

SIMATIC DP, Electronics module ET 200S: 2AI RTD High Feature, 15 mm width, 15 bit+sign accuracy +/-0.1%, for 2-/3-/4-wire sensors, with internal compensation of the line resistance, with SF LED (group fault)



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.	9 V

Constant measurement current for resistance-type transmitter, typ.	1.25 mA
Cycle time (all channels) max.	Number of active channels per module x basic conversion time
Technical unit for temperature measurement adjustable	Yes
<b>Input ranges (rated values), resistance thermometer</b>	
• Cu 10	Yes
• Input resistance (Cu 10)	10 MΩ
• Ni 100	Yes
• Input resistance (Ni 100)	10 MΩ
• Ni 1000	Yes
• Input resistance (Ni 1000)	10 MΩ
• Ni 120	Yes
• Input resistance (Ni 120)	10 MΩ
• Ni 200	Yes
• Input resistance (Ni 200)	10 MΩ
• Ni 500	Yes
• Input resistance (Ni 500)	10 MΩ
• Pt 100	Yes
• Input resistance (Pt 100)	10 MΩ
• Pt 1000	Yes
• Input resistance (Pt 1000)	10 MΩ
• Pt 200	Yes
• Input resistance (Pt 200)	10 MΩ
• Pt 500	Yes
• Input resistance (Pt 500)	10 MΩ
<b>Input ranges (rated values), resistors</b>	
• 0 to 150 ohms	Yes
• Input resistance (0 to 150 ohms)	10 MΩ
• 0 to 300 ohms	Yes
• Input resistance (0 to 300 ohms)	10 MΩ
• 0 to 600 ohms	Yes
• Input resistance (0 to 600 ohms)	10 MΩ
• 0 to 3000 ohms	Yes
• Input resistance (0 to 3000 ohms)	10 MΩ
<b>Thermocouple (TC)</b>	
<b>Temperature compensation</b>	
— internal temperature compensation	Yes
<b>Characteristic linearization</b>	
• parameterizable	Yes; for Ptxxx, Nixxx
— for resistance thermometer	Ptxxx, Nixxx
<b>Cable length</b>	

- shielded, max.

200 m

## Analog value generation for the inputs

Measurement principle	integrating (Sigma-Delta)
<b>Integration and conversion time/resolution per channel</b>	
<ul style="list-style-type: none"> <li>• Resolution with overrange (bit including sign), max.</li> </ul>	16 bit; for Pt100, Ni100, Ni120, Pt200, Ni200, Pt500, Ni500, Pt1000, Ni1000, Cu10: 15 bit + sign; for 150, 300, 600, 3000 ohms: 15 bit; for PTC: 1 bit
<ul style="list-style-type: none"> <li>• Integration time (ms)</li> </ul>	16,7 / 20 ms
<ul style="list-style-type: none"> <li>• Interference voltage suppression for interference frequency f1 in Hz</li> </ul>	50 / 60 Hz
<ul style="list-style-type: none"> <li>• Conversion time (per channel)</li> </ul>	Basic conversion time incl. integration time: 50 / 60 ms; additional conversion time for diagnostics of wire break test: 5 / 5 ms; additional conversion time for line compensation with 3-wire connection: 50 / 60 ms
<b>Smoothing of measured values</b>	
<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

## Encoder

<b>Connection of signal encoders</b>	
<ul style="list-style-type: none"> <li>• for resistance measurement with two-wire connection</li> </ul>	Yes
<ul style="list-style-type: none"> <li>• for resistance measurement with three-wire connection</li> </ul>	Yes; internal compensation of the line resistances
<ul style="list-style-type: none"> <li>• for resistance measurement with four-wire connection</li> </ul>	Yes

## Errors/accuracies

Linearity error (relative to input range), (+/-)	0.01 %
Temperature error (relative to input range), (+/-)	0.0009 %/K
Crosstalk between the inputs, min.	-50 dB
Repeat accuracy in steady state at 25 °C (relative to input range), (+/-)	0.05 %
<b>Operational error limit in overall temperature range</b>	
<ul style="list-style-type: none"> <li>• Resistance thermometer, relative to input range, (+/-)</li> </ul>	Resistance-type transmitter: $\pm 0.1$ %; Pt100, Pt200, Pt500, Pt1000 standard: $\pm 1.0$ K; Pt100, Pt200, Pt500, Pt1000 climate: $\pm 0.25$ K; Ni100, Ni120, Ni200, Ni500, Ni1000 standard and climate: $\pm 0.4$ K; Cu10 $\pm 1.5$ K
<b>Basic error limit (operational limit at 25 °C)</b>	
<ul style="list-style-type: none"> <li>• Resistance thermometer, relative to input range, (+/-)</li> </ul>	Resistance-type transmitter: $\pm 0.05$ %; Pt100, Pt200, Pt500, Pt1000 standard: $\pm 0.6$ K; Pt100, Pt200, Pt500, Pt1000 climate: $\pm 0.13$ K; Ni100, Ni120, Ni200, Ni500, Ni1000 standard and climate: $\pm 0.2$ K; Cu10 $\pm 1$ K

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

### Isochronous mode

Isochronous operation (application synchronized up to terminal)	No
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### Interrupts/diagnostics/status information

Diagnostic messages	
<ul style="list-style-type: none"> <li>Wire-break</li> </ul>	Yes
<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	7 byte
Diagnostics wire break	Disable / enable
Measurement type/range	Deactivated/ 150 Ohm / 300 Ohm / 600 Ohm / Pt100/Pt200/Pt500/Pt1000 each standard or climate range / Ni100/Ni120/Ni200/Ni500/Ni1000 each standard or climate range / Cu10 each standard or climate range / PTC
Group diagnostics	Disable / enable
Overflow/underflow	Disable / enable

### Potential separation

Potential separation analog inputs	
<ul style="list-style-type: none"> <li>between the channels</li> </ul>	No
<ul style="list-style-type: none"> <li>between the channels and backplane bus</li> </ul>	Yes
<ul style="list-style-type: none"> <li>Between the channels and load voltage L+</li> </ul>	Yes

### Permissible potential difference

between MANA and M internally (UISO)	75 V DC/60 V AC
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### 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