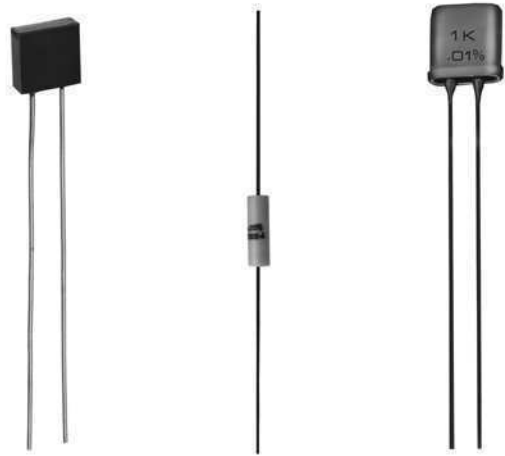


Specifications and Selection Charts

Fixed resistors have two primary uses in strain gage circuits: shunt calibration of strain-measuring instrumentation, and bridge completion. For shunt calibration, a fixed resistor is temporarily shunted across a bridge arm to produce a known resistance change in the bridge circuit. The resulting instrument indication is then compared to the calculated strain corresponding to the resistance change. For bridge-completion applications, a fixed resistor may be used in the adjacent arm of the bridge to complete the external half-bridge circuit when a single strain gage is connected in a quarter-bridge arrangement.

In each of these applications, the accuracy of the strain measurement is affected, directly or indirectly, by the accuracy and stability of the fixed resistor(s) used in the circuit. It is important, therefore, that only precision, high-stability resistors be selected for these purposes.



Standard S-Type

Wire Wound

Hermetic

PRECISION RESISTOR SPECIFICATIONS		
STANDARD S-TYPE (PREFIX "S")	WIRE WOUND (PREFIX "W")	HERMETIC (PREFIX "H")
<p>Noted for long-term stability and low temperature-coefficient-of-resistance. Used for shunt calibration (below 100,000 Ω) and bridge completion.</p> <p>Size: 0.295 x 0.320 x 0.10 in (7.5 x 8.1 x 2.5 mm).</p> <p>Temperature Coefficient: ±0.6 ppm/°F; +32° to +140°F (±1 ppm/°C; 0° to +60°C).</p> <p>Stability: 25 ppm/year max. drift.</p> <p>Wattage: 0.3 at +75°F (+24°C).</p> <p>Leadwires: 22 AWG tinned copper.</p> <p>Construction: Encapsulated in epoxy case for use in normal laboratory environment.</p>	<p>For high-value shunt resistance requirements (above 100,000 Ω).</p> <p>Size: 0.25 in dia. x 0.75 in long (6.4 x 19.1 mm).</p> <p>Temperature Coefficient: ±12 ppm/°F; +32° to +140°F (±20 ppm/°C; 0° to +60°C).</p> <p>Stability: 30 ppm/year max. drift.</p> <p>Wattage: 0.3 at +75°F (+24°C).</p> <p>Leadwires: 20 AWG tinned copper.</p> <p>Construction: Noninductive windings. Encapsulated for use in normal laboratory environment.</p>	<p>Best long-term stability under adverse environmental conditions. Premium resistors used for bridge completion where highest accuracy and stability are required.</p> <p>Size: 0.4 in square x 0.15 in thick (10 x 4 mm).</p> <p>Temperature Coefficient: ±0.6 ppm/°F; +32° to +140°F (±1 ppm/°C; 0° to +60°C).</p> <p>Stability: 5 ppm/year max. drift.</p> <p>Wattage: 0.25 at +75°F (+24°C).</p> <p>Leadwires: 22 AWG tinned copper.</p> <p>Construction: Hermetically sealed in metal case. Excellent long-term stability.</p>

Specifications and Selection Charts

SHUNT-CALIBRATION RESISTORS				
	ORDER NO.	RESISTANCE IN OHMS	TOLERANCE IN %	EQUIVALENT MICROSTRAIN
FOR 120 Ω GAGE CIRCUIT	W-599880-02	599,880	±0.02	100
	W-119880-02	119,880	±0.02	500
	S-59880-01	59,880	±0.01	1,000
	S-29880-01	29,880	±0.01	2,000
	S-19880-01	19,880	±0.01	3,000
	S-14880-01	14,880	±0.01	4,000
	S-11880-01	11,880	±0.01	5,000
	S-5880-01	5,880	±0.01	10,000
FOR 350 Ω GAGE CIRCUIT	W-349650-02	349,650	±0.02	500
	W-174650-02	174,650	±0.02	1,000
	S-87150-01	87,150	±0.01	2,000
	S-57983-01	57,983	±0.01	3,000
	S-43400-01	43,400	±0.01	4,000
	S-34650-01	34,650	±0.01	5,000
	S-17150-01	17,150	±0.01	10,000
	FOR 1000 Ω GAGE CIRCUIT	W-999000-02	999,000	±0.02
W-499000-02		499,000	±0.02	1,000
W-249000-02		249,000	±0.01	2,000
W-165666-02		165,666	±0.01	3,000
W-124000-02		124,000	±0.01	4,000
S-99000-01		99,000	±0.01	5,000
S-49000-01		49,000	±0.01	10,000

The "Equivalent Microstrain" column shows the true compression strain simulated by shunting each calibration resistor across an active strain gage arm of the exact indicated resistance, based on a circuit gage factor setting of 2.000.

BRIDGE COMPLETION RESISTORS	
CIRCUIT AND BRIDGE COMPLETION TOLERANCE ±0.01%	
ORDER NO.	RESISTANCE IN OHMS
S-50-01	50
S-60-01	60
S-100-01	100
S-120-01	120
S-175-01	175
S-240-01	240
S-350-01	350
S-500-01	500
S-1000-01	1,000
S-2000-01	2,000
S-5000-01	5,000
H-100-01	100
H-120-01	120
H-350-01	350
H-1000-01	1,000

Note:

Shunt-calibration resistors are chosen to accurately simulate resistance change in a strain gage subjected to specified levels of compressive strain. Strain indicators generally produce a linear output with a fully active half-bridge or full-bridge input circuit, and will be slightly in error when a single active arm is used. The same nonlinearity occurs whether the gage is actually strained in compression or simulated by shunting the gage with the corresponding calibration resistor. See Tech Note TN-514, "Shunt Calibration of Strain Gage Instrumentation."

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.

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.