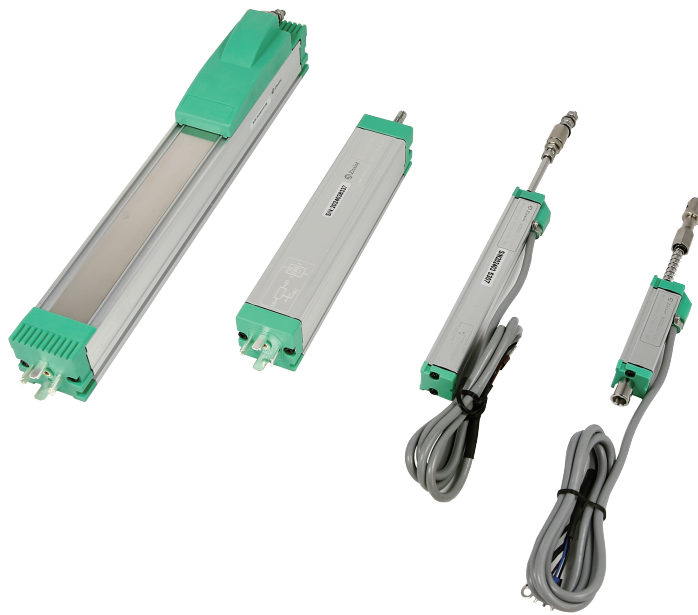


Instructions

Linear Displacement Sensor

ZSLS2 Series



attestation

Please read this instruction manual carefully before installation



ZSLS2 Series

| Product Overview

The ZSLS2 series is a combination of our company's more than ten years of manufacturing experience and customer feedback, and is jointly optimized and upgraded by the Engineering Department and the R&D Department. The product appearance, internal structure, material, production process, technical parameters, and sealing level parameters have all been greatly upgraded. The raw materials are all imported, and the production and manufacturing fully adopts the most advanced technology and process in the international industry. After 100 million reciprocating life tests, the performance indicators and technical parameters of the product still meet the highest standards in the industry. Its signal output terminal and line board connection device have obtained a national utility model patent, and the product appearance has obtained a national appearance design patent.

| Application

ZSLS2 is a general-purpose type, suitable for position detection of various types of equipment, such as: injection molding machines, die-casting machines, rubber machines, shoe machines, EVA injection molding machines, blow molding machines, woodworking machinery, hydraulic presses, etc.

| Features

- Lifespan of 100×10^6 times under different application conditions
- Excellent linearity, up to $\pm 0.04\%$
- Resolution higher than 0.01mm
- High operating speed
- Protection level IP 65

| Outlet mode

- Standard Hirschmann plug and socket
- Waterproof connector type
- Aviation plug type

Instrument settings

ZSLS 2-200mm - - - - -

Other requirements:

Blank: Standard product, the product does not have special requirements in the "MT" code
MT: 1. There are modification requirements, such as: straight outlet at the tail, and there are screws or fish eyes at the tail;
 2. Other non-standard products with special requirements, such as: enhanced sealing type (or die-casting machine-specific), non-standard resistance value, non-standard installation method, non-standard size, non-standard label (neutral packaging or model name required by the customer), etc.
For any special requirements with "MT", the specific non-standard modification situation must be stated on the product outer packaging for subsequent inspection and review

Is it equipped with universal joint or universal joint type:

Blank: Standard universal joint
W1: Extended universal joint
YW: Fisheye universal joint

Whether it is equipped with a cable, and how long the cable is:

Blank: Products with Hirschmann plugs do not come with a cable as standard
1: Only Hirschmann plug products come with a 1-meter cable. Note: Other non-Hirschmann plug products come with a 1-meter cable by default, so you don't need to select the digital code "1"
2~2000: Indicates how many meters the cable needs to be extended to, in m/m, 2 represents an extension to 2 meters, 5 represents an extension to 5 meters, ...

Whether equipped with Hirschmann plug or Hirschmann plug type:

Blank: This series of products is equipped with H1 Hirschmann plug as standard
H2: Equipped with H2 Hirschmann plug, please refer to our Hirschmann plug information page for details of this plug
H3: Equipped with H3 Hirschmann plug, please refer to our Hirschmann plug information page for details of this plug
H4: Equipped with H4 Hirschmann plug, please refer to our Hirschmann plug information page for details of this plug

Signal output type:

Blank: Default standard, no built-in signal transmitter module, resistance output type: 5KQ, 10KQ (0-100% given input working voltage, changes with displacement), that is, potentiometer principle output, power supply voltage 0-24V (default standard)
 That is: if the power supply voltage is 5V, then the output signal is 0-5V; if the power supply voltage is 10V, then the output signal is 0-10V; if the power supply voltage is 24V, then the output signal is 0-24V. An external or plug-in signal transmitter module can be added to convert the potentiometer signal into other signal outputs. For example, when the power supply voltage is 24V or 15-24V, if you need 0-5V, 0-10V, -10-10V, 4-20mA, RS485 and other signal output methods, you can select our external signal transmitter module (Note: When the power supply voltage is 12-24V, the 0-5V and 0-10V output signal transmitter modules can also work). For specific models, please refer to the external or plug-in signal transmitter module selection information.
V1: Built-in signal transmitter module, voltage 0-5V output, power supply voltage 8-24V
V2: Built-in signal transmitter module, voltage 0-10V output, power supply voltage 12-24V
V3: Built-in signal transmitter module, voltage -5-5V output, power supply voltage 12-24V
V4: Built-in signal transmitter module, voltage -10-10V output, power supply voltage 12-24V
A1: Built-in signal transmitter module, current 4-20mA output, three-wire system, power supply voltage 15-24V
A2: Built-in signal transmitter module, current 4-20mA output, two-wire system, power supply voltage 15-24V
A4: Built-in signal transmitter module, current 4-20mA output, four-wire system, power supply voltage 9-30V (contains isolation module, suitable for use in digital beating occasions with large interference)
RS: Built-in signal transmitter module, RS485 digital signal output, power supply voltage 15-24V

Note: When the module is built in, the main length of the electronic ruler will be slightly extended about 20mm-50mm, please consult us for the specific size.

Effective stroke (mm):

0~1250 (can be selected within 1250mm effective stroke, please refer to the range selection reference for details)

Product model:

ZSLS 2: Universal displacement pull rod type, LS2 is an upgraded version of LS

Note:

1. Please select according to the above selection code sequence. The standard parameter code for this model is "blank".

2. If there is no special instruction: the outlet of LS2/LS is the default Hirschmann plug, and it does not come with a cable. If you need to bring a cable, please fill in the length of the cable according to the above selection table.

3. Products that are not equipped with Hirschmann plugs as standard have conventional outlets, waterproof connector outlets, and aviation plug outlets. They all come with a 1-meter shielded cable by default. If you need to extend the cable, please indicate it in the selection code.

Standard delivery accessories include: 1 Hirschmann plug, 1 sealing gasket, 1 universal joint, 2 mounting brackets, 4 M4 flat washers, 4 M4 spring washers, 4 M4*20 screws



Specification

Housing	hard anodized aluminum
Mounting	slide-in adjustable fixing clamp
Pull rod	stainless steel, rotatable, M6 external thread
Bearing	flexible rotary buffer sliding bearing
Resistor element	conductive plastic
Brush assembly	precious metal multi-contact brush with elastic damping
Electrical connection	standard 4-pole silver-plated Hirschmann socket Aviation plug type 4-pole Waterproof connector type 4-pole

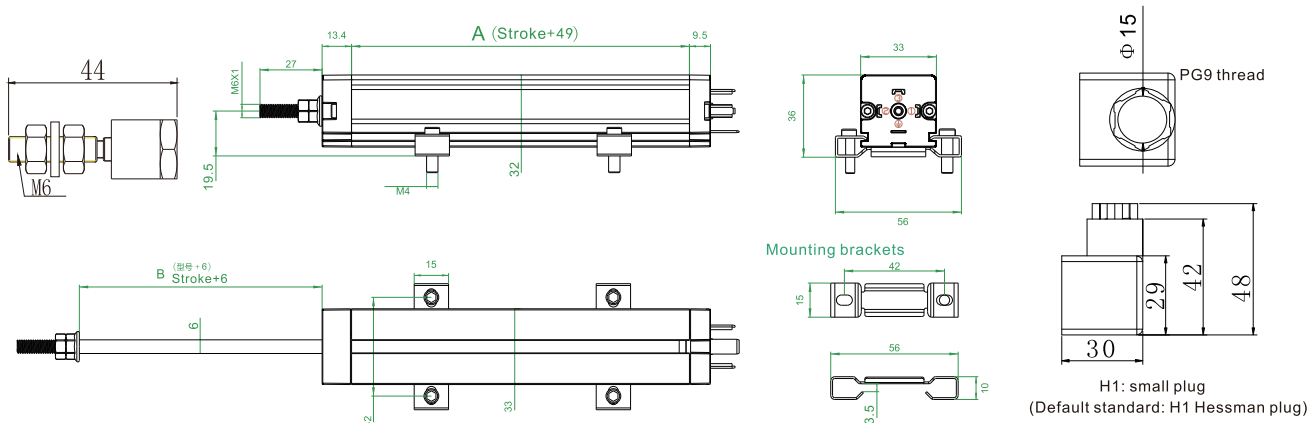
This series of sensors is used in measurement and control systems to measure displacement and length directly and absolutely.

The maximum working range of 1250mm and high resolution (0.01mm) provide accurate linear displacement measurement.

The sensor's structural design takes into account easy installation and removal.

The internal and external structural surfaces of the sensor are specially treated to work at high speed and low wear. The flexible buffer bearing at the front end of the sensor can overcome some minor lateral stresses of the transmission rod and ensure the normal operation of the sensor. The sensor's conductive material fixing and structural design processes ensure that the sensor can work reliably even under the harshest conditions.

Installation Dimensions



Performance Parameters

Note: The linearity, service life and other values listed in the following data sheet are obtained when the sensor works with the operational amplifier as the voltage follower to output voltage to the brush, and there is no load on the brush ($I_e \leq 10\mu A$).

Independent linearity ($\pm\%$)	50~110mm	125~175mm	200~550mm	600~1250mm
	0.1	0.07	0.05	0.04
Resistance tolerance $\pm 10\%$	5.0K Ω	5.0K Ω	5.0K Ω	10.0K Ω
Electrical travel	range+3mm			
Resolution/resolution	uninterrupted resolution			
Repeatability	0.01mm			
Normal working current of brush	$\leq 10\mu A$			
Maximum current of the brush when causing a fault	10mA			
Maximum allowable working voltage	42V			
Effective temperature coefficient ratio of output voltage to input voltage	usually 5ppm/K			
Insulation resistance (500VDC)	$\geq 10M\Omega$			
Insulation strength (500VAC,50Hz)	$\leq 100\mu A$			
Aluminum tube shell length (A)	range+49mm			
Mechanical stroke (B)	range+8mm			
Maximum pull of the pull rod	50KG			
Working force	horizontal direction < 10N Vertical direction $\leq 10N$			
Vibration resistance standard	5~2000Hz, $A_{max}=0.8mm$, $a_{max}=20g$			

Impact resistance standard	50g, 11ms
Working temperature range	-60°C~+150°C
Lifespan	> 100x10 ⁶
Maximum operating speed	10m/S, maximum operating acceleration 200 (20g) m/s ²
Protection level	up to IP67 (DIN40500/IEC529)
Range selection reference	50 75 100 110 125 130 150 175 200 225 250 275 300 325 350 360 375 400 425 450 475 500 550 600 650 700 750 800 850 900 950 1000 1150 1250

ZSLS Series

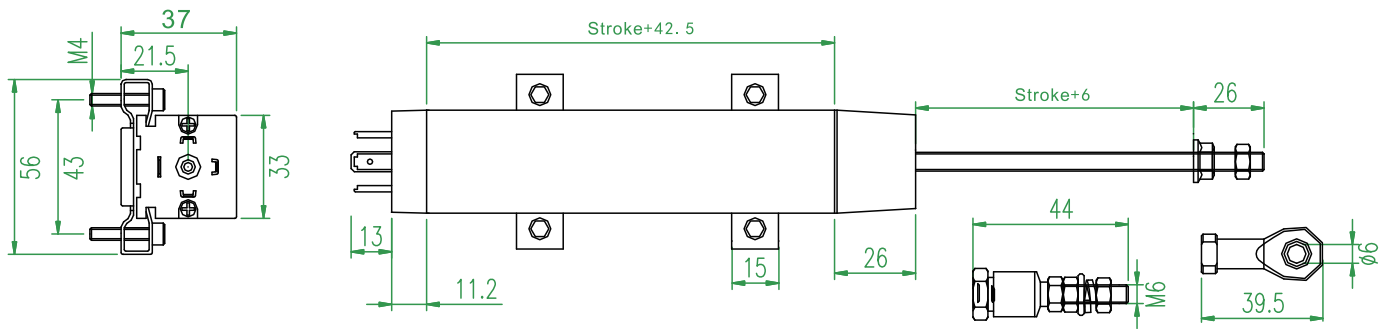
Standard delivery accessories include: 1 Hirschmann plug, 1 sealing gasket, 1 universal joint, 2 mounting brackets, 4 M4 flat washers, 4 M4 spring washers, 4 M4*20 screws



Performance Parameters

	75~110mm	125~175mm	200~550mm	600~1250mm	1150~2000mm
<u>Independent linearity (±%)</u>	±0.1%	±0.1%	±0.05%	±0.04%	±0.04%
<u>Resistance tolerance ±10%</u>	5.0KΩ	5.0KΩ	5.0KΩ	10.0KΩ	20.0KΩ
<u>Mechanical stroke</u>	stroke+6mm				
<u>Resolution/resolution</u>	uninterrupted resolution				
<u>Repeatability</u>	0.01mm				
<u>Maximum operating speed</u>	10m/S				
<u>Recommended current</u>	≤1mA				
<u>Using temperature range</u>	-60°C~+150°C				
<u>Output type</u>	0~100%given input operating voltage (changes with displacement)				
<u>Sensitivity</u>	1				
<u>Temperature drift</u>	infinitely small				
<u>Size</u>	as shown below (unit: mm)				
<u>Range selection reference</u>	75 100 110 125 130 150 175 200 225 250 275 300 325 350 360 375 400 425 450 475 500 550 600 650 700 750 800 850 900 950 1000 1150 1250				

Installation Dimensions



Application

ZSLS is a general-purpose type, suitable for position detection of various types of equipment, such as: injection molding machines, die-casting machines, rubber machines, shoe machines, EVA injection molding machines, blow molding machines, woodworking machinery, hydraulic presses, etc.

ZSLF Series

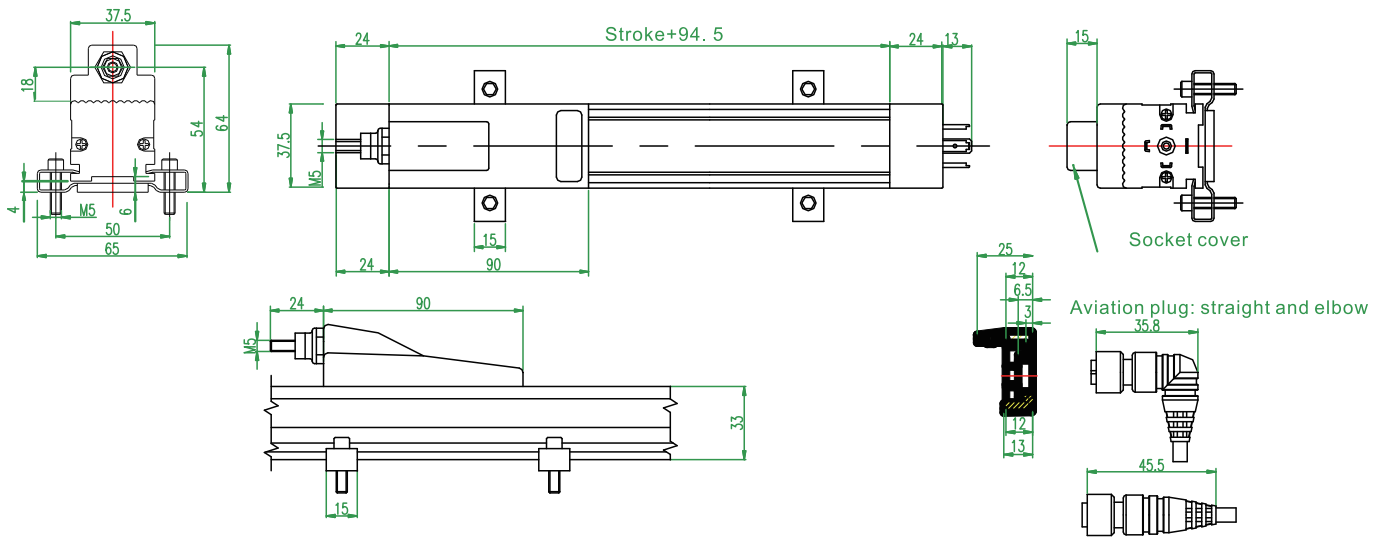
Standard delivery accessories include: 1 Hirschmann plug, 1 sealing gasket, 1 universal joint, 2 mounting brackets, 4 M4 flat washers, 4 M4 spring washers, 4 M4*20 screws



Performance Parameters

	75~110mm	125~175mm	200~550mm	600~1250mm	1150~2000mm	2000mm or more
<u>Independent linearity (±%)</u>	±0.1%	±0.1%	±0.05%	±0.04%	±0.04%	±0.04%
<u>Resistance tolerance±10%</u>	5.0KΩ	5.0KΩ	5.0KΩ	10.0KΩ	20.0KΩ	20.0KΩ
<u>Mechanical stroke</u>	stroke+6mm					
<u>Resolution/resolution</u>	uninterrupted resolution					
<u>Repeatability</u>	0.01mm					
<u>Maximum operating speed</u>	10m/S					
<u>Recommended current</u>	≤1mA					
<u>Using temperature range</u>	-60°C~+150°C					
<u>Output type</u>	0~100% given input operating voltage (changes with displacement)					
<u>Sensitivity</u>	1					
<u>Temperature drift</u>	infinitely small					
<u>Size</u>	as shown below (unit: mm)					
<u>Range selection reference</u>	75 100 110 125 130 150 175 200 225 250 275 300 325 350 360 375 400 425 450 475 500 550 600 650 700 750 800 850 900 950 1000 1150 1250 1350 1450 1500 1600 1800 2000 2250 2500 2800 3000					

Installation Dimensions



Application

ZSLF is a miniaturized universal installation, especially suitable for reducing the installation size in the length direction of the machine, and is suitable for applications with larger strokes, such as: large injection molding machine mold closing stroke, rubber machine mold closing stroke, woodworking machinery, and hydraulic machinery.

ZSLM Series

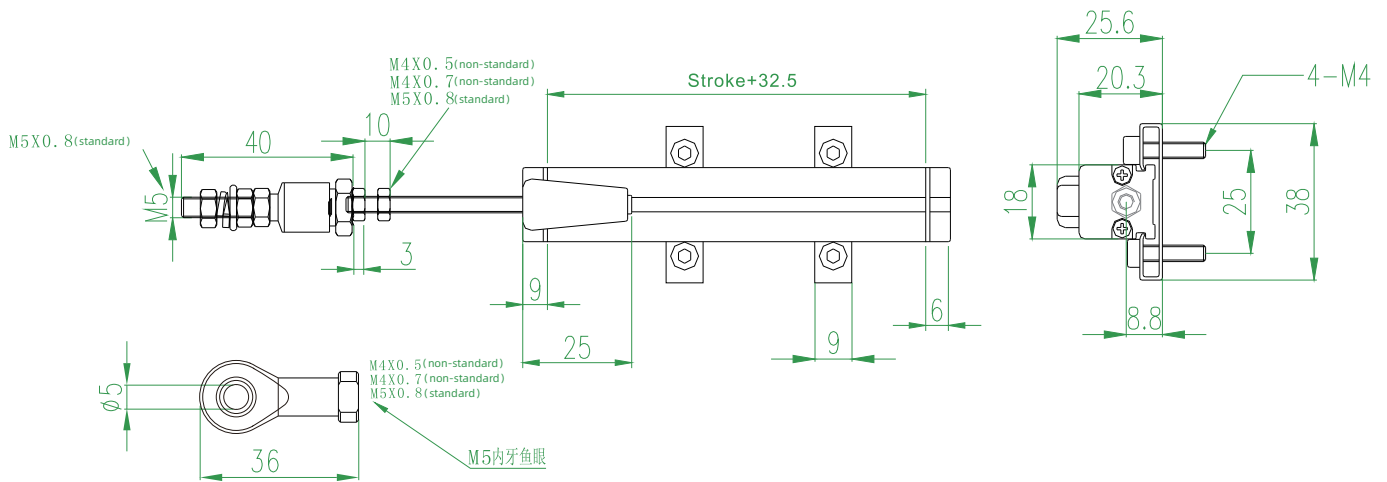
Standard delivery accessories include: universal joint, 4 M4*16 screws, 2 hardware brackets, 2 aluminum alloy brackets



Performance Parameters

	10mm	15mm	25mm	30mm	40mm	50~75mm	100~300mm
<u>Independent linearity (±%)</u>	±0.1%	±0.1%	±0.1%	±0.1%	±0.1%	±0.1%	±0.1%
<u>Resistance tolerance ±10%</u>	1KΩ	1KΩ	1KΩ	1KΩ	1KΩ	1KΩ	5KΩ
<u>Mechanical stroke</u>	stroke+3mm						
<u>Resolution/resolution</u>	uninterrupted resolution						
<u>Repeatability</u>	0.01mm						
<u>Maximum operating speed</u>	10m/S						
<u>Recommended current</u>	≤1mA						
<u>Using temperature range</u>	-60°C~+150°C						
<u>Output type</u>	0~100% given input operating voltage (changes with displacement)						
<u>Sensitivity</u>	1						
<u>Temperature drift</u>	infinitely small						
<u>Size</u>	as shown below (unit: mm)						
<u>Range selection reference</u>	10 15 25 30 40 50 75 100 125 150 175 200 225 250 300						

Installation Dimensions



Application

ZSLM is a micro-tie rod series, especially suitable for occasions with narrow space, such as aircraft steering, ship steering, shoemaking machinery (front lasting machine, back lasting machine), ejector control of injection molding machine, printing machinery, paper packaging machinery.

ZSLR Series

Standard delivery accessories include: 4 M4*16 screws, 2 hardware brackets, 2 aluminum alloy brackets



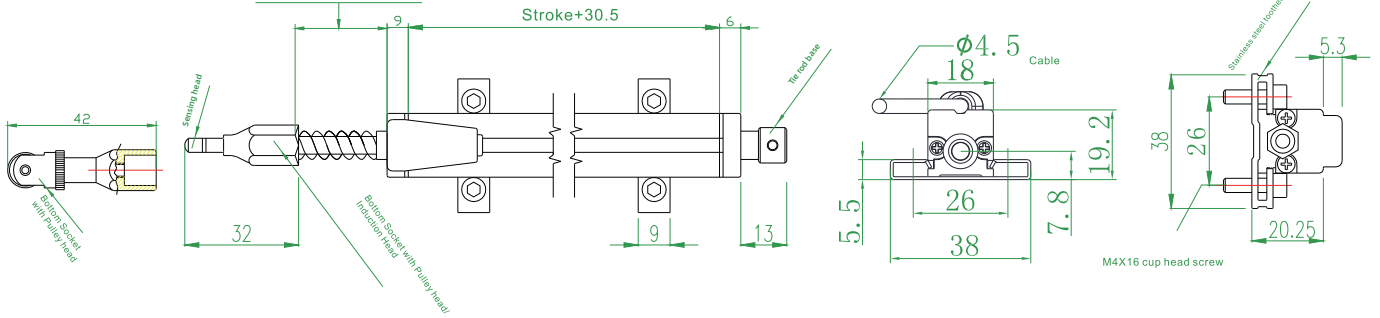
Performance Parameters

	10~15mm	25mm	30mm	40mm	50~150mm	175~300mm
Independent linearity (±%)	±0.1%	±0.1%	±0.1%	±0.1%	±0.1%	±0.1%
Resistance tolerance ±10%	2KΩ	2KΩ	2KΩ	2KΩ	5KΩ	5KΩ
Mechanical stroke	stroke+3mm					
Resolution/resolution	uninterrupted resolution					
Repeatability	0.01mm					
Maximum operating speed	10m/S					
Recommended current	≤1mA					
Using temperature range	-60°C~+150°C					
Output type	0~100% given input operating voltage (changes with displacement)					
Sensitivity	1					
Temperature drift	infinitely small					
Size	as shown below (unit: mm)					
Range selection reference	10 15 25 30 40 50 75 100 125 150 175 200 225 250 300					

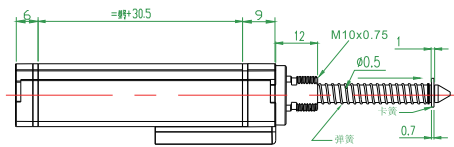
Installation Dimensions

ZSLR11/12

LR-10=22 LR-100=131 LR-250=330
 LR-15=28 LR-125=175 LR-300=393
 LR-25=33 LR-150=198
 LR-50=66 LR-175=225
 LR-75=99 LR-200=254



ZSLR2



Spring extension length and compression length (tolerance ±1mm)		
Model number	Natural elongation/mm	After compression/mm
ZSLR2-10mm	31	18
ZSLR2-15mm	37	19
ZSLR2-25mm	43	15
ZSLR2-50mm	76	23
ZSLR2-75mm	108	30

Application

ZSLR is a miniature self-recovering type, especially suitable for small spaces and inconvenient installation. Such as: hollow bottle blowing machine, IT equipment, tension adjustment, high-speed punching automatic feeder, speed adjustment, printing machinery, product packaging machinery, etc.