

ENCORE ELECTRONICS INC.
Model FL424
Dual Channel Thermocouple Amplifier
Type K

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SPECIFICATIONS
 Model FL424
 Dual Channel Thermocouple Amplifier
 Type K

Inputs (two):	K type thermocouple
Cold junction compensation:	Internal for K type thermocouple
Linearization:	None
FL424 Outputs (two):	3mV/°F @ 75°F: 0 to +4.760V for -50 to +1500°F
FL424 Initial calibration:	Output @ -50°F: 0.000 ±.005V Output @ 1500°F: 4.760 ±.005V Gain: 133.55 ±0.2%
FL424-003 Outputs (two):	8mV/°F @ 75°F: 0 to +8.540V for -50 to +1000°F
FL424-003 Initial calibration:	Output @ -50°F: 0.000 ±.005V Output @ 1000°F: 8.540 ±.005V Gain: 356.11 ±0.2%
TC grounding:	FL424 : -IN tied internally FL424-003 : TC grounded by customer
Open TC indication:	Output rails @ ≈7.5V (FL424 only)
Operating temperature:	0 to 50°C
Power requirement:	+18 to +30VDC @ 40mA
Package:	3.12"H x 2.88"W x 1.5"T DIN-rail mount box

OPERATION
Model FL424
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Connect Type K thermocouples to the TC inputs, RED to the (-) input and YELLOW to the (+) inputs. Connect the outputs to the desired readout or recording device, and a 24V power supply capable of at least 50mA to the appropriate terminals of the Model FL424. For maximum accuracy, allow 30 minutes for stabilization of the cold-junction compensation relative to the input terminals.

INTERPRETING THE OUTPUT
Model FL424
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The Model FL424 has factory configurable internal gain and offset circuitry to provide the output characteristics shown in the specifications. In this version, a gain of 133.55 and an offset of +1.729mV provides an output voltage of 0.000V @ -50°F and 4.760V @ 1500°F. These outputs correspond to input voltages of -1.729 and 33.913mV respectively. The input voltage for any output voltage is calculated using the following formula:

$$V_{in} = (V_{out} \div G) - V_{offset}$$

Where:

V_{in} = Thermocouple voltage in mV

V_{out} = Model FL424 output in mV

V_{offset} = 1.729mV

G = 133.55V/V

Example: For V_{out} = 3202.4mV

$$V_{in} = (3202.4 (V_{out}) \div 133.55 (G)) - 1.729 (V_{offset}) = 22.25mV$$

A voltage vs. temperature chart for Type K thermocouples will show that 22.25mV corresponds to a temperature of 1000°F.

The FL424-003 has higher gain of 356.11, producing 8mV per degree F around 75°F. The offset is still set for 0.000V output at -50°F, but with an output of 8.540V at 1000°F.