

VERSION 10
USER MANUAL

Patient Lifting System with Control Box-TC12 (Color LCD)

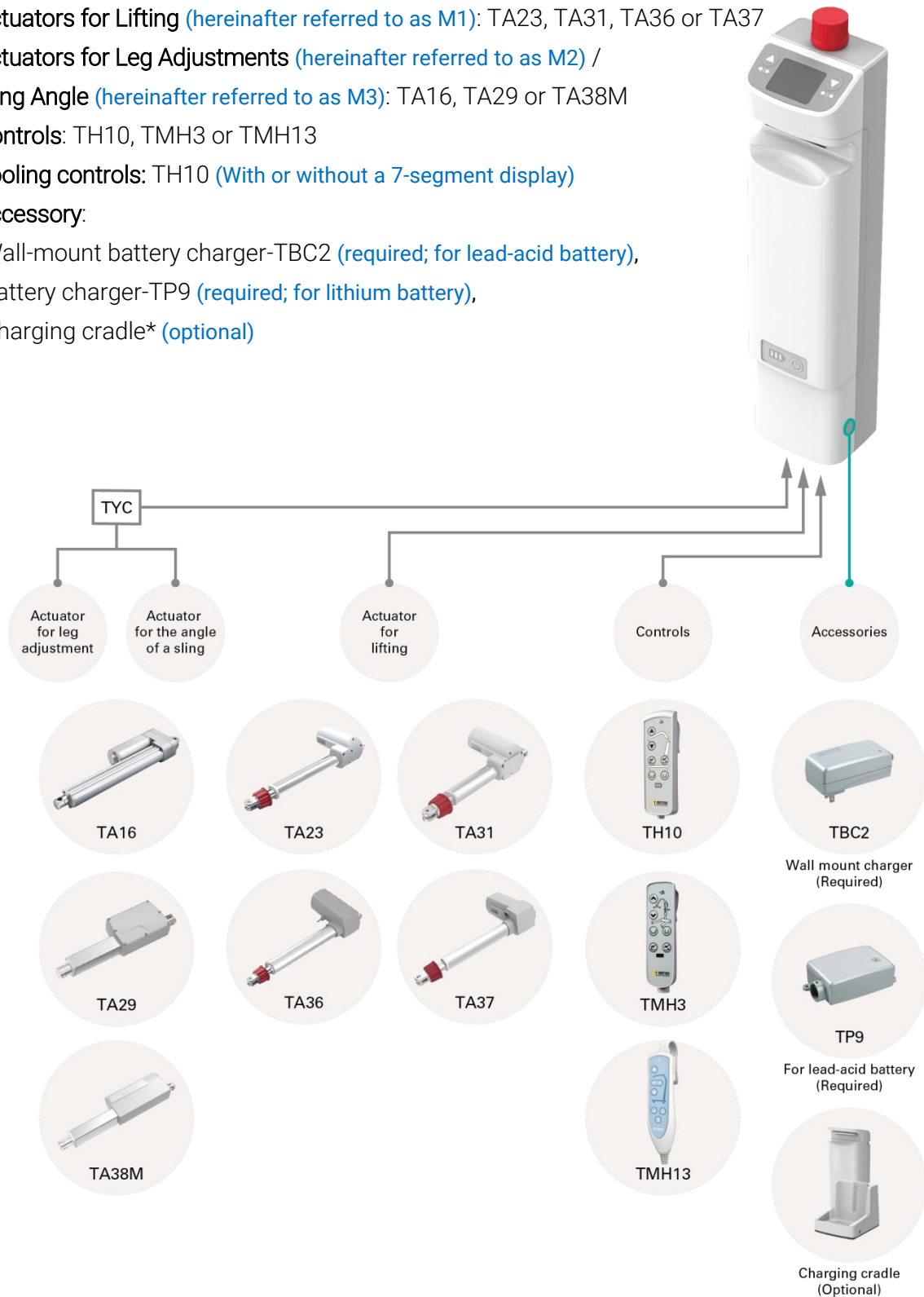


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1.Overview

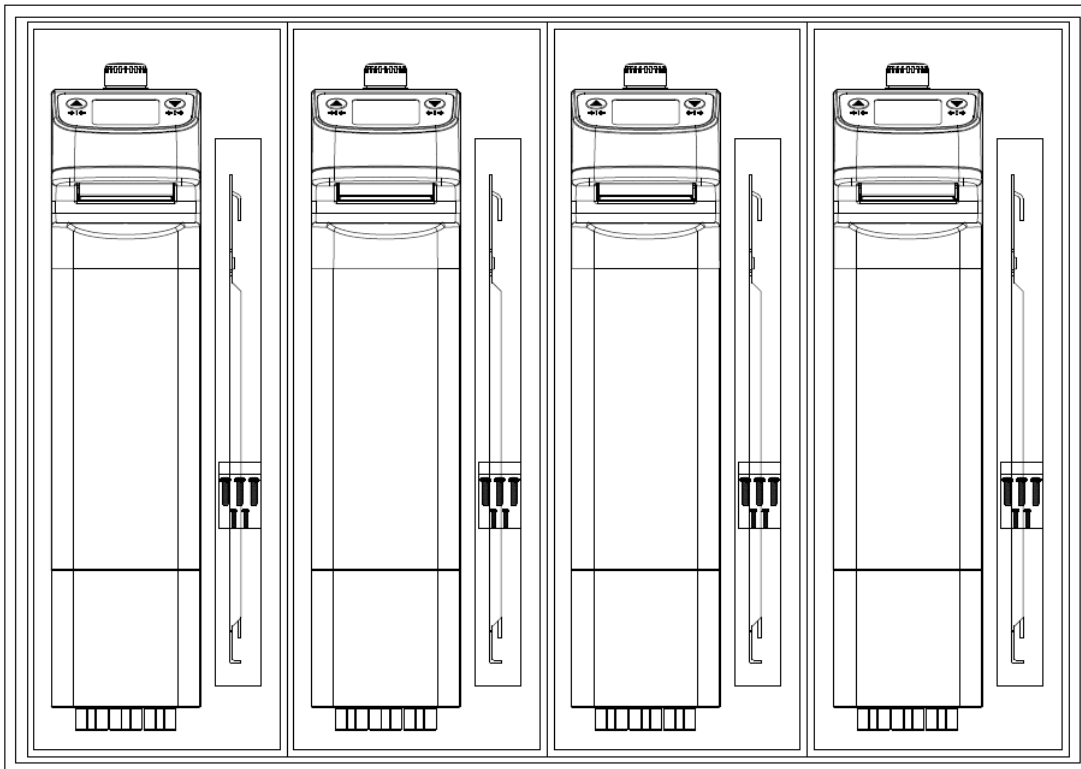
- Control Box: TC12
- Actuators for Lifting (hereinafter referred to as M1): TA23, TA31, TA36 or TA37
- Actuators for Leg Adjustments (hereinafter referred to as M2) / Sling Angle (hereinafter referred to as M3): TA16, TA29 or TA38M
- Controls: TH10, TMH3 or TMH13
- Tooling controls: TH10 (With or without a 7-segment display)
- Accessory:
 - Wall-mount battery charger-TBC2 (required; for lead-acid battery),
 - Battery charger-TP9 (required; for lithium battery),
 - Charging cradle* (optional)



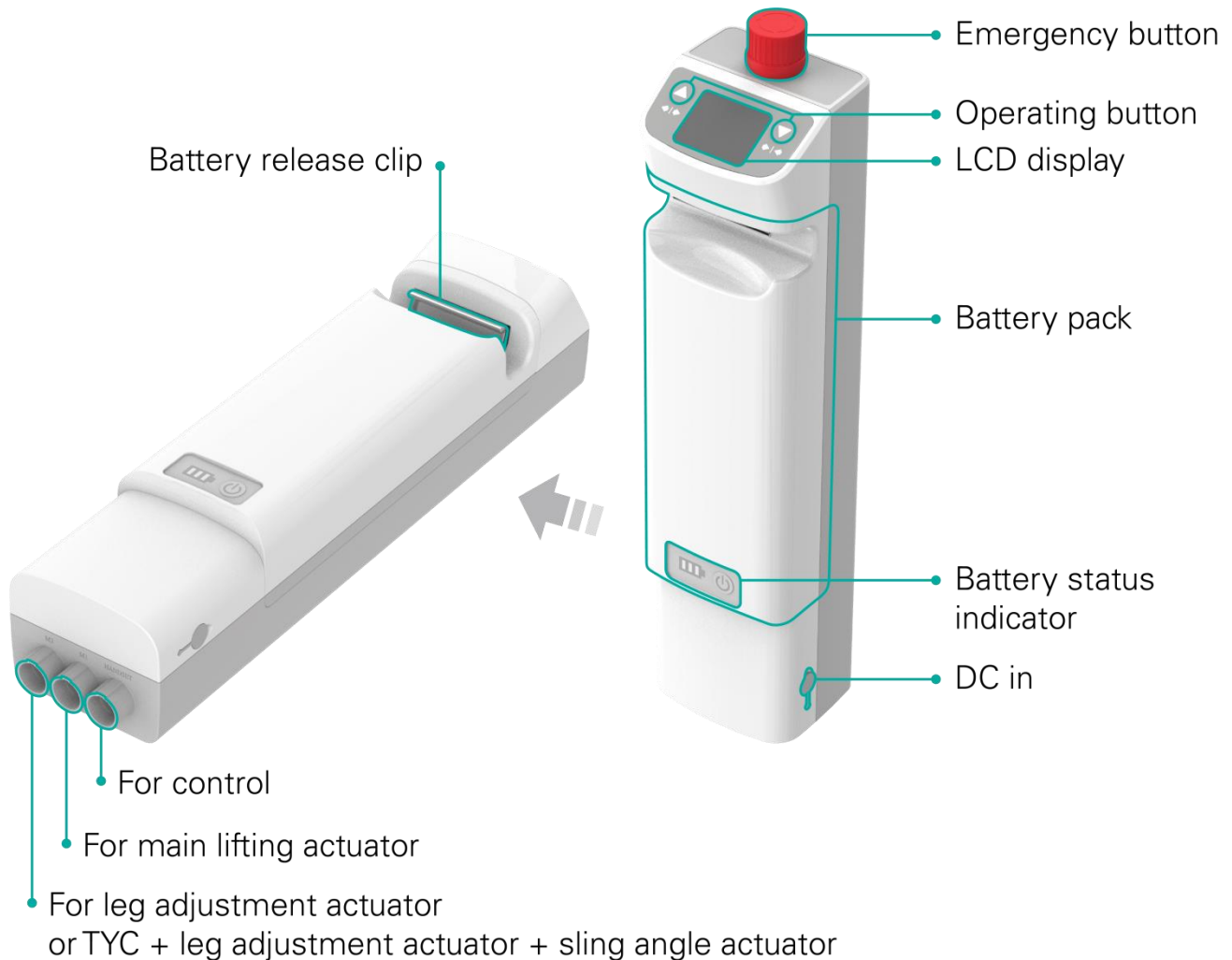
2.TC12 Control Box Introduction

2.1 Package Contents

The package contains one battery set and one pack of parts, which includes a bracket (1pc), fixed screws for the bracket (3pcs), and fixed screws for TC12 (2pcs).

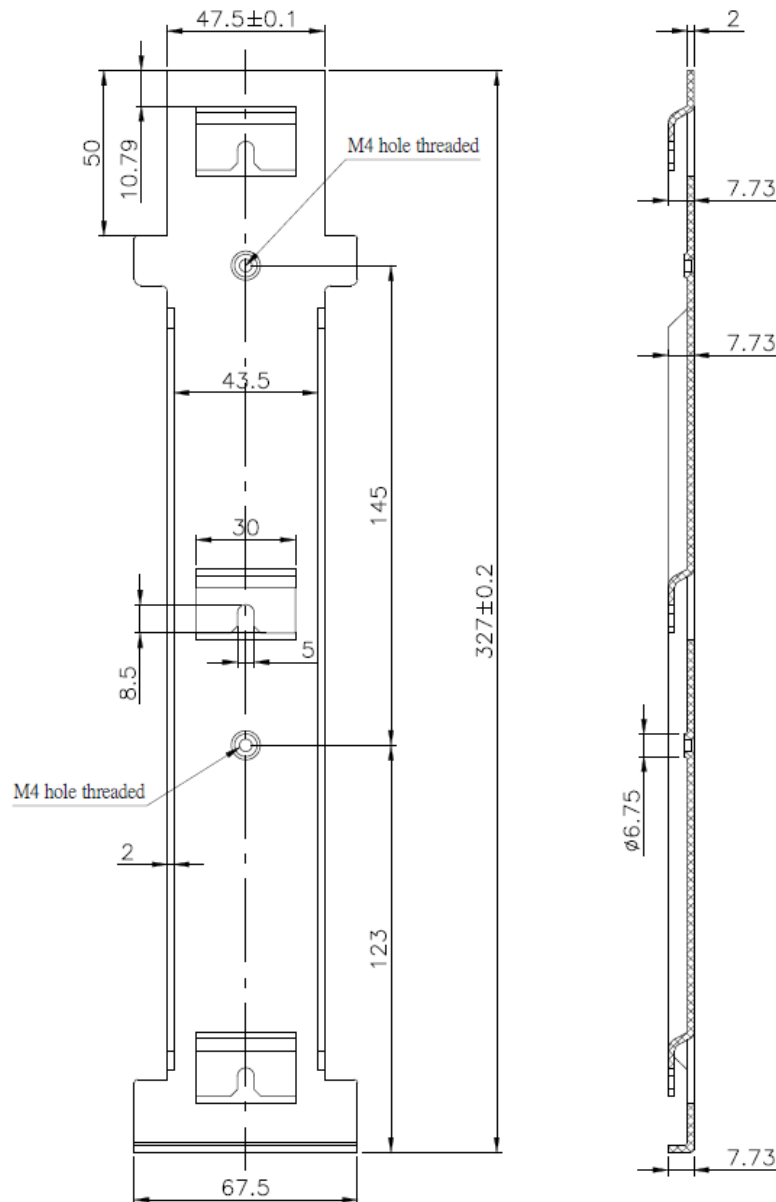


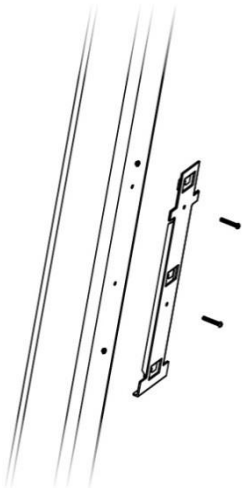
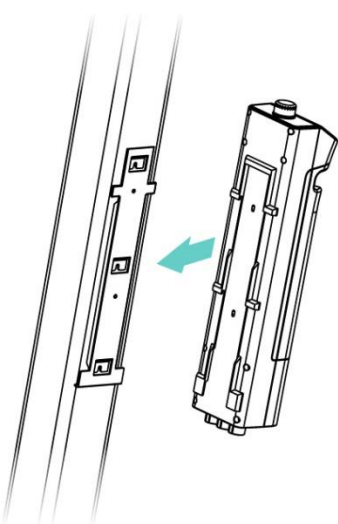
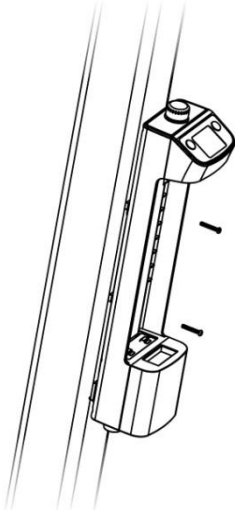
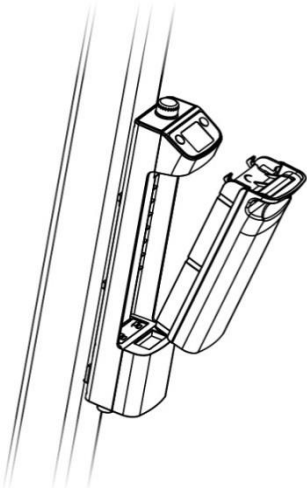
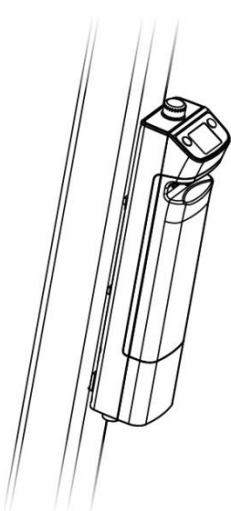
2.2 Appearance



2.3 Installation Instructions

2D drawing for the TC12 fixed bracket.



1. Install the bracket on the hoist frame 	2. Install the TC12 on the bracket 	3. Properly tighten ALL fasteners 
4. Install the battery 	5. Installation is now complete 	

3. TH10 Tooling Hand Control Introduction

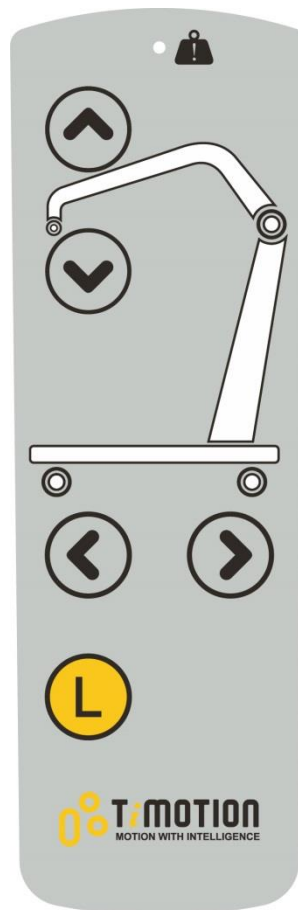
The TH10, designed as a tooling (programming) hand control for the patient lifting system, can assist further functionality settings in the control box-TC12.

To get started, begin with the TH10 tooling hand control. For *quick* overcurrent protection functionality setting, please select the TH10 with 7 segment display (refer to 3.7).

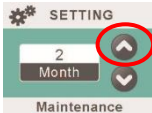
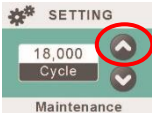
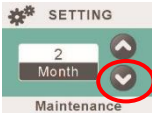
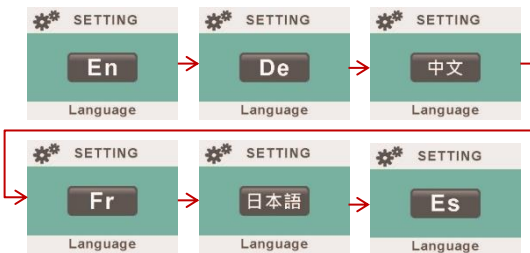
For more details, please see below regarding the functionality of the TH10 tooling hand control.

3.1 Without 7-segment display

1. Connect the TH10 tooling hand control to the control box-TC12.

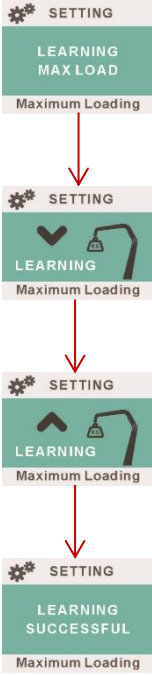


2. Refer to the following chart for the related function settings.

Buttons	Function descriptions	TC12 display images
	Overload alarm	
↑ or ↓	Short press: Switch the main menu on the TC12. Setting- - Reset - Motor Configuration - Maintenance - Language	   
↑	<u>Under the main menu</u> Long press: Extend the M1/M2/M3 actuator.	  
	<u>Under the submenu</u> Increase the figure.	 
↓	<u>Under the main menu</u> Long press: Retract the M1/M2/M3 actuator.	  
	<u>Under the submenu</u> Decrease the figure.	 
← or →	Switch the submenu options. Ex: Submenu from "language"	

L	Learning functionality. Press “L” and then the right image will be displayed. <i>*To activate the learning function, please press this button along with ↑</i>	
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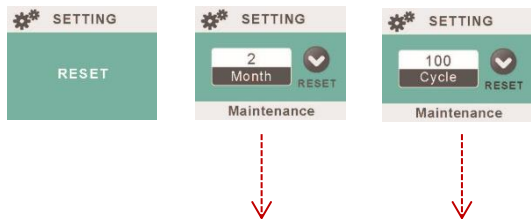
3.2 Activate the overcurrent learning function

Buttons	Action Required	TC12 display images
L+ ↑	Press “L” and then the right image will be displayed. *To activate the learning function, please press this button along with ↑ - Press and hold the L and ↑ buttons simultaneously without releasing until activation is complete. - After the learning function has been activated, the M1 actuator retracts to the lowest stroke limit. - Then, the M1 actuator extends to the highest stroke limit. - The buzzer will beep twice (once/sec) and screen will display “LEARNING SUCCESSFUL” when the setup has been successfully completed.	
	If the setup has failed, the buzzer will beep 3 times (once/sec) and screen will display “LEARNING FAILED”. User would then need to perform the process again. Notes: - Users can press any button to stop the learning function setting. - If the battery voltage is lower than 24V, the learning function cannot be activated.	

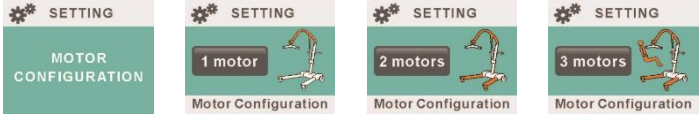
3. The default overcurrent value of the TC12 is 12A. It will stop the learning function if the current is over 12A during operation.

3.3 Reset

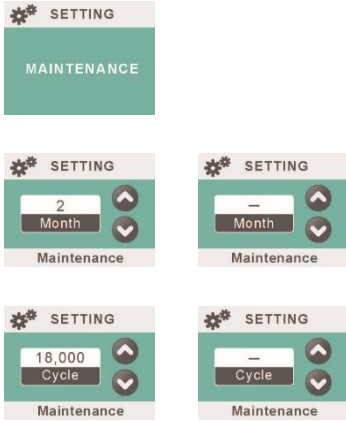
Users will need to reset the whole system if they change to a new motor or have a motor repaired.

Buttons	Action Required	TC12 display images
↑ or ↓	Short press: Scroll to the “Reset” menu. Note: Pressing either ↑ or ↓ is OK. It is a rotating menu.	
← or →	Switch the submenu options or return to the main menu. Users need to “Reset” the maintenance time and cycle.	
↓	Press and hold this button for 3 seconds to clear the previous records.	
← or →	Return to the main menu once the “Reset” is complete.	

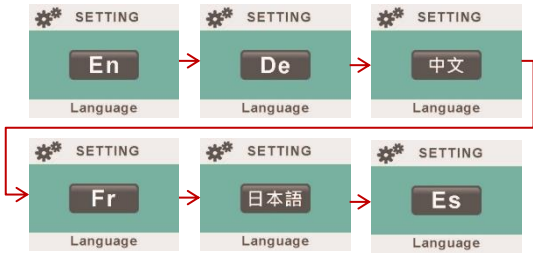
3.4 Set up the motor configuration

Buttons	Action Required	TC12 display images
↑ or ↓	Short press: Scroll to the “Motor Configuration” menu. Note: Pressing either ↑ or ↓ is OK. It is a rotating menu.	
← or →	Switch the submenu options or return to the main menu. The default motor number for the patient hoist system is 2. Users can change the motor number to 1 or 3 depending on the actual situation.	
↓	Press and hold this button for 3 seconds to confirm the motor configuration.	
← or →	Return to the main menu once the motor configuration is complete.	

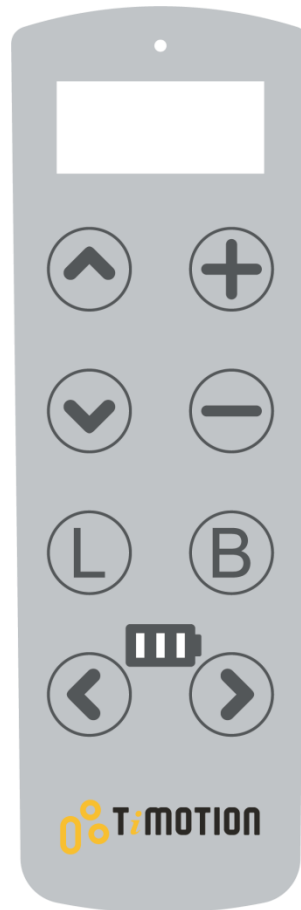
3.5 Set up the maintenance reminder

Buttons	Action Required	TC12 display images
↑ or ↓	Short press: Scroll to the "Maintenance" menu. Note: Pressing either ↑ or ↓ is OK. It is a rotating menu.	
← or →	Switch the submenu options or return to the main menu. 2 options of maintenance reminders. Users can set up either one or both of them. - By time - By motor cycle Note: "—" means that the reminder is turned off.	
↑	Increase to the required figure.	
↓	Decrease to the required figure.	

3.6 Set up the language

Buttons	Action Required	TC12 display images
↑ or ↓	Short press: Scroll to the "Language" menu. Note: Pressing either ↑ or ↓ is OK. It is a rotating menu.	
← or →	Switch the submenu options or return to the main menu. Currently, we provide Chinese, English, German, French, Japanese and Spanish options.	
↓	Press and hold this button for 3 seconds to confirm the language.	

3.7 With a 7-segment display



The strength of the TH10 with a 7-segment display is that users can read the overcurrent value on the display of the hand control, and then revise the value by pressing + or – button directly.

Once connecting the TH10 to the control box-TC12, the 7-segment display shows up the overcurrent value record, which was overwritten last time.

Quick overwriting current value to another control box

Press button B, change to another control box (TC12), and press B again. Then, the overcurrent value is quickly and successfully overwritten to another control box.

Check current value on the connected control box

Press button $\uparrow$ or $\downarrow$. It shows up the current value on the connected control box.

If the value is not correct, use + or – button to adjust the value until it reaches the correct figure*.

Then, press button B for confirmation.

Note*: Each time users press + or –, it will increase or decrease 0.5A of current value.

Activate overcurrent learning function

Please refer to 3.2.

After finishing overcurrent learning, the overcurrent value will show on the 7-segment display.

Reset

Same process, please refer to 3.3.

Set up the motor configuration

Same process, please refer to 3.4.

Set up the maintenance reminder

Same process, please refer to 3.5.

Set up the language

Same process, please refer to 3.6.

4. Operation Guides

There are four ways to operate the patient hoist system. Users can use the TC12, TH10 (*not tooling hand control*), TMH3 or TMH13. Please read the instructions below.

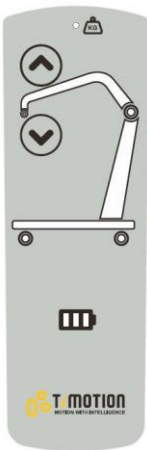
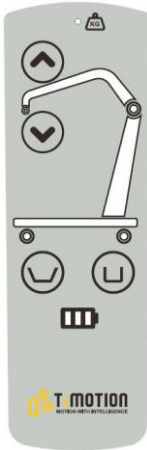
4.1 TC12

Functionality	Action Required						
Power On	Turn the emergency button clockwise to turn the power on. 						
Battery Life	If the power is on, the remaining battery life will be displayed on the TC12 (see image below). Then, it will beep twice twice (once/2 seconds). 						
Motor (actuator)	Next, the display will show the M1 motor (see image below). 						
Operate motor (actuator)	Short press ↑ or ↓ and it will switch to the M1, M2, or M3 motor.  <table><tr><th>M1</th><th>M2</th><th>M3</th></tr><tr><td></td><td></td><td></td></tr></table>	M1	M2	M3			
M1	M2	M3					
							

Extend or retract	Extend the motor: Long press ↑						
	<table><tr><td>M1</td><td>M2</td><td>M3</td></tr><tr><td></td><td></td><td></td></tr></table>	M1	M2	M3			
	M1	M2	M3				
							
Retract the motor: Long press ↓							
	<table><tr><td>M1</td><td>M2</td><td>M3</td></tr><tr><td></td><td></td><td></td></tr></table>	M1	M2	M3			
M1	M2	M3					
							
Power Off	Push down on the emergency button to turn the power off. 						
Standby Mode	The TC12 will automatically enter standby mode if no buttons are pressed. Press any button to wake up the system.						

4.2 TH10

The following pictures show the membrane or TH10 hand control by different motor numbers.

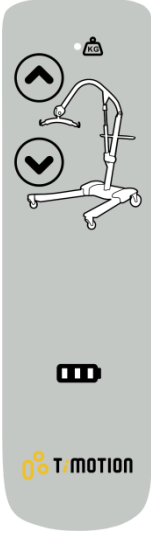
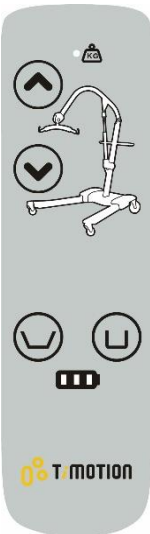
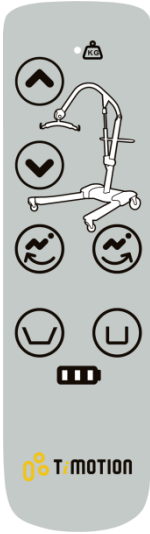
Single Motor	Dual Motors	Three Motors
		

Buttons Functionality:

							
Extend motor 1	Retract motor 1	Extend motor 2	Retract motor 2	Extend motor 3	Retract motor 3	Overcurrent indication	Battery capacity indication

4.3 TMH3

The following pictures show the membrane or TMH3 by different motor numbers.

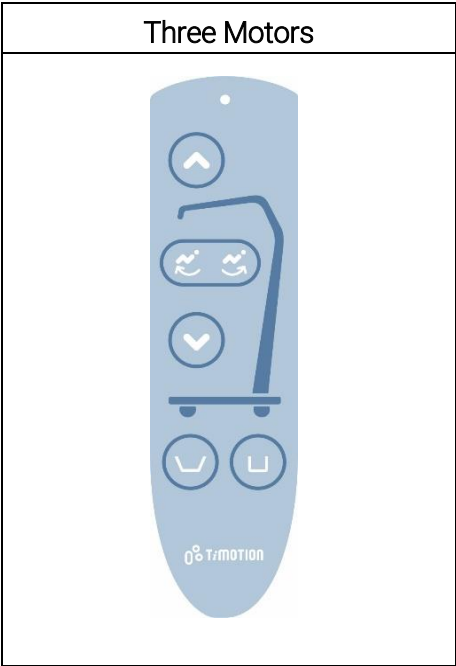
Single Motor	Dual Motors	Three Motors
		

Buttons Functionality:

							
Extend motor 1	Retract motor 1	Extend motor 2	Retract motor 2	Extend motor 3	Retract motor 3	Overcurrent indication	Battery capacity indication

4.4 TMH13

The following picture shows the TMH13 membrane.



Buttons Functionality:

						
Extend motor 1	Retract motor 1	Extend motor 2	Retract motor 2	Extend motor 3	Retract motor 3	Overcurrent indication

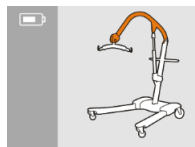
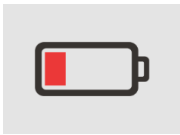
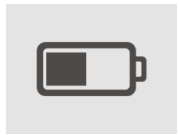
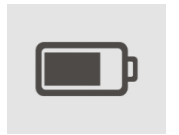
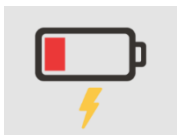
5. Battery Life Information

The chart below shows battery life indication images for the TC12, battery pack, and hand control.

Important Information:

- The battery pack has 2 options: lead-acid or lithium.
- Different types of battery packs need to be charged by different power supplies.
- Lead-acid battery pack: Charge it with the TBC2.
- Lithium battery pack: Charge it with the TP9.
- Please change the battery pack after 1 year of operation.
- Please install the battery pack correctly, as stated in this manual (refer to 2.3).

A. TC12

When the power is on			
			
During motor operation			
			
Battery Life indication-from 25% to 100%			
			
Charging			
			

B. Battery pack and hand control

Battery Life indication-from 25% to 100%			
			

6.Troubleshooting

Symptom	Possible cause	Action
Overload - The M1 actuator can only retract. - The LED on the hand control flashes 0.5 time/sec. "ATTENTION, Overloaded" also shows up on the control box display (see image below). - The buzzer keeps beeping 0.5 time/sec. 	When the operating current of the M1/M2/M3 actuator is higher than the overcurrent value record on TC12, the overload alarm triggers.	- Stop the system operation. - Turn off the emergency button, then turn it back on to reset the whole system (refer to 3.3). Notes: Default overcurrent values- - M1:12A - M2 & M3 : 6A They can be adjusted by the learning function or the tooling hand control with 7-segment display (refer to 3.7).

Battery Failure “ATTENTION, Recharge or Exchange” shows up on the control box display (see image below). - The buzzer keeps beeping 0.5time/sec. 	1. Remove the battery pack when charging the TC12 with TBC2 or TP9. 2. The battery voltage is lower than 24V.	1. Put the battery pack back. 2. Recharge the battery pack. Notes: Under this condition, users can only operate the “retract” function.
Maintenance Required “ATTENTION, Need to be Maintained” shows up on control box display (see image below) 	When the M1 actuator usage is over the previously set maintenance time or cycle, this reminder triggers.	Reset the whole system (refer to 3.3)

7. History

Descriptions of Version Updates:

1. April 23 2015: 1st version released.
2. Jun 09 2015: Cancel the function of the upper limit safety switch.
3. May 26 2015: Revise Maximum load setting step2 and step3.
4. August 19 2015: Add usage history feature.
5. December 15 2015: Revised the description in P17 "Indicator light"
6. March 23, 2016: Added remarks in Language setting
7. June 06, 2017: Changed the file name. This user manual aimed for TC12.
8. October 2017: Revised the products and limit switches information.
9. October 2019: Replaced TA12 with TA37.
10. September 2020: Revised the power on, button operation images on the LCD display. Revised M2 and M3 overcurrent value to 6A.