

**CASIO**  
**IT-300 Series**  
**Hardware Manual**  
**(Version 1.02)**

**CASIO Computer Co., Ltd.**

**Copyright © 2011. All rights reserved.**

**March 2011**

## Table of the Contents

	<b>Editorial Record</b>	<b>4</b>
<b>Chapter 1.</b>	<b>Overview of the Products</b>	<b>5</b>
1.1	Features at a Glance	5
1.2	Available Models	6
1.3	Options and Interfaces	7
1.4	External Views	8
1.4.1	IT-300	8
1.4.2	HA-J65US	10
1.4.3	HA-J80USBM	11
1.4.4	HA-J81USBH	11
1.4.5	HA-D32DCHG	12
1.4.6	AD-S42120B-N	13
1.4.7	AD-S15050B-N	13
1.4.8	HA-D20BAT-A	14
1.4.9	HA-J90PS5	14
<b>Chapter 2.</b>	<b>Hardware Specifications</b>	<b>15</b>
2.1	IT-300	15
2.2	HA-J65US	23
2.3	HA-D32DCHG	25
2.4	HA-D20BAT-A	25
2.5	AD-S15050B-N	26
2.6	AD-S42120B-N	27
<b>Chapter 3.</b>	<b>Product Identification and Reference Numbers</b>	<b>28</b>
<b>Chapter 4.</b>	<b>Quality References</b>	<b>29</b>
4.1	Environmental Performances	29
4.1.1	IT-300	29
4.1.2	HA-J65US	29
4.1.3	HA-D32DCHG	30
4.1.4	HA-D20BAT-A	31
4.1.5	AD-S15050B-N	32
4.1.6	AD-S42120B-N	32
4.2	Electrical Performances	33
4.2.1	IT-300	33
4.2.2	HA-J65US	33
4.2.3	HA-D32DCHG	34
4.2.4	HA-D32DCHG	34
4.2.5	HA-D20BAT-A	35
4.2.6	AD-S15050B-N	35
4.2.7	AD-S42120B-N	35
4.3	Mechanical Performances	36
4.3.1	IT-300	36
4.3.2	HA-J65US	36
4.3.3	HA-D32DCHG	37
4.3.4	HA-D20BAT-A	38
4.3.5	AD-S15050B-N	38
4.3.6	AD-S42120B-N	39

<b>4.4</b>	<b>Reliability</b>	<b>40</b>
<b>4.4.1</b>	<b>IT-300</b>	<b>40</b>
<b>4.4.2</b>	<b>HA-J65US</b>	<b>41</b>
<b>4.4.3</b>	<b>HA-D32DCHG</b>	<b>41</b>
<b>4.4.4</b>	<b>HA-D20BAT-A</b>	<b>41</b>
<b>4.4.5</b>	<b>AD-S15050B-N</b>	<b>42</b>
<b>4.4.6</b>	<b>AD-S42120B-N</b>	<b>42</b>
<b>4.5</b>	<b>Compliance</b>	<b>43</b>
<b>4.5.1</b>	<b>IT-300</b>	<b>43</b>
<b>4.5.2</b>	<b>HA-J65US</b>	<b>45</b>
<b>4.5.3</b>	<b>HA-D32DCHG</b>	<b>46</b>
<b>4.5.4</b>	<b>HA-D20BAT-A</b>	<b>46</b>
<b>4.5.5</b>	<b>AD-S15050B-N</b>	<b>46</b>
<b>4.5.6</b>	<b>AD-S42120B-N</b>	<b>47</b>
<b>4.6</b>	<b>Performance Reference</b>	<b>48</b>
<b>4.6.1</b>	<b>Scanning by Laser Scanner</b>	<b>48</b>
<b>4.6.2</b>	<b>Scanning by Linear Imager</b>	<b>50</b>

No part of this document may be produced or transmitted in any form or by any means, electronic or mechanical, for any purpose, without the express written permission of CASIO Computer Co., Ltd. in Tokyo Japan. Information in this document is subject to change without advance notice. CASIO Computer Co., Ltd. makes no representations or warranties with respect to the contents or use of this manual and specifically disclaims any express or implied warranties of merchantability or fitness for any particular purpose.

© 2011 CASIO Computer Co., Ltd. All rights reserved.

## Editorial Record

[illegible]

# 1. Overview of the Products

## 1.1 Features at a Glance

The IT-300 series handheld terminal is designed using the new concept of the Human-centered Design Process and is capable of performing various powerful functions including;

### **Outstanding Development Environment**

- Microsoft® Windows Embedded Handheld 6.5 English Version as the integrated OS
- Visual Studio 2005
- Visual Studio 2008

### **CPU, Memory**

- High-performance CPU  
Marvell® PXA320 Application Processor (runs at 624 MHz, maximum)
- Large-capacity memory  
RAM : 256 MB  
F-ROM : 256 MB

### **Capability of Scanning Industrial Standard Bar Code Symbolologies**

- 1D symbolologies  
UPC-A, UPC-E, EAN8, EAN13, Codabar (NW-7), Interleaved 2of5(ITF), MSI, Industrial 2of5, Code39, Code93, Code128 (GS1-128), IATA, GS1 DataBar Omnidirectional, GS1 DataBar Truncated, GS1 DataBar Limited, GS1 DataBar Expanded, GS1 DataBar Omnidirectionalstacked, GS1 DataBar Expanded Stacked

### **Compatibility of Various Communication Options**

- Integrated WLAN module compatible with IEEE802.11b/g standard (for IT-300-15E / IT-300-15C-CN model)
- Bluetooth® Version 2.0+EDR
- USB version 1.1 (Host/Client) for serial interface

### **Expandability**

- microSD (SDHC) card slot

### **Improved Environment Durability**

- Impact resistance : 1.5 m in height\*
- Dust/Water-splash proof : IP54 level (compliant with IEC60529 International Standard)

\* ; The drop durability height is a measured value resulting from actual testing. It does not necessarily guarantee the product from damage.

## 1.2 Available Models

Table 1.1 List of available models

Model no.	Scanner	Extension slot	WLAN (802.11 b/g)	Bluetooth	Remarks
IT-300-15E	Laser	microSD	Yes	Yes	
IT-300-15C-CN	Laser	microSD	Yes	Yes	Chinese OS
IT-300E-35E*	Linear Imager	microSD	--	Yes	

Notes

- “-CN” in the “Model no.” box denotes that the model is dedicated for China only.
- Model with “\*” at its model number is for USA and Canada only.

Table 1.2 List of options

Option	Product	Model no.	Remark
Cradle	USB and Charging Unit	HA-J65US HA-J65US-CN	for China
Cable	Mini USB cable	HA-J80USBM HA-J80USBM-CN	for China
	Mini USB Host conversion cable	HA-J81USBH HA-J81USBH-CN	for China
Battery	Battery Pack	HA-D20BAT-A HA-D20BAT-A-CN	for China
Battery Charger	Dual Battery Charger	HA-D32DCHG HA-D32DCHG-CN	for China
AC adaptor	USB-AC adaptor	AD-S5050USB-CN	for China
	AC adaptor for Dual Battery Charger (for HA-D32DCHG)	AD-S42120B-N AD-S42120BE-CN	without power cable accompanied for China
	AC adaptor for USB Unit (for HA-J65US)	AD-S15050B-N AD-S15050BE-CN	without power cable accompanied for China
Power cord	Power Cable (for AD-S42120B-N, AD-S15050B-N)	AC-CORD-EU	for Europe
		AC-CORD-US	for USA/Canada
		AC-CORD-TW	for Taiwan
		AC-CORD-KR	for Korea
		AC-CORD-AU	for Australia/New Zealand
Others	Screen Protect Sheet	HA-J90PS5	

Note:

- “-CN” in the “Model no.” box denotes that the model is dedicated for China only.

## 1.3 Options and Interfaces

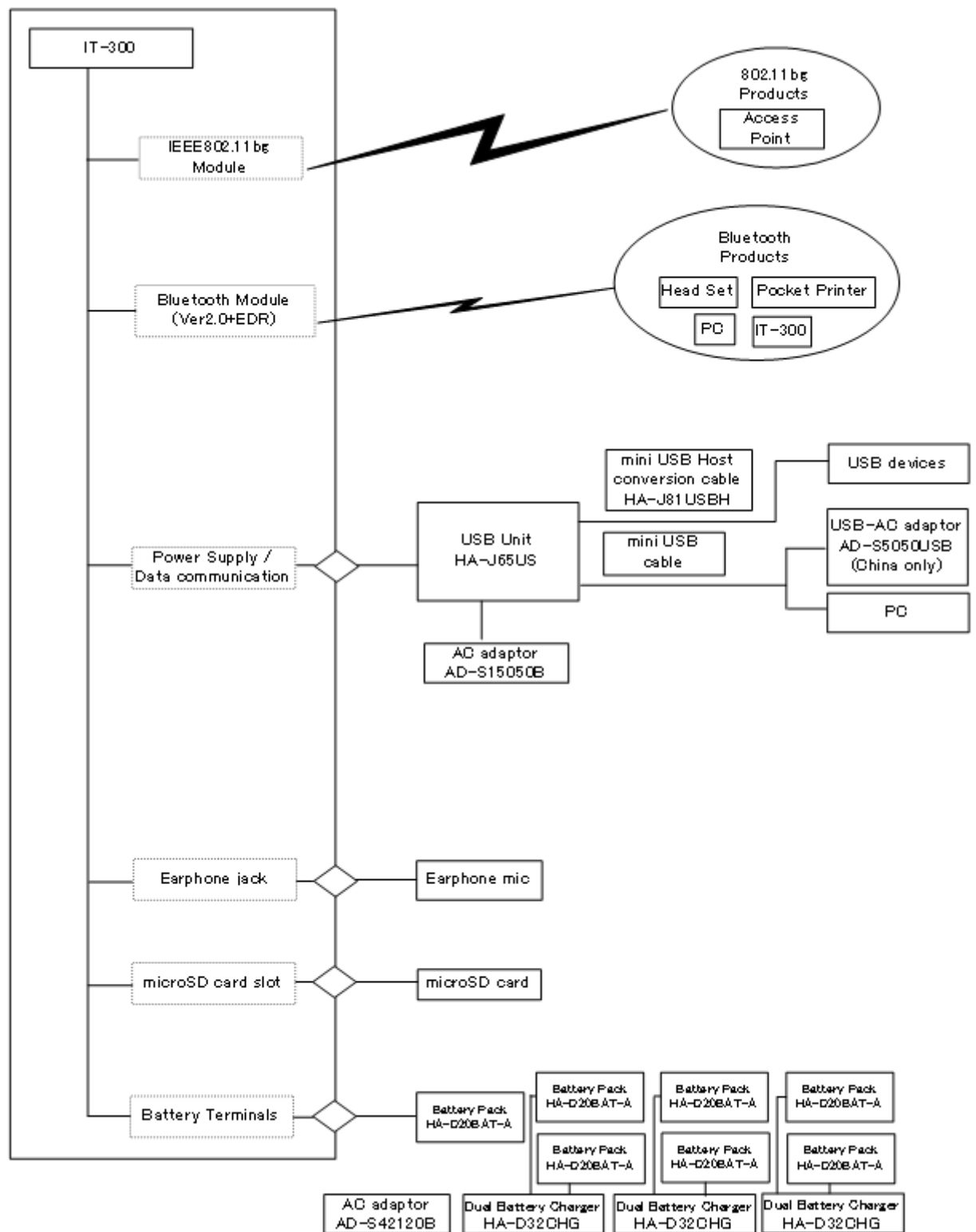


Figure 1-1

## 1.4 External Views

### 1.4.1 IT-300

The following external views show all models of IT-300 series PDA. Refer to Table 1.3 for each referenced part on the terminal.

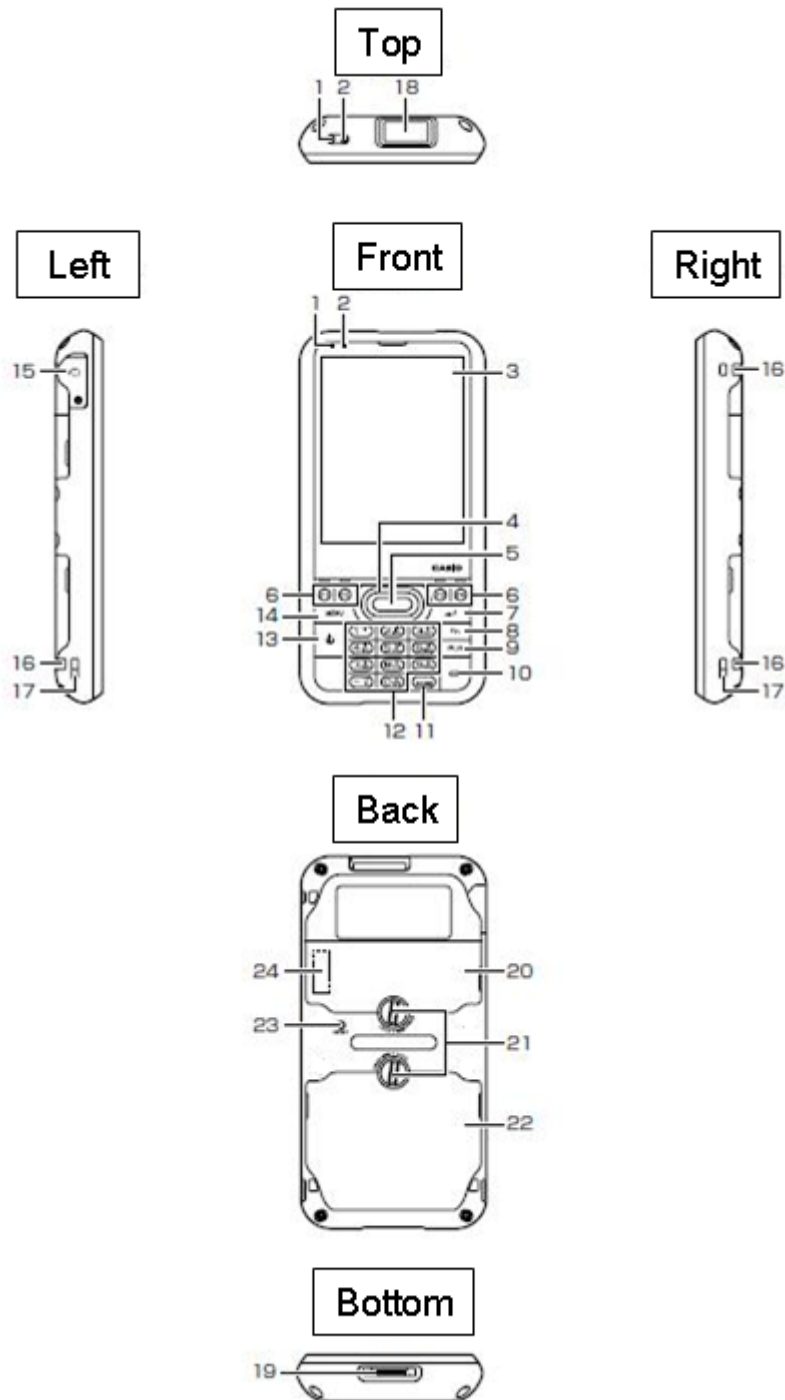


Figure 1-2



Table 1.3

No.	Name	Description
1	Indicator 1	Orange : Charging battery pack. Green : Charging battery pack is complete. Red : Battery pack is abnormal or the surrounding temperature is out of the charging temperature range.
2	Indicator 2	Blue (Blink) : BT using Orange (Blink) : WLAN using Magenta (Blink) : Communication available (at USB connection) Red : Barcode scanning error Green : Barcode scanning OK Alarm is turn on Red color.
3	Touch Screen	Displays text and operating instruction. Also used to operate the terminal and enter data.
4	Cursor Key	The key operates much like PC's cursor keys.
5	Trigger Key	Used to perform bar code reading. An arbitrary function can be assigned to the key.
6	Function Keys	Used starting a pre-registered application.
7	Execute Key	Press when finishing entering numerical values or when moving to the next step.
8	Fn Key	Used to make various settings in combination with the function keys or numeric keys or when starting a pre-registered application.
9	CLR Key	Used to clear one letter to the left of the input key.
10	Microphone	Used to input a sound including voice sound.
11	'A' Key	Changes text input mode.
12	Numeric Keys	Used to enter numeric, decimal points, and letters.
13	Power Key	Turns on and off the power.
14	Menu Key	Display menu related with application
15	Earphone mic jack	Connect earphone mic
16	Strap Holes	Used to attach the hand strap.
17	USB unit connection part	Used to connect with USB unit
18	Barcode scanning window	Issue laser or LED light from this window, then scan barcode data
19	Power/Signal Terminals	Used for USB communication or to supply power to the terminal and to charge the battery pack via USB unit.
20	microSD card slot cover	Set microSD inside of this cover
21	Lock switch	Slide at open and close cover
22	Battery pack cover	Used to cover the battery compartment that holds the battery pack inside.
23	Reset Switch	Used to reset the terminal.
24	microSD card slot	For insertion of a micro SD card into the slot in the battery compartment.

## 1.4.2 HA-J65US

The following external views show the USB and Charging unit (HA-J65US, HA-J65US-CN)

### Views



Figure 1-3

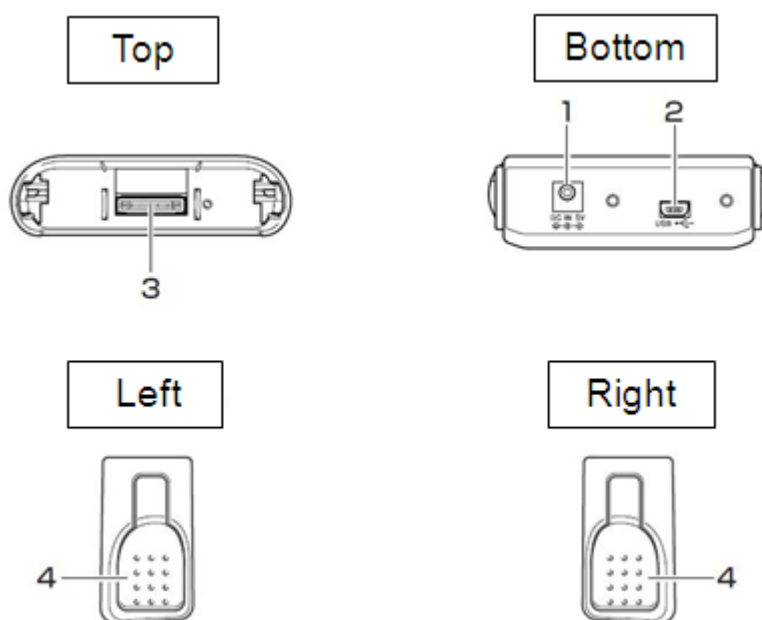


Figure 1-4

Table 1.4

No.	Name	Description
1	AC Adaptor Jack	This is used to supply power by connecting the dedicated AC adaptor, AD-S15050B, here.
2	USB port	This is used to connect mini USB cable (HA-J80USBM) or mini USB host conversion cable (HA-J81USBH). It is possible to communicate with PC by USB data or charge battery inside IT-300 while communicating. (HA-J80USBM) It is possible to connect with USB devices. (HA-J81USBH)
3	Power/Signal Terminal	Used for USB communication or to supply power to the terminal.
4	Stopper	Used to fix with IT-300.

### 1.4.3 HA-J80USBM

The following external views show the mini USB cable (HA-J80USBM, HA-J80USBM-CN).

#### Views



Figure 1-5

### 1.4.4 HA-J81USBH

The following external views show the mini USB host conversion cable (HA-J81USBH, HA-J81USBH-CN).

#### Views

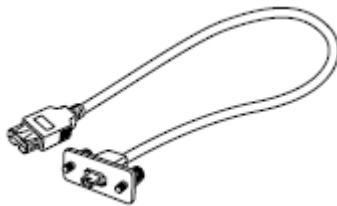


Figure 1-6

## 1.4.5 HA-D32DCHG

The following external views show the Dual Battery Chargers (HA-D32DCHG, HA-D32DCHG-CN). Refer to Table 1.5 for each referenced part on the charger.

### Views

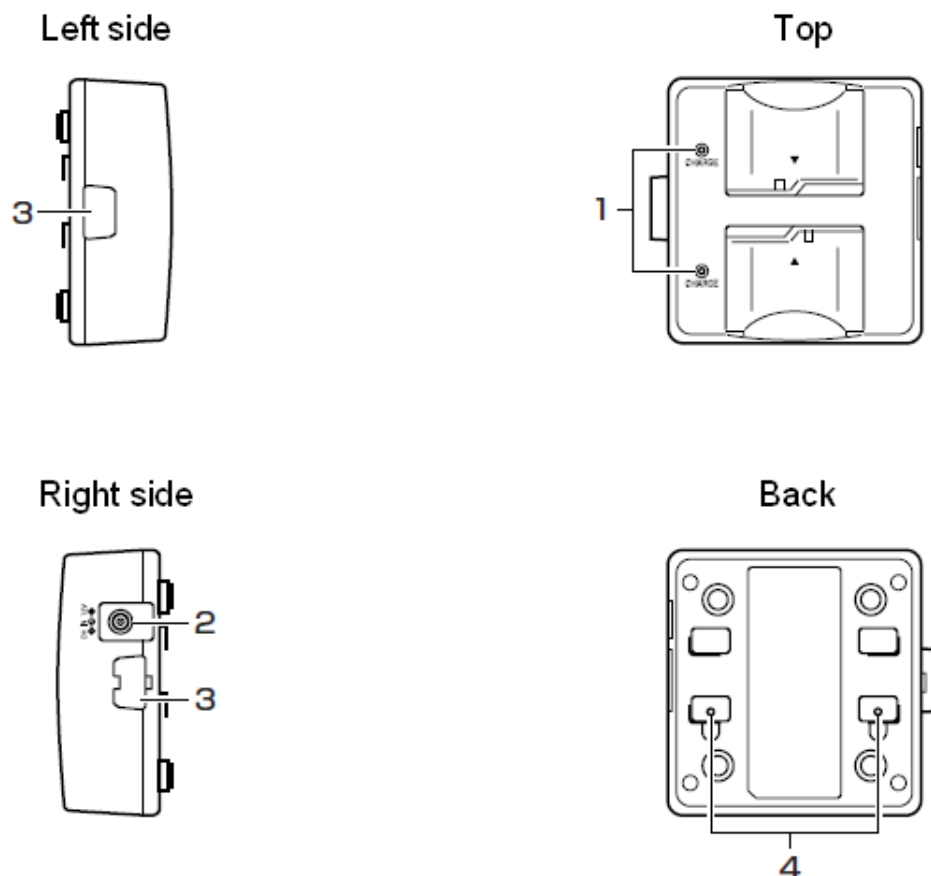


Figure 1-7

Table 1.5

No.	Name	Description
1	Charge Indicator LED	This LED indicates the charge status of battery pack(s). Off : Battery pack is not mounted. Red : Charging. Flashing Red : Problem on the battery pack. Green : Charging complete. Flashing Green : Standby.
2	AC Adaptor Jack	This is used to supply power by connecting the dedicated AC adaptor, AD-S42120B, here.
3	Dual Battery Charger Connection Port	Used to connect multiple Dual Battery Chargers each other.
4	Connection Bracket Attachment Holes	The connection bracket attaches here when you connect multiple Dual Battery Chargers.

### 1.4.6 AD-S42120B-N

The following external view shows the AC Adaptors (AD-S42120B-N, AD-S42120BE-CN).

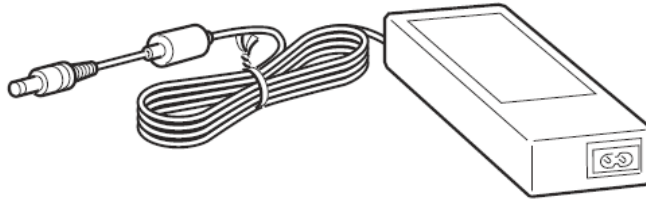


Figure 1-8

Note:

Power cable does not accompany to the AC Adaptor.

### 1.4.7 AD-S15050B-N

The following external view shows the AC Adaptor (AD-S15050B-N, AD-S15050BE-CN).

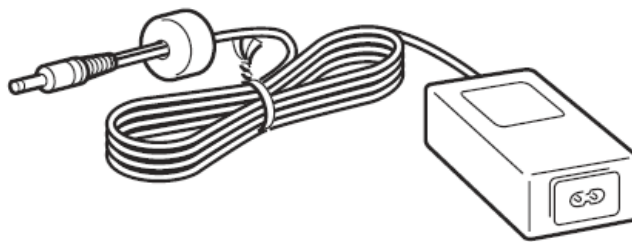


Figure 1-9

Note:

Power cable does not accompany to the AC Adaptor.

### 1.4.8 HA-D20BAT-A

The following external view shows the Battery Packs (HA-D20BAT-A / HA-D20BAT-A-CN).

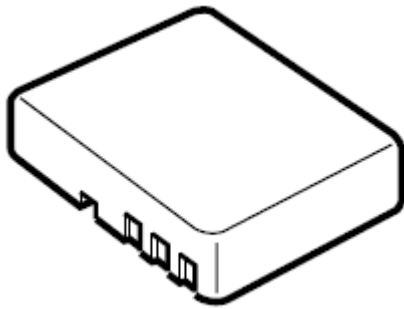


Figure 1-10

### 1.4.9 HA-J90PS5

The following external view the Screen Protect Sheet (HA-J90PS5).



Figure 1-11

## 2. Hardware Specifications

### 2.1 IT-300

Tables 2.1 explain about the hardware specifications of all models of IT-300 series including the models with “-CN” denotation.

Table 2.1

Item	Specification	Remark
CPU, Memory		
CPU	Marvell® Xscale Processor PXA320 runs at 624 MHz	
RAM	256 MB	
FROM	256 MB (user area; approx. 120 MB)	
OS	Microsoft® Windows Embedded Handheld 6.5 English Version	
Laser Scanner		
Laser emit angle	Redirected downward at 0 degree	
Wave Length	650±10 nm	
Optical Output	<1 mW	
No. of scannings	100±20 per second	
Resolution	0.127 mm (minimum) or greater	
PCS	0.45 (minimum) or greater	
Readable distance	Approximately 40 to 400 mm	
Readable width	Max. 310 mm	- at 400 mm depth
Daylight for scanning	50,000 Lux or less	
Readable bar code symbologies	UPC-A, UPC-E, EAN8, EAN13, Codabar (NW-7), Interleaved 2of5 (ITF), MSI, ISBT, Industrial 2of5, Code39, Code93, Code128 (GS1-128), IATA, GS1 DataBar Omnidirectional, GS1 DataBar Truncated, GS1 DataBar Limited, GS1 DataBar Expanded, GS1 DataBar Stacked, GS1 DataBar Stacked Omnidirectional, GS1 DataBar Expanded Stacked	

Continue.

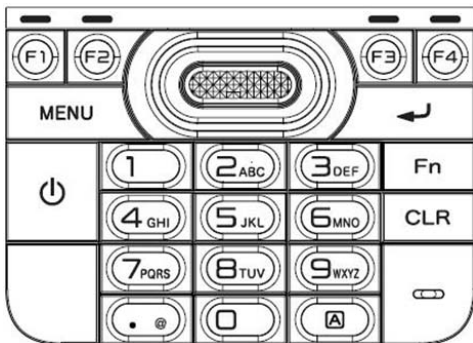
Linear Imager (IT-300E-35E)		
Wave Length	617 nm	
No. of scannings	200 scan per second or more (Auto adjust)	
Resolution	0.127 mm (minimum) or greater	
PCS	0.25 (minimum) or greater	
Readable distance	Approximately 60 to 300 mm	
Readable width	Max. 46mm (60mm depth) Max. 200mm (300mm depth)	
Daylight for scanning	50,000 Lux or less	
Readable bar code symbologies	UPC-A, UPC-E, EAN8, EAN13, Codabar (NW-7), Interleaved 2of5 (ITF), MSI, ISBT, Industrial 2of5, Code39, Code93, Code128 (GS1-128), IATA, RSS-14, RSS Limited, RSS Expanded, RSS-14 Stacked, RSS Expanded Stacked	
Vibrator	Notification of scanning bar code	
Display		
Display device	TFT	Blanview® by Ortus technology
No. of dots	480 (horizontal) x 640 (vertical) VGA	See “Dead Pixels”.
Dot pitch	0.117 (horizontal) x 0.117 (vertical) mm	
Gradation	65,536 colors	
Display font	Scalable font	
Backlight	LED backlight	
Viewing angle	35 degree (Left, Right), 10 degree (Up), 50 degree (Down)	Contrast 10 over
Touch Panel	Electrostatic capacity	plastic
Hardness	Pencil hardness 2H over	
Indicator		
LED	1pc x LED in 2 colors, 1pc x LED in 3 colors	

#### Dead Pixels

The LCD panel employed in this product uses high precision and substantial number of components which commonly cause a small number of the pixels not to light or to remain lit all the time. This is due to the characteristics of LCD panel yield in accuracy over 99.99% and permissible.

Continue.



Input		
Keyboard		
Control keys	Power key, Reset switch	
Trigger keys	Center	
WLAN		
Standard	IEEE 802.11b/g	
Module no.	WM-G-MR-090REF2	By USI
Radio type	Spread Spectrum	
Emission Designation	IEEE801.11b : D1D, G1D IEEE802.11g : G1D	ITU
Spectrum Spread modulation	IEEE802.11 b : DSSS IEEE802.11 g : OFDM	
Modulation type	BPSK, QPSK, CCK, 16QAM, 64QAM	
Frequency range	IEEE802.11b : 2,400 to 2,483.5 MHz IEEE802.11g : 2,400 to 2,483.5 MHz	
Baud rate	IEEE802.11b : 11 Mbps (maximum) IEEE802.11g : 54 Mbps (maximum)	
Communication range	IEEE802.11b/g : 50 m (indoor) to 150 m (outdoor)	Vary depending on the environment condition
Number of channels	11b : 14 11g : 13	
Channel spacing	5MHz	
Channel band width	22MHz	
Output power	IEEE802.11b : 11.0dBm (minimum) 17.0dBm (maximum) IEEE802.11g : 9.0dBm (minimum) 15.0dBm (maximum)	
Other feature	Roaming among Access-Points	

Continue.

Bluetooth Class 2			
	Standard	Bluetooth® specification Ver.2.0+EDR	
	Module no.	LBMA46LCS3-332	- By Murata Manufacturing Co., Ltd.
	Radio type	Spread Spectrum	
	Modulation	Frequency Hopping ("FHSS")	
	Modulation type	GFSK (1Mbps), $\pi/4$ -dqpsk (2Mbps), 8-DPSK (3Mbps)	
	Emission Designation	F1D, G1D	
	Frequency range	2,400 to 2,483.5 MHz	
	Communication range	Approx. 3 m	- Vary depending on the environment conditions
	Number of channels	79	-
	Channel spacing	1 MHz	-
	Channel band width	1 MHz	-
	Output power	Max. 4 dBm (PowerClass 2)	-
	micro SD	Compatible with SDHC.	
USB			
	Host	Baud rate	Full speed (12 Mbps)
			Low speed (1.5 Mbps)
		Power to external device	Voltage 5.0V $\pm$ 0.25V Current 100mA
	Client	Baud rate	Full speed (12 Mbps)
		USB power supply	Voltage 5.0 $\pm$ 0.25V Current 500mA or more (USB 2.0 High Power Port)

Continue

Speaker	Warning sound, etc.	
Microphone	Voice sound input	
Earphone mic jack	From top of terminal 1. Sound output(Left) 2. Sound output(Right) 3. GND 4. Mic/Hook button Compatibility terminals with iPhone earphone mic. Support VoIP hook. Do not support other function which is available in iPhone earphone mic. (ex. Volume adjust)	φ 3.5mm
Power		
Operating power	Lithium-ion battery pack	
Memory backup	Lithium battery (rechargeable)	- Integrated
Operating period	Approx 12 hours  Above time periods are based on the ratio of cyclic operation of “Standby: Calculation: Scanning” at 20:1:1, and under the conditions; - Auto Power Save mode (CPU) - Backlight Off	- At room temperature - New battery pack
	Approx 10 hours  Above time periods are based on the ratio of cyclic operation of “Standby: Calculation: Scanning” at 20:1:1, and under the conditions; - Auto Power Save mode (CPU) - Backlight On	
	Approx 10 hours  Above time periods are based on the ratio of cyclic operation of “Standby: Calculation: Scanning: WLAN” at 20:1:1:1, and under the conditions; - Auto Power Save mode (CPU) - Backlight Off	
	Approx 8 hours  Above time periods are based on the ratio of cyclic operation of “Standby: Calculation: Scanning: WLAN” at 20:1:1:1, and under the conditions; - Auto Power Save mode (CPU) - Backlight On	

	Memory backup period (with memory backup battery only)	Approx. 10 minutes for RAM Approx. 72 hours for integrated clock		<ul style="list-style-type: none"> <li>- Lithium battery (on-board) is fully charged.</li> <li>- At room temperature.</li> </ul>
	Memory backup period (with battery pack and memory backup battery)	Approx. 72 hours for RAM		<ul style="list-style-type: none"> <li>- The backup period starts when “Main battery low warning” appears.</li> </ul>
	Battery pack charge period	Approx. 6 hours by USB-AC adaptor (AD-S5050USB-CN China only)		<ul style="list-style-type: none"> <li>- Power on the terminal is turned off while the battery is being charged.</li> <li>- At room temperature.</li> <li>- Charge available at power on condition (but current is under 500mA and full charge time will be longer.</li> </ul>
		Approx 4 hours by AC adaptor (AD-S15050B)		<ul style="list-style-type: none"> <li>- At room temperature.</li> <li>- Charge available at power on condition</li> </ul>
	Charge method	See Table 2.2.		-
	Memory backup battery charge period	Approx. 4 days (for fully charged level)		<ul style="list-style-type: none"> <li>- Battery pack is being installed in the terminal.</li> <li>- At room temperature.</li> </ul>
	Backup battery specification	See Table 2.3.		
	Memory backup battery rated capacity	50 mAh		
	Method to charge memory backup battery	When power supply is made via AC adaptor	Yes	
		When power supply is made by installed battery pack (when terminal's power on )	Yes	
		When power supply is made by installed battery pack (when terminal's power off)	Yes	

## Charge Method

Table 2.2

Cradles, Charger	Condition to start charging	Action after charge is complete
USB and Charging Unit (HA-J65US)	Set the terminal on one of the options listed on left side. USB and Charging Unit need mini USB cable and USB-AC adaptor or AC adaptor.	Charging the battery pack starts again when the output voltage is lower to certain level.

## Backup by Backup Battery

Table 2.3

Backup item	Backup periods	Remarks
RAM and RTC	0 to 10 minutes	The backup for RAM and RTC (integrated clock) is about 10 minutes by integrated timer. After elapse of 10 minutes, the backup is for only the RTC.
RTC	10 minutes to 4 days	The over-discharge protection starts when remaining capacity of the memory backup battery is at 10 percent. Once the over-discharge protection takes place, the backup to the RTC stops.

## Cyclic Life of Memory Backup Battery

The more the memory backup battery is used often, the more quickly deterioration on the cyclic life worsens. See the table below. Note that the life period in the above explanation is based on condition that memory backup for 10 minutes or RTC backup for 3 days is no longer possible.

Table 2.4

Content backed up and period	Used capacity of memory backup battery	No. of cyclic life of charge/discharge
Memory +RTC for 10minutes	1% or less	About 20,000 times
RTC for 1 day	About 5%	About 3,000 times
RTC for 2 days	About 9%	About 1,000 times
RTC for 4 days	About 18%	About 500 times
RTC for 6 days	About 27%	About 275 times
RTC for 8 days	About 36%	About 160 times
RTC for 10 days	About 45%	About 110 times
RTC for 12 days	About 54%	About 90 times
RTC for 14 days	About 63%	About 75 times
RTC for 16 days	About 72%	About 60 times
RTC for 18 days	About 81%	About 55 times
RTC for 20 days	About 90%	About 50 times

Therefore, excluding the cases below, always install battery pack fully charged in the terminal so that the contents can be backed up by the battery pack (see note) instead by the memory backup battery.

- Long-term storage exceeding over 1.5 months period.
- Backup for the RTC within one day period, relatively the rate of use with the terminal is less.

Note:

The contents in the table can be backed up for approximately 30 days by battery pack fully charged.

## Dimensions and Weight

- Dimensions

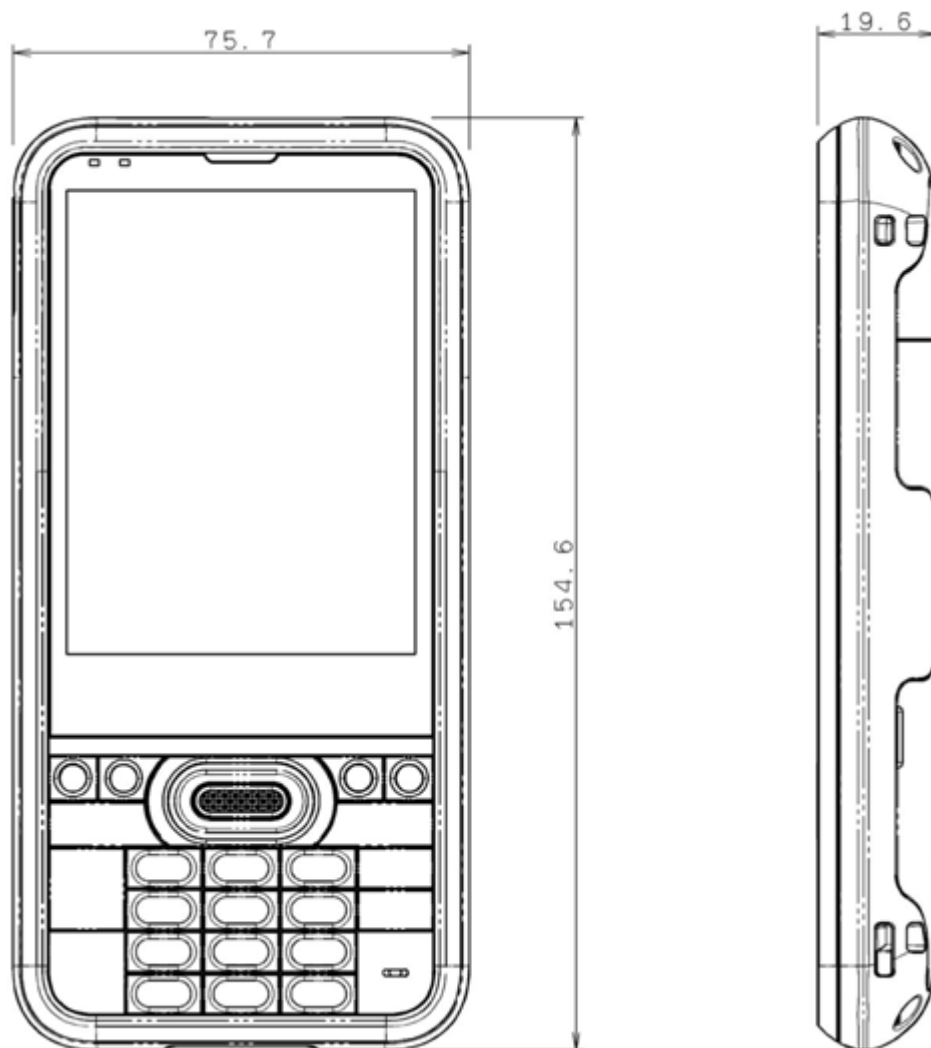


Figure 2-1

Dimensions in millimeters


Size : 154.6mm x 75.7mm x 19.6mm

Weight : 212g

## 2.2 HA-J65US

Tables 2.5 and 2.6 and Figure 2.7 explain about the hardware specifications of the USB and Charging unit (HA-J65US, HA-J65US-CN).

Table 2.5

Item		Specification	Remark
USB Client / Host	Standard	USB Ver.1.1 compatible	
	Baud rate	Max. 12 Mbps (maximum)	
	Pin Layout	See Figure 2.7.	
	Description	See Table 2.13.	
	Connector	<div></div> <div>USB connector from bottom side</div>	<div><ul style="list-style-type: none"><li>- 1 VBus</li><li>- 2 – Data (D -)</li><li>- 3 + Data (D+)</li><li>- 4 USB ID</li><li>- 5 GND</li></ul></div>
Power from AC Adaptor	Input voltage	DC 5V±5%	
	Current consumption	DC 5V, Approx. 3A (maximum)	<div><ul style="list-style-type: none"><li>- When supplying power or transmitting data.</li></ul></div>
	Plug	EIAJ RC-5320A type 2	<div><ul style="list-style-type: none"><li>- Center +</li></ul></div>
	AC Adaptor	AD-S15050B or AD-S15050B-CN	<div><ul style="list-style-type: none"><li>- Dedicated AC adaptor</li></ul></div>
Power	Output voltage	DC5.0±5%	
	Output current	2.1 A (maximum)	
	Charge method	Constant voltage method (with current limitation)	<div><ul style="list-style-type: none"><li>- Charge by integrated battery charge circuit</li></ul></div>
	Battery charge time (in hour)	Approx 4.0 (AD-S15050B)	<div><ul style="list-style-type: none"><li>- Charge by integrated battery charge circuit</li></ul></div>
		Approx 6.0 (AD-S5050USB)	<div><ul style="list-style-type: none"><li>- Charge by integrated battery charge circuit</li></ul><div>Power off, at room temperature</div></div>
Dimensions		Approx. 85.9 (W) x 26.2 (D) x 46.9 (H) mm	
Weight		Approx. 42g	

- Pin Layout

The pin layout below shows when the USB and charging unit is viewed at the front.

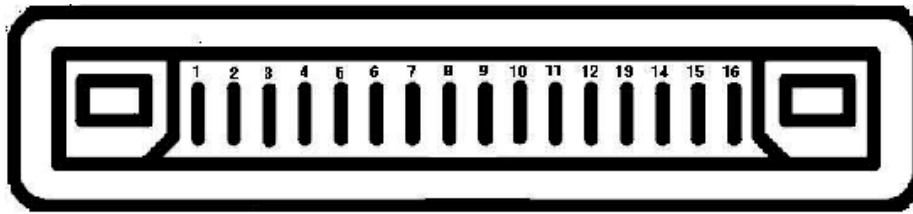


Figure 2.7

- Pin Layout and the description

Table 2.6

Pin no.	Signal	Description	Direction
1	GND	GND	-
2	N.C	-	-
3	N.C	-	-
4	GND	GND	-
5	D +	USB D +	IN/OUT
6	D -	USB D -	IN/OUT
7	V BUS	Power from USB cradle	IN/OUT
8	V CRADLE	Power supply to the terminal and charge the battery pack installed in the terminal.	-
9	V CRADLE	Power supply to the terminal and charge the battery pack installed in the terminal.	-
10	V CRADLE	Power supply to the terminal and charge the battery pack installed in the terminal.	-
11	V CRADLE	Power supply to the terminal and charge the battery pack installed in the terminal.	-
12	N.C	-	-
13	N.C	-	-
14	GND	GND	-
15	USB_ID	Switch-over between USB host and USB client	OUT
16	GND	GND	-



## 2.3 HA-D32DCHG

Table 2.7 explains about the hardware specifications of the Dual Battery Charger (HA-D32DCHG and HA-D32DCHG-CN).

Table 2.7

Item		Specification	Remark
Battery charge	Charge method	Constant voltage constant current	
	Charge period (in hours)	Approx. 2 (for 1 pc x HA-D20BAT-A) Approx. 3.5 (for 2 pcs x HA-D20BAT-A)	- At room temperature
Required power supply		AD-S42120B or AD-S42120B-CN	- Dedicated AC adaptor
Consumption current		Approx. 0.8 A (with single HA-D32DCHG)	
		Approx. 2.4 A (with three HA-D32DCHGs connected.)	
Operating temperature		Approx. 0 to 40 °C	
Operating humidity		30 to 80 %RH	
No. of the chargers to be connected		3 pcs x HA-D32DCHG (maximum)	
Dimensions		Approx. 110 (W) x 104 (D) x 46 (H) mm	
Weight		Approx. 195g	

## 2.4 HA-D20BAT-A

Table 2.8 explains about the hardware specifications of the battery packs (HA-D20BAT-A, HA-D20BAT-A-CN).

Table 2.8

Item	Specification	Remark
Rated capacity	6.84 WH (or 1,850 mAh)	
Rated output voltage	3.7 VDC	
Dimensions	Approx. 52.5 (W) x 40 (D) x 13.5 (H) mm	
Weight	Approx. 46g	
Accessory	Soft case	

## 2.5 AD-S15050B-N

Table 2.9 explains the hardware specifications of the AC Adaptors (AD-S15050B-N, AD-S15050BE-CN).

Table 2.9

Parameter		Specification	Remark
Original manufacturer's model no.		SA115B-05U	- By Sino-American Electronic Co., Ltd.
Type		Switching regulator	
Input requirements	Rated input voltage	100 to 240VAC	
	Input voltage tolerance	90 to 264VAC	
	Nominal frequency	50 or 60 Hz	
	Frequency tolerance	47 to 63 Hz	
	Input current	400 mA (maximum)	- At input 100VAC/50Hz with full load
	No load power consumption (Off mode)	0.5W or less	- At input 240VAC/50Hz
	Inrush current	60A or less	- At input 100VAC to 240VAC - At cold start, maximum load.
	Average efficiency	74.4 % (minimum)	- At input 115VAC/60Hz and 230VAC/50Hz with 25%, 50%, 75% and 100% load
	Leakage current	0.25 mA or less	- At input 240VAC/50Hz
Output requirements	Rated output voltage	DC5.0V	
	Rated output current	DC3.0A	
	Rated output power	15W	
	Minimum output current	0 A	
	Line regulation	DC5V±2%	- At full load and ±10% input voltage
	Load regulation	±5% or less	
	Ripple noise	100 mVp-p or less	- At O/P=5VDC, full load
Protections	Over load protection current	3.2 to 5.0 A	- At 100 to 240VAC
	Over voltage protection	110% to 200% Vo	
Hi-Pot Test (Dielectric strength)	AC3.0 KV for 1 minute, 5mA (leak current) or less		
Insulation resistance	DC500V for 1 minute, 100MΩ or more		
Dimensions	Approx. 75 (D) x 50 (W) x 30 (H) mm		
Weight	Approx. 360g		

## 2.6 AD-S42120B-N

Table 2.10 explains the hardware specifications of the AC Adaptors (AD-S42120B-N, AD-S42120BE-CN).

Table 2.10

Parameter		Specification	Remark
Original manufacturer's model no.		SA145A-1240U-6	- By Sino-American Electronic Co., Ltd.
Type		Switching regulator	
Input requirements	Rated input voltage	100 to 240VAC	
	Input voltage tolerance	90 to 264VAC	
	Nominal frequency	50 or 60 Hz	
	Frequency tolerance	47 to 63 Hz	
	Input current	1200mA (maximum)	- At input 100VAC/50Hz with full load
	No load power consumption (Off mode)	0.5W or less	- At input 240VAC/50Hz
	Inrush current	80A or less	- At input 100VAC to 240VAC - At cold start, maximum load.
	Average efficiency	83.6% (minimum)	- At input 115VAC/60Hz and 230VAC/50Hz with 25%, 50%, 75% and 100% load
Output requirements	Leakage current	0.25 mA or less	- At input 240VAC/50Hz
	Rated output voltage	DC12V	
	Rated output current	DC3.5A	
	Rated output power	42W	
	Minimum output current	0 A	
	Line regulation	±2% or less	- At full load and ±10% input voltage
	Load regulation	±5% or less	
Protections	Ripple noise	100 mVp-p or less	- At O/P=12VDC, full load
	Over load protection current	4.2 to 6.2 A	- At input 100VAC to 240VAC
	Over voltage protection	Clamp 190% output voltage maximum	
Hi-Pot Test (Dielectric strength)	AC3.0 KV for 1 second, 5mA (leak current) or less		
Insulation resistance	DC500V for 1 minute, 100MΩ or more		
Dimensions	Approx. 111 (D) x 50 (W) x 31 (H) mm		
Weight	Approx. 360 g		

### 3. Product Identification and Reference Numbers

On the back of the terminal and the dedicated options, there is a bar code and numbers printed on label as shown in the following figure. This bar code is represented by 15 digits of Code128 symbology and by alphanumeric characters beneath the bar code. The numbers from 1 to 9 in the figure represent identification and references of individual terminal. The numbers from 10 to 14 represent a manufacturing reference which is reserved by the manufacturer. See the figure for each meaning.

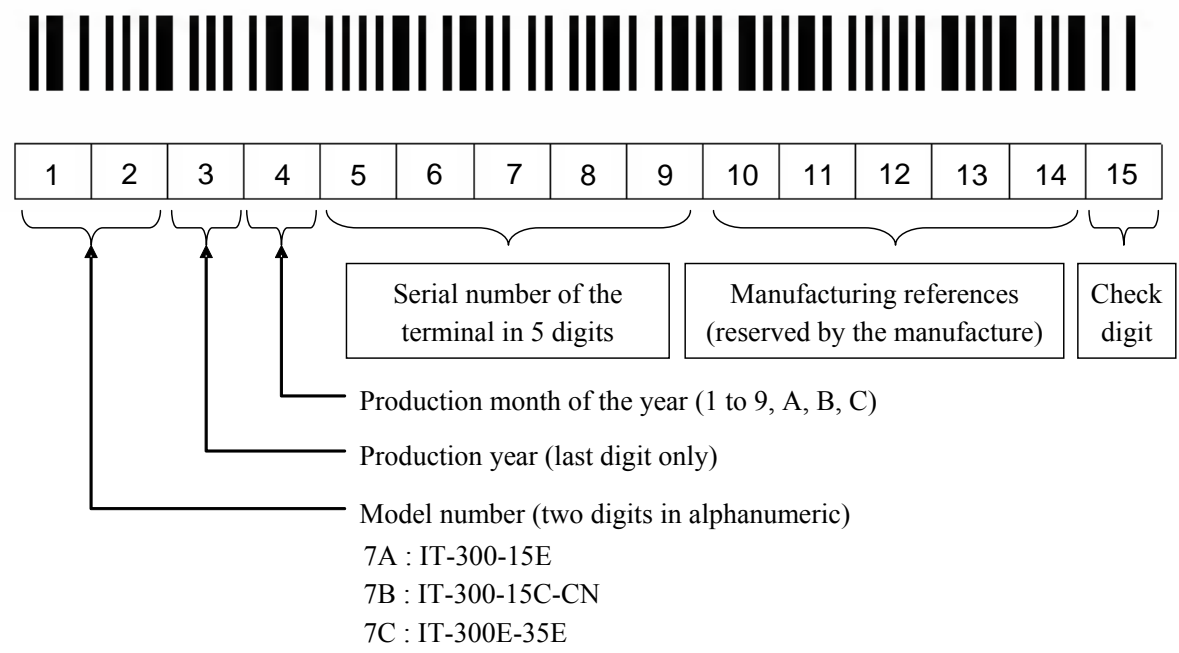


Figure 3-1

## 4. Quality References

This chapter describes about references of the IT-300 and its dedicated options concerned with environmental performance, regulatory compliance, mechanical and electric durability, etc.

### 4.1 Environmental Performances

#### 4.1.1 IT-300

Table 4.1 explains about the environment performances on all models of IT-300 series.

Table 4.1

Item	Specification	Remark/Condition
Temperature		
Operation	-20 °C to 50 °C	- 0 to 40 °C for charging battery
Non-operation	-20 °C to 60 °C	
Humidity		
Operation	10 % to 90 %RH	- No condensation
Non-operation	5 % to 90 %RH	
Storage		
Temperature	-20 °C to 60 °C	
Humidity	5 % to 90 %RH	
Dust and water-splash proof		
	IP54 level	- Compliant with IEC60529 standard

#### 4.1.2 HA-J65US

Table 4.2 explains about the environment performances on the USB and Charging unit (HA-J65US, HA-J65US-CN).

Table 4.2

Item	Specification	Remark/Condition
Temperature		
Operation	0 °C to 40 °C	
Non-operation	-20 °C to 60 °C	
Humidity		
Operation	10 % to 90 %RH	- No condensation
Non-operation	5 % to 90 %RH	
Storage		
Temperature	-20 °C to 60 °C	
Humidity	10 % to 90 %RH	- No condensation

### 4.1.3 HA-D32DCHG

Table 4.3 explains about the environment performances on the Dual Battery Chargers (HA-D32DCHG, HA-D32DCHG-CN).

Table 4.3

Item	Specification	Remark/Condition
Temperature		
Operation	0 °C to 40 °C	
Non-operation	-20 °C to 60 °C	
Humidity		
Operation	30 % to 80 %RH	- No condensation
Non-operation	10 % to 90 %RH	
Storage in carton box		
Temperature	-20 °C to 60 °C	
Humidity	10 % to 90 %RH	- No condensation

#### 4.1.4 HA-D20BAT-A

Table 4.4 explains environment performances on the Battery Packs (HA-D20BAT-A, HA-D20BAT-A-CN).

Table 4.4

Item	Specification	Remark/Condition
Temperature		
Operation	Compatible with the temperature range for the terminal during discharge, or with that of the battery chargers during charge. See Table 4.1 for discharge. Or, any one of Tables 4.2 to 4.6 for charge.	
Storage	Compatible with the temperature range for the terminal. See Table 4.1.	
Humidity		
Operation	Compatible with the humidity range for the terminal during discharge, or with that of the battery chargers during charge. See Table 4.1 for discharge. Or, any one of Tables 4.2 to 4.6 for charge.	
Storage	Compatible with the humidity range for the terminal. See Table 4.1.	
Storage in carton box		
Temperature	-25 to 30 °C	- The period of storage is recommended within one year.
Humidity	90 %RH or less	

## 4.1.5 AD-S15050B-N

Table 4.5 explains environmental performances on the AC Adaptors (AD-S15050B-N, AD-S15050BE-CN).

Table 4.5

Item		Specification	Remark/Condition
Temperature			
	Operation	0 to 40 °C	
	Storage	-20 to 60 °C	
Humidity			
	Operation	20 to 85 %RH	No condensation
	Storage	10 to 90 %RH	

## 4.1.6 AD-S42120B-N

Table 4.6 explains environmental performances on the AC Adaptors (AD-S42120B-N, AD-S42120BE-CN).

Table 4.6

Item		Specification	Remark/Condition
Temperature			
	Operation	0 to 40 °C	
	Storage	-20 to 60 °C	
Humidity			
	Operation	20 to 80 %RH	- No condensation
	Storage	10 to 90 %RH	



## 4.2 Electrical Performances

### 4.2.1 IT-300

Table 4.7 explains about electric performances on all models of IT-300 series including the models with “-CN” denotation.

Table 4.7

Item	Specification	Remark/Condition
Current consumption	DC 2.1A	
Anti-static strength		
Malfunction	±4 KV (In contact) ±8 KV (In air)	- 150 pF, 330ohm
Destruction	±12 KV	

### 4.2.2 HA-J65US

Table 4.8 explains about electric performances on the USB and charging Unit (HA-J65US, HA-J65US-CN).

Table 4.8

Item	Specification	Remark/Condition
Input voltage	DC5V±5%	
Anti-static strength		
In contact	±4 KV	- 150 pF, 330 ohm
In air	±8 KV	
Instant power interruption	10 milliseconds or less	
Line noise strength		
Malfunction	1,000 V	- Pulse frequency : 5 KHz - Burst cycle : 300 milliseconds - Number of pulses : 75 - Burst interval : 15 milliseconds

### 4.2.3 HA-D32DCHG

Table 4.9 explains about electric performances on the Dual Battery Chargers (HA-D32DCHG, HA-D32DCHG-CN).

Table 4.9

Item	Specification	Remark/Condition
Power consumption		
	Approximately 0.03A	Without battery
	Approximately 0.8A	At charging with battery
Input voltage	DC12V±5%	
Anti-static strength		
In contact	±6 KV	- 150 pF, 330 ohm
In air	±8 KV	
Line noise strength		
Malfunction	1,000 V	<ul style="list-style-type: none"><li>- Pulse frequency : 5 KHz</li><li>- Burst cycle : 300 milliseconds</li><li>- Number of pulses : 75</li><li>- Burst interval : 15 milliseconds</li></ul>

### 4.2.4 HA-D32DCHG

Table 4.10 explains about electric performances on the Dual Battery Chargers (HA-D32DCHG, HA-D32DCHG-CN).

Table 4.10

Item	Specification	Remark/Condition
Power consumption		
	Approximately 0.03A	Without battery
	Approximately 0.8A	At charging with battery
Input voltage	DC12V±5%	
Anti-static strength		
In contact	±6 KV	- 150 pF, 330 ohm
In air	±8 KV	
Line noise strength		
Malfunction	1,000 V	<ul style="list-style-type: none"><li>- Pulse frequency : 5 KHz</li><li>- Burst cycle : 300 milliseconds</li><li>- Number of pulses : 75</li><li>- Burst interval : 15 milliseconds</li></ul>

## 4.2.5 HA-D20BAT-A

Table 4.11 explains electrical performances on the Battery Packs (HA-D20BAT-A, HA-D20BAT-A-CN).

Table 4.11

Item	Specification	Remark/Condition
Anti-static strength		
Malfunction	6 KV (contact)/8KV (in air)	
Destruction	12 KV (contact, in air)	

## 4.2.6 AD-S15050B-N

Table 4.12 explains electrical performances on the AC Adaptors (AD-S15050B-N, AD-S15050BE-CN).

Table 4.12

Item	Specification	Remark/Condition
Immunity Test		
Electrostatic Discharge	Contact: $\pm 4\text{KV}$ Air: $\pm 8\text{KV}$	- IEC61000-4-2
Electromagnetic radiation	Frequency: 80 to 1000MHz Field Strength: 3V/m	- IEC61000-4-4
Burst noise	AC input: $\pm 1\text{KV}$	- IEC61000-4-4
Surge Noise	L1-L2: $\pm 1\text{KV}$ L1/L2-PE: $\pm 2\text{KV}$	- IEC61000-4-5

## 4.2.7 AD-S42120B-N

Table 4.13 explains electrical performance on the AC Adaptors (AD-S42120B-N, AD-S42120BE-CN).

Table 4.13

Item	Specification	Remark/Condition
Immunity Test		
Electrostatic Discharge	Contact: $\pm 4\text{KV}$ Air: $\pm 8\text{KV}$	- IEC61000-4-2
Electromagnetic radiation	Frequency: 80 to 1000MHz Field Strength: 3V/m	- IEC61000-4-4
Burst noise	AC input: $\pm 1\text{KV}$	- IEC61000-4-4
Surge Noise	L1-L2: $\pm 1\text{KV}$ L1/L2-PE: $\pm 2\text{KV}$	- IEC61000-4-5

## 4.3 Mechanical Performances

### 4.3.1 IT-300

Table 4.14 explains about mechanical performances on all models of IT-300 series including the models with “-CN” denotation.

Table 4.14

Item	Specification	Remark/Condition
Resistance to drop impact (height)	150 cm (see note)	- 2 cycles on each of 6 faces and 4 corners.
Resistance to drop impact in carton box (height)	70 cm (in individual carton box)	- 1 cycle on each of 6 faces, 1 corner and three edges.
	70 cm (in master carton box)	
Resistance to vibration	1.5 G	- 10 to 55 Hz - In X, Y, Z directions : 30 minutes

Note:

The drop durability height is a measured value resulting from actual testing. It does not necessarily guarantee the product from damage.

### 4.3.2 HA-J65US

Table 4.15 explains about mechanical performances on the USB and charging Unit (HA-J65US, HA-J65US-CN).

Table 4.15

Item	Specification	Remark/Condition
Resistance to vibration	1.5 G or less	- 10 to 55 Hz - In X, Y, and Z directions - Reciprocally for 30 minutes - While the power is turned on - Do not communicate condition
Resistance to vibration (in carton box)	1.5 G or less	- 10 to 55 Hz - In X, Y, and Z directions - Reciprocally for 30 minutes
Resistance to impact		
In bare condition	75 cm	- 1 cycle on each of 6 faces onto concrete floor - 1 cycle on each of 6 faces, 1 corner and 3 edges
In individual carton	70 cm or less	
In master carton	50 cm or less	

### 4.3.3 HA-D32DCHG

Table 4.16 explains about mechanical performances on the Dual Battery Chargers (HA-D32DCHG, HA-D32DCHG-CN).

Table 4.16

Item	Specification	Remark/Condition
Resistance to vibration	1.5 G or less	<ul style="list-style-type: none"><li>- 10 to 55 Hz</li><li>- In X, Y, and Z directions</li><li>- Reciprocally for 15 minutes</li><li>- While the power is turned off.</li></ul>
Resistance to vibration (in carton box)	1.5 G or less	<ul style="list-style-type: none"><li>- 10 to 55 Hz</li><li>- In X, Y, and Z directions</li><li>- Reciprocally for 15 minutes</li></ul>
Resistance to impact		
In bare condition	70 cm	<ul style="list-style-type: none"><li>- 1 cycle on each of 6 faces and 4 edges onto concrete floor</li><li>- 1 cycle on each of 6 faces, 1 corner and 3 edges</li></ul>
In individual carton	70 cm or less	
In master carton	60 cm or less	

### 4.3.4 HA-D20BAT-A

Table 4.17 explains about mechanical performances on the Battery Packs (HA-D20BAT-A, HA-D20BAT-A-CN).

Table 4.17

Item	Specification	Remark/Condition
Resistance to vibration	1.5 G or less	<ul style="list-style-type: none"><li>- 10 to 55 Hz</li><li>- In X, Y, and Z directions</li><li>- Reciprocally for 30 minutes</li></ul>
Impact durability (in height of fall)		
In bare condition	100 cm or less	<ul style="list-style-type: none"><li>- 1 cycle on each of 6 faces onto P-tile surface.</li><li>- 1 on each of 6 faces, 1 corner and 3 edges onto concrete surface.</li></ul>
In individual carton box	70 cm or less	
In master carton box	70 cm or less	

### 4.3.5 AD-S15050B-N

Table 4.18 explains mechanical performances on the AC Adaptors (AD-S15050B-N, AD-S15050BE-CN).

Table 4.18

Item	Specification	Remark/Condition
Resistance to vibration	0.5 G or less	<ul style="list-style-type: none"><li>- 10 to 100 Hz</li><li>- In X, Y, and Z directions</li><li>- Reciprocally for 10 minutes</li></ul>
Impact durability (in height of fall)		
In bare condition	70 cm or less	<ul style="list-style-type: none"><li>- 1 cycle on each of 6 faces onto P-tile surface.</li><li>- 1 cycle on each of 6 faces, 1 corner and 3 edges onto concrete surface.</li></ul>
In individual carton box	70 cm or less	
In master carton box	70 cm or less	

### 4.3.6 AD-S42120B-N

Table 4.19 explains mechanical performances on the AC Adaptors (AD-S42120B-N, AD-S42120BE-CN).

Table 4.19

Item	Specification	Remark/Condition
Resistance to vibration	0.5 G or less	<ul style="list-style-type: none"><li>- 10 to 100 Hz</li><li>- In X, Y, and Z directions</li><li>- Reciprocally for 10 minutes</li></ul>
Impact durability (in height of fall)		
In bare condition	70 cm or less	<ul style="list-style-type: none"><li>- 1 cycle on each of 6 faces onto P-tile surface.</li><li>- 1 cycle on each of 6 faces, 1 corner and 3 edges onto concrete surface.</li></ul>
In individual carton box	70 cm or less	
In master carton box	70 cm or less	

## 4.4 Reliability

### 4.4.1 IT-300

Table 4.20 explains about reliability on all models of IT-300 series including models with “-CN” denotation.

Table 4.20

Item		Specification	Remark/Condition
Service life			
Electronic Components MTBF		40,000 hours	- Main PCB + Sub PCB + Key PCB
Backlight		50,000 hours	- Half-value period at 25°C
LCD		50,000 hours	- 8 hours/day x 365 days/year x 5 years
Discharge/charge cycle longevity of battery pack		500 times	- 50% or more of the initial capacity
Battery pack storage period (recommended)		One year or less	- At temperature in the range of -25 °C to 30 °C - At 80% of the battery's capacity recovery rate
Discharge/charge cycle longevity of memory backup battery		20,000 times	- Memory backup for a period of 10 minutes
		50 times	- Memory backup until the cut-off voltage level
Key input durability	Reset switch	1,000 times	
	Trigger keys	1,000,000 times	- 500 times/day x 365 days/year x 5 years
	Keys (except Trigger keys)	1,000,000 times	- 500 times/day x 365 days/year x 5 years
Connector durability	microSD	10,000 times	-
Laser Scanner		10,000 hours	-
Mounting/removing	Battery pack	4,000 times	- 2 times/day x 365 days/year x 5 years
	USB port	10,000 times	- 4 times/day x 365 days/year x 5 years - (1 times charge, 2 times communication)



## 4.4.2 HA-J65US

Table 4.21 explains about reliability on the USB and charging Unit (HA-J65US, HA-J65US-CN).

Table 4.21

Item		Specification	Remark/Condition
MTBF for electronic parts		100,000 hours	
Connecting to the connector and removing from	USB client port	5,000 times	
Connecting to the IT-300 and removing from		18,000 times	
Connecting to the power part and removing from	AC adaptor jack	3,500 times	

## 4.4.3 HA-D32DCHG

Table 4.22 explains about reliability on the Dual Battery Chargers (HA-D32DCHG, HA-D32DCHG-CN).

Table 4.22

Item		Specification	Remark/Condition
MTBF for electronic parts		50,000 hours	
Mounting HA-D20BAT and removing it from		5,000 times	
Connecting to the joint connector and removing from		250 times	
Installing AC adaptor to and removing from	AC adaptor jack	1,500 times	

## 4.4.4 HA-D20BAT-A

Table 4.23 explains about reliability on the Battery Packs (HA-D20BAT-A, HA-D20BAT-A-CN).

Table 4.23

Item	Specification	Remark/Condition
Battery charge-discharge cyclic life	500 cycles	<ul style="list-style-type: none"><li>- Surrounding temperature : ordinary</li><li>- The capacity after 500 cycles remains 50% of its initial capacity or more.</li></ul>

#### 4.4.5 AD-S15050B-N

Table 4.24 explains about reliability on the AC Adaptors (AD-S15050B-N, AD-S15050BE-CN).

Table 4.24

Item	Specification	Remark/Condition
MTBF	100,000 hours	-

#### 4.4.6 AD-S42120B-N

Table 4.25 explains about reliability on the AC Adaptors (AD-S42120B-N, AD-S42120BE-CN).

Table 4.25

Item	Specification	Remark/Condition
MTBF	100,000 hours	-

## 4.5 Compliance

### 4.5.1 IT-300

Tables 4.26 to 4.27 explain about compliance with the relevant regulatory standards and requirements for all models of IT-300 series PDA.

Table 4.26

Area	Category		Standard/Requirement	IT-300		
				-15E	-15C-CN	E-35E
World	Safety		IEC60950-1 Edition 2	Yes	Yes	--
	Laser/LED		IEC60825-1	Yes	Yes	Yes
	Environment durability (Dust and water-splash)		IEC60529, Level IP54	Yes	Yes	Yes
	Bluetooth logo certification					
		Class1	PRD2.0	--	--	--
		Class2	PRD2.0	Yes	Yes	Yes
Europe	Safety		EN60950-1	Yes	--	--
	Laser/LED		EN60825-1	Yes	--	--
	EMS	EMC	EN55024	--	--	--
	EMI	EMC	EN55022	--	--	--
			EN61000-3-2	--	--	--
			EN61000-3-3	--	--	--
		Optional	ISO7637	--	--	--
	Radio (R&TTE Directive)					
		WLAN/Bluetooth				
		ERM	ETSI EN300 328	Yes	--	--
		EMC	ETSI EN301 489-17 V1.2.1	Yes	--	--
		SAR	EN50371	Yes	--	--
			EN62311	Yes	--	--
	Korea	Radio				
		Radio wave law	RRL notice	Yes	--	--
EMC standard						
		Radio Wave law	RRL notice	Yes	--	--
China	CCC					
		Safety	GB4943	--	Yes	--
		EMI	GB9254	--	Yes	--
		Harmonic	GB17625.1	--	Yes	--
	Radio SRRC					
		BT / 11b / 11g 1-13CH	[2002]353	--	Yes	--

ERM; Electromagnetic Compatibility and Radio Spectrum Matters

EMC; Electromagnetic Compatibility

Table 4.27

	Category	Standard/Requirement	IT-300		
			-15E	-15C -CN	E-35 E
USA	FCC				
	EMI	CFR 47 Part15 Subpart B	--	--	Yes
	Bluetooth / WLAN				
	ERM	CFR 47 Part15 Subpart C	--	--	Yes
	SAR	ET DOCKET 93-62 and OET BULLETIN 65	--	--	--
	Laser				
	FDA	CFR Title 21 Subpart 1000	--	--	--
	Safety				
	UL				
	Battery	UL2054	--	--	--
Car Devices	UL2089	--	--	--	
IT Devices	UL60950-1 Edition 2	--	--	Yes	
Canada	EMC/Radio				
	Bluetooth				
	BT	RSS-GEN, RSS-210 A8	--	--	Yes
	SAR	RSS-102	--	--	--
	EMC	IC ES-003	--	--	Yes
	Safety				
	CSA	cUL 60950-1	--	--	Yes

## 4.5.2 HA-J65US

Table 4.28 explains about the compliance with the required European standards for the Unit and charging Unit (HA-J65US, HA-J65US-CN).

Table 4.28

Area	Category		Standard/Requirement	
World	Safety		IEC60950-1 Edition 2	--
	Environment durability (Dust and water-splash)		IEC60529, Level IP54	--
Europe	Safety		EN60950-1	--
	EMS	EMC	EN55024	Yes
	EMI	EMC	EN55022	Yes
			EN61000-3-2	Yes
			EN61000-3-3	Yes
			Car Devices	ECE Reg.10
China	CCC			
	Safety		GB4943	--
	EMI		GB9254	--
	Harmonic		GB17625.1	--
Korea	EMC standard			
	Radio Wave law		RRL notice	Yes
USA	FCC			
	EMI		CFR 47 Part15 Subpart B	Yes
	Safety			
	UL			
		Car Devices	UL2089	--
	IT Devices	UL60950-1 Edition 2	Yes	
Canada	Radio			
	EMI		ICES-003	Yes
	Safety			
	CSA		cUL 60950-1	Yes

### 4.5.3 HA-D32DCHG

Table 4.29 explains about the compliance with the required European standards for the Dual Battery Charger (HA-D32DCHG, HA-D32DCHG-CN).

Table 4.29

Model no.	Directive 2004/108/EC	
	EMC EN55022:1998	EMI EN55024:1998
HA-D32DCHG	Yes	Yes

### 4.5.4 HA-D20BAT-A

Table 4.30 explains about compliance with applicable requirements for the Battery Packs (HA-D20BAT-A, HA-D20BAT-A-CN).

Table 4.30

Category	Requirement	Remark
Safety	UL1642	- Cell
	UL60950-1	- Battery Pack

### 4.5.5 AD-S15050B-N

Table 4.31 explains about compliance with the relevant regulatory standards and requirements for the AC Adaptors (AD-S15050B-N, AD-S15050BE-CN).

Table 4.31

Category	Standard/Requirement	Remark
EMC	UL60950 3 <sup>rd</sup> edition	- USA
	CAN/CSA C222 NO.60950-00 1 <sup>st</sup> edition	- Canada
	EN60950-1:2001+A11	- EU
	AS/NZS60950-1:2000	- Australia, New Zealand
	IEC60950-1:2001	- CB certificate
	K60950-1	- Korea
	CNS14336 (94)	- Taiwan
	GB4943-2001	- China
Safety	CFR47 FCC Part 15 Subpart B	- USA, Canada
	EN55022:2006	- EU
	EN55024:1998+A1:2001+A2:2003	- EU
	EN61000-3-2:2000+A2:2005	- EU
	EN61000-3-3:1995+A1:2001+A2:2005	- EU
	GB9254-1998	- China
	GB17625.1-2003	- China
	CNS13438 (95)	- Taiwan
	AZ/NZS CISPR22	- Australia, New Zealand

## 4.5.6 AD-S42120B-N

Table 4.32 explains about compliance with the relevant regulatory standards and requirements for the AC Adaptors (AD-S42120B-N, AD-S42120BE-CN).

Table 4.32

Category	Standard/Requirement	Remark
EMC	UL60950 3 <sup>rd</sup> edition	- USA
	CAN/CSA C222 NO.60950-00 1 <sup>st</sup> edition	- Canada
	EN60950-1:2001+A11	- EU
	AS/NZS60950-1:2000	- Australia, New Zealand
	IEC60950-1:2001	- CB certificate
	K60950-1	- Korea
	CNS14336 (94)	- Taiwan
	GB4943-2001	- China
Safety	CFR47 FCC Part 15 Subpart B	- USA, Canada
	EN55022:2006	- EU
	EN55024:1998+A1:2001+A2:2003	- EU
	EN61000-3-2:2000+A2:2005	- EU
	EN61000-3-3:1995+A1:2001+A2:2005	- EU
	GB9254-1998	- China
	GB17625.1-2003	- China
	CNS13438 (95)	- Taiwan
	AZ/NZS CISPR22	- Australia, New Zealand

## 4.6 Performance Reference

This section explains performance references with the laser scanner or with linear imager (model dependent) which should be utilized by the user prior to employment of the IT-300 series terminals for the capability of scanning bar codes.

### 4.6.1 Scanning by Laser Scanner

#### List of Scanning Performance

Detailed performances in the table below are measured values derived from actual scanning bar codes carried out under the basic condition (see the next page). Thus, they are not guaranteed values, but values which should be referenced as guidance.

Table 4.33

	Barcode Type		Readable Range	Remarks
Readable Distance				
Between IT-300 and the barcode	Code39	0.127mm	50 to 90mm	
		0.15mm	40 to 110mm	
		0.25mm	40 to 200mm	
		0.5mm	40 to 300mm	
		1.0mm	60 to 400mm	
Readable Angle				
Pitch angle	Code39	0.25mm	±35degree	
Skew angle	Code39	0.25mm	±50degree	
Dead Zone	Code39	0.25mm	±8degree	Skew, Pitch direction
Tilt angle	JAN 13digits	0.26mm	±20degree	
Curvature				
	JAN 8digits	0.26mm	R≥15mm	
	JAN 13digits	0.26mm	R≥20mm	
PCS				
			0.45 or over	
Lighting				
Solar			50,000Lux or less	
Scanning Angle				
			44 degree	
Scanning Width				
			52mm	At distance of 50mm
			310mm	At distance of 400mm



## Basic Condition

All detailed values in Table 4.33 are derived from actual scanning bar codes carried out under the condition below.

Test chart	: a chart produced by Opticon
PCS	: 0.9 or over
Read distance	: 100 mm away from the IT-300
Pitch angle	: 0 degree
Skew angle	: 15 degree
Tilt angle	: 0 degree
Surrounding temperature	: 25°C
Lighting	: 500 to 900 Lux
Background color of the bar code	: Black

## Reading Distance and Width by Resolution

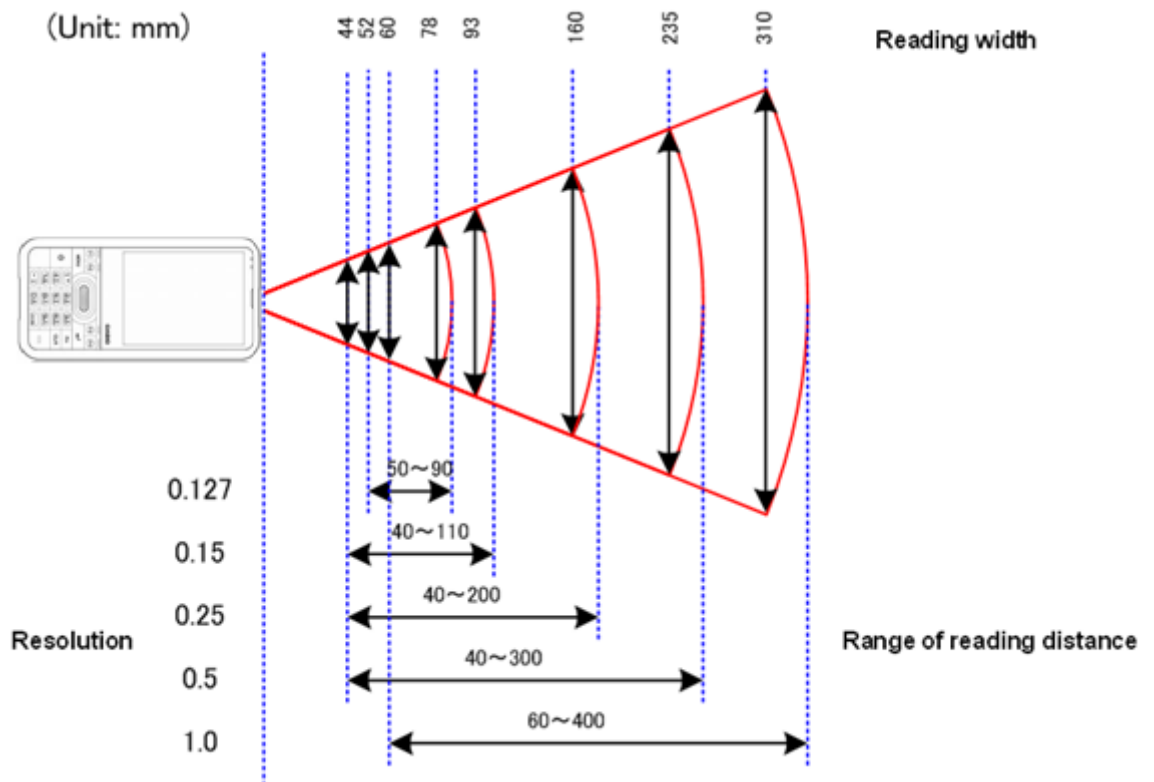


Figure 4-1

## 4.6.2 Scanning by Linear Imager

### List of Scanning Performance

Detailed performances in the table below are measured values derived from actual scanning bar codes carried out under the basic condition (see the next page). Thus, they are not guaranteed values, but values which should be referenced as guidance.

Table 4.34

	Barcode Type		Readable Range	Remarks
Readable Distance				
Between IT-300 and the barcode	Code39	0.127mm	110 to 160mm	
		0.25mm	70 to 200mm	
		0.5mm	60 to 240mm	
		1.0mm	80 to 300mm	
Readable Angle				
Pitch angle	EAN-13	0.33mm	±60degree	At distance of 115mm
Skew angle	EAN-13	0.33mm	±70degree	At distance of 200mm
Tilt angle	EAN-13	0.33mm	±20degree	At distance of 130mm
Curvature				
	EAN-8	0.26mm	R≥15mm	At distance of 135mm
	EAN-13	0.26mm	R≥20mm	At distance of 135mm
PCS				
			0.25 or over	
Lighting				
Solar			50,000Lux or less	
Scanning Angle				
			38 degree	
Scanning Width				
			46mm	At distance of 60mm
			200mm	At distance of 300mm

## Basic Condition

All detailed values in Table 4.34 are derived from actual scanning bar codes carried out under the condition below.

Test chart	: a chart produced by intermec
PCS	: 0.9 or over
Pitch angle	: 0 degree
Skew angle	: 18 degree
Tilt angle	: 0 degree
Surrounding temperature	: 25°C
Lighting	: 200 Lux
Background color of the bar code	: White

## Reading Distance and Width by Resolution

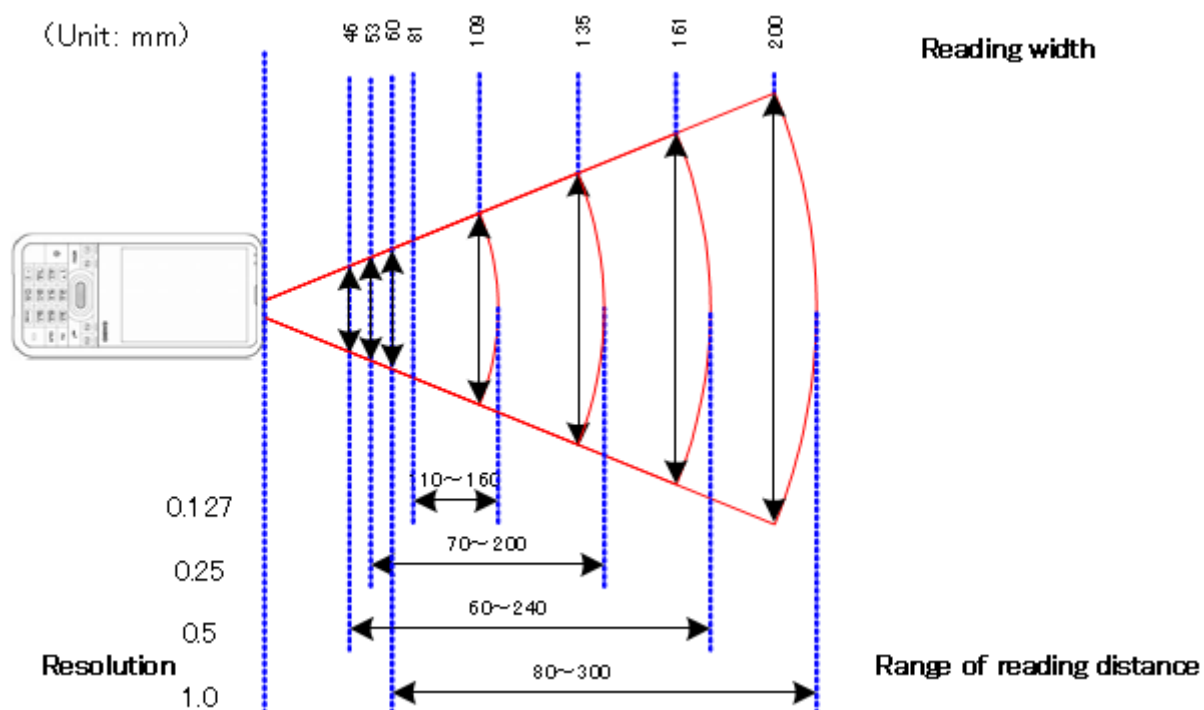


Figure 4-2