| APPLICATION | | REVISIONS | | | |
|---|---|---|---|---|---|
| NEXT ASSY | USED ON | REV | DESCRIPTION | DATE | APPROVED |
| | | A | ECN # 300 | 4/17/08 | JWM |
| | | B | ECN # 301 | 03/20/09 | JWM |

| CONTRACT NO. | | QUAD TRON, INC. | | | | |
|---|---|---|---|---|---|---|
| APPROVALS | DATE | MICRO MODULE PCM ENCODER, MODEL MI_TC_ADD8<br>8 CHANNEL THERMOCOUPLE ADD ON | | | | |
| DRAWN MJC | 03/25/08 | | | | | |
| CHECKED RHM | 03/25/08 | SIZE | FSCM NO. | DRAWING NO. | | REV B |
| ISSUE JWM | 03/25/08 | A | OBPE4 | 57-2625 | | SHEET 1 OF 4 |

# MICRO PCM ENCODER SERIES

# MODEL MI_TC_ADD8

## EIGHT (8) CHANNEL THERMOCOUPLE ADD ON MODULE

**The MI_TC-ADD8 module was designed to be used with the 4 Channel Thermocouple module, MI_TC. This increases the number of channels to 12 very accurate Thermocouple Conditioners. To achieve accuracy, amplifier digital temperature compensation is employed. Each channel includes digital Reference Junction Compensation and Thermocouple Linearization. Each channel's thermocouple type can be individually programmed for thermocouple types J, K, B, E, N, R, S, or T. Each channel has its own Analog to Digital converter for simultaneous sampling and to minimize errors with multiplexing. Each channel has an analog antialaising low pass filter. Provided are selectable digital FIR filters for each channel for noise reduction. Digital filter cutoff is selectable from 1 Hz to 500 Hz independently for each channel or can be bypassed. The Reference Junction Block is separate from the thermocouple conditioner module for ease of thermocouple connect, disconnect and reference junction temperature isolation. The Reference Junction Block (separate data sheet) uses digital temperature sensing of the thermocouple reference junction for reduced errors. Software is provided to calibrate the external cold junction blocks. The add on modules require two MI_CJ4 four (4) channel Cold Junction compensator blocks. Thermocouple data is digitized to 16-bit resolution for transmission in the system PCM output format. Each channel has programmable zoom and offset for user selectable temperature range and zoom features. All modules in a standalone or distributed PCM system are programmed via one PCM Base unit (MI_Base3 Module) connected to a PC with Windows based software -- (Single Point Programming.)**

**NOTE: The add on module "MUST STACK ON TOP" of the MI_TC module.**

**Electrical Specifications:**

| | |
|---|---|
| **TRANSDUCER TYPE:** | Thermocouple Types J, K, B, E, N, R, S, or T |
| **ACCURACY:** | ± 0.5 degree C, from -35° to +70° C; Unit Temperature.<br>±1.0 degree C otherwise, or better; Unit Temperature. |
| **INPUT TYPE:** | Thermocouple connection to the reference junction. Copper wire from compensator to unit. |
| **LOW PASS FILTERS:** | Each channel is analog filtered.<br>Each channel is digitally filtered after sampling. |

**Environmental:**

| | |
|---|---|
| Operating Temperature: | -40°C to +85°C |
| Storage Temperature: | -55°C to +125°C |
| Humidity: | Relative humidity of 85% for two hours at 65°C. |
| Altitude: | Unlimited |
| Vibration: | 20g's RMS from 5 to 2000Hz in each major axis. |
| Acceleration: | Constant acceleration of 100g's in each axis. |
| Shock: | 100g's for 10m second in each major axis. |

**Mechanical:**

Size: 8 Channel Thermocouple Module:

Length: 3.50 inches; Width: 1.25 inches; Height: 0.320 inches.

**Engraving:**

MI_TC_ADD8

MI_TC_ADD PINOUT

J1 CONNECTOR : NANONICS/TYCO, STM037M6HN / 4-1589487-0

MATE: NANONICS/TYCO, STM037PC2DC024N / 3-1589474-9

| PIN | FUNCTION |
|---|---|
| 1 | IN5+ |
| 2 | IN5- |
| 3 | IN8- |
| 4 | IN8+ |
| 5 | CS_N_CJ5 |
| 6 | CS_N_CJ8 |
| 7 | DOUT |
| 8 | SCLK |
| 9 | DIN |
| 10 | SCLK |
| 11 | DIN |
| 12 | CS_N_CJ9 |
| 13 | CS_N_CJ12 |
| 14 | AGND |
| 15 | IN9+ |
| 16 | IN9- |
| 17 | IN12+ |
| 18 | IN12- |
| 19 | IN6- |
| 20 | IN6+ |
| 21 | IN7+ |
| 22 | IN7- |
| 23 | AGND |
| 24 | CS_N_CJ6 |
| 25 | CS_N_CJ7 |
| 26 | 3.3VD |
| 27 | DGND |
| 28 | 3.3VD |
| 29 | DGND |
| 30 | DOUT |
| 31 | CS_N_CJ10 |
| 32 | CS_N_CJ11 |
| 33 | AGND |
| 34 | IN10- |
| 35 | IN10+ |
| 36 | IN11- |
| 37 | IN11+ |

NOTE: All connector pins are wired to 2 external cold junction blocks.