



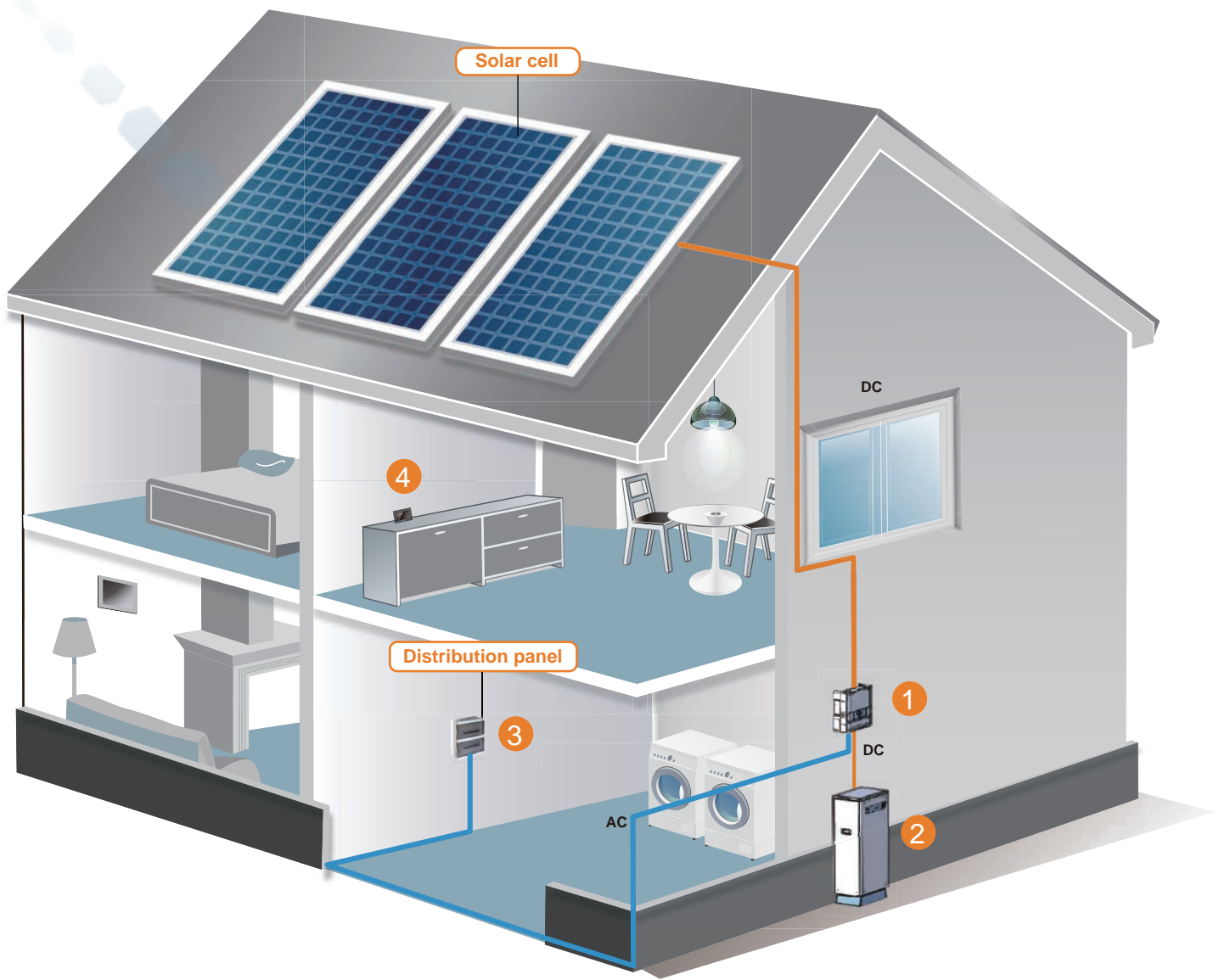
# Hybrid E5

## 6 kWh Li-ion Battery Energy Storage System

Benefit from solar energy even after sunset

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 **DELTA**  
Smarter. Greener. Together.



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.

## Key Features:

- Built-in customized energy management modes
- Maximum efficiency: > 97.2%(PV to AC) / > 95%(BT to AC)
- Reactive power capability (Cap 0.8 – Ind 0.8)
- Power Rating: 5kVA Inverter / 6kWh LiFePO<sub>4</sub> battery
- PV standalone function / backup power
- Wide input range (100-550Vdc)
- Dual MPPT's
- Outdoor battery cabinet
- Outdoor rated IP65 protective level
- Colour touch screen energy management unit
- Advanced passive cooling
- Manual bypass switch
- 6000 cycle at 80% DoD

## 1 Hybrid Inverter

The E5 hybrid inverter connects solar energy to household loads, battery bank and back to the grid. It also makes it possible to charge the battery directly from the grid.



## 2 Battery

Delta's high-capacity 6kWh Li-Ion battery provides clean energy day and night and combines a long service life with ultra-compact design. No ongoing maintenance is required and the robust design provides unsurpassed levels of safety and performance.



## 3 Power Meter

The Delta smart meter is a bidirectional meter which measures the amount of energy flowing to and from the grid. It also calculates the total power consumption and assists in maximising self-consumption.

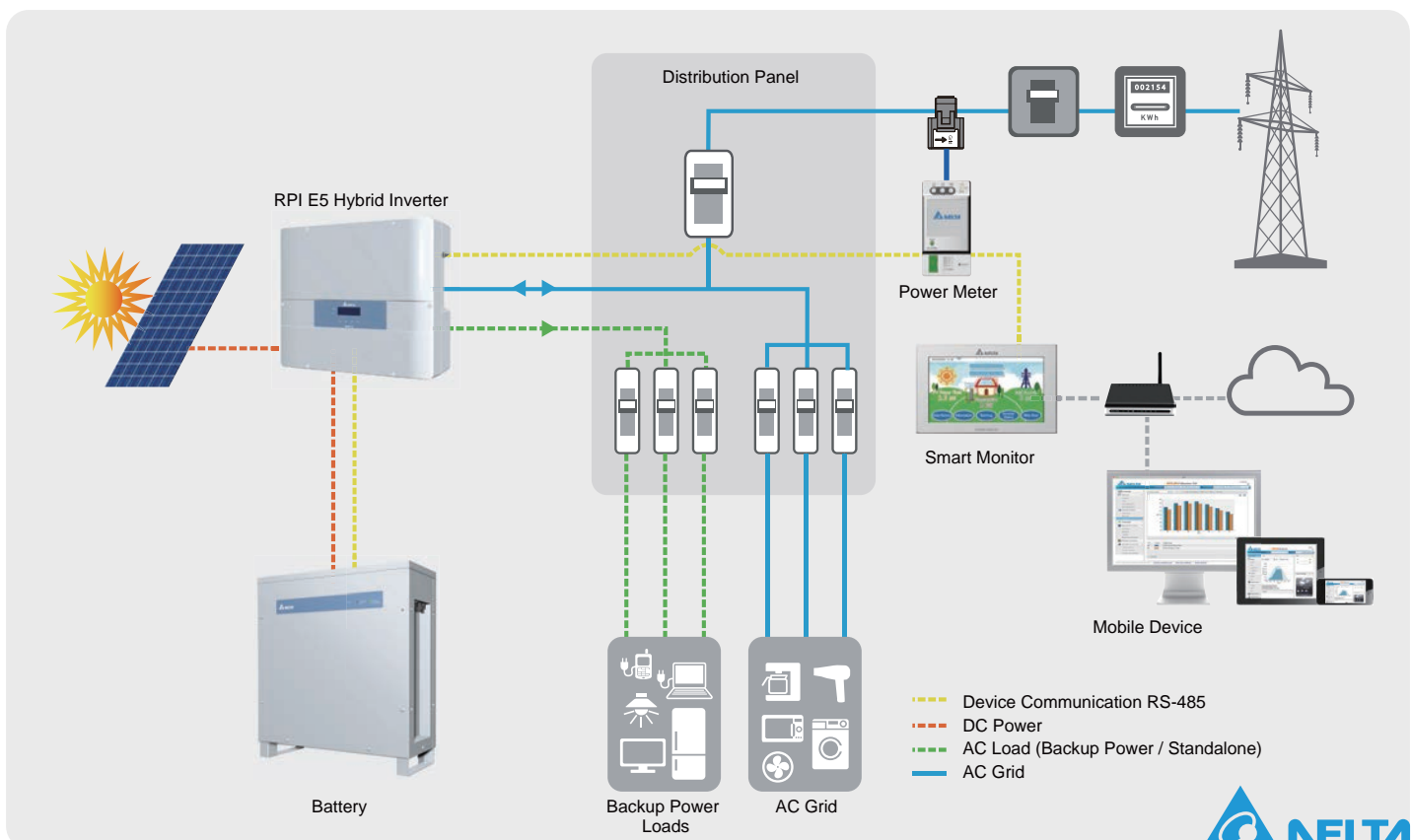


## 4 Smart Monitor

The Smart Monitor is used to control the E5 inverter and battery functionality in an optimized way, with multiple pre-programmed operational modes to select from. The simple configuration also serves as a gateway for visualisation of data on mobile devices.

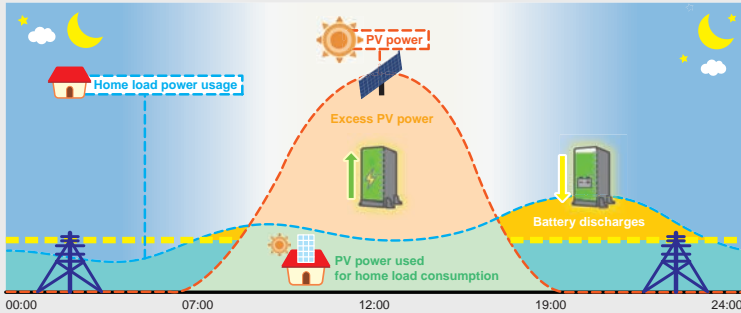


# System diagram



# Special operating modes

The E5 Hybrid Inverter is equipped with multiplied pre-programmed operational modes, which can be adjusted to optimise the benefits to the home owner, according to their requirements. Some modes will activate automatically in certain conditions to maintain the system's performance.

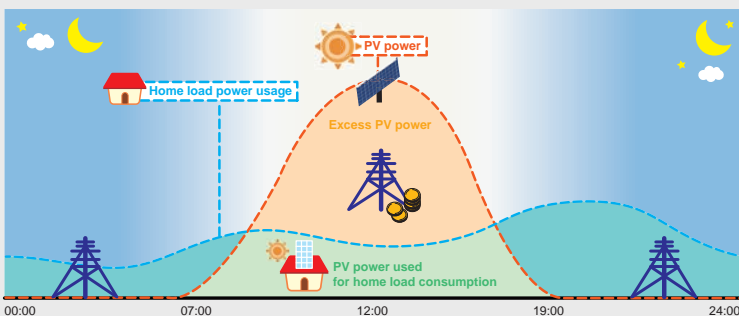
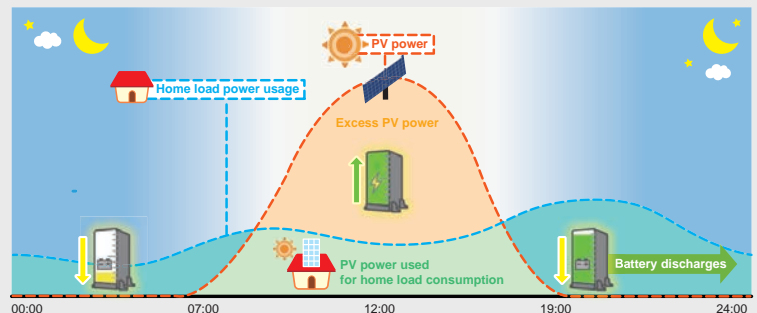


## Peak Cut Mode

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.

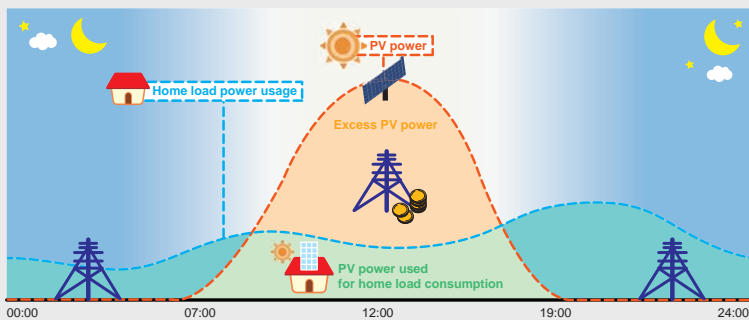
## Self-Consumption Mode

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).



## Selling-First Mode

This function operates like a standard PV inverter with the additional benefit of a programmable battery to charge and discharge at specific times when purchasing and exporting power from the grid. The power generated by the PV array will feed-in to the home load and grid, unless time settings are programmed differently.

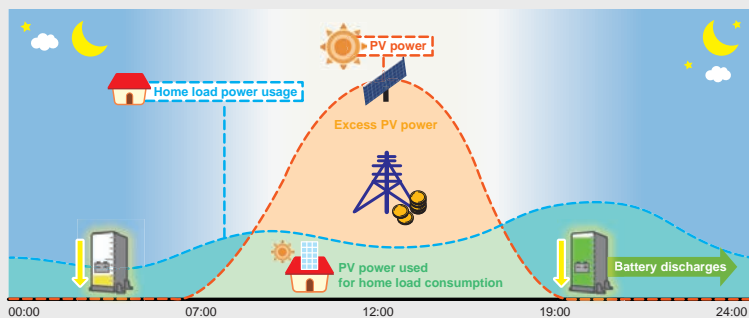
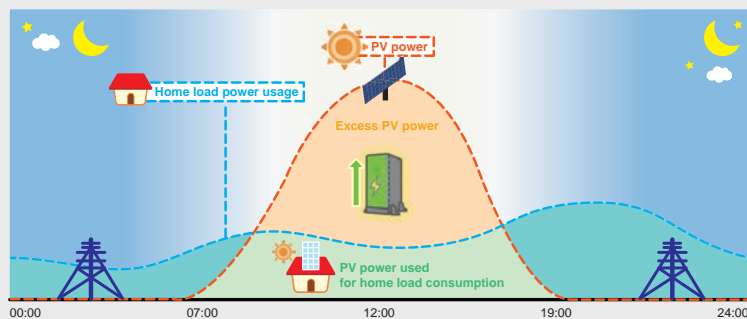


## Without Battery Mode

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).

## Charge First Mode

This mode ensures that batteries are in a complete state of charge prior to PV power being fed into localised loads and the grid. This operation mode is particularly beneficial to systems in winter months, when daylight hours are reduced. It also solves any problems associated with local loads exceeding available solar PV, as batteries are charged first.

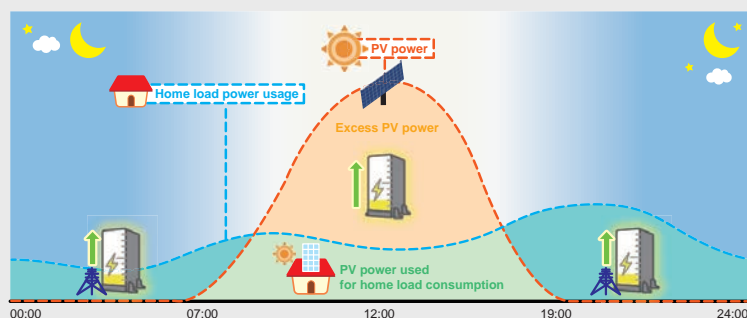


## Discharge First Mode

This mode is where the battery continues to discharge until all the available energy is consumed. The PV power and battery power will be fed directly to the household loads and the grid.

## Forced Charge Mode

In this mode, the hybrid inverter will force battery to charge from PV power and grid power until the battery's state of charge reaches 30%. This setting is especially useful when excessive battery use causes the state of charge to be lower than 0%.



## Backup power supply

The stand-alone 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 stand-alone mode. This function is particularly useful in regions where grid power is not regularly reliable. The inverter is still able to enter stand-alone mode even when the battery is not connected, as long as there is sufficient PV production to power the loads.

### Power outages



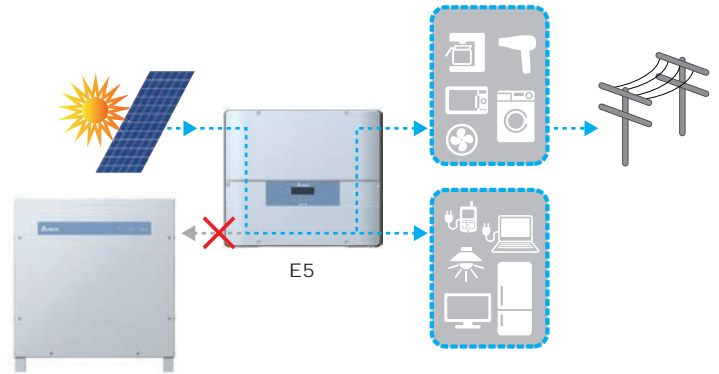
After two seconds



ON

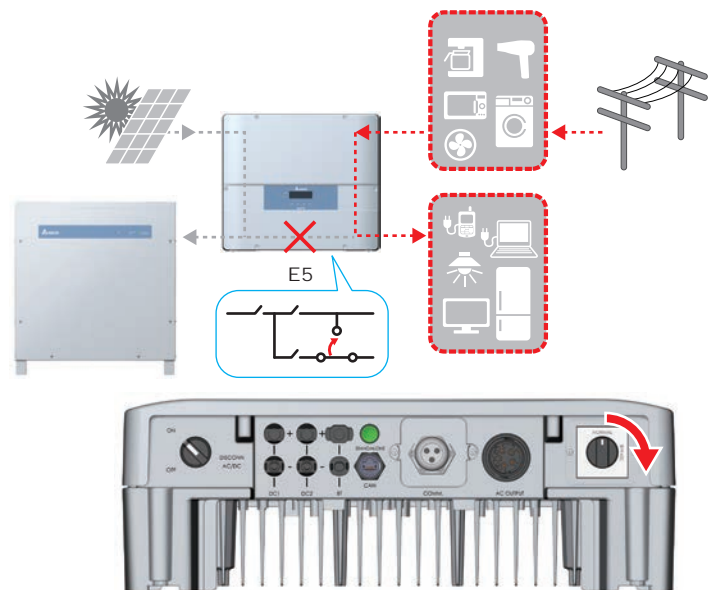
## PV inverter only

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



## Manual bypass

If the E5 system works abnormally, the manual bypass function can provide energy continuously.

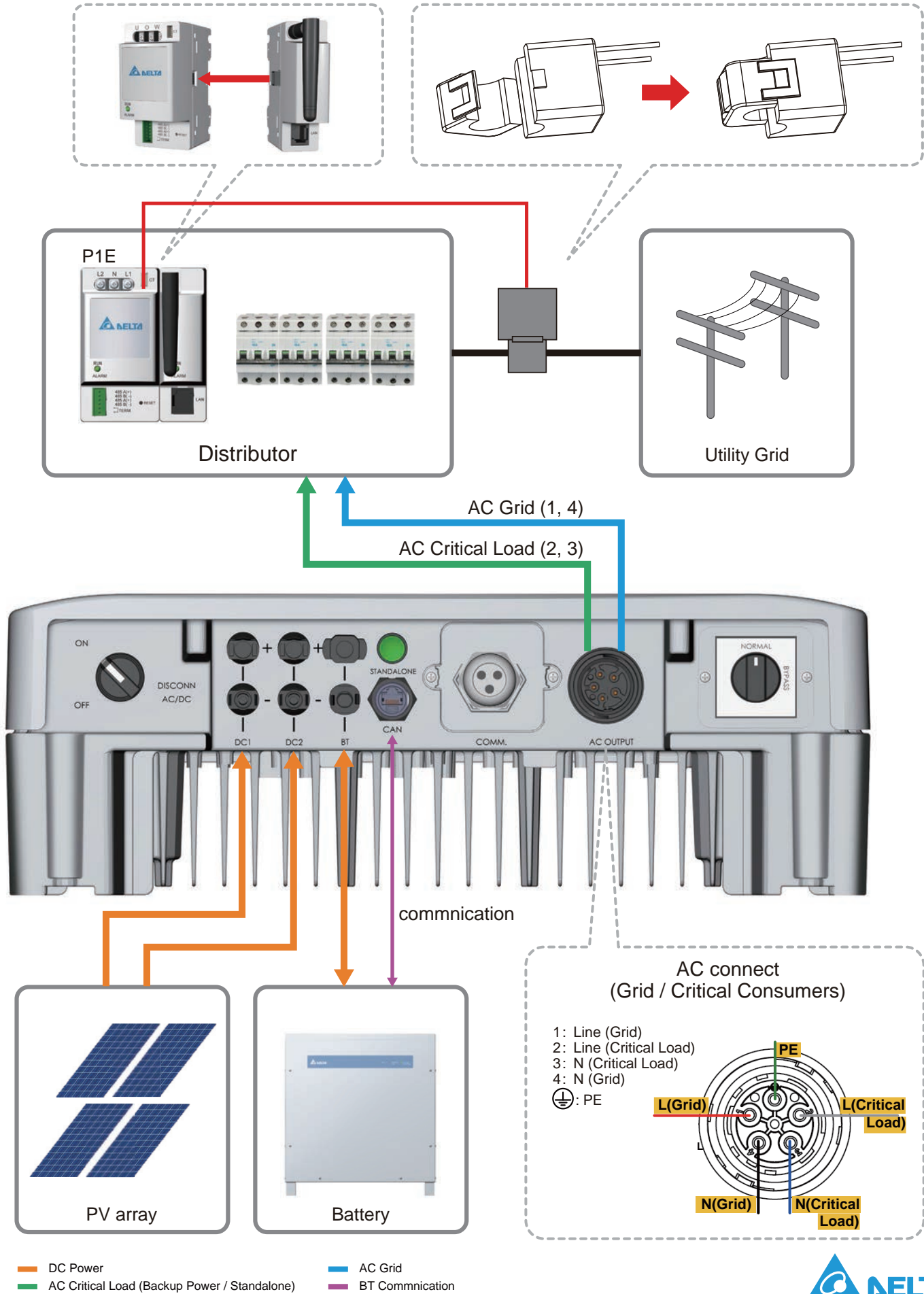


## Smart monitor



The Delta Smart Monitor features an interactive colour touch screen display, which allows the user to control the inverter and battery functionality. The Smart Monitor can be used to select one of the pre-programmed operating modes or to adjust the different time settings for purchasing and exporting energy to the grid. It also serves as a gateway for visualisation of data on mobile devices, such as the battery status, production, consumption, and exported energy.

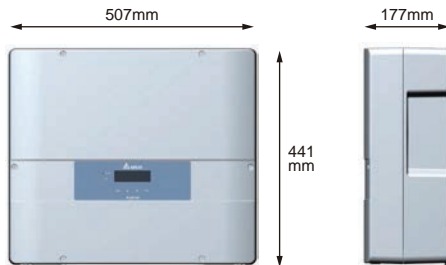
# Input / Output Interface



## Hybrid inverter

Model	RPI E5	
DC Input	Rated voltage	370Vdc
	MPPT	2
	Max. input current	2x12Adc
	Operating voltage range	110Vdc ~ 550Vdc
	MPP voltage range	220Vdc ~ 450Vdc
AC Output	Rated output power	5000VA
	Rated voltage	230Vac
	THD	< 3% at rated power
Efficiency	Peak efficiency	97.2%
	European efficiency	96.5%
Information	DC switch	2 (Each MPPT)
	Communication port	RS-485
	Display	20 x 4 LCD
Standalone power		3600VA
Communication		Wi-Fi(option) / RS-485
Environment		Outdoor
Operating temperature		-25 ~ 60°C
Relative humidity		0 ~ 100%, non-condensing
Dimensions		507 x 441 x 177 mm
Weight		30kg
Cooling		Natural cooling
Installation type		Indoor/outdoor
Enclosure rating		IP65
Certificates		IEC 62109-1/-2 IEC 62040 ARN-4105

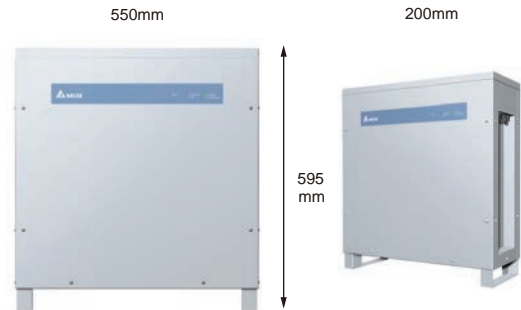
RPI E5



## Battery

Model	BX_6.0
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
Battery technology	Li-ion
Dimensions	550 x 595 x 200 mm
Weight	74 kg
Enclosure rating	IP54
Installation type	Indoor/outdoor
Ambient temperature range	0 ~ 50°C
Permitted humidity	0 ~ 80%
Certificates	UN38.3

Battery box



## Power meter

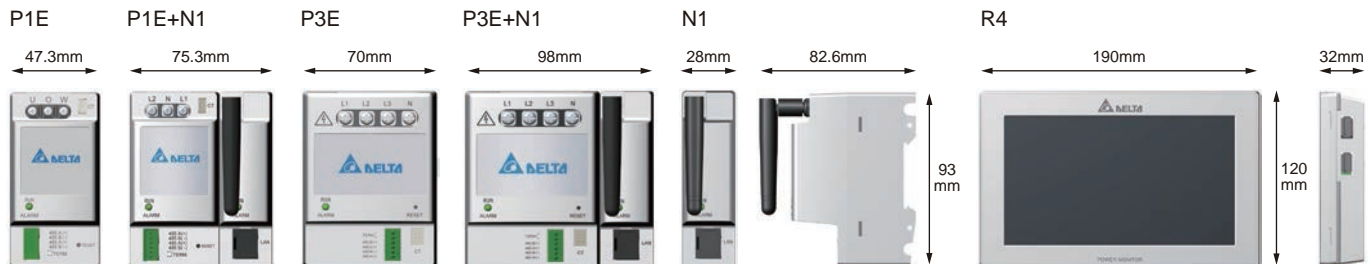
Model	PPM P1E-000	PPM P3E-000
Phase	1	3
Communication	Wi-Fi(N1) / RS-485	Wi-Fi(N1) / RS-485
Information	LED indicator	LED indicator
Rated operating voltage(L - N)	100Vac ~ 240Vac	230Vac
Operating voltage range(L - N)	85Vac ~ 264Vac	130Vac ~ 260Vac
Operating current limit	120A MAX	120A MAX
Rated frequency	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

## N1

Module	PPM-N1
Information	LED indicator
Power consumption	< 2 Watt
Emission	EN 55022 class B
Immunity	EN 61000-6-2
Operating temperature	-20°C ~ 50°C
Storage temperature	-20°C ~ 60°C
Relative humidity	30% ~ 85 %
Dimension	93 x 28 x 82.6 mm
Weight	90g
RF PRODUCT SPEC	
Communication standard	IEEE 802.11
Channel	7
Frequency	2.442 GHz

## Smart monitor

Module	PPM-R4
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



## Delta Energy Systems Australia

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