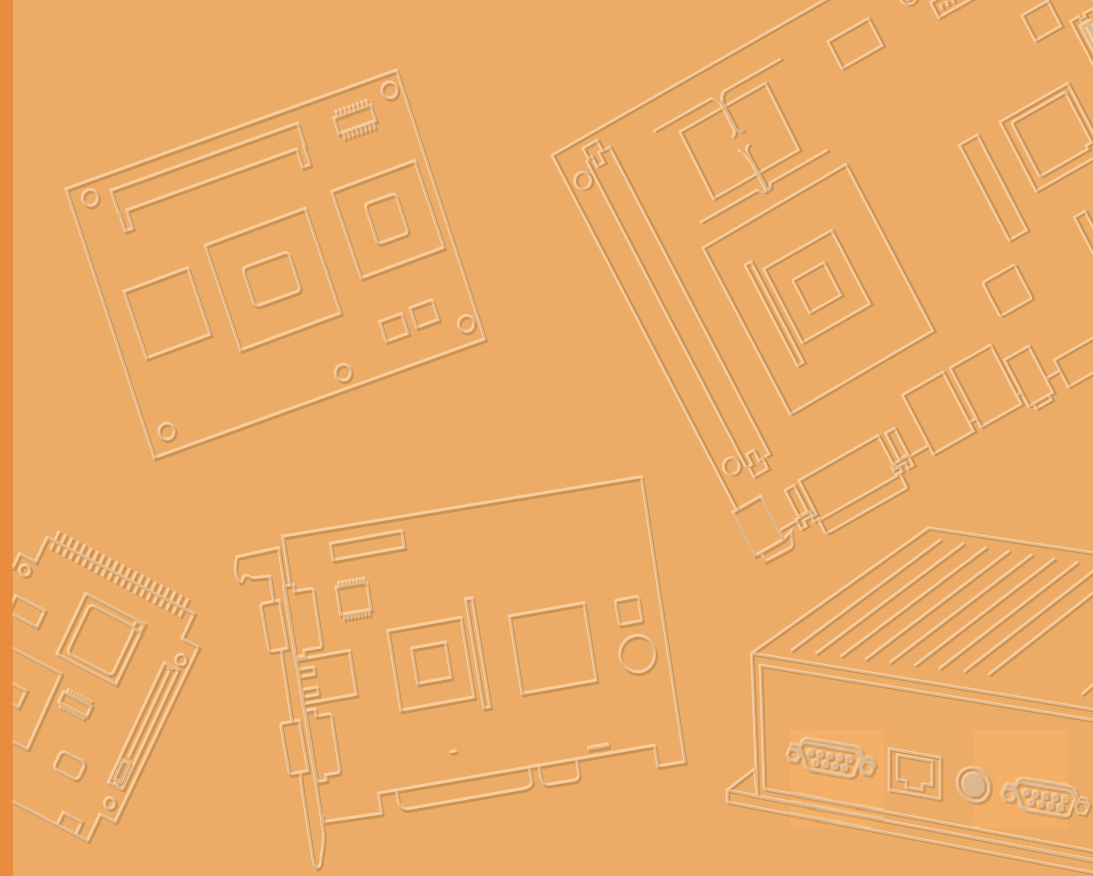


**User Manual**



# UbiQ-481

## Scenario Control Terminal

**ADVANTECH**

*Enabling an Intelligent Planet*

---

## Copyright

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## Acknowledgements

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# Declaration of Conformity

## CE

This product has passed the CE test for environmental specifications. Test conditions for passing included the equipment being operated within an industrial enclosure. In order to protect the product from being damaged by ESD (Electrostatic Discharge) and EMI leakage, we strongly recommend the use of CE-compliant industrial enclosure products.

## FCC Class B

Note: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

# Technical Support and Assistance

1. Visit the Advantech website at <http://support.advantech.com> where you can find the latest information about the product.
2. Contact your distributor, sales representative, or Advantech's customer service center for technical support if you need additional assistance. Please have the following information ready before you call:
  - Product name and serial number
  - Description of your peripheral attachments
  - Description of your software (operating system, version, application software, etc.)
  - A complete description of the problem
  - The exact wording of any error messages

---

## Instructions for the User

The document combines text and illustrations, providing a comprehensive overview of the system. The information is presented as sequential steps of action, allowing the user to learn directly how to use the device. The text provides explanations and instructs the user step by step in the practical use of the product, with short, clear instructions in easy-to-follow sequence.

## Warnings, Cautions and Notes

**Warning!** *Warnings indicate conditions, which if not observed, can cause personal injury!*



**Caution!** *Cautions are included to help you avoid damaging hardware or losing data. e.g.*



*There is a danger of a new battery exploding if it is incorrectly installed. Do not attempt to recharge, force open, or heat the battery. Replace the battery only with the same or equivalent type recommended by the manufacturer. Discard used batteries according to the manufacturer's instructions.*

**Note!** *Notes provide optional additional information.*



# Safety Instructions

1. Read these safety instructions carefully.
2. Keep this User Manual for later reference.
3. Disconnect this equipment from any AC outlet before cleaning. Use a damp cloth. Do not use liquid or spray detergents for cleaning.
4. For plug-in equipment, the power outlet socket must be located near the equipment and must be easily accessible.
5. Keep this equipment away from humidity.
6. Put this equipment on a reliable surface during installation. Dropping it or letting it fall may cause damage.
7. The openings on the enclosure are for air convection. Protect the equipment from overheating. **DO NOT COVER THE OPENINGS.**
8. Make sure the voltage of the power source is correct before connecting the equipment to the power outlet.
9. Position the power cord so that people cannot step on it. Do not place anything over the power cord.
10. All cautions and warnings on the equipment should be noted.
11. If the equipment is not used for a long time, disconnect it from the power source to avoid damage by transient overvoltage.
12. Never pour any liquid into an opening. This may cause fire or electrical shock.
13. Never open the equipment. For safety reasons, the equipment should be opened only by qualified service personnel.
14. If one of the following situations arises, get the equipment checked by service personnel:
  - The power cord or plug is damaged.
  - Liquid has penetrated into the equipment.
  - The equipment has been exposed to moisture.
  - The equipment does not work well, or you cannot get it to work according to the user's manual.
  - The equipment has been dropped and damaged.
  - The equipment has obvious signs of breakage.
15. **DO NOT LEAVE THIS EQUIPMENT IN AN ENVIRONMENT WHERE THE STORAGE TEMPERATURE MAY GO BELOW -20° C (-4° F) OR ABOVE 60° C (140° F). THIS COULD DAMAGE THE EQUIPMENT. THE EQUIPMENT SHOULD BE IN A CONTROLLED ENVIRONMENT.**
16. **CAUTION: DANGER OF EXPLOSION IF BATTERY IS INCORRECTLY REPLACED. REPLACE ONLY WITH THE SAME OR EQUIVALENT TYPE RECOMMENDED BY THE MANUFACTURER, DISCARD USED BATTERIES ACCORDING TO THE MANUFACTURER'S INSTRUCTIONS.**

The sound pressure level at the operator's position according to IEC 704-1:1982 is no more than 70 dB (A).

**DISCLAIMER:** This set of instructions is given according to IEC 704-1. Advantech disclaims all responsibility for the accuracy of any statements contained herein.

## **Manufacturer**

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Visit the Advantech websites at [www.advantech.com](http://www.advantech.com) or [www.advantech.com.tw](http://www.advantech.com.tw), if you need more information.

**Warning!** *Any changes or modifications made to the equipment which are not expressly approved by the relevant standards authority could void your authority to operate the equipment.*



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# Chapter 1

## Introduction

This chapter briefly introduces the UbiQ-481 product.

- Overview
- System Configuration

## 1.1 Overview

The UbiQ-481 comes with a 11.6" flat touch panel design scenario control panel. The 11.6" true color TFT LCD let the interaction between life and UbiQ-481 become more natural and colorful. Built-in powerful TI ARM Cortex-A8 OMAP-3530 CPU, Microsoft Windows® CE 6.0, IR receiver, RS-485/232, LANs, Wi-Fi, Video in, Line in/out, DI/DO and USB ports for versatile connectivity and more optional functions. IR receiver function make the UbiQ-481 has more remote control capability. Furthermore, the elegant outlook with slim faceplate which protrudes only 15 mm from the wall make the UbiQ-481 be more suitable for any environment.

### UBIQ-481 Features

- 11.6" TFT LCD with Touch Screen
- RISC base platform with Fan-Less Design
- Ideal for Access & Scenario Control
- High performance with TI ARM Cortex-A8 OMAP-3530
- Flat Touch Panel Design
- 2 M Pixel CMOS Camera
- Built-in Speaker
- Ethernet x 2, RS-485/232 x 1, USB x 3, Video in, Line in/out, DI/DO
- Microsoft Windows® CE 6.0
- Advantech SUSI API manager is supported for easy SI development
- Various Faceplate by Request
- IR Receiver by project
- Support Wall Mounting / VESA Standard



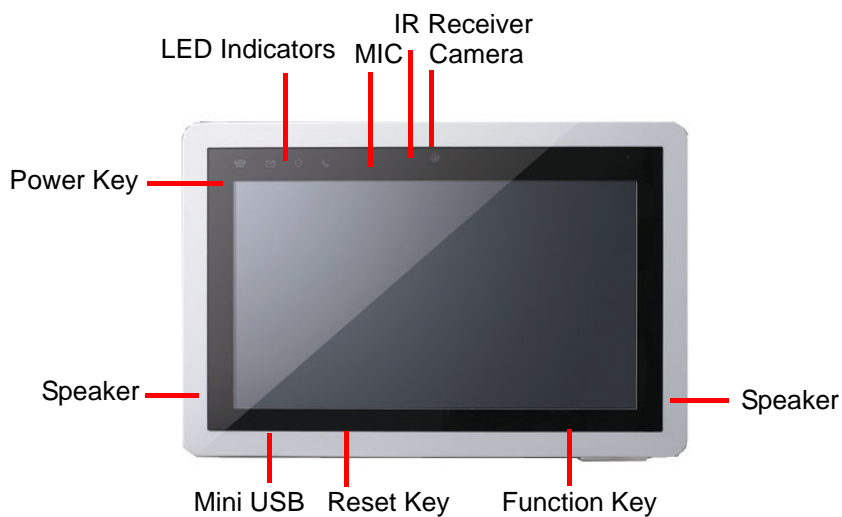
UbiQ-481 Front



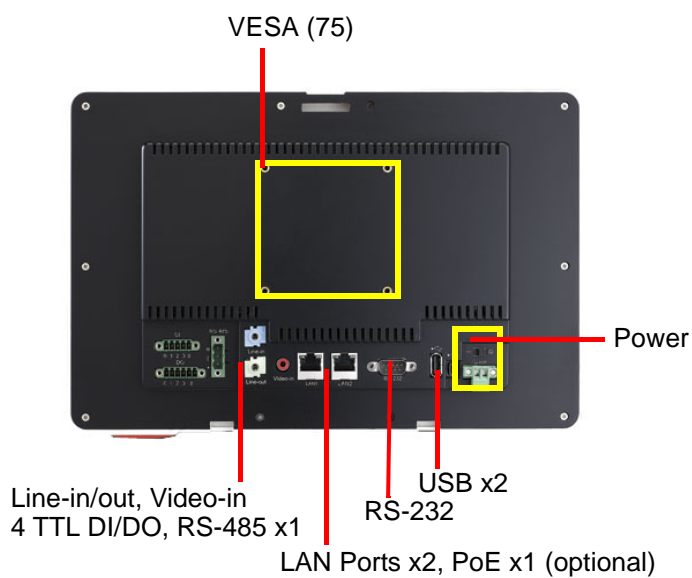
UbiQ-481 Back

Figure 1.1 Overview of the UbiQ-481

The I/O placement is arranged for control and data networking systems.



**UbiQ-481 Front I/O**



**UbiQ-481 Back I/O**

**Figure 1.2 Figure 1.1 I/O port of the UbiQ-481**

---

## 1.2 System Configuration

A block diagram of the UbiQ-481 Home Terminal based In-Wall, Home Automation Environment & Scenario control platform is shown in the following diagram:



**Figure 1.3 System Configuration of the UbiQ-481**

# Chapter 2

## Hardware and Software Description

This chapter describes the hardware features of the UbiQ-481 product.

- Main Specifications
- General Specifications
- Mechanical Specifications
- External View
- Installation & Mounting Guide

---

## 2.1 Main Specifications

The UBIQ-481 is an elegant touch panel with customizable fascias that installs in the walls of residential and commercial spaces to control anything from audio, video and communications appliances to lighting, climate. Windows CE 6.0 enables slick graphical user interfaces and an IR port accepts commands from remote controls for convenient operation.

In light of a soaring market demand, Advantech moves to efficiently and fully combine technology with comfort by establishing Advantech Intelligent Services that seek to extend the "Ubiquitous" model to every possible corner on the foundation of "Comfort, Convenience." Advantech also infuses its embedded system technology into putting together the "UBIQ Scenario Master" lighting scenario control modules. This produce line is compatible with community and intercom systems; aside from control panels, Advantech is realizing a highly-sough-after intelligent living scenario for any digital home residents in the intelligent living industry. Whether it's household space, or commercial venues such as hotels, restaurants, and boardrooms, all can enjoy the amenity and comfort of Advantech's living solutions promised by the combination of remote monitoring and real estate markets internet-controlled systems through the internet control system.

UBIQ Scenario Master are currently an integral part of numerous development projects, including luxury homes in Taiwan and India, Dubai, Australia, and many more international players catching on. Advantech's UBIQ Scenario Master has won a place among lighting scenario control modules in digital homes; its user-friendly operation interface further promises the bliss of intelligent home living.

### UBIQ-481 Features

- 11.6" TFT LCD with Touch Screen
- RISC base platform with Fan-Less Design
- Ideal for Access & Scenario Control
- High performance with TI ARM Cortex-A8 OMAP-3530
- Flat Touch Panel Design
- 2 M Pixel CMOS Camera
- Built-in Speaker
- Ethernet x 2, RS-485/232 x 1, USB x 3, Video in, Line in/out, DI/DO
- Microsoft Windows® CE 6.0
- Advantech SUSI API manager is supported for easy SI development
- Various Faceplate by Request
- IR Receiver by project
- Support Wall Mounting / VESA Standard

## 2.2 General Specifications

<b>Model Name</b>		UbiQ-481
<b>Processor</b>		TI OMAP 3530 600 MHz
<b>Memory</b>	Size	512 MB
	Module Type	Mobile DDR
<b>OS Support</b>		Windows CE 6.0
<b>Display</b>	Size/Type	11.6" TFT color LCD
	Max. Resolution	1366 x 768
	Brightness (cd/m <sup>2</sup> )	200 cd/m <sup>2</sup>
	Viewing Angle	160/160
	Brightness Control	PWM
<b>VGA</b>	Chipset	CPU build-in
<b>Storage / Type</b>		iNAND 2 GB flash on board (eMMC) SD Slot (optional, up to 32 GB)
<b>I/O Port</b>	Rear I/O	USB 2.0 Host x2/Client x1, Line-in/out , RS-232 / RS-485 x1, Video-in connector, IR Receiver, 4 TTL level DI, 4 TTL level DO, USB 2.0 Client x1 (Embedded for connector type)
	Front I/O	miniUSB 2.0 Host port x1
<b>Mechanical</b>	Mounting type	In-Wall/Wall Mounting/VESA Standard
	Dimension (W x H x D)	324.05 x 214.05. x 37.8 mm
<b>Camera</b>		2M Pixels CMOS camera
<b>Hot Key</b>		Power x1/ Hot Key x1
<b>LED</b>		4
<b>RF Wireless</b>		IR receiver x 1
<b>Network (LAN)</b>		10/100 Mbps Ethernet (RJ-45) x 2
<b>Audio</b>	Chipset	Standard I2S audio codec with stepping amplifier control
	SPK / MIC	Speaker x2 output / Microphone x1 input
<b>Power</b>	Output Rating	10 ~ 24 VDC, 2 A
	Input Voltage	100 ~ 240 VAC
<b>Touch screen</b>	Technology	Resistive(controller)
	Touch Life Cycle	10 million touches
<b>Temperature</b>	Operating	0 ~ 40° C
	Storage	-20 C ~ 60° C
<b>Certificates</b>		CE/FCC Class B, BSMI, UL, CB
<b>Option</b>	Wi-Fi	802.11 b/g
<b>Wall Box</b>		274.6 x 178.6x 80 mm

## 2.3 Mechanical Specifications

System dimensions: 324.05 (W) x 214.05 (H) x 37.8 (D) mm

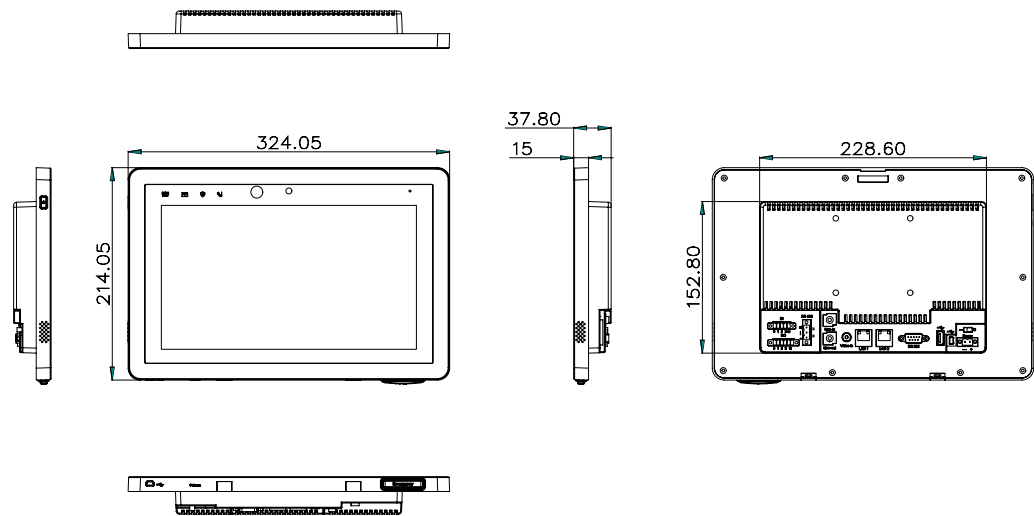


Figure 2.1 System dimensions of the UbiQ-481

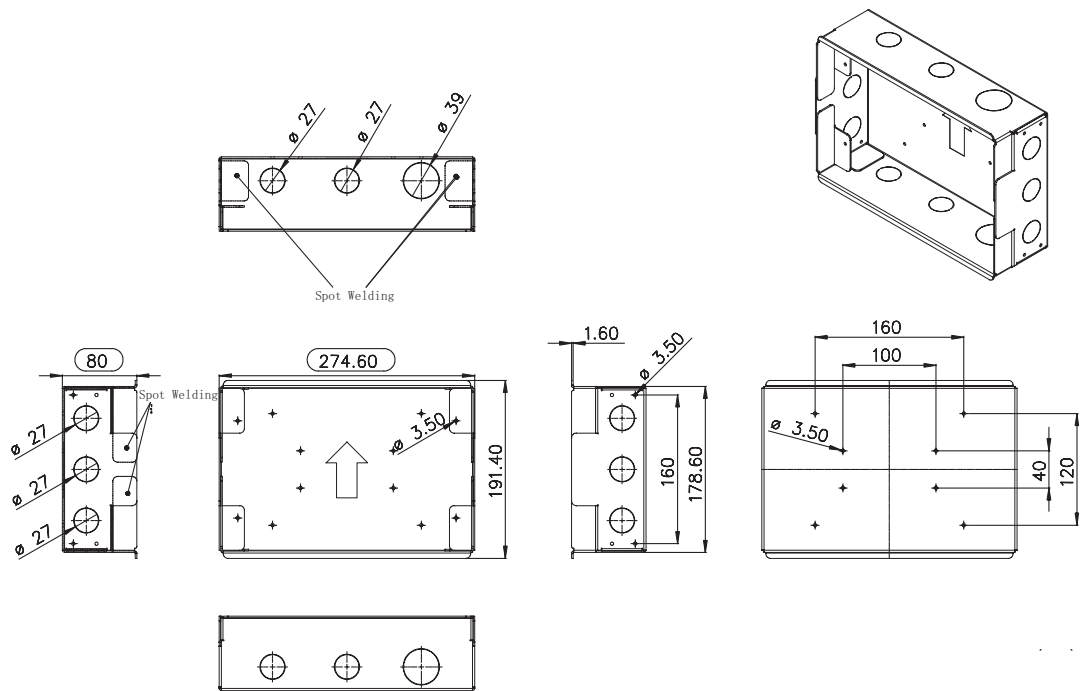


Figure 2.2 Wall-Box dimensions of the UbiQ-481



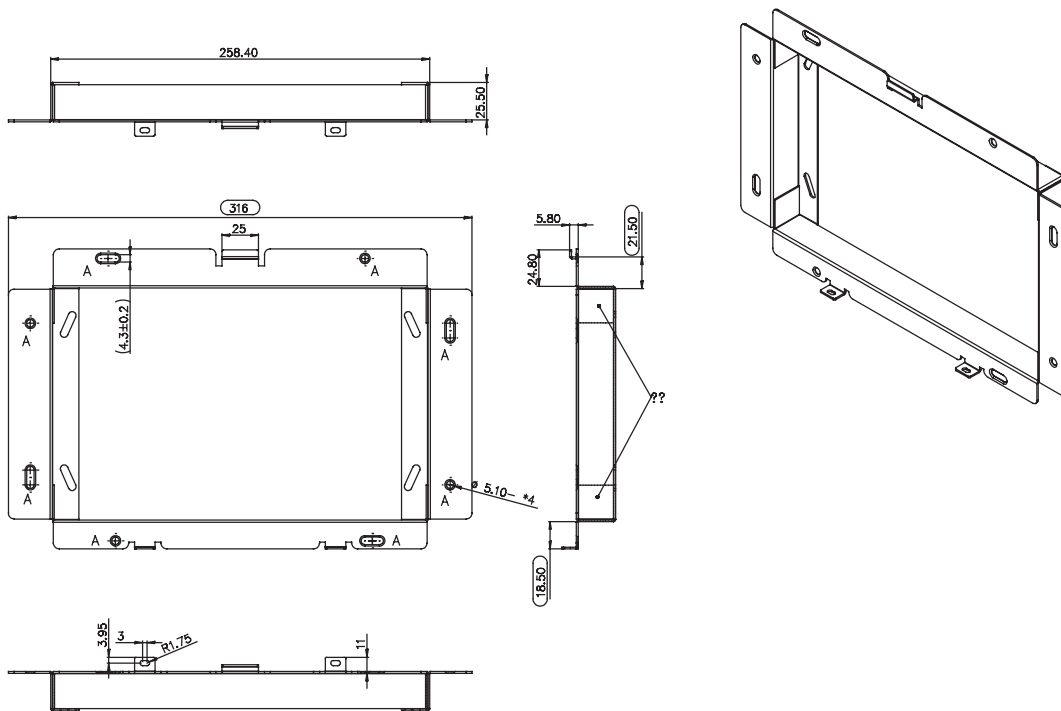


Figure 2.3 Bracket dimensions of the UbiQ-481

## 2.4 External View



Figure 2.4 Front view



Figure 2.5 Side view



Figure 2.6 Back view

## 2.5 Installation & Mounting Guide

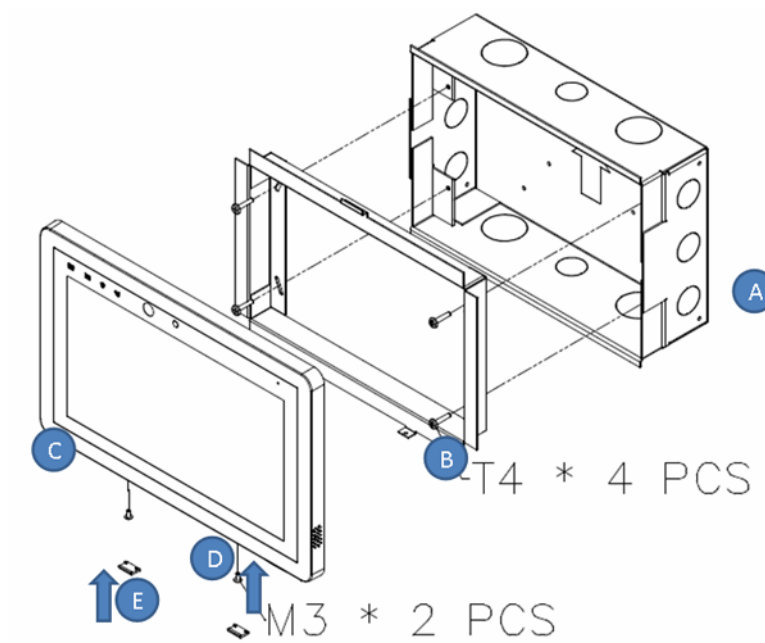
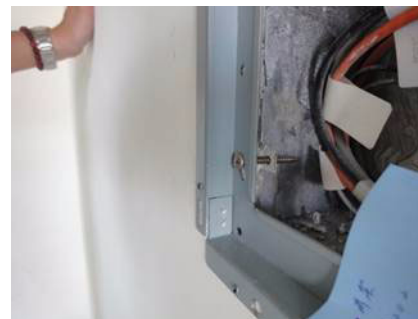
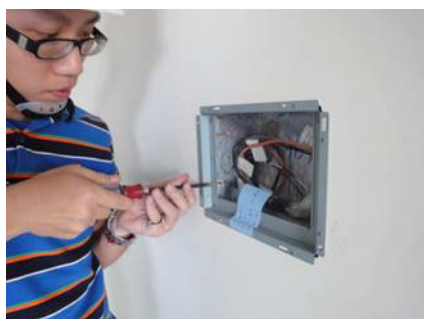


Figure 2.7 Installation View of the UbiQ-481

## 2.5.1 Pre-Market: Assembly with Bracket & Wall Box (Concrete Wall)

1. Put Wall Box (A) in the wall.
2. Bracket (B) with Wall Box (A) and turn the screw to the tighten it.
3. Front Cover (C) with Bracket (B) and turn the screw to the tighten it.
4. Put Rubber (E) with Front cover (C).

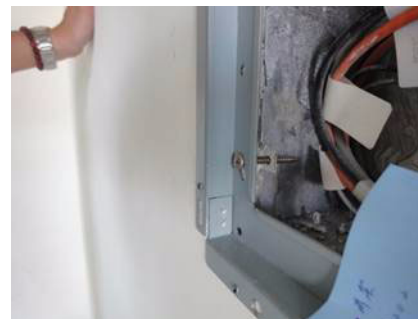
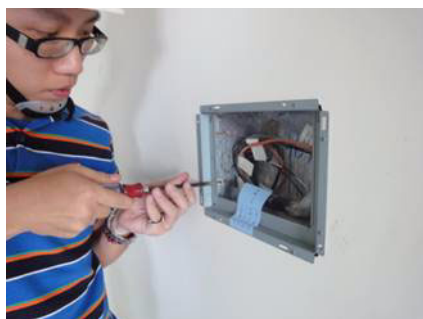


**Note!** UbiQ's Bracket & Wall-Box could be different by Model, the pictures are the reference.



## 2.5.2 After-Market: Assembly with Bracket

1. Bracket (B) with Wall Box (A) and turn the screw to the tighten it.
2. Front Cover (C) with Bracket (B) and turn the screw to the tighten it.
3. Put Rubber (E) with Front cover (C).



**Note!** UbiQ series bracket could be different, the pictures are the reference.



## 2.6 I/O Ports

The following table shows the connector list of UbiQ-481.

### 2.6.1 10 ~ 24 V<sub>DC</sub> in Power Terminal Block

Pin	Description
1	DC In
2	GNG

### 2.6.2 Power Switch

Pin	Description
1	ON
2	OFF

### 2.6.3 miniUSB Client Interface Pin Out (Connectors Backside)

Pin	Description
1	+5V
2	DATA-
3	DATA+
4	ID CTRL
5	GND

### 2.6.4 USB Host Interface Pin Out (Connectors Backside)

Pin	Description
1	+5 V
2	DATA-
3	DATA+
4	GND

### 2.6.5 miniUSB Host Interface Pin Out (USB Connectors Belowside)

Pin	Description
1	+5V
2	DATA-
3	DATA+
4	GND



Figure 2.8 USB Port, Power Port, Power Switch

### 2.6.6 RS-232 Serial Interface Pin Out

Pin	Description
2	RXD
3	TXD
5	GND
7	RTS
8	CTS

### 2.6.7 RS-485 Serial Interface Pin Out

Pin	Description
1	GND
2	RTXN
3	RTXP

### 2.6.8 Video-in Connector

Pin	Description
1	VDO INput
2	F_GND

## 2.6.9 Line-in & out Phone Jack

### Line-in

Pin	Description
1	GND
2	LIN_L
3	LIN_R
4	LIN_L
5	GND
7	LIN_R
8	GND

### Line-out

Pin	Description
1	GND
2	LINOUT_L
3	LINOUT_R
4	LINOUT_L
5	GND
7	LINOUT_R
8	GND

## 2.6.10 TTL Level DI & TTL Level DO

### DI

Pin	Description
1	DI0
2	DI1
3	DI2
4	DI3
5	AE_AGND

### DO

Pin	Description
1	DI0
2	DI1
3	DI2
4	DI3
5	AE_AGND
6	AE_AGND



Figure 2.9 I/O Port: DI/DO, RS-485, Line-In/Out, Video-In

### 2.6.11 LAN RJ-45, 10/100-Base-T

#### CN Type: LAN 1

Pin	Description
1	TX+
2	TX-
3	RX+
4	NC_1
5	NC_2
6	RX-
7	NC_3
8	NC_4

#### CN Type: LAN 2

Pin	Description
1	TX+
2	TX-
3	RX+
4	NC_1
5	NC_2
6	RX-
7	NC_3
8	NC_4

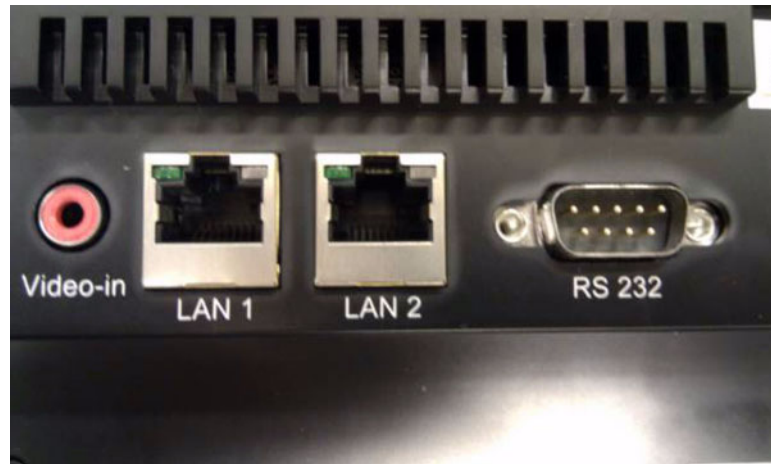


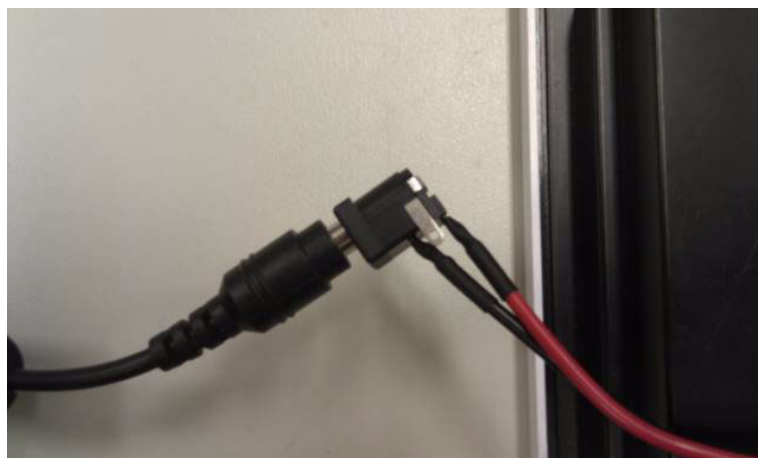
Figure 2.10 I/O Port: LAN 1/2, RS-232

## 2.7 DC in Assembly

1. Plug DC-Jack into the host, and tighten the screws.



2. Connect adapter with DC-Jack.





# Chapter 3

## Software Description

The chapter description the software feature for the UbiQ-481.

- Windows CE Embedded Software Specifications.

## 3.1 Window CE Embedded Software Specifications

### 3.1.1 UbiQ-481 Image

UbiQ-481 Image (Embedded the Window CE 6.0 OS) include by system.

Please link to website to download software manual download

- **SuSi 3.0 User Manual:** <http://www.advantech.com/ess/download.aspx>

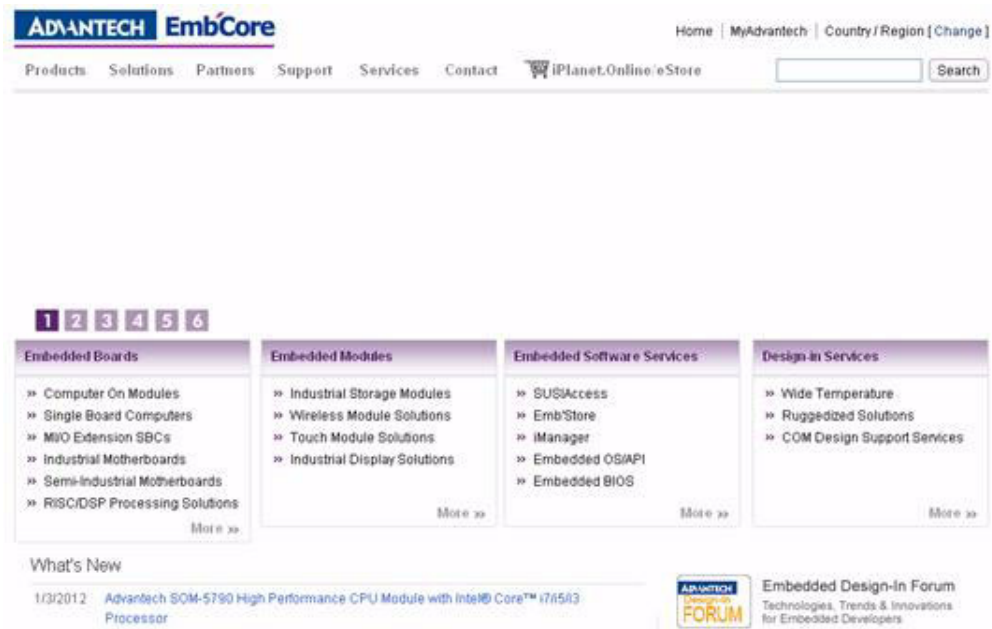


Figure 3.1 User manual download page

### 3.1.2 UbiQ-481 SDK Application Develop Tools

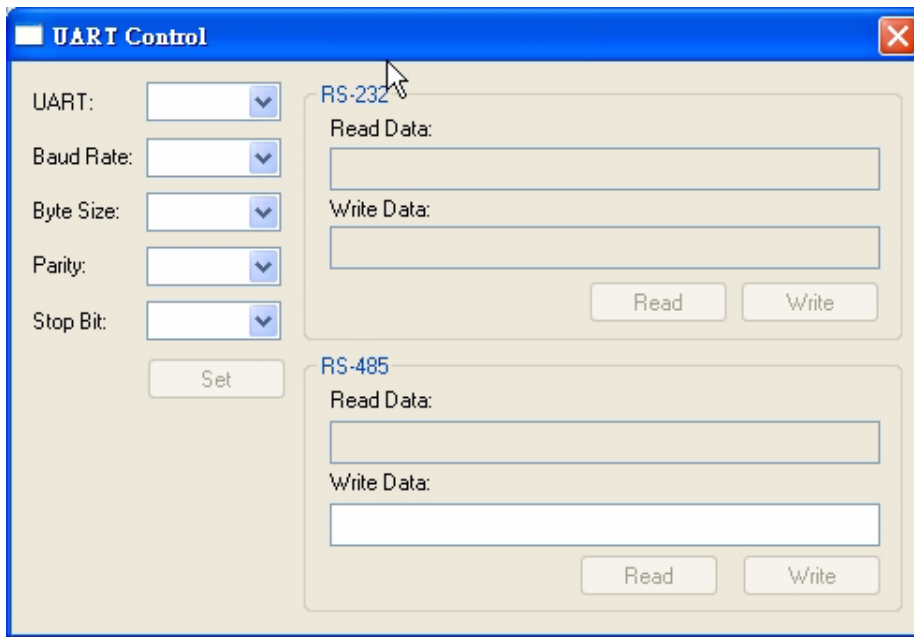
UbiQ-481 SDK applications develop tools.

- Hotkey control
- UART control
- LED control
- Audio control

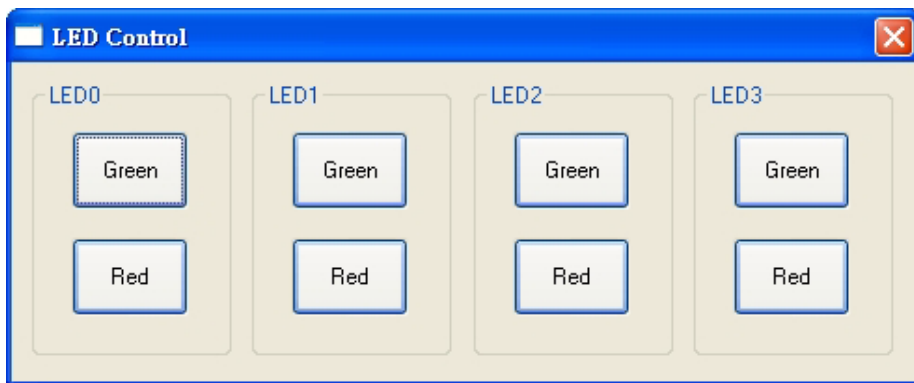
Please link to website to download manual download or send the mail with our FAE

- **UbiQ-481 SDK:** <http://www.advantech.com/ess/download.aspx>

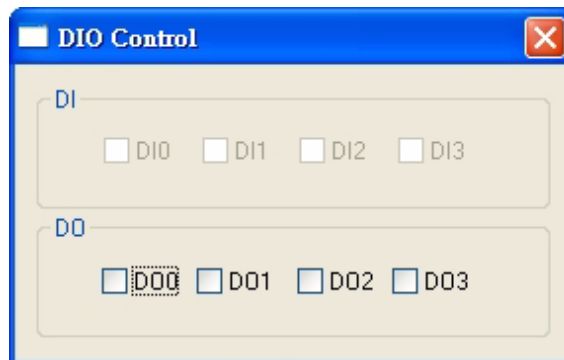
### 3.1.3 UbiQ-481 SDK Application Develop Tools List



**Figure 3.2 UART Control**



**Figure 3.3 LED Control**



**Figure 3.4 DI/DO Control**

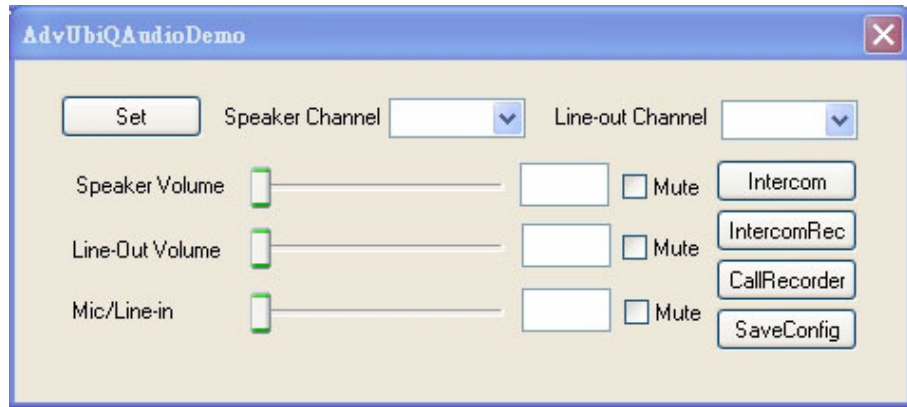


Figure 3.5 Audio Demo

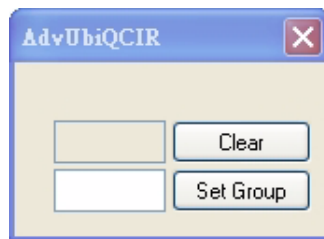


Figure 3.6 CIR

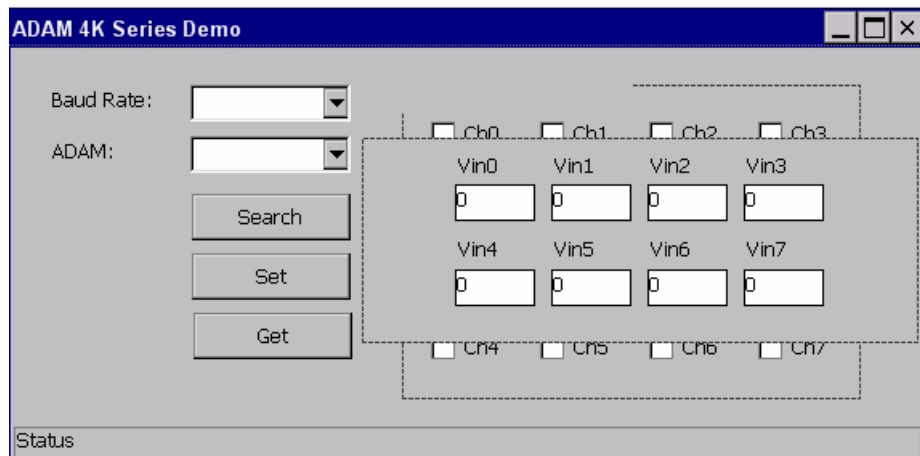


Figure 3.7 ADAM Control

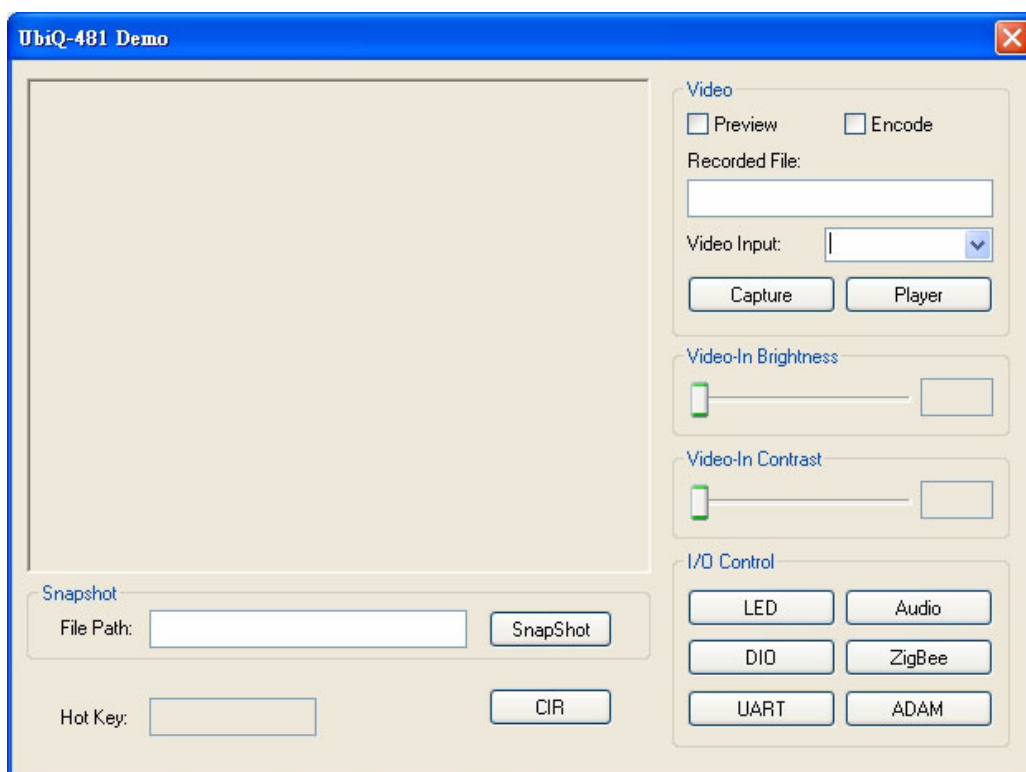


Figure 3.8 Video Control

### 3.1.4 UbiQ-481 Supported Video Formats

Format	Description
ASF Video and Audio	Advanced Systems Format (ASF). This format does not specify the codec used for a media object, but rather describes how media is structured in a stream.
AVI Video	Audio Video Interleave, a Microsoft media container format.
MPEG-4 Video	A compression format for audio and video.
MS RLE Video	Support for the Microsoft run-length encoded (RLE) video codec.
MPEG-2 Video	A format first developed by the Moving Pictures Expert Group (MPEG), MPEG-2 is the video format used in DVD Video, among other applications.
MPEG-1 Video	A video compression format first developed by the Moving Pictures Expert Group (MPEG).
WMV Video	Windows Media Video (WMV). A video compression format. Versions 1 through 9 are supported, including Simple, Advanced and Main profiles.

### 3.1.5 UbiQ-481 Supported Audio Formats

Format	Description
AIFF Audio	Audio Interchange File Format (AIFF) is a standard audio file format for storing uncompressed audio. AIFF files usually have the extension .aif or .aiff.
AU Audio	A standard file format for uncompressed audio. Synonymous with SND.
AVI Video	Audio Video Interleave (AVI). A format that includes both audio and video information. AVI files have the extension .avi.
G.711 Audio	G.711 is an audio format which supports both A-law and Mu-law encoding. These encoding schemes are used to improve signal to noise ratio for digital telephony in Europe (A-law) and in North America and Japan (Mu-law).
GSM 6.10 Audio	A lossy, compressed audio format intended for use in telephony. It is supported on GSM telephone networks.
MIDI Audio	A format that encodes musical control information (note on, note off, pitch) rather than the actual waveform data of the musical sound itself. Midi files often have the extension .mid.
SND Audio	Synonymous with AU.
Wave Audio	Wave audio is an audio container format. It may be found as a stand-alone format, or may be encoded in AVI and MPEG-1 streams. Wave files have an extension of .wav.
ASF Video and Audio	Advanced Systems Format (ASF). This is a container format. It does not specify the codec used for a media object, but rather describes how media is structured in a stream.
MS ADPCM Audio	A compression format developed by Microsoft using Adaptive Differential Pulse Code Modulation (ADPCM) audio compression.
IMA ADPCM	An industry standard format for Adaptive Differential Pulse Code Modulation (ADPCM) audio compression. from the Interactive Multimedia Association (IMA)
MP3 Audio	A popular compressed audio format.
MP2 Audio	The MPEG 1 layer 2 standard audio format.
WMA Audio	Windows Media Audio (WMA). An audio compression format. WMA v1 -9 is supported. WMA 9 Standard, Pro, Pro LBR, Voice and Lossless are supported.

# Chapter 4

## Design Requirements

The chapter description the design requirements for the UbiQ-481.

- Environmental Specifications
- Reliability

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## 4.1 Environmental Specifications

- **Temperature & Humidity:**
  - Operating Temperature: 0 ~ 40o C
  - Storage Temperature: -20 ~ 60o C
  - Relative Humidity: 0 ~ 95% RH (Non-condensed)
- **Case / Panel Temperature:** Less than 40o C @ 25o C ambient temperature (front bezel)
- **Certification:**
  - CE
  - FCC class B approved
  - UL
  - 18 ~ 500 Hz, 1 G acceleration

## 4.2 Reliability

- **MTBF:** 20,000 hours
- **Touch Screen:** 1 million touch actuation times on a single point with a 5/8" diameter silicon fin- ger under a 350 g load at 2 Hz
- **Power Requirements:**
  - **DC Input Voltage:** 10 V ~ 24 V
  - **Power Consumption:** less than 8 W (adapter: no less than 8 W)

- Note!**
1. *This product is intended to be supplied by a listed power unit marked "Class 2" and rated O/P: 10 to 24 Vdc, minimum 2 A*
  2. *Make sure external power adapter (includes power cords and plug assemblies) provided with the unit will be certified and suitable for use in the countries.*







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