Control Unit

POWER

Capacitor bank (top)
VDD / VSS
C44 100nF, C6 100nF, C7 100nF, C8 100nF
GND
3V3

VREF+ / VSSA
C9 100nF, C10 1UF
GND
3V3

VDDA / VSSA
C11 10nF, C12 1uF
GND
FB1 600 @ 100mhz
3V3

Power section
Conn_01x02 J5
IN-24V
F1 Fuse
D10 D
C17 10uF/50V
GND
U5 TPSM265R1SILR
VIN, EN, SS, VOUT, SENSE+/FB, HYS, PGOOD, GND
R12 21K, R11 100K
R14 100K, R15 32.4K
GND
5V
R25, R20
D9 BZV55B5V1
R16 1K
C21 22uF
D3 LED
GND

U9 XL4015
VIN, VC, GND, SW, FB

U3 LM1117-3.3
VI, GND, VO
C43 10uF, C14 10uF
C18 1uF, C42 1uF
GND
5V / 3V3

U2 (microcontroller)
VBAT, PC13, PC14-OSC32_IN, PC15-OSC32_OUT, PF0-OSC_IN, PF0-OSC_OUT, PG10-NRST, NRST, PC0, PC1, PC2, PC3, PA0, PA1, PA2, VSS, VDD
ADC1_in1, ADC1_in2, ADC1_in3, ADC1_in4

Y1 32.768 kHz
C3 5pF, C4 5pF
GND
RTC_1S
OSCIN / OSCOUT

C1 24pF, C2 24pF
Y2 20Mhz
R2 47R
GND
OSCIN / OSCOUT

Top pins: VDD, VSS, PB9, BOOT, PB8-BOOT, PB7, PB6, PB5, PB4, PB3, PD2, PC12, PC11, PC10, PA15, PA14, PA13
SPI3_MOSI, SPI3_MISO, UART5_RX_SC, UART5_CLK, UART4_RX, SPI3_CLK, UART4_TX, SPI3_CS, I2C2_SDA, I2C2_SCL

Right pins: VDD 48, VSS 47, PA12 46, PA11 45, PA10 44, PA9 43, PA8 42, PC9 41, PC8 40, PC7 39, PC6 38, PB15 37, PB14 36, PB13 35, PB12 34, PB11 33
VDD, VSS, USB_DP, USB_DM, USART1_RX_STM, USART1_TX_STM, BUZZER, I2C3_SDA, I2C3_SCL, PC7, PC6, SPI2_MOSI, SPI2_MISO, SPI2_CLK, SPI2_NSS, USART3_RX

Bottom pins: PA3, PA4, PA5, PA6, PA7, PC5, PB0, PB1, PB2, VSSA, VREF+, VDDA, PB10, VSS, VDD
ADC1_in4, SPI1_NSS, SPI1_CLK, SPI1_MISO, SPI1_MOSI, PC4, LD1, LD2, LD3, VREF+, USART3_TX, INPUT_Foot_LOCK, Pump_Signal

Switches
SW1 EN, NRST
R3 100R, SW2 BOOT, BOOT
C5 100nF
R4 15K
3V3
GND

J1 TYPE-C-31-M-12
VBUS, CC1, DP1, DN1, SBU1, SBU2, DN2, DP2, CC2, SHIELD, GND
D1 D, 5V
R1 5k1, R5 5k1
C_D+, C_D-
GND

U1 USBLC6-2SC6
C_D+, USB_DP, C_D-, USB_DM
5V
GND

U8 W25Q128JVSIQ
SPI3_CS, SPI3_CLK, SPI3_MOSI, SPI3_MISO
CS, SCK, DI(IO0), DO(IO1), WP, HOLD, VCC, GND
3V3
C45 10uF
GND

Buzzer
3V3
C46 100nF
R26 1K
BZ1 Buzzer
BUZZER
Q3 BSS138
GND

DRIVER SOLENOID
U4: R10 100R, RESET, C16 0.1uF, J21, J20 SPI1_MISO, SPI1_MOSI
5V, C15 4.7uF
SPI1_MISO, SO, SI SPI1_MOSI, VDD, SCLK SPI1_CLK, RESET, CE SPI1_NSS, OUT7, OUT0, OUT6, OUT1, OUT5, OUT2, OUT4, OUT3, N.C, N.C, GND

U6: R13 100R, RESET1, C20 0.1uF, J22, J23 SPI2_MISO, SPI2_MOSI
5V, C19 4.7uF
SPI2_MISO, SO, SI SPI2_MOSI, VDD, SCLK SPI2_CLK, RESET, CE SPI2_NSS, OUT7, OUT0A, OUT6, OUT1A, OUT5, OUT2A, OUT4, OUT3A, N.C, GND

KELAP KELIP (opsional)
LD3, LD2, LD1
R6 1K, R20 1K, R21 1K
D2 LED, D4 LED, D5 LED
GND

TERMINAL BLOK
IN-24V
J8 J11: OUT7, OUT6, OUT5, OUT4, OUT3, OUT2, OUT1, OUT0
J10 J13: OUT7A, OUT6A, OUT5A, OUT4A, OUT3A, OUT2A, OUT1A, OUT0A
IN-24V

MOLEX Connector
J19 GYRO_1: I2C_SDA, I2C_SCL, 3V3, GND
J3 GYRO_2: I2C_SDA, I2C_SCL, 3V3, GND
J14 GYRO_3: I2C3_SDA, I2C3_SCL, 3V3, GND
J17(RJ45) Second_Controller (SC): UART5_TX_SC, UART5_RX_SC, 3V3, GND
J18 LIDAR: UART4_TX, UART4_RX, 3V3, GND

TP PIN (opsional)
J16 USART3_RX, J15 USART3_TX
J7 PC7, J9 PC6

Pump section
PUMPSIGNAL
IN-12V, IN-08V
IN-24V, PUMP-
R24 10K, R23 10K, R7 10K
Q1 MMBT2222A 1P
R8 4.7kΩ
R9 1K
C13 0.1uF
Q2 IRFB7537PPB
PUMP-
Pump_Signal

BLE_MOBILE
J24, J25
USART1_RX_STM, USART1_TX_STM
UART_RXD_STM, UART_TXD_STM
gnd
File: BLE_MOBILE.kicad_sch

Title block
H3, H2, H1, H4
Sheet: /
File: SensorBASE.kicad_sch
Title:
Size: A3   Date: 2024-05-22   Rev:
KiCad E.D.A. 8.0.4   Id: 1/2

1.7 V to 3.6 V Power Supply

BLE

GNDREF

C30 8pF C31 8pF C32 4.7uF GNDREF

3V3 VDD2 3V3 VDDRF

220nF C29 32.7680 KHz 12.5 pF eNX2012SA-32.768K-STD-MUB-1 Y3

GNDREF

C35 C37 C39 C41 3pF
100nF 3pF 100nF

4.7uF C22 C23 100nF 10uH L2 22nH GNDREF NC

GNDREF CX2016DB32000D0FLJCC

GNDREF GNDREF GNDREF

100nF C28 32.0000 MHz 8pF

Antenna Matching Network

100nF C26 GNDREF GNDREF

ANT1 2500AT44M0400E

GNDREF

VDDSD VLXSD VSS NC VFBSD VCAP XTAL0 XTAL1 PB14 PB15 VDD4 OSCIN

36 35 34 33 32 31 30 29 28 27 26 25

OSCOUT 24
VDDRF 23 VDDRF
RF1 22
VDD2 21 VDD2

100nF C24

RSTN VDD3 37
RSTN 38
VDD1 39
VDDA 40

J12 PROG COM-TO-STM1

3V3 UART_TX GND UART_RX UART_TXD_STM

3.4pF C33
C36 0.5pF
C34 1.2pF L3 3n C38 0.5pF L4 3n C40 3pF

GNDREF

100nF C25

PB11 41
PB10 42
PB9 43
PB8 44 PB8_LED
PB7 45 PB7_LED
PB6 46
PB5 47 PB5_LED
PB4 48 PB4_LED
GND 49

QFN48 U7

PA7 20
PA6 19
PA5 18
PA4 17
PA3 16
PA2 15
PA1 14
PA0 13

GNDREF GNDREF GNDREF

SW3 EN

RSTN

PB3 1
PB2 2
PB1 3
PB0 4
PA15 5
PA14 6
PA13 7
PA12 8
PA11 9
PA10 10
PA9 11
PA8 12

R17 100R

GNDREF

C27 100nF

GNDREF

PB3_LED UART_TX UART_RX BOOTA PA10A PB0A

UART_RXD_STM

SW4 BOOT_

BOOTA R19 100R 3V3

R18 100K

GNDREF

R22 1K R23 1K R24 1K
PB5_LED PB4_LED PB3_LED
D6 D7 D8
LED LED LED

GNDREF GNDREF GNDREF

L5 L
GND GND GNDREF