

# ICT<sub>motor</sub>

## Operating Instruction

I012-01MU-02 rev.07(2023.05)



**Dentium**  
For Dentists By Dentists

## Table of Contents

|                                                                       |           |
|-----------------------------------------------------------------------|-----------|
| <b>1. Overview</b>                                                    | <b>04</b> |
| 1.1 Description and Purpose of Product                                | 04        |
| 1.1.1 Product Description                                             | 04        |
| 1.1.2 Intended Purpose                                                | 04        |
| 1.2 Distinction                                                       | 05        |
| <b>2. Precaution</b>                                                  | <b>05</b> |
| 2.1 Precaution Prior to Use                                           | 05        |
| 2.2 Precaution for Use                                                | 06        |
| 2.3 Precaution related to Electricity                                 | 06        |
| 2.4 Warning                                                           | 07        |
| <b>3. Safety Instruction</b>                                          | <b>07</b> |
| 3.1 Symbol                                                            | 07        |
| 3.2 Explanation of Control Unit Symbols (Main Unit + Foot Controller) | 08        |
| 3.3 Explanation of Packing Box Symbols                                | 08        |
| <b>4. Components</b>                                                  | <b>09</b> |
| <b>5. Technical Information</b>                                       | <b>10</b> |
| <b>6. Name of Part</b>                                                | <b>11</b> |
| 6.1 Main Unit                                                         | 11        |
| 6.2 LCD Panel                                                         | 12        |
| 6.3 Foot Controller Module                                            | 12        |
| 6.4 Micro Motor                                                       | 13        |
| <b>7. Installation</b>                                                | <b>13</b> |
| 7.1 Power Connection                                                  | 13        |
| 7.1.1 Power Cord Connection                                           | 13        |
| 7.1.2 How to connect foot Controller battery(1.5V X 2EA)              | 14        |
| 7.2 Irrigation Installation                                           | 15        |
| 7.2.1 Distilled Water Bag Support Installation                        | 15        |
| 7.2.2 Irrigation Tube Installation                                    | 15        |
| 7.3 Connecting Connectors                                             | 16        |
| 7.3.1 Connection Micro Motor                                          | 16        |
| 7.3.2 Disconnection Micro Motor                                       | 17        |
| 7.3.3 Connection Foot Controller                                      | 17        |
| <b>8. How to Operate Control Panel</b>                                | <b>18</b> |
| 8.1 Turing Power Switch On                                            | 18        |
| 8.2 Explanation of Control Panel Buttons                              | 18        |
| 8.3 Display Selection and Change                                      | 19        |
| 8.4 Program Selection and Change                                      | 20        |
| 8.4.1 Changing Program                                                | 20        |
| 8.4.2 Changing Rotational Speed (RPM)                                 | 21        |
| 8.4.3 Changing Torque                                                 | 21        |
| 8.4.4 Changing Direction                                              | 22        |
| 8.4.5 Adjust handpiece brightness                                     | 22        |
| 8.4.6 Changing Irrigation                                             | 23        |
| 8.4.7 Changing Gear Ratio                                             | 23        |
| 8.4.8 Foot Controller                                                 | 24        |



---

|                                                          |           |
|----------------------------------------------------------|-----------|
| <b>9. Sterilization</b>                                  | <b>24</b> |
| 9.1 Sterilization of Micromotor                          | 25        |
| <b>10. Cleaning and Storage</b>                          | <b>25</b> |
| 10.1 Main Unit and Foot Controller                       | 25        |
| 10.2 Storage of Main Unit                                | 25        |
| 10.3 Micro Motor                                         | 25        |
| <b>11. Maintenance</b>                                   | <b>26</b> |
| 11.1 Routine Check                                       | 26        |
| <b>12. Troubleshooting</b>                               | <b>27</b> |
| <b>13. Label Position</b>                                | <b>28</b> |
| 13.1 Main Unit (Front)                                   | 28        |
| 13.2 Main Unit (Rear)                                    | 28        |
| 13.3 Foot Controller                                     | 29        |
| 13.4 Handpiece                                           | 29        |
| <b>14. Information for Electromagnetic Compatibility</b> | <b>29</b> |
| 14.1 Resistance to Electronic Interference               | 30        |
| 14.2 Protection Distance                                 | 31        |
| <b>15. Precaution for system Disposal</b>                | <b>32</b> |
| <b>16. Product Warranty and service</b>                  | <b>33</b> |

---

## About Manual

Thank you for buying Dentium iCTmotor(WL-1) engine equipment for dental implant procedure.

This manual explains how to use, how to handle the equipment and the contents related to overall use in detail.

For the smooth use of equipment, please read this manual thoroughly before using the equipment.

Please keep this manual nearby the equipment for your reference refer any time

This manual is subject to change without prior notice according to the quality upgrade, change of specification, etc.

Manual Version : 7

Manual Publication Date : 2023.05.23

Telephone: +82-70-7098-4027,6909

Homepage: [www.dentium.co.kr](http://www.dentium.co.kr)

Address: (16229) 76, Changnyong-daero 256beon-gil, Yeongtong-gu, Suwon-si, Gyeonggi-do, Republic of Korea

---

## 01 Overview

### 1.1 Description and Purpose of Product

#### 1.1.1 Product Description

- As an engine to drive the handpiece for dental implant procedure, Dentium iCTmotor(WL-1) is not only convenient but also accurate and safe medical device for dental implant procedure enabling rotational speed and torque value check in real-time not to mention its ergonomic design
- Standard system is composed of main unit, micro motor and foot Controller

#### 1.1.2 Intended Purpose

- The iCTmotor from Dentium is a driving engine for dental handpiece, designed for dentists to perform dental surgery and implantology. The main unit is designed to operate a specific dental micromotor that drives dental handpiece fitted with appropriate tools to cut hard and soft tissues in the mouth and to screw dental implants. This device is optimized for dental implant procedure, featuring user-programmable controller to change parameters of dental handpiece for every surgical steps of dental implant. The application of iCTmotor is implant placement

The expected patient group with limitation is not exist separately. The iCTmotor is an engine that drives a hand piece for an implant during dental implant. we cannot determine patients group because using of the handpiece is determined by dentists or authorized specialists

For the safety of both patient and dental practitioner, please read and understand this Operating Instruction prior to the initial usage of this product. For technical support or any issues associated with this product, please contact the authorized service center for prompt technical service

There are some contact parts of operator, and duration is within 1 minute

---

## 1.2 distinction

- Stable torque optimized for implant procedure applied with RPM control technology
- Provide real-time torque and RPM display function
- Improve convenience for movement within hospital and usability by applying wireless power system
- Minimize the inconvenience by the interference of cable by applying wireless foot Controller
- Optic handpiece provides convenient operation
- Enable efficient procedure through 7 program memory functions
- 20RPM control technology through Dentium's low speed and high torque control technology
- Improve movement with compact product size

---

## 02 Precaution

---

### 2.1 Precaution Prior to Use

- iCTmotor(WL-1) is the medical device and should be operated by qualified personnel only
- Before use, read the user's manual thoroughly
- For the parts required the disinfection, use the equipment after disinfecting them all
- When using the equipment, use after verifying operating condition, status, and distance to the patient
- Do not modify the equipment without authorization of manufacturer. The damage by the disassemble at user's discretion will not be covered by the warranty even within the warranty period Verify if the equipment is assembled well by pulling the handpiece connected to micro motor before use
- Do not place any similar medical electrical equipment nearby this equipment. It may degrade the performance of this equipment. To avoid the electromagnetic interference, avoid the other electromagnetic energy sources
- If any product other than recommended is used, it may degrade the performance and cause the fault
- Use of accessories, transducers and cables other than those specified or provided by the dentium of this equipment could result in increased electromagnetic emissions or decreased electromagnetic immunity of this equipment and result in improper operation



Warning

No modification of this equipment is allowed"

"Warning: If this equipment is modified, appropriate inspection and testing must be conducted to ensure continued safe use of equipment"

---

## 2.2 Precaution for Use

- After procedure, keep the handpiece in the dedicated holder  
Be careful not to touch the operating instrument with hands or for it to contact with other objects while it is rotating
- Do not assemble or disassemble the handpiece while it is operating
- Connecting handpiece should be made after the micro motor and related instruments are completely stopped
- Since the equipment may malfunction or the performance may be degraded if excessive force is applied, do not apply excessive load  
If the noise or heat occurs during the use, stop using it and contact and inquire to the representative of Dentium or manufacturer nearby before use again
- If any product other than recommended is used, it may degrade the performance and cause the fault
- Do not drop the equipment or apply strong external shock to the equipment
- Do not insert the hand in the irrigation pump gap. It may cause injury
- This product is not the medical device to provide the heat to the patient
- This product can be applied to healthy skin of adult
- The temperature in the dental handpiece grip and head is over 41°C (reach to maximum 43°C after 3 minutes consecutive use)
- Contacting with hot part of the product directly and extended period of time may cause low temperature burn
- Those who have blood flow disorder (vascular disorder, blood circulation disorder, diabetes and hypertension) or have sensitive skin sensation are vulnerable to low temperature burn
- Irrigation tube is disposable. Be careful for disposing it as medical waste after using it
- For equipment check and repair, please contact and inquire to the dealer that the equipment is bought or manufacturer

## 2.3 Precaution related to Electricity

- Use the correct rated input condition according to the rating of the external power supply
- When installing the equipment, avoid the place where the connection of handpiece connector or power plug is hard
- When the input power needs to be changed, inquire to the dealer nearby or manufacturer
- Do not pull out the power plug by force

## 03 Safety Instruction

### 2.4 Warning

- Do not pull out the power plug by force
- Do not pour or spray liquid substance such as water. It may cause the electric shock, equipment damage or fire, etc
- Do not keep the inflammable substance around the equipment. It may cause the fire
- Do not operate the equipment operation switch during the equipment. It may cause the malfunction
- When the fire breaks out, use only the fire extinguished marked with relevant use  
If the water or liquid is used against the electrical fire, it may cause serious injury or damage to the person and equipment. You should disconnect the power plug before extinguishing fire to prevent the risk of electric shock
- Do not disinfect the equipment with spray. The sprayed disinfectant/sterilizer may cause the ignition



**Warning**

No modification of this equipment is allowed  
"It may cause critical damage to the equipment and human body"  
(Lithium-ion battery, Lithium-ion charger, controller, Cable)

### 3.1 Symbol

- In this manual, following symbols are used for efficient product use and please understand the meaning of the symbol and observe it
- To prevent the physical injury or property damage, observe the safety precaution described in this document. The precaution is shown with the below symbols

| Symbol | Name of Symbol                                       | Meaning                                                                                                                |
|--------|------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------|
|        | NOTE                                                 | Provide information required to use the product and the precautions                                                    |
|        | CAUTION                                              | Is the important instruction required to use the product. It may cause critical damage to the equipment and human body |
|        | WARNING                                              | Is the important instruction required to use the product. It may cause critical damage to the equipment and human body |
|        | AUTOCLAVE                                            | Enable the autoclave up to 134°C                                                                                       |
|        | SEPERATE DISPOSAL OF ELECTRIC AND ELECTRONIC PRODUCT | Show disposal as guide instruction                                                                                     |
|        | DANGER                                               | Caution not to jam the finger in irrigation module                                                                     |
|        | ELECTROMAGNETIC INTERFERENCE                         | Show electromagnetic interference standard in manual                                                                   |

### 3.2 Explanation of Control Unit Symbols (Main Unit + Foot Controller)

| Symbol                                                                              | Name of Symbol                                       | Meaning                                                              |
|-------------------------------------------------------------------------------------|------------------------------------------------------|----------------------------------------------------------------------|
|    | WARNING                                              | It may cause critical damage to the equipment and human body         |
|    | DANGER                                               | Do not insert the finger in the irrigation module                    |
|    | AUTOCLAVE                                            | Autoclave is enabled up to 134°C                                     |
|    | POWER PLUG                                           | Show polarity of DC power plug                                       |
|    | POWER SYMBOL                                         | Show power is off                                                    |
|    | POWER SYMBOL                                         | Show power is on                                                     |
|    | Type B mounting part                                 | Show type B protection class                                         |
|    | FOOT Controller                                      | Show foot Controller                                                 |
|   | SEPERATE DISPOSAL OF ELECTRIC AND ELECTRONIC PRODUCT | Show disposal as guide instruction                                   |
|  | MANUFACTURING DATE                                   | Show manufacturing date                                              |
|  | MANUFACTURER                                         | Show manufacturer                                                    |
|  | EUROPEAN REPRESENTATIVE                              | Show office EC representative                                        |
|  | MODEL NAME                                           | Show model name of product                                           |
|  | NOT NO.                                              | Show manufacturing NOT No.                                           |
| <b>VA</b>                                                                           | ACTIVE POWER                                         | Show power rating                                                    |
| <b>IPX 1</b>                                                                        | RATE OF WATERPROOF                                   | Show waterproof rating                                               |
|  | Note                                                 | It shows the information and precautions required to use the product |

### 3.3 Explanation of Packing Box Symbols

| Symbol                                                                              | Name of Symbol             | Meaning                                                  |
|-------------------------------------------------------------------------------------|----------------------------|----------------------------------------------------------|
|  | Direction of Packing Box   | When loading, load the direction indicated by arrow mark |
|  | Caution for Shock          | Fragile: Protect from shock                              |
|  | Moisture Control           | Protect from moisture                                    |
|  | Storage Temperature Range  | Show storage temperature range (0~+60°C)                 |
|  | Atmospheric Pressure Range | Show storage atmospheric pressure range (700~1060hPa)    |

|                                                                                   |                        |                                        |
|-----------------------------------------------------------------------------------|------------------------|----------------------------------------|
|  | Storage Humidity Range | Show storage humidity range (90% Max.) |
|  | Recyclable             | Show it is recyclable                  |
|  | Loading                | Stack packing box 5 layers or less     |

## 04 Components



| No. | Name                          | Quantity |
|-----|-------------------------------|----------|
| (a) | Main Unit                     | 1        |
| (b) | Foot Controller               | 1        |
| (c) | Micro Motor (including cable) | 1        |
| (d) | Distilled Water Bag Support   | 1        |
| (e) | AC Power Cable                | 1        |
| (f) | Main Unit Charger             | 1        |
| (g) | Sterilized Cap                | 1        |
| (h) | Tube Holder                   | 10       |
| (i) | Micro Motor Holder            | 1        |
| (j) | Handpiece (Optional)          | -        |



## 05 Technical Information

|                                   |                                                                                                                                                                         |
|-----------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Dimension                         | Main Unit: 27.8(W) X 17.5(D) X 13.4(H) Cm<br>Micro Motor: Ø 22 X 120(L) Cm<br>Foot Controller: 21.7(W) X 12(D) X 5.55(H) Cm                                             |
| Material                          | Main Unit: Plastic<br>Foot Controller: Plastic<br>Micro Motor: Stainless Steel                                                                                          |
| Weight                            | Main Unit: 3 kg<br>Foot Controller: 0.7 kg<br>Micro Motor: 0.4 kg                                                                                                       |
| Handpiece Speed and Torque range  | Rotational Speed Range: 20 – 2,000 rpm<br>Rotational Torque Range: 5 - 70 N·cm<br>(※ Based on 20:1 of gear ratio)                                                       |
| Foot Controller Waterproof Rating | IPX 1                                                                                                                                                                   |
| Irrigation                        | Level 1 : 40 mL/min<br>Level 2 : 50 mL/min<br>Level 3 : 60 mL/min                                                                                                       |
| Main Unit                         | Model : WL-1<br>Manufacturer : Dentium Co.,Ltd.(ICT Branch)<br>Rated input<br>- 42Vd.c, 1.5A (Connected Main Unit Charger)<br>- 36.5Vd.c, 2,750mAh(Only Li-ion Battery) |
| Main Unit Charger                 | Model: XVE-4200150<br>Manufacturer: JIN XIN YU POWER SUPPLY Co., Ltd.<br>Rated Input : 100-240V~50/60Hz, Max. 1.5A<br>Rated output : 42Vd.c., 1.5A                      |
| Foot Controller                   | Model : WLF-1<br>Manufacturer : Dentium Co., Ltd.(ICT Branch)<br>Rated Input : 3Vd.c.                                                                                   |
| Wireless specifications           | IEEE 802.15(Zigbee)<br>Frequency range : 2405-2480MHz<br>Number of channel : 16<br>Channel spacing : 5MHz<br>RF output power : 8.6dBm EIRP                              |
| Service Environment               | Temperature: 10 ~ 35 °C<br>Relative Humidity: 80 % (Max.)<br>Atmospheric Pressure: 800 - 1,060 hPa                                                                      |
| Transport & Storage Environment   | Temperature: 0 – 60 °C<br>Relative Humidity: 90 % (Max.)<br>Atmospheric Pressure: 700 - 1,060 hPa                                                                       |
| Warranty Period                   | 1 Years                                                                                                                                                                 |



Information

power supply is specified as a part of ME EQUIPMENT or combination is specified as a ME SYSTEM

## 06 Name of Part

### 6.1 Main Unit

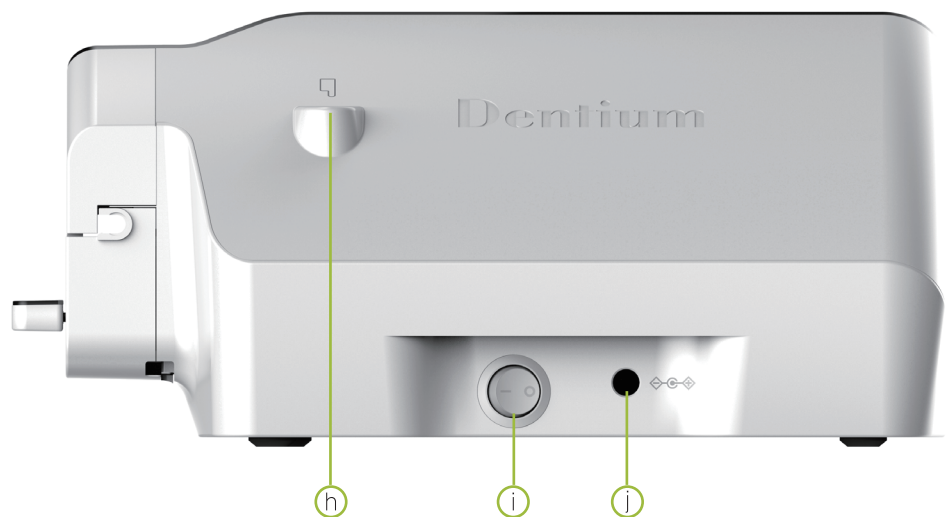
Front

- (a) LCD Screen Display
- (b) Mode Change Arrow(Left) ◀
- (c) Mode Change Arrow(Right) ▶
- (d) Micro Motor Connector
- (e) Irrigation Module Open/Close Lever
- (f) Irrigation Pump Module
- (g) Set Value Up/Down



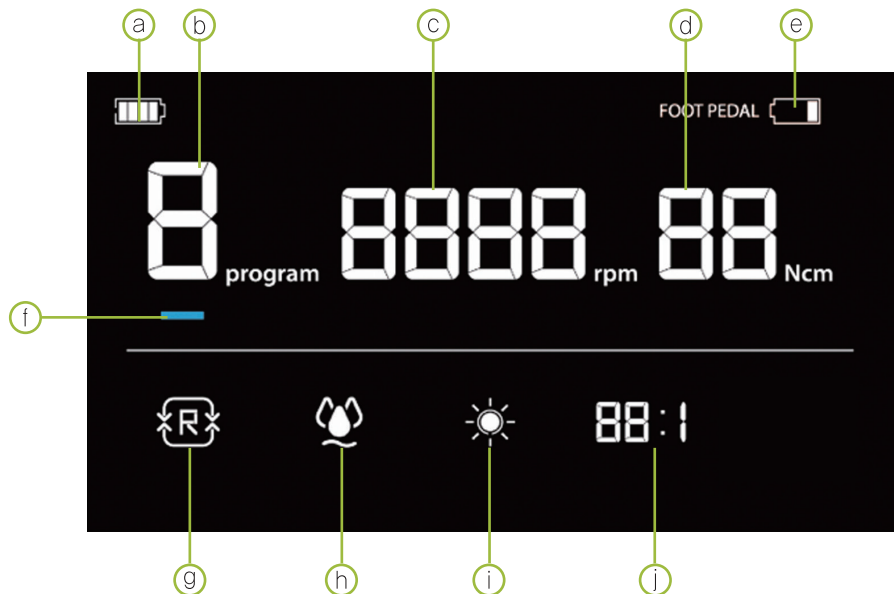
Rear

- (h) Hole for Distilled Water Bag Support
- (i) Power Switch
- (j) DC Jack



## 6.2 LCD Panel

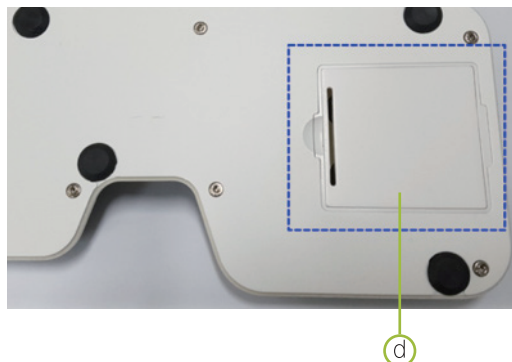
- (a) Show remaining battery of main unit (4 stages)
- (b) Change and show the program(0~6 stages)
- (c) Set and show micro motor RPM(20~2,000rpm)
- (d) Set and show micro motor torque(5~70Ncm)
- (e) Show remaining battery of foot pedal (4 stages)
- (f) Change and show mode
- (g) Set and show forward and reverse operation of micro motor (F/R)
- (h) Change and show irrigation (0-3)
- (i) Adjust and show brightness of handpiece optic (0-3)
- (j) show gear ratio (20:1)



## 6.3 Foot Controller Module



- (a) Foot Controller (Change speed)
- (b) Mode Change Switch (Change mode)
- (c) Power Switch (Power On/Off)
- (d) Battery Protection Cover
- (e) Battery Holder



- (a) Micromotor Adapter (Handpiece joint)
- (b) Micromotor Body
- (c) Micromotor Cable
- (d) Micromotor Connector

## 6.4 Micro Motor



# 07 Installation

## 7.1 Power Connection



Warning

- When connecting the power, do not handle with wet hands. It may cause electric shock
- This product uses rated input power of 100-240V~50/60Hz, Connect the equipment to rated power without fail

### 7.1.1 Power Cord Connection

Insert the connector of charger matching with the shape of power socket shown in rear of main body [Fig. 1]



Rear of Main Unit



Main Unit Charger



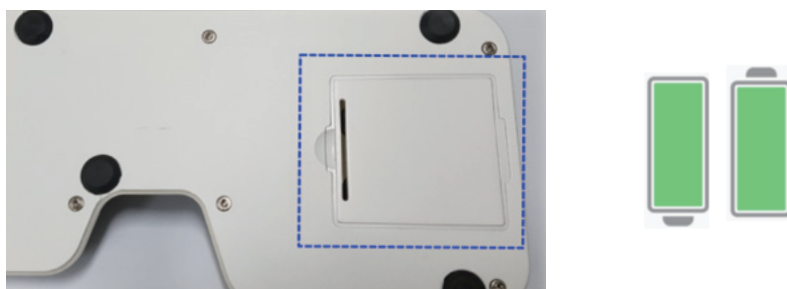
Connection



Caution

- Use only the charger provided by manufacturer. If any charge other than provided is used, it may cause the fire or electric shock
- Connect the charger outlet without connecting it to wall power  
If not, it may cause fire and electric shock

### 7.1.2 How to connect foot Controller battery(AA Size 1.5V x 2EA)



- Turn off (⏻) the foot Controller module power before proceeding
- Prepare the foot Controller module and battery as shown in figure
- If turning over the foot Controller high, you can find the battery cover of the blue box



- Press and lift the battery protection cover upward as shown in figure
- When opening the battery protection cover, there is a space to put battery
- Check the direction of battery shown in figure



- Insert the battery toward the polarity as shown in (2 units)
- Assemble the battery(1.5V AA) protection cover in reverse order after inserting the battery

## 7.2 Irrigation Installation

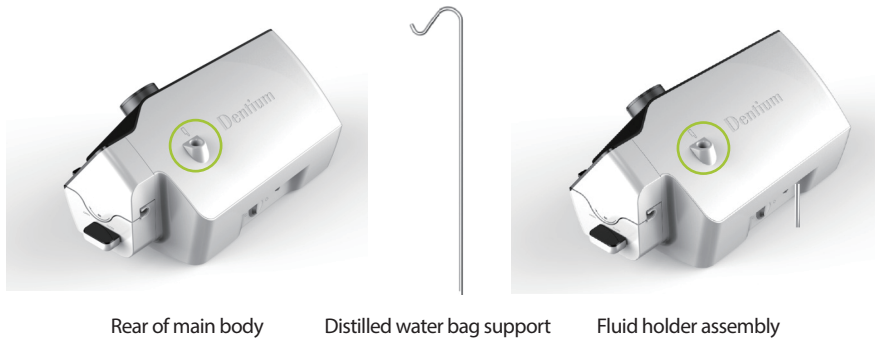


Warning

- For how to use irrigation fluid and tube, follow the manual published by each manufacturer
- The irrigation tube used for implant procedure is disposable and should not be used again. It may cause infection.

### 7.2.1 Distilled Water Bag Support Installation

Place the flat part of the liquid holder as shown in below figure [Fig. 3] and insert the distilled water bag support into the hole.

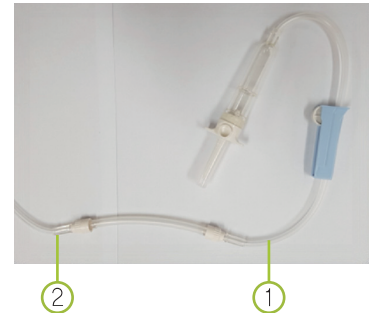


### 7.2.2 Irrigation Tube Installation

- Open the cover by rotating OPEN/CLOSE level to the "OPEN" direction
- Prepare irrigation tube as follows



Standard Irrigation Tube



- Connect one by one by pushing irrigation tube to the direction of 1 and 2 as shown below image
- After connecting irrigation tube, close it by rotating the handle to the direction of "CLOSE"





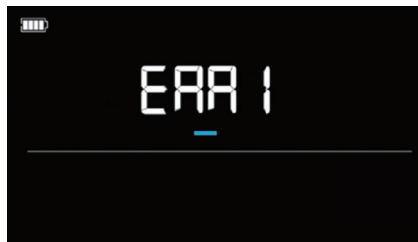
## 7.3 Connecting Connectors



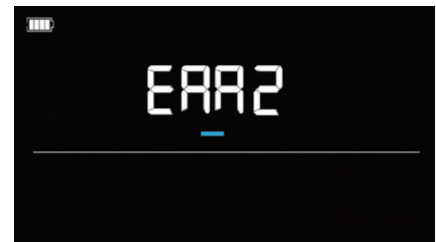
Warning

- When connecting and disconnecting the connectors, turn off the power of main unit without fail
- When connecting micro motor connector, connect after verifying the printed marking [●]
- Life span of the micro motor and the handpiece connected to it may be degraded by the heat when are used for extended period of time. Observe following operating time.  
\* Continuous operation (Load Time 3 minutes), Stop (Rest Time) 10 minutes.

- When micro motor is failed, connector is disconnected, or connection error occurs, ERR is displayed as below image. Use the equipment after connecting them again



Micromotor Error



Wireless Foot switch error

### 7.3.1 Connecting Micro Motor

- Insert the micro motor with the red print mark [●] facing above horizontal to the print mark [●] of the micro motor connector of main unit  
※ If the connection is made normally, it sounds click in the joint.



Main Unit Connector



Micro motor connector



### 7.3.2 Disconnecting Micro Motor

- Disconnect the micro motor by holding the red marked part of the connector and pulling out



### 7.3.3 Connecting Foot Controller

- As the wireless module is applied to iCTmotor(WL-1) foot witch, if the power of the foot Controller and mail unit is on, wireless communication is connected automatically
- Turn the power on by pressing the power switch toward [⊙] direction.
- Foot Controller serves to operate or stop the equipment. To stop the operation
- If taking the foot off foot Controller pedal, the operation is stopped stably



Information

- For the wireless foot Controller, turn off the power after using it. It can manage the life of battery efficiently
- 1.5V AA battery x 2EA (Life Cycle: 3 months)
- The life is varied depending on the type of battery and the frequency of use



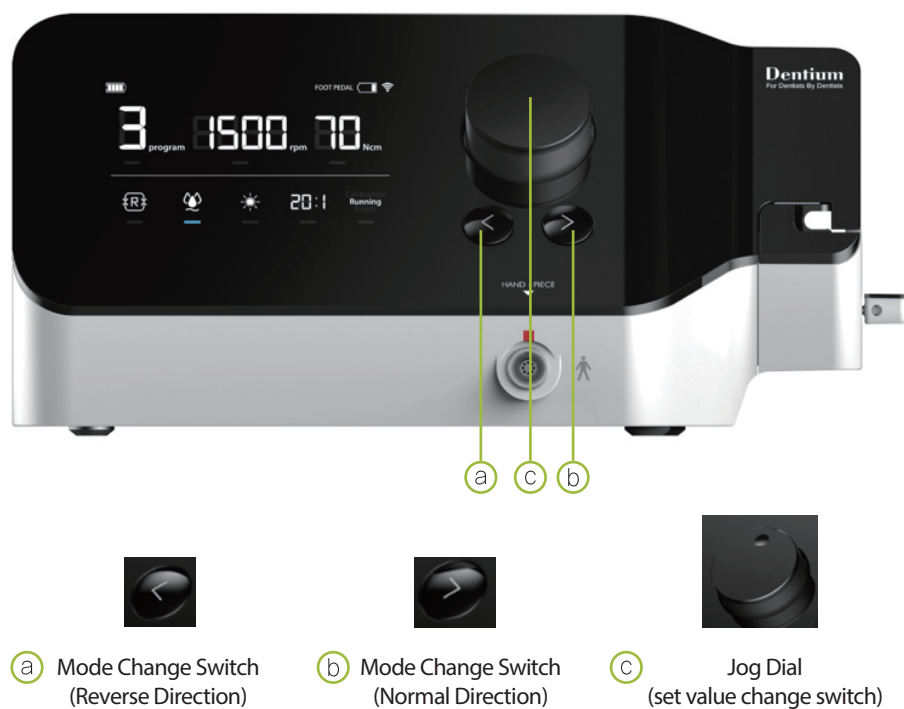
# 08 How to Operate Control Panel

## 8.1 Turning Power Switch On

Turn on the power by pressing Power switch located rear of the main unit toward "⦿" direction

## 8.2 Explanation of Control Panel Buttons

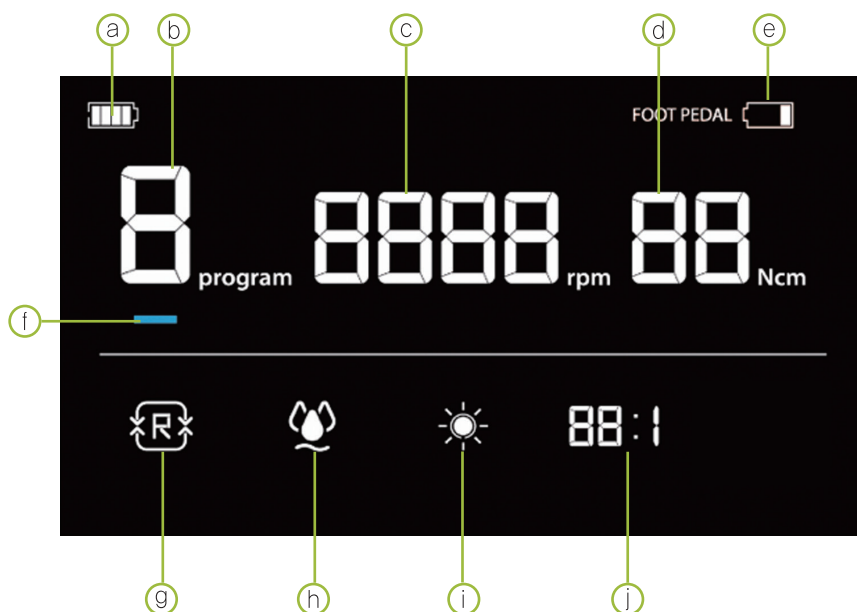
Front



| Button Image | Detailed Function                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|--------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|              | <p>a When pressing this button, blue lamp at the bottom of setting mode in LCD display is turned on and move by one stage whenever it is pressed (Program → F/R → Irrigation → Lamp → Gear Ratio → Torque → RPM)</p>                                                                                                                                                                                                                                       |
|              | <p>b When pressing this button, blue lamp at the bottom of setting mode in LCD display is turned on and move by one stage whenever it is pressed (Program → RPM → Torque → F/R → Irrigation → Lamp → Gear Ratio)</p>                                                                                                                                                                                                                                       |
|              | <p>c - When rotating jog dial after selecting the mode, the value of relevant function can be changed. It is used by setting normal direction/reverse direction</p> <p>- When you want to save the settings in memory after completing the setting by each mode, if the button is pressed for 3 seconds, the setting is saved in relevant memory setting by each mode, if the button is pressed for 3 seconds, the setting is saved in relevant memory</p> |

## 8.3 Display Screen Explanation

Front



- (a) Display the remaining battery of main unit and when changing, alarm is displayed
- (b) Display the function to save 7 settings
- (c) Display RPM and when rotating, real-time RPM is displayed
- (d) Display torque value and when rotating, real-time torque value is displayed
- (e) Display remaining battery of foot pedal and when replacing, alarm is displayed
- (f) When changing the value by each mode, if the direction switch is pressed, the cursor is moved
- (g) Display Forward(F)/reverse(R) set values of micro motor
- (h) Display irrigation setting (0→1→ 2→ 3 stage)
- (i) Adjust and display handpiece brightness (0 →1→ 2 →3 stage)
- (j) display gear ratio (20:1)

## 8.4 Program Selection and Change

- iCTmotor(WL-1) provides the saved program solution optimized for Dentium implant technique by relevant program ("step") as shown in below [Table-1] when shipping. This technique can be used by modifying it fit to the user's preference

\* Program(Step) Information

| Step | Ratio | Process                      | rpm   | Torque | Pump                                                                                  | Direction                                                                             |
|------|-------|------------------------------|-------|--------|---------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| 0    | 20:1  | Maxillary sinus              | 0     | 0      |    |    |
| 1    | 20:1  | Drilling                     | 1,000 | 35     |    |    |
| 2    | 20:1  | Countersinking               | 300   | 35     |    |    |
| 3    | 20:1  | Implant Insertion or Tapping | 20    | 35     |    |    |
| 4    | 20:1  | Cover & Healing connection   | 100   | 5      |    |    |
| 5    | 20:1  | Removal                      | 20    | 55     |   |   |
| 6    | 20:1  | Spare                        | 20    | 5      |  |  |

- ※ For your reference, above are not the standard guidance for all implant system [Table-1]
- ※ If you select Program 0 mode, micro motor operation and detailed functions cannot be set
- ※ Program 0 mode is a maxillary Sinus lifting mode. When you press the foot switch, 3ml of coolant is output and it stops automatically.

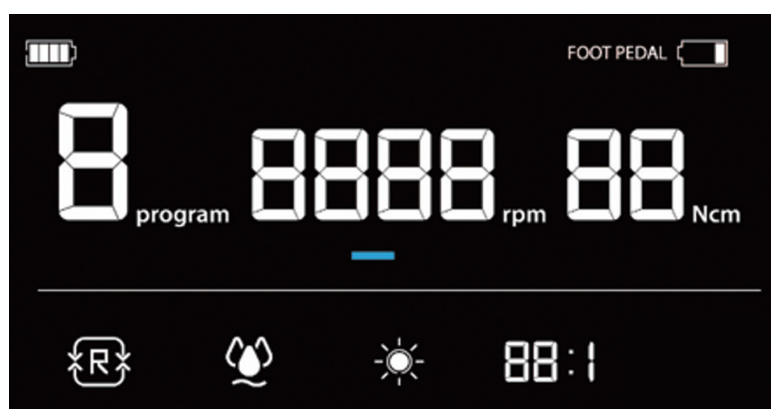
### 8.4.1 Changing Program

- 1) When moving the program, if pressing "◀ ▶" switch, the blue selection lamp is turned on and if pressing the switch, move to left and right by step. And when the blue selection lamp is located below the "Program", set desired stage by rotating jog dial
- 2) For the method to store the value for the program, if pressing jog dial for 3 seconds after completing the setting, the value will be saved in set program together with "beep" sound



## 8.4.2 Changing Rotational Speed (RPM)

- 1) When moving the program, if pressing “◀ ▶” switch, the blue selection lamp is turned on and if pressing the switch, move to left and right by step. And when the blue selection lamp is located below "RPM", set desired stage by rotating jog dial
- 2) For the method to store the value for the program, if pressing jog dial for 3 seconds after completing the setting, the value will be saved in set program together with "beep" sound



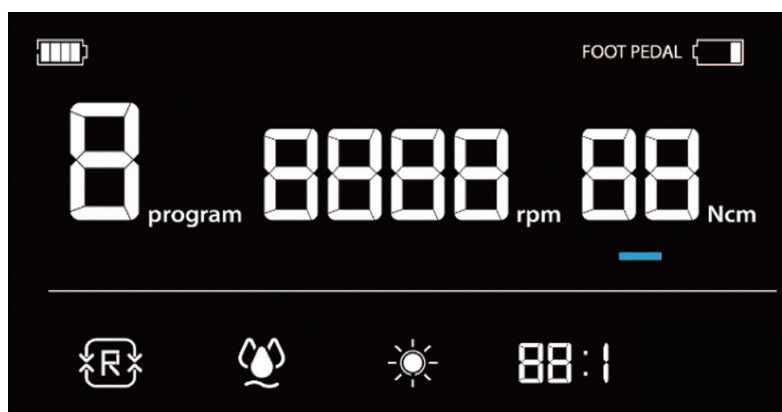
- 3) The unit to be changed according to rotational speed are shown in below

|                        |      | Unit (rpm) |
|------------------------|------|------------|
| Rotational Speed (rpm) | Unit |            |
| 20–50                  | 5    |            |
| 50–100                 | 10   |            |
| 100–2,000              | 100  |            |

※ The performance may be unstable slightly ( $\pm 10\%$ ) under the low speed of 25 RPM or less [Table-2]

## 8.4.3 Changing Torque

- 1) When moving the program, if pressing “◀ ▶” switch, the blue selection lamp is turned on and if pressing the switch, move to left and right by step. And when the blue selection lamp is located below "Ncm", set desired stage by rotating jog dial
- 2) For the method to store the value for the program, if pressing jog dial for 3 seconds after completing the setting, the value will be saved in set program together with "beep" sound



Torque value is increased or decreased by 5 N-cm unit.

※ The performance may be unstable slightly ( $\pm 10\%$ ) under the torque of 5N-cm

## 8.4.4 Changing Direction

- 1) When moving the program, if pressing “◀ ▶” switch, the blue selection lamp is turned on and if pressing the switch, move to left and right by step. And when the blue selection lamp is located below , set desired stage by rotating jog dial
- 2) For the method to store the value for the program, if pressing jog dial for 3 seconds after completing the setting, the value will be saved in set program together with "beep" sound



- ※ When setting to counter-clock wise ("R"), long alarm sound is made continuously and after operating the motor, it is converted to short alarm sound and lasts continuously.
- ※ All the set values can be changed and manipulated only when the motor operation is completely stopped.
- ※ "F" means "Forward" and "R" means "Reverse"

## 8.4.5 Adjust handpiece brightness

- 1) When moving the program, if pressing “◀ ▶” switch, the blue selection lamp is turned on and if pressing the switch, move to left and right by step. And when the blue selection lamp is located below , set desired stage by rotating jog dial
- 2) For the method to store the value for the program, if pressing jog dial for 3 seconds after completing the setting, the value will be saved in set program together with "beep" sound



### 8.4.6 Changing Irrigation

- 1) When moving the program, if pressing “◀ ▶” switch, the blue selection lamp is turned on and if pressing the switch, move to left and right by step. And when the blue selection lamp is located below “”, set desired stage by rotating jog dial
- 2) For the method to store the value for the program, if pressing jog dial for 3 seconds after completing the setting, the value will be saved in set program together with "beep" sound

※ Irrigation can be changed with 4 stages and for the output by each stage, see below

(Unit: ml/min)

| Stage                                                                             | Irrigation (Max.) |
|-----------------------------------------------------------------------------------|-------------------|
|  | OFF               |
|  | 40ml              |
|  | 50ml              |
|  | 60ml              |

※ Irrigation by stage may show deviation of ±10% depending on the tube used [Table-5]

### 8.4.7 Changing Gear Ratio

- 3)This product is provided with a fixed gear ratio of 20:1.





Caution

The handpieces compatible with iCTmotor(WL-1) are as shown in below and for the use and maintenance, follow the manual published by each manufacturer

| manufacturer | Model  | Ratio  | Torque      |
|--------------|--------|--------|-------------|
| Bien-Air     | CA20:1 | 20 : 1 | 5 - 70 N·cm |



Information

Name and specification of the device are subject to change according to the manufacturer

### 8.4.8 Foot Controller



| No. | Name                                                                                                                                                                                                                                                                                              |
|-----|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| a   | <ul style="list-style-type: none"> <li>As a pedal to operate the micro motor, the acceleration, deceleration and stop of motor are repeated according to the degree of push</li> </ul>                                                                                                            |
| b   | <ul style="list-style-type: none"> <li>As a program modification switch, the program shifts by stage whenever it is pressed (0 → 1 → 2 → 3 → 4 → 5 → 6)</li> <li>Press Program switch for 3 seconds to operate in reverse and press again for 3 seconds to operate in forward rotation</li> </ul> |



Information

- When using, turn the power on
- When reaching to 90% of set torque value, short alarm (beep) is sounded and when reaching to 100%, it is converted to alarm and the motor is automatically stopped (off) within 0.5 seconds
- While the handpiece (micro motor) is rotating counter-clockwise (R), alarm sounds continuously
- Program modification (STEP) should be used after the device operation is completely stopped

## 09 Sterilization

– To prevent the secondary infection by the contamination of device, observe following instructions



Warning

- The part that requires sterilization should be used after sterilization
- High pressure steam sterilization should be made after sealing the pouch for sterilization
- The part sterilized with high pressure steam should be used after being cooled and dried enough

※ If the sterilization is performed without using high pressure steam sterilization pouch, the equipment is damaged  
 ※ The parts, for which the high pressure steam sterilization is possible, are micro motor (including cable) and handpiece holder



## 9.1 Sterilization of Micromotor

- 1) Cover the inner hole of micro motor adapter with the sterilization cap in order not to enter stream as shown in below [Fig. -12]



- 2) Put the micro motor in the high pressure steam sterilization pouch and seal it
- 3) Perform high pressure steam sterilization.
- 4) Condition for high pressure steam sterilization: Max. 134 °C more than 5 minutes less than 20 minutes  
\* Working condition of high-pressure steam: 132 °C, Sterilization time 15minutes
- 5) The maximum number of Sterilization : 200Times

## 10 Cleaning and Storage



Caution

- Clean the parts of the electronic equipment after disconnecting the power
- Do not fold the cables (power, micro motor) composed of wire
- Do not clean spraying compressed air

### 10.1 Main Unit and Foot Controller

- 1) Clean the exterior with the clean clothes sprayed with cleaning fluid for microbe infection prevention or 80% ethyl alcohol and do not apply excessive force or use sharp object
- 2) Do not allow penetrating liquid, water or other foreign materials

### 10.2 Storage of Main Unit

- 1) If this medical equipment is not used for extended period of time, turn off(○) the power switch



Caution

- If the equipment is stored turned on the power for extended period of time, the internal battery may be discharged

### 10.3 Micro Motor

- 1) Prevent penetrating the liquid into inside of the micro motor connector.
- 2) Store micro motor and handpiece separately.



Caution

- Do not disassemble the micro motor (If the micro motor is disassembled at user's discretion, it shall not covered by the warranty)

# 11 Maintenance

- For the cables, check if the coating is peeled off and when storing, keep them by winding in a circle
- If any abnormality such as noise, heat, etc. may occur, stop using immediately and receive the service by inquiring Dentium branch nearby or dealer that you bought the equipment
- When disposing any part of electronic equipment, dispose it considering environmental impact
- Do not place the equipment or part in the place vulnerable to water or humidity
- Place the equipment in the place not affected by temperature, ventilation, sunlight, dust, salt, etc
- Avoid the slope or exposed to shock
- Do not place the chemical or gas storage
- If the water or liquid may penetrate inside of equipment, turn the power off and ask help to the professional
- When cleaning the equipment, rub the surface with the soft and dry towel

## 11.1 Routine Check

| Description     | Check Point                                                                                                                                                                                                                                                                        |
|-----------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Main Unit       | <ul style="list-style-type: none"> <li>• If the power I/O switch of the unused equipment is set to "●"</li> <li>• If the any switch on the control panel is damaged</li> <li>• If the color and data on the display is clearly displayed</li> </ul>                                |
| Micro Motor     | <ul style="list-style-type: none"> <li>• If any micro motor cable is damaged</li> <li>• If the micro motor connector connected to main unit is damaged</li> <li>• If any part of the micro motor assembly is loose</li> </ul>                                                      |
| Foot Controller | <ul style="list-style-type: none"> <li>• If the power switch is manipulated well according to the use</li> <li>• If the foot controller pedal moves smoothly up and down when operating foot controller pedal</li> <li>• If the foot control mode button moves smoothly</li> </ul> |



Caution

- The life of the battery used in main unit is approximately 2years. If the battery life displayed on the screen is reduced through the periodic check, contact with nearby Dentium branch and receive the inspection

# 12 Troubleshooting



Caution

- The equipment check should be made under the condition that the no moisture or water is found
- The error of the equipment should be treated turning off(○) the power of main unit
- The simple manipulations that can be made by user are shown in below [Table-6]. If the problem persists, contact with nearby Dentium branch or dealer that you bought the equipment for inspection

| Problem                                     | Cause and Solution |                                                                                                                                                                                                                                                                        | Page  |
|---------------------------------------------|--------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|
| The screen (LCD) is not turned on           | Cause              | 1 Power supply is not good enough                                                                                                                                                                                                                                      | 8     |
|                                             | Solution           | 1 Connect again after disconnecting the power outlet and power plug of main unit<br>2 Turn on the power switch ○ of main unit<br>3 Use after charging the battery by connecting battery change jack<br>4 Connect the charger when the battery performance deteriorates |       |
| Control button does not work                | Cause              | 1 While the equipment is operating, it does not work<br>2 Control button is out of order                                                                                                                                                                               | 14-16 |
|                                             | Solution           | 1 Wait until the operation is completely stopped and manipulate<br>2 Contact with nearby Dentium branch and receive service                                                                                                                                            |       |
| Handpiece does not work                     | Cause              | 1 It does not work because foot Controller is turned off<br>2 It does not work because handpiece is not clean<br>3 It does not work because the internal gear of the handpiece is worn or broken<br>4 Although foot Controller is turn on, it does not work            | 9-10  |
|                                             | Solution           | 1 Check if it operates by turning on the foot Controller<br>2 See the handpiece manual provide by manufacturer<br>3 Connect other handpiece to the equipment and see if it works<br>4 Contact with nearby Dentium branch and receive service                           |       |
| Irrigation pumping does not work or is weak | Cause              | 1 Tube is damaged or handpiece nozzle is clogged<br>2 Irrigation tube stopper is locked<br>3 Irrigation is set to stationary condition                                                                                                                                 | 8-10  |
|                                             | Solution           | 1 Replace the tube and check handpiece nozzle<br>※ Handpiece cleaning should be performed according to the user's manual provided by each manufacturer<br>2 Open irrigation tube stopper<br>3 Set the irrigation value (1-3) in the display                            |       |

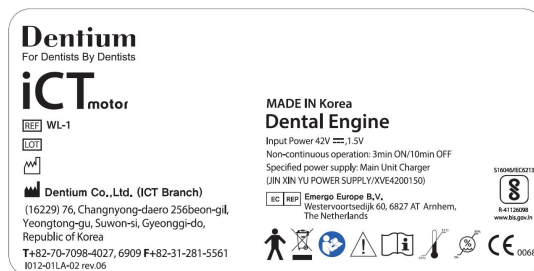
[Table-6]

# 13 Label Position

## 13.1 Main Unit (Front)



## 13.2 Main Unit (Rear)



### 13.3 Foot Controller



### 13.4 Handpiece



## 14 Information for Electromagnetic Compatibility

- This equipment is manufactured to work under electromagnetic environment described below.
- Client or user should verify if this equipment is used under such environment

| Emissions Test       | Compliance              | Electromagnetic environment-guidance                                                                                                                                                                                                                                                                                                                                                                                        |
|----------------------|-------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Radiated disturbance | CISPR 11 Group1 Class A | The emissions characteristics of iCTmotor(WL-1) make it suitable for use in industrial areas and hospitals (CISPR 11 class A). If it is used in a residential environment (for which CISPR 11 class B is normally required) this equipment might not offer adequate protection to radio-frequency communication services. The user might need to take mitigation measures, such as relocating or re-orienting the equipment |

|                                        |                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|----------------------------------------|-------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Mains terminal disturbance voltage     | CISPR 11 Group1 Class A | <p>The iCTmotor(WL-1) 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:</p> <p><b>Warning: 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 iCTmotor(WL-1) or shielding the location</b></p> |
| Harmonic emissions                     | Class A                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Voltage fluctuations flicker emissions | Complies                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |

## 14.1 Resistance to Electronic Interference

- This equipment is manufactured to work under electromagnetic environment described below
- Client or user should check if this equipment is used under such environment

| Immunity test                                                                                      | IEC 60601 test level                                                                                                  | Conformance level                                                                                                     | Electromagnetic environment-guidance                                                                                                                      |
|----------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------|
| Electrostatic discharge(ESD)<br>IEC 61000-4-2                                                      | Discharge by 8 kV direct contact<br>15 kV of Air-gap discharge                                                        | Discharge by 8 kV direct contact<br>15 kV of Air-gap discharge                                                        | Floors should be made of wood or concrete or have ceramic tiles. When the floor is made of synthetic material, the relative humidity must be at least 30% |
| Radiated RF<br>Electromagnetic Field immunity<br>IEC 61000-4-3                                     | 3 V/m<br>80 MHz-2.7 GHz<br>80% AM at 1 kHz                                                                            | 3 V/m<br>80 MHz-2.7 GHz<br>80% AM at 1 kHz                                                                            | The iCTmotor(WL-1) is suitable to use in professional healthcare environment                                                                              |
| Immunity to Proximity Fields from RF wireless Communications Equipment<br>Table 9 in IEC 60601-1-2 | 28 V/m Max.<br>385-5785 MHz in according to table 9                                                                   | 28 V/m Max.<br>385-5785 MHz in according to table 9                                                                   | RF communication equipment is used on closer than 30 cm to any part of the iCTmotor (WL-1), including cables specified by Dentium                         |
| Electrical fast transient/burst IEC 61000-4-4                                                      | ± 2 kV for power supply lines<br>± 1 kV for I/O lines<br>100 kHz repetition frequency                                 | ± 2 kV for power supply lines<br>± 1 kV for I/O lines<br>100 kHz repetition frequency                                 | The quality of supplied power should be suitable for general business site or hospital environment                                                        |
| Surge<br>IEC 61000-4-5                                                                             | ± 1 kV line to line<br>± 2 kV line to earth                                                                           | ± 1 kV line to line<br>± 2 kV line to earth                                                                           | The quality of supplied power should be suitable for general business site or hospital environment                                                        |
| Immunity to conducted disturbances induced by RF fields<br>IEC 61000-4-6                           | 3 V<br>0.15-80 MHz<br>6 V in ISM bands between 0.15 and 80 MHz<br>80% AM at 1kHz<br><br>Power supply line & I/O lines | 3 V<br>0.15-80 MHz<br>6 V in ISM bands between 0.15 and 80 MHz<br>80% AM at 1kHz<br><br>Power supply line & I/O lines | The strength of RF field in the frequency range higher than 150 kHz~80MHz, the strength of the RF field is smaller than 3 V                               |

|                                                                                                        |                                                                                                                                                                                     |                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                 |
|--------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Voltage dips, short interruptions and voltage variations on power supply input lines<br>IEC 61000-4-11 | <p>0 % UT: 0.5 cycle<br/>At 0°, 45°, 90°, 135°, 180°, 225°, 270° and 315°</p> <p>0 % UT; 1 cycle and<br/>70 % UT; 25/30 Cycles Single phase: at 0°</p> <p>0 % UT; 250/300 cycle</p> | <p>0 % UT: 0.5 cycle<br/>At 0°, 45°, 90°, 135°, 180°, 225°, 270° and 315°</p> <p>0 % UT; 1 cycle and<br/>70 % UT; 25/30 Cycles Single phase: at 0°</p> <p>0 % UT; 250/300 cycle</p> | <p>The quality of supplied power should be suitable for general business site or hospital environment.</p> <p>For the user to operate the equipment continuously even the electric power supply is interrupted, it is recommended that the uninterruptable power supply device (UPS) or batter is prepared</p>                                  |
| Magnetic field of supply frequency (50/60Hz)<br>IEC 61000-4-8                                          | 30 A/m                                                                                                                                                                              | 30 A/m                                                                                                                                                                              | <p>If LCD display distortion occurs, it may be necessary to position the Model iCTmotor LCD display intensifier further from sources of power frequency magnetic fields or to install magnetic shielding. The power frequency magnetic field should be measured in the intended installation location to assure that it is sufficiently low</p> |

## 14.2 Protection Distance

- The recommended protection distance between portable and mobile HF communication device and this equipment
- This equipment is manufactured to operate in the electromagnetic environment where the emitted HF disturbance is controlled
- RF communication equipment is used on closer than 30 cm to any part of the iCTmotor, including cables specified by Dentium

# 15 Precaution for System Disposal

- When disposing the machine and its parts, it should be made according to the guideline provided by relevant country



- This symbol means that since the unclassified local government's wastes should be collected separately, the electrical and electronic equipment wastes cannot be disposed
- Before disposing the product or parts, contact with nearby Dentium dealer or manufacturer and dispose them with safe and adequate method
- This equipment is basically manufactured to be disposed without environmental pollution

## Detailed Explanation

| Part Name     | Raw Material               | Recycle | Hazardous Material |
|---------------|----------------------------|---------|--------------------|
| Frame         | Aluminum + steel           | ◆       |                    |
| Cover         | Plastic                    | ◆       |                    |
| Motor         | Steel + Copper             | ◆       |                    |
| Control Board | Electronic components + PC | ◆       |                    |
| Cable         | Copper + Steel + Oil       | ◆       |                    |
| Packing       | Card Board + Foam          | ◆       |                    |

- Dentium iCTmotor(WL-1), the Dental implant surgic engine, is designed according to medical devices regulations and manufactured and inspected according to strict quality control system
- Dentium Co., Ltd. guarantees that the warranty is complied with the international warranty regulations of Consumer Protection Act



# 16 Product Warranty and Service

- Dentium Co., Ltd guarantees that iCTmotor(WL-1) and accessories do not have defect in materials and manufacturing under the normal use and service for specific period of 1 years from the purchase date
  - Product warranty has a condition that the buyer has used the product correctly. During the relevant warranty period, Dentium Co., Ltd will repair and replace the defective product and parts for free. However, Dentium Co., Ltd. may judge that the product warranty is not applied, the purchaser should pay the cost for all parts, transport and labor cost for repair
  - Please fill the following form when buying the product and send it to following Fax No. +82-31-281-5561
  - When claiming according to this warranty, this warranty should be presented to the manufacturer
  - The life of this equipment is 3 years
  - The case that the warranty is not applied
- 1) Any defect or damage by the accident by the user's negligence, misuse, abnormal use, abnormal condition and inappropriate storage
  - 2) Any damage by the external cause such as collision with the object, fire, flooding, sand, soil, storm, lightning, earthquake, weather condition
  - 3) Any defect or damage by the inappropriate test, operation maintenance, service or adjustment not provided or authorized by Dentium Co., Ltd
  - 4) Any defect or damage occurred by ignoring the warnings specified in the user's manual (instruction for use)

| Product Name       | iCTmotor(WL-1 ) | Client Information<br>(Please fill this form) |  |
|--------------------|-----------------|-----------------------------------------------|--|
| Purchase Date      |                 | Dental Clinic                                 |  |
| Manufacturing Date |                 | Address                                       |  |
| Serial No.         |                 |                                               |  |
| Warranty Period    | 1 Year          | Contact                                       |  |

---

# Dentium

For Dentists By Dentists

User manual Languages

|    |    |    |    |    |    |    |    |
|----|----|----|----|----|----|----|----|
| BG | ES | CS | DA | DE | ET | EL | EN |
|    |    |    |    |    |    |    | •  |
| FR | GA | HR | IT | LV | LT | HU | MT |
|    |    |    |    |    |    |    |    |
| NL | PL | PT | RO | SK | SL | FI | SV |
|    |    |    |    |    |    |    |    |

User manual Languages

---

Printed in Korea

Dentium Co.,Ltd (ICT Branch)

(16229) 76, Changnyong-daero 256beon-gil, Yeongtong-gu, Suwon-si, Gyeonggi-do, Republic of Korea

[www.dentium.co.kr](http://www.dentium.co.kr), Tel +82-70-7098-4027, 6909 Fax +82-31-281-5561

Dentium iCTmotor manual35

# ICT<sub>motor</sub>

**Dentium**

For Dentists By Dentists Specifications are subject to change without prior notice.

Printed in Korea

I012-01MU-02 rev.07 (2023.05)

Dentium Co.,Ltd (ICT Branch)

(16229) 76, Changnyong-daero 256beon-gil, Yeongtong-gu, Suwon-si, Gyeonggi-do, Republic of Korea

www.dentium.co.kr, Tel +82-70-7098-4027, 6909 Fax +82-31-281-5561

EC REP

**Emergo Europe B.V.** Westervoortsedijk 60, 6827 AT Arnhem, The Netherlands