

Universal Pulsegenerator UPTG3-32

UPTG3-32 Universal Pulse generator

The UPTG3-32 pulsegenerator can for example be used for:

- 1) Testing a steppermotordriver or servomotordriver that needs a step and direction signal.
- 2) To convert a PWM signal to a series of pulses, the frequency dependent on the modulation of the PWM signal. The amplitude of the PWM signal needs to be constant, and best is a CMOS signal (~ 0-5 V).
- 3) To set up a simple 4-20 mA loop with the pulsegenerator as a current to frequency converter.
- 4) To give the driver of a HF spindle a controllable signal.
- 5) A simple control using switches, to control for example a steppermotordriver, a servomotordriver or a relais.
- 6) After reprogramming as a simple replacement of a PLC. The standard UPTG3-32 doesn't have 24 V output, nor inputs. The output of the standard UPTG3-32 pulsegenerator can not supply more than 15-20 mA. The UPTG3-32 generator with the -OC extensie is capable of doing so.
- 7) Version 3 can in combination with a electronic relais controll a high power DC motors by PWM.

The power to the pulsegenerator can be supplied by:

- 1) The micro USB connector, for example by use of the supplied 5V USB adapter, or an USB connector of a computer.
- 2) A DC voltage between 8-32 Vdc on input V+.
- 3) A AC voltage between 8-24 Vac on input V+.

The input signal on input 1 can for example be:

- 1) A voltage between 0 en +5Vdc.
- 2) A voltage controlled by a potentiometer.
- 3) A PWM signal, internally converted to a control signal for the pulsegenerator.
- 4) A 4-20 mA signal after connecting a 250 ohm resistor between input 1 and ground. This is just a very simple simulation of the 4-20 mA loop, as it doesn't comply completely to the 4-20 mA specifications. As an example, it will only output a signal at 5 mA or more.

Intern there is now a 16 (0-F) position switch that controls the used preprogrammed routine.

Currently (V 3.0) we have the following programmings:

- 0) On power-up the led blinks to give the internal software version.
On completion the software starts routine 1.
- 1) Outputs a frequency controlled by voltage on input 1.
Output frequency is between 90 Hz and 73 KHz.
- 2) Equall to 1, output frequency <25 KHz.
- 3) PWM output, output can be used for a solidstate relais from www.stappenmotor.nl
This combination can controll the speed of a 24Vdc, 1 Kw DC motor.
There is NO feedback from this, so speed of the motor varies with load.

Output of the pulsegenerator for routine 0 or 1 consists of:

- 1) Output 4 : $F4 < 700 \text{ Hz}$ (input 1 = 1.25 Vdc) to $F4 > 73 \text{ KHz}$ (input 1 = 5 Vdc).
- 2) Output 3 : $F3 = F4/2$ (< 350 - > 36.500 KHz)
- 3) Output 2 : $F2 = F4/4$ (< 175 - > 18.25 KHz)
- 4) Output 1 : $F1 = F4/8$ (< 87.5 - > 9.1 KHz)

In position 2 the maximum frequency is 25 KHz (on output 1).

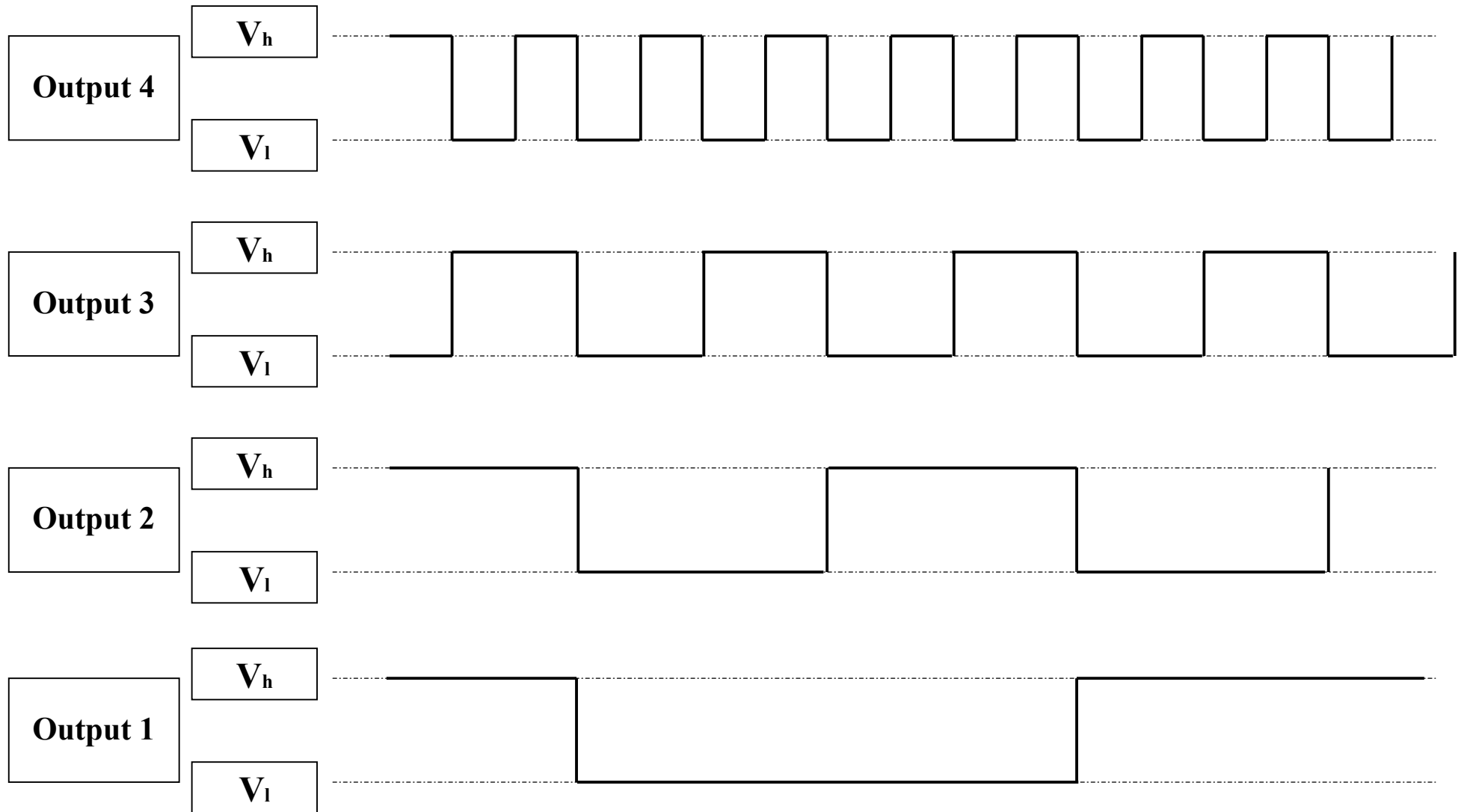
This is for a more slower controll of the outputfrequency.

The output signal of the pulsegenerator exists of a squarewave with a dutycycle van 50% and a voltage between < 1 V and > 4 V. The maximum current the outputs can source is 16 mA. The outputs can sink 25 mA.

With these signals and a suitable driver (for example a HF spindle driver) the speed of a motor (HF spindle, steppermotor, servomotor, etc) can be controlled with a potentiometer or a PWM signal. Another possible use is the testing of a steppermotor driver or a servomotor driver without the need of a computer or PLC.

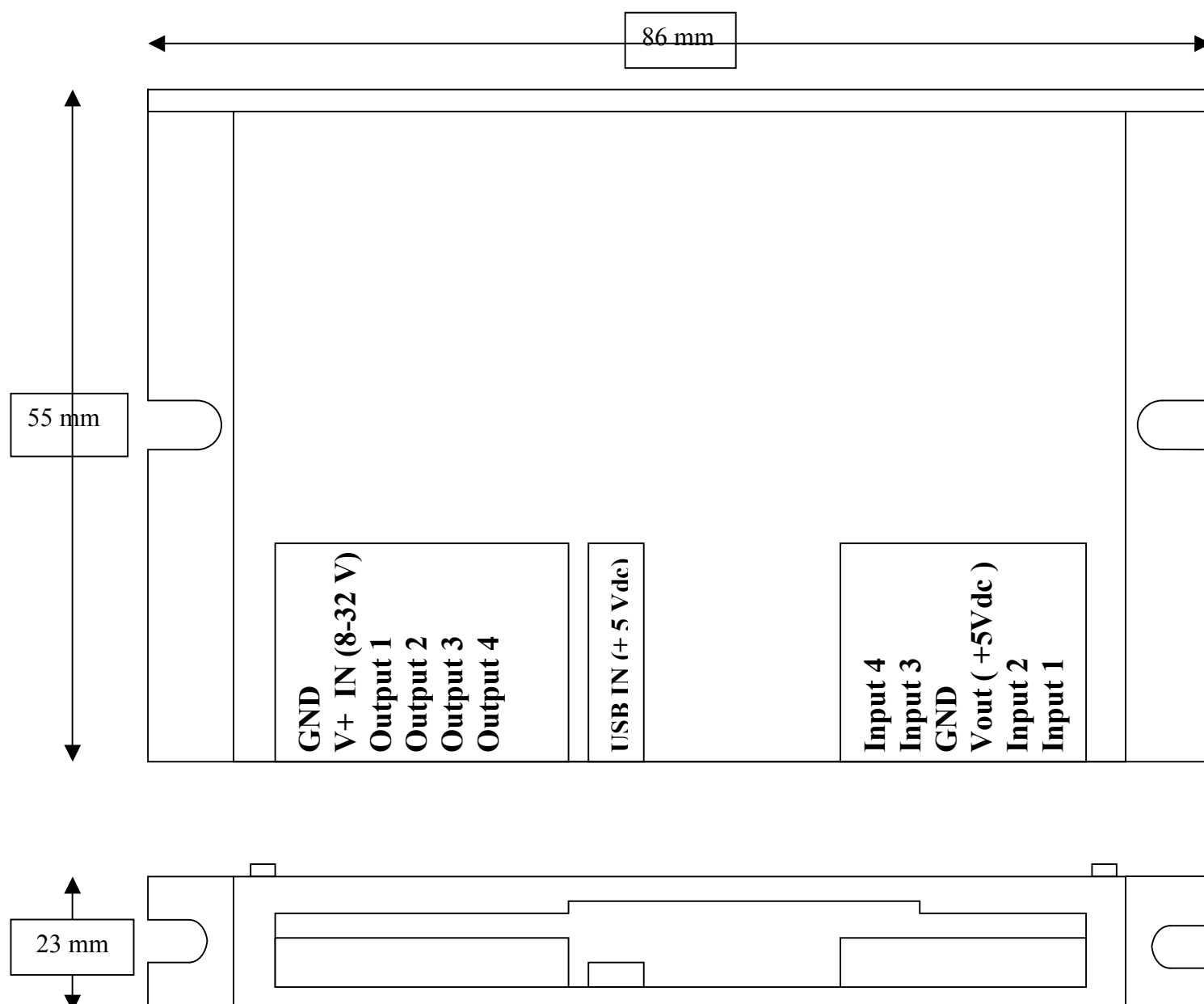
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Waveforms of the outputs



$$V_h > 4.0 \text{ Vdc} \quad V_l < 1.0 \text{ Vdc}$$

Dimensions

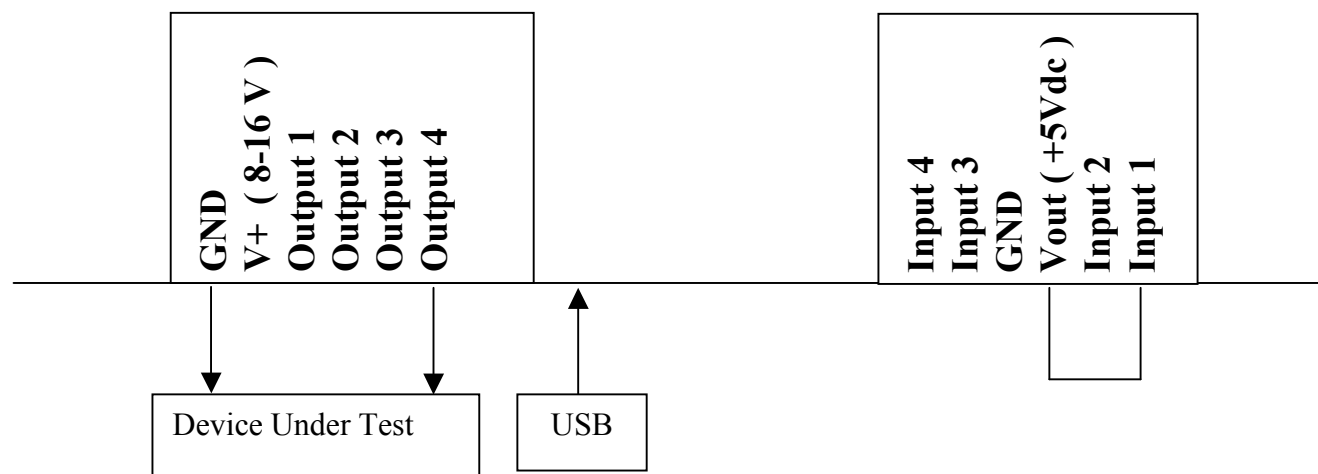


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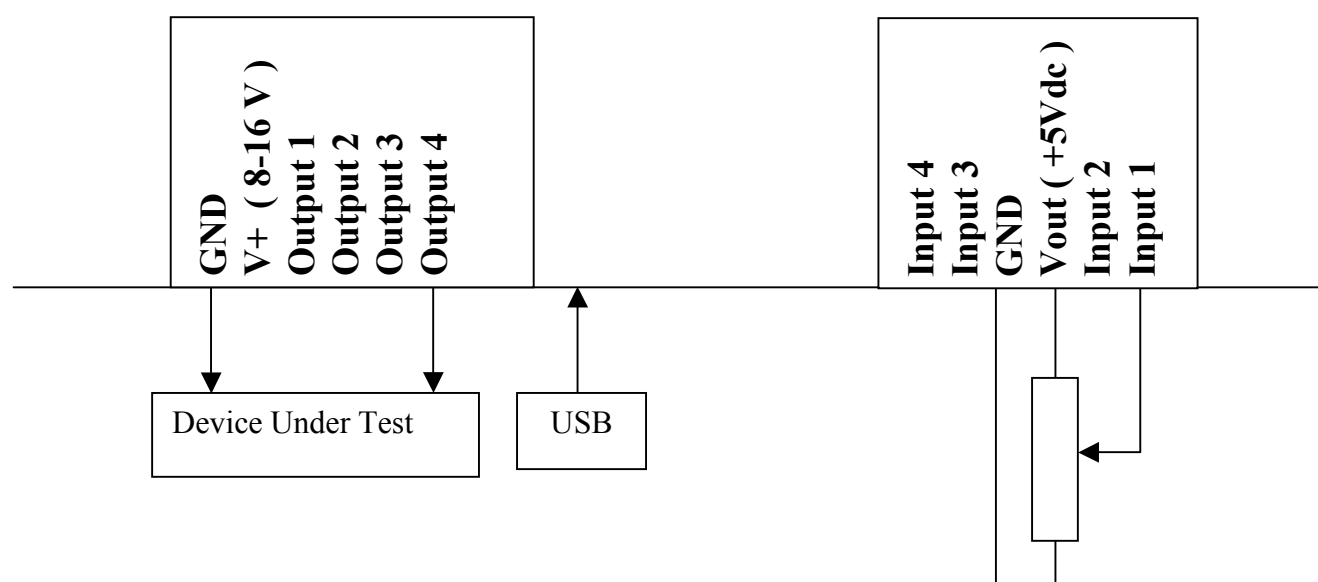
A few possible connections

CNC Testsignal generator:

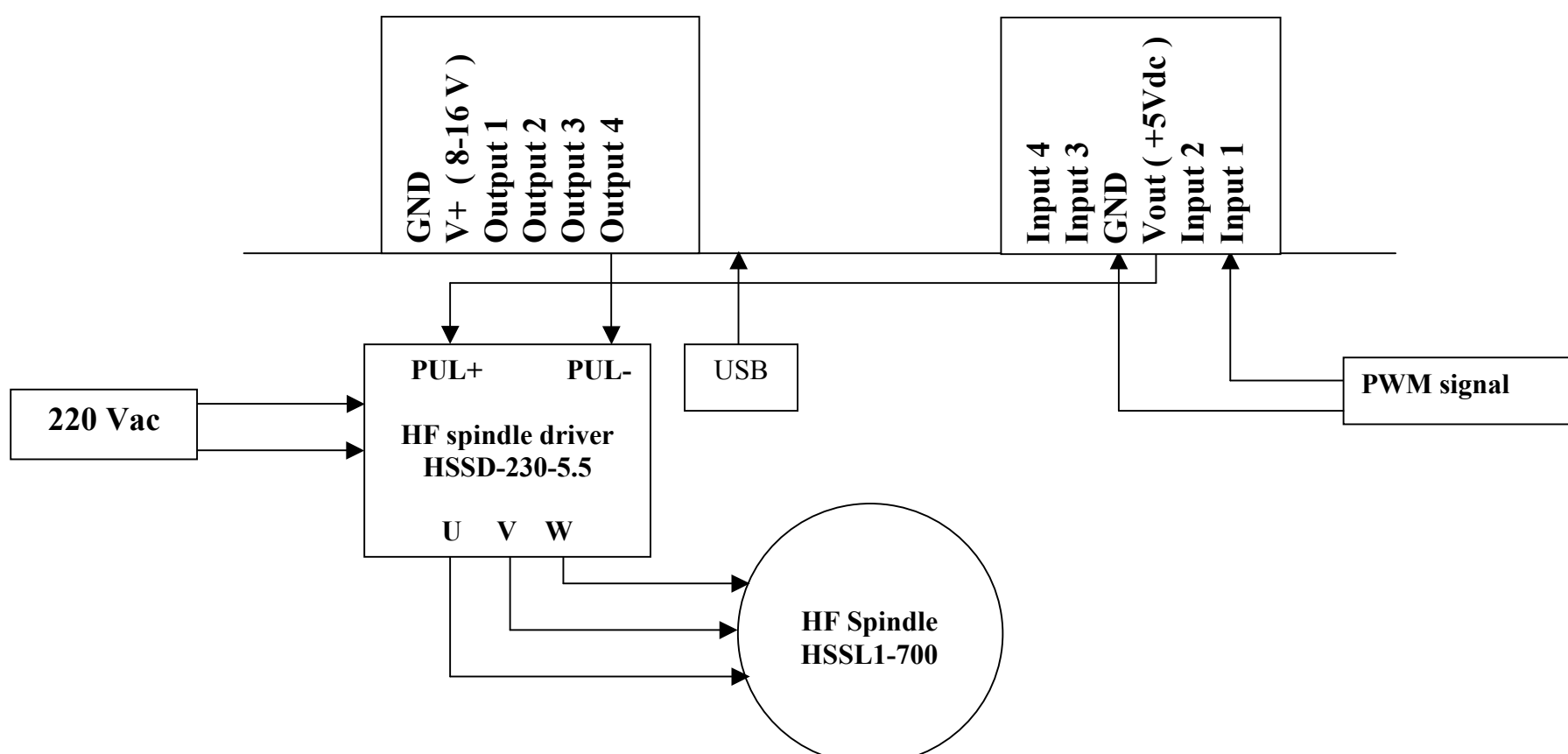
Connecting the pulsegenerator for a testsignal is very simple. The USB adapter is connected to the pulsegenerator and input 1 is connected to the +5V output with a simple wire. That makes the pulsegenerator supply the pulses at the highest frequency.



Pulsegenerator with a by potentiometer (1 - 10 Kohm) controlled pulsefrequency:

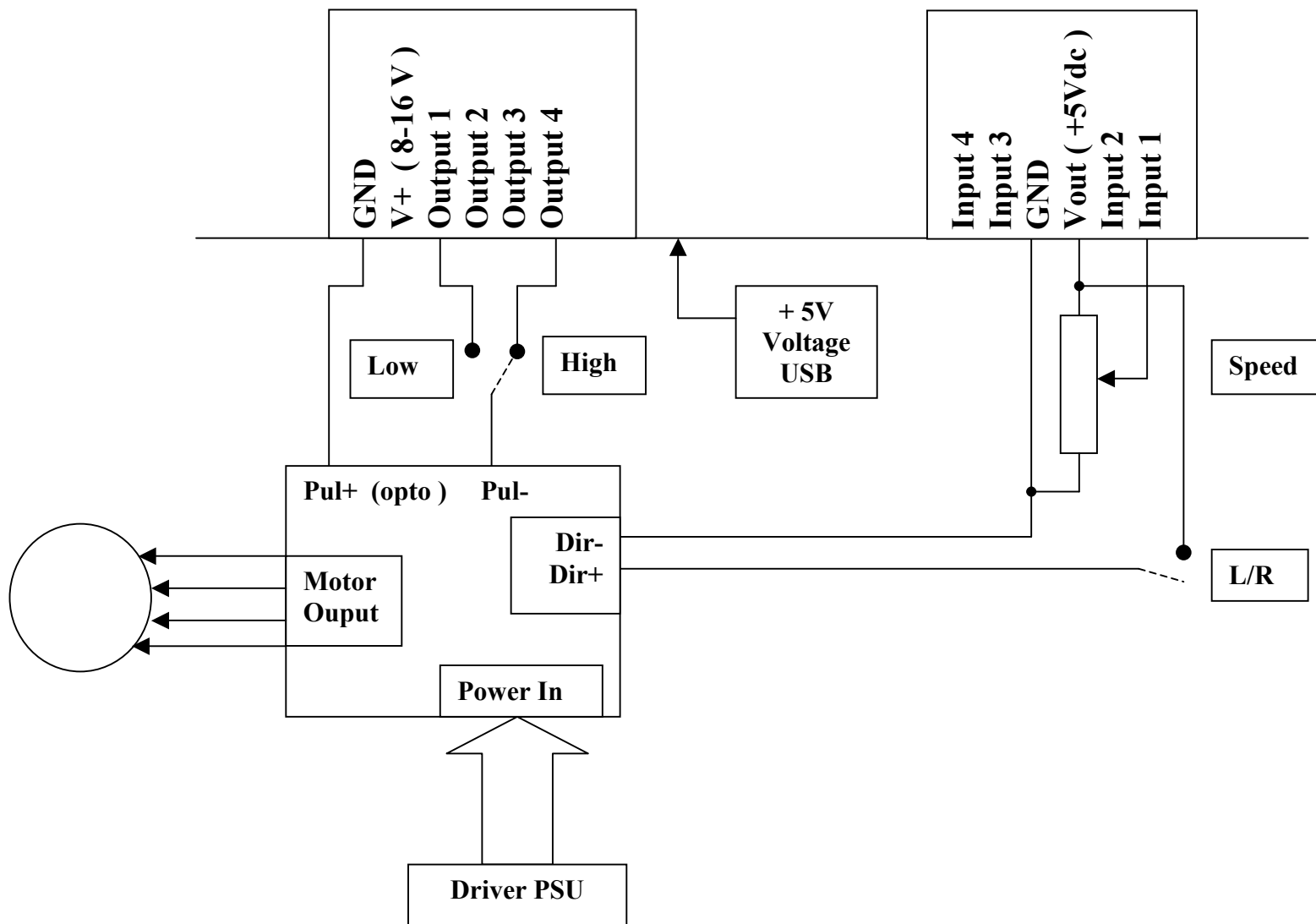


PWM control of a HF spindle and the HSSD1-230-5.6 HF-spindle driver :



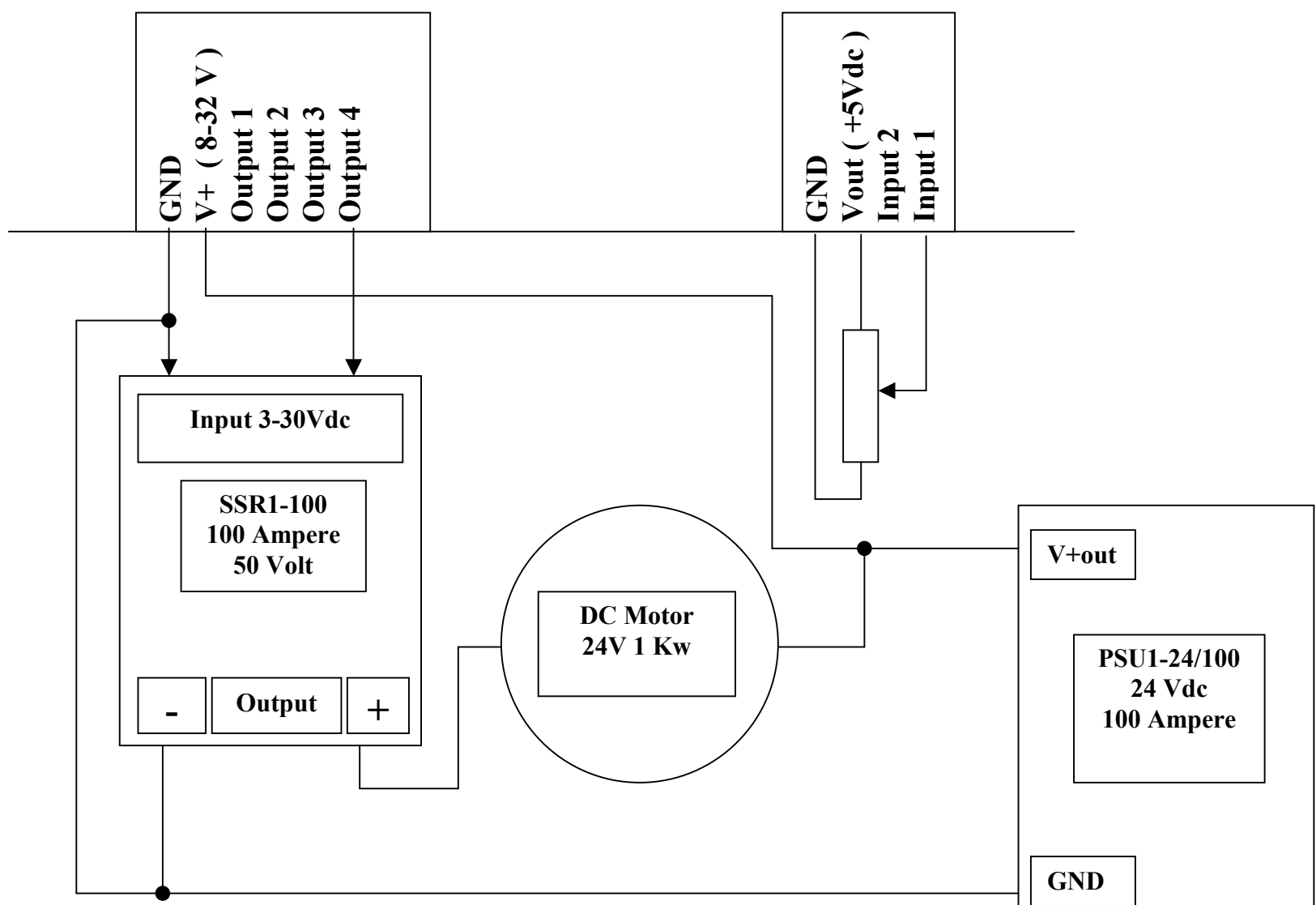
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Control of the speed and direction of a steppermotor or servomotor



* PUL+ is at some drivers called OPTO

Example of a controll for a 1 Kw DC motor (Switch position 3)



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