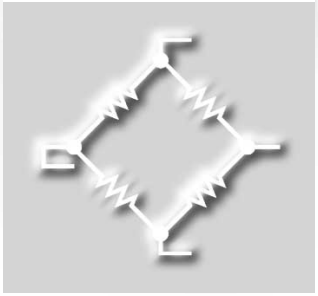
DAYTRONIC

5M Series

Model 5M70

DC Strain Gage Conditioner



The **Model 5M70 DIN** unit is a low cost, general-purpose single-channel conditioner for input of pressure, force, torque, weight, and other variables measured by conventional DC-excited strain gage transducers.

The **5M70** delivers filtered analog output of **±5 Vdc ±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**
- **"shunt" switch-based calibration**
- **wide range Zero & Span adjustments**
- **configurable low-pass active filtering**

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 industiral-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 accomidate 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 industiral, process and mobile environments

Model 5M70 DC Strain Gage Conditioner Module

Pub. No. 5M70PB.1

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. Along with the wide zero and span controls, the **5M70** provides the user with three low pass filter options depending on his needs.

Daytronic uses their "industry proven" three-pole modified butterworth design to provide a repeatable - analog response signal which minimizes overshoot and provides quick stabilization of the signal which results in a reliable limit or "peak capture" value needed for saftey and product qualification applications.

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 internal switch settings.

Front Panel Switch Settings

	Left	Right
Output Mode	Current	Voltage
Voltage Level	10 Vdc	5 Vdc
Current Level	4 - 12 - 20 mA	4 - 20 mA
Filter Setting	5 kHz	200 Hz
Filter Setting	10 Hz	200 Hz
Excitation	5.0 Vdc	2.5 Vdc
Zero Adjust	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

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

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)

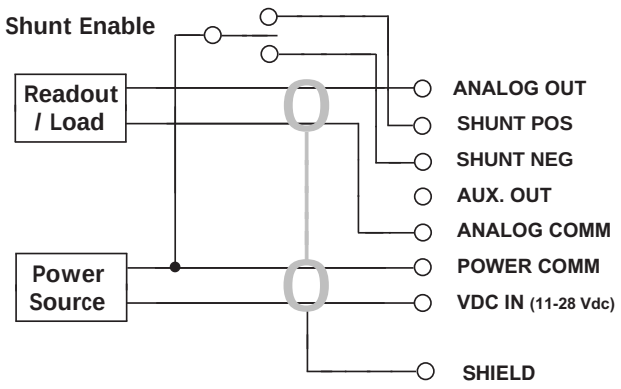
Shunt Logic Input : Activated by input taken to power common potential; ±25 V without damage; internal pull-up nom. 5 kΩ; input assume Logic 1 state in the absence of connection

Shunt Resistor Installed: 59k Ohm, standard. User replacable

Power Status Indicator: Green; indicates module power input

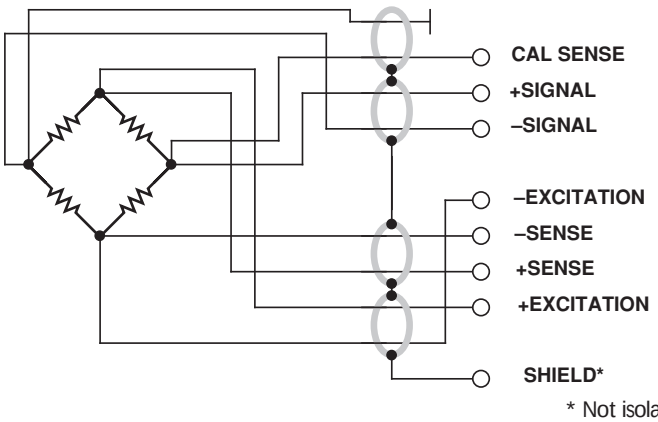
Over-Range Indicator: Yellow; indicates analog output overrange

Power - Shunt - Analog Field Connector



Transducer Field Connector

(using internal 5M70 shunt)



* Not isolated.

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