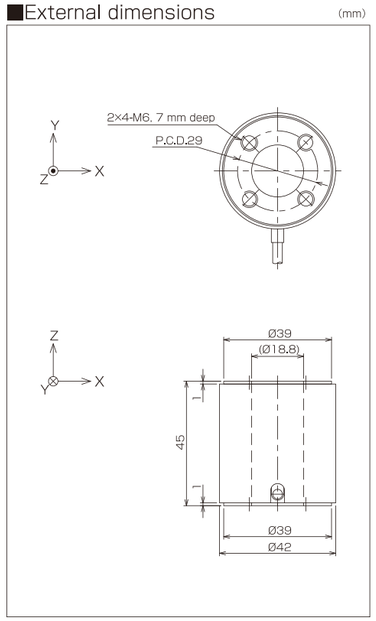
TL3B05



■Specifications

Model		TL3B05-500N
Rated capacity	Fx :	±500N
	Fy :	±500N
	Fz :	±500N
Maximum safe overload		150%
Non linearity		Within ±1% RO
Hysteresis		Within ±1% RO
Compensated temperature range		10 to 60℃
Recommended excitation voltage		1 to 5 VAC or VDC
Bridge resistance	Fx :	350Ω±3%
	Fy :	350Ω±3%
	Fz :	700Ω±3%
Cable		A 8-conductor shield cable, 3 m long
		Terminated with connector plug.
		For DSA-03A, a 12-pin connector (-C)
		For DPA-03A or HDL-18A, a 8-pin MD connector (-A)

■External dimensions (mm)

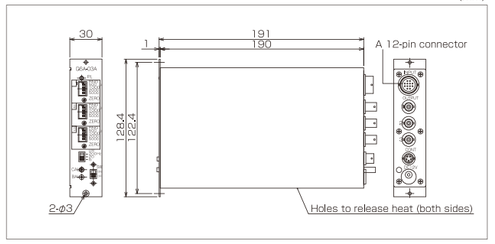


Amplifier

DSA-03A

DSA-03A is a compact singe conditioner suitable for force sensors and load cells. DSA-03 has three channels and quickly adjusts zero balance with the auto-balance function. Available for use with other sensors using strain gauges.

■External dimensions (mm)

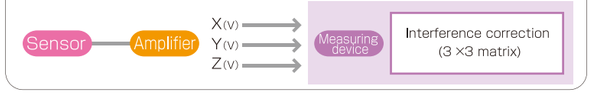


■Specifications

Model	DSA-03A
Number of measuring channels	3 ch.
Appropriate sensor	120 to 350 Ω bridge
Excitation voltage	2.5 VDC
Range of zero adjustment	Auto balance: ± 5000 με (Accuracy: ±20 με)
	Manual balance: ±200 με (for fine adjustment)
Measuring range	4 ranges: ±500, ±1000, ±2000, ±5000 με, for each channel, changed by DIP-SW
Calibration value	+500 με (Accuracy within 0.5%) 3 channels linked together, changed by CAL-SW
Low-pass filter	Cutoff frequency: Approx. 5, 20, and 200 Hz, Attenuation frequency -12 dB/oct, 3 channels linked together, changed by LPF-SW
Output voltage	±5 V
Non linearity	±0.1% FS
Operating temperature range	0 to +50 ℃, 20 to 85% RH (non condensing)
Power source	12 VDC (approx. 0.2 A)
Accessories	AC adapter, 3 output cables
Options	Input cable for DSA (15 c m, for NDIS connector input)
	Control cable for DSA (1.5 m, for DSS300-U)
Dimensions	30 (W) × 128.5 (H) × 191 (D) mm (excl. protrusion)

■オプション品　収納ケース 英訳未

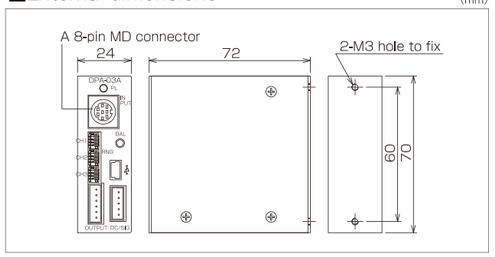
Sensor – Amplifier (DSA-03A) – Measuring device (DSS300-U)



DPA-03A

The advanced amplifier, DPA-03A, is smaller than DSA-03A, and has an interference correction function for 3-axis force sensor.

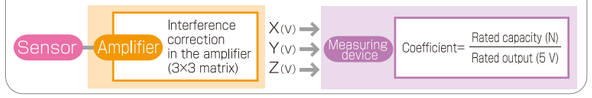
■External dimensions (mm)



■Specifications

Model	DPA-03A
Number of measuring channels	3 ch.
Appropriate sensor	120 to 350 Ω transducers using strain gauges
Excitation voltage	2 VDC
Range of zero adjustment	Auto balance: ± 5000 με
	3 channels linked together, use BAL-SW or BAL external contact signal
Measuring range	5 ranges: ±250, ±500, ±1000, ±5000 με, for each channel, changed by DIP-SW
Low-pass filter	Input: Cutoff frequency: 200 Hz, Attenuation frequency: -12 dB/oct, Output: Cutoff frequency:320 Hz, Attenuation frequency: -12 dB/oct,(fixed)
Output voltage	±5 V / sensor rated capacity, Time delay 5.3 msec
Non linearity	±0.1% FS
Operating temperature range	0 to +50 ℃, 20 to 85% RH (non condensing)
Power source	12 VDC ±10% (approx. 0.1 A or less) with an AC adapter
Accessories	Power source: BAL signal cable (15 cm, bared at the tip), Analog output cable (15 cm, bared at the tip)
Options	Power source with an AC adapter, BAL signal cable (AC adapter, 2 m, Another cable, 1.5 m bared at the tip)
	Analog output cable with BNC connector (1.5 m)
	DIN rail adapter
Dimensions	30 (W)×128.5 (H)×191 (D) mm (excl. protrusion)

Sensor – Amplifier (DSA-03A) – Measuring device / controller



Measuring device

DSS300-U

DSS300-US allows you to connect several 3-axis force sensors (up to 5) for real-time measurement. With software, you can apply digital filters freely to reduce analog noises while observing waveforms.

■Software screen

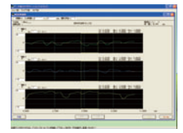
Sensor information
(·Interference correction ·Digital filter (-24 dB/oct) for each channel)
Measurement conditions
(·Sampling frequency ·Measuring time ·Trigger setting, and others)
Calibration
(·Zero balance adjustment ·Calibration)
Measurement
(Real-time measurement while observing physical quantities)
Checking
(·Checking measured data ·Data export (CSV))

■Specifications

Model	DSS300-U
[Performance]	
Appropriate OS	Windows Xp, Window 7
Number of channels	16 channels / one unit (Cascade connection up to 4 units (64 channels) is available.)
Resolution	12 bits
Input range	±1 V, ±5 V, ±10 V (switch with software)
Appropriate sensors	3-axis force sensors, sensors using strain gauges, voltage
Sampling frequency	Maximum: 100 kHz/CH (Maximum: 5 kHz/CH after 17 channels) * depend on the speed of computer processing.
Data capacity	Free desk space (100 MB at a maximum)
How to measure	Manual (software), External trigger, Pre-trigger, Level trigger
	External trigger: Contact signal or TTL signal * Only TTL (active high) after 17 channels.
	Pre- trigger: Contact signal or TTL signal * Only TTL (active high) after 17 channels.
	Level trigger: Choose one channel freely *Available when you use only one unit (to 16 channels)
Products	A/D converter with a terminal box (16 channels / one unit), Measurement software, USB cable (1 mm long)

■Analysis application (option –US)

The analysis application allows you to convert the CSV files to the special binary files for various analyses.



Time-series cursor reading

HDL-18A

HDL18A is a data logger, which can connect to several 3-axis force sensors (up to 6), for online measurement. The data logger makes it possible to offer continuous measurement, up to 99 cases.

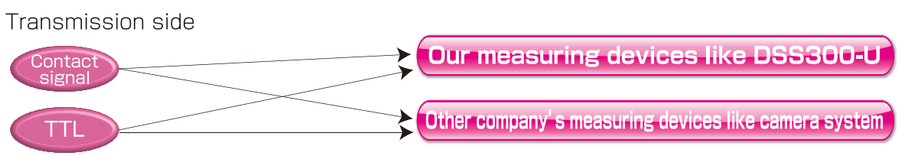
■Software screen

Accessory

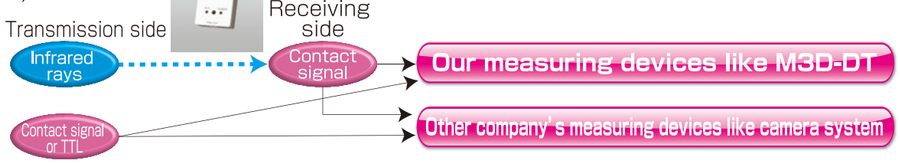
Trigger box

Trigger box designed to output contact signals and TTL signals simultaneously

TRC-T (Wired)



WTRC-T (Wireless)



12L00187　テック技販様　三軸力覚計測ステーションパンフレット（英）
P5-6