

SIMATIC S7-1500, ANALOG INPUT MODULE AI 8 X U/I HF, 16 BITS OF RESOLUTION, ACCURACY 0.1%, 8 CHANNELS IN GROUPS OF 1; COMMON MODE VOLTAGE: 30V AC/60V DC, DIAGNOSIS, PROCESSALARMS; INCL. INFEEED ELEMENT, SHIELD CLAMP AND SHIELD TERMINAL



General information	
Product type designation	AI 8xU/I HF
HW functional status	FS01
Firmware version	V1.0.0
<ul style="list-style-type: none"> FW update possible 	Yes
Product function	
<ul style="list-style-type: none"> I&M data 	Yes; I&M0 to I&M3
<ul style="list-style-type: none"> Measuring range scalable 	No
Engineering with	
<ul style="list-style-type: none"> STEP 7 TIA Portal configurable/integrated as of version 	V13 SP1 / V14
<ul style="list-style-type: none"> STEP 7 configurable/integrated as of version 	V5.5 SP3 / V5.5 SP4
<ul style="list-style-type: none"> PROFIBUS as of GSD version/GSD revision 	V1.0 / V5.1
<ul style="list-style-type: none"> PROFINET as of GSD version/GSD revision 	V2.3 / -
Operating mode	
<ul style="list-style-type: none"> Oversampling 	No
<ul style="list-style-type: none"> MSI 	Yes
CiR - Configuration in RUN	

Reparameterization possible in RUN	Yes
Calibration possible in RUN	No
Supply voltage	
Rated value (DC)	24 V
permissible range, lower limit (DC)	20.4 V
permissible range, upper limit (DC)	28.8 V
Reverse polarity protection	Yes
Input current	
Current consumption, max.	50 mA; with 24 V DC supply
Power	
Power available from the backplane bus	0.85 W
Power loss	
Power loss, typ.	1.9 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	
• 1 V to 5 V	Yes
• Input resistance (1 V to 5 V)	100 k Ω
• -10 V to +10 V	Yes
• Input resistance (-10 V to +10 V)	100 k Ω
• -2.5 V to +2.5 V	Yes
• Input resistance (-2.5 V to +2.5 V)	100 k Ω
• -5 V to +5 V	Yes
• Input resistance (-5 V to +5 V)	100 k Ω
Input ranges (rated values), currents	
• 0 to 20 mA	Yes
• Input resistance (0 to 20 mA)	25 Ω ; Plus approx. 42 ohms for overvoltage protection by PTC
• -20 mA to +20 mA	Yes
• Input resistance (-20 mA to +20 mA)	25 Ω ; Plus approx. 42 ohms for overvoltage protection by PTC
• 4 mA to 20 mA	Yes
• Input resistance (4 mA to 20 mA)	25 Ω ; Plus approx. 42 ohms for overvoltage protection by PTC
Cable length	
• shielded, max.	800 m
Analog value generation for the inputs	

Integration and conversion time/resolution per channel	
<ul style="list-style-type: none"> Resolution with overrange (bit including sign), max. 	16 bit
<ul style="list-style-type: none"> Integration time, parameterizable 	Yes
<ul style="list-style-type: none"> Integration time (ms) 	Fast mode: 2.5 / 16.67 / 20 / 100 ms, standard mode: 7.5 / 50 / 60 / 300 ms
<ul style="list-style-type: none"> Basic conversion time, including integration time (ms) 	Fast mode: 4 / 18 / 22 / 102 ms; Standard mode: 9 / 52 / 62 / 302 ms
<ul style="list-style-type: none"> Interference voltage suppression for interference frequency f1 in Hz 	400 / 60 / 50 / 10 Hz
<ul style="list-style-type: none"> Basic execution time of the module (all channels released) 	Corresponds to the channel with the highest basic conversion time
Smoothing of measured values	
<ul style="list-style-type: none"> parameterizable 	Yes
<ul style="list-style-type: none"> Step: None 	Yes
<ul style="list-style-type: none"> Step: low 	Yes
<ul style="list-style-type: none"> Step: Medium 	Yes
<ul style="list-style-type: none"> Step: High 	Yes
Encoder	
Connection of signal encoders	
<ul style="list-style-type: none"> for voltage measurement 	Yes
<ul style="list-style-type: none"> for current measurement as 2-wire transducer 	Yes; with external transmitter supply
<ul style="list-style-type: none"> for current measurement as 4-wire transducer 	Yes
Errors/accuracies	
Linearity error (relative to input range), (+/-)	0.02 %
Temperature error (relative to input range), (+/-)	0.005 %/K
Crosstalk between the inputs, max.	-80 dB
Repeat accuracy in steady state at 25 °C (relative to input range), (+/-)	0.02 %
Operational error limit in overall temperature range	
<ul style="list-style-type: none"> Voltage, relative to input range, (+/-) 	0.1 %
<ul style="list-style-type: none"> Current, relative to input range, (+/-) 	0.1 %
Basic error limit (operational limit at 25 °C)	
<ul style="list-style-type: none"> Voltage, relative to input range, (+/-) 	0.05 %
<ul style="list-style-type: none"> Current, relative to input range, (+/-) 	0.05 %
Interference voltage suppression for $f = n \times (f_1 \pm 1 \%)$, $f_1 =$ interference frequency	
<ul style="list-style-type: none"> Series mode interference (peak value of interference < rated value of input range), min. 	80 dB; in the Standard operating mode, 40 dB in the Fast operating mode
<ul style="list-style-type: none"> Common mode voltage, max. 	60 V DC/30 V AC
<ul style="list-style-type: none"> Common mode interference, min. 	80 dB
Isochronous mode	

Isochronous operation (application synchronized up to terminal)	No
Interrupts/diagnostics/status information	
Diagnostics function	Yes
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; only for 1 ... 5 V and 4 ... 20 mA
• Overflow/underflow	Yes
Diagnostics indication LED	
• 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
Potential separation	
Potential separation channels	
• between the channels	Yes
• between the channels, in groups of	1
• between the channels and backplane bus	Yes
• between the channels and the power supply of the electronics	Yes
Permissible potential difference	
between different circuits	60 V DC/30 V AC; insulation rated for 120 V AC basic insulation: between the channels and the supply voltage L+; between the channels and the backplane bus; between the channels
Isolation	
Isolation tested with	2 000 V DC between the channels and the supply voltage L+; 2 000 V DC between the channels and the backplane bus; 2 000 V DC between the channels; 707 V DC (type test) between the supply voltage L+ and the backplane bus
Ambient conditions	
Ambient temperature during operation	
• horizontal installation, min.	0 °C
• horizontal installation, max.	60 °C
• vertical installation, min.	0 °C
• vertical installation, max.	40 °C
Decentralized operation	

Prioritized startup	Yes
Dimensions	
Width	35 mm
Height	147 mm
Depth	129 mm
Weights	
Weight, approx.	280 g
last modified:	08/27/2016