

TECHNICAL DATA SHEET "B8033"

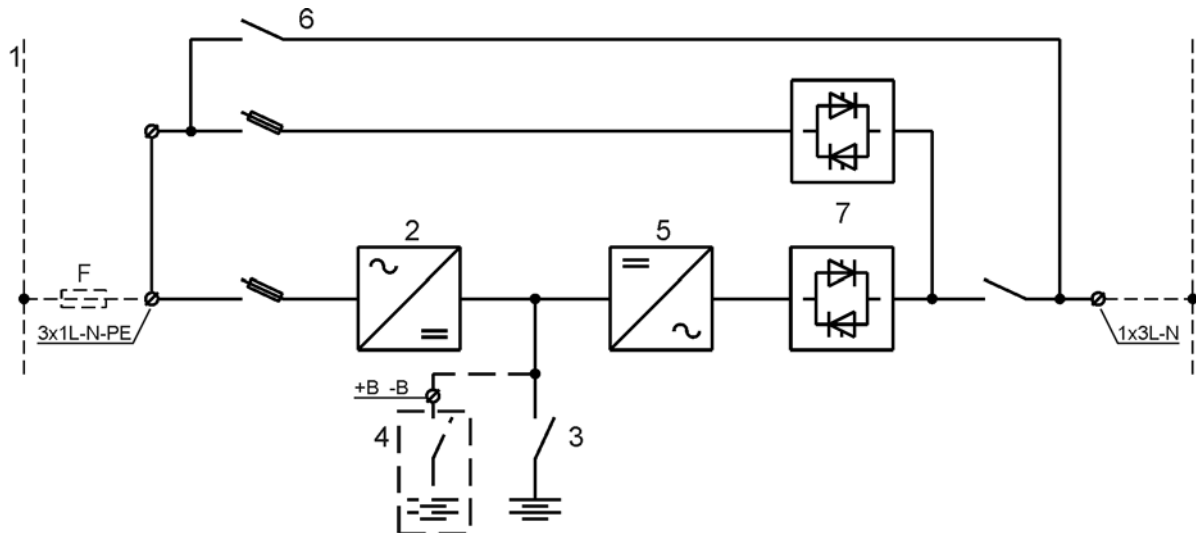
10 15 20 kVA 3Ph_(in) – 3Ph_(out)

GENERAL INFORMATION

POWER - kVA	10	15	20
UPS typology	ON LINE – Double conversion ACTIVE stand by-operation (Optional)		
Nominal output power (Cos Ø 0,8) - kVA	10	15	20
Nominal output power (Cos Ø 1) - kW	8	12	16
Efficiency (AC ÷ AC) - % (ECO mode)	>98	>98	>98
Efficiency (AC ÷ AC) - % (ON LINE Double conversion mode)	>92	>92	>92
Heat dissipation at nominal load:			
-W	695	1040	1390
-kcal/hour	598	894	1195
UPS ambient temperature - °C	0 ÷ 40		
BATTERY ambient temperature - °C	0 ÷ +25		
UPS storage temperature °C	-10 ÷ +70		
BATTERY storage temperature - °C	-10 ÷ +60		
Relative humidity (non condensing)	From 20 % to 80%		
Altitude	< 1000 mt (Above See Level)		
Power derating for altitude > 1000mt	According to "IEC62040-3"		
Ventilation	FORCED		
Requested cooling air volume - m ³ /h	500	500	600
Audible noise level (according EN 50091)	< 50 db		
Standard battery type lead acid 7,2 Ah -n° of cells	2 x180	2x180	2x180
Standard autonomy time at nominal load - min.	15	8	5
Storage time of battery without recharge (at 25°C)	3 months		
Protection degree	IP 20		
EMC compatibility	According to "EN50091-2" (CE label)		
Paint	RAL 7035		
Accessibility	Front and top		
Installation	10 cm from wall		
Dimensions (mm)	W = 450 D = 650 H = 1200		
Weights (kg) (without battery - with battery)	90-250	100-260	100-260
Static load (kg/m ²) (without battery - with battery)	310-854	340-890	340-890
Input/output cable connection	Bottom / Rear Side		
Movement	By wheels		
Ambient storage and transportation conditions	According to "IEC62040-3"		
Design standard	According to "EN50091" "IEC 62040"		
Free contact interface	On request		
Standard serial communication interface	RS232		

Rev.	Descrizione / Description	Data / Date	Comp. / Comp.	Contr. / Check.	Appr. / Approv.	Lingua / Lang.	Pag. / Pag.	di Pag. / of Pag.
/	First issue	04.01.06	A. Ferri	E. Simoni	E. Simoni	E	1	7
A	Revision JSD409427	02.05.07	A. Ferri	E. Simoni	E. Simoni	Cod. / Code	JUD408316	
B	Modify "alarms and option" JSE410256	17.01.08	P. Conti	E. Simoni	E. Simoni			

BLOCK DIAGRAM



1. Input mains (common for by-pass and rectifier)
2. Rectifier and battery charger
3. Standard internal battery
4. Optional external battery
5. Inverter
6. Emergency line (by-pass)
7. Inverter (SSI) and by-pass (SSB) static switch

DESCRIPTION:

- The UPS is designed following the criteria of low environmental impact.
- The quantity of the raw material used on the magnetic components and the number of semiconductors is minimized by the means of very advanced design criteria.
- The high overall efficiency minimizes the power consumption.
- The ECO mode is available as a standard.
- The expected battery lifetime is maximized by the very advanced digital battery charger.
- The UPS is designed in a full modular structure. Starting from a very high reliability basis (by the mean of a preliminary test and burn in of each module) and a very low time repairing time (the faulty module can be substituted in the field and repaired in the factory).
- The UPS is equipped by a built in very advanced self diagnostic program indicating the problems and suggesting to the service people how to repair the faults.
- Additional digital loops are included controlling:
 - ◇ the DC components on the output voltage (Anti Saturation Loop "ASL")
 - ◇ the short circuit current (Soft Short Recovery Loop "SSRL")
 - ◇ the high crest factor load current (Current Boost Gain "CBG")

UPS INPUT: RECTIFIER and BATTERY CHARGER

POWER - kVA	10	15	20
Input configuration	3 Phase + Neutral		
Nominal Input Voltage – Vac (Ph-N)	230 (+10% -20%)		
Input Frequency – Hz	50-60 +/- 5		
Input Power Factor	> 0.99		
Harmonic current distortion rejected in to the mains	< 4%		
DC Output Voltage Accuracy	+/- 1%		
DC Output Voltage Ripple	1% rms		
Battery Recharging Characteristic	IU (DIN 41773)		
Temperature Battery Voltage Compensation	On Request		
Maximum Recharging Current (at nom. load) - A	2x6	2x10	2x6
AC-DC converter type	IGBT		
Input protection	Fuses		
Inrush input current - A			
Earth leakage current - mA			
Nominal Current Absorbed from Mains - A (At nominal load and Battery charged)	12	19	23
Maximum Current Absorbed from Mains - A (@ nom. Load, maximum recharging current, $U_{in} = -20\%$)	24	36	36

DESCRIPTION:

- The Input rectifier is designed to minimize the harmonics rejected into the input mains.
- The technology is based on a full bridge 6-IGBT matrix, fully digitally controlled.
- Large input mains variations are allowed.
- The battery charger function is included on the same converter.
- The converter is designed to recharge the battery for long time autonomies.

BATTERY

POWER - kVA	10	15	20
Battery Type	Without maintenance		
Number of Cells	2 x 180	2 x 186	
Floating Voltage at 25°C - Vdc	2 x 406	2 x 418	
Minimum Discharge Voltage - Vdc	2 x 310	2 x 310	
Typical recharging current	C ₂₀		
Power Requested by Inverter (at nominal Load) - kW	8,5	12,7	17
Curr. Req. by Inverter (nominal load –minimum Vdc) - A	12	18	24
Battery Protection	Fuses		
Battery Test	Included as standard		

DESCRIPTION:

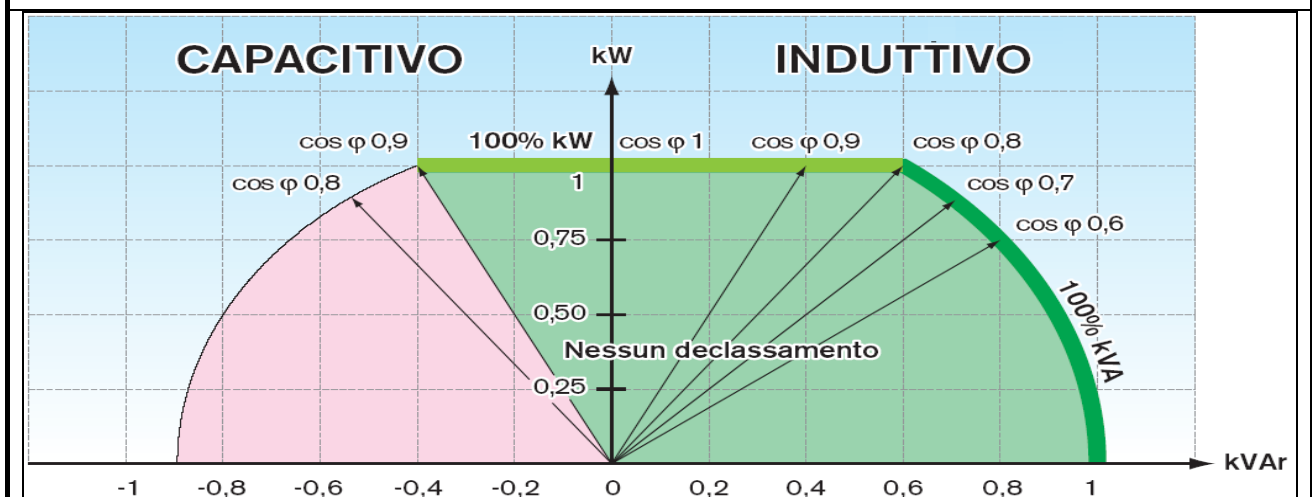
- The battery is composed by two strings of 180 sealed lead cells.
- The recharging mode is constant current followed by constant voltage type (DIN 41773).
- The battery temperature compensation is available as an option.
- Long autonomy batteries can be assembled in an external cubicle.
- Several automatic and manual battery tests are available.

UPS OUTPUT: INVERTER

DESCRIPTION:

- The Inverter design is based on a full bridge 6-IGBT matrix, fully digitally controlled.
- The output voltage stability and the dynamic response are optimized. Nested voltage an current mode loops are implemented the DC components on the output voltage is controlled by a separate loop (Anti Saturation Loop “ASL”).
- The output voltage total harmonic distortion is kept very low with both linear and not linear (switching) load (Current Boost Gain “CBG”).
- The selectivity in case of short-circuit is very high and the recovery of the voltage is digitally controlled (Soft Short Recovery Loop “SSRL”).
- The Inverter is designed to minimize the battery stress during the discharge.
- ECO mode available: load on by-pass and inverter on, the load transfer time is less than 5 msec.

POWER – kVA	10	15	20
Inverter Bridge	IGBT (transformerless)		
Nominal Output Power (Cos ϕ 0,8)	10	15	20
Nominal Output Power (Cos ϕ 1)	8	12	16
Permissible range of load power factor	See Above		
Nominal Output Voltage - Vac	220 - 230 - 240 (On request)		
Output configuration	Three Phase + Neutral		
Output Voltage Stability <ul style="list-style-type: none"> - Static - Dynamic (Step Load 0÷100%÷0) - Output Volt. Recovery Time (after step load) - IEC 62040-3 	+/- 1% rms +/- 2% rms Within 10 msec Classification 1		
Output Voltage Unbalance <ul style="list-style-type: none"> - Possible load unbalance - Voltage stability - Angle displacement tolerance 	100 % - 0% - 0% +/- 2% rms +/- 1 deg.		
Output Frequency - Hz	50 - 60		
Output Frequency Stability - Hz <ul style="list-style-type: none"> - Internal Quartz Oscillator - Hz - Inverter Sync. with Mains - Hz 	+/- 0,001 +/- 2 (Other on request)		
Nominal Output Current – A (@ 230 Vac output) <ul style="list-style-type: none"> - PF ϕ 0,8 - PF ϕ 1 	15 12	22,5 18	30 24
Overload Capability	125% for 10 min 200% for 100 msec		
Short Circuit Current – A	24	36	48
Short Circuit Characteristic	Elect. short circuit protection, current limited at 2 times nominal current. Automatic stop after 5 seconds		
Selectivity	Within ½ cicle (Fuse gl 20% In)		
Output Waveform	Sinusoidal		
Output Harmonic Distortion <ul style="list-style-type: none"> - Linear Load - Non Linear Load (Crest factor 3:1) - IEC 62040-3 	<1% <5% Fully complied		
Crest Factor (Non linear load)	3:1		



UPS OUTPUT: BY PASS

Automatic Static By-Pass Protection	Electronic Thyristor Switch Fuses
Nominal Voltage - Vac	220-230-240 +/-10%
Nominal Frequency - Hz	50 - 60 +/-5Hz
Transfer mode	Without interruption
Transfer Inverter ÷ Static By-Pass	In case of : -Static Switch test -Inverter failure -Input inv. Volt. out of limit -Output Volt. out of limit
Retransfer Static By-Pass ÷ Inverter	- Automatic - Block on bypass after 6 commutations within 2 min. - Reset by front panel or by remote command
Overload Capability	-200% Continuously -1000% For 1 Cycle
Manual By-Pass	Standard: - Electronically controlled - No break
Back-feed protection	Included as standard

DESCRIPTION:

- The back feed protection minimizes the danger caused by the inverter voltage feed back in case of by-pass fault.
- The manual by-pass is included as a standard. The electronic control avoids the risks of power interruption in case of transfer from inverter to manual by-pass and vice-versa.

PARALLEL

Automatic Parallel Redundant Configuration	Up to four by an additional card
Parallel Configuration	Redundant N-1 on N
Connection Type	CAN Bus Loop
Share Accuracy	10% max unbalancement
Maximum Distance Between two Units	100 mt
Overload Capability	N x 200% Continuously
Automatic By-Pass	On each unit
Manual By-Pass	On each unit (common as option)

DESCRIPTION:

- The parallel control is full digital and acts on both active and reactive power on each output phase.
- The Loop connection permits to disconnect one of the units from the parallel string allowing the normal operation of the remaining units.
- The can bus communication allows to connect the units by a DB9 standard connector.

ALARMS,CONTROLS AND SIGNALS

LOCAL ON THE “SYSTEM CONTROL PANEL” :

- Synoptic diagram showing : power flow, circuit breaker status and alarms
- Battery test indicator
- LCD display
- Keyboard

FREE CONTACTS (by the means of an additional card):

- Eight signals are available on free contacts.

Relay	Description	Alarms / Status
RL1	Common alarm	A30
RL2	Mains failure	A01
RL3	Battery end of discharge	A09
RL4	Inverter not OK	A13
RL5	Bypass feeding load	A16
RL6	Rectifier OK	S01
RL7	Inverter feeding load	S04
RL8	Bypass OK	S06

REMOTE PANEL (by the means of an RS485 connection):

- Synoptic diagram showing : power flow, circuit breaker status and alarms
- Battery test indicator
- LCD display
- Keyboard

OPTIONS

1. BATTERY TEMPERATURE VOLTAGE COMPENSATION
2. INSULATION TRANSFORMER
3. FREE CONTACTS CARD
4. SNMP
5. RS-485 MOD-BUS PROTOCOL
6. PARALLEL CARD INTERFACE
7. MODEM