



SIMATIC S7-400, ANALOG INPUT SM 431,
8AI;
16 BIT RESOLUTION,
RESIST./PT100/NI100 OPTIC. ISOLATED,
DIAGNOSTIC, ALARM, 20 MS MODULE UPDATE

Input current	
from load voltage L+ (without load), max.	400 mA
from backplane bus 5 V DC, max.	650 mA
Power losses	
Power loss, typ.	3.3 W
Analog inputs	
Number of analog inputs	8
Number of analog inputs for resistance measurement	8
permissible input voltage for voltage input (destruction limit), max.	35 V ; 35 V continuous, 75 V for max. 1 s (mark to space ratio 1:20)
Input ranges	
Resistance thermometer	Yes
Resistance	Yes
Input ranges (rated values), resistance thermometers	
Ni 100	Yes
Input resistance (Ni 100)	> 10,000 ohms
Ni 1000	Yes ; Different characteristics selectable: Europe/U.S.
Input resistance (Ni 1000)	> 10,000 ohms
Pt 100	Yes

Input resistance (Pt 100)	> 10,000 ohms
Pt 1000	Yes
Input resistance (Pt 1000)	> 10,000 ohms
Pt 200	Yes
Input resistance (Pt 200)	> 10,000 ohms
Pt 500	Yes
Input resistance (Pt 500)	> 10,000 ohms
Resistance thermometer (RTD)	
Characteristic linearization	
for resistance thermometer	Pt100, Pt200, Pt500, Pt1000, Ni100, Ni1000; different characteristics selectable (Europe/U.S.)
Characteristic linearization	
Parameterizable	Yes
Cable length	
Cable length, shielded, max.	200 m ; 50 m with thermocouples and input ranges +/-80 mV
Analog value creation	
Integrations and conversion time/ resolution per channel	
Resolution with overrange (bit including sign), max.	16 bit
Integration time, parameterizable	Yes
Basic conversion time, ms	8 / 23 / 25 ms
Integration time, ms	20 ms at 50 Hz (entire module incl. wire break)
Basic conversion time, including integration time, ms	
additional conversion time for wire break monitoring	110 ms / 4 ms
additional conversion time for wire break monitoring and resistance measurement	none
Interference voltage suppression for interference frequency f1 in Hz	none/ 60 / 50 Hz
Encoder	
Connection of signal encoders	
for resistance measurement with 3-conductor connection	Yes
for resistance measurement with 4-conductor connection	Yes
Errors/accuracies	
Operational limit in overall temperature range	
Resistance-type thermometer, relative to input area	+/-1 °C
Basic error limit (operational limit at 25 °C)	
Resistance-type thermometer, relative to input area	+/-0.2 °C
Interrupts/diagnostics/status information	
Alarms	
Diagnostic alarm	Yes ; Parameterizable

Limit value alarm	Yes
Diagnostic messages	
Diagnostics	Yes
Galvanic isolation	
Galvanic isolation analog inputs	
Galvanic isolation analog inputs	Yes ; internal/external
between the channels	No
Permissible potential difference	
between the inputs (UCM)	none
Isolation	
Isolation checked with	1500 V DC
Dimensions	
Width	25 mm
Height	290 mm
Depth	210 mm
Required slots	1
Weight	
Weight, approx.	650 g
Status	Feb 25, 2013