# XR-TH8-S

DEWETRON

- 8-channel universal thermocouple inputs
- Intelligent amplifier with integrated A/D conversion
- Cold junction compensation for every channel
- Available thermocouple types:
  - K, J, T, R, S, N, E, L, C, U, B
  - Isolated
- RS-485 or CAN interface programmable




## Module specifications

| Module specifications XR-TH8-S module | | | | | | | |
|---|---|---|---|---|---|---|---|
| Input channels | 8 isolated thermocouple channels | | | | | | |
| Input signals | K, J, T, R, S, N, E, L, C, U, B, ±150 mV | | | | | | |
| Sampling rate | Max. 200 S/s per channel for CAN<br>Max. 10 S/s per channel for RS-485 | | | | | | |
| Bandwidth (-3 dB) | 48 Hz | | | | | | |
| ADC type | 20-bit Delta Sigma Converter | | | | | | |
| Input connector | Mini thermocouple connector | | | | | | |
| Resolution | 0.02 °C for all types | | | | | | |
| Input noise | Type K: 0.2 °C @ 100 S/s; 0.05 °C @ 10 S/s; 0.02 @ 1 S/s | | | | | | |
| Input impedance | Typ. 100 MΩ | | | | | | |
| Bias current | Typ. <1 nA | | | | | | |
| Open thermocouple detection | Module indicates full-scale if input is open | | | | | | |
| Accuracy[1] (inluding CJC error) | **-270 to -200 °C** | **-200 to -100 °C** | **-100–0 °C** | **0 to 100 °C** | **100–400 °C** | **400–1000 °C** | **>1000 °C** |
| – Type K (-270 to 1372 °C) | 10.0 °C[4] | 1.0 °C | 0.5 °C | 0.4 °C | 0.4 °C | 0.6 °C | 0.8 °C |
| – Type J (-210 to 1200 °C) | 0.9 °C[4] | 1.0 °C | 0.4 °C | 0.3 °C | 0.4 °C | 0.5 °C | - |
| – Type T (-270 to 400 °C) | 6.5 °C[4] | 1.0 °C | 0.5 °C | 0.4 °C | 0.4 °C | - | - |
| – Type R (-50 to 1760 °C) | - | - | 2.8 °C | 1.8 °C | 1.3 °C | 1.1 °C | 1.2 °C |
| – Type S (-50 to 1760 °C) | - | - | 2.4 °C | 1.8 °C | 1.4 °C | 1.1 °C | 1.3 C° |
| – Type N (-270 to 1300 °C) | 16.0 °C[4] | 1.3 °C | 0.6 °C | 0.5 °C | 0.5 °C | 0.5 °C | 0.6 °C |
| – Type E (-270 to 1000 °C) | 5.5 °C[4] | 0.8 °C | 0.4 °C | 0.3 °C | 0.3 °C | 0.4 °C | - |
| – Type L (0 to 900 °C) | - | - | - | 0.4 °C | 0.4 °C | 0.5 °C | - |
| – Type C (0 to 2300 °C) | - | - | - | 0.8 °C | 0.7 °C | 0.8 °C | 2.0 °C |
| – Type U (-200 to 600 °C) | - | 1.0 °C | 0.6 °C | 0.4 °C | 0.4 °C | 0.4 °C | - |
| – Type B (0 to 1820 °C) | - | - | - | 90.2 °C[2] | 9.0 °C | 2.3 °C | 1.2 °C |
| Voltage accuracy[1] | ±0.02 % of reading ± 9 µV | | | | | | |
| Max. gain drift | 25 ppm/°C | | | | | | |
| Max. offset drift | 25 ppm of range/°C | | | | | | |
| Isolation[3] voltage | 1500 $V_{AC}$ (channel to channel and channel to bus, power and chassis) | | | | | | |
| Rated input voltage to earth according to IEC/EN 61010-2-30 | 70 $V_{DC}$ (46.7 $V_{PEAK}$) | | | | | | |

*Tab. 3: Module specifications XR-TH8-S module*

| Module specifications XR-TH8-S module | | |
|---|---|---|
| Overvoltage protection | 15 $V_{DC}$ | |
| CMRR (50/60 Hz) @ 0.01 to 10 S/s | 130 dB | |
| Interface | **RS-485** | **CAN 2.0B** |
| – Communication speed | 9600 bps (2400–115 200 programmable) | 50 kBd to 1000 kBd |
| – Standard settings | 9600 bps, 8 data bits, 1 stop bit, no parity, module address 00 hex | 500 kBd, Intel format |
| – Readout speed | Depending on Bdrate and number of channels (typ. 80 ch/s @ 9600 bps) | 200 Hz[4], 100 Hz, 50 Hz, 20 Hz, 10 Hz, 5 Hz, 2 Hz, 1 Hz, 0.5 Hz, 0.2 Hz or 0.1 Hz, 0.05 Hz, 0.02 Hz, 0.01 Hz, programmable |
| – Data format | - | 16-bit Intel or Motorola |
| – Identifier types | - | Standard, extended |
| MTBF[5] | 415,835 h | |
| IP rating | No IP rating | |
| Bus/power connector | HEG.1B.304.CLNP | |
| Power supply voltage | 7 to 40 V | |
| Power consumption | | |
| – Sample rate ≤10 S/s | 0.7 W | |
| – Sample rate 20 to 100 S/s | 0.9 W | |
| – Sample rate 200 S/s | 1.1 W | |
| Dimensions | | |
| – Base module (W x D x H) | 129 x 72 x 45 mm (5.1 x 2.8 x 1.8 in.) incl. mounting holes | |
| – Mounting holes distance | 119 x 6 mm (4.7 x 0.2 in.), 4.2 mm (0.17 in.) diameter | |
| Weight | Typ. 440 g (~0.95 lbs) | |
| Environmental | | |
| – Storage temperature | -40 °C to +100 °C (-40 °F to +212 °F) | |
| – Operating temperature | -40°C to +85 °C (-40 °F to +185 °F) | |
| – Relative humidity (MIL202) | 0 to 100 % at 60 °C | |

*Tab. 3: Module specifications XR-TH8-S module*

1) 1 year, 23 °C ±5 °C
2) calculated specification; not verified.
3) For safety reasons maximum allowed voltage: 70 $V_{DC}$ (46.7 $V_{PEAK}$)
4) At 200 S/s the accuracy is reduced; multiply accuracy values with 3
5) Mean time between failure