USB 2.0 type C

USB1
VBUS A4
VBUS B9
VBUS B4
VBUS A9
F1 MF-PSMF050X-2 → USB_VCC
VBUS → TP_VBUS
→ TP_USBVCC

DN1 A7
DN2 B7
DP1 A6
DP2 B6
SBU1 A8
SBU2 B8
CC1 A5
CC2 B5
R1 33
R4 33
UD−
UD+
D4 D5

GND B12
GND B1
GND A12
GND A1
SHLD 0
TP_USH
R3 5.1k
R10 5.1k
L1 BLM21PG221SN1D
GND GND GND GND

LED_BUILTIN on D13

TP_LL
L_CMD J14 R15 20k
D2 GREEN
GND

Power indicator LED

+5V
J13 R14 20k
TP_ONL
D3 RED
GND

RESET Button

+5V +5V
D1 CD1206-S01575
R2 10k
SW2
TS24CA
RES
GND

LM358 comparator circuit

VIN
R9 10k
+5V
+3V3
IRLML6402 Q1 → USB_VCC
TP_LCMD
+5V
U1A A LM358
TP_GATE
R11 10k
GND TP_CMP GND
D13_SCK
U1B B LM358
L_CMD
C1 100nF 16V
GND
Decoupling

HOLTEK – USB to UART

USB_VCC
R12 20k
UD+
UD−
C3 47pF 50V
C4 47pF 50V
C5 1uF 10V
IC1_TX
TP_RXL
D6 GREEN
Rx/Tx signal indicator LED
J5

IC1
D+ 1
D− 2
V330 3
GND 4
CTS 5
TX 6
UDET 7
LED 8
VDD 16
RI 15
DCD 14
RTS 13
DSR 12
RX 11
VDDIO 10
DTR 9

USB_VCC
C2 100nF 16V
+5V
D7
IC1_RX
TP_DTR
C9 100nF 16V
RES
C7 100nF 16V
GND

I2C 3V3 adapter

+5V +3V3
J1 SolderJumper_NC
R11 2.2k
Q2 2N7002PW,115
R12 2.2k
A5_SCL
Cut to disable A5 pullup & I2C 3V3 SCL

+5V +3V3
J9 SolderJumper_NC
R13 2.2k
Q3 2N7002PW,115
R14 2.2k
A4_SDA
Cut to disable A4 pullup & I2C 3V3 SDA

J12
4 SCL SDA
3 SDA
+3V3
2 3V3 GND
1 GND
0 SHIELD
0 SHIELD
SH_1x04_P1.0_H
GND

ATMEGA 328PB

+5V +5V
L2 10uH
C15 100nF 16V
C2 100nF 16V
GND

C8 22pF 50V
Y1 16MHz
C7 22pF 50V
TP_XT1
TP_XT2
GND

U3 ATMEGA328PB-MN

D8 12 PB0
D9 13 PB1
14 PB2
D10_SS 15 PB3
D11_MOSI 16 PB4
D12_MISO 17 PB5
D13_SCK 7 XTAL1/PB6
8 XTAL2/PB7

A0 23 PC0
A1 24 PC1
A2 25 PC2
26 PC3
A4_SDA 27 PC4
A5_SCL 28 PC5
29 RESET/PC6

RX0 30 PD0
TX1 31 PD1
D2 32 PD2
D3 1 PD3
D4 2 PD4
D5 9 PD5
D6 10 PD6
D7 11 PD7

AVCC VCC
AREF 20
PE0/ACO 3 PE0
PE[1] 19 PE1
ADC6/PE2 21 ADC6/PE2
ADC7/PE3 22 ADC7/PE3
AREF
C4 100nF 16V
GND

GND 33 21 5
GND

2.54mm pin header connectors

J3
A5_SCL A4_SDA AREF GND D13_SCK D12_MISO D11_MOSI D10_SS D8
10 9 8 7 6 5 4 3 2 1

J4
D7 D6 D5 D4 D3 TX1 RX0
8 7 6 5 4 3 2 1

J7
D12_MISO
D13_SCK
RES
+5V
D11_MOSI
GND

J10 J5 J6
ADC7/PE3 ADC6/PE2 PE1 PE0 INC RES +5V GND GND VIN
A0 A1 A2 A3 A4_SDA A5_SCL

5V voltage regulator

J8 DC-050-2.0-BB
TP_PWRIN
F2
D8 1N4007W
VIN
U5 AMS1117-5.0
VI 3 VO 2
GND 1
C11 47uF 25V
+5V
C12 47uF 25V
C13 100nF 16V
GND

3V3 voltage regulator

+5V
U2 AMS1117-3.3
VI 3 VO 2
GND 1
+3V3
C5 10uF 10V
C6 10uF 10V
GND

UART serial resistors

TP_TX
IC1_TX R13 1k RX0
IC1_RX R16 1k TX1
TP_RX

GroundStudio.ro

Revision history:
1.0.0
— initial release version