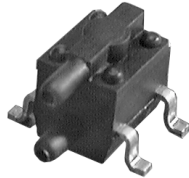
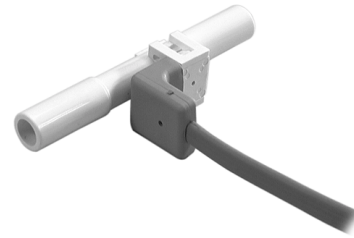


Pressure and Force Sensors

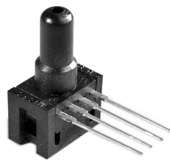
Alternative Methods for Amplification and Signal Conditioning



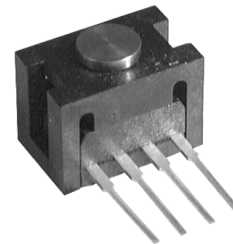
20PC Series SMT Pressure Sensors



20PC Series Flow Through Pressure Sensors



24PC And 26PC Series Pressure Sensors



FS Series Force Sensors

Covered by US Pat. Nos. 5,184,107 and 6,153,070.

BACKGROUND

Honeywell Sensing and Control manufactures several varieties of unamplified pressure and force transducers with and without temperature compensation.

Many applications require close control over performance parameters such as sensitivity, linearity, and hysteresis. Honeywell Sensing and Control provides this close control and higher performance on amplified products using discrete circuitry. For those products that are not amplified or temperature compensated, Honeywell provides application sheet/note information to provide customers with performance characteristics. Refer to the application note information that describes amplification and signal control techniques in the Environmental Condition Sensors Catalog (Catalog 15) and to the technical information located at the following URL:

<http://content.honeywell.com/sensing/prodinfo/pressure/#technical>

ALTERNATIVE AMPLIFICATION SOLUTIONS

As described in our application sheets/notes, amplification and temperature compensation circuitry require the use of discrete components. An alternative method is to use the MAX1452 Low-Cost Precision Sensor Signal Conditioner, which is available from Maxim Integrated Products, located in Sunnyvale, California.

FEATURES

The MAX1452 is a highly integrated, precision, 16-bit smart sensor signal conditioner that is capable of digitally correcting sensor outputs over a wide temperature range. It is optimized for use with resistive element sensors and provides amplification, calibration, and temperature compensation that enables an overall performance approaching the inherent repeatability of the sensor.

The MAX1452 has the capability of providing a basic ratiometric output (see figure 1), basic nonratiometric output (see figure 2), and a basic 4-20 mA output, loop-powered configuration (see figure 3).

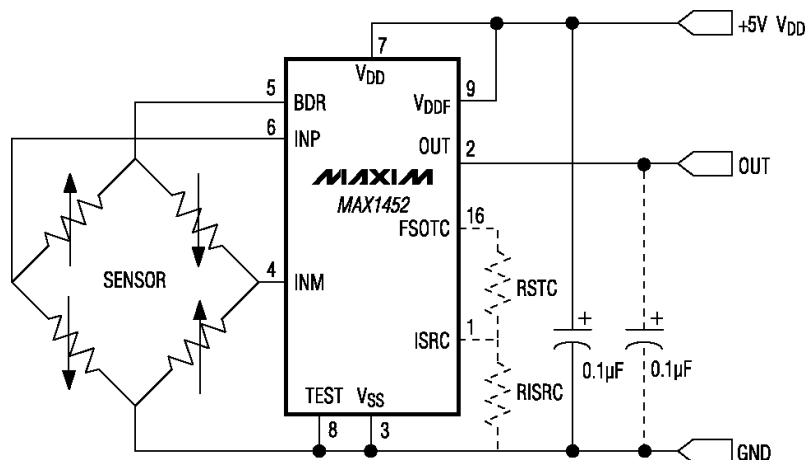


Figure 1. Basic Ratiometric Output Configuration

Typical Ratiometric Operating Circuit

A ratiometric output configuration provides an output that is proportional to the power supply voltage. This output may then be applied to a ratiometric ADC to produce a digital value independent of the supply voltage. Ratiometricity is an important consideration for battery-operated instruments, automotive, and some industrial applications. The MAX1452 provides a high-performance ratiometric output with a minimum number of external components. These components include one supply bypass capacitor, one optional output EMI (electromagnetic interference) suppression capacitor, and two optional resistors, RISRC and RSTC, for special sensor bridge types.

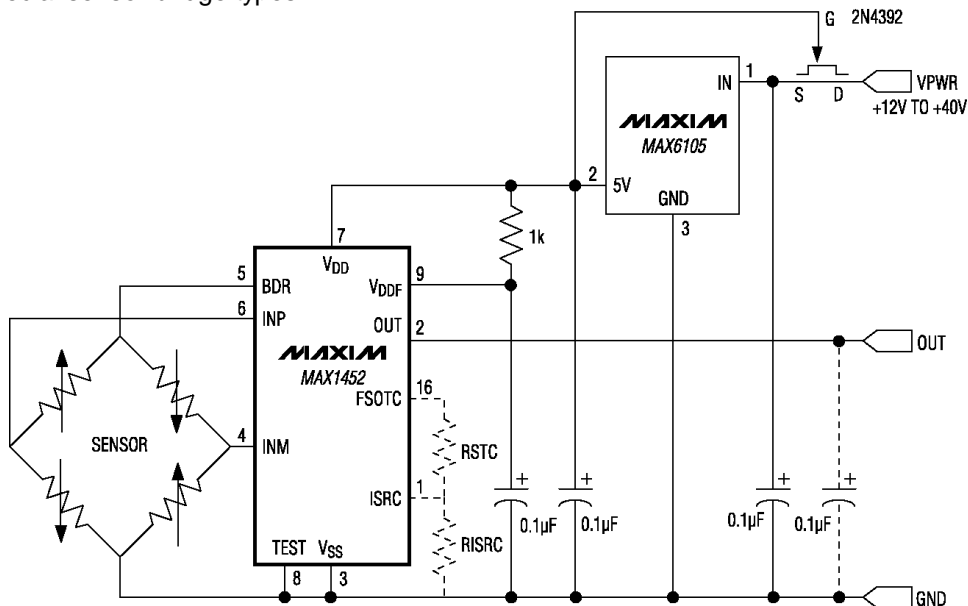


Figure 2. Basic Nonratiometric Output Configuration

Typical Nonratiometric Operating Circuit (12VDC < VPWR < 40VDC)

A nonratiometric output configuration enables the sensor power to vary over a wide range. A high performance voltage regulator, such as the MAX6105, is incorporated in the circuit to provide a stable supply and reference for MAX1452 operation. Nonratiometric operation is valuable when wide ranges of input voltage are to be expected and the system A/D or readout device does not enable ratiometric operation.

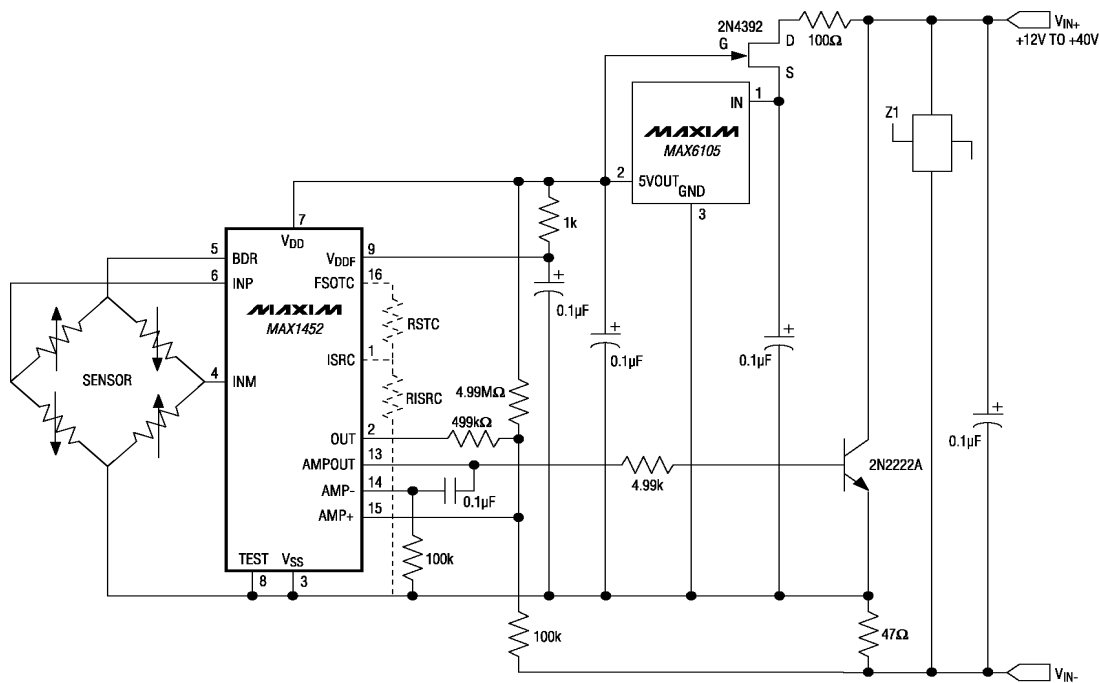


Figure 3. Basic 4-20 mA Output, Loop Powered Configuration

Typical 2-Wire, Loop Powered, 4-20 mA Operating Circuit

Process Control systems benefit from a 4-20 mA current loop output format for noise immunity, long cable runs, and 2-wire sensor operation. The loop voltages can range from 12 Vdc to 40 Vdc and are inherently nonratiometric. The low current consumption of the MAX1452 allows it to operate from loop power with a simple 4-20 mA drive circuit efficiently generated using the integrated uncommitted op amp.

For more information about the MAX1452 product, refer to the following URL:
http://dbserv.maxim-ic.com/Sensors_new_product.cfm.

Honeywell Sensing and Control is capable of supplying unamplified products with a customized MAX1452 processor. For more information and details, please contact our application center at 1-800-537-6945 or e-mail us at info.sc@honeywell.com.

NOTICE

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Amplification and Signal Conditioning Applications Pressure and Force Sensors

Application Sheet

WARRANTY/REMEDY

Honeywell warrants goods of its manufacture as being free of defective materials and faulty workmanship. Contact your local sales office for warranty information. If warranted goods are returned to Honeywell during the period of coverage, Honeywell will repair or replace without charge those items it finds defective. The foregoing is Buyer's sole remedy and is **in lieu of all other warranties, expressed or implied, including those of merchantability and fitness for a particular purpose.**

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While we provide application assistance personally, through our literature and the Honeywell web site, it is up to the customer to determine the suitability of the product in the application.

For application assistance, current specifications, or name of the nearest Authorized Distributor, contact a nearby sales office. Or call:

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FAX

1-815-235-6545 USA

INTERNET

www.honeywell.com/sensing
info.sc@honeywell.com

Honeywell

Sensing and Control
Honeywell Inc.
11 West Spring Street
Freeport, Illinois 61032



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