



**LOW COST, GENERAL-PURPOSE SINGLE-CHANNEL CONDITIONER FOR INPUT OF PRESSURE, FORCE, TORQUE AND OTHER VARIABLES MEASURED BY CONVENTIONAL DC-EXCITED STRAIN GAGE TRANSDUCERS.**



The **5M70** delivers filtered analog output of  $\pm 5$  Vdc,  $\pm 10$  Vdc or 4-20 mA; switch selectable by the user. Advanced analog design directly addresses the problem of measurement inaccuracy in industrial environments of high electromechanical noise. Exceptional signal stability and accuracy over a remarkably wide range of sensor inputs are achieved through .....

- **remotely sensed excitation, user-selectable**
- **chopper-stabilized low-drift amplification**
- **configurable low-pass active filtering**
- **“shunt” switch-based calibration**
- **wide range Zero & Span adjustments**

THE **5M70** DIN CONDITIONER IS A LOW COST UNIT FOR DC BASED - FULL BRIDGE STRAIN-GAGES FROM 0.5 TO 10 mV/V.

For steady indication and smooth, dependable control action, the **5M70** can provide a true average value of the measured variable, even in the face of substantial dynamic content. Housed in a durable-flame retardent enclosure, the **5M70** is ideal for industrial-process applications. The analog output and gain settings are easily configured through the use of a simple coarse rotary switch and precision range potentiometer which results in a highly repeatable, stable and accurate measurement.

- **Powerful low-pass active filtering**, selectable by the user, the **5M70** low pass filter removes unwanted high-frequency measurement-signal components and the elimination of aliasing errors, if the module's output is subsequently digitized.
- **Selectable excitation of 2.5 or 5.0 Vdc** bridge voltage which is slaved to an extremely stable reference voltage.
- **DIN mount construction** which allows the user easy access to the screw terminal connections for power, analog output, shunt and sensor signals.
- **Wide Zero & Span**, through the use of rotary switches & potentiometers, the **5M70** will accommodate 100% zero authority and a wide range of full bridge DC strain gage sensors, foil or semiconductor type with bridge resistance from 120 to 10 k Ohm.
- **Wide Input Power range from 11 to 28 Vdc**, the **5M70** is well suited for industrial, process and mobile environments

# MODEL 5M70

DC STRAIN GAGE CONDITIONER  
[5M SERIES]

## INTERNAL "SHUNT" CALIBRATION WITH WIDE ZERO AND SPAN SETTINGS - ENSURES HIGHLY ACCURATE CONDITIONING RESULTS.

To calibrate a **5M70**, use "deadweight" or "shunt" method. Through the use of front panel switch controls, the user will specify the mV/V range desired and adjust the fine and coarse controls to achieve the desired analog output, **±5** or **±10 Vdc** or **4-20 mA** full-scale. Zero-ing of the sensor is achieved in the same manner with the coarse and fine controls which will adjust the zero position +/- 100%. This gives the user the full working range of the conditioner for applications which require large offsets or to accommodate an external A/D device for higher resolution needs.

## SPECIFICATIONS

**Housing:** DIN mount housing; non-removable screw terminals.

**Dimensions:** 114.5 mm D x 22.5 mm W x 99.0 mm H

**Power Requirements:** 11- 28 Vdc ; 2 watts Max

**Operating Temperature Range:** -10° C to 70° C (14° F to 158° F)

**Operating Relative Humidity:** 5% to 95%, noncondensing

Transducer Types: Conventional 4-arm strain gage bridges, 120 Ω to 10 kΩ; zero range is 100% of the stated full scale; a screw terminal is provided for user-supplied shunt calibration resistor (see diagram, below, for typical cabling)

**Input Ranges (Nominal, Full-Scale) :** .5 to 5 mV/V or 1 to 10 mV/V via front panel switch settings.

**Excitation:** Nominal 2.50 Vdc up to 70 mA or 5.00 Vdc up to 70 mA selectable via front panel switch setting

**Analog Filters:** 10, 200, or 5000 Hz, switch selectable

**Power Status Indicator:** Green; indicates module power input

**Over-Range Indicator:** Yellow; indicates analog output overrange

**CE Directive** 2014/30/EU Electromagnetic Compatibility  
2014/35/EU Low Voltage Safety

## FRONT PANEL SWITCH SETTINGS

	Left	Right
<b>Output Mode</b>	Current	Voltage
<b>Voltage Level</b>	10 Vdc	5 Vdc
<b>Current Level</b>	4-12-20ma	4-20ma
<b>Filter Setting</b>	5 khz	200 Hz
<b>Filter Setting</b>	10 Hz	200 Hz
<b>Excitation</b>	5.0 Vdc	2.5 Vdc
<b>Zero Adjust</b>	Extended	Normal

## Amplifier:

**Common-Mode Range:** 0 to 3 V

**Common-Mode Rejection Ratio (at @1/2 Excitation):** -60 dB

**Input Impedance (Differential and Common-Mode):** Greater than 10,000 MΩ

**Offset:** adjustable; vs. temperature: ±0.10 μV/°C; vs. time: ±5 μV/month

**Gain Accuracy:** Limited only by calibration accuracy

**Gain Stability:** vs. temperature: ±30 ppm/°C; vs. time: ±10 ppm/month

**Analog Outputs:** Filtered ± 0 to 5 Vdc or ±0 to 10 Vdc, 4-12-20 or 4-20 mA (sourcing). Mode is switch selectable with linearity maintained for 20% overrange (in voltage mode only)

**Shunt Logic Input** Activated by input taken to power common potential; ±25 V without damage; internal pull-up nom. 5 kΩ; input assume Logic 1 state in the absence of connection

**Shunt Resistor Installed:** 59k Ohm, standard. User replaceable

## SIDE LABEL DIAGRAM

