To barrel connector, 4A switched mode supply

Standby – 2100mA (when charging)
Powered on – 1439mA + 2000mA relay peaks.

4A supply recommended. Molex connectors rated to 4A.
Pin 1: +5v
Pin 2: 0v

360mA
To bulb holders x 2

144mA
Pin 1 – to XLR4 Pin 1
Pin 2 – to XLR4 Pin 4
XLR's to Power Amp Relays

J?
Conn_01x02_Male

J?
Conn_01x04_Male

Current-limit to 1.28A

R1
3R9

56mA

5V switched

1283mA

923mA

1339mA

SSR1
CPC1708J

* Current limit?

28 mA
K1
RS:7181774

J?
Conn_01x02_Female
3.7V LiPo Battery Pack A

2A max

U1
Li-IonCharger1A
4.2V_out 5V_in
0V 0V

1A (@ power-off)

5V always on

30mA

28mA
K2
RS:7181774

Batt +

Batt –

D1
BZX79-B6V2,113
6.2V / 2%

R2
560R

R3
10k

R4
10k

RV1
50R

Q1
2N3904

R5
10k

Q3
2N3906

Q2
2N3904

C2
10µF

R10
100R

1N4148
D2

1N4148
D4

Battery Monitoring

779mA

R7
270

R8
470

AQW212EH
U2A

18.7mA

C1
1µF

R6
10k

R9
10k

Q4
2N3906

R11
100k

R12
100k

Q5
2N3904

D3
1N4148

Latch

760.3mA

28 mA
K3
RS:7181774

J?
Conn_01x02_Female
3.7V LiPo Battery Pack B

2A max

U3
Li-IonCharger1A
4.2V_out 5V_in
0V 0V

1A (@ power-off)

Silentswitcher power consumption + monitor circuits = 3600mW worst case

Battery packs are 10.4Ah
Voltage range: 8.4V (100%) to 7.45(20%)
Average voltage = 7.93V
Avg Current consumption for 3600mW = 3600 / 7.93 = 454mA.

We cut off at 20% charge, assume 10.4Ah is for 100% to 0% !

10.4 x 0.8 = 8.32Ah actual.

8320 / 454 = 18.32 hour's operation. 8.32 hours to recharge.

28 mA
K4
RS:7181774

D5
1N4148

D6
1N4148

R14
150R

R15
150R

C3
4700µF

684.3mA @ 5V / 3.42W

2A max
3ms max operate time

V+

0V

R13
150R

20mA

To front panel
switch red LED
RS 184-9137

J?
Conn_01x02_Male

J?
Conn_01x04_Male

Pin 1 – +5V LCD power
Pin 2 – 0V LCD power
Pin 3 – LCD Power trigger
Pin 4 – LCD DAC source trigger

LCDuino – 100mA constant draw
Peaks – 2A for relay switching

R?
10k

DAC source trigger

* Current limit?

CPC1708J
SSR?

Silentswitcher efficiency
85% worst-case.

J?
Conn_01x03_Male

To corresponding
Female XLR4 pins x2

J?
Conn_01x02_Male

To onboard linestage SilentSwitcher input

DAC

TP Opus
_____
Analogue: +8V x 11.6mA
Digital: +5V x 20.3mA

JLAudio I2SoverUSB
____
Digital: +5V x 100mA

DIR9001 SPDIF to I2S
____
Digital: +5V x 15mA

TP OTTO switcher (guessing as not specced)
_____
Digital: +5V x 15mA

Total on +8V rail – 11.6mA
Total on +5V rail – 150.3mA

Power to devices = (8 x 11.6) + (5 x 150.3) = 92.8 + 751.5 = 844.3mW

For 85% off:
Power consumption = 844.3 x 1.18 = 996.3mW

Current for battery at 7.45Vmin = 996.3 / 7.45 = 133.8mA
Current for wallwart at 5V = 996.3 / 5 = 199.3mA

LR Phono:

±12V (24V) x 50mA = 1200mW
Possibly add an On-LED from the other 3.3V supply?

Total 1200mW output to devices.

For 85% eff:
Power consumption = 1200 x (1.18) = 1416mW

Current for battery at 7.45Vmin = 1416 / 7.45 = 190mA
Current for wallwart at 5V = 1416 / 5 = 283.2mA

Pin 1: SSw +8v
Pin 2: SSw 0V
Pin 3: SSw –8v

J?
Conn_01x03_Male

J?
Conn_01x03_Male

a24 power ±8v
channel A

J?
Conn_01x03_Male

a24 power ±8v
channel B

Pin 1: SSw +6.5v
Pin 2: SSw 0v

J?
Conn_01x02_Male

J?
Conn_01x02_Male

VU buffer +6.5v

AMB Preamp:

a24 linestage ±8V (16V) x 50mA = 800mW
JLM Audio VU driver +6.5V x 8.4mA = 55mW

Total 855mW output to devices.

For 85% eff:
Power consumption = 855 x (1.18) = 1009mW

Current for battery at 7.45Vmin = 1009 / 7.45 = 135.4mA
Current for wallwart at 5V = 1009 / 5 = 201.8mA

Sheet: /
File: Preamp-DAC-Phono_power_layout.sch

Title:

Size: A2 | Date: | **Rev:**
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