

# USER'S MANUAL



## ***RCTI-DY(II)*** Endo Motor

\*The unit must be installed by a qualified engineer.

\*Only for user by dental professionals.

\*Read this operation manual carefully before installation or operation.

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### REMARKS:

**The pictures here are for reference only.**

**Real products shall prevail.**

**The parameters and pictures in this manual are subject to change without prior notice.**

Thank you for purchasing our device. Before operating the device, please fully read the manual and this manual should be saved for later use.

DENJOY DENTAL CO., LTD will take the responsibility for the security, reliability, capability under the following conditions:

1. The installation, debugging, maintenance should be adjusted by the approbatory technician by our company or obtained related nation quality level license professions.
2. The power supply shall be in conformity with the relevant provisions of the state and the use requirements of device itself.
3. The device should be operated by licensed dental professionals with medical applied skill. The whole operation process should follow user's manual strictly.

DENJOY DENTAL CO., LTD has right to improve shape and structure of the device, change any information and technical specification of this manual all the time, and no need to notice the user in advance.

## **CONTACT INFORMATION**

The device is manufactured by:

DENJOY DENTAL CO., LTD

Address: F4, Building A4, Lugu Medical Device Park, No.229  
Guyuan Road, Changsha, 410205 P. R. China

Authorized European Representative:

Company name: LANDLINK GMBH

Address: DORFSTRASSE 2/4, EMMENDINGEN, 79312 GERMANY

**Please contact sales representative directly from whom you have bought this device for user's record and further after-sale service.**

## **SECTION 1: GENERAL INTRODUCTION**

RCTI-DY (II) Endo Motor is an endodontic operation instrument which combined with both endo motor and apex locator function. Endo motor function is a kind of endodontic micromotor to drive NiTi instruments, which can assist the dentists to shape more standard root-canal in the process of root-canal treatment based on the micro-electronic control technology. Apex locator function is a kind of highly precise instrument used for determining the position of apex of root canal

This unit contributes to alleviate the dentist's working intensity.

### **Product application and intended use**

RCTI-DY (II) Endo Motor is an endodontic operation instrument which combined with both endo motor and apex locator function.

Endo motor is used for treat the root canal pulp necrosis, chronic pulpitis, chronic apical periodontitis (including meat tooth apical swelling, periapical abscess, periapical cyst), periodontal pulp syndrome and systemic diseases should not be extract but urgent needed to be treat. Apex locator function is used for determining the position of apex in the root canal.

### **Unique advantages**

Use Endo rotary file to machinery enlarge the root canal , Not only enlarges to the root canal in straight situation, but also works for curved root canal. In combination with our Apex locator function, our equipment can independently realize Endo motor function or Apex locator function, but also it can realize both the mentioned two functions at the same time.

1, Large size LCD screen provide more clear and accurate data to the operator during their operation.

2, 10 different program (Can be memorized) which can be preset according the requirement of the operator.

3, This unit can adjust freely the torque value according to the required Endo rotary file specification, the LCD displays the working trace of the present torque, more clear and convenience during the operation of dentists.

4, Auto-reverse function: When the rotary file reaches the preset torque, the file will automatically withdraw until resistance cleared.

5, The operation handpiece is controlled by foot pedal.

6, The operation handpiece is designed as soft power on and power off, which do not have sense of shock when start rotary the Endo file and also avoid the break off of Endo file by speed up in short period.

7, The unit is powered by rechargeable Lithium battery, in order to protect the life-span and working life of the battery. The machine will turn off automatically in 8 minutes without use.

8, Contra angle, file holder and stainless hook can be 135°C autoclaved.

9, Build-in Rechargeable battery, greatly resolved the inconvenience of frequently replace the battery and the cost of using our equipment.

10, The Apex locator function can preset the Apex area, when the rotary file arrived to the preset Apex area, the machine will stop rotary.

## **Product performance introduction**

RCTI-DY (II) Endo Motor 2in1 adapted micro-electronic control technology in order to reduce the working intensity for the dentists. Following the feature:

1, 1:1 HP contra angle can provide 100-650 r/min adjustable speed. The speed can be adjusted in 23 levels, each level can increase or decrease 25 r/min.

2, The machine have 10 program, each program can be adjust torque, speed, auto-reverse, Apex area presetting independently. Each preset

program can be memorized and when restart the unit, you can just find the preset program by press "Program" button in a convenience way.

3, Torque can be adjusted range from 0.6-5.2 N/cm, each level can be 0.1 N/cm increase or decrease.

4, After set the specification, long-press the SAVE button for confirm. If didn't press the SAVE button then the specification will not keep for next time.

5, Long press POWER button for turn on/off.

6, When the battery need to be charged, the machine will alarm.

## SECTION 2: MAIN TECHNICAL INDEX

Model Name	RCTI-DY (II)
Trade Name	JoySmart
Anti-shock type	Built-in power supply
Anti-shock level	Class B
Harmful levels of protection into the liquid General Equipment	
Operation mode	Continuous Operation
Main Unit	



Rated voltage: Max. DC8.4V (Operated by charging battery)

Rated current: Max.1.2 A (Operated by charging battery)

Power consumption: 10VA (Operated by charging battery)

Net weight: 450 g

Adapter

Rated input voltage: AC100-240V 50HZ/60HZ

Rated input current: 0.25A

Output voltage: DC8.7V

Output current: 0.6A

Apex Measuring Method: Multi-Frequency Operating System

CE Port Output Voltage Peak: <350mV

Apical Constriction Reference Value: 0.0±0.1、 0.5±0.1

Measuring Error: 0.0-0.5

Apical Constriction Error: <0.5mm

## SECTION 3: SYMBOL

The following symbols may appear in this manual, on the label, or on it's accessories. Some of the symbols represent standards and compliances associated with the endo motor and its use.

	Consult accompanying documents
	Caution: Consult accompanying documents
	Authorized Representative in the European Community
	CE Mark: conforms to essential requirements of the Medical Device Directive 93/42/EEC.
	Sterilizable up to the temperature specified at most
	Date of manufacture.
	Manufacturer
	Specifies serial number
	Type B applied part

	<p>Refer to instruction manual / booklet</p>
	<p>The device should not be used after the end of the shown or the day</p>
	<p>DISPOSAL: Do not dispose this product as unsorted municipal waste. Collection of such waste separately for special treatment is necessary.</p>
	<p>alert indicator displayed on the LCD screen</p>
	<p>battery indicator displayed on the LCD screen</p>
	<p>Rotation direction</p>
	<p>Dynamic display of torque</p>
	<p>After the endo file exceeds the max preset torque, and then Endo file will stop working automatically.</p>
	<p>After the endo file exceeds the max preset torque, the Endo file will keep withdraw (reverse) until the removal of resistance, and then the file stop working.</p>
	<p>After the endo file exceeds the max preset torque, the Endo file will keep withdraw (reverse) until the removal of resistance, and then the file go back to forward rotation again.</p>

## SECTION 4: PRODUCT STRUCTURE

RCTI-DY (II) Endo Motor 2in1 is mainly combined by main unit, handle, foot pedal connecting wire and adapter. Main unit is mainly combined by the outer shell, controlling circuit, L-Battery, output connector and operation display LCD screen. Handle is mainly combined by the metal shell, Motor.

**Remarks: Standard accessories do NOT include endo rotary file.**



A	Main Unit
B	Handpiece Motor (Plastics or Metal)
C	HP Contra Angle 1:1
D	Endo Cable
E	Probe Cable
<b>F</b>	File Holder
G	Stainless Hooks

H	Foot Petal
I	Charger
J	Handpiece Motor Holder

## NEW MOTOR HANDPIECE

The material of motor handpiece for the current JoySmart endo motor with apex locator is white special plastics.

The new motor handpiece will be much lighter and can match better with the contra angle.

## TRANSPARENT DISPOSABLE SLEEVES

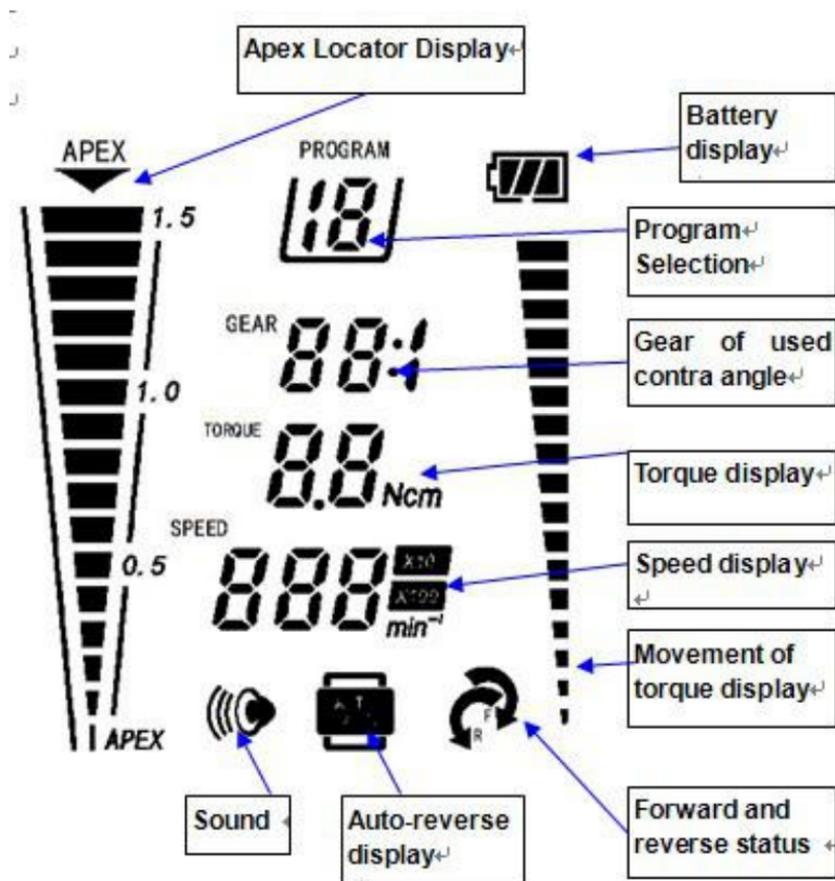


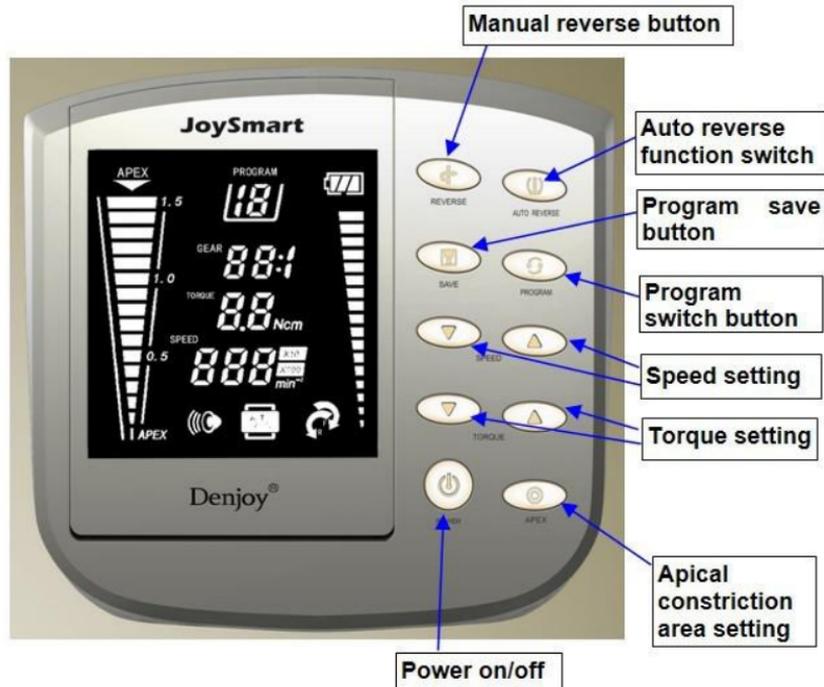
Each package includes one pack of disposable sleeves.  
(50 pieces/pack)

Disposable sleeves are used for covering the handpiece motor and contra angle during the process of whole operation. Please see the picture below.

## LCD display

**(The following LCD display is only for reference, NOT actual picture.)**





## SECTION 5: INSTALLATION AND SETTING

	<p>1, How to connect the foot pedal Connected foot pedal and then put the foot pedal plug into the related  socket</p>
	<p><b>2 How to connect the handpiece</b> Connect the handle set cable into the related  socket, please connect the point according to the red indication showed on the plug.</p>
	<p>3 How to connect the charger When the machine needs to be charged, please insert the charging plug inside the related  socket on the main unit</p>
	<p>4 How to connect the testing wire for Apex locator. After connected the testing wire, please insert the testing wire inside the related  socket</p>

Note: Please turn off the machine when connect the contra angle.

Note: When installing contra angle, please check that the contra angle connected with handle in good condition

## SETTING

### Speed setting:

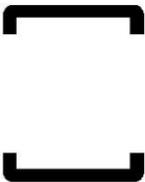
Hold press speed increase or decrease button and the speed will keep lasting increase or decrease quickly. Press the speed increase or decrease button once, then the speed will increase or decrease 25 r/min.

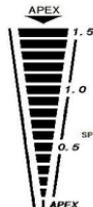
**Torque setting:**

Hold press torque increase or decrease button and the torque will keep lasting increase or decrease quickly. Press the torque increase or decrease button once, then the torque will increase or decrease 0.1N.cm。 When the gear displays 1:1 on the LCD, then only 1:1 contra angle is needed.

Picture	Description
	<p>Speed setting button</p> <p>▲▼Speed setting increase or decrease button, Press the speed setting button once and then the speed will increase or decrease 25 r/min and displays at the LCD screen.</p> <p>▲▼Hold press the speed setting button and the speed will keep increase or decrease 25 r/min and displays at the LCD screen</p>
	<p>Torque setting button</p> <p>▲▼Torque setting increase or decrease button, Press the torque setting button once and then the torque will increase or decrease 0.1Ncm and displays at the LCD screen.</p> <p>▲▼Hold press the torque setting button and the torque will keep increase or decrease 0.1Ncm and displays at the LCD screen</p>
	<p>Program switch button is for selecting the proper program from the saving program data, The numbers 1-10 will be displayed on the LCD screen and waiting for dentists to adjust it in their convenience working status.</p>

Picture	Description
	<p>This button only can be adjusted when the machine stops working.</p>
	<p>After setting up the convenience program, please hold press the saving button for memorize the setting. If you didn't memorize the setting by pressing this button, the program will go back to the original setting.</p> <p>This button only can be adjusted when the machine stops working.</p>
	<p>Auto reverse switch button is used for selecting different auto reverse program (3 programs in total). After selected the program, the LCD will shows the related display.</p> <p>This button only can be adjusted when the machine stops working.</p>
	<p>Manual reverse button is use for reverse manually. Press the manual reverse button once, then the file will stop and then reverse to the opposite side.Press the manual reverse button will reverse once only.</p> <p>NOTE: When the torque exceeds the max. setting, then the button is invalid.</p>
	<p>Extended press the power button for turn on/off the machine.</p>

Picture	Description
	<p>Apex setting button, press once for determine the apex position and in the same time displays on the LCD screen.</p> <p>During the operation, when the file exceeds the preset apex position, then the machine will reverse automatically.</p> <p>The numbers of Apex setting can be adjusted freely from 0.0 (APEX) to 1.0</p>
	<p>Auto reverse switch button -Program 1</p> <p>When the real torque exceeds the preset maximum value, the endo file will stop working automatically.</p>
	<p>Auto reverse switch button -Program 2</p> <p>When the real torque exceeds the preset maximum value, the endo file will keep withdraw (reverse) until the removal of resistance, and then the file stop working.</p>
	<p><b>Auto reverse switch button</b> -Program 3</p> <p>When the real torque exceeds the preset maximum value, the endo file will keep withdraw (reverse) until the removal of resistance, and</p>

Picture	Description
	then the file go back to normal rotation again.
NOTE: During the use of both Endo motor and Apex locator function, Endo file will reverse automatically according to the preset torque as well as the preset Apex position.	
	A display for the conditions between the preset torque and working torque
	Apex locating display

## SECTION 6: PREPARATION

- 1, Before use the machine, please connect the accessories and confirm.
- 2, Connect the 1:1 HP contra angle to the handpiece and install the rotary file to the contra angle. Make sure the connection is in good condition.
- 3, Double confirm the rotary has been installed in good condition. **Try to pull the rotary file out in order to check the rotary has been installed firm enough.**
- 4, Please confirm the rotary file size according to the Apex environment, before confirm the rotary file, please use 10# or 15# hand file for trial the size of Apex. Then select the correct NI-TI rotary file according to the size of the hand file.
- 5, Long press the POWER button for turn on the machine.

6, Adjust the specification of the machine according to the process of the endodontic treatment.

7, Make sure the LCD display shows exact specification of the needed endodontic treatment.

## SECTION 7: OPERATION

### 1,Charger

- 1) Connect the charger to the main unit and then connect the plug of the charger to the Power outlet
- 2) When the machine is charging, connect the charger to the power outlet and the mark of battery indicates will flash. If the mark of battery indicates stop flashing means the machine has been fully charge.
- 3) Pull out the adapter.

### 2, Function of Apex Locator

A, Please connect probe cable (Probe cable referring to E in Section 4) to file holder and insert the stainless hook into the interface, then hang it up at any side of the sufferer's mouth.

B, Insert the apex file into the root canal and start testing

 Please do not use foot pedal during Apex location period.

### 3,Function of Endo motor

A, Connect foot pedal, handpiece motor cable to the main unit.

B, Depresses the foot pedal to start the operation

 **Independent use for endo motor function, please do not use** probe cable and endo cable..

### 4, Function of Apex locator & Endo motor together.

A, Connect the foot pedal, handpiece motor cable, HP contra angle and endo cable. ( Endo cable referring to D in Section 4)

B, Please connect the file holder to endo cable and insert the stainless hook into the interface, then hang it up at any side of the sufferer's mouth.

C, Depresses the foot pedal to start the operation.

**When activate the functions of endo motor and apex locator together, the following spare parts are needed.**



**⚠** During this function status, the machine will start Endo motor and Apex location function in the same time, when the rotary file reaches the preset Apex area, the machine will automatically withdraw until the resistance released.

## **5, Operation of the handpiece**

A, When depresses the foot pedal, the rotary file will start rotary, when losses the foot pedal, the rotary file will stop.

B, If you need to adjust the speed and torque value, please press the TORQUE or SPEED button.

## **SECTION 8: OPERATION AFTER USE**

1, Long press the power button for turn off the machine after use. Machine will turn off automatically in 8 minutes without use.

2, Please pull out the rotary file after use.

During install or Disassemble the rotary file, please be careful and don't get your finger hurt.

3, Please disassemble the handpiece cable and foot pedal after use the machine.

4, Please recharge the machine until the power is enough for next operation.

## SECTION 9: MAINTENANCE & STERILIZATION

### 1 STERILIZATION

1) The following accessories which can be high pressure autoclaved: Contra angle, rotary file, bracket for rotary file, cable holder and bracket.

Except the mentioned above, other parts can't use for high pressure autoclave.

The mentioned above accessories we suggest use 135°C autoclave for 20 minutes.

 Please note: Please autoclave contra angle and rotary file after each use.

If the accessories are within medical Liquid, please clean the accessories until it cleaned enough and then process high pressure autoclave.

**Before autoclave contra angle, please use AR spray for cleaning the contra angle.**

· Please autoclave the rotary file according to the file manufacturer requirement.

2) The Following accessories can be sterilized with alcohol wipes

· Operation handpiece, handpiece connection cable

Please sterilize the accessories by gauze within alcohol.

 Please note: Please do not use any other chemical Disinfectant for

sterilize the operation handpiece and handpiece connection cable.

### 3) Cleaning for other parts

·When the main unit, adapter and foot pedal need to be cleaned, please wipe them with Neutral detergent and then wipe with damp cloth.

 Please note: Main unit, adapter and foot pedal can not be cleaned by Paint thinner, gasoline type cleaning solution.

·Please do not splash any chemical or medicine to the product, that medicine spray will affect the resin or stainless steel.

## 2, MAINTENANCE

1) Please keep the machine under the environment without X-ray or sunlight. The temperature outside could be  $-10\text{ }^{\circ}\text{C} \sim 55\text{ }^{\circ}\text{C}$ , humidity range under 90%, Atmospheric pressure: 80 – 106 kPa.

2) When the machine stopped use for 6 months, please recharge the battery for 5 minutes for restart the battery. If the machine do not get into use for very long time, please recharge battery 5 minutes each 3 months.

3) The machine has the life span for 5 years.

## SECTION 10: PRECAUTION

Most of the operation and maintenance of the failure is due to the basic security precautions and dangers without notice, due to the attention. In accordance with the company to use the recommended equipment for potential hazards to predict, prevent failures from occurring.

Please read all the safety precautions, dangerous items, as well as "medical electrical equipment (safety and risk prevention) precautions" must be very careful to prevent the equipment's damage and accidents.

The operation of our Endo motor should be operated by licensed professionals, the operator should specialized in medical applied skill. The

whole operation process should according to user's manual strictly.

## **WARNING**

Please wear a pair of insulated gloves during the operation.

This product is not waterproof, so as far as possible without rendering, or liquid such as water on the machine to prevent short circuit caused by heat or rust and other damage to the machine.

The machine can be misused in the environment of electromagnetic, please keep the machine away from the environment of high electromagnetic.

## **FORBIDDEN**

The cardiac pacemaker patient can not use this product.

Do not use with high-frequency surgical equipment and heart disease in patients with caution!

The machine can only be used independently; please do not connect the machine with other products.

Please do not use the machine when it's charging

## **NOTE:**

- Patient safety first and exercise caution when using this product.
- This product is limited to use by qualified dentist in dental treatment.
- Be sure to use the product supporting the battery and charger. Prohibit the use of other brand products, so as to avoid failure.

- Do not use damaged, bent, rusted rotary file, to avoid the use occurred during the root canal reamer broken or out of the risk of casualties.

- Do not use this product on hold or place in direct sunlight or hot weather inside or close to the flame, where heater to prevent the product overheating caused by the internal circuitry of the fault caused the fire or battery explosion.

- Please check carefully to whether is loose, vibration, noise and heat

phenomena in advance in the oral cavity, operating outside inspection. If feel any abnormal phenomenon, users are requested to promptly stop using and contact the dealer.

## SECTION 11: SELF-CHECKING

Please self-checking the machine at the following process

- 1) Please check the power can be turned on/off in good condition.
- 2) If the machine without use for 3 months, please charge the battery in a short time for restart the battery,
- 3) Please check the mode button can be adjusted correctly.
- 4) Please check the operation handpiece connector is cleaned enough and doesn't get any damage.
- 5) Check the contra angle connection part is cleaned enough and doesn't get any damage. Please check the contra angle can connect with operation handpiece correctly. Check whether the rotary file can be assembled conveniently and whether it get break or not.

## SECTION 12: TROUBLESHOOTING GUIDE

When trouble is found, check the following again before contacting your dealer. If none of these are applicable or the trouble is not remedied even after action has been taken, the product may have failed. Contact your dealer.

<b>Problems</b>	<b>Cause &amp; Solution</b>
The power is not turned on	The batteries are empty. Charge the batteries or use the AC adapter.
	The press of the power button is short. Please long press the power button
	The POWER button is broken. Contact with your dealer.

The setting cannot be changed.	The machine is still on operation, Release the foot pedal.
	Button is broken. Contact with your dealer.
The operation handpiece does not working correctly.	Make sure the connection is correct.
	Handpiece or connection cable is broken. Contact with your dealer
	The foot pedal does not connect well. Confirm the connection of the foot pedal
The Foot pedal or connection wire is broken. Contact with your dealer	
The machine can't be reversed.	The auto-reverse function didn't preset. Please preset the auto-reverse function
The battery can't be charged.	The adapter didn't connect well. Please recheck the connection
	The adapter is broken. Contact with your dealer
	The battery is broken. Contact with your dealer
The machine can not use Apex locator function	The machine has been connected with adapter. Pull out the adapter.
	The apex locator didn't connect well. Please confirm the connection
	The Apex locator wire is broken. Contact with your dealer.
The device can not work normally.	For this situation, please connect the handpiece and contra angle ( at non-charging condition), extended press speed button "▲" and "▼" at the same time until the LCD display shows the mark "—". Then extended presses the SAVE button for clear the inner data for the torque and speed.

## **SECTION 13: ENVIRONMENTAL REQUIREMENTS**

### **OPERATING CONDITIONS**

Ambient temperature: 5°C ~ 40°C

Relative humidity range: ≤80%

Atmospheric pressure: 70kPa~ 106kPa

### **STORAGE AND SHIPPING CONDITIONS**

Ambient temperature: -40°C ~ 55°C

Relative humidity range: ≤80%

Atmospheric pressure: 50kPa ~ 106kPa

Equipment is not suitable for storage in the presence of sunlight, rain, dust, and corrosive gasoline and volatile without poor ventilation.

Transportation is applicable to all common method.

## **SECTION 14: WARRANTY STATEMENT**

The device is maintained free of charge and doesn't require any routine maintenance within warranty period.

Do not modify and disassemble the device.

This instrument described below has been fully inspected and confronts to the current products specification.

This instrument is guaranteed for its designated use, against original defects in materials and workmanship for a period of 12 months from date of purchase.

Products warranty or service will not be extended if (1) the product is repaired, modified, misused, disassembled, or using the parts are not provided by the manufacturer, (2) The serial number of the product is defaced or missing.

The guarantee for accessories is 6 months. All accessories of the device

are damaged or needed to be renewed, the user can purchase new accessories from the seller.

## WARNING

The device is not repairable by user and contains no user serviceable parts. No modification of this equipment is allowed.

The user must check that the equipment functions safely and see that it is in proper working condition before being used.

The manufacturer does not require such preventive inspections by other persons.

**Please contact sales representative directly from whom you have bought this device for user's record and further after-sale service.**

Table 1

<b>Guidance and manufacturer's declaration - electromagnetic emissions</b>		
The [RCTI-DY ( II )] is intended for use in the electromagnetic environment specified below. The customer or the user of the [RCTI-DY ( II )] should assure that it is used in such an environment		
<b>Emissions test</b>	<b>Compliance</b>	<b>Electromagnetic environment - guidance</b>
RF emissions CISPR 11	Group 1	The [RCTI-DY ( II )] uses RF energy only for its internal function. Therefore, its RF emissions are very low and are not likely to cause any interference in nearby electronic equipment.

RF emissions CISPR 11	Class [B]	The [RCTI-DY ( II ) ] is suitable for use in all establishments other than domestic, and may be used in domestic establishments and those directly connected to the public low-voltage power supply network that supplies buildings used for domestic purposes, provided the following warning is heeded:  <b>Warning:</b> This equipment/system is intended for use by healthcare professionals only. This equipment/ system may cause radio interference or may disrupt the operation of nearby equipment. It may be necessary to take mitigation measures, such as re-orienting or relocating the [RCTI-DY ( II ) ] or shielding the location.
Harmonic emissions IEC 61000-3-2	Class A	
Voltage fluctuations/ flicker emissions IEC 61000-3-3	Complies	

Table 2

**Guidance and manufacturer's declaration - electromagnetic emissions**

The [RCTI-DY ( II )] is intended for use in the electromagnetic environment specified below. The customer or the user of the [RCTI-DY ( II )] should assure that it is used in such an environment

<b>Immunity Test</b>	<b>IEC 60601 Test level</b>	<b>Compliance level</b>	<b>Electromagnetic environment - guidance</b>
Electrostatic discharge (ESD) IEC 61000-4-2	±6 kV contact ±8 kV air	±6 kV contact ±8 kV air	Floors should be wood, concrete or ceramic tile. If floors are covered with synthetic material, the relative humidity should be at least 30 %
Electrical fast transient/burst IEC 61000-4-4	±2 kV for power supply lines ±1 kV for input/output lines	±2 kV for power supply lines	Mains power quality should be that of a typical commercial or hospital environment. The electrical fast transient burst (EFT) is generated by the switching of inductive loads. Separation between the equipment and other loads shall be considered before

			installation. Mains filter is required, if necessary.
Surge IEC 61000-4-5	±1 kV line(s) to line(s) ±2 kV line(s) to earth	±1 kV line(s) to line(s)	Mains power quality should be that of a typical commercial or hospital environment.
Voltage dips, short interruptions and voltage variations on power supply input lines IEC 61000-4-11	<5% $U_T$ (>95% dip in $U_T$ ) for 0.5 cycle  40% $U_T$ (60% dip in $U_T$ ) for 5 cycle  70% $U_T$ (30% dip in $U_T$ ) for 25 cycle  <5% $U_T$ (>95% dip in $U_T$ ) for 5s	<5% $U_T$ (>95% dip in $U_T$ ) for 0.5 cycle  40% $U_T$ (60% dip in $U_T$ ) for 5 cycle  70% $U_T$ (30% dip in $U_T$ ) for 25 cycle  <5% $U_T$ (>95% dip in $U_T$ ) for 5s	Mains power quality should be that of a typical commercial or hospital environment.  If the user of the [RCTI-DY (II)] requires continued operation during power mains interruptions, it is recommended the [RCTI-DY (II)] be powered from an uninterruptible power supply or a battery.
Power	3 A/m	3 A/m	Power frequency

frequency (50/60Hz) magnetic field IEC 61000-4-8			magnetic fields should be at levels characteristic of a typical location in a typical commercial or hospital environment.
NOTE $U_T$ is the a.c. mains voltage prior to application of the test level.			

Table 3

<b>Guidance and manufacturer's declaration - electromagnetic emissions</b>			
The [RCTI-DY ( II )] is intended for use in the electromagnetic environment specified below. The customer or the user of the [RCTI-DY ( II )] should assure that it is used in such an environment			
<b>Immunity Test</b>	<b>IEC 60601 Test level</b>	<b>Compliance level</b>	<b>Electromagnetic environment - guidance</b>
Conducte	3Vrms	3V	Portable and mobile RF communications equipment should be used no closer to any part of the [RCTI-DY ( II )], including cables, than the recommended separation distance calculated from the equation applicable to the frequency of the

<p>d RF IEC 61000-4-6</p>	<p>150KH z to 80MHz</p>	<p>3 V/m</p>	<p>transmitter.</p> <p><b>Recommended separation distance</b></p> $d = \left[ \frac{3,5}{V_1} \right] \sqrt{P}$
<p>Radiated RF IEC 61000-4-3</p>	<p>3 V/m 80MHz to 2.5GHz</p>		$d = \left[ \frac{3,5}{E_1} \right] \sqrt{P} \quad 80 \text{ MHz to } 800 \text{ MHz}$ $d = \left[ \frac{7}{E_1} \right] \sqrt{P} \quad 800 \text{ MHz to } 2,5 \text{ GHz}$ <p>where <math>p</math> is the maximum output power rating of the transmitter in watts (W) according to the transmitter manufacturer and <math>d</math> is the recommended separation distance in metres (m)</p> <p>Field strengths from fixed RF transmitters, as determined by an electromagnetic site survey,<sup>a</sup> should be less than the compliance level in each frequency range.<sup>b</sup></p> <p>Interference may occur in the vicinity of equipment marked with the following symbol:</p>



NOTE 1 At 80 MHz and 800 MHz, the higher frequency range applies.

NOTE 2 These guidelines may not apply in all situations. Electromagnetic propagation is affected by absorption and reflection from structures, objects and people.

<sup>a</sup> Field strengths from fixed transmitters, such as base stations for radio (cellular/cordless) telephones and land mobile radios, amateur radio, AM and FM radio broadcast and TV broadcast cannot be predicted theoretically with accuracy. To assess the electromagnetic environment due to fixed RF transmitters, an electromagnetic site survey should be considered. If the measured field strength in the location in which the [RCTI-DY ( II ) ] is used exceeds the applicable RF compliance level above, the [RCTI-DY ( II ) ] should be observed to verify normal operation. If abnormal performance is observed, additional measures may be necessary, such as re-orienting or relocating the [RCTI-DY ( II ) ].

<sup>b</sup> Over the frequency range 150 kHz to 80 MHz, field strengths should be less than 3 V/m.

Table 4

**Recommended separation distances between portable and mobile RF communications equipment and the [RCTI-DY ( II ) ]**

The [RCTI-DY ( II ) ] is intended for use in an electromagnetic environment in which radiated RF disturbances are controlled. The customer or the user of the [RCTI-DY ( II ) ] can help prevent electromagnetic interference by maintaining a minimum distance between portable and mobile RF

communications equipment (transmitters) and the [RCTI-DY ( II ) ] as recommended below, according to the maximum output power of the communications equipment.

Rated maximum output power of transmitter W	Separation distance according to frequency of transmitter m		
	150 kHz to 80 MHz $d=1.2 \sqrt{P}$	80MHz to 800MHz $d=1.2 \sqrt{P}$	800MHz to 2.5GHz $d=2.3 \sqrt{P}$
0,01	/	0.12	0.23
0,1	/	0.38	0.73
1	/	1.2	2.3
10	/	3.8	7.3
100	/	12	23

For transmitters rated at a maximum output power not listed above, the recommended separation distance  $d$  in metres (m) can be estimated using the equation applicable to the frequency of the transmitter, where  $P$  is the maximum output power rating of the transmitter in watts (W) according to the transmitter manufacturer.

NOTE 1 At 80 MHz and 800 MHz, the separation distance for the higher frequency range applies.

NOTE 2 These guidelines may not apply in all situations. Electromagnetic propagation is affected by absorption and reflection from structures, objects and people.

## WARRANTY REGISTRATION FORM

Item Name: \_\_\_\_\_

Model Name: \_\_\_\_\_

Serial No.: \_\_\_\_\_

Date of Purchase: \_\_\_\_\_

Name: \_\_\_\_\_

Address: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Phone: \_\_\_\_\_

Email: \_\_\_\_\_

Name of Distributor: \_\_\_\_\_

Authorized Distributors: \_\_\_\_\_

Stamp and Signature