Hybrid E5
5.4 kWh Li-ion Battery Energy Storage System

Benefit from solar power even after sunset
Overview
DC-coupled 5.4 kWh energy storage

The Hybrid E5 energy storage system is composed of the single phase RPI E5 hybrid inverter as well as an external battery cabinet equipped with a 5.4 kWh Li-ion battery, a Power Meter and Smart Monitor. The Hybrid E5 storage system is designed for new PV systems and features a high charging efficiency up to 95%. This is made possible since the E5 inverter can send DC electricity generated by the PV system directly to the battery, without additional power conversion steps or equipment needed.

Because the E5 inverter and battery cabinet ship as two separate compact pieces in the system, greater flexibility and simplified installation of the equipment are an added benefit. The power meter monitors energy flow and sends the data back to the smart monitor, the intelligence in the system. The Smart Monitor not only controls the E5 inverter and battery functionality in an optimized way but it also serves as a gateway to the internet and provides complete energy and battery data coming from the system for online viewing. The data from the Smart Monitor is sent over the internet via a router and can then be viewed on an internet-connected laptop, tablet or smartphone.

Key features include:
- High peak efficiency (PV to Grid) of 97.2% and nominal continuous power output of 5.0 kW for the E5 hybrid inverter
- Power electronics are combined in one enclosure featuring 2 MPPT to connect 5 kW of PV panels, 85...104 V\text{DC} battery in/ouput and AC in/output. Thus, minimized mounting and interconnections are needed.
- Smart 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.
- Built-in customized energy management modes for different customer requirements

System diagram

*1 phase or 3 phase Power Meter models available with optional Wi-Fi Module to allow wireless communication with the Smart Monitor
**Input / Output Interface**

![Diagram of the Input / Output Interface]

**PV INPUT**
- Max. recommended PV power: 5 kW - 6 kW
- Max. input power: 5.5 kW
- Nominal power: 5.28 kW
- Max. input voltage: 600 V
- Operating voltage range: 100 ... 550 V
- MPP operating voltage range: 100 ... 550 V
- Voltage range for maximum power: 220 .. 450 V
- Start voltage: 125 V
- Rated voltage: 370 V
- Max. input current: 24 A (12 A per MPP tracker)
- Max. number of MPP trackers: 2
- Connector type: 2 pairs MC4

**BATTERY**
- Operating voltage range: 85 ... 104 V_{dc}
- Effective capacity: 5.4 kWh
- Battery protection: Protection for overcharging / deep discharging, over current protection, over/under temperature protection
- Capacity calculation for one battery module: Current integration method

**AC OUTPUT (STAND ALONE)**
- Rated output power: 3 kW / 3 kVA (100%)
- Max. output power: 3.6 kW / 3.6 kVA (100%)
- Nominal output current: 15.7 A
- Overload capability:
  - ≤ 100%, continuous
  - > 100%, 10 minutes
  - > 110%, 1 minute
  - > 125%, 0.5 seconds
- Output voltage: 230 V +/- 3%
- Transfer time (No Grid to backup after pressing Stand-alone button): < 2 seconds

**AC OUTPUT (ON GRID)**
- Rated output power: 5.0 kW / 5.0 kVA
- Max. output power: 5.25 kW / 5.25 kVA
- Nominal output current: 21.7 A
- Rated voltage: 230 V_{ac}
- Operating frequency: 50 / 60 Hz.
- Power factor (adjustable): 0.8 leading to 0.8 lagging
- THD: < 3% at rated power

**EFFICIENCY**
- Peak efficiency: 97.2% (PV to Grid)
- Euro efficiency: 96.5% (PV to Grid)

**GENERAL CHARACTERISTICS**
- Communication port: RS485
- Display: 4 line LCD, 2 LEDs
- Operating temp. range: -10 °C ... + 60 °C
- Protection level:
  - Inverter: IP65
  - Battery: IP54
- Operating elevation: 0 to 2000 m (0 to 6666 ft.)
- Cooling: Natural convection
- Dimensions (W x H x D):
  - Inverter: 507 x 441 x 177 mm
  - Battery: 520 x 550 x 215 mm
- Weight:
  - Inverter: 27 kg
  - 5.4 kWh Battery: 60 kg

**CERTIFICATION**
- Anti-islanding protection / Grid regulation: VDE-AR-N 4105
- EMC:
  - EN61000-6-2; EN61000-6-3;
- Safety:
  - IEC62040; IEC62109-1 / -2;
  - CE conformity

\(^{1)}\) 4.6 kW / 4.6 kVA for Germany
Independence from the grid

Maximized self-consumption and backup power

The Hybrid E5 from Delta allows its owners to maximize the use of self-generated clean solar energy. By storing solar energy during the day for later use, the Hybrid E5 can power household loads into the evening and nighttime. The result is a much larger self-consumption rate and a significant decrease of the monthly spending on grid electricity.

The stand-alone feature of the Hybrid E5 inverter allows the owner to use their battery to power critical loads when the grid is not available. A standalone button on the inverter when engaged after a downed grid incident will allow your critical loads to be powered off of the Hybrid E5 battery. This is a benefit in regions where grid power is not always reliable or for occasional power outages when you need your critical loads (refrigerator or lighting) to remain active until the grid power comes back on.

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