Master Specifications	
Charging / Communication Cradle	
Product Name	CRD-3301
Specification No	T.B.D
Edition	Initial
Date of Publication	T.B.D
Original Doc. No.	T.B.D

Revision History

Specification No.: T.B.D
Product name : CRD-3301

Revision	Date	Section	Description of Changes
Initial	T.B.D	-	-

Table of contents

1. Abstract

This manual provides the specifications for the charging / communication cradle, CRD-3301.

2. Overview

CRD-3301 is the dedicated charging / communication cradle for the laser handy scanner, OPR-3301.
Followings are the features of the CRD-3301:

- ・CRD-3301 receives data from OPR-3301 via ver.2 compliant Bluetooth interface.
- ・The cradle can output the received data via RS232C or USB interface.
- ・OPR-3301 can be charged by placing it on the CRD-3301.
- ・RoHS – CRD-3301 is compliant with RoHS.
  (However, it is assessed by Optoelectronics Co., Ltd. and it does not have any legal weight in the EU.)

3. Basic Specifications

	Item		Specification	Remark
Control Section	CPU		16bit CMOS CPU	
	Clock frequency		12.00MHz	
	FLASH ROM		256KB	For BIOS/DATA
Communication Section	Interface		RS-232C: 600bps to 57.6kbps	
			USB: 2.0 HID compliant	
Wireless section	Frequency		2400MHz to 2483.5MHz	
	Specification		Bluetooth Ver2.0 compliant	Installed SPP
	Transmission power		Class 2 (4dBm or less)	
	Communication range		10m	The distance may vary depending on the environment.
	Baud rate		57.6kbps	
	Antenna		1/4λ (surface mounted)	
Indication	LED		Power: red (far left)	
Power feeding Section	For charging a scanner		Output: DC6V (typ.) Terminal: +/-/ Power supply control	
Main power section	Operation voltage range		5.7 to 6.3V	Dedicated AC adapter: 6.0V±5%
	Consumption current	Standby	90mA or less	Without charging
		Max.	1000mA	With charging

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Environment specifications	Temperature	Operation	0 to 40%	
		Storage	-20 to 60%	
	Humidity	Operation	25 to 85%	No frost, no condensation
		Storage	20 to 90%	No frost, no condensation
	Frequency		Increased the frequency of vibration from 10Hz to 100Hz at an accelerated velocity of 19.6m/s^2 (2G) for 6 minutes each in X-direction, Y-direction and Z-direction. Repeated this test for 10 times in each direction.	
	Drop test		Dropped from a height of 75cm onto a concrete surface. The drop test is done for each side (right, left, front, back, top and bottom).	
	Drip proof		Not tested	
Regulatory compliance	EMI/RFI		VCCI/EN55022/FCC Part15, B	For residential, commercial and light-industrial environments
	Product safety		CE marking	
			IEC/EN 60950-1	
	EMC		EN55024 (EN61000-6-1) Class-B	For residential, commercial and light-industrial environments
Immunity test	Resistance to static electricity	No destruction	Air discharge: 15kV (Impressed static electricity of 15kVfor 50 times on the surface of the scanner)	Condition: IEC61000-4-2 compliant
		No malfunction	Contact discharge (direct/indirect): ±8kV Air discharge (direct) : ±8kV	
	Fast Transient	Voltage	Alternating-current Input Cable: ± 1kV	Condition: IEC61000-4-4 compliant
		Pulse	5/50ns (Tr/Tw)	
		Frequency	5kHz	
	Surge	Pulse	1.2/50µs (Tr/Th)	Condition: IEC61000-4-5 compliant
		Voltage	From L to P:± 2 kV (closed-loop voltage)	
			From L to L:± 1 kV (closed-loop voltage)	
	Power supply frequency magnetic field	Frequency	50, 60Hz	Condition: IEC61000-4-8 compliant
		Level	3A/m	
	Voltage dip, momentary voltage drop, etc.	Dip 1	Drop 30%, 0.5 cycles	Condition: IEC61000-4-11 compliant
		Dip 2	Drop 60%, 5cyccles	
		Momentary drop	> Drop 95% ,250 Cycles	
Physical features	Dimensions		Approx. 100 (W) × 185 (D) × 78 (H)	
	Weight		250g (max.)	Excluding the AC adapter
AC adapter	Model name		SFP0602000P-PSE	(Integrated plug)
	Input	Voltage range	AC 90 to 264V	
		Supply current	0.5A max	
	Output	Voltage range	5.7 to 6.3V	
		Maximum current	2A max	

* This chart contains the sections which state about the combination of CRD-3301 and OPR-3301.

4. Bluetooth

CRD-3301 uses Bluetooth as a wireless interface.
Blue tooth is compliant with ver.2.0 and supports SPP (Serial Port Profile).

- ・ 　 Supported Protocol Stack
  - RF (Radio Frequency Protocol)
  - BB (Base Band Protocol)
  - LM (Link Manager Protocol)
  - L2CAP (Logical Link Control and Adaptation Protocol)
  - SDP (Service Discovery Protocol)
  - RFCOMM (emulation for RS-232C)

- ・ 　 Supported Profile
  - GAP (Generic Access Profile)
  - SPP (Serial Port Profile)

- ・ 　 Communication Configuration
1 to 1
One scanner to one host system

- ・ 　 Scanner operating mode while connected to the host system
  - Scanner (OPR-3301): Master mode
  - Cradle (CRD-3301): Slave mode

- ・ 　 Security Mode
Authentication enabled

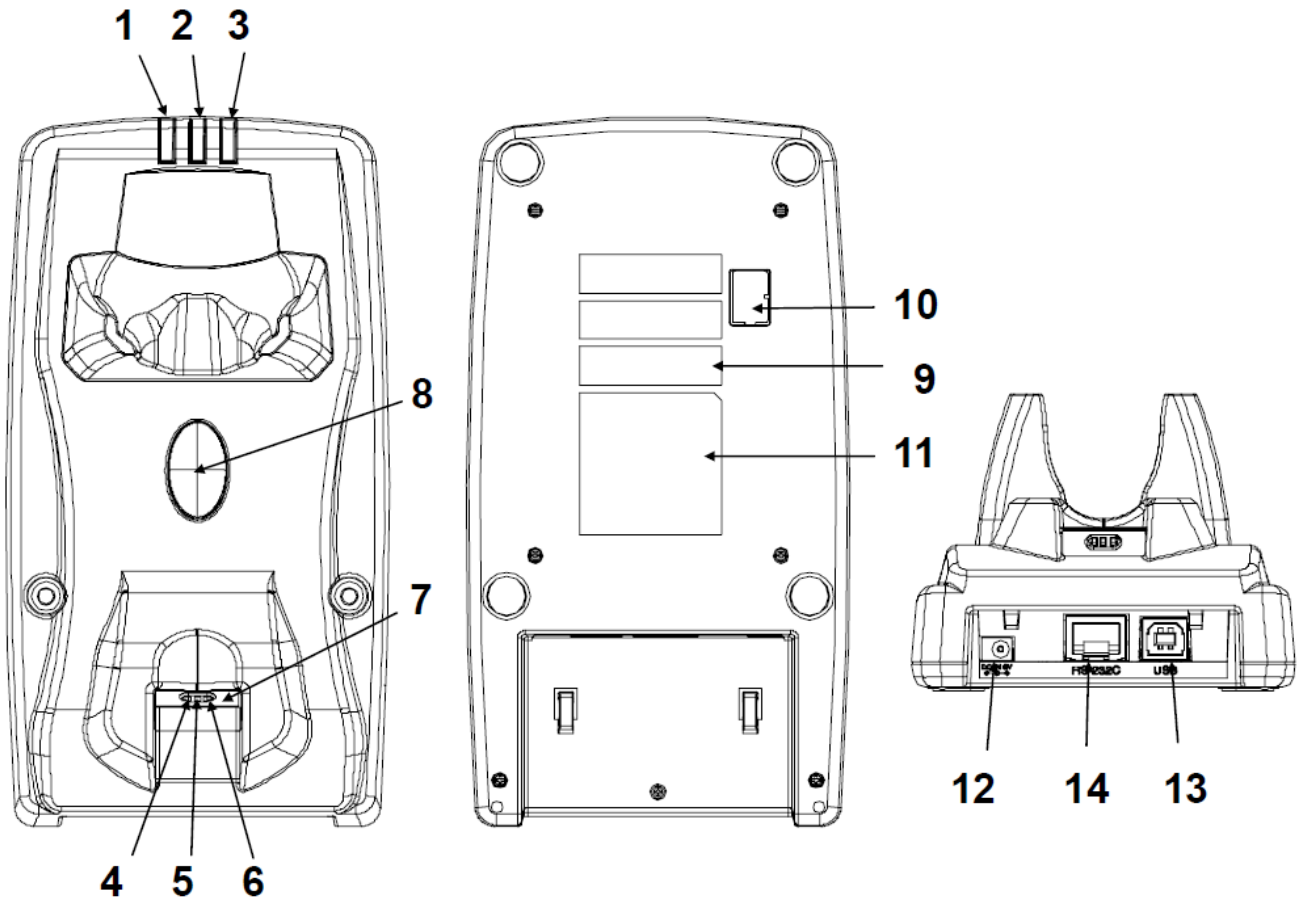- ・ 　 Encryption
Encryption enabled

5. Detailed View

Figure1: Detailed view

No.	Items	Specifications
1	Wireless communication status LED	Indicates operational status such as whether Bluetooth communication is connected.
2	Communication status LED	LED to indicate the interface and data transmission status.
3	Power Supply Status LED	LED to indicate the power supply status
4	Power supply terminal (-)	Negative power supply terminal for the scanner (OPR-3301).
5	Power supply terminal (+)	Positive power supply terminal for the cradle (OPR-3301).
6	Scanner control terminal	Terminal to transfer the kind of power (AC adapter / USB bus power).
7	Scanner detection switch	Switch to detect if the scanner (OPR-3301) is set on the cradle.
8	Scanner search button	Press the button when the scanner is missing. As long as the connection is established, the scanner answers via buzzer.
9	Barcode for BD address setting	Scan the barcode with the scanner(OPR-3301) to set the connection.
10	Dip switch	Dip switch for function settings
11	Serial label	-
12	DC Jack	Power supply jack for the dedicated AC adapter.
13	USB connector	USB connector for the USB interface cable.
14	Modular jack	Connector for the RS232C interface cable.

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6. Electrical Specifications
6.1. Configurations of CRD-3301

CRD-3301 is the dedicated cradle for OPR-3301 scanner which is able to charge and communicate with the scanner. This product consists of a power supply section which uses Bluetooth interface, power section which is in charge of power feed and voltage conversion for the scanner.

CRD-3301 can be operated by AC adapter or USB bus power, however, AC adapter is prior to USB bus power and USB power is disabled in the scanner when both power supplies are used at the same time.
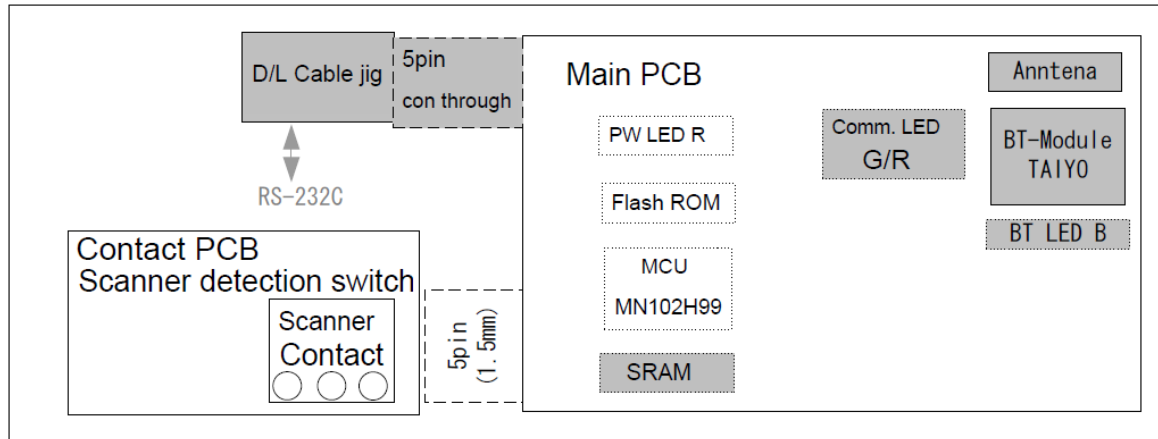

Figure2: Detailed view

6.2. Consumption Current

Item	Specifications		Conditions
	RS-232C	USB*	
When stand-by	90mA or less	90mA or less	Bluetooth communication: OFF
When communicating with a host computer	120mA or les	120mA or less	Bluetooth communication: ON
When charging a scanner	1000mA or less	500mA or less	Bluetooth communication: ON
Measurement conditions: Power supply voltage	6.0V	5V	

* Followings cannot be used as power supply and AC adapter needs to be used.
　・The maximum current of USB interface is 100mA.
　・The device which maximum current is 500mA, however, it uses USB hub.

6.3. LED Indication
These LEDs shown below notify operational status.

LED	Location	Color	Function
Power LED	Far left	Red	Lights when power ON.
Communication LED	Middle	Green	Lights during data transmission.
		Red	Lights during data reception.
Wireless LED	Far right	Blue	Lights when Bluetooth succeeds in connection. Blinks when Bluetooth fails in connection.

LED blinking cycle

LED	Location	Color	blinking cycle
Communication LED	Middle	Green	200mS
		Red	500mS
Wireless LED	Far right	Blue	500mS

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7. DIPSW configurations

Following functions can be set by DIPSW as shown.

DIPSW No.	Function
DIPSW1	Make sure the it is always OFF when using the cradle. This will be used for feature expansion.
DIPSW2	Enables inquiry scan withiout security Connection can be made witout authentication.
DIPSW3	Disables protocol while in connection. The menu allows the cradle to connect to bluetooth devices including OPR-3301.
DIPSW4	Disable DTR signakl detection for the host.
DIPSW5	Sets the cradle to the default. (Sets the contents of FLAH ROM to the initial setting.)
DIPSW6	It is normally OFF. When it is ON, *"software update mode" operates * With in this mode, software is rewitten via RS232C interface.

Note: 1. All DIPSWs are available when power ON.
          2. In the default setting, SW6 is ON, rest of them are OFF.

How to set DIPSW

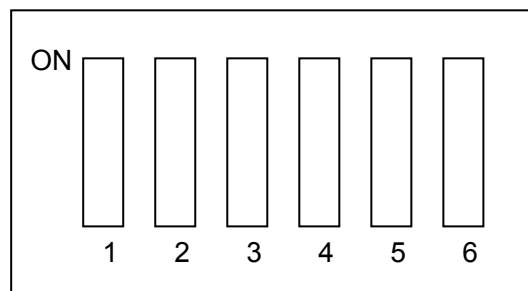| Setting	DIPSW					
	SW1	SW2	SW3	SW4	SW5	SW6
N/A	X	X	X	X	OFF	OFF
NO SECURITY	X	ON	X	X	OFF	OFF
NO PROTOCOL	X	X	ON	X	OFF	OFF
IGNORE DTR	X	X	X	ON	OFF	OFF
INITIAL SETUP	X	X	X	X	ON	OFF
DOWNLOAD MODE	X	X	X	X	X	ON

X : Don't Care

Figure3: Location of DIPSW

8. Cable Interface

CRD-3301 supports RS232C and USB HID interfaces.
The cradle recognizes the interface whilst watching its power supply.

* When changing an interface, turn OFF the power and change the setting for access point of the scanner and read the BD address. Otherwise it may cause malfunctions such as connection and data transmission failure.

8.1. RS232C Interface

8.1.1. Signal Level

Signal name	IN/OUT	RS-232C Level (V)	
		Mark/OFF	Space/ON
TXD	OUT	-5 to15	+5 to +15
RXD	IN	-3 to15	+3 to +15
RTS	OUT	-5 to -15	+5 to +15
CTS	IN	-3 to -15	+3 to +15
DSR	IN	-3 to -15	+3 to +15

8.1.2. Signal Level

PIN NO.	Signal name	Remark
1	RTS	Flow control output
2	CTS	Flow control input
3	TXD	Transmission data to host
4	RXD	Transmission data from host
5	NC	Not connected
6	GND	
7	NC	Not connected
8	DSR	For detecting interface connection
9	NC	Not connected
10	NC	Not connected
-	FG	

8.1.3. Connector Used
10-pin, modular jack

8.1.4. Interface Circuit

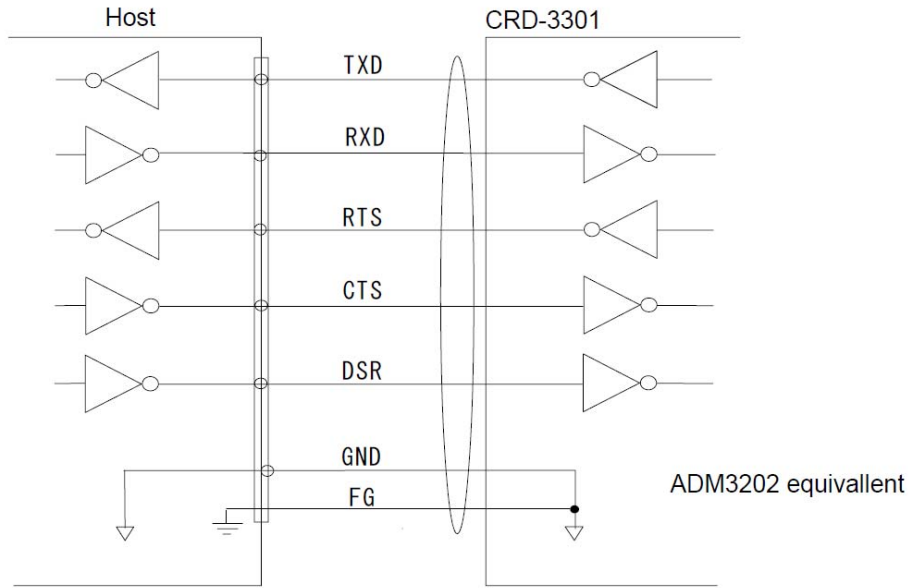*Figure4: Interface circuit*

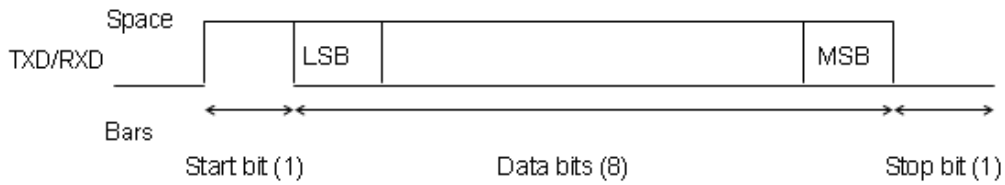### 8.1.5. Character Format

Figure5: Character format

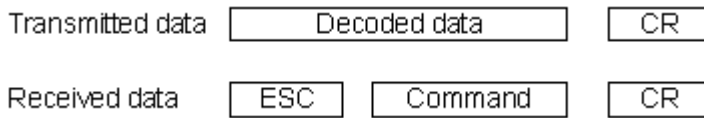### 8.1.6. Communication Format

Figure6: Communication format

8.1.7. Communication Control
By reading menus listed below enables the cradle to communicate with host computer.
Settings information is sent from the scanner.
BUSY/READY and P5 are set as default.

Handshaking	Menu / command
No hand shake	P0
Busy/Ready	P1
Modem	P2
ACK/NAK	P3
ACK/NAK No response	P4

a) No hand shaking
The scanner attempts the communication regardless of the state of the host computer. Flow control is not executed for the Bluetooth interface. For the scanner (OPR-3301), RTS is always enabled.
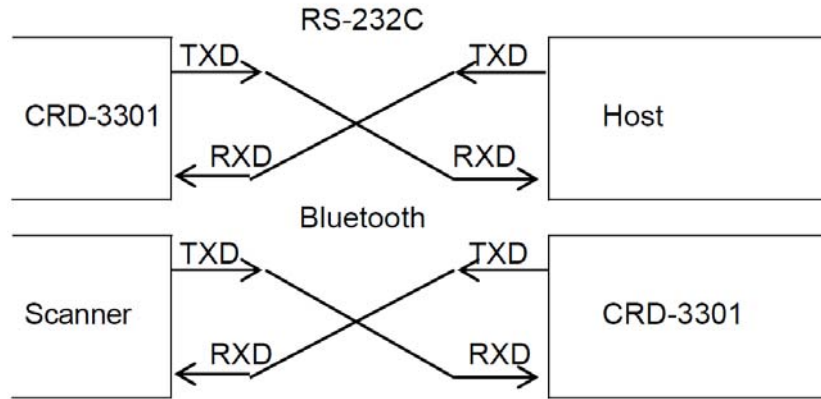
Figure7: No Handshaking

b) BUSY/READY
The scanner and the host computer notify each other of their state and whether they can receive data with BUSY/READY through an RTS line. They can communicate state to each other through a CTS line when connected as in the following figure.
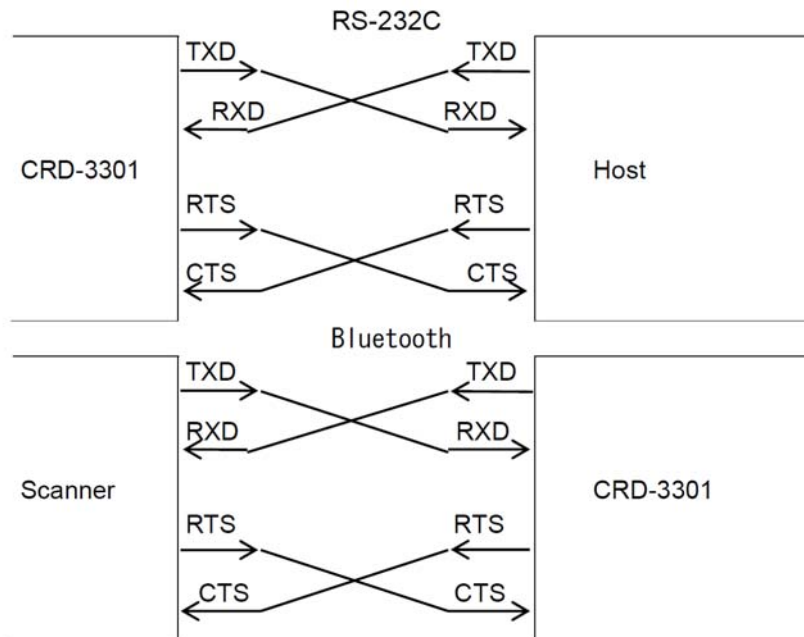Flow control is executed for the Bluetooth interface.

Figure8: BUSY/READY

The cradle stays ON (is able to receive data) except while it is transmitting data via IrDA or RS-232C interfaces. The cradle checks the CTS line before transmitting data. When it is ON, the cradle transmits data. When it is OFF, the cradle waits for it to turn ON within a set time. When the CTS line is not ON within a specified period, the cradle will blink the red LED to indicate it. The Flow Control timeouts are as follows, and the default setting is "indefinitely" (I0).

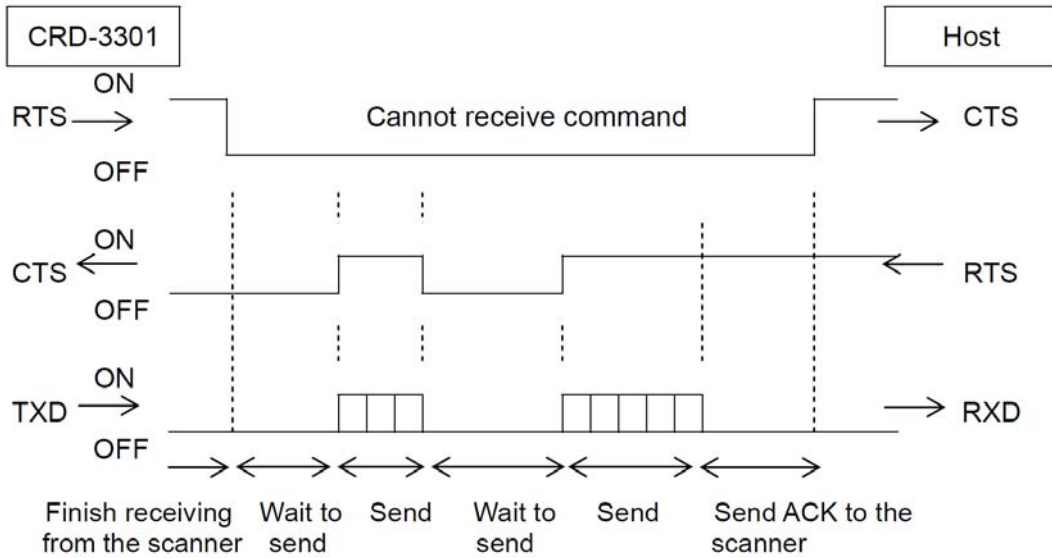| Flow Control Time Out	Menu / Command
Indefinitely (default)	I0 (Indenfinitely)
100msec	I1
200msec	I2
400msec	I3

Figure 9: Cannot receive command

CTS / TXD Signal Timing
When the CTS line (RTS signal of the host) is turned OFF while sending a TxD signal, the scanner transmits one character and waits. When the CTS signal is turned ON while transmitting a character, the character will be transmitted.
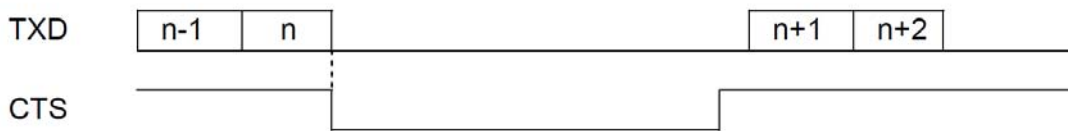

Figure 10: Signal timing

Note: When using loopback (wire connection) for RTS, CTS line of the scanner in this setting, No handshake is not enabled.

c) Modem

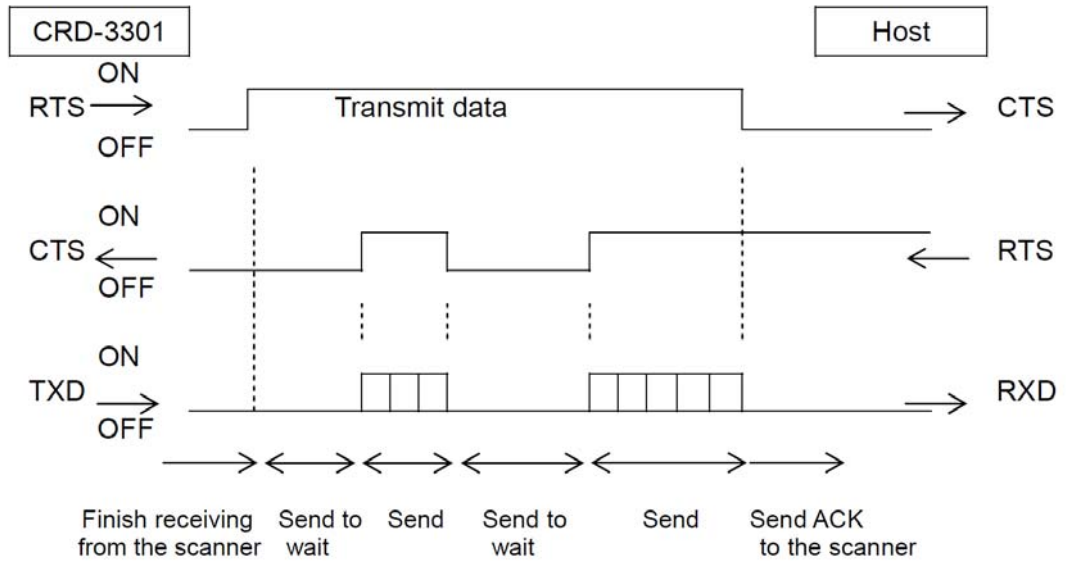The scanner turns CTS line ON before transmitting data. Other processes are the same as BUSY/READY.

Figure 11: Hand shaking modem mode

d) No ACK/NAK

After data has been transmitted, the cradle transmits ACK to the host to notify the transmission status on the wireless communication line.

 * Between the cradle and the host: No control.

 * Between the cradle and the host: No control

ACK/NAK Protocol	Control Level	Notes
	Scanner and Host	Regardless of the host status.

Data Transmission Status	Cradle	Scanner
OK	Center LED: Green Light Blinks	Green Light with GR Buzzer
	ACK Transmission	Receive ACK
NG	None	Red Light with NG Buzzer
	None	Receive Timeout

 * Between the cradle and the host: BUSY/READY or MODEM.

ACK/NAK Protocol	Control Level	Notes
	Scanner, Cradle and Host	Monitors CTS line of the host.

CTS Line Status	Cradle	Scanner
OK	Center LED: Green Light Blinks	Green Light with GR Buzzer
	ACK Transmission	Receive ACK
NG	Center LED: Red Light Blinks	Red Light with NG Buzzer
	None	Receive Timeout

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e) ACK/NAK

 After the data transmission, the cradle expects to receive one of the following responses from the host:

ACK/NAK Protocol	Control Level	Notes
	Scanner, Cradle and Host	Monitors response from the host.

Response	Cradle	Scanner
ACK	Center LED: Green Light Blinks	Green Light with GR Buzzer
	ACK Transmission	Receive ACK
NAK	None	Red Light with NG Buzzer
	NAK of Host Transmission	Receive NAK
DC1	Center LED: Red Light Blinks	Green Light
	DC1 of Host Transmission	Receive DC1
Timeout	None	Red Light with ERROR Buzzer
	Timeout Transmission	Receive Timeout

ACK/NAK timeout can be set as follows using the menu or commands.

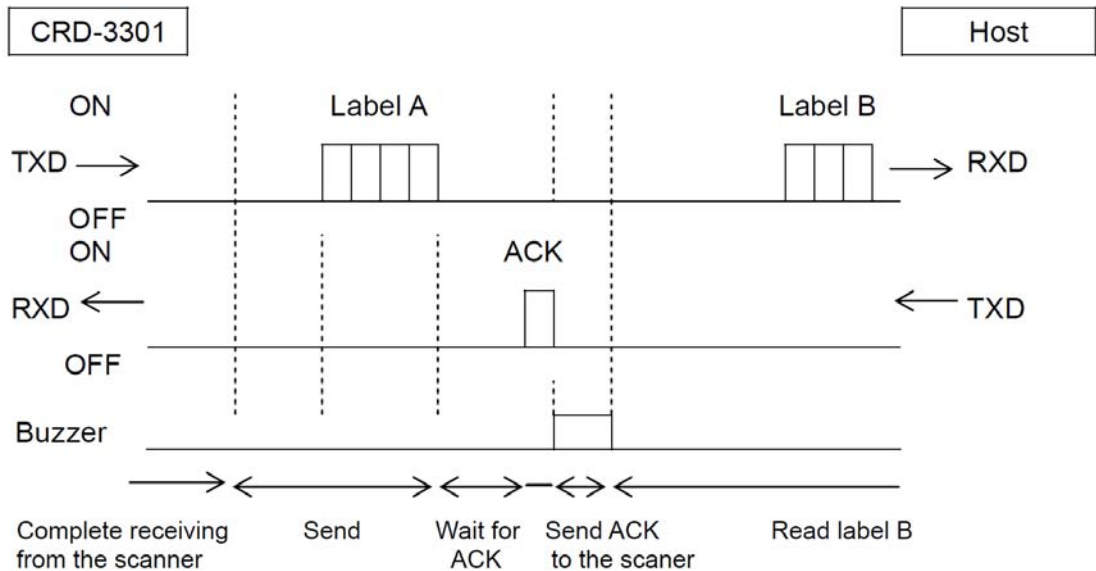| Menu / Command	ACK/NAK timeout
XI0	Indefinitely (Default)
XI1	100 ms
XI2	200 ms
XI3	300 ms

Figure 12: ACK/NAK

f) ACK/NAK NO RESPONSE
When no response from the host is received within the set time, the cradle assumes an ACK response, and returns to the initial state without the error buzzer. The other actions are the same as ACK/NAK.

Response	Cradle	Scanner
Timeout	None	Green Light with GR Buzzer
	None	Receive Timeout

Menu / Command	Menu / Command
XI4	Indefinitely
XI5	100 ms (default)
XI6	500 ms
XI7	1000 ms

8.1.8. Baud Rate Setting
Receive baud rate setting information from the scanner and configure the settings.

8.2. USA Interface

8.2.1. Specifiacation
USB2.0 HID Compliant

8.2.2. Connector
USB type B connector

8.2.3. Pin Assignment

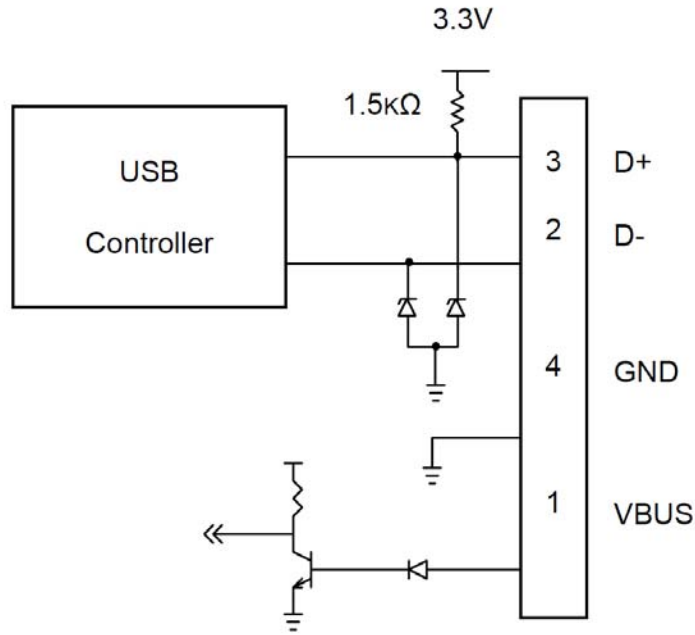| Pin No.	Signal name	Note
1	VBUS	Interface detection
2	D-	
3	D+	
4	GND	

8.2.4. Interface Circuit

Figure 13: Interface circuit

9. Interface Cable
Both a RS232C cable and a USB cable are included for a package.

9.1. RS232C Cable
A dedicated RS-232C cable is packaged in a box with CRD-7734.
Cable model no.: B04009-05

9.2. USB Cable
Cable model no.: B03006-11

10. Default Setting
CRD-3301 is shipped with the following default settings (DIPSW5):

Default Setting

Parameter	Setting
Baud Rate	9600 bps
Data Bit Length	8 bits
Party Bit	No parity
Stop Bit	1 stop bit
Handshake	BUSY/READY
ACK/NAK	No ACK/NAC
CTS Timeout	Indefinitely

11. Serial Label

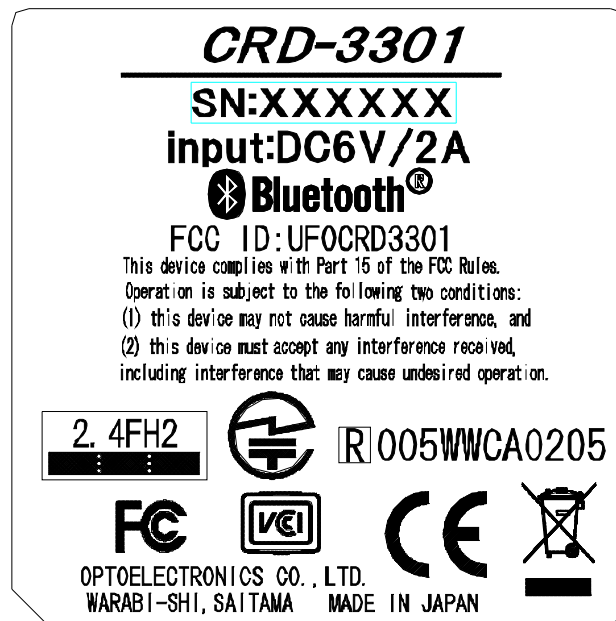   The serial number shown below is affixed to the cradle.

Figure 14: Serial label

12. Packaging Specifications

12.1. Individual Packaging Specufuactions
Size of the package: 163 (W) × 252 (D) × 123 (H) (mm)
*T.B.D

Figure 15: Individual packaging specifications

12.2. Collective Packaging Specufuactions
Size of the package: 260 (W) × 830 (D) × 255 (H) (mm)
*T.B.D
Figure 16: Collective packaging specifications

Note: The "RO" mark labeled on the package tray or package box guarantees that the applicable product has passed our test of RoHS restrictions compliance (the restriction of the use of certain hazardous substances in electrical and electronic equipment, 2002/95 EC). However, this document does **not** have any legal weight in the European Union.

13. Environmental Specifications

13.1. Operating Temperature and Humidity
Operating temperature: 0 to 40° C (Excluding AC adapter)
humidity: -25 to RH (No condensation, no frost)

13.2. Storage Temperature and Humidity
Storage temperature: -20 to 60° C
humidity: 20 to 90% RH

13.3. Electrical Specifications
・ Withstand voltage: AC 1500V / 60 seconds 10mA or less
・ Insulation resistance: DC500V 2MΩ
・ Leak current: 250μA or less / AC 250V 60Hz
・ Line noise: ±1kV or higher
・ Static noise: No destruction: ±15kV (air discharge, direct)
         No malfunction: ±8kV (air discharge, direct)
                   ±8kV (air discharge, direct)
 *Measurement environment: Use electrostatic testing device compliant with IEC 61000-4-2.
  (150pF, 330Ω)

13.4. Drop Test (without packaging)
No malfunction occurred after the following drop test.
Drop Test: Drop the scanner from a height of 75 cm onto a concrete floor.
        (three times in each of 6 angles).

13.5. Drop Test (with individual packaging)
No malfunction occurred after the following drop test.
Drop Test: Drop an individually packaged scanner from a height of 75 cm onto a concrete floor once on its 1 corner, 3 edges, and 6 sides (10 total drop tests).

13.6. Vibration Strength
No malfunction occurred after the following vibration test.

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Vibration test: Increase the frequency of the vibration from 10 Hz to 100 Hz with accelerated velocity 19.6 m/s^2 (2 G) for 60 minutes in non-operating state. Repeat this routine in each X, Y, Z direction once for 60 minutes each.

14. Reliability

Parameter	Tested Parts	Life
MTBF	Current-carrying parts	7 years
Number of Contact	Power supply terminal	1,000,000 times
Number of operation	Lever switch	100,000 times

15. Warranty

15.1. Warranty Period

OPTOELECTRONICS Co., Ltd. warrants that this product is free of defects or malfunctions for a period of twelve (12) months from its shipment. In case of having defects or malfunctions caused by normal usage in accordance with this specification during the foregoing warranty period, OPTOELECTRONICS shall repair or adjust the product free of charge.

Any repair or replacement of the product after the foregoing warranty period shall be charged at regular repair rates.

If defects or malfunctions were caused by customer mishandling, product repairs or replacement will be charged at regular repair rates, even during the foregoing warranty period.

15.2. Delivery

Products for maintenance or repair shall be sent back to OPTOELECTRONICS. The sender is responsible for all shipping costs.

15.3. Repair Time Frame

Repaired products shall be shipped back to the customer within 20 days after acceptance by OPTOELECTRONICS.

Expedited repairs may be available, subject to terms agreed to by OPTOELECTRONICS and the customer.

15.4. Repair Time Frame

The maintenance period of this product is 5 years after its shipment.

OPTOELECTRONICS may discontinue maintenance for this product during the 5-year maintenance period if a satisfactory replacement product or maintenance solution is agreed to.

15.5. Others

Any additional warranty issues must be discussed with OPTOELECTRONICS on a case-by-case basis.

16. Regulatory Compliance
16.1. Product Safety
EN60950-1

16.2. EMC

・EN55024
・VCCI Class B
・FCC Part 15 Subpart B&C, Class B

FCCID: UF0CRD3301

FCC Radiation Exposure Statement

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions : (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause **undesired operation of the device**

FCC Part15 subpart C   Statement

Harmful Interference Notice
This product has been tested and complies with the specifications for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used according to the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which is found by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:
• Reorient or relocate the receiving antenna
• Increase the separation between the equipment or devices
• Connect the equipment to an outlet other than the receiver's
• Consult a dealer or an experienced radio/TV technician for assistance
Changes or modifications to this equipment that have not been approved by Ruckus Wireless may void the user's authority to operate this equipment.

VCCI Class B

This is a Class B product, to be used in a domestic environment, based on the Technical Requirement of the Voluntary Control Council for Interference from Information Technology Equipment (VCCI). If this is used near a radio or television receiver in a domestic environment, it may cause radio interference.

16.3. Others
・Certification for Construction Design of Specified Radio Equipment
・Bluetooth logo certification

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17. RoHS

RoHS: The restriction of the use of certain hazardous substances in electrical and electronic equipment, 2002/95 EC.

18. Precautions

18.1. Radio Low

The data collector has obtained the Certification for Construction Design of Specified Radio Equipment.
Therefore it does not need to have a radio station license in Japan.
The following activities are prohibited under the Radio Law:
・　Remodeling and disassembly
・　Peeling off the certificate label

Do NOT use the data collector under the following environment:
*Otherwise radio interference may affect other device and end up with causing physical or material damage.

・　Safety apparatus and medical device for human body protection
・　Environment where is concerned to cause serious damage

18.2. HANDLING

Handle this product carefully. Do not deliberately subject it to any of the following.
(1) Shock
・Do not drop from the non-standard height.
・Do not place any heavy items on the data collector.
・Do not squeeze it between any heavy items.
・Do not swing around the cable.

(2) Temperature Conditions
・Do not use the data collector at temperatures outside the specified range.
・Do not pour boiling water on the data collector.
・Do not throw the data collector into the fire.

(3) Foreign Materials
・Do not put the data collector into liquid.
・Do not put the data collector into chemicals.

(4) Others
・Do not disassemble this product.
・Do not use the data collector near a radio or a TV receiver. It may cause reception problems.
・The data collector may be damaged by voltage drops caused by lightning.
・The data collector may not perform properly in environments when placed near a flickering light, such as a CRT

18.3. Export Administration Regulations

This product is subject to the strategically controlled exports regulated under "Foreign Exchange and Foreign Trade Laws". Therefore, export of this product may require an export permission of Japanese government.

19. Bluetooth

To communicate via Bluetooth, the device which CRD-3301 is connected to must support the same Bluetooth version and profile as CRD-3301's.

・ CRD-3301 is compliant to Bluetooth standards. However, we cannot assure the connection between CRD-3301 and other Bluetooth devices which have not been tested.

・ Bluetooth supporting devices use 2.4 GHz frequency band. However, many other sorts of devices also utilize this frequency band. It may effect the communication speed or communication range of this data collector.

・ The use of CRD-3301 outside of the European Union, the United States and Canada is punishable under the law.

・ Communication speed and communication range of CRD-3301 may differ due to the obstacles and radio wave conditions between CRD-3301 and the device, which CRD-3301 is connected to.

・ Conditions of the device, which CRD-3301 is connected to, may also affect the communication speed and communication range of CRD-3301.

20. Frequency Band

The frequency band 2.4 GHz is utilized by this scanner. Read carefully the followings before using this product.

In the frequency band of this scanner, scientific, medical and industrial devices including microwaves are used. Also other radio stations including local private radio station for mobile object identification requiring license for such as manufacturing lines at factories, specific power-saving radio station requiring no license and amateur radio station are managed.

Please make sure that "other radio stations" are not managed in the frequency band 2.4 GHz before using this scanner.
In case that radio interference occurs between this scanner and "other radio stations," change the service space immediately, or stop transmitting radio wave to avoid the interference.
If you have any questions or troubles, please contact our marketing group.
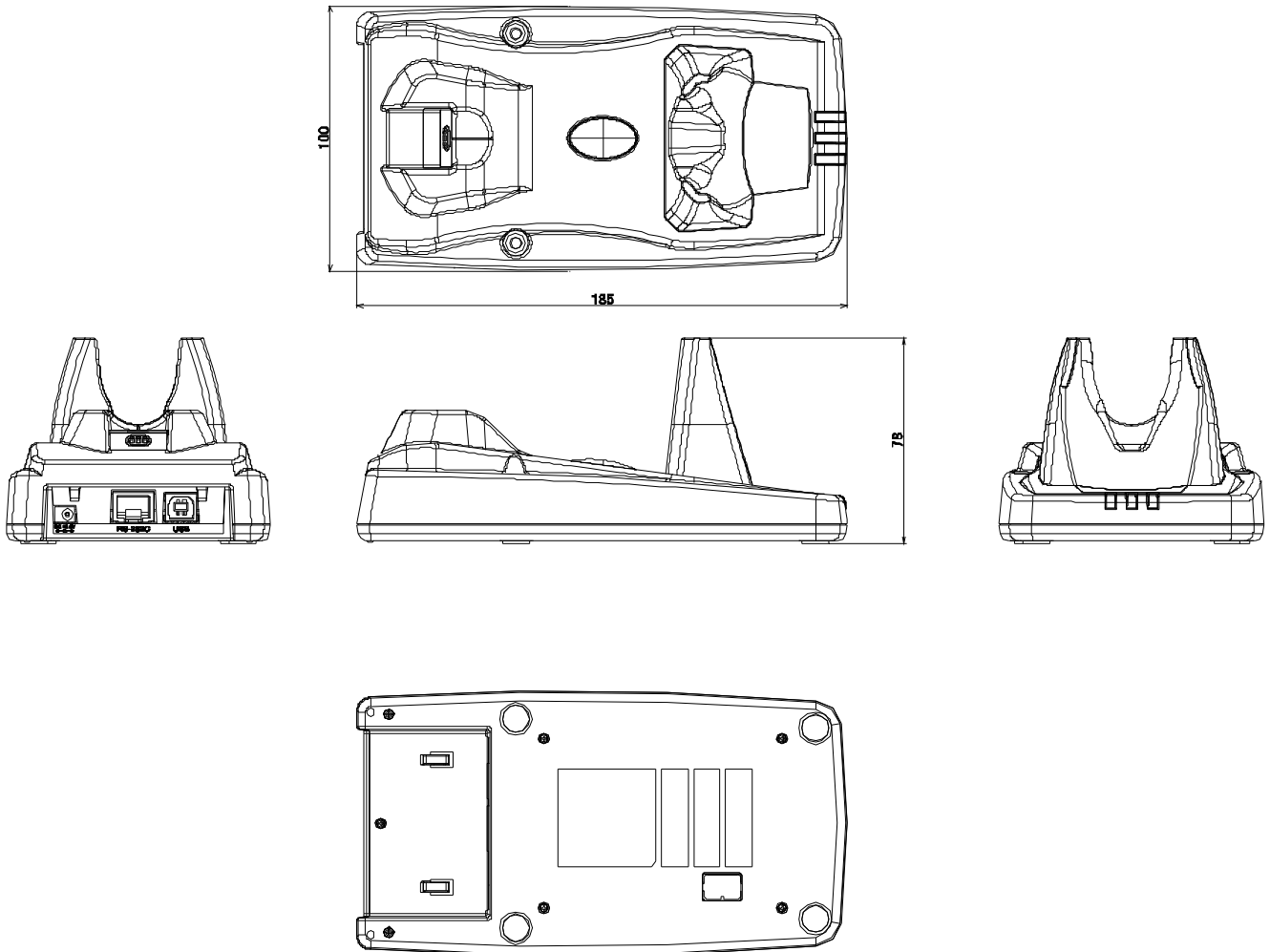
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Appendix. Mechanical Drawing

［単位： mm］

Figure 17: Mechanical drawing of CRD-3301

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