SD Card Reader
J6 114-00841-68

	DATA2	1
P1.12	CD/DAT3/SS	2
QSPID0 /P0.20	CMD/COPI	3
+3V3	VDD	4
GPIOCLK/P0.19	CLK/SCK	5
GND	VSS	6
QSPID1 /P0.21	DAT0/CIPO	7

U2 MP2322GQH-A.3   **J5 USB**

IN VBUS	VBUS
USB DP	USB DP
USB DM	USB DM
	USB ID
	GND

MKR1

CS	
A0	D15
A1	D16
A2	D17
A3	D18
A4	D19
A5	D20
A6	D23
D0	
D1	
D2	
D3	
D4	
D5	

MKR1

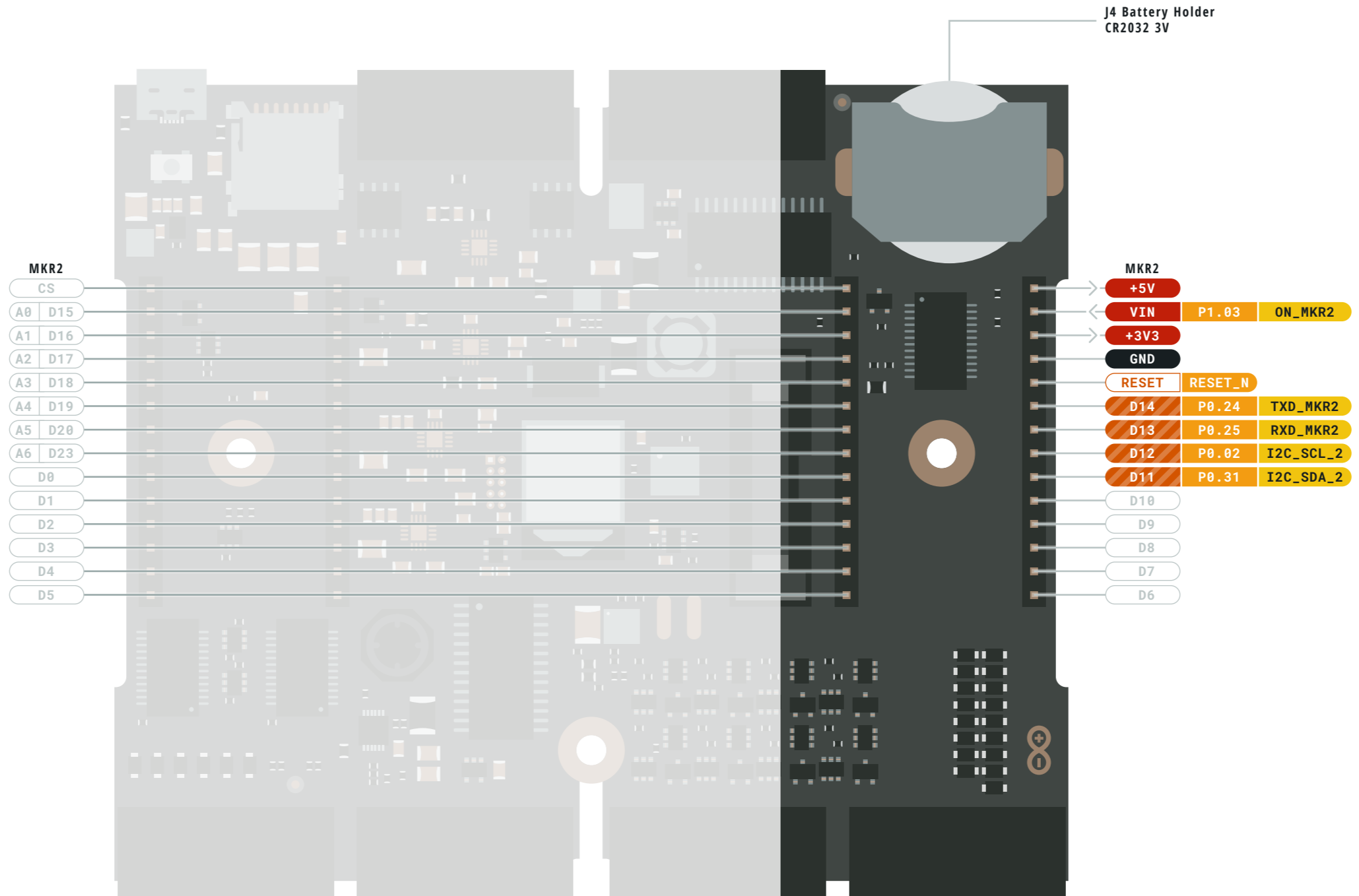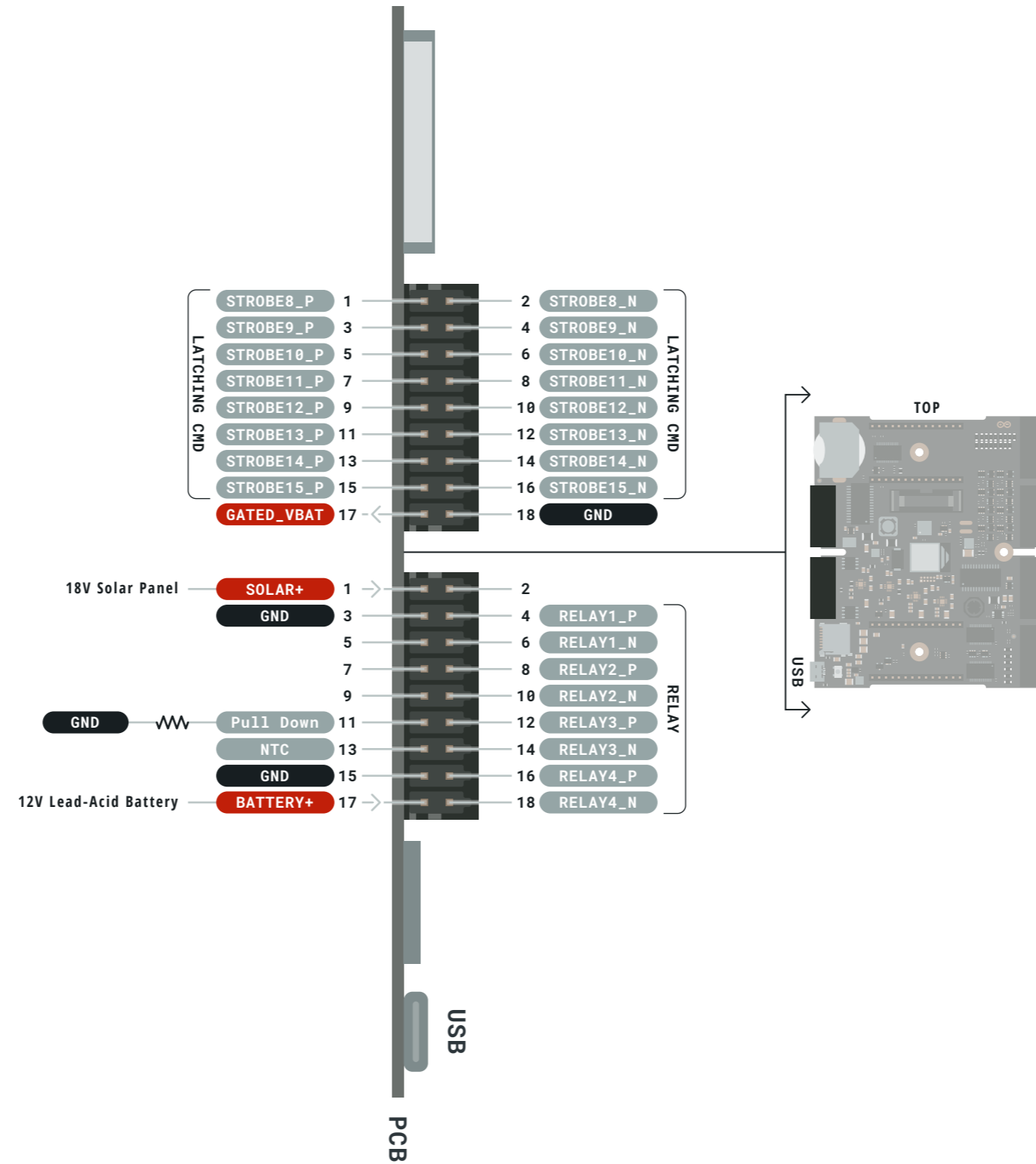|		
+5V		
VIN	P1.02	ON_MKR1
+3V3		
GND		
RESET	RESET_N	
D14	P1.10	TXD_MKR1
D13	P1.11	RXD_MKR1
D12	P0.11	I2C_SCL_1
D11	P1.09	I2C_SDA_1
D10		
D9		
D8		
D7		
D6		

Legend:

- Ground
- Power
- LED
- Internal Pin
- SWD Pin
- Digital Pin
- Analog Pin
- Other Pin
- Nina-B306 Port
- Default

⚠ **POWER LIMITS**
Depends on the Board used

J4 Battery Holder
CR2032 3V

MKR2

CS
A0	D15
A1	D16
A2	D17
A3	D18
A4	D19
A5	D20
A6	D23
D0
D1
D2
D3
D4
D5

MKR2

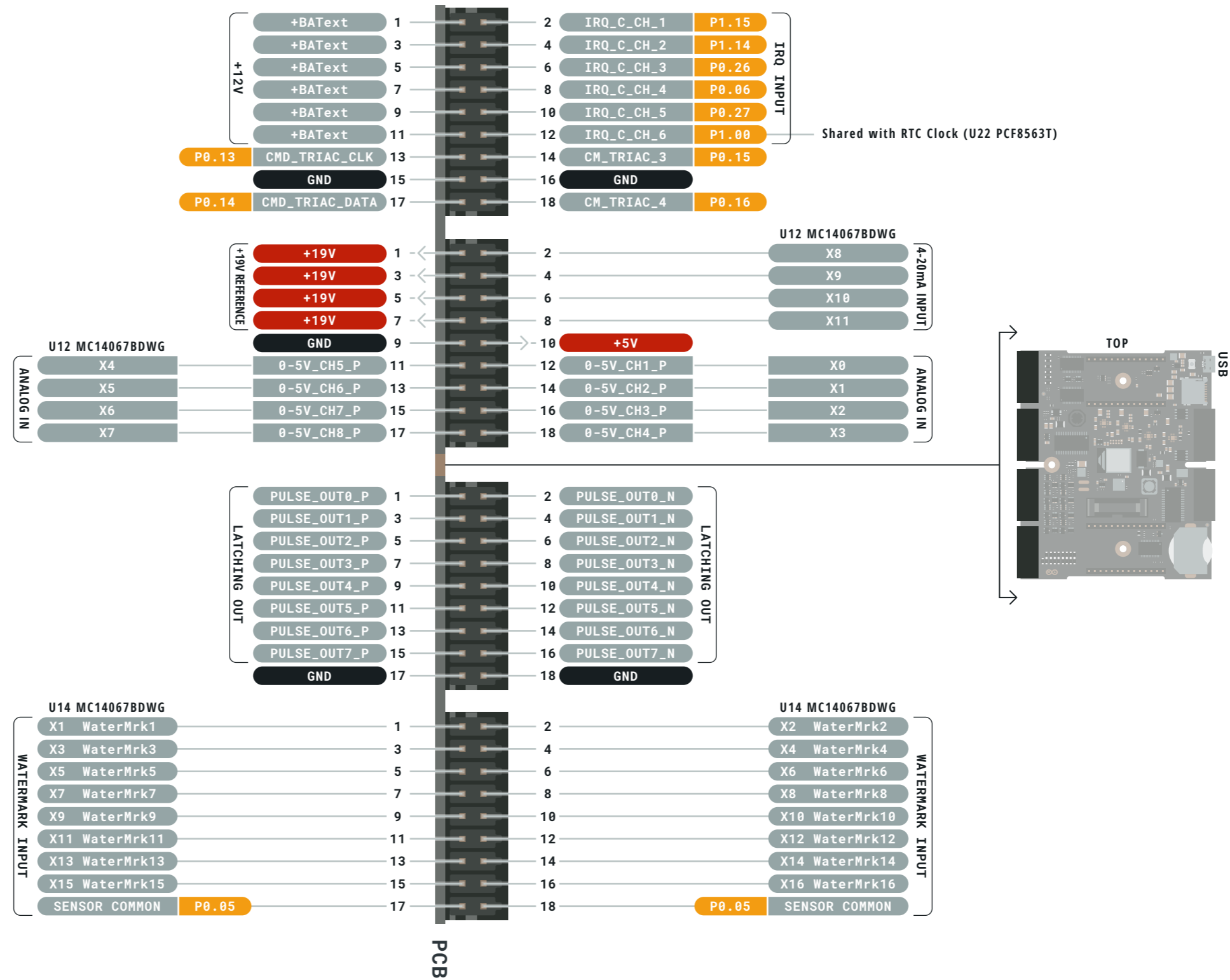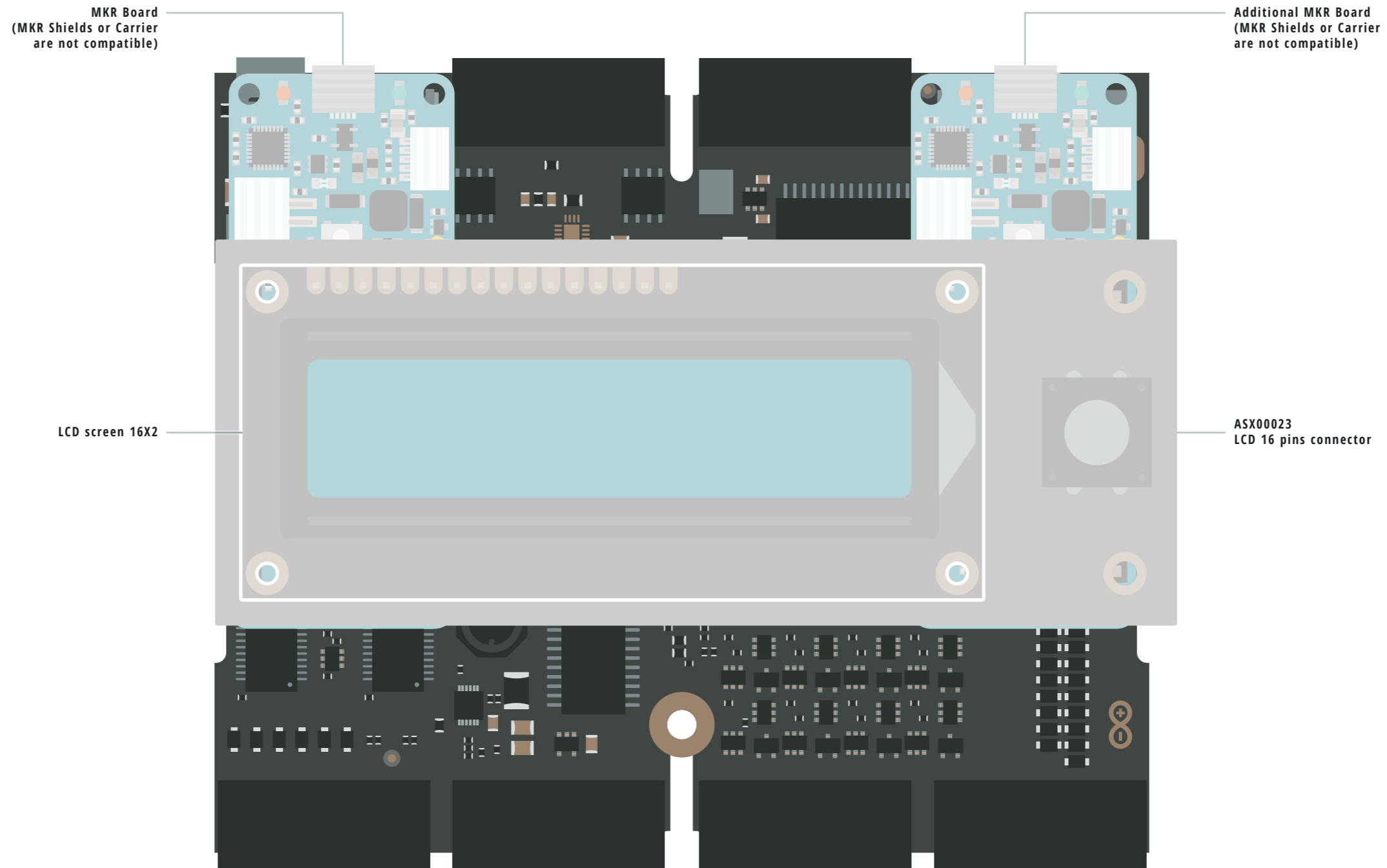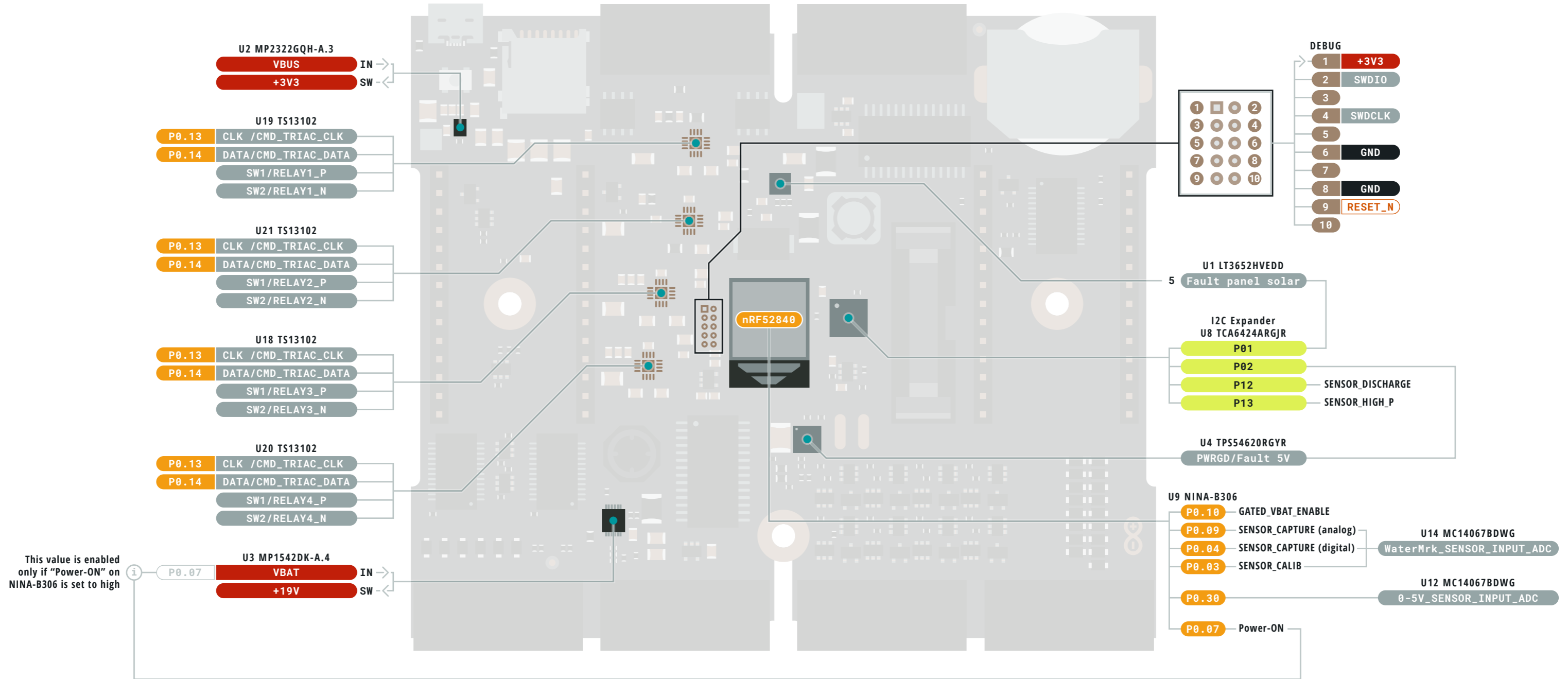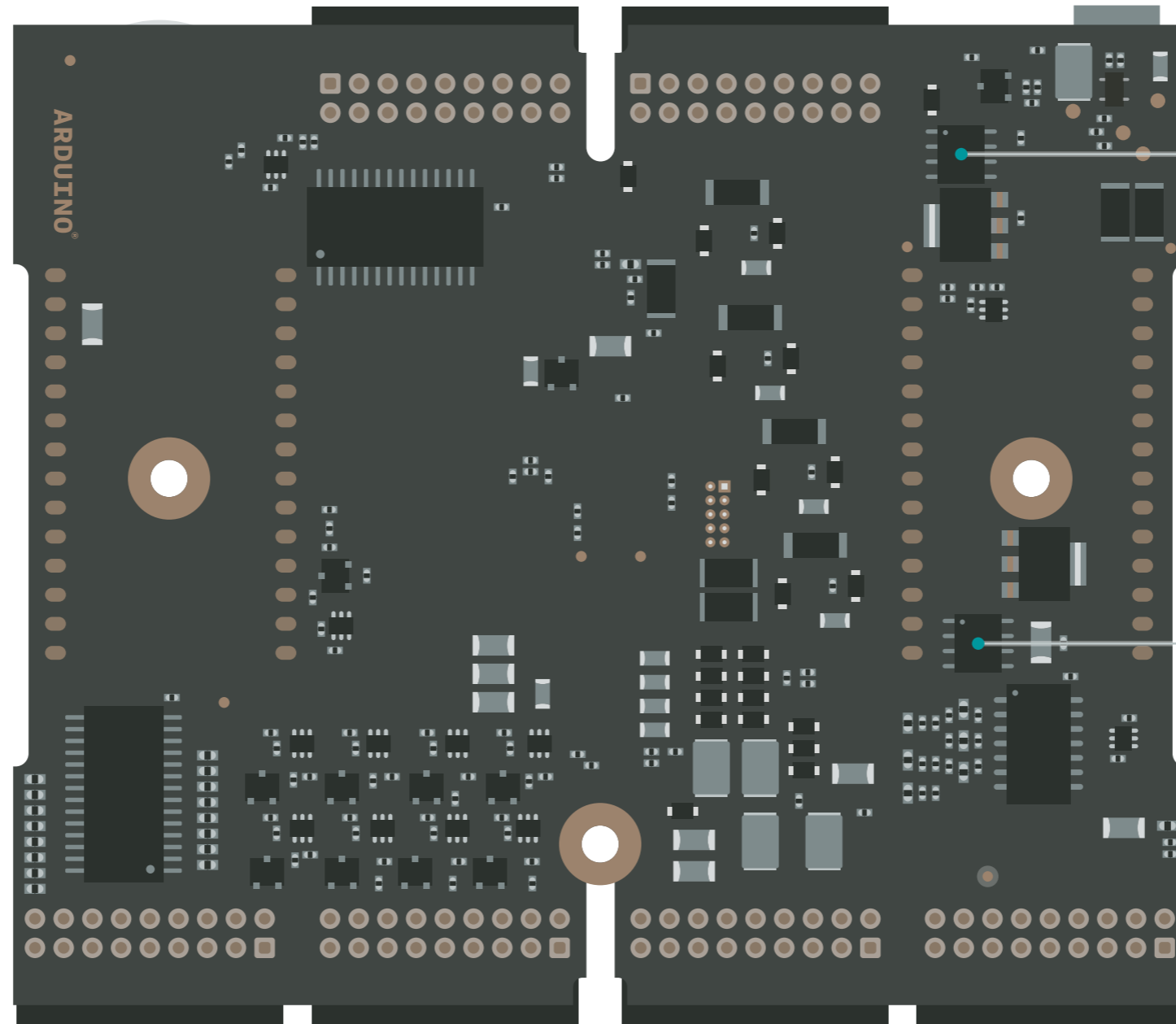| +5V		
VIN	P1.03	ON_MKR2
+3V3		
GND		
RESET	RESET_N	
D14	P0.24	TXD_MKR2
D13	P0.25	RXD_MKR2
D12	P0.02	I2C_SCL_2
D11	P0.31	I2C_SDA_2
D10		
D9		
D8		
D7		
D6		

Legend

- Ground
- Power
- LED
- Internal Pin
- SWD Pin
- Digital Pin
- Analog Pin
- Other Pin
- Nina-B306 Port
- Default

⚠ **POWER LIMITS**
Depends on the Board used

Last update: 2/12/2021

STROBE8_P	1		2	STROBE8_N	
STROBE9_P	3		4	STROBE9_N	
STROBE10_P	5		6	STROBE10_N	
STROBE11_P	7		8	STROBE11_N	
STROBE12_P	9		10	STROBE12_N	
STROBE13_P	11		12	STROBE13_N	
STROBE14_P	13		14	STROBE14_N	
STROBE15_P	15		16	STROBE15_N	
GATED_VBAT	17		18	GND	

LATCHING CMD — LATCHING CMD

TOP

18V Solar Panel	SOLAR+	1	2		
	GND	3	4	RELAY1_P	
		5	6	RELAY1_N	
		7	8	RELAY2_P	
		9	10	RELAY2_N	
GND	Pull Down	11	12	RELAY3_P	
	NTC	13	14	RELAY3_N	
	GND	15	16	RELAY4_P	
12V Lead-Acid Battery	BATTERY+	17	18	RELAY4_N	

RELAY

USB

PCB

USB

⬛ Ground	▨ Digital Pin
🟥 Power	▨ Analog Pin
🟩 LED	▢ Other Pin
⬜ Internal Pin	🟧 Nina-B306 Port
🟫 SWD Pin	🟨 Default

⚠ **POWER LIMITS**
Depends on the Board used

IRQ INPUT

+BAText	1	2	IRQ_C_CH_1	P1.15
+BAText	3	4	IRQ_C_CH_2	P1.14
+BAText	5	6	IRQ_C_CH_3	P0.26
+BAText	7	8	IRQ_C_CH_4	P0.06
+BAText	9	10	IRQ_C_CH_5	P0.27
+BAText	11	12	IRQ_C_CH_6	P1.00

+12V

Shared with RTC Clock (U22 PCF8563T)

P0.13	CMD_TRIAC_CLK	13	14	CM_TRIAC_3	P0.15
	GND	15	16	GND	
P0.14	CMD_TRIAC_DATA	17	18	CM_TRIAC_4	P0.16

U12 MC14067BDWG

4-20mA INPUT

+19V REFERENCE

	+19V	1	2	X8	
	+19V	3	4	X9	
	+19V	5	6	X10	
	+19V	7	8	X11	
	GND	9	10	+5V	

U12 MC14067BDWG

ANALOG IN

X4	0-5V_CH5_P	11	12	0-5V_CH1_P	X0
X5	0-5V_CH6_P	13	14	0-5V_CH2_P	X1
X6	0-5V_CH7_P	15	16	0-5V_CH3_P	X2
X7	0-5V_CH8_P	17	18	0-5V_CH4_P	X3

ANALOG IN

TOP

USB

LATCHING OUT

PULSE_OUT0_P	1	2	PULSE_OUT0_N	
PULSE_OUT1_P	3	4	PULSE_OUT1_N	
PULSE_OUT2_P	5	6	PULSE_OUT2_N	
PULSE_OUT3_P	7	8	PULSE_OUT3_N	
PULSE_OUT4_P	9	10	PULSE_OUT4_N	
PULSE_OUT5_P	11	12	PULSE_OUT5_N	
PULSE_OUT6_P	13	14	PULSE_OUT6_N	
PULSE_OUT7_P	15	16	PULSE_OUT7_N	
GND	17	18	GND	

LATCHING OUT

U14 MC14067BDWG

WATERMARK INPUT

X1 WaterMrk1	1	2	X2 WaterMrk2
X3 WaterMrk3	3	4	X4 WaterMrk4
X5 WaterMrk5	5	6	X6 WaterMrk6
X7 WaterMrk7	7	8	X8 WaterMrk8
X9 WaterMrk9	9	10	X10 WaterMrk10
X11 WaterMrk11	11	12	X12 WaterMrk12
X13 WaterMrk13	13	14	X14 WaterMrk14
X15 WaterMrk15	15	16	X16 WaterMrk16
SENSOR COMMON P0.05	17	18	P0.05 SENSOR COMMON

U14 MC14067BDWG

WATERMARK INPUT

PCB

Legend

■ Ground		▨ Digital Pin	
■ Power		▢ Analog Pin	
■ LED		▢ Other Pin	
■ Internal Pin		■ Nina-B306 Port	
■ SWD Pin		■ Default	

⚠ POWER LIMITS
Depends on the Board used

Last update: 2/12/2021

MKR Board
(MKR Shields or Carrier
are not compatible)

Additional MKR Board
(MKR Shields or Carrier
are not compatible)

LCD screen 16X2

ASX00023
LCD 16 pins connector

Ground

Power

LED

Internal Pin

SWD Pin

Digital Pin

Analog Pin

Other Pin

Nina-B306 Port

Default

POWER LIMITS
Depends on the Board used

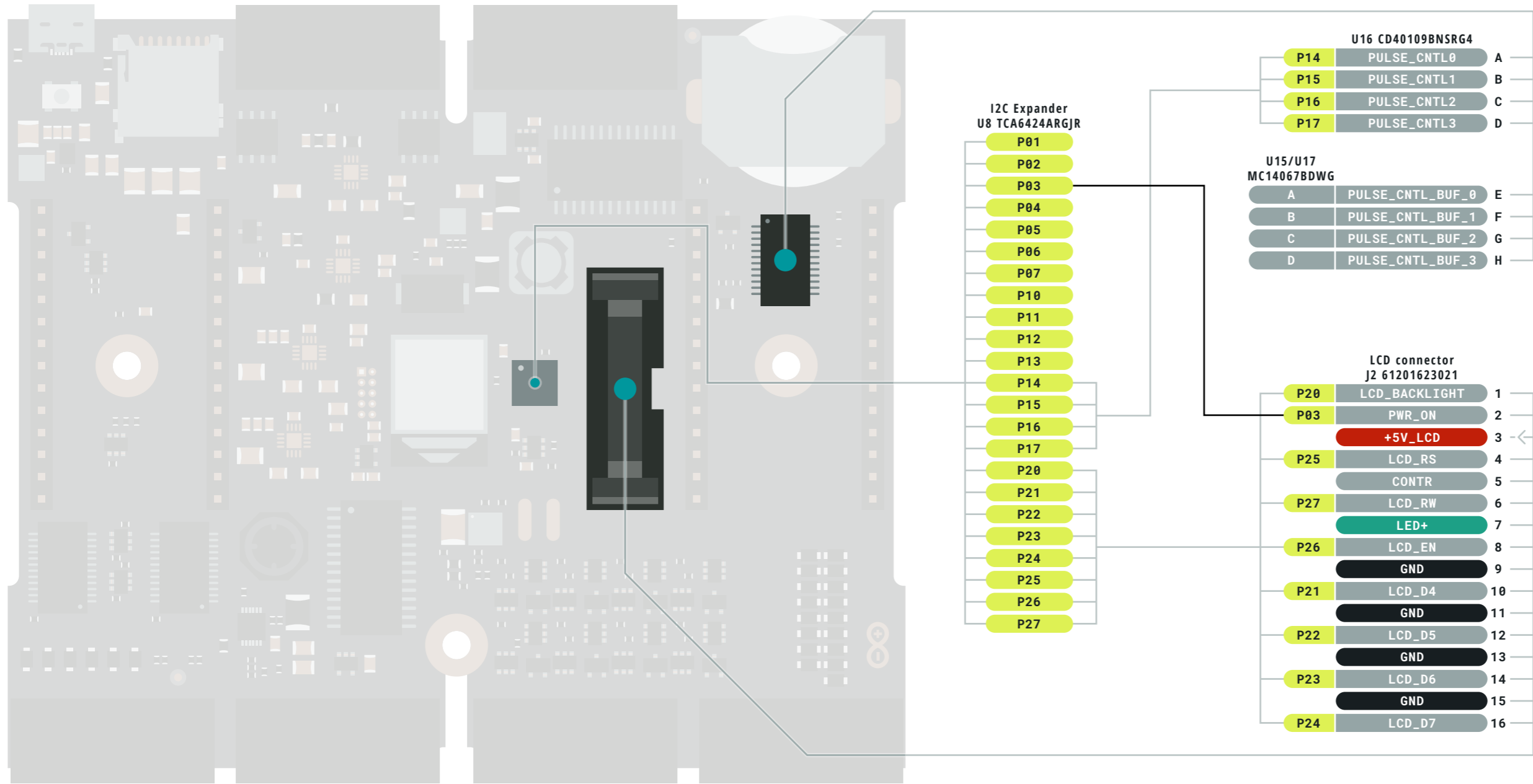**U2 MP2322GQH-A.3**

| VBUS | IN → |
| +3V3 | SW ← |

U19 TS13102

P0.13	CLK /CMD_TRIAC_CLK
P0.14	DATA/CMD_TRIAC_DATA
	SW1/RELAY1_P
	SW2/RELAY1_N

U21 TS13102

P0.13	CLK /CMD_TRIAC_CLK
P0.14	DATA/CMD_TRIAC_DATA
	SW1/RELAY2_P
	SW2/RELAY2_N

U18 TS13102

P0.13	CLK /CMD_TRIAC_CLK
P0.14	DATA/CMD_TRIAC_DATA
	SW1/RELAY3_P
	SW2/RELAY3_N

U20 TS13102

P0.13	CLK /CMD_TRIAC_CLK
P0.14	DATA/CMD_TRIAC_DATA
	SW1/RELAY4_P
	SW2/RELAY4_N

This value is enabled only if "Power-ON" on NINA-B306 is set to high

P0.07

U3 MP1542DK-A.4

| VBAT | IN → |
| +19V | SW ← |

DEBUG

1	+3V3
2	SWDIO
3	
4	SWDCLK
5	
6	GND
7	
8	GND
9	RESET_N
10	

nRF52840

U1 LT3652HVEDD

5 | Fault panel solar

**I2C Expander
U8 TCA6424ARGJR**

P01	
P02	
P12	SENSOR_DISCHARGE
P13	SENSOR_HIGH_P

U4 TPS54620RGYR

| PWRGD/Fault 5V |

U9 NINA-B306

P0.10	GATED_VBAT_ENABLE
P0.09	SENSOR_CAPTURE (analog)
P0.04	SENSOR_CAPTURE (digital)	**U14 MC14067BDWG**
P0.03	SENSOR_CALIB	WaterMrk_SENSOR_INPUT_ADC

U12 MC14067BDWG

| P0.30 | 0-5V_SENSOR_INPUT_ADC |

| P0.07 | Power-ON |

Legend

- ◼ Ground
- ◼ Power
- ◼ LED
- ◼ Internal Pin
- ◼ SWD Pin
- ▨ Digital Pin
- ▢ Analog Pin
- ▢ Other Pin
- ▨ Nina-B306 Port
- ◼ Default
- ▨ I2C Expander Port
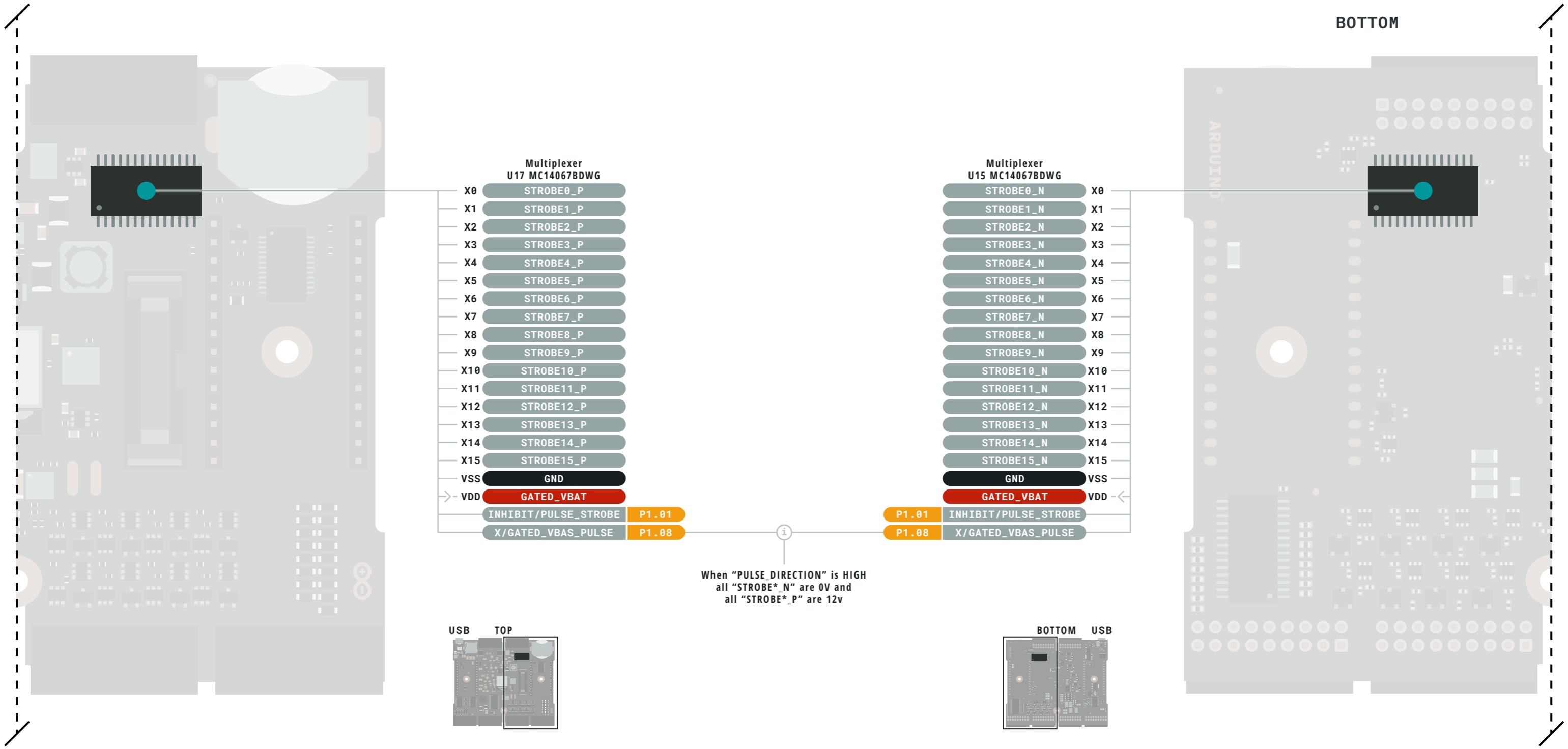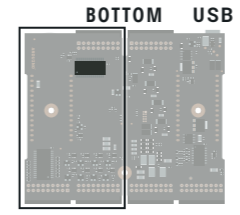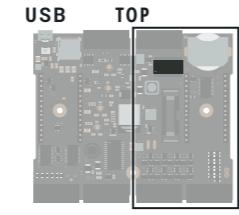
⚠ **POWER LIMITS**
Depends on the Board used

BOTTOM

Flash
U11 W25Q16JVZPIQ

1	CS	QSPIDCS/P0.17
2	DO	QSPID1 /P0.21
3	WP	QSPID2 /P0.22
4	GND	
5	DI	QSPID0 /P0.20
6	CLK	GPIOCLK/P0.19
7	HOLD	QSPID3 /P0.23
8	+3V3	
9	EP	GND

RTC Clock
U22 PCF8563T

I2C_SCL	P1.13
I2C_SDA	P1.09
RTC_INT	P1.00
+3V3	
GND	

POWER LIMITS
Depends on the Board used

■ Ground	◨ Digital Pin
■ Power	◿ Analog Pin
■ LED	▱ Other Pin
■ Internal Pin	■ Nina-B306 Port
■ SWD Pin	■ Default

BOTTOM

**Multiplexer
U14 MC14067BDWG**

I2C Expander U8 TCA6424ARGJR		Multiplexer U14
	P04	DEMUX_SEL0 — A
	P05	DEMUX_SEL1 — B
	P06	DEMUX_SEL2 — C
	P07	DEMUX_SEL3 — D
	P10	INHIBIT/WaterMkr_EN

**I2C Expander
U8 TCA6424ARGJR**

P01
P02
P03
P04
P05
P06
P07
P10
P11
P12
P13
P14
P15
P16
P17
P20
P21
P22
P23
P24
P25
P26
P27

**Multiplexer
U12 MC14067BDWG**

A	DEMUX_SEL0	P04
B	DEMUX_SEL1	P05
C	DEMUX_SEL2	P06
D	DEMUX_SEL3	P07
	INHIBIT/0-5V INPUT_EN	P11

BOTTOM USB

Legend

■	Ground	▨	Digital Pin	▨	I2C Expander Port
■	Power	▨	Analog Pin		
■	LED	□	Other Pin		
■	Internal Pin	■	Nina-B306 Port		
■	SWD Pin	■	Default		

⚠ **POWER LIMITS**
Depends on the Board used

ARDUINO

U16 CD40109BNSRG4

P14	PULSE_CNTL0	A
P15	PULSE_CNTL1	B
P16	PULSE_CNTL2	C
P17	PULSE_CNTL3	D

**U15/U17
MC14067BDWG**

A	PULSE_CNTL_BUF_0	E
B	PULSE_CNTL_BUF_1	F
C	PULSE_CNTL_BUF_2	G
D	PULSE_CNTL_BUF_3	H

**I2C Expander
U8 TCA6424ARGJR**

| P01 |
| P02 |
| P03 |
| P04 |
| P05 |
| P06 |
| P07 |
| P10 |
| P11 |
| P12 |
| P13 |
| P14 |
| P15 |
| P16 |
| P17 |
| P20 |
| P21 |
| P22 |
| P23 |
| P24 |
| P25 |
| P26 |
| P27 |

**LCD connector
J2 61201623021**

P20	LCD_BACKLIGHT	1
P03	PWR_ON	2
	+5V_LCD	3
P25	LCD_RS	4
	CONTR	5
P27	LCD_RW	6
	LED+	7
P26	LCD_EN	8
	GND	9
P21	LCD_D4	10
	GND	11
P22	LCD_D5	12
	GND	13
P23	LCD_D6	14
	GND	15
P24	LCD_D7	16

Last update: 2/12/2021

⬛ Ground	▨ Digital Pin	🟩 I2C Expander Port
🟥 Power	▨ Analog Pin	
🟩 LED	▢ Other Pin	
▨ Internal Pin	🟧 Nina-B306 Port	
🟫 SWD Pin	🟨 Default	

⚠ **POWER LIMITS**
Depends on the Board used

BOTTOM

**Multiplexer
U17 MC14067BDWG**

Pin	Signal
X0	STROBE0_P
X1	STROBE1_P
X2	STROBE2_P
X3	STROBE3_P
X4	STROBE4_P
X5	STROBE5_P
X6	STROBE6_P
X7	STROBE7_P
X8	STROBE8_P
X9	STROBE9_P
X10	STROBE10_P
X11	STROBE11_P
X12	STROBE12_P
X13	STROBE13_P
X14	STROBE14_P
X15	STROBE15_P
VSS	GND
VDD	GATED_VBAT

INHIBIT/PULSE_STROBE — P1.01

X/GATED_VBAS_PULSE — P1.08

**Multiplexer
U15 MC14067BDWG**

Signal	Pin
STROBE0_N	X0
STROBE1_N	X1
STROBE2_N	X2
STROBE3_N	X3
STROBE4_N	X4
STROBE5_N	X5
STROBE6_N	X6
STROBE7_N	X7
STROBE8_N	X8
STROBE9_N	X9
STROBE10_N	X10
STROBE11_N	X11
STROBE12_N	X12
STROBE13_N	X13
STROBE14_N	X14
STROBE15_N	X15
GND	VSS
GATED_VBAT	VDD

P1.01 — INHIBIT/PULSE_STROBE

P1.08 — X/GATED_VBAS_PULSE

When "PULSE_DIRECTION" is HIGH
all "STROBE*_N" are 0V and
all "STROBE*_P" are 12v

USB TOP

BOTTOM USB

Ground

Power

LED

Internal Pin

SWD Pin

Digital Pin

Analog Pin

Other Pin

Nina-B306 Port

Default

Last update: 2/12/2021