

# Template:FMB964 I/O settings

When no I/O element is enabled, AVL packet comes with GNSS information only. After enabling I/O element(s) AVL packet contains current value(s) of enabled I/O element(s) along with GNSS information.

If the device is connected to configurator all current I/O values are displayed in *Current Value* column.

*Priority* field allows enabling I/O elements and setting them a priority so they are added to the data packet, which is sent to the server. By default 12 I/O elements with low priority are enabled: *Ignition, Movement, Data Mode, GSM Signal, Sleep Mode, GNSS Status, GNSS PDOP, GNSS HDOP, External Voltage, Speed, Battery Current* and *Battery Voltage*. *Priority* level (AVL packet priority) can be **Low**, **High** or **Panic**. All records made by FMB1YX are regular, and regular packets are sent as low priority records. When *Low priority* event is triggered, FMB1YX makes an additional record with an indication that the event was caused by an I/O element change (depending on *Operand* configuration). When *High priority* is selected, module makes an additional record with high priority flag and sends event packet immediately to the server using GPRS. *Panic priority* triggers same actions as *High priority*, but if GPRS fails, it sends an AVL packet using SMS data if SMS data sending is enabled and the number is provided in *SMS/Call Settings*.

*High* and *Low* levels define I/O value range. If I/O value enters or exits this range, FMB1YX generates an event. *Operand* parameter defines when to generate event: *On Exit, On Entrance, On Both, On Hysteresis* or *On Delta Change*.

When *Event Only* is selected, I/O element status value will be appended only to eventual records, otherwise I/O element status value will appear in each AVL record.

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## Operands

### Operand On Exit

Record is generated when input value leaves a range between low and high level limits.

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## Operand On Entrance

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Record is generated when input value enters a range between low and high level limits.



## Operand On Both

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Record is generated by both On Exit and On Entrance operands' logic at same time.



## Operand Monitoring

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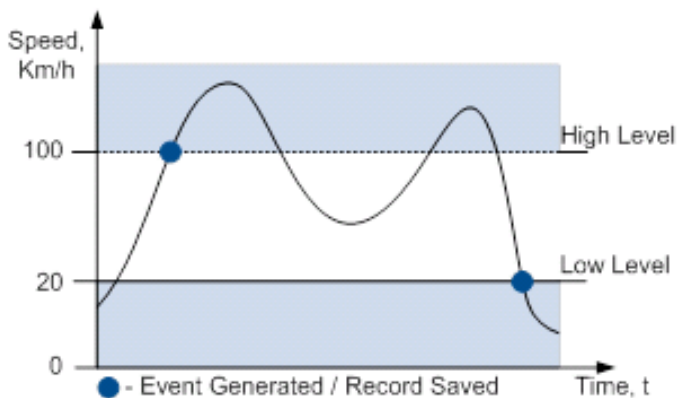
No event at all. Values are recorded only when other triggers worked.



## Operand On Hysteresis

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Record is generated when input value crosses the high limit value from below the low limit value or vice versa.



## Operand On Change

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Record is generated when input value changes.



## Operand On Delta Change

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Record is generated when input value changes and the absolute change becomes equal to or higher than the limit value.



### Avg Const

If *Avg Const* value is 10, new value must be present for 1 second to register the change to a new value. Internal sampling is done every 40 ms, so 25 samples are taken per second. To configure 5 seconds of averaging multiply 10 by 5 yielding 50 as *Avg Const* value. The same logic works if the device is in Deep Sleep mode.

Averaging follows RC exponential curve, see image below:



For Boolean values of  $5\tau$ , values is used, that means value change is taken when new values is averaged to more than 99.3%.

## OBD II (Blue-tooth) and LVCAN I/O elements

*OBD II (Blue-tooth)* and *LVCAN* sections show I/O elements that can be obtained accordingly from OBD II Blue-tooth dongle and LV-CAN200/ALL-CAN300 connected to FMB1YX device. All I/O configuration is as described in [Template:FMB I/O settings](#) section, except OBD II (Blue-tooth) I/O elements does not have an averaging constant parameter.

Detailed description of LVCAN I/O element configuration is given in [Template:FMB CAN adapters](#).