

S.B.C | SENSBLUE
ATLAS



**Explore more.
Wire Less.
Run Faster.**

SENSBLUE ATLAS was designed to automate decisions and move from concept to production in one platform

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2. Table of SENSBLUE ATLAS Reference ID Model Number

Paxxxxxxx	x	x1	-	-	
PAxxxxxxx	x	x2	-	-	

3. General Description

SENSBLUE ATLAS is a single board computer that connects sensors and assets, runs control logic and ships to production without platform changes.

Designed for industrial teams who need one dependable path from experiments to operations.

3.1 Key Features

Processor:

- Raspberry Pi CM4 (quad-core Cortex-A72)

I/O:

- 12 DO (Digital Outputs)
- 6 AI (Analog Inputs)
- 2 relays

Industrial Bus:

- RS-485
- CAN
- 2× Ethernet port (Independently managed)

Communication:

- Integrated LTE
- Wi-Fi
- BLE
- USB

Interface & Services:

- 1.47" IPS TFT display + joystick for local setup and feedback.
- Includes 1 GB of data (up to 500 MB LTE + 500 MB DB storage) via sensblue.cloud – no external SIM required.
- EU-hosted servers, TLS, weekly backups, VPN on request.
- Other versions under request.



4. Hardware Specifications

Parameter	Specification
Platform	Raspberry Pi Compute Module 4 (CM4)
Processor	Broadcom BCM2711 Quad-core Cortex-A72 (ARM v8)
CPU Frequency	1.5 GHz
RAM	4GB LPDDR4
Storage	32 GB eMMC
Selected Variant	CM4102032-4 GB RAM/ 32 GB eMMC / Wi-Fi / BLE
PCIe	1 x PCIe Gen 2.0 (1 lane)
HDMI	1 interfaces
USB	2 x USB 2.0

5. Power

Parameter	Specification
Input voltage	12-24 VDC $\pm$ 5%
Reverse polarity protection	Yes
Overcurrent protection	Resettable PTC fuse
Surge protection	TVS clamp for transient events
Isolation	No isolation
Typical consumption	< 15 W
Maximum consumption	25 W (all peripherals active)

6. Digital Inputs

Parameter	Specification
Channels	4
Input voltage	0-24 VDC
Logic LOW	Acording to EN 61131-2 Type I and III
Logic HIGH	Acording to EN 61131-2 Type I and III
Input type	Sourcing (PNP)
Input current	Acording to EN 61131-2 Type I and III
Isolation	Funcional Safety Gavanic isolation
Isolation Voltage	Functional isolation between channels on the field side +- 60V
Isolation Voltage DIN VDE V 0884-11	Maximum working isolation voltage 400V RMS
Isolation Voltage DIN VDE V 0884-11	Maximum surge isolation voltage 1 kV RMS
Special feature	Can be used as fast inputs until 100Hz



7. Digital Outputs (Relay)

Parameter	Specification
Channels	2
Type	Mechanical relay
Switching capacity	2 A@ 30 VDC
Isolation	1000 VAC galvanic isolation
Lifetime (nominal load)	≥ 100,000 cycles
Lifetime (no load)	≥ 100,000,000 cycles

8. Digital Outputs (Transistor/ SSR)

Parameter	Specification
Channels	8
Type	PNP (sourcing) SSR
Maximum current	300 mA per channel
Maximum voltage	24 VDC
Isolation	Funcional Safety Gavanic isolation
Isolation Voltage DIN VDE V 0884-17	Maximum transient isolation voltage 1 kV RMS

9. Analog Inputs

Parameter	Specification
Channels	4
Mode	Voltage or current configurable per channel
Voltage range	0-10 V
Current range	0/4-20 mA
ADC resolution	16 bits
ADC Sample Rate	32 samples/sec
Accuracy	≤ ±1.0% FSR
Input impedance (voltage)	> 100 kΩ
Input impedance (current)	100 Ω
Protection	TVS + analog filtering
Sampling rate	≥ 10 Hz per channel
Isolation	Funcional Safety Gavanic isolation
Isolation Voltage	Maximum transient isolation voltage 1 kV RMS



10. Analog Outputs

Parameter	Specification
Channels	2
Output type	Current
Range	0-20 mA
Optional range	4-20 mA (software configurable)
Resolution	12
Accuracy	$\leq \pm 1.0\%$ FSR
Isolation	Functional Safety Gavanic isolation
Isolation Voltage	Maximum transient isolation voltage 1 kV RMS

11. Communication Interfaces

11.1 Ethernet

Parameter	Specification
Ports	2 x RJ45
Port 1	10/100 Mbps
Port 2	0/100/1000 Mbps (native CM4)
Indicators	Link + Activity LEDs

11.2 RS-485

Parameter	Specification
Mode	Half-duplex
Control	TX_EN line
Protocol	Transparent/ any
Isolation	None

11.3 USB

Parameter	Specification
Ports	2
Type	USB-A
Standard	USB 2.0 Host
Maximum current	400 mA per port
Protection	Overcurrent protection



11.4 HDMI

Parameter	Specification
Ports	1
Connector	HDMI full-size
Maximum resolution	Depends on CM4 and OS

12. RF Communications

Technology	Specification
Wi-Fi	Integrated in CM4
BLE	Integrated in CM4
LTE	M.2 NGFF modem SIM7600G
SIM	External access

12.1 Antenna Connectors

Connector	Usage
RP-SMA	Wi-Fi / BLE
SMA	LTE

13. Local Peripherals

Peripheral	Description
Temperature sensor	Internal board temperature monitoring
Non-volatile memory	Persistent storage
Security IC	Microchip ATECC608A
RTC	Real Time Clock with battery backup

14. HDMI

14. 1 Display

Parameter	Specification
Type	IPS TFT LCD
Interface	SPI
Size	1.47"
Resolution	≥ 172 X 320
Backlight	LED
Mounting	Front mounted with transparent window



14. 2 Joystick

Parameter	Specification
Positions	5 (Up/ Down/ Left/ Right/ Enter)
Type	Mechanical tactile switch
Interface	GPIO Expander

15. Mechanical

Parameter	Specification
Mounting	DIN rail (EN 60715)
Enclosure	MAT0091092 (same as iSense / iCee)
Protection rating	IP20
Mounting method	DIN rail snap-fit

16. Environmental

Parameter	Specification
Operating temperature	-10 °C to +60 °C
Storage temperature	-20 °C to +80 °C
Humidity	5-95% non-condensing
Vibration	IEC 60068-2-6
Shock	IEC 60068-2-27

17. Certifications

Certification	Standard
CE	Yes
EMC	2014/30/EU
Radio	2014/53/EU (RED)
Ro HS	2011/65/EU

18. Connectivity

Parameter	Specification
Connector type	Pluggable System Terminal Block
Pitch	3.5 mm
Layout	Dual-row
Identification	Side panel silk screen
Fixation	Mechanical locking or spring clamp
Protection	Mechanical reverse insertion protection

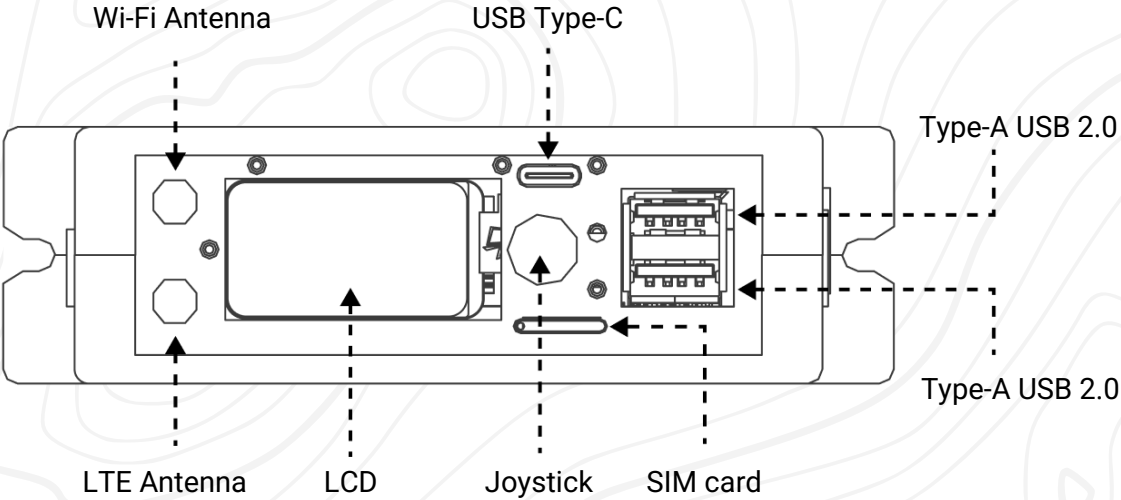


19. Expansion

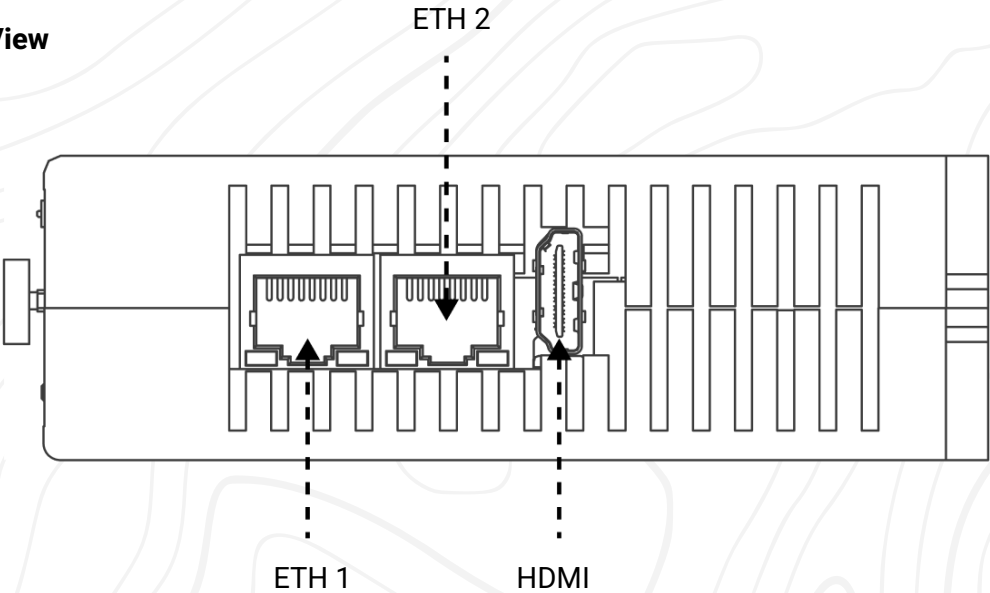
Feature	Description
Piggyback area	Reserved PCB area
Compatibility	Fully compatible with existing FW
Power rails available	Vin, 5 V, 3.3 V
Interfaces available	12C, SPI, UART, GPIO
External 1/0 lines	32 lines routed to external connectors
Storage expansion	M.2 NVMe SSD connector

20. Mechanical Drawings

Front View

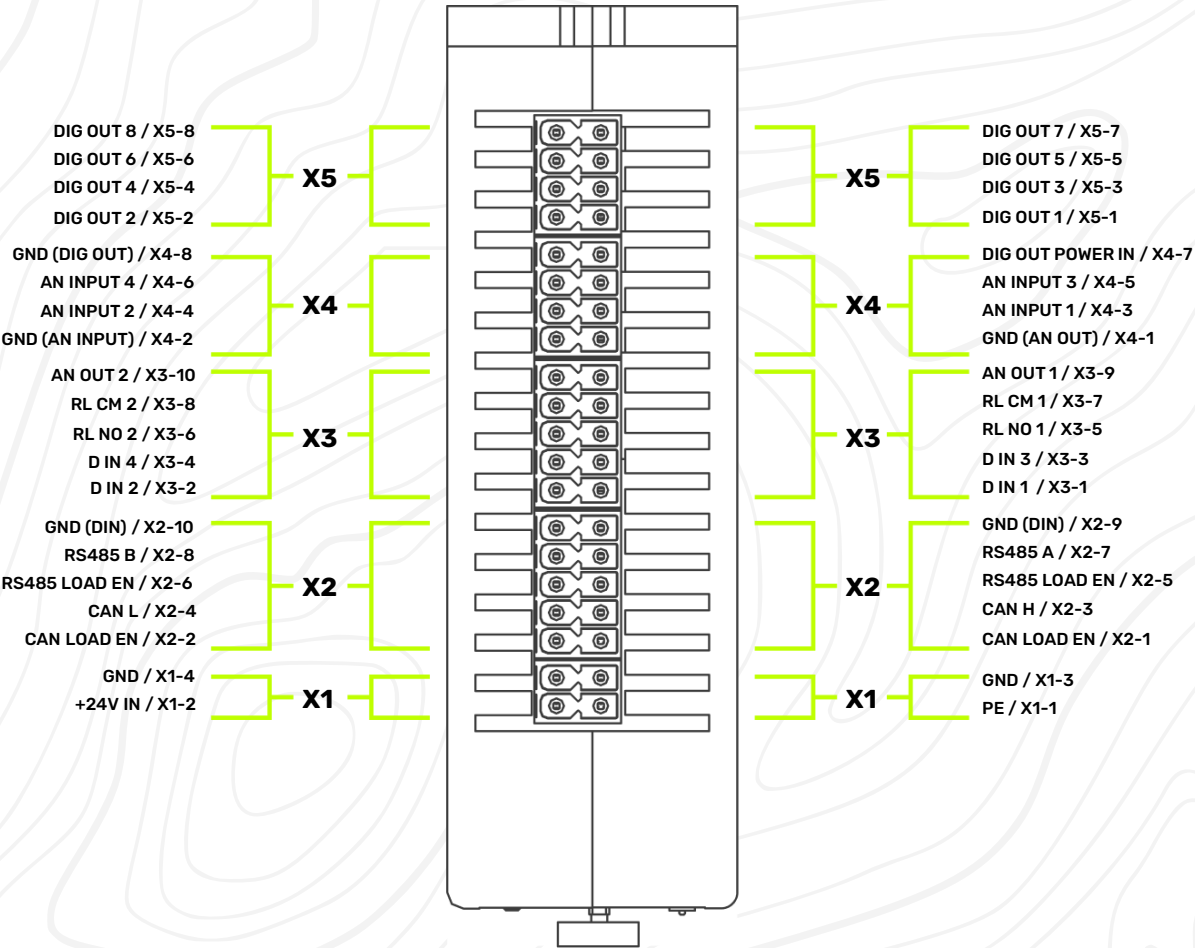


Bottom View





Top View





21. System Type

Raspian

Debian GNU/Linux 13 (trixie) Version 13.2 Linux atlas 6.12.47 +rpt-rpi-v8 #1 SMP PREEMPT
Debian 1 :6.12.47-1 +rpt1 (2025-09-16) aarch64 GNU/Linux.

22. Network Information

There is three ways to connect to the device. IP and state of the connection be checked on the LCD Network Interface.

22.1 Eth1 (eth0)

Client dynamic IP obtained by DHCP server.

22.2 Eth2 (eth1)

Static IP: 93.48.86.253

22.3 Access Point (wlan0)

IP: 192.168.30.1

23. Software Information

	Node-Red	Grafana	InfluxDB
Version	4.1.4	12.3.1	2.8.0
Port	1880	3000	8086
State	Clean	Clean	Clean
Authentication	None	User/Pass (admin/admin)	Not defined, configured on first time interface login.
GUI on	http://<device-ip>:1880	http://<device-ip>:3000	http://<device-ip>:8086

24. MQTT Broker

port: 1883
address: AP-> 192.168.30.1
Eth1: 93.48.86.253
user: < not needed>
login <not needed>



25. Relay Outputs Actor

25.1 App Interfacing

User App interface and functionalities exposed to the open part of the MQTT broker. Simplified interface to configure and obtain peripherals data. Connecting to the broker for this Area requires no credentials.

25.1.1 Set/reset digital output pin/pins state

Both relays **default** state is **open**.

Req-Topic: relayOutputs/config/in

```
{
  "id": "<TIMESTAMP>",
  "origin": "APP",
  "task": {
    "taskParams": {
      "D01": {
        "state": "open"
      },
      "D02": {
        "state": "open"
      }
    }
  }
}
```

Reply-Topic: relayOutputs/config/out

```
{
  "id": "<TIMESTAMP>",
  "origin": "APP",
  "task": {
    "taskResult": {
      "D01": {
        "success": true,
        "state": "open"
      },
      "D02": {
        "success": true,
        "state": "open"
      }
    }
  }
}
```



25.1.2 Get all relays state

Req-Topic: relayOutputs/runtime/in

```
{
  "id": "<TIMESTAMP>",
  "origin": "APP",
  "task": {
    "action": "READ"
  }
}
```

Reply-Topic: relayOutputs/runtime/out

```
{
  "id": "<TIMESTAMP>",
  "origin": "APP",
  "task": {
    "taskResult": {
      "D01": {
        "success": true,
        "state": "open"
      },
      "D02": {
        "success": true,
        "state": "close"
      }
    }
  }
}
```

25.2.3 Set all relays state

Req-Topic: relayOutputs/runtime/in

```
{
  "id": "<TIMESTAMP>",
  "origin": "APP",
  "task": {
    "action": "SET"
    "taskParams": {
      "D01": {
        "state": "open"
      },
      "D02": {
        "state": "close"
      }
    }
  }
}
```



Reply-Topic: relayOutputs/runtime/out

```
{
  "id": "<TIMESTAMP>",
  "origin": "APP",
  "task": {
    "taskResult": {
      "D01": {
        "success": true,
        "state": "open"
      },
      "D02": {
        "success": true
        "state": "close"
      }
    }
  }
}
```

26. RTC Actor

26.1 App Interfacing

User App interface and functionalities exposed to the open part of the MQTT broker. Simplified interface to configure and obtain peripherals data. Connecting to the broker for this Area requires no credentials.

26.1.1 Set timer/alarm interruption

mode: Timer, alarm or none

alarmSet: Date and time for alarm interruption (No effect if mode is timer or none)

timerSetSeconds: Period in seconds for timer interruption (No effect if mode is alarm or none)

Req-Topic: clock/config/in

```
{
  "id": "<TIMESTAMP>",
  "origin": "APP",
  "task": {
    "taskParams": {
      "CLOCK_SET_MODE": {
        "mode": "timer"
        "alarmSet": [timestamp epoch ms]
        "timerSetSeconds": <_INT_>
      }
    }
  }
}
```



Req-Topic: clock/config/out

```
{
  "id": "<TIMESTAMP>",
  "origin": "APP",
  "task": {
    "taskResult": {
      "success": true,
      "CLOCK_SET_MODE": {
        "mode": "timer"
      },
      "alarmSet": [timestamp epoch ms]
      "timerSetSeconds": <_INT_>
    }
  }
}
```

26.1.2 Toggle RTC sync logic (described below)

tcState: State of the synchronization logic of the RTC, this value is **non-persistent** so every-time a reboot happens the value return to default (by default the value is **ON**)

Req-Topic: clock/config/in

```
{
  "id": "<TIMESTAMP>",
  "origin": "APP",
  "task": {
    "action": "TOGGLE"
  }
}
```

Req-Topic: clock/config/out

```
{
  "id": "<TIMESTAMP>",
  "origin": "APP",
  "task": {
    "taskResult": {
      "success": true,
      "rtcState": "OFF"
    }
  }
}
```



26.1.3 Read clock configs

mode: Timer, alarm or none

alarmSet: Date and time for alarm interruption (No effect if mode is timer or none)

timerSetSeconds: Period in seconds for timer interruption (No effect if mode is alarm or none)

rtcState: Current state of the synchronization logic of the RTC

Req-Topic: clock/config/in

```
{
  "id": "<TIMESTAMP>",
  "origin": "APP",
  "task": {
    "action": "READ"
  }
}
```

Reply-Topic: clock/config/out

```
{
  "id": "<TIMESTAMP>",
  "origin": "APP",
  "task": {
    "taskResult": {
      "success": true,
      "CLOCK_CONFIGS": {
        "mode": "timer"
        "alarmSet": [timestamp epoch ms]
        "timerSetSeconds": <_INT_>
        "rtcState": "ON"
      }
    }
  }
}
```

26.1.4 Read clock

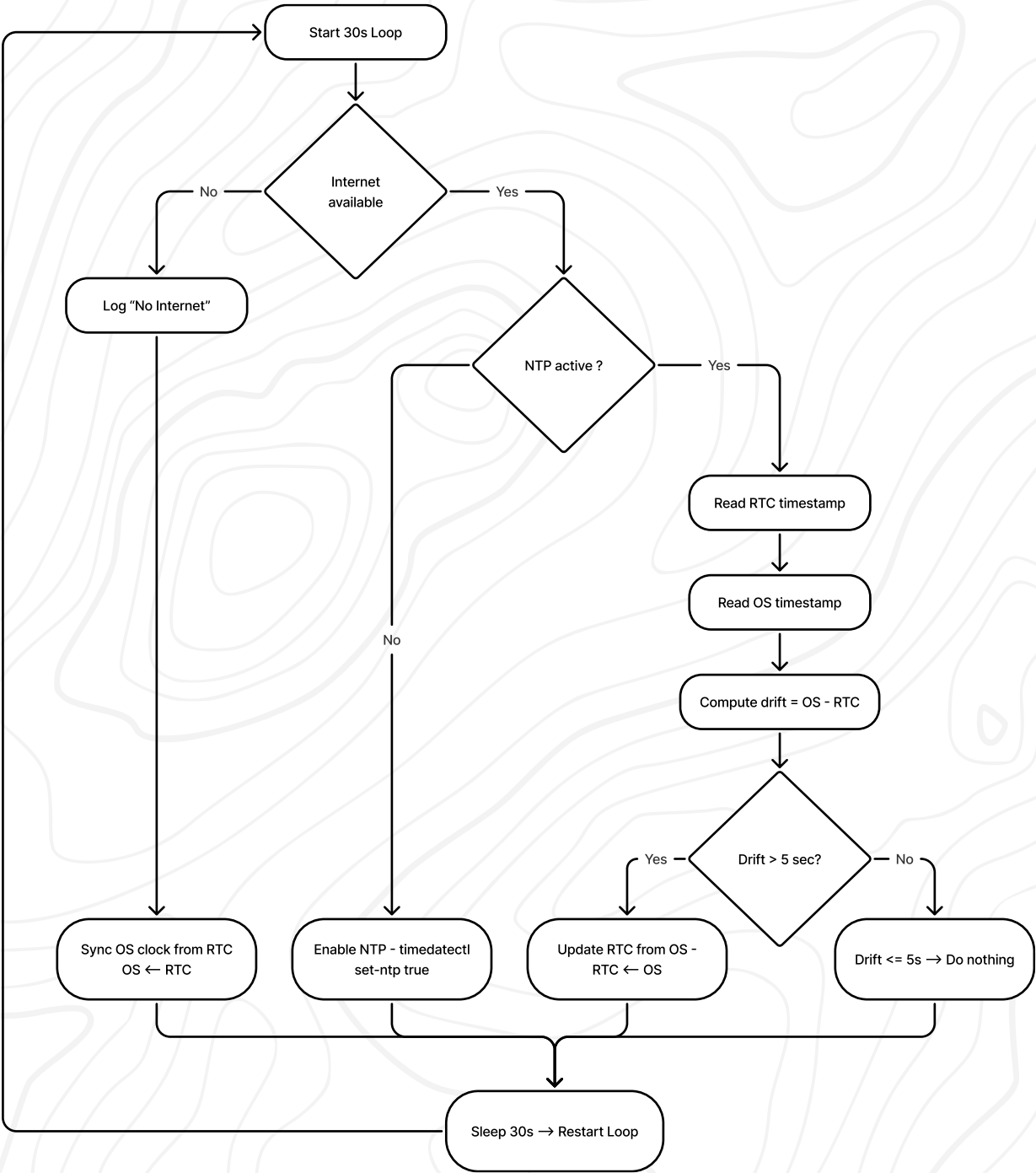
Req-Topic: clock/runtime/in

```
{
  "id": "<TIMESTAMP>",
  "origin": "APP",
  "task": {
    "taskResult": {
      "success": true,
      "timestamp": [timestamp epoch ms]
    }
  }
}
```



26.2 Synchronization loop flowchart (every 30 seconds)

RTC Actor - Overview





27. Core System Health Actor

27.1 App Interfacing

User App interface and functionalities exposed to the open part of the MQTT broker. This interface allows any external App to receive system-level metrics such as CPU load, RAM usage, disk usage, temperature, core frequency, system throttle status and uptime. No credentials are required to subscribe to this topic. The System Health Actor does not receive commands. It is fully autonomous and publishes its metrics every 1 second.

27.2 Runtime Data

Topic: `systemHealth/runtime/out`
Publish rate: 1 Hz (one message per second, clock-jump safe)

27.2.1 Metrics Provided

Key	Description	Unit
cpu_percent	Current CPU load	%
cpu_tempC	CPU temperature read from Linux thermal zones	°C
cpu0_freq	CPU Core 0 current frequency	Hz
cpu1_freq	CPU Core 1 current frequency	Hz
cpu2_freq	CPU Core 2 current frequency	Hz
cpu3_freq	CPU Core 3 current frequency	Hz
cpu0_throttle	System throttle status register	Hex
ram_percent	RAM usage	%
disk_percent	Disk usage for filesystem root /	%
uptime_sec	Time since last reboot	seconds

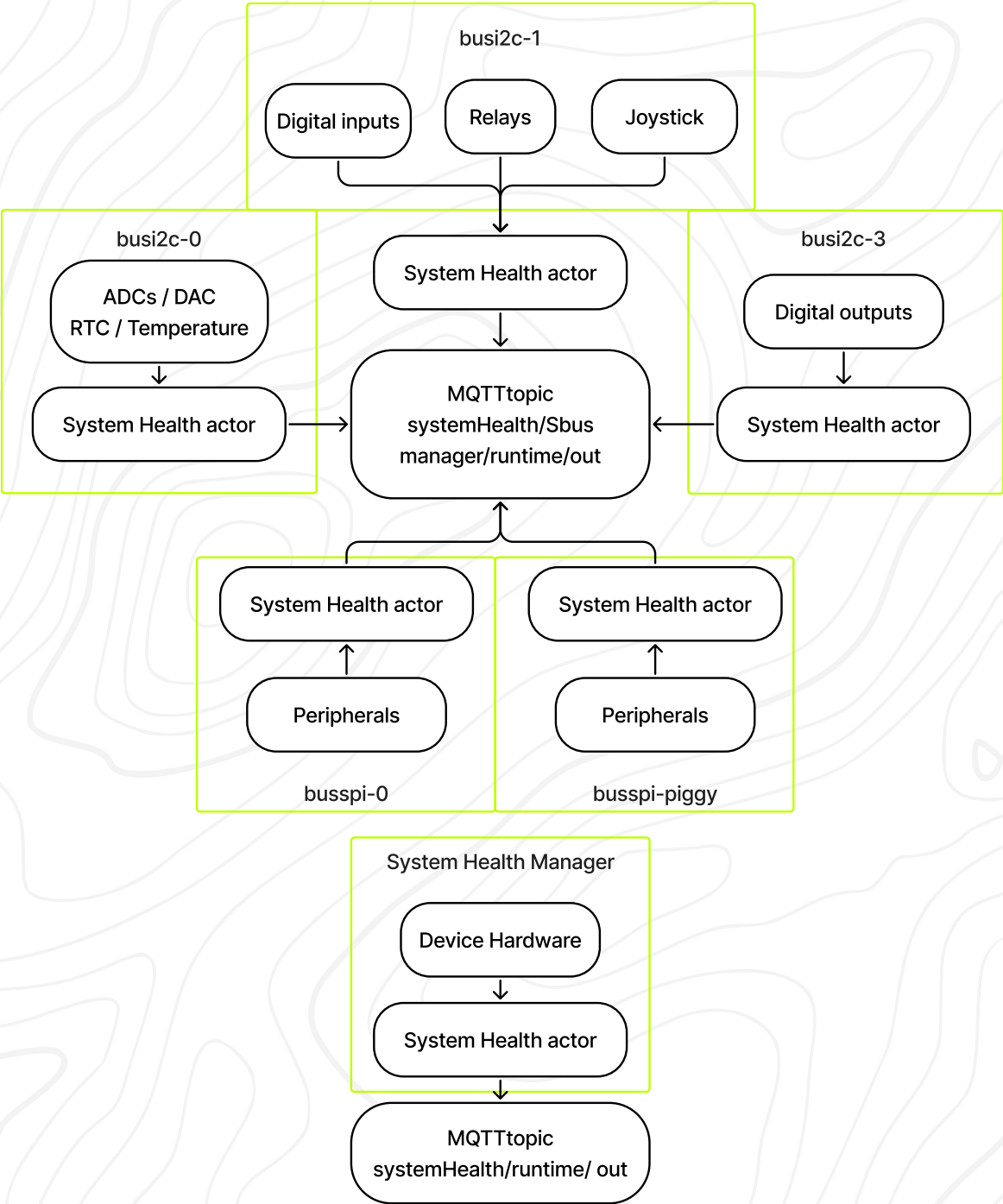
Example Payload (systemHealth/runtime/out)

```
{
  "id": 1736Q22028123,
  "origin": "system-health",
  "task": {
    "taskResult": {
      "cpu_percent": 7.1,
      "cpu_tempC": Q7.3,
      "cpu0_freq": 1500000000,
      "cpu1_freq": 1500000000,
      "cpu2_freq": 1500000000,
      "cpu3_freq": 1500000000,
      "cpu0_throttle": "0x0",
      "ram_percent": 32.9,
      "disk_percent": Q1.2,
      "uptime_sec": 5321
    }
  }
}
```



27.3 Peripherals health

In order get the peripherals health we had to implement a SystemHealth actor in each bus manager (busi2c0, busi2c-1, etc. ...).





27.3.1 Example

For **busi2c-0**:

Reply topic: **systemHealth/busi2c-0/runtime/out**

Payload:

```
{
  "id": 1770378753024,
  "origin": "system-health-busi2c-0",
  "task": {
    "taskResult": {
      "ADC": {
        "status": "ERROR",
        "description": "IRQ Retrying",
        "last_report": 1770378753006,
        "stats": {
          "AI1": {
            "samples": 563154,
            "retries": 760548,
            "discards": 253313
          },
          "AI2": {
            "samples": 563154,
            "retries": 760475,
            "discards": 253314
          },
          "AI3": {
            "samples": 563154,
            "retries": 760528,
            "discards": 253313
          },
          "AI4": {
            "samples": 563154,
            "retries": 760549,
            "discards": 253312
          }
        }
      },
      "DAC": {
        "status": "OK",
        "description": "Running....",
        "last_report": 1770378752576,
        "stats": {
          "AO1": {
            "samples": 240755,
            "retries": 0,
            "discards": 0
          },
          "AO2": {
            "samples": 240755,
            "retries": 0,
            "discards": 0
          }
        }
      }
    }
  }
}
```



```
"RTC": {
  "status": "OK",
  "description": "",
  "last_report": 1770378752094,
  "stats": {
    "samples": 248710,
    "retries": 0,
    "discards": 0
  }
},
"TEMP": {
  "status": "OK",
  "description": "",
  "last_report": 1770378752579,
  "stats": {
    "samples": 240754,
    "retries": 0,
    "discards": 0
  }
}
}
```

For busi2c-1:Reply topic: **systemHealth/busi2c-1/runtime/out**

Payload:

```
{
  "id": 1770382405107,
  "origin": "system-health-busi2c-1",
  "task": {
    "taskResult": {
      "JOYSTICK": {
        "status": "OK",
        "description": "Running...",
        "last_report": 1770382405050,
        "stats": {
          "read_all": {
            "samples": 410154,
            "retries": 0,
            "discards": 0
          },
          "read_raw": {
            "samples": 0,
            "retries": 0,
            "discards": 0
          },
          "buttons": {
            "JDOWN": {
              "reads": 410154,
              "last_state": "pressed"
            }
          }
        }
      }
    }
  }
}
```



```
"JRIGHT": {
  "reads": 410154,
  "last_state": "pressed"
},
"JUP": {
  "reads": 410154,
  "last_state": "pressed"
},
"JLEFT": {
  "reads": 410154,
  "last_state": "pressed"
},
"JCENTER": {
  "reads": 410154,
  "last_state": "pressed"
}
},
"RELAYS": {
  "status": "OK",
  "description": "Relay Output MQTT connected",
  "last_report": 1770298859099,
  "stats": {
    "read_all": {
      "samples": 0,
      "retries": 0,
      "discards": 0
    },
    "set": {
      "samples": 0,
      "retries": 0,
      "discards": 0
    },
    "set_many": {
      "samples": 0,
      "retries": 0,
      "discards": 0
    },
    "raw_read_all": {
      "samples": 0,
      "retries": 0,
      "discards": 0
    },
    "outputs": {
      "DO1": {
        "writes": 0,
```



28. TempSensor Actor

28.1 App Interfacing

User App interface and functionalities exposed to the open part of the MQTT broker. Simplified interface to configure and obtain peripherals data. Connecting to the broker for this Area requires no credentials.

16.1.1 Set temperature sensor configurations

Req-Topic: tempSensor/config/in

ALERT:

- activate: true(active)/false
- tempLow: alert temperature lower limit
- tempHigh: alert temperature upper limit

```
{
  "id": "<TIMESTAMP>",
  "origin": "APP",
  "task": {
    "taskParams": {
      "ALERT": {
        "activate": true,
        "tempLow": 0,
        "tempHigh": 80
      }
    }
  }
}
```

Reply-Topic: tempSensor/config/out

```
{
  "id": "<TIMESTAMP>",
  "origin": "APP",
  "task": {
    "taskResult": {
      "success": true,
      "ALERT": {
        "activate": true,
        "tempLow": 0,
        "tempHigh": 80
      }
    }
  }
}
```



28.1.2 Read temperature sensor configurations

Req-Topic: tempSensor/config/in

ALERT:

- activate: true(active)/false

LIMITS:

- tempLow: alert temperature lower limit
- tempHigh: alert temperature upper limit

```
{
  "id": "<TIMESTAMP>",
  "origin": "APP",
  "task": {
    "action": "READ"
  }
}
```

Reply-Topic: tempSensor/config/out

```
{
  "id": "<TIMESTAMP>",
  "origin": "APP",
  "task": {
    "taskResult": {
      "success": true,
      "ALERT": {
        "activate": true,
        "tempLow": 0,
        "tempHigh": 80
      }
    }
  }
}
```

16.1.3 Read temperature and alert status

- unit: Temperature unit of measure
- alert: true (triggered) or false

Req-Topic: tempSensor/runtime/in

```
{
  "id": "<TIMESTAMP>",
  "origin": "APP",
  "task": {
    "action": "READ"
  }
}
```



Reply-Topic: tempSensor/runtime/out

```
{
  "id": "<TIMESTAMP>",
  "origin": "APP",
  "task": {
    "taskResult": {
      "success": true,
      "data": {
        "temperature": <_FLOAT_>,
        "unit": "C",
        "alert": true
      }
    }
  }
}
```

29. TFT Actor

29.1 App Interfacing

User App interface and functionalities exposed to the open part of the MQTT broker. Simplified interface to control and interact with the TFT display, or frontal panel LCD screen. Connecting to the broker for this Area requires no credentials.

29.2 TFT Display Actor

The TFT Actor is responsible for:

- Rendering static and informative screens on the TFT display
- Reacting to joystick input (LEFT/ RIGHT/ CENTER/ UP/ DOWN)
- Managing screen navigation and user confirmation flows
- Providing feedback to the application via MQTT

29.2.1 Screen Carousel Concept

The TFT actor maintains an **ordered list of screens** (carousel).

- Screens are navigated using the joystick:
 - LEFT →. Previous screen
 - RIGHT →. Next screen
- The carousel wraps around:
 - LEFT on first screen →. last screen
 - RIGHT on last screen →. first screen

29.2.2 Screen Types

The TFT actor supports the following screen types:

a.) Image Screen

- Displays a static JPEG image
- Default screen shown at boot
- No user interaction required

b.) Network Information Screen

- Display a interface with information about the networks of the device
- Updated on load
- No user interaction required



29.3 Joystick Navigation Logic

Carousel Navigation:

Joystick Input	Action
LEFT	Previous screen
RIGHT	Next screen
DOWN	Refresh current screen

29.4 Boot Behavior

- At system boot:
1. TFT actor initializes the display
 2. Last available carousel is loaded
 3. First screen is rendered
 4. Joystick subscriptions are activated
 5. Actor waits for runtime commands

29.5 Design Notes & Constraints

- TFT actor does not expose joystick state
- Joystick actor remains independent
- TFT actor internally consumes joystick events
- Carousel state is local to the TFT actor
- Screen rendering is synchronous; input handling is asynchronous
- Confirmation screens always require explicit CENTER press

29.6.3 User interaction through MQTT

Enabling interaction with the carousel using the topic tft/runtime/in . Actions available will be public to the user.

Runtime commands

Go to screen

Req-Topic: tft/runtime/in

```
{
  "id": "<TIMESTAMP>",
  "origin": "APP",
  "task": {
    "action": "SET_CAROUSEL",
    "params": {
      "index": 2
    }
  }
}
```



Reply-Topic: tft/runtime/out

```
{
  "id": "<TIMESTAMP>",
  "origin": "tft",
  "task": {
    "taskResult": {
      "success": true,
      "index": 2
    }
  }
}
```

Set TFT Screen Carousel

Req-Topic: tft/runtime/in

```
{
  "id": "TIMESTAMP",
  "origin": "APP",
  "task": {
    "action": "SET_CAROUSEL",
    "params": {
      "startIndex": 0,
      "screens": [
        {
          "type": "image",
          "image": "default.jpg"
        },
        {
          "type": "image",
          "image": "status.jpg"
        },
        {
          "type": "confirm",
          "question": "Do you want to continue?"
        }
      ]
    }
  }
}
```

Parameters:

Field	Description
screens	Ordered list of screens
Start Index	Initial active screen (optional, default = 0)



Reply

Reply-Topic: **tft/runtime/out**

```
{
  "id": "TIMESTAMP",
  "origin": "tft",
  "task": {
    "taskResult": {
      "success": true,
      "activeIndex": 0,
      "totalScreens": 3
    }
  }
}
```

30. AnalogInputs Actor

30.1 App Interfacing

User App interface and functionalities exposed to the open part of the MQTT broker. Simplified interface to configure and obtain peripherals data. Connecting to the broker for this Area requires no credentials.

30.1.1 Configurations

Topic: analogInputs/config/in - Set ADC channels configurations

mode

- continuous
- single

type

- voltage
- current

```
{
  "id": "<TIMESTAMP>",
  "origin": "APP",
  "task": {
    "taskParams": {
      "AI1": {
        "mode": "single",
        "type": "voltage"
      },
      "AI2": {
        "mode": "single",
        "type": "voltage"
      },
      "AI3": {
        "mode": "single",
        "type": "current"
      },
      "AI4": {
        "mode": "single",
        "type": "current"
      }
    }
  }
}
```



Reply-Topic: analogInputs/config/out

```
{
  "id": "<TIMESTAMP>",
  "origin": "APP",
  "task": {
    "taskResult": {
      "AI1": {
        "success": true
      },
      "AI2": {
        "success": true
      },
      "AI3": {
        "success": true
      },
      "AI4": {
        "success": true
      }
    }
  }
}
```

30.1.2 Runtime Data

Topic: analogInputs/runtime/in.

action:

- READ
- PAUSE (only applicable in continuous mode)
- RESUME (only applicable in continuous mode)

```
{
  "id": "<TIMESTAMP>",
  "origin": "APP",
  "task": {
    "taskParams": {
      "AI1": {
        "action": "READ"
      },
      "AI2": {
        "action": "READ"
      },
      "AI3": {
        "action": "READ"
      },
      "AI4": {
        "action": "READ"
      }
    }
  }
}
```



Reply-Topic: analogInputs/runtime/out

```
{
  "id": "<TIMESTAMP>",
  "origin": "APP",
  "task": {
    "taskResult": {
      "AI1": {
        "success": true,
        "value": <_FLOAT_>
      },
      "AI2": {
        "success": true,
        "value": <_FLOAT_>
      },
      "AI3": {
        "success": true,
        "value": <_FLOAT_>
      },
      "AI4": {
        "success": true,
        "value": <_FLOAT_>
      }
    }
  }
}
```

31. Analog Outputs Actor

31.1 App Interfacing

User App interface and functionalities exposed to the open part of the MQTT broker. Simplified interface to configure and obtain peripherals data. Connecting to the broker for this Area requires no credentials.

31.1.1 Set analog outputs signal

Req-Topic: analogOutputs/config/in

Output: current within 0-20 mA

mode: on/off

```
{
  "id": "<TIMESTAMP>",
  "origin": "APP",
  "task": {
    "taskParams": {
      "mode": "on",
      "AO1": {
        "current": <_FLOAT_>
      },
      "AO2": {
        "current": <_FLOAT_>
      }
    }
  }
}
```



Reply-Topic: analogOutputs/config/out

```
{
  "id": "<TIMESTAMP>",
  "origin": "APP",
  "task": {
    "taskResult": {
      "mode": "on",
      "AO1": {
        "success": true,
        "current": <_FLOAT_>
      },
      "AO2": {
        "success": true,
        "current": <_FLOAT_>
      }
    }
  }
}
```

31.1.2 Set analog outputs

Req-Topic: analogOutputs/runtime/in

current: current within 0-20 mA

```
{
  "id": "<TIMESTAMP>",
  "origin": "APP",
  "task": {
    "taskParams": {
      "AO1": {
        "action": "SET",
        "current": <_FLOAT_>
      },
      "AO2": {
        "action": "SET",
        "current": <_FLOAT_>
      }
    }
  }
}
```



Reply-Topic: analogOutputs/runtime/out

```
{
  "id": "<TIMESTAMP>",
  "origin": "APP",
  "task": {
    "taskResult": {
      "AO1": {
        "success": true,
        "current": <_FLOAT_>
      },
      "AO2": {
        "success": true,
        "current": <_FLOAT_>
      }
    }
  }
}
```

31.1.3 Read analog outputs settings

Req-Topic: analogOutputs/runtime/in

current: current within 0-20 mA

```
{
  "id": "<TIMESTAMP>",
  "origin": "APP",
  "task": {
    "taskParams": {
      "AO1": {
        "action": "READ"
      },
      "AO2": {
        "action": "READ"
      }
    }
  }
}
```

Reply-Topic: analogOutputs/runtime/out

```
{
  "id": "<TIMESTAMP>",
  "origin": "APP",
  "task": {
    "taskResult": {
      "AO1": {
        "success": true,
        "current": <_FLOAT_>
      },
      "AO2": {
        "success": true,
        "current": <_FLOAT_>
      }
    }
  }
}
```



32. Digital Inputs Actor

32.1 App Interfacing

User App interface and functionalities exposed to the open part of the MQTT broker. Simplified interface to configure and obtain peripherals data. Connecting to the broker for this Area requires no credentials.

32.1.1 Set digital input pin/pins speed fast/slow

The **fast** speed setting supports edge detection speed up to 100 Hz and the **slow** speed settings supports up to 10 Hz.

Fast Mode generates a message on every I/O state change, which may result in a **high message payload** during operation. Fast Mode should therefore only be enabled when **strictly required**.

Req-Topic: digitalInputs/config/in

```
{
  "id": "<TIMESTAMP>",
  "origin": "APP",
  "task": {
    "taskParams": {
      "DI1": {
        "speed": "fast"
      },
      "DI2": {
        "speed": "slow"
      },
      "DI3": {
        "speed": "fast"
      },
      "DI4": {
        "speed": "fast"
      }
    }
  }
}
```



Reply-Topic: digitalInputs/config/out

```
{
  "id": "<TIMESTAMP>",
  "origin": "APP",
  "task": {
    "taskResult": {
      "DI1": {
        "success": true,
        "speed": "fast"
      },
      "DI2": {
        "success": true,
        "speed": "slow"
      },
      "DI3": {
        "success": true,
        "speed": "fast"
      },
      "DI4": {
        "success": true,
        "speed": "fast"
      }
    }
  }
}
```

32.2.2 Get all digital input pins state

Req-Topic: digitalInputs/runtime/in

```
{
  "id": "<TIMESTAMP>",
  "origin": "APP",
  "task": {
    "action": "READ"
  }
}
```



Reply-Topic: digitalInputs/runtime/out

state: high/low

```
{
  "id": "<TIMESTAMP>",
  "origin": "APP",
  "task": {
    "taskResult": {
      "DI1": {
        "success": true,
        "state": "high"
      },
      "DI2": {
        "success": true,
        "state": "low"
      },
      "DI3": {
        "success": true,
        "state": "high"
      },
      "DI4": {
        "success": true,
        "state": "low"
      }
    }
  }
}
```

33. Digital Outputs Actor

33.1 App Interfacing

User App interface and functionalities exposed to the open part of the MQTT broker. Simplified interface to configure and obtain peripherals data. Connecting to the broker for this area requires no credentials.

33.1.1 Get all digital output pins state

Req-Topic: digitalOutputs/runtime/in

```
{
  "id": "<TIMESTAMP>",
  "origin": "APP",
  "task": {
    "action": "READ"
  }
}
```



Reply-Topic: digitalOutputs/runtime/out

```
{
  "id": "<TIMESTAMP>",
  "origin": "APP",
  "task": {
    "taskResult": {
      "DO1": {
        "success": true,
        "state": "low"
      },
      "DO2": {
        "success": true,
        "state": "high"
      },
      "DO3": {
        "success": true,
        "state": "high"
      },
      "DO4": {
        "success": true,
        "state": "low"
      },
      "DO5": {
        "success": true,
        "state": "low"
      },
      "DO6": {
        "success": true,
        "state": "low"
      },
      "DO7": {
        "success": true,
        "state": "low"
      },
      "DO8": {
        "success": true,
        "state": "low"
      }
    }
  }
}
```



33.2.2 Set all digital output pins state

Req-Topic: digitalOutputs/runtime/in

```
{
  "id": "<TIMESTAMP>",
  "origin": "APP",
  "task": {
    "taskParams": {
      "DO1": {
        "action": "SET",
        "state": "low"
      },
      "DO2": {
        "action": "SET",
        "state": "high"
      },
      "DO3": {
        "action": "SET",
        "state": "high"
      },
      "DO4": {
        "action": "SET",
        "state": "low"
      },
      "DO5": {
        "action": "SET",
        "state": "low"
      },
      "DO6": {
        "action": "SET",
        "state": "low"
      },
      "DO7": {
        "action": "SET",
        "state": "low"
      },
      "DO8": {
        "action": "SET",
        "state": "low"
      }
    }
  }
}
```



Reply-Topic: digitalOutputs/runtime/out

```
{
  "id": "<TIMESTAMP>",
  "origin": "APP",
  "task": {
    "taskResult": {
      "D01": {
        "success": true,
        "state": "low"
      },
      "D02": {
        "success": true,
        "state": "high"
      },
      "D03": {
        "success": true,
        "state": "high"
      },
      "D04": {
        "success": true,
        "state": "high"
      },
      "D05": {
        "success": true,
        "state": "high"
      },
      "D06": {
        "success": true,
        "state": "low"
      },
      "D07": {
        "success": true,
        "state": "low"
      },
      "D08": {
        "success": true,
        "state": "low"
      }
    }
  }
}
```



33.3 Notes

If the busi2c-3 is not powered, we will get this:

Topic: **digit a IOutputs/runtime/ out**

```
{
  "id": "<TIMESTAMP>",
  "origin": "APP",
  "task": {
    "taskResult": {
      "D01": {
        "success": false,
        "state": "DO_not_powered"
      },
      "D02": {
        "success": false,
        "state": "DO_not_powered"
      },
      "D03": {
        "success": false,
        "state": "DO_not_powered"
      },
      "D04": {
        "success": false,
        "state": "DO_not_powered"
      },
      "D05": {
        "success": false,
        "state": "DO_not_powered"
      },
      "D06": {
        "success": false,
        "state": "DO_not_powered"
      },
      "D07": {
        "success": false,
        "state": "DO_not_powered"
      },
      "D08": {
        "success": false,
        "state": "DO_not_powered"
      }
    }
  }
}
```



34. Joystick Actor

34.1 App Interfacing

User App interface and functionalities exposed to the open part of the MQTT broker. Simplified interface to configure and obtain peripherals data. Connecting to the broker for this Area requires no credentials.

34.1.1 Get all joystick pins state

Req-Topic: joystick/runtime/in

```
{
  "id": "<TIMESTAMP>",
  "origin": "APP",
  "task": {
    "action": "READ"
  }
}
```

Reply-Topic: joystick//runtime/out

state: pressed/released

```
{
  "id": "<TIMESTAMP>",
  "origin": "APP",
  "task": {
    "taskResult": {
      "JLEFT": {
        "success": true,
        "state": "pressed"
      },
      "JRIGHT": {
        "success": true,
        "state": "released"
      },
      "JUP": {
        "success": true,
        "state": "released"
      },
      "JDOWN": {
        "success": true,
        "state": "released"
      },
      "JCENTER": {
        "success": true,
        "state": "released"
      }
    }
  }
}
```



35. Included Software Stack





36. Hardware Libraries



37. Related Products

PA	Name	Requirements

38. Accessories

PA	Name	Requirements

39. Document History

Version	Description	Date
SBADATAv0.1	First version of SENSBLUE ATLAS Datasheet	11/03/2026



40. SENSBLUE ATLAS in-the-field



SENSBLUE ATLAS DATASHEET

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