

ADUSM100 – Sourcemeter adapter for ADU100

Contents

1 ADUSM100	1
1.1 Hardware overview	2
1.2 Sample data from ilogger	4
1.3 Schematics	5
1.4 BOM	6
List of figures	8

1 ADUSM100

Figure 1 shows the ADUSM100. This is a plug-in companion module for the [ADU100](#) from [ONTRAK Control Systems](#), allowing high-side output current measurements from a fixed 5 V supply. The target application is monitoring current draw for Printed Circuit Board Assemblies (PCBAs) powered by 5 V – like the [Arduino UNO](#).

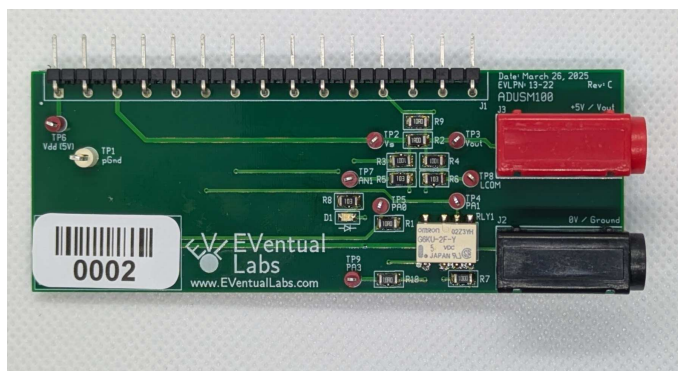


Figure 1: ADUSM100 is a companion module for the [ADU100](#) from ONTRAK Control Systems.

The RLY_{cal} relay shown in figure 3 and 4 allows calibrating current measurements with a known load resistor. The [ilogger](#) demonstration software stores slope and offset factors extracted during this calibration in a persistent database.

Figure 4 shows a block diagram of the ADU100 / ADUSM100 combination. A switching voltage converter in the ADU100 isolates the +5 VDC output from variations in the USB-provided VDD.

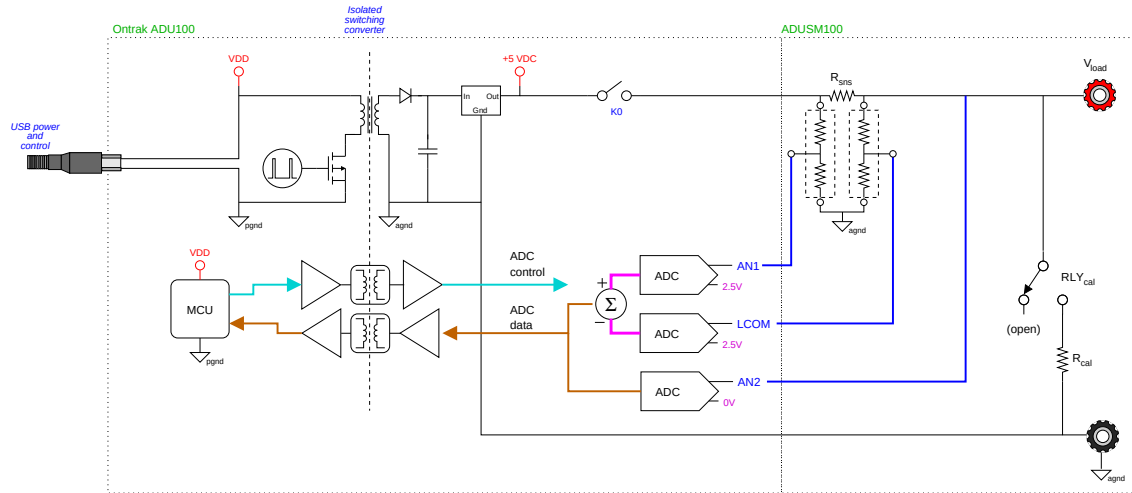


Figure 4: ADU100 / ADUSM100 block diagram.

1.2 Sample data from ilogger

The [ilogger](#) demo software automates current measurements with the ADUSM100. Listing 1 shows the first few lines of the data it writes.

```
[about]

# The title for the data to appear in the plot key
title=ADUSM100

# No more keys below the data section
[data]

# Time (s), Voltage (V), Current (A)
0.339, 4.959e+00, 2.187e-02
0.468, 4.959e+00, 2.516e-02
0.595, 4.959e+00, 2.499e-02
0.723, 4.959e+00, 2.491e-02
0.851, 4.959e+00, 2.491e-02
```

Listing 1: Sample data from ilogger

The [ilogplot](#) script in the same repository plots output data with [gnuplot](#). Figure 5 shows data taken with the setup shown in figure 2, where the ADUSM100 powers an Arduino UNO. The UNO's LED pulses for 1 s every 2 s, drawing about 1.2 mA each pulse. This drops the output voltage by about 1 mV each pulse as the LED current flows through the 1 Ω sense resistor.

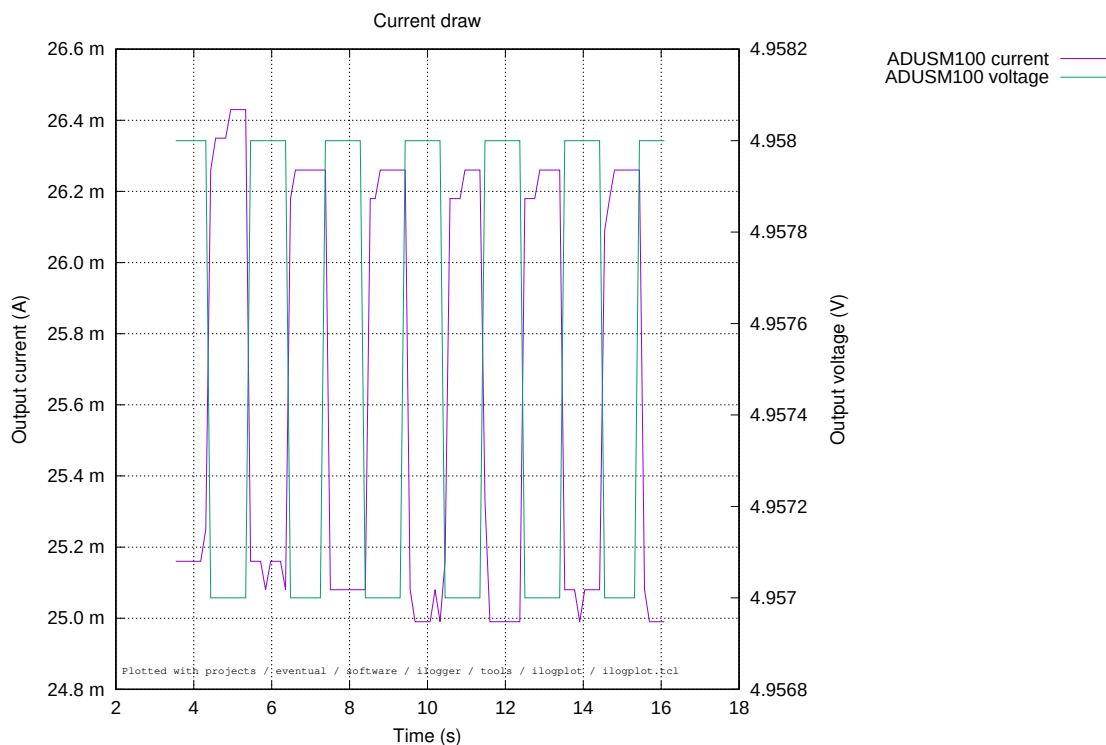


Figure 5: Sample data plotted with the [ilogplot](#) script and [gnuplot](#).

1.3 Schematics

As shown in figure 6, this datasheet supports layout version C and BOM version 2.

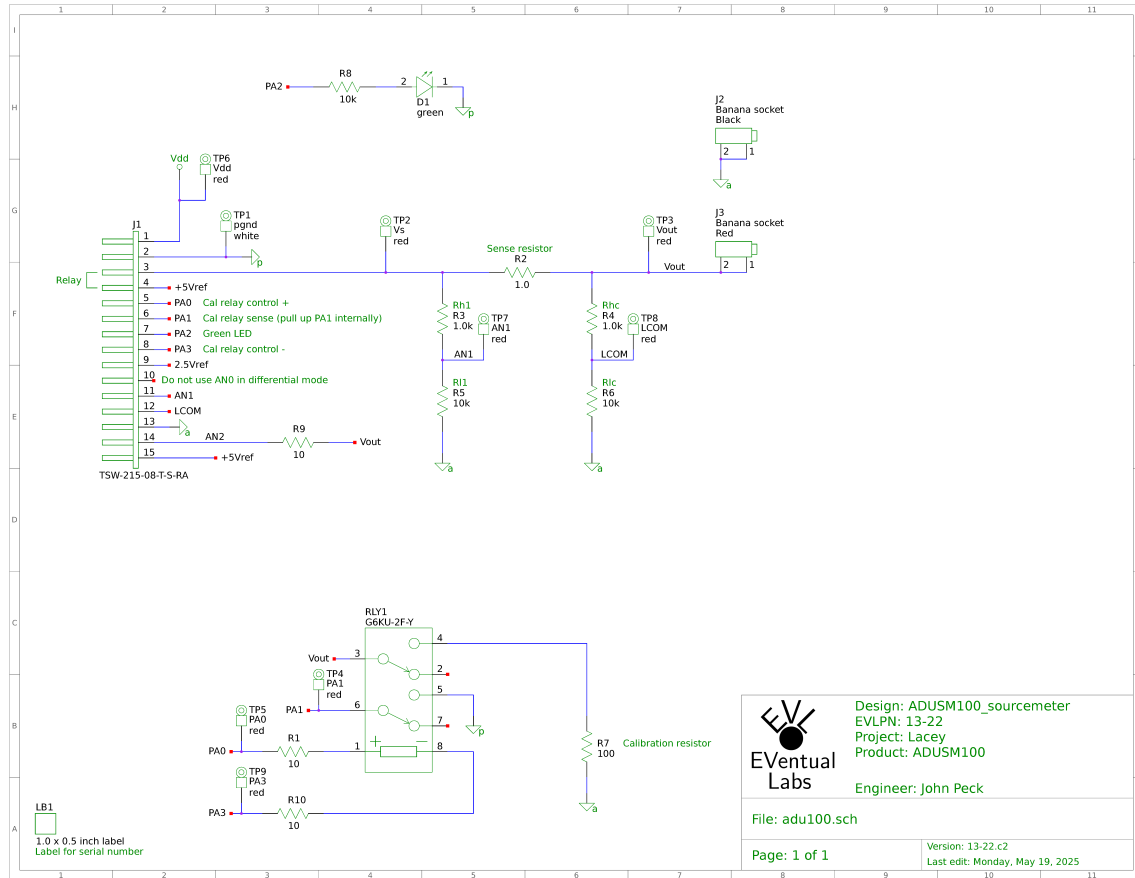


Figure 6: ADUSM100 schematics.

1.4 BOM

The BOM shown in table 1 supports layout version C and BOM version 2.

Table 1: Bill of materials

Item	Designators	Value	Manufacturer	Part number	Description	Comment
1	R1,R10,R9	10 Ω	Yageo	RC1206FR-0710RL	1% 0.25W thick film 1206 (3216 metric) chip resistor	
2	R2	1 Ω	Yageo	RC1206FR-101RL	1% 0.25W thick film 1206 (3216 metric) chip resistor	
3	R3, R4	1 k Ω	Yageo	RC1206FR-071KL	1% 0.25W thick film 1206 (3216 metric) chip resistor	
4	R5, R6, R8	10 k Ω	Yageo	RC1206JR-0710KL	5% 0.25W thick film 1206 (3216 metric) chip resistor	
5	R7	100 Ω	Yageo	RC1206FR-07100RL	1% 0.25W thick film 1206 (3216 metric) chip resistor	
6	D1	Green	Würth	150080GS75000	Green 0805 (2012 Metric) LED	
7	J1	TSW	Samtec	TSW-215-08-T-S-RA	15-pin 0.2-inch pitch single row right-angle TSW header	
8	J2	Banana	Multicomp	24.243.2	Black banana connector	
9	J3	Banana	Multicomp	24.243.1	Red banana connector	
10	TP1	White	Keystone	5012	White through-hole test point	

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Table 1 – continued from previous page

Item	Designators	Value	Manufacturer	Part number	Description	Comment
11	TP2, TP3, TP4, TP5, TP6, TP7, TP8, TP9	Red	Keystone	5000	Red through-hole test point	
12	LB1	Label				
13	RLY1	G6KU	Omron	G6KU-2F-Y-TR DC5	DPDT 5V latching relay	

List of Figures

1	ADUSM100 unplugged from an ADU100	1
2	ADUSM100 on the ADU100 used to power an Arduino UNO.	2
3	Hardware overview.	2
4	ADU100 / ADUSM100 block diagram.	3
5	Sample data plotted with the ilogplot script and gnuplot.	4
6	ADUSM100 schematics.	5