ALAN®

Since 1997.....

Alinco Series

CO_2 INSUFFLATOR

User's Manual

CE 1639

USER NOTICE

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SINCE1997.....

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PREFACE

This manual and the equipment it describes are for use only by qualified medical professionals trained in particular technique and surgical procedures to be performed . It is intended as a guide for using the Alan's ALINCO Series only

Equipment Covered in this Manual

ALINCO Series Models : ALINCO - 60, ALINCO - 45 and ALINCO - 30

The particulars given in this guide covers all the functions available in the models of this series.

Effective Date: Nov-2023

Made in India

Printed in India

Terms Used in This Guide

Warning

Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

Caution

Indicates a hazardous situation which, if not avoided, could result in serious injury.

Note

Indicates a hazard that may result in product damage. Indicates an operating tip or Maintenance suggestion.

Symbols Used

Caution High Voltage.

Applied part of type CF

The Generator output is floating (isolated) with respect to ground.

Danger:- Explosion risk if used with flammable anesthetics

Follow instruction for use(blue)

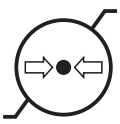
IP22 Liquid Ingress/Spillage Classification

Equipment should not be disposed in trash

In all EUcountries this product must be disposed of separately
in accordance with the national laws implementing
EU Directive 2002/96/EC of January 27, 2003, WEEE.In non-EU countries
the local regulations must be observed

CE Marking
with this marking , the manufacturer declares the conformity of the product with the applicable EU directives. A code number after the CE mark indicates the responsible notified body.

The EU directives relevant to the product can be found in the EU Declaration of Conformity, which can be requested from ALAN

	Manufacturer
	Date and country of Manufacturer
	Catalogue no.
	Serial number
	Lot number
	Number of products in the product packaging
	Medical Device
	Unique Device Identifier
	Model Name
	Consult the instructions for use
	Unsterile
	Fragile handle with care
	Keep dry
	Temperature Limit
	Humidity limit
	Air pressure limit

Introducing ALINCO Series insufflators

This is an insufflation device used to create and maintain a cavity while expulsing the ambient air . Built with latest technologies for gas pressure and gas flow control, along with multiple safety circuits for safe and reliable insufflation, makes this unit suitable for most of the surgical procedures.

Patient pressure can be continuously varied from 0 to 30 mmHg, and gas flow rate can be set to any value in the range 0 to 60 / 45 / 30 LPM as per the selected model.

The pressure , and flow values are displayed in bar graph displays, next to one another as set and actual values, providing convenient means for accurately monitoring the relevant insufflation parameters. In addition to this, in entry mode, the set points and actual values are displayed digitally in independent windows for the ease of use of operators.

Key Features

- Advanced micro controller based technology
- Works with wide input supply range 88 ~ 275VAC
- No need of stabilizer due to wide operating range design
- Independent display for set pressure and actual pressure in bargraph and digital display
- Independent display for set flow and actual flow in bargraph and digital display
- Built with Gas preheater
- Works with High pressure input Maximum 70bar
- 9 User program memories for different surgeries as per Surgeon's preference.
- Realtime pressure and flow control.
- Power up selftest to ensure, unit healthiness.
- Easy flow “ ON / OFF ” control
- Separate key for volume reset
- Gas supply mode selection for high pressure and low pressure CO_2 connectivity

Definitions

This manual provides information for the operation of the ALINCO SERIES Insufflator (also referred to in this manual as "unit" or "device").

The following list is abbreviations of commonly used terms throughout this manual
LPM :- Liters Per Minute
mmHg :- millimeters of mercury gas CO_2

Safety

The safe and effective use of CO2 Insufflator depends to a large degree on factors solely under the control of the operator. There is no substitute for a properly trained and vigilant medical staff. It is important that they read, understand, and follow the operating instructions supplied with unit.

Surgeons have used CO2 Insufflator safely in numerous procedures. Before starting any surgical procedure the surgeon should be familiar with the literature, complications, and hazards of using CO2 Insufflator in that procedure.

To promote the safe use of the Alan CO2 Insufflator unit, this section presents the warnings and cautions that appears throughout this user guide. So that you can operate this equipment with maximum safety. It is important that you read, understand, and follow the instructions in these warnings and cautions. It is also important that you read, understand, and follow the instructions for use in this user guide.

Serious incidents

A 'serious incident' includes incidents which, directly or indirectly, had, could have had or could have any of the following consequences:

a) Death of a patient, user, or another person

b) Temporary or permanent serious deterioration in the medical condition of a patient, user, or another person

c) A serious threat to public health

- The manufacturer and appropriate authority must be notified of all serious incidents.

Safety Instructions

Warning :

Read this instruction manual and be familiar with its contents prior to using this equipment. Before using the unit, read the following safety instructions carefully to avoid putting your patients, personnel or yourself at risk.

Warning :

The electrical installations in the operating room in which the unit is connected and operated must comply with the applicable IEC standards.

Warning :

Install equipment out of reach of patients.

Warning:

Do not use the unit in the presence of flammable anesthetic gases.

Caution :

Before connecting the unit to the electrical supply, verify that the line voltage mentioned on the unit.

Caution :

Use only fuses of the correct rating.

NOTE:

Any damage to the unit resulting from incorrect operation is not covered by the manufacturer's warranty.

Caution :

Do not reuse or resterilize instruments or accessories labelled disposable

Intended use

Co_2 insufflator is used to distend the abdominal space with CO_2 (inert gas) , creating pneumoperitoneum the “working space” necessary to examine the viscera, conduct surgical manipulations, and minimize the risk of inadvertent damage to intra abdominal structures when instruments are introduced into the abdominal cavity.

Intended / Targeted User

These devices may only be used by physicians and medical assistants who have a corresponding specialized qualification and who have been instructed in use of the unit.

Targeted Patient

There is no restrictions in terms of patient groups/age for this product

Caution :

Unauthorized conversions or modifications to the unit are not allowed for safety reasons.

Contraindications for Use

Our CO2 insufflator does not have any contraindications, as our intended use is limited to anterolateral abdominal wall distension during laparoscopic surgery using CO2 gas.
There is no CO2 gas complication, unless there is user negligence during surgery.

CO_2 absorption

CO_2 absorption occurs during insufflation. The body absorbs a portion of the CO_2 used for the insufflation. A too high CO_2 concentration in the blood or in the respiratory system can lead to the death of the patient in isolated cases. Observe vitals throughout the entire procedure and ensure sufficient patient respiration. High pressure or high gas flow encourage CO_2 absorption.

Changes to circulatory, metabolic and respiratory function.

The following symptoms can occur during CO_2 insufflation:

1. Hypercapnia
2. Acidosis
3. Decrease in cardiac output
4. Decrease in venous return

Safety Instructions

Embolism
Incorrect positioning of the insufflation instrument or a high intra abdominal pressure can lead to CO_2 embolism. Avoid high pressures and verify the correct positioning of the insufflation instrument. Embolism may occur in hysteroscopic applications.

Hypothermia
The CO_2 insufflation can lead to a decrease in body temperature. Monitor the body temperature throughout the intervention.

Idiosyncratic reactions
The risk of a metabolic imbalance due to increased CO_2 absorption is increased for patients with sickle cell anemia or pulmonary insufficiency.

Dehydration
For longer operations with high gas levels, insufflation can lead to a drying out of the tissues or cause tissue damage. Unnecessary leaks must be avoided for this reason. The decisive factor for the incidence of these complications is the length of the pneumoperitoneum the level of the intraabdominal pressure and the CO2 absorption associated with it. Increased pressure and flow values must thus be avoided. Pressures in excess of 15mm Hg are only required in isolated cases.

User qualification
These devices may only be used by physicians and medical assistants who have a corresponding specialized qualification and who have been instructed in use of the unit.

Safety precautions at the site of installation
The unit may only be used in medical rooms whose electrical systems have been installed in accordance with applicable national regulations. It is not intended for use in hazardous zones. This means, for example, that when using easily combustible and explosive inhalation anesthetics or mixtures thereof, the unit must not be operated inside the hazard zone shown in the diagram. This also applies for easily combustible and explosive chemicals, e.g., skin disinfectants and fast-acting surface disinfectants. The unit is equipped with a connector for attaching a ground line. It should be connected up in accordance with national regulations.

Safety precautions when operating the unit
It is the user's responsibility to make sure the unit is safe and operates properly before using it During treatment using the insufflator, the patient must be treated and kept under observation with the usual medical care. This includes keeping a check on the progress of treatment, as well as monitoring the vital levels and the anesthetic. Any treatment may only be performed if there is visual observation of the action of the unit.

Section :- 2

Controls and indicators

1) Front panel

2) Front panel Display Description

3) Front panel Symbols and Their Description

4) Rear Panel View

FRONT PANEL

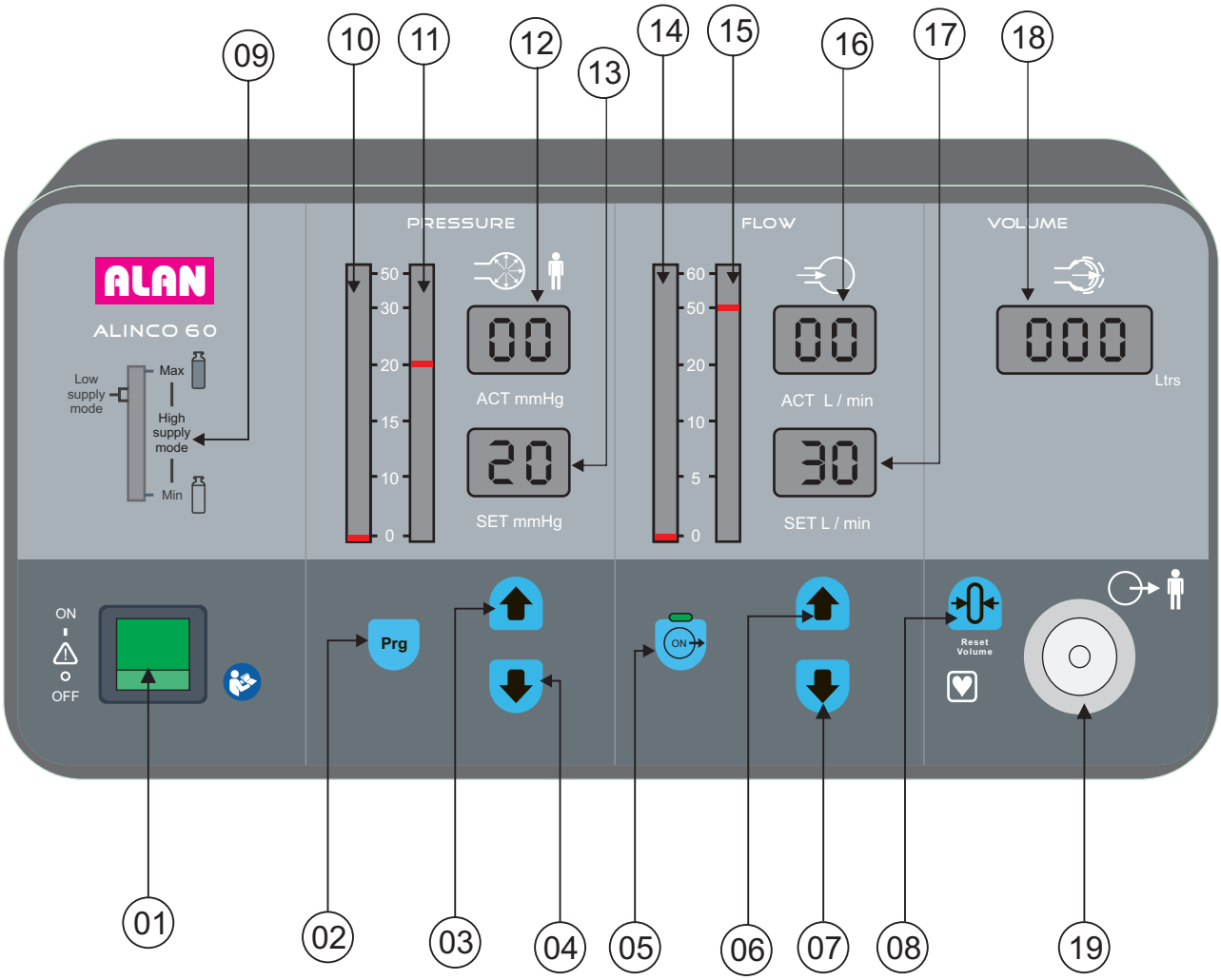


Fig : 01

Front panel Display Description

1) Mains ON / OFF switch

2) Program switch.

3) Pressure increment switch

4) Pressure decrement switch

5) Insufflation ON / OFF switch with indicator

6) Flow increment switch

7) Flow decrement switch

8) Volume Reset switch

9) CO_2 bottle Pressure display

10) Actual Pressure (mmHg) bargraph

11) Set Pressure (mmHg) bargraph

12) Actual Pressure (mmHg) display

13) Set Pressure (mmHg) display

14) Actual flow(LPM) bargraph

15) Set flow(LPM) bargraph

16) Actual flow(LPM) display

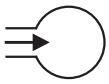
17) Set flow(LPM) display

18) Total used Gas volume display

19) CO_2 output port

Front panel Symbols and Their Description

Patient pressure

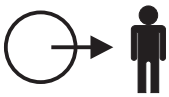


Insufflation pressure

CO_2 Volume

Gas bottle

Gas volume reset



Gas outlet to the patient

Rear Panel View

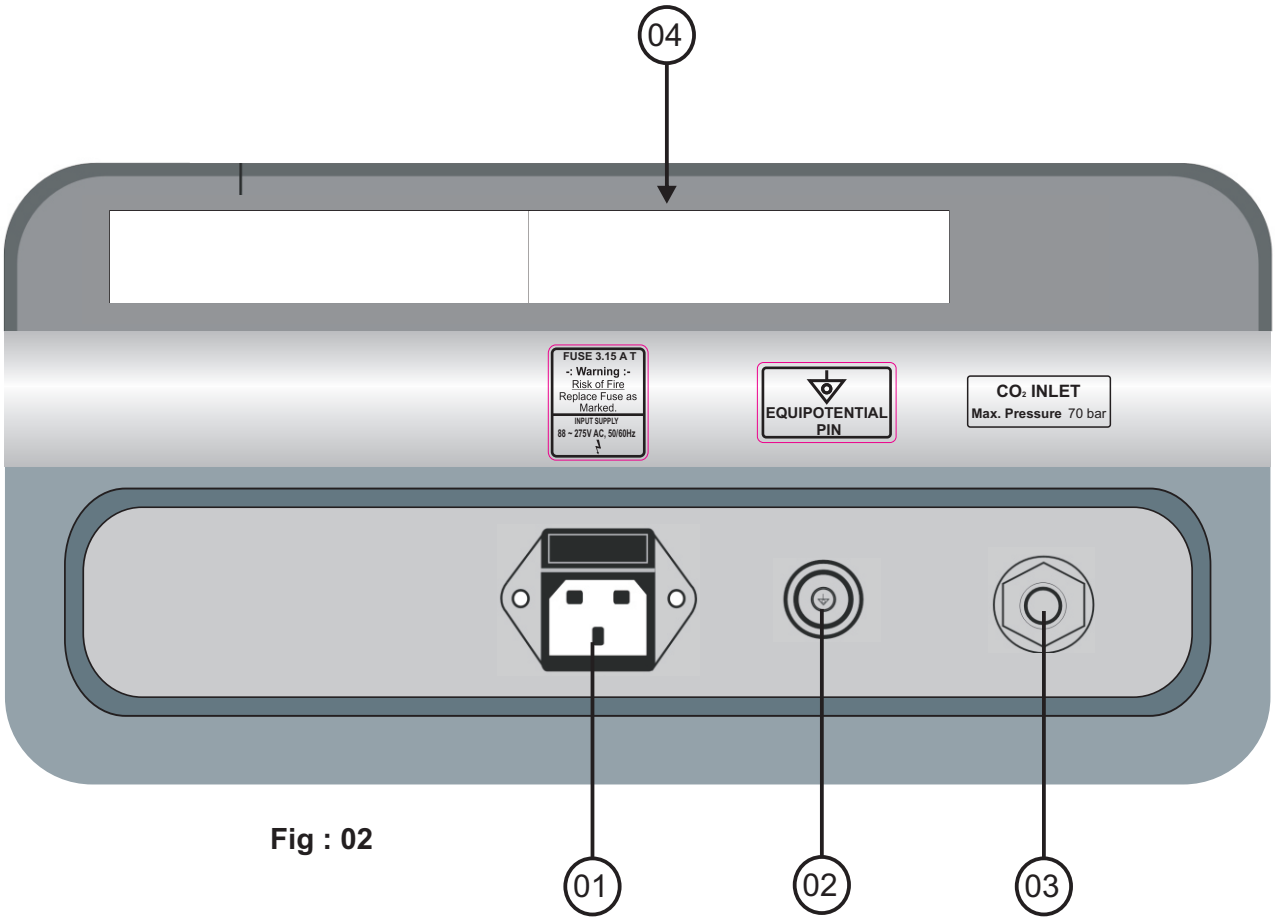


Fig : 02

Rear panel Description

1) IEC inlet
2) Equipotential terminal
3) CO_2 inlet
4) Product Labels (Product details, Identification, Address etc)

Section :- 3

Getting Started

1) Initial Inspection

2) Installation

3) Function Check

Initial Inspection

When you first unpack your ALAN ALINCO Series CO_2 Insufflator, inspect it visually.

1. Look for any signs of damage.

2. Verify that the shipping package contains all items listed on the packing list.

If the unit accessories are damaged, notify to ALAN Customer Service immediately. Do not use damaged equipment.

Installation

Place the ALAN ALINCO Series CO_2 Insufflator on any flat surface with a tilt angle not more than 10 degrees.

Inspecting the Insufflator and Accessories

Before each use of the ALAN ALINCO Series CO_2 Insufflator, verify that the Unit and all accessories are in good working condition.

• Inspect for damage to the CO_2 Insufflator and all its accessories.

• Verify that the appropriate accessories and adaptors are present.

• Inspect all cords and connectors for signs of wear, damage and abrasion.

Setting Up The Unit

1. Verify that the Power Switch is in the OFF position and that no accessories are connected to the unit.
2. Connect a hospital grade power cable to the AC power cable receptacle on the back of the unit.
3. Connect the Ground / Earth to the Equipotential pin provided on the back of the unit
4. Turn ON the unit by switching the power switch to the ON position.
5. Connect the CO_2 Cylinder / Centralized CO_2 connection to back of the unit where Co_2 inlet legend is marked.

WARNING:

Connect the power cord to a properly polarized and grounded power source with the frequency and voltage characteristics that match those listed on the back of the unit

Function Check

1. Turn ON the unit by switching the power switch to the ON position.

2. Wait till the unit finishes the “SELF TEST”.

3. Verify that the bottle pressure indicator indicates the Bottle Pressure level

4. Vary the flow between 0.1 to Max LPM using the flow  and  key and verify the set flow bargraph Led and set flow digital display varies inline with keys.

5. Vary the Pressure between 1 to 30mmHg using the Pressure  and  key and verify the set pressure bargraph Led and set pressure digital display varies inline with keys.

6. Set the Flow between 0.1 to Max LPM, and Pressure between 1 to 30 mmHg.

7. Press  Key, and check for the CO_2, Flow at CO_2 Outlet

8. Block the Outlet and verify that the Pressure indicator, shoots up and displayed digitally.

9. Check for Release valve function, once Pressure over shoots, Unit will Alarm after 3 Sec, and Release valve activates after 5 sec till the Pressure is 5 mmHg higher than the set Pressure.

Performance Checks

After the unit has passed the preliminary self test , it is ready for performance testing. a qualified biomedical engineer who is thoroughly familiar with the device should conduct this testing. the testing should include checking pressure and flow controls.

Caution :

To avoid contamination of the unit as a result of the reverse Flow of CO_2 or body fluid , a sterile CO_2 Gas filter must be inserted between the insufflation tube and the unit if the insufflation tube doesn’t have gas filter attached with it.

WARNING:

Do not use the unit in the presence of flammable anesthetic gases.

Section :- 4

Using the ALINCO Series CO_2 Insufflator

1) Using the ALINCO Series CO_2 Insufflator

2) Gas Supply mode

3) Selecting Gas Supply Modes

4) Recommended settings

Using the ALINCO Series CO_2 Insufflator

Patient and Operating Room Safety

The safe and effective use of CO_2 Insufflator depends to a large degree on factors solely under the control of the operator. There is no substitute for a properly trained and vigilant medical staff. It is important that they read, understand, and follow the operating instructions supplied with unit.

Surgeons have used CO_2 Insufflator safely in numerous procedures. Before starting any surgical procedure the surgeon should be familiar with the literature, complications, and hazards of using CO_2 Insufflator in that procedure.

Gas Supply modes

Alinco Series insuffulators support two type of Gas supply Modes.

1. High Pressure mode (Direct Cylinder / Bottle Connection)
2. Low Pressure mode (Centralised CO_2 connection)

Depends on the availability of gas connection, user can select the mode in OT.

High pressure mode

In this mode when connected to an empty cylinder or cylinder with low pressure i.e below 5 bar or in real time when the pressure drops below 5 bar, unit will give Audio visual alarm of Empty cylinder / Low cylinder pressure. Though the unit gives Audio visual alarm, still the insufflation will continue till the gas supply is present.

Warning :

Keep a standby Cylinder filled with CO_2 , and replace and when the insufflation is not happening and the unit is giving Empty cylinder / Low cylinder pressure warning.

Note :

Audio visual alarm only to alert the user. Still the insufflation will continue till gas supply is present.

Low Pressure mode

Ment for centralised CO_2 connection. In this mode there is no Empty cylinder / Low cylinder pressure warning, rest of the function remains same as of High pressure mode.
In this the mode the bottle pressure display LED glows continuously, as shown in fig:05

Note :

if the unit is programmed for low pressure mode but is connected to a high pressure supply it automatically switches over to the high pressure mode. however, this switchover only applies till the unit power is switched off, the next time the unit is switched on, it start in the mode in which it was programmed.

Selecting Gas Supply Modes

Press and hold the key during power up, now the unit will show the present gas supply mode.

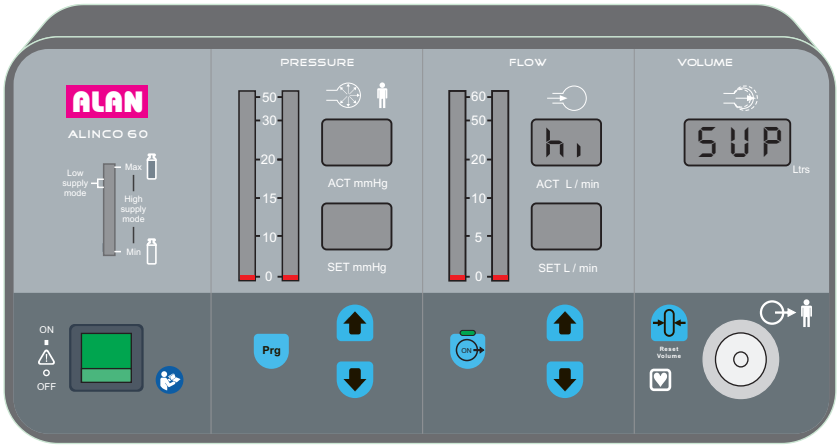


Fig : 03

To change press Flow Key for High Pressure mode or press Flow key for Low Pressure mode

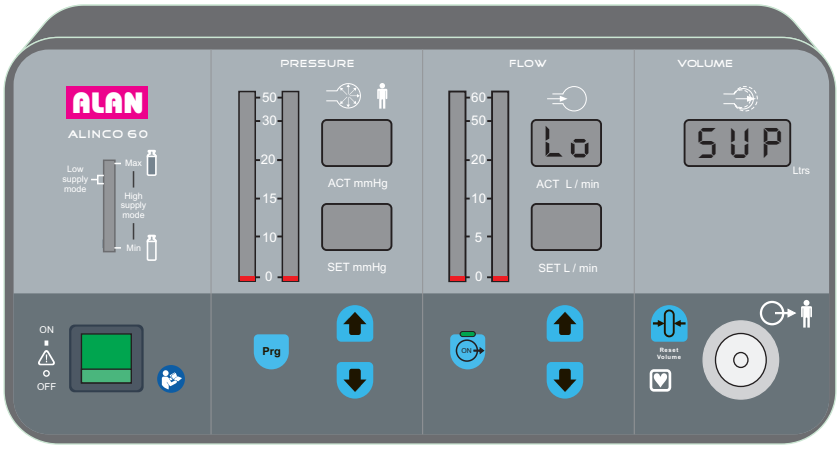


Fig : 04

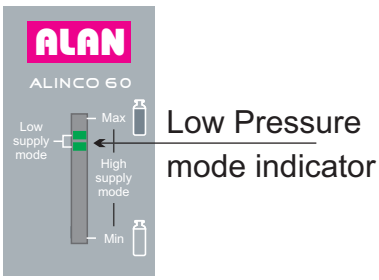


Fig : 05

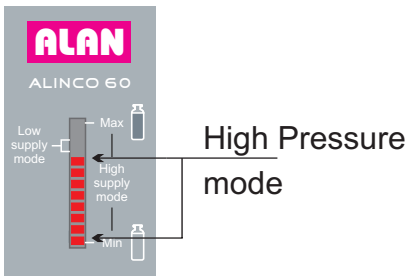


Fig : 06

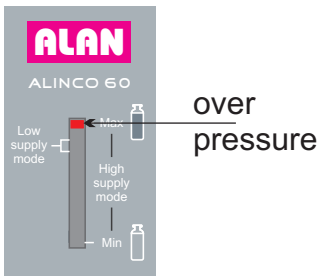


Fig : 07

Switch OFF and switch ON the unit to resume to normal operating mode.

Recommended Settings

Application	Pressure	Flow
Laparoscopy: pediatrics Standard	 6 mmHg 12 mmHg	 1 L/min 15 L/min

Section 5

Setting up

1. Place the unit on a stable flat surface, such as a table, platform or medical cart. carts with conductive wheels are recommended. for details refer to the procedures for your institution or to local directives provide at least four to six inches of space from all the sides of the unit for cooling normally, the top sides and rear panel will get warm when you use the unit continuously, for extended periods of time this is absolutely normal.

2. Verify that the Power Switch is in the OFF position and that no accessories are connected to the unit.

3. Connect a hospital grade power cable to the AC power cable receptacle on the back of the unit.

4. Connect the Ground / Earth to the Equipotential pin provided on the back of the unit

5. Turn ON the unit by switching the power switch to the ON position.

6. Connect the CO_2 Cylinder / Centralized CO_2 connection to back of the unit where Co_2 inlet legend is marked.

7. Connect a Disposable Insufflation tubing with gas filter on the CO_2 output port.

Caution:

If the self-test is not successful, an alarm tone sounds. An error code may appear in the in most cases, the unit is disabled. in such cases call your Bio-medical engineer or your authorised service center.

Setting up patient pressure

1. To set patient pressure, use the Pressure and keys given in the front side of the unit.
2. To increase the patient pressure use the Pressure key accordingly the Set Pressure bargraph Led and digital display will show the set patient pressure value.
3. To decrease the patient pressure use Pressure key accordingly the Set Pressure bargraph Led and digital display will show the set patient pressure value.

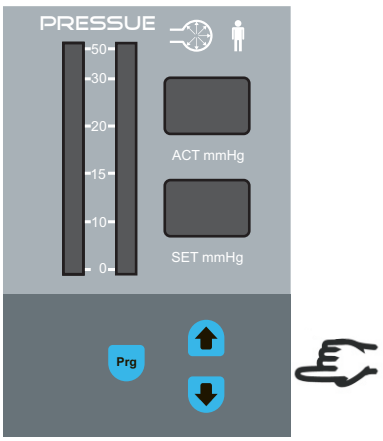


Fig : 08

Setting up patient CO_2 flow

1. To set patient CO_2 flow, use the Flow and keys given in the front side of the unit.
2. To increase the patient CO_2 flow use Flow key accordingly the Set Flow Bar graph Led and digital display will show the set flow value.
3. To decrease the patient CO_2 flow use Flow key accordingly the Set Flow Bar graph Led and digital display will show the set flow value.

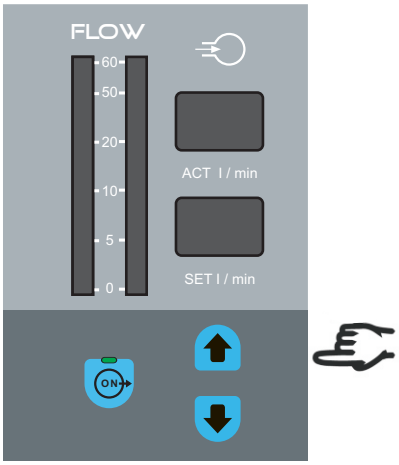


Fig : 09

How to Store and Recall the program for different procedures

Store

1. The store a desired setting in a particular program, Press " Prg " Key once to enter in to Program mode.
2. Now release and press " Prg " key till it shows the desired prg num. For example to select Program 3, do the above said sequence till it shows P3 in actual Pressure window as shown in fig:11
3. Once the desired program number is selected, Set Pressure and Set Flow Display windows, will show the currently stored settings for the selected program number.
4. Set / Modify Pressure and flow using pressure and Flow ↑ and ↓ keys as per requirement.
5. Once settings are over Press and hold " Prg " key till the display blinks once, as a confirmation of the settings are stored in the particular program.
6. Leave the unit in idle condition for 2 Sec to resume to Normal mode with the current settings.

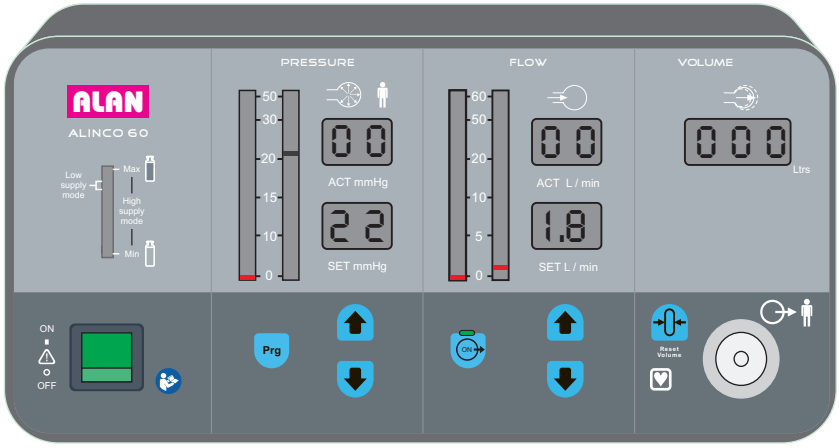


Fig : 10

Recall

1. The recall a desired program, Press " Prg " Key once to enter in to Program mode.
2. Now release and press " Prg " key till it shows the desired prg num. For example to select Program 3, do the above said sequence till it shows P3 in actual Pressure window as shown in fig:11
3. Now Set Pressure and Set Flow Display windows will show the currently stored settings for the selected program number.
4. Leave the unit in idle condition for 2 Sec to resume to Normal mode with the current settings.

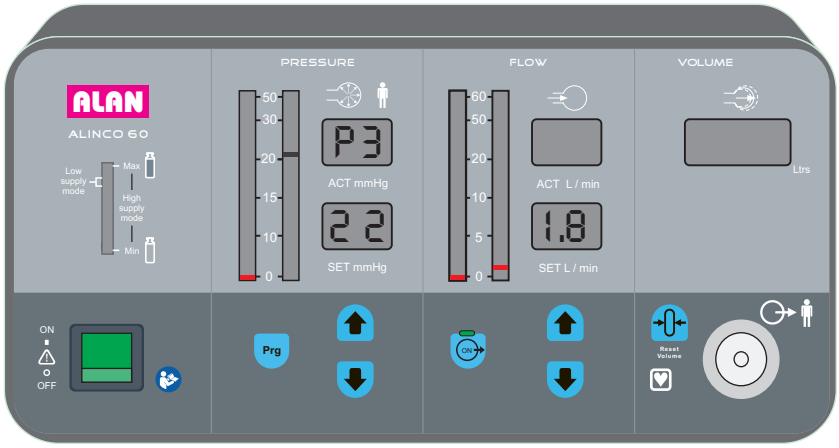


Fig : 11

Patient Insufflation ON / OFF

To begin insufflation press the flow switch, once the insufflation started, to terminate / stop the insufflation press the same flow switch.

The indicator provided on the top of the flow ON/OFF switch to indicate the insufflation status. Indicator glows when ever insufflation in ON.

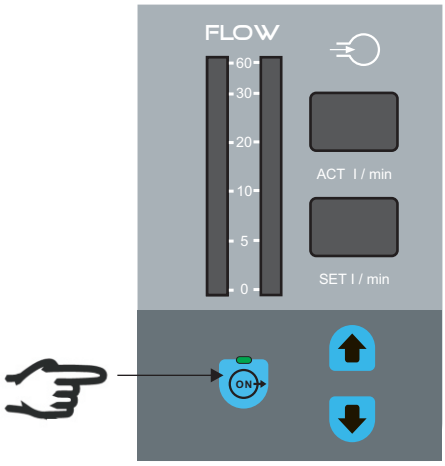


Fig : 12

CO_2 Volume Display

The Digital Volume Display reads the total volume of CO_2 passing from the ALINCO Series CO_2 Insufflator to the patient. The digital display indicates the volume of CO_2 delivered in Liters and has a range of 0 to 999 Ltrs.

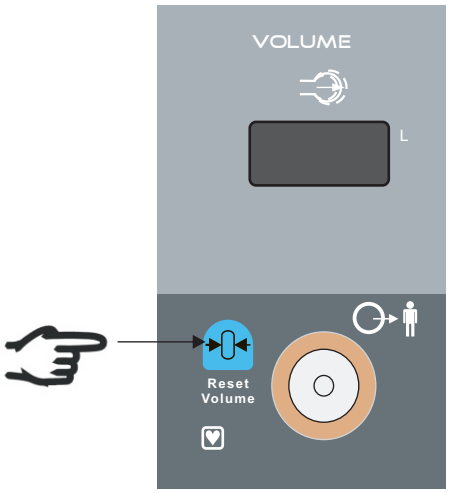


Fig : 13

Reset CO_2 Volume

Assure that the Volume Display reads zero prior to beginning insufflation. To reset the Volume Liters Display, press the

NOTE:

Do not press button once procedure has started.

Section 6

MAINTAINING THE ALAN ALINCO SERIES INSUFFLATOR

This section covers the following topics

- Cleaning
- Periodic Inspection
- Fuse Replacement

ALAN Medical Products recommends that you complete periodic inspection and performance testing at least once in every year. A qualified biomedical technician should conduct this testing to ensure that the unit is operating effectively and safely.

Cleaning

After each use, clean the unit.

1.Turn off the Unit and unplug the power cord from the wall outlet.

2.Thoroughly wipe all surfaces of the Unit, CO_2 inlet hose and power cord with a mild cleaning solution or disinfectant and a damp cloth. Follow the procedures approved by your institution or use a validated infection control procedure.

Caution
Do not allow fluids to enter the chasis. Do not sterilize the Unit

Periodic Inspection

Every six months, visually inspect the Unit for signs of wear or damage. In particular, look for any of the following Problems

- Damage to the power cord
- Damage to the power cable Receptacle
- Obvious damage to the unit.
- Damage to any input & output port
- Accumulation of lint or debris in or around the unit.

Fuse Replacement

Fuse for the unit reside directly above the power cable Receptacle on the rear side of the unit.

To replace the fuse, follow this procedure

1.Unplug the power cord from the wall outlet

2.Remove the power cord from the Power Cable Receptacle on the rear panel.

3.Release the fuse holder.

4.Remove the fuse and replace it with a new fuse of same Rating.

Section 7

TROUBLE SHOOTING CHART

This section includes the following information.

1. Correcting maintenance

2. Responding to system alarms or error.

Condition	Cause	Possible solution
Unit does not respond when turned ON	Disconnected power cord or faulty outlet	Check power cord connection to the Unit.
	Faulty power cord	Replace the power cord.
	Fuse holder cap is not properly installed	Tighten the fuse by Pushing the fuse Catridge to wards the unit
	Fuses are blown	Replace the blown fuse.
Unit is on, but did not complete the SELF-TEST	Software or internal component malfunction	Turn OFF, then turn ON the unit
	If error condition exist, internal component malfunction.	If the error code reappears, use backup unit.
		Contact your Bio-medical Engineer or Alan's representative.
Unit is on and Flow ON / OFF is pressed, but unit does not deliver CO_2 at outlet.	Co_2 Gas supply not connected	Check the cylinder connections
	Empty cylinder	Check the cylinder pressure display, if necessary connect another cylinder
	Set Flow and pressure may be to low	Increase the Set Flow and Pressure
	Set flow and or pressure at 0 level	Increase the Set Flow and Pressure
	If error condition exist , internal component malfunction.	Note the error. Use the backup unit Contact your Bio-medical Engineer or Alan's representative.

Condition	Cause	Possible solution
Unit is on, Cylinder pressure displays and ON / OFF is pressed, but unit does not deliver CO_2 at outlet.	Outlet tube damaged cord or faulty outlet	Check for damage in outlet tube, if damaged replace the same.
	Leakage in Outlet	Contact your Bio-medical Engineer or Alan's representative.

Errors and warning

Error Msg	Condition
FL Err	when insufflation cmd is OFF, and Flow reads greater than 1LPM
Er2	When Flow sensor reads reverse flow, or Flow sensor assembled reversely
FS Err	Sensor faulty, Sensor not available, faulty cable, inproper cable connection
Pr Err	Pressure difference between two pressure sensor immediately after self test
P1 Err	Pressure sensor not installed, faulty pressure sensor
P2 Err	Pressure sensor not installed, faulty pressure sensor
Er1	Temperture sensor malfunction /failure (Shorted / open NTC connections)
FT Err	Blocked / Closed Inlet , Blocked output & Release valve failure

Note:- if any of above Error code appears in the unit please switch OFF and then ON the unit it the error code appears repletely, its recommended not to use the unit and Contact your Bio-medical Engineer or Alan's representative.

Section 8

Repair Policy And Procedure

Responsiblity of the Manufacturer.

Routine Maintenance.

Returning the Unit for Service.

Cleaning of the Unit

Warning

Electric Shock Hazard :
Always turn off and unplug the unit before Handling.

Note :

Do not clean the unit with abrasive cleaning or disinfectant compound, solvents, or other materials that could scratch the panel or damage the unit.

Responsibility Of The Manufacturer

ALAN is responsible for the safety, consistency, and performance of the unit only under the following circumstances :

1) Installation and Set Up Procedure in this manual are followed.

2) Operation, Calibration, modification, or repair if any carried out by the authorised ALAN's representative.

3) The electrical installation of the relevant room complies with local codes and regulatory requirements, such as IEC and BSI.

4) The Unit is used in accordance with the ALAN's instructions for use.

Routine Maintenance

1) ALAN recommends that the Unit should be inspected by qualified service personnel at least once in a year. This inspection should include checking the calibration of the unit

2) Each time when you use the Unit ,Check the consumable accessories recommended by the ALAN. Replace the faulty accessories if any.

3) Fuse may damage, if any internal component malfunctions or heavy fluctuation occurs in mains input supply. You may need to replace the fuse if the unit fails Self-Test.

Returning The unit For Service

Before you return the Unit call ALAN's authorised representative for assistance. If you are instructed to send the unit to ALAN's Service centre, then clean the unit and ship to ALAN's Service centre with the photocopy of Purchase Bill.

TECHNICAL SPECIFICATIONS

All specification are nominal and subjected to change without notice. A specification referred to as “typical” is within ± 20% of a stated value at a room temperature (25° C / 77° F)and a nominal input supply.

Input Supply

Input : 88 ~ 275 VAC

Line Frequency : 50Hz / 60 Hz

Input Fuse : 3.15A T

Power Consumption : 300 VA Max.

Gas Type : Med CO_2 Liquefied

Flow : Adjustable in 0.1 LPM steps (up to 10 LPM)
and 1 LPM steps (10 to Max Flow as given below)
Accuracy 96%

Model	Max. Flow
ALINCO-30	0.1 to 30 LPM
ALINCO-45	0.1 to 45 LPM
ALINCO-60	0.1 to 60 LPM

Pressure : 0 to 30mmHg, Adjustable in 1 mmHg
Accuracy 98%

Volume : 0 to 999 Ltrs Tolerance +20%, -10%

Inlet Pressure : 70 bar max.

CO_2 gas supply systems inlet connection : UNF 7/16”

Outlet connection : Storz compatible

Dimensions (in mm) : 330(L) x 160(H) x 420 (D)

Weight : 7 Kg (max.)

Safety Features

Basic construction : In accordance with IEC 60601-1 and IEC 60601-1-2

Protection Class : 1

Unit type : CF

Electrical potential balancing : Indicated by symbol

Operating Parameters

Temperature range : +10° C to +40° C

Relative humidity : 30% to 75% non-condensing

Transport and Storage

Ambient temperature range : -10° C to 60° C

Relative humidity : 0% to 90% non-condensing

Recommended Accessories

SR. NO.	DESCRIPTION	MAKE
1	Mains Power Cord, 3m	Just Connect / Volex
2	Disposable Insufflation tubing with gas filter, 3m(03 1200-10), shelf life 5 Years	Storz
3	Co2 Inlet Hose (between Co2 cylinder and Insufflator unit) 102 cm, American connection/ISO connection, reusable, Max pressure 70 bar	Storz

Model Comparison Chart

SR. NO	DESCRIPTION	INPUT SUPPLY	INLET PRESSURE	GAS PRESSURE	MAX GAS FLOW	LED BAR GRAPH DISPLAY FOR ACTUALGAS PRESSURE & FLOW	LED BAR GRAPH DISPLAY FOR SET GAS PRESSURE & FLOW	9 Program Memories
1	ALINCO -60	88VAC to 275VAC	70 bar	0 - 30 mmHg	60 LPM	Present	Present	Present
2	ALINCO -45	88VAC to 275VAC	70 bar	0 - 30 mmHg	60 LPM	Present	Present	Present
3	ALINCO -30	88VAC to 275VAC	70 bar	0 - 30 mmHg	60 LPM	Present	Present	Present

Electromagnetic compatibility (EMC)

WARNING: The use of cables, accessories other than those specified recommended may result in increased emission and/or decreased immunity.

- Operate the product in a place with a maximum distance to electrical and magnetic interfering transmitters. If operation of the product close to other devices or together in a stack is necessary, observe the correct function of the system.

Manufacturer's declaration – Electromagnetic Emission (Table 201, EN 60601-1-2)
The product is suitable for use in a specific electromagnetic environment. The customer and/or the user of the product should assure that it is used in an electromagnetic environment as described below.

<table>
<tr><th>Emission Test</th><th>Compliance</th><th>Electromagnetic Environment Guidance</th></tr>
<tr><td>RF-emission
CISPR 11</td><td>Group 1</td><td>The product use RF energy only for its internal function. Therefore, its RF emissions are very low and not likely to cause any interference in nearby electronic equipment.</td></tr>
<tr><td>RF-emission
CISPR 11</td><td>Class A</td><td rowspan="3">The product is suitable for use in all establishments, including domestic establishments and those directly connected to the public low-voltage power supply network that supplies buildings used for domestic purpose.</td></tr>
<tr><td>Harmonic emissions
IEC 61000-3-2 (*)</td><td>Class A</td></tr>
<tr><td>Voltage fluctuations/
flicker emissions
IEC 61000-3-3 (*)</td><td>complies</td></tr>
<tr><td colspan="3">(*) Remark: for devices with power consumption of 75 W to 1000 W only</td></tr>
</table>

Manufacturer's declaration – Electromagnetic Immunity I (Table 202, EN 60601-1-2)
The product is suitable for use in a specific electromagnetic environment. The customer and/or the user of the product should assure that it is used in an electromagnetic environment as described below.

Immunity Test	IEC 60601-Level	Compliance Level	Electromagnetic Environment Guidance
Electrostatic discharge (ESD) IEC 61000-4-2	± 8 kV contact ± 15 kV air	± 8 kV contact ± 15 kV air	Floor should be wood, concrete or ceramic tile. If floors are covered with synthetic material,the relative humidity should be at least 30 %
Electrical fast transient/bursts IEC 61000-4-4	± 2 kV on Mains Power Supply Lines	± 2 kV on Mains Power Supply Lines	Mains power quality should be that of a typical commercial and/or hospital environment
Surge IEC61000-4-5	± 1 kV differential mode ± 2 kV common mode	± 1 kV differential mode ± 2 kV common mode	Mains power quality should be that of a typical commercial and/or hospital environment
Voltage dips, short interruptions and voltage variations on power supply input lines IEC61000-4-11	0% voltage for 0.5 cycle, At 0°, 45°, 90°, 135°, 180°, 225°, 270° and 315°phase angles 0% voltage for 1 cycle at 0° phase angle 70% voltage for 25 cycles at 0° phase angle Short Interruption: 0% voltage for 250 cycles at 0° phase angle.	0% voltage for 0.5 cycle,At 0°,45, 90°,135°,180°, 225°, 270° and 315° phase angles 0% voltage for 1 cycle at 0° phase angle 70% voltage for 25 cycles at 0° phase angle Short Interruption: 0% voltage for 250 cycles at 0° phase angle.	Mains power quality should be that of a typical commercial and/or hospital environment. If the user of the product requires continued operation during power mains interruptions, it is recommended that the product be powered from an uninterruptible power supply or a battery.
Power frequency (50/60 Hz) magnetic field IEC 61000-4-8	30A/m	30A/m	Power frequency magnetic fields should be at levels characteristic of a typical location in a typical commercial or hospital environment.
Note: U_T is the mains (AC) voltage before apply test levels			

Manufacturer's declaration – Electromagnetic Immunity II (Table 204, EN 60601-1-2)

The product is suitable for use in a specific electromagnetic environment. The customer and/or the user of the product should assure that it is used in an electromagnetic environment as described below.

Immunity Test	IEC 60601-Level	Compliance Level	Electromagnetic Environment Guidance
Conducted RF IEC 61000-4-6 Radiated RF IEC 61000-4-3	3 Vrms 150 kHz to 80 MHz 3V/m 80MHz to 2.7GHz	3 Vrms 3 V/m	Portable and mobile RF communications equipment should be used no closer to any part of the product, including cables, than the recommended separation distance calculated from the equation applicable to the frequency of the transmitter. Recommended separation distance: $d = 1.2\sqrt{P}$ $d = 1.2\sqrt{P}$ for 80 MHz to 800 MHZ $d = 2.3\sqrt{P}$ for 800 MHz to 2.7 Ghz where P is the maximum output power rating of the transmitter in Watt (W) according to the transmitter manufacturer and d is the re-commended separation distance in meters (m) Field strengths from fixed RF transmitters, as determined by an electromagnetic site survey a, should be less than the compliance level b in each frequency range  Interference may occur in the vicinity of equipment marked with the symbol described lateral.

Note 1: At 80 MHz and 800MHz, the higher frequency range applies.
Note 2: These guidelines may not apply in all situations. Electromagnetic propagation is affected by absorption and reflection from structures, objects, people and animals.

- Field strengths from fixed transmitters, such as base stations for radio (cellular/cordless) telephones and land mobile radios, amateur radio, AM and FM radio broadcast and TV broadcast cannot be predicted theoretically with accuracy. To assess the electromagnetic environment due to fixed RF transmitters, an electromagnetic site survey should be considered, if the measured field strength in the location in which the product is used exceeds the applicable RF compliance level above, the product should be observed, additional measures may be necessary, such as reorienting or relocating the product.
- Over the frequency range 150 kHz to 80 MHz, field strengths should be less than 3 V/m.

Manufacturer's declaration – Recommended Separation Distances between portable and mobile HF- communications equipment and the product (Table 206, EN 60601-1-2)

The product is intended for use in an electromagnetic environment in which radiated RF disturbances are controlled. The customer or the user of the product can help prevent electromagnetic interference by maintaining a minimum distance between portable and mobile RF communications equipment (transmitters) and the product – according on output power and frequency of the communications equipment – as recommended in the following table.

Rated maximum output power of transmitter in watts (W)	Separation distance according to the frequency of transmitter in meter (m)		
	150 kHz to 80 MHz $d = 1.2 \sqrt{P}$	80 MHz to 800 MHz $d = 1.2 \sqrt{P}$	800 MHz to 2.7 GHz $d = 2.3 \sqrt{P}$
0,01	0,12	0,12	0,23
0,1	0,38	0,38	0,73
1	1,2	1,2	2,3
10	3,8	3,8	7,3
100	12	12	23

For transmitters rated at a maximum output power not listed above, the recommended separation distance d in meters (m) can be estimated using the equation applicable to the frequency of the transmitter, where P is the maximum output power rating of the transmitter in watts (W) according to the transmitter manufacturer.

Note 1: At 80 MHz and 800MHz, the higher frequency range applies.

Note 2: These guidelines may not apply in all situations. Electromagnetic propagation is affected by absorption and reflection from structures, objects, people and animals.

WARRANTY

Alan Electronic systems Pvt. Ltd. Warrants each Unit to be free from defects in material and workmanship under normal use and service for period of one year (Default)

Alan's obligation under this warranty is limited to the repair or replacement, at its sole option, of any product, or part thereof, Which has been returned to it directly or through distributor / dealer within the applicable time period shown below after delivery of the product to the original purchaser, and which examination discloses, to Alan's satisfaction, that the product is indeed, defective

This warranty does not apply to any product, or part thereof, which has been repaired or altered outside Alan's factory in a way so as, in Alan's judgement, to affect its stability or reliability, or Which has been Subjected to misuse or neglect and accident.

The Warranty periods for Alan's products are as follows :

one year from the date of Shipments

CE
1639

Manufactured by,

ALAN®

Since 1997 .....

ALAN ELECTRONIC SYSTEMS PVT. LTD.

Factory : Plot No. F-75, MIDC, Additional Ambernath Industrial Area,
Anand Nagar, Jambivali, Ambernath (East) Dist: Thane.- 421 506.
Maharashtra.INDIA. Tal: +91-251-2628000
Web: www.alanindia.net , mail- sales.medical@alanindia.net

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