

DT-X400 Series

Android 8.1 Hardware Manual

This document describes hardware specifications of the DT-X400.



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1. Overview

1.1 Model composition

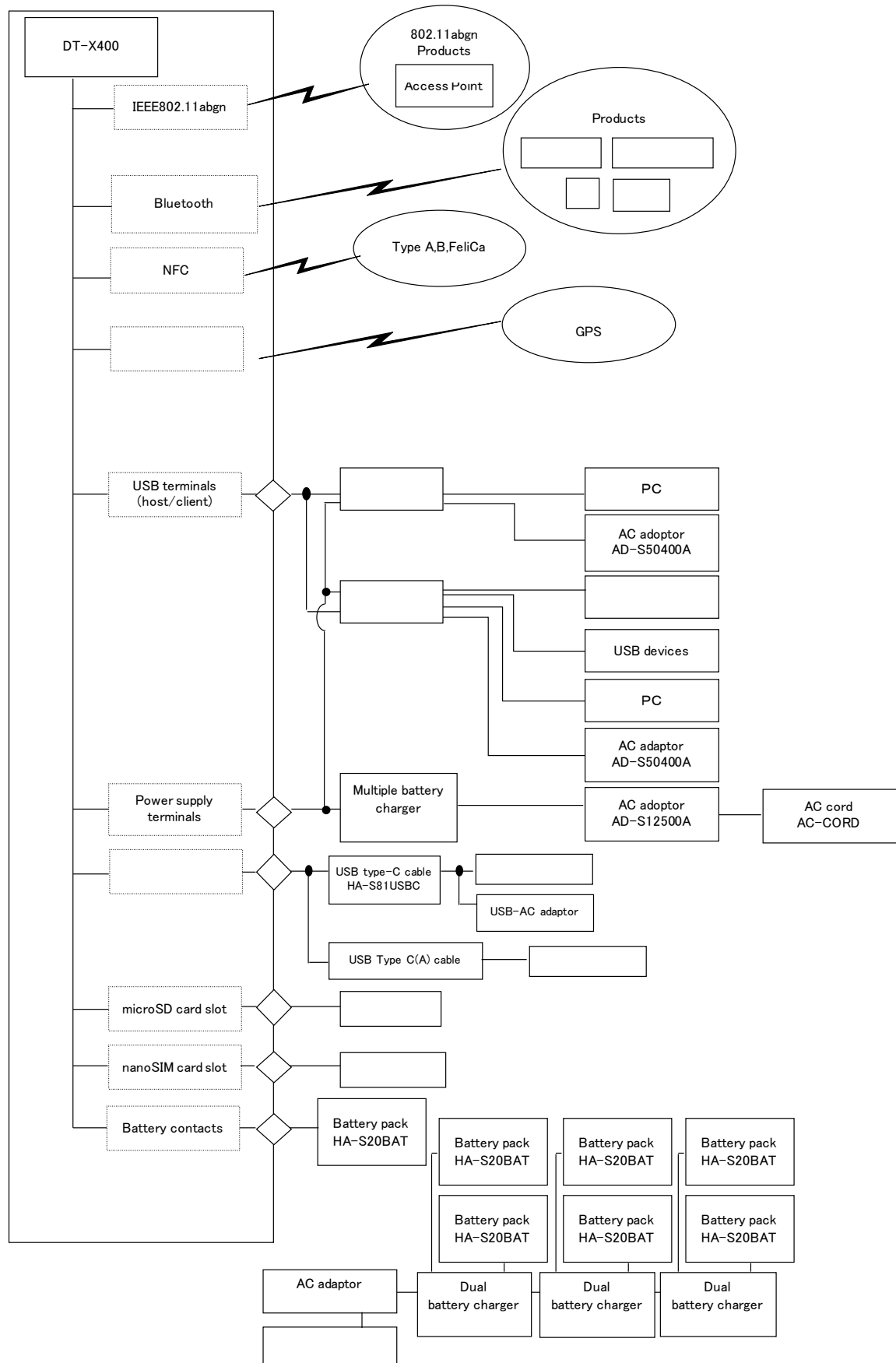
1.1.1 List of models

Model	Barcode Scanner	Scanner Angle	Camera	WLAN Bluetooth	WAN GPS	NFC	Remark
DT-X400-10	1D	25	-	Yes	-	-	
DT-X400-20	2D	25	-	Yes	-	-	
DT-X400-C21	2D	25	Yes	Yes	-	Yes	
DT-X400-WC21	2D	25	Yes	Yes	Yes	Yes	
DT-X400-C31	2D	60	Yes	Yes	-	Yes	
DT-X400-WC31	2D	60	Yes	Yes	Yes	Yes	
DT-X400-10-CN	1D	25	-	Yes	-	-	
DT-X400-20-CN	2D	25	-	Yes	-	-	

1.1.2 List of options

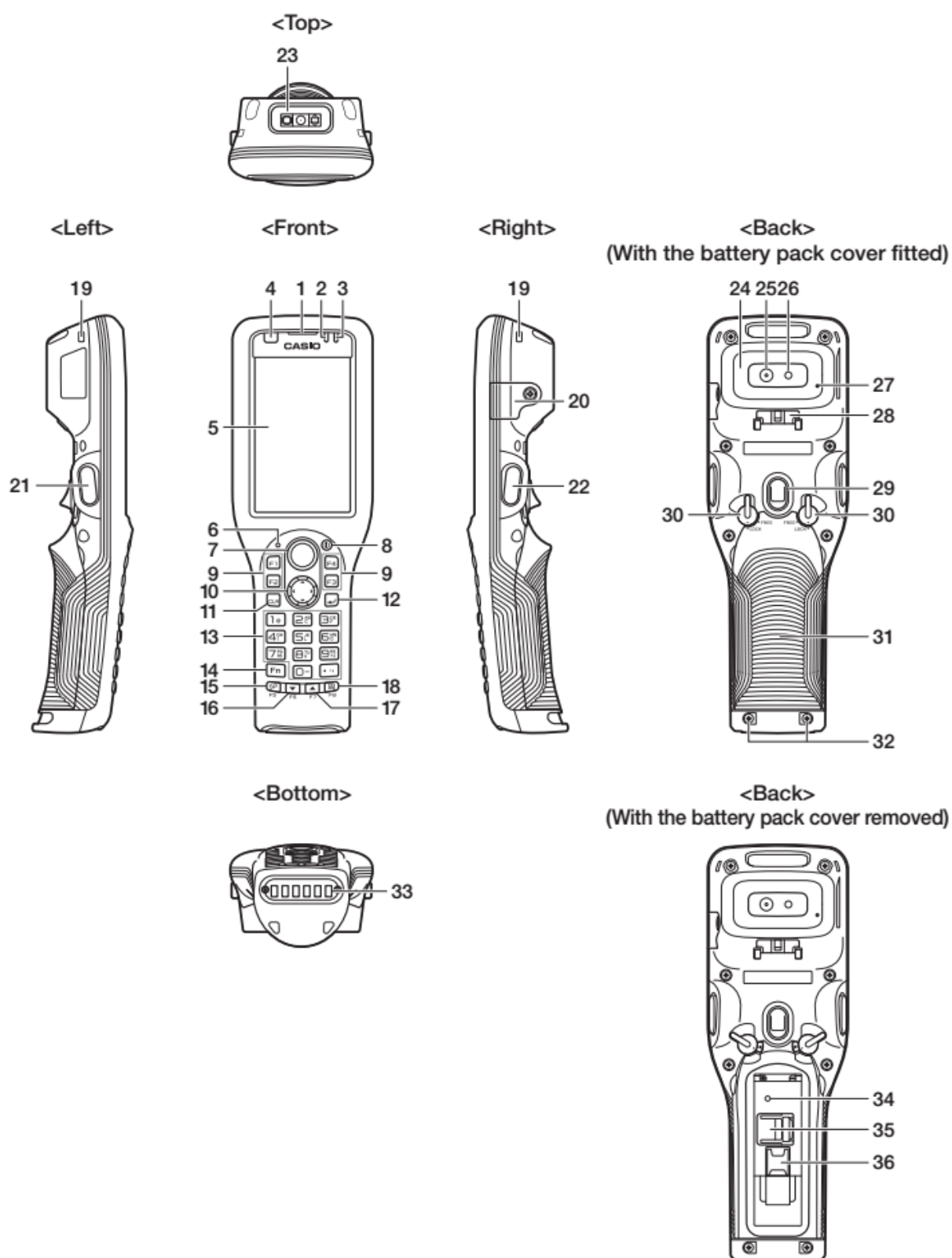
Product name	Model number
USB Cradle	HA-S60IO
Ethernet Cradle	HA-S62IO
Multiple Battery Charger	HA-S36DCHG
Dual Battery Charger	HA-S32DCHG
Battery Pack	HA-S20BAT
Screen Protect Sheet	HA-S90PS10
Hand Belt	HA-S95HB
AC Adaptor (5V4A)	AD-S50400A
AC Adaptor (12V5A)	AD-S12500A
USB Type-C Cable	HA-S81USBC

1.2 Interfaces



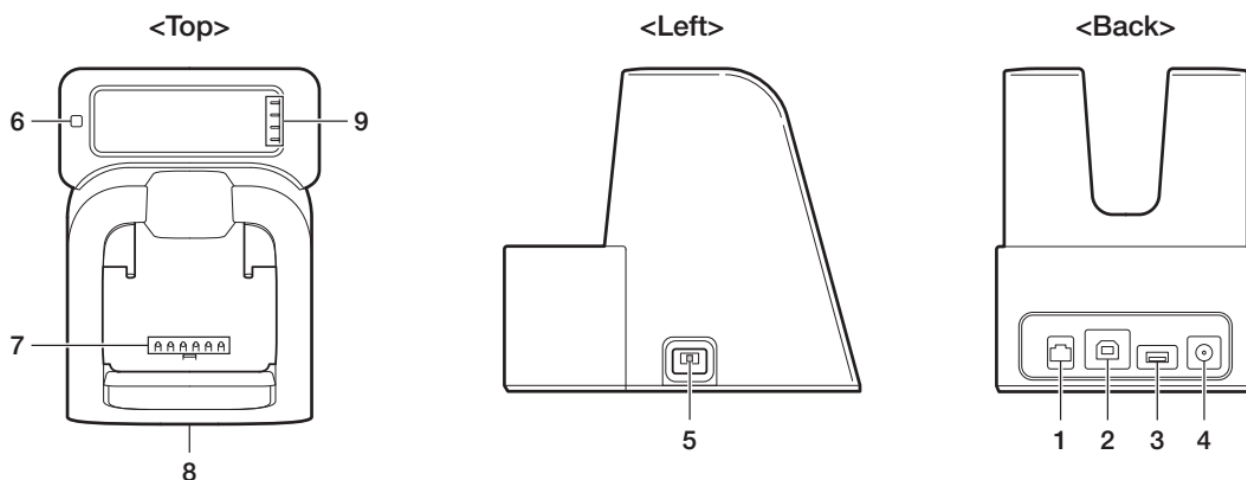
1.3 Appearance

1.3.1 DT-X400



No.	Name	Description
1	Speaker	Output sound
2	Charging Status LED	Show charging status
3	Notification LED	Show notifications
4	Illuminance/Proximity Sensor	Measure brightness and proximity of object
5	Screen (Touch Panel)	Display words and operation instructions Input data in IT-G400 by finger or Stylus (Pen)
6	Microphone	Microphone
7	Center Trigger Key	Scan barcode
8	Power Key	Power down/power on DT-X400
9	Function Key	Able to set an optional function Default settings: F5[input space], F6[Volume down], F7[Volume up], F8[character input mode selection]
10	Cursor Key	Move cursur to up, down, left and right
11	CLR Key	Input backspace
12	Enter Key	Input Enter
13	Numeric Keys	Input number and period
14	Fn Key	Set Fn mode
15	SP Key	Input space
16	Volume Down Key	Volume down
17	Volume Up Key	Volume Up
18	Mode Key	Switch character entry mode
19	Strap Holes	Attach strap
20	USB Type-C Port	Used for data communication and power supply by USB type-C cable
21	L Trigger Key	Scan barcode
22	R Trigger Key	Scan barcode
23	Barcode Reader	Laser or LED light of 2D imager radiates to read barcode
24	NFC Reader	Reading NFC card
25	Camera	Take picture and movie
26	LED Light	Torch around and camera flach
27	Microphone	Microphone
28	Hand Belt Mount	Attach Hnadbelt
29	Rear Trigger Key	Scan barcode
30	Battery Cover Lock Switch	Open battery cover by sliding
31	Battery Cover	Cover battery pack
32	Strap Holes (Hand Belt Mount)	Attach strap and Hnadbeltfook
33	Power Supply/Data Communication Terminal	Used for data communication and power supply by Cradle
34	Reset Switch	Cold reset
35	microSD Card Slot	Insert microSD card card after remving batery pack
36	nanoSIM Card Slot	Insert nano SIM card after remving batery pack

1.3.2 USB Cradle / Ethernet Cradle

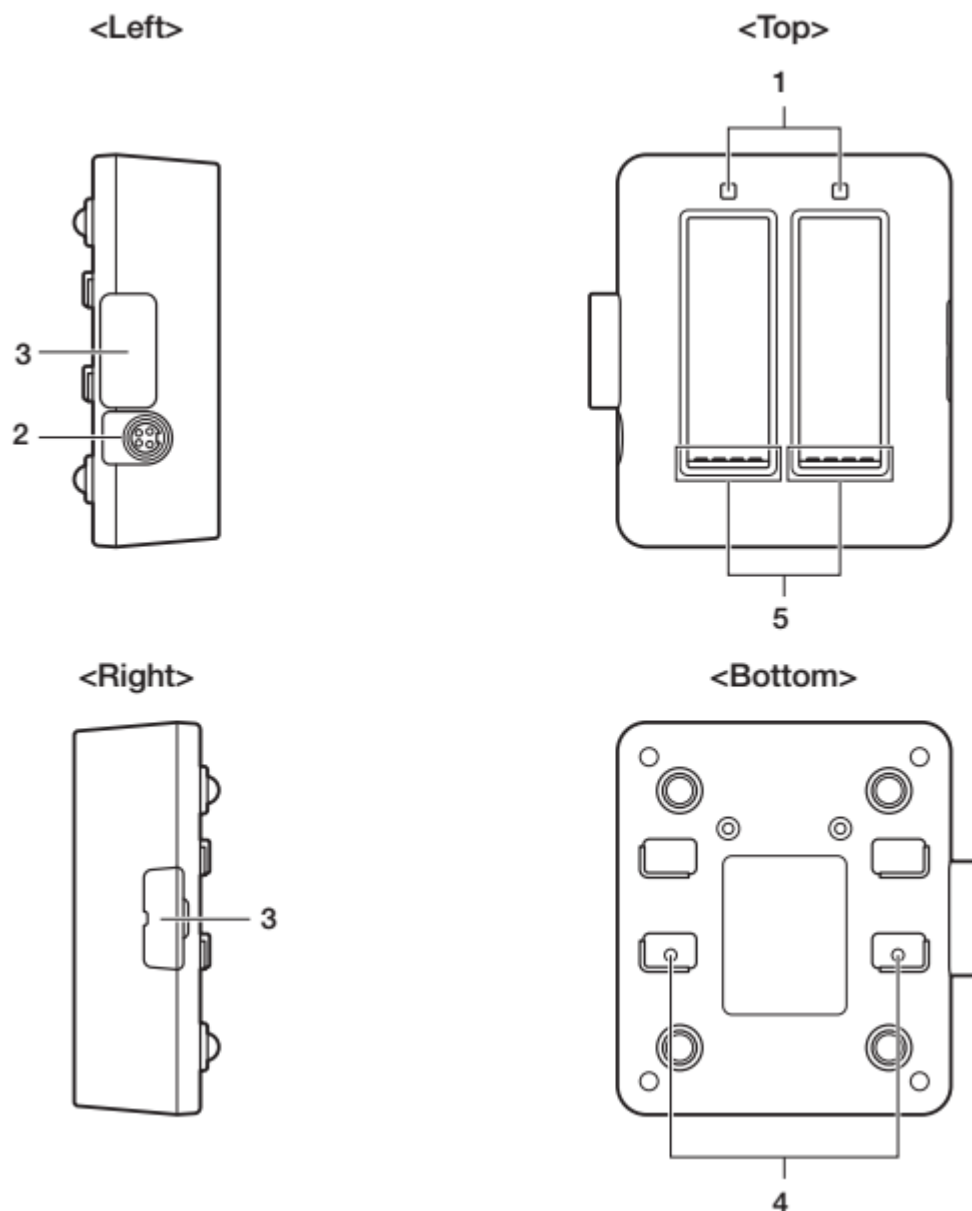


No.	Name	Description
1	AC Adapter Jack	Used to connect an AC adapter as a power supply.
2	LAN Port	Used to connect and transfer data to a computer or hub via a LAN cable for data transfer.
3	USB Host Port	Used to connect to USB device
4	USB Client Port	Used to connect to a computer.
5	Selector Switch	Used to switch between a USB connection and a LAN connection. LAN: LAN A: USB host B: USB client
6	Charging Status LED (Battery Pack)	Shows the charging status. Red: Charging Green: Charging complete Flashing alternately red/green: Battery pack fault or outside charging temperature range
7	Power Supply / Data Communication Terminal	Used to supply power to the DT-X400 or for data communication.
8	Power Supply LED	Indicates the power status and the mounting status of the DT-X400. Off: DT-X400 is not installed. Green: Power on, DT-X400 mounted correctly.
9	Battery Pack Contacts	Used to charge the battery pack.

Note:

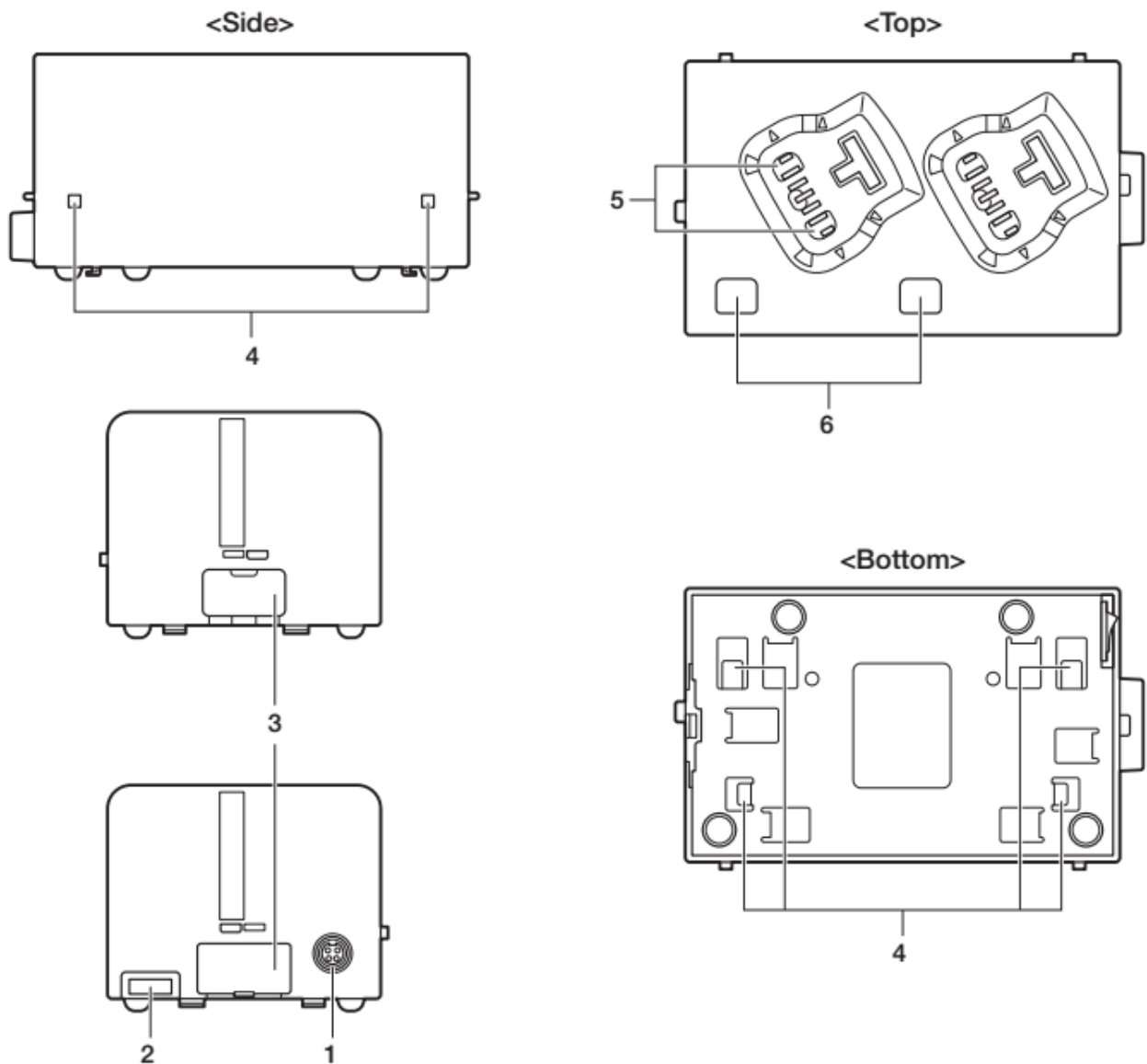
USB cradle does not have LAN Port, USB Host Port and Selector Switch.

1.3.3 Dual Battery Charger



No.	Name	Description
1	Charging Status LED	Shows the charging status. Red: Charging Green: Charging complete Flashing alternately red/green: Battery pack fault or outside charging temperature range
2	AC Adapter Jack	Connect the AC adaptor (sold separately) here.
3	Dual Battery Charger Connection Port	Used to connect Dual Battery Chargers to each other.
4	Connection Bracket Attachment Holes	The connection bracket attaches here when you connect Dual Battery Chargers to each other.
5	Battery Pack Contacts	Used to charge the battery pack.

1.3.4 Multiple Battery Charger



No.	Name	Description
1	AC Adaptor Jack	Connect the AC adaptor (sold separately) here.
2	Power Switch	Turns the power on and off.
3	Multiple Charger Connection Port	Used to connect Multiple Battery Chargers to each other.
4	Connection Bracket Attachment Holes	The connection bracket attaches here when you connect Multiple Battery Chargers to each other.
5	Power Contacts	Power is supplied to the DT-X400 via these contacts
6	Power LED	Indicates DT-X400 mounted Red: not mounted, Green: mounted

1.4 Hardware specification

1.4.1 DT-X400

Item		Specification	Memo
CPU		ARM Cortex-A7 Quad Core 1.3GHz	
OS		Android 8.1	
Memory	RAM	2GB	
	ROM	16GB	
Display	Display device	TFT	
	Display size	3.2 inches	
	Number of dots	480 (horizontal) x 800 (vertical) WVGA	
	Dot pitch	0.087 (horizontal) x 0.087 (vertical)mm	
	Gradation	1677M Colors	
	Backlight	LED Backlight	
	View angle	80 degree (up and down, left and right)	
Touch Panel		Resistive touch panel	
Indicator	LED	Indicator 1: Status of Charging Battery Pack, 2 Colors (Red and Green) Indicator 2: Notification, 2 Colors (Red and Blue)	
Vibrator		Notification of scanner	
Key	Numeric Keys	Input number, alphabet and period	Key backlight
	Function Key	Able to set an optional function Default settings: F5[input space], F6[Volume down], F7[Volume up], F8[character input mode selection]	
	Cursor Key	Move cursur to up, down, left and right	
	Power key	Power down/power on DT-X400	
	Reset Switch	Cold reset	
	Trigger key	Center/Light/Right/Rear	
Camera	Number of pixels	8M pixels	
	F number (Aperture)	2.4	
	Image capture range	10cm to infinity	
	Auto Focus	It has Auto Focus function.	
	Flash	LED Flash	
Speaker		Scanning notice, Warning sound	
Microphone	Front	Voice sound input	
	Rear	Noise cancel	
Sensors		Proximity sensor / Light Ambient sensor / Acceleration sensor	
RTC	Maximum monthly rate	2min10sec (Use battery pack) 8min38sec (Use sub batery only)	

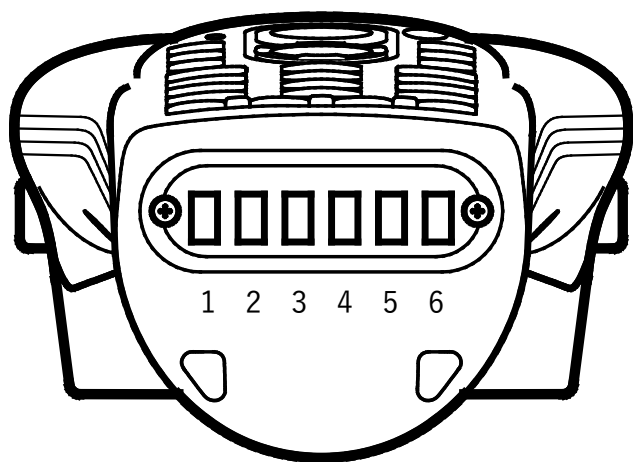
Item		Specification	Memo
1D Scanner	Method	Red Laser Diode	
	Scan Angle	25 degree	
	Wavelength	645 to 664nm	
	Output power	< 1.6 mW	
	Scanning speed	100±20 scan/sec	
	Minimum Resolution	0.127mm	
	PCS	>= 0.45	
	Depth of Field	43 to 890mm	
	Field of View	Max 670mm (Depth of Field 890mm)	
	Ambient Light	Sunlight, <= 50,000Lux	
	Readable 1D symbologies	UPC-A/UPC-E/EAN8(JAN8)/ EAN13(JAN13)/Codabar(NW-7)/ Code39/Interleaved 2 of 5(ITF)/ MSI/Code93/Code128/ GS1-128(EAN128)/ GS1 DataBar Omnidirectional (RSS-14)/ GS1 DataBar Truncated (RSS-14)/ GS1 DataBar Limited (RSS Limited)/ GS1 DataBar Expanded (RSS Expanded)/ GS1 DataBar Stacked (RSS-14 Stacked)/ GS1 DataBar Expanded Stacked (RSS Expanded Stacked)	

Item		Specification	Memo
2D imager	Method	CMOS imager, 1280 x 800, monochrome	
	Aimer	laser (λ = 650nm), < 1 mW	
	Scan Angle	25 degree / 60 degree	
	Minimum Resolution	1D: 0.127mm 2D Stacked: 0.169mm 2D Matrix: 0.191mm	
	PCS	>= 0.45	
	Depth of Field	1D : 33 to 420 mm (Resolution 0.25mm) 1D : 37 to 630 mm (Resolution 0.50mm) 2D Stacked : 98 to 220mm(Resolution 0.170mm) 2D Matrix : 32 to 360mm(Resolution 0.38mm)	
	Field of View	Max 32mm (Depth of Field 33mm) Max 477mm (Depth of Field 630mm)	
	Focal Distance	9.0 inches	
	Ambient Light	Sunlight, <= 50,000Lux	
	Readable Symbolologies (1D)	UPC-A/UPC-E/EAN8(JAN8)/EAN13(JAN13)/Codabar(NW-7)/Code39/Interleaved2of5(ITF)/MSI/ISBT/Code93/Code128/GS1-128(EAN128)/Code32/GS1 DataBar Omnidirectional (RSS-14)/GS1 DataBar Truncated (RSS-14)/GS1 DataBar Limited (RSS Limited)/GS1 DataBar Expanded (RSS Expanded)/	
	Readable Symbolologies (2D Stacked)	PDF417/Micro PDF/Composite/Codablock F/GS1 DataBar Stacked Omnidirectional (RSS-14 Stacked)/GS1 DataBar Expanded Stacked (RSS Expanded Stacked)/GS1 DataBar Stacked (RSS-14 Stacked)/GS1 DataBar Truncated	
	Readable Symbolologies (2D Matrix)	Aztec/DataMatrix/Maxicode/QR Code/Micro QR/HanXin Code	

Item		Specification	Memo
WLAN	Standard	IEEE 802.11a/b/g/n	
	Radio type	Spread Spectrum	
	Frequency Range	2412 MHz to 2472 MHz (1 to 13ch) 5180 MHz to 5320 MHz (36 to 64ch) 5500 MHz to 5700 MHz (100 to 140ch) 5745 MHz to 5825 MHz (149 to 165ch)	802.11d: Allowed frequency range can be used according to countries or regions.
	Baud rate	802.11a/g : 54Mbps (maximum) 802.11b : 11Mbps (maximum) 802.11n HT20 (2.4GHz) : 72Mbps (maximum) 802.11n HT40 (5GHz) : 150Mbps (maximum)	
	Communication Distance	802.11b/g/n: Indoor 50m, Outdoor 150 m (n: 2.4GHz) 802.11a/n: Indoor 30m, Outdoor 150 m (n: 5GHz)	It can change due to surrounding environment.
Bluetooth Class2	Standard	Bluetooth® Specification Ver.5.0	
	Radio type	Spread Spectrum FH-SS: Frequency Hopping Spread Spectrum	
	Frequency Range	2402 MHz to 2480 MHz	
	Communication Distance	about 5m	It can change due to surrounding environment.
	Supported profile	Classic : A2DP, AVRCP, GAVDP, HFP, HID, HSP, OPP, PAN, PBAP, SPP BLE : HOGP, SCPP	
GSM	Standard	3GPP	
	Communication Protocol	Audio, Data Packet GSM/GPRS/EDGE	
	Frequency range Band	EGSM900 (880-915 MHz/925-960 MHz) DCS1800 (1710-1785 MHz/1805-1880 MHz)	
W-CDMA	Standard	3GPP W-CDMA Rel 99, HSDPA, HSUPA	
	Communication	Audio, Data Packet	
	Baud rate	Downlink: 42Mbps (maximum) Uplink: 11Mbps (maximum)	
	Protocol	UMTS/HSDPA/HSUPA	
	Frequency range Band	BAND 1 (1920-1980MHz/2110-2170MHz)	
		BAND 6 (830 - 840MHz/875 - 885MHz)	
		BAND 8 (880-915MHz/925-960MHz)	

Item			Specification	Memo
LTE	Standard		3GPP LTE FDD&TDD	
	Communication		Data Packet	
	Baud rate		Downlink: 150Mbps (maximum) Uplink: 50Mbps (maximum)	
	Frequency range Band		FDD 1 (1920-1980MHz/2110-2170MHz)	
			FDD 3 (1710-1785MHz/1805-1880MHz)	
			FDD 7 (2500-2570MHz/2620-2690MHz)	
			FDD 8 (880-915MHz/925-960MHz)	
			FDD 19 (830-845MHz/875-890MHz)	
			FDD 20 (832-862MHz/791-821MHz)	
			FDD 26 (814-849MHz/859-894MHz)	
			TDD 38 (2570-2620MHz/2570-2620MHz)	
			TDD 41 (2496-2690MHz/2496-2690MHz)	
GPS	Satellite Navigation System		GPS, GLONASS, BeiDou	
	WAN and GNSS modes		-Simultaneous-GNSS (WAN+GNSS at the same time) -Standalone-GNSS (without WAN) -A-GPS	
	Protocol		NMEA	
	Sensitivity		Acquisition sensitivity: -145dBm	
			Tracking sensitivity: -159dBm	
SIM	Standard		ETSI TS 102 221 V11.0.0 nanoSIM card (12.3mm x 8.8mm x 0.67mm)	
	Specification		3V, 1.8V SIM card supported	
micro SD			Compatible with SDHC	Operation has been tested with up to 128GB.
USB Type-C	Connector type		UPC Type-C	
	Input current		Up to 2A	
	HOST	Baud rate	USB 2.0 high speed (480Mb/s)	
		Power to external device	voltage: 5.0V±0.25V current : up to 500mA	
	Client	Baud rate	USB 2.0 high speed (480Mb/s)	
Cradle terminals	Terminals layout		Refer to note 1.	
	Terminals configuration		Refer to note 2.	

Note 1
Terminal layout



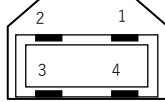
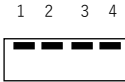
Note 2
Terminals configuration

No.	Name	Description
1	V CRADLE	Cradle Power, 5V 2A, Cradle Detect
2	D+	USB D+
3	D-	USB D-
4	VUSB	USB POWER 5V
5	USB ID	USB Host(H) / Client(L) Detect
6	GND	GND

Item		Specification		Memo	
NFC	Carrier Creqency	13.56MHz			
	Depth of Field	ISO14443 Type A/B, Felica: 0mm (Contact)		It can change by the design of Card or Tag.	
		ISO15693: 0 mm (Contact) to 50 mm(Maximum)			
	Protocol	Card type		Card (Operation Checked)	
		ISO14443 Type A	Yes	MIFARE 1K/MIFARE 4K MIFARE Ultralight MIFARE Ultralight C MIFARE EV1	Since some cards and tags which does not meet ISO standard exist, we do not guarantee operation with all cards. Pre-test is needed before operation start.
		ISO14443 Type B	Yes		
		FeliCa (JIS X 6319)	Yes	FeliCa Standard	
		ISO15693	Yes	I CODE SLI I CODE SLI-S I CODESLI-L	
		ISO18092 P2P	-		
ISO18092 Card Mode		-			

Item		Specification	Memo
Power	Battery pack	Lithium-ion battery	Removable
	Sub battery	Lithium-ion battery	Built-in battery
	Operating time	<u>Standard mode 1(JEITA G mode)</u> 30 hours Condition: According to JEITA G mode LCD backlight brightness minimum, WLAN ON (with stable RF connection), Buzzer minimum, Vibrator OFF, RF OFF (except for WLAN), Power saving setting after laser scanning(1sec)	At room temperature New battery pack
		<u>Standard mode 2(JEITA B mode)</u> 30 hours Condition: According to JEITA B mode LCD backlight brightness minimum, Buzzer minimum, Vibrator OFF, Power saving setting after laser scanning(1sec)	At room temperature New battery pack
	Backup time	RAM: 4 min RTC: 72 hours	At room temperature Sub battery fully charged If the battery pack is replaced without power off correctly, there is a possibility that RTC resets. In order to back up RAM, the battery pack must be replaced after IT-G400 gets HOTSWAP mode correctly. Tap HOTSWAP menu and wait until the Red LED off, then replace battery pack

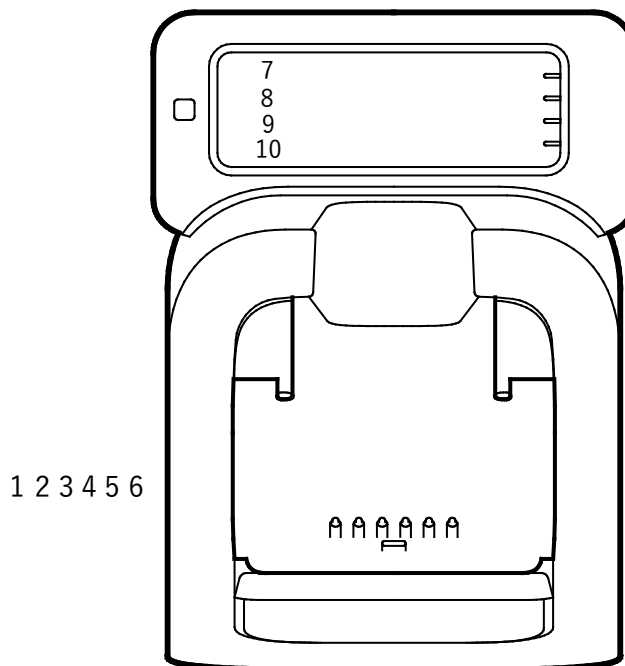
1.4.2 USB Cradle/ Ethernet Cradle

Item		Specification	Memo
Interface connected with DT-X400	Connector	Dedicated Contacts	Data communications and power supply to DT-X400. Refer to note 1 and note 2 for pin layout
	Speed	High speed (480Mbps)	
USB client port	Connector	USB Type B receptable 	1 VBus 2 USB D- 3 USB D+ 4 GND
	Speed	High speed (480Mbps)	
USB host port	Connector	USB Type A receptable 	1 VBus 2 USB D- 3 USB D+ 4 GND
	Speed	High speed (480Mbps)	
	Output power	voltage: 5.0V±0.25V current : up to 500mA	
LAN Port	Connector	RJ-45	
	Speed	100BASE-TX(100Mbps) 10BASE-T(10Mbps)	
Battery Charger	Connector	Battery Contacts	Charge battery pack Refer to note 3 for pin layout
	Battery pack charge time	4 hours	
AC adaptor	Input Voltage	DC5V±5%	
	AC adaptor	5V/4A	

Note:

USB cradle does not have LAN Port, USB Host Port and Selector Switch.

Note 1
Pin layout



Note 2
Pin configuration

No.	Name	Description
1	V CRADLE	Cradle Power, 5V 2A, Cradle Detect
2	D+	USB D+
3	D-	USB D-
4	VUSB	USB POWER 5V
5	USB ID	USB Host(H) / Client(L) Detect
6	GND	GND

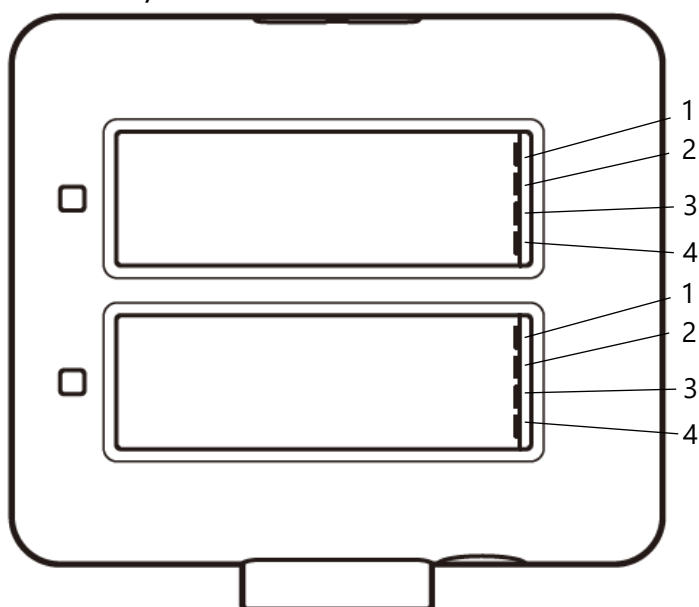
Note 3
Pin configuration of battery charger

No.	Name	Description
7	VBAT	Positive node
8	HDQ	HDQ
9	Thermistor	NTC
10	GND	Negative mode

1.4.3 Dual Battery Charger

Item		Specification	Memo
Interface connected with battery pack	Connector	Dedicated Contacts	Charge battery pack Refer to note 1 and note 2 for pin layout
AC adaptor	Input Voltage	DC12V±5%	
	AC adaptor	12V/5A	
Battery Charger	Battery pack charge time	4 hours	Able to charge 1 - 2 battery packs simultaneously with one dual battery charger.
Connection with another dual battery charger		Up to 3 dual battery chargers can be connected.	

Note 1
Pin layout



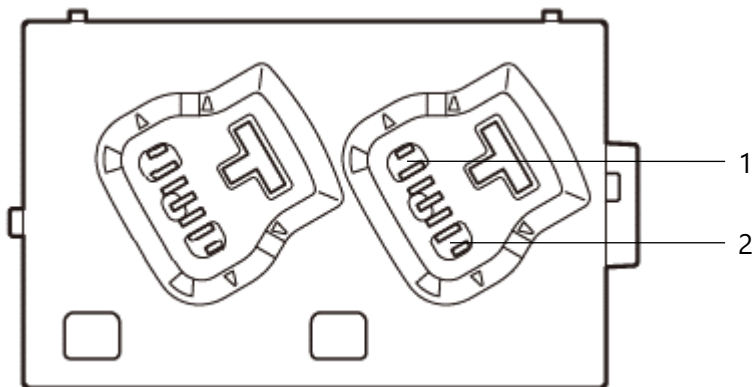
Note 2
Pin configuration

No.	Name	Description
1	VBAT	Positive node
2	HDQ	
3	Thermistor	NTC
4	GND	Negative node

1.4.4 Multiple Battery Charger

Item		Specification	Memo
Interface connected with DT-X400	Connector	Dedecated Contacts	Supply power to IT-G400 Refer to note 1 and note 2 for pin layout
AC adaptor	Input Voltage	DC12V±5%	
	AC adaptor	12V/5A	
Charger	Battery pack charge time	4 hours	Able to charge 1 - 2 DT-X400 simultaneously with one multiple battery charger.
Connection with another multiple battery charger		Up to 3 multiple battery chargers can be connected.	

Note 1
Pin layout



Note 2
Pin configuration

No.	Name	Description
1	V CRADLE	Cradle Power, 5V 2A, Cradle Detect
2	GND	GND

1.5 Environmental Sprcification

1.5.1 DT-X400

Item		Specification	Memo
Temperature	Operation	-20 °C to 50 °C	Camera Flash is unavailable in -20 °C to -11 °C. Battery pack charge operation: 0 to 40 °C The charge will stop when the temperature of ≤ 0 °C and ≥ 40 °C in order to protect battery cell. When the battery pack is fully charged, the charge stops and the charging status LED turns green. But the recharge does not start until the battery voltage gets lower than certain value. Therefore, remaining battery capacity display might not be 100% when the charging status LED is green.
	Non-operation	-20 °C to 60 °C	
Humidity	Operation	30% to 80%RH	No condensation
	Non-operation	5% to 90%RH	No condensation
Dust and waterproof		IP67 Standard	

1.5.2 USB Cradle/ Ethernet Cradle

Item		Specification	Memo
Temperature	Operation	0 °C to 40 °C	
	Non-operation	-10 °C to 50 °C	
	Charge operation	0 °C to 40 °C	The charge will stop when the temperature of ≤ 0 °C and ≥ 40 °C in order to protect battery cell. When the battery pack is fully charged, the charge stops and the charging status LED turns green. But the recharge does not start until the battery voltage gets lower than certain value. Therefore, remaining battery capacity display might not be 100% when the charging status LED is green.
Humidity	Operation	30% to 80%RH	No condensation
	Non-operation	5% to 90%RH	No condensation
Dust and waterproof		Not applicable	

1.5.3 Dual Battery Charger

Item		Specification	Memo
Temperature	Charge operation	0 °C to 40 °C	The charge will stop when the temperature of $\leq 0\text{ °C}$ and $\geq 40\text{ °C}$ in order to protect battery cell. When the main battery pack is fully charged, the charge stops and the charging status LED turns green. But the recharge does not start until the battery voltage gets lower than certain value. Therefore, remaining battery capacity display might not be 100% when the charging status LED is green.
	Non-operation	-10 °C to 50 °C	
Humidity	Operation	30% to 80%RH	No condensation
	Non-operation	5% to 90%RH	No condensation
Dust and waterproof		Not applicable	

1.5.4 Multiple Battery Charger

Item		Specification	Memo
Temperature	Charge operation	0 °C to 40 °C	The charge will stop when the temperature of $\leq 0\text{ °C}$ and $\geq 40\text{ °C}$ in order to protect battery cell. When the battery pack is fully charged, the charge stops and the charging status LED turns green. But the recharge does not start until the battery voltage gets lower than certain value. Therefore, remaining battery capacity display might not be 100% when the charging status LED is green.
	Non-operation	-10 °C to 50 °C	
Humidity	Operation	30% to 80%RH	No condensation
	Non-operation	5% to 90%RH	No condensation
Dust and waterproof		Not applicable	

2. Precautions

For information on general safety precautions, refer to the DT-X400 User's Guide

2.1 Handling and Operating Precautions

- Be sure not to continue to use DT-X400 with battery pack low status. Operation data might be deleted or changed. Please replace battery pack immediately when it gets main battery low warning.
- Observe environmental specification range. It might cause failure if DT-X400 is used out of environmental specification range.
- Be sure to use DT-X400 in below environment. It could cause failure.
 - Environment prone to static electricity
 - Environment of extremely high and low temperature
 - Environment of high humidity
 - Environment prone to extreme temperature change
 - Environment of dusty
- About stylus (pen), be sure to use dedicated stylus (pen) of DT-X400. If another stylus (pen) is used, it might cause failure.
- Lithium-ion Battery Pack

Each lithium-ion battery pack has its life. Life span depends on how battery pack is charged or stored. It might cause deterioration of battery pack and shorten life span if it is handled improperly. If battery pack performance does not show any recovery after charging, it is sign of ending the life. Replace with new battery pack.

Battery pack should be fully charged before first time use or after a long period since last time use. When charging battery pack, continue to charge until charge status LED turns green (fully charged).

If battery pack is often charged repeatedly, life span becomes shorter. To avoid charging repeatedly, it is recommended to start to charge when it gets battery level low.

Be sure to charge the battery pack in environmental specification range. Charging in out of environmental specification range can cause deterioration.

When used at low temperatures, battery level reduces quickly, so operation time gets shorter. Moreover, life span of battery pack gets shorter. After operation in low temperature, return battery pack to room temperature about 1 hour, then start to charge it if it needs.

Do not store battery pack with full charge state if it needs to be stored for long period. It needs to be 30 to 50% for a long period storage in moderate temperature. It can reduce deterioration.

The battery pack gradually deteriorates as time goes by. Especially, storage (or operation) of battery pack with fully charged at high temperatures tends to accelerate battery pack deterioration.
- DT-X400 uses the high sensitive communication modules inside, for the better data communication, avoid using the equipment to generate radio wave (mobile phone, etc) near DT-X400. Please keep it away (more than 30 cm in case of the mobile phone).
- When installing nano SIM card and micro SD card, check direction of card and insert card correctly. It can cause failure if card is inserted using force or reversely. Battery pack can not be installed properly if nano SIM card is not properly inserted.
- Use AC adaptor while using USB cradle.
- Battery pack might not be charged and battery level might get lower if DT-X400 is used with high load situation while charging by USB cable.

- WAN function

It is required to start carrier service to use the LTE/W-CDMA/GSM functions. Available LTE/W-CDMA/GSM functions depend on each carrier.
- GPS function

It might take a long time to fix location when DT-X400 is used for the first time or after a long period from last time use. In such case, start GPS in place with no obstacles nearby and wait for 15 minutes or longer.

GPS uses signals emitted by the satellites operated by the United States. Accuracy of fixed location might be affected by the condition of satellites.

GPS module might not be able to receive signals in building and tunnel.

If it needs to be installed in car, check and install DT-X400 at best location it can receive enough signals.
- WLAN function

It is illegal to use IEEE802.11a/n 5.2GHz/5.3GHz (W52/W53) outside of building in Japan. To ensure compliance with local regulations, be sure to follow the regulation of the country in which the access point is installed.
- LCD Display

There might be some defective dots. LCD display characteristic allows that some defective dots exist, so it is not failure.

When screen is pushed hard, pushed mark might occur on LCD display. It is not failure. Power off and power on DT-X400, then pushed mark should disappear.

When same contents display for long time, afterglow might occur after switching different contents. It is not failure. Wait for some time, then afterglow should disappear.
- Be careful about chemical like thinner, gasoline, coal oil, flux, cleaner, glue, paint, chemicals or cosmetic. These chemicals can cause discoloration and damage to resin case and cover.
- When DT-X400 is dirty, wipe it clean with a soft, dry cloth. Do not rub on screen hardily to avoid scratch on it.
- Keep power supply and data communication terminals clean. It might cause connection data transfer and charge defect by getting dirty, as well as firing by getting wet. For cleaning, use dry cotton swab after plug off AC adaptor or USB cable.
- DT-X400 has waterproof specification, but make sure to observe below items.
 - Wipe with dry towel if it gets showered and very wet.
 - Be careful to use DT-X400 in rain like other electrical products.
 - Close battery cover, USB connector cover properly. Check there is no dust or sand on covers as well as no crack and scratch on O-ring.
 - Do not push key and screen hardily in rain.
 - We will not take any responsibility for accident and failure related to water stained.
- DT-X400 might become warm after continuous use.

2.2 Storage

For long term storage, please remove the battery pack.
Avoid storing in high temperature location (ex, in the car).

2.3 Safety precautions

Make sure to observe user's Guide.

3. **Maintenance**

No parts require regular exchange and inspection.

4. Setup and Installation

Observe precautions. Perform appropriate setup and operation