



# Bareboat Necessities (BBN) Boat Monitoring

mgrouch

Version 2024-04-16, Bareboat Necessities Boat Monitoring

<https://bareboat-necessities.github.io>

[https://github.com/bareboat-necessities/lysmarine\\_gen](https://github.com/bareboat-necessities/lysmarine_gen)

[https://github.com/bareboat-necessities/lysmarine\\_gen/issues](https://github.com/bareboat-necessities/lysmarine_gen/issues)

<https://bareboat-necessities.wixsite.com/my-bareboat>

<https://github.com/bareboat-necessities/bbn-m5stack-tough>

<https://github.com/bareboat-necessities/bbn-nmea200-m5atom>

PDF version:

<https://bareboat-necessities.github.io/my-bareboat/bbn-boat-monitoring.pdf>

# Chapter 1. What is BBN Boat Monitoring

BBN Boat Monitoring is a low-power solution to send alarms on various conditions from an unattended boat.

In the center is esp32 with Ethernet module connected wired to a boat router. Alarms are sent via WhatsApp messenger.

Modular design of software and hardware so users can pick and choose needed modules.

# Chapter 2. Connectivity

1. MDNS discovery of other services gpsd, SignalK, pypilot, etc
2. DHCP client
3. NTP client
4. Web server for configuration
5. Uptime reporting (sleeping periods to save power)
6. Ethernet to router
7. WhatsApp message
8. Command line WhatsApp messenger for Linux
9. Internet connection speed reporting

# Chapter 3. Hardware

esp32 on m5atom-lite or m5atom-lite-S3. With ethernet atomPoW (with w5500 chip).

Sensors (pick and choose)

- Accelerometer
- IMU
- Env sensors (temperature, barometer, humidity)
- Gas Sensors (CO, heavy gases, hydrogen, smoke detector)
- GPS
- NMEA 0183 interface
- NMEA 2000 interface
- Lightning sensor
- Voltage sensor
- Current (amp) meter for bilge pump usage
- Temperature (1w) sensors
- Motion detection sensors
- Water salinity sensor
- Proximity sensors
- Snow / ice sensor
- Water level sensor
- Dighy LoRa locator
- RTC clock

# Chapter 4. Alarms (planned)

1. Heavy gases in bilge
2. High salinity of water in bilge
3. Hydrogen gas alarm
4. Fire alarm. Smoke detector
5. Carbon monoxide alarm
6. Hatch open
7. High heel or pitch (from IMU)
8. High wind alarm
9. Lightning storm detected
10. Forgot nav lights 'on'
11. Motion detected (Intrusion)
12. High humidity
13. Possible fog conditions
14. Snow or ice conditions
15. Barometer keeps falling alarm
16. Temp alarm (ex: fridge warm)
17. Dingy too far
18. GPX fix lost
19. High current at anchor (by speed through water)
20. Low water under keel alarm
21. Accelerometer alarm for high waves
22. Anchor alarm (plus command line utility to activate and deactivate)
23. Grounding alarm from accelerometer
24. Hard impact on hull (via accelerometer)
25. Heartbeat (ImAlive) WhatsApp message
26. Low battery voltage
27. Battery overcharging
28. High battery temperature
29. Bilge pump high utilization