

Module Types	
PWR_INPUT	Power Input Modules
	Modules intended for receiving and providing power to downstream DC-DC Convesion Modules. This includes receiving power from different sources, including batteries.
File: PWR_INPUT.kicad_sch	
POWER_OUTPUT	Power Output Modules
	Modules intended for providing power to a device. These modules should be capable of attaching to any module provided in the POWR_INPUT section.
File: untitled.kicad_sch	

Open Hardware
Design By: Daniel Manla
DanWave Design

Sheet: /
File: ModularPSU.kicad_sch

Title: Modular PSU

Size: A4	Date:	Rev:
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Miscellaneous Power Input Modules	
ASAP_PWR_IN	As-Simple-As-Possible Power Input
	Provides a barrel-jack input, a switch, and a fuse for providing basic control and protection of the power input. LED's are provided for debugging the fuse, switch, and barrel-jack input.
File: ASAP_PWR_IN.kicad_sch	
POE_PWR_IN	Power-Over-Ethernet Power Input
	Provides power from a POE source. Due to the high voltage of POE, a DC-DC Converter is included to convert the voltage to 5V. Also provides ethernet -> SPI bridge.
File: POE_PWR_IN.kicad_sch	
SOLAR_PWR_IN	Solar Power Input
	Provides power from a solar panel. Module is equipped with MPPT to optimize solar applications.
File: SOLAR_PWR_IN.kicad_sch	
OBD2_PWR	OBD2 Power
	Provides a power input to allow a device to be attached to a vehicle's OBD2 port. Also includes SPI enabled CAN interface controller. Includes power supervisor to prevent over-discharge of 12V and 24V vehicle batteries.
File: OBD2_PWR.kicad_sch	

USB Power Input Modules	
USB_C_PWR_IN	Basic USB-C Power
	USB-C Power Input. Configured to sink up to 2A at 5V.
File: USB_C_PWR_IN.kicad_sch	
USB_PD_PWR_IN	USB PD 3.0 Power
	USB-C PD 3.1 Power Input using the TPS2575S. Configuration of the IC is provided using switches. USB-PD Controller is accessible using I2C.
File: USB_PD_PWR_IN.kicad_sch	

Battery Charging Modules	
ASAP_BATT	Smart Battery Charger
	Provides a bidirectional Buck-Boost Convert to enable sink and source battery applications. Up to 5A of charging. Up to 5S Batteries. Battery Charger is accessible using I2C.
File: ASAP_BATT.kicad_sch	
ACAP_BATT	Basic Battery Charger
	Provides a basic linear battery charger. LED's and GPIO are provided to indicate status. Status includes whether charging is occurring and if the input voltage is high enough for charging
File: ASAP_BATT_CHEAP.kicad_sch	

Passive Utility Modules	
BreadBoardAdapter	Prototyping Breadboard Adapter
	Bridges the output of any module to the power-rail of a typical breadboard.
File: BreadBoardAdapter.kicad_sch	
Spacer	PSU Module Spacer
	Due to some modules being 2 units in size rather than 1, it is necessary to provide a spacer in case two modules of different sizes are used. This module also aids in providing fanout through the auxiliary power connectors of a neighboring unit.
File: Spacer.kicad_sch	

Open Hardware
Design By: Daniel Manla
DanWave Design

Sheet: /PWR_INPUT/
File: PWR_INPUT.kicad_sch

Title: Modular PSU

Size: A4

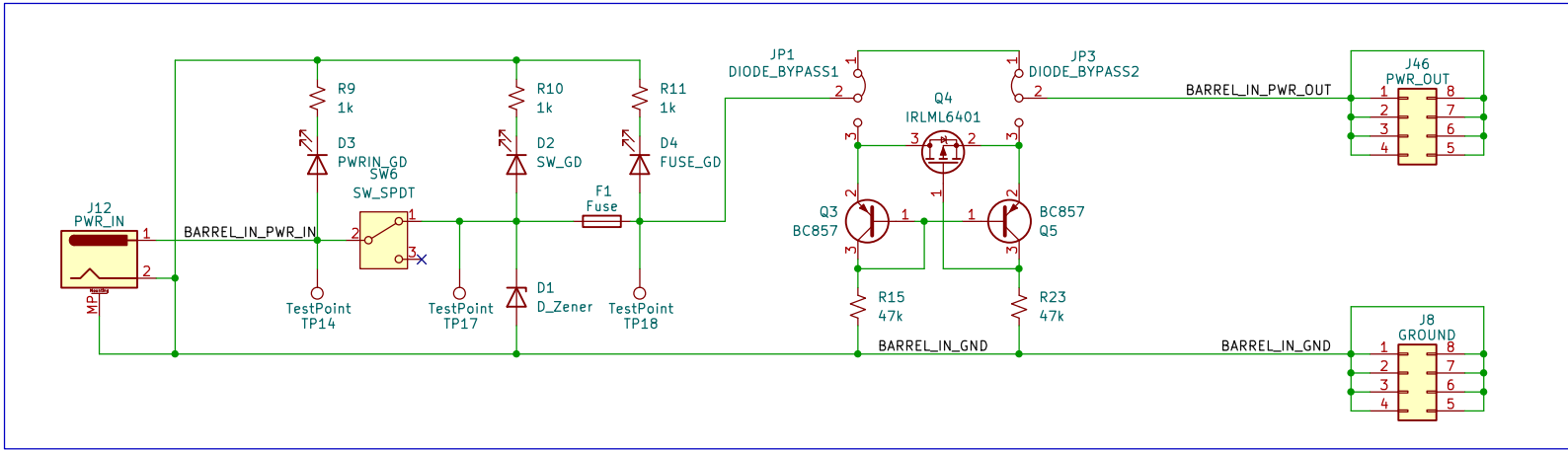
Date: 2025-05-13

Rev: A1

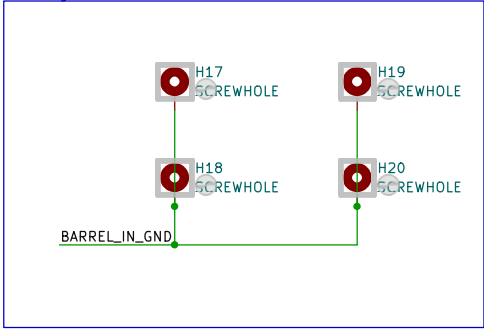
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Id: 2/15

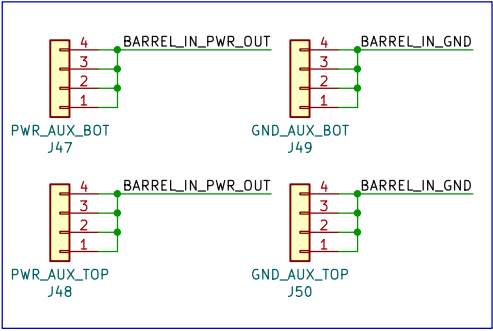
9V - 24V Power Barrel Power Path



Mounting Holes



Standard Modular PSU Power Paths



Open Hardware
Design By: Daniel Manla
DanWave Design

Sheet: /PWR_INPUT/ASAP_PWR_IN/
File: ASAP_PWR_IN.kicad_sch

Title: Modular PSU

Size: A4

Date:

KiCad E.D.A. 9.0.2

Rev:

Id: 3/15

[illegible]

Diagram illustrating the connection for DCDC5_V0_GND. The connection points are labeled H13 SCREW HOLE, H14 SCREW HOLE, H15 SCREW HOLE, and H16 SCREW HOLE. The connection is made via green wires to a common ground point labeled DCDC5_V0_GND.

J6
Conn_01x02

2	DCDC_5V0_PG
1	DCDC_5V0_EN

TP5 TestPoint — DCDC_5V0_IN
TP6 TestPoint — DCDC_5V0_OUT
TP7 TestPoint — DCDC_5V0_PG
TP10 TestPoint — DCDC_5V0_EN
TP15 TestPoint — DCDC_5V0_CC

Rev:
Id: 4/15

[illegible]

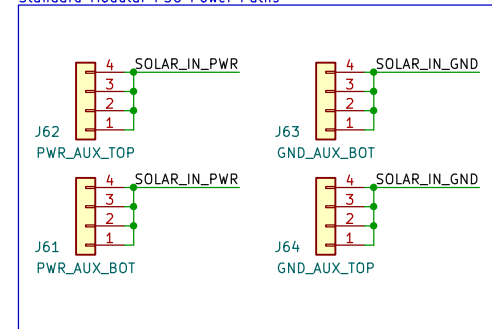
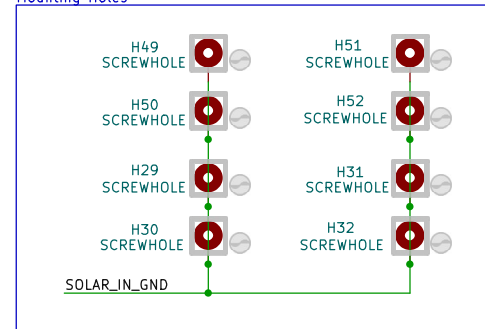
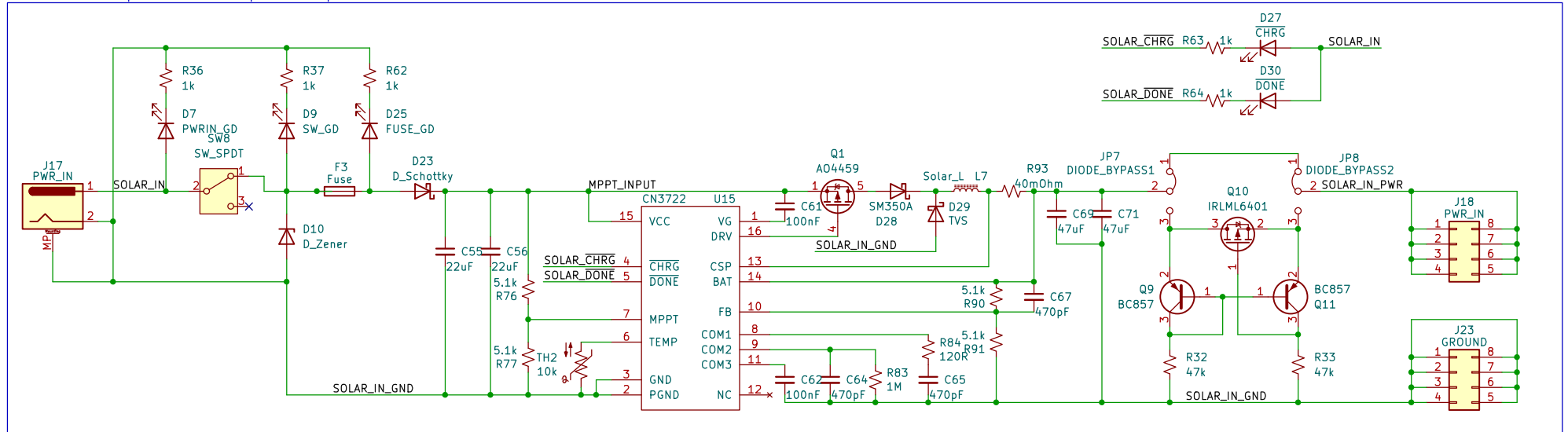
The diagram shows a PoE module with a green line labeled POE_IN_GND connected to a green circle labeled H26. Below H26 is a green circle labeled H28. To the right of H26 is a green circle labeled H25, and below it is a green circle labeled H27. To the right of H25 is a green circle labeled H22, and below it is a green circle labeled H24. To the right of H22 is a green circle labeled H21, and below it is a green circle labeled H23. Each of these green circles is connected to a red circle labeled SCREW_HOLE. The connections are as follows: POE_IN_GND to H26, H26 to H25, H25 to H22, H22 to H21, H28 to H27, H27 to H24, H24 to H23, and H21 to H23. There are also vertical connections between H26 and H28, H25 and H27, H22 and H24, and H21 and H23.

Diagram showing four pin headers for the PWR module:

- J55 PWR_AUX_BOT**: 4 pins. Pin 4 is labeled POE_IN_PWR_OUT. Pins 3, 2, and 1 are green.
- J58 GND_AUX_BOT**: 4 pins. Pin 4 is labeled POE_IN_GND. Pins 3, 2, and 1 are green.
- J57 PWR_AUX_TOP**: 4 pins. Pin 4 is labeled POE_IN_PWR_OUT. Pins 3, 2, and 1 are green.
- J59 GND_AUX_TOP**: 4 pins. Pin 4 is labeled POE_IN_GND. Pins 3, 2, and 1 are green.

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Id: 6/15



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Id: 7/15

The diagram illustrates the connection of four screwholes (H33, H34, H35, H36) to a common ground plane labeled ASAP_USB_C_GND. H33 and H35 are connected to the ground plane via a single vertical line. H34 and H36 are connected to the ground plane via a single vertical line. The ground plane is represented by a horizontal line with a green dot at the connection point for H34 and H36.

Standard Modular I/O Power Paths

J51 PWR_AUX_BOT

J52 PWR_AUX_TOP

J53 GND_AUX_BOT

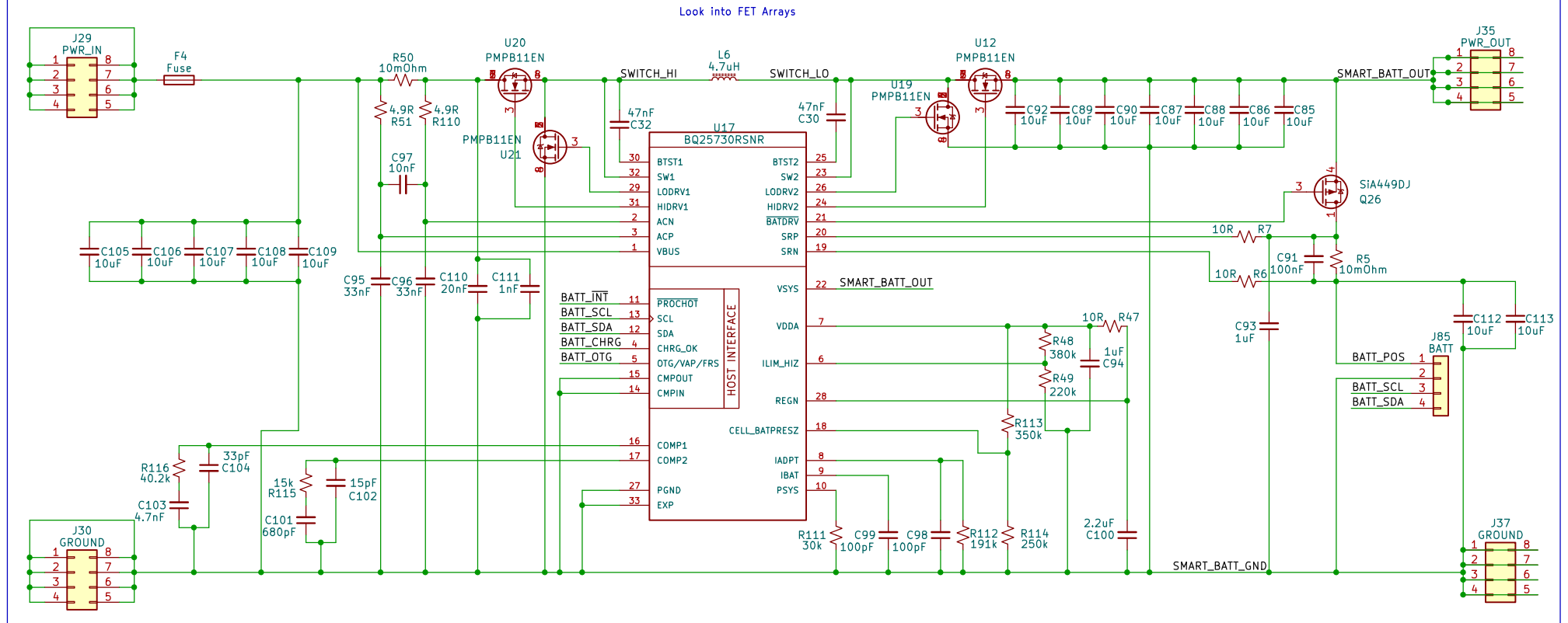
J54 GND_AUX_TOP

Title: Modular PSU

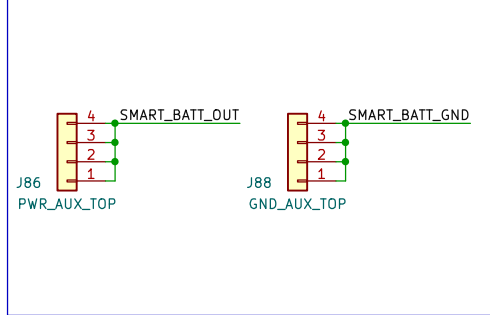
KiCad E.D.A. 9.0.2

Id: 8/15

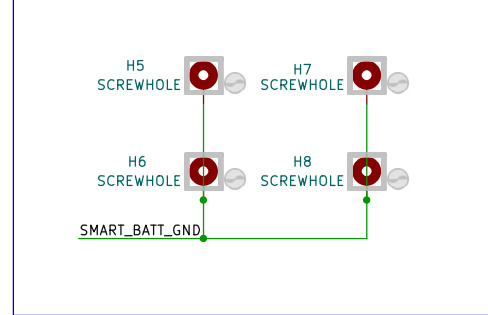
Battery Charger with I2C Interface for data and control



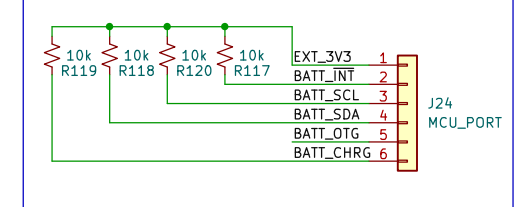
Standard Modular PSU Power Paths



Mounting Holes



Data Interface (I2C + LOGIC OUT)



Open Hardware

Design By: Daniel Manla

DanWave Design

Sheet: /PWR_INPUT/ASAP_BATT/

File: ASAP_BATT.kicad_sch

Title: Modular PSU

Size: A4

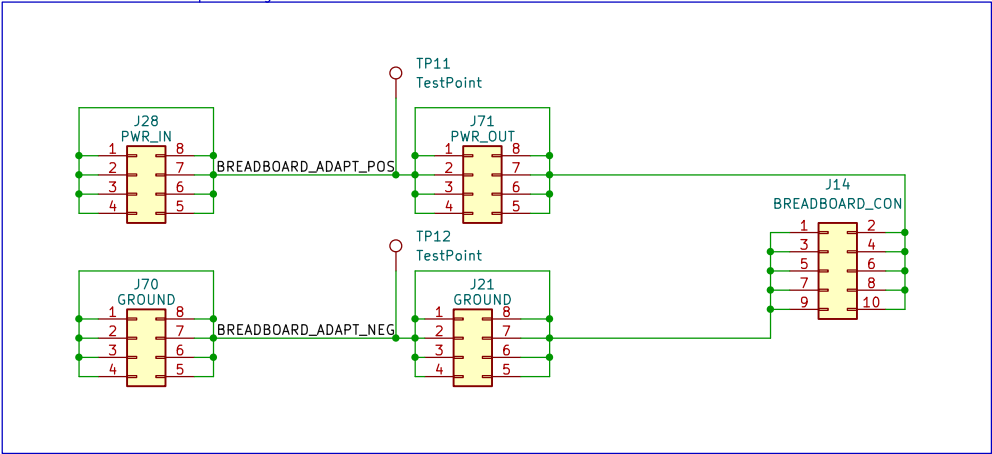
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KiCad E.D.A. 9.0.2

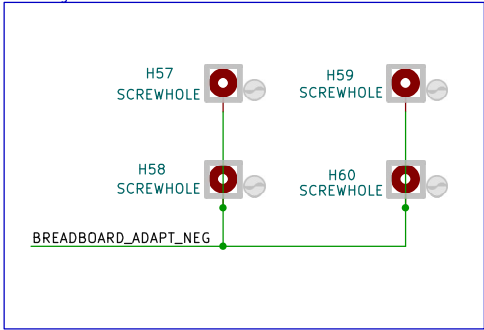
Rev:

Id: 10/15

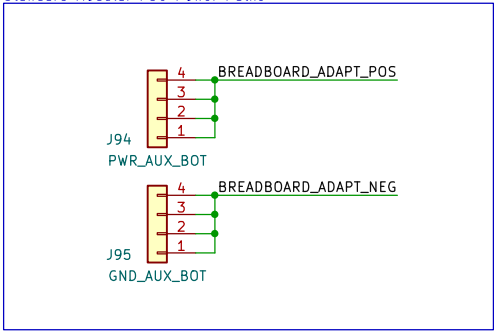
Modular PSU Standard Outputs bridged to Breadboard Connector



Mounting Holes



Standard Modular PSU Power Paths



Open Hardware
Design By: Daniel Manla
DanWave Design

Sheet: /PWR_INPUT/BreadBoardAdapter/
File: BreadBoardAdapter.kicad_sch

Title: Modular PSU

Size: A4

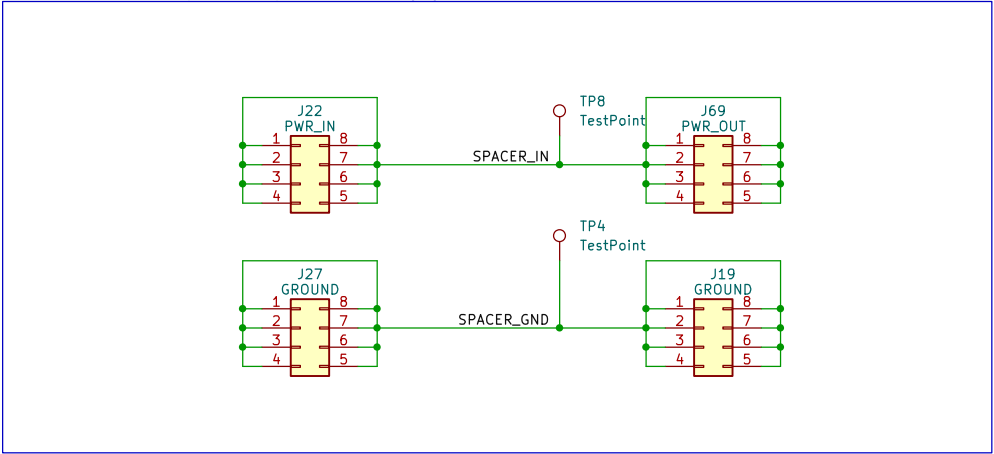
Date:

KiCad E.D.A. 9.0.2

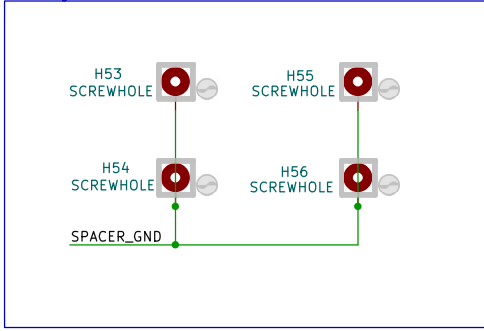
Rev:

Id: 11/15

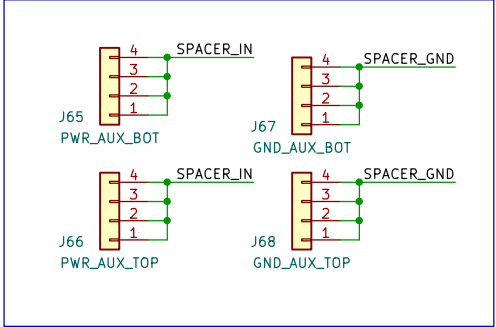
Modular PSU Standard Input and Output to enable bridging between modules



Mounting Holes



Standard Modular PSU Power Paths



Open Hardware
Design By: Daniel Manla
DanWave Design

Sheet: /PWR_INPUT/Spacer/
File: Spacer.kicad_sch

Title: Modular PSU

Size: A4

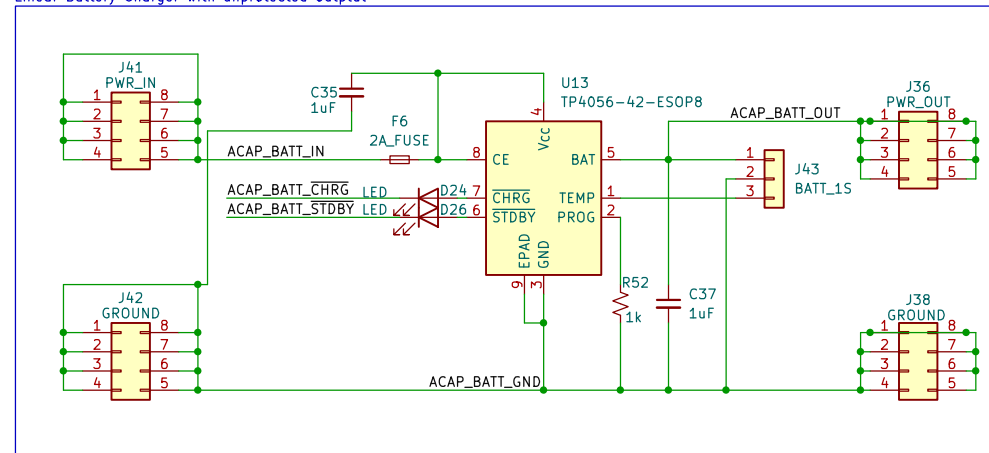
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KiCad E.D.A. 9.0.2

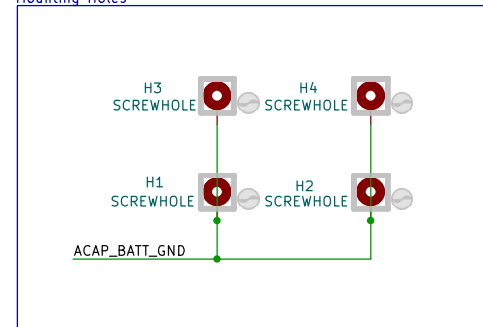
Rev:

Id: 12/15

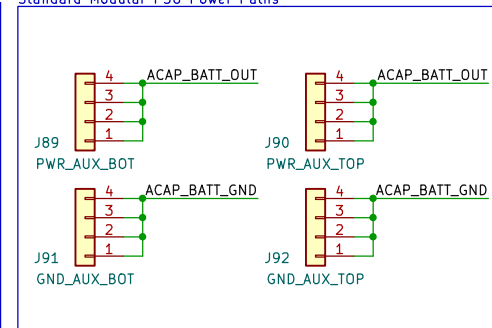
Linear Battery Charger with unprotected output



Mounting Holes



Standard Modular PSU Power Paths



Open Hardware
Design By: Daniel Manla

DanWave Design

Sheet: /PWR_INPUT/ACAP_BATT/
File: ASAP_BATT_CHEAP.kicad_sch

Title: Modular PSU

Size: A4

Date:

KiCad E.D.A. 9.0.2

Rev:

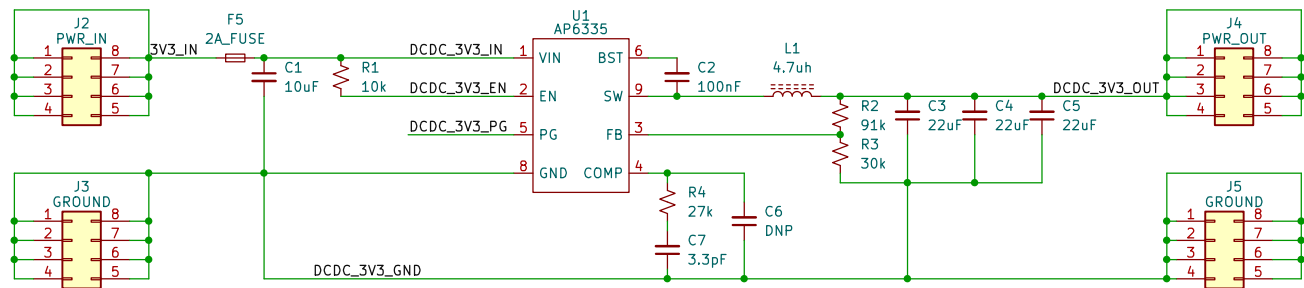
Id: 12/15

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

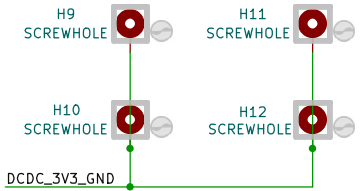
DC-DC Conversion	
24V_BUCK_TO_3V3	
	Converts Voltages up to 24V to 3.3V. MAX INPUT: 24V MIN INPUT: 3.3V OUTPUT: 3.3V (Up to 4A)
File: 24V_TO_3V3.kicad_sch	
24V_BUCK_BOOST_TO_5V	
	Converts any voltage from 3.3V-28V to 5V. Ideal for battery powered applications. MAX INPUT: 28V MIN INPUT: 3.3V OUTPUT: 5V (Up to 8A)
File: 24V_BUCK_BOOST_TO_5V.kicad_sch	

Open Hardware Design By: Daniel Manla DanWave Design		
Sheet: /POWER_OUTPUT/ File: untitled.kicad_sch		
Title: Modular PSU		
Size: A4	Date:	Rev:
KiCad E.D.A. 9.0.2		Id: 12/15

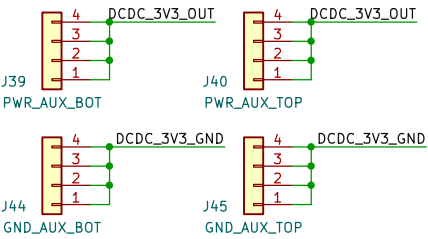
Buck Switching Converter:
INPUT: 3.8V – 32V
OUTPUT: 0.8V – 31V



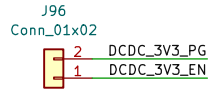
Mounting Holes



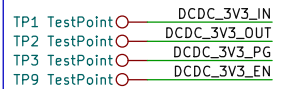
Standard Modular PSU Power Paths



IO For External Device Interfacing



Test Points



Open Hardware
Design By: Daniel Manla
DanWave Design
Sheet: /POWER_OUTPUT/24V_BUCK_TO_3V3/
File: 24V_TO_3V3.kicad_sch

Title: Modular PSU		
Size: A4	Date:	Rev:
KiCad E.D.A. 9.0.2		Id: 13/15

