

# KiDAQ Module 5509A

## Measurement module for piezoelectric sensors (charge amplifier)



### Description

KiDAQ is a general purpose data acquisition system to measure more than 20 different analog and digital signal types. The wide selection of signal conditioning and data acquisition modules enables perfectly fitted system configurations, exactly to the customer's requirements. All modules are available in the KiDAQ housing options Rack, Portable and DIN Rail which allows the use in different applications and environments.

### Key features

This universal charge amplifier module can be used wherever mechanical quantities are measured with piezoelectric sensors. Piezoelectric sensors produce an electric charge which varies in direct proportion with the load acting on the sensor.

- **4 channels charge amplifier**  
For piezoelectric sensors  
Measuring ranges: 1 000...1 000 000 pC
- **Low noise and low drift**
- **Adjustable time constant**
- **Frequency Range ≈0 ... 20 000 Hz**
- **A/D conversion**  
100 kSps sampling rate per channel, 24 Bit resolution
- **Galvanic isolation**  
Channels to power supply and to interface isolation voltage 500 VDC



### Technical data

#### Analog inputs

Number	4			
Input connector type	BNC neg., high-insulation (charge)			
Isolation voltage	500 VDC channels to power supply to interface <sup>1</sup>			
Measurement charge	Measuring ranges [pC]	Frequency range (-3dB) [Hz]	Input referred noise (typ.) [pCms]	
			1 Hz ... 10 kHz	1 Hz ... 100 kHz
	±1 000	≈0 ... 20 000	0.04	0.05
	±10 000	≈0 ... 20 000	0.05	0.07
	±100 000	≈0 ... 2 000	3.7	4.2
±1 000 000	≈0 ... 2 000	4.3	6.1	
Measurement uncertainty	<±1 % FSO			

Temperature coefficient, typ.	<50 ppm/K		
Linearity error	<±0.05 % FSO		
Drift	<±0.03 pC/s		
Reset-Measure jump	<±0.3 pC		
Time constant	range [pC]	long [s]	short [s]
	±1 000	>10 000	≈ 1.3
	±10 000	>100 000	≈ 1.3
	±100 000	>100 000	≈ 123
	±1 000 000	>100 000	≈ 123
Minimal sensor impedance	>10 <sup>11</sup> Ω		
Overload	≈±105 % FS		
Crosstalk between channels	<0.5 pC		

<sup>1</sup> noise pulses up to 1000 VDC, permanent up to 250 VDC

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The information corresponds to the current state of knowledge. Kistler reserves the right to make technical changes without advance notice. Liability for consequential damages arising from the application of Kistler products is excluded.

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**Analog/digital-conversion**

Resolution	24 bit
Sample rate	100 kSps per channel
Conversion method	Sigma-Delta
Digital filter	IIR, low pass, high pass, band pass, Butterworth 4 <sup>th</sup> order, 1 Hz up to 10 kHz in steps 1, 2, 5
Averaging	configurable or automated according the selected data rate

Further technical data please refer to data sheet "KiDAQ System Datasheet" 003-335e.

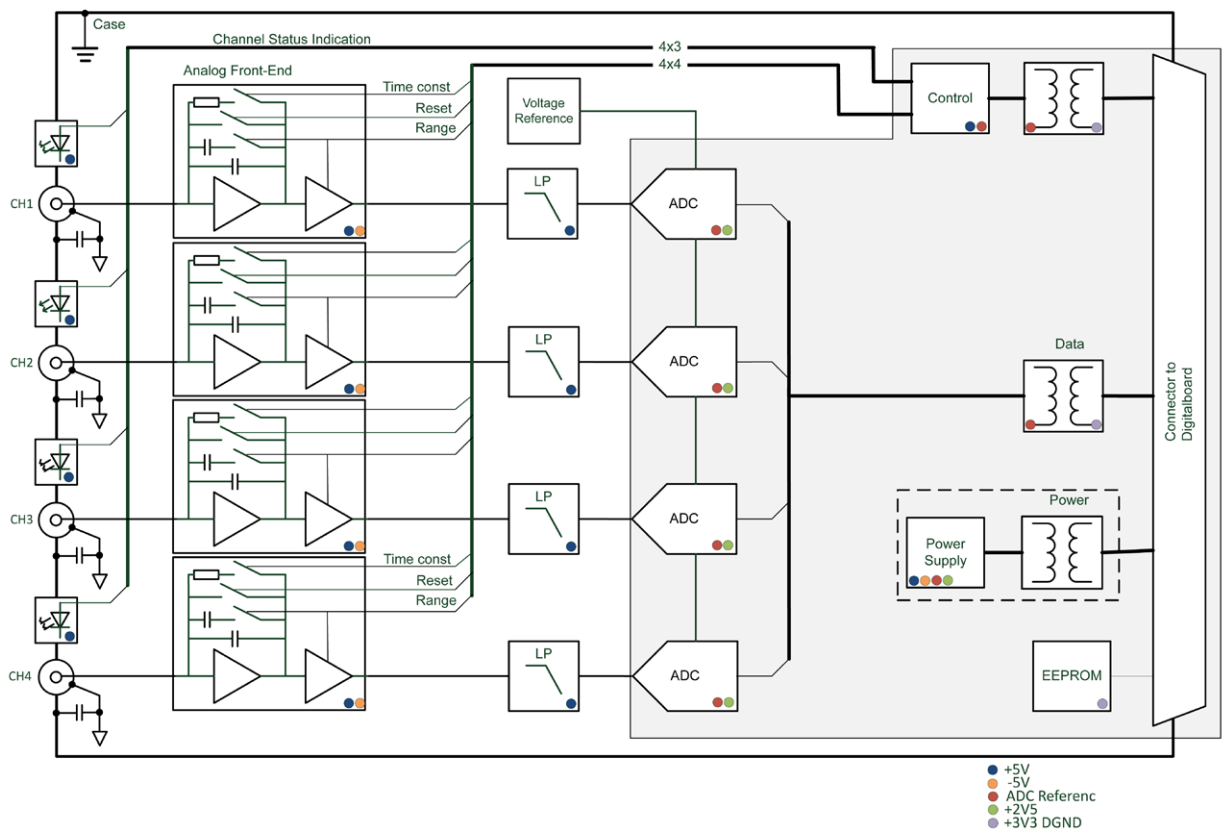
**Warm up time**

All declarations are valid after a warm up time of 45 minutes.

**LED status indication (per channel)**

Reset	blue flashing
Measure	blue constant
Overload	red constant

**Block diagram**



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