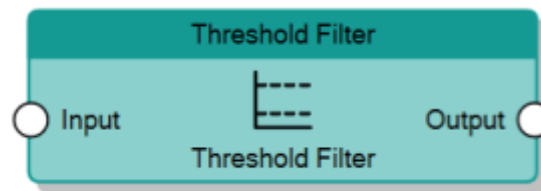
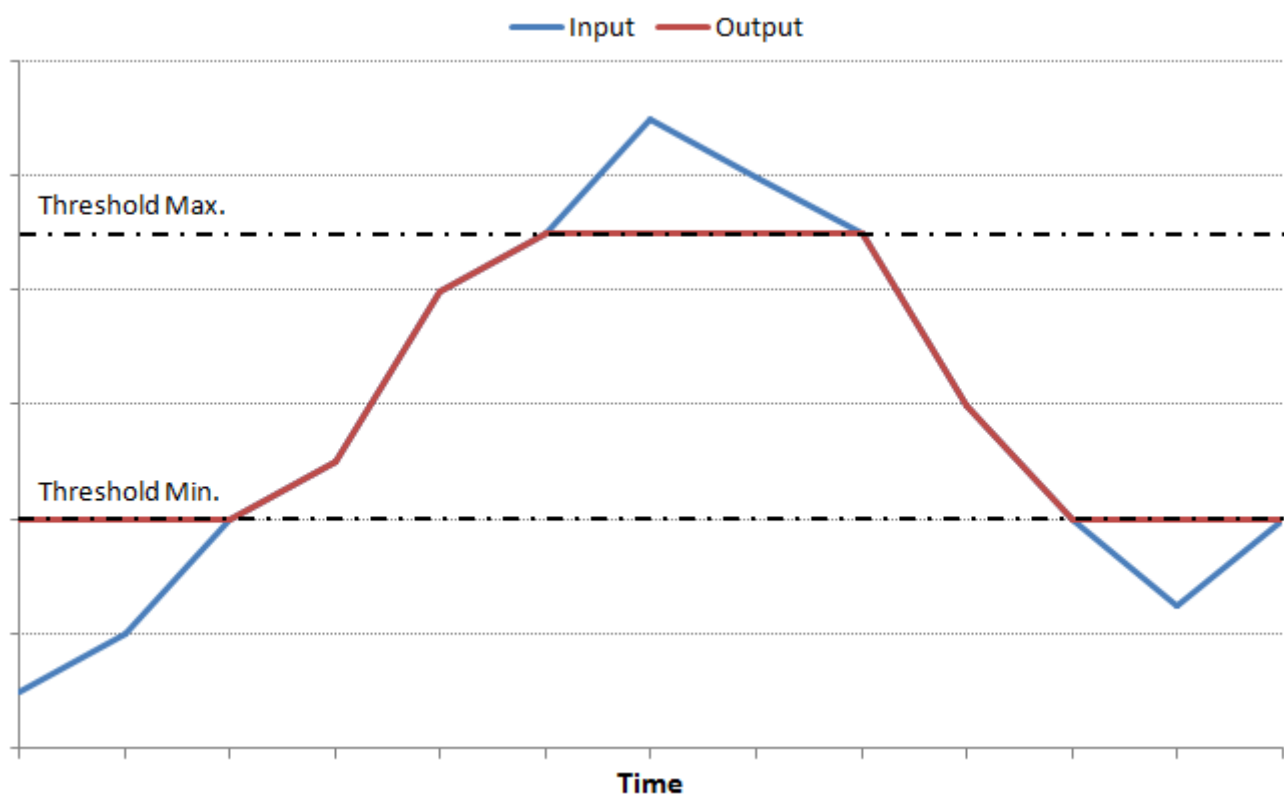


Threshold Filter



The **Threshold Filter** node limits an analog value according to one or two configured thresholds. When the value applied to the **Input** connector is included between **Threshold Min.** and **Threshold Max.**, the same value is sent to the **Output** connector. If the input value exceeds one of the configured limits, the node sends the corresponding threshold value instead.

It is possible to exclude one of the two thresholds by changing the **Filter type** property.



Behaviour of Threshold Filter with Filter Type set to *Minimum* and *maximum* thresholds

Connectors

Connector	Type	Description
Input	Input	Analog value to be filtered according to the configured threshold limits.

Connector	Type	Description
Output	Output	Filtered analog value. The output corresponds to the input value when it is within the allowed range, otherwise it is limited to the reached threshold.

Main properties

Property	Description
Threshold Min.	Defines the minimum allowed value. If the input goes below this threshold, the output is limited to this value when the minimum threshold is enabled.
Threshold Max.	Defines the maximum allowed value. If the input goes above this threshold, the output is limited to this value when the maximum threshold is enabled.
Filter type	Defines which thresholds are applied by the node. It can be used to enable both limits or exclude one of them.

Operation

When both minimum and maximum thresholds are enabled, the node behaves as a limiter.

Conceptually:

If Input < Threshold Min. → Output = Threshold Min.

If Threshold Min. ≤ Input ≤ Threshold Max. → Output = Input

If Input > Threshold Max. → Output = Threshold Max.

The node therefore does not generate a binary result.

Instead, it always produces an analog output value, limiting it only when the input goes outside the configured range.

Example

Consider the following configuration:

Property	Value
Threshold Min.	20
Threshold Max.	30
Filter type	Minimum and maximum thresholds

The resulting behaviour is:

Input	Output	Result
10	20	Input below the minimum threshold
20	20	Input at the minimum threshold
24	24	Input inside the allowed range
30	30	Input at the maximum threshold
40	30	Input above the maximum threshold



Values inside the configured interval pass through the node unchanged.
Only values outside the enabled threshold range are limited.

Minimum threshold only

By configuring the **Filter type** property, the maximum threshold can be excluded.

In this configuration, only the lower limit is applied.

Conceptually:

If Input < Threshold Min. → Output = Threshold Min.

If Input ≥ Threshold Min. → Output = Input

For example, with:

Threshold Min. = 20

Input	Output
10	20
20	20
30	30
50	50

The node therefore prevents the output from going below the configured minimum while leaving higher values unchanged.

Maximum threshold only

The **Filter type** property can also be configured so that only the upper limit is applied.

Conceptually:

If Input ≤ Threshold Max. → Output = Input

If Input > Threshold Max. → Output = Threshold Max.

For example, with:

Threshold Max. = 30

Input	Output
10	10
20	20

Input	Output
30	30
40	30

The node therefore prevents the output from exceeding the configured maximum while leaving lower values unchanged.

Threshold Filter vs Range Verifier

The **Threshold Filter** and **Range Verifier** both use minimum and maximum thresholds, but they perform different operations.

Threshold Filter	Range Verifier
Generates an analog output.	Generates a digital output.
Keeps the input value when it is inside the valid range.	Returns 1 when the input is inside the valid range.
Limits values that exceed the configured thresholds.	Returns 0 when the input is outside the configured range.
Used to constrain an analog value.	Used to verify whether a condition is true or false.

Typical applications

The Threshold Filter is useful whenever an analog value must be kept within predefined limits.

Typical applications include:

- limiting a temperature setpoint;
- restricting an analog command to the valid range of an actuator;
- preventing a dimming value from going below or above specific limits;
- limiting speed, pressure or other process values;
- protecting downstream logic from values outside an accepted operating range.

Verification through simulation

The Threshold Filter can be tested using the Logic Module simulation tools.

A typical test procedure is the following:

- connect a variable analog value to the **Input** connector;
- configure **Threshold Min.** and **Threshold Max.**;
- configure the required **Filter type**;
- start the simulation;
- set the input below the minimum threshold and observe the output;
- move the input inside the configured range and verify that the same value appears at the output;
- set the input above the maximum threshold and observe the output;
- repeat the test after excluding one of the thresholds.

Configuration notes

- Make sure that the input value and threshold values use the same scale and unit.
- When both thresholds are enabled, **Threshold Min.** should normally be lower than **Threshold Max.**
- Use **Filter type** to apply only the limits actually required by the logic.
- The node modifies only values that exceed the enabled limits.
- Unlike the Range Verifier, the Threshold Filter maintains an analog output.
- The node can be useful before sending values to devices that accept only a specific operating range.

Related pages

- [Logic Module](#)
- [Logic Module - Simulation management](#)
- [Range Verifier](#)

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