DAYTRONIC

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MODEL 5M78

AC STRAIN GAGE CONDITIONER
[5M SERIES]

STABLE, HIGH-ACCURACY SINGLE-CHANNEL STRAIN GAGE CONDITIONER OF PHASE-SENSITIVE CARRIER-AMPLIFIER DESIGN.

CE

The **5M78** delivers filtered analog output of **±5 Vdc**, **±10 Vdc**, **4-20 mA** or **4-12-20 mA**. The **5M78's** 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....

- **regulated, remotely sensed AC excitation**
- **precise symmetry and signal phase adjustment**
- **Standard DIN Package**
- **selectable low-pass active filtering**
- **wide range zero and span controls**
- **internal shunt resistor provided**

While intended primarily for applications involving transformer-coupling to the transducer bridge (as with conventional rotary-transformer torque sensors), the Model **5M78** can also be used when high sensitivity is required or where the electrical environment is especially noisy. Responding only to the modulated carrier frequency, the **5M78** rejects extraneous voltages that can cause errors in DC systems, particularly when there is a need to "blow up" a portion of the transducer range.

THE **5M78** OVERCOMES ERRORS THAT TRADITIONALLY PLAGUE THE STRAIN-GAGE MEASUREMENT PROCESS. For steady indication and smooth, dependable control action, the **5M78** can provide a true average value of the measured variable, even in the face of substantial dynamic content. Both models feature...

- **Powerful low-pass active filtering**, selectable via front panel switch settings for removal of unwanted high-frequency measurement-signal components and the elimination of aliasing errors, if the module's output is subsequently sampled.
- **Wide zero and span controls** compatable with a wide range of rotary torque transducer and sensor manufacturers.
- **Phase and symmetry controls** used to syncronize phase shifts due to sensor and cabling capacitance characteristics. Symmetry used to compensate sensors with non-symmetrical CW or CCW span.
- **Remote sensed excitation** Provides automatic excitation compensation control for installations which require long transducer interface cables.
- **Internal 59k Ohm shunt resistor** is provided for applications that require calibration or systems checkout when a dead weight method is not available or practical.

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INTERNAL SHUNT CALIBRATION OR TWO POINT (DEADWEIGHT) CALIBRATION

Because of normal cable loading effects, it is a practical necessity to calibrate any **AC TORQUE SENSOR / CABLE / INSTRUMENT** system after installation, using a known input standard The“ shunt” calibration method is provided by the **5M78** controls and can yield a precise and quick calibraiton verification of the transducer and cabling system. Easily performed— with the module fully “in place”— using the Positive and Negative logic inputs as shown below. This procedure uses the transducer’s calibration information to adjust + span using the Span course and fine controls along with symmetry for the - span value when the proper + or - shunt logic is applied when no torque is present on the transducer.

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, typically transformer-coupled, 120 Ω to 10 kΩ;

Input Ranges (Nominal, Full-Scale) : 0.5 mV/V to 5.0 mV/V

Excitation: 3.28 kHz; Nominal 2.77 Vac rms

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

Amplifier:

Normal-Mode Range: 1.5 V rms operating; ± 28 V without damage

Input Impedance (Differential): Greater than 10 MΩ

Offset : vs. temperature: ±30 ppm/°C; vs. time: ±10 ppm/month

Gain Accuracy: Limited only by calibration accuracy

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

Analog Filters: 10, 100, or 650 Hz, selectable

Analog Outputs: Filtered, ± 0 to 5 Vdc or ±0 to 10 Vdc or 4-20 mA or 4-12-20 mA, selectable, (20% over-range in voltage mode only)

Status Indicator Lights : Power and analog over-range

FRONT PANEL SWITCH SETTINGS

	Left	Right
Output Mode	Current	Voltage
Voltage Level	10 Vdc	5 Vdc
Current Level	4-12-20ma	4-20ma
Filter Setting	650 hz	100 Hz
Filter Setting	10 Hz	100 Hz
Sync Mode	Slave	Master
Zero Adjust	Extended	Normal
Aux. Output	Auxillary	Sync

SIDE LABEL DIAGRAM