

Industrial Online UPS 10-300KVA
CNI310 & CNI330
Series



CONSNANT

Constant Electric Power

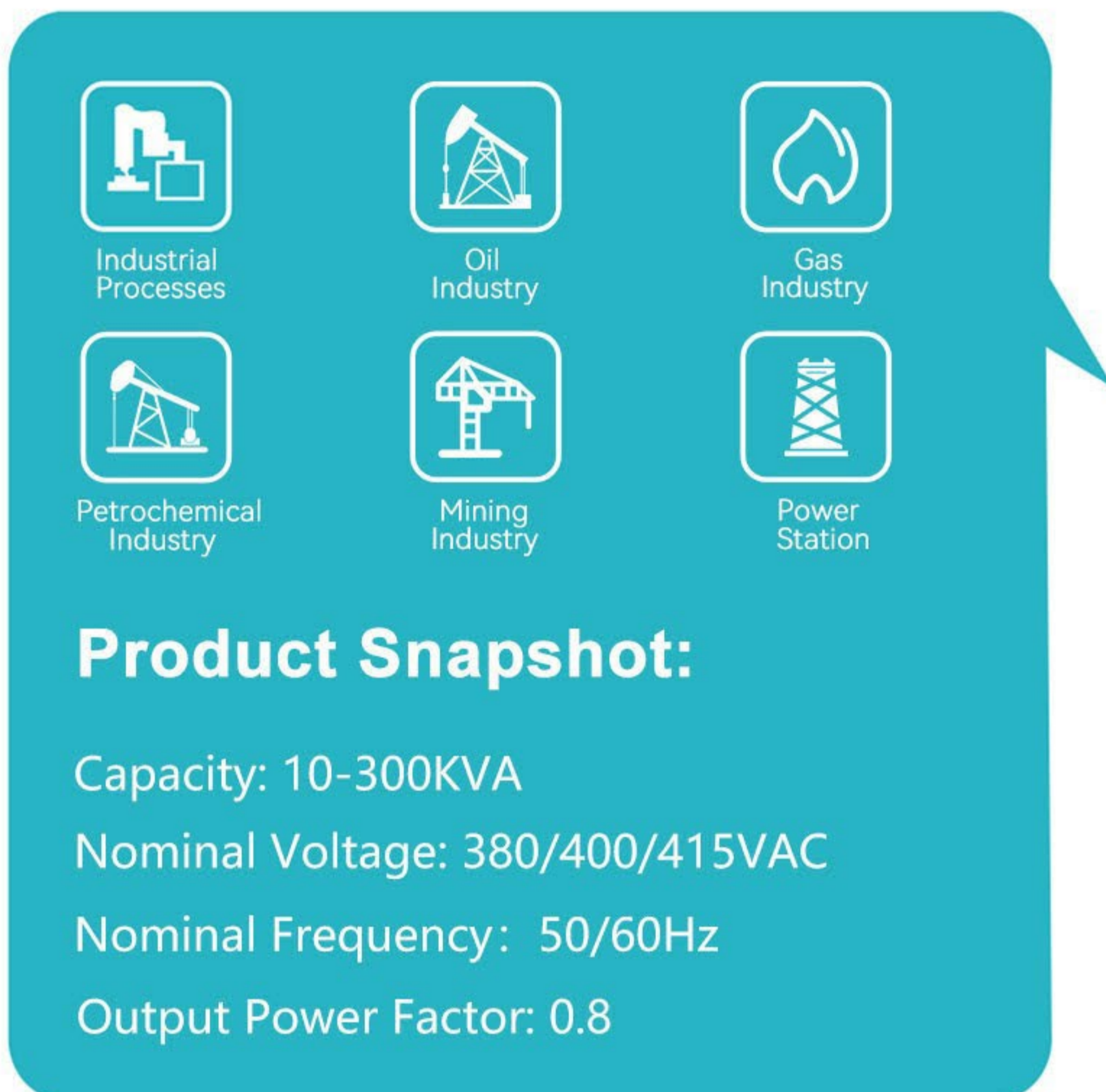
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CNI310 & CNI330 Series

Industrial Online UPS

10-100KVA (3Ph in & 1Ph out) / 10-300KVA (3Ph in & 3Ph out)

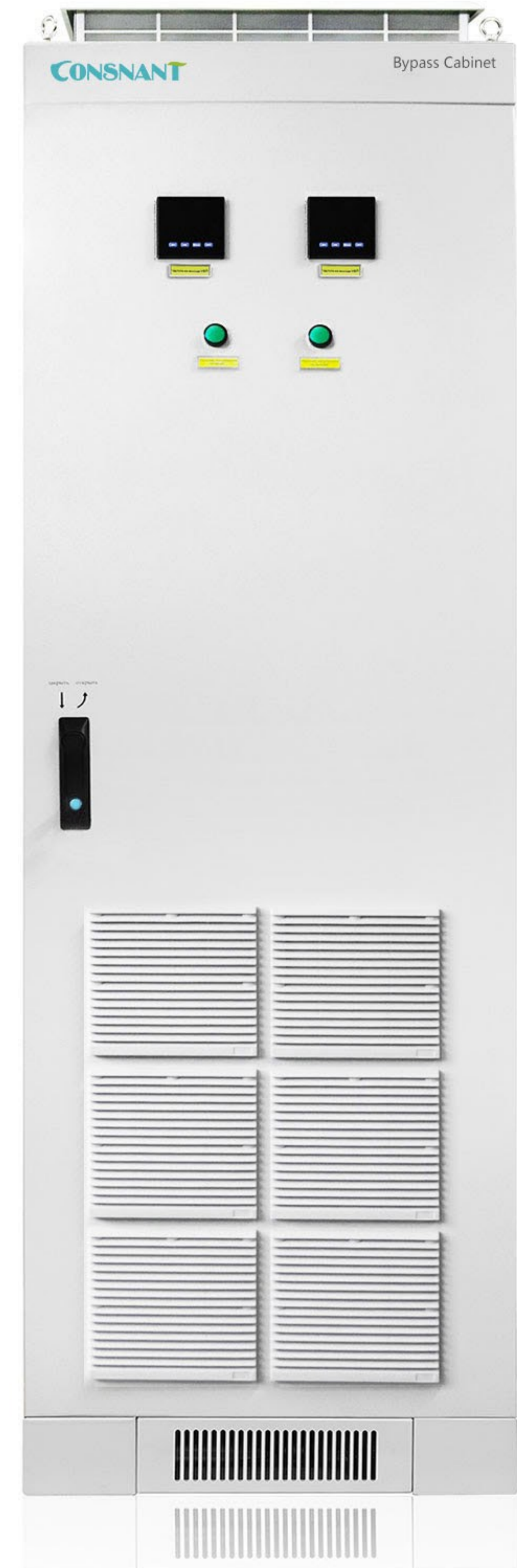


Product Snapshot:

- Capacity: 10-300KVA
- Nominal Voltage: 380/400/415VAC
- Nominal Frequency: 50/60Hz
- Output Power Factor: 0.8



UPS Main Cabinet



Bypass Cabinet

CNI310/CNI330 series products ensure the continuous availability of uninterrupted power supply requirements in oil & gas, petrochemical, power generation, transportation and other heavy industries. The state-of-the-art, double-conversion topology, flexible and compact high-reliability industrial grade design, suitable for use in harsh environments.

Typical Applications:

For all industrial applications

- Oil & Gas, Petrochemical (offshore, onshore, pipelines)
- Energy and Power (generation, transmission, distribution)
- Transportation (rail, airports, shipping, highways, tunnels)
- Water (desalination, treatment)
- All industrial production processes
- Instrumentation & Process control (chemicals, mining, steel, paper, emergency lighting)

Key Features:

- Adopt full digital control technology.
- Intelligent detection and monitoring function.
- Digital control and static switch zero switching.
- Input/Output full isolation.
- Bypass isolation transformer and voltage stabilizer available.
- Multifunctional protections against overvoltage, low voltage, overcurrent, short circuit, and so on.
- Large touch screen LCD display with multi-language (English, Chinese, Russian, French...)
- Ultralong 256 event records, user-friendly analysis and management of the situation of power supply.
- Static bypass has a strong anti-overload capacity.

Control System

Adopt microprocessor bus control technology and ensure the real-time control of rectifier, inverter, static switch, as well as coordination of each power part, characterized by increased control of aging, higher reliability, and improved efficiency of the entire UPS system.

Static Switch:

Not sync automatically switch:

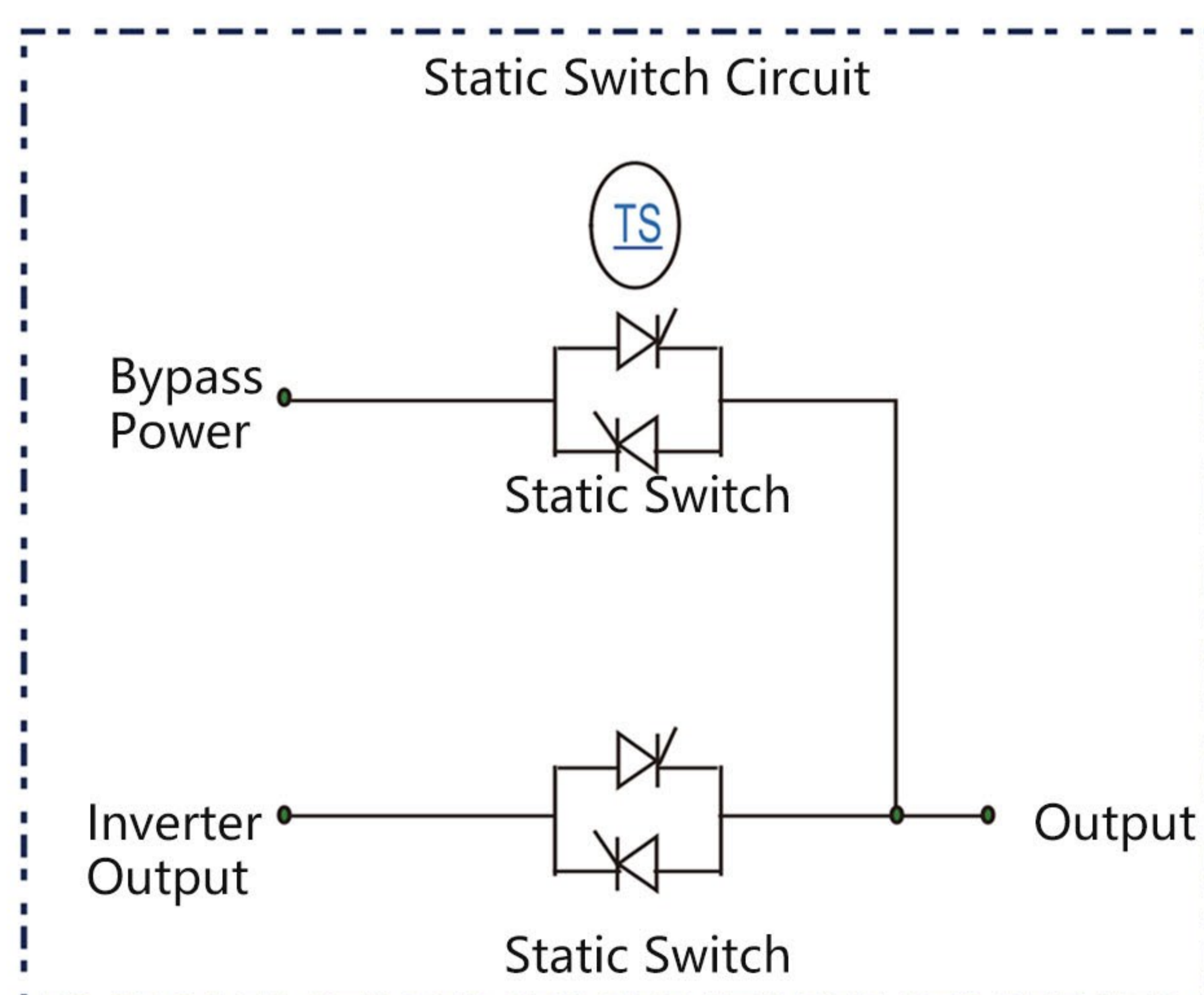
- When the bypass of UPS and inverter are not synchronized, the system can automatically implement not sync switch, which can ensure no power cutoff if the mains surge pulse width is $<5\text{ms}$.
- When the bypass exceeds the limit, UPS detects the bypass every 20ms, as long as the phase angle difference of bypass and inverter comes back to the normal range, not synchronized bypass switching can be realized.

Inverter

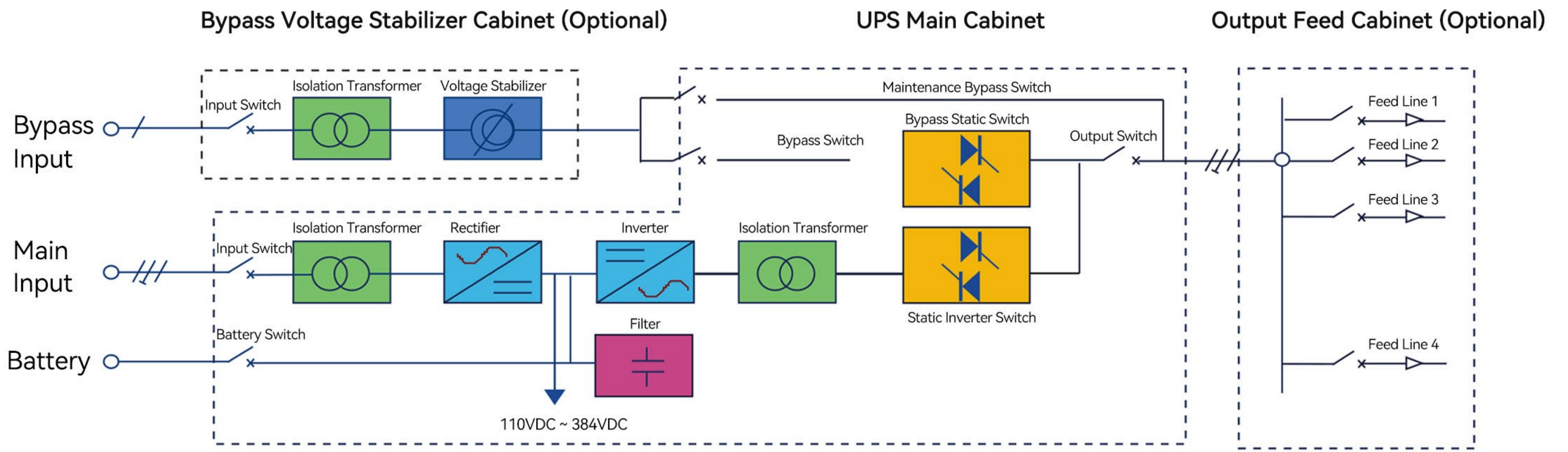
The SPWM (Sinusoidal Pulse Width Modulation) is a full bridge composed of six IGBT high-power transistors. Its function is to transform the DC voltage into standard sinusoidal AC voltage into AC 220V voltage required by the load through the special (Δ/Y) zero-phase-shift zigzag isolation transformer. In addition, the transformer can eliminate third harmonics reflected from non-linear loads such as computers. The control features the adoption of "slow-down gate voltage" protection technology, which greatly reduces the disturbance shutdown of the inverter (mutual conversion between the inverter and the static switch), improves the overload capacity of the entire UPS system, and the short-circuit resistance and anti-overload capacity are superior to the general UPS, especially the short-circuit resistance is unmatched by the general UPS.

Rectifier

A fully controlled bridge rectifier composed of 6 pulses or 12 pulses (6 or 12 SGR). Its function is to rectify the input AC 380V to DC 405V or so. Its control features "slope" start, that is, the rectifier output voltage rises from 0V to 405V within 10 seconds without affecting the grid.

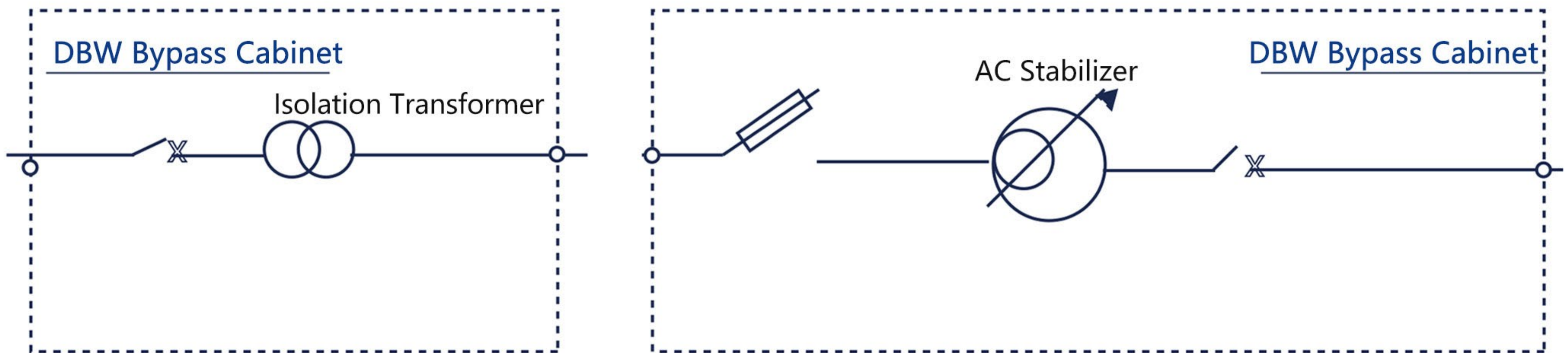


Principle Diagram



Optional Bypass Cabinet:

Isolation transformer and bypass voltage regulator



UPS Model List:

Model	Capacity	Nominal Voltage	Battery Voltage	Power Factor	W x D x H (mm)	Weight (KG)
CNI310	10KVA/8KW	380 / 400 / 415 VAC	110 / 220 / 384 VDC	0.8	600x800x1900 (2050)	327
	15KVA/12KW					372
	20KVA/16KW					418
	30KVA/24KW					516
	40KVA/32KW		620			
	60KVA/48KW		720			
	80KVA/64KW		920			
	100KVA/80KW		1070			
CNI330	10KVA/8KW	380 / 400 / 415 VAC	110 / 220 / 384 VDC	0.8	600x800x1900 (2050)	300
	15KVA/12KW					410
	20KVA/16KW					445
	30KVA/24W					536
	40KVA/32W		650			
	60KVA/48W		758			
	80KVA/64W		952			
	100KVA/80W		1100			
	120KVA/96W		1200			
	160KVA/128W		1428			
	200KVA/160W		1902			
	300KVA/240W		2800			

(PF=0.9 can be for option)

CNI310 Series Technical Specifications

CNI310 10-100KVA									
Rating (kVA)* @ P.F. 0.8 vs DC Rated Voltage									
Nominal Power (kW)	8	12	16	24	32	40	48	64	80
110Vdc	10	15	20	30	-	-	-	-	-
220Vdc	10	15	20	30	40	50	60	80	100
384Vdc	10	15	20	30	40	50	60	80	100
Input									
Input Voltage	380/400/415 Vac 3Phase±20%, 50/60Hz±10%								
Power Factor	Up to 0.95, if increase harmonic filter can reach to 0.99								
Input THDi	<10% @ rated load, if increase harmonic filter can <5%								
Bypass Input Voltage	380/400/415 Vac 3Phase±25%, 50/60Hz±15%								
Battery									
DC Voltage	110/220/384VDC (Optional)								
Battery Type	Lead-acid,Ni-cd or Li-Ion								
Output									
Nominal Voltage	220/230/240 Vac single phase								
Frequency	50/60Hz (Adaptive),±0.05% Hz synchronization, ±2Hz asynchronous								
Voltage Regulation	±1% static; ±5% dynamic; 80% load change, <10 ms recovery								
Overload Capacity	125% for 10 min; 150% for 1 min; 200% for 100ms								
Harmonic Distortion THDv	<2% linear load; <5% non-linear load								
System									
Cooling	Forced ventilation and redundant fans								
Color	RAL 7035 (standard), other optional								
Protection Degree	IP42(standard), other optional								
Environmental									
Operating Temperature	-10°C to 40°C (up to 55°C with de-rating) / Storage: -20°C to 70°C								
Altitude	<1000m (For places higher than 1000 meters, the output will be -1% of the nominal value for every 100 meters higher)								
Audible Noise at 1 Meter (dBA)	65 to 75 (Depending on rating and options)								
User Interface									
Front Panel	Graphic display, minic LED panel, Running indicator, EPO optional								
Connectivity	Includes alarm relay card and RS485 interface								
Standards	Quality assurance, environment, health and safety: ISO 9001:2008, ISO 14001:2004, BS OHSAS 18001:2007; Safety: IEC EN 62040-1; EMC: IEC EN 62040-2; Environmental aspects: IEC EN 62040-4; Test and performance: IEC EN 62040-3 VFI-SS-111; Protection degree: IEC 60529; Marking: CE								

CNI330 Series Technical Specifications

CNI330 10-300KVA

Rating (kVA)* @ P.F. 0.8 vs DC Rated Voltage

Nominal Power (kW)	8	12	16	24	32	40	48	64	80	96	128	160	240
110Vdc	10	15	20	30	-	-	-	-	-	-	-	-	-
220Vdc	10	15	20	30	40	50	60	80	100	120	-	-	-
384Vdc	10	15	20	30	40	50	60	80	100	120	160	200	300

Input

Input Voltage	380/400/415 Vac 3Phase±20%, 50/60Hz±10%
Power Factor	Up to 0.95, if increase harmonic filter can reach to 0.99
Input THDi	<10% @ rated load, if increase harmonic filter can <5%
Bypass Input Voltage	380/400/415 Vac 3Phase±25%, 50/60Hz±15%

Battery

DC Voltage	110/220/384VDC (Optional)
Battery Type	Lead-acid, Ni-cd or Li-Ion

Output

Nominal Voltage	380/400/415 Vac 3-phase
Frequency	50/60Hz (Adaptive), ±0.05% Hz synchronization, ±2Hz asynchronous
Voltage Regulation	±1% static; ±5% dynamic; 8% load change, <10 ms recovery
Overload Capacity	125% for 10 min; 150% for 1 min; 200% for 100ms
Harmonic Distortion THDv	<2% linear load; <5% non-linear load

System

Cooling	Forced ventilation and redundant fans
Color	RAL 7035 (standard), other optional
Protection Degree	IP42 (standard), other optional

Environmental

Operating Temperature	-10°C to 40°C (up to 55°C with de-rating) / Storage: -20°C to 70°C
Altitude	<1000m (For places higher than 1000 meters, the output will be -1% of the nominal value for every 100 meters higher)
Audible Noise at 1 Meter (dBA)	65 to 75 (Depending on rating and options)

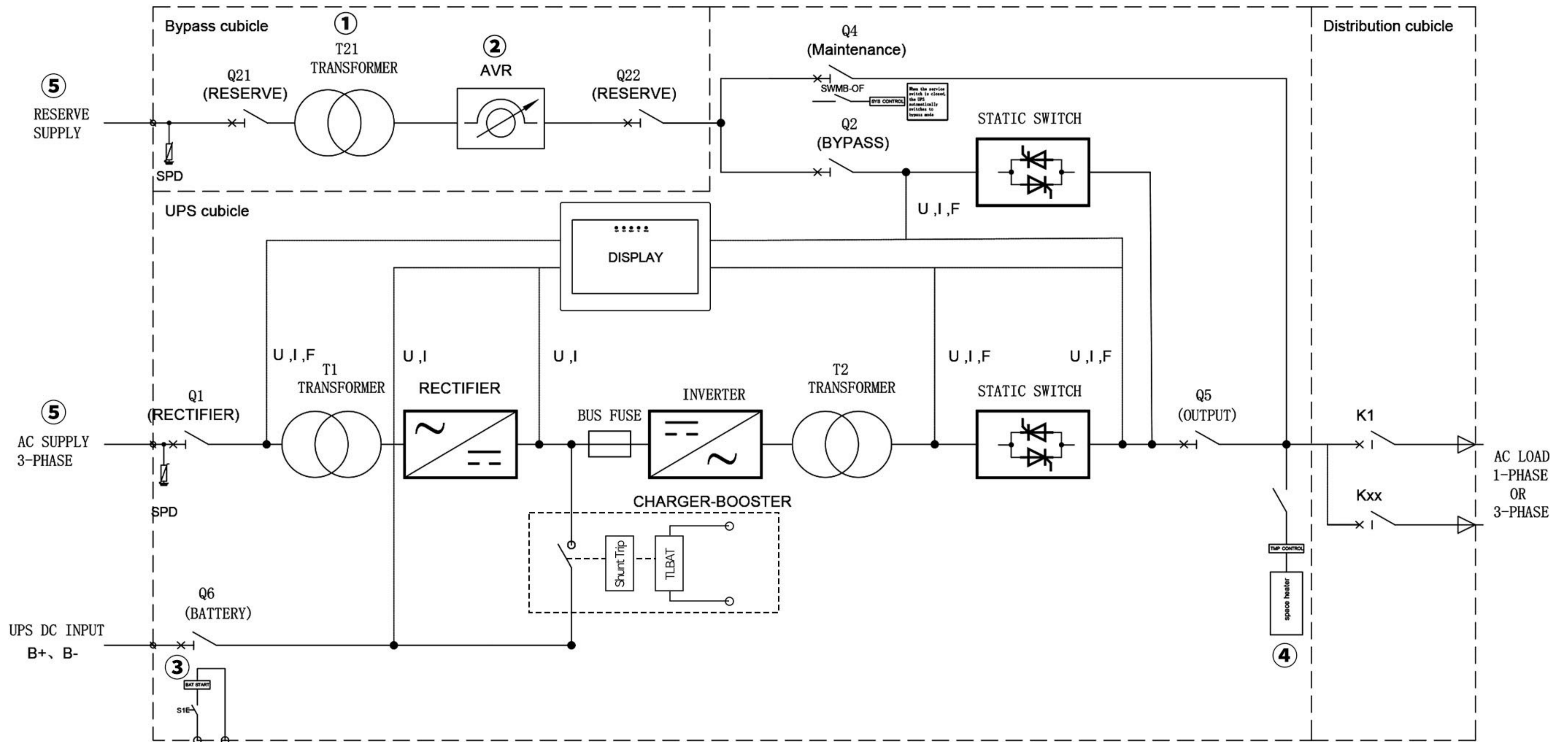
User Interface

Front Panel	Graphic display, minic LED panel, Running indicator, EPO optional
Connectivity	Includes alarm relay card and RS485 interface

Standards

Quality assurance, environment, health and safety: ISO 9001:2008, ISO 14001:2004, BS OHSAS 18001:2007; Safety: IEC EN 62040-1; EMC: IEC EN 62040-2; Environmental aspects: IEC EN 62040-4; Test and performance: IEC EN 62040-3 VFI-SS-111; Protection degree: IEC 60529; Marking: CE

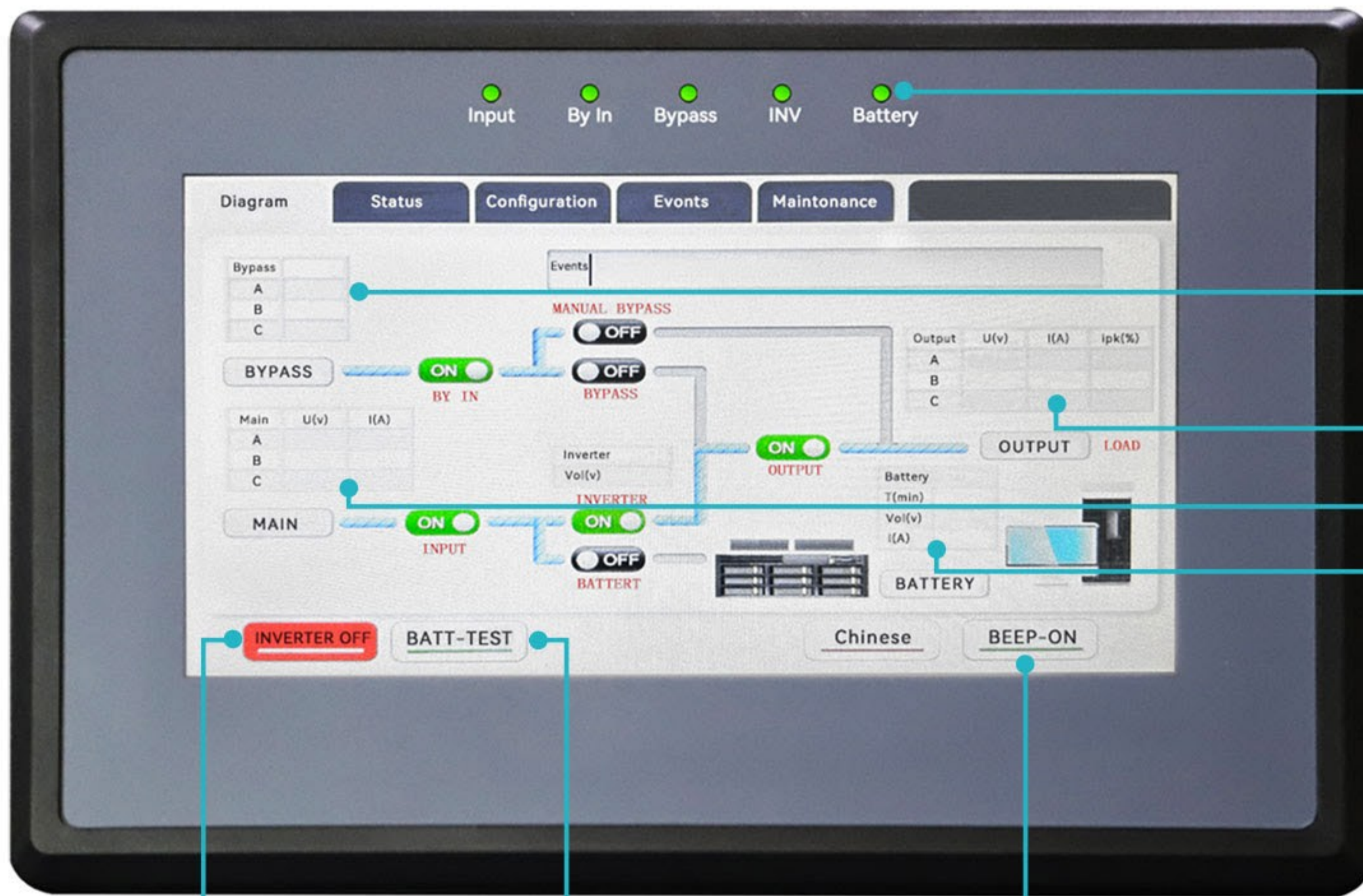
Main Electrical Options:



No.	Option Item	Item Name	Function Description
①	T21	Bypass Isolation Transformer	Realize the isolation between the ups output and the power grid, insulation class H.
②	AVR	Bypass Stabilizer	Electronic/electromechanical automatic voltage regulator to ensure the UPS reserve circuit voltage stability
③	Bat Start	Battery Black Start	In case of mains power failure, the inverter can be started through the battery start button.
④	Space Heater	Internal Space Heater	Space heater to prevent condensation of internal components
⑤	Special Input Voltage	Special Input Voltage	Optional three-phase input voltage: 208/220/230/380/400/415/440/460/480/525/660/690V. Note: this option will affect the overall system size and technical information
⑥	Parallel	Parallel Function	Supports up to 6 ups for reliable parallel operation and shared battery pack mode
⑦	Input Harmonic Filter	Input Harmonic Filter	Input harmonic filter, input power factor up to 0.99
⑧	SNMP Card	SNMP Card	Web page remote monitoring, multiple UPS systems can be centralized monitoring
⑨	Protocols	Protocols	Modbus TCP, Profibus , IEC61850
⑩	Analogue Meters	Analogue Meters	Meter size is 72x72. Standard : output voltage meter, output current meter, output frequency meter. Optional : input voltage meter, input current meter, battery voltage meter, battery current meter.
⑪	Special Enclosure Painting	Special Enclosure Painting	Standard color RAL 7035, other color can be customized.

(The options listed above are non-exhaustive. If other special requirements, please consult us.)

7 inch LCD Touch Screen Introduction



LED Status Indicators

Bypass Input Voltage Data Field

Output Voltage, Current, Power Data Column

Input Voltage, Current Data Column

Battery Information and Internal Temperature Data Bar

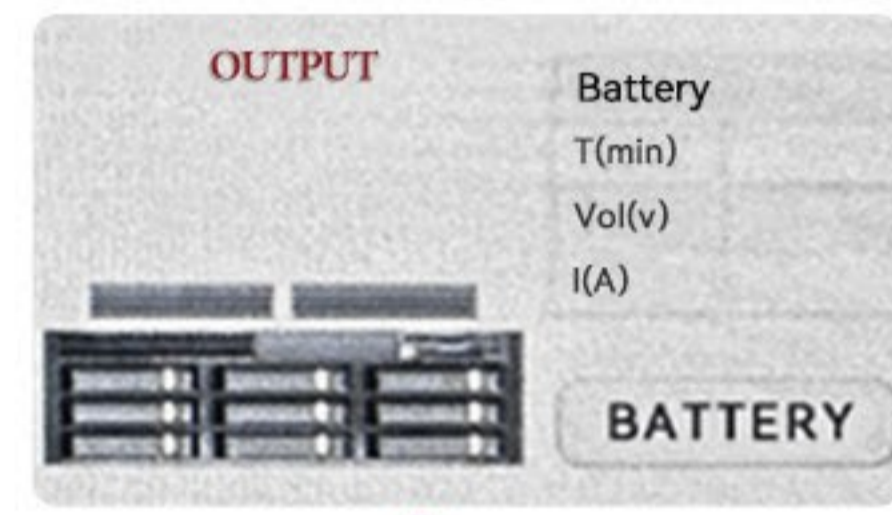
Inverter Switch Button

Battery Test Button

Alarm Switch Button

Benefits:

The button **INVERTER ON** or the button **INVERTER OFF** can easily turn on or off the inverter through the screen. This operation can be easily and fastly to realize the switch between inverter mode and bypass mode.



Estimated Battery Backup Time
 Battery Voltage
 Battery Charge and Discharge Current

Benefits:

Intelligent battery management function that can performance fault self-diagnosis at regular intervals, and automatically display battery capacity and standby time.

Chinese, English, French, Russian +...
 (Other languages can be customized) Optional

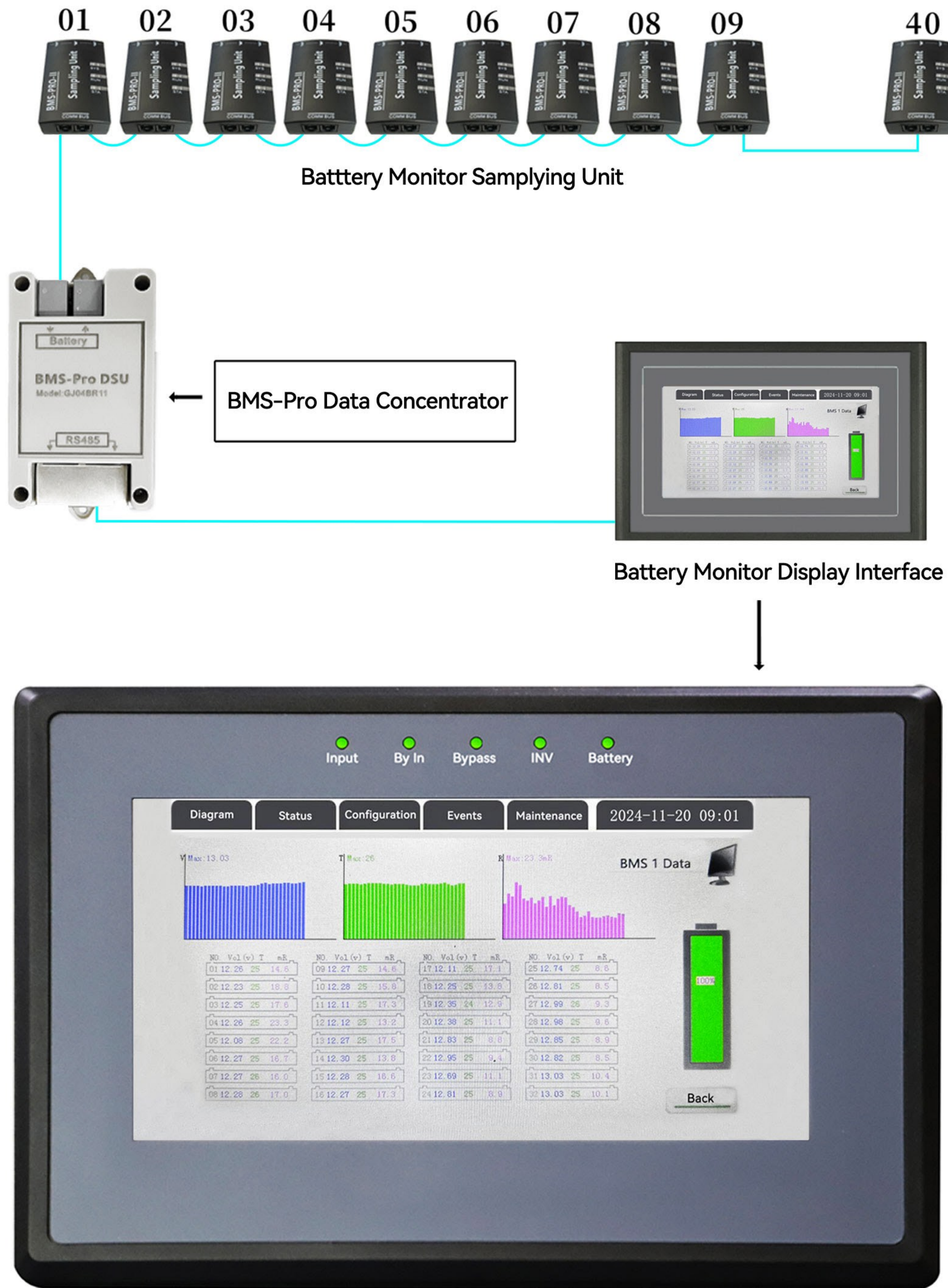
Benefits:

The button **BATT-TEST** can be one-click operation to perform battery testing, to check the battery status and current capacity.

Click the battery test button, the device will try to discharge the battery to run, the test time is 30s, when the battery is abnormal, the battery indicator will change to flashing state.

At the same time, the current status record bar prompts: battery or battery switch is abnormal.

Battery Monitor



Benefits:

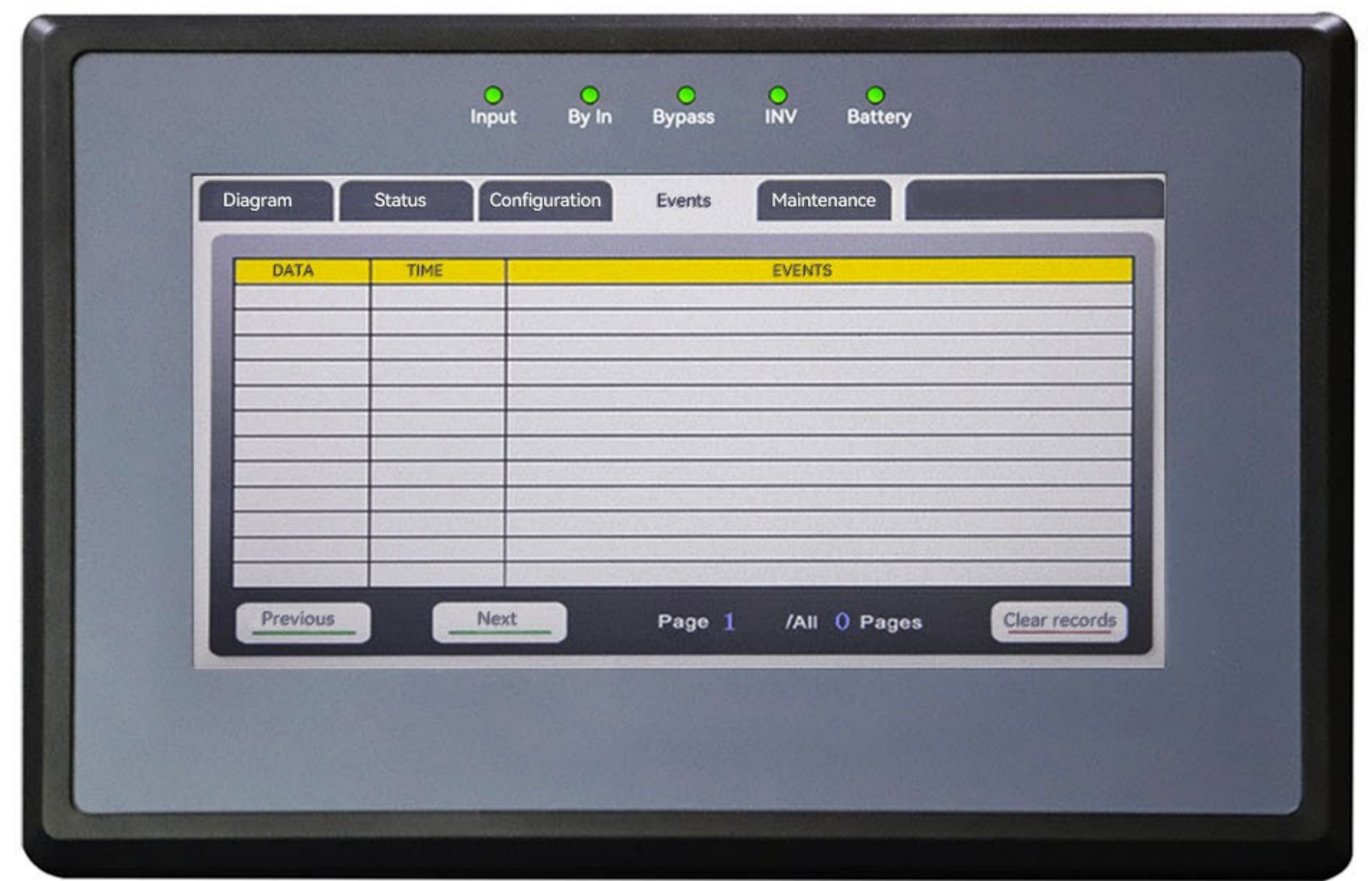
The battery monitor can detect single battery voltage, temperature, internal resistance and display parameters on the 7-inch UPS's LCD. The Maximum monitored battery cell number can reach to 40pcs.

Battery Charge Temperature Compensation Function

With battery monitor or temperature and humidity sensor, UPS can collect batteries's information, by adjusting the charging voltage to implement battery charge temperature compensation.



"Status" interface can displays the real-time operating status of the system, load, bypass, rectifier, inverter, alarm. It can provide more than 100 kinds of alarm, so that the fault can be found quickly.



"Events" interface can provide 256 history records. It can provide rich diagnostic data for the maintenance.

Structure Design Advantage:

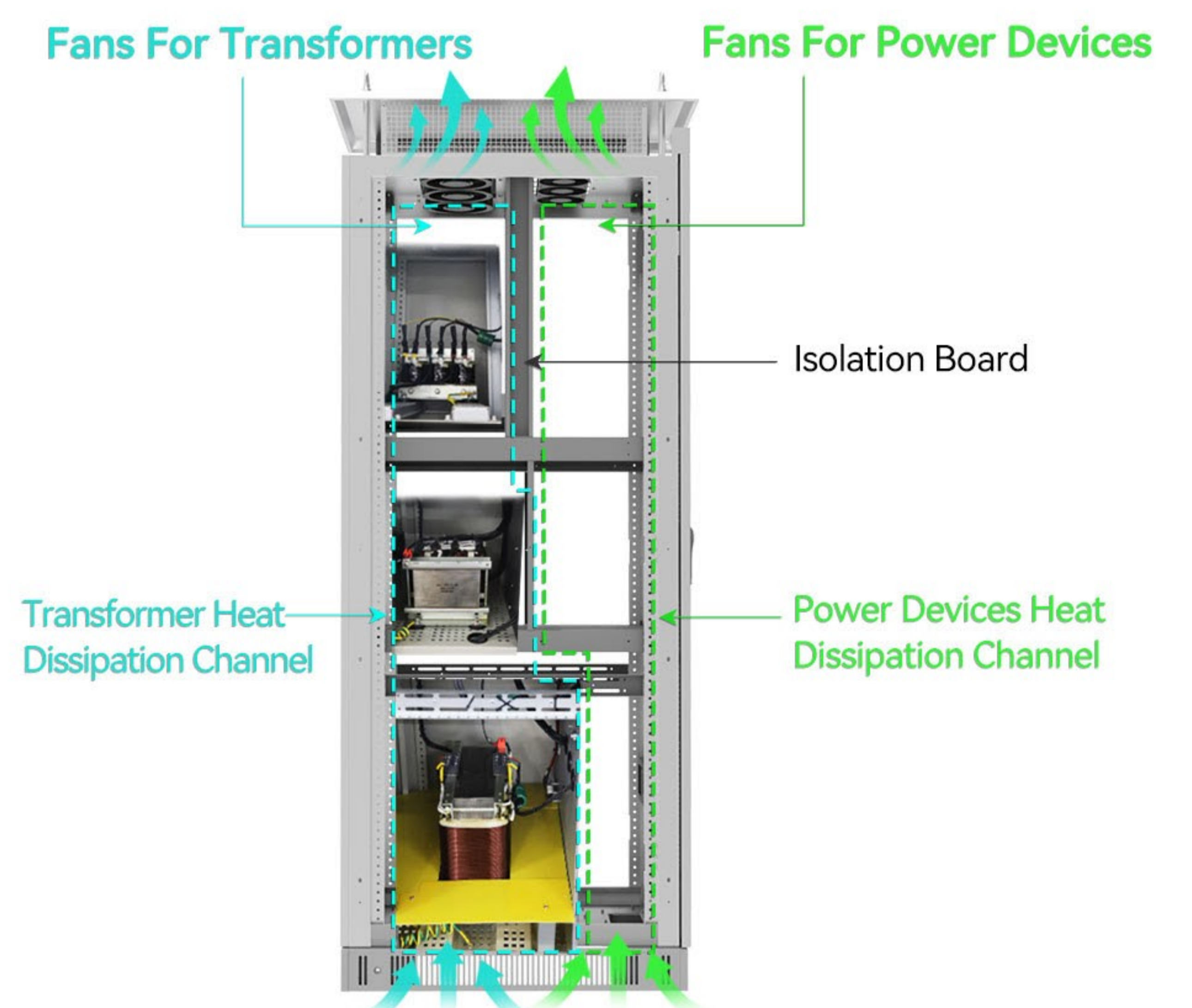
1) 10-80KVA STRUCTURE



2) 100-300KVA STRUCTURE

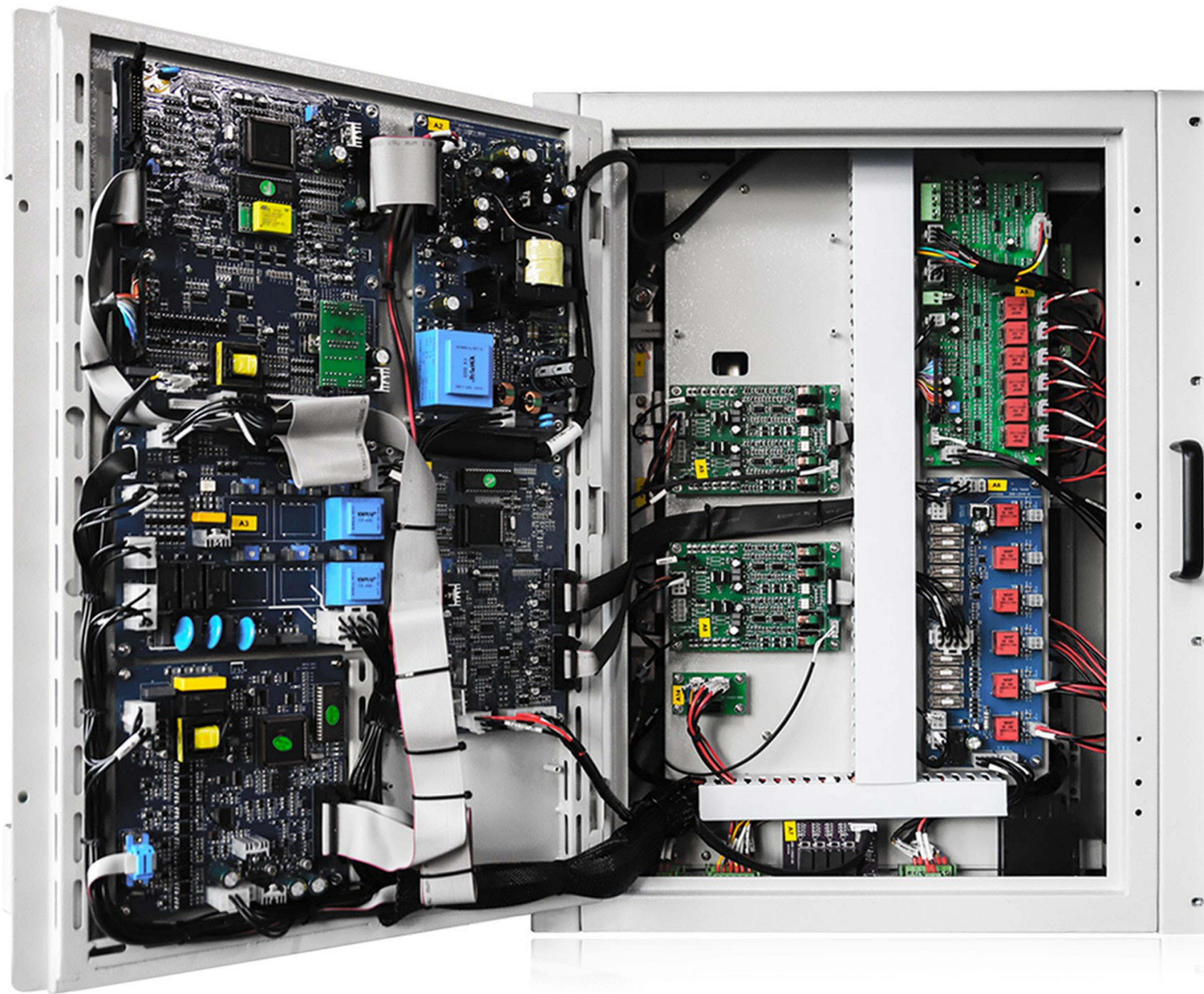


3) HEAT DISSIPATION STRUCTURE



- Front maintenance and top-cooling design, can be installed against a wall, save space.
- Better heat dissipation effec: transformer heat dissipation channel and power device heat dissipation channel are isolated.
- Fan redundancy design and fan faulty intelligent alarm, more safety.
- 10-80KVA adpot modular design is easy installing, disassembling, quick fault diagnosis and easy replacement.

Power Module Structure



Power Module CNIR310/330

Consist of the power module

A1	System control (SYS)
A2	Auxiliary power supply (SPS)
A3	Signal interface board (SENSING)
A4	Inverter control board (INV)
A5	IGBT drive-1
A6	IGBT drive-2
A7	Rectifier control board (REC1)
A8	Rectifier control board (REC2)
A9	Static switch driver board (STS)
A10	Adapter board
A11	Dry contact board (DRY)

IP20/IP30 Electricity Special Industrial UPS (10-100KVA)

Compatible with DC Power System

Power Module (CNDR)



Main UPS Structure:

- | | |
|--|--------------------------|
| Input Isolation Transformer ⑩
(it is behind the power distribution panel) | Output Voltmeter ① |
| Battery Switch ⑪ | Output Ammeter ② |
| Input Switch ⑫ | Output Frequency Meter ③ |
| Bypass Switch ⑬ | Input Indicator ④ |
| Output Switch ⑭ | Output Indicator ⑤ |
| Maintenance Switch ⑮ | Power Module ⑥ |
| SPD ⑯ | Cooling Fan ⑦ |
| Input / Output Terminal Block ⑰ | Output Transformer ⑧ |
| | Shunt Reactor ⑨ |



10KVA

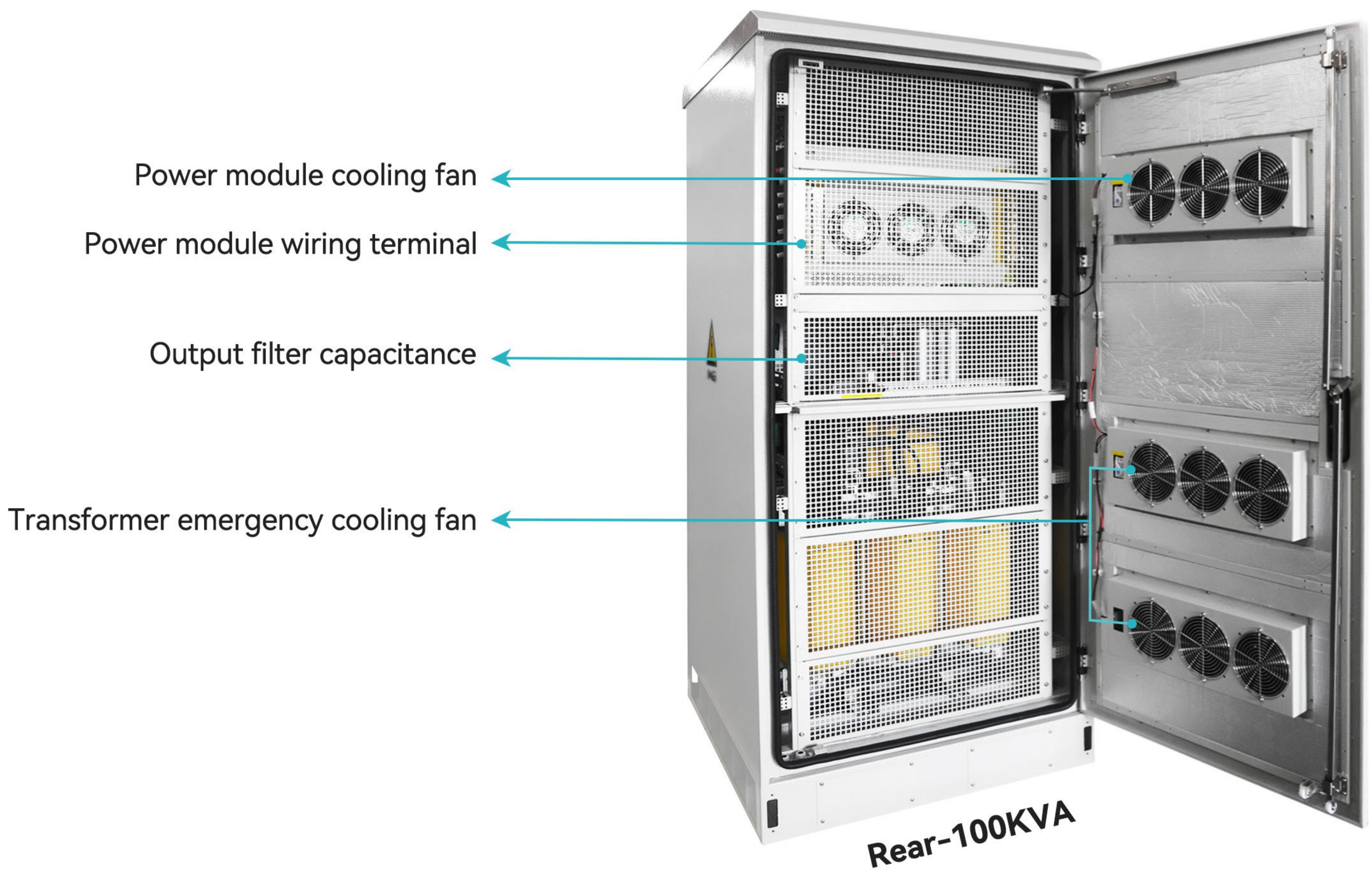
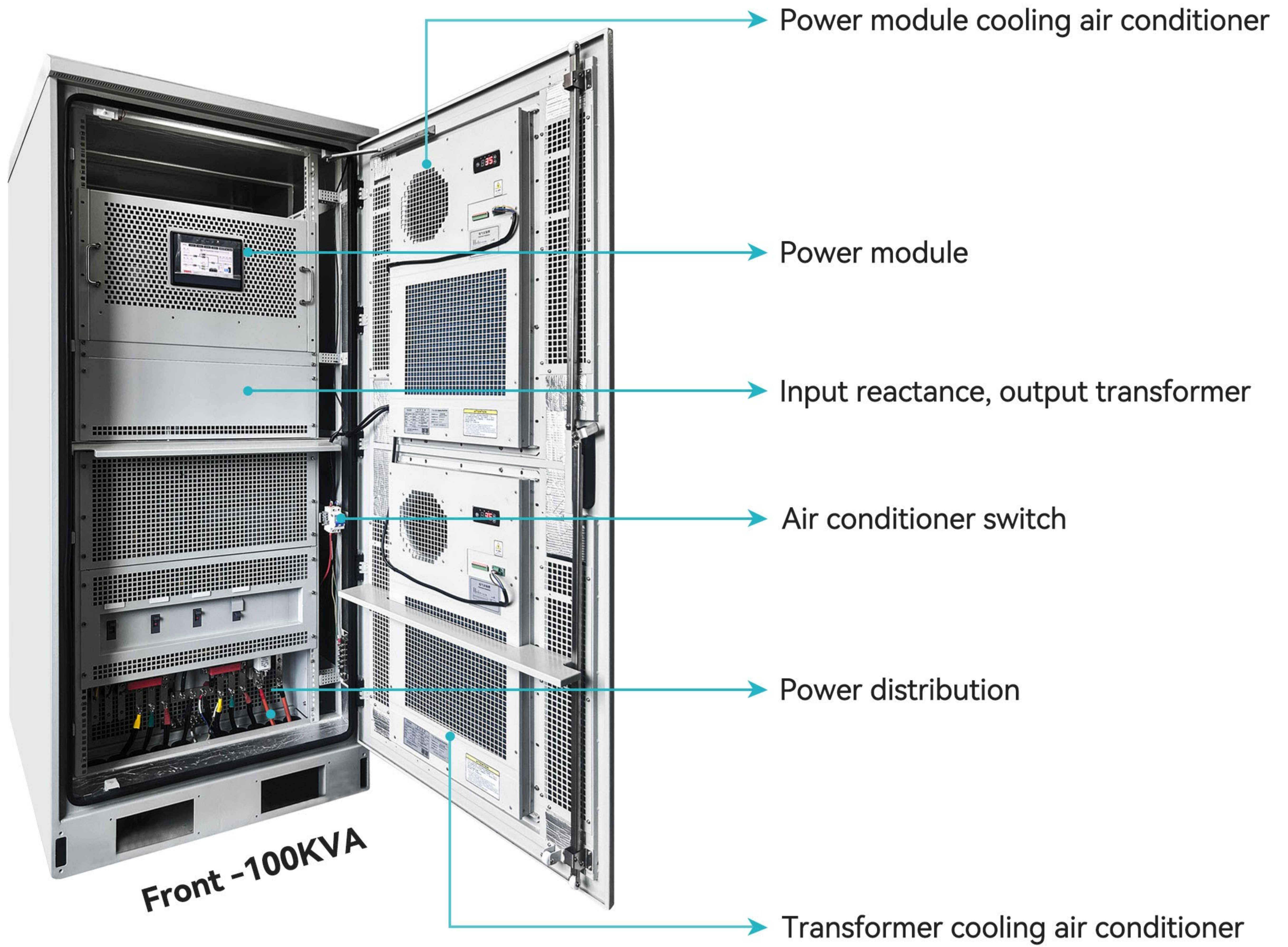


100KVA

Bypass Cabinet Structure

- | | |
|---------------------------|--------------------------------|
| ① Feeder Voltmeter | ⑨ Bypass Output Switch |
| ② Feeder Ammeter | ⑩ Feeder Loop |
| ③ Feeder Frequency Meter | ⑪ Feeder Loop |
| ④ Bypass Input Voltmeter | ⑫ Feeder Loop |
| ⑤ Bypass Output Voltmeter | ⑬ Bypass Voltage Regulator |
| ⑥ Input Indicator Light | ⑭ Feeder Master Switch |
| ⑦ Output Indicator Light | ⑮ Bypass Isolation Transformer |
| ⑧ Bypass Input Switch | |

IP55/IP56 Outdoor Industrial UPS (10-100KVA)



Application



Application





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