

# SENTEC

Micro Displacement  
Sensor

## LS-117 series

INSTRUCTION MANUAL



Thank you for purchasing this product.  
In order to use this specification, fully satisfying it,  
please use a handling description on looking well.

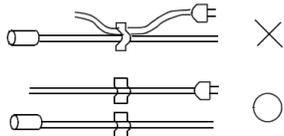
### 1 SPECIFICATIONS

CONTROLLER	LS-117-1	LS-117-2	LS-117-3A	LS-117-3B	LS-117-4A	LS-117-4B	LS-117-5	LS-117-10
<b>SENSOR ITEM</b>	HA-30R	HA-50R	HA-80R	HA-101R	HA-141R	HA-225R	HA-162R	HA-222R
MEASURING RANGE ※1	0~0.8mm	0~1mm	0~2mm	0~2mm	0~4mm	0~5mm	0~5mm	0~10mm
LINEARITY RANGE ※2	0~0.3mm	0~0.5mm	0~1.3mm	0~1.3mm	0.5~2mm	1~3.5mm	2~6mm	2~6mm
OUTPUT VOLTAGE	0~0.8V	0~1V	0~2V	0~2V	0~4V	0~5V	0~5V	0~10V
LINEARITY	±2% of F.S							
RESOLUTION	0.1% of F.S (1µm, minimum)							
RESPONSE	DC~10kHz (-3dB)							
OUTPUT IMPEDANCE	52Ω							
STABILITY ※3	SENSOR HEAD 0.05% of F.S/°C		CONTROLLER 0.02% of F.S/°C		0.03% of F.S/°C			0.02% of F.S/°C
AMBIENT TEMPERATURE	CONTROLLER: 0~60°C SENSOR HEAD: -10~70°C 85%RH or less, There must not be no dew condensation.							
POWER	DC 2.4V ±10% ripple rate 10% or less							
CONSUMPTION	100mA or less							
FUNCTION	※4 Disconnection detecting function (noncontact output DC60V 100mA)							

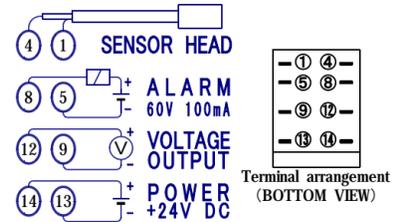
- ※1 The linearity is a time base range where accuracy is repeatedly guaranteed though it decreases somewhat.
- ※2 It is a time base range where the linearity guarantees the accuracy within ±2%.
- ※3 In a set distance, 1/2 of F.S 10°C interval/hr and target are SS400, and 3m in length of the cable.
- ※4 Red LED(ALARM) on the panel side lights when the sensor cable is disconnected and a no contact signal is output at the same time.

### 2 CAUTIONS ON USE

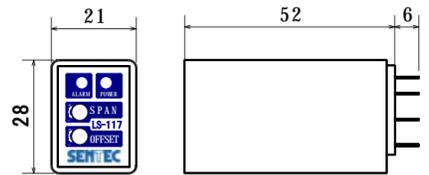
- For a sensor head, other power lines are according to. Please carry out independent wiring.
- Since the controller is adjusted according to the sensor head, use of the sensor head of a different form cannot be performed. Moreover, use which changes cable length cannot be performed, either.
- Since there is fear of mutual interference when using it, making a sensor head approach, please contact me to the Sales Department of our company.



### 3 CONNECTION



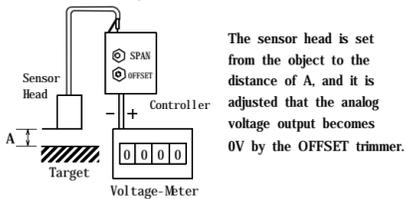
### 4 CONTROLLER DIMENSIONS



※Please buy terminal stand PYF08A, RT58S, and SM2S-05B equivalent goods for the mini power relay of marketing for the terminal stand separately.

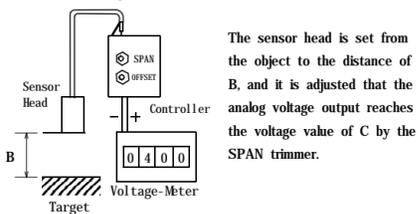
### 5 ADJUSTMENT

#### (1) OFFSET—Adjustment



The sensor head is set from the object to the distance of A, and it is adjusted that the analog voltage output becomes 0V by the OFFSET trimmer.

#### (2) SPAN—Adjustment



The sensor head is set from the object to the distance of B, and it is adjusted that the analog voltage output reaches the voltage value of C by the SPAN trimmer.

NOTES) Please repeat OFFSET-ADJ and SPAN-ADJ 2 to 3 times.

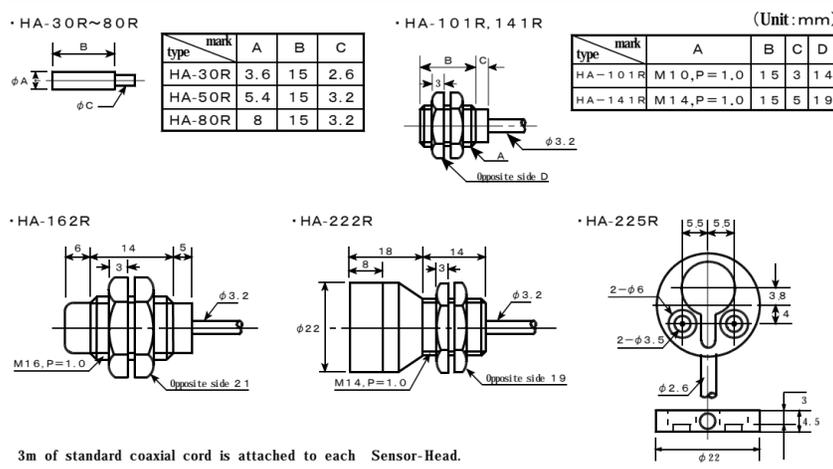
#### (3) OFFSET—Adjustment

The sensor head is returned from the object to the distance of A, and it is adjusted that the analog voltage output reaches the voltage value of D by the OFFSET trimmer.

#### Adjustment point of each type

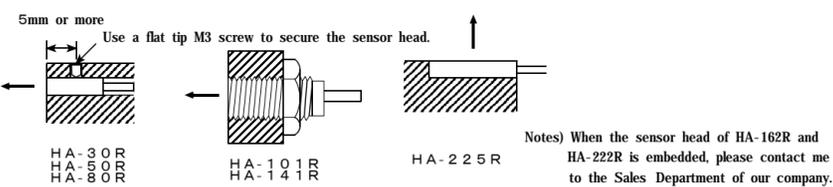
	1	2	3A/3B	4A/4B	5	10
A (mm)	0	0	0.5	0.8	1.5	3
B (mm)	0.3	0.4	1.1	1.8	2.5	5
C (V)	0.3	0.4	0.6	1	1	2
D (V)	0	0	0.5	0.8	1.5	3

### 6 SENSOR-HEAD DIMENSIONS



3m of standard coaxial cord is attached to each Sensor-Head.

### 7 SENSOR-HEAD MOUNTING



Notes) When the sensor head of HA-162R and HA-222R is embedded, please contact me to the Sales Department of our company.

### 9 CHECK LIST

The following symptoms are often mistaken for product failure. Check the following before bringing equipment in for repair.

Symptom	Cause	Countermeasure
● Power display does not light after power supply is turned on.	● Power line is unplugged, or power supply terminal plug is defective.	● Plug in power line properly, following instruction display.
● Output display does not reach volume described in specifications.	● Object to be sensed is material other than iron.	● Equipment is designed to sense iron : use only for iron.
● ZERO-adjust and/or SPAN-adjust not possible.	● Volume of object to be sensed is less than the standard.	● See reference data.
	● Sensor cord is of inappropriate length.	● Replace with cord of specified length.
	● Sensor is different from that specified.	● Controller is not compatible with sensor other than that specified. Use appropriate sensor.
	● Sensor wire is laid too close to other wires.	● Lay sensor wire separately from other wires.

### 10 CAUTION ON SAFETY

- Warning** If cautions are neglected, a dangerous situation which is connected with a serious disaster is shown.
- Caution** If cautions are neglected, a dangerous situation which is connected with damage on a product is shown.

#### Warning

- Please do not make reconstruction and decomposition absolute.
- Be careful for there to be no faulty wiring according to the wiring method indicated to this book and an instructions manual. A product may be damaged with faulty wiring. The breakage and failure to depend become the outside of the object of a guarantee.
- In case you perform connection, since there is a possibility of receiving an electric shock, please work turning off the power.

#### Caution

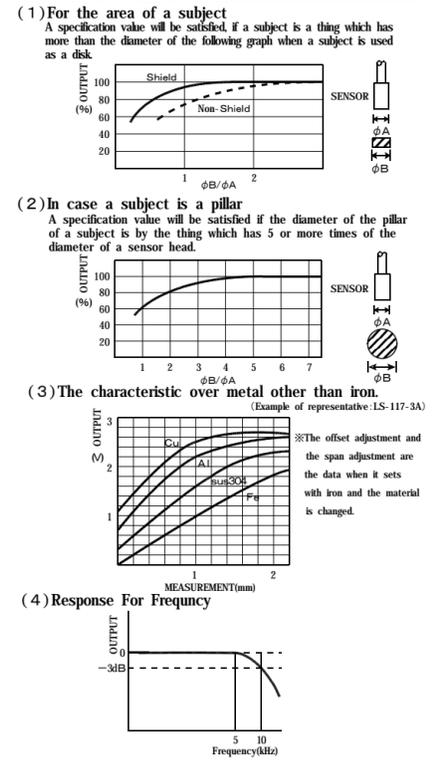
- Please do not add a big vibration and a shock to a product, or do not make it to topple a product. Moreover, please do not place a thing in piles on a product. It may change and damage.
- When opening packing, and you check that it is the product of an order and there are accessories, be careful enough not to throw away.
- When there are accessories etc., please keep it not to be intermingled.
- When you carry a product, please give treatment carefully.
- Please do not use and keep it under existence of corrosive gas.
- Keep in mind that water will infiltrate into the inside of a product and it will become the cause of breakage if water takes at the time of use and storage.
- When you incorporate and ship a product to apparatus, please protect a product in consideration of the vibration at the time of transportation, or a shock using shock absorbing material etc.
- The data value etc. that have been described are measurements under the examination environment of our specification, and it might be different from the data value described in this book and the manual depending on various conditions besides use conditions.

- Please use a suitable tool about attachment of a product and perform attachment which applied to the attachment method correspondingly after attention.
- Please do not use it exceeding the range of the specification.
- Please carry out warming up 30 minutes or more from a power supply injection.
- Nothing should connect with the terminal which is not used.
- Please do not set it up near the device equipment (inverter, high-frequency apparatus, and motor, etc.) that generates big surge.
- Please separate wiring from a high-tension wire or a power line as much as possible. It becomes the cause of malfunction or failure by a noise.
- Please set up the protection circuit of the arrester and the surge killer, etc. when the influence of the thunder and surge is thought.
- When you connect loads, such as a relay lamp, please install a protection circuit.
- Please avoid use in the place where a rapid temperature change is caused and the place where the vibration is intense.
- When it installs in a moist place, a product may be damaged by dew condensation. Please keep dew condensation from occurring in a moist place.

### 11 WARRANTY

- The guarantee of the product is the one to mean the guarantee of this machine unit.
- About the term of a guarantee of a product, I am after-shipment one year.
- It is failure of a product when failure arises according to a manufacturer's responsibility during the above-mentioned term of a guarantee. Repair of a portion or part exchange is performed. However, when it corresponds to below, I will carry out the outside of the scope of a guarantee.
  - ① When based on unsuitable condition, environment, handling, and use of those other than the contents checked by the specification value of a product, the specifications exchanged separately.
  - ② When the cause of failure is based on reasons other than supplies.
  - ③ By remodeling or repairing the delivery goods that depend besides our company.
  - ④ When based on the reason which was not able to be foreseen with the technical level at the time of shipment.
  - ⑤ In addition, when it is not in the responsibility by the side of a manufacturer with a natural disaster, disaster, etc.

### 8 REFERENCE DATA



● I can do neither conformity in the particular application of this machine, nor compensation of guarantee loss of the secondary value generated with a product. Moreover, they are not a design and the manufactured product for the purpose of the use as which very high reliability and safety are required, and the uses (atomic power, aerospace, infrastructure, medical equipment, etc.) concerning a human life. About the use under such a use and environment, I will carry out the outside of the scope of a guarantee.

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★ A specification change may be made without a preliminary announcement for the better improvement of a product.  
Please give me consent and an understanding.