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**QUALITY ASSEMBLY TOOLS**

***Error-proofing power supply***

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## **Instruction Manual**

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**Applicable Models: AM-30, AM-45, AM-85**

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- ***Thank you*** for purchasing the CHP Assembly Tool. In order to ensure maximum performance and product life, **please read this manual before operating your power supply.**

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# 1. General Safety Warnings



**WARNING:** Read all safety warnings and all instructions. Failure to follow the warnings and instructions may result in electric shock, fire and/or serious injury. Keep this manual readily accessible for reference.

## ■ Working area safety.

- Keep working area clean and well lit.
- Do not operate power tools in the presence of flammable liquids, gases or dust.
- Keep the power tool away from children.

## ■ Electrical safety

### To avoid risk of electric shock:

- Never modify the plug in any way.
- Do not expose the power tool to wet conditions.
- Do not pull or damage the power cord.
- Use suitable extension cord when operating outdoor.
- Use a residual current device (RCD) when operating in a damp location.

## ■ Personal safety

### To avoid injury during operation:

- Do not use the power tool when under influence of drugs, alcohol or medication.
- Ensure that the switch is in OFF/Neutral position before connecting the power source.
- Remove and adjusting key or wrench before turning on the power tool.
- Keep proper footing and balance at all time.
- Do not wear loose clothing or jewelry. Keep hair, clothing and gloves away from moving parts.

# 2. Care/Maintenance

- Use the appropriate power tool for the application. Do not force the power tool.
- Do not use the power tool if the switch is malfunctioning.
- Disconnect the power source before making adjustments, changing accessories or storing the tool.
- Keep the tool away from children or untrained personnel.
- Periodically check for any misalignment or binding of moving parts, breakage of parts and any other condition that may affect the operation.
- Keep the screw bits clean before and after use.
- Only use compatible power supplies and accessories.

# 3. Read Before Use

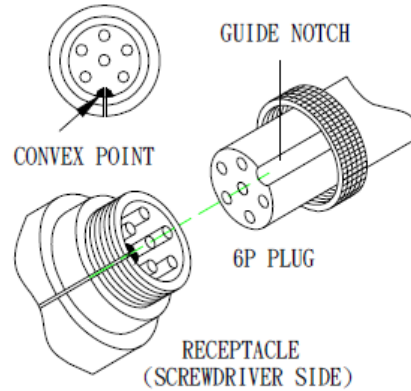
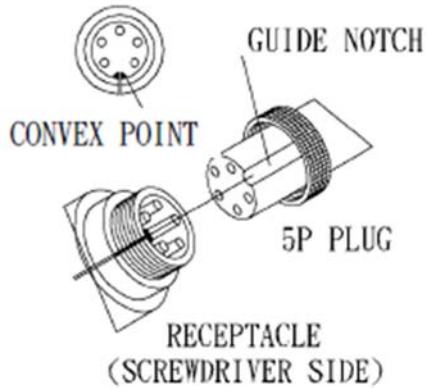
## ■ Set-up Notice

- Use the controller in dry place indoors without the presence of dust or metal grindings.
- Position the controller on a stable surface.
- Keep the controller away from high voltage sources or noise generating sources.
- Do not place objects on the top of the controller, keep surroundings clear to allow heat dissipation.

## ■ Caution during operation:

- Only use the power supply on an AC circuit with an overload relay.
  - Ensure the ground pin is connected to a socket equipped with a ground circuit to avoid electric shock.
  - Ensure that the power cord is tightly plugged into the socket.
  - When plugging in or unplugging the power cord, hold the plug firmly. Never pull on the cord.
  - Do not switch between forward and reverse when the electric screwdriver is in operation.
  - We recommend only use up to 80% of the rated maximum torque to avoid inaccurate clutch escape (The maximum torque may vary with the flexibility of the fastened object).
- If over 80% of the rated maximum torque is needed, using a screwdriver with higher torque is recommended.

- Ensure that the connecting cable to the driver is aligned properly with the guide slot before inserting; then twist the knob to fix the connection. Please see the picture below:



#### ■Safety Notice

- Stop using the product if there is any unusual noise or smell. Turn off the power and contact our customer service immediately.
- Turn off the controller when not in use. Remove the power cords from the controller for long period storage.
- The controller is for CHP electric screwdriver use ONLY. Do not use with any other tools.

## 4.Declaration of Conformity (CE)

We, American Hakko Products, Inc., hereby declare that the products described in this manual are in conformity with the following Directive(s)/Standardization document(s):

Low Voltage Directive 2014/35/EU  
EMC Directive 2014/30/EU

## 5.Product Information

#### ■Specification

MODEL NO. ITEM	AM Controller		
	AM-30	AM-45	AM-85
Setting Range: Accumulative work pieces	1-60000		
Setting Range: Screws in a single work piece	1~99		
Setting Range: Sample	1~99		
Number of Memo/profile	10 / 10 set		
Setting Range: Fastening time	0.01~9.99 seconds		
Setting Range: Fastening time tolerance	± 1~99 %		
Judgment	OK: alarm and green LED/NG: alarm and red LED		
Signal Output Mode	Dry Contact		
Input Voltage (VAC)	100~240 V、50/60Hz		
Output Voltage (VDC)	20~30V	25~35V	20~30V
Output Voltage Setting	Stepless Control		

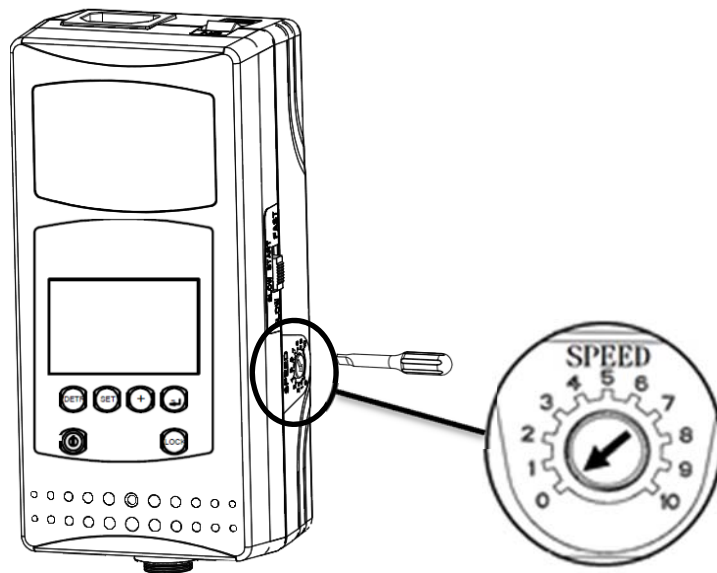
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Output Pin	5P	5P	6P
Internal Signal Output	Switch signal/Shut off signal/work piece complete signal/OK fastening signal/NG fastening signal		
External Signal Input	ON/OFF switch signal		
No. of Controlled Screwdriver	1 pc		
Power(W)	75 W	70 W	75 W
Applicable Model	AT-2000B AT-3000B AT-4000B AT-4000FB AT-6000B AT-6500B AT-6800B AT-200B AT-250B	AT-2000 AT-3000 AT-4000 AT-4500	AT-6000 AT-6500 AT-6800
Dimension	176 x 84 x 61 mm		
Weight	450g		
AC cable length (m)	1.8 M		
Safety Approval	CB, CE, UL(CUL), ROHS, REACH		
Accessories	RPM adjustment tool, 2P/4P terminal block(2pcs), AC cable		

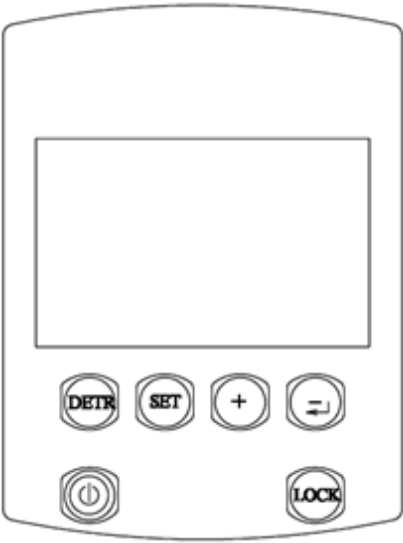






## 6. Operation

### Speed setting

- Change the speed setting by turning the speed-setting screw on the side of the power supply with the small screwdriver (standard accessory).
- Turn clockwise ↻ 0→10 to increase the speed.
- Turn counter-clockwise ↻ 10→0 to decrease the speed.

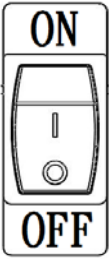
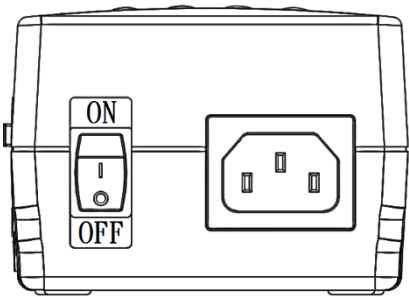
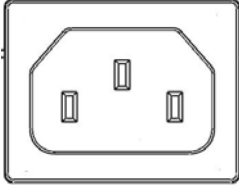


• AM screwing manager-Panel keys

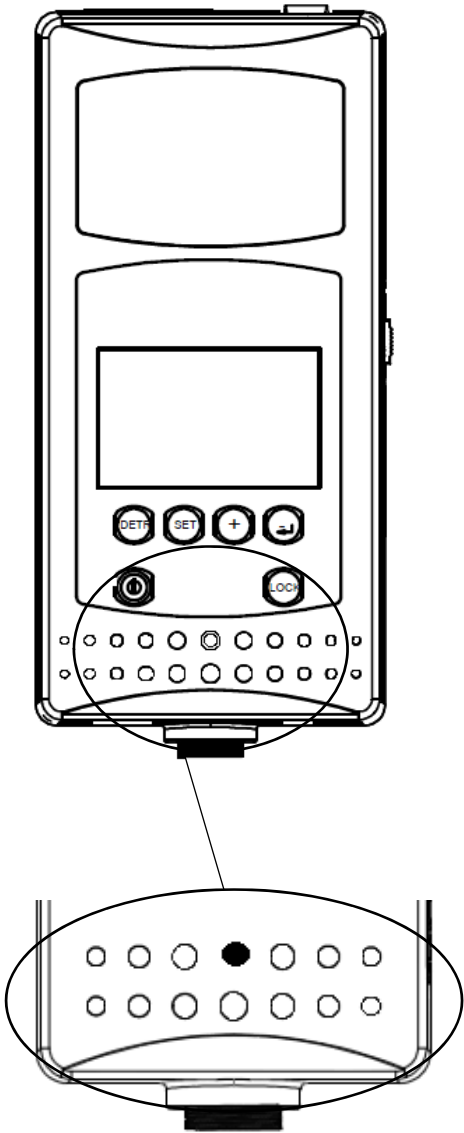
AM Controller Key Name	Return to the operation page Key	Switch to the setting page Key	Selection Key
			
	Selection/Enter Key	Screen Lock Key	LCD ON/OFF key
			

**Power setting and AC input socket (C13 specification)**

- The input voltage of the power supply is ranged between 100-240VAC, 50/60 Hz. Please make sure to use the correct voltage in order to avoid damage to the power supply.

Two-stage Switch	Top of the Power Supply	AC input socket (C13 specification)
		

Indicator Light



Model		AM-30	AM-45	AM-85
Item				
Green light	Switch-on			
	After switch on, flash orange light three times, then turn to green light	⊙	⊙	⊙
	Brakes			
No light	No DC voltage output	⊙	⊙	⊙
Flashing green	short circuit protection	⊙	⊙	⊙
	Over power protection	⊙	⊙	⊙
Red light	Brakes	⊙	⊙	⊙
Flashing red	heating protection (temperature set at 75~85°C)		⊙	⊙

Main Output (DC) Plug

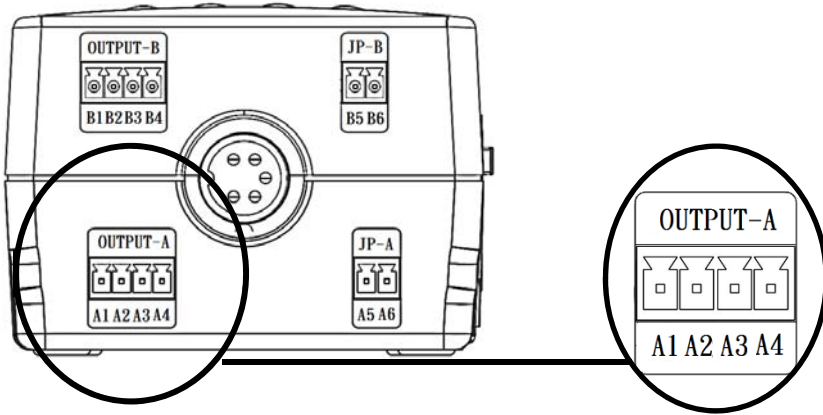
- Provides power to the electric screwdriver.

Bottom of the AM controller	5P connection	6P connection
The diagram shows the bottom of the AM controller. It features two 4-pin output connectors labeled 'OUTPUT-A' (pins A1, A2, A3, A4) and 'OUTPUT-B' (pins B1, B2, B3, B4). There are also two 2-pin jumper connectors labeled 'JP-A' (pins A5, A6) and 'JP-B' (pins B5, B6). A large 6-pin DC output plug is located in the center.	The diagram shows a 5-pin connection plug, which is a circular plug with five pins arranged in a cross pattern.	The diagram shows a 6-pin connection plug, which is a circular plug with six pins arranged in two rows of three.

### OUTPUT-A: Signal output terminal

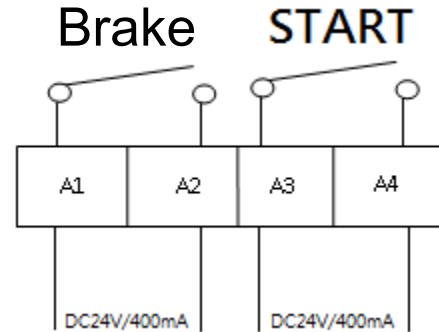
- A3 & A4: "Switch on" signal output. A3 and A4 will export dry contact signal when the electric screwdriver switches on.
- A1 & A2: "Shut-off" signal output. When the electric screwdriver has reached its set torque and stopped, no signal will be exported.

Picture 1



Picture2

Dry contact signal  
Voltage specification: DC24V/400mA MAX



### JP-A: External controller use terminal (AM-30 ONLY)

- The power supply supports an external controller to control screwdriver operation.
- Connect ON/OFF switch to JP-A terminal for external control (Forward only).

### OUTPUT-B: Error-proofing signal output terminal block

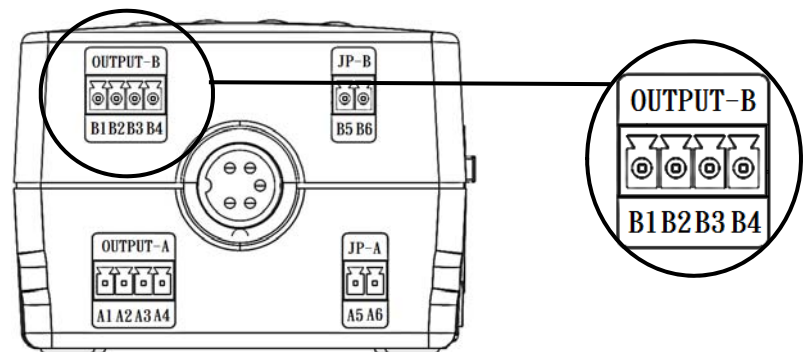
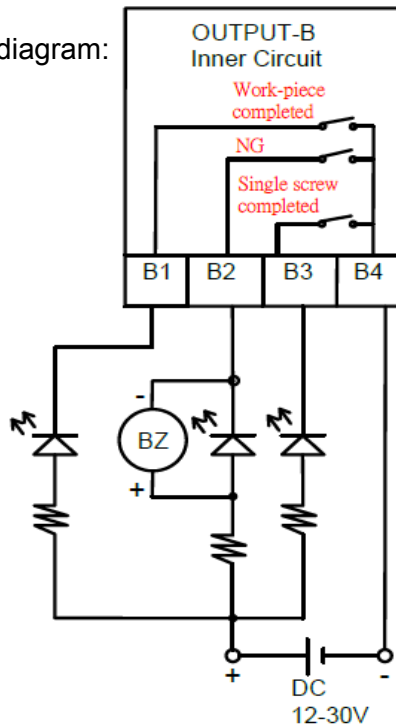
- OUTPUT-B Pin and corresponded outputs:

Work complete: B1 & B4

Single screw complete: B3 & B4

Single screw NG: B2 & B4

Sample wiring diagram:



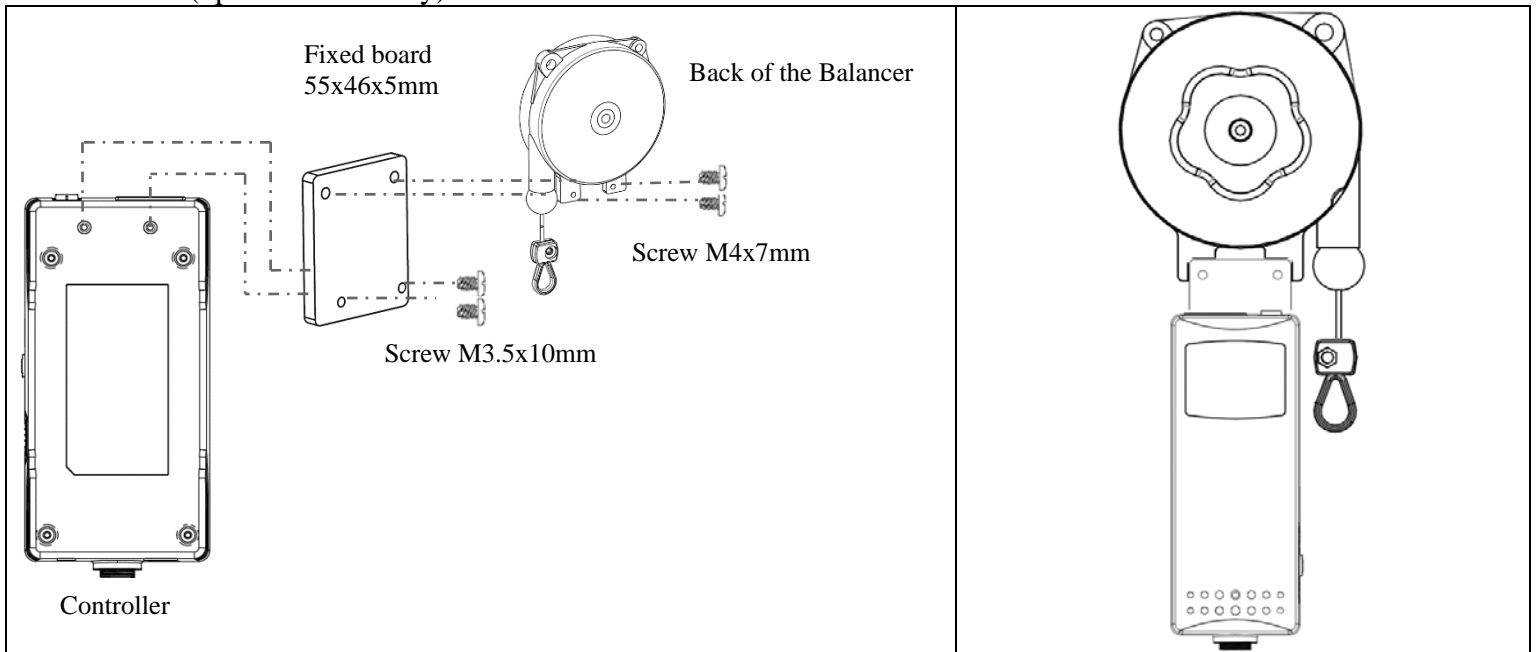


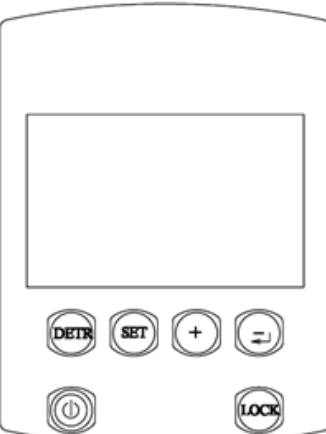






### JP-A: Work piece detection terminal











































- Connect with your work piece sensor and input ON/OFF signal into JP-A terminal (B5 & B6).
- The error proofing functions won't operate if work piece is not detected. A long "beep" alarm will also be heard.
- To disable this feature, use the included JP-A terminal connector with B5 and B6 short circuited.

### Screw hole for the assembly of the power supply and the balancer

- There are screw holes at the bottom of the power supply that allow the unit to be mounted on a CHP spring balancer (optional accessory) and the fixed board. Please follow the instruction below



AM controller panel	Return to the operation page Key	Switch to the setting page Key	Selection Key
			
	Selection/Enter Key	Screen Lock Key	LCD ON/OFF Key
			

Screen	Screen Display	Description and function of each displayed screen	Operation Guideline
1	<b>▲COUNT WORK▲</b> + OK : 0 0 / 1 + NG : 0 0 / 1	Screen 1 shows you numbers of OK or NG screw tightening for each unit during the operation. The reverse action will be counted as NG (three-way switch electric screwdriver ONLY).	1. Connect the screwdriver to the AM controller with the 5P or 6P cable.
2	<b>▲COUNT WORK▲</b> ITEM:1 STD : 0.00 sec +0% DET : 0.00 sec -0%	Screen 2 shows you the preset standard time of each screw fastening task, the tolerance, and the actual screw fastening time. "ITEM 1" indicates the current item of the operation.	2. Plug into the electric socket (110V / 220V).
3	MEMO CLEAR [YES]:+ [NO]:-	Clear all memo records. Press  key to delete; Press  key to save and switch to the next screen.	3. Turn on the LCD switch.
4	LANGUAGE SELECT ENGLISH← CHINESE	AM controller language selection: Press  key to choose the language 「ENGLISH」 or 「CHINESE」. Press  key to confirm and return to screen (1).	4. Screen (1) will display after 3 seconds. (Can jump to Step.7 if no need to erase the memory and change the language.)
5	SETTING MODE PASSWORD : ± ± ± ± SET DETR	You can set and recall your preferred profile memo after entering the correct key combination.	5. Press LOCK for 3-4 seconds and screen (3) "MEMO CLEAR" will display. Press  to delete; press  to cancel and switch to screen (4) •
6	1-1 MEMO RECALL 1:0.00sec 1 PCS	Choose the set memo (max. 10 items): Press  key for the next memo. Press  to choose memo and press  key to enter memo setting (next screen)	6. Screen (4) press    at the same time for 3-4 seconds. The language menu will display. The operator can choose the language.  to choose 「ENGLISH」 or 「CHINESE」,  to confirm and switch to screen(1).
7	1-2 CLEAR ALL CNT [YES]:+ [NO]:-	Clear all counting records of the current item (OK、NG、PASS) and reset: Press  key to delete; Press  key to keep records and return. Press  to switch to the next screen. (press any other key will return to screen 6).	7. Press  to enter setting mode on screen (5).
8	2 MEMO SET 1:0.00sec 1 PCS	Memo setting (max. 10 items): Press  key to select memo from 1 to 10. Choose the preferred memo and press  key to change the memo setting.	8. Enter the key combination     and the screen (6) will display. If you enter the wrong password, screen (1) will display.
9	3-1 SAMPLE TIMES [ 1]PCS	Set numbers of samples (max. sampling number is 99 pieces.) Press  key to increase the quantity; Press  key to decrease the quantity. Press  key to confirm and switch to the next screen.	9. Memo recall on screen (6). Press  to search the item you want to recall and press  to confirm. If you do not need to recall any item, press  to enter screen (7).
10	3-2 SAMPLES 0/1 0.00sec [OK]:+ [NG]:-	Showing the actual screw fastening time for each sample and counting numbers of sample fastened: Press  key to confirm each sample; Press  key to cancel. When you finish recording all the sample fastening time, it will switch to the next screen automatically.	10. Every time you want to set the item or values, you have to clear all previous counting records to avoid repeated counting in the new item. Press  to enter screen (8)
11	4-1 RANGE RATE +[10]%	Setting the upper-limit tolerance of sample fastening time. The max. upper-limit percentage is 99%. Press  to increase; Press  to decrease; Press  to confirm and switch to the next screen.	11. Press  to search the item number you want to save and press  to confirm and switch to screen (9).
12	4-2 RANGE RATE -[10]%	Setting the lower-limit tolerance of fastening time. The maximum lower-limit percentage is 99%. Press  to increase; Press  to decrease; Press  to confirm and switch to the next screen.	12. Set the numbers of sample on screen(9) and press  to confirm and switch to screen

13	5 PCS/UNIT [ 1]PCS	Setting the numbers of screws you need to fasten for each work piece (max.99 pieces). Press  to increase; Press  to decrease; Press  to confirm and switch to the next screen.	(10)
14	6 OK CNT DIR [+]	The counting logistic of completed units (increase/decrease): Press  indicates adding up numbers of completed unit; Press  indicates subtracting numbers of completed unit; Press  to confirm and switch to the next screen.	13. On screen (10), you start fastening the unit. The screen will show the actual fastening time needed for each sample screw you fastened. You have to confirm whether the value is valid. If yes, press  to save. If no, press  to continue fastening until all the preset sample screws on screen (9) are fastened. Then, it will automatically switch to screen (11).
15	7 CYCLE TIME [ 0.0]sec	You can preset the fastening time needed for each task from 0.1~99.9 seconds. The alarm will go off when the fastening task is not completed within the preset time. Press  to increase; Press  to decrease; Press  to confirm and switch to the next screen.	14. Set the values according to your preference from screen (11)~(17). Please refer to "Description and function of each displayed screen". Press  to enter screen (18).
16	8-1 SET +OK CNT [ 1]SET	If you choose "+" on screen (14), the "work complete" alarm will go off when the total numbers of completed sets reach the preset amount. You can set up to max. 60000 set. Press  key to increase; Press  key to decrease; Press  key to confirm and switch to the next screen.	15. Screen (18) shows you numbers of pass-counted units. Press  to enter screen (19).
	8-1 SET -OK CNT [ 1]SET	If you choose "-" on screen (14), the "work complete" alarm will go off when the value is "0" set. You can set up to max. 60000 set. Press  to increase; Press  to decrease; Press  to confirm and switch to the next screen.	16. "Save?" will display on screen (19). If you want to save the values under the item you chose on screen (8), Press ; press  to cancel and return to screen (6).
17	8-2 ADJ STD TMR [0.00]sec	The adjustment of the standard sample fastening time (max. 9.99 seconds) Press  to increase; Press  to decrease; Set timer to 0.00 to disable this function. Press  to confirm and switch to the next screen.	17. If you want to set the next item, please follow steps 7-16 above.
18	8-3 ADJ PASS CNT [ 0]SET	This screen shows you the accumulative amount of incomplete fastening task that you bypassed when there is defective set (max. 60000 set) Press  to confirm and switch to the next screen.	18. Press  to choose the item you want to use on screen (6); Press  to return to screen (1). Press  to enter count work screen (2).
19	9 SAVE? MEMO:1 [YES]:+ [NO]:-	Save the set values in the current memo Press  to save; Press  to cancel and switch to screen (6)	19. You can start using the screwdriver after the setting.
20	SETTINGS ADJ VOLUME -  +	Volume adjustment Press  to increase the volume; Press  to decrease the volume; The screen will return to screen (1) when the standby time is over 3 seconds.	
<p><b>NOTE:</b></p> <p>1. Turn on/turn off the AM controller. Turn on: Turn the power switch to ON, then press LCD power key, the AM controller will turn on. Turn off: Press LCD power key for 2-3 seconds, the AM controller will turn off automatically; then turn the power switch to OFF. (DO NOT switch off the main power directly, which may result malfunctions)</p> <p>2. LOCK key function: (1): Press LOCK to lock the AM controller. The power supply can still provide electricity. This prevents any record alteration due to improper use of the electric screwdriver during standby time. (2): Press LOCK for 3-4 seconds and you will see "MEMO CLEAR" (screen 3). Press + to delete; Press - to save and switch to screen (4) 「LANGUAGE SELECT」. Press + to choose 「ENGLISH」 or 「CHINESE」. Press  to confirm and return to screen (1)</p> <p>3. Language: Press    for 3-4 seconds and screen "LANGUAGE" will display. Press  to choose either "ENGLISH" or "CHINESE". Press  to confirm and switch to screen.</p> <p>4. Volume Adjustment: Press + or - on screen (1) or (2), screen (20) and you can adjust the volume. Press + to increase the volume; Press - to decrease the volume.</p> <p>5. Alarm category: Single screw complete: one "beep" sound Single screw NG (Stripping, abnormal fastening etc.): quick and short "beep-beep-beep" sound Numbers of fastened screws for the work piece did not reach the set amount: a long "beep" sound. [Press  to bypass, this action will be recorded by the system ] Numbers of fastened unit reaches the set amount: "beep-beep-beep-beep" sound The fastening task is not completed when the preset 'CYCLE TIME is reached: a long "beep" sound. [Press  to relief]</p>			

#### 6.LCD light indication:

Operation screen: Blue light

OK screw fastening: Green light

NG screw fastening: Red light

Setting screen: White light

Screen lock: Yellow

Numbers of completed work piece reach the set amount: Purple light (1-2 seconds) and then green light

Task is not completed within the preset CYCLE TIME: Purple light

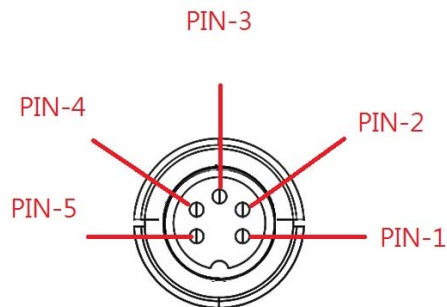
#### 7. Screen error & solution:

If you notice any screen error or scrambled code, you can restart the AM controller. If you still notice the same problem after restarting the machine, please contact customer service immediately.

## 7.Troubleshooting

### The screwdriver is not operating:

- Please ensure that the power plug is correctly plugged into the designated power source
- Check output voltage (DC) between pin 1(-) and pin 4(+). Replace power supply if there are no output voltage
- NOTE:** For 6 pin power supplies, connect pin 3 and pin 5 before measuring the output voltage
- Check for short/open circuit in the DC connection cord
- Please contact our customer service if the issue persists and/or other issue have occurred.



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Rev 2017.11