# Three-phase C&I Hybrid Inverter


# X3-ULTRA

**15kW / 19.9kW / 20kW**
**25kW / 30kW**

Note: The X3-ULTRA inverter is certified with the **HV-S3.6 Batteries** and the **HS51 Batteries**.

## Smart Management

- Single unit UPS-level switchover time <10ms
- Built-in shadow tracking
- Smart loads management(e.g., heat pump, smart EV charger)
- Loads respond time within 0.3 s
- VPP ready with a variety of compatibility (OpenADR, IEEE2030.5, FCAS, API)*

## Assured Reliability

- IP66 protection degree
- Type II SPD on AC&DC side
- Optional AFCI protection

## High Performance

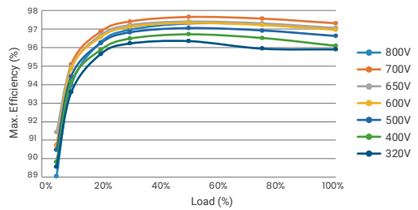
- 200% PV oversizing and up to 110% AC output
- 200% EPS overload for 10s
- Max. 60A charging / discharging current
- Low start-up voltage for longer operation

## Flexible Adaptability

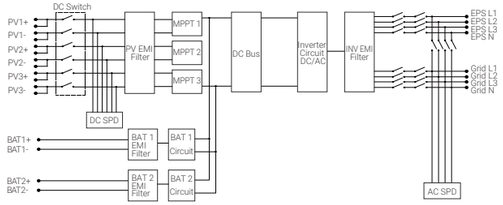
- Max. 10pcs parallel for on-grid and off-grid
- Microgrid and generator function for versatile operations
- Max. 36A PV input per MPPT, optimized for high-power solar panel

** Feature to be upgraded in the future*

## Efficiency Curve




## Circuit Diagram




**V2.1.1 Information may be subject to modify without notice. 650.00038.00*



| | X3-ULT-15K | X3-ULT-15KP | X3-ULT-19.9K | X3-ULT-20K | X3-ULT-20KP | X3-ULT-25K | X3-ULT-30K |
|---|---|---|---|---|---|---|---|
| **PV INPUT** | | | | | | | |
| Max. recommended PV array power | 30 kWp | | 40 kWp | | | 50 kWp | 60 kWp |
| Max. PV input voltage① | 1000 V | | | | | | |
| Nominal PV input voltage | 600 V | | | | | | |
| Operating voltage range | 120 ~ 950 V | | | | | | |
| MPPT voltage range② | 160 ~ 950 V | | | | | | |
| Start-up voltage | 200 V | | | | | | |
| No. of MPP trackers / Strings per MPP tracker | 2 / (2 / 2) | 3 / (2 / 2 / 2) | 2 / (2 / 2) | | 3 / (2 / 2 / 2) | | |
| Max. input current per MPPT (MPPT1/2/3) | 36 A / 36 A | 36 A / 36 A / 36 A | 36 A / 36 A | | 36 A / 36 A / 36 A | | |
| Max. input short circuit current per MPPT (MPPT1/2/3) | 45 A / 45 A | 45 A / 45 A / 45 A | 45 A / 45 A | | 45 A / 45 A / 45 A | | |
| **AC INPUT & OUTPUT (ON-GRID)** | | | | | | | |
| Rated output power | 15000 W (AS4777 14999 W) | | 19999 W | 20000 W | 20000 W | 25000 W (VDE4105 24900 W) | 30000 W (AS4777 29999 W, VDE4105 29900 W) |
| Rated output current | 21.8 A | | 29.0 A | 29.0 A | 29.0 A | 36.3. A | 43.5 A |
| Max. output apparent power | 16500 VA (AS4777 14999 VA) | | 19999 VA | 22000 VA | 22000 VA | 27500 VA (VDE4105 24900 VA) | 30000 VA (AS4777 29999 VA, VDE4105 29900 VA) |
| Max. output continuous current | 24.0 A (AS4777 21.8 A) | | 29.0 A | 31.9 A | 31.9 A | 39.9 A (VDE4105 36.3 A) | 43.5 A |
| Nominal AC voltage | 3 / N / PE, 220 / 380 V<br>3 / N / PE, 230 / 400 V | | | | | | |
| Max. AC input apparent power | 15000 VA | | 19999 VA | 20000 VA | 20000 VA | 25000 VA | 30000 VA |
| Max. AC input current | 21.8 A | | 29.0 A | 29.0 A | 29.0 A | 36.3 A | 43.5 A |
| Nominal AC frequency | 50 Hz / 60 Hz | | | | | | |
| Adjustable Power Factor range | ~ 1 (0.8 lagging to 0.8 leading) | | | | | | |
| THDi (Rated power) | < 3% | | | | | | |
| **BATTERY** | | | | | | | |
| Battery type | Lithium | | | | | | |
| Battery voltage range | 120 ~ 800 V | | | | | | |
| Max. charge / discharge current | 60 A (30 A × 2) | | | | | | |
| **EPS (OFF-GRID) OUTPUT (WITH BATTERY)** | | | | | | | |
| Rated EPS output voltage, frequency | 230 V / 400 V, 50 Hz / 60 Hz | | | | | | |
| Rated EPS output power | 15000VA | | 19999 VA | 20000 VA | | 25000 VA | 30000 VA |
| Peak EPS output power | 2 times of rated power, 10 s | | | | | | |
| Switchover time | < 10 ms | | | | | | |
| **EFFICIENCY** | | | | | | | |
| Max. efficiency | 98.0% | | | | | | |
| European efficiency | 97.7% | | | | | | |
| **ENVIRONMENT LIMIT** | | | | | | | |
| Ingress protection | IP66 | | | | | | |
| Operating ambient temperature range③ | -35 ~ 60°C | | | | | | |
| Max. operating altitude | 3000 m | | | | | | |
| Relative humidity | 0 ~ 100% RH (condensing) | | | | | | |
| Overvoltage category | Mains: III, Battery: II, PV: II | | | | | | |
| **GENERAL** | | | | | | | |
| Dimensions (W × H × D) | 696 × 526 × 240 mm | | | | | | |
| Net weight | 47 kg | | | | | | |
| Cooling concept | Smart cooling | | | | | | |
| Communication interfaces | Meter (RS-485), DI x 2, DO x 1, Modbus | | | | | | |
| Power consumption (night) | < 5 W | | | | | | |
| Topology | Non-isolated | | | | | | |
| Certificates and approvals | VDE4105, G99, AS4777, EN50549, CEI 0-21, IEC61727, PEA/MEA, NRS-097-2-1, RD1699, TOR | | | | | | |
| AC auxiliary power supply (APS) | Built-in | | | | | | |
| **PROTECTION** | | | | | | | |
| Protection | Over / under voltage protection, DC reverse-polarity protection, Residual current detection, Over temperature protection, DC isolation protection, Grid monitoring, DC injection monitoring, Back feed current monitoring | | | | | | |
| Active anti-islanding method | Frequency shift | | | | | | |
| Surge protection (DC / AC) | 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 inverter
② Input voltage exceeding the MPPT voltage range may triggers inverter protection
③ Derating above +45°C