

- Disconnection detection featured
- High-precision displacement meter (DC) Power Supply Type
- Variations of the sensor is available
- Compatibility of sensor head

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
SENSOR SPEC	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		0~4mm		0~5mm	0~10mm
LINEARITY RANGE*2	0~0.3mm	0~0.5mm	0~1.3mm		0.5~2mm		1~3.5mm	2~6mm
OUTPUT VOLTAGE	0~0.3V	0~0.5V	0~1.3V		0.5~2V		1~3.5V	2~6V
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		0.03% of F.S/°C				
	CONTROLLER			0.02% of F.S/°C				
AMBIENT TEMPERATURE	CONTROLLER: 0~60°C SENSOR HEAD: -10~70°C 85%RH or less ,No condensation.							
POWER	DC+24V ±10% ripple rate 10% or less							
CONSUMPTION	100mA or less							
FUNCTION*4	Disconnection alarm output (photoMOS output DC60V 100mA)							

※1 : MEASURING RANGE : Liniarity is more than ±2%. Repeatability is assured.

※2 : LINEARITY RANGE : The range of measurement assured linearity within ±2%.

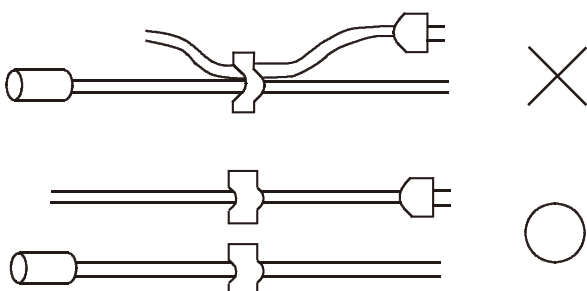
※3 : SENSOR ENVIRONMENT : a half distance of F.S, material SS400, cable length 3m.

※4 : Red LED(ALARM) on the panel side lights when the sensor cable is disconnected. A no contact signal is output at the same time.

Caution : When you are used in non-magnetic bodies such as aluminum, copper, SUS, please contact us.

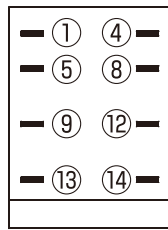
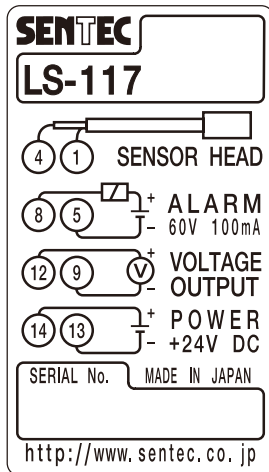
CAUTIONS ON USE

- Please carry out independent wiring to use sensor-head.



- Other sensor head cannot be performed.
- The cable length cannot be changed.
- Please contact us if you use sensor-heads closely.

CONNECTION

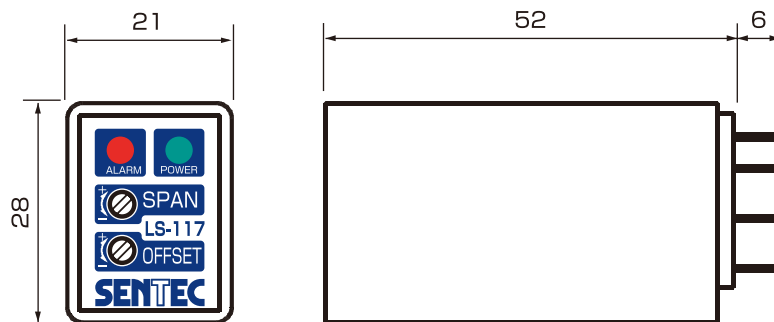


Terminal arrangement
(BOTTOM VIEW)

材質別係数表

Material	Factor
Iron	1.0
SUS304	approx0.7
Aluminum	approx0.5
Copper	approx0.4
Brass	approx0.4

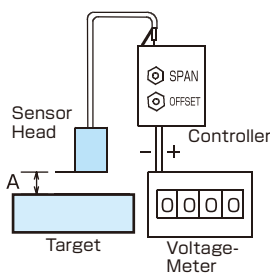
CONTROLLER DIMENSIONS



※Please buy terminal stand PYF08A or SM2S-05B separately.

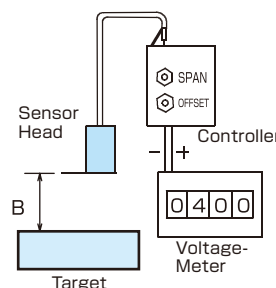
ADJUSTMENT

(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 sets to the distance of A, and it is adjusted that the analog voltage output reaches the voltage value of D by the OFFSET trimmer.

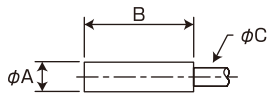
Adjustment point of each type

	LS-117-1	LS-117-2	LS-117-3A/3B	LS-117-4A/4B	LS-117-5	LS-117-10
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

Example LS-117-2,HA-50R, target: Fe

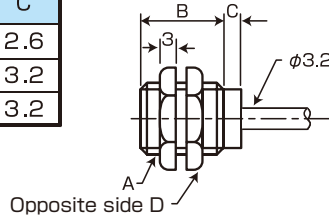
SENSOR-HEAD DIMENSIONS

HA-30R~80R



MARK TYPE	A	B	C
HA-30R	3.6	15	2.6
HA-50R	5.4	15	3.2
HA-80R	8	15	3.2

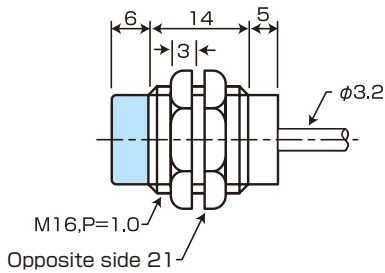
HA-101R,141R



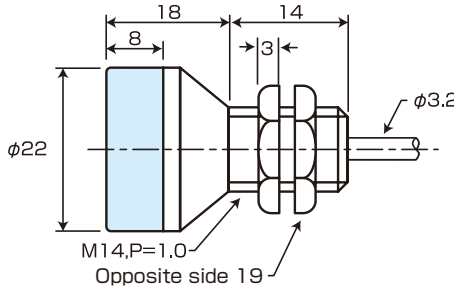
(unit : mm)

MARK TYPE	A	B	C	D
HA-101R	M10,P=1.0	15	3	14
HA-141R	M14,P=1.0	15	5	19

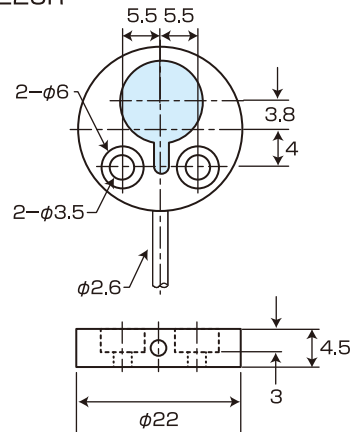
HA-162R



HA-222R



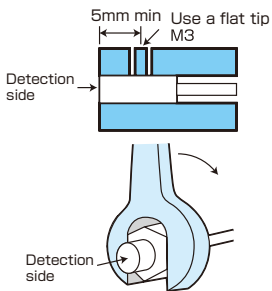
HA-225R



3m coaxial cable (standard cable)

CAUTION IN USE

● SENSOR HEAD MOUNTING



TYPE	MAX. TORQUE
HA-30R	0.2Nm or less
HA-50R	0.5Nm or less
HA-80R	0.8Nm or less
HA-101R	4Nm or less
HA-141R	15Nm or less
HA-162R	30Nm or less
HA-222R	15Nm or less

HA-30R~141R can be used in metals.
If you use the sensor in metals, please contact us.

● MUTUAL INTERFERENCE



Refer to the table list for minimum distance between the plural sensor heads set at opposing or parallel position.

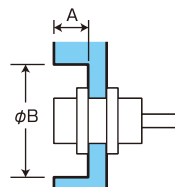
MARK TYPE	a
HA-30R	7
HA-50R	12
HA-80R	20
HA-101R	20
HA-141R	30
HA-225R	20
HA-162R	60
HA-222R	60

● VHF COAXIAL CABLE & CONNECTORS MATERIALS

Need to re-adjust when it is cut or extend the coaxial is (surcharge).

TYPE	COAXIAL CABLE	COAXIA CONNECTOR
HA-30R~HA-225R	RG-174U or equiv.	BNC P-1.5,J-1.5 or equiv.
HA-50R~HA-162R	1.5D-QEV or equiv.	
HA-222R	3D-QEV or equiv.	BNC P-3,J-3

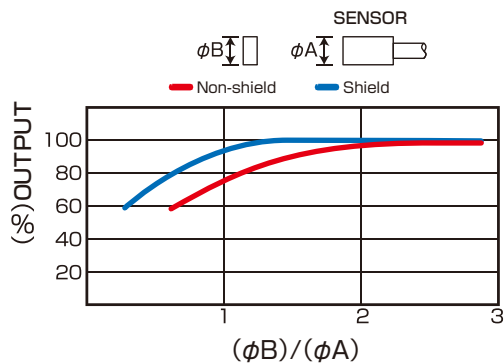
● EFFECT OF SURROUNDING FERROUS MATERIALS



MARK TYPE	A	phi B
HA-162R	9	30
HA-222R	18	42

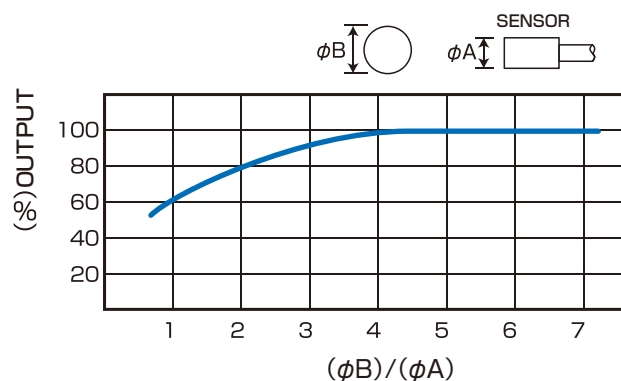
(1) For the area of object

A specification value will be satisfied, if an object is a thing which has more than the diameter of the following graph when a subject is used as a disk.



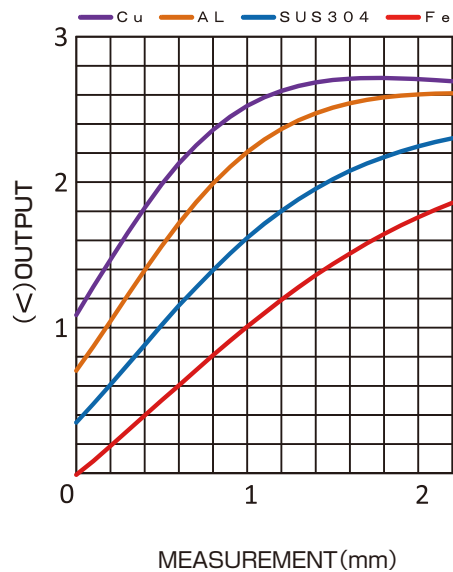
(2) For a pillar shape object

A specification value will be satisfied, if the diameter of the pillar of an object is by the thing which has 5 or more times of the diameter of a sensor head.

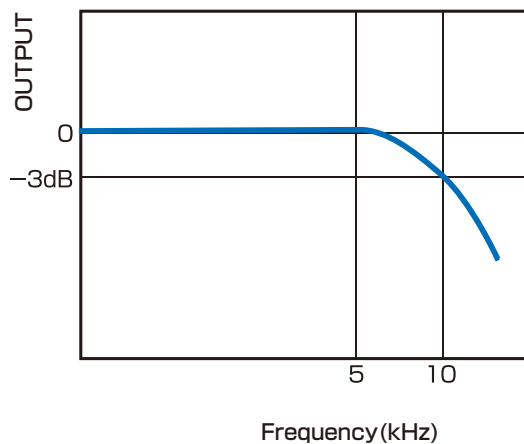


(3) The characteristic over metal other than iron. (Example of representative:LS-117-3A)

※The offset adjustment and the span adjustment are the data when it sets with iron and the material is changed.



(4) Response For Frequency



※*The whole data can be different depending on the operating environment.