電動起子控制器操作手冊

OPERATION AND MAINTENANCE MANUAL

■SKP-BC40HLN (VER:4.0)

■SKP-BC40HL-800N (VER:4.0)

■SKP-BC32HL-100N (VER:4.0)

請掃瞄以下 QR code 或依下方網址於 KILEWS
官網下載完整操作手冊
Please scan the following QR code or download
the operation manual from KILEWS website

https://www.kilews.com.tw/tc/download-list.php

奇力速工業股份有限公司

KILEWS INDUSTRIAL CO., LTD.

http://www.KILEWS.com

Y2F125Q-8-001

NOTICE

Metal Assembly Screwdrivers are designed for installing threaded fasteners in light industrial and appliance manufacturing applications.
KILEWS is not responsible for customer modification of tools for applications on which KILEWS was not consulted.

WARNIN

Important safety information enclosed.
Read all these instructions before placing tool in service or operation this tool and save these instructions. It is the responsibility of the employer to place the information in this manual into the hands of the operator. Failure to observe the following warnings could result in injury. When using electric tools, Basic safety precautions should always be followed to reduce the risk of fire, electric shock and personal injury, including the following：

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Important Safety Instructions

WARNING! Read all instructions Failure to follow all instructions listed below may result in electric shock fire and/or serious injure. The term "power tool" in all of the warning listed below refer to your mains operated (corded) power tool or battery operated (cordless) power tool.

SAVE THESE INSTRUCTIONS

1) Electrical Safety

a) **Keep work area clean and well lit.** Cluttered and dark areas invite accidents.

b) **Do not operate power tools in explosive atmosphere, such as in the presence of flammable liquids, gases or dust.** Power tools create sparks which may ignite the dust of fumes.

c) **Keep children and bystanders away while operating a power tool.**
Distractions can cause you to lose control.

2) Electrical Safety

a) **Power tool plugs must match the outlet. Never modify the plug in any way. Do not use any adapter plugs with earthed (grounded) power tools**.
Unmodified plugs and matching outlets will reduce risk of electric shock.

b) **Avoid body contact with earthed or grounded surfaces such as pipes, radiators, ranges and refrigerators.** There is an increased risk of electric shock if your body is earthed or grounded.

c) **Don't expose power tools to rain or wet conditions.**
Water entering a power tool will increase the risk of electric shock.

d) **Do not abuse the cord. Never use the cord to carry, pulling or unplugging the power tool. Keep cord away from heat, oil, sharp edges or moving parts.**
Damaged or entangled cords increase the risk of electric shock.

e) **When operating a power tool outdoors, use an extension cord suitable for outdoor use.**
Use of cord suitable for outdoor use reduces the risk of electric shock.

3) Personal Safety

a) **Stay alert, watch what you are doing and use common sense when operating a power tool. Do not use power tool while you are tired or under the influence of drugs, alcohol, or medication.** A moment of inattention while operating power tools may result in serious personal injury.

b) **Use safety equipment. Always wear eye protection.** Safety equipment such as dust mask, non-skid safety shoes, hard hat, or hearing protection used for appropriate conditions will reduce personal injuries.

c) **Avoid accidental starting. Ensure the switch is in the off position before plugging in.** Carrying power tools with your finger on the switch or plugging in power tools that have the switch on invites accidents.

d) **Remove any adjusting keys or wrench before turning the power tool on.** A wrench or a key that is left attached to a rotating part of the power tool may result in personal injury.

e) **Do not overreach. Keep proper footing and balance at all times.**
This enables better control of the power tool in unexpected situations.

f) **Dress properly. Do not wear loose clothing or jewellery. Keep your hair, clothing, and gloves away from moving parts.** Loose clothes, jewellery, or long hair can be caught in moving parts

g) **If devices are provided for the connection of dust extraction and collection facilities, ensure these are connected and properly used.** Use of these devices can reduce dust related hazards.

4) Power tool Use and Care

a) **Do not force the power tool. Use the correct power tool for your application.**
The correct power tool will do the job better and safer at the rate for which it was designed.

b) **Do not use power tool if switch does not turn it on or off.** Any power tool that cannot be controlled with the switch is dangerous and must be repaired.

c) **Disconnect the plug from the power source before making any adjustments, changing accessories, or storing the power tools.**
Such preventive safety measures reduce the risk of starting the power tool accidentally.

d) **Store idle power tools out of reach of children and do not allow persons unfamiliar with the power tool or these instructions to operate the power tool.**
Power tools are dangerous in the hands of untrained users.

e) **Maintain power tools. Check for misalignment or binding of moving parts, breakage of parts and any other condition that may affect the power tools operation. If damaged, have the power tool repaired before use.** Many accidents are cause by poorly maintained power tools.

f) **Keep cutting tools sharp and clean**, properly maintained cutting tools with sharp cutting edges are less likely to bind and are easier to control.

g) **Use the power tools, accessories and tool bits etc., in accordance with these instructions and in the manner intended for the particular type of power tool, taking into account the working conditions and the work to be performed.**
Use of the power tool for operations different from intended could result in a hazardous situation.

5) SERVICE

a) **Have your power tool serviced by qualified repair person using only identical replacement parts**,
This will ensure that the safety of the power tool is maintained.

Additional information shall be provide

a) Instruction for putting into use
1. Setting-up or fixing power tool in a stable position as appropriate for power tools which can be mounted on a support.
2. Assembly
3. Connection to power supply, cabling, fusing, socket type and earthing requirements.
4. Illustrated description of functions.
5. Limitations on ambient conditions.
6. List of contents.

b) Operating Instructions.
1. Setting and testing.
2. Tool changing.
3. Clamping of work.
4. Limits on size of work piece.
5. General instructions for use.

c) Maintenance and servicing.
1. Regular cleaning, maintenance, and lubrication.
2. Servicing by manufacture or agent, list of addresses.
3. List of user-replaceable parts.
4.Special tools which may be required.

Operations Cautions

1. Please read the operating manual thoroughly and comply with safety regulation to operate this Multi-Function Controller.
2. Please grasp the plug of power cord while plugging in or out the plugs of connecting cord of Electric Screwdriver and power cord.
3. Please fix the power controller to avoid any danger of pulling and dragging the power cord.
4. Do not near oil, chemical materials or heated objects, also please be alert not to scratch the power cord by sharp object.
5. This type of Controller can only be applied to KILEWS Electric Screwdriver with Counter. Do not use Electric Screwdriver Controller on other types of machinery.
6. In case of the Controller is overheated or overloaded with maximum current rating of fuse, the high-speed fuse will be melt down and cut off the power. If the Controller continues to jump off or has an abnormal switching reaction, please stop the operation immediately and send back the Controller for repair.
7. When Electric Screwdriver is running, if slides Forward/Reverse Switch instantly, device will generate the protection program to force Electric Screwdriver stop.
8. Please do not disassemble Electric Screwdriver casually and try to repair it by self.
9. When Controller is not in use, please turn the main power switch OFF and unplug the power.
10. The electric frequency will be lower when the voltage is adjusted as Lo or below 32V, so the torque of the electric screwdrivers can't be worked out except below scale of 4.

CAUTION

* Please arrange to use the whole set of Electric Screwdriver SKD-BN&SKD-BK series except SKD-BN&SKD-BK series with the Multi-Function Controller.
* Please arrange to use together with KILEWS SKD-BN&SKD-BK series Electric Screwdriver. If operator uses different brand of Electric Screwdriver and repair tools with parts or accessories not from KILEWS manufacturer, it may cause the Controller malfunction or poor quality. As a result, all of product guarantees will be void and no obligation to the manufacturer.
* When Electric Screwdriver is running, if operator slide Forward/Reverse switch instantly, device will turn on the protection program to force the Electric Screwdriver stop running.
* Don't swtich HI/LO changeover button when the screwdriver is running.
* To plug or unplug the DC connector must wait the LED OFF after power off.

Main Technical parameters

Model No	SKP-BC32HL-100N (ver：4.0)	SKP-BC40HLN (ver：4.0)	SKP-BC40HL-800 (ver：4.0)
Input Voltage	AC 100-240V 50 / 60Hz	AC 100-240V 50 / 60Hz	AC 115/230V 50 / 60Hz
Output Voltage	DC 32V/ 24V	DC 40V/ 32V/ 24V	DC 40V/ 32V/ 24V
Power Consumption	60W	220W	360W
Counting Numbers	1~99		
Counting Method	Forward as / Count down		
Connecting Sensor	ON / OFF		
Sensing Switch Mode	ON (2 Sensor) / OFF (1 Sensor)		
Slow-Start Time Adj.	0.0~9.9 seconds		
Slow-Start Speed Adj.	L0：100%， 30%~90% L1~L9 Rated speed		
Start Detecting Time	0.01-9.99 seconds		
Stop Detecting Time	0.1-9.9 seconds		
Detecting Alarm	ON/ OFF/ FF/ EF with LED and buzzer		
Auto response/Manual response	ON / OFF		
External Connection Input	Forward / Reversion / Prohibit operation / Sensor Switch / resuming Switch / Confirm Switch		
External Connection Output	OK/ NG/ OK ALL		
Electric Screwdriver Speed Control	HI / LO； Slow Start		
Size (mm)	200*130*100	247 *130*100	
Weight (Kg)	1.53	2.4	

Applicable Electric Screwdrivers (SKD-)	
SKP-BC32HL-100N(ver：4.0)	BN203L；BN203LS5；BN203LS6；BN203LS7；BN207L；BN210L
	BN512L；BN512LF；BN517LF；BN519L；BN512P；BN512PF；BN517PF；BN519P BN512LM；BN512LFM；BN517LFM；BN519LM
	BN730L；BN730P；BN722LF；BN722PF
SKP-BC40HLN (ver：4.0)	BN830L；BN830LF；BN850L；BN830P；BN830PF；BN850P BN830LM；BN830LFM；BN850LM
	TBK20L；TBK30L；TBK50L
SKP-BC40HL-800(ver：4.0)	TBK30LF；TBK35LF；TBK50LF；TBK70L
	TBN60L；TBN90L；TBN120L；TBN180L
	RBK60L；RBK90L；RBK120L；RBK120LF；RBK180L；RBK180LF；RBK250L；RBK250LF； RBK350L；RBK500L；RBK60P；RBK90P；RBK120P；RBK120PF；RBK180P；RBK180PF； RBK250P；RBK250PF；RBK350P；RBK500P LRBK50；LRBK75；LRBK100；LRBK100F；LRBK150；LRBK150F；LRBK220
	BK960L；BK960LF；BK990L；BK9120L；BK960P；BK960PF；BK990P；BK9120P
Accessories	Power cord *1、Key *2

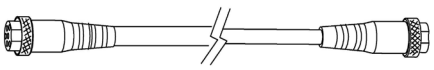
※SKD-BN203LS5 can't work with slow start (RC / SP) function.
※SKD-BN&SKD-BK series must be used with SIX PIN screwdrivers, so please confirm the screwdriver's type is SKD-BN&SKD-BK series and the connector is SIX PIN when using.

Step of the screwdriver confirmation：

1.Confirm the sticker is "SKD-BN" 

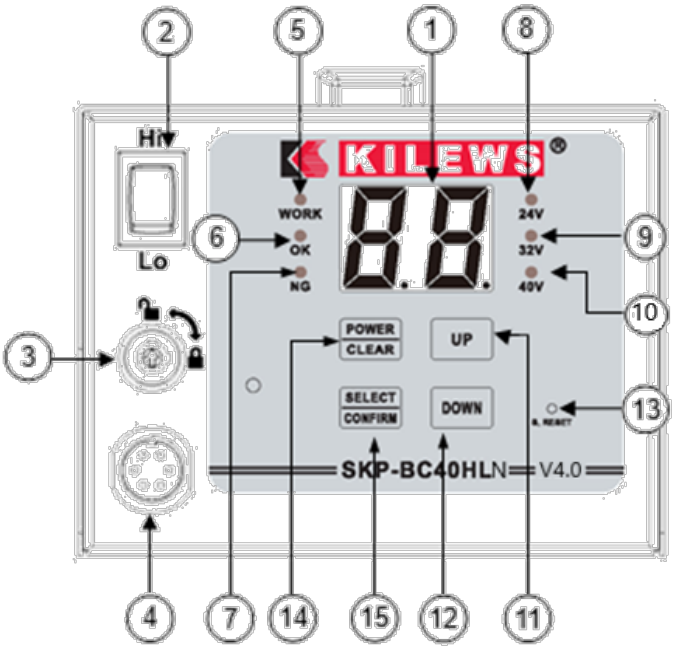
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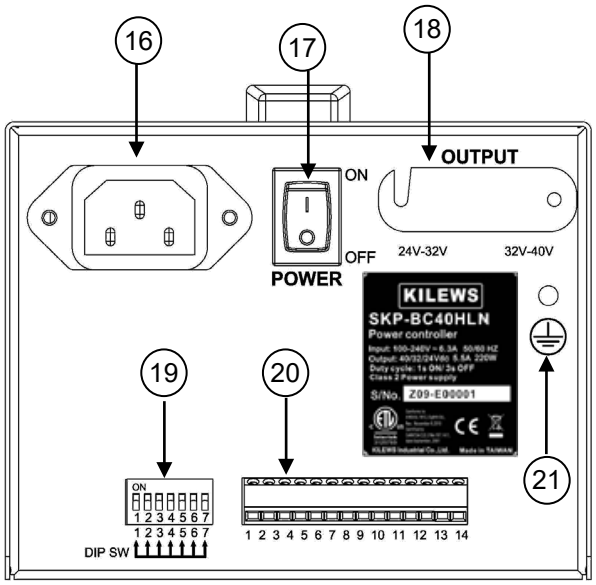
2.Confirm the screwdriver's CONNECTOR type is SIX PIN. 

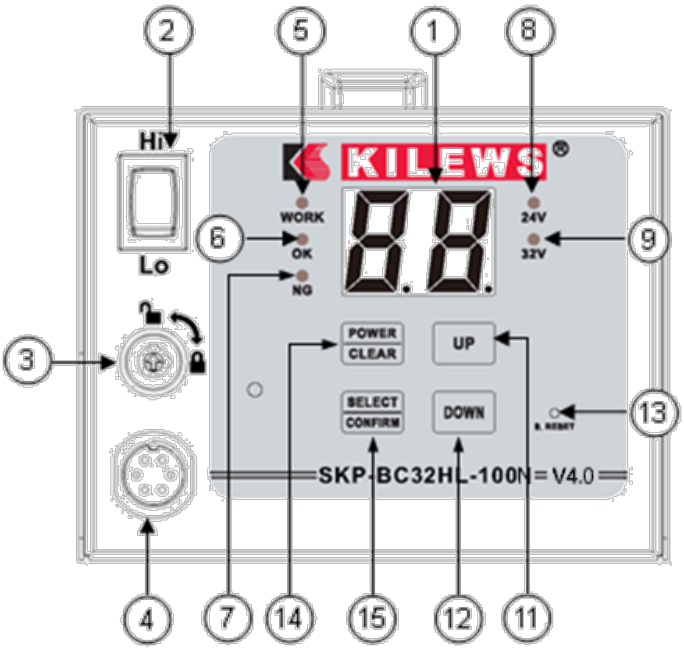
3.Confirm the connect cable between screwdriver and power controller is SIX wires. 

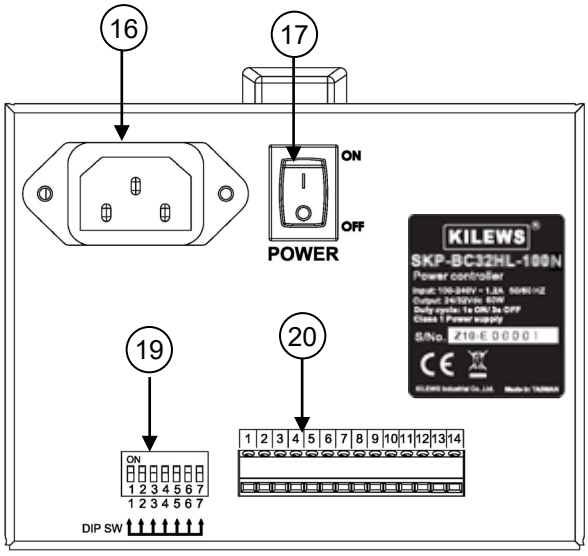
Control panel specifications

NO.	PARTS NAME	NO.	PARTS NAME
1	LED Indicator	12	Down-Selecting Key
2	HI / LO Speed Switch	13	System Build-in Reset Key
3	Key setting lock	14	POWER/CLEAR Key
4	6Pin Connector	15	Functional Selection / Confirm Key
5	WORK Light	16	Power point
6	OK Light	17	POWER SWITCH
7	N.G Light	18	Output voltage choice
8	24V Light	19	I/O Inserting Hole ＊ Instruction
9	32V Light	20	Functional Dip Switch ＊ Instruction
10	40V Light	21	GND
11	Up-Selecting Key		









Functions of Keys on Panel：

<table>
<tr><th>Key</th><th>Description of function.</th><th>Remarks</th></tr>
<tr><td>POWER
CLEAR</td><td>POWER： Power Switch
(1) Press and hold for 6 seconds that will turn off counter and other functions including 7 segment. LED display.
(2) Press and hold for 3 seconds to turn counter back on when counting function is deactivated.

CLEAR： Clear Switch
When operator intends to reset counter during operation, simply press and hold for one second till beep once. But under a cycle mode, to return back U1 for resetting by pressing and holding keypad for 3 seconds till beep twice.

Switch page：Under setting menu will change pages of decimal point</td><td>When there is NG signal, press CLEAR bottom to clear the NG signal</td></tr>
<tr><td>SELECT
CONFIRM</td><td>SELECT：
Press and hold SELECT button for 3 seconds to enter system setting menu：
SL---- SC----At----Ot----Rc----SP-----Ht----Lt----LL----NS----Ut----rt----rr----rS

When enter the setting menu. Press and hold S button to show the function (ex：SL or SC…etc.)and with beep sound. Release the "S" button to show the setting value

CONFIRM：
When DIP SW3 ON, when the user finished fasten a unit of screws. The counter requires to press CONFIRM button to start the next unit</td><td>1. Refer to CONFIRM mode：
When there is NG signal output. Press "CONFIRM" button to stop the NG signal output.</td></tr>
<tr><td>UP</td><td>UP：
In system menu, pressing the key to increase the number.
This key will point out user set-up number and unit during the process ：

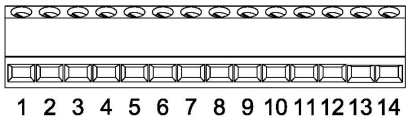
U1： No.1 setting number. U2： No.2 setting number.
U3： No.3 setting number. U4： No.4 setting number.
U5： No.5 setting number.</td><td>When press the UP button (hold), then panel will show the unit number, then press the start plate and the screwdriver will not operate</td></tr>
<tr><td>DOWN</td><td>DOWN：
In system menu, pressing the key to decrease the number.
This key will point out user set-up number and group during the process ：

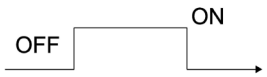
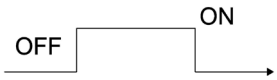
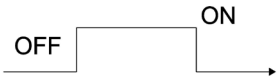
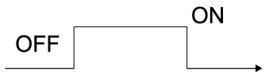
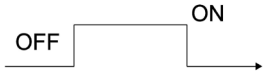
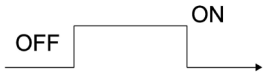
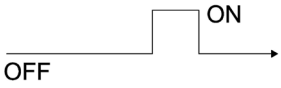
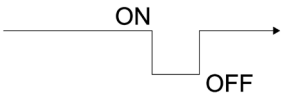
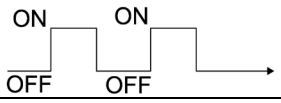
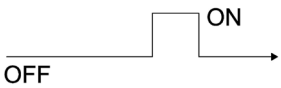
U1： No.1 setting number. U2： No.2 setting number.
U3： No.3 setting number. U4： No.4 setting number.
U5： No.5 setting number.</td><td>When press the DOWN button (hold), then panel will show the unit number, then press the start plate and the screwdriver will not operate</td></tr>
<tr><td>UP
+
DOWN</td><td>Up+Down：
Select the following modes.<table><tr><td>On</td><td>When fastening screw, completing work and if mistaken operation, the buzzer sound will be on.</td><td>FF</td><td>warring beep when finish all screws in the list and error in operation</td></tr><tr><td>OF</td><td>Only beep warning when wrong operation</td><td>EF</td><td>As one screw is fastened and work is completed, buzzer will be on；wrong operation will be no sound.</td></tr></table></td><td></td></tr>
<tr><td>S. RESET</td><td>S.RESET：SYSTEM RESET
Because of voltage or operation cause system abnormal, push this key back to the initial number.

The S.RESET is not functional if the outer key is under LC mode.</td><td>Press RESET key once then release. When hold RESET key, the screwdriver is not able to operate until the release the reset button.</td></tr>
<tr><td>UP
+
SELECT
CONFIRM</td><td><table><tr><td>LC</td><td>POWER
CLEAR</td><td>SELECT
CONFIRM</td><td>S. RESET</td><td>Lock function of the Panel Lock</td></tr><tr><td>Un</td><td>POWER
CLEAR</td><td>SELECT
CONFIRM</td><td>S. RESET</td><td>Unlock function of the Panel Lock</td></tr></table></td><td></td></tr>
</table>

UP + POWER CLEAR	Enter the setup： dt----- tt-----Sr----SA----Gr-----Rn dt/tt dt：the time range between each screwing process. This function will be triggered after finish one screwing process. If user doesn't start next screwing process in this setting time range. The system will display "dt" until next screwing process is started. ("01"= 1 second) tt：All the screwing processes in this list need to be finished under this setting time range. If user didn't finish all the screws in this setting time range, the panel will display "tt" until all the screwing processes are finished. ("01"= 1 minute) Note： (1) When dt errors, restart the screwdriver will release from error status. If two or more error occurs, the red light up and buzzer sounds, LED screen will display other error messages (eg：NS)；To solve another errors first and the red light will turn off , but dt continued errors. (2) When tt error occurs, to completed all fastening process will released from tt error condition .If an error occurs while there are other error coexist , same as dt situation . (3) When multiple loop mode： dt is for every one small loop (U #, #：1,2,3,4,5) , for each fastening screw time interval. tt is for the time of one big loop (U1 ~ U #, #：2,3,4,5) , which is from U1 first start until the end of last U # screw is fastened (4) When the dt / tt occurs, press CLEAR to release from dt / tt , counter will return to the original screw numbers setting of the current unit Sr：Multiple function switch cycle SENSOR Y：multiple cycles (SW2 = ON, SW6 = ON), when the number of fasten screws U1 are complete then screwdriver stop until the sensor triggered (SW4 = OFF). If SW4 = ON, you need to trigger twice before jumping to U2 ... and so on N：multiple cycles (SW2 = ON, SW6 = ON or SW2 = ON, SW4 = ON, SW6 = ON), when the number of fasten screw U1 are finish will automatically execute At time of that unit, then automatically start unit 2. Sr default：N Gr: When Er occurs, selects Y without "CONFIRM" to disable. If selects N be sure to press "CONFIRM" to disable. For example, when C4 & C5 trigger to Er signal, if Gr = Y happens the "CONFIRM" should be ignored which means an Er occurs that is the normal trigger at this situation. ※ When Gate_SW2_OFF_Err occurs, user must have a "CONFIRM" to disable. When C1, C2, C4 & C5 are under stage of Er, SW = OFF shuts off which means there is only "CONFIRM" can help to disable. Rn: Selects Y: this will enable the function of reversing to resume. See SW7 status below: SW7 ON = for reversing to resume to preset of screw's quantities SW7 OFF = for reversing to resume only once Selects N: disable the function of reversing to resume and SW7 (ON/ OFF) is futility Note：When SW6 = ON, Sr parameter setting (Y / N) only for reference. That is, Sr is a global variable, once SW6 = ON；Sr can set Y or N , then U2 ~ U5 SENSOR mode will follow same setting SA：When under Sensor mode, SA parameter setting only effect when the SW2 = ON, SW4 = OFF. The up and down button in the front panel can switch value (HI / LO). HI：Hi Active LO：Lo Active The default value is：HI	Note： (1) When the user press the POWER + UP, panel displays dt, release POWER + UP to show up values. At the dt mode, pressing "S" key can set "tt" value. Repeating press "S" key for the following setting. "Sr" → "SA" → "Gr" → "Rn" (2) dt and tt cannot be coexisted. When value sets as dt > 0, tt will disappear. The same, when the tt > 0, the dt will disappear.
	 Unlock Function	
	 1.Lock with the key (Need use the key to lock 2.When KEY lock is in lock position, the user change the Hi/Lo speed setting, the LED will display "PC" and the counter will beep 8 times until user change back the Hi/Lo setting.	

I/O Inserting Hole：

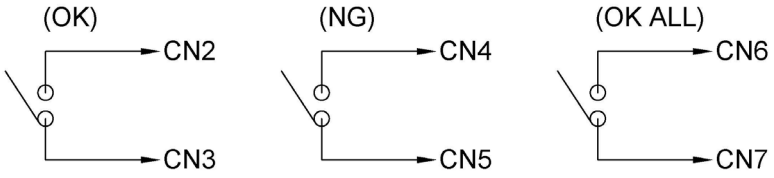


No	Name	In/Out	Content	wave pattern of signals	Remark
CN1	V+		Output 12 or 24 v dc		Output：DC +12V or +24V (Max：200mA) Default value：+24VDC (+12VDC need to custom modify)
CN2~CN3	OK	Output	CN2 and CN3 will be short when finished fasten one screw		Automatically open MOS RELAY (default) +/- 40V, +/- 250mA (Open Collector need to custom modify)
CN4~CN5	NG	Output	CN4 and CN5 will be short when error occur		Automatically open MOS RELAY (default) +/- 40V, +/- 250mA (Open Collector need to custom modify)
CN6~CN7	OK ALL	Output	CN6 and CN7 will be short when finished fasten all screw in the list		Automatically open MOS RELAY (default) +/- 40V, +/- 250mA (Open Collector need to custom modify)
CN8	START_IN	Input	External START input		1.When short Start input and COM(CN14) (CLOSE circle), able to start the screwdriver 2.When open circle with COM(CN14), screwdriver stop.
CN9	DIR_IN	Input	External REVERSE input		Shorten with COM (Close circle) and when enable start signal (CN8 + COM), screwdriver will start with Reverse rotation. If the driver switches F/R switch on "forward", when CN9 + COM short screwdriver is still reversed rotation after start
CN10	DISABLE	Input	External DISABLE input		When short with COM (CLOSE circle), cannot start the screwdriver When open circle with COM, screwdriver is able to start * When DISABLE (shorted with COM), work LED lights ON for 5 seconds, then OFF, then light up again for 5 seconds, on and off in circle.
CN11	CONFIRM	Input	External CONFIRM input		This switch feature and function is the same as CONFIRM, but no SELECT key function After press CONFIRM the NG signal will be release.
CN12	GATE	Input	External sensor switch	SW2:ON SW4：OFF  SW2：ON SW4：ON 	Input a confirm signal for machine to start working. Sensor Switch：External device, you can connect one or two switches.
CN13	CLR	Input	External device CLEAR switch		External clear switch, same as clear button on the panel. It also can disable N.G signal when it is triggered
CN14	COM		—		CN8 ~ CN13output/input signal COM port

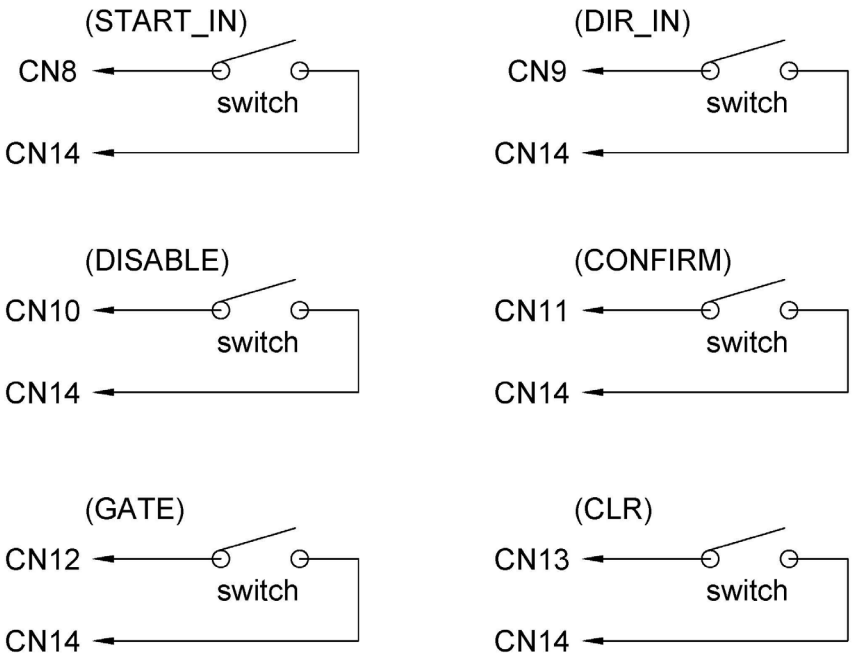
※CN1(V+) and CN14(COM) can provide DC 24V**(Default)。(DC +12V need to custom modify)**
※If users need different DC voltage, they must use their own step-down circuit to decrease voltage.
※If user need to input voltage to drive the alert instrument, do not use over DC+/-40V /, +/- 250mA voltage.

Terminal Connecting Diagram：(To take factory default：**MOS RELAY I/O** for example)

Output：

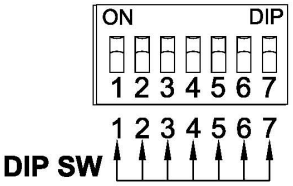


Input：



Functional Dip Switch：

SW	Name	OFF	ON
1	Counting Mode	Count Backward	Count Forward
2	Sensor Switch	Stop	Work
3	Manual Confirm Mold	Auto Zero	Start the Manual Confirmation
4	Switching Mode	Once Confirm	Twice Confirm
5	Automatic simulation learning mode	Stop	Work
6	Units arrangement Mode	Stop	Work
7	Reverse resuming	only one screw count backward	Enable to count backward within the screws quantity setting



Instruction：

SW1：Selects ON, counts screws number forward as 1-----2-----3------4------5----------1…
Selects Off, count down the screws number as 5-----4-----3-----2------1----------5…

SW2：Sensing Switch, select ON means Counter needs external sensing switch, SKP-BC40HLN must be in accordance with the sensing switch mode to determine if electric screwdriver will work. Select OFF means unnecessary for external switch, count number don't have to consider external switch to determine if it works.
Note：SA settings will affect SW2 = ON, SW4 = OFF the SENSOR drive mode, please refer to the SA setting for detail information.

SW3：The Count number Reset Mode, when counting screws number reach to the setting value, counter must be reset to default value, if select ON which stands for manual reset, user must press "SELECT/CONFIRM" / external CONFIRM (CN11+CN14) Key on the panel back the setting count number, otherwise Electric Screwdriver is unable to start under no confirming situation on the device. Select OFF makes system automatically to recover from the setting count number.

SW4：Switching Mode：Select ON means the external SENSOR need to have two signals been sent to SKP-BC40HLN which stands for the fastener on operational process need to go through the sensor on machine table to identify the fastener has been removed from working table, and new fastener goes through another SENSOR for confirming the new fastener that has reached the working table. Therefore two confirming signals allow SKP-BC40HLN to start the Electric Screwdriver running. Select OFF means only need one SENSOR to confirm the fastener that has been removed from this working table；this allows Electric Screwdriver starts to work.

SW5：Auto-Learning Mode: The Counter counts screws number and sends OK & NG signals followed by Ht/ Lt settings. Thus, Auto-Learning Mode experiences and memorizes screw fastening time from beginning to the end. To do so, simply user switches this mode to ON, and then system will ask fastening position (SL), number of screws (SC) to be tightened, whether needs time to be changed back to default or not (At), and OK LED keeps displaying time (Ot). Besides, user can add slow start function (Rc) or select speed level (SP), if need.

SW6：Arrangement form：The memory can save five units number, user can push switch ON, the system will automatically arrange five units, easy for user to make arrangement at work.

SW7：Reverse Resuming：User can turn on the reverse resuming switch to loose screws back. The system is able to count backward for presetting quantity of screws to be fastened. If the reverse resuming switch is switched to off, the system is only to do countdown for the last screw.

Note：Multiple cycles (SW6：ON)：
(1) rr =0
Whether Sr = Y or Sr = N, the reverse will both added to the U1.
(2) rr>0：
The screw list set with rr；the screwdriver well not reverses and will not add screws on the screw count.
At this point the user press CLEAR button or use CN13 to clear the count value to solve the problem and restart the operation after the "new work.
If customers want to reverse all screws, please turn off the counter before start reverse.

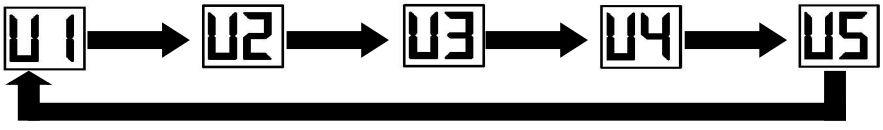
CONFIRM ：

Code	Instruction	Notations
C1	First external sensor to be confirmed. SW2 (ON) + SW3 (OFF) + SW4 (OFF)	External sensor * When the SA is set to HI, the display "C1"；if set is LO and will displayed "C.1 "
C2	The second external sensor to be confirmed. SW2 (ON) + SW3 (OFF) + SW4 (ON) ※When error occurs, the sensor needs to be triggered again. At this moment, panel shows "Er", user must press the "CONFIRM" from panel or short circuit **(CN11 + CN14 ports)** to clear "Er".	External sensors
C3	Manual confirm the panel. SW3 (ON)+SW2(OFF)+SW4(OFF)	Panel / External CONFIRM
C4	A switch SENSOR confirm +confirm button on the panel or short circuit **CN11+CN14** SW2(ON)+SW3(ON)+SW4(OFF)	External sensor + Panel / External CONFIRM * When the SA is set to HI, the display "C4"；if set is LO and will displayed "C.4 "
C5	Two switch SENSOR confirm + confirm button on the panel or short circuit **CN11+CN14** SW2(ON)+SW3(ON)+SW4(ON)	External sensors + Panel / External CONFIRM
CL	Reset to the default setting.	CLEAR

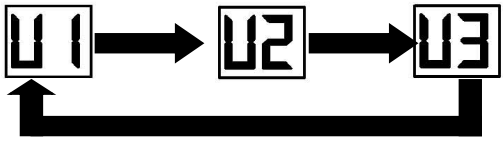
Error Code on LED description：

Symbol	Definition	Description
E4	High Temp. Protect	1.Screwdriver will stop when the operation temperature is higher. 2.LED will display **[E4]** to indicate high temperature protect.
E5	Stall Protect	1.Screwdriver will stop when motor is abnormal stalled after start. 2.LED will display **[E5]** to indicate stall protect.
E7	Push plate Error	1.Screwdriver will stop when push plate change between motor running. 2.LED will display **[E7]** to indicate abnormal operation.
E8	Brake Error	1.Screwdriver will stop when the abnormal brake signal appeared before start. 2.LED will display **[E8]** to indicate abnormal brake error.
PC	Power Error	1.When key is turning to lock, the voltage value has been changed in the meantime, the panel shows up PC status. (8 beeps) 2.A PC shows up when the controller outputs an invalid voltage to electric screwdriver. (e.g. When 24V is the output setting, we still connect a DC 40V screwdriver that does not match to each other. There will come 3 beeps warning (It is the same sign as low voltage) and NG light on. 3.When screwdriver connects to controller, there will need 2 seconds detecting time. (A PC shows up during these 2 seconds)

※ The error when the screw fastened was occurred during the external mode confirmation, the system will detect the abnormal state. The LED will show error code Er **and the buzzer will ring. The operator must confirm the external sensor (CN11+CN14) or press CONFIRM.**



※ If using three units of data only and let three units in cycles. It can set up "00" in counting number on U4, when SW6 switch ON, the system will automatically move in circle from U1~U3.



System setting

System procedure：

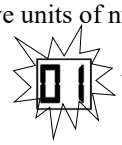
SL<SELECT>**SC**<SELECT>**At**<SELECT>**Ot**<SELECT>Rc<SELECT>**SP**<SELECT>**Ht**<SELECT>

Lt<SELECT>**LL**<SELECT>**Ns**<SELECT>**Ut**<SELECT>**rt**<SELECT>**rr**<SELECT>**rS**<SELECT>SAVE

PROCESS TO SET UP SYSTEM：

1、Please connect the cord, turn on the power switch until LED shows number.

2、Please press SELECT key over three seconds till buzzer making sound, the panel will show  ,  to push UP/DOWN to decrease or increase the number, it can set up five units of number.

3、To press SELECT key, buzzer will sound, the panel will show  ,  to push UP/DOWN to decrease or increase number, the maximum can set up 99.
SC：To set up counting number.

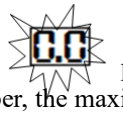
4、To press SELECT, the screen will show  ,  push UP/DOWN to increase or decrease number, the maximum can set up 9.9.
At：Automatic set up CLEAR time.

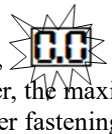
5、Presses SELECT to select  and  then press UP/DOWN to change digits. The maximum digit is 9.9.
Ot: LED time of OK or OK ALL status.

6、To press SELECT, the screen will show  ,  push UP/DOWN to increase or decrease number, the maximum can set up 9.9.
Rc：To set up slow-start time.

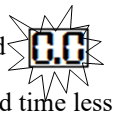
7、To press SELECT, the screen will show  ,  , push UP/DOWN to increase or decrease number between L0~L9, the maximum can set up L9.
SP：To set up speed of slow start.

8、To press SELECT, the screen will show  ,  push UP/DOWN to increase or decrease number, the maximum can set up 9.9.
Ht：Stop time.

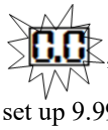
9、To press SELECT, the screen will show  ,  push POWER key, adjust decimals  , push UP/DOWN to increase or decrease number, the maximum can set up 9.99.
Lt：Set up Detect Start Time."02."means 0.02.

10、To press SELECT, the screen will show  ,  push POWER key, adjust decimals  , push UP/DOWN to increase or decrease number, the maximum can set up 9.90.
LL：No times confirmed within set-up time after fastening. "02." means 0.02.

11、Press SELECT for show  on LED and press UP/DOWN for change the setting.
NS：choosing action or not for next screwing process when error occur during screwing.
N：unlock(default setting) Y：lock(need to press S for release)

12、Presses SELECT to select  and  then press UP/DOWN to change digits. The maximum digit is 9.9.

Ut: Pre tightening time; any escaped time less than Ut will be counted as NG failure.

13、To press SELECT, the screen will show  ,  , push POWER key, adjust decimals  , push UP/DOWN to increase or decrease number, the maximum can set up 9.99.

rt：Set up auto reverse time。

14、To press SELECT, the screen will show  ,  , push POWER key, adjust decimals  , push UP/DOWN to increase or decrease number, the maximum can set up 9.99.

rr：Set up auto forward time.

15、To press SELECT, the screen will show  ,  , push POWER key, adjust decimal  , push UP/DOWN to increase or decrease number, the maximum can set up 9.99.

rS：Set up automatically forward pause time.

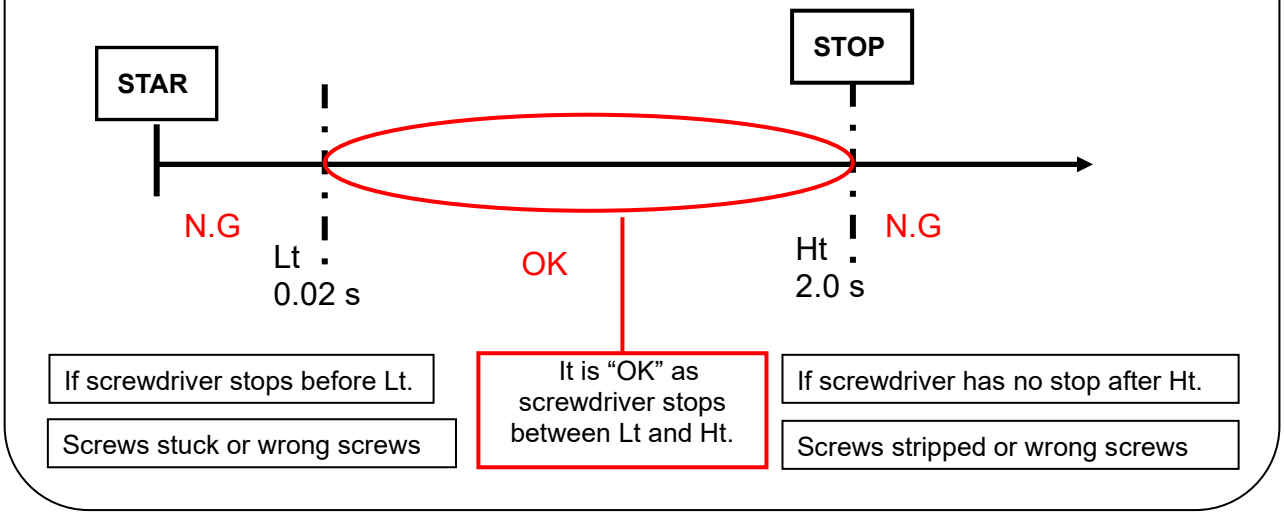
Remark:

Function Name	Set up Time and Value	Description	Buzz Time/ Light	Manufacturer Set-Up Value
SL	01~05	Screw List	---	---
SC	01~99	Counting number / count-down only	---	05
At	0.0~9.9	Automatic zero time / Signal output time	---	1.0
Ot	0.0~9.9	LED time of OK or OK ALL status.	---	0.0
RC	0.1~9.9	Slow start time	---	0.0
SP	L0~L9	Speed of start：L0：100%, L1~L9 (30%-90%) Rated speed	---	L0
Ht	0.0~9.9	Ht time Stop time (Show wrong as screwdriver can't stop at set time after starting, can be used to test stripped screws	3 beeps come with red LED on permanently	2.0
Lt	0.0~Ht	Lt time will show wrong as screwdriver stops before Lt after starting, can test screw is not properly fastened at its position. .	3 beeps come with red LED on permanently	0.00
LL	0.00~9.99	Reconfirm time after fastening.	---	0.00
NS	Y / N	Choosing action or not for next screwing process when error occur during screwing.	LED show NS	N
Ut	0.0~9.9	Pre tightening time; any escaped time less than Ut will be counted as NG failure	---	0.0
rt	0.00~9.99	Auto reverse time/ When the torque is reached and the screwdriver will start to reverse (backward) in this setting rt time range. (NOTE: rt value must exceed 0.05)	---	0.00
rr	0.00~9.99	Auto forward. when F/R switch is reverse (backward), set the number of seconds first for reverse immediately brakes and pause time rS. then forward until the torque is reached.	---	0
rS	0.10~9.99	Automatically forward pause time. When rr are setting (> 0), will show rS.	---	0.10
Backward to Count-Up	1 COUNT	When screwdriver is backward, the number will be back one	---	---
Ln	---	Automatic learning.	LED keeps flash of light	---

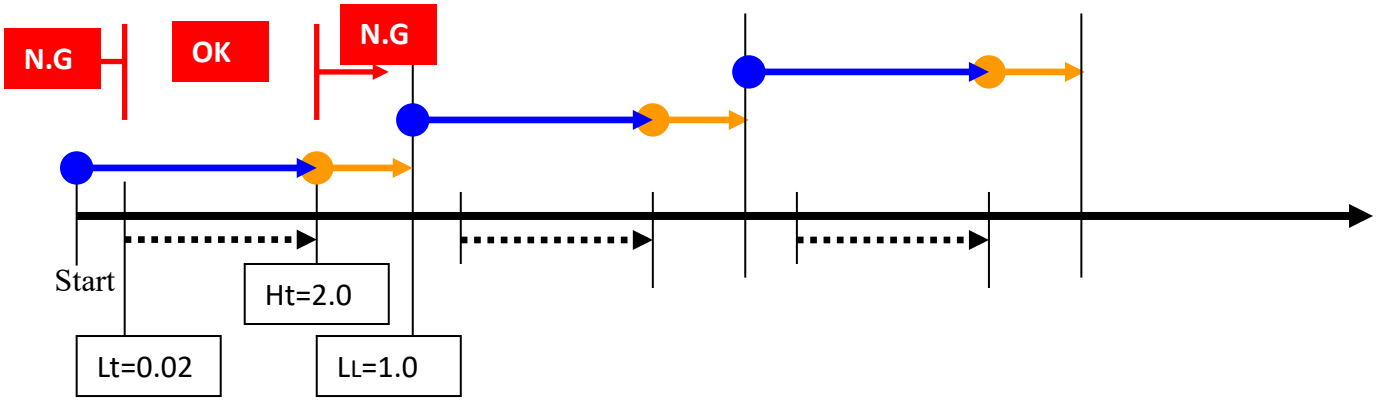
(1) When RC = 0 or SP = L0, there will be no slow start function.
(2) When RC & SP/ LL are excluded in setting, there is only one setting allowance.
(3) When rt/ rr & rs/ LL/ Ut are excluded in setting, there is only one setting allowance.

Data Chart：

Ht/Lt mainly set up the period of time. If stop is within the set period, it means OK. In contrast, it will be (NG), as stop before Lt or after Ht. and should reconfirm whether wrong screws is taken. More precise requested means more correct Ht/Lt set-up should be. The Lt default value: 0.00, but it can be increased or decreased in SELECT.



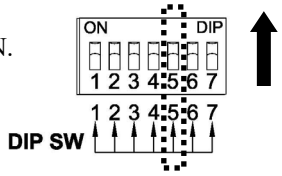
Execute under general pre-set program：



- **If the screwdriver stop time is in dotted line. it is normal fastening. "OK" will be shown.**
- **If the screwdriver stop time is before Lt or over Ht stop is before Ht or over Lt, it is "N.G.".**
- **User can freely adjust Ht. However, if Ht and Lt is closer, it will request more precise.**
- **If the user press the push button of the screwdriver after Ht and Lt setting, it is "N.G".**

Simulated Learning

1、 The switch mode SW5 change into ON.



※When SW5 change to ON, it will force to enter simulated learning procedure, any function will not work.

2、 When it changes to ON, LED will flash. The user can set whether or not counting screws, starting slow-start. The simulated learning function will be turned on after these necessary condition confirming.



3、 When set up finish, LED will show 0.0 and the user can test to fasten screws, When screwdriver starts, LED will show the count. When screwdriver shut-off, that means time to fasten screws. User can proceed many tests until satisfaction. User can change SW5 switch to OFF, the system will set up Ht time automatically. (Note：Lt will be set to zero)

4、 If user does not satisfy number, user can change SW5 to OFF, push SELECT over three seconds, then enter menu to change.

System procedure：

SL<SELECT>**SC**<SELECT>**At**<SELECT>**Ot**<SELECT>Rc<SELECT>**SP**<SELECT>**Ht**<SELECT>
Lt<SELECT>**LL**<SELECT>**Ns**<SELECT>**Ut**<SELECT>**rt**<SELECT>**rr**<SELECT>**rS**<SELECT>SAVE

Grounding

When use Electric Screwdriver Controller, it should be grounded to avoid operator getting electrical shock. This controller is equipped with 3 leading wires and 3 pins of grounding plug to fit for grounding type of outlet. The grounding wire must be connected firmly with power supply equipment for effective grounding result. The leading wire with yellow-green color is a grounding wire. Never attempt to connect this yellow-green color wire on electrified connector, this Controller has built-in grounding wire with electric leakage safety grounding and additionally, the Controller can eliminate ESD static, which is produced by running the electric screwdriver, via grounding wire.

Servicing

Maintenance and Inspection ：

1. The controller must be operated in top condition, one day working hour must be not more than eight hours.
2. Please note don't let the controller get over heated, every minute use 10~15 screws to operate.
3. The frequency use of this electric screw driver is over eight hours a day, still it needs periodically testing and treatment. Every 5-6 months.

CAUTION

1. The use of other than genuine KILEWS replacement parts may Result in decreased tool performance and increased maintenance, and may invalidate all warranties.
2. All repairs and maintenance of this tool and its word must be performed by an authorized service center.
3. KILEWS is not responsible for customer modification of tools for applications on which KILEWS was not consulted.
4. Repairs should by made only by authorized, trained personnel. Consult your nearest KILEWS authorized service center.
5. It is the responsibility of the employer to place the information in this manual into the hands of the operator.

DO NOT ATTEMPT TO REPAIR THIS

ELECTRIC SCREWDRIVER

CAUTION

SAVE THESE INSTRUCTIONS

DO NOT DESTROY

Our company reserves the right to modify the product without prior notice.

操作前請閱讀全部說明

（內附零件分解圖）

警　告

為了安全起見，在使用電動螺絲起子控制器前請詳閱電動螺絲起子控制器操作說明書，且務必依照說明書指示操作，並注意所有的警示。

重要安全說明事項

1.使用電動螺絲起子控制器說明書規定的電壓。
2.使用電源時請確定電流回路與安全開關裝置，並同時將地線接妥。
3.電動螺絲起子控制器勿置重物或堆積物品，且保持在適當的溫度與濕度狀態下工作。
4.勿將電動螺絲起子控制器放在通風不良之室內，或暴露在塵埃和金屬屑中
5.勿將電動螺絲起子控制器放在高溫潮濕的環境或易燃氣體的地方。
6.勿將電動螺絲起子控制器裝置在高處，應放于安全、平穩、固定的位置，以防止掉落的危險。
7.不可用電源線拉扯電動螺絲起子控制器，或將電源線從插座上猛拉開。

注　意

1、此控制器請搭配整組的專用電動起子 SKD-BN 與 SKD-BK 系列起子使用。
2、此控制器請配合 KILEWS SKD-BN 與 SKD-BK 系列計數器電動起子使用，控制器若搭配非 KILEWS 起子使用，以及使用非 KILEWS 原廠的零配件維修，而造成控制器發生故障或品質不良，導致一切保證失效本廠恕不負責。
3、起子在進行中，若瞬間切換正反開關，機器將會啟動保護程式，起子將停止運轉。
4、起子運轉中，禁止切換高低速開關。
5、電源關閉後，需待 LED 燈熄滅後才可插拔 DC 連接線。

操　作　須　知

1、操作前請詳細閱讀操作手冊，並且按照安全規範操作此電源供應器。
2、當插入或拔開起子連接線和電源線之插頭時，需抓緊電纜線之插頭部分。
3、請將此電源供應器固定，避免因拉扯而造成危險。
4、請勿靠近油、化學物質或熱的物體，同時也注意不要讓電纜線在工作中刮磨到銳利的物品。
5、 此型控制器，只能專門供 KILEWS 無碳刷電動起子計數器專用，勿將電動螺絲起子控制器使用於其他機械。
6、假如控制器過熱，或負載使用電流超過保險絲最大額定電流時，快速型保險絲會自動熔斷，切斷電源，持續跳脫或開關動作不正常時，請立即停止操作，並將電動螺絲起子控制器送回修理。
7、起子在進行中，若瞬間切換正反轉開關，機器將會啟動保護程式，起子會停止運轉。
8、請勿任意拆卸電動螺絲起子控制器嘗試自行修復。
9、不使用時將主要電源開關 "OFF"，並且拔掉電源插頭。
10、當 SKP 系列的輸出電壓調整至 Lo 的位置或小於 32V 的位置時，電動螺絲起子的扭力設定請低於刻度 4 位置以下使。

主 要 技 術 參 數

型　　號	SKP-BC32HL-100N (ver：4.0)	SKP-BC40HLN (ver：4.0)	SKP-BC40HL-800 (ver：4.0)
輸 入 電 壓	AC 100-240V 50 / 60Hz	AC 100-240V 50 / 60Hz	AC 115/230V 50 / 60Hz
輸 出 電 壓	DC 32V/ 24V	DC 40V/ 32V/ 24V	DC 40V/ 32V/ 24V
輸 出 功 率	60W	220W	360W
計 數 次 數	1~99		
計 數 模 式	正數 / 倒數		
接續感應器	ON / OFF		
感應開關模式	ON (2 Sensor) / OFF (1 Sensor)		
緩啟動時間設定	0.0~9.9 秒		
緩啟動轉速設定	L0：100%， 30%~90% L1~L9 額定轉速		
偵測停止時間(下限)	0.01-9.99 秒		
偵測停止時間(上限)	0.1-9.9 秒		
警示模式	ON/ OFF/ FF/ EF　LED 燈/蜂鳴器		
自動回復/手動回復	ON / OFF		
外部接續輸入	正轉 / 反轉 / 禁止操作/ 感應開關 / 回復開關 / 確認開關		
外部接續輸出	OK/ NG/ OK ALL		
控制起子轉速	HI / LO；緩啟動		
外部尺寸(mm)	200*130*100	247 *130*100	
重量(Kg)	1.53	2.4	
適用之電動螺絲起子			
SKP-BC32HL-100N(ver：4.0)	BN203L；BN203LS5；BN203LS6；BN203LS7；BN207L；BN210L		
	BN512L；BN512LF；BN517LF；BN519L；BN512P；BN512PF；BN517PF；BN519P BN512LM；BN512LFM；BN517LFM；BN519LM		
	BN730L；BN730P；BN722LF；BN722PF		
SKP-BC40HLN (ver：4.0)	BN830L；BN830LF；BN850L；BN830P；BN830PF；BN850P BN830LM；BN830LFM；BN850LM		
	TBK20L；TBK30L；TBK50L		
SKP-BC40HL-800(ver：4.0)	TBK30LF；TBK35LF；TBK50LF；TBK70L		
	TBN60L；TBN90L；TBN120L；TBN180L		
	RBK60L；RBK90L；RBK120L；RBK120LF；RBK180L；RBK180LF；RBK250L；RBK250LF； RBK350L；RBK500L； RBK60P；RBK90P；RBK120P；RBK120PF；RBK180P；RBK180PF； RBK250P；RBK250PF；RBK350P；RBK500P LRBK50；LRBK75；LRBK100；LRBK100F；LRBK150；LRBK150F；LRBK220		
	BK960L；BK960LF；BK990L；BK9120L；BK960P；BK960PF；BK990P；BK9120P		
配件	電源線 *1、鑰匙 *2		

※SKD-BN203LS5 無法使用緩啟動功能(RC/SP)

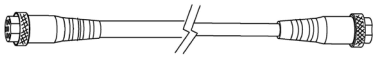
※搭配 SKD-BN 與 SKD-BK 系列的起子必須為 6PIN 起子，因此使用者在使用時請確認起子型號必須為 "SKD-BN 與 SKD-BK"系列之起子和連接頭為 6PIN。

確認起子步驟：

1、確認型號貼紙為 "SKD-BN" 

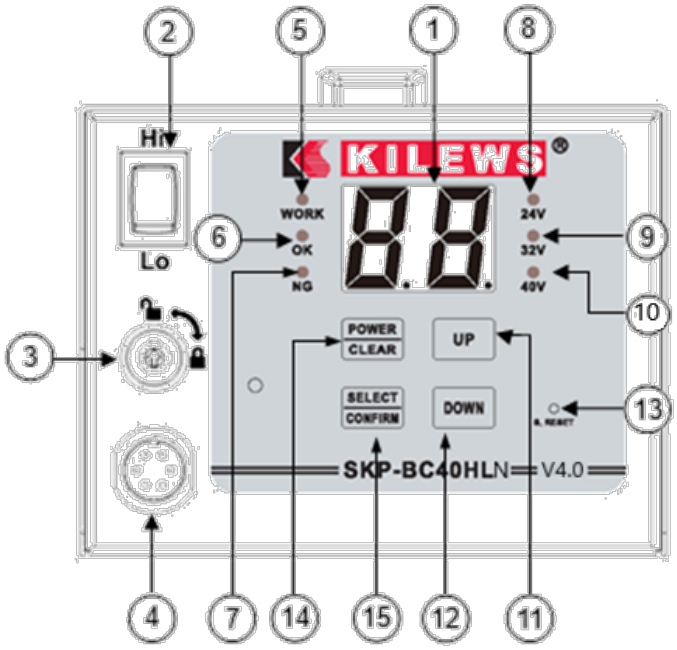
系列起子

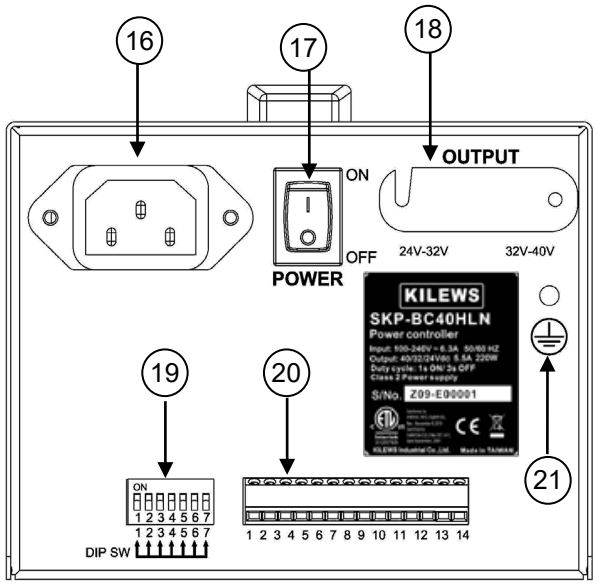
2、確認起子連接頭為 6PIN 

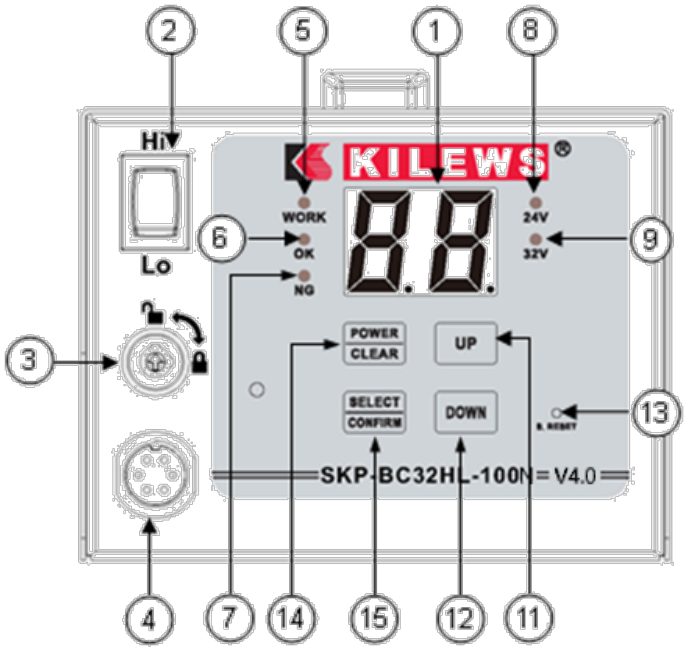
3、確認連接起子與控制器的連接線為 6 芯 

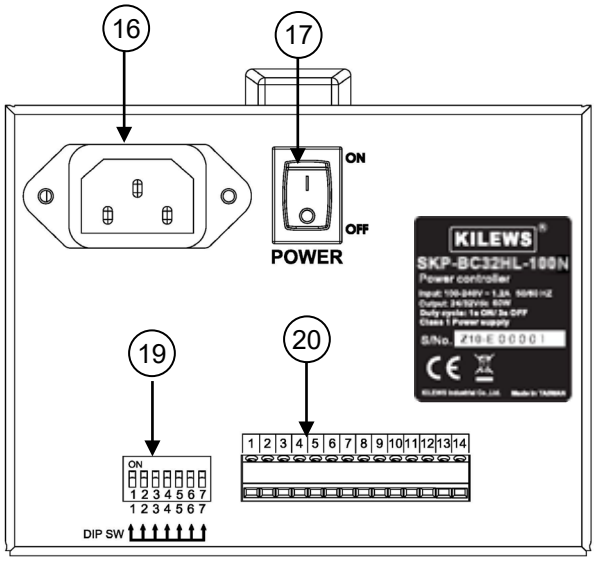
面 板 規 格

NO.	名稱	NO.	名稱
1	LED 顯示器	12	下選鍵
2	HI / LO 開關	13	內置系統重置鍵
3	鑰匙設定鎖	14	計數器電源 / 清除鍵
4	6PIN 連接頭	15	功能選擇 / 確認鍵
5	計數器工作燈	16	電源插座
6	OK 燈	17	電源開關
7	N.G 燈	18	輸出電壓選擇
8	24V 燈	19	指撥開關功能 ＊說明
9	32V 燈	20	I/O 插孔功能 ＊說明
10	40V 燈	21	接地線
11	上選鍵		









面板按鍵功能說明：

<table>
<tr><th>按　鍵</th><th>功　　能　　說　　明</th><th>備　註</th></tr>
<tr><td>POWER
CLEAR</td><td>POWER：計數器電源開關
長按 6 秒左右，系統會關閉計數器、附加功能與 7 段 LED 顯示。
在關閉計數器的情況下再回復計數器，可按此鍵約 3 秒即可打開計數器功能。

CLEAR：回復開關
起子在計數進行中，計數器計數到一半，使用者需要回復清除，可按此鍵約 1 秒左右，即可回復計數值，蜂鳴器響 1 聲。
在多循環模式下，長按 3 秒左右，即可回復到 U1 組的初始計數值，蜂鳴器響 2 聲。
參數設定模式時，此鍵為小數點切換鍵。</td><td></td></tr>
<tr><td>SELECT
CONFIRM</td><td>SELECT：功能選擇鍵
任何時候長按此鍵 3 秒以上，即進入系統設定畫面，即：
SL---- SC----At----Ot----Rc----SP-----Ht----Lt----LL----NS----Ut----rt----rr----rS
(當進入選單後，長按此鍵則顯示功能(如：SL 或 SC…等)且蜂鳴器鳴叫，放開此鍵後就顯示設定值。)

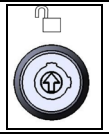
CONFIRM：系統確認鍵
當 DIP SW3　ON 時，每計數到設定的次數時，系統會要求操作人員按此鍵加以確認。</td><td>1.參考 CONFIRM 模式
2.當有 NG 訊號輸出時，按完此鍵後，NG 訊號即停止輸出。</td></tr>
<tr><td>UP</td><td>UP：系統設定畫面時，增加數字鍵；工作時，單獨按 UP 鍵，可顯示組別
在使用過程中案此鍵會提示使用者現在第幾組的設定值即：

U1：第 1 組設定值　　U4：第 4 組設定值
U2：第 2 組設定值　　U5：第 5 組設定值
U3：第 3 組設定值</td><td>當按下 UP 鍵(不放)，此時面板出現設定的組數，這時按下壓板，起子不會運轉</td></tr>
<tr><td>DOWN</td><td>DOWN：系統設定畫面時，減少數字鍵
在使用過程中案此鍵會提示使用者現在第幾組的設定值即：

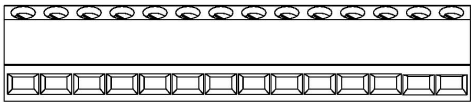
U1：第 1 組設定值　　U4：第 4 組設定值
U2：第 2 組設定值　　U5：第 5 組設定值
U3：第 3 組設定值</td><td>當按下 DOWN 鍵 (不放)，此時面板出現設定的組數，這時按下壓板，起子不會運轉</td></tr>
<tr><td>UP
+
DOWN</td><td>UP+DOWN：可以設定警示模式選擇功能

<table>
<tr><td>On</td><td>鎖附一個螺絲(OK1)、工作完成(OK ALL)、錯誤操作(NG)會發出聲響警示操作人員</td><td>FF</td><td>工作完成(OK ALL)□、錯誤操作(NG)會發出聲響警示</td></tr>
<tr><td>OF</td><td>只有錯誤操作(NG)會發出聲響警示</td><td>EF</td><td>每□附一個螺絲(OK1)與工作結束(OK ALL)會發出聲響警示；錯誤操作(NG)不發出聲音</td></tr>
</table>
</td><td></td></tr>
<tr><td>S. RESET</td><td>S.RESET：系統重置鍵
系統若因為電壓或操作因素導致系統不正常，可按此鍵讓系統回復到原廠設定值。

※外部鑰匙鎖 / LC 狀態下 S.RESET 功能無效</td><td>1. RESET 鍵觸發一下即可放開。
2. RESET 期間，起子不能被操作，直到放開 reset 鍵。</td></tr>
<tr><td>UP
+
SELECT
CONFIRM</td><td>
<table>
<tr><td>LC</td><td>POWER / CLEAR　SELECT / CONFIRM　S. RESET</td><td>鎖按鍵鎖功能</td></tr>
<tr><td>Un</td><td>POWER / CLEAR　SELECT / CONFIRM　S. RESET</td><td>解按鍵鎖功能</td></tr>
</table>
</td><td></td></tr>
</table>

UP + POWER CLEAR	進入設定畫面，即：dt----- tt-----Sr----SA----Gr-----Rn dt/tt ：工作時間提醒模式 dt：每顆螺絲的間隔等待時間 (預設：00， 00~99，單位：秒) 當未鎖螺絲時此動作不會執行，當鎖一顆螺絲時，則會依照設定的時間等待，若超過設定的時間內未有再鎖一顆的動作則會發出警告，display 會顯示"dt"字樣，直到再鎖另一顆，依此類推。(以秒計算"01"=1 秒) tt：設定總完成時間 (預設：00，00~99，單位：分) 設定時間內，要將所設定的螺絲全部鎖完，若在設定的時間內未將螺絲全部鎖完 display 會顯示"tt"，直到將設定的螺絲全部鎖完即可解除。(以分計算"01"=1 分) 註： (1) dt 錯誤時，一啟動則狀況解除。 (2) tt 錯誤時，要全部完成，狀況才會解除。 (3)當多組循環模式時： dt 為每 1 小循環(U#， #：1，2，3，4，5)內，每顆螺絲鎖附時間的間隔。 tt 為全部大循環(U1~U#，#：2，3，4，5)的時間，即 U1 第一次啟動到 U#最後 1 顆螺絲正確鎖完。 (4)當 dt/tt 發生時，可以透過 CLEAR 來解除，計數值恢復該組原設定值。 Sr：多組循環下(SW6=ON)，搭配感應器，流程控制模式切換 (預設：N) Y：(SW2=ON， SW4=OFF，SW6=ON)，當 U1 螺絲顆數鎖完即停止起子操作，必須重新感應一次 SENSOR 才會跳至 U2…依此類推，若(SW2=ON， SW4=ON，SW6=ON)則需感應二次。 N：多組循環時(SW2=ON，SW6=ON 或 SW2=ON， SW4=ON， SW6=ON)，當 U1 螺絲顆數鎖完會自動跳至 U2…依此類推，期間不需重新感應。 Gr： 當 Er 發生，選擇 Y = 不需按"CONFIRM"即可解除。 選擇 N = 需要按"CONFIRM"才可解除。 例：C4C5 觸發 Er 訊號，若 Gr=Y，則連帶 CONFIRM 會被忽略，等同常態觸發 Er。 □※Gate_SW2_OFF_Err 錯誤仍只能透過 Confirm 解除。C1、C2、C4、C5，Er 階段，SW2=OFF 關閉，視為特殊 Er，只能 CONFIRM 解除。 Rn： 選擇Y = 開啟反轉回復功能，即 SW7 狀態如下： SW7 ON = 可反轉回復至預設顆數。 SW7 OFF = 反轉回復 1 次。 選擇 N = 關閉反轉回復功能，即 SW7 (ON / OFF)皆失效。 註：當 SW6=ON 時，Sr 這參數設定(Y/N)才參考。且 Sr 是一個全域變數，一旦 SW6=ON；Sr 被設定 Y 或 N 後，U2~U5 的 SENSOR 模式比照執行。 SA：Sensor 使用的模式 (預設：HI) SA 這參數設定在 SW2=ON，SW4=OFF 時，才有效。 透過面板的上下鍵去切換值(HI / LO)。 HI：Hi Active LO：Lo Active	註： (1)當 user 按 UP + POWER，面板顯示 dt，放開 UP + POWER 就顯示數值，在設定 dt 模式下，按"S"可以進去設定"tt"，重複 S 鍵動作可以調整至後續功能 "Sr"→"SA"→"Gr"→"Rn" (2) dt/ tt 是互斥設定，也就是當 dt 設定值>0；看不到 tt 設定值。 同樣的，當 tt>0，也看不到 dt 設定值。
	○ S. RESET 解鎖功能	需有鑰匙才可解鎖
	HL ○ S. RESET 上鎖功能 1. 需有鑰匙才可上鎖。 2.上鎖時， 若操作者變更 HI/LO 開關狀態，蜂鳴器嗚叫 8 聲， 起子無法動作，LED 顯示"PC"， 直到 HI/LO 開關切回原本狀態。	

I/O 插孔功能說明:

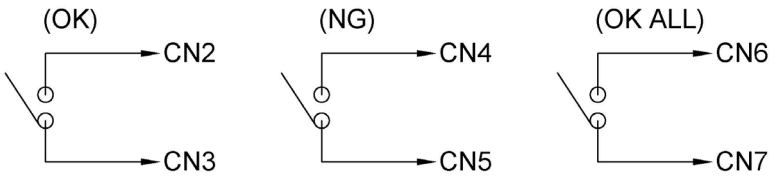


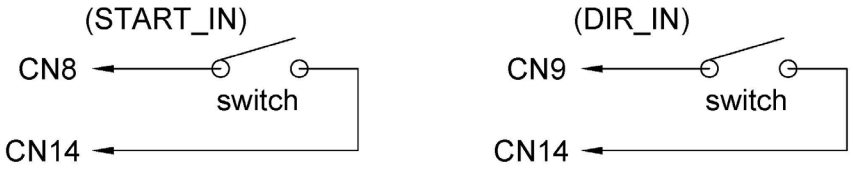
No.	名稱	輸入 輸出	內容	備註
CN1	V+		輸出+12 或 +24VDC	機器內置輸出電壓 DC +12V 或+24V (Max：200mA) 預設：+24VDC (+12VDC 可客製)
CN2~CN3	OK	輸出	鎖完一顆螺絲時 CN2、3 導通	自動開啟 MOS RELAY (預設) +/- 40V， +/- 250mA (若要Open Collector電路，可客製)
CN4~CN5	NG	輸出	當有錯誤操作時 CN4、5 導通	自動開啟 MOS RELAY (預設) +/- 40V， +/- 250mA (若要 Open Collector 電路，可客製)
CN6~CN7	OK ALL	輸出	完成設定的螺絲顆數，則 CN6、7 導通	自動開啟 MOS RELAY (預設) +/- 40V， +/- 250mA (若要 Open Collector 電路，可客製)
CN8	START_IN	輸入	外部啟動訊號輸入	1.與 COM(CN14)短路(CLOSE)，起子開始啟動 2.與 COM(CN14)斷路(OPEN)，起子停止運轉
CN9	DIR_IN	輸入	外部反轉訊號輸入	1.DIR-IN 先與 COM(CN14)短路(CLOSE)，有啟動訊號時(CN8+COM)或起子上被壓板啟動(L TYPE)或壓啟動(P TYPE)， 起子開始反轉啟動 2.若起子上的正反開關在"正轉"，當 CN9+COM 短路，起子啟動後仍是反轉。
CN10	DISABLE	輸入	外部禁止訊號輸入	1.與 COM 短路(CLOSE)時，起子不可以啟動 2.與 COM 斷路(OPEN)時，起子可以啟動 3.當被 DISABLE(與 COM 短路時)， work LED 燈恆亮 5 秒，熄滅再恆亮 5 秒，熄滅循環提示。
CN11	CONFIRM	輸入	外部確認鍵輸入	1.當系統要求按確認鍵時，可透過此 CN11 與 COM 短路來替代。 2.CONFIRM 執行後，NG 訊號也會清除
CN12	GATE	輸入	外接感應開關	1.輸入一個確認信號，使機器判定被鎖物為有效值。 2.感應開關：作業上的外接開關，可以接上一個或兩個開關。 3.接任何開關時都必須與 COM (CN14) 銜接
CN13	CLR	輸入	外接 CLEAR 開關	1.清除剩餘螺絲次數值，可外接確認開關 2.接任何開關時都必須與 COM (CN14) 銜接 3.CLEAR 執行後，NG 訊號也會清除
CN14	COM		—	CN8 ~ CN13 輸入/輸出 訊號都和此共地連接動作

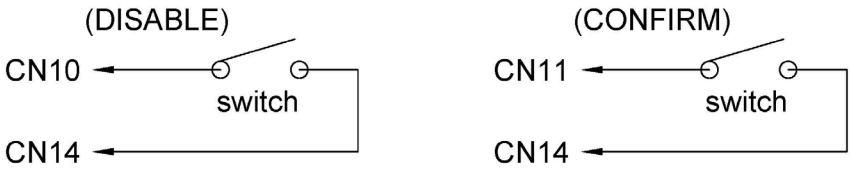
※CN1(V+)和 CN14(COM) 可供給 DC+24V(預設)。(DC +12V 需客製)
※若需要其他的 DC 電壓使用者必須自行使用降壓電路來降壓
※若使用者需要輸入電壓來驅動警示儀器，輸入電壓請勿超過 DC+/-40V，+/- 250mA(使用 MOS RELAY I/O 版)。

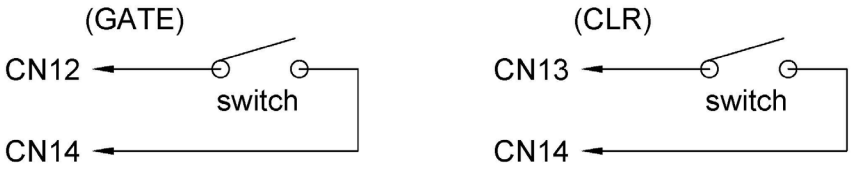
端子接線簡圖： (以出廠設定值：MOS RELAY I/O 為例)
輸出：

輸入：



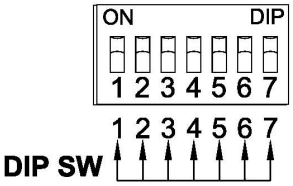






指撥開關功能說明：

SW	名稱	OFF	ON
1	計數方式	倒數	正數
2	感應開關	關閉	啟用
3	手動確認方式	自動回復	啟動手動確認
4	開關模式	一次開關確認	兩次開關確認
5	自動模擬學習模式	關閉	啟用
6	組別排列	關閉	啟用
7	反轉回復	僅能計算倒數一顆	可連續計算倒數至所設定的螺絲數量



說明： SW1 ：選擇 ON 則計數螺絲則為正數 即：1-----2-----3-----4------5----------1…
OFF 則計數螺絲則為倒數 即：5-----4-----3-----2------1----------5…

SW2 ：感應開關：選擇 ON 則表示需要外接感應開關，SKP-BC40HLN 必須按照感應開關的方式來決定起子是否動作。選擇 OFF 則表示不需要外接開關，計數不考慮外接開關來決定動作。
註：SA 設定值將影響 SW2=ON， SW4=OFF 的 SENSOR 驅動模式，詳細請參考 SA 設定值說明。

SW3 ：計數回復方式：當計數螺絲到設定次數時，計數器必須回復到原先設定值，若選擇 ON 則表示必須由面板確認(面板上"SELECT/CONFIRM") / 外部確認(CN11+CN14)來回復，否則機器沒有確認的情況下電動起子則無法動作。選擇 OFF 則系統自動會自動回復。

SW4 ：開關模式：選擇 ON，表示在外接的 SENSOR 必須要有兩個訊號給 SKP-BC40HLN，則表示在作業的製程上被鎖物必須經機台上的 SENSOR 確認有離開工作檯面上，而且新的被鎖物再經由另一 SENSOR 確認有到此作業檯面上，如此兩個確認 SKP-BC40HLN 才會動作起子才會啟動。選擇 OFF 則表示只需要一個 SENSOR 來確認，確認被鎖物有離開此工作檯面電動起子才會有動作。

SW5：自動學習模式：計數器計數螺絲的 OK 與 N.G 判斷值都是由 Ht 與 Lt 來設定，此自動學習模式全由電動起子來實際鎖螺絲，自動記憶螺絲從開始到鎖緊的時間，使用者只需將此開關切換到 ON 系統會詢問此工位需要記錄在第幾組數據(SL)，鎖幾顆螺絲(SC)，是否需要自動回復時間設定(At)，OK 燈持續顯示時間(Ot)，是否需要使用緩啟動的設置(Rc)，緩轉速的段數(SP)。

SW6：組別排列模式 / 多組循環模式：暫存記憶體內可以儲存 5 組的數據，使用者可以將此開關 ON，系統將會自動將 5 組的數據做排列，方便使用者作工作上的安排。

SW7：反轉回復：鬆退螺絲計數模式，使用者可以將此開關 ON，系統將可連續計算倒數至所設定的螺絲數量，若開關 OFF，系統僅能計算倒數一顆的螺絲數量。

註：多組循環時(SW6：ON)：
(1)rr= N：
不論 Sr = Y 或 Sr = N，均一直累加到 U 1。
(2) rr=Y：
退螺絲退到該組有 rr，則不執行退螺絲，也不累加。
此時使用者必須透過面板 CLEAR 或 CN 13＋CN14 來清除計數值來解決，之後並重新操作"新工件"。
若客戶要將螺絲全鬆，可以將計數器關閉再操作退螺絲。

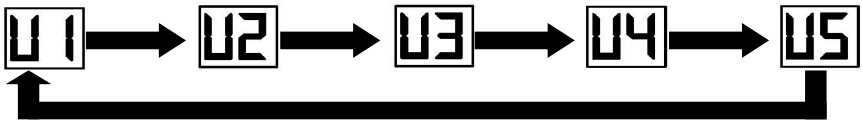
CONFIRM 模式：

代號	說明	備註
C1	為一個開關 SENSOR 確認方式 SW2 (ON)+SW3(OFF)+SW4(OFF)	外部感應開關 當 SA 設定為 HI 時，顯示 "C1"；若為 LO 時，顯示"C.1"
C2	為二個開關 SENSOR 確認方式 SW2 (ON)+SW3(OFF)+SW4(ON) 當發生錯誤時，SENSOR 需在感應，面板會顯示"Er"，需再按面板"CONFIRM"或外部確認(CN11+CN14 短路)，將"Er"消除	外部感應開關
C3	面板上 CONFIRM 手動確認方式 SW3 (ON)+SW2(OFF)+SW4(OFF)	面板 / 外部 CONFIRM
C4	為一個開關 SENSOR 長 ON 確認方式+面板上 CONFIRM 手動確認或外部確認(CN11+CN14 短路)方式。 SW2(ON)+SW3(ON)+SW4(OFF)	外部感應開關 +面板/外部 CONFIRM 當 SA 設定為 HI 時，顯示 "C4"；若為 LO 時，顯示" C.4"
C5	為二個開關 SENSOR 確認方式 +面板上 CONFIRM 手動確認方式或外部確認(CN11+CN14 短路)。 SW2(ON)+SW3(ON)+SW4(ON)	外部感應開關+面板/外部 CONFIRM
CL	資料回復設定初值	清除回復

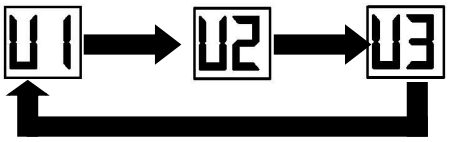
異常訊息顯示說明：

符號	符號定義	功能說明
E4	過溫保護	當電動起子的內部溫度過高時，會停止電動起子的動作並於 LED 顯示此符號，表示起目前處於溫度過高保護。
E5	堵轉保護	當電動起子馬達啟動異常時，會停止電動起子的動作並於 LED 顯示此符號，表示起子目前處於馬達啟動異常保護。
E7	方向推板異常	當電動起子馬達啟動時切換方向推板，起子的馬達會立刻停止動作，並於 LED 顯示此符號。
E8	剎車訊號異常	當電動起子剎車訊號偵測異常，會停止電動起子的動作並於 LED 顯示此符號。
PC	電壓異常	1. 鑰匙上鎖中，電壓狀態變更時顯示 PC。(蜂鳴器短音 8 聲) 2. 控制器輸出電壓不符合起子規格。(如：控制器設定電壓輸出 24V，但連接 DC 40V 的起子，蜂鳴器短音三聲(同等低電壓)並同時 NG 燈紅亮) 3.起子接上計數控制器時，約偵測兩秒(期間顯示 PC)。

※任何外部 CONFIRM 模式若進行到一半被鎖物發生錯誤，系統偵測到不正常時，會顯示 Er **，並發出警示聲響。回復方式必須再次確認 SENSOR，並再按一次面板上的 CONFIRM 或外啟確認(CN11+CN14)即可。**



※若使用只有 3 組的數據，只想讓 3 組數據循環，可以在 U4 的計數次數 SC 設定為"00"，如此在 SW6 切換 ON 時，系統將會自動從 U1~U3 循環



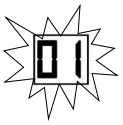
系統程序表單順序：

SL→→SC→→At→→Ot→→Rc→→SP→→Ht→→Lt→→LL→→Ns→→Ut→→rt→→rr→→rS→→SAVE

系統設定步驟：

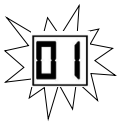
1、請將電源線接好，打開電源開關直到 LED 螢幕顯示數字即可。

2、請按 SELECT 鍵 3 秒以上，蜂鳴器會警示聲響，則螢幕會顯示 

，

按 UP/DOWN 增加或減少數值，最多可以設定到 5 組。

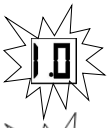
3、按 SELECT 鍵，蜂鳴器會警示聲響，則螢幕會顯示 

，

按 UP/DOWN 增加或減少數值，最多可以設定到 99。

SC：設定計數次數。

4、再按 SELECT，螢幕會顯示 

，

按 UP/DOWN 增加或減少數值，最多可以設定到 9.9。

At：設定自動回復時間。

5、按 SELECT，螢幕會顯示 

，

按 UP/DOWN 增加或減少數值，最多可以設定到 9.9。

Ot：OK 與 OK ALL 時，OK 燈持續顯示時間。

6、按 SELECT，螢幕會顯示 

，

按 UP/DOWN 增加或減少數值，最多可以設定到 9.9。

Rc：設定緩啟動時間。

7、按 SELECT，螢幕會顯示 

，

按 UP/DOWN 增加或減少數值，最多可以設定到 L9。

SP：設定緩啟動轉速。

8、按 SELECT，螢幕會顯示 

，

按 UP/DOWN 增加或減少數值，最多可以設定到 9.9。

Ht：設定起子停止時間。

9、按 SELECT，螢幕會顯示 

，

按 POWER 鍵，調整小數點 

，按 UP/DOWN 增加或減少數值，最多可以設定到 9.99。

Lt：設定起子啟動偵測時間。"02."表示 0.02。

10、按 SELECT，螢幕會顯示 

，

按 POWER 鍵，調整小數點 

，按 UP/DOWN 增加或減少數值，最多可以設定到 9.90。

LL：鎖螺絲後設定的時間內多剎車幾次都不做任何判斷。"02."表示 0.02。

11、按 SELECT，螢幕會顯示 

，按 UP/DOWN 來改變設定值。

NS：操作過程出現異常，是否要鎖住起子。 N：不鎖住(預設) Y：鎖住(需按 S 鍵來解除)

12、按 SELECT，螢幕會顯示 

，

按 UP/DOWN 增加或減少數值，最多可以設定到 9.9。

Ut：預鎖時間，當跳脫時間小於 Ut 時 皆算 NG。

13、按 SELECT，螢幕會顯示 

，

按 POWER 鍵，調整小數點 

，按 UP/DOWN 增加或減少數值，最多可以設定到 9.99。

rt：自動反轉時間設。

14、按 SELECT，螢幕會顯示 ， 按 POWER 鍵，調整小數點 ，按 UP/DOWN 增加或減少數值，最多可以設定到 9.99。

rr：啟動反轉時間設定。

15、按 SELECT，螢幕會顯示 ， 按 POWER 鍵，調整小數點  (0.10)，按 UP/DOWN 增加或減少數值，最多可以設定到 9.99。

rS：啟動反轉後的停頓時間設定。

功能名稱	設置時間及數值	功　能　解　釋	蜂鳴時間/發光二極體	原廠設定值
SL	01~05	數據組別	---	---
SC	01~99	計數次數	---	05
At	0.0~9.9	自動回復時間　AUTO.T/訊號輸出時間	---	1.0
Ot	0.0~9.9	OK ALL 時，OK 燈持續顯示時間	---	0.0
RC	0.0~9.9	緩啟動時間	---	0.0
SP	L0~L9	緩啟動轉速 L0：100%，　L1~L9 (30%~90%　) Rated speed	---	L0
Ht	0.0~9.9	Hi time 起子停止時間 (起子啟動後在 Ht 設定的時間未停止即顯示錯誤，可用於螺絲滑牙檢測)	3 聲蜂鳴聲與 LED 紅色恆亮	2.0
Lt	0.0~Ht	Lo time 起子啟動後停止時間早於 Lt 設定時間即顯示錯誤，可檢測螺絲沒有鎖定位置。	3 聲蜂鳴聲與 LED 紅色恆亮	0.00
LL	0.00~9.99	起子鎖附完成後再次確認時間	---	0.00
NS	Y / N	起子出現鎖附錯誤，是否鎖住	LED 顯示 NS	N
Ut	0.0~9.9	預鎖時間，當跳脫時間小於 Ut 時　皆算 NG。 UT > 0，忽略 Ht、Lt。	---	0.0
rt	0.00~9.99	起子跳脫後，自動反轉時間設定,此設定 rt>0.05 才有效	---	0.00
rr	0.00~9.99	起子啟動先反轉 rr 時間後再正轉直到跳脫	---	0
rS	0.10~9.99	rr 執行後的 rS 停頓時間，此設定當 rr>0 才有效。	---	0.10
反轉回復	1 COUNT	起子在反轉操作中，計數器數值會回復 1	---	---
Ln	---	自動學習狀態	LED 連續閃爍	---

註：

(1) RC=0 或 SP=L0 無緩啟動功能。

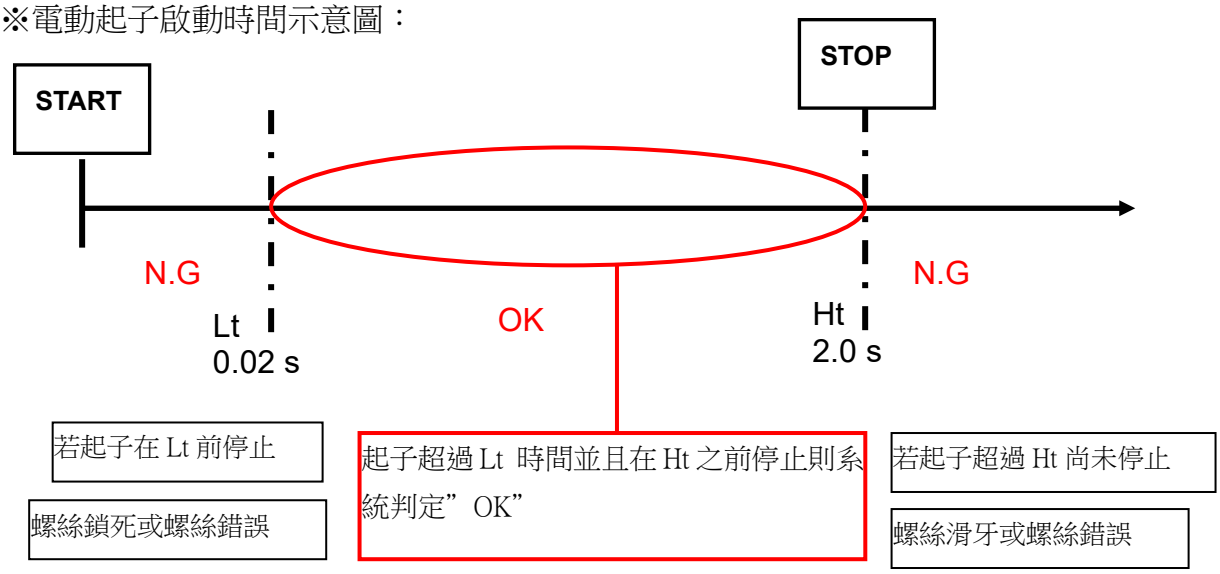
(2) RC& SP / LL 設定值互斥，只能有 1 個設定值存在（有效）。

(3) rt/rr&rs/LL/Ut 設定值互斥，只能有 1 個設定值存在（有效）。

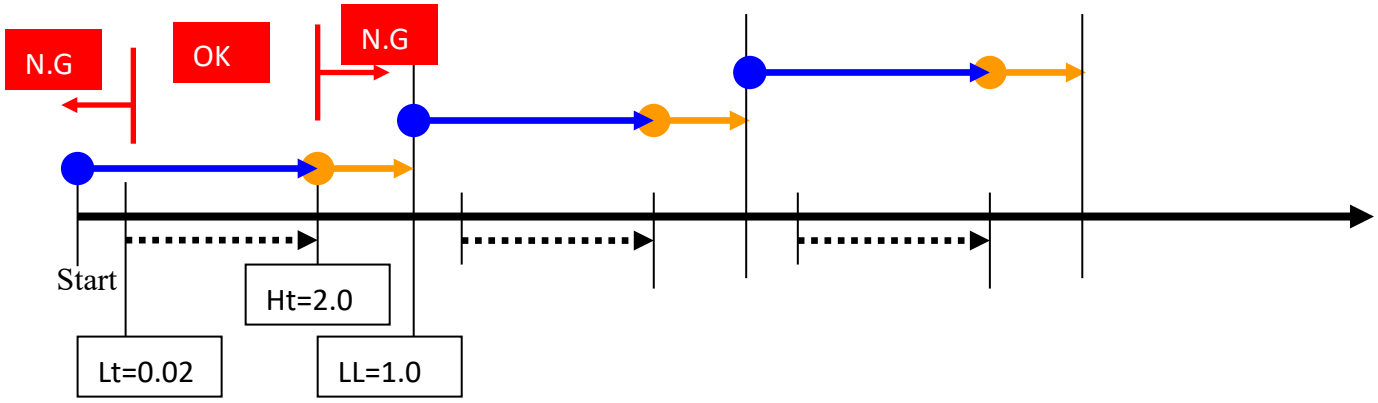
Ht/Lt 示意圖：

Ht/Lt 的時間主要是在設定時間範圍，若在設定的範圍內啟動到停止則顯示 OK 若螺絲在 Lt 設定 的時間之前停止或超過 Ht 的時間電動起子還沒停止，則表示螺絲在鎖的過程中不正常(N.G)，需 再次確認是否拿錯螺絲或者拿錯被鎖物，Ht/Lt 的時間設定的越精密則表示要求時間越嚴格，此 系統 Lt 的時間默認為 0.00，若要修改則可到 SELECT 內容進行增加或減少。

※電動起子啟動時間示意圖：



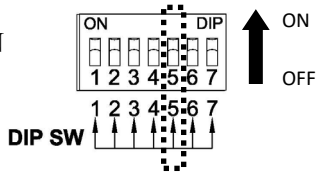
Ht/Lt/LL 時間示意圖：



※ 起子若在虛線區段停止，系統會判定為正常鎖附，顯示 "OK"。
※ 若起子在 Lt 時間停止或超過 Ht 時間尚未停止則系統將會判定成 "N.G"。
※ 使用者可以自由調整 Lt 的時間，若 Lt 與 Ht 的時間越接近則表示系統會判定需要更精準
※ 當 Ht . Lt 設定後,使用者連續按壓啟動壓板時，則系統將會判定成 "N.G"。

自動模擬學習設定步驟

1、 將模式選擇開關 SW5 切換 ON



※將 SW5 切至 ON 時，將強制進入自動模擬學習設定程序，任何功能將不起作用。

2、 切換 ON 時，LED 會閃爍讓使用者設定是否要計數幾顆螺絲、是否需要用到緩啟動，使用者必須先確定這些必要條件才可以進行自動學習。



設定完成後，LED 會顯示 0.0，使用者可以測試鎖螺絲動作，當起子啟動時，LED 會跟著計數，當起子剎車停止動作時，就是螺絲鎖附完成的時間，使用者可以進行多次測試，直到滿意為止，使用者可以將 DIP SW5 開關切至 OFF 狀態，如此系統將自動設定 Ht 的時間。(註 Lt 自動設定為零)

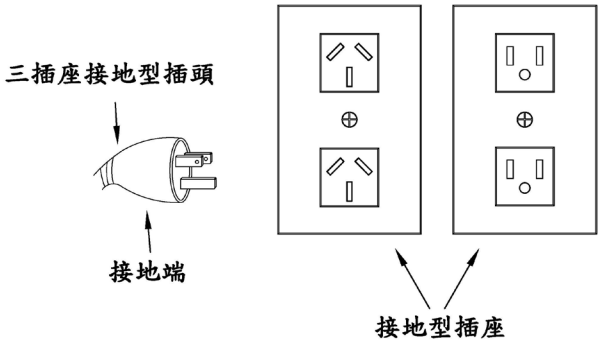
3、 若使用者認為數值尚不理想，再將 DIP SW5 切至 OFF 狀態時，可按住 SELECT 3 秒以上，進去選單畫面進行修改。

系統程序表單順序：

SL→→SC→→At→→Ot→→Rc→→SP→→Ht→→Lt→→LL→→Ns→→Ut→→rt→→rr→→rS→→SAVE

接 地 說 明

電動螺絲起子控制器使用時應接地以免操作者觸電。本控制器配有三條導線及三腳接地型插頭以適合接地型插座用，插座本身的接地線必須確實和電源設備地線相連接才有接地作用。電線黃綠色的導線是接地線。千萬不可將此黃綠色線接在通電的接頭上，此控制器內的接地線除了有漏電安全接地外，還可將起子工作時所產生的 ESD 靜電靠著接地線來接地消除。



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