



SIMATIC S7-400, ANALOG INPUT SM 431,
NON-ISOLATED 16 AI, RESOLUTION 13 BITS,
+/-10V, +/-20MA,
4 - 20MA 20 MS MODULE UPDATE

Supply voltage	
Load voltage L+	
Rated value (DC)	24 V ; Only required for supplying 2-wire transmitters
Reverse polarity protection	Yes
Input current	
from load voltage L+ (without load), max.	400 mA ; for 16 connected, fully controlled 2-wire transmitters
from backplane bus 5 V DC, max.	100 mA
Power losses	
Power loss, typ.	2 W
Analog inputs	
Number of analog inputs	16
Number of analog inputs for voltage/current measurement	16
permissible input voltage for voltage input (destruction limit), max.	20 V ; 20 V DC permanent, 75 V DC for max. 1 s (duty factor 1:20)
permissible input current for current input (destruction limit), max.	40 mA
Input ranges	
Voltage	Yes
Current	Yes
Input ranges (rated values), voltages	

1 to 5 V	Yes
Input resistance (1 to 5 V)	100 k Ω
-1 V to +1 V	Yes
Input resistance (-1 V to +1 V)	10 M Ω
-10 V to +10 V	Yes
Input resistance (-10 V to +10 V)	100 k Ω
Input ranges (rated values), currents	
-20 to +20 mA	Yes
Input resistance (-20 to +20 mA)	50 Ω
4 to 20 mA	Yes
Input resistance (4 to 20 mA)	50 Ω
Cable length	
Cable length, shielded, max.	200 m
Analog value creation	
Integrations and conversion time/ resolution per channel	
Resolution with overrange (bit including sign), max.	13 bit
Integration time, parameterizable	Yes
Basic conversion time, ms	55 / 65 ms
Integration time, ms	50 / 60 ms
Interference voltage suppression for interference frequency f1 in Hz	60 / 50 Hz
Encoder	
Connection of signal encoders	
for current measurement as 4-wire transducer	Yes
Errors/accuracies	
Operational limit in overall temperature range	
Voltage, relative to input area	+/- 0,65 % ; 1.0% at 1 to 5 V; 0.65% at +/-1 V, +/-10 V
Current, relative to input area	+/- 0,65 %
Basic error limit (operational limit at 25 °C)	
Voltage, relative to input area	+/- 0,25 % ; 0.5% at 1 to 5 V; 0.25% at +/-1 V, +/-10 V
Current, relative to input area	+/- 0,25 % ; at +/-20 mA, 4 to 20 mA
Galvanic isolation	
Galvanic isolation analog inputs	
Galvanic isolation analog inputs	No
between the channels	No
Permissible potential difference	
between the inputs (UCM)	2 V DC / 2 Vpp AC
Isolation	

Isolation checked with	500 V DC between bus and local ground
Dimensions	
Width	25 mm
Height	290 mm
Depth	210 mm
Required slots	1
Weight	
Weight, approx.	500 g
Status	Feb 25, 2013