

# 藍芽充電傳輸型數位扭力扳手

Bluetooth Rechargeable Digital Torque Wrench

使用者手冊

User Manual

## 中文 ━━━━━━━━━━━━━━ P. 2

產品概述	P. 2
產品特色	P. 2
產品技術規格	P. 6
充電電池技術規格	P. 7
使用前注意事項	P. 8
產品功能	P. 9
保養及注意事項	P. 14

## English ━━━━━━━━━━━━━━ P. 19

Product Overview	P. 19
Product Features	P. 19
Technical Specifications	P. 24
Battery Technical Data	P. 25
Precautions before Use	P. 26
Product Functions	P. 27
Maintenance and Precautions	P. 33

## 軟體安裝及 APP 安裝說明

Software and APP installation instructions

請掃描 QR Code 開啟觀看安裝說明文件。

Please scan the QR code to view the  
installation instructions.



親愛的客戶：

我們非常感謝您購買藍芽充電傳輸型數位扭力扳手與對本產品的支持。為了讓您完全享有產品的優點，請在調整任何設定前先閱讀下列指示，並保存本手冊，以供日後參照。

## 1. 產品概述

由於扭力量測校驗需要做嚴格的認證，儀器本身包括溫度、精確度與解析度，更需要具有抗干擾能力(ESD 與 EMI)，這些除了周邊零件的特性需要達到規格要求之外，更需要量測晶片的規格能符合要求。因此，如果能夠簡化周邊的被動元件，這時又能夠準確的量測出扭力值，不單是能夠節省成本，相對可以提高維修及組裝品質，更可以降低受用物件之損壞率。

## 2. 產品特色

簡易多功能操作，具有防震、預設扭力值、單位切換、模式切換、記憶儲存、數字遞增 & 遲減、省電模式、LED 燈號、響聲警示、震動警示等。

### 2.1 數位扭力值、角度值顯示

### 2.2 LCD 背光顯示

### 2.3 順時針及逆時針皆可操作

扭力精度：請參閱產品包裝內之校驗報告

角度精度：±2°(角度系列)

### 2.4 可儲存 30 組設定值

### 2.5 省電模式 (2 分鐘進入省電模式)

### 2.6 具有蜂鳴、震動及 LED 燈號警示功能

### 2.7 低電壓偵測

### 2.8 四種扭力單位，可供選擇切換

Nm、Kg.cm、lb-ft、lb-in

### 2.9 內建 3.7V 16650 1600mAh 鋰電池(

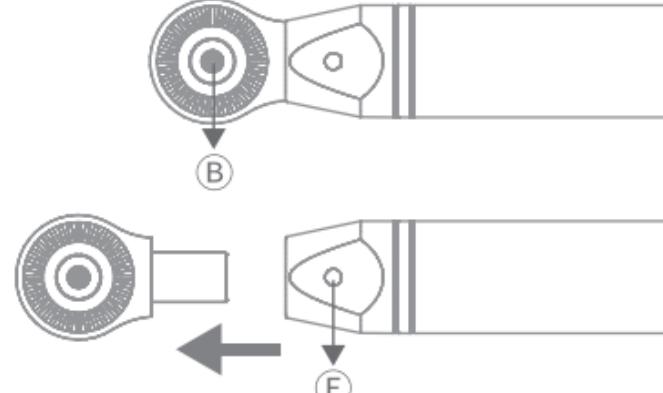
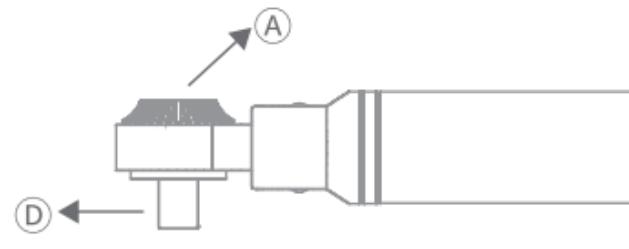
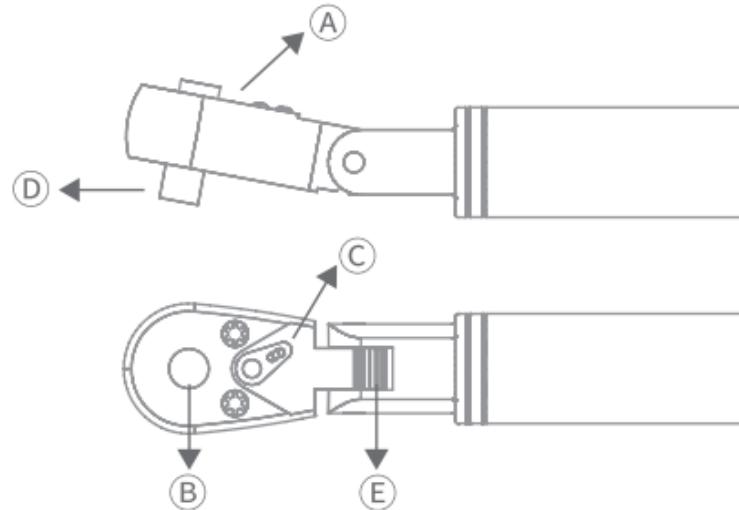
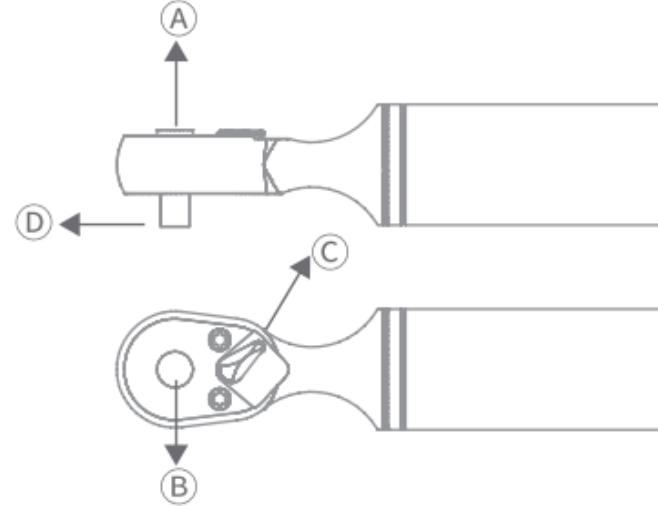
### 2.10 通用型 Type C 充電連接埠

### 2.11 過電壓充電保護、過電流充電保護、過載保護、過放保護

## 各部件功能及名稱

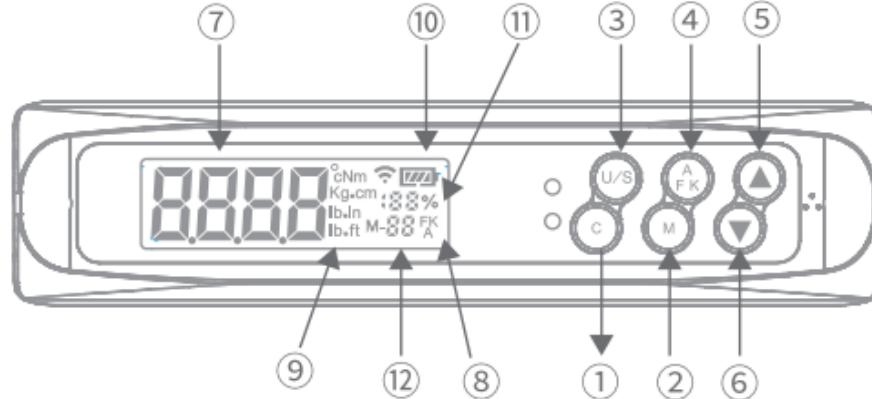


## 扳手種類



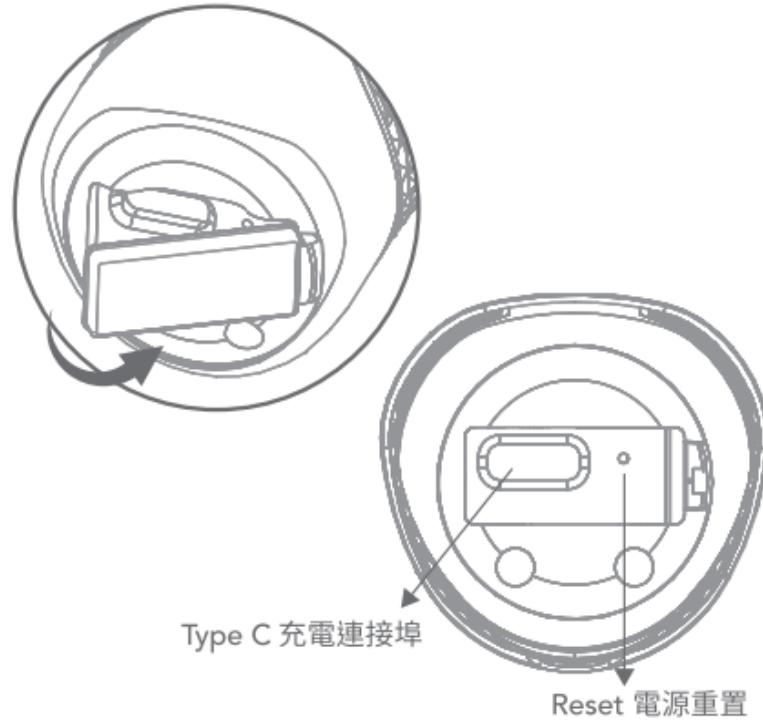
- Ⓐ 雙向棘輪頭
- Ⓑ 釋放鉗
- Ⓒ 正反轉方向撥片
- Ⓓ 棘輪扭力方頭
- Ⓔ 可調整頭部
- Ⓕ 頭部拆換卡榫

## 面板



① 電源及清除按鍵	⑧ F/K/A (追隨 / 峰值 / 角度 ) (A 角度系列)
② 記憶選擇按鍵	⑨ 單位顯示
③ 單位選擇按鍵	⑩ 電池壽命顯示
④ 模式選擇	⑪ 百分比顯示
⑤ 向上按鍵	⑫ 記憶組數顯示
⑥ 向下按鍵	
⑦ 扭力值顯示	

## 充電孔



### 3. 產品技術規格

扭力精確度*1	請參閱產品包裝內之校驗報告
角度精確度*2	±2° (角度模式)
最大可測得角度	360° (角度模式)
設定值儲存容量	30 組
LED 警示燈	2 LED(1 GREEN + 1 RED )
震動警示	有 (達設定值 90% 開始動作)
操作模式	Peak hold(K) / Track(F) / Angle(A)
單位選擇	Nm, lb-in, lb-ft, kg.cm
操作溫度	0°C ~60°C
儲存溫度	-20°C ~70°C
濕度	Up to 90%non-condensing
摔落測試	1m
振動測試	10G
壽命測試	10000 cycle
環境測試	Pass
電磁相容測試	Pass
工作海拔高度 (m)	2000 公尺以下

※ \*1 扭力精度說明：請參閱產品包裝內之校驗報告

※ \*2 角度精度說明：角度在每秒 45° 的速度轉 90° 下測量之精度

### 4. 產品充電技術規格

充電輸入電壓	5V==1A
充電方式	USB 充電 (Type-C)
充電時間	90~120 分
使用時間	8~10 小時
內建雙重 保護 IC 電路	提供過壓充電、過壓放電、過流充電、 過熱過載、短路等保護

## 4.1 充電電池技術規格

型號名稱	16650
標稱電壓	3.7V
標稱容量	1600mAh
內阻	<60 mΩ
電池尺寸	L (without cable) : 68.3±0.5mm L (with cable) : 69.8±1mm D : 16.7±0.5mm WL : 60±5mm Wire# : 1571/26#
Connector	1.25-2P 正向
使用環境 ( 溫度 )	充電 : 10° C ~ 45° C 放電 : -10° C ~ 60° C 貯存 : -20° C ~ 25° C (< 1 年) -20° C ~ 40° C (< 3 個月) -20° C ~ 50° C (< 1 個月)
使用環境 ( 濕度 )	工作 : 20% ~ 85%RH ( 無冷凝 ) 貯存 : 40% ~ 85%RH ( 無冷凝 )
摔落測試	1m
振動測試	10Hz → 55Hz → 10Hz / 0.8mm
壽命測試	電池標準充放電 300 次循環後高於容量 80%
環境測試	Pass
電磁相容測試	Pass

## 4.2 藍芽與傳輸技術規格

名稱	Bluetooth® Rechargeable Digital Torque Wrench
型號	SH-CBTA,SH-CBTQ,SH-CBTI SH-CBIA,SH-CBTF,SH-CBFA
FCC ID	2BCGY-SH05BT
無線傳輸介面	Bluetooth 4.2 2402~2480MHz
廠商	SUNHENG TECHNOLOGY CO., LTD. SUNHENG ELECTRONICS LTD.

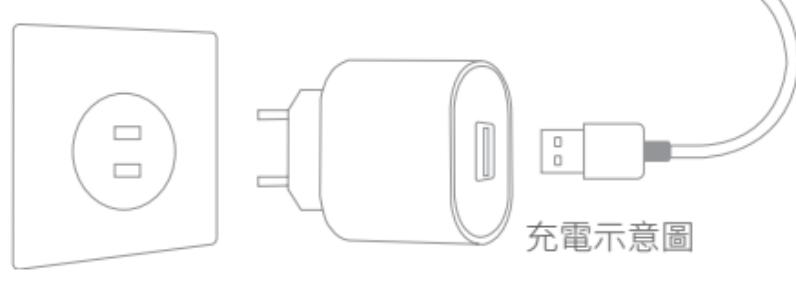
## 5. 使用前注意事項

### 5.1 充電系列

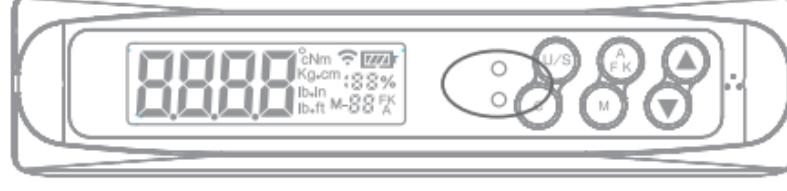
5.1.1 打開 USB 孔蓋。

5.1.2 接上充電線。

(請使用 5V/1A 電源供應器  
和電源線給產品充電。  
過壓將導致裝置無  
法正常使用。)



5.1.3 關機時充電，紅色 LED 亮起，充飽後綠燈亮起。



充電狀態電池格數需依序顯示，直到完成充電，充電完成綠燈保持，電池格數保持，直到拔出充電線。



5.1.4 扳手使用中進行充電，充電狀態電池格數需依序顯示。



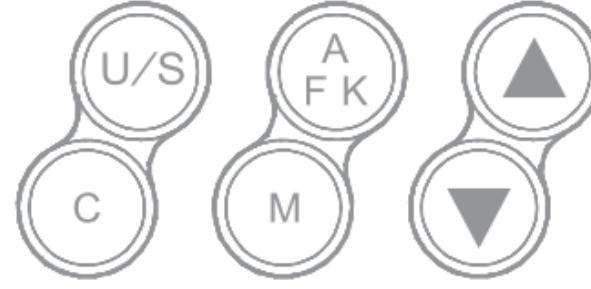
### 5.2 低電壓通知

如果系統偵測電池電壓過低時，螢幕右上角會出現電池符號，並在數秒之後關機。



## 6. 產品功能

共有六顆按鍵，表示符號分別如下：



按鍵名稱	按鍵功能說明
C	開關機及歸零
U/S	單位選擇
M	記憶選擇
F/K/A	設定值模式選擇 A 模式角度系列
▲	數字遞增選擇 (UP)
▼	數字遞減選擇 (DOWN)

### 6.1 開關機及歸零

開機：按下 C 鍵開機，背光亮 LCD 文字全閃，由左至右顯示 0000 後，進入操作模式。

#### ►角度系列

將扳手水平靜置，按下 C 鍵開機，背光亮 LCD 文字全閃，由左至右顯示 0000 後，扳手自動偵測是否有達到靜置狀態，如未靜置，LCD 由左至右持續顯示 0000，直到扳手完全靜置為止後，四個 0 同時顯示三次，進入操作模式。

第一次使用產品時，進入操作模式時，顯示該產品最大操作值，單位預設為 Nm，顯示記憶為第一組，模式為保持模式 K，百分比位置顯示 0%，電池刻度依當時偵測到的電壓值顯示該電池刻度 (30 組設定值記憶、預設值皆相同)。

關機：長按 C 鍵 3 秒關機。

歸零：開機狀態下按下 C 鍵歸零。

## 6.2 單位切換 / 選擇

國際標準公制為 Nm，公制為 Kg.cm，英制為 lb-in 及 lb-ft 等 4 種，每按下一次 U/S 鍵單位便切換，順序為 Nm、Kg.cm、lb-in、lb-ft；預設單位為 Nm。

### ►扭力單位換算對照表：

	lb-in	lb-ft	Nm	Kg.cm
1 lb-in	1	0.083	0.113	1.152
1 lb-ft	12	1	1.356	13.83
1 Nm	8.851	0.737	1	10.2
1 kg.cm	0.868	0.072	0.098	1

## 6.3 設定值記憶功能

所有的設定值記憶組別，第一次預設值皆為範圍最小值，記憶選擇方式，按下 M 鍵後 M-01 最右邊數值開始閃爍，即進入選擇模式，使用▲ (UP) / ▼ (DOWN) 選擇記憶組別，亦可持續按住連續遞增 / 減，選擇完畢後再按 M 鍵確認，停止閃爍即離開選擇模式。

## 6.4 追隨模式F/保持模式K/角度模式A(角度系列)

### ►追隨模式：

數值選定後 (假設選 50Nm)，扳手施力時數值由最小值往上遞增，當施力者施力，所顯示的值會依施力者的力度不同產生改變，用力就遞增，放鬆遞減，拿起或完全放鬆，顯示值將跳回 50Nm。

### ►保持模式：(第一次開機預設為保持模式)

數值選定後 (假設選 50Nm)，扳手施力時數值由最小值往上遞增，當施力者施力，所顯示的值會依施力者的力度不同產生改變，完全停止施力後，顯示值為最後的扭力值，閃爍 10 秒之後 (此時任何動作及按鈕皆無效)，自動回到設選數值，或按 C 鍵可以回到設選數值，亦可直接施力後，重新由最小值往上遞增量測扭力值。

►角度模式 (角度系列)：

數值選定後 (假設選  $50^\circ$ )，扳手施力時數值由  $0^\circ$  往上遞增，當施力者施力，所顯示的值會依施力者的角度不同產生改變，完全停止施力後，顯示值為最後的角度值及扭力值，角度值及扭力值交互顯示，閃爍 10 秒之後 (此時任何動作及按鈕皆無效)，自動回到設選數值，或按 C 鍵可以回到設選數值，亦可直接施力後，重新由  $0^\circ$  往上遞增量測角度值。

## 6.5 量測範圍數值選擇

在無施力量測或是設定值記憶選擇之下，數值皆可選擇，任何模式下完成施力測試後，皆會回到顯示選取的數值。

## 6.6 ▲ (UP) / ▼ (DOWN) 選擇

▲ (UP) 鍵時，按一下由最右邊數值開始遞增，持續按住連續遞增；▼ (DOWN) 鍵，按一下由最右邊數值開始遞減，持續按住連續遞減。

## 6.7 LED 燈 & 蜂鳴器

LED 燈在每個按鍵按下時綠燈亮且皆有嗶聲。

►追隨模式下，LED 燈兩顆分別為綠色、紅色，假設當設定的扭力值為  $20\text{Nm}$  時，使用者開始施力，數值由 0000 開始變化數值到達設定值的 80%，此時綠燈亮起開始閃爍，蜂鳴器開始發生聲音，當施力者扭力越接近該設定數值時，綠燈閃爍越快，蜂鳴聲越快，當數值達到設定值  $\geq 100\%$  時綠燈與紅燈恆亮，蜂鳴聲保持聲響，施力放鬆則遞減。

►保持模式下，同追隨模式，但施力者完全停止施力後，LED 燈及蜂鳴聲停止。

►角度模式(角度系列)下 LED 燈兩顆分別為綠色、紅色，假設當設定的角度值為 20°時，使用者開始施力，數值由 0°開始變化數值到達設定值的 80%，此時綠燈亮起開始閃爍，蜂鳴器開始發生聲音，當施力者角度越接近該設定數值時，綠燈閃爍越快，蜂鳴聲越快，當數值達到設定值  $\geq 100\%$  時綠燈與紅燈恆亮，蜂鳴聲保持聲響，施力者完全停止施力後，LED 燈及蜂鳴聲停止。

## 6.8 震動警示功能

假設當設定的扭力值為 20Nm 時，使用者開始施力，數值由 0000 開始變化數值到達設定值 90%，此時震動警示開啟，施力放鬆低於設定值 90% 則關閉震動。

►角度模式(角度系列)下震動警示功能自動關閉。

## 6.9 LCD 百分比 % 數顯示

一般顯示為 0%

►追隨模式下，使用者設定值為 50Nm，開始施力由 0Nm 至 25Nm 時，顯示為 50%，以此類推，放鬆後扭力值遞減，直到完全放鬆，跳回扭力設定畫面。

►保持模式下，效果同追隨模式，但完全停止施力後，顯示值為最後的扭力值 % 數，最高顯示 100%。

►角度模式(角度系列)下，使用者設定值為 50°，開始施力由 0°至 25°時，顯示為 50%，以此類推，完全停止施力後，顯示值為最後的角度值 % 數，最高顯示 100%。

## 6.10 低電壓顯示

LCD 電池標記顯示有四個刻度，當電壓過低剩下一格時任何功能皆停止，電池標記閃爍 5 秒後自動關機。

## 6.11 重置記憶功能

按住 C 鍵 + ▼ (DOWN) 鍵，五秒後，所有記憶數值將回到出廠預設值。



## 6.12 背光開關

按下 C 鍵 + ▲ (UP) 鍵，背光 ON/OFF，預設為 ON。



## 6.13 歸零重置

使用產品前都要按 C 鍵，可確保精準數據。勿在施力狀態下按下 C 鍵，將會產生錯誤的初始值。

## 6.14 省電裝置

無操作時，2 分鐘後進入省電模式，按 C 鍵喚醒。

## 6.15 精確度保護警示

為確保扭力扳手精確度，在任何模式下施力，造成產品扭力超過該扭力扳手扭力範圍值，進而損壞喪失扭力扳手精度，操作時，如到達該扳手扭力之最大量程，扳手將發出三長二短警示音，LED 紅、綠警示燈亮起，請立即停止使用，以確保維護產品扭力精度。

## 6.16 過載警示

開機或歸零時若畫面持續出現 110%，表示施力超過最大標準值 110%，可能會造成本品損壞喪失精準度。

正常



過載



## 7. 保養及注意事項



### 注意警語



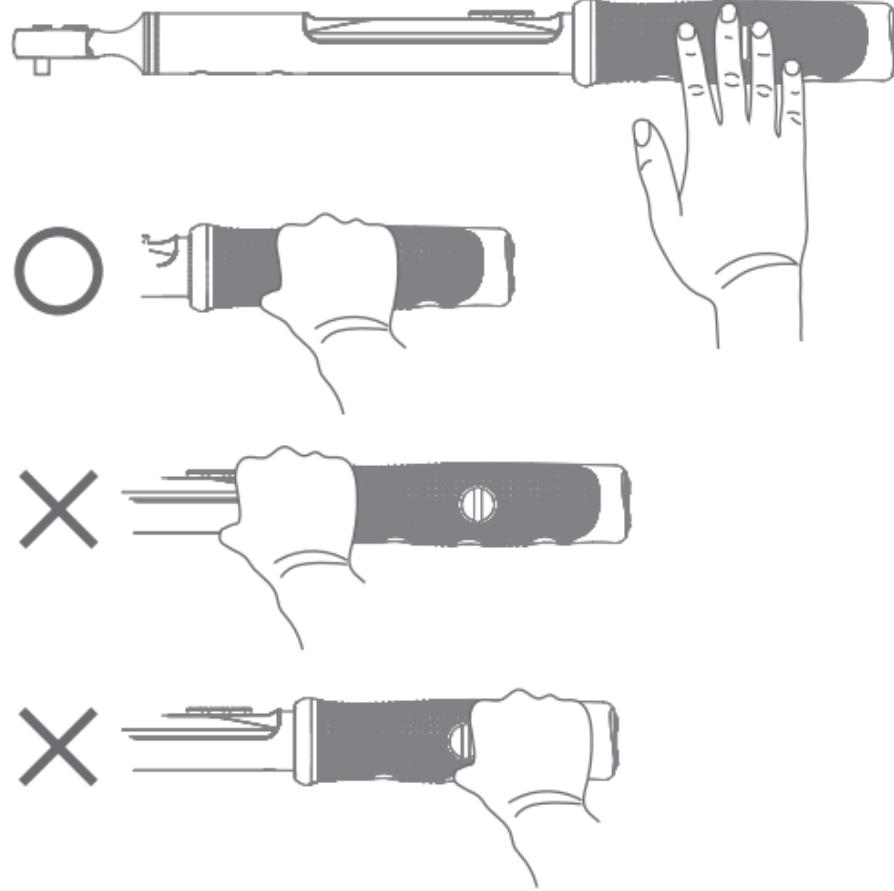
為了維持良好精度，建議大約每年需重新校正一次。

- 7.1 請勿使用有機溶劑清潔本品，如酒精或是油漆稀釋劑。
- 7.2 請勿將本品靠近磁性物體。
- 7.3 請勿重壓 LCD 螢幕。
- 7.4 請勿將本品當作敲擊工具使用。
- 7.5 請勿使用榔頭敲擊本品。
- 7.6 使用超過扭力最大標準值可能會造成本品損壞喪失精準度。(超過最大扭力值 110%)
- 7.7 請勿在靠近水的地方使用本品。
- 7.8 若不慎弄溼，請立即用乾布擦拭乾淨。
- 7.9 請勿將本品放置在高溫、高濕或是太陽直射之處。
- 7.10 請勿將本品暴露充滿灰塵或風沙的環境下，如此可能造成裝置嚴重損壞。
- 7.11 請勿將本品劇烈搖晃或將扳手重摔地上。
- 7.12 請將使用完之電池丟棄在指定回收處。  
請勿將電池至入火中。
- 7.13 使用本品前請詳閱操作手冊並依照手冊流程進行操作。
- 7.14 關機狀態下禁止使用。
- 7.15 請勿將手把外加延長桿使用。例如：鐵管或塑料管。
- 7.16 在施加扭力時，請勿按任何按鍵。
- 7.17 請勿在通電的物品上使用本品

## ※ 使用方法

### ■ 數位扭力扳手

扳手握柄使用示意圖



P.S：完成開機程序前（請參照 6.1 說明），請勿施力於扭力扳手。

### ■ 充電電池使用相關訊息

1. 若螢幕畫面無法顯示，請檢查電池是否沒電，必要時請充電。
2. 出於安全考慮，在運輸途中，可充電池組的容量較低，使用前請對電池組進行充電。
3. 新電池組在使用一段時間後，如果沒有完全充放電，容量會受到損失。但經過幾次完全的充放電之後，電池組就可以恢復到初始的性能。
4. 由於電池組會自放電，如未使用扳手時間超過 6 個月，應保持至少每 6 個月要對電池充一次電，以防止漏液及性能的衰退。
5. 溫度超過 40°C 時，充電功率會降低。
6. 請勿拆開電池組。

## ※ 聯邦通訊委員會干擾聲明

■ 本裝置符合 FCC 規範第 15 部分。操作符合以下兩項條件：

(1) 本裝置可能不會造成干擾；以及 (2) 本裝置必須接受任何干擾，包括造成裝置操作不良的干擾。

■ 本設備已經過測試，且符合 FCC 規則第 15 部分 B 級數位裝置的規格限制。這些限制的目的是對居家環境中的有害干擾提供合理的防護。本設備會產生、使用並輻射射頻能量；如果未依指示安裝與使用，可能會對無線電通訊產生有害干擾。然而，不能保證在特定的安裝中不會發生干擾。如果您透過關閉及開啟本設備，發現本設備的確對無線電或電視的接收產生有害干擾，建議您可使用下列一或多種方法嘗試消除干擾：

- 調整接收天線的方向或更換架設位置。
- 讓設備與接收器彼此遠離。
- 將設備與接收器分別連接到不同迴路的插座。
- 向代理商或經驗豐富的無線電／電視技術員求助。

## ※ FCC 注意

■ 若由未經負責法務遵循之一方明確核准而進行任何變更或改裝，可能會失去操作本設備的使用者授權。

■ 此發射器不得與任何其他天線或發射器位於相同位置或一起運作。

## ※ 輻射暴露聲明：

■ 本產品符合針對不受控制的環境規定的 FCC 便攜式射頻暴露限制，並且對於本手冊中所述的預期操作是安全的。如果產品能夠盡可能遠離使用者身體，或將裝置設定為較低的輸出功率（如果有此類功能），則可以進一步減少射頻暴露。初始安裝。該設備產生、使用並且可以輻射射頻能量，如果未依指示安裝與使用，可能會對無線電通訊產生有害干擾。然而，不能保證在特定的安裝中不會發生干擾。

如果您透過關閉及開啟本設備，發現本設備的確對無線電或電視的接收產生有害干擾，建議您可使用下列一或多種方法嘗試消除干擾：

- 調整接收天線的方向或更換架設位置。
- 讓設備與接收器彼此遠離。
- 將設備與接收器分別連接到不同迴路的插座。
- 向代理商或經驗豐富的無線電／電視技術員求助。

## ※ NCC 警語

■取得審驗證明之低功率射頻器材，非經核准，公司、商號或使用者均不得擅自變更頻率、加大功率或變更原設計之特性及功能。低功率射頻器材之使用不得影響飛航安全及干擾合法通信；經發現有干擾現象時，應立即停用，並改善至無干擾時方得繼續使用。前述合法通信，指依電信管理法規定作業之無線電通信。低功率射頻器材須忍受合法通信或工業、科學及醫療用電波輻射性電機設備之干擾。

## ※ 保固說明

### ■ 產品保固期限標準

本公司產品透過更完善的保固要求來達到延長產品使用壽命的目的，進而提升消費者使用意願，並提供一年電子零件有限保固與維修服務。

### ■ 保固標籤及序號辨識說明

請洽代理商或當地經銷商。



### ■ 保固範圍

於保固期間內，產品因材料或製造上確有瑕疵，致影響產品功能，本公司將以負責維修或以同型號之良品更換之。

## ■保固除外條款

雖然仍然在保固期限內，若屬於下列任一情況者，則產品不在保固範圍內，消費者須負擔全部維修費用或材料費，收費標準依其代理商或當地經銷商其所指定之維修服務據點規定。

1. 無法證明產品之保固期限或超過產品之保固期限。
2. 產品序號載明不相符者。產品序號不清楚，或被更改、撕毀者。
3. 因消費者未按使用手冊或說明書規定，使用不當而毀損者，產品之毀損係受不可抗力(天災、水災、火災、地震、雷擊、颱風、蟲害等)，人為破壞(刮傷、摔傷、卡榫斷裂、敲打、破裂、重擊等)，人為疏失(遺失、液體入侵、未妥善保管等)或其他非正常因素所致者。
4. 因正常使用時，所造成產品外殼或不需拆解而可接觸部分上之刮傷、磨損。
5. 客戶擅自或使第三人安裝、添附、擴充、修改、修復非本公司授權或認可之零件所致之毀壞。
6. 新品不良換貨服務範圍：
  - 無法正常開啟電源時 ■ 按鍵無法操作調整時
  - 無法正常顯示畫面時 ■ 控制功能無效時不符合上述新品換貨原則者，則以維修方式處理。
7. 更換零件時，本公司提供規格相同或更佳之良品；若非雙方另有書面約定，維修更換後之不良零件歸本公司所有。
8. 外觀、外殼及裝飾性的零組件機構受損不包括在本有效保證條款內，將無法提供免費維修服務。
9. 非本公司授權之經銷管道所買之產品。
10. 消費者自行運送過程中所導致之損害。
11. 因機器外之其他產品（設備）所引起之故障。
12. 任意拆卸自行改裝及更換充電電池不在保固範圍。

## ■其他建議事項

請確認您的產品規格及配件。

## ■權利保留

本公司保留變更條款內容之權利，日後本條款如有任何變更，本公司將公告之，不另通知個別消費者。

Dear customer,

We appreciate your purchase of our Bluetooth Recharable Digital Torque Wrench. To learn more about the advantages of this product, kindly read the instructions carefully before you start to adjust any settings. Please keep this manual for your reference at all times.

## 1. Product Overview

As torque measurement and calibration requires strict certification, torque instruments must possess good temperature, precision, and resolution capabilities, and also have the ability to correct disturbances (ESD and EMI). While the characteristics of peripheral components must meet specification requirements, measurement chip specifications must also meet requirements. For this reason, the simplification of peripheral passive elements allows an instrument to accurately measure torque values and angle degree, which will not only save cost but also improve maintenance and assembly quality, as well as reduce the probability of damage to used objects.

## 2. Product Features

This product is easy to operate with multiple functions, including shockproof, preset torque value, unit switching, mode switching, memory storage, number increment and decrement, power-saving mode, LED light, sound and vibration warning.

2.1 Digital torque and angle display

2.2 LCD backlight display

2.3 Operable for both clockwise and counterclockwise directions

Torque accuracy: Refer to the calibration report in the product packaging.

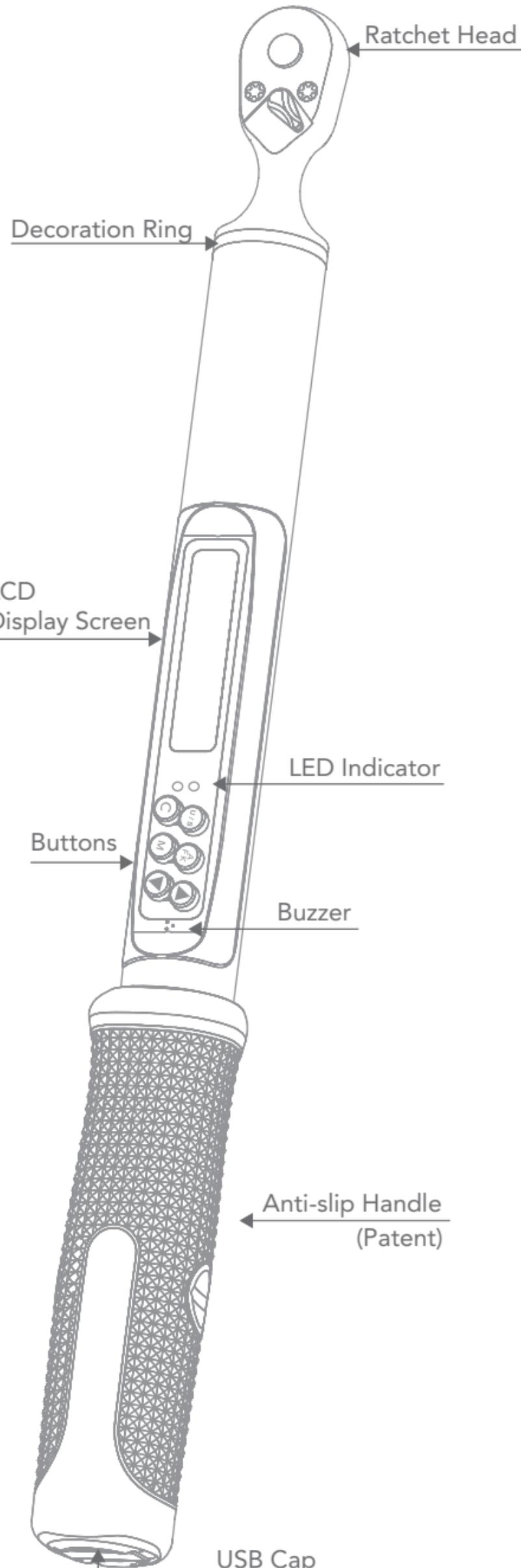
Angle accuracy:  $\pm 2^\circ$  (Angle series)

2.4 Able to save up to 30 sets of set values

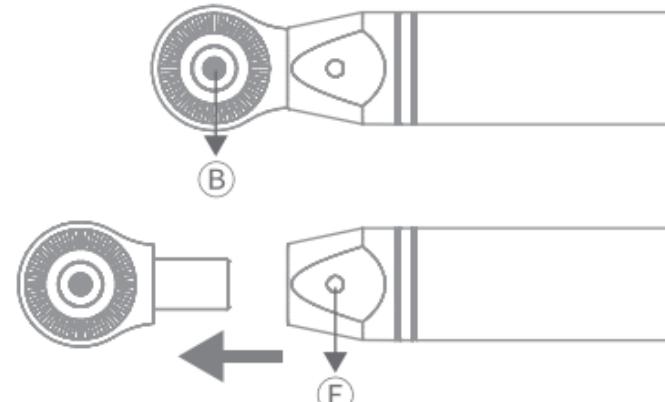
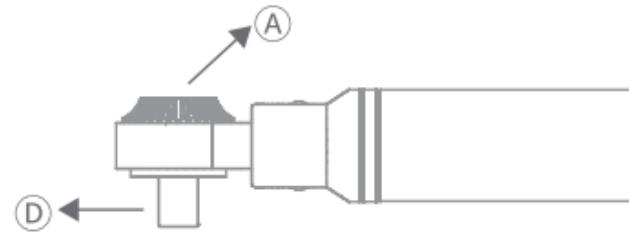
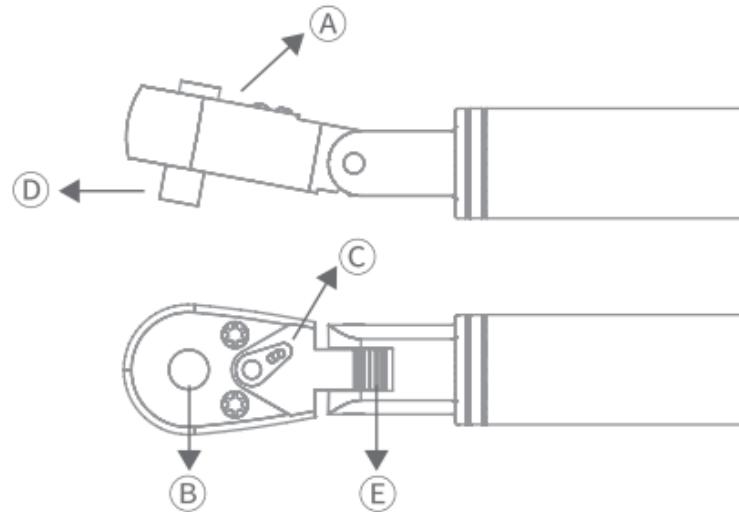
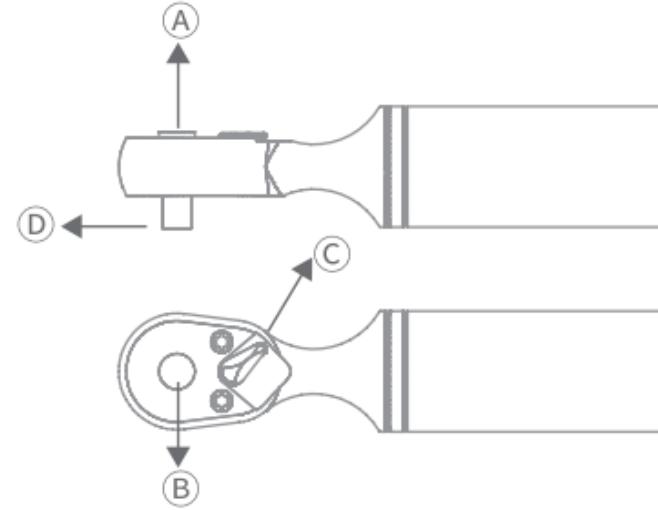
2.5 Power-saving mode (enter power saving mode in 2 minutes)

- 2.6 Equipped with buzzer, vibration and LED light warning functions
- 2.7 Low voltage detection
- 2.8 Four torque units available for switching: Nm, Kg.cm, lb-ft, and lb-in
- 2.9 Built in with a 3.7V 16650 1600mAh Li-ion batteries
- 2.10 Universally compatible USB Type-C port
- 2.11 Protect from over-voltage, over-current, overload and over-discharge.

## Function and Name of All Parts

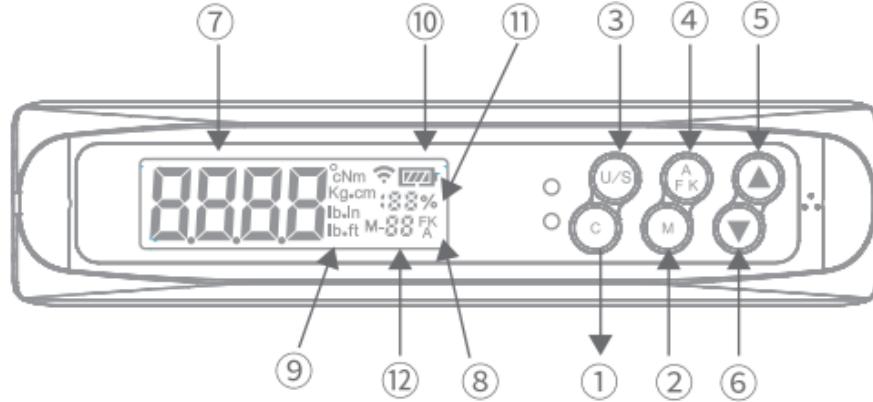


## Wrench Type



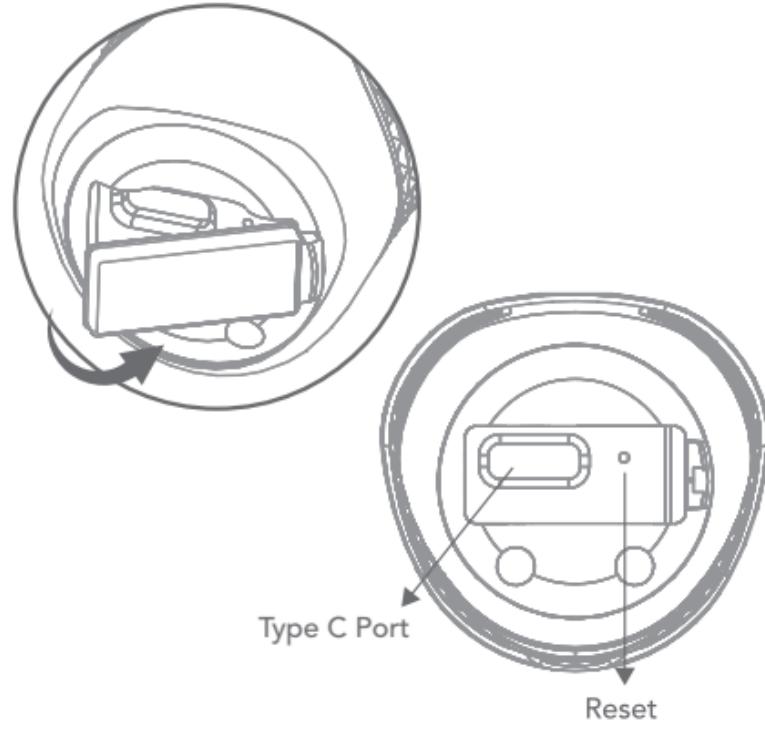
- Ⓐ Ratchet head
- Ⓑ Release button
- Ⓒ Forward and reverse paddle
- Ⓓ Ratchet torque square head
- Ⓔ Flexible ratchet head
- Ⓕ Changeable head joint

## Panel Function



① Power & Reset button	⑧ F/K/A (Track/Peak/Angle ) (A Angle series only)
② Memory button	⑨ Unit display
③ Unit switch	⑩ Battery life display
④ Mode switch	⑪ Percentage display
⑤ Up button	⑫ Memory group display
⑥ Down button	
⑦ Torque value display	

## Recharge Port



### 3. Technical Specifications

Torque accuracy <sup>*1</sup>	See attach calibration report
Angle accuracy <sup>*2</sup>	$\pm 2^\circ$ (Angle mode)
Maximum Angle	$360^\circ$ (Angle mode)
Memory Setting	30 Sets
Warning light	2 LED(1 GREEN + 1 RED )
Vibration warning	Yes ( activate when set value reaches 90%)
Mode	Peak hold(K) / Track(F) / Angle(A)
Unit	Nm, kg.cm, lb-in, lb-ft,
Operating temperature	$0^\circ\text{C} \sim 60^\circ\text{C}$
Storage temperature	$-20^\circ\text{C} \sim 70^\circ\text{C}$
Humidity	Up to 90% non-condensing
Drop test	1m
Vibration test	10G
Life test	10000 cycle
Environmental test	Pass
EMC test	Pass
Working altitude	2000m

\*1 Definition to torque accuracy:

Refer to the calibration report in the product packaging.

\*2 Definition to angle accuracy:

Accuracy of angle measured at a speed of  $45^\circ$  per second during a  $90^\circ$  rotation.

### 4. Recharge Specifications

Rated Input	5V==1A
Type	USB Charge (Type-C)
Recharge Time	90-120 mins
Used Time	8~10 hrs
Built-in IC chip Protect	Protect from over-voltage, over-current, overload and over-discharge

## 4.1 Battery Technical Data

Model name	16650
Normal Voltage	3.7V
Normal Capacity	1600mAh
Internal Resistance	<60 mΩ
Size	L(without cable): 68.3±0.5mm L(with cable): 69.8±1mm D : 16.7±0.5mm WL : 60±5mm Wire# : 1571/26#
Connector	1.25-2P Front
Storage conditions (Temperature)	Recharge:10°C ~ 45°C Discharge:-10°C ~ 60°C Storage:-20°C ~ 25°C (< 1 year) -20°C ~ 40°C (< 3 months) -20°C ~ 50°C (< 1 month)
Storage conditions (Humidity)	Work: 20% ~ 85%RH (not condensed) Storage: 40% ~ 85%RH (not condensed)
Drop test	1m
Vibration test	10Hz → 55Hz → 10Hz / 0.8mm
Life test	capacity above 80% after 300 times of standard recharge and discharge
Environmental test	Pass
EMC test	Pass

## 4.2 Bluetooth & Wireless Specifications

Model Name	Bluetooth® Rechargeable Digital Torque Wrench
Model	SH-CBTA,SH-CBTQ,SH-CBTI SH-CBIA,SH-CBTF,SH-CBFA
FCC ID	2BCGY-SH05BT
Wireless Interface	Bluetooth 4.2 2402~2480MHz
Company	SUNHENG TECHNOLOGY CO., LTD. SUNHENG ELECTRONICS LTD.

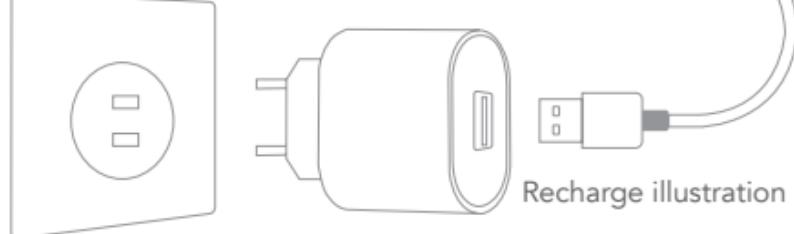
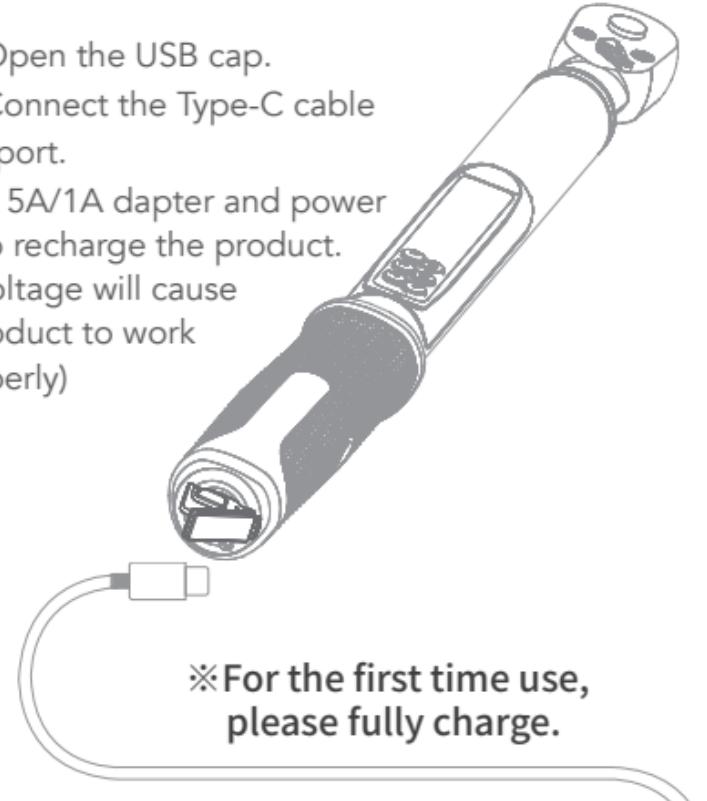
## 5. Precautions before Use

### 5.1 Recharge Series

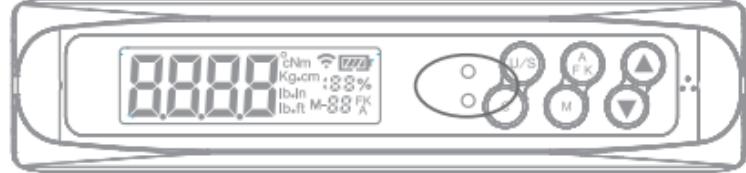
5.1.1 Open the USB cap.

5.1.2 Connect the Type-C cable to the port.

( Use a 5A/1A dapter and power cord to recharge the product. Overvoltage will cause the product to work improperly)



5.1.3 When charging with the device power off, the red LED light on. When battery is fully charged, the green LED light on.



Also the battery cell icon display in order until fully charged, and the green LED light on, and battery icon shows full cell icon until the cable is removed.



5.1.4 When recharging with the device power on, the battery cell icon display in order.



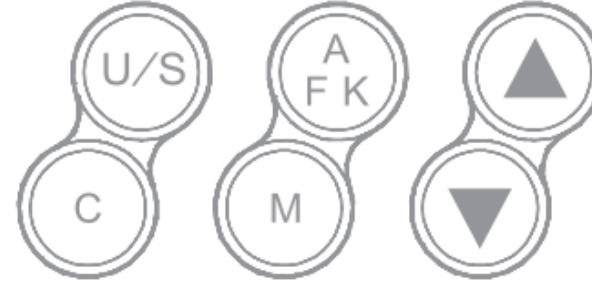
### 5.2 Low Voltage Notification

If the system detects battery in low voltage, a battery icon will appear at the upper right corner of the screen, and the system will shut down a few seconds later.



## 6. Product Functions

The function panel have 6 buttons, the function is as follow:



Button	Function
C	Power & Reset
U/S	Unit Selection
M	Memory Selection
F/K/A	Mode Switch A-Mode (Angle series)
▲	Number Increasing (UP)
▼	Number Decreasing(DOWN)

### 6.1 Power and Reset

**Power ON** Press the C button to turn on the wrench. Next, the backlight comes up, and all the text on the LCD flashes. After displaying 0000 from left to right, the wrench enters into operation mode.

#### ► Angle series

Place the wrench horizontally, and press the C button to turn on the wrench. Next, the backlight comes up, and all the text on the LCD flashes. After 0000 is displayed from the left to the right, the wrench automatically detects whether it is at rest. If it is not at rest, the LCD continues to display 0000 from left to right until four 0s are displayed three times at the same time after the wrench is fully at rest. Then, the wrench enters into operation mode.

When using the wrench in operation mode for the first time, the maximum operation value is displayed, and the unit is preset as Nm. Besides, memory for the first set is displayed, while the product is also set to Mode Peak (K), and the percentage is displayed as 0%. The battery scale displays the battery level according to the voltage level detected at that time (the memory for 30 sets of set values and the preset values are the same).

**Power OFF** Press and hold the C button for 3 seconds to turn off the wrench.

**Reset** When the wrench is ON, press the C button to reset the value.

### 6.2 Unit Selection

Press the U/S button to select, the unit will be set in the following order: Nm, Kg.cm, lb-in and lb-ft. The preset unit is Nm.

The torque unit conversion table:

	lb-in	lb-ft	Nm	Kg.cm
1 lb-in	1	0.083	0.113	1.152
1 lb-ft	12	1	1.356	13.83
1 Nm	8.851	0.737	1	10.2
1 Kg.cm	0.868	0.072	0.098	1

### 6.3 Set Value Memory

For the memory of each set of set values, the initial preset value is the minimum value in the range. To choose a memory, press the M button, the rightmost value of M-01 starts to flash and the wrench enters into selection mode. Press the ▲ (UP) or ▼ (DOWN) button to choose the memory for a particular set of set values. You can press these buttons to continuously increase or decrease the set number. After selecting, press the M button to confirm the selection. When the value stops flashing, it indicates that the wrench has exited selection mode.

### 6.4 (F) Mode/ (K) Mode/(A) Mode (Angle Series)

#### ► (F) Mode:

After selecting the value (let the value be 50Nm), the value increases from min. value when force is applied to the wrench and the value displayed will change according to the amount of force applied. The greater the force applied, the higher the value, and vice versa. When the wrench is picked up or no force is applied, the value displayed will return to 50Nm.

► (K) Mode:(When the wrench is turned on for the first time, the mode of operation is preset to Peak mode)

After selecting the value (let the value be 50Nm), the value increases from min. value when force is applied to the wrench and the value displayed will change according to the amount of force applied. When force stopped, the screen show the final torque. After flashing for 10 seconds (any action and button will be invalid at this point of time), the wrench automatically returns to value selection, or press the C button to return to value selection. You can also directly apply force to the wrench, and the torque value increases from min. value again.

► (A) Mode (Angle series):

After selecting the value (let the value be 50°), the value increases from 0° when force is applied to the wrench, and the value displayed will change according to the amount of force applied. When force stopped, the screen show the last angle value and torque value. The angle value and the torque value are alternatively displayed. After flashing for 10 seconds (any action and button will be invalid at this point of time), the wrench automatically returns to value selection, or press the C button to return to value selection. You can also directly apply force to the wrench, and the torque value increases from 0° again.

## 6.5 Value Selection for Measurement Range

Values can be selected during measurement without applying torque or selection of set value memory. After completing measurement with torque in any mode, the previously selected value will be displayed.

## 6.6 Selection by using ▲ (UP) / ▼ (DOWN)

When pressing the ▲ (UP) button, press once to increase the rightmost digit value, and hold the button to continuously increase the value. When pressing the ▼ (DOWN) button, press once to decrease the rightmost digit value, and hold the button to continuously decrease the value.

## 6.7 LED Light and Buzzer

The green LED lighten up, when button is pressed, also comes with a beep sound.

► In Track mode, the two LED light will function as green and red. Assume that the torque value is set at 20Nm. When the user starts applying force to the wrench, the value changes from 0000. When the force reaches 80% of the set value, the green light starts to flash, and the buzzer starts to sound. When the torque value approaches the set value, the green light flashes faster and the buzzer sounds faster. When the force reaches  $\geq 100\%$  of the set value, the green and red light comes up permanently, The buzzer sounds continuous and the value declines when the force applied to the wrench decrease.

► The Peak Mode is similar to the Track mode. However, in Peak Mode, the LED light and the buzzer stops after force applied to the wrench is completely removed.

► In Angle mode (Angle series), the two LED light will function as green and red. Assume that the set angle value is  $20^\circ$ . When the user starts applying force to the wrench, the value changes from  $0^\circ$ . When the force reaches 80% of the set value, the green LED starts to flash, and the buzzer starts to sound. When the angle value approaches the set value, the green LED flashes faster and the buzzer sounds faster. When the force reaches  $\geq 100\%$  of the set value, the green and red light comes up permanently. The buzzer sounds continuous. The LED lights and the buzzer sound stops when the user stop to apply the force.

## 6.8 Vibration Warning Function

Assume that the set torque value is 20Nm. When the user starts to apply force to the wrench, the value changes from 0000. When the value reaches 90% of the set value, vibration warning is activated. When the force applied decreased to less than 90% of the set value, vibration warning turned off.

► In Angle mode (Angle series), the vibration warning function is deactivate.

## 6.9 LCD Percentage Display

The display generally shows 0%.

► In Track mode, assume that the user's set value is 50Nm. When force applied as the torque value increase from 0Nm to 25Nm, the screen shows 50%, and so on. When force decreased, the torque value decreases. When force applied is stopped, the display will return to the torque setting screen.

► The effects in Peak Mode are similar to what in the Track mode. However, after force applied is stopped, the display shows the percentage of the last torque value, with the highest percentage being 100%.

► In Angle mode (Angle series), assume that the user's set value is 50°. When force is applied such that the angle value increases from 0° to 25°, the screen shows 50%, and so on. After force applied is stopped, the display shows the percentage of the last angle value, with the highest percentage being 100%.

## 6.10 Low Voltage Display

The LCD battery display shows four cells. When the battery voltage is low and icon shows less than one cell, all functions stop. The wrench will shut down after the LCD battery icon flashes for 5 seconds.

### 6.11 Reset Memory Function

Press and hold the C button + the ▼ (DOWN) button. 5 seconds later, all the memory values are reset to factory default values.



### 6.12 Backlight Switch

Press the C button + the ▲ (UP) button to preset the backlight ON/OFF switch to ON.



### 6.13 Resetting

Before using this product, press the C button to ensure accurate data. Do not press the C button when applying force to the product as it may generate the wrong initial values.

### 6.14 Power Saving Mode

When the wrench is not in use, it will enter power saving mode after 2 minutes. Press the C button to wake up the wrench.

### 6.15 Accuracy Protection Warning

In order to ensure the accuracy of the torque wrench, applying force in any mode cause the product to exceed the maximum torque range, thereby will damage the torque wrench accuracy. Short warning tone, LED red and green warning lights are on to ensure the maintenance of product torque accuracy.

### 6.16 Overload Warning

If the screen continuously shows 110% when the wrench is turned on or reset, it indicates that the torque applied exceeds the maximum standard value of 110%. It may result in damage to this product and cause this product to lose its accuracy.

Normal



Overload



## 7. Maintenance and Precautions



# Warning



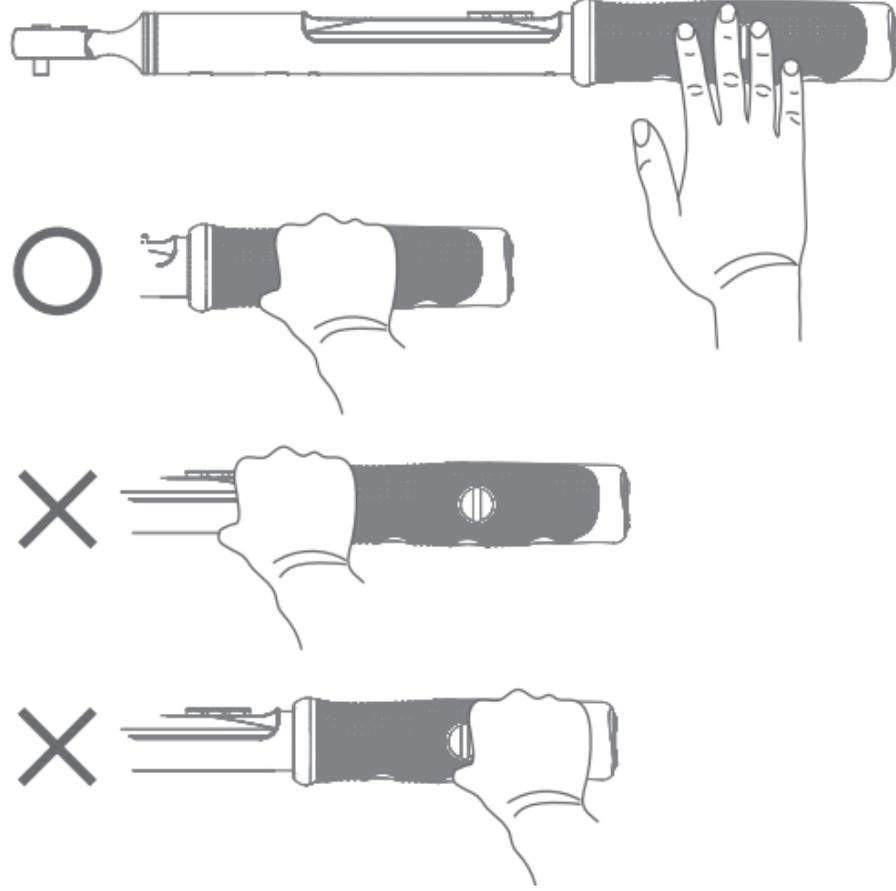
To ensure excellent accuracy, it is recommended to re-calibrate this product once every year.

- 7.1 Do not clean this product with organic solvents, such as alcohol or paint thinner.
- 7.2 Do not place this product near magnetic objects.
- 7.3 Do not press the LCD screen.
- 7.4 Do not use this product as a striking tool.
- 7.5 Do not hit this product with a hammer.
- 7.6 Applying torque exceeding the standard value may result in damage to this product and cause this product to lose its accuracy. (maximum torque value at 110%)
- 7.7 Do not use this product near water.
- 7.8 Wipe this product with a dry cloth if it gets wet accidentally.
- 7.9 Do not place this product in places which is exposed to high temperature, high humidity or direct sunlight.
- 7.10 Do not expose this product to dusty or sandy environment because it may result in serious damage to this product.
- 7.11 Do not shake this product violently or drop the wrench on the floor.
- 7.12 Discard the batteries used in the designated recycling location. Do not throw the batteries into fire.
- 7.13 Before using this product, read this user guide carefully and operate this product according to the procedures in this user guide.
- 7.14 Do not use this product when it is OFF.
- 7.15 Do not use this product by attaching an extension pole, such as an iron pipe or a plastic pipe, to the handle.
- 7.16 Do not press any button when applying torque.
- 7.17 Do not use this product on energized items.

## ※ Method of Use

### ■ Digital Torque Wrench

Using the wrench handle



P.S: Before completing the procedure for turning on this product (refer to Section 6.1), do not apply force to the torque wrench.

### ■ Information Related to Recharge Battery Use

1. If the screen cannot be displayed, check whether the batteries are dead. Recharge the batteries when necessary.
2. For safety, recharge your battery before transport.
3. Always fully recharge and discharge after using several times, prevent the reduce capacity, and also can restore to the initial state.
4. Due to the battery have self-discharge loss, remember to fully recharge every six months, to prevent the possibility of battery leakage and lifetime shorten.
5. If the temperatures is above 40°C, the charging power will be reduced.
6. Do not disassemble under any circumstances.

## ※ Federal Communication Commission Interference Statement

- This device complies with Part 15 of the FCC Rules. Operation is subject 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.
  
- This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one of the following measures:
  - Reorient or relocate the receiving antenna.
  - Increase the separation between the equipment and receiver.
  - Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
  - Consult the dealer or an experienced radio/TV technician for help.

※FCC Caution:

- Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.
- This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

※Radiation Exposure Statement:

- The product comply with the FCC portable RF exposure limit set forth for an uncontrolled environment and are safe for intended operation as described in this manual. The further RF exposure reduction can be achieved if the product can be kept as far as possible from the user body or set the device to lower output power if such function is available. initial installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

## ※NCC Caution:

■ Without permission granted by the NCC, any company, enterprise, or user is not allowed to change frequency, enhance transmitting power or alter original characteristic as well as performance to a approved low power radio-frequency devices. The low power radio-frequency devices shall not influence aircraft security and interfere legal communications; If found, the user shall cease operating immediately until no interference is achieved.

The said legal communications means radio communications is operated in compliance with the Telecommunications Act.

The low power radio-frequency devices must be susceptible with the interference from legal communications or ISM radio wave radiated devices.

## ※Warranty

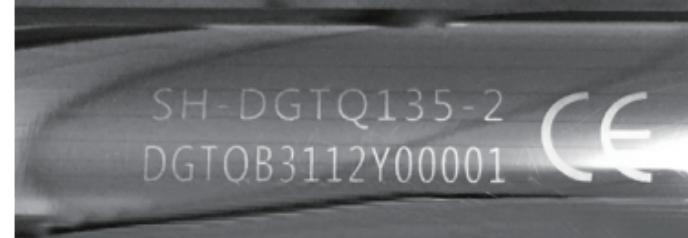
### ■ Product Warranty Period

Our company achieves the purpose of extending the useful life of our products through sound warranty requirements, thereby enhancing consumer's willingness to use our products. Our company offers one-year warranty and repair services for electronic components.

### ■ Instructions for Identifying Warranty

#### Label and Serial Number

Please contact your dealer or local distributor



### ■ Scope of Warranty

If the functions of this product are affected due to material or manufacturing defects during the warranty period, our company will be responsible for repairing this product or replace this product with the same model.

### ■ Warranty Exclusion Clause

Under any of the following circumstances, this product will not be covered by the warranty even though the warranty period has not expired. The consumer must bear all repair or material costs.

The relevant charges are set by the maintenance and repair outlet designated by the dealer or local distributor.

1. Unable to prove the warranty period of the product, or exceed the warranty period of the product.
2. The product serial number is inconsistent, or the product serial number is vague, or has been altered or torn up.
3. Damages resulted from the consumer's failure to use the product according to the user guide or manual, as well as damages to the product due to force majeure (natural disasters, floods, fires, earthquakes, lightning strikes, typhoons, pests, etc.), human destruction (scratch, fall, crack, knock, rupture, hit, etc.), human error (loss, liquid intrusion, failure to keep the product in safety, etc.) or other abnormal factors.
4. Scratches or wear and tear on product casing or contactable parts, which do not need to be disassembled, due to normal use.
5. Damage caused by the installation, addition, expansion, modification or repair of parts, which our company does not authorize or recognize, by the customer or third parties.
6. Scope of product replacement for defects in new products:
  - Unable to turn on the power
  - Unable to operate and adjust the buttons
  - Unable to display the screen properly
  - The control function is invalid.New products shall be handled by maintenance if the scope of product replacement is not met.
7. During parts replacement, our company provides products with similar specifications or of better quality. If not agreed in writing by both parties, our company shall own the defective parts after repair and replacement.
8. Damage to the exterior, external casing and decorative components which are not covered by this valid warranty, where free repair service cannot be provided.

9. Products purchased from distribution channels which are not authorized by our company.
10. Damage resulted from consumer's own shipping process.
11. Malfunctions caused by products (equipment) other than this instrument.
12. Any self disassemble or modification of the battery.

## ■ Other Recommendations

Please confirm your product specifications and accessories.

## ■ Reservation of Rights

Our company reserves the right to change the content of the terms and conditions. Should there be any changes to the terms and conditions in the future, our company will make the relevant public announcement without notifying individual consumers separately.

