



SIMATIC S7-400, analog input SM 431, isolated 8 AI, resolution 13 bit, U/IResistor

Figure similar

Supply voltage	
Load voltage L+	
<ul style="list-style-type: none"> Rated value (DC) 	not necessary
Input current	
from backplane bus 5 V DC, max.	350 mA
Power loss	
Power loss, typ.	1.8 W
Analog inputs	
Number of analog inputs	8
<ul style="list-style-type: none"> For voltage/current measurement 	8
<ul style="list-style-type: none"> For resistance measurement 	4
permissible input voltage for voltage input (destruction limit), max.	50 V
permissible input current for current input (destruction limit), max.	50 mA; 40 mA continuous
Constant measurement current for resistance-type transmitter, typ.	1.67 mA
Input ranges	
<ul style="list-style-type: none"> Voltage 	Yes
<ul style="list-style-type: none"> Current 	Yes
<ul style="list-style-type: none"> Thermocouple 	No
<ul style="list-style-type: none"> Resistance thermometer 	No
<ul style="list-style-type: none"> Resistance 	Yes
Input ranges (rated values), voltages	
<ul style="list-style-type: none"> 1 V to 5 V <ul style="list-style-type: none"> Input resistance (1 V to 5 V) -1 V to +1 V <ul style="list-style-type: none"> Input resistance (-1 V to +1 V) -10 V to +10 V <ul style="list-style-type: none"> Input resistance (-10 V to +10 V) 	Yes 200 kΩ Yes 200 kΩ Yes 200 kΩ
Input ranges (rated values), currents	
<ul style="list-style-type: none"> -20 mA to +20 mA <ul style="list-style-type: none"> Input resistance (-20 mA to +20 mA) 4 mA to 20 mA <ul style="list-style-type: none"> Input resistance (4 mA to 20 mA) 	Yes 80 Ω Yes 80 Ω
Input ranges (rated values), resistors	
<ul style="list-style-type: none"> 0 to 600 ohms <ul style="list-style-type: none"> Input resistance (0 to 600 ohms) 	Yes usable up to 500 ohms
Cable length	

• shielded, max.	200 m
Analog value generation for the inputs	
Integration and conversion time/resolution per channel	
• Resolution with overrange (bit including sign), max.	13 bit
• Integration time, parameterizable	Yes
• Basic conversion time (ms)	23 / 25 ms
• Integration time (ms)	16,7 / 20 ms
• Interference voltage suppression for interference frequency f1 in Hz	50 / 60 Hz
Encoder	
Connection of signal encoders	
• for voltage measurement	Yes; possible
• for current measurement as 2-wire transducer	Yes; with external transmitter supply
• for current measurement as 4-wire transducer	Yes
• for resistance measurement with two-wire connection	Yes; Line resistances are also measured
• for resistance measurement with three-wire connection	Yes; Line resistances are also measured
• for resistance measurement with four-wire connection	Yes
Errors/accuracies	
Operational error limit in overall temperature range	
• Voltage, relative to input range, (+/-)	1 %; ±1.0 % at ±1 V; ±0.6 % at ±10 V; ±0.7 % at 1 to 5 V
• Current, relative to input range, (+/-)	1 %; at ±20 mA, 4 to 20 mA
• Resistance, relative to input range, (+/-)	1.25 %; 0 to 500 ohms (4-conductor measurement, in range of 600 ohms)
Basic error limit (operational limit at 25 °C)	
• Voltage, relative to input range, (+/-)	0.7 %; 0.7% at ±1 V; 0.4% at ±10 V; 0.5% at 1 to 5 V
• Current, relative to input range, (+/-)	0.7 %; at ±20 mA, 4 to 20 mA
• Resistance, relative to input range, (+/-)	0.8 %; 0 to 500 ohms (4-conductor measurement, in range of 600 ohms)
Interrupts/diagnostics/status information	
Diagnostics function	No
Potential separation	
Potential separation analog inputs	
• Potential separation analog inputs	Yes; internal/external
• between the channels	No
• between the channels and backplane bus	Yes
Isolation	
Isolation tested with	2 120 V DC between bus and analog part; 500 V DC between bus and local ground; 2 120 V DC between analog part and local ground
Dimensions	
Width	25 mm
Height	290 mm
Depth	210 mm
Weights	
Weight, approx.	500 g
last modified:	12/16/2020 