UPS
ALCOR
20 ÷ 40 kVA

DT0385-E07

Document : DT0385 PTX English

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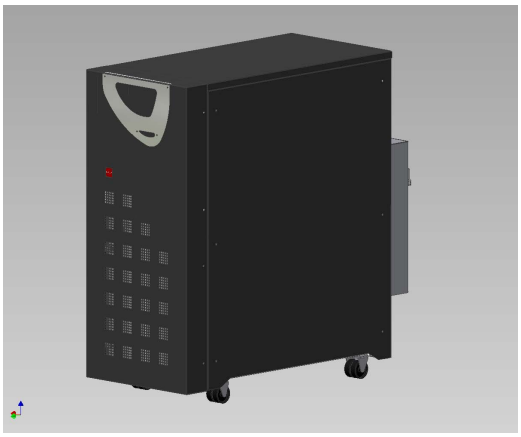
07	15-01-2010	25-01-2010 Longoni M.	28-01-2010 R.Ghezzi

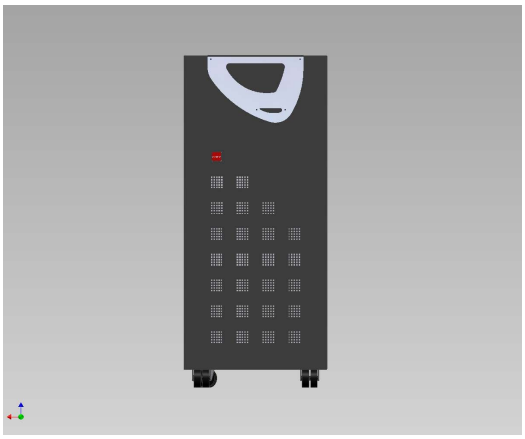
INTRODUCTION

Present document defines technical specs of a three phase UPS called *ALCOR* covering the power range from 20 to 40 kVA ON-LINE DOUBLE CONVERSION Uninterruptible Power Supply Systems with forced ventilation cooling. These equipments are characterized by reduced size and high efficiency, thanks to the trafoless design, which doesn't need transformers between mains, inverter and load.

ALCOR is a " on line, double conversion" *UPS,* with all the advantages given by this topology and without any penalty in total efficiency.

All the sizes have the same cubicle.





GENERAL FEATURES

- Double conversion, digital controlled, high frequency transformer less design, IGBT power semiconductor technology
- Mechanical design according to Powertronix style guidelines and featuring
- Electronics power devices on single power module
- Internal Battery
- UPS control, Monitor/Communication-UPS on single board.
- UPS communication board on back side of UPS

DATA COMMUNICATION PROTOCOL FEATURING

- User friendly front panel with integrated E.P.O.
- Remote EPO available
- RS232 9 pins D type connector
- Software designed for most existing platforms (Windows, Novell, Unix, OS/2, MacOS)
- UPS Diagnostic & Management through electrical RS232 serial communication
- Diagnostic system UPS through modem.
- SNMP Slot predisposition
- Remote status UPS through free contacts

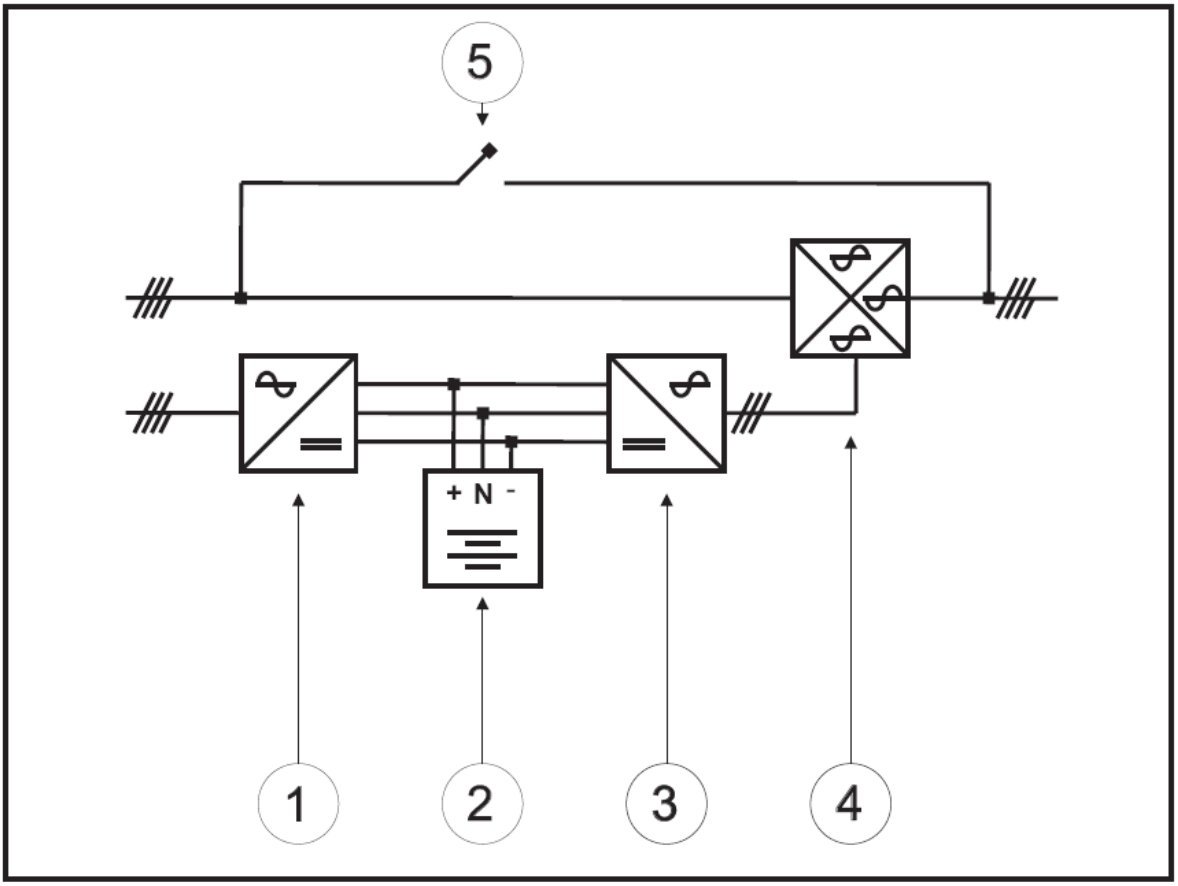
MECHANICAL

- Protection rating: IP20 (IP21 as option)
- Bottom cable entry
- Gladding for armoured cabling

OPTIONS:

- Input or Output Galvanic isolation transformer
- Single transformer on Inverter line or reserve
- Parallel Unit configuration

ALCOR LOCK DIAGRAM



Description :

1. IGBT Rectifier bridge
2. Battery
3. Inverter Power IGBT
4. Static Switch
5. Manual By-Pass

REGULATIONS AND STANDARDS

This UPS family is designed according to the following regulations and standards:

2006/95/CE	Low Voltage
2004/108/CE	EMC (Electromagnetic Compatibility)

CEI-EN 62040-1-1:	Uninterruptible power systems (UPS) Part 1-1: General and safety requirements for UPS used in operator access area
CEI EN 62040-1-2:	Uninterruptible power systems (UPS) Part 1-2: General and safety requirements for UPS used in restricted access locations
CEI EN 62040-2:	Uninterruptible power systems (UPS) Part 2: Electromagnetic compatibility (EMC) requirements
CEI EN 62040-3:	Uninterruptible power systems (UPS) Part 3: Method of specifying the performance and test requirements

GENERAL DATA

ALCOR 20 ÷ 40 kVA

GENERAL

Configuration	On-Line Double Conversion
Nominal Input Voltage	3ph + N 380Vac 400Vac 415Vac
Input PFC	H.F technology. IGBT sinusoidal current
Inverter	H.F technology switching trafoLess
S. Switch	Electronic static switch
Cooling system	Forced air

MECHANICAL

Housing	Dedicated UPS cabinet
Colour	RAL 7016
Protection rating	IP 20
Recommended distances for placement	See pages 20& 21
Cable entry	Rear Bottom
Size	390 x 910 x 910 mm (W x D x H)

ENVIRONMENTAL CONDITIONS

UPS operating temperature	0-40° C
Battery operating temperature	As suggested by battery manufacturer
Relative humidity	< 90% (without condensing)
Altitude Derating	Until 1000 m usl (1% downgrading every 100m from 1000 to 2000)
Storage temperature	-20°÷ + 70°C (UPS) +20°÷ +30°C (Batterie)
Air flux	200/400 m^3/ h (max)

DISPLAY

LCD-Display	Display LCD with four lines x 20 characters /each
Function key	Four functions Key (Menu / Left Arrow / Right Arrow / Esc) + Local EPO
Visual alarms	Led status green UPS OK/ Led status red ALARM
Acoustic alarms	Yes

COMMUNICATION

RS232	1 Serial (+ 1 optional)
Free contacts	4 • UPS in operation • UPS in bypass • Mains present Battery end discharge
SNMP SLOT	Yes
Maintenance Software	RS232
Parallel communication	Optical fibre

GENERAL DATA

ALCOR 20 ÷ 40 kVA

BATTERY

Nominal voltage	720 VDC
Floating voltage	810 VDC
N° of elements	360
Battery location	Internal compartment 5Ah/7Ah/9Ah
Battery Test	Yes / Adjustible Setting
Voltage Range-admitted	600-830 Vdc
Max recharge battery Current	30 A / 20KVA – 25 A / 25KVA – 20A / 30KVA - 8 A / 40KVA
Current recharge	Selectable by digital parameters
Recharge characteristics	DIN 41773
Stability of Vdc of battery charge	+/- 1%
Alternating residual in continue tension - (Vrms/Vb) x 100	< 1%
Battery Pre-alarm	Adjustable 630Vdc recommended
Temperature battery compensation	Temperature Voltage compensation of battery recharge value with external temperature sensor (optional)

WEIGHTS

Weight (Kg) without Battery	65 Kg
Weight (Kg) with Battery	235 Kg

ENVIRONMENT CONDITIONS

Radio noise suppression	IEC-EN62040-2 CLASSE A
Noise at 1m distance	58dB (A)

OPTIONAL

Extension of battery	Separated cabinet 2 x 60 blocks 12Vdc (5Ah or 7Ah or 9Ah)
Transformer	For galvanic isolation (separate cabinet).
Shutdown	Powershut Plus
Software for diagnostic	Generex PTX
SNMP-Adapter	Link the UPS on the network
Remote panel	Remote UPS's Status
Relay board	250Vac/8A

KVA	20 KVA
Configuration	On Line Double Conversion
Power factor	0,8
INPUT	
Number of phases	3 Ph+N
	1Ph+N
Nominal voltage	3ph + N 380/400/415 VAC ±20%
	1ph + N 220/230/240 VAC ±20%
Reserve Nominal voltage	3ph + N 380/400/415 VAC ±20%
	1ph + N 220/230/240 VAC ±20%
Nominal frequency	50/60 Hz
Allowed Frequency variation	40/70 Hz
Absorbed Max Current (A)	60A
(Vin = -20% 400V)	
Input power factor	0.98
Input current distortion	<3%
Soft start	20 seconds
Max Recharge battery current	30A
OUTPUT	
Number of phases	3 Ph+N
	1Ph+N
Output nominal voltage	3ph + N 380/400/415 VAC
	1ph + N 220/230/240 VAC
Output nominal current (A)	28,8A
(400Vnom.)	
Output frequency	50/60 Hz
Synchro tolerance	±1% / ±2% / ±5% / ±10%
Max Slew Rate with the main present	± 1 Hz per sec
Output frequency Tolerance with	± 0,005 Hz
internal oscillator	
Output Voltage Static Variation	±1% (UPS Class 1 CEI/IEC 62040-3 par 5.3.1)
(0-100% Load)	
Output Voltage Dynamic Variation	±5% (UPS Class 1 CEI/IEC 62040-3 par 5.3.1)
(0-100% Load)	
Output Wave form	Sinusoidal (UPS Class 1 CEI/IEC 62040-3 par 5.3.1.2)
Unbalanced Load drop Voltage	±3%
Phase to Phase Variation	120° ±1% (Balanced Load)
	120° ±3% (Unbalanced Load)
Output THD with linear load	< 3%
Output THD with distorted load	<7%
(according to EN62040-3)	
Crest Factor	Compatible with CEI-EN62040-3

OUTPUT

Inverter Overload	OVRLD <125% Pn 10 min OVRLD >125% Pn 5sec.
Efficiency	See pictures Efficiency/Load at pages 16 and 17

KVA	25 KVA
Configuration	On Line Double Conversion
Power factor	0,8
INPUT	
Number of phases	3 Ph+N 1Ph+N
Nominal voltage	3ph + N 380/400/415 VAC ±20% 1ph + N 220/230/240 VAC ±20%
Reserve Nominal voltage	3ph + N 380/400/415 VAC ±20% 1ph + N 220/230/240 VAC ±20%
Nominal frequency	50/60 Hz
Allowed Frequency variation	40/70 Hz
Max absorbed Current (A) (Vin = -20% 400V)	60A
Input power factor	0.98
Input current distortion	<3%
Soft start	20 seconds
Max Recharge battery current	25A
OUTPUT	
Number of phases	3 Ph+N 1Ph+N
Output nominal voltage	3ph + N 380/400/415 VAC 1ph + N 220/230/240 VAC
Output nominal current (A) (400Vnom.)	36
Output frequency	50/60 Hz
Synchro tolerance	±1% / ±2% / ±5% / ±10%
Max Slew Rate with the main present	± 1 Hz per sec
Output frequency Tolerance with internal oscillator	± 0,005 Hz
Output Voltage Static Variation (0-100% Load)	±1% (UPS Classe 1 CEI/IEC 62040-3 par 5.3.1)
Output Voltage Dynamic Variation (0-100% Load)	±5% (UPS Classe 1 CEI/IEC 62040-3 par 5.3.1)
Output Wave form	Sinusoidal (UPS Class 1 CEI/IEC 62040-3 par 5.3.1.2)
Unbalanced Load drop Voltage	±3%
Phase to Phase Variation	120° ±1% (Balanced Load) 120° ±3% Unbalanced Load)
Output THD with linear load	< 3%
Output THD with distorted load (according to EN62040-3)	<7%
Crest Factor	Compatible with CEI-EN62040-3

OUTPUT

Inverter Overload	OVRLD <125% Pn 10 min
	OVRLD >125% Pn 5sec.
Efficiency	See pictures Efficiency/Load at pages 16 and 17

KVA	30 KVA
Configuration	On Line Double Conversion
Power factor	0,8
INPUT	
Number of phases	3 Ph+N 1Ph+N
Nominal voltage	3ph + N 380/400/415 VAC ±20% 1ph + N 220/230/240 VAC ±20%
Reserve Nominal voltage	3ph + N 380/400/415 VAC ±20% 1ph + N 220/230/240 VAC ±20%
Nominal frequency	50/60 Hz
Nominal Frequency range	40/70 Hz
Max Absorbed Current (A) (Vin = -20% 400V)	60A
Input power factor	0.98
Input current distortion	<3%
Soft start	20 seconds
Max recharge battery current	20A
OUTPUT	
Number of phases	3 Ph+N 1Ph+N
Output nominal voltage	3ph + N 380/400/415 VAC 1ph + N 220/230/240 VAC
Output nominal current (A) (400Vnom.)	43,3
Output frequency	50/60 Hz
Synchro tolerance	±1% / ±2% / ±5% / ±10%
Max Slew Rate with the main present	± 1 Hz per sec
Output frequency Tolerance with internal oscillator	± 0,005 Hz
Output Voltage Static Variation (0-100% Load)	±1% (UPS Classe 1 CEI/IEC 62040-3 par 5.3.1)
Output Voltage Dynamic Variation (0-100% Load)	±5% (UPS Classe 1 CEI/IEC 62040-3 par 5.3.1)
Output Wave form	Sinusoidal (UPS Class 1 CEI/IEC 62040-3 par 5.3.1.2)
Unbalanced Load drop Voltage	±3%
Phase to Phase Variation	120° ±1% (Balanced Load) 120° ±3% Unbalanced Load)
Output THD with linear load	< 3%
Output THD with distorted load (according to EN62040-3)	<7%
Crest Factor	Compatible with CEI-EN62040-3

OUTPUT

Inverter Overload	OVRLD <125% Pn 10 min OVRLD >125% Pn 5sec.
Efficiency	See pictures Efficiency/Load at pages 16 and 17

KVA	40 KVA
Configuration	On Line Double Conversion
Power factor	0,8
INPUT	
Number of phases	3 Ph+N 1Ph+N
Nominal voltage	3ph + N 380/400/415 VAC ±20% 1ph + N 220/230/240 VAC ±20%
Reserve Nominal voltage	3ph + N 380/400/415 VAC ±20% 1ph + N 220/230/240 VAC ±20%
Nominal frequency	50/60 Hz
Frequency variation allowed	40/70 Hz
Max Current absorbed (A) (Vin = -20% 400V)	60A
Input power factor	0.98
Input current distortion	<3%
Soft start	20 seconds
Max recharge battery current	8A
OUTPUT	
Number of phases	3 Ph+N 1Ph+N
Output nominal voltage	3ph + N 380/400/415 VAC 1ph + N 220/230/240 VAC
Output nominal current (A) (400Vnom.)	57,7
Output frequency	50/60 Hz
Synchro tolerance	±1% / ±2% / ±5% / ±10%
Max Slew Rate with the main present	± 1 Hz per sec
Output frequency Tolerance with internal oscillator	± 0,005 Hz
Output Voltage Static Variation (0-100% Load)	±1% (UPS Class 1 CEI/IEC 62040-3 par 5.3.1)
Output Voltage Dynamic Variation (0-100% Load)	±5% (UPS Class 1 CEI/IEC 62040-3 par 5.3.1)
Wave form output	Sinusoidal (UPS Class 1 CEI/IEC 62040-3 par 5.3.1.2)
Unbalanced Load drop Voltage	±3%
Phase to Phase Variation	120° ±1% (Balanced Load) 120° ±3% Unbalanced Load)
Output THD with linear load	< 3%
Output THD with distorted load (according to EN62040-3)	<7%
Crest Factor	Compatible with CEI-EN62040-3

OUTPUT

Inverter Overload	OVRLD <125% Pn 10 min OVRLD >125% Pn 5sec.
Efficiency	See graphic Efficiency/Load pages 16 and 17

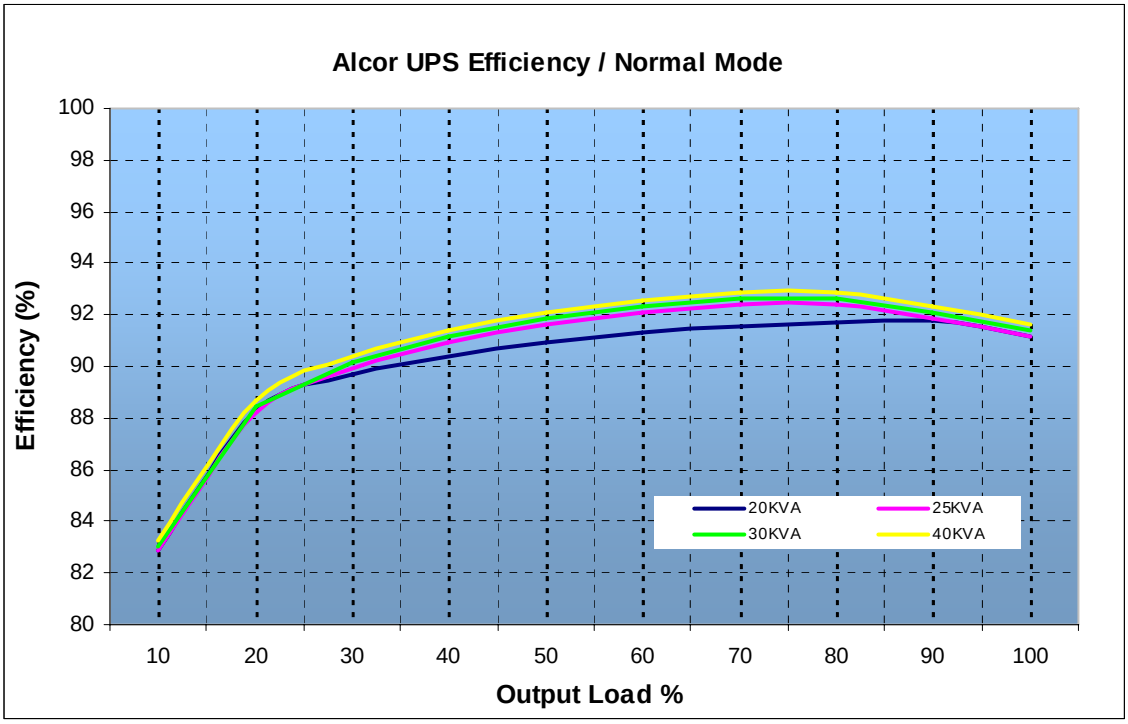
kVA	20-40KVA

BYPASS

Nominal Voltage	3ph + N	380/400/415 VAC	±20%
	1ph + N	220/230/240 VAC	±20%
Enable Reserve Window Tolerance		±10%	
Frequency		50/60 Hz	
Admitted Current Overload		10 I_n for 100 ms.	
Maximum switching time:			
• Inverter-Bypass		< 1ms	
• Bypass – Inverter automatic return		< 1ms	
• Overload / Failure		< 5ms	
Manual By pass		Available with mechanical blocks	

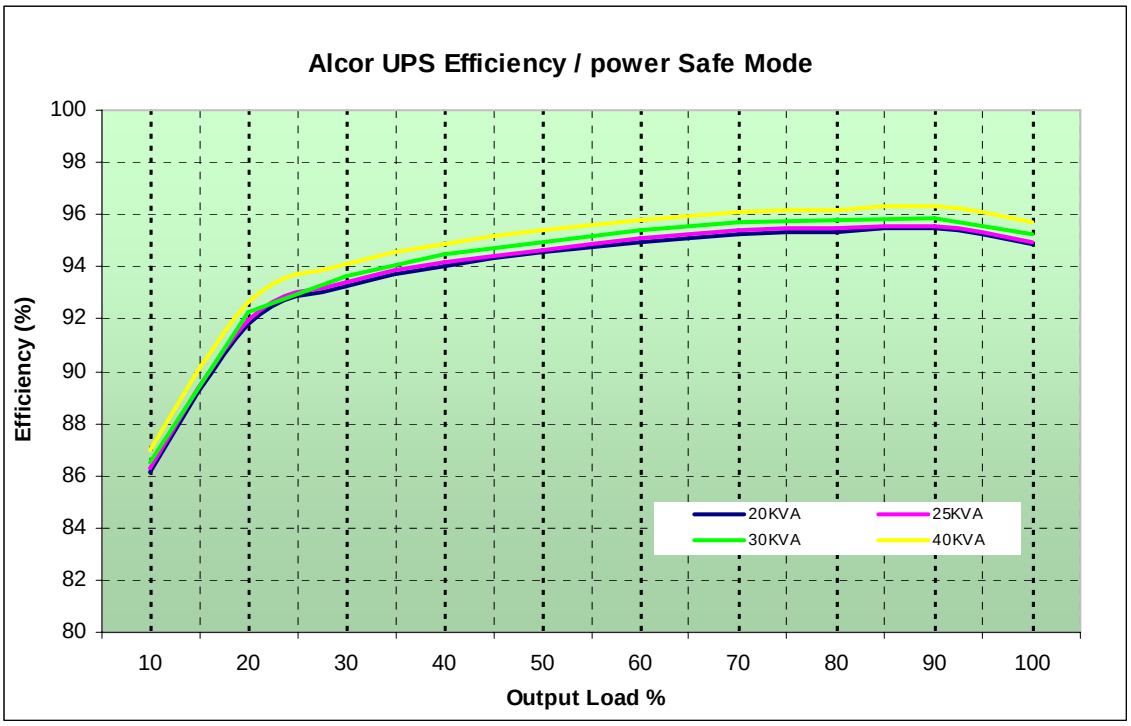
Picture 1
UPS ALCOR
Efficiency / Load

UPS in “standard” Mode



Picture 2
UPS ALCOR
Efficiency / Load

UPS in "Power Safe" Mode



UPS CONFIGURATIONS

All the sizes are available in the following configurations :

- Single phase input / Single phase output
- Three phase input / Single phase output
- Three phase input / Three phase output
- Single phase input / Three phase output
- Stand alone
- Hot stand-by configuration
- Parallel configuration (for redundancy or to increase power availability)

The parallel configuration is type bypass distributed.

It is possible to have up to 8 units in parallel.

The communications among the units of the parallel system is ring type by optical fibres.

UPS USER INTERFACE

LCD display has 4 rows of max 20 characters/each, 4 function buttons and a local EPO
The menu is composed by the following 6 voices :

MENU	N°	NOTE
UPS Status and alarms	1	Default menu
Measurements	2	It shows all the UPS measures
UPS Command	3	ON-OFF inverter, switching load, battery test
Panel setup	4	Date-Time setting, battery test setting, display language setting
Historical events	5	It stores the last happened 1024 events with date and time
Service Mode	6	Only for service department

Available Measurements on display :

-Input mains voltages -Input currents
-Output voltages -Output currents
-Output frequency -Output power kVA
-Battery voltage -Battery current (with sign)
-Cooling system temperature

UPS REMOTE PANEL

The transferred signals are the following :

- *UPS Run*
- *UPS in Bypass*
- *Mains Present*
- *Battery end discharge*

Serial Interface:

SNMP ADAPTER for UPS monitoring and managing from any intranet or internet site
RS232 port for UPS monitoring and managing from a connected PC (UPSMAN Software needed)

RECOMMANDED MINIMUM WALLS DISTANCE