copenhagen atomics

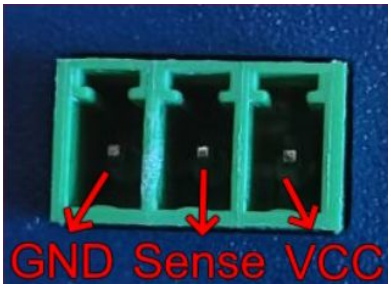
Tachometer V3.2

6 channel tachometer, 1 – 1500 Hz, for motors, flow meters, propellers, gears.

Photo showing version 3.2

Introduction

Usage



This tachometer box allow you to connect 6 sensors at the same time. The have voltage on the two outer pins and sensing on the middle pin. The box returns the frequency of the signal on the middle pin.

VCC output is 5V DC and the input signal is measured by how many rising edges are detected per second. The input signal is typically be between 3.6 - 5 V peak to peak. An external pull-up can be used for open-drain PWM sensors.

Data communication

Data communication happens over USB with the serial communication protocol (COM-port, /dev/ttyXX).

Baud rate 115200, with 8 data bits, no parity, and 1 stop bit. (8N1)

After you connect to the box it will output one line of text to the terminal every 0.1 second (10 Hz).

The content of this line is specified on the next page.

You can also send commands to the box. Just type in a command, then the box will turn channels on and off accordingly.

This video gives an introduction to serial data and commands: https://youtu.be/-64MM8h5SdI

Introduction

Integration with TurboCtrl

TurboCtrl AutoConfig will detect the box and insert each channel in IO.conf as a tachometer, which return frequency. Then you need to use the Math function in IO.conf to convert this into the correct flowrate for the given sensor.

The firmware in the Tachometer box can easily be changed to average filter the frequency over x number of samples. But the box will return this latest average value with 10 Hz.
This video gives an introduction to autoconfig: https://youtu.be/MhT1DqOuWLE

This video gives an introduction to TurboCtrl programming: https://youtu.be/MhT1DqOuWLE

TurboCtrl.ai supports many sensor and actuator types:
Temperatures, pressure, humidity, oxygen and other gasses, gas and liquid flow sensors, DC ports, AC ports, VFDs, current, voltage, oven controllers, light controllers, motors, audio, video, scales, position, liquid level, density, viscosity, integration with Festo and other pneumatics systems. And much more

Buy connectors

This box uses KANGNEX WJ15EDGK-3.81-3P connectors for input/output.

You can buy the connectors here: https://lcsc.com/product-detail/Pluggable-System-Terminal-Block_Ningbo-Kangnex-Elec-WJ15EDGK-3-81-3P_C8413.html

The box come with a USB-C to USB-C cable included and standard DIN rail mounting.

i For more information, please contact sales@copenhagenatomics.com

Specs

Serial terminal output (baud: 115200)

Output	Ch1 Freq	Ch2 Freq	Ch3 Freq	Ch4 Freq	Ch5 Freq	Ch6 Freq	status code (see next page)
Unit	[Hz]	[Hz]	[Hz]	[Hz]	[Hz]	[Hz]	[-]

IO config setup

Format	Example	Description
GenericSensor;SensorName;boxName;Port	GenericSensor;FanFreq;tc01;01	A fan on channel 1

Specification

Parameter	Condition	Value	Unit(s)
Frequency sensing range.	min.	1	Hz
	max.	1500	Hz
VCC output voltage.	typ.	5.1	V
Input impedance	typ.	1	GΩ
Survivable input voltage	est.	8	V
USB power	max.	0.14	W
USB current	max.	28	mA

Status code

The last output of the Tachometer box is a 32-bit status code. The 16 most significant bits are general status bits available across all boxes as listed below. The Tachometer has no specific status bits.

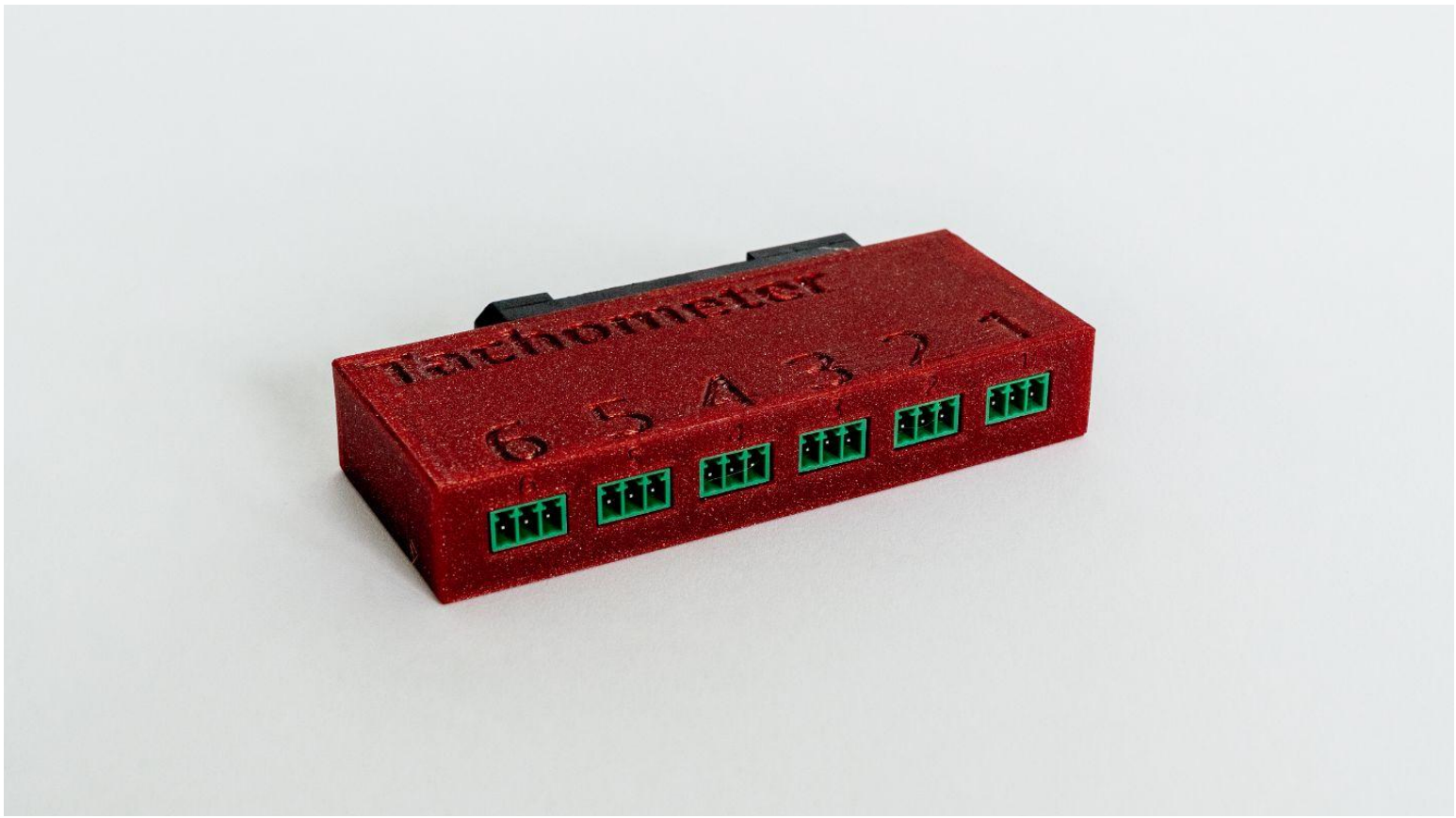
Bit 31 (MSB)	Bit 30	Bit 29	Bit 28	Bit 27	Bit 26	Bit 25
Error bit	Over temperature	Under Voltage	Over Voltage	Over Current	Version error	USB error

Commands

Command	<Arguments>	Description
Serial	-	Display the serial number and PCB version.
Status	-	Verbose output of the current board status.

The hardware board for this Tachometer box is the same as for the Pressure box; only the firmware is different. Both of them are open source, thus you can reprogram a Tachometer board with the Pressure software and vice versa.

Product photos



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