

5.12. TH: Thermocouple

KRYPTON TH modules are isolated rugged DAQ devices for temperature measurements using thermocouples.

5.12.1. TH: specifications

KRYPTONi-8xTH, 16xTH

Analog inputs	KRYPTONi-8xTH	KRYPTONi-16xTH
Input type	Isolated universal thermocouple and voltage	
Number of channels	8	16
ADC Type	24-bit delta-sigma	
±0.02 % of reading ±10 µV	Simultaneous 100 S/sec	
Voltage Ranges	±1 V	±100 mV
Input Accuracy	±0.02 % of reading ±100 µV	±0.02 % of reading ±10 µV
Typical Noise Floor @ 10 / 100 S/sec	-114 dB / -105 dB	-109 dB / -100 dB
Gain Drift	Typical 3 ppm/K (max. 10 ppm/K)	
Offset Drift	0.03 µV/K	
Gain Linearity	< 0.01 %	
Input Coupling	DC	
Input Impedance	100 MΩ	
Thermocouple		
Input type	TC Types: K, J, T, R, S, N, E, C, B	
Accuracy	±0.02 % of reading ± 0.5 °C ± 10 µV	
Resolution	< 0.001 °C	
Sampling rates	100, 80, 40, 20, 10 S/sec	
Typical Noise	0.007 °C RMS @ Type K @ 10 S/sec	0.02 °C RMS @ Type K @ 100 S/sec
Additional Specifications		
Input connector	Mini Thermocouple connector (copper)	
Isolation voltage	1000 V _{peak} channel/ground & channel/channel	
Environmental rating (see 1)	IP67	
Amplifier type	KRYPTONi-8xTH	KRYPTONi-16xTH
Power consumption	2.5 W	4 W
Weight	720 g	1000 g
Dimensions	213 x 39 x 56 mm	213 x 54 x 56 mm
1) Depending on the mating connector types, for non corrosive liquids only, IP65 standard		

KRYPTONi-1xTH-HV

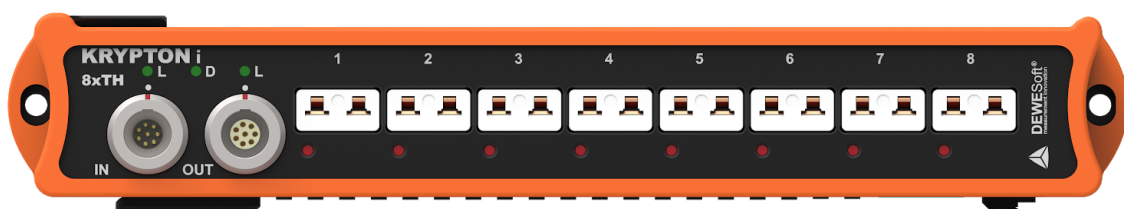
Inputs	
Input types	Thermocouple
Number of channels	1
Input connector	K-type Thermocouple LEMO REDEL 2P series
ADC Type	24-bit delta-sigma
Sampling Rate	Simultaneous 100 S/sec
Isolation voltage	CAT III 600 V, CAT II 1000 V
Input Impedance	100 MΩ
Thermocouple	
TC type	Type K
Accuracy	±0.02 % of reading ±0.5 °C ±10 μV
Resolution	< 0.001 °C
Sampling rates	100, 80, 40, 20, 10 S/sec
Typical Noise	0.007°C RMS @ Type K @ 10 S/sec
Power	
Power consumption	1.3 W (typ.)
Physical	
Dimensions	62 x 56 x 36 mm
Weight	300 g

KRYPTON TH ACCURACY

Temperature	Type K	Type J	Type T	Type R	Type S	Type N	Type E	Type B	Type C
-200 °C	1.19 °C	1.00 °C	1.18 °C			1.52 °C	0.95 °C		
-100 °C	0.84 °C	0.76 °C	0.87 °C			0.99 °C	0.74 °C		
0 °C	0.75 °C	0.70 °C	0.76 °C	2.35 °C	2.32 °C	0.88 °C	0.67 °C		1.22 °C
100 °C	0.76 °C	0.70 °C	0.73 °C	1.83 °C	1.87 °C	0.85 °C	0.67 °C	11.62 °C	1.14 °C
400 °C	0.81 °C	0.76 °C	0.73 °C	1.53 °C	1.61 °C	0.84 °C	0.70 °C	2.98 °C	1.09 °C
700 °C	0.88 °C	0.79 °C		1.46 °C	1.56 °C	0.88 °C	0.76 °C	2.04 °C	1.14 °C
1000 °C	0.97 °C	0.86 °C		1.42 °C	1.53 °C	0.95 °C	0.84 °C	1.70 °C	1.25 °C
1300 °C	1.09 °C			1.42 °C	1.54 °C	1.03 °C		1.57 °C	1.39 °C
1700 °C				1.55 °C	1.69 °C			1.57 °C	1.63 °C

5.12.2. KRYPTONi-8xTH

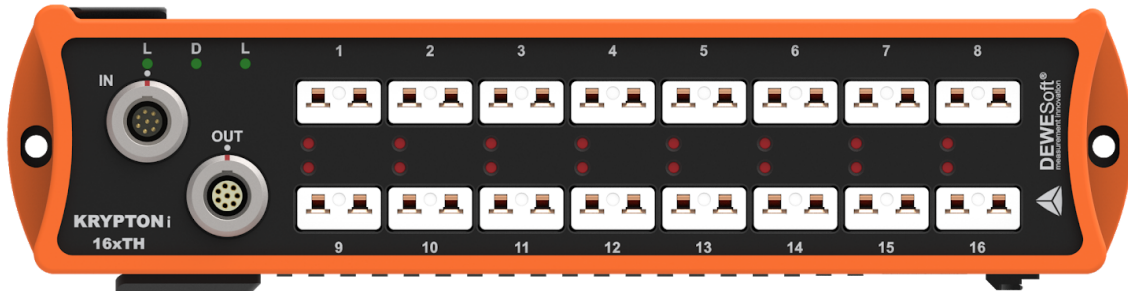
KRYPTONi-8xTH module has 8 thermocouple-connectors for temperature measurement.



KRYPTONi-8xTH

5.12.3. KRYPTONi-16xTH

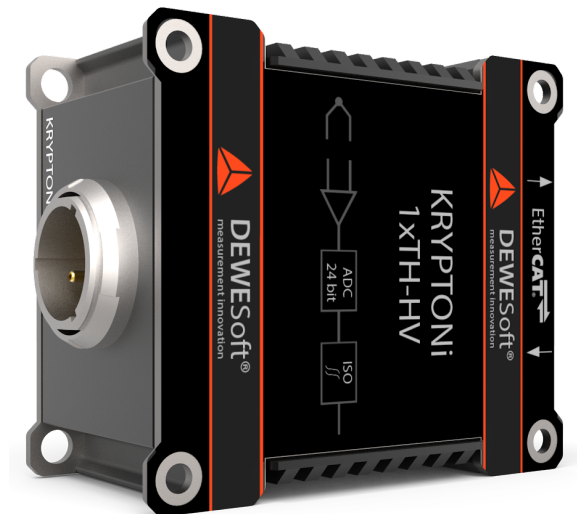
KRYPTONi-16xTH module has 16 thermocouple-connectors for temperature measurement.



KRYPTONi-16xTH

5.12.4. KRYPTONi-1xTH-HV

KRYPTONi-1xTH-HV is a single channel isolated module with LEMO REDEL H02 input connector for thermocouple temperature measurement. KRYPTONi-1xTH-HV is a perfect solution as thermocouple input for high voltage potential for battery measurements.



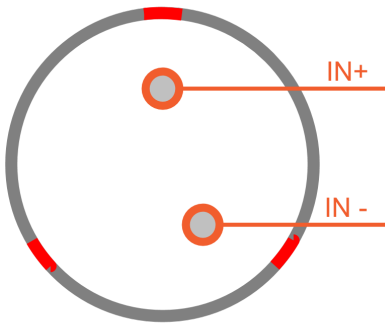
KRYPTONi-1xTH-HV

5.12.5. TH: connectors



Thermocouple connector: pin-out (Mini TC)

Pin	Name	Description
1	In+	Input+
2	In-	Input-

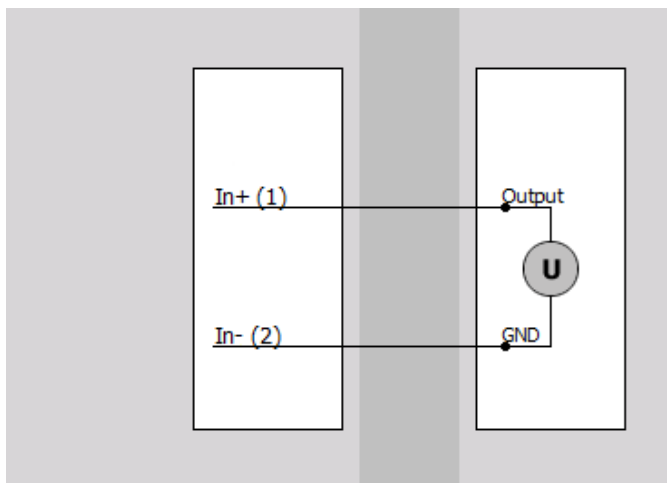


Thermocouple connector: pin-out (2-pin LEMO REDEL H02 male)

Pin	Name	Description
1	In+	Input+
2	In-	Input-

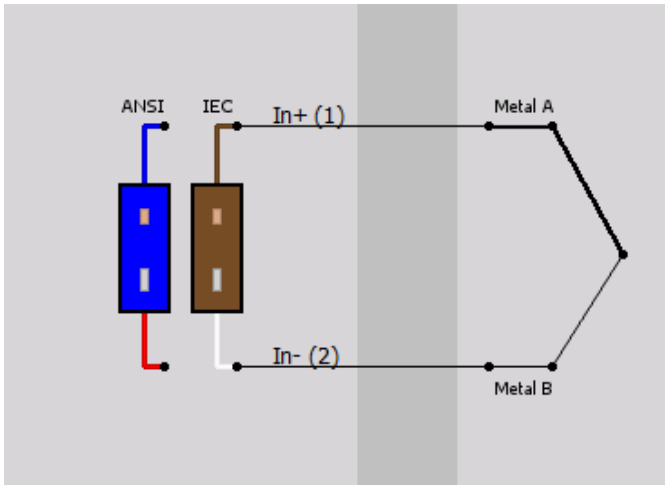
5.12.6. TH: wiring diagrams

5.12.6.1. KRYPTONi-8xTH, KRYPTONi-16xTH: Voltage

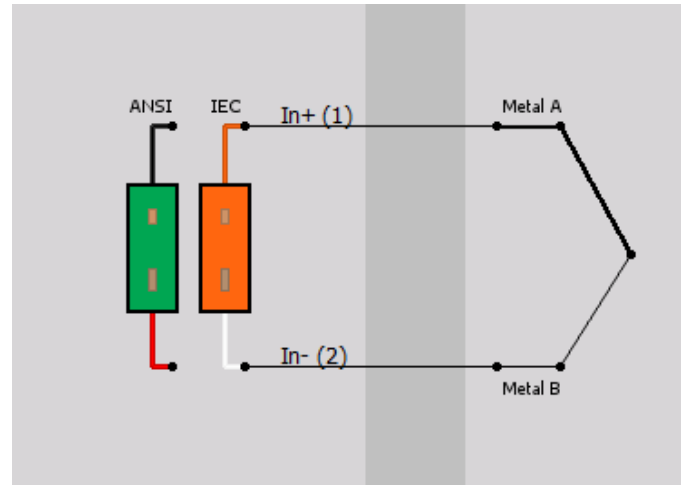


5.12.6.2. KRYPTONi-8xTH, KRYPTONi-16xTH: Temperature

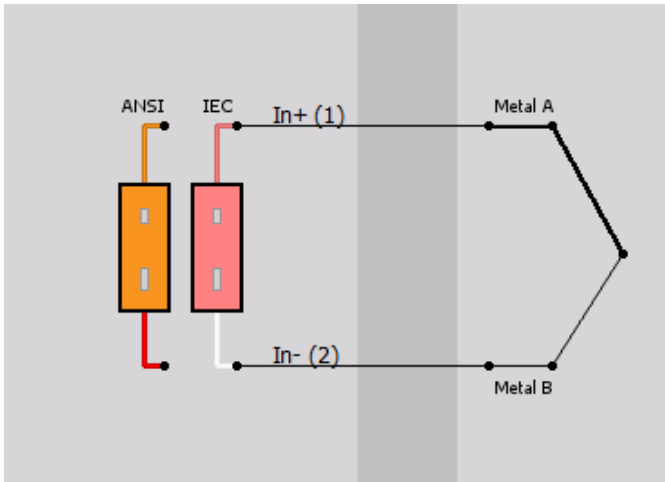
T-type thermocouple



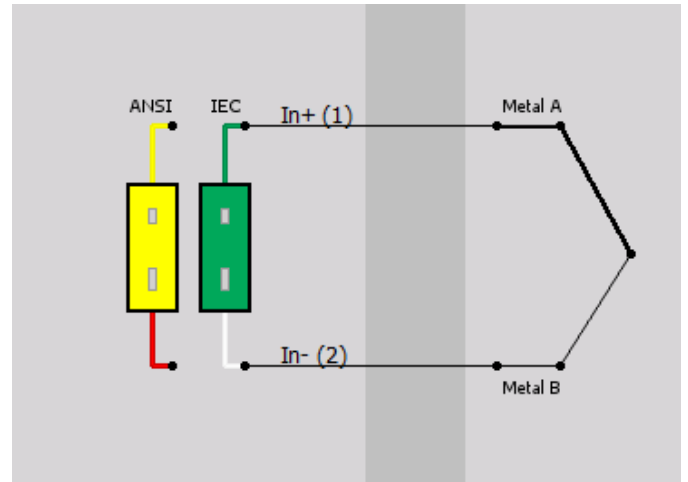
S-type, R-type thermocouple



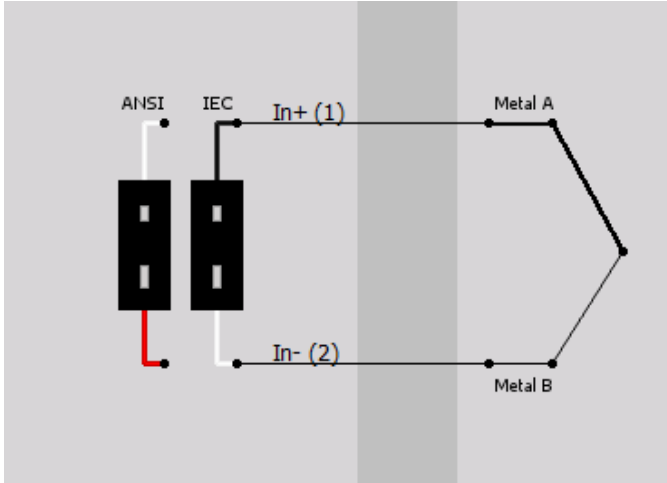
N-type thermocouple



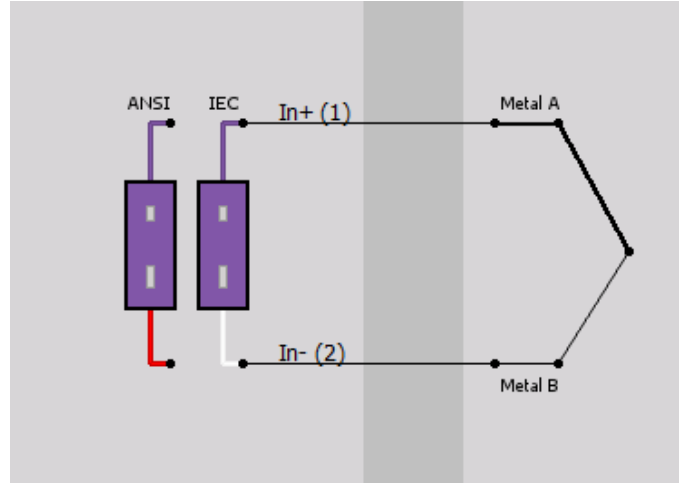
K-type thermocouple



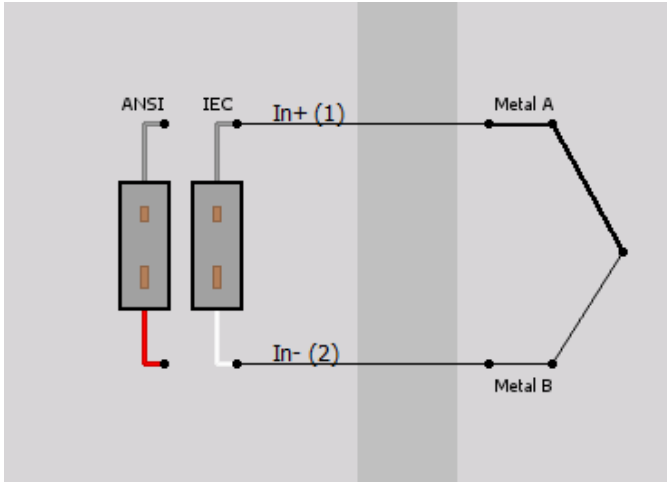
J-type thermocouple



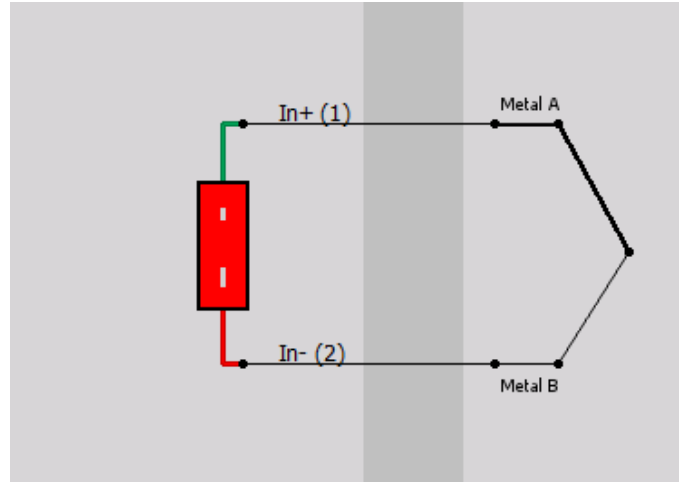
E-type thermocouple



B-type thermocouple



C-type thermocouple



5.12.6.3. KRYPTONi-1xTH-HV: Temperature

K-type thermocouple

