

# 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

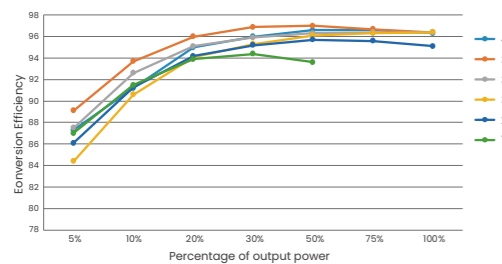
### Assured Reliability

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

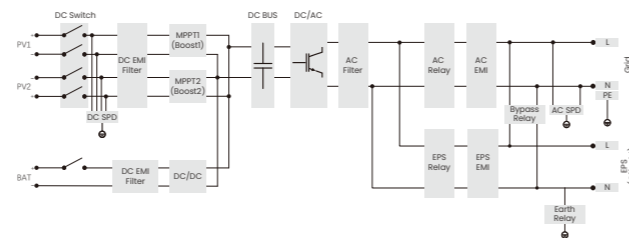
### Flexible Adaptability

- Lithium-ion & Lead-acid battery compatible
- Max. 16A DC input current for high power solar panel
- On-grid and off-grid parallel function, up to 15kW

### 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
<b>PV INPUT</b>					
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				
Nominal PV input voltage	360 V				
Operating 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 (MPPT1/2)	16 A / 16 A				
Max. input short circuit current per MPPT (MPPT1/2)	20 A / 20 A				
<b>AC INPUT &amp; OUTPUT (ON-GRID)</b>					
Rated output power	3000 W	3680 W	5000 W (Germany 4600 W, AU 4999 W)	6000 W	7500 W
Max. output apparent power	3300 VA	3680 VA	5500 VA (4600 VA for VDE4105, 4999 VA for AS4777)	6600 VA	7500 VA
Max. output continuous current	14.4 A	16.0 A	23.9 A (Germany 20 A, AU 21.7 A)	28.6 A	32.6 A
Nominal 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%				
<b>BATTERY</b>					
Battery type	Lithium / Lead - acid				
Battery voltage range	80 ~ 480 V				
Max. charge / discharge current	30 A				
<b>EPS (OFF-GRID) OUTPUT (WITH BATTERY)</b>					
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				
<b>EFFICIENCY</b>					
Max. efficiency	97.6%				
European efficiency	97.0%				
<b>ENVIRONMENT LIMIT</b>					
Ingress protection	IP65				
Operating ambient temperature range <sup>③</sup>	-35 ~ 60°C				
Max. operating altitude	3000 m				
Relative humidity	4 ~ 100% RH (condensing)				
<b>GENERAL</b>					
Dimensions (W x H x D)	482 x 417 x 181 mm				
Net weight	24 kg	24 kg	24 kg	24 kg	25 kg
Cooling concept	Nature cooling	Nature cooling	Nature cooling	Nature cooling	Smart cooling
Communication interfaces	CT / Meter (optional), External control RS485, Dongle interface, DRM, NTC (optional)				
Certificates and approvals	VDE-AR-N 4105, G99, G98, AS/NZS4777, EN50549, CEI 0-21, C10/11, IEC61727, RD1699, NRS 097-2-1, PEA/MEA, VFR2019, PPDS				
<b>PROTECTION</b>					
Protections	Over / under voltage protection, DC isolation protection, DC reverse-polarity protection				
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 the inverter  
 ② Input voltage exceeding the MPPT voltage range may trigger inverter protection  
 ③ Derating above +45°C

# Single-phase Residential Hybrid Inverter



## X1-VAST

5kW / 6kW / 8kW / 10kW

### Smart Management

- V2G/V2H ready for smart home energy integration\*
- Smart Schedule, Smart Scene, and 7x24h TOU
- VPP ready with a variety of compatibility(OpenADR, IEEE2030.5, FCAS, API)\*
- Wireless meter compatibility
- Support whole-home load without extra devices

### High Performance

- 20A DC input per MPPT with 4 trackers
- 200% PV oversizing and high power capacity
- Low PV start-up voltage of 50V

### Assured Reliability

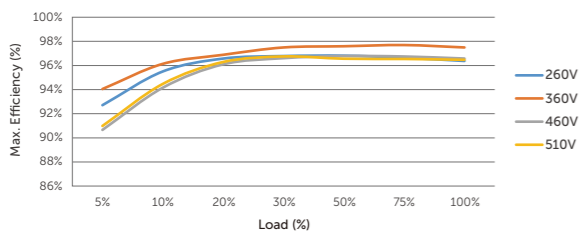
- Up to 200% EPS output for 10s
- UPS-level switchover time <10ms
- Type II SPD on AC&DC side
- Optional AFCI protection\*

### Flexible Adaptability

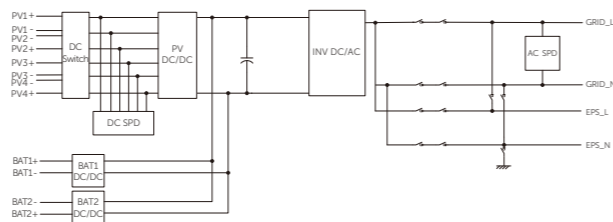
- Dual battery ports & 2-in-1 function for expansion
- Dedicated multi-device connections for streamlined cabling
- Functional and stylish wiring cover
- Microgrid and generator compatible for resilient off-grid solutions

\* Feature to be upgraded in the future

### Efficiency Curve



### Circuit Diagram



X1-VAST-5K      X1-VAST-6K      X1-VAST-8K      X1-VAST-10K

	X1-VAST-5K	X1-VAST-6K	X1-VAST-8K	X1-VAST-10K
<b>PV INPUT</b>				
Max. recommended PV array power	10 kWp	12 kWp	16 kWp	20 kWp
Max. PV input voltage <sup>①</sup>	600 V			
Nominal PV input voltage	360 V			
Operating voltage range	40 ~ 560 V			
MPPT voltage range <sup>②</sup>	40 ~ 560 V			
Start-up voltage	50 V			
No. of MPPT trackers / Strings per MPPT tracker	3 / (1 / 1 / 1)		4 / (1 / 1 / 1 / 1)	
Max. input current per MPPT(MPPT1/2/3)	20 A / 20 A / 20 A		20 A / 20 A / 20 A / 20 A	
Max. input short circuit current per MPPT(MPPT1/2/3)	25 A / 25 A / 25 A		25 A / 25 A / 25 A / 25 A	
<b>AC INPUT &amp; OUTPUT(ON-GRID)</b>				
Rated output power	4999 W	6000 W	8000 W	9999 W
Rated output current	21.8 A	26.1 A	34.8 A	43.5 A
Max. output apparent power	4999 VA	6000 VA	8000 VA	9999 VA
Max. output continuous current	21.8 A	26.1 A	34.8 A	43.5 A
Max. AC input apparent power	14500 VA			
Max. AC input current	63 A			
Adjustable Power Factor range	~ 1 (0.8 lagging to 0.8 leading)			
THDi (rated power)	< 2%			
<b>BATTERY</b>				
Battery voltage range	80 ~ 480 V			
Max. charge / discharge current <sup>③</sup>	50 A (25 A × 2)			
<b>EPS (OFF-GRID) OUTPUT (WITH BATTERY)</b>				
Rated EPS output voltage, frequency	230 V, 50 Hz / 60 Hz			
Rated EPS output power	5000 VA	6000 VA	8000 VA	10000 VA
Peak EPS output power	2 times of rated power, 10 s			
Switchover time	< 10 ms			
<b>EFFICIENCY</b>				
Max. efficiency	97.6%			
<b>ENVIRONMENT LIMIT</b>				
Ingress protection	IP66			
Operating ambient temperature range <sup>④</sup>	-35 ~ 60°C			
Max. operating altitude	3000 m			
Relative humidity	4 ~ 100% RH (condensing)			
<b>GENERAL</b>				
Dimensions (W × H × D)	590 × 400 × 180 mm			
Net weight	28 ± 2 kg			
Cooling concept	Nature cooling			
Communication interfaces	CT/Meter (optional), External control RS485, Dongle interface , DRM			
Topology	Transformerless			
Certificates and approvals	EN / IEC62109-1 / -2, AS / NZS 4777, G99, EN 50549-10, BR140, IEC61727, IEC 61683, RD1699, NRS 097-2-1, PEA / MEA, VFR2019			
<b>PROTECTION</b>				
Protections	DC isolation protection, DC reverse-polarity protection, Residual current detection, Over temperature protection			
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 the inverter

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

③ If each of the two battery ports is connected to a separate battery, it's 25A per port. If one port is connected to a single battery, it's 30A. If both ports are connected to a single battery using a 2-in-1 splitter cable(sold separately), it's 50A

④ Derating above +45°C

# Three-phase Residential Hybrid Inverter



## X3-HYBRID G4

5.0kW / 6.0kW / 8.0kW / 10.0kW / 12.0kW / 15.0kW

### 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

### High Performance

- 200% PV oversizing and up to 110% AC output
- Up to 97.5% efficiency in charging and discharging
- Up to 200% PV input
- Three-phase unbalanced output: Max. 5kW per phase

### Assured Reliability

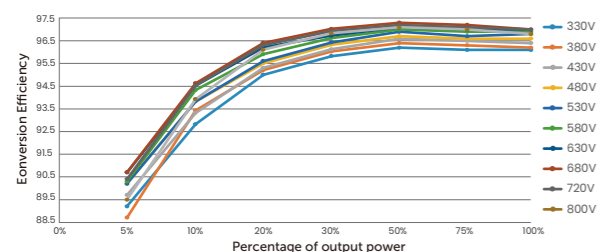
- Up to 200% EPS overload output for 10 seconds\*
- UPS-level switchover time <10ms
- IP65 protection degree
- Type II SPD on AC&DC side

### Flexible Adaptability

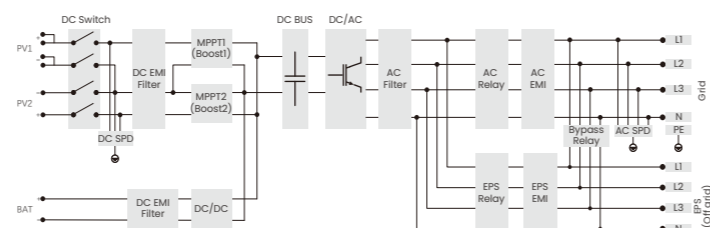
- Lithium-ion & Lead-acid battery compatible
- On-grid and off-grid parallel function, up to 150kW
- Max. 28A input per MPPT, optimized for high-power solar panels.
- Quick configuration via U-disk

\*Overload capabilities vary by model. Please refer to the specification page for detailed information

### Efficiency Curve



### Circuit Diagram



X3-HYBRID-5.0-D X3-HYBRID-6.0-D X3-HYBRID-8.0-D X3-HYBRID-10.0-D X3-HYBRID-12.0-D X3-HYBRID-15.0-D

	PV INPUT					
	10kWp	12kWp	16 kWp	20 kWp	24 kWp	30 kWp
Max. recommended PV array power	10kWp	12kWp	16 kWp	20 kWp	24 kWp	30 kWp
Max. PV input voltage <sup>①</sup>	1000 V					
Nominal PV input voltage	640 V					
MPPT voltage range <sup>②</sup>	180 ~ 950 V					
Start-up voltage	200 V					
No. of MPP trackers / Strings per MPP tracker	2 (1 / 1)			2 (2 / 1)		
Max. input current per MPPT <sup>③</sup> (MPPT1/2)	16 A / 16 A			28 A / 16 A		
Max. input short circuit current per MPPT (MPPT1/2)	20 A / 20 A			35 A / 20 A		
	AC INPUT & OUTPUT (ON-GRID)					
Rated output power	5 kW	6 kW	8 kW	10 kW	12 kW	15 kW
Rated output current	7.2 A	8.7 A	11.6 A	14.5 A	17.5 A	21.8 A
Max. output apparent power	5.5 kVA	6.6 kVA	8.8 kVA	11.0 kVA	13.2 kVA	15.0 kVA
Max. output continuous current	8.1 A	9.7 A	12.9 A	16.1 A	19.3 A	24.1 A
Nominal AC voltage	3 / N / PE, 220 / 380 V 3 / N / PE, 230 / 400 V					
Max. AC input apparent power	10 kVA	12 kVA	16 kVA	20 kVA	20 kVA	20 kVA
Max. AC input current	16.1 A	19.3 A	25.8 A	32.0 A	32.0 A	32.0 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-ion battery / Lead-acid battery					
Battery voltage range <sup>④</sup>	120 ~ 800 V					
Max. charge / discharge current	30 A					
	EPS (OFF-GRID) OUTPUT (WITH BATTERY)					
Rated EPS output voltage, frequency	400 V / 230 V, 50 Hz / 60 Hz					
Rated EPS output power	5 kVA	6 kVA	8 kVA	10 kVA	12 kVA	15 kVA
Peak EPS output power	12.0 kVA, 10 s	12.0 kVA, 10 s	18.0 kVA, 10 s	18.0 kVA, 10 s	22.5 kVA, 10 s	22.5 kVA, 10 s
Switchover time	< 10 ms					
	EFFICIENCY					
Max. efficiency	98.0%					
European efficiency	97.7%					
	ENVIRONMENT LIMIT					
Ingress protection	IP65					
Operating ambient temperature range <sup>⑤</sup>	-35 ~ 60°C					
Max. operating altitude	< 3000 m					
Relative humidity	4 ~ 100% RH (condensing)					
Overvoltage Category	Mains: III, Battery: II, PV: II					
	GENERAL					
Dimensions (W × H × D)	503 × 503 × 199 mm					
Net weight	30 ± 1 kg					
Cooling concept	Nature cooling			Smart cooling		
Communication interfaces	CT / Meter (optional), External control RS485, Pocket WiFi (Optional: Pocket LAN/4G), DRM, NTC (optional)					
Power consumption (night)	< 40 W for standby, < 5 W for idle					
Topology	Non-isolated					
Certificates and approvals	EN/IEC62109-1/-2, VDE4105, G99, G98, AS4777, EN50549, CEI 0-21, IEC61727, PEA/MEA, NRS-097-2-1, RD1699, TOR					
AC auxiliary power supply (APS)	Built-in					
	PROTECTION					
Protections	DC reverse-polarity protection, DC isolation protection, Residual current detection, AC overcurrent protection, AC short-circuit protection, Over / under voltage protection, Grid monitoring, DC injection monitoring, Back feed current monitoring, Over temperature protection					
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 the inverter  
 ② Input voltage exceeding the MPPT voltage range may trigger inverter protection  
 ③ When PV1 is connected to 2 strings, the maximum input current is 28A; when PV1 is connected to 1 string, the maximum input current is 20A  
 ④ Compatible with a minimum of 3 units of HS25/HS36 batteries, but if the total voltage of the 3 batteries is less than 127V and there is no PV input, the system will not be able to startup  
 ⑤ Derating above +45°C

# Three-phase Residential Hybrid Inverter



## X3-HYB-G4 PRO

4kW / 5kW / 6kW / 8kW  
10kW / 12kW / 15kW

### Smart Management

- V2X ready for smart home energy integration
- Smart Schedule, Smart Scene, and 7\*24h TOU
- Wireless meter compatibility
- VPP ready with a variety of compatibility(OpenADR, IEEE2030.5, FCAS, API)\*

### High Performance

- 20A DC input per MPPT with 3 trackers
- 200% PV oversizing and up to 110% AC output
- Ultra-wide MPPT range of 110-950V

### Assured Reliability

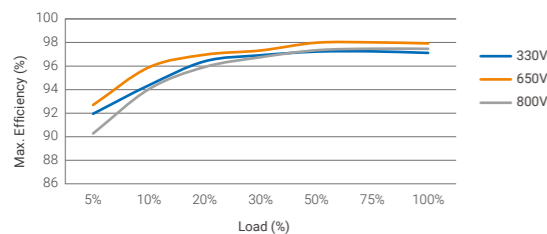
- Up to 200% EPS output for 10s
- UPS-level switchover time <10ms
- Optional Rapid Shutdown function for enhanced safety
- Type II SPD on AC&DC side
- Optional AFCI protection\*

### Flexible Adaptability

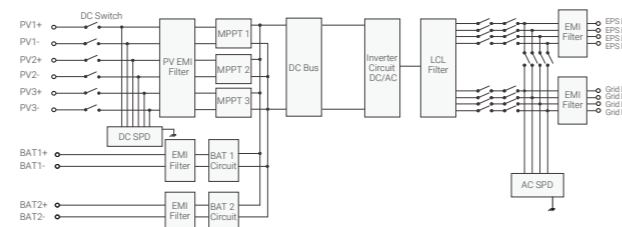
- Dual battery ports & 2-in-1 function for expansion
- Additional ports for simplified wiring and installation
- Functional and stylish wiring cover
- Microgrid and generator modes for versatile operations

\* Feature to be upgraded in the future

### Efficiency Curve (15kW)



### Circuit Diagram



	X3-HYB-4.0-P	X3-HYB-5.0-P	X3-HYB-6.0-P	X3-HYB-8.0-P	X3-HYB-10.0-P	X3-HYB-12.0-P	X3-HYB-15.0-P
<b>PV INPUT</b>							
Max. recommended PV array power	8 kWp	10 kWp	12 kWp	16 kWp	20 kWp	24 kWp	30 kWp
Max. PV input voltage <sup>①</sup>	1000 V						
Nominal PV input voltage	650 V						
Operating voltage range	110 ~ 950 V						
MPPT voltage range <sup>②</sup>	110 ~ 950 V						
Start-up voltage	120 V						
No. of MPPT trackers / Strings per MPPT tracker	2 (1 / 1)			3 (1 / 1 / 1)			
Max. input current per MPPT(MPPT1/2/3)	20 A / 20 A			20 A / 20 A / 20 A			
Max. input short circuit current per MPPT(MPPT1/2/3)	25 A / 25 A			25 A / 25 A / 25 A			
<b>AC INPUT &amp; OUTPUT (ON-GRID)</b>							
Rated output power	4000 W	5000 W (AS 4777 4999 W)	6000 W	8000 W	10000 W (AS 4777 9999 W)	12000 W	15000 W (AS 4777 14999 W)
Rated output current	5.8 A	7.2 A	8.7 A	11.6 A	14.5 A	17.5 A	21.8 A
Max. output apparent power	4400 VA	5500 VA (AS 4777 4999 VA)	6600 VA	8800 VA	11000 VA (AS 4777 9999 VA)	13200 VA	16500 VA (AS 4777 14999 VA)
Max. output continuous current	6.7 A	6.7 A	8.4 A	10.0 A	13.4 A	20.0 A	25.0 A
Nominal AC voltage	3 / N / PE, 220 / 380 V 3 / N / PE, 230 / 400 V						
Max. AC input apparent power	8.4 kVA	10.5 kVA	12.6 kVA	16.8 kVA	21.0 kVA		
Max. AC input current	12.2 A	15.2 A	18.2 A	24.3 A	30.4 A		
Nominal AC frequency	50 Hz / 60 Hz						
AC frequency range <sup>③</sup>	50 ± 5 Hz / 60 ± 5 Hz						
Adjustable Power Factor range	~ 1 (0.8 lagging to 0.8 leading)						
THDi (Rated power)	< 3%						
<b>BATTERY</b>							
Battery type	Lithium						
Battery voltage range	130 ~ 800 V						
Max. charge / discharge current <sup>④</sup>	50 A (25 A × 2)						
<b>EPS (OFF-GRID) OUTPUT (WITH BATTERY)</b>							
Rated EPS output voltage, frequency	400 V / 230 V, 50 Hz / 60 Hz						
Rated EPS output power	4 kVA	5 kVA	6 kVA	8 kVA	10 kVA	12 kVA	15 kVA
Peak EPS output power	2 times of rated power, 10 s						
Switchover time	< 10 ms						
<b>EFFICIENCY</b>							
Max. efficiency	98.0%						
European efficiency	97.7%						
<b>ENVIRONMENT LIMIT</b>							
Ingress protection	IP66						
Operating ambient temperature range <sup>⑤</sup>	-35 ~ 60°C						
Max. operating altitude	3000 m						
Relative humidity	0 ~ 100% RH (condensing)						
Overvoltage Category	Mains: III, Battery: II, PV: II						
<b>GENERAL</b>							
Dimensions (W × H × D)	560 × 503 × 210 mm						
Net weight	38 kg						
Cooling concept	Nature cooling			Smart cooling			
Communication interfaces	COM1 (Parallel 1, Parallel 2, BMS 1, BMS 2, RS485, Meter / CT); COM2 (DI/DO, EVC, DATAHUB, DRM, V2X, Heatpump)						
Power consumption (night)	< 40 W for standby, < 5 W for idle						
Topology	Non-isolated						
Certificates and approvals	IEC62109-1 / IEC62109-2, VDE 0126-1-1 A1:2012, VDE-AR-N 4105, G98, G99, AS4777, EN50549, CEI 0-21						
AC auxiliary power supply (APS)	Built-in						
<b>PROTECTION</b>							
Protection	Over / under voltage protection, DC isolation protection, DC reverse-polarity protection, Grid monitoring, DC injection monitoring, Back feed current monitoring, Residual current detection, Over temperature protection, AC overcurrent protection, AC short-circuit protection						
Active anti-islanding method	Frequency shift						
Surge protection (DC / AC)	DC: Type II, AC: Type II						
Arc-fault circuit interrupter (AFCI)	Optional						

①The maximum input voltage is the upper limit of the DC voltage. Any higher input DC voltage would probably damage the inverter ②Input voltage exceeding the MPPT voltage range may trigger inverter protection ③The AC frequency range may vary from different country codes ④If each of the two battery ports is connected to a separate battery, it's 25A per port. If one port is connected to a single battery, it's 30A. If both ports are connected to a single battery using a 2-in-1 splitter cable(sold separately), it's 50A ⑤Derating above +45°C

# Three-phase C&I Hybrid Inverter



## X3-ULTRA

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

### 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)\*

### 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

### Assured Reliability

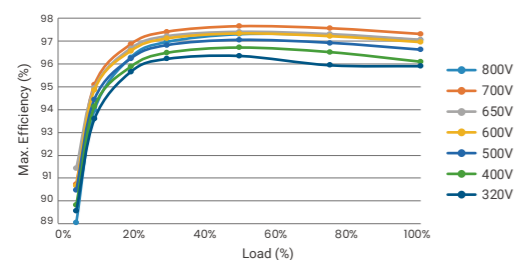
- IP66 protection degree
- Type II SPD on AC&DC side
- Optional AFCI protection

### Flexible Adaptability

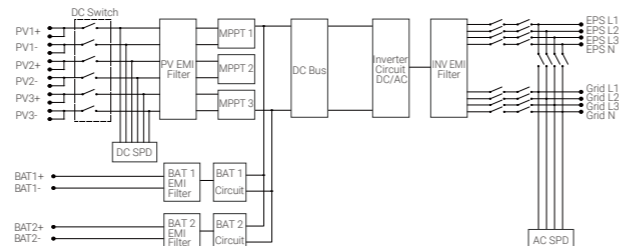
- Max. 10pcs parallel for on-grid and off-grid
- Microgrid and generator function for versatile operations
- Max. 36A PV input per MPPT, optimized for high-power solar panel

\* Feature to be upgraded in the future

### Efficiency Curve



### Circuit Diagram



X3-ULT-15K X3-ULT-15KP X3-ULT-19.9K X3-ULT-20K X3-ULT-20KP X3-ULT-25K X3-ULT-30K

	X3-ULT-15K	X3-ULT-15KP	X3-ULT-19.9K	X3-ULT-20K	X3-ULT-20KP	X3-ULT-25K	X3-ULT-30K
<b>PV INPUT</b>							
Max. recommended PV array power	30 kWp		40 kWp		50 kWp		60 kWp
Max. PV input voltage <sup>①</sup>	1000 V						
Nominal PV input voltage	600 V						
Operating voltage range	120 ~ 950 V						
MPPT voltage range <sup>②</sup>	160 ~ 950 V						
Start-up voltage	200 V						
No. of MPPT trackers / Strings per MPPT 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		
<b>AC INPUT &amp; OUTPUT (ON-GRID)</b>							
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 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%						
<b>BATTERY</b>							
Battery type	Lithium						
Battery voltage range	120 ~ 800 V						
Max. charge / discharge current	60 A (30 A × 2)						
<b>EPS (OFF-GRID) OUTPUT (WITH BATTERY)</b>							
Rated EPS output voltage, frequency	230 V / 400 V, 50 Hz / 60 Hz						
Rated EPS output power	15000VA	19999 VA	20000 VA	20000 VA	25000 VA	30000 VA	
Peak EPS output power	2 times of rated power, 10 s						
Switchover time	< 10 ms						
<b>EFFICIENCY</b>							
Max. efficiency	98.0%						
European efficiency	97.7%						
<b>ENVIRONMENT LIMIT</b>							
Ingress protection	IP66						
Operating ambient temperature range <sup>③</sup>	-35 ~ 60°C						
Max. operating altitude	3000 m						
Relative humidity	0 ~ 100% RH (condensing)						
Overvoltage category	Mains: III, Battery: II, PV: II						
<b>GENERAL</b>							
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						
<b>PROTECTION</b>							
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

# Single-phase Low-voltage Residential Hybrid Inverter



## X1-HYB-LV

3.0kW / 3.7kW / 4.0kW  
5.0kW / 6.0kW

### Smart Management

- Single unit UPS-level switchover time < 4 ms
- Global MPP scan for optimal energy harvest
- Smart loads management
- CT compatibility with fast load response in just 0.3 seconds

### High Performance

- 200% PV oversizing and up to 110% AC output
- 200% peak EPS power for 10 s
- Max. 120A charging / discharging current
- Low start-up voltage for longer operation

### Assured Reliability

- Battery terminal temperature detection
- IP65 protection degree
- Type II SPD on AC&DC side
- Optional AFCI protection\*

### Flexible Adaptability

- Max. 10pcs parallel for on-grid and off-grid\*
- Microgrid and generator function for versatile operations\*
- Max. 16A DC input current for high-power solar panel

\* Feature to be upgraded in the future

	X1-HYB-3.0-LV	X1-HYB-3.7-LV	X1-HYB-4.0-LV	X1-HYB-5.0-LV	X1-HYB-6.0-LV
<b>PV INPUT</b>					
Max. recommended PV array power	6000 Wp	7360 Wp	8000 Wp	10000 Wp	12000 Wp
Max. PV input voltage <sup>①</sup>	550 V				
Nominal PV input voltage	360 V				
MPPT voltage range <sup>②</sup>	80 ~ 520 V				
Start-up voltage	110 V				
No. of MPP trackers / Strings per MPP tracker	2 / (1 / 1)				
Max. input current per MPPT(MPPT1/2)	16 A / 16 A				
Max. input short circuit current per MPPT(MPPT1/2)	20 A / 20 A				
<b>AC INPUT &amp; OUTPUT(ON-GRID)</b>					
Rated output power	3000 W	3680 W	4000 W	5000 W	6000 W
Max. output apparent power	3300 VA	3680 VA	4400 VA	5000 VA	6000 VA
Max. output continuous current	15.0 A	16.0 A	20.0 A	22.7 A	27.3 A
Nominal AC voltage	1 / N / PE, 220 / 230 / 240 V				
Max. AC input apparent power	6000 VA	7360 VA	8000 VA	9200 VA	
Max. AC input current	26.1 A	32.0 A	34.8 A	40.0 A	
Nominal AC frequency	50 Hz / 60 Hz				
THDi (rated power)	< 3%				
<b>BATTERY</b>					
Battery type	Lithium / Lead - acid				
Battery voltage range	40 ~ 60 V				
Max. charge / discharge current	75 A			120 A	
<b>EPS (OFF-GRID) OUTPUT (WITH BATTERY)</b>					
Rated EPS output voltage, frequency	230 V, 50 Hz / 60 Hz				
Peak EPS output power	6000 VA, 10 s	7360 VA, 10 s	8000 VA, 10 s	10000 VA, 10 s	12000 VA, 10 s
Switchover time	< 4 ms				
<b>EFFICIENCY</b>					
Max. efficiency	97.6%				
European efficiency	97.0%				
<b>ENVIRONMENT LIMIT</b>					
Ingress protection	IP65				
Operating ambient temperature range <sup>③</sup>	-25 ~ 60°C				
Max. operating altitude	3000 m				
Relative humidity	4 ~ 100% RH (condensing)				
<b>GENERAL</b>					
Dimensions (W × H × D)	397 × 490 × 201 mm				
Net weight	16.5 kg			17.3 kg	
Cooling concept	Natural cooling			Smart cooling	
Communication interfaces	CAN, RS485, CT, Meter, NTC, WiFi, WiFi+LAN				
Topology	Transformerless for PV side / HF for battery side				
Certificates and approvals	NRS 097-2-1, IEC 61727, IEC 62116, PEA, MEA, BIS, EN IEC 62109-1 / -2				
<b>PROTECTION</b>					
Protections	Over / under voltage protection, DC isolation protection, DC reverse-polarity protection, Back feed current monitoring, Residual current detection, Active anti-islanding method, Over temperature protection				
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  
 ③ Derating above +45°C

# Single-phase Low-voltage Residential Hybrid Inverter



## X1-Lite-LV

8kW / 10kW / 12kW

### Smart Management

- Smart loads management
- Single unit UPS-level switchover time < 8ms
- Global MPP scan for optimal energy harvest\*

### High Performance

- 200% PV oversizing and up to 110% AC output
- 200% peak EPS power for 10s\*
- Max. 250A charging / discharging current
- Low start-up voltage for longer operation

### Assured Reliability

- Battery terminal temperature detection
- IP65 protection degree
- Type II SPD on AC&DC side
- Optional AFCI protection\*

### Flexible Adaptability

- Max. 10pcs parallel for on-grid and off-grid\*
- Microgrid and generator function for versatile operations
- Max. 32A input per string, optimized for high-power solar panels.

\* Feature to be upgraded in the future

	X1-Lite-8.0-LV	X1-Lite-10.0-LV	X1-Lite-12.0-LV
<b>PV INPUT</b>			
Max. recommended PV array power	16 kWp	20 kWp	24 kWp
Max. PV input voltage <sup>①</sup>	600 V		
Nominal PV input voltage	360 V		
Operating voltage range	50 ~ 550 V		
MPPT voltage range <sup>②</sup>	50 ~ 550 V		
Start-up voltage	110 V		
No. of MPP trackers / Strings per MPP tracker	2 / (2 / 2)	3 / (2 / 2 / 2)	
Max. input current per MPPT(MPPT1/2/3)	32 A / 32 A	32 A / 32 A / 32 A	
Max. input short circuit current per MPPT(MPPT1/2/3)	40 A / 40 A	40 A / 40 A / 40 A	
<b>AC INPUT &amp; OUTPUT (ON-GRID)</b>			
Rated output power	8000 W	10000 W	12000 W
Rated output current	34.8 A	43.5 A	52.2 A
Max. output apparent power	8800 W	11000 W	13200 W
Max. output continuous current	40 A	50 A	60 A
Nominal AC voltage	1 / N / PE, 220 / 230 / 240 V		
Max. AC input apparent power	12650 VA	14950 VA	18400 VA
Max. AC input current	55 A	65 A	80 A
Nominal AC frequency	50 Hz / 60 Hz		
AC frequency range <sup>③</sup>	50 ± 5 Hz / 60 ± 5 Hz		
Adjustable Power Factor range	~ 1 (0.8 lagging to 0.8 leading)		
THDi (Rated power)	< 3%		
<b>BATTERY</b>			
Battery type	Lithium / Lead - acid		
Battery voltage range	40 ~ 60 V		
Max. charge / discharge current	190 A	220 A	250 A
<b>EPS (OFF-GRID) OUTPUT (WITH BATTERY)</b>			
Rated EPS output voltage, frequency	230 V, 50 Hz / 60 Hz		
Rated EPS output power	8 kVA	10 kVA	12 kVA
Peak EPS output power	2 times of rated power, 10 s		
Switchover time	< 8 ms		
<b>EFFICIENCY</b>			
Max. efficiency	97.6%		
European efficiency	97.0%		
<b>ENVIRONMENT LIMIT</b>			
Ingress protection	IP65		
Operating ambient temperature range	-25 ~ 60°C		
Max. operating altitude	3000 m		
Relative humidity	4 ~ 100% RH (condensing)		
Overvoltage Category	Mains: III, Battery: II, PV: II		
<b>GENERAL</b>			
Dimensions (W x H x D)	462 x 651 x 280 mm		
Net weight	38.5 kg		
Cooling concept	Smart cooling		
Communication interfaces	LED + LCD / CAN, RS485, CT, Meter, NTC, WiFi+LAN		
Power consumption (night)	< 20 W		
Topology	Non-isolated		
Certificates and approvals	IEC/EN 62109-1/-2, NRS 097-2-1, IEC 61727, IEC 62116, PEA, MEA, BIS		
<b>PROTECTION</b>			
Protection	Over / under voltage protection, DC isolation protection, DC reverse-polarity protection, Grid monitoring, DC injection monitoring, Back feed current monitoring, Over temperature protection		
Active anti-islanding method	Frequency shift		
Surge protection (DC / AC)	DC: Type II, AC: Type II		

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  
 ③ The AC frequency range may vary from different country codes

# Three-phase Low-voltage Residential Hybrid Inverter



## X3-NEO-LV

5kW / 8kW / 10kW  
12kW / 15kW

### Smart Management

- Single unit UPS-level switchover time <3 ms
- Dedicated load interface for intelligent load management
- Global MPP scan for optimal energy harvest

### High Performance

- 200% PV oversizing and up to 110% AC output
- 200% peak EPS power for 10 s
- Max. 300A charging / discharging current
- Low start-up voltage for longer operation

### Assured Reliability

- Battery terminal temperature detection
- IP65 protection degree
- Type II SPD on AC&DC side
- Optional AFCI protection\*

### Flexible Adaptability

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

\* Feature to be upgraded in the future

	X3-NEO-5K-LV	X3-NEO-8K-LV	X3-NEO-10K-LV	X3-NEO-12K-LV	X3-NEO-15K-LV
<b>PV INPUT</b>					
Max. recommended PV array power	10 kWp	16 kWp	20 kWp	24 kWp	30 kWp
Max. PV input voltage <sup>①</sup>	1000 V				
Nominal PV input voltage	640 V				
Operating voltage range	160 ~ 950 V				
MPPT voltage range <sup>②</sup>	160 ~ 950 V				
Start-up voltage	150 V				
No. of MPP trackers / Strings per MPP tracker	2 / (1 / 1)		2 / (2 / 1)		2 / (2 / 2)
Max. input current per MPPT(MPPT1/2)	18 A / 18 A		36 A / 18 A		36 A / 36 A
Max. input short circuit current per MPPT(MPPT1/2)	25 A / 25 A		50 A / 25 A		50 A / 50 A
<b>AC INPUT&amp;OUTPUT (On-Grid)</b>					
Rated output power	5 kW	8 kW	10 kW	12 kW	15 kW
Rated output current	7.3 A	11.6 A	14.5 A	15.3 A	17.4 A
Max. output apparent power	5.5 kVA	8.8 kVA	11 kVA	13.2 kVA	16.5 kVA
Max. output continuous current	8.4 A	13.4 A	16.8 A	20.0A	25.0 A
Nominal AC voltage	3 / N / PE, 220 / 380 V 3 / N / PE, 230 / 400 V				
Max. AC input apparent power	10 kVA	16 kVA	20 kVA	24 kVA	30 kVA
Max. AC input current	15.2 A	24.3 A	30.4 A	36.4 A	45.5 A
Nominal AC frequency	50 Hz / 60 Hz				
AC frequency range <sup>③</sup>	50 ± 5 Hz / 60 ± 5 Hz				
Adjustable Power Factor range	~ 1 (0.8 lagging to 0.8 leading)				
THDi (rated power)	< 3%				
<b>BATTERY</b>					
Battery type	Lithium / Lead - acid				
Battery voltage range	40 ~ 60 V				
Max. charge / discharge current	125 A	200 A	250 A	280 A	300 A
<b>EPS (OFF-GRID) OUTPUT (WITH BATTERY)</b>					
Rated EPS output power	5 kVA	8 kVA	10 kVA	12 kVA	15 kVA
Peak EPS output power	2 times of rated power, 10 s				
Switchover time	< 3 ms				
<b>EFFICIENCY</b>					
Max. efficiency	97.6%				
European efficiency	97.0%				
<b>ENVIRONMENT LIMIT</b>					
Ingress protection	IP65				
Operating ambient temperature range <sup>④</sup>	-25 ~ 60°C				
Max. operating altitude	3000 m				
Relative humidity	4 ~ 100% RH (condensing)				
Overvoltage Category	Mains: III, Battery: II, PV: II				
<b>GENERAL</b>					
Dimensions (W × H × D)	520 × 705 × 258 mm				
Net weight	44.6 kg				
Cooling concept	Smart cooling				
Communication interfaces	LED+LCD / CAN, RS485, CT, Meter, NTC, WiFi+LAN				
Power consumption (night)	< 15 W				
Topology	Non-isolated				
Certificates and approvals	EN IEC 62109-1 / -2, NRS 097-2-1, IEC 61727, IEC 62116, PEA, MEA, BIS				
<b>PROTECTION</b>					
Protections	Over / under voltage protection, DC isolation protection, DC reverse-polarity protection, Grid monitoring, DC injection monitoring, Back feed current monitoring, Residual current detection, Over temperature protection				
Active anti-islanding method	Frequency shift				
Surge protection (DC / AC)	DC: Type II, AC: Type II				

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

③ The AC frequency range may vary from different country codes

④ Derating above +45°C