KL-MCTDS5
Standard Operating Procedure Document

Model : KL–MCTDS5

Table of Contents

1. Specification

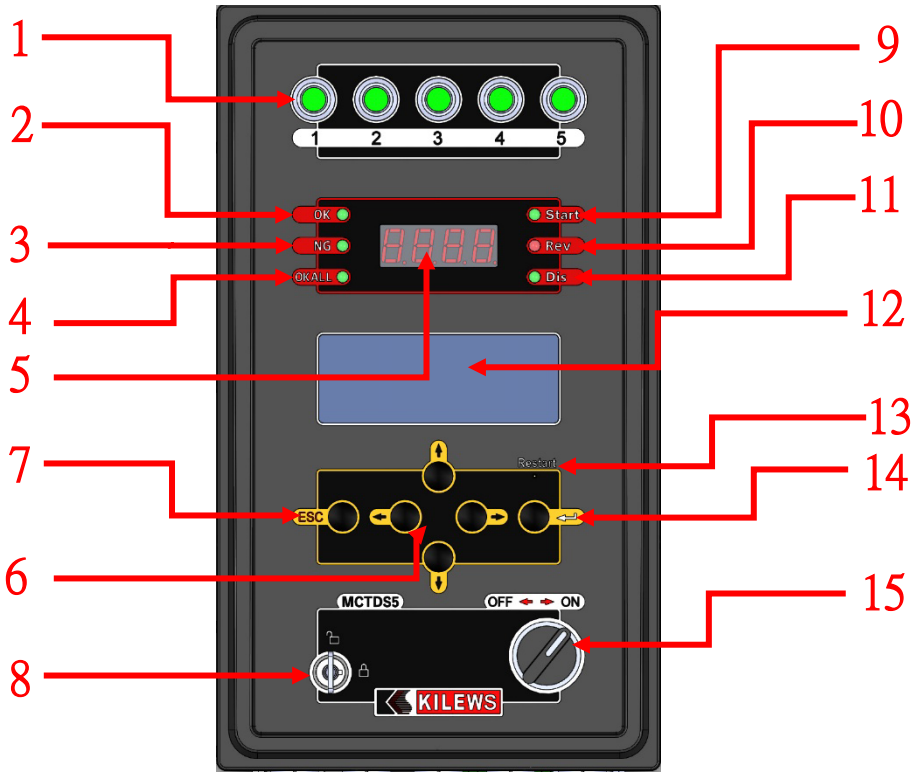
Model	KL-MCTDS5
Input Voltage	AC 100 ~ 240Vac
Input Frequency	50 / 60Hz
Input Current	6.3A
Output Voltage	DC 40V
Output Current	Max 9A
Output Power	360W
Duty Cycle	1s ON / 3s OFF
External Dimensions	185x320x209 mm
Weight	5.55Kg

Applicable Screwdriver Model							
SKD-BNK	Speed (r.p.m)	SKD-RBNK	Speed (r.p.m)	SKD-LRBNK	Speed (r.p.m)	SKD-TBNK	Speed (r.p.m)
BNK203L	1000	RBNK60L/P	1200	LRBNK50L	1200	TBNK-20L	1200
BNK207L	1000	RBNK90L/P	900	LRBNK75L	900	TBNK-30L	1200
BNK210L/P	1000	RBNK120L/P	600	LRBNK100L	600	TBNK-25L/F	2000
BNK512L/P	1000	RBNK180L/P	370	LRBNK150L	370	TBNK-50L	700
BNK512LF/PF	2000	RBNK120LF/PF	880	LRBNK100LF	880	TBNK-60L	1000
BNK517LF/PF	2000	RBNK180LF/PF	600	LRBNK150LF	600	TBNK-90L	800
BNK519L/P	1000	RBNK250L/P	370	LRBNK220L	370	TBNK-120L	550
BNK830L/P	1000	RBNK250LF/PF	-			TBNK-180L	350
BNK850L/P	1000	RBNK350L/P	350				
BNK960L/P	1000	RBNK500L/P	230				
BNK990L/P	1000						
BNK9120L/P	880						

2. Appearance Function

2.1 Panel

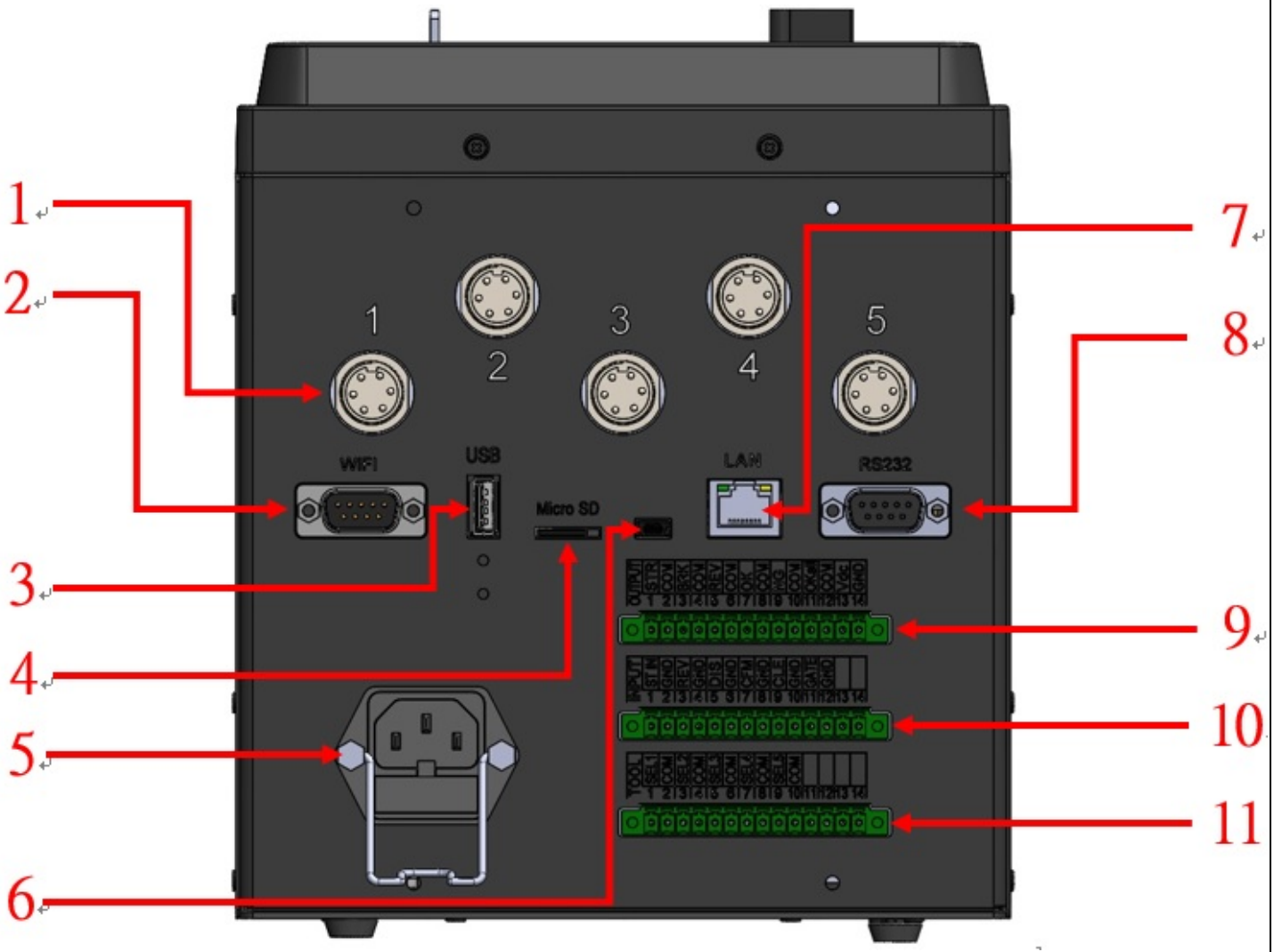
1. Tool signal indicator
2. **OK** signal indicator
3. **NG** signal indicator
4. **OKALL** signal indicator
5. Four-digit seven-segment display of torque value
6. Up, Down, Left, Right Buttons
7. **ESC** button (return/exit)
8. Key switch
9. **Start** signal indicator
10. **Reverse** signal indicator
11. **Disable** signal indicator
12. **16X4 LCM** display setup function
13. **Restart** button
14. **Enter** button (select/confirm)
15. Power switch **ON/OFF**



2.2 Bottom

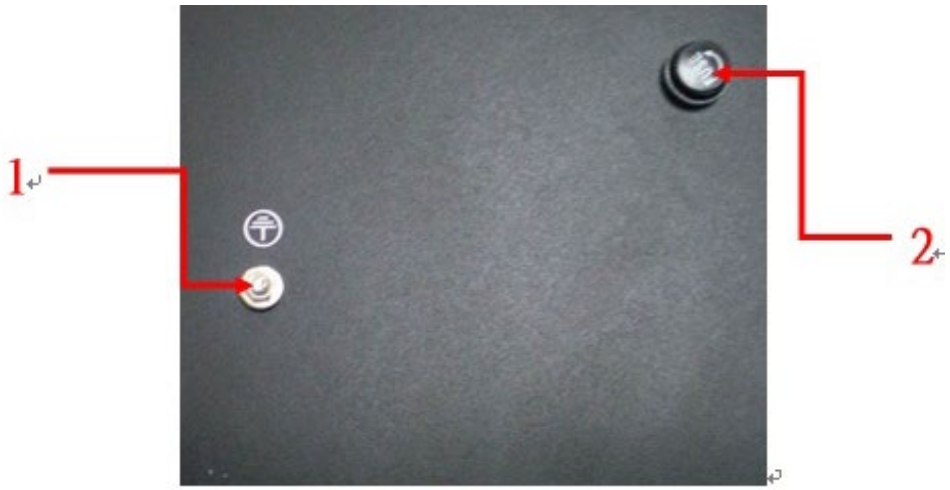
1. Tool connection base, total of 5
2. External wireless module communication port
3. BarCode Gun USB type-A port
4. Micro SD card port (for data storage)
5. Power cord socket
6. Update software fixture port
7. Wired communication port
8. Communication protocol output port
9. Output driver signal port
10. Input control driver signal port
11. Output driver status signal port

At present, 2 (external wireless module) + 8 (communication protocol output)/7 (built-in wired module) + 8 (communication protocol output) are combined, while other combinations may cause abnormal data transmission.



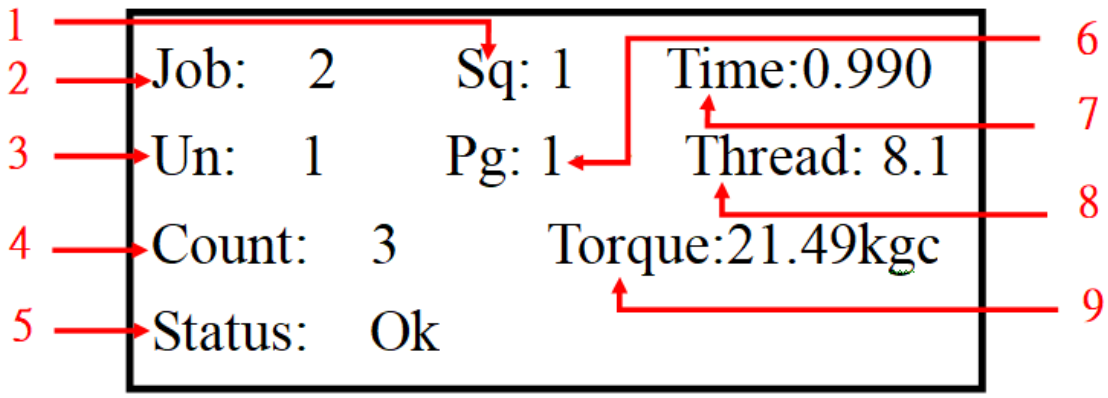
2.3 Above

1. Ground Terminal Block (FG)
2. DC Fuse Holder (includes 10A/250 fuses)



2.4 Description of LCM Display

1. Display the number of Sequence
2. Display the number of Job
3. Display the number of Unit
4. Display the number of tightening Screw
5. Display the system status, such as OK, OK all, ESD, etc.
6. Display the number of Program
7. Display the Time of tightening
8. Display the Thread of tightening
9. Display the Torque of tightening



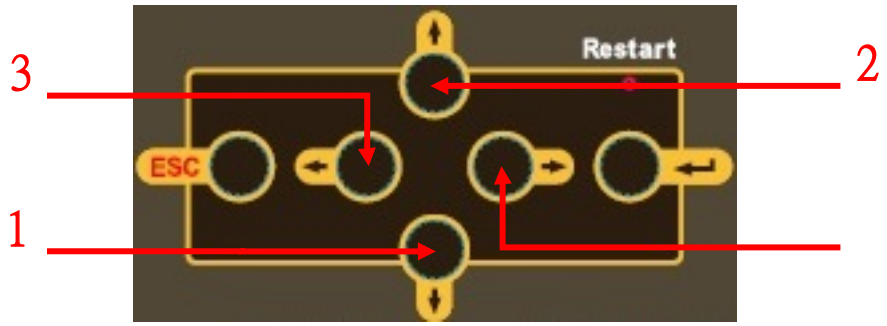
2.5 Hotkey Function

1. **Down key**: Press and hold the "**Down**" key for three seconds. When you hear the buzzer "**Beep**" sound, you are back to previous process.

2. **Up key**: Press the "Up & Down" keys together and then release the keys, to view the setting status of the tool.

3. **Left key**: (1) Clear the current screw count and back to the setting parameters.
   (2) Press and hold the key for three seconds. When you hear the buzzer "**Beep**" sound, you are back to previous process.

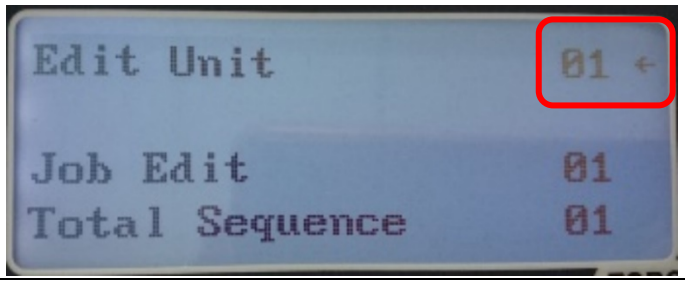
4. **Right key**: Press and hold the key for three seconds. When you hear the buzzer "**Beep**" sound, you are going to the next process.

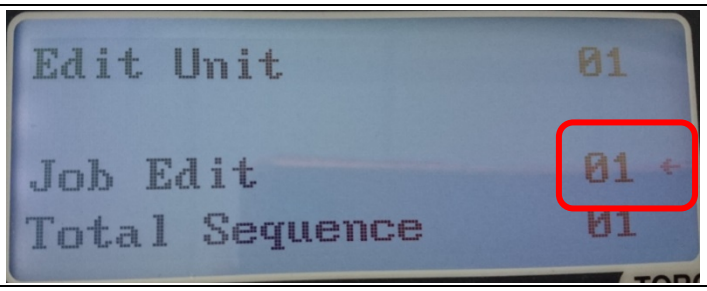


3. Setup Function

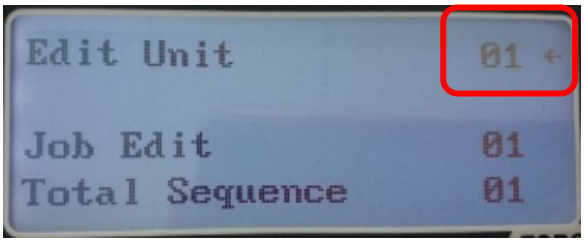
3.1 Up/Down/Left/Right/ESC/Enter keys

To select different functions by the up and down keys

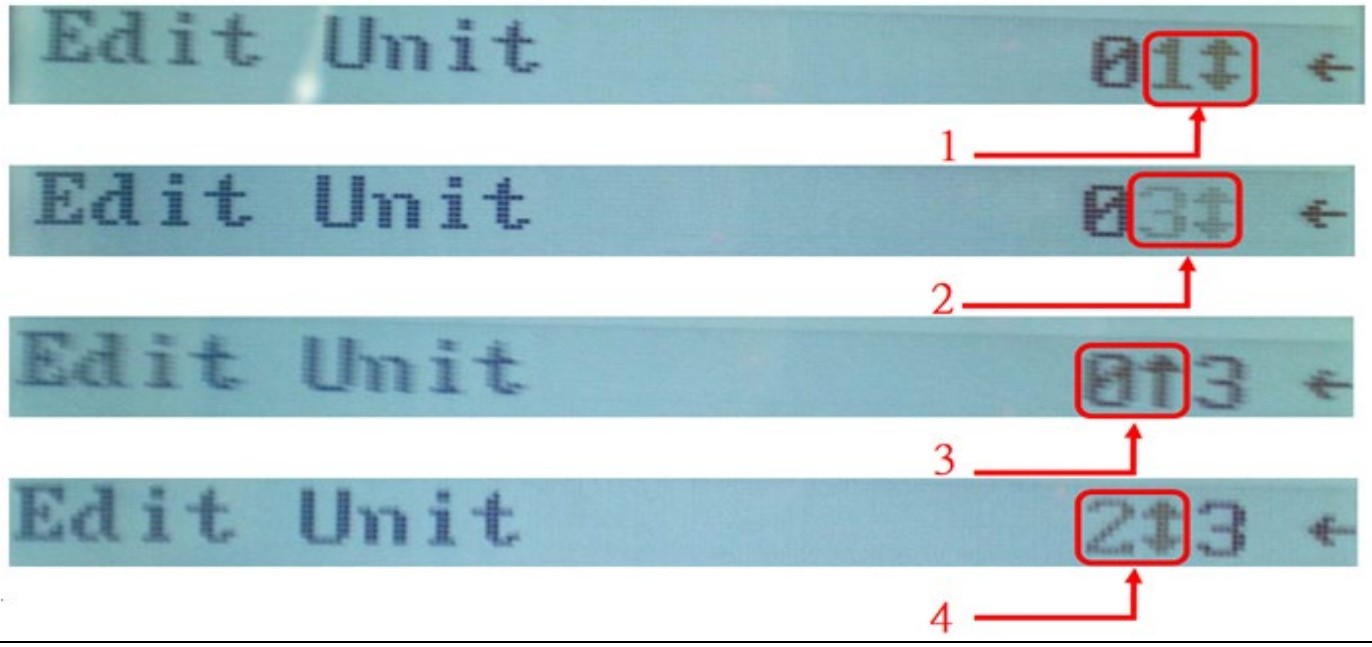




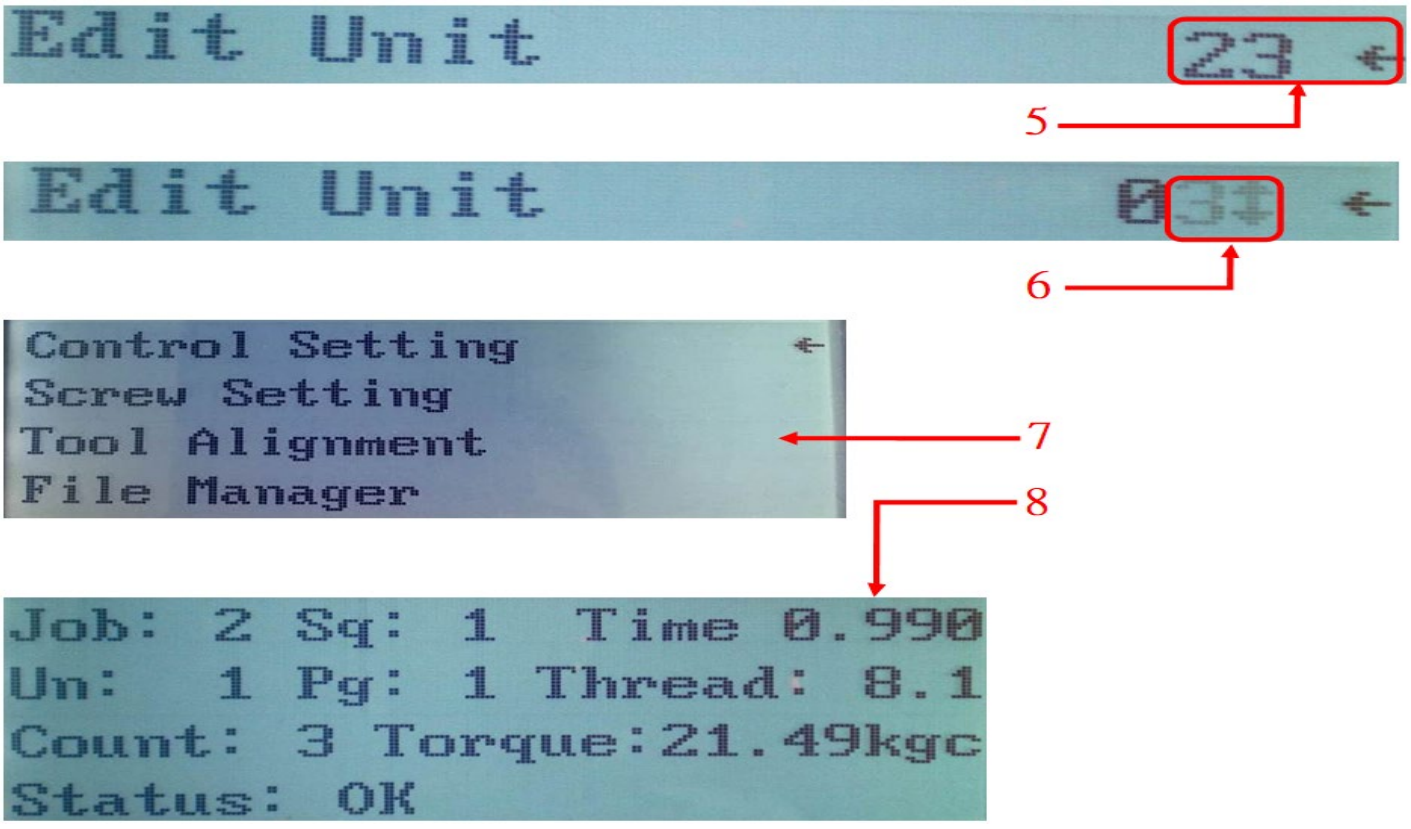
Using the “Edit Unit” function as an example, use the up and down keys to move the indicator to this option



1. Press “Enter key” to select, then you will see beside number 1 there are flashing up arrow and down arrow; indicating the number is selected.
2. Use **up and down arrows** to increase or decrease the number. The figure shows increasing number from “1” to “3”.
3. Use **left and right keys** to switch between left numbers and right numbers. The figure shows switching from “3” to “0”.
4. Use **up and down arrows** to increase or decrease the number. The figure shows increasing number from “0” to “2”.



5. Press “Enter key” to complete setup, as shown in the figure.
6. As shown in the figure that setup is not completed, press ‘ESC key”.
7. Return to previous page.
8. Or press it several times to return directly to the work page.

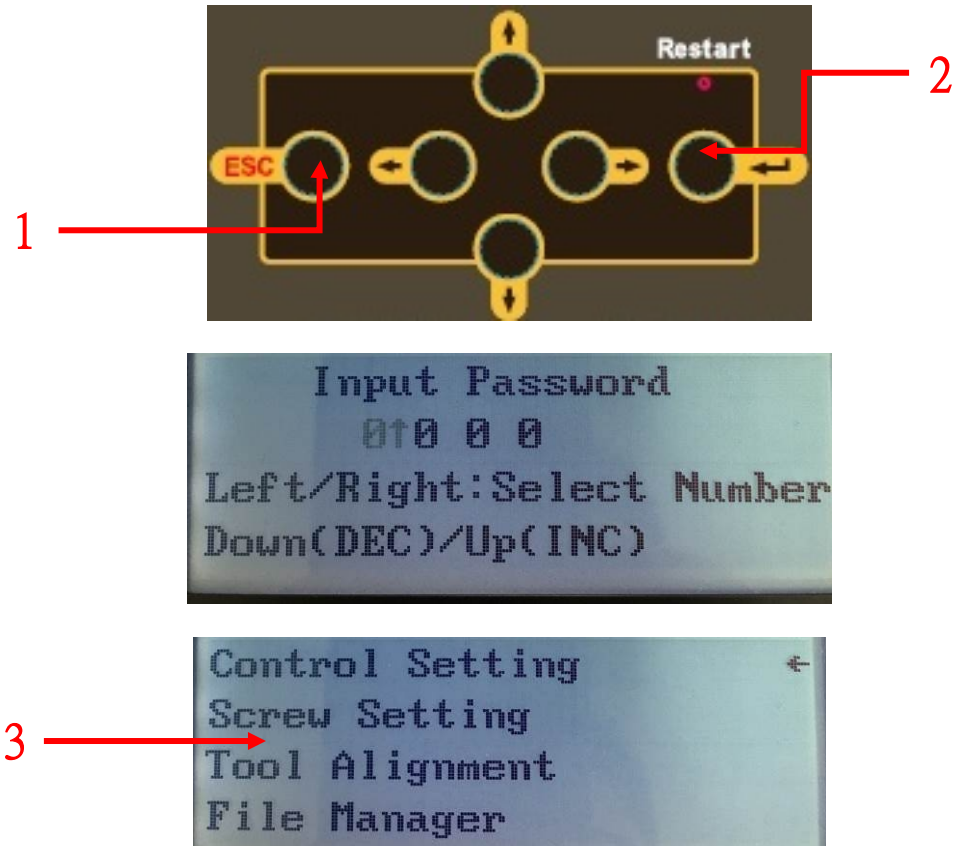


3.2 Enter the Setup Function Page

1. Press and hold the "**ESC**" key for four seconds. When you hear the buzzer "**Beep**" sound, you are on the verification password page. If there is no action for a long time, it will return to the status page.

2. Enter the password as shown in the figure. Press "**Enter**" to go to the next page.

3. According to the figures: **Control Setting, Screw Setting, Tool Alignment & File Manager** etc.; return to the previous page or leave, press "**ESC**" to return to the status page, or select any item and then press "**Enter**" button to go to the next page.



4. Control Setting

Name	Function Explanation	Set Value Options	Default Setting
Operation Mode	STD: Stand-alone mode ADV: KL-AMS Network system (wireless/wired) connection mode	STD/ADV	**STD**
Device ID	Set the device number	1~99	01
Edit Unit	**Unit = Program + Tool** Press “Enter” key and then set “Program” and “Tool”	1~99(Unit) 1~99(Pro) 1~5(Tool)	01 01 01
Job Edit / Total Sequence	Set the “**Job**” for the Sequence first, and then the quantity of “**Total Sequence”** for each job	1~20(Job) 1~20(Seq)	01 01
SEQ. Edit	Set the “Job” for the Sequence first and then the quantity of “**Unit”** and “**OF. (offset)”** for each “**S**”	1~20(Job) 1~20(Seq) 1~99(Unit) +99.99~ –99.99 (offset)	01 01 01 +00.00
Call Job	Select the program of job to start locking	0~20 (Job)	00
Factory Default	Restore to factory status and clear all memory data	Y/N	N
Torque Unit	Set torque display unit	Kgf.cm N.m Kgf.m Lbf.in	Kgf.cm
Brake Signal	After jump off, the duration of brake signal Keep: Continue to next startup and then disappear Release: Disappear as soon as hand-panel is released	Keep/Release	Keep
Barcode Enable	Switch "Job" with the barcode stored in the controller OFF : Turn off barcode switching ON : Turn on barcode switching	OFF/ON	OFF
Save/Scan Job Barcode	Select the work program, switch the bar code used by the work program, each group of bar codes cannot exceed 20 bytes.	1~20	01
Barcode Setting	First set the “Job” From: Set the bar code to judge from the first few characters. Count: There are a few judgment characters from the number of characters to be judged.	NA	NA
Change Password	Set password lock	0000~9999	0000

Sequence Type	1. “OKALL signal” output mode when the “Sequence Type” is “Single” or “Multiple” . 2. Turn OFF/ON Sequence Loop Function. OFF: (1)Sequence process controlled by “DAS” or “AMS” system. (2) Turn OFF Sequence Loop Function. Single : (1) “OKALL signal” output after finished each “Sequence” . (2) Turn ON Sequence Loop Function. Multiple : (1) “OKALL signal” output after finished the “Job” . (2) Turn ON Sequence Loop Function NOTE: In “Single” or“ Multiple” mode, “ASM” system cannot switch the programs and tools execution order externally	OFF Single Multi	OFF
Product Serial Number	Display controller’s serial number	NA	controller’s serial number
Auto Learning	Auto Learning: To enable the automatic learning function, you need to set “**P**” and “**T**” first. After the auto-learning is completed (there is a braking action), you will know which program and which tool the data to store. The screen will display three kinds of data for tools, as “**Time**”, “**Torque”** & “**Thread”** (The three data cannot be 0, to save the parameters after automatic learning)	1~99(Pro) 1~5(Tool)	O1 NA
Gate Mode	Once: One-time artifacts are in place Twice: Two-time artifacts are in place None: Do not start this mode	Once/Twice/None	None
Reverse Mode	Set reverse countdown function Once: Reverse countdown only once Each: Count down each reverse rotation	Once/Each	Once
Batch Mode	Set counter function DEC: countdown; INC: count up	DEC/INC	DEC
Device Time	Set controller time Year/month/day/hour/minute/second	NA	NA
Network Mode	Select data output by WLAN 、 LAN or RS-232	WLAN / LAN / RS-232	RS-232

Thread Finding Mode	ON: Turn on the function, No "NG" is displayed if the tool doesn't shut off and the running time does not exceed "High Time" and the number of turns does not exceed "High Thread" OFF: Turn off the function, "NG" is displayed when a user releases the Lever / Push-start trigger before the tool shutting off NOTE: "Pre Tighten Time" is not applicable to this setting.	ON/OFF	ON
Language Select	Select language interface	Chinese/English	English
Memory Screw Count	The working picture state is retained, and the number of screws locked to zero after the controller is restarted due to power jump or the process of the workpiece is executed from the beginning.	OFF/ON	OFF
Lock Tool	This function allows the starter serial number to lock a set of tool port channels. Any change of the driver or installation on a tool port that is not locked will cause the controller to display "ESD" and trigger the buzzer. Y: lock screwdriver N: Turn off the lock function	N/Y	N
Firmware Version	Display controller firmware version	NA	NA

5. Screw Setting

Name	Function Explanation	Set Value Options	Default Setting
Program	Select program set	1~99	01
Batch Count	Select count value	1~99	05
High Time	The maximum stop time of the screwdriver (The time set at "High Time" after the start of the screwdriver, "NG" will be displayed on the status bar, it can detect stripped or oversize screw).	0.000~9.999	9.999
Low Time	The minimum stop time of the screwdriver (The time set at "Low Time" after the start of the screwdriver, "NG" will be displayed on the status bar, it can check whether the screw is properly fastened or not).	0.000~9.999	0.000
Height Torque	Screwdriver maximum torque range	000.00~550.00	550.00
Low Torque	Screwdriver minimum torque range	000.00~550.00	000.00
High Thread	Screwdriver maximum count thread, but not applicable to tapping screws	0.000~9.999	9.999
Low Thread	Screwdriver minimum count thread, but not applicable to tapping screws	0.000~9.999	0.000

Slow Start Time	Set up the slow start time of the screwdriver	0.000~9.999	0.000
Slow Start Speed	Set up the slow start speed of the screwdriver. L0 (100%), L1~L9 (10%~90%)	L0~ L9	L0
Run Reverse Time	Set up the screwdriver run reverse time	0.000~9.999	0.000
Rev Suspend Time	Set up the screwdriver reverse suspend time	0.001~9.999	0.100
Auto Reverse Time	Set up auto reverse time after screwdriver shut off.	0.000~9.999	0.000
Pre Tighten Time	Set up the screwdriver start automatic pre tighten time	0.000~9.999	0.000
Reconfirm Time	The screwdriver shut off on site does not count if it is within the set time.	0.000~9.999	0.000
Count Thread	After the fastening is completed, confirm the count thread again.	00~99	10
OKALL Alarm Time	Set OKALL signal output time	0.000~9.999	1.000
OK One Time	Set OK One signal output time	0.000~9.999	0.000
NG Stop	Sets the selected handling method when screwdriver error ON: When the error signal “NS” is displayed, immediately stop screwdriver action; the user must press “ENTER” button to cancel forward rotation (if it is the I/O part, input “CFM+GND” for external confirmation, but the screwdriver can be reversed) OFF: When the error signal “NS” is displayed, the screwdriver will not stop; it will not affect the next start, but only sends out alarm	ON/OFF	OFF
OKALL Stop	The handling method selected after setting up counter value is completed. ON: When the operation is completed, immediately stop screwdriver action; the user presses the “ENTER” button to cancel forward rotation (if it is the I/O part, input “CFM+GND” for external confirmation) OFF: When the action is completed, the screwdriver will not stop; it will not affect the next start.	ON/OFF	OFF

5.1 Action Restriction

Mode / Function Name	1	2	3	4
RunReverseTime	V	X	X	X
AutoReverseTime	X	V	X	X
PreTightentTime	X	X	V	X
Reconfirm Time	X	X	X	V

Note: V- can be set, X-OFF
Turn on the “NG Stop” function, when NG occurred in “RunReverse/AutoReverse/PreTightent” time, the screwdriver can still be used without being locked.

6. Description of Displayed Status Code

Code	Description	Release Locking Method
C1	One-time external GATE signal confirmation	External GATE Signal Trigger One-time
C2	Two-time external GATE signal confirmation method	External GATE Signal Trigger Two-time
C3	When “OKALL Stop” function is enabled, LCM screen will display “C3” during OKALL.	Panel Enter Key/external CONFIRM Key
C4	When “OKALL Stop” & “Gate Mode-Once” function are enabled; LCM screen will display “C4” during OKALL.	External Sensor Switch One-time + Panel Enter/external CONFIRM Key
C5	When “OKALL Stop” & “Gate Mode-Once” function are enabled; LCM screen will display “C5” during OKALL.	External Sensor Switch Two-time + Panel Enter/external CONFIRM Key
NST NSQ NSC	NST: Stop time after screwdriver start is less than LT/greater than HT NSQ: Stop torque after screwdriver start is less than LQ/greater than HQ NSC: Stop count thread after screwdriver start is less than LC/greater than HC	Panel Enter Key/external CONFIRM Key
OK	The LCM screen will display “OK” each time the fastening is in position.	NA
OKALL	The LCM screen will display “OK ALL” each time the fastening for the entire batch is in position.	NA
NGT NGQ NGC	NGT: Stop time after screwdriver start is less than LT/greater than HT NGQ: Stop torque after screwdriver start is less than LQ/greater than HQ NGC: Stop count thread after screwdriver start is less than LC/greater than HC	NA

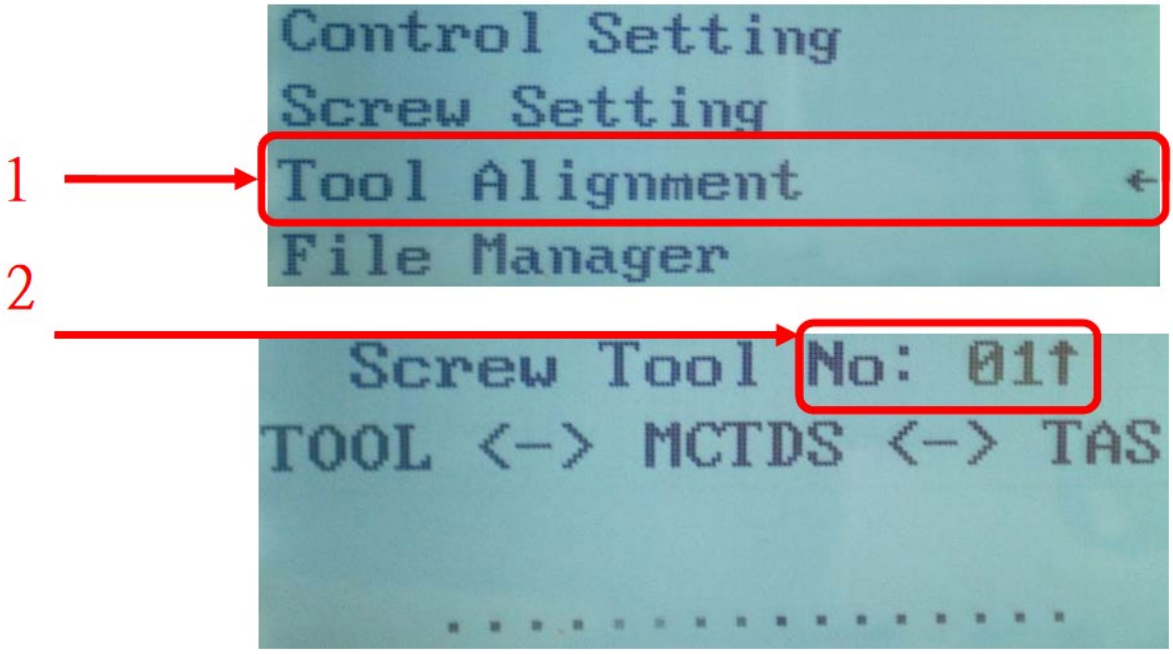
E3	Power-off Protection: When the voltage of the electric screw driver drops instantly, the action of the electric screw driver is stopped, and the LCM displays this symbol, representing that the screw driver is currently under low-voltage protection.	NA
E4	Temperature Protection: When the internal temperature of the electric screw driver is too high, the action of the electric screw driver is stopped, and the LCM displays this symbol, representing that the screw driver is currently under over-temperature protection.	NA
E5	Stall Protection: When the startup of the electric screw driver motor is abnormal, the action of the electric screw driver is stopped, and the LCM displays this symbol, representing that the screw driver is currently under motor startup abnormality protection.	NA
E7	Directional Push Board Fault: When the electric screw driver motor is switched on, as the direction push board is changed, the motor of the screw driver then stops action immediately, and LCM displays this symbol.	NA
E8	Abnormal Brake Signal: When the electric screw driver brake signal detection is abnormal, the action of the electric screw driver is stopped, and the LCM displays this symbol.	NA
E9	Eeprom Fault: When electric screwdriver Eeprom signal detection is faulty, it will stop screwdriver motion and show the symbol on LCM.	NA
Er	GATE Operation Fault: When there is fault with turning on GATE function operation, buzzer will sound intermittently and LCM will show this symbol.	NA
ES	Screwdriver End Communication is Abnormal: When the power screw driver communication signal detection is abnormal, the action of the electric screw driver is stopped, and the LED displays this symbol.	NA
ESC	Screwdriver End Calibration is Abnormal: When the electric screw driver is not calibrated, the LCM displays this symbol.	NA
ESD	Screwdriver End Anti-Interference Cable is Abnormal: When the device is being used and the screwdriver is swapped, replaced, or the interference preventive line is abnormal, the main screen will show “ESD”, indicating that the current wiring may be abnormal, and immediate inspection and repair is recommended. After the inspection and repair is completed, press the “ENTER” button to dismiss it.	Panel Enter Key/external CONFIRM Key
EPC	“ADV Mode” at “Operation Mode”	Set up “STD Mode”

7. Tool Alignment

Operating Environment Construction Diagram

Tool & Torque meter **KL-MCTDS5** **Computer - (TAS Software)**

1. Select “Tool Alignment”.
2. Select the tool to be calibrated, press "Enter key" to confirm, MCTDS5 setup is completed.
   Please refer to "**TAS Operation Manual**" for more complete illustration.

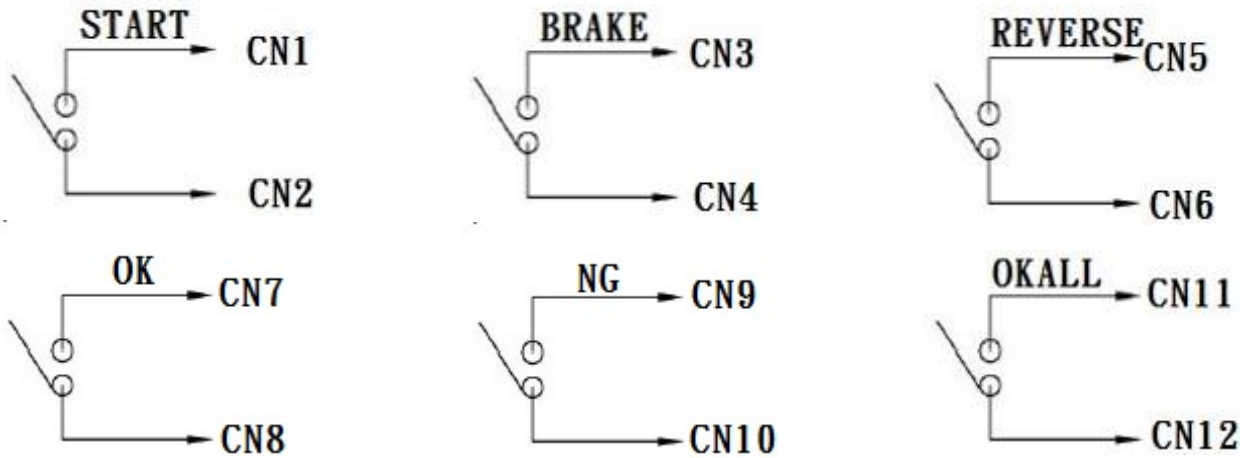


8. File Manager

For internal test only, there is no authorized external access yet.

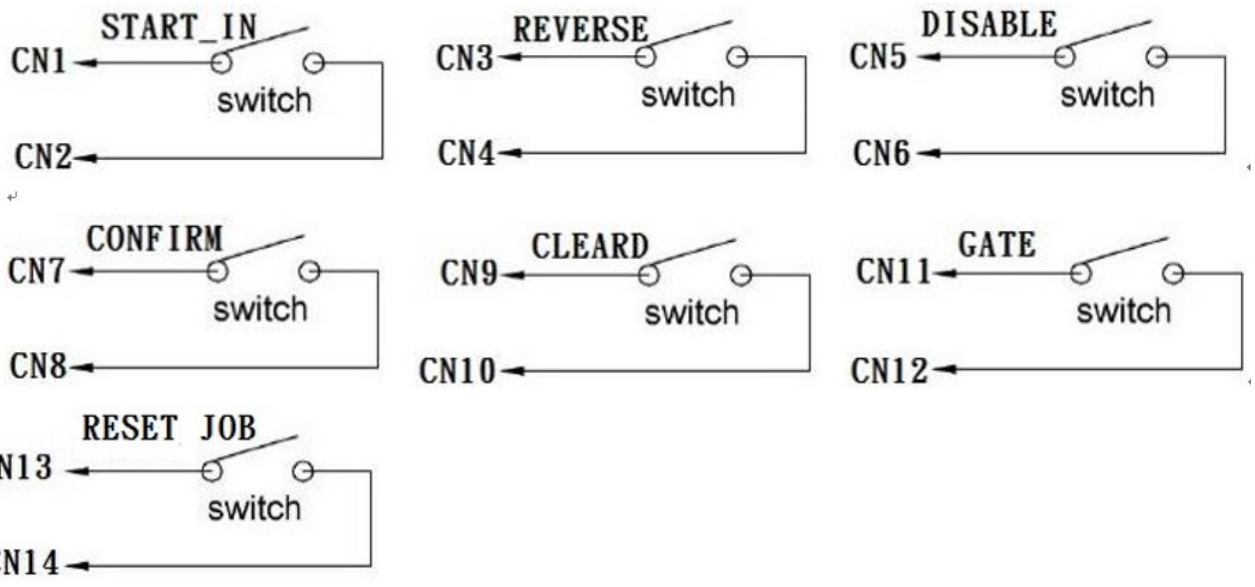
9. External Output Control Function Description

Connector No.	Definition	Function Description
CN 1	START	RUN FWD: CN1 and 2 conducting when starting the screwdriver CN1+CN2 conducting when short-circuit CN1+CN2 breaking when open-circuit
CN 2	COM	
CN 3	BRAKE	Brake: CN3 and 4 conducting when screwdriver brake starts CN3+CN4 conducting when short circuit CN3+CN4 breaking when open-circuit
CN 4	COM	
CN 5	REVERSE	RUN BWD: CN5 and 6 conducting when screwdriver reversed CN5+CN6 conducting when short circuit CN5+CN6 breaking when open-circuit
CN 6	COM	
CN 7	OK	OK: CN7 and 8 conducting when one screw is locked CN7+CN8 conducting when short circuit CN7+CN8 breaking when open-circuit
CN 8	COM	
CN 9	NG	NOK: CN9 and 10 conducting when there is an operation error CN9+CN10 conducting when short circuit CN9+CN10 breaking when open-circuit
CN 10	COM	
CN 11	OKALL	OK BATCH: CN11+CN12 conducting when complete the set number of screwdriver CN11+CN12 conducting when short circuit CN11+CN12 breaking when open circuit
CN 12	COM	
CN 13	Vdc	Output Power 24Vdc/50mA, 12Vdc/100mA
CN 14	GND	Output power GND



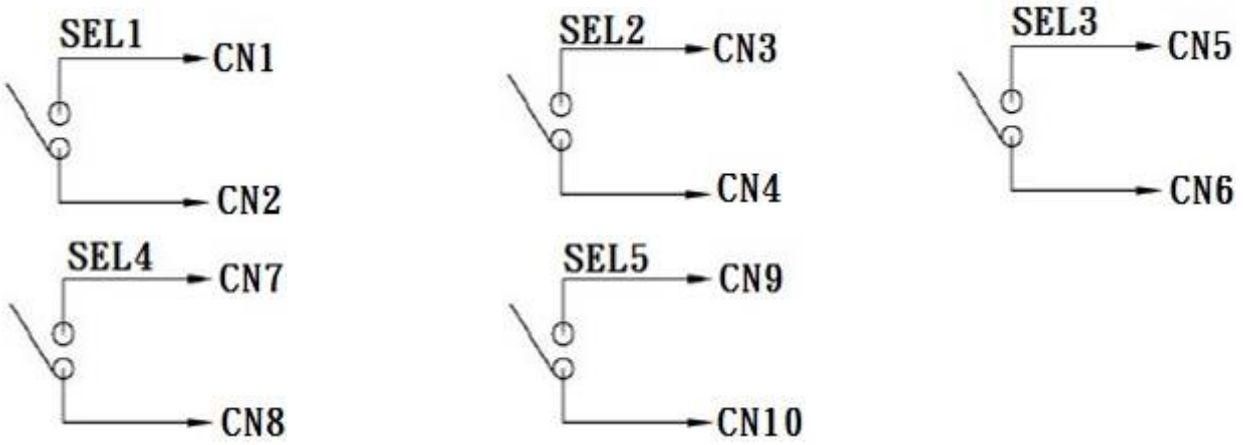
10. External Input Control Function Description

Connector No.	Definition	Function Description
CN 1	External start signal input START_IN	1. The screwdriver starts when the CN1+CN2 is at short-circuit (CLOSE) 2. The screwdriver stops when CN1+CN2 is at open-circuit (OPEN)
CN 2	GND	
CN 3	External Reverse Signal Input REVERSE	1. The external reversal signal CN3+CN4 is short-circuited first (CLOSE). When the activation signal CN1+CN2 is short-circuited (CLOSE), the screwdriver starts reverse rotation. 2. The external reversal signal CN3+CN4 is open-circuited first (OPEN). When the signal CN1+CN2 is short-circuited (CLOSE), the screwdriver starts forward rotation.
CN 4	GND	
CN 5	Disable externally signal input DISABLE	1. Screwdriver cannot start when CN5+CN6 is short-circuited (CLOSE) 2. The screwdriver can start when CN5+CN6 is open-circuited (OPEN)
CN 6	GND	
CN 7	External confirmation button enter CONFIRM	1. When the system requires confirmation, it can be replaced by this CN7+CN8 short circuit (CLOSE) 2. NG signal will be cleared after CONFIRM is run
CN 8	GND	
CN 9	External confirmation button enter CLEARED	When the counter value is to be cleared, the function can be enabled by this CN9+CN10 short-circuit (CLOSE).
CN 10	GND	
CN 11	External sensor switch GATE	1. Enter a confirmation signal for the machine to determine the locked object as a valid value 2. Inductive switch: external switch in operation, connect one or two switches 3. For any switch connection, CN14 must be connected
CN 12	GND	
CN 13	External confirmation button enter RESET JOB	When the Job is to be reseted, the function can be enabled by this CN13+CN14 short-circuit (CLOSE).
CN 14	GND	



11. TOOL External Output Function Description

Connector No.	Definition	Function Description
CN 1	SEL1	TOOL lamp signal is enabled by CN1+CN2 short-circuit (CLOSE)
CN 2	COM	
CN 3	SEL2	TOOL lamp signal is enabled by CN3+CN4 short-circuit (CLOSE)
CN 4	COM	
CN 5	SEL3	TOOL lamp signal is enabled by CN5+CN6 short-circuit (CLOSE)
CN 6	COM	
CN 7	SEL4	TOOL lamp signal is enabled by CN7+CN8 short-circuit (CLOSE)
CN 8	COM	
CN 9	SEL5	TOOL lamp signal is enabled by CN9+CN10 short-circuit (CLOSE)
CN10	COM	



CTDS V2.0/MCTDS5 Data transmission description and flow control suggestion

VER:2020060201

1. Controller power on and time synchronization

   After controller is power on, it will send data {REQ0...} each second to inform external device such as computer、PLC、AMS. It needs to reply {CMD0,....} that controller function normally and controller time.

   If the controller does not receive {CMD100,....},{REQ100,...}will be sent again after 10 seconds.

2. When controller received barcode information, it will send scanned data and data format as {REQ1....} to external device for control judgement or record saving. External device needs to reply {CMD0....}

3. After controller is power on and screwdriver shut off, brake signal format as {DATA0, ...} will be send. Every shut off will cause column 6 (no. of total tightening on controller) to increase by 1. External device needs to reply {CMD0,....}, if not, CMD0 will keep on sending DATA0(only update date time) and column 6 (no. of total tightening on controller) value will remain unchanged.

4. Shut off data will be sent after each shut off. Use the column 6 (no. of tightening on controller) to judge if there it is a new shut off data or not.

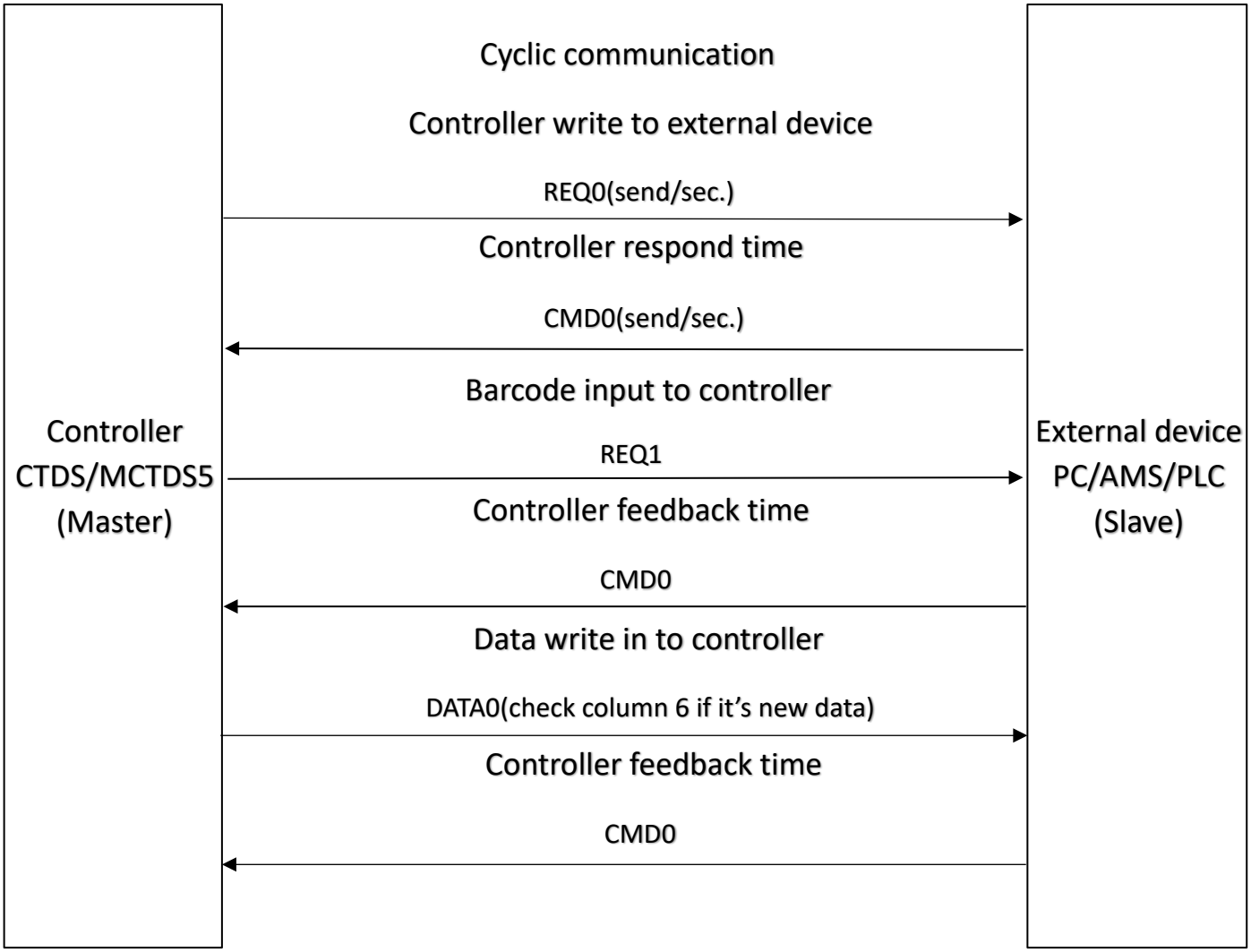
5.When controller receive feedback and format as {CMD0,....} from external device, controller will resume to automatically send {REQ0,...} and be able to configure controller time.

6. Recommended software control flow as below:

   P.S: The content of [CMD0] in flow as the below:

{CMD0,0,0,0,0,0,0,YEAR,MONTH,DAY,HOUR,MINUTE,SECOND,0000,0000}

str8 0001~9999 YEAR
str9 01~12 MONTH
str10 01~31 DAY
str11 00~23 HOUR
str12 00~59 MINUTE
str13 00~59 SECOND
str14 0000-9999 Check Sum(year, month, day, hour, mimute, and second plus sum)
str15 0000-9999 Key Code(Check Sum + 5438)


Cyclic communication
Controller write to external device
REQ0(send/sec.)
Controller respond time
CMD0(send/sec.)
Barcode input to controller
Controller
CTDS/MCTDS5
(Master)
REQ1
Controller feedback time
External device
PC/AMS/PLC
(Slave)
CMD0
Data write in to controller
DATA0(check column 6 if it's new data)
Controller feedback time
CMD0

Kilews KL-CTDS-2.0&KL-MCTDS5 Basic Data Output Protocol Description

(Ver1.0_20210302_01)

COMPORT Setting:Baud rate : 115200/9600(CTDS 1.7X), Data bit : 8 , Stop bit : 1, Parity bit :NON

Serial communication Mode -ASCII (American Standard Code for Information Interchange)

There are three basic data output formats send from device (CTDS/MCTDS) to external system (DAS/AMS/Other System) via the buildin RS232 port on the device :

1.Command {REQ0} : Send from Device to Host (Send device status to host per second after device startup ready)

2.Command {REQ1} : Send from Device to Host (Send barcode data to host immediately after barcode scaned a data)

3.Command {DATA0} : Send from Device to Host (Send last shutoff data to host immediately and repeat per second after screwdriver shutoff)

4.Command {CMD0} : Send from Host to Device (Host respond system time to device)

ps : 1.Device will change output data from {DATA0} to {REQ0} after read {CMD} from external system

2.The character position in the string does not contain a comma

1. {REQ0} Data format/example {REQ0,01,00,001,5555566666_____,01_____,1,1,1,01,01,1,0000000001,2.123,2.15,1,0,0,001/005,2018,08,02,13,23,02,2066,7504}

Field	Parameter	Value	Data Type	String Length	Position	Description
1	Header+CMD	{REQ0	String	5 Byte	1-5	Header+Command code
2	Sequence ID	01 ~ 20	String	2 Byte	7-8	CTDS = 1 - 8, MCTDS = 1 - 20
3	Job ID	00~ 20	String	2 Byte	10-11	CTDS = 1, MCTDS = 1-20,Default=0
4	Device ID	001 ~ 255	String	3 Byte	13-15	Device index number arranged in the same assembly line (or workstation) (CTDS:1-255 , MCTDS5:1-99)
5	Tool SN	20 Byte	String	20 Byte	17-36	Screwdriver serial no. Less than 20 Bytes ,fill the underline"_".
6	Device SN	20 Byte	String	20 Byte	38-57	Device serial no. Less than 20 Bytes ,fill the underline"_".
7	Device Operation Mode	0~3	String	1 Byte	59	Mode : 0 : ADV (Connection mode), 1 : STD (Standalone Mode), 2 : ALI (Alignment mode) , 3 : SET(Setting mode)
8	Sequence Control Mode	0~1	String	1 Byte	61	0 : Sequence control mode 1 : Skip sequence mode
9	Setting Status	0~1	String	1 Byte	63	Setting status (Received command executed status) 0 : fales, 1 : success
10	Select Tool	01~09	String	2 Byte	65-66	Selected Tool (Current activated screwdriver)
11	Program Unit	01~99	String	2 Byte	68-69	Selected Unit Program
12	Device Type	0~3	String	1 Byte	71	Device type (0: 1.7x CTDS,1: 2.0 CTDS, 2: MCTDS, 3: WSCBSN)
13	Tool Connect & Keylock	0000000000(10 Byte)	String	10 Byte	73-82	Screwdriver connection status and Keylock state (1: Connect, 0: Not connect) (Byte 1-9 indicate screwdriver connected or disconnected to controller from right to left order, byte 10th is keylock state)
14	Device Version	0.000~9.999	String	5 Byte	84-88	Device firmware version
15	Tool Version	0.00~9.99	String	4 Byte	90-93	Screwdriver firmware version
16	Tool Enable/Disable Status	0~1	String	1 Byte	95	Screwdriver status (0: Disable, 1: Enable)
17	Tool Stop Status	0~9,A~J	String	1 Byte	97	Tool Stop Status (0: None , 1:NS, 2:AS, 3:E3, 4:E4, 5:E5, 7:E7, 8:E8, 9:BS, A:EPC, B:ESC, C:ES, D:Er, E:C1, F:C2, G:C4, H:C5 I:ESD J:EA) EA has an abnormal communication in CTDS 1.7X version. The appearance of EA in MCTDS5 means bad RS485 communication. C3 appears for AS so it will send 2. BS only appear on the MCTDS5
18	Device extend function	0~1	String	1 Byte	99	Device extend function code (0: None, 1:Clear Batch)
19	Screw count	000~250/001~250	String	7 Byte	101-107	Remaining screws/Total screws
20	Year	0001~9999	String	4 Byte	109-112	Year
21	Month	01~12	String	2 Byte	114-115	Month
22	Date	01~31	String	2 Byte	117-118	Date
23	Hour	00~23	String	2 Byte	120-121	Hour(24 hours)
24	Minute	00~59	String	2 Byte	123-124	Minute
25	Second	00~59	String	2 Byte	126-127	Second
26	Check Sum	0000~9999	String	4 Byte	129-132	
27	Key Code	0000~9999}	String	5 Byte	134-138	Key Code+Tail
28						ASCII code LF
29						ASCII code CR
			{REQ0,... }Total:138 Byte,27 Field			
Remark	Item 1 to 27 are separated by "," (ASCII 0x2c)					

2. {REQ1} Barcode format/example {REQ1,6910066016096,2018,08,02,16,33,33,2110,7548}

Field	Parameter	Value	Data Type	String Length	Position	Description
1	Header+CMD	{REQ1	String	5 Byte	1-5	Header+Command code
2	Barcode	1~30 Byte	String	30 Byte	7-36	Barcode data
3	Year	0001~9999	String	4 Byte	38-41	Year
4	Month	01~12	String	2 Byte	43-44	Month
5	Date	01~31	String	2 Byte	46-47	Date
6	Hour	00~23	String	2 Byte	49-50	Hour(24 hours)
7	Minute	00~59	String	2 Byte	52-53	Minute
8	Second	00~59	String	2 Byte	55-56	Second
9	Check Sum	0000-9999	String	4 Byte	58-61	
10	Key Code	0000-9999}	String	5 Byte	63-67	Key Code+Tail
11						ASCII code LF
12						ASCII code CR
			{REQ1, ... }Total: 67Byte,10 Field			
Remark	Item 1 to 10 are separated by "," (ASCII 0x2c)					

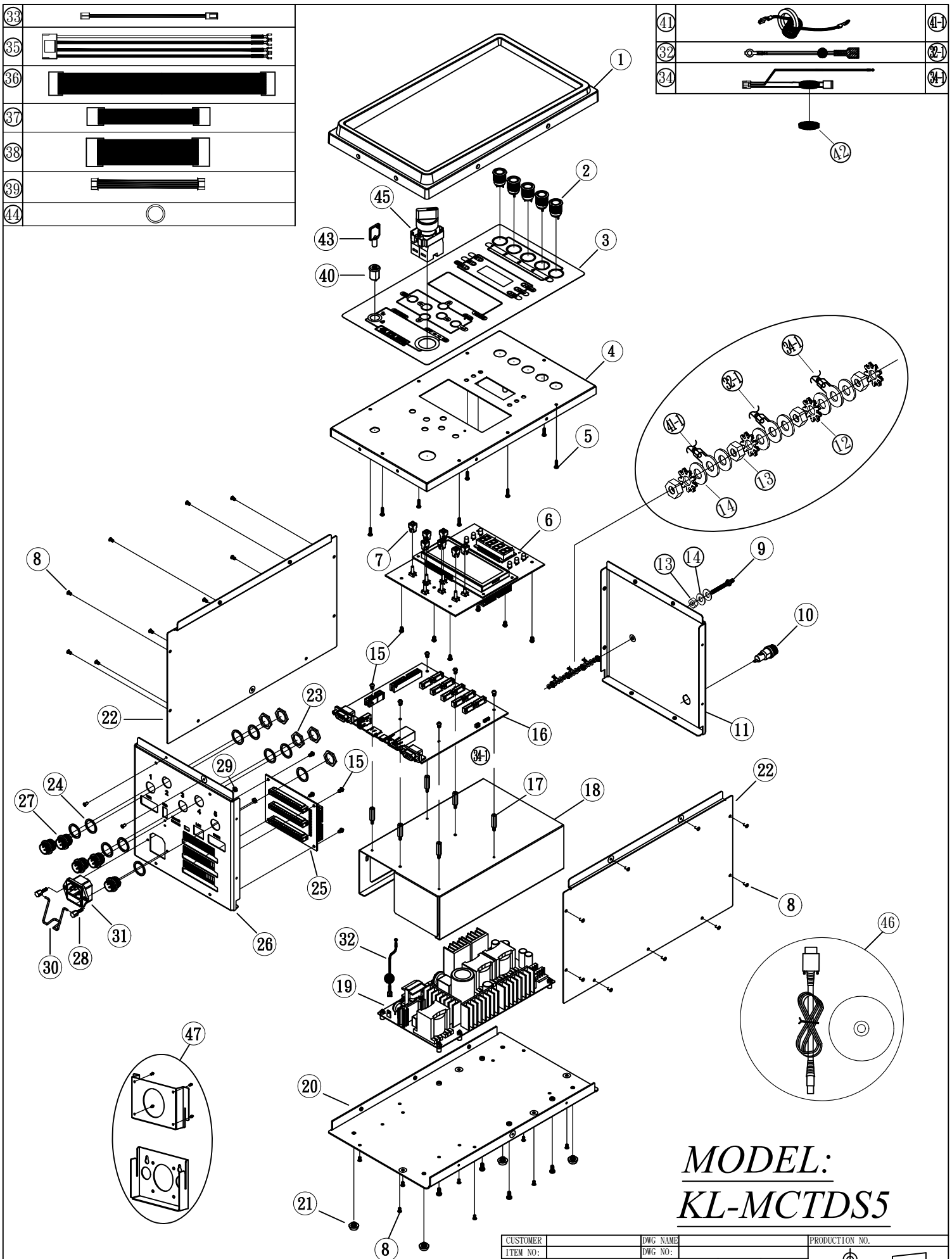
3. {DATA0} Data format/example {DATA0,1,001,2344_____,1y_____,0000000002,01,01,0002.4800,kgf.cm,0000.2100,0002.4000,003/005,INC,OK___,1,0,0,0002.4800,00339,2019,02,22,11,51,51,2156,7594}

Field	Parameter	Value	Data Type	String Length	Position	Description
1	Header+CMD	{DATA0	String	6 Byte	1-6	Header+Command code
2	Device Type	0~3	String	1 Byte	8	Devic type (0: 1.7x CTDS 1: 2.0 CTDS 2: MCTDS 3: WSCBSN)
3	Device ID	001~255	String	3 Byte	10-12	Device index(Exclusive in the same AMS system) (CTDS:1-255 , MCTDS5:1-99)
4	Tool SN	20 Byte	String	20 Byte	14-33	Screwdriver serial no. Less than 20 Bytes ,fill the underline"_".
5	Device SN	20 Byte	String	20 Byte	35-54	Devicer serial no. Less than 20 Bytes ,fill the underline"_".
6	Device Count	0000000001~9999999999	String	10 Byte	56-65	Device accumulated shutoff count after poweron
7	Program unit	01~99	String	2 Byte	67-68	Selected Program unit
8	Select Tool	01~09	String	2 Byte	70-71	Selected Tool (Activated screwdriver)
9	Torque	0000.0000~0550.0000	String	9 Byte	73-81	Shutoff troque
10	Torque unit	kgf.cm, N.m, lbf.in, kgf.m	String	6 Byte	83-88	Troque unit Less than 6 Bytes ,fill the bottom line"_".
11	Fastening time	0000.0000~0009.9990	String	9 Byte	90-98	Fastening time(ms)
12	Fastening thread	0000.0000~0999.9000	String	9 Byte	100-108	Fastening thread
13	Screw count	000~250/001~250	String	7 Byte	110-116	Remaining screws/Total screws
14	INC/DEC	INC,DEC	String	3 Byte	118-120	Batch Mode:Increase , Decrease
15	Status	OK,NGT,NGQ,NGC,OKALL,REV	String	5 Byte	122-126	Fastening status OK:Each time when the fastening is complete. NGT: stop time is earlier than L/later than H. NGQ: stop torque is less than L/more than H. NGC: stop number of turns is less than L/more than H. OKALL:Each time when a batch is complete. REV:Reverse Less than 5 Bytes ,fill the underline"_"

16	Device Operation Mode	0~3	String	1 Byte	128	Mode: 0 : ADV (Connection mode), 1 : STD (Standalone Mode), 2 : ALI (Alignment mode) , 3 : SET(Setting mode)
17	Tool Stop Status	0~9,A~J	String	1 Byte	130	Tool Stop Status (0: None , 1:NS, 2:AS, 3:E3, 4:E4, 5:E5, 7:E7, 8:E8, 9:BS, A:EPC, B:ESC, C:ES, D:Er, E:C1, F:C2, G:C4, H:C5 I:ESD J:EA) EA has an abnormal communication in CTDS 1.7X version. The appearance of EA in MCTDS5 means bad RS485 communication. C3 appears for AS so it will send 2. BS only appear on the MCTDS5.
18	Torque Filter	0~250,255	String	3 Byte	132-134	Torque filter (0:No filter,1-250 : Filter count,255:Unlimited Filter) CTDS 2.124 and MCTDS5 2.005 version add infinite filtering and modify 20 times to 250 times
19	Pre-filtering torque	0000.0000~0550.0000	String	9 Byte	136-144	Pre-filtering torque This field is only available for CTDS 2.124 and MCTDS5 2.006.
20	Current value	00000-65535	String	5 Byte	146-150	Current value This field is only available for CTDS 2.124 and MCTDS5 2.006.
21	Year	0001~9999	String	4 Byte	152-155	Year
22	Month	01~12	String	2 Byte	157-158	Month
23	Date	01~31	String	2 Byte	160-161	Date
24	Hour	00~23	String	2 Byte	163-164	Hour(24 hours)
25	Minute	00~59	String	2 Byte	166-167	Minute
26	Second	00~59	String	2 Byte	169-170	Second
27	Check Sum	0000-9999	String	4 Byte	172-175	
28	Key Code	0000-9999}	String	5 Byte	177-181	Key Code+Tail
29						ASCII code LF
30						ASCII code CR
			{DATA0, ... }Total:181 Byte,28 Field			
Remark	Item 1 to 28 are separated by "," (ASCII 0x2c)					

4. {CMD0} Data format/example	{CMD0,0,0,0,0,0,0,2018,09,03,18,45,19,2112,7550}					
Field	Parameter	Value	Data Type	String Length	Position	Description
1	Header+CMD	{CMD0	String	5 Byte	1-5	Header+Command code
2	Device Name	0~1	String	1 Byte	7	Device Name(0: AMS, 1: DAS)
3	unused	0	String	1 Byte	9	unused
4	unused	0	String	1 Byte	11	unused
5	unused	0	String	1 Byte	13	unused
6	unused	0	String	1 Byte	15	unused
7	unused	0	String	1 Byte	17	unused
8	Year	0001~9999	String	4 Byte	19-22	Year
9	Month	01~12	String	2 Byte	24-25	Month
10	Date	01~31	String	2 Byte	27-28	Date
11	Hour	00~23	String	2 Byte	30-31	Hour(24 hours)
12	Minute	00~59	String	2 Byte	33-34	Minute
13	Second	00~59	String	2 Byte	36-37	Second
14	Check Sum	0000-9999	String	4 Byte	39-42	
15	Key Code	0000-9999}	String	5 Byte	44-48	Key Code+Tail
16						ASCII code LF
17						ASCII code CR
			{CMD0, ... }Total: 48Byte,15 Filed			
Remark	1.Item 1 to 15 are separated by "," (ASCII 0x2c) 2.Reply to CMD0 when the time is inconsistent or repeat {DATA0}					

Communication interface :	RS-232C 9 Pin Female (DCE) to PC or PLC (DTE)		
Connection RS232 :	1.Barcode scanner	Connection method:KL-CTDS	Connection method:KL-MCTDS5
PORT1			
	2.WIFI module	Connection method:KL-CTDS	Connection method:KL-MCTDS5
PORT2			
Remark	※When the trip information (DATA0) is continuously transmitted, it can be judged by the field six。		



CUSTOMER		DWG NAME			PRODUCTION NO.		
ITEM NO:		DWG NO:					
TITLE:		MATERIAL		SHRINK			
		DES. BY		DATE	THIRD ANGLE PROJECTION.		
		CHKD. BY		DATE	UNIT	SCALE	SHT NO.
		APPD. BY		DATE			OF SHTS.

No.	PARTS NO.	PARTS NAME-E	PARTS NAME-C	Q'ty	No.	PARTS NO.	PARTS NAME-E	PARTS NAME-C	Q'ty
1	EC30004	Plastic frame	塑膠框	1	25	EG31545B	PCB-IO	機板成品 IO背板	1
2	K41400-5	LED Ass'y	LED 指示燈	5	26	CAD00002	Housing-Front Side	前蓋	1
3	YTM0175	Sticker-Model	麥拉貼紙	1	27	PZ50165-23	Connector (BC6Pin)	插座半成品-BC6Pin	5
4	CAA10004	Housung-Upside	上蓋	1	28	CH20102-6	Srew	六角螺絲	2
5	CH20161-3	Srew PTP-3*8LP	螺絲 PTP-3*8LP	8	29	CH20403	Bolt	螺帽 黑色	2
6	EG31545	P.C.B	機板成品 電流偵測扭力顯示	1	30	E31801	Plug fixer	扣環 U型	1
7	C50226-1	Button	按鍵開關蓋	7	31	P11505	Socket (with fuse)	AC插座(附保險絲座)	1
8	CH30222-1	Srew M3*0.5P*5L I	螺絲 M3*0.5P*5L I	36	32	CH50696-7	Grounding Means-350mm	接地線-350mm	1
9	CH20535	Srew M4*38L	螺絲 M4*38L	1	33	P11402-14	2Pin Plug	雙接頭半成品	1
10	E31502-5	Fuse	保險絲座	1	34	E31718-10	3Pin Plug	3P 排插頭含線 360mm	1
11	CAC00002	Housing-backside	後蓋	1	35	E31708-4	5Pin Plug	5P 排插含端子 380mm	1
12	CH20302	Washer	外齒型華司	4	36	WE31726-4-A1	24Pin Plug	24P 雙排插頭含線 220mm	1
13	CH20401	Bolt	螺帽	5	37	E31726	16Pin Plug	16P 雙排插頭含線 120mm	1
14	CH20301	Washer	華司	8	38	E31726-2	26Pin Plug	26P 雙排插頭含線 120mm	1
15	CH20505-6	Srew M3*5mm	螺絲 圓頭 M3*5	16	39	E31708-3	5Pin Plug	5P 雙頭排插含線 150mm	1
16	EG31545C	PCB	機板成品 電流偵測扭力顯示	1	40	P11404-9	Key Switch ASS'Y	鑰匙開關半成品	1
17	W50122	Spacer Support	PC板間隔柱	6	41	E31315	Inductor	電感	1
18	C50229	Plastic frame	防護蓋	1	42	ED30004	Filter	電磁夾	1
19	EG50101-38-1	PCB	機板成品 AO1160M-40C3A	1	43	P11404-6	Key	鑰匙	1
20	CBA10004	Housing-Underside	下蓋	1	44	X42117-2	Button cell battery	鈕扣電池	1
21	CH20103-3	Rubber Shim	腳墊	4	45	P11403-4	Selector switch	電壓選擇開關	1
22	C50228	Side housing	側蓋	2	46	P11307	USB Converter	USB 轉換器	1
23	X10068	Bolt	螺帽	5	47	PP0119	Mounting accessory	配件包 掛勾組	1
24	X10067	Washer	墊片	10					