

DAQP-MULTI

- Thermocouple:
- Bridge:
- Voltage input:
- RTD
- Resistance:
- Bandwidth:
- Isolation:
- Signal connection:

Isolated multifunctional module

- Free programmable ranges within full thermocouple input span
- ± 0.5 to ± 1000 mV/mA
- ± 5 mV to ± 5 V (free programmable within ± 5 V)
- Resistance Temperature Detector (Pt100 to Pt2000), free programmable ranges within full RTD input span
- 1 Ω to 1 M Ω (free programmable between 1 Ω and 1 M Ω)
- 3 kHz
- 1000 V_{RMS} continuous
- Standard miniature thermocouple connector, 9-pin SUB-D connector

**Module specifications**

DAQP-MULTI	
Input types:	Thermocouple (TC); Resistance Temperature Detector (RTD); Voltage; Resistance; Bridge with constant current excitation
Thermocouple	
Type:	K, J, T, R, S, N, E, B, L, C, U, others on request
Range:	Min. to max. of the input range is free programmable within the full thermocouple input span
CJC absolute accuracy:	± 0.2 °C
CJC stability:	0.01 °C/°C ambient temperature change
Accuracy :	Typical 0.3° for type K including CJC error; details see table „Input ranges and detailed specifications for thermocouple“.
Linearization:	DSP based linearization
Nonlinearity:	> 0.01°C
Open thermocouple detection:	100 M Ω pull up; software selectable
Connector:	Mini thermocouple connector with integrated cold junction compensation sensor
RTD	
Type:	Pt100, Pt200, Pt500, Pt1000, Pt2000, others on request
Range:	Min. and max. of the input range is free programmable within the full RTD input span
Constant current:	Pt100: 1 mA; Pt200, Pt500: 0.5 mA; Pt1000, Pt2000: 0.2 mA
Accuracy:	Typical accuracy 0.15 °C for Pt100, details see table „Input ranges and detailed specifications for RTD“
Linearization:	DSP based linearization
Nonlinearity:	> 0.01 °C
Voltage	
Input range:	± 5 mV, ± 10 mV, ± 20 mV, ± 50 mV, ± 100 mV, ± 200 mV, ± 500 mV, ± 1 V, ± 2 V, ± 5 V, free programmable within ± 5 V
Accuracy:	0 to ± 100 mV Range: 0.02 % of reading ± 0.01 % of Range ± 5 μ V > ± 100 mV to ± 5 V Range: 0.02 % of reading ± 0.01 % of Range ± 100 μ V
Offset drift:	Typical ± 0.3 μ V/°K ± 10 ppm of range/°K
Gain drift:	Typical 15 ppm/°K
Input impedance:	> 100 M Ω (power off: 50 k Ω)
Input noise:	8 nV * \sqrt Hz
Resistance	
Range:	1, 3, 10, 30, 100, 300, 1k, 3k, 10k, 30k, 100k, 1M, free programmable between 1 Ω and 1 M Ω
Accuracy:	According to table „Input ranges and detailed specifications for resistance“
Drift:	Typical 15 ppm/°K
Constant current:	From 5 μ A to 5 mA depending on range
Bridge	
Range:	0.5, 1, 2, 5, 10, 20, 50, 100, 200, 500, 1000 mV/mA
Accuracy:	0.02 % of reading ± 0.01 % of Range ± 5 μ V
Offset drift:	typical ± 0.3 μ V/°K ± 10 ppm of range/°K
Gain drift:	typical 15ppm/°K
Input impedance:	> 100 M Ω (power off: 50 k Ω)
Input noise:	8 nV * \sqrt Hz
Automatic bridge balance:	± 200 % of range
Supported sensors:	4 wire full bridge
Connector:	DSUB9; DEWETRON bridge type pinout

Excitation current	
Excitation current:	1, 2, 4 mA; software programmable
Accuracy:	0 to 200 μ A: 0.02 % \pm 50 nA 200 μ A to 5 mA: 0.02 % \pm 1 μ A
Drift:	15 ppm/ $^{\circ}$ K
Compliance voltage:	15 V
Source resistance:	>150 k Ω
Bandwidth (-3dB): 3 kHz	
Filters:	3 Hz, 10 Hz, 30 Hz, 100 Hz, 300 Hz, 1 kHz
Group delay:	300 μ s with highest filter
Filter characteristics:	Butterworth or Bessel, 2nd, 4th, 8th order programmable
Typ. CMRR @ 3kHz:	>160 dB
Isolation:	\pm 1000 V _{RMS} continuous (for input excitation and TEDS interface)
Over voltage protection:	\pm 100 V between inputs (clamping voltage: 5 V @ TC input; 11 V @ Voltage input)
Output voltage:	\pm 5 V; 0 to 5V; (\pm 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
Supported TEDS chips:	DS2406, DS2430A, DS2431, DS2432, DS2433, DS28EC20
MSI support:	No
Power supply voltage:	\pm 9 V _{DC} (\pm 1 %)
Power consumption:	1 W typical

Input ranges and detailed specifications for thermocouple

Thermocouple									
Type	Standard	Input range		Accuracy					
		min [°C]	max [°C]	-270 to -200 °C [°C]	-200 to -100 °C [°C]	-100 to 0 °C [°C]	0 to 100 °C [°C]	100 °C to fullscale [% of reading + °C]	
K	DIN EN 60584-1	-270	1372	6.70	0.70	0.35	0.26	0.027	0.26
J	DIN EN 60584-1	-210	1200	0.68	0.60	0.32	0.25	0.019	0.25
T	DIN EN 60584-1	-270	400	4.37	0.69	0.37	0.26		0.23
R	DIN EN 60584-1	-50	1760			0.85	0.59	0.009	0.44
S	DIN EN 60584-1	-50	1760			0.77	0.58	0.012	0.45
N	DIN EN 60584-1	-270	1300	9.14	0.77	0.37	0.28	0.017	0.27
E	DIN EN 60584-1	-270	1000	4.25	0.60	0.33	0.24	0.018	0.23
L	DIN 43710	0	900				0.25		0.33
C	ASTM E988-96	0	2310				0.36	0.045	0.33
U	DIN 43710	-200	600		0.64	0.37	0.26		0.24
B	DIN EN 60584-1	0	1820				0 to 500 °C 10	>500 °C	0.44

Input ranges and detailed specifications for RTD

RTD									
Type	Standard	Input range		Current [mA]	Accuracy				
		min [°C]	max [°C]		-200 to -100 °C [°C]	-100 to 0 °C [°C]	100 °C to fullscale [% of reading + °C]		
Pt100 (385)	DIN EN 60751	-200	850	0.2	0.14	0.21	0.07	0.21	
Pt200 (385)	DIN EN 60751	-200	850	0.1	0.18	0.27	0.10	0.27	
Pt500 (385)	DIN EN 60751	-200	850	0.2	0.34	0.42	0.09	0.42	
Pt1000 (385)	DIN EN 60751	-200	850	0.2	0.22	0.29	0.09	0.29	
Pt2000 (385)	DIN EN 60751	-200	850	0.2	0.25	0.35	0.12	0.36	
Pt100 (3926)		-200	850	0.2	0.14	0.21	0.07	0.21	

Input ranges and detailed specifications for resistance

Resistance			
Range [Ω]	Current [mA]	Accuracy	
		[% of reading]	[% of range]
1000000	0.005	0.04	1.02
300000	0.015	0.04	0.35
100000	0.05	0.04	0.11
30000	0.1	0.04	0.07
10000	0.1	0.04	0.08
3000	0.2	0.04	0.07
1000	0.5	0.04	0.25
300	1	0.04	0.18
100	1	0.04	0.12
30	2	0.04	0.08
10	4	0.04	0.06
3	5	0.04	0.10
1	5	0.04	0.23

Detailed specifications for excitation current

Excitation		
	[% of reading]	[μA]
0 to 200 μA	0,02	0,05
>0.2 to 5 mA	0,02	1