

## Overview



ET 200SP analog input module for force and torque sensors.

## Technical specifications

### SIMATIC ET 200SP, analog input module, AI 2x SG 4-, 6-Wire High Speed

General information	
Product type designation	AI 2xSG 4-/6-wire HS
Product function	
• I&M data	Yes; I&M0 to I&M3
• Measuring range scalable	Yes
• Scalable measured values	No
• Adjustment of measuring range	Yes; $\pm 0.5 \dots 320 \text{ mV/V}$
Engineering with	
• STEP 7 TIA Portal configurable/integrated as of version	V14 SP1
• STEP 7 configurable/integrated as of version	V5.6
• PROFIBUS as of GSD version/GSD revision	V03.01.105
• PROFINET as of GSD version/GSD revision	GSDML V2.33
Operating mode	
• Oversampling	Yes; 2 channels per module
• MSI	No
CiR – Configuration in RUN	
Reparameterization possible in RUN	Yes
Calibration possible in RUN	No
Supply voltage	
Rated value (DC)	24 V
Reverse polarity protection	Yes
Analog inputs	
Number of analog inputs	2; Differential inputs
Cycle time (all channels), min.	100 $\mu\text{s}$
Analog input with oversampling	Yes
• Values per cycle, max.	14
• Resolution, min.	100 $\mu\text{s}$
Input ranges	
• Strain gauges (full bridges)	Yes
Cable length	
• shielded, max.	500 m

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Analog value generation for the inputs	
Measurement principle	Sigma Delta
Integration and conversion time/resolution per channel	
• Resolution with overrange (bit including sign), max.	28 bit; 16 bits with oversampling
• Integration time, parameterizable	Yes
• Interference voltage suppression for interference frequency $f_1$ in Hz	60 / 50 Hz / no
• Conversion time (per channel)	100 $\mu\text{s}$
Smoothing of measured values	
• IIR low-pass filter frequency	0.01 ... 600 Hz
• IIR low-pass filter ordinal number	1 ... 4
• Notch filter frequency	0.1 ... 1 000 Hz
• Notch filter quality	5.00 ... 250.00
• Average value filter	0.1 ... 655.3 ms
Encoder	
Connection of signal encoders	
• For strain gauges (full bridges) with 4-conductor connection	Yes
• For strain gauges (full bridges) with 6-conductor connection	Yes
• Resistance of full bridge, min.	80 $\Omega$
• Resistance of full bridge, max.	5 000 $\Omega$
Errors/accuracies	
Temperature coefficient, zero point	$\leq \pm 0.25 \mu\text{V/K}$
Temperature coefficient, span, 4-conductor connection (referred to end value)	$\leq \pm 5 \text{ ppm/K}$
Temperature coefficient, span, 6-conductor connection (referred to end value)	$\leq \pm 10 \text{ ppm/K}$
Basic error limit (operational limit at 25 °C)	
• Voltage, relative to input range, (+/-)	0.05 %; See manual for details

## Weighing Electronics

SIWAREX weighing electronics for SIMATIC  
Force/torque measurement

### AI 2xSG 4/6-wire HS

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##### Isochronous mode

Isochronous operation (application synchronized up to terminal)	Yes
Filtering and processing time (TCI), min.	87 µs
Bus cycle time (TDP), min.	125 µs

##### Interrupts/diagnostics/ status information

Diagnostics function	Yes
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##### Alarms

• Diagnostic alarm	Yes
• Limit value alarm	Yes; two upper and two lower limit values in each case

##### Diagnostic messages

• Monitoring the supply voltage	Yes
• Wire-break	Yes
• Short-circuit	Yes
• Group error	Yes
• Overflow/underflow	Yes

##### Diagnostics indication LED

• Monitoring of the supply voltage (PWR-LED)	Yes; green PWR LED
• Channel status display	Yes; green LED
• for channel diagnostics	Yes; Red LED
• for module diagnostics	Yes; green/red DIAG LED

##### Potential separation

##### Potential separation channels

• between the channels and backplane bus	Yes
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##### Isolation

Isolation tested with	707 V DC (type test)
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##### Standards, approvals, certificates

Suitable for safety functions	No
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##### Ambient conditions

##### Ambient temperature during operation

• horizontal installation, min.	-25 °C
• horizontal installation, max.	60 °C
• vertical installation, min.	-25 °C
• vertical installation, max.	50 °C

##### Altitude during operation relating to sea level

• Ambient air temperature-barometric pressure-altitude	$T_{min} \dots T_{max}$ at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // $T_{min} \dots (T_{max} - 1 \text{ K}/100 \text{ m})$ at 795 hPa ... 701 hPa (+2 000 m ... +3 000 m)
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##### Dimensions

Width	15 mm
Height	73 mm
Depth	58 mm

##### Weights

Weight, approx.	45 g
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#### Selection and ordering data

Article No.

##### SIMATIC ET 200SP analog input module, AI 2x SG 4, 6-wire high speed

7MH4134-6LB00-0DA0

Suitable for BU type A0 color code CC00, channel diagnostics, 28/16 bit, +/- 0.05% for full bridge strain gauges

##### Accessories

SIMATIC ET 200SP, BaseUnit BU15-P16+A0+2B, BU type A0, push-in terminals, without AUX terminals, bridged to the left, W x H: 15 mm x 117 mm

6ES7193-6BP00-0BA0

SIMATIC ET 200SP, BaseUnit BU15-P16+A0+2D, BU type A0, push-in terminals, without AUX terminals, new load group, W x H: 15 mm x 117 mm

6ES7193-6BP00-0DA0

SIMATIC ET 200SP, BaseUnit BU15-P16+A10+2B, BU type A0, push-in terminals, with 10 AUX terminals, bridged to the left, W x H: 15 mm x 141 mm

6ES7193-6BP20-0BA0

SIMATIC ET 200SP, BaseUnit BU15-P16+A10+2D, BU type A0, push-in terminals, without AUX terminals, new load group, W x H: 15 mm x 141 mm

6ES7193-6BP20-0DA0

SIMATIC ET 200SP, 5 shield terminals and 5 shield supports, for direct connection

6ES7193-6SC00-1AM0