

SIMATIC DP, Electronics module f. ET200S, 2AI TC High Feature, 15 mm width, 15 bit+sign with internal temperature Compensation



Supply voltage	
Load voltage L+	
• Rated value (DC)	24 V; From power module
• Reverse polarity protection	Yes
Input current	
from load voltage L+ (without load), max.	30 mA
from backplane bus 3.3 V DC, max.	10 mA
Power loss	
Power loss, typ.	0.6 W
Address area	
Address space per module	
• Address space per module, max.	4 byte
Analog inputs	
Number of analog inputs	2
permissible input voltage for voltage input (destruction limit), max.	20 V; $\pm 20$ V, continuous
Cycle time (all channels) max.	Number of active channels per module x basic conversion time

Technical unit for temperature measurement adjustable	Yes; Celsius / Fahrenheit
<b>Input ranges (rated values), voltages</b>	
• -80 mV to +80 mV	Yes
• Input resistance (-80 mV to +80 mV)	1 MΩ
<b>Input ranges (rated values), thermocouples</b>	
• Type B	Yes
• Input resistance (Type B)	1 MΩ
• Type C	Yes
• Input resistance (Type C)	1 MΩ
• Type E	Yes
• Input resistance (Type E)	1 MΩ
• Type J	Yes
• Input resistance (type J)	1 MΩ
• Type K	Yes
• Input resistance (Type K)	1 MΩ
• Type L	Yes
• Input resistance (Type L)	1 MΩ
• Type N	Yes
• Input resistance (Type N)	1 MΩ
• Type R	Yes
• Input resistance (Type R)	1 MΩ
• Type S	Yes
• Input resistance (Type S)	1 MΩ
• Type T	Yes
• Input resistance (Type T)	1 MΩ
<b>Thermocouple (TC)</b>	
<b>Temperature compensation</b>	
— internal temperature compensation	Yes; possible with TM-E15S24-AT, TM-E15C24-AT
— external temperature compensation with compensations socket	Yes; one external compensating box per channel
<b>Characteristic linearization</b>	
• parameterizable	Yes
— for thermocouples	Type B, C, E, J, K, L, N, R, S, T to IEC 584
<b>Cable length</b>	
• shielded, max.	50 m
<b>Analog value generation for the inputs</b>	
Measurement principle	integrating
<b>Integration and conversion time/resolution per channel</b>	
• Resolution with overrange (bit including sign), max.	16 bit
• Integration time (ms)	16,7 / 20 ms

<ul style="list-style-type: none"> <li>• Interference voltage suppression for interference frequency <math>f_1</math> in Hz</li> </ul>	50 / 60 Hz
<ul style="list-style-type: none"> <li>• Conversion time (per channel)</li> </ul>	66 ms; 66 / 80 ms; additional conversion time for diagnostic wire break test

Smoothing of measured values	
<ul style="list-style-type: none"> <li>• parameterizable</li> </ul>	Yes; In four stages by means of digital filtering
<ul style="list-style-type: none"> <li>• Step: None</li> </ul>	Yes; 1x cycle time
<ul style="list-style-type: none"> <li>• Step: low</li> </ul>	Yes; 4x cycle time
<ul style="list-style-type: none"> <li>• Step: Medium</li> </ul>	Yes; 32x cycle time
<ul style="list-style-type: none"> <li>• Step: High</li> </ul>	Yes; 64x cycle time

### Errors/accuracies

Linearity error (relative to input range), (+/-)	0.01 %
Temperature error (relative to input range), (+/-)	0.005 %/K
Crosstalk between the inputs, min.	-50 dB
Repeat accuracy in steady state at 25 °C (relative to input range), (+/-)	0.05 %

Operational error limit in overall temperature range	
<ul style="list-style-type: none"> <li>• Voltage, relative to input range, (+/-)</li> </ul>	0.1 %; $\pm 1.5$ K for thermocouples, $\pm 7$ K for thermocouples type C, $\pm 2.5$ K with static thermal state (ambient temperature change < 0.3 K/min)

Basic error limit (operational limit at 25 °C)	
<ul style="list-style-type: none"> <li>• Voltage, relative to input range, (+/-)</li> </ul>	0.05 %; $\pm 1$ K with thermocouples, $\pm 5$ K with thermocouples type C, $\pm 1.5$ K with static thermal state (ambient temperature change < 0.3 K/min)

Interference voltage suppression for $f = n \times (f_1 \pm 1 \%)$ , $f_1 =$ interference frequency	
<ul style="list-style-type: none"> <li>• Series mode interference (peak value of interference &lt; rated value of input range), min.</li> </ul>	70 dB
<ul style="list-style-type: none"> <li>• Common mode interference (USS &lt; 2.5 V), min.</li> </ul>	90 dB

### Interrupts/diagnostics/status information

Diagnostic messages	
<ul style="list-style-type: none"> <li>• Wire-break</li> </ul>	Yes; only thermocouples
<ul style="list-style-type: none"> <li>• Group error</li> </ul>	Yes
<ul style="list-style-type: none"> <li>• Overflow/underflow</li> </ul>	Yes

Diagnostics indication LED	
<ul style="list-style-type: none"> <li>• Group error SF (red)</li> </ul>	Yes

### Parameter

Remark	4 byte
Diagnostics wire break	Disable / enable (wire break is detected only in thermocouples)

Measurement type/range	Deactivated/ ±80 mV/ TC-EL Type T (Cu-CuNi)/ TC-EL Type K (NiCr-Ni)/ TC-EL Type B (PtRh-PtRh)/ TC-EL Type c (Wer-Wer) TC-EL Type N (NiCrSi-NiSi)/ TC-EL Type E (NiCr-CuNi)/ TC-EL Type R (PtRh-Pt)/ TC-EL Type S (PtRh-Pt)/ TC-EL Type J (Fe-Cu-Ni)/ TC
Group diagnostics	Disable / enable
Overflow/underflow	Disable / enable
Comparison point	none / yes, internal

### Potential separation

Potential separation analog inputs	
• between the channels	No
• between the channels and backplane bus	Yes
• Between the channels and load voltage L+	Yes

### Permissible potential difference

Between the inputs and MANA (UCM)	140 V DC/100 V AC
between MANA and M internally (UISO)	75 V DC/60 V AC

### Isolation

Isolation tested with	500 V DC
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### Dimensions

Width	15 mm
Height	81 mm
Depth	52 mm

### Weights

Weight, approx.	40 g
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**last modified:** 05/09/2019