Crestron Module Documentation

for

ECOBEE THERMOSTATS

GENERAL INFORMATION

<table>
<tr><td>SIMPLWINDOWS NAME:</td><td>Crestron EcobeeAPI Demo (v1).smw</td></tr>
<tr><td>CATEGORY:</td><td>Web API</td></tr>
<tr><td>VERSION:</td><td>v1</td></tr>
<tr><td>SUMMARY:</td><td>This demo includes the CORE module and the TSTAT module (one per thermostat) allowing communication with Ecobee web server to retrieve information and allow basic controls of the Ecobee thermostats.
https://www.ecobee.com/home/developer/api/introduction/index.shtml</td></tr>
<tr><td>GENERAL NOTES:</td><td>
- Each Ecobee thermostats must be registered under the customers web account.
https://www.ecobee.com/home/ecobeeLogin.jsp
- An API key must be generated in the Developer section of the customers web account, using ecobeePIN as the authorization method.
- The Crestron processor will need to be authorized via PIN code under the My Apps section of the customers web account.
- Once access is granted, API tokens can be obtained by the processor using the setup page.
- The tstat list summary is used to retrieve the number and locations of tstats, as well as to know if data on a tstat has changed.
- API rate limits

As outlined in Core Concepts – Communication with the Thermostat, it is important to understand that the ecobee API does not communicate directly with thermostats to request data. Instead, thermostats communicate with the ecobee servers on a regular basis to post their current settings and telemetry data.

Repeatedly requesting updated information when it is not available is an inefficient use of bandwidth and server resources. Keep your API requests within the following usage and polling limits outlined in the table below.

API usage and polling frequency limits

Refer to the ecobee API docs for each individual feature for the most up-to-date usage limits but a recap of how frequently data may be updated:

<table>
<tr><td>GET_TSTAT_SUMMARY</td><td>3 minutes</td></tr>
<tr><td>GET_TSTAT_INFO</td><td>Do not poll, this is automatically called when tstat summary has changed or call this for manual refresh only when needed.</td></tr>
</table>

Note: Event commands sent through the ecobee API are issued to a thermostat immediately, therefore event sending is not affected by the above refresh frequencies. However, data refresh frequencies affect the ability to confirm if a setting change has been implemented by the target thermostat.
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<tr><td>CRESTRON HARDWARE REQUIRED:</td><td>3-series/4-series processor connected to the Internet</td></tr>
</table>

CORE MODULE

Parameters:

API_KEY	S	The API key generated in the customers web account.
REDIRECT_URI	S	The public IP or DDNS the processor can be reached out.
FILE_PATH	S	The location storage for the tokens.

Input Signals:

INIT	D	Pulse to initialize the module.
GET_PIN_CODE	D	Pulse to request the PIN code to be set in the web account to grant access.
GET_TOKENS	D	Pulse to retrieve initial set of tokens once access has been granted.
REFRESH_TOKENS	D	Pulse to force a manual refresh of the tokens.
STATUS_CODE_CLEAR	D	Pulse to close status message popup (warnings or errors from Ecobee).
SETPOINT_SENT_AS_C	D	Set to 1 if the setpoints will be sent as Celsius, set to 0 if sent as Fahrenheit.
GET_TSTAT_SUMMARY	D	Pulse to poll periodically the list of tstats/changes.

Output Signals:

BUSY	D	High if module is busy processing data.
PIN_CODE$	S	PIN code retrieved from Ecobee server, to be used in customers web account.
PIN_CODE_EXPIRY$	S	PIN code expiry (typically 9 minutes).
TOKEN_EXPIRY	A	Current token validity countdown.
STATUS_CODE_NOTIF	D	High when a warning/error status code has been received from Ecobee server.
STATUS_CODE	A	Warning/error status code received.
STATUS_MESSAGE$	S	Warning/error status message received.
NUMBER_OF_TSTATS	A	Number of tstats on the account.
POLL_TSTAT_INSTANCE	A	Used by the Core module to refresh tstats info.

TSTAT MODULE

Parameters:

INSTANCE	A	Unique instance number for this tstat.

Input Signals:

REFRESH_TSTAT	A	Instance ID received from the Core module if the tstat info needs to be refreshed.
GET_INFO	D	Pulse to refresh the tstat info.
SEND_UPDATE	D	Pulse to send updates settings (setpoint, mode, etc).
SET_HOLD_INDEFINITELY	D	Pulse to set the setpoint value indefinitely.
SET_HOLD_PROGRAM	D	Pulse to set the setpoint value until the program next event.
SET_HEAT	A	3-digits value to be sent for heat (ie. 220 = 22 degrees C).
SET_COOL	A	3-digits value to be sent for cool (ie. 240 = 24 degrees C).
SET_MODE	D	Pulse the corresponding mode to be sent.
SET_FAN	D	Pulse the corresponding fan mode to be sent.

Output Signals:

OFFLINE	D	Will report if tstat is offline.
BUSY	D	High if module is busy processing data.
NAME$	S	Name/location set on the tstat.
IDENTIFIER$	S	Serial# of the tstat.
CURRENT_TEMP	A	Current temperature in Fahrenheit and Celsius.
CURRENT_HUMIDITY	A	Current humidity in %.
RAW_TEMP	A	Raw temp report.
SET_HOLD	D	Hold type feedback.
SETPOINT	A	Current setpoints (heat and cool) feedback.
MODE	D	Current mode feedback.
FAN_MODE	D	Current fan mode feedback.
STATUS	D	Current status (heating, cooling, off) feedback.

Ecobee setpoint recommendation:

Note that when creating a temperature hold, both heat and cool temperatures must be specified.

It is good practice to set the heat and cool hold temperatures to be the same, if the thermostat is in either heat, cool, auxHeatOnly or off mode.

If the thermostat is in auto mode, an additional rule is required. The cool hold temperature must be greater than the heat hold temperature by at least the amount in the heatCoolMinDelta property, which can be found in Settings.

Programming recommendation:

The tstats list will be returned in alphabetical order. If there is a chance more tstats will be added in your project in the future, potentially shifting tstats in the list, you can use the name or identifier fields to route controls/FB (via crosspoints or buffers) to the proper room on your UI.

Testing:

OPS USED FOR TESTING:	DIN-AP3 - v1.601.3935.28796
SIMPL WINDOWS:	4.14.20
DEVICE DB:	200.01.001.00
CRESTRON DB:	200.00.004.00
SIMPL# LIBRARY:	EcobeeLib_v1
DEVICE API:	Ecobee API v1

Revision History:

Date	Comments
February.2020	v1 Initial Release
August.2020	v1 Recompile with 200 DB