



SIMATIC S7-400,
SM 431 ANALOG INPUT MODULE OPTIC. ISOLATED,
8 AI, 13 BIT RESOLUTION, U/I/RESIST.

Supply voltage	
Load voltage L+	
Rated value (DC)	not necessary
Input current	
from backplane bus 5 V DC, max.	350 mA
Power losses	
Power loss, typ.	1.8 W
Hardware configuration	
Slots	
Required slots	1
Analog inputs	
Number of analog inputs	8
Number of analog inputs for voltage/current measurement	8
Number of analog inputs 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
Input ranges	
Voltage	Yes

Current	Yes
Thermocouple	No
Resistance thermometer	No
Resistance	Yes
Input ranges (rated values), voltages	
1 to 5 V	Yes
Input resistance (1 to 5 V)	200 k Ω
-1 V to +1 V	Yes
Input resistance (-1 V to +1 V)	200 k Ω
-10 V to +10 V	Yes
Input resistance (-10 V to +10 V)	200 k Ω
Input ranges (rated values), currents	
-20 to +20 mA	Yes
Input resistance (-20 to +20 mA)	80 Ω
4 to 20 mA	Yes
Input resistance (4 to 20 mA)	80 Ω
Input ranges (rated values), resistors	
0 to 600 Ohm	Yes
Input resistance (0 to 600 ohms)	usable up to 500 ohms
Cable length	
Cable length, shielded, max.	200 m
Analog value creation	
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	60 / 50 Hz
Encoder	
Connection of signal encoders	
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 limit in overall temperature range	
Voltage, relative to input area, (+/-)	1 % ; +/-1.0% at +/-1 V; +/-0.6% at +/-10 V; +/-0.7% at 1 to 5 V

Current, relative to input area, (+/-)	1 % ; at +/-20 mA, 4 to 20 mA
Resistance, relative to input area, (+/-)	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 area, (+/-)	0.7 % ; 0.7% at +/-1 V; 0.4% at +/-10 V; 0.5% at 1 to 5 V
Current, relative to input area, (+/-)	0.7 % ; at +/-20 mA, 4 to 20 mA
Resistance, relative to input area, (+/-)	0.8 % ; 0 to 500 ohms (4-conductor measurement, in range of 600 ohms)
Galvanic isolation	
Galvanic isolation analog inputs	
Galvanic isolation analog inputs	Yes ; internal/external
between the channels	No
Permissible potential difference	
between the inputs (UCM)	30 V AC
Isolation	
Isolation checked with	2120 V DC between bus and analog part; 500 V DC between bus and local ground; 2120 V DC between analog part and local ground
Dimensions	
Width	25 mm
Height	290 mm
Depth	210 mm
Weights	
Weight, approx.	500 g
Status	Jan 15, 2015