

## Weighing Electronics

SIWAREX weighing electronics for SIMATIC  
Force/torque measurements

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

#### Overview



ET 200SP analog input module for force and torque sensors

#### Technical specifications

##### SIMATIC ET 200SP, analog input module, AI 2xSG 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
• Measured values scalable	No
• Measuring range adaptation	Yes; $\pm 0.5 \dots 320$ mV/V
Engineering with	
• STEP 7 TIA Portal can be configured/integrated as of version	V14 SP1
• STEP 7 can be configured/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	
Parameter reassignment possible in RUN	Yes
Calibration possible in RUN	No
Supply voltage	
Rated value (DC)	24 V
Reverse polarity protection	Yes
Analog inputs	
No. of analog inputs	2; differential inputs
Cycle time (all channels), min.	100 $\mu$ s
Analog input with oversampling	Yes
• Values per cycle, max.	14
• Resolution, min.	100 $\mu$ s
Input ranges	
• Strain gauge (full bridge)	Yes
Cable length	
• Shielded, max.	500 m

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

Generation of analog input values	
Measuring principle	Sigma delta
Integration and conversion time/resolution per channel	
• Resolution with overrange (bits including sign), max.	28 bits; 16 bits with oversampling
• Configurable integration time	Yes
• Interference voltage suppression for interference frequency f1 in Hz	60 / 50 Hz / no
• Conversion time (per channel)	100 $\mu$ s
Measured value smoothing	
• 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
Encoders	
Connection of sensors	
• For strain gauge (full bridge) with 4-wire connection	Yes
• For strain gauge (full bridge) with 6-wire connection	Yes
• Resistance of full bridge min.	80 W
• Resistance of full bridge max.	5 000 W
Errors/accuracies	
Temperature coefficient zero point	$\leq \pm 0.25$ mV/K
Temperature coefficient, span	$\leq \pm 5$ ppm/K
4-wire connection (in relation to end value)	
Temperature coefficient, span	$\leq \pm 10$ ppm/K
6-wire connection (in relation to end value)	
Basic error limit (operational limit at 25 °C)	
• Voltage, related to input range, (+/-)	0.05%; see manual for details

**Technical specifications** (continued)

<b>SIMATIC ET 200SP, analog input module, AI 2xSG 4-, 6-wire high speed</b>	
<b>Isochronous mode</b>	
Isochronous mode (application synchronized up to terminal)	Yes
Filter and processing (TWE), min.	87 µs
Bus cycle time (TDP), min.	125 µs
<b>Interrupts/diagnostics/status information</b>	
Diagnostic function	Yes
<b>Interrupts</b>	
• Diagnostic interrupt	Yes
• Limit alarms	Yes, two high and two low limits
<b>Diagnostic messages</b>	
• Monitoring of supply voltage	Yes
• Wire break	Yes
• Short circuit	Yes
• Group error	Yes
• Overflow/underflow	Yes
<b>Diagnostics LED</b>	
• Monitoring of 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
<b>Galvanic isolation</b>	
<b>Galvanic isolation of channels</b>	
• Between the channels and back-plane bus	Yes
<b>Insulation</b>	
Insulation tested with	707 V DC (type test)
<b>Standards, approvals, certificates</b>	
Suitable for safety functions	No
<b>Ambient conditions</b>	
<b>Ambient temperature in operation</b>	
• Horizontal mounting, min.	-25 °C
• Horizontal mounting, max.	60 °C
• Vertical mounting, min.	-25 °C
• Vertical mounting, max.	50 °C
<b>Operating height in relation to sea level</b>	
• With reference to ambient temperature, air pressure and altitude	$T_{min} \dots T_{max}$ at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m)  $T_{min} \dots (T_{max} - 1 K/100 m)$ at 795 hPa ... 701 hPa (+2 000 m ... +3 000 m)
<b>Dimensions</b>	
Width	15 mm
Height	73 mm
Depth	58 mm
<b>Weight</b>	
Weight, approx.	45 g

**Selection and ordering data** Article No.**SIMATIC ET 200SP analog input module, AI 2xSG 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 x 117 mm (1.57 x 7.09 in)

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 x 117 mm (1.57 x 7.09 in)

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 x 141 mm (1.57 x 7.09 in)

6ES7193-6BP20-0BA0

SIMATIC ET 200SP, BaseUnit BU15-P16+A10+2D, BU type A0, push-in terminals, with 10 AUX terminals, new load group, W x H: 15 x 141 mm (1.57 x 7.09 in)

6ES7193-6BP20-0DA0

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

6ES7193-6SC00-1AM0