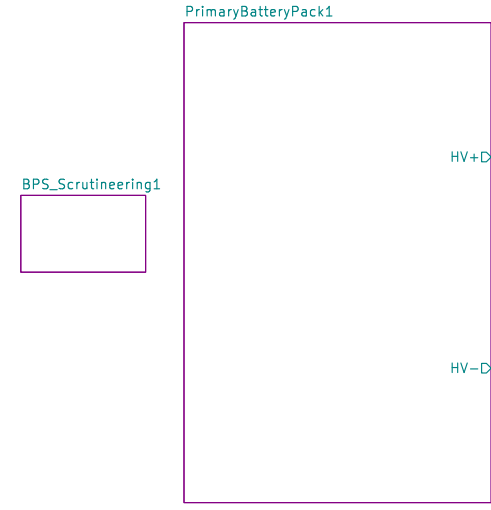


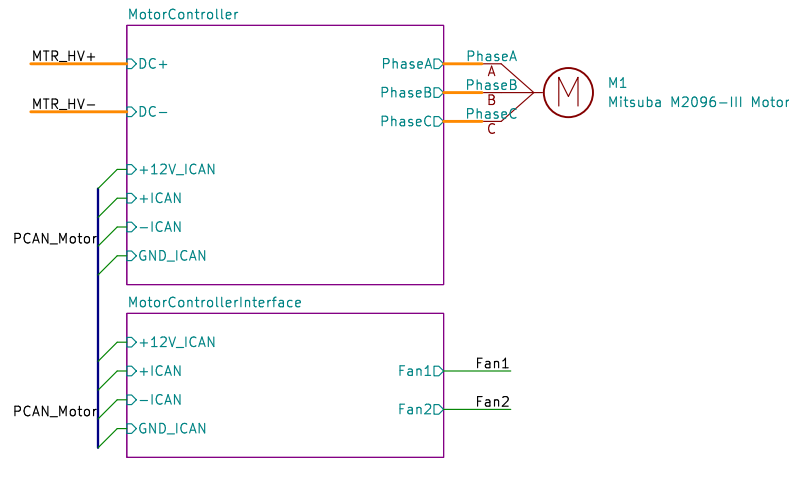
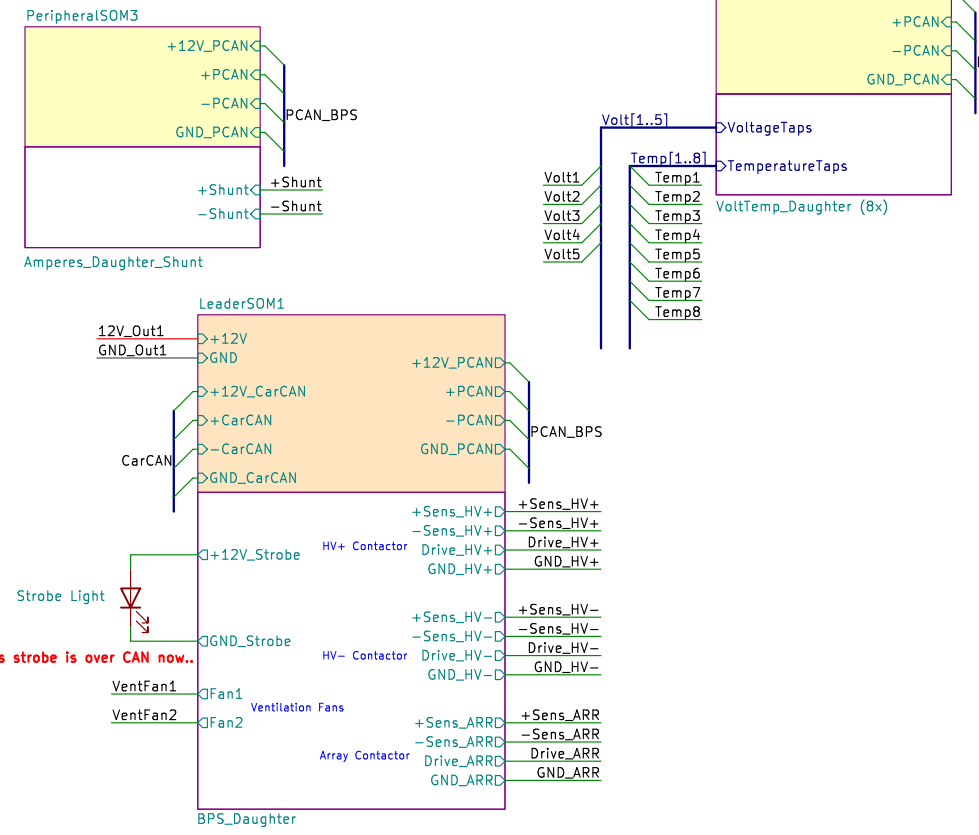
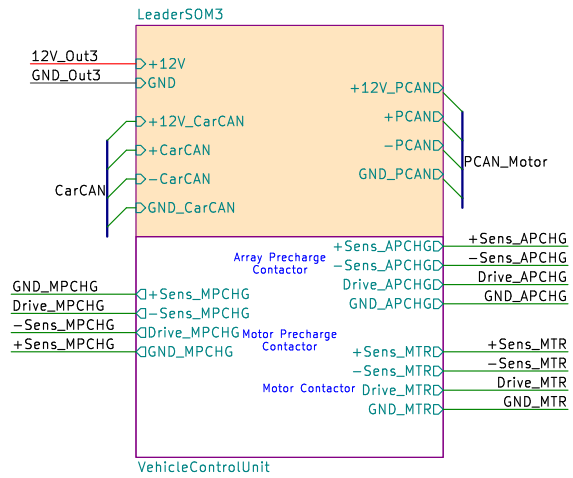
## HV Power Distribution

## Main Battery Pack

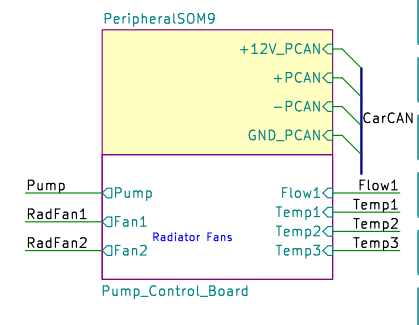
**add contactors, internal battery architecture, bus bar connections**



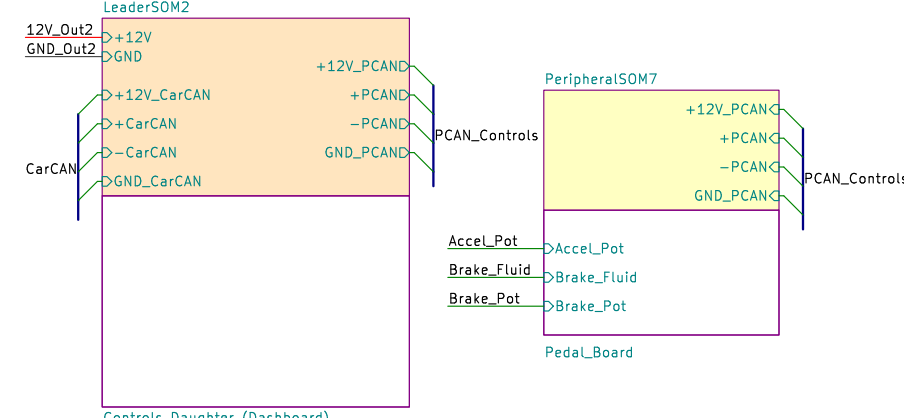
Determine scrut boards + voltage taps  
+ thermistor breakouts depending on  
Powertrain



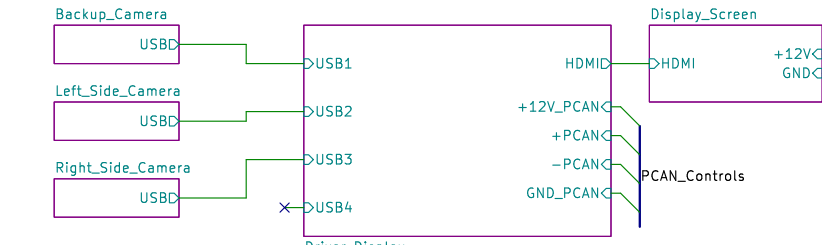
## Cooling



## Driver Controls



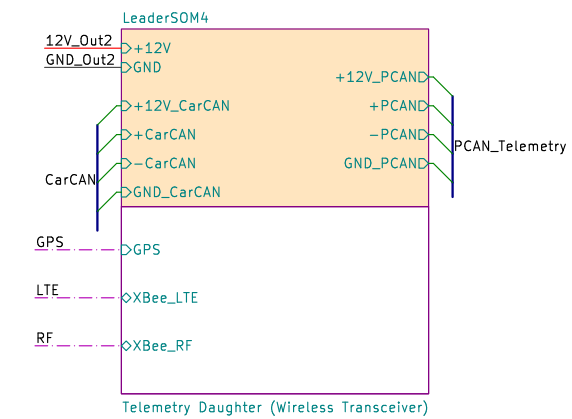
**Determine what dashboard LEDs and buttons will be connected**



**Determine how many USB/whether using USB hub on canopy**

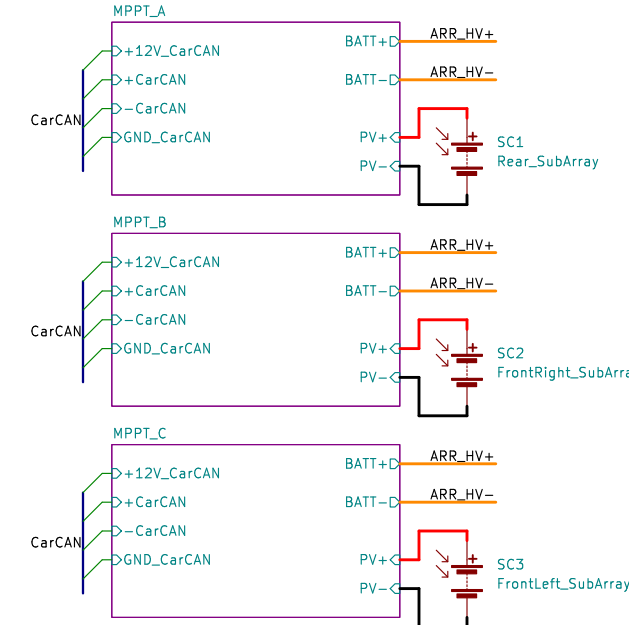
## Telemetry

add leader (+ wireless stuff), dynamics + linpot (4x), environment (6x??), TPMS transceiver (4x), broker?



## Array

add blackbody A/C (temp/irradiance sensors)



- TODD:**
- Controls Daughter Board
  - Steering board
  - Fans
  - Battery boards (internal HV?)
  - Telemetry sensors/leader
  - Array (MPPTs, Blackbody sensors)
  - VCU + MotorCAN?
  - Explain purpose of each CAN
  - Diagram CAN loop topology

define what we mean by HV, HC....

**Wire Legend:**

- High-Voltage High-Current (6 AWG)
- High-Voltage Low-Current (14 AWG)
- Low-Voltage High-Current (14 AWG)
- Low-Voltage Low-Current (20 AWG)
- - - Wireless

## Notes

## CAN Topology

The main CAN bus is CarCAN, which is utilized for system-wide communication (EX....). There are four peripheral CAN (PCAN) buses: BPS (Battery Protection System), Controls, Telemetry, and Motor (between VCU and motor controller).

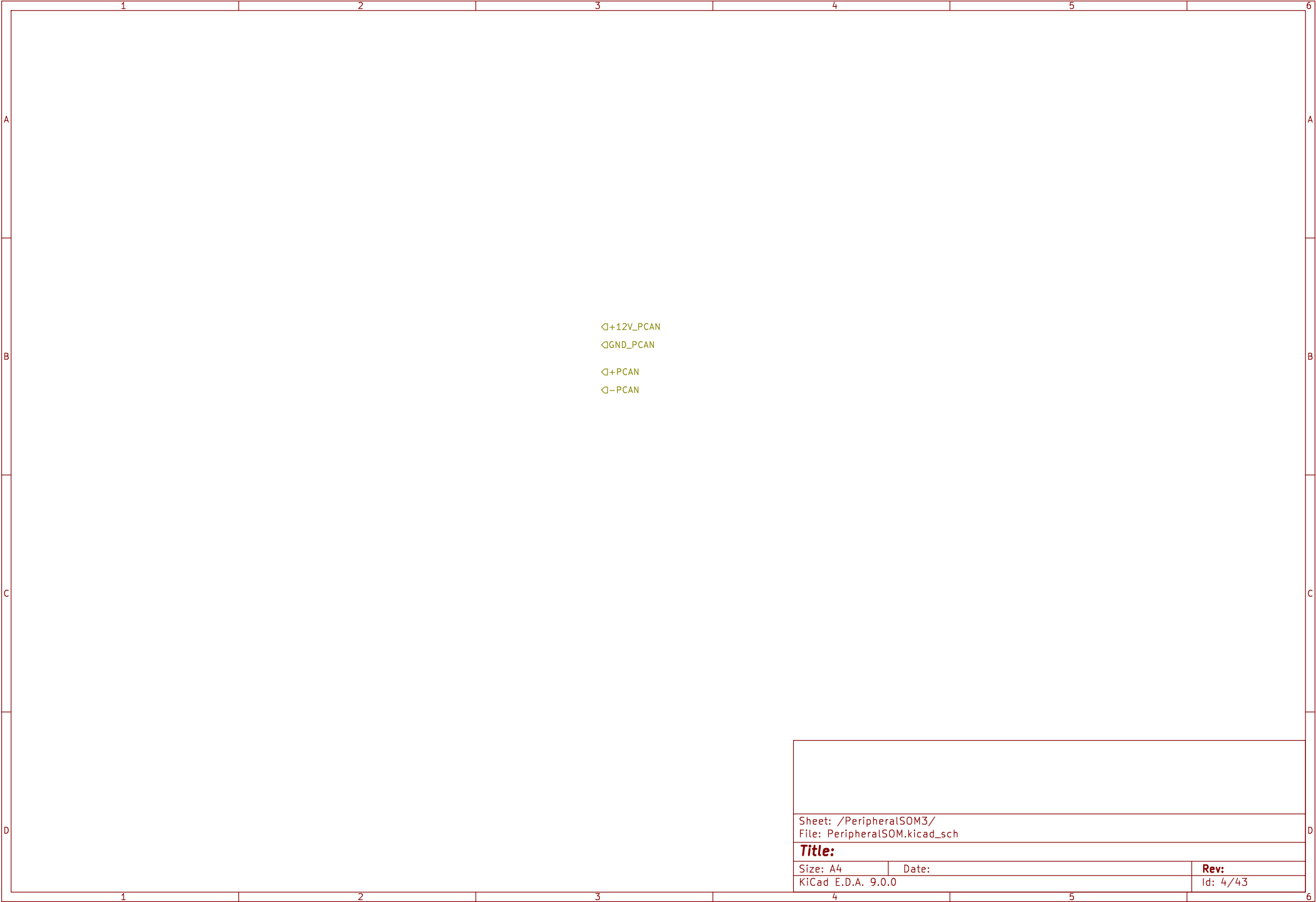
CarCAN

PCAN\_BPS

PCAN\_Controls

## PCAN Telemetry

PCAN\_Motor

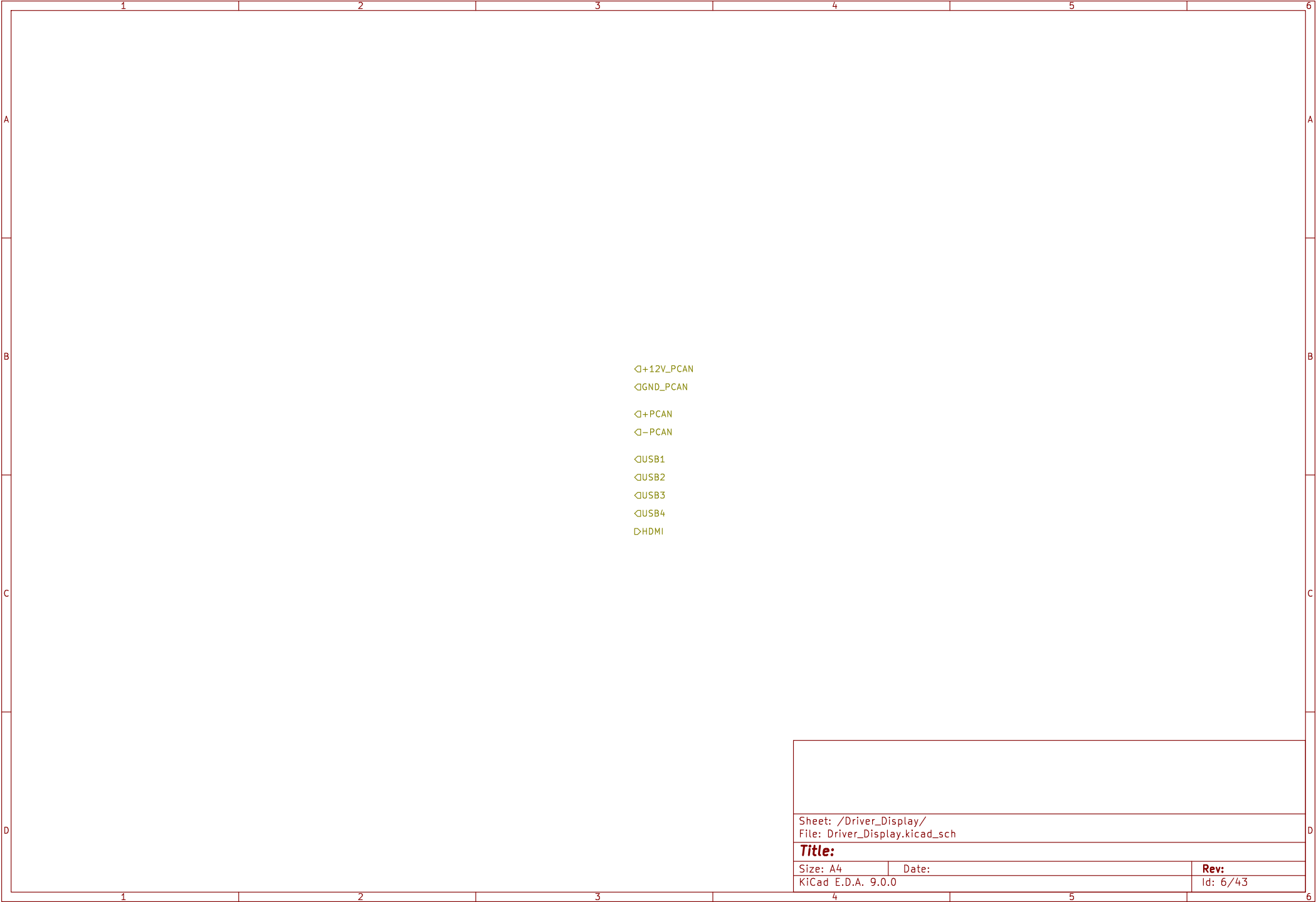


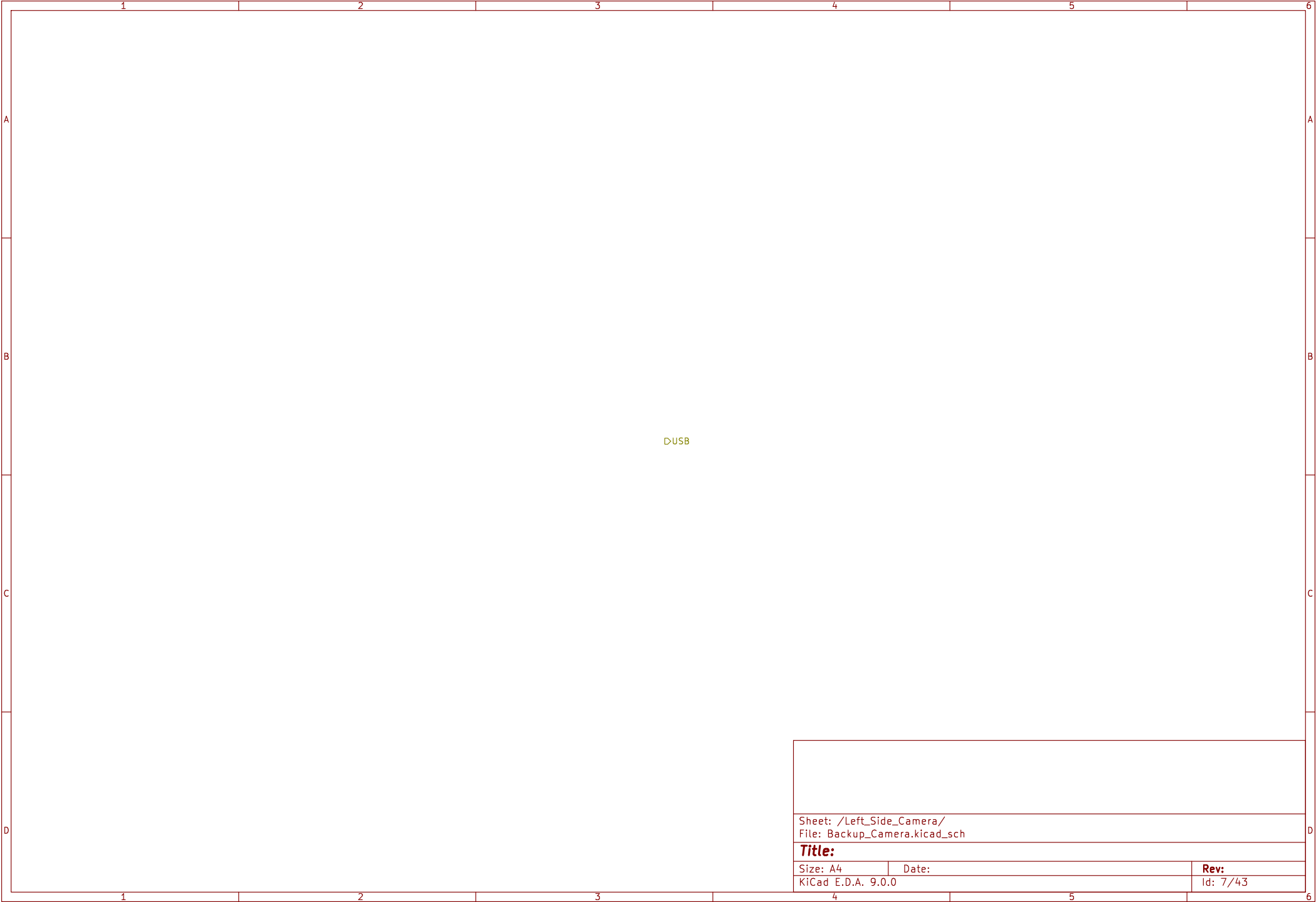
1	2	3	4	5	6
A					A
B					B
C					C
D					D
1	2	3	4	5	6

◁+Shunt

◁-Shunt

Sheet: /Amperes_Daughter_Shunt/ File: Amperes_Daughter_Shunt.kicad_sch		
<b>Title:</b>		
Size: A4	Date:	Rev:
KiCad E.D.A. 9.0.0		Id: 5/43





1	2	3	4	5	6
A					A
B					B
C					C
D					D
1	2	3	4	5	6

Sheet: /Controls_Daughter (Dashboard)/ File: Controls_Daugther.kicad_sch		
Title:		
Size: A4	Date:	Rev:
KiCad E.D.A. 9.0.0	Id: 8/43	

Sheet: /BPS_Daughter/ File: BPS_Daughter.kicad_sch	
<b>Title:</b>	
Size: A4	Date:
KiCad E.D.A. 9.0.0	Rev: 9/43





1	2	3	4	5	6
A					A
B					B
C					C
D					D
1	2	3	4	5	6

◀VoltageTaps

◀TemperatureTaps

Sheet: /VoltTemp_Daughter (8x)/ File: VoltTemp_Daughter.kicad_sch		
Title:		
Size: A4	Date:	Rev:
KiCad E.D.A. 9.0.0		Id: 11/43



	1	2	3	4	5	6
A						
B						
C						
D						
	1	2	3	4	5	6

D>FTLT\_Turn  
D>FTRT\_Turn  
D>FTLT\_Headlight  
D>FTRT\_Headlight  
D>SDLT\_Turn  
D>SDRT\_Turn

Sheet: /Lighting_Daughter_Front/ File: Lighting_Daughter_Front.kicad_sch		
Title:		
Size: A4	Date:	Rev:
KiCad E.D.A. 9.0.0		Id: 13/43



1	2	3	4	5	6
A					A
B					B
C					C
D					D
1	2	3	4	5	6

D>RRLT\_BRK\_Turn  
D>RRRT\_BRK\_Turn

Sheet: /Lighting_Daughter_Back/ File: Lighting_Daughter_Back.kicad_sch		
Title:		
Size: A4	Date:	Rev:
KiCad E.D.A. 9.0.0		Id: 15/43

1	2	3	4	5	6
A					A
B					B
C					C
D					D
1	2	3	4	5	6

Sheet: /BPS_Scrutineering1/ File: BPS_Scrutineering.kicad_sch		
Title:		
Size: A4	Date:	Rev:
KiCad E.D.A. 9.0.0		Id: 16/43



	1	2	3	4	5	6
A						
B			D+Sens_MTR DDrive_MTR D-Sens_MTR DGND_MTR  D+Sens_MPCHG DDrive_MPCHG D-Sens_MPCHG DGND_MPCHG  D+Sens_APCHG DDrive_APCHG D-Sens_APCHG DGND_APCHG			
C						
D						
	1	2	3	4	5	6

Sheet: /VehicleControlUnit/ File: VehicleControlUnit.kicad_sch		
Title:		
Size: A4	Date:	Rev:
KiCad E.D.A. 9.0.0		Id: 18/43





123456

A

B

C

D

123456

A

B

C

D

◀AcceLPot

◀Brake\_Pot

◀Brake\_Fluid

Sheet: /Pedal\_Board/  
File: Pedal\_Board.kicad\_sch

Title:

Size: A4Date:Rev:

KiCad E.D.A. 9.0.0Id: 20/43





HV+□

HV-□

Temp\_+5V[0..61]▷

Temp\_Sense[0..61]◁

Temp\_GND[0..61]▷

Volt\_RowA[0..7]◁

Volt\_RowA\_GND◁

Volt\_RowB[0..7]◁

Volt\_RowB\_GND◁

Volt\_RowC[0..7]◁

Volt\_RowC\_GND◁

Volt\_RowD[0..6]◁

Volt\_RowD\_GND◁

Sheet: /PrimaryBatteryPack1/ File: PrimaryBatteryPack.kicad_sch		
Title:		
Size: A4	Date:	Rev:
KiCad E.D.A. 9.0.0		Id: 22/43

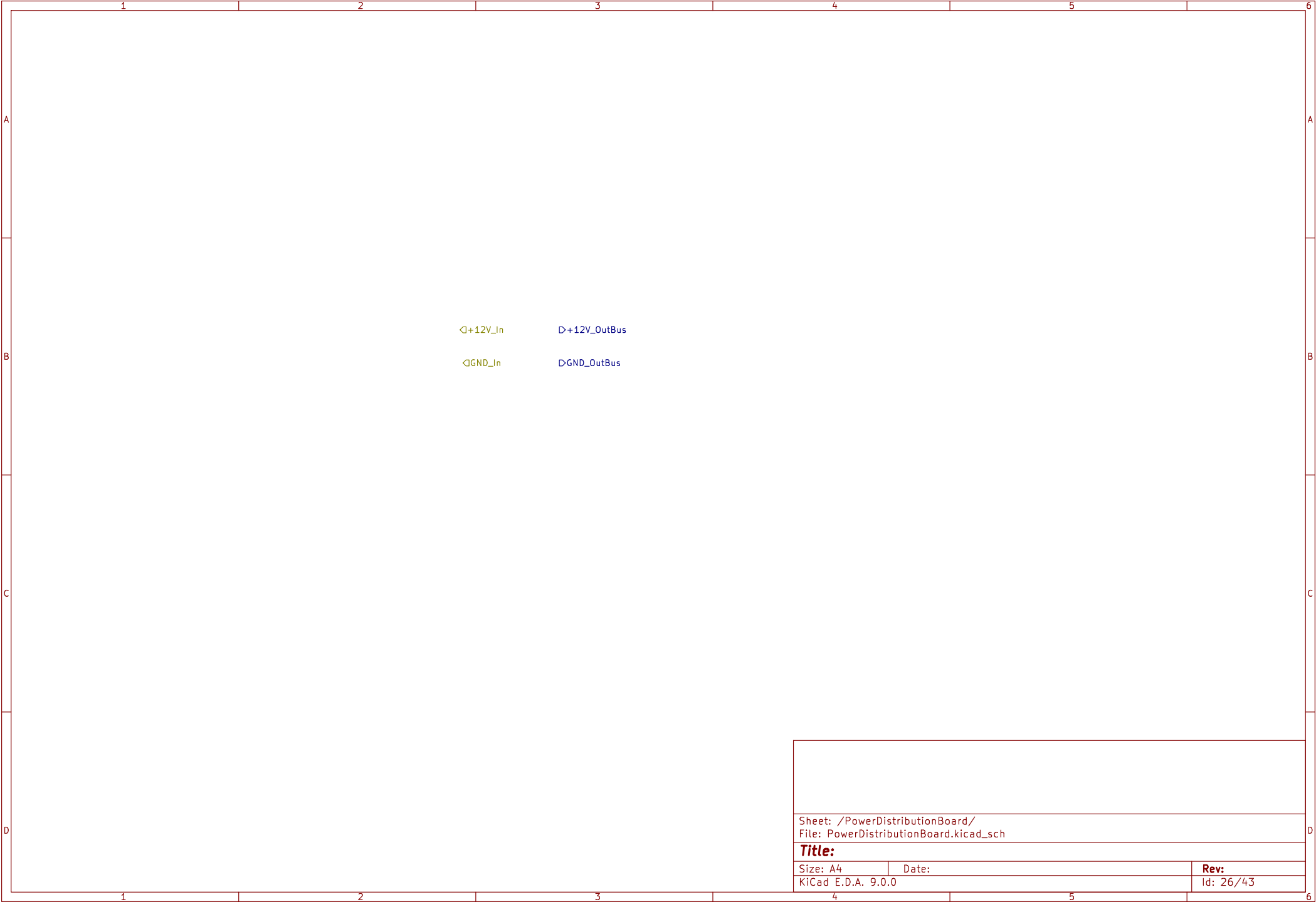
The diagram shows a schematic layout for a DC-DC converter. It is organized into a grid with columns numbered 1 to 6 and rows labeled A, B, C, and D. The circuit components are represented by text labels: 'HV+D' and 'HV-D' are located in the upper left area; 'D+12V\_DCDC' and 'DGND\_DCDC' are in the upper middle area; and 'D+' is in the upper right area. A title block is positioned in the bottom right corner, containing the following information:

Sheet: /DC-DC-Converter/		
File: DC-DC-Converter.kicad_sch		
<b>Title:</b>		
Size: A4	Date:	<b>Rev:</b>
KiCad E.D.A. 9.0.0		Id: 23/43

1	2	3	4	5	6
A					A
B					B
C					C
D					D
1	2	3	4	5	6

Sheet: /SupplementalBattery/ File: SupplementalBattery.kicad_sch		
Title:		
Size: A4	Date:	Rev:
KiCad E.D.A. 9.0.0	Id: 24/43	







◊+12V\_ICAN  
◊+ICAN  
◊-ICAN  
◊GND\_ICAN  
◊DC+  
◊DC-  
▷PhaseA  
▷PhaseB  
▷PhaseC

Sheet: /MotorController/  
File: MotorController.kicad\_sch

**Title:**

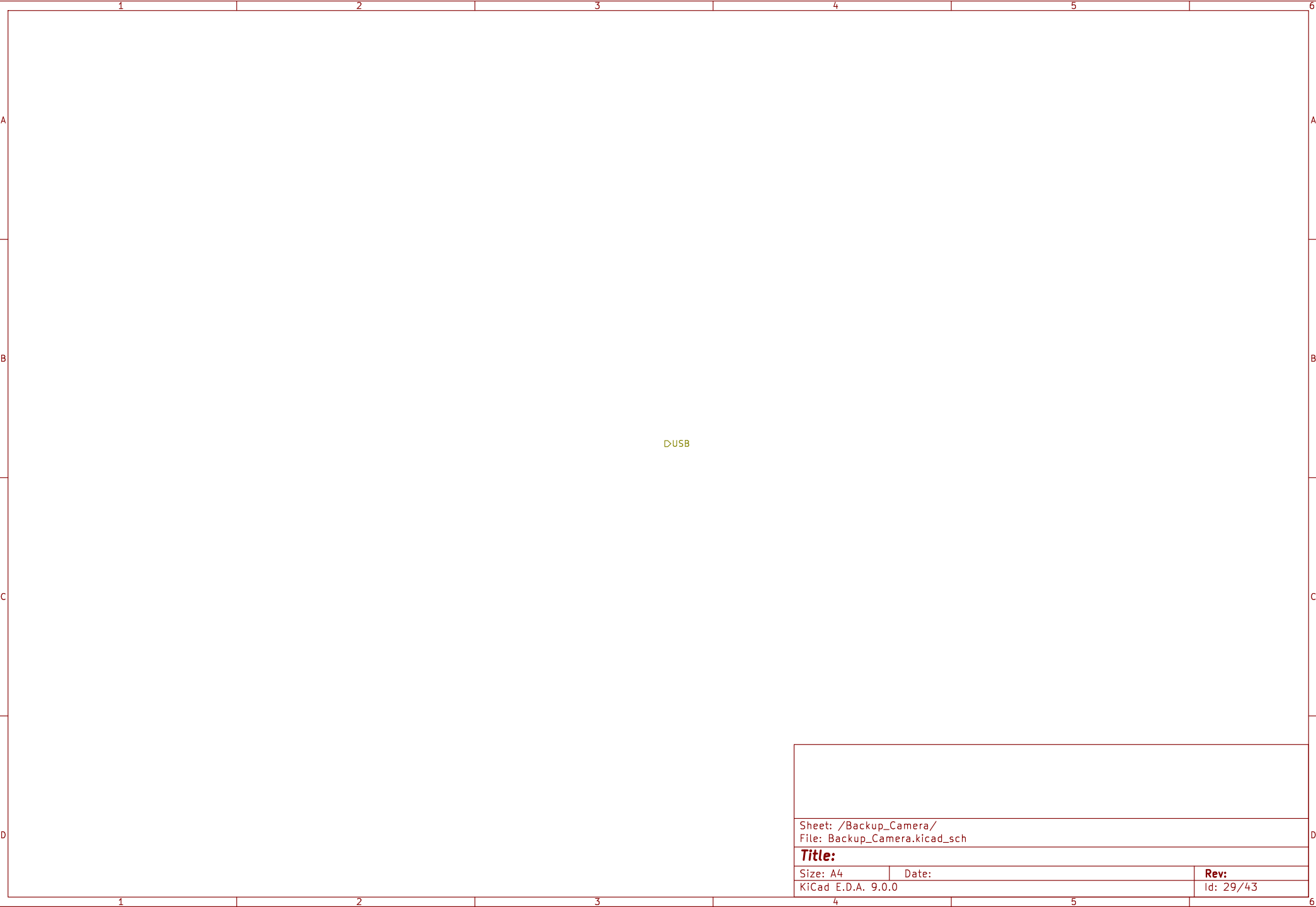
Size: A4  
KiCad E.D.A. 9.0.0

Date:

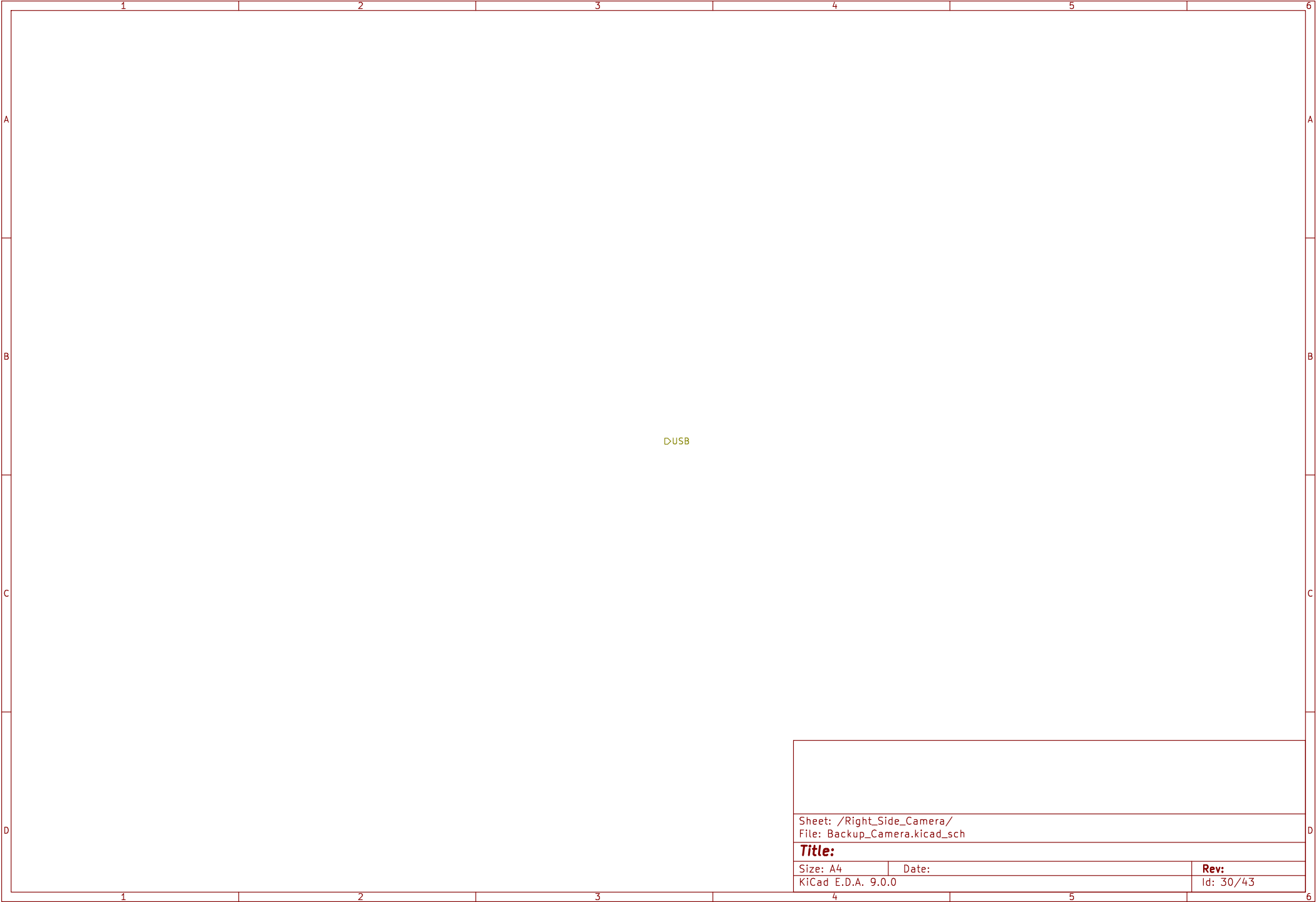
**Rev:**  
Id: 27/43







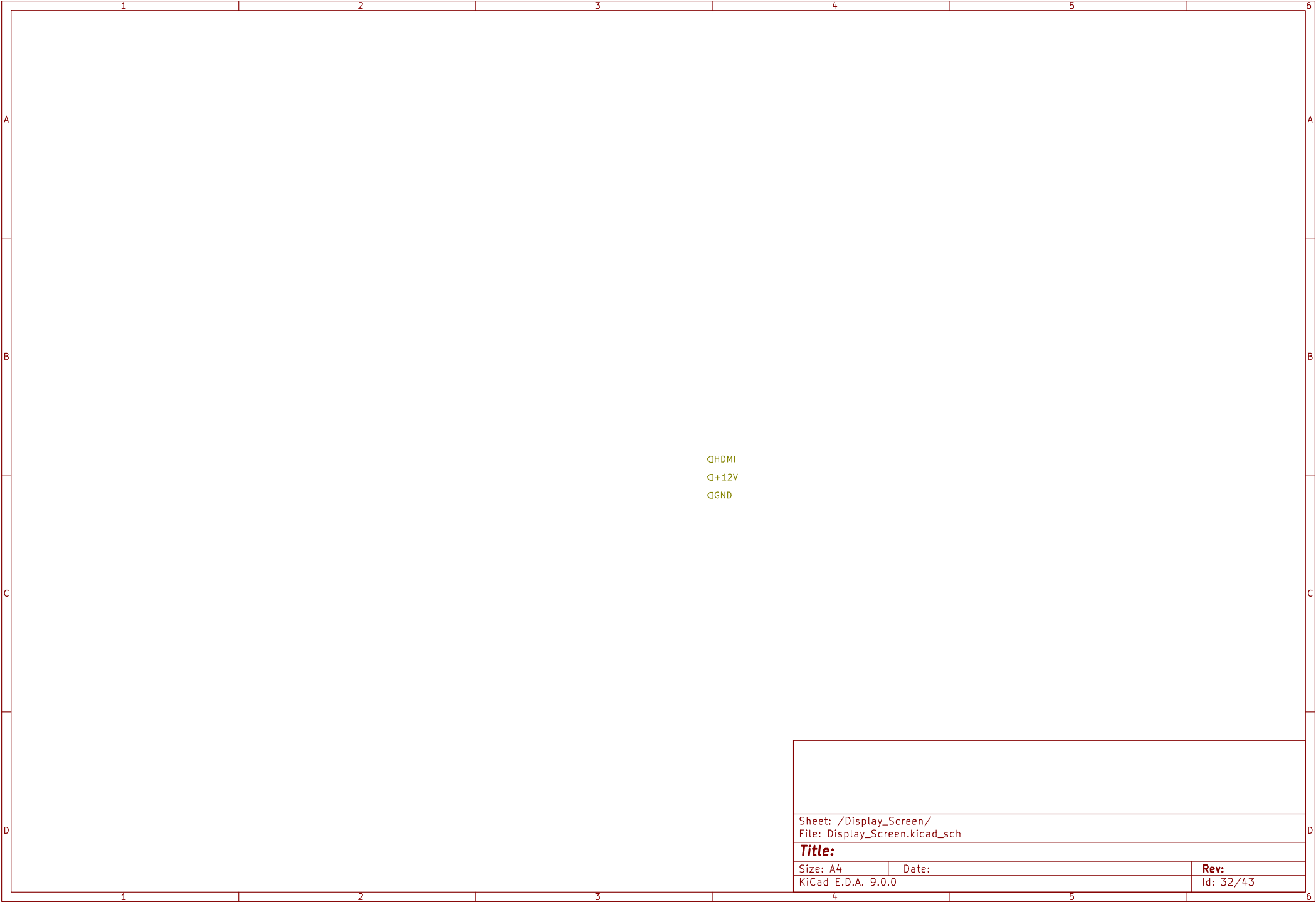
Sheet: /Backup_Camera/		
File: Backup_Camera.kicad_sch		
Title:		
Size: A4	Date:	Rev:
KiCad E.D.A. 9.0.0	Id: 29/43	



	1	2	3	4	5	6
A						
B						
C						
D						
	1	2	3	4	5	6

D>BRK\_Canopy  
D>BPS\_Strobe

Sheet: /Lighting_Daughter_Canopy/ File: Lighting_Daughter_Canopy.kicad_sch		
Title:		
Size: A4	Date:	Rev:
KiCad E.D.A. 9.0.0		Id: 31/43







▷Pump  
▷Fan1  
▷Fan2  
◁Temp1  
◁Temp2  
◁Temp3  
◁Flow1

Sheet: /Pump\_Control\_Board/  
File: Pump\_Control\_Board.kicad\_sch

Title:		
Size: A4	Date:	Rev:
KiCad E.D.A. 9.0.0		Id: 34/43





Diagram showing a schematic layout with a central green area and a table at the bottom right.

Central labels:

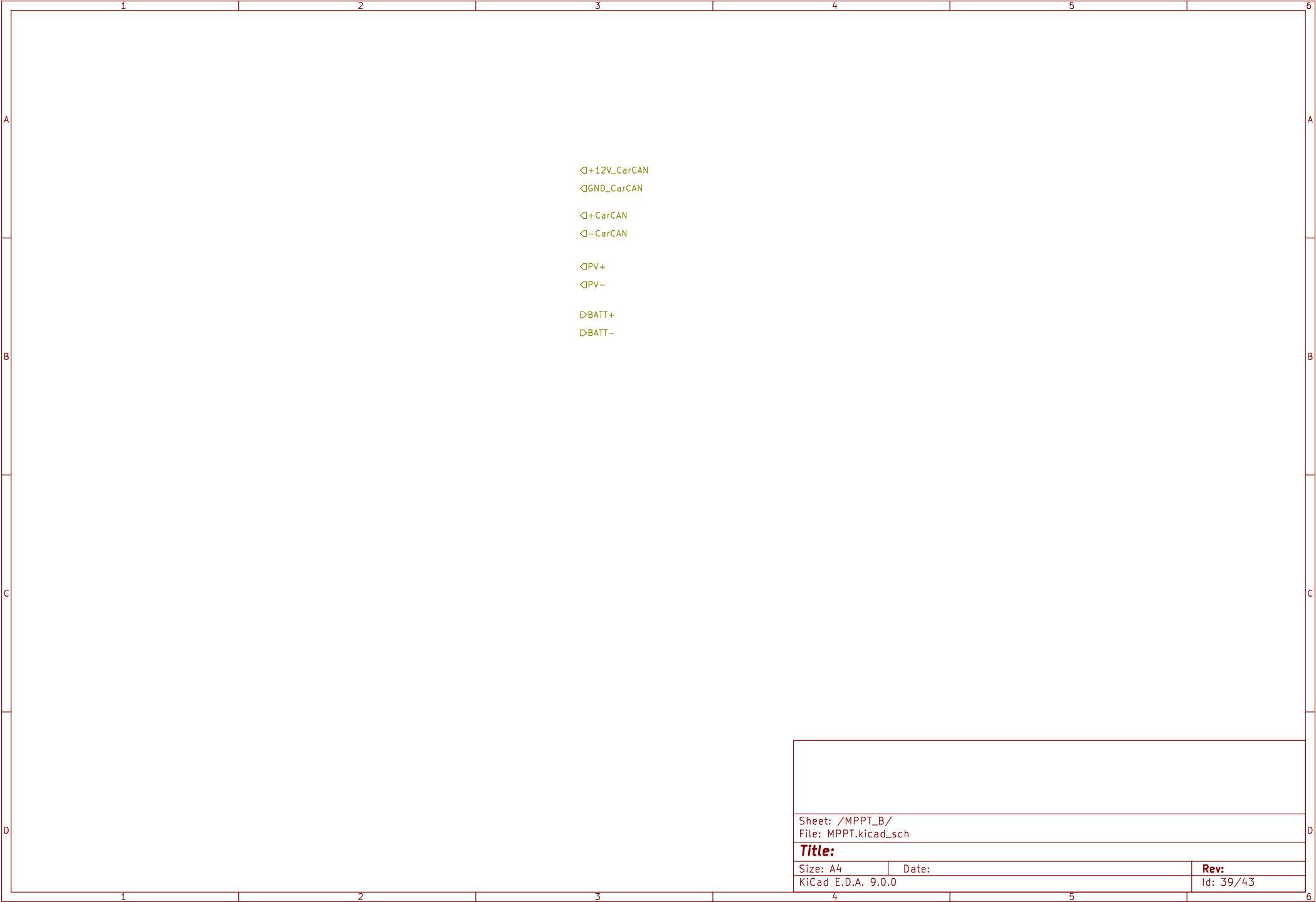
- $\Diamond +12V\_ICAN$
- $\Diamond +ICAN$
- $\Diamond -ICAN$
- $\Diamond GND\_ICAN$
- $\Diamond Fan1$
- $\Diamond Fan2$

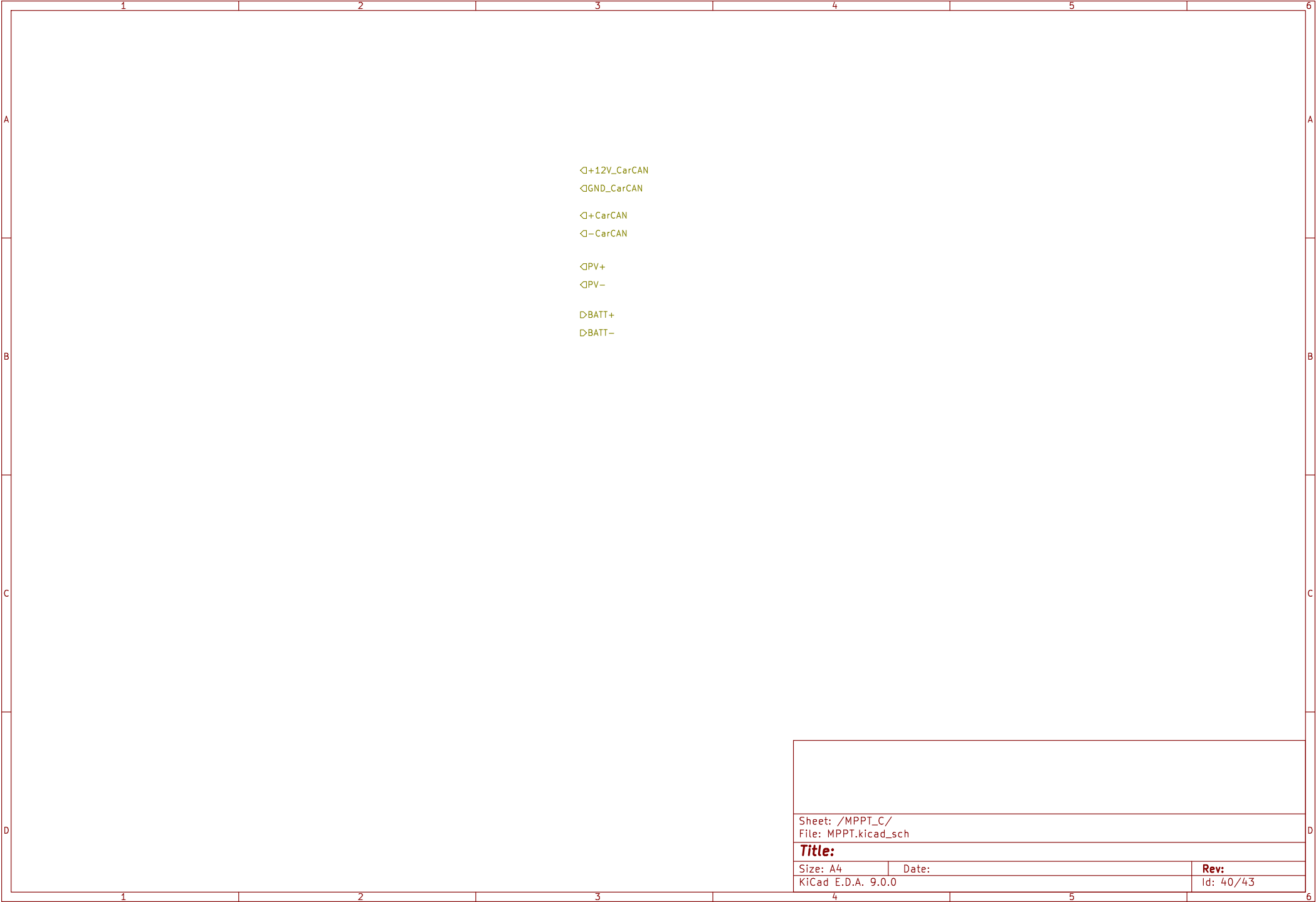
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<b>Title:</b>		
Size: A4	Date:	Rev:
KiCad E.D.A. 9.0.0	Id: 37/43	



1	2	3	4	5	6
A					A
B					B
C					C
D					D
1	2	3	4	5	6

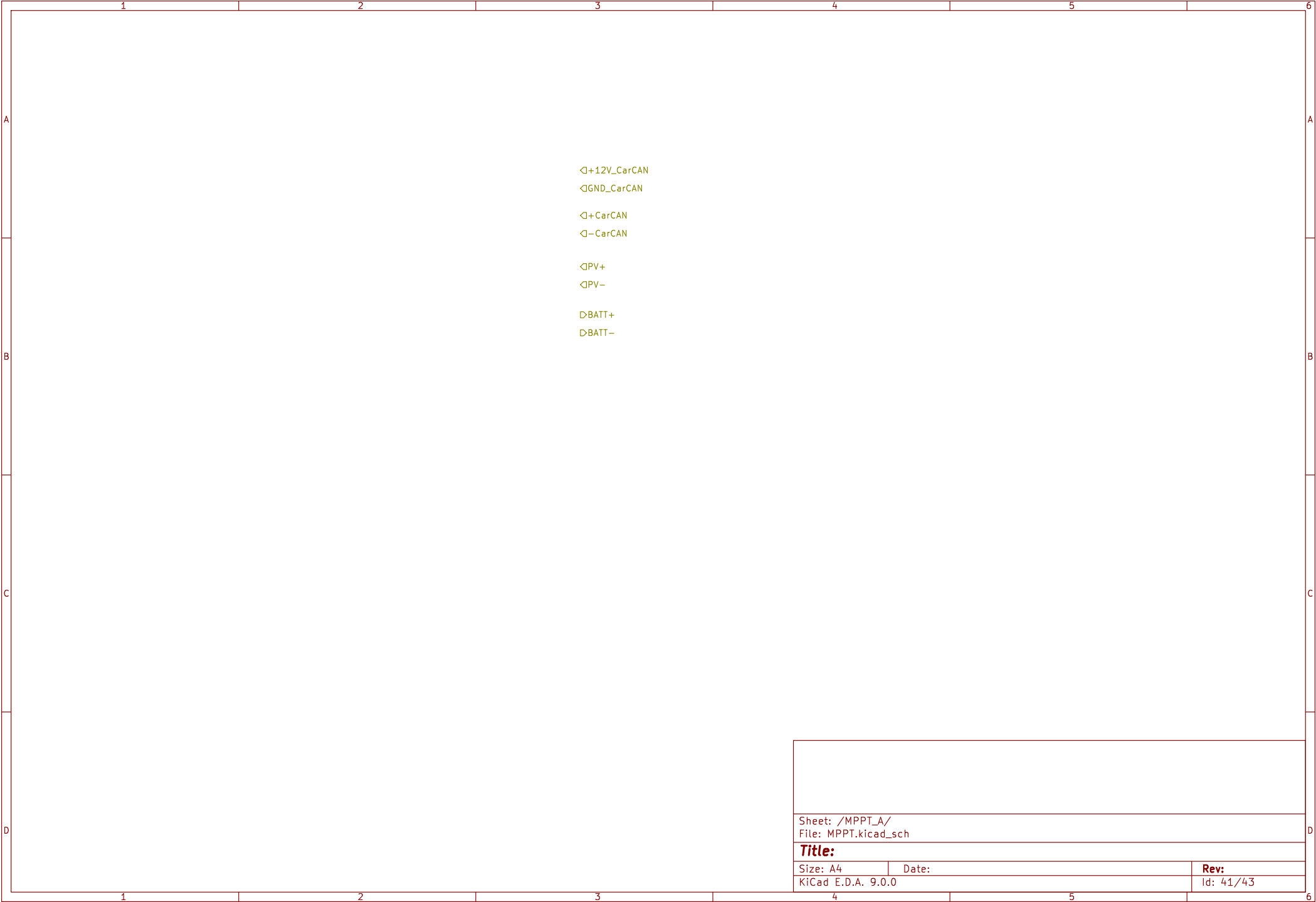
Sheet: /Steering_Board/ File: Steering_Board.kicad_sch		
Title:		
Size: A4	Date:	Rev:
KiCad E.D.A. 9.0.0	Id: 38/43	





Sheet: /MPPT_C/ File: MPPT.kicad_sch		
Title:		
Size: A4	Date:	Rev:
KiCad E.D.A. 9.0.0	Id: 40/43	





1	2	3	4	5	6
A					A
B					B
C					C
D					D
1	2	3	4	5	6

◇XBee\_LTE  
◇XBee\_RF  
◇GPS

Sheet: /Telemetry Daughter (Wireless Transceiver)/ File: Telemetry_Daughter.kicad_sch		
<b>Title:</b>		
Size: A4	Date:	<b>Rev:</b>
KiCad E.D.A. 9.0.0		Id: 42/43

