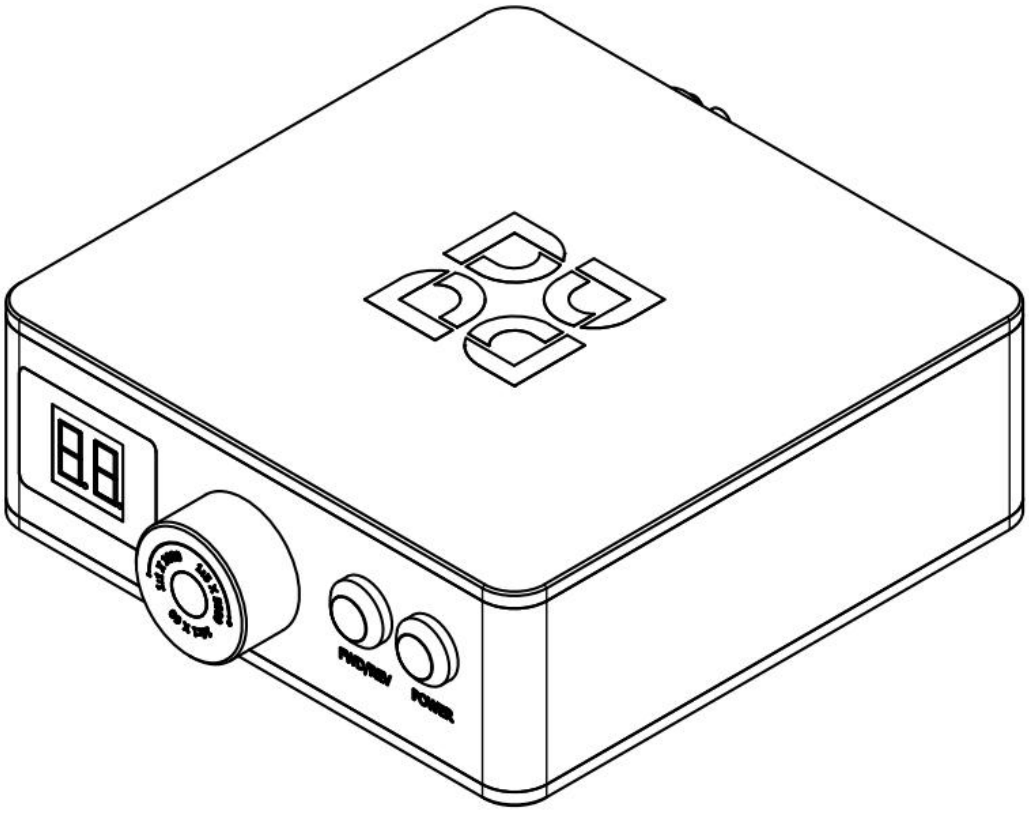
Dental Electric Motor

Operating Instruction



Hello Medical Technology (Guangdong) Co., Ltd.

Manufacturer name：Hello Medical Technology (Guangdong) Co., Ltd.
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1. Product description

With precision motor and high-brightness LED, this product has the following features: no regular maintenance, micro-vibration and low noise, easy operation, Easy to use. Just connect the original water pipe, mist pipe, and trachea tap to the motor, and connect the other tap of the trachea to the drive module. You can use the original pneumatic control system and complete most clinical treatments with different speed-increasing and decelerating handpieces.

2. Product model, Technical parameters, Product structure, Operation, Application scope

2.1 Product model: DR-ME5

2.2 Technical parameters:

(1) No-load speed: 1000-40000r/min, the error in both clockwise and counterclockwise running directions does not exceed ±10%.

(2) Power supply： DC32V～36V

(3) Noise: no more than 75dB

(4) Torque: more than 2N·cm

(5) When the water pressure is 200kPa (2.0bar), the water flow rate is not less than 50mL/min.

The air flow is not less than 1.5L/min;

When the air pressure is 250kPa～500kPa (2.5bar～5.0bar), the maximum air flow shall not exceed 40L/min.

(6) Working mode: Intermittent loading and continuous operation, working for 30 minutes with a gap of 5 minutes

(7) Classification according to the degree of protection against electric shock: BF type applied parts

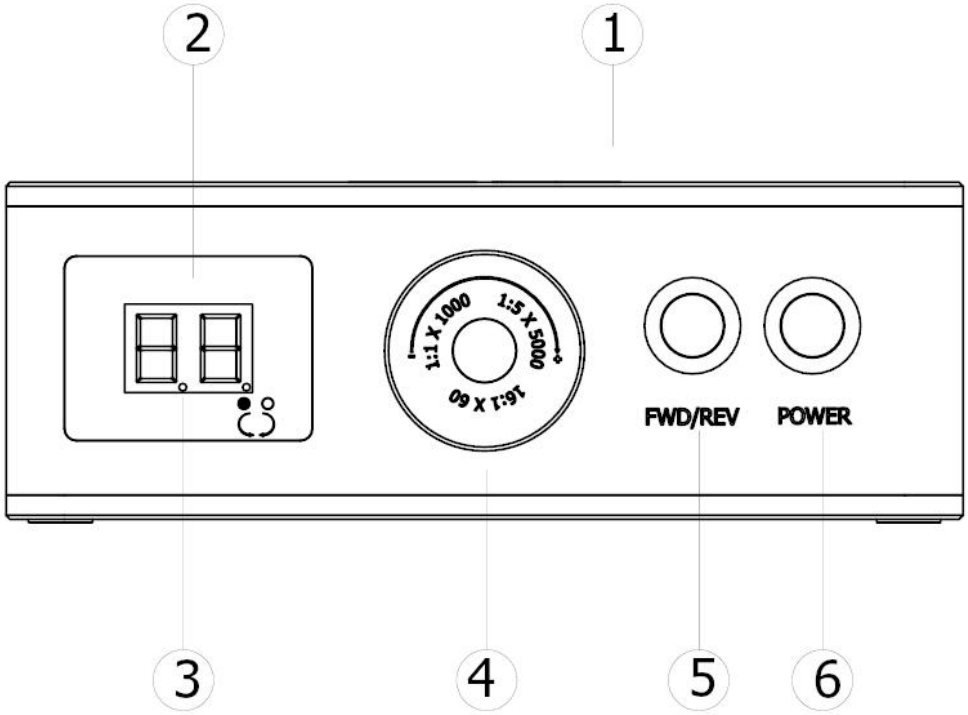
2.3 Operating conditions

Ambient temperature range: 5℃～40℃

Relative humidity range: ≤80%

Atmospheric pressure range: 86kPa～106kPa

2.4 Product structure



① Motor control box;

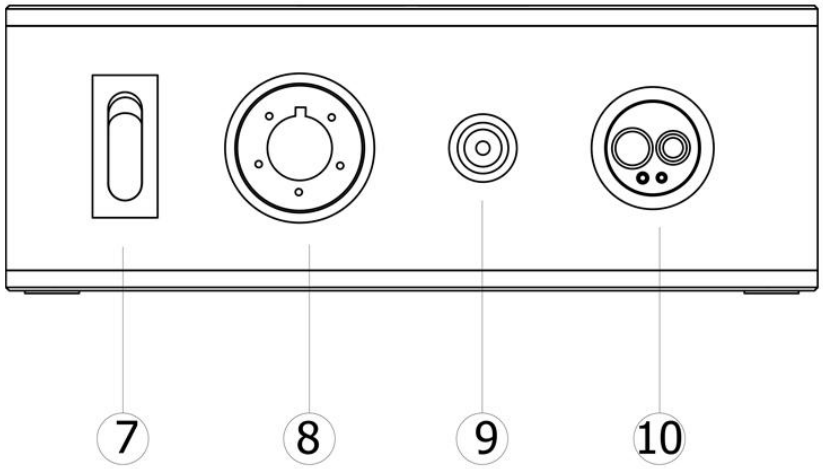
② Display area: accurately display the rotation speed of handpiece;

③ Forward/Reverse indicator light：Indicating the current direction of motor.

④ Speed controlling knob

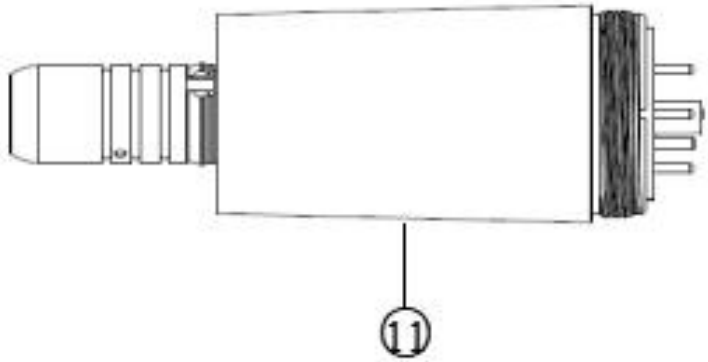
⑤ Forward/Reverse switch button：press this button to achieve the forward and reverse rotation of motor.

⑥ Power button

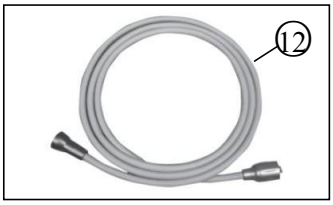


⑦ power switch ⑧ motor cord connector

⑨ DC adapter connector ⑩ 4 holes connector



⑪ motor



⑫ motor cord



⑬ adapter

2.5 Connection

Note: The following operations must be performed when the equipment is stopped.

(1) 4 holes connection (Figure 1)

Align the guide holes and push it in gently, then tighten the outer nut.

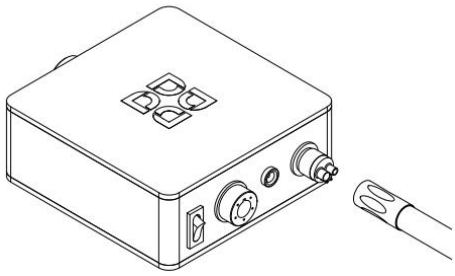


Figure 1

(2) Adapter connection (Figure 2)

Insert the adapter to the DC adapter hole （The original adapter must be use, other adapters are prohibited）

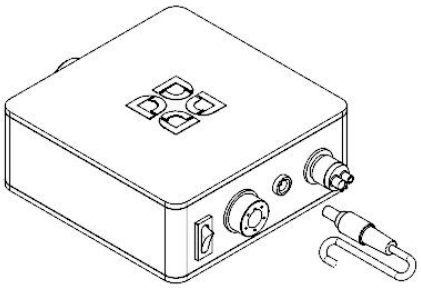


Figure 2

(3) Motor cord connection (Figure 3)

According to step guide of the motor cord, insert it to the motor connector hole, then tighten the outer nut.

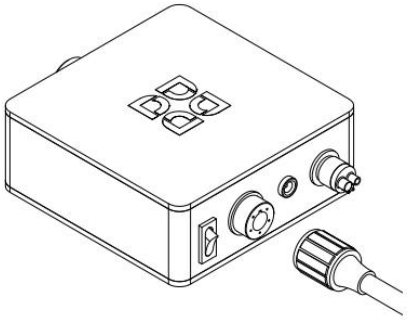


Figure 3

Whole connection (Figure 4)

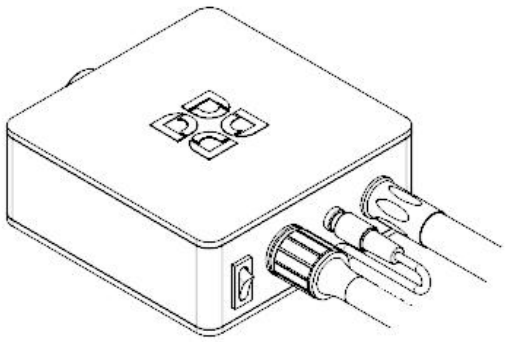


Figure 4

(4) Motor and motor cord connection (Figure 5)

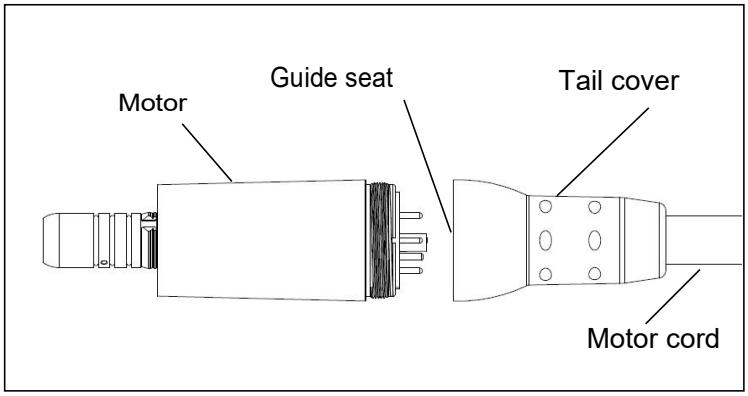


Figure 5

(5) Motor and handpiece connection (Figure 6)

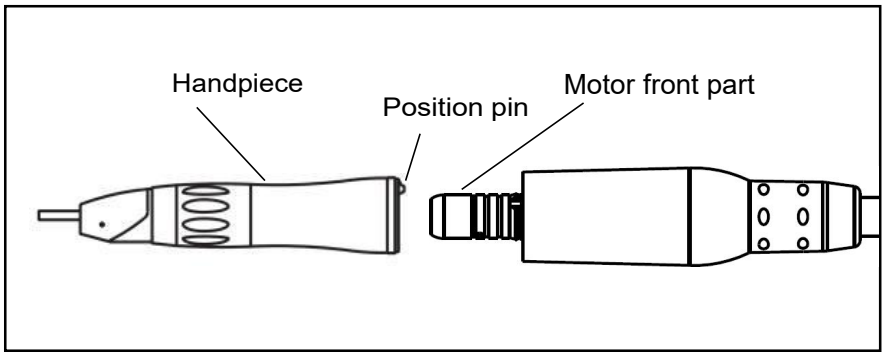


Figure 6

2.6 Application scope

Used to provide the driving force for dental handpieces to perform dental procedures.

3. Precautions

(1)The electric motor is suitable for dental handpieces compliant with ISO3964-1982(E).

(2) Make sure the handpiece tube is not tangled or damaged.

(3) Water and air shall meet the related standards.

(4) When using the control module for a long time, wipe it clean with a soft cloth, and keep the outside of the control box clean at all times to ensure that the body is clean and hygienic, and to avoid corrosion of the product by chemical solvents.

(5) Do not use it in the presence of mixtures of flammable anesthetics and oxygen or laughing gas.

(6) Before use the motor, please make disinfection under high temperature and high pressure.

(7) Do not unplug or touch the power plug during use, which may interrupt operation and cause instrument failure.

(8) This product is limited to use by qualified dental surgeons for dental treatment.

(9) It is strictly prohibited to modify or disassemble this product without authorization.

(10) Before clinical treatment, this product must be used in advance to check whether there is vibration, vibration, heat, etc., and it can be used for clinical treatment only after it is confirmed to be normal. If any abnormality is found during the inspection, please stop using it immediately and contact the seller or maintenance personnel promptly.

(11) Do not fill oil inside the motor.

(12) Cooling gas requirements: dry, pollution-free, and oil-free.

(13) It is absolutely prohibited to use oxidized ionized water (strongly oxidized water, peroxide water) or disinfectant for cleaning, soaking and wiping.

(14) Avoid using it in a strong electromagnetic environment. Working in a strong electromagnetic environment may cause the equipment to work abnormally.

4. Maintenance

The product only can use the spare parts that provided by Hello Medical Technology (Guangdong) Co., Ltd. If use other accessories or parts , the warranty will invalid.

4.1 Checking

Please do not disassemble this product by yourself. For all repairs, please contact the supplier or Hello Medical Technology (Guangdong) Co., Ltd. directly.

4.2 Cleaning

Use a clean, damp cloth for disinfection.

a) Do not apply pressure to the light source.

b) Do not use products containing acetone, chlorine and bleach as disinfectants.

c) Do not soak in the solution.

d) It is not suitable for ultrasonic cleaning machines.

4.3 Motor sterilization steps

It is recommended to use high-pressure sterilization. After the first use and after treatment of each patient, high-pressure sterilization is required. The sterilization steps are as follows:

a) Cut off the power supply of the control box.

b) Remove the connection cable between the handpiece and the motor.

c) Use a soft brush (not metal brushes) to clean the surface of the motor, and wipe it with cotton dampened with disinfectant alcohol.

d) Place the motor in a sterile bag and seal the bag.

e) Sterilization at a maximum temperature of 134°C for 3 minutes.

f) Before used, keep the motor in the sterile bag to keep the motor clean.

5. Transportation and storage conditions

5.1 Ambient temperature range: -20℃ ~ +55℃

5.2 Relative humidity range: 5%-95%

5.3 Atmospheric pressure range: 70KPa ~ 106KPa

5.4 During transportation and storage, attention should be paid to: "upward" and "afraid of moisture".

6. Product production date, use period or expiration date

6.1 Production date: see product label for details

6.2 Use period: The normal working life cycle of the product is 3 years. It is recommended that the parts and complete machines be disposed of in accordance with national regulations.

7. General rules and warranty

7.1 General

This product must be used by qualified personnel in accordance with current relevant industrial safety, health and accident prevention regulations and these work instructions.

According to the above requirements, operators can only use products with perfect performance and without faults. When abnormal operation, excessive vibration, overheating or other signs of product failure occur, operators must stop working immediately. At the same time, they must contact the repair center which is approved by Hello Medical Technology (Guangdong) Co., Ltd.
It is necessary to ensure that the device is only used for its designed purpose, to ensure the safety of itself, the patient and other people, and to avoid causing contamination during use. This device may be used for medical purposes only; use of this product for other purposes is prohibited or may cause danger. This medical device complies with all current EU legal requirements.
This device cannot be used in places containing explosive gases (narcotic gases). Do not immerse in disinfectant solution.
This device is subject to recycling. Electrical appliances and electrical equipment may contain hazardous substances that may have undue effects on health and the environment. When recycling, the user must return the device to the distributor or contact the dealer directly.
Contact the person authorized to recycle this equipment (EU Regulatory Directive 2002/96/CE).

7.2 Warranty period

Hello Medical Technology (Guangdong) Co., Ltd. is subject to the operator's warranty covering all functional failures, raw material or production defects. It’s 12 month warranty for the main unit and motor handle. After warranty,we will charge you the spare parts fee. You may buy the spare parts from us if damage or use up.
Hello Medical Technology (Guangdong) Co., Ltd. is not responsible for damage or injury caused by the following factors:
a) Excessive wear and pulling
b) Improper operation
c) Failure to follow relevant instructions for installation, operation and maintenance
d) Affected by abnormal chemicals, electrical appliances or electrolytes
e) Poor connections at gas, water or electricity supply terminals

8. Alarm code query and processing

Alarm code	Code information	Solution
E0	Motor doesn’t connected	Check if motor is connected to control box
E1	voltage is too high	Check the input power voltage
E2	voltage is too low	Check the input power voltage
E3	Motor overload	Restart the motor and grind appropriately.
E4	Motor led not working	Check the motor and motor cable. Change the motor and motor cable if necessary

9. Common faults and troubleshooting

Symptoms	Reason	Solution
The straight or contra angle body rotates during operation	The O-ring in the front intubation of the motor is worn	Replace the O-ring
The handpiece does not spray water	The water spray hole is clogged	Clean and divert it with a needle
The handpiece is leaking	The sealing gasket is aged or not tightened	Replace the aged parts and tighten the connecting pipe nut
The handpiece does not turn on	It is not connected to the power supply	Check the power supply connection

Note: Non-professional maintenance personnel are absolutely prohibited from dismantling or repairing. After the above processing and parts replacement, if the phone still does not work properly, please contact the manufacturer and an authorized repair center.

10. EMC statement



Notice:

The dental electric motor (model: DR-ME5) complies with the electromagnetic compatibility requirements of the YY 0505-2012 standard.
Users should install and use according to the electromagnetic compatibility information provided in the accompanying documents.
Portable and mobile RF communication equipment may affect the performance of the dental electric motor (model: DR-ME5), avoid strong electromagnetic interference when using it, such as close to mobile phones, microwave ovens, etc.
Guidance and Manufacturer's Declaration are attached.



Warning:

The dental electric motor (model: DR-ME5) shouldn’t be used close to or stacked with other equipment. If it need used close to or stacked, it should be observed to verify that it can operate normally under the configuration it’s used in.
Use of accessories and cables other than those specified may result in increased emissions from the Dental Electric Motor (Model: DR-ME5) other than cables sold by the manufacturer of the Dental Electric Motor (Model: DR-ME5) as spare parts for internal components or a reduction in noise immunity.

Connecting Cable Information

No.	Name	Cable length (m)	Shielded or not	Remarks
1	Connection cable	1.8m	NO	

Schedule 1:

Guidance and Manufacturer's Declaration – Electromagnetic Emissions		
The dental electric motor (model: DR-ME5) is expected to be used in the electromagnetic environment specified below. The purchaser or user should ensure that it is used in this environment: Emission Test Compliance Electromagnetic Environment – Guidance		
Emission	Test Compliance	Electromagnetic Environment–Guidance
Radio frequency emissions GB 4824	Set 1	Dental electric motor (Model: DR-ME5) is for its internal function only uses radio frequency energy. Therefore, its RF emissions are very low and they are less likely to cause interference in nearby electronic equipment
RF emissions GB 4824	Category B	The Dental Electric Motor (Model: DR-ME5) is suitable for use in all establishments, including domestic establishments and for direct connection to the public low voltage power supply network for domestic premises
Harmonic emissions GB 17625.1	Class A	
Voltage fluctuation/flicker emission GB 17625.2	conform to	

Schedule 2:

Guidance and Manufacturer's Statement – Electromagnetic Immunity			
The Dental Electric Motor (Model: DR-ME5) is intended to be used in the electromagnetic environment specified below, the purchaser or user should be ensured that it is used in this electromagnetic environment:			
Immunity test	IEC 60601 test level	conform to the level	Electromagnetic Environment–Guidelines
Electrostatic discharge GB/T 17626.2	±6 kV contact discharge ±8 kV air discharge	±6 kV contact discharge ±8 kV air discharge	Floors should be wood, concrete or ceramic tile, and if floors are covered with synthetic material, the relative humidity should be at least 30%
electrical fast transient burst GB/T 17626.4	±2kV to power line ±1kV for input/output lines	±2kV to power line	Mains power should be of the quality used in a typical commercial or hospital environment
surge GB/T 17626.5	±1 kV line-to-line ±2 kV line to ground	±1 kV line-to-line ±2 kV line to ground The mains supply should have typical	Quality for use in commercial or hospital environments
Voltage sags, short interruptions and voltage changes on power input lines GB/T 17626.11	<5% UT for 0.5 cycles (On UT, >95% dip) 40% UT for 5 cycles (On UT, 60% dip) 70 % UT for 25 cycles (On UT, 30% drop) <5 % UT, lasting 5s	<5% UT for 0.5 cycles (On UT, >95% dip) 40% UT for 5 cycles (On UT, 60% dip) 70 % UT for 25 cycles (On UT, 30% drop) <5 % UT, lasting 5s (On UT, >95% dip)	Mains power should be of a quality typically used in a commercial or hospital environment. If the user of the far infrared therapy device requires continuous operation during a power outage, it is

	(On UT, >95% dip)		recommended that the far infrared therapy device be powered by an uninterruptible power supply or a battery
Power frequency magnetic field (50/60Hz) GB/T 17626.8	3A/m	3A/m	The power frequency magnetic field should have the power frequency of a typical location in a typical commercial or hospital environment Magnetic field level characteristics
Note: UT refers to the AC network voltage before the test voltage is applied.			

Schedule 3

Guidance and Manufacturer's Statement – Electromagnetic Immunity			
The dental electric motor (model: DR-ME5) is expected to be used in the electromagnetic environment specified below. The purchaser or user should ensure that it is used in this electromagnetic environment:			
Immunity test	IEC 60601 test levels	compliance level	Electromagnetic environment – guidance
Radio frequency conduction GB/T 17626.6	3V (RMS) 150 kHz to 80 MHz	3V (RMS)	Portable and mobile RF communications equipment should not be used closer to any part of the far Infrared therapy unit, including cables, than the recommended separation distance. The distance is calculated by the formula corresponding to the frequency of the transmitter. The field strength of fixed radio frequency transmitters is determined by the electromagnetic field It should be lower than the compliance level in each frequency range, as determined by the survey conducted. Interference may occur in the vicinity of equipment marked with the following symbol. 
radio frequency radiation GB/T 17626.3	3V/m 80MHz ~ 2.5GHz	3V/m	
Note 1: At 80MHz and 800MHz frequencies, the formula for the higher frequency band is used. Note 2: These guidelines may not be suitable for all situations. Electromagnetic propagation is affected by absorption and reflection from buildings, objects and human bodies. Fixed transmitters such as base stations for radio (cellular/cordless) telephones and land mobile radios, amateur radio, AM and FM radio broadcasting and TV broadcasting, etc., the field strength cannot be accurately predicted theoretically. To assess the electromagnetic environment from fixed RF transmitters, an electromagnetic site survey			

should be considered. If the measured field strength of the location where the far-infrared therapy device is located is higher than the above applicable radio frequency compliance level, the far-infrared therapy device should be observed to verify that it can operate normally. If abnormal performance is observed, supplementary measures may be necessary, such as reorienting or repositioning the far Infrared Therapy Unit. In the entire frequency range from 150kHz to 80MHz, the field strength should be lower than 3V/m.

Schedule 4:

Recommended isolation distance between portable and mobile RF communications equipment and far-infrared therapeutic devices			
The Dental Electric Motor (Model: DR-ME5) is intended for use in an electromagnetic environment where radio frequency radiation disturbance is controlled. Based on the maximum rated output power of the communication equipment, the purchaser or user can prevent electromagnetic interference by maintaining the minimum distance recommended below between portable and mobile radio frequency communication equipment (transmitters) and dental electric motors (Model: DR-ME5)			
Rated maximum output power of the transmitter in W	Isolation distance corresponding to different frequencies of transmitter/m		
	150 kHz ~ 80 MHz	80 MHz ~ 800 MHz	800 MHz ~ 2.5 GHz
0.01	0.12	0.12	0.23
0.1	0.38	0.38	0.73
1	1.2	1.2	2.3
10	3.8	3.8	7.3
100	12	12	23
For the maximum rated output power of the transmitter not listed in the above table, the recommended separation distance “d”, in meters (m), can be determined by the formula in the frequency column of the corresponding transmitter, where “P” is the transmission distance provided by the transmitter manufacturer. The maximum rated output power of the machine, in watts (W). Note 1: At the 80MHz and 800MHz frequency points, the formula for the higher frequency band is used. Note 2: These guidelines may not be suitable for all situations. Electromagnetic propagation is affected by absorption and reflection from structures, objects and people.			

Floors should be wood, concrete or tile, and if floors are covered with synthetic material, the relative humidity should be at least 30%. Other equipment used at the same time near this equipment should meet the relevant requirements of electromagnetic compatibility.

Possible Effects of Portable and Mobile RF Communication Equipment on Dental Electric Motors (Model: DR-ME5)

See "Recommended Separation Distance Between Portable and Mobile RF Communication Equipment and Dental Electric Motor (Model: DR-ME5)" for details.

The dental electric motor (model: DR-ME5) is limited to the I/O lines and main components provided by the manufacturer (see 13. Accessories list for details). When using these I/O lines and main components, it complies with 36.201 of YY 0505. and the requirements of 36.202.

Warning: Except for accessories, conduits and cables sold by the manufacturer of the equipment as spare parts for internal components, the use of accessories, conduits and cables other than those specified may result in increased emissions or reduced immunity of the equipment.

Warning: The equipment should not be used close to or stacked with other equipment. If it need used close to or stacked, it should be observed to verify that it can operate normally under the configuration it is used in.

CAUTION: Equipment used in the vicinity of marked  equipment may experience interference and/or impairment of essential performance and safety.