

DAQP-THERM

- Thermocouple:
- Bandwidth:
- Signal connection:

Isolated thermocouple module

K, J, T, R, S, N, E, B, L, C, U (others on request)
 3 kHz
 Universal miniature thermocouple socket



Module specifications

DAQP-THERM			
Thermocouple types	K, J, T, R, S, N, E, B, L, C, U, others on request		
Ranges	Min. to max. of the input range is freely programmable within the full thermocouple input span		
CJC absolute accuracy	±0.3 °C		
CJC stability	0.03 °C/°C ambient temperature change		
CJC equilibrium time	5 minutes		
Accuracy	Typical 0.4° for type K including CJC error; details see table „Input ranges and detailed specifications for thermocouple“.		
Linearization	DSP based linearization		
Nonlinearity	> 0.01°C		
Input resistance	> 1 MOhm		
Bandwidth (-3 dB)	3 kHz		
Filters	3 Hz, 10 Hz, 30 Hz, 100 Hz, 300 Hz, 1 kHz, 3 kHz		
Filter characteristics	Butterworth or Bessel, 2nd, 4th, 6th or 8th order programmable		
Isolation	1 kV _{RMS} ¹⁾		
Typ. CMRR	0 to 100 mV range	100 mV to 5 V range	Thermocouple input
50 Hz	125	105	160
1 kHz	120	100	135
3 kHz	115	95	130
Open thermocouple detection	100 MΩ pull up; software selectable		
Output voltage	±5 V; 0 to 5 V; (±10 V and 0 to 10 V with special DEWE-30)		
Output resistance	22 Ω		
Output current	Max. 5 mA		
Output protection	Continuous short to ground		
RS-485 interface	Yes		
RS-485 data output	Yes		
Supported TEDS chip	DS2406, DS2430A, DS2431, DS2432, DS2433, DS28EC20		
MSI support	No		
Power supply voltage	±9 V _{DC} (±1 %)		
Power consumption	Typical 1 W		
Connector	Mini thermocouple connector with integrated cold junction compensation sensor		
¹⁾ Although the rated input voltage is 33 V _{RMS} ¹⁾ , 46.7 V _{PEAK} or 70 V _{DC} according to EN-61010-1 and EN-61010-2-30, the galvanic isolation has been tested with 1 kV _{RMS} for 1 min.			

Input ranges and detailed specifications for thermocouple

Thermocouple accuracy including CJC error										
Type	Standard	Input range		Accuracy						
		min	max	-270 to -200 °C -454 to -328 °F	-200 to -100 °C -328 to -148 °F	-100 to 0 °C -148 to 32 °F	0 to 100 °C 32 to 212 °F	100 to 400 °C 212 to 752 °F	400 to 1000 °C 752 to 1832 °F	>1000 °C > 1832 °F
		[°F] °C	[°F] °C	[°F] °C	[°F] °C	[°F] °C	[°F] °C	[°F] °C	[°F] °C	[°F] °C
K	DIN EN 60584-1	[-454] -270	[2501] 1372	[17.41] 9.67	[1.82] 1.01	[1.92] 0.51	[0.70] 0.39	[0.79] 0.44	[1.08] 0.6	[1.39] 0.77
J	DIN EN 60584-1	[-346] -210	[2192] 1200	[1.76] 0.98	[1.57] 0.87	[0.85] 0.47	[0.67] 0.37	[0.76] 0.42	[0.92] 0.51	[1.01] 0.56
T	DIN EN 60584-1	[-454] -270	[752] 400	[11.38] 6.32	[1.78] 0.99	[0.99] 0.55	[0.70] 0.39	[0.61] 0.34	-	-
R	DIN EN 60584-1	[-58] -50	[3200] 1760	-	-	[2.30] 1.28	[1.60] 0.89	[1.17] 0.65	[0.95] 0.53	[1.28] 0.71
S	DIN EN 60584-1	[-58] -50	[3200] 1760	-	-	[2.07] 1.15	[1.57] 0.87	[1.21] 0.67	[1.04] 0.58	[1.39] 0.77
N	DIN EN 60584-1	[-454] -270	[2372] 1300	[23.81] 13.23	[2.02] 1.12	[0.97] 0.54	[0.67] 0.42	[0.70] 0.39	[0.86] 0.48	[1.03] 0.57
E	DIN EN 60584-1	[-454] -270	[1832] 1000	[11.00] 6.11	[1.06] 0.87	[0.88] 0.49	[0.65] 0.36	[0.61] 0.34	[0.86] 0.48	-
L	DIN 43710	[32] 0	[1652] 900	-	-	-	[0.65] 0.36	[0.74] 0.41	[0.77] 0.43	-
C	ASTM E988-96	[32] 0	[4190] 2310	-	-	-	[0.88] 0.49	[0.86] 0.48	[1.06] 0.59	[1.69] 0.94
U	DIN 43710	[-328] -200	[1112] 600	[1.67] 0.93	[1.67] 0.93	[0.99] 0.55	[0.70] 0.39	[0.63] 0.35	[0.56] 0.31	-
B	DIN EN 60584-1	[32] 0	[3308] 1820	-	-	-	[54.56] 30.31	[5.47] 3.04	[1.40] 0.78	[0.92] 0.51

- = calculated specifications, not verified.