

KiDAQ Module 5531A

Measurement module for digital signals



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

- **4 digital input signals**
Frequency, pulse width, counter signal, time and status
- **Frequency measurement up to 1 MHz (Chronos method)**
- **Counter**
Forward/backward counter, quadrature counter with reference zero recognition (reset/enable), up to 1 MSps
- **PWM input**
Measurement of duty cycle and frequency
- **Galvanic isolation**
Channel to channel to power supply and to interface isolation voltage 500 VDC



Technical data

Digital inputs

Number	4
Input connector type	Terminal strip, 1x10 pole, color blue
Logic levels	TTL or 24 VDC according to IEC 61131-2, Type 1
TTL logic voltage	<0.8 VDC (Low) >3 VDC (High)
24 VDC logic voltage	-3 to 5 VDC (Low) 11 to 30 VDC (High)
Input type	PNP (current sinking)
Input voltage	max. 30 VDC
Input current	max. 2 mA
Isolation voltage	500 VDC group to group to power supply to interface ¹⁾

¹⁾ Noise pulses up to 1 000 VDC, permanent up to 250 VDC

Function digital inputs State

Reaction time	10 µs
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Frequency measurement

Method	Chronos (optimized by a combination of time measurement and pulse counting, detection of rotational direction (0 deg./90 deg.))
Frequency range	0.1 Hz up to 1 MHz
Time base	0.001 s up to 1 s
Internal reference frequency	48 MHz
Accuracy	0.01 % at time base >1 ms
Resolution	21 ns

Pulse counting

Accuracy	0.01 % at time base >1 ms
Resolution	21 ns
Counter frequency	1 MHz
Modes of operation	- Forward and backward counting (additional input for direction of counting) - Quadrature counter (additional input for detection of rotational direction) - Quadrature counter with zero reference and reset/enable (two additional inputs)

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PWM measurement

Input frequency	0.1 Hz up to 1 MHz
Accuracy	0.01% at time base > 1 ms
Resolution	21 ns

Digital outputs¹⁾

Number	4
Output connector type	Terminal strip, 1x10 pole, color blue
Contact	open drain p-channel MOSFET
Output voltage	12 to 30 VDC (external supply required)
Load capacity	30 VDC/500 mA (ohmic Load)
Isolation voltage	500 VDC group to group to power supply to interface ²⁾

¹⁾ Digital outputs are not yet supported in the software²⁾ Noise pulses up to 1 000 VDC, permanent up to 250 VDC**Function digital outputs¹⁾****State**

Response time	10 µs (>0.5 A)	100 µs (>0.1 A)	1 000 µs (<0.1 A)
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Frequency output

Frequency range	0.1 Hz up to 1 kHz/10 kHz (depending on load capacity)
Accuracy	0.1%
Resolution	1 µs

PWM output

Frequency range	0.1 Hz up to 1 kHz/10 kHz depending on load
Accuracy	0.1%
Resolution	1 µs

¹⁾ Digital outputs are not yet supported in the software**Analog outputs¹⁾**

Number	4
Output connector type	Terminal strip, 1x10 pole, color blue
Accuracy	0.02% typical
Output type	voltage or current, configurable per output
Isolation voltage	500 VDC channel to channel to power supply to interface ²⁾

¹⁾ Analog outputs are not yet supported in the software²⁾ Noise pulses up to 1 000 VDC, permanent up to 250 VDC**Output type voltage¹⁾**

Output voltage	±10 VDC	
Permitted load resistance	>2 kΩ	
Long term drift	<1 mV/24 h	<2.5 mV/8 000 h
Temperature influence	on zero	on sensitivity
	<2 mV/10 K	<0.05%/10 K
Noise	<10 mV at 1 000 Hz	<2 mV at 10 Hz

¹⁾ Analog outputs are not yet supported in the software**Output type current¹⁾**

Output current	0 – 20 mA	
Load resistance	<400 Ω	
Load influence	<0.1 µA/Ω	
Long term drift	<2 µA/24 h	
Temperature influence	on zero	on sensitivity
	<4 µA/10 K	<0.05%/10 K
Noise	<20 µA at 1 000 Hz	<4 µA at 10 Hz

¹⁾ Analog outputs are not yet supported in the software**Digital/analog-conversion**

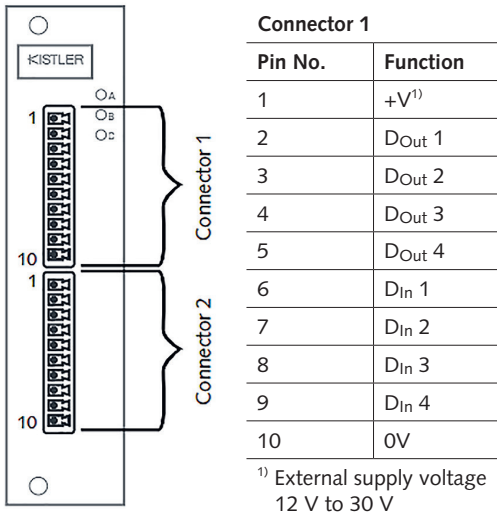
Resolution	16 bit
Update rate	100 kSps per channel
Settling time	3 µs

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

Warm up time

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

Pin assignment



Connector 2	
Pin No.	Function
1	NC
2	NC
3	AOut 1+
4	AOut 1-
5	AOut 2+
6	AOut 2-
7	AOut 3+
8	AOut 3-
9	AOut 4+
10	AOut 4-

Connector 1	
Digital I/O	Pin assignment
Digital input	
Digital output	

Connector 2	
Analog outputs	Pin assignment
Voltage output	
Current output	

With this module 1 x 4 terminals for digital inputs are available. Those will accept all listed signals as it is required. **The following combinations are possible:**

Connector 1			
Terminal 1.6	Terminal 1.7	Terminal 1.8	Terminal 1.9
State	State	State	State
State	State	2 channel signal ¹⁾	
2 channel signal ¹⁾		2 channel signal ¹⁾	
4 channel signal ²⁾			

¹⁾ e.g. counter with additional input for counting direction, 2-phase counter signal or frequency measurement with direction detection (torque transducers)

²⁾ e.g. counter with additional inputs for counting direction, zero reference and reset/enable for zero reference