



SIMATIC S7-1500,  
 ANALOG INPUT MODULE AI 8 X U/I HS,  
 16 BITS OF RESOLUTION, ACCURACY 0.3 %;  
 8 CHANNELS IN GROUPS OF 8;  
 COMMON MODE VOLTAGE APPR. 10V;  
 DIAGNOSIS, PROCESSALARMS;  
 8 CHANNELS IN 0,125 MS INCL. INFEEED ELEMENT,  
 SHIELD CLAMP AND SHIELD TERMINAL

General information	
Hardware product version	E01
Firmware version	V2.0.0
Product function	
I&M data	Yes ; I&M0 to I&M3
Engineering with	
STEP 7 TIA Portal can be configured/integrated as of version	V12 / V12
STEP 7 can be configured/integrated as of version	V5.5 SP3 / -
PROFIBUS as of GSD version/GSD revision	V1.0 / V5.1
PROFINET as of GSD version/GSD revision	V2.3 / -
Operating mode	
MSI	Yes
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.	240 mA ; with 24 V DC supply

<b>Encoder supply</b>	
<b>24 V encoder supply</b>	
short-circuit protection	Yes
Output current, max.	53 mA
<b>Power</b>	
Power available from the backplane bus	1.2 W
<b>Power losses</b>	
Power loss, typ.	3.4 W
<b>Analog inputs</b>	
Number of analog inputs	8
Number of analog inputs with current measurement	8
Number of analog inputs 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
<b>Input ranges (rated values), voltages</b>	
1 to 5 V	Yes
Input resistance (1 to 5 V)	50 k $\Omega$
-10 V to +10 V	Yes
Input resistance (-10 V to +10 V)	100 k $\Omega$
-5 V to +5 V	Yes
Input resistance (-5 V to +5 V)	50 k $\Omega$
<b>Input ranges (rated values), currents</b>	
0 to 20 mA	Yes
Input resistance (0 to 20 mA)	41 $\Omega$ ; Plus approx. 42 ohms for overvoltage protection by PTC
-20 to +20 mA	Yes
Input resistance (-20 to +20 mA)	41 $\Omega$ ; Plus approx. 42 ohms for overvoltage protection by PTC
4 to 20 mA	Yes
Input resistance (4 to 20 mA)	41 $\Omega$ ; Plus approx. 42 ohms for overvoltage protection by PTC
<b>Cable length</b>	
Cable length, shielded, max.	800 m
<b>Analog value creation</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 $\mu$ s ; 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
<b>Errors/accuracies</b>	
Linearity error (relative to input range), (+/-)	0.02 %
Temperature error (relative to input range), (+/-)	0.0050 %/K
Crosstalk between the inputs, min.	-60 dB
Repeat accuracy in steady state at 25 °C (relative to input area), (+/-)	0.02 %
<b>Operational limit in overall temperature range</b>	
Voltage, relative to input area, (+/-)	0.3 %
Current, relative to input area, (+/-)	0.3 %
<b>Basic error limit (operational limit at 25 °C)</b>	
Voltage, relative to input area, (+/-)	0.2 %
Current, relative to input area, (+/-)	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.	60 dB ; (At 400 Hz: 50 dB)
<b>Isochronous mode</b>	
Isochronous operation (application synchronized up to terminal)	Yes
Filtering and processing time (TCI), min.	80 μs
Bus cycle time (TDP), min.	250 μs
<b>Interrupts/diagnostics/status information</b>	
<b>Alarms</b>	
Diagnostic alarm	Yes
Limit value alarm	Yes ; two upper and two lower limit values in each case
<b>Diagnostic messages</b>	
Diagnostics	Yes
Monitoring the supply voltage	Yes
Wire break	Yes ; Only for 1 ... 5V and 4 ... 20mA
Overflow/underflow	Yes
<b>Diagnostics indication LED</b>	
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>Galvanic isolation</b>	
<b>Electrical isolation channels</b>	
between the channels	No
between the channels and the backplane bus	Yes
between the channels and the supply voltage of the electronics	Yes
<b>Permissible potential difference</b>	
between the inputs (UCM)	20 V DC
between inputs and MANA (UCM)	10 V DC
between M internally and the inputs	75 VDC / 60 VAC
<b>Isolation</b>	
Isolation checked with	707 V DC
<b>Ambient conditions</b>	
<b>Operating temperature</b>	
horizontal installation, min.	0 °C
horizontal installation, max.	60 °C
vertical installation, min.	0 °C
vertical installation, max.	40 °C
<b>Decentralized operation</b>	
Prioritized startup	No
<b>Dimensions</b>	
Width	35 mm
Height	147 mm
Depth	129 mm
<b>Weights</b>	
Weight, approx.	200 g
Status	Sep 22, 2014