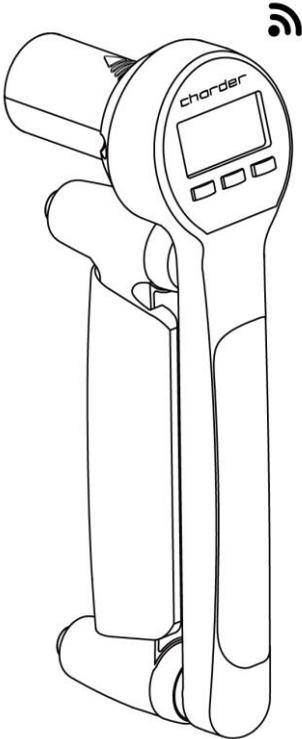




Hand Dynamometer

USER MANUAL

MG4800



Please keep the instruction manual at hand and follow instruction for use.

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I. Explanation of Graphic Symbols on Label/Packaging

Text/Symbol	Meaning
	Caution, consult accompanying documents before use
	Separate collection for waste of electrical and electronic equipment, in accordance with Directive 2002/96/EC. Do not dispose of device with everyday waste
	Name and address of device manufacturer, and year/country of manufacture
	Carefully read user manual before installation and usage, and follow instructions for use.
	Medical electrical device, Type B applied part
	Medical electrical device, Type BF applied part
	Device catalogue number / model number
	Name and address of authorized representative in the European Union
	Device is a medical device. Text indicates device category type
	Manufacturer's batch or lot number for device
	Device's serial number
	Device's Unique Device Identifier
	Verification Scale Interval. Value expressed in units of mass. Used to classification and verification of an instrument.
	Device conforms to (EU) 2017/745 Regulation on Medical Devices. Four digit number is identifier for medical device Notified Body

Device complies with EC directives (verified models only)



M: Conformity label in compliance with Directive 2014/31/EU for non-automatic weighing instruments
20: Year in which conformity verification was performed and the CE label was applied. (ex: 16=2016)
0122: Identifier for metrology Notified Body



Device is a Class III scale in compliance with Directive 2014/31/EU (verified models only)



Name and address of entity importing device (if applicable)



Name and address of entity responsible for translating Information For Use (if applicable)



Event counter confirming how many times device has been calibrated (if applicable)



Device conforms to Taiwan National Communications Commission(NCC) approval



Device conforms to U.S. Federal Communications Commission regulations



Device complies with UK non-automatic weighing instruments regulations 2016 (verified models only)
M: Conformity label in compliance with Non-automatic Weighing instruments Regulations 2016
20: Year in which conformity verification was performed and the UKCA label was applied. (ex: 20=2020)
8506:Identifier for metrology approved body



Device complies with all UK applicable product legislation



Device's polarity of power.

"In case of differences, icon on device itself takes precedence"

II. Copyright Notice

Copyright Notice

Charder Electronic Co., Ltd.

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This user manual is protected by international copyright law. All content is licensed, and usage is subject to written authorization from Charder Electronic Co., Ltd. (hereinafter Charder) Charder is not liable for any damage caused by a failure to adhere to requirements stated in this manual. Charder reserves the right to correct misprints in the manual without prior notice, and modify the exterior of the device for quality purposes without customer consent.



Charder Electronic Co., Ltd.
No. 103, Guozhong Rd., Dali Dist.,
Taichung City, 41262 Taiwan

III. Safety Notes

A. General Information

Thank you for choosing this Charder Medical device. It is designed to be easy and straightforward to operate, but if you encounter any problems not addressed in this manual, please contact your local Charder service partner.

Before beginning operation of the device, please read this user manual carefully, and keep it in a safe place for reference. It contains important instructions regarding installation, proper usage, and maintenance.

Intended Purpose

This medical device is designed to be used in accordance with national regulations, to measure grip strength within specifications, for grip strength-related usage by professionals.

Clinical Benefit

Measurement results are for doctor's reference of user's grip strength.

Intended medical indications/contraindications

Measurement: patient's handgrip. No known contraindications to measurement of handgrip.

Intended patient profile

- (a) Age: no restrictions
- (b) Weight: no restrictions
- (c) Patient Conditions: require measurement of grip strength
- (d) Other: hand needs to be large enough to grip device in one hand

Intended user profile

- (a) At least 20 years old
- (b) Minimum knowledge:
 - To be able to read at a high-school level and understand Arabic numerals (e.g. 1, 2, 3, 4...)
 - Basic hygiene knowledge
 - Trained in device's operation
 - Read the instruction manual

- (c) Language
 - Able to read the language of instruction manual
- (d) Qualifications
 - No special certifications or qualifications required

Residual Risk Evaluation

- (a) All foreseeable risks have been evaluated and considered acceptable. Generally speaking, the most likely risk caused by incorrect usage of the device is less accurate measurement (or inability to use device to acquire measurement), which does not pose imminent physical risk to patient or user.
- (b) Benefit-risk ratio is considered acceptable. Handgrip dynamometers are an important option for measuring patients. Usage of device is unlikely to result in harm to user or patient.

General Handling

- Ensure all parts are properly locked and tightened before operating the device.
- Measurement accuracy requires the subject's feet, back, and head to be straightly aligned. Please note that height can vary throughout the day
- **CAUTION:** Do not use next to equipment that may cause electromagnetic or other types of interference.

Safety Instructions

Before putting device into use, please read this user manual carefully. It contains important instructions for installation, usage, and maintenance of device.

The manufacturer shall not be liable for damages caused by failure to heed the following instructions:

- The device has an expected service life of 5 years when correctly handled, serviced, and periodically inspected in accordance with manufacturer's instructions.
- Improper installation will render the warranty null and void.
- Observe permissible ambient temperatures for use

Environmental

All batteries contain toxic compounds; batteries should be disposed of via designated competent organizations. Batteries should not be incinerated.

Cleaning

- Device surface should be cleaned using alcohol-based wipes. Corrosive cleansing liquids should not be used. Pressure-washers should not be used.
- Do not use large amounts of water when cleaning the device, as it may cause damage to the internal electronics.
- Always disconnect device from mains power before cleaning.

Maintenance

Please contact your local Charder distributor for regular maintenance and calibration, regular checking of accuracy is recommended; frequency to be determined by level of use and state of device.

Warranty/Liability

- The period of warranty shall be eighteen(18) months, beginning on the date of purchase. Please retain your receipt as proof of purchase.
- No responsibility shall be accepted for damage caused through any of the following reasons: unsuitable or improper storage or use, incorrect installation or commissioning by the owner or third parties, natural wear and tear, changes or modifications, incorrect or negligent handling, chemical, electrochemical, or electrical interference, unless damage is attributable to negligence on the part of Charder.
- This device does not contain any user-maintained parts. All maintenance, technical inspections, and repairs should be conducted by an authorized Charder service partner, using original Charder accessories and spare parts. Charder is not liable for any damages arising from improper maintenance or usage. Dismantlement of the device will void the warranty.

Disposal

This product is not to be treated as regular household waste, but should be taken to a designated collection points for electronics. Further information should be provided by local waste disposal authorities.



Warning

Only the original adapter should be used with the device. Using an adapter other than the one provided by Charder may cause malfunction.

- Do not touch the power supply with wet hands.
- Do not crimp the power cable, and avoid sharp edges.
- Do not overload extension cables connected to the device.
- Route cables carefully, to avoid tripping.
- Keep device away from liquids.
- Do not remove the plug by yanking on the cable.
- Use only a correctly wired (100-240VAC) outlet, and do not use a multiple outlet extension cable.
- Do not under any circumstances dismantle or alter the device, as this could result in electric shock or injury as well as adversely affect the precision of measurements.
- Do not place the device in direct sunlight, or in close proximity to an intense heat source. Excessively high temperatures may damage the internal electronics.

Incident Reporting

Any serious incident that has occurred in relation to the device should be reported to the manufacturer, EU representative (if device is used in EU member state), and competent authority of user/subject's member state

B. EMC Guidance and Manufacturer's Declaration

Guidance and manufacturer's declaration-electromagnetic emissions		
<p>The product is intended for use in the electromagnetic environment specified below. The customer or the user of the product should assure that it is used in such an environment.</p>		
Emission test	Compliance	Electromagnetic environment-guidance
RF emissions CISPR 11	Group 1	The product uses RF energy only for its internal function. Therefore, its RF emissions are very low and are not likely to cause any interference in nearby electronic equipment.
RF emissions CISPR 11	Class A	The product is suitable for use in all establishments other than domestic and those directly connected to a low voltage power supply network which supplies buildings used for domestic purposes.
Harmonic emissions IEC 61000-3-2	Class A	
Voltage fluctuations /flicker emissions IEC 61000-3-3	Compliance	

Guidance and manufacturer's declaration-electromagnetic immunity

The product is intended for use in the electromagnetic environment specified below. The customer or the user of the product should assure that it is used in such an environment.

Immunity test	IEC 60601 test level	Compliance level	Electromagnetic environment-guidance
Electrostatic discharge(ESD) IEC 61000-4-2	<u>±8 kV contact</u> <u>±2 kV, ±4 kV, ±8 kV, ±15 kV air</u>	<u>±8 kV contact</u> <u>±2 kV, ±4 kV, ±8 kV, ±15 kV air</u>	Floors should be wood, concrete or ceramic tile. If floors are covered with synthetic material, the relative humidity should be at least 30%
Electrical fast transient/burst IEC 61000-4-4	<u>± 2kV for power supply lines</u>	<u>± 2kV for power supply lines</u>	Mains power quality should be that of a typical commercial or hospital environment.
Surge IEC 61000-4-5	<u>± 1kV line(s) to line(s)</u> <u>± 2kV line(s) to earth</u>	<u>± 1kV line(s) to line(s)</u> <u>± 2kV line(s) to earth</u>	Mains power quality should be that of a typical commercial or hospital environment.
Voltage Dips, short interruptions and voltage variations on power supply input lines IEC 61000-4-11	<u>0% UT for 0,5 cycle</u> <u>0% UT for 1 cycle</u> <u>70% UT(30% dip in UT) for 25cycles</u> <u>0% UT for 5 s</u>	<u>0% UT for 0,5 cycle</u> <u>0% UT for 1 cycle</u> <u>70% UT(30% dip in UT) for 25cycles</u> <u>0% UT for 5 s</u>	Mains power quality should be that of a typical commercial or hospital environment. If the user of the product requires continued operation during power mains interruptions, it is recommended that the product be powered from an uninterruptible power supply or a battery.
Power frequency(50, 60 Hz) magnetic field IEC 61000-4-8	<u>30 A/m</u>	30 A/m	The product power frequency magnetic fields should be at levels characteristic of a typical location in a typical commercial or hospital environment.

NOTE UT is the a.c. mains voltage prior to application of the test level.

Guidance and manufacturer's declaration-electromagnetic immunity

The product is intended for use in the electromagnetic environment specified below.

The customer or the user of the product should assure that is used in such and environment.

Immunity test	IEC 60601 test level	Compliance level	Electromagnetic environment-guidance
Conducted RF IEC 61000-4-6	3 Vrms 150 KHz to 80 MHz 6 V in ISM bands between 0,15 MHz and 80 MHz 80 % AM at 1 kHz	3 Vrms 150 KHz to 80 MHz 6 V in ISM bands between 0,15 MHz and 80 MHz 80 % AM at 1 kHz	Portable and mobile RF communications equipment should be used no closer to any part of the product including cables, than the recommended separation distance calculated from the equation applicable to the frequency of the transmitter.
Radiated RF IEC 61000-4-3	3 V/m 80MHz to 2,7 GHz	3 V/m 80MHz to 2,7 GHz	<p>Recommended separation distance: $d = 1,2 \sqrt{P}$ $d = 1,2 \sqrt{P}$ 80MHz to 800 MHz $d = 2,3 \sqrt{P}$ 800MHz to 2,7GHz</p> <p>Where P is the maximum output power rating of the transmitter in watts (W) according to the transmitter manufacturer and d is the recommended separation distance in metres (m).</p>
			Field strengths from fixed RF transmitters, as determined by an electromagnetic site survey, ^a should be less than the compliance level in each frequency range. ^b
			Interference may occur in the vicinity of equipment marked with the following symbol:



NOTE1 At 80 MHz and 800 MHz, the higher frequency range applies.

NOTE2 These guidelines may not apply in all situations. Electromagnetic propagation is affected by absorption and reflection from structures, objects and people.

- a Field strengths from fixed transmitters, such as base stations for radio (cellular/cordless) telephones and land mobile radios, amateur radio, AM and FM radio broadcast and TV broadcast cannot be predicted theoretically with accuracy. To assess the electromagnetic environment due to fixed RF transmitters, an electromagnetic site survey should be considered. If the measured field strength in the location in which the product is used exceeds the applicable RF compliance level above, the product should be observed to verify normal operation. If abnormal performance is observed, additional measures may be necessary, such as re-orienting or relocating the product.
- b Over the frequency range 150 kHz to 80 MHz, field strengths should be less than 3V/m.

**Recommended separation distance between
portable and mobile RF communications equipment and the product**

The product is intended for use in an electromagnetic environment in which radiated RF disturbances are controlled. The customer or the user of the product can help prevent electromagnetic interference by maintaining a minimum distance between portable and mobile RF communications equipment (transmitters) and the product as recommended below, according to the maximum output power of the communications equipment.

Rated maximum output power of transmitter W	Separation distance according to frequency of transmitter m		
	150 kHz to 80 MHz $d = 1,2\sqrt{P}$	80 MHz to 800 MHz $d = 1,2\sqrt{P}$	<u>800 MHz to 2,7 GHz</u> $d = 2,3\sqrt{P}$
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 transmitters rated at a maximum output power not listed above, the recommended separation distance d in metres (m) can be estimated using the equation applicable to the frequency of the transmitter, where p is the maximum output power rating of the transmitter in watts (W) according to the transmitter manufacturer.

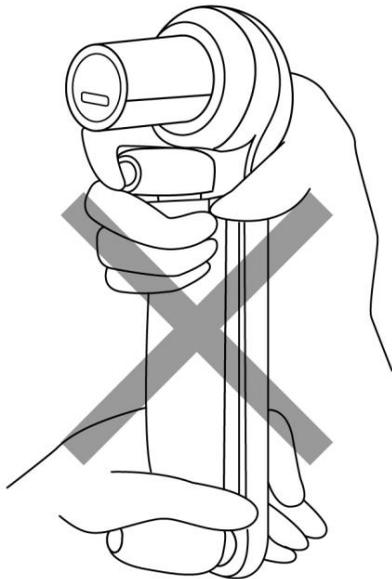
NOTE1 At 80 MHz and 800 MHz, the separation distance for the higher frequency range applies.

NOTE2 These guidelines may not apply in all situations. Electromagnetic propagation is affected by absorption and reflection from structures, objects and people.

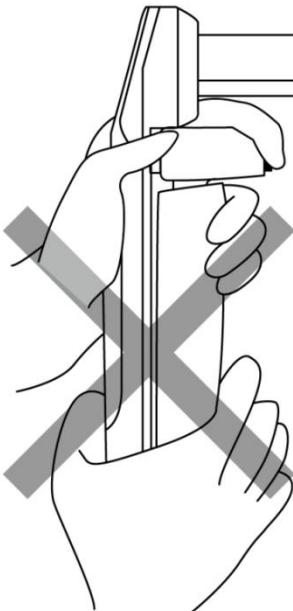
IV. Gripping Posture

A. Incorrect Gripping Posture

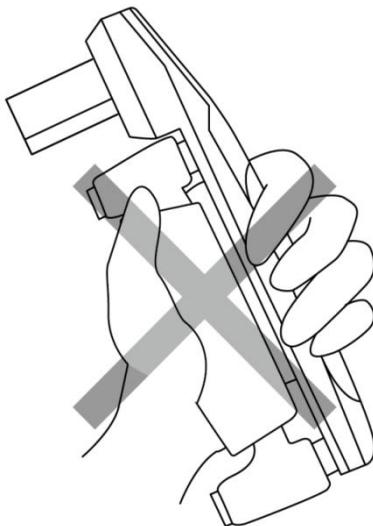
a.



b.

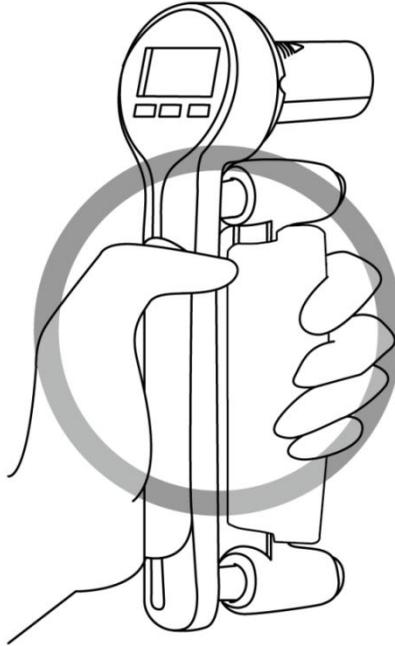


c.

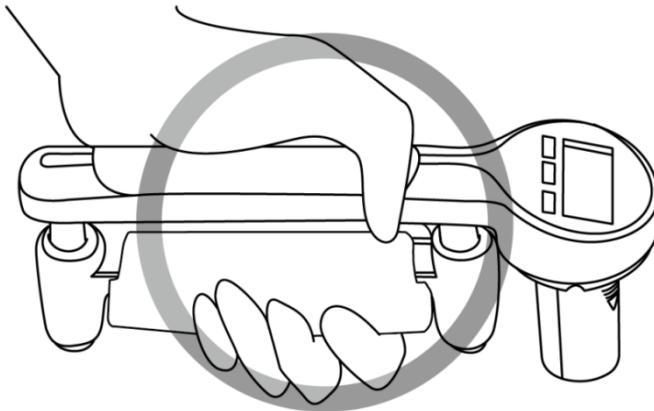


B. Correct Gripping Posture

a.

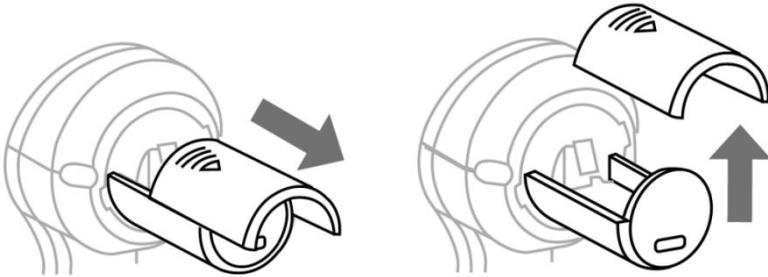


b.

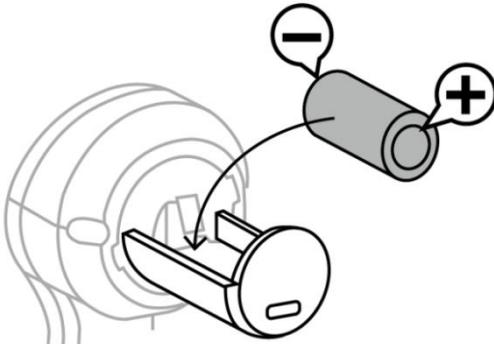


V. Inserting Battery

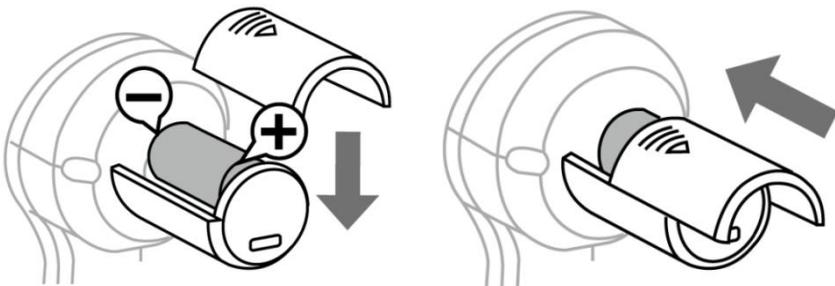
1. Removing battery cover (slide off)



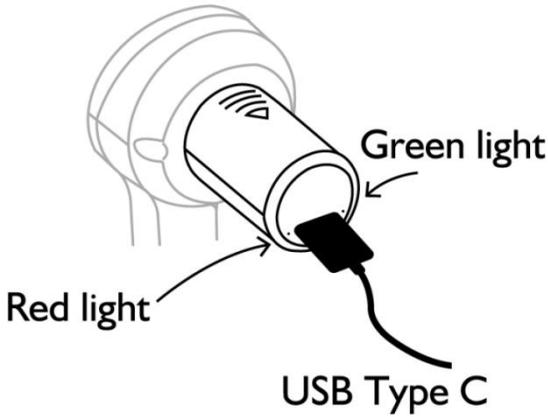
2. Insert RCR123A rechargeable lithium battery. (ensure +/- polarity is correct).



3. Replace battery cover.



4. Charging device



Charging battery using USB Type-C cable included with device.

Red Light : device charging

Green Light : device fully charged

NOTE :

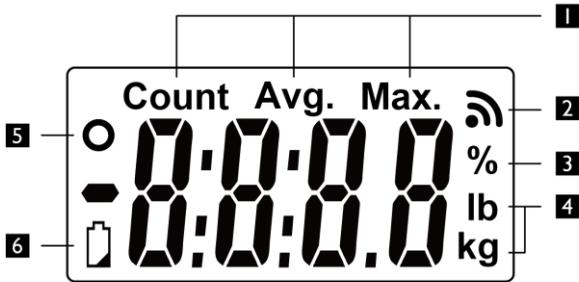
Before using the device for the first time, please charge the battery fully.



Do NOT use the device while charging.

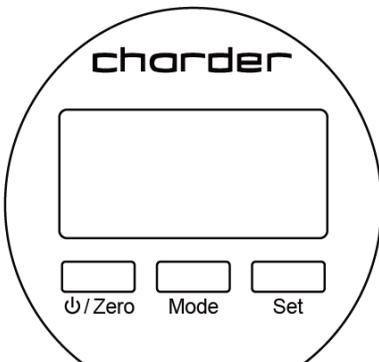
VI. Display and Key Functions

LCD Screen



- 1** Mode Indicator
- 2** Wireless Indicator
- 3** Percentage Indicator
- 4** Unit (lb / kg)
- 5** Stable symbol
- 6** Low Battery

Key Function



Power/Zero

Power on/Power off/Zero. When device is off, press to power on. Press to zero value. Press and hold for 3 seconds to turn off.

NOTE : please release device (do not squeeze) before zeroing value.

Mode

1. Settings
2. Unit switch working when long press it (underinstant mode).

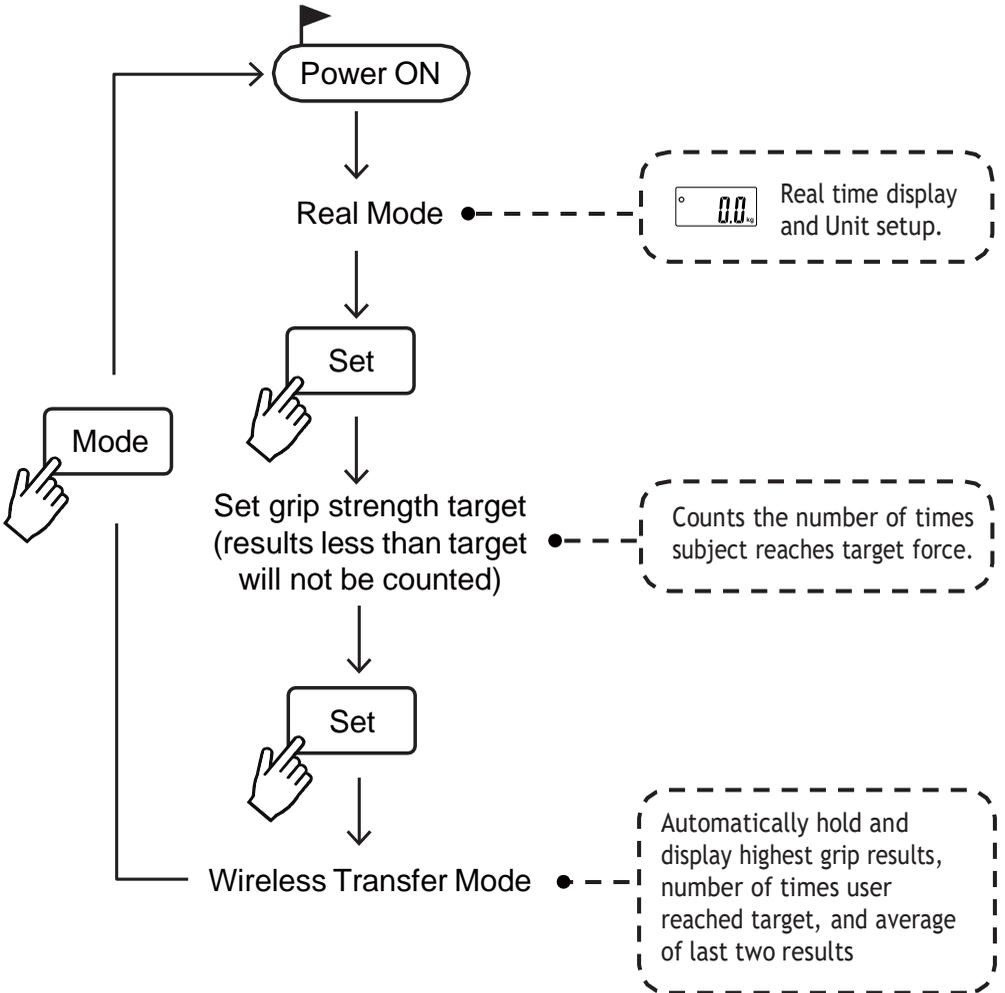
Set

Under standard mode, it is digit-setting.

MODE SWITCHING

NOTE:

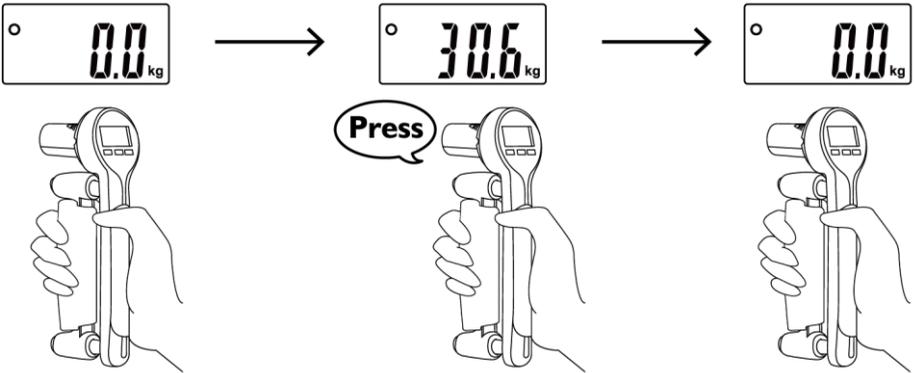
Real Mode is the default mode. If the device is powered off in any other mode, it will start in that mode the next time it is powered on.



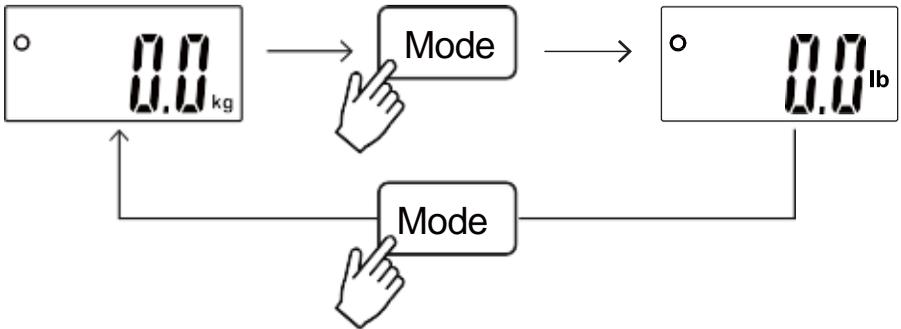
REAL MODE

Real Mode is a dynamic mode. The force value will fluctuate according to force exerted during usage.

Real Time Display



Kg / lb Setup:



VII. Wireless Data Transfer

To transfer measurement results, you must first set a target grip strength. In this mode ("Max" can be seen on screen), device will automatically count the number of times user reaches target grip strength, as well as the average of the last two results.



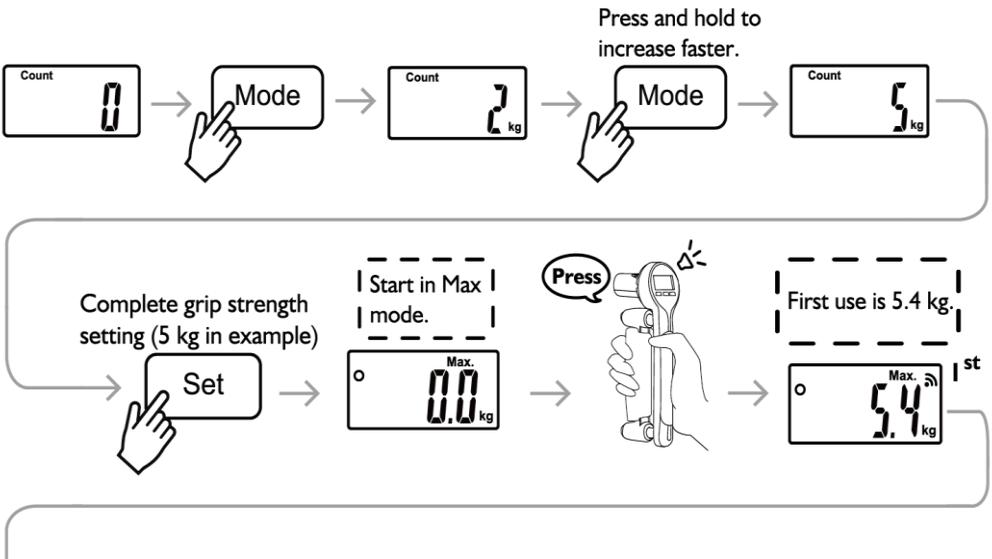
To set grip strength target, press

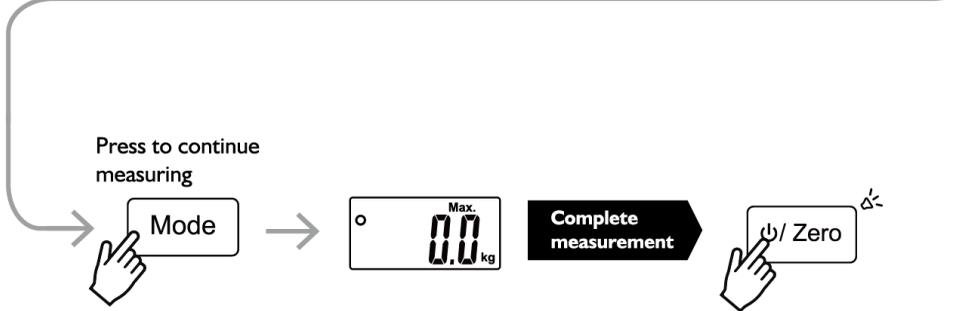
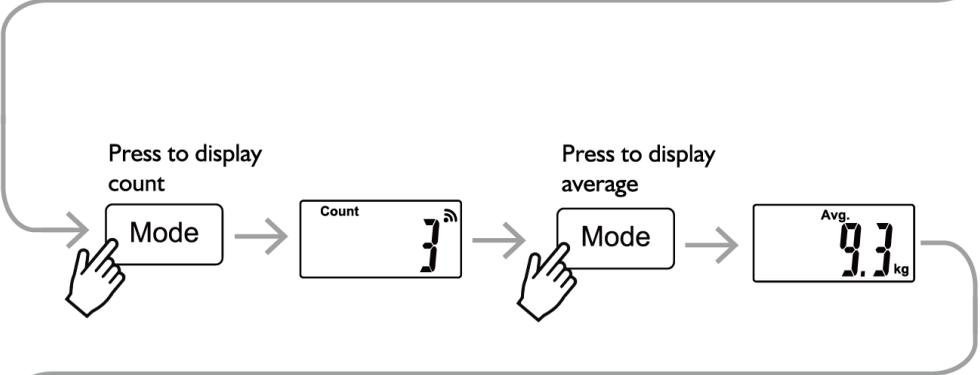
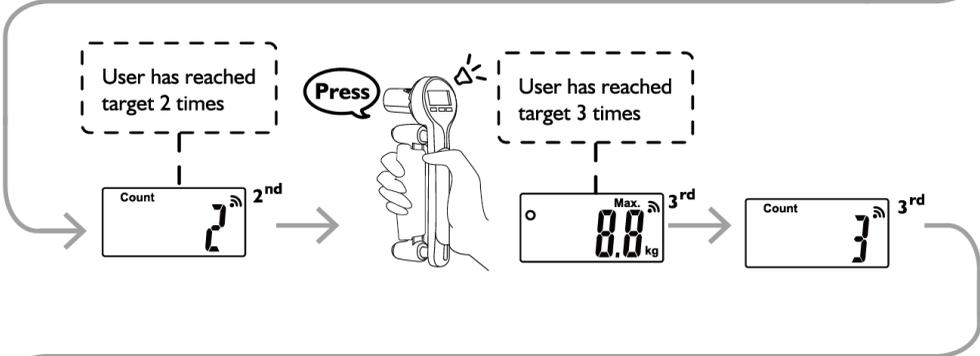
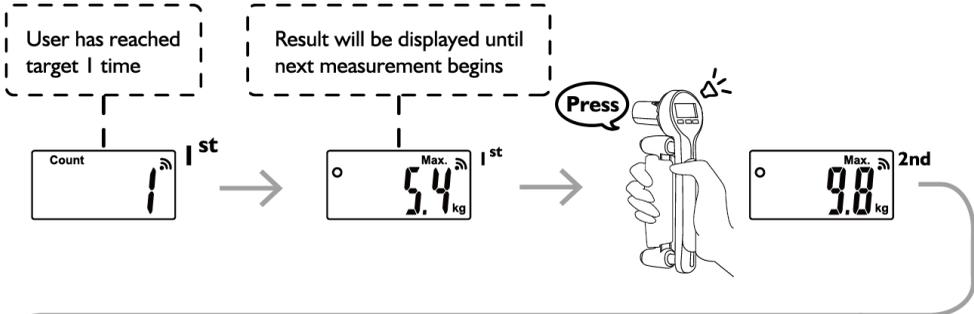
Set



This symbol indicates that the device is connected to receiving software. If wireless is off, results will be temporarily stored in memory until device is turned off.

SETUP TARGET GRIP FORCE



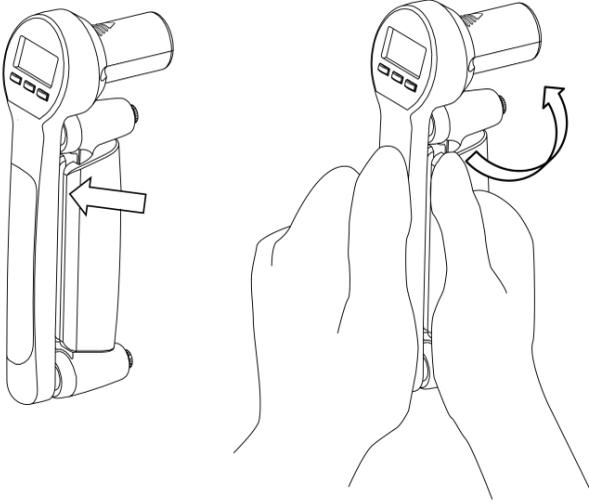


- Press "Zero" key. Device will beep twice, and send grip strength result, count, and average to receiving software.
- Press and hold "Zero" key for 3 seconds to clear memory and turn off device

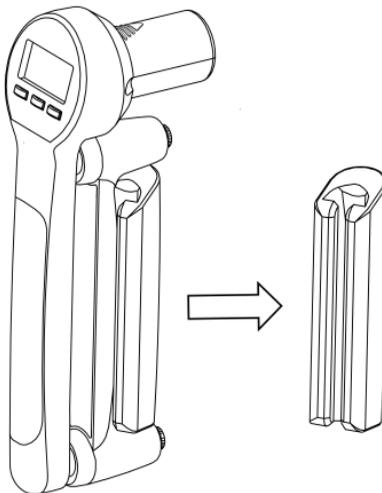
VIII. Removing the grip extension

The grip extension can be removed to fit different hand sizes and can be replaced according to the following instructions.

1. Push grip extension open from the side



2. Remove grip extension



IX. Connect to Software

The MG4800 can send measurement results to receiving device wirelessly.

▷ To transfer results, please set target grip strength (see Section 10). After doing so, device will automatically enter Max Mode

- PCs should use "Smart Data Manager" Software ". Please contact your distributor for details.
- Smartphones/tables should use "Charder Connect" app.



How to connect MG4800 with software

- Install software on receiving device and ensure that MG4800 is wireless model. If you have difficulty connecting, please contact Charder or your local distributor.
- After MG4800 is turned on, software will automatically search for the MG4800's MAC. Select the MG4800 from the software's menu to begin connection.
- Note that subject ID must be input in order to save results in software.

NOTE: PCs should utilize the 'Smart Data Manager' software, while smartphones and tablets should utilize the "Charder Connect" app.

For further details, please refer to the website.
(www.chardermedical.com)

ERROR MESSAGE

<p>1. Low Battery Warning Voltage of battery is too low to operate device. → Replace batteries (or charge batteries)</p>	 
<p>2. Force Under Zero The force is under zero when power on → Press ZERO key and try again.</p>	
<p>3. Force over Zero Force is over limit when device is powered on. → Ensure nothing is putting on device and power on again. If the problem persists, please contact distributor.</p>	
<p>4. Counting Error (too low) Force is under limit when device is powered on. → Ensure nothing is pulling on device and power on again. If problem persists, please contact distributor.</p>	
<p>5. Program Error Fault with device software. → If problem persists, please contact distributor.</p>	

X. Product Specifications

Model	MG4800
Capacity	80kg
Graduation	0.1kg/0.2lb
Accuracy	±2%
Unit	kg / lb
LCD Display	0.5-inch LCD screen (4 digits)
Dimensions	212(W) x 55(D) x 87(H)mm
Grip Span	48mm / 64 mm
Device Weight	0.36kg
Key Functions	On/Off/Zero, Mode, Set
Data Transmission	Wireless NOTE: Device should be connected to network by qualified distributors only
Power Supply	RCR 123A Rechargeable Lithium-ion Battery
Auto Off Time	60 sec
Standard Accessory	Carry casex1, Rechargeable batteryx1, Battery Charger x1, (EM1005AVRU 5V 1.2A) Charging Cable x1 Grip extension x1
Operation Environment	+5°C~+35°C 15%~85% RH 700 hPa ~1060 hPa

XI. Declaration of Conformity

This product has been manufactured in accordance with the harmonized standards, following the provisions of the below stated directives:



Electromagnetic Compatibility Directive 2014/30/EU

Low Voltage Directive 2014/35/EU

RoHS Directive 2011/65/EU and Delegated Directive (EU) 2015/863

Radio Equipment Directive 2014/53/EU

(applicable if wireless module is used)

Part 15 of the Federal Communications Statement Rules

This device may not cause harmful interference.

This device must accept any interference received, including interference that may cause undesired operation.



CCAH21Y10270T6

Manufactured by:



Charder Electronic Co., Ltd.
No.103, Guozhong Rd., Dali Dist.,
Taichung City 41262 ,Taiwan