MINIWARE

MINIWARE
Motion Control
Electric Screwdriver
ES15

User Manual V1.0

CONTENTS 目录

Safety Statements

1.1 Precautions

1) Please use DC 5V output power adapter to charge the product;
2) When charging, the screen will display a charging logo for 3 seconds, and the front LED light will be in breathing state, then go out when fully charged;
3) Do not operate in humid environment;
4) Do not operate in flammable and explosive environment;
5) Please keep the product surface clean and dry;
6) Do not soak the whole product in water or use it with wet hands, beware of electricity leakage;
7) This product contains precision components, please prevent it from dropping.

1.2 Operating Conditions

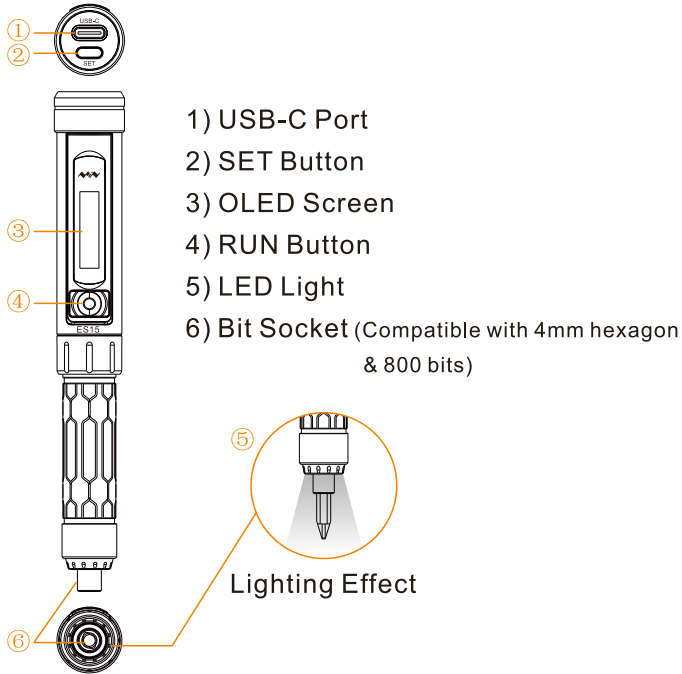| Operating Conditions		Requirements
🌡 Temperature	Working state	0℃~50℃
	Non-working state	-20℃~60℃
💧 Humidity	Working state	High temperature:40℃~50℃, 0%~60%RH
		Low temperature:0℃~40℃, 10%~90%RH
	Non-working state	High temperature:40℃~60℃, 5%~60%RH
		Low temperature:0℃~40℃, 5%~90%RH

1.3 Liability Statements

 Any special, indirect, incidental or subsequent damage or loss caused by the operation of the product that does not follow the contents of this manual (including but not limited to the operating conditions, warnings, precautions, instructions, etc.), the liability will belong to the user.
 The user is responsible for any damage or loss caused by disassembling or modifying the product without permission.
 Please keep this product in a safe place to prevent children from using this product without being supervised.

Product Introduction

MINIWARE Motion Control Electric Screwdriver ES15 is a modular designed smart electric screwdriver with a built-in angular velocity sensor, compatible with a variety of popular bits.

2.1 Buttons And Interface

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1) USB-C Port
2) SET Button
3) OLED Screen
4) RUN Button
5) LED Light
6) Bit Socket (Compatible with 4mm hexagon
& 800 bits)

⑤

Lighting Effect

⑥

2.2 Product Parameters

Screen	128*32 dpi OLED
USB interface	USB-C (for charging and firmware upgrade)
Size (without bits)	Length: 146mm, diameter: 19mm
Weight	120g
Bit type	4mm hexagon , 800
Battery capacity	800mAh
Charging time	50 minutes
Working time (idling/no load)	6 hours

2.3 Working Parameters

Operating Voltage	3-5v
Standby power	100mw
Max power	10w
Manual torque	20kgf.cm
Electronic torque	1.6kgf.cm
Idling speed	470rpm

03
How to Use

When using ES15, press Button RUN until the screen displays the standby logo, and the product enters standby mode. Press and hold Button RUN, ES15 will enter working mode. When ES15 is power off(screen is off), press and hold Button SET and connect product to computer with a USB Type-C data cable to enter DFU firmware upgrade mode.

▶ 1. Home display interface

Torque gear
【●】-Auto
【●】-Forward
【●】-Reverse
Battery
IMP-impact ON
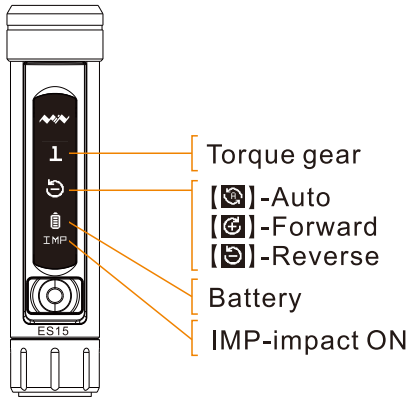
ES15

▶ 2.In standby mode, ES15's button functions are as follows:

Key Operation	Function
Press and hold Button RUN	Enter working mode and work according to settings
Press and hold Button SET	Enter setting menu

| Hot Key Operation	Function
Short press Button SET	Switch torque gear
Triple press Button RUN	Enter quick setting menu (to set working mode of smart motion control, directional forward and reverse)
(After entering quick setting menu) Short press Button RUN	Switch quick setting option values
(After entering quick setting menu) Long press Button RUN	Exit quick setting (or wait for 3 seconds to save and exit automatically)

▶ 3. Operation guide in different working modes:

1) When set to smart motion control mode, in standby mode, press and hold ES15's Button RUN:
   A. When the wrist rotates clockwise, ES15 rotates clockwise (Pic.1);
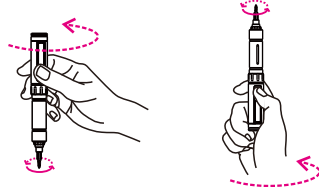   B. When the wrist rotates counterclockwise, ES15 rotates counterclockwise (Pic.2);

Motion control mode:
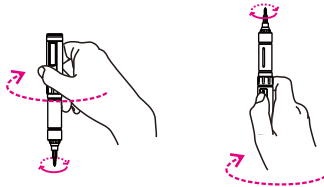
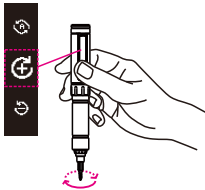The wrist rotates clockwise
Bit rotates clockwise
Pic.1

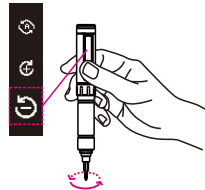The wrist rotates counterclockwise
Bit rotates counterclockwise
Pic.2

2) When set to directional mode (forward or reverse), in standby mode, press and hold Button RUN, ES15 will rotate according to the set direction.

Directional mode:

Bit rotates forward (clockwise)   Bit rotates reversely (counterclockwise)
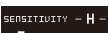
▶ 4. When ES15 is in menu setting mode (long press Button SET to enter menu setting), button functions are as follows:

Key Operation	Function
Short press Button RUN	Switch setting value options (gears/values/ON-OFF)
Short press Button SET	Switch setting items
Long press Button RUN / Button SET	Save the settings and return to standby mode

▶ 5. Setting Menu Description

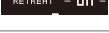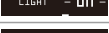| Icon	Parameter	Options	Function
[1]	Torque	1/2/3/4/5	Set screwdriver electronic torque, a bigger number indicates a higher torque.
	Mode	AUTO/+/-	Set working mode as smart motion control(A) / directional forward(+) / directional reverse(-)
SPEED -470 RPM-	Speed	220/360/470(RPM)	Set the speed of the screwdriver
SENSITIVITY - H -	Sensitivity	L/M/H	Set smart motion control sensitivity as Low/Medium/High
IMPACT - ON -	Impact	ON/OFF	Set impact function as ON/OFF (After this function is turned on, the screwdriver will make a torque impact on the screw every time tightening a screw)
RETREAT - ON -	Retreat	ON/OFF	Set Anti-stuck function as ON/OFF (special for hexagon screws)
LIGHT - ON -	Light	ON/OFF	Set LED lighting as ON/OFF
BEEP - ON -	Beep	ON/OFF	Set beep sound as ON/OFF
LANGUAGE - EN -	Language	中/EN	Set menu language as Chinese/English
BATTERY-M - ON -	Battery management	ON/OFF	Set battery management function as ON/OFF. When this function is set as ON, long press Button SET to unlock before use.

Note: the red colored item values indicate the factory settings.

▶ 6. Configuration File Setting

Use USB Type-C data cable to connect ES15 to the computer, a removable disk (ES15_APP) will appear on the computer, and ES15 will enter USB mode. Open the config.txt file in the disk, modify the corresponding values and save the file to complete the configuration file setting.

Parameter	Range	Description
Speed	0-2	0-220rpm,1-360rpm, 2-470rpm
Sensitivity	0-2	0-Low, 1-Medium, 2-High
Torque	1-5	Torque gear; a bigger number indicates a higher torque.
Impact	0-1	0-OFF, 1-ON
Retreat	0-1	0-OFF, 1-ON
Light	0-1	0-OFF, 1-ON
Beep	0-1	0-OFF, 1-ON
Language	0-1	0-中文,1-English
Battery-M	0-1	Battery management; 0-OFF, 1-ON, when this function is set as ON, long press Button SET to unlock before use.
Mode	0-2	Working mode; 0-AUTO(Smart motion control), 1-Forward, 2-Reverse

▶ 7. Parameter Descriptions

Speed

Rotating speed of the screwdriver in working mode.

Sensitivity

In smart motion control mode, speed is related to the swing angle of the screwdriver. The higher the sensitivity, the smaller the swing angle required to reach the same speed.

Electronic torque

The electronic torque of the screwdriver, a bigger number indicates a higher torque.

Impact function

When the screwdriver detects a locked-rotor status, it will output a specific torque several times in a short period of time, simulating the working mode of an impact screwdriver, and can easily tighten or remove the screw. A single impact torque can reach 3 times of the set torque, and increase with the increase of torque gear.

Retreat function

It is an anti-stuck function specially designed for the hexagon screws to prevent the bit from getting stuck in the screw slot after the impact function or the screw is tightened in place.

Light

LED light in the front of the screwdriver.

Beep sound

Button operation sound and low battery warning sound.

Language

The language of the screwdriver operation interface.

Battery Management

After the smart battery management function is turned on, the screwdriver will smartly judge the battery status, so that the battery will go to sleep in the most suitable state to extend battery life. **It is recommended to turn on this function if the screwdriver would not be in use for some time.** After the smart battery management function is turned on, the screwdriver will automatically enter this mode after power off. Long press Button SET to exit this mode (you need to reset after each exit before entering smart battery management function again).

Mode

The working mode of the screwdriver. When it is set to "AUTO", it works as smart motion control mode. When it is set to "+" (directional forward) or "-" (directional reverse), the screwdriver will keep rotating in the same direction, and will not be controlled by changing the hand motion . Directional settings are suitable for heavy work in a fixed direction.
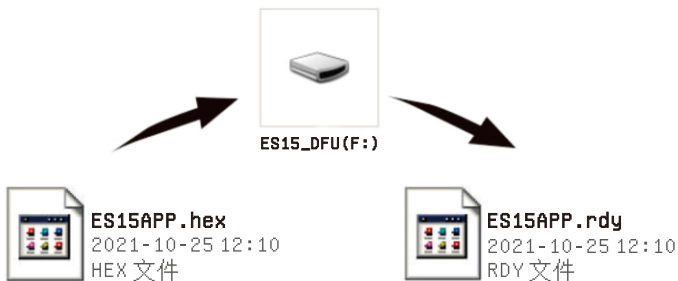
Technical Support

Please visit www.miniware.com.cn for more product information, including product details, user manuals, firmware resources, usage skills, etc.

4.1 Reminders

1. When ES15 is in USB mode, if the configuration file config.txt in the removable disk is deleted, the system will restore the factory settings.
2. The data files in ES15 removable disk may be emptied due to misoperation or firmware upgrade. Please do not store important files in the disk to avoid loss.
3. ES15 will not work when it is in low battery state. It will shut down after a warning appears on the screen, and it can be used normally after charging.
4. It is normal if there is a little oil stain on the surface of ES15's bit socket.

4.2 Firmware Upgrade

1. Visit www.miniware.com.cn to download the suitable ES15 firmware to your PC.
2. When ES15 is power off (screen is off), press and hold Button SET, connect ES15 to your PC via USB Type-C data cable; ES15 will show "DFU3.50" on screen and enter DFU mode, meanwhile a removable hard disk will appear on your PC.
3. Copy the .hex firmware to the root directory of that disk. After the extension of the firmware changes from ".hex" to ".rdy", disconnect USB to complete firmware upgrade.

ES15_DFU(F:)

ES15APP.hex
2021-10-25 12:10
HEX 文件

ES15APP.rdy
2021-10-25 12:10
RDY 文件

05

Legal Statements

5.1 Disposal

This product contains batteries and/or recyclable electronic parts.
Please do not dispose the product together with household garbage.
Please handle it according to your local laws and regulations.

5.2 Statement of Fulfilling FCC Standard

This device complies with part 15 of the FCC Rules. Operation is
subjected to the following two conditions:
(1)This device may not cause harmful interference, and
(2)This device must accept any interference received, including
    interference that may cause undesired operation.

5.3 Statement of Fulfilling CE Standard

The CE mark is a registered trademark of the European Community.
This CE mark indicates that the product complies with all relevant
European laws and regulations.