

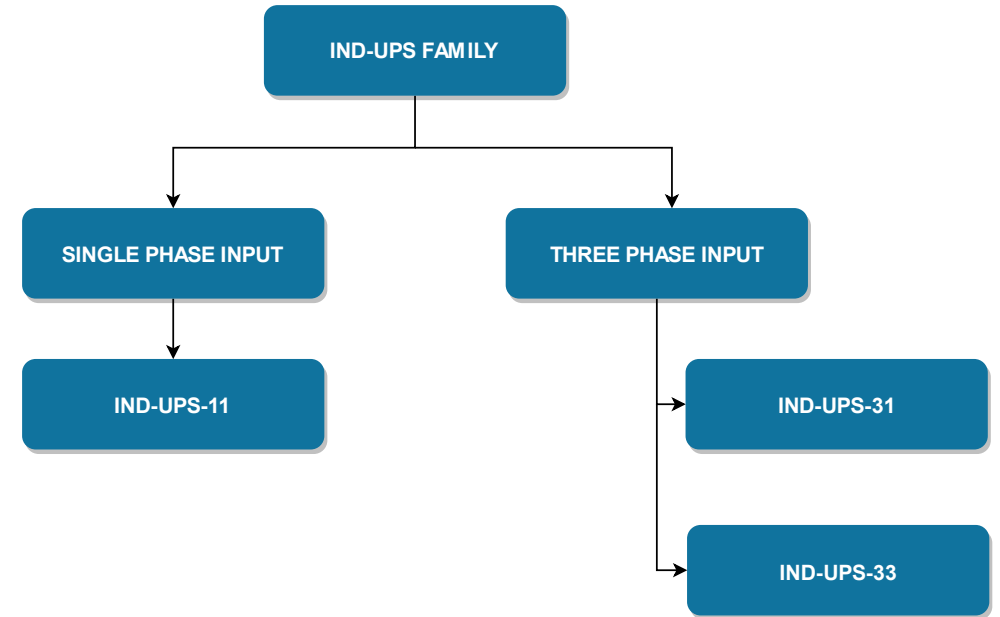
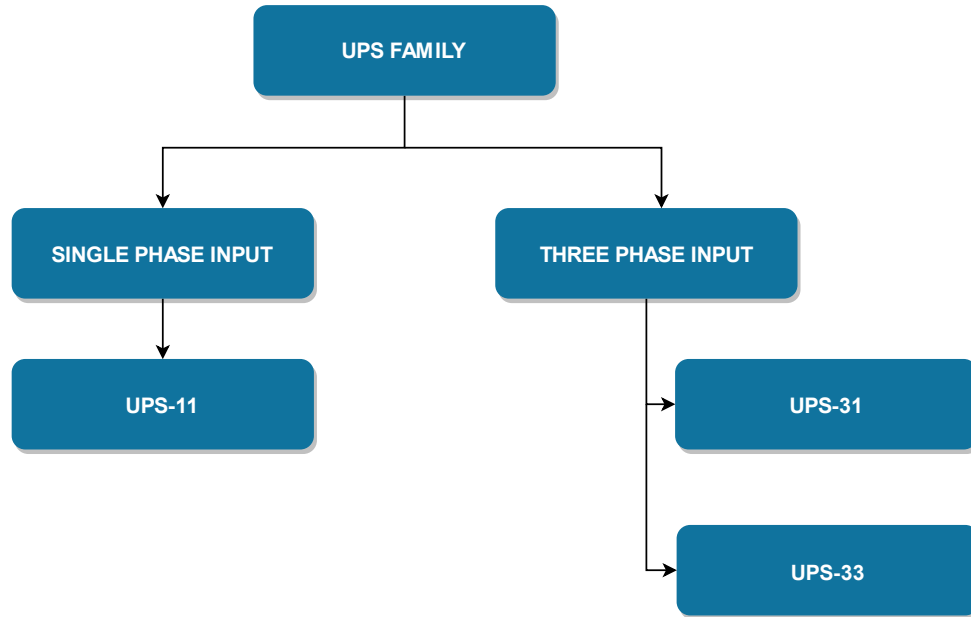
PESS UPS FAMILY

Special Features

Block and SLD Diagrams

Technical Specifications

UPS FAMILY



UPS Products



< 50 kVA

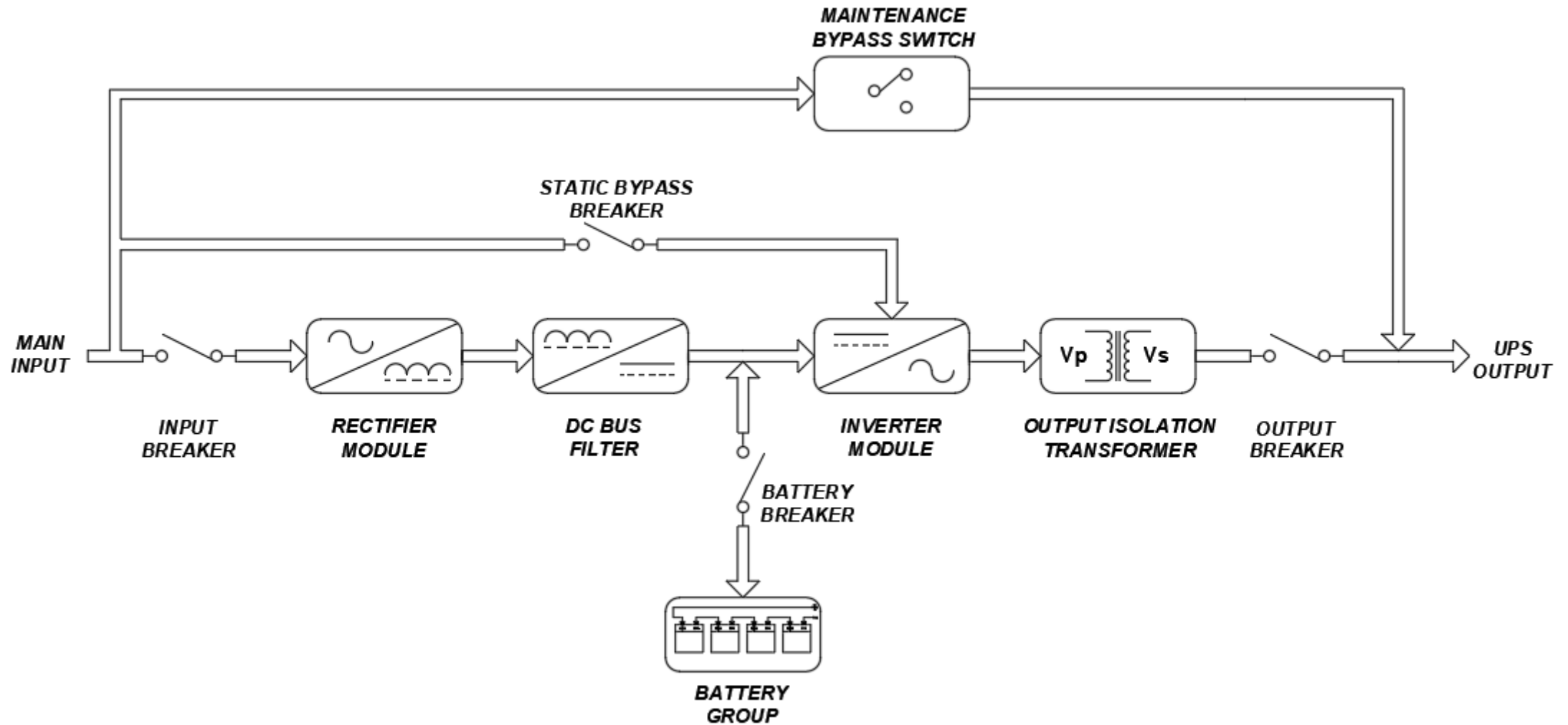


> 50 kVA

Special Features

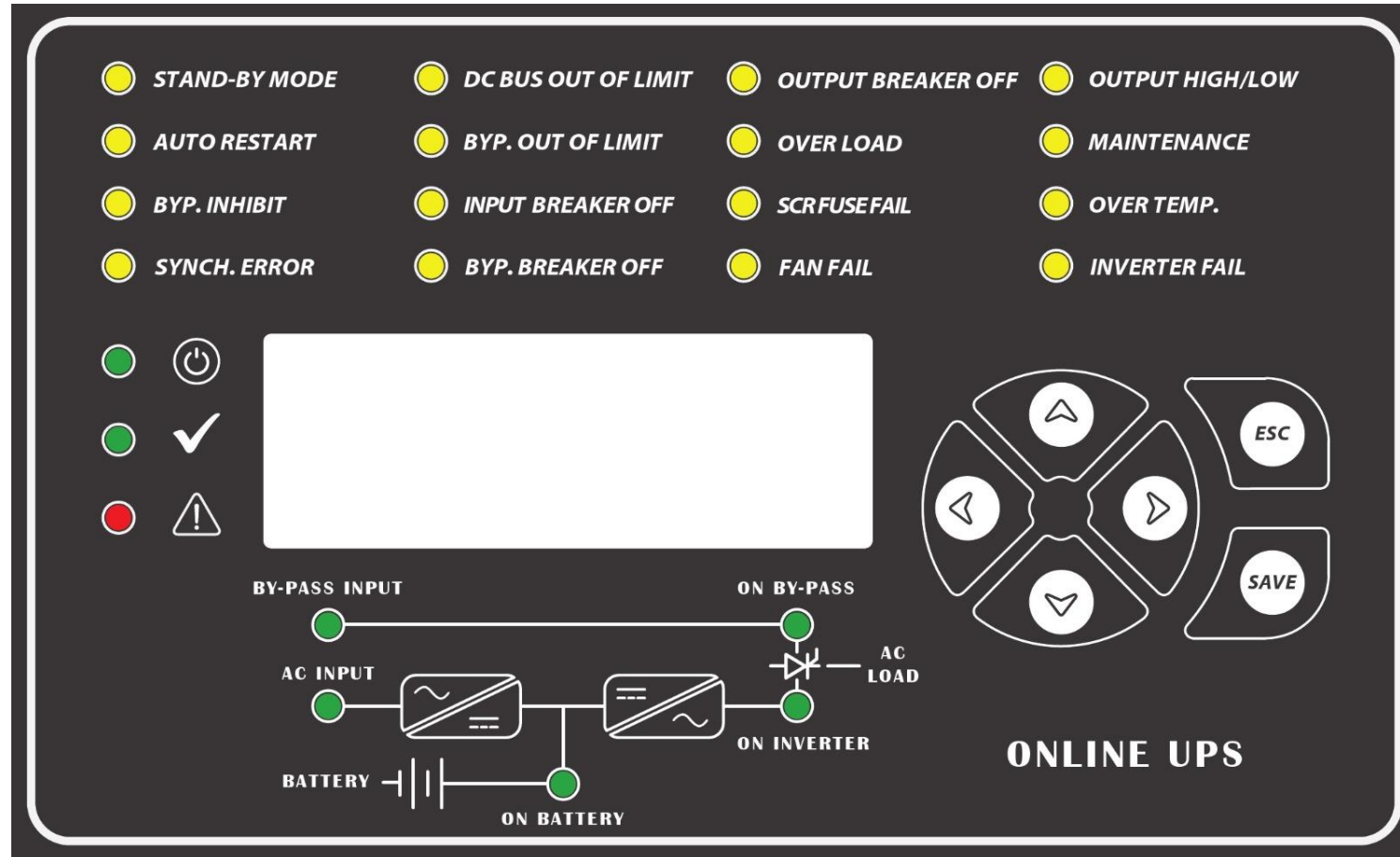
- ❖ High efficiency double power conversation with new generation IGBT and SCR modules.
- ❖ User friendly HMI (Human Machine Interface) front panel with indicator LEDs
- ❖ Automation and alarm relay output
- ❖ RS232 communication and special PC control software
- ❖ PC software calibration
- ❖ Event history
- ❖ Bypass input isolation and regulation

UPS Block Diagram



* This drawing belongs to the general scheme. It may vary in special designs. PESS company reserves the right to make changes to the drawings.

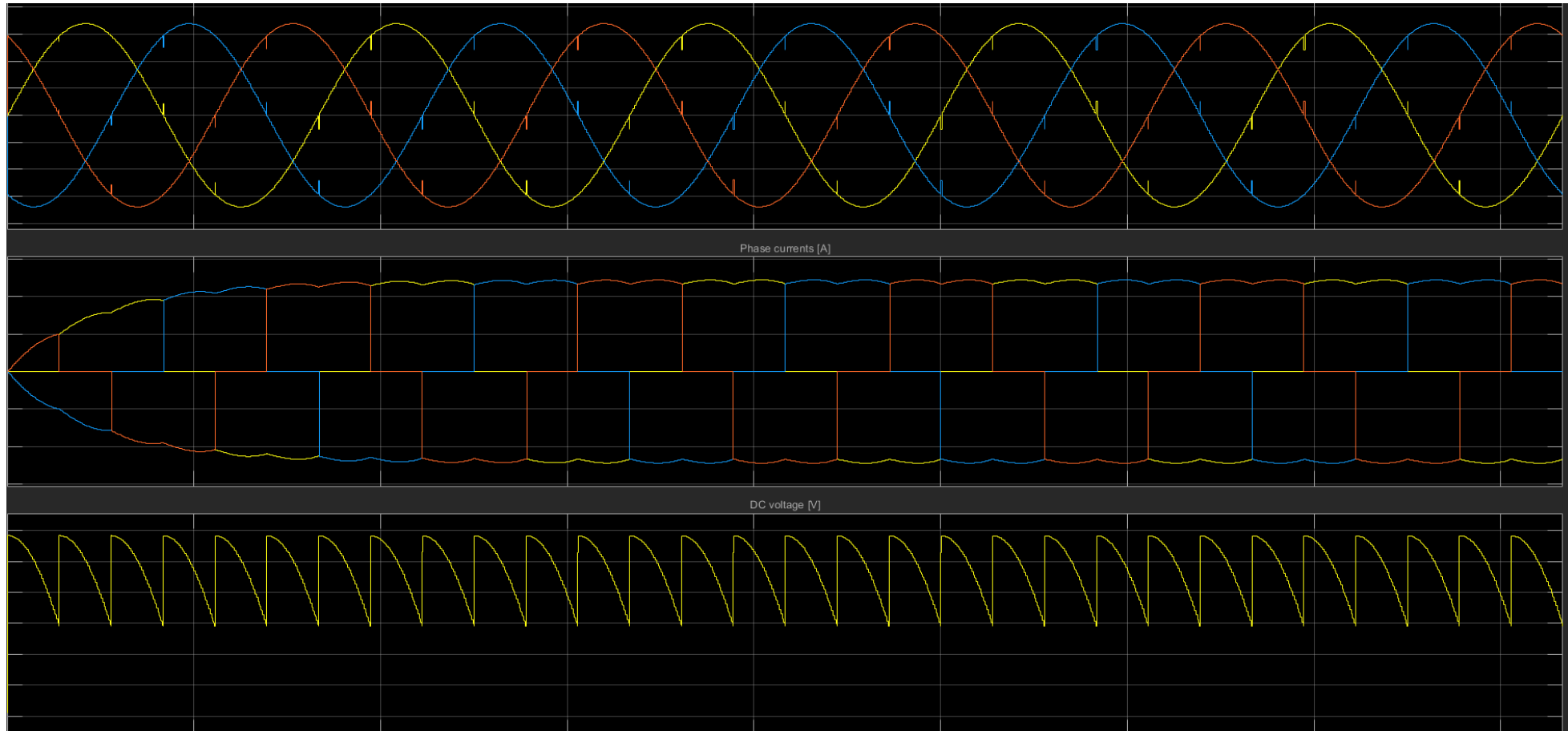
Front Panel Design of PESS UPS Devices



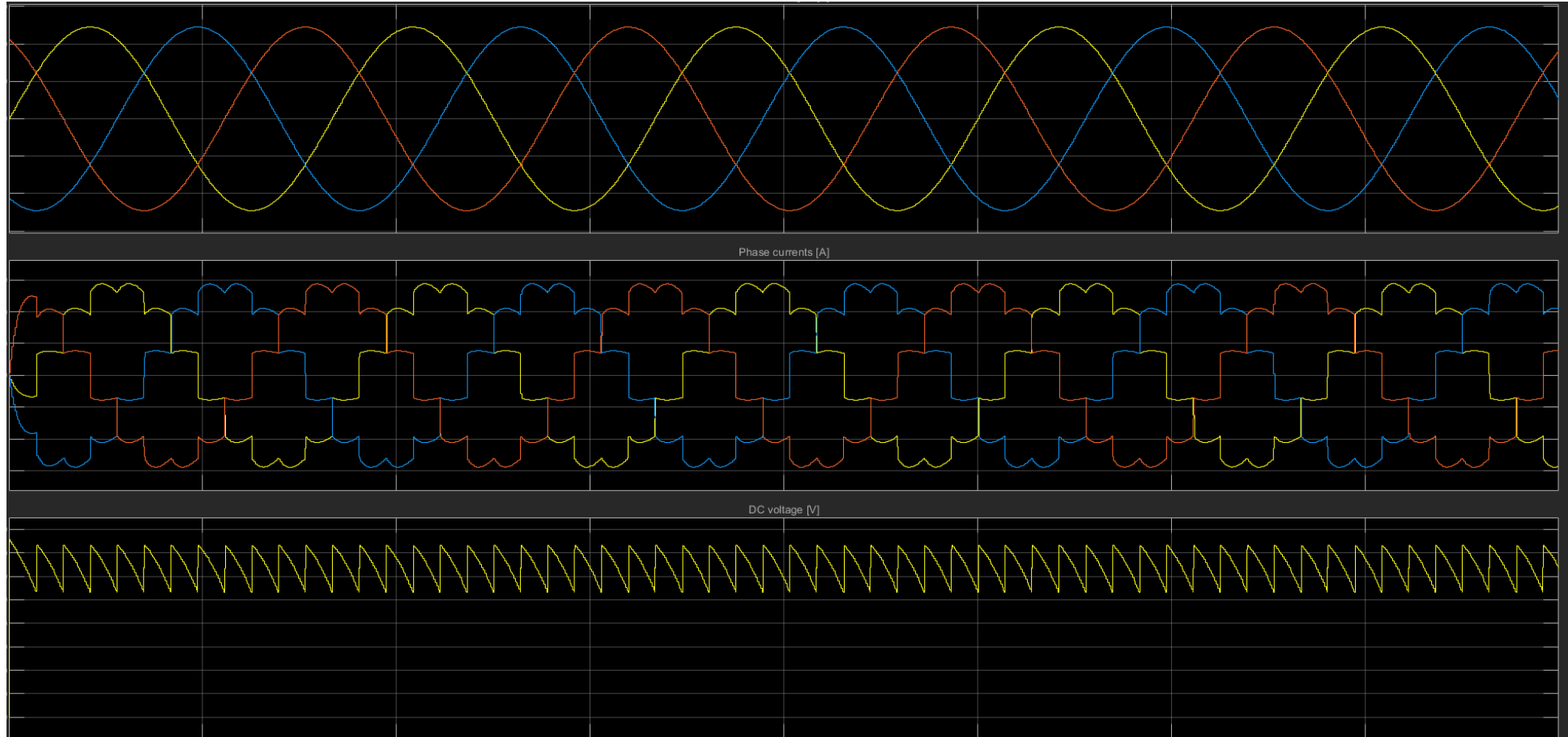
Rectifier

- Single phase UPS system has 2 pulse rectifier system
- Three phase UPS system has two available options for rectifier system
6 Pulse(%30 THD) and 12 Pulse (%10 THD)
- Reliable and robust working for industrial purpose
- Increased battery life thanks to our advanced battery charging algorithm
- Protection against overvoltage and undervoltage

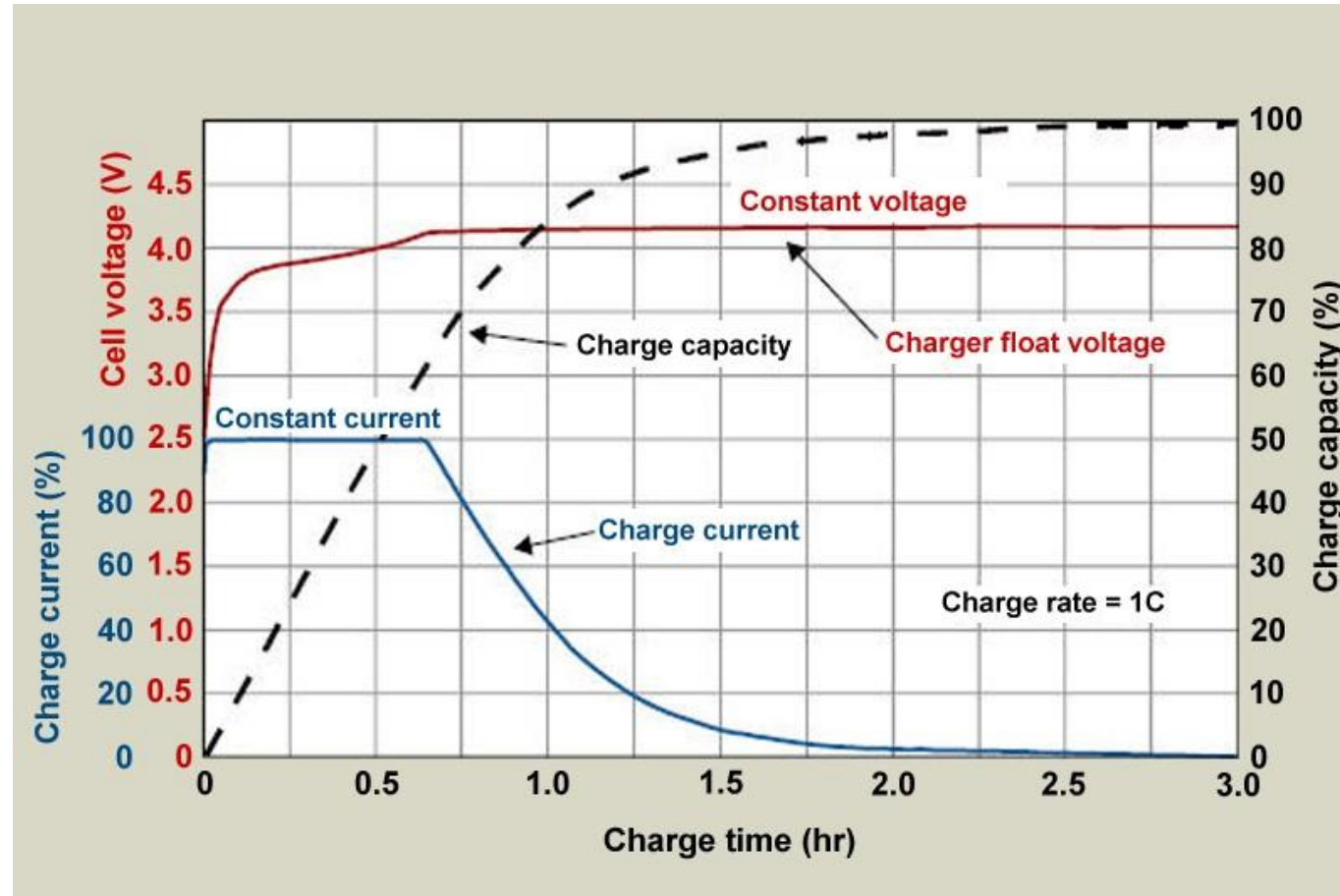
6 Pulse Rectifier



12 Pulse Rectifier

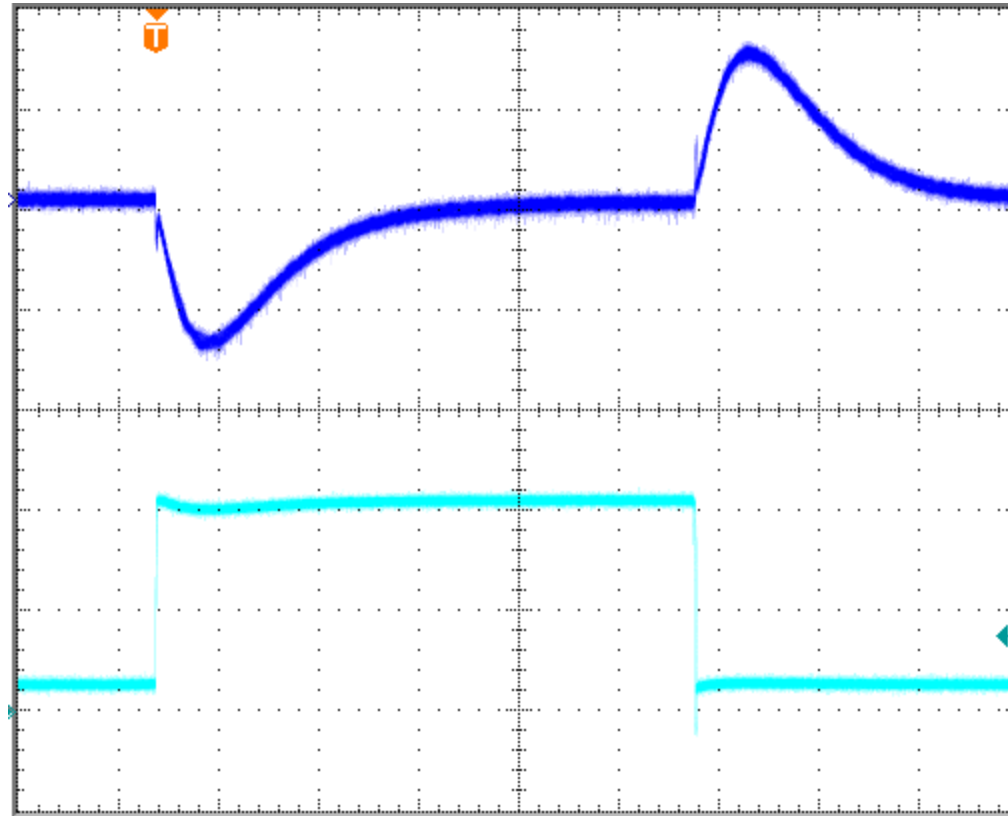


Rectifier system battery charging characteristic



Charge voltage ripple < %1

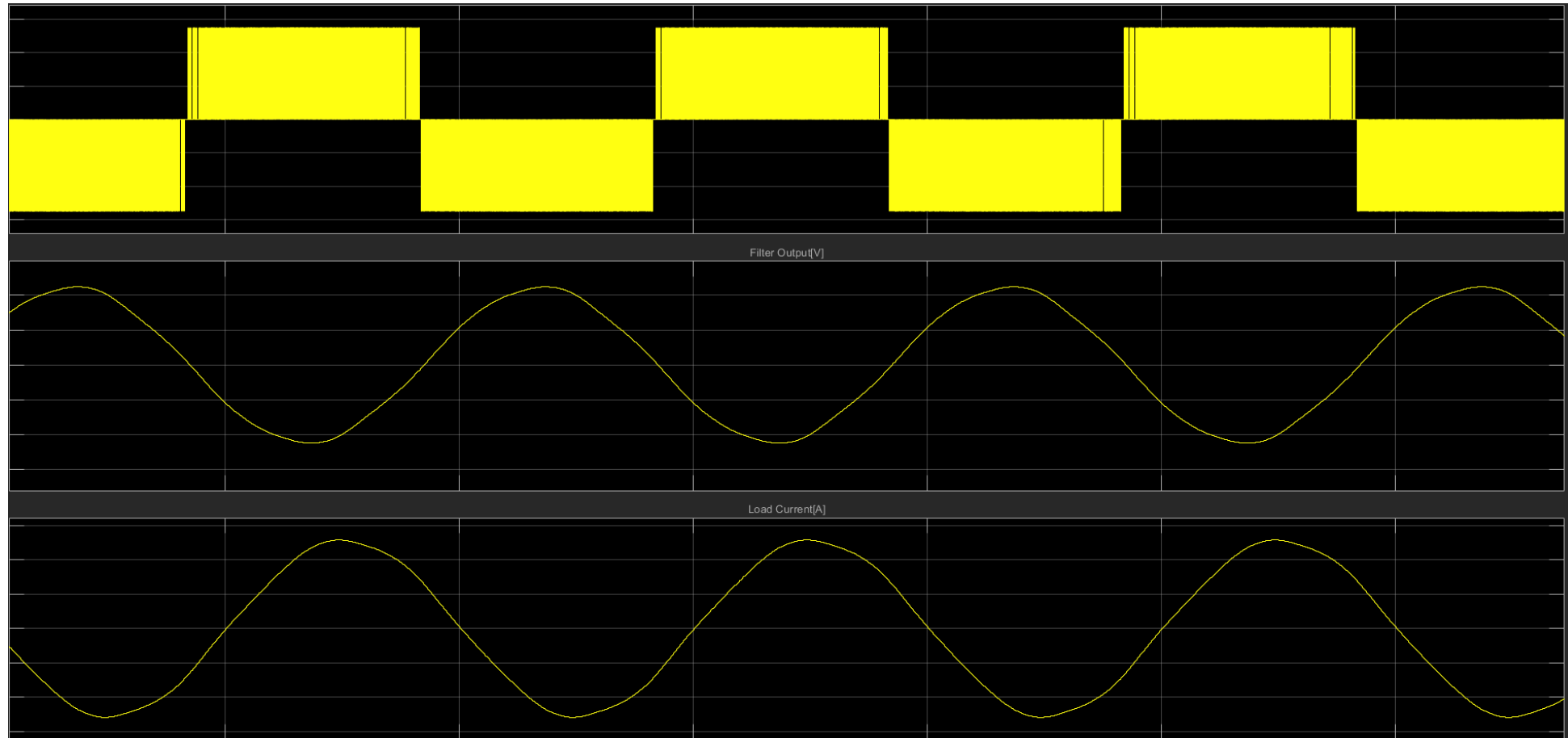
Rectifier Dynamic Load Response



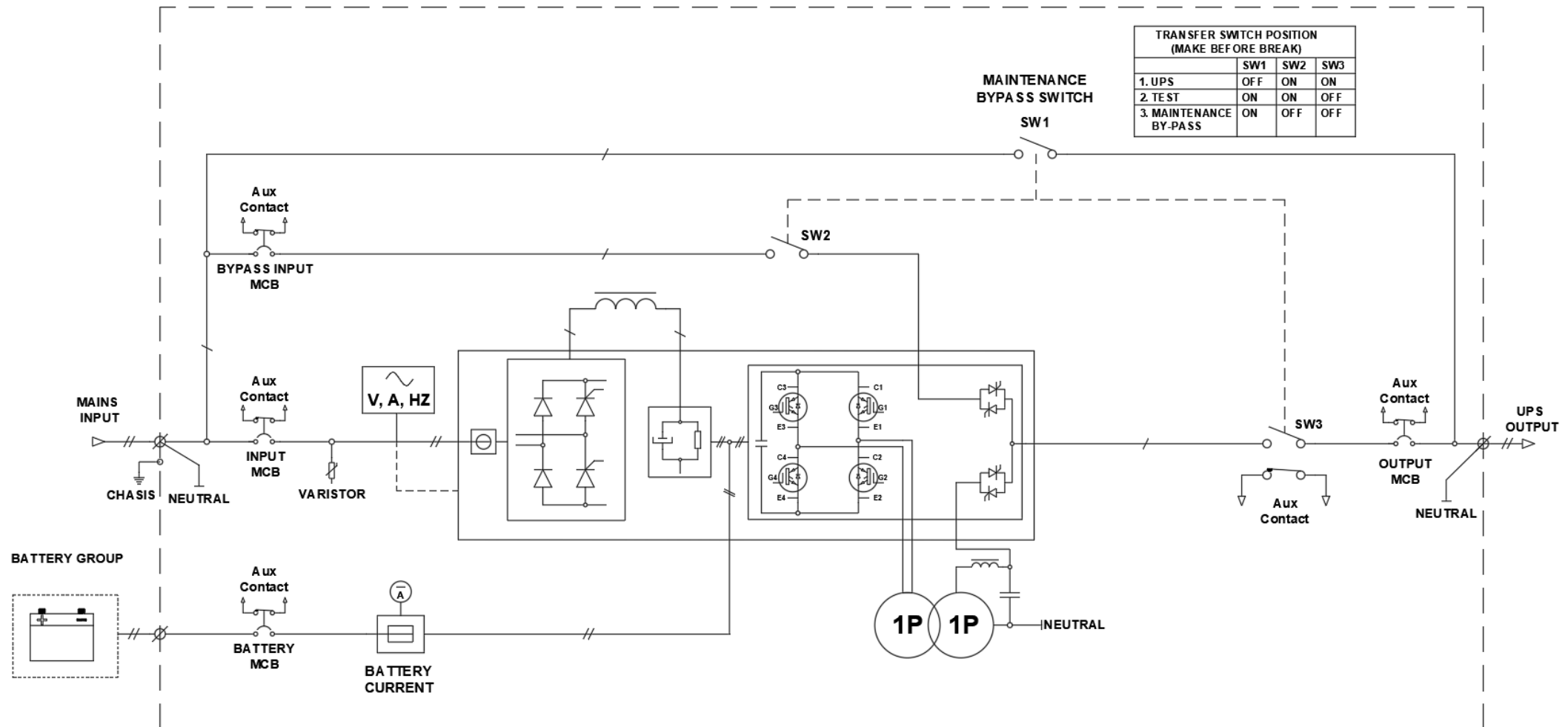
Inverter System

- The Inverter system of the UPS device, controls each phase with independently according to the phase feedbacks.
- Thanks to our advance software control algorithm, PESS UPS devices can be provide phase balance and equality.
- SCR controlled uninterruptable static transfer
- Protection IGBT and load against to asynchron bypass transfer
- Effective snubber design for prolonged semiconductor life
- Fast fuse IGBT protection

Inverter System

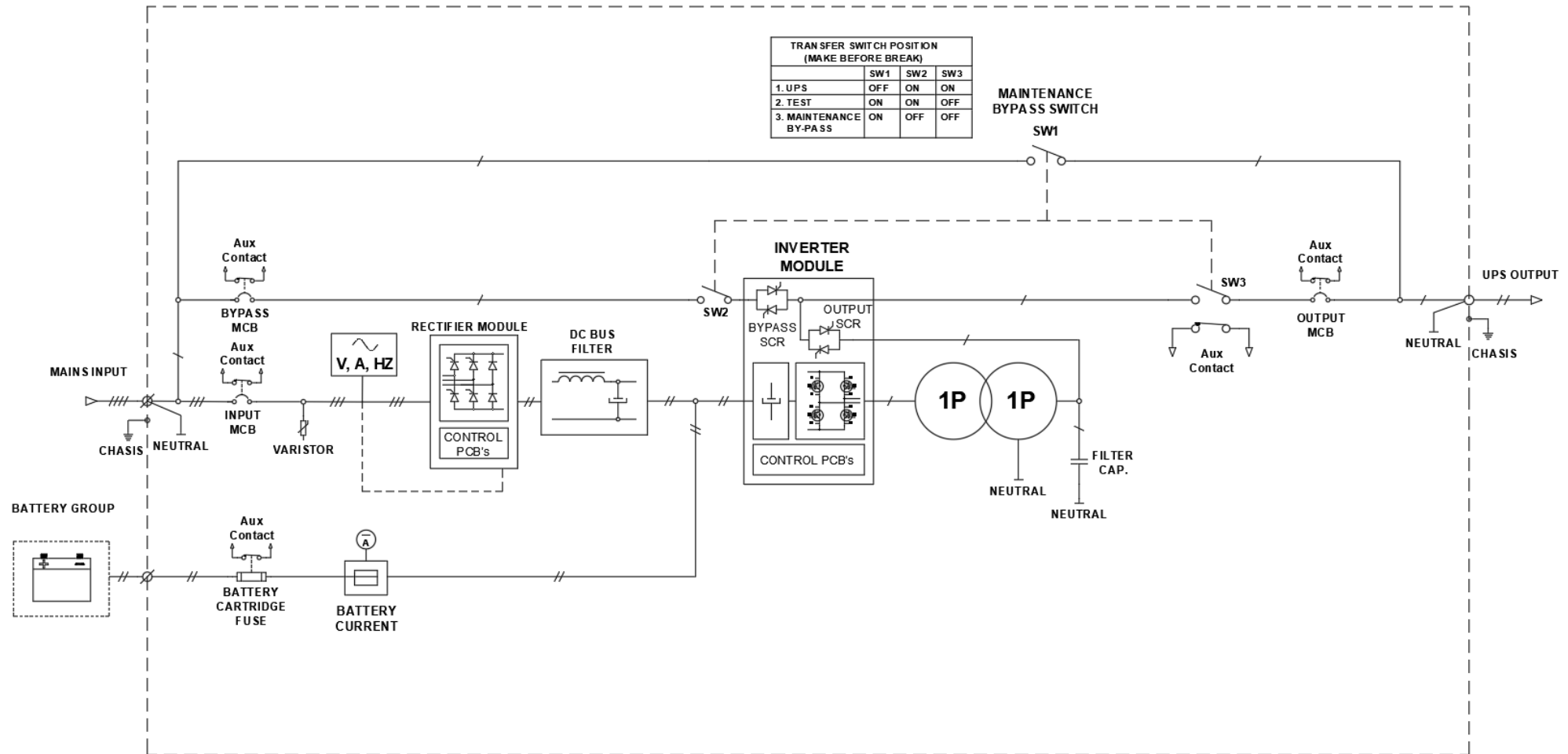


UPS-11 Single Line Diagram



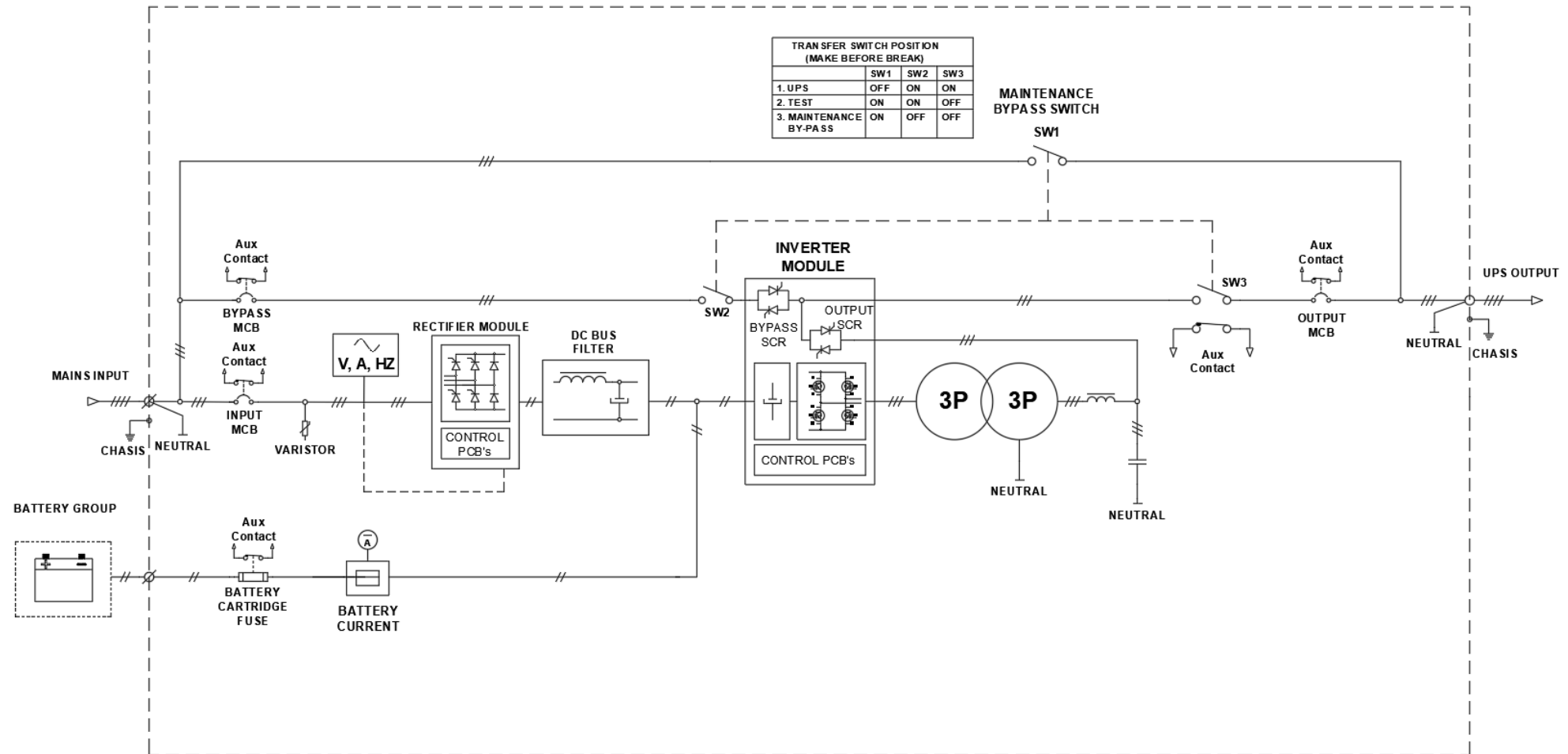
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UPS-31 Single Line Diagram



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UPS-33 Single Line Diagram



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UPS-11 Technical Specifications

kVA Ratings	5 / 10 / 15 / 20 / 25 / 30
Input characteristics (rectifier)	
Rectifier	2-pulse SCR rectifier or IGBT rectifier
Rated input voltage	110 / 120 / 220 / 230 / 240 VAC, 3-wire (1PH+N+PE)
Rated operating frequency	50Hz/60Hz
Input voltage range	-15% ~ + 15%
Input frequency range	-5% ~ + 5%
Input power factor	up to 0.90(SCR) up to 0.99 (IGBT)
DC characteristics	
Blocking Diode (Optional)	Inside UPS Cabinet
DC switch	Inside UPS Cabinet
Nominal voltage	110 / 144 / 220 / 360 VDC (or customizable voltage level)
Battery type	Lead Acid, Ni-Cad, Gel, AGM
Bypass	
Bypass input voltage	1 PH 110 / 120 / 220 / 230 / 240 VAC
Bypass voltage range	-10% ~ + 10%
Maintenance bypass switch	Make before break maintenance switch
Static switch	
Frequency	50Hz/60Hz
Frequency synchronization	± 5% Hz
Overload capacity	100% 10min, 110% 1min, 125% 10 sec, 150% 1sec, 300% 1 msec

UPS-11 Technical Specifications

Inverter output voltage		1 PH 110 / 120 / 220 / 230 / 240 VAC (5-30kVA)
Output power factor		0.8
Voltage stability	Steady state	<± 1%
	Transient (20-100%)	<±10%
Transient response time		(20-150) ms
Inverter overload capacity		100% 10min, 110% 1min, 125% 10 sec, 150% 1sec, 300% 1 msec
THDv	100% linear load	3%
	100% non-linear load	8%
Efficiency		up to 90% (depends on power rating)
System		
Noise		53~70dB
Ingress Protection		IP20 up to IP54
Color		RAL7035, other color is optional
Cable entry		Bottom (top cable entry as option)
HMI software		It can be download from webpage
Communication interface		MODBUS RTU RS485 (SNMP, IEC61850, MODBUS TCP option)
Free contacts		Programmable 8 dry contacts

UPS-11 Battery

UPS Model	5	10	15	20	25	30	kVA
Output Rated Power	4	8	12	16	20	24	kW
Min/Max Number of 12V Battery Blocks @ PF=1.0	12						QTY
Maximum UPS Current (220 VAC)	18	36	54	72	90	110	A
Battery Charging Curve	Ripple free; IU (DIN 41773)						
Temperature compensation ready	Standard (temp. sensor optional)						
Battery Test	Automatic and periodically (adjustable)						
Battery Type	Maintenance free VRLA or NiCd						

UPS-31 Technical Specifications

kVA Ratings	10 / 20 / 30 / 40 / 50 / 60 / 80
Input characteristics (rectifier)	
Rectifier	6/12-pulse SCR rectifier or IGBT rectifier
Rated input voltage	380 / 400 / 415 VAC, 5-wire (3PH+N+PE)
Rated operating frequency	50Hz/60Hz
Input voltage range	-15% ~ + 15%
Input frequency range	-5% ~ + 5%
Input power factor	up to 0.95 (SCR) up to 0.99 (IGBT)
DC characteristics	
Blocking Diode (Optional)	Inside UPS Cabinet
DC switch	Inside UPS Cabinet
Nominal voltage	110 / 220 / 360 VDC (or customizable voltage level)
Battery type	Lead Acid, Ni-Cad, Gel, AGM
Bypass	
Bypass input voltage	3 PH 380 / 400 / 415 VAC
Bypass voltage range	-10% ~ + 10%
Maintenance bypass switch	Make before break maintenance switch
Static switch	
Frequency	50Hz/60Hz
Frequency synchronization	± 5% Hz
Overload capacity	100% 10min, 110% 1min, 125% 10 sec, 150% 1sec, 300% 1 msec

UPS-31 Technical Specifications

Inverter output voltage		3 PH 380 / 400 / 415 VAC (10-100kVA)
Output power factor		0.8
Voltage stability	Steady state	<± 1%
	Transient (20-100%)	<±10%
Transient response time		(20-150) ms
Inverter overload capacity		100% 10min, 110% 1min, 125% 10 sec, 150% 1sec, 300% 1 msec
THDv	100% linear load	3%
	100% non-linear load	8%
Efficiency		up to 90% (depends on power rating)
System		
Noise		53~70dB
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HMI		It can be download from webpage
Communication interface		MODBUS RTU RS485 (SNMP, IEC61850, MODBUS TCP option)
Free contacts		Programmable 8 dry contacts

UPS-31 Battery

UPS Model	10	20	30	40	50	60	70	80	kVA
Output Rated Power	8	16	24	32	40	48	56	64	kW
Min/Max Number of 12V Battery Blocks @ PF=1.0	10 / 18				32				QTY
Maximum UPS Current (220 VAC)	36	72	110	145	180	218	254	290	A
Battery Charging Curve	Ripple free; IU (DIN 41773)								
Temperature compensation ready	Standard (temp. sensor optional)								
Battery Test	Automatic and periodically (adjustable)								
Battery Type	Maintenance free VRLA or NiCd								

UPS-33 Technical Specifications

kVA Ratings	20 / 30 / 40 / 50 / 60 / 80 / 100 / 120 /160/ 200
Input characteristics (rectifier)	
Rectifier	6/12-pulse SCR rectifier or IGBT rectifier
Rated input voltage	380 / 400 / 415 VAC, 5-wire (3PH+N+PE)
Rated operating frequency	50Hz/60Hz
Input voltage range	-15% ~ + 15%
Input frequency range	-5% ~ + 5%
Input power factor	up to 0.95 (SCR) up to 0.99 (IGBT)
DC characteristics	
Blocking Diode (Optional)	Inside UPS Cabinet
DC switch	Inside UPS Cabinet
Nominal voltage	110/144/220/360VDC (or customizable voltage level)
Battery type	Lead Acid, Ni-Cad, Gel, AGM
Bypass	
Bypass input voltage	3 PH 380 / 400 / 415 VAC
Bypass voltage range	-10% ~ + 10%
Maintenance bypass switch	Make before break maintenance switch
Static switch	
Frequency	50Hz/60Hz
Frequency synchronization	± 5% Hz
Overload capacity	100% 10min, 110% 1min, 125% 10 sec, 150% 1sec, 300% 1 msec

UPS-33 Technical Specifications

Inverter output voltage		3 PH 380 / 400 / 415 VAC (10-100kVA)
Output power factor		0.8
Voltage stability	Steady state	<± 1%
	Transient (20-100%)	<±10%
Transient response time		(20-150) ms
Inverter overload capacity		100% 10min, 110% 1min, 125% 10 sec, 150% 1sec, 300% 1 msec
THDv	100% linear load	3%
	100% non-linear load	8%
Efficiency		up to 90% (depends on power rating)
System		
Noise		53~70dB
Ingress Protection		IP20 up to IP54
Color		RAL7035, other color is optional
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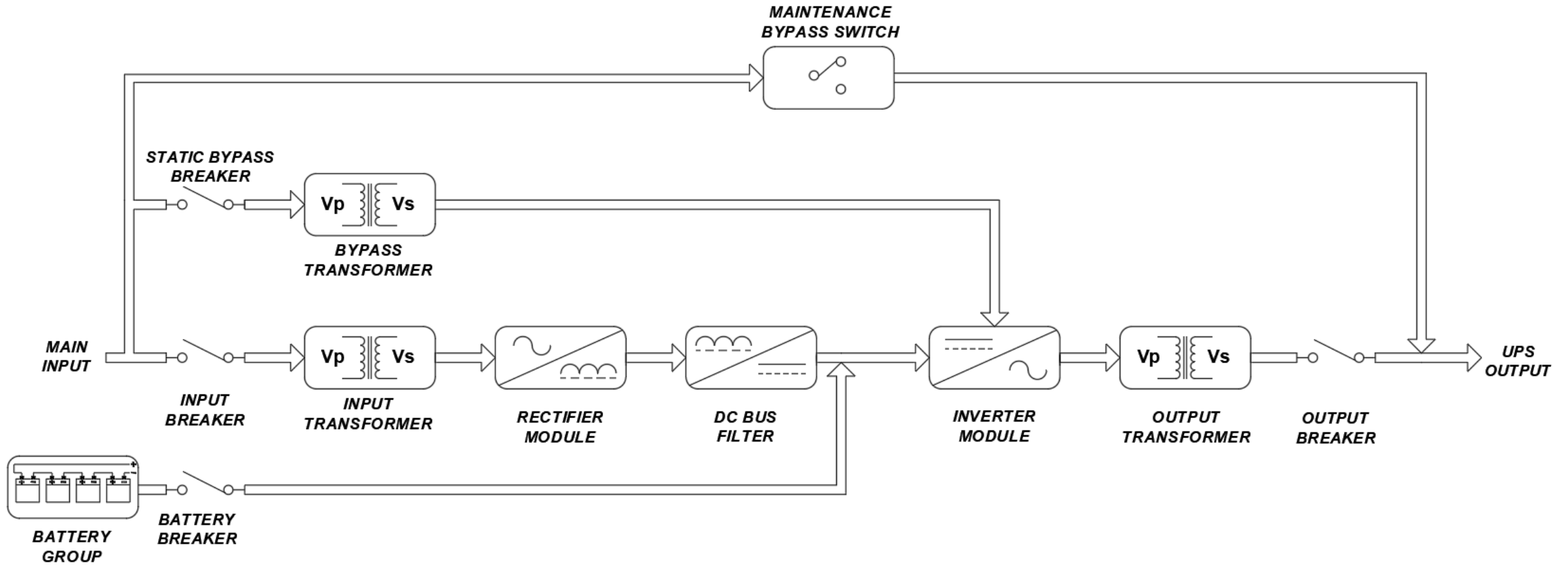
UPS-33 Battery

UPS Model	20	30	40	50	60	80	100	120	160	200	kW
Output Rated Power	16	24	32	40	48	64	80	96	128	160	kW
Min/Max Number of 12V Battery Blocks @ PF=1.0	30								32		QTY
Maximum UPS Current (380 VAC)	24	36	50	60	73	97	121	146	194	243	A
Battery Charging Curve	Ripple free; IU (DIN 41773)										
Temperature compensation ready	Standard (temp. sensor optional)										
Battery Test	Automatic and periodically (adjustable)										
Battery Type	Maintenance free VRLA or NiCd										

Industrial Type UPS

- Industrial type UPS devices has different available options.
 - ❖ Input of the UPS has rectifier transformer
 - ❖ Bypass input of the UPS has bypass isolation transformer
 - ❖ Bypass input can be include servo voltage regulator option.
 - ❖ DC BUS voltage can be adjustable for desired DC voltage level

Industrial Type UPS Block Diagram



Quality Certificates



STANDARTS AND SAFETY

Overvoltage Protection	IEEE 587 4.5 kA, 110 Joules(standart) 40 kA, 1000 Joules surge arrestor(optional)
Electrical Interference Reduction	FCC Part 15 Class B
Electrical Standarts	EN 50091-1(Security) / EN 50091-2(EMC)
Environment Protection	IP42, available upto IP54
MTBF (Mean time between failures)	100000 hours (without battery group)
Enclosure Material	Mild Steel 1.5mm, Zinc-phosphate coated 100 um;
Panel Lighting	Optional
Cooling	Forced air cooling (natural cooling is optional)
Operating Altitude	Max 2000 mt
Relative Humidity	5-90 %
Noise level	Max 60 db

Company Contact Informations

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PESS POWER ELECTRONIC SYSTEM SOLUTIONS
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