

MANUAL

FOR

equitron[®]

SLEDOC - SERIES AUTOCLAVE

#7431SLEDOC
#7440SLEDOC
#7441SLEDOC
#7451SLEDOC
#74403SLEDOC



Sr No of Autoclave :

V. 1.0

000 «Диаэм»

Москва

ул. Магаданская, д. 7, к. 3 ■ тел./факс: (495) 745-0508 ■ sales@dia-m.ru

www.dia-m.ru

С.-Петербург
+7 (812) 372-6040
spb@dia-m.ru

Новосибирск
+7(383) 328-0048
nsk@dia-m.ru

Воронеж
+7 (473) 232-4412
vrn@dia-m.ru

Йошкар-Ола
+7 (927) 880-3676
nba@dia-m.ru

Красноярск
+7(923) 303-0152
krsk@dia-m.ru

Казань
+7(843) 210-2080
kazan@dia-m.ru

Ростов-на-Дону
+7 (863) 303-5500
rnd@dia-m.ru

Екатеринбург
+7 (912) 658-7606
ekb@dia-m.ru

Кемерово
+7 (923) 158-6753
kemerovo@dia-m.ru

Армения
+7 (094) 01-0173
armenia@dia-m.ru



PACKING LIST

VERTICAL AUTOCLAVE - SLEDOC
#7431SLEDOC/#7440SLEDOC/ #7441SLEDOC/ #7451SLEDOC/#74403SLEDOC
SR NO.:.:

1	The Autoclave	[]
2	Operating Manual - 3001-00	[]
3	Warranty Card	[]
4	Test Report	[]
5	Pressure Gauge Calibration Certificate and Traceability	[]
6	Temperature controller Calibration Certificate and Traceability	[]
7	'X' Stand SS	[]
8	Carrier SS wire mesh with separator - 01 no for #7431, #7440 & #74403	[]
9	Carrier SS Wire mesh type - 02 nos for #7441 and #7451	[]
10	9 to 25 pin converter	[]
11	Dot matrix printer	[]
12	Spare Gasket	[]
13	Silicone pipe Ø8 X 11 - 1 mtr	[]
<i>Checked By</i>		





Dear Customer,

- a. Thank you for the confidence in equitron[®] SLEDOC series Autoclave and we hope that it meets your expectations.
- b. Please read this manual thoroughly before starting the equipment and in order to operate it in an efficient manner.
- c. Please use the equipment in accordance to this Manual for keeping it in a good condition.
- d. Please contact the Dealer if the machine encounters a problem. We ensure quality service and customer support.
- e. We operate on a policy of continuous development. Therefore we reserve the right to make changes and improvements to any of the products described in this manual without prior notice.

INDEX

Sr.	Topic	Page no.
1.0	Introduction	7
1.1	Basic information	7
1.2	Intended use	8
2.0	Unpacking	9
2.1	Material shipped	9
2.2	General safety precautions	9
3.0	Installation	10
3.1	Environmental conditions	10
3.2	Utilities required	10
3.3	Placement	10
3.4	Set up	10
4.0	Operation	11
5.0	Controller settings	13
6.0	General specification	16
6.1	Technical Specification	16
7.0	Maintenance	18
7.1	Cleaning	18
7.2	Daily maintenance	18
7.3	Weekly maintenance	18
8.0	Please ensure the following...	19
9.0	Emergency conditions	20
10.0	Troubleshooting	20
	Annexure I- wiring diagram	21
	Annexure II	22
	Warranty	25

MEANING OF SYMBOLS:

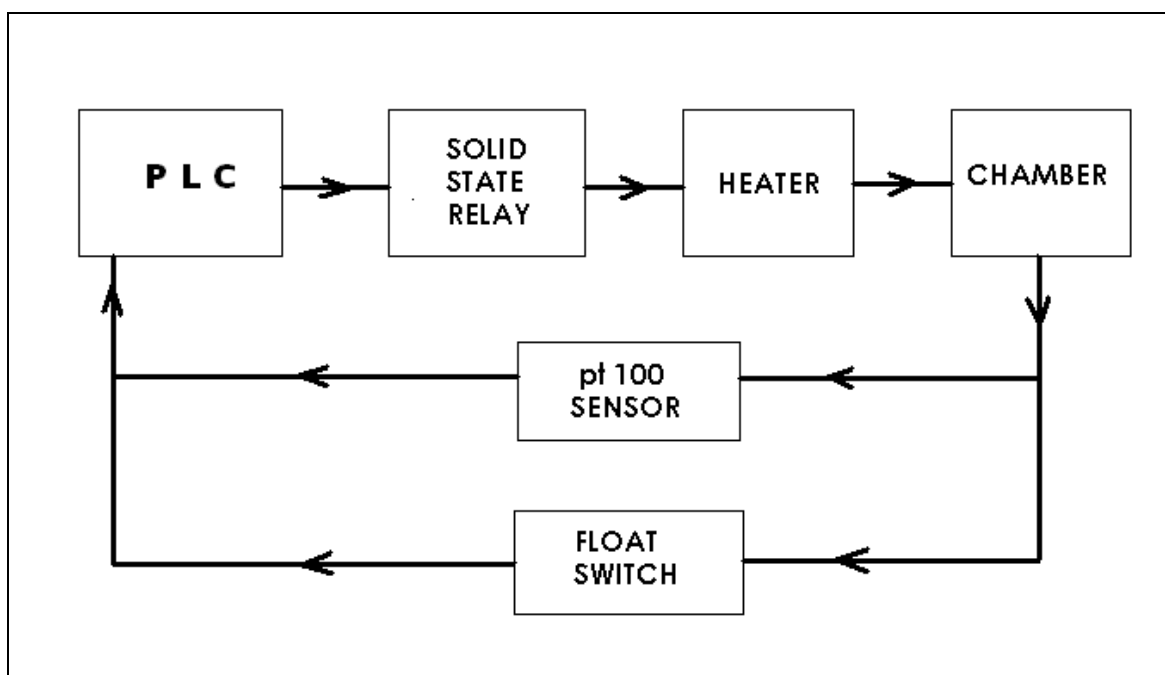
	<p>This symbol draws attention to the user manual, for example, <u>Check water level in the chamber and add water before each sterilization cycle.</u></p>
	<p>This symbol warns about hot surfaces and should not be touched during operation</p>
	<p>This symbol indicates location of grounding protection on product.</p>
	<p>This symbol is a cautionary symbol for taking precautions and / or highlighting hazards.</p>

1.0 INTRODUCTION:

1.1 Basic information:

equitron® SLEDOC series Autoclave is used for Sterilization purpose. Sterilization may be defined as the statistically complete destruction of all micro organisms including the most resistant bacteria and spores.



Block Diagram:**1.2 Intended use:**

equitron[®] *Single Lever Series Autoclave* can be used for numerous medical and laboratory applications in market sectors such as food, dairy, universities, colleges, agriculture, healthcare and industries such as pharmaceuticals, chemical, biotech etc.

These Autoclaves are intended to sterilize :

- a. Unwrapped solid instruments
- b. Non-porous loads
- c. Media preparation
- d. Sterilization of Media as well as Surgical instruments.
- e. For discard or prior to discard.
- f. Dentistry
- g. Metallurgy

Autoclaves are found in many Medical Settings and other places that need to ensure sterility of an object.

2.0 UNPACKING:

While unpacking the consignment, please ensure that following materials are intact, else contact to dealer / manufacturer.

2.1 Material shipped :

- a. The Autoclave, fitted with a MCB, Controller, a Solenoid Valve and Basket(s) (Carriers) as per Specifications.
- b. This manual,
- c. Calibration certificates and test reports
- d. Warranty card
- e. Dot matrix printer
- f. Spare gasket

2.2 General safety precautions:

- a. Observe all standard laboratory safety and accident prevention rules and regulations.
- b. The *Autoclaves* are made for **Sterilization Purpose** and should not be used for any other purpose.
- c. Before connecting the equipment to a power socket, please ensure that line supply matches that of the instrument rating.
- d. Never touch the steam outlet and the *Autoclave's* outer body when it is in operation. It may cause burns. EQUITRON MEDICA PRIVATE LIMITED would not be responsible for such inadequate actions.
- e. Don't allow patients, mostly children to touch the *Autoclave*.
- f. Before using the *Autoclave* make sure that the internal chamber is clean and free from residue.
- g. For effective sterilization, steam needs to penetrate the autoclave load uniformly, so an autoclave should not be overcrowded, and the lids of bottles and containers must be left ajar.
- h. Before opening up the *Autoclave* at end of the cycle, make sure that the depresssurization is complete, the pressure gauge is reading "0" psi.
- i. Never apply any force to open an *Autoclave*.
- j. You must use distilled water to extend the life of sterilizer.
- k. It is suggested that you use a matched instrument hand clip to take out the equipment's to avoid scalding.
- l. The *Autoclave* should not operate in an enclosed area like cupboards.
- m. There are no serviceable parts inside the chamber; an authorized personnel should service the equipment.

3.0 INSTALLATION:

3.1 Environmental conditions:

- Ambient temperature : 5°C-40°C
- Relative humidity: ≤ 85%

3.2 Utilities required:

Electric supply: 230V AC, 50 Hz, single phase

Supplied voltage must not vary more than 10% from the data plate rating. Damage to the unit may result if supplied voltage varies more than 10% & it will void the standard warranty.



Please ensure that proper grounding of the point prior to connecting the AUTOCLAVE to mains.

Water: The *Autoclave* uses a distilled water or demineralized water for steam generation. Please ensure supply of the same.

3.3 Placement:

- a. Place the *Autoclave* on a level surface, isolated from any major heat and humidity sources.
- b. The *Autoclave* is gravity drained. Therefore, please ensure that the solenoid valve outlet drains correctly using a flexible hose. Point the silicon pipe downwards and clamp it securely to avoid spillage.

3.4 Setup:

- a. Unpack the machine carefully. After all the packing material has been removed, please check for any damages or loose parts.
- b. #7440 & #74403 plug top should be connected to 15A, 230 VAC. Single phase supply.
- c. For #7441 and #7451, the three core mains cable should be connected directly to your Supply Mains Switch of suitable rating.
- d. The X-stand at bottom should not be obstructing the water level sensor.

4.0 OPERATION:



The drain valve should never be opened when the Autoclave is under pressure.

- a. Open the Autoclave lid by pressing down the lid handle and turning the lever in anti clockwise direction.
- b. Remove the baskets but leave the Heater cover X stand inside.
- c. Ensure that the drain Valve at the bottom of the Autoclave is closed.



Duty cycle: Four cycles in eight hrs shift with a 30 minutes cooling period.

- a. Pour DISTILLED WATER into the Autoclave (Do not pour water on Water Level Float Switch) up to the Heater Cover X stand.
- b. Load the Autoclave, close the lid by turning the lever clockwise.
- c. If lid is not closed properly a lamp (situated below controller) will glow and cycle won't start till you close the lid completely.
- d. Lid lock mechanism should be smooth, please ensure all the locking rods fully engaged with kahn for lid locking.



Please do not spill any chemical or any liquid inside the chamber.

- e. Turn the machine ON, using the MCB. The solenoid valve will energize immediately.
- f. The programmable logic controller shows three temperature and one pressure channel, as well as set temperature and remaining time.
- g. Set required temperature and time as explained in controller settings.
- h. Press 'F3' to start the cycle.
- i. The Solenoid Valve will remain energized up till the temperature reaches to purge set point in order to purge the stale air enclosed in the Autoclave, after which it will automatically close.



Purging depends upon boiling temperature of water. This boiling point differs as per altitude.

- j. After this, the temperature and pressure will gradually rise, which will be indicated by the PLC and Pressure Gauge.
- k. Just before the set temperature the Heater will be cut OFF and then gradually attain the set temperature. The TIMER will start its countdown after the set temperature is attained. During the countdown the temperature and hence the pressure will be maintained by the PLC by switching ON / OFF the heater.
- l. During this period of countdown, the Safety Valve may leak slightly, which is normal.
- m. After the elapse of the set time, a buzzer will sound for about 30 seconds, the heater will cut OFF and the Solenoid Valve energize - to exhaust the pressure.
- n. For faster evacuation of the pressure, the manual steam release valve (Exhaust Valve) may be opened.
- o. Open lid ONLY AFTER THE PRESSURE GAUGE SHOWS '0'. Do not attempt to open the lid at even 1 or 2 psi. Always wait till the Gauge reads zero before opening the lid.
- p. To stop the cycle press 'F2'.

- q. To avoid recontamination of material, please remove the sterilized material at the earliest after total exhaust of pressure. The Purge Valve cum Vacuum Breaker will allow air to enter inside the chamber to prevent a vacuum within.
- r. To restart the cycle press the F3 . Be sure to top up the water level with distilled water before starting a new cycle.



The maximum load volume of the Autoclave is 70% of its drum/carrier size.



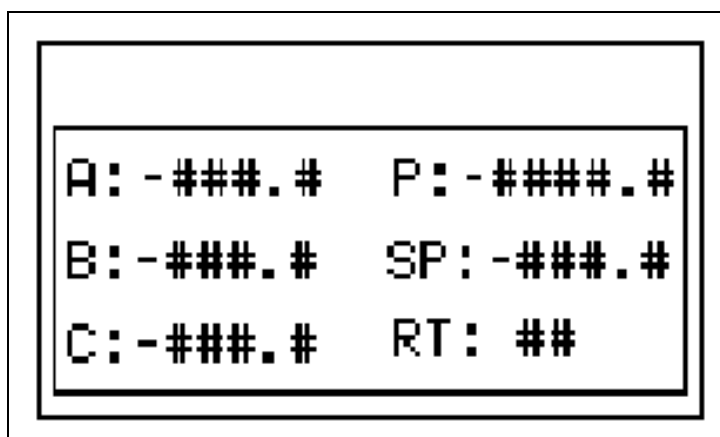
The control box should not be wrapped in plastic.

5.0 CONTROLLER SETTING:

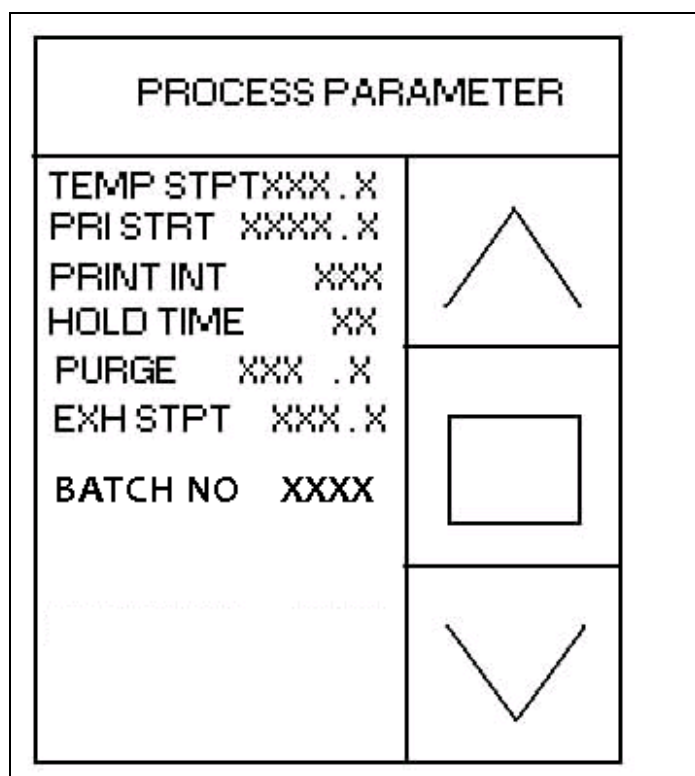
- a. After switching on the machine, the below screen will appear.



- a. This screen will change to machine details screen.
b. Now the display will change in main screen.



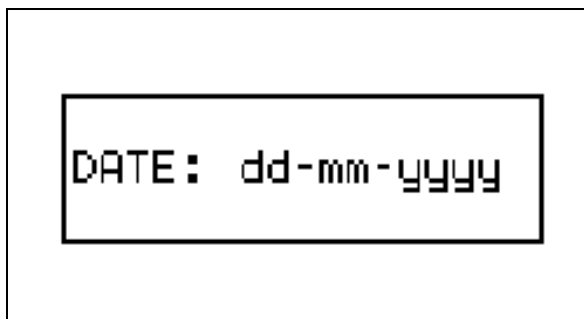
- c. Channel A, B and C are temperature channels, P is Pressure channel, pressure unit is mBar.
- d. SP denotes set point for temperature and RT is for Remaining Time.
- e. 'Cycle on' / alarms are flashed on upper blank space on main screen.
- f. To set Process Parameter press F1.
- g. Below screen will appear.



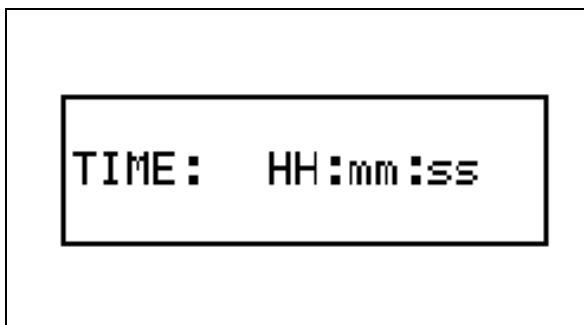
- a. When this screen appears, the first parameter is by default highlighted. Press ENTER key to change the parameter.
- b. Increment the value using UP key and decrement using DOWN key. To shift digit, use LEFT or RIGHT shift key.
- c. After changes are done, press ENTER.
- d. Press ESC key to come out of menu.
- e. To return to the main screen press F2.

DATE & TIME SETTING PROCEDURE:

- a. When main screen is displayed, press F5 key, controller will ask for password.
- b. The password is '1222'.
- c. After providing password, below screen will appear.



- d. Press ENTER key to change value. Change the value using UP, Down, LEFT and RIGHT keys. After changes are done again press 'ENTER' key to register the change. If you wish to change time then press 'F4', below screen will appear. For returning back to the main screen press 'F2'.



- e. Press ENTER key to change value. Change the value using UP, Down, LEFT and RIGHT keys. After changes are done again press 'ENTER' key to register the change. For returning back to the main screen press 'F2'.

Printing:

- a. A Dot matrix printer with serial printing port is suitable for online printing.
- b. Print will start as the temperature reaches to 'Print start' temperature.
- c. Please refer to below settings of printer.

Sr no	Parameters	Desired value
1	Page length for tractor	11 inch
2	Auto line feed	Off
3	Print direction	Bi-D
4	Baud rate	9600
5	Parity	None
6	Data length	8 bit

6.0 GENERAL SPECIFICATIONS :
6.1 TECHNICAL SPECIFICATIONS :

	#7431SLEDOC	#7440SLEDOC	#7441SLEDOC	#7451SLEDOC	#74403SLEDOC
Chamber dimensions	Ø35 x 55 (Ø14 x 22")cm	Ø 40 x 60 (16 X 22") cm	Ø45 x 71 (18 x 28") cm	Ø55 x 76 (22 x 30") cm	Ø 40 x 60 (16 X 22") cm
Supply	230VAC, 50Hz				
Capacity	53 litres	75 litres	113 litres	180 litres	75 litres
Sterilization pressure	15-16 psi				30-31 psi
Operating temperature	≤ 122.0°C				≤ 135°C
Start up volume	8.5 litres	9 litres	10 litres	12 litres	8.5 litres
Water consumption	595ml	620 ml	700 ml	840 ml	650 ml
Time required for 1 cycle(Appx.)	1 Hr	1 Hr	1 Hr 6 min	1 Hr 12 min	1 Hr
Maximum Permissible Weight Loading in Carriers:	10 kg at bottom + 08 kg on separator	12 kg at bottom + 10 kg on separator	14 kg in bottom carrier + 14 kg on top carrier	16 kg in bottom carrier + 16 kg on top carrier	12 kg at bottom + 10 kg on separator
Heater	2.5 kW	2.5 kW	3.50kW	5.00kW	2.50kW
Miniature circuit breaker	DP 16A	DP 16A	DP 25A	DP 32A	DP 16A
Solenoid valve	Direct acting 2/2, 24VDC coil,				
Pressure gauge	0-30psi; 63 mm Ø (3"); 1/4"BSP Back connection				0-60psi; 63 mm Ø (3"); 1/4"BSP Back connection
Float switch	SS float Ball 1/4"Ø stem				
Drain valve	3/8" BSP Ball Valve				
Max. Working pr. Min. Working pr	25 psi 0 psi/ ambient				35 psi 0 psi / ambient
Safety/ Alarm	Low water level alarm Over temperature alarm Sensor open alarm Safety valve for over pressure protection Lid interlock for pressure Power Fail alarm				

Loading capacity:
Erlenmeyer flasks (ml) Loading capacity

Flask size	#7431	#7440	#7441	#7451
250 ml (Ø85 x 140) mm	8 X 2	9 X 2	14 X 2	22 X 2
500 ml (Ø104 x 176) mm	5 X 2	7 X 2	9 X 2	14 X 2
1000 ml (Ø131 x 220) mm	3 X 2	4 X 2	5 X 2	9 X 2
2000 ml (Ø165 x 286) mm	1	2	2 X 2	4 X 2

Bottles (Plain narrow mouth) (ml) loading capacity:

Bottle size	#7431	#7440	#7441	#7451
250 ml (Ø55 X 120) mm	11 X 2	16 X 2	21 X 2	34 X 2
500 ml (Ø80 x 172) mm	8 X 2	9 X 2	14 X 2	22 X 2
1000 ml (Ø104 x 200) mm	5 X 2	7 X 2	9 X 2	14 X 2
2000 ml (Ø129 x 265) mm	1 X 2	3	4 X 2	7 X 2

7.0 MAINTENANCE:

7.1 Cleaning:

- a. Open the drain valve to drain the machine of used Distilled water. Place a suitably sized vessel below the drain valve and open it.



Please clean the autoclave once in a week.

- b. After the chamber is empty, rinse the chamber using water. This will flush any residual matter and small particles. Before flushing please remove any large particles as they may block the drainage valve.
- c. Close Drain Valve and pour distilled water for next cycle.

7.2 Daily maintenance:

- a. The door gasket and the mating surface should be wiped clean each day with a clean, damp cloth. Do not use abrasive cleaners on the gasket or mating surface.
- b. For persistent marks use warm soapy water but ensure any soap residues are completely removed by wiping both the gasket and the vessel again with water using a lint free damp cloth.
- c. Cleaning After Liquid Loads : Biological media tends to boil at a higher rate than other liquids during venting. This causes media to be spattered inside the chamber. Therefore, the chamber must be cleaned daily when you are sterilizing media. Clean as follows:
 - 1) Allow unit to cool.
 - 2) Wipe out chamber and door with a clean, damp cloth.

7.3 Weekly Maintenance:

- a. Clean chamber, basket at least once a week, the baskets should be removed from the sterilizer chamber.
- b. The Basket and chamber should be thoroughly cleaned to remove any deposits from the surfaces.
- c. Clean the basket and chamber (especially the bottom of the chamber) with appropriate anti biological cleaners. Wipe all residues from the surfaces with a dampened, lint-free cloth.
- d. Water drain valve might has been jammed by some dust because of use for a long-term. This kinds of impurity come from smeary dust on the instruments being sterilized or some calcification in the water.
- e. Heater coil which is located at the bottom of the chamber should be cleaned with mild soap solution, to ensure long life of component.
- f. Keep inside chamber clean in order to make life of *Autoclave* much longer; please take the following advice for consideration:
 - 1) Use distilled water;
 - 2) The instruments should be cleaned before running the operation; it is good to use specified packing for the instruments with oil or other impurity, don't forget to seal up.
- g. There are some impurities and some toxins have been left behind the chamber because distilled water had left behind for a long time, so you need to drain and clean the autoclave regularly .
- h. Lid lock mechanism should be smooth, please ensure all the locking rods fully engaged with kahn for lid locking.

7.4 Quarterly Maintenance:

Below mentioned all safety interlock / features should be checked frequently or quarterly by the technician or maintenance person.

- a. Door interlock (Limit switch & Lid lock valve)
- b. Over temperature (Thermostatic cut-off)
- c. Over pressure (Safety valve)
- d. Water level (Float switch)

8.0 PLEASE ENSURE THE FOLLOWING . .

- a. You have read and follow these operating instructions.
- b. The load can be sterilized at the selected temperature.
- c. The load has been cleaned.
- d. The load has been rinsed thoroughly in clean water prior to sterilization to avoid any chemical residues left.
- e. Only distilled, de-ionized or sterile water is used.
- f. The *Autoclave* is in a draught free area.
- g. The *Autoclave* is not installed in an enclosed cupboard space.
- h. All other exterior product panels are 50 mm clear of adjoining surfaces to allow air circulation.
- i. The gasket is left ajar when not in use.
- j. Only qualified personnel service the *Autoclave*.

AND PLEASE DO NOT...

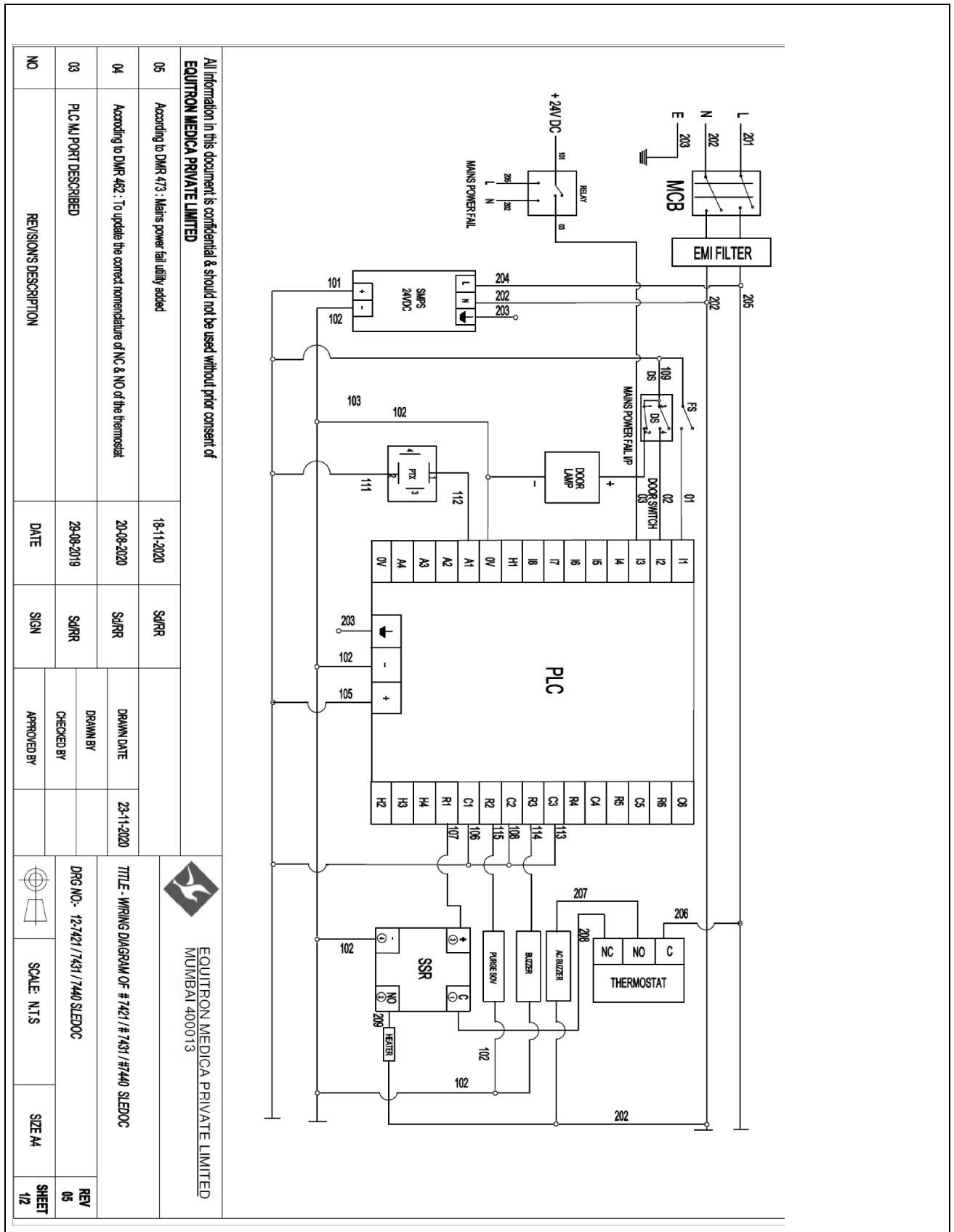
- a. ...Lose this handbook.
- b. ...Add any chemicals whatsoever to the water.
- c. ...Attempt to sterilize volatile substances, toxic materials or other unsuitable loads. Refer to your Responsible Person for advice.
- d. ...Place the autoclave in direct sunlight.
- e. ...Place the *Autoclave* on heat sensitive surfaces.
- f. ...Use inappropriate cleaning materials.
- g. ...Drop or abuse the *Autoclave*.
- h. ...Use in areas of risk associated with flammable materials or gases.
- i. ...Remove the casing or attempt to service or repair this *Autoclave*.

9.0 EMERGENCY CONDITIONS:

Emergency conditions that can arise during operation:	Fail-safe condition:
Failure of temperature controller....	Spring loaded safety valves are provided at 19/33psi to avoid the bursting of chamber due to over pressure.
Failure of SSR.....	A Thermostat is fitted which is independent of controller and set at 128°C/138°C.
Water level goes below the minimum limit.....	Process is aborted irrespective of the status of the process, in addition an alarm is generated for audible indication.
Controlling sensor open.....	Process is aborted irrespective of the status of the process, in addition an alarm is generated for audible indication

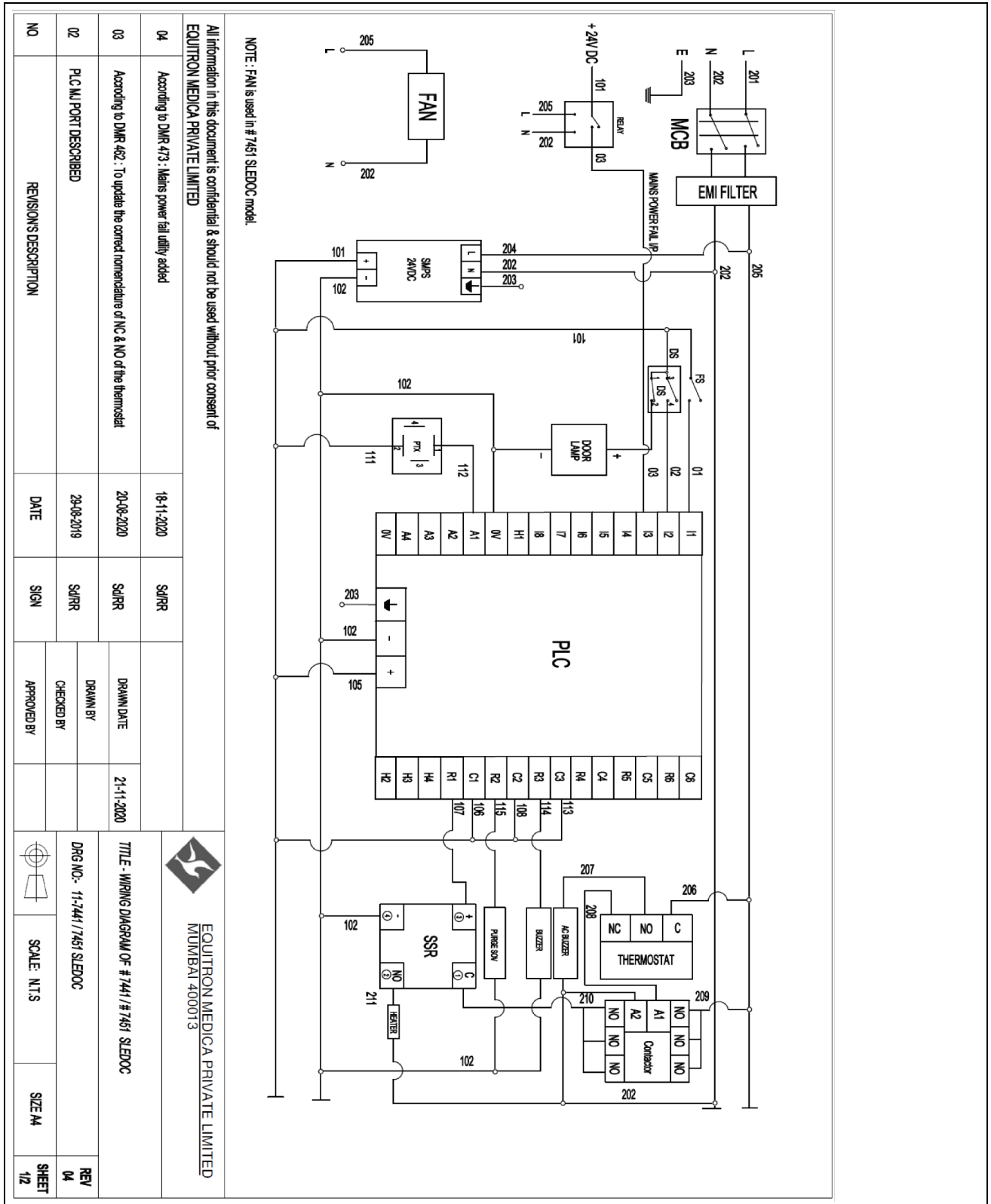
10.0 TROUBLE SHOOTING:

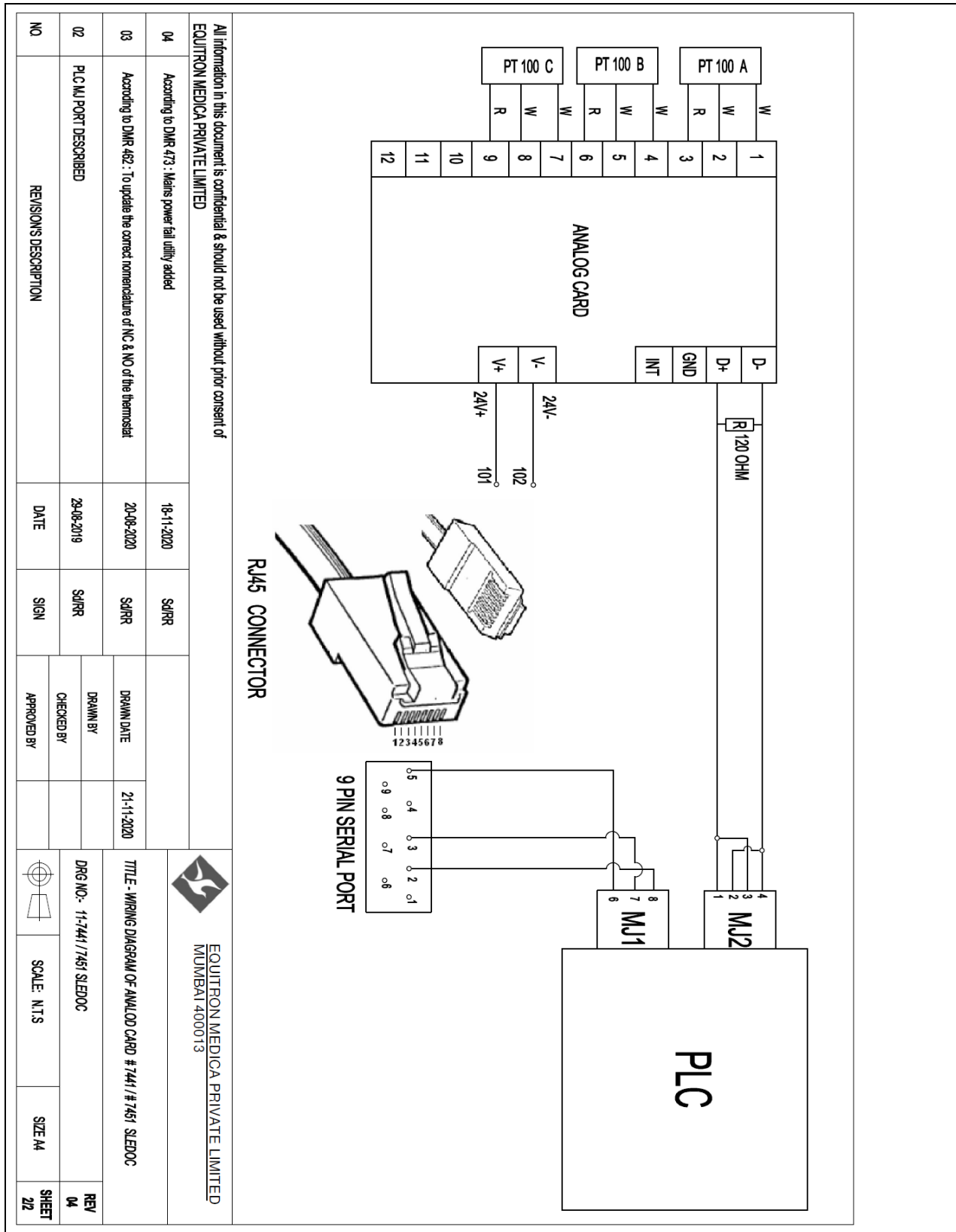
Conditions	Solutions
No display present on the controller panel	<ol style="list-style-type: none"> 1. Check the availability of supply 2. Check whether MCB is on or not
No heating is taking place	<ol style="list-style-type: none"> 1. Check SSR connections 2. Check whether supply is given to the heater.
Steam leakage during operation	<ol style="list-style-type: none"> 1. Check the proper fitting of the gasket 2. Check the spare parts fitted on the lead
Generation of an alarm	<ol style="list-style-type: none"> 1. Check the water level 2. Check the sensor connections

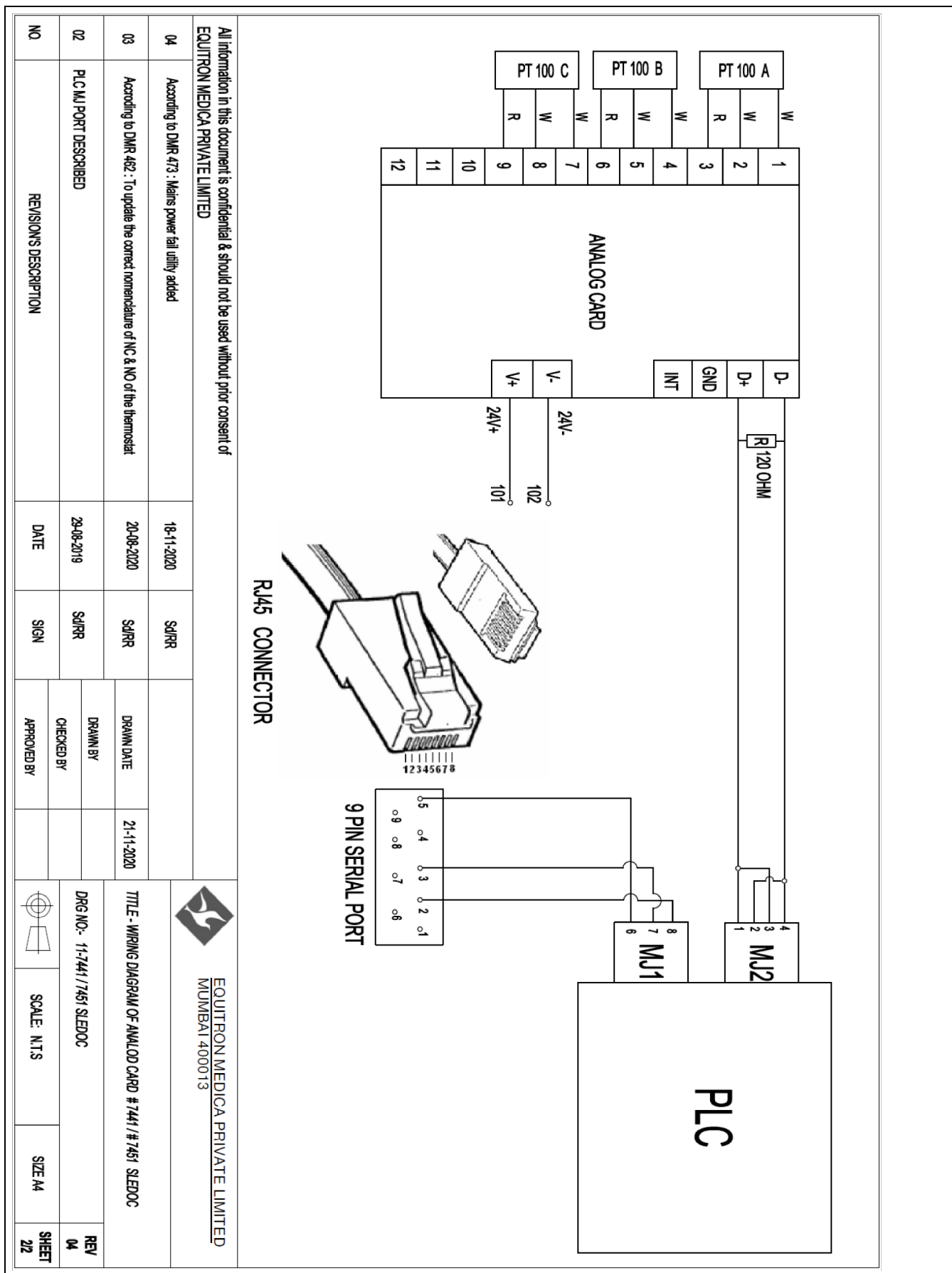
Annexure I
Wiring Daigram for #7431SLEDOC/#7440SLEDOC


Annexure II

Wiring Diagram for #74403SLEDOC, #7441SLEDOC & #7451SLEDOC



Wiring Diagram for Analogue Card




WARRANTY

Scope:

- a. This warranty extends only to the original buyer & may not be extended to a third party without a written consent of manufacturer.
- b. All products of EQUITRON MEDICA PRIVATE LIMITED are warranted against manufacturing defects for a period of one year from the date of Invoice.
- c. An authorized EQUITRON MEDICA PRIVATE LIMITED dealer will repair the device free of charge, provide required parts (except for the exceptions noted below) and perform labor free of charge during the warranty period.


Restriction:

- a. This warranty does not apply if an attempt has been made to repair, rectify alter or dismantle the product by an unauthorised person.
- b. This warranty also does not cover damages resulting from accident, mishandling, negligence and breakage in transit.
- c. This warranty covers only the main instrument & manufacturer shall not be liable for damages to any accessory connected to it.
- d. Under no circumstances would we be liable for any consequential loss, damage or suffering due to any malfunctioning of our product, bonafide or otherwise.

Exclusion:

- a. All Consumables.
- b. Items like Heaters, Pressure / Compound / Vacuum Gauges, Pilot Lamps, Lamps - all kinds and Switches are excluded form the scope of warranty.


Sr No of the product:.



GOEMENEASZ CONFORMITY & ADVISORY SERVICES

302 / D, NeelSagar, Tata Colony, Navghar Road,
Mulund (E), Mumbai – 400 081.
Landline – (022)-21631975, Mobile- 9322917810/9004679283
Email ID – admin@goemeneaszindia.com/atul@goemeneaszindia.com

Date: 27/02/2015



CE


M/s Goemeneasz India Testing Services a subsidiary of M/s. Goemeneasz Conformity & Advisory Services which is an Independent, Impartial, Verification, Inspection and Assessment body is pleased to say that the CE Marking Compliance for MEDICA INSTRUMENT MFG CO. has been successfully implemented under the Machinery Directive 2006 / 42 / EC, Low Voltage Directive 2006 / 95 / EC, Electromagnetic Compatibility Directive 2004 / 108 / EC for "EQUITRON AUTOCLAVE" having Service Order Request No GITS/TEST/121-MD-01 to 09 & details as follows:

Autoclave Series	Range
EQUITRON Autoclave SLEFA	35~180 L 15 psi & 35~75 L 30 psi
EQUITRON Autoclave SLEDOC	75~180 L 15 psi & 75 L 30 psi
EQUITRON Autoclave PRAANO	75~180 L 15 psi & 75 L 30 psi
EQUITRON Autoclave SLV	113~180 L 15 psi
EQUITRON Autoclave SLEDD	200 L 15 psi & 75~100 L 30 psi


All the requirements of the Machine Directive have been appropriately verified by M/s. Goemeneasz India Testing Services . Any interested party who wants to interact under the scope of CE marking abiding to the above Model No, can contact us for the same for any clarification. This Statement of Assurance is valid for 10 years against the condition of machine inspected before delivery.

The Compliance Verification is Carried out against the EN Standards mentioned in page no. 2

All the Safety Guidelines and recommendations in the USER MANUAL, Shall be strictly followed ignorance to which the "STATEMENT OF CONFORMITY", shall be NULL and VOID.



Yours truly,



Atul Dattatraya Shirodkar
Guide & Head Compliance

M/s. Goemeneasz Conformity & Advisory Services

Контакты сервисных центров

Сервисный центр Диаэм в Москве:

Адрес: 129345, г. Москва, ул. Магаданская, д.7, корп.3

Тел.: 8 (800) 234-05-08, +7 (495) 745-05-08

service@dia-m.ru, www.dia-m.ru

Сервисный центр Диаэм в Новосибирске:

Адрес: 630090, Новосибирск, Академгородок, пр. Ак. Лаврентьева, 6/1, офис 100А

Тел.: 8 (800) 234-05-08, +7 (495) 745-05-08

service@dia-m.ru, www.dia-m.ru

Сервисный центр Диаэм в Казани:

Адрес: 420111, Казань, ул. Профсоюзная, д.40-42, пом. № 8

Тел.: 8 (800) 234-05-08, +7 (495) 745-05-08

service@dia-m.ru, www.dia-m.ru

Сервисный центр Диаэм в Санкт-Петербурге:

Адрес: 197022, Санкт-Петербург, ул. Профессора Попова, д. 23, лит. Д, офис 614 (БЦ «Гайот»)

Тел.: 8 (800) 234-05-08, +7 (495) 745-05-08

service@dia-m.ru, www.dia-m.ru

