

MANUFACTURER DOCUMENT PACKAGE

Manufacturer's Manual

Reference package for procurement and maintenance review

SIEMENS SIMATIC S7

6ES7531-7NF10-0AB0

HIGH-SPEED ANALOG INPUT MODULE

Used with the applicable Siemens Simatic S7 configuration.

REFERENCE PACKAGE

OFFICIAL DOCUMENT

Selected official manufacturer pages follow this cover.

Source: Siemens official manufacturer documentation



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. INFEED ELEMENT,
SHIELD CLAMP AND SHIELD TERMINAL

General information	
Hardware product version	E01
Product function	
I&M data	Yes ; IM0 to IM3
Engineering with	
STEP 7 TIA Portal can be configured/integrated as of version	V12.0 / V12.0
STEP 7 can be configured/integrated as of version	as of V5.5 SP3 / -
CiR - Configuration in RUN	
Reparameterization possible in RUN	Yes
Calibration possible in RUN	Yes
Supply voltage	
Rated voltage/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)
Encoder supply	

24 V encoder supply	
Short-circuit protection	Yes
Output current, max.	53 mA
Power	
Power available from the backplane bus	1.15 W
Power losses	
Power loss, typ.	3.4 W
Analog inputs	
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
Input ranges (rated values), voltages	
1 to 5 V	Yes
Input resistance (1 to 5 V)	50 k Ω
-10 V to +10 V	Yes
Input resistance (-10 V to +10 V)	100 k Ω
-5 V to +5 V	Yes
Input resistance (-5 V to +5 V)	50 k Ω
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 to +20 mA	Yes
Input resistance (-20 to +20 mA)	41 Ω ; (Plus approx. 42 ohms for overvoltage protection by PTC)
4 to 20 mA	Yes
Input resistance (4 to 20 mA)	41 Ω ; (Plus approx. 42 ohms for overvoltage protection by PTC)
Cable length	
Cable length, shielded, max.	800 m
Analog value creation	
Integrations 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 μ s
Smoothing of measured values	
Parameterizable	Yes
Step: None	Yes
Step: low	Yes
Step: Medium	Yes

Step: High	Yes
Encoder	
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
Errors/accuracies	
Crosstalk between the inputs, max.	-60 dB
Interference voltage suppression for $f = n \times (f_1 \pm 1\%)$, f_1 = interference frequency	
common mode voltage, max.	10 V
Common mode interference, min.	60 dB ; (At 400 Hz: 50 dB)
Isochronous mode	
Isochronous operation (application synchronized up to terminal)	Yes
Filtering and processing time (TCI), min.	100 μ s
Bus cycle time (TDP), min.	250 μ s
Interrupts/diagnostics/status information	
Alarms	
Diagnostic alarm	Yes
Limit value alarm	Yes ; Two upper and two lower limit values in each case
Diagnostic messages	
Diagnostics	Yes
Monitoring the supply voltage	Yes
Wire break	Yes ; Only for 1 ... 5V and 4 ... 20mA
Overflow/underflow	Yes
Diagnostics indication LED	
RUN LED	Yes ; Green LED
ERROR LED	Yes ; Red LED
Monitoring the supply voltage	Yes ; Green LED
Channel status display	Yes ; Green LED
for channel diagnostics	Yes ; Red LED
for module diagnostics	Yes ; Red LED
Galvanic isolation	
Electrical isolation channels	
between the channels	No
between the channels, in groups of	8
between the channels and the backplane bus	Yes
between the channels and the supply voltage of the electronics	Yes

Permissible potential difference	
between the inputs (UCM)	20 V DC
between inputs and MANA (UCM)	10 V DC
between M internally and the inputs	75 V DC/60 V AC (base isolation)
Isolation	
Isolation checked with	707 V DC (type test)
Decentralized operation	
Supports fast startup	No
Dimensions	
Width	35 mm
Height	147 mm
Depth	129 mm
Weight	
Weight, approx.	300 g
Status	Jul 1, 2013