

DIA **GUN**[™]
Wireless Obturation System

INSTRUCTION MANUAL





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1. Introduction

Thank you for purchasing DiaDent's Wireless Obturation System – Dia-Gun. Dia-Gun offers fast and easy obturation delivery. With this effective obturation system and technique, optimum results are achieved. The high-performance Dia-Gun device has the following features:

- Wireless and Compact Design allows complete freedom of movement
- Reliable Gutta Percha Filling to the desired level without delay
- Fast and continuous flow of filling tightly seals the canal
- Variable Temperature Settings (160 °C, 180 °C, 200 °C): precise control of obturation flow
- Quick Heating System: temperature reaches 200 °C within 25 seconds
- Ergonomically designed 360° Swivel Needle offers improved access
- Thinner needle can easily fill the narrow root canal

This manual provides detailed operating and setup instructions. Please read the manual carefully before operating the device. Please keep this manual in a readily accessible place for quick and easy reference.

2. Safety Instructions

To reduce the risk of injury, always follow manufacturer's cautions listed below as well as other warnings and cautions throughout this manual.



Caution

Caution(s) indicates information which, if not followed properly, could result in serious injury to the patient or the operator and damage the device.

1. This device should be used exclusively by trained and qualified dentists and endodontists only. If the device is used by any other users that are not specified in this manual, the manufacturer has no liability due to injury.
2. Practice the technique of this device before using with patients.
3. To reduce the risk of electronic shock, do not try to open, disassemble or repair the handpiece, battery pack or the charger base.
4. To prevent the injury, do not allow patients to handle or touch this device.
5. To prevent explosion and defects, keep handpiece, battery pack or charger base in the temperatures ranging from -10 to + 40 °C, air pressure from 70 to 106 kPa, and humidity from 30 to 85%.
6. Do not immerse the handpiece, battery pack or charger base in liquid of any kind.
7. The charger and power adapter should be connected to the electrical outlet compatible with current electrical standards.



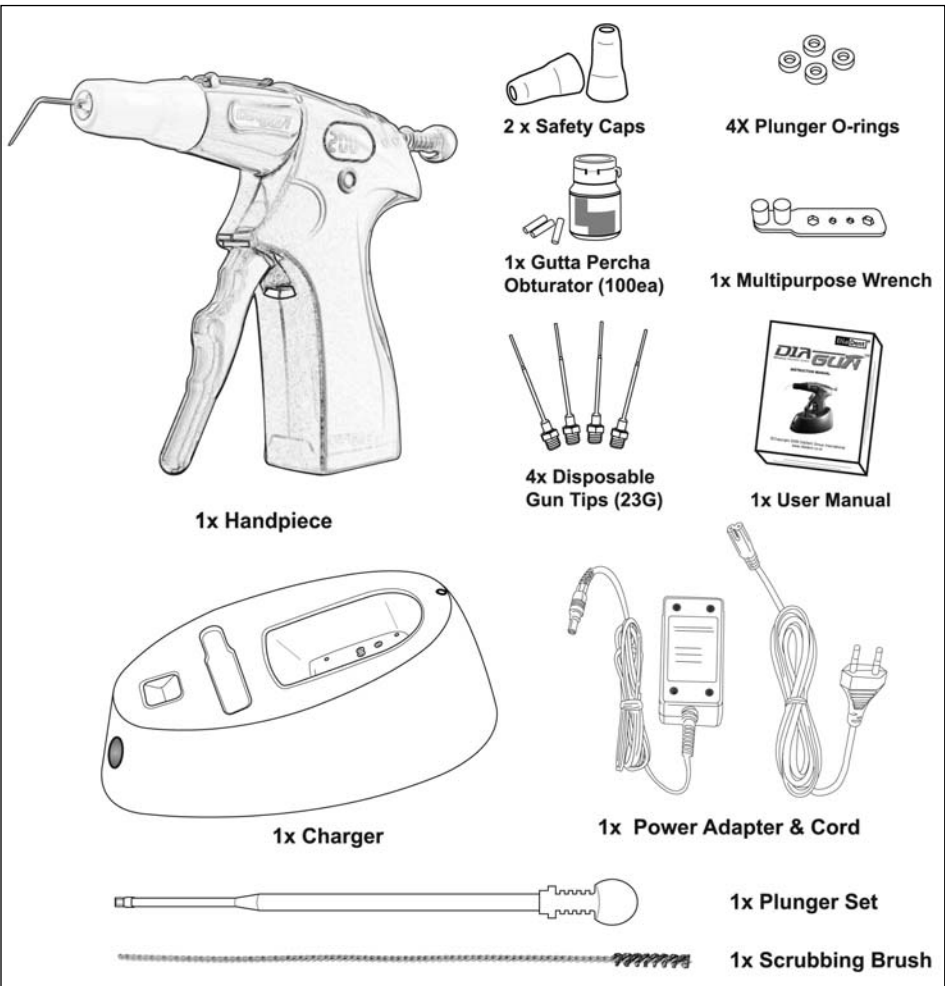
Warning

The electromagnetic waves or other medical equipments in hospitals could be caused the malfunction of this device.

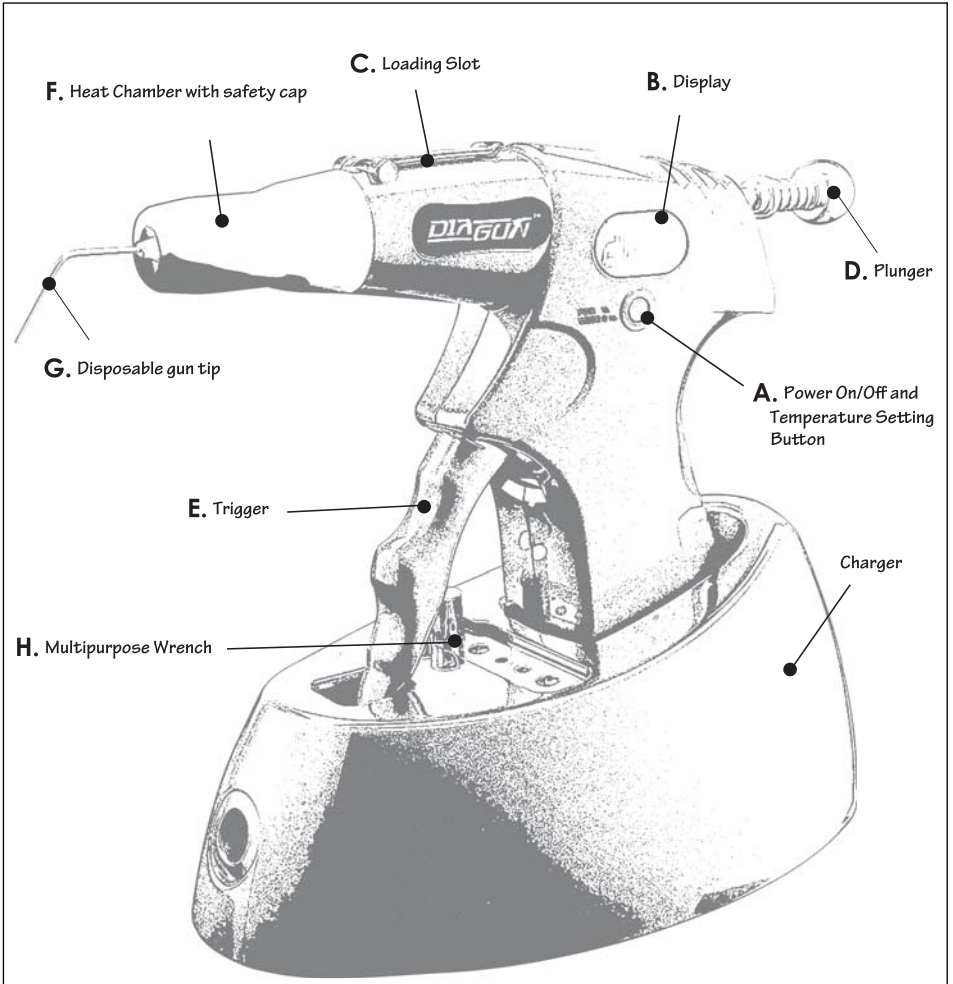
3. Package Contents

Before removing the device from the box, check it against the items described below to make sure you have everything. If any item is missing or damaged, contact your sales representative.

- 1x Handpiece
- 1x Charger
- 2x Safety Caps
- 1x Plunger Set
- 4X O-rings
- 1x Power Adapter & Cord
- 4x Disposable Gun Tips (23G)
- 1x Multipurpose Wrench
- 1x Gutta Percha Obturator (100ea)
- 1x Scrubbing Brush
- 1x User Manual

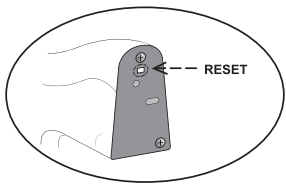


4. Product Features



Press the "RESET" switch once

* Reset Switch: Before using the handpiece of DiaGun for the first time, you must press the "Reset" Switch that is located at the bottom of the handpiece once. When the handpiece is off, its display is blank. Pressing the "Reset" Switch once will light up the display.



Handpiece

A. Power On/Off and Temperature Setting Button :

- Press the button for one (1) second to turn the device On/Off.
- Press the button shortly to increase or decrease preset temperatures (160 °C, 180 °C, 200 °C).
- Power turns off automatically in four and a half (4.5) minutes when the device is not in use. This automatic time-out feature prevents overheating.

B. Display : Indicates setting and heating temperature.

C. Loading Slot : Place Gutta Percha Obturator to the heat chamber.

D. Plunger : Push the Gutta Percha Obturator into the heat chamber until it snaps securely into place. Plunger O-rings could be worn by the repetition use and caused the back-flow, please change O-rings by the Multipurpose Wrench.

E. Trigger : Lightly squeeze the trigger to achieve a flow of warm Gutta Percha Obturator.

F. Heat Chamber with safety cap : Swivel 360° to adjust needle's direction. Soft safety cap can reduce the possibility of injury during use. Always steam autoclave the safety cap before use.

G. Disposable gun tips (23G) : Connect the tip tightly to heat chamber and bend or remove using the multipurpose wrench.

H. Multipurpose Wrench : After the needle is placed properly, bend and tighten it to the desired degree using the wrench. After use, remove the needle safely.

I. Rechargeable Battery Pack : Inside handpiece.

J. Reset Switch : Before using the handpiece of Dia-Gun for the first time, you must press the "Reset" Switch that is located at the bottom of the handpiece once. When the handpiece is off, its display is blank. Pressing the "Reset" Switch once will light up the display. Should this device not work properly because of internal program error, please power off "Reset" Switch and power it on after one (1) minute.

Caution

1. Before using the handpiece, check that charging is complete and the handpiece is ready for use.
2. Check that the disposable gun tips and heat chamber are clean and undamaged before each use.
3. As plunger is completely inserted, do not force to pull trigger which may result in device damage.
4. Do not re-use needles. After obturation, remove disposable gun tips with wrench completely.
5. After each use, remove all visible soil from Gutta Percha Obturator in the heat chamber with scrubbing brush. Melt the residual at 160°C and clean it all.
6. Use one pellet of Gutta Percha Obturator only. Many pellets can damage the device.
7. To reduce the injury of patient or operator, always place the safety cap on during use.
8. Gun tip should be tightened moderately so that there is no leakage or flow out of Gutta Percha Obturator. Over-tightening the tip may lead to damage to the tip and/or handpiece. The tip can be adjusted and bent to the desired degree by the supplied wrench. Do not bend the needle by force.
9. To prevent injury, when the gun tip is activated, avoid contact with the patient and operator. When the gun tip needs to be removed after obturation, wait at least three (3) minutes until the tip has been cooled down.
10. After use, push the plunger backwards to the start-position. There is a possibility that the plunger might not move back because the remaining filling material is frozen inside. In this case, operate the device and move plunger back slowly.

CHARGER

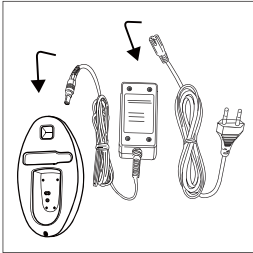
- A. Charge handpiece battery pack when handpiece is placed in the charger and the charger is plugged in.
- B. Flashes “Red” when the battery pack is discharged. When the battery pack needs to be re-charged and when battery power is below 20%, “Lo.” is indicated on the handpiece display. Place the handpiece in the charger as soon as this happens.
- C. Flashes “Green ” when the battery pack is fully charged.
- D. After use, always place back the handpiece in the plugged-in charger to re-charge. This will ensure a longer lifetime of the battery pack.

Caution

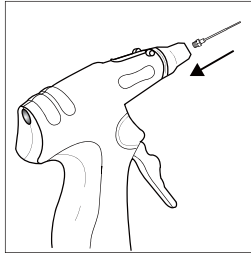
1. For proper operation, the charger must be installed and used in a dry environment. If the charger becomes wet, unplug and dry it immediately.
2. Check the required voltage before connecting the charger to the power adapter. Failure to do so may damage the charger and/or the handpiece.
3. Place the charger on a level and safe surface.
4. Use only the power adapter that is supplied by the manufacturer.
5. Place the handpiece vertically in the charger and check that the handpiece end cap contacts touch the charger contacts properly.
6. Do not drop or hit the battery pack as this may result in the exposure of corrosive chemicals in the battery pack.
7. If fire or explosion occurs when handpiece is in the charger, unplug the charger immediately.

5. Operation

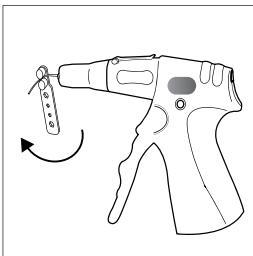
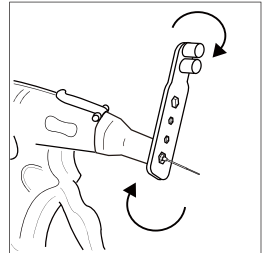
Operation



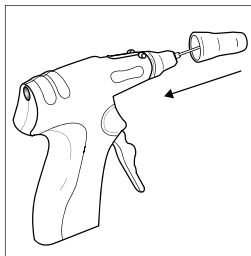
1. Connect the adapter to the charger, then connect the adapter to the power source.



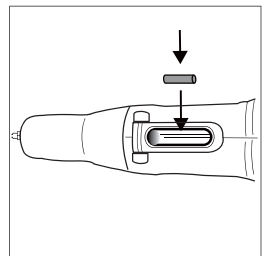
2 ~ 3. Insert the disposable gun tip to the heat chamber using the wrench.



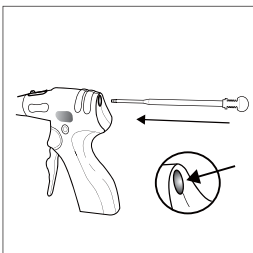
4. Using the wrench, gently bend the tip to the desired position.



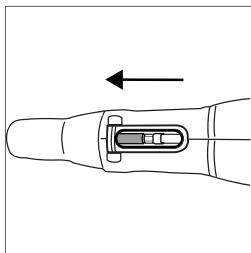
5. Cover the heat chamber with the safety cap.



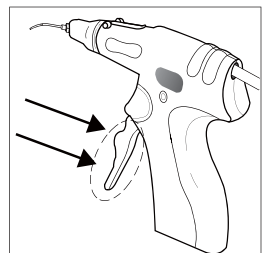
6. Insert the pellet (gutta percha obturator) to the loading slot.



7. Insert the plunger into handpiece as shown on the picture above.



8. After placing pellet (gutta percha obturator) in the loading slot, push it into the heat chamber using the plunger.



9. Lightly squeeze the trigger.

A. Charging

- Before use, check that the charging is completed. If the handpiece is discharged, place it in the charger which is connected with the power adapter.

B. Inserting the Tip

- Use Dia-Gun's tips only.
- Do not activate the handpiece while inserting the tip.
- Insert the tip to the heat chamber using the wrench to ensure safety.
- Use the wrench to bend the tip to the desired position very gently. To get better result, before bending the tip, activate the handpiece, flow the Gutta Percha Obturator a little.
- During or after operation, the tip is very hot. To prevent severe injuries, do not touch the tip.

C. Loading Pellet (Gutta Percha Obturator)

- Pellets (Gutta Percha Obturator) provided by DiaDent are optimized to Dia-Gun equipment so pellets from other manufacturers may not fit and require a different dissolution temperature.
- Before inserting a pellet, please make sure the equipment is cooled down.
- Use only one Gutta Percha Pellet at a time.
- Pull the plunger back (not out of the body) to empty the loading slot. Then, pull down the front of the device until the tip faces downward to insert the pellet into the loading slot.
- After placing the Gutta Percha pellet in the loading slot, push it into the heat chamber using the plunger.
- When the pellet is not inserted properly, the trigger will not work correctly.
- It is better to operate the trigger in a continuous and smooth fashion than a one-time strong compression.
- When the inserted pellet is used up completely and the handpiece has cooled down, reload another pellet.

D. Powering On

- Before using the handpiece of Dia-Gun for the first time, you must press the " Reset " switch that is located at the bottom of the handpiece once.
- Press the power button for one (1) second to turn the device on.
- Press the button shortly to increase or decrease preset temperatures (160 °C, 180 °C, 200 °C) and adjust the tip temperature.
- Display shows current heating temperature of the tip and the temperature will change when the setting temperature is reached.

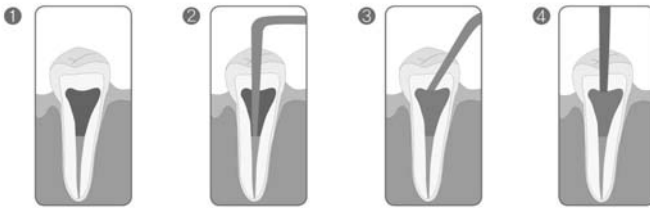
E. Placing the safety cap

- Place the safety cap in front of the device and the tip before use.
- ALWAYS steam autoclave the safety cap before use.

F. Obturating (Backfill)

- Fit the master Gutta Percha cone that is dipped in sealer and take a radiograph to ensure that it is filling well.
- Increase the preset temperature of Dia-Gun, so Gutta Percha Obturator is heated.
- Using Dia-Gun's tip, make contact with the upper part of Gutta Percha Point that is already filled in the root canal, transfer heat for 3 to 5 seconds.
- Operate the trigger slowly, flow the melted Gutta Percha Obturator to the root canal and continue flowing while withdrawing the needle from the canal.
- Use an Endodontic hand plugger to compact obturation material.
- Repeat as needed until canal is filled without voids and take a radiograph.

※ Backfill Obturating

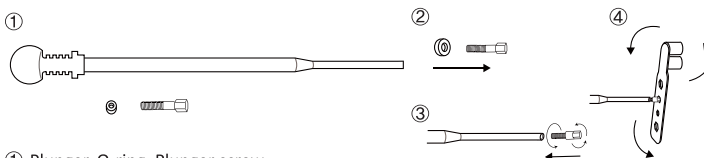


1. Fit the master Gutta Percha cone that is dipped in sealer and take a radiograph to verify its proper fit. Increase the preset temperature of Dia-Gun, so Gutta Percha Obturator is heated.
2. Using Dia-Gun's tip, make contact with the upper part of Gutta Percha Point that is already filled in the root canal, transfer heat for 3 to 5 seconds.
3. Operate the trigger slowly, flow the melted Gutta Percha Obturator to the root canal and continue flowing while withdrawing the needle from the canal.
4. Use an Endodontic hand plugger to compact obturation material. Repeat as needed until canal is filled without voids and take a radiograph.

G. Powering Off

- Press the power button for one (1) second to turn the device off.
- Power turns off automatically in four and a half (4.5) minutes when the device is not in use.

※ Connection method of plunger

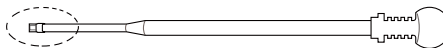


① Plunger, O-ring, Plunger screw

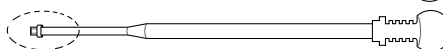
② Connect the o-ring to plunger screw

③~④ Using multipurpose wrench, gently connect the screw to plunger.

A. Correct assembly



B. Wrong assembly



6. Cleaning and Maintenance

A. Cleaning the charger

- Remove the handpiece from the charger. Disconnect the charger from the power adapter and power supply. Clean the outer surface of the charger by wiping with a soft cloth dampened with pH neutral surface disinfection solution or alcohol.
- Do not submerge the charger in disinfection liquids of any kind.
- It would be better to clean Charger contacts with Alcohol.

B. Cleaning the handpiece

- Remove the handpiece from the charger for cleaning. Clean the outer surface of the handpiece by wiping with a soft cloth dampened with pH neutral surface disinfection solution or alcohol.
- Do not submerge the charger in disinfection liquids of any kind.
- It would be better to clean handpiece contacts with Alcohol.

C. Cleaning the inside of heat chamber

- Remove the tip by wrench and clean all visible soil from Gutta Percha Obturator in the heat chamber with scrubbing brush. Melt the residual at 160 °C and clean it all.

D. Cleaning the safety cap

- After each use, steam it using a steam autoclave.

E. Cleaning the plunger

- Wipe it with a soft cloth dampened with alcohol.

7. Disposal

A. Handpiece and charger disposal

- Remove battery pack before disposal. Dispose of electronic parts as electronic waste. Dispose of all other parts according to the relevant regulations concerning waste disposal.

B. Battery pack disposal

- Dispose of the battery pack as chemical waste. Dispose in accordance with all applicable local regulations

C. Tips disposal

- Dispose of needles as medical waste. Dispose in accordance with all applicable local regulations

8. Device Item Codes

Item	Codes
Dia-Gun Set	#4001-1001
Handpiece	#4001-1010
Charger	#4001-1020
Safety Cap(2ea)	#4001-1030
Plunger	#4001-1040
Plunger O-rings(4ea)	#4001-1050
Power Adapter & Cord	#4001-1060
Disposable Gun Tips(4ea, 23G)	#4001-1070
Disposable Gun Tips(4ea, 25G)	#4001-1071
Multipurpose Wrench	#4001-1080
Scrubbing Brush	#4001-1090
Battery	#4001-1100
Gutta Percha Obturator(100ea)	#181-101


9. Warranty

- A. 1 Year Limited Warranty (excluding safety cap, gun tips, plunger, plunger o-rings, power adapter & cord, multipurpose wrench, and brush).
- B. The manufacturer gives a one (1) year warranty effective from the date of purchase. Any defects or errors that are due to faulty manufacturing or material will be repaired or replaced within this warranty period.
- C. To obtain warranty coverage and to return the device to the manufacturer's service facility, please contact your sales representative. Products returned for warranty coverage should be securely packed and shipped with postage prepaid. DiaDent does not accept shipments sent collect. Manufacturer will be responsible for shipping the repaired or replacement product to you.
- D. Manufacturer disclaims liability and is not responsible for repair or replacement of product in the case of:
 - Noncompliance with this instruction manual.
 - Operating and/or handling the device without care.
 - Damage caused by natural disasters.
 - Incorrect diagnosis or poor result due to operator error.
 - Device damages resulting from repairs or modifications not serviced by the manufacturer.












10. Trouble Shooting

Problem	Action
Device will not operate	<ul style="list-style-type: none">• Check charger and power adapter for proper operation and connection• Charge the battery pack as soon as possible• Check the plug socket• Check to ensure Reset switch is on.
Handpiece does not work	<ul style="list-style-type: none">• Check battery pack is fully charged before use• Replace damaged Gun tips• Check charger and power adapter• Replace the battery pack• Replace damaged plunger
Charger does not work	<ul style="list-style-type: none">• Check that the charger light is on• Check that the power adapter is plugged into power outlet compatible with the voltage• Check to see if the charger or power adapter is damaged• If charger light is not on, please contact your representative• Ensure that the handpiece is placed firmly into the charger base• If the battery contact points of the handpiece or charger are wet, dry immediately and do not use.• Replace the battery pack• If the charger still does not work, please contact your representative
Tip does not heat	<ul style="list-style-type: none">• Check that the battery pack is fully charged• Replace damaged tips• Replace damaged battery pack

11. Technical Specification

Product Name	Dia-Gun	
Classification	Class II (AC/DC Adapter)	
Setting Temperature	160, 180, 200° C	
Charging time	Approx. 2 hrs 30 min	
Operation time per full charge	20 times per four and half (4.5) min	
Dimensions	Handpiece	180 x 124 x 33mm(W x H x D)
	Charger	156 x 65 x 88mm(W x H x D)
	Handpiece	186g
Weight	Charger	305g
	Adapter	200g
Power Supply(Adapter)	Input	100V-240V~, 50-60 Hz, 0.4A
	Output	5V  , 2A
Battery	Li-ion Battery, DC 3.7V, 2200mAh	
Storage Condition	Temperature	-10 °C ~ +40°C
	Humidity	30~85%
	Atmospheric Pressure	70~106 kPa
Transportation Condition	Temperature	-10 °C ~ +40°C
	Humidity	10~85%
	Atmospheric Pressure	600~1060 hPa

12. Symbol

Symbol	Description	Symbol	Description
	Cautions indicate which, if not observed, could result in damage to person and/or equipment		Direct current
	CE certification		Manufacturer
	Manufacture date		Serial No
	EU Representative		FRAGILE
	KEEP DRY		USE NO HOOKS/DO NOT PUNCTURE
	UNSTABLE		



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CE 0197



ISO 9001

ISO 13485