



Figure similar

SIMATIC S7-1500 Analog input module AI 8xU/I HS, 16 bit resolution, Accuracy 0.3% 8 channels in groups of 8; Common mode voltage 10 V; Diagnostics; Hardware interrupts 8 channels in 0.0625 ms Oversampling; Delivery including infeed element, shield bracket and shield terminal: Front connector (screw terminals or push-in) to be ordered separately

General information	
Product type designation	AI 8xU/I HS
HW functional status	From FS01
Firmware version	V2.1.0
• FW update possible	Yes
Product function	
• I&M data	Yes; I&M0 to I&M3
• Isochronous mode	Yes
• Prioritized startup	Yes
• Measuring range scalable	No
• Scalable measured values	No
• Adjustment of measuring range	No
Engineering with	
• STEP 7 TIA Portal configurable/integrated from version	V14 / -
• STEP 7 configurable/integrated from version	V5.5 SP3 / -
• PROFIBUS from GSD version/GSD revision	V1.0 / V5.1
• PROFINET from GSD version/GSD revision	V2.3 / -
Operating mode	
• Oversampling	Yes
• MSI	Yes
CiR - Configuration in RUN	
Reparameterization possible in RUN	Yes
Calibration possible in RUN	Yes
Supply voltage	
Rated value (DC)	24 V
permissible range, lower limit (DC)	19.2 V
permissible range, upper limit (DC)	28.8 V
Reverse polarity protection	Yes
Input current	
Current consumption, max.	240 mA; with 24 V DC supply
Encoder supply	
24 V encoder supply	
• Short-circuit protection	Yes
• Output current, max.	20 mA; Max. 47 mA per channel for a duration < 10 s
Power	
Power available from the backplane bus	1.15 W
Power loss	
Power loss, typ.	3.4 W

## Analog inputs

Number of analog inputs	8
• For current measurement	8
• For voltage measurement	8
permissible input voltage for voltage input (destruction limit), max.	28.8 V
permissible input current for current input (destruction limit), max.	40 mA
Input ranges (rated values), voltages	
• 0 to +5 V	No
• 0 to +10 V	No
• 1 V to 5 V	Yes
— Input resistance (1 V to 5 V)	50 kΩ
• -10 V to +10 V	Yes
— Input resistance (-10 V to +10 V)	100 kΩ
• -2.5 V to +2.5 V	No
• -25 mV to +25 mV	No
• -250 mV to +250 mV	No
• -5 V to +5 V	Yes
— Input resistance (-5 V to +5 V)	50 kΩ
• -50 mV to +50 mV	No
• -500 mV to +500 mV	No
• -80 mV to +80 mV	No
Input ranges (rated values), currents	
• 0 to 20 mA	Yes
— Input resistance (0 to 20 mA)	41 Ω; Plus approx. 42 ohms for overvoltage protection by PTC
• -20 mA to +20 mA	Yes
— Input resistance (-20 mA to +20 mA)	41 Ω; Plus approx. 42 ohms for overvoltage protection by PTC
• 4 mA to 20 mA	Yes
— Input resistance (4 mA to 20 mA)	41 Ω; Plus approx. 42 ohms for overvoltage protection by PTC
Input ranges (rated values), thermocouples	
• Type B	No
• Type C	No
• Type E	No
• Type J	No
• Type K	No
• Type L	No
• Type N	No
• Type R	No
• Type S	No
• Type T	No
• Type TXK/TXK(L) to GOST	No
Input ranges (rated values), resistance thermometer	
• Cu 10	No
• Cu 10 according to GOST	No
• Cu 50	No
• Cu 50 according to GOST	No
• Cu 100	No
• Cu 100 according to GOST	No
• Ni 10	No
• Ni 10 according to GOST	No
• Ni 100	No
• Ni 100 according to GOST	No
• Ni 1000	No
• Ni 1000 according to GOST	No
• LG-Ni 1000	No
• Ni 120	No
• Ni 120 according to GOST	No
• Ni 200	No
• Ni 200 according to GOST	No
• Ni 500	No
• Ni 500 according to GOST	No
• Pt 10	No
• Pt 10 according to GOST	No

• Pt 50	No
• Pt 50 according to GOST	No
• Pt 100	No
• Pt 100 according to GOST	No
• Pt 1000	No
• Pt 1000 according to GOST	No
• Pt 200	No
• Pt 200 according to GOST	No
• Pt 500	No
• Pt 500 according to GOST	No
<b>Input ranges (rated values), resistors</b>	
• 0 to 150 ohms	No
• 0 to 300 ohms	No
• 0 to 600 ohms	No
• 0 to 3000 ohms	No
• 0 to 6000 ohms	No
• PTC	No
<b>Cable length</b>	
• shielded, max.	800 m
<b>Analog value generation for the inputs</b>	
<b>Integration and conversion time/resolution per channel</b>	
• Resolution with overrange (bit including sign), max.	16 bit
• Basic execution time of the module (all channels released)	62.5 µs; independent of number of activated channels
<b>Smoothing of measured values</b>	
• parameterizable	Yes
• Step: None	Yes
• Step: low	Yes
• Step: Medium	Yes
• Step: High	Yes
<b>Encoder</b>	
<b>Connection of signal encoders</b>	
• for voltage measurement	Yes
• for current measurement as 2-wire transducer	Yes
— Burden of 2-wire transmitter, max.	820 Ω
• for current measurement as 4-wire transducer	Yes
• for resistance measurement with two-wire connection	No
• for resistance measurement with three-wire connection	No
• for resistance measurement with four-wire connection	No
<b>Errors/accuracies</b>	
Linearity error (relative to input range), (+/-)	0.02 %
Temperature error (relative to input range), (+/-)	0.005 %/K
Crosstalk between the inputs, max.	-60 dB
Repeat accuracy in steady state at 25 °C (relative to input range), (+/-)	0.02 %
<b>Operational error limit in overall temperature range</b>	
• Voltage, relative to input range, (+/-)	0.3 %
• Current, relative to input range, (+/-)	0.3 %
<b>Basic error limit (operational limit at 25 °C)</b>	
• Voltage, relative to input range, (+/-)	0.2 %
• Current, relative to input range, (+/-)	0.2 %
<b>Interference voltage suppression for <math>f = n \times (f_1 \pm 1 \%)</math>, <math>f_1</math> = interference frequency</b>	
• Common mode voltage, max.	10 V
• Common mode interference, min.	50 dB at 400 Hz; 60 dB at 60 / 50 / 10 Hz
<b>Isochronous mode</b>	
Filtering and processing time (TCI), min.	80 µs
Bus cycle time (TDP), min.	250 µs
<b>Interrupts/diagnostics/status information</b>	
Diagnostics function	Yes
<b>Alarms</b>	
• Diagnostic alarm	Yes

• Limit value alarm	Yes; two upper and two lower limit values in each case
<b>Diagnoses</b>	
• Monitoring the supply voltage	Yes
• Wire-break	Yes; only for 1 ... 5 V and 4 ... 20 mA
• Overflow/underflow	Yes
<b>Diagnostics indication LED</b>	
• RUN LED	Yes; green LED
• ERROR LED	Yes; red LED
• Monitoring of the supply voltage (PWR-LED)	Yes; green LED
• Channel status display	Yes; green LED
• for channel diagnostics	Yes; red LED
• for module diagnostics	Yes; red LED
<b>Potential separation</b>	
<b>Potential separation channels</b>	
• between the channels	No
• between the channels, in groups of	8
• between the channels and backplane bus	Yes
• between the channels and the power supply of the electronics	Yes
<b>Permissible potential difference</b>	
between the inputs (UCM)	20 V DC
Between the inputs and MANA (UCM)	10 V DC
<b>Isolation</b>	
Isolation tested with	707 V DC (type test)
<b>Ambient conditions</b>	
<b>Ambient temperature during operation</b>	
• horizontal installation, min.	-25 °C; From FS02
• horizontal installation, max.	60 °C
• vertical installation, min.	-25 °C; From FS02
• vertical installation, max.	40 °C
<b>Altitude during operation relating to sea level</b>	
• Installation altitude above sea level, max.	5 000 m; Restrictions for installation altitudes > 2 000 m, see manual
<b>Dimensions</b>	
Width	35 mm
Height	147 mm
Depth	129 mm
<b>Weights</b>	
Weight, approx.	300 g
<b>last modified:</b>	4/29/2021 