

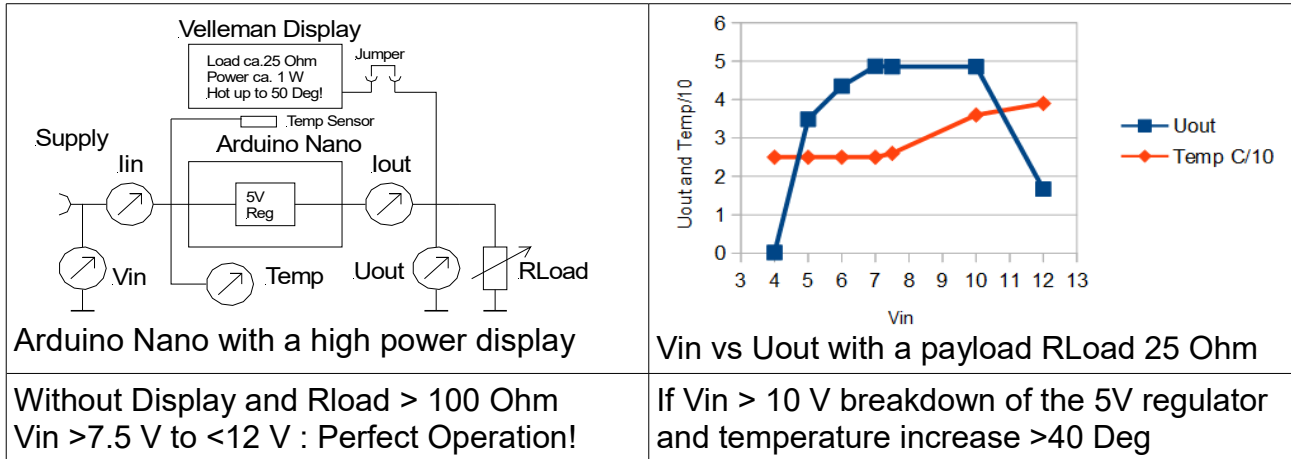
# Report 15 Arduino Nano Output Power Limitations

PAN, Febr 24, 2022

The Arduino Nano is equipped with a linear voltage regulator converting the input supply voltage >7.5 to an internal 5V supply.

This 5V supply can be used for attached circuits, at first glance up to 500 mA.

However with high loads the Arduino works fine only once after upload, but not later!



The limiting factor is the power loss PL within the voltage regulator:  $(V_{in} - U_{out}) \cdot I_{out}$   
At  $V_{in} = 10\text{ V}$  and  $R_{Load} = 25\text{ Ohm}$ :  $PL = 1990$ , to much!

The Velleman display VMA12 requires a minimum supply of 3.65 V for a very low brightness. At nominal supply 5 V the current is > 0.4 A, very bright, but hot!

At  $V_{in} = 6\text{ V}$  the display shows a good brightness with following data.  
 $U_{out} = 4.45\text{ V}$ ,  $I_{out} = 202\text{ mA}$ ,  $R_{Load} = 22\text{ Ohm}$ ,  $I_{in} = 210\text{ mA}$ ,  $Temp = 32\text{ Deg}$

## Experimental Test Setup:

