

# FMM640 I/O settings

[Main Page](#) > [EOL Products](#) > [FMM640](#) > [FMM640 Configuration](#) > **FMM640 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 10 I/O elements with low priority are enabled: Ignition, Movement, Data Mode, GSM Signal, Sleep Mode, GNSS Status, GNSS PDOP, GNSS HDOP, External Voltage and Speed. Priority level (AVL packet priority) can be Low, High or Panic. All records made by FMM640 are regular, and regular packets are sent as low priority records. When Low priority event is triggered, FMM640 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, FMM640 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.

□

## Contents

- [1 Operands](#)
  - [1.1 Operand On Exit](#)
  - [1.2 Operand On Entrance](#)
  - [1.3 Operand On Both](#)
  - [1.4 Operand Monitoring](#)
  - [1.5 Operand On Hysteresis](#)
  - [1.6 Operand On Change](#)
  - [1.7 Operand On Delta Change](#)
- [2 Avg Const](#)

## Operands

### Operand On Exit

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

✘

### Operand On Entrance

---

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



## Operand On Both

---

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



## Operand Monitoring

---

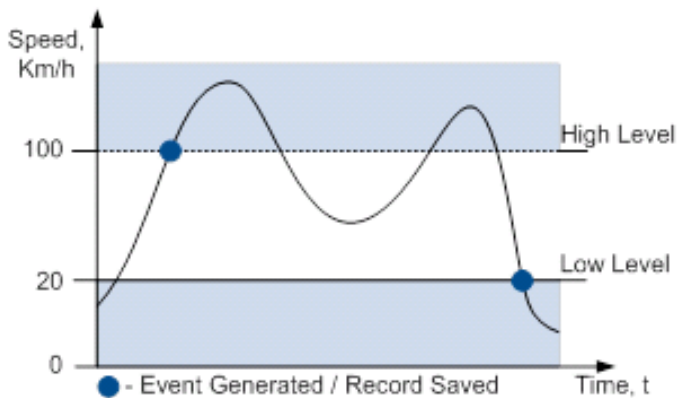
No event at all. Values are recorded only when other triggers worked.



## Operand On Hysteresis

---

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



## Operand On Change

---

Record is generated when input value changes.



## Operand On Delta Change

---

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 curves, see image below:



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