

EICKEMEYER® PHACOVET

USER MANUAL



Art. No. 329000

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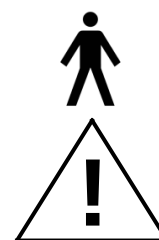
veterinary technology for life
Eickemeyer®

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This symbol indicates type B

This symbol indicates: ATTENTION! Please read user manual prior to use

Protection Class IP20



Versions:

| | |
|------|------------------------------------|
| 2021 | Basic version |
| 2021 | Adaptation LIN/FIX, block diagram, |

Warning

ONLY FOR APPLICATION IN VETERINARY SURGERY

WARNING: INCORRECT USE OF THE TOUCH-SENSITIVE SCREEN, THE PEDAL OR THE PUMP UNIT CAN DESTROY THE INTERNAL ELECTRONIC CONTROL OF THE DEVICE, THEREBY PUTTING PATIENTS IN DANGER. THE DEVICE IS TO BE OPERATED EXCLUSIVELY BY AUTHORIZED AND TRAINED PERSONNEL.

NOTE: IT IS ESSENTIAL THAT THE APPLICATION PARTS, CABLES AND CONNECTIONS UNDERGO REGULAR SAFETY CHECKS.

WARNING: EXCLUSIVELY INSTRUMENTS AND ACCESSORY PARTS SUPPLIED BY THE MANUFACTURER ARE TO BE USED. THE USE OF ALTERNATE ACCESSORY PARTS CAN LEAD TO UNFORESEEABLE EFFECTS AND DEFECTS, AND POSES A RISK OF INJURY FOR USERS AND PATIENTS.

1. GENERAL

PHACOVET is a device for the steering of ultrasound and cutting instruments. The purpose of the device is to ensure safe and reliable surgeries on animal eyes.

1.1 Application of PHACOVET

PHACOVET is a surgical instrument with a liquid-crystal display (LCD) and a touch-sensitive screen (capacitive touch screen). The display shows all menus, values and user information.

Additionally, there are graphical symbols that represent the screen control buttons. A soft touch on the area of these 'buttons' immediately triggers the corresponding function, if this function is enabled. The loudspeaker plays a short tone as acoustic feedback of the button function. The buttons largely have an automatic repeat function, meaning if a button is pressed for a longer period of time, the corresponding function will be triggered again. This is especially helpful for keys that trigger a change in value. For an optimal response, make sure to press the graphical center of a respective button.

PLEASE NOTE: The surface of the touchscreen may only be touched softly. Please only use your fingers or specially designed pens. Metal objects or other sharp objects can damage the surface of the touchscreen-system. Furthermore, the touchscreen surface may only be cleaned with a dry cloth — and if necessary with glass cleaner — but under no circumstance with aggressive liquids.

Whenever the font of a button is green, it generally means that the button is active.

1.2 Preparations

- Place PHACOVET on a table or on a surgical cart.
- Fold the touchscreen to the desired position. Use the button on the left side of the screen to fix its position.
- Check the voltage selector on the back of the device. The voltage range at which the device is operated must be within the voltage range indicated on the type plate.
- Connect the pedal to the round connector on the back of the device.
- Connect the power cable to the device, as well as to the power outlet.
- Turn on the device by placing the power switch of the device in position "1". After a couple of seconds, the screen should light up and display the initialization message. Once all power-on tests of the device have been completed, the HOME menu (PREOP) is automatically displayed. The valve must be open.

1.3 The PHACOVET Pedal



During a surgery, the surgeon must use the pedal to perform all preset functions.

If no pedal is connected, the note “CONNECT PEDAL” is displayed in the “service line” on the bottom left of the screen. As soon as a pedal has been connected, the service line displays the current pedal position. The pedal position is also represented graphically by a bar — see image 2 “pedal display”.

The selection of instruments menus for IA, US and CUTTER is only available if a pedal is connected and functioning correctly.

If no pedal is connected, the loudspeaker may periodically play a crackling sound.

The following pedal positions are defined for the PHACOVET pedal:

- POS. 0 Neutral position of the pedal. The pedal usually automatically resets into this position if there is no pressure on the pedal surface.
- POS.1 Position 1 of the pedal at toe pressure. A slightly perceptible mechanical stop when this position is reached causes the speaker to produce a repetitive tone and the irrigation valve to be opened if the flow (flow-rate) has been set to a value greater than 0.
- POS. 2 Position 2 of the pedal at toe pressure. A slightly perceptible mechanical stop between POS. 1 and POS.2 is defined as the range at which the pump is activated and starts aspirating liquid according to the pedal deflection (only if the flow-rate has been set to a value greater than 0). In the range between the 1. and 2. position, there is continuous aspiration to the maximum limit.
- POS. 3 Between position 2 and position 3, the instrument is activated. Depending on the user’s choice, the modus is either linear or fix.
- POS. -1 Stop when stepping back. In this position, PHACOVET puts the pump into (REFLUX). While REFLUX is active, all changes are audible via loudspeaker.

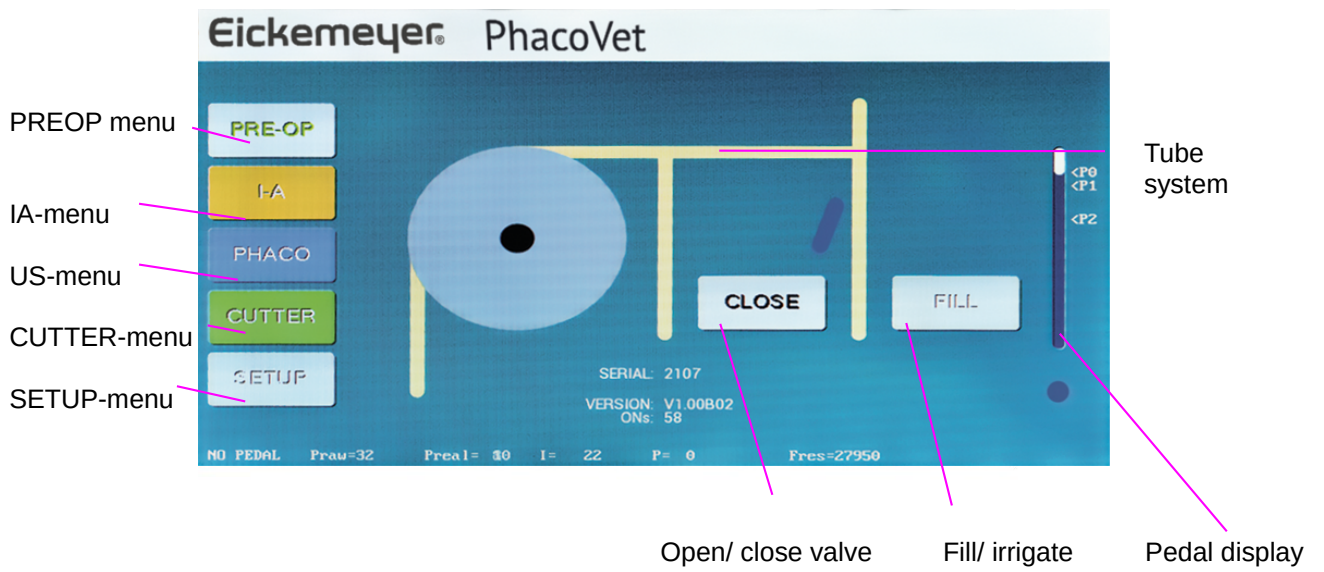


Image 1 HOME Menu PREOP

1.4 Preparation and installation of the tube system

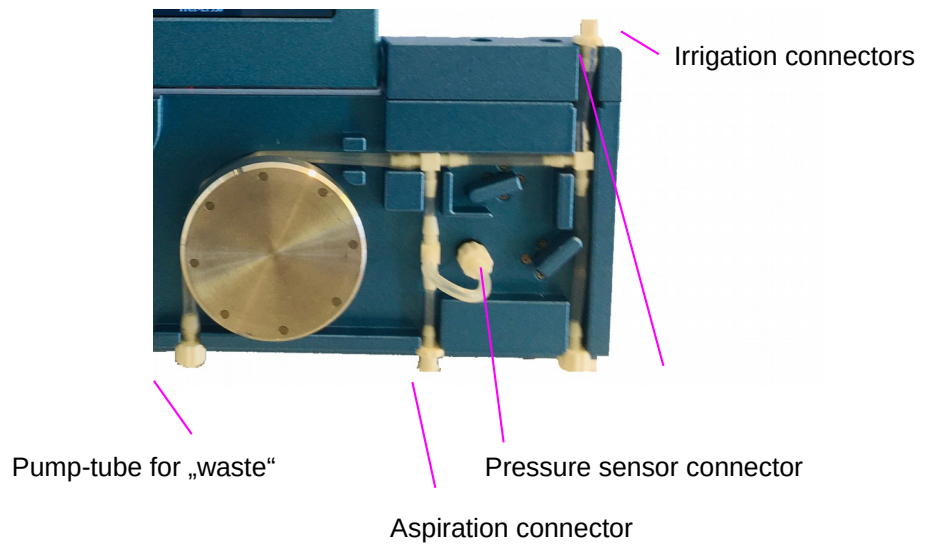


Image 2 Tube system

- 1.4 The tubes are installed with the following steps:
 - 1.4.1 Turn on device, resp. select PREOP.
 - 1.4.2 Valve has to be open as displayed in picture 2. If the valve is closed for some reason, press "open/ close valve", making the button display "CLOSE". **An open valve may need to be moved manually to free the tube canal.**
 - 1.4.3 Place the tube system as indicated in the image. Commence with the right part (irrigation connectors). Then place the center part, i.e. the part containing the aspiration connector. Finally, stretch the pump-tube over the pump and hook it onto the bottom of the housing.
 - 1.4.4 Connect the pressure sensor
 - 1.4.5 Connect the irrigation line from the infusion set to the top right. Connect the irrigation line to the instrument at the bottom right – the irrigation line to the instrument is the "thick" tube.
 - 1.4.6 Connect the aspiration line to the device. The aspiration line to the instrument is the "thin" tube.
 - 1.4.7 Connect infusion and aspiration with the device
 - 1.4.8 Place the instrument tip in liquid or place the test chamber on the instrument. Open the irrigation of the infusion bottle.
 - 1.4.9 Press the button "FILL". Now, the tube system is filled with infusion liquid. Depending on the situation, this will take approximately 2 minutes. As soon as the liquid is visible in the waste container – and without bubbles – the "FILL" button can be pressed again, which will stop the process and close the valve.

Please note:

If the tube system is open (Luer-connectors not connected correctly), the tube system will not be filled correctly. To test this, the irrigation line can be pinched off during the filling process. This will produce a vacuum, and as soon as a vacuum value of 200mmHg has been reached, the filling process should stop automatically. If that is not the case, one or multiple Luer-connectors are not connected correctly.

1.5 Rinsing of the tube system

After completion of a surgery, the tube system can be rinsed. Please proceed as outlined below.

1. Clamp (close) irrigation from infusion bottle.
- 1.5.2 Remove irrigation line on the top right.
- 1.5.3 Remove IA connectors from the device, and connect the two Luer-connectors to one another.
- 1.5.4 Select PREOP menu.
- 1.5.5 Press "FILL" button. Now the tube system will be emptied. Depending on the situation, this will take approximately 2 minutes. As soon as the tubes are completely free of liquids, disconnect the pressure sensor connector. Then wait for 10 seconds. Now, the button "FILL" can be pressed anew, which will stop the process and close the valve.
- 1.5.7 Press OPEN to open the valve.
- 1.5.8 Remove the tube system.

2. Functions

The main functions of PHACOVET are:

- I/A Irrigation – Aspiration
- PHACO To utilize the Phaco handpieces
- CUTTER Cutting instrument for the electromagnetic cutter
- PREOP Standby position prior to/ after use
- SETUP System setup mode to change parameters

Please note: It is only possible to switch between functions if the pedal is in position 0 (=neutral). This prevents accidental triggering of an undesired function. Value changes are possible at any pedal position.

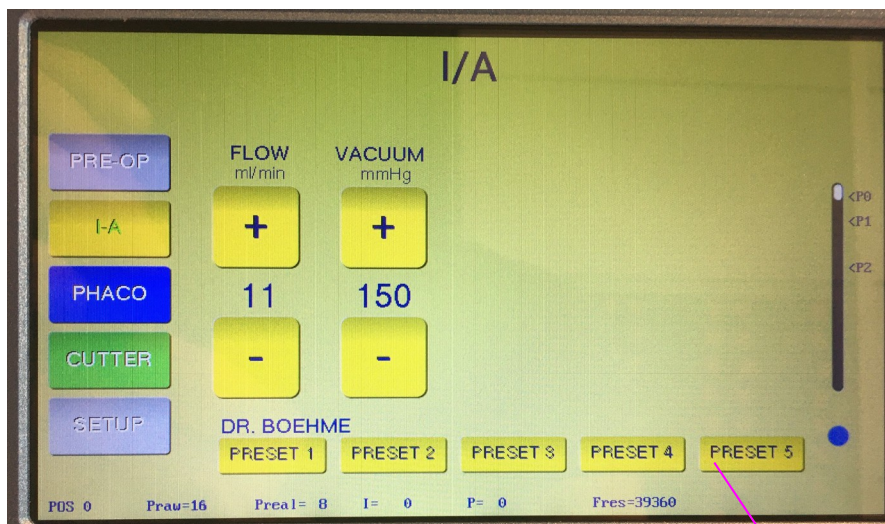
Function selection

The device offers 5 memory locations per function. These are displayed as the buttons “PRESET 1” to “PRESET 5”. Furthermore, it is possible to select 10 different sets of these presets in the SETUP menu.

A short press on “PRESET n”, retrieves the stored values. A long press stores the currently set values under “PRESET n”. An acoustic feedback is given for this.

2.1 I/A function

I/A is an abbreviation for Irrigation/Aspiration, and refers to the irrigation and aspiration of liquids. The Irrigation line transfers liquids from the infusion bottle into the eye. The aspiration line extracts liquids from the eye with the aid of the peristaltic pump. Thus, the surgical site can be kept wet at all times. The pressure that is generated by the irrigation liquid through the irrigation line depends on the height of the irrigation bottle. The vacuum with which the liquid is extracted from the operating field is determined by the vacuum limit "VACUUM", which can be set on the device. The speed at which the liquid is exchanged is set by the flow "FLOW" on the device. The surgeon can control the I/A function with the pedal. Once the set vacuum limit is reached, the flow stops automatically.

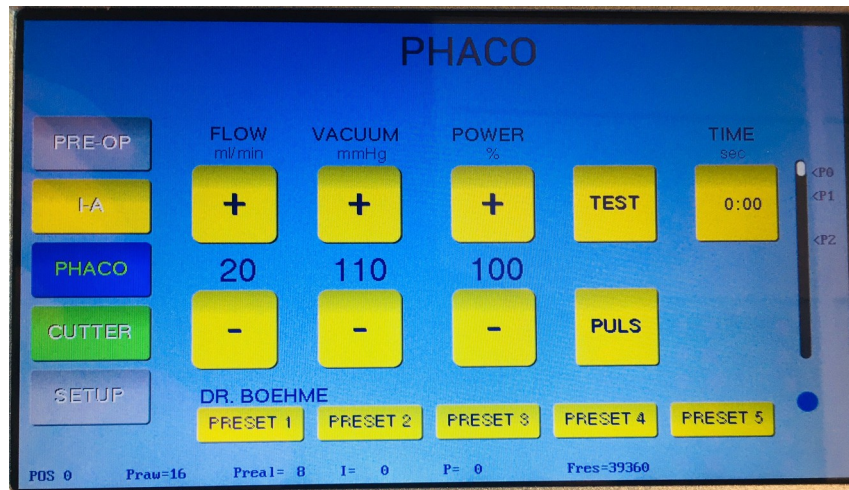


Display of constant irrigation. If it is blue, constant irrigation is deactivated. To activate constant irrigation, briefly press the corresponding key on the pedal. The circle is then displayed in red and a dripping noise is emitted via the loudspeaker. This applies to all function menus.

| | |
|---------|---|
| FLOW+ | Increase of flow rate in steps of 1ml/min, maximum of 90ml/min |
| FLOW- | Decrease of flow rate in steps of 1ml/min |
| VACUUM+ | Increase of vacuum limit in steps of 10mmHg, maximum of 500mmHg |
| VACUUM- | Decrease of vacuum limit in steps of 10mmHg. |

2.2 US Function

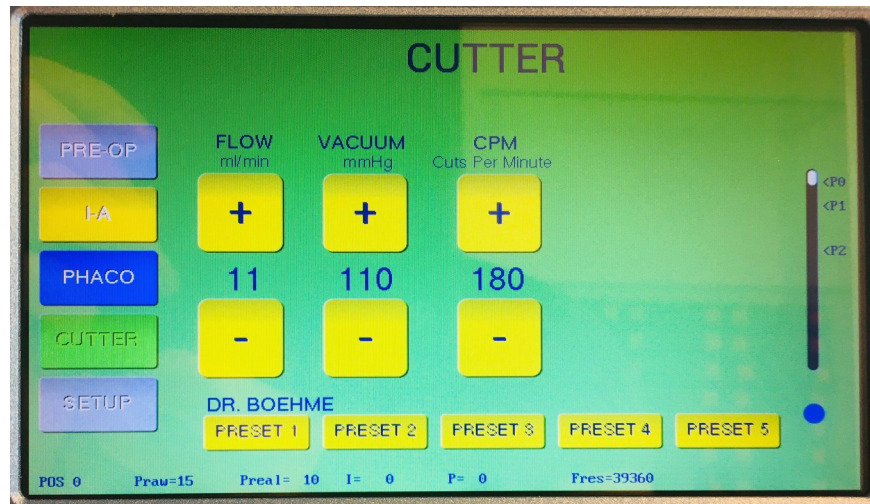
US is an abbreviation for ultrasound. The ultrasound instrument connected to the front left socket can be used to smash a natural lens and the remnants can be extracted with the connected I/A tubes.



| | |
|---------|--|
| FLOW+ | Increase of flow rate in steps of 1ml/min, maximum of 90ml/min |
| FLOW- | Decrease of flow rate in steps of 1ml/min |
| VACUUM+ | Increase of vacuum limit in steps of 10mmHg, maximum of 500mmHg |
| VACUUM- | Decrease of vacuum limit in steps of 10mmHg |
| POWER+ | Increase of instrument performance in steps of 1% |
| POWER- | Decrease of instrument performance in steps of 1% |
| TEST | Handpiece test to identify the ideal resonance frequency and performance. This step must be performed for every newly connected handpiece. The test takes a couple of seconds. During the test, the pump is started to ensure flow and thus cooling of the instrument. The US instrument may not be tested or used without liquid. |
| PULS | This activates pulsation. The active time is 80 milliseconds at a frequency of 6.7 Hertz. |
| TIME | This button displays US time in minutes and seconds. A short press on this button resets the time to 0:00. |

2.3 CUTTER function

CUTTER refers to a connected cutting tool. The CUTTER connected to the front right socket allows structures to be cut from the eye and the remnants extracted through the connected I/A tubes.



| | |
|---------|--|
| FLOW+ | Increase of flow rate in steps of 1ml/min, maximum of 50ml/min |
| FLOW- | Decrease of flow rate in steps of 1ml/min |
| VACUUM+ | Increase of vacuum limit in steps of 10mmHg, maximum of 500mmHg |
| VACUUM- | Decrease of vacuum limit in steps of 10mmHg |
| POWER+ | Increase of instrument performance in steps of 60 CPM, maximum of 2400 CPM. CPM = Cuts Per Minute. 60 CPM correspond to 1 Hertz. |
| POWER- | Decrease of instrument performance in steps of 60 CPM. |
| BIOPS | The biopsy function can be used to trigger the cutting function without triggering I/A. |

2.4 SETUP



2.4.1 BRIGHTNESS Slider to regulate screen brightness

2.4.2 SOUND Slider to regulate volume

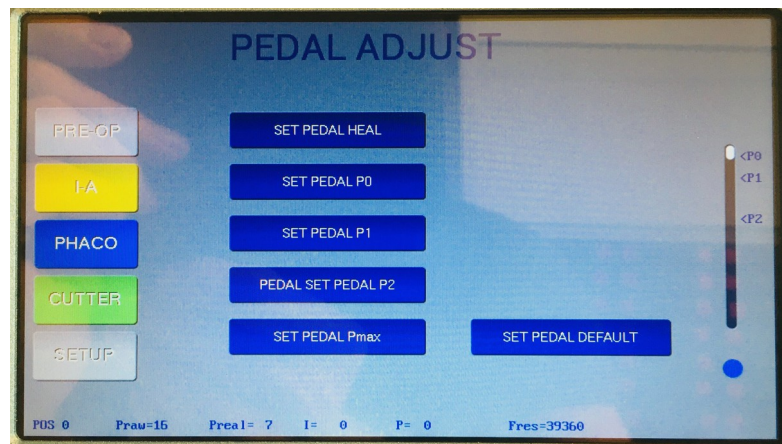
2.4.3 LINEAR Instrument function LINEAR: When the pedal is deflected, the instrument power is delivered linearly as a function of the pedal deflection in position 3, up to the maximum set power.

FIX Instrument function FIX: When the pedal is deflected, the instrument power in position 3 is always delivered at 100% of the maximum set power.

2.4.4 OCC BRK Function removed

2.4.5 28 kHz Switch of the handpiece resonance frequency. Standard is 28 kHz. Alternatively, 40 kHz handpieces may also be used. Please contact the manufacturer to obtain more information.

2.4.6 PEDAL ADJUST Setting the individual pressure points on the pedal.
It is possible to adjust the pressure points on the pedal individually.



Approach:

- Trigger and maintain heel pressure on pedal: press SET PEDAL HEAL
- Maximize toe pressure on pedal and maintain: press SET PEDAL Pmax
- Release pedal: press SET PEDAL P0
- Move pedal to desired pressure point P1 and maintain: press SET PEDAL P1
- P0 to P1 is the position range in which the irrigation valve is opened
- Move pedal to desired pressure point P2 and maintain: press SET PEDAL P2
- P1 to P2 is the position range in which the pump is active

2.4.7 PROG SELECT Selection of one of 10 PRESET-Sets

Approach:

To activate one of the 10 sets, the corresponding line needs to be pressed.

To change the name of a program, please press the button NAME.

An alphanumerical keyboard will be opened, allowing the user to enter a program name. The name will then be displayed in the functional menu, above PRESET 1.

2.4.8 SET DEFAULT Resetting PRESETS to standard values and program names.

3. Technical DATA

| | | |
|------|------------------------|---|
| | Classification Type | CLASS 1 B |
| 4.1 | Mains voltage | 90...264VAC |
| 4.2 | Mains frequency | 50 ... 60 Hertz |
| 4.3 | Grid connection power | 95VA |
| 4.4 | Fuse | 2 * 1.6 AT |
| 4.5 | Aspiration pump | Peristaltic, DC-Motor-controller Pump with 8 segments |
| 4.6 | Valve | 1 DC-motor-driven valve for irrigation |
| 4.7 | Output U-S Phaco | Pmax = 50 Watt, Uamax = 350Veff, f=27kHz ... 43kHz, floating |
| 4.8 | Output CUTTER | PulsMode 4ms, DC24Vpp, Imax = 2A |
| 4.9 | Flow | 0 ... 50 ml/min (for US and CUTTER) 0 ... 90 ml/min for IA |
| 4.10 | Vacuum limit | 0 ... 500mmHg |

4. Periodical Maintenance

PHACOVET must be checked once a year after delivery. The following list must be checked by trained and educated technical personnel with adequate testing equipment.

5.1 Visual checks

- 5.1.1 Check of main cable (plugs and insulation, type of cable)
- 5.1.2 Check of pedal cable, insulation, connectors.
- 5.1.3 Check of touch screen (dirt and correct surface)
- 5.1.4 Check of front connectors (unbroken plastic)
- 5.1.5 Check of spurs of saltwater solution which may indicate liquid running into housing
- 5.1.6 Check of pump; all rolls correct and turning lightly

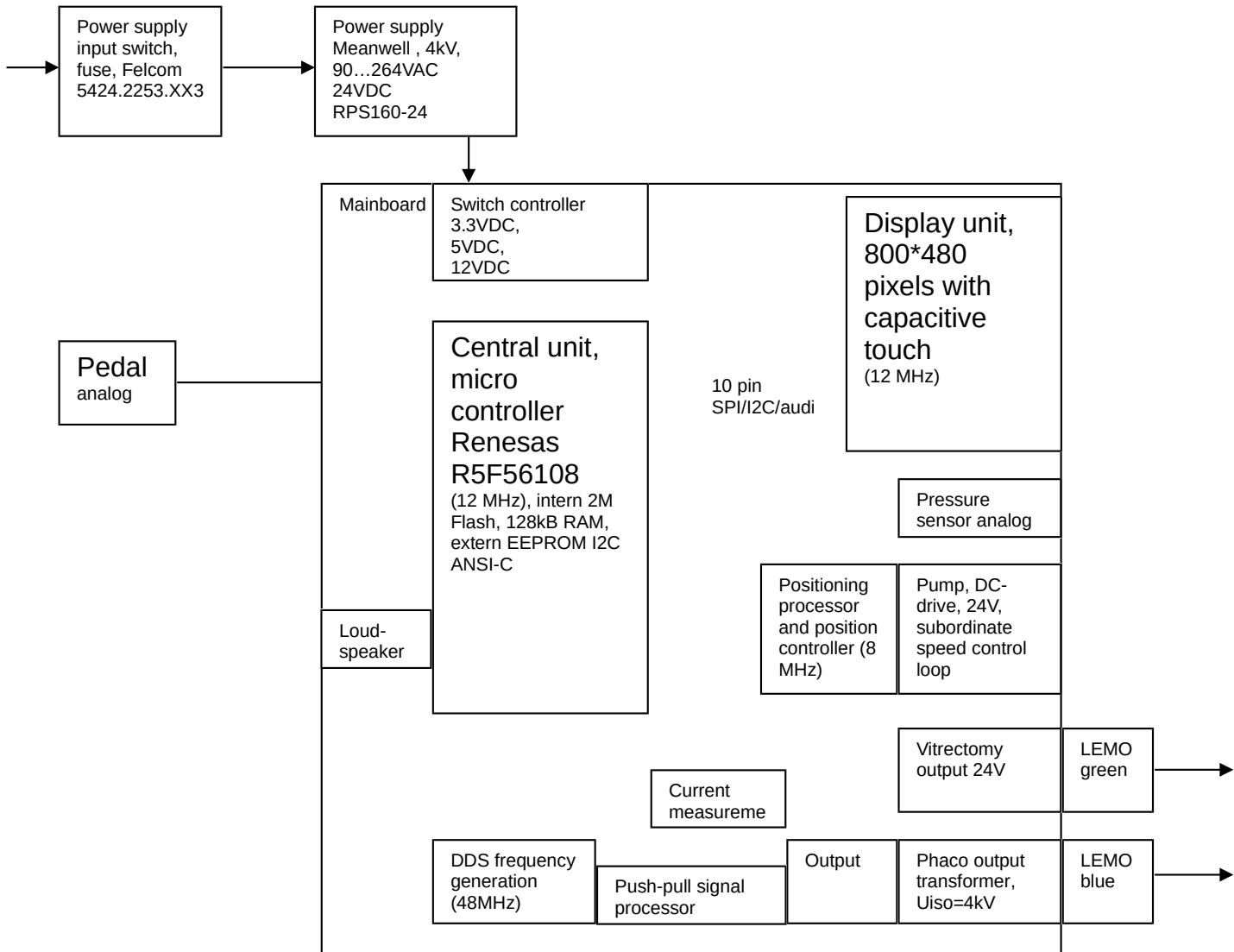
5.2 Security checks

- 5.2.1 Measure of Earth Leakage Current
N.C.: 0.5mA S.F.C.: 1.0mA

5.3 Functional Checks

- 5.3.1 Check of all instrument functions with instruments
- 5.3.2 Check of pump system using I/A tubing and all instruments:
I/A – US – VIT together with appropriate check of touch screen and pedal function (pedal pressure vs. correct positions)

5. Block diagram



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