

Thermostat Settings

2010-04-05 10:04:40 by Nick

I have begun the process of building up the firmware for my Digital Thermostat module to include some advanced features and settings. In order to help me organize this process, I have created a “memory map” that lists all the settings I plan to implement. It is shown below.

| Digital Thermostat Module | | | | | | | | | | |
|--|------|--------------------|----|----------------------------------|------|---------|---------|------------------|---|--|
| Memory Settings Map, Version 0.1, Nick Viera, 2010/03/31 | | | | | | | | | | |
| Permissions | | Register / Setting | | | | Values | | | Default | |
| Admin | User | Name | # | Function | Min | Max | Units | (state or value) | States | |
| R | - | 0.0 | 0 | Unit unique Serial Number | | | | xxxxxxxx | | |
| R | R | 0.1 | 1 | Unit model ID Number | | | | xxxxxx | | |
| R/W | - | 0.2 | 2 | Admin Menu Passcode Mode | | | | None (0) | None (0), On (1) | |
| R/W | - | 0.3 | 3 | Admin Menu Passcode | 0000 | 9999 | | 0000 | | |
| R/W | R/W | 0.4 | 4 | User Menu Passcode Mode | | | | None (0) | None (0), On (1) | |
| R/W | R/W | 0.5 | 5 | User Menu Passcode | 0000 | 9999 | | 0000 | | |
| R/W | - | 0.7 | 7 | Temperature Lock mode applies to | | | | Others (0) | Others (0), User and Others (1) | |
| R/W | - | 0.8 | 8 | Temperature Lock mode | | | | None (0) | None (0), Restricted (1), Fixed (2) | |
| R/W | - | 0.9 | 9 | Restricted temperature range | 0 | 7 | +/- °C | 3 | | |
| R/W | R | 1.0 | 10 | Ethernet IP Address (low byte) | 0 | 255 | | x | | |
| R/W | R | 1.1 | 11 | Ethernet IP Address | 0 | 255 | | x | | |
| R/W | R | 1.2 | 12 | Ethernet IP Address | 0 | 255 | | 168 | | |
| R/W | R | 1.3 | 13 | Ethernet IP Address (high byte) | 0 | 255 | | 192 | | |
| R/W | R | 1.4 | 14 | Ethernet Port Number | 1 | 9999 | | 8428 | | |
| R/W | R | 1.5 | 15 | Control Mode | | | | Auto (0) | Auto(0), Local Only (1) | |
| R/W | R/W | 2.0 | 20 | LCD Contrast | 0 | 255 | | 200 | | |
| R/W | R/W | 2.1 | 21 | LCD Backlight Brightness | 0 | 255 | | 255 | | |
| R/W | R/W | 2.2 | 22 | LCD Backlight idle mode | | | | Auto Off (0) | Auto Off (0), Auto Dim (1), On (2) | |
| R/W | R/W | 2.3 | 23 | LCD Backlight idle time | 1 | 15 | seconds | 4 | | |
| R/W | R/W | 2.4 | 24 | LED Brightness | 0 | 255 | | 127 | | |
| R/W | R/W | 2.5 | 25 | LED idle mode | | | | On (2) | Auto Off (0), Auto Dim (1), On (2) | |
| R/W | R/W | 2.6 | 26 | LED idle time | 1 | 15 | seconds | 4 | | |
| R/W | R/W | 3.0 | 30 | Temperature Units | | | | °C (0) | °C (0), °F (1) | |
| R/W | - | 3.1 | 31 | Automatic mode temperature gap | 2 | 15 | °C | 4 | | |
| R/W | - | 3.2 | 32 | Temperature Calibration offset | -5.0 | 5.0 | °C | 0 | | |
| R/W | - | 3.3 | 33 | Humidity Calibration offset | -30 | 30 | %RH | 0 | | |
| R/W | - | 3.4 | 34 | Swing mode (hysteresis) | | | | Temperature (0) | Temperature (0), Time (1), Auto-learn (2) | |
| R/W | - | 3.5 | 35 | Temperature swing | 0 | 7 | 0.5°C | 2 | | |
| R/W | - | 3.6 | 36 | Heating mode time swing | 0 | 15 | ¼ mins | 2 | | |
| R/W | - | 3.7 | 37 | Cooling mode time swing | 0 | 15 | ¼ mins | 2 | | |
| R/W | - | 3.8 | 38 | Auto-learning swing adjust | -10 | 10 | | 0 | | |
| R/W | - | 4.0 | 40 | Cooling mode minimum off time | 0 | 15 | minutes | 5 | | |
| R/W | - | 4.1 | 41 | Cooling mode minimum on time | 0 | 15 | minutes | 5 | | |
| R/W | - | 4.2 | 42 | Heating mode minimum off time | 0 | 15 | minutes | 5 | | |
| R/W | - | 4.3 | 43 | Heating mode minimum on time | 0 | 15 | minutes | 5 | | |
| R/W | - | 4.4 | 44 | Auxiliary mode minimum off time | 0 | 15 | minutes | 5 | | |
| R/W | - | 4.5 | 45 | Auxiliary mode minimum on time | 0 | 15 | minutes | 5 | | |
| R/W | - | 4.6 | 46 | Circulation mode time period | 10 | 255 | minutes | 90 | | |
| R/W | - | 4.7 | 47 | Circulation mode on time | 3 | (per-3) | minutes | 20 | | |

The map lists the expected values or states associated with each setting, and the default state or value. Each setting has two numerical identifiers. The first, listed under the column “Name,” is the identifier that will read out on the module’s LCD screen. Thus, this is the number that will be seen from the built-in interface menu(s), used for programming the thermostat.

The second numerical identifier is listed under the column “#”. This number is used to identify the settings when it is accessed through the Ethernet interface from a remote client. Both identifiers are numeric and short in order to minimize memory usage. (Textual names would require a lot more memory to store).

The two left-most columns identify which settings can be read (R) / written (W) by whom. The thermostat will have two “log-in” modes, one for a “user”, and one for an “administrator”, which are both different from the standard mode, in which nobody is logged in (the default state.) Although not required, these two

special log-in modes will be used to restrict access to certain settings and adjustments on the thermostat by non-authorized users. More on this later...
