

Smartdop 45 Service Manual

Note: Only authorized person should perform the repair services.

1. Troubleshooting

1-1. Trouble 1: Doesn't turn on.

- (1) Is it possible to recharge the battery?
If yes, go to next.
If no, go to 1-2.
- (2) After recharging, does the unit turn on?
If yes, there is no problem with the unit.
- (3) Does the unit turn on, when replacing the Upper PCB with good one?
If yes, replace the Upper PCB.
- (4) Does the unit turn on, when replacing the Lower PCB with good one?
If yes, replace the Lower PCB.

1-2. Trouble 2: Recharging is not possible.

- (1) Does the charging indicator turn on when plugging AC adaptor?
If yes, go to 1-2-(4).
- (2) Is the AC adaptor plugged into wall socket?
If no, plug it into wall socket.
- (3) Is recharging possible when replacing the AC adaptor with good one?
If yes, replace the AC adaptor.
- (4) Is the voltage of the power supply 0 V?
If yes, cable may be disconnected. replace or repair cable or connector.
- (5) Full charge life is too short.
Discharge and then recharge the battery. If it is same status, the battery is almost dead.
- (6) The voltage of the battery is less than 6 V after recharging.
The battery is not usable.

1-3. Trouble 3: Full charge life is short.

- (1) Recharging is not possible.
If no, go to 1-2.
- (2) Recharging is possible, but operating time is shot.
If yes, replace the battery.



1-4. Trouble 4: LCD displays nothing.

- (1) Do Doppler sounds come out?
If no, replace the Lower PCB.
- (2) Does it make change on display when turning on?
If yes, replace the LCD.
- (3) Does LCD display something when replacing Upper PCB with good one?
If yes, replace the Upper PCB.

1-5. Trouble 5: The unit does not display waveforms or waveform amplitude is small.

- (1) Does LCD display normally when replacing the probe with good one?
If yes, replace the probe.
- (2) Does LCD display normally when replacing the Upper PCB with good one?
If yes, replace the Upper PCB.
- (3) Does LCD display normally when replacing the Lower PCB with good one?
If yes, replace the Lower PCB.

1-6. Trouble 6: Separation of forward and reverse components is not correct.

- (1) Is separation correct when replacing the probe with good one?
If yes, replace the probe.
- (2) Is separation correct when replacing the Upper PCB with good one?
If yes, replace the Upper PCB.
- (3) Is separation correct when replacing the Lower PCB with good one?
If yes, replace the Lower PCB.

1-7. Trouble 7: No Doppler sounds

- (1) Does noise come out when volume control at maximum?
If yes, replace the probe.
If no, replace the Lower PCB.

1-8. Trouble 8: Having trouble printing

- (1) Does the printer move?
If yes, go to next.
If no, go to 1-8-(3).
- (2) Does the printer move smoothly?
If yes, check the connection of the printer head cable.
If no, check the motor drive connector. If it has no problem, replace the Upper PCB.
- (3) Does the Print Button work?
If yes, replace the Upper PCB.
- (3) Prints only a part of waveform or data.



If yes, replace the printer.

1-9. Trouble 9: Button does not work.

- (1) Does button work when replacing the Button PCB with good one?
If yes, replace the Button PCB.
- (2) Does button work when replacing the Upper PCB with good one?
If yes, replace the Upper PCB.

1-10. Trouble 10: Communication fault with computer. (With V-Link software series)

- (1) Check the settings such as communication port.
If no error on settings, go to next.
- (2) Do you use a dedicated communication cable?
If no, use a dedicated cable.
- (3) Does communication work when replacing the communication cable with good one?
If yes, replace the communication cable.
- (4) Does communication work when replacing the Upper PCB with good one?
If yes, replace the Upper PCB.
- (5) Does communication work when replacing the Lower PCB with good one?
If yes, replace the Lower PCB.

1-11. Trouble 11: No sounds from headset.

- (1) Check the volume control.
If the volume control is at minimum, turn up the sound.
- (2) Do sounds come out when replacing the headset with good one?
If yes, replace the headset.
If no, replace the Lower PCB.

1-12. Trouble 11: Doesn't work with PPG / PV probe.

- (1) Does the unit work with Doppler probe?
If yes, go to next.
If no, go to 1-5.
- (2) Does the unit work when replacing the PPG / PV probe with good one?
If yes, replace the PPG / PV probe.
- (3) Does the unit work when replacing the Upper PCB with good one?
If yes, replace the Upper PCB.
- (4) Does the unit work when replacing the Lower PCB with good one?
If yes, replace the Lower PCB.

Note. If the trouble can not be solved after checking those points shown above, please contact us



or dealer from whom you purchased your Doppler.

2. Repair procedures

Basically exchange with applicable PCB or component.

3. Preventive maintenance

- (1) Take care of following storage and operating environments.
- (2) Do not place near water.
- (3) Do not place where atmospheric pressure, temperature, humidity, ventilation, sunlight, dust, salt, sulfur and so forth will affect the unit adversely.
- (4) Do not place where chemicals are stored, or where gas may be generated.
- (5) Take care of the stability conditions such as inclination, vibration, and shock during transportation and installation works.
- (6) Make sure that the unit operates safely and correctly.
- (7) Make sure that all cables are connected correctly and safely.
- (8) Using more than one equipment together may result in erroneous diagnosis from malfunction or cause a danger.
- (9) Recheck external connections to the patient carefully.
- (10) Do not sterilize the main unit by gas or autoclave since it may cause a damage.
- (11) Be careful not to exceed time and volume which is necessary for diagnosis treatment.
- (12) Always watch so the unit and patient are not under abnormal conditions.
- (13) When any abnormality is found on the unit or the patient, take proper action such as stopping operating the unit in a manner safe to the patient.
- (14) Do not let the patient touch the unit.
- (15) Use designated probe only
- (16) Use it under condition of between 10 and 40 degrees(C) and 75% humidity or less.
- (17) Any connected computer is not allowed to be in the patient area, 1.5m or less.
- (18) Turn it off after use.
- (19) Clean the unit, accessories, cables and probes and place in right place for the next use.
- (20) The probe transducer tip is very thin and delicate. Please handle with care and use the probe cap when not in use.
- (21) Use ultrasonic gel. Using other materials may damage the probe.
- (22) The ultrasonic gel enclosed is non-sterile and do not use it for surgeries.
- (23) When the unit gets out of order, contact the dealer for repair from whom you purchased the unit.
- (24) Only authorized persons should perform the repair services.

4. Spare parts list

4-1. Assembling components

Part code	Part name
	Upper PCB assembly
	Lower PCB assembly
	Button PCB assembly
	Battery
	Speaker
5110-12864-00	LCD
	Upper cover
	Bottom cover
	Printer bracket
	Printer paper cover
	Multi-way button top cover
	Back button top cover
	Power button top cover
3310-00623-00	Volume control knob
	Panel sheet
	Rubber foot

4-2. Accessories

Part code	Part name
7270-12580-23	FRIWO AC adaptor 200 V series
7270-12480-11	1248 AC adaptor 117 V
7120-05825-00	Print paper
7240-00002-00	Hand strap
7100-00900-00	Gel 90ml
	Headset
	Operating manual
	Carrying case

Note. The accessories are considered as consumables except probe.

5. Special tool list

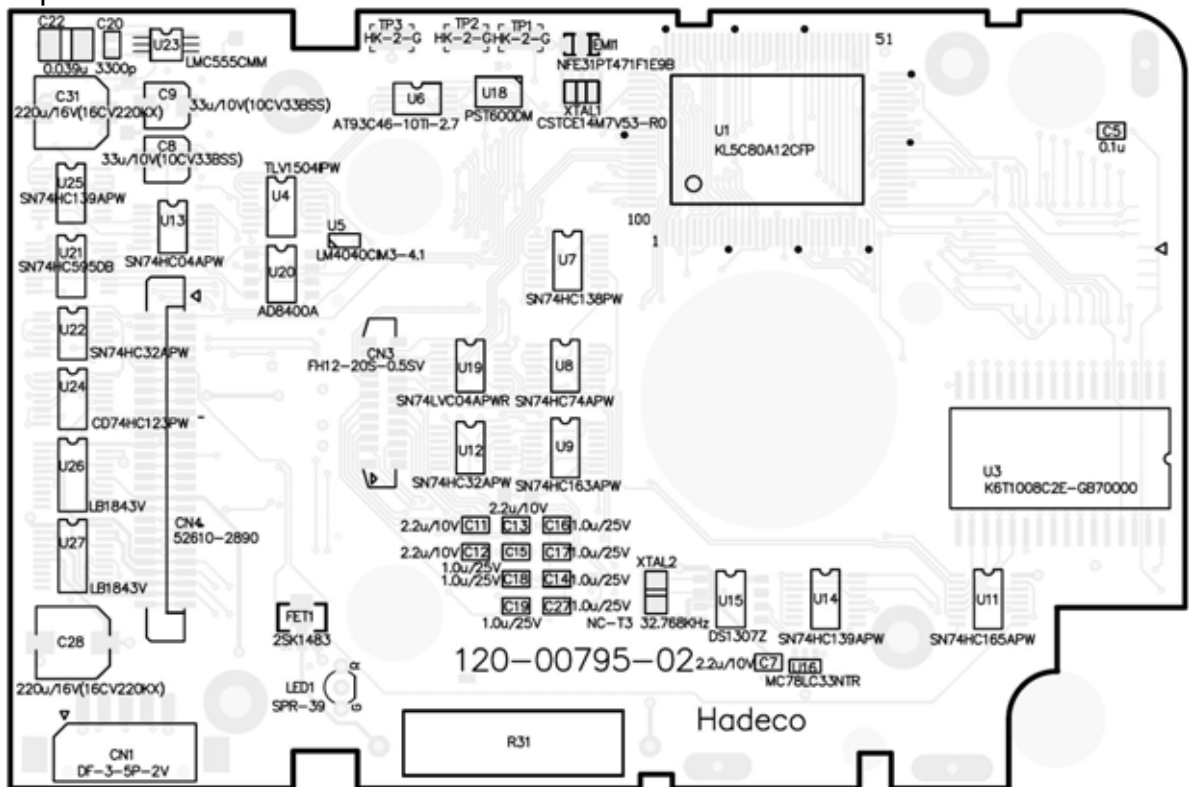
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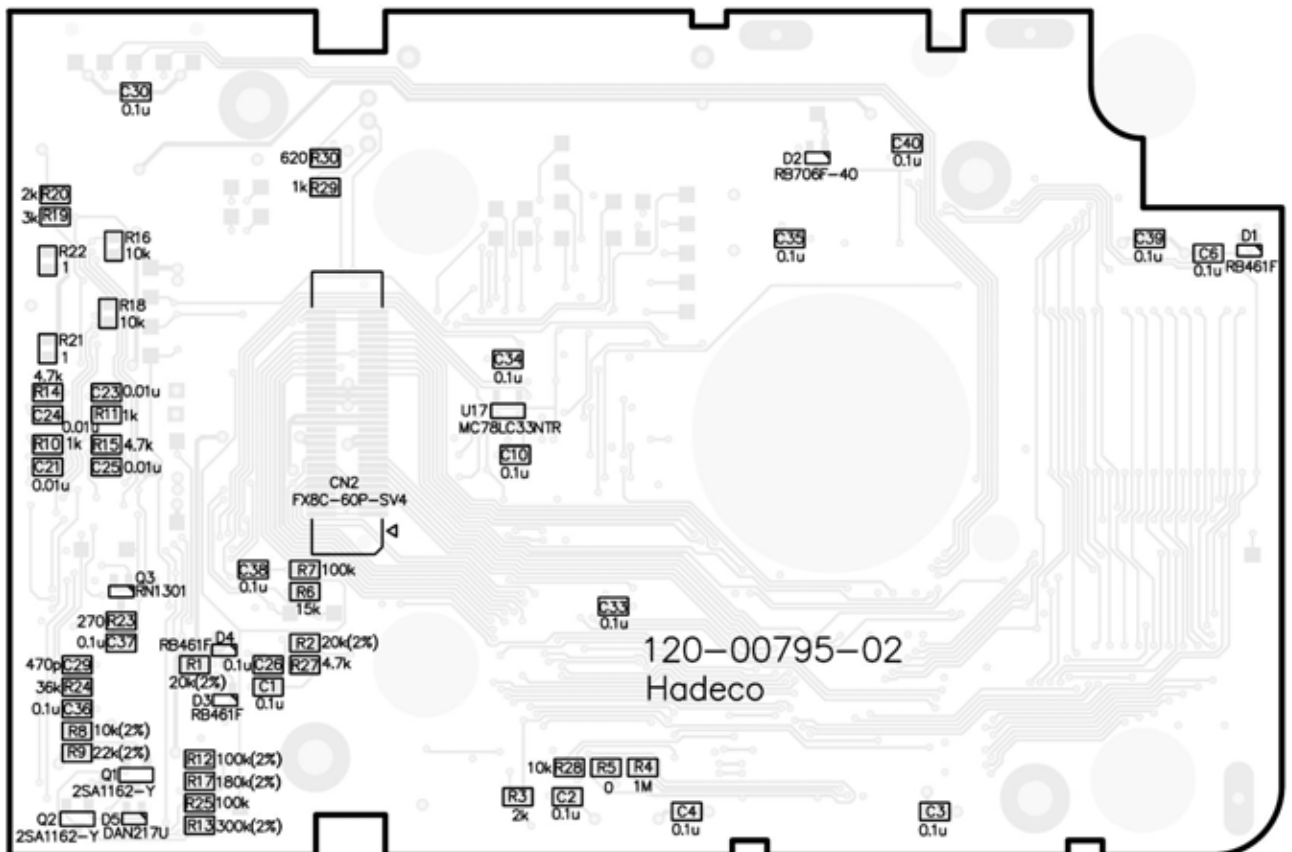
6. Diagrams

Upper PCB layout

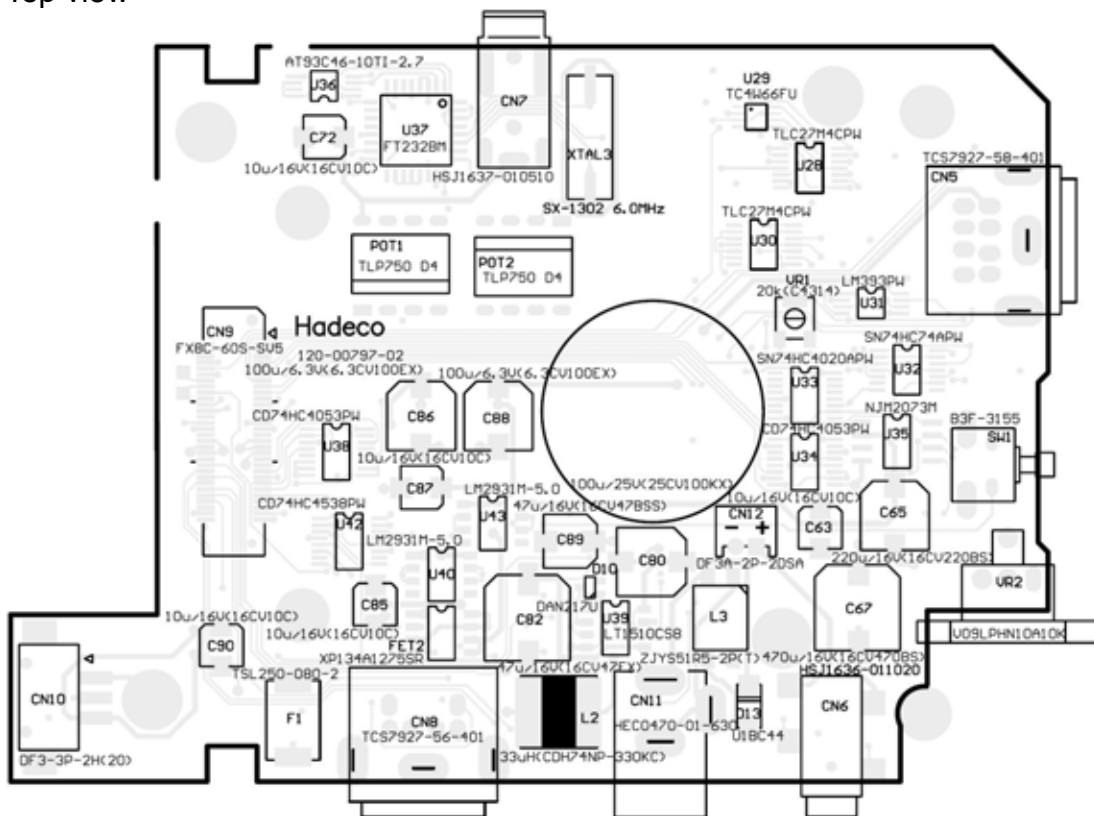
Top view



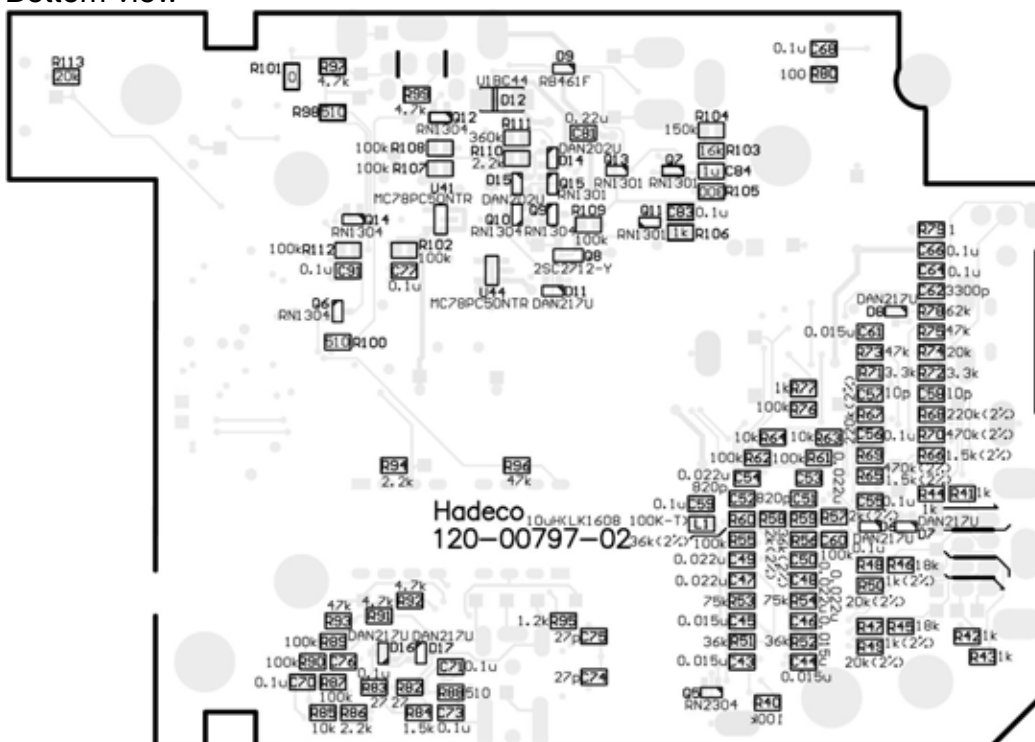
Bottom view



Lower PCB layout
Top view



Bottom view



Button PCB