# 3561 FC Vibration Condition Monitoring

**FLUKE**

**Reliability**

## A. Alarms

Alarms can be generated for the following measurement types:

 a. Vibration – in/s, g, mm
 b. Temperature – C, F

## B. Alarm types

The following Alarm types are possible for the above measurement types:

 a. Above a threshold (User specified)
 b. Below a threshold (User specified)
 c. Between two specified thresholds (User specified)
 d. Out of two specified thresholds (User specified)
 e. FOVS (Based on user selected Machine category)

   i. Unsatisfactory
   ii. Unacceptable

## C. Alarm generation and exclusivity

Alarms are generated based on the following conditions:

 a. If 3 out of 8 consecutive data points violate an alarm threshold, then an alarm is generated for that threshold

**Example 1.0:**
Alarm Threshold: **>10C**
Alarm Type: **Above a threshold**

**Data points captured:**

| SL No | Time stamp | Data point value (C) | Breached threshold (Y/N) | Action taken | Should raise alarm? |
|---|---|---|---|---|---|
| 1 | 1/1/2020 00:00:00 | 9 | N | None | N |
| 2 | 1/1/2020 00:01:30 | 8 | N | None | N |
| 3 | 1/1/2020 00:03:00 | 7 | N | None | N |
| 4 | 1/1/2020 00:04:30 | 9 | N | None | N |
| 5 | 1/1/2020 00:06:00 | 4 | N | None | N |
| 6 | 1/1/2020 00:07:30 | 11 | Y | Check last 7 data points for at least 2 violations | No Violations found. Do not raise an alarm. |
| 7 | 1/1/2020 00:09:00 | 9 | N | None | N |
| 8 | 1/1/2020 00:10:30 | 12 | Y | Check last 7 data points for at least 2 violations | Only 1 Violation found. (No 6) Do not raise an alarm. |
| 9 | 1/1/2020 00:12:00 | 7 | N | None | N |
| 10 | 1/1/2020 00:13:30 | 13 | Y | Check last 7 data points for at least 2 violations | **2 Violations found. (No 6,12) Raise an alarm.** |

**Alarm Raised: 13C @ 1/1/2020 00:00:09 for violating threshold >10C**

b. **Alarm Suppression:**
An alarm of a particular alarm type (See Sec B) once raised will not be raised again for a period of 7 days. After 7 days, if a violation occurs and satisfies Sec C.a, then an alarm of that type will be raised again.

**Example 2.0:**
Carrying over from Example 1.0, since an **'Above a threshold'** alarm has been raised on **1/1/2020 00:00:09**, the same type of alarm will not be raised until **1/8/2020 00:00:09**

c. Alarms Suppression works based on Alarm Types, hence when one Alarm Type is suppressed, another alarm of different type can be raised.

**Example 3.0:**
If **'Above a threshold'** alarm type is currently under the 7 day suppression rule, another alarm of say **'Below a threshold'**, can still be raised if violated according to Sec C.a.

d. Multiple Alarms of the same type configured for an asset.
If multiple alarms of the same type are set for an asset, and more than one of them are violated according to Sec C.a, we will be unable to identify which specific alarm will be raised. Any one of the violated alarms can be raised.

**Example 4.0:**
**Given:**
Asset: Motor1
Alarm Thresholds: > 10C, > 12C, >15C
Alarm Type: Above a threshold
Violating Data point (Acc Sec C.a): 17C @ 1/1/2020 00:00:10

**Then:**
Alarm Raised will be one of the following:
* 17C @ 1/1/2020 00:00:10 for violating threshold >10C
* 17C @ 1/1/2020 00:00:10 for violating threshold >12C
* 17C @ 1/1/2020 00:00:10 for violating threshold >15C
Exact alarm **cannot** be determined.

Alarm Suppression: An 'Above a threshold' alarm will not be raised until 1/8/2020 00:00:11