Patterns

Info360 is able to find average reoccurring patterns found in measured data by creating Pattern objects.

A powerful application of Patterns for numerical modelers is to send the pattern to **InfoWater** or **InfoSWMM**. This is the only means of passing Info360 time-varying data as input to the model.

Patterns are created using the following inputs:

Input	Description

Type

This defines how Info360 breaks the data into repeating components.

Type	Description
5 minute	This type outputs the average value for each five minute of the hour (12 points in 1 hour). Example: Every data point within the Time Range that occurs for each five minute will be averaged together and assigned as the Pattern output.
10 minute	This type outputs the average value for each 10 minute of the hour (6 points in 1 hour). Example: Every data point within the Time Range that occurs for each 10 minute will be averaged together and assigned as the Pattern output.
15 minute	This type outputs the average value for each 15 minute of the hour (4 points in 1 hour). Example: Every data point within the Time Range that occurs for each 15 minute in an hour will be averaged together and assigned as the Pattern output.
15 minute Hourly	This type outputs the average value for each 15 minute in 24 hours (96 points in 24 hours). Example: Every data point within the Time Range that occurs for each 15 minute in 24 hours will be averaged together and assigned as the Pattern output.
30 minute	This type outputs the average value for each 30 minute of the hour (2 points in 1 hour). Example: Every data point within the Time Range that occurs for each 30 minute in an hour will be averaged together and assigned as the Pattern output.
30 minute Hourly	This type outputs the average value for each 30 minute in 24 hours (48 points in 24 hours). Example: Every data point within the Time Range that occurs for each 30 minute in 24 hours will be averaged together and assigned as the Pattern output.
Hourly	This type outputs the average value for each hour of the day (24 points in 24 hours). Example: Every data point within the Time Range that occurs within the hour of 8:00 will be averaged together and assigned as the Pattern output at 8:00.
Weekday Hourly	This type outputs the average value for each weekday hourly (24 points in a week). Example: Every data point within the Time Range that occurs hourly from Monday to Friday will be averaged together and assigned as the Pattern output for Friday.
Weekend Hourly	This type outputs the average value for each weekend hourly (24 points in a week). Example: Every data point within the Time Range that occurs hourly from Saturday to Sunday will be averaged together and assigned as the Pattern output for Sunday.
Day of Month	This type outputs the average value for each day of the month (31 points in a month). Example: Every data point within the Time Range that occurs on the 4th day of the month will be averaged together and assigned as the Pattern output at day 4.
Week 7 Day	This type outputs the average value for each day of the week (7 points in a week). Example: Every data point within the Time Range that occurs on a Monday will be averaged together and assigned as the Pattern output for Monday.
Weekday	This type outputs the average value for each weekday of the week (5 points in a week). Example: Every data point within the Time Range that occurs from Monday to Friday will be averaged together and assigned as the Pattern output for Friday.
Weekend	This type outputs the average value for each weekend of the week (2 points in a week). Example: Every data point within the Time Range that occurs from Saturday and Sunday will be averaged together and assigned as the Pattern output for Sunday.
Weekly	This type outputs the average value for each week of the month (4 points in a month). Example: Every data point within the Time Range that occurs on the 4th week of the year will be averaged together and assigned as the Pattern output at week four.
Monthly	This type outputs the average value for each month of the year (12 points in a year). Example: Every data point within the Time Range that occurs in April of any year will be averaged together and assigned as the Pattern output on month four.

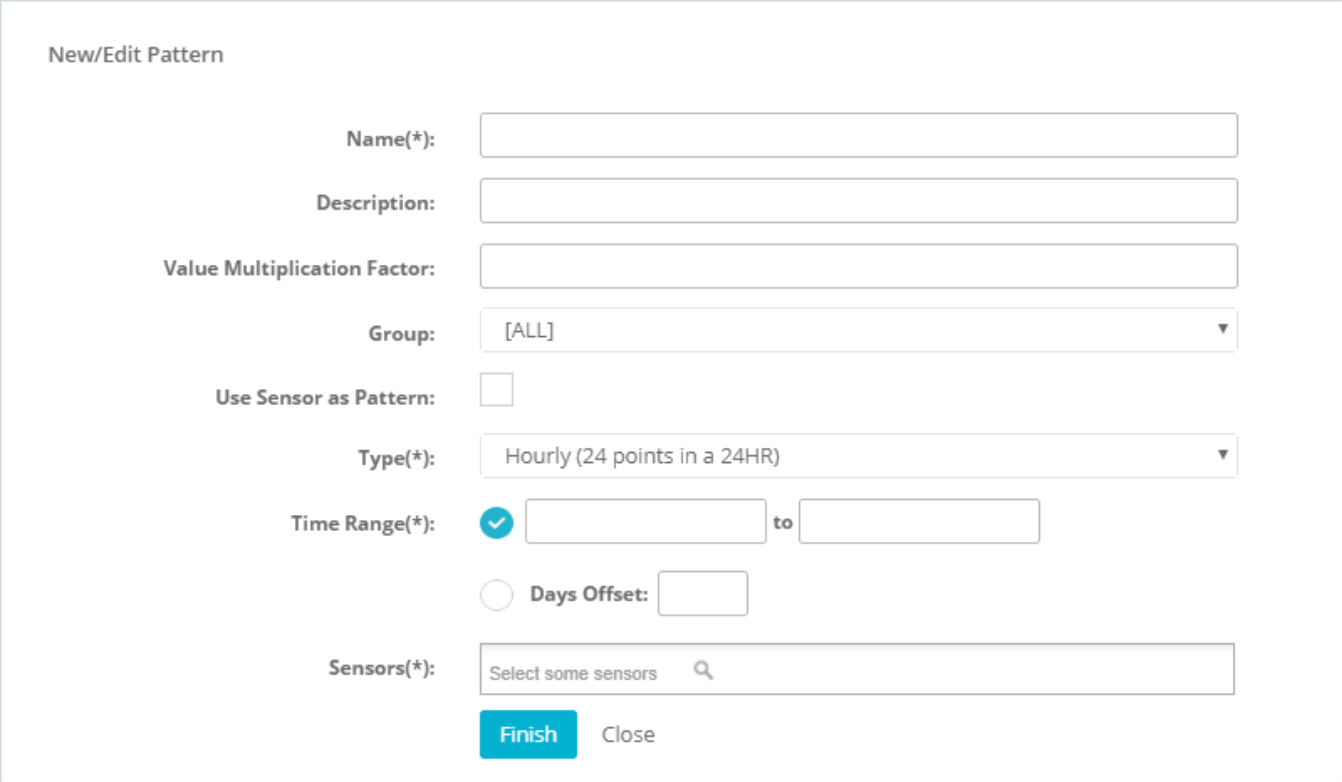
Time Range	This specifies the range in data to be included in the Pattern. For example, one could create Hourly patterns for each month of the year to compare how the system varies seasonally.

User Interface of the Pattern Tab

Feature	Description
Create new Pattern	Clicking this button will create a new Pattern and open the New/Edit Pattern window where the name, type, time range, and sensors are assigned.
Refresh	Clicking this button will re-calculate the associated pattern. If you have a Day Offset on pattern instead of Time Range, then instead of creating new pattern or editing the pattern every day, you can click the **Refresh** button and Info360 will recalculate the pattern. If you are on a workspace and it includes those patterns, then Info360 will update those pattern widgets as well.
View	Click this to add a quick chart of the pattern output in the current workspace. This chart does not have all the controls of standard charts. See Add Pattern as a Reference Chart below for more controls.
Edit Clone Delete	These are the standard Info360 tools for editing, cloning, and deleting objects.

New/Edit Pattern

The New/Edit Pattern window defines the properties of a Pattern, including the type that is used and which sensor/group is tracked.



Fields

Field	Description
Name (*)	Specifies the name of the Pattern.
Description	Optional description that appears in the table of saved Pattern.
Value Multiplication Factor	The numerical factor that will be multiplied to the average output of a particular Pattern Type.
Group	Optional drop-down menu to associate the Pattern in a saved Pattern Group.
Use Sensor as Pattern	Enables/disables to use sensor as pattern.

Type (*)	Defines how the application breaks the data into repeating components.
Time Range (*)	The start and end time of the data where the average output value will be taken for the Pattern Type.
Days Offset	Allows you to specify the last number of days that you want to see the pattern for.
Sensor(*)	Specifies the data inputs to be included in the Pattern. When multiple sensors are selected, the average of all sensors at each time is used in the result.

⚠ Fields marked with (*) are required fields.

Rerunning the Pattern Analysis

When a pattern is created, its output is stored as static data until it is rerun. It is therefore common practice to rerun the pattern with the latest data before adding it to charts and reports.

To rerun a pattern, click the Edit button, modify the date range to include the latest data, and then click 

. A prompt in the upper right corner will indicate whether the analysis ran properly.

Add Pattern as a Reference Chart

Patterns can be added to sensor charts by using the Pattern function as a Reference Chart. Just call the Pattern() function and reference the ID of the desired pattern.

Tip:

In Reference Charts, Patterns should be reviewed at the time step in which they were created. For example, if an Hourly pattern is viewed at a daily interval, the result will show a flat line.