

# THR4x

## 4-channel insulated digital thermocouple conditioner

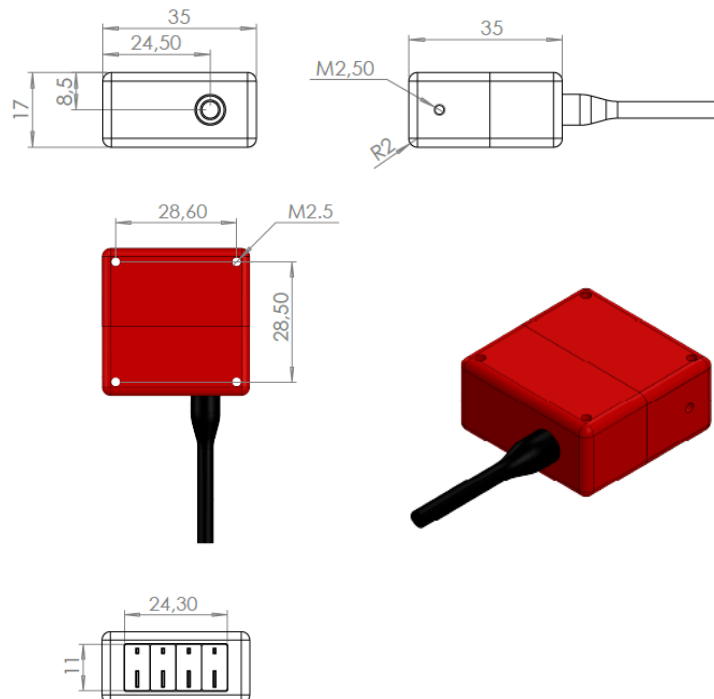
THR4x – spec 02

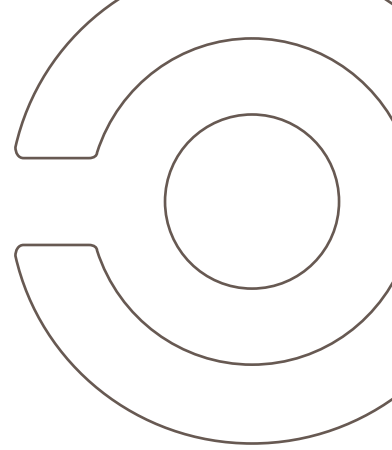
Texys sensors are designed for data recording. If the user wants to include this sensor in a close loop system or active control, he must assume all responsibility.

|                                       |                                |   |
|---------------------------------------|--------------------------------|---|
| <b>Range</b>                          | -100 min, 1800 max             | °C  |
| <b>Type</b>                           | K                              |   |
| <b>Sampling frequency per channel</b> | 100                            | Hz  |
| <b>Integration Time</b>               | 80 to 1280                     | ms  |
| <b>Sampling error</b>                 | 0.2                            | %FS max                                       |
| <b>Cold junction error</b>            | ±1                             | °C  |
| <b>CAN bus</b>                        | 2.0A or B                      |   |
| <b>CAN bus termination</b>            | R=120Ω, Switchable via CAN Bus |   |
| <b>Digital Output</b>                 | <b>Data Format</b>             | 2 bytes per cell (signed int)                 |
|                                       | <b>Resolution</b>              | 0.1 °/bit                                     |
|                                       | <b>Accuracy</b>                | ±1 °C for FS≤400°C<br>or 0.25%FS for FS>400°C |
| <b>Supply Voltage</b>                 | 6 to 36                        | V   |
| <b>Supply Current</b>                 | 15                             | mA  |
| <b>Calibrator</b>                     | Fluke 714B or 753              |   |
| <b>Dimension</b>                      | 35 x 35 x 17                   | mm  |
| <b>Material</b>                       | Aluminum                       |   |
| <b>Weight</b>                         | 70                             | g   |
| <b>Protection</b>                     | IP53                           |   |
| <b>Insulation</b>                     | 50V                            | 50MΩ  |
| <b>Vibration test</b>                 | 20Gpp5'                        |   |
| <b>Shock</b>                          | 500                            | G   |
| <b>Operating Temp</b>                 | -40 to +125                    | °C  |
| <b>Storage Temp</b>                   | -40 to + 125                   | °C  |

| Cable  |                |     |
|--|----------------|-----|
| Type: 5x26AWG FEP tinned copper braided (250V 200°C) |                |     |
| Length: 50mm Tubing: DR-25-TW                        |                |     |
| Connector:   |                |     |
| Pinout   |                |     |
| Colour   | Function       | Pin |
| Red  | Supply         | -   |
| Black  | Ground 0V      | -   |
| Green  | CAN High       | -   |
| White  | CAN Low        | -   |
| Yellow   | Do Not Connect | -   |
| Braid  | Not Connected  | -   |

| Thermocouple connector                                |  |
|---|--|
| Micro connector female Type K on conditioner          |  |
| 4 mating connector male supplied with the conditioner |  |
| Ref: 431-11-01  |  |





## CAN Data output

- Resolution: 0.1°/bit
- 4 thermocouple temperatures:

|                 |                |               |                |               |                |               |                |               |
|-----------------|----------------|---------------|----------------|---------------|----------------|---------------|----------------|---------------|
| Tx1 ID<br>0x3F0 | Byte 0<br>MSB  | Byte 1<br>LSB | Byte 2<br>MSB  | Byte 3<br>LSB | Byte 4<br>MSB  | Byte 5<br>LSB | Byte 6<br>MSB  | Byte 7<br>LSB |
|                 | Temperature #1 |               | Temperature #2 |               | Temperature #3 |               | Temperature #4 |               |

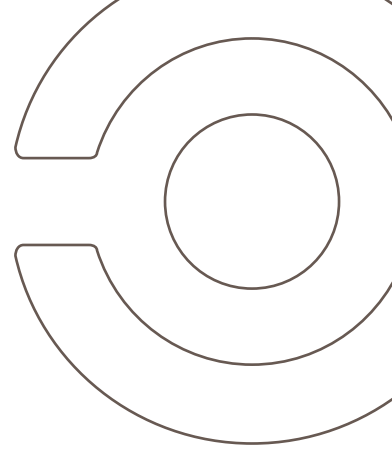
- 2 ambient temperatures (Tx2 frame enable = 1):

|                 |               |               |               |               |
|-----------------|---------------|---------------|---------------|---------------|
| Tx2 ID<br>0x3F4 | Byte 0<br>MSB | Byte 1<br>LSB | Byte 2<br>MSB | Byte 3<br>LSB |
|                 | Ambient #1    |               | Ambient #2    |               |

## Changing parameters

### CAN parameters:

| Address | Parameter                                       | Raw values  | values           | Comments                     |         |                  |         |      |                    |      |                    |      |                    |      |                      |      |                     |      |                     |      |                     |
|---------|---|---|------------------|------------------------------|---------|------------------|---------|------|--------------------|------|--------------------|------|--------------------|------|----------------------|------|---------------------|------|---------------------|------|---------------------|
| 0x00    | Baudrate  | 0x00  | CAN2.0A 1Mbps    | Default                      |         |                  |         |      |                    |      |                    |      |                    |      |                      |      |                     |      |                     |      |                     |
|         |   | 0x01  | CAN2.0A 500 Kbps |                              |         |                  |         |      |                    |      |                    |      |                    |      |                      |      |                     |      |                     |      |                     |
|         |   | 0x02  | CAN2.0A 250 Kbps |                              |         |                  |         |      |                    |      |                    |      |                    |      |                      |      |                     |      |                     |      |                     |
|         |   | 0x03  | CAN2.0A 125 Kbps |                              |         |                  |         |      |                    |      |                    |      |                    |      |                      |      |                     |      |                     |      |                     |
|         |   | 0x10  | CAN2.0B 1Mbps    |                              |         |                  |         |      |                    |      |                    |      |                    |      |                      |      |                     |      |                     |      |                     |
|         |   | 0x11  | CAN2.0B 500 Kbps |                              |         |                  |         |      |                    |      |                    |      |                    |      |                      |      |                     |      |                     |      |                     |
|         |   | 0x12  | CAN2.0B 250 Kbps |                              |         |                  |         |      |                    |      |                    |      |                    |      |                      |      |                     |      |                     |      |                     |
|         |   | 0x13  | CAN2.0B 125 Kbps |                              |         |                  |         |      |                    |      |                    |      |                    |      |                      |      |                     |      |                     |      |                     |
| 0x01    | Emission frequency                              | 0x00  | Rx frame trig    | Triggering mode - 100Hz max. |         |                  |         |      |                    |      |                    |      |                    |      |                      |      |                     |      |                     |      |                     |
|         |   | 0x01  | 1 Hz             |                              |         |                  |         |      |                    |      |                    |      |                    |      |                      |      |                     |      |                     |      |                     |
|         |   | 0x02  | 10 Hz            | Default                      |         |                  |         |      |                    |      |                    |      |                    |      |                      |      |                     |      |                     |      |                     |
|         |   | 0x03  | 50 Hz            |                              |         |                  |         |      |                    |      |                    |      |                    |      |                      |      |                     |      |                     |      |                     |
|         |   | 0x04  | 100 Hz           |                              |         |                  |         |      |                    |      |                    |      |                    |      |                      |      |                     |      |                     |      |                     |
| 0x02    | RxTrig frame ID                                 | if CAN2.0A: 0x1 to 0x7F0  |                  | MSB                          |         |                  |         |      |                    |      |                    |      |                    |      |                      |      |                     |      |                     |      |                     |
| 0x03    |   | if CAN2.0B: 0x1 to 0xFFFF (except 0x7F1 to 0x7F3)   |                  | LSB                          |         |                  |         |      |                    |      |                    |      |                    |      |                      |      |                     |      |                     |      |                     |
| 0x04    | Tx1 frame ID                                    | if CAN2.0A: 0x1 to 0x7F0  |                  | MSB                          |         |                  |         |      |                    |      |                    |      |                    |      |                      |      |                     |      |                     |      |                     |
| 0x05    |   | if CAN2.0B: 0x1 to 0xFFFF (except 0x7F1 to 0x7F3)   |                  | LSB                          |         |                  |         |      |                    |      |                    |      |                    |      |                      |      |                     |      |                     |      |                     |
| 0x06    | Tx2 frame ID                                    | if CAN2.0A: 0x1 to 0x7F0  |                  | MSB                          |         |                  |         |      |                    |      |                    |      |                    |      |                      |      |                     |      |                     |      |                     |
| 0x07    |   | if CAN2.0B: 0x1 to 0xFFFF (except 0x7F1 to 0x7F3)   |                  | LSB                          |         |                  |         |      |                    |      |                    |      |                    |      |                      |      |                     |      |                     |      |                     |
| 0x08    | Don't care (may be changed without consequence) |   |                  |                              |         |                  |         |      |                    |      |                    |      |                    |      |                      |      |                     |      |                     |      |                     |
| 0x09    |   |   |                  |                              |         |                  |         |      |                    |      |                    |      |                    |      |                      |      |                     |      |                     |      |                     |
| 0x0A    | Degree  | 0   | Fahrenheit       |                              |         |                  |         |      |                    |      |                    |      |                    |      |                      |      |                     |      |                     |      |                     |
|         |   | 1   | Celsius          | Default                      |         |                  |         |      |                    |      |                    |      |                    |      |                      |      |                     |      |                     |      |                     |
| 0x0B    | CAN Bus Termination Resistor                    | 0   | Not connected    | Default                      |         |                  |         |      |                    |      |                    |      |                    |      |                      |      |                     |      |                     |      |                     |
|         |   | 1   | Connected        |                              |         |                  |         |      |                    |      |                    |      |                    |      |                      |      |                     |      |                     |      |                     |
| 0x0C    | Tx2 frame Enable                                | 0   | Disable          | Default                      |         |                  |         |      |                    |      |                    |      |                    |      |                      |      |                     |      |                     |      |                     |
|         |   | 1   | Enable           | This frame is sent at 1Hz    |         |                  |         |      |                    |      |                    |      |                    |      |                      |      |                     |      |                     |      |                     |
| 0x0D    | Integration time #1                             | <table border="1"> <tr> <td>0x01</td> <td>80ms (8 samples)</td> <td rowspan="6">Default</td> </tr> <tr> <td>0x02</td> <td>160ms (16 samples)</td> </tr> <tr> <td>0x03</td> <td>320ms (32 samples)</td> </tr> <tr> <td>0x04</td> <td>640ms (64 samples)</td> </tr> <tr> <td>0x05</td> <td>1280ms (128 samples)</td> </tr> <tr> <td>0x0E</td> <td>Integration time #2</td> </tr> <tr> <td>0x0F</td> <td>Integration time #3</td> </tr> <tr> <td>0x10</td> <td>Integration time #4</td> </tr> </table> |                  |                              | 0x01    | 80ms (8 samples) | Default | 0x02 | 160ms (16 samples) | 0x03 | 320ms (32 samples) | 0x04 | 640ms (64 samples) | 0x05 | 1280ms (128 samples) | 0x0E | Integration time #2 | 0x0F | Integration time #3 | 0x10 | Integration time #4 |
| 0x01    | 80ms (8 samples)                                |   |                  |                              | Default |                  |         |      |                    |      |                    |      |                    |      |                      |      |                     |      |                     |      |                     |
| 0x02    | 160ms (16 samples)                              |   |                  |                              |         |                  |         |      |                    |      |                    |      |                    |      |                      |      |                     |      |                     |      |                     |
| 0x03    | 320ms (32 samples)                              |   |                  |                              |         |                  |         |      |                    |      |                    |      |                    |      |                      |      |                     |      |                     |      |                     |
| 0x04    | 640ms (64 samples)                              |   |                  |                              |         |                  |         |      |                    |      |                    |      |                    |      |                      |      |                     |      |                     |      |                     |
| 0x05    | 1280ms (128 samples)                            |   |                  |                              |         |                  |         |      |                    |      |                    |      |                    |      |                      |      |                     |      |                     |      |                     |
| 0x0E    | Integration time #2                             |   |                  |                              |         |                  |         |      |                    |      |                    |      |                    |      |                      |      |                     |      |                     |      |                     |
| 0x0F    | Integration time #3                             |   |                  |                              |         |                  |         |      |                    |      |                    |      |                    |      |                      |      |                     |      |                     |      |                     |
| 0x10    | Integration time #4                             |   |                  |                              |         |                  |         |      |                    |      |                    |      |                    |      |                      |      |                     |      |                     |      |                     |
| 0x0E    | Integration time #2                             |   |                  |                              |         |                  |         |      |                    |      |                    |      |                    |      |                      |      |                     |      |                     |      |                     |
| 0x0F    | Integration time #3                             |   |                  |                              |         |                  |         |      |                    |      |                    |      |                    |      |                      |      |                     |      |                     |      |                     |
| 0x10    | Integration time #4                             |   |                  |                              |         |                  |         |      |                    |      |                    |      |                    |      |                      |      |                     |      |                     |      |                     |



**Ordering ref:**

THNF4x-C- *Type/Range*

K/-100+400  
K/-100+800  
K/-100+1300  
K/-40+1370  
K/0+800  
K/0+900  
K/0+1000  
K/0+1100  
K/0+1250

Ex: THNR4x -K/-50+200 > type K, -50 to +200°C

For complete information, contact us at [info@texense.com](mailto:info@texense.com)