

SIMATIC DP, Electronics module ET 200S: 2AI RTD High Feature, 15 mm width, 15 bit+sign accuracy $\pm 0.1\%$, 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
Input ranges	
• Voltage	No
• Current	No
• Thermocouple	No
• Resistance thermometer	Yes
• Resistance	Yes
Input ranges (rated values), resistance thermometer	
• 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
Input ranges (rated values), resistors	
• 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
Thermocouple (TC)	

Temperature compensation	
— internal temperature compensation	Yes
Characteristic linearization	
• parameterizable	Yes; for Ptxxx, Nixxx
— for resistance thermometer	Ptxxx, Nixxx
Cable length	
• shielded, max.	200 m
Analog value generation for the inputs	
Measurement principle	integrating (Sigma-Delta)
Integration and conversion time/resolution per channel	
• Resolution with overrange (bit including sign), max.	16 bit; for Pt100, Ni100, Ni120, Pt200, Ni200, Pt 500, Ni 500, Pt1000, Ni1000, Cu10: 15 bits + sign; for 150, 300, 600, 3000 ohms: 15 bits; for PTC: 1 bits
• Integration time (ms)	16,7 / 20 ms
• Interference voltage suppression for interference frequency f1 in Hz	50 / 60 Hz
• Conversion time (per channel)	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
Smoothing of measured values	
• parameterizable	Yes; In four stages by means of digital filtering
• Step: None	Yes; 1 x cycle time
• Step: low	Yes; 4 x cycle time
• Step: Medium	Yes; 32 x cycle time
• Step: High	Yes; 64 x cycle time
Encoder	
Connection of signal encoders	
• for resistance measurement with two-wire connection	Yes
• for resistance measurement with three-wire connection	Yes; internal compensation of the line resistances
• for resistance measurement with four-wire connection	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 %
Operational error limit in overall temperature range	

Resistance thermometer, relative to input range, (+/-)	Resistance-type transmitter: $\pm 0.1\%$; Pt100, Pt200, Pt500, Pt1000 standard: $\pm 1.0\text{ K}$; Pt100, Pt200, Pt500, Pt1000 climate: $\pm 0.25\text{ K}$; Ni100, Ni120, Ni200, Ni500, Ni1000 standard and climate: $\pm 0.4\text{ K}$; Cu10 $\pm 1.5\text{ K}$
Basic error limit (operational limit at 25 °C)	
Resistance thermometer, relative to input range, (+/-)	Resistance-type transmitter: $\pm 0.05\%$; Pt100, Pt200, Pt500, Pt1000 standard: $\pm 0.6\text{ K}$; Pt100, Pt200, Pt500, Pt1000 climate: $\pm 0.13\text{ K}$; Ni100, Ni120, Ni200, Ni500, Ni1000 standard and climate: $\pm 0.2\text{ K}$; Cu10 $\pm 1\text{ K}$
Interference voltage suppression for $f = n \times (f_1 \pm 1\%)$, f_1 = interference frequency	
Series mode interference (peak value of interference < rated value of input range), min.	70 dB
Common mode interference (USS < 2.5 V), min.	90 dB
Isochronous mode	
Isochronous operation (application synchronized up to terminal)	No
Interrupts/diagnostics/status information	
Diagnostic messages	
Wire-break	Yes
Group error	Yes
Overflow/underflow	Yes
Diagnostics indication LED	
Group error SF (red)	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	
between the channels	No
between the channels and backplane bus	Yes
Between the channels and load voltage L+	Yes
Permissible potential difference	
between MANA and M internally (UISO)	75 V DC/60 V AC
Isolation	
Isolation tested with	500 V DC

Dimensions	
Width	15 mm
Height	81 mm
Depth	52 mm
Weights	
Weight, approx.	40 g
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