UNIPULSE

RoHS2

1.Product outline

UCPI is a tension/compression type load cell.

- Suitable for assembling into press machine and compression/tension testing machine due to its thin body
- A cable is with a connector which is convenient for an exchange

2.Handling prohibitions and precautions

Prohibitions **Prohibited actions while operating the product (Prohibited actions)**

PROHIBITION Do not disassemble this product.

PROHIBITION Avoid dropping or giving a shock to the product.

Precautions **Events that may cause injury to personnel or material damage in case of misuse.**

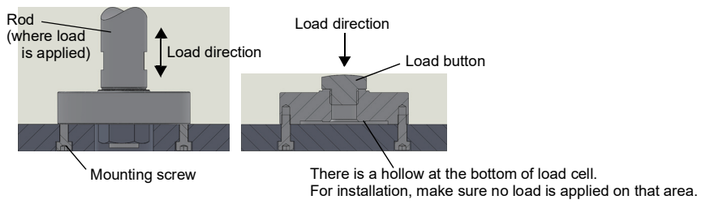
- Do not install the product in the following environments:
  - In an atmosphere with corrosive or combustible gases;
  - Locations where temperature or humidity exceeds specifications;
  - Locations subject to drastic temperature fluctuations or icing and condensation;
  - Locations exposed to direct sunlight;
  - Locations subject to direct vibration or shock
- Consult us if this product is to be used under a special environment.
- Provide sufficient strength to the installation location.
- Perform adequate isolation if the product is used in the following locations:
  - Locations subject to noise such as static electricity;
  - Locations subject to strong electric field and intense magnetic field.
- Perform electric welding before mounting the loadcell. Take caution not to make current flow in the loadcell if the welding needs to be performed after mounting.
- Handle this product as industrial waste when disposing.

3.Installation procedure

(1) For tensile load, do lock the rods with screw lock, nut and such to prevent them from loosening. Do adjust a screw-in amount of a mounting screw to more than 3 times the pitch of the mounting screw with each capacity but less than a screw depth.
Recommended tightening torque (0.5T series).....M4: 0.76N·m, M5: 1.5N·m, M8: 6.2N·m

(2) The base plate must be made of steel having enough rigidity. Also its flatness should be 0.01mm or less and surface roughness should be less than Ra1.6.

(3) If loads are applied from other than load direction, output signal may not be output correctly or there is a risk of damage. Take measure to prevent it from eccentric and moment load being applied.



4.Wiring color of loadcell cables

Core wire	Signal name / wiring color						
	+EXC	+S	-S	-EXC	+SIG	-SIG	SHIELD
Six wires	Red	Yellow	Orange	Black	Green	White	Braided wire

5.Indicator connection

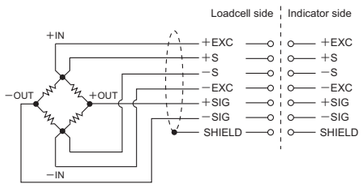
Check the signal name and wiring color before connection.

(1) The cable of UCPI loadcell has 6 bare wire ends. Therefore UCPI should be used with an indicator that accepts 6-wire input. In case UCPI is used with a 4-wire input indicator, both +EXC and +S wires must be inserted to +EXC terminal of an indicator, also both -EXC and -S wires must be inserted to -EXC terminal of an indicator. In this case, sensitivity may change a little.
Please connect SHIELD wire to SHIELD terminal of indicator.
Since load cell main body is insulated from SHIELD cable, make sure main body and indicator ground point is connected in single-point grounding.

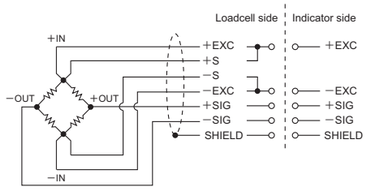
(2) Apply the recommended voltage for the excitation. If the applied voltage exceeds the maximum excitation voltage, UCPI may get permanent damage.

(3) To extend loadcell cable, make sure to use a cable with the same diameter or bigger diameter than standard cable. A voltage drop may occur when small diameter cable (having high resistance) is used, and it may affect the result of measurement.
Re-calibration with an standard weight could be needed if UCPI is used with a 4-wire input indicator.
Please consult our sales representative for cable extension.

■Six-wire type loadcell → Six-wire type indicator



■Six-wire type loadcell → Four-wire type indicator



* SHIELD wire is not connected to load cell main body.

6.Calibration

If calibration is needed, do it on indicator. For more information, refer to the manual of indicator.

■Actual load calibration

In this calibration method, actual load is applied to a loadcell, and the value of the actual load is input using the keys. Accurate calibration with minimal error can be performed.
Prepare a reference item such as a weight in advance.

■Equivalent input calibration

In this calibration method, only the rated output value and the rated capacity value of the loadcell are input using the keys. This method does not involve actual load.
The values are stated on the attached data sheet upon the purchase of loadcell.

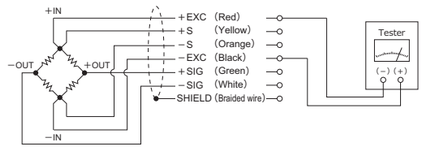
7.Trouble shooting

Determine whether the error is occurring on the loadcell side or the indicator side.
Check the damage of UCPI in the following ways.

(1) In case a load is applied larger than safe overload or a load in unexpected direction is applied to the UCPI, make sure to check if it didn't get damaged after recalibration.

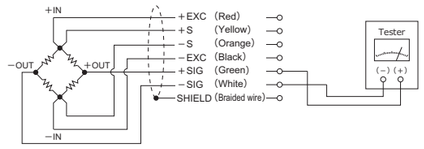
(2) When the reading on indicator is unstable or odd, do an inspection as follows after checking wiring and precautions.

① Check the input resistance of loadcell under no-load condition. (between +EXC and -EXC)



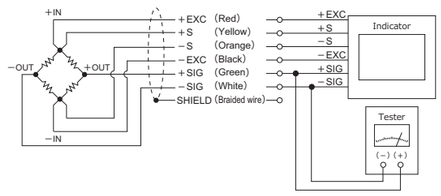
Disconnect the UCPI from the indicator. And verify if the input resistance of loadcell (between +EXC and -EXC) is within the specification range under no-load condition.

② Check the output resistance of loadcell under no-load condition.(between +SIG and -SIG)



Disconnect the UCPI from the indicator. And verify if the output resistance of loadcell (between +SIG and -SIG) is within the specification range under no-load condition.

③ Check the signal output of loadcell (Zero-balance) under no-load condition



Connect the UCPI with an indicator. And measure the output voltage (Vout[mV/V]) under no-load condition, while an excitation voltage (Vin[V]) is applied. Verify if the signal output of loadcell ($\frac{Vout}{Vin}$[mV/V]) is within the specification range. (Zero-balance)

In case measured values above are out-of-specification, please consult us.

If no problem found on UCPI, check the indicator in the following ways.

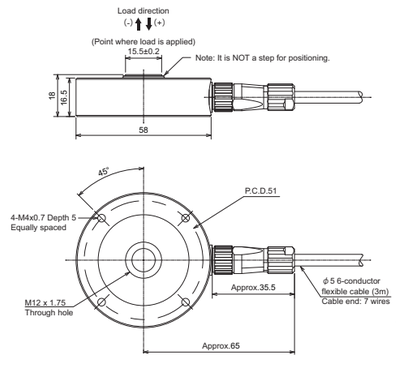
(1) Disconnect the UCPI from indicator. Check if the reading on indicator is near 0, while short the input terminals(+SIG and -SIG).

(2) Measure the voltage of the output terminals(+EXC and -EXC) of indicator, and verify if the excitation voltage is applied properly.

For more information, refer to the manual of indicator.

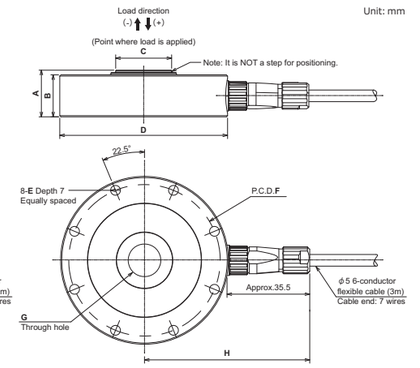
8.External dimension

■UCPI-1KN/2KN/5KN



■UCPI-10KN/20KN/50KN

Unit: mm



Model	A	B	C	D	E	F	G	H
UCPI-10KN	20	18	24±0.2	72	M5×0.8	65	M16×2.0	Approx.71
UCPI-20KN								
UCPI-50KN	23	21	28±0.2	82	M8×1.25	72	M20×1.5	Approx.76

9.Specifications

Model	UCPI-1KN	UCPI-2KN	UCPI-5KN	UCPI-10KN	UCPI-20KN	UCPI-50KN
Rated capacity	1kN	2kN	5kN	10kN	20kN	50kN
Rated output	Approx. 2mV/V					
Safe overload	150%R.C.					
Zero balance	±10%R.O.					
Non-linearity	0.1% or less R.O.					0.15% or less R.O.
Hysteresis	0.1% or less R.O.					0.15% or less R.O.
Repeatability	0.1% or less R.O.					
Compensated temperature range	-10 to +60℃					
Safe temperature range	-20 to +70℃					
Temperature effect on zero	0.1%R.O./10℃ or below					
Temperature effect on span	0.1%R.O./10℃ or below					
Input resistance	Approx. 1000Ω					
Output resistance	Approx. 1000Ω					
Recommended excitation voltage	10V					
Maximum excitation voltage	15V					
Insulation resistance (DC50V)	1000MΩ or more					
Cable	ϕ5 6-conductor flexible cable (3m) Cable end: 7 wires					
Deflection at rated capacity	0.05mm	0.05mm	0.06mm	0.04mm	0.05mm	0.06mm
Natural frequency	5kHz	7kHz	10kHz	10kHz	13kHz	13kHz
Loadcell material	Stainless steel					
Weight (Excluding the cable)	350g			410g		630g

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