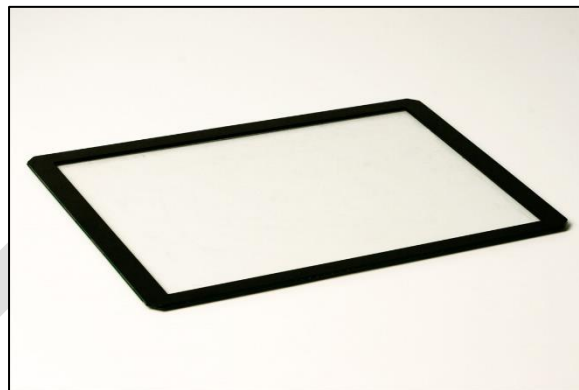


Measuring just 3.4 mm from glass to frame surface, the Baanto Slim Touch is the thinnest multi-touch frame on the market. Combining the industry proven performance of ShadowSense with a minimalist bezel design allows the Slim Touch to be utilized in multi-touch applications typically exclusive to projective capacitive technology.

Baanto ShadowSense requires no drivers or touch detection applications running on the host CPU making this technology an outstanding solution for cost sensitive applications using low power CPU's and media players.



The following operating systems are supported:

- Windows XP® / XPE®
- Windows Vista®
- Windows 7® / 7 Embedded
- Windows 8® / 8 Embedded
- Windows 10®
- Linux®
- Mac OS®
- Android™

An industry first, the Baanto Configuration Dashboard provides customers the ability to easily implement and modify the touchscreen behavior. The Dashboard allows the user to adjust the performance and touch characteristics of the touchscreen to provide spurious touch and palm rejection, debris and static object recognition, rain and fluid cancellation, and touch object characterization.

A perimeter based sensor design decouples the touch function from the protective glass providing improved optical and environmental performance, and better immunity to surface debris and scratches.

Targeted at embedded applications in Kiosk, Gaming, ATM, and Control and Monitoring, the worldwide agency approvals and certifications simplify your integration and product approval efforts.

## 1.0 Features

- True 5 Multi-touch performance
- High Performance
  - Exceptional accuracy
  - No ghosting or dead zones
  - Outstanding ambient light rejection
  - Excellent size detection
- Fully featured
  - Real-time touch area data provided for all touch points
  - Static object detection and rejection
  - Continues to function with debris on the screen
  - Configurable hover distance for touch detection
  - Configurable spurious touch and palm rejection
  - Power saving idle mode
  - Wakeup on touch input
- No drivers or touch detection processes on host CPU
  - USB HID interface to host
  - Plug and Play
  - Windows® 7, 8 and 10 compliant packet formats
- Calibration free
  - Mechanically and thermally stable

## 2.0 Specifications

Description	Value
Size	23.8" Diagonal
Aspect Ratio	16:9
Number of Touches	5
Touch Resolution	12 Bit X, 12 Bit Y
Sub pixel Resolution	4K
Accuracy	TBM
Data Interface	USB 2.0 (Full Speed) HID, compatible with USB 1.1, 2.0 High Speed, 3.0 & 3.1 HID compliant USB Female Type B Receptacle
Touch Method	Finger, gloved hand or any other pointer Stylus minimum 4mm tip
Touch Activation Force	No pressure required
Touch Durability	Unlimited
Ambient Light Rejection	Direct sunlight
Mean Time To Failure (MTTF)	More than 200,000 hours

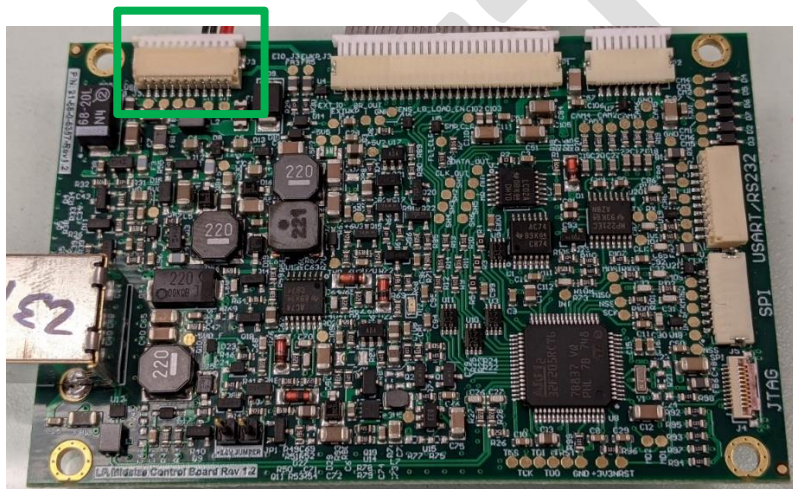
### 3.0 Parts List

The System consists of the following components:

- 23.8" 16:9 Thin Bezel with 3mm protective glass (BEZEL-238W1-I63-S1)
- Touch Control Board (CTRLR-238W1-M4L-RX.XX)
- 26-pin Cable (CABLE-LP-MID-4S-600)

### 4.0 Power Supply Specifications

The touch control board is powered by applying input voltage on pin 1 & 2 (+V\_EXT) and ground pins 3 & 4 (GND\_EXT) on the connector J3 shown below in green. (Note: the 8-pin connector on the right is not populated on the SDW-238.)



The Board can be powered up using 12V with the following Input Voltage specs.

Control Board Connectors	Voltage	Average Current	Peak Current
11 Pin JST SH 1mm (SM11B-SRSS)	10 V – 13.2 V	0.25A	0.5A

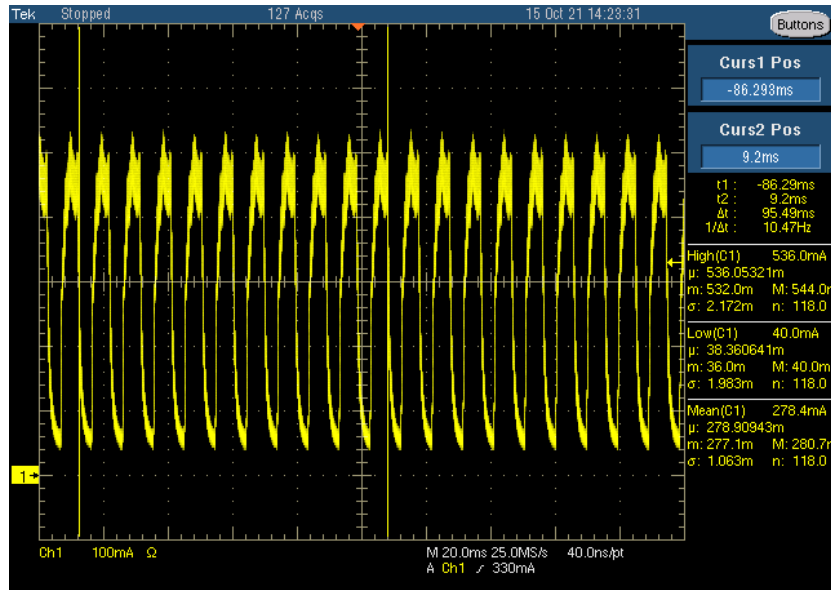
It can also operate at any input voltage from 5V to 12V Input.

For 5V input it is necessary to short out the **5.0V Jumper** shown below in red.

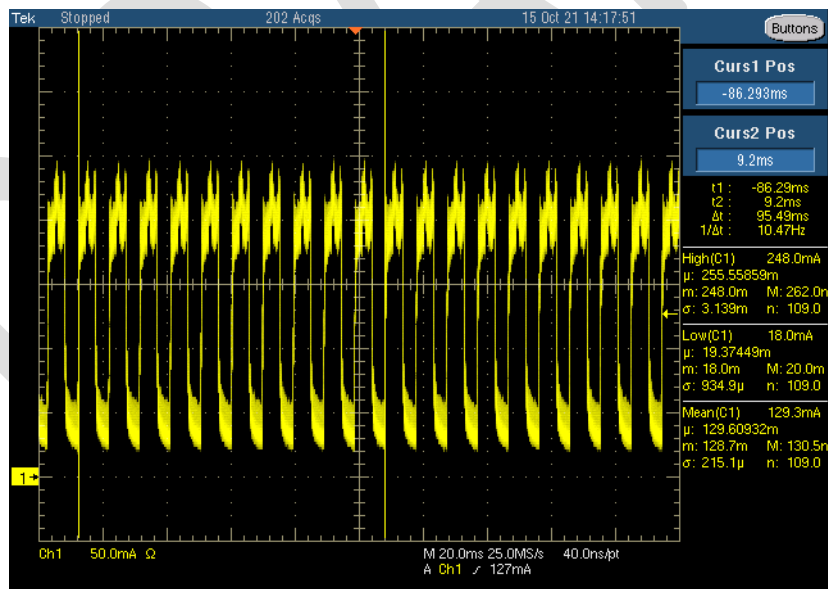


Screen shot below shows the current measurement when the touch screen is operated at 5V or 12V input power supply during the normal (Active) mode of operation.

### 5V Input

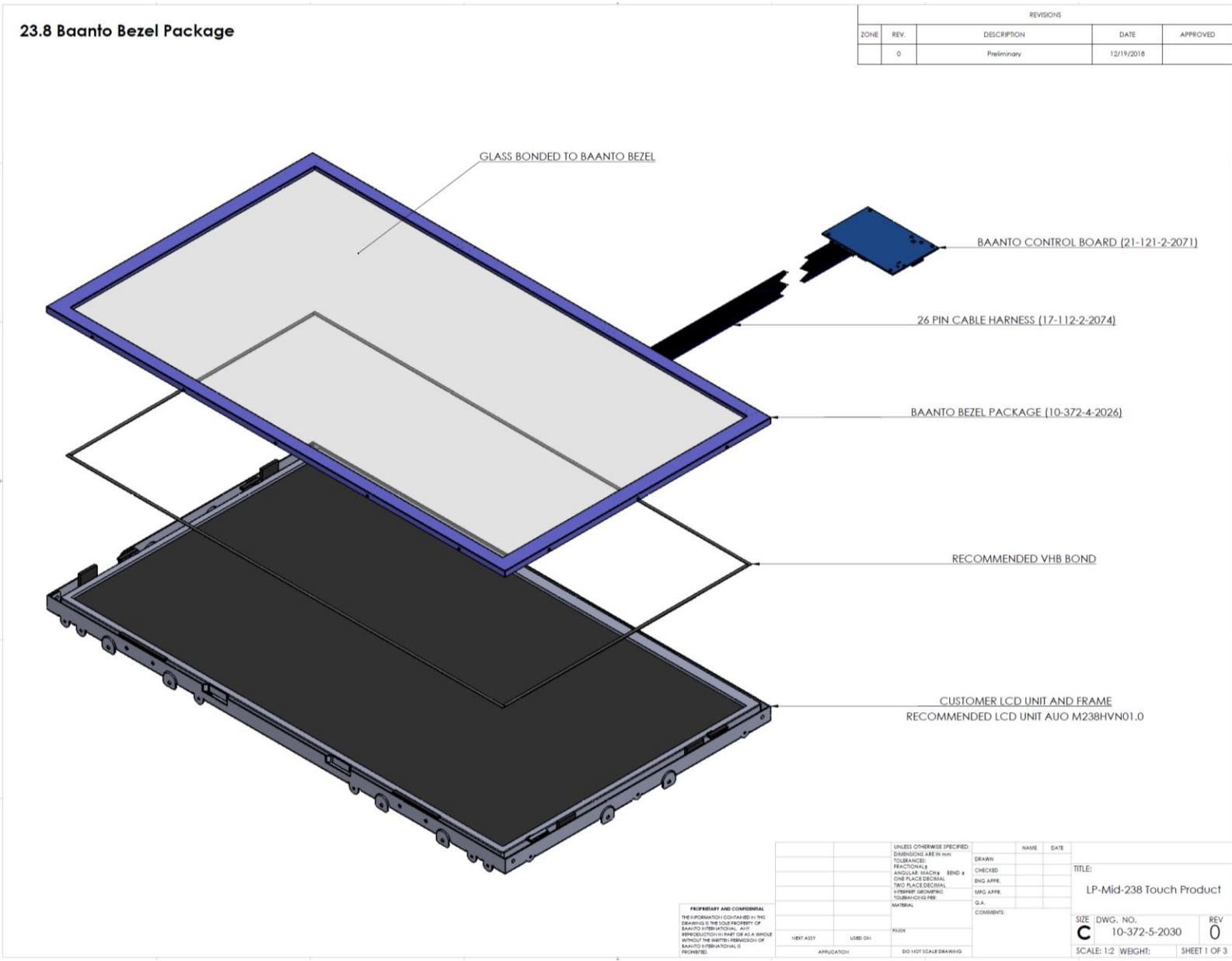


### 12V Input



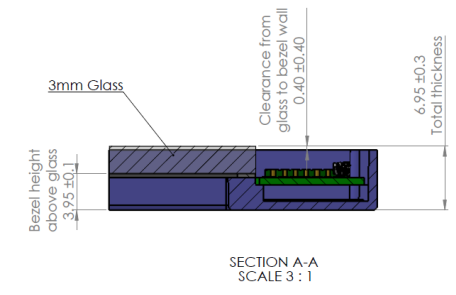
Current Consumption	Max (mA)	Min (mA)	Average (mA)
5V Input	536	40	278
12V Input	248	18	129

# 5.0 Mechanical Dimensions



# 23.8" TOUCH PRODUCT ENVELOPE

REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
	0	Preliminary	12/19/2018	

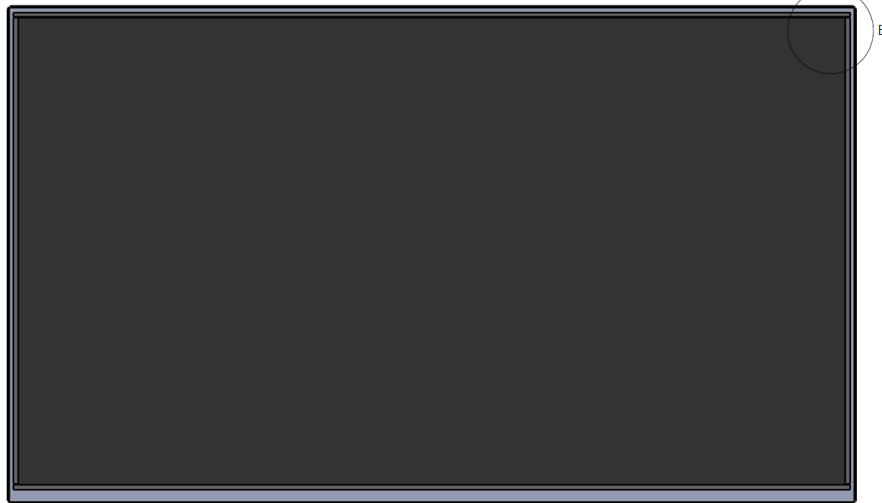
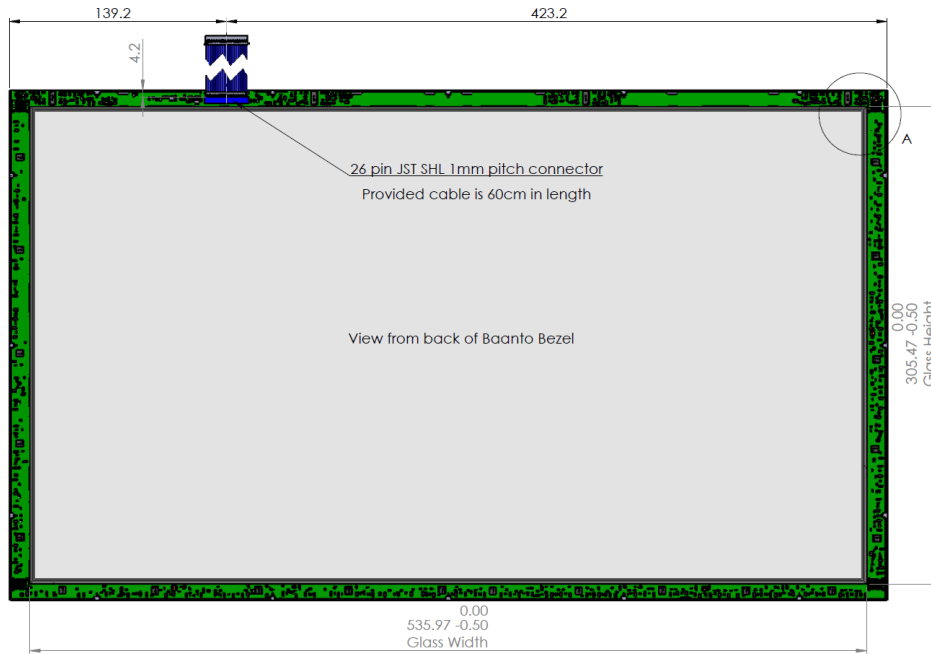


Optical Glass conforms to ASTM C1036-01 Q2  
Tempered with 91% optical clarity  
No anti-glare or anti-reflective coatings or films

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UNLESS OTHERWISE SPECIFIED:		NAME	DATE	TITLE: LP-Mid-238 Touch Product
DIMENSIONS ARE IN mm		DRAWN		
TOLERANCES:		CHECKED		SCALE: 1:2 WEIGHT: SHEET 2 OF 3
FRACTIONALS		ENG APPR.		
ANGULAR MATCH		MFG APPR.		
BEND R				
ONE PLACE DECIMAL ±0.1				
TWO PLACE DECIMAL ±0.1				
THERMAL DIMENSIONS				
TOLERANCES PER:				
MATERIAL:				
FINISH:				
HIST ASSY	USED ON:			
APPLICATION:	DO NOT SCALE DRAWING			

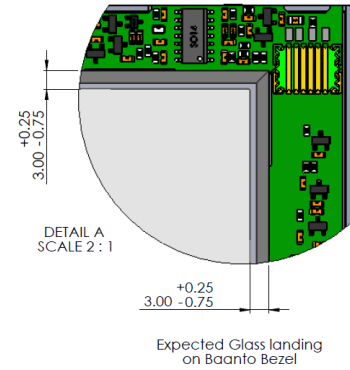
# 23.8" TOUCH PRODUCT MOUNTING DETAILS



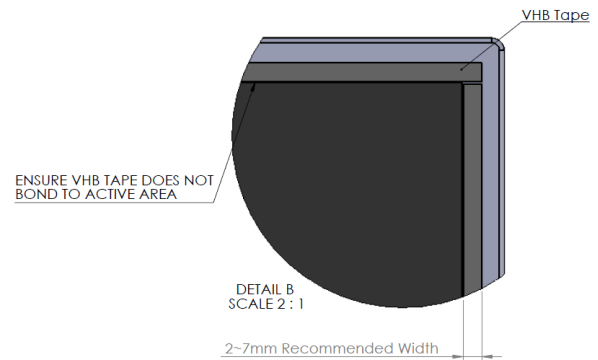
RECOMMENDED LCD PANEL: AUO M238HVN01.0 (SHOWN ABOVE)

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REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
	0	Preliminary	12/19/2018	



LCD PANEL SHOULD MATE TO THE GLASS AND MUST NOT BE IN CONTACT WITH ANY OF THE PCBs

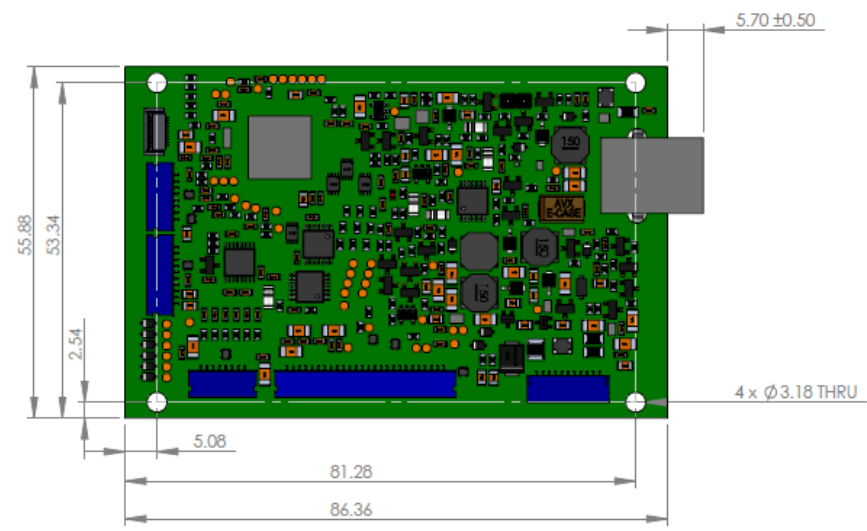
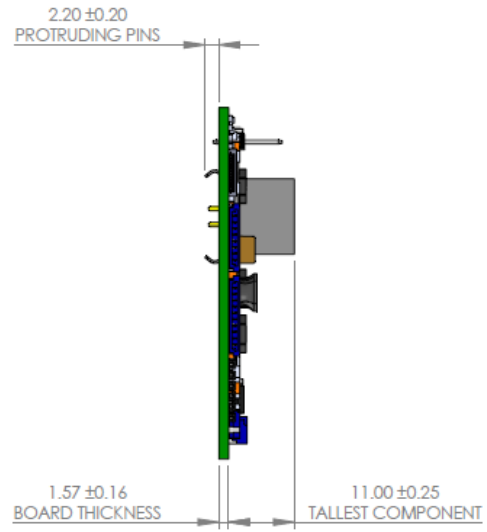


Example of VHB Tape used to bond Baanto Bezel to LCD face  
Recommended width 2-7mm

UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN mm TOLERANCES: FRACTIONALS ANGULARS, HATCH, H. HEND. # ONE PLACE DECIMAL ±0.5 TWO PLACE DECIMAL ±0.25 INTERPRET GEOMETRIC TOLERANCES HERE		NAME	DATE	TITLE:  LP-Mid-238 Touch Product
DRAWN	CHECKED			
ENG APPR.	MFG APPR.			SIZE DWG. NO. C 10-372-5-2030
				REV 0
COMMENTS:	RUSH			SCALE: 1:2 WEIGHT: SHEET 3 OF 3
APPLICATION	USED ON			

# PACKAGE DIMENSIONS

REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
	0	Preliminary	04/02/2019	



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		DIMENSIONS ARE IN mm TOLERANCES UNLESS OTHERWISE SPECIFIED: ANGULAR: MACH±0.5 deg BEND ±2 deg TWO PLACE DECIMAL ±0.2 THREE PLACE DECIMAL ±0.1		NAME	DATE
				DRAWN	
				CHECKED	
				ENG APPR.	
				MFG APPR.	
				G.A.	
				COMMENTS:	
NEXT ASSY	USED ON	FINISH			
APPLICATION	DO NOT SCALE DRAWING				

**LP Mid Control  
PCB Assembly**

SIZE <b>A</b>	DWG. NO. 21-121-2-2071	REV. 0
SCALE:1:1	WEIGHT:	SHEET 1 OF 2



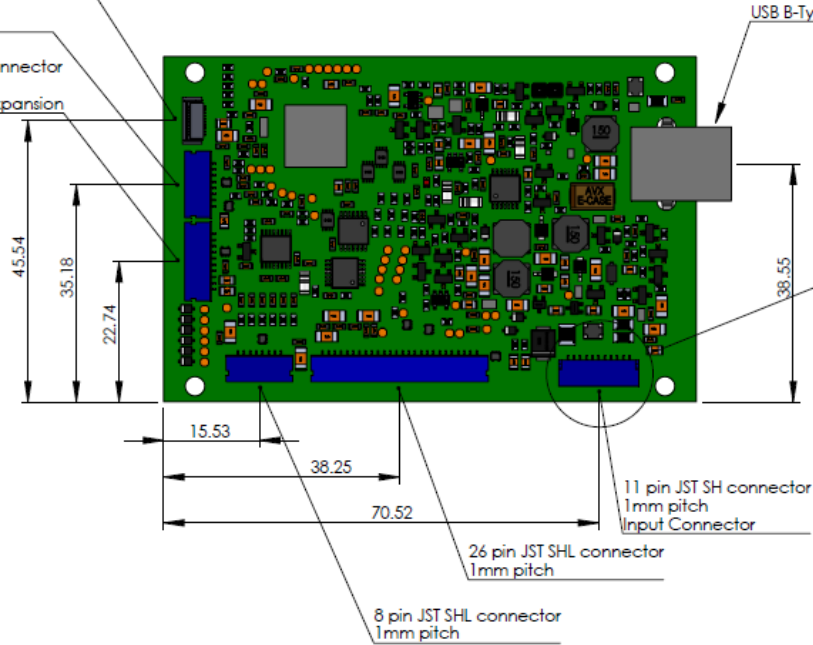
# CONNECTOR PLACEMENTS

REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
	0	Preliminary	04/02/2019	

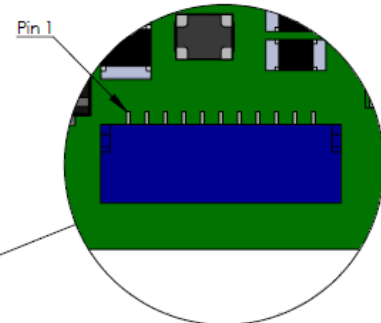
10 pin FPC connector  
0.5mm pitch  
Programming Connector

8 pin JST SHL connector  
1mm pitch  
SPI Expansion

10 pin JST SHL connector  
1mm pitch  
RS-232 & UART Expansion



DETAIL B  
SCALE 3 : 1



Control Board Pinout		
Pin	Signal	Description
1	+V_EXT	Input Power 10V-13.2V, 0.5A
2	+V_EXT	
3	GND_EXT	Input Power Ground
4	GND_EXT	
5	SHIELD_USB	Optional Internal USB
6	USB D-	
7	USB D+	
8	GND USB	Optional I/O Expansion
9	EXT IO	
10	GND IO	
11	WKP IO	Optional I/O Expansion

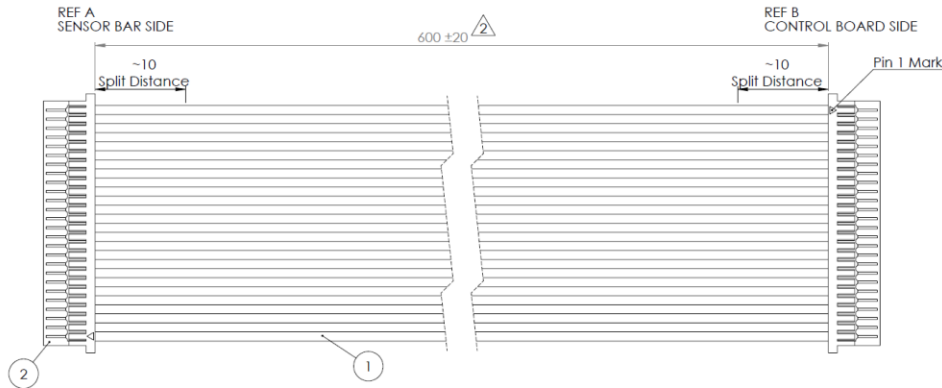
Contact: JST SSH-003T-P0.2-H  
Housing: JST SHR-11V-S

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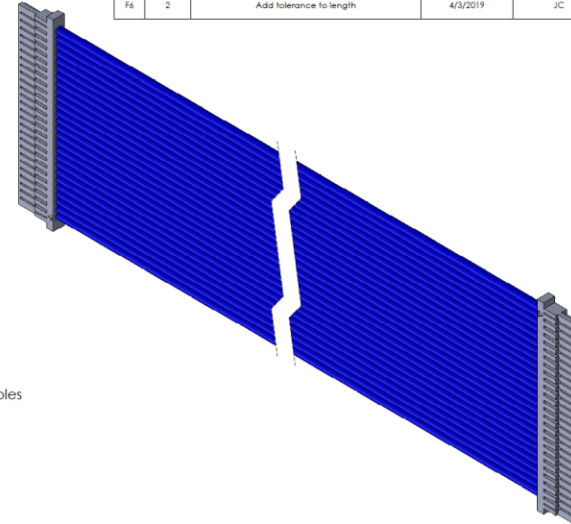
		DIMENSIONS ARE IN mm TOLERANCES UNLESS OTHERWISE SPECIFIED: ANGULAR: MACH±0.5 deg BEND ±2 deg TWO PLACE DECIMAL ±0.5 THREE PLACE DECIMAL ±0.25		NAME DATE		<p>LP Mid Control PCB Assembly</p> <p>SIZE DWG. NO. REV. <b>A</b> 21-121-2-2071 0</p> <p>SCALE:1:1 WEIGHT: SHEET 2 OF 2</p>
		MATERIAL		DRAWN		
		FINISH		CHECKED		
NEXT ASSY USED ON				ENG APPR.		
APPLICATION		DO NOT SCALE DRAWING		MFG APPR.		
				Q.A.		
				COMMENTS:		

# 6.0 Cable Assembly Specifications

## LOW PROFILE CABLE HARNESS, 26 PIN, 600mm

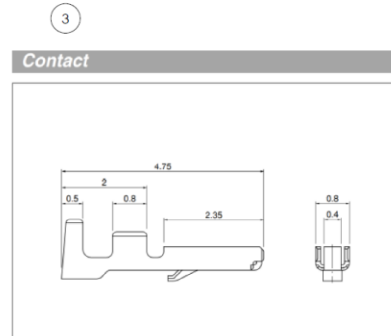


REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
	0	Preliminary	8/16/2018	
CB	1	Changed signal names	12/10/2018	
F6	2	Add tolerance to length	4/3/2019	JC



REF B CONTROL BOARD SIDE			REF A SENSOR BAR SIDE	
Signal	Pin	Crimp Terminal	Pin	Crimp Terminal
+6V3	1	SSHL-003T-P0.2	26	SSHL-003T-P0.2
+5V2	2	SSHL-003T-P0.2	25	SSHL-003T-P0.2
+5V0	3	SSHL-003T-P0.2	24	SSHL-003T-P0.2
+5V0	4	SSHL-003T-P0.2	23	SSHL-003T-P0.2
LGND	5	SSHL-003T-P0.2	22	SSHL-003T-P0.2
LGND	6	SSHL-003T-P0.2	21	SSHL-003T-P0.2
-5V5	7	SSHL-003T-P0.2	20	SSHL-003T-P0.2
-12V0	8	SSHL-003T-P0.2	19	SSHL-003T-P0.2
SAMPLE CLEAR	9	SSHL-003T-P0.2	18	SSHL-003T-P0.2
FILTER CLEAR	10	SSHL-003T-P0.2	17	SSHL-003T-P0.2
SHUTTER1	11	SSHL-003T-P0.2	16	SSHL-003T-P0.2
SHUTTER2	12	SSHL-003T-P0.2	15	SSHL-003T-P0.2
SHUTTER3	13	SSHL-003T-P0.2	14	SSHL-003T-P0.2
SHUTTER4	14	SSHL-003T-P0.2	13	SSHL-003T-P0.2
PWR ENABLE	15	SSHL-003T-P0.2	12	SSHL-003T-P0.2
GND	16	SSHL-003T-P0.2	11	SSHL-003T-P0.2
GND	17	SSHL-003T-P0.2	10	SSHL-003T-P0.2
CH OUT1	18	SSHL-003T-P0.2	9	SSHL-003T-P0.2
CH OUT2	19	SSHL-003T-P0.2	8	SSHL-003T-P0.2
CH OUT3	20	SSHL-003T-P0.2	7	SSHL-003T-P0.2
CH OUT4	21	SSHL-003T-P0.2	6	SSHL-003T-P0.2
GND	22	SSHL-003T-P0.2	5	SSHL-003T-P0.2
MR OUT	23	SSHL-003T-P0.2	4	SSHL-003T-P0.2
DATA OUT	24	SSHL-003T-P0.2	3	SSHL-003T-P0.2
CLK OUT	25	SSHL-003T-P0.2	2	SSHL-003T-P0.2
BR OUT	26	SSHL-003T-P0.2	1	SSHL-003T-P0.2

\*Split refers to the separation of ribbon cable into individual cables



Model No.	Applicable wire			Qty/ reel
	mm <sup>2</sup>	AWG#	Insulation O.D. (mm)	
<b>SSHL-003T-P0.2</b>	0.032-0.08	32-28	0.4-0.8	41,000

**Material and Finish**  
Phosphor bronze, tin-plated (reflow treatment)

**RoHS compliance**  
Note: Contact JST for gold-plated products.

Contact	Crimping machine	Applicator		
		Crimp applicator	Dies	Crimp applicator with dies
<b>SSHL-003T-P0.2</b>	AP-K2N	MKS-L-10-3 *MKS-SC	MKSSHVL-003-02 SC/SSHL-003-02	APLMK SSHL003-02 APLSC SSHL003-02

Note: \*Strip-crimp applicator  
Contact JST for applicable wires in case that it is not usable due to wire size.

Ref	Baanto Part #	Mfg	Mfg Part #	Description	Qty
①	7-140-0-6386	Tungville	UL1061 #28/26P GRY 7/0.127	UL1061 #28AWG 26P Ribbon Cable, GRY PVC 300V>80C, Pitch=1mm, Ins OD=0.4~0.8mm	1
②	16-339-0-6242	JST	SHLP-26V-S-B	Connector Housing, 26 pos, JST SHL	2
③	16-313-0-4695	JST	SSHL-003T-P0.2	Crimp Contact for SHL housing	52

UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN mm TOLERANCES: FRACTIONALS ANGULAR MEAS. ± BEND ± ONE PLACE DECIMAL, 0-1 TWO PLACE DECIMAL, 0-1 TENTHS DECIMAL PER MATERIAL	NAME	DATE	TITLE: <b>LP-Mid-4S-600 Cable Harness Assembly</b>
DRAWN	CHECKED	ENG. APPR.	
NEXT ASSY	USED ON	FINISH	SCALE: DWG. NO. 17-112-2-2074
APPLICATION	DO NOT SCALE DRAWING	COMMENTS:	REV 2
			SCALE: 3:1 WEIGHT: SHEET 1 OF 1

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## 7.0 Glass Specification

Description	Value
Plain Glass Material	Tempered Glass
Light Transmission	91%
Anti-Glare Glass Material	Low Iron Tempered Glass
Light Transmission	87% to 90%
Single Sided Anti-Glare Gloss	80% ± 10% at 60°
Flatness Tolerance for Plain and Anti-Glare Glass	0.03 inches

## 8.0 Environmental Specification

Description	Value
Operating Temperature	0°C to +70°C
Non-Operating Temperature (Storage)	-20°C to +80°C
Operating Humidity	5% to 90% RH non-condensing
Non-Operating Humidity	5% to 90% RH non-condensing
Operating Altitude	sea level to 10,000 feet
Non-Operating Altitude	sea level to 30,000 feet
Shock Operating	40 g per IEC 60068-2-27, half sine, 11ms duration, 3 axis
Shock Non-Operating	50 g per IEC 60068-2-27, half sine, 11ms duration, 3 axis (in approved packaging)
Vibration Operating	1 g per IEC 60068-2-64 at 5 to 500Hz, 1 octave/min, 3 axis
Vibration Non-Operating	5 g per IEC 60068-2-64 at 5 to 500Hz, 1 octave/min, 3 axis
Electrostatic Discharge Protection Per Standard	IEC 61000-4-2:2008
Air Discharge	±8KV
Contact Discharge	±4KV

## 9.0 Regulatory Test Standards

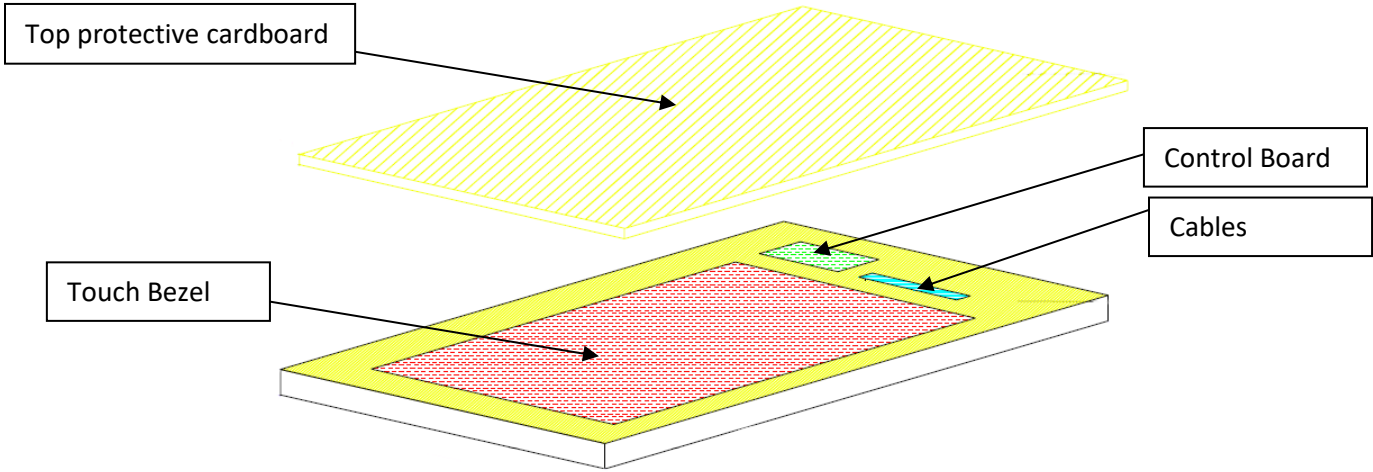
Below is a list of regulatory standards the touch screen complies with and the certification marks.

Description	Value
Information technology equipment. Radio disturbance characteristics	EN 55022:2010/AC:2011
FCC EMC Conducted & Radiated Emission	FCC Part 15 B
Electrical equipment for measurement, control and laboratory use - EMC requirements - Part 1: General requirements	EN 61326-1:2006
Industrial, Scientific and Medical Equipment – Radio Frequency disturbance Characteristics – Limits and Methods of Measurement	EN 55011:2011
Electromagnetic compatibility (EMC). Limits for harmonic current emissions (equipment input current ≤ 16 A per phase)	EN 61000-3-2:2006+A1+A2
Electromagnetic compatibility (EMC). Limitation of Voltage Fluctuations and Flicker	EN 61000-3-3:2008
Information technology equipment. Immunity characteristics	EN 55024:1998+A1+A3
Information Technology Equipment - Safety, Part 1: General Requirements	UL 60950-1

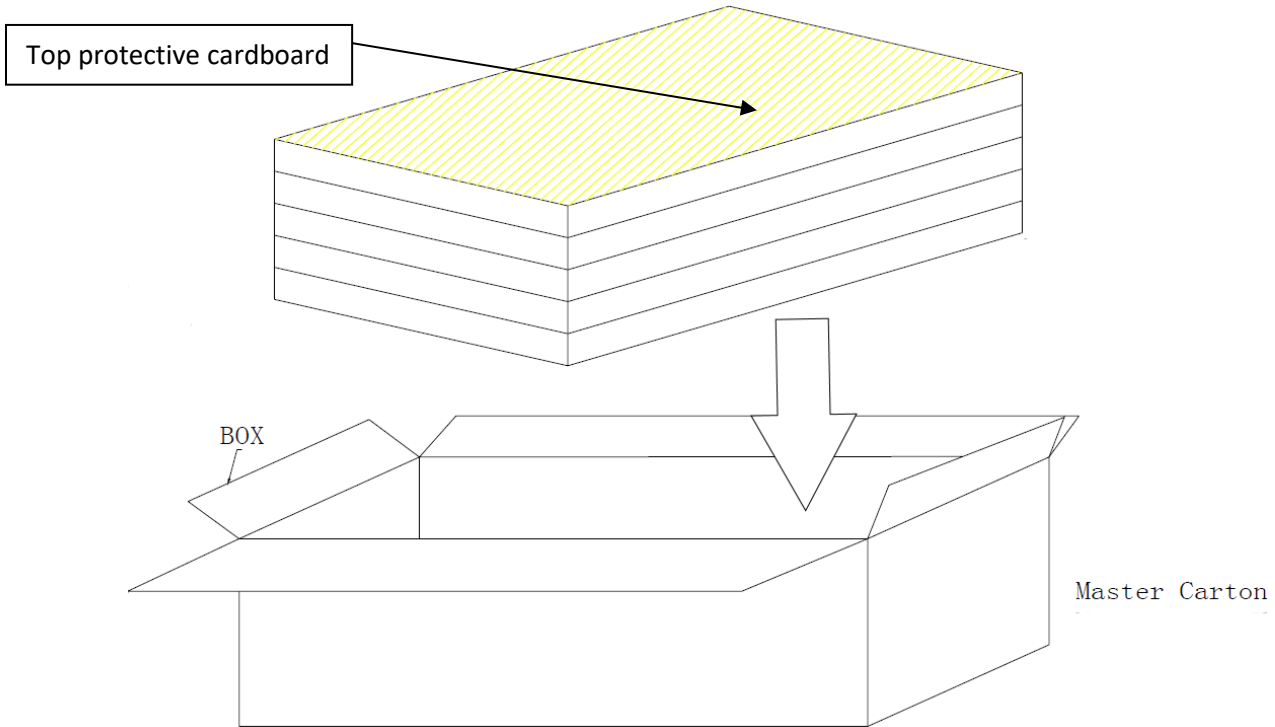


## 10.0 Packing Information

Each touch screen bezel is individually sandwiched between two brown moisture absorbing paper. The screen, control board and cables are placed in a foam cutout as shown below. A cardboard piece is placed on the topmost foam cutout.



Five frames are stacked on top of each other and placed in the Master Carton



Description	Length	Width	Height	Weight
Master Carton	768 mm	457 mm	165 mm	TBD

## 11.0 Ordering Information

Currently can order the 23.8" Slim Bezel Multi-Touch screen from Baanto using the Part Number stated below. The description of each field within the part number is shown below. As more options become available then the list below will be updated. There is a minimum order quantity of 5 units.

# SDW-238W1-M4L-I63-S1-M0-PRD

