



## Delta All-In-One Storage solutions

- Hybrid inverter Model : E5
- 6.0 kWh Li-ion Battery Model : BX\_6.0
- Smart monitor & control Model : R4E
- Power meter Model : P1E / P3E

It is time to embrace true energy independence

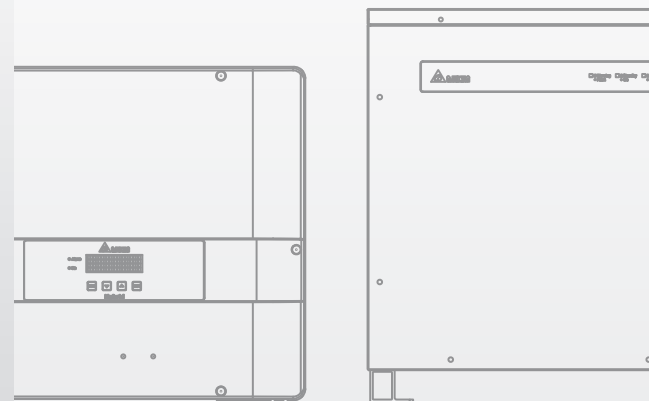
## All-In-One, All Delta



Seamless integration with 5KW hybrid inverter, Li-ion battery and touch screen monitor system. The best solution to reach energy independence from the grid.

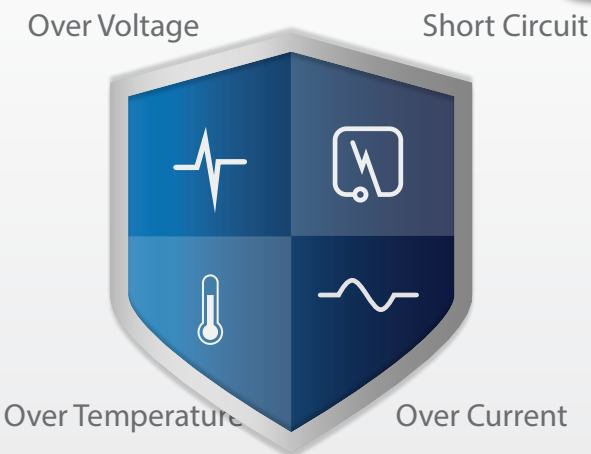
## Outdoor Is A Must

# IP65 IP55



Do you really want to install battery inside your house? Don't worry, Delta storage systems (inverter and battery) are all outdoor ready.

## The Safest Battery

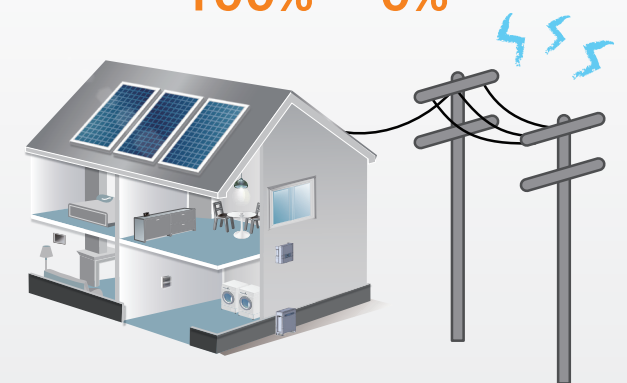


BX\_6.0 is the most reliable battery. Water and dust proofed for indoor and outdoor environment. Resistible for 5000kg stress and 1100 degree temperature.

\* Heat resistance temperature up to 1100 degree which will not cause flame out of battery cabinet even since spontaneous combustion.  
\*\* Built by Panasonic Li-ion battery pack with 18650 cell.

## Zero Export

100% ~ 0%



With the complete Delta storage solution which can execute the feed in power limitation from grid, home users still can enjoy the optimized power output from PV system. Delta storage system fulfill the demand of home usage and chargeable battery capacity, then limit the power generation from PV system dynamically.

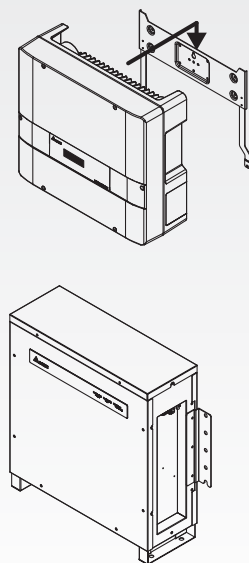
## Product Features

### Extremely Quiet



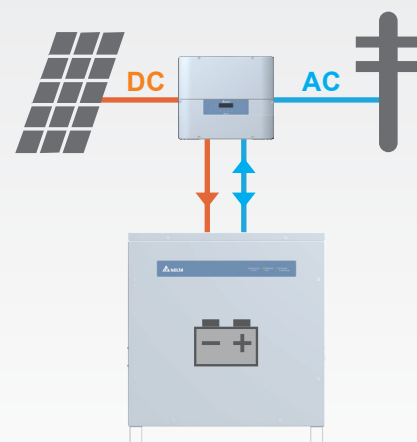
Brilliant design without any fan inside the inverter and battery optimize the user experience.

### Easy Installation



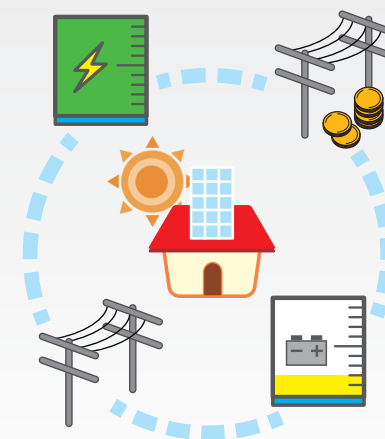
Hassle-free installation for inverter and battery. Delta BX6.0 battery even supports wall mount and floor mount.

### True Hybrid Operation



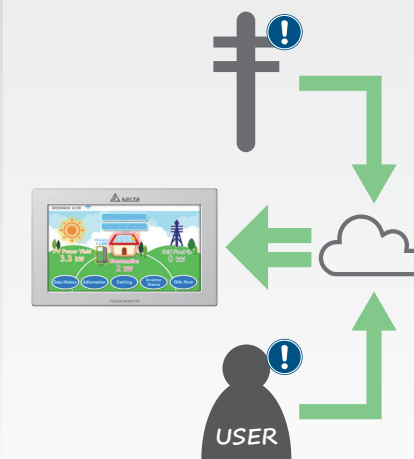
Integration with DC & AC coupling, Delta E5 hybrid inverter can maximize the flexibility for different energy storage scenario and demand.

### Smart Multiple Modes



7 operation modes, select the favorite application for your home with one touch.

### Remote Control



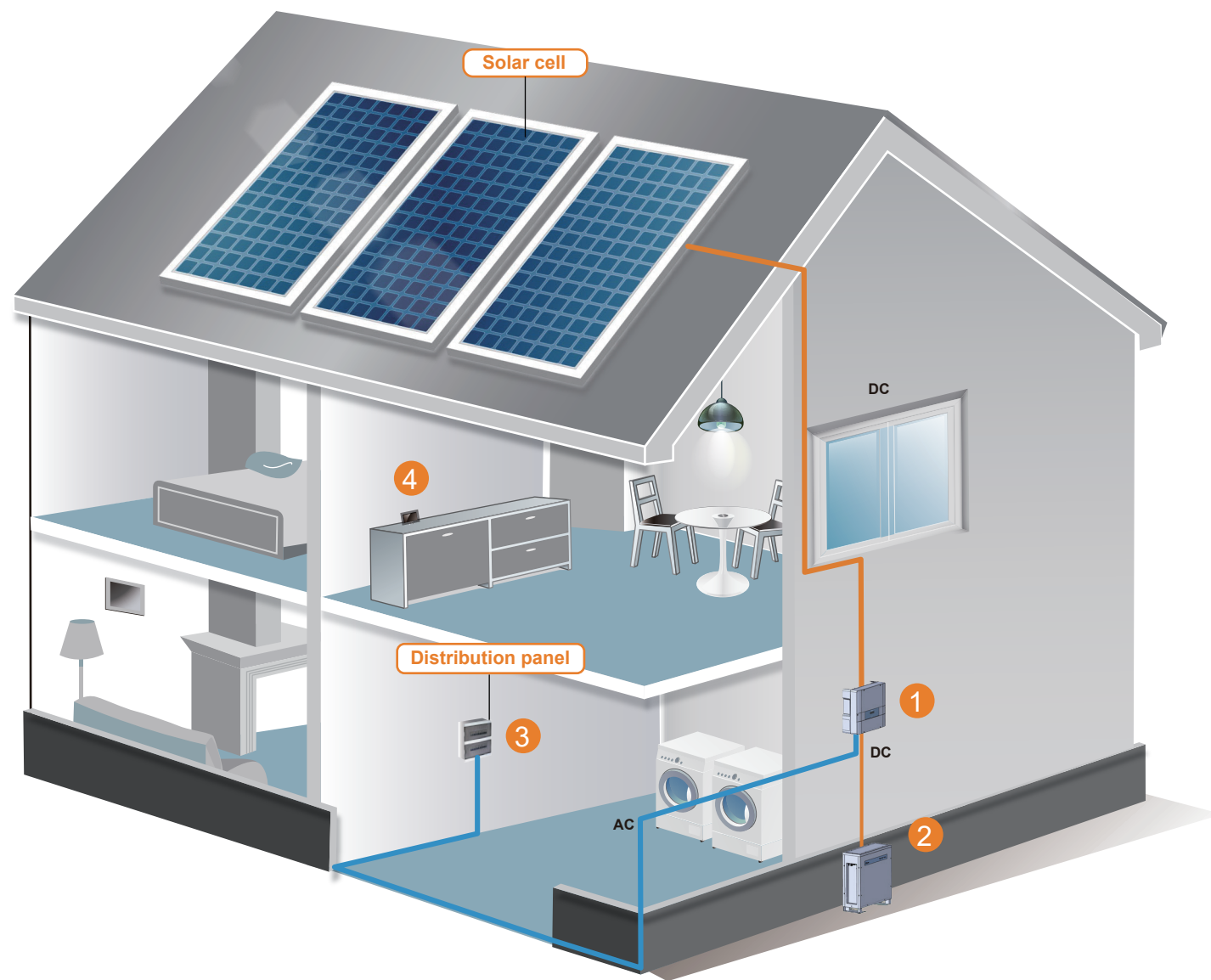
The integrated communication interface allows the E5 to execute instructions from the grid or user remotely.

\* FW upgradable for receiving the signal from grid operator, then implement the instruction.

### Touch Screen Local Monitoring



7-inch touch screen monitor provides complete local monitoring without encryption concerns



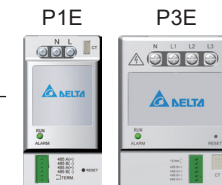
## 1 Hybrid Inverter

The hybrid inverter can power household loads.  
The remaining power can charge to battery or feed-in to grid.  
At nighttime, it can adjust electricity and make it possible to charge battery from grid.



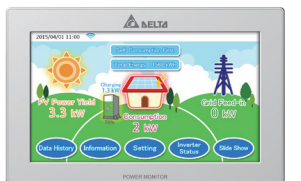
## 2 Battery

The 6kWh Li-ion battery can provide power for nighttime use  
by storing solar energy during the day.  
Extendable to max. 2 sets of BX\_6.0.



## 3 Power Meter

Smart meter can calculate power consumption and feed-in to grid.  
It also can calculate how much power purchased from utility  
company at daytime and nighttime.



## 4 Smart Monitor

Owner can simply read power produced, power consumption  
and convert and control to different operation modes via  
smart monitor.



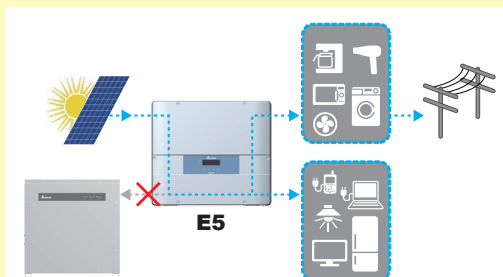
## 5 Delta Solar Cloud Service

24/7 remote monitoring for your electricity consumption.  
E-mail notification for warning and alarm information.  
Data storage up to 20 years.

The Hybrid E5 energy storage system consists of a single phase 5kW hybrid inverter, an external battery cabinet equipped with a high capacity 6 kWh Li-Ion battery, power meter and Smart Monitor. The Hybrid E5 storage system has been designed to integrate seamlessly with the battery and features dual MPPT, standalone function and a high charging efficiency of up to 97%. This is made possible as the inverter can send DC electricity generated by the PV system directly to the battery, without any additional power conversion steps or equipment required. The E5 inverter and battery cabinet are compact and detach from each other, allowing for greater flexibility and simplified installation. The power meter measures energy flow and displays the data on the Smart Monitor, which can be used to control the system operation modes to maximise use of self-generated solar energy.

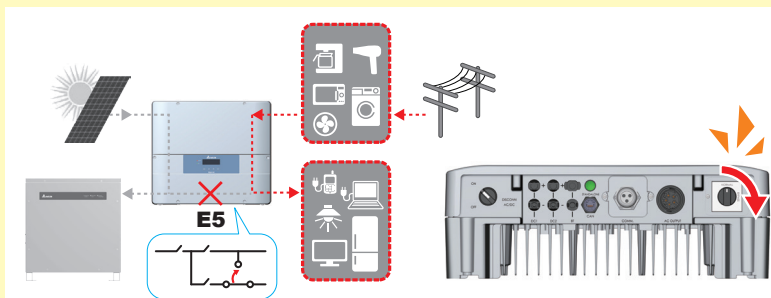
### PV inverter only

If the battery is not installed yet, the E5 inverter can work independently as a regular PV inverter.

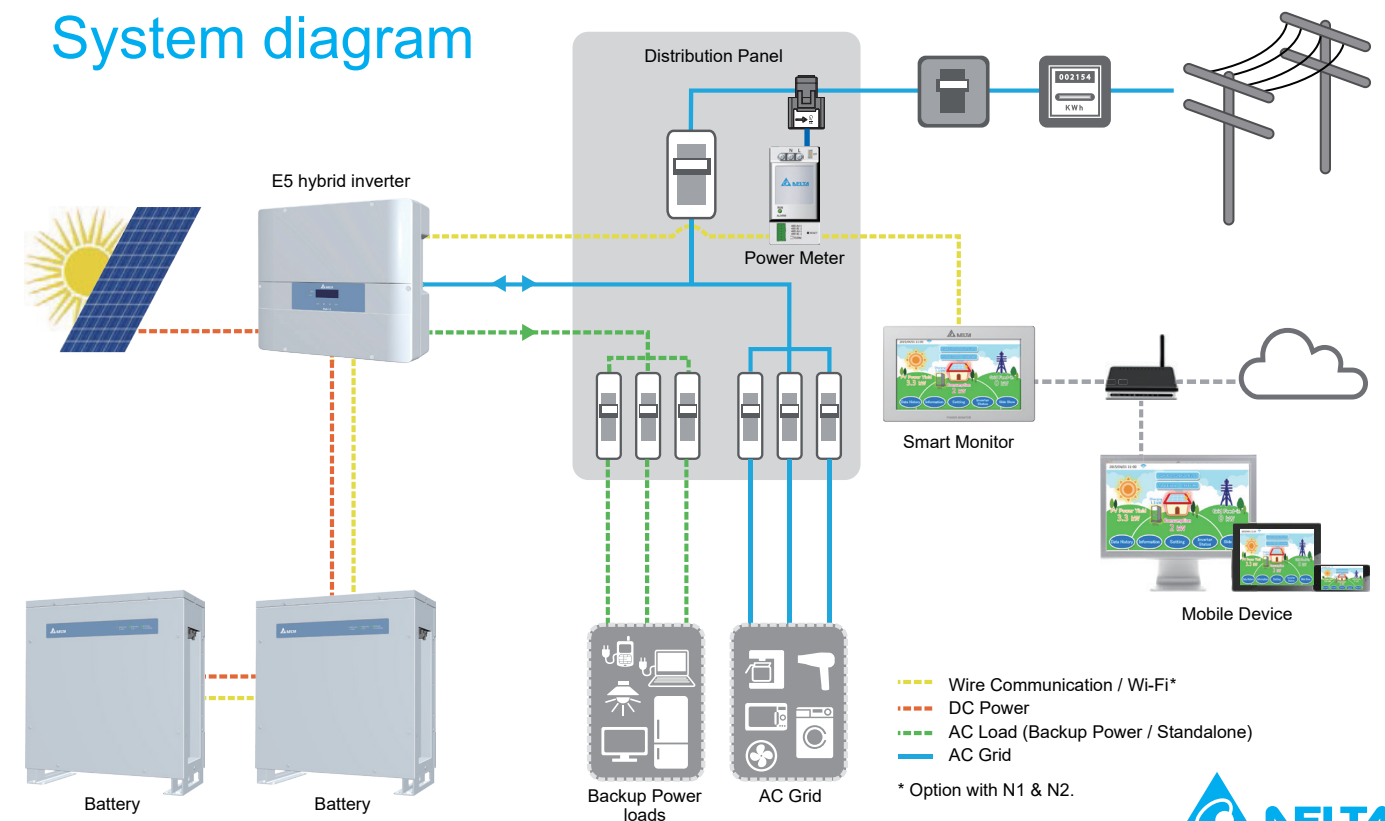


### Manual bypass

If the E5 inverter is not working correctly, the manual bypass function allows energy feed from the battery reserve.



## System diagram





Smart monitor

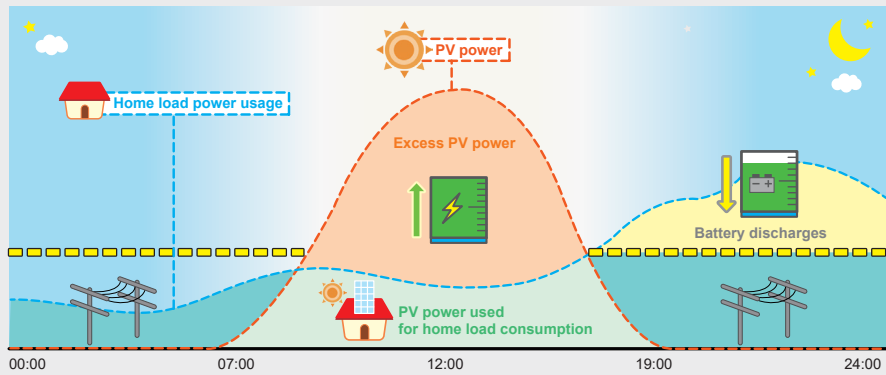
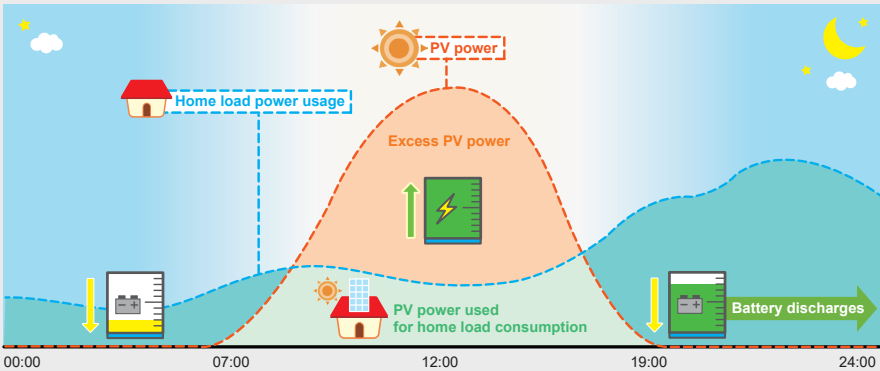


Smart energy monitor to control and optimize the system and the power usage of the owner. It provides all power consumption and battery status data to the user online.

Maximized energy application

Self-Consumption Mode

This setting allows the owner to maximize the use of self-generated solar energy by storing the excess solar energy produced during the day for later use. In this mode the inverter will essentially act as a standard hybrid inverter with the added advantage of being able to programme different battery charge and discharge times for purchasing and exporting energy to the grid. When there is no PV power, the battery will supply home load until the available energy is depleted (night time).

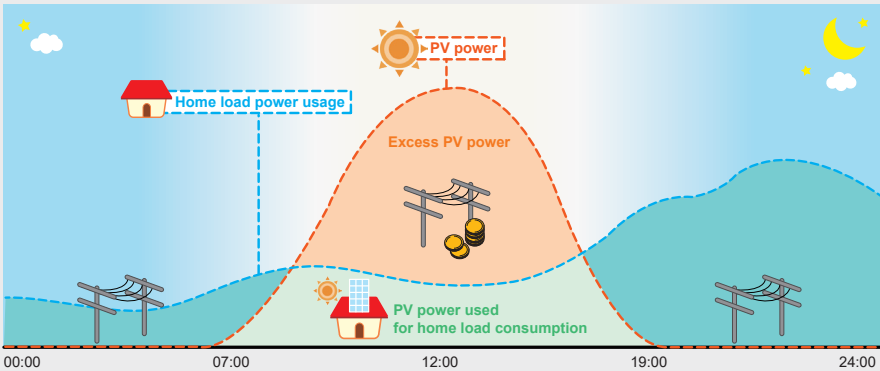


Peak Cut Mode

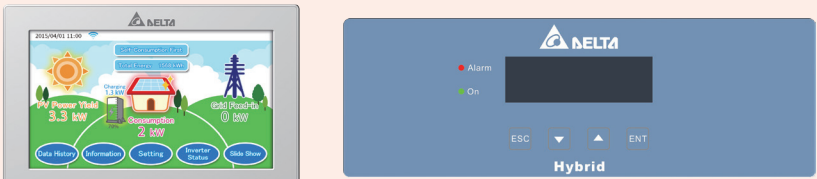
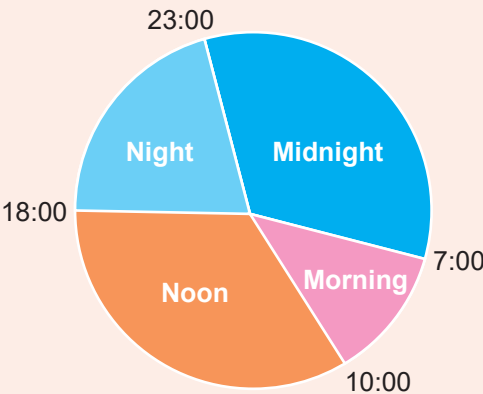
This setting helps reduce peak demand and subsequent cost from the grid provider by discharging batteries at a predefined 'peak level'. When the home load exceeds the 'peak level' (set by the installer), the battery will discharge to assist the home power usage. This allows the stored energy to be used at times of the day when savings are greatest.

Without Battery Mode

This allows the E5 hybrid inverter to operate as a standard grid-connected inverter until the home owner is ready to add the battery unit. In the event of a battery fault, the system can also be programmed to supply localised loads directly from the available PV source (battery bypass).



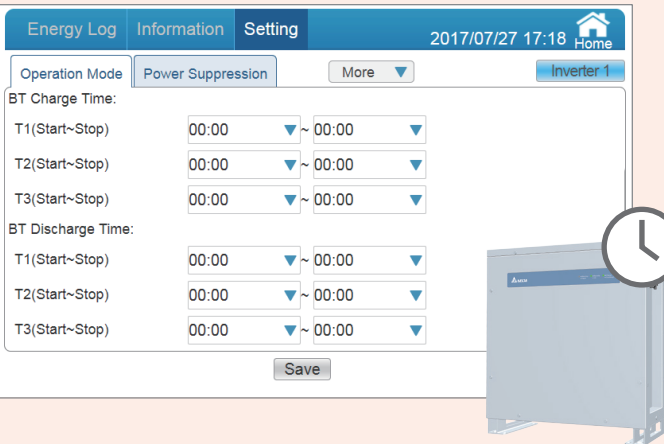
-Scheduling-



Both Monitor and Display provide time setting for purchasing and feeding in energy. Even if the Monitor is not installed, it's also convenient for user to operate.

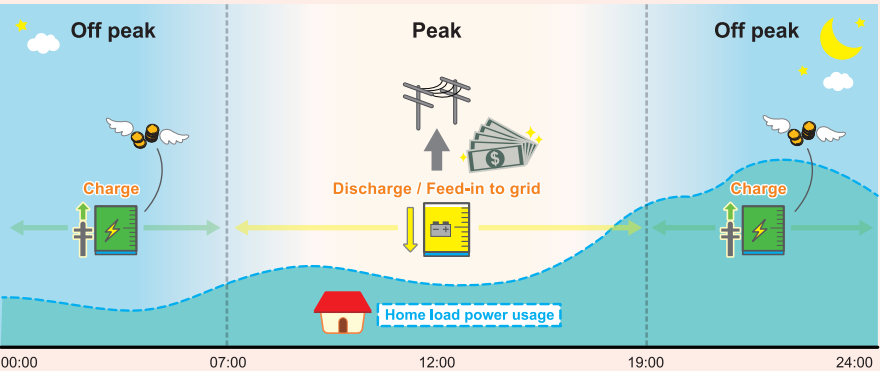
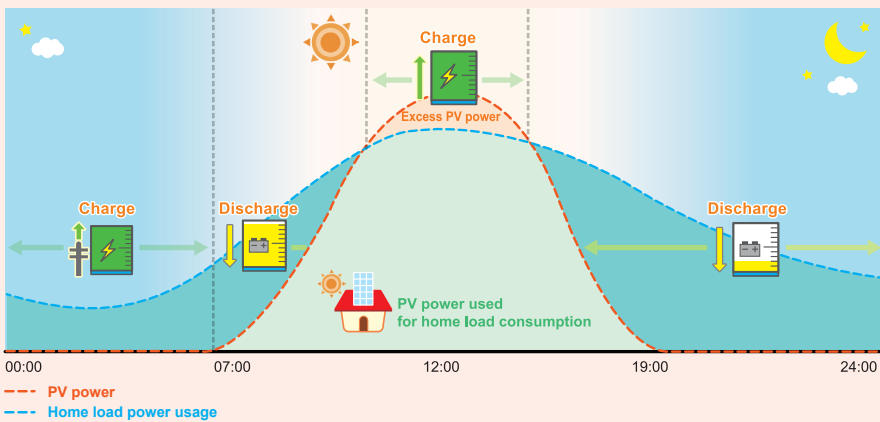
Time Settings

Time settings can be separated into Battery charge time and Battery discharge time. Each setting can set 3 time intervals. These 6 time intervals cannot overlap with each other. When the inverter operation mode is set to self-consumption or selling first mode, time settings are enabled. Hybrid inverter will automatically change the mode to charge first / discharge first in the time intervals you set and return to self-consumption / selling first mode outside the intervals.

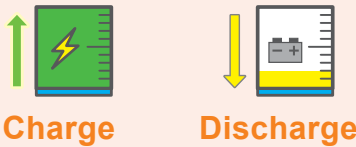


Application for TOU Rates (Time of use rates)

Time-of-use is a rate plan in which rates vary according to the time of day, season, and day type (weekday or weekend/holiday). Higher rates are charged during the peak demand hours and lower rates during off-peak demand hours. Rates are also typically higher in summer months than in winter months. By using the time setting function, home user can set to purchase electricity to charge the battery from grid during off-peak demand hours, and limit the power purchase from grid during peak demand hour.



Thanks to the time setting functions, home user can easily set up the schedule according to the user habits, TOU rates and grid standard. Benefit and optimize the power utilization from Delta Storage System!



# Backup power supply

The standalone function of the Hybrid E5 inverter allows the owner to use the battery to power critical loads when the grid is not available. This function will activate automatically during a power outage, although the E5 also has a button to manually switch the system to standalone mode. This function is particularly useful in regions where grid power is not regularly reliable. The inverter is still able to enter standalone mode even when the battery is not connected, as long as there is sufficient PV production to power the loads.

Power outages



After 3 seconds\*

ON



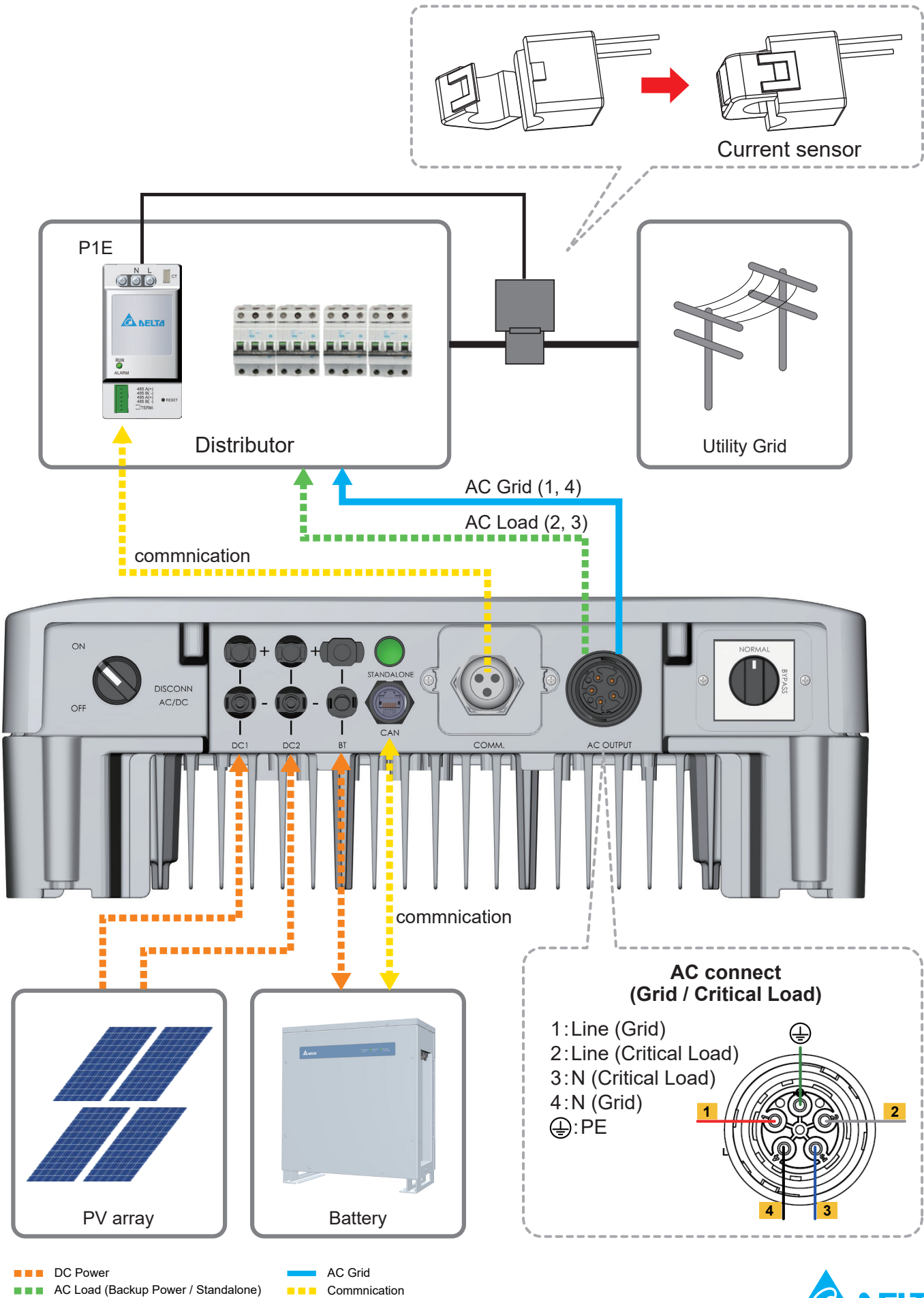
\* Delta storage system is completely compliant with the grid standard which is established to maintain stable feed in power. E5 will only change to back-up mode 3 secs after black out.

# Solar standalone power supply

The E5 system allows the owner to use battery to generate power when the grid is not easily available like in an island or mountain or grid available cost is high. At daytime, it can convert to DC power from PV cell for household load and store the rest power to battery. At nighttime, battery can provide power for loads. From this cycle usage, E5 system can make globe greener.



# Input / Output Interface





# Design For Battery Safety

## Exterior



### Safe and Powerful

Built by Panasonic's Li-ion battery pack with 18650 cell. A range of different alloys were integrated into the battery to make it safer, increase its lifespan and the power output.



### Floor or Wall Mounted

Install easily on the wall or floor and mounting bracket included without extra charge.



### Water-resistant and dustproof

IP55 protection level allows BX 6.0 to be installed indoor and outdoor.



### Extremely Quiet

Almost no noise during the BX 6.0 daily operation.

## Hybrid inverter

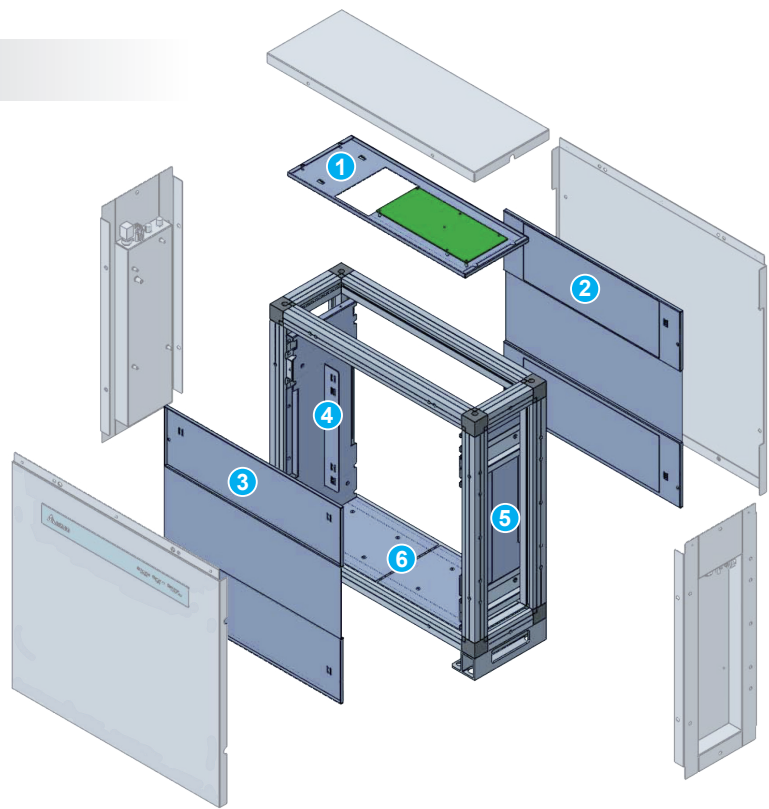
Model	E5	
DC Input	Rated voltage	370Vdc
	Recommended PV power	7kW
	MPPT	2
	Max. input current	2×12Adc
	Operating voltage range	100Vdc ~ 550Vdc
AC Output	MPP voltage range	220Vdc ~ 450Vdc
	Rated output power	5000VA
	Rated voltage	230Vac
Efficiency	THD	< 3% at rated power
	Peak efficiency	97.2%
	European efficiency	96.5%
Information	Communication port	RS-485
	Display	20 x 4 LCD
Standalone power	3600VA	
Communication	Wi-Fi(option) / RS-485	
Environment	Outside	
Operating temperature	-25 ~ 60°C	
Relative humidity	0 ~ 100%, non-condensing	
Dimensions(unit)	510 x 445 x 177 mm	
Weight	27kg	
Cooling	Natural cooling	
Installation type	Indoor/outdoor	
Enclosure rating	IP65	
Certificates	IEC 62109-1/-2 IEC 62040 ARN-4105	
	Under testing: IEC61727/ IEC62116/ IEC61683/ IEC60068-2	

## Battery

Model	BX_6.0
Battery supplier	Panasonic
Nominal capacity	6kWh
Usable capacity (80% DoD)	4.8kWh
Cycle stability (80% DoD)	6000
Voltage range	85 ~ 104 VDC
Nominal charging power	2.5kW
Nominal discharging power	3kW
Max. charging current	30A
Max. discharging current	35A
Short Circuit Current	54A
Battery technology	Li-ion
Dimensions	552 x 596 x 200 mm
Weight	75kg
Enclosure rating	IP55
Installation type	Indoor/outdoor
Ambient temperature range*	-10 ~ 45°C
Permitted humidity	0 ~ 90%
Certificates	UN38.3
Warranty	10 years

\* The battery can only be discharged at -10°C but cannot be recharged, except ambient temperature is above 0°C.

## Interior



### 4X Battery Module Protection



① ~ ⑥ :

6 Steel plate design provides the solid protection if there is any explosion happened inside the battery. The explosion proof design of the battery is to deliver the safest residential energy storage pack for consumer.

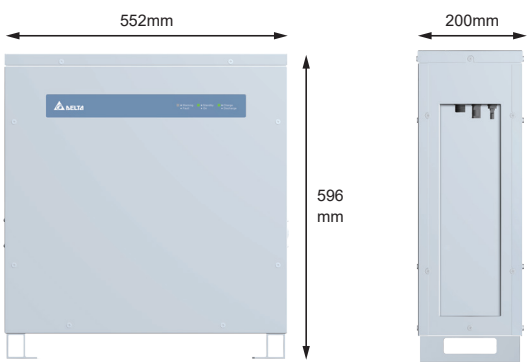
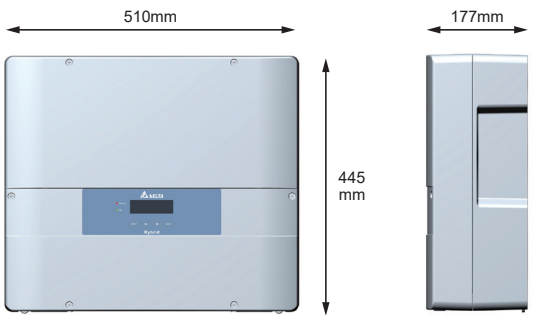


High-strength metal framework design provides the robust quality to survive any accident. Delta BX 6.0 pass the 5000KG stress test which is equal to 4 sedan pressure on the BX cabinet.

powered by Panasonic

## Battery box

E5



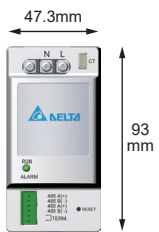
## Power meter

Model	PPM P1E-000	PPM P3E-000
Phase	1	3
Communication	Wi-Fi(N1) / RS-485	Wi-Fi(N1) / RS-485
Information	LED indicator	LED indicator
Rated operating voltage(L - N)	100Vac ~ 240Vac	230Vac
Operating voltage range(L - N)	85Vac ~ 264Vac	130Vac ~ 260Vac
Operating current limit	120A	120A
Rated frequency	45 ~ 65 Hz	45 ~ 65 Hz
Power consumption	Max. 2 Watt	Max. 3 Watt
Power consumption with N1	Max. 4 Watt	Max. 6 Watt
Safety standard	IEC 60950-1	
Emission	EN 55022 class B	
Immunity	EN 61000-6-2	
Operation temperature	-20°C ~ 50°C	
Storage temperature	-20°C ~ 60°C	
Relative humidity	30% ~ 85%	
Dimension	93 x 47.3 x 66.5 mm	93 x 70 x 66.5 mm
Weight	145 g without CT	200 g without CT

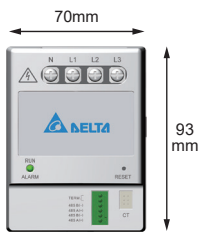
## Smart monitor

Module	PPM R4E
Rated operating voltage	12Vdc
Operating voltage range	10Vdc ~ 16Vdc
Power consumption	< 6 Watt (Without USB port)
Safety standard	EN 62109-2
Emission	EN 55022 class B
Immunity	EN 61000-6-2
Information	LCD Display
	Touch resistive screen
	7 inch TFT LCD, 800 x 480 pixel, 24 bit RGB
Communication	RS-485 / Wi-Fi
Operation temperature	-20°C ~ 50°C
Storage temperature	-20°C ~ 60°C
Relative humidity	30% ~ 85%
Dimension	120 x 190 x 32 mm
Weight	440 g

P1E



P3E



R4E

