Group 1

Controlled Environment Monitors

Production Document

Contents

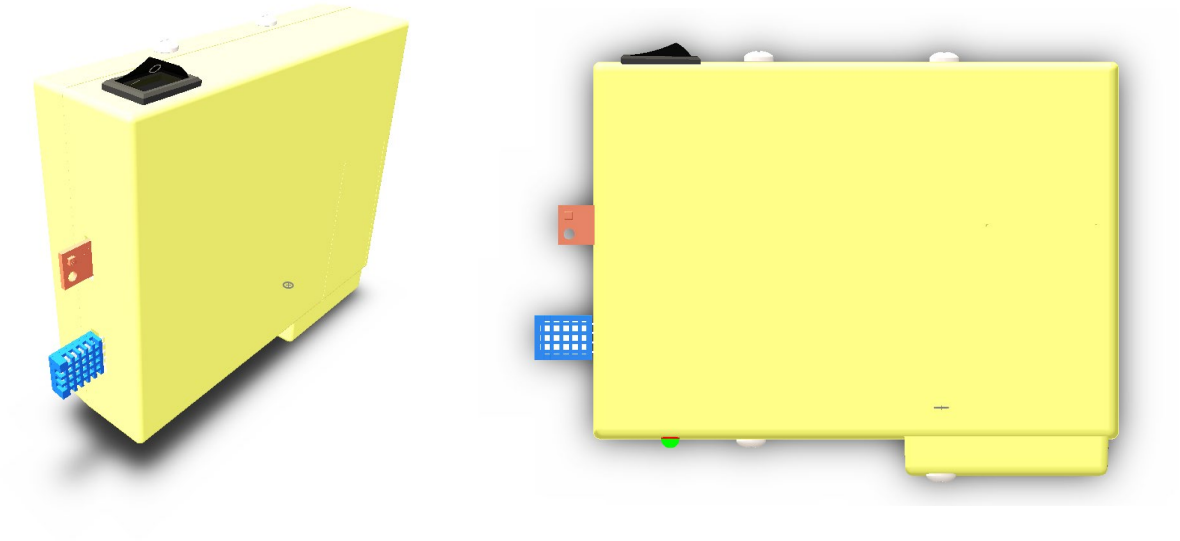
Group 1

Controlled Environment Monitors

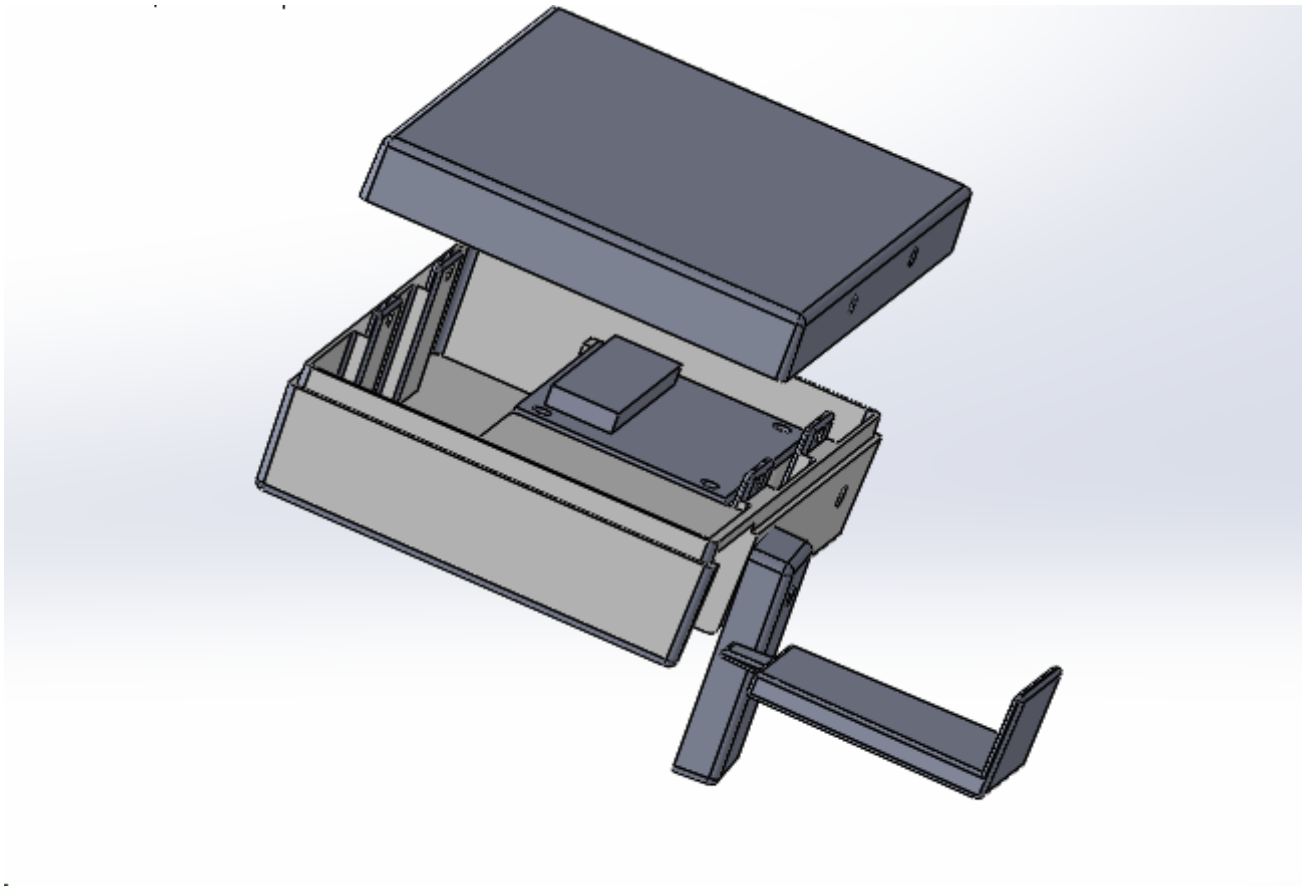
Manufacture

Sensor Unit Manufacture

Sensor Unit Enclosure



Sensor Unit



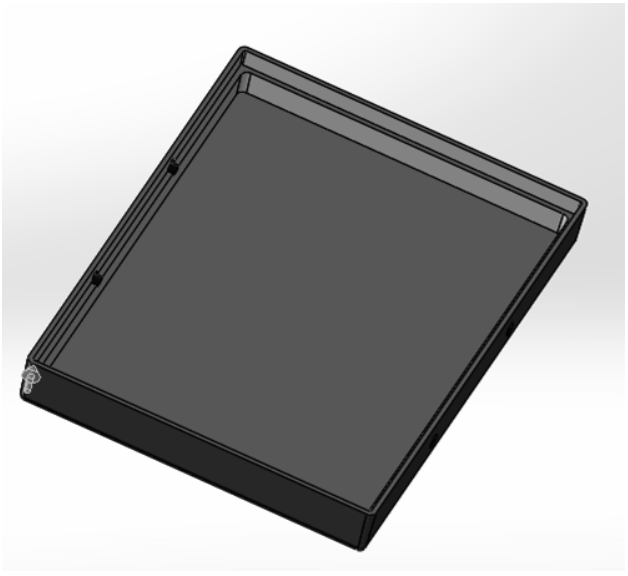
Components

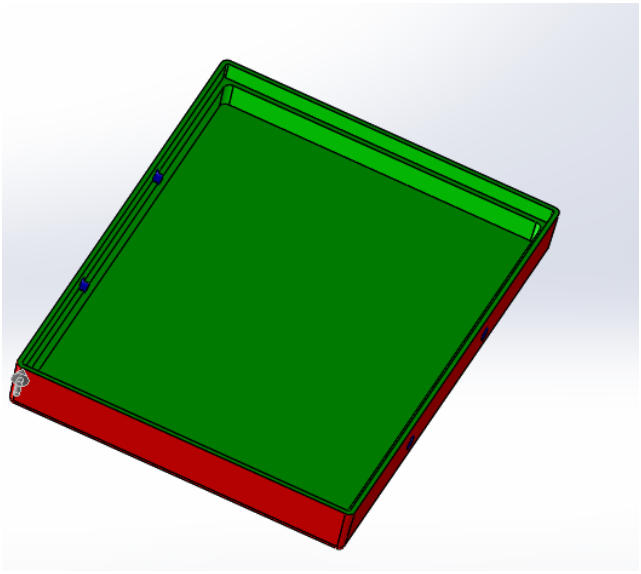
The Sensor Unit Enclosure consists of 4 components that are to be manufactured by injection molding. All units are to be molded using hard plastic

Components to be molded are:

1. Top Cover
2. Bottom Cover
3. Battery Cover
4. Battery Lock

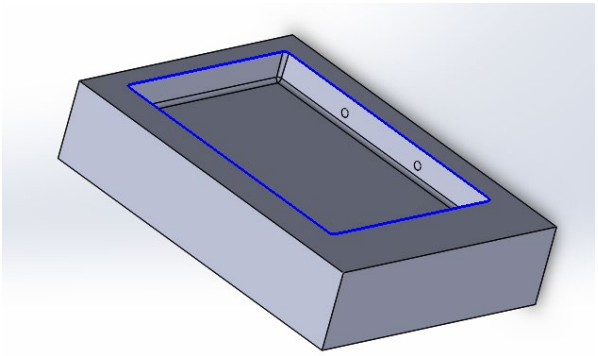
Top Cover



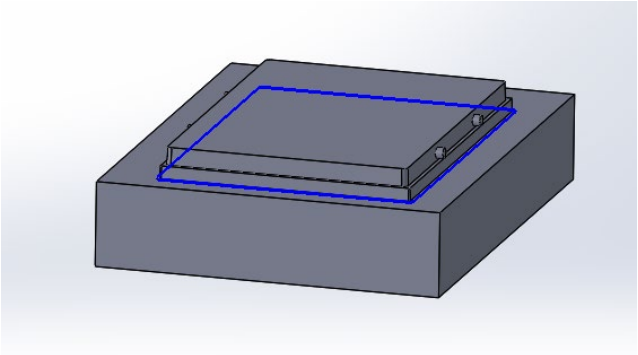


Draft Analysis of Top Cover

Top Cover Mold Components

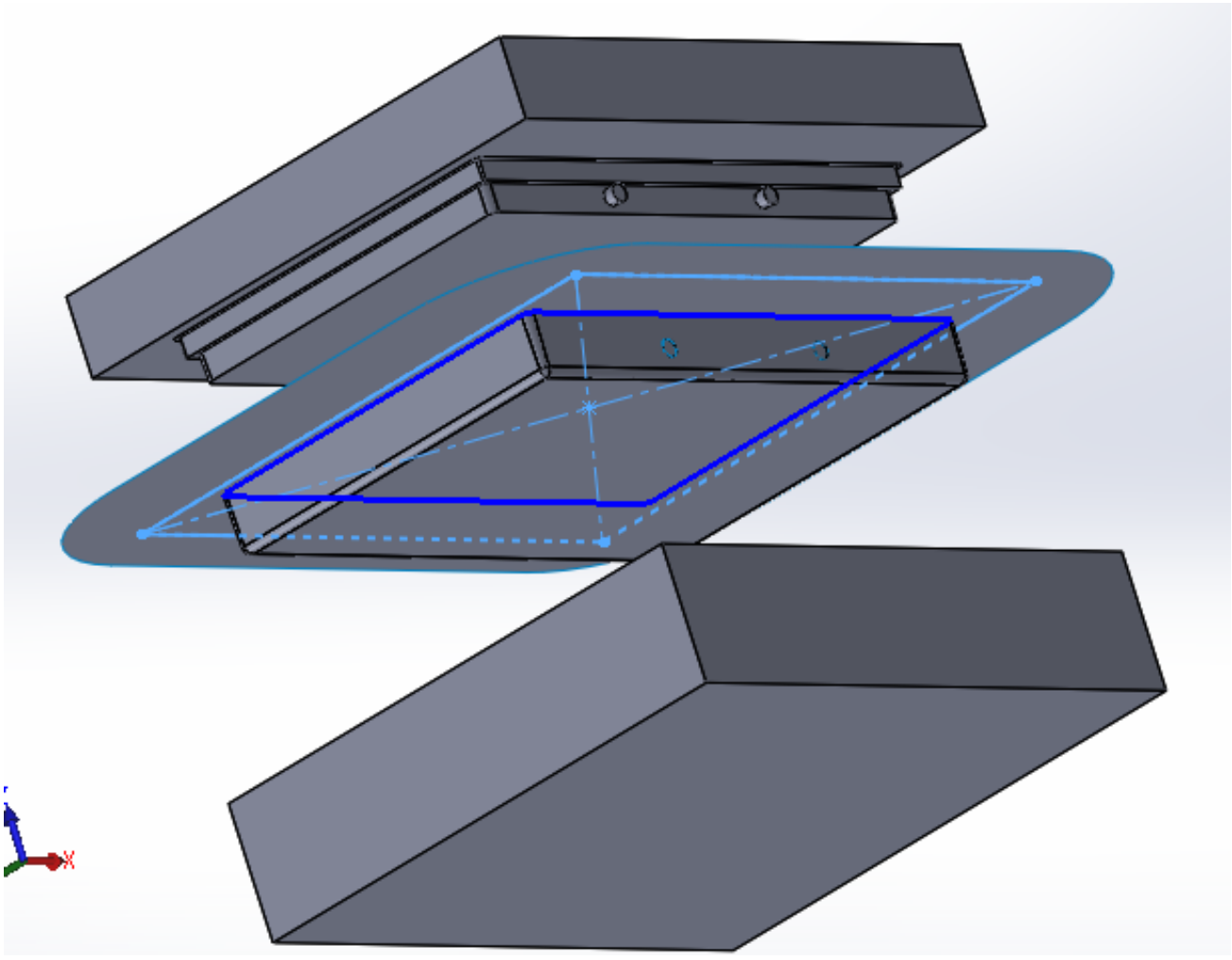


Cavity

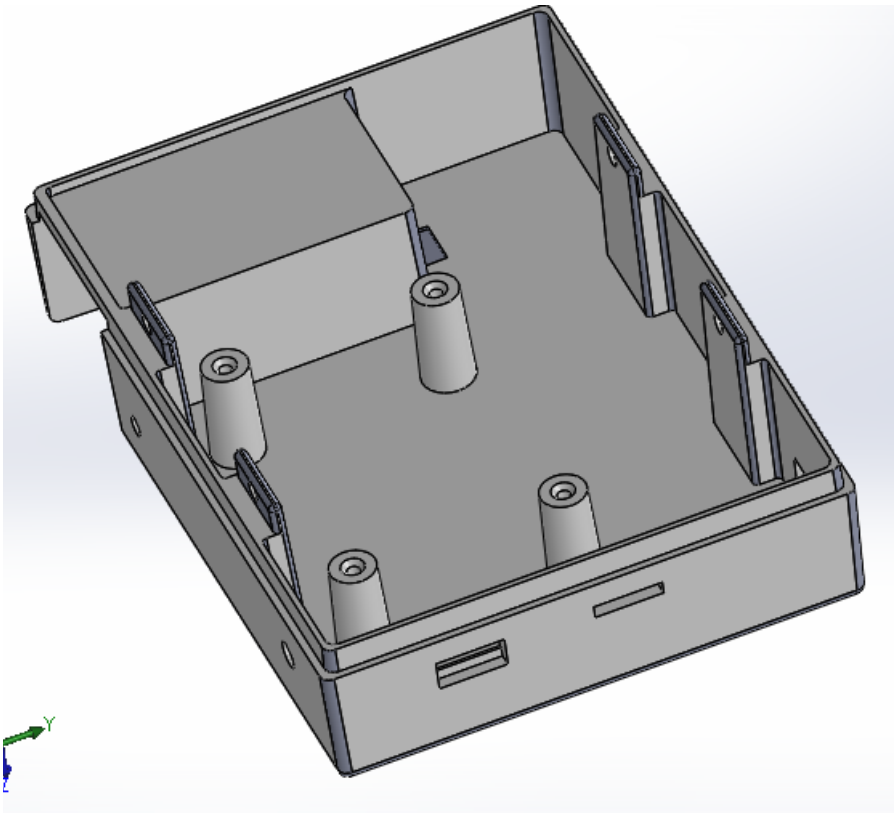


Core

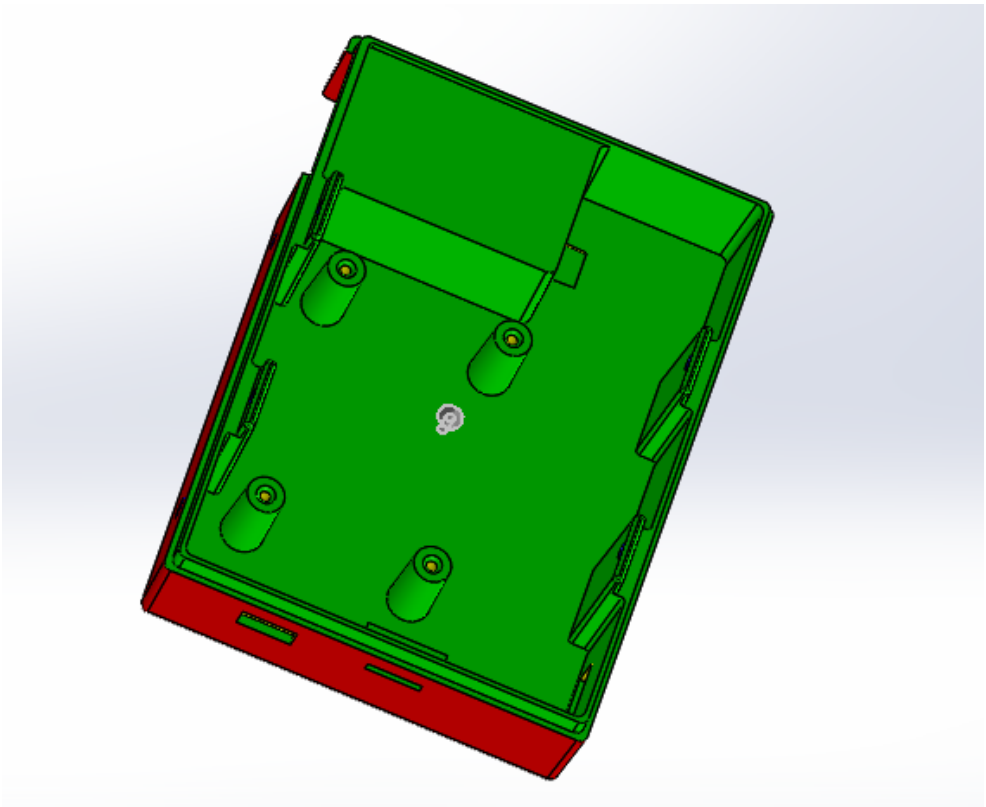
Exploded View of Mold



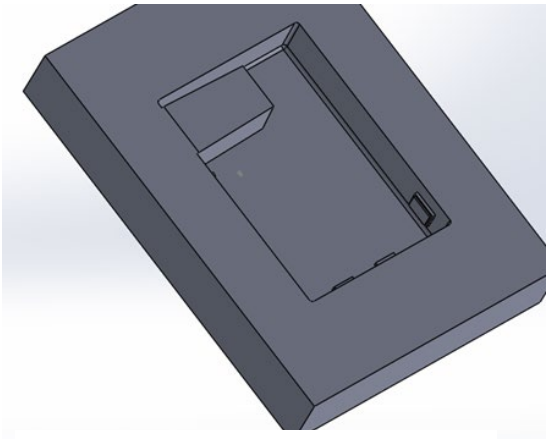
Bottom Cover



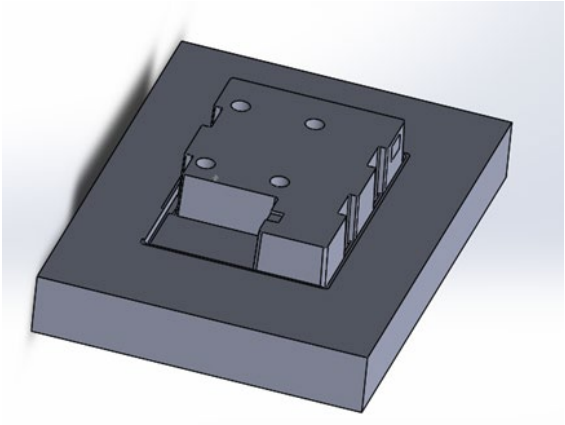
Draft Analysis of Bottom Cover



Bottom Cover Mold Components



Cavity



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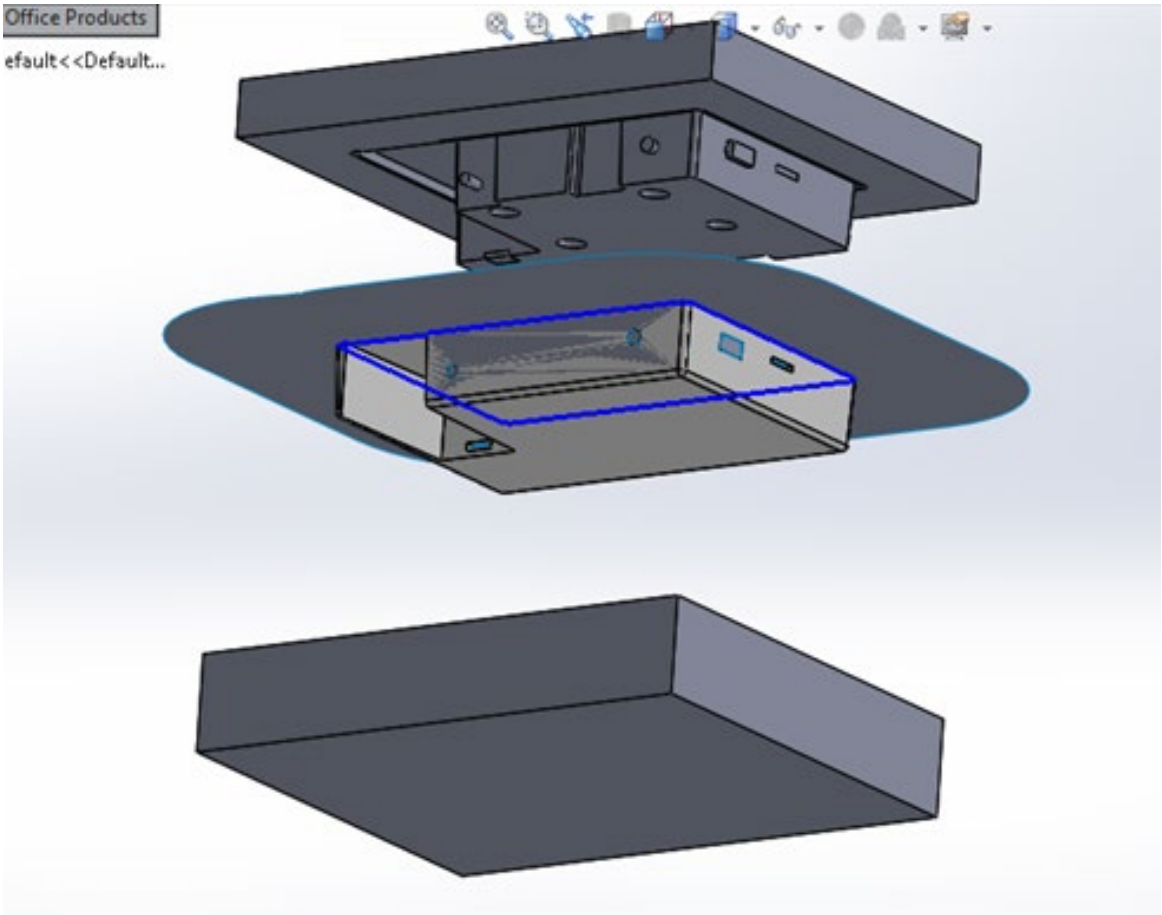
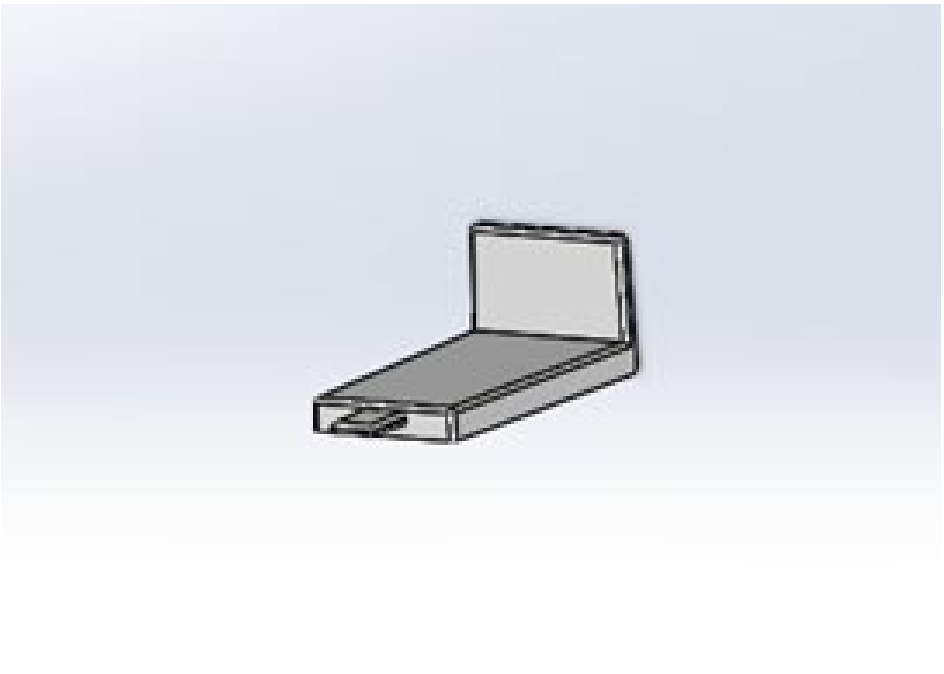
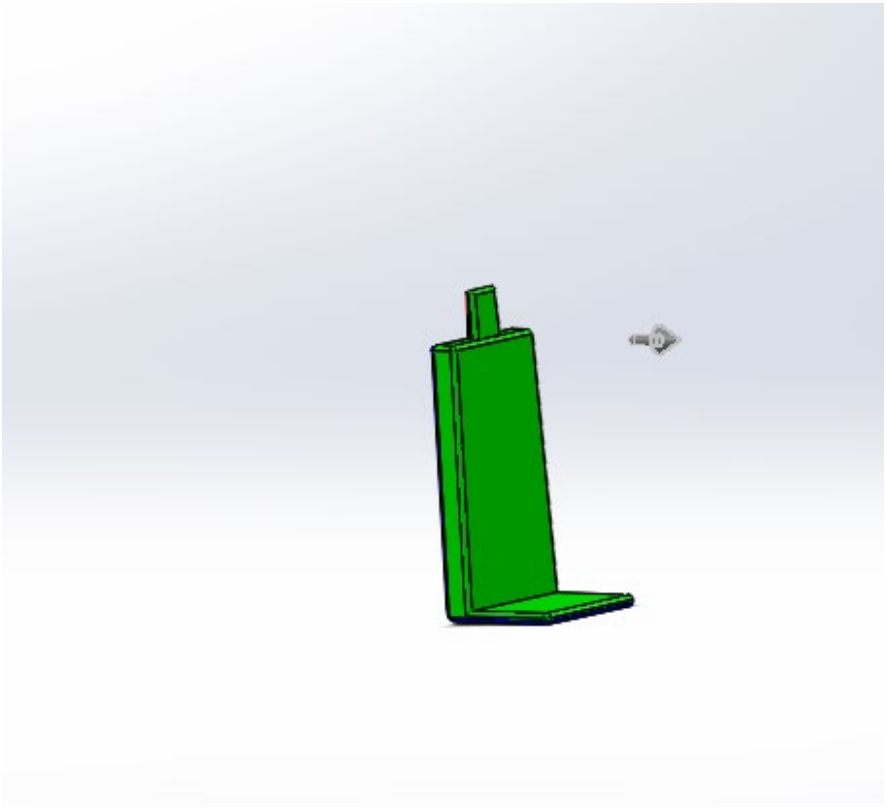


Exploded View of Mold

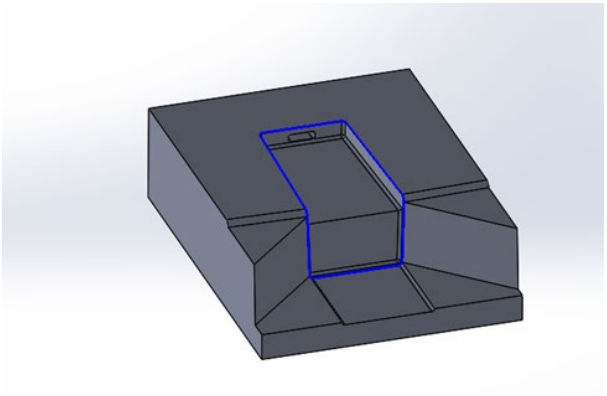
Battery Cover



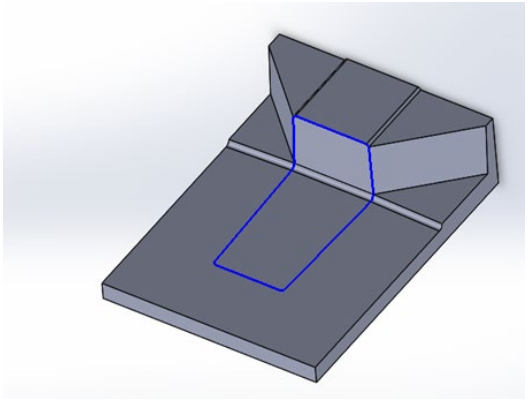
Draft Analysis of Battery Cover



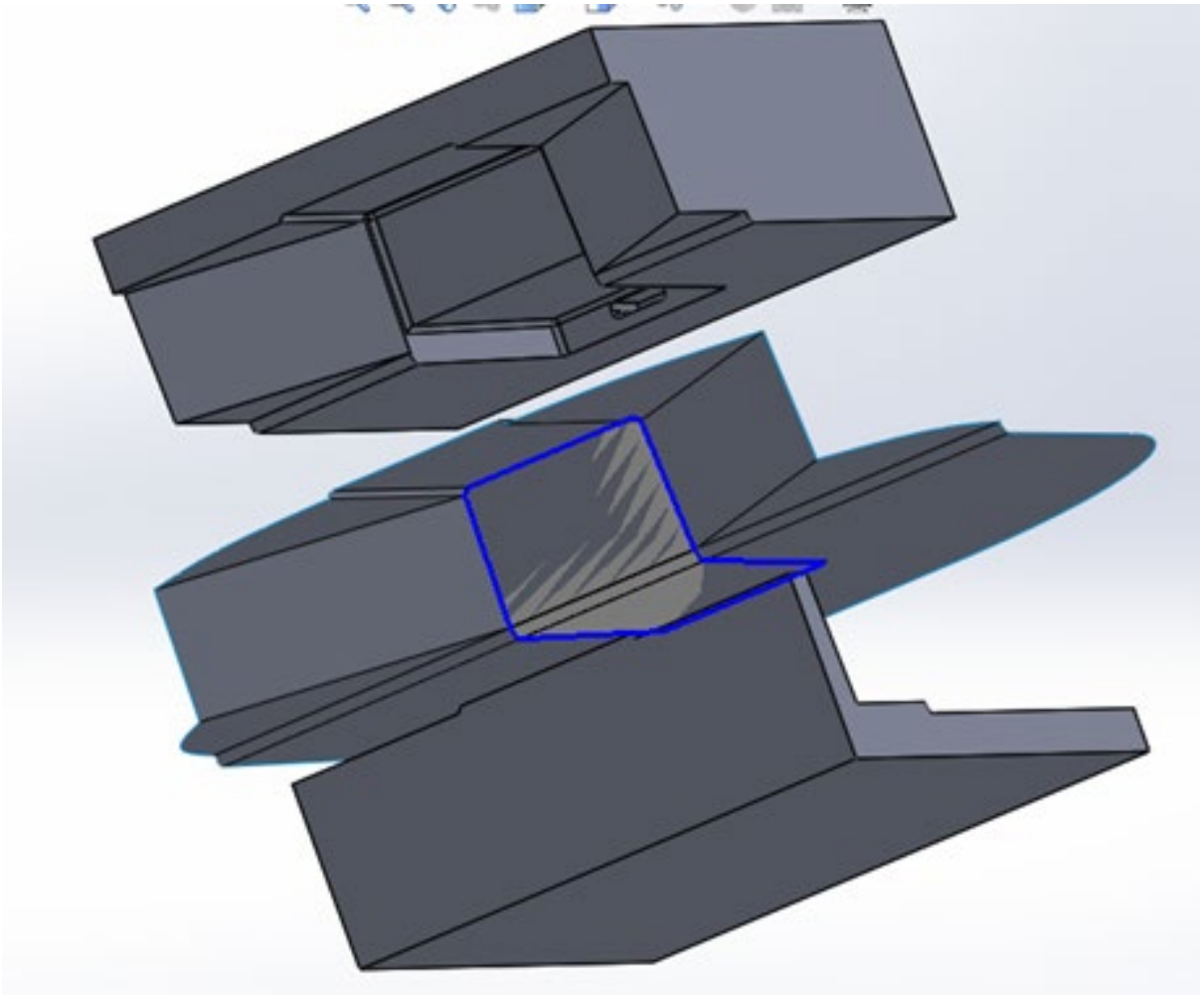
Battery Cover Mold Components



Cavity

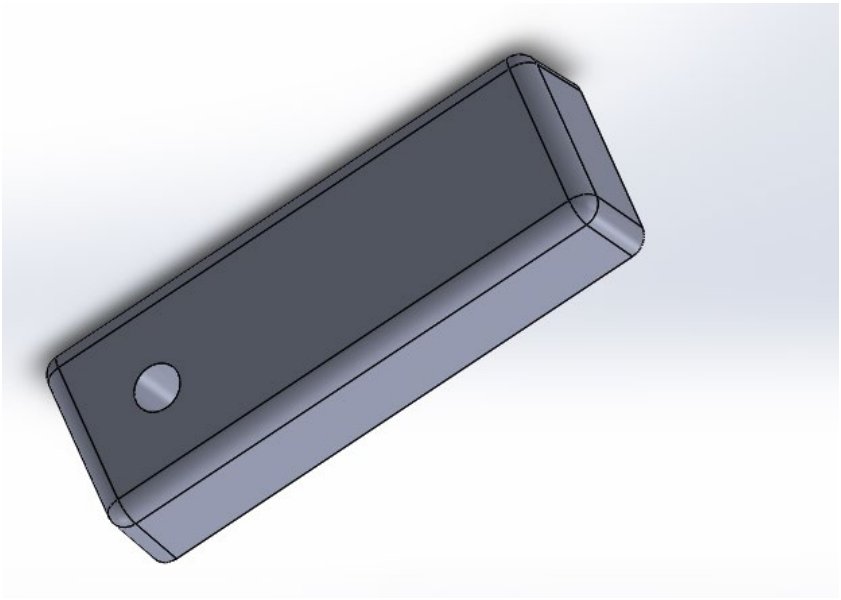


Core

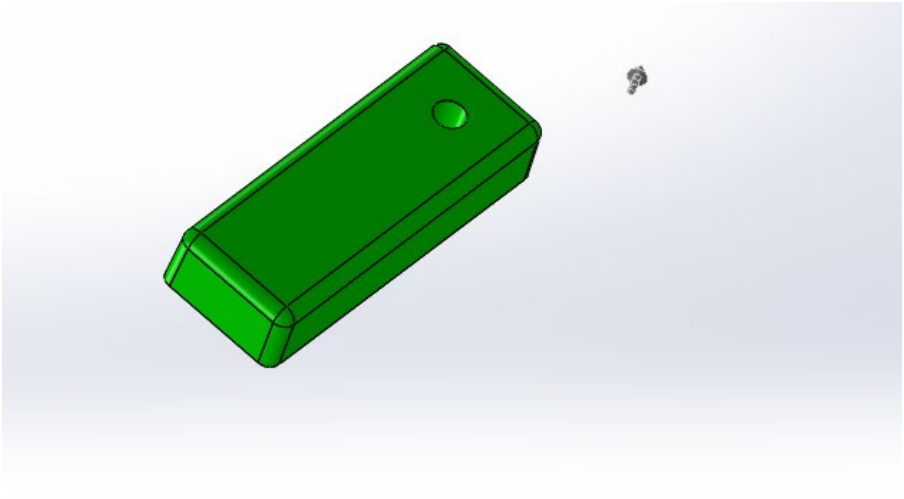


Exploded View of Mold

Battery Lock



Draft Analysis of Battery Lock



Sensor Unit PCB Manufacture

Bill of Materials for PCB

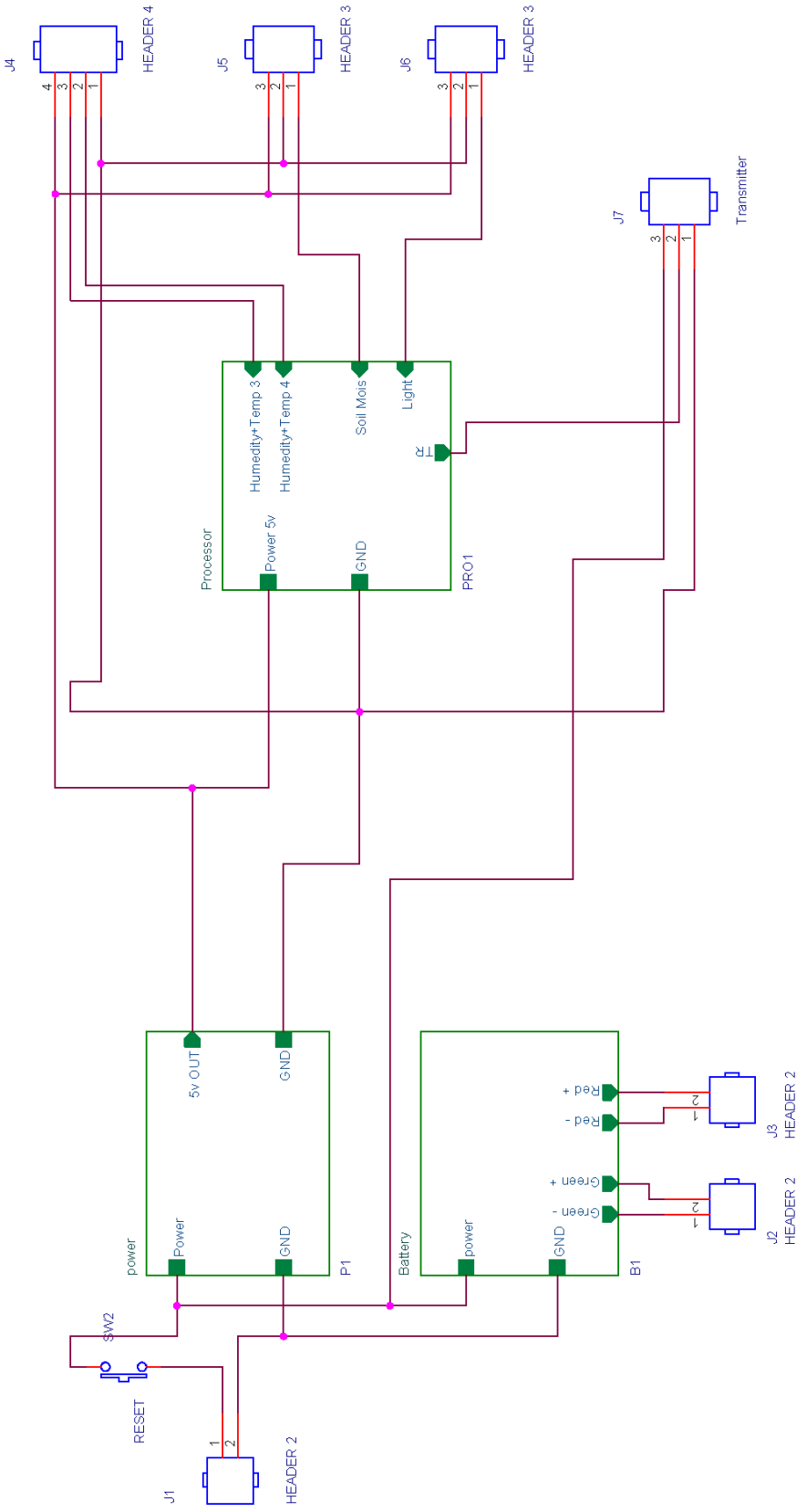
SYM_NAME	COMP_DEVICE_TYPE	COMP_VALUE	COMP_TOL	COMP_CLASS	REFDES
RESISTOR	CAP NP_RESISTOR_0.33UF	0.33uF		IC	C11
RESISTOR	CAP NP_RESISTOR_0.1UF	0.1uF		IC	C12
RESISTOR	CAP NP_RESISTOR_22PF	22pF		IC	C13
RESISTOR	CAP NP_RESISTOR_22PF	22pF		IC	C14
RESISTOR	DIODE ZENER_0_RESISTOR_1N4735A	1N4735A		IC	D1
JACK	HEADER 2_JACK_HEADER 2	HEADER 2		IC	J1
CONN2	HEADER 2_CONN2_HEADER 2	HEADER 2		IC	J2
CONN2	HEADER 2_CONN2_HEADER 2	HEADER 2		IC	J3
CONN4	HEADER 4_CONN4_HEADER 4	HEADER 4		IC	J4
CONN3	HEADER 3_CONN3_HEADER 3	HEADER 3		IC	J5
CONN3	HEADER 3_CONN3_HEADER 3	HEADER 3		IC	J6
CONN3	HEADER 3_CONN3_TRANSMITTER	Transmitter		IC	J7
REGULATOR	LM7805CTNOPB_0_REGULATOR_LM7805	LM7805CTNOPB		IC	Q11
BC547	2N3904TFR_BC547_BC547A	BC547A		IC	Q12
BC547	2N3904TFR_BC547_BC547A	BC547A		IC	Q13
RESISTOR	RESISTOR_RESISTOR_7.5K	7.5K		IC	R11
RESISTOR	RESISTOR_RESISTOR_39K	39K		IC	R12
RESISTOR	RESISTOR_RESISTOR_680	680		IC	R13
RESISTOR	RESISTOR_RESISTOR_30K	30K		IC	R14
RESISTOR	RESISTOR_RESISTOR_RESISTOR	RESISTOR		IC	R15
RESISTOR	RESISTOR_RESISTOR_10K	10k		IC	R16
RESISTOR	SW PUSHBUTTON_0_RESISTOR_RESET	RESET		IC	SW1
SCREWCONN	SW PUSHBUTTON_0_SCREWCONN_RESET	RESET		IC	SW2
ICSOCKET	ATMEGA32A-PU_0_ICSOCKET_ATMEGA3	ATMEGA32A-PU		IC	U1
RESISTOR	CRYSTAL_RESISTOR_16MHZ	16MHz		IC	Y1

Bill of Materials - Non-PCB Components

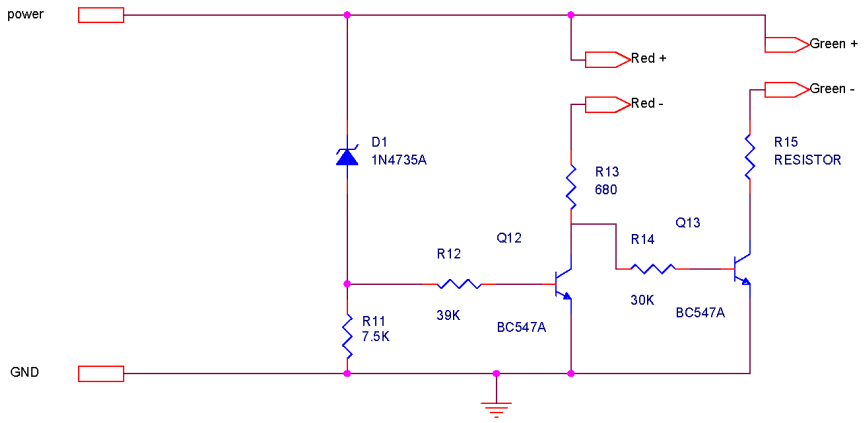
COMPONENT NAME	MANUFACTURER	QUANTITY
ATMEGA32A	MICROCHIP	1
DHT11	ADAFRUIT	1
TEMT6000	ADAFRUIT	1
SOIL MOISTURE SENSOR	ADAFRUIT	1
ROCKER SWITCH	NTE ELECTRONICS	1
433 MHZ TRANSMITTER	ADAFRUIT	1
LED GREEN	GENERIC	1

Circuit Schematics

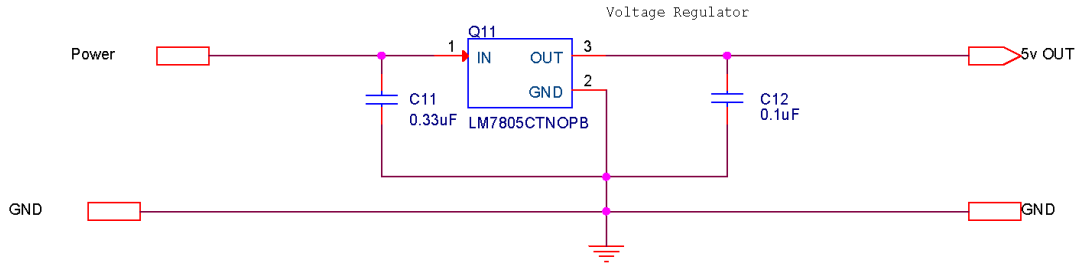
Hierarchical view



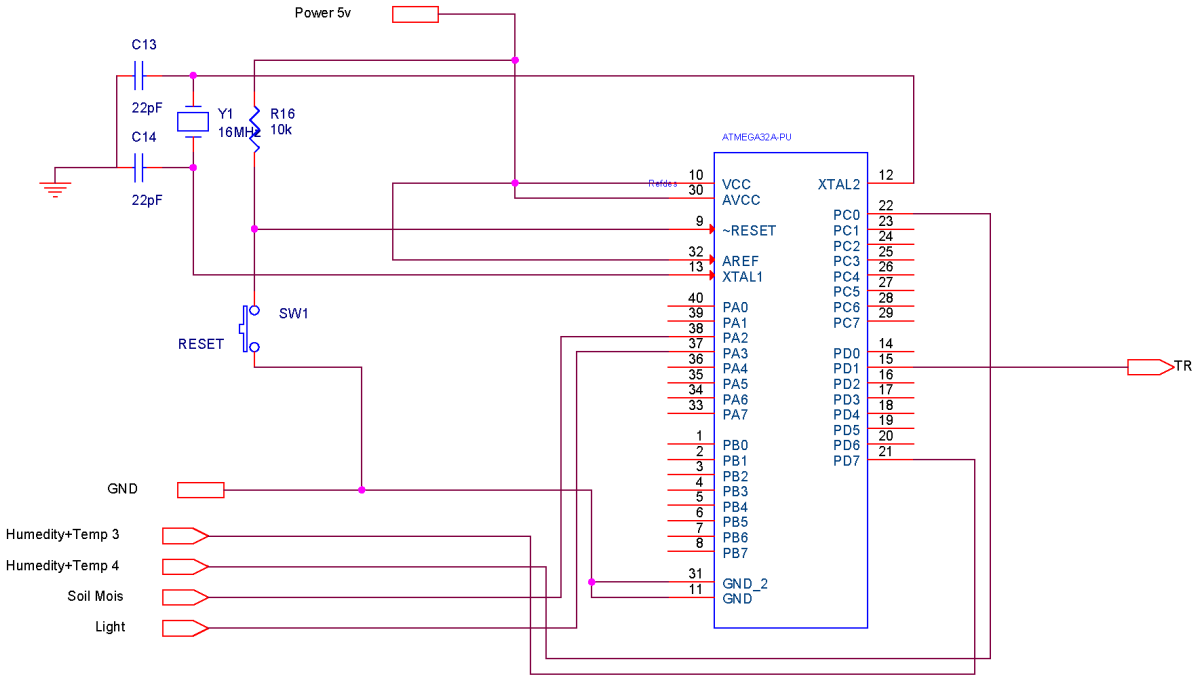
Battery Level Sensor



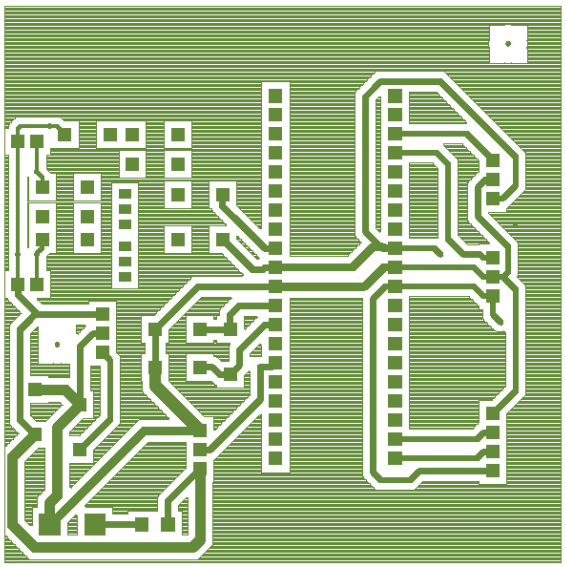
Power Regulator



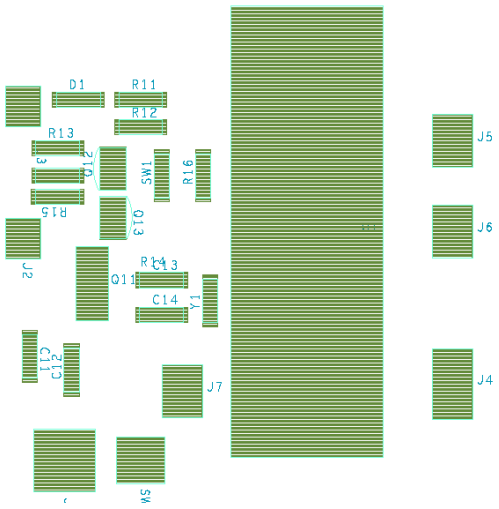
Processor



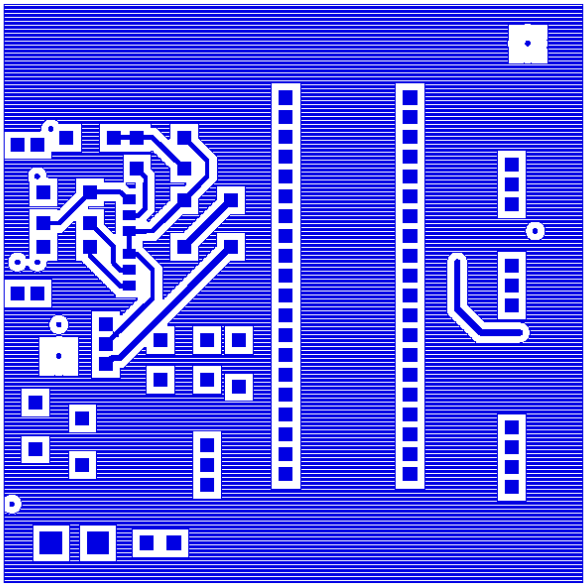
Circuit Layout



Sensor Unit Bottom



Silkscreen



Sensor Unit Top

Design Name **D:/JAKS jaya/Propagater/orcad lib/sensorboardfinal.brd**
Date **Thu Jun 06 21:31:28 2019**

Net List Report

Net Name	Net Pins
N01461	Q13.3 R15.1
N01481	Q12.3 R13.2 R14.1
N01545	D1.2 R11.1 R12.2
N01565	Q13.2 R14.2
N01577	Q12.2 R12.1
N01607	C13.2 U1.12 Y1.2
N03368	C14.2 U1.13 Y1.1
N03420	R16.2 SW1.1 U1.9
N05812	C11.2 D1.1 J2.2 J3.2 J7.3 Q11.1 SW2.1
N05864	C11.1 C12.2 C13.1 C14.1 J1.2 J4.1 J5.2 J6.2 J7.1 Q11.2 Q12.1 Q13.1 R11.2 SW1.2 U1.11 U1.31
N06064	J2.1 R15.2
N06072	J3.1 R13.1
N06627	C12.1 J4.4 J5.3 J6.3 Q11.3 R16.1 U1.10 U1.30 U1.32
N06779	J7.2 U1.15
N07080	J4.3 U1.21
N07092	J4.2 U1.22
N07402	J5.1 U1.38
N07414	J6.1 U1.37
N09349	J1.1 SW2.2

Design Name **D:/JAKS jaya/Propagater/orcad lib/sensorboardfinal.brd**
Date **Thu Jun 06 21:33:39 2019**
Total Padstack Definitions: 12
Dimensions in millimeters with 4 decimal places

Padstack: 110X110DUAL Type: through Inner pads: Optional

Layer	Pad Type	Geometry	Width	Height	Offset X	Offset Y	Flash Name	Shape Name
TOP	ANTI	CIRCLE	2.9210	2.9210	0.0000	0.0000		
TOP	THERMAL	FLASH	0.1270	0.1270	0.0000	0.0000	AB85	
TOP	REGULAR	SQUARE	2.7940	2.7940	0.0000	0.0000		
BOTTOM	ANTI	CIRCLE	2.9210	2.9210	0.0000	0.0000		
BOTTOM	THERMAL	FLASH	0.1270	0.1270	0.0000	0.0000	AB85	
BOTTOM	REGULAR	SQUARE	2.7940	2.7940	0.0000	0.0000		
internal_pad_def	ANTI	CIRCLE	2.1590	2.1590	0.0000	0.0000		
internal_pad_def	THERMAL	FLASH	0.1270	0.1270	0.0000	0.0000	AB85	
internal_pad_def	REGULAR	CIRCLE	1.5240	1.5240	0.0000	0.0000		
SOLDERMASK_TOP	REGULAR	SQUARE	1.9050	1.9050	0.0000	0.0000		
SOLDERMASK_BOTTOM	REGULAR	SQUARE	1.9050	1.9050	0.0000	0.0000		
PASTEMASK_TOP	REGULAR	NULL	0.0000	0.0000	0.0000	0.0000		
PASTEMASK_BOTTOM	REGULAR	NULL	0.0000	0.0000	0.0000	0.0000		
FILMMASKTOP	REGULAR	NULL	0.0000	0.0000	0.0000	0.0000		
FILMMASKBOTTOM	REGULAR	NULL	0.0000	0.0000	0.0000	0.0000		

Drill Data for 110X110DUAL

Hole Type	Drill Dia	Plating	Figure	Characters	Width	Height	Offset X	Offset Y	Pos Tolerance	Neg Tolerance	Non-Standard
CIRCLE DRILL	0.8890	PLATED	CIRCLE		0.8890	0.8890	0.0000	0.0000	0.0000	0.0000	

Padstack: 60X45DUAL Type: through Inner pads: Optional

Layer	Pad Type	Geometry	Width	Height	Offset X	Offset Y	Flash Name	Shape Name
TOP	ANTI	CIRCLE	2.1590	2.1590	0.0000	0.0000		
TOP	THERMAL	FLASH	0.1270	0.1270	0.0000	0.0000	AB85	
TOP	REGULAR	RECTANGLE	1.5240	1.1430	0.0000	0.0000		
BOTTOM	ANTI	CIRCLE	2.1590	2.1590	0.0000	0.0000		
BOTTOM	THERMAL	FLASH	0.1270	0.1270	0.0000	0.0000	AB85	
BOTTOM	REGULAR	RECTANGLE	1.5240	1.1430	0.0000	0.0000		
internal_pad_def	ANTI	CIRCLE	2.1590	2.1590	0.0000	0.0000		
internal_pad_def	THERMAL	FLASH	0.1270	0.1270	0.0000	0.0000	AB85	
internal_pad_def	REGULAR	CIRCLE	1.0160	1.0160	0.0000	0.0000		
SOLDERMASK_TOP	REGULAR	RECTANGLE	1.0414	0.7874	0.0000	0.0000		
SOLDERMASK_BOTTOM	REGULAR	RECTANGLE	1.0414	0.7874	0.0000	0.0000		
PASTEMASK_TOP	REGULAR	NULL	0.0000	0.0000	0.0000	0.0000		
PASTEMASK_BOTTOM	REGULAR	NULL	0.0000	0.0000	0.0000	0.0000		
FILMMASKTOP	REGULAR	NULL	0.0000	0.0000	0.0000	0.0000		
FILMMASKBOTTOM	REGULAR	NULL	0.0000	0.0000	0.0000	0.0000		

Drill Data for 60X45DUAL

Hole Type	Drill Dia	Plating	Figure	Characters	Width	Height	Offset X	Offset Y	Pos Tolerance	Neg Tolerance	Non-Standard
CIRCLE DRILL	0.6350	PLATED	CIRCLE		0.5080	0.5080	0.0000	0.0000	0.0000	0.0000	

Padstack: 60X30DUAL Type: through Inner pads: Optional

Layer	Pad Type	Geometry	Width	Height	Offset X	Offset Y	Flash Name	Shape Name
TOP	ANTI	CIRCLE	2.1590	2.1590	0.0000	0.0000		
TOP	THERMAL	FLASH	0.1270	0.1270	0.0000	0.0000	AB85	
TOP	REGULAR	RECTANGLE	1.5240	0.7620	0.0000	0.0000		
BOTTOM	ANTI	CIRCLE	2.1590	2.1590	0.0000	0.0000		
BOTTOM	THERMAL	FLASH	0.1270	0.1270	0.0000	0.0000	AB85	
BOTTOM	REGULAR	RECTANGLE	1.5240	0.7620	0.0000	0.0000		
internal_pad_def	ANTI	CIRCLE	2.1590	2.1590	0.0000	0.0000		
internal_pad_def	THERMAL	FLASH	0.1270	0.1270	0.0000	0.0000	AB85	
internal_pad_def	REGULAR	CIRCLE	1.0160	1.0160	0.0000	0.0000		
SOLDERMASK_TOP	REGULAR	RECTANGLE	1.0414	0.7874	0.0000	0.0000		
SOLDERMASK_BOTTOM	REGULAR	RECTANGLE	1.0414	0.7874	0.0000	0.0000		
PASTEMASK_TOP	REGULAR	NULL	0.0000	0.0000	0.0000	0.0000		
PASTEMASK_BOTTOM	REGULAR	NULL	0.0000	0.0000	0.0000	0.0000		
FILMMASKTOP	REGULAR	NULL	0.0000	0.0000	0.0000	0.0000		
FILMMASKBOTTOM	REGULAR	NULL	0.0000	0.0000	0.0000	0.0000		

Drill Data for 60X30DUAL

Hole Type	Drill Dia	Plating	Figure	Characters	Width	Height	Offset X	Offset Y	Pos Tolerance	Neg Tolerance	Non-Standard
CIRCLE DRILL	0.6350	PLATED	CIRCLE		0.5080	0.5080	0.0000	0.0000	0.0000	0.0000	

Padstack: 40X30DUAL Type: through Inner pads: Optional

Layer	Pad Type	Geometry	Width	Height	Offset X	Offset Y	Flash Name	Shape Name
TOP	ANTI	CIRCLE	2.1590	2.1590	0.0000	0.0000		
TOP	THERMAL	FLASH	0.1270	0.1270	0.0000	0.0000	AB85	
TOP	REGULAR	RECTANGLE	1.0160	0.7620	0.0000	0.0000		
BOTTOM	ANTI	CIRCLE	2.1590	2.1590	0.0000	0.0000		
BOTTOM	THERMAL	FLASH	0.1270	0.1270	0.0000	0.0000	AB85	
BOTTOM	REGULAR	RECTANGLE	1.0160	0.7620	0.0000	0.0000		
internal_pad_def	ANTI	CIRCLE	2.1590	2.1590	0.0000	0.0000		
internal_pad_def	THERMAL	FLASH	0.1270	0.1270	0.0000	0.0000	AB85	
internal_pad_def	REGULAR	CIRCLE	1.0160	1.0160	0.0000	0.0000		
SOLDERMASK_TOP	REGULAR	RECTANGLE	1.0414	0.7874	0.0000	0.0000		
SOLDERMASK_BOTTOM	REGULAR	RECTANGLE	1.0414	0.7874	0.0000	0.0000		
PASTEMASK_TOP	REGULAR	NULL	0.0000	0.0000	0.0000	0.0000		
PASTEMASK_BOTTOM	REGULAR	NULL	0.0000	0.0000	0.0000	0.0000		
FILMMASKTOP	REGULAR	NULL	0.0000	0.0000	0.0000	0.0000		
FILMMASKBOTTOM	REGULAR	NULL	0.0000	0.0000	0.0000	0.0000		

Drill Data for 40X30DUAL

Hole Type	Drill Dia	Plating	Figure	Characters	Width	Height	Offset X	Offset Y	Pos Tolerance	Neg Tolerance	Non-Standard
CIRCLE DRILL	0.6350	PLATED	CIRCLE		0.5080	0.5080	0.0000	0.0000	0.0000	0.0000	

Padstack: 55S36 Type: through Inner pads: Optional

Layer	Pad Type	Geometry	Width	Height	Offset X	Offset Y	Flash Name	Shape Name
TOP	ANTI	SQUARE	1.3970	1.3970	0.0000	0.0000		
TOP	THERMAL	NULL	0.0000	0.0000	0.0000	0.0000		
TOP	REGULAR	SQUARE	1.3970	1.3970	0.0000	0.0000		
BOTTOM	ANTI	CIRCLE	1.3970	1.3970	0.0000	0.0000		
BOTTOM	THERMAL	NULL	0.0000	0.0000	0.0000	0.0000		
BOTTOM	REGULAR	CIRCLE	1.3970	1.3970	0.0000	0.0000		
internal_pad_def	ANTI	SQUARE	1.3970	1.3970	0.0000	0.0000		
internal_pad_def	THERMAL	SQUARE	1.3970	1.3970	0.0000	0.0000		
internal_pad_def	REGULAR	SQUARE	1.3970	1.3970	0.0000	0.0000		
SOLDERMASK_TOP	REGULAR	SQUARE	1.5240	1.5240	0.0000	0.0000		
SOLDERMASK_BOTTOM	REGULAR	CIRCLE	1.5240	1.5240	0.0000	0.0000		
PASTEMASK_TOP	REGULAR	NULL	0.0000	0.0000	0.0000	0.0000		
PASTEMASK_BOTTOM	REGULAR	NULL	0.0000	0.0000	0.0000	0.0000		
FILMMASKTOP	REGULAR	NULL	0.0000	0.0000	0.0000	0.0000		
FILMMASKBOTTOM	REGULAR	NULL	0.0000	0.0000	0.0000	0.0000		

Drill Data for 55S36

Hole Type	Drill Dia	Plating	Figure	Characters	Width	Height	Offset X	Offset Y	Pos Tolerance	Neg Tolerance	Non-Standard
CIRCLE DRILL	0.9652	PLATED	CIRCLE	A	0.9652	0.9652	0.0000	0.0000	0.0000	0.0000	

Padstack: 70S85C35D Type: through Inner pads: Optional

Layer	Pad Type	Geometry	Width	Height	Offset X	Offset Y	Flash Name	Shape Name
TOP	ANTI	CIRCLE	2.1590	2.1590	0.0000	0.0000		
TOP	THERMAL	FLASH	0.1270	0.1270	0.0000	0.0000	AB85	
TOP	REGULAR	SQUARE	1.7780	1.7780	0.0000	0.0000		
BOTTOM	ANTI	CIRCLE	2.1590	2.1590	0.0000	0.0000		
BOTTOM	THERMAL	FLASH	0.1270	0.1270	0.0000	0.0000	AB85	
BOTTOM	REGULAR	SQUARE	1.7780	1.7780	0.0000	0.0000		
internal_pad_def	ANTI	CIRCLE	2.1590	2.1590	0.0000	0.0000		
internal_pad_def	THERMAL	FLASH	0.1270	0.1270	0.0000	0.0000	AB85	
internal_pad_def	REGULAR	CIRCLE	1.5240	1.5240	0.0000	0.0000		
SOLDERMASK_TOP	REGULAR	SQUARE	1.9050	1.9050	0.0000	0.0000		
SOLDERMASK_BOTTOM	REGULAR	SQUARE	1.9050	1.9050	0.0000	0.0000		
PASTEMASK_TOP	REGULAR	NULL	0.0000	0.0000	0.0000	0.0000		
PASTEMASK_BOTTOM	REGULAR	NULL	0.0000	0.0000	0.0000	0.0000		
FILMMASKTOP	REGULAR	NULL	0.0000	0.0000	0.0000	0.0000		
FILMMASKBOTTOM	REGULAR	NULL	0.0000	0.0000	0.0000	0.0000		

Drill Data for 70S85C35D

Hole Type	Drill Dia	Plating	Figure	Characters	Width	Height	Offset X	Offset Y	Pos Tolerance	Neg Tolerance	Non-Standard
CIRCLE DRILL	0.8890	PLATED	CIRCLE		1.2700	1.2700	0.0000	0.0000	0.0000	0.0000	

Padstack: VIA Type: through Inner pads: Optional

Layer	Pad Type	Geometry	Width	Height	Offset X	Offset Y	Flash Name	Shape Name
TOP	ANTI	CIRCLE	0.7620	0.7620	0.0000	0.0000		

TOP	THERMAL	FLASH	0.1270	0.1270	0.0000	0.0000	AB00	
TOP	REGULAR	CIRCLE	0.6096	0.6096	0.0000	0.0000		
BOTTOM	ANTI	CIRCLE	0.7620	0.7620	0.0000	0.0000		
BOTTOM	THERMAL	FLASH	0.1270	0.1270	0.0000	0.0000	AB00	
BOTTOM	REGULAR	CIRCLE	0.6096	0.6096	0.0000	0.0000		
internal_pad_def	ANTI	CIRCLE	0.7620	0.7620	0.0000	0.0000		
internal_pad_def	THERMAL	FLASH	0.1270	0.1270	0.0000	0.0000	AB00	
internal_pad_def	REGULAR	CIRCLE	0.6096	0.6096	0.0000	0.0000		
SOLDERMASK_TOP	REGULAR	CIRCLE	1.1176	1.1176	0.0000	0.0000		
SOLDERMASK_BOTTOM	REGULAR	CIRCLE	1.1176	1.1176	0.0000	0.0000		
PASTEMASK_TOP	REGULAR	NULL	0.0000	0.0000	0.0000	0.0000		
PASTEMASK_BOTTOM	REGULAR	NULL	0.0000	0.0000	0.0000	0.0000		
FILMMASKTOP	REGULAR	NULL	0.0000	0.0000	0.0000	0.0000		
FILMMASKBOTTOM	REGULAR	NULL	0.0000	0.0000	0.0000	0.0000		

Drill Data for VIA

Hole Type	Drill Dia	Plating	Figure	Characters	Width	Height	Offset X	Offset Y	Pos Tolerance	Neg Tolerance	Non-Standard
CIRCLE DRILL	0.3302	PLATED	CIRCLE	+	1.2700	1.2700	0.0000	0.0000	0.0000	0.0000	

Padstack: 80X50 Type: smd Inner pads: Fixed

Layer	Pad Type	Geometry	Width	Height	Offset X	Offset Y	Flash Name	Shape Name
TOP	ANTI	NULL	0.0000	0.0000	0.0000	0.0000		
TOP	THERMAL	NULL	0.0000	0.0000	0.0000	0.0000		
TOP	REGULAR	RECTANGLE	2.0320	1.2700	0.0000	0.0000		
BOTTOM	ANTI	NULL	0.0000	0.0000	0.0000	0.0000		
BOTTOM	THERMAL	NULL	0.0000	0.0000	0.0000	0.0000		
BOTTOM	REGULAR	NULL	0.0000	0.0000	0.0000	0.0000		
internal_pad_def	ANTI	NULL	0.0000	0.0000	0.0000	0.0000		
internal_pad_def	THERMAL	NULL	0.0000	0.0000	0.0000	0.0000		
internal_pad_def	REGULAR	NULL	0.0000	0.0000	0.0000	0.0000		
SOLDERMASK_TOP	REGULAR	RECTANGLE	2.1844	1.4224	0.0000	0.0000		
SOLDERMASK_BOTTOM	REGULAR	NULL	0.0000	0.0000	0.0000	0.0000		
PASTEMASK_TOP	REGULAR	RECTANGLE	1.5240	1.2700	0.0000	0.0000		
PASTEMASK_BOTTOM	REGULAR	NULL	0.0000	0.0000	0.0000	0.0000		
FILMMASKTOP	REGULAR	NULL	0.0000	0.0000	0.0000	0.0000		
FILMMASKBOTTOM	REGULAR	NULL	0.0000	0.0000	0.0000	0.0000		

Drill Data for 80X50

Hole Type	Drill Dia	Plating	Figure	Characters	Width	Height	Offset X	Offset Y	Pos Tolerance	Neg Tolerance	Non-Standard
CIRCLE DRILL	0.0000	NON_PLATED	NULL		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	

Padstack: PAD125 Type: through Inner pads: Fixed

Layer	Pad Type	Geometry	Width	Height	Offset X	Offset Y	Flash Name	Shape Name
TOP	ANTI	CIRCLE	3.6830	3.6830	0.0000	0.0000		
TOP	THERMAL	CIRCLE	3.6830	3.6830	0.0000	0.0000		
TOP	REGULAR	CIRCLE	0.6350	0.6350	0.0000	0.0000		

BOTTOM	ANTI	CIRCLE	3.6830	3.6830	0.0000	0.0000		
BOTTOM	THERMAL	CIRCLE	3.6830	3.6830	0.0000	0.0000		
BOTTOM	REGULAR	CIRCLE	0.6350	0.6350	0.0000	0.0000		
internal_pad_def	ANTI	CIRCLE	3.6830	3.6830	0.0000	0.0000		
internal_pad_def	THERMAL	CIRCLE	3.6830	3.6830	0.0000	0.0000		
internal_pad_def	REGULAR	CIRCLE	0.6350	0.6350	0.0000	0.0000		
SOLDERMASK_TOP	REGULAR	CIRCLE	3.6830	3.6830	0.0000	0.0000		
SOLDERMASK_BOTTOM	REGULAR	CIRCLE	3.6830	3.6830	0.0000	0.0000		
PASTEMASK_TOP	REGULAR	NULL	0.0000	0.0000	0.0000	0.0000		
PASTEMASK_BOTTOM	REGULAR	NULL	0.0000	0.0000	0.0000	0.0000		
FILMMASKTOP	REGULAR	NULL	0.0000	0.0000	0.0000	0.0000		
FILMMASKBOTTOM	REGULAR	NULL	0.0000	0.0000	0.0000	0.0000		

Drill Data for PAD125

Hole Type	Drill Dia	Plating	Figure	Characters	Width	Height	Offset X	Offset Y	Pos Tolerance	Neg Tolerance	Non-Standard
CIRCLE DRILL	3.1750	NON_PLATED	NULL	X	1.9050	1.9050	0.0000	0.0000	0.0000	0.0000	

Padstack: PAD156 Type: through Inner pads: Fixed

Layer	Pad Type	Geometry	Width	Height	Offset X	Offset Y	Flash Name	Shape Name
TOP	ANTI	CIRCLE	5.0800	5.0800	0.0000	0.0000		
TOP	THERMAL	FLASH	0.1270	0.1270	0.0000	0.0000	AB00	
TOP	REGULAR	CIRCLE	1.2700	1.2700	0.0000	0.0000		
BOTTOM	ANTI	CIRCLE	5.0800	5.0800	0.0000	0.0000		
BOTTOM	THERMAL	FLASH	0.1270	0.1270	0.0000	0.0000	AB00	
BOTTOM	REGULAR	CIRCLE	1.2700	1.2700	0.0000	0.0000		
internal_pad_def	ANTI	CIRCLE	5.0800	5.0800	0.0000	0.0000		
internal_pad_def	THERMAL	FLASH	0.1270	0.1270	0.0000	0.0000	AB00	
internal_pad_def	REGULAR	CIRCLE	1.2700	1.2700	0.0000	0.0000		
SOLDERMASK_TOP	REGULAR	CIRCLE	5.0800	5.0800	0.0000	0.0000		
SOLDERMASK_BOTTOM	REGULAR	CIRCLE	5.0800	5.0800	0.0000	0.0000		
PASTEMASK_TOP	REGULAR	NULL	0.0000	0.0000	0.0000	0.0000		
PASTEMASK_BOTTOM	REGULAR	NULL	0.0000	0.0000	0.0000	0.0000		
FILMMASKTOP	REGULAR	NULL	0.0000	0.0000	0.0000	0.0000		
FILMMASKBOTTOM	REGULAR	NULL	0.0000	0.0000	0.0000	0.0000		

Drill Data for PAD156

Hole Type	Drill Dia	Plating	Figure	Characters	Width	Height	Offset X	Offset Y	Pos Tolerance	Neg Tolerance	Non-Standard
CIRCLE DRILL	3.9624	NON_PLATED	NULL	A	2.5400	2.5400	0.0000	0.0000	0.0000	0.0000	

Padstack: PAD250 Type: through Inner pads: Fixed

Layer	Pad Type	Geometry	Width	Height	Offset X	Offset Y	Flash Name	Shape Name
TOP	ANTI	CIRCLE	7.6200	7.6200	0.0000	0.0000		
TOP	THERMAL	CIRCLE	7.6200	7.6200	0.0000	0.0000		
TOP	REGULAR	CIRCLE	1.2700	1.2700	0.0000	0.0000		
BOTTOM	ANTI	CIRCLE	7.6200	7.6200	0.0000	0.0000		
BOTTOM	THERMAL	CIRCLE	7.6200	7.6200	0.0000	0.0000		

BOTTOM	REGULAR	CIRCLE	1.2700	1.2700	0.0000	0.0000		
internal_pad_def	ANTI	CIRCLE	7.6200	7.6200	0.0000	0.0000		
internal_pad_def	THERMAL	CIRCLE	7.6200	7.6200	0.0000	0.0000		
internal_pad_def	REGULAR	CIRCLE	1.2700	1.2700	0.0000	0.0000		
SOLDERMASK_TOP	REGULAR	CIRCLE	7.6200	7.6200	0.0000	0.0000		
SOLDERMASK_BOTTOM	REGULAR	CIRCLE	7.6200	7.6200	0.0000	0.0000		
PASTEMASK_TOP	REGULAR	NULL	0.0000	0.0000	0.0000	0.0000		
PASTEMASK_BOTTOM	REGULAR	NULL	0.0000	0.0000	0.0000	0.0000		
FILMMASKTOP	REGULAR	NULL	0.0000	0.0000	0.0000	0.0000		
FILMMASKBOTTOM	REGULAR	NULL	0.0000	0.0000	0.0000	0.0000		

Drill Data for PAD250

Hole Type	Drill Dia	Plating	Figure	Characters	Width	Height	Offset X	Offset Y	Pos Tolerance	Neg Tolerance	Non-Standard
CIRCLE DRILL	6.3500	NON_PLATED	NULL	B	2.5400	2.5400	0.0000	0.0000	0.0000	0.0000	

Padstack: 60S85C35D Type: through Inner pads: Optional

Layer	Pad Type	Geometry	Width	Height	Offset X	Offset Y	Flash Name	Shape Name
TOP	ANTI	CIRCLE	2.1590	2.1590	0.0000	0.0000		
TOP	THERMAL	FLASH	0.1270	0.1270	0.0000	0.0000	AB85	
TOP	REGULAR	SQUARE	1.6510	1.6510	0.0000	0.0000		
BOTTOM	ANTI	CIRCLE	2.1590	2.1590	0.0000	0.0000		
BOTTOM	THERMAL	FLASH	0.1270	0.1270	0.0000	0.0000	AB85	
BOTTOM	REGULAR	SQUARE	1.6510	1.6510	0.0000	0.0000		
internal_pad_def	ANTI	CIRCLE	2.1590	2.1590	0.0000	0.0000		
internal_pad_def	THERMAL	FLASH	0.1270	0.1270	0.0000	0.0000	AB85	
internal_pad_def	REGULAR	CIRCLE	1.5240	1.5240	0.0000	0.0000		
SOLDERMASK_TOP	REGULAR	SQUARE	1.9050	1.9050	0.0000	0.0000		
SOLDERMASK_BOTTOM	REGULAR	SQUARE	1.9050	1.9050	0.0000	0.0000		
PASTEMASK_TOP	REGULAR	NULL	0.0000	0.0000	0.0000	0.0000		
PASTEMASK_BOTTOM	REGULAR	NULL	0.0000	0.0000	0.0000	0.0000		
FILMMASKTOP	REGULAR	NULL	0.0000	0.0000	0.0000	0.0000		
FILMMASKBOTTOM	REGULAR	NULL	0.0000	0.0000	0.0000	0.0000		

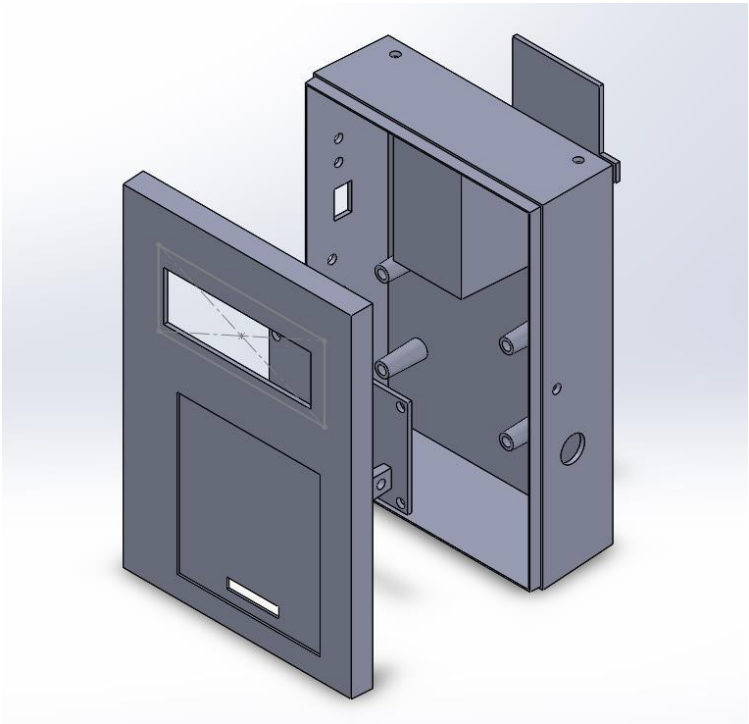
Drill Data for 60S85C35D

Hole Type	Drill Dia	Plating	Figure	Characters	Width	Height	Offset X	Offset Y	Pos Tolerance	Neg Tolerance	Non-Standard
CIRCLE DRILL	0.8890	PLATED	CIRCLE		1.2700	1.2700	0.0000	0.0000	0.0000	0.0000	

Display Unit Manufacture

Display Unit Enclosure

Display Unit

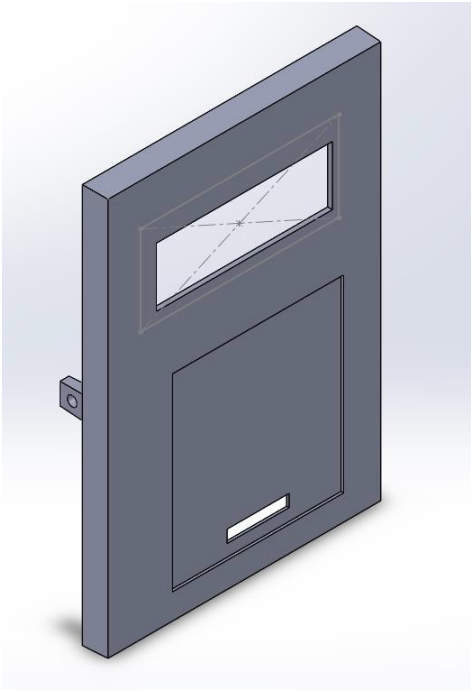


Components

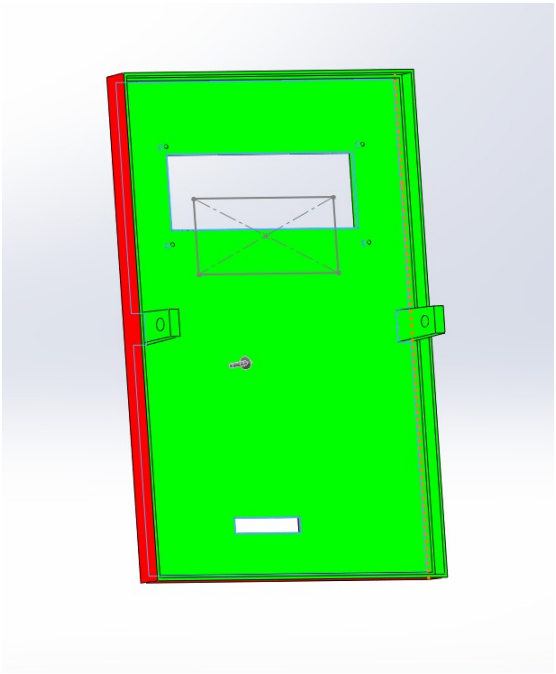
The display unit enclosure consists of 3 components that are manufactured by injection molding. All units are to be molded using hard plastic.

1. Top Cover
2. Bottom Cover
3. Battery Cover

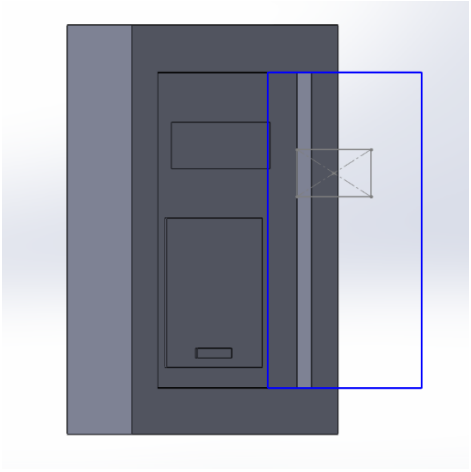
Top Cover



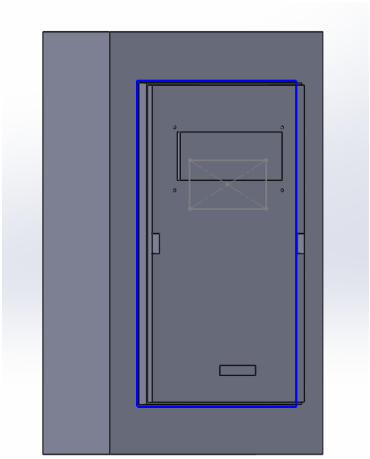
Draft Analysis of Top Cover



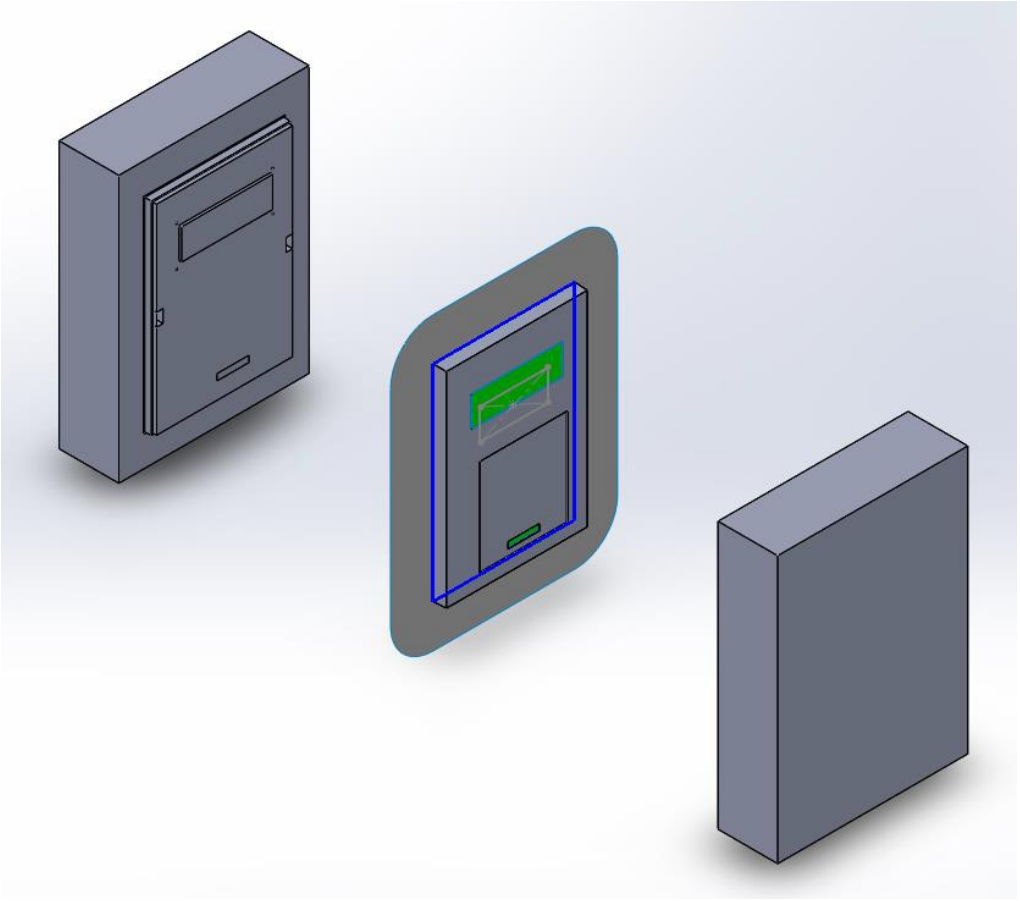
Mold Components of Top Cover



Cavity

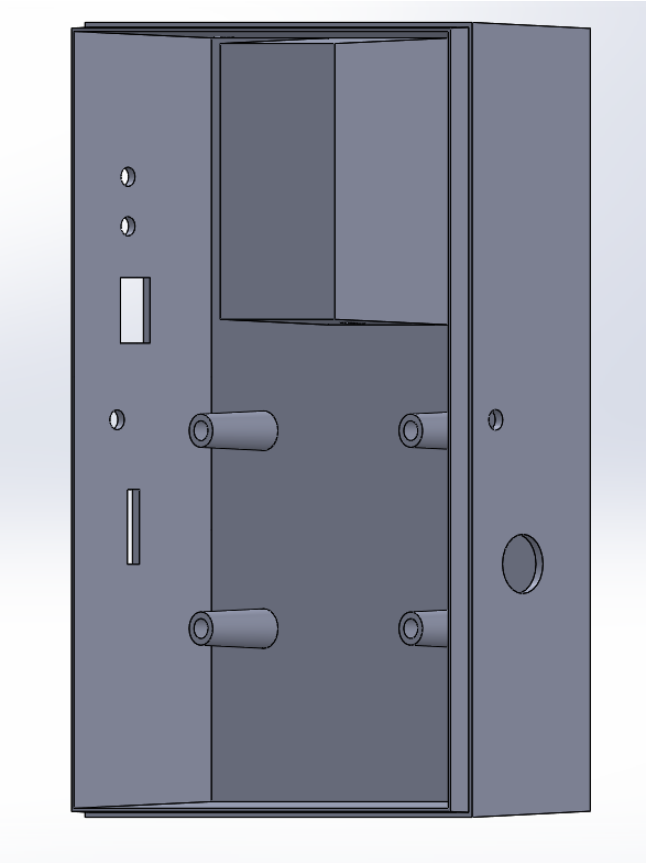


Core

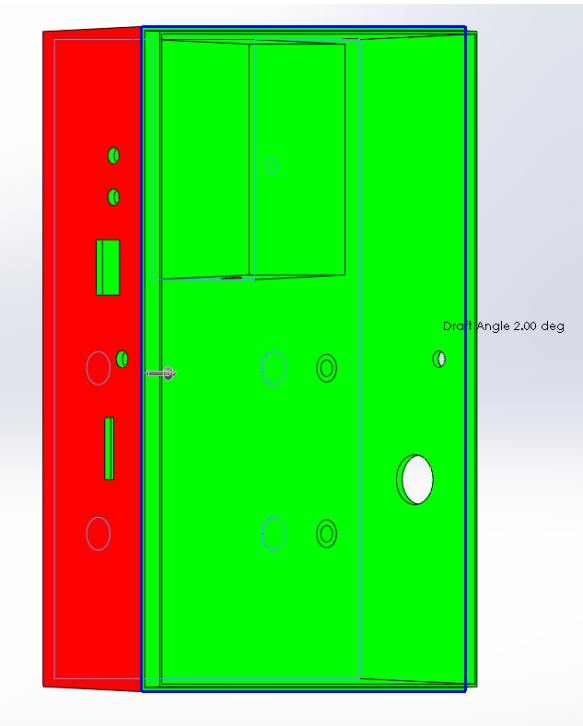


Exploded view of mold

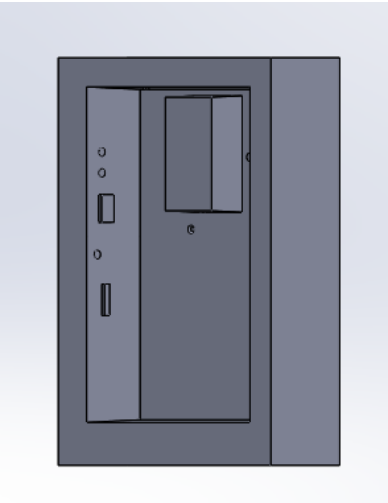
Bottom Cover



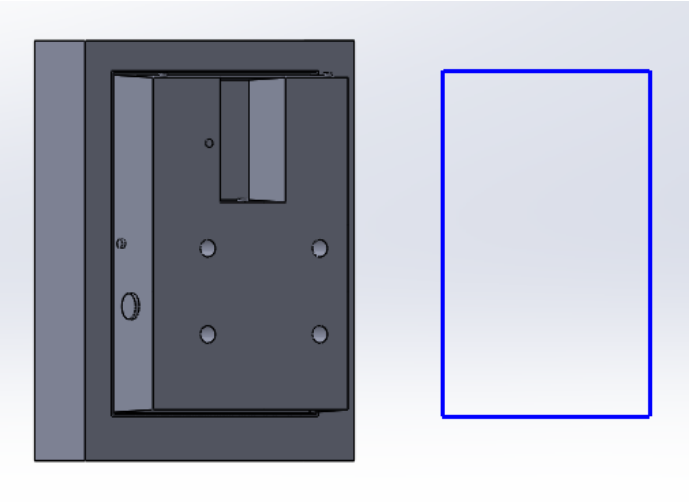
Draft Analysis of Bottom Cover



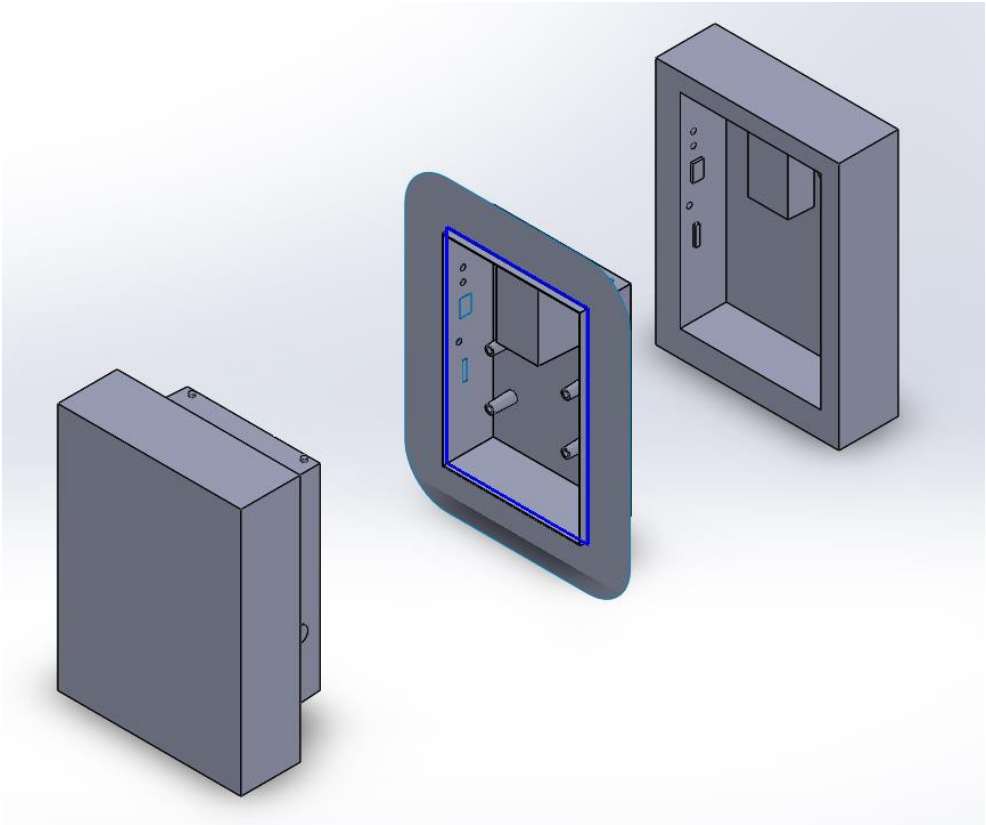
Mold Components



Core

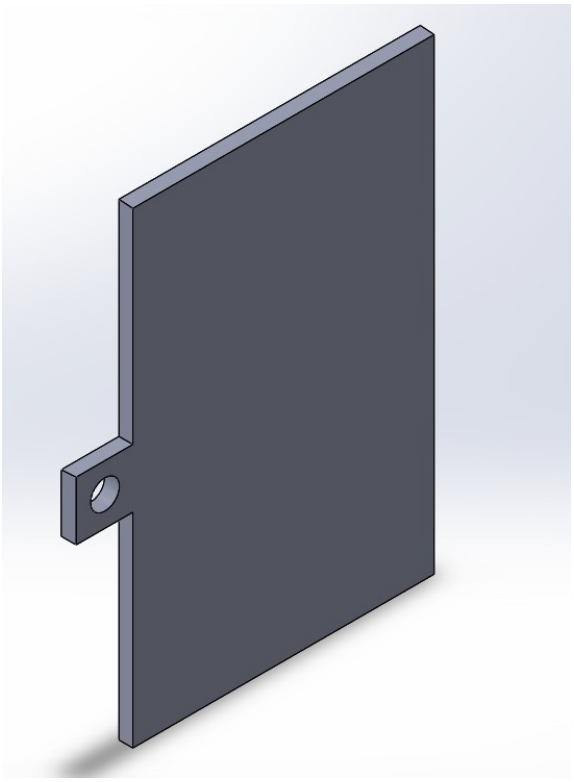


Cavity

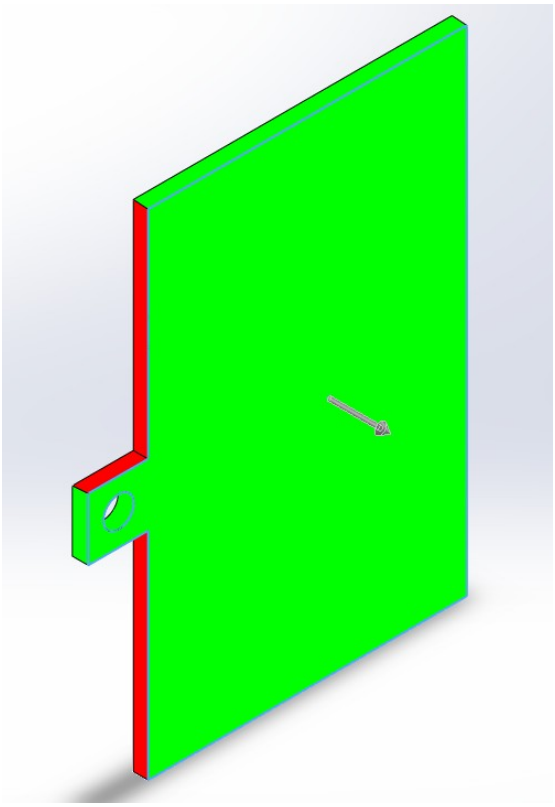


Exploded view of Mold

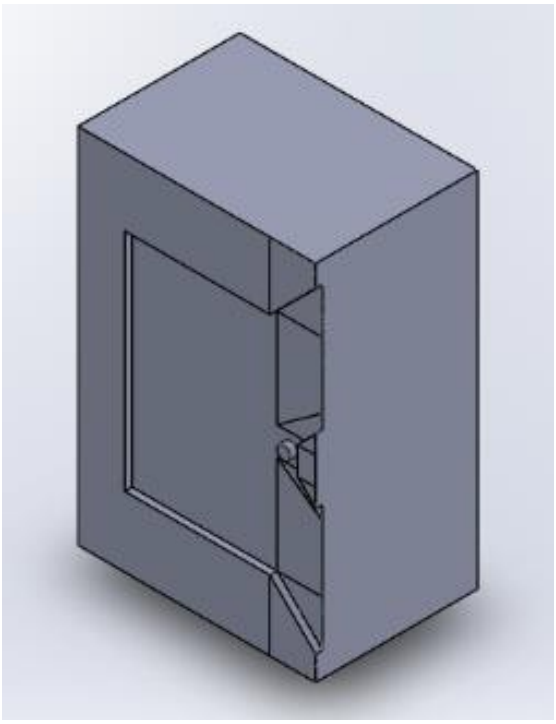
Battery Cover



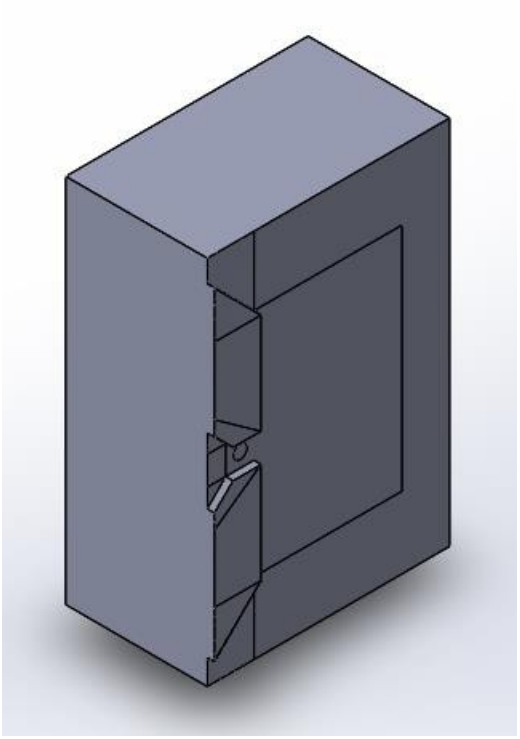
Draft Analysis of Battery Cover



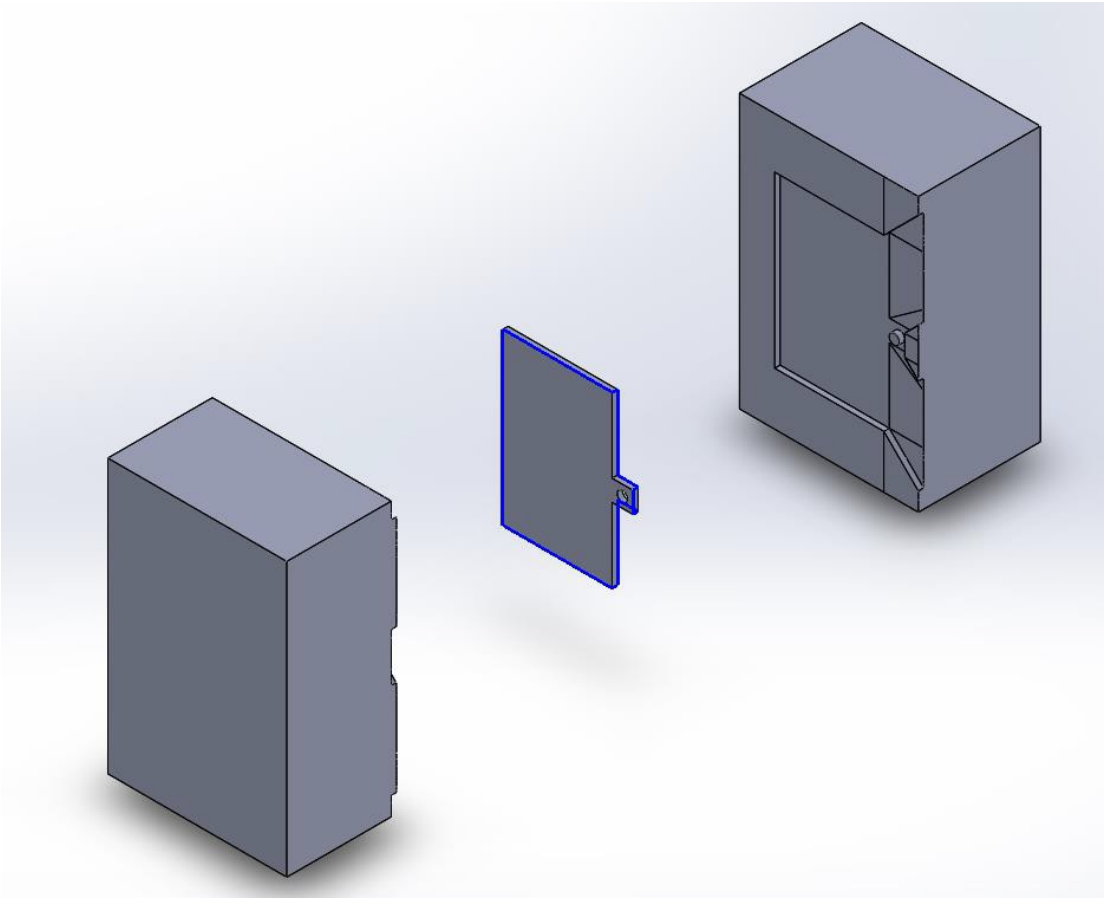
Mold Components of Battery Cover



Core



Cavity



Exploded view of Mold

Display Unit PCB Manufacture

Bill of Materials

SYM_NAME	COMP_DEVICE_TYPE	COMP_VALUE	COMP_TOL	COMP_CLASS	REFDES
RESISTOR	C_RESISTOR_0.33UF	0.33uF		IC	C1
RESISTOR	C_RESISTOR_0.33UF	0.33uF		IC	C2
RESISTOR	C_RESISTOR_22PF	22pF		IC	C3
RESISTOR	C_RESISTOR_22PF	22pF		IC	C4
RESISTOR	1N4740A_RESISTOR_1N4740A	1N4740A		IC	D1
JACK	HEADER 2_JACK_HEADER 2	HEADER 2		IC	J1
CONN16	HEADER 16_CONN16_LCD	LCD		IC	J2
CON6	HEADER 6_CON6_HEADER 6	HEADER 6		IC	J3
CONN2	HEADER 2_CONN2_HEADER 2	HEADER 2		IC	J4
CONN2	HEADER 2_CONN2_HEADER 2	HEADER 2		IC	J5
CONN8	HEADER 8_CONN8_HEADER 8	HEADER 8		IC	J6
CONN2	HEADER 2_CONN2_HEADER 2	HEADER 2		IC	J7
OPTO	CONN MOD 6-4_J_OPTO_CONN MOD 6-	CONN MOD 6-4_J		IC	J8
CONN2	CON2_CONN2_CON2	CON2		IC	J9
CONN4	HEADER 4_CONN4_HEADER 4	HEADER 4		IC	J10
BC547	BC547A_BC547_BC547A	BC547A		IC	Q1
BC547	BC547A_BC547_BC547A	BC547A		IC	Q2
TRIMPOT	POT_TRIMPOT_1K	1K		IC	R1
RESISTOR	R_RESISTOR_1K	1k		IC	R2
RESISTOR	R_RESISTOR_1K	1k		IC	R3
RESISTOR	R_RESISTOR_680	680		IC	R4
RESISTOR	R_RESISTOR_680	680		IC	R5
RESISTOR	R_RESISTOR_30K	30K		IC	R6
RESISTOR	R_RESISTOR_39K	39K		IC	R7
RESISTOR	R_RESISTOR_7.5K	7.5K		IC	R8
RESISTOR	R_RESISTOR_10K	10K		IC	R9
RESISTOR	SW_PB_SPST_RESISTOR_SW_PB_SPST	SW_PB_SPST		IC	SW1
REGULATOR	LM7805C_0_REGULATOR_LM7805C	LM7805C		IC	U1
ICSOCKET	ATMEGA32A-PU_ICSOCKET_ATMEGA32A	ATMEGA32A-PU		IC	U2
CRYSTAL	CRYSTAL_CRYSTAL_CRYSTAL	CRYSTAL		IC	Y1

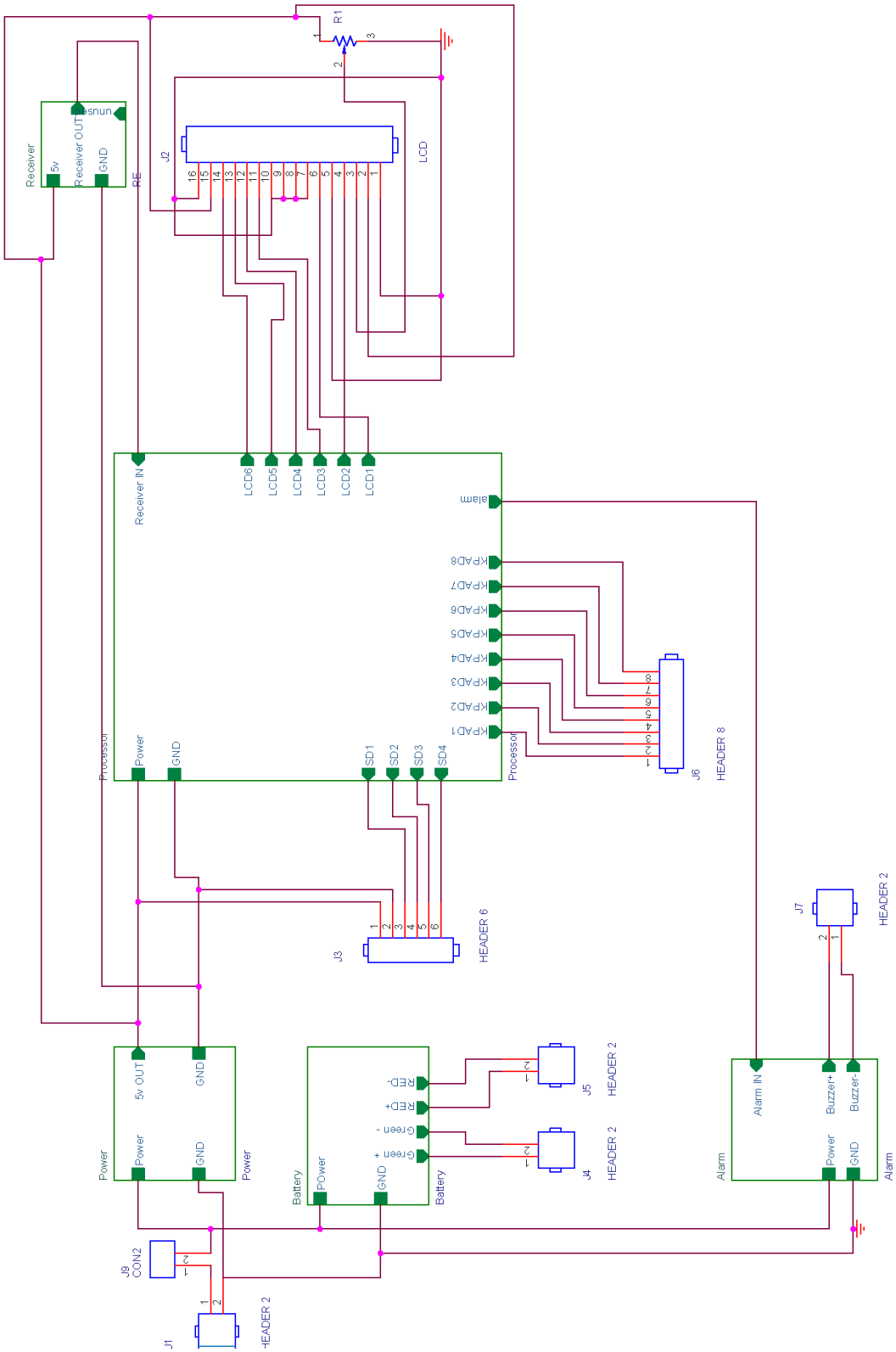
External Component Bill of Materials

Component Name	Manufacturer	Quantity

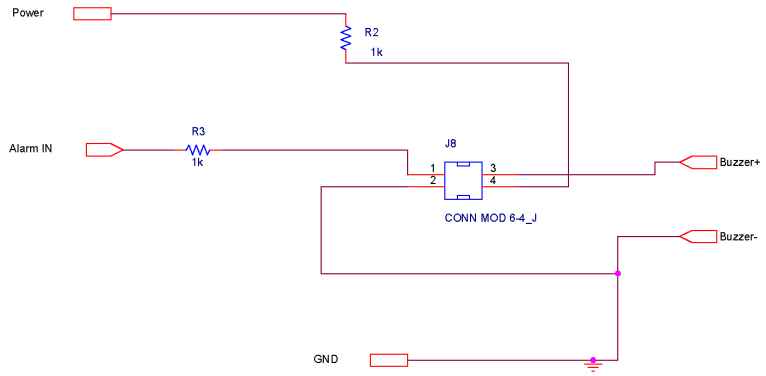
ATMega32A	Microchip	1
Rocker Switch	NTE Electronics	1
433 MHz Receiver	AdaFruit	1
SD Card Reader	Kingston	1
16x2 LCD	XIAMEN AMOTEC	1
4x4 Keypad	XIAMEN AMOTEC	1

Circuit Schematics

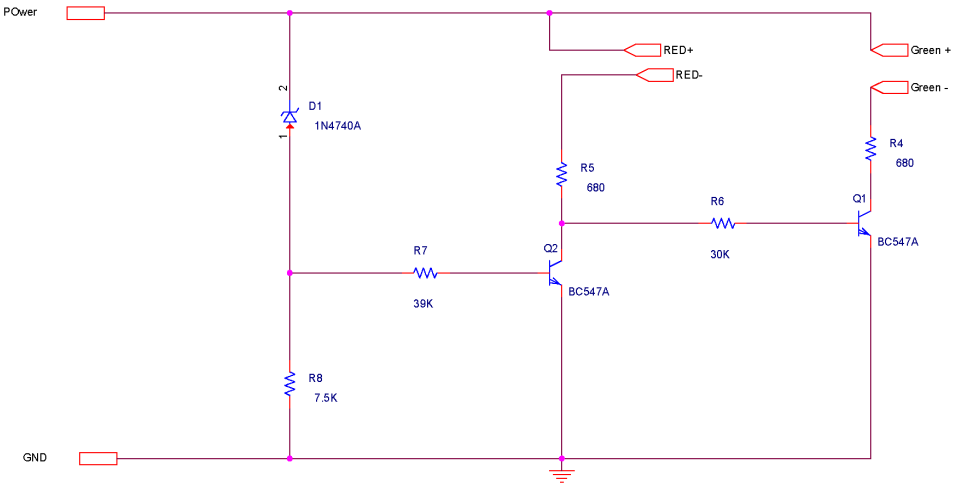
Hierarchical View



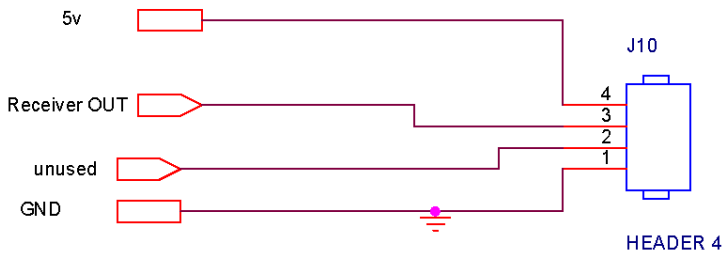
Alarm Unit



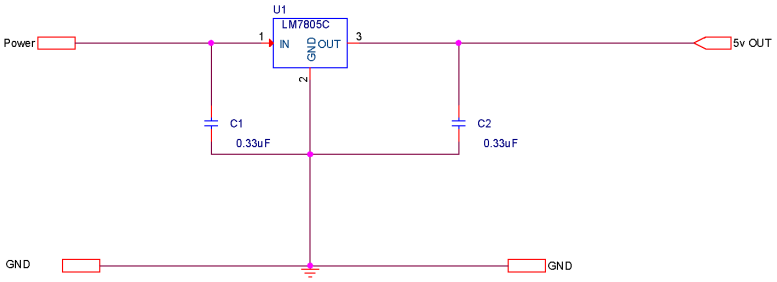
Battery Indicator



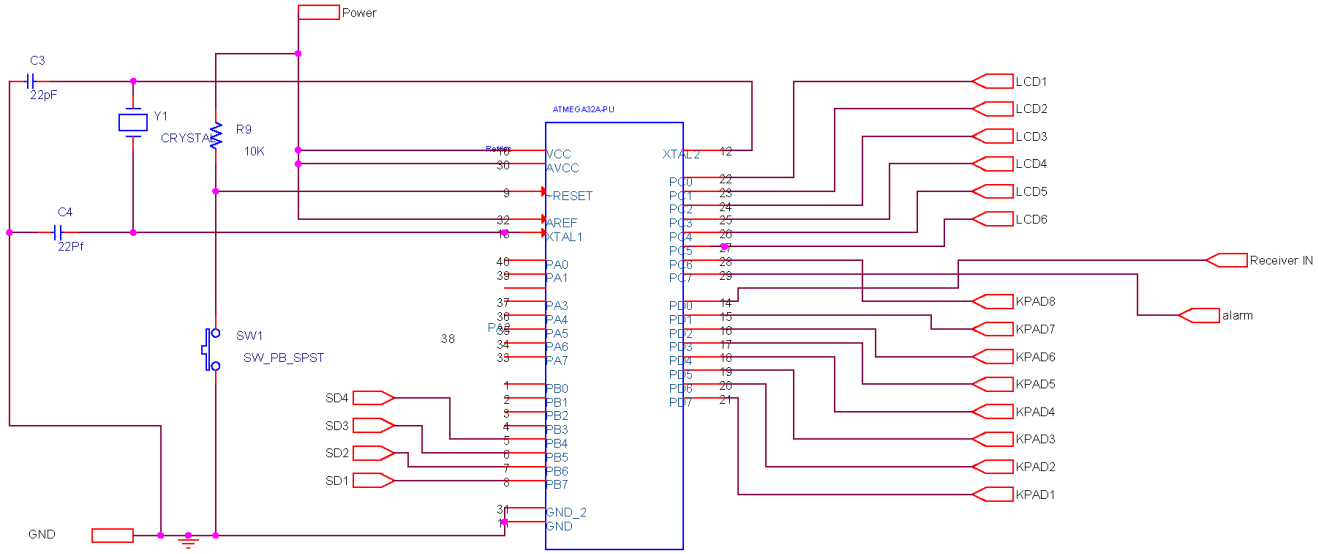
RF communication



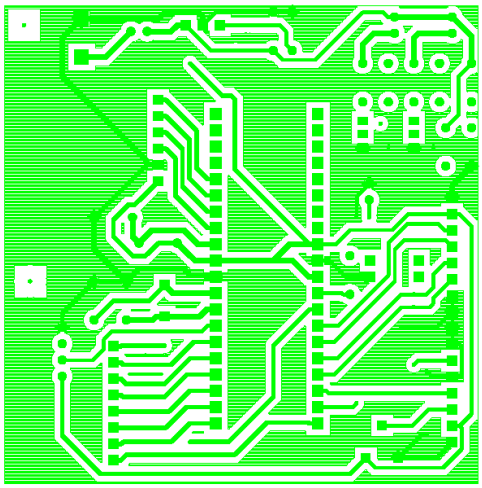
Power regulator



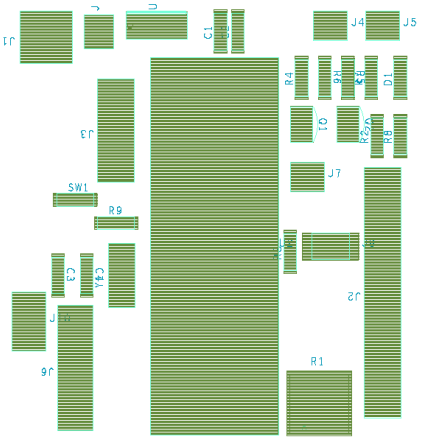
Processor



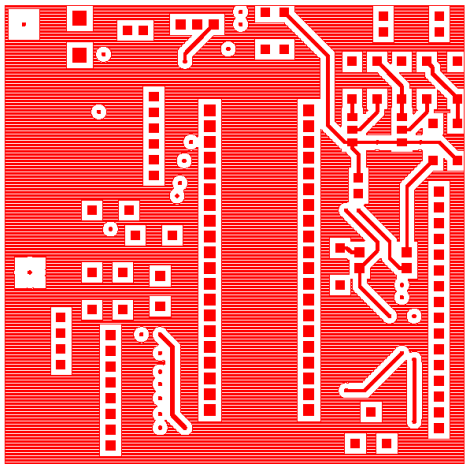
Circuit Layout



Display Unit Bottom



Silkscreen



Display Unit Top

Design Name D:/JAKS jaya/Propagater/Display_unit/display_unit.brd
Date Thu Jun 06 21:24:08 2019

Net List Report

Net Name	Net Pins
GND	C1.2 C2.2 C3.1 C4.1 J1.2 J2.1 J2.5 J2.7 J2.8 J2.9 J2.10 J2.16 J3.2 J7.1 J8.2 J10.1 Q1.3 Q2.3 R1.3 R8.1 SW1.1 U1.2 U2.11 U2.31
N00181	J8.1 R3.2
N00255	D1.1 R7.2 R8.2
N00282	J8.4 R2.1
N00339	Q2.2 R7.1
N00391	C1.1 D1.2 J4.1 J5.1 J9.2 R2.2 U1.1
N00522	Q2.1 R5.2 R6.1
N00588	C2.1 J2.2 J2.15 J3.1 J10.4 R1.1 R9.2 U1.3 U2.10 U2.30 U2.32
N00636	J4.2 R4.2
N00686	Q1.2 R6.2
N00688	J5.2 R5.1
N00715	Q1.1 R4.1
N00717	J7.2 J8.3
N00827	J10.3 U2.14
N00890	R3.1 U2.29
N01074	J3.3 U2.8
N01110	J3.4 U2.7
N01146	J3.5 U2.6
N01180	J3.6 U2.5
N01521	R9.1 SW1.2 U2.9
N01957	J6.1 U2.21
N01995	J6.2 U2.20
N02035	J6.3 U2.19
N02075	J6.4 U2.18
N02113	J6.5 U2.17
N02151	J6.6 U2.16
N02192	J6.7 U2.15
N02230	J6.8 U2.28
N02340	C4.2 U2.13 Y1.1
N03028	C3.2 U2.12 Y1.2
N03303	J2.14 U2.27
N03341	J2.13 U2.26
N03383	J2.12 U2.25
N03418	J2.11 U2.24
N03460	J2.4 U2.23
N03495	J2.6 U2.22
N03676	J2.3 R1.2
N06708	J1.1 J9.1
UNUSED	J10.2

Design Name D:/JAKS jaya/Propagater/Display_unit/display_unit.brd
Date Thu Jun 06 21:24:50 2019
Total Padstack Definitions: 7
Dimensions in millimeters with 4 decimal places

Padstack: 90X90DUAL Type: through Inner pads: Optional

Layer	Pad Type	Geometry	Width	Height	Offset X	Offset Y	Flash Name	Shape Name
TOP	ANTI	CIRCLE	2.4130	2.4130	0.0000	0.0000		
TOP	THERMAL	FLASH	0.1270	0.1270	0.0000	0.0000	AB85	
TOP	REGULAR	SQUARE	2.2860	2.2860	0.0000	0.0000		
BOTTOM	ANTI	CIRCLE	2.4130	2.4130	0.0000	0.0000		
BOTTOM	THERMAL	FLASH	0.1270	0.1270	0.0000	0.0000	AB85	
BOTTOM	REGULAR	SQUARE	2.2860	2.2860	0.0000	0.0000		
internal_pad_def	ANTI	CIRCLE	2.1590	2.1590	0.0000	0.0000		
internal_pad_def	THERMAL	FLASH	0.1270	0.1270	0.0000	0.0000	AB85	
internal_pad_def	REGULAR	CIRCLE	1.5240	1.5240	0.0000	0.0000		
SOLDERMASK_TOP	REGULAR	SQUARE	1.9050	1.9050	0.0000	0.0000		
SOLDERMASK_BOTTOM	REGULAR	SQUARE	1.9050	1.9050	0.0000	0.0000		
PASTEMASK_TOP	REGULAR	NULL	0.0000	0.0000	0.0000	0.0000		
PASTEMASK_BOTTOM	REGULAR	NULL	0.0000	0.0000	0.0000	0.0000		
FILMMASKTOP	REGULAR	NULL	0.0000	0.0000	0.0000	0.0000		
FILMMASKBOTTOM	REGULAR	NULL	0.0000	0.0000	0.0000	0.0000		

Drill Data for 90X90DUAL

Hole Type	Drill Dia	Plating	Figure	Characters	Width	Height	Offset X	Offset Y	Pos Tolerance	Neg Tolerance	Non-Standard
CIRCLE DRILL	0.8890	PLATED	CIRCLE		1.2700	1.2700	0.0000	0.0000	0.0000	0.0000	

Padstack: VIA Type: through Inner pads: Optional

Layer	Pad Type	Geometry	Width	Height	Offset X	Offset Y	Flash Name	Shape Name
TOP	ANTI	CIRCLE	0.7620	0.7620	0.0000	0.0000		
TOP	THERMAL	FLASH	0.1270	0.1270	0.0000	0.0000	AB00	
TOP	REGULAR	CIRCLE	0.6096	0.6096	0.0000	0.0000		
BOTTOM	ANTI	CIRCLE	0.7620	0.7620	0.0000	0.0000		
BOTTOM	THERMAL	FLASH	0.1270	0.1270	0.0000	0.0000	AB00	
BOTTOM	REGULAR	CIRCLE	0.6096	0.6096	0.0000	0.0000		
internal_pad_def	ANTI	CIRCLE	0.7620	0.7620	0.0000	0.0000		
internal_pad_def	THERMAL	FLASH	0.1270	0.1270	0.0000	0.0000	AB00	
internal_pad_def	REGULAR	CIRCLE	0.6096	0.6096	0.0000	0.0000		
SOLDERMASK_TOP	REGULAR	CIRCLE	1.1176	1.1176	0.0000	0.0000		
SOLDERMASK_BOTTOM	REGULAR	CIRCLE	1.1176	1.1176	0.0000	0.0000		
PASTEMASK_TOP	REGULAR	NULL	0.0000	0.0000	0.0000	0.0000		
PASTEMASK_BOTTOM	REGULAR	NULL	0.0000	0.0000	0.0000	0.0000		
FILMMASKTOP	REGULAR	NULL	0.0000	0.0000	0.0000	0.0000		
FILMMASKBOTTOM	REGULAR	NULL	0.0000	0.0000	0.0000	0.0000		

Drill Data for VIA

Hole Type	Drill Dia	Plating	Figure	Characters	Width	Height	Offset X	Offset Y	Pos Tolerance	Neg Tolerance	Non-Standard
CIRCLE DRILL	0.3302	PLATED	CIRCLE	+	1.2700	1.2700	0.0000	0.0000	0.0000	0.0000	

Padstack: PAD125 Type: through Inner pads: Fixed

Layer	Pad Type	Geometry	Width	Height	Offset X	Offset Y	Flash Name	Shape Name
TOP	ANTI	CIRCLE	3.6830	3.6830	0.0000	0.0000		
TOP	THERMAL	CIRCLE	3.6830	3.6830	0.0000	0.0000		
TOP	REGULAR	CIRCLE	0.6350	0.6350	0.0000	0.0000		

BOTTOM	ANTI	CIRCLE	3.6830	3.6830	0.0000	0.0000		
BOTTOM	THERMAL	CIRCLE	3.6830	3.6830	0.0000	0.0000		
BOTTOM	REGULAR	CIRCLE	0.6350	0.6350	0.0000	0.0000		
internal_pad_def	ANTI	CIRCLE	3.6830	3.6830	0.0000	0.0000		
internal_pad_def	THERMAL	CIRCLE	3.6830	3.6830	0.0000	0.0000		
internal_pad_def	REGULAR	CIRCLE	0.6350	0.6350	0.0000	0.0000		
SOLDERMASK_TOP	REGULAR	CIRCLE	3.6830	3.6830	0.0000	0.0000		
SOLDERMASK_BOTTOM	REGULAR	CIRCLE	3.6830	3.6830	0.0000	0.0000		
PASTEMASK_TOP	REGULAR	NULL	0.0000	0.0000	0.0000	0.0000		
PASTEMASK_BOTTOM	REGULAR	NULL	0.0000	0.0000	0.0000	0.0000		
FILMMASKTOP	REGULAR	NULL	0.0000	0.0000	0.0000	0.0000		
FILMMASKBOTTOM	REGULAR	NULL	0.0000	0.0000	0.0000	0.0000		

Drill Data for PAD125

Hole Type	Drill Dia	Plating	Figure	Characters	Width	Height	Offset X	Offset Y	Pos Tolerance	Neg Tolerance	Non-Standard
CIRCLE DRILL	3.1750	NON_PLATED	NULL	X	1.9050	1.9050	0.0000	0.0000	0.0000	0.0000	

Padstack: 70S85C35D Type: through Inner pads: Optional

Layer	Pad Type	Geometry	Width	Height	Offset X	Offset Y	Flash Name	Shape Name
TOP	ANTI	CIRCLE	2.1590	2.1590	0.0000	0.0000		
TOP	THERMAL	FLASH	0.1270	0.1270	0.0000	0.0000	AB85	
TOP	REGULAR	SQUARE	1.7780	1.7780	0.0000	0.0000		
BOTTOM	ANTI	CIRCLE	2.1590	2.1590	0.0000	0.0000		
BOTTOM	THERMAL	FLASH	0.1270	0.1270	0.0000	0.0000	AB85	
BOTTOM	REGULAR	SQUARE	1.7780	1.7780	0.0000	0.0000		
internal_pad_def	ANTI	CIRCLE	2.1590	2.1590	0.0000	0.0000		
internal_pad_def	THERMAL	FLASH	0.1270	0.1270	0.0000	0.0000	AB85	
internal_pad_def	REGULAR	CIRCLE	1.5240	1.5240	0.0000	0.0000		
SOLDERMASK_TOP	REGULAR	SQUARE	1.9050	1.9050	0.0000	0.0000		
SOLDERMASK_BOTTOM	REGULAR	SQUARE	1.9050	1.9050	0.0000	0.0000		
PASTEMASK_TOP	REGULAR	NULL	0.0000	0.0000	0.0000	0.0000		
PASTEMASK_BOTTOM	REGULAR	NULL	0.0000	0.0000	0.0000	0.0000		
FILMMASKTOP	REGULAR	NULL	0.0000	0.0000	0.0000	0.0000		
FILMMASKBOTTOM	REGULAR	NULL	0.0000	0.0000	0.0000	0.0000		

Drill Data for 70S85C35D

Hole Type	Drill Dia	Plating	Figure	Characters	Width	Height	Offset X	Offset Y	Pos Tolerance	Neg Tolerance	Non-Standard
CIRCLE DRILL	0.8890	PLATED	CIRCLE		1.2700	1.2700	0.0000	0.0000	0.0000	0.0000	

Padstack: 60X45DUAL Type: through Inner pads: Optional

Layer	Pad Type	Geometry	Width	Height	Offset X	Offset Y	Flash Name	Shape Name
TOP	ANTI	CIRCLE	2.1590	2.1590	0.0000	0.0000		
TOP	THERMAL	FLASH	0.1270	0.1270	0.0000	0.0000	AB85	
TOP	REGULAR	RECTANGLE	1.5240	1.1430	0.0000	0.0000		
BOTTOM	ANTI	CIRCLE	2.1590	2.1590	0.0000	0.0000		
BOTTOM	THERMAL	FLASH	0.1270	0.1270	0.0000	0.0000	AB85	
BOTTOM	REGULAR	RECTANGLE	1.5240	1.1430	0.0000	0.0000		
internal_pad_def	ANTI	CIRCLE	2.1590	2.1590	0.0000	0.0000		
internal_pad_def	THERMAL	FLASH	0.1270	0.1270	0.0000	0.0000	AB85	
internal_pad_def	REGULAR	CIRCLE	1.0160	1.0160	0.0000	0.0000		
SOLDERMASK_TOP	REGULAR	RECTANGLE	1.0414	0.7874	0.0000	0.0000		
SOLDERMASK_BOTTOM	REGULAR	RECTANGLE	1.0414	0.7874	0.0000	0.0000		

PASTEMASK_TOP	REGULAR	NULL	0.0000	0.0000	0.0000	0.0000		
PASTEMASK_BOTTOM	REGULAR	NULL	0.0000	0.0000	0.0000	0.0000		
FILMMASKTOP	REGULAR	NULL	0.0000	0.0000	0.0000	0.0000		
FILMMASKBOTTOM	REGULAR	NULL	0.0000	0.0000	0.0000	0.0000		

Drill Data for 60X45DUAL

Hole Type	Drill Dia	Plating	Figure	Characters	Width	Height	Offset X	Offset Y	Pos Tolerance	Neg Tolerance	Non-Standard
CIRCLE DRILL	0.6350	PLATED	CIRCLE		0.5080	0.5080	0.0000	0.0000	0.0000	0.0000	

Padstack: 55S36 Type: through Inner pads: Optional

Layer	Pad Type	Geometry	Width	Height	Offset X	Offset Y	Flash Name	Shape Name
TOP	ANTI	SQUARE	1.3970	1.3970	0.0000	0.0000		
TOP	THERMAL	NULL	0.0000	0.0000	0.0000	0.0000		
TOP	REGULAR	SQUARE	1.3970	1.3970	0.0000	0.0000		
BOTTOM	ANTI	CIRCLE	1.3970	1.3970	0.0000	0.0000		
BOTTOM	THERMAL	NULL	0.0000	0.0000	0.0000	0.0000		
BOTTOM	REGULAR	CIRCLE	1.3970	1.3970	0.0000	0.0000		
internal_pad_def	ANTI	SQUARE	1.3970	1.3970	0.0000	0.0000		
internal_pad_def	THERMAL	SQUARE	1.3970	1.3970	0.0000	0.0000		
internal_pad_def	REGULAR	SQUARE	1.3970	1.3970	0.0000	0.0000		
SOLDERMASK_TOP	REGULAR	SQUARE	1.5240	1.5240	0.0000	0.0000		
SOLDERMASK_BOTTOM	REGULAR	CIRCLE	1.5240	1.5240	0.0000	0.0000		
PASTEMASK_TOP	REGULAR	NULL	0.0000	0.0000	0.0000	0.0000		
PASTEMASK_BOTTOM	REGULAR	NULL	0.0000	0.0000	0.0000	0.0000		
FILMMASKTOP	REGULAR	NULL	0.0000	0.0000	0.0000	0.0000		
FILMMASKBOTTOM	REGULAR	NULL	0.0000	0.0000	0.0000	0.0000		

Drill Data for 55S36

Hole Type	Drill Dia	Plating	Figure	Characters	Width	Height	Offset X	Offset Y	Pos Tolerance	Neg Tolerance	Non-Standard
CIRCLE DRILL	0.9652	PLATED	CIRCLE	A	0.9652	0.9652	0.0000	0.0000	0.0000	0.0000	

Padstack: 60S85C35D Type: through Inner pads: Optional

Layer	Pad Type	Geometry	Width	Height	Offset X	Offset Y	Flash Name	Shape Name
TOP	ANTI	CIRCLE	2.1590	2.1590	0.0000	0.0000		
TOP	THERMAL	FLASH	0.1270	0.1270	0.0000	0.0000	AB85	
TOP	REGULAR	SQUARE	1.5240	1.5240	0.0000	0.0000		
BOTTOM	ANTI	CIRCLE	2.1590	2.1590	0.0000	0.0000		
BOTTOM	THERMAL	FLASH	0.1270	0.1270	0.0000	0.0000	AB85	
BOTTOM	REGULAR	SQUARE	1.5240	1.5240	0.0000	0.0000		
internal_pad_def	ANTI	CIRCLE	2.1590	2.1590	0.0000	0.0000		
internal_pad_def	THERMAL	FLASH	0.1270	0.1270	0.0000	0.0000	AB85	
internal_pad_def	REGULAR	CIRCLE	1.5240	1.5240	0.0000	0.0000		
SOLDERMASK_TOP	REGULAR	SQUARE	1.9050	1.9050	0.0000	0.0000		
SOLDERMASK_BOTTOM	REGULAR	SQUARE	1.9050	1.9050	0.0000	0.0000		
PASTEMASK_TOP	REGULAR	NULL	0.0000	0.0000	0.0000	0.0000		
PASTEMASK_BOTTOM	REGULAR	NULL	0.0000	0.0000	0.0000	0.0000		
FILMMASKTOP	REGULAR	NULL	0.0000	0.0000	0.0000	0.0000		
FILMMASKBOTTOM	REGULAR	NULL	0.0000	0.0000	0.0000	0.0000		

Drill Data for 60S85C35D

Hole Type	Drill Dia	Plating	Figure	Characters	Width	Height	Offset X	Offset Y	Pos Tolerance	Neg Tolerance	Non-Standard
CIRCLE DRILL	0.8890	PLATED	CIRCLE		1.2700	1.2700	0.0000	0.0000	0.0000	0.0000	

Group 1

Controlled Environment Monitors

Testing

Sensor Unit PCB Testing

```
Testprep General Analysis ...

          number of nets                                .
          number of nets tested                         .      3
          number of nets not tested                     .
          number of nets flagged with NO_TEST           .      1
         -ty
          number of nets testable (tested + not         .
         d)
          ntage of all nets tested                      .      5.79 percent
          ntage of testable nets tested                 .      6.67 percent
          requiring more than one testprobe:

    Required
  Actual  Net
      Name
--------  ----
  --  --------

6                       0  N06627
6                       0  N07080
6                       0  N07092

          number of testprobes on TOP    side          ...   00 percent)
          number of testprobes on BOTTOM side          ...   0.00 percent)
          number of testprobes on pins                 ...
          number of testprobes on vias                 ...

WARNING: There are            6 testprobes

with no assigned probe type. Minimum pad size

for probing                   ... 0 MM

|=================================================================================================================================
==================================
|

|
| Nets currently under test for TOP side ...
|

|
|=================================================================================================================================
==================================
| Net Name                          | QUANTITY | Number | Type              |   Pad Size |     Location      | Reference
Designation                       |
|=================================================================================================================================
==================================

Total number of testpoints on TOP side =       0


|=================================================================================================================================
==================================
|

|
| Nets currently under test for BOTTOM side ...
|

|
|=================================================================================================================================
==================================
| Net Name                          | QUANTITY | Number | Type              |   Pad Size |     Location      | Reference
Designation                       |
|=================================================================================================================================
==================================
        :812                      |          |   ia               | )6 | (-44.0000 -33.0000) | N05812
                                  |          |   ia               | 5  | (-38.0000 -10.0000) | N05812-A
                                  |          |   ia               | 5  | (-43.2700 -2.0000)  | N05812-B
                                  |          |   ia               | 5  | (-39.0000 15.0836)  | N05812-C
|---------------------------------------------------------------------------------------------------------------------------------
---------------------------------
| N06064                            |          |     1  | Via               |     0.6096 | (-40.7300 -2.0000)
                                  | N06064   |
|---------------------------------------------------------------------------------------------------------------------------------
---------------------------------
| N06072                            |          |     1  | Via               |     0.6096 | (-40.7300 9.0000)
                                  | N06072   |
|---------------------------------------------------------------------------------------------------------------------------------
---------------------------------

Total number of testpoints on BOTTOM side =       6


|=================================================================================================================================
==================================
|

|
```

Nets currently not tested ...

Net Name	QUANTITY
N01461	
N01481	
N01545	
N01565	
N01577	
N01607	
N03368	
N03420	
N06627	6
N06779	
N07080	6
N07092	6
N07402	
N07414	
N09349	

Total number of nets not currently tested = 15

Nets currently with NO_TEST property ...

Net Name	QUANTITY
N05864	

Total number of nets with NO_TEST property = 1

Test Report for Sensor Unit

Testpoints on the Top Side

Tespoint	Delivered Input (V)	Expected Output (V)

Testpoints on the Bottom Side		
Testpoint	Input (V)	Expected Output(V)
NO6072	4.65±7.5%	4.65±7%
NO6064	4.65±7.5%	4.65±7.5%
NO5812	4.65±7.5%	4.65±7.5%

Test Report for Power

Voltage Supplied by the Battery	8±15%
Regulated Voltage	4.65±7.5%
Expected Current out from Regulator	3A

Display Unit PCB Testing

```
Testprep General Analysis ...

          mber of nets                                  ...

          mber of nets tested                           ...
          mber of nets not tested                       ...
          mber of nets flagged with NO_TEST property    ...

          mber of nets testable (tested + not tested)   ...

          ge of all nets tested                         ...ercent
          ge of testable nets tested                    ...ercent

          uiring more than one testprobe:


          mber of testprobes on TOP          side       ...          3 ( 13.04
          mber of testprobes on BOTTOM side             ...         20 ( 86.96
          mber of testprobes on pins                    ...
          mber of testprobes on vias                    ...

WARNING: There are              23 testprobes with no assigned probe type. Minimum pad size for probing       ... 0 MM

|=============================================================================================================================================
===========
|

|
| Nets currently under test for TOP side ...
|

|
|=============================================================================================================================================
===========
| Net Name                                | QUANTITY | Number | Type                 |   Pad Size |      Location      | Reference Designation
                                          |
|=============================================================================================================================================
===========
                                                                                     | (23.0000 13.9680)
                                                                                     | (30.0000 13.9680)
|---------------------------------------------------------------------------------------------------------------------------------------------
-------------
| N00686                                  |          |      1 | Via                  |     0.6096 | (21.7688 17.6298)  | N00686
                                          |
|---------------------------------------------------------------------------------------------------------------------------------------------
-------------

Total number of testpoints on TOP side =              3

|=============================================================================================================================================
===========
|

|
| Nets currently under test for BOTTOM side ...
|

|
|=============================================================================================================================================
===========
| Net Name                                | QUANTITY | Number | Type                 |   Pad Size |      Location      | Reference Designation
                                          |
|=============================================================================================================================================
===========
                                                                                     | (-21.8797 18.8797)
                                                                                     | (1.0000 35.0000)
                                                                                     | (29.0000 -14.0000)
|---------------------------------------------------------------------------------------------------------------------------------------------
-------------
| N00391                                  |          |      1 | Via                  |     0.6096 | (-1.0000 29.0000)  | N00391
                                          |
|---------------------------------------------------------------------------------------------------------------------------------------------
-------------
          8                                                                          | (1.0000 33.0000)          8
                                                                                     | (-20.0000 0.0000)         -1
|---------------------------------------------------------------------------------------------------------------------------------------------
-------------
| N01074                                  |          |      1 | Via                  |     0.6096 | (-9.2603 5.3187)   | N01074
                                          |
|---------------------------------------------------------------------------------------------------------------------------------------------
-------------
| N01110                                  |          |      1 | Via                  |     0.6096 | (-8.7983 7.3967)   | N01110
                                          |
|---------------------------------------------------------------------------------------------------------------------------------------------
-------------
| N01146                                  |          |      1 | Via                  |     0.6096 | (-8.1003 11.0000)  | N01146
                                          |
|---------------------------------------------------------------------------------------------------------------------------------------------
-------------
| N01180                                  |          |      1 | Via                  |     0.6096 | (-7.0000 14.0000)  | N01180
                                          |
|---------------------------------------------------------------------------------------------------------------------------------------------
-------------
| N01995                                  |          |      1 | Via                  |     0.6096 | (-12.0000 -32.0000)  | N01995
                                          |
|---------------------------------------------------------------------------------------------------------------------------------------------
```

N02035		1	Via	0.6096	(-12.0000 -29.8100)	N02035
N02075		1	Via	0.6096	(-12.0000 -27.2700)	N02075
N02113		1	Via	0.6096	(-12.0000 -25.0000)	N02113
N02151		1	Via	0.6096	(-12.0000 -23.0000)	N02151
N02192		1	Via	0.6096	(-12.0000 -20.0000)	N02192
N02230		1	Via	0.6096	(-15.0000 -17.0000)	N02230
N03383		1	Via	0.6096	(27.0000 -9.0000)	N03383
N03418		1	Via	0.6096	(27.0000 -11.0000)	N03418
N06708		1	Via	0.6096	(-21.1271 28.1429)	N06708

Total number of testpoints on BOTTOM side = 20

Nets currently not tested ...

Net Name	QUANTITY
N00181	
N00255	
N00282	
N00339	
N00522	
N00636	
N00688	
N00715	
N00717	
N00827	
N00890	
N01521	
N01957	
N02340	
N03028	
N03303	
N03341	
N03460	
N03495	
N03676	
UNUSED	

Total number of nets not currently tested = 21

Nets currently with NO_TEST property ...

Net Name	QUANTITY

Total number of nets with NO_TEST property = 0

Test Report for Display Unit

Testpoints on the Top Side

Testpoint	Delivered Input (V)	Expected Output(V)
N00391	4.65±7.5%	4±0.5%
N00588	4.65±7.5%	4±0.5%
N01074	4.65±7.5%	4±0.5%
N01110	4.65±7.5%	4±0.5%
N01146	4.65±7.5%	4±0.5%
N01180	4.65±7.5%	4.65±7.5%
N01995	4.65±7.5%	4.65±7.5%
N02035	4.65±7.5%	4.65±7.5%
N02075	4.65±7.5%	4.65±7.5%
N02113	4.65±7.5%	4.65±7.5%
N02151	4.65±7.5%	4.65±7.5%
N02192	4.65±7.5%	4.65±7.5%
N02230	4.65±7.5%	4.65±7.5%
N03383	4.65±7.5%	4.65±7.5%
N03418	4.65±7.5%	4.65±7.5%
N06708	4.65±7.5%	4±0.5%
GND	0	0

Nets on The Bottom Side		
Testpoint	Input (V)	Expected Output(V)
GND	0	0
N00686	4.65±7.5%	4.65±7.5%

Test Report for Power

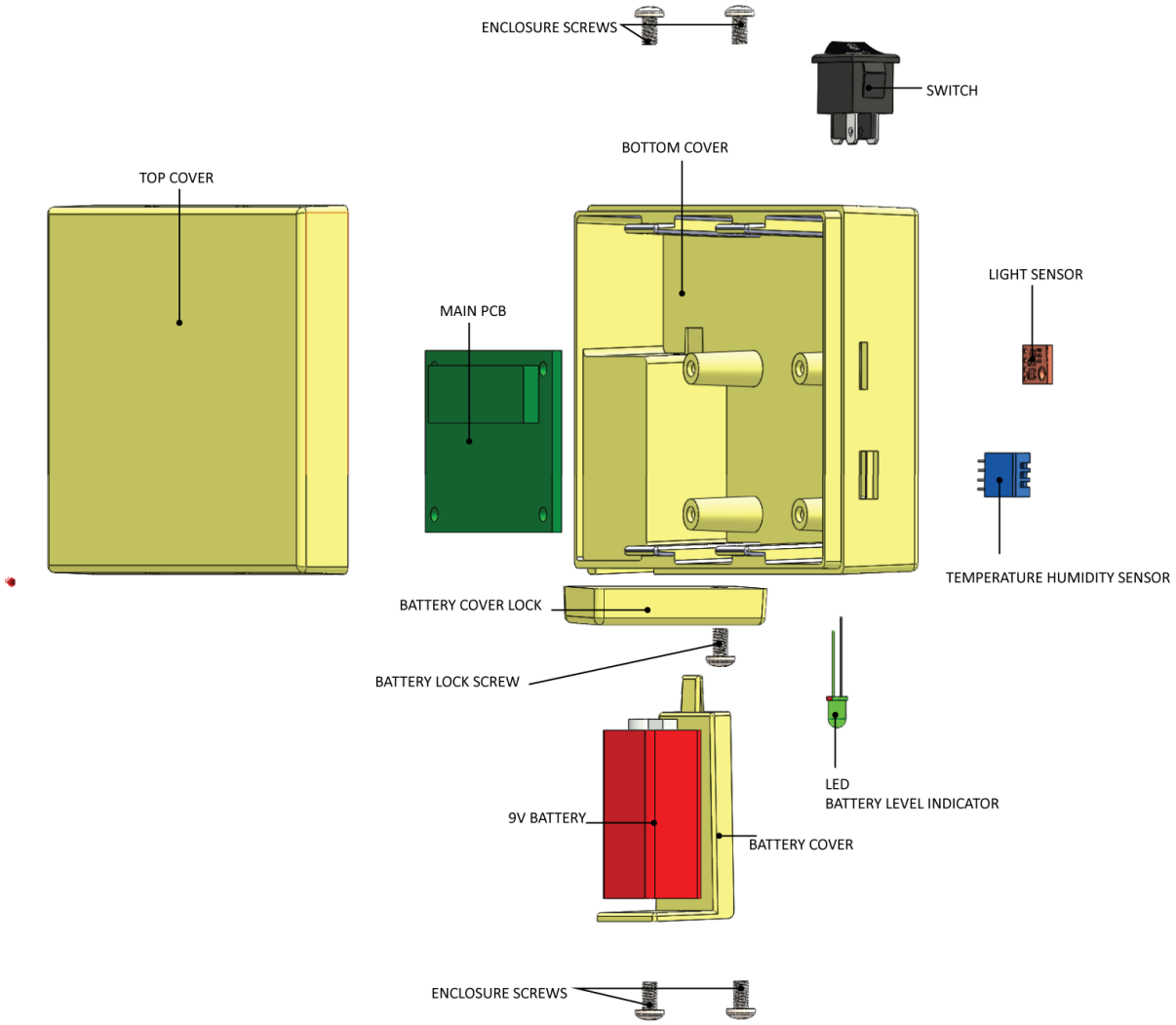
Voltage Supplied by the Battery	8±15%
Regulated Voltage	4.65±7.5%
Expected Current out from Regulator	1A

Group 1

Controlled Environment Monitors

Assembly

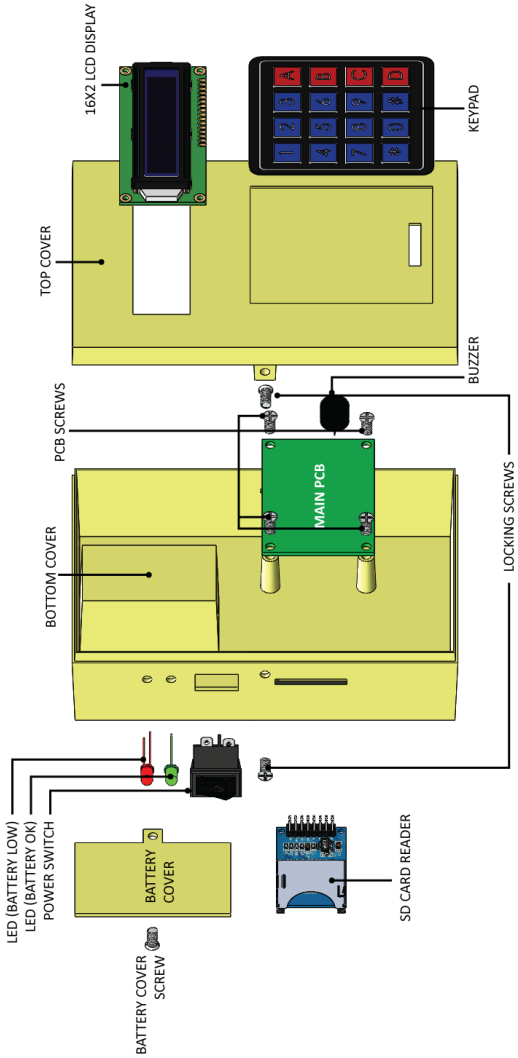
Sensor Unit Assembly



Assembly Steps

1. Connect the LCD's to the corresponding headers on the PCB (Refer Circuit Diagram).
2. Insert and secure the LCD's into corresponding sockets
3. Mount the Fully soldered and tested PCB on the corresponding mounting holes
4. Insert screws and secure the PCB
5. Insert the Temperature, RH, Light and Soil Moisture Sensors into their corresponding sockets and secure.
6. Connect the above sensors using their corresponding polarized headers (See Circuit Diagrams for more information)
7. Insert the rocker switch and secure the battery connector in their corresponding positions.
8. Connect the rocker switch and battery connector to the corresponding places on the PCB
9. Insert the Battery Cover into the Battery Cover slot
10. Screw the Battery Lock into position, and rotate clockwise to secure the battery cover
11. Fit the top cover into position and secure the sides with screws.

Display Unit Assembly



Assembly Steps

1. Connect the LCD's to the corresponding headers on the PCB (Refer Circuit Diagram).
2. Insert and secure the LCD's into corresponding sockets
3. Mount the Fully soldered and tested PCB on the corresponding mounting holes
4. Insert screws and secure the PCB
5. Connect the SD card Reader to the corresponding connector on the PCB and insert the SD card reader into its corresponding position and secure.
6. Insert the rocker switch and secure the battery connector in their corresponding positions.
7. Connect the rocker switch and battery connector to the corresponding places on the PCB.
8. Insert the Battery Cover into the Battery Cover slot, and screw into position.
9. Secure the LCD Screen to the inside of the Top Cover.
10. Secure the Keypad to its slot on the top cover, while taking its connector in through the front slot.
11. Connect both LCD and Keypad to the PCB in their correct positions.
12. Fit the top cover into position and secure the sides with locking screws.

Processor Code

```
/* ------------------------------------------------------------------------------
---------------
 [FILE NAME]: <Configuration Files.c>
 [AUTHOR(S)]: <T.T.N Bahavan>
 [DATE CREATED]: <6/19/2019>
 [DESCRIPTION]: <Contains configuration files for LCD Unit>
 ------------------------------------------------------------------------------
-------------*/


#ifndef MICRO_CONFIG_H_
#define MICRO_CONFIG_H_


#ifndef F_CPU
#define F_CPU 10000000UL //8MHz Clock frequency
#endif

#include <avr/io.h>
#include <avr/interrupt.h>
#include <util/delay.h>
#include <string.h>
#include "std_types.h"
#include "common_macros.h"
#include "lcd.h"
#include "keypad.h"
#include "IntEEPROM.h"
#include "password.h"

#endif

/* MICRO_CONFIG_H_ */
/* ------------------------------------------------------------------------------
---------------
 [FILE NAME]: <EEPROMCODE.c>
 [AUTHOR(S)]: <T.T.N Bahavan>
 [DATE CREATED]: <6/19/2019>
 [DESCRIPTION]: <EEPROM>
 ------------------------------------------------------------------------------
-------------*/

#include "IntEEPROM.h"

void eepromWriteByte(unsigned short a_addr, unsigned char a_data)
{

	/* Wait for completion of previous write */
	while (EECR & (1 << EEWE))
		;
	/* Set up address and data registers */
	EEAR = a_addr;
	EEDR = a_data;
	/* Write logical one to EEMWE */
	EECR |= (1 << EEMWE);
	/* Start EEPROM write by setting EEWE */
	EECR |= (1 << EEWE);
}

unsigned char eepromReadByte(unsigned short a_addr)
{
```

```
	/* Wait for completion of previous write */
	while (EECR & (1 << EEWE))
		;
	/* Set up address register */
	EEAR = a_addr;
	/* Start EEPROM read by writing EERE */
	EECR |= (1 << EERE);
	/* Return data from data register */
	return EEDR;
}

/* ----------------------------------------------------------------------------
---------------
 [FILE NAME]: <KEYPAD CODE.c>
 [AUTHOR(S)]: <T.T.N Bahavan>
 [DATE CREATED]: <6/19/2019>
 [DESCRIPTION]: <Contains the main function of the program>
 ----------------------------------------------------------------------------
--------------*/

#include "keypad.h"

uint8 KeyPad_getPressedKey(void){
	uint8 col,row;
	while(1)
	{
		for(col=0;col<N_col;col++) /* loop for columns */
		{
			/*
			 * each time only one of the column pins will be output and
			 * the rest will be input pins include the row pins
			 */
			KEYPAD_PORT_DIR = (0b00010000<<col);

			/*
			 * clear the output pin column in this trace and enable the internal
			 * pull up resistors for the rows pins
			 */
			KEYPAD_PORT_OUT = (~(0b00010000<<col));
			for(row=0;row<N_row;row++) /* loop for rows */
			{
				if(BIT_IS_CLEAR(KEYPAD_PORT_IN,row)) /* if the switch is
press in this row */
				{
					#if (N_col == 3)
						return
KeyPad_4x3_adjustKeyNumber((row*N_col)+col+1);
					#elif (N_col == 4)
						return
KeyPad_4x4_adjustKeyNumber((row*N_col)+col+1);
					#endif
				}
			}
		}
	}
}

#if (N_col == 3)

uint8 KeyPad_4x3_adjustKeyNumber(uint8 button_number)
{
	switch(button_number)
```

```
	{
		case 10: return '*'; // ASCII Code of =
				 break;
		case 11: return 0;
				 break;
		case 12: return '#'; // ASCII Code of +
				 break;
		default: return button_number;

	}
}


#elif (N_col == 4)

uint8 KeyPad_4x4_adjustKeyNumber(uint8 button_number)
{
	switch(button_number)
	{
		case 1: return 7;
				break;
		case 2: return 8;
				break;
		case 3: return 9;
				break;
		case 4: return '%'; // ASCII Code of %
				break;
		case 5: return 4;
				break;
		case 6: return 5;
				break;
		case 7: return 6;
				break;
		case 8: return '*'; /* ASCII Code of '*' */
				break;
		case 9: return 1;
				break;
		case 10: return 2;
				break;
		case 11: return 3;
				break;
		case 12: return '-'; /* ASCII Code of '-' */
				break;
		case 13: return 13;  /* ASCII of Enter */
				break;
		case 14: return 0;
				break;
		case 15: return '='; /* ASCII Code of '=' */
				break;
		case 16: return '+'; /* ASCII Code of '+' */
				break;
		default: return button_number;

	}
}

#endif
```

```
/* ------------------------------------------------------------------------------
---------------
 [FILE NAME]: <UART.c>
 [AUTHOR(S)]: <T.T.N Bahavan>
 [DATE CREATED]: <6/19/2019>
 [DESCRIPTION]: <UART CODE>
 ------------------------------------------------------------------------------
-------------*/

#include "uart.h"

extern volatile uint8 g_choice;
void UART_init(void) {
	UCSRA = (1 << U2X); /* U2X = 1 for double transmission speed */
	/************************* UCSRB Description ************************
	 * RXCIE = 1 Enable USART RX Complete Interrupt Enable
	 * TXCIE = 0 Disable USART Tx Complete Interrupt Enable
	 * UDRIE = 0 Disable USART Data Register Empty Interrupt Enable
	 * RXEN  = 1 Receiver Enable
	 * RXEN  = 1 Transmitter Enable
	 * UCSZ2 = 0 For 8-bit data mode
	 * RXB8 & TXB8 not used for 8-bit data mode
	 ********************************************************************/
	UCSRB = (1 << RXEN) | (1 << TXEN) | (1 << RXCIE);

	/************************* UCSRC Description ************************
	 * URSEL   = 1 The URSEL must be one when writing the UCSRC
	 * UMSEL   = 0 Asynchronous Operation
	 * UPM1:0  = 00 Disable parity bit
	 * USBS    = 0 One stop bit
	 * UCSZ1:0 = 11 For 8-bit data mode
	 * UCPOL   = 0 Used with the Synchronous operation only
	 ********************************************************************/
	UCSRC = (1 << URSEL) | (1 << UCSZ0) | (1 << UCSZ1);

	/* baud rate=9600 & Fosc=8MHz -->  UBBR=( Fosc / (8 * baud rate) ) - 1 = 103 */
	UBRRH = 0;
	UBRRL = 103;
}

void UART_sendByte(const uint8 data) {
	/* UDRE flag is set when the Tx buffer (UDR) is empty and ready for
	 * transmitting a new byte so wait until this flag is set to one */
	while (BIT_IS_CLEAR(UCSRA, UDRE)) {
	}
	/* Put the required data in the UDR register and it also clear the UDRE flag as
	 * the UDR register is not empty now */
	UDR = data;
	/************************* Another Method ************************
	 UDR = data;
	 while(BIT_IS_CLEAR(UCSRA,TXC)){} // Wait until the transimission is complete
TXC = 1
	 SET_BIT(UCSRA,TXC); // Clear the TXC flag
	 ********************************************************************/
}

uint8 UART_recieveByte(void) {
	/* RXC flag is set when the UART receive data so wait until this
	 * flag is set to one */
	while (BIT_IS_CLEAR(UCSRA, RXC)) {
	}
	/* Read the received data from the Rx buffer (UDR) and the RXC flag
```

```
        will be cleared after read this data */
       return UDR;
}

void UART_sendString(const uint8 *Str) {
       uint8 i = 0;
       while (Str[i] != '\0') {
              UART_sendByte(Str[i]);
              i++;
       }
       /************************ Another Method ************************
        while(*Str != '\0')
        {
        UART_sendByte(*Str);
        Str++;
        }
        ****************************************************************/
}

void UART_receiveString(uint8 *Str) {
       uint8 i = 0;
       Str[i] = UART_recieveByte();
       while (Str[i] != '#') {
              i++;
              Str[i] = UART_recieveByte();
       }
       Str[i] = '\0';
}


/* -------------------------------------------------------------------------------
---------------
 [FILE NAME]: <Main Control Unit.c>
 [AUTHOR(S)]: <T.T.N Bahavan>
 [DATE CREATED]: <6/19/2019>
 [DESCRIPTION]: <Contains the main function of the program>
 -------------------------------------------------------------------------------
--------------*/

#ifndef STD_TYPES_H_
#define STD_TYPES_H_

typedef unsigned char uint8;
typedef signed char sint8;
typedef unsigned short uint16;
typedef signed short sint16;
typedef unsigned long uint32;
typedef signed long sint32;

#endif /* STD_TYPE_H_ */
```

```
/* ------------------------------------------------------------------------------
---------------
 [FILE NAME]: <ADC Unit for sensors.c>
 [AUTHOR(S)]: <T.T.N Bahavan>
 [DATE CREATED]: <6/19/2019>
 [DESCRIPTION]: <ADC Conversion>
 ------------------------------------------------------------------------------
--------------*/
#include "atmega-adc.h"

void (*_adc_handler)(uint8_t pin, uint16_t);
volatile uint8_t _adc_pin_qty;

uint16_t adc_read(uint8_t prescaler, uint8_t vref, uint8_t pin) {
	#ifdef MUX5
	if (pin > 7) {
		ADCSRB |= _BV(MUX5);
		ADMUX = vref | (pin - 8);
		} else {
		ADCSRB &= ~(_BV(MUX5));
		ADMUX = vref | pin;
	}
	#else
	ADMUX = vref | pin;
	#endif

	ADCSRA = _BV(ADEN) | _BV(ADSC) | prescaler;
	while(!(ADCSRA & _BV(ADIF)));

	return (ADCL | (ADCH<<8));
}

void adc_start(uint8_t prescaler, uint8_t vref, uint8_t pin_qty, void
(*handler)(uint8_t, uint16_t)) {
	_adc_handler = handler;
	_adc_pin_qty = pin_qty;
	ADMUX = vref;
	#ifdef MUX5
	ADCSRB &= ~(_BV(MUX5));
	#endif
	ADCSRA = _BV(ADEN) | _BV(ADSC) | _BV(ADIE) | prescaler;
}

void adc_stop() {
	ADCSRA = 0;
}

#ifdef ENABLE_ADC_INT
ISR(ADC_vect) {
	static uint8_t cur_pin = 0;

	_adc_handler(cur_pin, ADCL | (ADCH<<8));

	cur_pin++;
	if (cur_pin >= _adc_pin_qty)
	cur_pin = 0;

	#ifdef MUX5
	if (cur_pin > 7) {
		ADCSRB |= _BV(MUX5);
		ADMUX = (ADMUX & 0xe0) | (cur_pin - 8);
		} else {
```

```
                ADCSRB &= ~(_BV(MUX5));
                ADMUX = (ADMUX & 0xe0) | cur_pin;
        }
        #else
        ADMUX = (ADMUX & 0xe0) | cur_pin;
        #endif

        ADCSRA |= _BV(ADSC);
}
#endif
```

Sensor Unit Code

```
/* ------------------------------------------------------------------------------------
---------------
 [FILE NAME]: <Sensor UNIT.c>
 [AUTHOR(S)]: <T.T.N Bahavan>
 [DATE CREATED]: <6/19/2019>
 [DESCRIPTION]: <Contains the code in the sensor unit>
 ------------------------------------------------------------------------------------
--------------*/
#include "micro_config.h"
#include <avr/io.h>
#include <util/delay.h>
#include <stdio.h>
#include "atmega-adc.h"
#include <stdint.h>

/*-----------------------------------------------All Variables----------------------
----------------------------*/

uint8 flag = 0;
uint8 val; /*to read the value from EEPROM in it*/

uint8 TEMP[6];
uint8 HUMID[6];
uint8 SOILMOISTURE[6];
uint8 LIGHTLEVEL[6];
uint8 COMPOSITEDATA[24];


int main(void)
{

        UART_init(); /* initialize UART */
        sei();
    while (1)
    {
        TEMP[6]=adc_read(128, aref, 0) ;
        HUMID[6]=adc_read(128, aref, 1) ;
        SOILMOISTURE[6]=adc_read(128, aref, 2) ;
        LIGHTLEVEL[6]=adc_read(128, aref, 3) ;

        COMPOSITEDATA                                                                   =
MakeComposite(TEMP[6],HUMID[6],SOILMOISTURE[6],LIGHTLEVEL[6],COMPOSITEDATA[24]);
        UART_sendString(COMPOSITEDATA) {
    }

}
```

LCD CODE

```
/* ------------------------------------------------------------------------------------
---------------
 [FILE NAME]: <Sensor UNIT.c>
 [AUTHOR(S)]: <T.T.N Bahavan>
 [DATE CREATED]: <6/19/2019>
 [DESCRIPTION]: <Contains the code in the sensor unit>
 ------------------------------------------------------------------------------------
-------------*/
#include "micro_config.h"
#include <avr/io.h>
#include <util/delay.h>
#include <stdio.h>
#include "atmega-adc.h"
#include <stdint.h>

/*-----------------------------------------------All Variables----------------------
----------------------------*/

uint8 flag = 0;
uint8 val; /*to read the value from EEPROM in it*/

uint8 TEMP[6];       //DETERMINED BY UART DATA
uint8 HUMID[6];
uint8 SOILMOISTURE[6];
uint8 LIGHTLEVEL[6];

uint8 MAXTEMP[6];      //SET BY THE USER ACCORDING TO SPECIFICATIONS REQUIRED
uint8 MINHUMID[6];
uint8 MINSOILMOISTURE[6];
uint8 MAXLIGHTLEVEL[6];


int main(void)
{

       UART_init(); /* initialize UART */
       LCD_init();
       sei();
       if !(UART_RECEIVED){
              LCD_DISPLAY(0,0,"Waiting");
       }

       else {

    while (1)
    {//Display the stuff
           //If button press start the other program
           LCD_clearScreen();
           LCD_displayStringRowColumn(0, 0, "Temp : "+TEMP);
              LCD_displayStringRowColumn(0, 0, "Temp : "+HUMID);
              LCD_displayStringRowColumn(0, 0, "Temp : "+SOILMOISTURE);
           LCD_displayStringRowColumn(0, 0, "Temp : "+LIGHTLEVEL);


           inputChoise1 = KeyPad_getPressedKey();

           //Start changing the data
           if (inputChoise1 == '+')
           {
                  //Display Choices
                  LCD_clearScreen();
```

```
                LCD_displayStringRowColumn(0, 0, "- : Change Temp");
                LCD_displayStringRowColumn(1, 0, "+ : Change RH");
                   LCD_displayStringRowColumn(0, 5, "- : Change Soil Moisture");
                   LCD_displayStringRowColumn(1, 5, "+ : Change Light Level");
                inputChoise2 = KeyPad_getPressedKey();

                if (inputChoise2 == '+')
                {   LCD_clearScreen();
                       LCD_displayStringRowColumn(0, 0, "RH");
                       getValue(RH);
                       }else{
                       LCD_clearScreen();
                       LCD_displayStringRowColumn(0, 0, "Temp");
                       getValue(Temp);
                          LCD_displayStringRowColumn(0, 0, "Soil Moisture");
                          getValue(RH);
                          }else{
                          LCD_clearScreen();
                          LCD_displayStringRowColumn(0, 0, "Light Level");
                          getValue(Temp);
                }
        }}
    }

}
```