



Design and Development of a Sensor Mote for Precision Aquaculture

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Outline

- Introduction
- Proposed sensor mote
- Experiment setup and results
- Conclusions

Introductions



Fig.1 Precision agriculture solutions

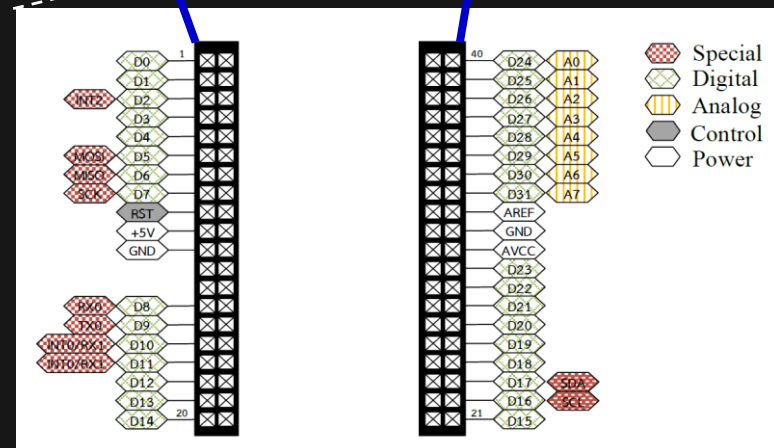
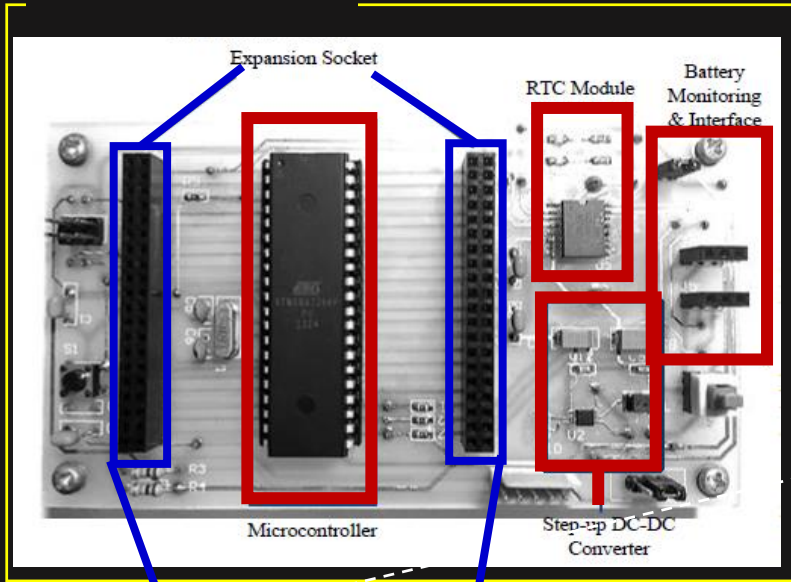


Fig.2 The Aquaculture

- Precision agriculture technology has been implemented over the years
- **Analyzing and evaluating** of environmental parameters for decision
- **Increase Performance** for farm management
- Sensor mote is **primary inputs** to the system
 - DO
 - pH
 - Temperature

Sensor Mote Design

Main Board



- Processing
- Powering units
- Sensing
- Communicating

Extension Board

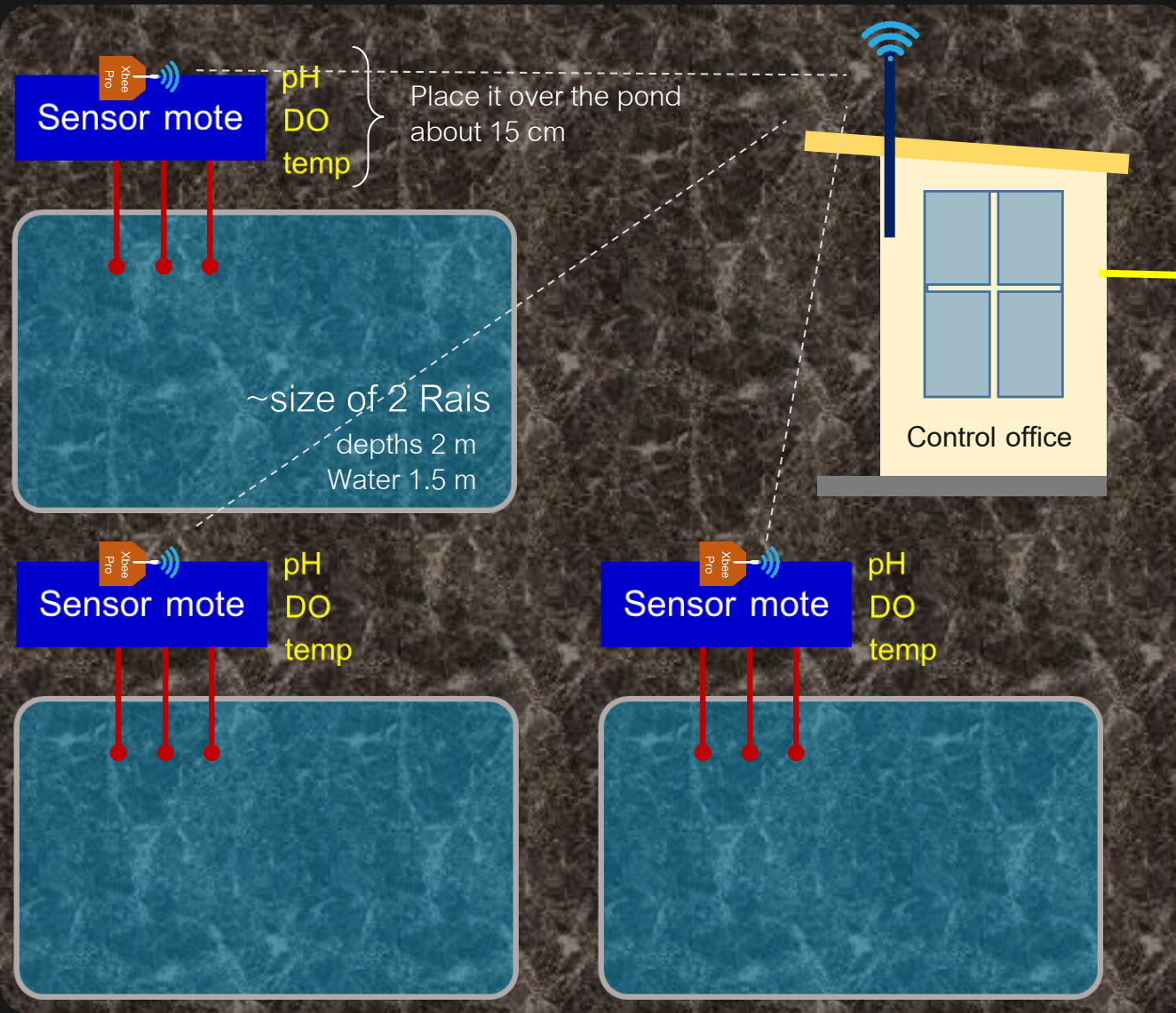
XBee-PRO ZigBee

DO / pH / Temperature

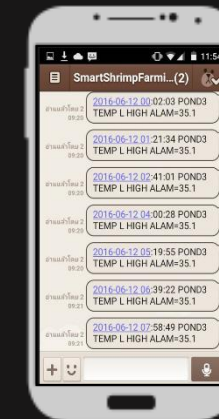
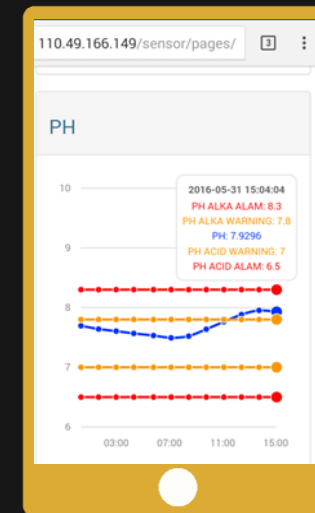
- Sleep mote **DIP-40 ATmega1284p**
- Support digital/serial interface, SPI, I2C and devices

- RTC module **DS3232**
- backup battery
- DC – DC converter **MAX1674**
- battery monitoring module **MAX1043**

Deployment Setup & Results



the server notifies the farm manager's mobile devices, via the Internet, if there is any parameter that needs attention



Deployment Setup & Results

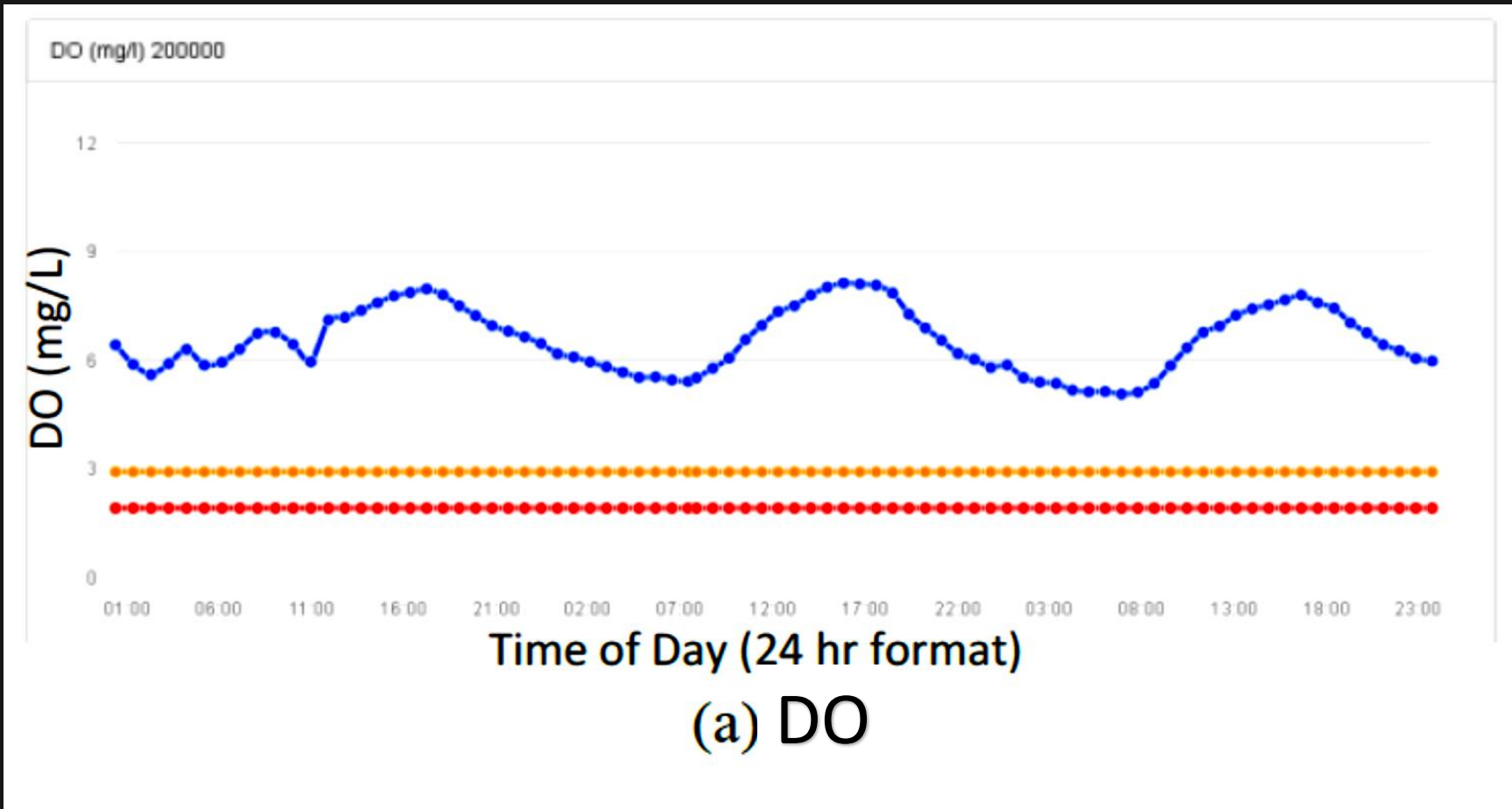


Fig. 7 (a) Sensor data obtained from sensor mote during 72 hour collection period.

Deployment Setup & Results

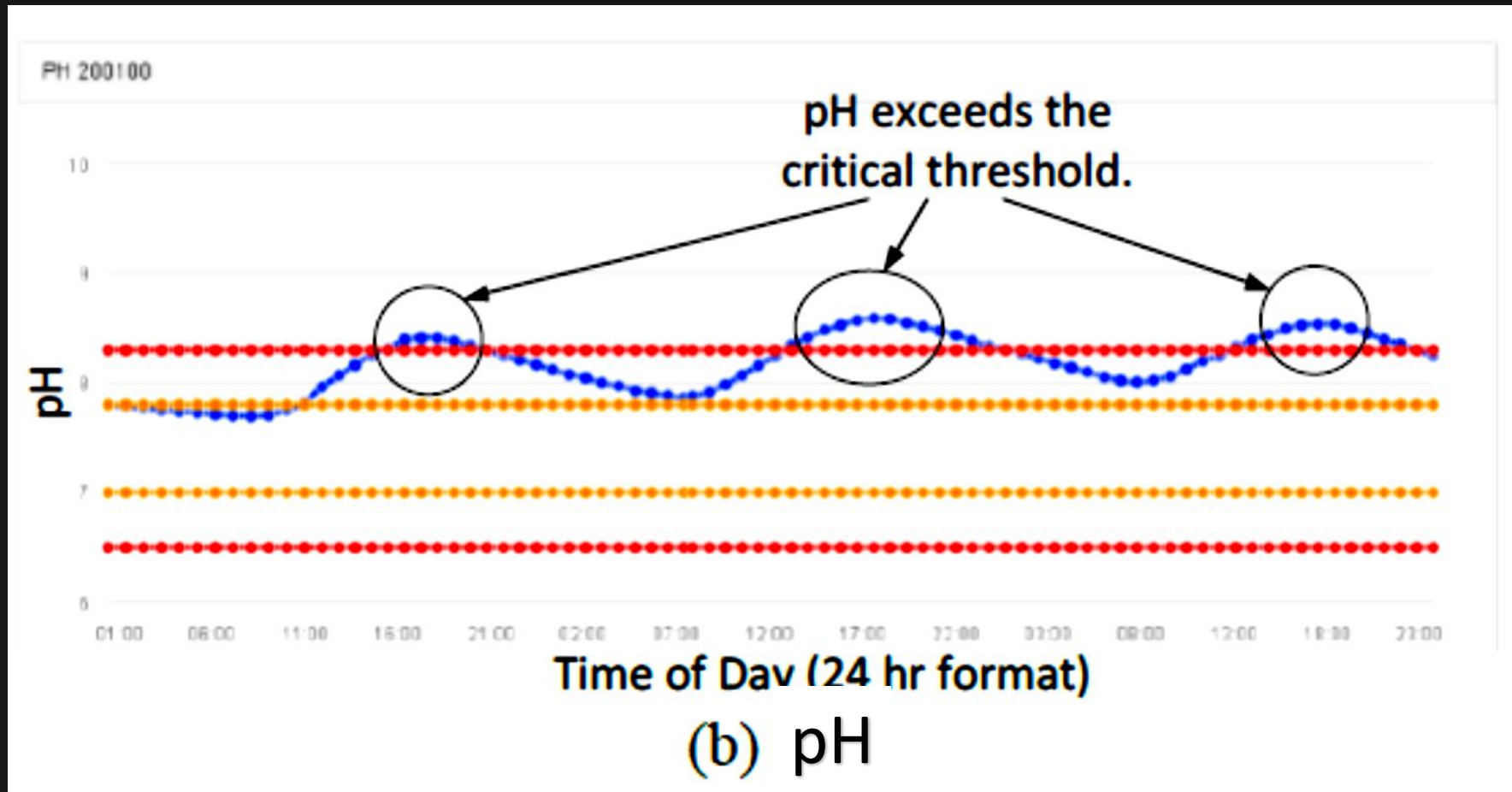


Fig. 7 (b) Sensor data obtained from sensor mote during 72 hour collection period.

Deployment Setup & Results

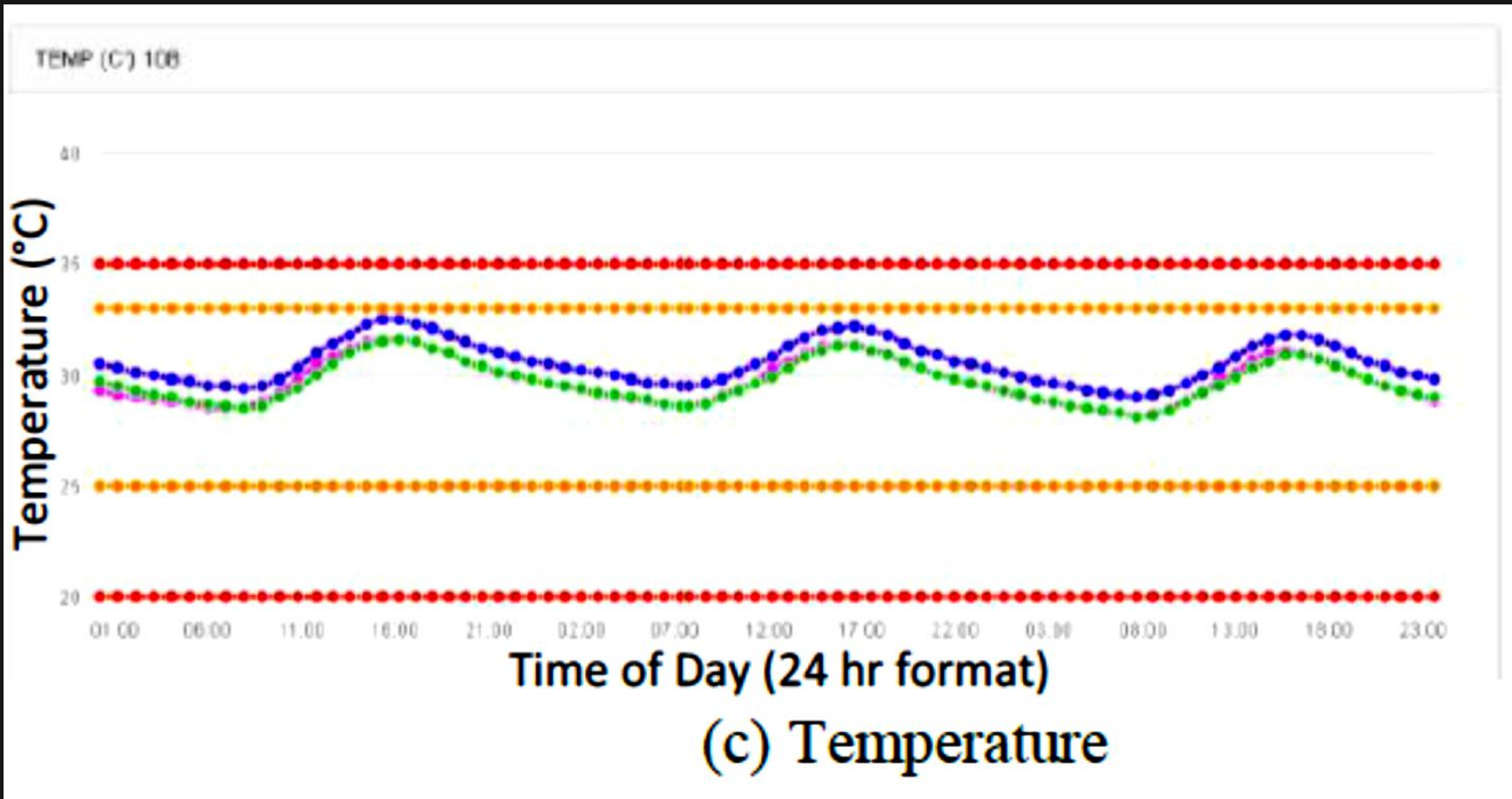
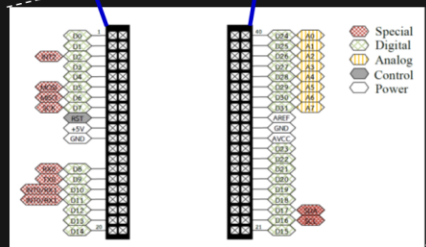
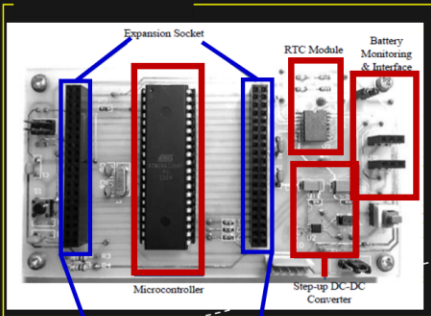


Fig. 7 (c) Sensor data obtained from sensor mote during 72 hour collection period.

Conclusion

Main Board



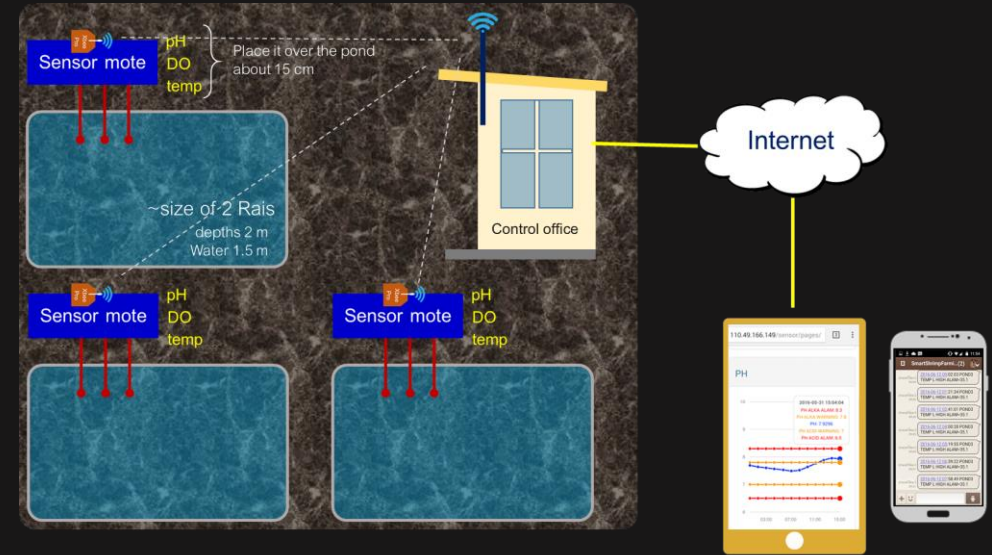
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Thank you