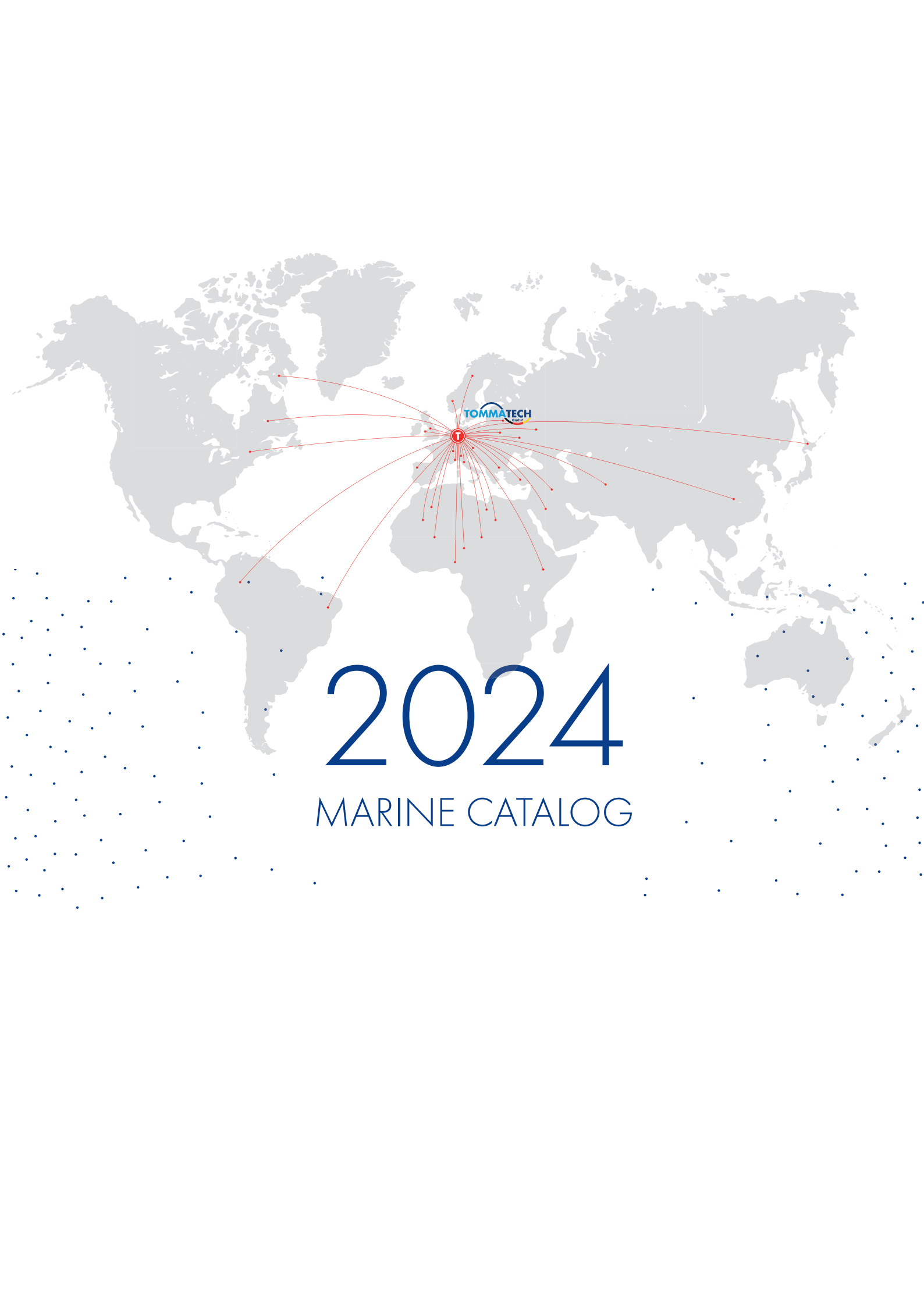




TOMMATECH
GmbH

GERMAN-based company ●●●

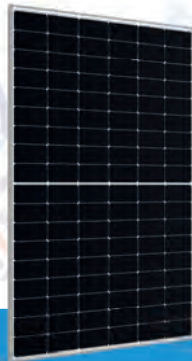
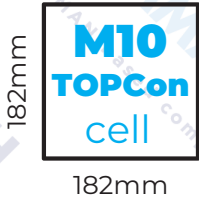
MARINE
Boat and Caravan
Systems



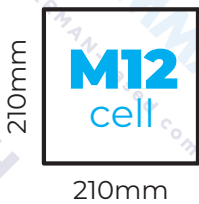
2024

MARINE CATALOG

»» SOLAR PANELS



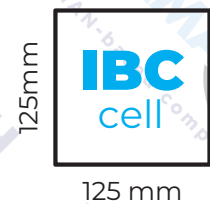
TommaTech M10
TOPCON Monocrystalline
Solar Panels
108TN10 450Wp



TommaTech M12
PERC Monocrystalline
Solar Panels
108PM12 550Wp



TommaTech
M12 PERC Monocrystalline
Small Panels
240-45Wp



TommaTech Flexible Series
Solar Panels
170-110-Wp



TommaTech Easy Life Series
Mobile Solar Charging Panels
25-15Wp

TOPCON MONOCRYSTALLINE 108TN10

- ◆ TT450-108TN10 450 Wp
- ◆ TT445-108TN10 445 Wp
- ◆ TT440-108TN10 440 Wp
- ◆ TT435-108TN10 435 Wp



High Conversion Efficiency

High panel efficiency to guarantee high power output



Self-Cleaning And Anti-Reflection Glass

Coating glass for self-cleaning reduces surface dust



Outstanding Low Irradiation Glass

Outstanding panel performance even in weak light conditions



Excellent Durability

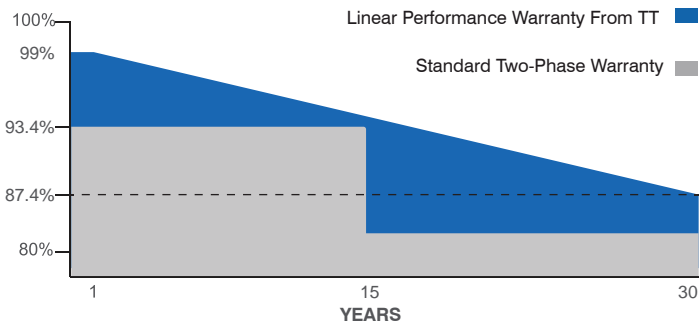
Wind load up to 2400 Pa, Snow load up to 5400 Pa



0~+5W Positive Power Tolerance



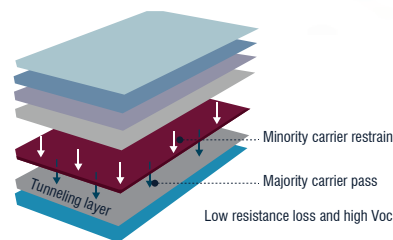
Easy Installation



30 Years Performance Warranty



15 Years Product Warranty



Half-Cut



IEC 61215, IEC 61730-1, IEC 61730-2
IEC 62804 PID (POTENTIAL INDUCED DEGRADATION)
IEC 61701 SALT MIST CORROSION
IEC 62716 AMMONIA CORROSION
ISO 9001:2015, ISO 14001:2015, ISO 45001:2018



Model Type	TT435 108TN10	TT440 108TN10	TT445 108TN10	TT450 108TN10
Peak Power (P _{max})	435 Wp	440 Wp	445 Wp	450 Wp
Module Efficiency	22.28	22.53	22.79	23.04
Maximum Power Voltage (V _{mp})	32.54	32.74	32.94	33.14
Maximum Power Current (I _{mp})	13.37	13.44	13.51	13.58
Open Circuit Voltage (V _{oc})	38.51	38.71	38.91	39.11
Short Circuit Current (I _{sc})	14.17	14.24	14.31	14.38
Power Tolerance	0~+5W			
Maximum System Voltage	1500V DC			
Operating Temperature	-40 ~ +85°C			
Protection Class	Class II			
Maximum Series Fuse Rating	25A			

MECHANICAL SPECIFICATIONS

Cell Dimensions(mm)	182x91
Cells per Module(pcs)	108 (6x18)
Weight(kg)	21.45
Panel Dimensions(mm)	1722x1134x30
Max. Wind/Snow Load(Pa)	2400/5400
Junction Box	IP68
Junction Box Cable Length(mm)	350-1600

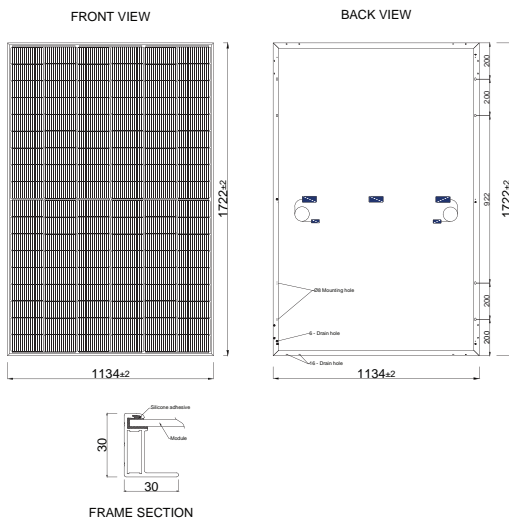
TEMPERATURE CHARACTERISTICS

Temp. Coeff. of (I _{sc})	0.040%/°C
Temp. Coeff. of (V _{oc})	-0.260%/°C
Temp. Coeff. of (P _{max})	-0.30%/°C

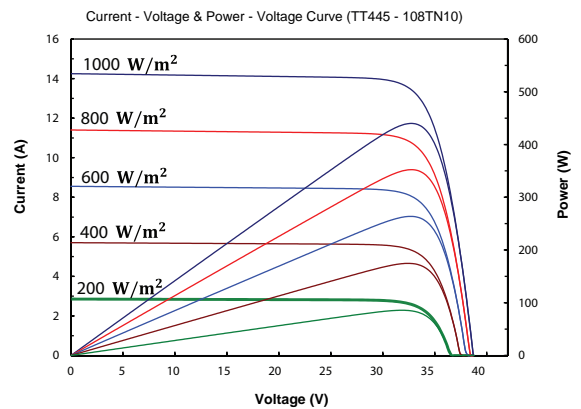
PACKING CONFIGURATION

Container	40' HC
Pieces per Pallet	35
Pieces per Container	910
Pallet Per Container	26

PHYSICAL CHARACTERISTICS



ELECTRICAL CHARACTERISTICS



* The specifications are obtained under the standard test conditions: 1000W/m2 solar irradiance, 1.5 Air Mass and cell temperature of 25°C. Measurement uncertainty for all panels is 6%. The actual transactions will be subject to the contracts. These parameters are for reference only and it is not a part of the contracts. The technical specifications in this document may vary. For more information, refer to the "Installation Manual".

* For roof, facades and installations on similar surfaces, solar panels should be mounted over a fire-resistant covering suitable for this application, with adequate ventilation between the back of the solar panels and the mounting surface. Improper installations are hazardous and may spark a fire. Solar panels must not be mounted on structures and roofs which are made of not fire-resistant materials such as plastic layer, transparent plastic, PVC or similar materials without any fire-protection layer. Usage and installation not in accordance with the guidelines as outlined in the installation manual will terminate the warranty. Please refer to the installation manual and the warranty documents for further details.

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PERC MONOCRYSTALLINE 108PM12

- ◆ TT550-108PM12 550 Wp
- ◆ TT545-108PM12 545 Wp
- ◆ TT540-108PM12 540Wp
- ◆ TT535-108PM12 535 Wp
- ◆ TT530-108PM12 530 Wp



High Conversion Efficiency

High panel efficiency to guarantee high power output



Self-Cleaning And Anti-Reflection Glass

Coating glass for self-cleaning reduces surface dust



Outstanding Low Irradiation Glass

Outstanding panel performance even in weak light conditions



Excellent Durability

Wind load up to 2400 Pa, Snow load up to 5400 Pa



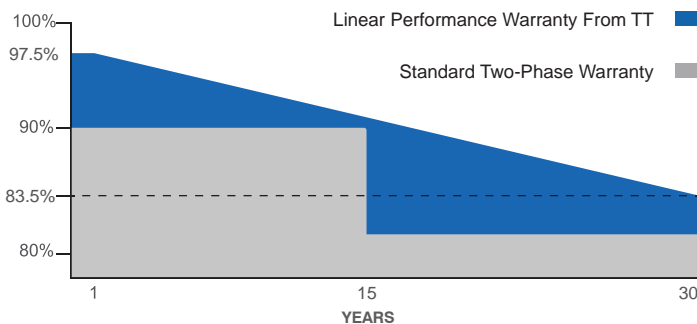
0~+5W Positive Power Tolerance



Easy Installation



12BB



- ✓ 30 Years Performance Warranty
- ✓ 15 Years Product Warranty

Half-Cut



IEC 61215, IEC 61730-1, IEC 61730-2
IEC 62804 PID (POTENTIAL INDUCED DEGRADATION)
IEC 61701 SALT MIST CORROSION
IEC 62716 AMMONIA CORROSION
ISO 9001:2015, ISO 14001:2015, ISO 45001:2018



Model Type	TT530 108PM12	TT535 108PM12	TT540 108PM12	TT545 108PM12	TT550 108PM12
Peak Power (Pmax)	530 Wp	535 Wp	540 Wp	545 Wp	550 Wp
Module Efficiency	20.70	20.90	21.09	21.29	21.48
Maximum Power Voltage (Vmp)	30.7	30.9	31.1	31.3	31.5
Maximum Power Current (Imp)	17.27	17.31	17.36	17.42	17.46
Open Circuit Voltage (Voc)	37.0	37.2	37.5	37.7	37.9
Short Circuit Current (Isc)	18.28	18.33	18.38	18.45	18.49
Power Tolerance	0~+5W				
Maximum System Voltage	1500V DC				
Operating Temperature	-40 ~ +85°C				
Protection Class	Class II				
Maximum Series Fuse Rating	25A				

MECHANICAL SPECIFICATIONS

Cell Dimensions(mm)	210x105
Cells per Module(pcs)	108 (6x18)
Weight(kg)	28.5
Panel Dimensions(mm)	1965x1303x35
Max. Wind/Snow Load(Pa)	2400/5400
Junction Box	IP68
Junction Box Cable Length(mm)	350-1600

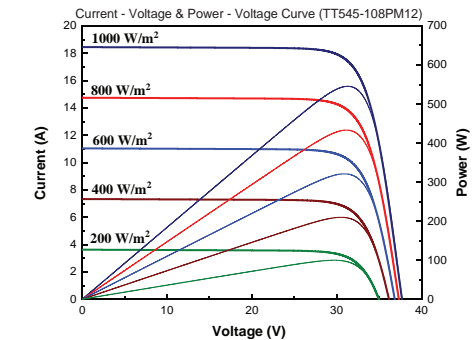
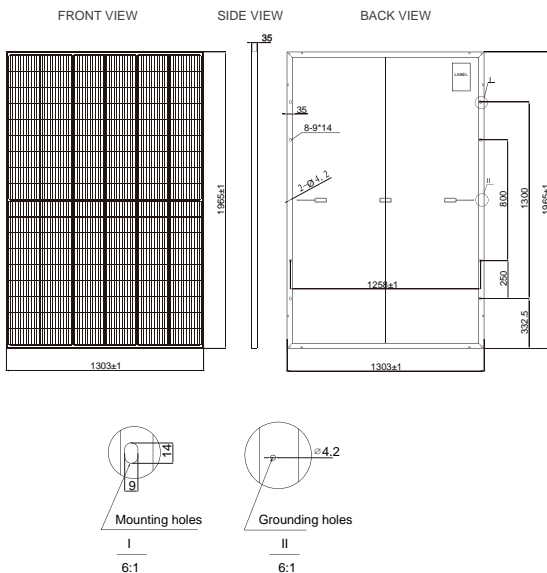
TEMPERATURE CHARACTERISTICS

Temp. Coeff. of (Isc)	0.05%/°C
Temp. Coeff. of (Voc)	-0.27%/°C
Temp. Coeff. of (Pmax)	-0.35%/°C

PACKING CONFIGURATION

Container	40' GP
Pieces per Pallet	30
Pieces Per Container	480
Pallet Per Container	16

PHYSICAL CHARACTERISTICS



* The specifications are obtained under the standard test conditions: 1000W/m2 solar irradiance, 1.5 Air Mass and cell temperature of 25°C. Measurement uncertainty for all panels is 6%. The actual transactions will be subject to the contracts. These parameters are for reference only and it is not a part of the contracts. The technical specifications in this document may vary. For more information, refer to the "Installation Manual".

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PERC MONOCRYSTALLINE 36-48PM12

- ◆ TT240-48PM12
- ◆ TT060-36PM12
- ◆ TT120-36PM12
- ◆ TT045-36PM12
- ◆ TT090-36PM12



High Conversion Efficiency

High panel efficiency to guarantee high power output



Self-Cleaning And Anti-Reflection Glass

Coating glass for self-cleaning reduces surface dust



Outstanding Low Irradiation Glass

Outstanding panel performance even in weak light conditions



Excellent Durability

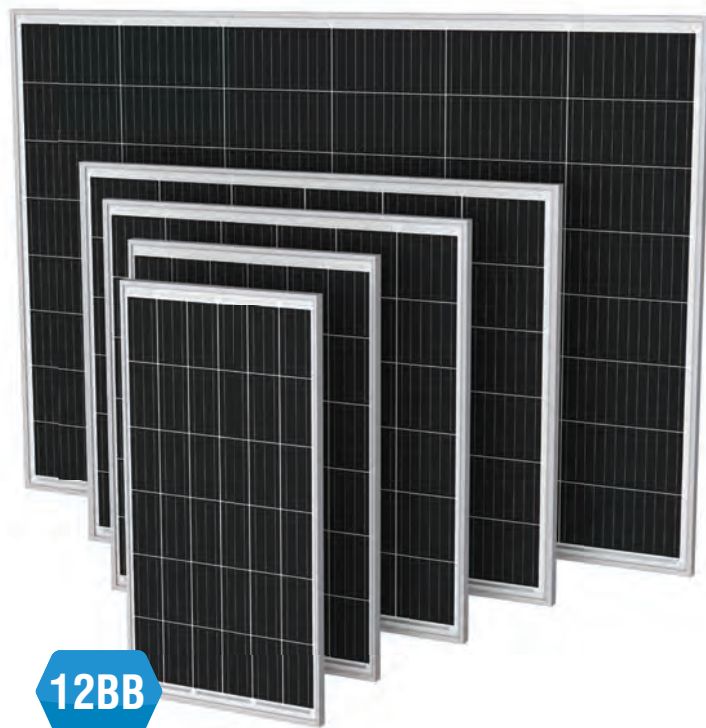
Wind load up to 2400 Pa, Snow load up to 5400 Pa



0~+5W Positive Power Tolerance



Easy Installation



ISO 9001:2015, ISO 14001:2015, ISO 45001:2018



Model Type	TT045 36PM12	TT060 36PM12	TT090 36PM12	TT120 36PM12	TT240 48PM12
Peak Power (P _{max})	45 Wp	60 Wp	90 Wp	120 Wp	240 Wp
Maximum Power Voltage (V _{mp})	20.77	20.77	20.77	20.77	27.70
Maximum Power Current (I _{mp})	2.17	2.90	4.34	5.78	8.67
Open Circuit Voltage (V _{oc})	24.37	24.37	24.37	24.37	32.50
Short Circuit Current (I _{sc})	2.34	3.04	4.55	6.06	9.11
Cell per Module	36 (6x6)	36 (6x6)	36 (6x6)	36 (6x6)	48 (6x8)
Cell Dimensions (mm)	53x105	70 x 105	105 x 105	140 x 105	210x105
Panel Dimensions (mm)	362x692x20	464x692x20	674x692x20	884x692x20	931x1303x30
Weight (kg)	3.25	4.00	5.54	7.10	13.46
Operating Temperature	-40 ~ +85°C				

MECHANICAL SPECIFICATIONS

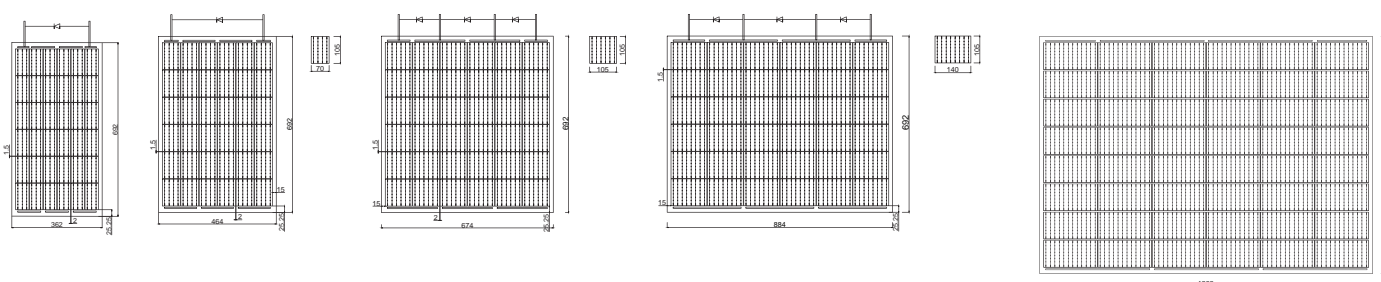
Solar Glass	3.2mm Low iron, Tempered Glass
Frame	Anodized Aluminum
IP Rating	IP67 / IP68
Cable Diameter	4mm ²
Cable Length	500mm

TEMPERATURE CHARACTERISTICS

Temp. Coeff. of (I _{sc})	0.050%/°C
Temp. Coeff. of (V _{oc})	-0.270%/°C
Temp. Coeff. of (P _{max})	-0.350%/°C

PHYSICAL CHARACTERISTICS

Unit: mm



45 Wp

60 Wp

90 Wp

120 Wp

240Wp



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FLEXIBLE SOLAR PANELS

◆ TT-FLEX-170 170Wp ◆ TT-FLEX-170-FB 170Wp ◆ TT-FLEX-110 110Wp ◆ TT-FLEX-110-FB 110Wp

TommaTech New Generation Flexible Panel, which has high light transmittance ETFE polymer, durable fiberglass and high efficiency IBC solar cell in its structure, is produced in international quality standards with 7-layer advanced lamination technology. The combination of ETFE and fiberglass sheet makes the panel much more durable. It flexes up to a maximum of 30 degrees and is lightweight, making it a perfect fit for any surface. Available in 110Wp and 170Wp power options, TommaTech Flexible Panel Series has the advantage of being used in many application areas such as boats, caravans, roofs and many similar applications. Available in white and black color options, the series has the option of production in different power and size options according to your needs.



Prism Surface

Maximum light absorption through prism surface



Excellent Light Transmit with ETFE

Higher light transmittance, corrosion resistance, operating temperature range



IBC Cell Technology

Flexible, durable and high efficient cell with back contact connection



Flexible Design

Flexibility up to 30 degrees max



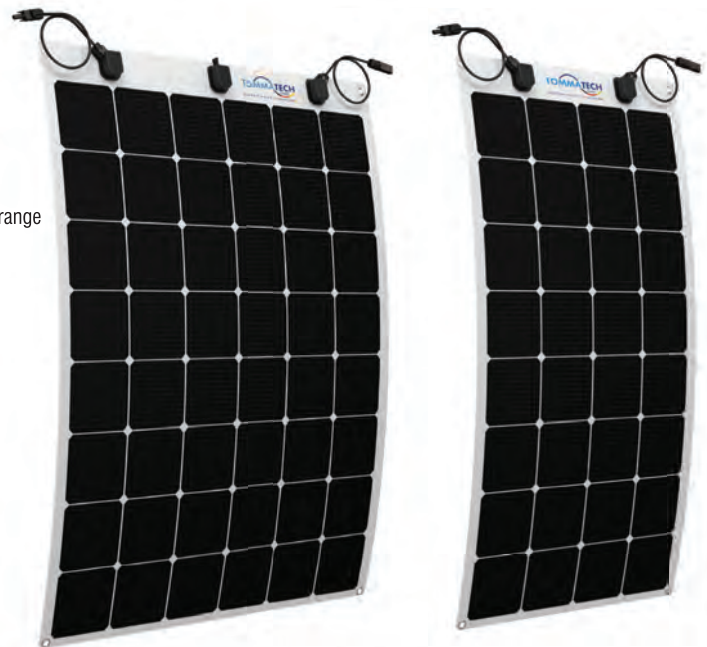
Ultra Lightweight

3mm thick ultrathin and durable design



IP68 Protection Class

Provides water resistance with IP68 Junction Box



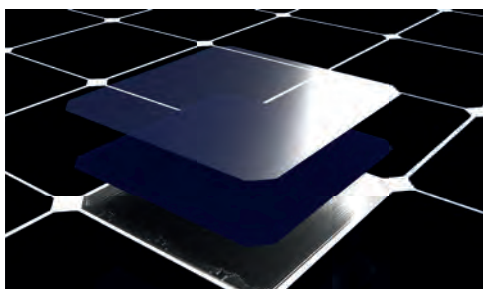
IP68
Junction Box



Prism
Surface Design



Stainless
Eyelet

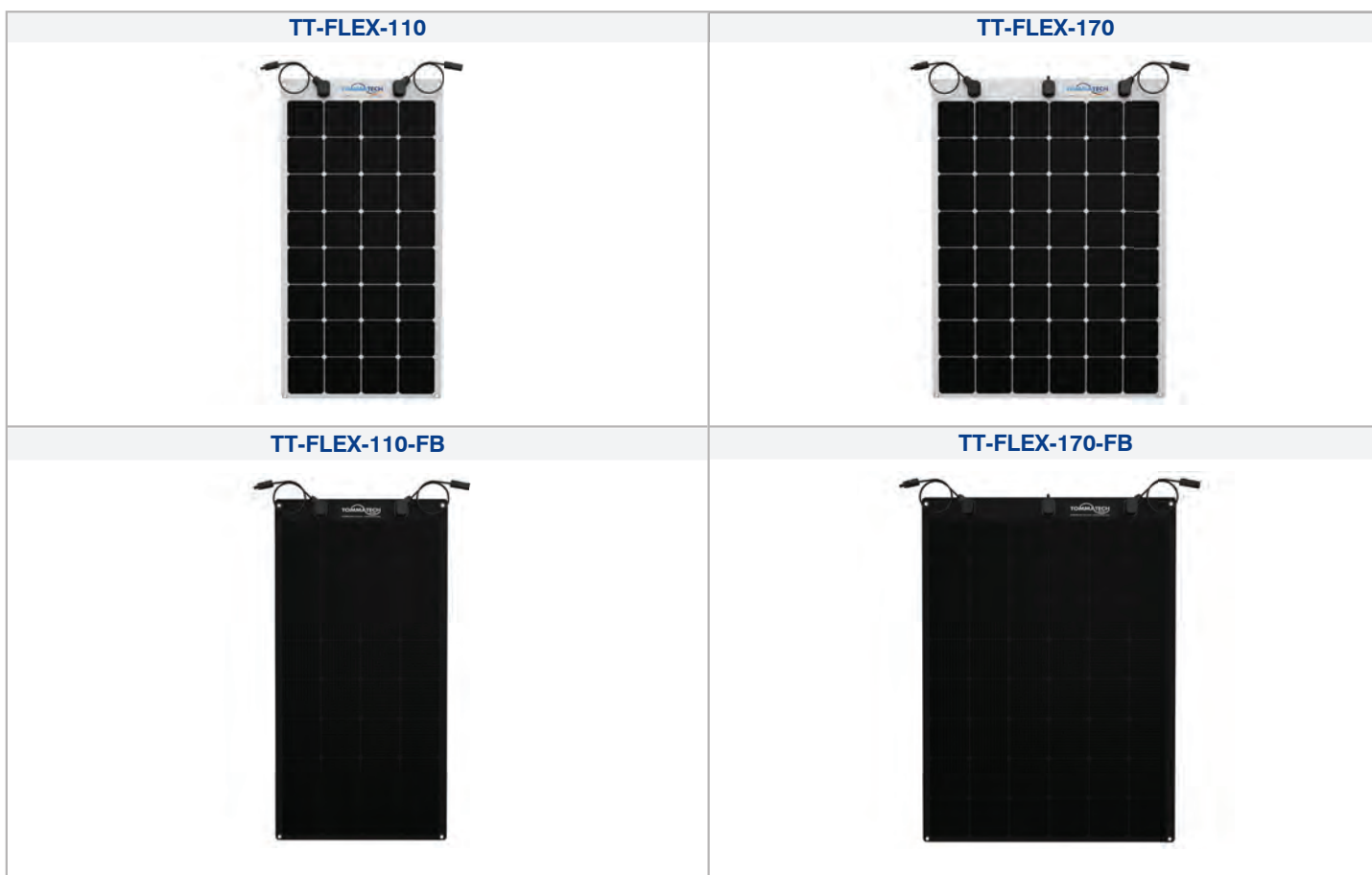


IBC Solar cells, which are preferred in flexible panels, are a cell type built on a copper base. When bent or left in a humid environment, TommaTech Flexible Panels are more resistant to power losses due to breakage and corrosion than conventional solar panels. TommaTech Flexible Panels are one of the most important energy solutions for users with the Bypass diodes and efficient cell architecture in low radiation and shade conditions.

ISO 9001:2015, ISO 14001:2015, ISO 45001:2018



Model Type	TT-FLEX-110 110Wp	TT-FLEX-170 170Wp
Peak Power (P_{max})[Wp]	110	170
Module Efficiency (%)	17.5	18.5
Power Tolerance [W]	0~+5	
Maximum Power Voltage(V_{mp})[V]	18.84	28.82
Maximum Power Current (I_{mp})[A]	5.84	5.90
Open Circuit Voltage (V_{oc})[V]	22.80	34.60
Short Circuit Current (I_{sc})[A]	6.15	6.33
Temp. Coeff. of (P_{max})	-0.29%/°C	
Temp. Coeff. of (V_{oc})	-55.68mV/°C	-83.70mV/°C
Temp. Coeff. of (I_{sc})	2.9mA/°C	
Dimensions (mm)	1134x555x3	1134x811x3
Weight (kg)	2.3	3.2
Maximum System Voltage [VDC]	600	
Maximum Series Fuse Rating [A]	15	
Protection Class	IP68	
Number of ByPass Diodes	2	3



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FOLDABLE SOLAR PANELS

◆ TT-FLEX-FBAG-110 110Wp

Easy to install, to carry and to use, the TommaTech foldable solar panel is a powerful companion ready to take you on your next adventure. Designed to withstand harsh operating conditions, the high-performance solar panel offers a practical and reliable solution for emergencies. TommaTech foldable solar panel, which has high light transmittance ETFE polymer, durable fiberglass sheet and high efficiency IBC solar cell in its structure, is produced in international quality standards with 7-layer high lamination technology. With TommaTech foldable solar panels, you can charge your phone or tablet directly with USB power output, while at the same time you can get up to 110W instant power output with solar connectors. It is also possible to increase capacity by connecting multiple products together. Models can be customized for your different needs.



Prism Surface

Maximum light absorption through prism surface



Excellent Light Transmit with ETFE

Higher light transmittance, corrosion resistance, operating temperature range



IBC Cell Technology

Flexible, durable and high efficient cell with back contact connection



Ultra Lightweight

Ultra thin and durable design



Easy to Use

Easy to use, practical design

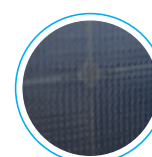


Increasable Capacity

Increasable power by connecting two or more products together



Solar Connector



Prism Surface



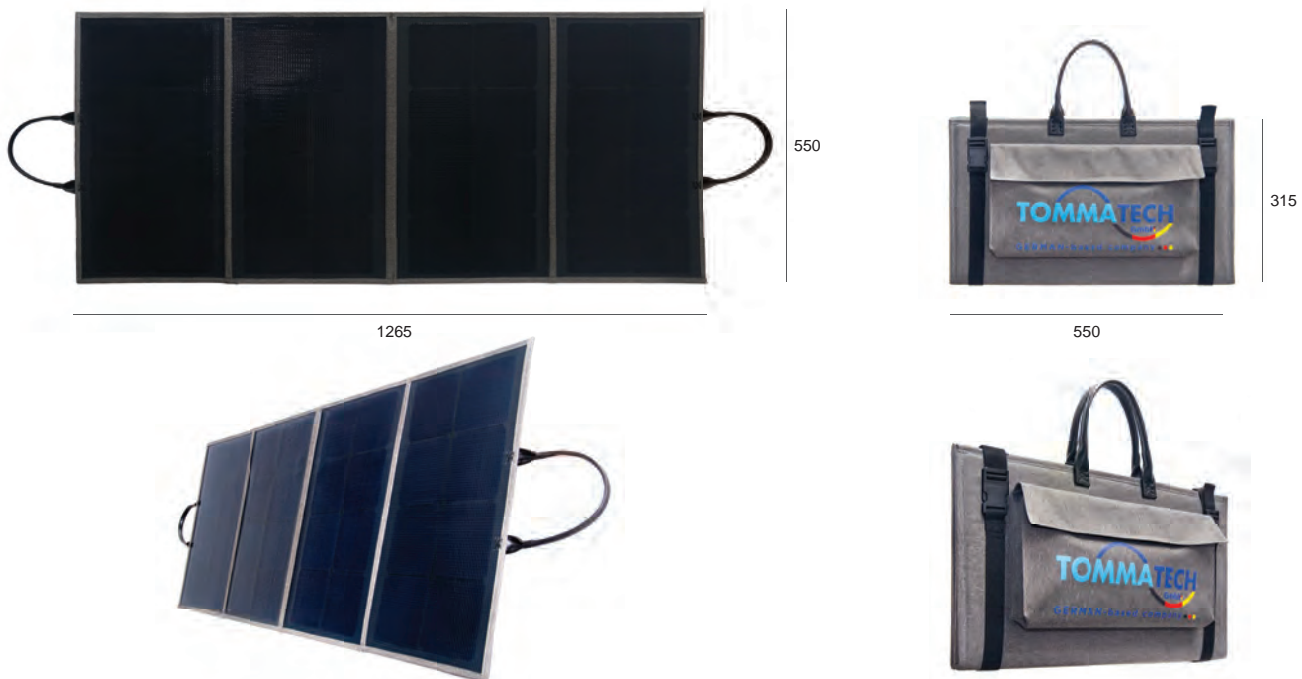
USB Fast Charging Output



The holders allows you to adjust the panel to the optimum angle for maximum performance. You can make adjustments as the position of the sun changes.

Model Type	TT-FLEX-FBAG-110 110Wp
Peak Power (P_{max})	110 Wp
Power Tolerance	0~+5W
Maximum Power Voltage (V_{mp})	18.84
Maximum Power Current (I_{mp})	5.84
Open Circuit Voltage (V_{oc})	22.80
Short Circuit Current (I_{sc})	6.15
Temp. Coeff. of P_{max}	-0.29%/°C
Temp. Coeff. of V_{oc}	-55.68mV/°C
Temp. Coeff. of I_{sc}	2.9mA/°C
Dimensions (Opened/Closed)(mm)	1265x550x6 / 550x315x24
Weight	4
Maximum System Voltage	1000V DC
Maximum Series Fuse Rating	15A
Protection Class	IP68
Junction Box Cable Length (mm)	600
Connector	MC4
USB Output	QC 3.0 Quick Charge 5V-9V-12V
Exterior of the Product	Fabric

Unit: mm



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TOMMATECH

Easy Life

TOMMATECH 25Wp FOLDABLE SOLAR CHARGING PANEL



TommaTech Easy Life Series Foldable Solar Charging Panel provide power to portable chargers such as powerbanks, smart phones, tablets or other USB devices directly from the sun, offering a wide range of applications.



Prism Surface

Maximum light absorption through prism surface



Excellent Light Transmit with ETFE

Higher light transmittance, corrosion resistance, operating temperature range



IBC Cell Technology

Flexible, durable and high efficient cell with back contact connection



Ultra Lightweight

Compact design with easy to carry size and weight



Fast Charging Technology

Fast charging up to 3 amps with QC 3.0 technology



Charging Multiple
Devices



Zippered Pocket



IPX4
Protection



Hanger and
carabiner



By connecting your phone's charging cable to the USB port on the pocket of the TommaTech Foldable Charging Panel, you can charge your phone easily and quickly from clean and renewable solar energy.

Model Type	TT-FSC-25
Peak Power (P_{max}) [Wp]	25
Maximum Power Voltage (V_{mp})[V]	9.90
Maximum Power Current (I_{mp})[A]	2.55
Open Circuit Voltage (V_{oc})[V]	11.41
Short Circuit Current (I_{sc})[A]	2.70
Temp. Coeff. of P_{max}	-0.29%/°C
Temp. Coeff. of V_{oc}	-27.84mV/°C
Temp. Coeff. of I_{sc}	2.9mA/°C
Dimensions (Opened/Closed)[mm]	698x268x4 / 175x268x40
Weight [kg]	0.8
Output Ports	USB-A / TYPE-C
USB Output Voltage	QC 3.0 Quick Charge 5V-9V-12V
Maximum Charging Current [A]	3
Exterior of the Product	Fabric

PHYSICAL CHARACTERISTICS

Unit: mm

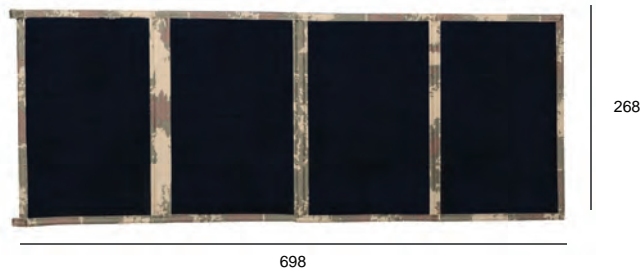
FRONT VIEW



SIDE VIEW



OPEN VIEW



ISO 9001:2015, ISO 14001:2015, ISO 45001:2018



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TOMMATECH

Easy Life

TOMMATECH 15 Wp MOBILE SOLAR CHARGING PANEL



TommaTech Mobile Solar Charging panels provide power to portable chargers such as powerbanks, smart phones, tablets or other USB devices directly from the sun, offering a wide range of applications.



Prism Surface

Maximum light absorption through prism surface



Excellent Light Transmit with ETFE

Higher light transmittance, corrosion resistance, operating temperature range



IBC Cell Technology

Flexible, durable and high efficient cell with back contact connection



Ultra Lightweight

Can be carried wherever you go with its bag size and lightweight design



Fast Charging Technology

Fast charging up to 3 amps with QC 3.0 technology



Don't Bend The Panel

Bending the panel causes damage to the cells inside and energy loss



Charging
Devices While
Sunbathing



Charging
Powerbanks
While Walking



Charging On the
Stroller



For USB Fan
Charging



USB and Type-C
ports



For Ipad
Charging



Model Type	TT-FSC-15
Peak Power (P_{max}) [Wp]	15
Maximum Power Voltage (V_{mp})[V]	9.31
Maximum Power Current (I_{mp})[A]	1.63
Open Circuit Voltage (V_{oc})[V]	10.81
Short Circuit Current (I_{sc})[A]	1.72
Temp. Coeff. of P_{max}	-0.29%/°C
Temp. Coeff. of V_{oc}	-26.1mV/°C
Temp. Coeff. of I_{sc}	2.90mA/°C
Dimensions [mm]	269x344x3
Weight [kg]	0.415
Output Ports	USB-A / TYPE-C
USB Output Voltage	5V/9V/12V
Maximum Charging Current [A]	3

PHYSICAL CHARACTERISTICS

Unit : mm

FRONT VIEW



SIDE VIEW

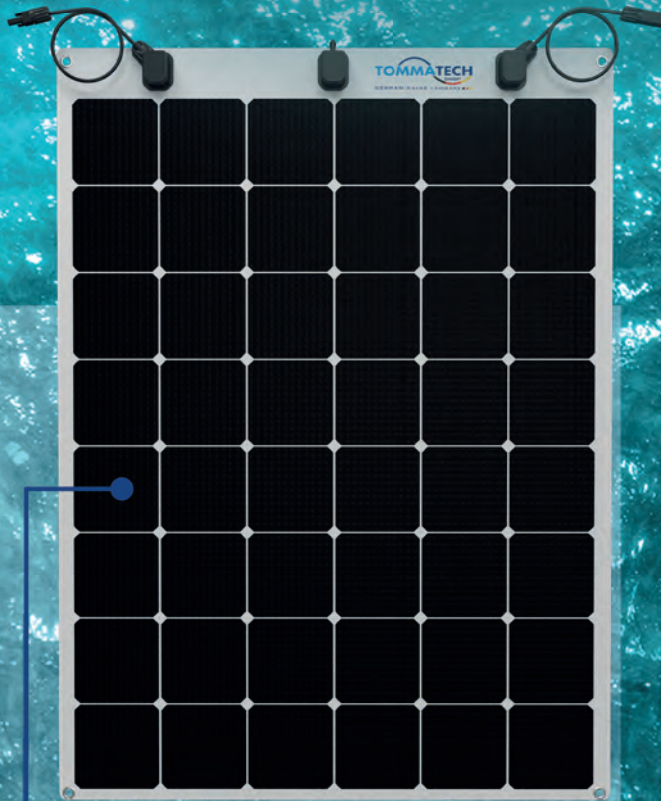


ISO 9001:2015, ISO 14001:2015, ISO 45001:2018



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Explore the World With Solar Energy



TT-FLEX-110
Flexible Solar Panel

TT-FLEX-170
Flexible Solar Panel



TOMMATECH
GmbH
GERMAN-based company

tommatech.de



»» INVERTERS

» OFF-GRID INVERTER



TommaTech
M Plus Series Inverter
3.6-7.2-11kW

» HYBRID INVERTERS



TommaTech
Plus Series Inverter
5.6kW



TommaTech
Uno Hybrid K-Series Inverter
3.0/ 3.7/ 5.0/ 6.0/ 7.5

»» SOLAR CHARGE CONTROL



TommaTech S Series
MPPT Charge Controller
3kW/60A



- › Customizable status LED bar with RGB lights
- › Built-in wifi for mobile monitoring via WatchPower App
- › Supports USB On-the-Go function
- › Reserved communication port for BMS (RS485, CAN-BUS or RS232)
- › Replaceable fan design for effortless of maintenance
- › Battery independent design
- › Configurable AC/PV output usage timer and prioritization
- › Selectable high power charging current
- › Selectable input voltage range for home appliances and personal computers
- › Compatible to Utility Mains or generator input
- › Built-in anti-dust kit
- › Optional 100W DC Output
- › Parallel operation up to 6 units available for 7.2kVA and 11kVA



RGB light:
Different color to present output source from PV, Grid or battery and battery charge/discharge status



Communication for Remote panel



Parallel connectors:
Maximum 6 units in parallel (only for 7.2kW and 11kW)



Diverse communications:
USB On-the-Go function, Dry contact and BMS communication



Anti-dust filter:
Increase product reliability in harsh environment



100W DC Output
Connect to DC fan, LED bulb or router



MODEL	TT-MPLUS 3.6KW-24V	TT-MPLUS 7.2KW-48V	TT-MPLUS 11KW-48V
Rated Power [VA/W]	3600/3600	7200/7200	11000/11000
Parallel Capability	No	Yes, 6 Pieces	
INPUT			
Voltage [V AC]	230		
Selectable Voltage Range [V AC]	170-280 (For Personal Computers) 90-280 (For Home Appliances)		
Nominal Frequency [Hz]	50 /60 (Auto Sensing)		
INPUT DC			
Max input current per MPPT [A]	18	18	18
Max short circuit current per MPPT [A]	22	22	22
MPPT Range @ Operating Voltage [V DC]	120 ~ 450	90 ~ 450	
Number of MPPT	1	2	2
Strings per MPPT	1	1	1
AC OUTPUT			
AC Voltage [V AC]	230 ± 5%		
Surge Power [VA]	7500	15000	22000
Maximum Efficiency [%]	90-93		
Transfer Time [ms]	15 (For Personal Computers) 20 (For Home Appliances)	10 (For Personal Computers) 20 (For Home Appliances)	
Waveform	Pure Sine Wave		
No Load Power Consumption [W]	< 45	< 70	
BATTERY			
Battery Voltage [V DC]	24	48	
Floating Charge Voltage [V DC]	27	54	
Overcharge Protection [V DC]	33	66	63
SOLAR & AC CHARGER			
Solar Charger Type	MPPT		
Max. PV Array Power [W]	4000	8000 (4000 x 2)	11000
MPPT Operating Voltage Range [V DC]	120 ~ 450	90 ~ 450	
Max. PV Array Open Circuit Voltage [V DC]	500		
Max. Solar Charge Current [A]	80	150	
Max. AC Charge Current [A]	80	150	
Max. Charge Current [A]	80	150	
PHYSICAL FEATURES			
Dimension, D x W x H [mm]	147.4 x 432.5 x 553.6		
Net Weight [kg]	14.1	18.4	
Communication Interface	USB/RS232/RS485/Wi-Fi/Dry-Contact		
ENVIRONMENT			
Humidity [%]	5 ~ 95 RH (Non-Condensing)		
Operating Temperature [°C]	-10 ~ 50		
Storage Temperature [°C]	-15 ~ 60		
STANDARD			
Compliance Safety	CE		

* TommaTech GmbH reserves the right to change the specifications of the products without prior notice.



- › Pure sine wave output
- › Touchscreen buttons with 4.3" colored LCD
- › Self-consumption and Feed-in to the grid options
- › Programmable supply priority for PV, Battery or Grid
- › User-adjustable charging current and voltage
- › Programmable multiple operation modes
- › Built-in Wi-Fi for mobile monitoring
- › Reserved communication port for BMS
- › Parallel operation up to 9 units

MODEL	TT-PLUS 5.6kW-48V
Phase	1-Phase In / 1-Phase Out
Maximum PV Input Power [W]	6000
Rated Output Power [W]	5600
Maximum Charging Power [W]	6000
PV INPUT (DC)	
Nominal DC Voltage / Maximum DC Voltage [V]	360 / 450
Start-up Voltage / Initial Feed-In Voltage [V]	110/ 120
MPPT Voltage Range [V]	120 ~ 430
Number of MPP Trackers / Maximum Input Current [A]	1 / 27
GRID OUTPUT (AC)	
Nominal Output Voltage [V AC]	220/230/240
Output Voltage Range [V AC]	184 - 264.5 or 195.5 - 253 (Selectable)
Nominal Output Current [A]	24.3
Power Factor	>0.9
EFFICIENCY	
PV Conversion Efficiency (DC/AC)	%96
AC INPUT	
AC Start-up Voltage / Auto Restart Voltage [V AC]	120 - 140 / 180
Acceptable Input Voltage Range [V AC]	90 - 280 or 170 - 280
Nominal Frequency [Hz]	50 / 60 (Auto Sensing)
Maximum AC Input Current [A]	40
BATTERY MODE OUTPUT (AC)	
Nominal Output Voltage [V AC]	220 / 230 / 240
Output Waveform	Pure Sine Wave
Battery Conversion Efficiency (DC to AC)	%93
BATTERY & CHARGER	
Nominal DC Voltage [V]	48
Maximum Solar Charging Current [A]	120
Maximum AC Charging Current [A]	120
Maximum Charging Current [A]	120
PHYSICAL SPECIFICATIONS	
Dimension, (D x W x H) [mm]	140 x 295 x 468
Weight [kg]	12
INTERFACE	
Parallel Function	Yes, 9 Units
Communication Port	USB / RS232 / RS485 / Wi-Fi / Dry-Contact
ENVIRONMENT	
Humidity [%]	5 ~ 95 RH (No Condensing)
Operating Temperature [°C]	-10 ~ 50

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Single Phase Hybrid Inverter
Uno Hybrid K-Series
3.0/ 3.7/ 5.0/ 6.0/ 7.5



Simple. Reliable. Efficient.



Low Start-Up
Voltage



High
Efficiency



Remote
Monitoring



IP65
Rated



Hybrid
Solution

3.0kW

3.7kW

5.0kW

**Uno-Hybrid-K-3.0/ Uno-Hybrid-K-3.7/ Uno-Hybrid-K-5.0/
Uno-Hybrid-K-6.0/ Uno-Hybrid-K-7.5**



TommaTech®'s Uno-Hybrid K-Series single phase inverters with a maximum efficiency of 97.6%, advanced PV array power, lower start-up voltage of 90V and maximum PV string voltage of 600V are compatible with our high voltage lithium ion as well as regular lead acid batteries. It offers plug and play installation and optimizes self-consumption through export control. There are five power options between 3.0 kW and 7.5 kW.



	Uno-Hy-K-3.0	Uno-Hy-K-3.7	Uno-Hy-K-5.0	Uno-Hy-K-6.0	Uno-Hy-K-7.5
DC INPUT					
Max. PV Array Input Power [Wp]	4500	5500	7500	9000	10000
Max. PV Input Voltage [V]			600		
Start Output Voltage [V]			90		
Nominal Input Voltage [V]			360		
MPPT Voltage Range [V]			70~550		
Number of MPPTs / Strings per MPPT			2(1/1)		
Max. Input Current (MPPT A / MPPT B) [A]			16/16		
Max. Short Circuit Current (MPPT A / MPPT B) [A]			20/20		
AC INPUT & OUTPUT					
Nominal AC Output Power [W]	3000	3680	5000(4600 for DE)	6000	7500(6900 for PEA)
Max. AC Output Apparent Power [VA]	3300	3680	5500(4600 for DE)	6600	7500(7300 for PEA)
Max. AC Output Current [A]	14.4	16.0	23.9(20 for DE)	28.6	32.6(33 for PEA)
Max. AC Input Apparent Power [VA]	6300	7360	9200	9200	9200
Max. AC Input Current [A]	27.4	32.0	40.0	40.0	40.0
Nominal AC Voltage [V]			230~240		
Nominal Grid Frequency[Hz]			50/60		
Displacement Power Factor			0.8 Leading ~ 0.8 Lagging		
THDi (Rated Power) [%]			<2		
BATTERY DATA					
Battery Type	Li-ion battery / Lead-acid battery				
Battery Voltage Range [V]	80-480				
Max. Continuous Charge/Discharge Current [A]	30				
EPS OUTPUT (WITH BATTERY)					
Nominal Output Power [W]	3000	3680	5000	6000	7500
Peak Apparent Power [VA]	3600,1h	4416,1h	6000,1h	7200,10min	7500
Max. Continuous Current [A]	13	16	21.7	26.1	32.6
Nominal Voltage [V]; Frequency [Hz]	230; 50/60				
Switch Time [ms]	<10				
Parallel Operation	Yes				
SYSTEM DATA					
Max. Efficiency [%]	97.6				
Euro. Efficiency [%]	97.0				
Battery Charge/Discharge Efficiency [%]	97.0/97.0				
Standby Consumption [W]	<3				
Ingress Protection	IP65				
Operating Temperature Range [°C]	-35~+60 (Derating at>45)				
Max. Operation Altitude [m]	3000				
Humidity [%]	0~100				
Typical Noise Emission [dB]	<30			<45	
Storage Temperature [°C]	-40~+65				
Dimensions [WxHxD] [mm]	482x417x181				
Net Weight [kg]	24				25
Cooling Concept	Natural cooling				Smart cooling
Communication Interfaces	CT/ Uno Smart Meter(Optional) / External Control RS485/ Dongle Wi-Fi /Dongle LAN (Optional)/ USB Upgrade/ NTC				
STANDARD					
Safety	EN/IEC62109-1/-2				
EMC	EN61000-6-1/2/3/ 4; EN61000-3-2/3/11/12				

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TommaTech's 3kW combined MPPT and DSP controller, will adjust solar electricity to charge batteries smoothly and according to their individual specifications. Compared to traditional solar charge controllers, it allows your solar panels to operate at their optimum power output voltage, providing higher efficiency up to 98% with lower power loss.

In combination with an inverter, solar panels, as well as external battery packs, TommaTech's 3kW MPPT-SCC can become the center of a standalone solar solution to generate green power for your home appliances.

Product Features

- › Intelligent Maximum Power Point Tracking technology
- › Built-in DSP controller with high performance
- › Automatic battery voltage detection (Only for 600W and 3kW)
- › Battery temperature sensor (BTS) automatically provides temperature compensation (Only for 3kW)
- › Three-stage charging optimizes battery performance
- › Automatic load-detection
- › Multifunctional LCD displays detailed information
- › Reverse polarity protection for solar panel and battery
- › Overcharge and overload protection
- › Suitable for different battery types

MODEL	SCC-MPPT 3kW
INPUT	
MPPT Operating Voltage [V]	60 ~ 115
Maximum PV Array Open Circuit Voltage [V]	145
Maximum PV Array Power [W]	800 1600 3200
Maximum Current [A]	50
OUTPUT	
Nominal Battery Voltage [V]	12 24 48
Connected Battery Type	Sealed Lead Acid, AGM or Gel
Maximum Charging Current [A]	60
Maximum Efficiency [%]	98
Charging Method	Three Stages: Bulk, Absorption, and Floating
PROTECTION	
Overload Protection	> %110 : Audible Alarm
Overcharge Protection	Yes
Polarity Reversal Protection	Yes
INDICATORS	
LCD Panel	LCD Panel Indicating Solar Power, Load Level, Battery Voltage / Capacity, Charging Current and Fault Conditions
LED Display	Three Indicators For Solar, Charging and Load Status
PHYSICAL FEATURES	
Dimensions [DxWxH] [mm]	315 x 165 x 128
Net Weight [kg]	4.5
IP Protection	IP31
ENVIRONMENT	
Humidity [%]	5 ~ 95 RH (Non-Condensing)
Operating Temperature [°C]	0 ~ 55
Storage Temperature [°C]	-15 ~ 60
Maximum Working Altitude [m]	0 ~ 3000

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» LITHIUM BATTERIES

» LOW VOLTAGE



TommaTech LFP Modular
Lithium Battery
12.8V-102Ah



TommaTech LFP
Modular Lithium Battery
12.8V-204Ah



TommaTech LFP
Modular Lithium Battery
25.6V-102Ah
25.6V-204Ah
51.2V-102Ah



TommaTech LFP
Rack Lithium Battery
51.2V-102Ah



TommaTech Modular
Lithium Battery
48V-50Ah
48V-100Ah

» HIGH VOLTAGE



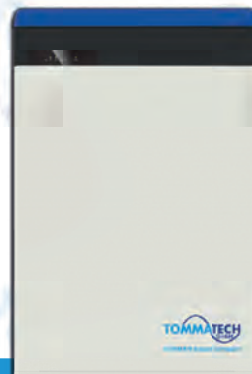
TommaTech
Hightech Power
3.0kWh



TommaTech
Hightech Power & BMS
3.0kWh



TommaTech
Booster Pack
5.8kWh



TommaTech
General Pack
5.8kWh

TOMMATECH LFP LITHIUM BATTERY



BTR-P-12.8V-102AH



BTR-P-25.6V-102AH



BTR-P-12.8V-204AH



BTR-P-25.6V-204AH



**LFP LITHIUM BATTERY
MODULAR 12.8V**

**LFP LITHIUM BATTERY
MODULAR 25.6V**

TommaTech new generation low voltage lithium batteries offer unique solutions for energy storage. With a long life of up to 8000 cycles, high energy density, high quality and performance, TommaTech lithium batteries stand out with their functional and eco-friendly structure.



High Performance

Great performance based on the latest generation of LiFePO₄ technology



Active Smart Management System

Effective usage structure with active balancing BMS technology



Long Lifespan

Long lifespan up to 8000 cycles



Innovative Design and Heat Resistant Case

Aesthetic, compact and durable metal cabinet design



Expandable Capacity

Parallel Connection up to 16 Batteries



Communication

CAN / RS485 / Bluetooth
(for 25.6V batteries)



IP20- IP65 Protection Class

IP20 - IP65 compatible metal cabinet and connector components



Sustainable Energy

An eco-friendly and sustainable energy source thanks to its ability to charge from solar panels

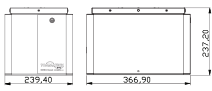
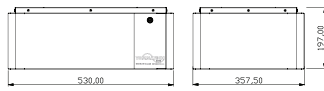
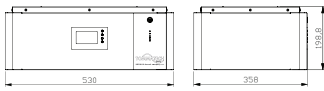
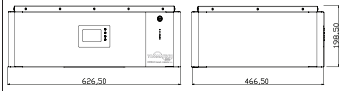
TommaTech Lithium Batteries are designed with heat-resistant and high performance LiFePO₄ battery technology. At the same time, lithium batteries equipped with temperature sensors are presented to users with a durable metal case. BMS (Battery Management System) with balancing function is used in TommaTech Lithium Batteries designed with the concept of safety and quality. Batteries with Al-Cu alloy conductive busbars allow parallel connection without loss of performance.



TECHNICAL SPECIFICATIONS

ELECTRICAL SPECIFICATIONS	BTR-P-12.8V-102Ah	BTR-P-12.8V-204Ah	BTR-P-25.6V-102Ah	BTR-P-25.6V-204Ah
Nominal Voltage [V]	12.8	12.8	25.6	25.6
Nominal Capacity [Ah]	102	204	102	204
Nominal Energy [Wh]	1305.6 ¹	2611.2 ¹	2611.2 ¹	5222.4 ¹
Recommended Charging Current [A]	50 ^{2,3}	80 ^{2,3}	50 ^{2,3}	100 ^{2,3}
Maximum Charge Current [A]	75 ^{2,3}	100 ^{2,3}	75 ^{2,3}	150 ^{2,3}
Recommended Charging Voltage [V]	14.2	14.2	28.4	28.4
Maximum Charge Voltage [V]	14.6	14.6	29.2	29.2
Recommended Discharge Current [A]	50 ^{2,3}	80 ^{2,3}	50 ^{2,3}	100 ^{2,3}
Maximum Discharge Current [A]	75 ^{2,3}	100 ^{2,3}	75 ^{2,3}	150 ^{2,3}
Discharge Cut-off Voltage [V]	11.1±0.2	11.1±0.2	22.4±0.2	22.4±0.2
BATTERY/CELL				
Cycle Life	8000 ^{2,3,4,5,6}			
Mass Energy Density [Wh/Kg]	165			
Volumetric Energy Density [Wh/L]	350			
Internal Resistance [mΩ]	0.27-0.40 ⁷			
SAFETY AND STANDARDS				
Overcharge Protection	Yes			
Overdischarge Protection	Yes			
Overcurrent Protection	Yes			
Short Circuit Protection	Yes			
Overtemperature Protection	Yes			
Temperature Sensor	Yes			
Adjustable Charge / Discharge Current	Yes			
Cell Type	LFP Prismatic			
Safety Standards	IEC 61960 / 62133-2 / RoHS			
ENVIRONMENTAL CONDITIONS				
Charging Temperature [°C]	0 ~ +60			
Discharge Temperature [°C]	-20 ~ +60			
Storage Temperature [°C]	0 ~ +35			
Humidity (Non-Condensing) [%]	Max. 85%			
Protection Class	IP20-IP65			
Design Life [Year]	>15			
Warranty [Year]	5			
ADDITIONAL INFORMATION				
Dimensions (WxDxH) [mm]	239.4x366.9x237.2	530x357.5x197	530x358x198.8	466.5x626.5x198.5
Weight [kg]	16.50±0.2	27.75±0.2	27.75±0.2	47.70±0.2
Battery Connector	IP67 Protected Positive (+) and Negative (-) Pole Connector			
Serial Connection	No			
Parallel Connection	Yes (Max. 16 pcs)			
Communication	Not Available		CAN / RS485 / Bluetooth	
Display	Not Available		LCD	
Casing Material	Metal Case			

PHYSICAL CHARACTERISTICS

BTR-P-12.8V-102Ah	BTR-P-12.8V-204Ah	BTR-P-25.6V-102Ah	BTR-P-25.6V-204Ah
			
Unit:mm			

1) Usable Energy

2) 0.5C

3) 25°C ± 2°

4) 50% SOC (State Of Charge)

5) 75% D.O.D (Depth Of Discharge)

6) 80% EOL (End Of Life)

7) 17% ± 3% SOC (State Of Charge)

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** For modular lithium battery, the base accessory is available separately upon request.

TOMMATECH LFP LITHIUM BATTERY



BTR-P-51.2V-102AH



BTR-P-51.2V-102AH-R



**LFP LITHIUM BATTERY
MODULAR - 51.2V**

**LFP LITHIUM BATTERY
RACK - 51.2V**

TommaTech new generation low voltage lithium batteries offer unique solutions for energy storage. With a long life of up to 8000 cycles, high energy density, high quality and performance, TommaTech lithium batteries stand out with their functional and eco-friendly structure.



High Performance

Great performance based on the latest generation of LiFePO₄ technology



Active Smart Management System

Effective usage structure with active balancing BMS technology



Long Lifespan

Long lifespan up to 8000 cycles



Innovative Design and Heat Resistant Case

Aesthetic, compact and durable metal cabinet design



Expandable Capacity

Parallel Connection up to 16 Batteries



Communication

CAN / RS485 / Bluetooth



IP20- IP65 Protection Class

IP20 - IP65 compatible metal cabinet and connector components



Sustainable Energy

An eco-friendly and sustainable energy source thanks to its ability to charge from solar panels

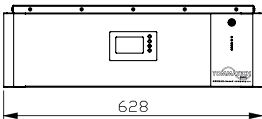
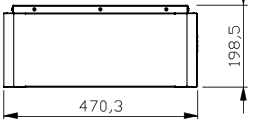
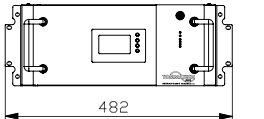
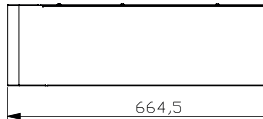
TommaTech Lithium Batteries are designed with heat-resistant and high performance LiFePO₄ battery technology. At the same time, lithium batteries equipped with temperature sensors are presented to users with a durable metal case. BMS (Battery Management System) with balancing function is used in TommaTech Lithium Batteries designed with the concept of safety and quality. Batteries with Al-Cu alloy conductive busbars allow up to 16 parallel connections without loss of performance. In this way, energy storage capacity of up to 80kWh can be achieved in a single system.



TECHNICAL SPECIFICATIONS

ELECTRICAL SPECIFICATIONS	BTR-P-51.2V-102Ah	BTR-P-51.2V-102Ah-R
Nominal Voltage [V]	51.2	
Nominal Capacity [Ah]	102	
Nominal Energy [Wh]	5222.4 ¹	
Recommended Charging Current [A]	50 ^{2,3}	
Maximum Charge Current [A]	75 ^{2,3}	
Recommended Charging Voltage [V]	56.8	
Maximum Charge Voltage [V]	58.4	
Recommended Discharge Current [A]	50 ^{2,3}	
Maximum Discharge Current [A]	75 ^{2,3}	
Discharge Cut-off Voltage [V]	44.8±0.2	
BATTERY/CELL		
Cycle Life	8000 ^{2,3,4,5,6}	
Mass Energy Density [Wh/Kg]	165	
Volumetric Energy Density [Wh/L]	350	
Internal Resistance [mΩ]	0.27-0.40 ⁷	
SAFETY AND STANDARDS		
Overcharge Protection	Yes	
Overdischarge Protection	Yes	
Overcurrent Protection	Yes	
Short Circuit Protection	Yes	
Overtemperature Protection	Yes	
Temperature Sensor	Yes	
Adjustable Charge / Discharge Current	Yes	
Cell Type	LFP Prismatic	
Safety Standards	IEC 61960 / 62133-2 / RoHS	
ENVIRONMENTAL CONDITIONS		
Charging Temperature [°C]	0 ~ +60	
Discharge Temperature [°C]	-20 ~ +60	
Storage Temperature [°C]	0 ~ +35	
Humidity (Non-Condensing) [%]	Max. 85%	
Protection Class	IP20-IP65	
Design Life [Year]	>15	
Warranty [Year]	5	
ADDITIONAL INFORMATION		
Dimensions (WxDxH) [mm]	628x468.5x198.5	482x664.5x174.2
Weight [kg]	47.70±0.2	53.35±0.2
Battery Connector	IP67 Protected Positive (+) and Negative (-) Pole Connector	
Serial Connection	No	
Parallel Connection	Yes (Max. 16 pcs)	
Communication	CAN / RS485 / Bluetooth	
Display	LCD	
Casing Material	Metal Case	

PHYSICAL CHARACTERISTICS

BTR-P-51.2V-102Ah		BTR-P-51.2V-102Ah-R	
			
628	470,3	482	664,5
	198,5		171,8

birim:mm

1) Usable Energy

2) 0.5C

3) 25°C ± 2°

4) 50% SOC (State Of Charge)

5) 75% D.O.D (Depth Of Discharge)

6) 80% EOL (End Of Life)

7) 17% ± 3% SOC (State Of Charge)

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**For modular lithium battery, the base accessory is available separately upon request.

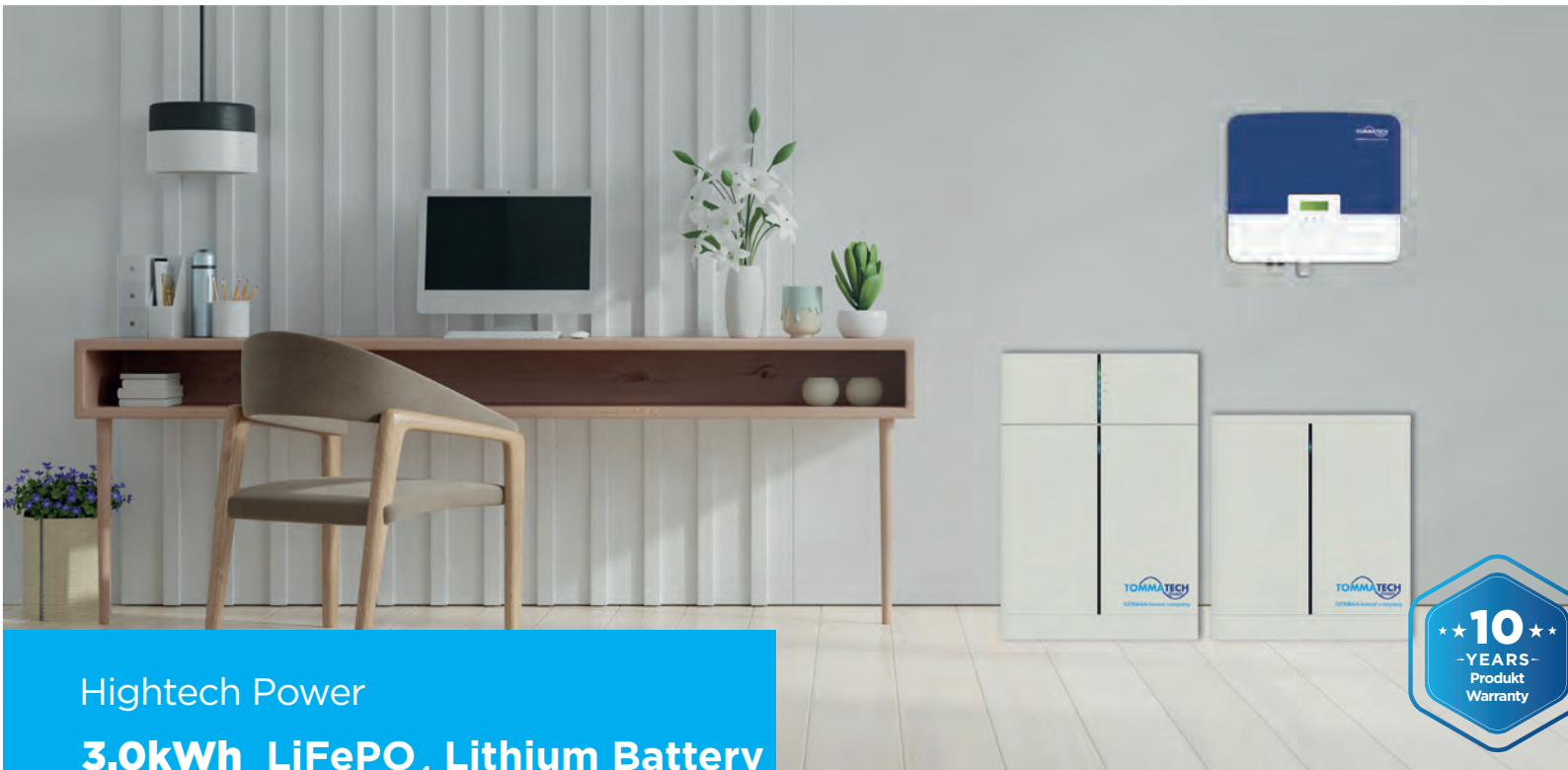


- The modular lithium battery is equipped with intelligent BMS for each battery pack to manage modules effectively
 - Compared with the traditional module, TommaTech Lithium Battery exceeds the capacity storage and greatly enhances the cycle life
 - Safe lithium iron phosphate battery cell
 - Compact size ultralight module
 - Each module is equipped with an independent BMS system
 - Practical pull ear design improves operation convenience
- Compact design for using in both Hybrid and Off-Grid solar power systems
 - The modular battery is widely used in energy storage and electrical products. Household energy storage systems, centralized power station energy storage system

MODEL	TT-MDL-48V-50Ah	TT-MDL-48V-100Ah
Battery Technology	LiFePO ₄	
Nominal Battery Energy [kWh]	2.4	4.8
Nominal Capacity [Ah]	50	100
Nominal Voltage [V]	48	
Charging Cut-Off Voltage [V]	54	
Discharging End-Off Voltage [V]	42	
Recommend C Rate [C]	0.5	
Recommended Charge/Discharge Current [A]	25	50
Max.Power Charge/Discharge Current [A]	50	75
Peak Power Charge/Discharge Current [A]	100 (15s)	
Net Weight [kg]	22	45
Dimension [WxDxH] [mm]	480x405x90	504x597x155
Charging Temp. Range [°C]	0 ~ 50	
Discharging Temp. Range [°C]	-20 ~ 50	
Communication	CAN / RS485 / RS232	
Certification & Safety Standard	TUV / CE / EN62619 / IEC62040 / UN38.3 / CEC Accredited / LIL 1973 / C E 1-021	
Warranty	10 Years	5 Years
Compatible Inverters	TommaTech / Goodwe / Victron / Imeon / Solis / Luxpower / Growatt / GMDE Solar / Voltronic / Deye	
OTA Function-Remote Upgrade	Yes	
Life Span	6000 Cycles	3500 Cycles
Protection Level	IP20	

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3.0kWh LiFePO₄ LITHIUM BATTERY



Hightech Power

3.0kWh LiFePO₄ Lithium Battery

3.0/ 6.0/ 9.0/ 12.0

Simple. Reliable. Efficient.



**6000W
Charger/Discharger
Rate**



**High
Efficiency**



**Remote
Monitoring**



**IP65
Rated**



**LiFePO₄
Technology**



**LiFePO₄ Lithium Battery 3.0/LiFePO₄ Lithium Battery 6.0/
LiFePO₄ Lithium Battery 9.0/LiFePO₄ Lithium Battery 12.0**

Maximize your solar benefits with our durable and scalable battery solutions. The safest LiFePO₄ technology ensures long term and high-performing operation with more than 6000 life cycles at 90% DoD with marginal self-consumption. Up to 4 of our TT-3.0kWh batteries can be equipped effortlessly with a BMS for maximal customization.

3.0kWh LiFePO₄ LITHIUM BATTERY

MODEL	3.0 kWh	6.0 kWh	9.0 kWh	12.0 kWh
Uno-Hybrid-K 3.0T / 3.7T / 5.0T / 6.0T / 7.5T	Storage Manager + TT 3.0 kWh	Storage Manager + 2 x TT 3.0 kWh	Storage Manager + 3 x TT 3.0 kWh	Not Suitable
Trio-Hybrid-K 5.0T / 6.0T / 8.0T / 10.0T / 12.0T / 15.0T	Not Suitable	Storage Manager + 2 x TT 3.0 kWh	Storage Manager + 3 x TT 3.0 kWh	Storage Manager + 4 x TT 3.0 kWh
Battery	30Ah Lithium(LFP)	30Ah Lithium(LFP)	30Ah Lithium(LFP)	30Ah Lithium(LFP)
Nominal Voltage [V]	102.4	204.8	307.2	409.6
Operating Voltage Range [V]	90-116	180-232	270-348	360-464
Battery Module	Modulex1	Modulex2	Modulex3	Modulex4
Rated Capacity [Ah]			30	
Total Energy [kWh]	3.1	6.1	9.2	12.3
Usable Energy [kWh]	2.8	5.5	8.3	11.0
Faradic Charge Efficiency			99%	
Battery Roundtrip Efficiency [%]			95%	
Standard Power [kW]	2.55	5.1	7.65	10.2
Recommend Charge / Discharge Current [A]			25	
Max Charge / Discharge Current [A]			30	
Cycle Life [90% DOD]			6000 Cycles	
Warranty			10 Years	
Available Charge / Discharge Temperature [°C]			-30°C ~ 55°C	
Storage Temperature [°C]			0°C ~ 40°C (1 Year) -20°C ~ 50°C (3 Months)	
Humidity [%]			0 ~ 100%	
Altitude [m]			Below 3000m	
Protection			IP65	
System to Inverter			RS485/CAN2.0	
Battery to Battery / BMS			CAN2.0	
Master Control LED Indicator Working			1 LED	
Master Control Capacity Indicator			4LED (25%, 50%, 75%, 100%)	
Battery Module LED	1 LED	2 LED	3 LED	4 LED
Switch On / Off			Button x 1 + Breaker x 1	
Safety Certificate			CE, TUV (IEC62619), MSDS	
UN Number			UN3840	
Hazardous Materials Classification			Class 9	
Transport Testing Requirement			UN38.3	
Physical Characteristics				
Dimensions (WxLxH) [mm]	Storage Manager: 482x174x148 TT 3.0 kWh: 482x472x148	Storage Manager: 482x174x148 +2 x TT 3.0 kWh: 482x472x148	Storage Manager: 482x174x148 +3 x TT 3.0 kWh: 482x472x148	Storage Manager: 482x174x148 +4 x TT 3.0 kWh: 482x472x148
Weight [kg]	Storage Manager: 7.5kg + TT 3.0 kWh: 33kg	Storage Manager: 7.5kg +2 x (TT 3.0 kWh: 33kg) = 66kg	Storage Manager: 7.5kg +3 x (TT 3.0 kWh: 33kg) = 99kg	Storage Manager: 7.5kg +4 x (TT 3.0 kWh: 33kg) = 132kg

*The data and technical specifications specified in this document are for preliminary information and may vary depending on the usage method of the products, system design and ambient conditions.

5.8kWh LiFePO₄ LITHIUM BATTERY



Hightech Power

5.8 kWh LiFePO₄ Lithium Battery

5.8/ 11.5/ 17.3/ 23.0

Simple. Reliable. Efficient



6000W
Charger/Discharger
Rate



High
Efficiency



Remote
Monitoring



IP65
Rated



LiFePO₄
Technology



**LiFePO₄ Lithium Battery 5.8/LiFePO₄ Lithium Battery 11.5/
LiFePO₄ Lithium Battery 17.3/LiFePO₄ Lithium Battery 23.0**

Maximize your solar benefits with our durable and scalable battery solutions. The safest LiFePO₄ technology ensures long term and high-performing operation with more than 6000 life cycles at 90% DoD with marginal self-consumption. Our GeneralPacks with inbuilt BMS can effortlessly be upgraded with up to 3 BoosterPacks to increase backup times and savings.

5.8kWh LiFePO₄ LITHIUM BATTERY



MODEL	5.8 kWh	11.5 kWh	17.3 kWh	23.0 kWh
Uno-Hybrid 3.0T / 3.7T / 4.6T / 5.0T	General Pack	General Pack + Booster Pack	General Pack + 2 x Booster Pack	Not Suitable
Trio-Hybrid 5.0T / 6.0T / 8.0T / 10.0T	Not Suitable	General Pack + Booster Pack	General Pack + 2 x Booster Pack	General Pack + 3 x Booster Pack
Nominal Voltage [V]	115.2	230.4	345.6	460.8
Operating Voltage [V]	100-131	200-262	300-393	400-524
Battery Type	Li-Ion (LFP)	Li-Ion (LFP)	Li-Ion (LFP)	Li-Ion (LFP)
Total Capacity [kWh]	5.8	11.5	17.3	23.0
Usable Capacity [kWh]	5.2	10.4	15.6	20.7
Faradic Charge Efficiency [%]	99	99	99	99
Battery Roundtrip Efficiency [%]	95	95	95	95
Standard Power [kW]	2.9	5.8	8.7	11.6
Max. Power [kW]	3.5	7	10.5	14
Recommended Charge / Discharge Current [A]	25	25	25	25
Max. Charge / Discharge Current [A]	35	35	35	35
Short Circuit Current [A]	1440	1440	1440	1440
Cycle Life	>6000 Cycles	>6000 Cycles	>6000 Cycles	>6000 Cycles
Warranty [Year]	10	10	10	10
Available Operating Temperature Range [°C]			0 ~ 55	
Full-Load Operating Temperature Range [°C]			5 ~ 48	
Humidity [%]			4 ~ 100 (Condensing)	
Max. Operation Altitude [m]			2000	
Protection			IP65	
System to Inverter			CAN2.0	
Battery to Battery/BMS			RS485	
Data Collect on Port /FW UPDATE			CAN2.0	
Master Control Working Mode Indicator			1 LED	
Master Control Capacity Indicator			4LED (25%, 50%, 75%, 100%)	
Battery Module LED			2 LED	
Reset			Button	
Physical Characteristics				
Dimensions (WxLxH) [mm]	474x193x708	(474x193x708)+(474x193x647)	(474x193x708)+2x(474x193x647)	(474x193x708)+3x(474x193x647)
Weight [kg]	72.2	72.2 + 68.5	72.2 + 2x68.5	72.2 + 3x68.5

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