

The Problem

Manufacturers of solid-state pressure transducers face a demanding task when testing this kind of electro-mechanical product. The test typically must measure the transducer output in millivolts at a fixed excitation voltage and at a known pressure input. The test must also make certain there are no body leaks in the device.

Additionally, the production tester must be cost effective enough to allow implementing numerous stations to increase production throughput.

Sometimes assembled from computers and laboratory instruments, the machine array often becomes an awkward collection of difficult-to-operate and difficult-to-maintain components.

The Solution

Sprint LC-T has everything needed to test strain-gauge pressure transducers. Sprint provides voltage excitation and millivolt measurement to test the performance of transducers when subjected to pressure. Sprint LC-T has a precision linearized pressure sensor to monitor supplied test pressure and to detect leaks in the product being tested.

Everything is contained in one small integrated tester to make calibration and maintenance simple and cost effective.

Because Sprint LC-T costs much less than a custom array of separate instruments, users can buy multiple Sprints to greatly increase their production throughput.

How It Works

The Sprint LC-T (in basic form) works like this:

- Product is attached to the test port and Sprint's test program is started. (Figure 1)
- Sprint applies air pressure to side A of the transducer to be tested and checks the product for body leaks with sensor [S]. Voltage is measured from the transducer under test to determine whether the product is within established tolerance.
- Air pressure is applied to side B (backside) of the transducer and Sprint checks for leaks. Next, Sprint measures the voltage output from the transducer under test to determine whether it is within limits.

NOTE: Many options are possible in how users can configure the Sprint LC-T for testing pressure transducers.

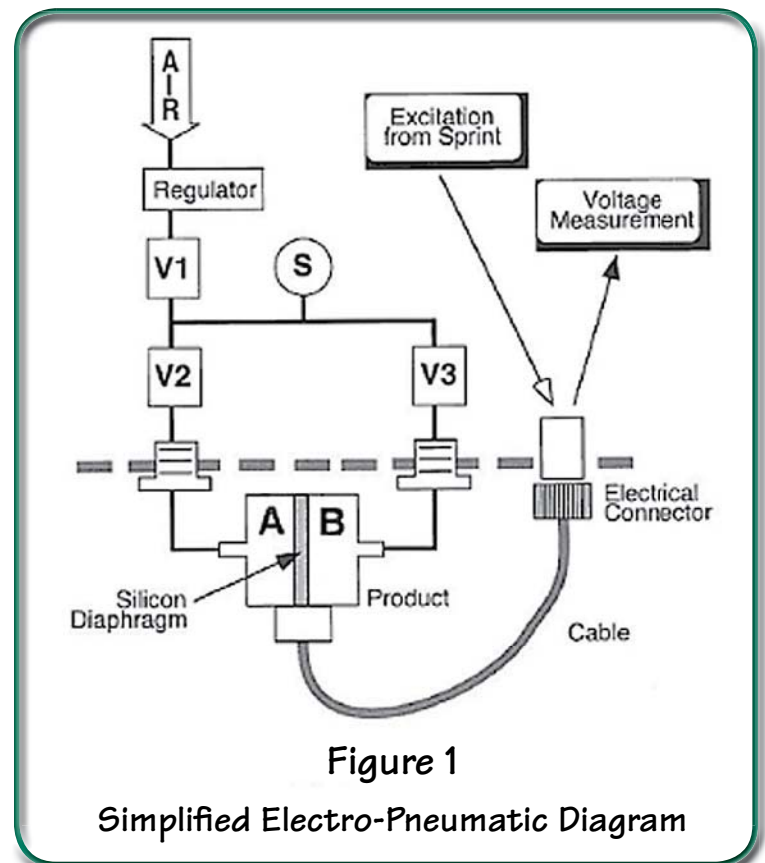


Figure 1

Simplified Electro-Pneumatic Diagram

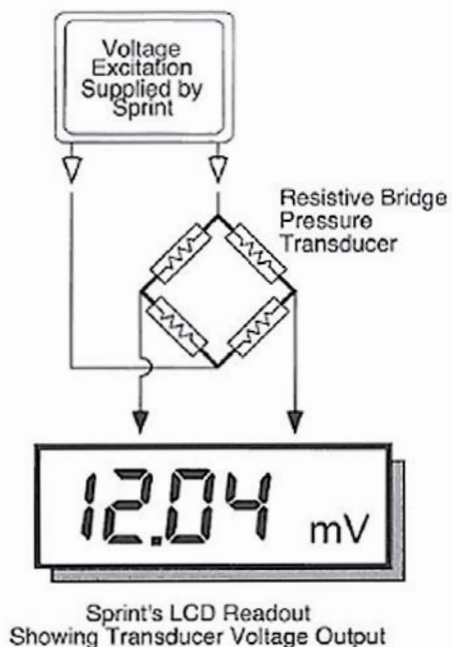


Figure 2
Transducer Electrical Testing

Electrical Parameters

Sprint LC-T contains all the necessary electrical components and microprocessor logic to evaluate the electrical characteristics of the pressure transducer under test. (Figure 2)

Acceptance limits for both pressure and electrical output are set in any of Sprint's user-defined test programs.

Excitation Output

Strain-gauge pressure transducers typically require an excitation of 5 volts DC. This is supplied by the Sprint. Other excitation voltages and currents are possible.

Millivolt Inputs

As the resistance of the bridge changes due to varying pressure, the voltage output of the transducer under test changes. These changes are read by Sprint in millivolts. Other input and readouts are possible with the Sprint LC-T.

Engineering Units

Pressure can be selected to read in psi, inches of water, millimeters of mercury or millibar.

Applications

Sprint LC-T is manufactured exclusively by Uson for testing pressure transducers commonly used in medical, automotive, aerospace, industrial and home appliances.

The transducer tester built by Uson represents the leadership that has established Sprint as the standard in product testing.

Many options are possible with the Sprint LC-T such as the addition of a programmable air regulator for multiple test pressures.

Because all data concerning the operation of the Sprint transducer tester cannot be included in this brief application note, we invite you to call Uson to discuss how a Sprint LC-T can be applied to your specific testing needs.

Features

- Completely self-contained.
- Built in transducer excitation source
- Millivolt transducer measurement
- Built in pressure source and measurement
- Fully calibrated and simple to maintain
- Perfect for bench or automation
- Voltage resolution of 0.01 millivolts
- Pressure resolution of 0.001 psig
- Small footprint of 8.5 by 15 inches
- Interface for statistical process control
- User-Selectable engineering units

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