

# Single-phase Residential Hybrid Inverter



## X1-HYBRID G4

3.0kW / 3.7kW / 5.0kW / 6.0kW / 7.5kW



### Smart Management

- VPP ready, ancillary service in power market
- Global MPP scan for optimal energy harvest
- Smart loads management (e.g. heat pump, smart EV charger)
- Intelligent ToU-driven energy management
- CT compatibility with fast load response in just 0.3 seconds



### High Performance

- 200% PV oversizing and up to 110% AC output
- Up to 200% PV input
- Up to 97% efficiency in charging and discharging
- Low start-up voltage for longer operation



### Assured Reliability

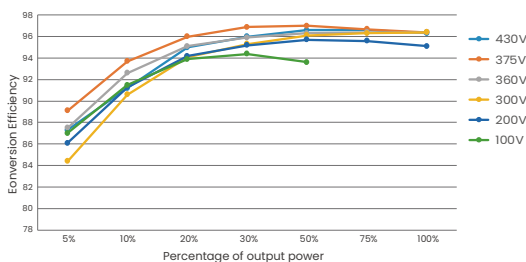
- Up to 150% EPS output for 10s
- UPS-level switchover time <10ms
- IP65 Ingress protection
- Type II SPD on AC&DC side



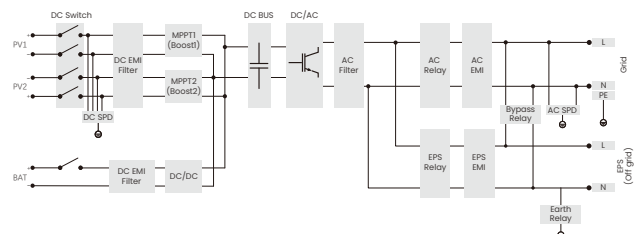
### Flexible Adaptability

- Lithium battery compatible
- Max. 16A DC input current for high power solar panel

### Efficiency Curve



### Circuit Diagram



**X1-HYBRID-3.0-D**
**X1-HYBRID-3.7-D**
**X1-HYBRID-5.0-D**
**X1-HYBRID-6.0-D**
**X1-HYBRID-7.5-D**

| PV INPUT                                      |                                                                                                                         |               |                                                         |               |                   |
|-----------------------------------------------|-------------------------------------------------------------------------------------------------------------------------|---------------|---------------------------------------------------------|---------------|-------------------|
| Max. recommended PV array power               | 6.0 kWp                                                                                                                 | 7.4 kWp       | 10.0 kWp                                                | 12.0 kWp      | 15.0 kWp          |
| Max. PV input voltage <sup>①</sup>            | 600 V                                                                                                                   |               |                                                         |               |                   |
| Rated PV input voltage                        | 360 V                                                                                                                   |               |                                                         |               |                   |
| Operation voltage range                       | 70 ~ 550 V                                                                                                              |               |                                                         |               |                   |
| MPPT voltage range <sup>②</sup>               | 70 ~ 550 V                                                                                                              |               |                                                         |               |                   |
| Start-up voltage                              | 90 V                                                                                                                    |               |                                                         |               |                   |
| No. of MPP trackers / Strings per MPP tracker | 2 (1 / 1)                                                                                                               |               |                                                         |               |                   |
| Max. input current per MPPT                   | 16 A / 16 A                                                                                                             |               |                                                         |               |                   |
| Max. input short circuit current per MPPT     | 20 A / 20 A                                                                                                             |               |                                                         |               |                   |
| AC INPUT & OUTPUT (ON-GRID)                   |                                                                                                                         |               |                                                         |               |                   |
| Rated output power                            | 3000 W                                                                                                                  | 3680 W        | 5000 W<br>(Germany 4600 W, AU 4999 W)                   | 6000 W        | 7500 W            |
| Max. output apparent power                    | 3300 VA                                                                                                                 | 3680 VA       | 5500 VA<br>(4600 VA for VDE4105,<br>4999 VA for AS4777) | 6600 VA       | 7500 VA           |
| Max. output continuous current                | 14.4 A                                                                                                                  | 16.0 A        | 23.9 A<br>(Germany 20 A, AU 21.7 A)                     | 28.6 A        | 32.6 A            |
| Rated AC voltage                              | 1 / N / PE, 220 / 230 / 240 V                                                                                           |               |                                                         |               |                   |
| Max. AC input apparent power                  | 6300 VA                                                                                                                 | 7360 VA       | 9200 VA                                                 | 9200 VA       | 9200 VA           |
| Max. AC input current                         | 27.4 A                                                                                                                  | 32.0 A        | 40.0 A                                                  | 40.0 A        | 40.0 A            |
| Nominal AC frequency                          | 50 Hz / 60 Hz                                                                                                           |               |                                                         |               |                   |
| THDi (rated power)                            | < 2%                                                                                                                    |               |                                                         |               |                   |
| BATTERY                                       |                                                                                                                         |               |                                                         |               |                   |
| Battery type                                  | Lithium                                                                                                                 |               |                                                         |               |                   |
| Battery voltage range                         | 80 ~ 480 V                                                                                                              |               |                                                         |               |                   |
| Max. charge / discharge current               | 30 A                                                                                                                    |               |                                                         |               |                   |
| EPS (OFF-GRID) OUTPUT (WITH BATTERY)          |                                                                                                                         |               |                                                         |               |                   |
| Rated EPS output voltage, frequency           | 230 V, 50 Hz / 60 Hz                                                                                                    |               |                                                         |               |                   |
| Rated EPS output power                        | 3000 VA                                                                                                                 | 3680 VA       | 5000 VA                                                 | 6000 VA       | 7500 VA           |
| Peak EPS output power                         | 6000 VA, 10 s                                                                                                           | 6000 VA, 10 s | 7500 VA, 10 s                                           | 9000 VA, 10 s | 11250 VA, 10 s    |
| Switchover time                               | < 10 ms                                                                                                                 |               |                                                         |               |                   |
| EFFICIENCY                                    |                                                                                                                         |               |                                                         |               |                   |
| Max. efficiency                               | 97.6%                                                                                                                   |               |                                                         |               |                   |
| European efficiency                           | 97.0%                                                                                                                   |               |                                                         |               |                   |
| ENVIRONMENT LIMIT                             |                                                                                                                         |               |                                                         |               |                   |
| Ingress protection                            | IP65                                                                                                                    |               |                                                         |               |                   |
| Operation temperature range                   | -35 ~ 60°C (> 45°C derating)                                                                                            |               |                                                         |               |                   |
| Max. operation altitude                       | 3000 m                                                                                                                  |               |                                                         |               |                   |
| Relative humidity                             | 4 ~ 100% RH (condensing)                                                                                                |               |                                                         |               |                   |
| GENERAL                                       |                                                                                                                         |               |                                                         |               |                   |
| Dimensions (W × H × D)                        | 482 × 417 × 181 mm                                                                                                      |               |                                                         |               |                   |
| Net weight                                    | 24 kg                                                                                                                   |               |                                                         |               | 25 kg             |
| Cooling concept                               | Natural cooling                                                                                                         |               |                                                         |               | Smart air cooling |
| Communication interfaces                      | CT / Meter (optional), External control RS485, Dongle interface, DRM, NTC (optional)                                    |               |                                                         |               |                   |
| Certification                                 | VDE-AR-N 4105, G99, G98, AS/NZS4777, EN50549, CEI 0-21, C10/11<br>IEC61727, RD1699, NRS 097-2-1, PEA/MEA, VFR2019, PPDS |               |                                                         |               |                   |
| PROTECTION                                    |                                                                                                                         |               |                                                         |               |                   |
| Protections                                   | Over / under voltage protection, DC isolation protection, DC reverse-polarity protection                                |               |                                                         |               |                   |
| Active anti-islanding method                  | Frequency shift                                                                                                         |               |                                                         |               |                   |
| Surge protection                              | DC: Type II, AC: Type II                                                                                                |               |                                                         |               |                   |
| Arc-fault circuit interrupter (AFCI)          | Optional                                                                                                                |               |                                                         |               |                   |

① The maximum input voltage is the upper limit of the DC voltage. Any higher input DC voltage would probably damage the inverter

② Input voltage exceeding the MPPT voltage range may trigger inverter protection