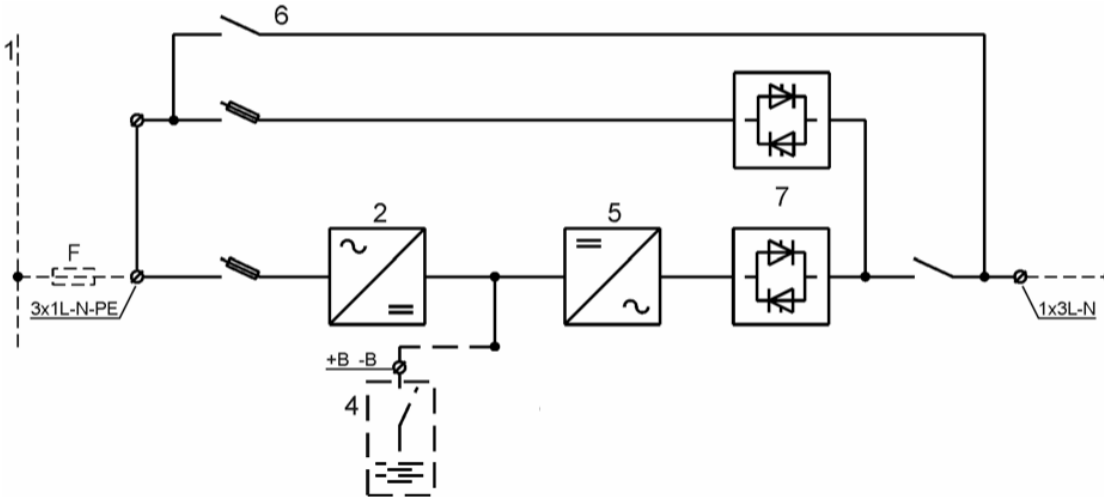


**GENERAL INFORMATION**

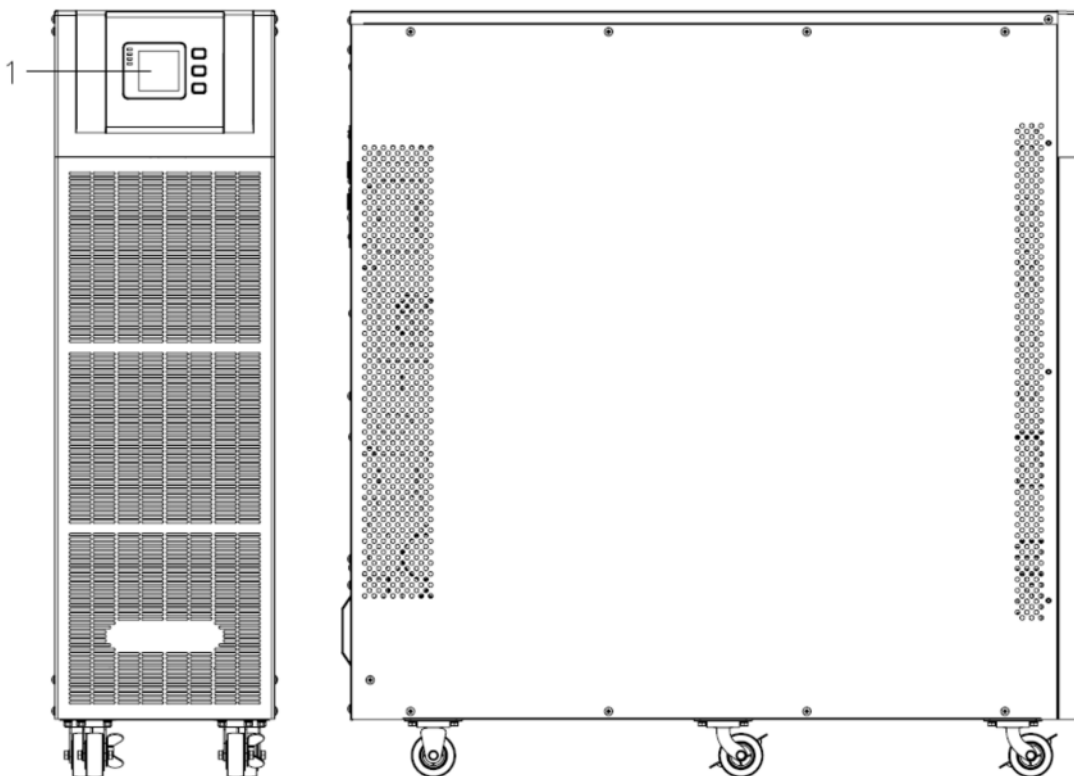
<b>POWER - kVA</b>	<b>10</b>	<b>15</b>	<b>20</b>	<b>30</b>	<b>40</b>
UPS topology	ON LINE - Double Conversion				
Classification	VFI-SS-111 in accordance with IEC 62040-3				
Nominal output power (Cos Ø 0,9) - kVA	10	15	20	30	40
Nominal output power (Cos Ø 1,0) - kW	9	13,5	18	27	36
Efficiency (AC ~ AC) - at 100 % load	max. 93,5 %			max. 94,5	
Efficiency ECO-Mode - %	max. 98,75				
Heat dissipation at nominal load and voltage - W	675	878	1170	1755	2340
UPS ambient temperature - °C	0 ÷ 40				
BATTERY ambient temperature - °C	0 ÷ +20				
UPS storage temperature - °C	-25 ÷ +55				
BATTERY storage temperature - °C	-10 ÷ +40				
Relative humidity (non condensing)	< 95%				
Altitude	< 1500 mt (above sea level)				
Power derating for altitude > 1500m	max 5000 m with 1% derating for +100m				
Ventilation	FORCED				
Requested cooling air volume – m³/h	300	300	380	536	536
Audible noise level (according EN 50091)	<55dB				<58dB
Battery DC-voltage 10 – 30 kVA	+/- 96 V, +/- 108 V, +/- 120 V, depending on the battery set				
Battery DC-voltage 40 kVA	+/- 192 V, +/- 204 V, +/- 216 V, +/- 228 V, +/- 240 V, depending on the battery set				
Built-in Charger adjustable	max. 10 A			max. 15A	
Protection degree	IP 20				
EMI Electromagnetic compatibility	According to "EN62040-2" Class C3				
Paint	black				
Accessibility	front, top and side access for service				
Installation	50 -100 cm from wall				
Dimensions (mm)	W = 250 D = 828 H = 868				
Weight (kg) (without battery)	65	70	70	81	73
Built in battery quantity 9,5 Ah max.	40	40	40	60	N/A
Input/output cable connection	bottom / back side				
Movement	By wheels				
Transport mechanical stress	According to "IEC62040-3"				
Design standard	According to "IEC EN 62040"				
Free contact interface	optional				
Communication interface	1 x USB, 1 x RS232, 2 x RS485, 2 x Parallel port, 1 x Coupler dry contact, 1 x EPO, 2 x Intelligent slot, SNMP card (optional), Relay card (optional)				
Parallel configuration	Up to 4 redundant or capacity				
Separate bypass input	no				

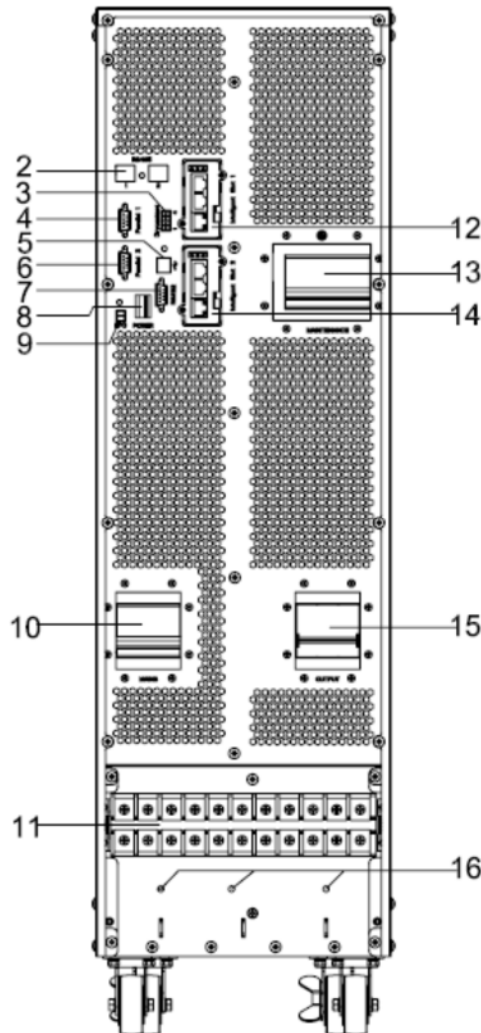
**BLOCK DIAGRAM**



- 1 .Input mains (common for by-pass and rectifier)
- 2. Rectifier and battery charger
- 4. Internal/ external battery
- 5. Inverter
- 6. Emergency line (by-pass)
- 7. Inverter and by-pass static switch

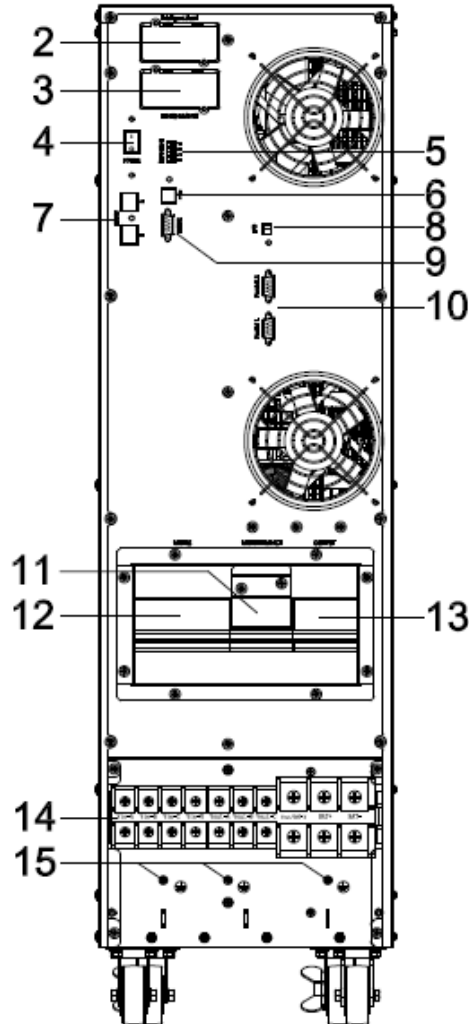
**Cabinet Outlook**





**10-20kVA Rear View (terminal block without cover)**

(1) LCD panel	(2) RS485 port
(3) Dry contact port	(4) Parallel port 1
(5) USB port	(6) Parallel port 2
(7) RS232	(8) Power Switch
(9) REPO port	(10) I/P Switch
(11) Terminal block	(12) Intelligent Slot 1 (SNMP card/ Relay card)
(13) Maintenance switch & its cover	(14) Intelligent Slot 2 (SNMP card/ Relay card)
(15) O/P Switch	(16) Ground



**30-40kVA Rear View (terminal block without cover)**

(1) LCD panel	(2) Intelligent Slot 1 (SNMP card/ Relay card)
(3) Intelligent Slot 2 (SNMP card/ Relay card)	(4) Battery Power Switch
(5) Dry contact port	(6) USB port
(7) RS485 port	(8) REPO port
(9) RS232	(10) Parallel port
(11) Maintenance switch & its cover	(12) I/P Switch
(13) O/P Switch	(14) Terminal block for Input, output & battery
(15) Ground	

**INPUT: RECTIFIER and BATTERY CHARGER**

<b>POWER - kVA</b>	<b>10</b>	<b>15</b>	<b>20</b>	<b>30</b>	<b>40</b>
Input configuration	3 Phase + N + PE				
Nominal Voltage - Vac	380-400-415 V 3ph				
Operating Voltage - Vac	208 – 478				323 - 478
Input Frequency - Hz	45-55 Hz at 50 Hz 54-66 Hz at 60 Hz, auto sensing				
Input Power Factor (@ 400 V)	> 0,9				
Input Harmonic current distortion (THDI)	< 3 %				
DC Output Voltage Accuracy	+/- 1%				
Walk-in time	10 sec				
DC Output Voltage Ripple	1% rms				
3-level Intelligent Charging Modes	IUoU				
Temperature-controlled charging voltage	no				
Maximum Recharging Current (adjustable) – A	10			15	
AC-DC converter type	IGBT PFC				
Input protection	Fuses				
Nominal Current Absorbed from Mains (At nominal load and Battery charged) - A	15	21	28	43	57
Maximum Current Absorbed from Mains (At nom. load and max. recharging current) - A	23	30	37	52	66

**BATTERY**

<b>POWER - kVA</b>	<b>10</b>	<b>15</b>	<b>20</b>	<b>30</b>	<b>40</b>
Type	Free maintenance				
Number of Cells	96 – 108 – 120				
Floating Voltage at 25°C - V	2,27 V per cell				
Minimum Discharge Voltage - V	1,75 V per cell				
Battery Protection (external to the UPS)	wall mounted fuse box on request				

**UPS OUTPUT: INVERTER**

POWER - kVA	10	15	20	30	40
Inverter Bridge	IGBT (transformerless)				
Nominal output power (Cos Ø 0,9) - kVA	10	15	20	30	40
Nominal output power (Cos Ø 1,0) - kW	9	13,5	18	27	36
Nominal Output Voltage - Vac (selectable)	380 ÷ 415 3Ph + N				
Output Voltage Stability					
-Static (Balanced Load)	+/- 1%				
-Static (Unbalanced Load)	+/- 1%				
-Dynamic (Step Load 0÷100%÷0)	+/- 5%				
-Output Volt. Recovery Time (after step load)	< 20ms				
Phase Angle					
-Balanced Load	+/- 1°				
-100% Unbalanced Load	+/- 1°				
Output Frequency -Hz	50 - 60				
Output Frequency Stability					
-Free Running Quartz Oscillator	+/- 0,1Hz				
-Inverter Sync. with Mains	+/- 1%, 2%...10% (adjustable)				
- slew rate	0.23Hz/sec				
Nominal Output Current - A					
- Cos φ 0,9	14,4	21,6	29	43,3	58
- Cos φ 1,0	13	19,5	26	39	52
Overload Capability (line mode)	<110% / 60 min, <125% / 10 min, <150% / 1 min, >150% / Bypass				
Overload Capability (battery mode)	<110% / 10 min, <125% / 1 min, <150% / 10 sec, >150% / ups shutdown				
Short Circuit Current - A for 200ms (Ip/Irsm)	61A/ 43A	130A/92A		140A/ 99A	164A/ 116A
Output Waveform	sine wave				
Output Harmonic Distortion					
- Linear Load	<2%				
- Non Linear Load (according to IEC EN62040-3)	<5%				
Crest Factor without derating	3:1				

**UPS OUTPUT: BY PASS**

Automatic Static By-Pass	Electronic Thyristor Switch
Protection	Breaker(Input)
Voltage range– Vac	Max. voltage: 380Vac: +25%(optional 10%, +15%,+20% ) 400Vac: +20%(optional +10%,+15% ) 415Vac: +15%(optional +10% ) Min. voltage: -45% (optional -20%, -30%)
Frequency protection range:	±10%
Transfer mode	No break
Transfer Inverter ÷ Static By-Pass	In case of : -Inverter test -Inverter not operating -Battery end of discharge
Retransfer Static By-Pass ÷ Inverter	- Automatic - Block on bypass after 6 switchings within 2 min. - Reset by front panel
Overload Capability	- 150% continuously - 1000% for 20 ms
Manual By-Pass for maintenance	Standard: - Electronically controlled - no break

**PARALLEL**

Automatic Parallel Configuration for redundancy/capacity	Up to four units (by an additional cable)
Basic parallel Configuration	Redundant N+X
Connection Type	CAN Bus Loop
Share Accuracy	5% max unbalance in inverter mode; bypass mode based on wiring at site
Maximum distance between two Units	5 meter
Overload Capability	N x 200% for 200 msec N x 125% for 10 min
Automatic By-pass	On each unit
Manual By-pass	On each unit (common as option)