



FOUR CHANNEL ISOLATED THERMOCOUPLE CONDITIONER WITH REAL-TIME ANALOG OUTPUTS. IDEAL FOR MOTOR, VARIABLE SPEED DRIVES AND HIGH ELECTRICAL NOISE ENVIRONMENTS.

A member of Daytronic's new "M" series of enhanced conditioner modules the **5M14/5M14V** provides linearization, stable amplification and proven filtering techniques for up to four thermocouples. This isolated, four-channel conditioner accepts real-world temperature signals from **Types E, J, K, N, R, S, and T Thermocouples**, producing accurately linearized output over the full TC ranges. All four channels of a given 5M14 module must be dedicated to the same TC type as selected by front panel dip switches. The "M" series (for manual operation) do not require any computer programming.

The Model **5M14 / 5M14V** offers

- **true galvanic isolation** with pulsewidth modulation, allowing sensor-to-chassis or sensor-to-sensor common-mode voltages as high as 1000 V (rms) to be accommodated
- **linear output** over wide TC ranges without the need for additional output processing; based on NIST polynomials, linearization is performed throughout each thermocouple's stated operating range, and within the rated accuracy limits
- **internal reference-junction compensation** automatically selected by thermocouple choice; no external cold junction is required—internal thermistor circuitry provides a highly accurate Temperature Zone measurement for reference-junction compensation.
- **User selectable filter selection:** Field proven analog filtering is accomplished using the traditional Daytronic three-pole modified butterworth filter which provides stable, repeatable, analog amplification for the user's measurement process
- **TC break detection:** In the event of a broken thermocouple wire or other "open TC" condition, the 5M14 Module will automatically indicate an indeterminate off-scale reading for the TC channel in question, with positive or negative polarity selectable on a per-channel basis.

A simple "Manual" switch procedure lets you quickly set up the **5M14** TC conditioner for the appropriate TC "type" and range required. During operation, appropriate reference-junction compensation, realtime linearization, and millivolt per Degree C scaling are automatically applied for the type of thermocouple selected. The **5M14** provides a true analog amplification path, long with high isolation and filter technique making this module ideal for pump / motor / dynamometer & rotating machinery applications.

MODEL 5M14

THERMOCOUPLE CONDITIONER

[5M SERIES]

SPECIFICATIONS

Amplifier (per channel):

Normal-Mode Range: ± 80 mV operating; ± 240 V without instrument damage or loss of calibration

Common-Mode Range: ± 1000 V (rms) operating and without instrument damage

Common-Mode Rejection Ratio: DC and at 60 Hz: -154 dB

Input Impedance: Differential: 10 M ohms; Common-Mode: >500 M ohms.

Offset: Initial: ± 5 μ V; vs. Temperature: ± 0.1 μ V / $^{\circ}$ C; vs. Time: ± 1.0 μ V/month

Gain Accuracy: $\pm 0.02\%$ of absolute mv input range of -10 to +80 mV

Gain Stability: vs. Temperature: ± 25 ppm/ $^{\circ}$ C; vs. Time: ± 25 ppm/ month

Filter (all channels): 3-pole modified Butterworth; 3 dB down at 4 Hz or 20 Hz; selectable

Step-Response Settling Time (Full-Scale Output @ 4 Hz):

To 1% of final value: 450 msec (20 Hz @ 60 msec)

To 0.1% of final value: 600 msec (20 Hz @ 80 msec)

To 0.02% of final value: 750 msec (20 Hz @ 125 msec)

Analog Outputs: 5M14 dependent of TC type and range selected. Model 5M14V will have an output double the millivolt value indicated.

Module Accuracy: : $\pm 0.05\%$ FS, including linearization, compensation and amplification.

Power-Supply: 24 Vdc $\pm 10\%$, regulated; 110mA nominal, 150mA max

ADDITIONAL SPECIFICATIONS

TC Type	Range	Linear Output (mV/degree C)
E	-200 to +1000	5.000
J	-200 to +1200	4.000
K	-200 to +1372	4.000
N	-180 to +1300	4.000
R	-50 to +1768	2.000
S	-50 to +1768	2.000
T	-200 to +400	12.50
Er	-200 to +250	20.00
Jr	-200 to +250	20.00
Kr	-200 to +250	20.00
Nr	-180 to +250	20.00
EI	-200 to +1000	X65 Gain
JI	-200 to +1200	X65 Gain
KI	-200 to +1372	X90 Gain
TI	-200 to +400	X90 Gain

WIRING DIAGRAM

