

**UPS
ATLAS
60 ÷ 120 kVA**

DT 0341-E07

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INTRODUCTION

Present document defines technical specs of a three phase UPS named *ATLAS* covering the power range from 60 to 120 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 conversion topology, which doesn't need transformers between mains, inverter and load.

ATLAS UPS belongs to the "double conversion" equipments family, with all advantages given by this topology and without any penalty in total efficiency.

All sizes have the same cubicle.

Following is shown the picture of the system :



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
- 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)
- Diagnostic & management of UPS through electrical RS232 serial communication
- Diagnostic system UPS through modem.
- SNMP Slot predisposition
- Remote status UPS through clean contact

MECHANICAL

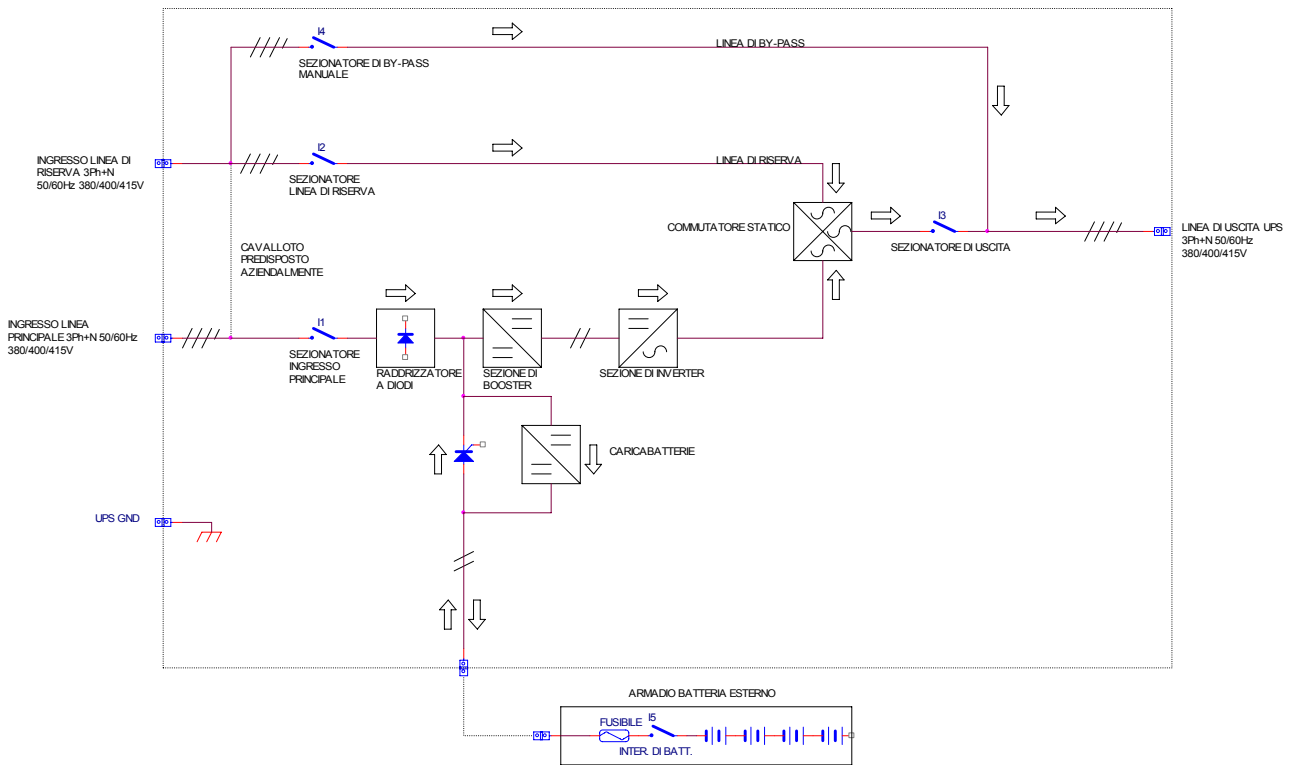
- IP20 grade protection
- Gladding for armoured cabling
- Service access fully from the front
- No side access required
- Bottom cable entry

According to all the others POWERTRONIX products option are available in order to increase the performances of the system:

- Galvanic isolation of the load through transformer
- Parallel Unit configuration
- Single transformer on Inverter line or reserve line as requested
- PC connection of the UPS on local net communication

ONE LINE DIAGRAM:

On this page is given the key block of UPS



Descriptions :

1. Rectifier bridge
2. Booster IGBT (step-up)
3. Inverter Power IGBT
4. Static Switch
5. Manual By-Pass
6. Battery Charger
7. Batteries

REGULATIONS AND STANDARDS

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

EUROPEAN electromagnetic compatibility CE 2004/108

- | | |
|-------------------|---|
| 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

ATLAS 60 ÷ 120 kVA

GENERAL

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

MECHANICAL

Housing	Dedicated UPS cabinet
Colour	RAL7035
Grade of protection	IP20
Recommended distances for placement	See pages from 20 to 22
Entry cables	Front from below
Size	1800 x 700 x 730 mm (h x l x p)

ENVIRONMENTAL CONDITIONS

Operating temperature	0-40° C
Temperature recommended for batteries	+20 ÷ +30 °C
Relative humidity	< 95% (without condensing)
Maximum altitude	Until 1000 m usl (1% downgrading every 100m from 1000 a 2000)
Storage temperature	-20°+ 70°C (UPS) +20°C ÷ 30°C (battery)

DISPLAY

LCD-Display	Display LCD four lines x 20 characters end four function keys + local EPO
Bright alarms	Led status green UPS OK/ Led status red ALARM
Acoustic alarms	Yes

COMMUNICATION

RS232	1 Serial standard
Free contacts	N° 4 contact: UPS in operation / UPS in bypass/mains present /battery end discharge
Battery end discharge SNMP SLOT	Yes
Maintenance Software	RS232
Parallel communication	RS232 Optic

GENERAL DATA

ATLAS 60 ÷ 120 kVA

BATTERY	60-80-100 KVA	120 KVA
Nominal voltage	384 VDC.	480 VDC
Floating voltage	432 VDC.	540 VDC
N° of elements	192	240
Battery location	External dedicated cabinet	
Voltage Range-admitted	320-750 Vdc	396-750 Vdc
Max recharge battery Current	25 Amps	
Current recharge	8,5-13,5-20-25A selectable	
Characteristics of recharge	DIN 41773	
Stability of Vdc of battery charge	+/- 1%	
Alternating residual in continue tension - (Vrms/Vb) x 100	< 1%	
Battery Pre-alarm	Adjustable 350Vdc recommended	Adjustable 430Vdc recommended
Temperature battery compensation	Temperature Volt compensation of battery recharge value optional with external thermal sensor	

Weights	60 kVA	80 kVA	100 kVA	120 kVA
	283 Kg (stand.)	315 Kg (stand.)	385 Kg (stand.)	400 Kg (stand.)
Weight (Kg)	419 Kg (12 P)	465 Kg (12 P)	562 Kg (12 P)	588 Kg (12 P)
	482 Kg (lowTHD)	512 Kg (lowTHD)	629 Kg (lowTHD)	655 Kg (lowTHD)

ENVIROMENT CONDITION

Deletion noise radio	IEC-EN62040-2 CLASS A	
noise at 1m of distance	60-80-100KVA<60 dB (A)	120KVA<65 dB (A)
Air flux	700m ³ /h (massima)	

OPTIONAL

Extension of battery	Separated cabinet
Transformer	For galvanic isolation (separated cabinet).
Shutdown	Powershut Plus.
Software for diagnostic	Generex PTX.
SNMP-Adapter	Link the UPS on the net.
Remote panel	For indicate the status of the UPS at the distance
Relays board	
Relays contacts available on TagBlock	250Vac/8A Mains present Inverter in function Prealarm of battery Load on reserve

TYPE kVA
60

Configuration	Standard	12 pulse	12 pulse + Low THD
Power factor	0.8	0.8	0.8

INPUT

Input frequency	50±60Hz +/- 20%		
Number of phases	3PH + N		
Nominal voltage	3ph + N 380/400/415 VAC ±20%		
Reserve Nominal voltage	3ph + N 380/400/415 VAC ±10%		
Nominal frequency	50/60 Hz		
Frequency variation allowed	40/70 Hz		
Max Current absorbed (A) (Vin = -20% 400V)	96,2 A		
Input current distortion	<28%	<10%	<5%
Input current Cos φ	0,95	0,97	0,99
Soft start	30 sec.		

OUTPUT

Number of phases	3PH + N		
Output nominal voltage	3ph + N 380/400/415 VAC		
Output nominal current (A) (400Vnom.)	87 A		
Output frequency	50/60 Hz		
Synchro tolerance	+/- 1%, +/- 2%, +/-5%, +/-10% selectable		
Max Slew Rate whit the main present	± 1 Hz for sec		
Precision of the output frequency with internal oscillator	± 0,005 Hz		
Output Voltage Static Variation (0-100% Carico)	±1% (UPS Class 1 CEI/IEC 62040-3 par 5.3.1)		
Output Voltage Dynamic Variation (0-100% Carico)	±5% (UPS Class 1 CEI/IEC 62040-3 par 5.3.1)		
Unbalanced Load drop Voltage	±3%		
Phase Variation between Phase	120° ±1% (Balanced Load) 120° ±3% Unbalanced Load)		
Output THD whit linear load	<3%		
Output THD whit distorted load (accordidng to CEI62040-3)	<7%		
Crest Factor	Compatible with CEI-62040-3		
Admitted Inverter Overload	125% for 10 minutes; 150% per 5 seconds		
Efficiency	See Graphic 1/2 pag. 14		
Maximum total losses (W)	5300		
Power consume whitout load (W)	450w		

TYPE kVA
80

Configuration	Standard	12 pulse	12 pulse + Low THD
Power factor	0.8	0.8	0.8

INPUT

Input frequency	50±60Hz +/- 20%		
Number of phases	3PH + N		
Nominal voltage	3ph + N 380/400/415 VAC ±20%		
Reserve Nominal voltage	3ph + N 380/400/415 VAC ±10%		
Nominal frequency	50/60 Hz		
Frequency variation allowed	40/70 Hz		
Max Current absorbed (A) (Vin = -20% 400V)	128,7 A		
Input current distortion	<28%	<10%	<5%
Input current Cos φ	0,95	0,97	0,99
Soft start	30 sec.		

OUTPUT

Number of phases	3PH + N		
Output nominal voltage	3ph + N 380/400/415 VAC		
Output nominal current (A) (400Vnom.)	115,5 A		
Output frequency	50/60 Hz		
Synchro tolerance	+/- 1%, +/- 2%, +/-5%, +/-10% selectable		
Max Slew Rate whit the main present	± 1 Hz for sec		
Precision of the output frequency with internal oscillator	± 0,005 Hz		
Output Voltage Static Variation (0-100% Carico)	±1% (UPS Class 1 CEI/IEC 62040-3 par 5.3.1)		
Output Voltage Dynamic Variation (0-100% Carico)	±5% (UPS Class 1 CEI/IEC 62040-3 par 5.3.1)		
Unbalanced Load drop Voltage	±3%		
Phase Variation between Phase	120° ±1% (Balanced Load) 120° ±3% Unbalanced Load)		
Output THD whit linear load	<3%		
Output THD whit distorted load (accordidng to CEI62040-3)	<7%		
Crest Factor	Compatible with CEI-62040-3		
Admitted Inverter Overload	125% for 10 minutes; 150% per 5 seconds		
Efficiency	See Graphic 1/2 pag. 14		
Maximum total losses (W)	7350		
Power consume whitout load (W)	450W		

TYPE kVA
100

Configuration	Standard	12 pulse	12 pulse + Low THD
Power factor	0.8	0.8	0.8

INPUT

Input frequency	50±60Hz +/- 20%		
Number of phases	3PH + N		
Nominal voltage	3ph + N 380/400/415 VAC ±20%		
Reserve Nominal voltage	3ph + N 380/400/415 VAC ±10%		
Nominal frequency	50/60 Hz		
Frequency variation allowed	40/70 Hz		
Max Current absorbed (A) (Vin = -20% 400V)	157,2A		
Input current distortion	<28%	<10%	<5%
Input current Cos φ	0,95	0,97	0,99
Soft start	30 sec.		

OUTPUT

Number of phases	3PH + N		
Output nominal voltage	3ph + N 380/400/415 VAC		
Output nominal current (A) (400Vnom.)	144,3 A		
Output frequency	50/60 Hz		
Synchro tolerance	+/- 1%, +/- 2%, +/-5%, +/-10% selectable		
Max Slew Rate whit the main present	± 1 Hz for sec		
Precision of the output frequency with internal oscillator	± 0,005 Hz		
Output Voltage Static Variation (0-100% Carico)	±1% (UPS Class 1 CEI/IEC 62040-3 par 5.3.1)		
Output Voltage Dynamic Variation (0-100% Carico)	±5% (UPS Class 1 CEI/IEC 62040-3 par 5.3.1)		
Unbalanced Load drop Voltage	±3%		
Phase Variation between Phase	120° ±1% (Balanced Load) 120° ±3% Unbalanced Load)		
Output THD whit linear load	<3%		
Output THD whit distorted load (accordidng to CEI62040-3)	<7%		
Crest Factor	Compatible with CEI-62040-3		
Admitted Inverter Overload	125% for 10 minutes; 150% per 5 seconds		
Efficiency	See Graphic 1/2 pag. 14		
Maximum total losses (W)	7146w		
Power consume whitout load (W)	480w		

TYPE kVA
1200

Configuration	Standard	12 pulse	12 pulse + Low THD
Power factor	0.8	0.8	0.8

INPUT

Input frequency	50±60Hz +/- 20%		
Number of phases	3PH + N		
Nominal voltage	3ph + N 380/400/415 VAC ±20%		
Reserve Nominal voltage	3ph + N 380/400/415 VAC ±10%		
Nominal frequency	50/60 Hz		
Frequency variation allowed	40/70 Hz		
Max Current absorbed (A) (Vin = -20% 400V)	186A		
Input current distortion	<28%	<10%	<5%
Input current Cos φ	0,95	0,97	0,99
Soft start	30 sec.		

OUTPUT

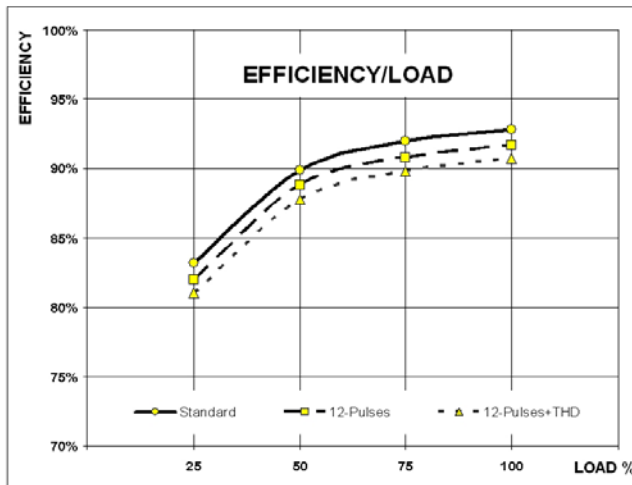
Number of phases	3PH + N		
Output nominal voltage	3ph + N 380/400/415 VAC		
Output nominal current (A) (400Vnom.)	173,2A		
Output frequency	50/60 Hz		
Synchro tolerance	+/- 1%, +/- 2%, +/-5%, +/-10% selectable		
Max Slew Rate whit the main present	± 1 Hz for sec		
Precision of the output frequency with internal oscillator	± 0,005 Hz		
Output Voltage Static Variation (0-100% Carico)	±1% (UPS Class 1 CEI/IEC 62040-3 par 5.3.1)		
Output Voltage Dynamic Variation (0-100% Carico)	±5% (UPS Class 1 CEI/IEC 62040-3 par 5.3.1)		
Unbalanced Load drop Voltage	±3%		
Phase Variation between Phase	120° ±1% (Balanced Load) 120° ±3% Unbalanced Load)		
Output THD whit linear load	<3%		
Output THD whit distorted load (accordidng to CEI62040-3)	<7%		
Crest Factor	Compatible with CEI-62040-3		
Admitted Inverter Overload	125% for 10 minutes; 150% per 5 seconds		
Efficiency	See Graphic 1/2 pag. 14		
Maximum total losses (W)	7114W		
Power consume whitout load (W)	510W		

TYPE kVA

60-120KVA

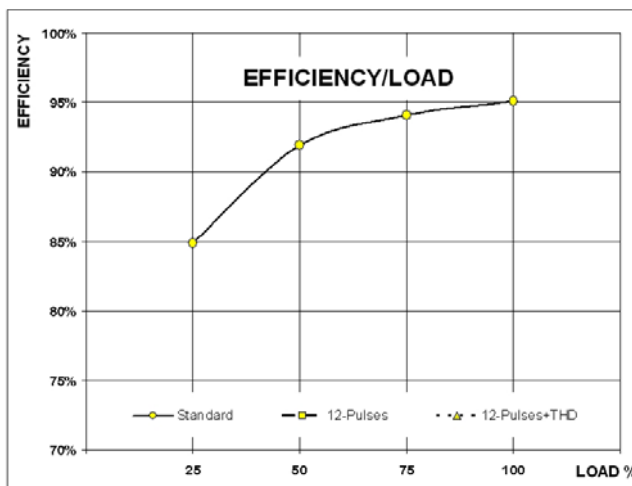
BYPASS

Nominal voltage	3ph + N	380/400/415 VAC	±20%
	1ph + N	220/230/240 VAC	±20%
Reserve Enable Window Tolerance			±10%
Frequency			50/60 Hz
Overload in current admitted		150% 30 minutes	1000% 100ms.
Maximum temp of communication			
Inverter-Bypass			<1ms
Bypass – Inverter automatic return			<0ms
Overload / Failure			<5ms
Manual by pass			Available with mechanical blocks



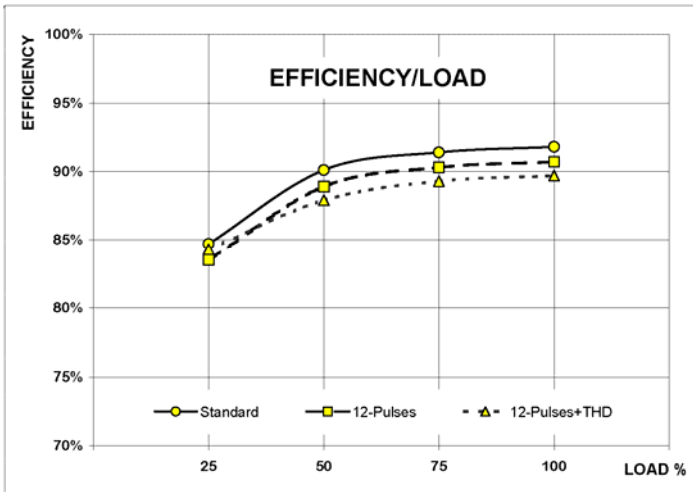
UPS ATLAS 60KVA
Grafic 1
"Efficiency /Load"

Mode "UPS"
-Standard
-12Pulses
-Low THD

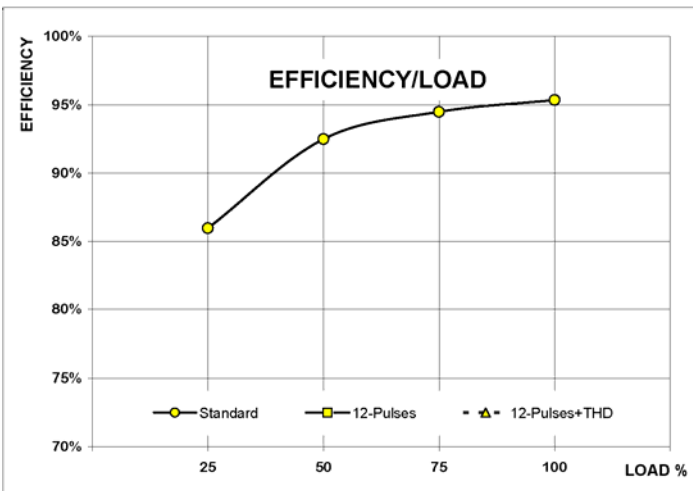


UPS ATLAS 60KVA
Grafic 2
"Efficiency /Load"

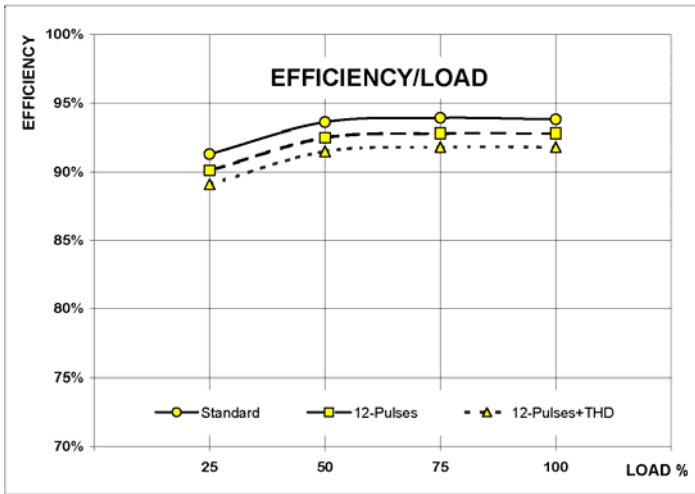
Mode "POWER SAFE"



UPS ATLAS 80KVA
Grafic 3
"Efficiency /Load"
Mode "UPS"
-Standard
-12Pulses
-Low THD

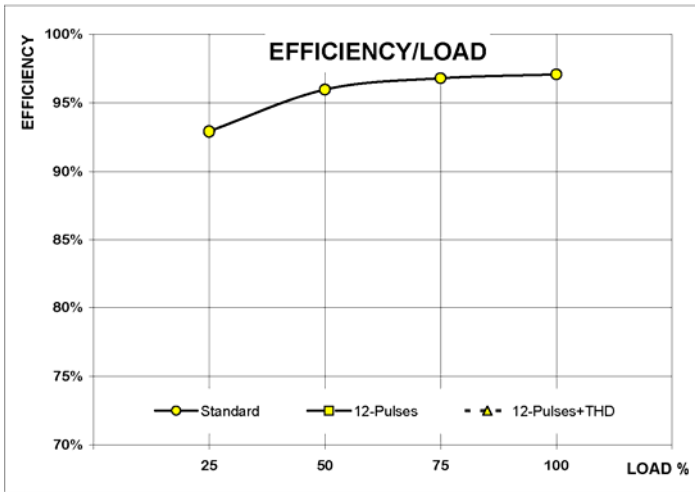


UPS ATLAS 80KVA
Grafic 4
"Efficiency /Load"
Mode "POWER SAFE"



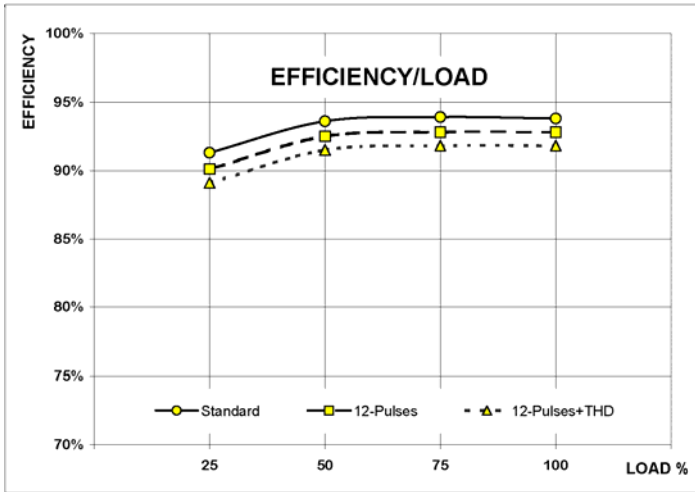
UPS ATLAS 100KVA
Grafic 5
"Efficiency /Load"

Mode "UPS"
-Standard
-12Pulses
-Low THD



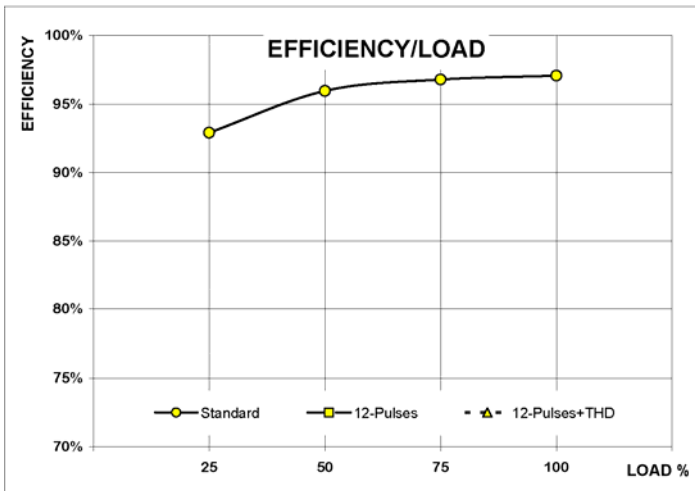
UPS ATLAS 100KVA
Grafic 6
"Efficiency /Load"

Mode "POWER SAFE"



UPS ATLAS 120KVA
Grafic 7
“Efficiency /Load”

Mode “UPS”
-Standard
-12Pulses
-Low THD



UPS ATLAS 120KVA
Grafic 8
“Efficiency /Load”

Mode “POWER SAFE”

UPS CONFIGURATIONS

All the sizes are available in the following configurations :

- Three phases input / single phase output
- Three phases input / three phases output
- Stand alone
- Hot stand-by configuration
- Parallel mode or power parallel

(features available on three phase in Three phase out only)

The parallel configuration is type bypass distributed.

It is possible to have maximum n°8 unit in parallel.

The communications between the unit of the parallel system is ring type by optical fibres.

UPS USER INTERFACE

LCD display 4 rows x 20 characters and 4 functions buttons + local EPO

Measures :

- | | |
|------------------------|-----------------------------|
| - Input Voltage | - Input Currents |
| - Output Voltage | - Output Currents |
| - Input Frequency | - Output Frequency |
| - Battery Voltage | - Battery Current with sign |
| - Battery back-up time | |

UPS REMOTE PANEL

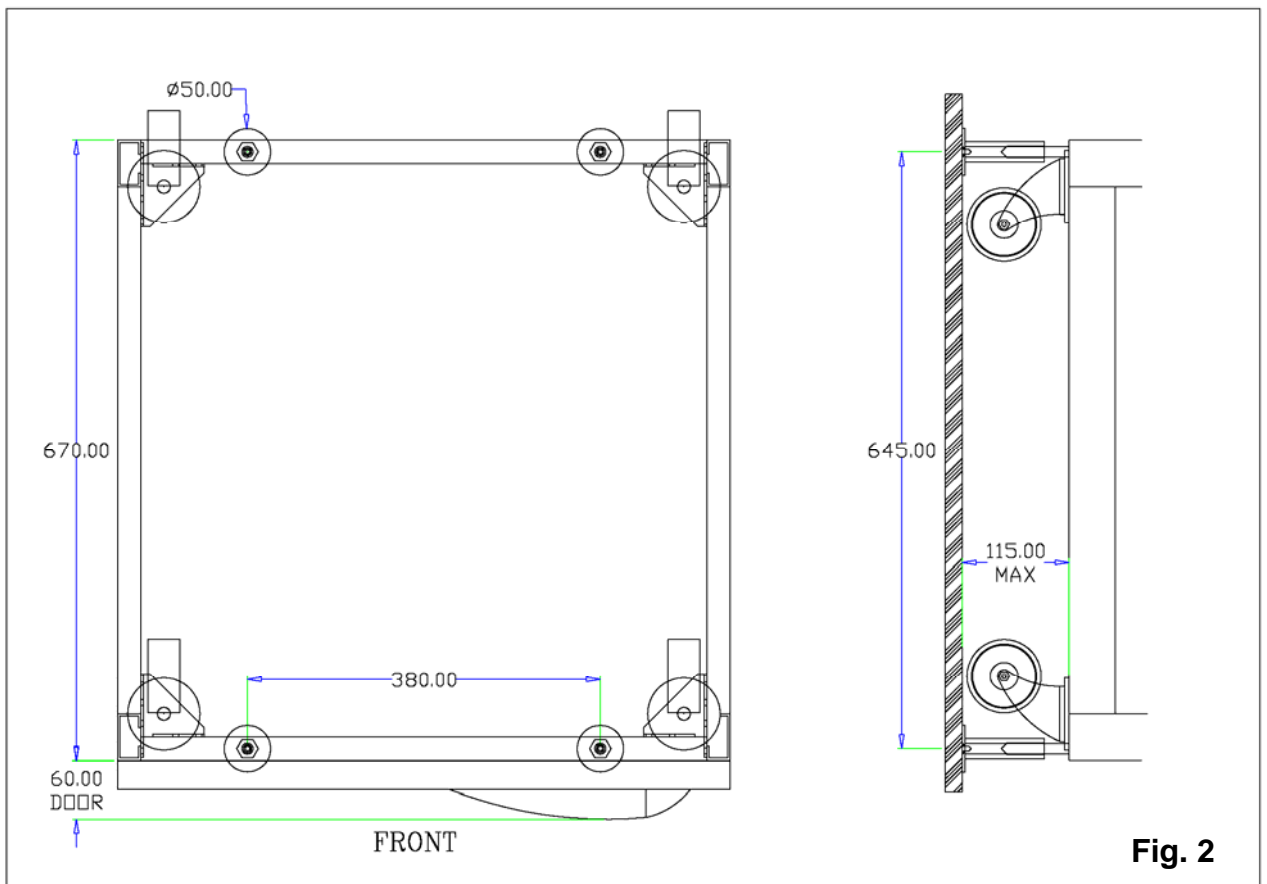
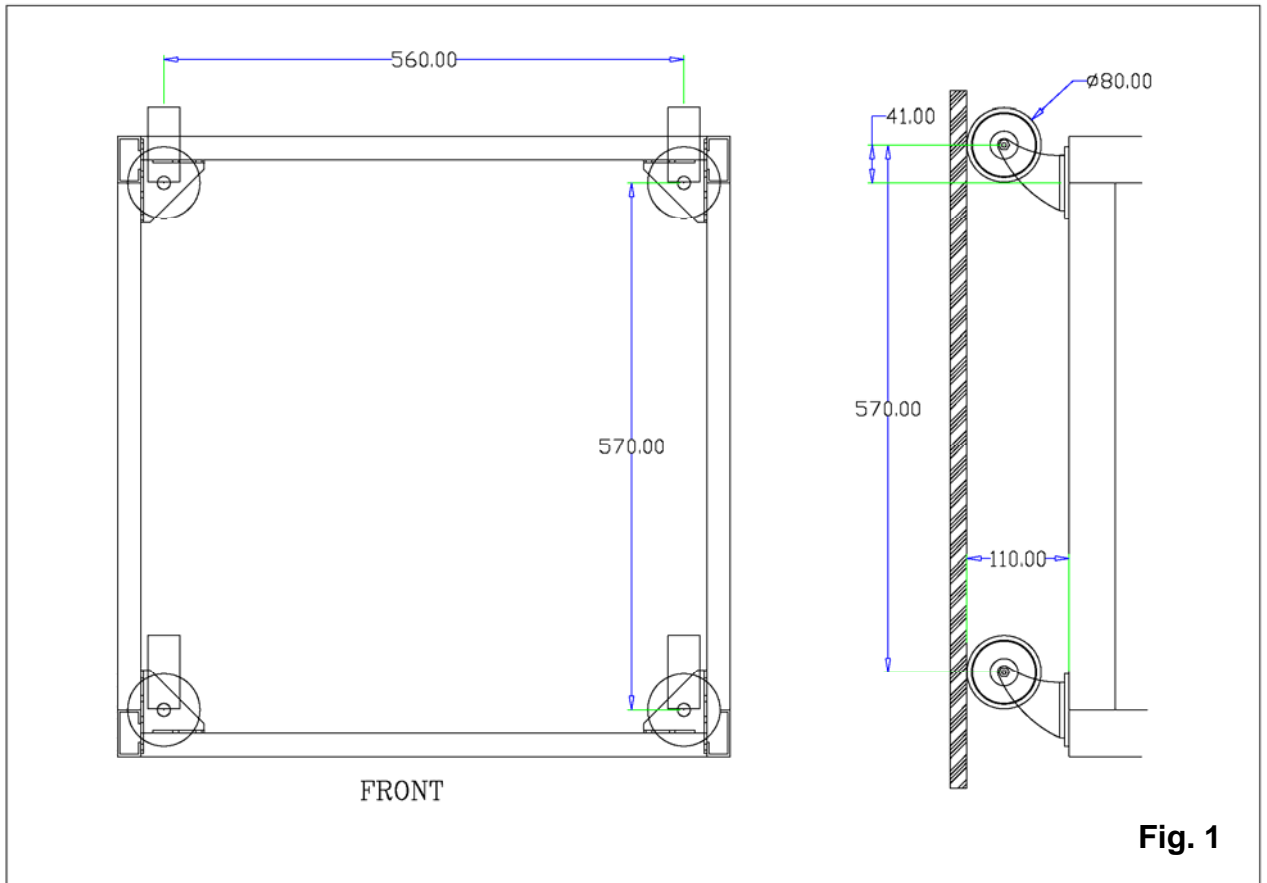
The signals transferred are the following :

- *Inverter Run*
- *On automatic Bypass*
- *Mains Present*
- *Battery Low*

Serial Interface:

CS121 SNMP ADAPTER per il collegamento in rete dell'UPS.

RS 232 port to be connected to a local PC, which has to be equipped with UPSMAN software.



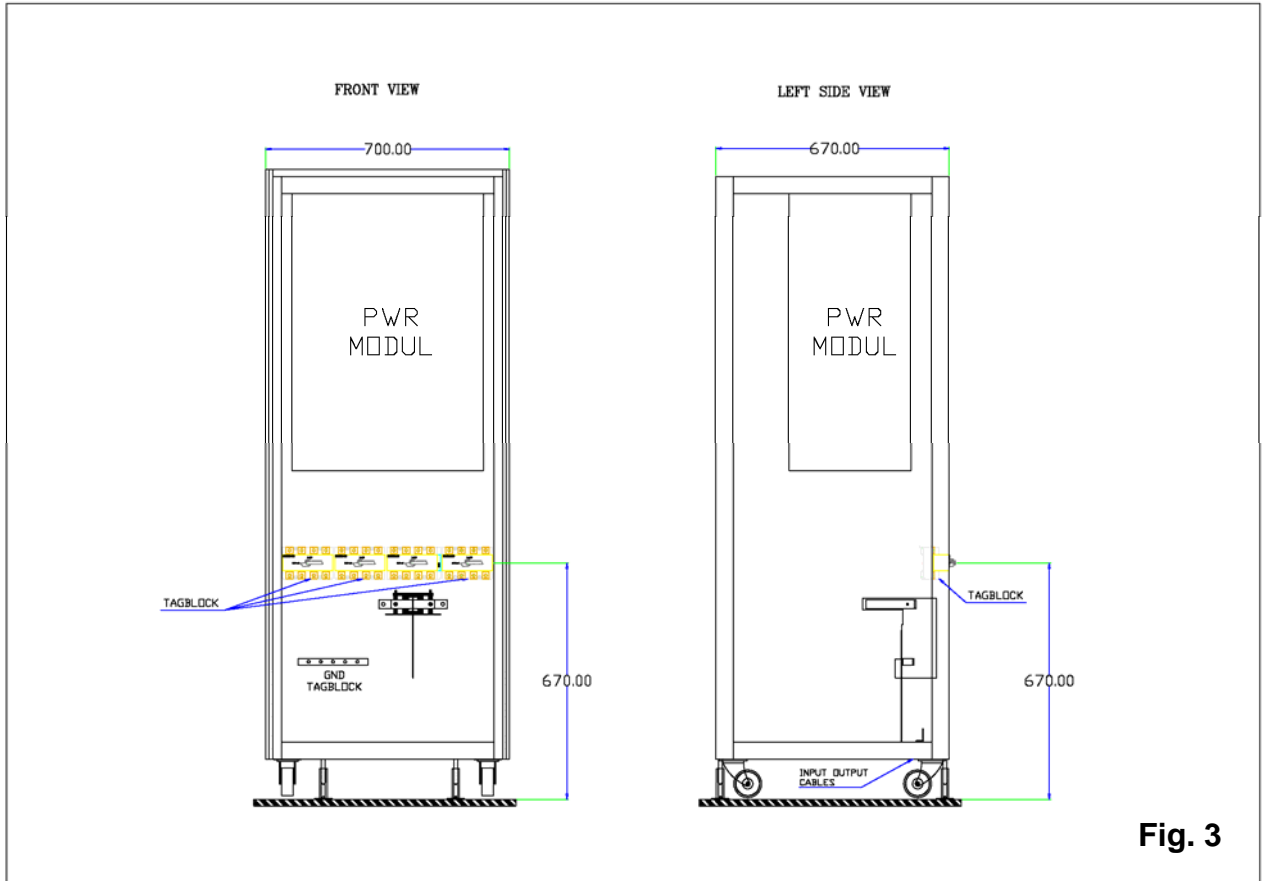


Fig. 3

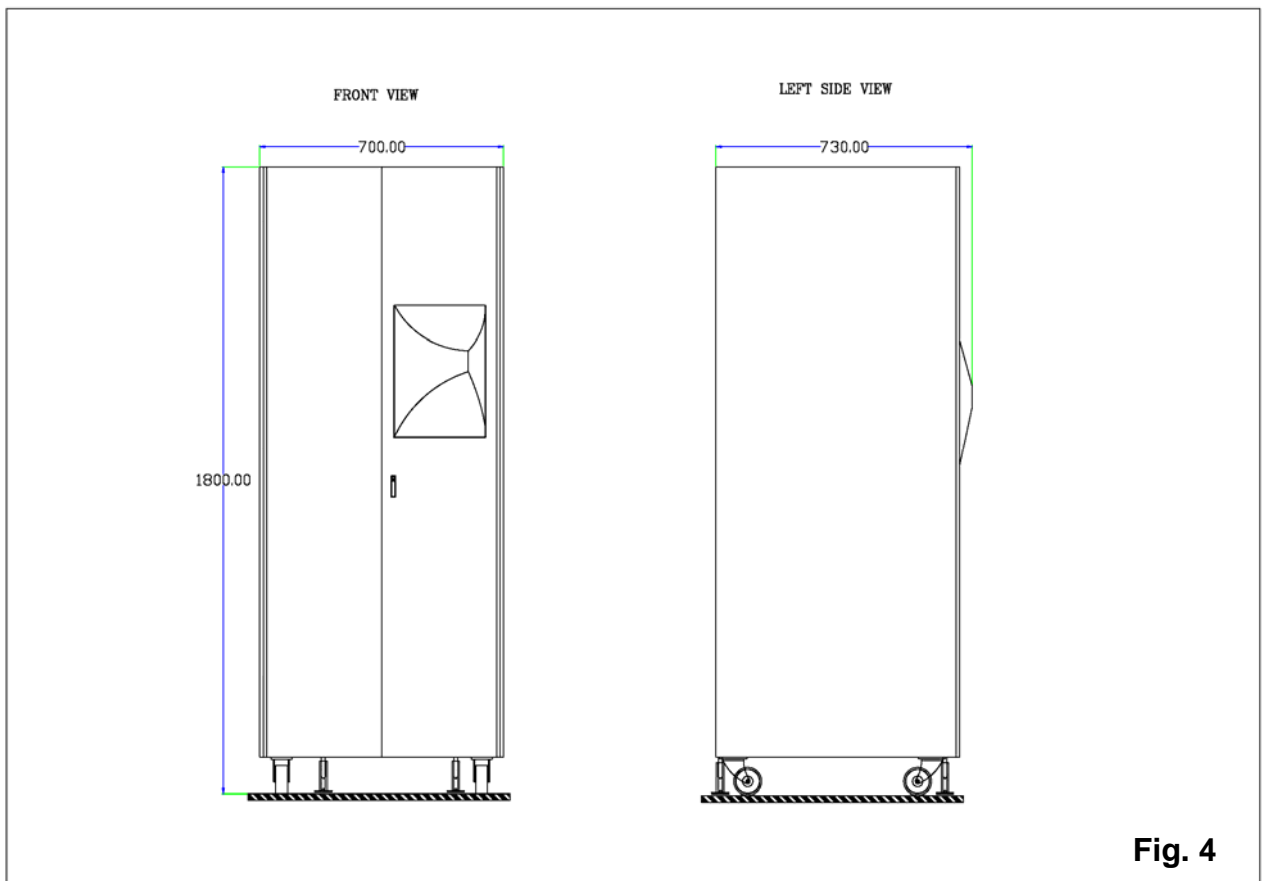


Fig. 4

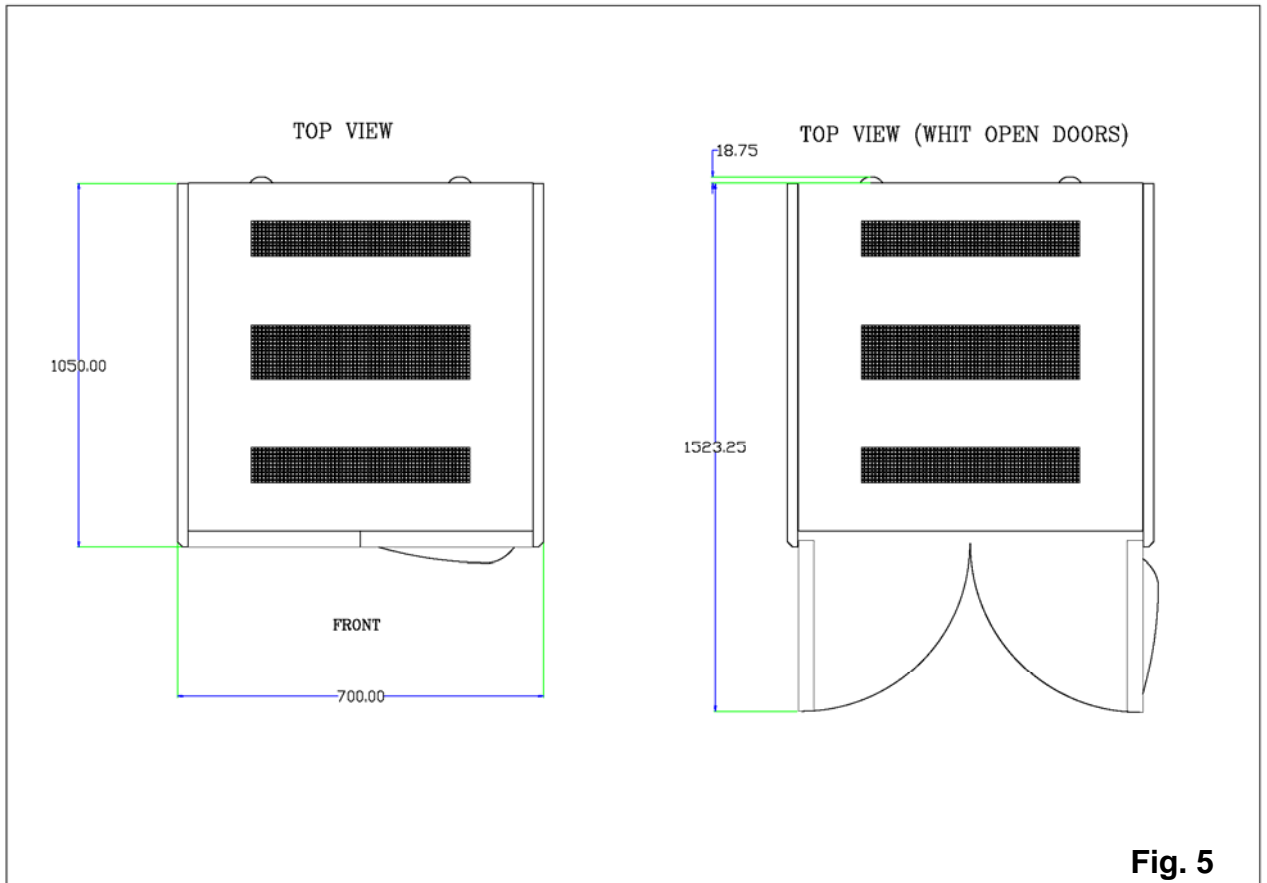


Fig. 5

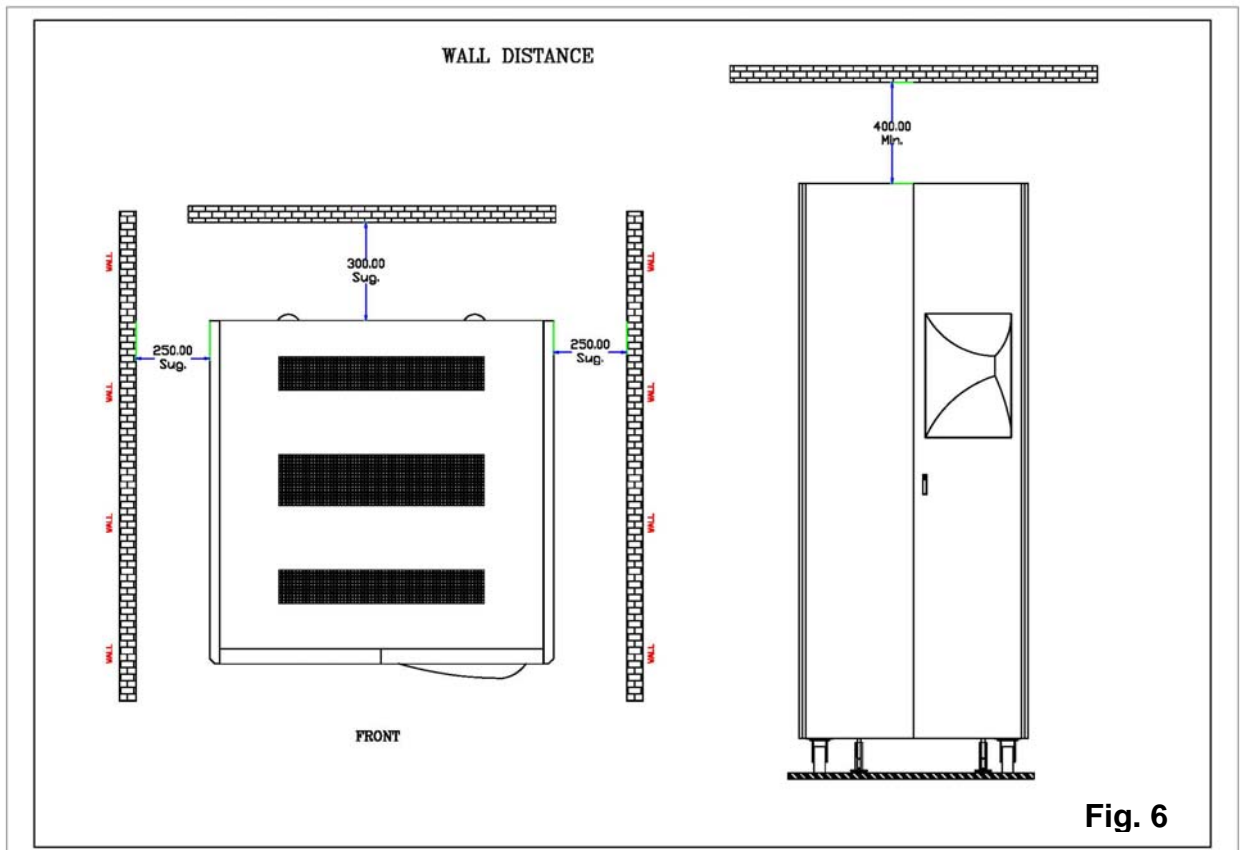


Fig. 6