S-DIAS Analog Input Module
AI 047

with 4 analog inputs 0-22 mA or 4-22 mA

The S-DIAS analog input module AI 047 has four analog inputs 0-22 mA or 4-22 mA with an 18-bit resolution. The voltage supply for the analog inputs are monitored for under voltage. The analog inputs are galvanically separated from the S-DIAS bus.

Analog Input Specifications

Number of channels	4	
Measurement range	0-22 mA	4-22 mA
Amplification	10	
Measurement value	0-220,000 (Mode: 19-bit signed value range) 0-27,500 (Mode: 16-bit signed value range)	40,000-220,000 (Mode: 19-bit signed value range) 5,000-27,500 (Mode: 16-bit signed value range)
Galvanic isolation	500 V (maximum isolation voltage)	
Input type	difference input	
A/D converter	18-bit SAR with simultaneous scanning	
Measurement range resolution	17-bit ca. 0.17 µA/LSB	
Scan rate per channel	10 µs minimum	
Data memory depth per channel	512 Dwords (32 bits) 1024 words (16 bits)	
Calculation basis for number of values per channel (n)	n = S-DIAS cycle time / scan rate	
S-DIAS cyclic time	100 µs minimum	

Common mode range	±8 V	
Load	typically 45 Ω	
Cable break monitor	no	yes, can be set from 0-4 mA via software (default: 3 mA)
Input filter hardware	10 kHz, low pass 3rd order (differential mode) 100 kHz, low pass 1st order (common mode)	
Input filter software	configurable	
Maximum input current allowed	continuous 50 mA single pulse 0.12 A/1 s single pulse 0.25 A/40 ms single pulse 0.75 A/200 µs	
Total measurement precision Measurement method: Mode 2, sampling rate 50 µs	±0.060 % (20-40 °C) ±0.070 % (0-55 °C)	
Status display	green LED	

Measuring Modes

Scan rate (µs)	Mode 1	Mode 2
	hardware frequency limit in kHz	hardware frequency limit in kHz
10	10	10
20	10	10
25	10	10
50	10	8
100	10	5
200	10	3
250	10	3
500	10	1,5
1000	10	1,5

Measurement Precision

Accuracy incl. calibration error and noise Mode 2, sampling rate 50 µs 25 °C	0.028 %
Temperature drift 20-40 °C 0-55 °C	 0.007 % 0.032 %
Linearity	0.005 %
Crosstalk	0.003 %
Total error 20-40 °C 0-55 °C	 ±0.045 % (±9.9 µA) ±0.070 % (±15.4 µA)

Electrical Requirements

	External voltage supply X5	18-30 V DC	
	Current consumption X5 1)	maximum 650 mA (maximum 500 mA for all sensor supplies) typically 60 mA (electronics)	
	Voltage supply from S-DIAS bus	+5 V	
	Current consumption on the S-DIAS bus (+5 V supply)	0	0
	Voltage supply from S-DIAS bus	+24 V	
	Current consumption on the S-DIAS bus (+24 V supply)	typically 30 mA	maximum 35 mA

Voltage Monitor External +24 V Supply

	Power supply +24 V	supply voltage > 18 V (DC OK-LED lights green)

Article Number and Miscellaneous

	Article number	20-009-047
	Dimensions	12.5 x 104.2 x 72 mm (W x H x D)
	Standard	UL in preparation
	Approvals	UL, cUL, CE in preparation

Environmental Conditions

	Storage temperature	-20 ... +85 °C	
	Environmental temperature	0 ... +55 °C	
	Humidity	0-95 %, non-condensing	
	Operating conditions	pollution degree 2 altitude up to 2000 m	
	EMC resistance	in accordance with EN 61000-6-2 (industrial area)	
	EMC noise generation	in accordance with EN 61000-6-4 (industrial area)	
	Vibration resistance	EN 60068-2-6	3.5 mm from 5-8.4 Hz 1 g from 8.4-150 Hz
	Shock resistance	EN 60068-2-27	15 g
	Protection type	EN 60529	IP20

Notes