TEAC

Load Cells

About TEAC

TEAC was originally founded as Tokyo Television Acoustic Company in August 1953. Its goal was to be a leader in magnetic recording technology. Over the years, the challenge to be at the cutting edge of data recording technology has pushed the company forward.
The guiding principle of TEAC is to enrich our society through our innovative products. For over 70 years, TEAC has been well known for its video, image and audio recording technologies, and now also is highly rated in the field of measuring instruments such as transducers and digital indicators.

Features of TEAC load cells

TEAC's load cells use a strain gauge type. A strain gauge type load cell is a transducer that uses a "strain gauge" as a detection element and converts force, weight, and others into electrical signals. These load cells are manufactured to be small, lightweight, and highly accurate so that they can be used in the fields of measurement and control.
In addition to respond to the following standardization, we will continue to actively incorporate functions that are in line

TEDS

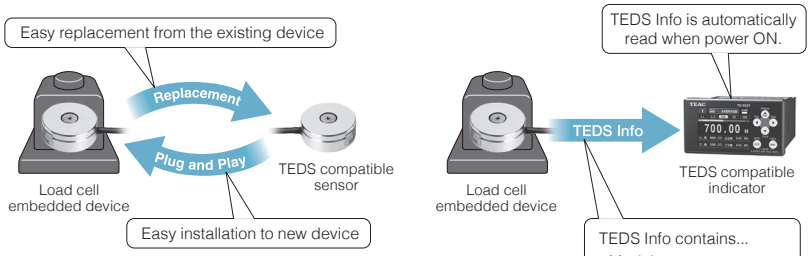
TEAC is the first company in Japan to obtain a Manufacturer ID.

We are the 16th company worldwide (out of 90 currently registered) to have obtained this certificate. (Manufacturer ID: 32)

The memory built into the TEAC load cell body records electronic model name, serial number, sensitivity, and other calibration coefficients. By incorporating a memory chip, it is compatible with small, low-capacity models that are difficult to support.

Digital indicators also support TEDS reading for TD-250T and later models.

Support for both load cells and indicators simplifies setup and eliminates setup complexity of on-site setup.

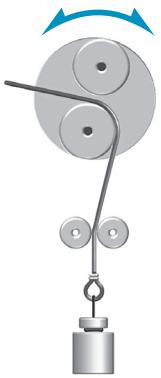


TEDS Advantages:
(Transducer Electronic Data Sheet)

- ✔ Connecting or changing sensors saves time.
- ✔ Eliminates confusing configuration steps.
- ✔ Eliminates the need to remember or have on hand calibration data since it is read from the sensor.
- ✔ Eliminates scaling and calibration errors.

Robot cable

These cables provide enhanced durability and stable performance against bending that occurs in moving parts with frequent repetitive motion, such as industrial robots and machine tools.



History of TEAC Load Cells

Mar. 1979	Started sales of load cells and amplifiers
1980	
Feb. 1985	TEAC Corporation established a joint venture, Temco, to manufacture load cell amplifiers.
Oct. 1986	Renamed Joint venture, Temco, to TEAC Electronic Measurement Co.
1990	
Nov. 1990	Relocated the head office to Kawasaki City, Kanagawa Prefecture
2000	
Dec. 2000	The sales division of measuring instruments of TEAC Corporation was transferred to TEAC ELECTRONIC MEASUREMENT CO.
Dec. 2005	Announced TD-250T digital indicator compliant with IEEE 1451.4 TEDS standard
Apr. 2006	TEAC Electronic Measurement Corporation merged with TEAC Corporation to strengthen product competitiveness.
Dec. 2007	Head office relocated to Tama City, Tokyo
2010	
Sep. 2013	Announced TD-700T digital indicator compliant with IEEE 1451.4 TEDS standard
Sep. 2014	TEDS-compliant model of load cell released
Nov. 2016	Released portable digital indicator TD-01Portable
Sep. 2017	Started sales of load cells and digital indicators at TEAC EUROPE GmbH, TEAC AMERICA, INC. and TEAC SALES & TRADING (ShenZhen) CO., LTD.
Apr. 2019	Robot cable standard for load cells
Dec. 2019	Announced the TD-9000T color graphic digital indicator
2020	
Sep. 2021	Announced TD-SC1 Load Cell Signal Conditioner

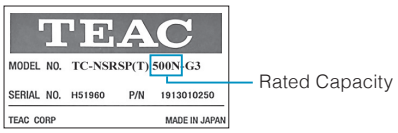
Load cell selection/model explanation

How to select a load cell

1. Select load condition: Compression, Tension Compression, Tension
2. Select the appropriate load cell size for the object to be measured.
   (If larger, how many points to measure)
3. Determine the conditions, such as temperature and vacuum.
4. Determine temperature, vacuum, and other conditions.
5. Select the indicator to be displayed (built-in type, handy type, control panel built-in type).

Product label

Rated capacity is shown on the product label.



How to read a Load Cell model

TC-NSRSP(T)□□N-G3

Type
TC: Compression
TU: Tension/compression
TT: Tension

Identifying name

Specifications 1
(T): built-in TEDS

Rated Capacity

Specifications 2
None: shielded cable
G: ϕ2mm 6-core robot cable
G3: ϕ3mm 6-core robot cable
G6: ϕ6mm 6-core robot cable
G8: ϕ8mm 6-core robot cable

G: RoHS
Number: Cable Diameter

How to read a Load Cell Floor Scale model

TL-PS12 50K

Type

Loading plate size (mm)

Rated Capacity (Unit: kg)

Order Example.

Model: TC-USR(T)17-5N-G3
Ordering details
Compression Load Cell TC-USR series, built-in TEDS, Nominal size 17mm, Rated Capacity 5N, ϕ3mm 6-core robot cable

Contact us

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For Europe, MIddle East and Africa
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info@teac.eu

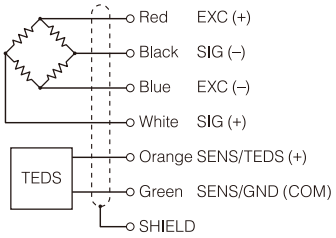
Wiring diagram/cable/connector

Load cell wiring color

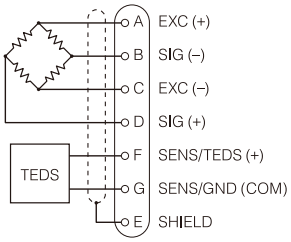
Red:	EXC (+)
Black:	SIG (–)
Blue:	EXC (–)
White:	SIG (+)
Orange:	SENS/TEDS (+)*
Green:	SNS/GND (COM)*
Gray (Silver):	SHIELD

* TEDS compatible products

Bare lead wires

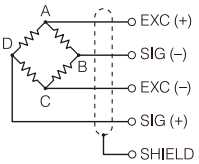


Connector



NDIS Standard Connector

non-TEDS
model name without (T)



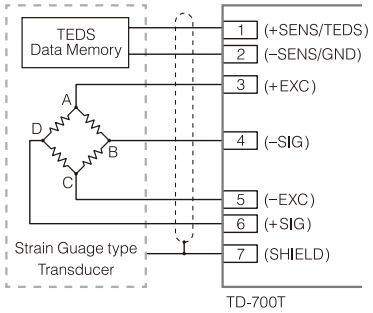
- Shielded cables of ϕ6 or more are yellow.
- The "orange, green" or connector pins "F, G" on the cable are wired for TEDS.
- Remote sense is not supported.

  Remote sense compatible products also use the same cables and connector pins as TEDS, so please be careful not to use them as remote sense by mistake.

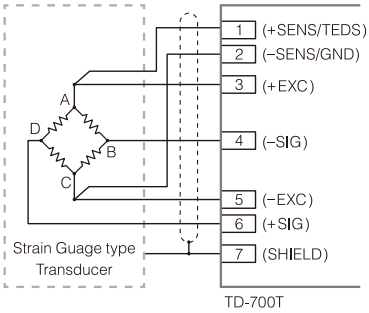
  When connecting a remote-sensing indicator or strain amplifier, refer to the sensor connection method in the instruction manual of each device.

Connection with digital indicator (e.g. TD-700T)

TEDS sensor and 4-wire connection



6-wire connection



If not using the TEDS function, terminals 1 and 2 can be left open.

Cable

Vinyl-sheathed cable

- Ø10 6-core shielded cable
- Ø8 6-core shielded cable
- Ø6 6-core shielded cable
- Ø8 4-core shielded cable
- Ø6 4-core shielded cable
- Ø3 4-core shielded cable

Robot Cable

- Ø8mm 6-core shielded robot cable
- Ø6mm 6-core shielded robot cable
- Ø3mm 4-core shielded robot cable
- Ø3mm 6-core shielded robot cable
- Ø2mm 6-core shielded robot cable
- Ø1.95mm 4-core shielded robot cable

Connector (NDIS 4102)

Plug (7P)
PRC03-12A10-7M10.5

Plug (7J)
PRC03-32A10-7F10.5

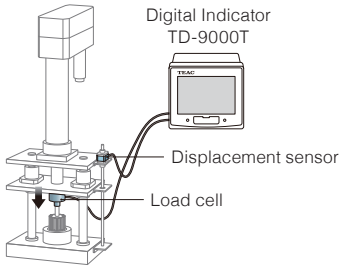
Receptacle (7R)
PRC03-21A10-7F

*Small connector (LEMO) is also available. Please contact us.

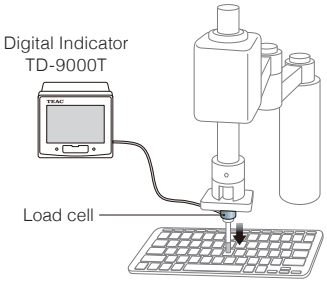
Applications of Load cells

Measurement scenes using Load cell

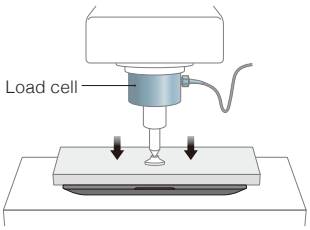
Load control for press-fitting machine



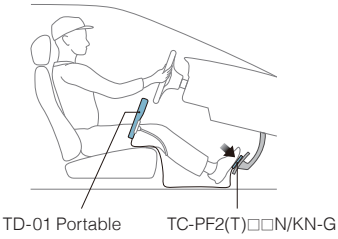
Measurement for key-touch force when pressed



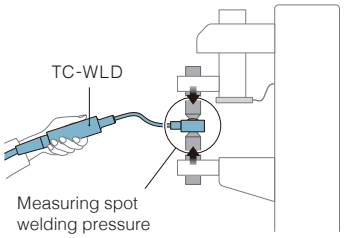
Test for robusutness (surface pressure) of electronics devices



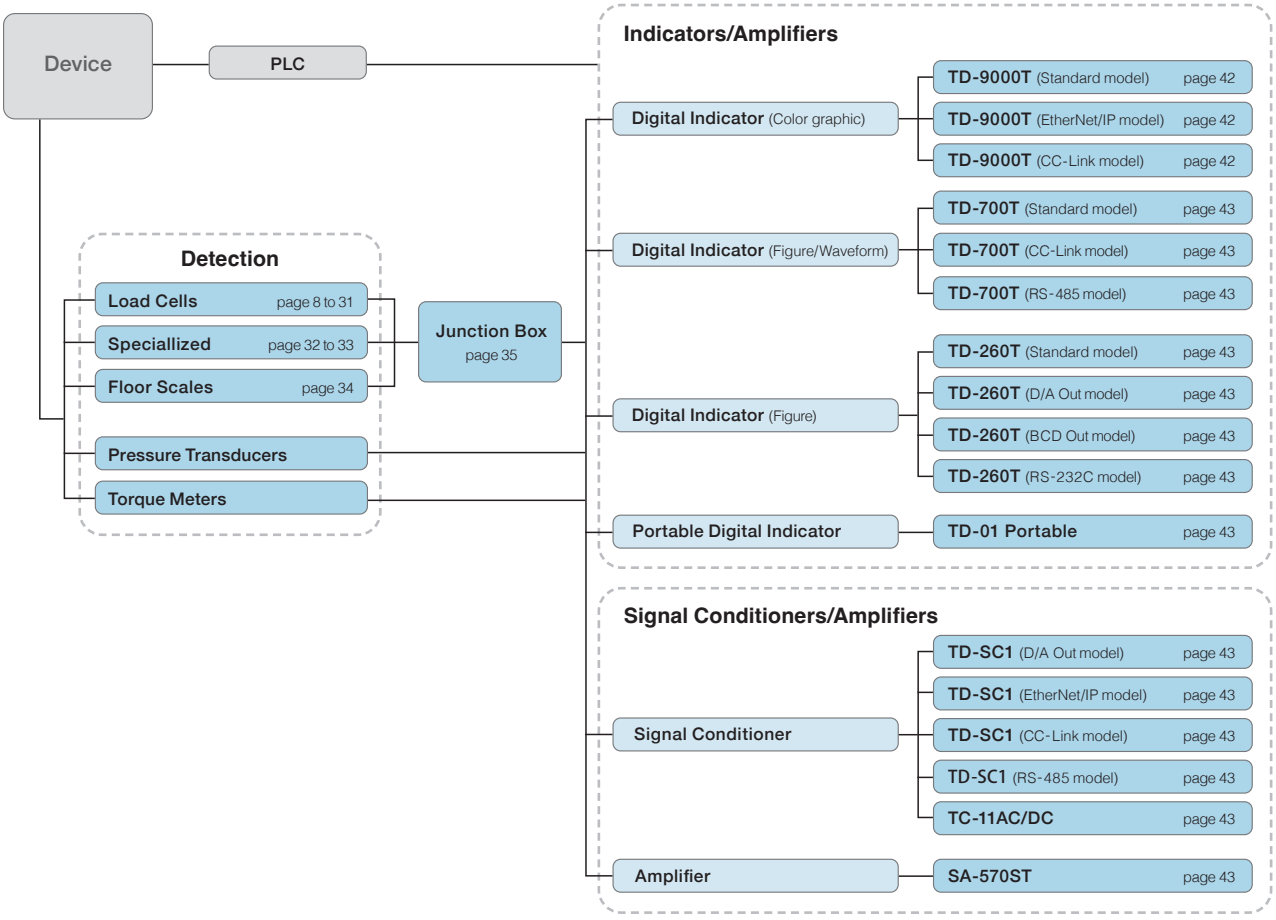
Measurement for automotive pedal force



Measurement for spot welding pressure



Measurement Flow Chart



Product Lineup (Product Finder)

Type	Model	TEDS	Linearity	0.5 N / 51 gf	1 N / 102 gf	2 N / 204 gf	5 N / 510 gf	10 N / 1.02 kgf	20 N / 2.04 kgf	50 N / 5.1 kgf	100 N / 10.2 kgf	200 N / 20.4 kgf	500 N / 51 kgf
Compression	**TC-AR(T)□□KN-G6/G8**	○	0.1%										
Compression	**TC-BSR(T)□□KN-G3**	○	1.0% (10k/50kN) 2.0% (20kN)										
Compression	**TC-FR(T)□□KN/KN-G6**	○	0.1%										○
Compression	**TC-FSRSP(T)□□KN-G3**	○	1%					○	○	○			
Compression	**TC-FSRSP2(T)□□KN-G3**	○	1%								○		
Compression	**TC-KR(T)□□KN-G6**	○	0.50%										
Compression	**TC-LPR(T)□□N/KN-G6**	○	0.1% (500 to 3kN) 0.3% (5k/10kN)										○
Compression	**TC-MFSR(T)□□N-G**	○	0.50%						○	○			
Compression	**TC-MR(T)□□KN-G3**	○	1%										
Compression	**TC-NSRSP(T)□□N-G3**	○	0.2%							○	○	○	○
Compression	**TC-NSR(T)□□KN-G3**	○	1%										
Compression	**TC-SR(T)□□N/KN-G/G3**	○	0.5% (10N/20N/50N) 1% (5N)				○	○	○	○	○	○	○
Compression	**TC-SR□□KN-G3**		1.0%										
Compression	**TC-USR(T)□□N/KN-G3**	○	0.3% (17/23) 0.1%	○	○	○	○	○	○	○	○	○	○
Compression	**TC-XR(T)□□KN-G6**	○	0.50%										
Tension/ Compression	**TU-BR□□N/KN-G**		0.05%									○	○
Tension/ Compression	**TU-CR(T)□□N/KN-G6**	○	0.05%							○	○	○	○
Tension/ Compression	**TU-FSRSP(T)□□N-G3**	○	1%					○	○	○			
Tension/ Compression	**TU-FSRSP2(T)□□N-G3**	○	1%								○		
Tension/ Compression	**TU-GR□□KN-G**		0.05% (5k to 200kN) 0.15% (500k to 1000kN)										
Tension/ Compression	**TU-MBR(T)□□N-G3**	○	0.10%			○	○	○	○	○	○	○	
Tension/ Compression	**TU-MXR2(T)□□N-G3**	○	0.10%					○	○	○	○	○	○
Tension/ Compression	**TU-NR-C□□KN-G**		0.15%										
Tension/ Compression	**TU-PGRH□□N/KN-G**		0.015%									○	○
Tension/ Compression	**TU-PGRS□□N/KN-G**		0.03%								○	○	○
Tension/ Compression	**TU-QR(T)□□N/KN-G3**	○	0.50%							○	○	○	○
Tension	**TT-FR(T)□□N/KN-G6**	○	0.15%										○
Compression	**TC-WLD(T)□□KN-G**	○	1.0% (10kN) 2.0% (20kN)										
Compression	**TC-PF2(T)□□N/KN-G**	○	0.3% (Target value)										○
Type	Model	TEDS	Linearity	0.5 N / 51 gf	1 N / 102 gf	2 N / 204 gf	5 N / 510 gf	10 N / 1.02 kgf	20 N / 2.04 kgf	50 N / 5.1 kgf	100 N / 10.2 kgf	200 N / 20.4 kgf	500 N / 51 kgf

Product Lineup (Product Finder)

1 kN / 102 kgf	2 kN / 204 kgf	3 kN / 305 kgf	5 kN / 510 kgf	10 kN / 1.02 tgf	20 kN / 2.04 tgf	30 kN / 3.05 tgf	50 kN / 5.1 tgf	100 kN / 10.2 tgf	200 kN / 20.4 tgf	300 kN / 30.5 tgf	500 kN / 51 tgf	1000 kN / 102 tgf	Page	Model
					○	○	○	○	○				8	TC-AR(T)□□KN-G6/G8
				○	○		○						9	TC-BSR(T)□□KN-G3
○	○		○	○	○								10	TC-FR(T)□□KN/KN-G6
													11	TC-FSRSP(T)□□KN-G3
													11	TC-FSRSP2(T)□□KN-G3
			○	○	○	○	○	○	○	○			12	TC-KR(T)□□KN-G6
○		○	○	○									14	TC-LPR(T)□□N/KN-G6
													15	TC-MFSR(T)□□N-G
			○	○	○								16	TC-MR(T)□□KN-G3
													17	TC-NSRSP(T)□□N-G3
○	○												19	TC-NSR(T)□□KN-G3
○	○		○										18	TC-SR(T)□□N/KN-G/G3
			○	○									18	TC-SR□□KN-G3
○	○												20	TC-USR(T)□□N/KN-G3
					○		○	○	○	○			13	TC-XR(T)□□KN-G6
○	○		○	○	○								21	TU-BR□□N/KN-G
○	○												22	TU-CR(T)□□N/KN-G6
													23	TU-FSRSP(T)□□N-G3
													23	TU-FSRSP2(T)□□N-G3
			○	○	○		○	○	○		○	○	24	TU-GR□□KN-G
													25	TU-MBR(T)□□N-G3
													26	TU-MXR2(T)□□N-G3
○	○		○	○	○		○	○	○				27	TU-NR-C□□KN-G
○	○	○	○										28	TU-PGRH□□N/KN-G
○	○	○	○	○	○								29	TU-PGRS□□N/KN-G
○	○												30	TU-QR(T)□□N/KN-G3
○	○		○	○									31	TT-FR(T)□□N/KN-G6
				○	○								32	TC-WLD(T)□□KN-G
○	○												33	TC-PF2(T)□□N/KN-G
1 kN / 102 kgf	2 kN / 204 kgf	3 kN / 305 kgf	5 kN / 510 kgf	10 kN / 1.02 tgf	20 kN / 2.04 tgf	30 kN / 3.05 tgf	50 kN / 5.1 tgf	100 kN / 10.2 tgf	200 kN / 20.4 tgf	300 kN / 30.5 tgf	500 kN / 51 tgf	1000 kN / 102 tgf	Page	Model

Compression Load Cell

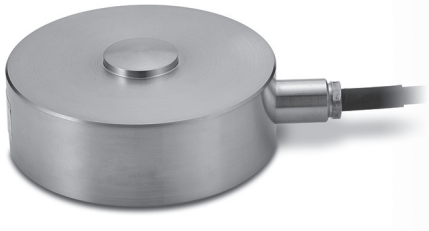
TC-AR(T)□□KN-G6/8

Linearity 0.15%, 0.1%
(G6) (G8)

Benefit
Easy to install on the existing facilities/systems.

Mounting Method
Four M5 or M8 screws to mount.
(Screw size varies by models.)

Applications
Environments where corrosion resistance is required.
Also available for use in vacuum
(Custom made)



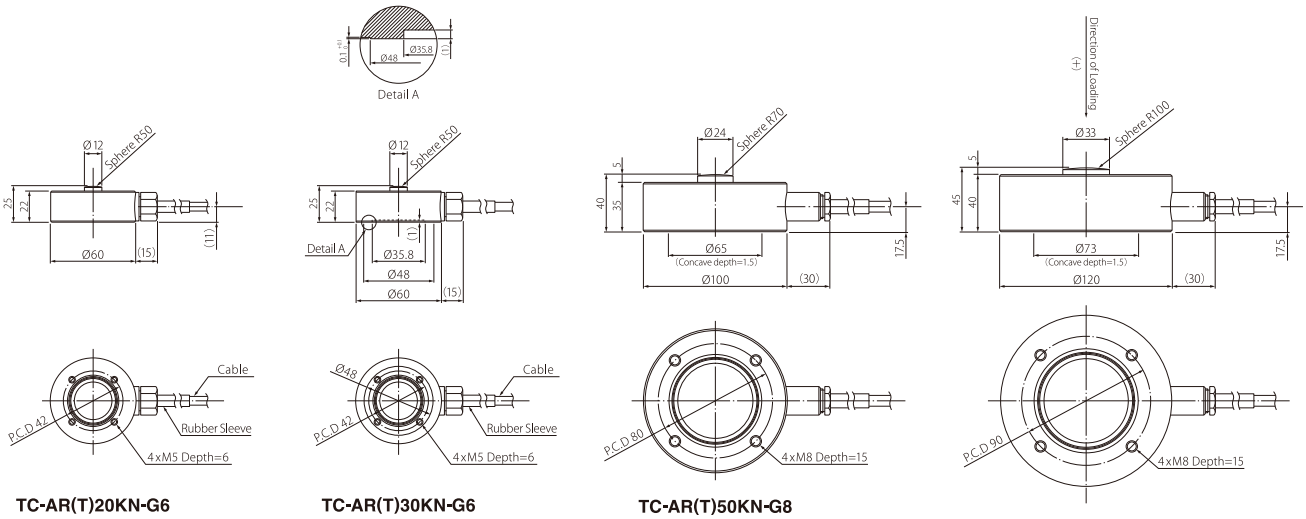
Robot Cable | TEDS (Embeded in the body) | RoHS (10 substances)

Specifications

Line up	TC-AR(T)20KN-G6	TC-AR(T)30KN-G6	TC-AR(T)50KN-G8	TC-AR(T)100KN-G8	TC-AR(T)200KN-G8
Rated Capacity (R.C.)	20kN	30kN	50kN	100kN	200kN
Natural Frequency	23kHz	23kHz	7.7kHz	11kHz	5.0kHz
Weight (Approx.)	0.8kg	0.8kg	1.8kg	1.8kg	3.1kg
Safe overload rating	150% R.C.				
Rated Output (R.O.)	2mV/V ±1%				
Linearity	0.1% R.O.				
Hysterisis	0.15% R.O.				
Repeatability	0.1% R.O.				
Safe Excitation Voltage	15V				
Input Terminal Resistance	425Ω ±50Ω				
Output Terminal Resistance	350Ω ±5Ω				
Insulation Resistance	1000MΩ or more (50VDC)				
Compensated Temperature Range	–10°C to 70°C				
Permissible Temperature Range	–30°C to 80°C				
Temperature Effect on Zero Balance	0.1% R.O. / 10°C				
Temperature Effect on Output	0.1% R.C. / 10°C				
Cable	Φ6, 6-core shielded, 5m direct connection robot cable with bare lead wires		Φ8, 6-core shielded, 5m direct connection robot cable with bare lead wires		
Mounting Method	Screw holes				
Body Material	Stainless Steel				

Dimensional drawings
(Units: mm)

Also see page 36 for optional Head Plate and Base Plate.



TC-AR(T)20KN-G6

TC-AR(T)30KN-G6

TC-AR(T)50KN-G8
TC-AR(T)100KN-G8

TC-AR(T)200KN-G8

TC-AR(T)20KN-G6
TC-AR(T)30KN-G6

TC-AR(T)50KN-G8
TC-AR(T)100KN-G8
TC-AR(T)200KN-G8

Compression Load Cell

TC-BSR(T)□□KN-G3

Compact & High Output

Benefit

Supports high loads despite its small size.
(21mm diameter x 10mm height)

Applications

Measuring press pressure and load distribution in environments where corrosion resistance is required.

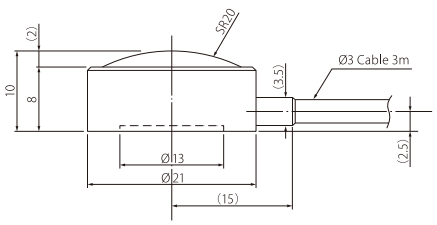
Robot Cable | TEDS (Embeded in the body) | RoHS (10 substances)

Specifications

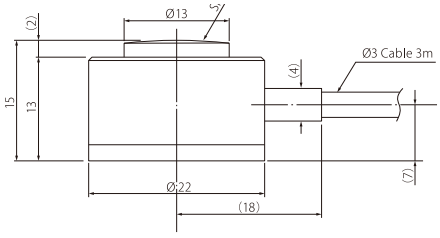
Line up	TC-BSR(T)10KN-G3	TC-BSR(T)20KN-G3	TC-BSR(T)50KN-G3
Rated Capacity (R.C.)	10kN	20kN	50kN
Natural Frequency	98kHz	98kHz	46kHz
Weight (Approx.)	21g	21g	34g
Safe overload rating	120% R.C.		
Rated Output (R.O.)	1mV/V ±50%	1.5mV/V ±50%	
Linearity	1% R.O.	2% R.O.	1% R.O.
Hysterisis	1% R.O.		
Repeatability	1% R.O.		
Zero Balance	±10% R.O.		
Safe Excitation Voltage	7V		5V
Input Terminal Resistance	350Ω ±5%		
Output Terminal Resistance	350Ω ±5%		
Insulation Resistance	1000MΩ or more (DC50V)		
Compensated Temperature Range	0°C to 50°C		
Permissible Temperature Range	−10°C to 60°C		
Temperature Effect on Zero Balance	0.5% R.O. / 10°C		
Temperature Effect on Output	0.5% R.C. / 10°C		
Cable	Φ3, 6-core shielded, 3m direct connection robot cable with bare lead wires		
Mounting Method	Bonding, Housing		
Body Material	Stainless Steel		

Dimensional drawings

(Units: mm)



TC-BSR(T)□□10KN/20KN-G3



TC-BSR(T)□□50KN-G3

Compression Load Cell

TC-FR(T)□□N/KN-G6

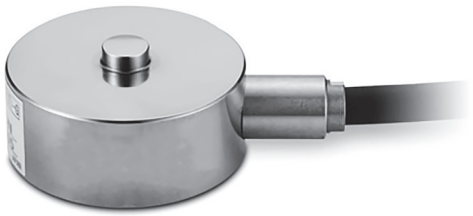
Compact & Lightweight

Benefit

Easy to install on the existing facilities/systems.

Vacuum Compatible

Works in vaccum state.
(TC-FR custom design model)



Robot Cable | TEDS (Embeded in the body) | RoHS (10 substances)

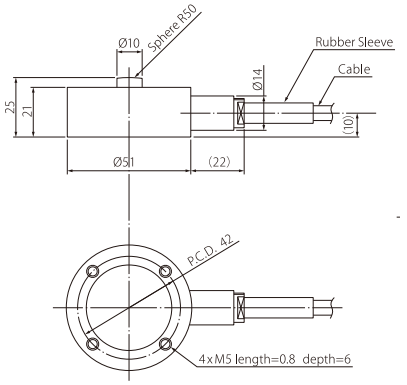
Specifications

Line up	TC-FR(T) 500N-G6	TC-FR(T) 1KN-G6	TC-FR(T) 2KN-G6	TC-FR(T) 5KN-G6	TC-FR(T) 10KN-G6	TC-FR(T) 20KN-G6
Rated Capacity (R.C.)	500N	1kN	2kN	5kN	10kN	20kN
Natural Frequency	3.6kHz	5.0kHz	6.0kHz	7.0kHz	10.0kHz	TBA
Weight (Approx.)	230g	230g	230g	230g	230g	230g
Safe overload rating	150% R.C.					
Rated Output (R.O.)	2mV/V ±1%					
Linearity	0.1% R.O.					
Hysterisis	0.1% R.O.					
Repeatability	0.05% R.O.					
Safe Excitation Voltage	15V					
Input Terminal Resistance	425Ω ±50Ω					
Output Terminal Resistance	350Ω ±5Ω					
Insulation Resistance	1000MΩ (DC 50V)					
Compensated Temperature Range	–10°C to 70°C					
Permissible Temperature Range	–10°C to 70°C					
Temperature Effect on Zero Balance	0.05% R.O. / 10°C					
Temperature Effect on Output	0.1% R.C. / 10°C					
Cable	Φ6, 6-core shielded, 5m direct connection robot cable with bare lead wires					
Mounting Method	Screw hole, Base Plate					
Body Material	Stainless Steel					

Dimensional drawings

(Units: mm)

Also see page 36 for optional Head Plate and Base Plate.



Compression Load Cell

TC-FSRSP(T)□□N-G3
TC-FSRSP2(T)□□N-G3

Exchangeable Load Buttons

Load Buttons (included)

Exchangeable Spherical/Flat Load Buttons

Exchangeable load buttons (Spherical/Flat) allow you to apply an ideal load to the object.
Third-party adapters can be attached to the tap hole. (M2 depth 2mm)

Robot Cable | TEDS (Embeded in the body) | RoHS (10 substances)

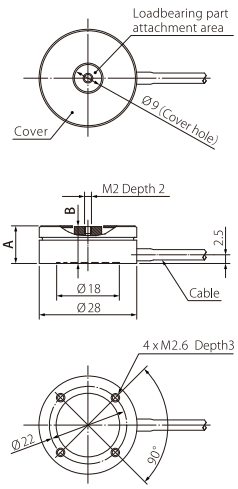
Specifications

Line up	TC-FSRSP(T)10N-G3	TC-FSRSP(T)20N-G3	TC-FSRSP(T)50N-G3	TC-FSRSP2(T)100N-G3
Rated Capacity (R.C.)	10N	20N	50N	100N
Natural Frequency	1.9kHz	2.7kHz	4.9kHz	—
Weight	15g	15g	15g	37g
Safe overload rating	120%			
Rated Output (R.O.)	1mV/V ±50%			
Linearity	1% R.O.			
Hysterisis	1% R.O.			
Repeatability	0.5% R.O.			
Safe Excitation Voltage	5V			
Zero Balance	±30% R.O.			
Input Terminal Resistance	470Ω ±30%			350Ω ±20%
Output Terminal Resistance	470Ω ±30%			350Ω ±20%
Insulation Resistance	1000Ω or more (DC 50V)			
Compensated Temperature Range	5 to 40°C (no condensation)			
Permissible Temperature Range	0 to 50°C (no condensation)			
Temperature Effect on Zero Balance	2% R.O. / 10°C			
Temperature Effect on Output	1% R.C. / 10°C			
Cable	Φ3, 6-core shielded, 3m direct connection robot cable with bare lead wires			
Body Material	Aluminum (Contains Stainless Steel and Steel parts in the boady)			Stainless Steel
Included Accessories	Load Buttons x 2 (Spherical x 1, Flat x 1)			

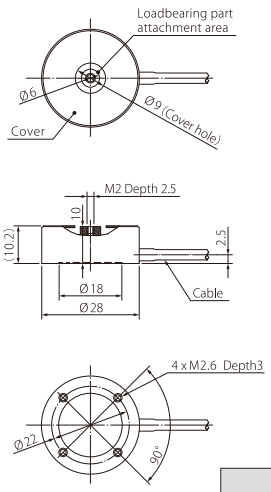
Dimensional drawings

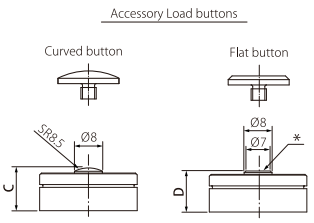
(Units: mm)

TC-FSRSP(T)□□N-G3



TC-FSRSP2(T)□□N-G3





* When using a flat load button, use it so that the load is equally distributed within a Ø7mm range.

Model No.	A	B	C	D
TC-FSRSP(T)10N-G3	10.3	10.1	11.8	11.3
TC-FSRSP(T)20N-G3	10.3	10.1	11.8	11.3
TC-FSRSP(T)50N-G3	10.7	10.5	12.2	11.7
TC-FSRSP2(T)100N-G3	10.2	10	11.7	11.2

TC-FSRSP TC-FSRSP2

Compression Load Cell

TC-KR(T)□□KN-G6

Center Hole type

Center Hole

Suitable for press fitting, and caulking.

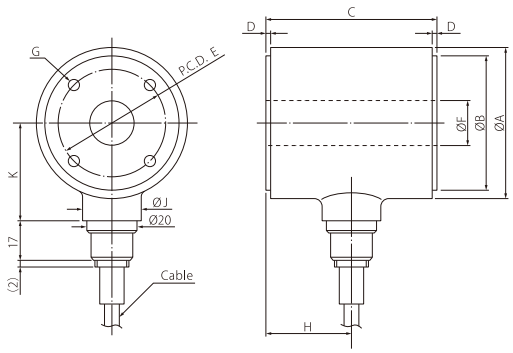
Robot Cable | TEDS (Embeded in the body) | RoHS (10 substances)

Specifications

Line up	TC-KR(T) 5KN-G6	TC-KR(T) 10KN-G6	TC-KR(T) 20KN-G6	TC-KR(T) 30KN-G6	TC-KR(T) 50KN-G6	TC-KR(T) 100KN-G6	TC-KR(T) 200KN-G6	TC-KR(T) 300KN-G6
Rated Capacity (R.C.)	5kN	10kN	20kN	30kN	50kN	100kN	200kN	300kN
Natural Frequency	13.2kHz	8.2kHz	10.9kHz	8kHz	13.5kHz	19kHz	10kHz	4.6kg
Weight	0.3kg	0.95kg	1.0kg	1.0kg	1.0kg	1.3kg	2.9kg	15kg
Safe overload rating	120% R.C.							
Rated Output (R.O.)	1mV/V ±1%							
Linearity	0.5% R.O.							
Hysterisis	0.5% R.O.							
Repeatability	0.1% R.O.							
Safe Excitation Voltage	18V							
Input Terminal Resistance	350Ω ±3.5Ω	700Ω ±7Ω						
Output Terminal Resistance	350Ω ±3.5Ω	700Ω ±7Ω						
Insulation Resistance	2000MΩ or more (DC 50V)							
Compensated Temperature Range	–10°C to 70°C							
Permissible Temperature Range	–20°C to 100°C							
Temperature Effect on Zero Balance	0.1% R.O. / 10°C							
Temperature Effect on Output	0.1% R.C. / 10°C							
Cable	Φ6, 6-core shielded, 3m direct connection robot cable with bare lead wires							
Mounting Method	Screw hole							
Body Material	Nickel chrome molybdenum steel							

Dimensional drawings

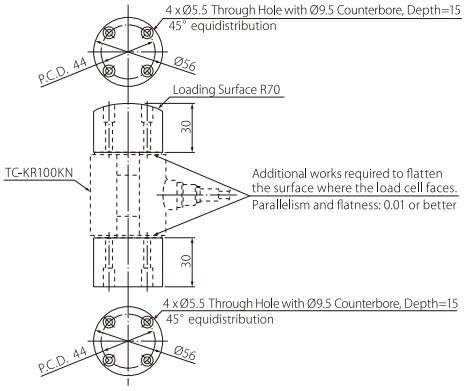
(Units: mm)



TC-KR-(T)□□KN-G6

Rated Capacity		ØA	ØB	C	D	ØE	ØF	G	H	ØJ	K
5kN	510kgf	40	35	50	1	24	10	2 x 4-M4 Depth=8	25	26	29
10kN	1.02tf	62	55	70	2	44	18	2 x 4-M5 Depth=8	35	26	40
20kN	2.04tf	62	55	70	2	44	18	2 x 4-M5 Depth=8	35	26	40
30kN	3.06tf	62	55	70	2	44	18	2 x 4-M5 Depth=8	35	26	40
50kN	5.1tf	62	55	70	2	44	18	2 x 4-M5 Depth=8	35	26	40
100kN	10.2tf	62	55	80	2	44	18	2 x 4-M5 Depth=8	40	26	40
200kN	20.4tf	88	80	100	2	60	20	2 x 4-M8 Depth=12	50	26	53
300kN	30.6tf	100	90	120	2	70	20	2 x 4-M8 Depth=15	60	26	59

Jig attachent drawing for TC-KR(T)-G6 series



Compression Load Cell

TC-XR(T)□□KN-G6

Center Hole type

Center Hole

Suitable for press fitting, and caulking.

Sleek & Flat Design

It can be widely applied to bolt tension, press forming equipment and so on.

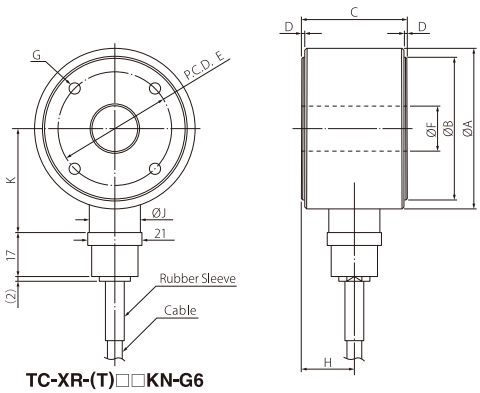
Robot Cable | TEDS (Embeded in the body) | RoHS (10 substances)

Specifications

Line up	TC-XR(T) 20KN-G6	TC-XR(T) 50KN-G6	TC-XR(T) 100KN-G6	TC-XR(T) 200KN-G6	TC-XR(T) 300KN-G6
Rated Capacity (R.C.)	20kN	50kN	100kN	200kN	300kN
Natural Frequency	7.0kHz	11kHz	13kHz	11kHz	9kHz
Weight	0.8kg	0.8kg	0.9kg	2.0kg	4.0kg
Safe overload rating	120% R.C.				
Rated Output (R.O.)	1mV/V ±1%				
Linearity	0.5% R.O.				
Hysterisis	0.5% R.O.				
Repeatability	0.1% R.O.				
Safe Excitation Voltage	15V				
Input Terminal Resistance	700Ω ±7Ω				
Output Terminal Resistance	700Ω ±7Ω				
Insulation Resistance	2000MΩ or mote (DC 50V)				
Compensated Temperature Range	0°C to 60°C				
Permissible Temperature Range	–10°C to 80°C				
Temperature Effect on Zero Balance	0.5% R.O. / 10°C				
Temperature Effect on Output	0.5% R.C. / 10°C				
Cable	Φ6, 6-core shielded, 3m direct connection robot cable with bare lead wires				
Mounting Method	Screw hole				
Body Material	Nickel chrome molybdenum steel				

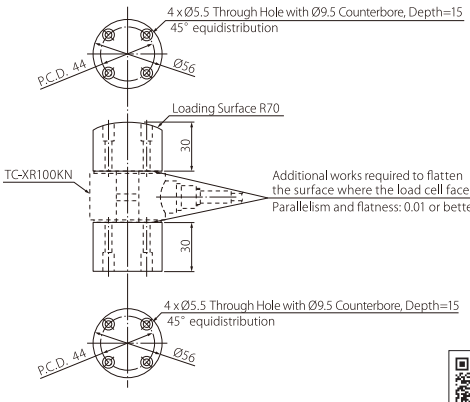
Dimensional drawings

(Units: mm)



TC-XR-(T)□□KN-G6

Jig attachent drawing for TC-XR(T)-G6 series



Rated Capacity		ØA	ØB	C	D	ØE	ØF	G	H	ØJ	K
20kN	2.04tf	62	56	35	1	44	18	2 x 4-M5 Depth=7	17.5	20	40
50kN	5.1tf	62	56	35	1	44	18	2 x 4-M5 Depth=7	17.5	20	40
100kN	10.2tf	62	56	40	1	44	18	2 x 4-M5 Depth=7	20	20	40
200kN	20.4tf	86	78	50	2	60	20	2 x 4-M8 Depth=10	25	26	52
300kN	30.6tf	100	90	70	2	70	20	2 x 4-M8 Depth=12	35	26	59

Compression Load Cell

TC-LPR(T)□□N/KN-G6

Detachable Load Button

Benefit

Easy to install on the existing facilities/systems.

Mounting Method

M4 screws to mount.
(Screw hole depth: 4mm)

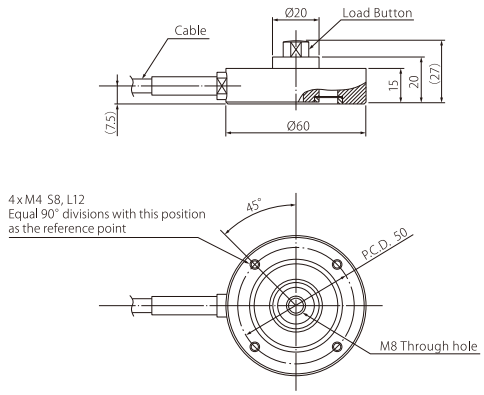
Robot Cable | TEDS (Embeded in the body) | RoHS (10 substances)

Specifications

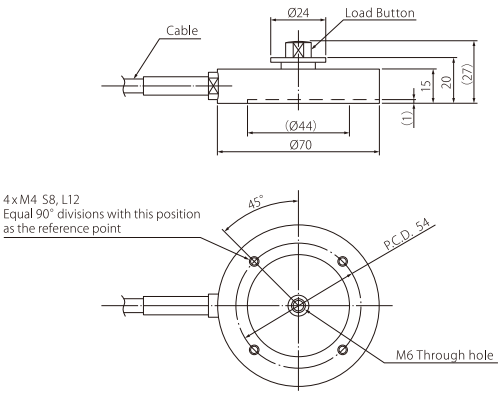
Line up	TC-LPR(T)500N-G6	TC-LPR(T)1KN-G6	TC-LPR(T)3KN-G6	TC-LPR(T)5KN-G6	TC-LPR(T)10KN-G6
Rated Capacity (R.C.)	500N	1kN	3kN	5kN	10kN
Natural Frequency	2.5kHz	3.8kHz	7.3kHz	(TBA)	(TBA)
Weight	250g	250g	250g	(TBA)	(TBA)
Safe overload rating	120% R.C.			150% R.C.	
Rated Output (R.O.)	1mV/V ±10%				
Linearity	0.1% R.O.			0.3% R.O.	
Hysterisis	0.1% R.O.			0.3% R.O.	
Repeatability	0.05% R.O.				
Safe Excitation Voltage	15V			12V	
Input Terminal Resistance	382Ω ±10Ω				
Output Terminal Resistance	350Ω ±3.5Ω				
Insulation Resistance	1000MΩ or more (DC 50V)				
Compensated Temperature Range	–10°C to 70°C				
Permissible Temperature Range	–30 to 80°C				
Temperature Effect on Zero Balance	0.1% R.O. / 10°C				
Temperature Effect on Output	0.1% R.C. / 10°C				
Cable	Φ6, 6-core shielded, 5m direct connection robot cable with bare lead wires (G6)				
Mounting Method	Screw hole				
Body Material	Stainless Steel				
Included Accessories	Load button				

Dimensional drawings

(Units: mm)



TC-LPR(T)□□500N to 3KN-G6



TC-LPR(T)□□5KN to 10KN-G6

Compression Load Cell

TC-MFSR(T)□□N-G

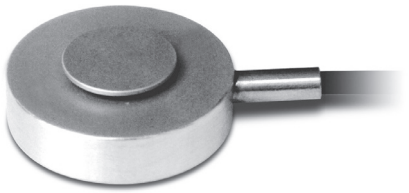
Small load cell Flat load point

Applications

Ideal for pressurizing control of bonding machine.

Mounting Method

Glue or housing



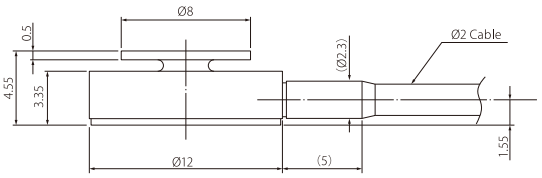
Robot Cable | TEDS (Embeded in the body) | RoHS (10 substances)

Specifications

Line up	TC-MFSR(T)20N-G	TC-MFSR(T)50N-G
Rated Capacity (R.C.)	20N	50N
Natural Frequency	23kHz	23kHz
Weight	2g	2g
Safe overload rating	120% R.C.	
Rated Output (R.O.)	approx. 1mV/V	
Linearity	0.5%R.O.	
Hysterisis	0.5% R.O.	
Repeatability	0.3% R.O.	
Zero Balance	±10% R.O.	
Safe Excitation Voltage	6V	
Input Terminal Resistance	350Ω ±20Ω	
Output Terminal Resistance	350Ω ±20Ω	
Insulation Resistance	1000MΩ or more (DC50V)	
Compensated Temperature Range	0°C to 60°C	
Permissible Temperature Range	−10°C to 80°C	
Temperature Effect on Zero Balance	2% R.O. / 10°C	
Temperature Effect on Output	1% R.C. / 10°C	
Cable	Φ2, 6-core, 3m direct connection robot cable with bare lead wires	
Mounting Method	Glue, Housing	
Body Material	Beryllium copper	

Dimensional drawings

(Units: mm)



Compression Load Cell

TC-MR(T)□□KN-G3

Compact and lightweight

Benefit

Ideal for testing machines with its high response.

Mounting Method

Screw mount.

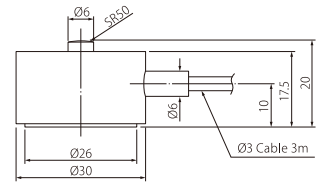
Robot Cable | TEDS (Embeded in the body) | RoHS (10 substances)

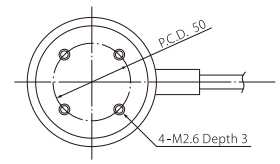
Specifications

Line up	TC-MR(T)5KN-G3	TC-MR(T)10KN-G3	TC-MR(T)20KN-G3
Rated Capacity (R.C.)	5kN	10kN	20kN
Natural Frequency	50kHz	50kHz	50kHz
Weight	0.06kg	0.06kg	0.06kg
Safe overload rating	150 %R.C.		
Rated Output (R.O.)	0.75mV/V ±20%	1.5mV/V ±20%	
Linearity	1% R.O.		
Hysterisis	1% R.O.		
Repeatability	0.5% R.O.		
Zero Balance	±10% R.O.		
Safe Excitation Voltage	5V		
Input Terminal Resistance	350Ω ±20Ω		
Output Terminal Resistance	350Ω ±20Ω		
Insulation Resistance	1000MΩ or more (50VDC)		
Compensated Temperature Range	0°C to 50°C		
Permissible Temperature Range	–5°C to 60°C		
Temperature Effect on Zero Balance	0.5% R.O. / 10°C		
Temperature Effect on Output	0.5% R.C. / 10°C		
Cable	Φ3, 6-core shielded, 3m direct connection robot cable with bare lead wires		
Mounting Method	Screw Holes		
Body Material	Stainless Steel		

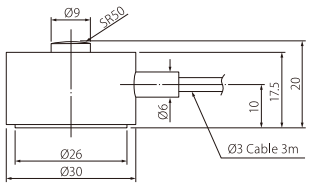
Dimensional drawings

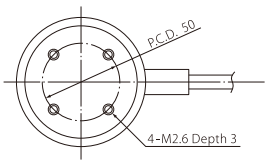
(Units: mm)





TC-MR(T)□□5KN/10KN-G3





TC-MR(T)□□20KN-G3

Compression Load Cell

TC-NSRSP(T)□□N-G3

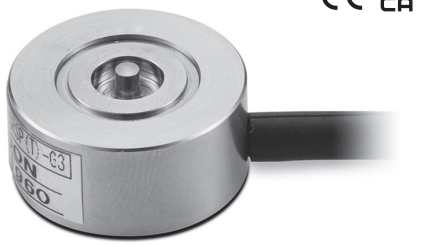
High accuracy, High responsivility

Linearity 0.2%

Compact but high accuracy

Mounting Method

It can be widely applied to bolt tension, press forming equipment and so on.



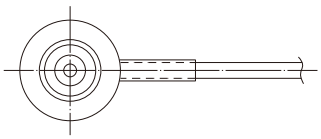
Robot Cable | TEDS (Embeded in the body) | RoHS (10 substances)

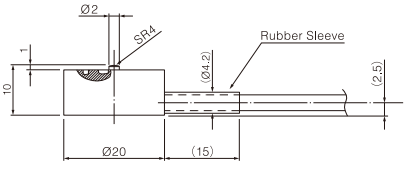
Specifications

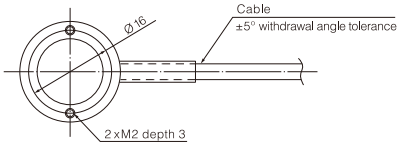
Line up	TC-NSRSP(T)50N-G3	TC-NSRSP(T)100N-G3	TC-NSRSP(T)200N-G3	TC-NSRSP(T)500N-G3
Rated Capacity (R.C.)	50N	100N	200N	500N
Natural Frequency	41.8kHz	60.9kHz	83.3kHz	116.9kHz
Weight	17g	17g	17g	17g
Safe overload rating	150 % R.C.			
Rated Output (R.O.)	1.3mV/V ±30%			
Linearity	0.2% R.O.			
Hysterisis	0.2% R.O.			
Repeatability	0.2% R.O.			
Safe Excitation Voltage	5V			
Input Terminal Resistance	1150Ω ±30%			
Output Terminal Resistance	1150Ω ±30%			
Insulation Resistance	1000MΩ or more (50VDC)			
Compensated Temperature Range	0°C to 60°C			
Permissible Temperature Range	–20 to 70°C			
Temperature Effect on Zero Balance	0.3% R.O. / 10°C			
Temperature Effect on Output	0.3% R.C. / 10°C			
Cable	Φ3, 6-core shielded, 3m direct connection robot cable with bare lead wires			
Mounting Method	Screw Hole			
Body Material	Stainless Steel			

Dimensional drawings

(Units: mm)







Compression Load Cell

TC-SR(T)□□N/KN-G/G3

Ultra-compact, lightweight

Benefit

Easy to install on the existing facilities/systems.

Mounting Method

Glue or housing

Robot Cable | TEDS (Embeded in the body) | RoHS (10 substances)

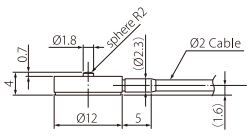
Specifications

Line up	TC-SR(T)				TC-SR(T)					TC-SR*	
Rated Capacity (R.C.)	5N-G	10N-G	20N-G	50N-G	100N-G3	200N-G3	500N-G3	1KN-G3	2KN-G3	5KN-G3	10KN-G3
Natural Frequency	5N	10N	20N	50N	100N	200N	500N	1kN	2kN	5kN	10kN
Weight	11kHz	17kHz	21kHz	35kHz	21kHz	25kHz	41kHz	59kHz	84kHz	101kHz	151kHz
Safe overload rating	1.7g	1.7g	1.8g	1.9g	9.8g	9.9g	11g	11g	12g	32g	34g
Rated Output (R.O.)	150% R.C.									150% R.C.	
Linearity	approx. 1mV/V									approx. 1mV/V	
Hysterisis	1% R.O.	0.5% R.O.								1% R.O.	
Repeatability	1% R.O.	0.5% R.O.								1% R.O.	
Zero Balance	0.5% R.O.									1% R.O.	
Safe Excitation Voltage	6V									6V	
Input Terminal Resistance	350Ω ±20Ω									350Ω ±12Ω	
Output Terminal Resistance	350Ω ±20Ω									350Ω ±12Ω	
Insulation Resistance	1000MΩ or more (50VDC)									1000MΩ or more (50VDC)	
Compensated Temperature Range	0°C to 60°C									0°C to 60°C	
Permissible Temperature Range	−10 to 60°C									−10 to 60°C	
Temperature Effect on Zero Balance	2% R.O. / 10°C									2% R.O. / 10°C	
Temperature Effect on Output	1% R.C. / 10°C									1% R.C. / 10°C	
Cable	Φ2, 6-core shielded, 3m direct connection robot cable with bare lead wires				Φ3, 6-core shielded, 3m direct connection robot cable with bare lead wires					Φ3, 4-core shielded, 3m direct connection robot cable with bare lead wires	
Mounting Method	Glue, Housing									Glue, Housing	
Body Material	Beryllium copper				Stainless Steel					Stainless Steel	

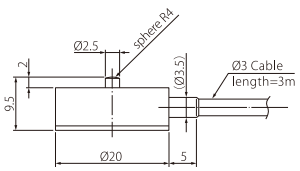
* TEDS not supported

Dimensional drawings

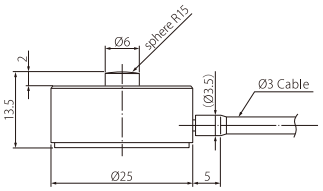
(Units: mm)



TC-SR(T)□□N-G



TC-SR(T)□□N/KN-G3



TC-SR□□KN-G3

TC-SR(T)□□N-G

TC-SR(T)□□N/KN-G3

TC-SR □□KN-G3

Compression Load Cell

TC-NSR(T)□□KN-G3

Ultra-compact, Screw mount

Benefit

Easy to install on the existing facilities/systems.

Mounting Method

Screw mount

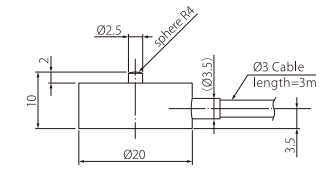
Robot Cable | TEDS (Embeded in the body) | RoHS (10 substances)

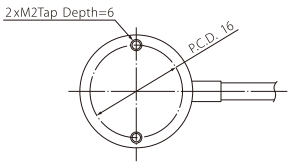
Specifications

Line up	TC-NSR(T)1KN-G3	TC-NSR(T)2KN-G3
Rated Capacity (R.C.)	1kN	2kN
Natural Frequency	52.8kHz	55.5kHz
Weight	16.3g	16.7g
Safe overload rating	150 % R.C.	
Rated Output (R.O.)	approx. 0.75mV/V	
Linearity	1% R.O.	
Hysterisis	1% R.O.	
Repeatability	1% R.O.	
Safe Excitation Voltage	7V	
Input Terminal Resistance	350Ω ±20Ω	
Output Terminal Resistance	350Ω ±20Ω	
Insulation Resistance	1000MΩ or more (50VDC)	
Compensated Temperature Range	(TBA)	
Permissible Temperature Range	–20 to 70°C	
Temperature Effect on Zero Balance	2% R.O. / 10°C	
Temperature Effect on Output	1% R.C. / 10°C	
Cable	Φ3, 6-core shielded, 3m direct connection robot cable with bare lead wires	
Mounting Method	Screw Holes	
Body Material	Stainless Steel	

Dimensional drawings

(Units: mm)





Compression Load Cell

TC-USR(T)□□N/KN-G3

Ultra low capacity, With stopper, Screw hole

CE UKCA

Anti-overload Construction

In order to make measurement with high precision even at low capacity, a strain relief plate with a linear beam structure different from other load cells is used.

Robot Cable | TEDS (Embeded in the body) | RoHS (10 substances)

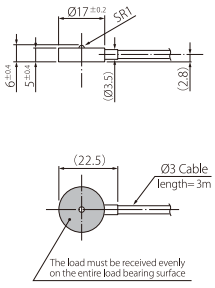
Specifications

Line up	TC-USR(T)30		TC-USR(T)17			TC-USR(T)23			TC-USR(T)29				TC-USR(T)34			
	0.5N -G3	1N -G3	1N -G3	2N -G3	5N -G3	1N -G3	2N -G3	5N -G3	10N -G3	20N -G3	50N -G3	100N -G3	200N -G3	500N -G3	1KN -G3	2KN -G3
Rated Capacity (R.C.)	0.5N	1N	1N	2N	5N	1N	2N	5N	10N	20N	50N	100N	200N	500N	1kN	2kN
Natural Frequency	0.5kHz	0.8kHz	6.7kHz	5.6kHz	6.7kHz	7.1kHz	5.5kHz	7.5kHz	6.8kHz	7.5kHz	9.5kHz	15kHz	14kHz	14kHz	15kHz	16kHz
Weight	12g		2.5g			5g			15g	35g			58g			65g
呼び径	Ø30 type		Ø17 type			Ø23 type			Ø29 type				Ø34 type			
Body Material	Aluminum									Stainless Steel						
Safe Overload Rating	120% R.C.		150% R.C.													
Overload limit	300% R.C.		500% R.C.						300% R.C.							
Rated Output (R.O.)	0.5mV/V or more		approx. 0.4 mV/V	0.5mV/V or more		approx. 0.4 mV/V	0.5mV/V or more		0.75mV/V ot more							
Linearity	0.1% R.O.		0.3% R.O.						0.1% R.O.							
Hysterisis	0.1% R.O.		0.3% R.O.						0.1% R.O.							
Repeatability	0.1% R.O.		0.3% R.O.						0.1% R.O.							
Safe Excitation Voltage	6V															
Input Terminal Resistance	420Ω ±20Ω		370Ω ±20Ω	420Ω ±20Ω		370Ω ±20Ω	390Ω ±20Ω									
Output Terminal Resistance	350Ω±20Ω															
Insulation Resistance	1000MΩ or more (50V DC)															
Compensated Temp. Range	0°C to 60°C															
Permissible Temp. Range	–5°C to 70°C		–10°C to 60°C													
Temperature Effect on Zero Balance	0.3% R.O. / 10°C		0.5% R.O / 10°C	0.3% R.O / 10°C		0.5% R.O. / 10°C	0.3% R.O. / 10°C									
Temperature Effect on Output	0.3% R.C. /10°C		0.1% R.C. / 10°C													
Cable	Φ3, 6-core shielded, 3m direct connection cable with bare lead wires															
Mounting Method	Screw Holes except Φ17 type which is glue type															
Overload protection	Structural stopper															

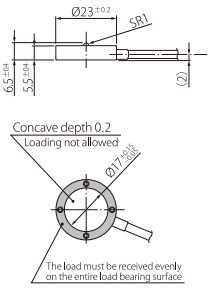
Dimensional drawings

(Units: mm)

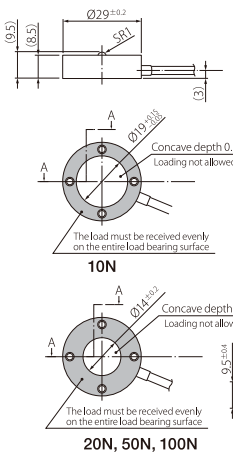
TC-USR(T)17-G3



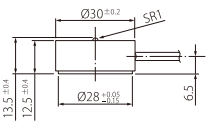
TC-USR(T)23-G3



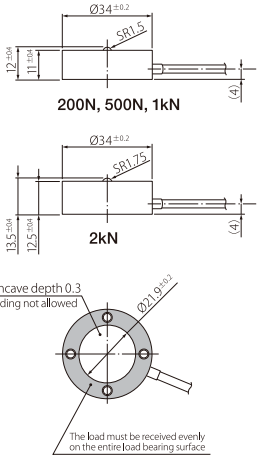
TC-USR(T)29-G3



TC-USR(T)30-G3



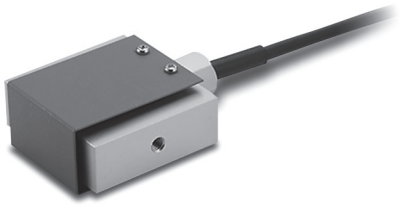
TC-USR(T)34-G3



Compression/Tension Load Cell

TU-BR□□N/KN-G

High precision



Applications

Suitable for press fitting, and caulking.

Mounting Method

Screw mount

RoHS
(10 substances)

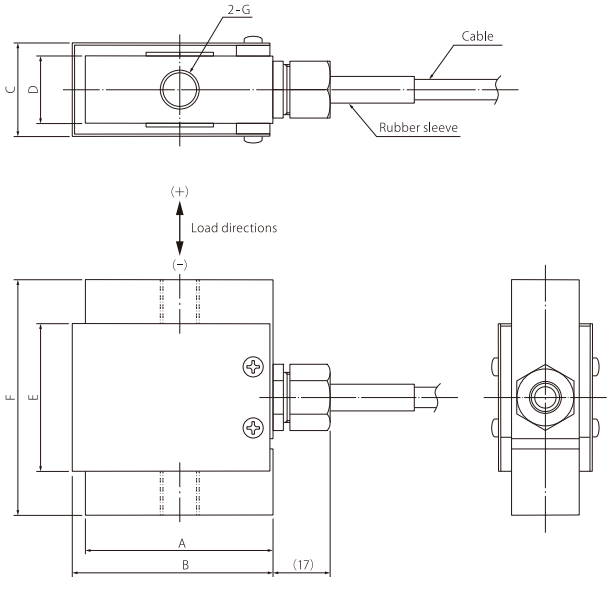
Specifications

Line up	TU-BR200N-G	TU-BR500N-G	TU-BR1KN-G	TU-BR2KN-G	TU-BR5KN-G	TU-BR10KN-G	TU-BR20KN-G
Rated Capacity (R.C.)	200N	500N	1kN	2kN	5kN	10kN	20kN
Natural Frequency	0.6kHz	1.2kHz	1kHz	1.5kHz	2.7kHz	2.3kHz	2.2kHz
Weight	0.3kg	0.3kg	0.3kg	0.45kg	0.5kg	0.5kg	1.6kg
Safe overload rating	150% R.C.						
Rated Output (R.O.)	3mV/V ±1%						
Linearity	0.05% R.O.						
Hysterisis	0.05% R.O.						
Repeatability	0.03% R.O.						
Zero Balance	±10% R.O.						
Safe Excitation Voltage	20V						
Input Terminal Resistance	350Ω ±3.5Ω						
Output Terminal Resistance	350Ω ±5Ω						
Insulation Resistance	1000MΩ or more (DC 50V)						
Compensated Temperature Range	−10°C to 70°C						
Permissible Temperature Range	−30°C to 80°C						
Temperature Effect on Zero Balance	0.05% R.O./10°C						
Temperature Effect on Output	0.05% R.C. / 10°C						
Cable	Φ6, 4-core shielded, 5m direct connection cable with bare lead wires						
Mounting Method	Scrw Holes						
Body Material	Aluminum			Steel			

Dimensional drawings

(Units: mm)

Also see page 37 for optional Rod-end Bearings.



Polarity: Tension (–), Compress (+)

Model	Capacity	A	B	C	D	E	F	G
TU-BR200N-G	200N	56	60	28	20	44	60	M6 x1 Depth=12
TU-BR500N-G	500N	56	60	28	20	44	60	M6 x1 Depth=12
TU-BR1KN-G	1kN	56	60	28	20	44	60	M6 x1 Depth=12
TU-BR2KN-G	2kN	56	60	28	20	44	70	M12 x 1.75 Depth=16
TU-BR5KN-G	5kN	56	60	28	20	44	70	M12 x 1.75 Depth=16
TU-BR10KN-G	10kN	56	60	28	20	44	70	M12 x 1.75 Depth=16
TU-BR20KN-G	20kN	70	74	33	25	58	90	M16 x2 Depth=20

Compression/Tension Load Cell

TU-CR(T)□□N/KN-G

CE UK CA

High accuracy. High output

Applications

Accuracy 1/2000, ideal for test equipment and industrial scales for conveyer and tanks.

Mounting Method

Bolts to mount
(M6 for 50N to 1kN, M12 for 2kN)

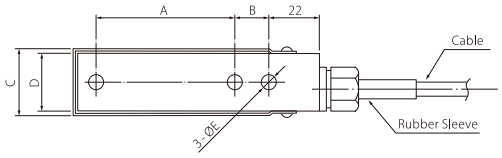
Robot Cable | TEDS (Embeded in the body) | RoHS (10 substances)

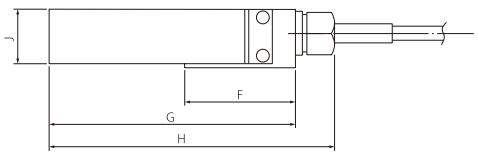
Specifications

Line up	TU-CR(T) 50N-G6	TU-CR(T) 100N-G6	TU-CR(T) 200N-G6	TU-CR(T) 500N-G6	TU-CR(T) 1KN-G6	TU-CR(T) 2KN-G6
Rated Capacity (R.C.)	50N	100N	200N	500N	1kN	2kN
Natural Frequency	0.3kHz	0.46kHz	0.7kHz	2.2kHz	3.4kHz	4.6kHz
Weight	0.2kg	0.2kg	0.2kg	0.2kg	0.2kg	0.7kg
Safe overload rating	150% R.C.					
Rated Output (R.O.)	3mV/V ±1%					
Linearity	0.05% R.O.					
Hysterisis	0.05% R.O.					
Repeatability	0.03% R.O.					
Safe Excitation Voltage	20V					
Input Terminal Resistance	350Ω ±3.5%					
Output Terminal Resistance	350Ω ±5%					
Insulation Resistance	1000MΩ or more (DC 50V)					
Compensated Temperature Range	–10°C to 70°C					
Permissible Temperature Range	–30°C to 80°C					
Temperature Effect on Zero Balance	0.05% R.O. /10°C					
Temperature Effect on Output	0.05% R.C. / 10°C					
Cable	Φ6, 6-core shielded, 5m direct connection robot cable with bare lead wires					
Mounting Method	Screw Hole					
Body Material	Aluminum					

Dimensional drawings

(Units: mm)



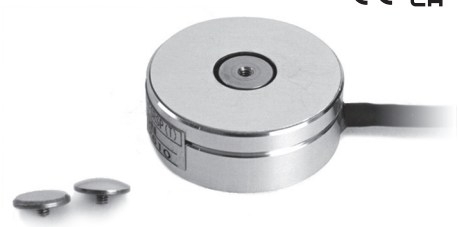


Model	Capacity	A	B	C	D	ØE	F	G	H	J
TU-CR(T)50N-G6	50N	60	15	29	25	3-Ø6.5	48	107	124	25
TU-CR(T)100N-G6	100N	60	15	29	25	3-Ø6.5	48	107	124	25
TU-CR(T)200N-G6	20N	60	15	29	25	3-Ø6.5	48	107	124	25
TU-CR(T)500N-G6	500N	60	15	29	25	3-Ø6.5	48	107	124	25
TU-CR(T)1KN-G6	1kN	60	15	29	25	3-Ø6.5	48	107	124	25
TU-CR(T)2KN-G6	2kN	83	45	39	35	3-Ø13	82	167	184	35

Compression/Tension Load Cell

TU-FSRSP(T)□□N-G3
TU-FSRSP2(T)□□N-G3

Exchangeable Load Buttons



Load Buttons (included)

Exchangeable Spherical/Flat Load Buttons

Exchangeable load buttons (Spherical/Flat) allow you to apply an ideal load to the object.
Third-party adapters can be attached to the tap hole. (M2 depth 2mm)

Robot Cable | TEDS (Embeded in the body) | RoHS (10 substances)

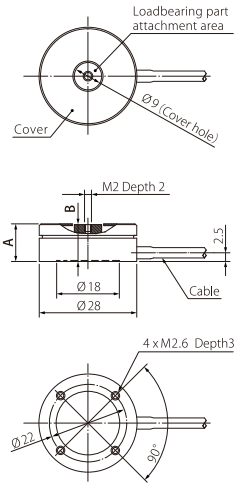
Specifications

Line up	TU-FSRSP(T)10N-G3	TU-FSRSP(T)20N-G3	TU-FSRSP(T)50N-G3	TU-FSRSP2(T)100N-G3
Rated Capacity (R.C.)	10N	20N	50N	100N
Natural Frequency	1.9kHz	2.7kHz	4.9kHz	—
Weight	15g	15g	15g	37g
Safe overload rating	120%			
Rated Output (R.O.)	1mV/V ±50%			
Linearity	1% R.O.			
Hysterisis	1% R.O.			
Repeatability	0.5% R.O.			
Safe Excitation Voltage	5V			
Zero Balance	±30% R.O.			
Input Terminal Resistance	470Ω ±30%			350Ω ±20Ω
Output Terminal Resistance	470Ω ±30%			350Ω ±20Ω
Insulation Resistance	1000Ω or more (DC 50V)			
Compensated Temperature Range	5 to 40°C (no condensation)			
Permissible Temperature Range	0 to 50°C (no condensation)			
Temperature Effect on Zero Balance	2% R.O. / 10°C			
Temperature Effect on Output	1% R.C. / 10°C			
Cable	Φ3, 6-core shielded, 3m direct connection robot cable with bare lead wires			
Body Material	Aluminum (Contains Stainless Steel and Steel parts in the boady)			Stainless Steel
Included Accessories	Load Buttons x 2 (Spherical x 1, Flat x 1)			

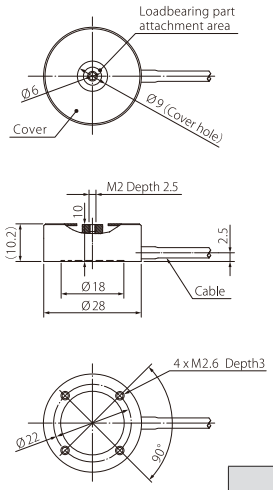
Dimensional drawings

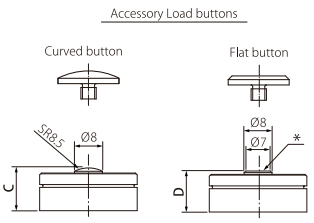
(Units: mm)

TU-FSRSP(T)□□N-G3



TU-FSRSP2(T)□□N-G3





* When using a flat load button, use it so that the load is equally distributed within a Ø7mm range.

Model No.	A	B	C	D
TU-FSRSP(T)10N-G3	10.3	10.1	11.8	11.3
TU-FSRSP(T)20N-G3	10.3	10.1	11.8	11.3
TU-FSRSP(T)50N-G3	10.7	10.5	12.2	11.7
TU-FSRSP2(T)100N-G3	10.2	10	11.7	11.2

TU-FSRSP TU-FSRSP2

Tension/Compression Load Cell

TU-GR□□KN-G

Shear beam · Center hole type

Center Hole
Ideal for load control of injection molding machines and wafer polishing machines.

Sleek Design
Space saving. Easy install to the existing machines.

Convertible
Calibrated with actual load on both compression and tension.

Mounting Method
Bolt to mount

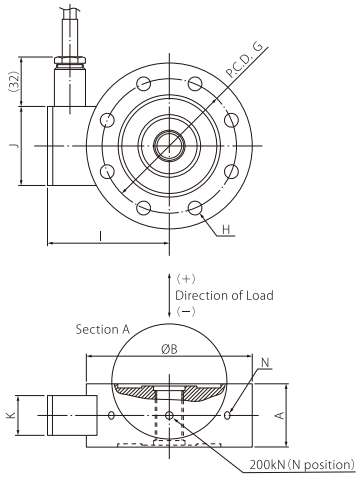
RoHS
(10 substances)

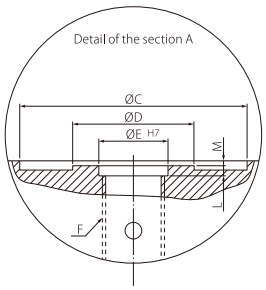
Specifications

Line up	TU-GR 5KN-G	TU-GR 10KN-G	TU-GR 20KN-G	TU-GR 50KN-G	TU-GR 100KN-G	TU-GR 200KN-G	TU-GR 500KN-G	TU-GR 1000KN-G
Rated Capacity (R.C.)	5kN	10kN	20kN	50kN	100kN	200kN	500kN	1000kN
Natural Frequency	3.5kHz	5kHz	7.6kHz	8.8kHz	7kHz	5.6kHz	5.9kHz	3.3kHz
Weight	2.2kg	2.2kg	2.2kg	3.7kg	8.5kg	20kg	54kg	140kg
Safe overload rating	150% R.C.							
Rated Output (R.O.)	2mV/V ±1%							
Linearity	0.05% R.O.						0.15% R.O.	
Hysterisis	0.1% R.O.						0.15% R.O.	
Repeatability	0.03% R.O.						0.1% R.O.	
Safe Excitation Voltage	20V							
Input Terminal Resistance	350Ω ±3.5Ω							
Output Terminal Resistance	350Ω ±3.5Ω							
Insulation Resistance	1000MΩ or more (DC 50V)							
Compensated Temperature Range	–10°C to 60°C							
Permissible Temperature Range	–30 to 80°C							
Temperature Effect on Zero Balance	0.05% R.O. / 10°C							
Temperature Effect on Output	0.1% R.C. / 10°C							
Cable	Φ8, 4-core shielded, 5m direct connection cable with bare lead wires							
Mounting Method	Bold Hole							
Body Material	Alloy Tool Steel							
Remarks	Eye Bolt							

Dimensional drawings

(Units: mm)





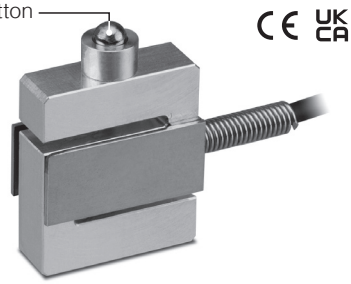
Capacity		A	ØB	ØC	ØD	ØE	F	ØG	H	I	ØJ	K	L	M	N
5kN	510kgf	40	105	65	35	20	M18×1.5	85	8-Ø9	77	50	25	3	1	–
10kN	1.02tf	40	105	65	35	20	M18×1.5	85	8-Ø9	77	50	25	3	1	–
20kN	2.04tf	40	105	65	35	20	M18×1.5	85	8-Ø9	77	50	25	3	1	–
50kN	5.1tf	50	120	74	40	26	M24×1.5	95	8-Ø11	86	50	25	4	1	–
100kN	10.2tf	65	160	100	60	40	M36×2	130	8-Ø18	108.5	55	30	5	1	–
200kN	20.4tf	80	220	140	80	55	M50×2	180	8-Ø26	140.5	55	30	5	1	2-M8
500kN	51tf	100	330	200	135	90	M85×2	265	8-Ø33	203.5	70	40	7	2	4-M10
1000kN	102tf	140	460	280	190	115	M110×3	370	16-Ø33	270.0	70	40	7	2	4-M10

Tension/Compression Load Cell

TU-MBR(T)□□N-G3

Ultra Compact, Safe overload of 500% (2/5/10/20N)

Optional Load Button



Applications

Tension measurement, and
In-line load management

Mounting Method

Female scew to mount
(2 x M3)

Robot Cable | TEDS (Embeded in the body) | RoHS (10 substances)

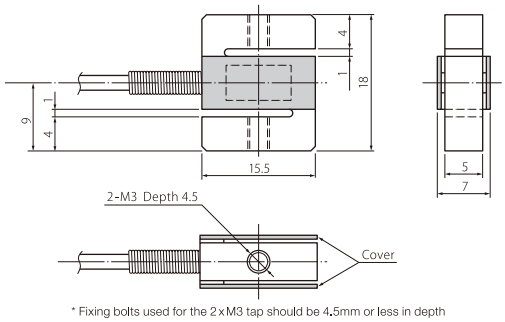
Specifications

Line up	TU-MBR(T) 2N-G3	TU-MBR(T) 5N-G3	TU-MBR(T) 10N-G3	TU-MBR(T) 20N-G3	TU-MBR(T) 50N-G3	TU-MBR(T) 100N-G3	TU-MBR(T) 200N-G3
Rated Capacity (R.C.)	2N	5N	10N	20N	50N	100N	200N
Natural Frequency	1.47kHz	2.45kHz	2.81kHz	2.92kHz	2.92kHz	(TBA)	
Weight	5g						
Safe overload rating	500% R.C.				150% R.C.		
Rated Output (R.O.)	Approx. 0.4mV/V				Approx. 1mV/V		
Linearity	0.1% R.O.						
Hysterisis	0.1% R.O.						
Repeatability	0.1% R.O.						
Zero Balance	±20% R.O.						
Safe Excitation Voltage	5V						
Input Terminal Resistance	350Ω ±5%						
Output Terminal Resistance	350Ω ±5%						
Insulation Resistance	1000MΩ or more (DC50V)						
Compensated Temperature Range	−10°C to 60°C						
Permissible Temperature Range	−20 to 70°C						
Temperature Effect on Zero Balance	±1% R.O. / 10°C						
Temperature Effect on Output	±1% R.C. / 10°C						
Cable	ϕ2, 4-core shielded robot cable for 1m direct connection (to built-in TEDS part), ϕ3, 6-core cable lead about 170mm from built-in TEDS part						
Mounting Method	Screw hole*						
Body Material	Aluminum					Stainless Steel	
Included Accessories	Anti-rotating Gig						
Optional Accessories	Load Button, Rod-end Bearing						

Dimensional drawings

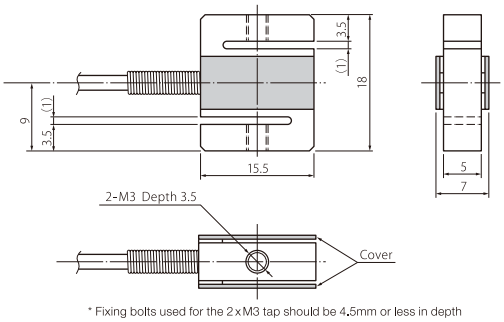
(Units: mm)

2N, 5N, 10N, 20N



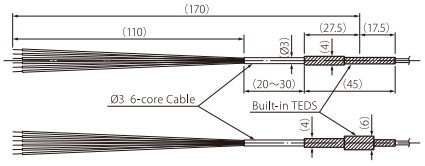
* Fixing bolts used for the 2 x M3 tap should be 4.5mm or less in depth

50N, 100N, 200N



* Fixing bolts used for the 2 x M3 tap should be 4.5mm or less in depth

Shield robot cable (common)



* Fixing bolts used for the 2-M3 should be 4.5mm or less in depth. If more than 4.5mm is used, it may push up the sensing section of the unit and cause damage
* When installing the unit, make sure that no excessive force is applied to the base of the cable. Otherwise, this may cause measurement error or damage.

Also see follwing pages for optional/included accessories:
Page 36 for optional Base Plate
Page 37 for optional Rod-end Bearing
Page 38 for optional Load Button and included Anti-rotating Jig.

Tension/Compression Load Cell

TU-MXR2(T)□□N-G3

Compact and low-capacity

Applications

Load measuerment for test equipment and manufacturing robot.

Mounting Method

M3 or M4 female screw to mount Proofed for tension/compression loading.

TEDS (Embeded in the cable-end)

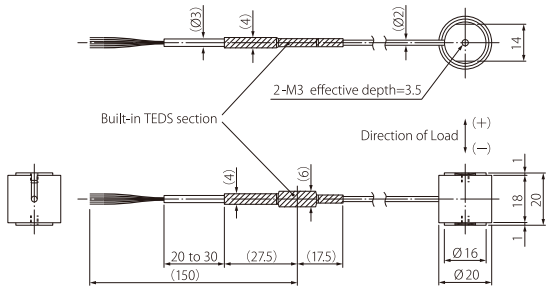
RoHS (10 substances)

Specifications

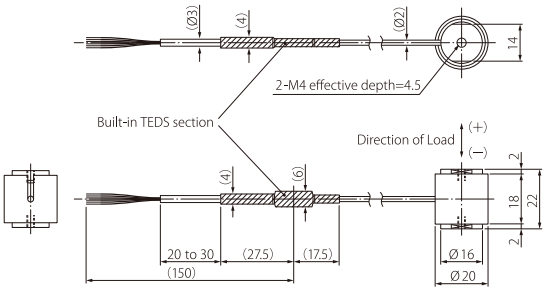
Line up	TU-MXR2(T) 10N-G3	TU-MXR2(T) 20N-G3	TU-MXR2(T) 50N-G3	TU-MXR2(T) 100N-G3	TU-MXR2(T) 200N-G3	TU-MXR2(T) 500N-G3
Rated Capacity (R.C.)	10N	20N	50N	100N	200N	500N
Natural Frequency	2.2kHz	3.0kHz	5.2kHz	8.0kHz	6.6kHz	(TBA)
Weight	9g	9g	10g	10g	21g	24g
Safe overload rating	120% R.C.					
Rated Output (R.O.)	Approx. 1.5mV/V ±30%					
Linearity	0.1% R.O.					
Hysterisis	0.1% R.O.					
Repeatability	0.1% R.O.					
Safe Excitation Voltage	8V					
Input Terminal Resistance	350Ω ±2%					
Output Terminal Resistance	350Ω ±2%					
Insulation Resistance	1000MΩ or more (50V DC)					
Compensated Temperature Range	–10°C to 45°C					
Permissible Temperature Range	–20 to 60°C					
Temperature Effect on Zero Balance	0.5% R.O./10°C					
Temperature Effect on Output	0.5% R.C. / 10°C					
Cable	Φ2, 4-core shielded cable between this unit and TEDS, 3m direct connection with bare lead wires, Φ3, 6-core shielded cable between TEDS and lead (approx. 15cm)					
Mounting Method	M3 Screw Hole					M4 Screw Hole
Body Material	Aluminum					

Dimensional drawings

(Units: mm)



TU-MXR2(T)10N to 200N-G3

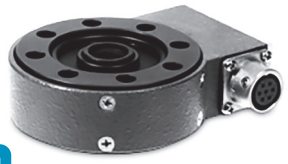


TU-MXR2(T)500N-G3

Tension/Compression Load Cell

TU-NR-C□□KN-G

Shear beam · Center hole type



Center Hole
Ideal for load managementl of injection molding machines and wafer polishing machines.

Sleek Design
Space saving. Easy install to the existing machines.

Convertible
Calibrated with actual load on both compression and tension.

Mounting Method
Bolt mount

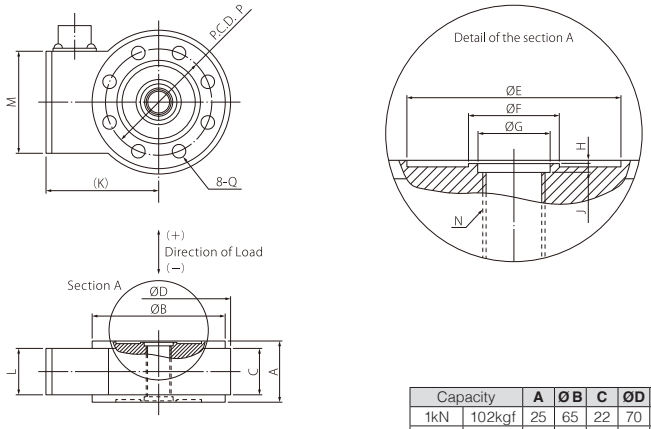
RoHS
(10 substances)

Specifications

Line up	TU-NR-C 1KN-G	TU-NR-C 2KN-G	TU-NR-C 5KN-G	TU-NR-C 10KN-G	TU-NR-C 20KN-G	TU-NR-C 50KN-G	TU-NR-C 100KN-G	TU-NR-C 200KN-G
Rated Capacity (R.C.)	1kN	2kN	5kN	10kN	20kN	50kN	100kN	200kN
Natural Frequency	6.5kHz	8kHz	11kHz	16kHz	21kHz	18kHz	16kHz	12kHz
Weight	0.6kg	0.6kg	0.6kg	0.6kg	0.7kg	1.1kg	2.2kg	6kg
Safe overload rating	150% R.C.							
Rated Output (R.O.)	0.75mV/V ±1%	1mV/V ±1%	1.5mV/V ±1%					
Linearity	0.15% R.O.							
Hysterisis	0.15% R.O.							
Repeatability	0.1% R.O.							
Safe Excitation Voltage	20V (12V recommended)							
Input Terminal Resistance	350Ω ±1Ω							
Output Terminal Resistance	350Ω ±1Ω							
Insulation Resistance	1000MΩ or more (DC 50V)							
Compensated Temperature Range	−10°C to 60°C							
Permissible Temperature Range	−30 to 80°C							
Temperature Effect on Zero Balance	0.1% R.O./10°C		0.05% R.O./10°C					
Temperature Effect on Output	0.1% R.C./10°C							
Cable	Φ8, 4-core shielded, 5m cable with bare lead wires on one end, and PRC03-12A10-7M on another end							
Mounting Method	Bolt Hole							
Body Material	Alloy Tool Steel							
Remarks	PRC03-21A10-7F (Main unit connector)							

Dimensional drawings

(Units: mm)

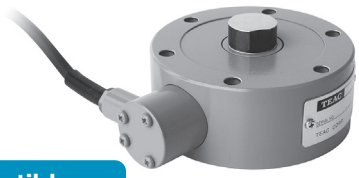


Capacity		A	ØB	C	ØD	ØE	ØF	ØG	H	J	K	L	M	N	ØP	ØQ
1kN	102kgf	25	65	22	70	41	18	14	0.5	2	55	22	50	M12 x 1	52	6.5
2kN	204kgf	25	65	22	70	41	18	14	0.5	2	55	22	50	M12 x 1	52	6.5
5kN	510kgf	25	65	22	70	41	18	14	0.5	2	55	22	50	M12 x 1	52	6.5
10kN	1.02tf	25	65	22	70	41	18	14	0.5	2	55	22	50	M12 x 1	52	6.5
20kN	2.04tf	30	65	22	70	41	18	14	0.5	2	55	22	50	M12 x 1	52	6.5
50kN	5.1tf	30	88	27	92	60	30	22	1	2	64	22	50	M20 x 1.5	74	9
100kN	10.2tf	34	117	31	121	82	46	34	1	2	81	22	50	M32 x 2	100	11
200kN	20.4tf	50	–	–	166	116	60	44	1	2	117	40	70	M40 x 2	142	17

Tension/Compression Load Cell

TU-PGRH□□N/KN-G

High precision, Sealed structure, High stability



Benefit
Easy to install on the existing facilities/systems.

Stability
High-impedance circuitry minimizes temperature drift due to self-heating.

Mounting Method
Bolt mount
(Bolt size varies depend on capacity)

Convertible
Can be used as a compression type load cell by using included load button TF-LB.

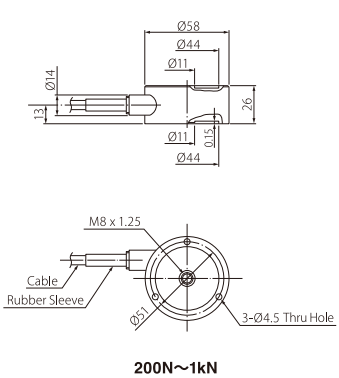
RoHS
(10 substances)

Specifications

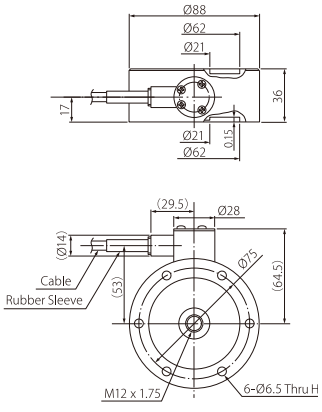
Line up	TU-PGRH 200N-G	TU-PGRH 500N-G	TU-PGRH 1KN-G	TU-PGRH 2KN-G	TU-PGRH 3KN-G	TU-PGRH 5KN-G
Rated Capacity (R.C.)	200N	500N	1kN	2kN	3kN	5kN
Natural Frequency	1kHz	1.6kHz	2.2kHz	2.1kHz	(TBA)	3.4kHz
Weight	0.4kg	0.4kg	0.4kg	1.3kg	1.3kg	1.3kg
Safe overload rating	150% R.C.					
Rated Output (R.O.)	2mV/V ±0.3%					
Linearity	0.015% R.O.					
Hysterisis	0.02% R.O.					
Repeatability	0.015% R.O.					
Safe Excitation Voltage	10V					
Input Terminal Resistance	1050Ω ±10Ω					
Output Terminal Resistance	1050Ω ±10Ω					
Insulation Resistance	1000MΩ or more (DC 50V)					
Compensated Temperature Range	−10°C to 60°C					
Permissible Temperature Range	−30 to 80°C					
Temperature Effect on Zero Balance	0.02% R.O. / 10°C					
Temperature Effect on Output	0.025% R.C. / 10°C					
Cable	Φ6, 4-core shielded, 5m direct connection cable with bare lead wires					
Mounting Method	Bolt Hole					
Body Material	Steel/Stainless Steel (coated surface)					
Included Accessories	Load Button					

Dimensional drawings

(Units: mm)



200N～1kN



2kN～5kN

Tension/Compression Load Cell

TU-PGRS□□N/KN-G

High precision, Sealed structure, High stability

Stability

High-impedance circuitry minimizes temperature drift due to self-heating.

Mounting Method

Bolt mount
(Bolt size varies depend on capacity)

Convertible

Can be used as a compression type load cell by using included load button TF-LB.

RoHS
(10 substances)

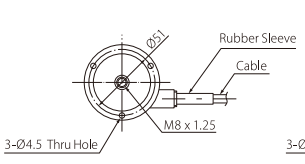
Specifications

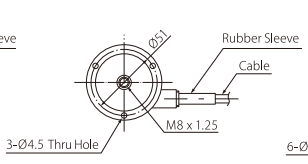
Line up	TU-PGRS 100N-G	TU-PGRS 200N-G	TU-PGRS 500N-G	TU-PGRS 1KN-G	TU-PGRS 2KN-G	TU-PGRS 3KN-G	TU-PGRS 5KN-G	TU-PGRS 10KN-G	TU-PGRS 20KN-G
Rated Capacity (R.C.)	100N	200N	500N	1kN	2kN	3kN	5kN	10kN	20kN
Natural Frequency	1.1kHz	1.5kHz	4.3kHz	5.4kHz	3.4kHz	4.4kHz	6.5kHz	3.9kHz	5.4kHz
Weight	0.15kg	0.15kg	0.15kg	0.15kg	0.41kg	0.41kg	0.41kg	2.2kg	2.2kg
Safe overload rating	150% R.C.								
Rated Output (R.O.)	2mV/V ±0.3%								
Linearity	0.03% R.O.								
Hysterisis	0.03% R.O.								
Repeatability	0.02% R.O.								
Safe Excitation Voltage	15V		20V						
Input Terminal Resistance	1050Ω ±10Ω								
Output Terminal Resistance	1050Ω ±10Ω								
Insulation Resistance	1000MΩ or more (DC 50V)								
Compensated Temperature Range	–10°C to 60°C								
Permissible Temperature Range	–30 to 80°C								
Temperature Effect on Zero Balance	0.025% R.O. / 10°C								
Temperature Effect on Output	0.03% R.C. / 10°C								
Cable	Φ6, 4-core shielded, 5m direct connection cable with bare lead wires								Φ8, 4-core shielded, 5m direct connection cable with bare lead wires
Mounting Method	Bolt Holes								
Body Material	Aluminum (coated surface)								Steel (coated surface)
Included Accessories	Load Button								

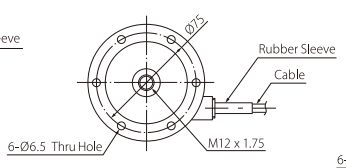
Dimensional drawings

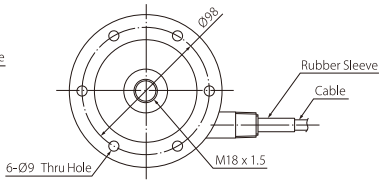
(Units: mm)

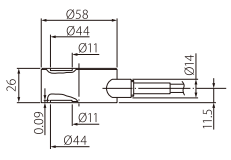
Also see follwing pages for optional/included accessories:
Page 36 for optional Head Plate and Base Plate
Page 37 for optional Rod-end Bearing and Tension Adapter
Page 38 for included Load Button



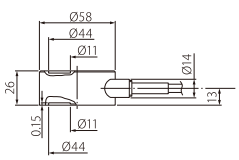




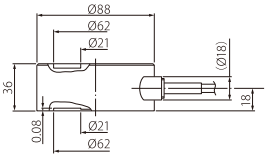




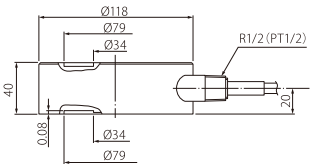
500N, 1kN



100N, 200N



2kN, 5kN

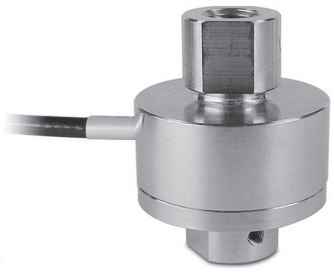


10kN, 20kN

Tension/Compression Load Cell

TU-QR(T)□□N/KN-G3

Compact, & lightweight



CE UK CA

Applications

Ideal for test equipment and installation to manufactuing machines.

Mounting Method

M3 female screw mount on both ends.

Robot Cable | TEDS (Embeded in the body) | RoHS (10 substances)

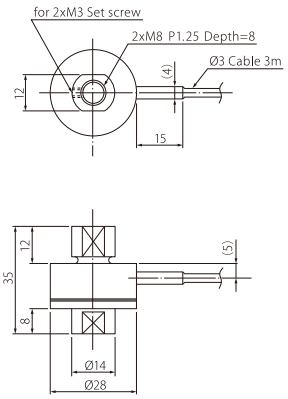
Specifications

Line up	TU-QR(T) 50N-G3	TU-QR(T) 100N-G3	TU-QR(T) 200N-G3	TU-QR(T) 500N-G3	TU-QR(T) 1KN-G3	TU-QR(T) 2KN-G3
Rated Capacity (R.C.)	50N	100N	200N	500N	1kN	2kN
Natural Frequency	2.7kHz	4.3kHz	5.8kHz	7.3kHz	10.0kHz	14.0kHz
Weight	66.9g	67.6g	68.2g	69g	70g	71.9g
Safe overload rating	150% R.C.					
Rated Output (R.O.)	0.5mV/V or higher					
Linearity	0.5% R.O.					
Hysterisis	0.5% R.O.					
Repeatability	0.3% R.O.					
Safe Excitation Voltage	5V					
Input Terminal Resistance	350Ω ±20Ω					
Output Terminal Resistance	350Ω ±20Ω					
Insulation Resistance	1000MΩ or more (50V DC)					
Compensated Temperature Range	0°C to 70°C					
Permissible Temperature Range	−10 to 70°C					
Temperature Effect on Zero Balance	0.5% R.O./10°C					
Temperature Effect on Output	0.5% R.C. / 10°C					
Cable	Φ3, 6-core shielded, 3m direct connection robot cable with bare lead wires					
Mounting Method	M3 Screw Hole					
Body Material	Stainless Steel					

Dimensional drawings

(Units: mm)

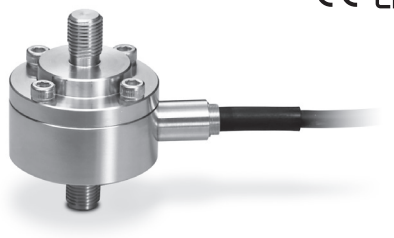
Also see page 49 for optional Rod-end Bearing.



Tension Load Cell

TT-FR(T)□□N/KN-G6

Compuct & Lightweight



Benefit

Easy to install on the existing facilities/systems.

Robot Cable | TEDS (Embeded in the body) | RoHS (10 substances)

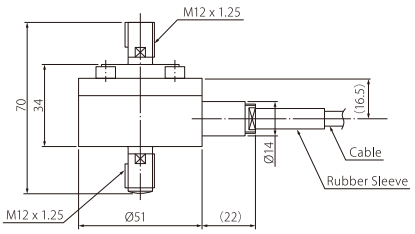
Specifications

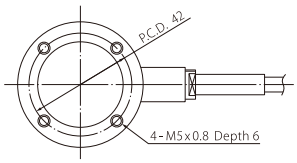
Line up	TT-FR(T)500N-G6	TT-FR(T)1KN-G6	TT-FR(T)2KN-G6	TT-FR(T)5KN-G6	TT-FR(T)10KN-G6
Rated Capacity (R.C.)	500N	1kN	2kN	5kN	10kN
Natural Frequency	3.6kHz	5kHz	6kHz	7kHz	10kHz
Weight	0.24kg	0.24kg	0.24kg	0.24kg	0.24kg
Safe overload rating	150% R.C.				
Rated Output (R.O.)	2mV/V ±0.5%				
Linearity	0.15% R.O.				
Hysterisis	0.1% R.O.				
Repeatability	0.05% R.O.				
Safe Excitation Voltage	15V				
Input Terminal Resistance	425Ω ±50Ω				
Output Terminal Resistance	350Ω ±5Ω				
Insulation Resistance	1000MΩ (DC 50V)				
Compensated Temperature Range	–10°C to 70°C				
Permissible Temperature Range	–10°C to 70°C				
Temperature Effect on Zero Balance	0.05% R.O. / 10°C				
Temperature Effect on Output	0.05% R.C. / 10°C				
Cable	Φ6, 6-core shielded, 5m direct connection robot cable with bare lead wires				
Mounting Method	Male screw (M12)				
Body Material	Stainless Steel				

Dimensional drawings

(Units: mm)

Also see follwing pages for optional accessories:
Page 49 for optional Rod-end Bearing
Page 50 for optional Rotate Attachement





Compression Load Cell

TC-WLD(T)□□KN-G

Load cell for spot welding pressure control

Built-to-Order

Custom design capacity is available as well as 10kN/20kN models

TEDS (Embeded in the load cell)

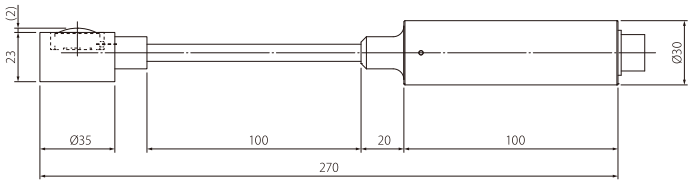
RoHS (10 substances)

Specifications

Line up	TC-WLD(T)10KN-G	TC-WLD(T)20KN-G
Rated Capacity (R.C.)	10kN	20kN
Safe overload rating	120% R.C.	
Rated Output (R.O.)	1mV/V ±50%	1.5mV/V ±50%
Linearity	1.0% R.O	2.0% R.O
Hysterisis	1% R.O.	
Repeatability	1% R.O.	
Safe Excitation Voltage	7V	
Input Terminal Resistance	350Ω ±5%	
Output Terminal Resistance	350Ω ±5%	
Insulation Resistance	1000MΩ or more (50V DC)	
Compensated Temperature Range	0°C to 50°C	
Permissible Temperature Range	−10°C to 60°C	
Temperature Effect on Zero Balance	0.5% R.O. / 10°C	
Temperature Effect on Output	0.5% R.C. / 10°C	
Connector	PRC03-21A10-7F	
Cable	Φ6 6-core shielded cable 1m with plug connector at both ends Connector:PRC03-12A10-7M	

Dimensional drawings

(Units: mm)

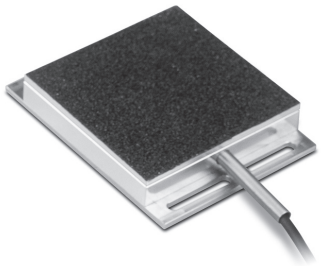


Compression Load Cell

TC-PF2(T)□□KN-G

Load cell for automotive pedal force measurement.

Built-to-Order



Robot Cable | TEDS | RoHS

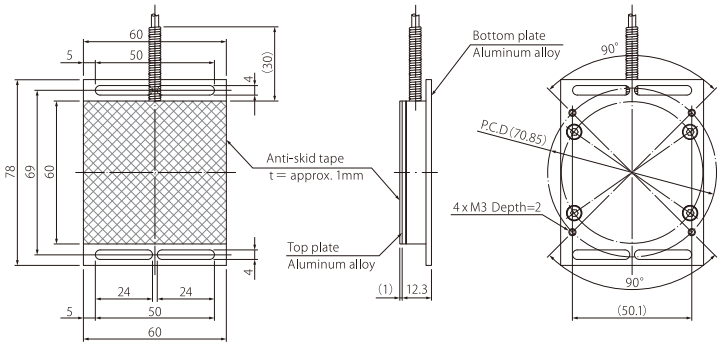
(Embeded in the connector) (10 substances)

Specifications

Model	TC-PF2(T)500N-G	TC-PF2(T)1KN-G	TC-PF2(T)2KN-G
Rated Capacity (R.C.)	500N	1kN	2kN
Safe overload rating	150% R.C.		
Rated Output (R.O.)	approx. 1mV/V (2000 x 10-6 strain)		
Linearity	0.3% R.O.		
Hysterisis	0.3% R.O.		
Repeatability	0.2% R.O.		
Safe Excitation Voltage	AC. DC. 8V		
Input Terminal Resistance	700Ω ±5%		
Output Terminal Resistance	700Ω ±5%		
Insulation Resistance	1000MΩ or more (50V DC)		
Compensated Temperature Range	0°C to 50°C (no condensation)		
Permissible Temperature Range	−10°C to 70°C (no condensation)		
Temperature Effect on Zero Balance	0.5% R.O. / 10°C		
Temperature Effect on Output	0.5% R.C. / 10°C		
TEDS	Built-in NDI7J connector (PRC03-12A-10-7M)		
Cable	Φ3mm, 6-core robot cable, 3m direct connection with NDI7P on the tip		
Included Accessories	Velcro tape x 2 pcs.		

Dimensional drawings

(Units: mm)



Notice: Please use appropriate jigs that keeps the bottom plate of the TC-PF2 and a pedal contact each other evenly, and fix to the TC-PF2 with four M3 screws. This product is NOT water-resistant.

Floor Scale

TL series

Low-floor load cell floor scales

Robust & Stable

Stainless steel cabinet. Stable operation even after long-term use.

Durable

Durable beam type load cell is used in the load detection section.

Various Type

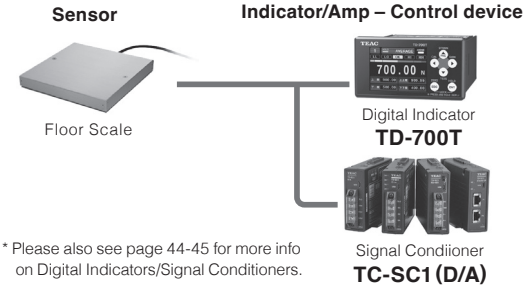
Available in standard, thin, ultra-compact and water-proof type.

Custom Design

Custom design model is available up on request.

RoHS
(10 substances)

System Configuration



* Please also see page 44-45 for more info on Digital Indicators/Signal Conditioners.

Specifications

Type		Ultra-compact			Thin									Standard										
Line up (Rated Capacity)		TL-LF			TL-PM12			TL-PM18			TL-PM21			TL-PS12			TL-PS18			TL-PS21				
		0.6 kg	1 kg	3 kg	10 kg	20 kg	50 kg	10 kg	20 kg	50 kg	10 kg	20 kg	50 kg	10 kg	20 kg	50 kg	10 kg	20 kg	50 kg	10 kg	20 kg	50 kg	100 kg	200 kg
Weight		0.4kg			0.7kg			1.4kg			1.7kg			0.8kg			2.0kg			2.0kg				
Linearity		0.03%			0.25%			0.25%			0.25%			0.10%			0.10%			0.10%				
Safe Overload Rating		150%			150%			150%			150%			150%			150%			150%				
Compensated Temperature Range		–10 to 40°C			–10 to 50°C			–10 to 50°C			–10 to 50°C			–10 to 50°C			–10 to 50°C			–10 to 50°C				
Dim	A / B / C	80 / 80 / 70			120 / 120 /110			180 / 180 / 170			210 / 210 / 200			120 / 120 / 110			180 / 180 / 170			210 / 210 / 200				
	E / F	– / –			– / –			– / –			– / –			80 / 56			120 / 150			180 / 120				
	H1 /H2	31 / 31			19 / 17			19 / 16			19 / 16			25 / 21			25 / 21			28 / 24				

Type		Standard																						
Line up (Rated Capacity)		TL-PS25							TL-PS28							TL-PS33							TL-PS42						
		10 kg	20 kg	50 kg	100 kg	200 kg	300 kg	400 kg	10 kg	20 kg	50 kg	100 kg	200 kg	300 kg	400 kg	20 kg	50 kg	100 kg	200 kg	300 kg	400 kg	50 kg	100 kg	200 kg	300 kg	400 kg
Weight		3.8kg							4.5kg							6,2kg						11.1kg				
Linearity		0.10%							0.10%							0.10%						0.10%				
Safe Overload Rating		150%							150%							150%						150%				
Compensated Temperature Range		–10 to 50°C							–10 to 50°C							–10 to 50°C						–10 to 50°C				
Dim	A / B / C	250 / 250 / 240							280 / 280 / 270							335 / 335 / 325						420 / 420 / 410				
	E / F	180 / 220							210 / 240							270 / 300						350 / 380				
	H1 /H2	28 / 24							28 / 24							28 / 24						32 / 27				

Type		Standard								Water-proof (IP53 equivalent)														
Line up (Rated Capacity)		TL-PS50				TL-PS60				TL-PW22					TL-PW34						TL-PW43				
		100 kg	200 kg	300 kg	400 kg	100 kg	200 kg	300 kg	400 kg	10 kg	20 kg	50 kg	100 kg	200 kg	20 kg	50 kg	100 kg	200 kg	300 kg	400 kg	50 kg	100 kg	200 kg	300 kg	400 kg
Weight		16.8kg				18.2kg				3.4kg					7.4kg						12.9kg				
Linearity		0.10%				0.10%				0.10%					0.10%						0.10%				
Safe Overload Rating		150%				150%				150%					150%						150%				
Compensated Temperature Range		–10 to 50°C				–10 to 50°C				–10 to 50°C					–10 to 50°C						–10 to 50°C				
Dim	A / B / C	500 / 500 / 490				600 / 600 / 490				220 / 220 / 210					345 / 345 / 335						430 / 430 / 420				
	E / F	340 / 440				340 / 440				– / –					– / –						– / –				
	H1 /H2	33 / 28				33 / 27				30 / 24					30 / 24						35 / 27				

Type		Water-proof (IP53 equivalent)									
Line up (Rated Capacity)		TL-PW53				TL-PW60					
		100 kg	200 kg	300 kg	400 kg	100 kg	200 kg	300 kg	400 kg	300 kg	
Weight		21.9kg				23.0kg					
Linearity		0.10%				0.10%					
Safe Overload Rating		150%				150%					
Compensated Temperature Range		–10 to 50°C				–10 to 50°C					
Dim	A / B / C	530 / 530 / 520				600 / 600 / 590					
	E / F	– / –				– / –					
	H1 /H2	35 / 30				35 / 28					

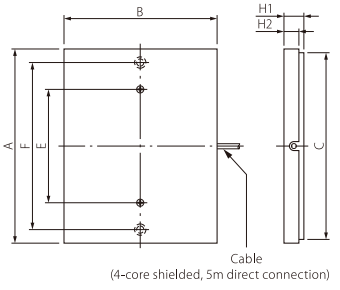
Mounting method

- There are two methods of mounting: fixing the bottom plate to the floor surface or fitting it into a frame.

Note

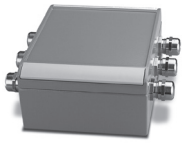
- Keep the installation surface of the platform level.
- If the installation surface is tilted, it shows a different value from the actual load value.
- This product cannot be used for commercial transactions or acts of certification as stipulated in the "Measurement Law".
- Please contact your dealer for REACH regulations.

Dimensional drawings (Units: mm)



Junction Box for Expansion

BX-110A



Up to 4 units of load cells can be connected in parallel

Parallel Connection

Expands up to 4 load cell outputs parallelly.

Wapter/Dust-proof

Cable GND complies IP-68, as Main unit does IP-65.

Improved Accuracy

Output sensitivity compensasion trimmer for connected load cell.

RoHS
(10 substances)

Junction Box for Extension

BX-120

Extends 4-lead Load cell cable

Wapter/Dust-proof

Cable GND complies IP-68, as Main unit does IP-65.

Weather resistance

Die-cast aluminum case to resist climate and sea water.

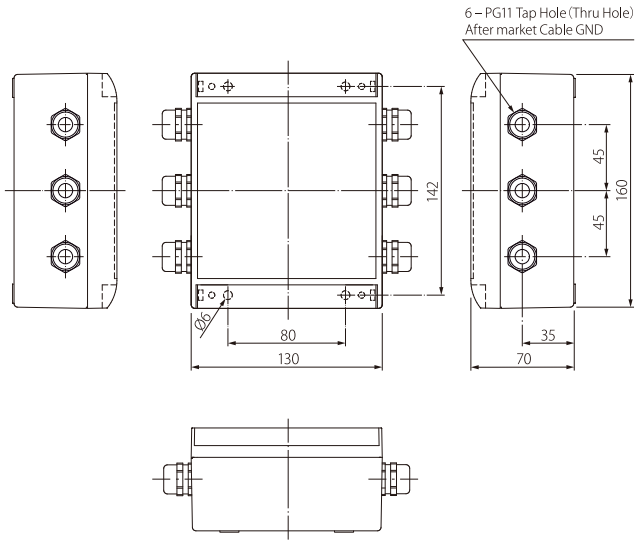
Specifications

Type	Junction Box for Expansion	Junction Box for Extension
Line up	**BX-110A**	**BX-120**
Number of expandble Load cell	max. 4 connectors (4 Line): 5 pole	—
Output Connector to Measurement Device	7 pole 1 set	5 pole
Cable GND	Compatible Cable diameter Ø10mm	Compatible Cable diameter Ø5 to 11mm
Calbe Connector Diameter	max. 2.5mm²	max. 2.5mm²
Load cell sensitivity range	0.6 ~ 3.0m/V	
Dimensions (W×H×D)	approx. 160 × 130 × 70 mm	approx. 99.5 × 45 × 69.6 mm
Weight	approx. 1.7kg	approx. 340g
Case Material	Aluminum Die-cast	Aluminum Die-cast

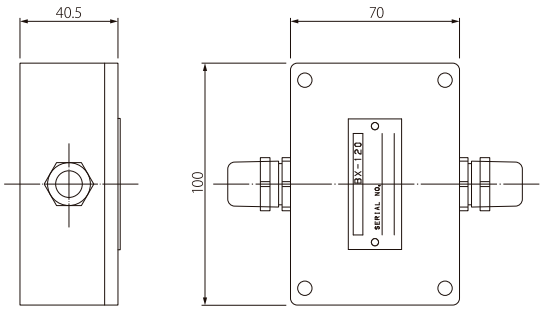
Dimensional drawings

(Units: mm)

BX-110A



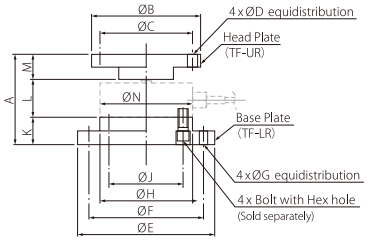
BX-120



Accessories

Head Plate / Base Plate

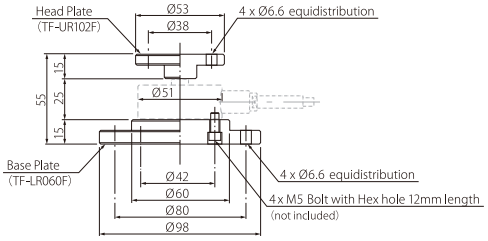
for TC-AR



Model	Head Plate (Weight)*	Base Plate (Weight)*	HEX hole Bolt	A	ØB	ØC	ØD	ØE	ØF	ØG	ØH	ØJ	K	L	M	ØN
TC-AR(T)-G6 20kN	TF-UR102F (0.13kg)	TF-LR060F (0.6kg)	M5×12	55	53	38	6.6	98	80	6.6	60	42	15	25	15	60
TC-AR(T)-G6 30kN			M5×12	55	53	38	6.6	98	80	6.6	60	42	15	25	15	60
TC-AR(T)-G8 50kN	TF-UR050F (1.53kg)	TF-LR101F (2.9kg)	M8×25	98	118	100	11	148	124	9	100	80	30	40	28	100
TC-AR(T)-G8 100kN			M8×25	98	118	100	11	148	124	9	100	80	30	40	28	100
TC-AR(T)-G8 200kN		TF-LR121F (5.8kg)	M8×30	113	118	100	11	168	144	14	120	90	40	45	28	120

* Weights are approximate.

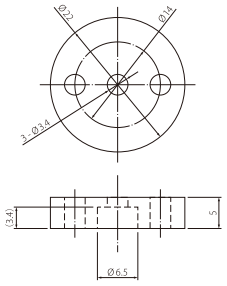
for TC-FR



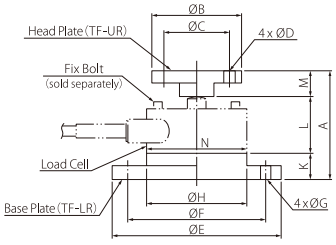
Model	Head Plate (Weight)*	Base Plate (Weight)*	HEX hole Bolt
TC-FR(T)-G6 500N	TF-UR102F (0.13kg)	TF-LR060F (0.6kg)	M5×12
TC-FR(T)-G6 1kN			
TC-FR(T)-G6 2kN			
TC-FR(T)-G6 5kN			
TC-FR(T)-G6 10kN			
TC-FR(T)-G6 20kN			

* Weights are approximate.

for TU-MBR Base Plate



for TU-PGRS



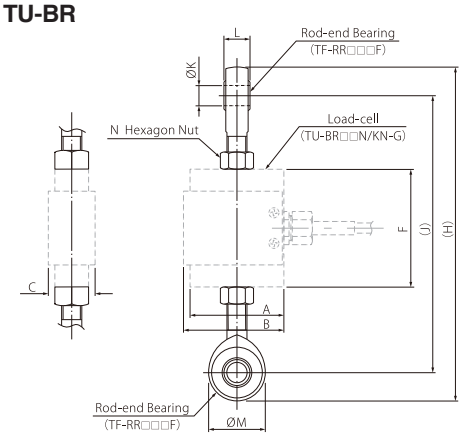
Model		Head Plate (Weight)*	Base Plate (Weight)*	HEX hole Bolt	A	ØB	ØC	ØD	ØE	ØF	ØG	ØH	K	L	M	ØN
	Rated Capacity															
TU-PGRS-G	100N, 200N, 500N, 1KN	TF-UR102F (0.13kg)	TF-LR058F (0.62kg)	3-M4	63	53	38	6.6	98	80	6.6	58	15	33	15	58
TU-PGRH-G	200N, 500N, 1KN															
TU-PGRS-G	2KN, 3KN, 5KN	TF-UR002F (0.86kg)	TF-LR090F (2.45kg)	6-M6	96	98	80	11	136	112	11	88	25	47	24	88
TU-PGRH-G	2KN, 3KN, 5KN															
TU-PGRS-G	10KN, 20KN		TF-LR118F (4.7kg)	6-M8	109	98	80	11	178	148	14	118	30	55	24	118

* Weights are approximate.

Accessories

Rod-end Bearing

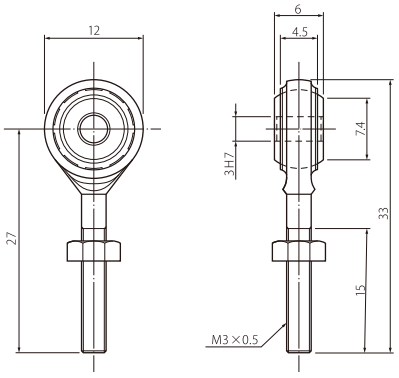
for TU-BR



Load cell	Rod-end Bearing	H	J	ØK	L	ØM	N
TU-BR200N-G	TF-RR006F	126	108	6H7	9	18	M6×1.0
TU-BR500N-G							
TU-BR1KN-G							
TU-BR2KN-G	TF-RR012F	199	165	12H7	16	34	M12×1.75
TU-BR5KN-G							
TU-BR10KN-G							
TU-BR20KN-G	TF-RR016F	229	190	16H7	19	39	M16×2.0

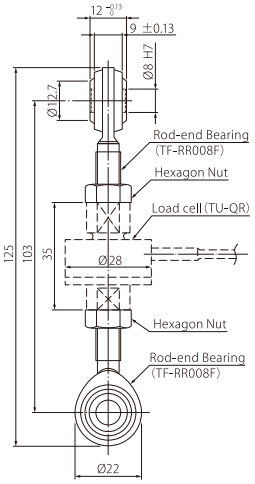
* Hex nuts are not ncluded.

for TU-MBR



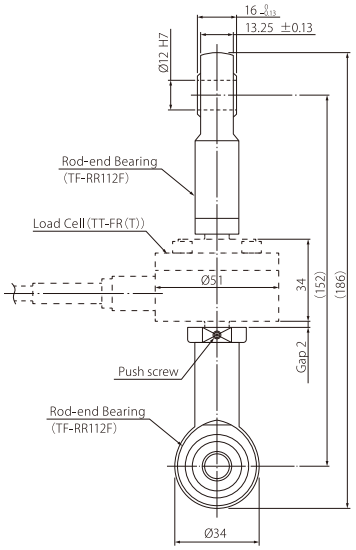
* Hex nuts are not ncluded.

for TU-QR



* Hex nuts are not ncluded.

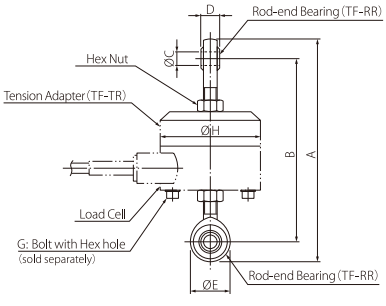
for TT-FR



* Hex nuts are not ncluded.

Rod-end Bearing, Tension Adapter

for TU-PGRS



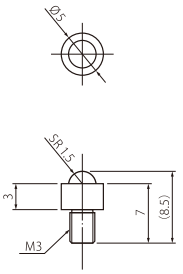
* Hex nuts are not ncluded.

Model	Rated Capacity	Rod-end Bearing (Weight)*	Tension Adapter (Weight)*	A	B	ØC	D	ØE	F	G	ØH
TU-PGRS-G	100N, 200N, 500N, 1kN	TF-RR008F (0.15kg)	TF-TR058F (0.36kg)	130	107	8H7	11	23	M8×1.25	3-M4×35	58
TU-PGRH-G	200N, 500N, 1kN										
TU-PGRS-G	2KN, 3KN, 5KN	TF-RR012F (0.15kg)	TF-TR088F (1.9kg)	203	169	12H7	16	34	M12×1.75	6-M6×50	88
TU-PGRH-G	2KN, 3KN, 5KN										

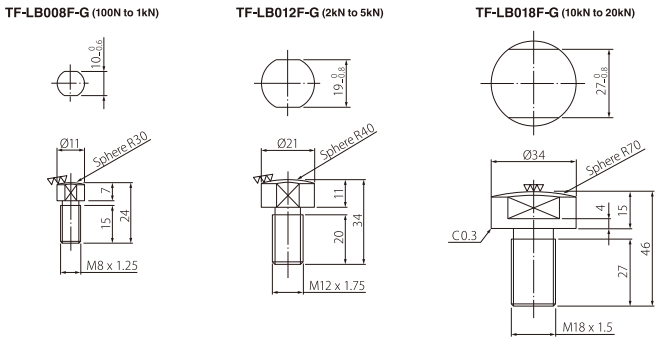
Accessories

Load Button

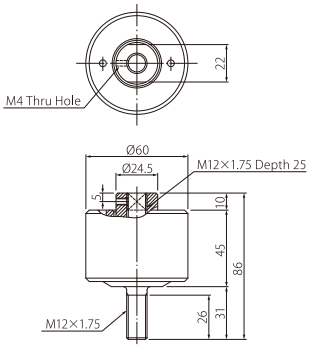
for TU-MBR



for TU-PGRS (included Accessory)

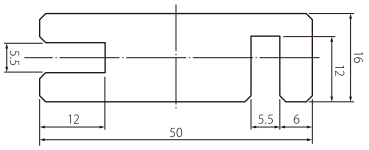


Rotate Attachment

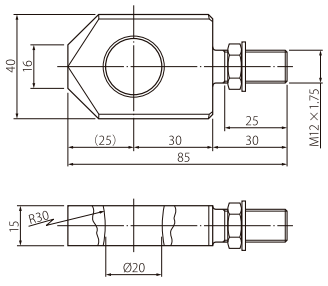


Fixing Jig for Anti-rotation

for TU-MBR (included Accessory)



Ring Hock



NOTE

Conversion Table for SI units

All units related to our products are expressed in SI units. (Except Floor Scale)
When using conventional units for your application, please refer to the conversion table below to select the rated capacity.

About force

Unit of force: kgf → N (Newton)

In SI units, force is expressed in newtons (N).
From the definition of force in the second law of motion in physics, which states that force is the product of mass and acceleration, the acceleration acting on the object is **a**, when the force **F** acting on an object of mass **m** can be expressed as

F = ma

Since the SI units of mass and acceleration are kg and m/s^2, respectively, the unit of force in SI basic units is kg・m/s^2.
In SI units, the unit for this force is defined as the newton (N), named after an accomplished physicist.
Conventionally, the "kg" unit, which is the same unit as mass, was used as the unit of force. In Japan, the use of "kg," which is the same unit as mass, as a unit of force has been problematic since about 20 years ago, and "kgf" has been used more and more in the engineering unit system. However, this indication is to distinguish it from "kg", which is the same unit as mass, and not SI, so the "kgf" unit will be switched to "N In SI, the "kgf" unit will be switched to "N". The relationship between the conventional unit (kgf) and the SI unit (N) is as follows using the standard acceleration of gravity (9.80665m/s^2), since the conventional unit is defined based on the acceleration of gravity working on the earth.

1kgf = 1kg × 9.80665m/s^2 = 9.80665N

Source: The New Measurement Law and the SI System – From the Gravity System of Units to the International System of Units (SI)
Published by the Committee for the Promotion of SI Units, etc., Ministry of International Trade and Industry of Japan (now Ministry of Economy, Trade and Industry), March 1999.

Conversion Table (SI units listed on our products ⇄ Conventional units)

Load cell

SI units (N)	gf / kgf / tf
0.5N	51gf
1N	102gf
2N	204gf
5N	510gf
10N	1.02kgf
20N	2.04kgf
50N	5.1kgf
100N	10.2kgf
200N	20.4kgf
500N	51kgf
1kN	102kgf
2kN	204kgf
5kN	510kgf
10kN	1.02tf
20kN	2.04tf
30kN	3.06tf
50kN	5.1tf
100kN	10.2tf
200kN	20.4tf
500kN	51tf
1000kN	102tf

Torque Meter

SI units (N·m)	kgf·cm / kgf·m / tgf·m
50mN·m	0.510kgf·cm
100mN·m	1.020kgf·cm
200mN·m	2.039kgf·cm
500mN·m	5.099kgf·cm
1N·m	10.20kgf·cm
2N·m	20.39kgf·cm
5N·m	50.99kgf·cm
10N·m	1.020kgf·m
20N·m	2.039kgf·m
50N·m	5.099kgf·m
100N·m	10.20kgf·m
200N·m	20.39kgf·m
500N·m	50.99kgf·m
1000N·m	102.0kgf·m
5000N·m	509.9kgf·m
10000N·m	1.020tf·m

Pressure Transducer

SI unit (Pa)	kgf/cm^2	psi
100kPa	1.020kgf/cm^2	14.50psi
200kPa	2.039kgf/cm^2	29.01psi
500kPa	5.099kgf/cm^2	72.52psi
1MPa	10.20kgf/cm^2	145.0psi
2MPa	20.39kgf/cm^2	290.1psi
5MPa	50.99kgf/cm^2	725.2psi
10MPa	102.0kgf/cm^2	1450psi
20MPa	203.9kgf/cm^2	2901psi
50MPa	509.9kgf/cm^2	7252psi
100MPa	1020kgf/cm^2	14504psi

Acceleration Transducer

SI unit (m/s^2)	Gal	G
10m/s^2	1,000Gal	1.020G
20m/s^2	2,000Gal	2.039G
50m/s^2	5,000Gal	5.099G
100m/s^2	10,000Gal	10.20G
200m/s^2	20,000Gal	20.39G
500m/s^2	50,000Gal	50.99G
1,000m/s^2	100,000Gal	102.0G
2,000m/s^2	200,000Gal	203.9G
5,000m/s^2	500,000Gal	509.9G
10,000m/s^2	1,000,000Gal	1,020G
20,000m/s^2	2,000,000Gal	2,039G
50,000m/s^2	5,000,000Gal	5,099G
100,000m/s^2	10,000,000Gal	10,200G

Units described on each product

Product Name	Units	Type of Products
Load cell	mN, N, kN, MN(1kgf=9.80665N)	Load converter (foce)
Floor Scale	mg, g, kg, t (Ton expressions are not allowed.)	Load converter (Weight)
Torque Meter	N·m, kN·m (1kgf/cm^2=98.0665kPa for Blood pressure)	Torque converter
Pressure Transducer	P, kP, MP, mmHg	Pressure converter
Acceleration Transducer	m/s^2 (1G=9.80665m/s^2)	Acceleration converter

Glossary of Terms

Definitions of transducer terms

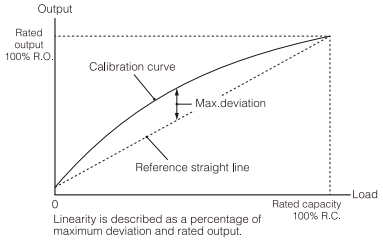
Rated capacit
The maximum capacity (load) that a load cell can measure while maintaining its specifications.

Allowable Overload
A load for which the load cell does not undergo a permanent change in its specifications for a load in excess of its rated capacity. If within the allowable overload, the load cell can be used again to meet specifications up to its rated capacity when the overload is removed. It is expressed as a percentage of the rated capacity.

Max. allowable overload
It is the critical load at which any further loading will cause structural damage.

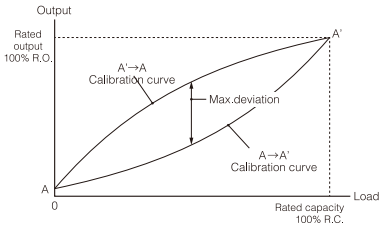
Rated output
It is the value obtained by subtracting the output at no load from the output when the rated capacity is loaded. It is expressed in terms of output (mV/V) per 1V of applied voltage, abbreviated as R.O.

Linearity (JIS B7602 complied)
The maximum deviation of the output under calibration load (calibration curve) from the straight line connecting the output under no load and the output under rated load (reference curve). However, it is measured only when the calibration load is increased, and described as a percentage of rated output.

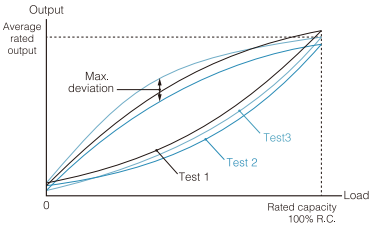


Linearity is described as a percentage of maximum deviation and rated output.

Hysteresis
The maximum difference between the output of the load cell when the load increases and when the load decreases during a load cycle from no load to the rated capacity. It is expressed as a percentage of the rated output.



Repeatability
The maximum difference when repeatedly loaded under the same load conditions and the same ambient conditions, expressed as a percentage of the average rated output over three cycles.



Allowable applied voltag
The maximum voltage that can be applied to the input terminal of a load cell to maintain its specifications for continuous use.

Input terminal resistance
Resistance between input terminals to be measured under no load and with output terminals open.

Output terminal resistance
Resistance between output terminals to be measured under no load and with output terminals open.

Insulation resistance
This is the DC resistance between the electrical circuit of the load cell and the load cell itself. Usually 50VDC is used for measurement.

Compensated temperature range
The temperature range over which the rated output and zero balance are compensated so as not to exceed the specifications.

Operating temperature
Temperature range in which the product can be used satisfying the specifications.

Allowable temperature range
A temperature range within which load cells can be used without permanent characteristic change (damage), although the specified specifications are not met.

Zero temperature effect
This is the change in output at no load when the ambient temperature of the load cell changes by 10°C. The change per 10°C is expressed as a percentage of the rated output. (ex. 0.5%R. O./10°C)

Temperature effect on output
This is the change in rated output when the ambient temperature of the load cell changes by 10°C. The change per 10°C is expressed as a percentage of the rated output. The in-house inspection standard is 25°C/4 hours → 50°C/4 hours → 25°C/4 hours.

Zero balance
Output at no load.

Other Definitions

Active gauge
A strain gauge attached to the part that produces strain.

SN ratio
Ratio between the specified output and noise (p-p value) at the set sensitivity. It is expressed in percentage or decibels.

Sensitivity
The ratio of output (voltage, current, indicated value) to strain input or vice versa under specified conditions.

Ground noise
The amount of noise an amplifier, indicator, or signal conditioner has.

Gauge bridge
A Wheatstone bridge circuit with a strain gauge as a constituent edge.

Gauge rate setting range
The range of strain gauge factor that can be set to obtain the same strain value at the same load regardless of the difference in the gauge factor of the strain gauge used.

Calibration strain
This is an electrical signal added to calibrate the measured value of an indicator, amplifier, etc. It is usually input in strain conversion.

Calibration Bridge
A bridge circuit that generates calibration strain.

Max. output
The maximum value of output that can be supplied to a specified load, satisfying the specifications. It is indicated in terms of voltage or current.

Output load resistance
Relationship between load and maximum output.

Switch box
This instrument is used to switch gauges and perform balancing when measuring strain at multiple points by switching a single strain measuring instrument.

Span
In an indicating instrument, it is the amount of strain shown in full scale. It is also sometimes called a range.

Dial bridge
In zero method measuring instruments, a balanced voltage generating bridge circuit with an indicator dial for strain reading.

Dummy gauge
A gauge used only as a resistance for the purpose of constructing a bridge. Also includes those used as temperature compensation to counteract changes in the amount of strain in an active gauge due to changes in temperature.

Equivalent noise
Noise (p-p value) at the specified output of the set sensitivity. Shown as strain converted to input.

Equivalent strain
The output voltage produced by the strain applied to the gauges that make up the bridge is converted to the strain of the gauges on one side that give the same output.

Strain input
This is the input of the strain meter shown in strain.

Load resistance
This resistor is capable of satisfying the specifications and loading.

Bridge power
The applied power source of the bridge circuit. Voltage or current (in the case of a constant-current power supply), DC or AC. In the case of AC, its frequency (carrier frequency) is also indicated.

Bridge box
This instrument is used to construct a Wheatstone bridge circuit in the vicinity of an active gauge.

Resolution
It is the smallest amount of strain change that an indicator or measuring instrument can detect or adjust.

Balance adjustment range
The range within which the resistance and capacitance deviations of the gauge bridge circuit can be corrected. The resistance adjustment range is shown as a percentage of the gauge resistance (enter the gauge resistance), and the capacitance adjustment range is shown as a capacitance value.

Serial number
Unique identification number of the load cell. It is written on the main unit.

Color Graphic Digital Indicator

TD-9000T

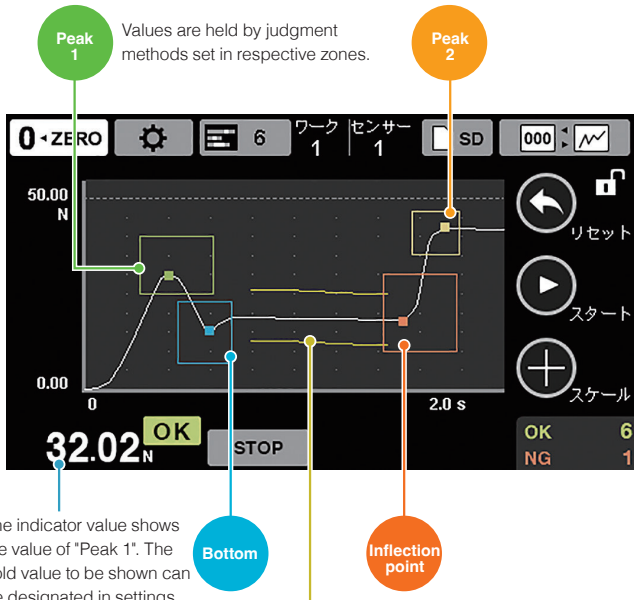
Standard model | CC-Link model | EtherNet/IP™ model

92×92mm
Panel opening size

High performance model with large LCD

Supporting two inputs, force sensor and displacement sensor, various comparison judgments function, and direct saving of waveform data onto large capacity internal memory.

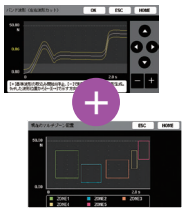
4.3" Color Touch Screen **Real Time Judgement**



TEDS | RoHS | 4.3" LCD | Touch Panel | 20,000 time/sec. | 24-bit | Load/Vary Inputs | Waveform | Static Strain | Interrupt Check | High/Low Limit Compare | Judgements | D/A OUT | RS-232C | Quadlingual

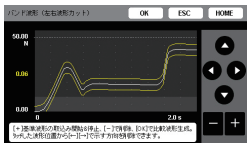
c UL us CE CC-Link EtherNet/IP

Combination judgment



Simultaneous judgment by combining band and multi-zone judgments. Even complicated waveforms can be judged in detail.

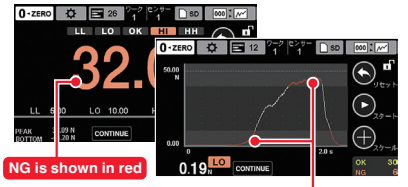
Band judgment



Band setting with saved waveform and measurement waveform

OK/NG judgment by comparing a measurement value with a reference curve having high and low ranges. The increase or decrease of the load to changes in time and displacement is judged by a series of flows.

Continuous judgment

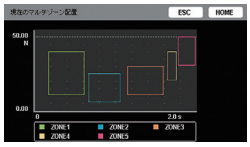


Continuous judgment is conducted when "CONTINUE" is the status displayed on the screen.
Support for 4 contacts of high high limit, high limit, low limit, and low low limit. OK/NG judgment in real time for the load value for a certain value.

Notification by beep sound in addition to the display

Multi-zone judgment

Selectable max. 5 zones



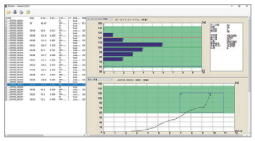
Zone switching from external input is also possible.

OK/NG judgment in a maximum of 5 zones for one process. Judgment in combination with various holds (constant comparison, sampling, peak, bottom, peak to peak, average value, maximum/ minimum and inflection point).

Dedicated offline data viewer

TD-View

TD-View is software that displays and statistically analyzes the data recorded on the SD/SDHC card on a personal computer. It shows its true ability in statistical process control. Displayable contents vary depending on hold mode and others. Not merely individual measurement data (Time-Load, Time-Displacement, Displacement-Load), but also trends and histograms of OK/NG judgment points for the entire list and statistically calculated values (Data, OK/NG Count, Average, Maximum, Minimum, Variance, S.D, Fluct., Cp) are displayed.



System Requirement
CPU: Gen2 Intel® Core™ i5 3.0GHz or faster
OS: Windows 10 or later
Memory: 4GB or more

PC Setting Software

TD Monitor for TD-9KT

Software is available to connect a PC to the TD-9000T (USB or D-Sub) to enable various settings, monitoring, and data storage on the PC.

Download software (Registration required)
https://loadcell.jp/products/indicator/td-9000t/download.html

Load Cell Signal Conditioner

TD-SC1

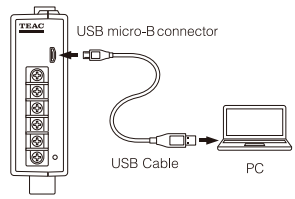
D/A model | RS-485 model | CC-Link model | EtherNet/IP™ model

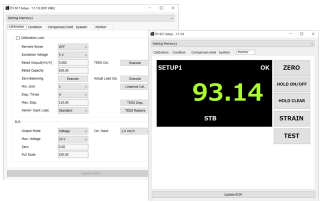
Slim and light-weight signal conditioner

Supporting high-speed sampling of 20,000 times/second, PC-based configuration via USB connection, selectable network, and TEDS calibration function.

Monitor/Setting from PC **DIN Rail Mounting**

Connection sample with PC





TEDS | RoHS | Plug-in | 20,000 time/sec. | D/A OUT | RS-485

Portable Digital Indicator

TD-01 Portable

On-site checking tool with versatility

Supporting various functions that equal to embeded systems, in hand-held size, allowing you to take measurements anytime anywhere, according to your purpose.

2.4” Color LCD **USB Bus Power / AA Batteries**

TEDS | RoHS | Color LCD | Waveform | Bar Meter | High/Low Limit Compare | Data Rec | Static Strain | Interrupt Check | D/A OUT | Dual I/O | 24-bit | AA Batteries | Long Time Operation | Bilingual

Weighs only 320g (incl. Batteries)

Digital Indicator

TD-700T

Standard model | RS-485 model | CC-Link model

Excellent model with compact and high functionality

Supporting five key functions in one unit, numeric display, graph display, TEDS function, static strain display, and signal conditioner. This small and cost-effective TD-700T achieves equal or even higher performance to upper-class models, with high-visibility color LCD and various hold functions.

2.4” Color LCD

DIN 92×45
Panel opening size

TEDS | RoHS | 4,000 time/sec. | 24-bit | Static Strain | Waveform | Bar Meter | D/A OUT | High/Low Limit Compare | Various Holds | Bilingual | AC/DC Power

* Remote Sense compatible

Digital Indicator

TD-260T

Standard model | BCD Out model | RS-232C model | D/A Out model

Directly readable, 5-digit digital display

Different types of hold functions available: peak hold, bottom hold, peak-to-peak hold, and block setting for each hold

Green LED

DIN96
Panel opening size

TEDS | RoHS | 100 time/sec. | 16 bit | Static Strain | Compare | Hold

Strain/DC Amplifier

SA-570ST

Multi-function Amplifier switchable Strain Amp/DC Amp

Supporting basic functions such as Bridge Power, Auto Balance, Proofed Voltage, and Low-pass/High-pass Filters.

Sensitivity: Max x5000 **Frequency Response: DC-150kHz**

TEDS

Load Cell Signal Conditioner

TC-11AC/TC-11DC

DIN Rail Mount **Output:0-±10V/4-20mA**

TEAC

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