copenhagen atomics

DC box V3.2

6 channels 4A DC output, MOSFET PWM controlled, with current measurements

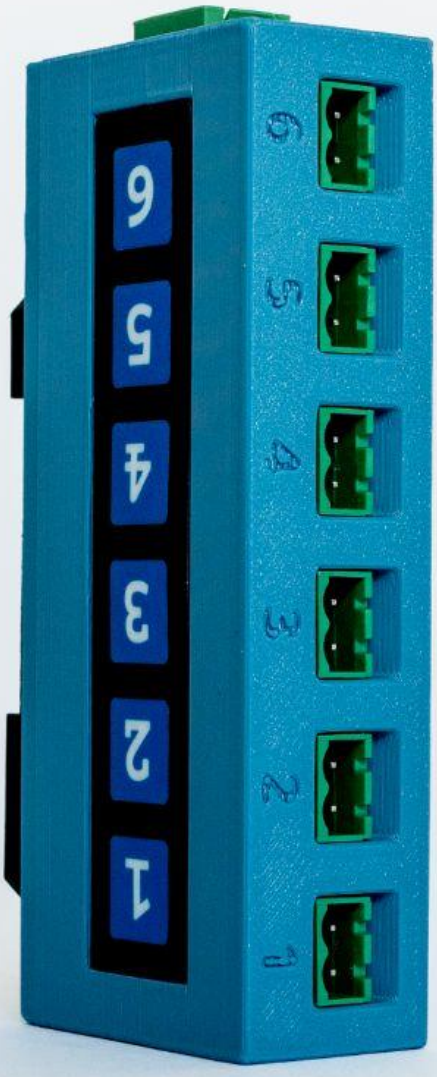


Photo showing version 3.2

Introduction

Usage

The DC board is meant to be used to turn things like valves, heaters, fans and relays on and off. It can take 12 - 24V DC input voltage and switch this on each one of the 6 channels using a MOSFET. It is possible to run PWM on each channel with 1 kHz frequency.

The box also has manual on off buttons for quick operations during installation or other manual tasks.

Autoconfig can put buttons on the WebUI to allow you to turn each channel on or off with a mouse click from across the world.

Each channel has current measurement which enable you to monitor how much current a given heater, relay or valve is drawing.

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 board 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 board. Just type in a command, then the board 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 board and insert each channel in IO.conf as a valve.
Current from each channel and on/off status is available in the vector.

PWM commands / status is not in the vector.
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 board uses KANGNEX WJ2EDGK-5.08-2P connectors for output and Phoenix 1718481 for DC input.

You can buy the connectors here:
Input:
https://www.digikey.dk/en/products/detail/phoenix-contact/1718481/2527227

Output:
https://lcsc.com/product-detail/Pluggable-System-Terminal-Block_Ningbo-Kangnex-Elec-WJ2EDGK-5-08-2P_C71370.html

The board comes 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	p1 current	p2 current	p3 current	p4 current	p5 current	p6 current	status code (see next page)
Unit	[A]	[A]	[A]	[A]	[A]	[A]	[-]

Commands

Command	<Arguments>	Description
p<1-6> <on/off>	Port nr., on/off-state.	Turn specific port on/off.
p<1-6> on <0-100>%	Port nr., percentage on.	Turn on specific port for % of the time indefinitely.
p<1-6> on <0-99>	Port nr., on-time	Turn on specific port for a given time.
p<1-6> on <0-99> <0-100>%	Port nr., on-time, percentage on.	Turn on specific port for % of a given time.
Status	-	Verbose output of the current board status.
Serial	-	Verbose output of serial number and calibration.

Specification

Parameter	Condition	Value	Unit(s)
Supply voltage range	Min. nom.	12	V
	Max. nom.	24	V
Single channel load	max.	4	A
Fuse rating (per channel)	nom.	5	A
Total load (all four channels on), NB! Ensure proper wiring!	max.	24	A
USB power	max.	0.88	W
USB current	max.	175	mA
PWM Frequency	typ.	1000	Hz

Specs

Status code

The last output of the DC board is a 32-bit status code. The 16 most significant bits are general status bits available across all boards as listed below.

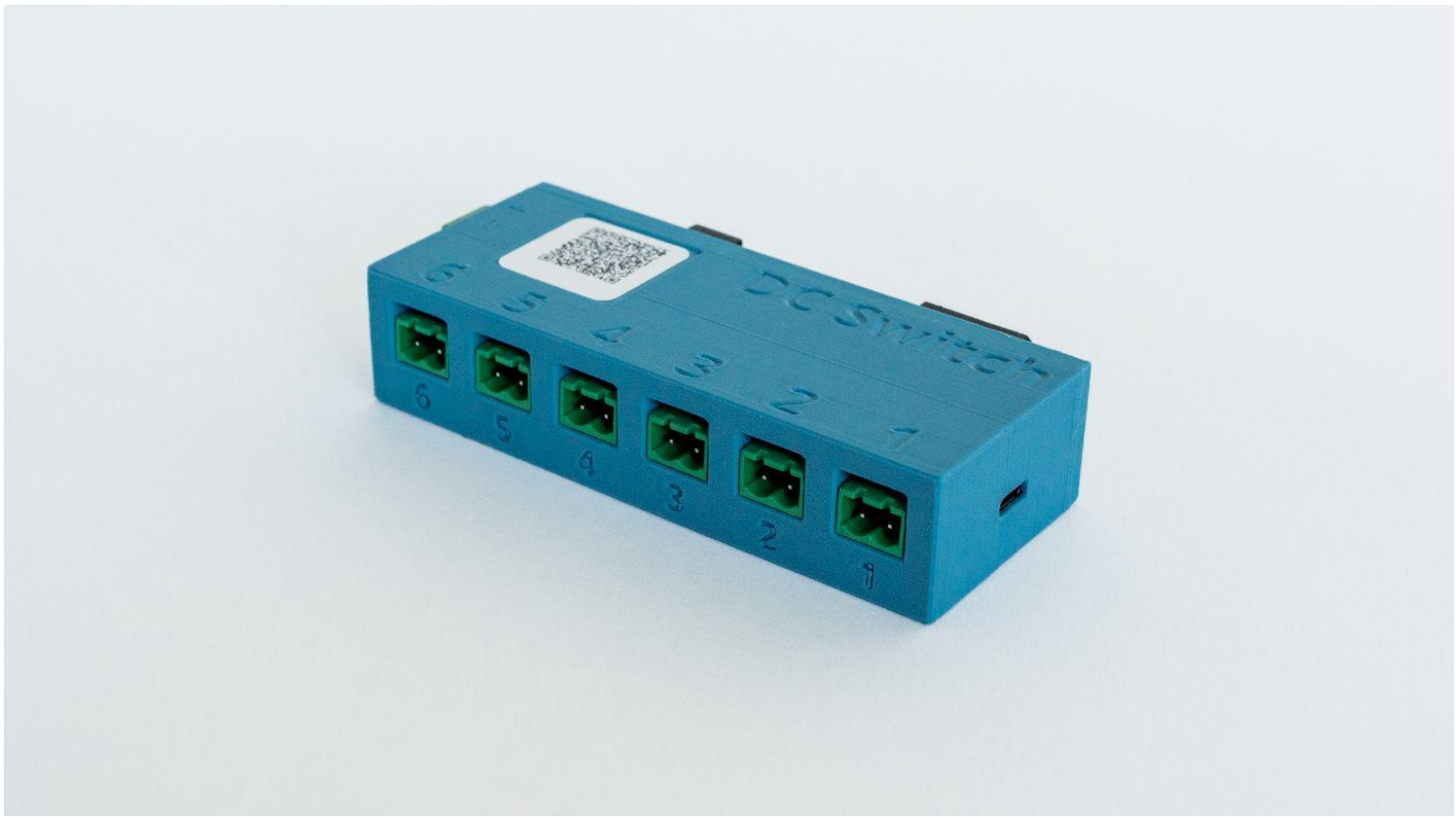
Bit 31 (MSB)	Bit 30	Bit 29	Bit 28	Bit 27
Error bit	Over temperature	Under Voltage	Over Voltage	Over Current

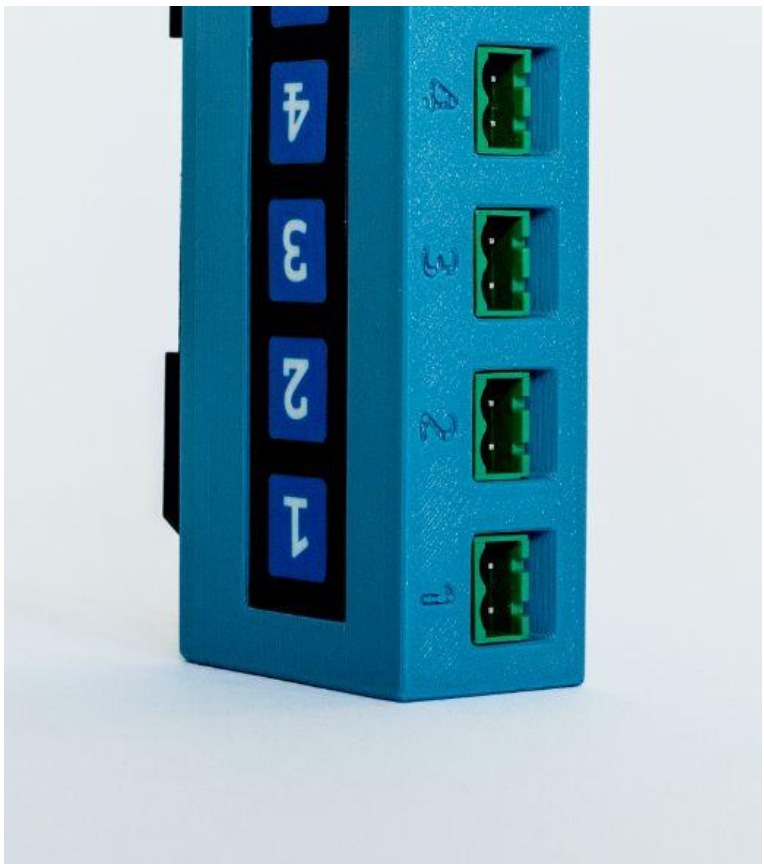
The 16 least significant bits of the status code are DC board specific and described below.

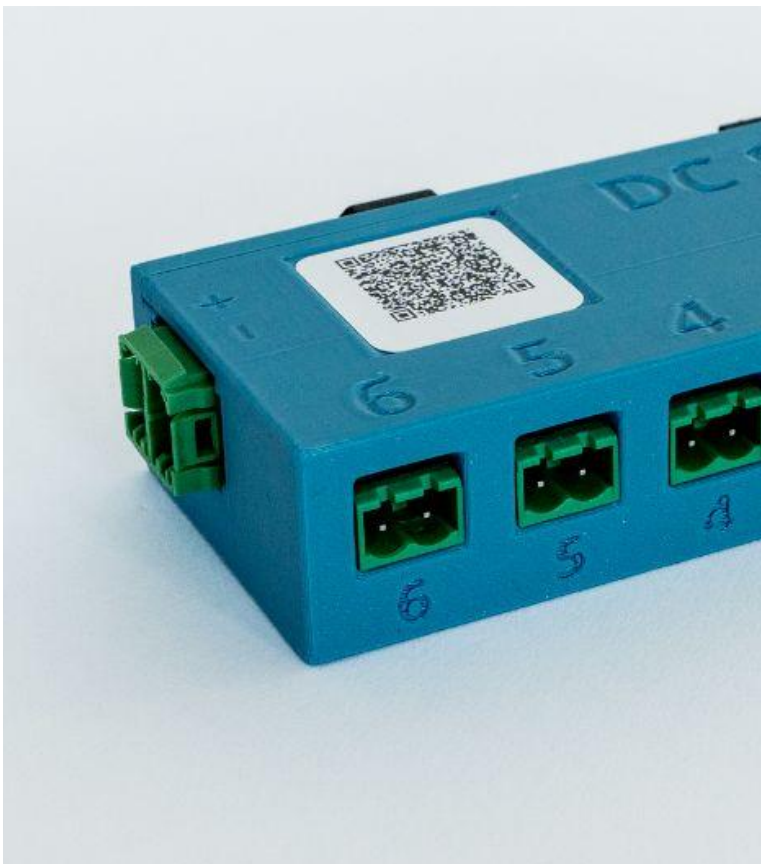
Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0 (LSB)
Port 6 On/Off	Port 5 On/Off	Port 4 On/Off	Port 3 On/Off	Port 2 On/Off	Port 1 On/Off

All bit fields not described above are unused.

Product photos







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