

XR-TH8-S



- ▶ 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 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 M Ω						
Bias current	Typ. <1 nA						
Open thermocouple detection	Module indicates full-scale if input is open						
Accuracy ¹⁾ (including 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 μ V						
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