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CPSC 46000-003

Programming Languages

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Smart Thermostat Language

Design Documentation

**Constants** (changeable only within the code at present):

SAFETY\_TEMP\_MIN – minimum allowable temperature, default is 50

SAFETY\_TEMP\_MAX – maximum allowable temperature, default is 85

**Restricted Keywords:**

ALL – *type: target* – refers to all cells in a schedule (all day/time combinations)

NOW – *type: target* – set only the current and next hour on the repeating daily schedule

SLEEP – *type: target* – for the period between BOUNDARY 3 and 0 (sleeping time)

WAKE – *type: target* – for the period between BOUNDARY 0 and 1 (morning / awakening)

AWAY – *type: target* – for the period between BOUNDARY 1 and 2 (away from home)

HOME – *type: target –* for the period between BOUNDARY 2 and 3 (evening / at home)

**Restricted Commands Keywords:**

\_SYSPROPS – display both schedule and summarized boundary data

\_SCHED –display all schedule data

Displays each period, time range, and each hour’s stored temperature settings

CLEAR – *type: command* – reset all schedule settings to pre-defined default state

SET – *type: command* - assign the specified temperature to a target selection (for automatic scheduling), or to the current temperature (manual adjustment)

usage: SET [keyword: *target*] [int: *temperature*] – apply the temperature to the targeted period through accepted keywords: ALL, NOW, SLEEP, WAKE, AWAY, HOME

alternate usage: SET [int: *temperature*] – apply the temperature to default target, NOW

BOUNDARY – *type: command* – redefine the boundary time, which represents the transition time between period profiles

usage: BOUNDARY [int: 0-3 *bound ID*] [int 0-23 *time*] – set the threshold. int *bound ID* represents chronological thresholds in the day:

0 represents transition from SLEEP to WAKE (default: 7)

1 represents transition from WAKE to AWAY (default: 9)

2 represents transition from AWAY to HOME (default: 17)

3 represents transition from HOME to SLEEP (default: 23)

**Sample Inputs:**

\_SYSPROPS – output current system properties

\_SCHED – output current schedule

CLEAR – resets all schedule settings to pre-defined default state (70 at all hours)

SET *72* – sets the temperature setting to 72 for the next 2 hours

SET NOW 72 – same as above, as the default option, NOW is technically optional/redundant

SET ALL 71 – sets the temperature for ALL hours to 71, regardless of period

SET SLEEP *68 –* sets the temperature for the hours in the SLEEP period to 68

SET WAKE 72 - sets the temperature for the hours in the WAKE period to 72

SET AWAY 66 – sets the temperature for the hours in the AWAY period to 66

SET HOME 71 – sets the temperature for the hours in the HOME period to 71

SET 25 – E*rror* because 25 does not meet or exceed SAFETY\_TEMP\_MIN, the minimum allowable temperature

SET 99 – E*rror* because 99 exceeds SAFETY\_TEMP\_MAX, the maximum allowable temperature

BOUNDARY 0 6 – adjust the time of the first profile transition (SLEEP -> WAKE) to 6:00 am, and migrate the current temperature settings around the new boundary

BOUNDARY 3 22 – adjust the time of the last profile transition (HOME -> SLEEP) to 10:00pm aka 22:00, and migrate the current temperature settings around the new boundary