KL-GTCS User Manual

Model：KL-GTCS

V1.29

KILEWS INDUSTRIAL CO., LTD.

https://www.kilews.com.tw

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1. Product specification introduction

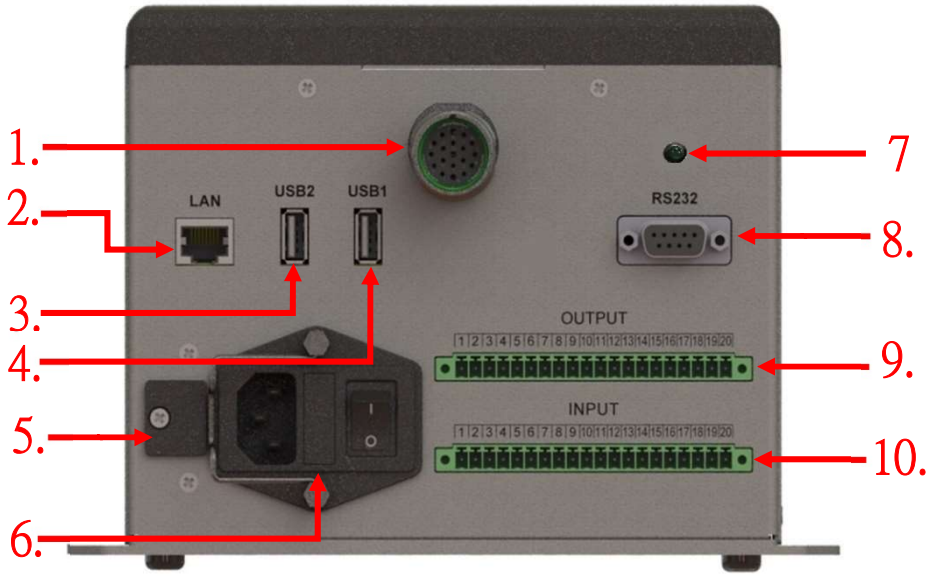
Model	KL-GTCS		
Import Voltage	AC 115V / 230V		
Import Frequency	50 - 60Hz		
Import Current	6.3A		
Import Voltage	DC 40V		
Export Current	Max 9A		
Export Power	360W		
Size (mm)	266*180*145.1		
Weight (g)	4080		
DC screwdriver model:	SGT-CS303 series	Working Time	1s ON / 3s OFF
	SGT-CS505 series		1s ON / 3s OFF
	SGT-CS712 series		1s ON / 3s OFF
	SGT-LCS505 series		1s ON / 3s OFF
	SGT-LCS712 series		1s ON / 3s OFF
	SGT-CS303T series		1s ON / 3s OFF

2. Appearance

2.1 Panel

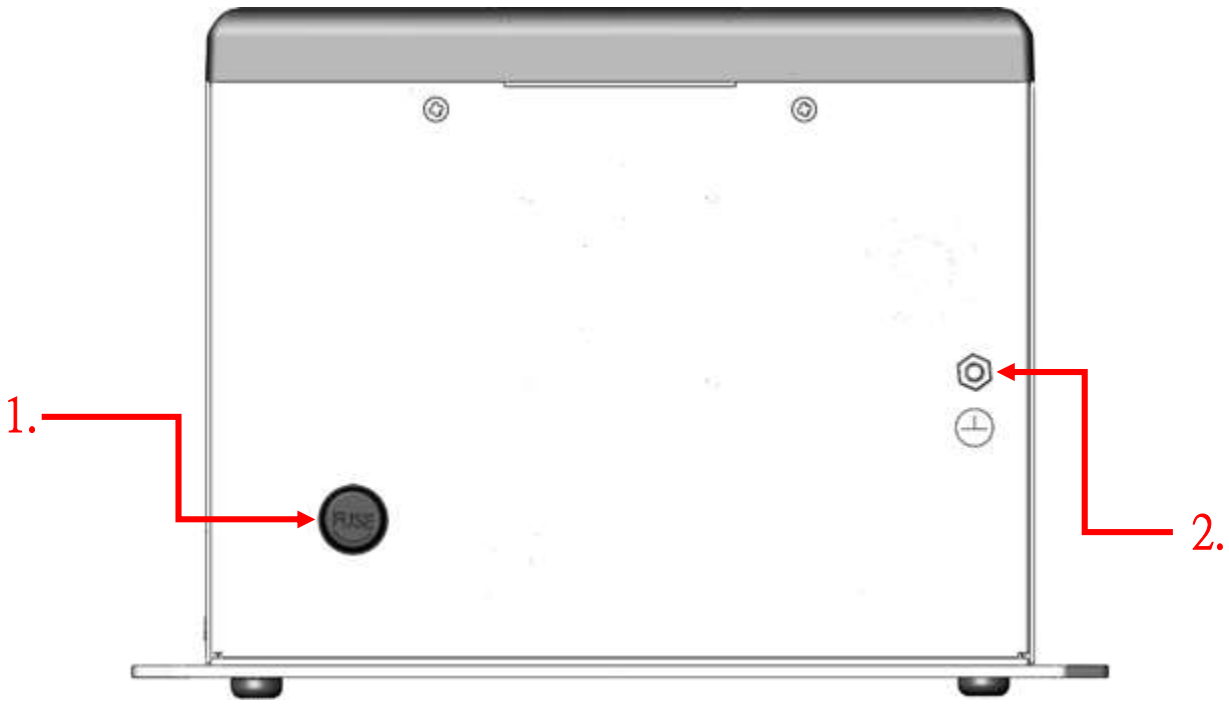
2.2 Bottom

1.	Tool connection seat	6.	Power cord socket and power switch
2.	Wired communication port	7.	LED Indicator: The lights will turn on for normal operation and standby/sleep mode. If the lights do not turn on, it indicates a malfunction.
3.	Export/configuration file export/import/update software/scanner for lock data, USB type-A	8.	Prcol export port
4.	Export/configuration file export/import/update software/ scanner for lock data, USB type A	9.	Export screwdriver signal port
5.	Voltage changeover switch	10	Import control screwdriver signal port



2.3 Upper cover

1.DC fuse seat (incl. 15A fuse)
2. Grounding terminal seat (FG)



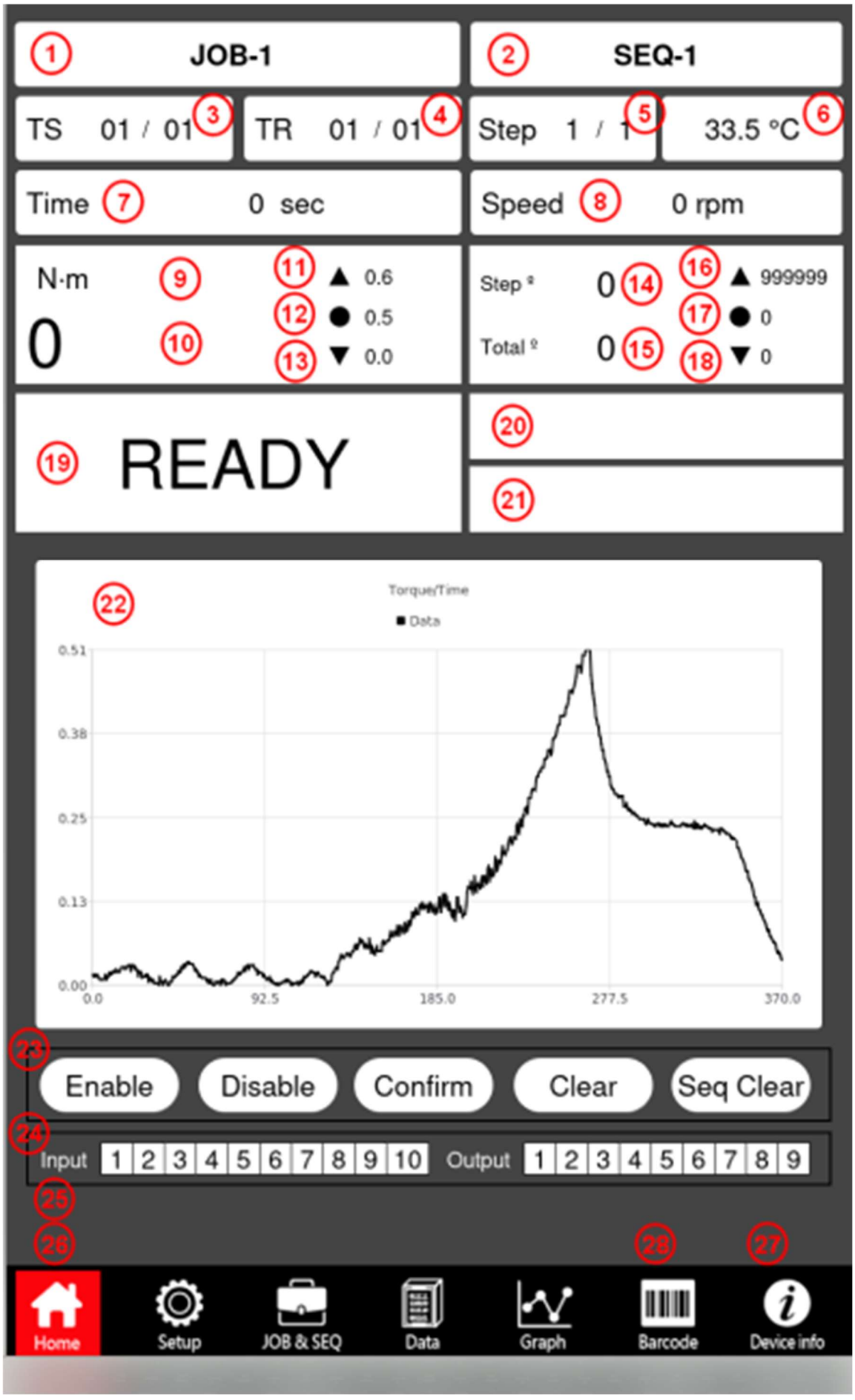
3. First page

3.1. Style 1

Main page	Description
1. Lock mode	Normal / Advanced.
2. Edit job name	Displays the name of the currently running edit job.
3. Edit job status	 Enable: Tool is applicable.
	 Disable: Tool not applicable; the operation and screwdriver red indicators flash.
4.System time	Display system time.
5.Number of Sequences	Current sequence / total number of sequences.
6.Sequence name	Display the name of the currently running sequence.
7.Number of locks	Current number/total number.
8.Steps	Display the run steps. The current step displays a picture with black text on a white background; the step that has been run display a picture with white text on a black background.
9.Torque unit	Set up torque display unit.
10.Torque value	Display the running/locking torque values.
11.Target Torque	Display the target torque setting.
12.High Torque	Display the upper limit of torque setting.
13.Low Torque	Display the lower limit of torque setting.
14.Step Angle	In process / Value of Step Angle.
15.Total Angle	In process / Value of Total Angle.
16.Target Angle	Display the target angle setting.
17.High Angle	Display the upper limit of angle setting.
18.Low Angle	Display the lower limit of angle setting.
19.Fastening state	Display fastening status (READY.OK.NG.NS.OK-SEQ.OK-JOB… etc.).
20.Abnormal message	Display abnormal message of lock/controller.
21.System information	Display system judgment message.
22.Control function	Enabled: Tool is at runnable state. Disabled: The tool is disabled from operation. Confirm: Release status. Clear: The screw number is counted from zero. Sequence Clear: Return to the first sequence.
23.IO display	Display import / export setting indicator.
24.Barcode	Display the scanned barcode.
25.Barcode length	Display the total length of scanned barcode.
26.Save	Display the location of the inserted storage device.
27.DT/TT	Display DT/TT status occurrence.

Function page icons		Description
First page		Display lock information, screwdriver status, barcode, import / export, and function buttons.
Setting		Login password, normal setting, advanced setting, tool setting, controller setting, input setting, output setting, system setting, and calibration setting.
Edit job /Sequence		Select edit job and sequence to perform switching.
Data		Display historic lock data, export lock data, import/export configuration files, Curve data.
Chart		Displays the locking result chart.
Barcode		Barcode setting.
Information		Display controller/tool information.

3.2. Style 2


1
JOB-1
2
SEQ-1
TS 01 / 01
3
TR 01 / 01
4
Step 1 / 1
5
33.5 °C
6
Time
7
0 sec
Speed
8
0 rpm
N·m
9
0
10
11
▲ 0.6
12
● 0.5
13
▼ 0.0
Step º
14
0
Total º
15
0
16
▲ 999999
17
● 0
18
▼ 0
19
READY
20
21
22
Torque/Time
Data
0.51
0.38
0.25
0.13
0.00
0.0
92.5
185.0
277.5
370.0
23
Enable
Disable
Confirm
Clear
Seq Clear
24
Input 1 2 3 4 5 6 7 8 9 10
Output 1 2 3 4 5 6 7 8 9
25
26
28
27
Home
Setup
JOB & SEQ
Data
Graph
Barcode
Device info

Main page	Description
1. Edit job name	Display current job name
2. Sequence name	Display current sequency name
3. Number of Sequences	Current Sequency Type/ Sequency quantity
4.Number of locks	Current number/total number.
5. Steps	Current step/ Sum of steps
6. Controller temperature	Displays the current controller temperature.
7. Sum of the Tightening Time	Display current time spent of tightening
8. Speed	Displays the running speed.
9.Torque unit	Display torque unit
10.Torque value	Display the running/locking torque values.
11.High Torque	Display the upper limit of torque setting.
12.Target Torque	Display the target torque setting.
13.Low Torque	Display the lower limit of torque setting.
14.Step Angle	Display operating/ step angle value
15. Total Angle	Display operating/ total angle value
16. High Angle	Display the upper limit of angle setting.
17. Target Angle	Display the target angle setting.
18. Low Angle	Display the lower limit of angle setting.
19.Fastening state	Display fastening status (READY.OK.NG.NS.OK-SEQ.OK-JOB… etc.).
20. Abnormal message	Display abnormal message of lock/controller.
21. System information	Display system judgment message.
22. Chart	Display current tightening chart
23. Control function	Enable: Tool is at runnable state. Disable: The tool is disabled from operation. Confirm: Release status. Clear: The screw number is counted from zero. Seq Clear: Return to the first sequence.
24. IO display	Display import / export setting indicator.
25. Barcode	Display the scanned barcode.
26. Barcode length	Display the total length of scanned barcode.
27. Save device	Display the location of the inserted storage device.
28.DT/TT	Display DT/TT status occurrence.

Function page icons		Description
First page		Display lock information, screwdriver status, barcode, import / export, and function buttons.
Setting		Login password, normal setting, advanced setting, tool setting, controller setting, input setting, output setting, system setting, and calibration setting.
Edit job /Sequence		Select edit job and sequence to perform switching.
Data		Display historic lock data, export lock data, import/export configuration files, Curve data.
Chart		Displays the locking result chart.
Barcode		Barcode setting.
Information		Display controller/tool information.

4. Setting

4-1. Login

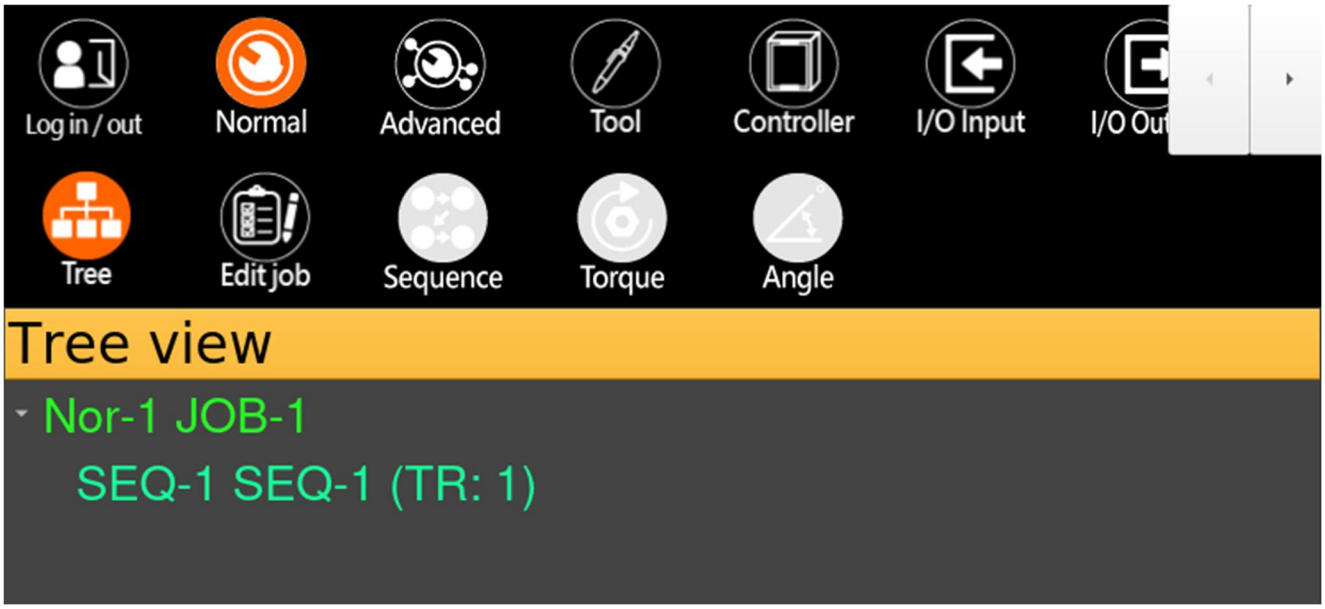
Operation
1. No Login: The function icons are not selectable and appear in grey.
2. Login Password : Default password : 0000
3. choose Login

1. Login : The function icons selectable and appear in black.
2. Reboot : Requires re-login

Logout **:** Exit the parameter setting.

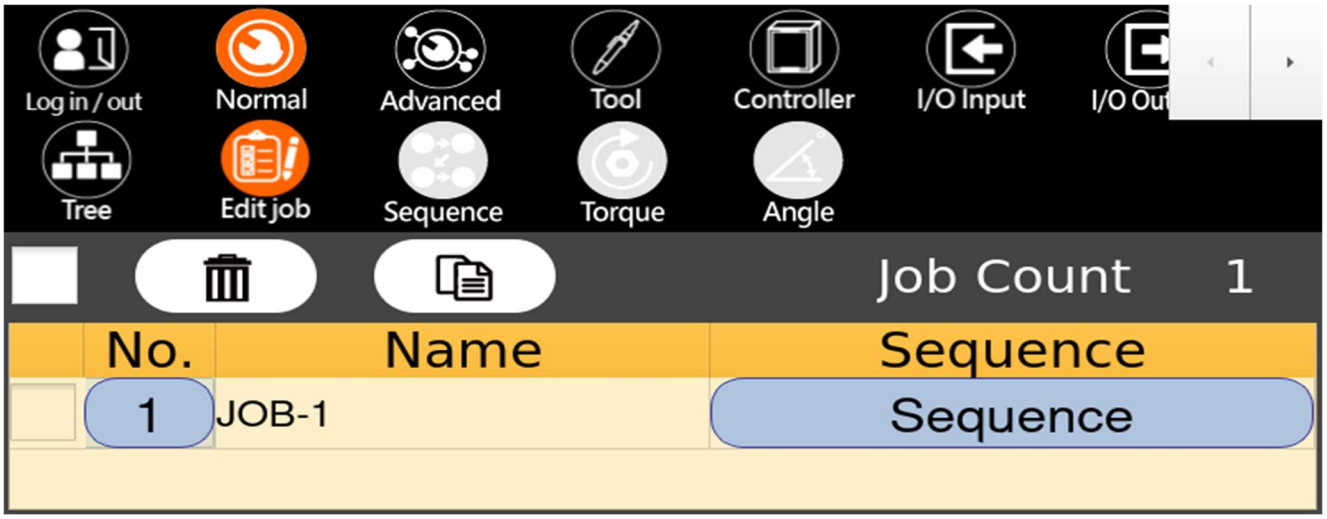
4-2. Normal

4-2-1.Tree View:



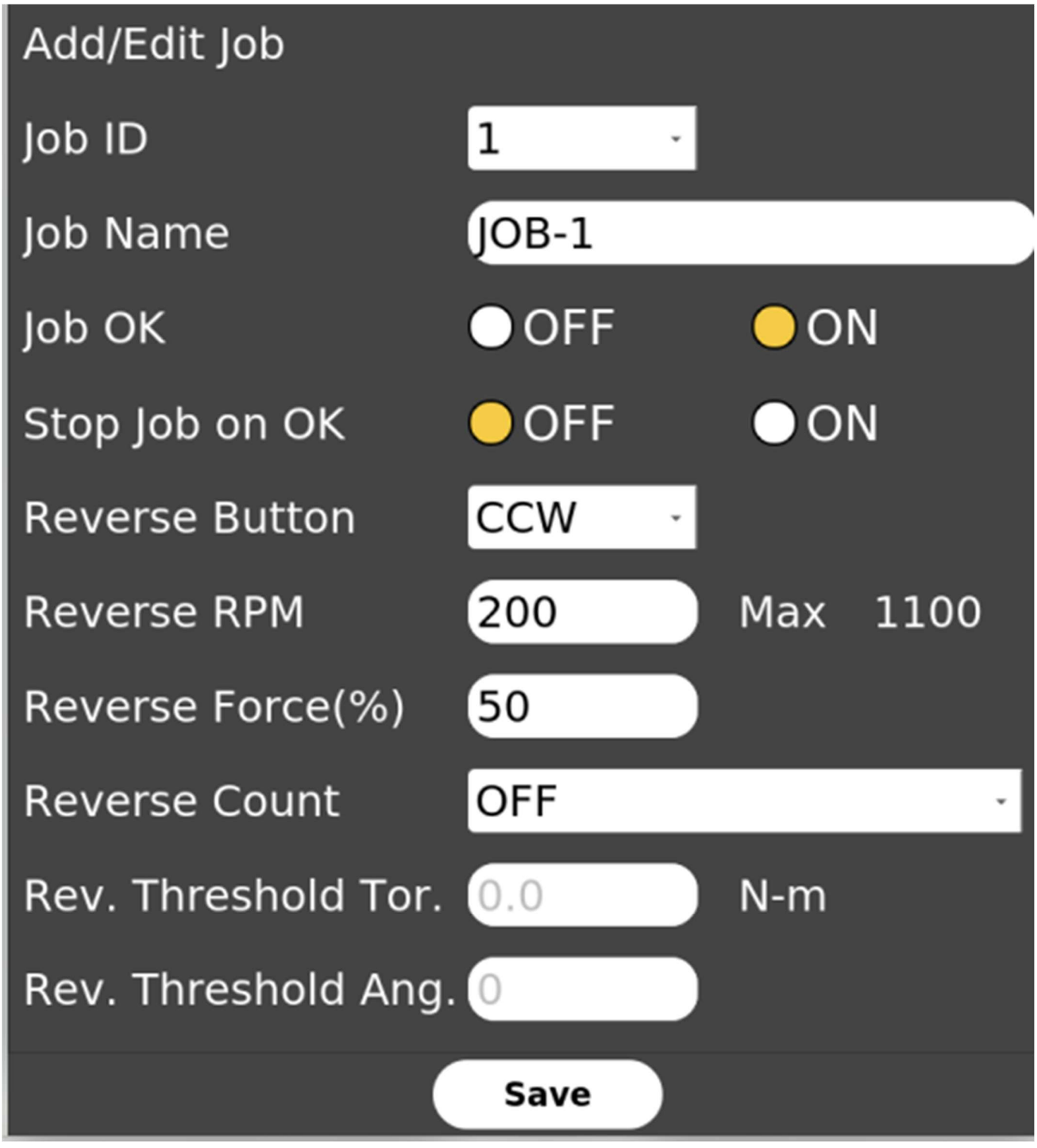
Normal Tree View	Description
Tree View	Display the set edit job name, sequence name, and screw number.

4-2-2.Edit job:



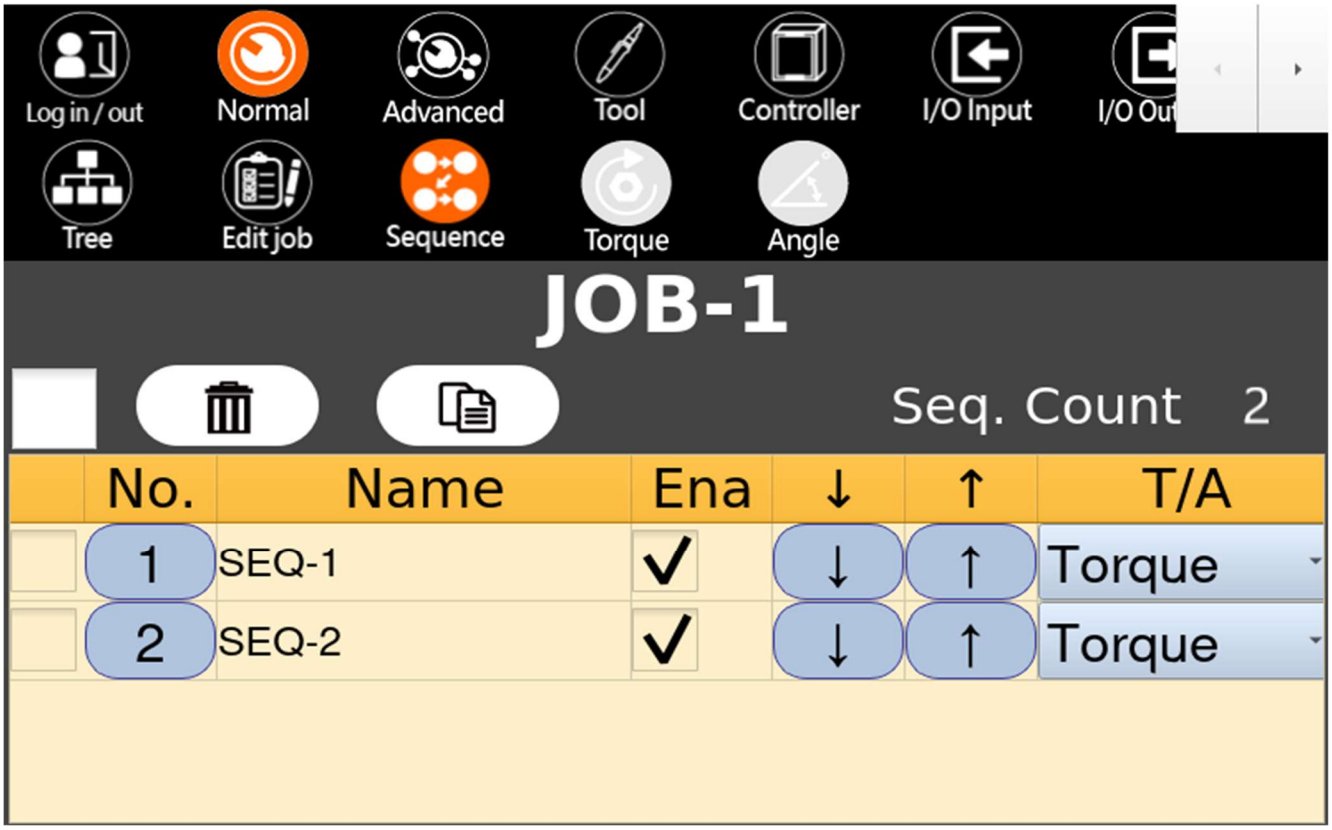
Edit job Setting	Description
☐	After checking, select all the newly added jobs.
🗑	Delete the selected jobs; it can delete single or multiple jobs.
📋	Copy the selected job together with the sequence and steps. (Single selection only)
Job Count	Display the current total number of Edit jobs.
Edit job list	Display ☐, No. button, Edit job name, and Sequence button. ☐ Check to select delete or copy function. Click the Form No. button to modify the edit job parameters below. Click the Form Sequence button to display the Sequence icon. Be sure to click the Sequence button to enter the Sequence icon to avoid confusion caused by data display.

Add /Edit job:


Add/Edit Job
Job ID
1
Job Name
JOB-1
Job OK
OFF
ON
Stop Job on OK
OFF
ON
Reverse Button
CCW
Reverse RPM
200
Max 1100
Reverse Force(%)
50
Reverse Count
OFF
Rev. Threshold Tor.
0.0
N-m
Rev. Threshold Ang.
0
Save

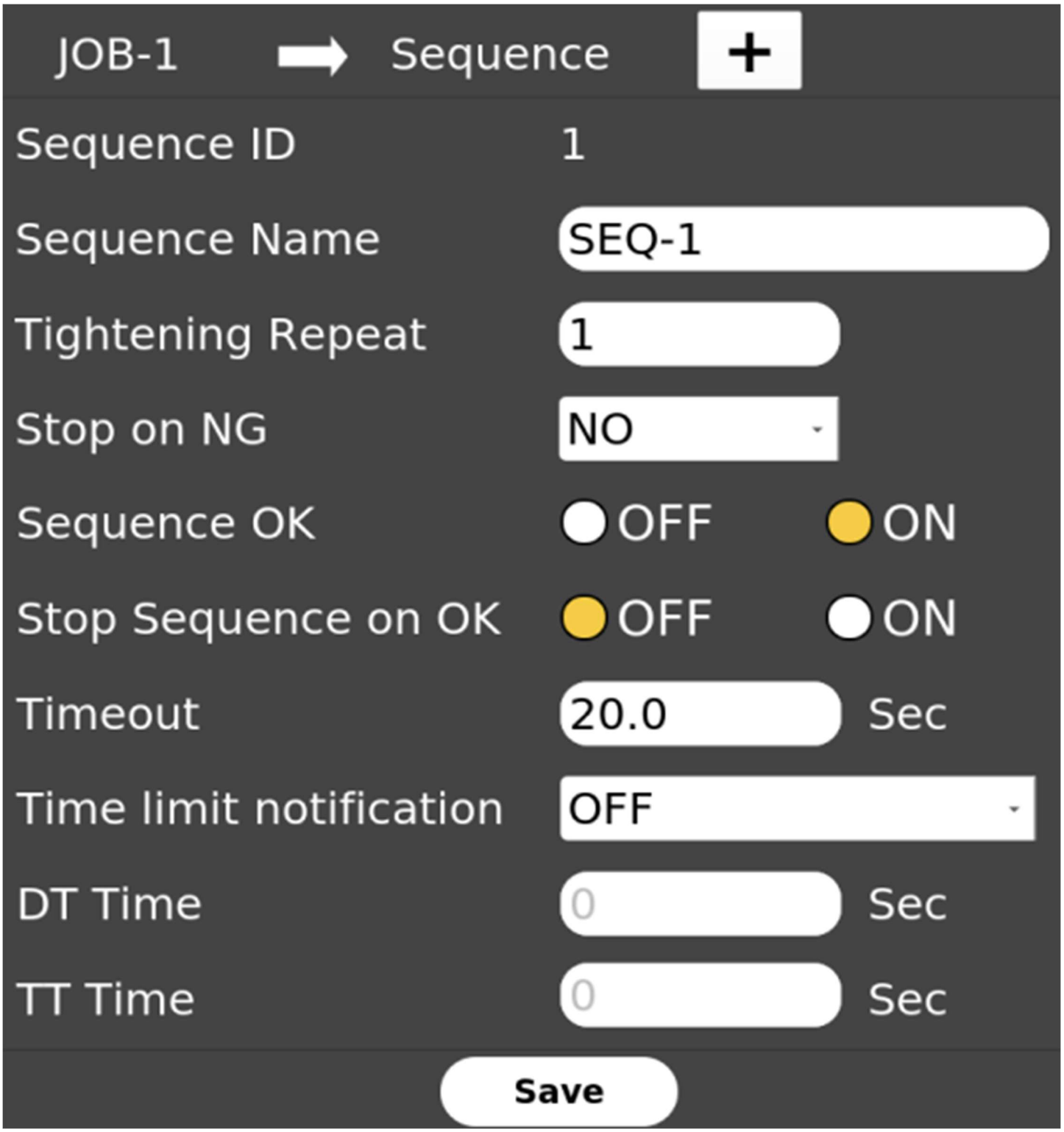
Edit job parameter	Description
Job ID	Select Edit job ID. (Range: 1-99, default: 1)
Job Name	Support English (capital and small characters), numbers and symbols (Range: 1-250 characters, default: JOB-1)
Job OK	OFF: No completion signal (OK-JOB) export. ON: Export completion signal (OK-JOB). Default: ON.
Stop Job on OK	OFF: The screwdriver won't stop when the action is completed; nor will it affect the next start of the screwdriver. ON: When the lock is completed, the screwdriver will be locked immediately; user needs to press the "Confirm" key to confirm that the forward rotation can be released. (For the I/O part, it is an external confirmation signal). Default: OFF.
Reverse Button	Set the rotation direction of the screwdriver counterclockwise (CCW)/Disable. Default: Counterclockwise (CCW).
Reverse RPM	Set the rotation speed of the screwdriver when removing screws, (Range: Please refer to the screwdriver technical specifications, default: 200 RPM. The maximum speed of the screwdriver will be displayed next to it).
Reverse Force (%)	Set the force of the screwdriver to remove the screw. (Range: 1%~110%, default: 50%)
Reverse Count	Off: Disable screw removal count. Threshold Torque: Enable screw removal count when the threshold torque is reached. Threshold Angle: Enable screw removal count when the threshold angle is reached. Both (Torque and Angle): Enable screw removal count when both the threshold torque and angle are reached. (Trigger start → angle counting begins) Both (Torque Priority): Enable screw removal count when both the threshold torque and angle are reached. (Threshold torque reached → angle counting begins) Default: Off.
Rev. Threshold Tor.	The main page will display the screw removal torque value after setting the threshold torque value for screw removal touch. Screw removal counting will only begin when the threshold torque has exceeded, provided that the screw removal counting function is activated. Default: 0.0 N-m, with the torque unit displayed beside it.
Disassembly Threshold Angle	After setting the threshold angle value for disassembly detection, the main screen will display the disassembly angle value. Screw removal count will only begin when the threshold angle is exceeded, and the screw removal count function is enabled. Default: 0.
Save	Save the settings on this page.

4-2-3. Sequence



Sequence Setting	Description
Edit job name	Display the previous page and click Edit job name. (The example in the figure shows JOB-1)
☐	After checking, select all the newly added sequences.
🗑	Delete the selected sequence; it can delete single or multiple selections.
📋	Copy the selected process and copy the steps together. (Only supports single selection)
Seq. Count	Display the current total number of Sequences.
Sequence list	Display ☐, No. button, Sequence name, turn on (☐), UP/DOWN sequence button, Torque / Angle. ☐ Check to select delete or copy function. Click No. button to modify the Sequence parameters below. turn on ☐ Check to run the sequence; the sequence won't be run if not checked. ↓ ↑ move the sequence up and down. Select Torque or Angle, it then will display the Torque or Angle icon. Be sure to click the Torque button to enter the Torque icon to avoid confusion caused by data display.

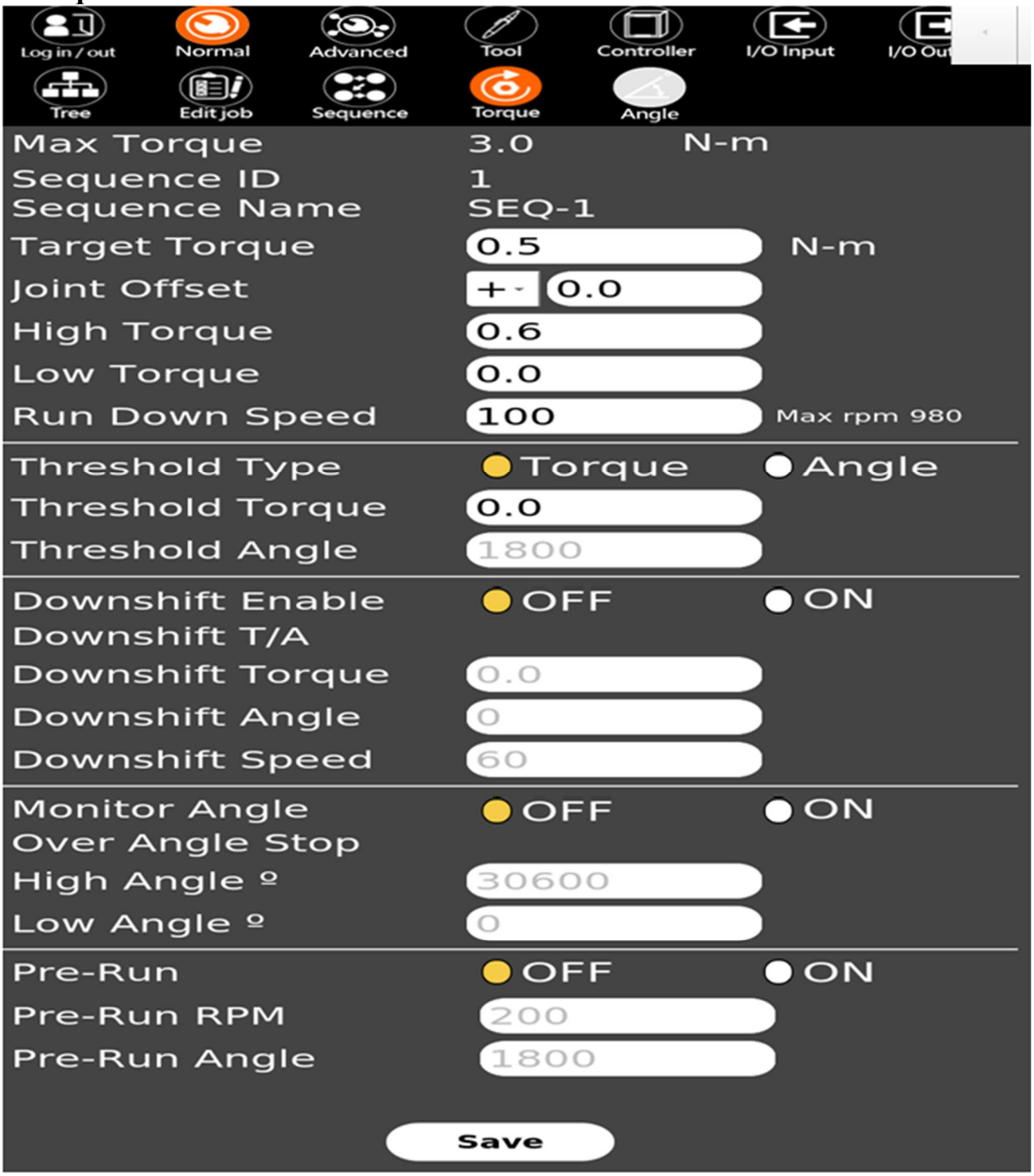
Add Sequence



Sequence parameter	Description
Edit job ID	Display the selected Edit job ID. (The example in the figure shows JOB-1)
+	Add sequence button, if there are more than 99 groups, this button will be grayed out and cannot be added more.
Sequence ID	Display the Edit job ID. (Range: 1~99, default: 1)
Sequence Name	Support English (capital and small characters), numbers and symbols (Range: 1~250 characters, default: SEQ-1)
Tightening Repeat	Total lock screw number in Setting Sequence. (Range: 1~99, default: 1)
Stop on NG	Set the processing method selected when screwdriver lock is wrong: No / 1-9 1~9 :

	Setting 1: Lock screwdriver if trigger-once lock is error, Setting 2: Continuous lock error; lock screwdriver if trigger-twice lock is error… and so on; if anyone lock is OK, make re-calculation. Enable function 1~9: When the error signal "NS" appears, the screwdriver is locked immediately; user needs to press the "Confirm" button to confirm to release. (For the I/O part, confirm the Confirm signal externally, and confirm that the screwdriver can still remove the screw) No: When the error signal "NG" appears, the screwdriver won't stop; it won't affect the next start of the screwdriver, only a warning will be issued. Default: No.
Sequence OK	OFF: No sequence completion signal (OK-SEQ) is export. ON: Export sequence completion signal (OK-SEQ). Default: ON.
Stop Sequence on OK	The processing method selected when the total number of screws in the Setting Sequence is counted to complete the action. OFF: The screwdriver won't stop when the action is completed; nor will it affect the next start of the screwdriver. ON: When the number of Sequence screws is locked, the screwdriver will be locked immediately; user must press the "Confirm" button to confirm that the forward rotation can be released. (If it is the I/O part, it is an external confirmation signal) Default: OFF.
Timeout	Set the running time of a single screw. (Range: 0.1~60.0 seconds, default: 20 seconds)
Work Time Notification Mode	Off: Disable and do not count. Screw Interval Time: Enable the screw interval time (DT) counting function. Sequences Completion Time: Enable the sequences completion time (TT) counting function. Both Enabled: Enable both screw interval time (DT) and sequences completion time (TT) counting functions. Default: Off.
Screw Interval Time	Screw Interval Time (DT): During the fastening process, this is the time between when a screw fastening result (e.g., OK or NG) is confirmed and when the next screw fastening is triggered. If the waiting time exceeds the set value, the controller will display a corresponding message/ icon warning with an alert sound, which will continue until the next fastening operation is triggered. Note: Setting range: 1–99 seconds. A default value of 0 means it is not set.
Sequences Completion Time	Process Completion Time (TT): During the fastening process, this is the time from the first trigger to start fastening until the final screw of the process is completed. If the sequences completion time exceeds the set value, the controller will display a corresponding warning message/icon and emit an alert sound until all screws in the process have been fastened. Note: Setting range: 1–6000 seconds. Default value: 0, means no setting
Save	Save the settings on this page.

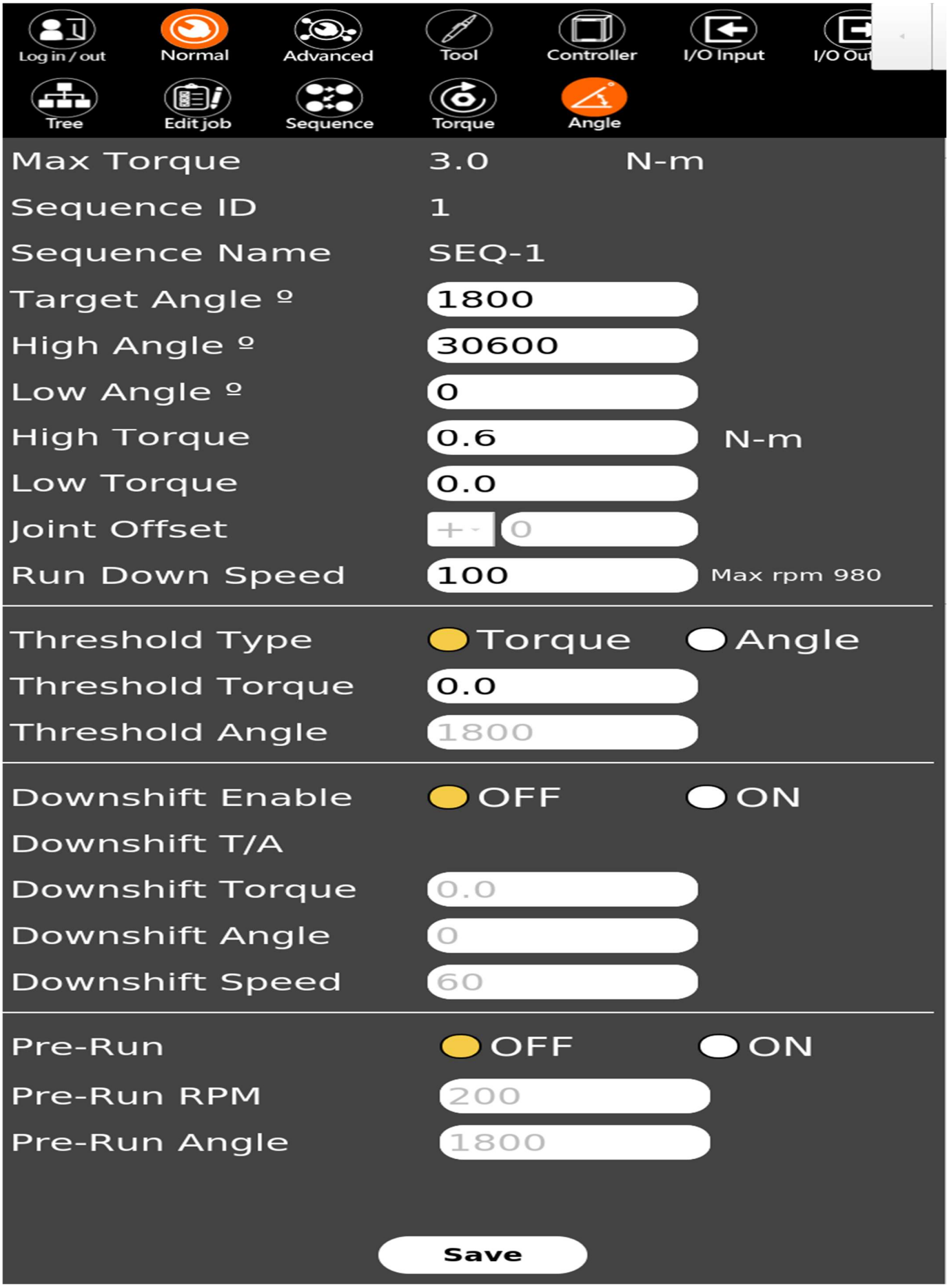
4-2-4. Torque



Torque parameter	Description
Max Torque	Display the maximum torque of the tool and the set the torque unit. Default torque unit: Newton-meter (N-m)
Sequence ID	Display Sequence ID, (Range: 1~99, default: 1).
Sequence Name	Display Sequence name, (Range: 1~250 characters, default: SEQ-1)
target Torque	Set the target torque of the screwdriver. The target torque must be imported in a reasonable torque range according to the specification of the screwdriver. The setting range should be within 10% to 100% of the screwdriver's specifications. (Range :Please refer to the screwdriver technical specifications，Default: 0.5 N-m. (The current set torque unit will be displayed next to it)

Joint Offset	+: Torque offset increases. Default: +0. -: Torque offset decreases. Adjust this value for fine adjustment; making the actual torque value of the screwdriver lock is closer to the torque value displayed by the Controller. (KTM torque meter is an optional product) Default: 0.0 N-m.
High Torque	The upper limit of Setting Torque, the upper limit cannot exceed 110% of the maximum torque, for example: The upper limit of a 5N-m screwdriver is 5.5N-m, the default is 0.6 N-m.，The upper section will show the maximum torque.)
Low Torque	The lower limit of Setting Torque; the default is 0.0 N-m.
Run Down Speed (rpm)	To set the speed (rpm) of the screwdriver lock, it must be set according to the speed range of the screwdriver specification and the required speed. If the set value exceeds the specification, the screwdriver won't start. (Range : Please refer to the screwdriver technical specifications，the default is 100 RPM. The maximum speed will be displayed next to it)
Threshold Type	Torque : The set threshold is primarily based on torque. Angle : The set threshold is primarily based on angle. Default: Torque。
Threshold Torque	After touching the set threshold torque, the controller starts to calculate the screwdriver lock angle, and it is OK to stop within the upper/lower limit of the Setting Torque. Default: 0.0 N-m.
Threshold Angle	After touching the set threshold angle, the controller starts to calculate the screwdriver lock angle, and it is OK to stop within the upper/lower limit of the Setting Angle. (Range : 0~30600，default : 0)
Downshift Enable	OFF: The speed won't be reduced during the locking process. ON: The speed decreases during locking process. Default: OFF.
Downshift Torque/ Angle	Torque : Deceleration begins with torque. Angle : Deceleration begins with angle. Default: :Torque.
Downshift Torque	After touching the torque value at the set run-down speed, the screwdriver speed will drop, and it will be OK if it stops within the upper/lower limit of the Setting Torque. Default: 0.0 N-m.
Downshift Angle	When the tightening procedure reaches the deceleration point of the angle, the screwdriver gradually slows down until it reaches the target angle range. It then stops and displays an OK signal. Default: 0
Downshift Speed	Set the speed of the screwdriver when the torque value of the speed run-down point is reached. (Range : Please refer to the screwdriver technical specifications, the default : 60 RPM. The maximum speed of the screwdriver will be displayed the top to it)。
Monitor Angle	OFF: Turn off the Monitoring Angle. ON: Turn on the Monitoring Angle Default: OFF
Over Angle Stop	OFF: Angle won't stop immediately after timeout. ON: Angle will stop immediately after timeout. Default: OFF
High Angle º	Upper range of Setting Angle. (Range: 1~30600, default: 30600)
Low Angle º	Lower range of Setting Angle. (Range: 0~30599, default: 0)
Pre-Run	OFF: No CCW Pre-Run Unfasten. ON: CCW Pre-Run Unfasten. Default: OFF
Pre-Run RPM	To set the speed (rpm) of pre-run, it must be set according to the speed range of the screwdriver specification and the required speed. If the set value exceeds the specification, the screwdriver won't start. (Range : Please refer to the screwdriver technical specifications, the default : 200 RPM. The maximum speed of the screwdriver will be displayed the top to it)。
Pre-Run Angle	Set the pre-run angle.(Range: 1~30600, default: 1800)
Save	Save the settings on this page.

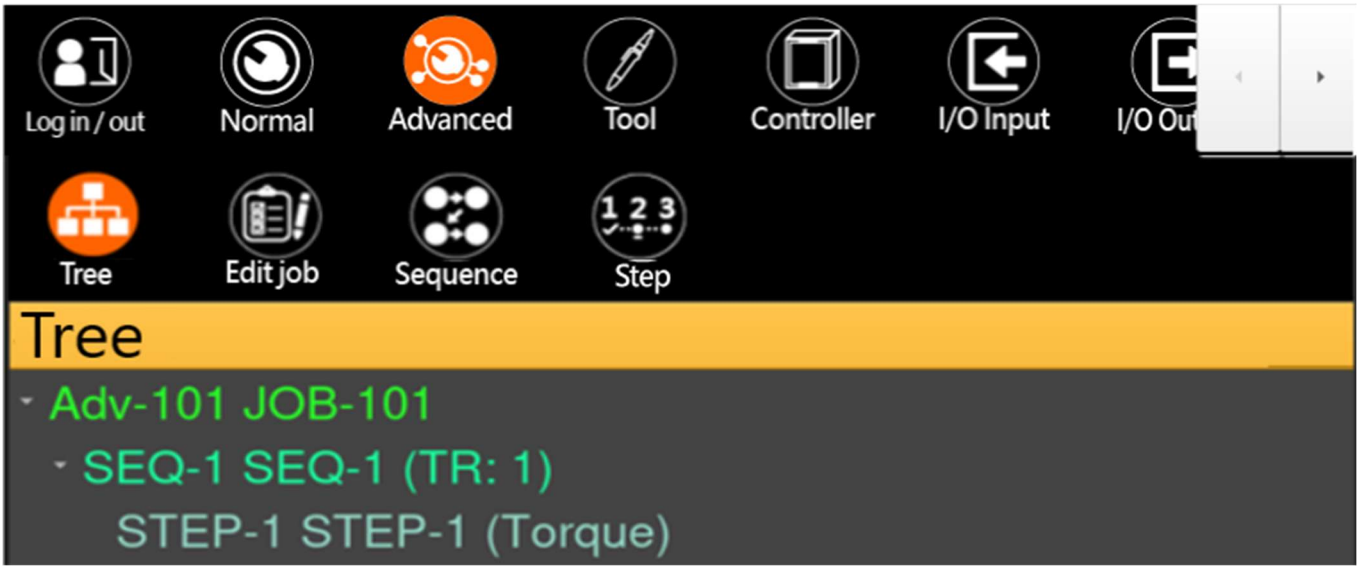
4-2-5. Angle


Log in / out
Normal
Advanced
Tool
Controller
I/O Input
I/O Out
Tree
Edit job
Sequence
Torque
Angle
Max Torque
3.0
N-m
Sequence ID
1
Sequence Name
SEQ-1
Target Angle º
1800
High Angle º
30600
Low Angle º
0
High Torque
0.6
N-m
Low Torque
0.0
Joint Offset
+ -
0
Run Down Speed
100
Max rpm 980
Threshold Type
Torque
Angle
Threshold Torque
0.0
Threshold Angle
1800
Downshift Enable
OFF
ON
Downshift T/A
Downshift Torque
0.0
Downshift Angle
0
Downshift Speed
60
Pre-Run
OFF
ON
Pre-Run RPM
200
Pre-Run Angle
1800
Save

Angle parameter	Description
Max Torque	Display the maximum torque of the tool and the set the torque unit. Default torque unit: Newton-meter (N-m)
Sequence ID	Display Sequence ID, (Range : 99，default: 1).
Sequence Name	Display Sequence name, (Range: 1~250 characters, default: SEQ-1)
Target Angle	Set the target angle of screwdriver. (Range: 1~30600, default: 1800)
High Angle º	Upper range of Setting Angle. (Range: 1~30600, default: 30600)
Low Angle º	Lower range of Setting Angle. (Range: 0~30599, default: 0)
High Torque	The upper limit of Setting Torque, the upper limit cannot exceed 110% of the maximum torque, For example: The upper limit of a 5N-m screwdriver is 5.5N-m, the default is 0.6 N-m. (The torque unit will be displayed next to it)
Low Torque	The lower limit of Setting Torque; the default is 0.0 N-m.
Joint Offset	+: Torque offset increases. Default: +0. -: Torque offset decreases. Adjust this value for fine adjustment; making the actual torque value of the screwdriver lock is closer to the torque value displayed by the Controller. (KTM torque meter is an optional product) Default: 0.0 N-m.
Run Down Speed (rpm)	To set the speed (rpm) of the screwdriver lock, it must be set according to the speed range of the screwdriver specification and the required speed. If the set value exceeds the specification, the screwdriver won't start. (Range : Please refer to the screwdriver technical specifications, default is 100 RPM. The maximum speed will be displayed next to it)
Threshold Type	Torque : The set threshold is primarily based on torque. Default: Torque。 Angle : The set threshold is primarily based on angle.
Threshold Torque	After touching the set threshold torque, the controller starts to calculate the screwdriver lock angle, and it is OK to stop within the upper/lower limit of the Setting Torque. Default: 0.0 N-m.
Threshold Angle	After touching the set threshold angle, the controller starts to calculate the screwdriver lock angle, and it is OK to stop within the upper/lower limit of the Setting Angle. (Range : 0~30600，default : 0)
Downshift Enable	OFF: The speed won't be reduced during the locking process. Default: OFF ON: The speed decreases during locking process.
Downshift T/A	Torque: Deceleration begins with torque Default: Torque Angle: Deceleration begins with angle
Downshift Torque	After touching the torque value at the set run-down speed, the screwdriver speed will drop, and it will be OK if it stops within the upper/lower limit of the Setting Torque. Default: 0.0 N-m.
Downshift Angle	When the tightening procedure reaches the deceleration point of the angle, the screwdriver gradually slows down until it reaches the target angle range. It then stops and displays an OK signal. Default: 0
Downshift Speed	Set the speed of the screwdriver when the torque value of the speed run-down point is reached. (Range : 60~The maximum speed of the screwdriver, default: 60 RPM. The maximum speed of the screwdriver will be displayed the top to it).
Pre-Run	OFF: No CCW Pre-Run Unfasten. ON: CCW Pre-Run Unfasten. Default: OFF
Pre-Run RPM	To set the speed (rpm) of pre-run, it must be set according to the speed range of the screwdriver specification and the required speed. If the set value exceeds the specification, the screwdriver won't start. (Range : 60~The maximum speed of the screwdriver, default is 200 RPM. The maximum speed will be displayed next to it)
Pre-Run Angle	Set the pre-run angle. (Range: 1~30600, default: 1800)
Save	Save the settings on this page.

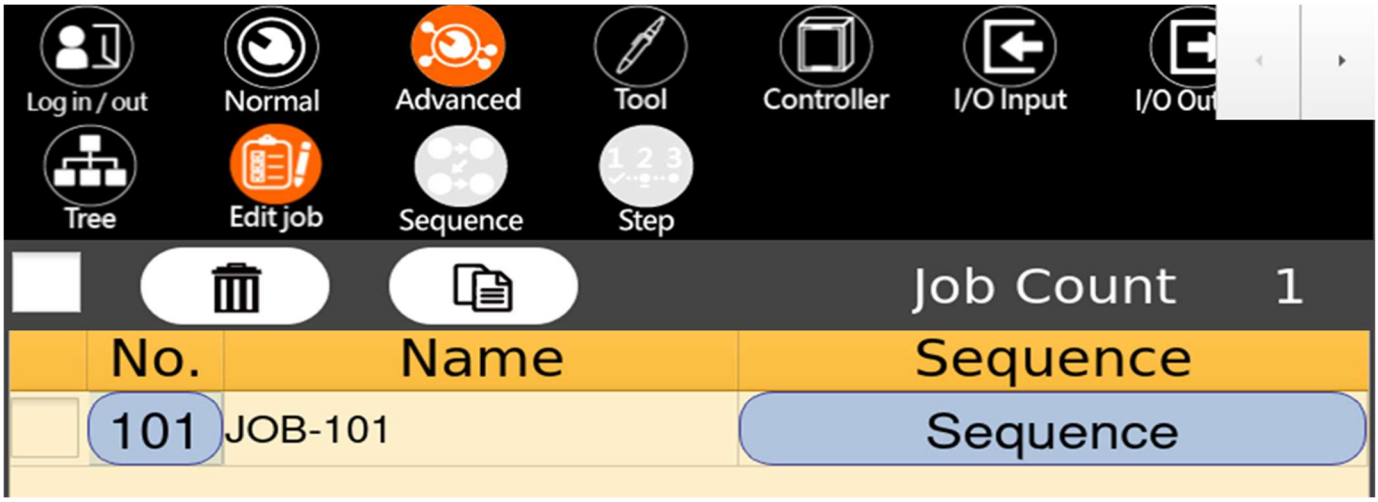
4-3. Advanced

4-3-1. Tree:



Advanced Tree View	Description
Tree View	Display the Edit job, Sequence, number, steps, and target options that have been set.

4-3-2 Edit job



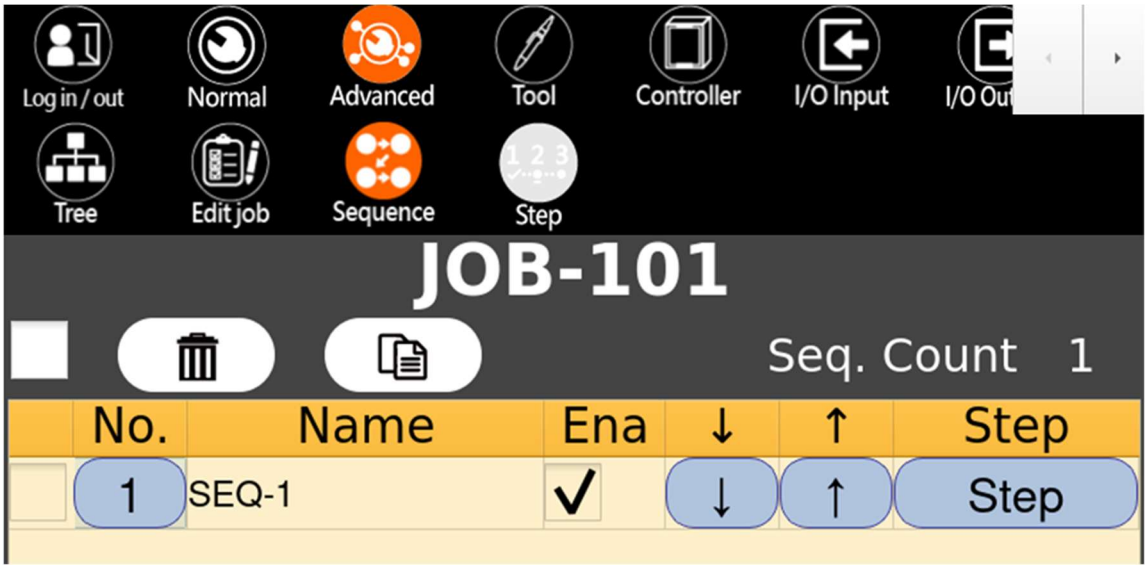
Edit job Setting	Description
☐	After checking, select all the newly added jobs.
🗑	Delete the selected jobs; it can delete single or multiple jobs.
📋	Copy the selected job together with the sequence and steps. (Single selection only)
Job Count	Display the current total number of Edit jobs.
Edit job list	Display ☐, No. button, Edit job name, and Sequence button. ☐ Check to select delete or copy function. Click the Form No. button to modify the edit job parameters below. Click the Form Sequence button to display the Sequence icon. Be sure to click the Sequence button to enter the Sequence icon to avoid confusion caused by data display.

Add / Edit job.


Add/Edit Job
Job ID
1
Job Name
JOB-1
Job OK
OFF
ON
Stop Job on OK
OFF
ON
Reverse Button
CCW
Reverse RPM
200
Max 1100
Reverse Force(%)
50
Reverse Count
OFF
Rev. Threshold Tor.
0.0
N-m
Rev. Threshold Ang.
0
Save

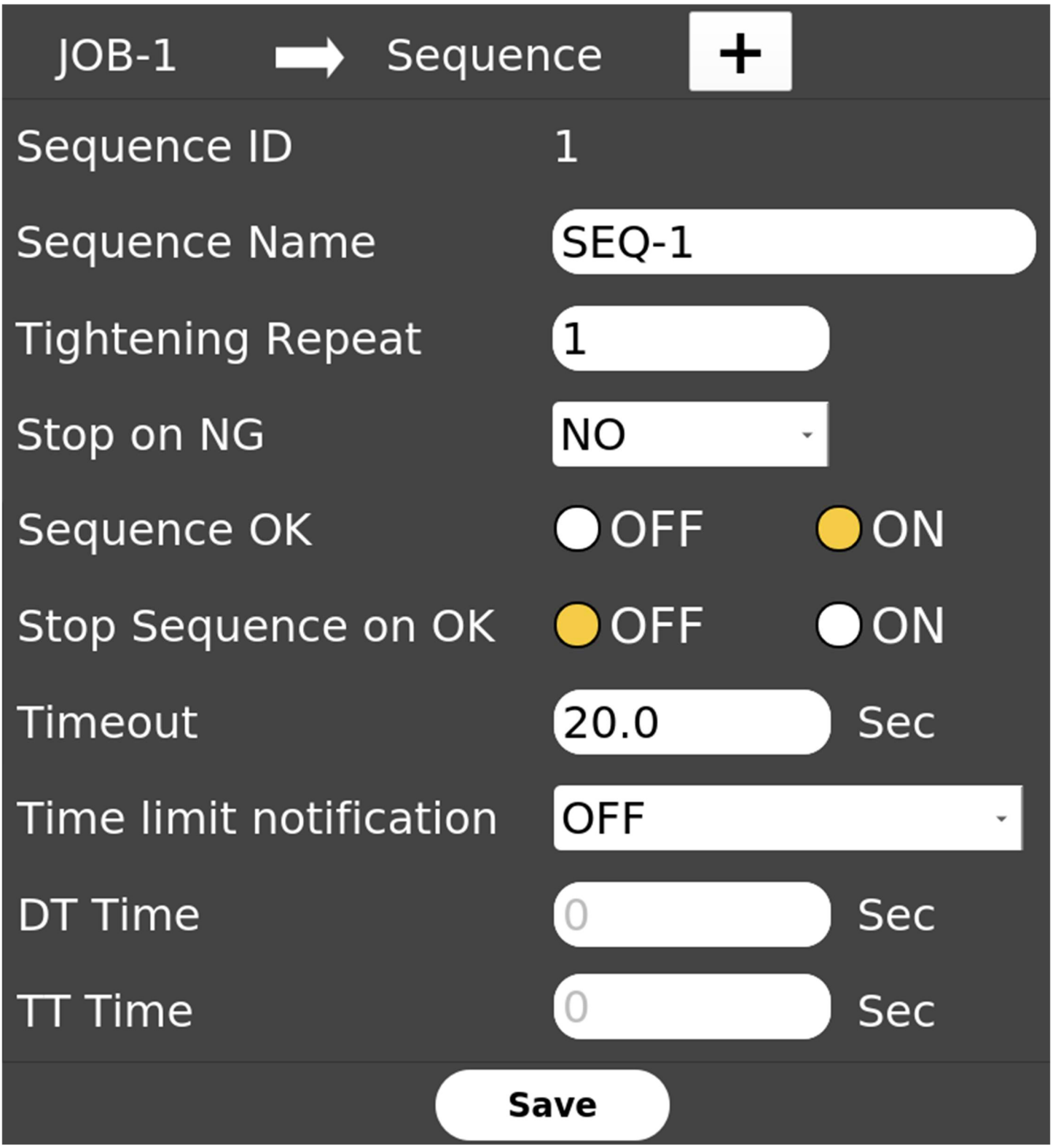
Edit job parameter	Description
Edit job ID	Select Edit job ID. (Range: 101~170, default: 101)
Edit job name	Support English (capital and small characters), numbers and symbols (Range: 1~250 characters, default: JOB~101)
Job OK	OFF: No completion signal (OK-JOB) export. ON: Export completion signal (OK-JOB). Default: ON.
Stop Job on OK	OFF: The screwdriver won't stop when the action is completed; nor will it affect the next start of the screwdriver. ON: When the lock is completed, the screwdriver will be locked immediately; user needs to press the "Confirm" key to confirm that the forward rotation can be released. (For the I/O part, it is an external confirmation signal). Default: OFF.
Reverse Button	Set the rotation direction of the screwdriver counterclockwise (CCW)/Disable. Default: Counterclockwise (CCW).
Reverse RPM	Set the rotation speed of the screwdriver when removing screws, (Please refer to the screwdriver technical specifications, default is 200 RPM. The maximum speed will be displayed next to it)
Reverse Force (%)	Set the force of the screwdriver to remove the screw. (Range: 1%~110%, default: 50%)
Reverse Count	Off: Disable screw removal count. Threshold Torque: Enable screw removal count when the threshold torque is reached. Threshold Angle: Enable screw removal count when the threshold angle is reached. Both (Torque and Angle): Enable screw removal count when both the threshold torque and angle are reached. (Trigger start → angle counting begins) Both (Torque Priority): Enable screw removal count when both the threshold torque and angle are reached. (Threshold torque reached → angle counting begins) Default: Off.
Rev. Threshold Tor.	The main page will display the screw removal torque value after setting the threshold torque value for screw removal touch. Screw removal counting will only begin when the threshold torque has exceeded, provided that the screw removal counting function is activated. Default: 0.0 N-m, with the torque unit displayed beside it.
Disassembly Threshold Angle	After setting the threshold angle value for disassembly detection, the main screen will display the disassembly angle value. Screw removal count will only begin when the threshold angle is exceeded, and the screw removal count function is enabled. Default: 0.
Save	Save the settings on this page.

4-3-3 Sequence



Sequence Setting	Description
Edit job name	Display the previous page and click Edit job name. (The example in the figure shows JOB-1)
☐	After checking, select all the newly added sequences.
🗑	Delete the selected sequences; it can delete single or multiple selections.
📋	Copy the selected job together with the sequence and steps. (Single selection only)
Seq. Count	Display the current total number of Sequences.
Sequence list	Display ☐, No. button, Sequence name, Start (☐), UP/DOWN sequence button, Torque / Angle. ☐ Check to select delete or copy function. Click No. button to modify the Sequence parameters below. Start ☐ Check to run the sequence; the sequence won't be run if not checked. ↓ ↑ move the sequence up and down. Select Torque or Angle, it then will display the Torque or Angle icon. Be sure to click the Torque button to enter the Torque icon to avoid confusion caused by data display.

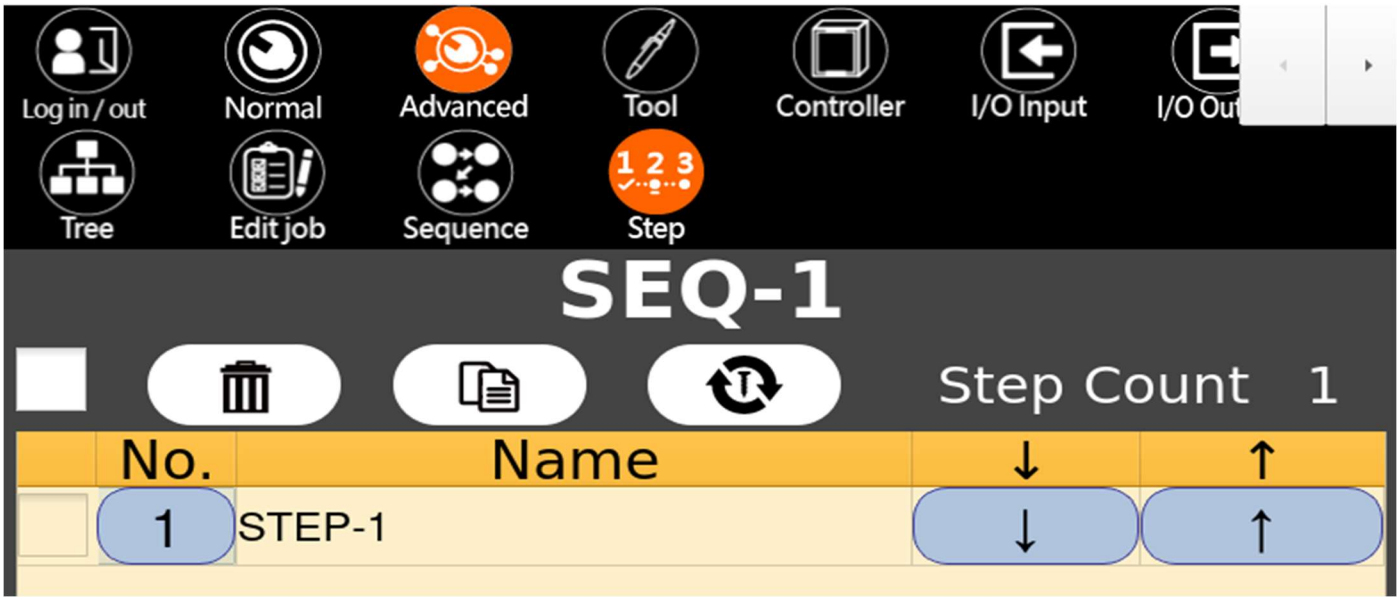
Add Sequence



Sequence parameter	Description
Edit job ID	Display the selected Edit job ID. (The example in the figure shows JOB-101)
+	Add sequence button, if there are more than 50 groups, this button will be grayed out and cannot be added more.
Sequence ID	Display the Edit job ID. (Range: 1~50, default: 1)
Sequence Name	Support English (capital and small characters), numbers and symbols (Range: 1-250 characters, default: SEQ-1)
Tightening Repeat	Total lock screw number in Setting Sequence. (Range: 1~99, default: 1)

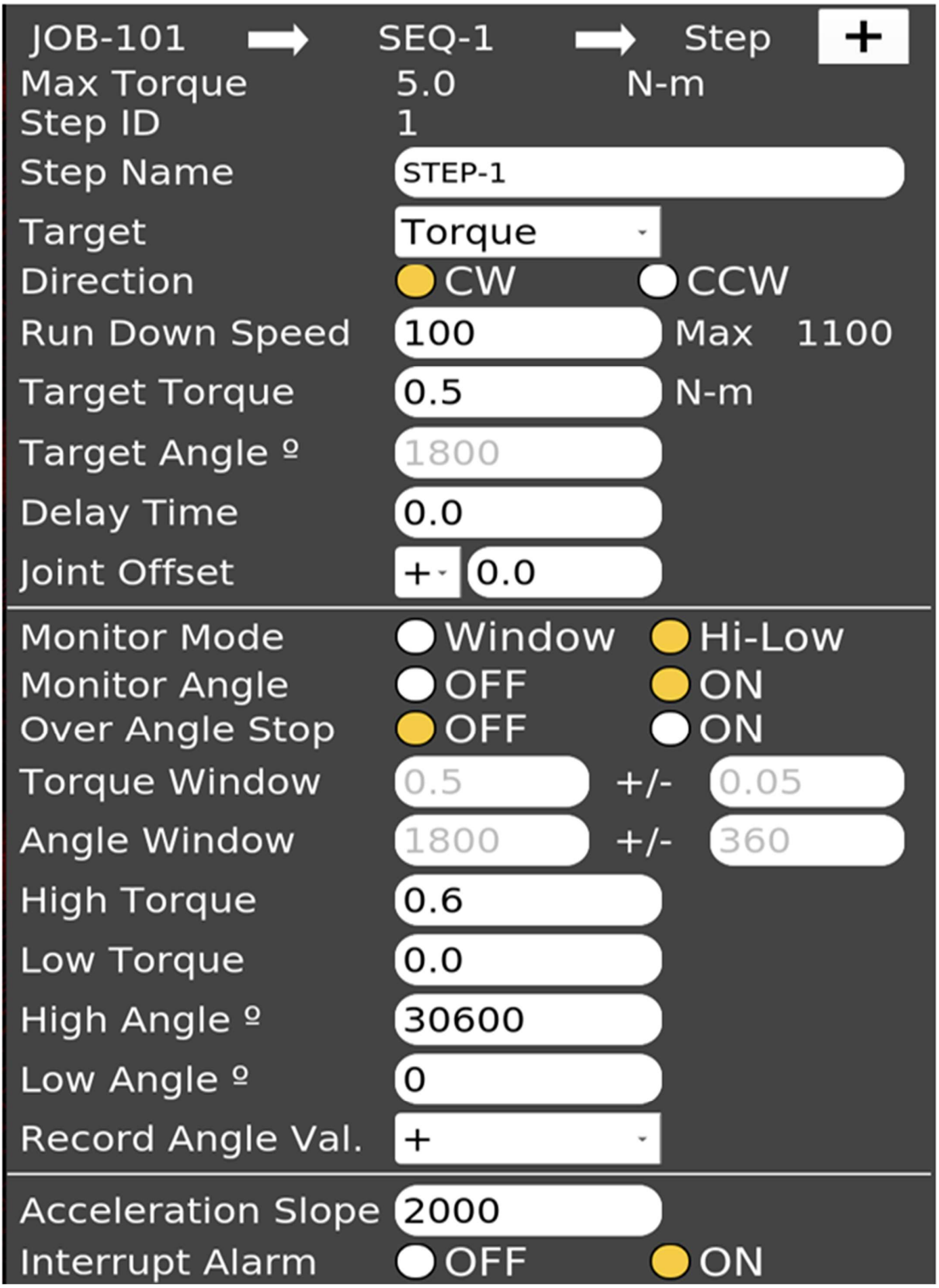
Stop on NG	Set the processing method selected when screwdriver lock is wrong: No / 1-9 1~9 : Setting 1: Lock screwdriver if trigger-once lock is error, setting 2: Continuous lock error; lock screwdriver if trigger-twice lock is error…and so on; if anyone lock is OK, make re-calculation. Enable function 1-9: When the error signal "NS" appears, the screwdriver is locked immediately; user needs to press the "Confirm" button to confirm to release. (For the I/O part, confirm the Confirm signal externally, and confirm that the screwdriver can still remove the screw) No: When the error signal "NG" appears, the screwdriver won't stop; it won't affect the next start of the screwdriver, only a warning will be issued. Default: No.
Sequence OK	OFF: No sequence completion signal (OK-SEQ) is export. ON: Export sequence completion signal (OK-SEQ). Default: ON.
Stop Sequence on OK	The processing method selected when the total number of screws in the Setting Sequence is counted to complete the action. OFF: The screwdriver won't stop when the action is completed; nor will it affect the next start of the screwdriver. ON: When the number of Sequence screws is locked, the screwdriver will be locked immediately; user must press the "Confirm" button to confirm that the forward rotation can be released. (If it is the I/O part, it is an external confirmation signal) Default: OFF.
Timeout	Set the running time of a single screw. (Range: 0.1~60.0 seconds, default: 60 seconds)
Work Time Reminder Mode	Off: Disabled; no counting. Screw Interval Time: Enables the screw interval time (DT) counting function. Process Completion Time: Enables the process completion time (TT) counting function. All On: Enables both screw interval time (DT) and process completion time (TT) counting functions. Default: Off.
Screw Interval Time	Screw Interval Time (DT): During the fastening process, this is the time between when a screw fastening result (e.g., OK or NG) is confirmed and when the next screw fastening is triggered. If the waiting time exceeds the set value, the controller will display a corresponding message/ icon warning with an alert sound, which will continue until the next fastening operation is triggered. Note: Setting range: 1–99 seconds. A default value of 0 means it is not set.
Sequences Completion Time	Process Completion Time (TT): During the fastening process, this is the time from the first fastening trigger to the completion of the final screw in the operation. If the total process time exceeds the set value, the controller will display a corresponding message/ icon warning with an alert sound, which will continue until all screws in the process are fastened. Note: Setting range: 1 – 6000 seconds. A default value of 0 means it has not set yet..
Save	Save the settings on this page.

4-3-4 STEP



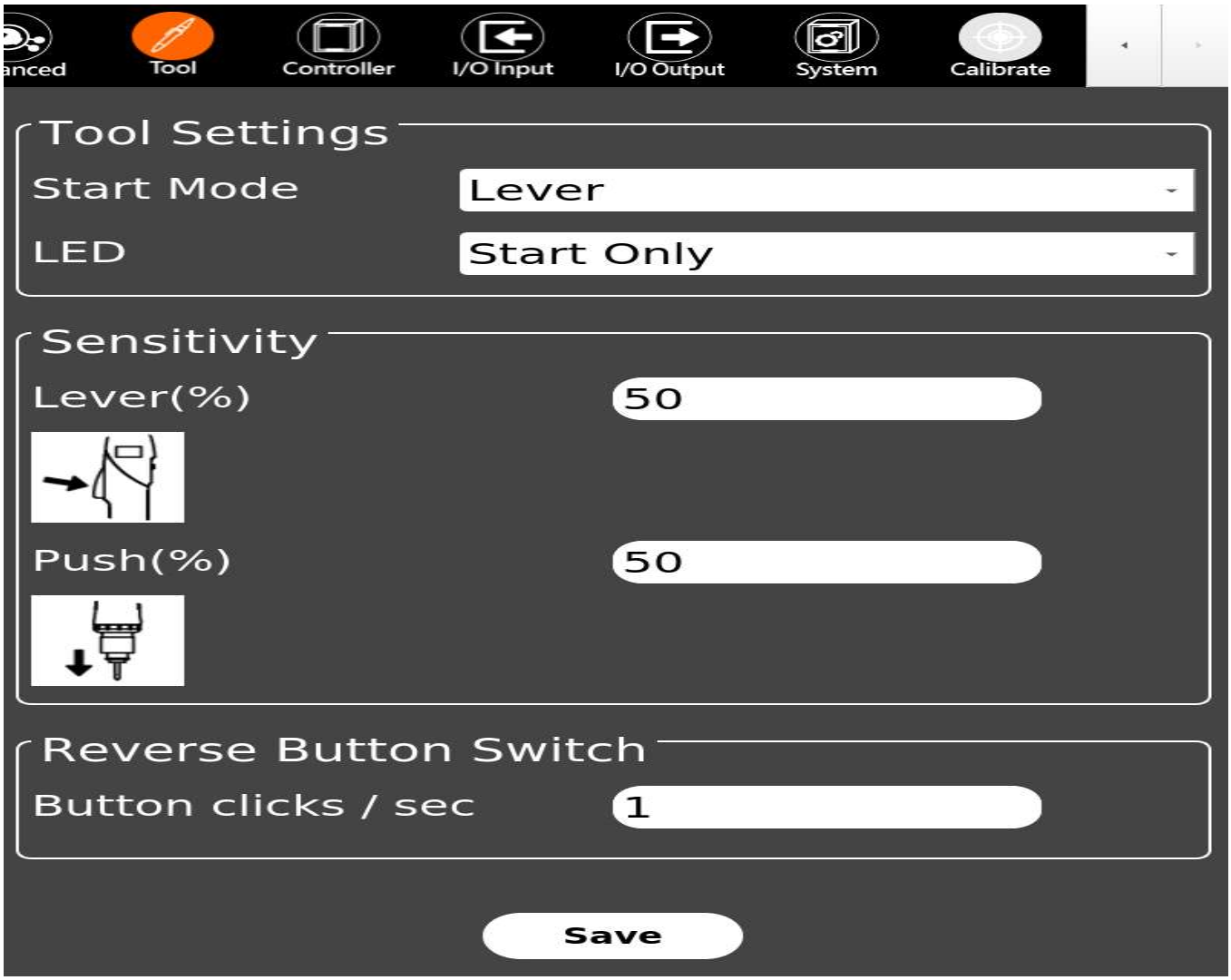
STEP Setting	Description
Sequence Name	Display the previous page and click Sequence name.
☐	After checking, select all the newly added steps
🗑	Delete the selected steps; it can delete single or multiple selections.
📋	Copy the selected steps. (Single selection only)
🔄	Perform a step test on the selected sequence. (All steps of the sequence are tested)
Step Count	Display the current total number of steps.
Steps list	Display ☐, No. button, Step name, UP/DOWN sequence button. ☐ Check to select delete or copy function. Click No. button to modify the Step parameters below. ↓ ↑ move the steps up and down. Select Torque or Angle, it then will display the Torque or Angle icon. P.S. Do not set the delay time on the first and last step.

Add Steps


JOB-101
SEQ-1
Step
+
Max Torque
5.0
N-m
Step ID
1
Step Name
STEP-1
Target
Torque
Direction
CW
CCW
Run Down Speed
100
Max 1100
Target Torque
0.5
N-m
Target Angle º
1800
Delay Time
0.0
Joint Offset
+
0.0
Monitor Mode
Window
Hi-Low
Monitor Angle
OFF
ON
Over Angle Stop
OFF
ON
Torque Window
0.5
+/-
0.05
Angle Window
1800
+/-
360
High Torque
0.6
Low Torque
0.0
High Angle º
30600
Low Angle º
0
Record Angle Val.
+
Acceleration Slope
2000
Interrupt Alarm
OFF
ON

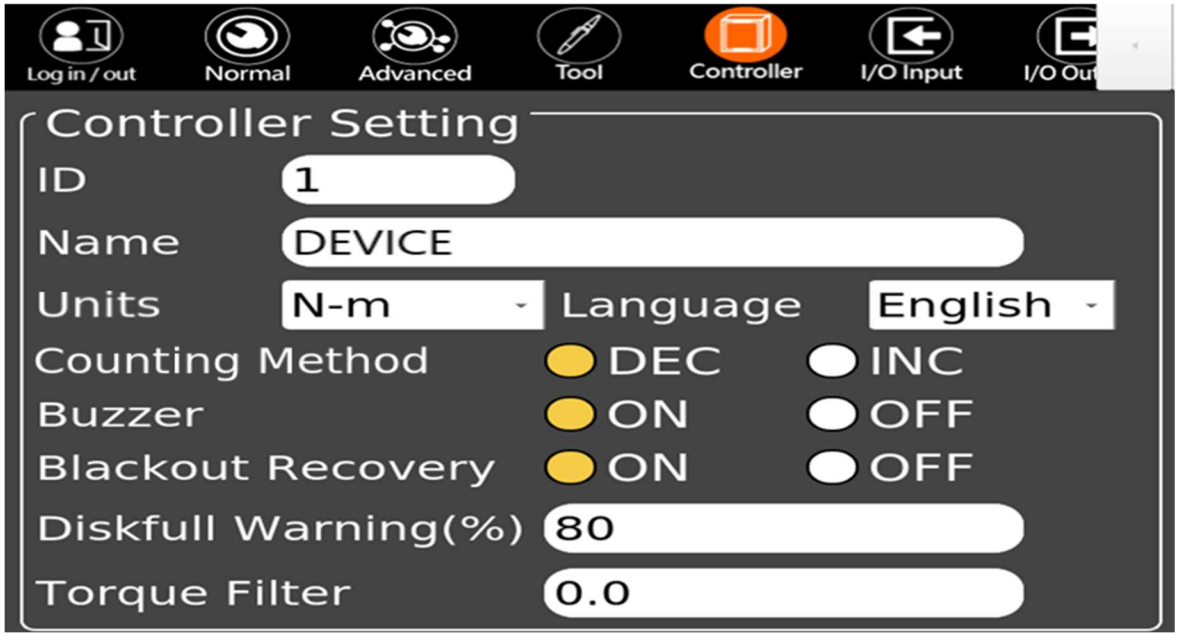
STEP parameter	Description
Edit job ID	Display the selected Edit job ID. (The example in the figure shows JOB-101)
Sequence ID	Display Sequence ID. (The example in the figure shows SEQ-1)
✚	Add steps button, if there are more than 8 steps added, this button will be grayed out and cannot be added more.
Tool Max Torque	Display the maximum torque of the tool and the set the torque unit. Default torque unit: Newton-meter (N-m)
Step ID	Display Step ID. (Range: 1~8, default: 1)
Step Name	Support English (capital and small characters), numbers and symbols (Range: 1~250 characters, default: STEP-1)
Target Type	Select that the lock target is angle, torque. Default: Torque.
Direction	Set the rotation direction of the screwdriver; Clockwise (CW)/Counterclockwise (CCW). Default: Clockwise (CW).
Run Down Speed (rpm)	To set the speed (rpm) of screwdriver, it must be set according to the speed range of the screwdriver specification and the required speed. If the set value exceeds the specification, the screwdriver won't start. (Range : Please refer to the screwdriver technical specifications，the default is 100 RPM. The maximum speed will be displayed next to it)
Target Torque	Set the target torque of the screwdriver. (Range :Please refer to the screwdriver technical specifications，Default: 0.5 N-m. (The current set torque unit will be displayed next to it)
Target Angle	Set the target angle of screwdriver. (Range: 1~30600, default: 1800)
Delay Time	Set the delay time of the screwdriver. (Range: 0.0~10.0 seconds, default: 0.0 seconds) The delay action occurs during the stroke, so please release the start signal (lever trigger/ push down) after few seconds.
Joint Offset	+: Torque offset increases. Default: +0. -: Torque offset decreases. Adjust this value for fine adjustment; making the actual torque value of the screwdriver lock is closer to the torque value displayed by the Controller. (KTM torque meter is an optional product) Default: 0.0 N-m.
Monitoring Mode	Window: Range proportional interval, for example: 3+/-0.1→2.9~3.1. High-Low: The range interval can be large or small, for example: 0.0~4N-m.
Monitoring Angle	OFF: Turn off the Monitoring Angle. ON: Turn on the Monitoring Angle Default: OFF
Over Angle Stop	OFF: Angle won't stop immediately after timeout. ON: Angle will stop immediately after timeout. Default: OFF
Torque Window	The target and high-low of torque in setting. Default: 0.5 N-m / 0.05N-m.
Angle Window	The target and high-low of angle setting. (Range: 1~30600, default: 1800/360)
High Torque	The upper limit of Setting Torque, the upper limit cannot exceed 110% of the maximum torque, For example: The upper limit of a 5N-m screwdriver is 5.5N-m, the default is 0.6 N-m, The upper section will show the maximum torque.)
Low Torque	The lower limit of torque setting; the default is 0.0 N-m.
High Angle º	The upper limit of angle setting. (Range: 1~30600, default: 30600)
Low Angle º	The lower limit of angle setting. (Range: 0~30599, default: 0)
Record Angle Val.	Option: Skip、+、- Skip: This step does not calculate the angle. + : The angle accumulates increasingly with each step. - : The angle accumulates decreasingly with each step.
Acceleration rate	Set acceleration rate of the screwdriver (Range: 200 – 2000; Preset: 2000) The acceleration slope refers to changing rate of the screwdriver from startup to reach target speed within this interval. A larger value means much faster to reach the target speed after startup
Interrupt alarm	Off: Disable alert On: Enable alert Default: On Advance mode (Adv) An alert will be triggered if the disconnection function stops before the tightening process reaches the target."
Save	Save the settings on this page.

4-4.Tool

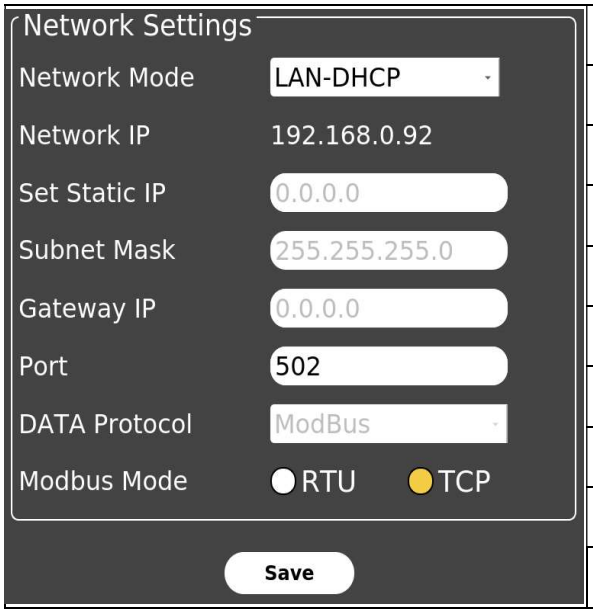


Tool Setting	Description
Start Setting	Remote Start: IO/ communication method (ex: Modbus…) to start tool. Push Start: Push down to start the tool operation . Lever Start: Lever to start the tool operation. Both simultaneously: Trigger both push down and lever simultaneously to start the tool operation. Either method is acceptable: Push down or trigger the lever to start the tool operation. Either method is acceptable (Lever trigger or Remote): Press trigger or IO/ communication to start tool. All three are possible: Use remote activation, push down triggering or lever triggering to start the tool operation. Default: Lever Start
LED Setting	Continuous light-on: LED is normally on. Off: LED is normally off. Startup light-on: Light on during operation. Default: Start lights up.
Lever (%)	Trigger the lever to the set value to start the tool operation. (Range 10%~90%, default: 50%)
Push (%)	Trigger the push-down to the set value to start the tool operation. (Range 10%~90%, default: 50%)
Lock/ Unlock Key Switch	The lock function can only be switched after pressing the lock key within 1 second. (Range 1~3, default: : 1)
Save	Save the settings on this page.

4-5. Controller

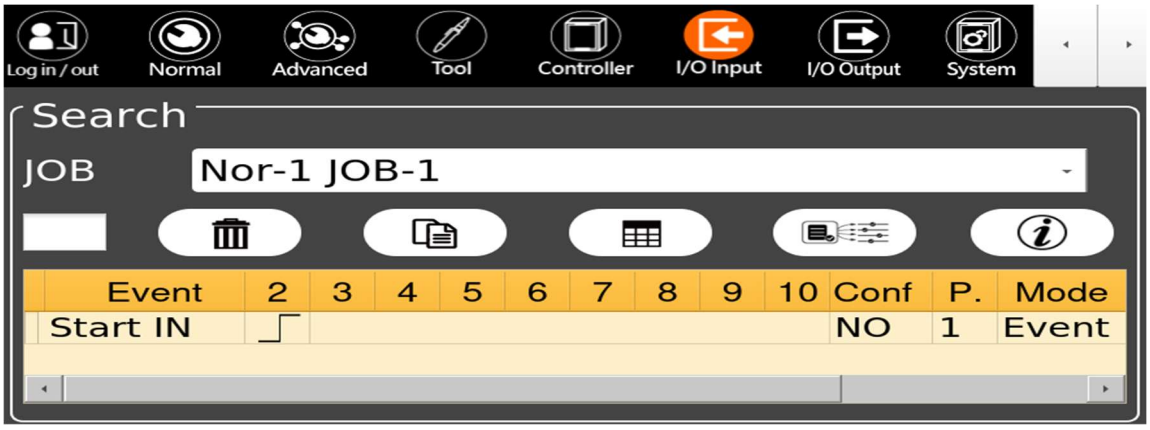


Controller Setting	Description
ID	Setting of Controller ID. (Range: 1~255, default: 1)
Name	Support English (capital and small characters), numbers and symbols (Range: 1~14 characters, default: DEVICE)
Unit	Kgf-m, N-m, Kgf-cm, In-lbs. Default: N-m.
Language	English/ Chinese Traditional / Chinese Simplified. Default: English.
Batch Mode	Countdown/count up: Decremented/incremental calculation of screw number. Default: DEC.
Buzzer Mode	ON/OFF: Set the buzzer switch. Default: ON.
Blackout Recovery	ON: Memory stores the number of operations before the controller was powered off last time. Default: On. OFF: Memory stores the work before the controller was powered off last time.
Disk full Warning (%)	Set disk full warning. (Range: 50%-95%, default: 80%)
Torque Filter	Set the smaller torque for filtering. (Default: 0.0, set the unit according to the above)



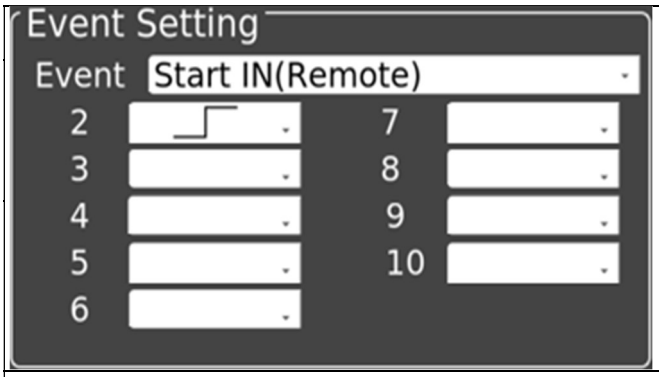
Description
Wired-Static/Wired-Dynamic. Default: Wired-Dynamic.
Display the current IP of the controller.
Set controller static IP. Default: 0.0.0.0.
Set the controller's subnet mask. Default: 255.255.255.0.
Set controller to connect to the default gateway IP. Default: 0.0.0.0.
Set the port to connect to the server. (Range: 1~65535, default: 502.)
Set the export format of lock data: Modbus
Set the Modbus protocol: RTU / TCP (choose one).
Save the settings on this page.

4-6 Input

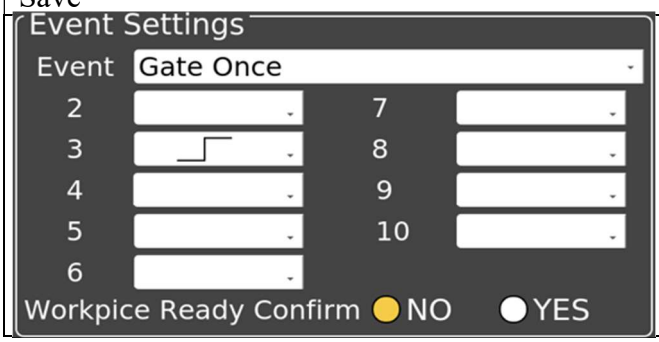


Input Inquiry	Description
Edit job	Select the Edit job.
☐	After checking, select all the newly added events
🗑	Delete the selected events; it can delete single or multiple selections.
📋	Copy the selected events. (Single selection only)
▦	Inquire the event setting details of the job.
(All Job)	When select All Job function (Input), the Input will perform current settings but leave without activation the previous Job settings. To do so, click the All Job button (enable status: black text on yellow background). When press the button again, it will disable All Job function (disable status: black text on white background).
ⓘ	View the input pin information.
Input list	Display ☐, event, signal (2-10), confirmation, page number, and mode. ☐ Click to select the delete function.

Description	
1	Page 1
Mode	Event

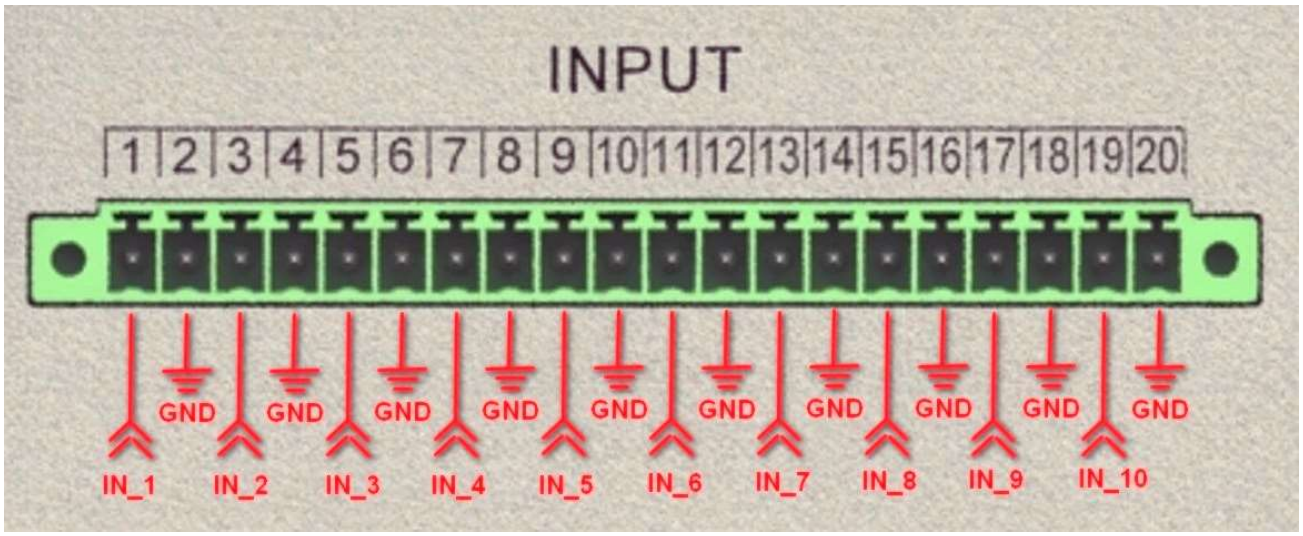


Description
Start IN / Reverse / Disable / Enable / Confirm / Clear Sum / Sequence Clear / Reboot / Self Define 1 / Self Define 2 / Gate Once / Switch Edit job (Nor 1~99，Adv 101~170).
Select signal: Blank High Low
Save the settings on this page.



The workpiece reset confirmation field will be displayed only when selecting the "Single Induction" mode.
Workpiece reset confirmation field:
No: No needs to press confirmation button
Yes: Need to press confirmation button
Default: No

External input enters binary switching JOB



Steps:

1. Item 1 for input (IN_1) Short Circuit (ON) to enter binary switching mode (Note 1)
2. Convert the desired job ID number from decimal to binary. (Represented in 8 digits, padding with zeros if necessary.) (Note 2)
3. After converted into binary (ID 8 digits), pastes them from greater to smaller into the item 3 (IN_3) by order till item 10 (IN_10). 0 → OFF (Open); 1 →ON (Short)
4. Ensure all 8 digits are correctly filled out, then verify that item 2 (IN_2) is inputted and set to short (ON) before switching jobs.

Note 1: Item 1 entered (IN_1) → OFF (Open) Normal even mode, 1 → ON (Short) Binary switching mode.
Note 2: Normal Job ID: 01 ~ 99
Advance Job ID: 101 ~ 170
Modbus Job ID: 201 ~ 221
$2^8 = 256$. In binary, an 8-digit number can display from 0000 0000 to 1111 1111, encompassing a total of 256 sets, which covers the total number of Jobs.

Example : 1. Normal Job (1) → Binary Switching Job (11)

$11_{(10)} \rightarrow 0000\ 1011_{(2)}$

	(IN_1)	(IN_2)	(IN_3)	(IN_4)	(IN_5)	(IN_6)	(IN_7)	(IN_8)	(IN_9)	(IN_10)
	0	0	0	0	0	0	0	0	0	0
⇒	(IN_1)	(IN_2)	(IN_3)	(IN_4)	(IN_5)	(IN_6)	(IN_7)	(IN_8)	(IN_9)	(IN_10)
	1	1	0	0	0	0	1	0	1	1

⇒ Switch Job (11)

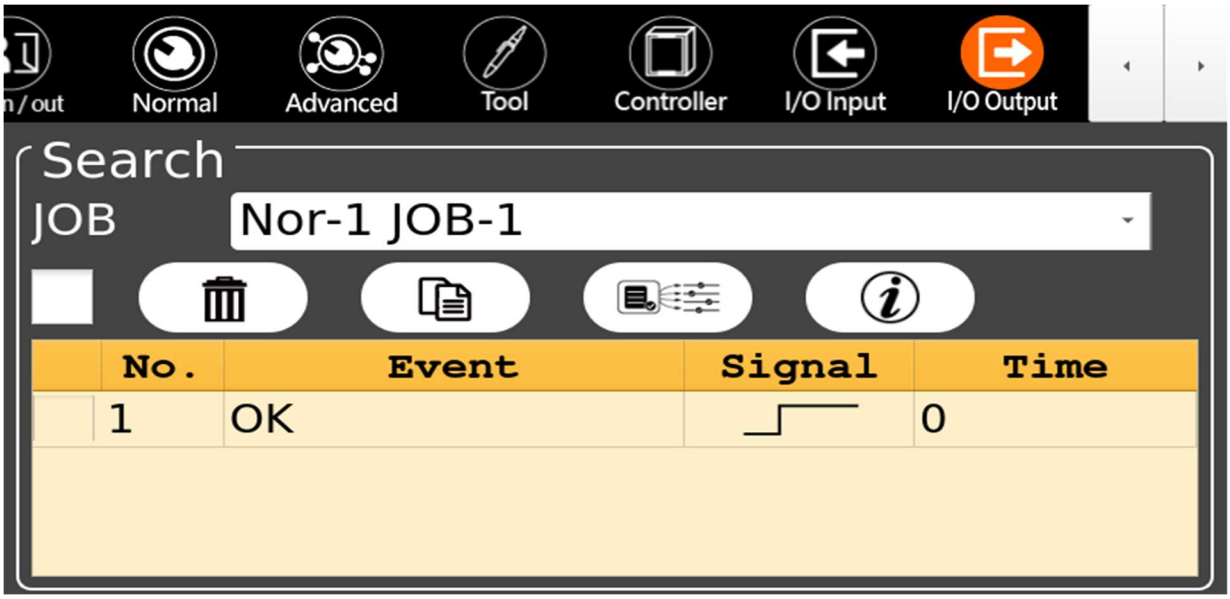
2. Binary Switching Job (11) → Binary Switching Job (101)

$101_{(10)} \rightarrow 0110\ 0101_{(2)}$

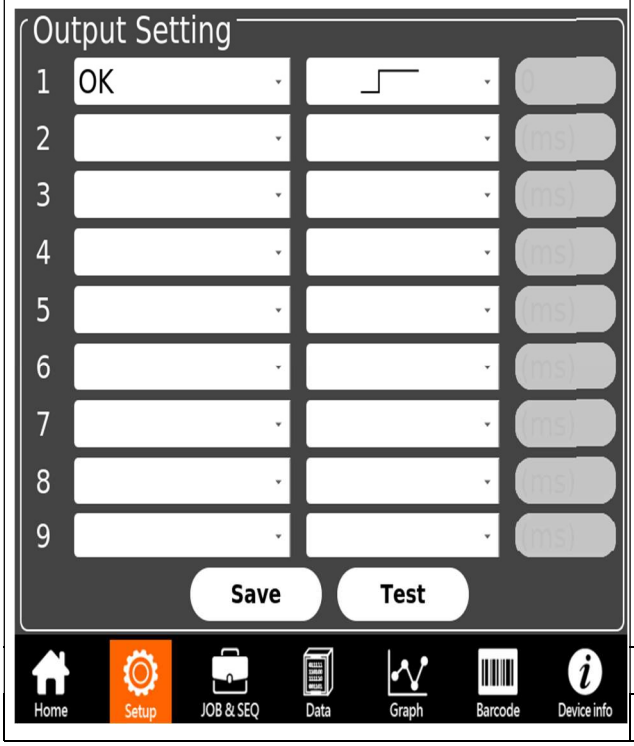
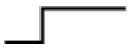
	(IN_1)	(IN_2)	(IN_3)	(IN_4)	(IN_5)	(IN_6)	(IN_7)	(IN_8)	(IN_9)	(IN_10)
	1	0	0	0	0	0	1	0	1	1
⇒	(IN_1)	(IN_2)	(IN_3)	(IN_4)	(IN_5)	(IN_6)	(IN_7)	(IN_8)	(IN_9)	(IN_10)
	1	1	0	1	1	0	0	1	0	1

⇒ **Switch Job (101)**

4-7. Output



Output Inquiry	Description
Edit job	Select the Edit job.
☐	After checking, select all the newly added events.
🗑	Delete the selected events; it can delete single or multiple selections.
📋	Copy the selected events. (Single selection only)
(All Job)	When select All Job function (Output), the Output will perform current settings but leave without activation the previous Job settings. To do so, click the All Job button (enable status: black text on yellow background). When press the button again, it will disable All Job function (disable status: black text on white background)
ⓘ	View the output pin information.
Output list	Display ☐, No., event, signal, and time. ☐ Click to select the delete function.

Output Setting	Description
	Select event and time. Event: OK / NG / Over High / Below Low / Sequence Complete Signal / Job Complete Signal / Motor Signal / Start Signal / Reverse / Self-Define 1 / Self-Define 2./ Barcode stop / Barcode Clockwise Rotation/ Counterclockwise Rotation  Signal: Continuous Export: Light on constantly when screwdriver stops; light off after screwdriver starts again.  Single cycle: Set the continuing time of indicator on according to time. Enable Export: After screwdriver stopped, turn on switch (lever, push-down or remote) Light extinguished after releasing the enable signal. Time: Set the display time of indicator. (Range: 100-10000 mS)
	Save the settings on this page.
	Able to detect whether the IO light is abnormal independently.

4-8. System

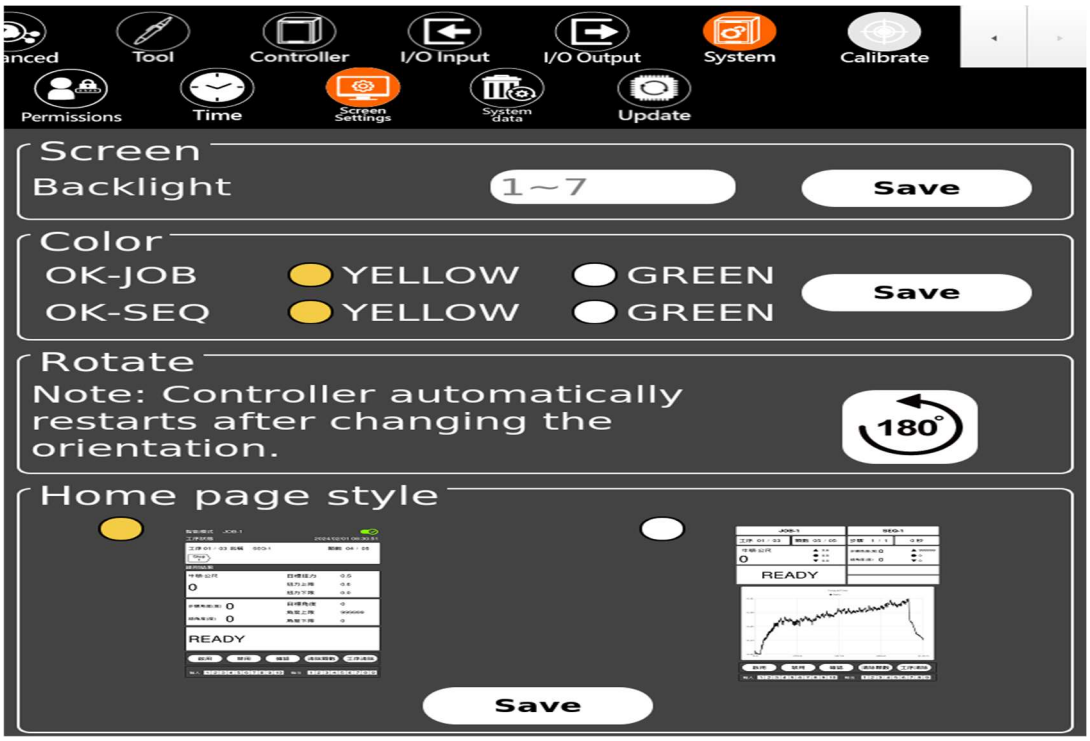
4-8-1. Permissions:

Function switch	Description
Function password	Set password for special functions, range 4-10 characters (support numbers only). For special functions, please contact the manufacturer.
Save	Save function password setting.
Password Setting	Description
Permission selection	Currently, only administrator status (cannot be selected)
New password	Range 4~10 characters (support numbers only).
Confirm password	Range 4~10 characters (support numbers only).
Save	Save password setting.
Function Permissions	Description
Confirm	Clicking this button (yellow background with black text) and then clicking the confirmation button on the main page will activate the keyboard for entering the password to unlock.
Clear	Clicking this button (yellow background with black text) and then clicking the button for removing the component count on the main page will activate the keyboard for entering the password to unlock.
Seq. Clear	Clicking this button (yellow background with black text) and then clicking the button for process clearance on the main page will activate the keyboard for entering the password to unlock.
Page Enable	Description
Switch Edit job/ Sequence	Click this button (black text on a white background) to disable switching between the Edit job/sequence icon. Icon is grayed out Click this button (black text on a yellow background) to switch between Edit job/sequence icon.
Export / Import	Click this button (black text on a white background) to disable switching between data and configuration file import/export, graphic data; the icon is grayed out Click this button (black text on a yellow background) to switch between data and configuration file import/export, graphic data
Barcode	Click this button (black text on a white background) to disable switching between barcode and icon; Icon is grayed out. Click this button (black text on a yellow background) to switch between barcode and icon.

4-8-2. Date / Time:

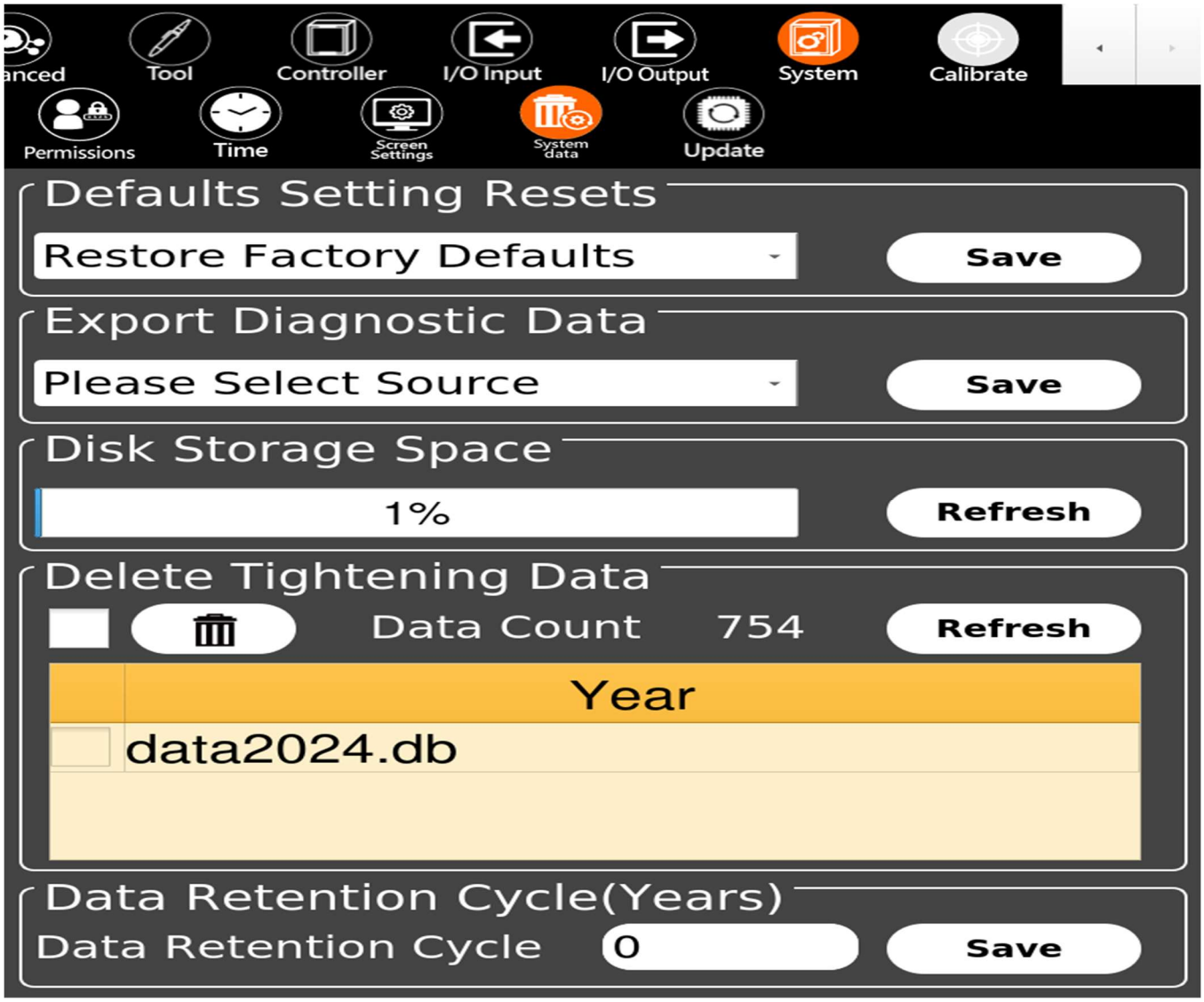
System date	Description
Date	Select yyyy/mm/dd. (Click the date, it displays by the date)
Time	Select a.m./p.m. hh /mm/ss.

4-8-3 Screen Setting:



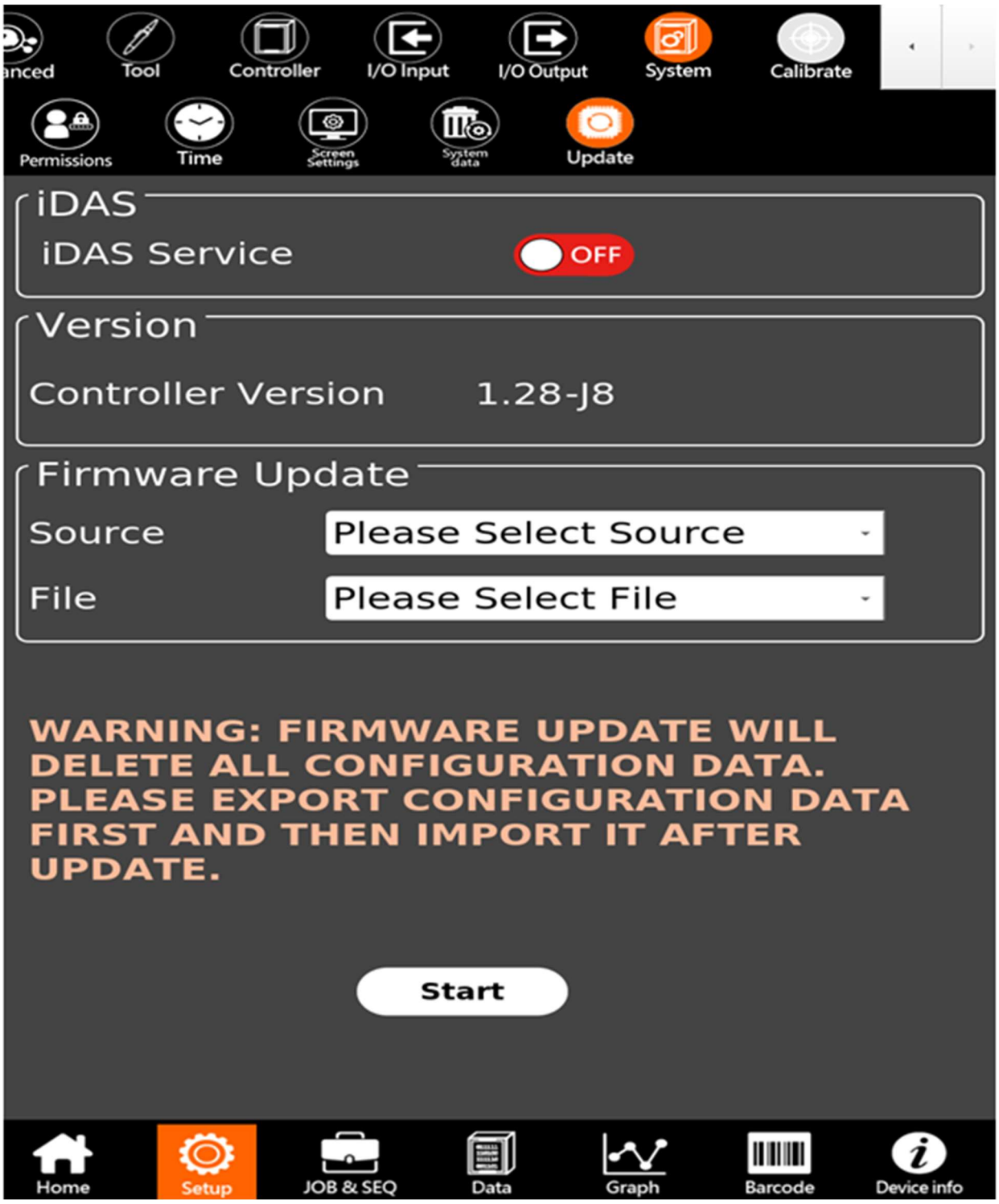
Screen Setting	Description
LED Brightness	Set screen brightness; large number responds higher brightness. (Range: 1-7, default: 7)
Save	Save brightness setting.
Color	Set OK-JOB / OK-SEQ status display color. (Default: yellow)
Save	Save brightness setting.
Screen Rotate	Set screen to rotate 180º and then controller resets automatically.
Home page style	Set the style for the homepage display, and the controller will automatically restart after the settings are saved.

4-8-4. System Management



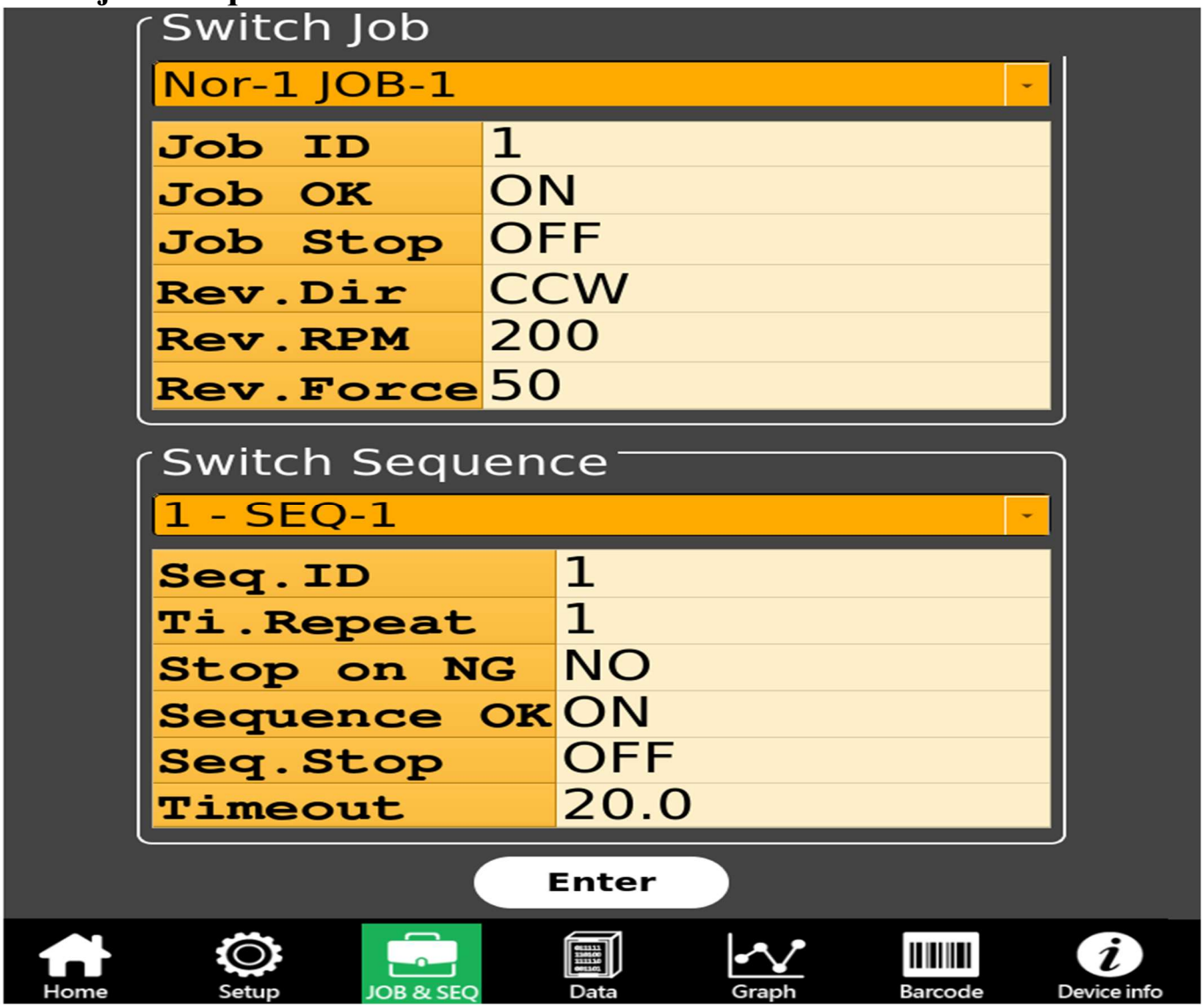
System Management	Description
Defaults Setting Resets	Factory reset default: Keep locked data, clear configuration files. Default: Restore factory default.
Export Diagnostic Data	Export system operation records, select source FTP / USB1 / USB2.
Save	Save data.
Disk Storage Space	Displays the percentage of current disk usage.
Refresh	Refresh data saved.
Delete Tightening Data	Delete fastening data.
☐	After checking, select all the year databases that have been established.
🗑	Delete the selected year; it can delete single or multiple selections.
Delete Database list	Display the years that the database has been created.
Data Count	Display numbers of lists data
Refresh	Refresh numbers of lists
Delete cycle (year)	Set the storage limit for fastening data in cyclic storage. (Range: 1-9999999, Default: 0 (None))
Save	Save. A password is required. Please contact the local agent or manufacturer.

4-8-5. Firmware Update:



Firmware Update	Description
iDAS service	Enable or disable iDAS functionality
Controller Ver.	Show Controller version.
Source	Import the updated version; select the source from FTP / USB1 / USB2. FTP upload file size limit: 500M
File	Select. file hex (example : BF01-0701-0-xxx.hex).
Start	Start to update.

5. Edit job / Sequence



Select Switch Job	Description
Select Switch Job	Select the Edit job name to be run.
Job ID	Displays the selected Edit job ID.
Job OK	Display whether the setting parameter is enabled the Job OK signal.
Job Stop	Display whether the setting parameter is enabled the Stop on Job OK signal.
Rev. Dir.	Displays whether the setting parameter allows unfastening screws.
Rev. RPM	Display the rpm setting parameter to unfasten screws.
Rev. Force	Display the unfastening force setting parameter to unfasten screws.

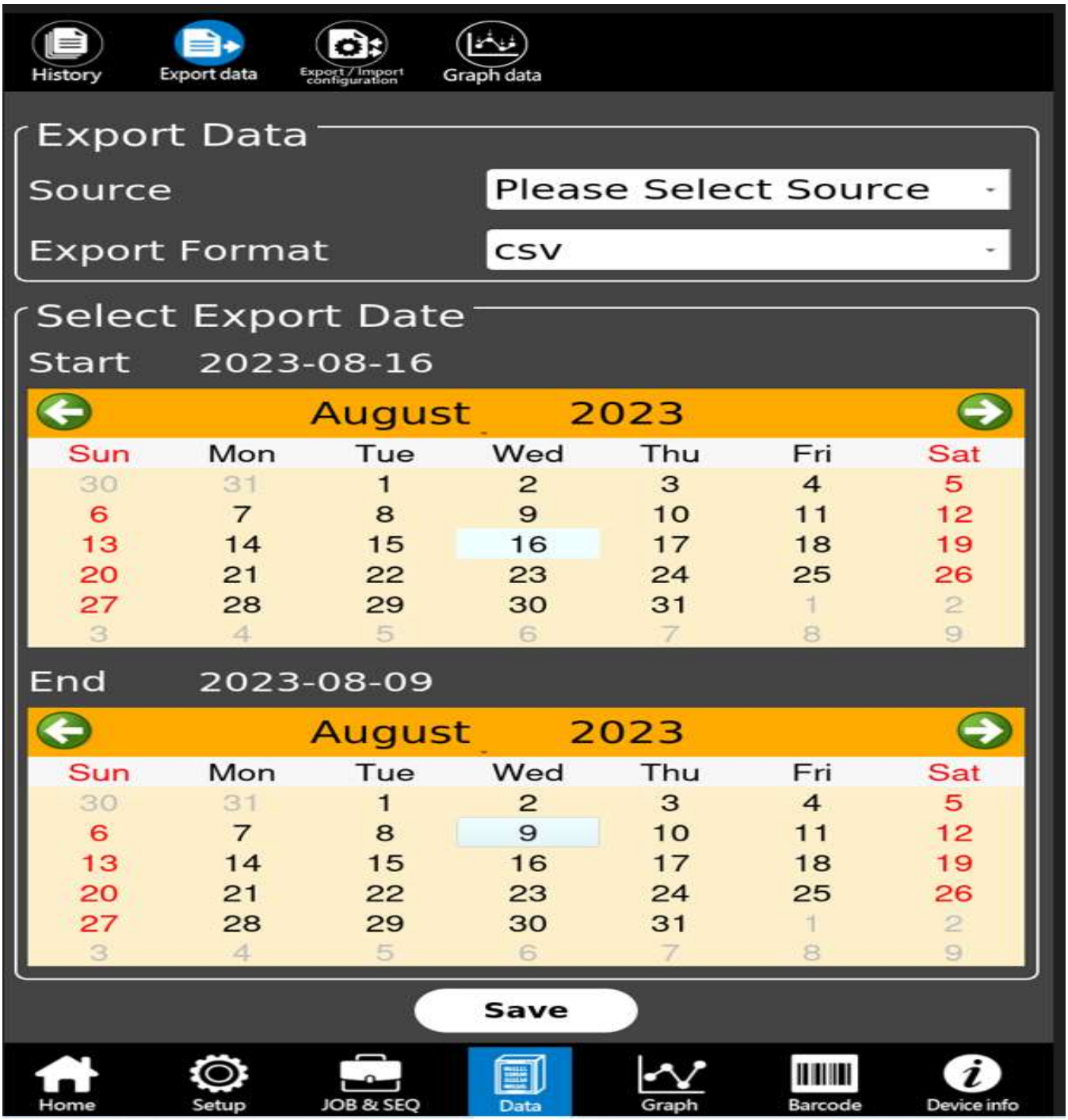
Select Switch Sequence	Description
Select Switch Sequence	Select the name of Sequence to be run. (If the set Sequence is not run, it will not be displayed)
Sequence ID	Displays the selected Sequence ID.
Ti. Repeat	Display the parameter setting value.
Stop on NG	Displays whether the setting parameter allows NG to stop.
Sequence OK	Display whether the setting parameter enables the Sequence OK signal.
Seq. Stop	Displays whether the setting parameter enables the Stop on Sequence OK.
Timeout	Display the parameter setting of timeout.

6. Data

6-1. Historic data

Historic Data	Description
Data Status	Select Display All / OK / NG Status.
Historic Data	Display the latest 100 records with the following fields: Serial No. (No), Data Timestamp, Job Name, Process Name, Step ID, Torque, Unit, Step Angle, Total Angle, Piece Count, Total Count, Status, Barcode.

6-2 Export historic data

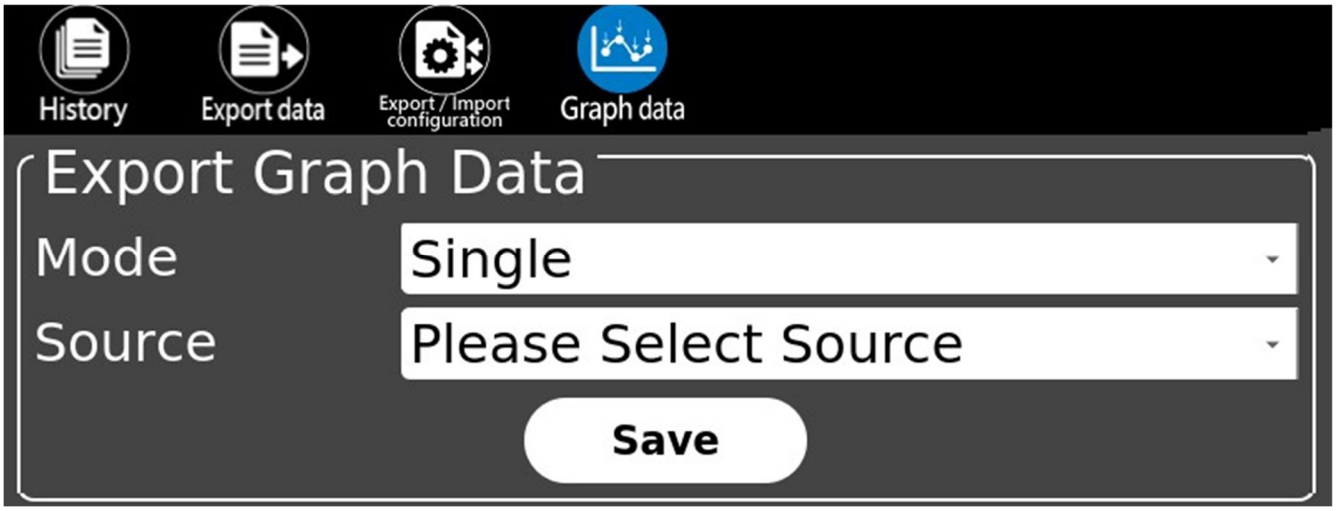


Export Historic Data	Description
Source	Select the export source FTP / USB1 / USB2.
Export Format	Select the export format csv / zip (compressed).
Start	Select the start date (year/month/day), be sure to click the start date, it will appear be displayed next to "Start".
End	Select the end date (month/day) and cannot select across years. Be sure to click the end date, it will be displayed next to "End".
Save	Save the settings on this page.

6-3Export/Import Configuration file

Export/Import Config.	Description
Mode	Select Export / Import.
Source	Select export/import source from FTP / USB1 / USB2. Limit of FTP upload file size: 500M
DB Ver.	Display the current DB version.
File	Select the import file. (extension.cfg)
Save	Save the settings on this page.

6-4 Graph Data



Export Graph Data	Export graph data
Mode	Single: Export one file at a time. Continuous: Continuously auto-export to USB Default: Single
Source	Select the export source USB1 / USB2.
Save	Save setting of this page

7. Chart

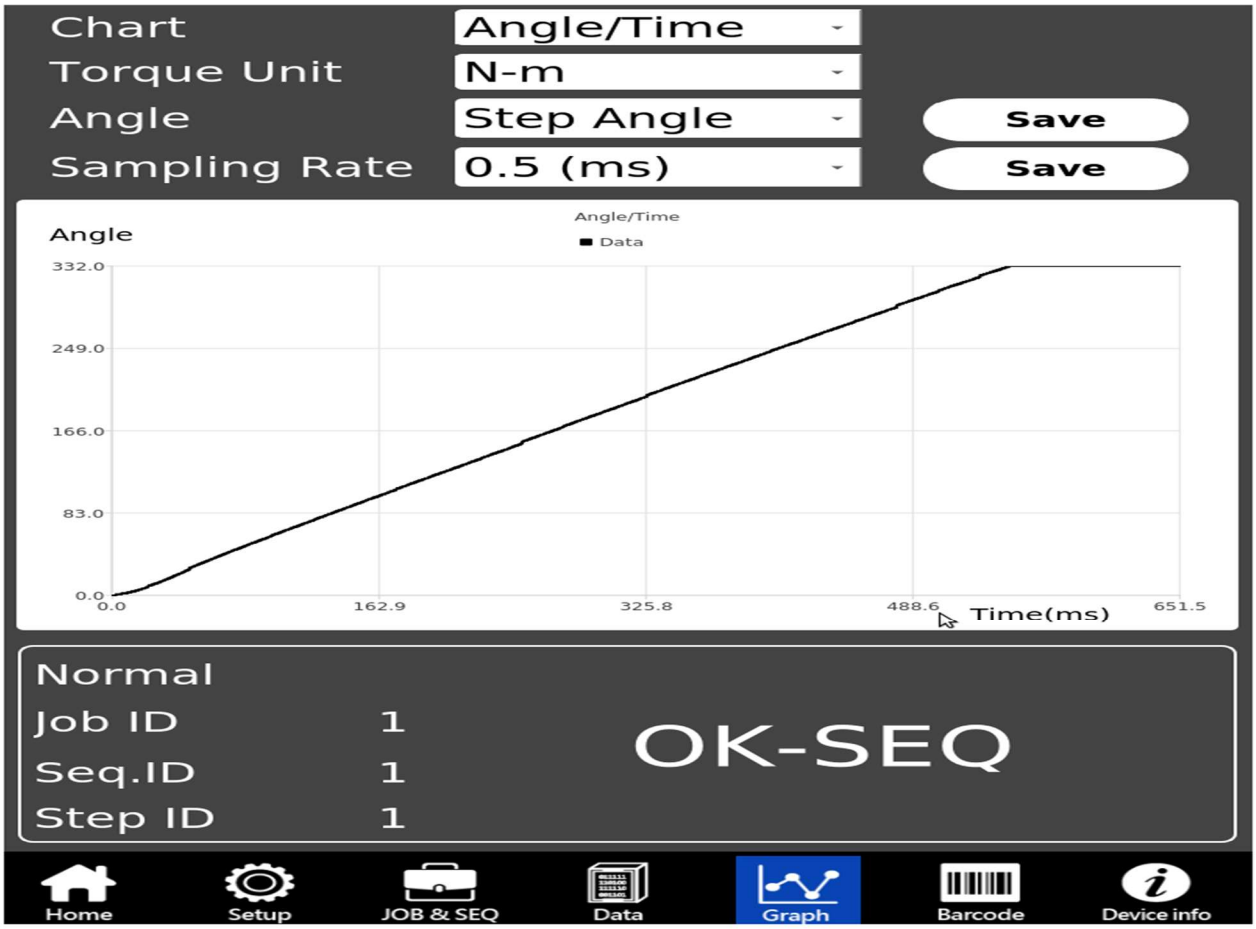
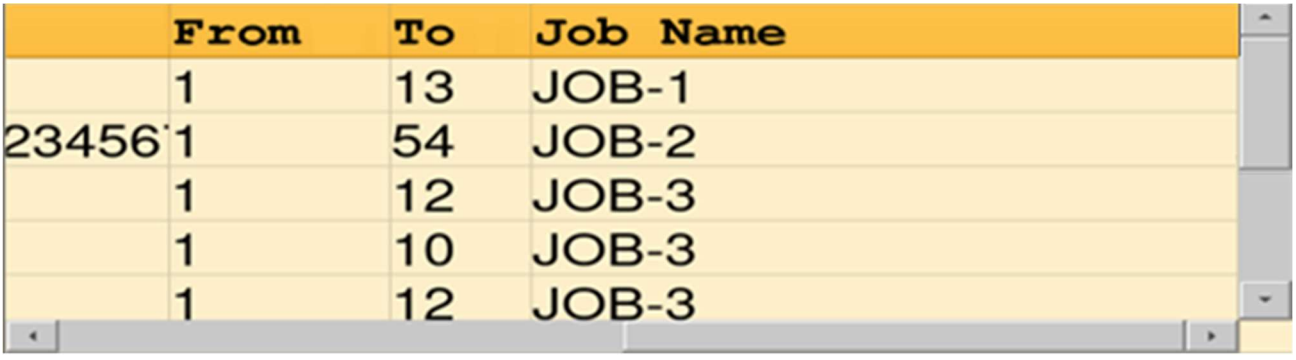
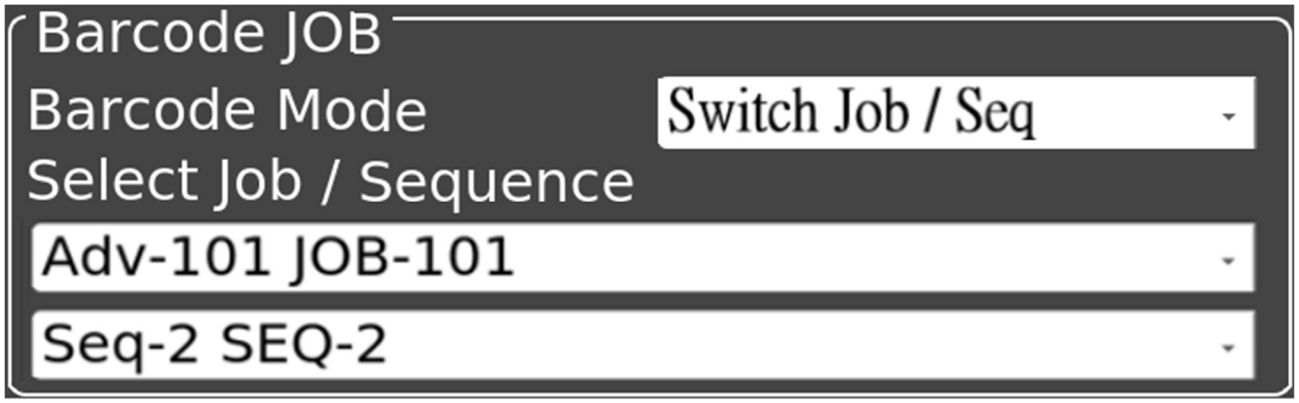


Chart Setting	Description
Chart	Select to display chart Torque / Time: Horizontal is time, vertical is Torque. Angle / Time: Horizontal is time, vertical is Angle. RPM/Time: Horizontal is time, vertical is RPM. Power/Time: Horizontal is time, vertical is Power. Torque / Angle: Horizontal is Torque, vertical is Angle. Default: Torque / Time.
Torque Unit	Kgf-m, N-m, Kgf-cm, In-lbs.
Angle	Select Display Step Angle/ Total Angle. Step Angle: The last step angle. Total Angle: The total sum of angles begins with the initiation of calculation. Preset: Step Angle.
Save	Save the settings on Angle.
Sampling Rate	Select output sampling rate 0.5 (ms) / 1 (ms) / 2 (ms). Default: 0.5 (ms)
Save	Save the sample rate setting.
Chart	Displays the position of lock curve.
High/low	□ Check and display the high/low auxiliary lines.
mode	Display Normal / Advanced.
Edit job ID	Display running Edit job ID.
Sequence ID	Display running Sequence ID.
Step ID	Displays running Step ID.
Status	Display lock status.

8. Barcode

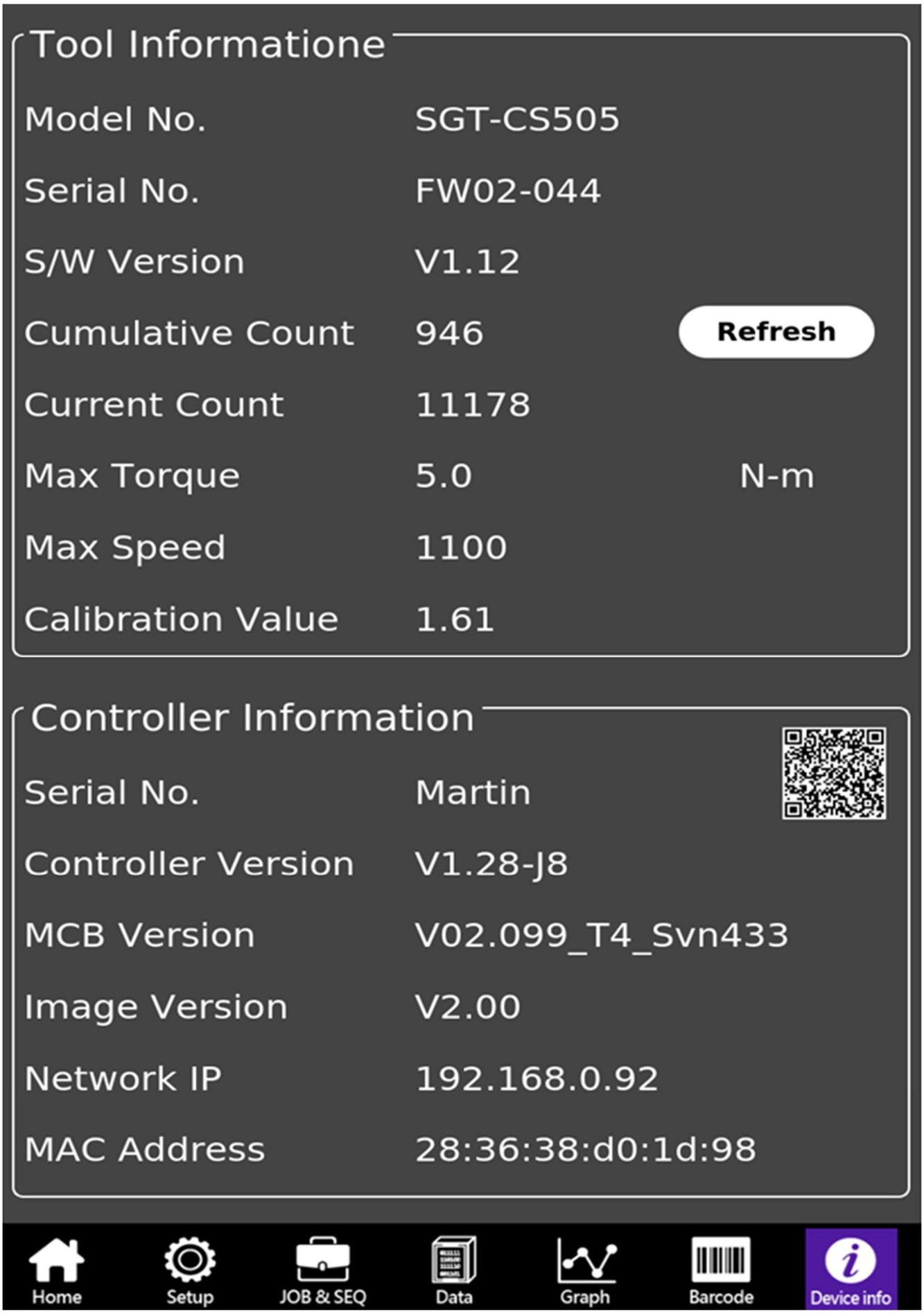

Total Count 7
No.
Barcode
Fro
1
1234567890ABC
1
2
012345678901234567890123456
1
3
=(|}%$%$^&*!
1
4
12-ABC-abc
1
5
prwegrkopwer
1
Barcode
1234567890ABC
Barcode Match
Match From
1
Match To
13
Barcode JOB
Barcode Mode
BS
Select Job / Sequence
Nor-1 JOB-1
Save
Home
Setup
JOB & SEQ
Data
Graph
Barcode
Device info


From
To
Job Name
1
13
JOB-1
23456
1
54
JOB-2
1
12
JOB-3
1
10
JOB-3
1
12
JOB-3


Barcode JOB
Barcode Mode
Switch Job / Seq
Select Job / Sequence
Adv-101 JOB-101
Seq-2 SEQ-2

Barcode Setting	Description
☐	After checking, select all the newly added barcodes.
🗑	Delete the selected barcodes; it can delete single or multiple selections.
Total Count	Display the current total number of barcodes.
Barcode list	Display ☐, No. button, barcode, from, number, and Edit job name. ☐ Check to select delete function. Click the No. button to modify the barcode parameters below.
Barcode	Scan the barcode real-time display area. The barcode content does not support single quotes (‘) which will affect the length of the barcode. If single quotes are used, they will be replaced by double quotes (“). (Range: 1~100 characters)
Match From	Set the barcode judgment interval of each Edit job / Sequence; set which character barcode judges from. (Range: 1~100 characters, default: 1)
Match To	The number of judging characters needed to be counted from the judging character onward. Additionally, after scanning a barcode, the total number of characters in the barcode will be displayed. (Range: 1~100 characters, default: 1)
Barcode Mode	Select Barcode Stop (BS), Barcode Stop (Sequence is switchable), Switch Job/ Sequence) Preset: Disable Barcode Stop (BS) Barcode Stop (BS): Job status oriented. After scanning a barcode, switch to the corresponding Job and disable it (Disable). Turn on; there will be no allowance to either switch Jobs or perform barcode scanning during this tightening process until the Job procedure is finished, and then clear barcode information. Barcode Stop (Sequence is switchable) (BS (Free)): Job status oriented. After scanning a barcode, switch to the corresponding Job and disable it (Disable). Turn on; there will be allowance to either switch Sequences or scan barcode to switch Jobs/ Sequences (Barcodes listed in the summary table only) during this tightening process until the Job procedure is finished, and then clear barcode information. Switch Job/ Sequence (Switch Job/ Seq.): Sequence status oriented. After scanning a barcode, switch to the corresponding Sequence, and it can be switched to different Sequences or even different Jobs. Turn on; there will be allowanced to scan different barcodes during this tightening process until the Sequence procedure is finished, and then clear barcode information
Select job	Select Scan Barcode for Job: Only in "Switch Job/Seq." mode, previously saved jobs can be selected. In other modes, saved jobs cannot be selected, and the option will be grayed out.
Select Sequence	Select the sequence corresponding to the barcode scan. The menu of "Sequence Selection" will be appeared when the Barcode mode has been selected on "Switch Job/Seq." There is only at the Switch Job/Seq. mode that allows to select different sequences under the same job.
Save	Save the settings on this page.

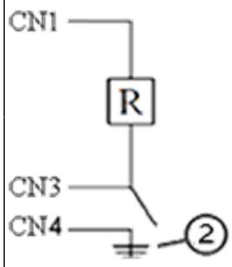
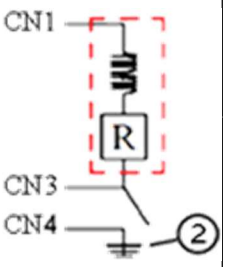
9. Information



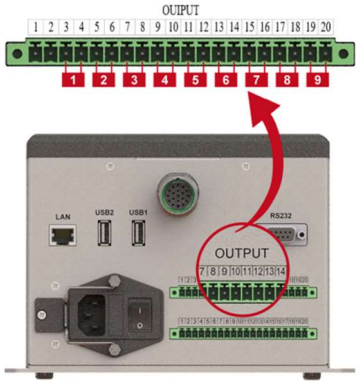
Tool Information	Description
Tool Type	Displays the tool model number.
Tool SN	Displays the serial number of the tool.
S/W Version	Displays the tool version.
Maintain Counts	Display the number of maintenances. (When the number reaches 1000000, the homepage will prompt EOC)
Refresh	Refresh the values of maintenance times and total locking times.
Total Counts	Displays the total number of tool locks.
Max Torque	Displays the maximum torque of the tool.
Max Speed	Displays the maximum rotational speed of the tool.
Calibration Value	Displays calibration scale.

Controller Information	Description
Controller S/N	Display the serial number of Controller.
Controller Ver.	Show Controller version.
MCB Version	Show MCB version.
Image Ver.	Display the Image version.
Network IP	Show Controller IP.
MAC	Display Controller MAC address.
QR Code	Display the QR code and provide the download link for the user manual.

10. External output control function description

<table>
<tr><th>Connector No</th><th>Self-definition</th><th>Description</th><th>Ordinary load</th><th>Inductive load</th></tr>
<tr><td>CN 1</td><td>Vdc</td><td>The voltage output of controller is DC+12V/100mA or +24V/50mA.
Default: +24V/50mA (+12V/100mA is also applicable)</td><td rowspan="3"> 
</td><td rowspan="3"> 
</td></tr>
<tr><td>CN 2</td><td>GND</td><td>Power output GND</td></tr>
<tr><td>CN 3

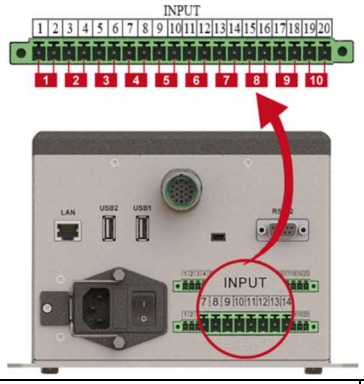
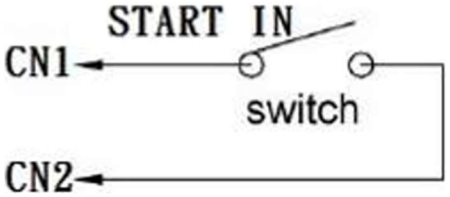
CN 4</td><td>Example:
OK

COM</td><td>OK: CN3 and CN4 are connected when a screwdriver is initiated.
CN3 + CN4 are connected when short-circuited
CN3 + CN4 are disconnected when open-circuited1+CN4
 
</td></tr>
<tr><td>Output state definition</td><td colspan="3">OK
NG
NG-High: Exceed upper limit.
NG-Low: Lower than lower limit.
OK-Sequence: Sequence completion signal
OK-JOB: Job completion signal
Tool Running: Motor signal
Tool Trigger: Initiating signal
Reverse: Screw removing
UserDefine1: Self-definition 1
UserDefine2: Self-definition 2</td></tr>
</table>

11. External input control function description

<table>
<tr><th>Connector No</th><th>Self-definition</th><th colspan="2">Description</th></tr>
<tr><td>CN 3

CN 4</td><td>Example:
START IN

GND</td><td>1. When CN3 + CN4 is (CLOSE), screwdriver is initiated.
2. When CN3+CN4 is (OPEN), screwdriver stops running
 
</td><td> 
</td></tr>
<tr><td>Input state definition</td><td colspan="3">Start IN: Start
Reverse: Screw removing
Disable: Not used
Enable: Able to use
Confirm: Make confirmation
Clear: Clear the counts
Sequence Clear: Clear sequence
Reboot: Restart
UserDefine1: Self-definition 1
UserDefine2: Self-definition 2
Gate Once: Trigger-once sensing
SW JOB: Switch jobs (Smart:1-99, Advanced:101-170)</td></tr>
</table>

Remark:

※ For the INPUT contact, if the non-isolated (wet contact) control method is used, a 10K resistor shall be connected in series on the wiring to prevent equipment damage.

※ CN1(V+) and CN14(GND) can supply DC+24V (default). (DC +12V needs to be customized)

※ If user needs other DC voltage, users must use step-down circuit to step down voltage.

※ If user needs input voltage to drive the police instrument, the input voltage should not exceed DV+/-40V, +/-1A, max:10w (use MOS RELAY I/O version)

12. Description of display status code

12.1Abnormal messages from controller/screwdriver/lock information

Code	Error message	Description
0	NO-ERR	NO Error (display null value)
1	ERR-CONT-TEMP	Error controller temperature
2	ERR-MOT-TEMP	Error motor temperature
3	ERR-MOT-CURR	Error motor current too high
4	ERR-MOT-PEAK-CURR	Error motor peak current too high
5	ERR-HIGH-TORQUE	Error motor torque too high; the stop torque is greater than the "upper limit of judgment lock torque " after the screwdriver is started.
6	ERR-DEADLOCK	Error motor doesn't turn
7	ERR-PROC-MINTIME	Error process min time is below limit
8	ERR-PROC-MAXTIME	Error process max time is below limit
9	ERR-ENCODER	No pulses from encoder
10	ERR-HALL	No pulses from Hall sensors
11	ERR-BUSVOLT-HIGH	Bus- Voltage is too high
12	ERR-BUSVOLT-LOW	Bus- Voltage is too low
13	ERR-PROC-NA	Process not available
14	ERR-STEP-NA	Step not available
15	ERR-DMS-COMM	Error Torque Controller Communication
16	ERR-FLASH	CRC Error STM32 Flash (controller FLASH verification code error)
17	ERR-FRAM	CRC Error Frame (controller FRAM verification code error)
18	ERR_HIGH_ANGLE	Error Angle (only if selected in screwing step)(angle exceeds upper limit); the stop angle is greater than the "judgment lock angle upper limit" after the screwdriver is started.
19	ERR-PROTECT-CIRCUIT	Is set if the "Protect In" Port Pin is low (hardware protection error)
20	ERR-SWITCH-CONFIG	If another switch (lever or push) is engaged than configured (just for information). (Abnormal start switch setting).
21	ERR-STEP-NOT-REC	Screwing process number of steps and process step numbers of settings are inconsistent.
22	ERR-TMD-FRAM	The FRAM of the screwdriver board is abnormal
23	ERR-LOW-TORQUE	Error motor torque too low, the stop torque after the screwdriver is started is less than the "judgment lock torque lower limit".
24	ERR-LOW-ANGLE	Error motor angle too low, the stop angle after the screwdriver is started is less than the "judgment lock angle lower limit".
25	ERR_PROC_NOT_FINISH	Operation not completed
	User definitions below	
32	SEQ-COMPLETED	Press OK when the sequence is completed (with OK-SEQ)
33	JOB-COMPLETED	Press OK when the job is completed (with OK-JOB)
34	WORKPIECE_RECOVERY	Workpiece recovery press confirm (with C1-ERR/C4-ERR)-
35	NOT ACCEPT BARCODE	Do not accept barcode. In BS/BS (Free) mode, an abnormal condition will occur after pressing start if there is a duplicate scan or if the barcode does not exist in the barcode pool.

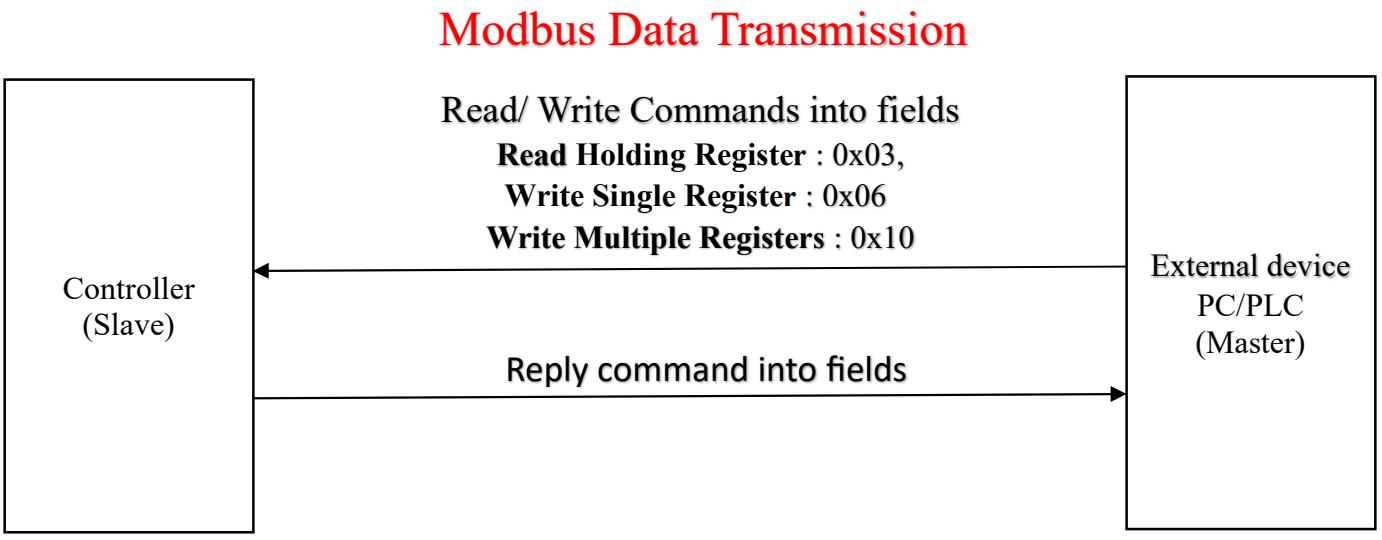
12.2 System messages

Code	System message	Description
0	INITIAL	Initialization
1	NORMAL	NO Error (display null value)
2	REMOTE-GPIO	Remote control-IO
3	REMOTE-LAN	Remote control-LAN
4	REMOTE-RS232	Remote Control-RS232
5	MODE-AUTO-LEARNING	Mode - auto-learning
6	MODE-ADV-TEST	Pattern - advanced testing
7	DISK-FULL	Capacity is full
8	WARN-DISK-FULL	Warning capacity is almost full
9	WARN-LAN-COMM.	Abnormal network communication
10	WARN-DB-VERSION	DB version does not match
11	WARN-MCB-COMM.	Controller communication is abnormal
12	TOOL-MOTOR-NSUPPORT	Tool motor is not supported
13	WORKPIECE_READY	Workpiece in place
14	WORKPIECE_NOT_READY	The workpiece is not in place

12.3 Fasten Status

Code	Status	Description
0	INIT	Initialize
1	READY	Tool Ready
2	RUNNING	Tool running
3	REVERSE	Reverse
4	OK	Screw OK
5	OK_SEQ	Sequence ok
6	OK_JOB	Job ok
7	NG	Screw NG
8	NS	NS NG
9	SETTING	MCB Setting MCB
10	EOC	Arrival maintenance times
11	C1	Once external confirmation “GATE”
12	C1-ERR	Once external confirmation “GATE” is error.
15	C4	When 『OK-SEQ/OK-JOB disable screwdriver』 & 『Gate mode_ trigger once』 functions are on screen will display『C4』 after a batch completed
16	C4-ERR	When 『OK_SEQ/OK_JOB disable screwdriver』 & 『Gate mode_ trigger once』 is error.
19	BS	Barcode Stop
20	NAB	Not Accept Barcode *Press Confirm to release. In BS/BS (Free) mode, an abnormal condition will occur after pressing start if there is a duplicate scan or if the barcode does not exist in the barcode pool.

13. Modbus Instruction



Communication method uses MODBUS TCP/ MODBUS RTU standard protocol.
Connection methods are:

- TCP connection and setup:

1. Selecting LAN-DHCP or LAN-STATIC from controller.
2. Configuring the controller's IP to be on the same domain as the PC's. (Find out an IP from LAN-DHCP or select/ setup an IP address from STSTIC IP or GATEWAY IP.)
3. Setting the Server port (default is 502) and click SAVE.

- R RS-232 connection and setup

BAUDRATE configuration: 115200/ Data bits: 8/ Stop bits: 1/ Parity: None/ Flow Control: Xon/ Xoff.

MODBUS PDU:

- Using Big-Endian as data placement format
- Read Funcode code supports Read Holding Registers
- Write Funcode code supports Write signal Register/ Write Multiple Registers
  (If writing multiple addresses in ASCII, only Write Multiple Registers is supported.)

Note 1: To use command control for the screwdriver, set the screwdriver to Remote Start (Go to Settings > Tools > Tool Settings > Start Settings > Remote Start).

Note 2: When using command control to start the screwdriver (ON), remember to turn off the start (OFF) when other operations are required.

Supported Versions: Controller Version V1.22 and above.
For the Modbus communication document (Read/Set Fields), please contact the original manufacturer.

Chart 1 Controller Data fields

TCP/RTU Torque Reading as below:

Request

Device ID	Function Code	Start address High	Start address Low	No of address High	No of address Low	CRC16 Low	CRC16 High
01	03	10	3B	00	02	B1	06

Response

Device ID	Function Code	No of byte	Data #1 High	Data #1 Low	... x n data		CRC16 Low	CRC16 High
01	03	04	00	00	00	33	BA	26

add (Hex)	add (DEC)	Length	Parameter INS	Parameter area	Function Code
103B	4155	2	Tightening Torque* 100	0~TOOL MAX	0x03

Char2. Controller function setting address

TCP/RTU An example of setting the screwdriver to start is as follows:

Request

Device ID	Function Code	Address High	Address Low	Date High	Data Low	CRC16 Low	CRC16 High
01	06	01	C8	00	01	C8	08

Response

Device ID	Function Code	Address High	Address Low	Date High	Data Low	CRC16 Low	CRC16 High
01	06	01	C8	00	01	C8	08

add (Hex)	add (DEC)	Length	Parameter INS	Parameter area	Function Code
01C8	456	1	Screwdriver Starting	0: off 1: on	0x06, 0x10