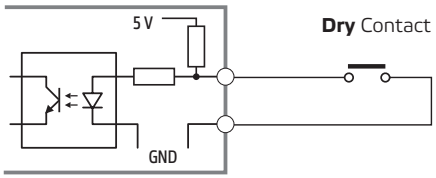
External digital inputs

CONNECTION AND DESCRIPTION OF FUNCTION

1 Control of external inputs

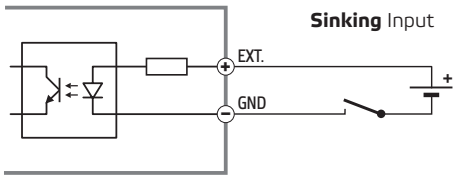
These inputs allow the connection of external binary signals or sensors, thus increasing the flexibility and expandability of measuring systems. This can be useful when synchronizing measurements with other devices or events. Digital inputs are binary in the form of logic 0 (low-level) and 1 (high-level). The type of connection and control of external inputs varies according to the type of device, therefore always follow the instructions for your device when connecting them.

Dry contact control



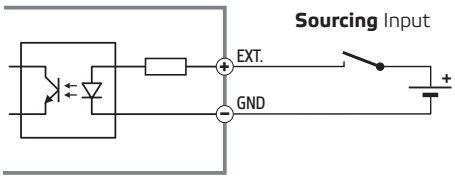
Control signal with positive logic (P)

Supply: 10...30 VDC



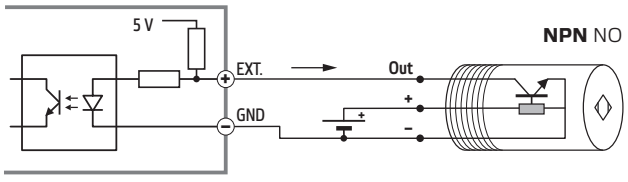
Control signal with negative logic (M)

Supply: 10...30 VDC



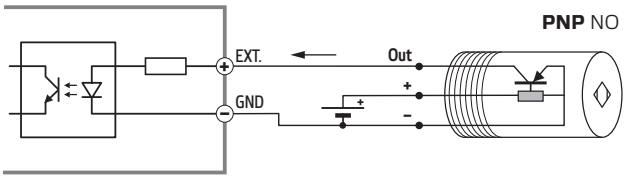
Control by NPN sensor

Supply: 10...30 VDC



Control by PNP sensor

Supply: 10...30 VDC



Tare

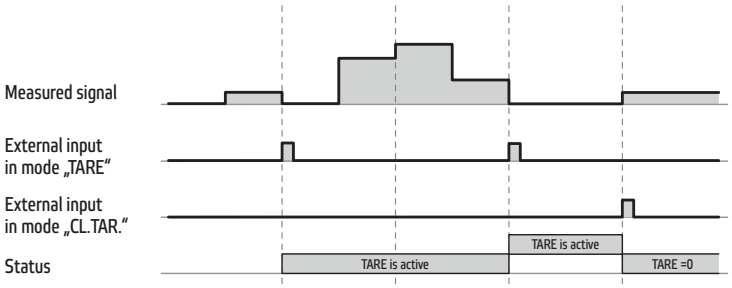
In the context of measurement, the term **TARE** refers to a value that is subtracted from the total measured value in order to eliminate the effect of a blank or zero condition. This method is often used in weighing or measuring, especially where it is important to differentiate the weight or value of an empty vessel from the total value.
Overall, **TARE** in measurement means a value that represents a zero or an empty state and is subtracted during measurement to obtain the value of the content itself or the measurand.

Function of external inputs

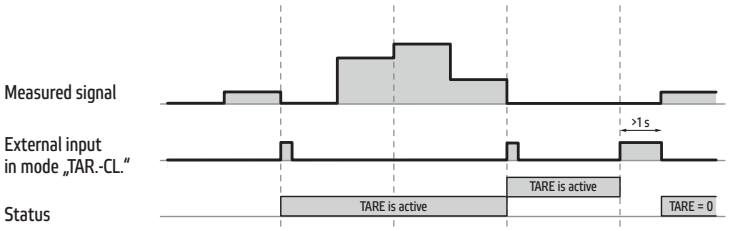
TARE	Activation of Tare
CL.TAR.	Clear Tare
TAR.-CL.	Activation of Tare (<1 s) + Clear Tare (>1 s)

Value of **TARE** is lost automatically every time the device is switched off

TARE Function



TARE / Clear TARE



Teach-In of Offset

In the context of measurement and sensing, offset means determining the difference between the value that a sensor or measuring device generates and the actual value. This deviation can arise for various reasons, including calibration inaccuracies, temperature effects or sensor wear.

To correct these deviations, you can use the **T-IN.OF.**, function, in which the device is calibrated based on a real live measurement and this value is stored in the **OFFSET** menu item. This process determines how much the measured value differs from the expected value and then corrects the output data or calibrates the device to provide more accurate results.

The use of the offset function is important for ensuring the accuracy of measurement and eliminating systematic errors that may arise over time or due to various factors.

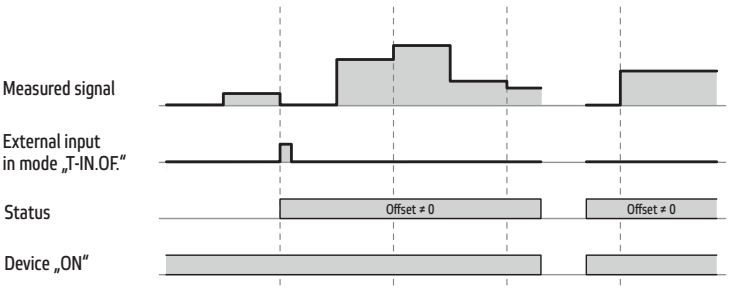
If you know the OFFSET value, you can enter it directly in the device menu instead of using the **T-IN.OF.** function.

Function of external inputs

T-IN.OF.	Activation of Tech-In for Offset

OFFSET value remains active in the device memory even after it had been switched off.

Function Teach-In of Offset



Cumulative measurement

Cumulative measurement **CUM.SUM.** usually refers to a measurement method in which values of measured quantities are added to each other in several steps, while the increase or change in value since the previous measurement is recorded.

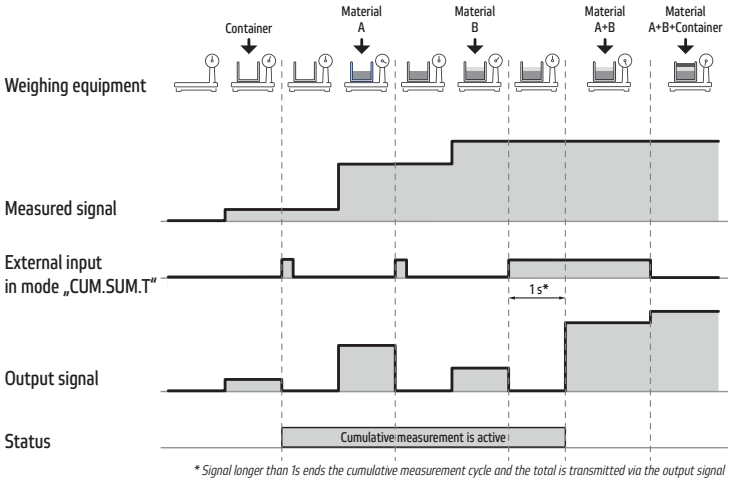
This method is often used in situations where it is important to observe changes or increments of a given quantity instead of measuring its absolute value. Cumulative measurement can be advantageous, for example, when monitoring dynamic processes, tracking the rise or fall of values over time, or when collecting data from various events.

Function of external inputs

CUM.SUM. Control of Cumulative measurement

Cumulative measurement

Example



** Signal longer than 1s ends the cumulative measurement cycle and the total is transmitted via the output signal*

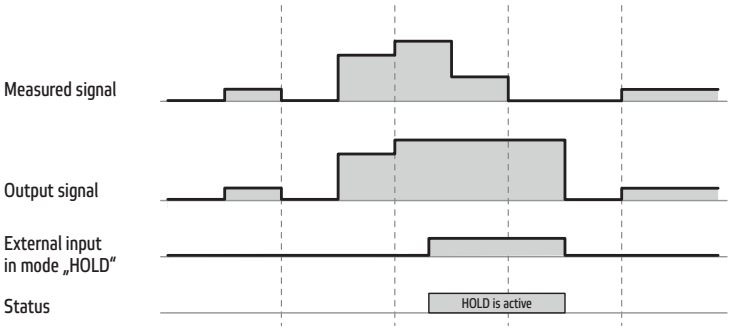
HOLD

The **HOLD** function is used in measuring devices to temporarily hold or "freeze in time" the current value on the display or output, even though the monitored input signal may have changed in the meantime. This can be useful in situations where it is difficult or impractical to monitor the device's display/output during the entire duration of the measurement, especially if you want to get an accurate reading at a specific point in time. This function can also be used to start the measurement at a specified moment.

Function of external inputs

HOLD Freezes measurement

Function HOLD



SAMPLE

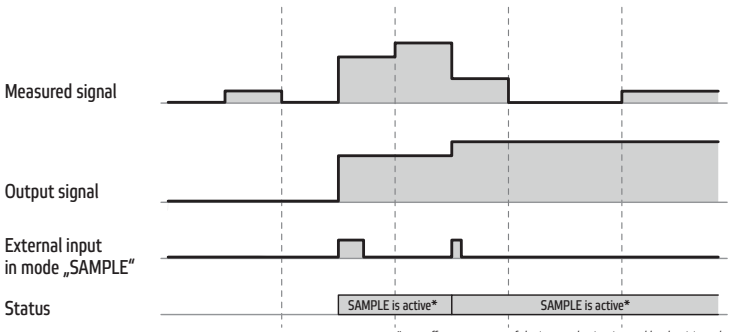
The **SAMPLE** function is suitable for applications where only one sample measurement needs to be taken at a precisely determined moment (latency ~5 ms).

This makes it possible to synchronize and control the flow of activities in different technological contexts, which is important for accurate measurement, synchronization of events and effective management of electronic systems.

Function of external inputs

SAMPLE Initiates a one-off measurement

Function SAMPLE



** one-off measurement of the input value is triggered by the rising edge*

Values Min, Max, Max-Min, Average

Measured values such as **MIN** (minimum), **MAX** (maximum), **MAX-MIN** (difference between maximum and minimum) and **AVERAGE** (average value) are statistical indicators that are often used in the control of technological processes and subsequent analysis. These values provide overall characteristics for the measured quantities.

Explanation of terminology:

Min It is the lowest value that can be found in the given measurement period. It represents the smallest measured value.

Max It is the highest value that can be found in the given measurement period. It represents the greatest measured value.

Max-Min Indicates the span of values. It is calculated by subtracting Min from Max. It provides information about the range of values.

Average Is the arithmetic mean of all values in a given measurement period. It is calculated by adding up all measured values and dividing by their number

The above values can be utilized for visualization, interpretation and further processing of the measured data. Min and Max give an idea of the range of values, the mean gives the central tendency and the Max-Min can be a useful indicator of the variability of the data.

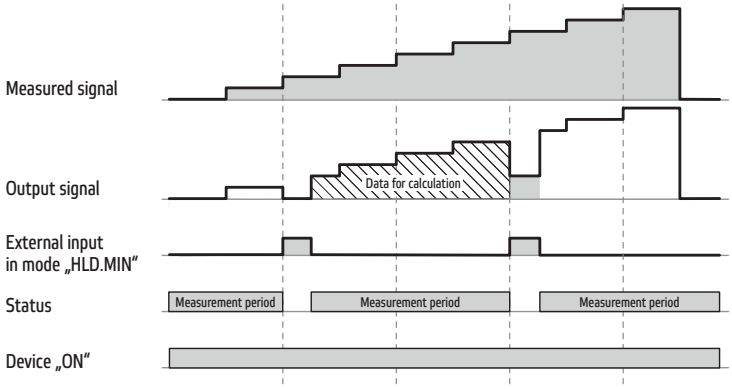
Function of external inputs

HLD.MIN	Hold - Value of Minimum
HLD.MAX	Hold - Value of Maximum
HLD.M-M	Hold - Value of MAX-MIN
HLD.PRM.	Hold - Average value

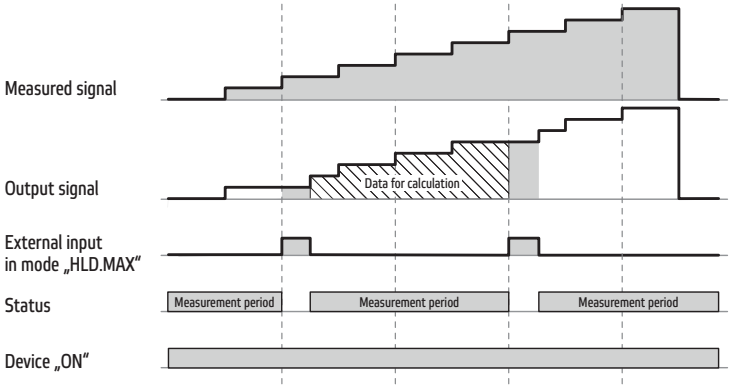
The measuring period is triggered by the falling edge of the control signal on the selected external input

Turning on the device is always the beginning of the first measured period

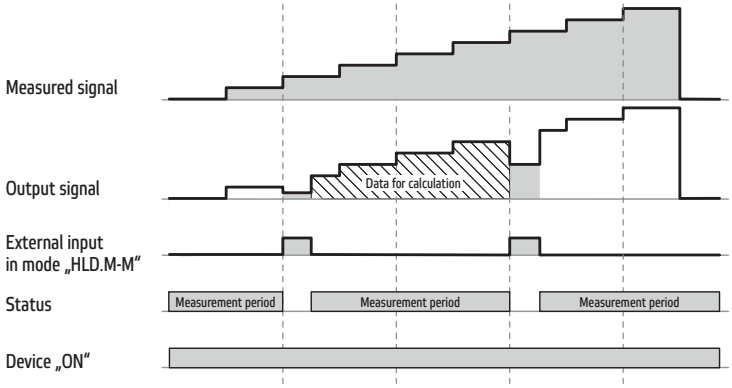
Function HLD.MIN



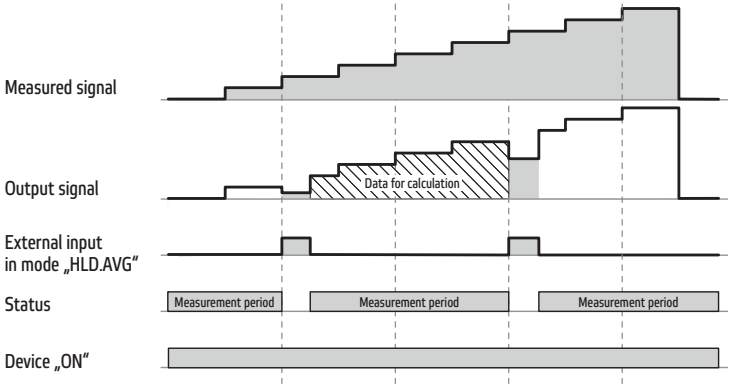
Function HLD.MAX



Function HLD.M-M



Function HLD.AVG



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