

Goals and Planning

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Lab day 1 consisted of further planning and development of both THAT system and of the Digital Thermostat Module, code-named "COPTA". Although the basic THAT system has been fairly well defined at this time, COPTA's hardware and software goals and requirements need further consideration and discussion.

Module Overview

COPTA defines an advanced, digital thermostat module with a rich feature set and fully programmable control. It is designed for use with most residential and light-commercial (single or split-unit) HVAC systems. COPTA will perform most basic HVAC control functions as a stand-alone device. Alternatively, it will be capable of integration into a larger THAT System to provide extended flexibility and functionality.

Initial Design Goals

Hardware Design Goals

- Graphic, back-lit, monochromatic LCD display.
- Integral temperature and humidity sensors.
- Integral outputs for simple 24VAC HVAC system control (Heat, A/C, Fan).
- Support for advanced 24VAC HVAC system control (w/ separate relay module).
- LED indicator lamps for easy system status notification.
- Real time clock with calendar.
- Non-volatile memory for storing "permanent" system settings.
- Battery-backup for temporary settings and RTC.
- Infrared Receiver.

Software Design Goals

- Modularity in design.
- Configurable support for single and multi-stage A/C and heat-pump systems.
- Configurable support for controlling dynamically variable HVAC systems.
- Configurable support for reading external temperature/humidity sensors.
- "Learning" of codes from Infrared remotes.

Packaging Goals

- Form Factor: Wall mount, round.
 - Physical size: Approx. 4.5" diameter, < 2" depth.
 - Main user interface: 6-button direct input, LCD/LED output.
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