

MP780 ST+/MW860USTi Digital Projector User Manual



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Important safety instructions

Your projector is designed and tested to meet the latest standards for safety of information technology equipment. However, to ensure safe use of this product, it is important that you follow the instructions mentioned in this manual and marked on the product.

Safety Instructions

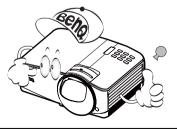
 Please read this manual before you operate your projector. Save it for future reference.



 Do not look straight at the projector lens during operation. The intense light beam may damage your eyes.



3. Refer servicing to qualified service personnel.



 Always open the lens shutter or remove the lens cap when the projector lamp is on.



5. In some countries, the line voltage is NOT stable. This projector is designed to operate safely within a mains voltage between 100 to 240 volts AC, but could fail if power cuts or surges of ±10 volts occur. In areas where the mains voltage may fluctuate or cut out, it is recommended that you connect your projector through a power stabilizer, surge protector or uninterruptible power supply (UPS).



 Do not block the projection lens with any objects when the projector is under operation as this could cause the objects to become heated and deformed or even cause a fire.

Safety Instructions (Continued)

 The lamp becomes extremely hot during operation. Allow the projector to cool for approximately 45 minutes prior to removing the lamp assembly for replacement.



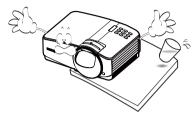
 Do not operate lamps beyond the rated lamp life. Excessive operation of lamps beyond the rated life could cause them to break on rare occasions.



 Never replace the lamp assembly or any electronic components unless the projector is unplugged.



 Do not place this product on an unstable cart, stand, or table. The product may fall, sustaining serious damage.



11. Do not attempt to disassemble this projector. There are dangerous high voltages inside which may cause death if you should come into contact with live parts. The only user serviceable part is the lamp which has its own removable cover. Under no circumstances should you ever undo or remove any other covers. Refer servicing only to suitably qualified professional service personnel.



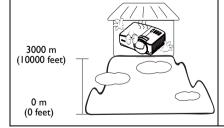
 When the projector is under operation, you may sense some heated air and odor from its ventilation grill. It is a normal phenomenon and not a product defect.

Safety Instructions (Continued)

- Do not place this projector in any of the following environments.
 - Space that is poorly ventilated or confined. Allow at least 50 cm clearance from walls and free flow of air around the projector.
 - Locations where temperatures may become excessively high, such as the inside of a car with all windows rolled up.
 - Locations where excessive humidity, dust, or cigarette smoke may contaminate optical components, shortening the projector's life span and darkening the image.



- Locations near fire alarms
- Locations with an ambient temperature above 40°C / 104°F
- Locations where the altitudes are higher than 3000 m (10000 feet).



- Do not block the ventilation holes.
 - Do not place this projector on a blanket, bedding or any other soft surface.
 - Do not cover this projector with a cloth or any other item.
 - Do not place inflammables near the projector.



If the ventilation holes are seriously obstructed, overheating inside the projector may result in a fire.

- Always place the projector on a level, horizontal surface during operation.
 - Do not use if tilted at an angle of more than 10 degrees left to right, nor at angle of more than 15 degrees front to back.
 Using the projector when it is not fully horizontal may cause a malfunction of, or damage to, the lamp.



Safety Instructions (Continued)

16. Do not stand the projector on end vertically. Doing so may cause the projector to fall over, causing injury or resulting in damage to the projector.



 Do not step on the projector or place any objects upon it. Besides probable physical damage to the projector, doing so may result in accidents and possible injury.



18. Do not place liquids near or on the projector. Liquids spilled into the projector may cause it to fail. If the projector does become wet, disconnect it from the power supply's wall socket and call BenQ to have the projector serviced.



 This product is capable of displaying inverted images for ceiling mount installation.



Use only BenQ's Ceiling Mount Kit for mounting the projector and ensure it is securely installed.



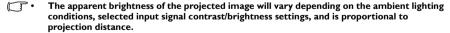
Introduction

Projector features

The projector integrates high-performance optical engine projection and a user-friendly design to deliver high reliability and ease of use.

The projector offers the following features.

- HDMI
- · LAN display for network control and web server
- LAN display 4-1 (maximum 4PC/ NB display to 1 projector)
- Remote desktop feature for LAN and USB display I-M (maximum IPC/ NB can display to 8 projectors at the same time)
- USB display supports computer connection via USB mini-B type to A type cable
- USB Reader supports USB flash drive or HDD display
- 3D Ready supported
- · Variable audio output
- Microphone input with big speakers (10W x2) can save extra audio systems for schools
- Wall color correction allowing projection on surfaces of several predefined colors
- Quick auto search speeding up the signal detecting process
- · Selectable password protected function
- 3D color management allowing color adjusents to your liking
- Selectable quick cooling function makes the projector cool in a shorter time
- Presentation timer for better control of time during presentations
- One-key auto-adjusent to display the best picture quality
- Digital keystone correction to correct distorted images
- Adjustable color balance control for data/video display
- High brightness projection lamp
- Multi-language On-Screen Display (OSD) menus
- Switchable normal and economic modes to reduce the power consumption
- Component HDTV compatibility (YPbPr)
- Less than I W power consumption in standby mode
- PointDraw™ interactive function
- WXGA, perfect for widescreen NB and PC, and provides 30% more images to XGA
- Short throw lens to create larger images with less distance between the projector and the screen



 The lamp brightness will decline over time and may vary within the lamp manufacturers specifications. This is normal and expected behavior.

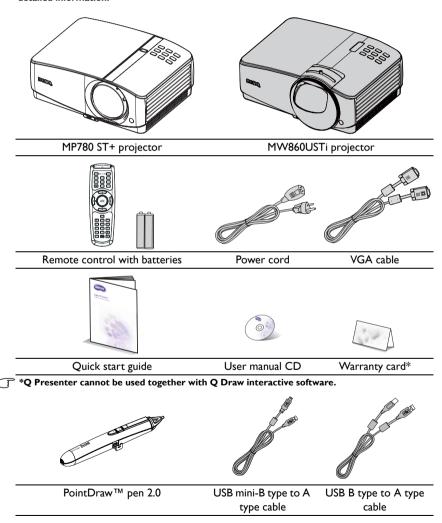
Shipping contents

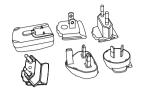
Carefully unpack and verify that you have all of the items shown below. If any of these items are missing, please contact your place of purchase.

Standard accessories

The supplied accessories will be suitable for your region, and may differ from those illustrated.

*The warranty card is only supplied in some specific regions. Please consult your dealer for detailed information.









USB power adapter

PointDraw[™] pen holder

PointDraw™ pen wrist strap





PointDraw™ pen quick start guide

O Draw 2.0 interactive software*



You may enjoy the dual pen feature by using two PointDraw pen 2.0 and the Q Draw 2.0 interactive software provided.

Optional accessories

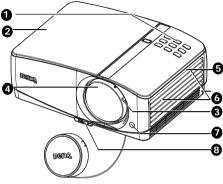
- ١. Spare lamp kit
- 2. Ceiling mount kit
- 3. RS232 cable

- 4. BenQ wireless dongle
- 5. PointDraw pen 2.0
- Wall mount kit

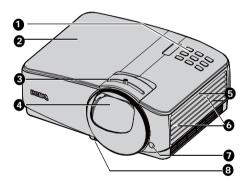
Projector exterior view

Front/upper side

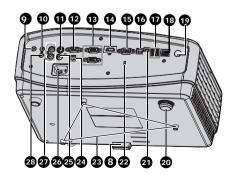
(MP780 ST+)



(MW860USTi)



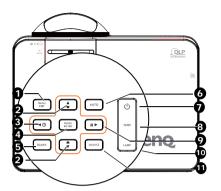
Rear/lower side



- External control panel (See "Projector" on page 11 for details.)
- 2. Lamp cover
- 3. Focus slide lever
- 4. Projection lens
- 5. Vent (heated air exhaust)
- 6. Speakers
- 7. Front IR remote sensor
- 8. Quick-release button
- 9. Audio output jack
- 10. Audio input jack
- 11. S-Video input jack
- 12. RGB signal output jack
- RGB (PC)/Component video (YPbPr/ YCbCr) signal input jack
- 14. HDMI input jack
- 15. RS-232 control port
- 16. USB B type jack
- 17. USB A type jack
- 18. RI45 LAN input jack
- 19. Rear IR remote sensor
- 20. Rear adjuster foot
- 21. USB mini-B type jack
- 22. Kensington anti-theft lock slot
- 23. Ceiling mount holes
- 12V DC output terminal Used to trigger external devices such as anelectric screen or light control, etc. Consult your dealer for how to connect these devices.
- 25. Video input jack
- 26. AC power cord inlet
- 27. Audio (L/R) input jack
- 28. Microphone input jack

Controls and functions

Projector



I. MENU/EXIT

Turns on the On-Screen Display (OSD) menu. Goes back to previous OSD menu, exits and saves menu settings.

Manually corrects distorted images resulting from an angled projection. See "Correcting keystone" on page 33 for details.

3. **◄** Left/ ?

Starts the FAQ function. See "Utilizing FAQ function" on page 47 for details.

4. MODE/ENTER

Selects an available picture setup mode. See "Selecting a picture mode" on page 40 for details.

Activates the selected On-Screen Display (OSD) menu item. See "Using the menus" on page 34 for details.

5. BLANK

Used to hide the screen picture. See "Hiding the image" on page 46 for details.

6. AUTO

Automatically determines the best picture timings for the displayed image. See "Auto-adjusting the image" on page 32 for details.

7. (1) Power/POWER indicator light

Toggles the projector between standby mode and on.See "Starting up the projector" on page 30 for details.

Lights up or flashes when the projector is under operation. See "Indicators" on page 96 for detail.

8. TEMPerature indicator light

Lights up red if the projector's temperature becomes too high. See "Indicators" on page 96 for details.

9. ► Right/ 🗖

When the On-Screen Display (OSD) menu is activated, the #2, #3, and #9 keys are used as directional arrows to select the desired menu items and to make adjusents. See "Using the menus" on page 34 for details.

Activates panel key lock. See "Locking control keys" on page 47 for details.

10. LAMP indicator light

Indicates the status of the lamp. Lights up or flashes when the lamp has developed a problem. See "Indicators" on page 96 for details.

II. SOURCE

Displays the source selection bar. See "Switching input signal" on page 37 for details.

Mounting the projector

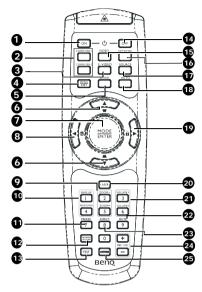
We want you to have a pleasant experience using your BenQ projector, so we need to bring this safety matter to your attention to prevent possible damage to person and property.

If you intend to mount your projector on the ceiling or wall, we strongly recommend that you use a proper fitting BenQ projector ceiling mount kit or wall mount kit and that you ensure it is securely and safely installed.

If you use a non-BenQ brand projector mounting kit, there is a safety risk that the projector may fall from the ceiling or wall due to an improper attachment through the use of the wrong gauge or length screws.

You can purchase a BenQ projector ceiling mount or wall mount kit from the place you purchased your BenQ projector. BenQ recommends that you also purchase a separate Kensington lock compatible security cable and attach it securely to both the Kensington lock slot on the projector and the base of the mounting bracket. This will perform the secondary role of restraining the projector should its attachment to the mounting bracket become loose.

Remote control



I. ON

Turns on the projector. See "Starting up the projector" on page 30 for details.

2. COMPUTER-I/COMPUTER-2

Displays RGB (PC)/Component video (YPbPr/ YCbCr) signal.

S-VIDEO

Displays S-video signal.

4. MENU/EXIT

Turns on the On-Screen Display (OSD) menu. Goes back to previous OSD menu, exits and saves menu settings. See "Using the menus" on page 34 for details.

5. BLANK

Used to hide the screen picture. See "Hiding the image" on page 46 for details.

Manually corrects distorted images resulting from an angled projection. See "Correcting keystone" on page 33 for details.

7. MODE/ENTER

Selects an available picture setup mode. See "Selecting a picture mode" on page 40 for details.

Activates the selected On-Screen Display (OSD) menu item. See "Using the menus" on page 34 for details.

8. **◄** Left/ ?

Starts the FAQ function. See "Utilizing FAQ function" on page 47 for details.

9. ZOOM+/ZOOM-

Magnifies or reduces the projected picture size. See "Magnifying and searching for details" on page 38 for details.

10. PAGE UP/PAGE DOWN

Page up/down arrows when connected through USB to a PC. See "Remote paging operations" on page 46 for details.

II. FREEZE

Freezes the projected image. See "Freezing the image" on page 46 for details.

12. Network Setting

Enables Network Settings OSD menu.

13. TEST

Displays the test pattern. See "Test Pattern" on page 78 for details.

14. OFF

Turns off the projector. See "Shutting down the projector" on page 75 for details

15. VIDEO

Displays vidoe signal.

16. NETWORK

Enables the network mode.

17. SOURCE

Displays the source selection bar. See "Switching input signal" on page 37 for details.

18. AUTO

Automatically determines the best picture timings for the displayed image. See "Auto-adjusting the image" on page 32 for details.

19. ► Right/ 🛍

When the On-Screen Display (OSD) menu is activated, the #6, #8, and #19 keys are used as directional arrows to select the desired menu items and to make adjusents. See "Using the menus" on page 34 for details.

Activates panel key lock. See "Locking control keys" on page 47 for details.

20. LASER

Emits visible laser pointer light for presentation purposes.

21. VOLUME+/VOLUME-

Adjusts the projector's sound level. See "Adjusting the sound" on page 48 for details.

22. MUTE

Toggles projector audio between on and off. See "Muting the sound" on page 48 for details.

23. ASPECT

Selects the display aspect ratio. See "Selecting the aspect ratio" on page 39 for details.

24. MIC/VOL

Adjusts the microphone's sound level. See for details. See "Adjusting the microphone's sound level" on page 49 for details.

25. CAPTURE

Captures current displayed screen to be MyScreen. See "Creating your own startup screen" on page 44 for details.

Operating the LASER pointer

The Laser Pointer is a presentation aid for professionals. It emits red colored light when you press it and the indicator lights up red.



The laser beam is visible. It is necessary to press and hold LASER for continuous output.



Do not look into the laser light window or shine the laser light beam on yourself or others. See the warning messages on the back of the remote control prior to using it.

The laser pointer is not a toy. Parents should be mindful of the dangers of laser energy and keep this remote control out of the reach of children.

Infra-Red (IR) remote control sensor is located on the front of the projector. The remote control must be held at an angle within 22.5 degrees perpendicular to the projector's IR remote control sensor to function correctly. The distance between the remote control and the sensor should not exceed 8 meters (~ 26 feet).

Make sure that there are no obstacles between the remote control and the IR sensor on the projector that might obstruct the infra-red beam.

- · Operating the projector from the front
- · Operating the projector from the rear

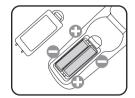




Replacing the remote control battery

- To open the battery cover, turn the remote control over to view its back, push on the finger grip on the cover and slide it up in the direction of the arrow as illustrated. The cover will slide off.
- Remove any existing batteries (if necessary) and install two AAA batteries observing
 the battery polarities as indicated in the base of the battery comparent. Positive (+)
 goes to positive and negative (-) goes to negative.
- 3. Refit the cover by aligning it with the base and sliding it back down into position. Stop when it clicks into place.







- · Avoid excessive heat and humidity.
- There may be battery damage if the battery is incorrectly replaced.
- Replace only with the same or equivalent type recommended by the battery manufacturer.
- · Dispose of the used battery according to the battery manufacturer's instructions.
- · Never throw a battery into a fire. There may be danger of an explosion.
- If the battery is dead or if you will not be using the remote control for a long time, remove
 the battery to prevent damage to the remote control from possible battery leakage.

Positioning your projector

Choosing a location

Your room layout or personal preference will dictate which installation location you select. Take into consideration the size and position of your screen, the location of a suitable power outlet, as well as the location and distance between the projector and the rest of your equipment.

Your projector is designed to be installed in one of four possible installation locations:

I. Front Table

Select this location with the projector placed near the floor in front of the screen. This is the most common way to position the projector for quick setup and portability.

2. Front Ceiling

Select this location with the projector suspended upsidedown from the ceiling in front of the screen.

Purchase the BenQ Projector Ceiling Mounting Kit from your dealer to mount your projector on the ceiling.

Set Front Ceiling in the SYSTEM SETUP: Basic > Projector Position menu after you turn the projector on.

3. Rear Table

Select this location with the projector placed near the floor behind the screen.

Note that a special rear projection screen is required.

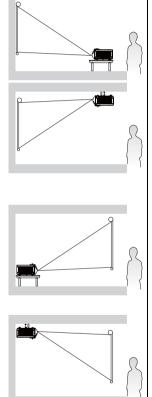
Set **Rear Table** in the **SYSTEM SETUP: Basic** > **Projector Position** menu after you turn the projector on.

4. Rear Ceiling

Select this location with the projector suspended upsidedown from the ceiling behind the screen.

Note that a special rear projection screen and the BenQ Projector Ceiling Mounting Kit are required for this installation location.

Set Rear Ceiling in the SYSTEM SETUP: Basic > Projector Position menu after you turn the projector on.



Obtaining a preferred projected image size

The distance from the projector lens to the screen, the zoom setting (if available), and the video format each factors in the projected image size.

The projector should always be placed horizontally level (like flat on a table), and positioned directly perpendicular $(90^{\circ}$ right-angle square) to the horizontal center of the screen. This prevents image distortion caused by angled projections (or projecting onto angled surfaces).

If the projector is mounted on a ceiling, it must be mounted upside-down so that it projects at a slightly downward angle.

You can see from the diagram on page 19, that this type of projection causes the bottom edge of the projected image to be vertically offset from the horizontal plane of the projector. When ceiling mounted, this refers to the top edge of the projected image.

If the projector is positioned further away from the screen, the projected image size increases, and the vertical offset also increases proportionately.

When determining the position of the screen and projector, you will need to account for both the projected image size and the vertical offset dimension, which are proportional to the projection distance.

BenQ has provided a table of screen sizes to assist you in determining the ideal location for your projector. There are two dimensions to consider, the perpendicular horizontal distance from the center of the screen (projection distance), and the vertical offset height of the projector from the horizontal edge of the screen (offset).

How to determine the position of the projector for a given screen size

- Select your screen size.
- Refer to the table on page 19 and find the closest match to your screen size in the
 left columns labelled "Screen size". Using this value, look across this row to the right
 to find the corresponding distance from screen value in the column labelled
 "Distance from screen (mm)". This is the projection distance.
- On that same row, look across to the right column and make note of the "Vertical
 offset (mm)" value. This will determine the final vertical offset placement of the
 projector in relation to the edge of the screen.
- 4. The recommended position for the projector is aligned perpendicular to the horizontal center of the screen, at the distance from the screen determined in step 2 above, and offset by the value determined in step 3 above.

For example, If you are using the MP780 ST+ and a 120-inch screen, the projection distance is 1293 mm and with a vertical offset of 264 mm.

How to determine the recommended screen size for a given distance

This method can be used for situations where you have purchased this projector and would like to know what screen size will fit in your room.

The maximum screen size is limited by the physical space available in your room.

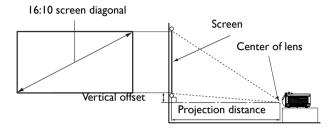
- 1. Measure the distance between the projector and where you want to position the screen. This is the projection distance.
- Refer to the table on page 19 and find the closest match to your measurement in the column labelled "Distance from screen (mm)".
- Using this value, look across that row to the left to find the corresponding "Screen size" listed in that row. That is the projected image size of the projector at that projection distance.
- 4. On that same row, look across to the right column and make note of the "Vertical offset (mm)" value. This will determine the final placement of the screen in relation to the horizontal plane of the projector.

For example, if you are using the MP780 ST+ and your measured projection distance is 2.0 m (2000 mm), the closest match in the column is 1616 mm. Looking across this row shows that a 150-inch screen is required.

If you place the projector in a different position (to that recommended), you will have to tilt it down or up to center the image on the screen. In these situations, some image distortion will occur. Use the Keystone function to correct the distortion. See "Correcting keystone" on page 33 on page for details.

Projection dimensions

Refer to "Dimensions" on page 99 for the center of lens dimensions of this projector before calculating the appropriate position.



MP780 ST+

Screen size			Vertical offset		
Diag	onal	W	H	Distance from screen (mm)	(mm)
Inch	mm	(mm)	(mm)		(11111)
40	1016	862	538	431	88
50	1270	1077	673	539	110
60	1524	1292	808	646	132
80	2032	1723	1077	862	176
100	2540	2154	1346	1077	220
120	3048	2585	1615	1293	264
150	3810	3231	2019	1616	330
200	5080	4308	2692	2154	440
250	6350	5385	3365	2693	550
300	7620	6462	4039	3231	660

MW860USTi

Screen size			Vertical offset		
Diag	onal	W	Н	Distance from screen (mm)	(mm)
Inch	mm	(mm)	(mm)		(11111)
40	1016	862	538	294	67
50	1270	1077	673	381	84
60	1524	1292	808	468	101
80	2032	1723	1077	642	135
100	2540	2154	1346	817	168
120	3048	2585	1615	991	202
150	3810	3231	2019	1253	252
200	5080	4308	2692	1689	337
250	6350	5385	3365	2125	421
300	7620	6462	4039	2561	505

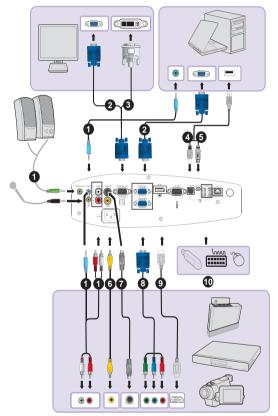
There is 3% tolerance among these numbers due to optical component variations. BenQ recommends that if you intend to permanently install the projector, you should physically test the projection size and distance using the actual projector in situ before you permanently install

it, so as to make allowance for this projector's optical characteristics. This will help you determine the exact mounting position so that it best suits your installation location.

Connection

When connecting a signal source to the projector, be sure to:

- 1. Turn all equipment off before making any connections.
- 2. Use the correct signal cables for each source.
- 3. Ensure the cables are firmly inserted.
- In the connections shown below, some cables may not be included with the projector (see "Shipping contents" on page 8). They are commercially available from electronics stores.
 - For detailed connection methods, see pages 23-29.



I. Audio cable	6. Video cable
2. VGA cable	7. S-Video cable
3. VGA to DVI-A cable	8. Component Video to VGA (DSub) adapter cable
4. USB B type to A type cable	9. HDMI cable
5. USB mini-B type to A type cable	10. USB flash drive/HDD/wireless dongle/ keyboard/mouse

Computer system requirements for USB display::

Operation System Requirements	Minimum Hardware Requirements
Windows XP	Supports USB 2.0
Windows Vista	CPU: Pentium 1G
	RAM: 512MB RAM
	Disk: 20MB hard driver space

Computer system requirements for WiFi display::

Operation System Requirements	Minimum Hardware Requirements
Windows XP	WiFi: 54 Mbps
Windows Vista	CPU: Pentium 1G
	RAM: 512MB RAM
	20MB hard driver space

Computer system requirements for LAN display::

Operation System Requirements	Minimum Hardware Requirements
Windows XP	LAN: 100 Mbps
Windows Vista	CPU: Pentium 1G
	RAM: 512MB RAM
	20MB hard driver space

Connecting a computer or monitor

Connecting a computer

The projector can connect to both IBM^{\circledR} compatibles and $\mathsf{Macintosh}^{\circledR}$ computers. A Mac adapter is needed if you are connecting legacy version $\mathsf{Macintosh}$ computers.

To connect the projector to a notebook or desktop computer (using VGA):

- Take the supplied VGA cable and connect one end to the D-Sub output socket of the computer.
- Connect the other end of the VGA cable to the COMPUTER 1 or COMPUTER
 2 signal input jack on the projector.
- 3. If you wish to make use of the projector speaker(s) in your presentations, take a suitable audio cable and connect one end of the cable to the audio output jack of the computer, and the other end to the AUDIO jack of the projector. When you connect audio output signal from a computer, please balance out the volume control bar to obtain an optimal sound effects.
- If you wish, you can use another suitable audio cable and connect one end of the
 cable to the AUDIO OUT jack of the projector, and the other end to your external
 speakers (not supplied).

Once connected, the audio can be controlled by the projector On-Screen Display (OSD) menus. See "Audio Settings" on page 78 for details.

The built-in speaker will be muted when the **AUDIO OUT** jack is connected.

To connect the projector to a notebook or desktop computer (using USB):

- Take a USB mini-B type to USB A type cable and connect one end to the A type jack of the computer.
- 2. Connect the other end of the cable to the **MINI-B** jack on the projector.
- (It may take several seconds to successfully display the screen for the first time plug-in.
 - If computer's screen still can't be projected, please go to "My Computer", find the projector name (same as using a flash disk drive), then double click it.
 - Projection speed will vary according to the computer capability.

To connect the projector to a notebook or desktop computer (using LAN):

- Take a RJ45 cable and connect one end to the LAN input jack of the projector and the other end to the RJ45 port.
- Make sure that your computer is also connected to an internet cable. Please use Q
 Presenter program to connect network display and transfers the desktop contents of
 the host PC via local network connection. See "Displaying image through Q
 Presenter" on page 60 for details.
- Do not use the RJ45 cable to connect the projector to your computer. Because this connection needs an IP router.

To connect the projector to a notebook or desktop computer (using HDMI):

I. Take a HDMI cable and connect one end to the HDMI jack of the computer.

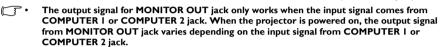
- 2. Connect the other end of the cable to the HDMI jack on the projector.
- Many notebooks do not turn on their external video ports when connected to a projector. Usually a key combo like FN + F3 or CRT/LCD key turns the external display on/off. Locate a function key labeled CRT/LCD or a function key with a monitor symbol on the notebook. Press FN and the labeled function key simultaneously. Refer to your notebook's documentation to find your notebook's key combination.
 - Transmission speed and image quality will vary according to the bandwidth of local area network and the status of network usage.

Connecting a monitor

If you want to view your presentation close-up on a monitor as well as on the screen, you can connect the **MONITOR OUT** signal output jack on the projector to an external monitor following the instructions below:

To connect the projector to a monitor:

- Connect the projector to a computer as described in "Connecting a computer" on page 23.
- Take a suitable VGA cable (only one supplied) and connect one end of the cable to the D-Sub input jack of the video monitor.
 - Or if your monitor is equipped with a DVI input jack, take a VGA to DVI-A cable and connect the DVI end of the cable to the DVI input jack of the video monitor.
- 3. Connect the other end of the cable to the **MONITOR OUT** jack on the projector.



If you wish to use this connection method when the projector is in standby mode, make sure
the Standby Monitor Out function is turned on in the SYSTEM SETUP: Advanced
menu. See "Standby Settings" on page 88 for details.