

TouchBeam Interactive

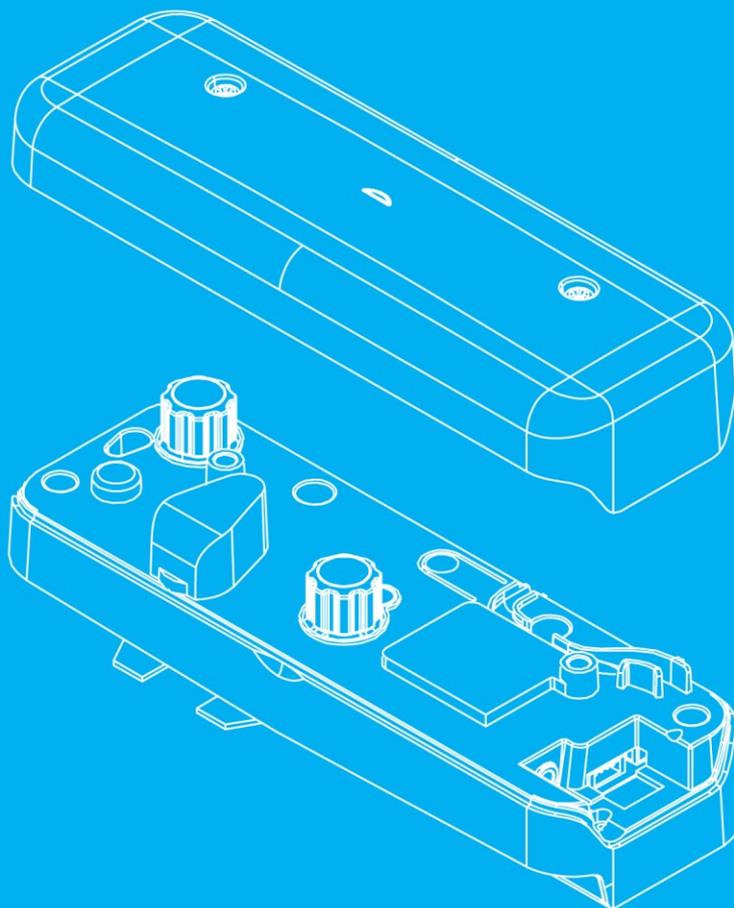


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Usage Notice

Please follow all warnings, precautions and maintenance as recommended in this user's manual.

- Warning - Do not disassemble the TouchBeam module.
- Warning - Do not use, store, or leave the TouchBeam module near fire, or in places with a high temperature, e.g., in direct sunlight, or in sun-heated cars.
- Warning – Use a standard USB cable (maximum length: 5m). To extend the USB cable length over 5m, a certified active extension USB cable is required.
- Warning - Do not allow liquid or foreign material to enter the TouchBeam module.

Precautions

The IR camera on the projector receives infrared signals from the TouchBeam module which is attached to the whiteboard.

To operate normally:

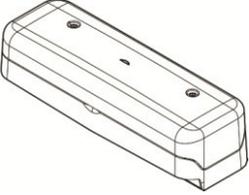
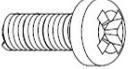
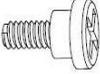
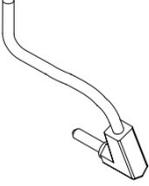
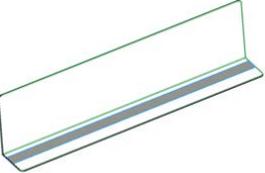
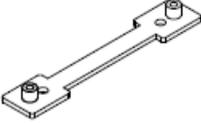
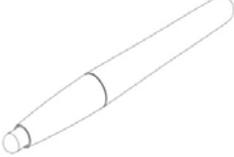
- The IR camera should face the projection area of the whiteboard.
- Remove any obstacle in between the IR camera and the TouchBeam module.
- Do not place other infrared communication devices, lighting equipment, or residential heating equipment etc., nearby.

Maintenance: Gently clean the optical port with dust blower.

How it works

- TouchBeam covers the entire whiteboard with a thin invisible IR light.
- When a finger or stylus breaks the TouchBeam, IR light reflects to the IR camera.
- The camera module tracks multiple touch points and reports positions to a PC or laptop via USB.
- To optimize the touch function the whiteboard needs to be flat and in good condition, without dents or warping.

Package Overview

			
TouchBeam module	2x (M2 6mm) screws	2x (M6 6mm) screws	Interactive cable
			
2x Alignment Card	TouchBeam bracket	Double sided tape	5m USB cable
			
2x Passive pens	CD user manual		

Before Installation - Environment Check

Before setting up and installing the projector and TouchBeam module ensure that the power supply and wiring work for the installation location of the mount in advance.

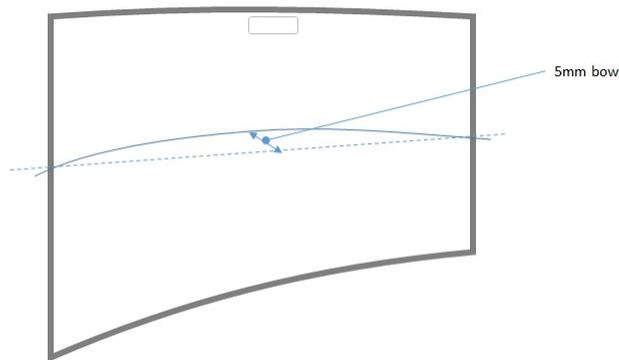
Note:

- Install the projector away from other electrical devices such as florescent lights or air conditioners. Some kinds of florescent lights could interfere with the remote control of the projector
- We recommend to keep source cable length less than 20 meters to reduce external noise
- We recommend using a steel backed whiteboard
- Make sure the projector is installed under the following conditions
 - the projected image is a rectangular shape without any distortion
 - the projector is tilted at an angle no more than +/-3 degrees vertically and horizontal in relation to the screen
- When using the interactive function install the projector so that the projected image is within reach
- Do not install the projector or screen in a location subject to direct sunlight. If the projector and screen are subject to direct sunlight, the interactive function may not operate correctly.

TouchBeam installation information

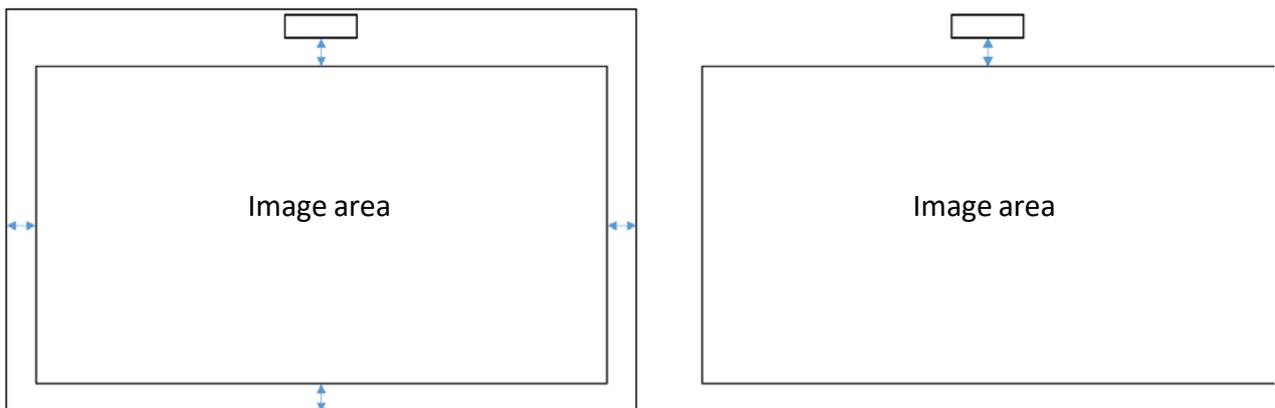
Before installing the TouchBeam module, the projection surface must meet the following conditions/criteria:

1. The screen surface is a flat, smooth surface with no unevenness of more than 5mm. The surface can either be a flat wall or a whiteboard. For details on how to check surface flatness see page 8.
2. The surface must be magnetic or allow for the TouchBeam module to be secured with screws **above the 'projector image.'**



If the projection surface meets the requirements above, the projector and TouchBeam module can then be installed using one of the two methods listed below:

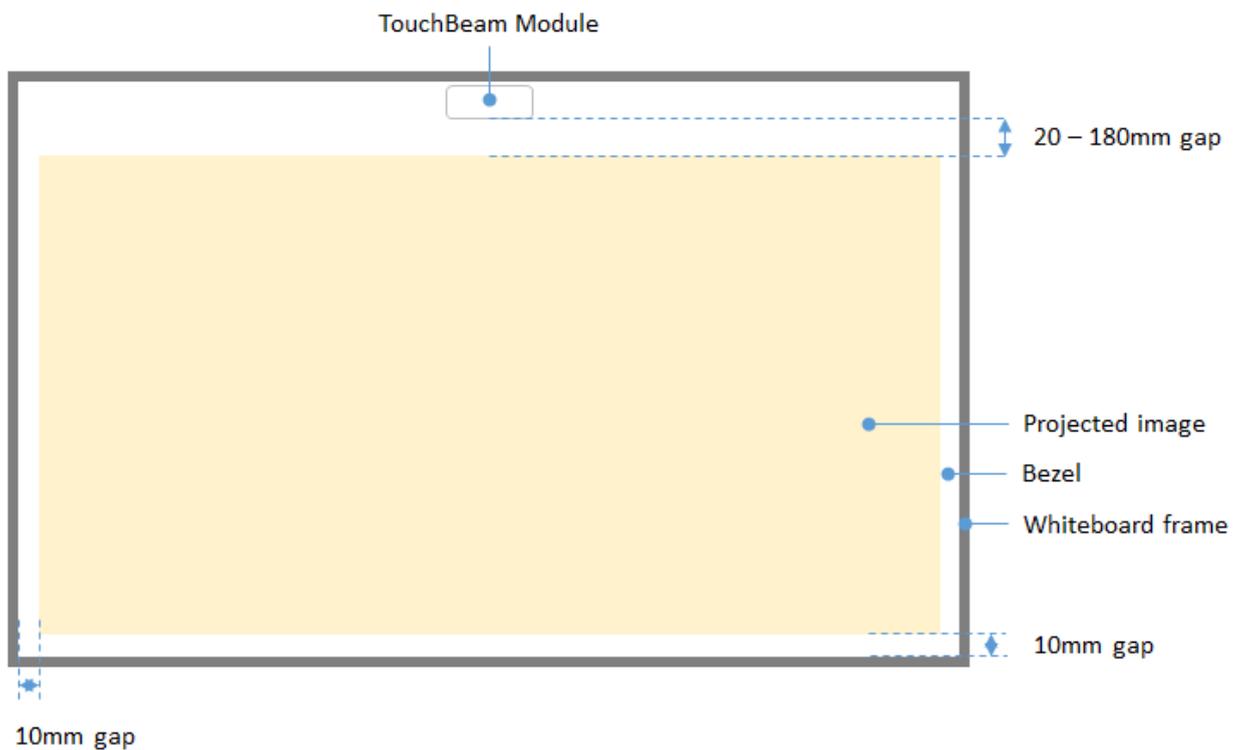
1. Mount the projector and TouchBeam module to the wall.
2. Mount the projector to the wall and attached the TouchBeam module to the whiteboard.



- FullHD 1080p - Minimum Image is 80" / Maximum Image Size 100"
- WXGA 1280x800 - Minimum Image is 85" / Maximum Image Size 115"
- From the top of image area, a 1" to 7" gap must exist between the top of the projector image and the bottom of the laser curtain module.
- For the best performance when using a whiteboard with a 3mm frame or smaller – ensure there is a .5-inch gap around the projector image (between image and whiteboard frame).
- For the best performance when using a standard whiteboard (ex: aluminum frame) ensure there is a 2-inch gap around the projector image (between image and whiteboard frame). Failure to ensure the gap around the projector image is 2 inches will result in issues laser curtain alignment AND OR calibration.

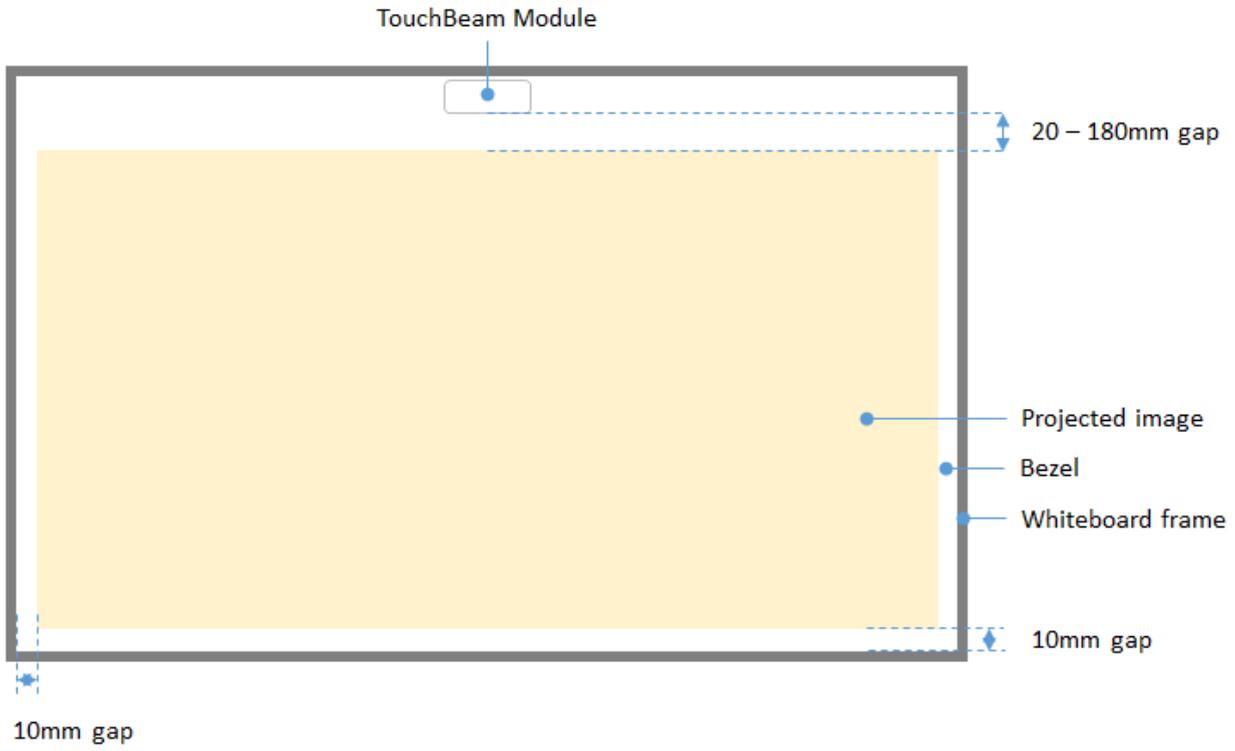
Whiteboard Setup for Frames 0.12" (3mm) or smaller

When installing the TouchBeam module on a whiteboard please follow the guidelines below for standard aspect ratio (4:3, 16:10 and 16:9) image sizes.



Whiteboard Setup for Aluminum Frames larger than 0.12" (3mm)

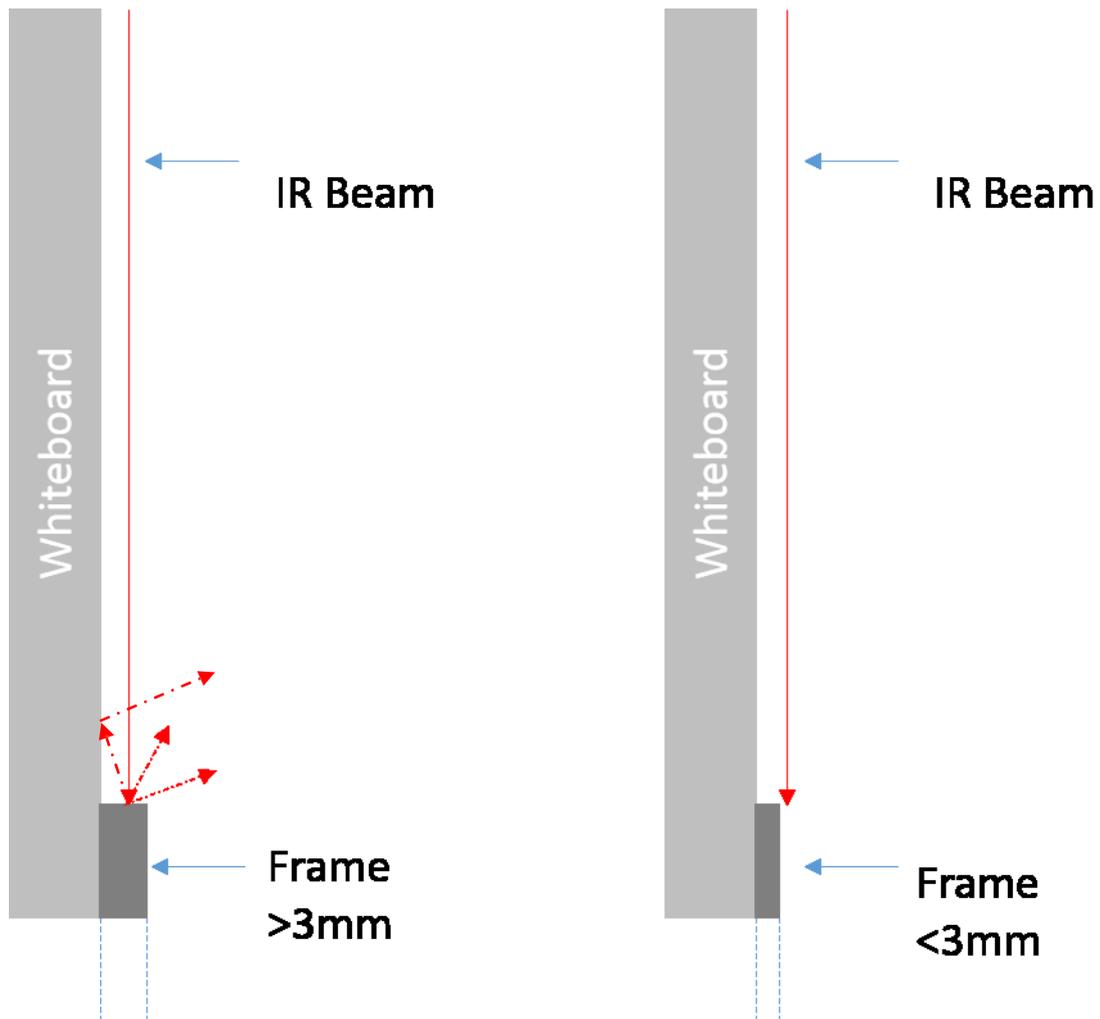
When installing the TouchBeam module on a whiteboard please follow the guidelines below for standard aspect ratio (4:3, 16:10 and 16:9) image sizes.



Notes

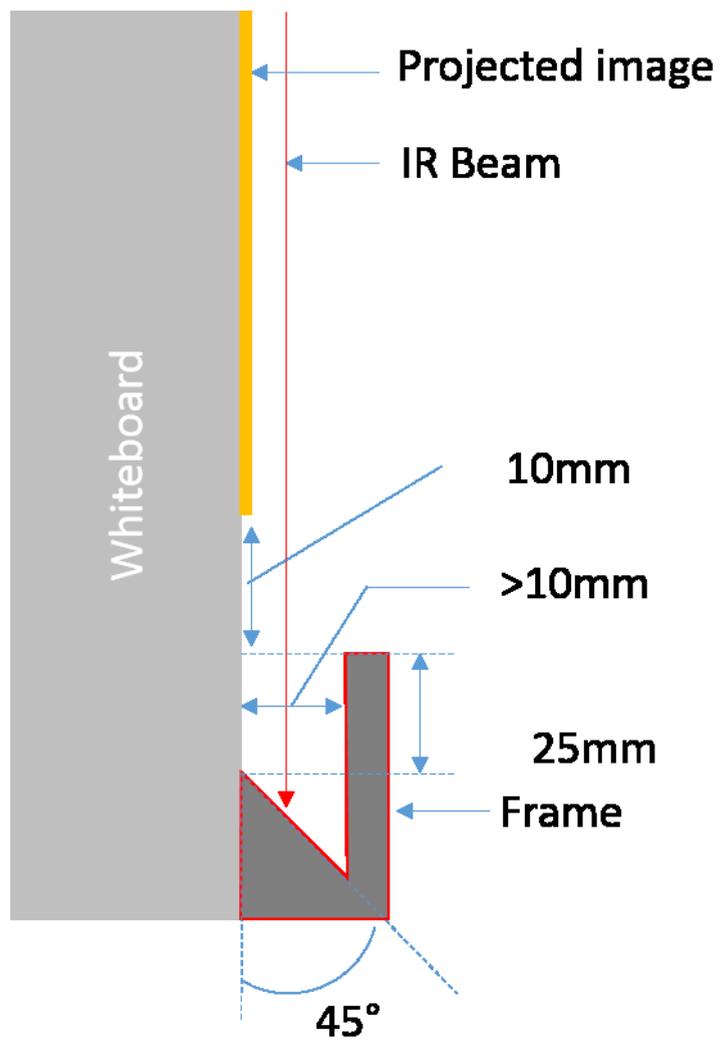
If the whiteboard frame thickness is greater than 0.12" (3mm) the light can reflect off the whiteboard (detected by IR camera) resulting in interference -- compromising touch/interactive functionality. To prevent this from happening, we recommend a 2" (50mm) border/gap around the projector image -- instead of 0.40" (10mm) as shown in diagram on the previous page.

If the whiteboard frame thickness is less than 0.12" (3mm), ensure the reflected light interference is not observed when completing TouchBeam alignment.



It is suggested that a whiteboard with a frame of less than 0.12" (3mm) is used. However, if a larger frame size is required it must follow the conditions shown below:

- Surface treatment: Matte, with mold texture ≥ 11010
- Shape: as figure on next page



Measuring projection surface flatness

- ✓ Criteria: overall surface flatness should have variance of less than 5mm.
- ✓ Equipment: leveling instrument (1.2~1.5m) and thickness gauge.



Split projection area into 16 segments equally as shown on chart below. Place leveling instrument on whiteboard.

Insert the 5mm thickness gauge at point 1~9 positions following below order:

<p>Horizontal:</p> <ul style="list-style-type: none"> - Measure point 1, 2 & 3. - Measure point 4, 5 & 6. - Measure point 7, 8 & 9. 	<p>Vertical:</p> <ul style="list-style-type: none"> - Measure point 1, 4 & 7. - Measure point 2, 5 & 8. - Measure point 3, 6 & 9.
--	--

	Point1	Point2	Point3
	Point4	Point5	Point6
	Point7	Point8	Point9

If a 5mm thickness gauge cannot be inserted between the whiteboard and the level then the whiteboard is not suitable for finger touch control.

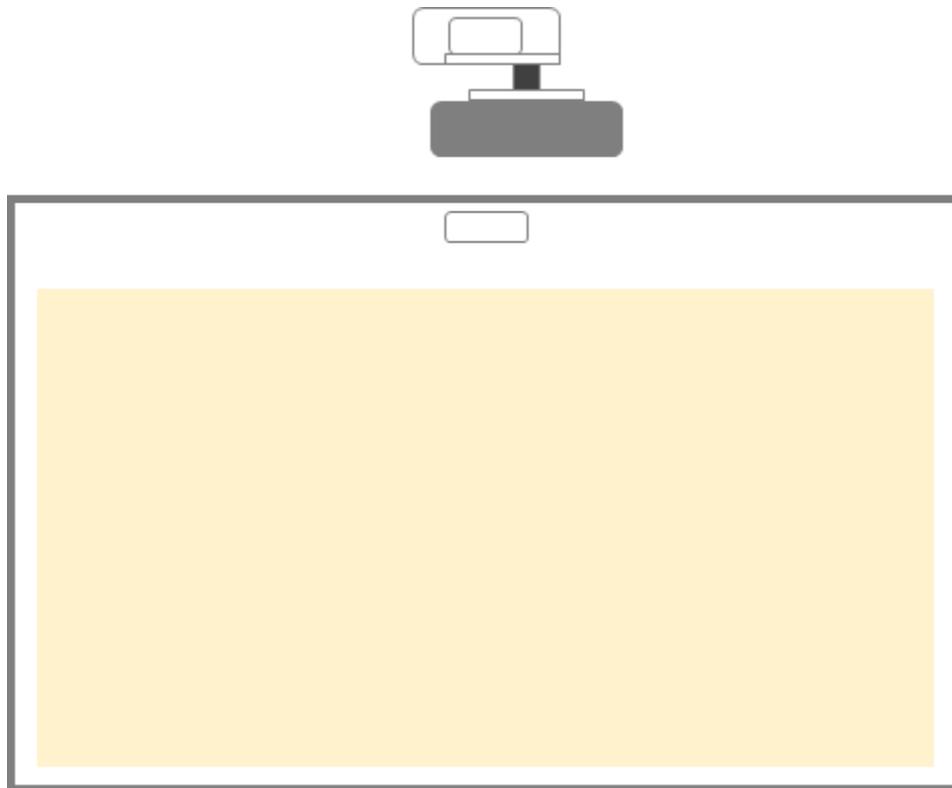
Installation guide

Installation workflow

- Install the projector mount (See mount installation guide)
- Attach the projector to mount (See mount installation guide)
- Connect sources to the projector
- Adjust projected images (See mount installation guide)
- Install the whiteboard (See whiteboard installation guide)
- Install the TouchBeam module
 - Attach to board
 - Connect to projector / PC
 - Calibrate

Note: If the whiteboard is already installed please see page 36.

Installing the whiteboard



- Please refer to the whiteboard installation instructions

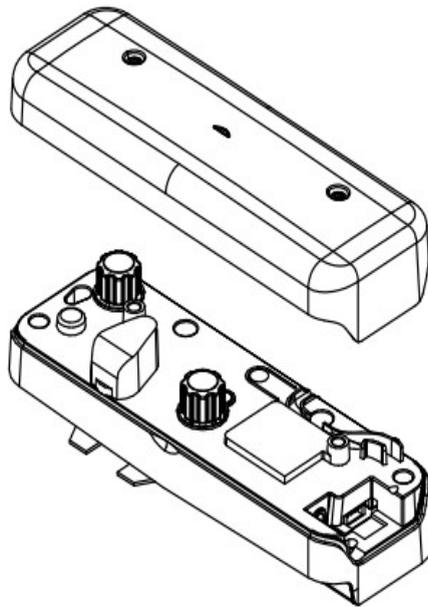
Note: The whiteboard and projector should be installed centrally to each other. The bottom of the image must be a minimum of 0.40" (10mm) from the bottom of the whiteboard border. Enough room must be left on top for the TouchBeam module.

Note: If the whiteboard is already installed please proceed page 36

Installing the TouchBeam module

Step 1: Mounting the TouchBeam module

1. Open top cover with a screwdriver.



1.2 Mount bracket to whiteboard or wall

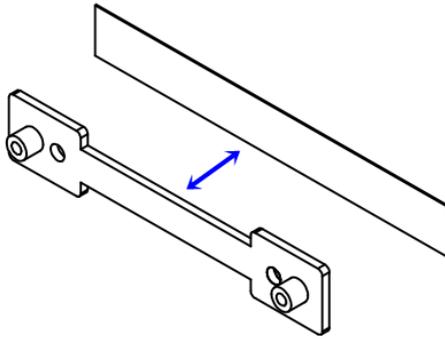
The module must be installed ABOVE the top of the projected image

- **There MUST be at least 4" (13.5cm) between the top of the projected image and the bottom of the TouchBeam module therefore the mounting bracket for the TouchBEAM module should be installed 5" ABOVE the top of the projected image. It is easiest to achieve when the bracket and TouchBeam module are installed inside of the bezel/frame (directly onto the whiteboard).**

If the bracket and TouchBEAM module must be installed above the whiteboard's bezel/frame – the bracket and TouchBEAM must be FLUSH (level) with the bezel/frame and whiteboard. The bracket and TouchBEAM cannot reside "lower" (closer to the wall than the bezel/frame and whiteboard).

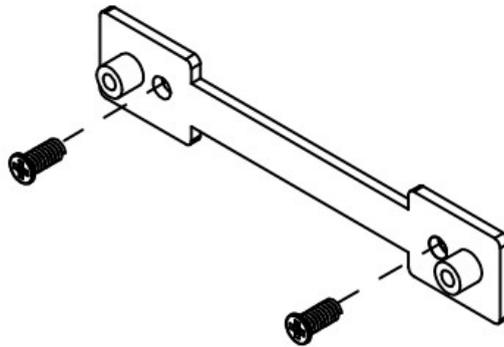
Failure to install the mounting bracket and TouchBeam module correctly will result in erratic performance and or the inability (dead zones and unresponsive corners) to use the interactive touch features.

1.3a Short-term installation (few days to a few weeks):



Adhere double-sided tape (enclosed in accessory box) onto bracket, then attached onto the whiteboard.

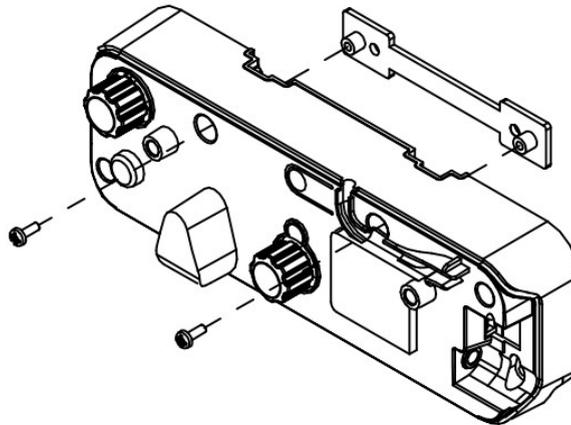
1.33b Long-term use:



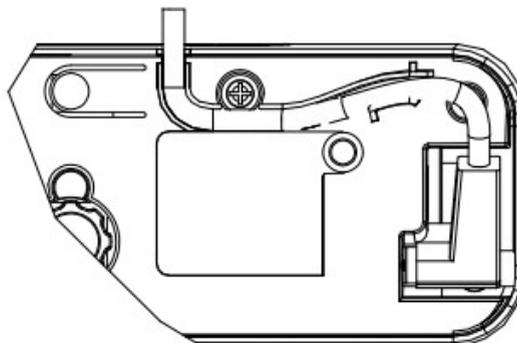
Use screws to fix the TouchBeam bracket onto the whiteboard:

- Drill tip: Φ O=2.3mm
- Screw type: M3x6L
- Screw head: Φ O<5.5mm, thickness <2.5mm

1.4 Attach the module to the bracket with screws



1.5 Connect the interactive cable into the TouchBeam module



Note: The right-angle connector must plug directly into the TouchBeam module.

Step 2: Install TouchBEAM Utility Software

1. System requirements

To ensure normal operation of the touch function, your computer must meet the system requirements shown in the table below.

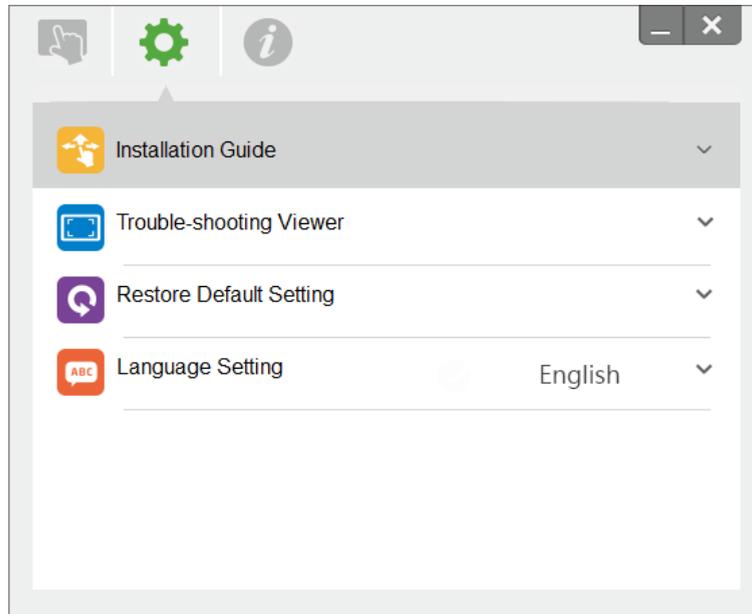
System requirement	
Operating system	Microsoft Windows XP (SP3)/Windows 7 (32bit/64bit)/Windows 8 (Must be installed. NET Framework 4.0)
CPU	Intel® Core™ i3 or above
Memory	2GB or higher
Min. hard disk space	110 MB

2. Install the software utility from the CDROM. The status of the software is shown in the task bar, the icons shown below describe the mode the software is set to:

	Touch mode
	Pen mode
	Disconnected

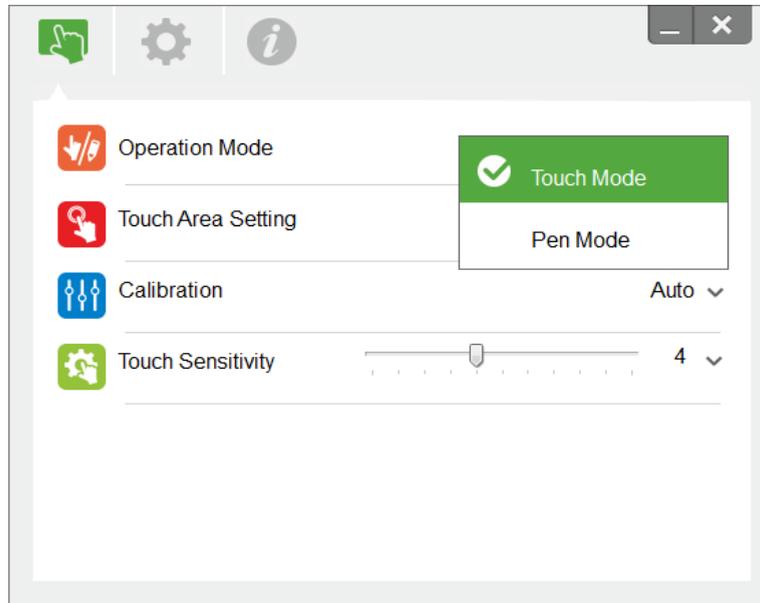
Step 3: Initial Setup

For first time setup, follow the installation guide to complete the installation procedure (✔).



Step 4: Operation Mode

Windows 7 and Windows 8 operating systems support multi-point touch control. Users can select default Touch Mode (👉) for **multi-point touch**, Or switch to Pen Mode (👉) when using the light pen (IR pen).



Please note: Windows XP and MAC operating systems only support **single-point touch**

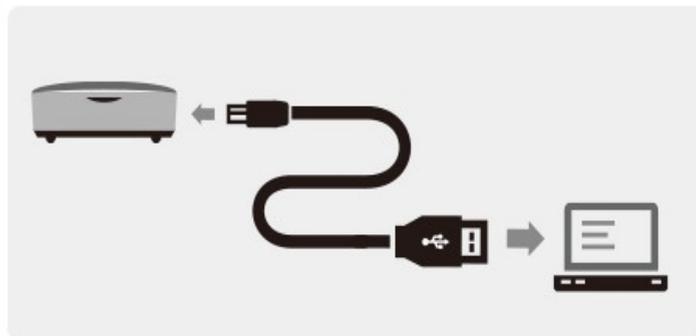
Step 5: TouchBeam Alignment

1. Press the button to switch to visible light mode (The Red LED will blink continuously)



Mode	LED indicator			Description
	Blue LED	Red LED		
IR Laser mode	Solid	--		IR laser ON
Visible light mode	Solid	Blinking		Visible light ON (IR Laser OFF, touch disabled)
Error	--	Solid		Error of LD module occurred.

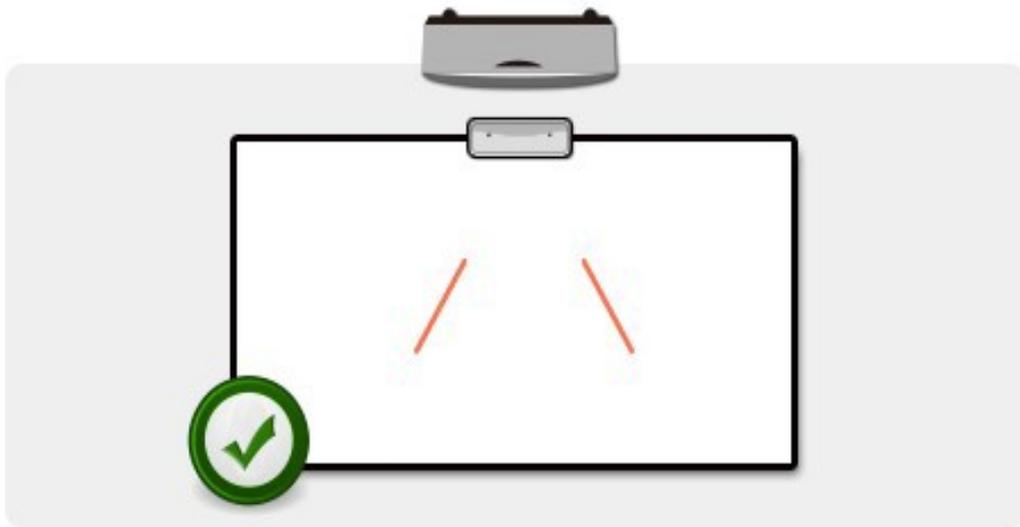
2. Connect PC and Projector via USB cable



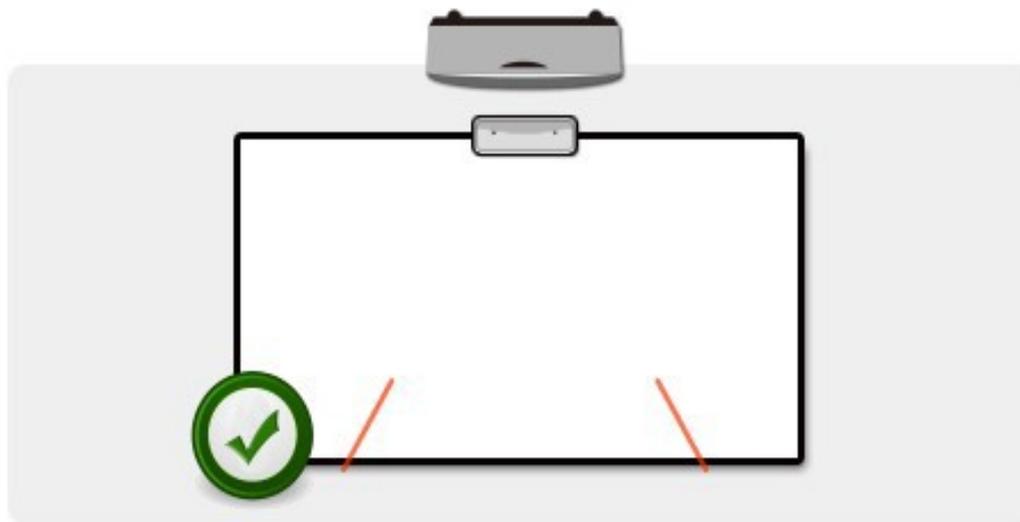
3. Rotate the black and grey adjustment knobs clockwise until they stop



4. Rotate the grey knob counter-clockwise, until both beams are symmetrically at the same level.

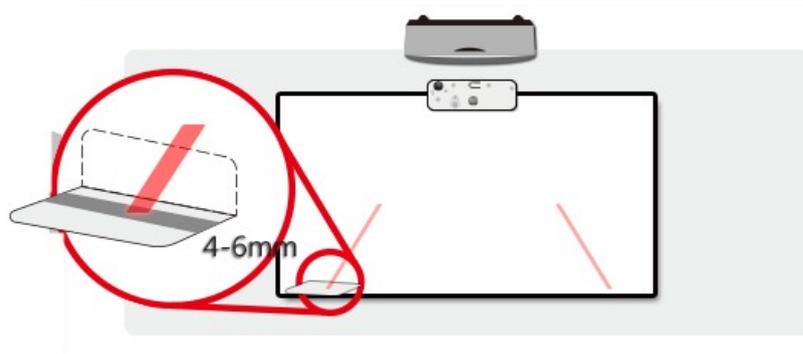


5. Rotate black knob counter-clockwise, moving both beams downwards until they hit whiteboard frame.

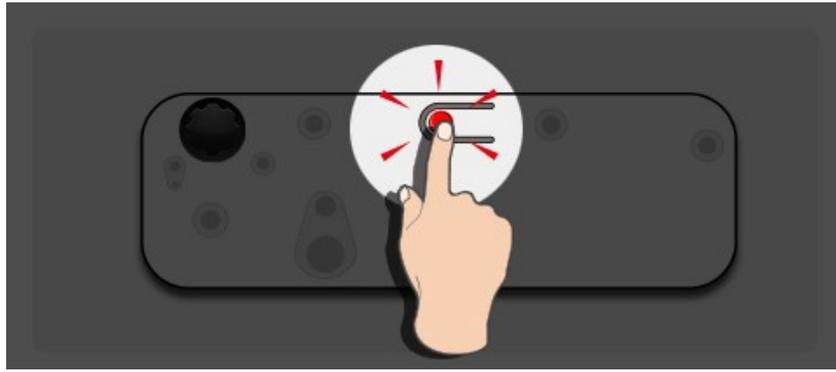


To check the beam height with alignment sticker for the both the left and right beams – place the alignment sticker horizontally 0.25” (6.5mm) for both left and right beams. The beams should be located within the gray strip on the alignment sticker. A red dot should appear in the gray strip, indicating that beam alignment is correct.

If you do not see a red dot in the gray strip on the alignment sticker, turn the black and grey clockwise until the red dots appear on the alignment sticker. Adjust until red dot is within the gray strip.

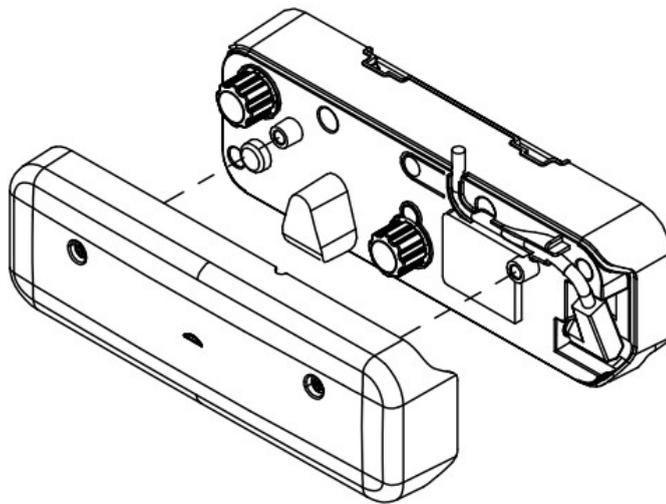


6. Press the button on the TouchBEAM model to switch to IR mode (The Blue LED will stay solid).



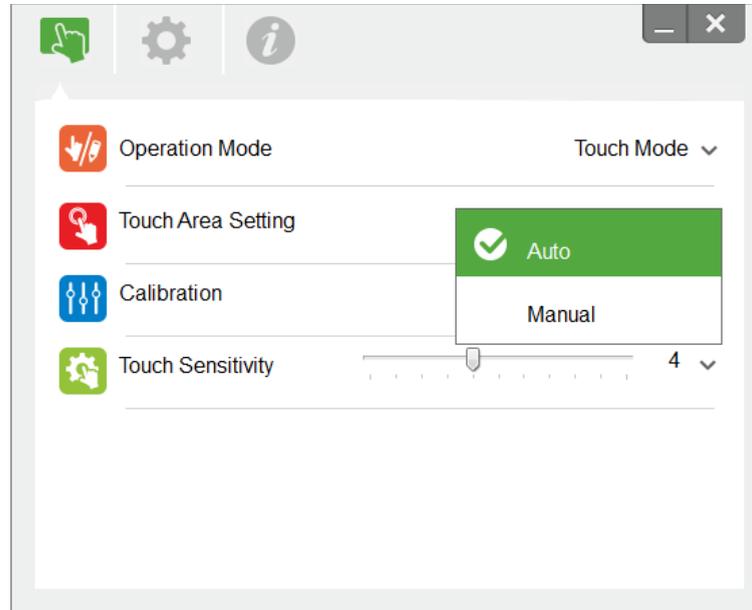
Mode	LED indicator		Description
	Blue LED	Red LED	
IR Laser mode	Solid	--	IR laser ON
Visible light mode	Solid	Blinking	Visible light ON (IR Laser OFF, touch disabled)
Error	--	Always ON	Error of LD module occurred.

7. Put top cover back on and tighten the screws.



Step 6: Touch Area Setting

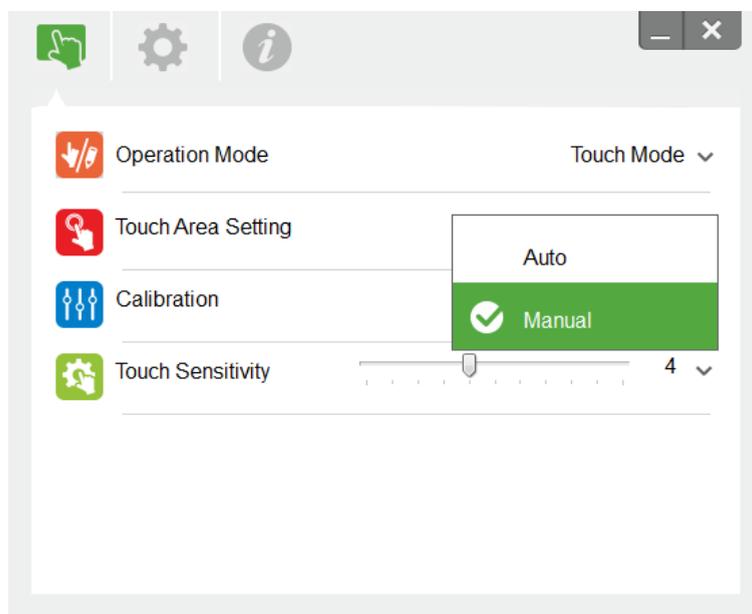
A. Select Auto Touch Area Setting:



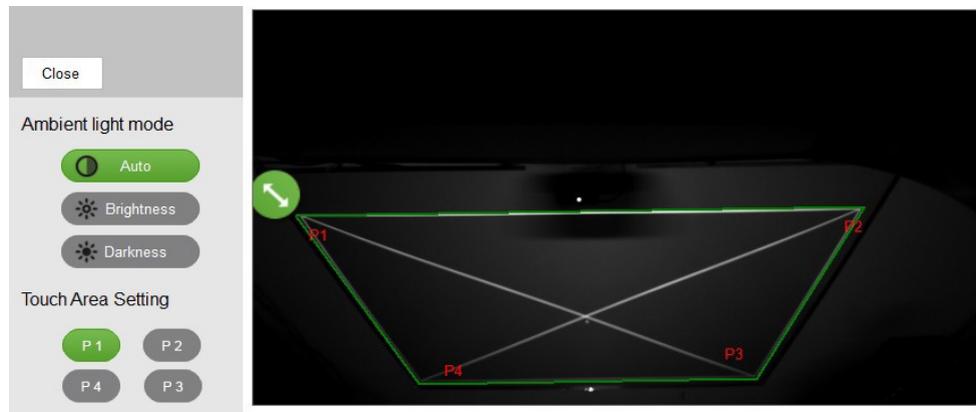
Note:

- Quit all software applications
 - Reduce ambient light (dim)
 - Do not obstruct or shake lens during Touch Area Setting
 - Check if projection image is clear. If not, adjust focus to sharpen the image
- If failure message appears, please switch to Manual Touch Area Setting.

B. Select Manual Touch Area Setting:



B-1. The camera will capture and display the projection image -- a Touch Area window will appear. If the captured image is not clear enough, please change the “Ambient light mode” from “Auto” to “Bright” or “Dim” (according to the actual amount of ambient light in the room). Press “Preview” and the camera will re-capture the image.



B-2. Touch Area Boundary Fine-tuning

Step 1: Click on P1, use mouse to drag P1 to upper left corner. Align adjustable green zone with projected white frame.

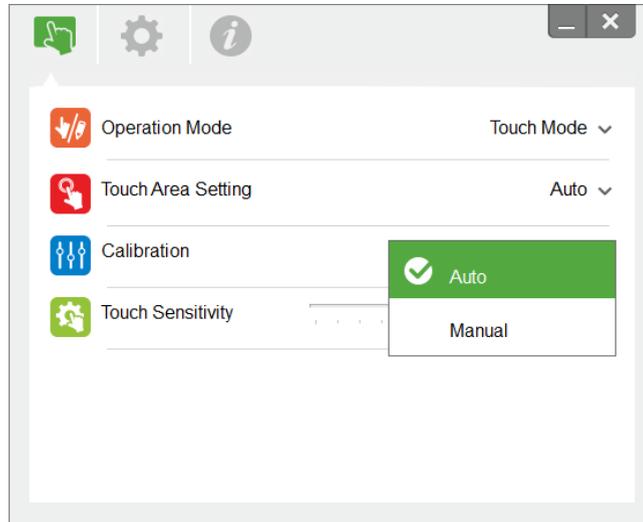
Step 2: Adjust P2 to P4 accordingly; adjustable green zone should completely overlap the projected white frame.

Step 3: Finally, check again if the green frame completely overlaps the projected white frame. If not, fine-adjust again.

B-3. When the Touch Area is correctly identified click “close” to exit.

Step 7: Calibration

A. Select Auto Calibration



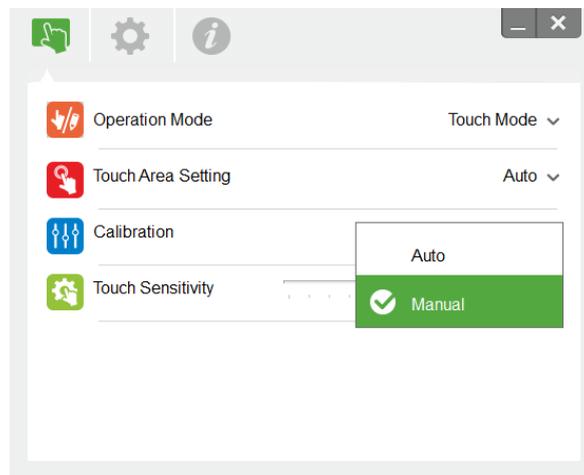
Note:

If the failure message appears, follow the steps shown below to troubleshoot the issues.

- Close all software applications
- Reduce ambient light
- Do not obstruct or shake lens during calibration
- Check if projection image is clear. If not, adjust focus to sharpen the image

If the Auto Calibration fail message still pops up on screen, switch to Manual Calibration.

B. Select Manual Calibration and follow the onscreen prompts to calibrate:

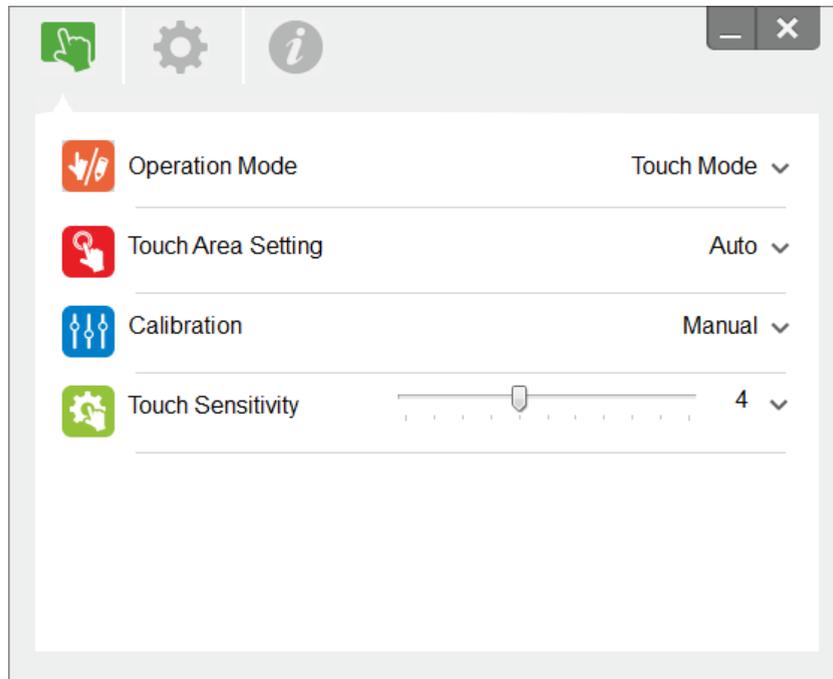


Note:

Manual Calibration is suggested for better accuracy.

Step 8: Touch Sensitivity

When touch function is unresponsive or intermittent (dead zones) -- you can adjust the sensitivity by adjusting the Touch Sensitivity level.



- Default: 4 (best for classrooms and conference rooms)
- Max.: 10 (most sensitive – best for creative artists)
- Min.: 0 (least sensitive)

Step 9: Trouble-shooting Viewer

Sometimes infrared red light (IR light) from ambient light sources may interfere with touch performance. The IR light viewer is a troubleshooting tool which displays real time images of the environment.

Use the tab on the left side of the screen to switch to the IR light viewer. Any infrared light interference is now shown in the window.



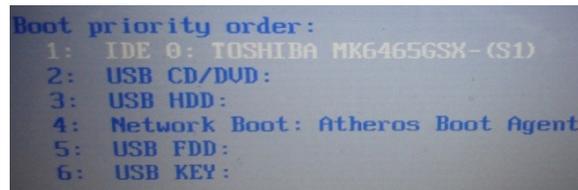
Appendix

Troubleshooting

Q1 Why won't the PC boot when the USB cable is connected to the projector?

A:

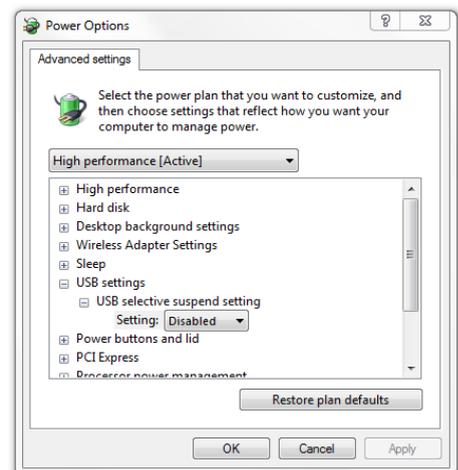
1. Unplug USB cable from PC; or
2. Go to BIOS setup page of PC and modify the "Boot priority order." Choose Hard disk as top priority, save the change and reboot PC.



Q2 What to do when Windows system cannot identify the USB device?

A:

1. Unplug/re-plug in the USB cable and check again.
2. Switch to another USB port and check again.
3. Restart your computer and check again.
4. Go to Power Options in Control Panel, check USB selective suspend settings status in USB settings under Advance Settings. Switch to "Disabled".

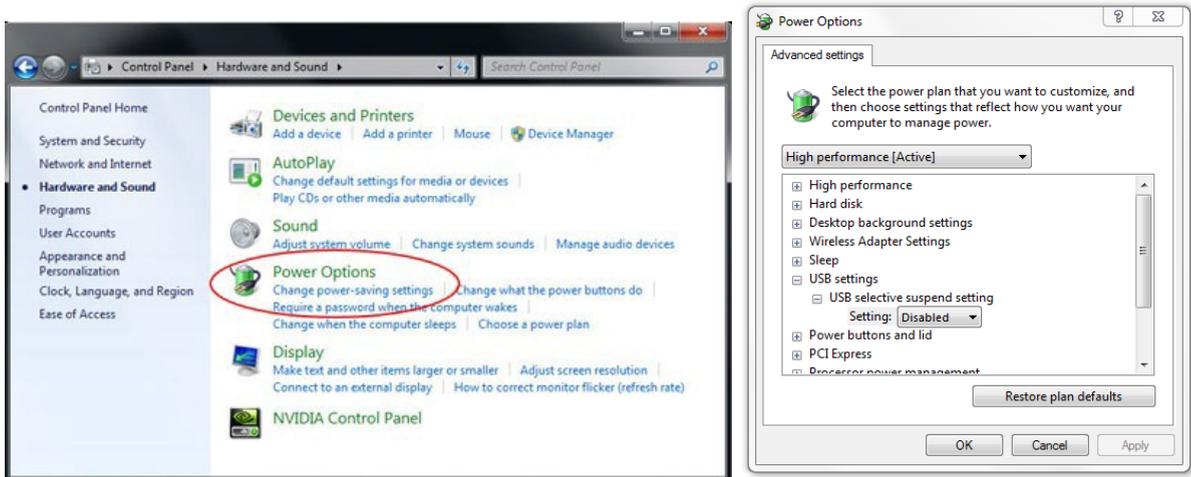


5. Go to the official website of the laptop/PC manufacturer, and update the USB driver to the latest version.
6. Use the USB cable included with your projector and check again. If a USB extension is needed please contact your distributor.
7. The USB port of your computer may not be working. Please contact your IT staff.

Q3 Why is the utility icon (🔴) red and not green (🟢/🟢)?

A: Red icon (🔴) indicates a failed connection. This may be caused by the following:

1. Unplug/re-plug in the USB cable and check again.
2. Switch to another USB port and check again.
3. Restart your computer and check again.
4. Go to Power Options in Control Panel; check USB selective suspend settings status in USB settings under Advance Settings. Switch to “Disabled”.

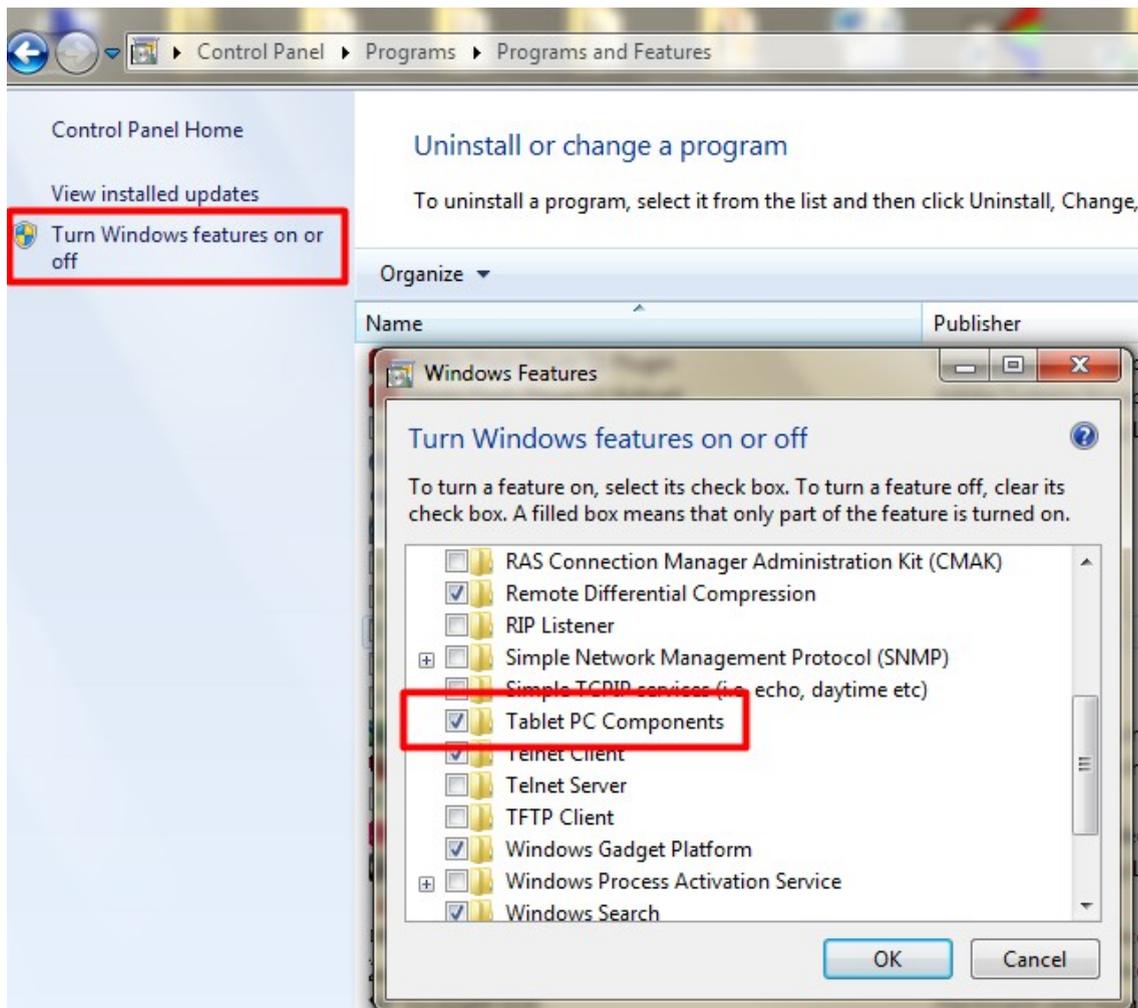


5. Go to official website of the laptop/PC manufacturer, and update the USB driver to the latest version.
6. Go to official website of the laptop/PC manufacturer, and update the BIOS driver to the latest version.
7. Use the USB cable included with your projector and check again. If an USB extension is needed, please contact your distributor.
8. The USB port of your computer may not be working. Please contact your IT staff.

Q4 What to do when there is only single touch point?

A:

1. Re-plug USB cable from PC.
2. Go to “Control Panel” and make sure “Tablet PC Components” is selected.



Q5 When should Calibration and Touch Area Setting be completed?

- A: Please perform Calibration and Touch Area setting during first installation. If the projector or whiteboard is moved, Touch Area Setting and Calibration should be performed again.
- When Laptop/PC resolution is changed, calibrate again.
 - For better accuracy, please complete manual calibration.
 - If an overlarge offset is observed, please perform Manual Calibration and see Step 8 Calibration for troubleshooting.

Q6 What to do when Auto Calibration and Auto Touch Area Setting both fail?

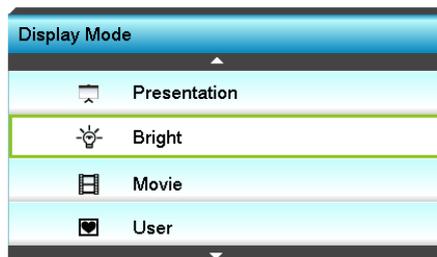
- A:
1. When the projectors OSD message is shown, this may result in Auto Calibration failure and Auto Touch Area Setting failure. Please wait until the OSD message is hidden before performing Auto Calibration and Auto Touch Area Setting.



2. Please follow the troubleshooting steps shown below to perform Auto Calibration and Auto Touch Area Setting again.
 - a. Quit all software applications
 - b. Reduce ambient light
 - c. Do not obstruct or shake lens during Calibration
 - d. Check if projection image is clear. If not, adjust focus to sharpen the image.
 - e. If the "Auto Touch Area Setting failed" or "Auto Calibration failed" message pops up on screen again, please switch to Manual Mode to complete Touch Area Setting and Calibration.
3. Please check Projector Brightness Mode selection. Lower lamp brightness (ECO mode) may affect both Auto Touch Area Setting and Auto Calibration. Please switch to Bright mode to complete Touch Area Setting and Calibration.



4. Please check Projector Display Mode selection. To ensure accuracy of both Auto Touch Area Setting and Auto Calibration, it is suggested to switch display mode to Bright Mode.



Q8 What to do when the mouse cursor () flashes or jumps on screen, or when the Touch function does not work well for a certain projection area?

A:

1. Check if there is strong ambient light shown on the whiteboard. If yes, turn off the light.
2. Check if there are any foreign objects on the whiteboard. If yes, remove the object.
3. Refer to Step 6 Laser Beam Alignment for detailed procedures, to see if laser beam is aligned.
4. Refer to Step 7 Touch Area Setting for detailed procedures, check if Manual Touch Area boundary is located properly.

Q9 What to do when the projection area corner is insensitive or intermittent lines are observed?

A:

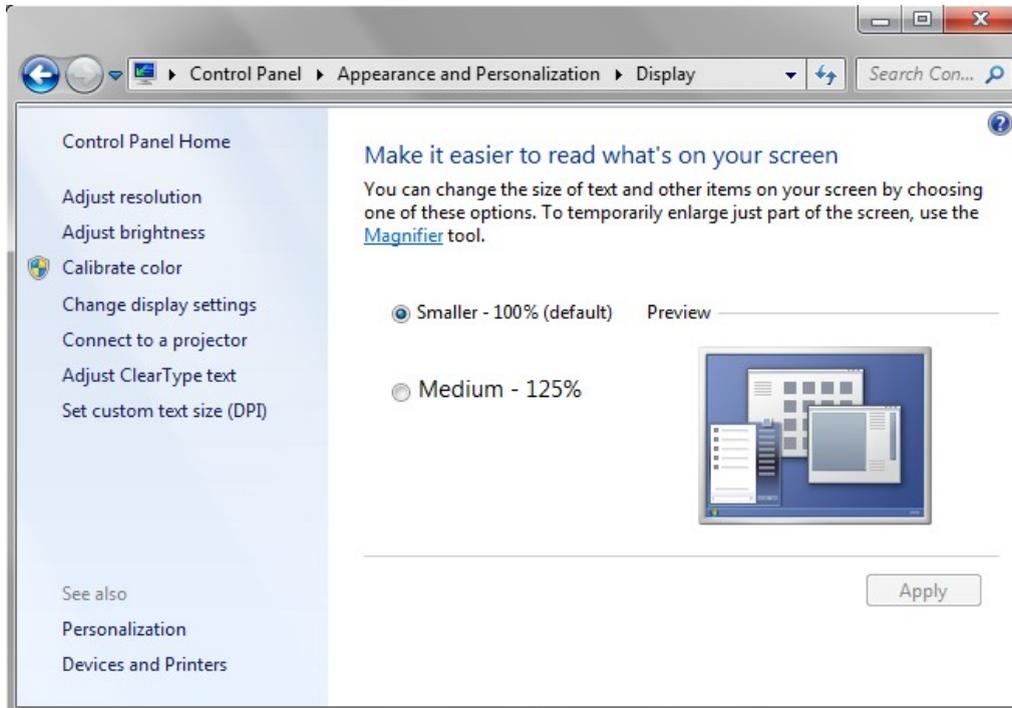
1. Adjust the level of Touch Sensitivity to enhance sensitivity, see Step 9 Touch Sensitivity for troubleshooting.
2. If Touch function remains insensitive, please check the optical port condition. If dust or

particles are observed, gently clean the optical port with dust blower.

Q10 What to do when the touch function is not accurate?

A: Touch accuracy may be impacted when the Windows default display has been changed.

1. Go to the setting page <Start menu/Control Panel/Appearance and Personalization>

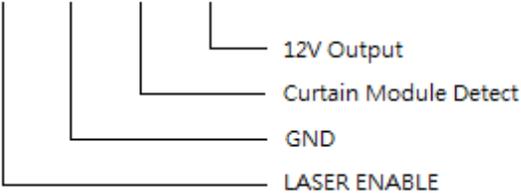


2. Select "Smaller - 100%(Default) " and click "Apply".

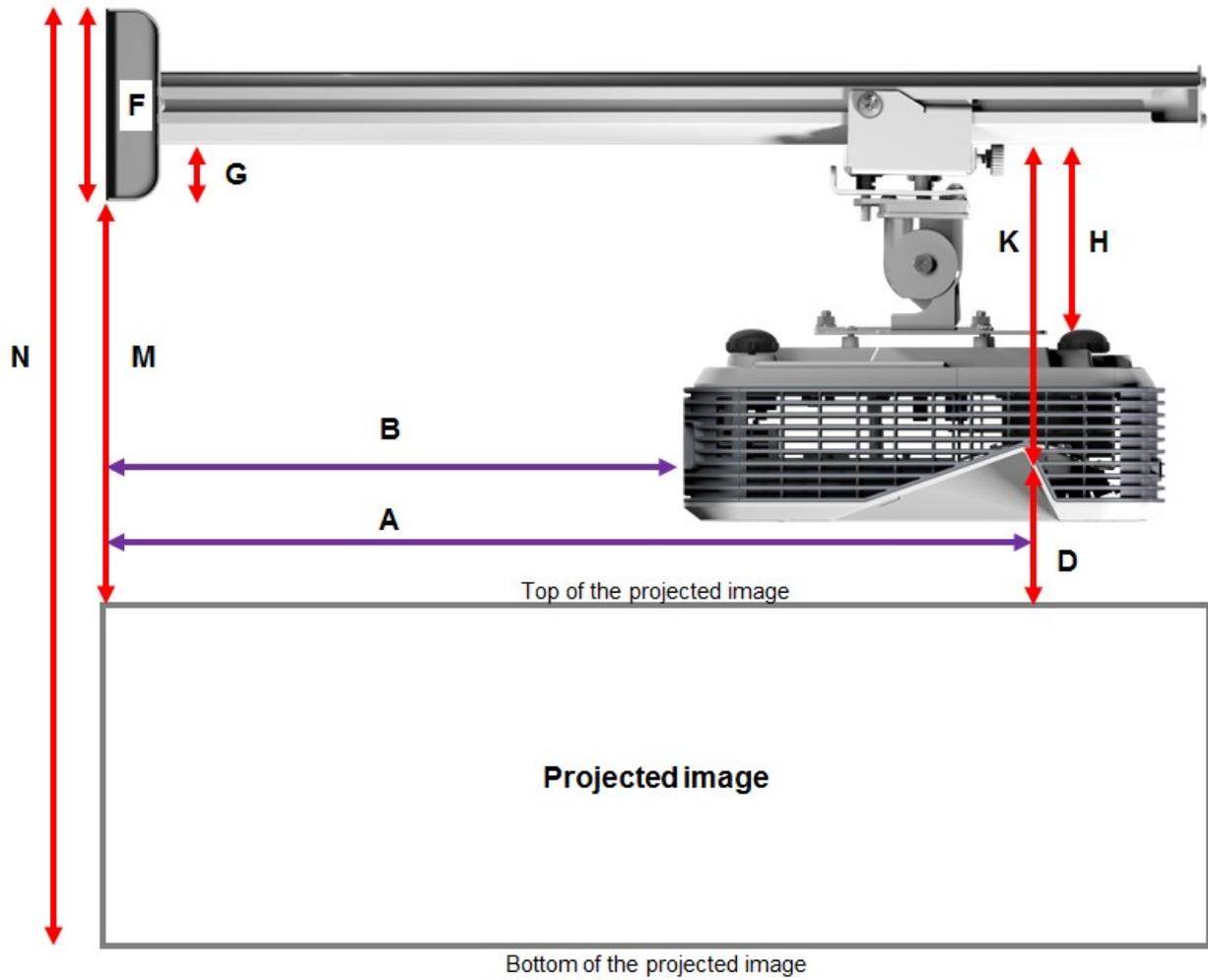
Appendix

Interactive cable layout

3.5mm Plug



Distance calculator



XGA

B	A	W	H	Image size	D	M	N
0.219m	0.472m	1.422m	1.066m	1.777m / 70"	0.181m	0.37m	1.57m
0.252m	0.505m	1.521m	1.141m	1.879m / 75"	0.194m	0.38m	1.64m
0.287m	0.540m	1.627m	1.220m	2.033m / 80"	0.207m	0.40m	1.75m
0.354m	0.607m	1.828m	1.371m	2.285m / 90"	0.233m	0.43m	1.92m
0.422m	0.675m	2.033m	1.525m	2.541m / 100"	0.259m	0.45m	2.10m

WXGA

B	A	W	H	Image size	D	M	N
0.232m	0.485m	1.830m	1.144m	2.158m / 85"	0.172m	0.36m	1.63m
0.245m	0.498m	1.879m	1.175m	2.216m / 87"	0.176m	0.37m	1.67m
0.261m	0.514m	1.940m	1.212m	2.287m / 90"	0.182m	0.37m	1.71m
0.318m	0.571m	2.155m	1.347m	2.541m / 100"	0.202m	0.40m	1.87m
0.375m	0.628m	2.370m	1.481m	2.795m / 110"	0.222m	0.42m	2.02m
0.403m	0.656m	2.475m	1.547m	2.919m / 115"	0.232m	0.43m	2.10m

1080p

B	A	W	H		D	M	N
0.193m	0.446m	1.770m	0.996m	2.031m / 80"	0.179m	0.37m	1.49m
0.244m	0.497m	1.972m	1.109m	2.263m / 89"	0.200m	0.39m	1.63m
0.249m	0.502m	1.992m	1.121m	2.286m / 90"	0.202m	0.39m	1.64m
0.305m	0.558m	2.214m	1.246m	2.541m / 100"	0.224m	0.42m	1.79m

Ultra wide*

B	A	W	H		D	M	N
0.467m	0.72m	2.857m	1.071m	3.05m / 120"	0.193m	0.39m	1.58m
0.497m	0.75m	2.976m	1.116m	3.18m / 125"	0.201m	0.39m	1.63m
0.527m	0.78m	3.095m	1.161m	3.30m / 130"	0.209m	0.40m	1.69m

*longer arm mount required

F	G	H	K
0.125m	0.037m	0.125m	0.18

Specification

I. TouchBeam Touch Module

Laser Safety	Class 1
Curtain to Screen Distance	20mm ~ 100mm @75"~115" XGA/WXGA/1080p 40mm ~ 100mm @ 120"~140" 16:6 ultra-wide
LED Indicator	Blue/Red
I/O Port	Interactive Jack x1
ID Size(W*L*H)	150.0 (W) x 50.0 (L) x 40.0 (H) mm
Weight	<330g
Power Consumption	12V/0.3A
Operation Temperature	0°C~+40°C(without cooling fan)
Storage Temperature	-20°C~+60°C

II. General Specifications

Calibration	Auto Calibration Manual Calibration
Multi-touch	10-touch points (Win 7 and Win8 compliant)
Multi-touch Min. Distance	≥40mm
Hover (Z-depth)	Default hover height is 5.5mm.
Working Projection Image Size	70"~100" @XGA (co-operate with TR0.33 UST projector) 85"~115" @WXGA (co-operate with TR0.27 UST projector) 80"~100" @1080P (co-operate with TR0.25 UST projector) 120"~140" @ Ultra-wide 16:6 (co-operate with TR0.25 UST projector)
Display mode	Support Ceiling mode only
IR camera hot plug	IR camera cannot support hot plug. Please unplug AC power cord of projector before install IR camera.

III. Installation Software

System Requirements	OS Required:	<ul style="list-style-type: none"> ● Microsoft Windows XP (SP3): Mouse mode supported. ● Windows 7/Windows 8: Touch mode-10 touch points supported and Mouse mode supported (Windows: .NET Framework 4.0 installation is required) ● Max OS X(10.7~10.10)
	Processor Type	Intel Core™ i3 or above
	RAM	2GB or higher
	Min. HDD Space	110 MB

