



User Manual

TT-Modular Series

51.2V 100Ah & 25.6V 200Ah

LFP Lithium Battery

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SAFETY PRECAUTIONS



WARNING:

Failure to follow the instructions and safety rules contained in this manual may result in death or serious injury. Read, understand and follow the safety rules and operating instructions carefully before using the lithium battery. Avoid dangerous situations. Always carry out an inspection before making a connection. Use the lithium battery only for its intended purpose. Read, understand and comply with all legal regulations. Receive the training to use the lithium battery safely.

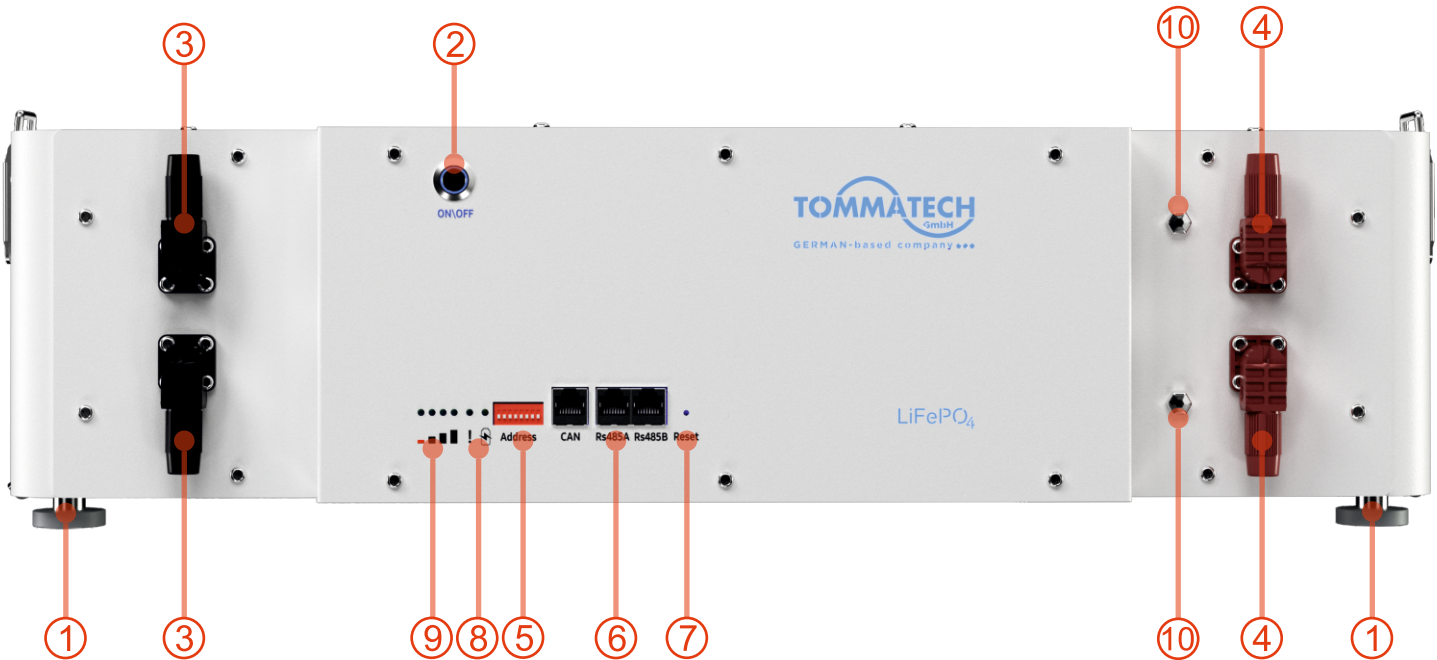


WARNING:

- Please read the datasheet specifications and user manual carefully before using or testing the lithium battery. Otherwise, you may encounter situations such as heating, loss of efficiency, short circuit, electrical malfunction, etc.
- Use the necessary equipment (insulating gloves, protective goggles, protective clothing, recommended hand tools) when installing the lithium battery.
- Do not puncture the lithium battery, throw it from a high place or apply physical force to it.
- Do not intervene with the lithium battery except by an authorized service.
- Do not disconnect the connector connections when any load is connected to the lithium battery or when current is being drawn. Use a circuit breaker.
- Do not open and intervene inside the lithium battery and do not reverse the polarity of the battery.
- Do not draw current from the lithium battery above the capacity of the battery.
- Do not connect any conductive material other than the battery connector to the positive (+) and negative (-) terminals of the lithium battery.
- Make sure that the lithium battery connectors are fully inserted and not loose.
- Do not throw the lithium battery from high places or hit it with any object such as a pickaxe or shovel.
- Do not expose the lithium battery to high current or voltage.
- Avoid contact of the lithium battery with liquid, do not leave the battery in watery, humid environments and do not immerse it in liquid.
- Use the lithium battery away from sunlight, fire, heaters or materials containing high temperatures.
- Do not use direct alternating current power supply for charging the lithium battery.
- Do not charge the lithium battery with alternating current directly from the mains line without using a rectifier.
- Do not store the lithium battery near fire or heating sources.
- Do not connect lithium batteries in series.
- Do not use different type, different capacity batteries when making parallel electrical connection of the products.
- Do not use the lithium battery with unsuitable energy sources.
- Protect the case of the lithium battery from any physical impact.
- Do not permanently fix the lithium battery terminals. Use a circuit breaker suitable for the voltage and current ratings so that the battery can be disconnected in a dangerous situation.
- Do not attempt to disassemble or modify the lithium battery in any way.
- Do not place the lithium battery in a microwave oven or a pressurized container.
- Place the lithium battery properly in the area where it will be used.
- Do not continue to use the lithium battery in risky situations.
- The lithium battery must not be opened except by authorized service. If opened, it will be out of warranty.

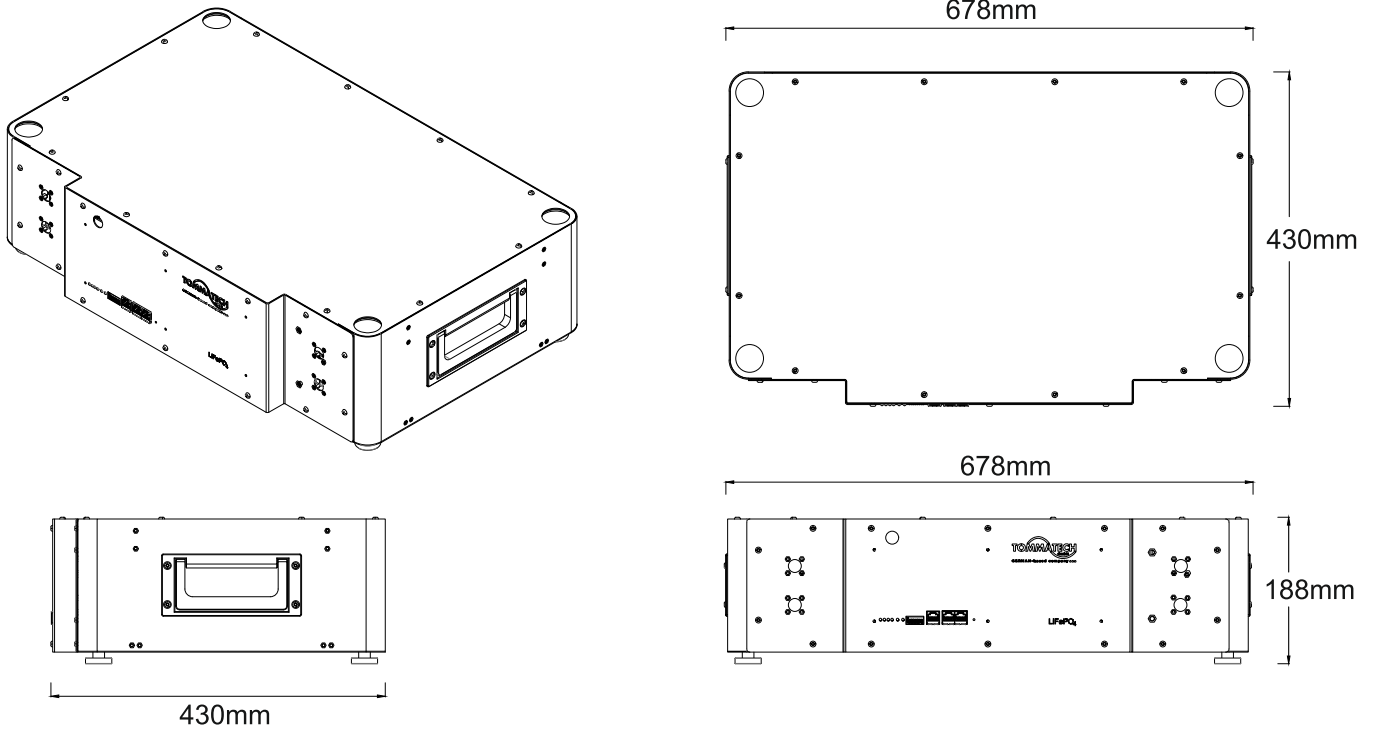
1. TT-MDL-48V-100AH & 24V-200AH LITHIUM BATTERY INTERFACE DEFINITIONS

1.1. TT Modular Series Lithium Battery Device Front Interface



NO	NAME	DESCRIPTION
1	Leveling Feet	Plastic feet separating the lithium battery from the floor.
2	On/Off Button	Main switch button. It must be switched to the on position when using the lithium battery.
3	(-) Connectors	Lithium battery negative power connectors.
4	(+) Connectors	Lithium battery positive power connectors.
5	Dip Switch	CAN-RS485 Switch for communication settings.
6	RS485/CAN Port	Communication ports.
7	Reset Button	BMS (Battery Management System) on-off and restart button.
8	Alarm	LED that lights red in case of malfunction, error, etc.
9	SOC	Green LED set showing the charging status of the battery.
10	Grounding	Ground connection terminal.

1.2. TT Modular Series Lithium Battery General Dimensions




1.3. TT Modular Series Lithium Battery Warning Label

WARNING HIGH VOLTAGE INSIDE	ÖNEMLİ UYARI YÜKSEK VOLTAJ İÇERİR
<ul style="list-style-type: none"> - Please read the user manual before installing and operating the Lithium Battery. <p>Lityum Bataryayı kurulum yapmadan ve çalıştırmadan önce lütfen kullanım kılavuzunu okuyun.</p> <ul style="list-style-type: none"> - Do not drop or expose the Lithium Battery to any impact during use or relocation. <p>Lityum Bataryayı kullanım sırasında veya yer değişikliği esnasında düşürmeyin ve herhangi bir darbeye maruz bırakmayın.</p> <ul style="list-style-type: none"> - Please do not open and touch your product in case of malfunction. Otherwise, the lithium battery will be out of warranty. <p>Lütfen arıza anında ürününüzü açmayın ve müdahale etmeyin. Aksi takdirde lityum batarya garanti kapsamı dışında kalır.</p> <ul style="list-style-type: none"> - Do not immerse the device in water. Keep away from safety risk environments with flammable liquids, gases and dust. <p>Cihazı suya batırmayın. Yanıcı sıvılar, gazlar ve tozların bulunduğu güvenlik riski bulunan ortamlardan uzak tutun.</p> <ul style="list-style-type: none"> - Do not step on the lithium battery and do not put any material on the device. <p>Lityum Batarya üzerine kesinlikle basmayın ve cihazın üzerine herhangi bir malzeme koymayın.</p> <ul style="list-style-type: none"> - Do not pierce, hit or throw the lithium battery from a high place. Do not use in high pressure, high temperature, water contact environments. <p>Lityum bataryayı delmeyin, vurmayın, yüksek yerden atmayın. Yüksek basınç, yüksek sıcaklık, su ile temaslı ortamlarda kullanmayın.</p> <ul style="list-style-type: none"> - Please keep your device out of the reach of children and animals. <p>Lütfen cihazınızı çocukların ve hayvanların ulaşamayacağı yerde saklayın.</p> <ul style="list-style-type: none"> - When cleaning the Lithium Battery, turn off your device and clean it with a dry cloth. <p>Lityum Bataryayı temizleme esnasında cihazınızı kapatın ve kuru bez ile temizleyin.</p> <ul style="list-style-type: none"> - Store the Lithium Battery under the storage conditions specified in the user manual. <p>Lityum Bataryayı kullanım kılavuzunda yer alan depolama koşullarında saklayın.</p> <ul style="list-style-type: none"> - In case of any problem with your product, please contact the authorized service. <p>Ürününüzde herhangi bir problem ile karşılaşılması durumunda lütfen yetkili servis ile iletişime geçin.</p>	<p>! EMERGENCIES !</p> <ul style="list-style-type: none"> - If your battery is leaking, flowing or damaged, turn off your device and do not continue to use it. <p>Bataryanızda sızıntı, akıntı veya hasar var ise cihazınızı kapatın ve kullanmaya devam etmeyin.</p> <ul style="list-style-type: none"> - Do not touch liquid leaking from your battery. <p>Bataryanızdan sızan sıvıya temas etmeyin.</p> <ul style="list-style-type: none"> - Never use water in case of fire. <p>Herhangi bir yangın durumunda kesinlikle su kullanmayın.</p> <ul style="list-style-type: none"> - Use special fire extinguishers containing carbon dioxide or dry chemical powder. <p>Karbondikoksitli veya kuru kimyevi toz içeren özel yangın söndürücüler kullanın.</p>



1.4. TT Modular Series Lithium Battery Product Labels






1.4.1. TT MDL-48V-100AH




GERMAN-based company ●●●

Model Name	: TT-MDL-48V-100AH	Rec. Discharge Current [A]	: 50
Rated Voltage [V]	: 51.2	Max. Discharge Current [A]	: 100
Nominal Capacity [Ah]	: 100	Discharge Cut-off Voltage [V]	: 44.8 ± 0.2
Nominal Energy [Wh]	: 5120	Operating Temperature [°C]	: -20 ~ +60
Rec. Charge Current [A]	: 30	Dimensions (WxDxH) [mm]	: 679x431x189
Max. Charge Current [A]	: 50	Weight [kg]	: 55.5 ± 0.5
Rec. Charge Voltage [V]	: 56.8	Parallel Connection	: Yes (Max. 16 Pcs)
Max. Charge Voltage [V]	: 58.4	Communication	: CAN / RS485

Serial Number






1.4.2. TT MDL-24V-200AH



GERMAN-based company ●●●

Model Name	: TT-MDL-24V-200AH	Rec. Discharge Current [A]	: 50
Rated Voltage [V]	: 25.6	Max. Discharge Current [A]	: 100
Nominal Capacity [Ah]	: 200	Discharge Cut-off Voltage [V]	: 22.4 ± 0.2
Nominal Energy [Wh]	: 5120	Operating Temperature [°C]	: -20 ~ +60
Rec. Charge Current [A]	: 30	Dimensions (WxDxH) [mm]	: 494x721x180
Max. Charge Current [A]	: 50	Weight [kg]	: 55.5 ± 0.5
Rec. Charge Voltage [V]	: 28.4	Parallel Connection	: Yes (Max. 16 Pcs)
Max. Charge Voltage [V]	: 29.2	Communication	: CAN / RS485

Serial Number

2. INSTALLATION

2.1. Security

- * The lithium battery must be installed by persons who have been trained in electrical and wiring work and have sufficient knowledge of battery and power systems.
- * You must wear the following protective equipment when installing the lithium battery system.



**Protective Insulating
Gloves**



Protective Goggles









Safety Shoes

2.2. Tools


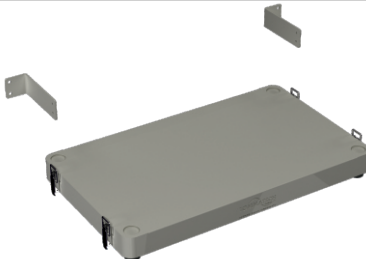
- * The tools and measuring instruments that can be used during installation are listed below.

Screwdriver
Electric Drill
Torque Wrench
Flush Cutter
Current Meter
Voltmeter
Insulation Tape
Temperature Meter
Pliers
User Manual

2.3. TT Modular Series LFP Lithium Battery Box & Packaging Contents

ITEM	DESCRIPTION	QTY.	PHOTO
TT MODULAR SERIES LFP LITHIUM BATTERY	51.2V-100Ah & 25.6V-200Ah LiFePO4 BATTERY	1	
NEGATIVE AND POSITIVE POWER CABLE (PARALLELING)	RED (25mm ²) BLACK (25mm ²) /150 mm	1	
PARALLEL COMMUNICATION CABLE BETWEEN BATTERIES	RJ45/300 mm	1	
COMMUNICATION CABLE BETWEEN BATTERY INVERTER	RJ45/1500mm	1	
GROUNDING CABLE	NYAF	1	
USER MANUAL AND WARRANTY CERTIFICATE	TT MODULAR SERIES	1	

2.3.1. Optional Accessories

ITEM	DESCRIPTION	QTY.	PHOTO
POWER CABLES BETWEEN BATTERY AND INVERTER	RED (25mm ²) BLACK (25mm ²) /1500 mm	1	
COMMUNICATION CABLE BETWEEN BATTERY INVERTER	RJ45/1500mm	1	
BATTERY LEVELING FOOT AND MOUNTING BRACKET	TT MODULAR SERIES METAL FOOT	1	

2.4. Installation Steps

2.4.1. STEP 1: Remove the contents of the box carefully from the product packaging and make sure that the contents of the product are complete. Please keep the product packaging carefully for future warranty/technical service cases.

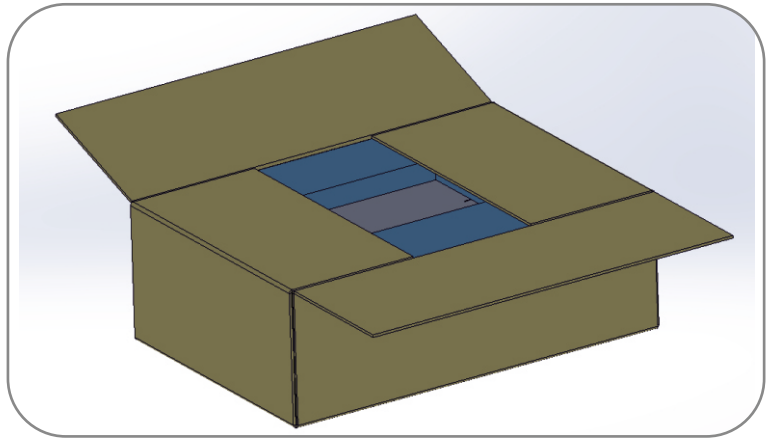


Figure 1

2.4.2. STEP 2: Determine the area where the battery will be installed and position the leveling foot on the ground.



Figure 2

2.4.3. STEP 3: Make sure that the battery is switched off. Using the side handles of the device prepared for installation, place it into the slots of the plastic feet as shown in figure 2-1.



Figure 2-1

2.4.4. STEP 4: Make sure that the 4 latches are open. (Figure 2-2)



Figure 2-2

2.4.5. STEP 5: After placing the device, pull back the latch lever of each latch as shown in Figure 2-3, insert the latch pin into the slot and lock the latch by pushing it.

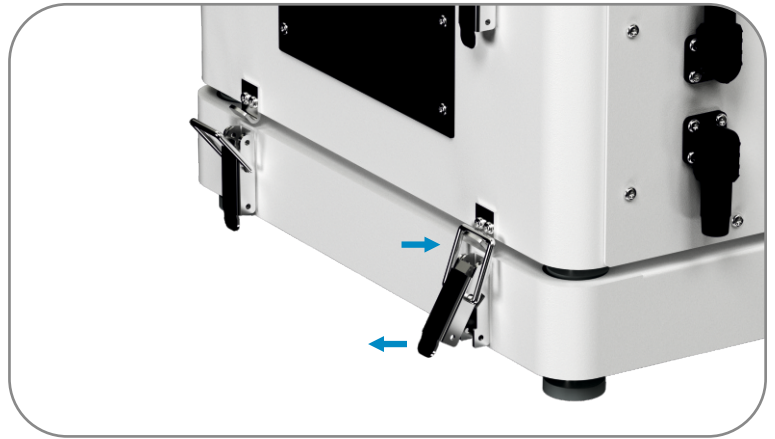


Figure 2-3

2.4.6. STEP 6: Lock the latches of each device so that there can be max. 6 devices on top of each other. Each device has 4 tension latches on the right and left.



Figure 2-4

2.4.7. STEP 7: Remove the two tension latches on the back of the top device with a screwdriver or allen key. (Figure 3/Figure3-1)



Figure 3

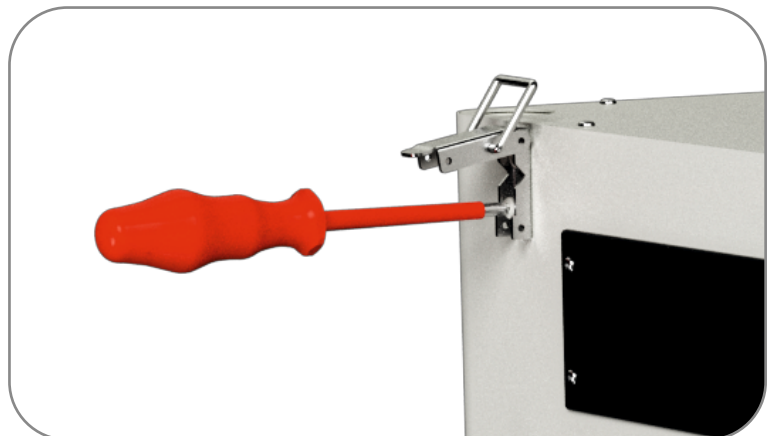


Figure 3-1

2.4.8. STEP 8: Place the fixing brackets as shown in Figure 4.

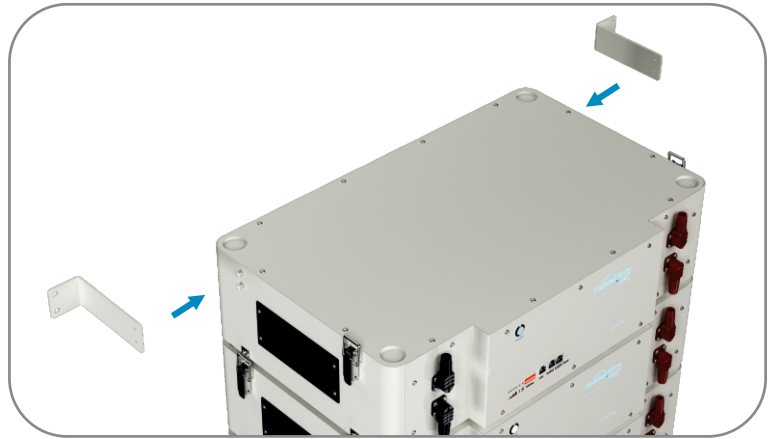


Figure 4

2.4.9. STEP 9: Screw the fixing apparatus with a screwdriver or allen key into the bearing of the tension latch that you removed from the battery.



Figure 4-1

2.4.10. STEP 10: Fix the mounting brackets screwed on the device to the wall with the help of screwdriver or drill (Figure 4-2/Figure 4-3)



Figure 4-2



Figure 4-3

2.4.11. STEP 11: Connect the 15 cm parallel connection power cables of the modules.

2.4.12. STEP 12: Connect the RJ45 communication cables of the modules. (Page 14) Connect the communication cable between the inverter and the master battery to the Rs485A port.



Figure 5

2.4.13. STEP 13: Adjust the dip switch settings of the modules according to the user manual (Page 10-Figure 8)

2.4.14. STEP 14: Connect the total positive power cable of the lithium batteries to the inverter (Page 10 - Figure 8)

2.4.15. STEP 15: Connect the total negative power cable of the lithium batteries to the inverter (Page 10 - Figure 8)

2.4.16. STEP 16: Set the power status of the modules to 'On', especially the slave modules.

2.4.17. STEP 17: Test the main BMS 'Off' and 'On' to test the communication. Observe the lithium batteries turning on and off together and the communication status.

2.4.18. STEP 18: Start the inverter. Check the communication status between inverter and battery.

2.5. Dip Switch Settings

2.5.1. Single Use Settings

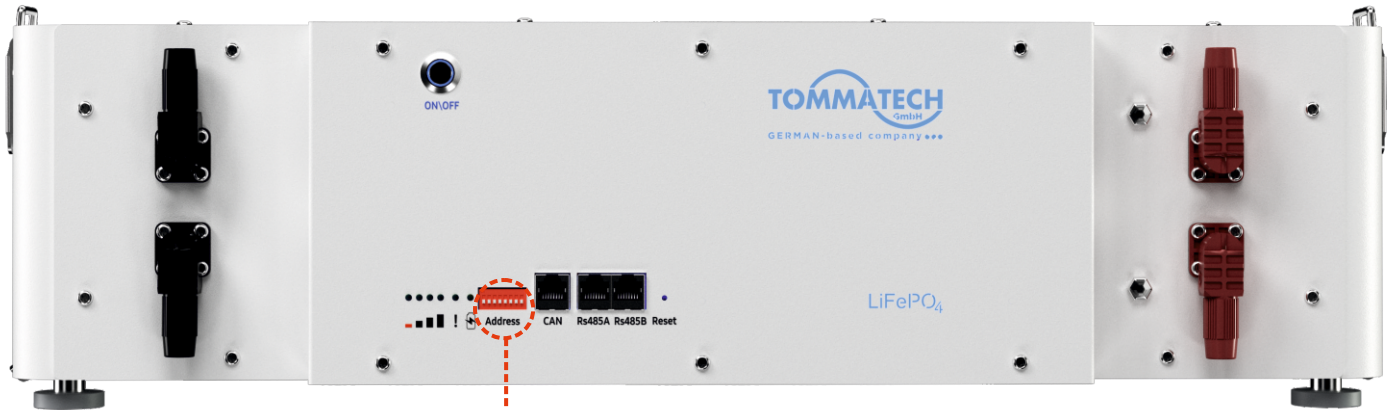


Figure 7

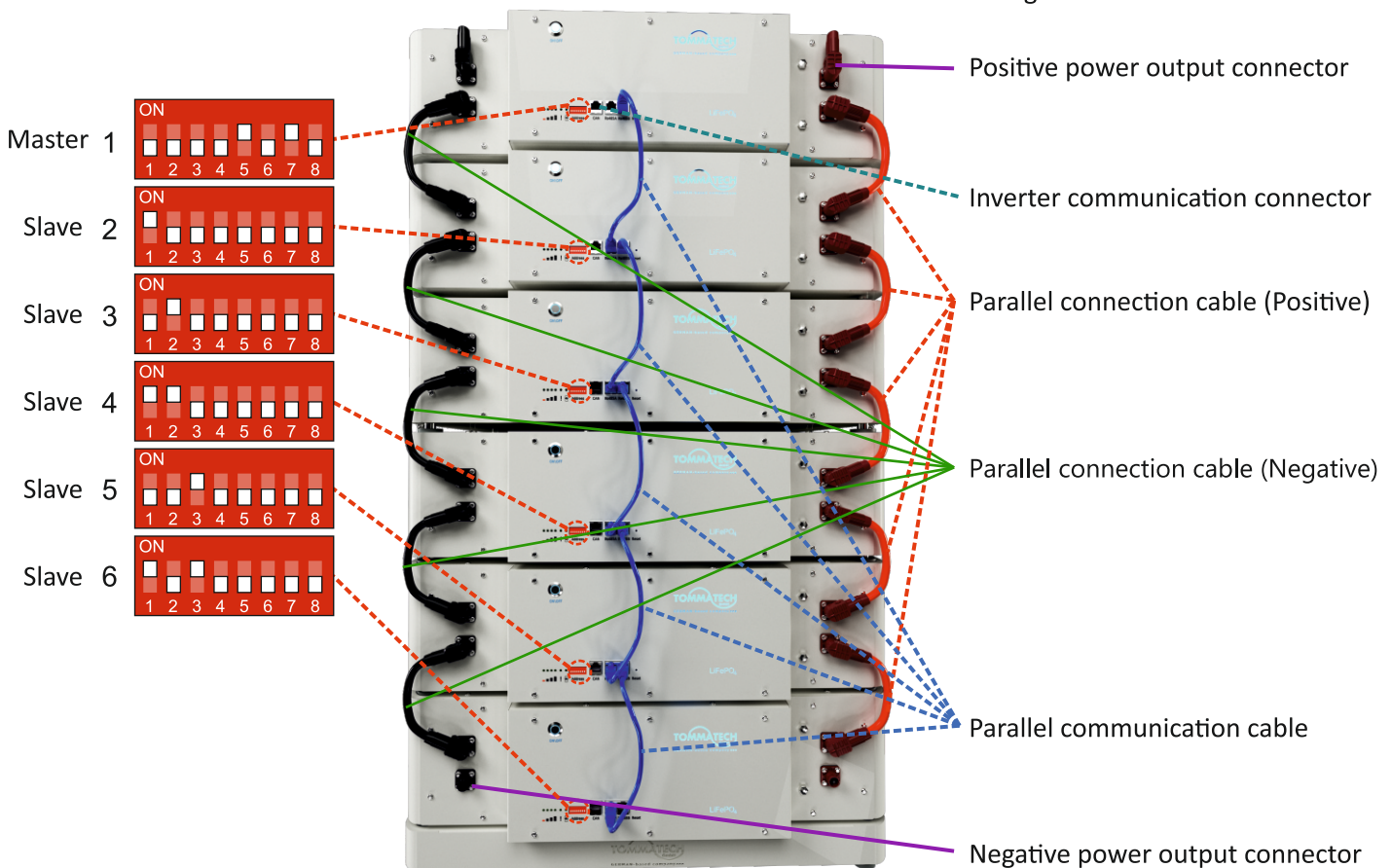


NOTE: You do not need to make any dip switch settings for single use. All switches must be closed .

2.5.2. Multiple Use Settings (Parallel Connection)

Example: 6 Parallel

NOTE: In multiple parallel connection, it will be suitable for power distribution to connect the power output cables of the lithium battery from the beginning and end of the positive and negative outputs as shown in the figure.



Şekil 8

2.5.3. Multiple Use Settings (Parallel Connection)

DIP Switch

When the lithium batteries are connected in parallel, the master protocol communicates with the slave protocols via the CAN interface. The master protocol summarizes the information of the whole battery system and shares it with the inverter via CAN or 485.

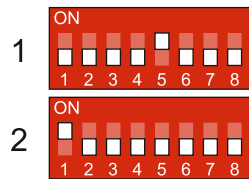
In single use, you do not need to set any dip switch settings. All switches must be closed. For multiple parallel connection, set the DIP switch according to the number of devices as indicated in the figures below.

Single Use

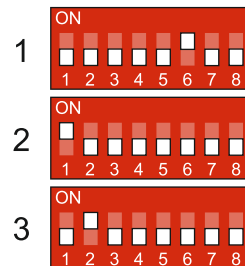


↓ Closed

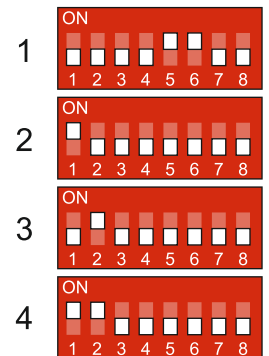
2 Parallel



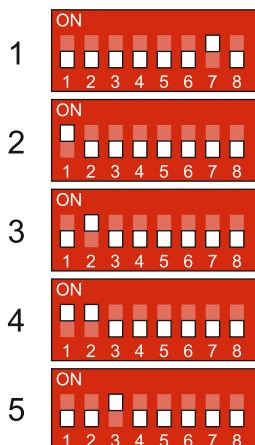
3 Parallel



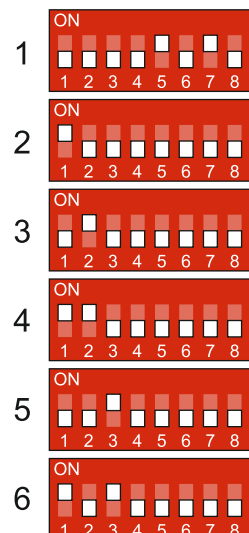
4 Parallel



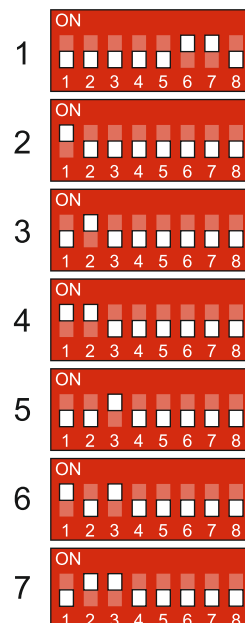
5 Parallel



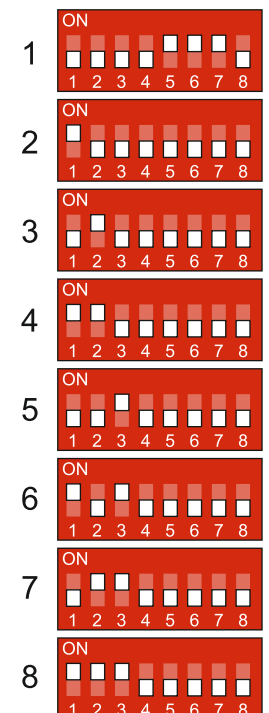
6 Parallel



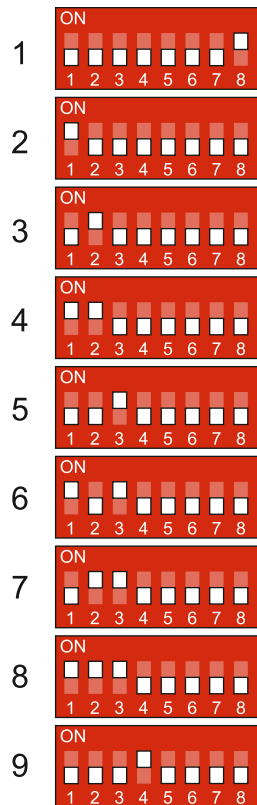
7 Parallel



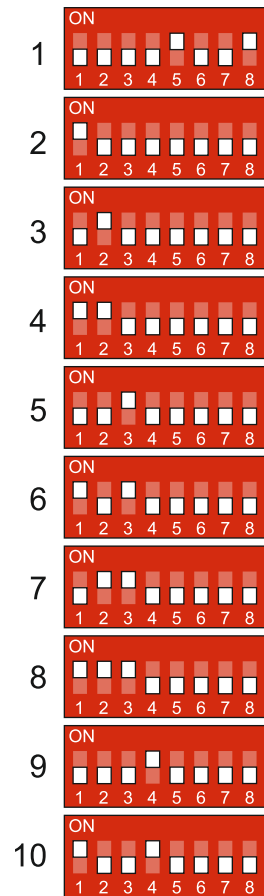
8 Parallel



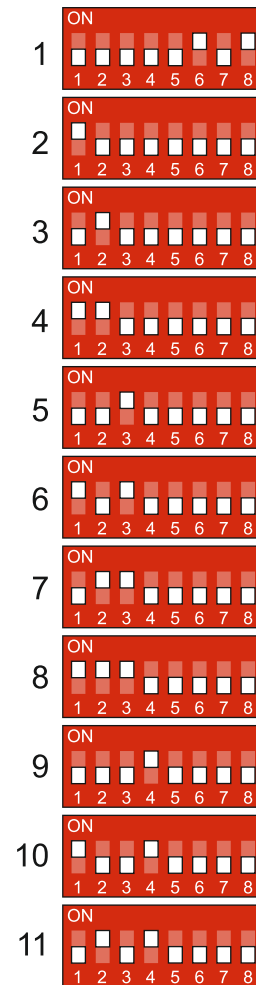
9 Parallel



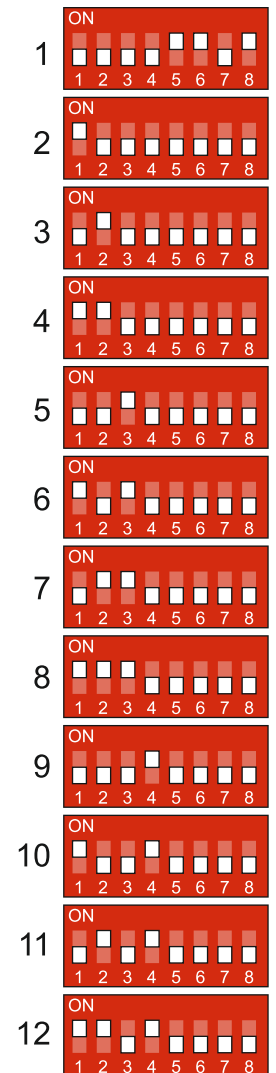
10 Parallel



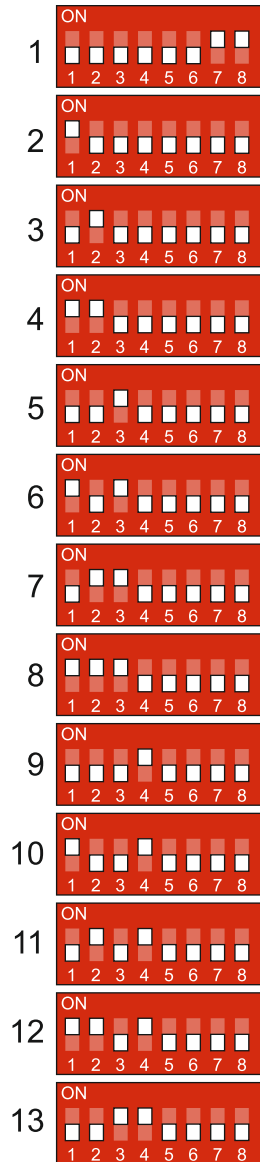
11 Parallel



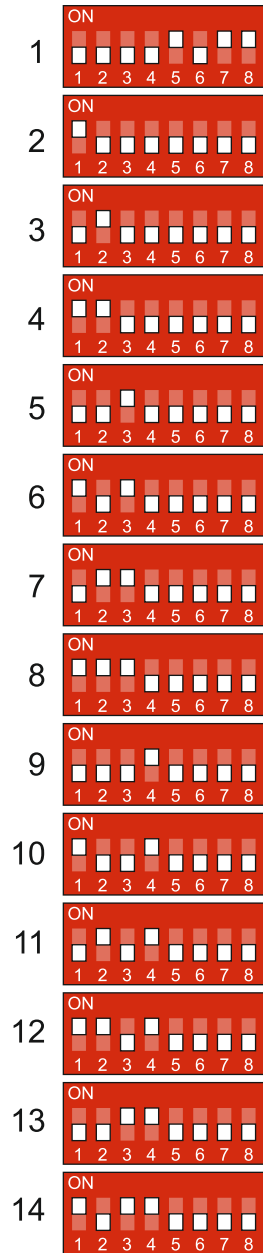
12 Parallel



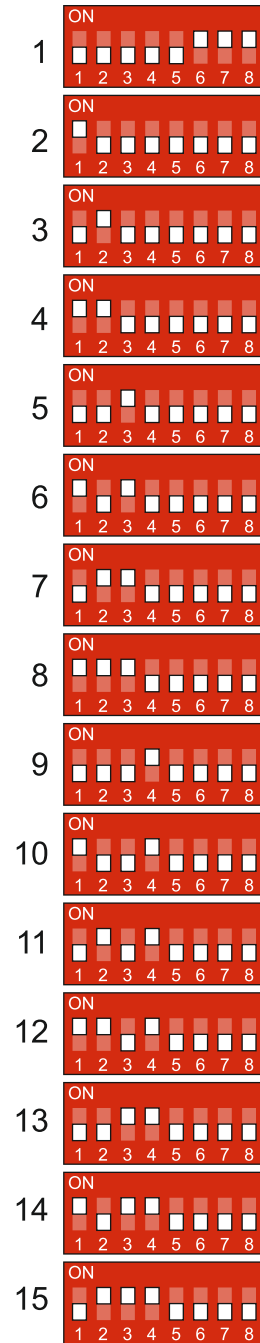
13 Parallel



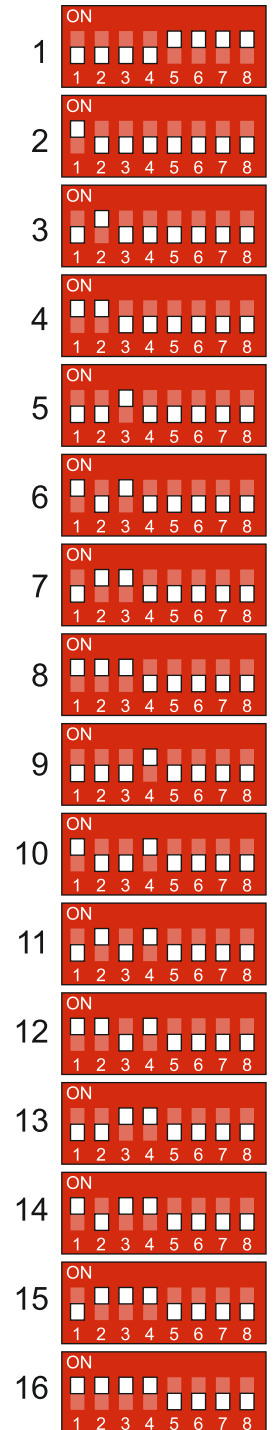
14 Parallel



15 Parallel



16 Parallel



2.6. Rj45 Communication Cable Identification Between Inverters

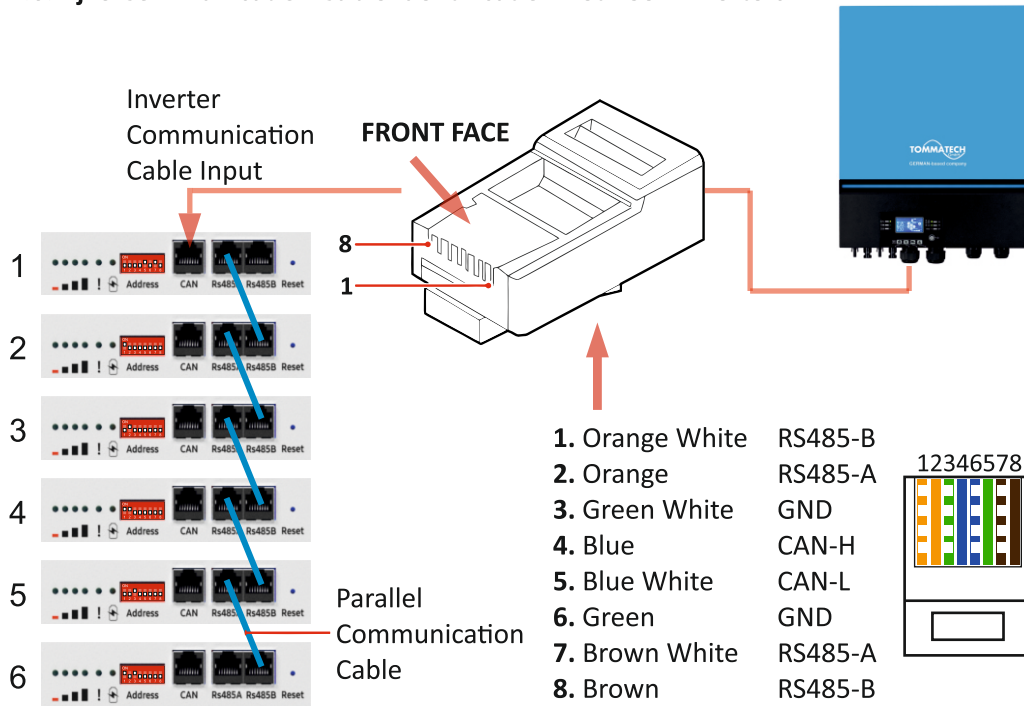


Figure 9

2.6.1. Compatible Inverters









- TOMMATECH
- GOODWE
- GROWATT
- VICTRON
- VOLTRONiC
- LUXPOWER
- SOFAR
- DEYE
- SERMATEC
- RENAC
- TBB POWER
- SOLIS
- SMA
- FOXESS

NOT: If your inverter is not included in the list above, please contact our technical service.

3. OPERATION AND ALARM INDICATORS

BATTERY STATUS	MODE	OPERATION MODE	ALARM	LED LED LIGHTS			
Closed	Closed	OFF	OFF	OFF	OFF	OFF	OFF
Waiting	Normal	Flickering	OFF	Depending on Battery Charge Status			
Charging Mode	Normal	Flickering	Flickering	Depending on Battery Charge Status			
	Over Current Protection	Flickering	OFF				
	Over Voltage Protection	Flickering	OFF	OFF	OFF	OFF	OFF
	Over Temperature Protection	Flickering	OFF	OFF	OFF	OFF	OFF
Discharge Mode	Normal	Flickering	OFF	Depending on Battery Charge Status			
	Alarm	Flickering	Flickering				
	High Current, Temperature, Overcurrent Protection	OFF	Fixed Red	OFF	OFF	OFF	OFF
	Low Voltage Protection	OFF	Fixed Red	OFF	OFF	OFF	OFF

3.1. Charge Indicator

ITEM	CHARGE				DISCHARGE			
Indicator Status	L4 	L3 	L2 	L1 	L4 	L3 	L2 	L1 
0-25%	OFF	OFF	OFF	Flickering	OFF	OFF	OFF	Fixed Green
25%-50%	OFF	OFF	Flickering	Fixed Green	OFF	OFF	Fixed Green	Fixed Green
50%-75%	OFF	Flickering	Fixed Green	Fixed Green	OFF	Fixed Green	Fixed Green	Fixed Green
>75%	Flickering	Fixed Green	Fixed Green	Fixed Green	Fixed Green	Fixed Green	Fixed Green	Fixed Green

4. ADVANCED BATTERY MANAGEMENT SYSTEM (BMS)

In lithium battery applications, the BMS, also called battery management system, is the component that ensures the safety and control of the battery throughout the charging and discharging processes of the battery packs. The BMS continuously monitors and manages the battery's overcharge/discharge, high current, high/low voltage and high temperature operations. In addition, it performs inter-cell voltage and charge balancing, allowing the battery to be used at high performance for a long time.

5. RECOMMENDED INVERTER AND BATTERY POWER COMBINATIONS

The table is based on the system voltage 48V in inverters.

INVERTER	NUMBER OF PARALLELS	BATTERY ENERGY (kWh)
≤5.6 KW	2	10
≤7.2 KW	3	15
≤11 KW	4	20
≤15 KW	6	30
≤20 KW	8	40
≤30 KW	12	60
≤40 KW	16	80

6. TT MODULAR SERIES LITHIUM BATTERY TECHNICAL AND PHYSICAL SPECIFICATIONS

6.1. Voltage Capacity

	TT-MDL-48V-100AH	TT-MDL-24V-200AH
Nominal Voltage [V]	51.2	25.6
Nominal Capacity [Ah]	100	200
Nominal Energy [Wh]	5120	5120
Recommended Charging Current [A]	30	30
Maximum Charge Current [A]	50	50
Recommended Charging Voltage[V]	56.8	28.4
Maximum Charge Voltage [V]	58.4	29.2
Recommended Discharge Current [A]	50	50
Maximum Discharge Current [A]	100	100
Discharge Cut-off Voltage [V]	44.8±0.2	22.4±0.2

6.2. Cycle Specifications (at 25°C)

100% D.O.D	2000 Cycles
50% D.O.D	3400 Cycles
30% D.O.D	4800 Cycles

6.3. Safety and Standarts

Overcharge Protection	Yes
Overdischarge Protection	Yes
Overcurrent Protection	Yes
Short Circuit Protection	Yes
Overtemperature Protection	Yes
Temperature Sensor	Yes
Adjustable Charge / Discharge Current	Yes
Grounding	Yes
Cell Type	LFP 32700 Cylindrical
Safety Standards	IEC 61960 / 62133-2

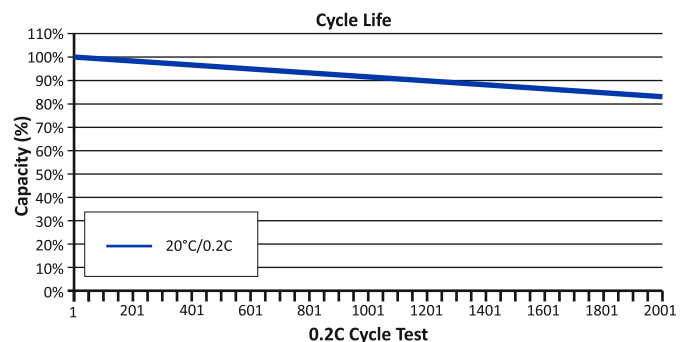
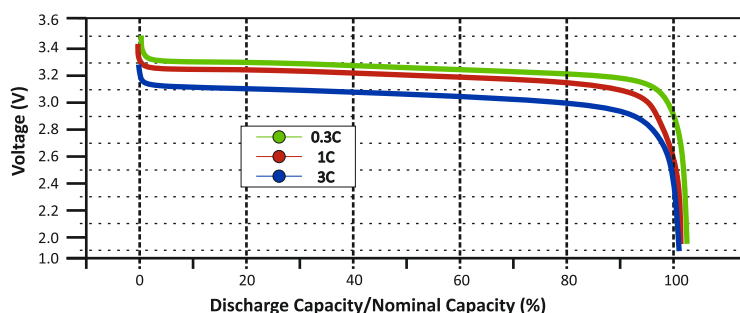
6.4. Environmental Conditions

Charging Temperature [°C]	0 ~ +60
Discharge Temperature [°C]	-20 ~ +60
Storage Temperature [°C]	0 ~ +35
Humidity (Non-Condensing) [%]	Max. 95%
Protection Class	IP65
Design Life [Year]	>10
Warranty [Year]	5

6.5. Additional Information

Dimensions (WxDxH) [mm]	494x721x180
Weight [kg]	55.5±0.5
Battery Connector	IP67 Protected Positive (+) and Negative (-) Pole Connector
Series Connection	No
Parallel Connection	Yes (Max. 16 pcs)
Communication	CAN / Rs485
Casing Material	Metal Case

Test Curve



7. TT MODULAR SERIES LITHIUM BATTERY TEST SPECIFICATIONS

7.1. Electrical Performance Test

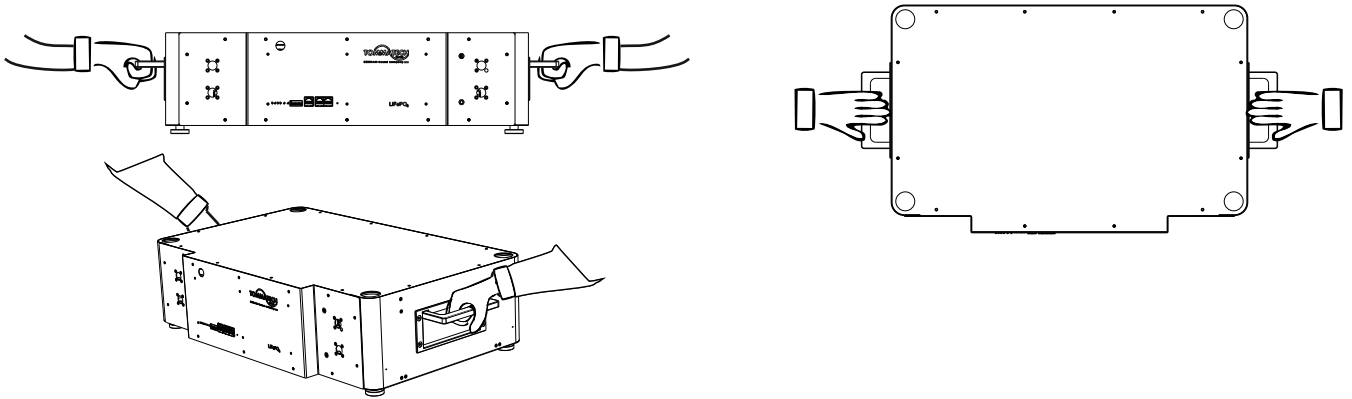
ITEM	TEST PROCEDURE	RESULT
Nominal Voltage	i) 25.6V Measurement of the average voltage during battery operation ii) 51.2V Measurement of the average voltage during battery operation	i) 25.6V ii) 51.2V
Discharge Performance	i) The time it takes for the battery with full capacity to drop from 51.2V to 40V with standard discharge current ii) The time it takes for the battery with full capacity to drop from 25.6V to 20V with standard discharge current	i) ≥ 117 min. ii) ≥ 117 min.
Storage	i) Measurement of voltage loss of 51.2V battery after 1 month at $25 \pm 5^\circ\text{C}$ ii) Measurement of voltage loss of 25.6V battery after 1 month at $25 \pm 5^\circ\text{C}$	i) $\geq 49.6\text{V}$ ii) $\geq 25.1\text{V}$
Number of Cycles	Measurement of the availability of 80 percent of its capacity at 100% bottom discharge at $25 \pm 5^\circ\text{C}$ with standard charging (30A) and discharging current (50A)	$\geq 80\%$ in 2000 cycles

7.2. Safety Test

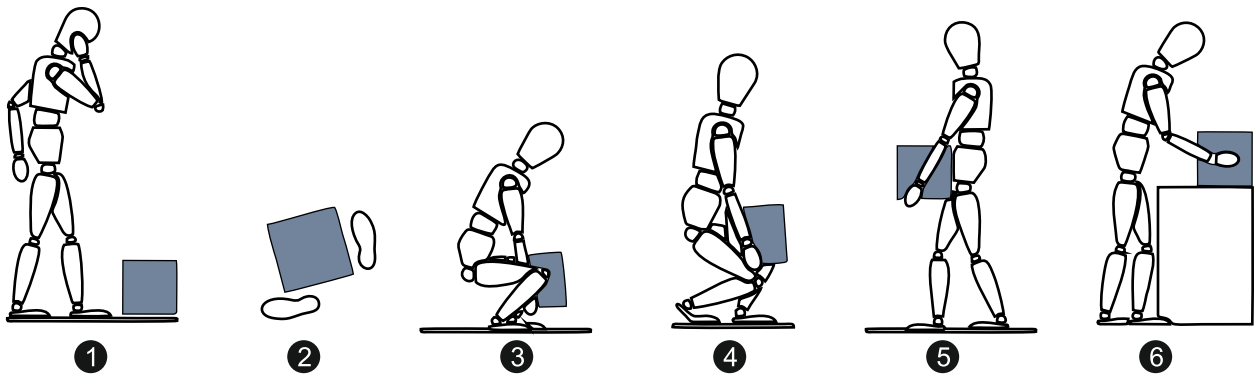
ITEM	TEST PROCEDURE	RESULT
Short Circuit	A cable with a resistance of less than $5\text{m}\Omega$ was connected to the positive and negative poles of the battery at full capacity and a short circuit condition was observed for 10 minutes. As a result of the test, the highest temperature of the battery was 138°C and no burning or explosion was observed.	No combustion or explosion was observed.
Drilling and Impact	When the battery was fully charged, an impact test was performed with a steel needle with a diameter between $\varnothing 3\text{mm}$ and $\varnothing 8\text{mm}$ and a speed between 10 mm/s and 40 mm/s . As a result of the test, it was observed that the outer layer of the battery was punctured and the voltage values decreased to zero.	No combustion or explosion was observed.
Overcharging	With 1C, the battery was discharged in an environment with a temperature of $25^\circ\text{C} \pm 5^\circ\text{C}$ until a voltage of 0V was reached. No combustion and explosion were observed as a result of the test.	No combustion or explosion was observed.
Thermal Shock	After the battery was fully charged with 1C, it was placed in a box with a dry environment and kept in an environment with a temperature of $150^\circ\text{C} \pm 2^\circ\text{C}$ for half an hour.	No combustion or explosion was observed.

8. TRANSPORT

- Pack the lithium battery with insulation and shockproof material to prevent physical damage.
- Be careful when loading and unloading the product during transportation. Do not discard the batteries and do not expose them to physical impact/collision.
- Never transport lithium batteries together with flammable or explosive objects or sharp metal products.
- To transport lithium batteries, lift them by the handles with at least two people.



- Follow the 6 rules of occupational health and safety in manual lifting and transportation:



1. Recognize the burden.
2. Approach asymmetrically.
3. Bend down springing on the knees.
4. Grasp the load diagonally and stay on the knees.
5. Rotate with the feet, keeping the load close to the body.
6. Putting the load in place.

9. MAINTENANCE

- If the lithium battery is rarely used, perform a maintenance charge or charge the battery regularly.
- If the lithium battery is not used for a long period of time, check the voltage. If the measured voltage is lower than the nominal operating voltage, charge the battery.
- The lithium battery does not need to be filled with any liquid. Therefore, never attempt to open or tamper with the battery. Opened or tampered products are not covered by the warranty.

10. PACKAGING

Cells/LFP Batteries are 40% - 60% charged when packaged. The high security LiFePO₄ box will contain name, type, nominal voltage, quantity, gross weight, date, capacity and impedance on the surface.

11. COMMON SITUATIONS AND SOLUTION SUGGESTIONS

SITUATION	SOLUTION SUGGESTION
My lithium battery is not fully charged.	Your charging voltage setting is low. The charging voltage of your lithium battery should be between 56.8V-57.6V for model TT-MDL-48V-100AH and 28.4V-28.8V for model TTMDL-24V-200AH.
I get a communication error from my lithium battery.	Check the dip switch settings, if there is no problem, check the RJ45 cable between the inverter and the battery. Battery RJ45 input equivalents are given in the user manual.
After connecting my lithium battery to the inverter, the inverter does not charge my lithium battery.	Your lithium battery voltage is low. If your voltage value is 44V for model TT-MDL-48V-100AH, 22V for model MDL-24V-200AH and below, the inverter may not charge your battery.
My lithium batteries discharge quickly.	You can add an additional lithium battery with the same product specifications to your system.
My lithium battery turns itself off.	Check the current drawn by your inverter. Observe the maximum current draw limit. Check the voltage of your lithium battery and make sure that it is at normal voltage values.
When I turn my lithium batteries off, some batteries do not turn off.	Your lithium batteries can only be switched on and off via the executive lithium battery and your lithium batteries cannot be switched off while charging. Please refer to the LED light states when the lithium battery is charging section in the user manual.
I don't know which lithium battery is my executive lithium battery.	Your executive lithium battery can be any lithium battery connected in parallel. This is related to your dip switch settings. The setting given at the top of the dip switch settings in the user manual is the dip switch setting of your manager lithium battery.
I want to add another brand battery with the same voltage and current values to my lithium batteries, will I encounter any problems?	You can only add batteries of the same model and brand with the same voltage and current values to your lithium batteries. If you add other brands of batteries, errors may occur in the system and you may encounter serious situations.
My lithium batteries touch the ground. Will I encounter any problems?	You must install your lithium batteries 20 cm above the ground so that they do not touch the ground. Protect from negative situations such as moisture, liquid contact, scratches, etc.

**The conditions and solution suggestions given in the table are for general control. If you cannot find a solution for your lithium batteries after the specified situations, you can contact the authorized service.*

WARRANTY CERTIFICATE

Title: TOMMATECH GMBH

Headquarters:

Address: Bürgerplatz 5 - 85748 Garching Munich / Germany

Phone: +49 89 1250 36 860

E-mail: mail@tommatech.de

Authorized Technical Service:

Address: Antalya Organize Sanayi Bölgesi 1. Kısım Atatürk Bulvarı No:20

Döşemealtı – Antalya – Türkiye

Phone: + 90 242 229 00 54

Phone: 444 20 02

Fax: + 90 242 229 00 74

Product Information

Product Model

Product Serial No

Warranty Period 5 YEARS (60 MONTHS)

Maximum Repair Time 20 Working Days

Seller Company Information

Title

Address

Telephone

Email

Invoice Date and Number

Delivery Date and Place

Authorized Signature

Company Stamp

Note: In order for your device sent to our company to be considered under warranty (during the warranty period of the product), no hardware must not be interfered with, it must not be damaged, the warranty label must not be torn / damaged and the product must be returned in its original packaging. If the above mentioned points are not taken into consideration, your device will be considered within the scope of unauthorized interference and will be deemed out of warranty.

WARRANTY EXCLUSIONS

- 1-Damages caused by transportation of the batteries.
- 2-Damages caused by intervention other than authorized service.
- 3-Damages caused by reverse connection of battery polarity.
- 4-Damages caused by drawing more current from the battery than the battery discharge current capacity.
- 5-Damage caused by charging the battery by applying more current than the maximum charging current capacity of the battery.
- 6-Damage caused by charging the battery by applying more voltage than the battery maximum charging voltage specified in the user manual.
- 7-Damages caused by charging the battery by applying more voltage than the maximum charging voltage of the battery specified in the user manual.
- 8-Damages caused by short-circuiting the battery poles.
- 9-Damage caused by contacting the positive (+) and negative (-) terminals of the battery with metal objects.
- 10-Malfunctions and errors in the product due to faulty assembly, maintenance, repair and disassembly by unauthorized persons.
- 11-Damages caused by the battery connectors not being fully inserted.
- 12-Damages caused by opening and intervening in the battery other than authorized service.
- 13-Damage caused by dropping the battery from a high place.
- 14-Damage caused by hitting the battery with any object such as a pickaxe or shovel.
- 15-Damage caused by connecting the batteries in series.
- 16-Damage caused by exposing the battery to high current or voltage.
- 17-Damage caused by contact of the battery with any liquid.
- 18-Damage caused by leaving or using the battery in excessively humid environments.
- 19-Damage caused by exposing the battery to temperatures higher or lower than the values specified in the user manual.
- 20-Damage caused by using the battery in a manner other than that specified in the user manual.
- 21-Damage caused by direct exposure of the battery to sunlight, fire, heaters or materials containing high temperatures.
- 22-Damage caused by connecting the battery directly to alternating current devices without using an inverter device.
- 23-Damage caused by direct power supply to electrical or electronic devices such as televisions and washing machines.
- 24-Damages caused by using direct alternating current source for battery charging.
- 25-Damages caused by continuing to use the battery in any risky condition.
- 26-Damages caused by the battery remaining below the nominal operating voltage for a long time.
- 27-Damages caused by keeping and using the battery near fire or heating sources.
- 28-Damages caused by using batteries of different types, different capacities and different production dates during parallel electrical connection of the batteries.
- 29-Damages caused by exposure of the battery to any physical impact.
- 30-Damages caused by disconnecting the connector connections while any load is connected to the battery or while drawing current.



