

## Special Use Sensors – Linear Displacement Sensors

### FEATURES

- Infinite resolution
- True output linearity over the entire measurement range
- Low operating forces
- Excellent stability and temperature compensation

### DESCRIPTION

Micro-Measurements Linear Displacement Sensors use a fully active 350-ohm strain-gage bridge to sense spindle displacement, giving infinite resolution and excellent linearity. They are compatible with all standard strain-gage instrumentation with bridge excitation from 2 to 10 volts. With a selection of models having full-scale ranges from 5mm (0.2 in) to 100mm (4 in), Linear Displacement Sensors feature a unique design that produces maximum operating forces of less than 4N (0.9 lb). Available with specially designed mounting fixtures, these versatile sensors are ideally suited for use in research, manufacturing and process control applications.

### ACCURACY

Micro-Measurements Linear Displacement Sensors produce an output voltage proportional to a captive, guided spindle displacement by means of a 350-ohm strain gage bridge with four active arms. This arrangement provides excellent temperature compensation and linearity.



### COMPATIBILITY

Micro-Measurements Linear Displacement Sensors exhibit the same inherent advantages for linearity, versatility and precision as many other strain-gage-based sensors. As such, they are systems-compatible with a wide range of commonly used sensors for pressure, load, acceleration, vibration, etc. and normally utilize the same instrumentation.

Characteristics		HS-A XX					Units
Model		HS-A5	HS-A10	HS-A25	HS-A50	HS-A100	
Displacement		5.5	11	26	51	101	mm
		0.2	0.4	1.0	2.0	4.0	inch
Weight (Ex Cable)		125/135	130/140	140/150	180/200	320	grams
Spindle Force		50-250	50-250	50-250	50-250	90-380	gf
Sensitivity (nominal)		4.2/4.6	2.5/2.8	1.3/1.5	0.75/0.8	0.38	mV/mm
Output FS (nominal)		4.2/4.6	5.1/5.6	6.7/7.2	9.0/9.6	7.5	mV/V
Non-Linearity, Hysteresis, Repeatability (total error)		<0.1				<0.2	%FS
Bridge Resistance		350					Ohms
Excitation:		10 recommended (2-10 acceptable)					Volts AC or DC
Current Consumption:		<30 @ 10Vdc					mA
Insulation Resistance:		>2000					MΩ
Resolution		Infinite					
Operation Temperature		-10 to +70 (14 to +158)					°C (°F)
Temperature Effect	Zero	<0.01					% / °C
	Output	<0.01					% / °C
Construction:		Stainless Steel/Aluminium					
Environmental Protection:		IP54					
Cable:		2 Metre 4 Core Screened, bend radius 10mm					

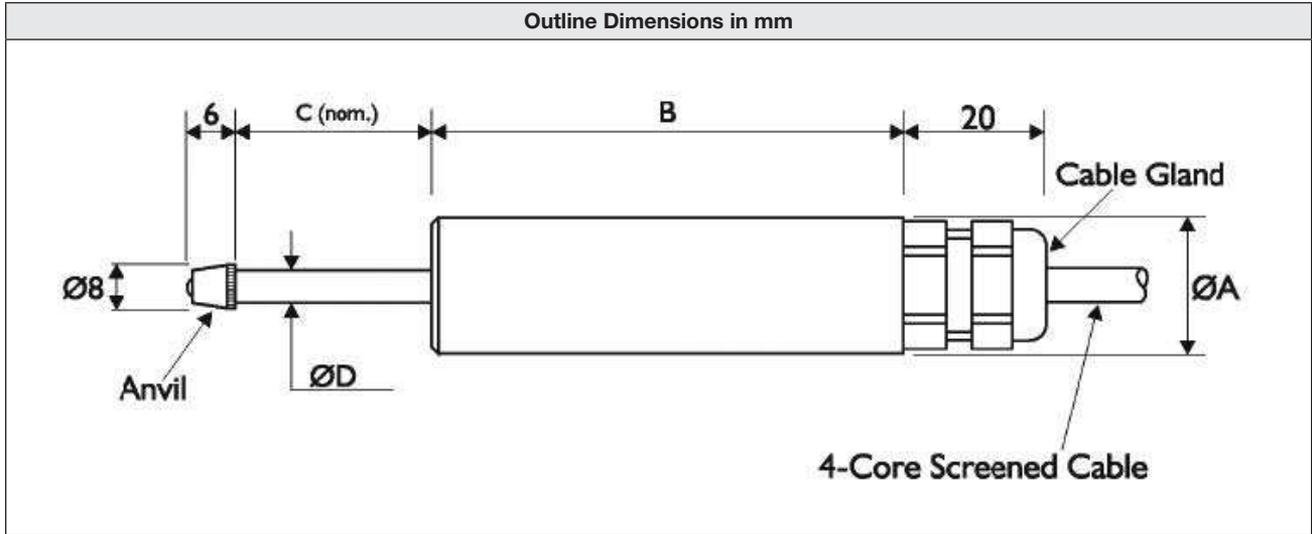
#### Operational Notes:

1. The outer case must not be distorted when clamping the sensor. A full diameter clamp is advised.
2. The sensor is not recommended for use in hostile environments without additional protection.
3. Special tools are required to remove the plunger tip (anvil) to avoid damage to the spindle.
4. With the plunger tip (anvil) attached this forms a positive overload protection stop. If the anvil is removed, the threaded end of the plunger must not be allowed to enter the case.

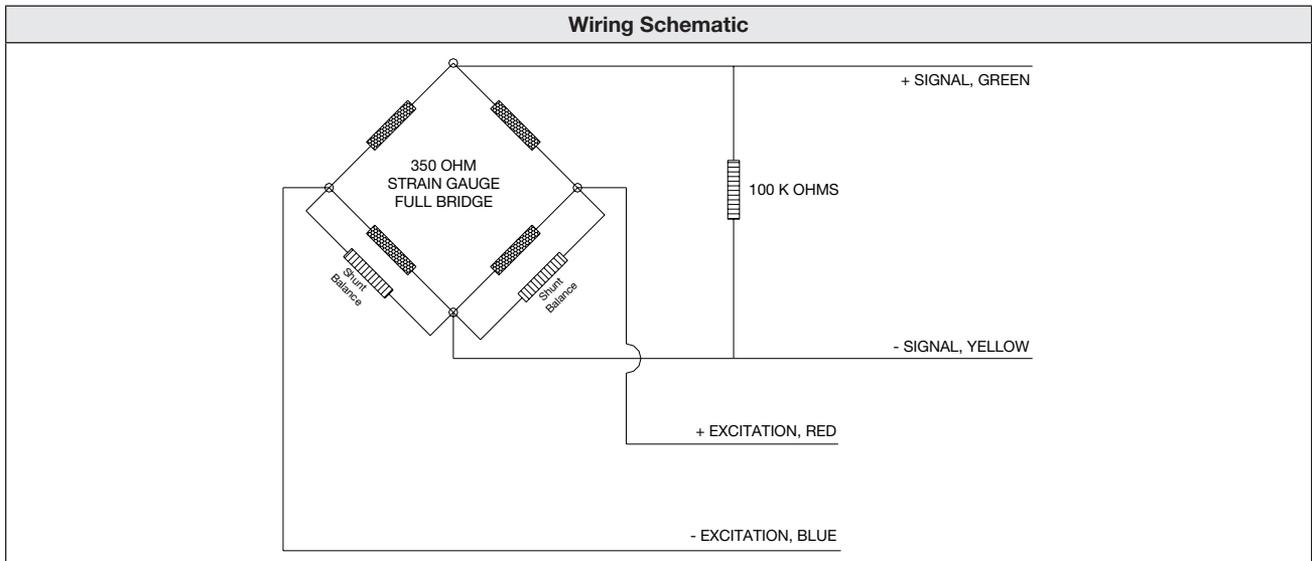
Special Use Sensors—Linear Displacement Sensors

**CONNECTIONS:**

Wire	Designation
RED	+ve excitation
BLUE	-ve excitation
GREEN	+ve signal
YELLOW	-ve signal
SCREEN	GND – Not connected to body



Dimensions mm (inch)	Model				
	HS-A5	HS-A10	HS-A25	HS-A50	HS-A100
ØA	17.4 (0.685)	17.4 (0.685)	17.4 (0.685)	17.4 (0.685)	25.4 (1)
B	89 (3.504)	89 (3.504)	104 (4.094)	155 (6.1)	264 (10.39)
C	5 (0.197)	5 (0.197)	26 (1.023)	51 (2)	102 (4.016)
ØD	4.8 (0.189)	4.8 (0.189)	4.8 (0.189)	4.8 (0.189)	4.8 (0.189)



## Special Use Sensors—Linear Displacement Sensors

### DISPLACEMENT SENSOR ACCESSORY

Single End Clamp Types SHC 17

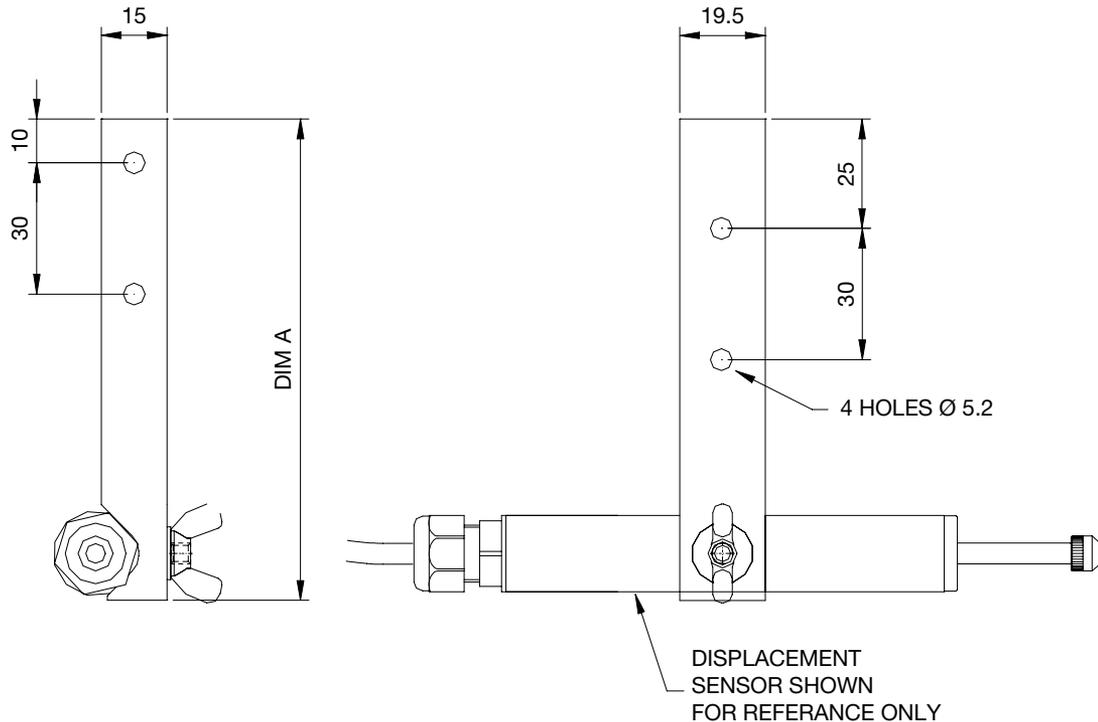
SHC 20

SHC 25

Materials: Clamp Bar Anodised Aluminium

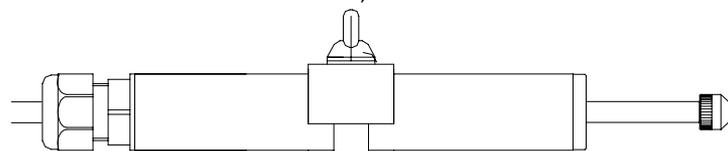
Ring & Fixings Stainless Steel

Note: Clamp bar can be machined to suit applications



TYPE	DIM A	SENSOR TYPE/DIA
SHC-17	110	HS-A-xx/Ø17.4
SHC-19	110	HS-A-xx/Ø19
SHC-25	115	HS-A-100/Ø25.4

WING NUT CAN BE REPLACED BY M5 FULL NUT FOR PERMANENT FIXING



Special Use Sensors—Linear Displacement Sensors

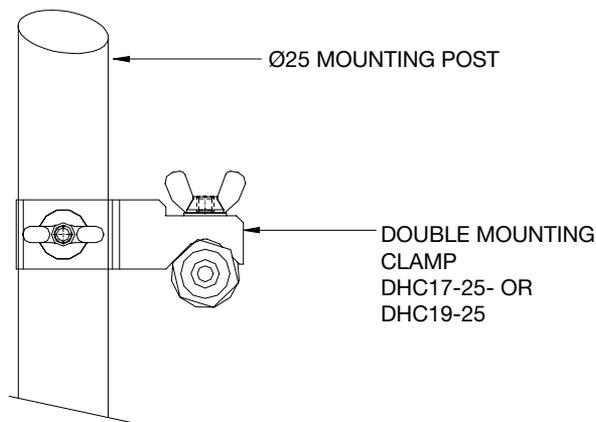
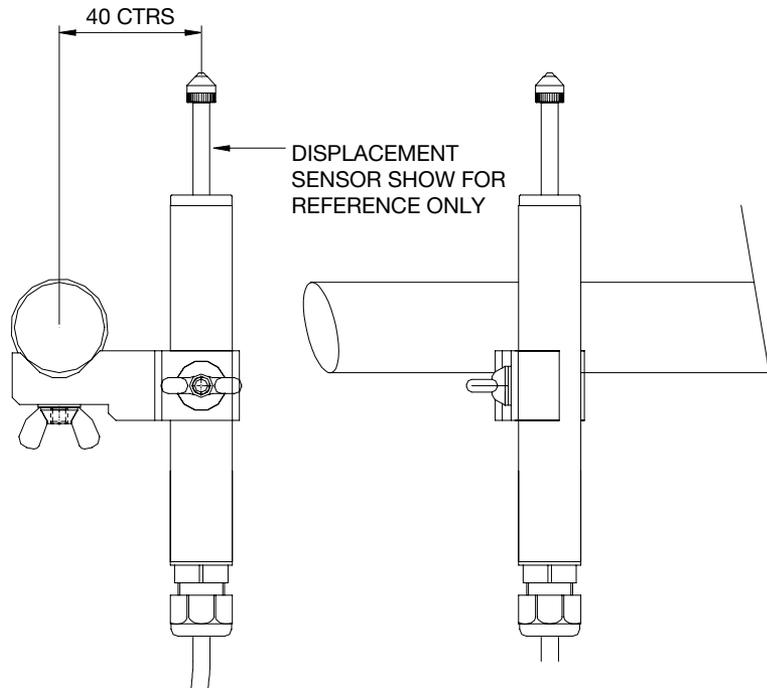
**DISPLACEMENT SENSOR ACCESSORY**

Double End Clamp Types DHC 17-25

DHC 19-25

Materials: Clamp Bar Anodised Aluminium

Ring fixing Stainless Steel



## Disclaimer

ALL PRODUCTS, PRODUCT SPECIFICATIONS AND DATA ARE SUBJECT TO CHANGE WITHOUT NOTICE.

Vishay Precision Group, Inc., its affiliates, agents, and employees, and all persons acting on its or their behalf (collectively, "VPG"), disclaim any and all liability for any errors, inaccuracies or incompleteness contained herein or in any other disclosure relating to any product.

The product specifications do not expand or otherwise modify VPG's terms and conditions of purchase, including but not limited to, the warranty expressed therein.

VPG makes no warranty, representation or guarantee other than as set forth in the terms and conditions of purchase. **To the maximum extent permitted by applicable law, VPG disclaims (i) any and all liability arising out of the application or use of any product, (ii) any and all liability, including without limitation special, consequential or incidental damages, and (iii) any and all implied warranties, including warranties of fitness for particular purpose, non-infringement and merchantability.**

Information provided in datasheets and/or specifications may vary from actual results in different applications and performance may vary over time. Statements regarding the suitability of products for certain types of applications are based on VPG's knowledge of typical requirements that are often placed on VPG products. It is the customer's responsibility to validate that a particular product with the properties described in the product specification is suitable for use in a particular application. You should ensure you have the current version of the relevant information by contacting VPG prior to performing installation or use of the product, such as on our website at [vpgsensors.com](http://vpgsensors.com).

No license, express, implied, or otherwise, to any intellectual property rights is granted by this document, or by any conduct of VPG.

The products shown herein are not designed for use in life-saving or life-sustaining applications unless otherwise expressly indicated. Customers using or selling VPG products not expressly indicated for use in such applications do so entirely at their own risk and agree to fully indemnify VPG for any damages arising or resulting from such use or sale. Please contact authorized VPG personnel to obtain written terms and conditions regarding products designed for such applications.

Product names and markings noted herein may be trademarks of their respective owners.

Copyright Vishay Precision Group, Inc., 2014. All rights reserved.