



Figure similar

SIMATIC S7-200 SMART, Analog input SM AI04, 4 AI, 0...10V, 0...5V, +/-5 V, +/-2.5 V, or 0/4-20 mA 11 bit + sign (12 bit ADC)

General information	
Product type designation	SM AI04, AI 4x12 bit
CiR - Configuration in RUN	
Reparameterization possible in RUN	No
Supply voltage	
Type of supply voltage	DC
Rated value (DC)	24 V; -15 / +20 %
permissible range, lower limit (DC)	20.4 V
permissible range, upper limit (DC)	28.8 V
Input current	
Current consumption, typ.	40 mA
from backplane bus 5 V DC, typ.	80 mA
Power loss	
Power loss, typ.	1.5 W
Analog inputs	
Number of analog inputs	4
Input ranges	
<ul style="list-style-type: none"> • Voltage 	Yes; ±10V, ±5V, ±2.5V
<ul style="list-style-type: none"> • Current 	Yes; 0 to 20 mA
<ul style="list-style-type: none"> • Thermocouple 	No
<ul style="list-style-type: none"> • Resistance thermometer 	No
<ul style="list-style-type: none"> • Resistance 	No
Input ranges (rated values), voltages	
<ul style="list-style-type: none"> • -10 V to +10 V — Input resistance (-10 V to +10 V) 	Yes 9 MΩ
<ul style="list-style-type: none"> • -2.5 V to +2.5 V — Input resistance (-2.5 V to +2.5 V) 	Yes 9 MΩ
<ul style="list-style-type: none"> • -5 V to +5 V — Input resistance (-5 V to +5 V) 	Yes 9 MΩ
Input ranges (rated values), currents	
<ul style="list-style-type: none"> • 0 to 20 mA — Input resistance (0 to 20 mA) 	Yes 250 Ω
Analog value generation for the inputs	
Integration and conversion time/resolution per channel	
<ul style="list-style-type: none"> • Resolution with overrange (bit including sign), max. • Interference voltage suppression for interference frequency f1 in Hz 	12 bit; voltage mode: 11 bit + sign bit, current mode: 11 bit 10 / 50 / 60 / 400 Hz
Smoothing of measured values	
<ul style="list-style-type: none"> • parameterizable 	Yes; In 4 stages: 1x, 4x, 16x, 32x cycle time

- Step: None
- Step: low
- Step: Medium
- Step: High

Yes; 1x
 Yes; 4x
 Yes; 16x
 Yes; 32x

Interrupts/diagnostics/status information

Diagnostics function	Yes
Diagnoses	
<ul style="list-style-type: none"> • Monitoring the supply voltage • Wire-break • Short-circuit 	<p>Yes No No</p>
Diagnostics indication LED	
<ul style="list-style-type: none"> • for status of the inputs 	Yes

Degree and class of protection

IP degree of protection	IP20
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Standards, approvals, certificates

CE mark	Yes
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Dimensions

Width	45 mm
Height	100 mm
Depth	81 mm

Weights

Weight, approx.	147 g
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SIMATIC S7-200 SMART, Analog input SM AI08, 8 AI, 0...10V, 0...5V, +/-5 V, +/-2.5 V or 0/4-20 mA; 11 bit + sign (12 bit ADC)

General information	
Product type designation	SM AI08, AI 8x12 bit
CiR - Configuration in RUN	
Reparameterization possible in RUN	No
Supply voltage	
Type of supply voltage	DC
Rated value (DC)	24 V; -15 / +20 %
permissible range, lower limit (DC)	20.4 V
permissible range, upper limit (DC)	28.8 V
Input current	
Current consumption, typ.	60 mA
Current consumption, max.	80 mA
from backplane bus 5 V DC, typ.	61 mA
from backplane bus 5 V DC, max.	80 mA
Power loss	
Power loss, typ.	2 W
Analog inputs	
Number of analog inputs	8
Input ranges	
<ul style="list-style-type: none"> • Voltage • Current • Thermocouple • Resistance thermometer • Resistance 	<ul style="list-style-type: none"> Yes Yes No No No
Analog value generation for the inputs	
Integration and conversion time/resolution per channel	
<ul style="list-style-type: none"> • Resolution with overrange (bit including sign), max. 	12 bit
Dimensions	
Width	45 mm
Height	100 mm
Depth	81 mm
Weights	
Weight, approx.	186 g

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SIMATIC S7-200 SMART, Analog input SM AR02 RTD, 2x AI RTD modules

General information	
Product type designation	SM AR02, AI RTD 2x16 bit
CiR - Configuration in RUN	
Reparameterization possible in RUN	No
Supply voltage	
Type of supply voltage	DC
Rated value (DC)	24 V; -15 / +20 %
Input current	
Current consumption, typ.	40 mA
from backplane bus 5 V DC, typ.	80 mA
Power loss	
Power loss, typ.	1.5 W
Analog inputs	
Number of analog inputs	2; Resistance thermometer
permissible input voltage for voltage input (destruction limit), max.	30 V
Technical unit for temperature measurement adjustable	Yes; Degrees Celsius/degrees Fahrenheit
Input ranges	
<ul style="list-style-type: none"> • Voltage • Current • Thermocouple • Resistance thermometer 	<p>No</p> <p>No</p> <p>No</p> <p>Yes; Resistance-type transmitter: Pt10, Pt50, Pt100, Pt200, Pt500, Pt1000, Ni100, Ni120, Ni200, Ni500, Ni1000, Cu10, Cu50, Cu100, LG-Ni1000</p>
<ul style="list-style-type: none"> • Resistance 	Yes; 48 Ω, 150 Ω, 300 Ω, 600 Ω, 3 000 Ω,
Input ranges (rated values), resistance thermometer	
<ul style="list-style-type: none"> • Cu 10 <ul style="list-style-type: none"> — Input resistance (Cu 10) • Ni 100 <ul style="list-style-type: none"> — Input resistance (Ni 100) • Ni 1000 <ul style="list-style-type: none"> — Input resistance (Ni 1000) • LG-Ni 1000 <ul style="list-style-type: none"> — Input resistance (LG-Ni 1000) • Ni 120 <ul style="list-style-type: none"> — Input resistance (Ni 120) • Ni 200 <ul style="list-style-type: none"> — Input resistance (Ni 200) • Ni 500 <ul style="list-style-type: none"> — Input resistance (Ni 500) • Pt 100 <ul style="list-style-type: none"> — Input resistance (Pt 100) • Pt 1000 <ul style="list-style-type: none"> — Input resistance (Pt 1000) • Pt 200 <ul style="list-style-type: none"> — Input resistance (Pt 200) • Pt 500 <ul style="list-style-type: none"> — Input resistance (Pt 500) 	<p>Yes</p> <p>10 Ω</p> <p>Yes</p> <p>100 Ω</p> <p>Yes</p> <p>1 000 Ω</p> <p>Yes</p> <p>1 000 Ω</p> <p>Yes</p> <p>120 Ω</p> <p>Yes</p> <p>200 Ω</p> <p>Yes</p> <p>500 Ω</p> <p>Yes</p> <p>100 Ω</p> <p>Yes</p> <p>1 000 Ω</p> <p>Yes</p> <p>200 Ω</p> <p>Yes</p> <p>500 Ω</p>
Input ranges (rated values), resistors	
<ul style="list-style-type: none"> • 0 to 48 ohms • 0 to 150 ohms • 0 to 300 ohms • 0 to 600 ohms 	<p>Yes</p> <p>Yes</p> <p>Yes</p> <p>Yes</p>

• 0 to 3000 ohms	Yes
Analog outputs	
Number of analog outputs	0
Analog value generation for the inputs	
Measurement principle	Sigma Delta
Integration and conversion time/resolution per channel	
• Resolution with overrange (bit including sign), max.	15 bit; at 150, 300, 600 und 3 000 ohms; otherwise 15 bits + sign
• Integration time, parameterizable	Yes; 10/ 16.67/ 20/ 100 ms
• Interference voltage suppression for interference frequency f1 in Hz	10 / 50 / 60 / 400 Hz
Smoothing of measured values	
• parameterizable	Yes; In four stages by means of digital filtering
• Step: None	Yes; 1x
• Step: low	Yes; 4x
• Step: Medium	Yes; 16x
• Step: High	Yes; 32x
Degree and class of protection	
IP degree of protection	IP20
Standards, approvals, certificates	
CE mark	Yes
Dimensions	
Width	45 mm
Height	100 mm
Depth	81 mm
Weights	
Weight, approx.	148.7 g

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SIMATIC S7-200 SMART, Analog input SM AR04 RTD, 4xAI RTD module

Figure similar

General information	
Product type designation	SM AR04, AI RTD 4x16 bit
CiR - Configuration in RUN	
Reparameterization possible in RUN	No
Supply voltage	
Type of supply voltage	DC
Rated value (DC)	24 V; -15 / +20 %
Input current	
Current consumption, typ.	40 mA
from backplane bus 5 V DC, typ.	80 mA
Power loss	
Power loss, typ.	1.5 W
Analog inputs	
Number of analog inputs	4
Input ranges	
<ul style="list-style-type: none"> • Voltage • Current • Thermocouple • Resistance thermometer • Resistance 	<ul style="list-style-type: none"> No No No Yes Yes
Analog outputs	
Number of analog outputs	0
Analog value generation for the inputs	
Integration and conversion time/resolution per channel	
<ul style="list-style-type: none"> • Resolution with overrange (bit including sign), max. 	16 bit
Dimensions	
Width	45 mm
Height	100 mm
Depth	81 mm
Weights	
Weight, approx.	150 g
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SIMATIC S7-200 SMART, Analog input SM AI04, 4 AI, 4xAI thermocouples

General information	
Product type designation	SM AT04, AI TC 4x16 bit
Supply voltage	
Type of supply voltage	DC
Rated value (DC)	24 V
permissible range, lower limit (DC)	20.4 V
permissible range, upper limit (DC)	28.8 V
Reverse polarity protection	Yes
Input current	
Current consumption, typ.	30 mA; Current consumption of 24 V DC user power
Current consumption, max.	40 mA; at 20.4 V DC and max. load
from backplane bus 5 V DC, typ.	70 mA; For 5 V DC from CPU module
from backplane bus 5 V DC, max.	80 mA
Power loss	
Power loss, typ.	1.5 W
Analog inputs	
Number of analog inputs	4
Input ranges	
<ul style="list-style-type: none"> • Voltage • Current • Thermocouple • Resistance thermometer • Resistance 	<ul style="list-style-type: none"> No No Yes No No
Analog outputs	
Number of analog outputs	0
Analog value generation for the inputs	
Integration and conversion time/resolution per channel	
<ul style="list-style-type: none"> • Resolution with overrange (bit including sign), max. 	16 bit
Dimensions	
Width	45 mm
Height	100 mm
Depth	81 mm
Weights	
Weight, approx.	125 g

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