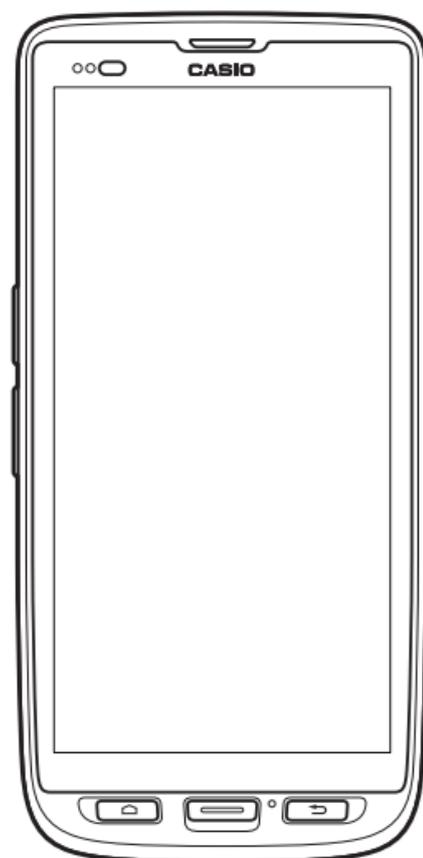


ET-L10 Series

Android 9 Hardware Manual

This document describes hardware specifications of the ET-L10.



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1. Overview

1.1 Model composition

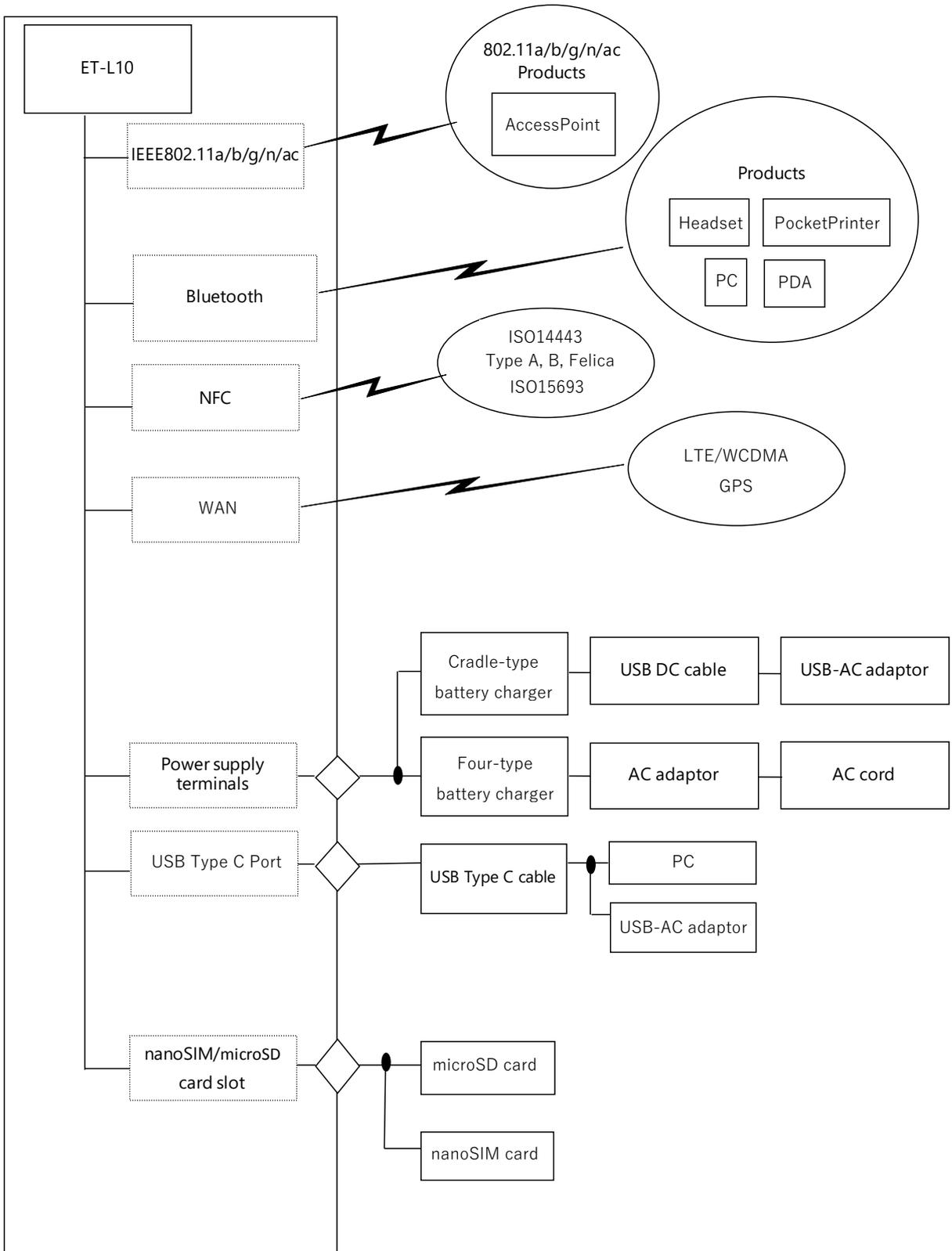
1.1.1 List of models

Model number	OS	Scanner	Camera	WLAN Bluetooth	WAN GPS	NFC
ET-L10-WC21	Android9 GMS	Yes	Yes	Yes	Yes	Yes
ET-L10-WC21-AO	Android9 AOSP	Yes	Yes	Yes	Yes	Yes

1.1.2 List of options

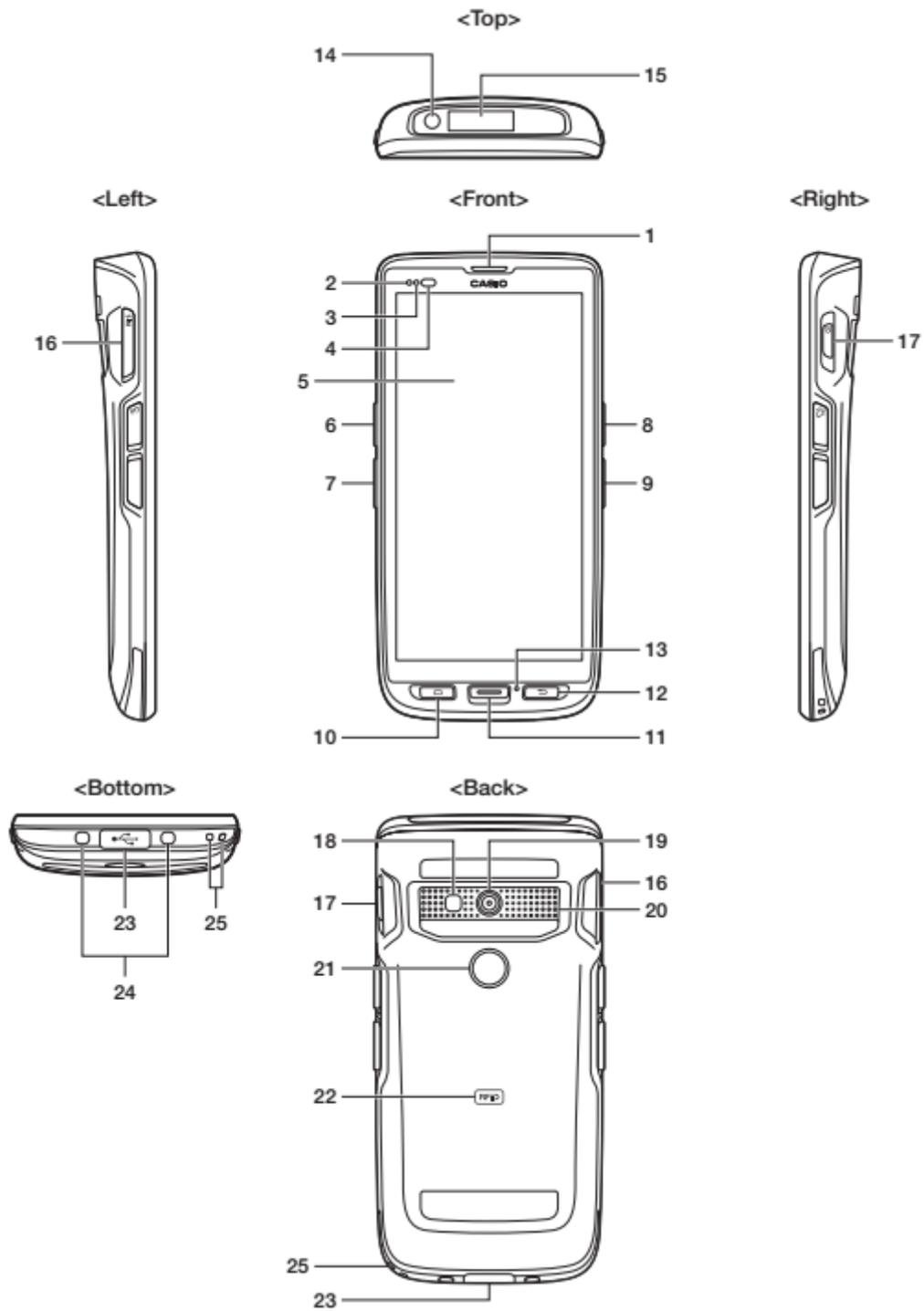
Product name	Model number
Screen Protect Sheet	HA-T90PS10
Cradle-type Battery Charger	HA-T30CHG
Cradle-type Battery Charger (China SKU)	HA-T30CHG-CN
Four-cradle battery charger	HA-T38CHG

1.2 Interfaces



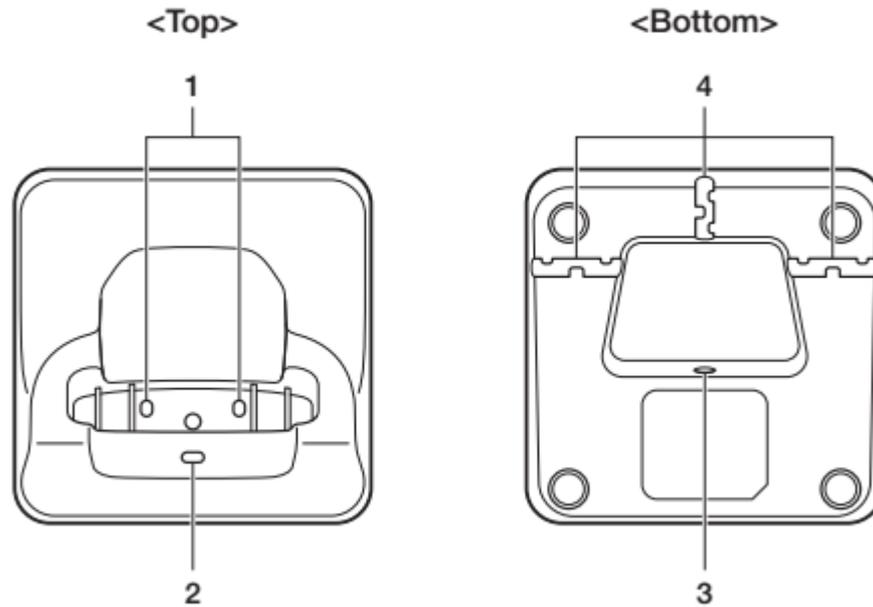
1.3 Appearance

1.3.1 ET-L10



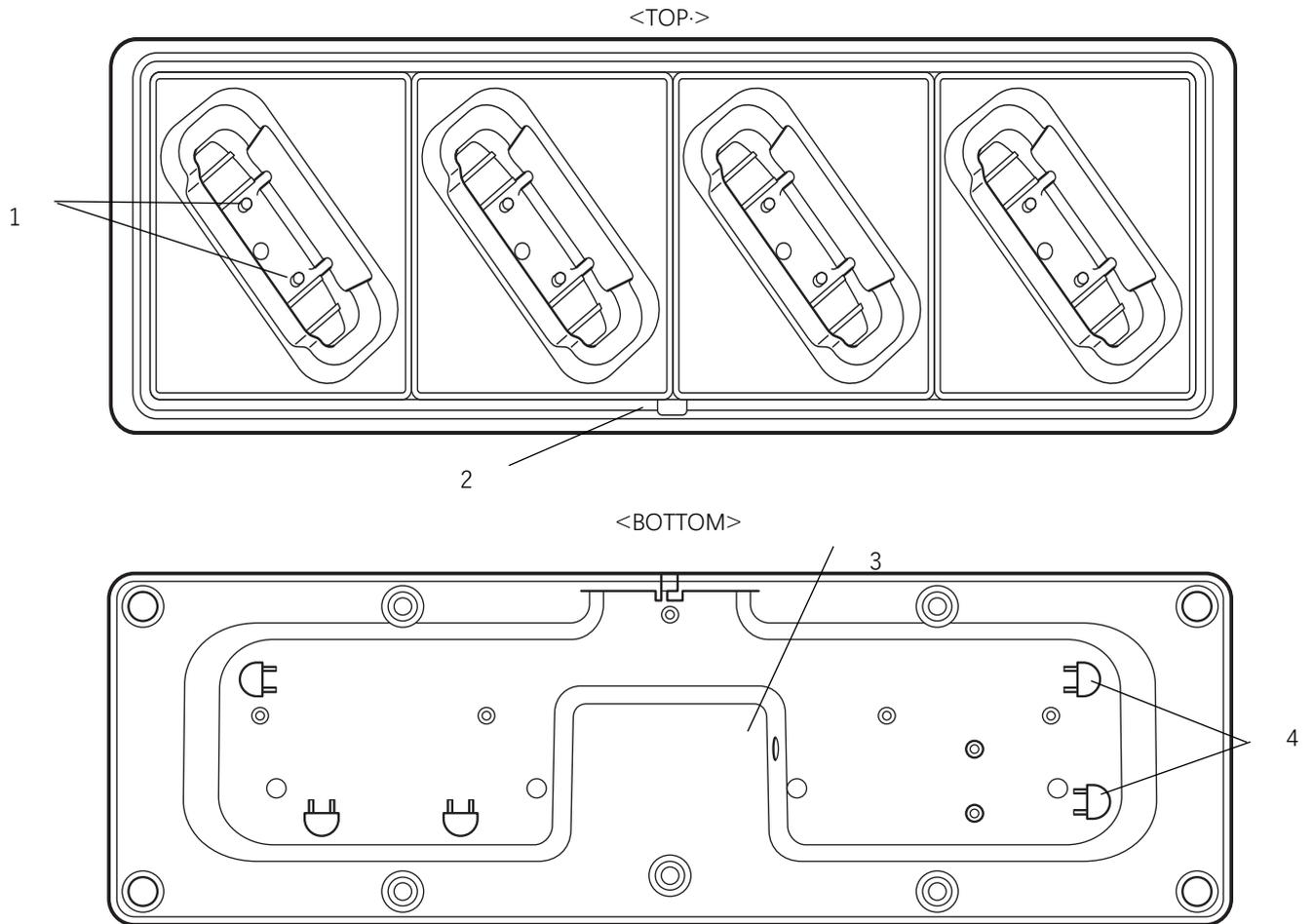
No.	Name	Description
1	Receiver	Output sound
2	Charging Status LED	Show charging status
3	Notification LED	Show notifications
4	Illuminance/Proximity Sensor	Measure brightness and proximity of object
5	Screen (Touch Panel)	Display words and operation instructions Input data in ET-L10
6	PTT Key	For the transceiver, but ET-L10 does not have transceiver function. Able to set an optional function
7	L Trigger Key	Scan barcode
8	Light Key	Turn on/off flashlight
9	R Trigger Key	Scan barcode
10	Home Key	Go home screen
11	Center Trigger Key	Scan barcode Able to set an optional function
12	Back Key	Back to previous screen and close apps
13	Microphone	Microphone
14	Flashlight	Flashlight
15	Scanner	LED light of 2D imager radiates to read barcode
16	nanoSIM/microSD Card Slot	Insert nano SIM card and microSD
17	Power Key	Power down/power on ET-L10
18	LED Light	Torch around and camera flash
19	Camera	Take picture and movie
20	Speaker	Output sound
21	Fingerprint Sensor	Used for fingerprint authentication
22	NFC Reader	Reading NFC card
23	USB Type-C Port	Used for data communication and power supply by USB type-C cable
24	Power Supply Terminal	Used for power supply by Cradle
25	Strap Hole	Attach strap

1.3.2 Cradle-type Battery Charger



No.	Name	Description
1	Power Supply Terminal	Used to supply power to the ET-L10.
2	Power Status LED	Indicates the power status. Off : Power OFF Green : Power ON
3	AC Adapter Jack	Used to connect an AC adapter as a power supply.
4	Power Cable Slit	Place the power cable

1.3.3 Four-cradle battery charger



No.	Name	Description
1	Power Supply Terminal	Used to supply power to the ET-L10.
2	Power Status LED	Indicates the power status. Off : Power OFF Green : Power ON
3	AC Adapter Jack	Used to connect an AC adapter as a power supply.
4	Power Cable hook	Place the power cable

1.4 Hardware specification

1.4.1 ET-L10

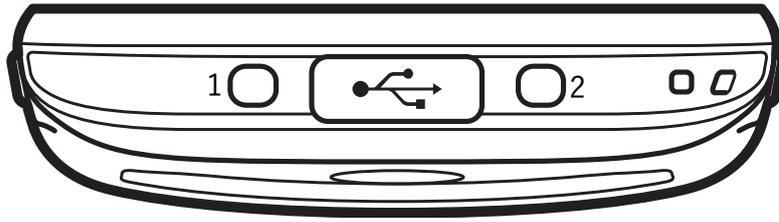
Item		Specification	Memo
CPU		Qualcomm 1.8GHz Octa Core	SDM 450
OS		Android 9	
Memory	RAM	2GB	
	ROM	16GB	
Display	Display device	TFT	
	Display size	5.7 inches	
	Number of dots	720 (horizontal) x 1440 (vertical) , HD+	
	Dot pitch	0.090 (horizontal) x 0.090 (vertical)mm	
	Gradation	1677M Colors	
	Backlight	LED Backlight	
	View angle	80 degree (up and down, left and right)	
Touch Panel		Capacitive Touch Panel, Multi-touch (5 points)	
Indicator	LED	Charging status (Red and Green) Notification (Red, Green and Blue)	
Vibrator		Notification of scanner	
Key	Navigation key	Home / Back	Key backlight
	Side Key	PTT key / Light Key	
	Power key	Power on/off ET-L10	
	Trigger key	Center / Light / Right	Center trigger has key backlight
Camera	Number of pixels	13M pixels (4146 (V) x 3120 (H))	
	F number (Aperture)	2.0	
	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 / Light Ambient / Acceleration / Fingerprint	
RTC	Maximum monthly rate	2min10sec	

Item		Specification	Memo
2D imager	Method	CMOS, 832 x 640, monochrome	
	Aimer	laser ($\lambda = 650\text{nm}$), < 1 mW	
	Scan Angle	10 degree	
	Minimum Resolution	1D : 0.127mm 2D Stacked : 0.169mm 2D Matrix : 0.191mm	
	PCS	≥ 0.45	
	Depth of Field	1D : 50 to 400 mm 2D Stacked : 50 to 230mm 2D Matrix : 70 to 300mm	
	Field of View	Max 42mm (Depth of Field 50mm) Max 476mm (Depth of Field 400mm)	
	Focal Distance	5.0 inches	
	Ambient Light	Sunlight, $\leq 50,000\text{Lux}$	
	Readable Symbologies (1D)	UPC-A/UPC-E/EAN8(JAN8)/ EAN13(JAN13)/Codabar(NW-7)/ Code39/Interleaved2of5(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)	
	Readable Symbologies (2D Stacked)	PDF417/Micro PDF/Composite/ GS1 DataBar Stacked Omnidirectional (RSS-14 Stacked)/ GS1 DataBar Expanded Stacked (RSS Expanded Stacked)/ GS1 DataBar Stacked (RSS-14 Stacked)/ GS1 DataBar Truncated	
	Readable Symbologies (2D Matrix)	Aztec/DataMatrix/Maxicode/ QR Code/Micro QR/HanXin Code	

Item		Specification	Memo
WLAN	Standard	IEEE 802.11a/b/g/n/ac, IEEE 802.11d	
	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/5GHz) : 72Mbps (maximum) 802.11ac: 433Mbps (maximum)	
	Communication Distance	802.11b/g/n: Indoor 50m, Outdoor 150 m (n: 2.4GHz) 802.11a/n/ac: Indoor 30m, Outdoor 150 m (n: 5GHz)	It can change due to surrounding environment.
Bluetooth	Standard	Bluetooth® Specification Ver.5.0	
	Class	Class 1	
	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 : SCPP	
GSM	Standard	3GPP	
	Communication Protocol	Audio, Data Packet GSM/GPRS/EDGE	
	Frequency range Band	EGSM900 DCS1800	
W-CDMA	Standard	3GPP W-CDMA Rel 99, HSPA+	
	Communication	Audio, Data Packet	
	Baud rate	Downlink : 42Mbps (maximum) Uplink : 11Mbps (maximum)	
	Protocol	UMTS/HSPA+	
	Frequency range Band	BAND 1 (1920 to 1980 MHz / 2110 to 2170 MHz)	
		BAND 6 (830 to 840 MHz / 875 to 885 MHz)	
BAND 8 (880 to 915MHz / 925 to 960 MHz)			

Item		Specification	Memo
LTE	Standard	3GPP LTE FDD&TDD	
	Communication	Data Packet	Not support VoLTE
	Baud rate	Downlink : 150Mbps (maximum) Uplink : 50Mbps (maximum)	
	Frequency range Band	FDD 1 (1920 to 1980 MHz / 2110 to 2170 MHz)	
		FDD 3 (1710 to 1785 MHz / 1805 to 1880 MHz)	
		FDD 5 (824 to 849 MHz / 869 to 894 MHz)	
		FDD 7 (2500 to 2570 MHz / 2620 to 2690 MHz)	
		FDD 8 (880 to 915MHz / 925 to 960 MHz)	
		FDD 18 (880 to 915 MHz / 925 to 960 MHz)	
		FDD 19 (830 to 845 MHz / 875 to 890 MHz)	
		FDD 20 (832 to 862 MHz / 791 to 821 MHz)	
		TDD 38 (2570 to 2620 MHz / 2570 to 2620 MHz)	
		TDD 39 (1880 to 1920 MHz / 1880 to 1920 MHz)	
	TDD 40 (2300 to 2400 MHz / 2300 to 2400 MHz)		
TDD 41 (2555 to 2655 MHz / 2555 to 2655 MHz)			
GPS	Satellite Navigation System	GPS, GLONASS, BeiDou	
	WAN and GNSS modes	Standalone-GNSS (without WAN) A-GPS	
	Protocol	NMEA	
	Sensitivity	Acquisition sensitivity: -135dBm	
Tracking sensitivity: -145dBm			
SIM	Standard	ISO7816 IC Card standard 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 32GB.
USB Type-C	Connector type	UPC Type-C	
	Input current	Up to 2A	
	HOST	Not support	
	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

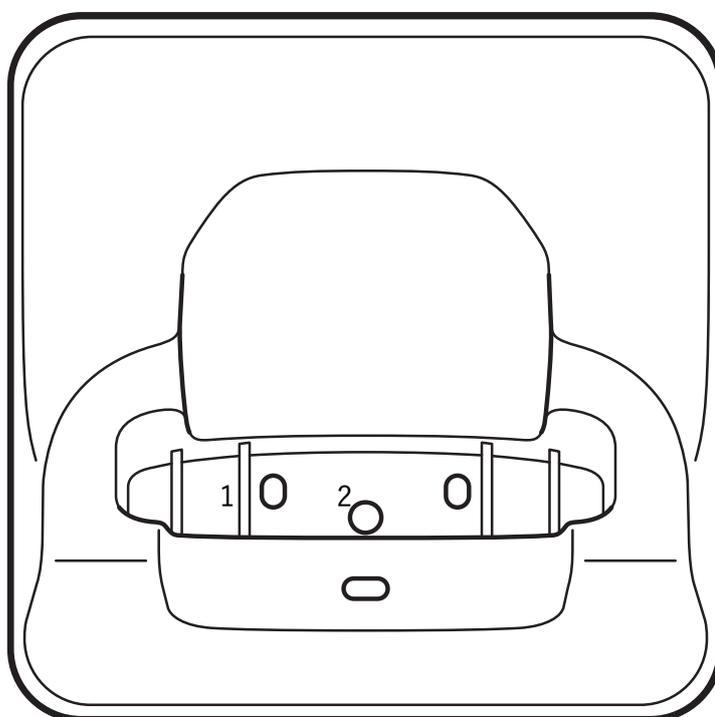
No.	Name	Description
1	GND	GND
2	V CRADLE	Cradle Power, 5V 2A

Item		Specification		Memo	
NFC	Carrier Frequency	13.56MHz			
	Depth of Field	ISO14443 Type A/B, Felica: 0mm (Contact)		It can change by the design of Card or Tag.	
		ISO15693: 0mm (Contact) to 50mm (Maximum)			
	Protocol	Card type		Card (Operation Checked)	
		ISO14443 Type A	Y	MIFARE 1K/MIFARE 4K MIFARE Ultralight	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	Y		
		FeliCa (JIS X 6319)	Y	FeliCa Standard	
		ISO15693	Y	I CODE SLI	
		ISO18092 P2P	-		
ISO18092 Card Mode		-			
Power	Main battery	Lithium-ion battery		Built-in battery	
	Sub battery	N/A			
	Operating time	<u>Standard mode 1(JEITA G mode)</u> 12 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	
	Battery charge time	4 hours		At room temperature Charged by USB AC adaptor, cradle-type battery charger or four-cradle battery charger.	

1.4.2 Cradle-type Battery Charger

Item		Specification	Memo
Interface connected with ET-L10	Connector	Dedicated Contacts	Supply power to ET-L10 Refer to Note 1 for pin layout
AC adaptor	Input Voltage	DC24V±5%	
	AC adaptor	24V/2.5A	
Charger	Battery charge time	4 hours	

*1 Pin layout

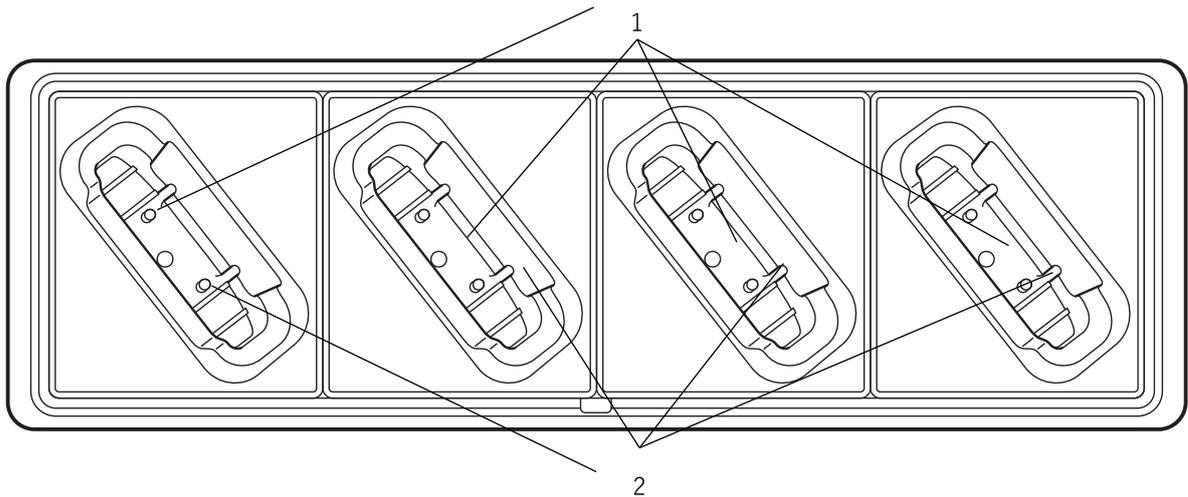


No.	Name	Description
1	GND	GND
2	V CRADLE	Cradle Power, 5V 2A

1.4.3 Four-cradle Battery Charger

Item		Specification	Memo
Interface connected with ET-L10	Connector	Dedicated Contacts	Supply power to ET-L10 Refer to *1 for pin layout
AC adaptor	Input Voltage	DC24V±5%	
	AC adaptor	24V/2.5A	
Charger	Battery charge time	4 hours	Able to charge up to four ET-L10 simultaneously with the following charge time.
Connection with another multiple battery charger		Impossible	

Note 1 Pin layout



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

1.5 Environmental Sprcification

1.5.1 ET-L10

Item		Specification	Memo
Temperature	Operation	-10°C to 50°C	Battery pack charge operation: 0 to 40°C The charge will stop when the temperature of $\leq 0^{\circ}\text{C}$ and $\geq 40^{\circ}\text{C}$ 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	-20°C to 60°C	
Humidity	Operation	10% to 90%RH	No condensation
	Non-operation	5% to 90%RH	No condensation
Dust and waterproof		IP65 Standard	

1.5.2 Cradle-type Battery Charger

Item		Specification	Memo
Temperature	Operation	0°C to 40°C	The charge will stop when the temperature of $\leq 0^{\circ}\text{C}$ and $\geq 40^{\circ}\text{C}$ 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	
	Charge operation	0°C to 40°C	
Humidity	Operation	10% to 90%RH	No condensation
	Non-operation	5% to 90%RH	No condensation
Dust and waterproof		Not applicable	

1.5.3 Four-cradle Battery Charger

Item		Specification	Memo
Temperature	Charge operation	0°C to 40°C	The charge will stop when the temperature of $\leq 0^{\circ}\text{C}$ and $\geq 40^{\circ}\text{C}$ 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, please refer to the ETL10 User's Guide

2.1 Operating Precautions

Your terminal and its options are precision. Improper operation or rough handling can cause problems with data storage and other problems. Note and observe the following precautions to ensure proper operation.

- Do not continue using the battery once it is exhausted. Doing so could result in data loss or corruption. When the battery is exhausted, replace it immediately.
- Observe environmental specification range. It might cause failure if your terminal is used out of environmental specification range.
- Stop or avoid using the terminal and its options in areas and conditions subject to the following.
 - Large amounts of static electricity
 - Extreme heat or cold or humidity
 - Sudden temperature change
 - Large amount of dust
 - After large amount of rain or water falls on the terminal
 - Pressing the screen or keys with excessive force when using in the rain
- Always use the dedicated eject pin to eject the nanoSIM/microSD card tray.
- Do not use volatile chemical substances such as thinners, benzene or toiletries to clean the terminal. When the terminal is dirty, wipe it clean with a soft, dry cloth. Rubbing with excessive force could scratch the display.
- Built-in battery
 - The terminal's battery is built into the terminal and cannot be removed. The built-in battery has a limited service life. The way the built-in battery is charged can accelerate its degradation or reduce its capacity so that it cannot be used for as long. If charging the built-in battery does not restore its full functionality, this indicates that it has reached the end of its life. If this occurs, request a replacement. Using the correct charging procedures will maximize the service life of the built-in battery.
 - You should charge the built-in battery fully the first time you use it and whenever it has not been used for a long period. Continue charging until the charging status LED lights green (fully charged).
 - Frequent repeated charging will shorten the life of the battery. You should wait until the battery is low on charge before charging it.
 - Charge the battery within the specified temperature range. Note that the specified temperature range varies depending on the equipment used. Refer to the User's Guide (download version). Charging outside the specified range can cause battery deterioration.
 - When used in low-temperature environments, the built-in battery capacity may be lower so that it cannot be used for as long. It may also shorten the life of the built-in battery.
 - Charging when the terminal is cold can cause built-in battery deterioration. After working in a cold environment, allow the terminal to warm up to room temperature (leave for roughly 1 hour) before charging.
 - For long-term storage, do not store the built-in battery fully charged. The battery should be 30-50% charged for long-term storage and it should be stored at a low temperature. This will minimize battery deterioration. Note also that even when not being used, the

- built-in battery will gradually discharge. If this situation continues for a long period (several months or more), the built-in battery will become overdischarged, which may impair quality and performance.
- Rechargeable batteries will deteriorate over time. Storing (or using) fully charged batteries at high temperatures in particular can lead to faster deterioration.
 - The power-supply terminals should be cleaned periodically using an implement such as a dry cotton bud. Soiling on the terminals may cause connection defects.
 - Take care when using chemicals. Applying thinners, gasoline, kerosene, solvents or oils, or substances such as cleaners, adhesives, paints, medications or toiletries that contain those materials, to the plastic case or cover may cause discoloration or other damage.
 - Water or other moisture on the power-supply terminals could cause sparking or an electric shock, and soiled contacts could block the connection and impair charging functionality.
 - While the ET-L10 is waterproofed, note the following when using this product:
 - If the ET-L10 is exposed to water droplets, thoroughly wipe off the moisture with a dry cloth.
 - Do not use the ET-L10 for long periods in the rain.
 - Securely close the connector covers when using the ET-L10.
 - Do not press hard on the screen (touch panel) or keys when using the ET-L10 in the rain.
 - The back of the ET-L10 may become warm during use. This is normal and does not indicate a fault.
 - Weld Lines
There are seam-like markings in some locations on the terminal. These are referred to as “weld lines” in the plastic forming process and are not cracks or scratches. Weld lines do not interfere in any way with the operation of the terminal.
 - LCD panel
 - The LCD panel is manufactured using high-precision technology and features a minimum of 99.99% effective pixels. There may be some pixels that fail to light or that remain permanently lit.
 - If the same screen is displayed on the panel for a prolonged period, its afterimage may persist after a new screen is displayed. The afterimage will fade after a few moments.
 - 802.11a/n/ac Restrictions
 - This product is for indoor use only when using channels 36, 40, 44, 48, 52, 56, 60, or 64 (5150-5350 MHz).
 - To ensure compliance with local regulations, be sure to select the country in which the access point is installed.
 - For hand strap, only use the dedicated hand strap from accessories.
 - Drop resistance
The drop resistance is a test value only and is not guaranteed. Repeated or frequent shocks may still result in damage, so the terminal should be handled so as to avoid impacts.

- In order to have reliable communication, avoid to use devices which radiate radio frequency such as mobile phone near the terminal. If those devices need to be used near the terminal, keep them away from the terminal (30 cm or more for mobile phone).
- When installing nanoSIM card or microSD card, make sure it is positioned correctly. If it is installed forcibly or in the wrong position, it can cause defect.
- If you use the terminals with USB cable connected, the battery level may be reduced without being charged depending on operation and application.
- WAN function
 - When using the LTE / WCDMA / GSM communication, you need to get the network service which is run by network service providers. The available functions can change depending on the network service.
 - Ask network service providers about their detail network service.
- 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 is 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.
- Scanner function

When using scanner in high temperature environment, the protection of the aimer can be activated and turn off the aimer. But it is not malfunction. The scan function can work with the aimer off. In order to turn the aimer on again, leave the terminal for a while or use it at room temperature.

2.2 Storage

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