## 6ES7336-4GE00-0AB0





SIMATIC S7, Analog input SM 336, 6 AI; 15 bit; fail-safe analog inputs for SIMATIC Safety, with HART support, up to Category 4 (EN 954-1)/ SIL3 (IEC61508)/PLE (ISO13849), 1x 20-pole

Rated value (DC) Reverse polarity protection Yes Load voltage L+  Rated value (DC) Reverse polarity protection Reverse polarity protection Reverse polarity protection Yes Input current From power supply L+, typ. 150 mA from backplane bus 5 V DC, max. Power loss Power loss, typ.  Analog inputs Number of analog inputs Permissible input current for current input (destruction limit), max. Input ranges Voltage Voltage Voltage Current Resistance themometer No Resistance themometer Resistance Resistance Resistance Input ranges (rated values), currents  150 0; typ. 150 ohms max. 175 ohms  26ble length Shielded, max. 1000 m  Analog value generation for the inputs Integration and conversion time/resolution per channel Resolution with overrange (bit including sign), max. Integration and conversion time/resolution per channel Resolution with overrange (bit including sign), max. Integration and conversion time/resolution per channel Resolution with overrange (bit including sign), max. Integration and conversion time/resolution per channel Resolution with overrange (bit including sign), max. Integration and conversion time/resolution per channel Resolution with overrange (bit including sign), max. Integration and conversion time/resolution per channel Resolution with overrange (bit including sign), max. Integration sing denoment as 2-wire transducer Froncelecture Froncelecture Connection of signal encoders For current measurement as 2-wire transducer For current measurement as 4-wire transducer	Supply voltage	
Load voltage L+  Rated value (DC) Reverse polarity protection  From power supply L+, typ. From power s	Rated value (DC)	24 V
Rated value (DC) Reverse polarity protection Yes  From power supply L+, typ. From backplane bus 5 V DC, max.  Power loss Power loss, typ.  Analog inputs  Number of analog inputs  Number of analog inputs  Analog input current for current input (destruction limit), max.  Iinput ranges  Voltage Voltage Voltage Resistance thermometer Resistance thermometer Resistance thermometer Resistance thermometer Resistance thermometer Resistance (4 mA to 20 mA) Finput resistance (4 mA to 20 mA)  Input resistance (4 mA to 20 mA) Resistance quarter for the inputs  Integration and conversion time/resolution per channel Resolution with overrange (bit including sign), max. Integration and conversion time/resolution per channel Resolution with overrange (bit including sign), max. Integration and conversion time/resolution per channel Resolution with overrange (bit including sign), max. Integration and conversion time/resolution per channel Resolution with overrange (bit including sign), max. Integration and conversion time/resolution per channel Resolution with overrange (bit including sign), max. Integration and conversion time/resolution per channel Resolution with overrange (bit including sign), max. Integration and conversion time/resolution per channel Resolution with overrange (bit including sign), max. Integration and conversion time/resolution per channel Resolution with overrange (bit including sign), max. Integration and conversion time/resolution per channel Resolution with overrange (bit including sign), max. Integration and conversion time/resolution per channel Resolution with overrange (bit including sign), max. Integration and conversion time/resolution per channel Resolution with overrange (bit including sign), max. Integration and conversion time/resolution per channel Resolution with overrange (bit including sign), max. Integration and conversion time/resolution per channel Resolution with overrange (bit including sign), max. Integration and conversion time/resolution per channel Resolution with overrange (bit i	Reverse polarity protection	Yes
Reverse polarity protection   Yes	Load voltage L+	
Input current   From power supply L+, typ.   150 mA   90 mA   Power loss   VP.   4.5 W   Analog inputs   6   Power loss   VP.   4.5 W   Analog inputs   40 mA   Power loss   VP.   VP	Rated value (DC)	24 V
From power supply L+, typ. 150 mA  from backplane bus 5 V DC, max. 90 mA  Power loss  Power loss  Power loss, typ. 4.5 W  Analog inputs  Number of analog inputs  Power loss input current for current input (destruction limit), max.  Input ranges  • Voltage No • Current Yes • Thermocouple No • Resistance thermometer No • Resistance thermometer No • Input ranges (rated values), currents  • 0 to 20 mA Yes — Input resistance (0 to 20 mA) 150 \( \Omega; \text{ typ. 150 ohms max. 175 ohms} \) • 4 mA to 20 mA Yes — Input resistance (4 mA to 20 mA) 150 \( \Omega; \text{ typ. 150 ohms max. 175 ohms} \) Cable length • shielded, max. 1000 m  Analog value generation for the inputs Integration and conversion time/resolution per channel • Resolution with overrange (bit including sign), max. • Integration time (ms) 20 ms © 50 Hz, 16.7 ms © 60 Hz fen x (f1 ± 0.5 %)  Encoder  Connection of signal encoders • for current measurement as 2-wire transducer • for current measurement as 4-wire transducer • Yes	<ul> <li>Reverse polarity protection</li> </ul>	Yes
from backplane bus 5 V DC, max.  Power loss  Power loss, typ.  Analog inputs  Number of analog inputs  permissible input current for current input (destruction limit), max.  Input ranges  • Voltage  • Current  • Resistance thermometer  • Resistance thermometer  • No  Input ranges (rated values), currents  • 0 to 20 mA  — Input resistance (0 to 20 mA)  • 4 mA to 20 mA  — Input resistance (4 mA to 20 mA)  • shielded, max.  Analog value generation for the inputs  Integration and conversion time/resolution per channel  • Resolution with overrange (bit including sign), max.  • Integration and conversion time/resolution per channel  • Resolution with overrange (bit including sign), max.  • Integration time (ms)  • Integrence voltage suppression for interference frequency ff in Hz  Encodor  Connection of signal encoders  • for current measurement as 2-wire transducer  • for current measurement as 4-wire transducer	Input current	
Power loss, typ.  Analog inputs  Number of analog inputs  6  permissible input current for current input (destruction limit), max.  Input ranges  • Voltage • Current • Resistance thermometer • Resistance • No  Input ranges (rated values), currents  • 0 to 20 mA — Input resistance (0 to 20 mA) — Input resistance (4 mA to 20 mA) — Input resistance (4 mA to 20 mA) — Input resistance (4 mA to 20 mA)  • Shielded, max.  Analog value generation for the inputs  Integration and conversion time/resolution per channel • Resolution with overrange (bit including sign), max. • Integration time (ms) • Interference voltage suppression for interference frequency f1 in Hz  Encoder  Connection of signal encoders • for current measurement as 2-wire transducer • for current measurement as 4-wire transducer	From power supply L+, typ.	150 mA
Power loss, typ.  Analog inputs  Number of analog inputs  permissible input current for current input (destruction limit), max.  Input ranges  • Voltage • Current • Thermocouple • Resistance thermometer • Resistance (and the survey of the	from backplane bus 5 V DC, max.	90 mA
Analog inputs       6         permissible input current for current input (destruction limit), max.       40 mA         Input ranges       • Voltage       No         • Current       Yes         • Thermocouple       No         • Resistance thermometer       No         • Resistance       No         Input ranges (rated values), currents       • 0 to 20 mA       Yes         — Input resistance (0 to 20 mA)       150 Ω; typ. 150 ohms max. 175 ohms         • 4 mA to 20 mA       Yes         — Input resistance (4 mA to 20 mA)       150 Ω; typ. 150 ohms max. 175 ohms         Cable length       1000 m         • shielded, max.       1 000 m         Analog value generation for the inputs       16 bit; 15 bit + sign         Integration and conversion time/resolution per channel       • Resolution with overrange (bit including sign), max.         • Integration time (ms)       20 ms @ 50 Hz, 16.7 ms @ 60 Hz         • Interference voltage suppression for interference frequency f1 in Hz       f=n x (f1 ±0.5 %)         Encoder       Connection of signal encoders         • for current measurement as 2-wire transducer       Yes         • for current measurement as 4-wire transducer       Yes	Power loss	
Number of analog inputs   6	Power loss, typ.	4.5 W
permissible input current for current input (destruction limit), max.  Input ranges  • Voltage  • Current  • Thermocouple  • Resistance thermometer  • Resistance (a mA to 20 mA)  - Input resistance (4 mA to 20 mA)  • Shielded, max.  Analog value generation for the inputs  Integration and conversion time/resolution per channel  • Resolution with overrange (bit including sign), max.  • Integration time (ms)  • Interference voltage suppression for interference frequency f1 in Hz  Encoder  Connection of signal encoders  • for current measurement as 2-wire transducer  • for current measurement as 4-wire transducer  • for current measurement as 2-wire transducer  • for current measurement as 4-wire transducer  • for current measurement as 4-wire transducer  • for current measurement as 2-wire transducer  • for current measurement as 4-wire transducer  • for current measurement as 4-wire transducer  • for current measurement as 4-wire transducer	Analog inputs	
imit), max.  Input ranges  • Voltage  • Current  • Thermocouple  • Resistance thermometer  • Resistance (a values), currents  • 10 to 20 mA  — Input resistance (0 to 20 mA)  • 4 mA to 20 mA  — Input resistance (4 mA to 20 mA)  • Shielded, max.  Cable length  • shielded, max.  Analog value generation for the inputs  Integration and conversion time/resolution per channel  • Resolution with overrange (bit including sign), max.  • Integration time (ms)  • Interference voltage suppression for interference frequency f1 in Hz  Encoder  Connection of signal encoders  • for current measurement as 2-wire transducer  • for current measurement as 4-wire transducer  • Yes  • for current measurement as 4-wire transducer  • Yes  • for current measurement as 4-wire transducer  • Yes	Number of analog inputs	6
<ul> <li>Voltage</li> <li>Current</li> <li>Thermocouple</li> <li>Resistance thermometer</li> <li>No</li> <li>Resistance thermometer</li> <li>No</li> <li>Input ranges (rated values), currents</li> <li>0 to 20 mA</li> <li>— Input resistance (0 to 20 mA)</li> <li>4 mA to 20 mA</li> <li>— Input resistance (4 mA to 20 mA)</li> <li>4 mA to 20 mA</li> <li>— Input resistance (4 mA to 20 mA)</li> <li>50 Ω; typ. 150 ohms max. 175 ohms</li> <li>Cable length</li> <li>shielded, max.</li> <li>1 000 m</li> <li>Analog value generation for the inputs</li> <li>Integration and conversion time/resolution per channel</li> <li>Resolution with overrange (bit including sign), max.</li> <li>Integration time (ms)</li> <li>Interference voltage suppression for interference frequency f1 in Hz</li> <li>Encoder</li> <li>Connection of signal encoders</li> <li>• for current measurement as 2-wire transducer</li> <li>• for current measurement as 4-wire transducer</li> <li>Yes</li> </ul>		40 mA
Current Thermocouple No Resistance thermometer No Resistance No  Input ranges (rated values), currents  O to 20 mA Input resistance (0 to 20 mA) Analog value generation for the inputs  Integration and conversion time/resolution per channel Resolution with overrange (bit including sign), max. Integration time (ms) Integration and conversion time/resolution per channel Integration and conversion time/res	Input ranges	
<ul> <li>Thermocouple</li> <li>Resistance thermometer</li> <li>Resistance</li> <li>No</li> <li>Input ranges (rated values), currents</li> <li>0 to 20 mA</li> <li>— Input resistance (0 to 20 mA)</li> <li>4 mA to 20 mA</li> <li>— Input resistance (4 mA to 20 mA)</li> <li>50 Ω; typ. 150 ohms max. 175 ohms</li> <li>A mA to 20 mA</li> <li>— Input resistance (4 mA to 20 mA)</li> <li>Shielded, max.</li> <li>Analog value generation for the inputs</li> <li>Integration and conversion time/resolution per channel</li> <li>Resolution with overrange (bit including sign), max.</li> <li>Integration time (ms)</li> <li>Interference voltage suppression for interference frequency f1 in Hz</li> <li>Encoder</li> <li>Connection of signal encoders</li> <li>for current measurement as 2-wire transducer</li> <li>fen current measurement as 4-wire transducer</li> <li>Yes</li> </ul>	<ul> <li>Voltage</li> </ul>	No
<ul> <li>Resistance thermometer</li> <li>Resistance</li> <li>No</li> </ul> Input ranges (rated values), currents <ul> <li>0 to 20 mA</li> <li>Input resistance (0 to 20 mA)</li> <li>4 mA to 20 mA</li> <li>Input resistance (4 mA to 20 mA)</li> <li>5to Ω; typ. 150 ohms max. 175 ohms</li> </ul> Input resistance (4 mA to 20 mA) <li>Shielded, max.</li> <li>Integration and conversion time/resolution per channel</li> <li>Resolution with overrange (bit including sign), max.</li> <li>Integration time (ms)</li> <li>Integration time (ms)</li> <li>Interference voltage suppression for interference frequency f1 in Hz</li> Integration of signal encoders <ul> <li>for current measurement as 2-wire transducer</li> <li>for current measurement as 4-wire transducer</li> <li>fessolution</li> </ul> Integration of signal encoders <ul> <li>for current measurement as 4-wire transducer</li> <li>fen x (f1 ±0.5 %)</li> </ul> Integration of signal encoders  Integration of signal encoders <ul> <li>for current measurement as 2-wire transducer</li> <li>fen current measurement as 4-wire transducer</li> </ul> Integration of signal encoders <ul> <li>for current measurement as 4-wire transducer</li> <li>fen current measurement as 4-wire transducer</li> </ul> Integration of signal encoders <ul> <li>for current measurement as 4-wire transducer</li> <li>fen current measurement as 4-wire transducer</li> </ul> Integration of signal encoders <ul> <li>for current measurement as 4-wire transducer</li> </ul> Integration of signal encoders <ul> <li>for current measurement as 4-wire transducer</li> </ul> Integration of signal encoders  Integration of signal encoders <ul> <li>for current measurement as 4-wire transducer</li> </ul> Integration of signal encoders <ul> <li>for current measurement as 4-wire transducer</li> </ul> Integration of signal encoders  Integration of signal encoders <ul> <li>for current measurement as 4-wire transducer</li> </ul> Integration of signal encoders  Integration of s	Current	Yes
<ul> <li>Resistance</li> <li>Input ranges (rated values), currents</li> <li>0 to 20 mA</li> <li>— Input resistance (0 to 20 mA)</li> <li>4 mA to 20 mA</li> <li>— Input resistance (4 mA to 20 mA)</li> <li>Shielded, max.</li> <li>Analog value generation for the inputs</li> <li>Integration and conversion time/resolution per channel</li> <li>Resolution with overrange (bit including sign), max.</li> <li>Integration time (ms)</li> <li>Integration time (ms)</li> <li>Interference voltage suppression for interference frequency f1 in Hz</li> <li>Encoder</li> <li>Connection of signal encoders</li> <li>f or current measurement as 2-wire transducer</li> <li>f or current measurement as 4-wire transducer</li> <li>Yes</li> </ul>	<ul><li>Thermocouple</li></ul>	No
Input ranges (rated values), currents  • 0 to 20 mA  — Input resistance (0 to 20 mA)  • 4 mA to 20 mA  — Input resistance (4 mA to 20 mA)  (Cable length  • shielded, max.  Analog value generation for the inputs  Integration and conversion time/resolution per channel  • Resolution with overrange (bit including sign), max.  • Integration time (ms)  • Interference voltage suppression for interference frequency f1 in Hz  Encoder  Connection of signal encoders  • for current measurement as 2-wire transducer  • for current measurement as 4-wire transducer  • Yes  Yes  Yes  Yes	<ul> <li>Resistance thermometer</li> </ul>	No
• 0 to 20 mA  — Input resistance (0 to 20 mA)  • 4 mA to 20 mA  — Input resistance (4 mA to 20 mA)  • Shielded, max.  Analog value generation for the inputs  Integration and conversion time/resolution per channel  • Resolution with overrange (bit including sign), max.  • Integration time (ms)  • Interference voltage suppression for interference frequency f1 in Hz  Encoder  Connection of signal encoders  • for current measurement as 2-wire transducer  • for current measurement as 4-wire transducer  • for current measurement as 4-wire transducer  Yes	Resistance	No
- Input resistance (0 to 20 mA) 4 mA to 20 mA Pes Input resistance (4 mA to 20 mA) 50 Ω; typ. 150 ohms max. 175 ohms  Cable length shielded, max.  1 000 m  Analog value generation for the inputs Integration and conversion time/resolution per channel Resolution with overrange (bit including sign), max. Integration time (ms) Integration time (ms) Interference voltage suppression for interference frequency f1 in Hz  Encoder  Connection of signal encoders for current measurement as 2-wire transducer for current measurement as 4-wire transducer Fessolution ohms max. 175 ohms Yes 150 Ω; typ. 150 ohms max. 175 ohms Yes 160 M; typ. 150 ohms max. 175 ohms Yes 150 Ω; typ. 150 ohms max. 175 ohms Yes 150 Ω; typ. 150 ohms max. 175 ohms Fessolution ohms max. 175 ohms Yes	Input ranges (rated values), currents	
<ul> <li>4 mA to 20 mA         — Input resistance (4 mA to 20 mA)         150 Ω; typ. 150 ohms max. 175 ohms     </li> <li>Cable length         <ul> <li>shielded, max.</li> <li>1 000 m</li> </ul> </li> <li>Analog value generation for the inputs         <ul> <li>Integration and conversion time/resolution per channel</li> <li>Resolution with overrange (bit including sign), max.</li> <li>Integration time (ms)</li> <li>Interference voltage suppression for interference frequency f1 in Hz</li> </ul> </li> <li>Encoder         <ul> <li>Connection of signal encoders</li> <li>for current measurement as 2-wire transducer</li> <li>for current measurement as 4-wire transducer</li> </ul> </li> </ul>	• 0 to 20 mA	Yes
- Input resistance (4 mA to 20 mA)  Cable length  • shielded, max.  Analog value generation for the inputs  Integration and conversion time/resolution per channel  • Resolution with overrange (bit including sign), max.  • Integration time (ms)  • Interference voltage suppression for interference frequency f1 in Hz  Encoder  Connection of signal encoders  • for current measurement as 2-wire transducer  • for current measurement as 4-wire transducer  Yes	<ul><li>— Input resistance (0 to 20 mA)</li></ul>	150 $\Omega$ ; typ. 150 ohms max. 175 ohms
Cable length  • shielded, max.  Analog value generation for the inputs  Integration and conversion time/resolution per channel  • Resolution with overrange (bit including sign), max.  • Integration time (ms)  • Interference voltage suppression for interference frequency f1 in Hz  Encoder  Connection of signal encoders  • for current measurement as 2-wire transducer  • for current measurement as 4-wire transducer  Yes	• 4 mA to 20 mA	Yes
shielded, max.  Analog value generation for the inputs  Integration and conversion time/resolution per channel      Resolution with overrange (bit including sign), max.     Integration time (ms)     Interference voltage suppression for interference frequency f1 in Hz  Encoder  Connection of signal encoders     for current measurement as 2-wire transducer     for current measurement as 4-wire transducer     Yes	— Input resistance (4 mA to 20 mA)	150 Ω; typ. 150 ohms max. 175 ohms
Analog value generation for the inputs  Integration and conversion time/resolution per channel  • Resolution with overrange (bit including sign), max.  • Integration time (ms)  • Interference voltage suppression for interference frequency f1 in Hz  Encoder  Connection of signal encoders  • for current measurement as 2-wire transducer  • for current measurement as 4-wire transducer  Yes	Cable length	
Integration and conversion time/resolution per channel  Resolution with overrange (bit including sign), max.  Integration time (ms)  Interference voltage suppression for interference frequency f1 in Hz  Encoder  Connection of signal encoders  Integration time (ms)  Integrati	• shielded, max.	1 000 m
<ul> <li>Resolution with overrange (bit including sign), max.</li> <li>Integration time (ms)</li> <li>Interference voltage suppression for interference frequency f1 in Hz</li> <li>Encoder</li> <li>Connection of signal encoders</li> <li>for current measurement as 2-wire transducer</li> <li>for current measurement as 4-wire transducer</li> <li>Yes</li> </ul>	Analog value generation for the inputs	
<ul> <li>Integration time (ms)</li> <li>Interference voltage suppression for interference frequency f1 in Hz</li> <li>Encoder</li> <li>Connection of signal encoders</li> <li>for current measurement as 2-wire transducer</li> <li>for current measurement as 4-wire transducer</li> <li>Yes</li> </ul>	Integration and conversion time/resolution per channel	
<ul> <li>Interference voltage suppression for interference frequency f1 in Hz</li> <li>Encoder</li> <li>Connection of signal encoders</li> <li>for current measurement as 2-wire transducer</li> <li>for current measurement as 4-wire transducer</li> <li>Yes</li> </ul>	<ul> <li>Resolution with overrange (bit including sign), max.</li> </ul>	16 bit; 15 bit + sign
frequency f1 in Hz  Encoder  Connection of signal encoders  • for current measurement as 2-wire transducer  • for current measurement as 4-wire transducer  Yes  Yes	<ul><li>Integration time (ms)</li></ul>	20 ms @ 50 Hz, 16.7 ms @ 60 Hz
Connection of signal encoders  • for current measurement as 2-wire transducer  • for current measurement as 4-wire transducer  Yes  Yes	0 11	f=n x (f1 ±0.5 %)
<ul> <li>for current measurement as 2-wire transducer</li> <li>for current measurement as 4-wire transducer</li> </ul> Yes Yes	Encoder	
• for current measurement as 4-wire transducer Yes	Connection of signal encoders	
	<ul> <li>for current measurement as 2-wire transducer</li> </ul>	Yes
Errors/accuracies	<ul> <li>for current measurement as 4-wire transducer</li> </ul>	Yes
	Errors/accuracies	

Operational error limit in overall temperature range	
<ul> <li>Current, relative to input range, (+/-)</li> </ul>	0.2 %; 40 μA
Basic error limit (operational limit at 25 °C)	
<ul> <li>Current, relative to input range, (+/-)</li> </ul>	0.1 %
Interrupts/diagnostics/status information	
Diagnostics function	Yes
Alarms	
Diagnostic alarm	Yes
Diagnoses	
Diagnostic information readable	Yes
Diagnostics indication LED	
<ul> <li>Fail-safe operation</li> </ul>	Yes
<ul> <li>Group error SF (red)</li> </ul>	Yes
<ul> <li>Encoder supply Vs (green)</li> </ul>	No
Potential separation	
Potential separation analog inputs	
<ul> <li>between the channels</li> </ul>	Yes
<ul> <li>between the channels and backplane bus</li> </ul>	Yes
<ul> <li>between the channels and the power supply of the electronics</li> </ul>	Yes
Isolation	
Isolation tested with	370V for 1 min
Standards, approvals, certificates	
Highest safety class achievable in safety mode	
• acc. to EN 954	4
<ul> <li>Performance level according to ISO 13849-1</li> </ul>	e
<ul> <li>SIL acc. to IEC 61508</li> </ul>	SIL 3
connection method / header	
required front connector	20-pin
Dimensions	
Width	40 mm
Height	125 mm
Depth	120 mm
Weights	
Weight, approx.	350 g

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last modified: