Power Supply

J3
436500212

1 12VIN
2 GND

File: Power-Supply.kicad_sch

MCU

PD2
PD3
SCL
SDA

PB1
PB2

PB0
PD5
PD6
PD7

File: MCU-ATega328P.kicad_sch

Sensors

INT_IR
INT_HP
SCL
SDA

File: Sensors.kicad_sch

Fan

FAN1_PWM
FAN2_PWM

File: Fan.kicad_sch

Lighting

LED_EXT_DAT
PANEL_LED_PWM
INTERNAL_LED_PWM

File: Lighting.kicad_sch

M5 Mounting Holes

H1   H2   H3   H4

GND GND GND GND

USB TO SERIAL

J1
1054500101

FB1
C13 10nF
VBUS
GND

D1 Green
R3 4.7k
R22 4.7k
RX_LED
TX_LED
D5 Green

VBUS
C7 4.7uF
C15 100nF
GND

U2 FT231XQ

C5 100nF
GND
3V3OUT 10
3V3OUT

TXD 17 — TX_FT232
RXD 1 — RX_FT232
RTS 19
CTS 6
DTR 18
DSR 4
DCD 5
RI 2

C16 100nF
RESET

VCC 20
VCCIO
3V3OUT 12

USBDM 9
USBDP 8
RESET 11

CBUS0 15 — TX_LED
CBUS1 14 — RX_LED
CBUS2 7
CBUS3 16

R1 22
R2 22

GND 3
GND 13
GND 21
GND

C4 47pF
C3 47pF
GND

S1 10nF
C29
GND

VBUS A4
CC1 A5
CC2 B5
R16 5.1k
R26 5.1k

D− A7
D− B7
D+ A6
D+ B6

RX1− B10
RX1+ B11

TX1− A3
TX1+ A2

RX2− A10
RX2+ A11

TX2− B3
TX2+ B2

SBU1 A8
SBU2 B8

SHIELD

GND A1

Main MCU

+5V
MOSI 1 — MISO
MISO 4 — MOSI
SCK 3 — SCK
RESET 5 — RST
J2 AVR-ISP-6
GND 6
GND

+5V
C31 100nF
GND

C1 100nF
GND
AREF 20
ADC6 19
ADC7 22

+5V
C2 100nF
C6 1uF
GND

U1 ATmega328P-M

VCC 4
AVCC 18

PB0 12 — PB0
PB1 13 — PB1
PB2 14 — PB2
PB3 15 — MOSI
PB4 16 — MISO
PB5 17 — SCK

XTAL1/PB6 7
XTAL2/PB7 8

Y1 16MHz
GND

PC0 23 — A0
PC1 24 — A1
PC2 25
PC3 26
PC4 27 — SDA
PC5 28 — SCL
RESET/PC6 29

+5V
R4 10k
SW1 RESET
RESET

C12 100nF
GND

PD0 30 — TX_FT232
PD1 31 — RX_FT232
PD2 32 — PD2
PD3 1 — PD3
PD4 2 — PD4
PD5 9 — PD5
PD6 10 — PD6
PD7 11 — PD7

GND 3

+3.3V
R5 2.2k
R6 2.2k

J4 Conn_01x04
4
3 — SDA
2 — SCL
1 — +3.3V
I2C Expansion

GND

U3
VEML6030

Pin	Name
6	VDD
5	SCL
2	SDA
1	GND
3	INT
4	ADDR

R8 10R
C8 100nF
C9 10uF
R17 10k
R18 10k
R19 10k
+3.3V
GND
SCLD
SDA
INT_IR

U6
STHS34PF80TR

Pin	Name
6	VDD
9	VDD
3	CS
1	SCL/SPC
4	SDA/SDIO
10	INT
5	NC
7	GND
8	GND
2	RES

C14 100nF
R20 10k
R21 10k
+3.3V
GND
SCLD
SDA
INT_HP

+12V

F1
0451010.MRL

D2
B5819WS

1
2
J9
436500212

R23
100

FAN1_PWM

Q4
NCE3080KA

R7
100k

GND

+12V

F2
0451010.MRL

D6
B5819WS

1
2
J10
436500212

R24
100

FAN2_PWM

Q5
NCE3080KA

R25
100k

GND

PANEL LED (MONOCHROME, DIRECT DRIVE)

+12V

C18
47uF

GND

J6
436500212
1
2

PANEL_LED_PWM

R12
100

Q1A
FDS8949

R11
100k

GND

GND

INTERNAL LED (MONOCHROME, DIRECT DRIVE)

+12V

C17
47uF

GND

J7
436500212
1
2

INTERNAL_LED_PWM

R13
100

Q1B
FDS8949

R14
100k

GND

EXTERNAL LED STRIP (RGB, DIGITAL)

+5V

C23
100nF

GND

GND

GND

LED_EXT_DAT

U4
SN74LVC1G125DBV

GND VCC

+5V

C19
47uF

C20
100nF

GND

DIN_5V

J8
436500312
1
2
3

GND

+5V

C21
47uF

C22
100nF

GND

J11
436500212
1
2

GND

Secondary power,
Connect to the other
end of the LED strip

U5
TPS5450DDAR

C10 100uF
C11 4.7uF
C24 4.7uF
C25 10nF

TP1
TP2 TP3

VIN — 7
ENA — 5
GND — 6
PH — 8
BOOT — 1
Vsense — 4

C26 10nF
D3 B540C

L2 15uH

C27 330uF
C28 100nF

R9 10k
R10 3.16k

D4 Yellow **Power OK**
R15 1k

VSENSE

12VIND

GND

VBUS

D7 MBR0520LT
5V USB
5V EXT
D8 MBR0520LT

+5V
C30 1uF
GND

U7
AMS1117-3.3

+5V
TP4
C32 22uF
C33 100nF

VI — 3
GND — 1
VO — 2

TP5
+3.3v

C34 10uF
C35 100nF

D9 Green
R27 1k

GND