

FlowWorks WebAPI

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FlowWorks WebAPI

Introduction

The FlowWorks WebAPI has been created to allow developers to extract site, channel and data point information for their FlowWorks sites using a RESTful web service. The data is formatted in JSON for quick and easy app development across multiple platforms.

Audience

The FlowWorks WebAPI is intended for software developers familiar with consuming HTTP web services, REST principles, JSON, and the FlowWorks data model.

Access

Access to the FlowWorks WebAPI requires an API key. This API key is a unique identifier associated with an existing FlowWorks user account. To request a key, please contact FlowWorks Support at <http://support.flowworks.com>.

For security, all WebAPI traffic is encrypted via SSL and is only accessible via the HTTPS protocol. The API key must be included with every request.

Making Requests

Requests to the FlowWorks WebAPI use the following basic format:

```
https://developers.flowworks.com/fwapi/<version #>/<apikey>/<resource>
```

The *<version #>* refers to the API version you are requesting.

The *<apikey>* is your unique identifier and must be included on every request.

The *<resource>* describes the resource you are requesting. For a complete list of available resources, see the Resources section below.

Response Objects

Each response contains the following:

requeststatus: integer value of 0 or 1 -- representing success or failure

msg: string containing a message describing the result and any errors that occurred. See Appendix B: Response Messages for complete listing.

username: string containing the name of the user associated with the api key that made the request.

A collection of the resource you requested. See Resources section below for examples.

Resources

The following Resources are available from the FlowWorks WebAPI.

GET site

Description:

Returns a collection of all sites.

Example URL:

<https://developers.flowworks.com/fwapi/v1/<apikey>/sites>

Example JSON response:

```
{
  "requeststatus":1,
  "msg":"Request OK.",
  "username":"jdoe",
  "sites": [
    {"id":1,"name":"Bay City Road","longitude":"49.0730927817148","latitude":"-122.316370010375","channels":null},
    {"id":2,"name":"Bay City Marina","longitude":"49.0606509305222","latitude":"-122.297401428222","channels":null}]
}
```

GET site/<siteid>

Description:

Returns a site specified by the siteid parameter and includes the channels.

Example URL:

<https://developers.flowworks.com/fwapi/v1/<apikey>/site/1>

Example JSON response:

```
{
  "requeststatus":1,
  "msg":"Request OK.",
  "username":"jdoe",
  "sites":[
    {
      "id":1,
      "name":"Bay City Road",
      "longitude":"49.0730927817148",
      "latitude":"-122.316370010375",
      "channels":
        [{"id":22,"name":"Battery voltage","unit":"V"}],
        [{"id":28,"name":"Velocity","unit":"ft/s"}]
    }
  ]
}
```

GET site/<siteid>/channel

Description:

Returns a site specified by the siteid parameter and includes the channels.

Example URL:

<https://developers.flowworks.com/fwapi/v1/<apikey>/site/1/channel>

Example JSON response:

```
{
  "requeststatus":1,
  "msg":"Request OK.",
  "username":"jdoe",
  "sites":[
    {
      "id":1,
      "name":"Bay City Road",
      "longitude":"49.0730927817148",
      "latitude":"-122.316370010375",
      "channels":
        [{ "id":22,"name":"Battery voltage","unit":"V"},
          { "id":28,"name":"Velocity","unit":"ft/s"}]
    }
  ]
}
```

GET site/<siteid>/channel/<channelid>

Description:

Returns a channel specified by the siteid and channelid parameters.

Example URL:

<https://developers.flowworks.com/fwapi/v1/<apikey>/site/1/channel/22>

Example JSON response:

```
{
  "requeststatus":1,
  "msg":
  "Request OK.",
  "username":"jdoe","channels":
  [{ "id":22,"name":"Battery voltage","unit":"V"}]
}
```

GET site/<siteid>/channel/<channelid>/data/

Description:

Returns all data points for the channel specified by the siteid and channelid parameters.

Example URL:

<https://developers.flowworks.com/fwapi/v1/<apikey>/site/1/channel/22/data/>

Example JSON response:

```
{
  "requeststatus":1,
  "msg":"Request OK.",
  "username":"jdoe",
  "datapoints": [
    {"date":"2012-01-01T00:00:00","value":12.21},
    {"date":"2012-01-01T00:15:00","value":12.21},
    ...
    {"date":"2012-11-03T14:45:00","value":11.92}]
}
```

GET site/<siteid>/channel/<channelid>/data/startdate/<date>

Description:

Returns all data points for the channel, in the range between start date and the current time, as specified by the siteid, channelid, and startdate parameters. The startdate is in the 'yyyyMMddHHmmss' format with the time component being optional.

Example URL:

https://developers.flowworks.com/fwapi/v1/<apikey>/site/1/channel/22/Data/startdate/20120321163000

Example JSON response:

```
{
  "requeststatus":1,
  "msg":"Request OK.",
  "username":"jdoe",
  "datapoints": [
    {"date":"2012-03-21T16:30:00","value":12.07},
    {"date":"2012-03-21T16:45:00","value":12.07},
    ...
    {"date":"2012-11-03T14:45:00","value":11.92}]
}
```

GET site/<siteid>/channel/<channelid>/data/enddate/<date>

Description:

Returns all data points for the channel, in the range between the beginning of time until the end date, as specified by the siteid, channelid, and enddate parameters. The enddate is in the 'yyyyMMddHHmmss' format with the time component being optional.

Example URL:

https://developers.flowworks.com/fwapi/v1/<apikey>/site/1/channel/22/data/enddate/20120101

Example JSON response:

```
{
  "requeststatus":1,
  "msg":"Request OK.",
  "username":"jdoe",
  "datapoints": [
    {"date":"2009-08-11T10:30:00","value":12.31},
    {"date":"2009-08-11T10:45:00","value":12.31},
    ...
    {"date":"2012-01-01T00:00:00","value":12.21}]
}
```

GET site/<siteid>/channel/<channelid>/data/startdate/<date>/enddate/<date>

Description:

Returns all data points for the channel, in the range between the start date and the end date, as specified by the siteid, channelid, startdate, and enddate parameters. Both date parameters are in the 'yyyyMMddHHmmss' format with the time component being optional.

Example URL:

https://developers.flowworks.com/fwapi/v1/<apikey>/site/1/channel/22/data/startdate/20120403192712/enddate/20120409

Example JSON response:

```
{
  "requeststatus":1,
  "msg":"Request OK.",
  "username":"jdoe",
  "datapoints": [
    {"date":"2012-04-03T19:30:00","value":11.89},
    {"date":"2009-04-03T19:45:00","value":11.89},
    ...
    {"date":"2012-04-09T00:00:00","value":11.73}]
}
```

GET site/<siteid>/channel/<channelid>/data/intervaltype/ <type>/intervalnum/<num>

Description:

Returns all data points for the channel in the range specified by the interval type and interval number, for the specified siteid and channelid. This can be used to retrieve the last N intervals of data. For example, an interval type of 'D' and an interval number of '7' would return the data from the past 7 days. An interval type of 'HH' and interval number of '12' would return the data from the past 12 hours. Valid interval types are: 'Y', 'M', 'D', 'HH', 'MM', and 'SS'.

Example URL: <https://developers.flowworks.com/fwapi/v1/<apikey>/site/1/channel/22/data/intervaltype/D/intervalnum/7>

Example JSON response:

```
{
  "requeststatus":1,
  "msg":"Request OK.",
  "username":"jdoe",
  "datapoints": [
    {"date":"2012-10-27T15:00:00","value":11.98},
    {"date":"2012-10-27T15:15:00","value":11.98},
    ...
    {"date":"2012-11-03T14:45:00","value":11.92}]
}
```


Restrictions & Limits

There is a rate limit for each API user to prevent an individual from consuming too many resources. If the rate limit is exceeded, no data will be returned and the response message will indicate the problem. If this is happening frequently, please contact FlowWorks Support (<http://support.flowworks.com>) to discuss your requirements, application, and scenario. In some cases, this limit can be increased.

It's possible to request a set of data that is too large to return in a single response. The maximum size of a response is capped at ~1.5 million data points. Applications should be checking the response message to see if this has occurred, and then make additional requests by varying the date range to complete the set of data.

APPENDIX A: FlowWorks Data Model

Site - A physical location where data is being collected. A Site has a name, location (lat/long), and a collection of channels.

```
public class Site
{
    public integer id { get; set; }
    public string name { get; set; }
    public string longitude { get; set; }
    public string latitude { get; set; }
    public IEnumerable<Channel> channels { get; set; }
}
```

Channel - A description of a set of time series data. A channel has a name (i.e. Flow, Level, Velocity, Temperature, etc.) and optionally a unit of measurement (i.e. gal/min, ft, ft/s, °F, etc.).

```
public class Channel
{
    public int id { get; set; }
    public string name { get; set; }
    public string unit { get; set; }
}
```

Data Point - A value recorded at a specific date and time.

```
public class DataPoint
{
    public DateTime date { get; set; }
    public float value { get; set; }
}
```

APPENDIX B: Response Messages

Request OK – Request is valid and was accepted.

Request Not OK – Request failed, caused an error, or was invalid.

Exceeded Data Point Limit – The request succeeded, but resulted in too many data points being returned. See Restrictions & Limits section.

Request failed, no data returned – No data was available. Check you have supplied the correct site and/or channel parameters.

Authentication failed or rate limit exceeded – Your api key is not authorized to use the API, or you've made too many requests to the API in a short time span. See Restrictions & Limits section.

Channel id must be > 0 – An invalid channel id parameter has been supplied.

Site id must be > 0 – An invalid site id parameter has been supplied.

Can't find that site – The site you've requested does not exist.

Bad End Date or Time – Incorrect date format used.

Bad Start Date or Time – Incorrect date format used.

Bad Date or Time – Incorrect date format used.

Interval number is too big – Invalid interval number has been supplied which would result in too much data being returned. Try a smaller range or breaking your request into multiple smaller ones.

Interval type should be Y OR M OR D OR HH OR MM OR SS – Invalid interval type parameter has been supplied.

