1. KE2Evap Rest API

Purpose: This document describes the KE2EVAP data API.

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2. API Request/Response overview

The API endeavours to follow 'Restful' principles where practical/possible.

The API

Request characteristics:

- API request indicated by Uniform Resource Identifier (URI) commencing with /api
- Only requests sent over SSL will be acknowledged
- HTTP request method identifies type of transaction
- URI identifies target resource
- For PUT requests, request body contains revised settings (in JSON format)

Response characteristics:
- HTTP response code 200 indicates success
- HTTP response code other than 200 indicates failure & reason
- If response includes data:
  - Response headers include 'Content-Type: application/json'
  - Response body contains returned data (in JSON format)

2.1.   Request /api indicates API request

The server recognises requests need to be routed for service by the API when the request URI starts with '/api'

Requests without '/api' will be handled by the standard HTTP server

2.2.   Request Security / Authentication

All requests to the API must be sent over SSL. Requests to the API using other than over SSL will not be acknowledged

Authentication if required is supplied in the request via query parameter 'key'

The key parameter can be viewed & (re)set via the current HTTP KE2EVAP interface (for a logged in administrator)

Method	Authentication required?	Note
HTTP GET	No	
HTTP PUT	Always	
HTTP POST	Always	

2.3.   Request HTTP Methods

The API accepts 3 types of HTTP methods for getting & setting KE2EVAP status values, settings & actions:

Method	Purpose	Note
HTTP GET	Retrieve status values or current parameters	
HTTP PUT	Change KE2EVAP parameters	Idempotent
HTTP POST	Perform actions	Relates directly to action buttons on the current HTTP interface

2.4.   Request URI identifies target resource

Resources are organised in a tree structure. For ease of use/familiarity this structure closely follows the KE2EVAP current HTTP interface

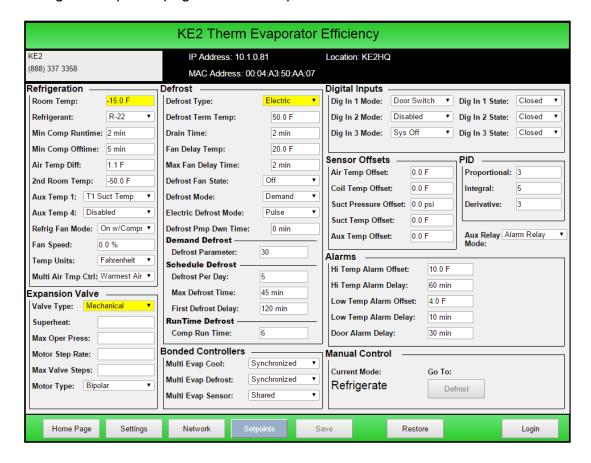| Current HTTP Interface page	API resource highest level	Note
Home page	/status	GET only
Settings	/settings	
Network	/network	
Setpoints	/setpoints	

The request URI identifies the target resource. Within each high level resource there are unique child resources that you can drill down to by extending the URI

/api/resource
/api/pathto/resource
/api/pathto/pathto/resource
/api/pathto/pathto/pathto/resource

However there are restrictions on combining resources & HTTP methods

- For GET requests, all child resources will be returned for a given parent resource level
- For PUT requests, at least the first & second level resource paths must be supplied
- For PUT requests, a distinct child resource cannot be specified as the distinct child resources are identified in the request body
- For POST requests, the distinct child resource must be identified by the request URI

Using the setpoints page as an example:

A GET request to /api/setpoints will return all current setpoints page parameters

A GET request to /api/setpoints/refrigeration will return all current setpoints page refrigeration parameters

A PUT request to /api/setpoints is invalid (too large in scope)
A PUT request to /api/setpoints/refrigeration will allow refrigeration parameters to be set in the request body
A PUT request to /api/setpoints/refrigeration/refrigeration is invalid (too distinct)

A POST request to any setpoints resource other than /api/setpoints/ManualControl/gotonextmode (circled button in image above) or /api/settings/alertnotifications/SendTest will be invalid (not specific enough/wrong resource type)

Refer to the resources map for additional information.

2.5. Request body contains PUT request parameters (JSON)

For PUT requests, parameters to be changed are expected in the request body

E.g. a PUT request to /api/setpoints/refrigeration will require at least one child parameter to be supplied

Both of these examples are valid:
```
{
     "Refrigerant":"R-507",
}

{
     "Refrigerant":"R-507",
     "MinCompRuntime":"2 min",
     "MinCompOfftime":"5 min",
     "AirTempDiff":"1.0 F",
     "2ndRoomTemp":"-50.1 F",
     "AuxTemp1":"3 T1 Suct Temp",
     "AuxTemp4":"0 Disabled",
     "RefrigFanMode":"2 On w/Compressor",
     "FanSpeed":"0 %",
     "TempUnits":"0 Fahrenheit",
     "MultiAirTempControl":"0 Warmest Air"
}
```

2.6. Response codes

A response of 200 indicates transaction success

This is only returned when all of a request is able to be actioned. A PUT request containing multiple parameters (to be set), will only be actioned on the server if all parameters supplied are valid. Otherwise the entire transaction is failed, and a response code

Refer the HTTP Response codes table for additional information

2.7.   Response body

If a request is successful, the response will contain JSON formatted data.

For a GET request, this is the resource requested and all its children

For a PUT request this is the resource requested and all its children

A GET request to /api/setpoints/refrigeration will return:

```json
{
    "RoomTemp":{
        "current":"44.6 F",
        "currentValue": "44.6",
        "units": "F"
        },
    "Refrigerant":{
        "current":"R-507", "currentIndex": "1",
            "options":[
                    "R-404A",
                    "R-507",
                    "R-407A",
                    "R-407C",
                    "R-422A",
                    "R-422D",
                    "R-134A",
                    "R-22",
                    "R-717",
                    "R-438A",
                    "R-408A",
                    "R-409A",
                    "R-407F",
                    "R-410A",
                    "R-744"
                ]

        },
    "MinCompRuntime":{
        "current":"1 MIN",
        "currentValue": "1",
        "units": "MIN"
        },
    "MinCompOfftime":{
        "current":"1 MIN",
        "currentValue": "1",
        "units": "MIN"
        },
```

```
"AirTempDiff":{
      "current":"2.5 F",
      "currentValue": "2.5",
      "units": "F"
      },
"2ndRoomTemp":{
      "current":"-45.2 F",
      "currentValue": "-45.2",
      "units": "F"
      },
"AuxTemp1":{
      "current":"T1 Suct Temp", "currentIndex":
"3",
            "options":[
                  "Monitor",
                  "T1 Room Temp",
                  "T1 Coil Temp",
                  "T1 Suct Temp"
            ]

      },
"AuxTemp4":{
      "current":"T4 Coil Temp", "currentIndex":
"3",
            "options":[
                  "Disabled",
                  "Monitor",
                  "T4 Room Temp",
                  "T4 Coil Temp"
            ]

         },
"RefrigFanMode":{
      "current":"On w/Compressor",
"currentIndex": "2",
            "options":[
                  "Managed",
                  "Permanent",
                  "On w/Compressor",
                  "Title 24"
            ]

         },
"FanSpeed":{
      "current":"0.0 %",
      "currentValue": "0.0",
      "units": "%"
```

```
            },
    "TempUnits":{
            "current":"Fahrenheit", "currentIndex":
"0",
                    "options":[
                            "Fahrenheit",
                            "Celcius"
                    ]

            },
    "MultiAirTempControl":{
            "current":"Warmest Air", "currentIndex":
"0",
                    "options":[
                            "Warmest Air",
                            "Average Air"
                    ]

            }
}
```

A GET request to /api/setpoints/refrigeration/refrigerant will return:

```
{,
    "Refrigerant":{
            "current":"R-507", "currentIndex": "1",
                    "options":[
                            "R-404A",
                            "R-507",
                            "R-407A",
                            "R-407C",
                            "R-422A",
                            "R-422D",
                            "R-134A",
                            "R-22",
                            "R-717",
                            "R-438A",
                            "R-408A",
                            "R-409A",
                            "R-407F",
                            "R-410A",
                            "R-744"
                    ]

            },
```

A successful PUT request to /api/setpoints/refrigeration will return the same as a GET request to the same resource per the example above
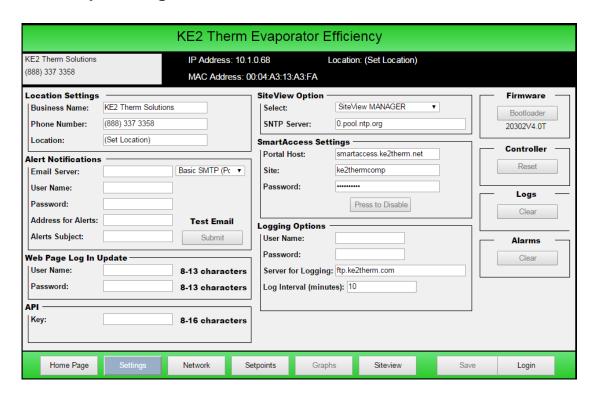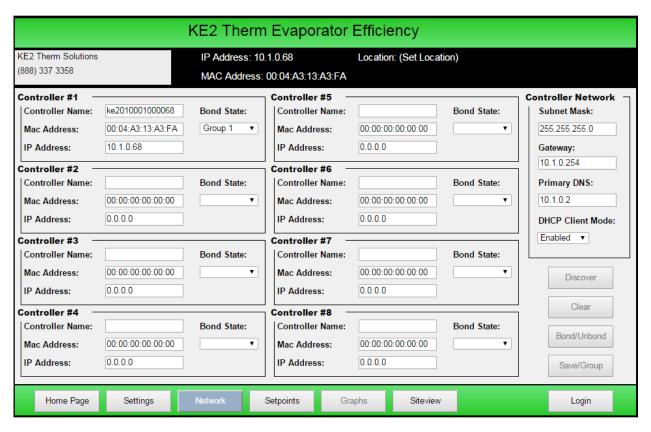
3. Resources map

3.1.   /api/Status/

Resource path	GET	PUT	POST
/api/Status	GET		
/api/Status/FirmwareVersion	GET		
/api/Status/SystemMode	GET		
/api/Status/RoomTemp	GET		
/api/Status/CoilTemp	GET		
/api/Status/CompressorRelay	GET		
/api/Status/EvaporatorFanRelay	GET		
/api/Status/AuxiliaryRelay	GET		
/api/Status/DefrostRelay	GET		
/api/Status/DigitalInput1	GET		
/api/Status/DigitalInput2	GET		
/api/Status/DigitalInput3	GET		
/api/Status/Auxilary1	GET		
/api/Status/Auxilary4	GET		
/api/Status/Superheat	GET		
/api/Status/SuctionPressure	GET		
/api/Status/SaturationTemp	GET		
/api/Status/ValvePosition	GET		
/api/Status/Alarm1	GET		
/api/Status/Alarm2	GET		
/api/Status/Alarm3	GET		
/api/Status/Alarm4	GET		
/api/Status/Alarm5	GET		
/api/Status/Alarm6	GET		

3.2.   /api/Settings/

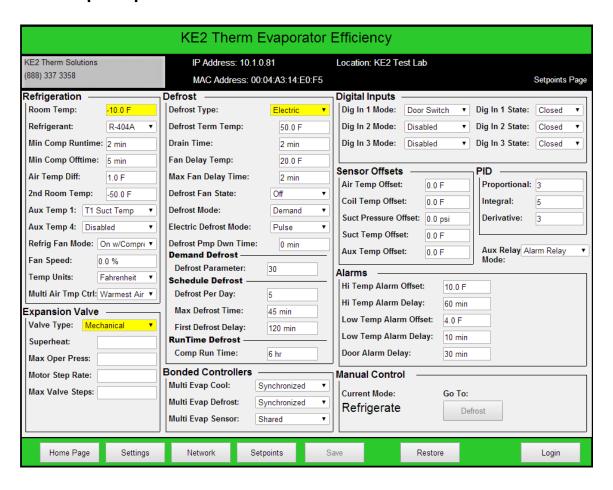| Resource path	GET	PUT	PUT parent resource URI	POST
/api/Settings	GET			
/api/Settings/Location	GET			
/api/Settings/Location/BusinessName	GET	PUT	/api/Settings/Location	
/api/Settings/Location/PhoneNumber	GET	PUT	/api/Settings/Location	
/api/Settings/Location/Location	GET	PUT	/api/Settings/Location	
/api/Settings/WebpageLogin	GET			
/api/Settings/WebpageLogin/UserName	GET	PUT	/api/Settings/WebpageLogin	
/api/Settings/WebpageLogin/Password	GET	PUT	/api/Settings/WebpageLogin	
/api/Settings/AlertNotifications	GET			
/api/Settings/AlertNotifications/EmailServer	GET	PUT	/api/Settings/AlertNotifications	
/api/Settings/AlertNotifications/Port	GET	PUT	/api/Settings/AlertNotifications	
/api/Settings/AlertNotifications/UserName	GET	PUT	/api/Settings/AlertNotifications	
/api/Settings/AlertNotifications/Password	GET	PUT	/api/Settings/AlertNotifications	
/api/Settings/AlertNotifications/EmailAddress	GET	PUT	/api/Settings/AlertNotifications	
/api/Settings/AlertNotifications/EmailSubject	GET	PUT	/api/Settings/AlertNotifications	
/api/Settings/AlertNotifications/SendTest				POST
/api/Settings/FTPLogging	GET			
/api/Settings/FTPLogging/FTPUserName	GET	PUT	/api/Settings/FTPLogging	
/api/Settings/FTPLogging/FTPPassword	GET	PUT	/api/Settings/FTPLogging	
/api/Settings/FTPLogging/FTPServer	GET	PUT	/api/Settings/FTPLogging	
/api/Settings/FTPLogging/LogInterval	GET	PUT	/api/Settings/FTPLogging	
/api/Settings/Misc	GET			
/api/Settings/Misc/LogOpt	GET	PUT	/api/Settings/Misc	
/api/Settings/APISSL	GET	PUT		

3.3. /api/Network

Resource path	GET	PUT	PUT parent resource URI	POST
/api/Network	GET			
/api/Network/Controller	GET			
/api/Network/Controller/1	GET			
/api/Network/Controller/1/Name	GET			
/api/Network/Controller/1/BondState	GET			
/api/Network/Controller/1/MacAddress	GET			
/api/Network/Controller/1/IPAddress	GET			
/api/Network/Controller/2	GET			
/api/Network/Controller/2/Name	GET			
/api/Network/Controller/2/BondState	GET			
/api/Network/Controller/2/MacAddress	GET			
/api/Network/Controller/2/IPAddress	GET			
/api/Network/Controller/3	GET			
/api/Network/Controller/3/Name	GET			
/api/Network/Controller/3/BondState	GET			
/api/Network/Controller/3/MacAddress	GET			
/api/Network/Controller/3/IPAddress	GET			
/api/Network/Controller/4	GET			
/api/Network/Controller/4/Name	GET			
/api/Network/Controller/4/BondState	GET			
/api/Network/Controller/4/MacAddress	GET			
/api/Network/Controller/4/IPAddress	GET			

/api/Network/Controller/5	GET
/api/Network/Controller/5/Name	GET
/api/Network/Controller/5/BondState	GET
/api/Network/Controller/5/MacAddress	GET
/api/Network/Controller/5/IPAddress	GET
/api/Network/Controller/6	GET
/api/Network/Controller/6/Name	GET
/api/Network/Controller/6/BondState	GET
/api/Network/Controller/6/MacAddress	GET
/api/Network/Controller/6/IPAddress	GET
/api/Network/Controller/7	GET
/api/Network/Controller/7/Name	GET
/api/Network/Controller/7/BondState	GET
/api/Network/Controller/7/MacAddress	GET
/api/Network/Controller/7/IPAddress	GET
/api/Network/Controller/8	GET
/api/Network/Controller/8/Name	GET
/api/Network/Controller/8/BondState	GET
/api/Network/Controller/8/MacAddress	GET
/api/Network/Controller/8/IPAddress	GET
/api/Network/MacAddress	GET
/api/Network/SubNetMask	GET
/api/Network/Gateway	GET
/api/Network/DNS	GET
/api/Network/DHCPmode	GET

3.4.   /api/Setpoints

Resource path	GET	PUT	PUT parent resource URI	POST
/api/Setpoints	GET			
/api/Setpoints/Refrigeration	GET			
/api/Setpoints/Refrigeration/RoomTemp	GET	PUT	/api/Setpoints/Refrigeration	
/api/Setpoints/Refrigeration/Refrigerant	GET	PUT	/api/Setpoints/Refrigeration	
/api/Setpoints/Refrigeration/MinCompRuntime	GET	PUT	/api/Setpoints/Refrigeration	
/api/Setpoints/Refrigeration/MinCompOfftime	GET	PUT	/api/Setpoints/Refrigeration	
/api/Setpoints/Refrigeration/AirTempDiff	GET	PUT	/api/Setpoints/Refrigeration	
/api/Setpoints/Refrigeration/2ndRoomTemp	GET	PUT	/api/Setpoints/Refrigeration	
/api/Setpoints/Refrigeration/AuxTemp1	GET	PUT	/api/Setpoints/Refrigeration	
/api/Setpoints/Refrigeration/AuxTemp4	GET	PUT	/api/Setpoints/Refrigeration	
/api/Setpoints/Refrigeration/RefrigFanMode	GET	PUT	/api/Setpoints/Refrigeration	
/api/Setpoints/Refrigeration/FanSpeed	GET	PUT	/api/Setpoints/Refrigeration	
/api/Setpoints/Refrigeration/TempUnits	GET	PUT	/api/Setpoints/Refrigeration	
/api/Setpoints/Refrigeration/MultiAirTempControl	GET	PUT	/api/Setpoints/Refrigeration	
/api/Setpoints/Expansionvalve	GET			
/api/Setpoints/Expansionvalve/ValveType	GET	PUT	/api/Setpoints/Expansionvalve	
/api/Setpoints/Expansionvalve/Superheat	GET	PUT	/api/Setpoints/Expansionvalve	
/api/Setpoints/Expansionvalve/MaxOperPressure	GET	PUT	/api/Setpoints/Expansionvalve	
/api/Setpoints/Expansionvalve/MotorStepRate	GET	PUT	/api/Setpoints/Expansionvalve	
/api/Setpoints/Expansionvalve/MaxValveSteps	GET	PUT	/api/Setpoints/Expansionvalve	
/api/Setpoints/Expansionvalve/MotorType	GET	PUT	/api/Setpoints/Expansionvalve	
/api/Setpoints/Defrost	GET			

/api/Setpoints/Defrost/DemandDefrost	GET		
/api/Setpoints/Defrost/DemandDefrost/Parameter	GET	PUT	/api/Setpoints/Defrost/DemandDefrost
/api/Setpoints/Defrost/ScheduleDefrost	GET		
/api/Setpoints/Defrost/ScheduleDefrost/PerDay	GET	PUT	/api/Setpoints/Defrost/ScheduleDefrost
/api/Setpoints/Defrost/ScheduleDefrost/MaxTime	GET	PUT	/api/Setpoints/Defrost/ScheduleDefrost
/api/Setpoints/Defrost/ScheduleDefrost/FirstDefrostDelay	GET	PUT	/api/Setpoints/Defrost/ScheduleDefrost
/api/Setpoints/Defrost/DefrostRuntime	GET		
/api/Setpoints/Defrost/DefrostRuntime/CompRunTime	GET	PUT	/api/Setpoints/Defrost/DefrostRuntime
/api/Setpoints/Defrost/DefrostType	GET	PUT	/api/Setpoints/Defrost
/api/Setpoints/Defrost/DefrostTermTemp	GET	PUT	/api/Setpoints/Defrost
/api/Setpoints/Defrost/DrainTime	GET	PUT	/api/Setpoints/Defrost
/api/Setpoints/Defrost/FanDelayTemp	GET	PUT	/api/Setpoints/Defrost
/api/Setpoints/Defrost/MaxFanDelayTime	GET	PUT	/api/Setpoints/Defrost
/api/Setpoints/Defrost/DefrostFanState	GET	PUT	/api/Setpoints/Defrost
/api/Setpoints/Defrost/DefrostMode	GET	PUT	/api/Setpoints/Defrost
/api/Setpoints/Defrost/ElectricDefrostMode	GET	PUT	/api/Setpoints/Defrost
/api/Setpoints/Defrost/DefrostPmpDwnTime	GET	PUT	/api/Setpoints/Defrost
/api/Setpoints/BondedControllers	GET		
/api/Setpoints/BondedControllers/MultiEvapCool	GET	PUT	/api/Setpoints/BondedControllers
/api/Setpoints/BondedControllers/MultiEvapDefrost	GET	PUT	/api/Setpoints/BondedControllers
/api/Setpoints/BondedControllers/MultiEvapSensor	GET	PUT	/api/Setpoints/BondedControllers
/api/Setpoints/Misc	GET		
/api/Setpoints/Misc/AuxRelayMode	GET	PUT	/api/Setpoints/Misc
/api/Setpoints/DigitalInputs	GET		
/api/Setpoints/DigitalInputs/1	GET		
/api/Setpoints/DigitalInputs/1/Mode	GET	PUT	/api/Setpoints/DigitalInputs
/api/Setpoints/DigitalInputs/1/State	GET	PUT	/api/Setpoints/DigitalInputs
/api/Setpoints/DigitalInputs/2	GET		
/api/Setpoints/DigitalInputs/2/Mode	GET	PUT	/api/Setpoints/DigitalInputs
/api/Setpoints/DigitalInputs/2/State	GET	PUT	/api/Setpoints/DigitalInputs
/api/Setpoints/DigitalInputs/3	GET		
/api/Setpoints/DigitalInputs/3/Mode	GET	PUT	/api/Setpoints/DigitalInputs
/api/Setpoints/DigitalInputs/3/State	GET	PUT	/api/Setpoints/DigitalInputs
/api/Setpoints/SensorOffsets	GET		
/api/Setpoints/SensorOffsets/AirTempOffset	GET	PUT	/api/Setpoints/SensorOffsets
/api/Setpoints/SensorOffsets/CoilTempOffset	GET	PUT	/api/Setpoints/SensorOffsets
/api/Setpoints/SensorOffsets/SuctPressureOffset	GET	PUT	/api/Setpoints/SensorOffsets
/api/Setpoints/SensorOffsets/SuctTempOffset	GET	PUT	/api/Setpoints/SensorOffsets
/api/Setpoints/SensorOffsets/AuxTempOffset	GET	PUT	/api/Setpoints/SensorOffsets
/api/Setpoints/PID	GET		
/api/Setpoints/PID/Proportional	GET	PUT	/api/Setpoints/PID
/api/Setpoints/PID/Integral	GET	PUT	/api/Setpoints/PID
/api/Setpoints/PID/Derivative	GET	PUT	/api/Setpoints/PID
/api/Setpoints/Alarms	GET		
/api/Setpoints/Alarms/HiTempAlarmOffset	GET	PUT	/api/Setpoints/Alarms
/api/Setpoints/Alarms/HiTempAlarmDelay	GET	PUT	/api/Setpoints/Alarms
/api/Setpoints/Alarms/LowTempAlarmOffset	GET	PUT	/api/Setpoints/Alarms
/api/Setpoints/Alarms/LowTempAlarmDelay	GET	PUT	/api/Setpoints/Alarms

/api/Setpoints/Alarms/DoorAlarmDelay	GET	PUT	/api/Setpoints/Alarms
/api/Setpoints/ManualControl	GET		
/api/Setpoints/ManualControl/CurrentMode	GET		
/api/Setpoints/ManualControl/NextMode	GET		
/api/Setpoints/ManualControl/GotoNextMode			POST