Designed for Australia:

- Earth Fault Alarm
- Zero Export
- Power Factor adjustable
- Remote Upgrade

ES Series
Hybrid Inverter
3.6kW/4.6kW

- Future conception for Solar
- Charge controller and inverter integrated
- Intelligent battery management function
- Capable of being grid-interactive or grid-independent
- Compatible with both Lead-acid and Li-Ion battery
- More security & performance for same costs
- Battery max. discharge power up to 4.6kW
- IP65 dust-proof and water-proof rating
- 45°C full-load output
- Monitoring inverters freely via computers or mobile phones
- Fanless low-noise design

How does it work?

Mode 1
- DC, current
- DC, no current
- AC, current
- AC, no current

Mode 2
- DC, current
- DC, no current
- AC, current
- AC, no current

Mode 3
- DC, current
- DC, no current
- AC, no current
- AC, no current

- Energy produced by the PV system is used to optimize self-consumption. The excess energy is used to recharge the batteries, then sale to grid.

- When there is no PV, and the battery is OK, it can supply the load with the grid together.

- Once the grid is failure, the system automatically switches to back-up mode.
### Technical Data

#### Solar
- Max. allowed PV Power [W]: 6000, 4600
- Nominal DC Power [W]: 5000, 4200
- Max. DC voltage [V]: 580, 580
- MPPT voltage range [V]: 125–550, 125–550
- Starting voltage [V]: 150, 150
- Max. DC current [A]: 11/11
- No. of DC connectors: 2
- No. of MPP Ts: 2 (can parallel)
- DC connector: MC4, Phoenix, Amphenol, MC4, Phoenix, Amphenol

#### Battery
- Battery type: Lead-acid or Li-Ion, Lead-acid or Li-Ion
- Nominal Voltage [V]: 48, 48
- Max Discharge power [W]: 4600, 3600
- MAX Charge power [W]: 4600, programmable*, 3600, programmable
- Battery capacity [Ah]: >100 (depending requirement), >100 (depending requirement)
- Charging curve: 3-stage adaptive with maintenance, 3-stage adaptive with maintenance
- Charging voltage [V]: 60 (optional), 60 (optional)
- Battery temperature compensation: Included (Li-Ion), Included (Li-Ion)
- Battery voltage sense: Integrated, Integrated
- Current shunt: Integrated, Integrated

#### AC Output Data
- Nominal AC power [W]: 4600, 3600
- Max. AC power [W]: 4600/4850/4950/5100**, 3600
- Peak power (Back-up) [W]: 1.5x Nom, 10sec, 1.5x Nom, 10sec
- Max. AC current [A]: 20/21***, 16
- Nominal AC output: 50/60Hz; 230Vac, 50/60Hz; 230Vac
- AC output range: 45–55Hz/55–65Hz; 180–270Vac, 45–55Hz/55–65Hz; 180–270Vac
- AC output (Back-up): 230Vac ±2%, 50/60Hz optional ±0.2%, THD<3% (linear load)
- THD: <1.5%, <1.5%
- Power factor: 0.8 leading~0.8 lagging, 0.8 leading~0.8 lagging
- Grid connection: Single phase, Single phase

#### Efficiency
- Max. efficiency: 97.6%, 97.6%
- Euro efficiency: >97.0%, >97.0%
- MPPT adaptation efficiency: 99.9%, 99.9%

#### Protection
- Residual current monitoring unit: Integrated, Integrated
- Anti-islanding protection: Integrated, Integrated
- DC switch (PV): Integrated (optional), Integrated (optional)
- AC over current protection: Integrated, Integrated
- Insulation monitoring: Integrated, Integrated

#### Certifications & Standards
- Safety: IEC62109-1&-2, AS3110, IEC62040-1
- EMC: EN61000-6-1, EN61000-6-2, EN61000-6-3, EN61000-6-6, EN61000-3-11, EN61000-3-12, EN61000-6-4, EN61000-3-2, EN61000-3-3

#### General Data
- Dimensions (WxHxD) [mm]: 516*440*184, 516*440*184
- Weight [kg]: 30, 28
- Mounting: Wall bracket, Wall bracket
- Ambient temperature range: -25~60°C (+45°C derating), -25~60°C (+45°C derating)
- Relative humidity: 0~95%, 0~95%
- Max. operating altitude: 4000m (> 3000m derating), 4000m (> 3000m derating)
- Protection degree: IP65, IP65
- Topology: Transformerless, Transformerless
- Standby losses [W]: <8, <8
- Cooling: Natural convection, Natural convection
- Noise emission [dB]: <25, <25
- Display: LED light & APP, LED light & APP
- Communication: WIFI, RS485, CAN, WIFI, RS485, CAN
- Standard warranty [years]: 5, 5

*under off-grid mode, the battery capacity should be more than 100Ah
under on-grid mode, then battery capacity could be less than 100Ah
**4600 for VDE-AR-4105, 4850 for Thailand, 4850 for Australia, 5100 for other countries
***21 for Thailand, 20 for other countries