equitron®

User Manual - Autoclave PRAANO Series

AUTOCLAVE PRAANO
Single Lever with Advanced Features
Top Loading

OPERATION & MAINTENANCE MANUAL

Models

#7440PR
#7441PR
#7451PR
#74403PR

Sr No of Autoclave

V. 1.0

User Manual - Autoclave PRAANO Series

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1.0 Packing List

AUTOCLAVE PRAANO
#7440PR/#7441PR/#7451PR/#74403PR
Sr. No.:

Sr No	Item	Available
1	Autoclave	[ ]
2	User Manual	[ ]
3	Warranty Card (included in User Manual)	[ ]
4	Test Report (included in User Manual)	[ ]
5	Calibration Certificate with Traceability	[ ]
6	X-stand included in the Autoclave	[ ]
7	Carrier SS wire mesh type with separator (1 pc) - applicable to models #7440PR	[ ]
8	Carrier SS wire mesh type (2 pcs) - applicable to models #7441PR & #7451PR	[ ]
9	Spare Gasket - 1 pc	[ ]
10	Silicone pipe Ø 08 x 11 mm - 1 metre length	[ ]
11	Dot Matrix Printer	[ ]
12	Certificate Of Declaration (Only applicable for PED vessel)	[ ]
	Checked By	

Dear Customer,

- Thank you for the confidence in the Autoclave PRAANO and we hope that it meets your expectations.
- Please read this manual thoroughly before starting the equipment and in order to operate it in an efficient manner.
- Please use the equipment in accordance with this Manual for keeping it in a good condition.
- Please contact the Authorised Dealer or manufacturer if the machine encounters a problem. We ensure quality service and customer support.
- 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

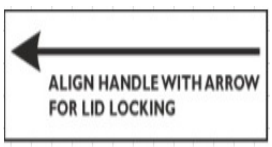
2.0 Safety Warnings & Symbols

This symbol draws attention to the user manual. For example:
Please ensure that proper grounding of the point prior to connecting the AUTOCLAVE to mains.

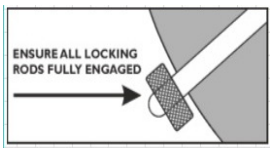
This symbol warns about hot surfaces and should not be touched during operation

This symbol indicates the location of grounding protection on the product.

This symbol is a cautionary symbol for taking precautions and/or highlighting hazards.



Align lid handle with the arrow label provided on the lid cover while lid locking.



Lid lock mechanism should be smooth,please ensure all the locking rods fully engaged with kahn for lid locking

3.0 Introduction

3.1 Basic Information

- PRAANO Autoclave comprises Programmable logic controller which helps to have a more user friendly and advanced controlling system.
- This series has an inbuilt documenting feature with 4 temperature sensors and 1 pressure sensor.

3.2 Intended use

a. Praano Autoclave can be used for numerous medical and laboratory applications in market sectors such as food and dairy, universities and colleges, agriculture and healthcare (including Pharmaceuticals, chemical industries) etc.
b. These Autoclaves are intended to sterilize unwrapped solid instruments and non-porous loads.
c. Media preparation.
d. Sterilization of media as well as surgical instruments.
e. For preparing materials for discarding.
f. Dentistry.
g. Metallurgy.

3.3 Prohibited use

Follow material should not be treated in the Autoclave

- Flammable or explosive substances.
- Gas in bottles or spray cans.
- Materials containing: solvents, volatile, chlorinated compounds (HCL, bleach)or corrosive chemicals (such as phenol, trichloroacetic acid, ether, chloroform), etc.
- Material contaminated with chemotherapeutic agents or radioactive material
- Non autoclavable plastic materials
- Material that can generate toxic, flammable, explosive gases/vapors due to steam sterilization

3.4 Options available with PRAANO series

DRAIN COOLING (EXHAUST COOLING):

In this option the steam is exhausted while positive pulse or after the end of the cycle is condensed, so that due to temperature of exhausted steam, the surrounding temperature won't get affected.

POSITIVE PULSING:

This option is mainly useful when load type is media. In positive pulsing, prior to sterilization phase the pressure is raised to a certain level (Below sterilization pressure) and held for a few minutes. Then the steam is exhausted to just above the atmospheric pressure.

AIR BALLAST WITH FILTER (SUPPORT PRESSURE AFTER STERILIZATION): In Air ballast with filter option, an external filtered air is introduced post sterilization. This helps avoid Media spillage, by controlling chamber pressure.

4.0 Unpacking

- Upon receipt, the autoclave should be unpacked and inspected for mechanical damage. Observe the packing method and retain packing material until the unit has been inspected.
- Mechanical inspection involves checking for signs of physical damage such as scratched panel surface damage or bend, etc.
- If you find any battered, please inform the dealer/manufacturer.
- These products are carefully inspected prior to shipment and all reasonable precautions are taken for shipment to assure safe arrival at their destinations.

4.1 General safety precautions

a. Observe all standard laboratory safety and accident prevention rules and regulations.
b. The Autoclaves are made for Sterilization Purposes and should not be used for any other purpose.
c. Before connecting the equipment to a power socket, please ensure that the 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 any untrained person to use 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 door of the Autoclave at the end of the cycle, make sure that the depressurization is complete, the pressure gauge is reading 'o' psi.
i. Never leave the autoclave unattended when in operation, do not open the door during the running cycle.
k. In case of service, contact an authorized dealer/manufacturer.

5.0 Installation

5.1 Acceptable environmental conditions

For Storage:

- Ambient temperature: 4°C ~ 50°C
- Relative humidity: ≤ 80%

For Operation:

- Equipment for use: Indoors use only, should be installed in a well ventilated, dust free & adequately lit room.
- Maximum altitude: 2000 meters
- Ambient temperature: 10°C ~ 40°C
- Relative humidity: ≤ 85%
- Maximum mains voltage variations: +/ - 10% of that shown on the serial number plate.

Note - Pressure vessel sr. no. On label can be traced from sr.no. encoded on pressure vessel.

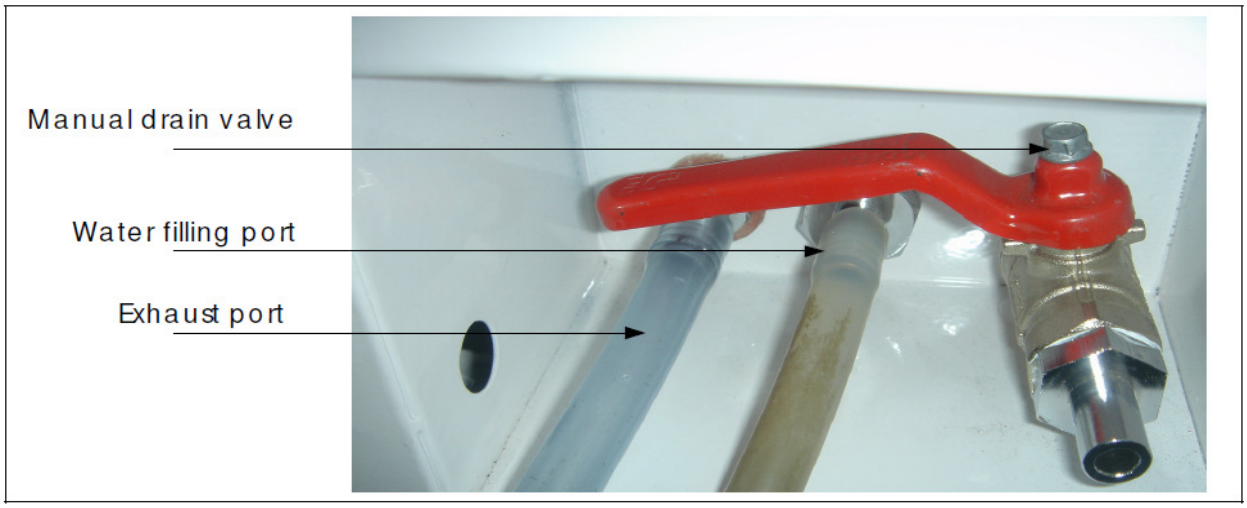
5.2 Utilities required

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

- For Supply Voltage & Frequency, refer to serial number plate. It is recommended to provide MCB of appropriate rating. Refer technical specifications.
- Water: Distilled water or demineralized water should be used for autoclave, with TDS value less than 50 PPM & pH range 6.5 to 7.5.
- Drain Point: The drain exhaust must be connected to a suitable building drain capable of carrying condensate/steam pressure/temperatures of approx 3400mbar/ 137°C. Drain pipeline must be below in height as compared to the drain point of Autoclave. Appropriate silicon tube (8 mm ID) will need to be connected from Autoclave to this drain point.

5.3 Placement

a. Autoclave should be placed on a level ground and should preferably be away from a major heat / humidity source.
b. Arrange the equipment with a clearance of 1 meter on the right side and 0.2 meter from rear side.
c. If the equipment is installed in a place which is 800 m or higher than sea level (that is under low pressure) its specifications (viz. purging temperature, exhaust temperature etc.) are subject to change. In this case be sure to contact the manufacturer or dealer.
d. The autoclave drain and exhaust outlet on the rear side should be left to drain by means of the flexible hose or the area around it should be uncluttered. Piping should always go in downward direction and should be clamped/ tied properly.
e. Avoid installing the equipment in a place where its body may be exposed to water or chemicals or where corrosive and explosive gases may be produced nearby.
f. Avoid placing the equipment directly under a fire detector. If you open the lid immediately after completion of operation, steam comes out of the working chamber, and may activate the detector.



5.4 Setup

a. Unpack the machine carefully. After all the packing material has been removed, please check for any damages or loose parts.
b. The Autoclaves #7440PR/#74403PR needs a 15A wall socket and switch. Please ensure proper earthing.
c. The three core mains cable should be connected directly to your Supply Mains Switch of suitable rating, 25A for #7441PR and 32A for #7451PR. Please ensure proper earthing.
d. The X stand at bottom should not be obstructing the water level sensor.

6.0 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 carriers but leave the heater cover X stand inside.
c. Ensure that the drain valve at the bottom of the Autoclave is closed.
d. Connect a Distilled Water line to the Autoclave

Duty cycle: Four cycles in an eight hours shift with a 30-minute cooling period.

e. Load the Autoclave, close the lid by turning the lever in clockwise direction.

Align lid handle with the arrow label provided on the lid cover while lid locking.

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.

Before closing the lid, please check that there are no foreign matters in the portion of the lid which is in contact with the lid packing. Foreign particles may cause steam leakage.

f. Switch ON the MCB.
g. If the lid is not closed properly a lamp (situated below the controller) will glow and the cycle won't start till you close the lid completely.
h. The Water in SOV will automatically start filling water, if water level is below desired level.
i. Select desired recipe as per instructions given in Controller settings. Press 'START' to start the cycle.

j. The Solenoid Valve will remain open up till the temperature reaches approximately 99~100°C in order to purge the stale air enclosed in the Autoclave, after which it will automatically close.

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

For setting appropriate Purge set point, refer to the table below:

Altitude compared to sea level (in ft)	Boiling point (Purge set point) (in °C)
500	99.5
1000	99.0
1500	98.5
2000	98.0
2500	97.5
3000	97.0
3500	96.5
4000	96.0
4500	95.5
5000	95.0

k. After this, the temperature and pressure will gradually rise, which will be indicated by the controller and Pressure Gauge.
l. If positive pulsing is enabled, the pressure will gradually rise upto 1900 mbar. Then that pressure is held up for 5 minutes and steam is exhausted upto 1200 mbar. This whole cycle is called Positive pulsing. Users can set a number of positive pulses for reducing lag time.
m. After positive pulsing the temperature as well as pressure will build up to sterilizing temperature .
n. Just before the set temperature the heater will turn ON & OFF and then gradually attain the set temperature. Timer will start its countdown after the set temperature is attained. During countdown the temperature and hence the pressure will be maintained by the controller by switching ON / OFF the heater.
o. During this period of countdown, the Safety Valve may leak slightly, which is normal.
p. If drain cooling is enabled,the exhausted steam mixed with raw water gets condensed & drained through the exhaust port.

q. After the elapse of the set time, if the Air ballast option is not enabled, steam will be exhausted through the solenoid valve, and 'EOC' (End of cycle) will be displayed on the controller screen.
r. If the 'Air Ballast' option is enabled, then after elapse of Hold time, the compressor will turn on.The pressure will be maintained between 2000 mbar to 2200 mbar till the temperature reaches 85°C.
s. When temperature reaches 85°C the compressor will turn off automatically and Exhaust valve will open for 5 minutes,after that cycle will end and 'EOC' will be displayed on the screen.
t. After the completion of the cycle, a Buzzer will sound for about 30 seconds.
u. For faster evacuation of the pressure, the manual steam release valve (Exhaust Valve) may be opened.
v. Open the lid ONLY AFTER THE PRESSURE GAUGE SHOWS '0'. Do not attempt to open the lid at even 1 or 2 psi. 'Pressure interlock' given for the lid. So if there is any residual pressure in the chamber lid will not open.
w. To avoid recontamination of material, please remove the sterilized material at the earliest after total exhaustion of pressure,The Purge Valve cum Vacuum Breaker will allow air to enter inside the chamber to prevent a vacuum within.

Keep the lid open for 15 minutes or more between operations when the equipment is operated continuously. Ensure that the temperature in the working chamber is 50°C or below before starting the next operation.

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

Please open the lid only when the temperature is below 80°C .

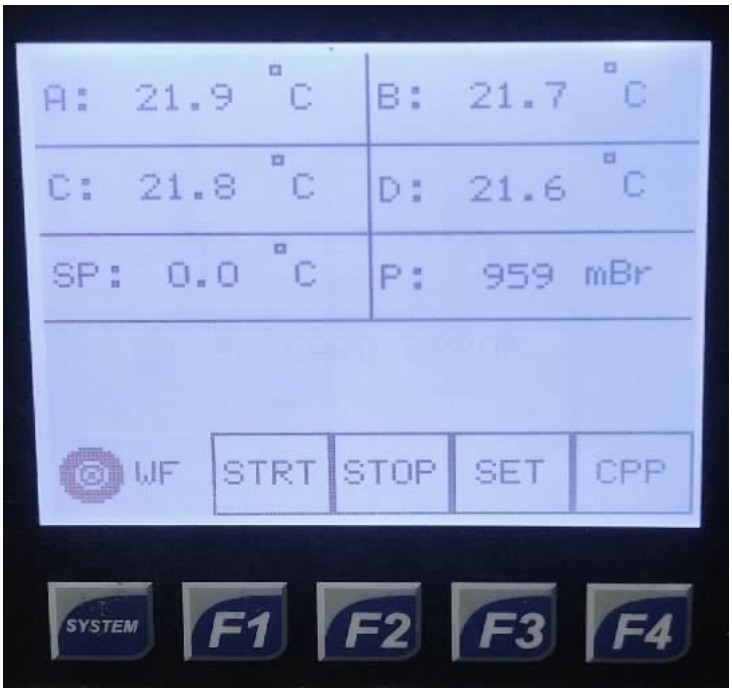
NOTE :

i. PURGE-SP setting is not allowed above 100°C, because chamber temperature will not rise above 100°C, as the boiling point of water is 100°C.

ii. While the cycle is running, the user is not allowed to change the sterilization time.

7.0 Controller Settings

- This screen gives information about actual temperature readings of 4 temperature channels for the chamber, 1 pressure reading of the pressure channel,water level and also shows the status of the running cycle.

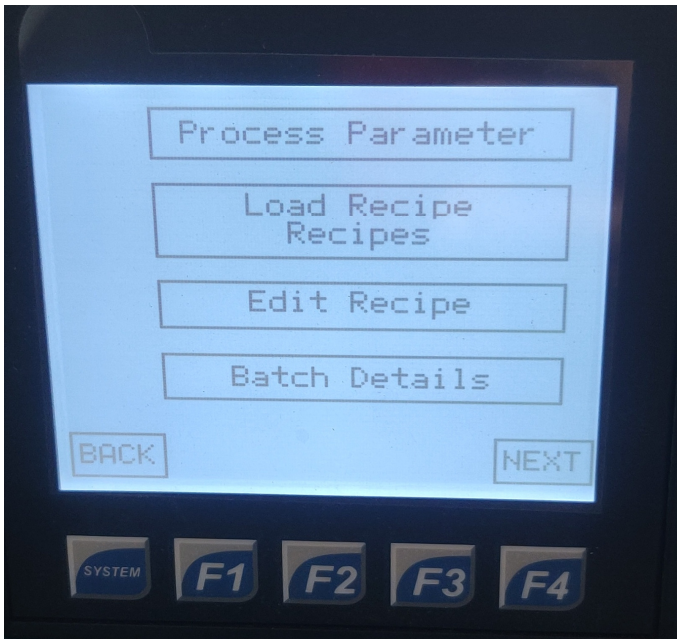


1. Temperature values: The controller has four temperature channels viz. A, B C and D.
2. SP: The main screen also displays set point value.
3. P: The Pressure is displayed in mbar (Absolute scale).
4. WF: This indicates the water level is at desired level and cycle can be started.
5. STRT: To start the cycle.
6. STOP: To stop the cycle. After pressing this key the controller prompts the reconfirmation message.
7. SET: To set parameters.
8. CPP: CPP stands for Critical Process Parameters.

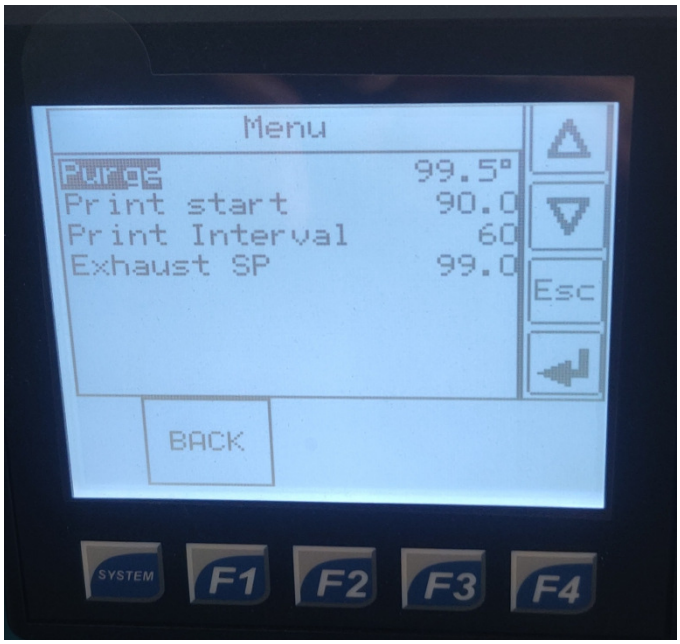
Note: Temperature set point & Sterilization time may vary for #74403PR i.e. 134.0°C & 7 minutes for specific cycles.

7.1 Set process parameters

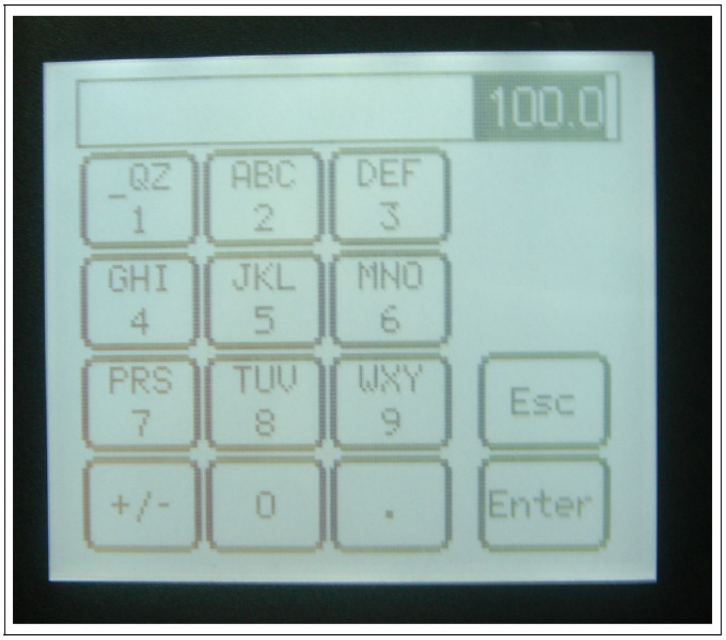
a. Press the ‘SET’ key on the main screen. The screen below will appear.



b. Press on the ‘Process parameter’, and the screen below will appear.

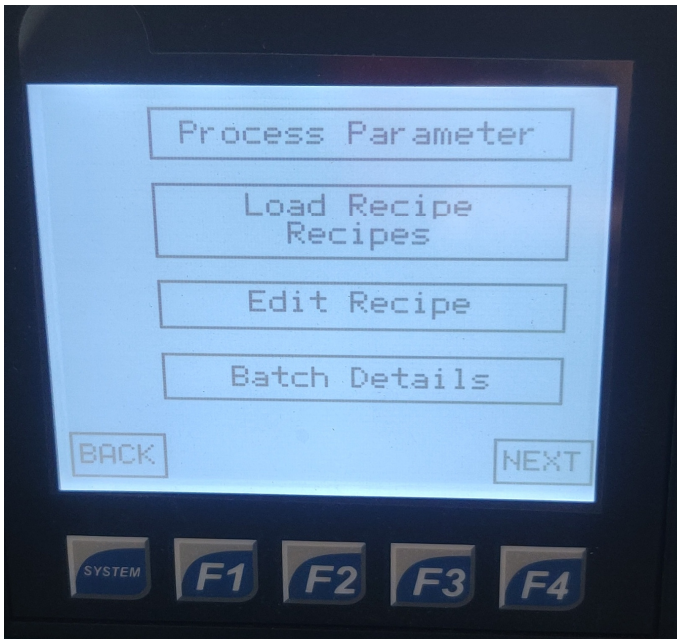


c. Navigate through parameters using up and down keys. If you want to alter the settings, press Enter ( ) key. A Keypad will appear as below. Enter the desired value and press enter.



7.2 Recipe selection

a. Press the 'SET' key on the main screen. The screen below will appear.



b. Press on the 'Load recipe Recipes', the screen below will appear.

c. Navigate through recipes using up and down keys. Press Enter ( ) to select the desired recipe. Press Exit to escape to the main screen.

7.3 Recipe Table (For sample)

	Unwrapped	**Media**	**Glassware**	**Discard**	**Media_115**	**Warming**
Temperature set point	121.0°C /134.0°C	121.0°C	121.0°C /134.0°C	121.0°C /134.0°C	115.0°C	105°C
Hold time	20 minutes / 07 minutes	20 minutes	20 minutes / 07 minutes	20 minutes /07 minutes	15 minutes	20 minutes
Positive pulsing	02 cycles	02 cycles	02 cycles	02 cycles	NA	NA
Support pressure	NA	Yes	NA	NA	NA	NA

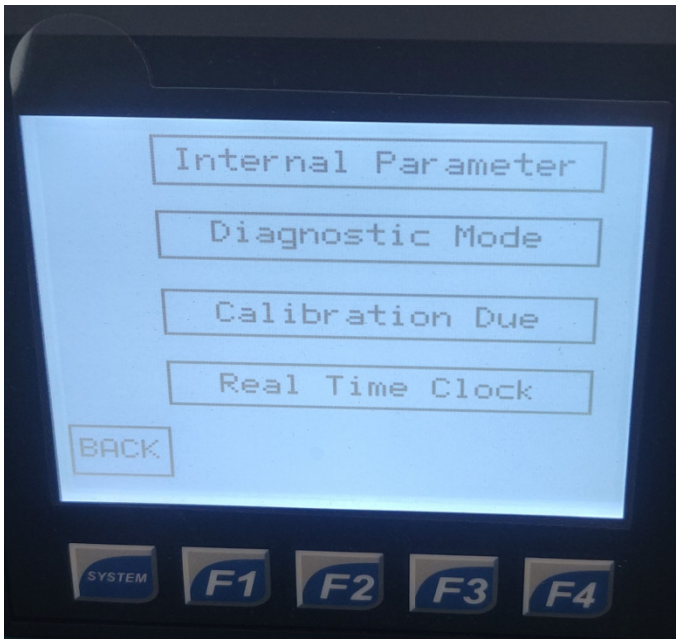
7.4 Edit Recipe

All recipe parameters are factory set,these are password protected for equipment safety concerns.

7.5 Batch Details

a. Press on the 'Batch Details', the screen below will appear.

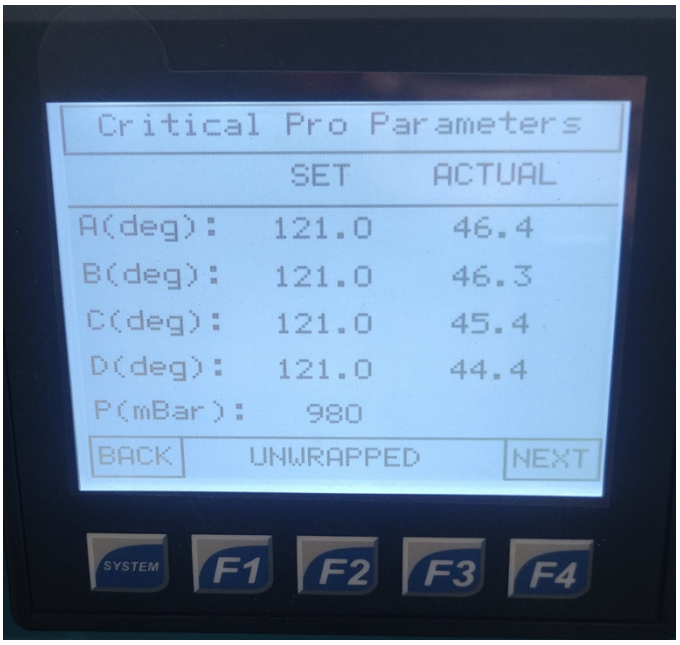
Press on the 'NEXT' key.The screen below will appear.



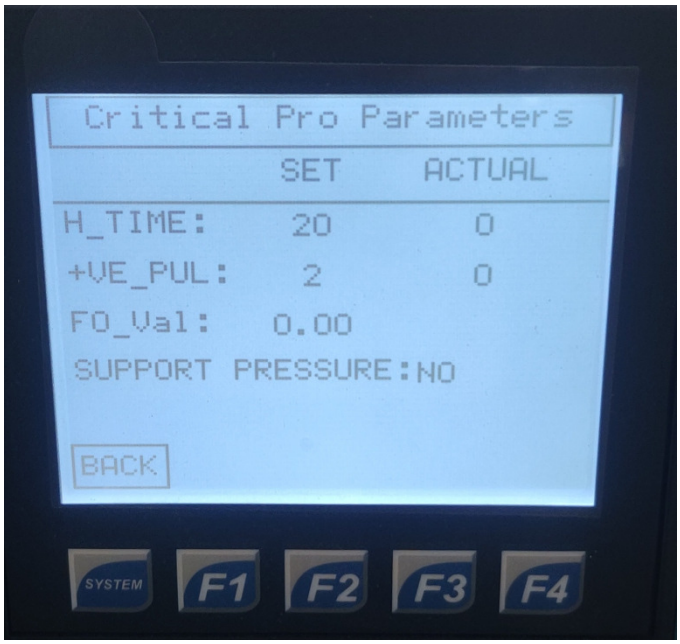
Parameters are factory set,these are password protected for equipment safety concerns.

7.6 CPP

a.Press on the ‘CPP’ key. The screen below will appear.



b.Press on the ‘NEXT’ key.The screen below will appear.



7.7 Printer Setting

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

8.0 General Specifications

8.1 Technical Specifications

Model No.	#7440PR	#7441PR	#7451PR	#74403PR
Working Size(mm)	Ø407 x 725	Ø459 x 850	Ø559 x 905	Ø407 x 725
Basket(s) (Carriers)	35Ø x 55 cm - 1	Ø40 x 33 cm - 2	Ø50 x 35 cm - 2	35Ø x 55 cm - 1
Autoclave loading height (kg)	90	97	101	90
Chamber Fill Up volume (liters)	91	135	212	91
Autoclave weight when empty (kg)	75	98	124	75
Autoclave Weight when filled with water (kg)	166	233	337	166
External Dimension of Autoclave (cm)	100x75x50	112x73x55	115x92x66	100x75x50

MOC of working chamber	SA240 Type 304			
Operating Temp\Press	≤124.0°C \ 18 psi			≤135.0°C \ 32 psi
Design Temp\Press	150°C \ 20 psi			150.0°C \ 36 psi
Start up vol.(approx.) (L)	9	10	12	9
Water consumption (Approx)	645 ml	700 ml	840 ml	645 ml
Maximum Permissible Weight Loading in Carriers:	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 (kW)	2.5 kW	3.5 kW	5.0 kW	2.5 kW
Current drawn (Approx)	10 A	15 A	22 A	10 A
Safety	Door open alarm Over temperature alarm Over pressure alarm Sensor open alarm Safety valve for overpressure protection			
Miniature Circuit Breaker (MCB)	DP 16A	DP 25A	DP 32A	DP 16A
Supply	220~230V AC, 50/60 Hz, single phase			
Solenoid Valve	Direct acting 2/2, 240 VAC coil, Normally Closed, 16 mm orifice, ½” BSP port. (1 no) & Direct acting 2/2, 24 VDC coil, Normally Closed, 4 mm orifice, 3/8"BSP port (1 no).			
Pressure Gauge	0-30 psi; 63mmØ(2½”); ¼” BSP			
Drain Valve	Bottom connection			
Float Switch	SS Float Ball potential free			

8.2 Controller Specifications

Programmable logic controller	
Make	Horner
Model	XLT series HE-103
No of Digital Inputs	8
No of Analog Inputs	2
No of digital outputs	12
Additional	Analog card for RTD inputs.

8.3 Loading Capacity:

Erlenmeyer flasks (ml) Loading capacity

Flask size	**#7440**	**#7441**	**#7451**
250 ml (Ø85 x 140) mm	7 x 2	10 x 2	16 x 2
500 ml (Ø104 x 176) mm	5 x 2	7 x 2	12 x 2
1000 ml (Ø131 x 220) mm	3 x 2	4 x 2	5 x 2
2000 ml (Ø165 x 286) mm	2	2 x 2	4 x 2

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

Bottle size	**#7440**	**#7441**	**#7451**
250 ml (Ø55 X 120) mm	16 X 2	21 X 2	34 X 2

500 ml (Ø80 x 172) mm	10 x 2	10 x 2	19 x 2
1000 ml (Ø104 x 200) mm	5 x 2	7 x 2	12 x 2
2000 ml (Ø129 x 265)mm	3	4 x 2	7 x 2

9.0 Maintenance

9.1 Cleaning

a. Open the drain valve to drain the chamber water. Connect the drain connection to the suitable outlet .
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

Do not use benzine or thinner to clean the body. Also make sure that the volatile substances such as insecticides do not come into contact with the body as these substances may deteriorate the body or strip its paint.

c. Close the Drain Valve and pour distilled water for the next cycle.

9.2 Daily Maintenance

a. The lid 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. 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 the unit to cool.
    2) Wipe out chamber and door with a clean, damp cloth

9.3 Weekly Maintenance

a. Clean Chamber carriers at least once a week, the carriers should be removed from the sterilizer chamber.

b. The carriers and chamber should be thoroughly cleaned to remove any deposits from the surfaces.
c. Clean the carriers 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 must be cleaned for dust after use for a long-term. This kind of impurity comes from smeary dust on the instruments being sterilized or some calcification in the water.
e. Lid lock mechanism should be smooth, please ensure all the locking rods fully engaged with kan for lid locking.

9.4 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)

9.5 Alarms

Alarm annunciation is provided for below various conditions. When an alarm is generated, a buzzer will sound and the alarm will be shown on screen & required print as well.

i)LOW WATER LEVEL : Water level indicator symbol is dark if water level is low.

ii)OVER TEMPERATURE : An alarm is generated and the process gets cut off when the chamber temperature is more than 124°C.

iii)SD CARD ERROR : An alarm generated if SD card is not present.

iv)PRESSURE SENSOR OPEN : An alarm generated and the process gets cut off if the Pressure sensor (transmitter) is open.

v)CHAMBER PRESSURE HIGH : An alarm is generated and the process gets cut off when chamber pressure is above 2400 mbar.

vi)DOOR OPEN: Cycle won't start if the door (lid) is open. A message will be displayed on the screen.

vii)STERILIZATION ERROR: It gives an Alarm, when actual temperature goes below set temperature for more than 2 minutes.

viii)MAINS POWER FAIL : An alarm generated if Mains power fails.

ix)PLC BATTERY FAIL : An alarm generated if PLC battery fail.

x) I/O MODULE FAULT : An alarm generated and the process gets cut off if the I/O module is open.

xi)DATA LOG ERROR :If data log stops between the running cycle, this message will be displayed on the screen.

xii)CHANNEL A/B/C/D SENSOR OPEN : An alarm generated respectively and the process gets cut off if any sensor opens out of A,B,C,D sensor.

10.0 Do's and Don'ts

PLEASE DO...

a. You have read and followed 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 drought free area.
g. The Autoclave is not installed in an enclosed cupboard space.
h. All other exterior product panels are 1 metre 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.

11.0 Emergency Conditions

Emergency conditions that can arise during operation:	**Fail-safe condition:**
Failure of temperature controller.....	An independent spring loaded safety valve is provided at 19/33 psi to avoid the bursting of the chamber due to over pressure.
If temperature rises beyond control.....	A thermostat is provided which limits the chamber temperature upto safe level. Which gives an alarm and cuts off the heater from supply 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

12.0 Troubleshooting

Conditions	**Solutions**
No display present on the controller panel	1. Check the availability of power supply 2. Check whether switch is on or not
No heating is taking place	1. Check SSR connections 2. Check whether power supply is given to the heater.
Steam leakage during operation	1. Check the proper fitting of the gasket 2. Check the spare parts fitted on the lid
Generation of an alarm	1. Check the water level 2. Check the sensor connections

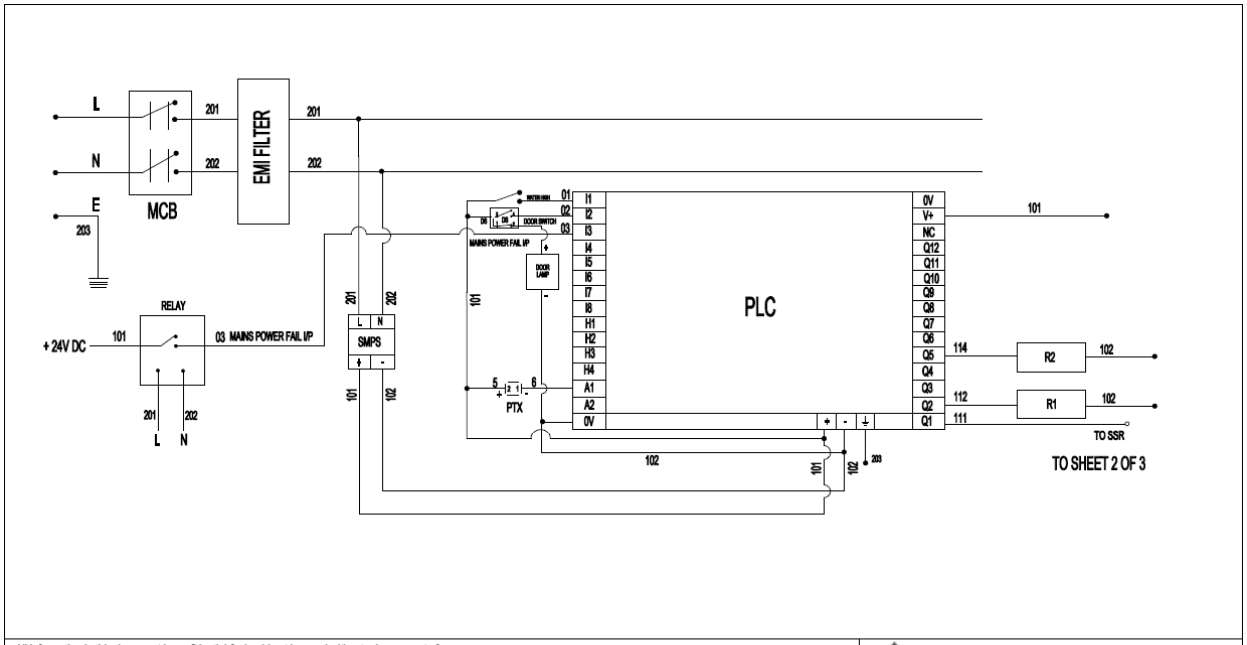
13.0 Autoclave Operation and Maintenance Guidelines

AUTOCLAVE OPERATION AND MAINTENANCE GUIDELINES	
	DO **NOT** USE MACHINE WITHOUT READING PRODUCT MANUAL.
	**Ventilation:** Leave sufficient space (600mm from all sides) surrounding the autoclave (Room temperature should be below 40°C). Do not cover the ventilation holes.
	**Water**: If water IN line is connected – water pressure should be maintained below 2 bar. Use only distilled or soft water (hardness of less than 50 PPM and pH between 6.5 to 7.5). Non-usage of distilled or soft water may have a severe effect on the autoclave life and will void the standard warranty.
	The Autoclave should not be loaded to more than 70% of its capacity. Sterilization loads should not touch the chamber/lid wall.
	There is a danger of explosion of tightly-closed containers in case support pressure(Air Ballast with Filter) is not opted for. If there is no support pressure,containers can be covered but unsealed.
	When unloading materials, wear appropriate protective gear to prevent burns.
	Do not open the autoclave lid unless pressure gauge reading is ZERO.
	➢ Do not spill media or broken glass parts in the autoclave. For discard loads – EQUITRON discard containers are highly recommended to prevent the autoclave drain from being clogged due to media spillage. Foreign particle / media spillage in the chamber can damage the Exhaust / Drain solenoid valve & this will void the standard warranty ➢ Do not use nails or any other hard device to operate the controller. ➢ Do not keep basket, carrier, or any other item on gasket as it may damage the gasket surface. ➢ Do not lean on the autoclave.
	For continuous operation of the autoclave, at least 30 minutes cooling period before starting next cycle is recommended.
	**Cleaning:** Clean the chamber with appropriate (mild) cleaning solution at least once a week (frequency depends on usage).Never use bleach or any chemical containing chlorides/acids, steel wool, steel brush or anything abrasive to scrub or clean the chamber or gasket
	Do not remove the side panel except for maintenance or inspection.
	**Safety**: Validate all the safety devices connected to the autoclave for its operation at least once a year. **Calibration:** For assured sterilization, calibrate the controller & gauges connected to the autoclave at least once a year.

74PRMGAIH

14.0 Wiring Diagram

PLC wiring for #7440PR & #7440PR-PP



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MUMBAI 400013

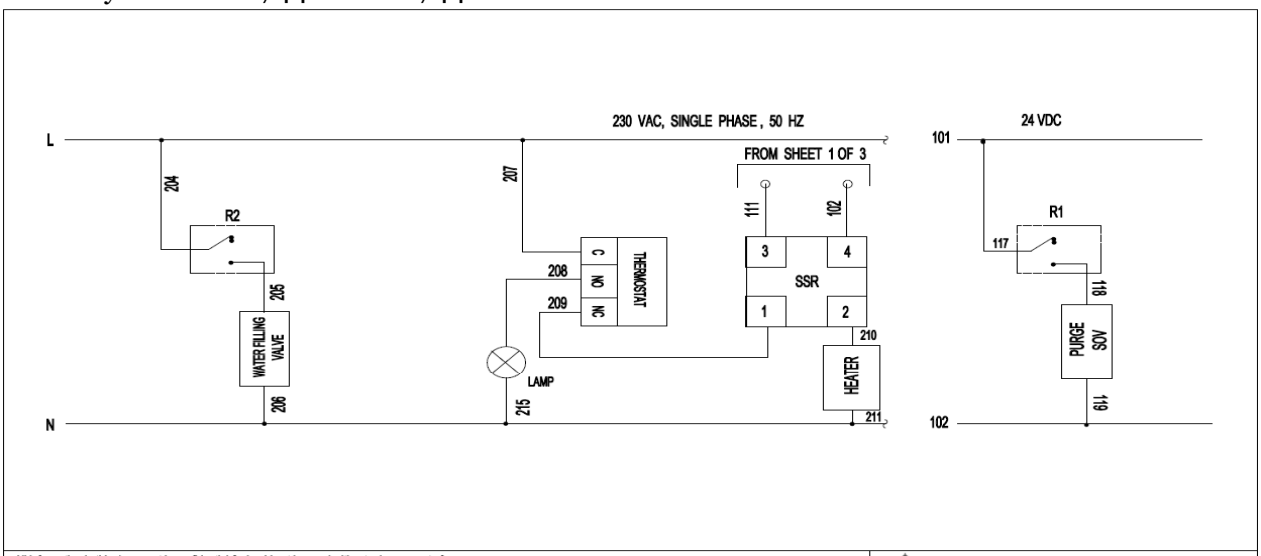
	REVISION'S DESCRIPTION	DATE	SIGN
08	Updated IO Hardware Configuration List Name as per New XLT Controller	18/01/2023	SD/AK
07	According To DMR 510: 9 Pin Serial Connector is Replaced with 25 Pin Connector	10/08/2022	SD/VTK
06	According to DMR 505 : Sensor wire nomenclature changed as per IEC 60751:2008	03-02-2022	SD/VTK

DRAWN DATE	18/01/2023
DRAWN BY	
CHECKED BY	
APPROVED BY	

TITLE - PRAANO WIRING DIAGRAM OF PLC CONTROLLER

DRG NO:- #7440PR | REV 08 | SCALE: N.T.S | SIZE A4 | SHEET 1/3

Relay card for #7440PR & #7440PR-PP



EQUITRON MEDICA PRIVATE LIMITED
MUMBAI 400013

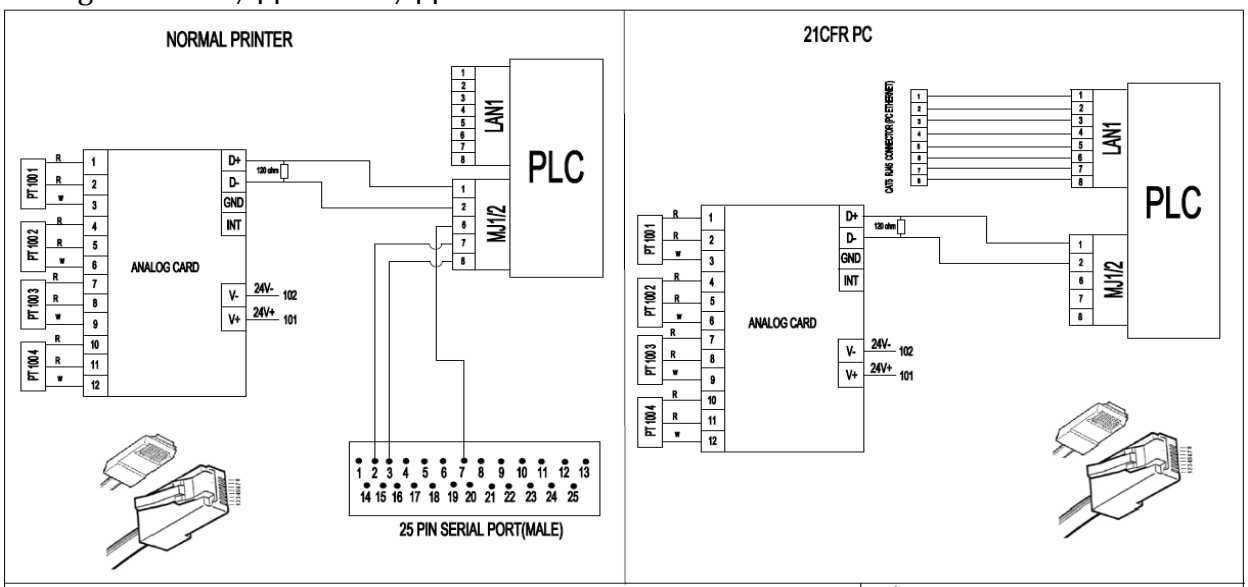
	REVISION'S DESCRIPTION	DATE	SIGN
07	According To DMR 510: 9 Pin Serial Connector is Replaced with 25 Pin Connector	10/08/2022	SD/VTK
06	According to DMR 505 : Sensor wire nomenclature changed as per IEC 60751:2008	03-02-2022	Sd/VTK
05	According to DMR 473 : Mains power fail utility added	18-11-2020	Sd/RR

DRAWN DATE	10-08-2022
DRAWN BY	
CHECKED BY	
APPROVED BY	

TITLE - PRAANO WIRING DIAGRAM OF 230VAC RELAY

DRG NO:- #7440 PR | REV 07 | SCALE: N.T.S | SIZE A4 | SHEET 2/3

Analog card for #7440PR & #7440PR-PP



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EQUITRON MEDICA PRIVATE LIMITED MUMBAI 400013

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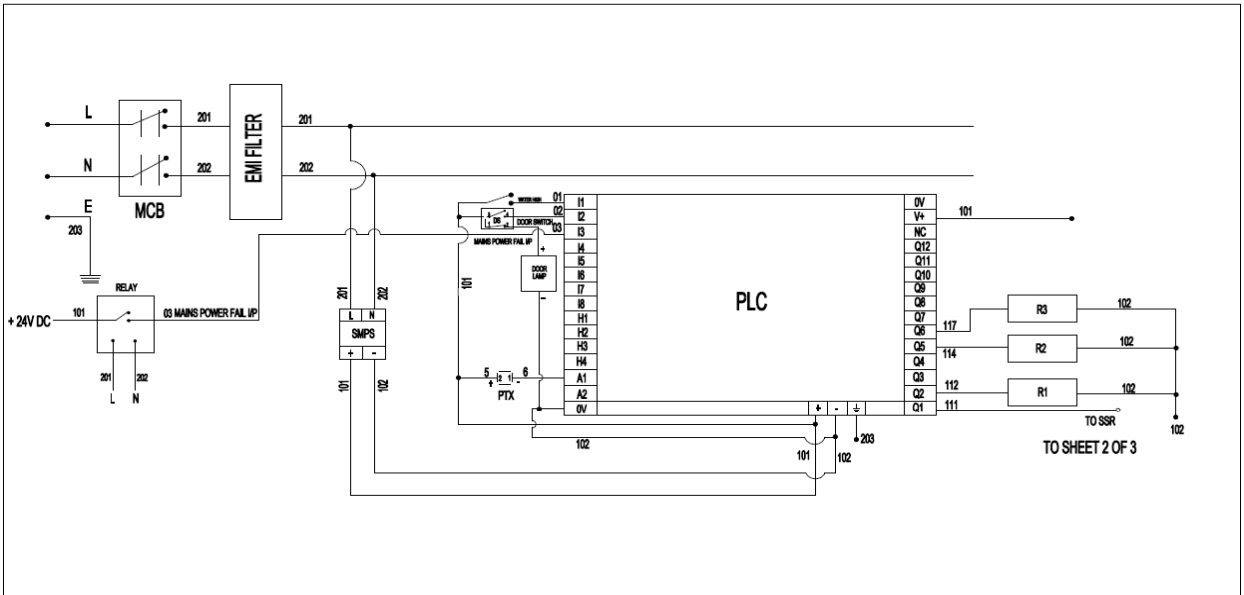
05	According to DMR 473 : Mains power fail utility added	18-11-2020	Sd/RR	DRAWN BY	
	REVISION'S DESCRIPTION	DATE	SIGN	CHECKED BY	
				APPROVED BY	

TITLE - PRAANO WIRING DIAGRAM OF ANALOG CARD

DRG NO:- #7440PR | REV 07 | SCALE: N.T.S | SIZE A4 | SHEET 3/3

PLC wiring for #7440PR-PPDC



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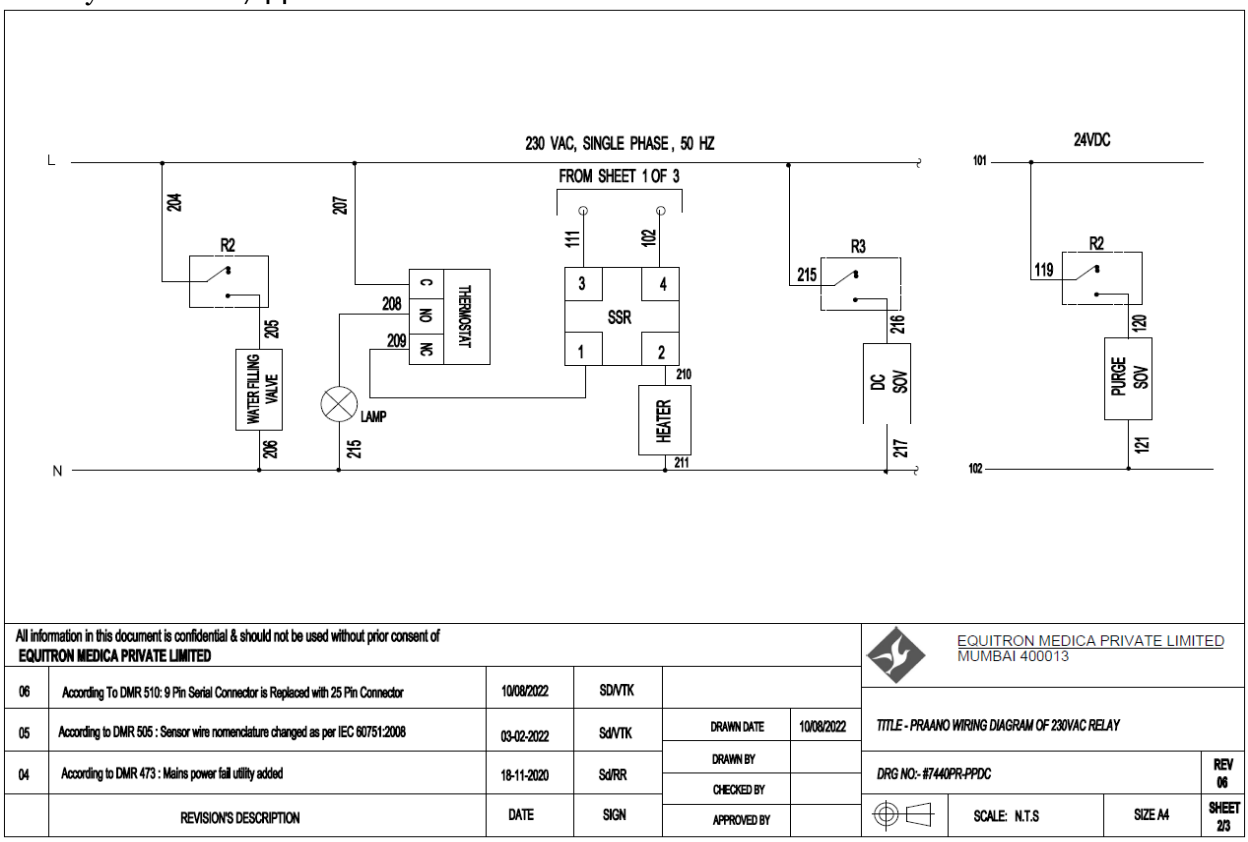
05	According to DMR 505 : Sensor wire nomenclature changed as per IEC 60751:2008	03-02-2022	SD/VTK	DRAWN BY	
	REVISION'S DESCRIPTION	DATE	SIGN	CHECKED BY	
				APPROVED BY	

TITLE - PRAANO WIRING DIAGRAM OF PLC CONTROLLER

DRG NO:- #7440PR-PPDC | REV 07 | SCALE: N.T.S | SIZE A4 | SHEET 1/3

Relay card for #7440PR-PPDC



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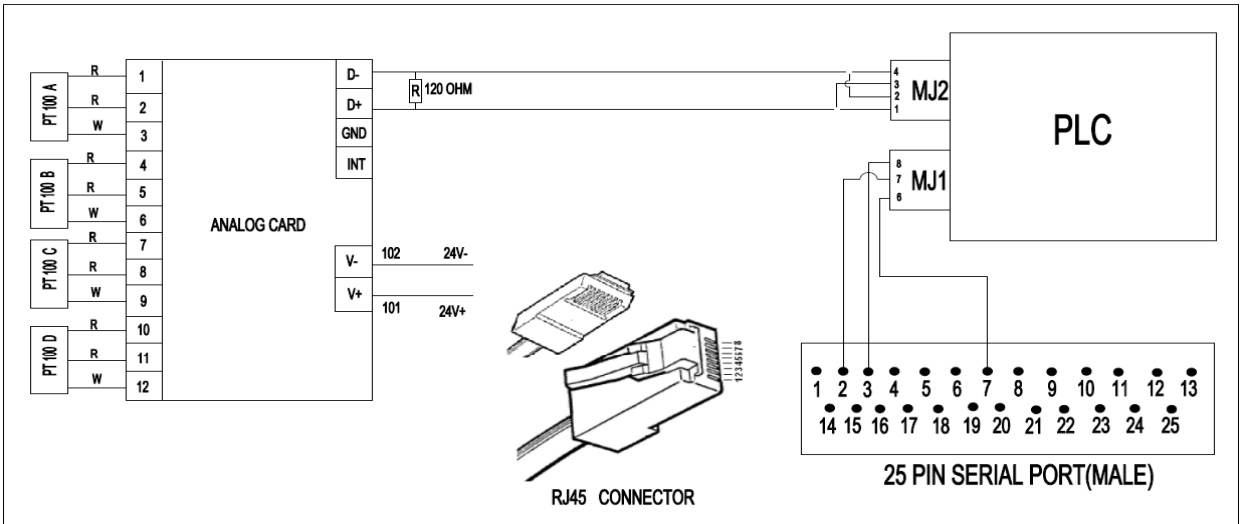
04	According to DMR 473 : Mains power fail utility added	18-11-2020	Sd/RR	DRAWN BY	
	REVISION'S DESCRIPTION	DATE	SIGN	CHECKED BY	
				APPROVED BY	

TITLE - PRAANO WIRING DIAGRAM OF 230VAC RELAY

DRG NO:- #7440PR-PPDC — REV 06

SCALE: N.T.S — SIZE A4 — SHEET 2/3

Analog card for #7440PR-PPDC



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MUMBAI 400013

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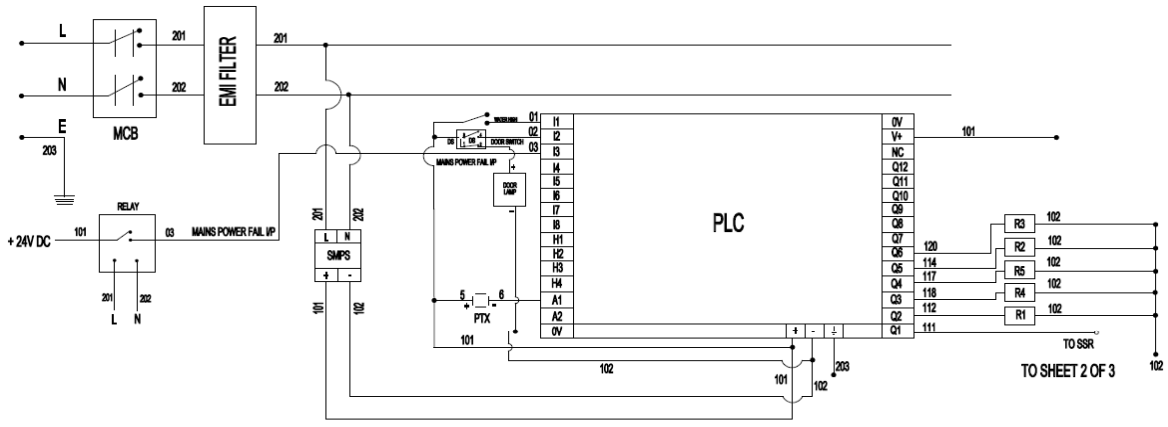
	REVISION'S DESCRIPTION	DATE	SIGN	CHECKED BY	
				APPROVED BY	

TITLE - PRAANO WIRING DIAGRAM OF ANALOG CARD

DRG NO:- #7440PR-PPDC — REV 06

SCALE: N.T.S — SIZE A4 — SHEET 3/3

PLC wiring for #7440PR-PPDCAB



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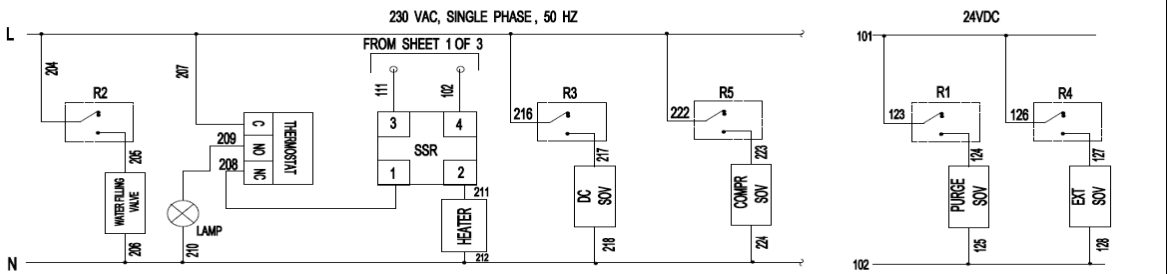
05	DMR 505 wiring diagram - Sensor wire nomenclature changed as per IEC 60751:2008	03-02-2022	Sd/VTK	DRAWN BY	
				CHECKED BY	
	REVISION'S DESCRIPTION	DATE	SIGN	APPROVED BY	

TITLE - PRAANO WIRING DIAGRAM OF PLC CONTROLLER

DRG NO:- #7440PR-PPDCAB — REV 07

SCALE: N.T.S — SIZE A4 — SHEET 1/3

Relay card for #7440PR-PPDCAB



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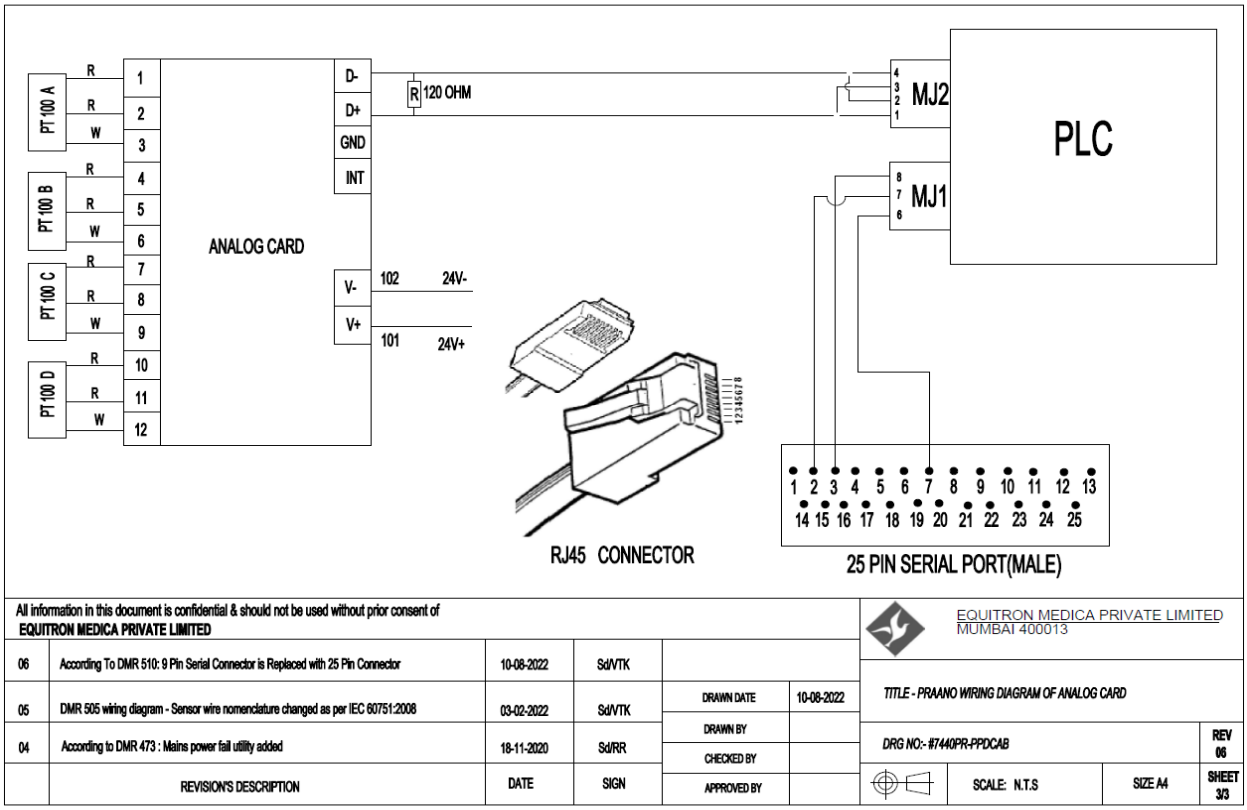
	REVISION'S DESCRIPTION	DATE	SIGN	APPROVED BY	

TITLE - PRAANO WIRING DIAGRAM OF 230VAC RELAY

DRG NO:- #7440PR-PPDCAB — REV 06

SCALE: N.T.S — SIZE A4 — SHEET 2/3

Analog card for #7440PR-PPDCAB



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MUMBAI 400013

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DRAWN DATE	10-08-2022
DRAWN BY	
CHECKED BY	
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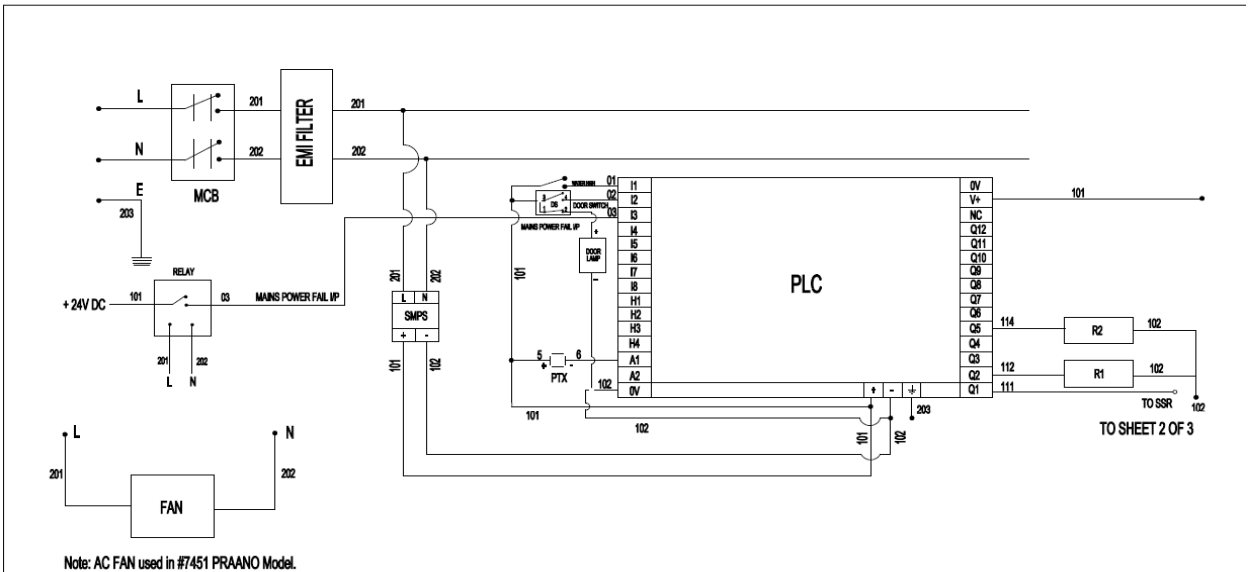
TITLE - PRAANO WIRING DIAGRAM OF ANALOG CARD

DRG NO:- #7440PR-PPDCAB — REV 06

SCALE: N.T.S — SIZE A4 — SHEET 3/3

PLC wiring for #7441 / #7451 PR



Note: AC FAN used in #7451 PRAANO Model.

EQUITRON MEDICA PRIVATE LIMITED
MUMBAI 400013

	REVISION'S DESCRIPTION	DATE	SIGN
07	Updated IO Hardware Configuration List Name as per New XLT Controller	18-01-2023	Sd/AK
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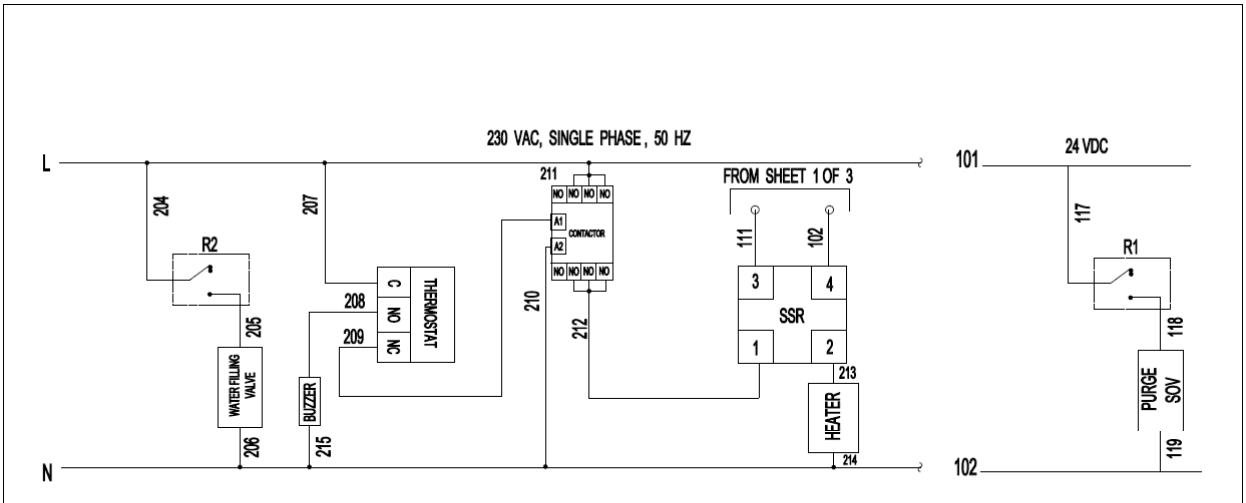
DRAWN DATE	18-01-2023
DRAWN BY	
CHECKED BY	
APPROVED BY	

TITLE - PRAANO WIRING DIAGRAM OF PLC CONTROLLER

DRG NO:- #7441-51PR — REV 07

SCALE: N.T.S — SIZE A4 — SHEET 1/3

Relay card for #7441 / #7451 PR



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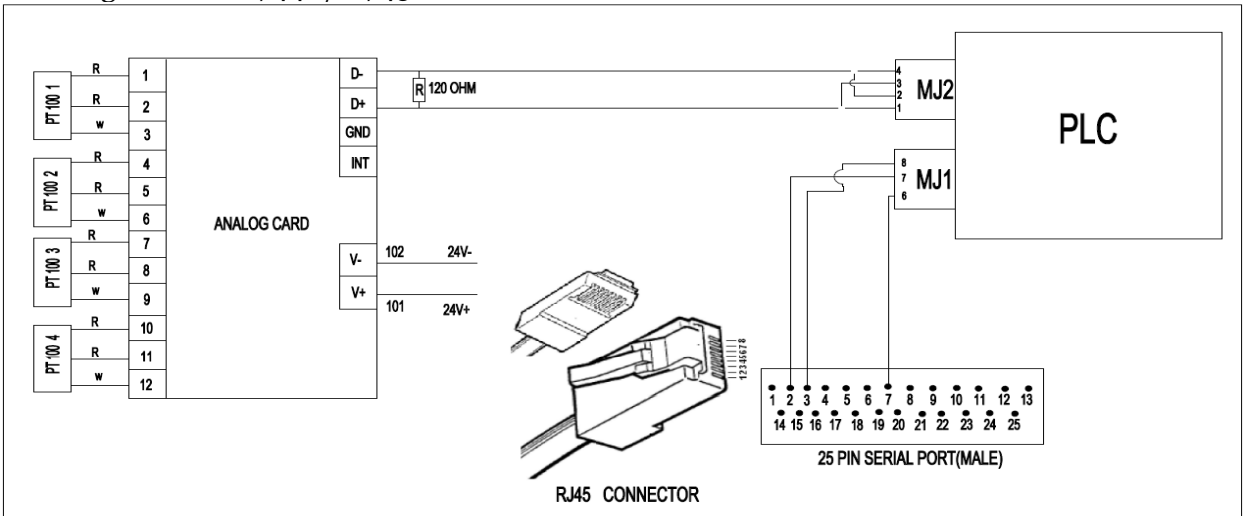
DRAWN DATE	12-08-2022
DRAWN BY	
CHECKED BY	
APPROVED BY	

TITLE - PRAANO WIRING DIAGRAM OF 230VAC RELAY

DRG NO:- #7441-51PR | REV 06 | SCALE: N.T.S | SIZE A4 | SHEET 2/3

Analog card for #7441 / #7451 PR



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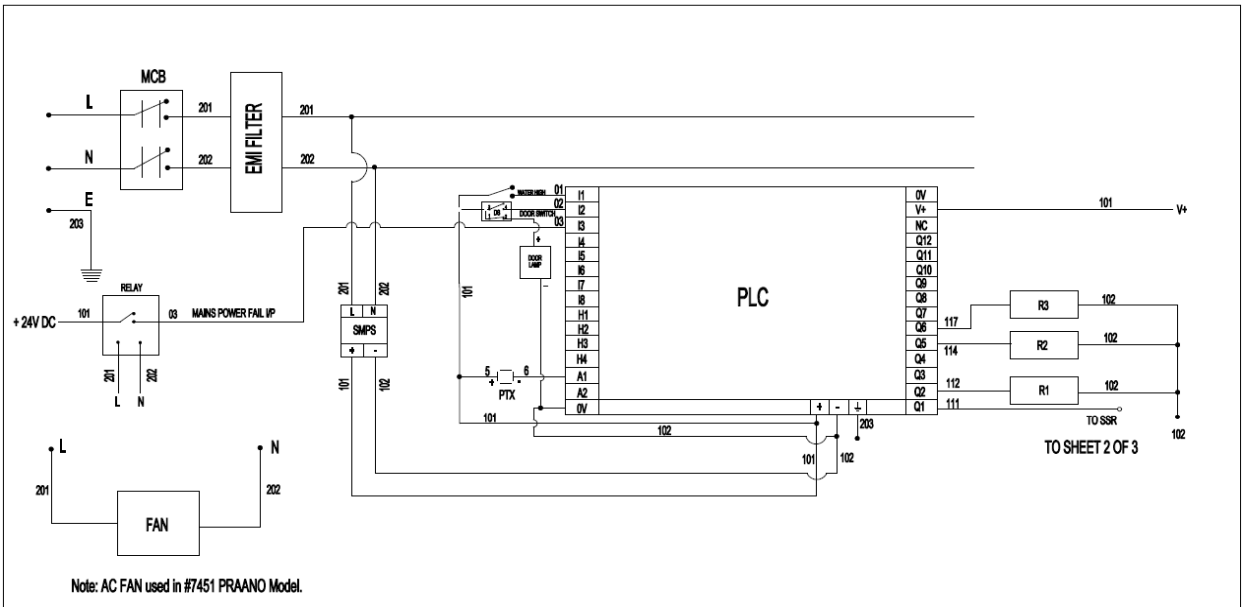
DRAWN DATE	12-08-2022
DRAWN BY	
CHECKED BY	
APPROVED BY	

TITLE - PRAANO WIRING DIAGRAM OF ANALOG CARD

DRG NO:- #7441-51-PR | REV 06 | SCALE: N.T.S | SIZE A4 | SHEET 3/3

PLC wiring for #7441 / #7451 PR-PPDC



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MUMBAI 400013

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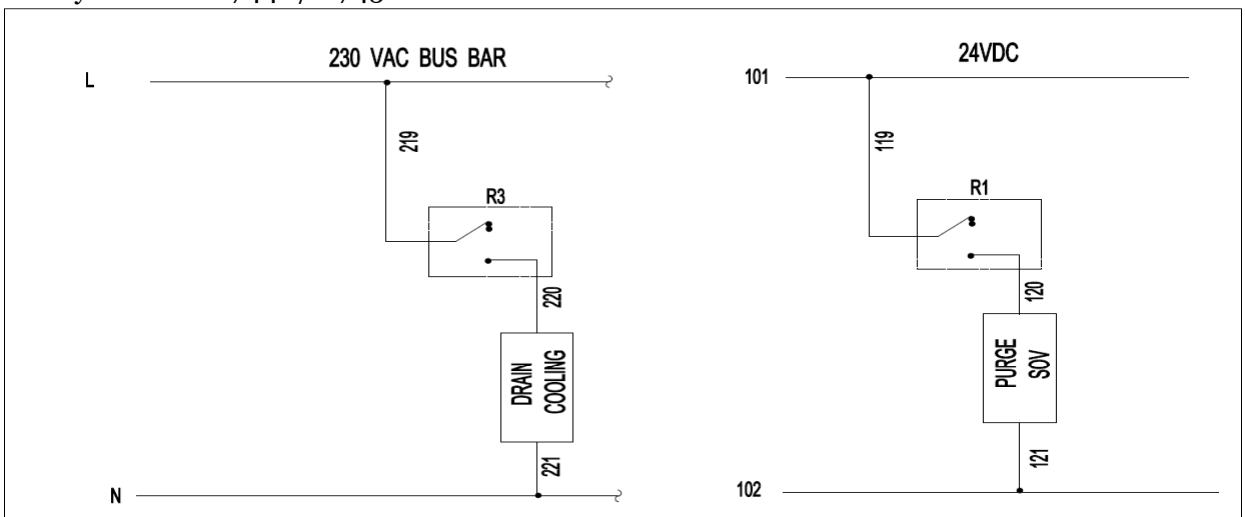
DRAWN DATE	18-01-2023
DRAWN BY	
CHECKED BY	
APPROVED BY	

TITLE - PRAANO WIRING DIAGRAM OF PLC CONTROLLER

DRG NO:- #7441-51PR-PPDC | REV 07

SCALE: N.T.S | SIZE A4 | SHEET 1/4

Relay card for #7441 / #7451 PR-PPDC



EQUITRON MEDICA PRIVATE LIMITED
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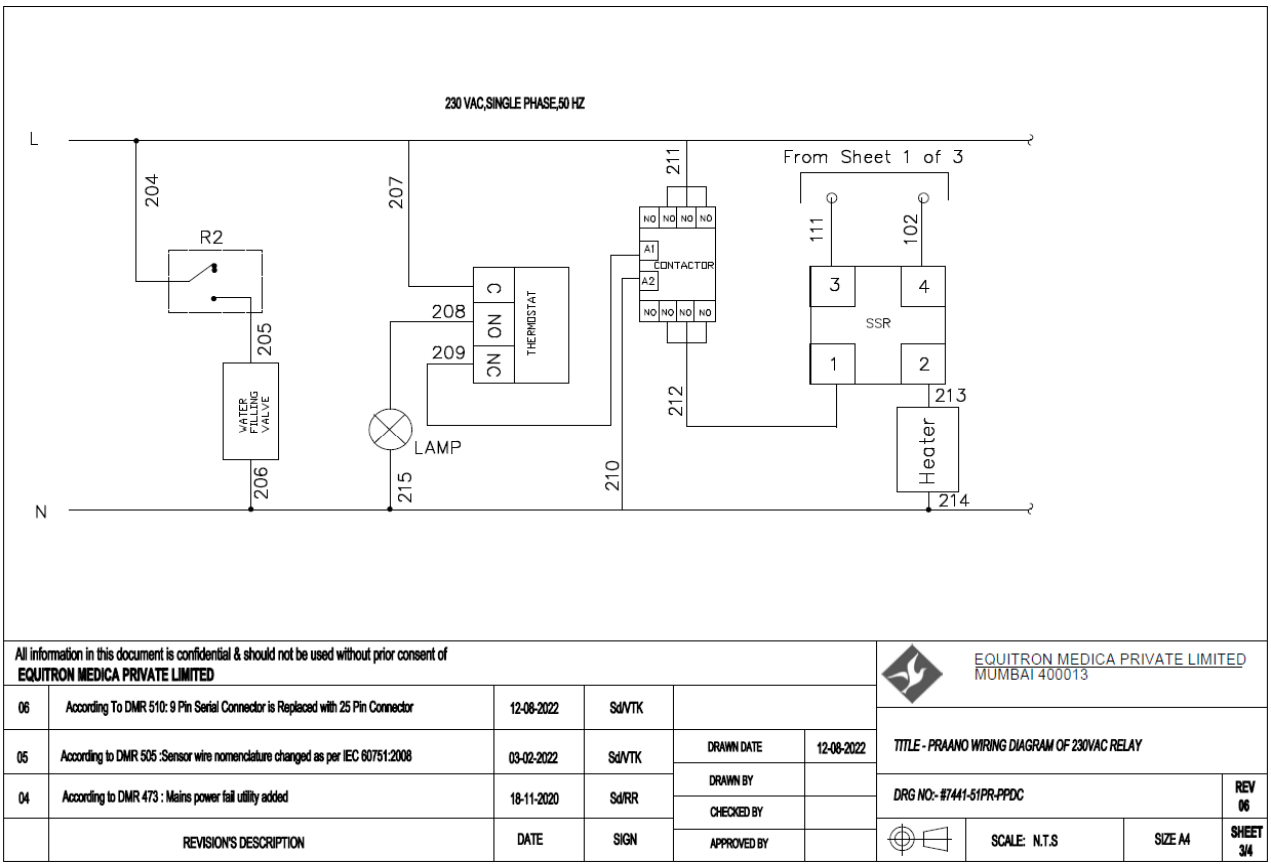
04	According to DMR 473 : Mains power fail utility added	18-11-2020	Sd/RR

DRAWN DATE	12-08-2022
DRAWN BY	
CHECKED BY	
APPROVED BY	

TITLE - PRAANO WIRING DIAGRAM OF 24VDC RELAY

DRG NO:- #7441-51PR-PPDC | REV 06

SCALE: N.T.S | SIZE A4 | SHEET 2/4



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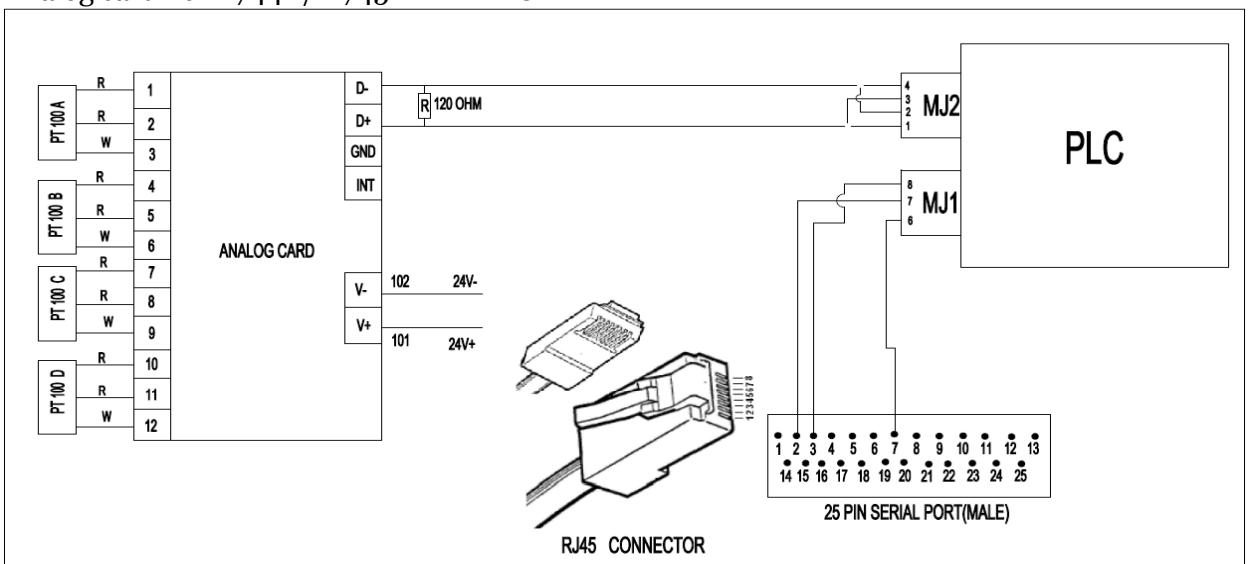
04	According to DMR 473 : Mains power fail utility added	18-11-2020	Sd/RR	DRAWN BY	
				CHECKED BY	
	REVISION'S DESCRIPTION	DATE	SIGN	APPROVED BY	

TITLE - PRAANO WIRING DIAGRAM OF 230VAC RELAY

DRG NO:- #7441-51PR-PPDC | REV 06

SCALE: N.T.S | SIZE A4 | SHEET 3/4

Analog card for #7441 / #7451 PR-PPDC



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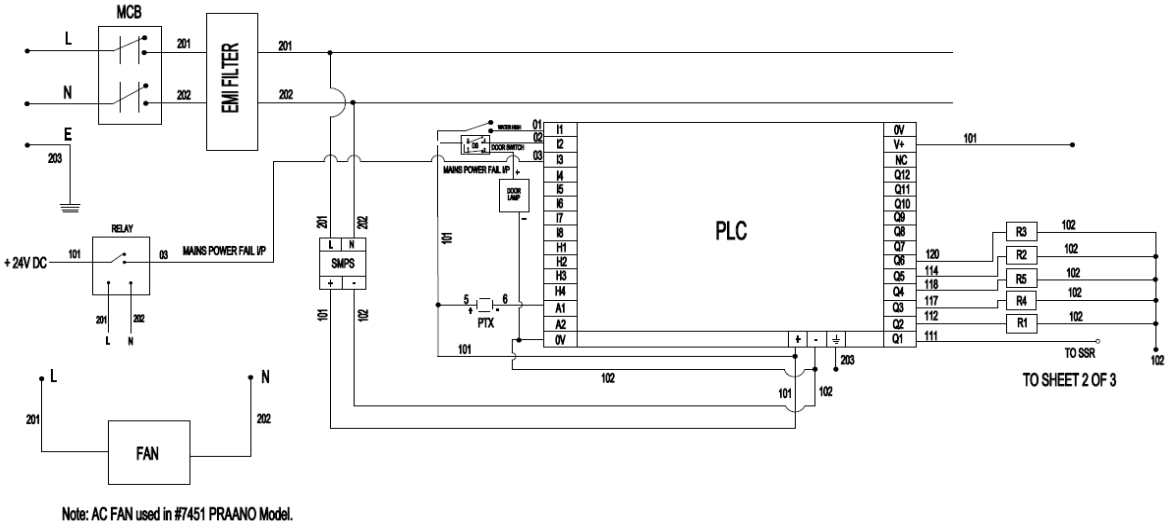
				CHECKED BY	
	REVISION'S DESCRIPTION	DATE	SIGN	APPROVED BY	

TITLE - PRAANO WIRING DIAGRAM OF ANALOG CARD

DRG NO:- #7441-51PR-PPDC | REV 06

SCALE: N.T.S | SIZE A4 | SHEET 4/4

PLC wiring for #7441 / #7451 PR-PPDCAB



EQUITRON MEDICA PRIVATE LIMITED
MUMBAI 400013

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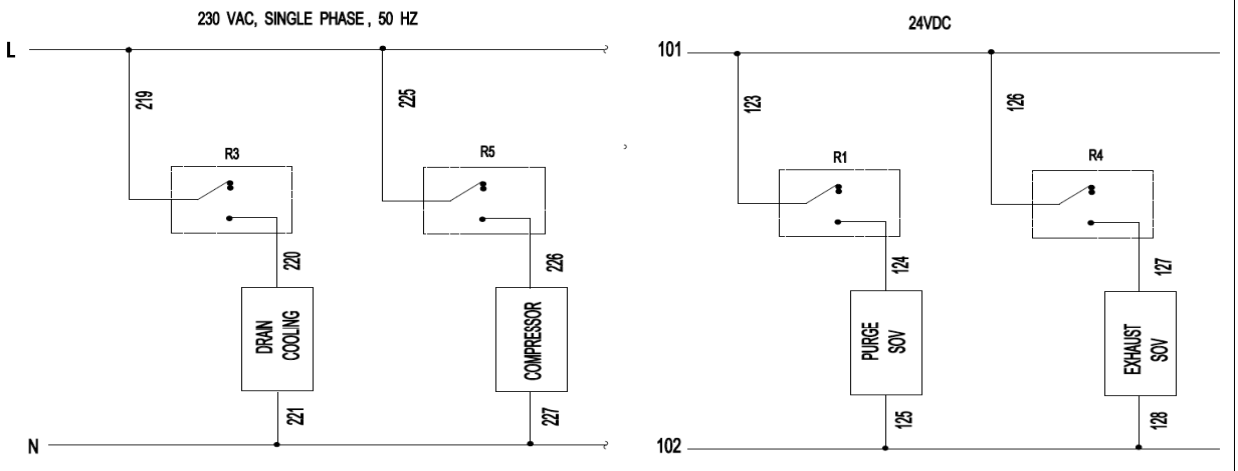
05	According to DMR 505: Sensor wire nomenclature changed as per IEC 60751:2008	04-02-2022	Sd/VTK

DRAWN DATE	17-01-2023
DRAWN BY	
CHECKED BY	
APPROVED BY	

TITLE - PRAANO WIRING DIAGRAM OF PLC CONTROLLER

DRG NO:- #7441-51PR-PPDCAB | REV 07 | SCALE: N.T.S | SIZE A4 | SHEET 1/4

Relay card for #7441 / #7451 PR-PPDCAB



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MUMBAI 400013

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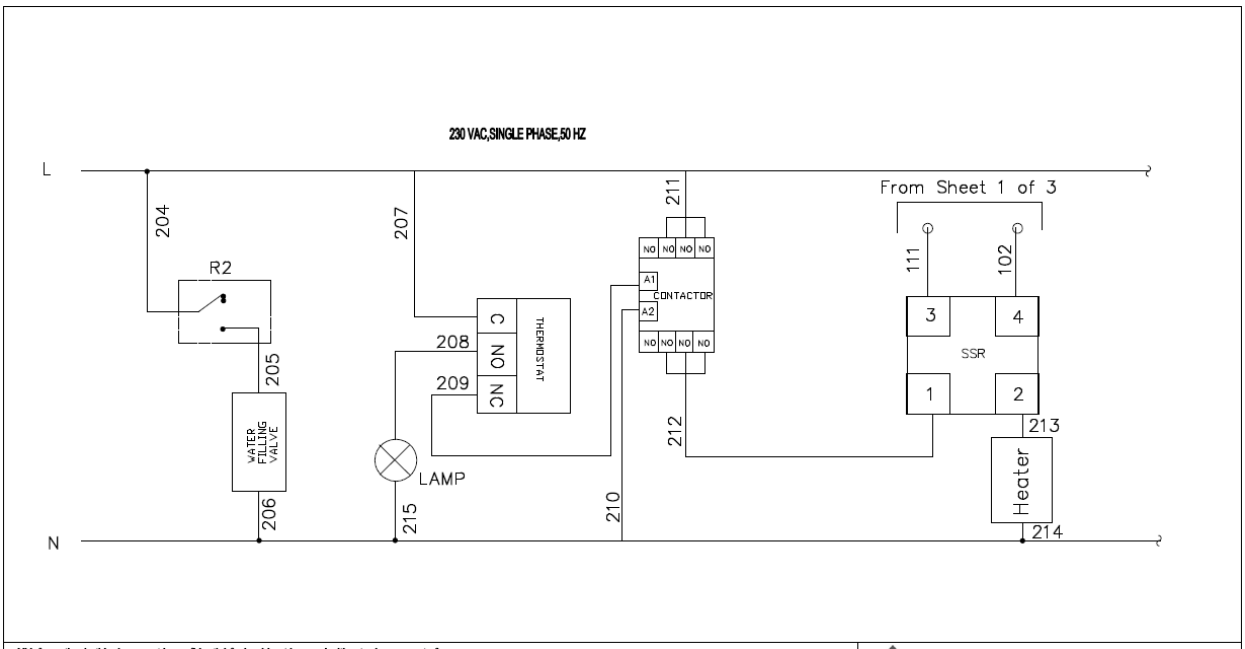
04	According to DMR 473 : Mains power fail utility added	18-11-2020	Sd/RR

DRAWN DATE	10-08-2022
DRAWN BY	
CHECKED BY	
APPROVED BY	

TITLE - PRAANO WIRING DIAGRAM OF 24VDC RELAY

DRG NO:- #7441-51PR-PPDCAB | REV 06 | SCALE: N.T.S | SIZE A4 | SHEET 2/4



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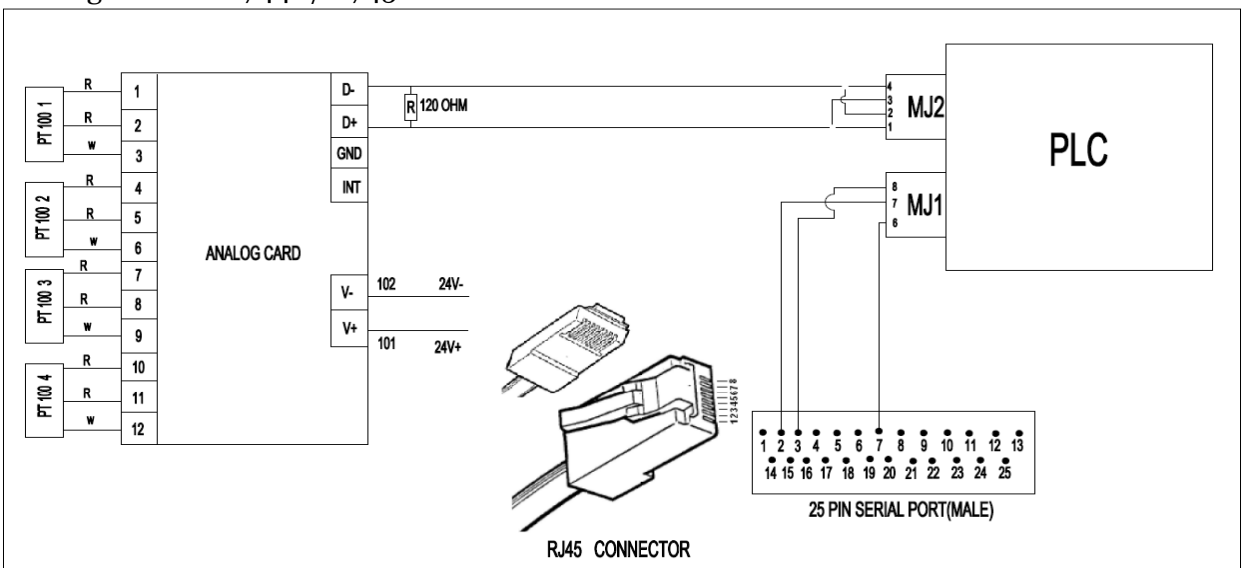
06	According To DMR 510: 9 Pin Serial Connector is Replaced with 25 Pin Connector	10-08-2022	Sd/VTK					
05	According to DMR 505: Sensor wire nomenclature changed as per IEC 60751:2008	04-02-2022	Sd/VTK	DRAWN DATE	10-08-2022	TITLE - PRAANO WIRING DIAGRAM OF 230VAC RELAY		
04	According to DMR 473 : Mains power fail utility added	18-11-2020	Sd/RR	DRAWN BY		DRG NO:- #7441-51PR-PPDCAB		REV 06
	REVISION'S DESCRIPTION	DATE	SIGN	CHECKED BY		SCALE: N.T.S	SIZE A4	SHEET 3/4
				APPROVED BY				

Analog card for #7441 / #7451 PR-PPDCAB



All information in this document is confidential & should not be used without prior consent of EQUITRON MEDICA PRIVATE LIMITED						EQUITRON MEDICA PRIVATE LIMITED MUMBAI 400013		
06	According To DMR 510: 9 Pin Serial Connector is Replaced with 25 Pin Connector	10-08-2022	Sd/VTK					
05	According to DMR 505: Sensor wire nomenclature changed as per IEC 60751:2008	04-02-2022	Sd/VTK	DRAWN DATE	10-08-2022	TITLE - PRAANO WIRING DIAGRAM OF ANALOG CARD		
04	According to DMR 473 : Mains power fail utility added	18-11-2020	Sd/RR	DRAWN BY		DRG NO:- #7441-51PR-PPDCAB		REV 06
	REVISION'S DESCRIPTION	DATE	SIGN	CHECKED BY		SCALE: N.T.S	SIZE A4	SHEET 4/4
				APPROVED BY				

15.0 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:

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
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Сервисный центр Диаэм в Казани:
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Сервисный центр Диаэм в Санкт-Петербурге:
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