Megapower 3-Level HPM3300E-RT Rack/Tower Series

KSTAR *Product Presentation*

CREXEL SRL

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KSTAR 科士达

Megapower HPM3300E-RT Rack/Tower series

Centralized Parallel Modular Online UPS System

CREXEL SRL

Pantone Black C; RAL9005

2U 10kVA/15kVA/20kVA/30kVA
3U 40kVA/50kVA

10kVA/15kVA/20kVA/30kVA 2U

40kVA/50kVA 3U

Mission critical & industrial applications

- Servers, Computer Rooms
- Communication System
- Processing Control Equipment,
- Security Systems, etc.

Main Features

- High Reliability
- Low Cost of Ownership
- Efficient Service Concept
- Space-saving and Simple to Service
- Mains-friendly with Low Input Harmonics and Advanced PFC
- Technical Specifications

High Reliability

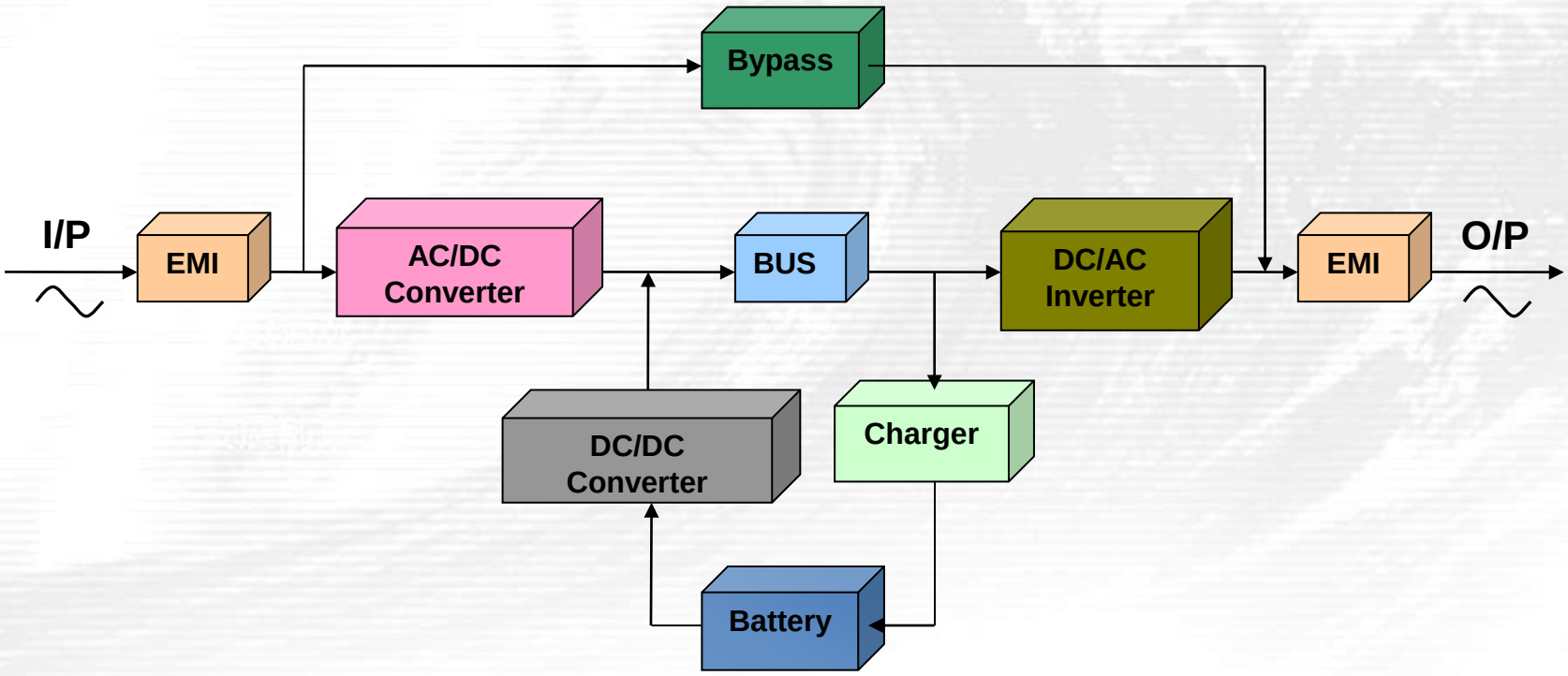
- ✓ True Online Double Conversion with 3-level Inverter Topology
- ✓ Redundancy Fans
- ✓ Conformal Coating on PCB Enables to work in harsh environment
- ✓ N+X Parallel Redundancy
- ✓ Extended Backup Time Availability

High Reliability

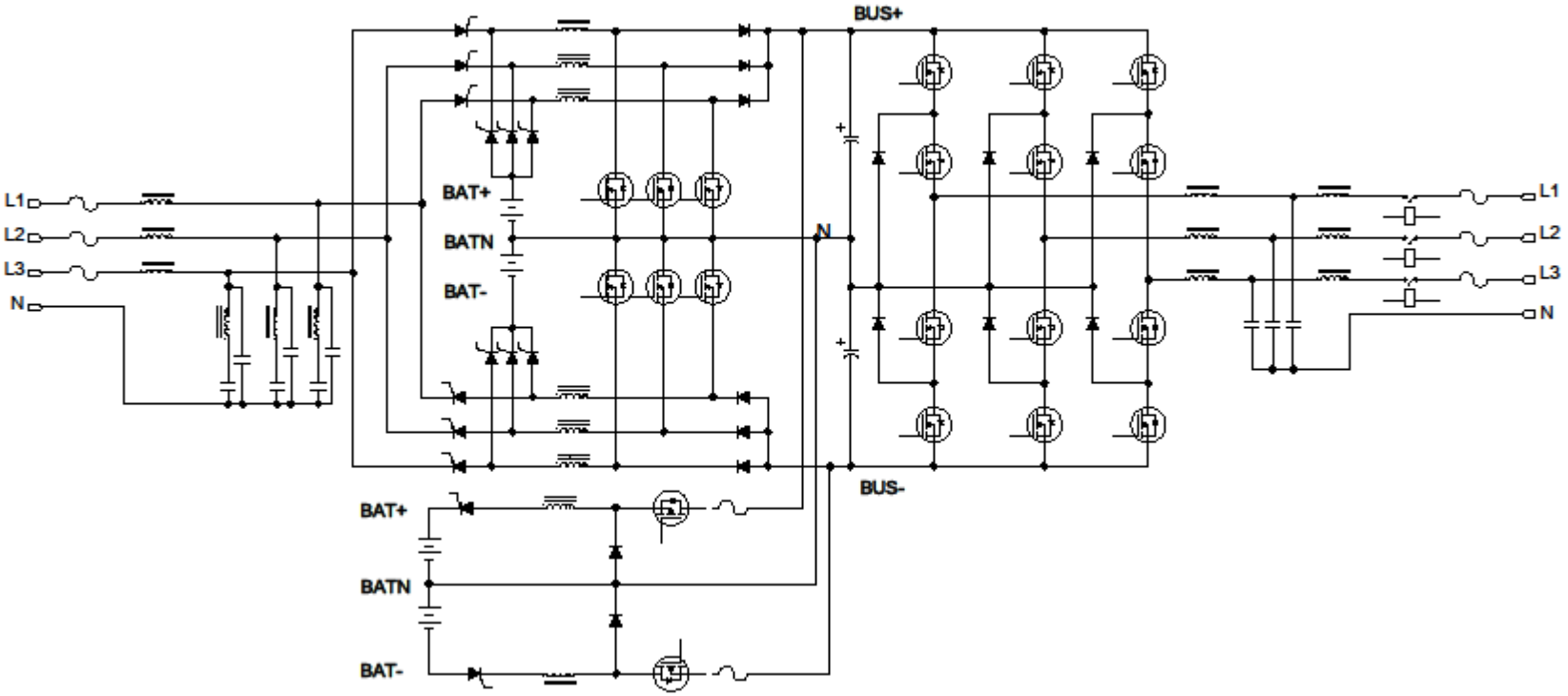
- ✓ Powerful Power Module May provide >30% Charging Capacity
- ✓ 3-level Intelligent Charging Modes

True Online Double Conversion

Single Line Diagram

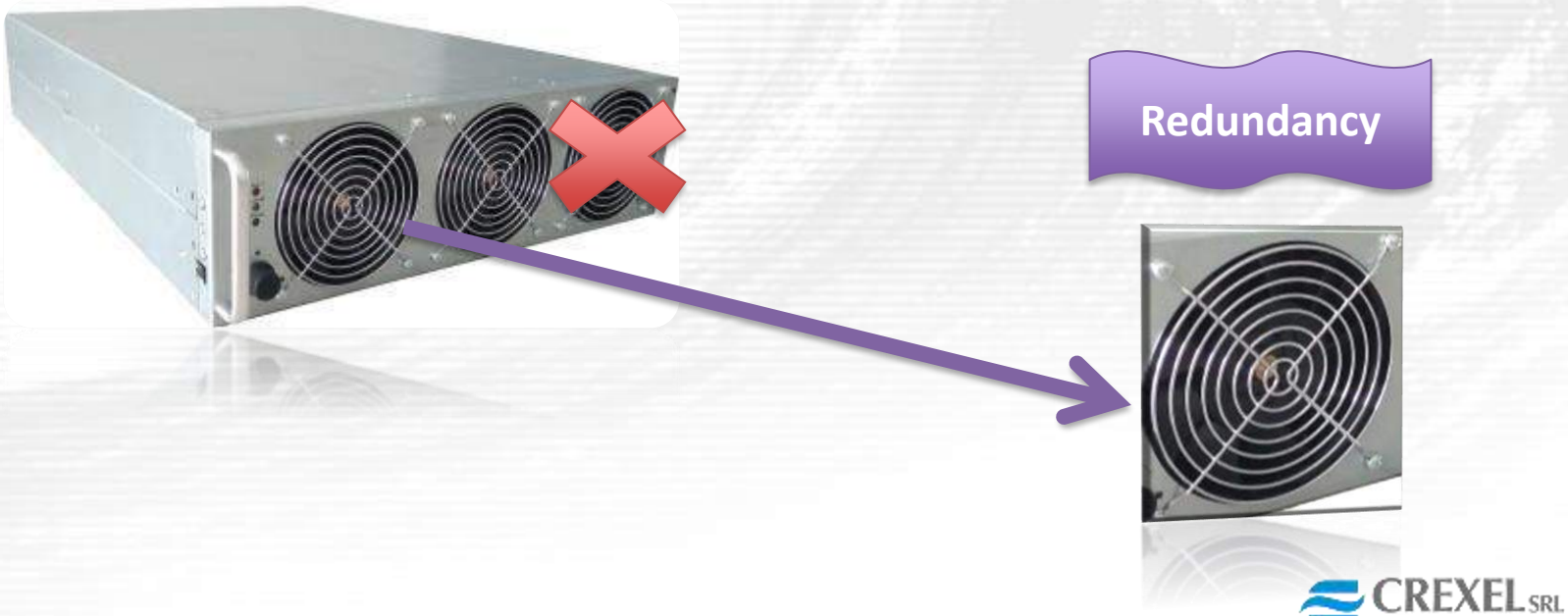


3-level Inverter Topology



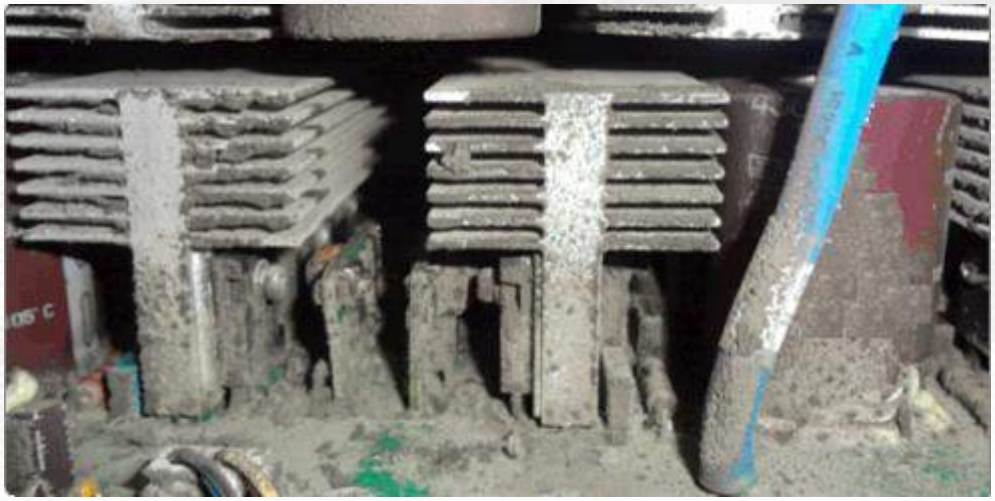
Redundancy Fan

- ✓ Avoid Single Point of Failure
- ✓ Support 50% load if one fan is in failure; support 30% load if two fans are in failure



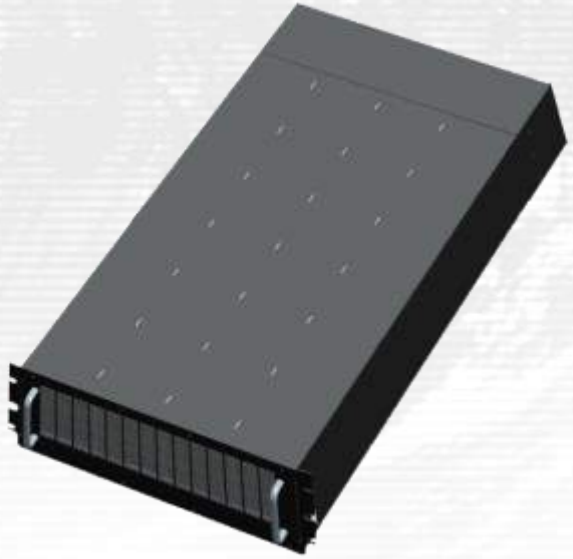
Conformal Coating on PCB Enables to work in harsh environment

- ✓ Can Work under dust, salty & Misty Environment
- ✓ No derating at 40 C



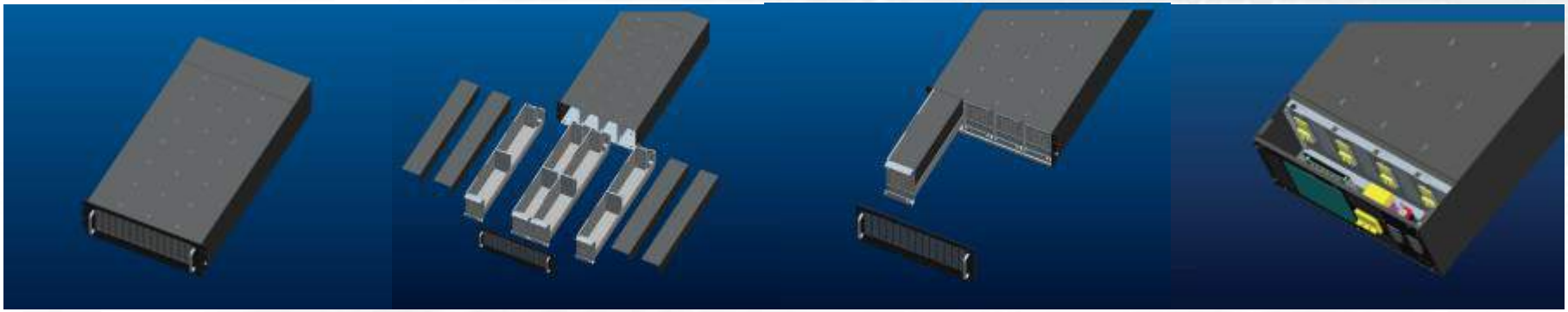
N+X Parallel Redundancy

- ✓ Up to 4 UPS can be in Parallel
- ✓ More than 1 UPS can be in redundancy



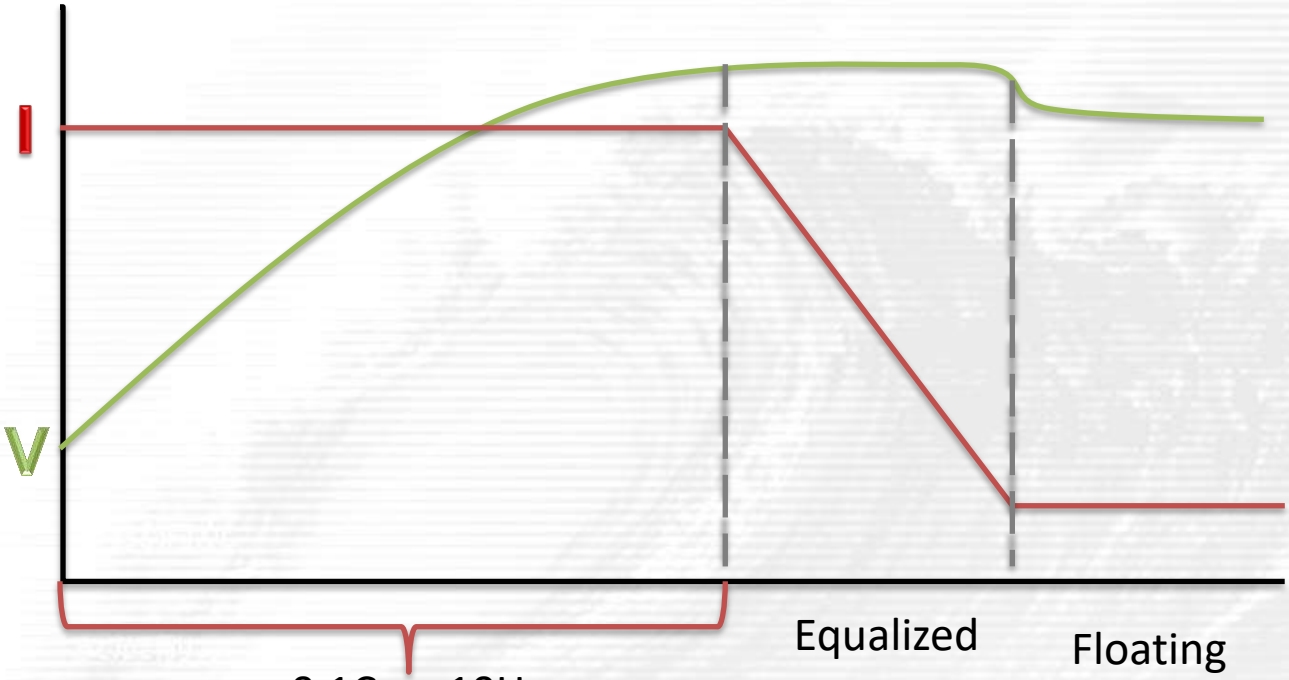
Extended Backup Time Availability

- ✓ Powerful Charger 18A for 10kVA~30kVA and 20A for 40kVA/50kVA.
- ✓ Matching Battery Cabinet for long backup



HPM-BR40009 Battery Pack

3-level Intelligent Charging Modes



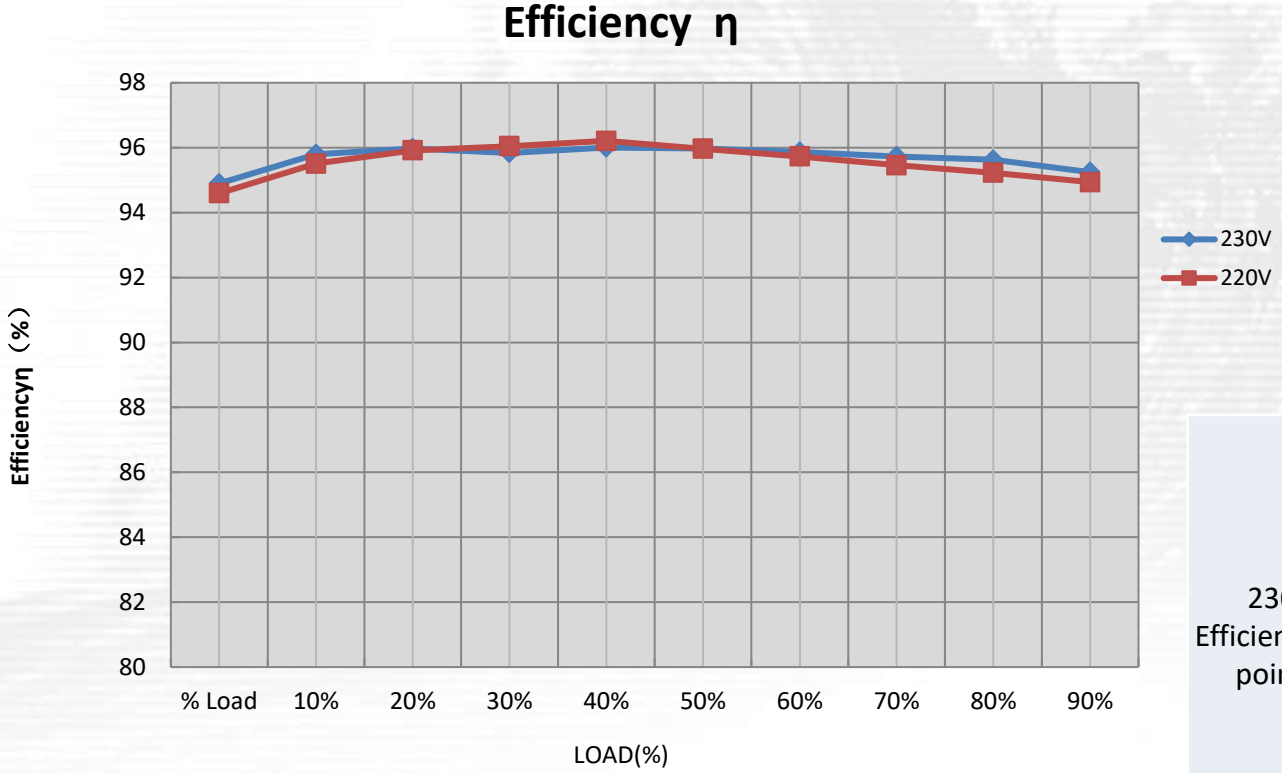
(Boost Charge 2.30V to 2.35V per cell &Float Charge 2.20V to 2.29V per cell)

Low Cost of Ownership

- ✓ Up to 95.5% system efficiency
- ✓ Up to >=99% efficiency in Eco-mode
- ✓ Rated Output Power Factor 1.0
- ✓ Near-unity Power factor at partial and full loads
- ✓ Wide Input Voltage/Frequency Range
- ✓ Superior Overload Capability
- ✓ Back feed Protection
- ✓ De-rating Operation Available
- ✓ Adjustable Battery Voltage(30 ~50 blocks)
- ✓ Common Battery
- ✓ Dual Input Feed
- ✓ Frequency Converter Mode Is Selectable

Up to 95.5% system efficiency

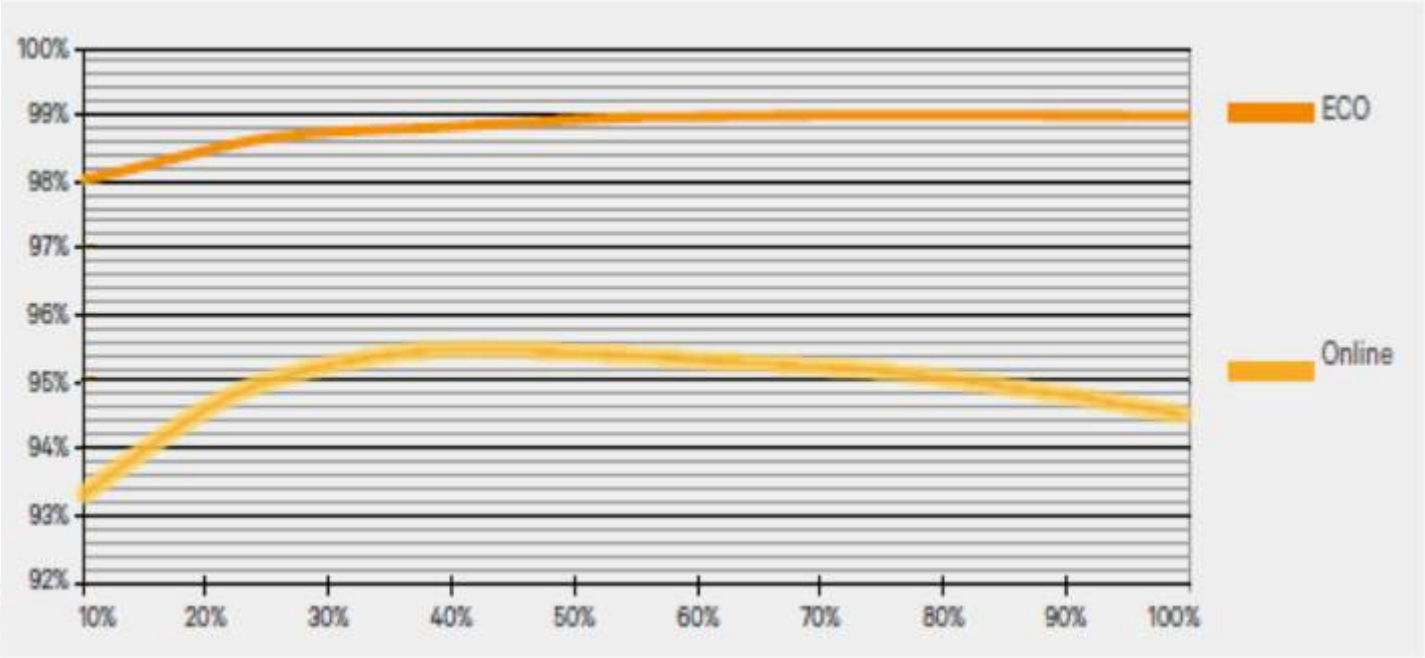
- ✓ Efficiency 94.6% from **10%** load
- ✓ Flat Efficiency Curve for a Wide Range of Load



	% Load	230V
230V Efficiency (10 points)	10%	94.90
	20%	95.80
	30%	95.98
	40%	95.84
	50%	96.01
	60%	95.98
	70%	95.87
	80%	95.73
	90%	95.63
	100%	95.25

Up to >=99% efficiency in Eco-mode

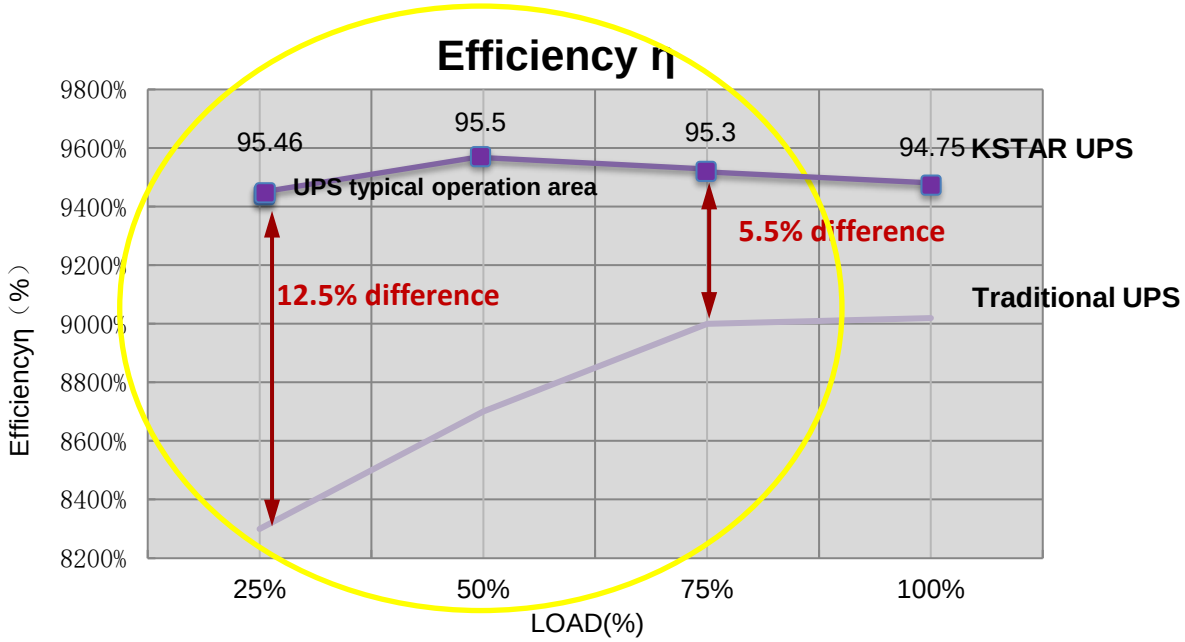
- ✓ Suitable for good grid area
- ✓ Transfer time back to online mode: <5ms



High Efficiency of Up to 95.5% at Low Load

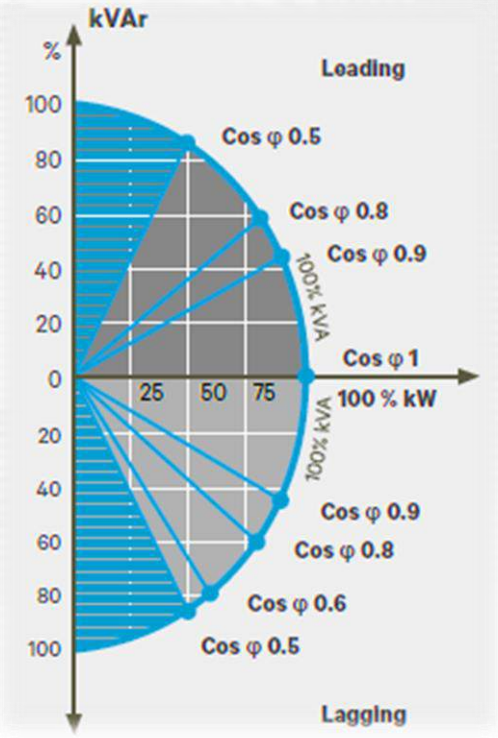
High and Constant Efficiency

- √ Traditional UPS operates at efficiency below 85% when in parallel configuration (10% to 50% system load rate)
- √ KSTAR UPS achieves 95.3%efficiency at 75% load rate
- √ KSTAR UPS achieves 95.5% at 50% load rate
- √ KSTAR UPS achieves 95.46% efficiency at 25% above load rate



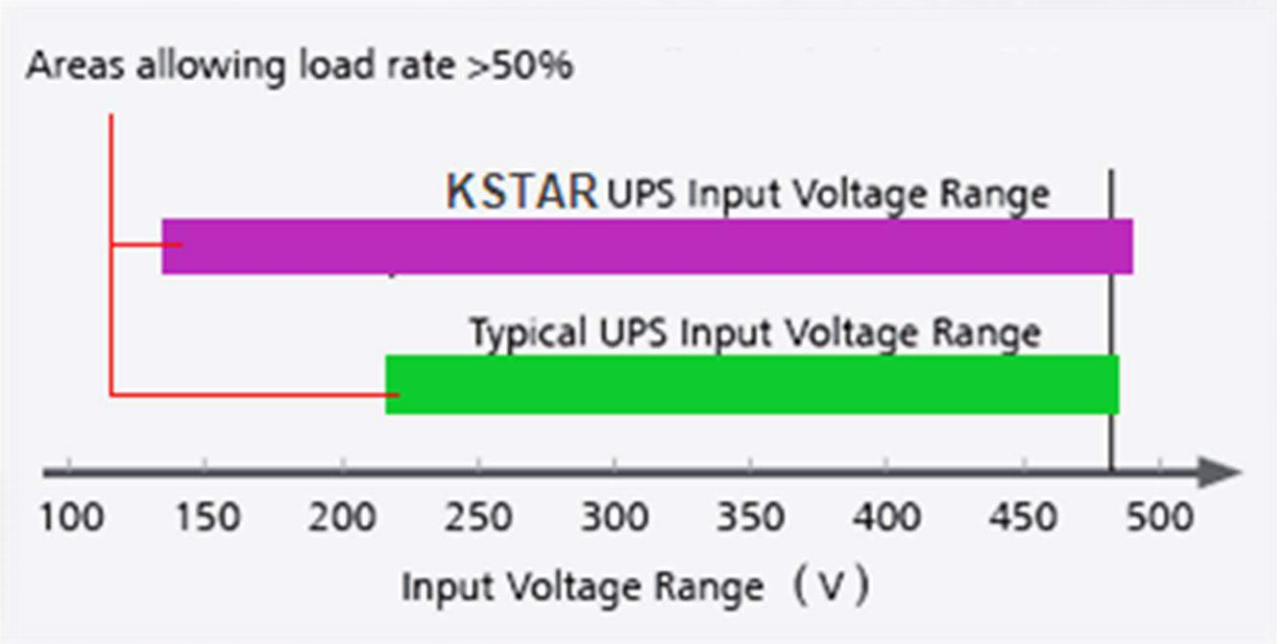
Rated Output Power Factor 1.0

- ✓ Supply loads from 0.5 leading to 0.5 lagging without de-rating
- ✓ Can connect 25% more than traditional UPS



Wide Input Voltage/Frequency Range

- ✓ Voltage Window: 138V~485V
- ✓ Frequency Window: 40~70Hz
- ✓ 6KV/5KA Lightning Protection



Superior Overload Capability

- ✓ Inverter: 110% for 60 min., 125% for 10min., 150% for 1 min., >=1000% for 100ms
- ✓ Bypass: 135% continuously; >=1000% for 100ms

Back feed Protection

- ✓ To drive the bypass breaker when Backfeed alarm

Instruction:

UPS	Instruction
Pin1/PIN2	Normally NO
Pin3/PIN4	Normally NC

For 10kVA/15kVA/20kVA/ 25kVA/30kVA

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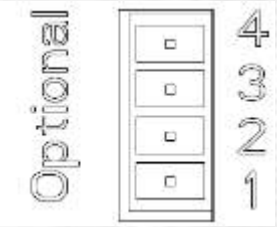
Coupler Dry Contact Port for Backfeed or Battery Voltage Low Protection

- ✓ To drive the bypass breaker when backfeed alarm
- ✓ To drive the battery breaker when battery voltage Low

Definition of Male port：



Instruction:
Relay Dry Contact Port 5A/277Vac

UPS	Instruction
Pin1	Normally NC
Pin2	Normally NO
Pin3	/
Pin4	Common

For 40kVA/50kVA

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De-rating Operation Available

- ✓ Temperature: Normal operation at 0~40 C & 12% per 5 C (max. 50 C)

- ✓ Altitude:

Altitude（m）	1500	2000	2500	3000	3500	4000	4500	5000
Load coefficient	100%	95%	90%	85%	80%	75%	70%	65%

Adjustable Battery Voltage(30 ~50blocks)

- ✓ Flexible Battery voltage, No need to over-size the batteries
- ✓ No Interruption might occur when few blocks of the batteries connected to the same string are broken

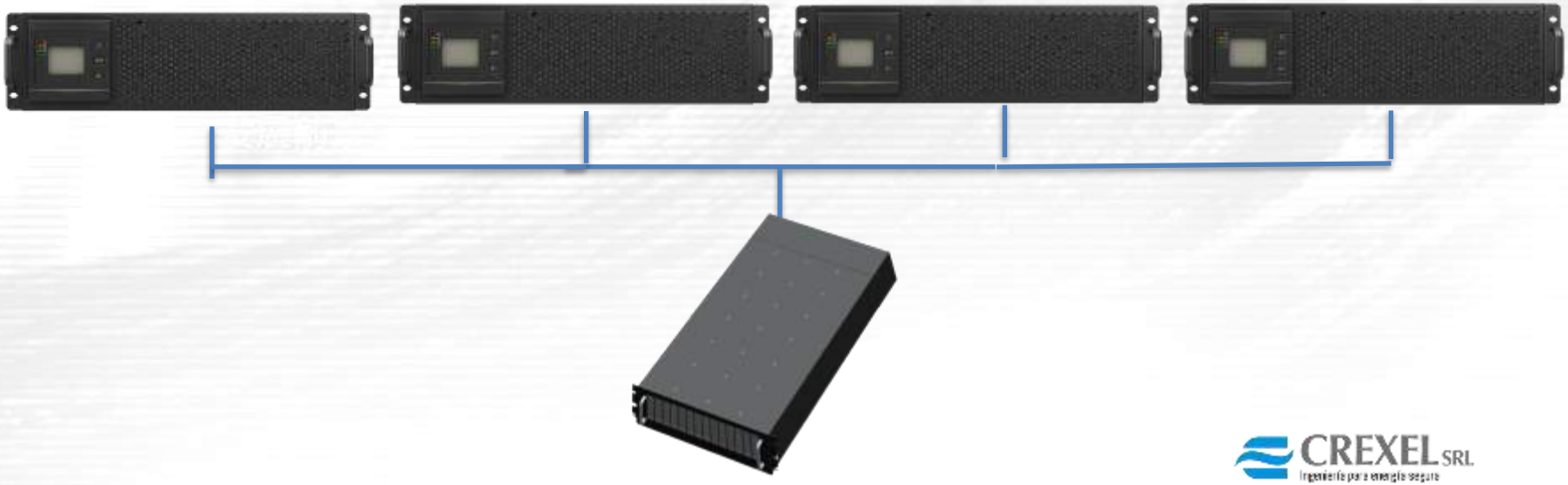
- 30 blocks: 0.8PF
- 32-34 blocks: 0.9PF
- 36-50 blocks: 1.0PF

Battery Voltage v.s. Output Power Factor

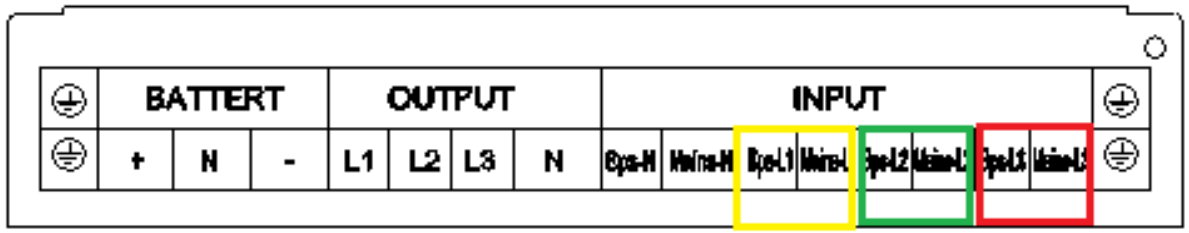
	30 Blocks	32-34 Blocks	36~50 Blocks
Power Factor	0.8 PF	0.9 PF	1.0 PF

Common Battery

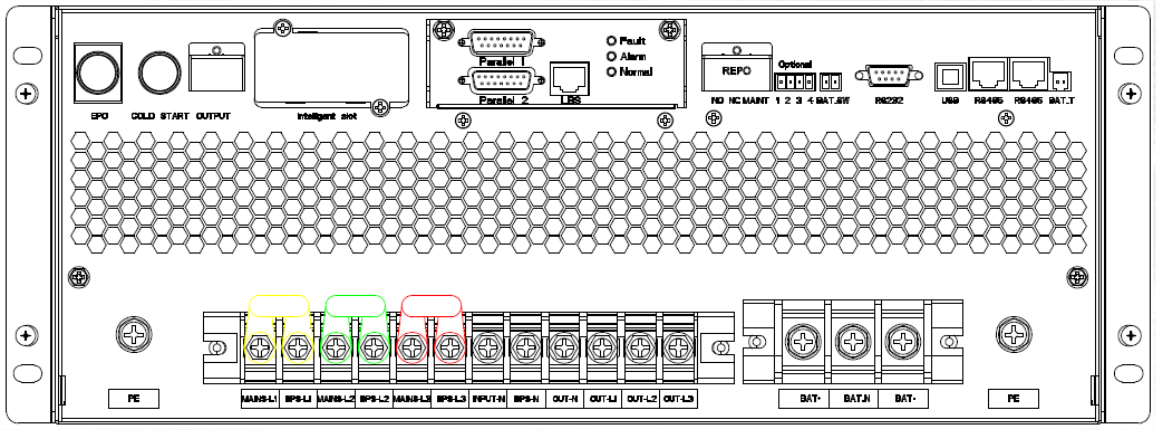
- ✓ Flexible battery configuration 30~50 blocks
- ✓ All UPS in Parallel Share One Battery String
- ✓ Big Saving for Battery Management Investment
- ✓ Maximize cost Effectiveness
- ✓ Minimize Floor Space



Dual Input Feed



10kVA/15kVA/20kVA/25kVA/30kVA



40kVA/50kVA

Frequency Converter Mode

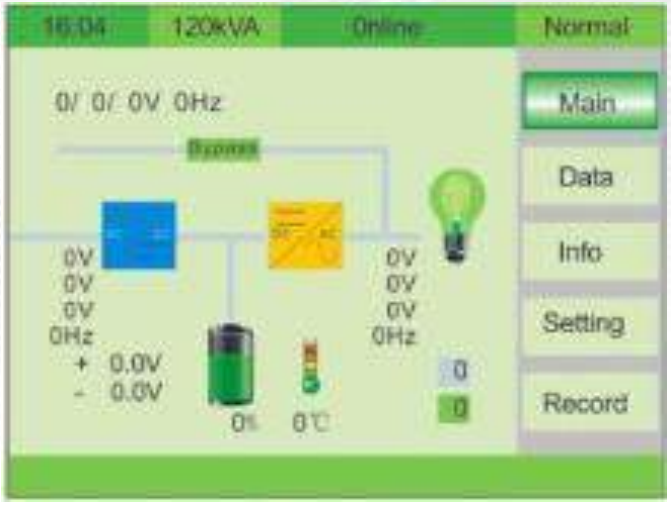
- ✓ Optional Frequency Converter Mode Supported
- ✓ Set by Muser 5000 Setting Software

Efficient Service Concept

- ✓ Easy Swappable Module with Condition
- ✓ Fan Replacement from Front
- ✓ User-friendly LCD
- ✓ Superior MTBF & MTTR
- ✓ Remote Monitoring and Connectivity Options
- ✓ Maintenance Bypass Box

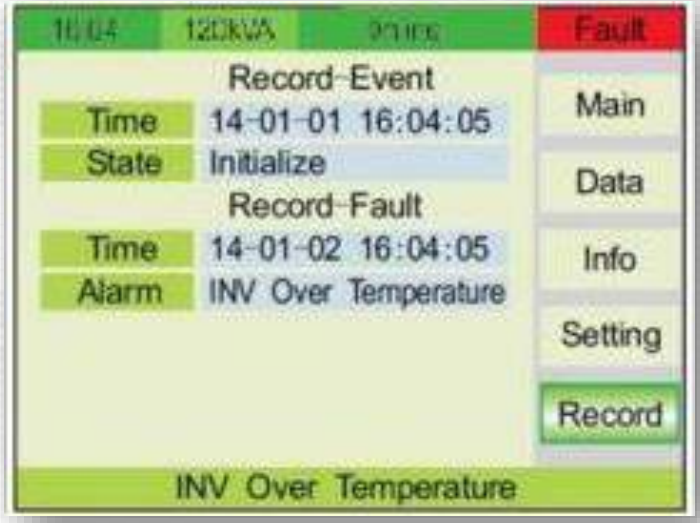
User-friendly LCD

- ✓ Thin film transistor(TFT) LCD
- ✓ Supports Multi-languages
- ✓ Real-time Meter Readings of System Currents, Voltages, Active and Reactive Power
- ✓ Status Reports and History Files
- ✓ System Power Flow On-line Diagram



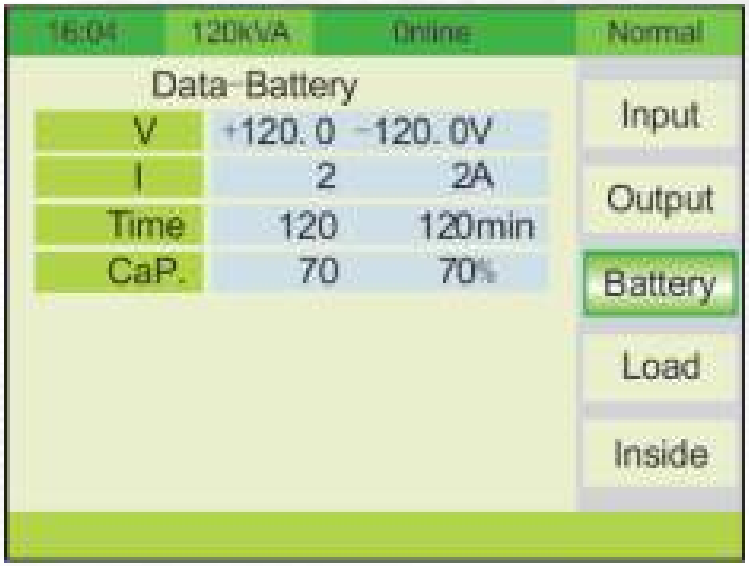
Event log Shown On the Display

- ✓ 1000~10,000 Event Can be Recorded
- ✓ Event Log can be exported
- ✓ First-in First-out Principle



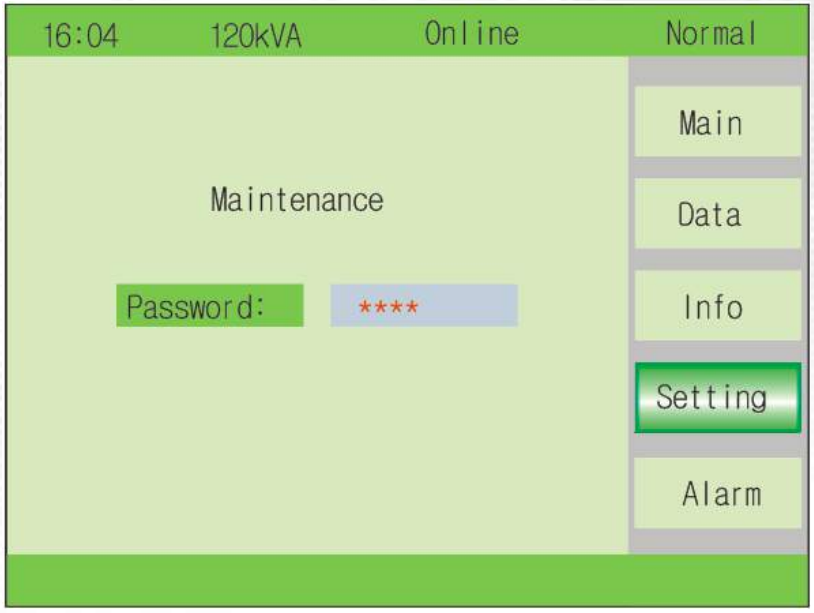
User-friendly LCD

Remaining Backup Time on LCD



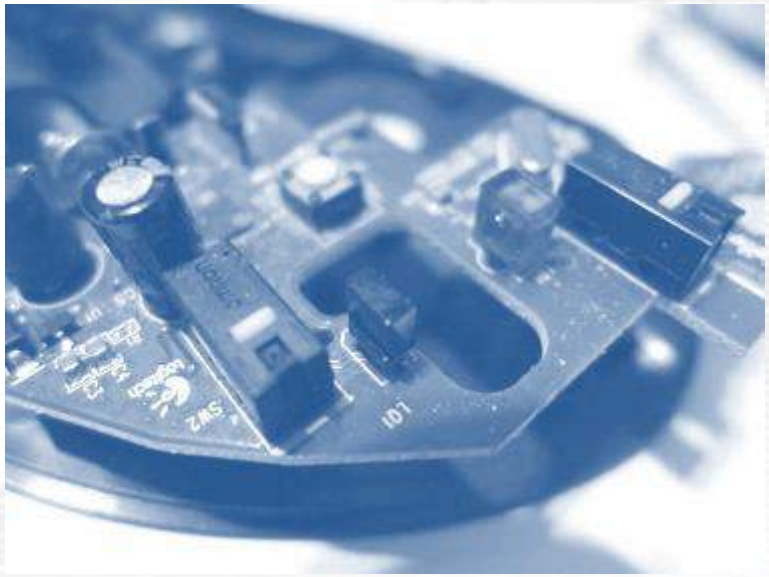
User-friendly LCD

- ✓ Can be disable or enable by password
- ✓ Maintenance due date can be set from 3months to 240months

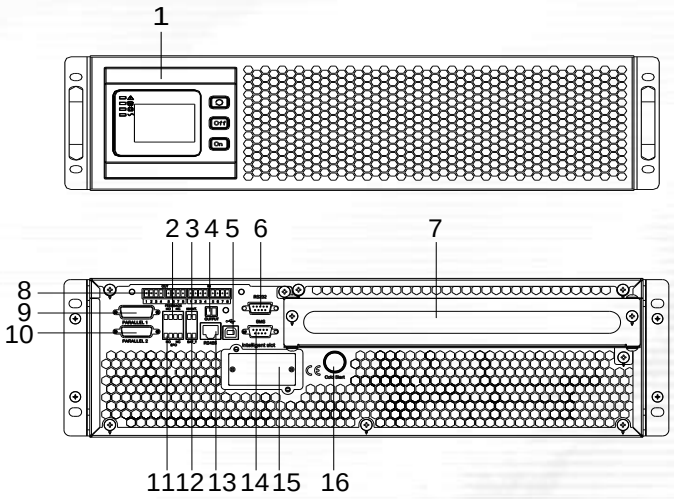


Superior MTBF & MTTR

- ✓ MTBF: 100,000 hours
- ✓ MTTR: <30 Min.

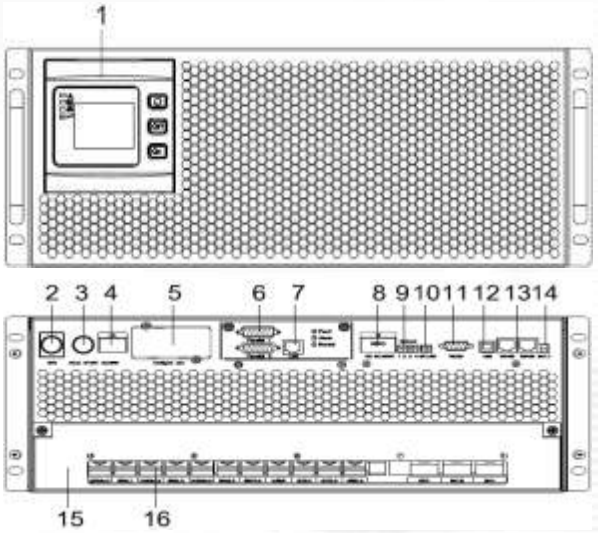


Front/Rear Panel for 10kVA~30kVA



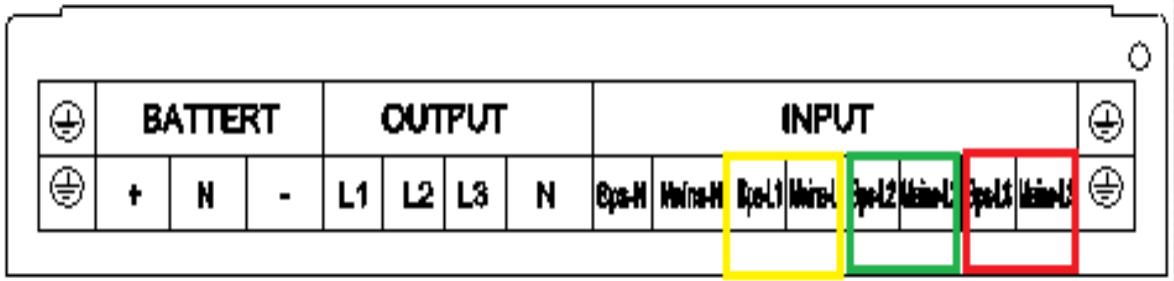
(1) LCD panel	(2)Backfeed protection port
(3)MAINTAIN-AUXSWS port	(4) Output breaker aux contactor
(5)USB port	(6) RS232 port
(7) Terminal block for Input, output & battery	(8) Dry contact port
(9)Parallel port 1	(10) Parallel port 2
(11) EPO port	(12) Temperature sensor port (for NTC)
(13) RS485 port	(14) BMS port (optional)
(15) Intelligent Slot (SNMP card)	(16) Cold-start button

Front/Rear Panel for 40kVA~50kVA

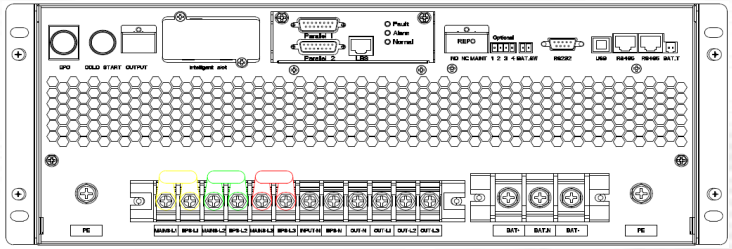


(1) LCD panel	(2) EPO port
(3) Cold-start button	(4) Output breaker aux contactor
(5) Intelligent Slot (SNMP card/ Relay card)	(6) Parallel port 1&2
(7) LBS port	(8) MAINTAIN-AUXSWS port and REPO port
(9) Optional port (Port for backfeed protection, or for battery breaker driver to prevent battery over-drain after UPS shuts down)	(10) BAT_SW : detect battery switch status
(11) RS232	(12) USB port
(13) RS485 port	(14) Temperature sensor port (for NTC)
(15) Terminal cover	(16) Terminal

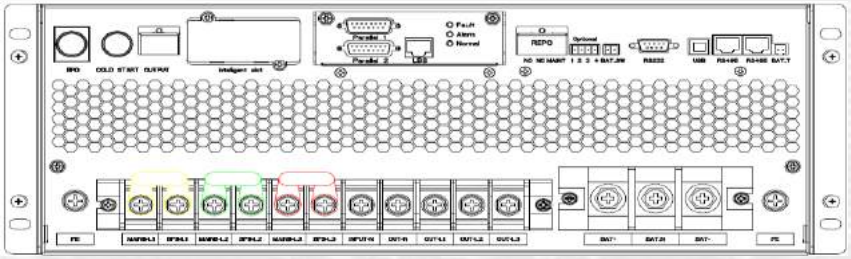
Terminal Block for 10kVA~30kVA



Terminal Block for 40K/50K



40kVA



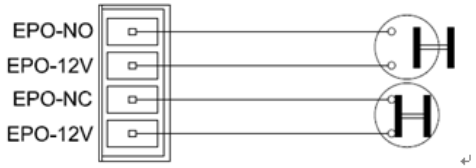
50kVA

INPUT Primary input Line	OUTPUT
	Vout-L1: Output Phase L1
Vin-L1: Primary input Phase L1	Vout -L2: Output Phase L2
Vin-L2: Primary input Phase L2	Vout -L3: Output Phase L3
Vin-L3: Primary input Phase L3	Vout -N: Output Neutral
Vin-N: Input Neutral for primary and secondary input	PE: Grounding
	BAT+: Positive terminal of the batteries string
	BATN: Neutral terminal of the batteries string
	BAT-: Negative terminal of the batteries string

EPO & Remote EPO

✓ Support Normal Open & Normal Close

Connection diagram：

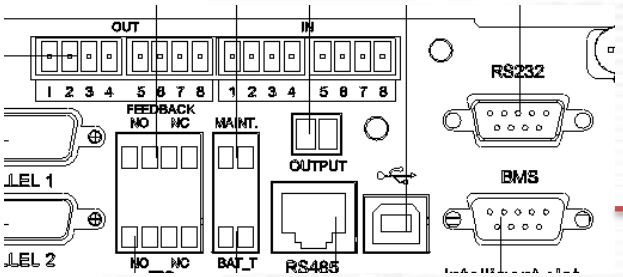


Connection between the button and UPS REPO port.

Button	UPS REPO	Description
Pin 1	Pin 1	EPO-NO
Pin 2	Pin 2	EPO-12V
Pin 1	Pin 3	EPO-NC
Pin 2	Pin 4	EPO-12V

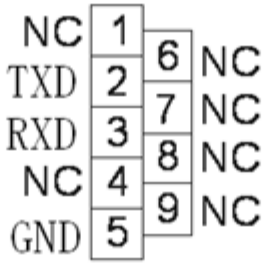
◆A remote emergency stop switch can be installed in a remote location and connection through simple wires to the REPO connector.

RS232/USB/RS485 Port/Dry Contact Port



RS232 Port

Definition of Male port:



Connection between PC RS232 port and UPS RS232 port

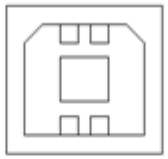
PC RS232 port	UPS RS232 port	
Pin 2	Pin 2	UPS send,PC receive
Pin 3	Pin 3	PC send,UPS receive
Pin 5	Pin 5	ground

CAUTION!

USB and RS232 interface cannot be used at the same time.

USB Port

Definition of port:



Connection between PC USB port and UPS USB port.

PC USB port	UPS USB port	Description
Pin 1	Pin 1	PC : +5V
Pin 2	Pin 2	PC : DPLUS signal
Pin 3	Pin 3	PC :DMINUS signal
Pin 4	Pin 4	Signal ground

CAUTION!

USB and RS232 interface cannot be used at the same time.

RS485 Port

Definition of port:

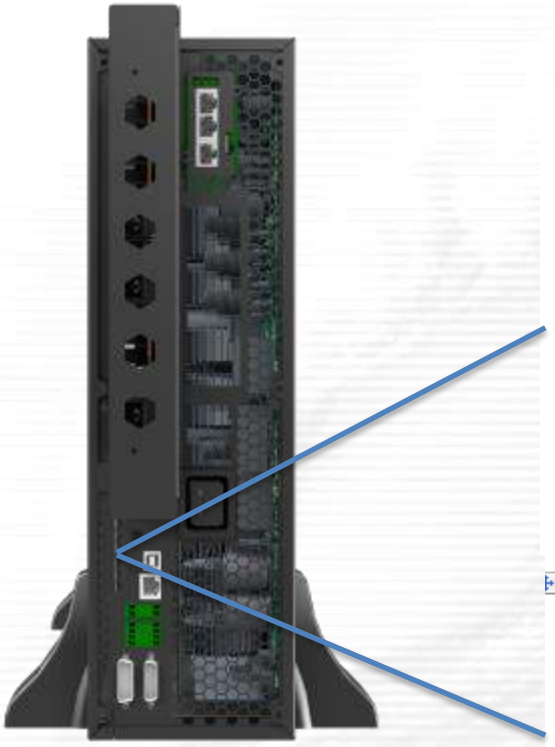
Connection between the Device's RS485 port and UPS RS485 port.

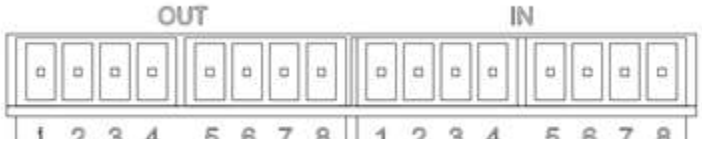
	device(RJ45)	UPS(RJ45)	Description
10-30kVA	Pin 1	Pin 1	485+ "A"
	Pin 2	Pin 2	485 -"B"
	Pin 7	Pin 7	12V
	Pin 8	Pin 8	GND
40-50kVA	Pin 1/5	Pin 1/5	485+ "A"
	Pin 2/4	Pin 2/4	485 -"B"
	Pin 7	Pin 7	12V
	Pin 8	Pin 8	GND

CAUTION!

RS485 port pin7 is 12Vdc!

Dry Contact Port for 10kVA~30kVA





Input Dry Contact Interface

Port	Name	Function
IN-1	Input_contact_1	Input dry contact signal port, function can slect on LCD
IN-2	GND	Input dry contact signal GND
IN-3	Input_contact_2	Input dry contact signal port, function can slect on LCD
IN-4	GND	Input dry contact signal GND
IN-5	Input_contact_3	Input dry contact signal port, function can slect on LCD
IN-6	GND	Input dry contact signal GND
IN-7	Input_contact_4	Input dry contact signal port, function can slect on LCD
IN-8	GND	Input dry contact signal GND

Output Dry Contact Interface

Port	Name	Function
OUT-1	Output_1_RLY	Output_1 dry contact port NC pin
OUT-2	Output_1_RLY_C	Output_1 dry contact port common pin
OU -3	Output_2_RLY	Output_2 dry contact port NC pin
OUT-4	Output_2_RLY_C	Output_2 dry contact port common pin
OUT-5	Output_3_RLY	Output_3 dry contact port NC pin
OUT-6	Output_3_RLY_C	Output_3 dry contact port common pin
OUT-7	Output_4_RLY	Output_4 dry contact port NC pin
OUT-8	Output_4_RLY_C	Output4 dry contact port common pin

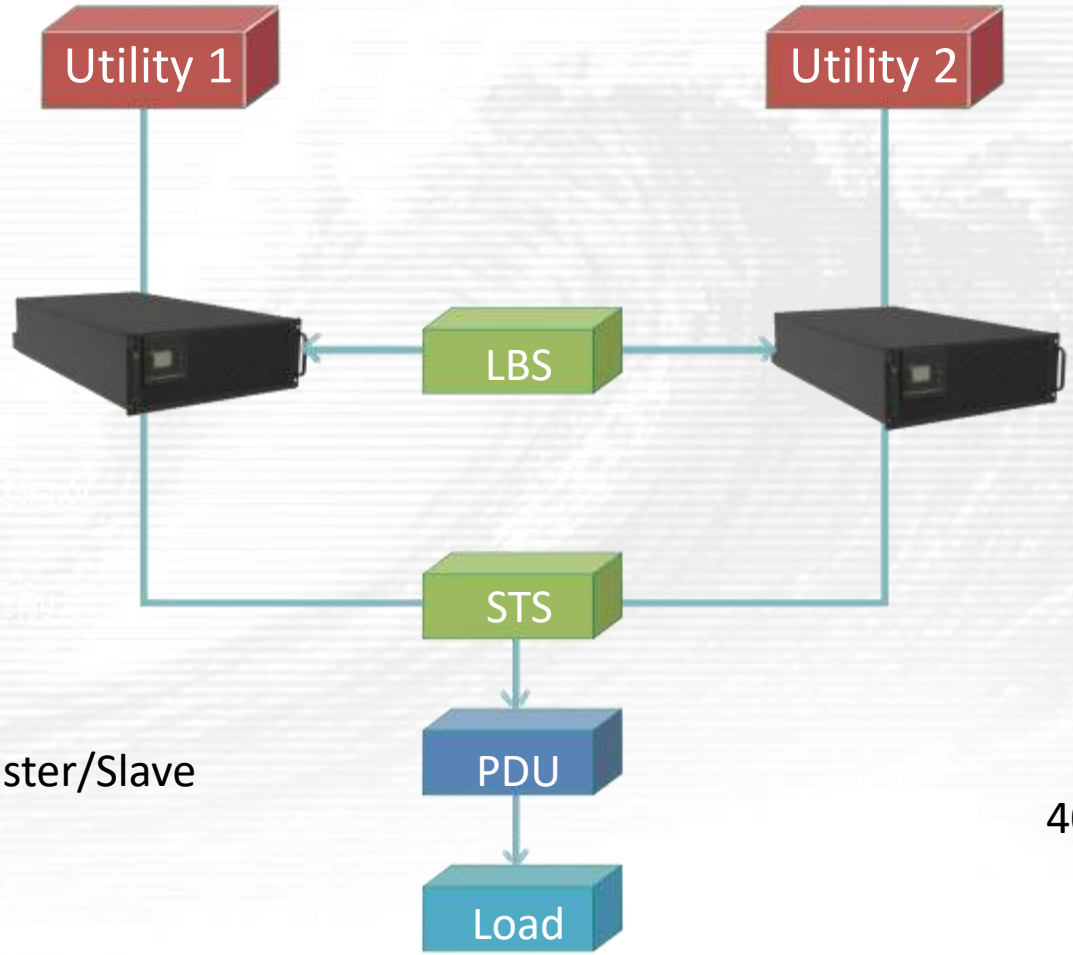
Temperature Compensation Sensor

Temperature sensor port

Load Bus Synchronization

For 40kVA/50kVA only

Load Bus Synchronization



- ✓ Set Master/Slave

40kVA/50kVA only

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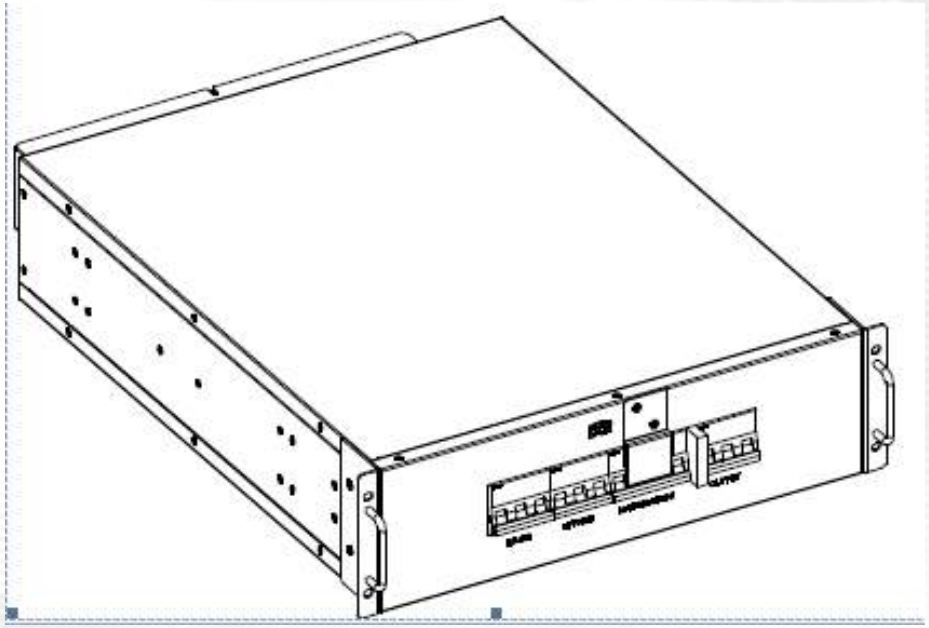
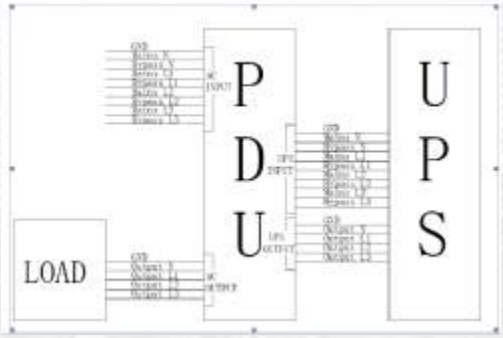
Dry Contact Relay Card

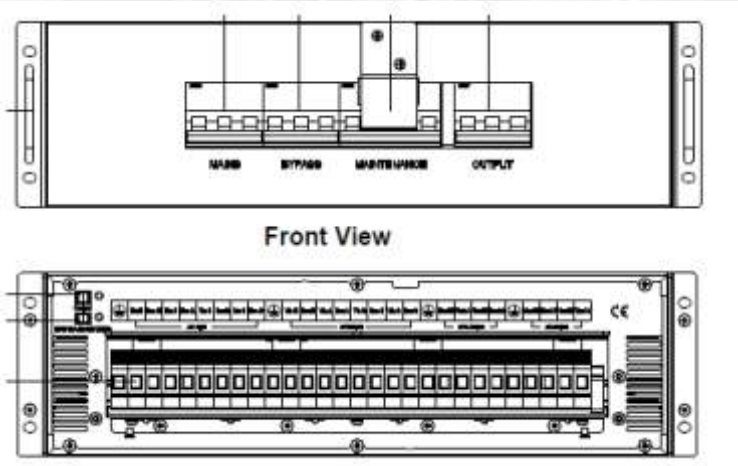
Pin-out	Function description	Input/Output
1	UPS Failure	Output
2	Summary Alarm	Output
3	GND	
4	Remote Shutdown	Input
5	Common	
6	Bypass	Output
7	Battery Low	Output
8	UPS ON	Output
9	Utility Failure	Output

SNMP Communication Card & Environment Feeler

Maintenance Bypass Box



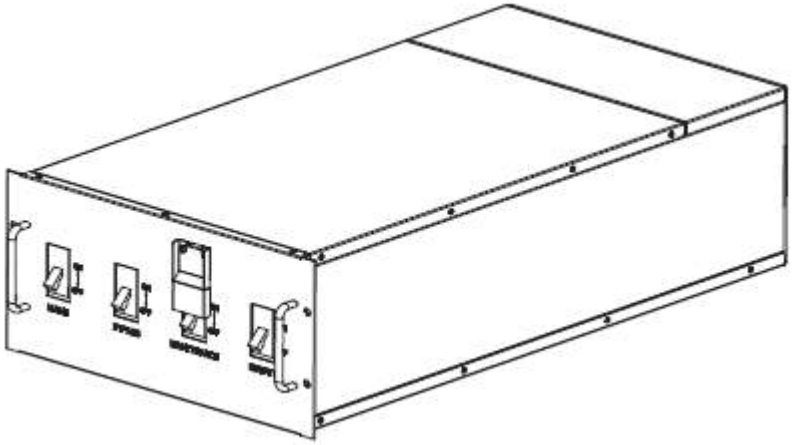


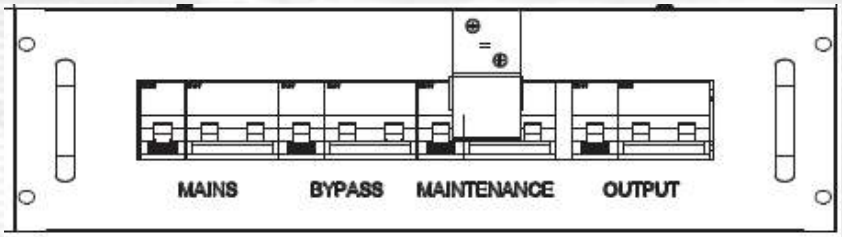


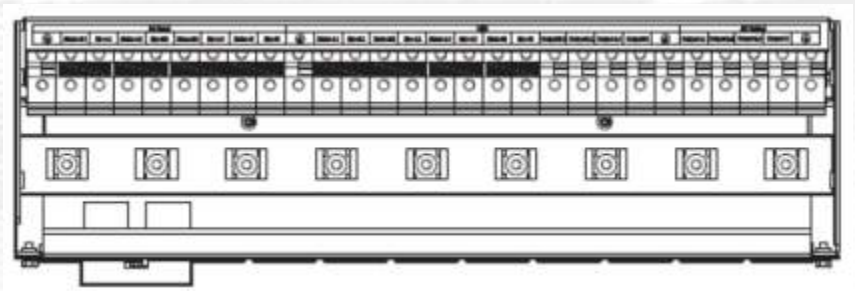
Front View

For 10kVA~30kVA

Maintenance Bypass Box







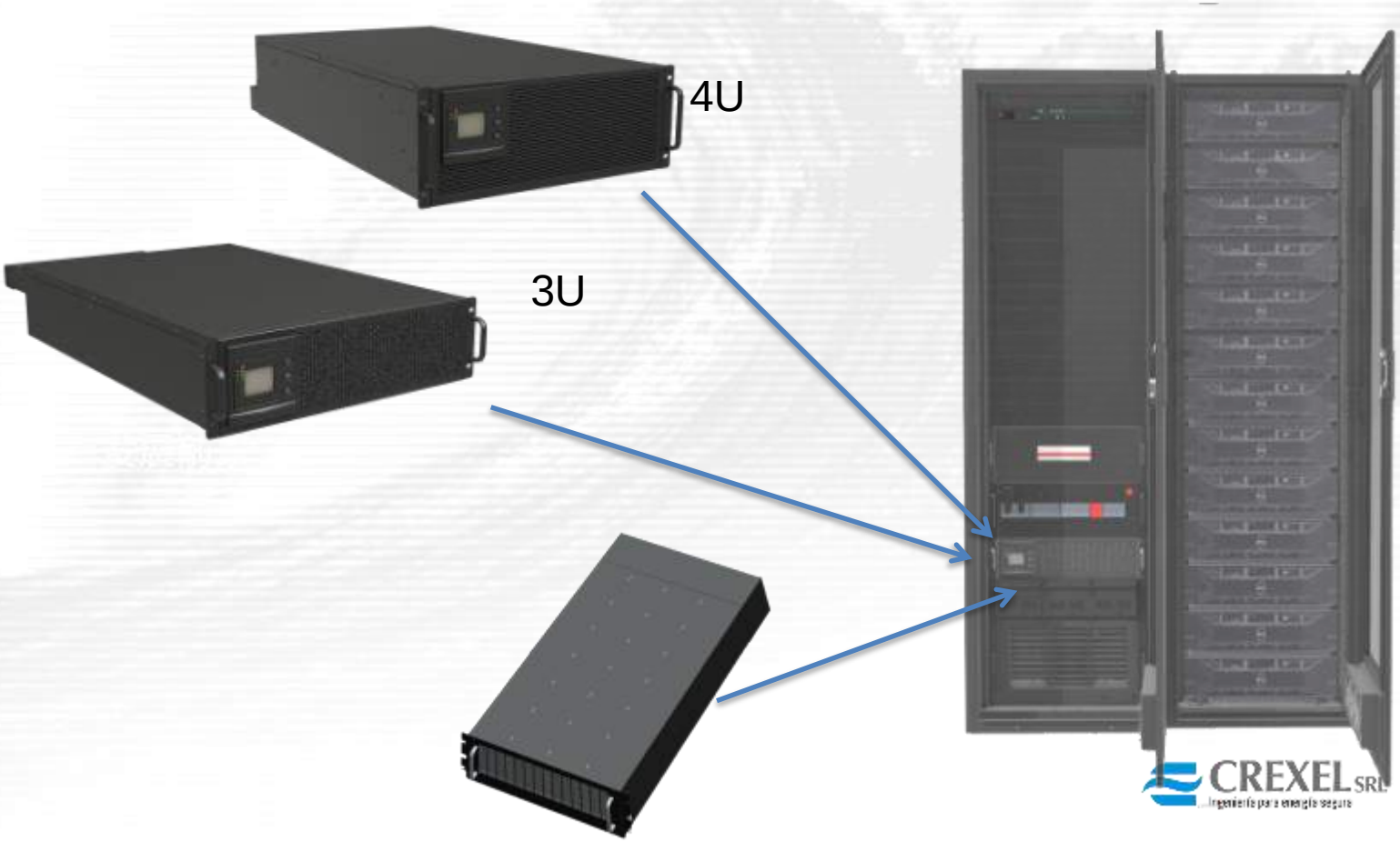
For 40kVA/50kVA

Space-saving and Simple to Service

- ✓ Very Compact Only 2U for 30kVA and 3U for 50kVA
- ✓ Communication Software
- ✓ HP Tools to Export Event Log Data
- ✓ Periodically Automatic Battery Test

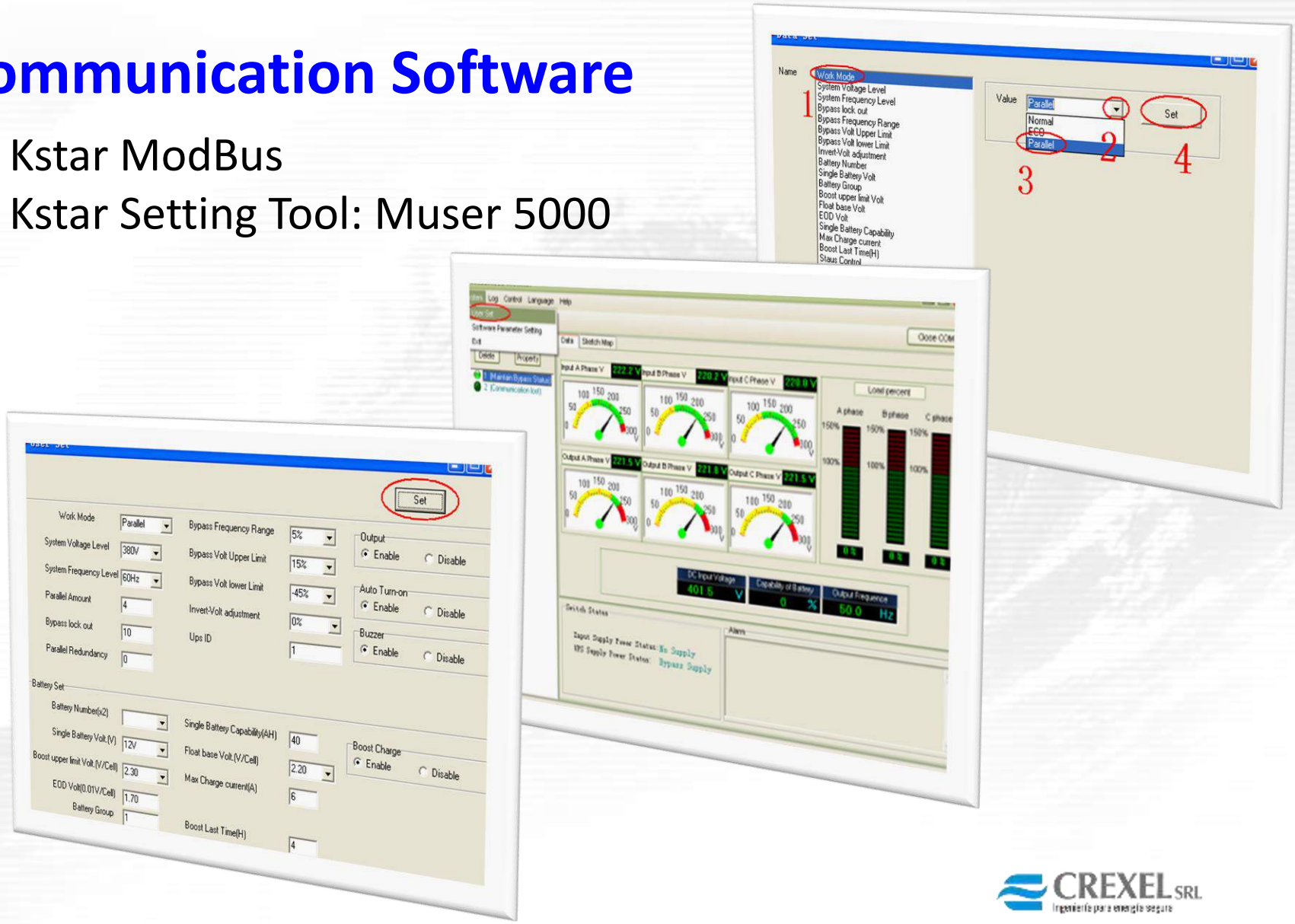
Very Compact

- ✓ 3U for 10kVA~30kVA & 4U for 40kVA~50kVA
- ✓ Optimize PUE(Power Usage Effectiveness)



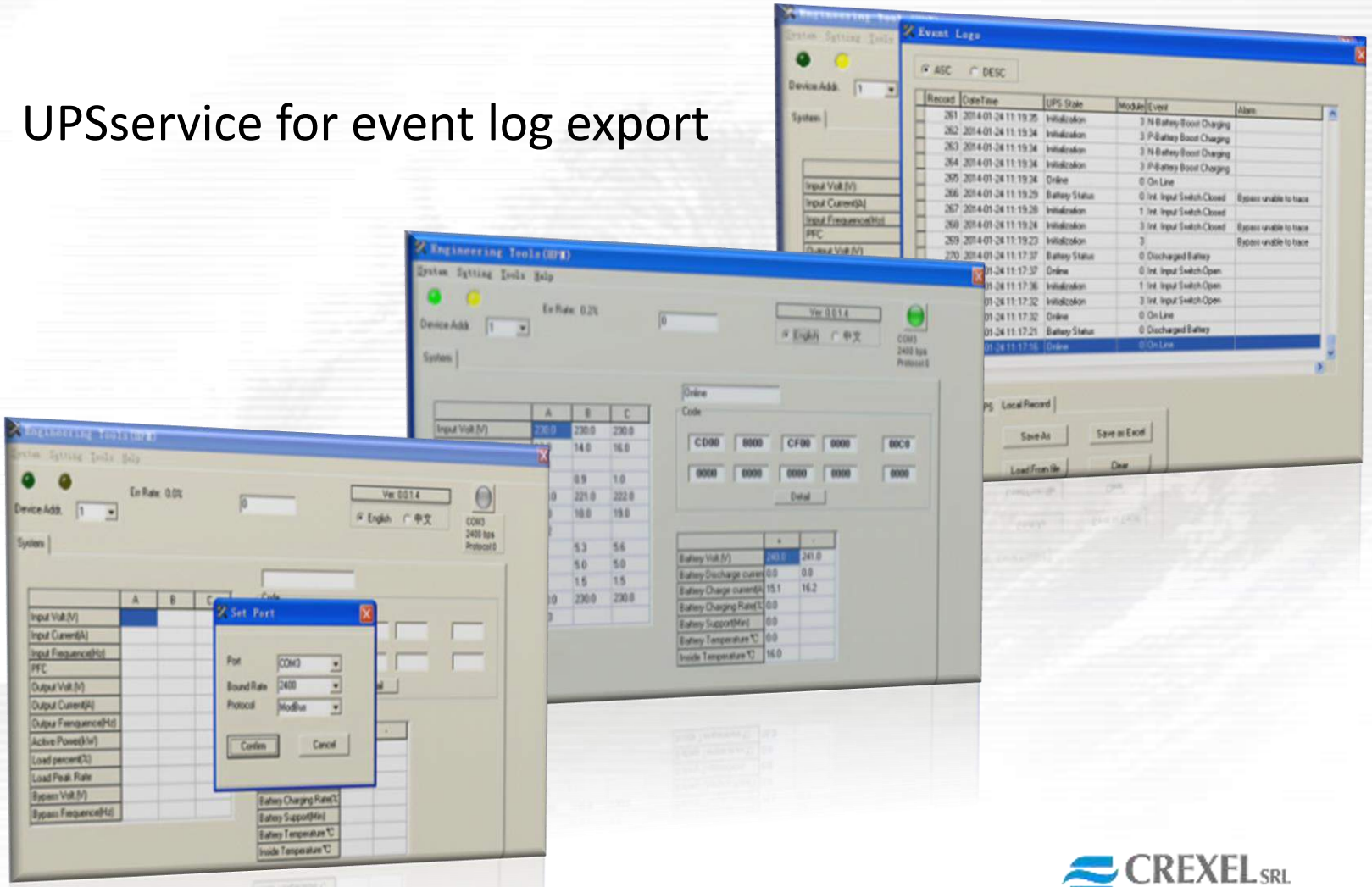
Communication Software

- ✓ Kstar ModBus
- ✓ Kstar Setting Tool: Muser 5000



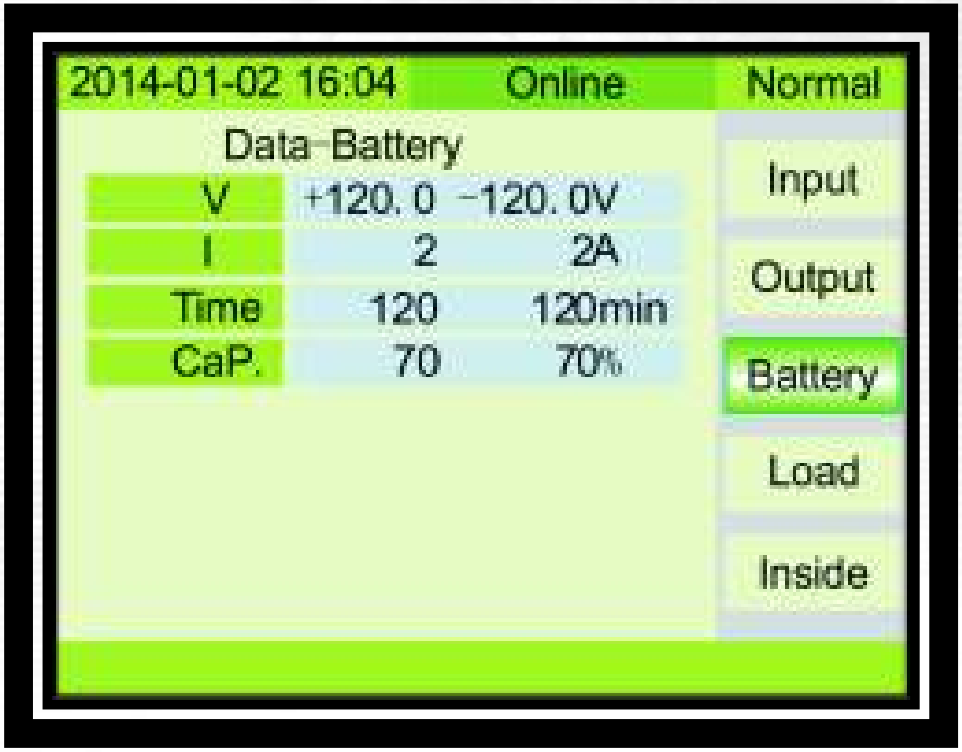
Tools to Export Event Log Data

- ✓ UPSservice for event log export



Periodically Automatic Battery Test

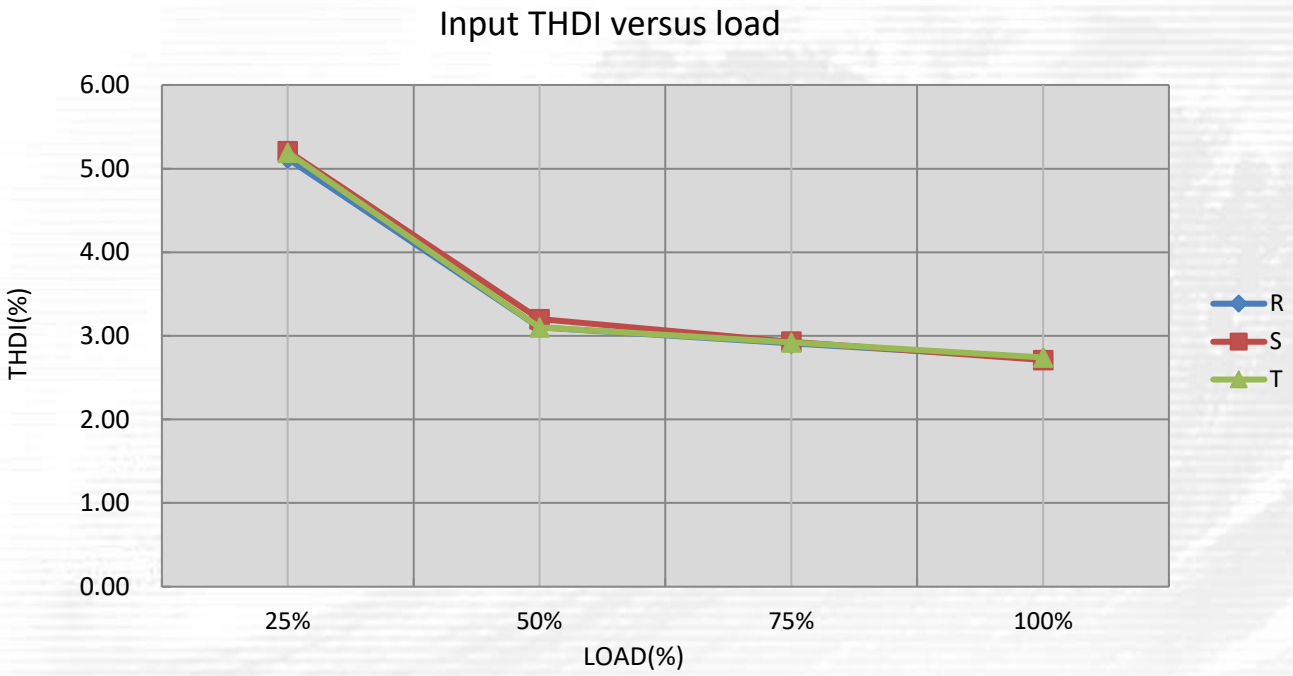
- ✓ Settable from LCD Display
- ✓ Periodically Automatic Battery Test Every 30 Days
- ✓ Battery Test Period can be set at 10 seconds, 10 min. or EOD



Mains-friendly with Low Input Harmonics and Advanced PFC

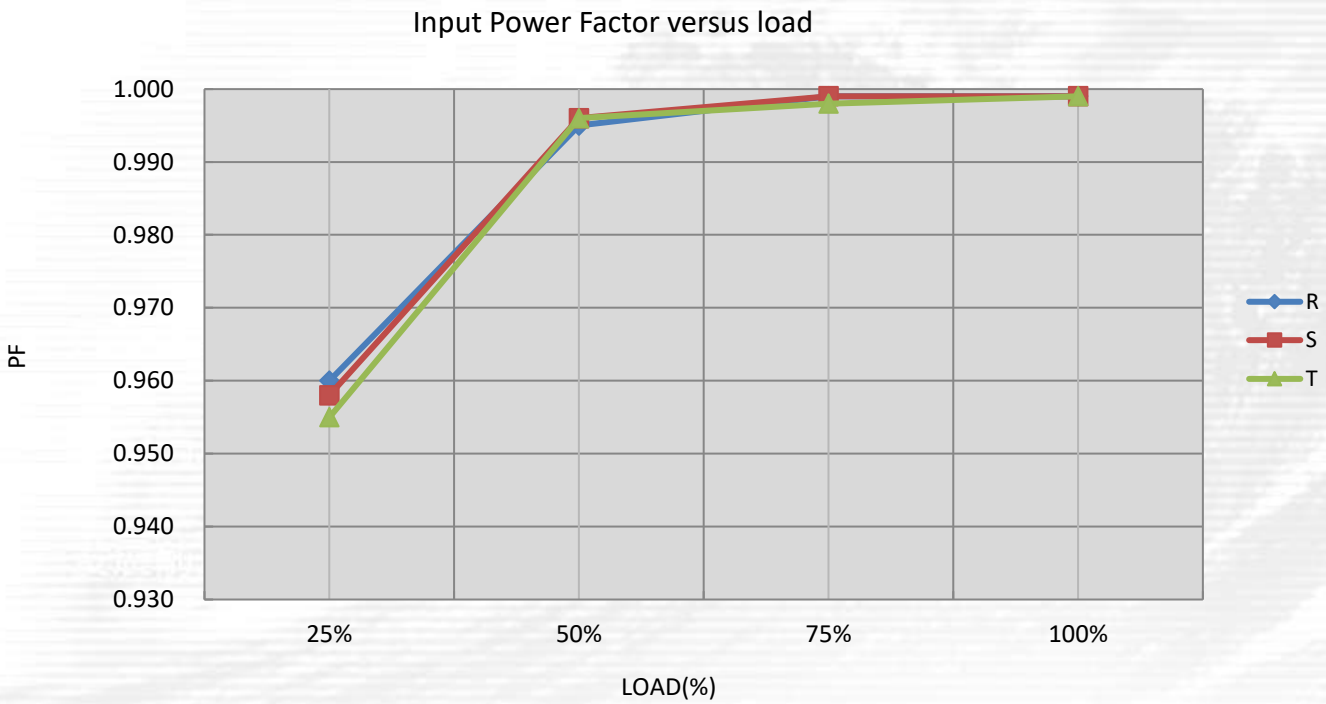
- ✓ Low input current THD < 2.71%
- ✓ Unity Power Factor
- ✓ No Additional Filters required in Upstream
- ✓ No Disturbance caused to the equipment connected to the same input source
- ✓ Less Investment in Upstream Cabling, Switchgear and Generator Size
- ✓ Reduce heating of Input Transformers

Low input current THD < 2.71%



Input THDI versus load	% Load	R	S	T
	25%	5.12	5.21	5.19
	50%	3.10	3.20	3.10
	75%	2.91	2.93	2.92
	100%	2.73	2.71	2.74

Unity Power Factor



	% Load	R	S	T
Input Power Factor versus load	25%	0.960	0.958	0.955
	50%	0.995	0.996	0.996
	75%	0.999	0.999	0.998
	100%	0.999	0.999	0.999

Input

MODEL	10kVA	15kVA	20kVA	25kVA	30kVA	40kVA	50kVA
Capacity (VA/Watts)	10k 10k	15k 15k	20k 20k	25k 25k	30k 30k	40k 40k	50k 50k
INPUT							
Nominal voltage	380/400/415Vac, (3Ph+N+PE)						
Operating voltage range	138~485Vac						
Operating frequency range	40Hz-70Hz						
Power factor	≥0.99						
Harmonic distortion (THDi)	≤3% (100%non-linear load)						
Bypass voltage range	220Vac Max.voltage: +25%(optional +10%,+15%,+20%) 230Vac Max.voltage: +20%(optional +10%,+15%) 240Vac Max.voltage: +15%(optional +10%) Min. voltage: -45% (optional -20%,-30%) Frequency synchronize tracing range: ±10%						
Generator input	Support						

Output

MODEL	10kVA	15kVA	20kVA	25kVA	30kVA	40kVA	50kVA
Capacity (VA/Watts)	10k 10k	15k 15k	20k 20k	25k 25k	30k 30k	40k 40k	50k 50k
OUTPUT							
Output voltage	380/400/415Vac (3Ph+N+PE)						
Voltage regulation	±1%						
Power factor	1.0						
Output frequency	1.Line Mode: synchronize with input; when input frequency >±10% (±1%/±2%/±4%/±5% optional) 2.Battery Mode:50/60*(1±0.02%)Hz						
Crest factor	3:1						
Harmonic distortion (THD)	≤2% with linear load ≤4% with non linear load						
Efficiency	95.5%						

Battery

MODEL	10kVA	15kVA	20kVA	25kVA	30kVA	40kVA	50kVA
Capacity (VA/Watts)	10k 10k	15k 15k	20k 20k	25k 25k	30k 30k	40k 40k	50k 50k
BATTERY							
Battery voltage	Optional Voltage: ±180V/±192V/±204V/±216V/±228V/±240/±252/±264/±276/±288/±300Vdc(30/32/34/36/38/40/42/44/46/48/50pcs optional) 360Vdc~600Vdc (30~50 pcs, 36 pcs define, 36~50 pcs no power derating; 32~34 pcs output power factor 0.9; 30 pcs output power factor 0.8;)						
Charge Current(A) (charge current can be set according to battery capacity installed)	Max. current 18A					Max. current 20A	

Physical

PHYSICAL				
Dimension D×W×H (mm)	 670×440×130(3U)		 800×440×175 (4U)	
Net weight (kg)	25	27	45	48

Cabling

UPS cabinet	Cable Dimension			
	AC Input (mm^2)	AC Output (mm^2)	DC Input (mm^2)	Grounding (mm^2)
10kVA	4	4	6	4
15kVA	6	6	8	6
20kVA	10	10	16	10
25kVA	16	16	25	16
30kVA	16	16	25	16
40kVA	25	16	35	16
50kVA	25	25	50	25

Breakers

Model	Mains input circuit breaker	Bypass input circuit breaker	Maintenance circuit breaker	Output circuit breaker	Battery circuit breaker
10kVA	20A 3P	20A 3P	20A 4P	20A 3P	32A 3P
15kVA	32A 3P	32A 3P	32A 4P	32A 3P	50A 3P
20kVA	40A 3P	40A 3P	40A 4P	50A 3P	63A 3P
25kVA	50A 3P	50A 3P	50A 4P	50A 3P	80A 3P
30kVA	63A 3P	63A 3P	63A 4P	63A 3P	100A 3P
40kVA	80A 3P	80A 3P	80A 4P	80A 3P	125A 3P
50kVA	100A 3P	100A 3P	100A 4P	100A 3P	160A 3P

The End

&

Have a Nice Day