



Měření spotřeby zařízení BPC-DE2 projekt

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Brno

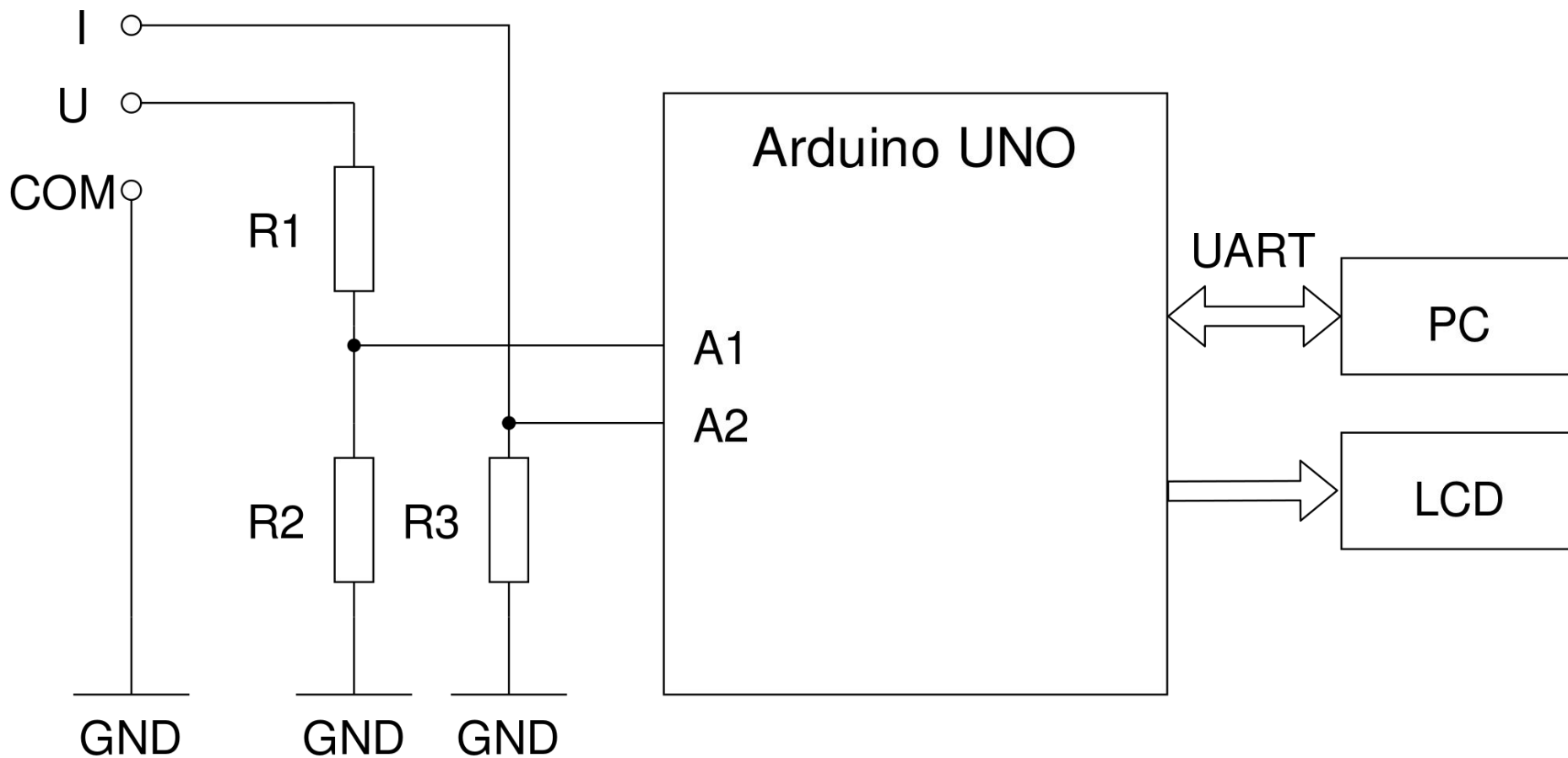
<https://github.com/fatalwir/Digital-electronics-2/>

Cíle

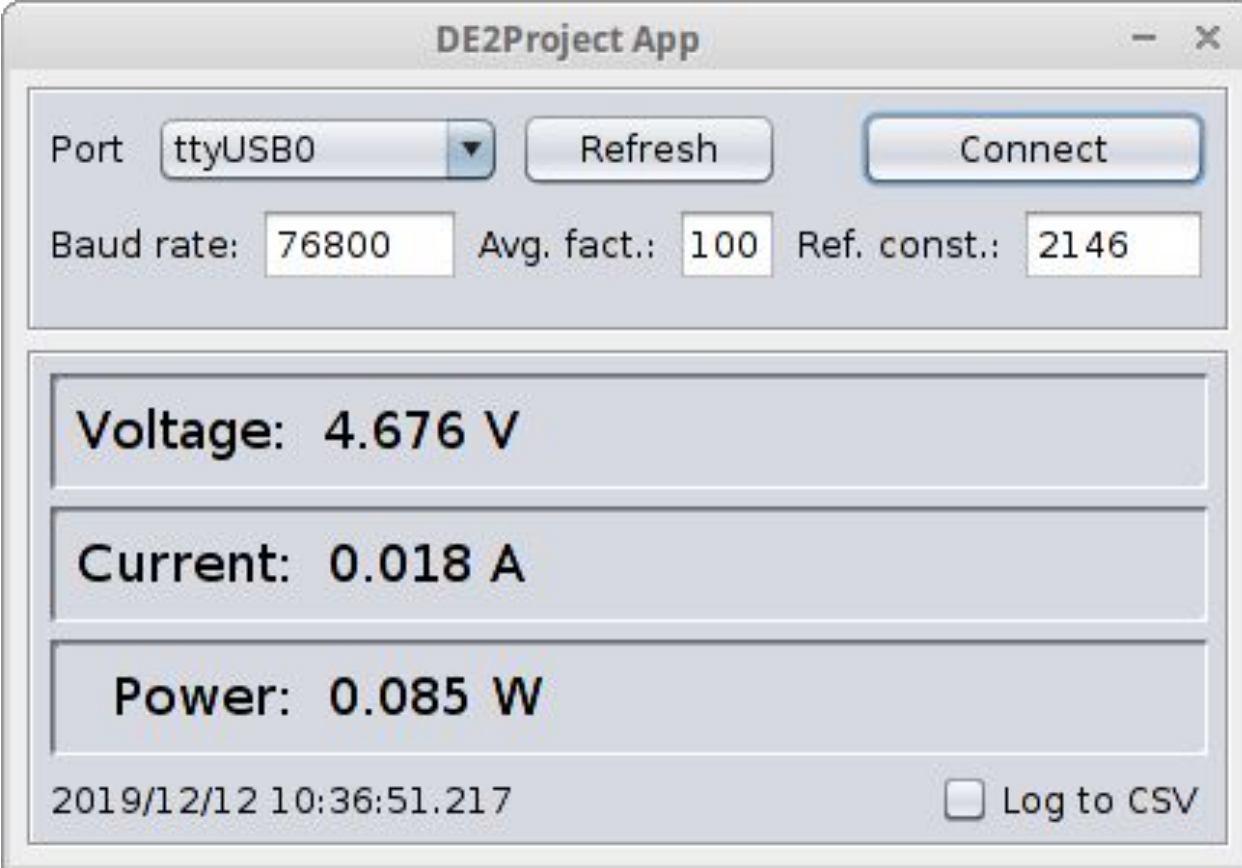


- měření napětí, proudu a výkonu
- odeslání do počítače přes UART
- real-time zobrazení hodnot na počítači a LCD
- logování dat do CSV souboru

Schéma zapojení



Počítačová aplikace

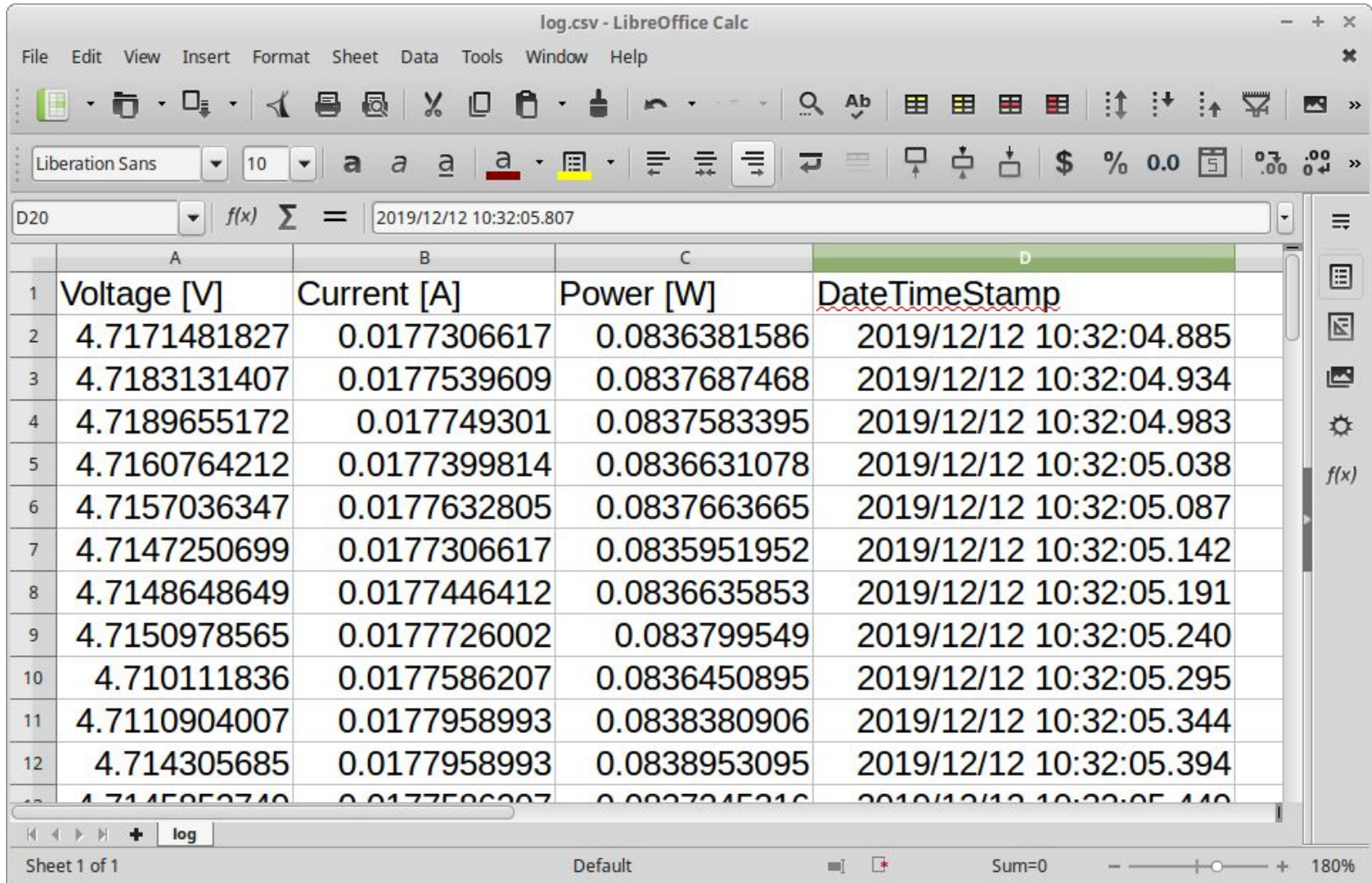


The screenshot shows a software window titled "DE2Project App". It features a "Port" dropdown menu set to "ttyUSB0", a "Refresh" button, and a "Connect" button. Below these are input fields for "Baud rate" (76800), "Avg. fact.:" (100), and "Ref. const.:" (2146). The main display area shows three stacked boxes with the following values: "Voltage: 4.676 V", "Current: 0.018 A", and "Power: 0.085 W". At the bottom left is a timestamp "2019/12/12 10:36:51.217", and at the bottom right is a checkbox labeled "Log to CSV" which is currently unchecked.

Parameter	Value
Voltage	4.676 V
Current	0.018 A
Power	0.085 W

2019/12/12 10:36:51.217 ☐ Log to CSV

CSV log



log.csv - LibreOffice Calc

File Edit View Insert Format Sheet Data Tools Window Help

Liberation Sans 10

D20 f(x) Σ = 2019/12/12 10:32:05.807

	A	B	C	D
1	Voltage [V]	Current [A]	Power [W]	<u>DateTimeStamp</u>
2	4.7171481827	0.0177306617	0.0836381586	2019/12/12 10:32:04.885
3	4.7183131407	0.0177539609	0.0837687468	2019/12/12 10:32:04.934
4	4.7189655172	0.017749301	0.0837583395	2019/12/12 10:32:04.983
5	4.7160764212	0.0177399814	0.0836631078	2019/12/12 10:32:05.038
6	4.7157036347	0.0177632805	0.0837663665	2019/12/12 10:32:05.087
7	4.7147250699	0.0177306617	0.0835951952	2019/12/12 10:32:05.142
8	4.7148648649	0.0177446412	0.0836635853	2019/12/12 10:32:05.191
9	4.7150978565	0.0177726002	0.083799549	2019/12/12 10:32:05.240
10	4.710111836	0.0177586207	0.0836450895	2019/12/12 10:32:05.295
11	4.7110904007	0.0177958993	0.0838380906	2019/12/12 10:32:05.344
12	4.714305685	0.0177958993	0.0838953095	2019/12/12 10:32:05.394

Sheet 1 of 1 Default Sum=0 180%

Komunikační protokol



Arduino -> PC

První bajt: 0b10uuuiii
Druhý bajt: 0b0uuuuuuu
Třetí bajt: 0b0iiiiiii

*

uuu uuuuuuuu - bin. data napětí
iii iiiiii - bin. data proudu

PC -> Arduino

První bajt: 0b1cyyxxxx
Další bajty: znaky
Poslední bajt: 0x00

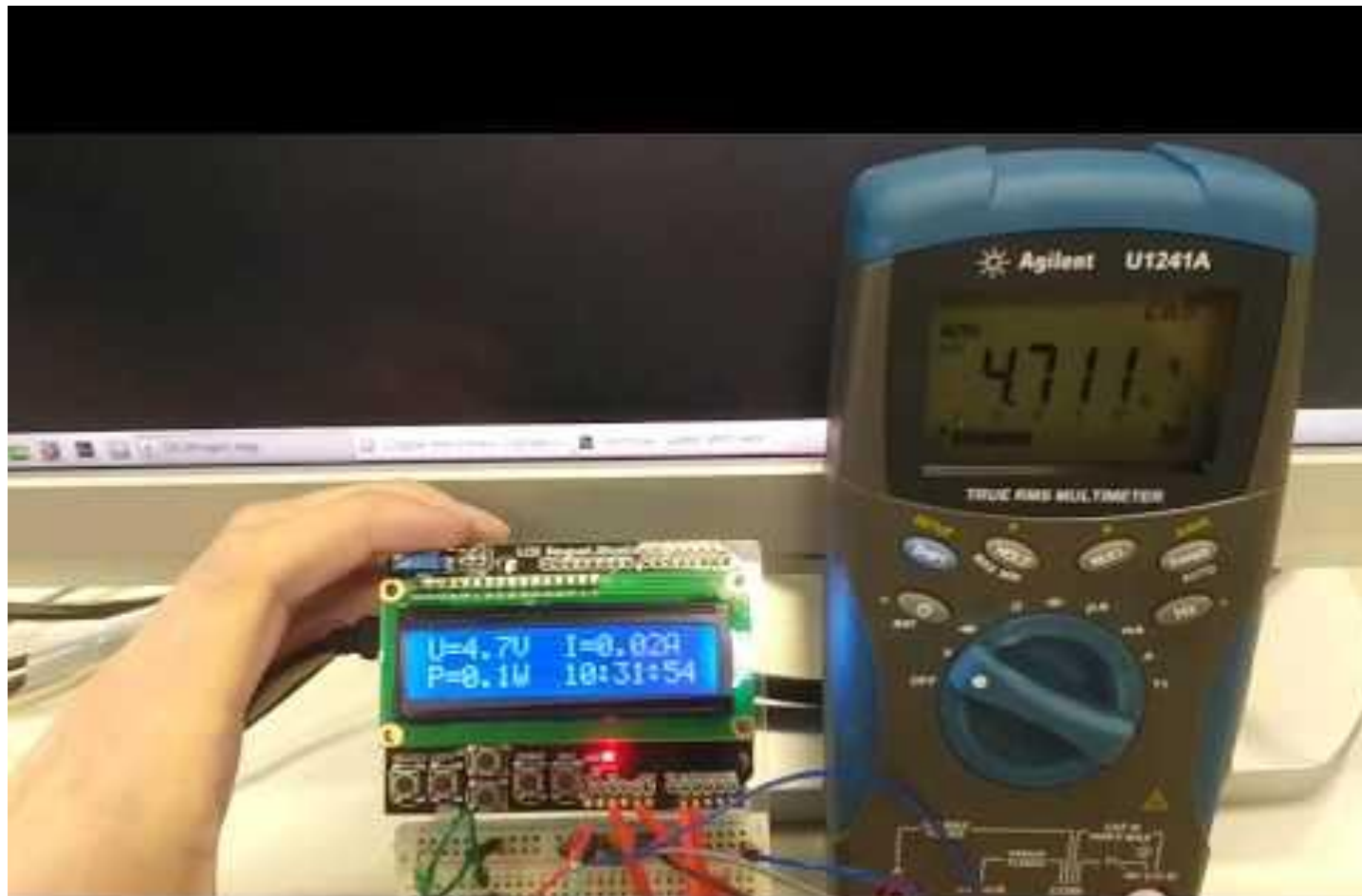
*

c - 1=vymazat LCD před zápisem
0=nemazat

yy - pozice kurzoru (řádek)

xxxx - pozice kurzoru (sloupec)

Ukázka (<https://youtu.be/5RztR6jo-bU>)



Děkujeme za pozornost



Prostor pro dotazy