

IP Intercom Door Phone MT390S User Manual and Installation Guide

Version : 1.1
2016/10/18



Table of Contents

TABLE OF CONTENTS	2
PREFACE	4
ABOUT THIS MANUAL	4
Regulatory Compliance Statements	4
Laser Information.....	6
LED Information.....	7
Battery Notice	7
Adapter Notice	9
Hearing Damage Warning	9
Warranty Policy	10
CHAPTER 1	11
GETTING STARTED	11
MT390S and Elfin System	11
CHAPTER 2	12
BASIC OPERATION	12
Package and Interface Overview	12
Terminal Block	14
CHAPTER 3	16
INSTALLATION	16
Process.....	16
Altitude	17
Physical Appearance.....	18
CHAPTER 4	19
DOCUMENT VERSION RECORD	19
Version Record.....	19
APPENDIX A	20
SYSTEM SPECIFICATIONS	20

APPENDIX B 23
WORLDWIDE SUPPORT 23

Preface

About This Manual

Thank you for purchasing the unitech product.

This manual explains how to install, operate and maintain our product.

No part of this publication may be reproduced or used in any form, or by any electrical or mechanical means, such as photocopying, recording, or information storage and retrieval systems, without permission in writing from the manufacturer. The material in this manual is subject to change without notice.

Regulatory Compliance Statements

FCC Warning Statement

This device 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 with radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference with 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.

1. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.
2. This device complies with FCC RF radiation exposure limits set forth for an uncontrolled environment. To maintain compliance with FCC RF exposure requirements, avoid direct contact to the transmitting antenna during transmitting.
3. Any changes or modifications (including the antennas) made to this device that are not expressly approved by the manufacturer may void the user's authority to operate the equipment.

FCC Label Statement

This device complies with part 15 of the FCC rules. Operation is subject to the following two conditions:

1. This device may not cause harmful interference.
2. This device must accept any interference received, including interference that may cause undesired operation.

RF Radiation Exposure Statement

For body contact during operation, this device has been tested and meets FCC RF exposure guidelines when used with an accessory that contains no metal and that positions the handset a minimum of 20 cm from the body.

Use of other accessories may not ensure compliance with FCC RF exposure guidelines.

Canadian Compliance Statement

This Class B Digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations.

Cet appareil numérique de la classe B respecte les exigences du Règlement sur le matériel brouilleur du Canada.

European Conformity Statement

unitech Electronics co., Ltd herewith declares that the unitech product is in compliance with the essential requirements and all other provisions of the R&TTE 1999/5/EC directive, the EMC 2004/108/EC directive and the Low Voltage 2006/95/EC directive.

The declaration of conformity is available for download at:

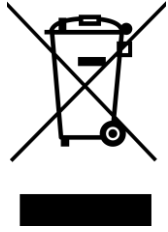
<https://portal.unitech.eu/public/Safetyregulatorystatement>

RoHS Statement



This device conforms to RoHS (Restriction Of Hazardous Substances) European Union regulations that set maximum concentration limits on hazardous materials used in electrical and electronic equipment.

Waste electrical and electronic equipment (WEEE)



unitech has set up a policy and process to meet the EU directive 2002/96/EC and update 2003/108/EC concerning electronic waste disposal.

For more detailed information of the electronic waste disposal of the products you have purchased from unitech directly or via unitech's resellers, you shall either contact your local supplier or visit us at :

<https://portal.unitech.eu/public/WEEE>

Taiwan NCC Warning Statement

低功率電波輻射性電機管理辦法

第十二條：經型式認證合格之低功率射頻電機，非經許可，公司、商號或使用者均不得擅自變更頻率、加大功率或變更原設計之特性及功能。

第十四條：低功率射頻電機之使用不得影響飛航安全及干擾合法通信；經發現有干擾現象時，應立即停用，並改善至無干擾時方得繼續使用。

低功率射頻電機需忍受合法通信或工業、科學及醫療用電波輻射性電機設備之干擾。

Laser Information

The unitech product is certified in the U.S. to conform to the requirements of DHHS/CDRH 21CFR Subchapter J and to the requirements of IEC 825-1. Class II and Class 2 products are not considered to be hazardous. The unitech product contains internally a Visible Laser Diode (VLD) whose emissions do not exceed the maximum limits as set forth in the above regulations. The scanner is designed so that there is no human access to harmful laser light during normal operation, user maintenance or prescribed service operations.

The laser safety warning label required by the DHHS/IEC for the unitech product's optional laser scanner module is located on the memory compartment cover, on the back of the unit.

* Laser information only applies to the products with laser components.

CAUTION! Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous laser light. Use of optical instruments with the scanner, including binoculars, microscopes, and magnifying glasses, with will increase eye damage.

This does not include eyeglasses worn by the user.

LED Information

The unitech product contains LED indicator(s) or LED ring whose luminance is not harmful to human eyes during normal operation, user maintenance or prescribed service operations.

*LED information only applies to the products with LED components.

Battery Notice

1. To guarantee optimal performance, it is recommended that rechargeable batteries be replaced every year, or after 500 charging cycles are completed. It is normal for the battery to balloon or expand after one year or 500 cycles. Although it does not cause damage, it cannot be used again and must be disposed of according to the location's safe battery disposal procedures.
2. If a battery performance decreases more than 20%, the battery is at the end of its life cycle. Stop use and ensure the battery is disposed of properly.
3. The length of time that a battery lasts depends on the battery type and how the device is used. Conserve the battery life by doing the following:
 - Avoid fully uncharging the battery because this places additional strain on it. Several partial uncharges with frequent charges are better than a fully uncharged battery. Charging a partially charged battery does not cause harm to the unit.
 - Keep the battery cool. Avoid hot vehicles. For prolonged storage, keep the battery at a 40% charge level.
 - Do not leave the battery uncharged and unused for an extended period of time, the battery will wear out and the longevity of the battery will be at least half of one with frequent charges.
4. Protect battery life by not over or under charging the battery.
5. Please do not leave battery unused for long time without charging it. Despite unitech's safety precautions, the battery pack may begin to change shape. If so, stop using it immediately. Please check to see if you are using a proper power adapter to charge the battery or contact your service provider for service.
6. If you cannot charge the battery after it has been idle for an extended period of time and it begins to heat up, please do not try to charge it. It may not be functional anymore.
7. Please only use the original battery from unitech. Using a third party battery can damage our products. Please note that when such damage occurs, it is not covered by unitech's warranty policy.

CAUTION!

- RISK OF EXPLOSION IF BATTERY IS REPLACED INCORRECTLY.
DISPOSE OF USED BATTERIES ACCORDING TO THE INSTRUCTIONS.
- 如果更換不正確之電池行事會有爆炸的風險
請依製造商說明書處理用過之電池
- 如果更換不正確之電池行事會有爆炸的風險
請依製造商說明書處理用過之電池

Battery charge notice

It is important to consider temperature when the battery pack is charging. Charging is most efficient at normal room temperature or in a slightly cooler environment. It is essential that batteries are charged within the stated range of 0°C to 40°C. Charging batteries outside of the specified range could damage the batteries and shorten their life cycle.

CAUTION! Do not charge batteries at a temperature lower than 0°C. This will make the batteries unstable and dangerous. Please use a battery temperature detecting device for a charger to ensure a safe charging temperature range.

CAUTION! To ensure the unit working properly, please keep all connectors away from the contaminants staying inside of them such as dust, grease, mud, and water. The negligence may cause the unit with no communication, short circuited, and overheated and so on.

CAUTION! If the connector is damaged, please ensure the connector is being fully repaired before use the unit to avoid causing short circuited.

Storage and safety notice

Although charged batteries may be left unused for several months, their capacity may be depleted due to build up of internal resistance. If this happens, they will require recharging prior to use. Batteries may be stored at temperatures between -20°C to 60°C, however they may deplete more rapidly at higher temperatures. It is recommended to store batteries at room temperature.

** The message above only applies to the usage of the removable batteries.*

For the products with non-removable batteries / without batteries, please refer to the specification of each product.

Product Operation and Storage Notice

The unitech product has applicable operation and storage temperature conditions. Please follow the limitation of suggested temperature conditions to avoid failure, damage or malfunction.

**For applicable temperature conditions, please refer to the specification of each product.*

Adapter Notice

1. Please do not leave the power adapter in the socket when it is not connected to your unitech product for charging.
2. Please remove the power adapter when the battery is fully recharged.
3. The bundled power adapter that comes with your unitech product is not meant to be used outdoors. An adapter exposed to water or rain, or a very humid environment can cause damage to both the adapter and the product.
4. Please only use the bundled power adapter or same specification of adapter to charge your unitech product. Using the wrong power adapter can damage your unitech product.

** The message above only applies to the product connected to the adapter.*

For the products without using the adapters, please refer to the specification of each product.

Hearing Damage Warning

Zx.3 Warning

The warning shall be placed on the equipment, or on the packaging, or in the instruction manual and shall consist of the following:

- the symbol of Figure 1 with a minimum height of 5 mm; and
- the following wording, or similar :

To prevent possible hearing damage, do not listen at high volume levels for long periods.



Figure 1 – Warning label (IEC 60417-6044)

Alternatively, the entire warning may be given through the equipment display during use, when the user is asked to acknowledge activation of the higher level.

Warranty Policy

The following items covered under the unitech Limited Warranty are free from defects during normal use:

The warranty period is varied from each country. Please consult with your supplier or unitech local office for actual length of warranty period to your purchased product.

Warranty becomes void if equipment is modified, improperly installed or used, damaged by accident or neglect, or if any parts are improperly installed or replaced by the user.

Chapter 1

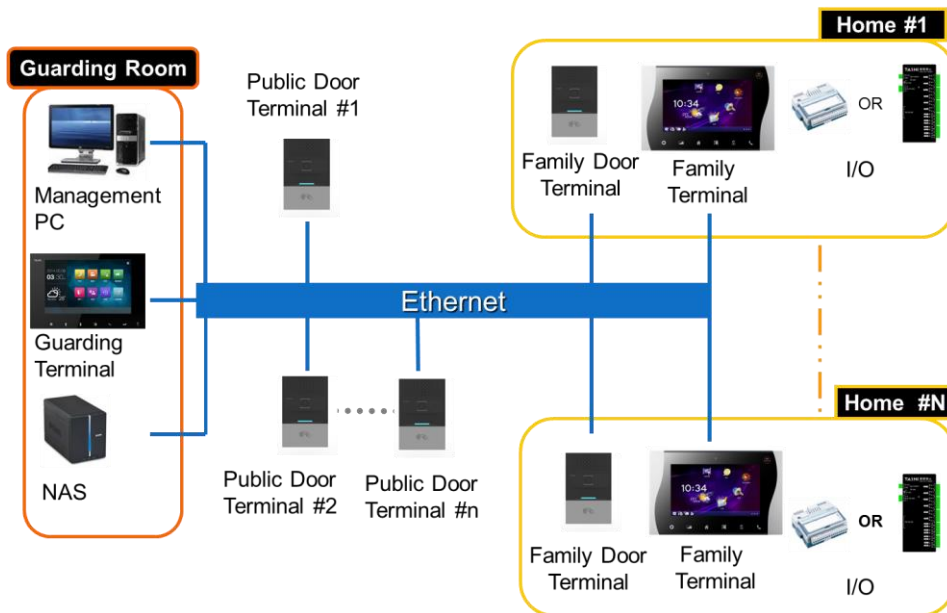
Getting Started

MT390S and Elfin System

This manual includes the introduction of MT390S, the installation and other supporting information for the users.

Elfin system is a kind of Smart Home system, and MT390S is the Public Door Terminal and/or the Family Door Terminal in the Elfin System. MT390S is designed for the TASHI related vertical markets; TASHI stands for Telephony, Access, Security, Home Automation and Intercom.

The following diagram has presented the architecture of the Elfin system; it includes MT390S and other related devices:



For the user manuals on the Elfin System, “Elfin Household User Manual” and “Elfin Custodian User Manual”, please refer to the Appendix B, “World Support” and contact regional services representatives.

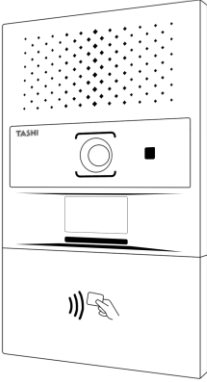


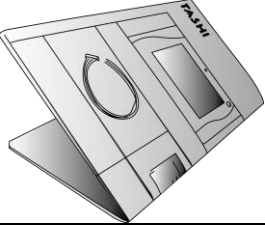

MT390S has delicate design and is suitable to be installed in the household and community as the public door terminal and/or the family door terminal.

Chapter 2

Basic Operation

Package and Interface Overview

Please make sure the following contents are in the MT390S box. If anything appears missing or damaged, please contact the TASHI representatives.

		
<p>MT390S</p>	<p>Relay Cable (3 pins)</p>	
		
<p>Communication Cable (8 pins)</p>	<p>QRG Paper Note</p>	<p>Screw (1 pcs in a bag)</p>

Note: The on-wall kit and the on-wall kit with shielding roof are the options.

Outlook:

The appearance is graceful and meets the IP Code 65; refer to Appendix A, “System Specifications” for the details.

MT390S with on-wall kit, shielding roof:

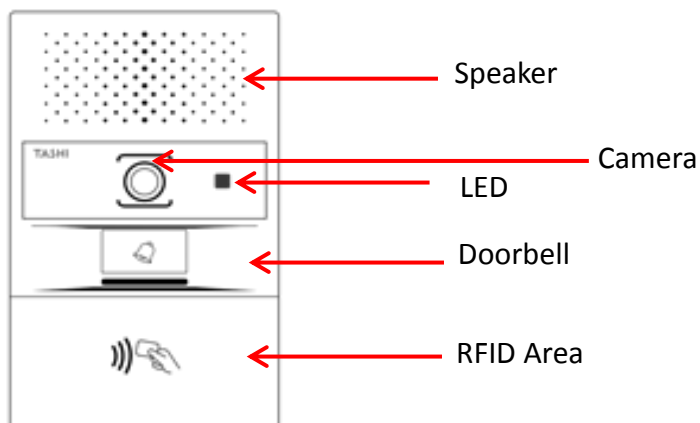


MT390S with on-wall kit:



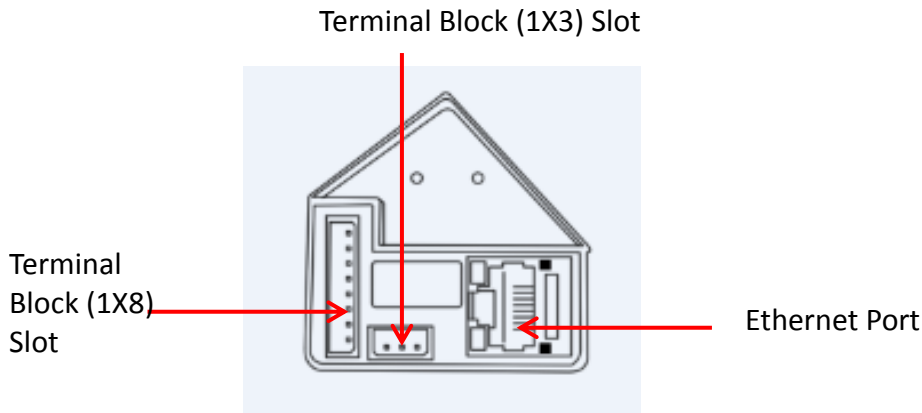
Front Side:

It consists of five main parts; the speaker, the camera, the LED, the doorbell and the RFID area.



Rear Side:

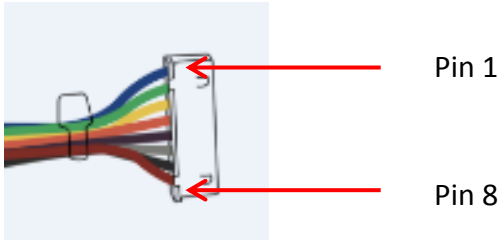
There are two terminal blocks; one is the Terminal Block (1X8), the other is the Terminal Block (1X3). The pin definition/functionality, refer to the section of “Terminal Block”.



Terminal Block

Terminal Block (1X8) Pin Assignment:

This is the Terminal Block (1X8); the color and the function have been depicted respectively.

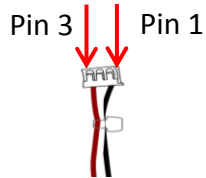


Pin	Wire Color	Description
1	Blue	RS485-
2	Green	RS485+
3	Yellow	DI-2
4	Orange	DI-1
5	Purple	Wiegand_D1
6	Gray	Wiegand_D0
7	Black	GND
8	Red	12V

In the condition of “DI-1 connects to Hi (5V)” and “DI-2 connects to ground (0)”, DI (Input) will be High when be activated; otherwise DI will be Low.

Relay Pin Assignment:

This is the Terminal Block (1X3); the function has been presented.



Pin	Name	Wire Color	Description
1	C	Black	Relay 1 Common
2	NC	White	Relay 1 Normal Close
3	NO	Red	Relay 1 Normal Open

Chapter 3

Installation

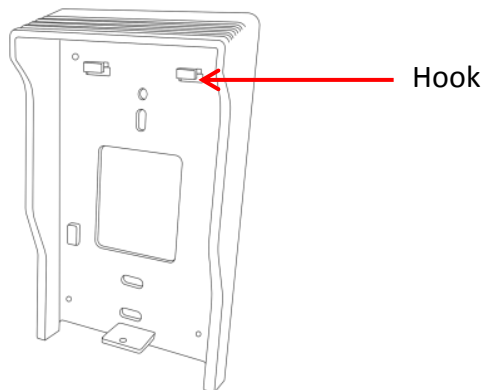
Process

Please follow the process to install the MT390S.

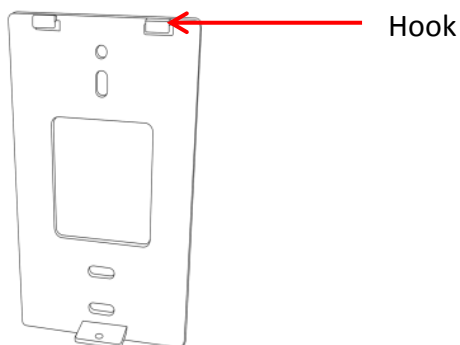
1. Fit the on-wall kit in the direction as shown onto the wall by two bolts, there are two kinds of on-wall kit; the outside on-wall kit, the on-wall kit.

Due to the outside on-wall kit has the upper cover; it is higher than the on-wall kit. Please refer to the section of "Altitude" for the suggested altitude when installing the outside on-wall kit/on-wall kit.

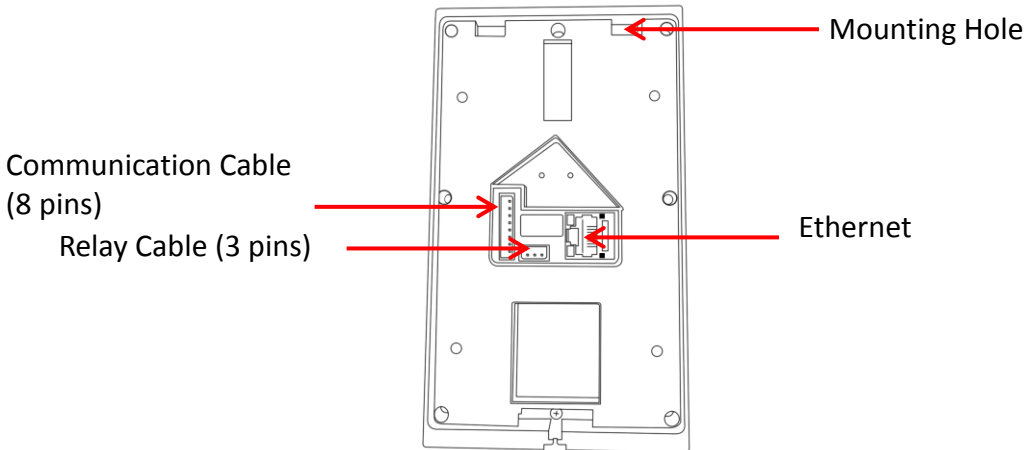
Condition 1: On-wall kit with shielding roof



Condition 2: On-wall kit

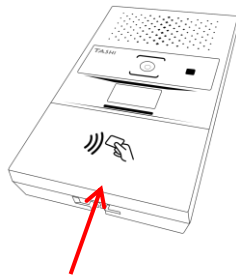


2. Connect the Ethernet, the Communication Cable (8 pins) and the Relay Cable (3 pins).



3. Fit MT390S onto the outside on-wall kit/on-wall kit by aligning the hooks (the outside on-wall kit/on-wall kit) to the mounting holes (the rear side of MT390S), and then lift MT390S vertically upwards and push to the end.

4. Tighten the screw as shown below. Using other kinds of screw will result in unrecoverable damage and void the warranty.



Altitude

Due to the wide-range camera is used in the MT390S (the horizontal angle is 91° and the vertical angle is 47°), the altitude of the installation should be considered carefully.

Condition 1: Outside on-wall kit

It is suggested that the distance between the top of the outside on-wall kit and the ground is about 174cm.

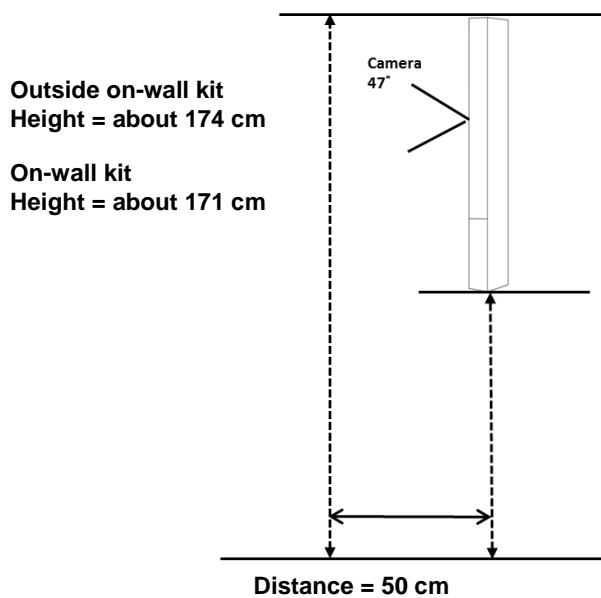
Condition 2: On-wall kit

It is suggested that the distance between the top of MT390S and the ground is about 171cm.

Please make sure the ground is flat, take the height difference into consideration if it is not the flat surface.

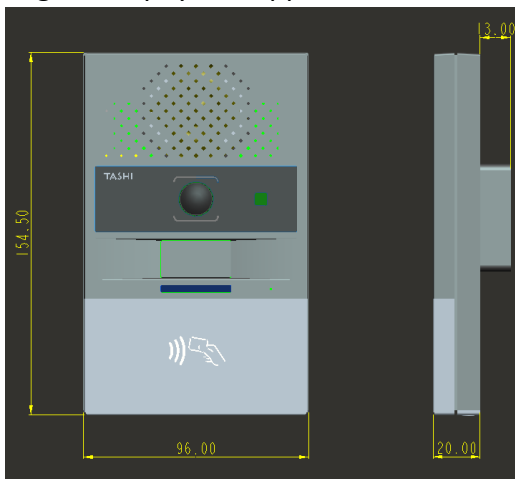
In front of camera with 50cm, the coverage of length of users would be from 143cm to 187cm; it might need to be modified by the on-site situation.

Schematic Diagram:



Physical Appearance

The diagram of physical appearance for MT390S: Unit: mm



Chapter 4

Document Version Record

Version Record

V1.0	Initial Version
V1.1	Modify the title of the cover page Remove some statements in the section of “Regulatory Compliance Statements”

Appendix A

System Specifications

This table contains the system specifications for MT390S:

Processor	CPU	ITE IT9079(400MHz)+IT9917(200MHz)
Memory	SDRAM	64MB (DDR2, 16 bits)
	Flash	16MB (NOR TYPE Flash, 4 bits)
OS	Open RTOS, based on FreeRTOS V7.5.3	
Key	Top Side	1 key for doorbell with 2 color LED
		Red for power off / off line / alarm set for RFID
		Green for power on (keep flashing) / on line (constant green) / RFID signal (one flash)
	Bottom Side	WIFI WPS Button: HW WPS function input
Reset Button: HW warm start function		
Interface	USB Host	Just for firmware update OS
	MicroSD Connector	Support MicroSD memory card
	Terminal Block (1X8)	Refer to page 6
	Terminal Block (1X3)	Refer to page 6
	RJ45	Ethernet 10/100M bps PHY with POE function
Audio	Speaker	8 ohm/2W output
		Support for over 85 dB at 10cm distance from top side when push doorbell
	Microphone	One MIC design
		Directivity => Omni-direcyivitional
		Sensitivity => -42dB (@1K Hz)

Enclosure	Weight	200g
	Dimension	154.50mm(L) X 96.00mm(W) X 20.00mm(H)
Environmental	Operating Temperature	-10° to 50° C
	Storage Temperature	-20° to 60° C
	Charging Temperature	0° to 40° C
	Humidity	95% non-condensing
	Vibration and Shock Protection	Tested to MIL-STD-810F, 514.4 process II
	Loose Cargo Test	With package
RF Module	Wireless LAN Module	Module Name: WM-8188E
		IEEE 802.11 b/g/n
		Using USB interface connected to CPU
	RFID/HF Module	Module Name: Egm-nfc-s68
		Support ISO-15693
		Support ISO-14443A (EasyCard) / 14443B
		Support NFC
	RFID/LF EM module	Module Name: RF10-10
		Support ISO-11784
Support ISO-11785		
RF Antenna & Performance	Wireless LAN	One antenna design, support b/g/n; antenna passive > 40%
	RFID/HF	PCB Antenna; Using HF Mirfare S50 card, 4.0cm \geq Reading distance \geq 3.0cm
	RFID/LF	Coil Antenna; Using LF EM card, 3.0cm \geq Reading distance \geq 2.6cm
Certification	Complies with FCC class B, CE , BSMI , NCC, CCC waived, C-Tick	
Camera	1M camera: 606563G / PIXELPIUS PO3100K; landscape type	
	Data Formats	Bayer color filter pattern
		4:2:2 YUV data sequence
	Maximum Frame Rate	60fps, 1280x720 YCbCr @ 74.25MHz
60fps, 1280x720 Bayer @ 74.25MHz		

Storage	Micro SD, support up to 32GB	
IP Requirement	IEC/EN 60529 Standard	
	IP rating is IP65, front panel	
Power	DC Power 12V	From terminal block
	POE	13W, from RJ45 connector
ESD	Contact	8KV
	Air	12KV

Appendix B

Worldwide Support

At Unitech, we have a professional support team to answer your questions or any related technical issues. If the equipment problem occurs, you may contact our regional services representatives to get the quick response. We have seven regional services centers, and choose your region to get our quick support and their contact information can be found in our websites provided as below.

Region	Website
TASHI Smartech	http://www.tashi.ute.com
Global Operation Center	http://www.ute.com
Unitech Taiwan	http://tw.ute.com
Unitech Asia Pacific & Middle	http://apac.ute.com
	http://india.ute.com
Unitech China	http://cn.ute.com
Unitech Japan	http://jp.ute.com
Unitech America	http://us.ute.com
	http://can.ute.com
Unitech Europe	http://eu.ute.com

In addition, you could contact TASHI Smartech by TASHI@tashi.ute.com