

## Gage Installation Tester

### FEATURES

- A compact, battery-powered instrument used to verify the electrical quality of a strain gage installation BEFORE it is placed in service as well as for fault finding AFTER an installation is put into service.
- Reads with the push of a button — no warm-up
- Reads insulation resistance (leakage) to 20,000 MΩ with 15 VDC
- Measures deviation of installed gage resistance from precise standards to a resolution of 0.02%
- Ohmmeter scale for troubleshooting questionable installations
- Verifies the complete gage circuit, including leadwires



### DESCRIPTION

Two of the most important measurements used to verify the quality of a strain gage installation are insulation resistance (leakage to ground) and shift in gage resistance due to installation procedures. While these two measurements are not a complete guarantee of eventual proper strain gage performance, any installation that produces questionable values should not be relied upon where accuracy of results is necessary.

For example, a voltage difference between the specimen and strain gage frequently exists. A low insulation resistance will permit this voltage differential to introduce extraneous signals during strain measurement.

Several sources of variations in insulation resistance and shifts in gage resistance are:

- Insulation resistance in excess of 20,000 MΩ should be expected for foil strain gages when installed under laboratory conditions. A value of 10,000 MΩ should be considered minimum. A reading below this value generally indicates trapped foreign matter, moisture,

residual flux or backing damage due to soldering, as well as incomplete solvent evaporation from an overcoating.

- Deterioration of the insulation resistance with time may be an indication of an improperly coated installation.
- At higher test temperatures, particularly above +300°F (+150°C), it is normal to expect lesser values. Ten MΩ is considered to be the lower allowable value.
- Shifts in gage resistance during installation should not normally exceed 0.5% when using room-temperature-curing adhesives. Resistance shifts greater than 0.5% generally indicate damage to the gage due to improper handling or clamping. However, strain gages installed using elevated-temperature-curing adhesives may exhibit greater shifts in resistance due to adhesive lock-up at elevated temperatures (difference in linear coefficient of thermal expansion between the strain gage and specimen). These shifts will vary depending upon the specific cure temperature and materials used. The shifts should never exceed 2% and should be uniform within 0.5%.

### SPECIFICATIONS

All specifications are nominal or typical @ +23°C unless noted.

PARAMETER	SPECIFICATIONS
<b>INPUT CIRCUITS</b>	
Gages:	Three-wire quarter bridge (120 Ω and 350 Ω) and half bridge. Other value quarter bridges using customer's reference, at readily accessible panel terminals.
As ohmmeter:	Two ranges (500 Ω and 500 MΩ mid-scale)
<b>INPUT LEADS</b>	4-ft (1.2m) 4-conductor AWG #26 (0.4-mm diameter) twisted Teflon®-insulated cable supplied (with ground clip and three tinned leads)
<b>METER</b>	3.5-in size [3.00-in (76-mm) scale length] with mirror
Tracking accuracy:	±1% of full range

Gage Installation Tester

PARAMETER	SPECIFICATIONS
<b>MODE SWITCH</b>	Five momentary push buttons: <ul style="list-style-type: none"> <li>• Battery check,</li> <li>• <math>\pm 5\%</math> deviation,</li> <li>• <math>\pm 1\%</math> deviation,</li> <li>• gage resistance (<math>\Omega</math>), and</li> <li>• insulation resistance (<math>M\Omega</math>)</li> </ul>
<b>DEVIATION MODE</b>	Two ranges, $\pm 1\%$ and $\pm 5\%$ , of F.S. (50 graduations either side of zero)
Accuracy:	1% range: 0.04% $\Delta R$ (2 meter graduations) 5% range: 0.2% $\Delta R$ (2 meter graduations)
Excitation:	1.0 VDC per gage
<b>INSULATION RESISTANCE MODE</b>	Graduated 5 $M\Omega$ to 20,000 $M\Omega$ (500 $M\Omega$ mid-scale)
Accuracy:	1 scale division
Test Voltage:	15 VDC open circuit
<b>OHM MODE</b>	Graduated 5 $\Omega$ to 20 k $\Omega$ (500 $\Omega$ mid-scale)
Accuracy:	1 scale division
Test Voltage:	2 VDC open circuit (0.4 VDC @ 120 $\Omega$ )
<b>ENVIRONMENTAL</b>	
Temperature:	+15°F to +125°F (-10°C to +50°C)
Humidity:	Up to 80%, non-condensing
<b>POWER SUPPLY</b>	Four 9 V PP3 (ANSI/NEDA 1604A, IEC 6LR61) batteries
Life:	Typically fully test 1000–5000 installations
<b>Case</b>	
Material:	Aluminum case (separable lid)
Size:	5 H x 7 W x 5 D in with lid (125 x 180 x 126 mm)
<b>Weight</b>	3.6 lb (1.6 kg) with batteries

Teflon is a Registered Trademark of DuPont





## 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.