SIEMENS

Data sheet

6ES7531-7NF10-0AB0



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

Figure similar

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
• -2.5 v to +2.5 v • -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
- input resistance (-5 v to +5 v) • -50 mV to +50 mV	No
• -500 mV to +500 mV • -500 mV to +500 mV	No No
• -80 mV to +80 mV	
● -80 mV to +80 mV Input ranges (rated values), currents	No
o 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	41 12, Flus approx. 42 offits for overvoltage protection by FTC
• 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	110
• 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
555 5555.4	

• 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	
Input ranges (rated values), resistors		
• 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	
Cable length		
• shielded, max.	800 m	
Analog value generation for the inputs		
Integration and conversion time/resolution per channel		
 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	
Smoothing of measured values		
parameterizable	Yes	
• Step: None	Yes	
• Step: low	Yes	
• Step: Medium	Yes	
Step: Medium Step: High	Yes	
Encoder	165	
Connection of signal encoders		
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	
Errors/accuracies		
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	0.02 %	
range), (+/-)		
Operational error limit in overall temperature range		
 Voltage, relative to input range, (+/-) 	0.3 %	
• Current, relative to input range, (+/-)	0.3 %	
Basic error limit (operational limit at 25 °C)		
 Voltage, relative to input range, (+/-) 	0.2 %	
• Current, relative to input range, (+/-)	0.2 %	
Interference voltage suppression for f = n x (f1 +/- 1 %), f1 = interference	erence frequency	
 Common mode voltage, max. 	10 V	
• Common mode interference, min.	50 dB at 400 Hz; 60 dB at 60 / 50 / 10 Hz	
Isochronous mode		
Filtering and processing time (TCI), min.	80 µs	
Bus cycle time (TDP), min.	250 μs	
Interrupts/diagnostics/status information		
Diagnostics function	Yes	

Diagnoses Initivature alarm Personance Initivature alarm Personance Monitoring the supply voltage Wire-break Overflow/underflow Personance RUN LED	Alarms		
Monitoring the supply voltage Wire-break Wire-break Overflow/underflow Yes Diagnostics indication LED RUN LED RUN LED REROR LED Monitoring of the supply voltage (PWR-LED) Channel status display for channel diagnostics for module diagnostics for module diagnostics Formodule diagnostics between the channels between the channels in groups of between the channels and backplane bus between the channels and backplane bus between the channels and the power supply of the electronics Permissible potential difference between the inputs (UCM) Between the inputs (UCM) Between the inputs and MANA (UCM) Isolation tested with Ambient temperature during operation Ambient temperature during operation Anbient temperature during operation Portical installation, min. horizontal installation, min. horizontal installation, min. verficial installation, max. Verficial installation in a see level Installation altitude above sea level, max. Dimensions Widh Height Verical installation altitude above sea level, max. Do on m. Restrictions for installation altitudes > 2 000 m, see manual Dimensions Widh Height Har mm Depth Wolphts	Diagnostic alarm	Yes	
Monitoring the supply voltage Wire-break Wes; only for 1 5 V and 4 20 mA Ves Diagnostics indication LED RUN LED RUN LED RENOR LED Monitoring of the supply voltage (PWR-LED) Channel status display For channel status display For channel diagnostics For module diagnostics For module diagnostics For module diagnostics For hannel sand to severe the channels For channels For the channels For the channels For the channels in groups of For the channels and the power supply of the For the channels and the power supply of the For the channels and the power supply of the For the channels and the power supply of the For the channels and the power supply of the For the channels and the power supply of the For the channels and the power supply of the For the supply the for the channels For the channels and the power supply of the For the channels and the power supply	Limit value alarm	Yes; two upper and two lower limit values in each case	
Wire-break Overflow/underflow Ves Overflow/underflow Yes Coverflow/underflow Yes RUN LED RUN LED FERROR LED FERROR LED Owner Owner Owner Owner Owner Overflow/underflow Yes; green LED Yes; green LED Yes; green LED Yes; green LED Owner Own	Diagnoses		
Overflow/underflow Picapositics indication LED RUN LED RUN LED RUN LED RERROR LED Responsible supply voltage (PWR-LED) Res	 Monitoring the supply voltage 	Yes	
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• ERROR LED • Monitoring of the supply voltage (PWR-LED) • Channel status display • For channel diagnostics • For module diagnostics • Petital separation Potential separation Potential separation Potential separation channels • Detween the channels • Detween the channels, in groups of 8 • Detween the channels and backplane bus Yes • Detween the channels and the power supply of the electronics Permissible potential difference Detween the inputs (UCM) • Dot C Between the inputs (UCM) Isolation Isolation tested with 707 V DC (type test) Ambient conditions Ambient temperature during operation • horizontal installation, min. • Portical installation, min. • Vertical installation, m	Diagnostics indication LED		
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Height 147 mm Depth 129 mm Weights	Dimensions		
Depth 129 mm Weights	Width	35 mm	
Weights	Height	147 mm	
	Depth	129 mm	
Weight, approx. 300 g	Weights		
	Weight, approx.	300 g	

8/8/2023

last modified: