DEWETRON

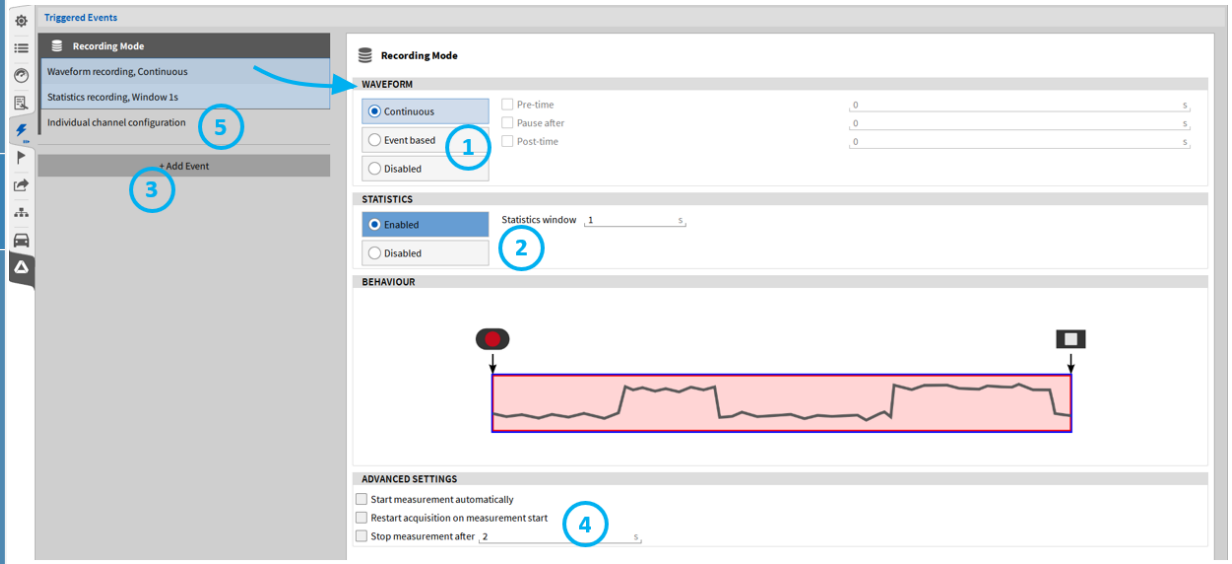
OXYGEN TRAINING
> EVENT BASED RECORDING

CONTENT

What's event based recording?
Event based or triggered recording denotes editing the recording state based on one or several signal thresholds

MENU OVERVIEW

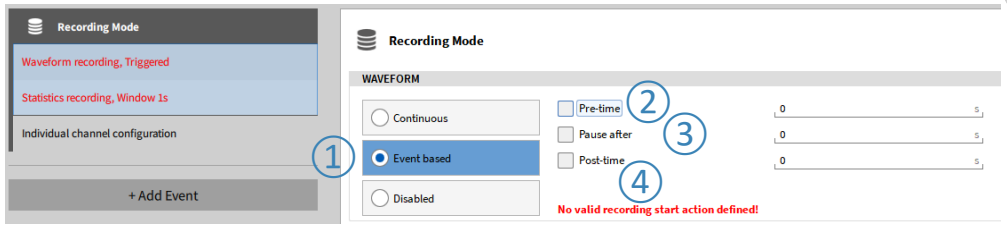
①	Settings for *Waveform* recording *Waveform* recording denotes storing data at full sample rate to the data file
②	Settings for *Statistics* recording Statistics recording denotes storing MIN, MAX, AVG and RMS of all channels for a selectable time window to the data file
③	Adds an event for event based waveform recording
④	Starts the measurement automatically after software startup or setup load *„Pressing the record button will become obsolete“* *Restart he data acquisition on measurement start* *Stop measurement after a selectable time*
⑤	Settings for individual channel configuration for the storing behavior



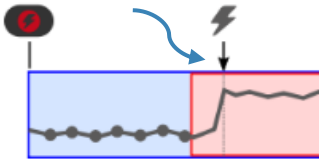
EVENT BASED WAVEFORM RECORDING

①	Select *Event based* Waveform Recording
②	Enter an optional *Pre-time* up to 100 s
③	Enter an optional *Pause after* time
④	Enter an optional *Post-time* up to 100 s
⑤	Press *Add Event* to create a recording event

An event consists of a condition to activate the event and an action that defines what shall be done in case the event is activated or active. The action might be a recording action or others



> *Pre-time* means that the data of the time before the trigger event is activated, will be stored to the data file as well

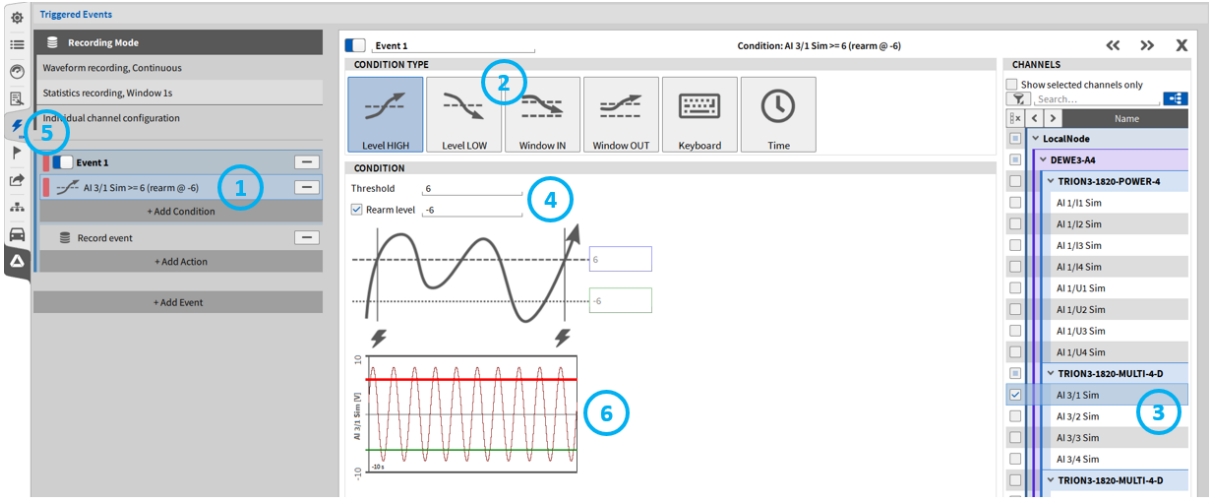


> *Pause after* means that recording is automatically stopped after the specified time has passed

> *Post-time* continues Recording time after Stop recording action has been activated

EVENT BASED WAVEFORM RECORDING – EVENT CONDITIONS

①	Click here to edit the *Condition* to activate the *Event*
②	Different *condition types* exist: > Signal exceeds or decreases a threshold > Signal is in or out a certain window > Keyboard event > Relative time event
③	Select the channel if a threshold shall be monitored
④	Enter the threshold
⑤	Indication if event is active or inactive
⑥	Preview window. Shows a preview of the base signal of the trigger event. Threshold is represented by the blue line, which becomes red, if trigger event is active. Rearm level will be represented by the green line. Range is the set range of the first assigned signal.



EVENT BASED WAVEFORM RECORDING – CONDITION TYPES

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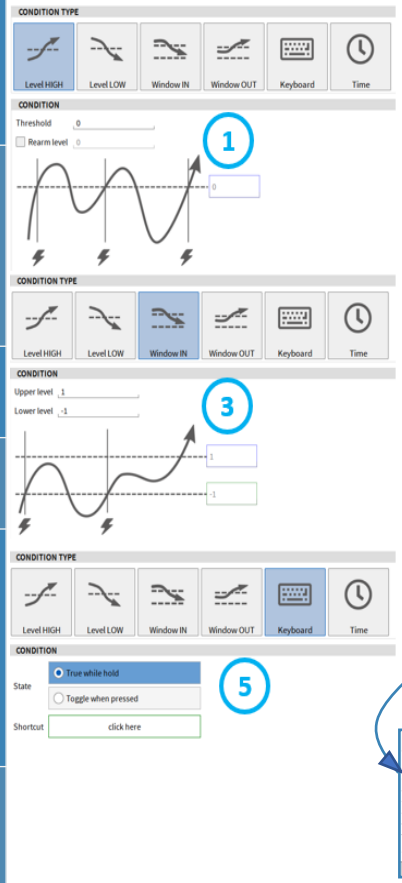
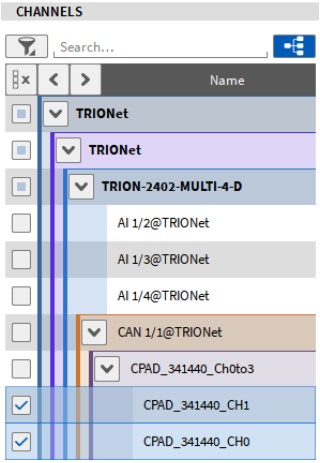
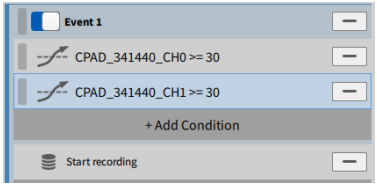
①	Event will be activated if signal exceeds a certain *Threshold*; Optional *Rearm level* that needs to be passed to reactivate the event and ignore noise can be defined
②	Event will be activated if signal decreases a certain *Threshold*; Optional *Rearm level* that needs to be passed to reactivate the event and ignore noise can be defined
③	Event will be activated if signal is within a certain range
④	Event will be activated if signal is out of a certain range
⑤	*True while hold*: Event is activated as long as the key (freely selectable) is pressed *Toggle when pressed*: Event status is toggled (activated / deactivated) when key is pressed
⑥	Event will be activated for a certain duration and repeated, starting at a selectable absolute time.





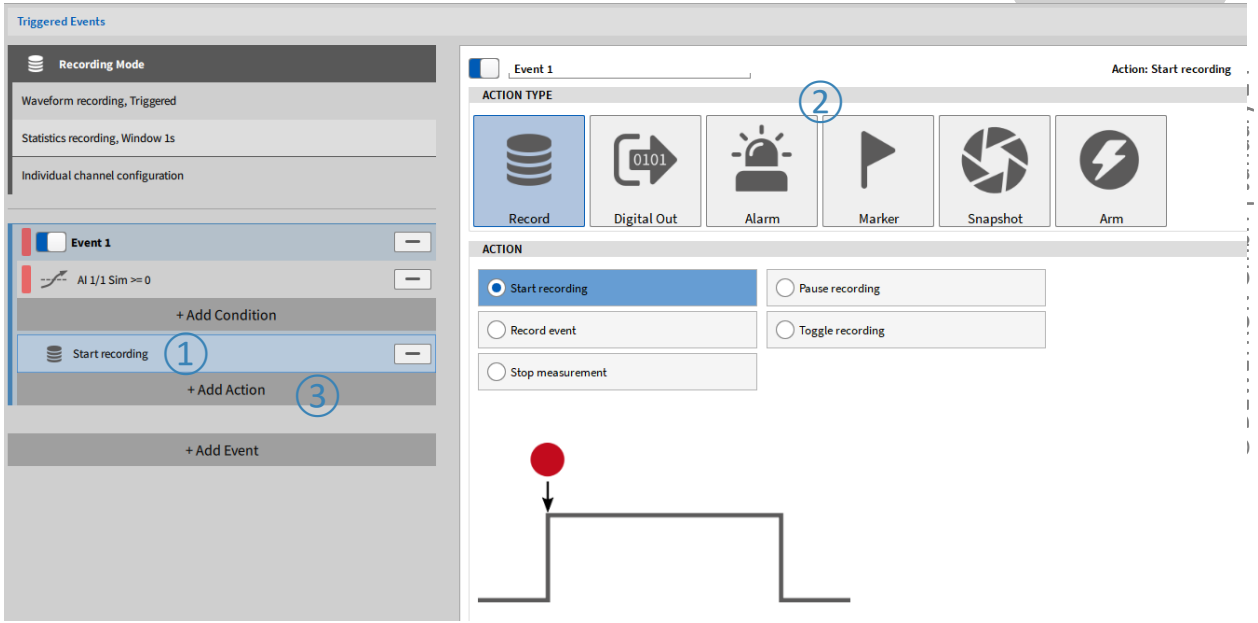
Several channels could be selected; Event will be activated if one channels fulfills the conditions (-> OR connection)



Several conditions could be created; Event will be activated if one condition is true(-> OR connection)

EVENT BASED WAVEFORM RECORDING - ACTIONS

①	An action needs to be defined that prescribes what to do in case the event is actived or active
②	Four different *Action Types* can be selected: > Recording > Alarm > Marker > Snapshot
③	Several Actions can be created



EVENT BASED WAVEFORM RECORDING – RECORDING ACTIONS

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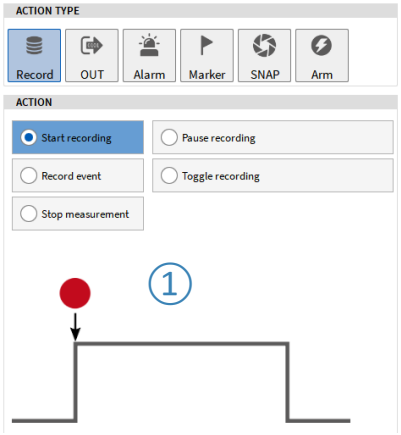
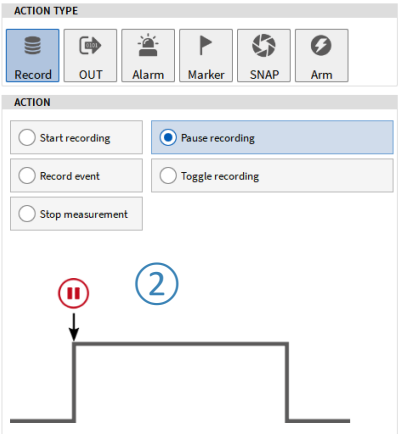
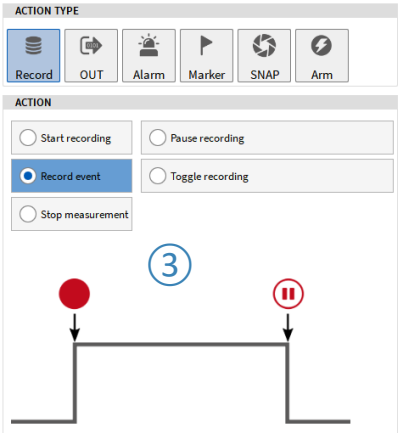
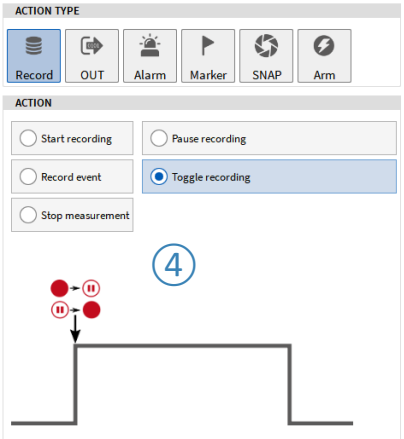
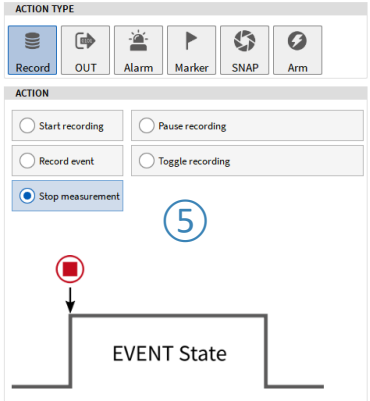
①	Start Recording if event is activated
②	Pause Recording if event is activated
③	Records as long as the event is active
④	Toggles Recording if event is activated
⑤	Stop Recording if event is activated





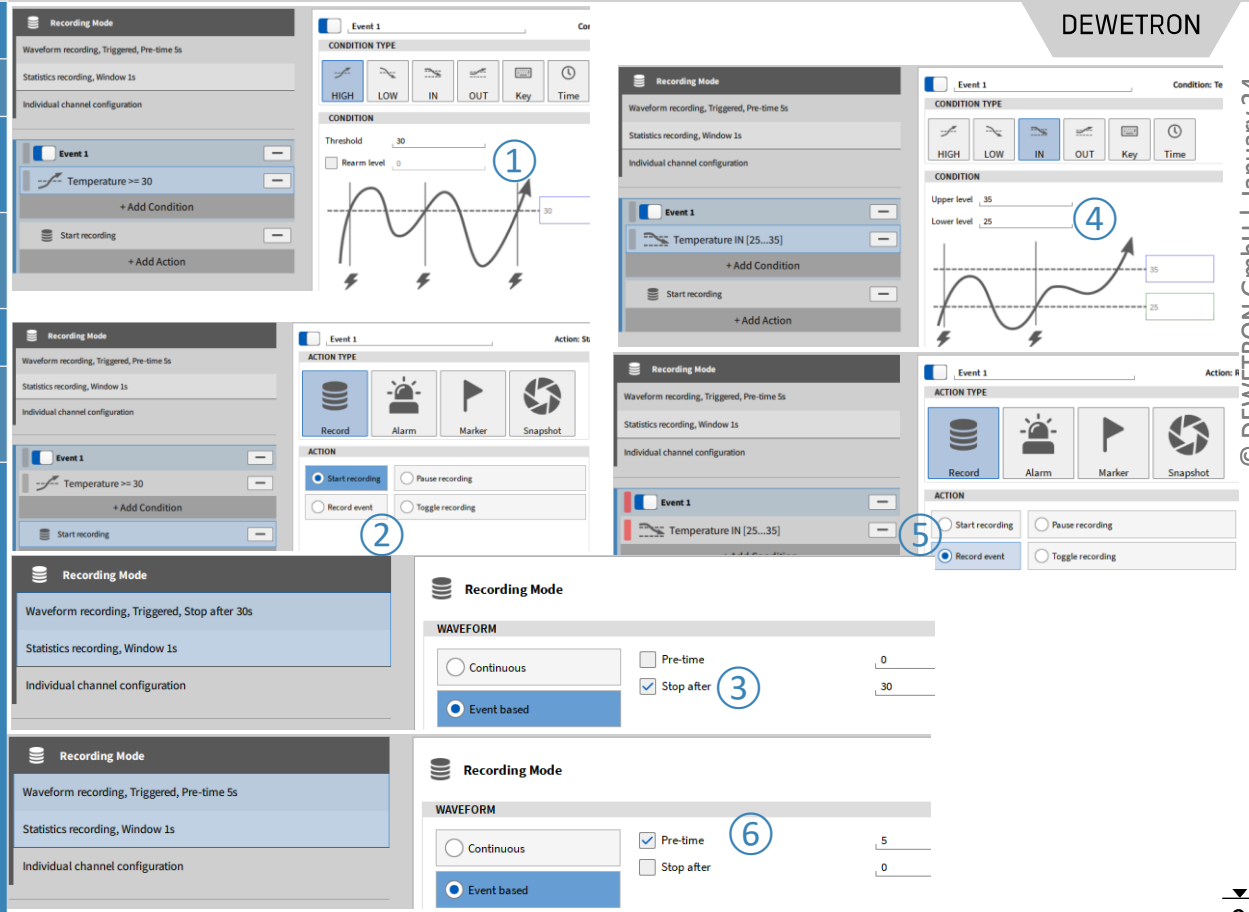






EVENT BASED WAVEFORM RECORDING – EXAMPLES

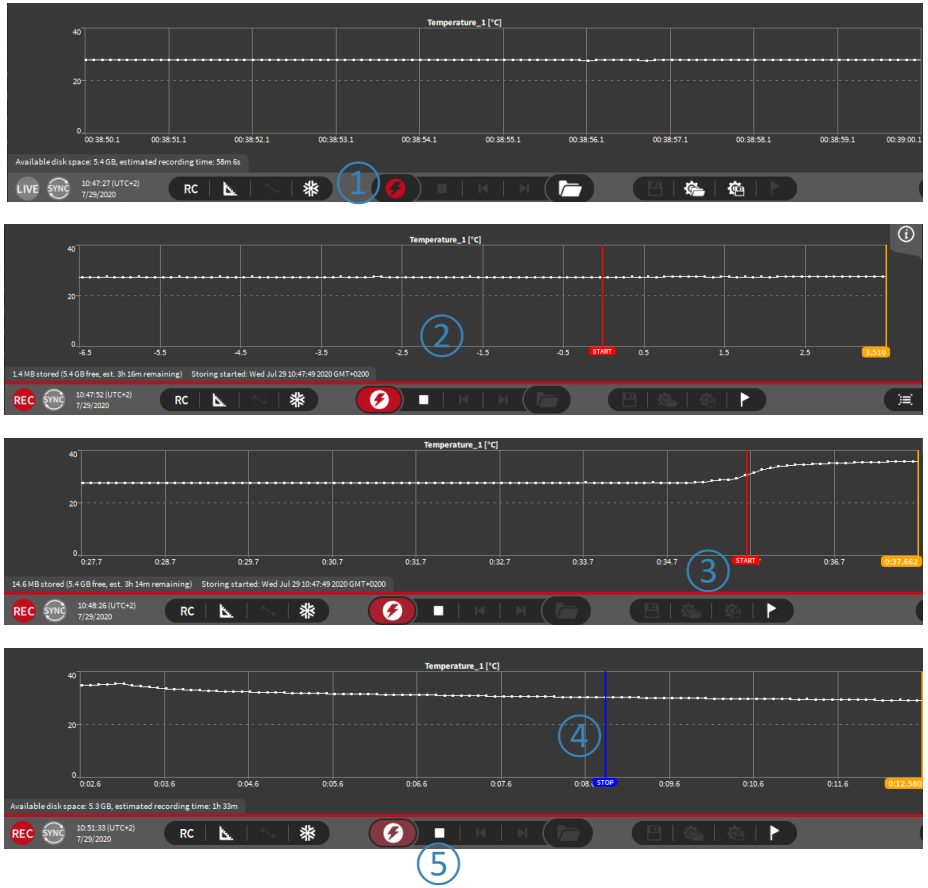
①	If *Temperature* exceeds 30 …
②	… Recording is started
③	Optionally stop Recording automatically after 30 seconds
④	As long as Temperature is within 25 … 35 …
⑤	… data is recorded
⑥	Optionally record data 5 seconds prior to event



EVENT BASED WAVEFORM RECORDING –MEASUREMENT START

①	Press the *Record* button to start Statistics data storing and wait for the trigger for event based recoring
②	Statistics data is stored and trigger is awaited
③	When trigger is received, waveform data and statistics data is recorded
④	Stop marker denotes the end of waveform recording
⑤	Measurement can be stopped with *Stop* button at any time
⑥	Exact timestamps and recording indicators can be found in the *Event List*

The record can still be started manuall by pressing the record button in case event based recording is selected



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EVENT BASED WAVEFORM RECORDING – ALARM ACTIONS

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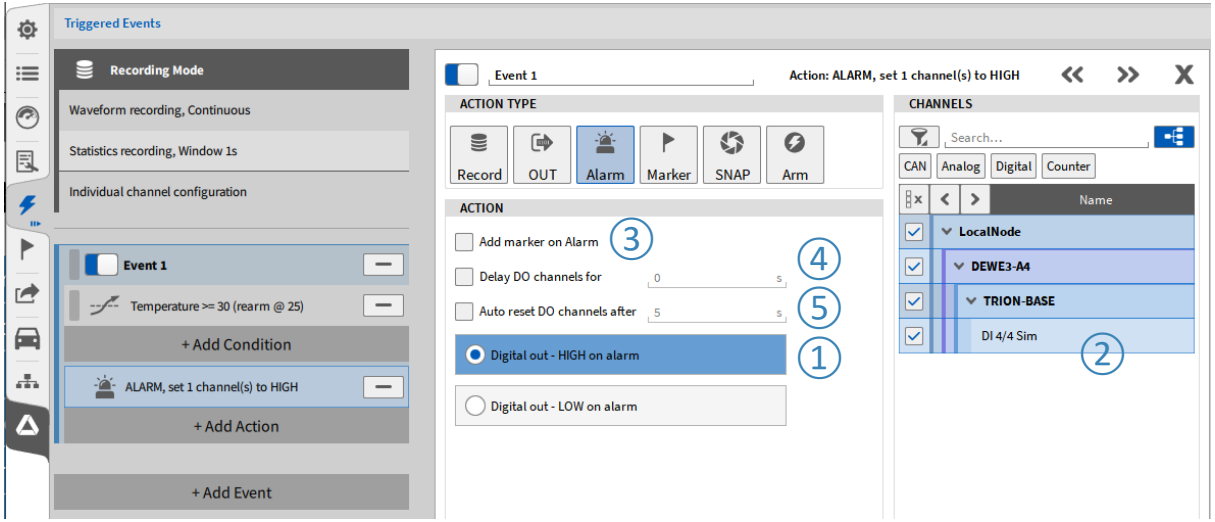
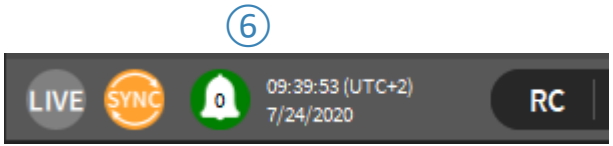
①	Possibility to set a Digital Output to *High* or *Low* in case the event is activated
②	Digital output can be selected from the list (only digital outputs are displayed)
③	Optionally set a marker
④	Optionally delay the switching of digital to LOW or HIGH
⑤	Optionally reset Digital Output after a certain time
⑥	Alarm Counter in the Action bar counts the number of alarms and can be reset by clicking on it

Alarms could also be used during continuous waveform recording

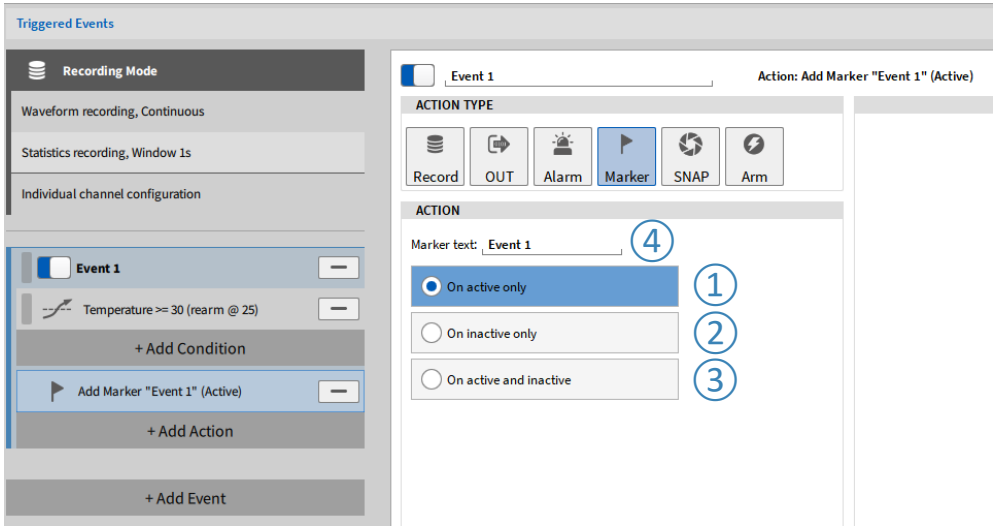




EVENT BASED WAVEFORM RECORDING – MARKER ACTIONS

①	Marker can be added to the data file in case the event is activated
②	… deactivated
③	… or both if event is activated an deactivated
④	Marker text can be freely defined

Markers could also be used during continuous waveform recording



EVENT BASED WAVEFORM RECORDING – SNAPSHOT ACTIONS

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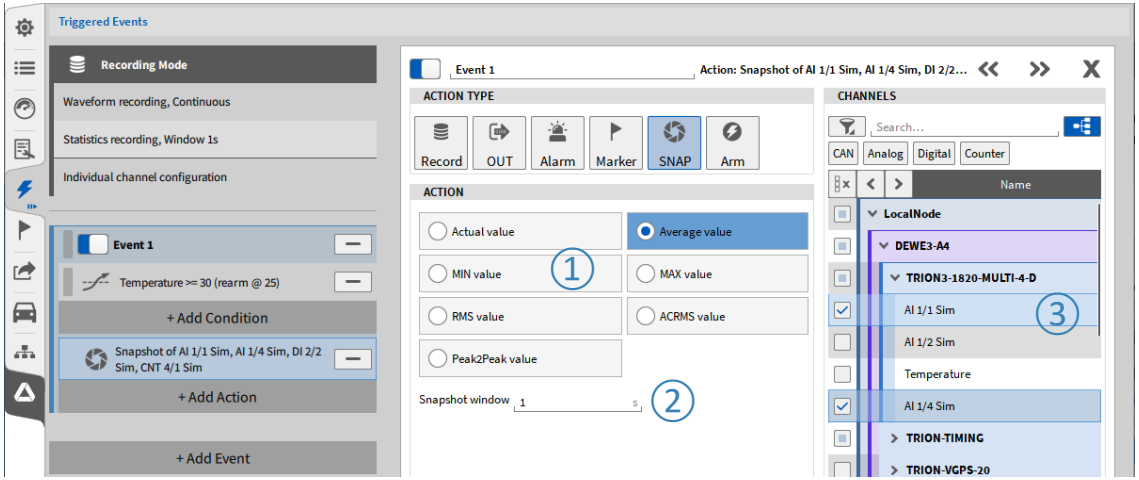
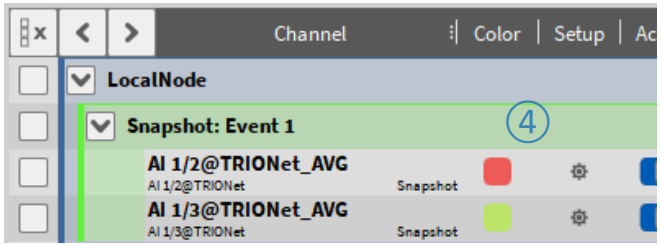
Snapshots could be used to query measurement values in case an event is activated
In the example on the right hand side, the average value for 1 s of channel AI 1/1 and AI 1/2 is queried in case the Temperature exceeds 30

①	Select the value to be queried: Actual, AVG, MIN, MAX, RMS, ACRMS, P2P
②	Specify the time window for the statistics up to 10 s
③	Select the channels that shall be queried
④	Data will be written to new channels

Snapshots could also be used during continuous waveform recording



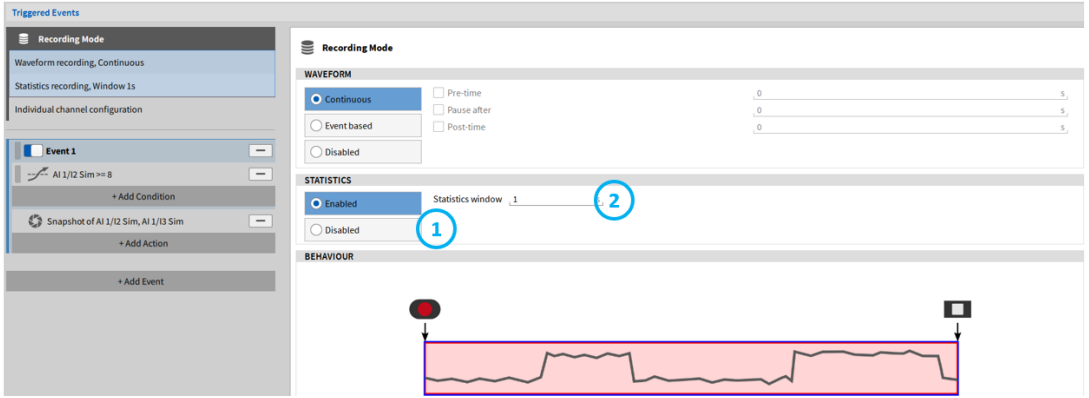


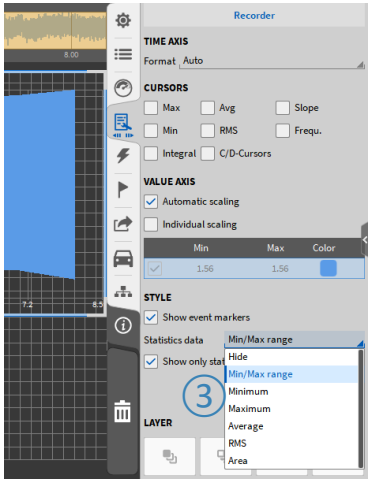
STATISTICS RECORDING

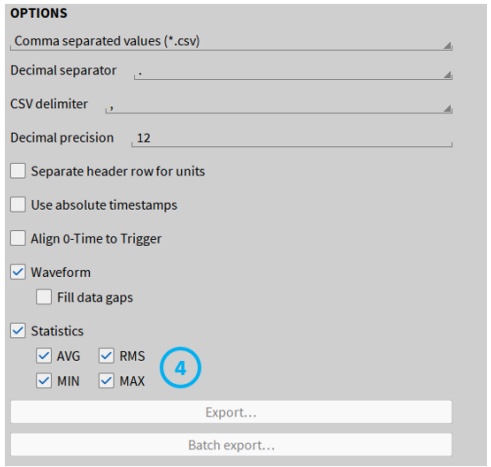
①	If statistics Recording is enabled, MIN, MAX, AVG, and RMS for each channel is calculated and stored to a separate channel
②	Statistics window can be set up to 1000s
③	Statistics data could be displayed in the Recorder …
④	… and is available for data export
	… but cannot be found as separate channel in the Channel List

In case event based recording is activated, statistics data is also stored even if no recording even is active.

Thus, statistics data could be used to monitor the signal trend if no trigger is active to make sure the DAQ system was working properly without consuming much memory.







INDIVIDUAL CHANNEL CONFIGURATION

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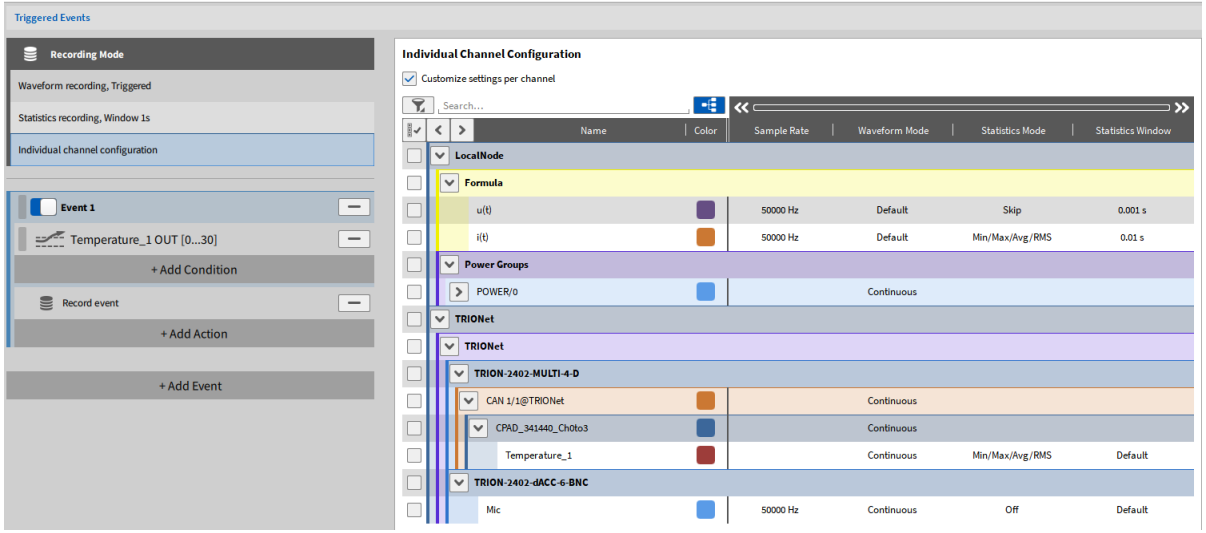
Individual channel configuration denotes to apply channel specific recording options for waveform and statistics recording which differ from the global settings explained above.

I.e. it is possible to

- *Continuously store the waveform data no matter if an event based recording event is active or not (in event based recording mode)*

- *Store channels at different sample rates if an event based recording event is active or not)*

- *Apply channel specific statistic recording options to single channels*



INDIVIDUAL CHANNEL CONFIGURATION CONT‘D

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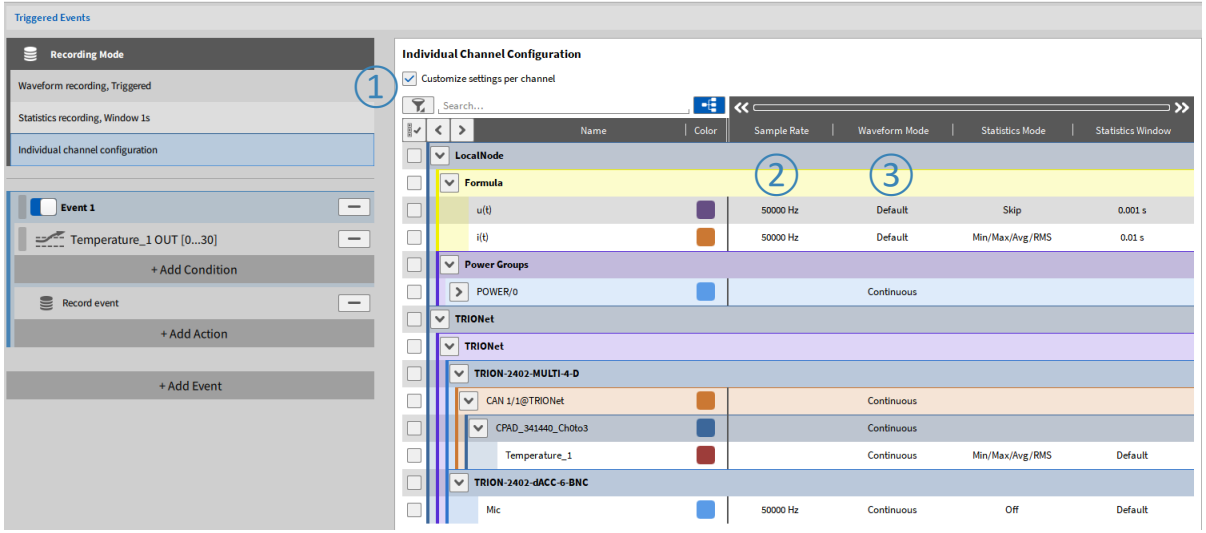
① To use the individual channel configuraton, check *Customize settings per channel*.
This is to avoid unintended use of this feature

② The *Sample Rate* column shows the sample rate of each channel and can‘t be changed here. This has to be done in the Channel List menu

③ In the *Waveform Mode* columns, *Default* and *Continuous* can be selected
> *Default* means that the Waveform data is only stored in case the event based recording event is active
> *Continuous* means that waveform is always stored, no matter if event based recording event is active or not

This allows to exclude certain channels from an event based recording and store their data continuously



INDIVIDUAL CHANNEL CONFIGURATION CONT‘D

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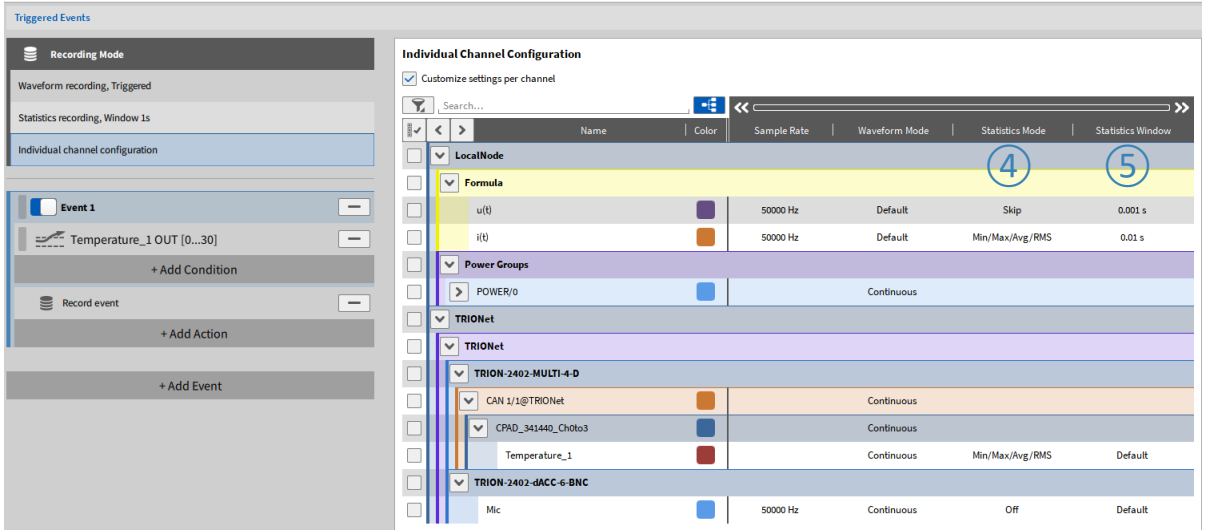
④ Statistics data is always recorded no matter if event based recording event is active or not
- > *MIN/MAX/AVG/RMS* stores these values in separate channels; time window must be defined in *Statistics Window*
- > *Skip* only stores the first sample of the *Statistics Window* to a separate channel
- > *Off* does not store any statistics data

⑤ *Statistics Window* defines the Statistics time interval; Min: Waveform sample rate; Max: 10 s

This allows to deactivate statistics recording for single channels and to store channels at sample rate „A“ when event based recording is not active and sample rate „B“ when event based recording is active



INDIVIDUAL CHANNEL CONFIGURATION - EXAMPLE

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①	The global recording mode is event based recording. Statistics data (MIN/MAX/AVG/RMS) is updated every second
②	Event based recording is active if *Temperature_1* is out the range from 0 … 30 °C
③	Waveform of *u(t)* and *i(t)* is only recorded if event based recording is active
④	Waveform of *POWER/0*, *Temperature_1* and *Mic* will be stored always; no matter if event based recording is active or not
⑤	One sample of *u(t)* will be stored every 0.001 s (stored with 1 kHz continuously)
⑥	MIN/MAX/AVG/RMS of *i(t)* will be updated every 0.01 s
⑦	MIN/MAX/AVG/RMS of *Temperature_1* will be updated with default setting every 1 s
⑧	No statistics of *Mic* will be stored