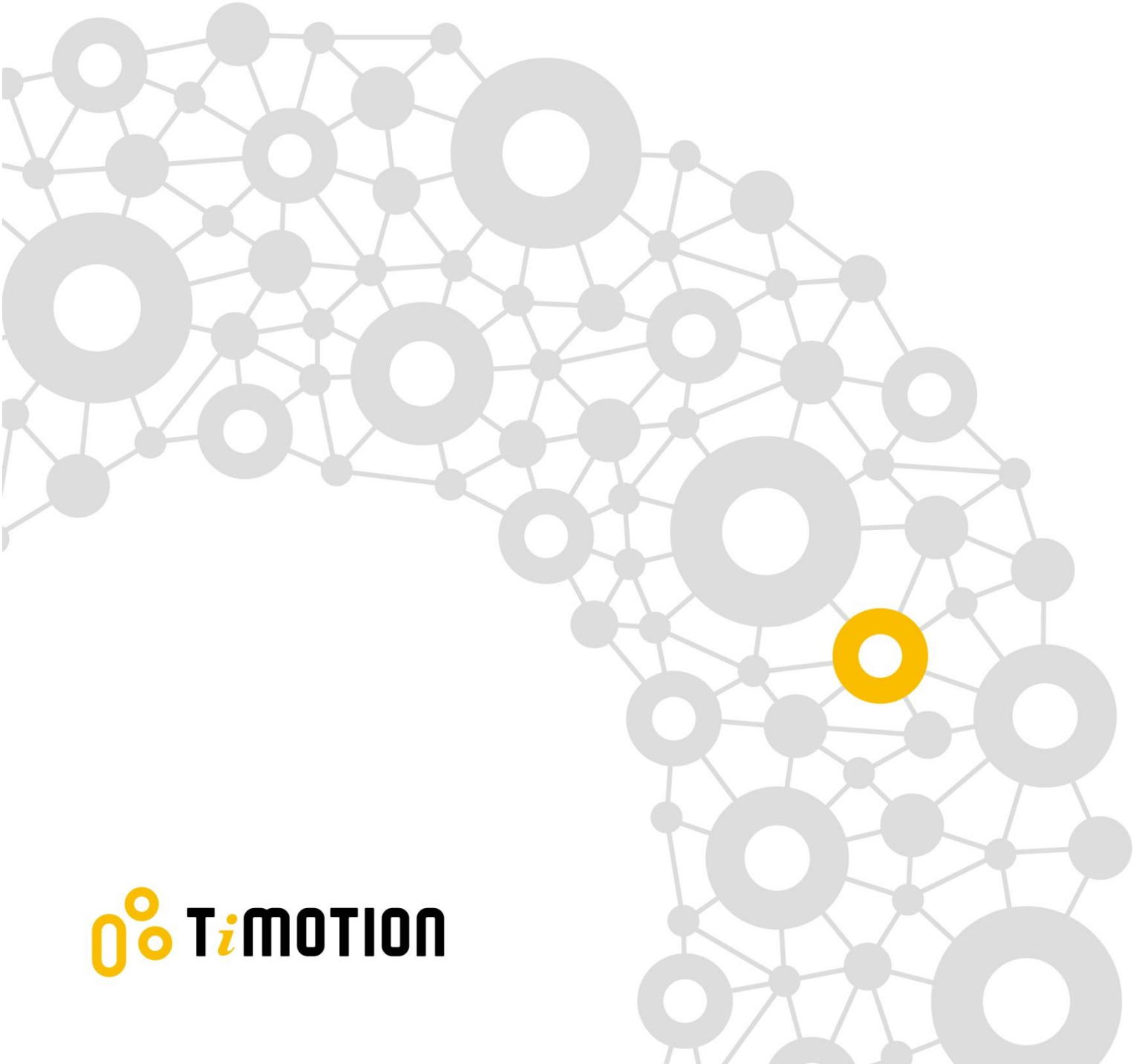
VERSION 2

USER MANUAL

Patient Lifting System with Control Box-TC20

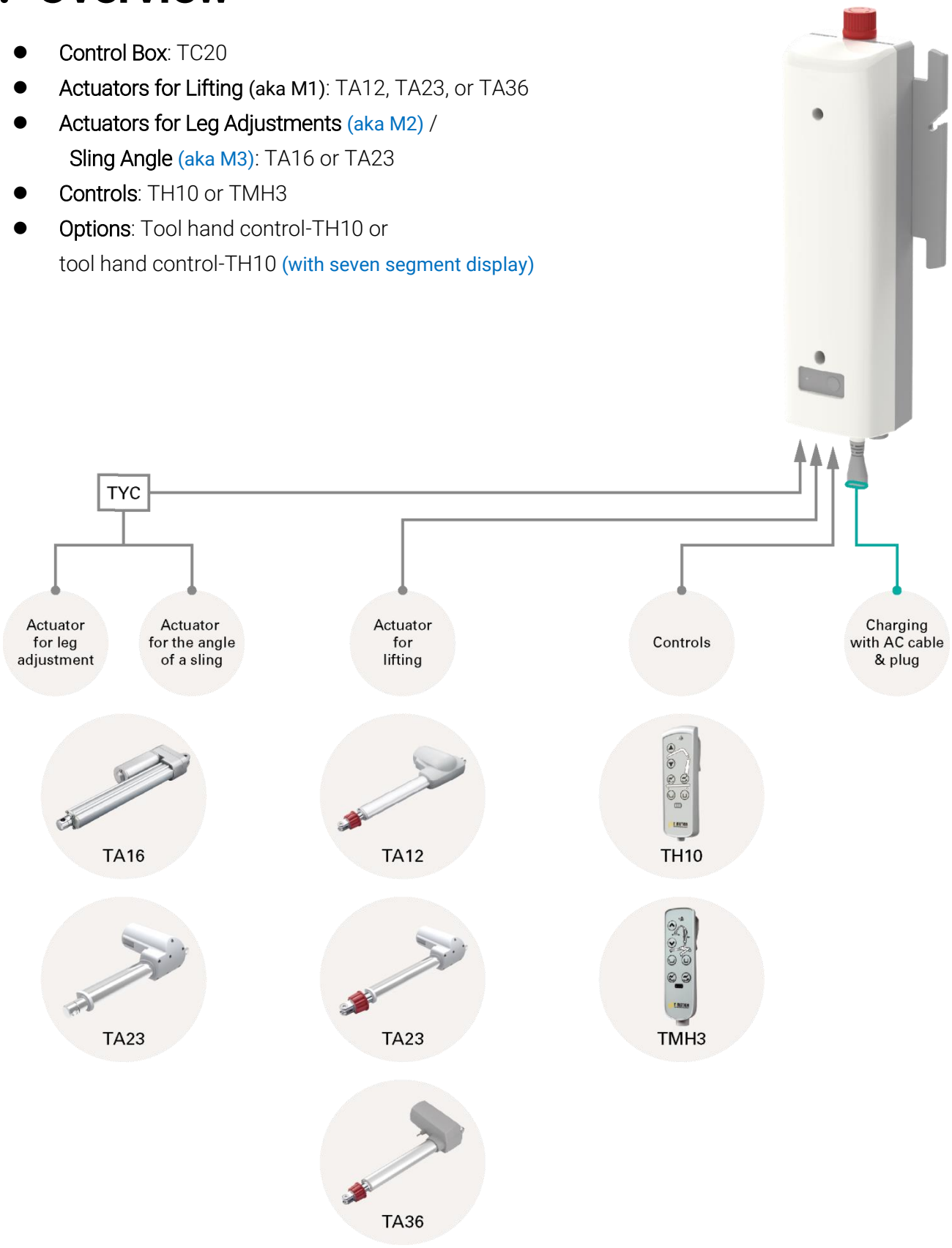


TiMOTION

Contents

1. Overview

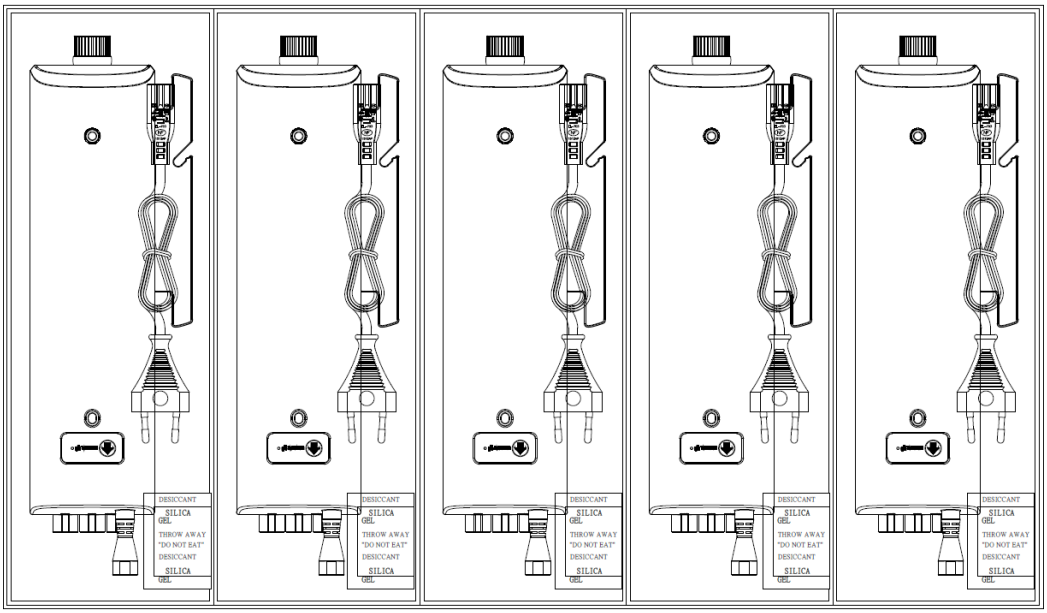
- Control Box: TC20
- Actuators for Lifting (aka M1): TA12, TA23, or TA36
- Actuators for Leg Adjustments (aka M2) /
  Sling Angle (aka M3): TA16 or TA23
- Controls: TH10 or TMH3
- Options: Tool hand control-TH10 or
  tool hand control-TH10 (with seven segment display)



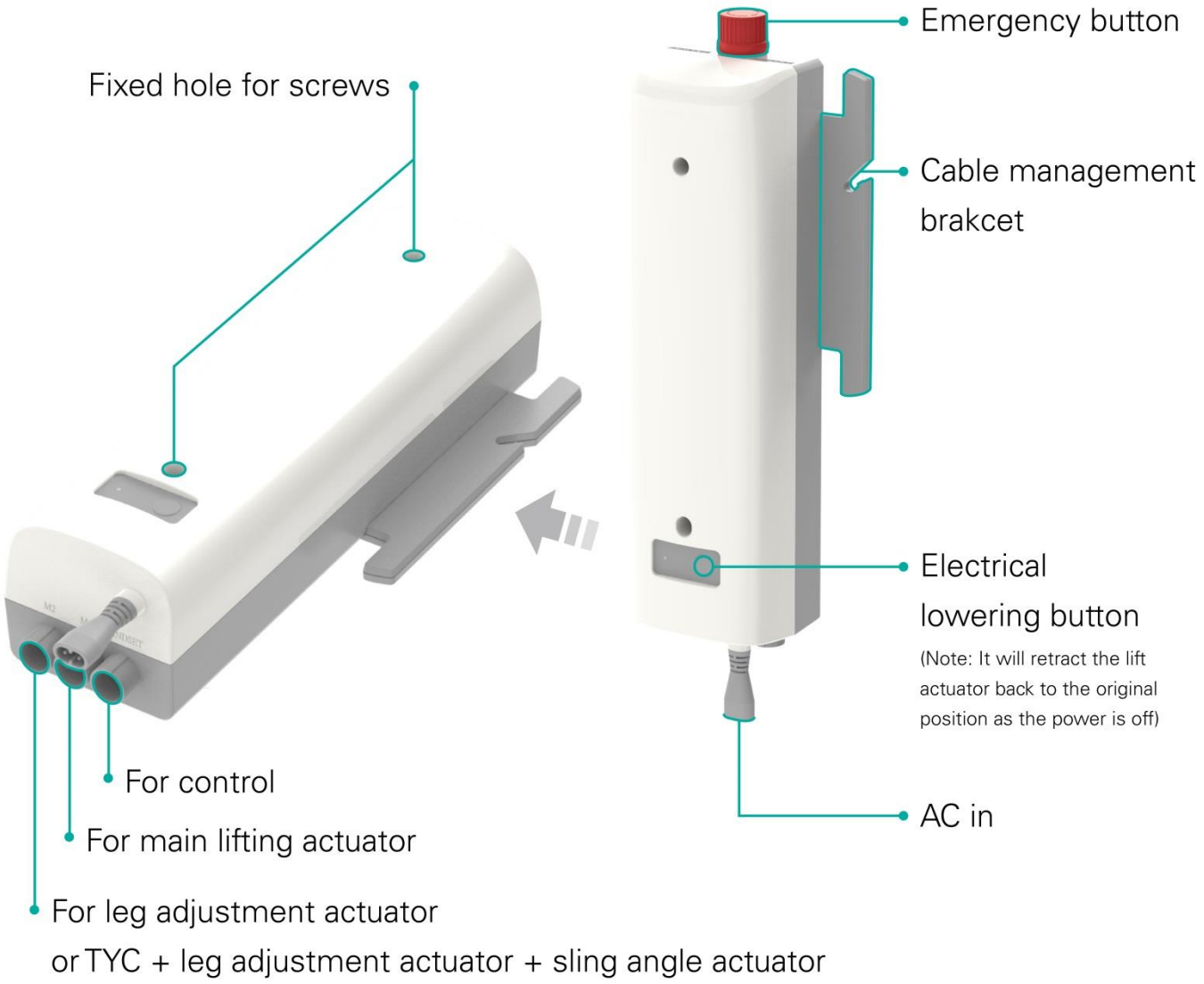
2. Introduction: Control Box-TC20

2.1 Package Contents

The package contains one AC cable, one accessory “cable manager” (optional), and one package of parts which include fixed screws for TC20 *2pcs.

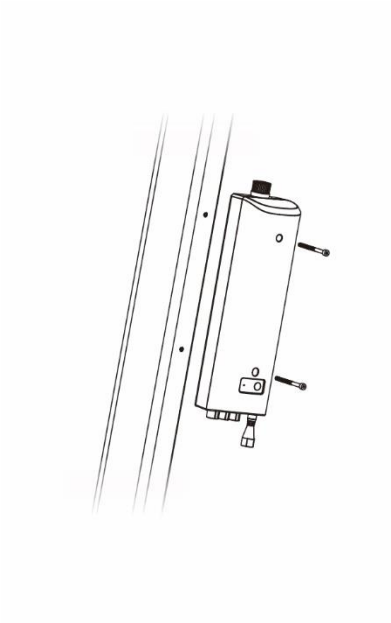
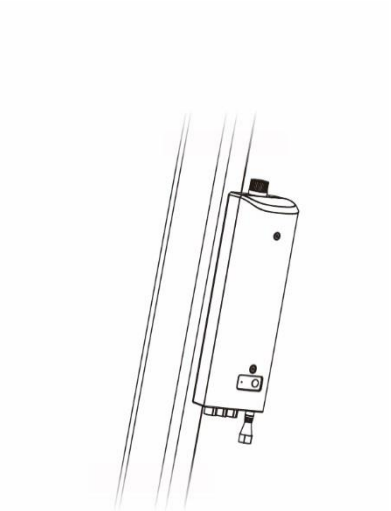


2.2 Appearance

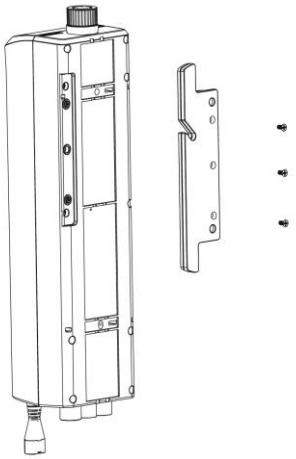


2.3 Installation Instructions

2.3.1 Installation of TC20

1. Install TC20 on the hoist frame 	2. Install fixed screws of TC20. Make sure the screws are tightened properly 

2.3.2 Installation of Cable Management Bracket

1. Install cable management bracket screws	2. Make sure the screws are tightened properly
	

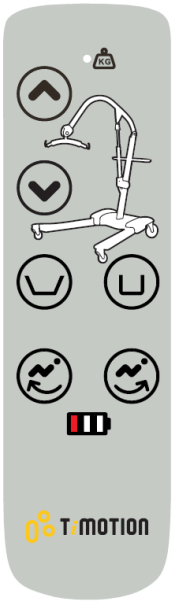
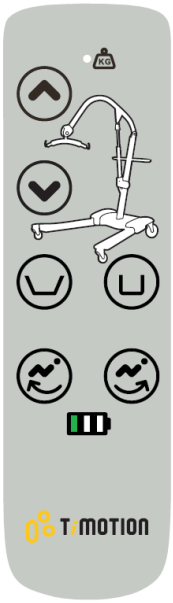
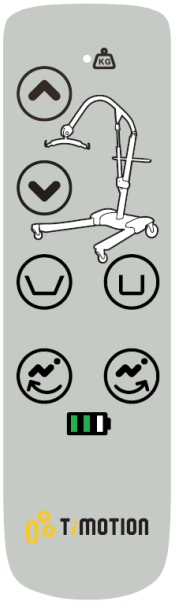
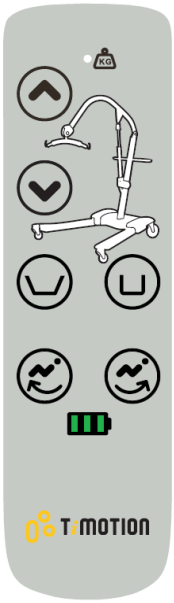
2.4 Getting Started

2.4.1 Emergency Button

Switch Off Press it down to cut the system current	Switch On Rotate the button cap clock wisely
	

2.4.2 Battery Status

- Switch on the emergency button of TC20 to activate, then the display on the hand control will show the battery status.
- The hand control will go into stand-by mode without pressing any button for five seconds.

Battery status on the hand control display			
24V~24.5V	24.5V~25V	25V~25.6V	>25.6V
			

Note 1: If the battery voltage is under 24V~24.5V, each time users press the hand control button, they will hear a buzzing sound from the buzzer every two seconds.

Note 2: If the battery voltage is lower than 24V, the system will not operate even if users press any button on the hand control.

2.4.3 Charging the TC20

- Switch on the emergency button and plug in AC cable to charge TC20.

- The battery cannot be charged if turning off the emergency button. The battery will go into stand-by mode without any operation for five seconds.

2.4.4 Overload Current Setting

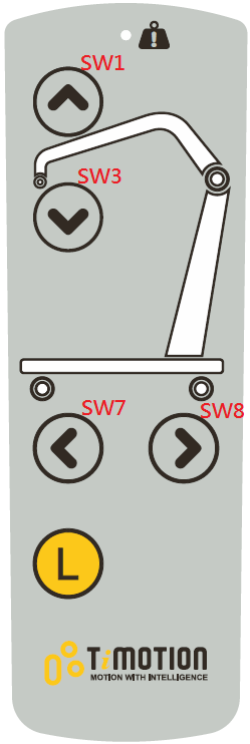
The pre-set overload current value of TC20 is 12A. If the TC20 is under overload condition, the system cannot operate. Under the overload condition, users will hear three beep sounds from the buzzer which means users need to reset the system (Note1).

Note1: To reset the system, just switch off and then switch on the emergency button right away.

Overload current setting (a.k.a learning mode):

1. Connect the tool control-TH10 to TC20.
2. Switch off and then switch on the emergency button one time.
3. Press and hold L and SW1 at the same time to activate the learning function.
4. The buzzer will beep every two seconds during the learning process. Do not release the button during the learning process.
5. During the learning process, M1 motor will retract to the lowest position then extend to the highest position automatically.
6. If hearing the beep sound for one second, it means the learning mode succeeds; if hearing three beep sounds, it means the learning mode fails. Please start with the learning mode set up again.

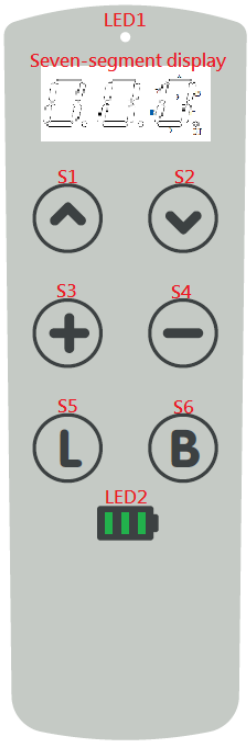
Button definitions on the tool control-TH10:

<table>
<tr><td rowspan="5"> 
</td><td>SW1: Press and hold for M1 motor extend</td></tr>
<tr><td>SW3: Press and hold for M1 motor retract</td></tr>
<tr><td>SW7: Press and hold for M2 motor extend</td></tr>
<tr><td>SW8: Press and hold for M2 motor retract</td></tr>
<tr><td>L: Learning button</td></tr>
</table>

Overload current setting and adjust the current value:

1. Only the tool control-TH10 (with seven segment display) can adjust the current value.
2. Connect the tool control-TH10 (with seven segment display) to TC20.
3. Switch off and on the emergency button one time.
4. Press and hold **L** and **SW1** at the same time to activate the learning function.
5. The buzzer will beep every two seconds during the learning process. Do not release the button during the learning process.
6. During the learning process, **M1** motor will retract to the lowest position then extend to the highest position automatically.
7. If hearing the beep sound for one second, it means the learning mode succeeds; if hearing three beep sounds, it means the learning mode fails. Please start with the learning mode set up again.
8. To adjust the current value, press **S3** or **S4** to increase or decrease the current value.
9. After setting up the over current value, press **S6** to quick write-in the overload current number to the control box.

Button definitions on the tool control-TH10 (with seven segment display):

<table>
<tr>
<td rowspan="6"> 
</td>
<td>S1:
● A short cut to switch the different motors (ex: main motor, leg motor, sling motor)
● To extend the motor : Press and hold S1 more than 0.5 sec.</td>
</tr>
<tr>
<td>S2:
● A short cut to switch the different motors (ex: main motor, leg motor, sling motor)
● To retract the motor : Press and hold S2 more than 0.5 sec.</td>
</tr>
<tr>
<td>S3:
● Increase the overload current value
● One press of S3 will add the value-0.5A.</td>
</tr>
<tr>
<td>S4:
● Decrease the overload current value
● One press of S4 will minus the value- 0.5A.</td>
</tr>
<tr>
<td>S5(L): Learning button</td>
</tr>
<tr>
<td>S6(B): Quick write-in button

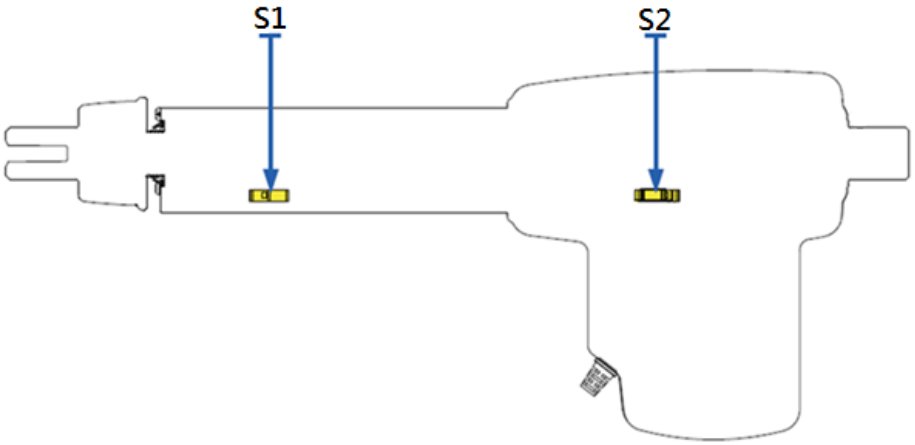
Note: Pressing S6 will write in the code directly to the control box.</td>
</tr>
</table>

2.4.5 Compatible Actuators

Compatible with the actuator which has only two limit switches.

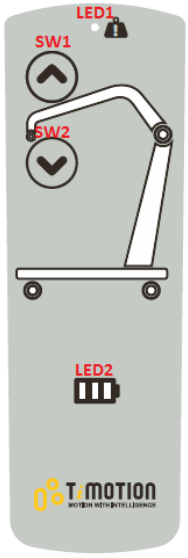
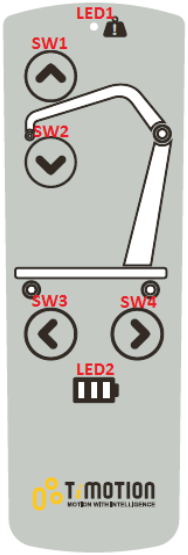
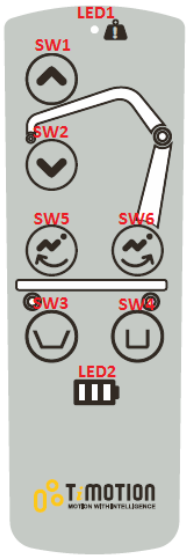
S1: Upper Limit Switch

S2: Lower Limit Switch

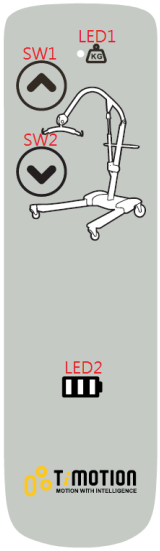
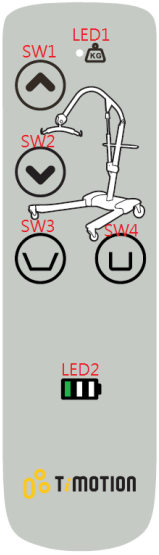
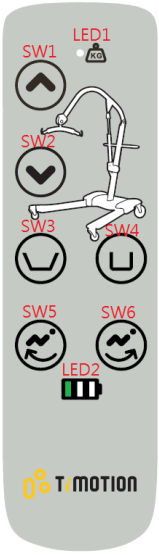


2.4.6 Compatible Controls

A. TH10

Motor Support	Single Motor		Two Motors		Three Motors	
Layout						
Buttons Definitions	SW1	M1 motor extend	SW1	M1 motor extend	SW1	M1 motor extend
	SW2	M1 motor retract	SW2	M1 motor retract	SW2	M1 motor retract
	LED1	Overload alarm	SW3	M2 motor extend	SW3	M2 motor extend
	LED2	Battery voltage status	SW4	M2 motor retract	SW4	M2 motor retract
			LED1	Overload alarm	SW5	M3 motor extend
			LED2	Battery voltage status	SW6	M3 motor retract
					LED1	Overload alarm
					LED2	Battery voltage status

B. TMH3

Motor Support	Single Motor		Two Motors		Three Motors	
Layout						
Buttons Definitions	SW1	M1 motor extend	SW1	M1 motor extend	SW1	M1 motor extend
	SW2	M1 motor retract	SW2	M1 motor retract	SW2	M1 motor retract
	LED1	Overload alarm	SW3	M2 motor extend	SW3	M2 motor extend
	LED2	Battery voltage status	SW4	M2 motor retract	SW4	M2 motor retract
			LED1	Overload alarm	SW5	M3 motor extend
			LED2	Battery voltage status	SW6	M3 motor retract
					LED1	Overload alarm
					LED2	Battery voltage status

3.Notifications

If the following notifications appear, please follow the procedures listed below to troubleshoot:

Low Battery Capacity: (refer to 2.4.2 on P.9) ● If the battery voltage is lower than 24V, the system will not operate even if users press any button on the hand control. ● The hand control will go into stand-by mode without pressing any button for five seconds. ● If it does not hold a proper charge, the battery will need to be replaced.
Overload Alarm: (refer to 2.4.4 on P.10-11) ● Weight has exceeded the set maximum limit. Remove weight from the hoist and reset then retry.

4.History

Descriptions of Version Updates:

1. June 2017: 1st version released.
2. October 2017: Changed products and wordings.