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KiDAQ Module 5534A

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

- **8 digital input signals**
  Frequency, pulse width, counter signal, time and status
- **Frequency measurement up to 1 MSps (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	8
Input connector type	Terminal strip, 2x10 pole, color blue
Input voltage	max. 30 VDC
Input current	max. 2 mA
Threshold (programmable)	TTL or programmed individually
Signal voltage „0“	–3… 5 VDC (EN61131-2, Type1)
Signal voltage „1“	11… 30 VDC (EN61131-2, Type1)
Isolation Voltage	500 VDC group/group and against power supply and interface [1]

Function	
State	
Reaction time	10 µs
8-fold Bit-Set	Specification such as simple state-input, but the binary coded information of 8 inputs can be transmitted as a single variable. This functionality covers all 8 inputs even if they are already used by other functionalities such as counter or frequency measurement. In case of a conflict the Bit-Set is lower prior

Frequency measurement	
Method	Chronos optimized by combination of time measurement and pulse counting Recognition of the direction of rotation (0°, 90°)
Frequency range	0.1 Hz up to 1 MHz
Time base	0.001 up to 10 s
Counter frequency	48 MHz
Resolution	0.002%
Frequency measurement with recognition ot the direction of rotation	Specification like frequency measurement. For the recognition of the direction of rotation the phasing of both inputs is being used.

[1] Noise pulses up to 1,000 VDC, permanent up to 250 VDC

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PWM measurement	
Input frequency	0.1 Hz up to 1 MHz
Resolution	21 ns
Configuration of the measurement type	counter for duty cycle, frequency
Counter	
Counter	32 bit (±31 bit)
Counter frequency	1 MHz
Back/forward counter	Specification like counter but with an additional input for the direction of counting.
Quadrature counter	Specification like counter. For the recognition of the direction the phasing of both inputs is being used.
Quadrature counter with zero reference and reset/enable	Specification like quadrature counter but with an additional input for the „0“ reference recognition and an additional input to activate „0“ reference recognition individually.
Time measurement	
Function	Measuring of time between two edges, measuring of high time, low time and high/low relation
Time range	1 µs up to 2 s
Resolution	21 ns

Digital outputs [1)]

Number	8		
Contact	open drain p-channel MOSFET (short circuit proof)		
Output voltage	10 V up to 30 V, external supply required		
Function			
State			
Reaction time (depending on load)	>0.5 A	>0.1 A	<0.1 A
	10 µs	100 µs	1,000 µs
8-fold Bit-Set	Specification such as a simple state output but 8 outputs can be set with only one variable in binary coding. This functionality covers all 8 outputs even if they are used by other functionalities such as frequency or PWM output. In case of a conflict the Bit-Set is lower prior.		
Frequency output			
Frequency range	0.1 Hz up to 1 kHz/10 kHz depending on load		
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		

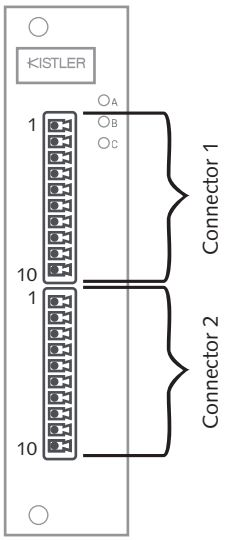
[1)] Digital outputs are not yet supported in the software

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.

Pin assignment



Pin No.	Function
1	+V
2	D_{out} 1
3	D_{out} 2
4	D_{out} 3
5	D_{out} 4
6	D_{in} 1
7	D_{in} 2
8	D_{in} 3
9	D_{in} 4
10	0V

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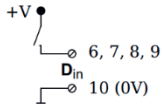
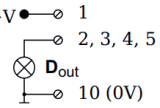
Digital I/O	Pin assignment
Digital input	
Digital output	

With this module 2 x 4 connectors for digital inputs are available. Those will accept all mentioned signals as it is required.
The following combinations are possible:

Connector 1				Connector 2			
Terminal 1.6	**Terminal 1.7**	**Terminal 1.8**	**Terminal 1.9**	**Terminal 2.6**	**Terminal 2.7**	**Terminal 2.8**	**Terminal 2.9**
State	State	State	State	State	State	State	State
State	State	State	State	State	State	2 channel signal [1]	
State	State	State	State	2 channel signal [1]		2 channel signal [1]	
State	State	State	State	4 channel signal [2]			
State	State	2 channel signal [1]		2 channel signal [1]		2 channel signal [1]	
State	State	2 channel signal [1]		4 channel signal [2]			
2 channel signal [1]		2 channel signal [1]		4 channel signal [2]			
2 channel signal [1]		2 channel signal [1]		2 channel signal [1]		2 channel signal [1]	
4 channel signal [2]				4 channel signal [2]			

[1] all digital input functionalities except state and „quadrature counter with reference zero and reset/enable“
[2] Quadrature counter with reference zero and reset/enable