DANTES CARPC

What you need… new 7” touchscreen lcd display (my case Lilliput 669 openframe), cga/vga converter (rgbs to vga), some electronic parts described in the schemas below and of course a minipc.

There are 3 LM555 schemas. One for poweroff delay, one for one sec output when power applied, one for one sec output when power is off after beeing on. The schemas are marked modified for the ones I used and what I’ve modified, and the original ones don’t have this marking.

First of all, we have to use the power off delay schema.

The relay in that schema is a 12v 30A relay used in automotive industry. The load voltage is going to a universal car charger for laptops, that is providing the power for the minipc. This power off delay is used in order for the minipc to power off / hibernate.

The R1 is 100k and the C1 is 1000uF for power off delay and 22uF for the other 2 schemas that simulate power on/off of the minipc.

The timer for power off delay will be 110 seconds, but this will vary on the actual values of the resistor and the capacitor.

For 1 sec output when on, in fact there is a 2.4 sec. but those resistors and capacitors i had ..so i used those.

For 1 sec output when off after on, there is a almost or exxactly 1 sec output, because the 1000uF capacitor is like an accumulator for keeping the LM555 chip on. If you use a larger capacitor (like 4700uF like i used to test it), then a 2.4 sec output will be achieved also at power off after on.

Always protect the voltages with diodes. At the entry of each circuit put a diode. Also for relays.

The infotainment on voltage is the + from the infotainment unit that has a voltage when the unit is on.

In the infotainment unit, there is one relay in the whole system, situated in the middle board. There you have a +9v when the unit is on.

Since +9v i found out is not enough and because i cannot use a relay of 12v that i had, o used a NPN tranzistor like BC547, with the +9v from that relay with a 1k resistor to the base, the collector to one of the pins of the coil of the relay, and the emitor to the ground. The other pin of the coil to +12v and between pins a diode. This way, the transistor is acting like a switch, activated at 2.5v . I used it like this in order for voltage drops to be countered when cranking or whatever.

The same idea is for powering the rgb converter and the display. From pin 1 of the 10pin connector, same ideea as above with the tranistor as a switch.

The original lcd has 2 connections from the unit. A 10pin connector and a 28 pin connector described at page 9 respectively 8 of the lcd datasheet.

At the 10pin connector, pin 1 will go to the npn transistor that will power up a relay that will power up the rgb converter and the new display.

The new display has a filter box so is best if the rgb converter is connected after this filter box in order to reduce the noise from the system.

Also, the pin 10 gets connected with a 1k resistor with pin 2. This is because the original lcd has a 10k NTC resistor for measuring the temperature of the screen in order to modulate the pwm and other stuff...without this connection, the unit shuts off the power from pin 1.

Why this connection and not directly? Because the new display and converter must be on ONLY when the infotainment unit consider it. When you unlock the car, the unit is getting on WITHOUT powering the lcd. When you open the door, the unit is powering on also the lcd. Same thing, when you are locking the car, the unit just shut off the lcd, but the sistem is still on for 3 mins. This is when you forgot something in the car and you unlock the car...this way the unit is not taking on/off shocks.

How to connect the rgb converter.

From the unit, all the connections are in the 28pin connector, that is a ribbon cable.

pin 5 = ground

pin 8 = red

pin 10 = green

pin 12 = blue

pin 21 = composite sync

This must be connected to the input of the rgb converter. From the converter, you will get correct vga signal, that you will connect to the lcd.

As rgb converter, use ebay and search for a cga/vga converter or arcade game vga converter. There are a lot of them.

Of course, adjust the converter and the lcd screen in order to match the viewable area perfectly.

The new lcd screen will get in place of the old one perfectly. The electronics of the new lcd put it direclty there, as close to it as possible since there is not too much room in the unit. This is your imagination to put it there...use the white plastic screws and glue them directly on the back of the lcd as close as possible.

Same with the converter... i've put it between 2 boards, with some spacers and it's staying perfectly.

Since the unit gets crowded, you need to better ventilate the system during summer. For this, i got the wires from the back fan, i disconected that from the board, and connected it on pin 2 of the 10pin connector. So the fan will be on as long as the screen is on. Also, i've put a second fan at the very bottom of the unit, to blow air inside, also connected to pin 2 of the 10 pin connector. This way, i get a fresh cool system even when it's very hot outside.

The new lcd screen has also a small board with switches. I've connected the power on/off to the tp button of the unit, and the switch source to the tv button. You can choose if you want or not, or what button to use. If you connect this to the unit, make sure that the button is not connected to the unit anymore... there is a +5 or +9v going on those switches that will mess around with the unit.! Be careful!

Also, in the small hole from upper left corner of the unit, there is a light sensor in the original unit. There i've put the IR sensor from that small board from the lcd screen since the original sensor is not used anymore. So, i can control the new lcd with the provided IR remote.

On the lcd, depends of the chosen unit, there is or there is not a wire that gets a +12v from the reversing light in order for the lcd to make autoswitch for reversing camera. I used the lilliput 669, and i had the resistors and the transistor, but there was no wire...so i've solder it where it should be and that was it.

More info on this you will get from googleing and from the pictures of the 669 board. If another lcd is used, then use whatever is correct to that.

The minipc is a lenovo Q190 with windows 7 and from here the sky is the limit...audio, video, obd2, navigation, onboard camera, internet, internet radio and so many other things...

Good luck!

NOTES: After I wrote this, i’ve changed the vga-rgb converter with another type without a heat sink on it, and placed it outside the infotainment unit, in order to have more air in the infotainment unit and to prevent any kind of heating up. It’s working either way, but I’m more mentally comfortable with this converter outside the unit. Also, the electronics with power off delay I’ve changed it from 2 boards, into just one..but the same circuit and schemas.

ORIGINAL LCD

6.1 Analog interface

SYMBOL	PIN	I/O	DESCRIPTION
V/V_{out}	1	I/O	vertical sync pulse I/O; negative going pulses for both input and output
H/H_{out}	2	I/O	horizontal sync pulse I/O; negative going pulses for both input and output
OSD	3	I	On screen data select input; default LOW for OSD OFF
V_{sup}	4	I	Supply voltage (+8 to 16 V)
GND	5	-	Ground
CVBS	6	I	Composite video input; module can synchronize on CVBS or CS input
GND	7	-	Ground
R	8	I	Red video input
GND	9	-	Ground
G	10	I	Green video input
T_{sensor}/GND	11	-	Temperature sensor / AC ground
B	12	I	Blue video input
RGB/CVBS	13	I	RGB/CVBS select input; default LOW (10 kohm pull-down resistor) selects CVBS; RGB/CVBS=HIGH (+5V) selects RGB (CS is then sync input)
Colour	14	I	0 to 3.5 V colour control input (CVBS only)
Contrast	15	I	0 to 3.5 V contrast control input (CVBS only)
Brightness	16	I	0 to 3.5 V brightness control input
Tint	17	I	0 to 3.5 V Tint control input (CVBS-NTSC only)
P/N	18	I	PAL/NTSC mode select; default HIGH (10 kohm pull-up resistor) selects NTSC 60 Hz mode. For PAL mode 50 Hz versions, P/N is default LOW; see note 3
R/L	19	I	scan direction right/ left; default HIGH (10 kohm pull-up resistor) for left-to-right scanning; R/L= LOW (0 V) gives right-to-left scanning
B/T	20	I	scan direction bottom-to-top/ top-to-bottom; default HIGH (10 kohm pull up) for top-to-bottom scanning; B/T= LOW (0 V) gives bottom-to-top scanning
CS	21	I	composite sync input; positive or negative-going TTL signal
CLKC	22	I	clock select (internal sync/ external clock); see note 1
MODS	23	I	Aspect ratio control input
MODW	24	I	Aspect ratio control input
MODN	25	I	Aspect ratio control input
PIXCLK	26	I	pixel clock
PWM	27	O	backlight synchronization output; see note 2
n.c.	28	-	Not used. Do not connect.

Note s

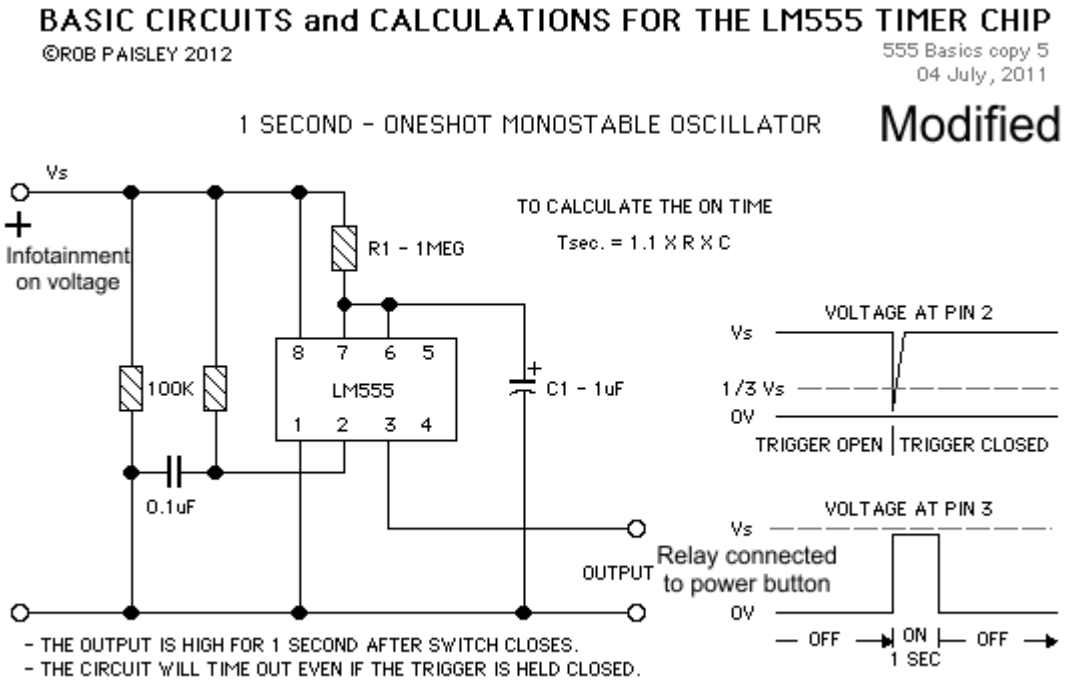
1. For internal clock mode CLKC input is default HIGH (10 Kohm pull up), and PIXCLK will be continuously low. With CLKC=LOW, PIXCLK is input as the external clock signal, V and H become sync inputs and P/N,MODS,MODW and MODN must be set HIGH
2. PWM signal can be used to control the PWM dimming frequency directly. It can also be used to control dimming in combination with HSY. The PWM signal should be used only with standard NTSC or PAL signal inputs.
3. Only select when module is not operating

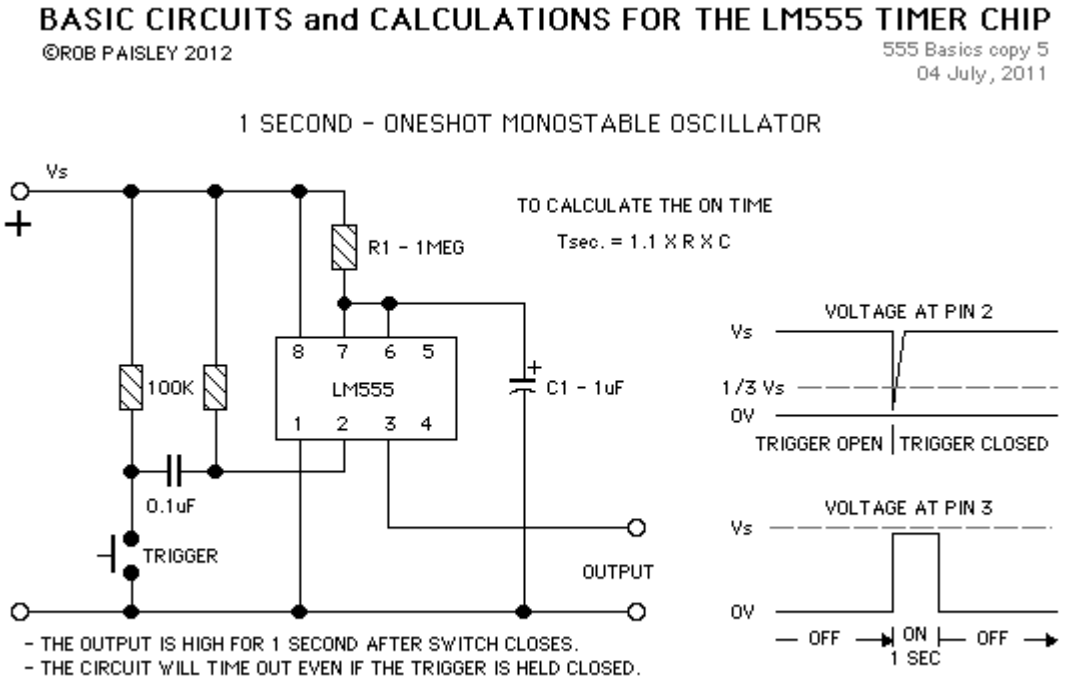
6.2 Backlight inverter interface

Pin No.	Symbol	Description	Remarks
CN1-1	V_{in}	Supply voltage	8.0 – 16.0 V
CN1-2	V_{in}	Supply voltage	8.0 – 16.0 V
CN1-3	GND_{supply}	Supply ground	
CN1-4	GND_{supply}	Supply ground	
CN1-5	Sleep	Sleep control by digital voltage	0.0 ~ 5.0 V
CN1-6	Duty	Duty cycle dimming control by analog or PWM voltage	0.0 – 5.0 V
CN1-7	Ampl	Amplitude control by analog or PWM voltage	0.0 ~ 5.0 V
CN1-8	Sync	Synchronization of internal PWM	0.0 ~ 5.0 V
CN1-9	$GND_{control}$	Control ground	
CN1-10	$Sensor_{out}$	Sensor readout	10 kΩ NTC

RGB/VGA converter

Timer schemas

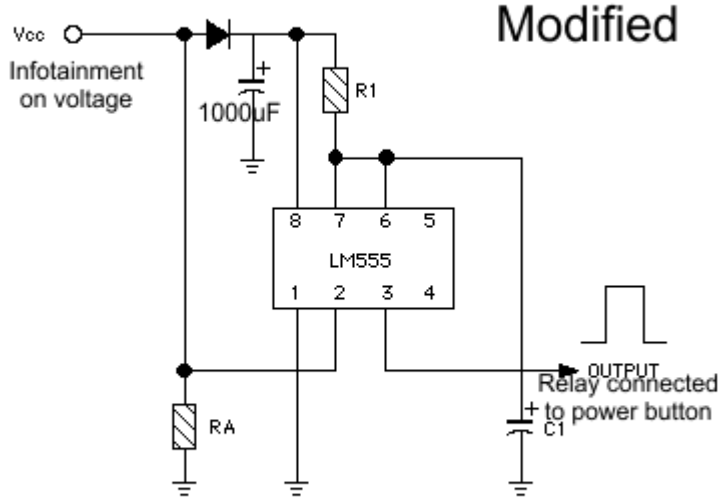




555 TIMER - REVERSED TRIGGER INPUT

555 Helper 2a
07 January, 2009

Modified



http://home.cogeco.ca/~rpaisley4/CircuitIndex.html

- PIN 2 IS HELD HIGH UNTIL THE SWITCH IS OPENED.
- RA = ANY VALUE.

555 TIMER - REVERSED TRIGGER INPUT

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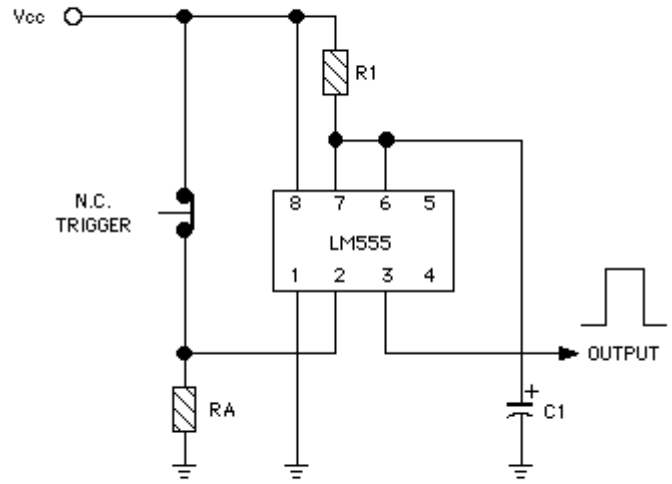
555 Helper 2a
07 January, 2009



http://home.cogeco.ca/~rpaisley4/CircuitIndex.html

- PIN 2 IS HELD HIGH UNTIL THE SWITCH IS OPENED.
- RA = ANY VALUE.

POWER OFF DELAY CIRCUIT / BATTERY SAVER Modified

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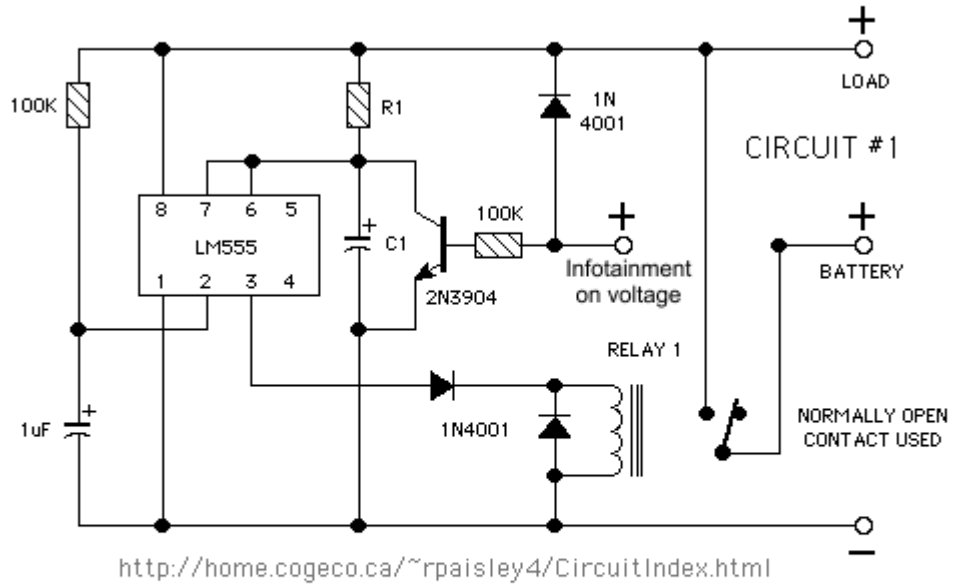
– RELAY –

555 Power Off Delay
12 December, 2010



http://home.cogeco.ca/~rpaisley4/CircuitIndex.html

- WHEN S1 IS CLOSED, THE CIRCUIT WILL TURN ON, CLOSE THE RELAY AND SUPPLY POWER TO THE LOAD.
- WHEN S1 IS OPEN, THE 555 TIMER WILL START ITS DELAY AS DETERMINED BY R1 AND C1.
- AT THE END OF THE DELAY TIME, THE RELAY WILL OPEN AND CUT OFF THE POWER TO THE LOAD AND TIMING CIRCUIT.

- AS LONG AS S1 IS CLOSED, THE TIMER'S COUNT WILL REMAIN AT ZERO.
- THE CIRCUIT WILL NOT TRIGGER WHEN POWER IS APPLIED TO THE CIRCUIT.

POWER OFF DELAY CIRCUIT / BATTERY SAVER

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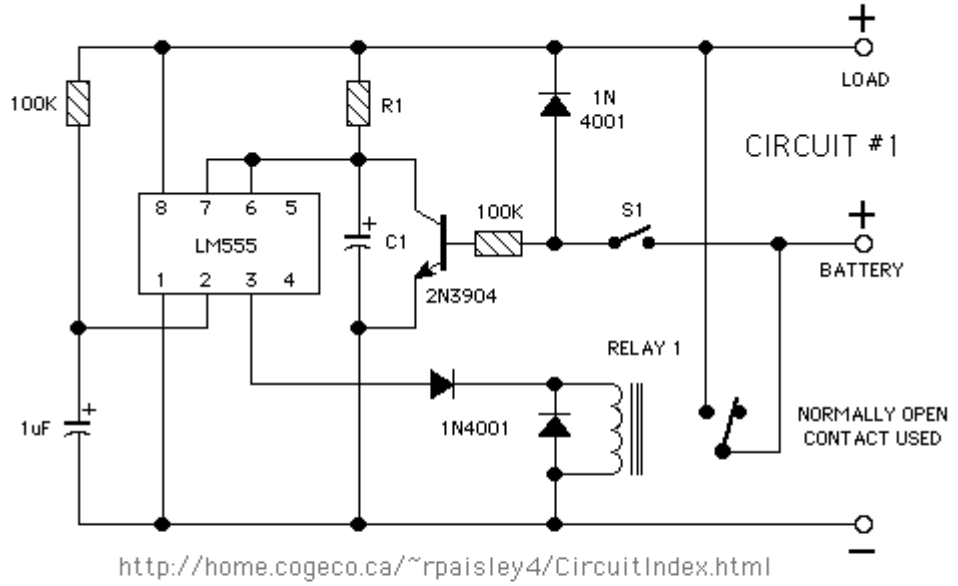
– RELAY –

555 Power Off Delay
12 December, 2010



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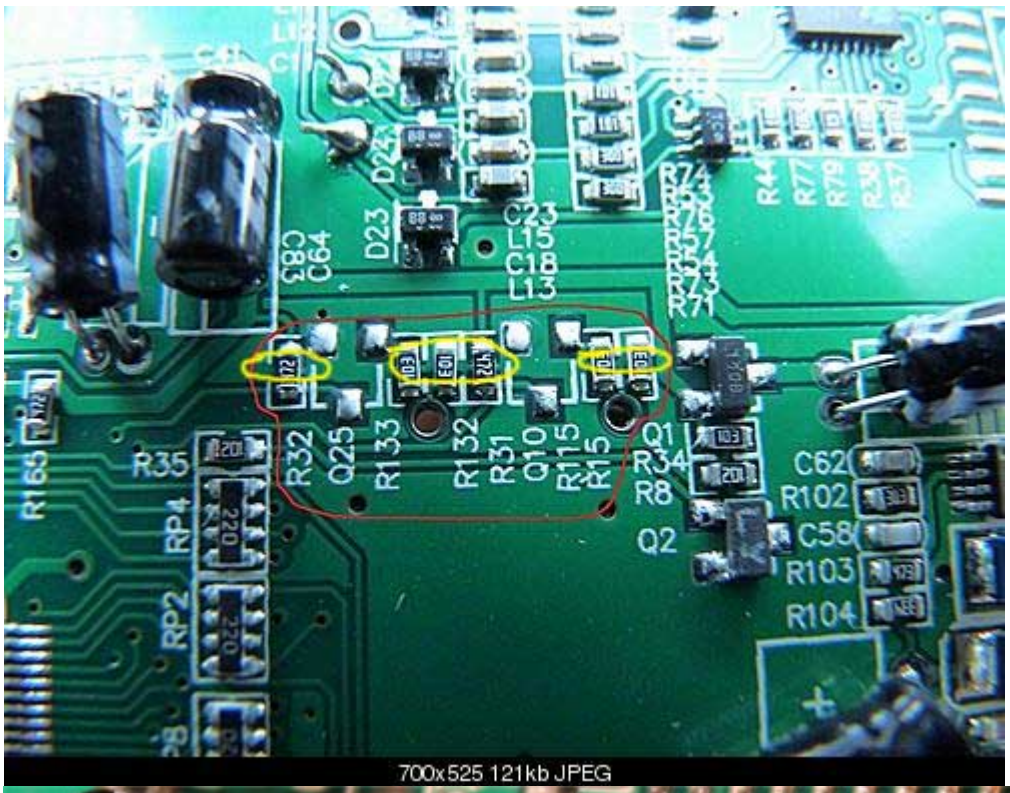
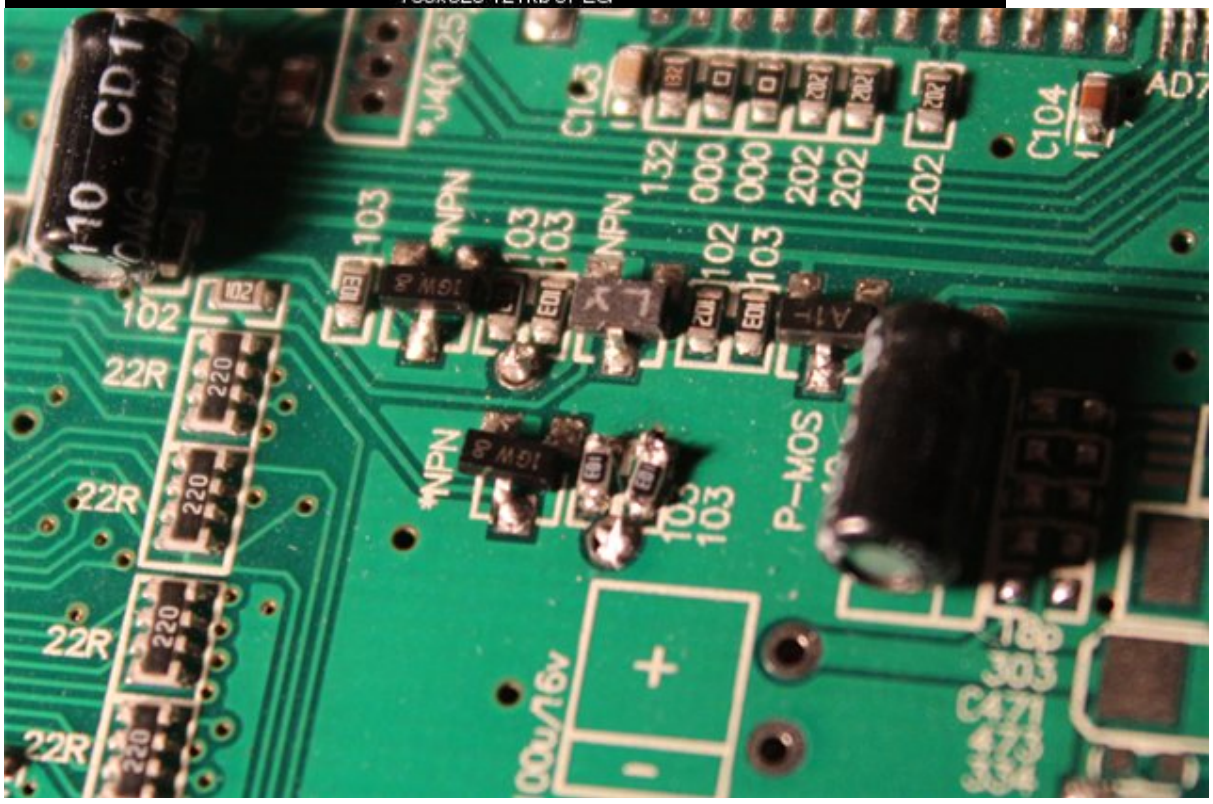
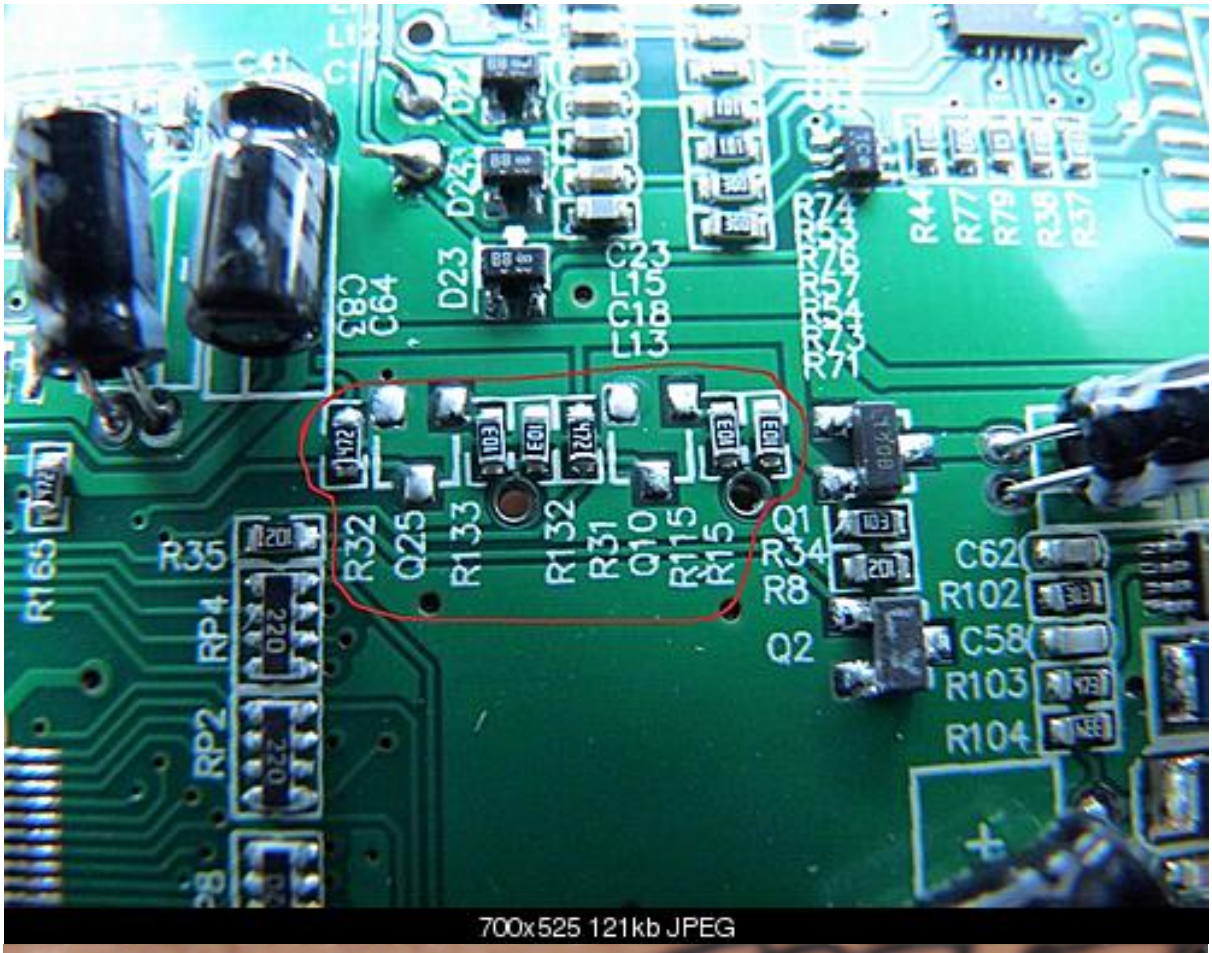
LILLIPUT 669 board for autoswitch to reverse camera.







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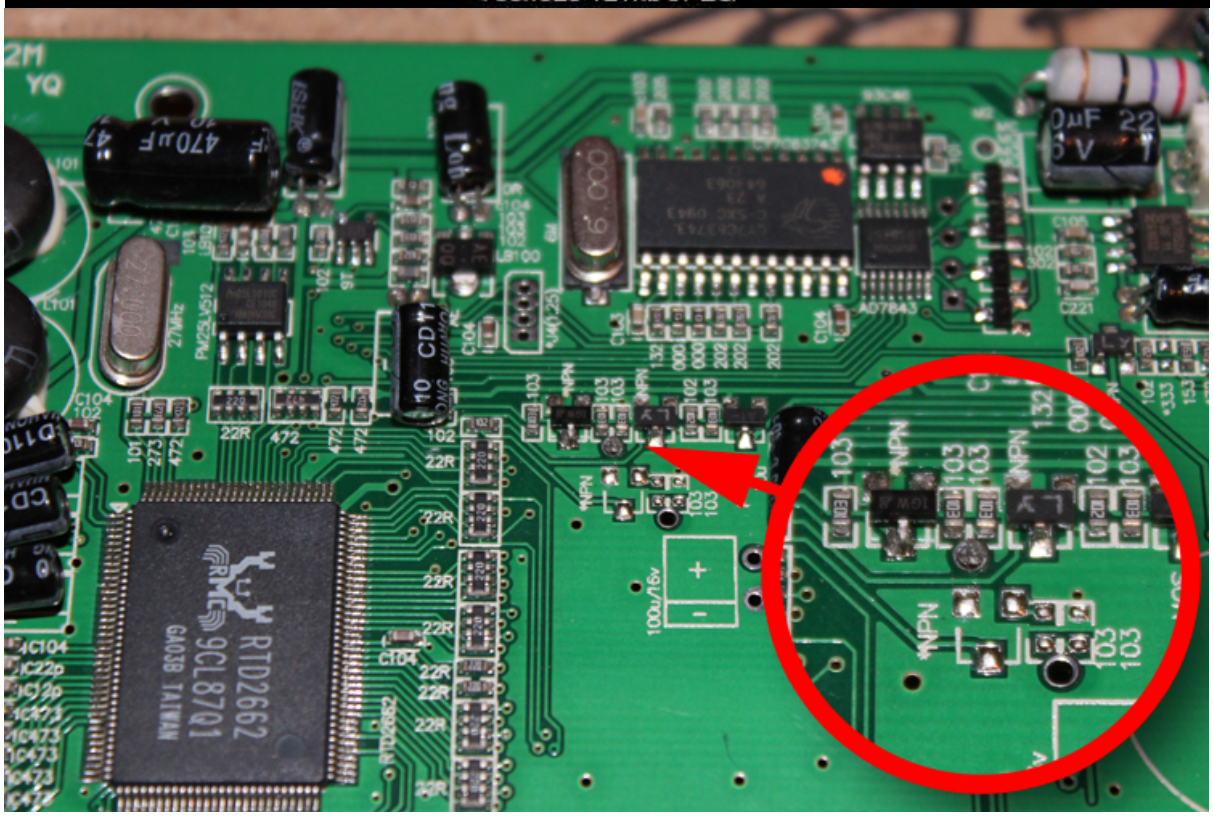

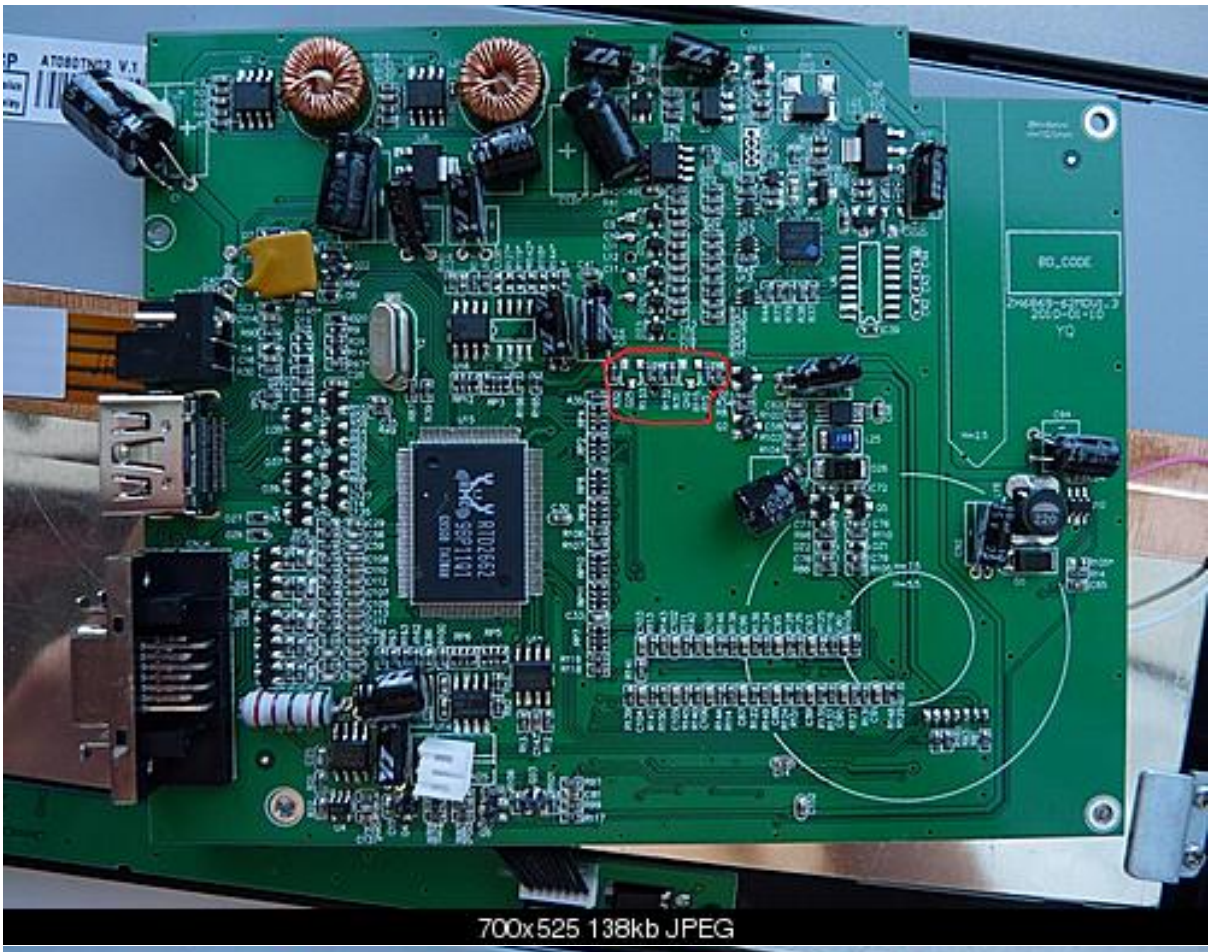

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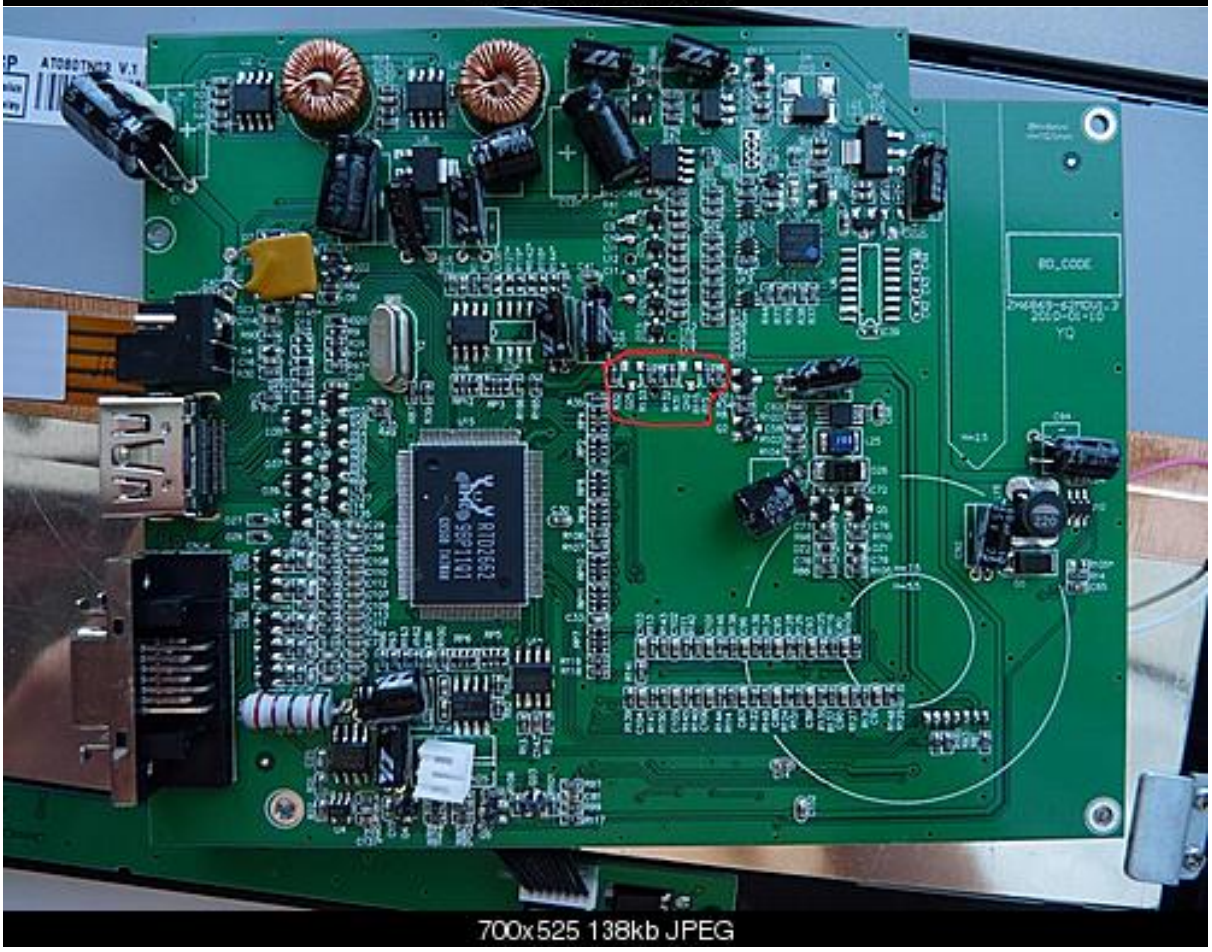

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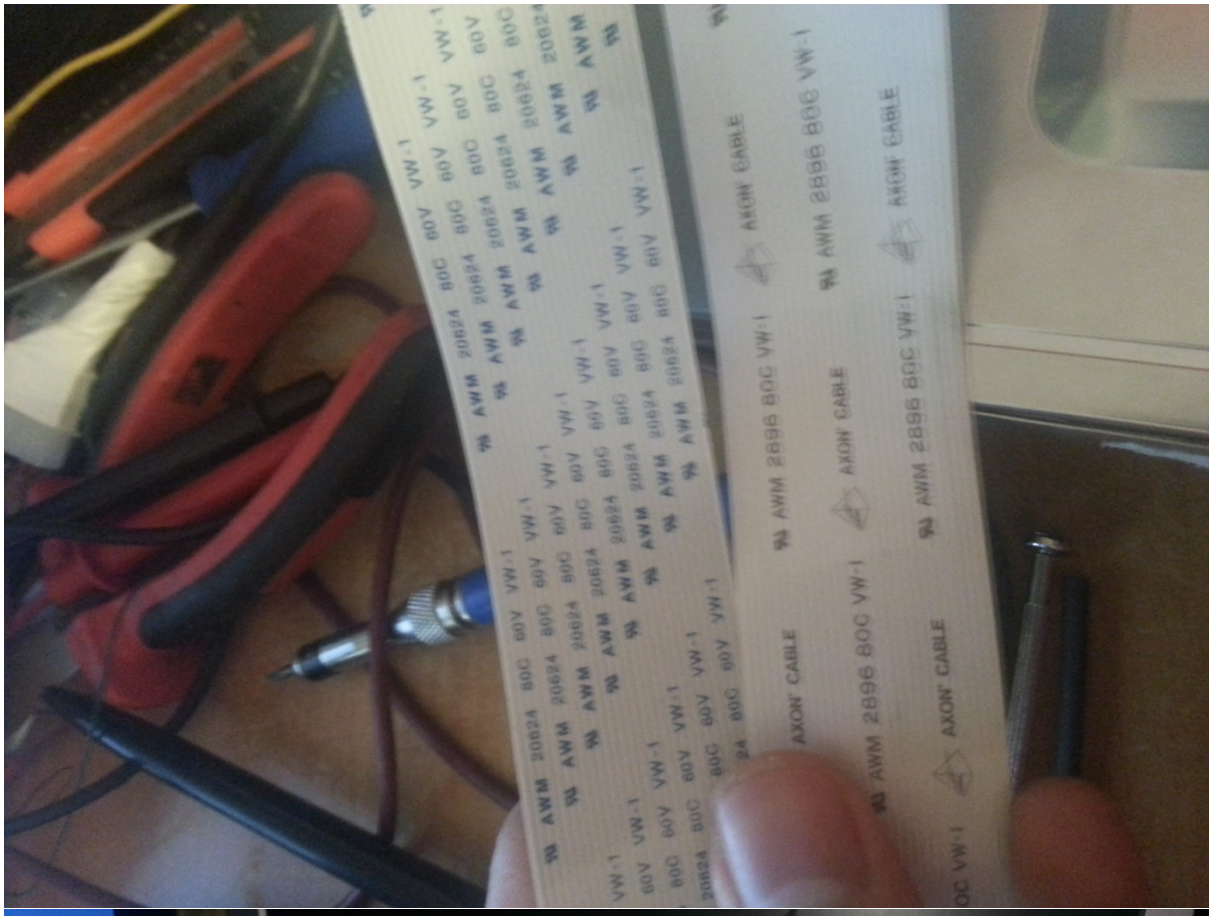
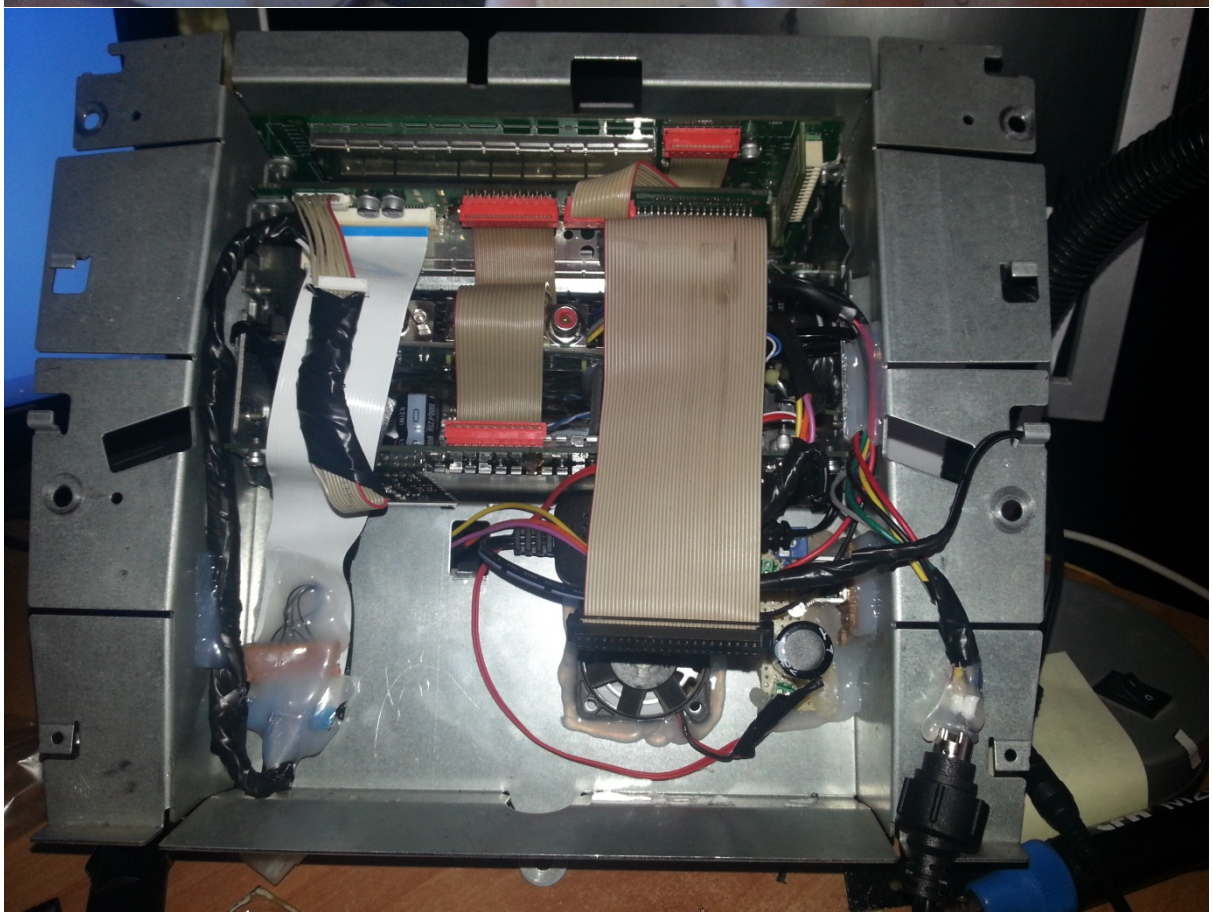
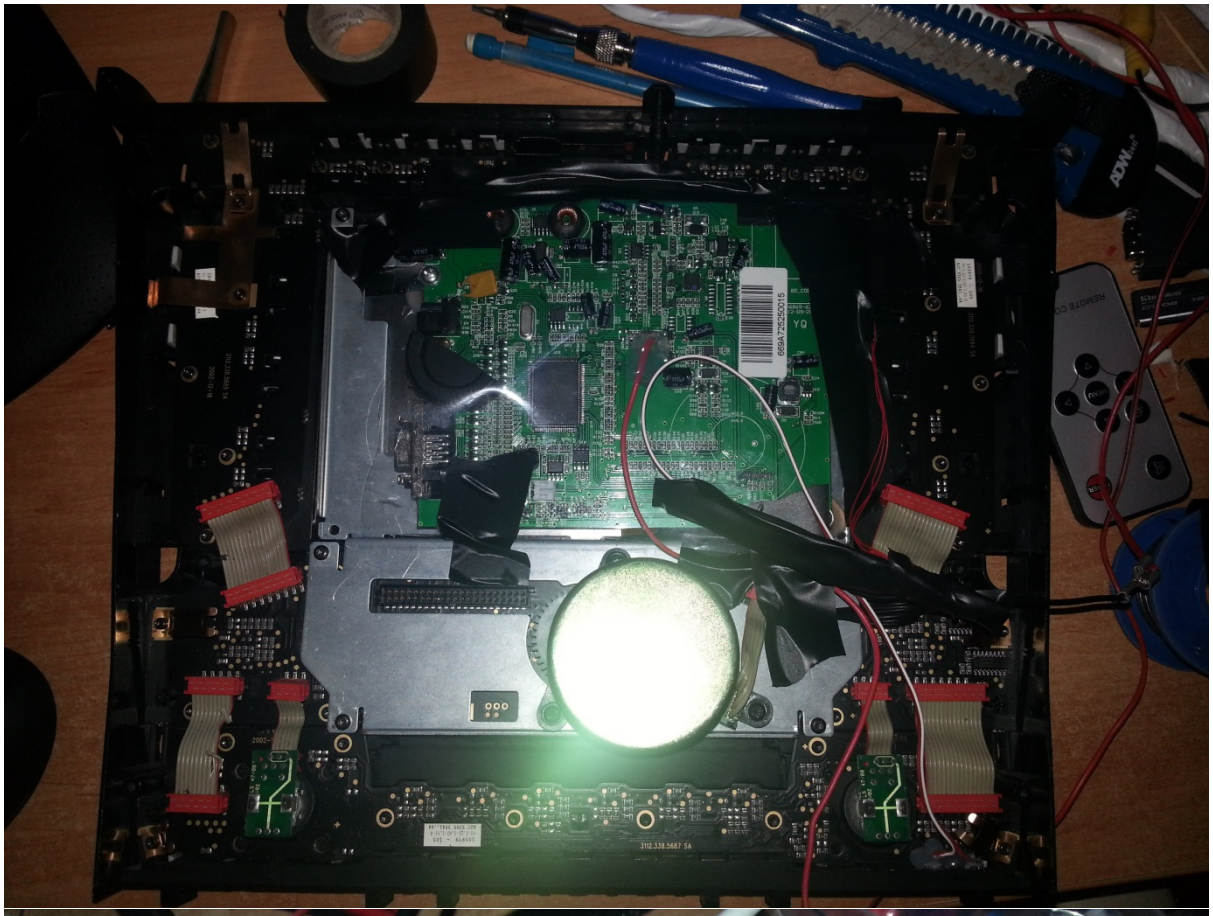
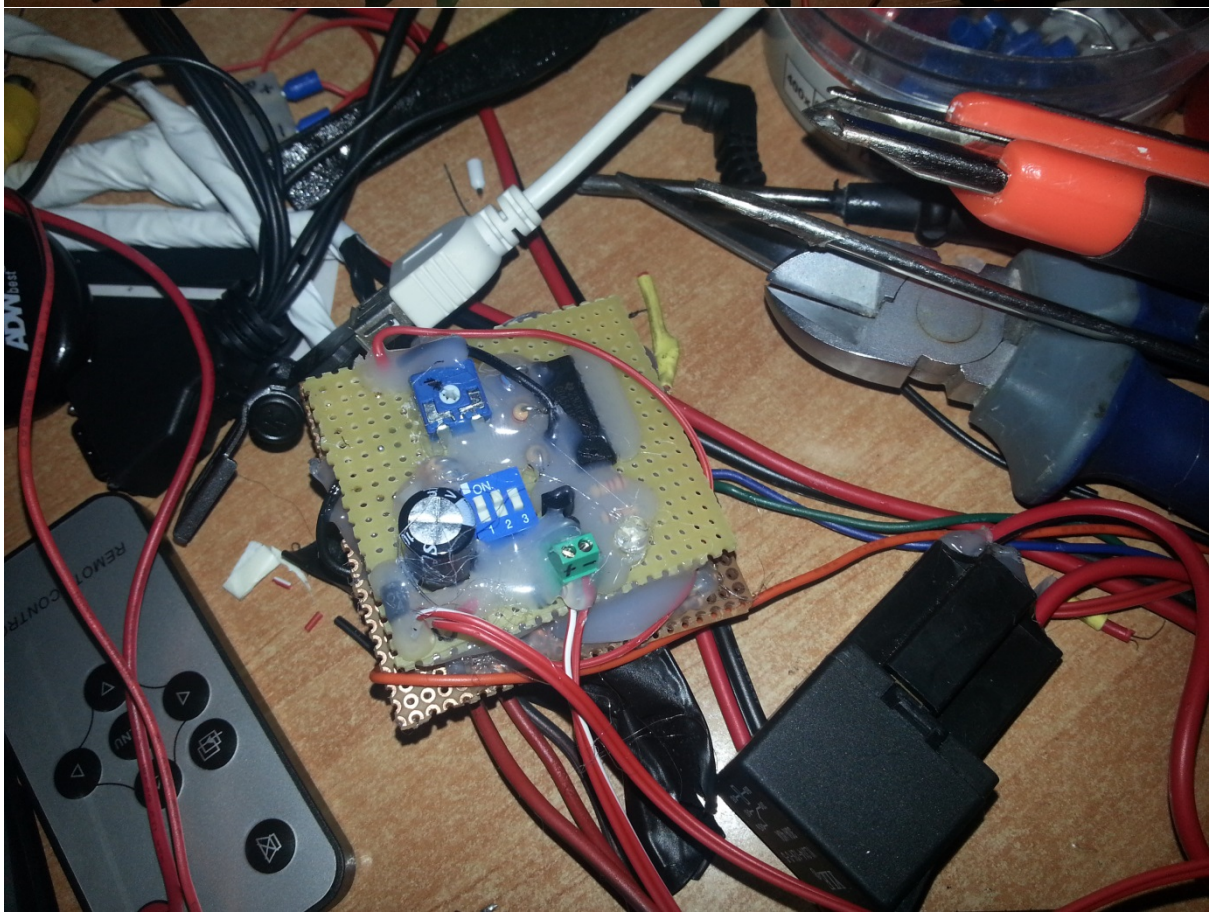

AXON' CABLE
AWM 2896 80C VW-1



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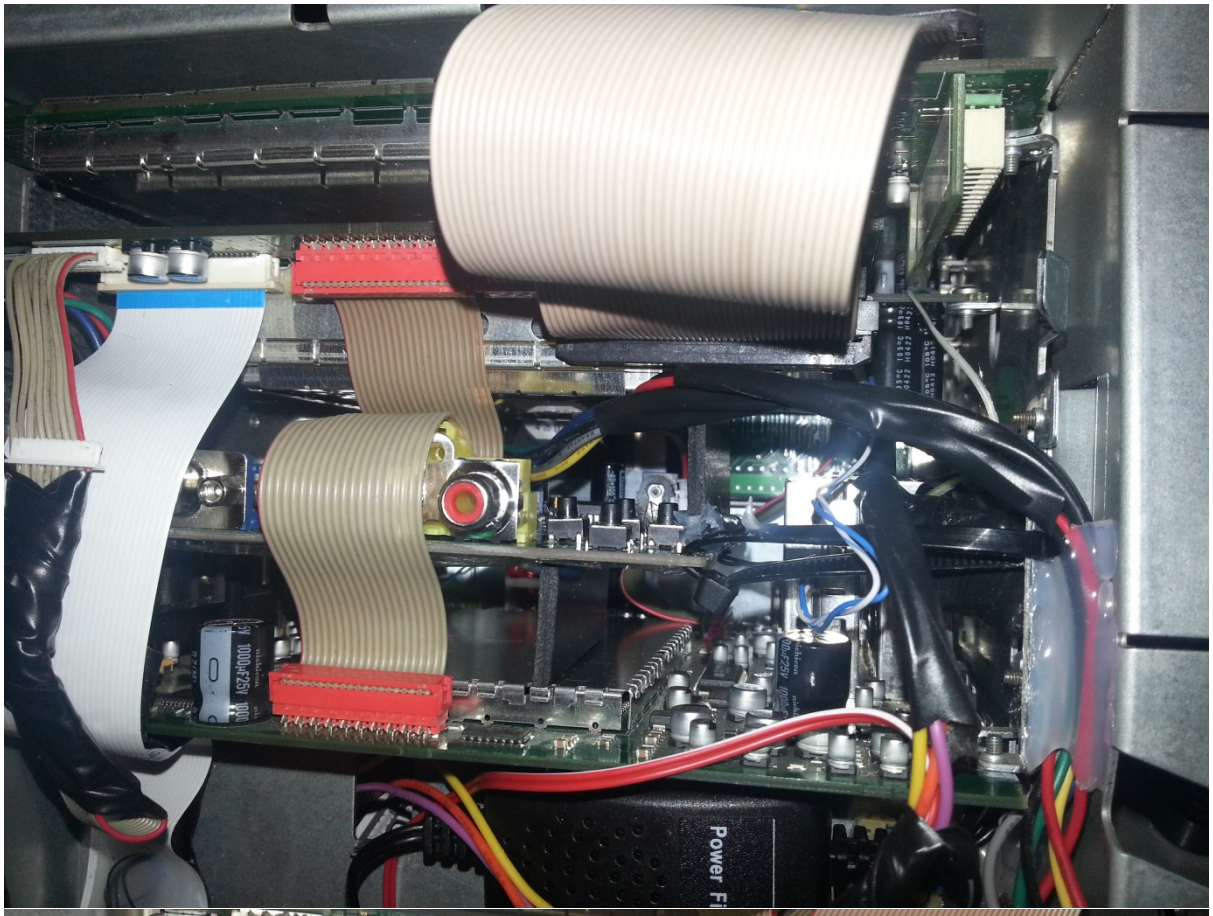
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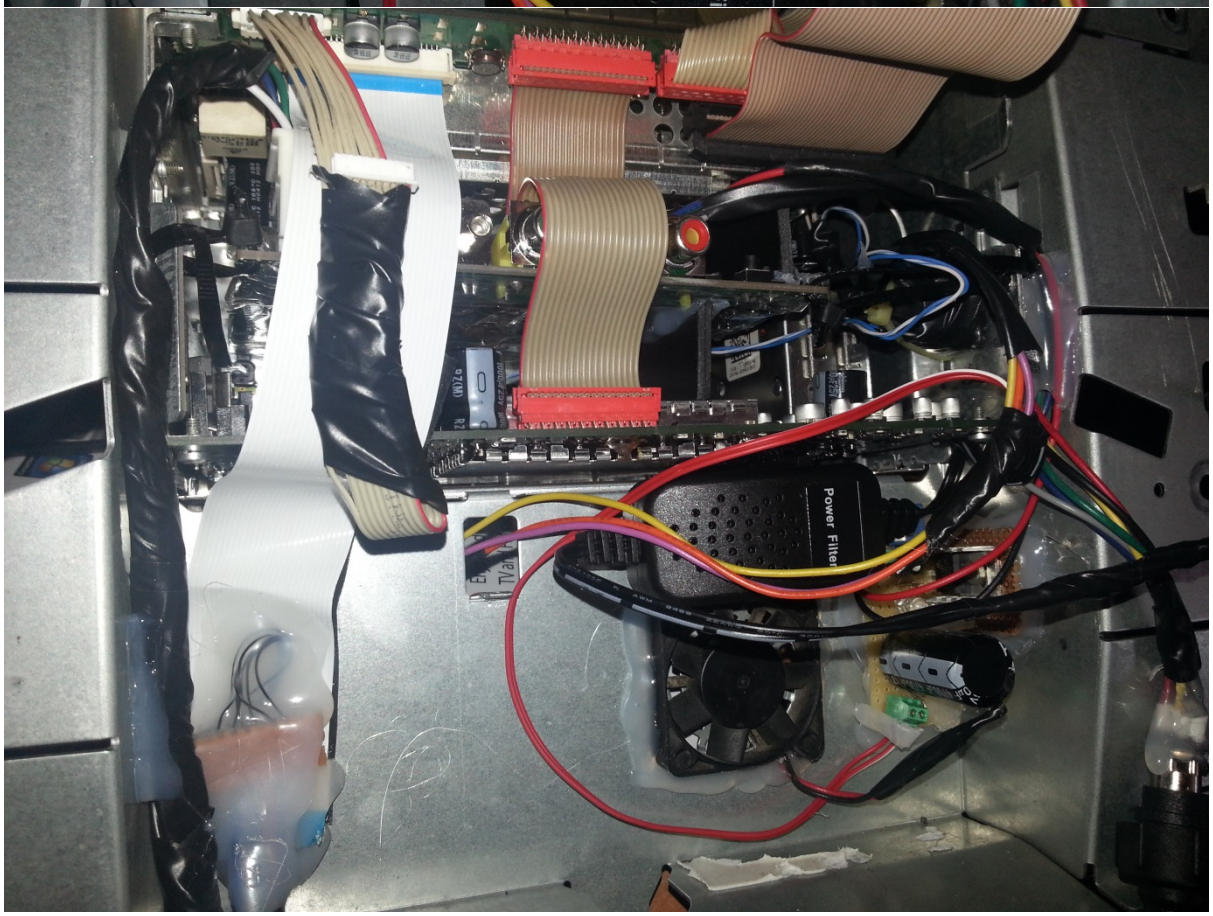
Power Filter


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Apploader
Apploader
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PHONE
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NAVI
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AUDIO/TV
BOARD PC
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ON/DARK
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