

## S7-300 analog inputs

Module type	Analog inputs SM 33x										
Special features of this module	Universal module covering the most common measurement ranges and therefore greatly simplifying spare parts handling		High-resolution and high-precision module for detecting currents and voltages		Low-cost, universal hybrid module for the acquisition and output of currents and voltages	Universal hybrid module for measuring voltages, resistances and temperatures by means of resistance-type transmitters (RTD) and for the output of voltages	Hybrid module for high-speed applications, such as plastics machines; integrated comparator	Universal module that covers all prevalent measurement ranges (no TC measurement) and thus simplifies spare parts handling	Very fast module that operates according to the principle of current value encryption; suitable for isochronous applications	High-resolution, individually floating module for voltage measurement and thermocouples, two-channel redundancy for the increased demands of process engineering	
Voltage measuring range Sensors	± 80 mV ± 250 mV ± 500 mV ± 1 V ± 2.5 V		± 5 V ± 10 V 1 ... 5 V		0 ... 10 V		± 1 V ± 2.5 V ± 10 V 0 ... 2 V 0 ... 10 V	± 10 V ± 50 mV ± 500 mV 1 ... 5 V ± 1 V ± 5 V 0 ... 10 V	± 1 V ± 5 mV ± 10 V 1 ... 5 V	± 25 mV, ± 50 mV, ± 80 mV, ± 250 mV, ± 500 mV, ± 1 V	
Diagnostics capability	●		●				●		●		
Interrupt capability	●		●				●		●		
Operating error	± 1%		± 0.1%		± 0.1%	± 0.9%	± 0.7%	± 0.15%	± 0.6%	± 0.4%	± 0.12%
Number of channels	8	2	8	8	4	2	4	8	8	6	
Galvanic isolation: Number of groups	4	1	4	4	1	1	4	1	1	6	
Resolution	max. 14 bits + sign	max. 14 bits + sign	15 bits + sign	15 bits + sign	8 bit	12 bits + sign	13 bits + sign	12 bits + sign	13 bits + sign	15 bits + sign	
Conversion time per channel (at 50 Hz)	22 ms	22 ms	65 ms	83 ms <sup>2)</sup>	100 µs	85 ms	200 µs	60 ms	52 µs <sup>1)</sup>	20 ms	
Order No. group: 6ES7	331-7KF0. <sup>3)</sup>	331-7KB0. <sup>3)</sup>	331-7NF0. <sup>3)</sup>	331-7NF1. <sup>3)</sup>	334-0CE0.	334-0KE0. <sup>3)</sup>	335-7HG0.	331-1KF0. <sup>3)</sup>	331-7HF0.	337-7PF1.	

Module type	Analog inputs SM 33x									
Special features of this module	Universal module covering the most common measurement ranges and therefore greatly simplifying spare parts handling		High-resolution and high-precision module for detecting currents and voltages		Low-cost, universal hybrid module for the acquisition and output of currents and voltages	Hybrid module for high-speed applications, such as plastics machines; integrated comparator	Universal module that covers all prevalent measurement ranges (no TC measurement) and thus simplifies spare parts handling	Very fast module that operates according to the principle of current value encryption; suitable for isochronous applications	Supports communications with HART-capable field devices; high channel density and thus a low price	
Current measuring range Sensors	± 3.2 mA, ± 10 mA, ± 20 mA, 0 ... 20 mA, 4 ... 40 mA		0 ... 20 mA 4 ... 20 mA ± 20 mA		0 ... 20 mA	± 10 mA 0 ... 20 mA 4 ... 40 mA	± 20 mA 0 ... 20 mA 4 ... 20 mA			± 20 mA 0 ... 20 mA 4 ... 20 mA HART
Type of connection	2-wire and 4-wire transducers				4-wire transducers		2-wire and 4-wire transducers			
Diagnostics capability	●		●				●		●	
Interrupt capability	●		●				●		●	
Operating error	± 1%		± 0.3%		± 0.1%	± 0.8%	± 0,25%	± 0.5%	± 0.3%	± 0.15%
Number of channels	8	2	8	8	4	4	8	8	8	8
Galvanic isolation: Number of groups	4	1	4 (8)	4	1	1	1	1	1	1
Resolution	max. 14 bits + sign	max. 14 bits + sign	15 bits + sign	15 bits + sign	8 bit	13 bits + sign	12 bits + sign	13 bits + sign	13 bits + sign	15 bits + sign
Conversion time per channel (at 50 Hz)	22 ms	22 ms	65 ms	83 ms <sup>2)</sup>	100 µs	200 µs	60 ms	52 µs <sup>1)</sup>	65 ms	
Order No. group: 6ES7	331-7KF0. <sup>3)</sup>	331-7KB0. <sup>3)</sup>	331-7NF0. <sup>3)</sup>	331-7NF1. <sup>3)</sup>	334-0CE0.	335-7HG0.	331-1KF0. <sup>3)</sup>	331-7HF0.	331-7TF0. <sup>3)</sup>	

<sup>1)</sup> Independently of the set interference frequency suppression

<sup>2)</sup> in 4-channel mode 10 ms

<sup>3)</sup> As SIPLUS extreme component also for extended temperature range -25 ... +60/+70 °C and corrosive atmosphere/condensation (for further details, see page 98 or [www.siemens.com/siplus-extreme](http://www.siemens.com/siplus-extreme))

## S7-300 analog inputs

Module type	Analog inputs SM 33x				
Special features of this module	Universal module covering the most common measurement ranges and therefore greatly simplifying spare parts handling		High-resolution and high-precision module for recording temperatures via resistance-type transmitters (RTD) including characteristic-curve linearization based on the Russian GOST standard	Universal hybrid module for measuring voltages, resistances and temperatures by means of resistance-type transmitters (RTD) and for the output of voltages	Universal module that covers all prevalent measurement ranges (no TC measurement) and thus considerably simplifies spare parts handling
Resistance measuring range Sensors	150 Ω, 300 Ω, 600 Ω			10 kΩ	600 Ω, 6 kΩ
Type of connection	2-/3-/4-wire connection				
Diagnostics capability	●				
Interrupt capability	●				
Operating error	± 1%		± 0.1%	± 3.5%	± 0.5%
Number of channels	4	1	8	4	8
Galvanic isolation: Number of groups	4	1	4	2	1
Resolution	max. 14 bits + sign	max. 14 bits + sign	max. 15 bits + sign	12 bits + sign	12 bits + sign
Conversion time per channel (at 50 Hz)	23 ms	23 ms	80 ms	170 ms	132 ms
Order No. group: 6ES7	331-7KF0. <sup>3)</sup>	331-7KB0. <sup>3)</sup>	331-7PF0. <sup>3)</sup>	334-0KE0. <sup>3)</sup>	331-1KF0. <sup>3)</sup>

Module type	Analog inputs SM 33x										
Special features of this module	Universal hybrid module for measuring voltages, resistances and temperatures by means of resistance-type transmitters (RTD) and for the output of voltages		Universal module covering the most common measurement ranges and therefore greatly simplifying spare parts handling		High-resolution and high-precision module for recording temperatures via resistance-type transmitters (RTD) including characteristic-curve linearization based on the Russian GOST standard	Universal module covering the most common measurement ranges and therefore greatly simplifying spare parts handling		High-resolution and high-precision module for recording temperatures via thermocouples (TC) including characteristic-curve linearization based on the Russian GOST standard	Universal module that covers all prevalent measurement ranges (no TC measurement) and thus considerably simplifies spare parts handling	High-resolution, individually floating module for voltage measurement and thermocouples, two-channel redundancy for the increased demands of process engineering	
Temperature measuring range Sensors	Pt 100 (-120...+130 °C)		Pt 100 Ni 100 (-200...+385 °C) standard or climate		Pt: 100; 200; 500; 1 000; Ni: 100; 120; 200; 500; 1 000; Cu 10 (-200 ... +850 °C and -120 ... +130 °C) <sup>1)</sup>	Thermocouples types E, N, J, K, L		Thermocouples type B, C, E, N, J, K, L, R, S, T, U <sup>2)</sup>	Pt 100 (-120...+130 °C); Ni 100; Ni 1 000; LG-Ni 1 000; (standard or depending on climate)	Thermocouples type T, U, E, J, L, K, N, R, S, B, C, TxK, XK (L) <sup>2)</sup>	
Diagnostics capability	●		●								
Interrupt capability	●										
Operating error	± 1%		± 0.1%		± 1%		± 0.1%		± 1%		± 0.15%
Number of channels	4	4	1	8	8	2	8	8	8	6	
Galvanic isolation: Number of groups	2	1	1	4	4	1	4	1	6	6	
Resolution	max. 14 bits + sign			15 bits + sign	max. 14 bits + sign		15 bits + sign	12 bits + sign	15 bits + sign		
Conversion time per channel (at 50 Hz)	170 ms	23 ms		80 ms	22 ms	44 ms	95 ms	110 ms	20 ms		
Order No. group: 6ES7	334-0KE0. <sup>3)</sup>	331-7KF0. <sup>3)</sup>	331-7KB0. <sup>3)</sup>	331-7PF0. <sup>3)</sup>	331-7KF0. <sup>3)</sup>	331-7KB0. <sup>3)</sup>	331-7PF1. <sup>4)</sup>	331-1KF0. <sup>3)</sup>	331-7PF1.		

<sup>1)</sup> Characteristics according to GOST 6651-94

<sup>2)</sup> Characteristics according to GOST P8.585.2001

<sup>3)</sup> As SIPLUS extreme component also for extended temperature range -25 ... +60/+70 °C and corrosive atmosphere/condensation (for further details, see page 98 or [www.siemens.com/siplus-extreme](http://www.siemens.com/siplus-extreme))

<sup>4)</sup> As SIPLUS extreme component also for corrosive atmosphere/condensation (for further details, see page 98 or [www.siemens.com/siplus-extreme](http://www.siemens.com/siplus-extreme))

## S7-300 analog outputs

Module type	Analog outputs SM 33x						
Special features of this module	Universal analog output module		Universal analog output module; economical thanks to high channel density	High-speed module with high resolution and accuracy; suitable for isochronous mode	Low-cost, universal hybrid module for the acquisition and output of currents and voltages	Universal hybrid module for measuring voltages, resistances and temperatures by means of resistance-type transmitters (RTD) and for the output of voltages	Hybrid module for high-speed applications, such as plastics machines; integrated comparator
Output range	0 ... 10 V, 1 ... 5 V, ± 10 V				0 ... 10 V		0 ... 10 V ± 10 V
Diagnostics capability	●						
Interrupt capability	●						
Operating error	± 0.5%			± 0.12%	± 0.6%	± 1%	± 0.5%
Number of channels	2	4	8	4	2		4
Galvanic isolation: Number of groups	1	1	1	4	1		1
Resolution	11 bits + sign			max. 15 bits + sign	8 bit	12 bit	max. 13 bits + sign
Conversion time per channel	< 0.8 ms			> 1.6 ms	0.5 ms	0.5 ms	> 0.8 ms
Order No. group: 6ES7	332-5HB0. <sup>2)</sup>	332-5HD0. <sup>1)</sup>	332-5HF0. <sup>2)</sup>	332-7ND0. <sup>1)</sup>	334-OCE0.	334-OKE0. <sup>2)</sup>	335-7HG0.

Module type	Analog outputs SM 33x						
Special features of this module	Universal analog output module		Universal analog output module; economical thanks to high channel density	High-speed module with high resolution and accuracy; suitable for isochronous mode	Low-cost, universal hybrid module for the acquisition and output of currents and voltages	Supports communications with HART-capable field devices; low price per channel thanks to high channel density	
Output range	± 20 mA, 0 ... 20 mA, 4 ... 20 mA				0 ... 20 mA		0 ... 20 mA HART 4 ... 20 mA HART
Diagnostics capability	●						
Interrupt capability	●						
Operating error	± 0.6%			± 0.18%	± 1%	± 0,2%	
Number of channels	2	4	8	4	2	8	
Galvanic isolation: Number of groups	1	1	1	4	1	1	
Resolution	11 bits + sign			max. 15 bits + sign	8 bit	15 bits + sign	
Conversion time per channel	< 0.8 ms			1.6 ms	0.5 ms	50 ms	
Order No. group: 6ES7	332-5HB0. <sup>2)</sup>	332-5HD0. <sup>1)</sup>	332-5HF0. <sup>2)</sup>	332-7ND0. <sup>1)</sup>	334-OCE0.	332-8TF0. <sup>2)</sup>	

<sup>1)</sup> As SIPLUS extreme component also for corrosive atmosphere/condensation (for further details, see page 98 or [www.siemens.com/siplus-extreme](http://www.siemens.com/siplus-extreme))

<sup>2)</sup> As SIPLUS extreme component also for extended temperature range -25 ... +60/+70 °C and corrosive atmosphere/condensation (for further details, see page 98 or [www.siemens.com/siplus-extreme](http://www.siemens.com/siplus-extreme))