

## Tension and Compression Load cell DPU series

- DPU series is a strain gauge type load cells for tension and compression testing.
- DPU series can be built in manufacturing line and equipment with ease.

DPU series	
<p>Standard type</p> <p>compression/tension sensor part</p> <p>Tapped hole</p> <p>(Capacity: 2 to 500N)</p>	<p>Test image</p> <p>EB-500N-M6(*1)</p> <p>Small Hook A-1/S-1(*2)</p> <p>when built into equipment</p> <p>when hanging on equipment/hooking samples</p>
<p>High capacity type</p> <p>compression/tension sensor part</p> <p>Tapped hole</p> <p>(Capacity: 1000N to 20kN)</p>	<p>Test image</p> <p>EB-20kN(*1)</p> <p>when hanging on equipment</p>

\*1 Hoisting attachment for load cells EB 500N-M6 is sold separately. Refer to page 5 for detail.

\*2 Small hook A-1/S-1 is included in separated sensor type force gauge ZTS-DPU/ZTA-DPU-2N to 5000N. It is not included with load cell itself. (The supplied accessories will be different depending on the range.)

\* An amplifier (indicator) is required to read values. Refer to "Available amplifiers (indicators)" on page 2 for details.

### : eZ-Connect series

eZ-Connect is composed of an amplifier and load cells.

- Allows easy replacement of load cells without additional adjustment
- Suits different types of tests such as tension and torque, measuring from low load to high load, etc.

Available load cells have a mark.

Specification				
Model	DPU-2N to 500N	eDPU-2N to 500N	DPU-1000N to 20kN	eDPU-1000N to 20kN
Features	Standard type	eZ-Connect series standard type	High capacity type	eZ-Connect series high capacity type
Capacity	Refer to each model list			
Rated output	1mV / V+/-10% (2N,5N is 0.9 to 1.25 mV / +/-10%)	-	2mV / V+/-1%	-
Nonlinearity	0.12%R.O.	-	0.05%R.O.	-
Hysteresis	0.12%R.O.	-	0.05%R.O.	-
Recommended voltage (allowable applied voltage)	5V DC (12V DC)	-	10V DC (18V DC)	-
Safe overload rating	Refer to [Load cell only]			
Working environment (allowable temperature)	0 to +50 degree Celsius (-10 degree to +60 degree Celsius)		-10 to +70 degree Celsius (-20 degree to +80 degree Celsius)	
Temperature influence for 0 degree	0.02%/ degree Celsius	-	0.01% degree Celsius	-
Temperature influence for output	0.01%/ degree Celsius	-	0.01%/ degree Celsius	-
Weight	Approx. 325g		Approx. 800g eDPU-10kN: Approx. 1.7kg eDPU-20kN: Approx. 2.3kg	
Cable	2m (with cable)		3m (with cable)	
Dimension	Refer to [Dimensions]			

- \* Refer to page 3 for the accuracy of combinations with the amplifier (indicator) under [Models of sensors combined with indicators (Separated sensor models)] and [eZ-Connect series (Sensor interchangeable model)].
- \* An amplifier (indicator) is required to read values. Refer to "Available amplifiers (indicators)" below for details.
- \* When ordering load cell without indicators, three connector types are available. See [Load cell only] on page 4 for details. The load cells are not guaranteed either for the operability with your own amplifier (indicator) or for the accuracy as a result of such use.

Available Amplifiers (Indicators)					
Type	Separated Sensor Model			eZ-Connect series Sensor Interchangeable Amplifier	
Indicator	Handheld type ZTS series	Handheld type ZTA series	Desk type FA Plus2	Desk type eFA Plus2	Handheld type eZT
Image					
Feature	- Handheld use - Specific purpose - Higher accuracy	- Handheld use - Specific purpose - Higher accuracy - I/O displacement - Data saving to USB	- Desktop use - Specific purpose - Higher accuracy	- Desktop use - Load cell interchangeable (such as measurement of tension and torque, or low and high load)	- Handheld use - Load cell interchangeable (such as measurement of tension and torque, or low and high load)

\* Refer to the specification sheet of each amplifier (indicator) for details.

**[Models of sensors combined with indicators (Separated sensor models)]**

Model			Capacity	Accuracy (*1)	Display	Resolution
ZTS	ZTA	FA Plus2				
ZTS-DPU-2N	ZTA-DPU-2N	FAP2-DPU-2N	2N	+/-0.2%F.S. or less	2.000N(2000mN)	0.001N(1mN)
ZTS-DPU-5N	ZTA-DPU-5N	FAP2-DPU-5N	5N		5.000N(5000mN)	0.001N(1mN)
ZTS-DPU-10N	ZTA-DPU-10N	FAP2-DPU-10N	10N		10.00N	0.01N
ZTS-DPU-20N	ZTA-DPU-20N	FAP2-DPU-20N	20N		20.00N	0.01N
ZTS-DPU-50N	ZTA-DPU-50N	FAP2-DPU-50N	50N		50.00N	0.01N
ZTS-DPU-100N	ZTA-DPU-100N	FAP2-DPU-100N	100N		100.0N	0.1N
ZTS-DPU-200N	ZTA-DPU-200N	FAP2-DPU-200N	200N		200.0N	0.1N
ZTS-DPU-500N	ZTA-DPU-500N	FAP2-DPU-500N	500N		500.0N	0.1N
ZTS-DPU-1000N	ZTA-DPU-1000N	FAP2-DPU-1000N	1000N		1000N(1.000kN)	1N(0.001kN)
ZTS-DPU-2000N	ZTA-DPU-2000N	FAP2-DPU-2000N	2000N		2000N(2.000kN)	1N(0.001kN)
ZTS-DPU-5000N	ZTA-DPU-5000N	FAP2-DPU-5000N	5000N		5000N(5.000kN)	1N(0.001kN)
ZTS-DPU-10kN	ZTA-DPU-10kN	FAP2-DPU-10kN	10kN		10.00kN	0.01kN
ZTS-DPU-20kN	ZTA-DPU-20kN	FAP2-DPU-20kN	20kN		20.00kN	0.01kN

\* Refer to each indicator specification for details.

\*1 It is the accuracy of the sensor and the indicator combined.

**[eZ-Connect series (Sensor interchangeable model)]**

Model	Capacity	Accuracy (*1)	Display	Resolution
eDPU-2N	2N	+/-0.4%F.S. or less	2.000N(2000mN)	0.001N(1mN)
eDPU-5N	5N		5.000N(5000mN)	0.001N(1mN)
eDPU-10N	10N		10.00N	0.01N
eDPU-20N	20N		20.00N	0.01N
eDPU-50N	50N		50.00N	0.01N
eDPU-100N	100N		100.0N	0.1N
eDPU-200N	200N		200.0N	0.1N
eDPU-500N	500N		500.0N	0.1N
eDPU-1000N	1000N		1000N(1.000kN)	1N(0.001kN)
eDPU-2000N	2000N		2000N(2.000kN)	1N(0.001kN)
eDPU-5000N	5000N		5000N(5.000kN)	1N(0.001kN)
eDPU-10kN	10kN		10.00kN	0.01kN
eDPU-20kN	20kN		20.00kN	0.01kN

\* Refer to each indicator specification for details.

\*1 It is the accuracy of the sensor and indicators of eZ-connect series combined.

**[Load cell only]**

Model	Capacity	Safe overload rating	Measuring thread
DPU-2N	2N	150%	M6
DPU-5N	5N		
DPU-10N	10N	200%	
DPU-20N	20N		
DPU-50N	50N		
DPU-100N	100N		
DPU-200N	200N		
DPU-500N	500N		
DPU-1000N	1000N	240%	
DPU-2000N	2000N	120%	
DPU-5000N	5000N		
DPU-10kN	10kN	120%	N/A (*2)
DPU-20kN	20kN		

\*1 Female screw M12 P1.75 is available by removing the measuring shaft.

\*2 DPU-10kN and DPU-20kN do not have measuring threads, they have an M18P1.5 Depth22 female screw.

If necessary, measuring thread option is available for DPU-10kN/20kN.

\* The load cells are not guaranteed either for the operability with your own amplifier (indicator) or for the accuracy as a result of such use.

\* When ordering load cell only, choose the connector type from the table below and add the code to the end of model.

For example, when ordering DPU-500N with 5 pin, the product model is "DPU-500N-5P".

Code	-5P	-6P	-OC
Connector shape	 5 pin	 6 pin	Without Connector (Open end)
Connect to	ZTA/S series, FA Plus2, etc	Some discontinued IMADA products	For installing in equipment
*Check the connector shape of your equipment to connect.			

Cable Option			
	Code *1	Cable Length	Description
Extended Cable	-( )m	Max. 10m *2	It is an option to change the cable to extended cable which connects to the amplifier (indicator).
Flexible Cable	-BR( )m	Max. 10m	It is an option to change the cable to high flexible cable to reduce the risk of breakage during bending.

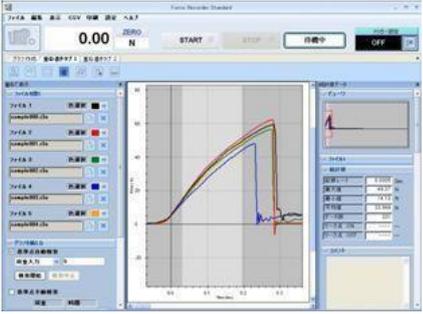
\*1 Put Cable Length before "m" of Code. The order increment of the optional cable length is every meter.

\*2 The cable length is the sum of the standard cable length and the extended cable one.

\* To maintain the signal quality, the cable length is limited.

\* When ordering cable option, add the cable option code before the connector shape code.

For example, when ordering DPU-5N-5P with 10m cable length, the product model is "DPU-5N-10m-5P".

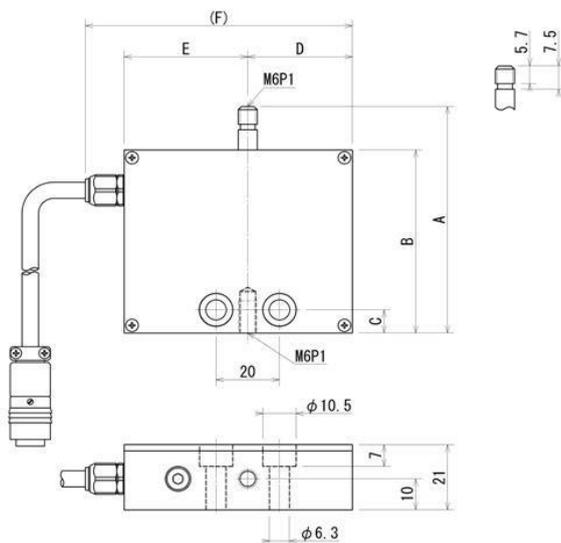
Related Products		
<p>Pen type load cell <b>PN-50N</b></p> 	<p>Coin shaped type load cell <b>LM series</b></p> 	<p>High accuracy coin shaped type load cell <b>LC series</b></p> 
<p>Pen-shaped to fit for measuring control force of small samples.</p>	<p>Coin size load cell for compression use.</p>	<p>High accuracy coin shaped load cell for compression.</p>
<p>Extra small type load cell <b>LMU series</b></p> 	<p>For automatic doors load cell <b>DM-2000N</b></p> 	<p>Small type load cell <b>LU series</b></p> 
<p>Extra small load cell for both tension and compression testing with 50N to 500N capacity.</p>	<p>Fit to measure automatic door closing force.</p>	<p>Small type load cell for both tension and compression testing with 50N to 2000N capacity.</p>
<p>Hoisting attachment for load cell <b>EB/RE series</b></p> 	<p>Option handle <b>LTH-T</b></p> 	<p>Option handle <b>LTH-C</b></p> 
<p>Hoisting attachment for load cell, it combines with DPU/LU/LMU series for tension testing.</p>	<p>Handle for DPU/eDPU series load cell to make handheld measurement easier.</p>	<p>Handle for DPU/eDPU series load cell to make handheld measurement easier.</p>
Graphing Software: Force Recorder		
 <p>* The image is Force Recorder Standard.</p>	<ul style="list-style-type: none"> <li>- Plots graphs of force-time at real time via USB connection at 2000Hz</li> <li>- Comment function for keeping a note of testing conditions such as testing speed</li> <li>- Overlays up to 5 graphs (Standard, Professional edition)</li> <li>- Analyzes force-displacement relationships (Professional edition)</li> </ul> <p>* Refer to each specification sheet for further information.</p>	

Related Adaptor		
Model	Mountable load cell	Purpose
CA-6T6	From DPU-2N to DPU-500N	For converting the M6 female screw to M6 measuring shaft (male screw). Enabled to mount the M6 attachment to the DPU load cell.
CA-12T10	From DPU-1000N to DPU-5000N	For converting the M12 female screw to M10 measuring shaft (male screw). Enabled to mount the M10 attachment to the DPU load cell.
CA-18T18	From DPU-10kN to DPU-20kN	For converting the M18 female screw to M18 measuring shaft (male screw). Enabled to mount the M18 custom attachment to the DPU load cell.

\* Refer to the specification sheet of CA series for more details.

## [Dimensions]

### DPU-2N to 500N

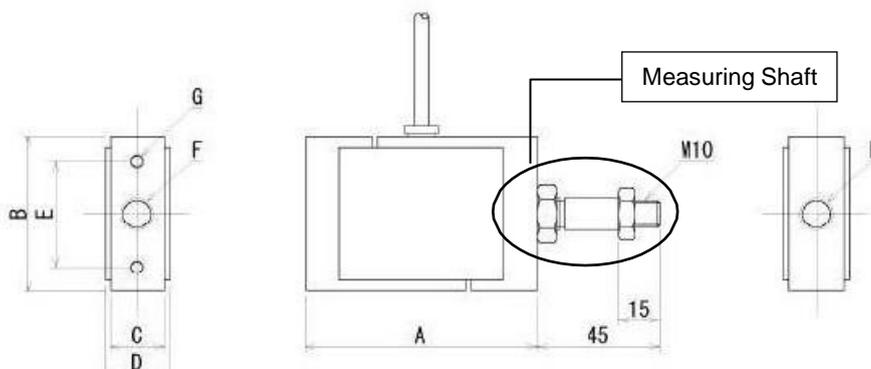


Model	A	B	C	D	E	(F)
DPU-2N	71	57	12	26	32	(70)
DPU-5N	71	57	12	26	32	(70)
DPU-10N	71	57	12	26	32	(70)
DPU-20N	73	59	7.5	33	39	(84)
DPU-50N	73	59	7.5	33	39	(84)
DPU-100N	73	59	7.5	33	39	(84)
DPU-200N	73	59	7.5	33	39	(84)
DPU-500N	73	59	7.5	33	39	(84)

\* eDPU series connector has different dimensions.

Unit: mm

### DPU-1000N to 20kN



Unit: mm

Model	A	B	C	D	E	F	G	Note
DPU-1000N	85	58	20	26	40	M12 P1.75 Depth 15	M5 Depth 8	With a thread
DPU-2000N	85	58	20	26	40	M12 P1.75 Depth 15	M5 Depth 8	With a thread
DPU-5000N	85	58	20	26	40	M12 P1.75 Depth 15	M5 Depth 8	With a thread
DPU-10kN	105	78	32	38	60	M18 P1.5 Depth 22	M6 Depth 10	Without thread
DPU-20kN	110	88	36	42	60	M18 P1.5 Depth 22	M6 Depth 10	Without thread

\* eDPU series connector has different dimensions.

**[Cautions]**

- Information in this document is subject to change without prior notice.
- This document is product descriptions and handling precautions, and do not guarantee various characteristics or safety.
- This product is designed for force measurement purpose only.
- Do not copy and use this content without authorization.
- Do not apply force more than its capacity or from incorrect direction to the measuring shaft.
- Do not use this product in the environments including fierce temperature changes, high temperature, high humidity, near water, dusty place.

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