Section	Part	Notes		
Pack Voltage Sensor and Charge Sensor	U4		This document is a suggested method to building a PackMAN board from Rev 0.8	To learn more about surface mount soldering, watch https://www.youtube.com/watch?v=3NN7UGWYmBY
	R3			
	C23			
High Voltage Power	F1	1) Put on last 2) remember to place fuse in fuse block before powering up		
	D5			
	R13			
	C10	put on last, but before F1		
	C11			
	U6			
	L1	put on last, but before F1		
	D6			
	R14			
	C15			
	C12			
ADC	C8			
	U5			
	R19			
	R20			
At this point in soldering, verify that Vcc (BATT+) is present at R3 and F1. Then verify that 5V HV is present at C15, C12, C8, C23.				
HV Digital I/O	R10			
	C22			
	U3			
	Q4			
	R11			
I2C Isolator	C14			
	C25			
	C13			
	U8			
	C17			
This step is moved up here because U7 is clunky and makes soldering difficult. Verify C17 after the 3.3 Linear Reg circuit has been soldered.				
DC/DC	U7	Put on Last		
	C9			
	C16			
	D9			
At this point, verify that 5V LV is present at C16.				
3.3 Linear Reg	C24			
	U9			
	C27	On back of board		
System LED	R6			
	D1			

At this point, verify that 3.3V LV is present at C27. Verify that LED D1 lights up. Measure 3.3V referenced Low Voltage Ground across C17.				
AVR Microcontroller	U1			
	C1			
	C4			
	C6			
	X1			
	C2			
	C33			
	C5			
I2C Pullup	R1			
	R2			
External Watchdog	R34			
	C18			
	U2			
	C26			
Status LEDs	R7			
	R8			
	D2			
	D3			
Connector	P5			
At this point, verify that 3.3 V is present across C26.				
At this point, program the microcontroller. Once this is done, verify that the heartbead LED blinks as expected.				
Charge Control P-Fet	R23			
	D12			
	R38			
	Q3			
	D19			
	U12			
	Rly2			
High Side P-Fet Driver	U10			
Fan Control P-Fet	R37			
	Q1			
	D18			
CAN Tranceiver	R24			
	C19			
	U11			
	R25	Do not place		
Opto-Isolator on SL Closed Signal	R9			
	U13			
	C7			
Safety-Loop Relay	D21			
	Rly1			
	Q2			

	R4			
	R5			
	C28			
	C29			
UART	D15			
	C21			
	C20			
	R15			
	R16			
	R17			
	R18			
	C30			
	C31			
	C32			
	C33			
	C34			
	C35			
	C36			
	R22			
	R26			
	C37			
	U14			
	R27			
	R28			
Connectors	P1			
	P6			
	P3			
	J3			
	J1			
	P4			
	P5			
	J2			
	R12			
	R21			
	R35			
	R36			