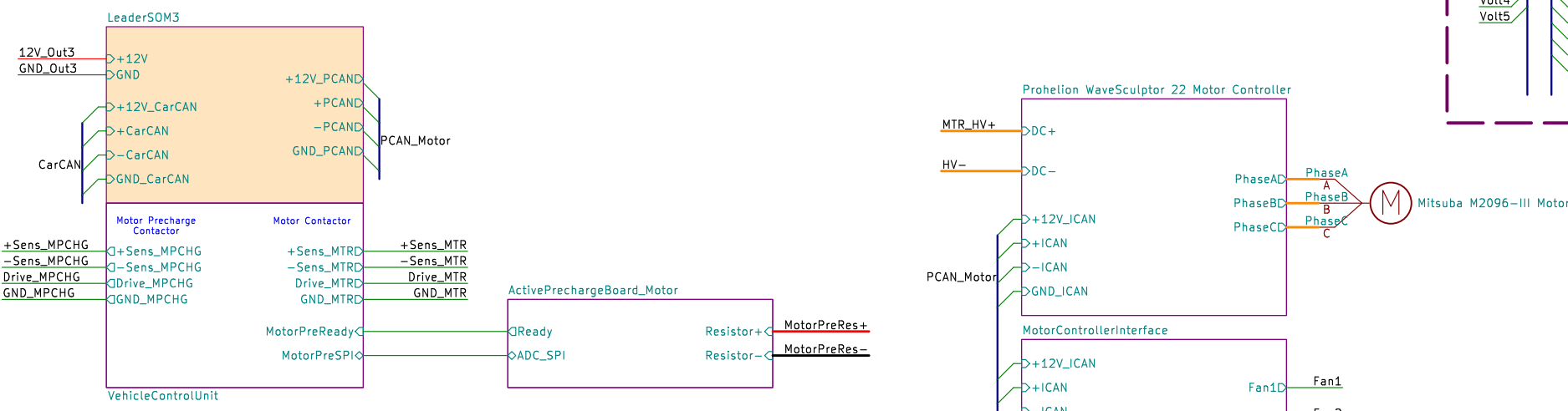
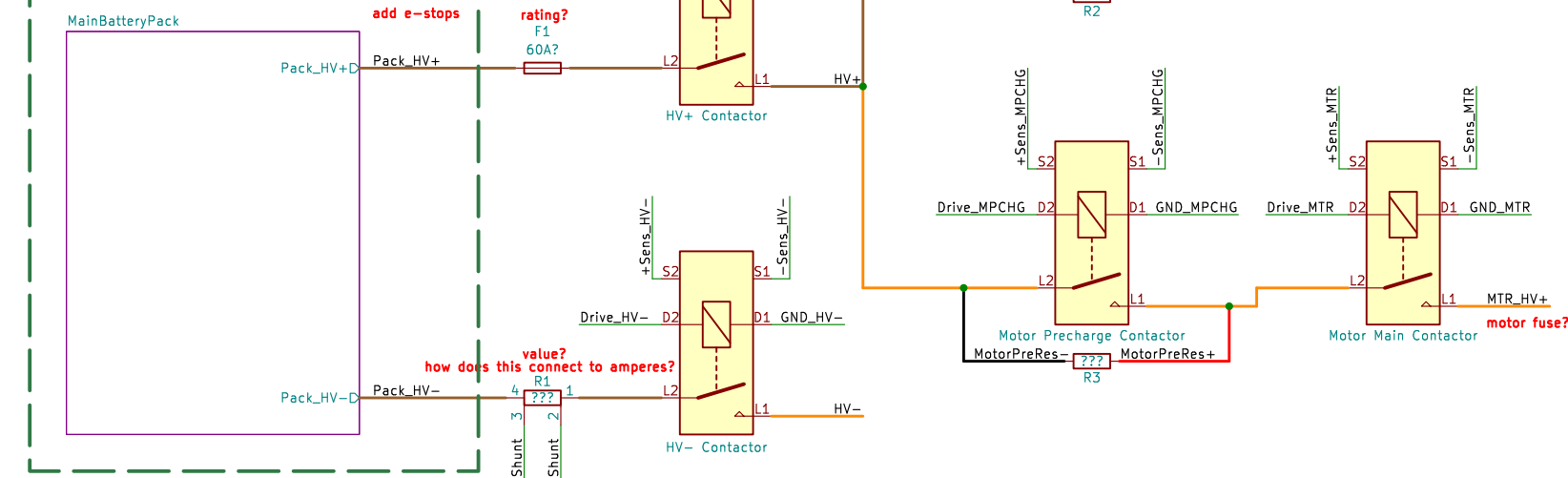
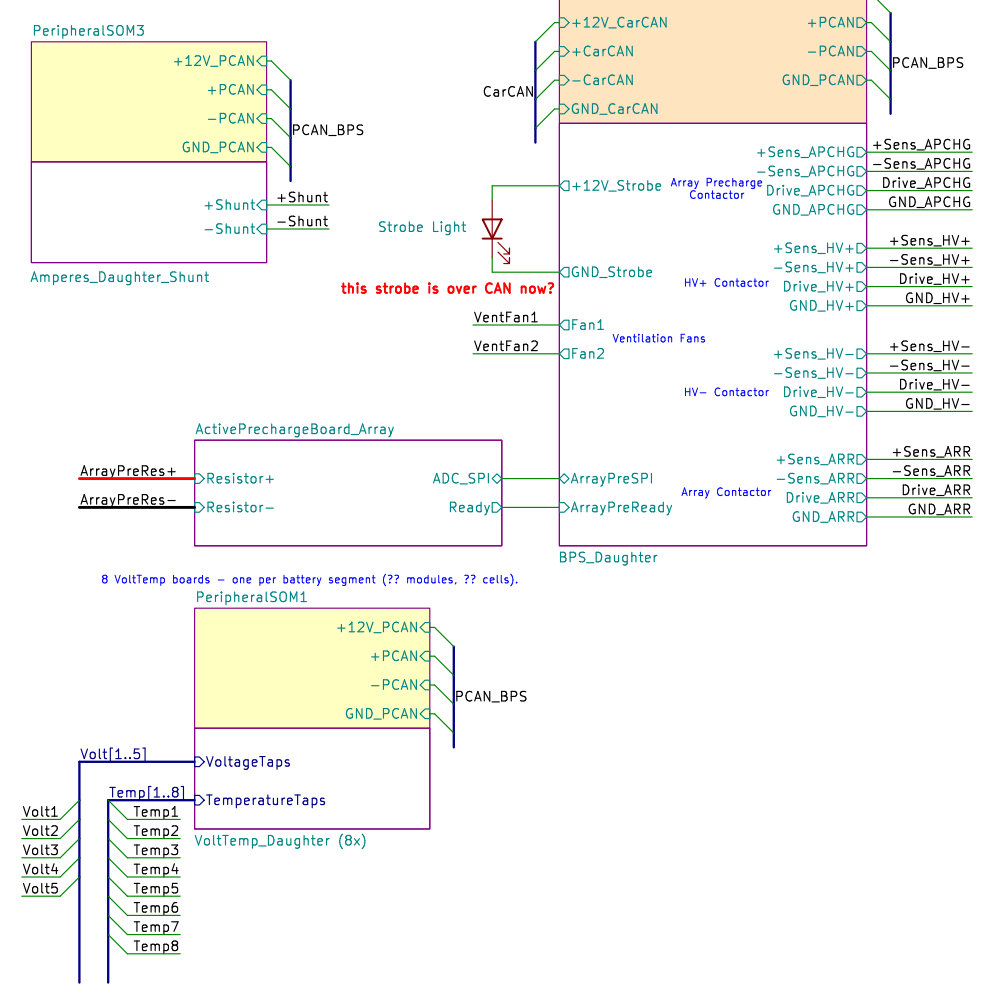


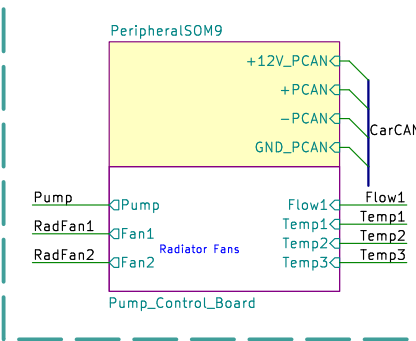
HV Power Distribution



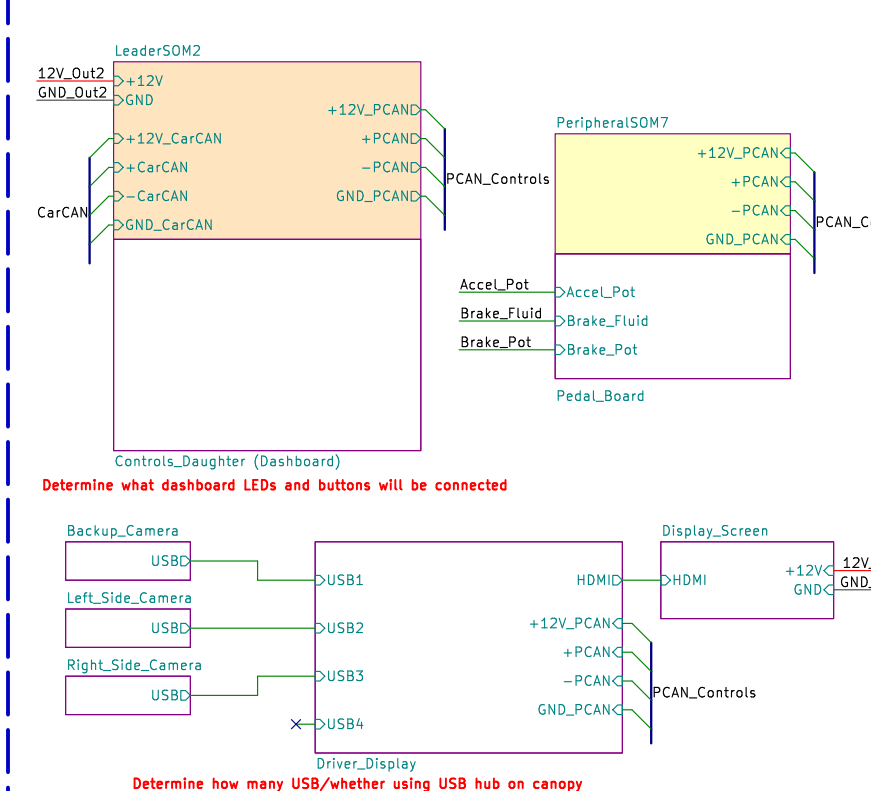
BPS



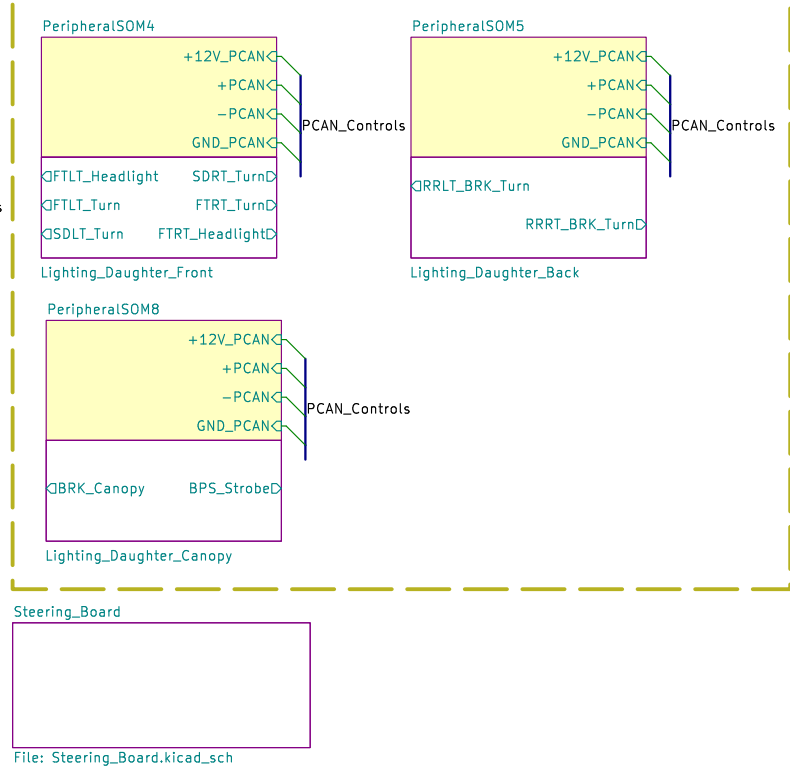
Cooling



Driver Controls



| Lighting



TODO:

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

Wire Legend:

- Custom Bus Bar (cross-section?)
- 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

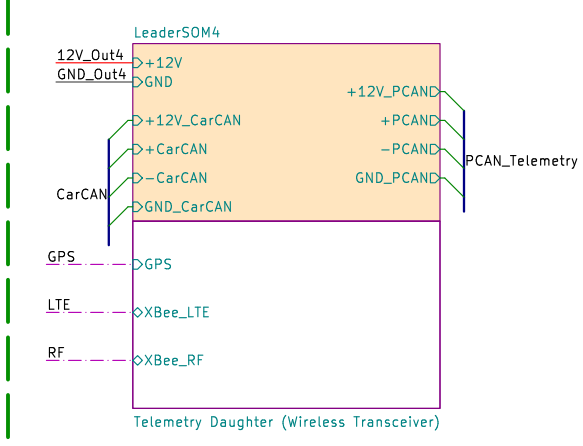
PCAN_Controls

PCAN_Telemetry

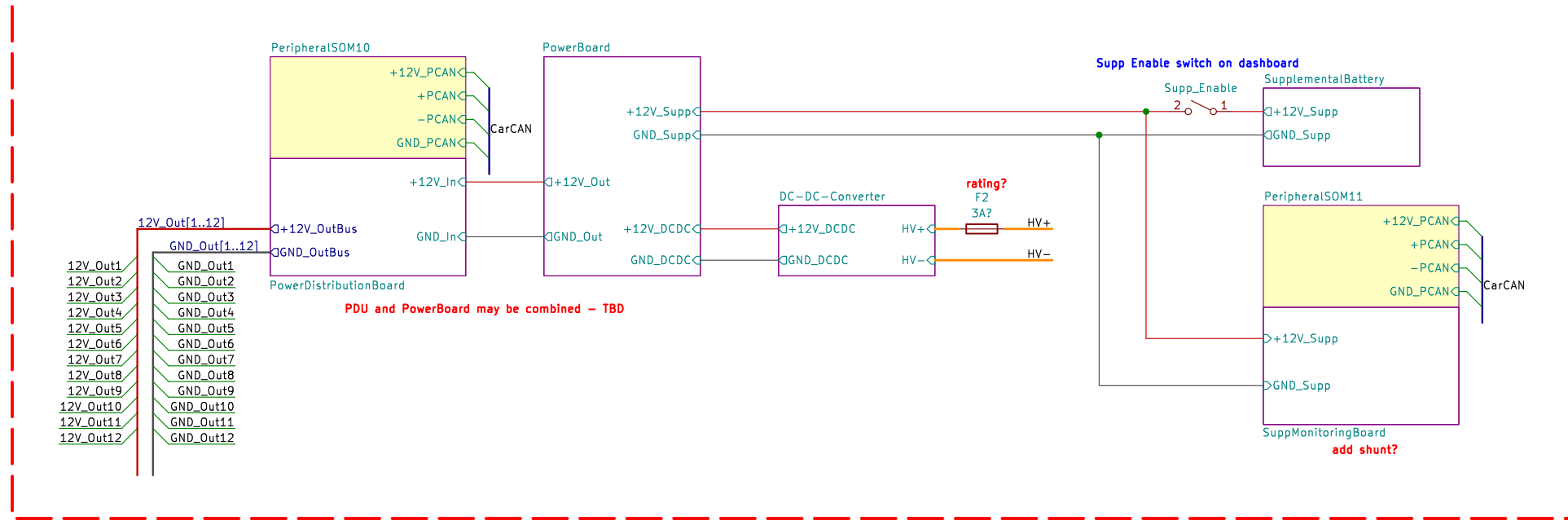
PCAN_Motor

Telemetry

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

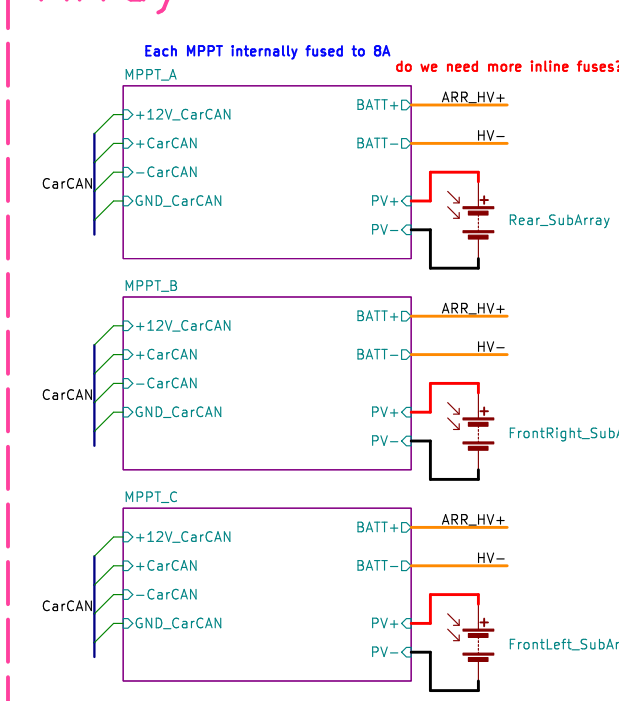


LV Power Distribution



Array

add blackbody A/C (temp/irradiance sensors)





123456

A

B

C

D

◁Resistor+

◁Resistor−

▷Ready

◇ADC_SPI

Sheet: /ActivePrechargeBoard_Motor/
File: ActivePrechargeBoard.kicad_sch

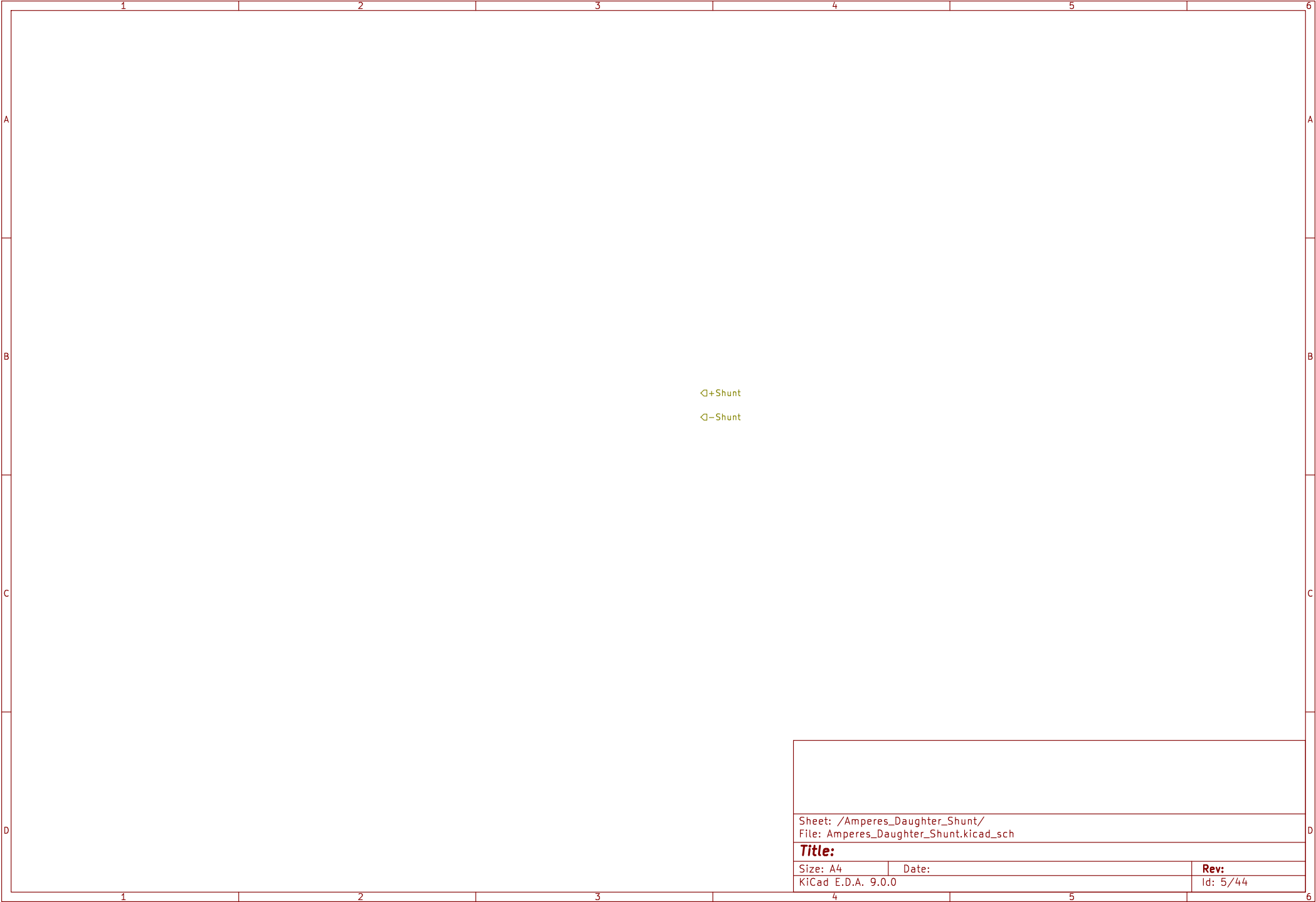
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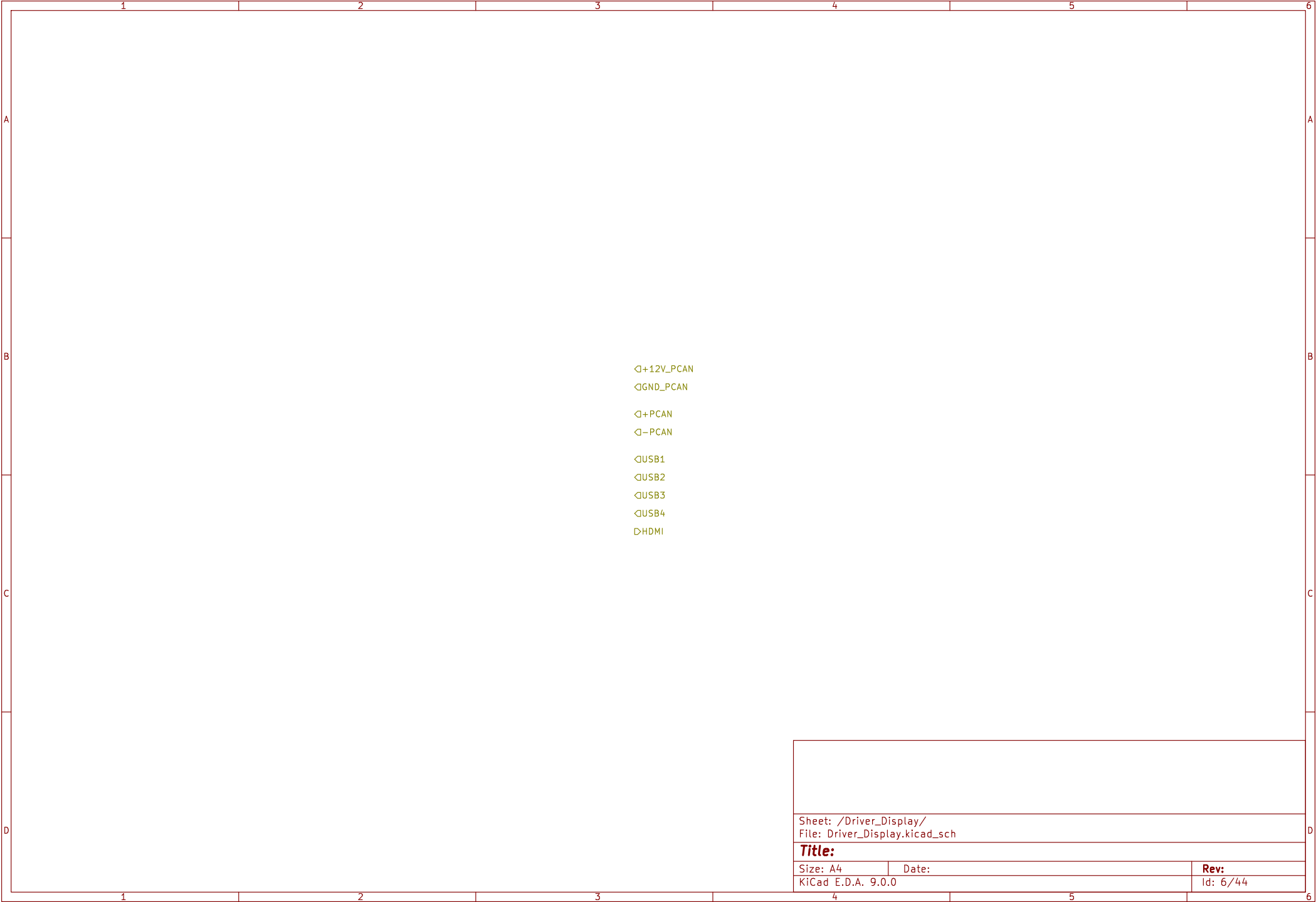
Size: A4Date:KiCad E.D.A. 9.0.0

Rev:Id: 3/44

6







$\triangleleft +12V_PCAN$

$\triangleleft GND_PCAN$

$\triangleleft +PCAN$

$\triangleleft -PCAN$

$\triangleleft USB1$

$\triangleleft USB2$

$\triangleleft USB3$

$\triangleleft USB4$

$\triangleright HDMI$

Sheet: /Driver_Display/
File: Driver_Display.kicad_sch

Title:

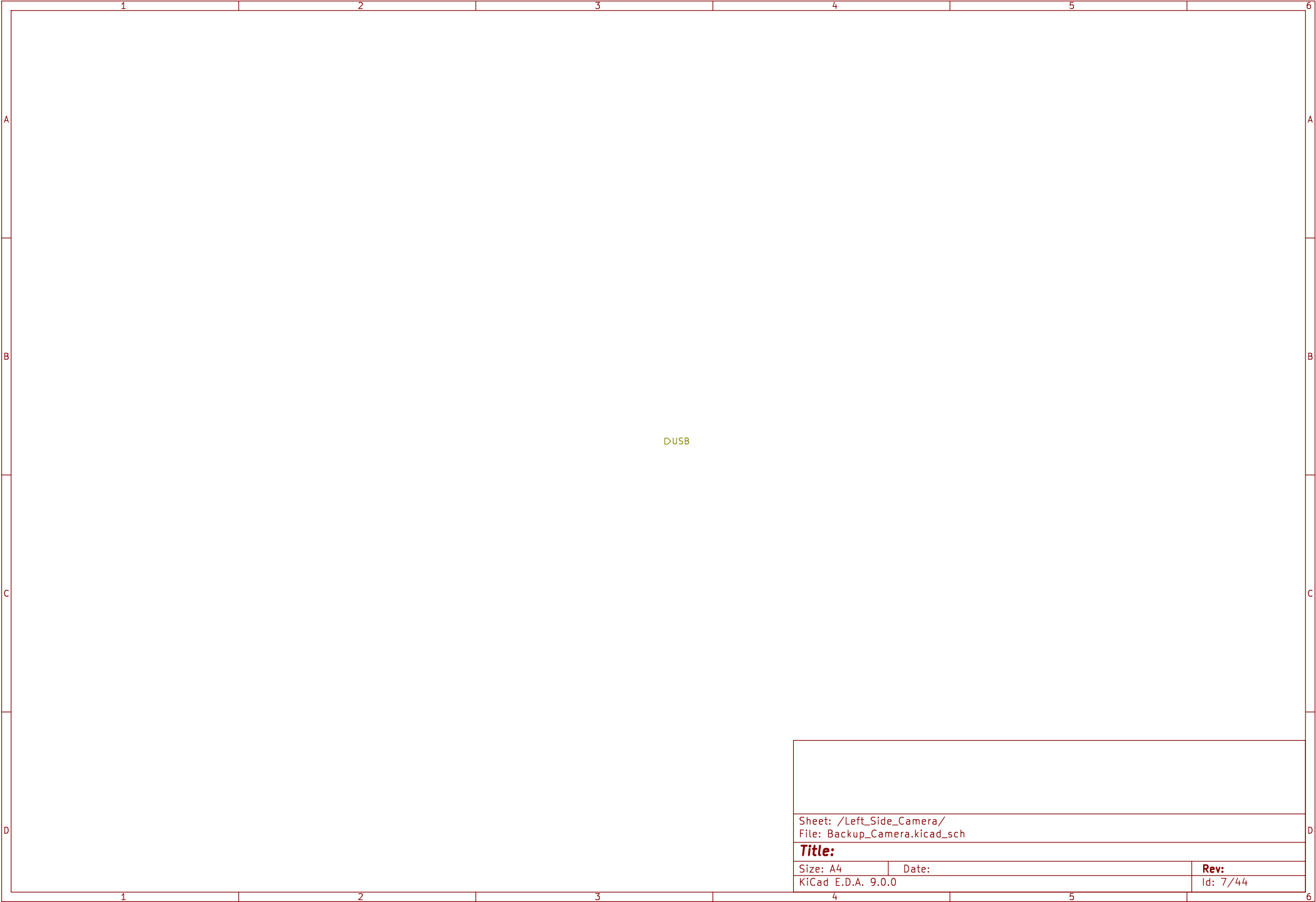
Size: A4

Date:

Rev:

KiCad E.D.A. 9.0.0

Id: 6/44



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: 8/44

	1	2	3	4	5	6
A						
			D+Sens_APCHG DDrive_APCHG D-Sens_APCHG DGND_APCHG			
B			D+Sens_HV+ DDrive_HV+ D-Sens_HV+ DGND_HV+			
			D+Sens_HV- DDrive_HV- D-Sens_HV- DGND_HV-			
C			D+12V_Strobe DGND_Strobe D+Sens_ARR DDrive_ARR D-Sens_ARR DGND_ARR DFan1 DFan2 QArrayPreSPI QArrayPreReady			
D						
	1	2	3	4	5	6

Sheet: /BPS_Daughter/ File: BPS_Daughter.kicad_sch		
Title:		
Size: A4	Date:	Rev:
KiCad E.D.A. 9.0.0	Id: 9/44	

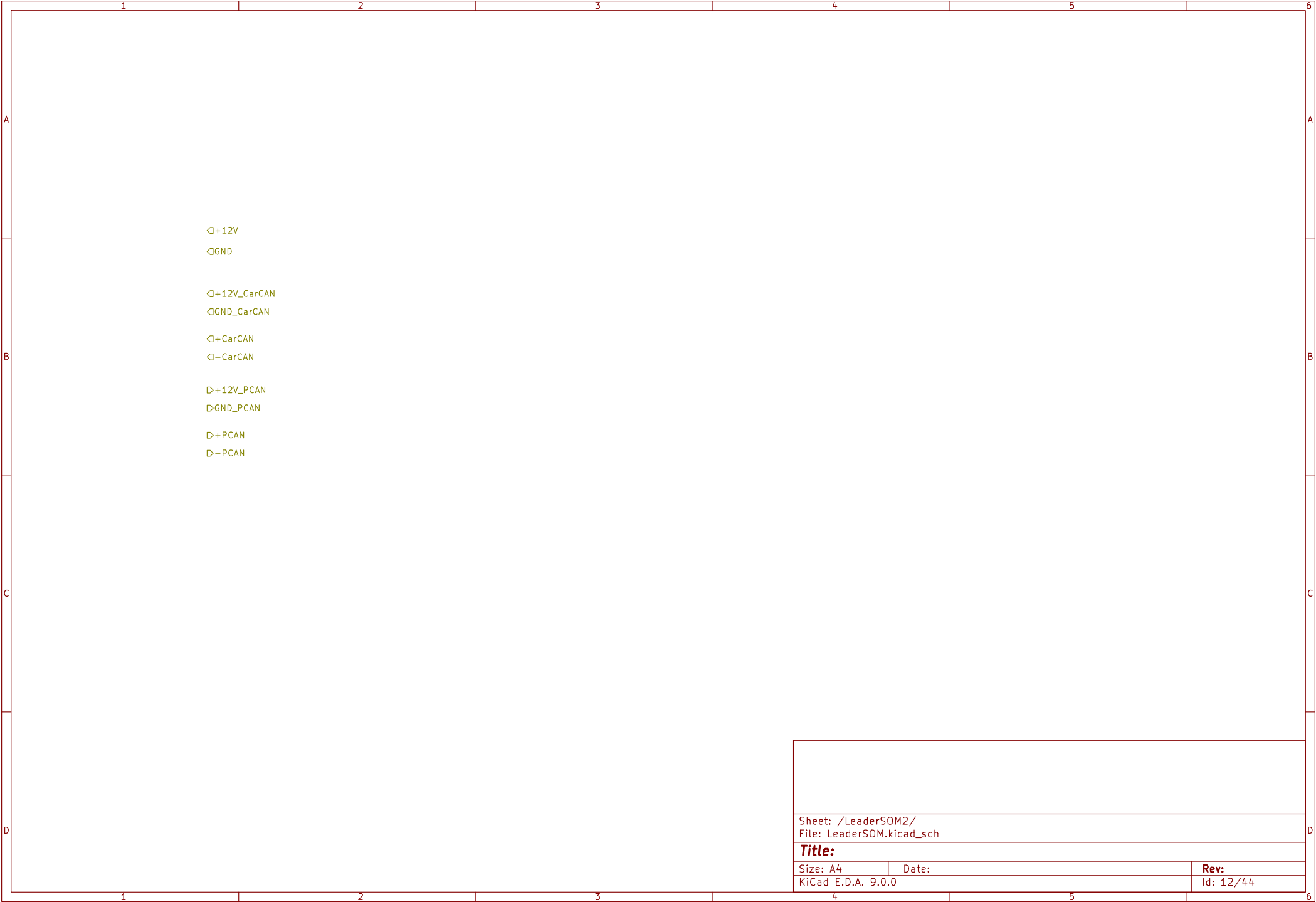


1	2	3	4	5	6
A					A
B					B
C					C
D					D
1	2	3	4	5	6

◀VoltageTaps

◀TemperatureTaps

Sheet: /VoltTemp_Daughter (8x)/ File: VoltTemp_Daughter.kicad_sch		
Title:		
Size: A4	Date:	Rev:
KiCad E.D.A. 9.0.0		Id: 11/44



	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: 13/44



	1	2	3	4	5	6
A						
B						
C						
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: 15/44







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:KiCad E.D.A. 9.0.0

Rev:Id: 20/44

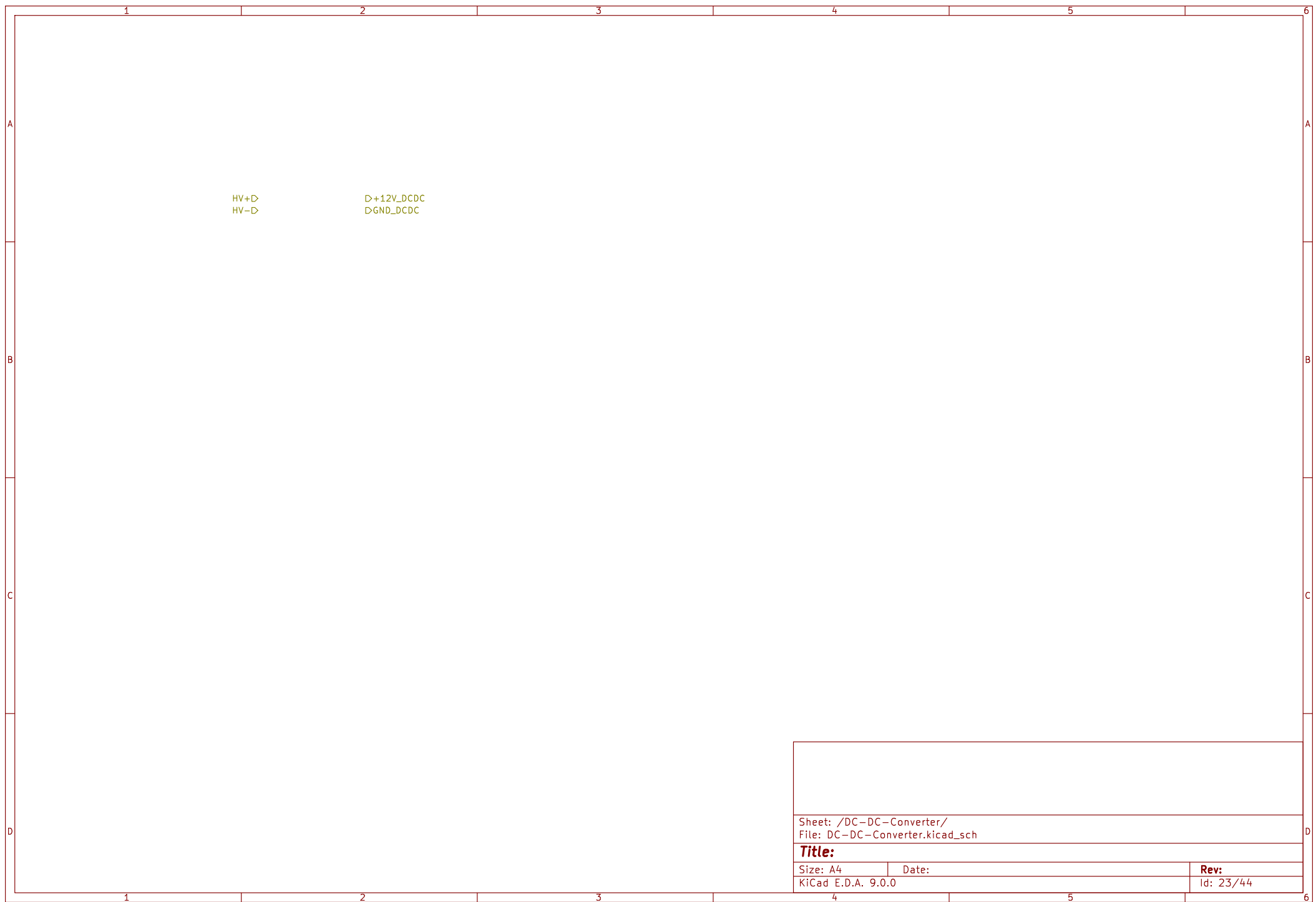


The diagram shows a battery pack layout on a grid. The grid has columns labeled 1 to 6 and rows labeled A to D. The components are placed as follows:

- At (2, B): HV+ and HV-.
- At (1, C): Temp_+5V, Temp_Sense, and Temp_GND.
- At (1, D): Volt_RowA, Volt_RowA_GND, Volt_RowB, Volt_RowB_GND, Volt_RowC, Volt_RowC_GND, Volt_RowD, and Volt_RowD_GND.

A title block is located at the bottom right, containing the following information:

Sheet: /MainBatteryPack/ File: PrimaryBatteryPack.kicad_sch		
Title:		
Size: A4	Date:	Rev:
KiCad E.D.A. 9.0.0		Id: 22/44



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: 24/44



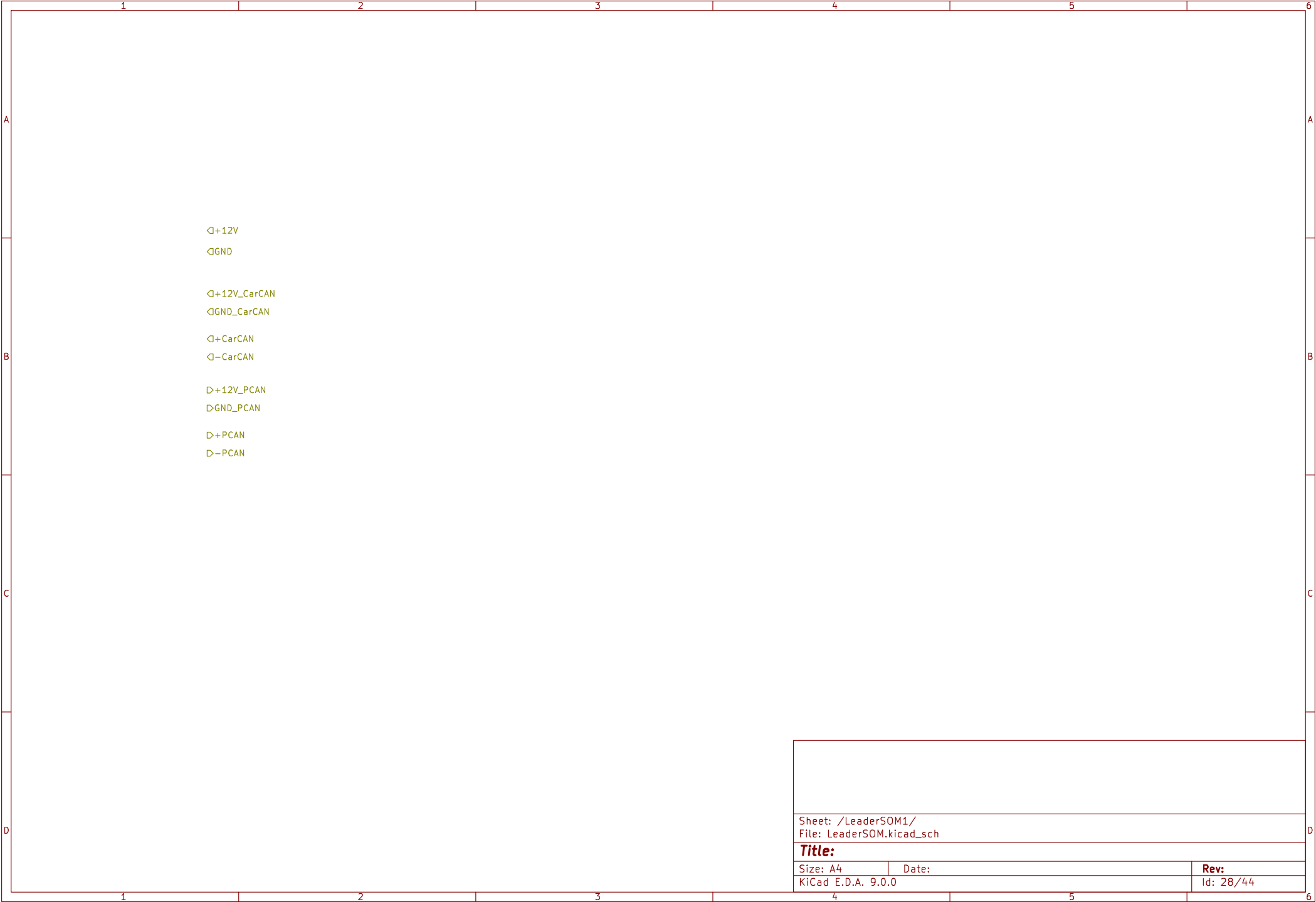


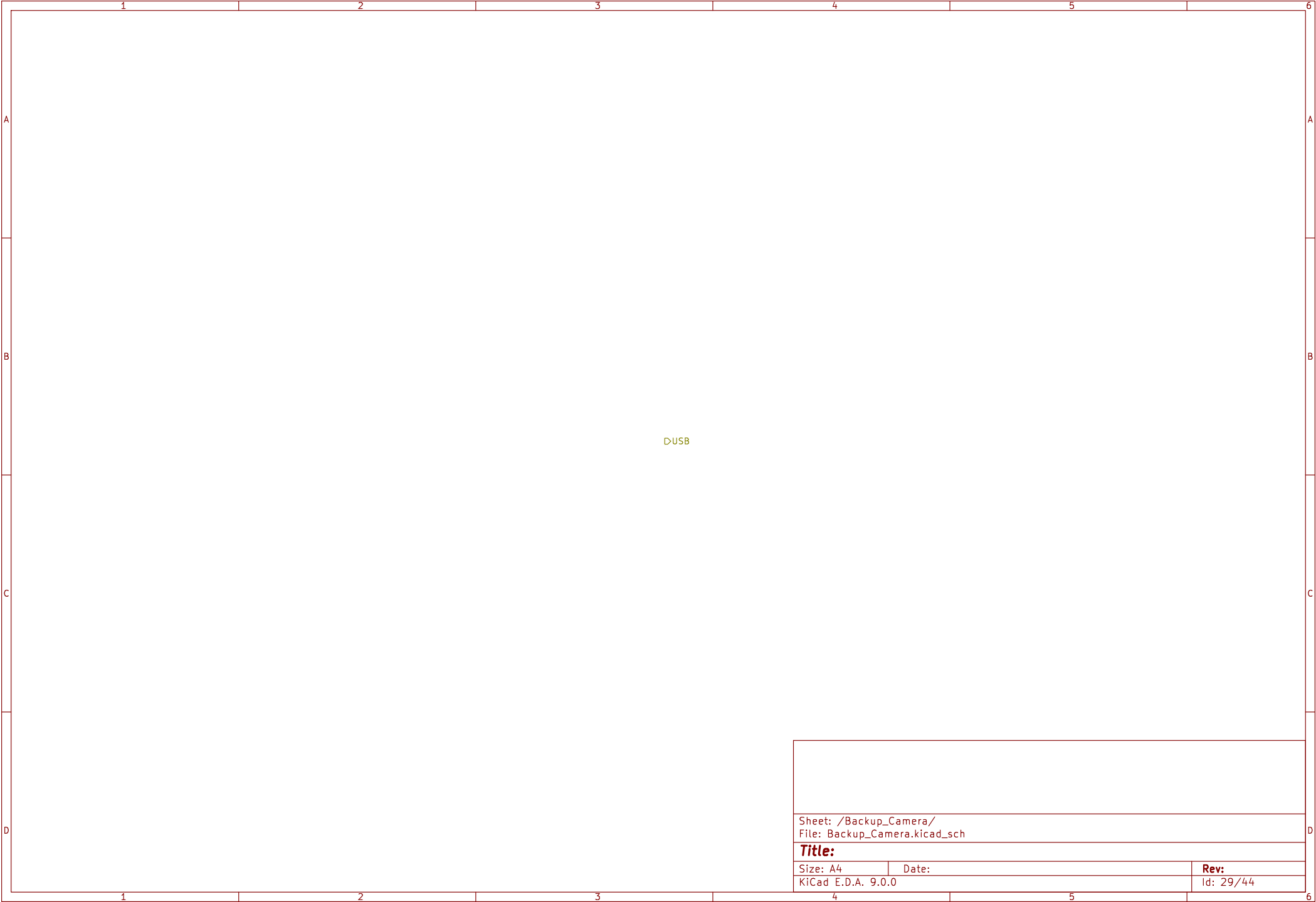
◊+12V_ICAN
◊+ICAN
◊-ICAN
◊GND_ICAN
◊DC+
◊DC-
▷PhaseA
▷PhaseB
▷PhaseC

Sheet: /Prohelion WaveSculptor 22 Motor Controller/
File: MotorController.kicad_sch

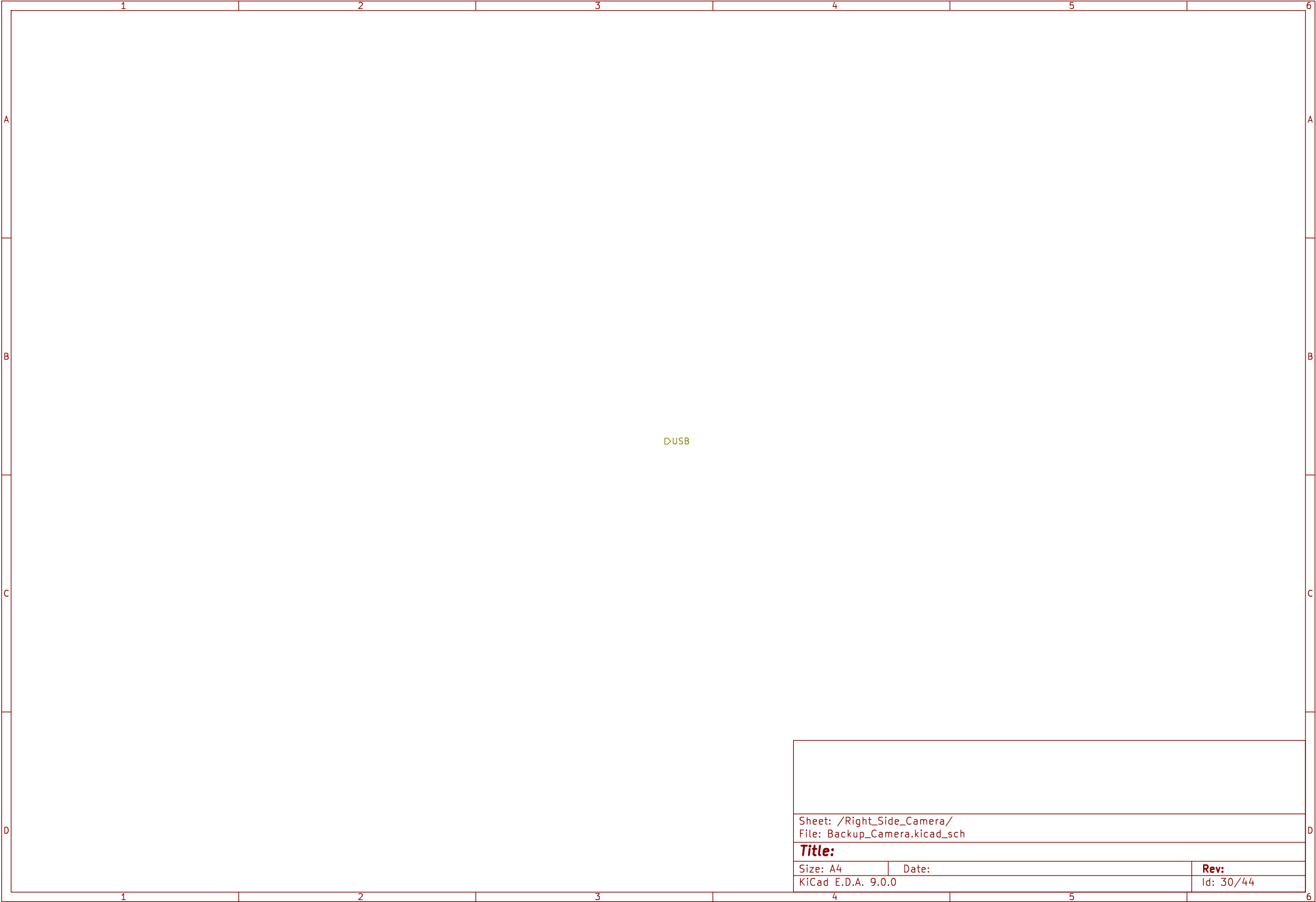
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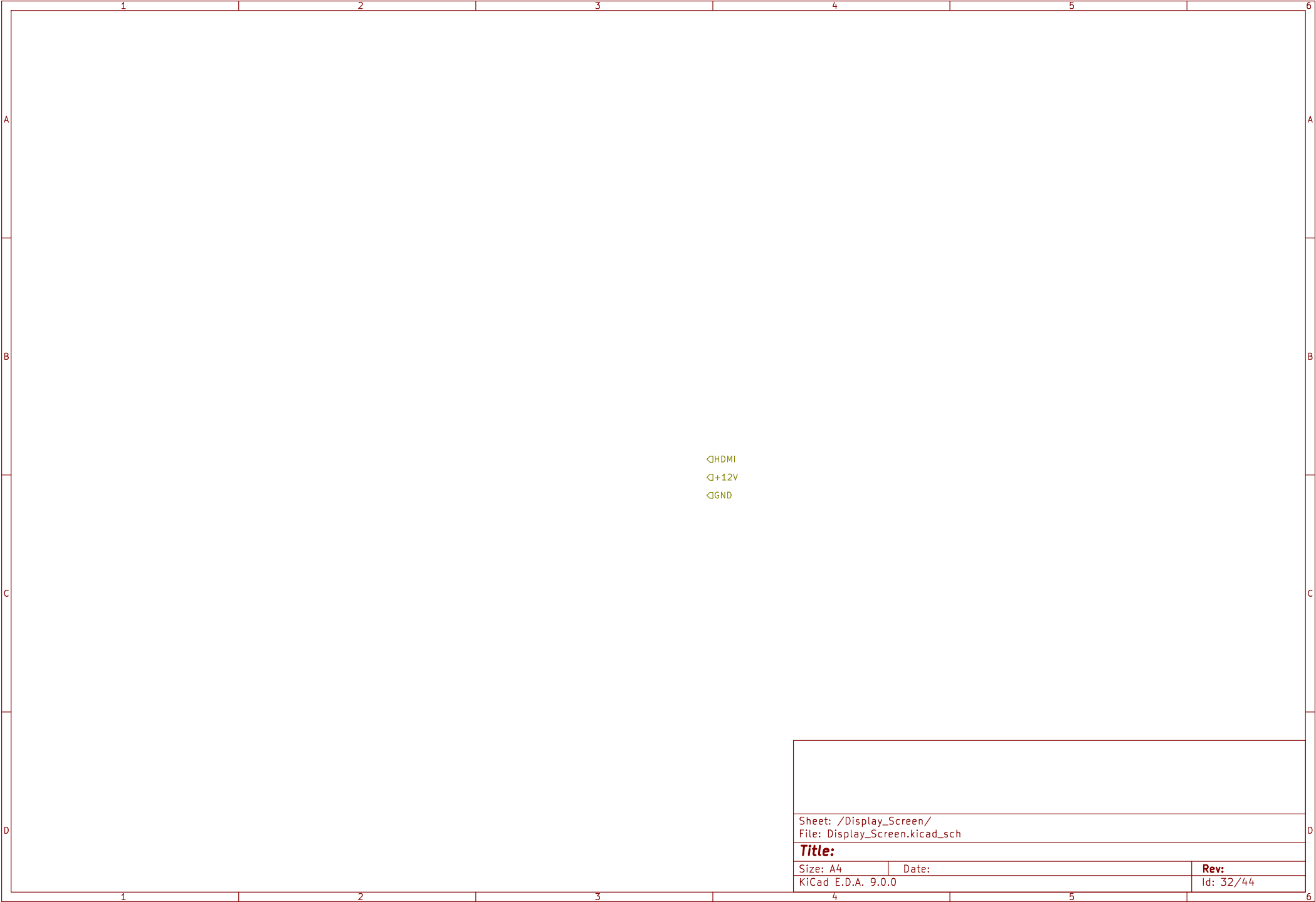
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File: Backup_Camera.kicad_sch		
Title:		
Size: A4	Date:	Rev:
KiCad E.D.A. 9.0.0	Id: 29/44	



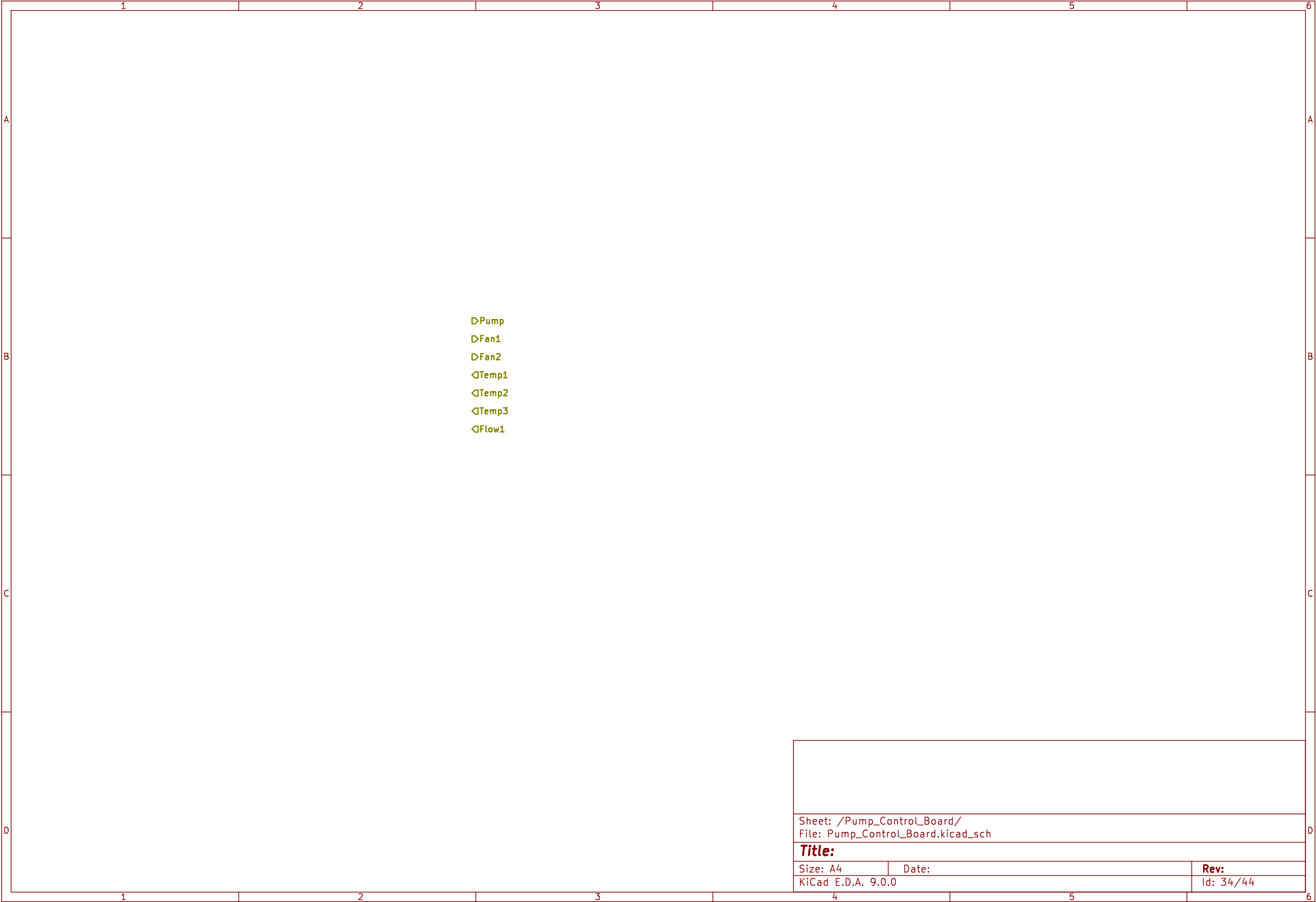
1	2	3	4	5	6
A					A
B					B
C					C
D					D
1	2	3	4	5	6

▷BRK_Canopy
▷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: 31/44	







Sheet: /Pump_Control_Board/ File: Pump_Control_Board.kicad_sch		
Title:		
Size: A4	Date:	Rev:
KiCad E.D.A. 9.0.0	Id: 34/44	



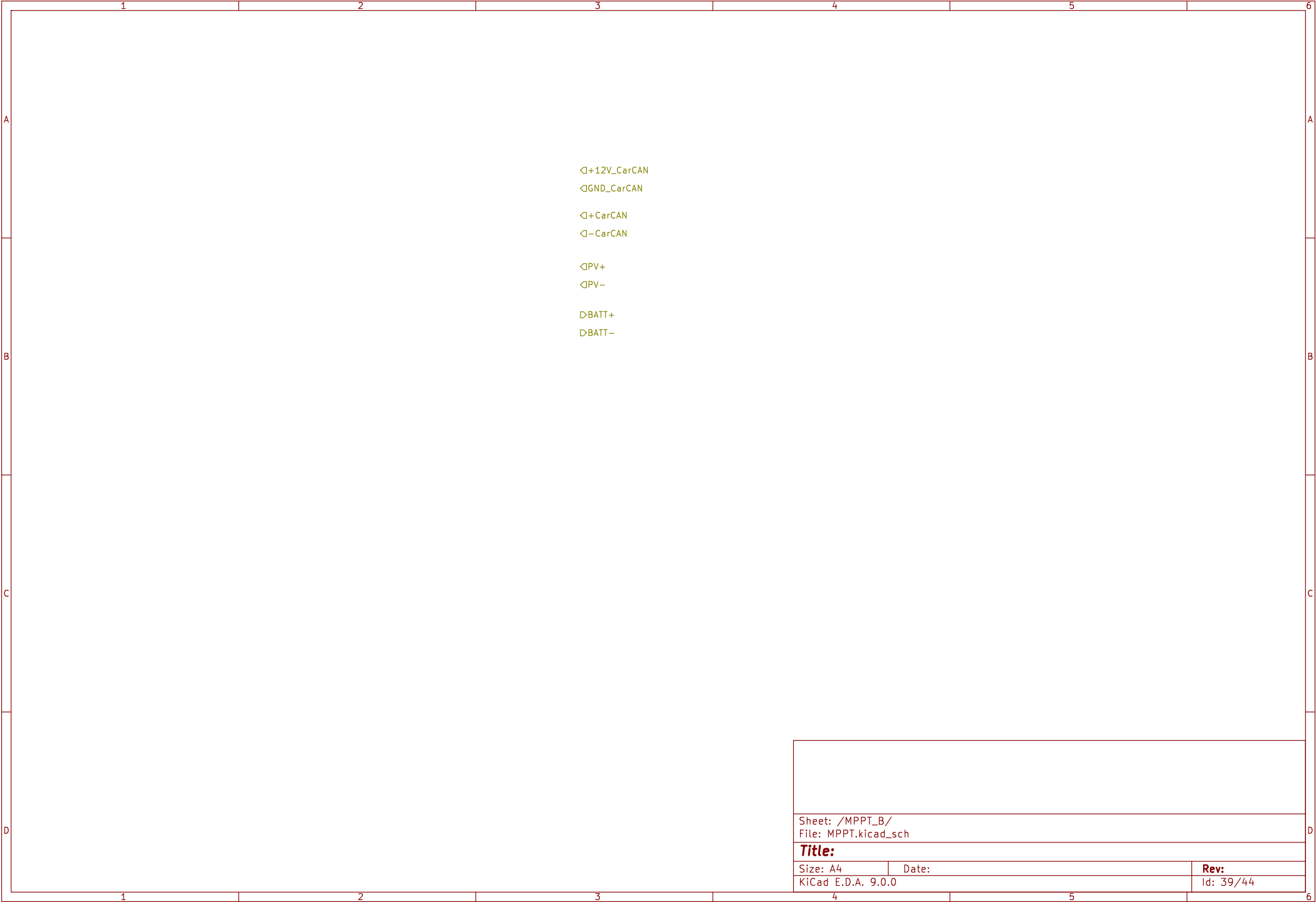


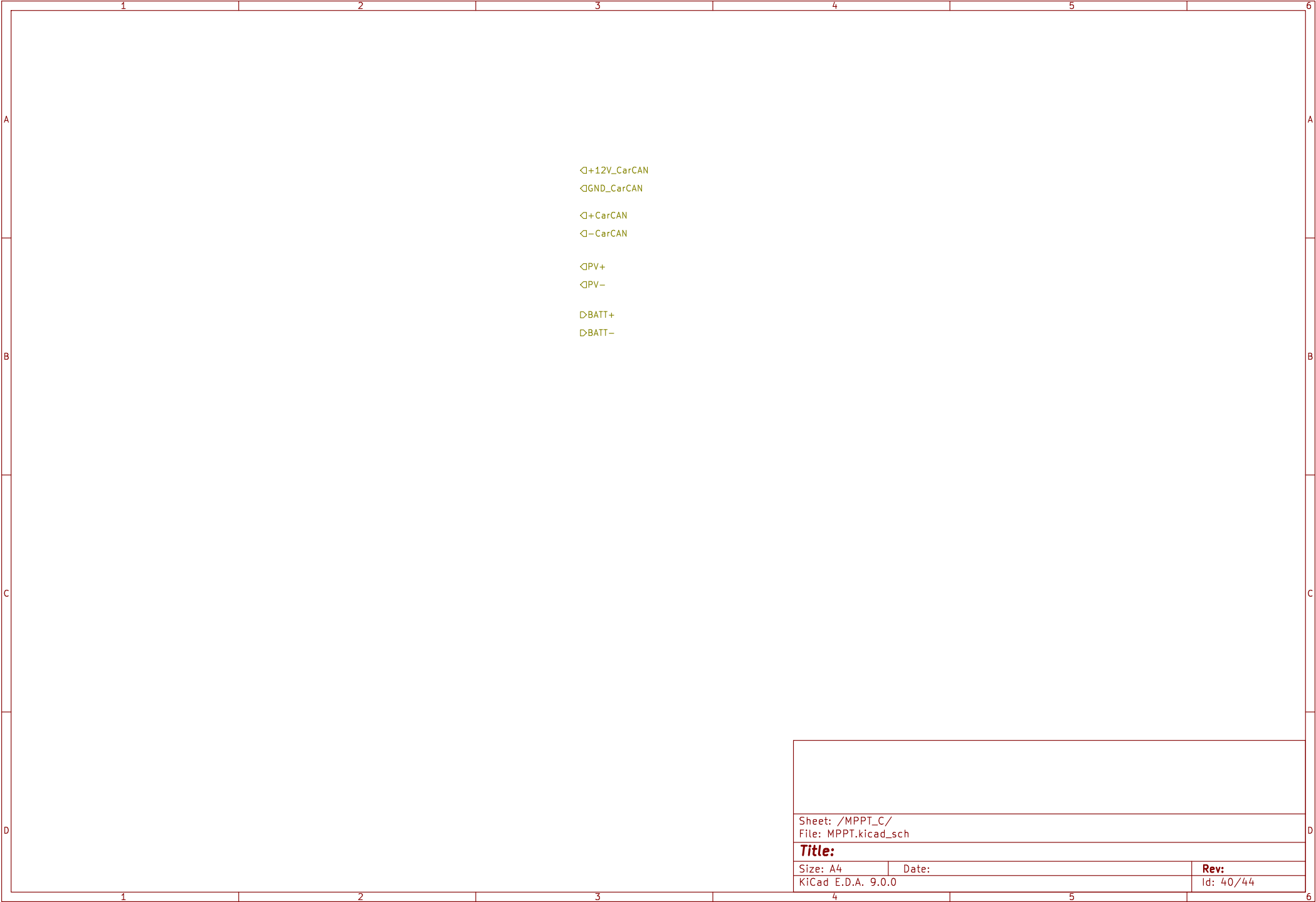




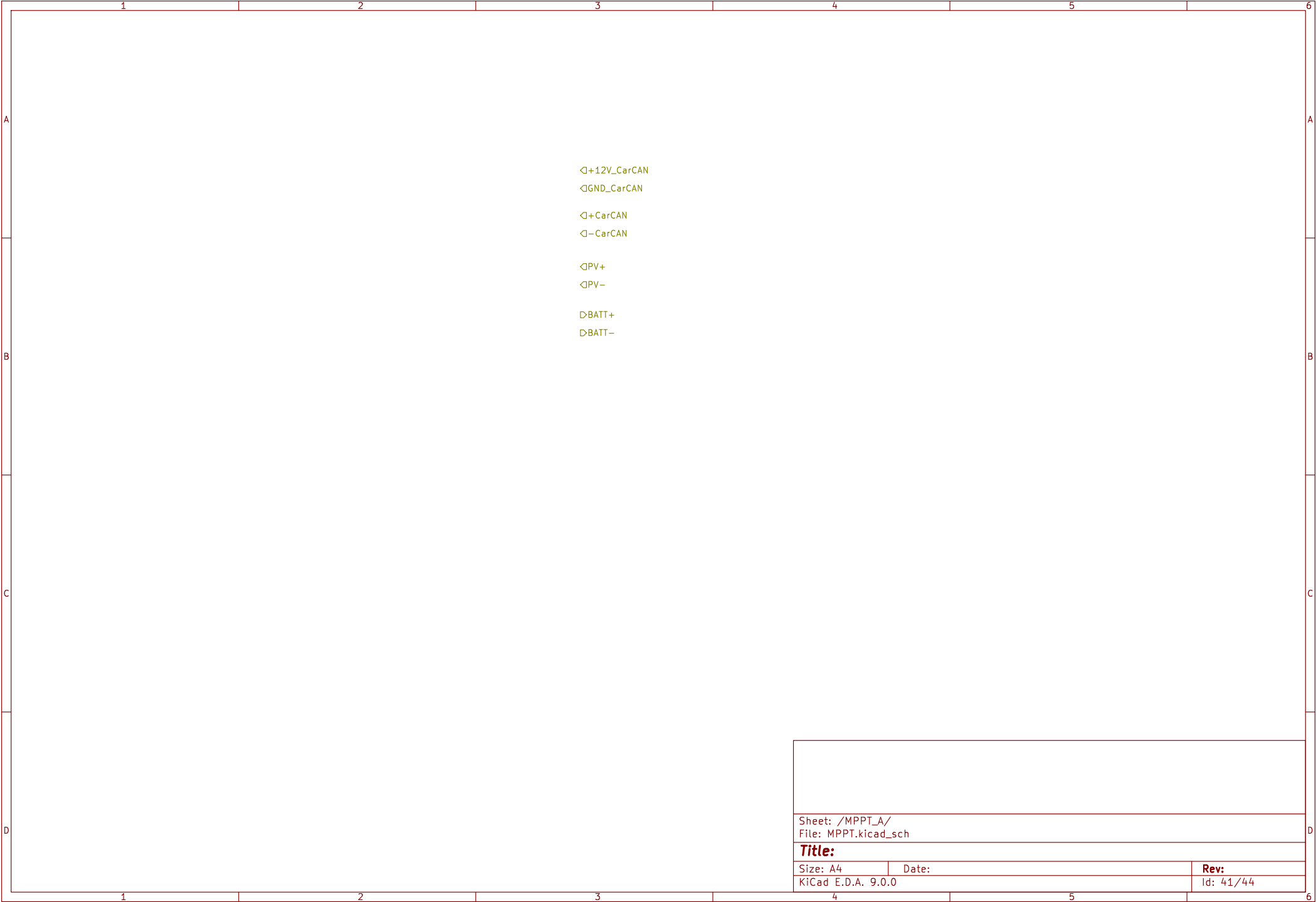
1	2	3	4	5	6
A					A
B					B
C					C
D					D
1	2	3	4	5	6

Sheet: /Steering_Board/ File: Steering_Board.kicad_sch		
Title:		
Size: A4	Date:	Rev:
KiCad E.D.A. 9.0.0	Id: 38/44	





Sheet: /MPPT_C/ File: MPPT.kicad_sch		
Title:		
Size: A4	Date:	Rev:
KiCad E.D.A. 9.0.0		Id: 40/44



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		
Title:		
Size: A4	Date:	Rev:
KiCad E.D.A. 9.0.0	Id: 42/44	

