

START >

# Available aggregations

Aggregations are used to **summarize the signal** on a granularity choosen by the user.





# Count

## How does it works ?

- Count aggregation counts the number of points in the desired interval.
- It has to be used without interpolation (none)



### Main uses

- Count the number of events measured
- Check whether the sensor has recieved data in the interval





# Difference

## How does it works ?

- It is the difference between the value at the end of the interval with the value at the beggining.
- It is use with one interpolation in order to determine the value at the beggining or in the end of the interval.



### Main uses

- Compute an average derivative of the signal
- Consumption measurement for counter sensors

Time	Water Consumption
18:00	5
19:00	0
20:00	5
21:00	4



# First

## How does it works ?

- It takes the first values of the interval
- Depending on the chosen interpolation, the value taken can be actually measured (interp = none) or interpolated (interp = linear or previous)



### Main uses

• Some custom sensors might need this aggregation

Time	Consumption (interp. : linear)	Consumption (interp: none)
18:00	5	6
19:00	15	15
20:00	20	NA
21:00	11	5



# Last

## How does it works?

- It takes the last values of the interval
- Depending on the chosen interpolation, the value taken can be actually measured (interp = none) or interpolated (interp = linear or previous)



### Main uses

• Some custom sensors might need this aggregation

Time	Consumption (interp. : linear)	Consumption (interp: none)
18:00	15	6
19:00	20	21
20:00	11	NA
21:00	6	7



# Max

## How does it works?

- It takes the maximum value of the interval
- Depending on the chosen interpolation, the value taken can be actually measured (interp = none) or interpolated (interp = linear or previous)



### Main uses

• To be sure to trigger an alarm when a sensor value goes above a threshold

Time	Consumption (interp. : linear)	Consumption (interp: none)
18:00	15	13
19:00	28	28
20:00	20	NA
21:00	12	13



# Min

## How does it works?

- It takes the minimum value of the interval
- Depending on the chosen interpolation, the value taken can be actually measured (interp = none) or interpolated (interp = linear or previous)



### Main uses

• To be sure to trigger an alarm when a sensor value goes below a threshold

Time	Consumption (interp. : linear)	Consumption (interp: none)
18:00	5	6
19:00	15	15
20:00	11	NA
21:00	5	5



# Mean

### How does it works?

- It takes the arithmetic mean of the points in the interval.
- If an interpolation is choosen, a point is added at the beggining and at the end of the interval.



### Main uses

• To summarize the values of the sensor when the time between them is not important (batch statistics for instance)

#### Mean vs. weighted mean vs. integral

Time	Consumption (interp. : linear)	Consumption (interp: none)
18:00	9	8.33
19:00	21.5	22.83
20:00	15.5	NA
21:00	8	7.8



# Mode

## How does it works?

- It returns the most common value within the interval.
- No interpolation can be choosen





Time	Consumption
18:00	8
19:00	22
20:00	NA
21:00	6



# None

## How does it works ?

- It returns the data stored in the database
- As the timestamps might be different from one sensors to another it might be difficult to compare one sensor with another

### Main uses

- To see the raw, untreated data, stored in the database
- To apply treatment to directly to the raw data



Time	Consumption
18:05:32	6
18:12:34	8
18:34:21	8
18:53:12	12
•••	•••



# Sum

## How does it works ?

- It returns the sum of all data points within the interval.
- No interpolation is needed for this aggregation





- To sum up production data
- To sum up consumption of an input, when appliable

Time	Total production (kg)
18:00	459
19:00	688
20:00	NA
21:00	469





# Weighted mean

## How does it works?

- It is the mean of the interpolated (continuous) signal
- Visually, it is the area under the curve where the interval length is normalized to one.
- The original unit is conserved

### Main uses

• Considered as the most representative mean of the signal for continuous sensors.

Mean vs. weighted mean vs. integral





Time	Average Power (kW)
18:10	10
18:20	15
18:30	17.5
18:40	15



# Integral How does it works ?

- It is the mean of the interpolated (continuous) signal, normalized by the length of the interval
- If the original sensor Unit is U then the final unit is Uh



#### Main uses

- Conversion of electrical consumption from kW to kWh
- Conversion of flow meters from m<sup>3</sup>/h to m<sup>3</sup> actually consumed within the interval

#### Mean vs. weighted mean vs. integral

Time	Consumption (kWh)
18:10	1.67
18:20	2.5
18:30	2.92
18:40	2.5





Compute the aggregation result for **mean, weighted mean and integral aggregations** (using or not the previous interpolation), between 6h00 and 6h10 on the picture on the left and between 6h00 and 8h00 on the right.



Answers



