



Tension sensor

Tension sensor is used to measure the tension value of coiled material in the process of tension control. According to its con guration, it can be divided into three types: axle-table type, through-axle type, cantilever type, etc. , suitable for all kinds of optical ber, yarn, chemical ber, metal wire, wire, cable and other places. To meet the needs of various industries tension measurement: wood production, construction materials, lm cutting, vacuum coating, coater, lm blowing machine, tire molding machine, steel cord cutting machine, slitting production line, aluminum foil coating production line, coiling production line, color coated plate production line, optical ber equipment, plasterboard production line, cord canvas impregnation machine, carpet production line, batte stacking machine, lithium electric slitting machine, lithium electric rolling die machine and other industries.

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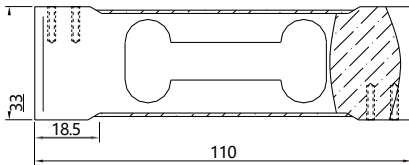
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<http://www.huoxin.com>



Mounting dimensions

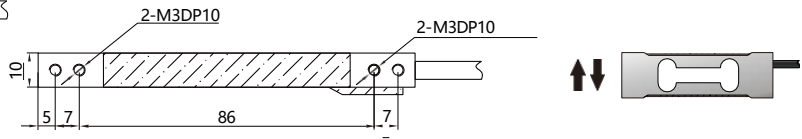


KDEV-Z-30

Product characteristics

- The measurement accuracy is better than 0.02% , balance level, good long-term stability, high repeatability, small size, small installation space. Widely used in commercial, civil and other high-precision weighing instruments, commercial scales, small and medium-sized space of high-precision force measurement industrial automation equipment.

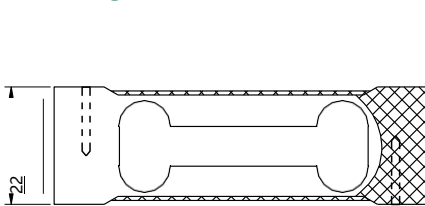
Force mode



Technical parameters			
(Measuring range)	0.3/0.6/1/2/3/5/10 kg	(Sensitivity temperature effect)	±0.025%F.S/10°C
(Composite Error)	≤±0.02%	(Zero temperature effect)	±0.025%F.S/10°C
(Non-linear)	0.02%	(Temperature compensation range)	-10~40°C
(Sensitivity)	1.0/2.0±0.15mV/V	(Operating temperature range)	-20~60°C
(Creep)	±0.03%F.S/30min	(Excitation voltage)	5~125V
(Zero output)	±1.0%F.S	(SAFE overload range)	120%F.S
(Input impedance)	400±10Ω	(Limit Overload Range)	150%F.S
(Output impedance)	350±10Ω	(Cable specifications)	Φ3mm×3m
(Insulation Resistance)	≥5000MΩ/100V DC	(Protection level)	Ip65



Mounting dimensions

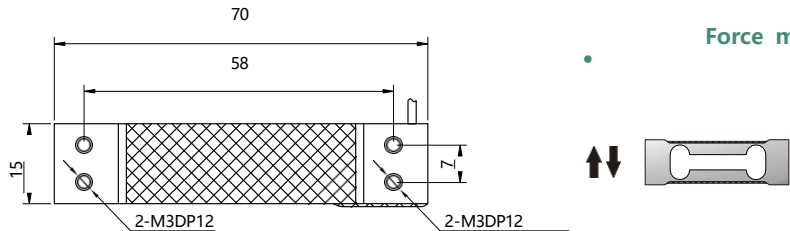


KDEV-Z-3A

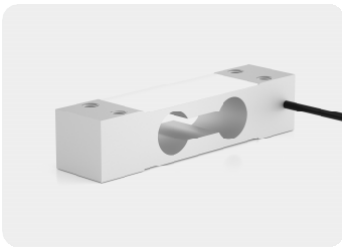
Product characteristics

- The measuring precision is better than ± 0.02% , the long-term stability is good, the repetition consistency is high, the volume is small and the small space installation is convenient. Widely used in commercial, civil and other high-precision weighing instruments, and industrial automation in small space high-precision force measurement, weighing equipment.

Force mode



Technical parameters			
(Measuring range)	0.3/0.5/1/2/3/5/10/15/20 kg	(Sensitivity temperature effect)	±0.025%F.S/10°C
(Composite Error)	≤±0.02%	(Zero temperature effect)	±0.025%F.S/10°C
(Non-linear)	0.02%	(Temperature compensation range)	-10~40°C
(Sensitivity)	1.0/2.0±10%mV/V	(Operating temperature range)	-20~60°C
(Creep)	±0.03%F.S/30min	(Excitation voltage)	5~12V
(Zero output)	±1.0%F.S	(SAFE overload range)	120%F.S
(Input impedance)	410±10Ω	(Limit Overload Range)	150%F.S
(Output impedance)	350±10Ω	(Cable specifications)	Φ3mm×3m
(Insulation Resistance)	≥5000MΩ/100V DC	(Protection level)	Ip65

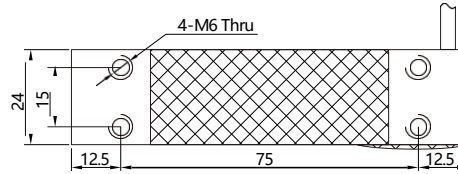
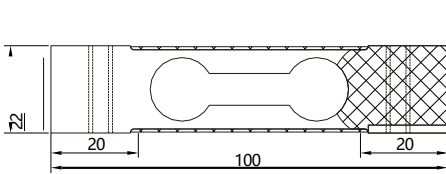


KDEV-Z-3B

Product characteristics

- Dust-proof seal, wide range, high precision, stable and reliable structure, high strength, easy to install and use. It is suitable for all kinds of automatic measurement and control system of force measurement and weighing industry.

Mounting dimensions



Force mode



Technical parameters

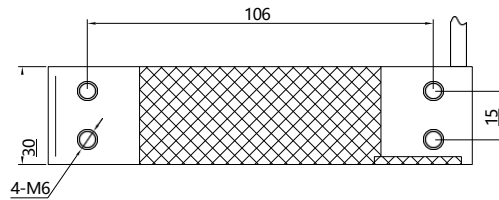
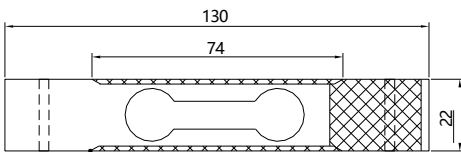
(Measuring range)	3/6/10/15/20/30/40 kg	(Output temperature effect)	±0.03%F.S/10°C
(Rated output)	2.0±10% <i>mV/V</i>	(Zero temperature effect)	±0.05%F.S/10°C
(Zero output)	±5%R.O.	(Excitation voltage)	5~12VDC
(30-minute creep)	±0.03%R.O.	(Maximum excitation voltage)	18VDC
(Non-linear)	±0.02%R.O.	(Temperature compensation range)	-10~+40°C
(Lag behind)	±0.015%R.O.	(Operating temperature range)	-20~+60°C
(Repeatability)	±0.015%R.O.	(SAFE overload)	150%F.S
(Input Resistance)	1130±20Ω	(Ultimate overload)	200%F.S
(Output Resistance)	1000±10Ω	(Cable specifications)	Φ3mm×3m
(Insulation Resistance)	≥2000MΩ/50V DC	(Protection level)	Ip65

KDEV-Z-40

Product characteristics

- The product is made of aluminum alloy material, adhesive seal treatment, protection level to IP65, the surface of colorless anodic oxidation treatment, anti-corrosion, easy to install and use. The product is suitable for high-precision small-range force measuring equipment.

Mounting dimensions

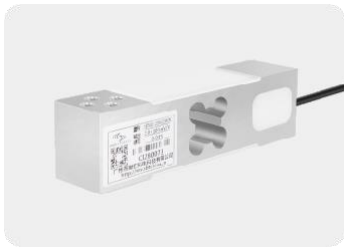


Force mode



Technical parameters

(Measuring range)	3/5/10/15/20/30/40/50 kg	(Sensitivity temperature effect)	±0.025%F.S/10°C
(Composite Error)	≤±0.02%	(Zero temperature effect)	±0.025%F.S/10°C
(Non-linear)	0.02%	(Temperature compensation range)	-10~40°C
(Sensitivity)	2.0±0.2% <i>mV/V</i>	(Operating temperature range)	-20~60°C
(Creep)	±0.03%F.S/30min	(Excitation voltage)	5~12V
(Zero output)	±20%F.S	(SAFE overload range)	120%F.S
(Input impedance)	410±10Ω	(Limit Overload Range)	150%F.S
(Output impedance)	350±10Ω	(Cable specifications)	Φ4mm×3m
(Insulation Resistance)	≥5000MΩ/100V DC	(Protection level)	Ip65

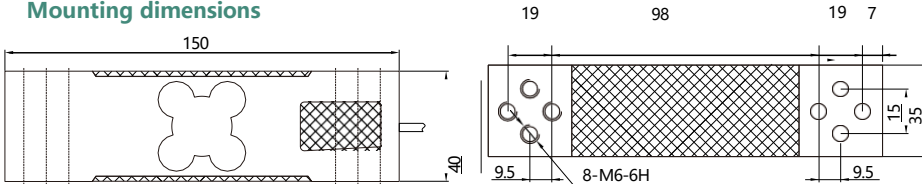


KDEV-Z-50

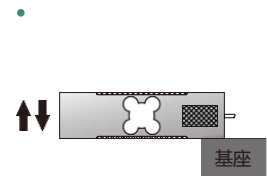
Product characteristics

- KDEV-Z-50 is a high precision box structure single point load cell, high precision, easy to install commonly used in electronic platform scales, mechanical testing machines, electronic weighing platform, tank reactor weighing system is the
- most widely used platform scale sensor structure. It is widely used in the test of anti- eccentric load.

Mounting dimensions



Force mode



Technical parameters

(Measuring range)	50/100/200/300/500 kg	(Supply Voltage)	5~12VDC
(Output sensitivity)	2.0±0.2mV/V	(Temperature affects the zero point)	±0.025%F.S/10°C
(Zero output)	±0.2%F.S	(Temperature effect on sensitivity)	±0.025%F.S/10°C
(30-minute creep)	±0.03%F.S	(Materials)	aluminum alloy
(Non-linear)	±0.02%F.S	(Package mode)	Adhesive seal
(Lag behind)	±0.02%F.S	(Rated temperature range)	-10~40°C
(Repeatability)	±0.02%F.S	(Temperature range for use)	-10~60°C
(Input Resistance)	410±10Ω	(SAFE overload)	120%F.S
(Output Resistance)	350±10Ω	(Ultimate overload)	150%F.S
(Insulation Resistance)	≥5000MΩ/50V DC	(Protection level)	Ip65
(Cable specifications)	Φ5mm×3m	(Dimensions (length x width x height))	150×40×35 mm

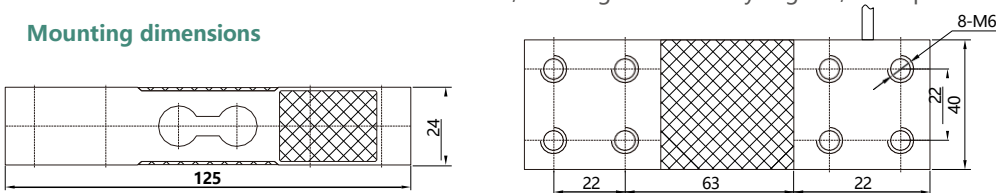


KDEV-Z-5A

Product characteristics

- Widely used commercial, civil and other high-precision weighing instruments, and industrial automation in small and medium-sized space high-precision force measurement, weighing equipment. The measurement accuracy is better than ± 0.02% , the long-term stability is good, the repetition consistency is high.

Mounting dimensions



Force mode



Technical parameters

(Measuring range)	20/30/50/100/200/300 kg	(Supply Voltage)	5~12VDC
(Output sensitivity)	2.0±0.2mV/V	(Temperature affects the zero point)	±0.025%F.S/10°C
(Zero output)	±0.2%F.S	(Temperature effect on sensitivity)	±0.025%F.S/10°C
(30-minute creep)	±0.03%F.S	(Materials)	aluminum alloy
(Non-linear)	±0.02%F.S	(Package mode)	Adhesive seal
(Lag behind)	±0.02%F.S	(Rated temperature range)	-10~40°C
(Repeatability)	±0.02%F.S	(Temperature range for use)	-10~60°C
(Input Resistance)	410±10Ω	(SAFE overload)	120%F.S
(Output Resistance)	350±10Ω	(Ultimate overload)	150%F.S
(Insulation Resistance)	≥5000MΩ/50V DC	(Protection level)	Ip65
(Cable specifications)	Φ5mm×3m	(Dimensions (length x width x height))	125×40×24 mm

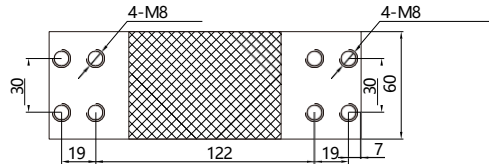
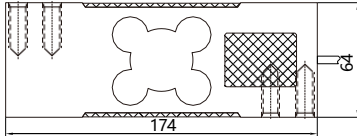


KDEV-Z-5C

Product characteristics

- Dust-proof seal, wide range, high precision, stable and reliable. High structural strength, easy installation and use. Easy to install and use, suitable for electronic batching system, packaging scale, batching bin bin scale and other weighing of industrial automation measurement and control system.

• Mounting dimensions



• Force mode



Technical parameters

(Measuring range)	100/200/300/500/750/1000 kg	(Supply Voltage)	5~12VDC
(Output sensitivity)	2.0±0.2mV/V	(Temperature affects the zero point)	±0.025%F.S/10°C
(Zero output)	±0.2%F.S	(Temperature effect on sensitivity)	±0.025%F.S/10°C
(30-minute creep)	±0.03%F.S	(Materials)	aluminum alloy
(Non-linear)	±0.02%F.S	(Package mode)	Adhesive seal
(Lag behind)	±0.02%F.S	(Rated temperature range)	-10~40°C
(Repeatability)	±0.02%F.S	(Temperature range for use)	-10~60°C
(Input Resistance)	410±10Ω	(SAFE overload)	120%F.S
(Output Resistance)	350±10Ω	(Ultimate overload)	150%F.S
(Insulation Resistance)	≥5000MΩ/50V DC	(Protection level)	Ip65
(Cable specifications)	Φ5mm×3m	(Dimensions (length x width x height))	174×60×64 mm

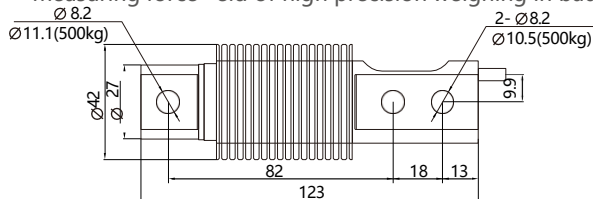
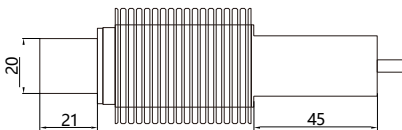


KDEV-Z-60

Product characteristics

- High precision, easy installation, commonly used in electronic platform scale, mechanical testing machine, electronic weighing platform, tank reactor weighing system. Platform scale is the most widely used sensor structure. It is suitable for measuring force field of high precision weighing in bad environment.

• Mounting dimensions



Force mode

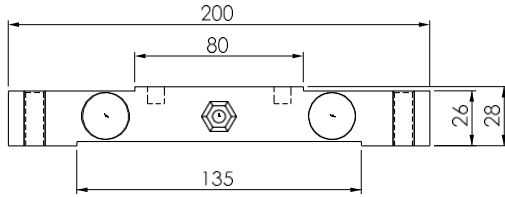


Technical parameters

(Measuring range)	10/20/50/100/200/500 kg	(Insulation Resistance)	≥5000MΩ/100V DC
(Output sensitivity)	2.0±0.05mV/V	(Temperature sensitivity drift)	±0.008%F.S/10°C
(Zero output)	±0.02%F.S	(Temperature compensation range)	±0.0125%F.S/10°C
(Creep)	≤0.0166%F.S	(Excitation voltage)	5~15V
(Non-linear)	≤0.018%F.S	(Maximum excitation voltage)	20V
(Lag behind)	≤0.017%F.S	(Temperature compensation range)	-10~40°C
(Repeatability)	≤0.018%F.S	(Operating temperature range)	-30~70°C
(Input Resistance)	390±5Ω	(SAFE overload)	150%F.S
(Output Resistance)	350±5Ω	(Ultimate overload)	200%F.S
产品材料 (Product material)	0.5kg	(Materials)	stainless steel
(Cable specifications)	Φ5mm×3m		



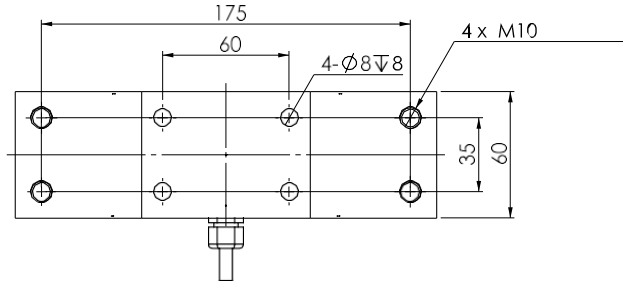
Mounting dimensions



KDEV-Z-70A

Product characteristics

- Adopt high precision resistance strain type principle, cantilever type structure design, pressure bearing, easy to install and use, high precision and high stability. Alloy steel material, compact size, beautiful appearance, high dynamic response frequency.



Technical parameters

(Measuring range)	1/2/5/10/20 T	(Sensitivity temperature effect)	±0.1%F.S/10°C
(Composite Error)	±0.15%F.S.	(Zero temperature effect)	±0.1%F.S/10°C
(Non-linear)	0.15%F.S.	(Temperature compensation range)	-10~40°C
(Output sensitivity)	1.6±0.01mV/V	(Operating temperature range)	-20~60°C
(Lag behind)	0.15%F.S.	(Recommended excitation voltage)	5~10V
(Service life)	Over 1 million times	(Maximum excitation voltage)	15V
(Materials)	alloy steel	(SAFE overload range)	150%F.S
(Insulation Resistance)	≥5000MΩ/100V DC	(Limit Overload Range)	200%F.S
(Cable specifications)	Φ5mm×3m	(Protection level)	Ip66



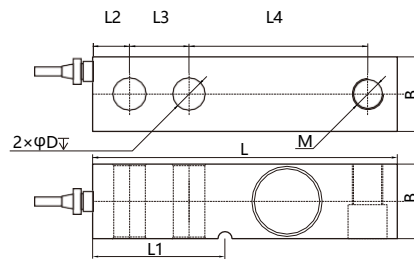
• Mounting dimensions

(T)	L	L1	L2	L3	L4	φD	B	M
0.5-2	130	56.5	15.8	25.4	76.2	13.5	31.8	M16×2
2.5-5	171.5	77.2	19.1	38.1	95.3	20	38.1	M20×2.5
10	222.3	101.6	25.4	50.8	120.7	26.2	50.8	M24×2

KDEV-Z-7F

Product characteristics

- Widely used in electronic platform scales, car scales, scales, belt scales and other weighing equipment. The measuring precision is better than ±0.03% , the long-term stability is good, the repeatability is high, the reliability is high, the alloy steel material is used.



Force mode

Technical parameters

(Measuring range)	0.5/1/2/3/5/10 T	(Supply Voltage)	5~12VDC
(Output sensitivity)	2.0±0.003mV/V	(Temperature affects the zero point)	±0.025%F.S/10°C
(Zero output)	±0.2%F.S	(Temperature effect on sensitivity)	±0.025%F.S/10°C
(30-minute creep)	±0.03%F.S	(Materials)	alloy steel
(Non-linear)	±0.03%F.S	(Package mode)	Adhesive sealing/laser welding
(Lag behind)	±0.03%F.S	(Rated temperature range)	-10~40°C
(Repeatability)	±0.03%F.S	(Temperature range for use)	-10~60°C
(Input Resistance)	350±5Ω	(SAFE overload)	120%F.S
(Output Resistance)	350±3Ω	(Ultimate overload)	150%F.S
(Insulation Resistance)	≥5000MΩ/100V DC	(Protection level)	IP67/IP68
(Cable specifications)	Φ5mm×3m	(Dimensions (length x width x height))	Please refer to the drawings in detail

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KDEV-Z-8E(steel)

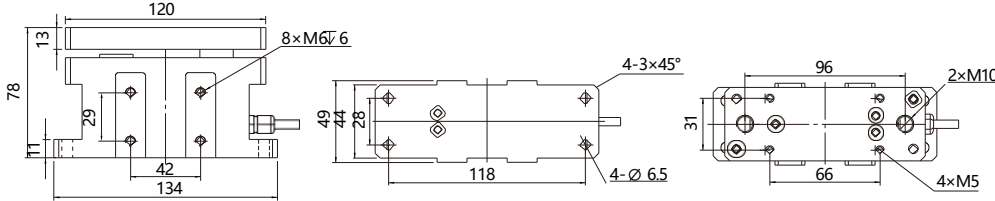
KDEV-Z-8F(aluminium)

KDEV-Z-8E(steel) / KDEV-Z-8F(aluminium)

Product characteristics

- The tension sensor adopts Mitsubishi structure and the design of tension-compression type, which makes the response frequency greatly increased, and the output signal has the characteristics of good
- linearity and fast response. The sensor is widely used in printing, composite, coating, cutting, paper, rubber, textile, wire and cable and lm take-up control equipment and production lines.

Mounting dimensions



Note: Force calculation on page 42

stainless steel	aluminum alloy
KDEV-Z-8E	KDEV-Z-8F

Technical parameters

(Measuring range)	5/10/20/30/50/100/200/500 kg	(Sensitivity temperature effect)	±0.05%F.S./10°C
(Composite Error)	±0.1%F.S.	(Zero temperature effect)	±0.05%F.S./10°C
(Non-linear)	0.1%F.S.	(Temperature compensation range)	-10~40°C
(Output signal)	1.0±1% mV/V , RS485/RS232, 4-20mA, 0±5v, 0±10V optional	(Operating temperature range)	-20~60°C
(Lag behind)	0.05%F.S.	(Recommended excitation voltage)	5~10V
(Service life)	Over 1 million times	(Maximum excitation voltage)	12V
(Materials)	Alloy steel/stainless steel/aluminum alloy	(SAFE overload range)	120%F.S.
(Insulation Resistance)	≥5000MΩ/100V DC	(Limit Overload Range)	150%F.S.
(Cable specifications)	Φ5mm×3m	(Protection level)	Ip66

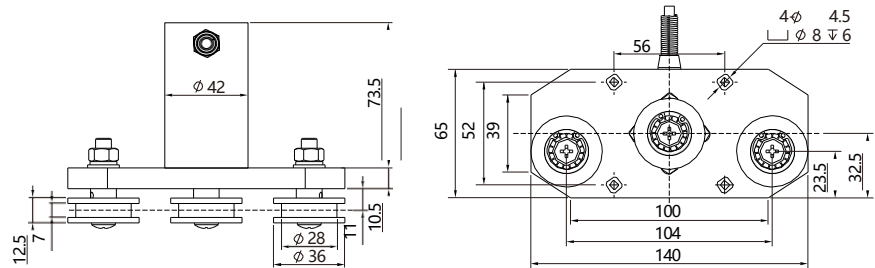
KDEV-Z-8H

Product characteristics

- The utility model has the advantages of strong structure, long service life, simple installation and stable performance. Applicable to all kinds of optical fiber, yarn, chemical fiber, metal, wire, cable, tape, steel belt tension measurement, widely used in electronic, chemical, textile, paper, machine and industrial automation measurement and control fields.



• Mounting dimensions



Note: Force calculation on page 42

Technical parameters

(Measuring range)	0.5/1/2/5/10/20/50/100 kg	(Input impedance)	350±50Ω
(Material)	Steel and aluminum alloys	(Output impedance)	350±10Ω
(Output sensitivity)	1.5-2.0mV/V	(Insulation impedance)	≥2000MΩ/50VDC
(Zero)	±0.04mV/V	(Operating temperature)	-20~+60°C
(Nonlinear)	0.03%F.S.	(Safety overload)	150%F.S.
(Lag)	0.03%F.S.	(Extreme overload)	200%F.S.
(Repeatability)	0.03%F.S.	(Use voltage)	5-10V
(Creep)	0.03%F.S.	(Maximum voltage)	15V
(Temperature sensitivity drift)	0.03%F.S./10°C	(Cable specifications)	Φ5mm×2m
(Zero temperature drift)	0.03%F.S./10°C	(Protection level)	Ip65

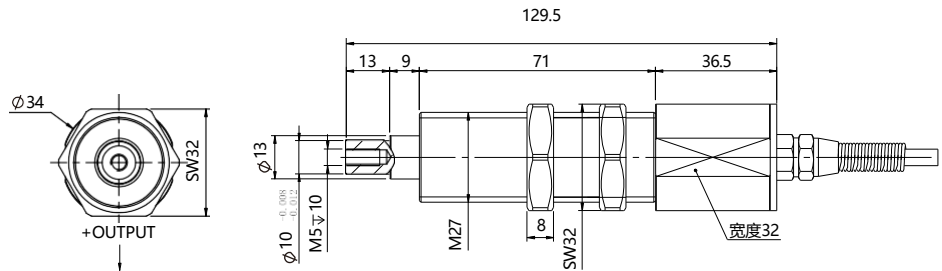


KDEV-Z-89

Product characteristics

- Easy to install, high accuracy, low tension can also accurately measure the situation. Built-in new mechanical 10 times anti-overload protection structure,
- small temperature drift, with good linear error and repeatability error. Small size, small installation space.

Mounting dimensions



Technical parameters

(Measuring range)	20 kg	(Temperature sensitivity drift)	$\pm 0.05\%$ F.S. / 10°C
(Output sensitivity)	$1.5 \pm 0.2\text{mV/V}$	(Zero temperature drift)	$\pm 0.05\%$ F.S. / 10°C
(Zero output)	$\pm 0.04\text{mV/V}$	(Use voltage)	5 ~ 10V
(Nonlinear)	0.05% F.S.	(Maximum voltage)	15V
(Lag)	0.05% F.S.	(Operating temperature range)	$-20 \sim +60^\circ\text{C}$
(Repeatability)	0.05% F.S.	(Safety overload)	120%
(Creep (10 min))	0.05% F.S.	(Extreme overload)	150%
(Input impedance)	$350 \pm 50\Omega$	(Cable specifications)	$\phi 5\text{mm} \times 3\text{m}$
(Output impedance)	$300 \pm 10\Omega$	(Material)	stainless steel
(Insulation Resistance)	$\geq 2000\text{M}\Omega/50\text{VDC}$	(Protection level)	Ip65

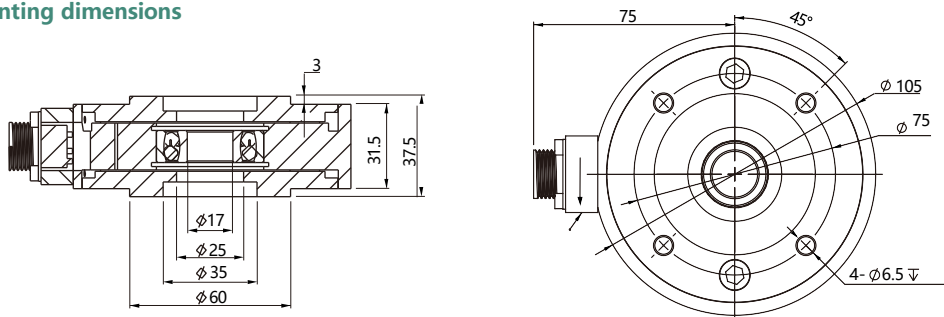


KDEV-Z-90

Product characteristics

- KDEV-Z-90 series through-shaft tension sensor is a kind of very accurate sensor for measuring web tension. It adopts the principle of resistance strain type and has the characteristics of accurate and stable signal, compact structure and small deformation.

Mounting dimensions



Note: Force calculation on page 42

Technical parameters

(Measuring range)	5/10/15/25/50/75/100/150/300 kg	(Operating temperature range)	$-20 \sim 80^\circ\text{C}$
(Output signal)	$1.5 \pm 0.2\text{mV/V}$	(Compensation temperature range)	$-10 \sim 40^\circ\text{C}$
(Non-linear)	$\leq \pm 0.3\%$	(Zero temperature drift)	0.02%F.S./ $^\circ\text{C}$
(Repeatability)	$\leq \pm 0.15\%$ F.S.	(Recommended excitation voltage)	5~10VDC
(Zero output)	$\pm 2\%$ F.S.	(Extreme overload)	1000%F.S
(Insulation Resistance)	$\geq 2000\text{M}\Omega$	(Protection level)	Ip65
(Cable specifications)	$\phi 6\text{mm} \times 3\text{m}$		

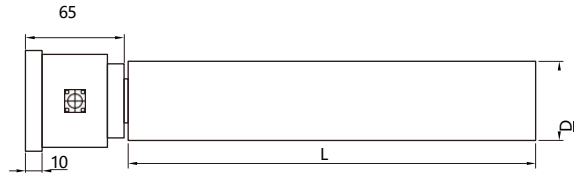
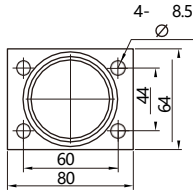


KDEV-Z-9A

Product characteristics

- Compact structure, high comprehensive precision, good long-term stability. High-hardness aluminum alloy shell, stable output, high-sensitive strain measurement components,
- suitable for precision level measurement application platform, good stability and reliability, high accuracy, oxidation shell, strict process.

Mounting dimensions



D : 40-65mm L
: 50-400mm

Technical parameters

(Measuring range)	2/5/7.5/10/20/30 kg	(Temperature sensitivity drift)	±0.05%F.S/10°C
(Output sensitivity)	±0.1%F.S.	(Zero temperature drift)	±0.05%F.S/10°C
(Zero output)	±0.1%F.S.	(Operating temperature range)	-20~80°C
(Non-linear)	0.1%F.S.	(Use voltage)	5~15V
(Lag behind)	0.1%F.S.	(SAFE overload range)	150%F.S
(Repeatability)	0.1%F.S.	(Limit Overload Range)	200%F.S
(30-minute creep)	0.1%F.S.	(Ultimate tensile strength of cable)	10kg
(Impedance)	350Ω	(Cable specifications)	Φ5mm×3m
(Insulation Resistance)	≥5000MΩ/100V DC	(Material)	alloy steel
(Response Frequency)	10kHz	TEDS optional	

KDEV-Z



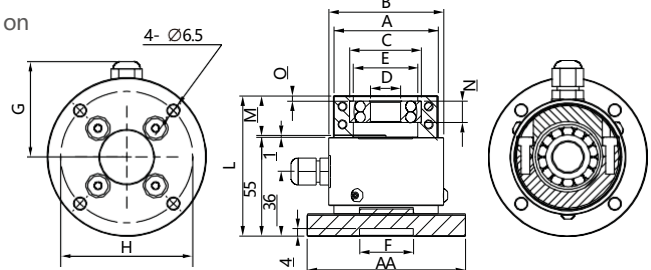
KDEV-Z-9B

Product characteristics

- It can accurately detect the resultant force produced by the wrapped angle pulling material, the design outline is very low, and the space requirement in the frame can be reduced to the minimum, compact structure, small deformation and so on

Mounting dimensions

(kg)	mm												
	A	AA	B	C	D	E	F	G	H	L	M	N	O
5	58	88	64	40	17	36	30	52.9	75	78	22	12	3
15	58	88	64	40	17	36	30	52.9	75	78	22	12	3
25	58	88	64	40	17	36	30	52.9	75	78	22	12	3
50	58	88	64	40	17	36	30	52.9	75	78	22	12	3
75	80	120	88	52	25	46	45	65.2	104	82	26	15	4
100	80	120	88	52	25	46	45	65.2	104	82	26	15	4



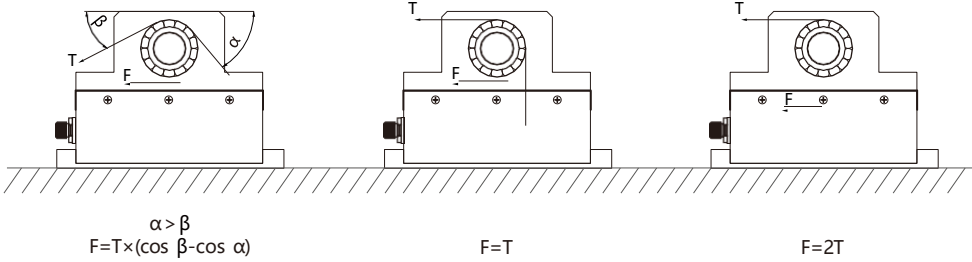
Technical parameters

(Measuring range)	5/15/25/50/75/100 kg	(Insulation Resistance)	≥5000MΩ/100V DC
(Output sensitivity)	2.0±10% mV/V	(Sensitivity temperature effect)	±0.05%F.S/10°C
(Zero output)	±0.03% mV/V	(Zero temperature effect)	±0.05%F.S/10°C
(Non-linear)	≤0.5%F.S.	(Operating temperature range)	0~50°C
(Lag behind)	≤0.5%F.S.	(Excitation voltage)	5~12V
(Repeatability)	≤0.25%F.S.	(Maximum excitation voltage)	15V
(Creep)	≤0.1%F.S.	(SAFE overload range)	150%F.S
(Input impedance)	350±10Ω	(Limit Overload Range)	500%F.S
(Output impedance)	350±5Ω	(Cable specifications)	Φ5mm×3m
(Connection mode)	Red: power supply+, green: signal+, yellow: shielded wire, white: signal-, black: power supply-		

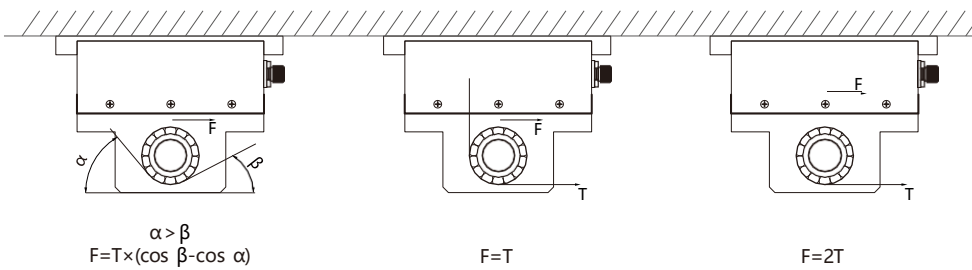
Axis type tension sensor

Force calculation

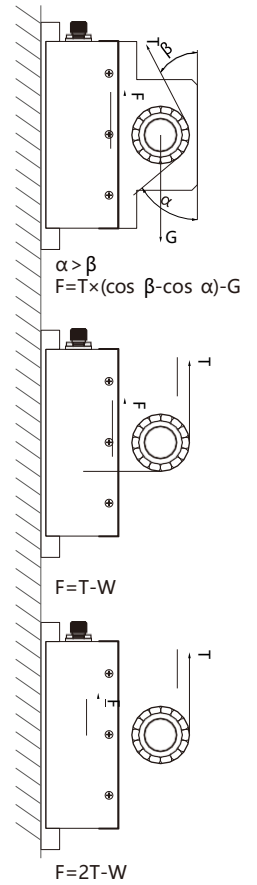
Horizontal installation



Horizontal Inversion

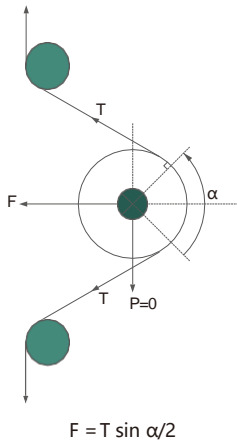


Vertical installation

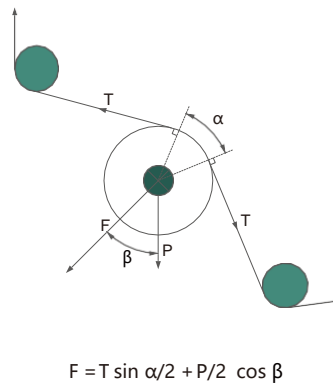

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Axis tension sensor

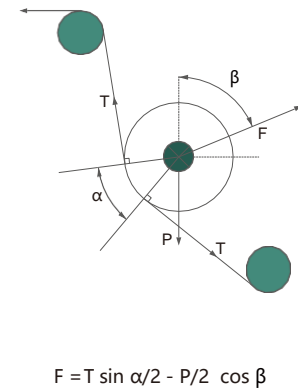
Force calculation



*T- tension α - Envelope angle($30^\circ \leq \alpha \leq 180^\circ$)



F- Sensor detection of force P- Roller self weight



β - The sensor detects the angle between the direction of force and the direction of roller weight