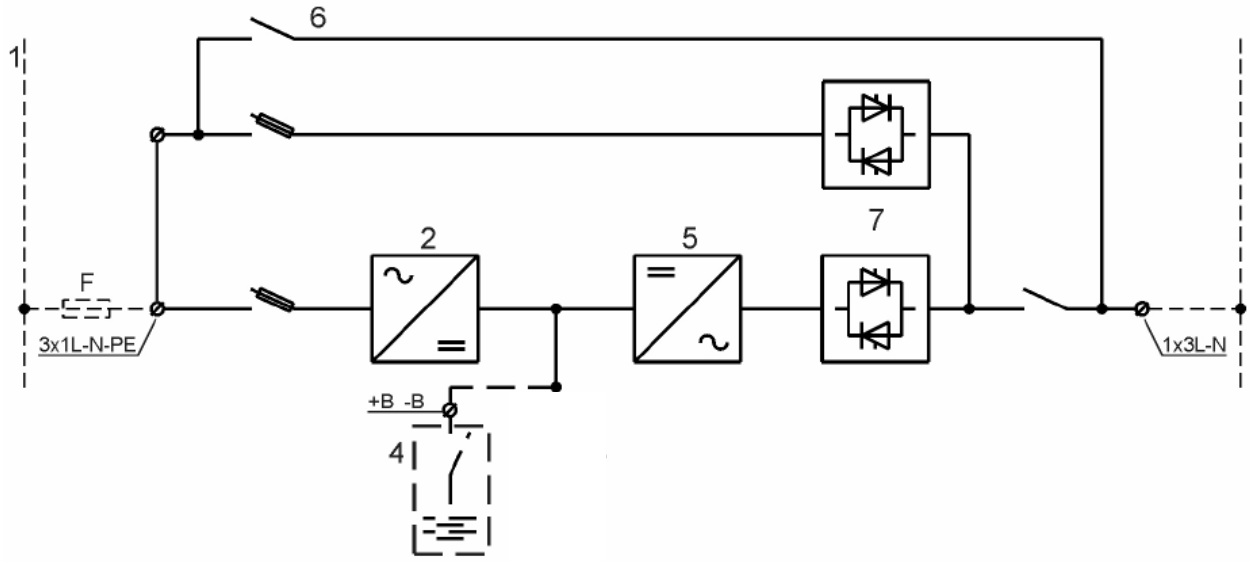
CBS GROUP LIMITED

PREMIER 33L Series, 30:40kVA UPS System

General information:

POWER (kVA)		**30**	**40**
UPS typology		ON LINE - Double conversion ECO Mode – stand by operation (Optional)	
Nominal output power (Cos Ø 0.8)	(kVA)	30	40
Nominal output power (Cos Ø 1.0)	(kW)	24	32
Efficiency AC ÷ AC (ECO mode)	(%)	>98	
Efficiency AC ÷ AC (ON LINE Double conversion mode)	(%)	>92	
Heat dissipation at nominal load	W kcal /hour	2080 1788	2780 2390
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)	(%)	<95	
Altitude	(m)	<1000 (Above Sea Level)	
Power de-rating for altitude > 1000m		According to “IEC62040-3”, from 1000m to 2000m max with 1% derating for +100m	
Ventilation		FORCED	
Requested cooling air volume	(m^3/h)	800	900
Audible noise level (according EN 50091)	(dB)	<60	
Protection degree		IP 20	
Standard battery type lead acid	(N° cells)	2x180	
EMC compatibility		According to “EN 62040-2” (CE Label)	
Paint		RAL 9001	
Dimensions	(mm)	W = 450, D = 650, H = 1200	
Accessibility		Front and top	
Installation	(cm)	10 from wall	
Weights	(kg)	141	
Static load	(kg/m^2)	483	
Input/output cable connection		Bottom / Front Side	
Movement		By wheels	
Ambient storage and transportation conditions		According to IEC62040-3	
Design standard		According to IEC62040 ISO 9000:2000 – ISO 14001	
Free contact interface		On request	
Serial communication interface		RS232-USB, RS485(Optional)	

Block diagram:



Description

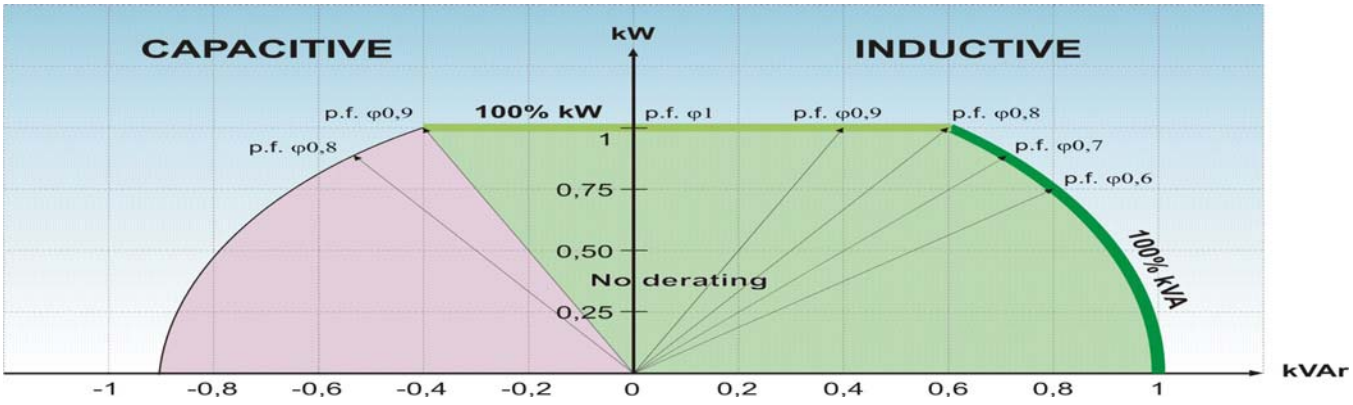
- The UPS is designed following the criteria of low environmental impact.
- The quantity of the raw material used on the magnetic components and the number of semiconductors is minimised by the means of advanced design criteria.
- The high overall efficiency minimises the power consumption.
- ECO mode is available as a standard.
- The expected battery life time is maximised by the advanced digital battery charger.
- The UPS is designed in a full modular structure. Starting from a very high reliability basis (by the use of a preliminary test and burn in of each module) and a very low repair time (the faulty module can be substituted in the field and repaired in the factory).
- The UPS is equipped with a built-in advanced self-diagnostic program to identify problems and suggest to the service engineers 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 "CGB")

UPS Input: Rectifier and Battery charger

POWER (kVA)		**30**	**40**
Input configuration		3 Phase + Neutral	
Nominal Input Voltage	(Vac)	400 (+10% -20%)	
Input Frequency	(Hz)	50-60 +/- 5	
Input Power Factor		>0.99	
Input current THDi	(%)	<3	
DC Output Voltage Accuracy	(%)	+/- 1	
Walk-in time duration	(s)	10	
DC Output Voltage Ripple	(% rms)	1	
Battery Recharging Characteristic		IU (DIN 41773)	
Temperature Battery Voltage Compensation		Optional	
Maximum Recharging Current @ nominal load	(A)	10	8
AC-DC converter type		IGBT – PFC	
Input protection		Fuses	
Inrush input current	(A)	< Maximum nominal current	
Nominal Current Absorbed from Mains (@ nominal load and Battery charged)	(A)	38	50
Maximum Current Absorbed from Mains (@ nom. load and max. recharging current, Uin = -20%)	(A)	58	72

Description

- The input rectifier is designed to minimise 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.



UPS Output: Inverter

POWER (kVA)		**30**	**40**
Inverter Bridge		IGBT (transformerless)	
Nominal Output Power (Cos Ø 0.8)	(kVA)	30	40
Nominal Output Power (Cos Ø 1.0)	(kW)	24	32
Efficiency (DC-AC)	(%)	>95	
Permissible range of load power factor		See Above	
Nominal Output Voltage	(Vac)	380-400-415	
Output configuration		Three Phase + Neutral	
Output Voltage Stability			
- Static (Balanced Load)	(% rms)	+/- 1	
- Static (Unbalanced Load)	(% rms)	+/- 2	
- Dynamic (Step Load 0~100%~0)	(% rms)	+/- 5	
- Output Volt. Recovery Time (after step load)		<10 ms	
- IEC 62040-3		Class 1	
Phase Angle			
- Balanced Load	(°)	+/-1	
- 100% Unbalanced Load			
Output Frequency	(Hz)	50 – 60	
Output Frequency Stability			
- Free Running Quartz Oscillator	(Hz)	+/- 0.001	
- Inverter Sync. with Mains	(Hz)	+/- 2 (configurable)	
- Slew rate	(Hz/s)	1	
Nominal Output Current (@ 400 Vac output)			
- PF Ø 0.8	(A)	45	60
- PF Ø 1.0	(A)	36	48
Overload Capability	(%)	125 for 10 minutes 200 for 100 ms	
Short Circuit Current	(A)	72	96
Short Circuit Characteristic		Elect. short circuit protection, current limited at 2 times nominal current. Automatic stop after 5 seconds	
Selectivity		Within ½ cycle (Fuse gl 20% In)	
Output Waveform		Sinusoidal	
Output Harmonic Distortion			
- Linear Load	(%)	<1	
- Non Linear Load (Crest factor 3:1)	(%)	<5	
- IEC 62040-3		Fully compliant	
Crest Factor (Non-linear load)		3:1	

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 optimised. Nested voltage and 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 non-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 minimise the battery stress during the discharge.
- ECO mode available: load on by-pass and inverter on, the load transfer time is less than 5ms.

UPS Output: By-pass

Automatic Static By-Pass		Electronic Thyristor Switch
Protection		Fuses
Nominal Voltage (3 Phase + N)	(Vac)	380-400-415 +/-10%
Nominal Frequency	(Hz)	50-60 +/-2 (configurable)
Transfer mode		Without interruption
Transfer: Inverter to automatic bypass		In case of : -Static Switch test -Inverter failure -Input inv. Volt. out of limit -Output volt. out of limit
Retransfer: Automatic bypass to Inverter		- Automatic - Block on bypass after 6 commutations within 2 minutes, reset by front panel
Overload Capability	(%)	- 150 continuously - 500 for 1 cycle
Manual By-Pass		Standard: - Electronically controlled - No break
Back-feed protection		Optional

Description

- The back feed protection minimises the danger caused by the inverter voltage feed back in case of by-pass fault (Optional).
- The manual by-pass is included as standard. The electronic control avoids the risks of power interruption during 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
Connection type		CAN Bus Loop
Share accuracy (maximum unbalance)	(%)	10
Maximum distance between two units	(m)	10 (longer on request)
Overload capability		N x 200%
Automatic by-pass		On each unit
Manual by-pass		On each unit (common as option)

Description

- The parallel control is fully digitally controlled, and acts on both active and reactive power on each output phase, allowing an accurate load current sharing among the UPS's, even during transient conditions.
- The parallel UPS configuration is provided with control for operation in both redundant and capacity increase.
- The loop connection permits disconnection of one of the units from the parallel string allowing the normal operation of the remaining units.
- Parallel control is distributed (not a centralised control, but on each UPS microcontroller) and communication among each unit uses a CAN BUS connection loop, providing a highly reliable system without "single points of failure".
- Extremely simple parallel control and interconnections enable simple installations and field upgrades, adding new units to the system according to the customer's needs.

UPS Monitoring:

LOCAL ON FRONT PANEL

- Synoptic diagram showing: power flow, circuit breaker status and alarms
- LCD display with menu and sub-menu
- Keyboard

PC (Windows OS)

- Connection point-point UPS-PC via RS232
- Remote connection through modem
- All the local indications, alarms and measures
- Basic troubleshooting
- History events

RELAY CARD (Optional)

- **SRC card free relay contact**
- Eight signals Alarms/Status are available for remote connections
- Free relay contact

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

- **SNMP adaptor (Optional)**
  - LAN/WAN, web server features and monitoring by browser.
  - UPS operation monitoring and server management.
- **RS485 interface board (Optional)**
  - ModBus protocol
  - UPS operation monitoring

OPTIONS

1. BATTERY TEMPERATURE VOLTAGE COMPENSATION
2. INSULATION TRANSFORMER ON BY-PASS
3. FREE CONTACTS RELAY CARD
4. SNMP ADAPTOR
5. SERIAL INTERFACE RS-485 (MOD-BUS protocol)
6. PARALLEL CARD INTERFACE
7. MODEM
8. VOLTAGE ADAPTATION AUTO-TRANSFORMERS
9. EXTERNAL BATTERY CABINET
10. WALL MOUNTED FUSED SWITCH BOX
11. SEPARATED BYPASS INPUT
12. SPECIAL PAINT

- ◇ Online double conversion technology, <5ms eco-mode
- ◇ 32-bit DSP implementing full digital control
- ◇ Digitally controlled transformerless IGBT Bridge, minimises the harmonics reinjected into the mains reducing the harmonic distortion of the current to less than 4%
- ◇ Power factor correction technology resulting in a power factor of greater than 0.99
- ◇ Lightweight, small size, on wheels
- ◇ Integrated advanced self-diagnostic program
- ◇ Step-by-step procedures described on the LCD display for ease of use
- ◇ Results of electrical measurement, alarm, work condition, event log and battery state are displayed real time on the LCD front panel
- ◇ Mimic flow display to show the operating status of the UPS
- ◇ Battery test included as standard
- ◇ Parallel redundant configurations of up to four units

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